# Does Aid Educate?

Dynamic Panel Evidence on the Role of Official Development Assistance in Determining Outcomes in Primary Education

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I, Victoria Turrent, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

# Abstract

This research evaluates the effectiveness of Official Development Assistance in determining primary education enrolment and completion, as well as the differential role that the quality of recipient country governance and presence of conflict play in influencing its impact. A panel dataset is constructed to allow analysis of educational and aid data for 61 countries over the period 1970-2013 using the dynamic panel system Generalised Methods of Moments estimator. The macro analysis is complemented by analysis of the disaggregated panel data and a review of education aid evaluations for select countries in order to profile the patterns of educational aid and enrolment growth.

The results find education aid to be a highly significant predictor of enrolment, with a US$ 1 increase in education aid equated with a 0.3 rise in the primary net enrolment rate. Aid committed to countries with more stable governance is shown to be significant in the production of higher levels of primary enrolment as is education aid given during times of conflict. Both the results of the macro analysis and the four case studies - Pakistan, India, Malawi and Mozambique - point to aid effectiveness being highly dependent upon the context to which it is delivered.

By analysing how differing 'structural vulnerabilities' have influenced the impact of aid for education, the thesis encourages the global debate to move on from asking whether or not aid works to looking at *when* aid works and how it can work better, arguing that increased emphasis will need to be placed on the strategic allocation of aid if the new ambitious sustainable education goal is to be met. The implications of the research for the practice of donor aid-giving post-2015 are important, as the results question current aid allocation practices and the proposed benefits of earlier calls to adopt a 'big push' approach to scaling-up education aid. It is argued that aid should be allocated on the basis of educational need and the focus ought primarily to be on ensuring the effectiveness of education aid projects where governance and/or political will is weak by identifying innovative and context-appropriate aid delivery mechanisms.

# Acknowledgements

# Table of Contents

# List of Tables, Figure and Equations

## TABLES

## FIGURES

## EQUATIONS

# Abbreviations and Acronyms

| | |
|---|---|
| CREATE | Consortium for Research on Educational Access, Transitions and Equity |
| CRS | Creditor Reporting System |
| DAC | Development Assistance Committee |
| EFA | Education for All |
| EDI | Education for All Development Index |
| FTI | Fast Track Initiative |
| GDP | Gross Domestic Product |
| GMM | Generalised Method of Moments |
| GNI | Gross National Income |
| GPE | Global Partnership for Education |
| HDI | Human Development Index |
| ICRG | International Country Risk Guide |
| IMF | International Monetary Fund |
| MDG | Millennium Development Goal |
| NER | Net Enrolment Rate |
| NGO | Non-Governmental Organisation |
| ODA | Official Development Assistance |
| OECD | Organisation for Economic Co-operation and Development |
| OLS | Ordinary Least Squares |
| PRSP | Poverty Reduction Strategy Paper |
| RCT | Randomised Control Trial |
| RECOUP | Research Consortium on Educational Outcomes and Poverty |
| SDG | Sustainable Development Goal |
| SWAp | Sector Wide Approach |
| UIS | UNESCO Institute for Statistics |
| UNICEF | United Nations Children's Fund |
| UNESCO | United Nations Educational, Scientific and Cultural Organisation |
| WDI | World Development Indicators |

# 1. Introduction

The moral imperative to 'aid' poor countries, and the desire of rich donors to ensure that aid budgets are spent effectively, have made the question of whether foreign aid[1] plays a role in stimulating economic growth one of the most pervasive and significant inquiries in economics. However, despite the voluminous literature on aid and growth, the question of whether development aid leads to economic growth continues to be controversial. This is in large part due to the lack of an obvious causal link between aid and growth, as well as the potential for confounding factors (Bourguignon and Sundberg 2007). As such, discussion concerning the efficacy of aid has been highly divisive and a pragmatic middle ground rarely conceded.

The research presented in this thesis explores the issue of aid effectiveness by focusing on outcome variables that are more specific than economic growth. It employs disaggregated aid data to investigate the link between aid granted to the education sector and education enrolment and completion, with the expectation that this approach - demonstrating a more apparent causal link between input and outcome - might provide a definitive response to the question of aid effectiveness, as well as an understanding of the country contexts that influence it. This is important for discussions of aid effectiveness within the development education community, as the practice of allocating aid for education continues to be heavily influenced by the allocation practices of aid in general, based in the macroeconomic literature on aid and growth (Thiele, Nunnenkamp et al. 2007; Colenso 2011).

It is frequently argued that current levels of external aid for education are inadequate to close the very significant financing gaps in priority Education for All (EFA) areas (Benavot, Archer et al. 2010), but only minimal investigation has been conducted at the global level to identify whether education aid has indeed been successful in achieving its purpose of improving access to and participation in education. It is therefore anticipated that this research, in identifying the differential impact of education aid according to the quality of recipient country governance and presence of conflict, will provide a useful contribution to discussions concerning education aid allocation policy and practice post-2015.

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[1] Throughout this thesis the terms 'foreign aid', 'development assistance', 'external assistance' 'aid' and 'development cooperation' are used interchangeably. Aid is broadly used to mean bilateral or multilateral resources – either financial or in the form of technical assistance – granted to poor countries in support of economic or welfare development activities. A fuller description of the definition of aid as applied to the research presented in this thesis is outlined in Chapter 2.

## 1.1. RATIONALE

The promise of mass aid transfers announced by G8 leaders at Gleneagles and subsequently at the United Nations World Summit in 2005 resulted in substantial increases in education aid, with aid for education rising by 77 per cent between 2003 and 2010 to US$ 13.5bn. The positive trend has since been reversed, as total aid began to fall in 2011 as the result of the protracted financial crisis (UNESCO 2012a: 145-147).

In spite of the persistence of mass poverty in the developing world, substantial rises in total aid volumes in past years, coupled with resource constraints encountered by formerly 'rich' donors in the developed world in more recent years, have intensified the aid critique as signs of political aid fatigue again begin to set in. For education, as for other sectors, evidence that aid investments reap adequate returns is a necessary and important step towards ensuring that existing aid commitments are upheld and additional resources mobilised in order to meet internationally agreed education goals.

The problem of aid effectiveness, however, has tended to be debated at the macroeconomic level, focusing on economic growth as a measure of the impact of aid. This is problematic as the evidence base remains shaky at best, and the accompanying debate is highly polarised. On the one hand, aid 'optimists' argue that aid is the single greatest hope for ridding the world of poverty, illustrating their case by citing examples from across the globe - including Botswana, Mozambique and South Korea - where aid has improved health and education, helped build vital infrastructure, raised productivity, or fought off the threat of famine. On the other hand, the so-called aid 'pessimists' claim the contrary, postulating that aid has been futile in its attempts to unshackle the world's poor, instead doing great harm.

The crux of the argument of aid advocates such as Joseph Stiglitz (2002), James Wolfensohn and Nicholas Stern (2002), Jeffrey Sachs (2005), Nancy Birdsall and William Savedoff (2010) is that development assistance affords access to basic goods and services in situations where the population would otherwise be forced to go without. Whilst these proponents of aid generally acknowledge that aid has at times failed, they suggest that this is chiefly due to the shortcomings of donors rather than of recipients (Radelet 2006). Their case rests on the argument that the decades of Official Development Assistance have been

witness to the most significant reductions of poverty in history, citing evidence that aid has been a major contributing factor through both its impact on economic growth and more directly in its nurturing of human development.

Those defending an anti-aid position, including prominent aid critics such as Peter Bauer (1984), Dambisa Moyo (2009), and William (2006; 2015) have directed harmful blows to the pro-aid agenda, claiming that aid has led to bloated government bureaucracies, effected bad governments, bolstered the elite, or simply been squandered. They allude to pervasive poverty across both Africa and South Asia in spite of decades of international assistance, and name countries that have been in receipt of sizeable tranches of aid yet demonstrate disastrous records - the Democratic Republic of the Congo, Haiti, Papua New Guinea, and Somalia. Their belief is that development assistance should be radically transformed, significantly reduced, or abolished (Radelet 2006).

The view that aid does not work is not new - detractors of aid have stated this to be the case since the 1950s - and is again taking root in aid circles (see Friedman 1958; Moyo 2009; Easterly 2015). It is maintained that aid programmes have been propagated and enlarged not as a result of their demonstrable successes but, rather, because aiding poor countries continues to strike a moral chord and thus far no feasible alternatives have been recognised. Proponents of this belief argue that development assistance has achieved little that countries could not have achieved for themselves, and that it has repeatedly promoted recipient governments' bad traits - aiding the adoption of policies and programmes that have wrecked the progress of struggling economies (Easterly 2002). That the developing world would thrive if external assistance did not exist is the thrust of Dambisa Moyo's (2009) thesis *Dead Aid*, which argues that aid is the primary source of discontent for most sub-Saharan Africans. Moyo proposes that aid ought no longer to be seen as a potential solution to the woes of Africa, but rather viewed as its underlying problem.

Such bold claims might alarm aid optimists into fearing reductions in aid programmes, but there are some more moderate voices in the debate. Glennie (2008) concedes that aid should be reduced in the medium term, making the case that it is preferable to do so rather than to call persistently for additional aid when evidence of its detrimental effects is increasingly presented. Yet other prominent analysts defend a middle ground. Paul Collier (2007) has contested that aid, used appropriately in select circumstances, can be part of the solution even though it may live on as part of the problem. Similarly, findings by Burnside and Dollar (2000) suggest that aid spent by recipient governments practising 'good' policies

could appreciably enhance the prospects for economic growth. Numerous studies have defended Burnside and Dollar's findings (see, for example, Chauvet and Guillaumont 2002), but several others have questioned them (Easterly, Levine et al. 2004; Roodman 2007). Disparities in the results appear to have at their crux somewhat abstruse distinctions in statistical specification and the precise data used (Findley 2010).

Consequently, a point is reached at which critics hurl conflicting testimonies about aid at each other, shoring up their positions with findings that point in very different directions. Who amongst these aid analysts is right? The starting point for this thesis argues that research on the subject of aid effectiveness has been directed towards an end that is just too big. Economic growth is, of course, an important subject and the impact of aid on growth warrants special consideration. Nonetheless, it is remarkable that so little rigorous research has paid attention to outcomes other than growth - particularly given that many strands of aid might have only a tenuous impact on growth, if at all (Findley 2010). What both sides of the aid-growth debate have been inclined to disregard is that different types of aid are unlikely to have the same economic effects. Foreign aid tackles a wide spectrum of objectives, begging the question, why ought all aid be expected to promote economic growth exclusively?

This research is not alone in asking this question. There have been a number of appeals over the years for the unravelling of the various strands of aid and requests for disaggregated analyses of aid (see, for example, Cassen and Associates 1986; White 1998). It was research by Clemens, Radelet et al. (2004) on short-impact aid that instigated a move towards employing disaggregated data in analyses of aid. The authors published convincing evidence that only aid allocated to such areas as infrastructure, industry, and agriculture has short-run effects on economic growth, demonstrating that other types of aid have no bearing on the economy at large. I strongly agree with the ethos prompting such qualifications. This research therefore shortens the chain between 'cause' and 'effect', addressing the apparently conflicting evidence on the impact of aid by employing the example of the education sector. A sectoral approach avoids the convoluted nature of macro level assessments in which recognising all variables that potentially have a bearing upon the relationship between aid and economic growth becomes virtually impossible (Michaelowa and Weber 2006). Most importantly, it also allows for examination of the effectiveness of *education* aid - analysis of the extent to which aid in support of education activities lead to specific education outcomes and where it has done so. As crucial decisions are made regarding post-2015 development cooperation, it is vital that this is informed by

empirical evidence as to whether education aid succeeds in its aims and under what conditions.

## 1.2. CONCEPTUAL FRAMEWORK AND RESEARCH QUESTIONS

Education can improve economic growth by various means: enhancing productivity and technological advancement; making possible technological spillovers and facilitating the diffusion of knowledge; as well as reducing the effect of diminishing returns to physical capital; and improving health outcomes by, for instance, decreasing birth and mortality rates (Nelson and Phelps 1966; Lucas 1988; Romer 1990; Mankiw, Romer et al. 1992; Appiah and McMahon 2002). A positive relationship between education and economic growth is fundamental to the new endogenous growth and augmented Solow models.

Several empirical studies find the quantity of human capital and degree of educational investment to be positively associated with economic growth (see, for example, Becker 1994; McMahon 2002; Oketch 2006; Kostakis 2014). Education is regarded as an important component of human development and it is widely believed to allow a country to access a higher steady state of growth through the accumulation of human capital. Empirical cross-country evidence such as Barro (1999) and Barro and Sala-i-Martin (2003) confirms that human capital measured by years of schooling has a positive influence on growth due to the increased productivity of workers. In accordance with the principles of human capital theory, reasoning for the investment of aid resources in education is strong as education is viewed a primary *means* of economic development. Several decades of deliberation on the merits of human capital theory - and centuries of attention to education in advanced economies - have nurtured the belief that a productive development strategy would be to raise the schooling levels of the population. That a more educated society (with a greater collective stock of human capital) can lead to increased economic growth is the foundation of the approach adopted by the drive toward EFA, as well as a founding notion of the education-related Millennium Development Goals (MDGs), that resulted in a push for the global mass expansion of schooling (Hanushek and Wößmann 2007).

Even if the link between education and economic growth were found to be weak, educational outcomes are important in their own right. As Sen (1999) has posited, education is an *end* in itself. The capability approach to development has been enormously influential at both an academic and institutional level, shifting the development paradigm

from the advancement of economic growth to human wellbeing (Pressman and Summerfield 2009). With respect to interpretations of the capability approach, education plays an elaborate and complex role in human development. Sen (1992) posits that to be educated is to have a basic capability, and is therefore critical to human wellbeing. Access to education, and the promotion of a solid set of basic learning outcomes, is considered fundamental to the realisation of other capabilities (Unterhalter 2002; Unterhalter, Vaughan et al. 2007; Nussbaum 2011). This ties in closely with much of the empirical evidence, with schooling demonstrating a large number of direct beneficial effects - including lower child and maternal mortality, higher immunisation rates, better family nutrition, reductions in HIV/AIDS, and improved natural resource management - that address poverty when conceptualised as 'capability-deprivation' (Godoy and Contreras 2001; World Bank 2001; World Bank 2002).

The capability approach presents a rich set of resources for the consideration of education and social justice. Unterhalter, Vaughan et al. (2007) suggest that there are capabilities in education that are so important that equality in these capabilities should be worked towards. This position is in line with the Convention of the Rights of the Child, which declares education to be a basic human right and advocates for a child's education to be concentrated upon the nurturing of personality and talents as well as of mental and physical abilities in order that a child can achieve its greatest potential (United Nations General Assembly 1989). The capability approach, then, while divorced from human capital theory in its anticipated outcome for education in development, equally supports calls for public investment (both national and international) in education. If the value of education is assessed with regards to the capability to attain 'functionings' deemed to be of value, it becomes clear that society is duty-bound to enable all children to complete, at the very least, a basic education irrespective of their relative future contributions to economic growth (Wigley and Akkoyunlu-Wigley 2006; Nussbaum 2011).

As such, education is one of the mainstays of development strategies for Africa as well as being one of the principal sectors allocated development aid on a large scale. Increasingly, aid has been deployed in support of internationally agreed education initiatives. However, examination of the impact that aid can have on economic growth persists as a threat to the future prospects of aid-giving. The questions as to whether additional resources result in improved education outcomes and what role aid plays in achieving international education goals remain open to debate.

The conceptual framing for this research which stipulates that education aid ought to improve education outcomes - in particular improved enrolment and completion rates, as well as greater equality in education provision - is not unreasonable. Aid is intended to augment spending on education in recipient countries by supplementing governments' education budgets. In addition, through the provision of additional resources in the financing of education (e.g. building of schools, the hiring and training of teachers, supplying of textbooks and other school supplies) the quality of education can be improved. Moreover, anecdotal evidence from a number of countries points to education aid reducing absenteeism and improving enrolment and retention rates. Asediu and Nandwa (2007) refer to the example of Ghana, which was one of ten countries to implement The New Partnership for Africa's Development (NEPAD) aid-funded school-feeding programme. The programme provides every primary school child with a well-balanced and nutritious meal on each day that he/she attends school. Results indicate that enrolment has more than doubled, and absenteeism declined substantially, since the inception of the programme. This affirmative association between education aid and outcomes in education is consistent with empirical findings published by Michaelowa and Weber (2006), Dreher, Nunnenkamp et al. (2008) and Birchler and Michaelowa (2015).

Appraisal of the relationship between aid and education outcomes is necessary in order to elucidate the anticipated function of aid in achieving universal primary education. The research addresses this issue by exploring the impact of education aid and the contextual factors that determine aid effectiveness - seeking to establish the criteria upon which education aid allocation priorities ought to be based - by asking:

**RQ.1. What has been the direct effect of education aid on enrolment over time across developing countries?**

     RQ.1.1. To what extent has aid directed specifically to primary education contributed to ensuring that, by 2015, children everywhere - boys and girls alike - will be able to complete a full course of primary schooling?

**RQ.2. How does the heterogeneity of aid recipients affect the impact of education aid upon enrolment in, and completion of, primary education?**

     RQ.2.1. What are the conditions under which aid has been most/least effective? Is aid given to well-governed countries (as defined by government stability, economic

openness, and democratic freedom) more effective than aid to less well-governed countries?

RQ.2.2. How does a country's conflict status affect the ability to absorb additional amounts of aid?

**RQ.3. Are differing patterns of aid effectiveness discernible when exploring aid dependency and allocative efficiency in education?**

RQ.3.1. To what extent are recipient countries dependent upon aid for the financing of their education systems and how does the degree of aid dependency affect the impact that education aid can have?

RQ.3.2. Has education aid during the MDG period been strategically allocated to those countries showing the greatest educational need?

## 1.3. METHODOLOGY

The empirics of long-run economic growth have traditionally been analysed using cross-section frameworks employing average data over a number of decades. However, there has been a shift away from this approach in recent years towards analyses that favour the application of panel data. Cross-sectional data are not deemed appropriate for the present research for the following reasons: first, by reducing the time series to a single average observation, much of the rich internationally comparable data available on aid and education is not put to use; second, cross-sectional regressions are likely to suffer from omitted variable bias; and third, one or more of the regressors may be endogenous. Since cross-sectional regressions potentially suffer from these problems, a dynamic panel data approach is used instead. Panel data contains observations on multiple phenomena observed over multiple time periods, and allows for unobserved variables and time variant variables to be controlled for, thus accounting for individual heterogeneity.

Two panel datasets are constructed to address the research questions and to analyse the impact of education aid upon education outcomes (specifically enrolment, primary completion, and gender parity) across 61 developing countries. The first, a long-term

structural panel, covering aid flows (commitments)[2] over the period 1970-2013 is employed to examine the overall effect of aid on education over several decades and the conditions under which it has been most effective. It also allows for analysis of absorptive capacity constraints and as to whether education aid is subject to diminishing returns. The second dataset, a short-term annual panel, covering the period 2000-2013 has been designed specifically to capture the effect of development assistance (disbursements) under the more recent model of donors allocating aid to country-owned education strategies following the MDG announcement in 2000 - in particular the increased use of 'programme' aid (general and sector budget support).

One of the principle attributes of the panel data methods of analysis employed is that it allows for variation *between* countries over time - allowing for exploration of the additional impact that aid has on primary enrolment, whilst controlling for domestic spending on education and other structural elements of the national education system that are likely to promote enrolment growth. However, it is patterns *within* countries over time that may illuminate where aid has had an impact, and where it has not. Amongst those countries accounted for in the dataset constructed for this thesis, Tanzania, Ethiopia and Afghanistan have experienced exceptionally large enrolment growth over the last 10 years coincident with major educational aid programmes calculated to increase enrolment. Other countries, such as Malawi and Pakistan, have witnessed only moderate increases in their primary enrolment rates despite having received substantial amounts of aid for education.

National data used for macro analyses such as that presented in Chapter 4 of this thesis should be considered within the broader picture of a dynamic and specific country context that is itself evolving within a larger sub-regional or regional environment. For this reason the data collected for the panel analysis is disaggregated in Chapter 5 to explore issues of aid dependency and the strategic allocation of aid at country level in order to contextualise the findings of the macro analysis. The disaggregated analysis is used alongside a review of education aid evaluations and other documentary evidence in the form of official government documentation to construct four case studies that explore issues of aid dependency in Pakistan, India, Mozambique and Malawi. Similarities and differences between the cases are identified in order to gauge how future education aid can be allocated more strategically to maximize the effectiveness of education aid resources within

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[2] Sector-specific disbursement data are not available prior to 1990, for which reason commitment data are used as a proxy for total education aid disbursements in the long-term structural panel. Further discussion in relation to the aid data employed in this analysis may be found in Chapter 3.

total education spending - of which domestic resources almost always constitute the largest share.

### *The Data and Variables*

The two panel datasets constructed for the macro analysis rely upon secondary data in the form of international statistics on primary enrolment and completion rates as well as gender parity ratios as the dependent variable, and for regressors - education aid, domestic education spending, pupil-teacher ratio, the relative size of the youth population, extent of urbanisation, and Gross Domestic Product (GDP), as well as measures of conflict, democracy, and economic and political governance. The research is made possible only by the availability of such statistics, which make it possible to draw generalised inferences on how aid works, where and why.

The data on education aid commitments and disbursements are taken from the Organisation for Economic Co-operation and Development (OECD) Creditor Reporting System (CRS). The OECD CRS (2015) database holds comprehensive information concerning education projects funded by OECD Development Assistance Committee (DAC) member countries. Education and some economic data are pooled from the World Bank (2015a) World Development Indicators (WDI) which are compiled from officially-recognised international sources. In the case of education this is the United Nations Educational, Scientific and Cultural Organisation (UNESCO) Institute for Statistics (UIS). The WDI presents the most current and accurate global development data available.

Data required to examine the interaction between education aid and the quality of governance (i.e. the effect of aid on education outcomes when education aid is delivered under conditions of good/poor governance) are drawn from a range of internationally renowned sources. Data on democratic and economic freedom are drawn from the Freedom House (2015) index of political rights and civil liberties and the Fraser Index of Economic Freedom (Gwartney, Hall et al. 2015) respectively. Data relating to government stability are taken from the International Country Risk Guide (ICRG), which measures both a government's ability to carry out its declared programmes and its ability to stay in office. The The PRS Group (2015) ICRG dataset is widely considered by political science researchers as being the most reliable and comprehensive data on political stability available (Armah 2010).

To allow for an assessment of the interaction between conflict and education aid, data on

conflict are taken from the Uppsala Conflict Data Program at the department of Peace and Conflict Research, Uppsala University and the Centre for the Study of Civil War at the International Peace Research Institute Sweden. The UCDP/PRIO (2015) dataset, which holds information on the incidence of armed conflict since 1946 to the present has been widely used by both researchers and policy makers (see, for example, Collier 2003; Miguel, Satyanath et al. 2004; Harbom, Melander et al. 2008).

### *Estimation Procedure*

In their influential paper, Hansen and Tarp (2001) contend there to be three causes for aid regression estimates to be biased: (i) unobserved country-specific factors; (ii) untreated endogeneity of aid; and (iii) conditional convergence. Panel data allows for analysis that reflects the differences between subjects, and the changes within subjects over time. Whilst it is possible to employ ordinary multiple regression techniques with this type of data, the estimates of coefficients derived from regressions might be subject to omitted variable bias. Panel data regression techniques allow for the possibility of controlling for certain unobserved variables, by detecting variances in the dependent variable over time. These control for omitted variables that vary between cases but remain constant over time. Panel data also allows omitted variables that differ over time but are constant between cases to be controlled for (Ruspini 2002).

As aid cannot reasonably be expected to be exogenous to school enrolment - with donor rhetoric stating that aid is granted to countries that are less developed - fixed- and random-effects models that ignore the potential endogeneity of aid are not considered to be appropriate estimators. Instead, system Generalised Method of Moments (GMM) dynamic panel models are fitted to the data to estimate coefficients, and an instrumental variable method is applied to allow for the endogeneity of aid and other explanatory variables. This approach is considered to be most appropriate in the presence of endogenous regressors (Hoeffler 1998).

### *A Complementary Case Study Strategy*

A case study strategy allows for holistic, in-depth investigation that provides a systematic way of looking at events without the need for a rigid protocol that is limited by examining a number of pre-determined variables (Fagin, Orum et al. 1991). As an empirical mode of enquiry that investigates a phenomenon within its real-life context, it is the most suitable approach for addressing R.Q. 3 - 'are differing patterns of aid effectiveness discernable

when exploring aid dependency and allocative efficiency in education?' - which is concerned with explaining the complex causal links between aid and education outcomes in terms of real-life interventions (Yin 1994). In this way it becomes possible to illustrate how aid has impacted education outcomes at country level, lending context to the findings of the quantitative macro analysis that is employed to address R.Q. 1 and 2. Case studies lend themselves to multi-perspective analyses, allowing the researcher to consider not just the voice and perspective of actors, but also the relevant groups of actors and interaction between them (Fagin, Orum et al. 1991).

Four case study countries are selected for the research on the basis of analysis of disaggregated data taken from the panel datasets constructed for the thesis. The analysis considers aid dependency as an issue of aid effectiveness and groups countries according to their relative aid dependency. From these, two Asian and two African nations - Pakistan, India, Malawi and Mozambique - were selected, reflecting a mix of high/low aid dependency and high/low education outcomes in order to provide contrasting examples for discussion. The case studies are informed by data both in the form of comparable international education statistics and documentary evidence in the form of donor aid evaluations and other grey literature including working papers, technical reports, and government documents.

The intention of employing documented accounts of aid recipients and donors is to offer an "experiential understanding" (Stake 1995: 43) of aid effectiveness at country level. Because the research proceeds from the conviction that the issues determining aid effectiveness - policy, process, governance - are inevitably complex phenomena; providing an analytical account of aid's impact reliant upon the action and opinions of - and relations between – the various actors involved is considered the most appropriate means of uncovering different patterns of aid effectiveness and discussing the complex and multifaceted reality of aid dependency and efficiency in education aid allocation. The focus of the analysis is upon the level of aid dependency, education outcomes and perceived degree of aid effectiveness – including how issues of aid dependency, donor involvement, and strength of institutions impact the effect that aid is seen to have had.

## 1.4. EXPECTED OUTCOMES AND VALUE OF RESEARCH

There is a very real lack of empirical education literature on aid effectiveness that covers

whole regions or continents, let alone the entire developing world. Few conventional academic texts have developed such an encompassing analysis; nevertheless, there is unmistakably an audience for frameworks that endeavor to decipher educational aid policy and practice beyond the borders of a single nation. This is particularly the case given that so much of the developing world appears to be in need of external assistance to achieve even the minimum education goals.

The central research hypothesis argues that the broad literature on aid effectiveness has failed to establish a conclusive aid-growth relationship, and that the effectiveness of development cooperation might be measured more accurately through an exploration of sector-specific outcomes. The research focuses on more specific outcome variables than economic growth, using disaggregated aid data to investigate the link between aid granted to the education sector and education outcomes at the primary level. A major contribution of this research, then, is that it constructs a panel dataset drawing on international statistics allowing for examination of the direct effect of aid on education over time across developing countries.

The concern of aid effectiveness in education has always been questioned, but only relatively recently has there been an empirical examination of aid's impact on education outcomes conducted at the global level (Michaelowa and Weber 2006; Dreher, Nunnenkamp et al. 2008; Christensen, Homer et al. 2010; Birchler and Michaelowa 2015). The findings appear to indicate that there is a positive relationship between aid and education outcomes, but the effect is shown to be considerably less than that deemed necessary to reach the EFA objectives and MDG2. A reasonable interpretation of these findings, explaining the somewhat weak relationship between education aid and education outcomes, is that aid is more effective in certain development settings than others. Aid does not operate in a vacuum - a country's policies, governance, the extent of its need, and whether it is suffering the corollaries of conflict are likely to have a significant impact upon the effect of education aid.

Ahead of the Millennium, a serious discussion was provoked by the publication of World Bank (1998) research regarding aid effectiveness and the consequences for aid allocations. The debate was concentrated upon the significance of good policy as a determinant of aid effectiveness. The World Bank study posited that aid is most effective when governments have good policies in place, and that greater selectivity in the allocation of aid to those low-income-countries pursuing sound policies would lead to greater reductions in poverty. To

this end, many bilateral and multilateral donors reassessed their patterns of aid allocation, with a particular emphasis on making aid more performance-based. However, establishing 'good' policy as both a determinant of aid effectiveness and a condition for aid allocations is likely to result in negative repercussions for 'fragile states' - countries beset by weak governance and institutional capacity, many of which suffer from the damaging effects of conflict. Moreover, countries with strong policies in place are generally not the neediest if aid is viewed as a means of closing big gaps between the current level of development indicators and international education goals. This is representative of the classical 'need-ability' dilemma in development aid.

Furthermore, claims have been made in the wider economic literature on aid effectiveness that the capacity of certain countries to absorb additional aid is greater than others. Collier and Hoeffler (2004) propose this to be the case for post-conflict countries, arguing that these settings have demonstrated a capacity for absorbing aid that is greater than the norm due to their unique characteristics and propensity for rapid growth. It is suggested that opportunities for recovery in post-conflict scenarios enable a phase in which economic growth is 'supra-normal' - the urgency to restore infrastructure, pitted against the collapse of revenue, make aid unusually productive (Collier and Hoeffler 2004). It is plausible that the findings of the traditional aid literature may not, then, be applicable to post-conflict countries. Aid disbursed to post-conflict environments is very different from conventional development aid in terms of circumstance, size, composition and time-profile as well as the largely stark environments in which it is deployed.

This research goes beyond the scope of the emergent empirical literature on the effectiveness of education aid to measure the extent to which the quality of political and economic governance and presence of conflict, influence aid's impact in the education sector. It does so with the intention of determining the conditions necessary for the optimal allocation of education aid. By doing so it becomes possible to understand the effectiveness and efficiency of education aid in different contexts relative to development assistance more generally. With the establishment of the new sustainable development goal agenda, which emphasizes the need to for external support for those countries least able to help themselves, understanding where aid for education works, under what conditions, and why will be of critical importance.

## 1.5. STRUCTURE OF THE THESIS

The thesis is divided into seven main chapters as outlined below. Chapter 1 introduces the research, explaining the rationale for the area of study; introducing the conceptual framework, research questions and methodology; as well as the expected outcomes and value of the research.

Chapter 2 offers a review of the literature. The first part of the chapter is concerned with providing theoretical and historical context, resolutely making the case that the study of education aid ought to fall within the remit of the development education literature. It starts by establishing a theoretical framing for the thesis, exploring the theories and application of human capital theory and the capability approach, and their guiding of individuals, nation states and the international development community to invest in education. It subsequently turns to address the historical evolution of education aid - providing much needed education context of an issue that is invariably examined against the background of macroeconomics.

The second part of the chapter moves on to assess the debate on whether aid works - much of which has been discussed within the economic discipline - addressing the unresolved debate in the macroeconomic literature on aid effectiveness. It considers the principal areas of discussion between the aid 'optimists' and 'pessimists', looking specifically at issues of aid allocation and the role of country heterogeneity in determining aid effectiveness. The final section of the chapter addresses literature specifically related to the effectiveness of education aid, critiquing the emerging empirical literature on education aid, honing in specifically on the models that they rely upon and methods of econometric analysis employed.

Chapter 3 contains a discussion of the methodological issues that arise in the study. It starts by discussing the research design, and goes on to address data issues, the estimation methods employed, as well as approaches to test the robustness of findings.

Chapter 4 presents the findings from the macro analysis. The first part of the chapter offers a descriptive analysis of the data from the long-term structural (1970-2013) panel. It provides simple summaries of the data, maps out trends, and makes some early observations ahead of the empirical analysis that follows. Whilst a purely descriptive analysis of the data collected, the discussion allows for trends in education aid flows to be

mapped against what is described in historical discussions of development education and, more broadly, in analyses of the history of aid.

The second part presents the empirical analysis addressing the first two research questions: what is the direct effect of education aid on enrolment over time across developing countries?; and how does the heterogeneity of aid recipients affect the impact of education aid upon enrolment? The research contributes to the discussion on the effectiveness of education aid by focusing on the issue of heterogeneity among the recipients of aid – specifically the issue of country governance and the relevance of conflict in determining the impact of aid to education.

Chapter 5 offers a country level perspective of issues relating to aid dependency and efficiency in the allocation of education aid in order to complement and contextualise the findings of the panel analysis. The first section examines the extent to which countries accounted for in the analysis are dependent upon aid for the financing of their education systems. Discussion then moves on to identify learning in aid allocated at country level – where it has worked and where it has not, taking into account issues of aid dependency, teasing out the findings of the previous chapter and expanding upon these through four case study examples based on country level education aid evaluations. The final section of the chapter looks at the issue of allocative efficiency - the extent to which aid is allocated to purposes and inputs where it has the greatest catalytic impact on national education outcomes. It does so by determining priority countries for aid to have the greatest impact.

Chapter 6 discusses the appropriateness of the research design, data collection and analysis strategies. It presents a brief summary of the most pertinent findings and positions them within current debates in the field. The discussion offers a critical reflection on how the research has contributed to the knowledge field, how it speaks to other authors, and how the results may be interpreted. The chapter examines the implications of the research to practice and theory and concludes by considering the study's limitations as well as avenues for future research.

Chapter 7 concludes by synthesising the analysis and discussion presented in earlier chapters and placing the importance of the research within the context of the new Sustainable Development Goal agenda.

# 2. Literature Review

## 2.1. INTRODUCTION

Economists generally agree that on average, in spite of several decades of development assistance, the majority of developing countries have encountered limited economic growth. Although a handful of countries largely found in South East Asia have at various points witnessed rapid expansions in the growth of their economies, the majority of countries in Africa have until very recently experienced minimal or, in some countries, even negative economic growth. Might this be evidence of the failure of development aid? Can it be concluded, as some economists have, that development assistance has no effect - positive or negative - for the vast majority of aid recipients?

Indeed, unclear and ambiguous results have been yielded from much of the empirical research addressing the subject of aid effectiveness. Bourguignon and Sundberg (2007) argue that this ought not to be surprising given the diversity of motives in giving aid, limitations in the tools for analysing aid's impact, and the complex chain of causality that links development assistance to economic growth. Are there, then, alternative measures of development that address these concerns and which might reflect more positive results? The recent econometric literature on the effectiveness of education aid explores just this question, seeking to unpick some of the complex causal links between aid and development outcomes (see Michaelowa and Weber 2006; Dreher, Nunnenkamp et al. 2008; Christensen, Homer et al. 2011; Birchler and Michaelowa 2015). By shortening the chain of causality - to look at the impact of education aid upon education outcomes - it is assumed that such analysis will prove more robust, with results measuring the 'true' effect of aid. The research presented in this thesis is conducted in this vein, and likewise assumes that the causal link between aid and outcome ought to be shorter and stronger in a sector-specific analysis of aid effectiveness.

However, whilst these empirical studies of aid effectiveness in the education sector carried out by development economists and political scientists have been concerned with establishing the positive impact of aid in order to resolve the broader macroeconomic problem of aid effectiveness, this thesis concerns itself specifically with understanding the

relevance of aid for education policy. It first questions to what extent aid has been effective over the long-term in promoting enrolment in primary education; and in the shorter-term - since the announcement of the MDGs - in closing the gap towards achievement of the goal of universal primary completion and gender equality. It then asks under what conditions education aid has proved most effective - assuming that the distinct development environments into which education aid is disbursed will have an impact upon its eventual outcomes.

These questions are important for shaping the future of development assistance in the education sector and the strategic allocation of aid in support of the newly formed and ambitious Sustainable Development Goal agenda. Aid as the subject of rigorous empirical analysis is invariably left to economists with the effects of aid on growth, and the conditions under which aid is deemed to work best, considered the same for education as for development assistance more generally. But development objectives are likely to be very different, and the processes at play that ensure the effectiveness of aid quite distinct.

The thesis bridges the yawning divide between economic and education research on this topic, by applying established econometric techniques to a very urgent and relevant issue of development education policy and complementing this with country-level assessments of aid dependency and efficiency in education aid allocation based on a combination of international education statistics and a review of select country education aid evaluations. This literature review therefore draws heavily on literature from both development education and economic disciplines, critically examining a range of studies related to the effectiveness of aid - and education aid in particular.

The first part of the literature review is concerned with providing the theoretical and historical context, resolutely making the case that the study of education aid ought to fall within the remit of the development education literature. It starts by establishing a theoretical framework for the thesis, exploring the theories and application of human capital theory and the capability approach, and their guiding of individuals, nation states and the international development community to invest in education. It subsequently addresses the historical evolution of education aid - providing much needed education context of an issue that is invariably examined against the background of macroeconomics. This is important, as presumably the effectiveness of education aid will be determined in part by the purpose for which it is allocated.

The second part of the literature review assesses the debate as to whether aid works, of which there has been much discussion within the economic discipline. The debate in the macroeconomic literature concerned with aid-growth studies has been extremely divisive. This review of the literature considers the principal areas of discussion between the aid 'optimists' and 'pessimists', looking at issues of aid allocation and the contexts (e.g. countries demonstrating good governance; post-conflict situations and where the 'need' for aid is greatest) under which it is considered that aid ought to be most effective. The final section of the chapter addresses literature specifically related to the effectiveness of education aid, critiquing the handful of cross-country empirical studies that exist, focusing specifically on the models that they rely upon and the methods of econometric analysis employed.

The chapter concludes by identifying gaps in the literature that the present research will seek to address.

## 2.2. THEORETICAL FRAMEWORK

This first section of the literature review provides the theoretical framework for the thesis, establishing why education is a priority investment area for aid resources in developing countries. In its discussion it draws on human capital theory and, by extension, the capability approach to development. It concludes by discussing the two theories in consideration of education as a public good.

### 2.2.1. Education, Human Capital, and Theories of Economic Growth

Education as an economic good is widely recognised to be a means of investing in human capital that propagates economic benefits and contributes to a country's future wealth by increasing the productive capacity of its people, making it fundamental to the construction of globally competitive economies (Bruns, Mingat et al. 2003; Woodhall 2004; Kostakis 2014). That investment in education systems yields substantial economic benefits is a conclusion highly relevant to individuals, businesses, governments and international organisations alike, as it informs their assessments as to where best to invest resources. It is the supposition that individuals improve their well-being through the accrual of human capital that has framed government policies and justified the rapid expansion of education systems around the globe (Little 2003).

Adam Smith is credited with the development of human capital theory. In *The Wealth of Nations,* Smith (2005) isolates education as a contributing factor of 'human capital', positing that knowledge and skills have an economic value of their own. Given the economic value placed on knowledge and skills, there are two key reasons for expecting to find a correlation between education and economic growth. First, at the most general level, through the development of knowledge, education appears to assist scientific advance. Referring to the stock of productive skills and technical knowledge exemplified by labour, human capital is acknowledged to be an agent of economic growth (Schultz 1961; Becker 1994). Education allows for the creation, application and spread of new ideas and technologies, which, it is argued, lead in turn to increased labour productivity (Lucas 1988; Romer 1990). The impact of education on growth, in this case, is indirect in that - through the process of acquiring education, or due to the vital part that education plays in the development of a research sector - it leads to the creation of knowledge, ideas and technological innovation. Second, at a more specific level, there is an indication that the incomes which individuals have the possibility to earn are largely dependent upon their level of education (Mincer 1974; Becker 1994). This is a direct effect on economic growth, as individual workers become more productive (Stevens and Weale 2003).

The supremacy of human capital theory in the economics of education has had a significant impact on decisions regarding labour markets and wage determination. It is based upon the assumption that the effectiveness of investment in human capital can be measured by employing the same methods of investment appraisal that have conventionally been applied to physical capital (Woodhall 1997). Several economists have founded their work on this theory: measuring the rates of return to education (Mincer 1974; Becker 1994; Psacharopoulos 1994); examining the effects of education on economic growth using a growth accounting framework (Dennison 1962; Dougherty and Jorgenson 1997); considering educated labour as a factor of production (Mankiw, Romer et al. 1992); and as a means for measuring endogenous growth (Lucas 1988; Romer 1990; Barro and Sala-i-Martin 2003). These applications of human capital theory and their implications for investment in education are discussed below.

### *Rates of Return to Education*

At the micro level, the function of education in economic growth has been examined by rates of return analysis. This empirical method uses Mincerian wage equations to establish

the economic benefits of education (see Patrinos and Psacharopoulos 2004). In his seminal contribution *Investment in Human Capital*, Schultz (1961) established that - by accounting for the cost of education, including forgone earnings, as well as individuals' incomes - both private and social benefits of education to economic growth could be identified. Becker (1994) developed the theoretical framework for rates of return analysis in education, which is explained on the basis of private and social rates of return, in line with Schultz's notion of human capital. He posited that the private rate of return to education quantitatively measures an individual's benefit of education, with certain individuals earning more than others because they invest more in their own education (Becker 1994). He considers the social rate of return to education, then, to be the basis of investment decisions for governments, as certain investments in human capital do not affect individual earnings but the costs are paid and returns collected not by the individual being educated but, rather, "by the firms, industries, and countries employing them" (Becker 1994: 154).

Various influential empirical analyses have been conducted using the methods of rates of return analysis. Controlling for other factors including age and experience, Mincer (1974) examines individual earnings as a function of the number of years of education. He finds that an additional year of education increases individual earnings by 7 per cent. By calculating earnings on the basis of an increasing linear and decreasing quadratic function of number of years of work, the return to an additional year of schooling is increased to 10 per cent, evidence of a more complex model of returns but indicating the early years of education to be of greater value than later years.

The work of Mincer (1974) has been criticised both for overstating the social returns to education on the grounds of the cost of providing education, and for ignoring the opportunity cost of being educated that results in a loss of earnings together with the fact that the benefits of education perish with age (Stevens and Weale 2003). Moreover, Mincer's (1974) analysis assumes that individuals are the same when, in fact, the benefit of additional education is likely to be different for different people.

A further, widely cited, study that surveys rates of returns analysis is that conducted by Psacharopoulos (1994). The survey of 78 countries found returns to primary education to range from 3 to 42 per cent, with the largest returns for secondary and tertiary education to be 48 per cent and 24 per cent respectively. In order to smooth out the variability in returns to individual countries, Psacharopoulos examines the rates of return by country income level (see Table 1), concluding that the social rate of return to education decreases

according both to the amount of education that an individual receives and to country income, presumably due to the profusion of educated labour.

**Table 1: Rates of Return to Education**

| Income Band (1985 US$) | Mean Income | Social Rate of Return (% per annum) | | |
|---|---|---|---|---|
| | | Primary | Secondary | Higher |
| Low Income (<$610) | $299 | 23.4 | 15.2 | 10.6 |
| Lower Middle Income ($610-$2,449) | $1,402 | 18.2 | 13.4 | 11.4 |
| Upper Middle Income ($2,450-$7,619) | $4,184 | 14.3 | 10.6 | 9.5 |
| High Income (>$7,620) | $13,100 | n.a. | 10.3 | 8.2 |
| World | $2,020 | 20 | 13.5 | 10.7 |

*Source: Psacharopoulos (1994: 1328)*

Based on the results of this analysis, Psacharopoulos (1994: 1325) concludes that primary education ought "to be the number one investment priority in developing countries". Although selecting which level of education should be the focus of development efforts is deemed controversial, such findings have globally been the guide for many education investment decisions that prioritise primary education in particular (Stevens and Weale 2003).

The approach to conducting rates of return analyses has certainly not been without its critics. Great diversity in rates of return to education have been reported for sub-Saharan Africa in particular, including low and sometimes even negative estimates, with inconsistent patterns according to the level of education (Bennell 1996a; Bigsten 2000; Pritchett 2001). There is also evidence of increasing rates of return by level of education, which may call into question the focus of aid towards lower levels of schooling (Kingdon and Unni 2001; Colclough, Kingdon et al. 2009; Aslam, Bari et al. 2012). The methods of studies that report unreasonably high returns to primary education have been contested (refer to Knight, Sabot et al. 1992, for example); and Bennell (1996b) has convincingly argued that there has been considerable over-estimation in much of the rates of return analysis - with researchers having distorted some of the research findings, using small or inappropriate sample surveys, and ignoring more reliable data sources. Beyond these purely methodological concerns, wider macroeconomic forces - such as a country's openness to trade, the extent of economic liberalisation as the result of structural adjustment, and the degree of economic growth - have also been found to influence the impact of education

upon the incomes an individual can expect to command (Söderbom and Teal 2003; Kostakis 2014): these are issues that are not generally addressed in rates of returns analysis.

Although many of the weaknesses of rates of returns of analysis have by now been dealt with, the most pervasive and enduring criticism of the method is its inability to account for the non-economic benefits of education. Rates of return consider only pre-tax earnings (social returns) and post-tax benefits (private returns). The criticism is strongest in the case of the social rates of return, which, in their true sense, ought to capture more than solely monetary benefits. By limiting social returns to earnings, rates of return analysis ignores the other important social benefits of education, those non-economic social, political and cultural benefits that accrue to society as a whole - improved citizenship, democratic stability, poverty reduction, lower crime rates. These important externalities are invariably acknowledged by economists, but they are rarely calculated in rates of return to education because they are notoriously difficult to measure (McMahon 2002; Oreopoulos and Salvanes 2009). Rates of return therefore become unreliable as a sole criterion upon which investment decisions can be made.

### *A Growth Accounting Framework*

Growth accounting is a method used to measure the contribution of various factors on economic growth - its roots are found in the concept of a production function in macroeconomics. The growth accounting model separates out the growth rate of overall economic output into that which is the result of rises in capital and labour, as well as that which cannot be taken into account by any observed changes. As the observed levels of economic growth are not usually fully explained by growth in capital and labour, the unexplained part of economic growth is deemed to be due to technological progress (Solow 1957). Thus, the growth accounting framework is able to measure not only what part of economic growth is due to rises in capital and labour stocks, but it is also able indirectly to measure the growth rate of technological progress, by measuring the growth rate of GDP that cannot be explained by the growth rate of observable inputs (the residual).

However, within this neo-classical growth model, Solow's (1956) production function contains only physical capital and raw labour, with human capital being exogenously determined. Technical progress is treated as something that cannot be explained by either the input of physical capital or labour. That improvements in technological progress might

be explained by improvements in the quality of labour - in particular through the effect of education on earnings, an explicit measurement of the contribution of labour quality - became an influential approach to account for the large growth residual (Dennison 1962).

The contribution of improved labour quality is studied by Dougherty and Jorgenson (1997) using the growth accounting framework. They find that investment in the broad sense, which includes additions to both human and physical capital, can almost entirely explain the growth in output per capita that G7 countries enjoyed in the period 1960-1999. That the main source of economic growth is investment - either in physical capital or, through education, in improving the quality of labour supplied - is a definition of productivity that differs from that usually adopted, and it leads to rather different views about economic performance.

### *Educated Labour as a Factor of Production*

As has been discussed above in relation to the framework for growth accounting, whilst the Solow (1956) model has been found correctly to predict the direction of income growth, it is not sufficient to predict its magnitudes. Mankiw, Romer et al. (1992) argue that the predictive power of the model can be improved by augmenting the Solow model to include human capital as a fourth factor of production. In this way the growth of output per capita is dependent also upon investment in human capital.

Mankiw, Romer et al. (1992) posit that the textbook Solow model's emission of human capital may account for the estimated coefficients of savings and population appearing unusually large. This, they maintain, may happen for two reasons. First, for any given rate of human capital accumulation, increases in savings or decreases in population growth lead to a greater level of income and thus a greater level of human capital; "hence, accumulation of physical capital and population growth have greater impact on income when accumulation of human capital is taken into account" (Mankiw, Romer et al. 1992: 408). Secondly, human capital accumulation may be correlated with savings and population growth rates, with the implication that the omission of human capital would bias the estimated coefficient on savings and population growth.

Mankiw, Romer et al. (1992) find the augmented Solow model to be particularly effective, explaining around 80 per cent of cross-country variation in income in spite of the inevitable imperfections that this type of data can present. They argue that "the augmented

Solow model provides an almost complete explanation of why some countries are rich and other countries are poor" (Mankiw, Romer et al. 1992: 408).

### *Education and Endogenous Growth*

While Mankiw, Romer et al. (1992) argue that the Solow (1956) model ought to be taken seriously and that much of the variation in cross-country growth can be explained by augmenting the model to include human capital, a second concurrent strand in the literature discounts the Solow model altogether. The theory of endogenous growth has been presented as an alternative to the Solow model, one that addresses the failures to explain cross-country differences by maintaining that economic growth is primarily the result of endogenous rather than external forces (see Romer 1990).

In Solow's (1956) neo-classical growth model, economic growth is exogenously determined by the rate of technical progress, a variable that therefore remains unexplained. Endogenous growth theory tries to overcome this shortcoming by replacing the exogenous growth variable with a model that makes explicit the key determinants of growth. Lucas (1988) and Romer (1990) omit technological change, with growth in these models being explained by indefinite investment in human capital which has spillover effects on economies and reduces diminishing returns to capital accumulation (Barro and Sala-i-Martin 2003).

The theory of endogenous growth developed by Lucas (1988) emphasises the relationship between human capital and the propagation of technological change, with human capital being made a central tenet of the production function for economic growth. With the driver of growth being human capital, it is shown that as human capital accumulation rises so also does the productivity of both labour and physical capital. The fundamentals of the model lie in the assumption that individuals divide their time between work and training: this implies a trade-off between the two as, whilst individuals undertake training, they forego part of their income but at the same time raise their future productivity and consequently their future wages. Decisions concerning the accumulation of human capital depend upon the dynamic features of the economy, which makes it endogenous. Since human capital is the driver of economic growth, growth itself will also be endogenous.

Moreover, Lucas (1988) assumes that, although individual human capital may decompose over time, there exists a public body of knowledge and accumulation of human capital that

can supplement this. Therefore, additional economic growth remains feasible even when there is no further educational attainment, as human capital continues to rise. Romer (1990) develops a comparable model, which considers that growth in productivity is reliant upon the existing body of knowledge and the number of people committed to amassing new ideas.

The notion of human capital, and its role in wage determination and economic growth, has been highly influential in establishing the framework for government policies on education since the early 1960s. The consideration of individuals as being human capital and various other economic metaphors such as 'technological change', 'research', 'innovation' and 'productivity' - to name but a few - have been responsible for education becoming increasingly recognised as a key determinant of economic performance.

There have been many criticisms of the human capital approach. For example, a pervasive questioning in labour market studies continues over the issue of whether the correlation between an individual's education and their socioeconomic recompense is reflective of increased productivity, labour market screening or credentialism. Each explanation calculates an association between education and socioeconomic status, but all are at odds concerning an explanation for the exact underlying cause of this relationship (Sakamoto, Kim et al. 2012). Although screening/credentialist hypotheses on education challenge human capital theory the broad consensus that still holds should be acknowledged: education confers large benefits to individuals in the form of increased earnings and these can be seen to be arising due to productivity increases rather than due to any other reason. A further criticism is the view that the economy can be analytically separated from the realm of society and explained in terms of its own inherent dynamics. Of course economists are aware that culture and politics influence economies, but they are invariably viewed as exogenous factors that can be left aside in a framework that focuses on purely economic factors. Fitzsimons (1999) identifies a further key criticism of the human capital approach - that it assumes individuals act rationally in order to maximise utilities. He argues that economists are sufficiently enlightened to understand that individuals often act irrationally or pursue goals other than the maximisation of utility. Their position is that the exclusion of these aberrations from the rationality principle can be validated by attempts to determine the core dynamics of an economy.

It is in response to the fundamental criticism of human capital theory concerning the analytic separation of economies and societies that expansive attempts have been made to

elucidate how education can contribute to socio-political development and freedom (Alexander 1996; Sen 1999; Grubb and Marvin 2004). It is to this strand of theoretical literature that the discussion now turns.

## 2.2.2. Education and the Capability Approach

Educationalists now tend to agree that applications of the human capital approach are representative of the sometime narrow perspective of economics in its focus on economic growth as an education outcome; and they propose that, even if the link between education and growth were found to be weak, educational outcomes are important in their own right (Hoffmann and Bory-Adams 2005; Unterhalter 2005; Unterhalter 2007). Amartya Sen (1999) in his Nobel-Prize winning thesis *Development as Freedom*, makes the case that humans are ends, not means. Education ought also to be considered as an end in itself, rather than as a means to creating economic growth, because of its capacity to realise individual freedoms. Instrumentally and intrinsically valuable, education is vital for human development. This approach is in contrast with much of the mainstream work on education such as human capital theory, and both structuralist and post-structuralist accounts of education (Unterhalter 2005).

This section looks first at the basic principles of the capability approach and then discusses its importance in analyses of education.

### *The Capability Approach*

The capability approach to development as outlined by Sen (1999) is a framework for the evaluation and assessment of social arrangements (Comim and Carey 2001). The approach is an amalgamation of a number of concepts that had either been excluded from or inadequately addressed in traditional approaches to development economics. Central to the approach is the focus on individual capabilities.

The ethos of the capability approach is the establishment and weighting of capabilities - many of which are essential to overall wellbeing, whilst others may be deemed to be trivial and without value. Sen (1999) identifies five components for assessing capability: (i) the importance of real freedoms in the assessment of a person's advantage; (ii) individual differences in the ability to transform resources into valuable activities; (iii) the multivariate nature of activities giving rise to happiness; (iv) a balance of materialistic and non-

35

materialistic factors in evaluating human welfare; (v) concern for the distribution of opportunities within society.

A further important element of Sen's approach, beyond the refinement of modes for assessing social arrangements, is the case he makes for an individual's freedom. Sen (1999) argues that a person's freedom to live in the way he or she sees fit holds innate value and ought therefore to be considered as a vital part of an individual's being. What can be inferred from this is that not only are achieved functionings of value, but also a person's capability to select and discriminate between possible ways of life is also of critical importance (Comim and Carey 2001). According to Sen, emphasis on freedom or on capability reflects the agency aspect of an individual.

Rather than emphasising the role of utilities or access to resources as in the case of human capital theory, the capability approach as an extension of human capital theory focuses upon functional capabilities - such as the ability to live into old age, engage in economic transactions, or participate in political activities. These are 'substantive freedoms' that individuals have reason to value, with poverty therefore understood as capability-deprivation. The notion of poverty as the deprivation of capability might be represented due to ignorance (lack of education), government oppression, lack of access to financial resources, and so forth. Emphasis is placed upon the significance of freedom of choice, of individual heterogeneity, as well as of the multi-dimensional constitution of welfare. It is this emphasis upon the individualistic nature of ethics of the capability approach that has been cited as its key limitation. Gore (1997: 243) argues that the approach:

> …does not see individuals atomistically, and it does not rely wholly on individual preferences to judge states of affairs. But the goodness or badness of social arrangements or states of affairs is evaluated on the basis of what is good or bad *for* individual well-being and freedom and is also reduced to the good *of* those individuals.

Sen (1999) acknowledges his treatment of the freedoms of individuals as being the basic building blocks of development; but there is evidence that he also makes use of social features as being instrumental in determining an individual's well-being. Comim and Carey (2001) argue that certain 'essential' social features - in particular political freedom and democracy - are ascribed intrinsic value and play an important role from an evaluative perspective in Sen's work. They make the case that political participation and democracy cannot easily be defined as properties of individuals and that - if they are considered to be of intrinsic importance irrespective of their consequences on individual capability - they

ought to be incorporated as part of the capability approach. Comim and Carey (2001: 10) state:

> Crucial development problems seem to depend on the assessment of unjust and unfair social structures, such as the international system of trade and transfers, international regulations of property rights, international financial markets, that end up benefiting the richer countries in international commercial disputes, foreign debt payment arrangements. Should these structures be assessed only in terms of their impact on individuals' capabilities? Are they not intrinsically good or bad, fair or unfair in themselves? Shouldn't structural, system-level properties, be assessed according to their intrinsic properties?

Whatever the flaws with the theory may be, the capability approach to development has been enormously influential at both an academic and institutional level, shifting the development paradigm from the advancement of economic growth to human wellbeing (Pressman and Summerfield 2009). In collaboration with other economists and the political philosopher Martha Nussbaum, in particular, Amartya Sen has placed the capability approach squarely in the policy debate on human development, leading to the conception of the UN's Human Development Index (HDI) which has become a popular measure of human development, capturing capabilities in health, education and income, to name a few. The relevance of the capability approach to understanding the importance of education as a priority area of investment is of specific interest to this research, and it is to this issue that the following section turns.

### Applications of the Capability Approach to Education

With respect to interpretations of the capability approach, education plays an elaborate and complex role in human development. Sen (1992) posits that to be educated is to have a basic capability, and therefore critical to human wellbeing. Access to education, and the promotion of a solid set of basic learning outcomes, is considered fundamental to the realisation of other capabilities (Unterhalter 2002; Nussbaum 2011). This ties in closely with much of the empirical evidence, with schooling demonstrating a large number of direct beneficial effects that address poverty when regarded as 'capability-deprivation'. These include lower child and maternal mortality, higher immunization rates, better family nutrition (World Bank 2001), reductions in HIV/AIDS (World Bank 2002), improved natural resource management (Godoy and Contreras 2001), lower poverty, greater equality, and faster economic growth (Birdsall and Londoño 1998).

Hoffmann and Bory-Adams (2005) follow Sen's reasoning on substantive freedoms in arguing that education ought to be recognised as more than a foundation for other

capabilities, and that an all-encompassing perspective of education is necessary. The notion of equitable access to education is reflective of considering education to be an end in itself, in that it specifically enhances individual capability to make affirmative life choices. This point is elaborated upon by Unterhalter, Vaughan et al. (2007) who propose that, in order for children to make decisions with regards to their 'own valued beings and doings', attention needs to be paid both to those capabilities that are of value to a child at the present moment, and to enabling a child to make choices and expand its capabilities in the future. Brighouse (2000) argues the same, namely that children need to be equipped with skills to make rational reflections on how to live, empowering them to make the best decisions with regards to how they live their lives both now and in the future. Nussbaum (2000; 2011), considering the broader societal implications, posits that in the interests of democracy and emergence of a tolerant society an education should allow children to develop capabilities to reflect and plan autonomously and critically.

The capability approach, then, presents a rich set of resources for consideration of education and social justice (Unterhalter, Vaughan et al. 2007). The authors suggest that there are capabilities in education that are so important that the aim should be to achieve equality in these capabilities. They propose that the capability approach calls for consideration of the equality of capabilities through education, and they link the notion of social justice with a concept of equalising capabilities and ensuring fairness.

Such a vision is in line with the Convention of the Rights of the Child, which declares education to be a basic human right and advocates for a child's education to be concentrated upon the nurturing of personality and talents as well as on mental and physical abilities, in order that a child can achieve its greatest potential (United Nations General Assembly 1989). International commitments on education are also representative of the momentous shift towards such learning outcomes. That education ought to be directed towards identifying and developing a child's potential through an emphasis on skill acquisition was the position taken at the 2000 World Education Forum. The resulting Dakar Framework for Action reinvigorated the concept and importance of education quality, giving recognition to measurable learning outcomes and essential life skills (UNESCO 2000). In accordance with the capability approach to development, these are skills that positively shape agency, attitudes and behaviour and, consequently, are themselves central to advancement towards the concept of social justice (Hoffmann and Bory-Adams 2005).

Unterhalter, Vaughan et al. (2007) identify an important challenge in the application of the capability approach to education that relates to measuring capability in education. They suggest that, in order to establish valuable functions, individual interviews might be the best approach; and that even then there may be difficulties in evaluating the true aspirations of children and young people, as it becomes extremely difficult to identify when and whether individuals' preferences have been moulded by the circumstances and customs within which they have been raised.

As mentioned earlier in this section, HDI was conceived in response to the policy debate generated by the capability approach to development being postulated as an attempt to measure achieved functionings as proxies for certain capabilities. In the case of education capabilities, these are recorded under the education component of the HDI. This measures the mean of years of schooling for adults aged 25, and the expected years of schooling for school-age children, taking the geometric mean of the two indices to establish capabilities in education (UNDP 2012a). Measures such as these and of test results can be seen as evidence that an individual has access to education and the capability to function as a knowledgeable learner. But of course, such measures can capture only some of the many multidimensional capabilities engendered by education.

While this and other challenges to the capability approach in respect of education - such as how to address the potential for conflict between an individual's freedom and well-being when a child values certain activities over others, to the detriment of its future capabilities; and concern that the educational process itself may impart values that may lead individuals to define valuable functions according to their educational experiences (Unterhalter, Vaughan et al. 2007) - provide interesting avenues for research, these are outweighed by the pervasive influence that the approach has had on establishing the importance of education within human development. Following the World Education Forum in 2000, a significant number of countries developed EFA action plans integrating the six goals outlined in the UNESCO (2000) Dakar Framework for Action. All of these incorporate some notion of human capabilities, demonstrating just how influential the approach has been in education (Hoffmann and Bory-Adams 2005).

### 2.2.3. Aid Financing Education as a National Public Good

The human capital approach, by identifying the social benefits of education, provides strong incentives for governments to invest in a nation's education. Advocates of government participation in the financing and provision of education argue for public provision of education, citing its characteristic as a public good, the presence of externalities, as well as education's redistributive power (Riddell 2004). Even prominent classical economists enter the debate, meandering from the habitual free market approach on the fitting role of the government, to propose the importance of government intervention:

> The state derives no inconsiderable advantage from the education of the common people. If instructed they…are less liable to the delusions of enthusiasm and superstition, which among ignorant nations, frequently occasion the most dreadful disorders (Smith 2005: 642).

> A stable and democratic society is impossible without widespread acceptance of some common set of values and without a minimum degree of literacy and knowledge on the part of most citizens. Education contributes to both. In consequence, the gain from the education of a child accrues not only to the child or to his parents but to other members of the society; the education of my child contributes to other people's welfare by promoting a stable and democratic society (Friedman 1962: 86).

Moreover, the conviction embodied in human capital theory that education acts as a driver of economic growth has led national governments and the international development community to invest in both the quality and quantity of formal education - considering education to be highly instrumental, and indeed necessary, to improving the productive capacity of a nation (Little 2003; Hanushek and Wößmann 2007). Public provision of education is deemed the most effective policy for increasing economic growth and reducing the range of income distribution (Eckstein and Zilcha 1994; Trostel 2002; Joshua 2015).

The capability approach to development equally appears to support calls for public investment (both national and international) in education. If the value of education is assessed in terms of the capability to achieve valued functionings, it becomes clear that society is duty-bound to enable all children to complete at the very least a basic education, irrespective of their relative future contributions to economic growth (Wigley and Akkoyunlu-Wigley 2006). Such reasoning is supported by the broad evidence base of education's power to attain other capabilities: education helps to build behaviours and habits that impact positively upon an individual's health (United Nations 2003); when girls with a basic education reach adulthood, evidence demonstrates that they are more likely to

manage the size of their families according to their capacities than those without an education; and they are more likely to provide better care for their children and send them to school (Basu 2002). Nussbaum (2000: 92) articulates the case clearly, stating that "the more crucial a function is to attaining and maintaining other capabilities, the more entitled we may be to promote actual functioning in some cases", providing an important rationale for expansion in education provision.

Both human capital theory and, by extension, the capability approach therefore recognise education as a public good. It is not surprising then that formal schooling in most developing countries today is almost entirely paid for and administered by government bodies and that education is considered to be a priority aid investment. Of course, it has been argued that the public good characteristics of education might be more prevalent at certain levels of education than others. Bertola and Checchi (2003) argue this to be the case, suggesting that the public good characteristics are greater for primary education due to basic skill acquisition, with private returns overshadowing social returns at higher levels of education. Likewise, McMahon (1998) has contended that empirical evidence demonstrates that, once universal primary education has been achieved, it is secondary education that becomes the greatest contributor to economic growth and ought, therefore, to be the focus of education policy. Expanding access to higher education too soon might not, he posits, be an effective policy for promoting growth.

These are considerations of governments and donors alike, and they have been present in much of the contemporary discourse on education goals and the international aid architecture for education. Indeed, a focus on primary education and on life skills lies at the heart of EFA as well the MDGs and Sustainable Development Goals (SDGs). Where countries are unable to meet their commitments to achieve these goals, the international community has agreed to make a concerted effort to provide technical and financial assistance to countries in need (United Nations 2002; UNDP, UNESCO et al. 2006; United Nations 2014).

The belief that education is an engine of economic growth (as postulated in human capital theory), or a promoter of individual capabilities and social justice (as proposed by the capability approach to development), rests on the quantity and quality of education provision in any country. Such theoretical rationales supporting the case for educational investment suppose formal education to be highly influential, indeed fundamental to, advancing the prospects of individuals and nations alike - providing insight as to why

national governments and aid donors prioritise education in their development strategies. Understanding the impact that aid has had on education and the situations in which it is most effective requires a much longer-term view of the provision of education aid in its many forms and for its many purposes. It is for this reason that the chapter next considers the various definitions of aid and subsequently offers a brief account of the evolution of aid for education, exploring the theories that have shaped aid allocation at particular points and that paved the way for the establishment of the current education aid architecture.

## 2.3. DEFINITIONS OF EDUCATION AID

Most developing countries depend heavily on aid as a means of increasing their gross national income (GNI). A crude measure of this dependence is the net flow of approximately $100 billion per year in aid from developed to less developed countries. As Tandon (2008) argues, aid is well recognised as a substantial contribution to global financial flows; yet, in many ways, it defies description. In order to evaluate the impact of aid for education, it is important to have a clear definition and understanding of aid's purpose.

### 2.3.1. Making the Distinction between 'Foreign Aid' and 'Development Aid'

The term foreign aid constitutes "all resources - physical goods, skills and technical know-how, financial grants (gifts), or loans (at concessional rates) - transferred by donors to recipients" (Riddell 2007: 17). It may have any number of origins including donor governments, non-governmental organisations (NGOs), private foundations and the diaspora. Moreover, aid transfers can fund a diverse set of activities: budgetary and balance of payments needs in recipient countries, investment projects and research activities, economic or political reform programmes, technical advice and training, and humanitarian relief. These transfers are sometimes regarded as including trade and military expenditures abroad, or used to encompass all public transfers among countries (Lancaster 2007).

This expansive definition of aid is somewhat blurry. For instance, that the transfer of funds earned by migrant workers in rich countries and channelled back to their families in poor countries - remittances - should be classified as part of foreign aid (Adelman, Norris et al. 2005) means that it becomes extraordinarily difficult to measure. If remittances from the diaspora are to be accounted for as foreign aid, it would have a huge effect, because, these monies have been recorded as being up to twice as large as the amount of aid flows

recorded in official aid statistics (World Bank 2006; African Development Bank Group 2013). Such a broad view of foreign aid allows also for the inclusion of resources provided to further political and strategic interests, including resources provided to help achieve military aims and objectives (Riddell 2007). This may be contested on the grounds that the purposes of foreign aid, then, are far too broad.

It is clear, therefore, that the term foreign aid does not allow for a specification of what the resources include, who the respective donors and recipients are, why resources are being transferred, what impact they have, or the degree to which the giving of foreign aid is a voluntary act or one based on conditionality. This all-encompassing description makes aid difficult to conceptualise and, consequently, is rarely deployed by those directly involved in the aid business. More narrow and restrictive definitions - usually driven and shaped by those who have an interest in particular types and forms of aid - are far more common.

Some scholars and specialists using a 'purpose-based' definition, define aid as an instrument adopted by a government to reinforce the economy of another country. A key problem with such purpose-based definitions is that the concept of purpose is open to a wide variety of interpretations. The development community - whose interest lies in aid's contribution to human welfare, poverty reduction and development - works within narrower confines of the definition of foreign aid - often termed development aid or development assistance. However, despite the focus on development, the specific definition is rarely made clear.

Theoretically, there are a number of possible options for the definition of that part of foreign aid - development aid - which contributes to human welfare and development, and ways in which it can be distinguished from other forms of foreign aid, such as foreign military aid. Riddell (2007) argues that, most broadly, development aid can be defined in relation to those giving it, with reference to the purpose for which it is given. He posits that it can be refined further to account for the tangible effects it has on beneficiaries. Thus, it may be defined as those resources received from donors that contribute to the fulfilment of the basic rights and freedoms of poor and vulnerable people, or that part of foreign aid that effectively addresses immediate humanitarian needs and reduces the poverty and vulnerability of the poor in developing countries.

Such an interpretation of development aid is based on intentions - the intentions of aid donors, as opposed to the recipients of aid. Remarkably, no systematic attempt has been

made to formally agree this definition of development aid. As such, the definition is, on the whole, donor-driven and largely based on agreements made by the OECD DAC since its emergence in the 1960s.

## 2.3.2. The DAC Definition of Aid

The OECD DAC are responsible for what is arguably the most significant contribution towards the introduction of an operational definition of development aid. Established in 1960 to coordinate and advance development aid provision by leading donor governments, it has striven to determine a definition for aid allocated by donor governments to developing countries, which it terms Official Development Assistance (ODA). First agreed by the DAC in 1969 and subsequently refined in 1972, the definition of ODA states that:

> ODA consists of flows to developing countries and multilateral institutions provided by official agencies, including state and local governments, or by their executive agencies, each transaction of which meets the following two criteria: (1) it is administered with the promotion of the economic development and welfare of developing countries as the main objective, and (2) it is concessional in character and contains a grant element of at least 25 percent (Fuhrer 1994: 25).

Whilst ODA is accepted as the most comprehensive measure of development aid, it is not without its critics. Indeed, as both Tandon (2008) and Hynes and Scott (2013) note, the most difficult problem in critiquing the OECD DAC definition of what constitutes ODA is that it is has become the standard definition of aid, acquiring a prescriptive legitimacy. Statistics on 'development aid' collected by the DAC are quoted worldwide by the aid industry literati lending them further plausibility. Amin (2009) too critiques the DAC definition of development aid, regarding it as a product of political strategy, established by dominant powers in the global system. He argues that the definition is fraught with ambiguity and contradiction, since, on the one hand, it proclaims important principles regarding the right of countries to appropriate aid - defined in terms of ownership and partnership - but on the other hand, it details modalities that render enforcement of these principles infeasible. Whatever the criticisms of the OECD DAC definition of ODA, it remains the defined source of aid for which comparable statistics relating to financial co-operation are collected annually. As such, the concurrent aid database - the CRS - is internationally recognised as the most accurate source of data on the geographical and sectoral breakdown of development aid granted by bilateral and multilateral institutions.

For the purposes of discussion in this literature review and for the research presented in later chapters of this thesis, aid is understood as concessional government transfers made for development purposes, in line with the DAC definition of ODA. Table 2 below outlines in detail the description of what is captured by the OECD DAC definition of Education Aid, a definition that has remained consistent since the DAC countries began reporting education aid commitments in the 1970s.

**Table 2: OECD DAC Definition of Education Aid**

| DAC 5 CODE | CRS CODE | 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 (adult 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: Adapted from OECD DAC (2015a)*
*N. B. Sector-specific education activities are included in the respective sectors, either in a specific education code such as Agricultural education or in a general code such as communications policy/ administrative management.*

## 2.4. THE EVOLUTION OF AID FOR EDUCATION: POLICIES AND PRIORITIES

This section of the literature review outlines prominent debates in the history of aid allocation and the influence of various aid actors. It examines the evolution of aid for education and the context within which aid-giving has been shaped, employing a critical analysis of the various theories of aid's 'purpose' at different points in time. It starts out by describing how aid has grown through various stages, from modest origins in the nineteenth century to being securely established following the end of the Second World War. It refers to the diplomatic objectives of aid-giving during the depth of the Cold War, the development focus of aid in the 1970s and structural adjustment in the 1980s. The section concludes by exploring the aid architecture for education since the 1990s and aid in the early 21st century. The intention is to place the allocation of education aid within the broader contextual literature on the history of aid, but distinguish it in practice by emphasising the distinct purposes that aid for education has been intended to serve at particular points in time.

### 2.4.1. The Origins of Education Aid - 1800-1970

Whilst discussion in the literature of foreign aid has tended to focus on events following the end of the Second World War, the history of aid-giving for education can be traced back much further. Education is arguably the oldest form of aid, with examples of missionary education dating from pre-colonial times. As Oliver (1962) states, across many regions but particularly in East Africa, Protestant missions had instituted the system of schooling in the vernacular prior to British occupation of the area. Moreover, education in the Belgian Congo was the sole domain of Christian missionaries until the Second World War, and the provision of schooling continued to rely heavily on the missions right up until the end of the colonial era (Frankema 2010a).

In many British colonies, schooling was farmed out to private voluntary agencies. Frankema (2010b: 4) states that in the British Gold Coast, prior to the Second World War, just eight per cent of the primary-aged population attended government schools, with the remaining 92 per cent registered at mission schools of Anglican, Protestant, Catholic or Islamic denomination. Two-thirds of these students were enrolled in schools in receipt of financial aid from the colonial government, whilst the other third were enrolled in 'non-aided schools' that were solely reliant upon private school fees and missionary funds.

The practice of education aid began to take more concrete form - as aid 'agencies' began to search for generalisable recommendations as how best to assist education in the developing world - in the 1920s, with the establishment of the missionary inspired and privately financed Phelps-Stokes education commissions (1922; 1925). The commissions called for partnership between missions and government rather than parallel development, identifying the rudiments of basic education by stressing the important role of education on character development, health, agriculture, industrial skills, family life and community. The commissions' reports not only marked a watershed in African education history, but also helped to launch the Phelps-Stokes Fund into the forefront of the then select group of organisations concerned with the evolution of education on the African continent. Indeed, the Fund's education commissions were catalysts in the creation of the Colonial Office's common education policy for Africa.

While these commissions were surely influential in establishing common goals for development education, throughout the colonial era the flow (at that time from colonial government to national authorities) of 'bilateral' aid to education in developing countries remained limited, with the few commissions of inquiry carried out largely by the metropolitan authorities of the particular colonies. It is clear that a common consensus on the importance of establishing a development education agenda was beginning to emerge at this time; however, it was not until the early 1960s, when the greater part of the colonies became politically independent, that aid negotiations got underway with many of the newly established bilateral and multilateral agencies, and in particular the World Bank which started its educational lending in 1963. It was also at this time that aid negotiations began to intensify with private agencies such as the Ford and Rockefeller Foundations, as well as with NGOs (King 1991). As this new, somewhat more cohesive, approach to development education evolved, so too did the actors, goals, purposes, content, and delivery of education aid financing.

### *The Institutional Beginnings of Education Aid*

Education aid, as recognised today, has its roots in the Bretton Woods conference held in 1944 to address the urgent need for restructuring international finance and trade whilst the Second World War was still raging. The discussions, led by the economist John Maynard Keynes and US Secretary of State Harry Dexter White, laid the foundations for the

establishment of the World Bank, the International Monetary Fund (IMF), and the International Trade Organisation (Riddell 2007).

It was envisaged that a new framework for economic cooperation would be necessary in order to support Europe's post-war recovery, and that significant financial aid would be required for reconstruction in order to bring about social, political and economic stability. The reconstruction agenda was built upon the assumption that the substantial demands presented by post-war Europe would require the pooling of financial risk, as few countries would be able to fulfill the role of foreign lender (Moyo 2009). A founding principle of the World Bank, therefore, was that no matter which countries lent funds all member nations should be responsible for underwriting the implied risk.

Following the success of the first large-scale bilateral transfer under the patronage of the Marshall Plan, a sentiment began to emerge that such a model of financial aid might be applicable to the developing world, as evidenced in President Truman's inaugural address of 1949:

> More than half the people of the world are living in conditions approaching misery. Their food is inadequate. They are victims of disease. Their economic life is primitive and stagnant. Their poverty is a handicap and a threat both to them and to more prosperous areas. For the first time in history, humanity possesses the knowledge and skill to relieve the suffering of these people.

> …Our aim should be to help the free peoples of the world - through their own efforts - to produce more food, more clothing, more materials for housing and more mechanical power to lighten their burdens. We invite other countries to pool their technological resources in this undertaking… This should be a cooperative enterprise in which all nations work together through the United Nations and its specialized agencies whenever practicable… Such new economic developments must be devised and controlled to benefit the peoples of the areas in which they are established… Only by helping the least fortunate of its members to help themselves can the human family achieve the decent, satisfying life that is the right of all people (Truman 1949).

It was widely assumed that poor countries lacked sufficient financial capital to spur development - investment capital was seen to be critical for economic growth (Harrod 1939; Domar 1946). The work of preeminent economists was central to this new approach to the developing world with Rosenstein-Rodan (1943) formulating the notion of the 'big push', whereby large amounts of aid are provided to ease the constraints that inhibit the ability of economies to raise investment levels. Lewis (1954) too identified capital shortages in developing countries as the primary obstruction to development, proposing a role for foreign aid as a form of 'capital import'. Likewise, Nurkse (1953) and Nelson (1956) pleaded for massive capital investment in the form of foreign aid in order to break the vicious cycle of poverty in underdeveloped countries. In the absence of domestic savings,

and lacking in the physical and human capital necessary to attract private investment, aid was generally seen to be the only way to trigger higher economic growth in developing countries.

The consequence of much of this theoretical thinking was the emergence of a coherent, generally accepted, purpose of aid and the foundation of the aid architecture as recognisable today. With the Cold War raging, education aid was allotted on the basis of where countries stood in the great confrontation. Development appears to have been generally conceived as a linear form of progression towards the economic and political models of the industrial Western world. Associated in the West with economic progress and national development, education was seen to be important to development - with aid for education rapidly expanding during the 1950s and 1960s as many countries gained political independence - but, as Riddell (2007) notes, the broader development agenda remained dominated by a focus on infrastructure which was seen to be critical to instigating economic growth. Aid was primarily used to fund balance of payments as well as the budgetary needs of developing countries, in order to finance investment projects, especially in infrastructure and industry (Lancaster 2007).

Education aid was initially provided primarily to nationals of recipient countries in the form of higher education imparted in donor countries, with a view to training educators who could work in developing countries or support the establishment of international professional organisations. However, with the Addis Ababa Conference on education in African countries held in 1961, there was a clear turning point in terms of strategy with respect to education goals as primary education was integrated into the global educational planning framework (Njeuma 1986). Human capital theory was used to define a concrete role for investment in education as part of national development plans, and was used by national governments and international agencies to justify the financing of education. The compelling link between education and economics was particularly attractive to international financial institutions such as the World Bank, with Benavot (1986: 3) arguing that the practical application of human capital theory "strengthened the commitment of international development agencies… to financially assist less-developed countries in the expansion of their educational programmes".

During this early period of modern aid lending for education, the World Bank relied upon techniques to analyse manpower requirements in order to establish how education ought to be bolstered in developing countries with a view to fostering the Bank's own infrastructure

investments (Youssef 2005). In its first statement on education, the World Bank (1963: 1) contended:

> In most developing countries...the most urgent need is for (a) an expression of vocational and technical education and training at various levels, including technical schools, agriculture schools and schools of commerce and business administration; and (b) an expression of general secondary education, to provide middle-level management for government, industry, commerce and agriculture, more candidates for higher education and for specialized vocational training, and more teachers for the primary schools.

While the emphasis on higher levels of education was maintained, the channeling of aid for education (educating foreign nationals in donor universities) soon changed as concern emerged over the presence of an effective 'brain drain' as well as continued recipient dependency upon external institutions (Beine, Docquier et al. 2001). Donor governments and international organisations began instead to fund the construction of secondary and tertiary institutions as well as vocational programmes of education in developing countries. The emergence of discrete education projects focusing on teacher training, the provision of technical support to education ministries, and the construction of schools became the norm in the provision of education aid at this time.

### 2.4.2. Aid for Development - 1970-1990

*Changing Ideologies in Aid Provision*

Despite relatively high growth across developing countries during the 1960s, growth rates did not increase as fast as had been hoped, and there was little evidence of poverty reduction. Even as aid programmes came to establish themselves more concretely, there appears to have been a degree of disappointment with the achievements of foreign aid, with OECD DAC reports of the period referring to 'donor fatigue' and a 'crisis of development'. Lancaster (2007) identifies a number of factors that led to this malaise with the purpose of aid: a decrease in the intensity of the Cold War competition; the catapulting rise in oil prices during the early 1970s and subsequent debt and economic crises in many developing countries; as well as severe bouts of famine - primarily in Africa - in the mid-1970s and mid-1980s. She also highlights the increasing number and importance of NGOs in developing countries, and their role not only as service providers but also as advocates for the provision of basic social services.

Emanating both from the criticisms made of the approach to aid at that time, and from the debate regarding the future of development assistance, was a call for greater focus on 'basic human needs' - stressing the need for donors to espouse policies that immediately and directly benefited the poor, rather than concentrating on efforts to stimulate long-term growth in the hope that this would eventually eliminate poverty. In education this meant a return to the concept of 'minimum essential learning needs' (Coombs, Prosser et al. 1973). Riddell (2007) argues that the consolidation of this new development perspective for aid in the global policy space emerged from two distinct philosophical veins. The first, that proposed by the World Bank, was a policy of redistribution with concomitant economic growth (Chenery, Ahluwalia et al. 1974); the second, that of the International Labour Office, was the consideration of a basic needs approach to development (Ghai and Lee 1980). Both approaches encompassed a notion of development that perceived economic growth alone to be insufficient in achieving poverty reduction - structural and institutional economic changes and increased growth rates, it was argued, would only indirectly lead to reductions in poverty rates. A more direct approach to tackling absolute poverty was deemed to be of utmost importance. By the early 1970s, the importance placed on infrastructure as a stimulus for economic growth had been replaced by a focus on poverty reduction (Browne 2006; Riddell 2007; Moyo 2009).

The impact of this thinking on the practice of aid-giving was dramatic, with the development purpose of aid quickly gaining in prominence and the policy frameworks for development assistance becoming increasingly sophisticated and complex as bilateral agencies were progressively professionalised and larger potions of aid were channelled via multilateral agencies (Lancaster 2007; Moyo 2009). Donors began to focus aid on particular social sectors, such as education and health, in an attempt to support the world's poor more directly. It is of interest to note, however, that recipient governments typically tolerated but did not welcome the basic needs approach to development - indeed, as Lancaster (2007) states, their main concern continued to be rapid economic growth, particularly in urban areas. King (1991) contends, with reference to the international agency literature on education aid, that one might be excused for concluding that there has always been consensus concerning the priorities of education aid at specific points in time; but, even almost quarter of a century after King made this remark, the reality is that the literature is almost devoid of coherent accounts of what developing countries have thought about the different donor development 'fashions' over time.

The shift towards a basic needs approach to development was closely followed by a reconsideration of the relationship between education and development, which was no longer considered to be as straightforward as donor agencies and national governments had assumed it to be in the 1960s. Youssef (2005: 7) argues that, since its inception, the World Bank - in its education policy formulation and practice - has tended to disregard the rich conceptualisation and debates that have been taking place in the field of education, viewing education instead "as a means to the end of sustaining infrastructure investments aimed at forwarding the economic development of a country". She states that the repercussions of the manpower forecasting approach to education converted into lending practices that favoured technical and vocational education and excluded investment in any other types of education. Primary education in particular was notably absent from the Bank's polices towards education at the time. However, the shift away from growth-centric perspectives of development towards poverty alleviation in the 1970s is evidenced in the Bank's expanded vision of education, as it recognised that educational finance had been disproportionately allocated in earlier years resulting in the under-financing of primary education (World Bank 1974). The 1974 Education Sector Working Paper made the case for the provision of "minimum basic education for all as fully and as soon as available resources permit and the course of development requires" (World Bank 1974: 52).

This emerging focus in education was also witnessed at the Bellagio education meetings (see Ward (1974) *Education and Development Reconsidered: The Bellagio Conference Papers*): with it, an interest in low-cost innovations, the exchange of educational data, and awareness of the idea that donor coordination could be of substantial significance to the state of education in developing countries (King 1991). This last point is of particular note as, by the 1970s, it was commonplace for recipient countries to have between and 20 and 40 separate bilateral and multilateral agreements in the education sector alone. Beyond these agreements for the formal education sector as negotiated with the central government, were significant numbers of training projects negotiated with other ministries, and with OECD countries and their counterparts in the recipient country often in non-formal and adult education; as well as projects managed by NGOs, whose funds would in part be derived from bilateral agencies. It is surprising, then, that there exist few accounts of global 'education-systems-as-aided', nor any detailed account of the effectiveness of educational aid in the developing world.

*Structural Adjustment*

Weiler (1983) notes that in the late 1970s, even as donors reconfirmed the importance of education for national development, the budgets for education aid began to decline - with total aid for education from OECD DAC members barely keeping pace with inflation in the early 1980s. Insuperable stress on global finances as the result of the 1973 and 1979 oil crises led major donors to withdraw their earlier commitments to direct more aid to the world's poor. Moreover, there was a significant reduction in the flow of aid from the East and from the Organisation of the Petroleum Exporting Countries (OPEC), which meant that the increasing number of newly politically independent states were in competition for an ever-decreasing pot of aid monies (Mistry 1995).

This situation was compounded by the effects of a global recession, as foreign exchange earnings plunged alongside demand for developing country exports. Numerous countries began to default on their loans as a result of rapid escalation in interest rates, coupled with an untenable economic situation that made country debts unserviceable (Moyo 2009). The consequence of the debt and balance of payments crises throughout much of the developing world, and of severe financial constraints in much of the developed world ushered in a new paradigm for development aid. The focus was no longer on basic human needs and redistribution: aid allocation was concerned with 'structural adjustment' - with aid being tied to currency devaluation, trade liberalisation, and deficit reduction, along with a multitude of other economic measures and reforms that were calculated to stimulate growth (Dollar and Svensson 2000; Lancaster 2007). This neoliberal approach in the guise of a reform package for the crisis-wrecked developing world was to become known as the 'Washington Consensus' due to its promotion by Washington-based institutions such as the World Bank, IMF, and the US Treasury Department.

King (1991) argues that it was logical for development agency staff to rethink education policy in light of the wider fiscal constraints encountered by donors and developing countries alike, and, as such, these provided the rationale for seeking out educational changes that could bolster the macroeconomic strategy of adjustment being shaped by the World Bank and IMF. The World Bank established its dominance in the policy formation of education and training during this period, being largely concerned then with ensuring that the state was not monopolising education finance and provision (Jones 1992). According to Mundy (2002: 409), the policy conditions imposed by the Bank on education activities in recipient countries allowed the education sector to gain the "kind of economic muscularity being demanded across the organisation as a whole". This approach forged a

more prominent role for education in Bank lending, as the contents of education policy were adamantly adhered to in loan negotiations.

The move towards a greater focus on basic education, that had first been tendered in the Addis Ababa conference in 1961 and subsequently in the *Education Sector Working Paper* (1974), was now tangible as the subsidising of higher education came under criticism along with schemes for promoting protected employment. Although the Addis Ababa Conference had forecast universal primary schooling by 1980, this had not been realised owing primarily to Africa's population having initially been underestimated and a greater rate of population growth having occurred (Williams 1986). However, it was clear that basic education now took precedence and that fulfilling manpower obligations was no longer part of the Bank's agenda, as evidenced by The World Bank's (1980) *Education Sector Policy Paper*. The emphasis on primary education was framed within human capital theory, which continued to be prominent in World Bank thinking during the 1980s, and was now realised through the practice of rates of return analysis (refer to, for example, Psacharopoulos 1985). Rates of return analysis supplanted the use of manpower forecasting, becoming the key method for determining the level of education most suitable for effective lending (Youssef 2005).

Along with structural adjustment, postulates Mosley (1998), came the burden of ever more convoluted conditions and 'policy advice' appended to foreign aid. Riddell (2007) and Easterly (2002) argue that recipient governments were obliged to implement policies beyond those deemed necessary to make aid effective, an issue that also became apparent in the education sector (Carnoy 1995). In line with the basic tenets of neo-liberalism, recipient countries were persuaded to reduce direct government expenditure on education, and emphasis was placed upon the increasing privatisation of education and training wherever possible and appropriate (Jones 1992; Mundy 2002). This was coupled with the promotion of user-fees, community financing, as well as various cost-sharing schemes in order to expand the financing of education away from the sole remit of the state (King 1991).

The scaling back of domestic education expenditure and the consequent move towards the greater privatisation of education, as well as the conditions imposed on recipient governments wishing to access aid funds were moves vigorously contested by various NGOs, and by the United Nations Children's Fund (UNICEF) in particular. Resistance from the NGO community argued that economic reforms only served to worsen poverty,

and claims were made that aid should, to the greatest extent possible, be focused instead on activities aimed directly at reducing poverty and empowering the poor (Shams 1998). UNICEF's seminal study by Cornia, Jolly et al. (1987) *Adjustment with a Human Face* stresses the very grave corollaries of economic stabilisation, adjustment and debt repayments for the education and health sectors of many poor countries, arguing that those living in poverty were the first victims of the measures associated with structural adjustment. The differences between, on the one hand, the international financial institutions imposing conditions, and, on the other hand, the detractors of structural adjustment, persisted and deepened as the decade wore on without the debate being resolved.

With the benefit of hindsight, many have argued that the era of structural adjustment was a 'lost decade' for education development (Carnoy 1995; Robertson, Novelli et al. 2007). Disparity in the development trajectories of many African and Latin American countries (that assumed policies of structural adjustment) during the 1980s and 1990s, when evaluated alongside China, the Asian Tigers, and India (that adopted a more strategic approach to development, retaining a strong role for the state), is quite distinct. Indeed, the difference is seen to have instigated what continues to be a key debate in development - as to whether market-led or state-based redistribution strategies ought to be favoured in the alleviation of poverty and inequality (Robertson, Novelli et al. 2007).

### 2.4.3. Into the 21st Century – Aid's New Purpose

As the geopolitical rationale for aid-giving ceased with the end of the Cold War in 1991, and substantive criticisms continued to be made of structural adjustment programmes, donor fatigue again set in (Burnell 1997). Towards the end of the 1980s debt continued to be high, dwarfing foreign aid and resulting in a net flow from recipient to donor countries (Oxfam 2001). In many African countries growth rates were in decline, while poverty was seen to be on the rise (Moyo 2009). Structural adjustment policies were seen to have weakened the capacity of low-income countries to guarantee stability and social cohesion and to provide for the poorest and most vulnerable within their populations. The international financial institutions were hurried to tackle the negative effects of structural adjustment. What was seen as a failure of structural adjustment led to a shift in the understanding of the role of the state and market in development, with the World Bank and numerous prominent bilateral agencies in the early 1990s beginning to reassess their

policies in light of the criticisms that had been made: this paved the way for what became known as the Post-Washington Consensus (Robertson, Novelli et al. 2007).

Against this background, improved governance became an increasingly important objective of development, with many arguing that it was necessary for the promotion of sustainable economic growth. Inadequate political leadership and weak institutions were deemed to be the cause of Africa's afflictions (Burnside and Dollar 2000; Dalgaard and Hansen 2001; Collier and Dollar 2002). The 'good governance' agenda emerged "as both an explanation of and solution to the deficiencies of the Washington Consensus development model" (Robertson, Novelli et al. 2007: 55). In an effort to reinvigorate interest in development aid, the OECD DAC emphasised a number of areas in need of urgent attention in order for aid to be effective in promoting its intended outcomes. The objectives, that: (i) the aid process ought to be recipient-owned; (ii) recipient countries should foster internal accountability for their activities; (iii) donors and recipients should establish strong and effective partnerships; (iv) donors work closely to coordinate their activities; (v) donors harmonise their activities, making them consistent with their aid and development policies; (vi) greater institution and capacity building is necessary; as well as (vii) results-based aid (OECD 1996), subsequently became central to the aid architecture as recognised today and embedded in aid terminology.

Following on from this, and in order to create a compact between development actors, the Poverty Reduction Strategy Paper (PRSP) approach to development - a comprehensive country-based strategy for poverty reduction - emerged. This was initiated in 1999 by the IMF and World Bank in recognition of the importance of country ownership, as well as the need for a greater focus on poverty reduction. The purpose of PRSPs was "to provide the crucial link between national public actions, donor support, and the development outcomes needed to meet the United Nations' Millennium Development Goals", which were centered on halving poverty by 2015 (IMF 2013).

The importance of country 'ownership', and the concomitant 'good governance' necessary to institute it that emerged during the 1990s, became the foundation of thinking for the later Monterrey Consensus (UN 2002) and the subsequent Paris (2005) and Accra Declarations on Aid Effectiveness (2008). Donors sought to replace adjustment-linked aid with aid framework agreements - such as PRSPs - that emphasised recipient-based development strategies. These provided expenditure frameworks for aid allocation according to agreed priorities, which were then reflected in annual budgets. The intention

being that these were produced by the recipient countries, based on consultation with relevant interest and civil society groups. In practice, however, many of these documents have been criticised as being externally driven (Stewart and Wang 2003). Certainly, it has been argued that this has been the case for a number of countries seeking endorsement of plans and provision of external finance for education through the EFA-Fast Track Initiative (FTI), renamed in 2011 the Global Partnership for Education (GPE) (Cambridge Education, Mokoro et al. 2010; Turrent 2011).

New aid modalities emerged, involving efforts to depart from discrete projects with the intention of cultivating recipient government ownership. Aid apportioned via these modalities was generally larger in size and less targeted, with donors preferring to allocate aid to Sector Wide Approaches (SWAps) that route aid to entire sectors such as health or education. Increasingly, particularly in recipient countries judge by donors to be capable of spending aid funds productively and transparently, 'budget support' has been used - invariably comprised of a block grant to the recipient government with the intention of providing additional funds to boost and expand government expenditure (Riddell 2007).

The governance agenda has also been shaped by donor organisations' attemps to expand and enhance the capacity of recipient governments, ministries, and institutions by adding capacity-building dimensions to projects, as well as by developing stand-alone projects specifically designed to enhance technical and financial management capacity. A further, more recent, phenomenon - particularly in the aftermath of September 11th 2001 - has been the focus of attention on countries affected by conflict, emerging from conflict, or where the risk of conflict is high, as there is seen to be a link between political instability and weak institutions and the risk of conflict (Collier 1999; Collier 2004; Novelli and Robertson 2007). It is suggested that war erodes both the quality of institutions and past development gains, and that it impedes future prospects. However, channeling development aid to these countries has been fraught with difficulties, as such countries typically do not meet the criteria for the provision of significant sums of development assistance. Efforts have been accordingly patchy, with huge sums of development aid pumped into Afghanistan, for example, with relatively little provided to countries such as the Democratic Republic of the Congo. This issue of education provision in particular has been a focus of both research and practice undertaken by organisations such as Save the Children, CfBT Education Trust, the International Network for Education in Emergencies and the Brookings Institute Centre for Universal Education. It has also been the subject of academic interest,

with researchers demonstrating the limited ability of conflict-affected and fragile states to attract aid for education (Turrent and Oketch 2009; Turrent 2011).

The 4th High Level Forum on Aid Effectiveness held in Busan in 2011 endorsed a 'New Deal' for engagement in fragile states, recognising that the previous global aid effectiveness compacts had failed adequately to address the multifarious development challenges faced by these countries (Busan Partnership 2011). The broader development community has, in very recent years, acknowledged the issue by making various commitments to tackle the difficulties for aiding these countries – see, for example United Nations (2014). This new approach recognises that development is not an even process and that there is no 'catch all' solution to the woes of the developing world. New sets of commitments to enhance transparency, manage risk, strengthen national capacity, and improve the predictability that are appropriate to country context are seen to be necessary to improve the timelines and predictability of aid in the hope of achieving better results.

### *Aid Allocation and International Education Goals*

Seventy years on from the Stokes-Phelps commission came a further rediscovery of getting back to basics as development agencies, through the World Declaration on EFA in 1990, put on to the international education agenda a scheme for 'meeting basic learning needs' (Inter-Agency Commission 1990). In the cases of both the Stokes-Phelps Commission and the Inter-Agency Commission, the external agencies proposing the agenda had a comparative advantage over local institutions with regards to analysis of the issue: this was as a direct result of their geographical mandates as well as access to national data from many different countries. International agendas such as these are invariably criticised for being donor-centric in their remit and too broad and simplistic in their scope (Vandemoortele 2009; Lewin 2015a). But the perspective that they have been afforded has also been credited with effecting tremendous change and mobilising international support for education on an unprecedented scale, proposing and contributing to a dramatic increase in the numbers of children educated. To the extent that such international - albeit donor driven - agendas for tackling education issues on a global scale are valid, so it is equally important to understand what is necessary in financial terms to achieve these goals.

It was a World Bank report *Financing Education in Developing Countries* by Psacharopoulos, Tan et al. (1986) that served as an impetus to the 1990 EFA Conference held in Jomtien, co-sponsored by the UN and the World Bank. Donor agencies and developing country

governments made an international commitment to the goal of achieving universal basic education for all children by 2000. Particular emphasis was placed on the importance of a conference paper by Colclough and Lewin (1990) that questioned whether education for all children could be secured by the end of the 20th century. The authors argued that, as a result of recession, debt, and structural adjustment measures, many countries were further away from enrolling all children in primary education than they had been a decade previously. Colclough and Lewin (1990: 1) calculated the cost that would need to be assumed by donors in order for universal primary education to become a reality, estimating that:

> The total additional recurrent costs of achieving schooling for all by the year 2000 would, in the absence of policy reforms, amount to 58 billion dollars. The greater part of these costs could be accommodated by developing countries provided three conditions were met. First, governments would need to introduce policies to reduce costs and mobilize additional resources to finance expansion. Second, some restructuring of expenditures - in particular from military budgets toward education - would be required. Third, a return to economic growth in Africa would need to take place. If the above conditions were met, the financing gap that remained could be closed by transfers of between 1 and 1.3 billion dollars per year from 1990 to 2000.

In relation to the first of these three conditions - policies to reduce costs in education and to provide a better quality of education - emphasis was upon measures to reduce costs via in-school actions; to reduce public expenditure by cost-sharing with users and communities; and, in some instances, to increase costs to improve the quality of education provision. The concept of a trade-off between improvements in the quality of education achieved and cost reduction strategies was not new (see Lockheed and Werspoor 1991). However, what was new was the phasing of simulations into distinct enrolment situations - with the costs of universal primary education rising dramatically during a period in which countries strive to achieve access for all children; shrinking as assorted adjustment and cost-reduction measures are factored in; and lastly, significantly rising again as measures of quality improvement (achievement) are introduced. The phasing would take place over a period of ten years, with a trade-off being made between the savings generated as a result of adjustment and restructuring and the costs of improved educational quality. Amongst the most significant contributions of the Colclough and Lewin (1990) paper was its estimation of the aid that would be required from developed nations in order to achieve universal primary education. It indicated that approximately US$ 1bn to US$ 1.3bn would be required annually over the period 1990 to 2000.

Inevitably, calculations such are these are reliant upon bold assumptions being made in order to reach global estimations: but the result helped to ignite the type of discussion that

organisations such as UNICEF required in order to mobilise support for a target to meet universal primary education (King 1991). This is an important point because the notion that mass education was possible and that international commitment could be rallied in support of it has since become an entirely accepted - if not uncontested - concept. Significant commitments were galvanised in support of EFA and the education MDGs, and considerable efforts made in the form of an annual EFA Global Monitoring Report to track progress towards the goals. However, few global attempts were made to assess the effectiveness of the substantial additional resources that were deployed in support of universal primary education. The annual EFA Global Monitoring Reports, much like the Save the Children reports that examine aid flows to conflict-affected and fragile states (see, for example, UNESCO 2008; Save the Children 2009; UNESCO 2010; UNESCO 2012a), rely upon descriptive statistics from which correlations between education aid and outcomes cannot be derived. Few attempts have been made by economists to ascertain the effectiveness of education aid - research by Michaelowa and Weber (2006) represents the first global attempt to determine the impact of education aid upon enrolment and there have been a handful of others since (notably Dreher, Nunnenkamp et al. 2008; Christensen, Homer et al. 2010; Findley 2010; Birchler and Michaelowa 2015 - see section 2.6.3 of this chapter for a review of this literature). As has been stressed by many donors, a firm understanding of 'what aid works where' is extremely important to the future of the external financing of education (Turrent 2011). When aid is being employed on a global scale it is important to understand the degree of its influence.

Since the early 1990s, there has appeared to be renewed international interest in primary education, prompting a considerable amount of fresh research on primary schools in the developing world with attention increasingly concentrated upon what primary schools are achieving (Lockheed and Werspoor 1991; Boissiere 2004; Duflo, Dupas et al. 2007; UNESCO 2007; Gakidou, Cowling et al. 2010). Coupled with this, the improved collection of data has led to a much better global statistical picture of education outcomes. As the impetus towards primary education has been maintained, donors have become bound to review the distribution of their resources to education and to primary education in particular.

A key issue of concern is the extent to which donor allocations are based on recipient country 'need'. Several studies have addressed this topic, with the main finding being that most donors' allocations are only weakly related to recipient country needs (Save the Children 2009; Turrent and Oketch 2009; Colclough 2011). It should be noted, however,

that there is a good deal of variation among donors, with - in the education sector at least - multilaterals generally performing better than bilaterals, and some bilaterals (e.g. the UK, Netherlands) generally performing better than others (e.g. France or Japan) (Save the Children 2009). Although useful, studies of this nature share a drawback: there are few obvious benchmarks by which to judge donors' allocations (ODI 2005; Colclough 2011). What proportion of aid for education, for example, should be apportioned to the lowest-income countries? By how much should aid receipts fall as a developing country's per capita GDP (or enrolment rates, or the provision of quality education) rises? Recognising this, a more systematic appraisal of what an optimal allocation of aid should look like is called for. Some attempts have been made in the macroeconomic literature on aid by researchers such as Collier and Dollar (2002) and Benyon (2003) to address this issue - in particular those factors that determine the quantity of aid that each country receives, and what their relative contributions ought to be.

In these discussions, two sorts of disagreement have arisen. The first concerns principles: what are the fundamental principles according to which aid allocations should be determined? This entails profound questions about the role of aid and notions of equity. The second is about evidence and implementation. Even if the fundamental principles are agreed, it may not be possible to agree about what those principles mean in practice (ODI 2005). This is because the evidence on the effects of aid, as will be discussed in Part II of this chapter, is not always clear-cut. These issues have particular relevance in the context of international education goals as to whether any scaling-up of aid volumes ought to be combined with a uniform approach to its allocation across countries.

## 2.5. ASSESSMENTS OF AID EFFECTIVENESS

The voluminous literature on aid effectiveness provides little concrete evidence of the impact of aid on growth as almost all the research is contested - for surveys of the literature, see Clemens, Radelet et al. (2004); Harms and Lutz (2004). During the 1980s, a positive and significant effect of aid on growth was found by some researchers (Gupta and Islam 1983; Levy 1988), whilst others found no effect at all (Mosley 1985; Boone 1994). These studies were the impetus for further research seeking either to untwine or disprove the findings. Amongst these were studies showing that aid can bring about economic growth when deployed in particular development scenarios - for example, where good policies are in place (Burnside and Dollar 2000), or where institutional quality is high

(Collier and Dollar 2002). Yet other research found that, on average, aid works but with diminishing returns (Hadjimichael, Ghura et al. 1995; Durbarry, Gemmell et al. 1998; Hansen and Tarp 2000). Recent studies continue both to challenge and to support the hypothesis that aid leads to growth. The declaration by Easterly (2006) that aid has done 'so much ill and so little good' has been rigorously challenged by several leading thinkers on aid including Sen (2006) and Tarp (2006), who contend that such bold claims obscure the fact that development assistance can be effective if delivered correctly. Likewise, surveys of the literature on aid and growth also reach wildly differing conclusions: Doucouliagos and Paldam (2005) speculate that the aid effectiveness literature has been futile in its efforts to prove that aid works, whilst McGillivray, Feeny et al. (2005) emphasise that the majority of research finds a positive association between aid and growth. A definitive answer to the question as to whether aid predicts growth remains elusive.

This section starts by exploring both sides of the argument on the future of aid, looking both at the rationale behind the drive to increase aid flows, and at the arguments to reduce or terminate development assistance. It then examines the evidence base upon which such claims are made, looking specifically at the macroeconomic literature on aid effectiveness in relation to aid and economic growth.

### 2.5.1. Conflicting Visions on the Future of Aid

*A World Without Aid*

The case that aid does not work has been made since the 1950s by critics such as Friedman (1958). It argues that the number of aid programmes has increased not necessarily because of their demonstrable successes but, rather, for moral reasons and because no feasible alternatives have yet been established. The argument continues that aid has accomplished little that countries could not have achieved independent of aid finance and that the prospect of aid monies has invariably promoted recipient governments' worst traits. The view that developing countries would be in a better position without development assistance is once again gaining in popularity in aid circles. That such stances on aid are again gaining currency is significant and ought to be considered seriously. As Easterly (2006), Glennie (2008), Birdsall and Savedoff (2010) and others have observed, there has been a frustrating lack of intellectual rigour behind many of the calls for large increases in

aid. Undoubtedly, it would be dangerous not to query the anticipated benefits that it is proposed additional aid will bring to developing countries because, as is discussed in section 2.5.2, there remains fairly inconclusive evidence for claims that aid has been effective.

The position laid out by Moyo (2009) that calls for an end to aid programmes in Africa, supposing that governments would thus be obliged to pursue alternative sources of finance consequently forcing them to become more accountable, is part of the new wave of anti-aid literature. This neo-liberal, market fundamentalist approach adopted by Moyo (2009) is, however, questionable, underestimating the challenges faced by African societies and exaggerating the opportunities presented by alternative finance (Collier 2009). Apart from her ideological stance, the prime criticism of Moyo's case is that it is not based on empirical research and, as has been argued by Roodman (2009b), is overstated. Nonetheless, Moyo presents a convincing argument in relation to the matter of aid dependency - stating that the prospect of accountable and effective governance is invariably damaged by exceedingly high levels of bilateral aid, a position espoused also by Moss et al. (2006). Likewise, Glennie (2008) maintains that rather than the usual appeals for increased aid, strategies should be put in place to reduce aid in the medium-term due to the mounting evidence of the damage that it can cause to country growth and institutions.

Whilst there is evidently increasing appreciation of the significance of state institutions in development (Commission for Africa 2005; OECD DAC 2005), there remains limited knowledge of the harm that aid dependency has upon recipient governments. Aid is thought to be detrimental to the process of learning, with the argument made by Branczik (2004) that countries are able to acquire knowledge and cultivate new skills and technology when resources are generated locally; but when resources are imported, as is the case with external development assistance, this process of learning and skill development is lost. Aid dependency occurs, as this loss of opportunity with regards to the broader means of development results in countries becoming increasingly dependent upon the external supply of resources. Orjiako (2000) postulates that aid is apt to encourage export lethargy amongst aid recipients as it is invariably aimed at making up for the shortage of foreign exchange. A problem arises as recipients declare the foreign aid shortage in support of calls for more aid - promoting a culture of export lethargy and encouraging indiscipline in the balance of payments position.

Other arguments stating the harm that aid can do include a tendency for ambitious

planning on the promise of aid and political ramifications resulting from the promotion of centralised government power. In the first instance, it has been found that countries in receipt of aid monies have a propensity for large-scale planning on the basis of commitments from external donors to provide aid, but fail to mobilise sufficient domestic resources to implement them. When failure to mobilise domestic resources occurs, this is invariably addressed by employing deficit budgeting (Pankaj 2005). The provision of aid may also have harmful political implications in a decentralised system of governance, as donors tend to allocate aid directly to federal government, leading to a centralisation of power. Moreover, on the basis of foreign aid, governments indulge in ambitious expansions of public sector activities without consideration of their economic feasibility (Pankaj 2005).

The relationship between aid and governance is even more complex. Aid pessimists assert that predictable and adequate amounts of development aid can weaken the incentives for recipient country governments to boost domestic revenue, generating a cycle of aid dependence and weakening accountability to citizens. Braütigam (2000) maintains that large influxes of aid fuel corruption, particularly in recipient countries with weak public financial management systems. However, while corruption may be widespread among many governments in receipt of aid, cross-country research has not been successful in establishing a significant, clear or consistent causal link between aid dependence and governance (Moss, Pettersson et al. 2006).

Easterly (2003) has argued that development assistance weakens economic growth, alters national priorities, encourages corruption and ultimately achieves little for its intended beneficiaries. Bauer (1959), Byres (1972) and Lipton and Toye (1990), are other often cited critics of the aid-led growth model. Rejecting the theory that foreign aid is positively correlated to growth and development, they argue that there is a fundamental difference between foreign capital and domestic capital. The thrust of their argument lies in the conviction that foreign aid alone does not guarantee the growth and development of developing countries and that there are particular perils - both economic and political - to dependence on foreign aid that need to be understood. The case that they build against aid-led growth strategies is based on both theoretical grounds and the documented experiences of aid recipient countries.

A common strand in the argument against foreign aid-led growth models is that they are biased towards a capital-intensive growth strategy, and that an all-purpose application of

these models is limited due to the heterogeneity of country conditions. It is proposed that, whilst many of these developing countries may experience low capital formation, this is not the sole setback experienced - their predicament goes beyond savings and foreign exchange constraints to include colonial and semi-colonial dependence; capital flight; and other bottlenecks to development that cannot be eliminated merely with the influx of aid (Mikesell 1968; Tandon 2008). Similarly, Pankaj (2005) argues the socio-cultural impediments to growth and development, structural rigidities, the low level of technology, weak banking and financial structures, inappropriate government policies and an overloaded primary sector, are other deterrents of growth which cannot be eradicated with the injection of additional foreign capital. An additional difficulty with the application of the capital oriented growth strategy in the developing world is its appropriateness to the context of low-income economies, which generally suffer from a surplus of labour. In these less developed countries the primary concern is often with increasing opportunities for employment as well as improving growth rates (Pankaj 2005).

Bauer (1959) discards the view that self-sustained economic growth can be achieved on account of aid, whilst Ward and Bauer (1968) identify determinants of development - individuals' beliefs, economic qualities and attitudes, values and objectives, as well as peoples' social and political values - that are negatively influenced by the receipt of foreign aid.

Aid pessimists raise valuable questions over the issue of aid effectiveness. Whilst economic growth has been unsatisfactory in many aid-dependent countries, this does not imply that aid is the underlying cause. It does elude, however, to there being a robust case for reckoning that aid ought to have achieved more. Indeed, the broader economic picture does not appear to corroborate such intense pessimism on aid effectiveness. The suggestion that increased aid results in less economic growth would imply stagnant or waning poverty reduction rates, but there is no solid evidence verifying the assertion that aid undermines growth prospects. Chen and Ravallion (2008) find that in the period 2000 to 2008 during which aid to sub-Saharan Africa almost doubled, the average growth rate was between 5 and 6 per cent per annum - twice the average growth rate of the 1990s. During this time, the incidence of poverty dropped from 58 per cent to 51 percent, with absolute numbers below the poverty line dropping for the first time in a generation. Cross-country analysis looking further back suggests that aid has a broadly positive impact on growth although, as has been discussed above, aid pessimists rightly note that high levels of aid dependence over long periods can have adverse consequences (Clemens, Radelet et al.

2004). Part of the problem with the argument of aid pessimists is that it fails to differentiate between types of aid. Aid to basic education, for example, ought not to be expected to deliver early results for economic productivity.

### *More Aid, Now*

> Rich countries must recognize that even with action on trade or agricultural subsidies, there is still a fundamental need to boost resources for developing countries. We estimate that it will take on the order of an additional $40 to $60 billion a year to reach the Millennium Development Goals - roughly a doubling of current aid flows - to roughly 0.5 percent of GNP, still well below the 0.7 target agreed to by global leaders years ago. ... Does anybody really believe that the goal of halving absolute poverty by 2015 is not worth this investment? (Wolfensohn and Stern 2002)

Reinforcing this position, Sachs (2005; 2015) has been the voice leading the call for rapid increases in aid, arguing that African nations are stuck in a 'poverty trap' from which they will only be able to remove themselves with the help of development aid. His plea for additional aid has been accompanied by the work of other 'aid optimists' seeking to determine on what basis aid could be scaled up.

Riddell (2007) sets out what is and what is not known about aid's impact on recipient countries. Stressing the complexity of the issue of aid effectiveness and the complications in ascertaining whether or not aid has had a positive impact, he refers to the numerous development actors involved and types of aid given - project, programme, as well as technical assistance and capacity building - that make it difficult to untangle the complex web of development assistance and its effectiveness. He also highlights the serious measurement issues that have tended to impede aid effectiveness studies - notably that the data necessary to measure aid's impact are invariably not available, and that the difficulty in agreeing the aims and purpose of development aid pose significant problems when defining criteria against which performance can be measured. Riddell (2007) also considers what the appropriate time series ought to be over which aid effectiveness outcomes can be assessed. Finally, he questions the issue of establishing what would have occurred in the absence of aid - the counter-factual problem.

Riddell is arguably sceptical of bold claims about the effectiveness of aid. He claims that it is of more value to understand what does not work, as opposed to what does, in order to establish what it is that can be done to make aid more effective. He identifies five problems that are in need of redress: the quantity of aid allocated; efficiency in aid allocation; reducing volatility in aid flows; eradicating duplicated aid efforts due to the proliferation of donor organisations; and attending to disparity in the donor-recipient relationship.

Banerjee's (2007) position is that aid can work, but that there is substantial waste and inefficiency in the provision of aid due to the lack of scrutiny over which aid programmes really work. This, he contends, stimulates unwarranted cynicism concerning the function of aid in advancing economic development. Unlike Riddell, he posits that improvements in the practice of aid-giving are necessary. Banerjee attributes the sometimes ineffectiveness of aid to 'institutional laziness', pointing out that aid donors fail to make the effort to ascertain what kinds of aid are successful before they allocate it. He alludes to the instance of a World Bank publication proposing best-practice measures for poverty reduction that provides no evidence that the measures have been shown to work. Studies to uncover what aid does work suffer from the fact that it is not possible to identify whether what is observed is a consequence of the measures introduced. The solution that Banerjee presents is to conduct Randomised Control Trials (RCTs) prior to apportioning aid, and to fund only those projects that are demonstrably successful. He illustrates his case by proposing how RCTs have been applied to ascertain the most cost-effective means of encouraging children to spend more time in school. The result was that the introduction of de-worming medicine, meaning that children were less frequently away from school due to illness, was the most aid effective way of achieving this (Kremer and Miguel, 2004).

Selecting the most efficient and effective project is extremely important in order to ensure that limited aid funds are not unnecessarily wasted. Of course, as several of the contributors to Banerjee's (2007) book *Making Aid Work* point out, there are practical issues in taking this approach too far. Banerjee, however, presents a persuasive argument for a more scientific approach to the practice of aid-giving and selection of appropriate projects for funding.

At a time when the donor community is being called to match their words with action by increasing the amount of aid given to match the previously agreed target of 0.7 per cent of bilateral donors' gross national income (United Nations 2014), and whilst there is concern over the effectiveness of aid as formerly 'rich' donors struggle to meet aid commitments (UNESCO 2012a), it is of critical importance to appreciate how development aid can be most effectively utilised in order to achieve the best possible outcomes. As is frequently argued, making aid more effective matters as much as giving more (Banerjee 2007; Riddell 2007; Fredriksen 2013).

At the heart of the matter, in contrast to what aid optimists (such as Sachs) and aid pessimists (such as Moyo) propose, lies the reality that the impacts of aid are complex. Only through rigorous empirical research is an appraisal of these impacts made possible, and for an understanding of aid effectiveness to be inferred. Glennie (2008) coins this 'aid realism' - implying that decisions regarding aid and its future role are founded neither on an ideological anti-aid position, nor the 'moral' requirement to raise the levels of aid when studies reveal that current practice is ineffective.

A fitting and 'realistic' response to aid pessimists, then, is not to hark back to the aid optimist viewpoint of postulating unsubstantiated scenarios in which there will be 'X number of lives saved per billion dollars spent', but instead to acknowledge the faults of aid and the harm that it can, on occasion, cause; and then to uphold its positive achievements.

As has been discussed above, both aid optimists and aid pessimists overstate the importance of aid. No country has ever developed as a consequence of aid: the development process is far more complex. It continues to be unclear what it is that makes aid work, or not. Although the world is now generally prosperous, the developing world lingers behind and is still renowned for high rates of poverty and disease. The solution requires a serious assessment of whether or not aid works - an issue to which the following section turns.

## 2.5.2. Does Aid Work? A Selective Survey of Empirical Aid Effectiveness Literature

As discussed in section 2.4, optimism about aid was last widespread in the late 1970s, but was followed by a big wave of scepticism. By the mid-1980s, aid was seen to be inefficient - a transferral of resources from the poor in rich countries to the rich in poor countries. It was claimed that aid did not work, and that the sole means of resolving the plight of developing countries was through self-discipline and market forces. It took two decades for that orthodoxy to dissipate, although - as evidenced in section 2.5.1 - aid pessimists still abound. As such there are two discernible strands in the literature on aid effectiveness: one argues that aid spurs the growth and development of recipient countries e.g. (Stiglitz 2002; Sachs 2005; Sachs 2015); while the other opposes this view by arguing that aid crowds out savings and investments and thus leads to a slowing down of economic growth e.g. (Friedman 1958; Easterly 2003; Moyo 2009).

This section explores the evidence base upon which such claims are made. It looks specifically at the macroeconomic literature on aid effectiveness - exploring first the complexities of establishing a link between aid and growth; second the debate around the selective allocation of aid to countries demonstrating strong policy environments; and third aid and growth in post-conflict countries, where it is argued that aid may be more effectively absorbed than is accounted for in current aid allocation practices.

### *Aid and Growth - The Elusive Link*

The empirical literature examining the link between aid and growth is vast and has been surveyed by White (1992), Hansen and Tarp (2000), Hjertholm et al. (2000) and McGillivray, Feeny et al. (2005). Numerous studies conducted between the 1960s and 1980s measured the impact of aid on growth with widely differing results. In some cases aid was shown to be effective in inducing growth: however, the majority of studies from this period showed that the impact was either insignificant or negative (Chenery, Ahluwalia et al. 1974; Dudley and Montmarquette 1976; Mosley 1987). Michalopoulos and Sukhatme (1989), who reviewed literature from the period, conclude that evidence is inconclusive, whilst White (1992) postulates that the macroeconomic impact of development assistance is little understood. Indeed, reviewers of the aid literature during this period regularly put forward the idea that cross-country empirical studies failed to produce statistically significant results. The perceived lack of evidence on the macroeconomic impact of aid at this time, and in later years, has been discussed with reference to criticisms of the methods applied - notably the econometric, conceptual and data difficulties that are implicit in cross-country analyses of the link between aid and growth (Michalopoulos and Sukhatme 1989; White 1992).

Although the literature of the 1980s found insufficient evidence of a link between aid and growth, much of the research conducted during the 1990s - particularly that commissioned by the World Bank (Burnside and Dollar 1997; Collier and Dollar 1999) - sought to establish a causal relationship. Cassen (1994) contends that there is a wealth of evidence confirming that aid projects generate adequate economic rates of return. Likewise, many case studies corroborate the World Bank's (1998) reflection that aid has, on occasion, achieved a lot. Hansen and Tarp (2000: 376) argue that it is, therefore, "neither analytically defensible nor empirically credible to argue from the outset that aid never works".

However, evidence from studies that have attempted to assess the indirect link between aid and growth through investment has again been largely inconclusive. While some papers had found a link, others have been unable to establish a positive correlation (Dollar and Easterly 1999; Easterly 1999; Arndt, Jones et al. 2010). The results of studies that incorporate aid in structural growth models have been similarly ambiguous. Where aid has been included as part of an optimal growth model, it has been found to stimulate investment in the short term; however, in the long term it has been shown to reduce labour supply and capital stock, whilst increasing consumption (Obstfeld 1999; Gong and Zou 2001).

Rajan and Subramanian (2005), amongst others, uncover no strong evidence of a causal link between aid and growth, and little to suggest that aid works better in strong policy or particular geographical environments; nor do they find that certain kinds of aid work better than others, as has been claimed elsewhere. The authors state that strong claims about aid effectiveness are therefore unjustifiable, with aid policies shaped on the basis of such claims being in need of reconsideration.

It is clear that there is little consensus as to the overall effect of aid. Whilst the empirical literature on aid effectiveness has benefitted in recent years from the availability of better data and improved estimation techniques, it appears that aid is at best only marginally significant in contributing to economic growth. Against this background, studies conducted over the course of the last decade have sought to establish the reasons behind the apparent ineffectiveness of aid. The following two sub-sections explore two dominant themes in this literature that are of relevance to the allocation and impact of education aid - the policy environment into which aid is delivered and the impact of aid in post-conflict reconstruction.

### *Aid, Policy and Growth: The Selectivity Debate*

Research conducted by Boone (1996) is notable for introducing the political determinants of aid into cross-country growth regressions. Subsequent work commissioned by the World Bank and carried out by Burnside and Dollar (1997) led to a debate on the importance of strong political will and institutions as instruments of effective aid. Their results were published in the *American Economic Review* (Burnside and Dollar 2000) in an article that explored the relationship between aid, economic policy, and growth. They argued that aid is invariably disbursed in countries where policy conditions are distorted,

leading to a reduction in the marginal productivity of capital and a weakened incentive for investors. The authors included a range of institutional and policy indicators, with their results showing the interaction between aid and good policy environments to be significant in a number of model specifications. Dollar and Easterly (1999) likewise found a statistically significant relationship between aid and investment in good policy environments, contributing to the influential literature that led to concern for aid to be allocated selectively to countries demonstrating strong policies and political will.

These papers were initially very influential and deemed to address the inconsistencies in the literature on aid effectiveness. However, as Easterly (2003) rightly notes, whilst the findings are intuitively plausible, it should be of concern that the Burnside and Dollar (2000) paper became the basis for a policy recommendation to increase foreign aid in countries where policies are good without there being further testing of whether the results hold true when expanding the dataset or using alternative definitions of 'aid', 'policy' and 'growth'. Moreover, Hansen and Tarp (2000), (2001) have undermined the results, showing that they are extremely data-dependent and, on the basis of the available evidence, have concluded that the policy environment in the recipient country does not influence the effectiveness of aid. Furthermore, the findings have come under intense scrutiny and have been challenged on methodological grounds such as the identification and treatment of outliers, the choice of instruments, and methods of estimation (Dalgaard and Hansen 2001; Benyon 2003; Easterly, Levine et al. 2004). Easterly et al. (2004) employ exactly the same specification as Burnside and Dollar (2000), but they include more recent data with a resulting sample covering 1970 to 1997. Their results show the coefficient for the critical interaction term between aid and policy to be insignificant in the expanded sample.

A further paper widely cited by aid advocates is that conducted by Collier and Dollar (2002). The study adopts the Country Policy and Institutional Analysis as a measure of the policy environment and largely confirms the Burnside and Dollar (2000) results, with the exception that the overall impact of aid is found to be greater and its sensitivity to the quality of recipient policy more muted. An additional one percentage point's worth of aid (equivalent to a one per cent increase in GDP) increases the rate of economic growth by 0.2 percentage points in countries with weak policies, 0.4 in countries with average policies, and 0.6 in those countries with strong policies in place (Collier and Dollar 2002). The authors conclude that a reduction in poverty is dependent upon the extent of poverty and upon the distribution of income. On the basis of these findings, Collier and Dollar (2002)

estimate a 'poverty-efficient' allocation of aid between countries - a system of allocating aid in order to maximise poverty reduction within a given global aid budget.

Clearly, the model of aid allocation that Collier and Dollar (2002) propose is very attractive, particularly to those responsible for ensuring the efficient spending of aid monies. However, as Benyon (2003) points out, the findings are not altogether robust: the comprehensiveness and currency of the dataset; limited sensitivity testing; ambiguous interpretation of high correlation coefficients between different scenario results; the validity of certain primary data; the variation in individual and regional allocations; methods used to restrict allocations to populous countries as well as the handling of the potential for small country bias; and the pattern of regional progress towards the MDGs, may all be called into question.

Benyon (2003) tackles many of these concerns by employing a more rigorous approach to the sensitivity testing (accounting for 25 different scenarios) of the basic Collier and Dollar (2002) model. He finds the variation in individual and regional allocations to increase significantly - Sub-Saharan Africa's poverty-efficient share ranges from 25 per cent to 83 per cent, and the number of potential recipients varies from 15 to 29 countries - and concludes that the practical value of the Collier and Dollar (2002) model for aid policymakers in redirecting allocations to specific countries is therefore diminished.

### *Aid and Growth in Post-Conflict Reconstruction*

The result of selectivity in aid allocation has meant that aid volatility in what are termed 'fragile states' - 'bad performing' countries with weak governance and/or institutions - is more acute than in more stable countries (Levin and Dollar 2005). 'Fragile' states is the term that has been coined to refer to those nation states exhibiting weak government institutions and poor policies. The term captures shared characteristics of weak or deteriorating governance, a vulnerability to conflict as well as fragile conditions of protracted crisis, post-conflict and political transition (Rice and Patrick 2008). Although they represent a highly diverse group of countries, many are considered to be 'aid orphans' and few attract much in the way of regular private finance (Levin and Dollar 2005; Colenso 2011). It is frequently argued that the threat to development posed by fragile states requires an early, customised, and harmonised approach by donors that goes beyond the existing ad hoc response (Leader and Colenso 2005; Fayolle 2006; Sperling 2006; OECD 2007; Winthrop, Ndaruhutse et al. 2010; Colenso 2011). Donors have a tendency to use technical

and off-budget assistance channelled through NGOs and civil society organisations in order to prevent corruption in fragile states. However, this means that the opportunity to build government system capacity and improve transparency may often be bypassed - thus perpetuating the cycle of institutional fragility (Leader and Colenso 2005; Winthrop, Ndaruhutse et al. 2010; Turrent 2011).

Levin and Dollar's (2005) research on aid volatility examines aid flows between 1992 and 2002 and finds aid volatility to be far greater in fragile states than it is in other low-income countries. The authors also find that aid to fragile states is delivered in sudden bouts, suggesting that aid is allocated to countries over short timeframes when donors are made aware of specific international 'crises'. Overall, fragile states were in receipt of 43 per cent less aid than the amount commensurate with their population, poverty, policy and institutional levels (Levin and Dollar 2005) - detrimental to prospects for poverty reduction. Moreover, problems for fragile states are further exacerbated by allocation criteria that are inconsistent and often not transparent, meaning that aid flows are unpredictable (McGillivray 2005; Colclough 2011; Colenso 2011).

For the purposes of aid analysis, countries emerging from conflict - due to their invariably low institutional capacity - are regularly categorised as 'fragile states'. However there is reason to believe that aid delivered to post-conflict countries may behave differently than in other fragile states, in which studies have shown it to be relatively ineffective due to weak capacity and institutions (Burnside and Dollar 2000; Collier and Dollar 2002). The end of conflict generates an instant recovery of economic activity, as donor and government consumption of local goods and services fuel broader economic growth. Furthermore, job-creation programmes cause a momentary rise in employment and consumption, whilst investment in physical and social infrastructure stimulates demand over the short-term and supports growth in the long-term (Collier 1999). As Collier and Hoeffler (2004) argue, the economic circumstance of post-conflict societies is therefore quite distinct from other developing countries in the early post-conflict years, with the prospect for recovery bringing about a period in which economic growth is 'supra-normal' - the necessity to rebuild infrastructure at a time when domestic revenue has collapsed makes aid unexpectedly productive.

Collier and Hoeffler's (2004) research on aid, policy and growth in post-conflict societies considers countries in their first decade of post-conflict economic recovery during the 1990s, by examining whether absorptive capacity is systematically different in post-conflict

countries compared to other developing countries. The term absorptive capacity in the context of development aid generally refers to the capacity of the recipient country to use aid in a manner that is acceptable to donors. In economics, the term refers to the marginal rate of return to aid disbursed, with the assumption that aid is subject to diminishing returns. The authors find that absorptive capacity is no greater than usual throughout the first three years following the cessation of conflict, but that for the remainder of the first post-conflict decade it reaches around double its normal level. They conclude that, ideally, aid should be steadily introduced over the years of the first post-conflict decade. This is quite the opposite of the historical pattern of aid allocation in which, in the majority of examples, aid has been higher in the immediate aftermath of conflict at the point during which international concern is at its peak, and has reduced considerably over the course of the decade.

Collier and Hoeffler (2004) also question whether the role that policy plays in determining economic growth is systematically different in post-conflict countries, and specifically, whether the different constituents of government policy are differentially important. The authors find that economic growth is more responsive to policy in post-conflict societies; and, evaluating the effectiveness of different policies, observe that social policies have a greater impact when compared to macroeconomic policies. However, again, this is not how policy reform has tended to be conducted in post-conflict societies historically. The authors argue that their results reinforce the case that aid should taper in rather than taper out, and that it should be directed to policies aimed at strengthening provision of basic social services - arguing that the findings provide a strong justification for directing international attention towards improving aid allocation in post-conflict settings.

As has been suggested by the literature reviewed above, understanding how aid operates in different development scenarios and in different sectors is crucial to the development of policymaking on aid allocation. The following section considers the literature on aid effectiveness at the level of the education sector: first exploring the ways in which the question of the impact of aid on education outcomes has been addressed, and subsequently the data and methods used to empirically examine the effect of education aid.

## 2.6. MEASURING AID EFFECTIVENESS IN THE EDUCATION SECTOR

### 2.6.1. The Trouble with Aid Evaluations

The challenge faced by those evaluating the impact of aid is to ascertain whether the activities supported by donor organisations represent a positive contribution towards their stated goals, and to recommend how aid can be most effectively employed in order to contribute to development. As White (2005) argues, the nature of the challenge of aid impact assessment changes as the development model evolves, and with it the activities of donor agencies. In the 1960s and early 1970s, attention was on techniques of cost-benefit analysis. The move away from measuring development in terms of economic growth was echoed in changes to how aid effectiveness was evaluated. The change was driven, in part, by the misguided notion that the social sectors - which had become the focus of the development agenda in line with the drive to promote 'basic human needs', and its broadening to include rights issues such as gender equality (see section 2.4.2) - were less responsive to economic cost-benefit analysis. The assumption was that cost-benefit analysis would be unable to capture these social aspects of development, and that a more qualitative approach was necessary. By the 1980s, qualitative methods dominated the evaluations studies carried out on behalf of development agencies.

The move towards qualitative evaluations of aid was reinforced by an emphasis on process, specifically project management - which accounted for donor coordination, institutional development, and management systems. Clearly, these are essential components of well-managed aid that may be disregarded in a narrow economic study. However, it may be argued that projects focussed on process - in which the focal point is invariably institutional development - are generally too far removed from final development outcomes to quantify their impact on the latter (White 2005). The spotlight on results against the background of the MDGs calls for more than qualitative studies can achieve alone, and it is this that has led to the re-emergence and re-establishment of quantitative methods of aid assessment. This is because qualitative approaches are less appropriate for querying the extent to which interventions by donor agencies have bought about progress towards MDG-related indicators across the developing world.

Quantitative methods have re-established themselves at two levels - first in the measurement of donor agency performance, and second in the evaluation of project-level

interventions. Randomisation in programme design is increasingly being adopted which, as well as serving the purpose of selecting the most effective projects prior to funding, aids evaluation. Where RCTs are not possible, recent developments in econometrics allow for the production of more satisfactory controls, permitting retrospective analyses of aid to be made that control for the many potentially significant variables. Although in the academic realm of research there has been a recent surge in the application of these quantitative methods to analyse the effectiveness of aid, it remains the case that the vast amount of evaluation work (carried out or contracted out by donor agencies) continues to be conducted without the use of these techniques. This is problematic, as evaluations account for the majority of aid effectiveness studies and, therefore, ultimately shape the future direction of aid policy. Indeed, it has been estimated that up to 90 per cent of evaluations expound the 'success' of development aid (Michaelowa and Borrmann 2006). The potential for evaluation-bias in aid-giving - concerning the motivations for evaluations to demonstrate positive outcomes - has been much discussed as a result (Hodson 1997; Easterly 2002; Martens 2002; Michaelowa and Borrmann 2006; Phillips 2013), and is considered further in section 3.3 of the methodology chapter.

### *Qualitative Assessments of Education Aid*

There is extensive literature on aid to education, much of it based on case study research conducted at recipient country level (see, for example, Hopkin 1994; Casely-Hayford, Palmer et al. 2007; Malik 2007; Wang 2007; Colclough and De 2010; Malik and Naveed 2012). There is also a great deal written on aid partnerships in the education sector as well as on aid modalities, much of which has been produced by donor organisations (IMF and World Bank 2002; Smith and Vaux 2003; Radelet 2004; Rose and Greeley 2006; Sperling 2006; UNESCO 2008; Save the Children 2009). A third strand in the literature explores global patterns in education aid (Lewin 1994; King and Buchert 1999; Chisholm, Bloch et al. 2008; King and McGrath 2012). This body of education aid literature is generally positive about the role of aid in education, proposing that developments in education underscore the potential for aid to make a difference. The literature is illustrated by numerous examples of how this has been done - a few of which are outlined below.

Since 2001, Afghanistan has been in receipt of significant tranches of aid intended to lead to the reinstatement of its education system. The Afghan government, with support from NGOs, UN agencies and other donor organisations, has reacted to the high demand for education and is credited with increasing primary enrolment from less than one million

children (made up mostly of boys) in 2000 to more than 8.3 million children (of which almost 40 percent were girls) in 2011 (EMIS 2012). The Education Sector Support Project in Cambodia, funded by donor organisations, offers scholarships for poor children wishing to transition from primary to secondary school. Fiszbein and Schady (2009) posit that the scholarships are shown to have had a noticeable effect, with beneficiary schools demonstrating secondary enrolment rates that are 21 per cent higher than non-beneficiaries.

In Mali, attempts to hasten progress towards universal primary education have resulted in an increase in the primary net enrolment rate (NER) from 46 per cent at the end of the 1990s to 63 per cent in 2007. Almost three-quarters of the programme cost in 2007 was borne by external aid agencies, with 22 donors providing technical and financial assistance (Ky in UNESCO 2010). In respect of the Mozambiquan national education strategy, pooled support by donors has been shown to have played an important role in financing the building of schools in rural communities, in the recruitment and training of teachers, and provision of textbooks. Between 1999 and 2012, the primary net enrolment ratio rose from 52 per cent to 86 per cent (Education Policy and Data Center 2014).

The above examples, and many other such studies, illustrate the success of education aid. However, it should be noted that they do not signify aid success stories in a narrow sense, as they are the result of national policies and political leadership supported by development assistance. Certainly, the case that is regularly put forward is that no amount of aid can counteract poor policies and political apathy (Collier and Dollar 2002; Rose and Greeley 2006; UNESCO 2010). As such, these studies are of limited use to those interested in understanding whether or not aid works, as they cannot wholly attribute the improvements in education outcomes to the impact of aid. Interestingly, those studies that attempt to address this issue by employing econometric methods that allow for these factors to be controlled for - to a certain extent at least - find the impact of aid to be only marginally positive, and in some instances holding no statistical significance: this is a point that will be discussed at greater length in section 2.6.3.

### 2.6.2. Disaggregated Analyses of Aid

Leading academic research on aid effectiveness that makes bold claims about how aid should be allocated concentrates almost entirely on economic growth. Claiming that the

cross-country macroeconomic studies have failed conclusively to establish the impact of aid, an emerging literature on the subject of aid effectiveness argues that a disaggregated approach to the analysis of aid is necessary. Although Cassen and Associates (1994) and White (1998) have both argued the case for disaggregated analyses of aid to be made, the composite nature of development cooperation has received only limited attention in the empirical literature. Indeed, the majority of econometric studies on the impact of aid continue to rely on aggregate aid data: this led a survey on the link between aid and growth by Harms and Lutz (2004) to reiterate the appeal for disaggregated analysis, and to conclude that it was unsurprising that a variable as all-encompassing as ODA demonstrated no robust effect on economic growth.

The majority of studies accounting for different types of aid have been undertaken within the last 10 years, and they have concentrated upon the difference between programme and project aid or between grants and loans (see, for example, Gupta, Verhoeven et al. 2002; Cordella and Dell'Ariccia 2003; Cordella and Ulku 2004; Mavrotas 2005; Cohen, Jacquet et al. 2006; Dreher, Nunnenkamp et al. 2006). The sectoral aspect of aid heterogeneity has been the subject of considerably less attention. Thiele, Nunnenkamp et al. (2007) offer an in-depth description of sector-wide aid allocation, but they do not assess its effectiveness. Also drawing on data from the OECD CRS, Clemens, Radelet et al. (2004) assess the effect that short-term sectoral aid might be expected to have on growth. They find that short-impact aid demonstrates a positive and significant effect on economic growth, a claim that is disputed by Rajan and Subramanian (2005). What is interesting, however, is that whilst both Thiele, Nunnenkamp et al. (2007) and Rajan and Subramanian (2005) account for a number of different types of sector-specific aid under short-impact aid, they do not contemplate outcome variables other than economic growth.

Only recently has an empirical literature on the effectiveness of aid within specific sectors emerged, much of which builds upon earlier efforts to approximate the predictors of outcomes in the health and education sectors. With regards to education, which is the focus of this thesis, numerous cross-country regressions have been carried out that examine the effect of public expenditure on education, as well as other variables upon school attendance (measured by enrolment and completion rates) and attainment (literacy, test scores) (Filmer and Pritchett 1999; Gupta, Verhoeven et al. 1999; Roberts 2003; Baldacci, Clements et al. 2004). These studies seek to ascertain the comparative strength of demand-side factors such as per capita income, adult literacy, size of the school population, and extent of urbanisation; and supply-side factors such as pupil-teacher ratio, unit cost of

education, and public education expenditure with regard to educational outcomes.

Dreher, Nunnenkamp et al. (2008) posit that the most logical strategy in the analysis of aid's impact upon school enrolment is to include aid for education as an additional explanatory variable in the educational outcome equation. This approach is adopted by Wolf (2007) who defines a system of equations for health and education, as well as for access to water and sanitation, in which outcomes are dependent on outcomes in other sectors, whilst controlling for public expenditure, development assistance and other variables relevant to the respective sector. Wolf (2007) concludes that aid provided to health, to education, and for water and sanitation demonstrates a positive impact on outcomes in each of the respective sectors. However, these findings have been contested on the grounds that the sector-specific results are far from robust. Indeed, it has been noted that the interdependency between sectoral outcomes is weak, calling into question the decision to estimate a system of equations (Dreher, Nunnenkamp et al. 2008). Furthermore, the estimated aid-outcome link may not reveal the true relationship because, crucially, the endogeneity of aid is not taken into account; and the Ordinary Least Squares (OLS) estimates across the recipient countries pertain to a single year despite it being well-documented that volatility is an issue with annual aid flows (refer to Bulíř and Hamman 2003; Levin and Dollar 2005; Chauvet and Guillaumont 2009).

A handful of studies explore an aid-expenditure link at the sectoral level. Gomanee, Morrissey et al. (2003) develop a pro-poor public expenditure index, proposing this to be a transmission mechanism through which aid might alleviate poverty. In addition to education expenditure, the index includes health expenditure as well as other expenditure items that are assumed to be pro-poor. The results are ambiguous, however, as while Gomanee, Morrissey et al. (2003) find that aid affects poverty solely through its effect on pro-poor public expenditures, the same authors reach the opposite conclusion when using a larger sample of aid-recipient countries (Gomanee 2005). Pettersson (2006) employs the pro-poor public expenditure index and finds evidence that the effect of aid on infant mortality largely works via this transmission mechanism, upholding the result of Gomanee, Morrissey et al. (2003). As Dreher, Nunnenkamp et al. (2008) contend, the work of Pettersson (2006) stands out among these studies in his use of sector-specific aid data - including data on aid for education - alongside government spending at the sectoral level. However, like Wolf (2007), Pettersson (2006) treats aid as exogeneous.

It can reasonably be argued that modelling the interaction between institutions and sector-

specific aid may offer additional insights into aid effectiveness. Pritchett (2001), for example, contends that there may be increased social pay-offs to investments made in education in those countries demonstrating strong governance. This is a subject that has been touched on in the emerging literature that specifically examines the link between aid for education and education outcomes. A critical review of these studies is found in the following section of this chapter.

### 2.6.3. Education-Specific Analyses of Aid

Since the turn of the Millennium substantial progress has been made towards international development goals, with net primary enrolment rates rising globally - with Benin, Ethiopia, Mozambique and Tanzania being examples of the countries that have demonstrated some of the greatest increases (UNESCO 2015). Consequently, the number of out-of-school children of primary age has dropped from 103 million in 1999 to 59 million in 2013 (UNESCO 2008; UNESCO 2015). However, determining how much of this progress can be ascribed to growing levels of education aid remains difficult to assess. As discussed earlier in this chapter, much of the literature on aid effectiveness has concentrated upon the macro effects of aid - the association between aid and economic growth. It has been shown that there is no real consensus in the literature, and that much of the discussion has been centred upon the supposition that aid is effective in stimulating growth, but only in recipient countries with strong policies and institutions.

It is evident that a convincing conclusion about the effectiveness of aid will not be reached whilst the thrust of research on the subject remains focused on the link between aid and economic growth, and that it is necessary to define aid effectiveness in another way. Following the calls for disaggregated analyses of aid, it seems sensible to examine how aid affects the specific sectors it is intended to serve (Cassen and Associates 1994; White 1998; Harms and Lutz 2004; Findley 2010). The sectoral approach to evaluating aid effectiveness in the education sector has a number of benefits: first, although a macro-level approach is still required (with the corresponding difficulties having to be dealt with), it circumvents the issue by acknowledging the innumerable factors that influence the aid-growth relationship; second, as opposed to a micro-level project approach, it is possible to explore the effect of governance and other macro-level indicators often assumed to shape aid effectiveness; and, third, reliance upon international statistics is arguably more dependable than project data when we consider that this is often produced - as discussed in section 3.3

- for the purpose of development agency evaluations (Michaelowa and Borrmann 2006). The following section therefore reviews the empirical literature on aid effectiveness in the education sector in an effort to establish the impact of aid upon education.

### *Education Aid and Economic Outcomes*

The emerging literature on education aid effectiveness may be readily divided into two groups: studies that weigh up the broad economic outcomes of education aid, such as economic growth, and those that assess educational outcomes as an outcome of interest. Theoretically, in order to be considered effective, educational foreign aid must either positively affect a country's economy or improve certain educational outcomes (Christensen, Homer et al. 2010). Those studies that consider economic outcomes as the dependent variable of interest most often draw on increases in GDP as a measure of aid effectiveness, suggesting that education aid should encourage economic growth as it provides human capital (Asiedu and Nandwa 2007; Pritchett 2001). Since the intention of the majority of aid is poverty-alleviation, through direct or indirect mechanisms by enhancing growth, such a supposition has logical foundations (Christensen, Homer et al. 2010).

Asiedu and Nandwa (2007) examine the effect that education aid at primary, secondary and tertiary levels has on determining economic growth. They find that only primary education aid positively affects growth in low-income countries whilst, in middle-income countries, only higher education aid has a positive effect on growth. In middle-income countries, primary and secondary education aid is found to have a significant but negative impact on growth. The authors argue this to be the case because the majority of middle-income countries have already achieved universal or near universal primary and secondary education and that, in these contexts, basic education is less relevant for production. Their suggestion, therefore, is to increase aid only to primary education in low-income countries. Whilst interesting and possibly indicative findings, these results should be interpreted with caution because they are based on a very limited number of observations and on disbursement data for years in which it is recognised that the coverage ratio is insufficient for analysis.

### *Education Aid and Primary Education Outcomes*
Following new trends in sector-specific aid evaluations, and due to the innumerable factors that can be assumed to influence economic growth, it may reasonably be argued that too

broad a look at the effectiveness of education aid (for example by examining its impact upon growth) allows for excessive error potential. As such, enrolment rates are increasingly invoked as the dependent variable for studies on aid effectiveness in the education sector. This is in part because they demonstrate the best education outcome for analysis in terms of their global availability, and due to the fact that education enrolment was a fundamental measure of MDG 2 - the target of ensuring that, by 2015, children everywhere, boys and girls alike, can complete a full course of primary schooling.

Michaelowa and Weber (2006) conduct a dynamic panel analysis to examine the impact of aid for education on primary enrolment rates across eighty developing countries, employing two panels: a long-term structural panel of five-year averages from 1975 to 2000, as well as a short-term annual panel from 1993 to 2000. This approach is clearly superior to the cross-sectional approach adopted by Wolf (2007), as techniques of panel data analysis allow for the comparison of repeated observations for countries, helping to establish more persuasive correlations. Michaelowa and Weber (2006) control for national education system characteristics such as pupil-teacher ratio, domestic education expenditure, and the youth share of the total population. Per capita GDP is employed to control for income. The authors, following the approach adopted by Burnside and Dollar (2000), also examine the importance of good governance; accounting for inflation, fiscal surplus, openness to trade, as well as democratic freedom as further explanatory variables.

In the results of the long-term panel, the impact of education aid on primary enrolment is found to be positive, yet modest. The results indicate that inflation, fiscal surplus and openness to trade are insignificant; while democratic freedom (as measured by the Freedom House index) is shown to be significant and positively related with the enrolment ratio, suggesting that good political and institutional governance may be more important than good economic governance. Michaelowa and Weber (2006) contend that while good governance in economic terms (trade openness, budgetary austerity, price stability) does not demonstrate any significant positive effect on primary education enrolment, general political and institutional governance clearly does - as lack of political freedom and civil liberties is consistently negatively related to enrolment. They further argue that, at least in the short run, the effects of development assistance and governance seem to be interrelated, and they suggest that under very bad political and institutional conditions, aid can have a negative rather than a positive impact on primary enrolment and completion. They interpret this as an indication of fungibility of resources, whereby more aid frees government resources for activities that are detrimental to the country's overall

development. However, the conclusions drawn by Michaelowa and Weber (2006) are tenuous. These variables are included in the model as explanatory and not as interaction terms with the education aid variable. As such it can only be concluded that good political governance positively affects the enrolment rate directly, but not via aid.

The results of the short-term annual panel also show a positive and significant relationship between education aid and primary enrolment. However, Michaelowa and Weber (2006) find that considerably fewer variables are significant compared to results from the long-term structural panel. The authors address this possible problem of endogeneity between the dependent variable of enrolment and the explanatory aid variable by employing a Two Stage Least Squares estimation with energy aid as an instrument. Overall, coefficient estimates for the impact of aid on net primary enrolment and completion rates are rather small, and they are sensitive to model specification. The authors' findings indicate that, on average, for every increase in education aid equivalent to 1 per cent of the recipient country's GDP, there will be an increase in primary completion rates of 1.6 percentage points. This effect is quite small given that, as Dreher, Nunnenkamp et al. (2008) point out, education aid as a share of GDP has tended to fluctuate at around 0.3 - 0.5 per cent. As Michaelowa and Weber (2006) concede, on the basis of even their most optimistic estimates, any realistic rate of growth in aid provision will be insufficient to move the world markedly closer towards the internationally agreed EFA objective.

Dreher, Nunnenkamp et al. (2008) also analyse the effectiveness of education aid, with the purpose of their study being to establish whether aid is more effective than government expenditure in producing education outcomes. In order to do this, they use enrolment rates as well as completion rates as outcome variables, and education aid as well as domestic education expenditure as explanatory variables. They control for adult literacy, extent of urbanisation, per capita GDP, and youth as a share of the total population. A long-term structural panel data set is built for the period 1970-2004, with data in five-year averages held for 96 developing countries.

It should be noted that the overall approach adopted by Dreher, Nunnenkamp et al. (2008) is not directly comparable to the added value approach by Michaelowa and Weber (2006). While Michaelowa and Weber (2006) explore the added value of aid to an existing initial level of enrolment and completion, Dreher, Nunnenkamp et al. (2008) examine the overall effect of education aid over a period of several decades. Their study shows a positive and significant correlation between aid and school enrolment, with their results generating

considerably higher coefficient estimates. Their findings indicate that, on average, an increase in education aid equivalent to 1 per cent of the recipient country's GDP results in an increase in primary enrolment of between 2.5 - 5 percentage points. Clearly the considerable variation between results - that suggest that the impact of education aid is around two or three times greater than that estimated by Michaelowa and Weber (2006) - is due to the methods of estimation. It may be argued that the results of Michaelowa and Weber (2006) - which do not neglect the dependence of educational outcomes upon initial values - are more intuitive. Controlling for initial levels of enrolment is important, as gains in countries that are starting from a lower base are likely to be greater, whilst the converse is true in countries that are approaching near 100 per cent enrolment. That this factor is so influential suggests that its exclusion from the Dreher, Nunnenkamp et al. (2008) study may be responsible for the exaggerated gains in enrolment linked to the allocation of education aid.

Dreher, Nunnenkamp et al. (2008) also address the issue of endogeneity by using Two Stage Least Squares regressions, with the child mortality rate (a proxy for country need), the Fraser index of economic freedom, and the ICRG index as instruments. The results remain largely unchanged with the inclusion of the instrumental variables. In order to examine the influence of strong political governance, the authors include an interaction term for education aid and the Freedom House index of political rights and civil liberties. In contrast to the findings of Michaelowa and Weber (2006), the results are not significant. Dreher, Nunnenkamp et al. (2008) propose that the effectiveness of education aid, then, does not depend on the extent of democratic freedom. In response to the selectivity criterion stressed by many donors - particularly the quality of governance - the authors argue that this may be less important than widely believed.

Research by Michaelowa and Weber (2006) and Dreher, Nunnenkamp et al. (2008) finds positive correlations between education aid and primary enrolment, but the relationship appears not to be substantively significant, suggesting that aid's influence upon education outcomes is only marginal. Whether these findings are the result of the models employed, methods of instrumentation, or the data itself is an interesting question.

Christensen, Homer et al. (2010), using the comprehensive AidData - as opposed the OECD CRS used by both Michaelowa and Weber (2006) and Dreher, Nunnenkamp et al. (2008) - employ latent growth modelling in order to capture the nature of change in primary enrolment rates over the period 1975-2005. By allowing the intercepts and slopes

to vary across time periods and countries, the authors assume that it will be possible to model the behaviour of enrolment-rate growth more effectively. Their findings depart from the previous literature with statistical results indicating there to be little significant relationship between the aid and enrolment variables, suggesting that education aid may not explain changes in education enrolment rates in developing countries. Christensen, Homer et al. (2010: 21) argue that "global commitment to increase primary school attendance through aid efforts may have proven largely ineffective overall, though it is likely that there may have been individual success stories for specific projects".

### *Sub-Sector Education Aid and Outcomes at Other Levels of Education*

Both Michaelowa and Weber (2006) and Dreher, Nunnenkamp et al. (2008) examine the effect of total education aid on primary school enrolment, rather than the effect of aid specifically for primary education on primary school enrolment - the reasons for this being that aid information at a sub-sectoral level is not available until 1990. While secondary and tertiary education initiatives might reasonably be expected to have some spillover effects on primary school enrolments, they may also introduce distorting noise into the models. In an effort to address this matter, Michaelowa and Weber (2007a) go beyond their previous research, separately assessing aid effectiveness for primary, secondary and tertiary education by disaggregating the education aid variable into its component parts.

However, despite the more precise sectoral attribution, this approach does not show any stronger effect of aid. Using a dynamic panel model for approximately 100 low- and lower-middle-income countries for which the relevant information is available Michaelowa and Weber (2007a) find, overall, the coefficients for the impact of primary aid upon primary completion to be statistically insignificant. Where they are found to be significant the effect is positive. It should be noted that only eight of the 24 regression estimations find the effect of aid on the respective educational outcome to be significantly positive. The authors contend that the share of significant coefficients confirms the positive, if limited, effect of education aid. The highest coefficient obtained reveals that an increase in primary education aid equivalent to 1 per cent of recipient GDP would lead to an increase in primary completion of 2.5 percentage points. Contrary to expectation, the effect measured specifically for aid to primary education does not result in higher regression estimates. Where significant coefficients can be compared, the effect of total education aid is shown to be higher than the effect of aid specifically allocated to primary education. Such a result would be inconceivable under otherwise equal model conditions, but the two panels

employed by Michaelowa and Weber (2007a) relate to different time periods - covering the periods 1990-2000 and 1999-2004. As Dreher, Nunnenkamp et al. (2008) point out, given that in recent years the initial level of primary enrolment will have been higher, further increases in enrolment and completion are likely to have been more difficult to achieve. This is suggestive of the relevance of decreasing returns to education aid - additional gains in enrolment become more difficult to achieve the closer a country is to achieving universal primary education, with fewer children being enrolled in school per extra aid dollar spent.

For enrolment in secondary education, the impact of aid is of a similar magnitude to that at primary level, with the highest positively significant coefficient for secondary education aid as a percentage of GDP estimated to be 2.3. At this level also, Michaelowa and Weber's (2007a) results from the 1999-2004 annual panel reveal diminishing returns to aid. In the short-term annual panel, aid to tertiary education is found to be insignificant - in some instances even negative - while results suggest that aid allocated to tertiary level leads to increased tertiary enrolment in the longer run. The positively significant coefficients from the longer-term structural panel fall into the same range as those for primary and secondary education aid.

The results suggest that the efficiency of education aid is uniform across the various levels of education to which aid is allocated. Despite the expectation that disaggregated - and more precise - levels of education aid ought to give rise to higher outcomes, even the best results do not significantly improve upon other studies. Michaelowa and Weber's (2007a) findings indicate that, at all levels of education, results are very sensitive to different model specifications, with the study further suffering from reduced length of time series and the correct attribution of aid to the different sub-sectoral categories.

In a follow up to their earlier work, Christensen, Homer et al. (2011) also look at the impact of aid specifically for primary education upon primary education outcomes. They argue that the problem of adverse selection complicates the effectiveness of aid, hypothesising that bilateral donors are likely to have more freedom than multilateral donors when allocating aid on the basis of the quality of recipient governance, as they are subject to less stringent institutional rules concerned with the impartial provision of aid. The authors therefore assume that bilateral donors will be at an advantage in reducing adverse selection, with the consequence that bilateral aid should boost enrolments to a greater degree.

Their analysis of AidData for around 100 low- and lower-middle-income countries from 1995 to 2008 using latent growth models indicates that, when compared to multilateral donors, bilateral donors are more likely to determine their allocation of primary education aid on the basis of the recipient country's control of corruption and that bilateral aid is significantly and positively related to improved enrolments as a result. It is argued that, multilateral donors are more tightly constrained by institutional rules and practices where broad coalitions of developing countries have seats and voting shares on development banks' executive boards and can collude to demand financing with few strings attached. In contrast, bilateral donors are able to be more discriminating about the quality of governance among recipients and therefore act more strategically when allocating aid for primary education. These allocation strategies, the authors propose, influence the effectiveness of aid in boosting primary-school enrolment rates (Christensen, Homer et al. 2011).

Of course perhaps one of the most obvious criticisms to be made of this literature is its overreliance upon the 'quantity of schooling' as measures of human capital. Many have argued that the available estimates of returns to cognitive skills indicate strong returns to schooling quality especially in developing countries and the large magnitude of the effects show that educational quality concerns are not only very real for developing countries but that they cannot and should not be ignored in empirical estimates. Much in line with the micro literature, while early macro studies of growth empirics also focused on the 'quantity of schooling' as measures of human capital, more recent studies have tended to place a stronger emphasis on the 'quality of schooling' acquired. As a result, there has been a clear move elsewhere in the empirical literature from using enrolment rates and years of schooling to measure human capital to the use of international test scores to arrive at more convincing measures of learning (Hanushek and Kim 2000; Hanushek and Wößmann 2008; Atherton, Appleton et al. 2013; Birchler and Michaelowa 2015). It must also be mentioned that studies have provided evidence showing the education quality-growth relationship to be robust to controls for reverse causality. That said, there remains a data challenge that needs to be overcome. While a preferred outcome measure of human capital, data relating to the quality of education are not available over sufficiently long time-series to enable researchers to conduct such panel data analyses, a point that shall be returned to in the following chapter.

## 2.7. CONCLUSION

The reasoning that education directly affects economic growth as a result of its role in stimulating productivity, technological innovation and entrepreneurship, as well as increasing earnings and job mobility, is well documented (Schultz 1961; Mincer 1974; Lucas 1988; Romer 1990; Becker 1994). The supposition that education generates considerable economic benefits is crucial to informing the investment decisions of all stakeholders - individuals, businesses, governments and international organisations alike. Indeed, as Little (2003) argues, it is the notion that individuals maximise their interests through the accumulation of human capital that has forged the development of government policies on education and validated the rapid expansion of education systems around the globe. That a greater collective stock of human capital leads to increased economic growth underpins the push for the mass expansion of schooling as adopted by the EFA initiative, Millennium, and Sustainable Development Goals. Significant aid resources have been invested in education in support of this approach.

Education also has an intrinsic value for human development that cannot be overlooked (Sen 1999). The capability approach to development, as an extension of human capital theory, has been extremely influential in amplifying the development paradigm to account for human well-being as well as the advancement of economic growth. Irrespective of whether the outcomes of education are economic or human growth - or indeed a combination of the two - understanding the impact of foreign aid on education in developing countries is of critical importance.

Building on the theoretical rationale citing the importance of education in both human and economic development, education is viewed as one of the strongholds of development strategies for Africa and consequently among the foremost sectors apportioned development aid on a sizeable scale. It is worthy of note that the earliest instances of serious investment of development assistance in education are roughly contemporary with the revolution in economic thought associated with human capital investment that was initiated by Schultz (1961). In more recent years, aid has been deployed increasingly in support of internationally agreed education goals; however, examination of the impact that aid has had upon economic growth persists as a threat to the future prospects of aid-giving so long as there remains a lack of consensus as to its effectiveness. Aid studies conducted at the macro level have failed to establish the aid-growth link convincingly, leaving open to

debate the questions as to whether additional resources result in improved education outcomes and what role education aid plays in achieving universal primary education.

It is clear from a review of the literature on aid effectiveness that the lack of an obvious causal link between aid and growth - and what the determinants of that relationship might be - can be explained by technical failings, with both positive and negative empirical evidence contingent on the selection of data and estimation methods. Moreover, as Michaelowa and Weber (2006) suggest, the establishment of a reliable model on which to build effective aid allocation is hindered by the array of confounding factors that shape economic growth and make it difficult to tease out the relationship. At the same time, the call for increased aid effectiveness has become ever louder around the globe. Recent contributions to the aid literature point to the need for sectoral level assessments in order to acquire a more accurate picture of aid effectiveness (Findley 2010). Putting aside the implications of education aid for growth in general, or even for human growth, it is imperative for us to understand whether donor aid accomplishes the short-term targets upon which it is focused. The direct aid outcome to evaluate is: does education aid increase enrolment? If children are not in school, it becomes impossible to determine whether aid has any impact beyond the very simple equation of whether education aid inputs result in education enrolment outcomes - whether it contributes to the quality of education, or indeed whether those children contribute to economic growth through enhanced productivity or whether they go on to take advantage of the 'capabilities' that an education bestows.

Any empirical assessment of the effectiveness of education aid must overcome the issue of agreeing the aims and purpose of aid, and consequently the benchmarks against which achievement should be measured. As this literature review has shown, donor opinion has continually fluctuated between the extreme views that aid for education is most usefully allocated with the intention of assisting the poor directly, or that it is best apportioned with the purpose of accelerating the process of wealth creation, contributing to poverty reduction indirectly. This is related to the issue of determining a suitable time span over which to assess the outcome.

Most often, enrolment rates are considered as the dependent variable for education aid effectiveness studies, both because they relate to the MDGs and because they have the best global availability. Initial studies by Michaelowa and Weber (2006), Dreher, Nunnenkamp et al. (2008) and Christensen, Homer et al. (2011) find fairly tentative positive correlations

between education aid and education outcomes, suggesting that aid has a positive influence on school enrolment but that this relationship is not so substantively significant. These results should, however, be treated with a degree of caution as, given that the field of study has emerged only in the past decade, they have not been subjected to the same level of scrutiny as much of the aid-growth research.

The present research therefore scrutinises the rationales upon which these models are built in order to develop a strong conceptual framework as a basis for an improved model for exploring the question of aid effectiveness in the education sector. It also draws on key themes in the broader macroeconomic literature on aid effectiveness that plausibly propose country heterogeneity to be an important influence upon the impact of aid. This study does not suppose the effect of aid to be homogenous, as it is invariably treated; rather it is assumed that differences in the very distinct development environments (in terms of economic and political governance, the extent of poverty, and the presence of conflict) into which aid is disbursed dramatically affect the impact that aid will have upon education outcomes.

Understanding how aid reacts under 'good' or 'bad' policy conditions, when given in contexts of dire need, or in a situation where a country is emerging from conflict - is essential to our understanding of how aid can be allocated effectively. In a world increasingly concerned with interrupting the spread of global terrorism and aware of the economic interdependency of nation states, ensuring that aid flows meet the needs of the poorest - invariably those living in so-called 'fragile states' - is critical. In order for aid to have a beneficial effect, the above literature review has shown that it is vital to understand precisely how aid functions under different development scenarios. The extensive literature on aid and growth - and indeed that of the emerging education aid effectiveness literature - is largely based on the experience of developing countries taken as a whole. Rarely are the characteristics and the circumstances of the recipient country taken into account, and the proposed research offers the opportunity to do so.

The research addresses these gaps in the literature through an analysis of aid effectiveness in the education sector. It goes beyond earlier studies on the effectiveness of education aid to explore the determinants of aid effectiveness and the differing contexts under which aid can be absorbed more efficiently in order to establish a model for aid allocation in the education sector. The research findings will inform policymaking on education aid, in an

attempt to improve aid effectiveness by identifying priorities for aid allocation with a view to managing development aid efficiently in the pursuit of international education goals.

# 3. Methodology

## 3.1. INTRODUCTION

As discussed in the previous chapter, research on the link between aid and economic growth remains inconclusive owing to the large number of possible determinants of growth - the majority of which are highly correlated with each other - that make it a complex task to distinguish statistically between them. The econometric complexities of confirming an obvious causal relationship between aid and growth should not, however, be construed as proof that no such a relationship exists. Rather than attempting to disentangle the myriad of growth determinants, the approach adopted here is to consider whether aid given to a particular sector - education - is effective in achieving its intended purpose; in this case, improving education outcomes, and what the contextual political and economic factors are that influence the eventual impact that education aid has. Closer examination of the effects of sector-specific aid upon sector-specific outcomes may be critical to unravelling the ambiguity of aid effectiveness. Indeed, it is expected to lead to more robust empirical results given the clearer linkage between education aid and education outcomes and the smaller number of intertwined factors often considered in aid-growth studies.

Cross-country research into aid effectiveness at a sectoral level is an emerging area of interest with just a handful of studies specifically addressing the effect of education aid upon measurable outcomes in the education sector (Michaelowa and Weber 2006; Dreher, Nunnenkamp et al. 2008; Christensen, Homer et al. 2010; Birchler and Michaelowa 2015). The research presented in this thesis goes further than these existing studies by expanding the basic model of the education production function applied in the empirical literature to account for the effects of good governance, economic policy and the presence of conflict working through aid in 61 low- and lower-middle-income countries with low and medium EDI scores to reconsider the impact of education aid upon enrolment and completion at the primary level. It does this by measuring the differential impact of education aid when working in countries demonstrating strong political and economic governance, and in contexts where a country is experiencing or emerging from conflict.

Only Asiedu and Nandwa (2007) explore the heterogeneity of aid recipients as an issue that may explain variability in the impact of aid on economic growth. Their study compares the impact of education aid on economic growth across different income groups. Whilst their findings indicate there to be a differential impact of education aid between each of these groups according to the level of education aid allocated, the excessively small sample sizes upon which regressions are run mean that the findings must be considered only as tentative indicators of the impact of education aid by income status. Nonetheless, the research conducted for this thesis also works on the assumption that the effect of aid for education is not homogenous, as it is invariably treated; rather, it is expected that differences in these very distinct development environments into which aid is disbursed affect the impact that aid will have upon education outcomes.

Recognising that a macro analysis such as those conducted by economists while useful in understanding the overall effect of aid - whether and where aid works - they give us little contextual information about aid effectiveness at country level (what works). National data used for such macro analyses should be considered within the broader picture of a dynamic and specific country context that is itself evolving within a larger sub-regional or regional environment. For this reason the data collected for the panel analysis is disaggregated in Chapter 5 to explore issues of aid dependency and the strategic allocation of aid at country level in order to contextualise the findings of the macro analysis presented in Chapter 4. The disaggregated analysis is used to identify interesting countries for further analysis as case studies that are informed by the quantitative data already collected, as well as a review of national level education aid evaluations and relevant government documentation.

The research addresses three broad questions and the following sub-questions in relation to the effectiveness of education aid with the intention of establishing criteria to determine priorities for aid allocation in the education sector:

**RQ.1. What has been the direct effect of education aid on enrolment over time across developing countries?**

RQ.1.1. To what extent has aid directed specifically to primary education contributed to ensuring that, by 2015, children everywhere - boys and girls alike - will be able to complete a full course of primary schooling?

**RQ.2. How does the heterogeneity of aid recipients affect the impact of education aid upon enrolment in, and completion of, primary education?**

RQ.2.1. What are the conditions under which aid has been most/least effective? Is aid given to well-governed countries (as defined by government stability, economic openness, and democratic freedom) more effective than aid to less well-governed countries?

RQ.2.2. How does a country's conflict status affect the ability to absorb additional amounts of aid?

**RQ.3. Are differing patterns of aid effectiveness discernible when exploring aid dependency and allocative efficiency in education?**

RQ.3.1. To what extent are recipient countries dependent upon aid for the financing of their education systems and how does the degree of aid dependency affect the impact that education aid can have?

RQ.3.2. Has education aid during the MDG period been strategically allocated to those countries showing the greatest educational need?

These research questions require a new approach to thinking on education aid. As discussed in the previous chapter, the academic literature on external educational assistance can be divided broadly into three main areas. First, is that which examines the 'aid process', the nature of aid negotiations and agreements (the donor-recipient relationship); the capacity of actors involved; as well as the structures and management of education aid - the information base from which education policy decisions and decisions about aid are taken, as well as the planning capabilities necessary to help 'systems-as-aided' cope with demand (see, for example, Hopkin 1994; Casely-Hayford, Palmer et al. 2007; Wang 2007; Brannelly, Ndaruhutse et al. 2009; Malik and Naveed 2012).

Second, is the record of educational assistance and lessons gained from experience. This is largely concerned with the type and level of education aid that is most appropriate and with documenting experiences of previous periods of educational assistance in order to re-evaluate current approaches (Hawes and Coombe 1984; King 1991; Leach 1999; King and McGrath 2012). Linked to these two areas is a third strand in the literature on development

assistance in the education sector that is related to aid effectiveness. This explores the role of education aid, defining its purpose and priorities, as well as the mechanisms and modalities through which education aid can be delivered most efficiently. Discussion is invariably preoccupied with the coordination, harmonisation and alignment of aid for education as proposed by various aid declarations (refer to IMF and World Bank 2002; Sperling 2006; UNESCO 2012a).

Although a handful of academics have written on the global patterns of education aid (see Lewin 1994; King and Buchert 1999; Chisholm, Bloch et al. 2008; King and McGrath 2012), much of the discussion around aid effectiveness in the education sector has been informed by donor-commissioned aid evaluations and case study research conducted at individual country level. Whilst this research is enormously valuable in its own right, providing a rich account of the processes and experiences of international educational assistance, the conclusions that may be drawn are limited to the country context within which they were carried out. Indeed, with ever-greater international aid co-operation in the development community and clearly established international goals for education, there is a very obvious market for empirical analysis that ventures to interpret the impact of education aid beyond the borders of a single country.

There is an obvious gap in the development education literature that requires a marrying of these macro and micro perspectives in order to explore whether aid for education is effective and where it can be best directed - whether it should be given to those countries demonstrating the greatest educational 'need' or to those able to use it most effectively. Addressing this gap is important, as the successes usually attributed to education aid are, inevitably, also the product of national policies, economies, politics, demographics and other factors related to country circumstance. As such, for those interested in understanding whether education aid works and under what conditions, it is necessary to apply a mixed-methods approach to research on aid effectiveness - employing econometric techniques to large datasets containing observations for a wide range of countries across the developing world in order to disentangle the effects of these political and socio-economic variables from the true effect of education aid and disaggregating this to data to offer a more descriptive analysis of the workings of education aid at country level in order to explain the findings.

A major contribution of this research is that it constructs a publicly available panel dataset drawing on recognised international statistics allowing for examination of the direct effect

of aid on education over time across developing countries, and the conditions that have influenced it. Rather than through a comparison of aggregates over time as in cross-sectional studies that address the relationship between aid and economic growth, panel data contains repeated observations of countries, helping to produce stronger causal interpretations. Two panel data sets have been constructed to address the research questions and allow for econometric analysis of the impact of education aid upon education outcomes. The first, a long-term structural panel, covering aid flows over the period 1970-2013 is employed to examine the overall effect of aid to education over several decades and the conditions under which it has been most effective. It permits the analysis of absorptive capacity constraints and whether education aid is subject to diminishing returns, allowing for conclusions to be drawn as to where aid for education might be most efficiently allocated. The second data set, a short-term annual panel, covering the period 2000-2013 has been designed specifically to depict the effect of aid on education under the more recent model of donors contributing to country-owned education strategies in the wake of the MDGs announcement in 2000.

The chapter contains a discussion of the methodological issues that arise in the study. It starts by discussing the rationale for adopting a mixed-methods approach to the analysis of aid effectiveness in the education sector and moves on to consider the research design adopted to address each of the research questions.

## 3.2. AN INTRODUCTION TO MIXED METHODS

Colclough (2012) advocates the use of mixed-methods research to provide additional layers of explanation and insight that single-method studies tend to be denied. A number of academics have expounded the benefits of combining qualitative and quantitative approaches to research (Bryman 1988; Bryman 2009; Creswell 2009; Creswell and Plano Clarce 2011). The intention when combining the two approaches is to retain the strengths and minimise the weaknesses of each (Bergman 2009).

There is a great deal to be gleaned from combining methodological approaches, as together they can be used to produce more complete knowledge that is necessary for informing theory and practice (Johnson and Onwuegbuzie 2004). In the case of the present research the benefits of combining macro quantitative analysis with a descriptive account of aid effectiveness at country level is the insight that such a perspective offers – complementing

findings on the effect of education aid across a large swathe of countries with accounts of where aid has had an impact and where it has not, thereby allowing for the diversity in patterns of aid effectiveness to be illuminated.

As Creswell (2009) argues, the overall strength of a mixed-methods approach is more beneficial than use of qualitative or quantitative methods individually. The adoption of a mixed-methods approach offers insight and understanding that may be otherwise missed if only a single method is applied (Johnson and Onwuegbuzie 2004), and the use of multiple methodologies increases the possibilities for generalisation (Bryman 1988). The approach improves the ability to achieve findings that are more trustworthy and relevant than if each method were used separately. Moreover, it offers stronger evidence for the conclusion through the merging and corroboration of findings. By combining qualitative and quantitative approaches, and through triangulation, the researcher's claim for validity is enhanced if it can be demonstrated that there is mutual confirmation of results (Bryman 1988). In complementary mixed-methods research, which is applied in this thesis, findings from one dominant method – in this case the quantitative method - are strengthened and improved through findings from another method – by employing a case study strategy to examine issues of aid effectiveness at country level (Greene and Caracelli 1997).

A key design component in mixed-method research is whether the research methods are implemented in a parallel manner or in a sequential manner (Teddlie and Tashakkori 2009). Sequential mixed method research, as adopted in this thesis, refers to an investigation in which the phases of the research occur in a consecutive order, with one phase emerging from or following on from the other. The research questions addressed as well as the procedures used in one phase depend on the previous phase. The following sections of this chapter consider the methods adopted to address each of the research questions in turn.

## 3.3. A QUANTITATIVE APPROACH

Aid effectiveness studies are, in general, carried out by donor agencies, based largely on qualitative evidence obtained at the micro level in the form of project evaluations (White 2005; Banerjee 2007). Evaluation is deemed an important tool to ensure the effective use of development aid; but that the majority of aid evaluations are self-initiated by donors clearly presents a symbiotic challenge. Indeed, Michaelowa and Borrmann (2006) estimate that between 70 and 90 per cent of evaluations demonstrate the 'success' of development aid.

Such high success rates might raise questions about the motivations for evaluations to find positive outcomes, as it does not require a great leap of logic to suppose that successful projects will enhance the promotion of particular policies and programmes and help to attract additional resources. There are strong grounds on which to believe this to be the case. Project evaluations have been found to be subject to distortion due to aid agencies' conflicting objectives of transparency and self-legitimisation, and the potential collusion between evaluators and project managers (Hodson 1997; Easterly 2002; Martens 2002).

Certainly, there exist strong incentives for aid projects to be found to work. In the case of bilateral aid, voters mandate politicians to provide development assistance. This mandate is delegated to the relevant ministry and, onwards, to public and non-governmental aid suppliers. In recipient countries, the directive is passed on to those responsible for representing donor agencies, to local NGOs and consultants, as well as partner institutions. In the case of multilateral aid, aid agencies receive their mandate from the policy representatives of member states, each of which is responsible for briefs designated by different groups of voters. The chain of responsibilities at the recipient country level in this case is shorter with development cooperation from multilateral agencies primarily composed of comprehensive, strategic projects or programmes determined at national level by the recipient country government.

As Michaelowa and Borrmann (2006) argue, members or institutions at each level of the chain have particular goals in mind which will not necessarily correspond with the objectives of their immediate principal, or indeed, with the objectives authorised by voters. All reports requested of an agent by his direct principal will pass "the filter of the agent's specific utility function". In such contexts, they argue, it appears unlikely that voters in donor countries, at the end of the chain and without any direct contact to the final beneficiaries, are supplied with realistic information on aid effectiveness. "Each principal (up to the ministry) is himself the agent of some other principal (up to the voter), and therefore has a genuine interest in having his work appear successful" (Michaelowa and Borrmann 2006: 314). Even though a recent OECD (2010) member survey suggests that the independence of evaluations conducted by donor organisations is improving as the direct result of competitively recruited consultants to conduct evaluations, it maintains that little progress has been made in ensuring independence in the selection of evaluation objectives and the setting of the evaluation budget.

A further controversial yet persuasive argument against the current doctrine in aid evaluations has been made by Banerjee (2007) who argues that there should be less focus on process and more on outcomes in order to increase the efficiency and efficacy of development aid. Banerjee argues that the current approach to aid evaluations - imparted using weak evaluative tools and inappropriate methods and inference - contributes to a lack of consensus around the simplest of questions: what works? Poorly conducted evaluations, he stresses, only reinforce the arguments of the aid pessimists. Banerjee's (2007) solution is to import the use of RCTs, as applied to drug trials, to address questions of aid effectiveness. There is no doubting that Banerjee makes some salient points in his contestation of an overreliance upon anecdotal evidence to assess the impact of aid projects, and in support of his call for a more systematically rigorous approach to analyses of what works in development assistance. That said, RCTs may not always represent the most appropriate solution to evaluations of aid - and particularly so in the case of education. Questions over the scale and reach of evaluations are a key sticking point. Whilst RCTs should be implemented wherever possible and may be appropriate to small-scale interventions, in the case of education, schools and teachers are necessary - whilst not sufficient conditions - for a child to attend school and learn. Akin to expansive policy reforms and extensive infrastructure projects, these critical aspects of the schooling system cannot be subject to randomisation (White 2007). Moreover, aid flows are now composed of significantly less project expenditure. The use of direct budget and education sector budget support severely impedes the potential use of RCTs to evaluate the impact of aid to education (Moore 2007).

Rightly or wrongly, the MDGs represent an outcome rather than process-driven development agenda (Burnett and Felsman 2012; Unterhalter 2013; Lewin 2015a) that in many ways is suited to large scale quantitative evaluations. Indeed, the formulation of the MDGs has encouraged the collection and use of better statistics - the annual publication of the EFA Global Monitoring Report that keeps abreast of progress towards international education goals is reflective of this. While some goals such as 'quality education' are difficult to measure or find appropriate indicators for, the quantifiable indicators and targets that make up the MDGs allow for assessments of progress that were unthinkable prior to their inception.

The approach adopted in this study builds upon this momentum. Whilst appreciating the importance of process and its concomitant dimensions including greater participation, empowerment and structural change, the study is reliant upon ever better international

statistics and quantitative methods of analysis to address development's most evasive
question - does aid work? (and if so, when?)


### *The Quantitative Paradigm*

The research methods applied to address research questions 1 and 2 rely upon the use of
comparative international statistics and econometric methods of analysis to address the
research questions. For quantitative-oriented research paradigms, knowledge is reasoned to
be 'conjectural', making it difficult to establish absolute truths (Reichardt and Cook 1979:
10). It is believed that it is data, evidence and rational consideration that ought to shape
knowledge (Creswell 2003: 6). Researchers working within this paradigm are concerned
with fact and seeking the causes of social phenomena. Little consideration is given to the
'subjective states of individuals': knowledge has to be observed and empirically verified
(Reichardt and Cook 1979: 10). Ideally, therefore, quantitative approaches are deductive in
that a researcher starts with a theory (or set of theories), formulates hypotheses, collects
data to verify or 'falsify' those hypotheses and then makes any necessary revisions to the
theory or theories that he started with (Creswell 2003).

Quantitative research supposes philosophical assumptions, often associated with
positivism, that guide the direction of quantitative approaches adopted in the many phases
of the research process. Positivism contends that the scientific method is the best approach
to exposing the processes by which both physical and human events occur. Positivists
deem reality to be stable and, as such, witnessed and described from an objective viewpoint
(Levin 1988). They argue that phenomena should be isolated and that observations should
be replicable. This invariably requires manipulating reality through changes in a single
independent variable in order to detect regularities in, and to create associations between,
constituent elements of the social world. Predictions may be formed on the grounds of
observed and explained realities and their inter-relationships. The assertion made by
Positivists is that authentic knowledge is only that which is based on sense experience and
positive verification.

Passionate accounts of positivism no longer remain in favour in the contemporary social
sciences. Today, proponents of positivism recognise the issues of observer bias and
structural limitations, shunning concern with the metaphysical in support of
methodological discussion related to reliability, replicability and validity (Gartell and Gartell
1996). This positivism is, in the main, associated with quantitative research and thus carries

no explicit theoretical or philosophical commitments. The foundation of this brand of sociology is frequently attributed to Paul Lazarsfeld who led the way with large scale surveys, developing the statistical methods necessary to analyse them (Wacquant 1994).

It was Lazarsfeld and Fiske (1938) who published the first systematic statement on the technique of panel analysis and Lazarsfeld, Berelson et al. (1944) who used the pioneering techniques to conduct the first major panel study - a study of voter decision making during the 1940 United States presidential election campaign. Panel designs have since become increasingly popular as a research design, in a variety of sociological, political, and economic areas.

## 3.4. RESEARCH DESIGN

### 3.4.1. Panel Data

A retrospective panel research design is considered most appropriate to addressing the research problem. The retrospective panel design implies that data is collected at a single point in time for several periods. Rather than comparing aggregates over time - as was the practice of economists exploring the relationship between aid and growth up until the late 1990s - panel analysis compares repeated observations of individuals or countries. Where constancy is present in the aggregate, it may obscure the dynamic nature of macroeconomic relationships at the individual country level (Lloyd, Morrisery et al. 2001). Panel analysis can help to identify this and consequently establish more persuasive correlations. Further benefits of panel designs are that they allow for the establishment of temporal order; the measurement of change; and making stronger causal interpretations (Ruspini 2002). This is important as the research questions are concerned with understanding the correlations between aid and education outcomes, and especially whether particular development settings impact upon the degree of aid effectiveness.

Panel research designs seek to identify the causes of social phenomena, with the temporal ordering of events helping to distinguish causality (Ruspini 2002). They allow the composition of causality intrinsic to social processes to be recreated as a particular sequence of events leading to a certain state (Leisering and Walker 1998). Not only does this allow the researcher to study countries which at different points in time find themselves caught within a specific situation, such as conflict or low economic growth; but

also to examine the flows, into and out of such a situation, thus opening up many paths for both causal analysis and for inference (Duncan and Kalton 1987).

Three criteria are essential to establishing the existence of a causal relation between variables: (i) covariation - the variables of interest must be statistically associated; (ii) non-spuriousness - the relation must not be due to the effects of other variables; (iii) temporal order of events - variations in cause must intervene before variations in effect (Ruspini 2002). A fourth criterion for establishing a causal relation, not always apparent in the literature, is the importance of theory. Causal inferences cannot be made directly from empirical designs. Causal influence is theoretically driven, with causal statements based primarily on substantive hypotheses developed by the researcher (Ruspini 2002).

The first two criteria can, theoretically, be tested by employing data from cross-sectional studies. Evidence relevant to the third criterion is usually only acquired using a panel research design that offers information about the temporal order of the nominated 'cause' and 'effect' variables. Moreover, in relation to the fourth criterion, only panel designs can truly test whether the research hypothesis stands as they allow for the construction of more complicated behavioural models than purely cross-sectional or time-series data (Davies and Dale 1994). Specifically, panel designs - in this case a retrospective panel design - allow models to be built that are better able to account for the complexities in the way in which countries' circumstances evolve as the result of government policies, socio-economic factors, population dynamics and so forth. Such models allow for greater control over variables that are, inevitably, omitted from any analysis.

As the purpose of this research is to establish whether there exists a correlation between education outcomes and the provision of education aid, a retrospective panel design is deemed most appropriate as it allows for examination of whether such a causal relation exists by looking at aid and education outcomes across countries over more than a forty year period (1970-2013), whilst controlling for other explanatory variables. Estimating a panel data model solves many issues encountered in traditional methods of comparative research. Several reasons support this. The first reason concerns the 'small N' issue encountered in both cross-section and time-series analysis. The limited available data and restricted number of spatial units over time violate basic assumptions of standard statistical analysis. Invariably there is disproportion in the number of explanatory variables (where there may be too many) and cases (where there may be too few), therefore exceeding the degree of freedom necessary for modelling the correlation between the dependent and

independent variables. Panel designs, on the contrary, allow for a relaxation of this restriction. This is because the cases are 'country-year' (NT observations) beginning with country $_i$ in year $_t$, then country $_i$ in year $_{t+1}$ through country $_z$ in the final year of the period being examined. This allows for testing of the effect of numerous explanatory variables on the level and change in the response variable within the context of a multivariate analysis (Schmidt 1997).

Second, panel models permit inquiry into variables that elude study in simple cross-sectional or time-series analyses. For example, many characteristics of national systems (e.g. economic factors, governance, the degree of democracy) tend to be temporally invariant (Podestà 2002). Regression analysis of pooled data merging time and space may depend on greater variability of data when compared to a simple time-series or cross-section research design (Hicks 1994). Due to the complex nature of country behaviour - their economic, social and political dimensions - and as a result of limited capacity to model it, there is always considerable heterogeneity in the response variable, even among countries with the same characteristics. The effect of unobserved individual characteristics, which generally do not vary over time, can severely weaken the findings of cross-sectional analyses, as parameter estimates will be inconsistent. Use of longitudinal information permits better checks for the effects of missing or unobserved variables, satisfying the effect of unobserved heterogeneity - a key econometric problem that often arises in empirical studies - namely the assertion that certain effects are found (or not found) because omitted variables are correlated with the explanatory variables. This issue is resolved by taking advantage of there being time invariance in the unobserved individual characteristics - a credible supposition in most instances - and by the availability of repeat observations on the same individuals (Hsiao 1985; Hsiao 1986; Mátyás and Sevestre 1996; Trivellato 1999).

A third reason for employing a panel research design relates to the possibility for describing not only the variation of what emerges through time or space, but also the variation of these two dimensions concurrently. This is because, rather than testing a cross-section model for all countries at one point in time or a time-series model for a single country for which time-series data is held, a panel model can be tested for all countries through time (Pennings, Keman et al. 1999).

Given the overriding benefits of a panel research design as compared to a cross-sectional design, two panel data sets have been constructed to address the research questions and allow for econometric analysis of the impact of education aid upon enrolment and

completion at the primary level. The first, a long-term structural panel, covers education aid flows over the period 1970-2013. The design of the structural panel is based on the notion that educational outcomes such as enrolment will have a tendency to respond to long-term advances in the education system, education policy environment, and availability of resources as opposed to short-term changes in any of these variables. As such, annual data generate excessive noise, an issue that can be avoided by smoothing data over a number of years. For the purpose of this research, data available for all variables was therefore averaged over the five-year periods 1970-1975, 1976-1980 and so forth. This approach of 'smoothing' data in this way has been adopted elsewhere in the economics of education literature (see McMahon 1987; Oketch 2006). This provides a structural panel data set for the study of aid effectiveness; in this case, of the effectiveness of aid directed toward activities in the education sector over several decades and the conditions under which it has been most effective. It permits the analysis of absorptive capacity constraints and the questioning of whether education aid is subject to diminishing returns.

The second data set, a short-term annual panel, contains information on aid activities between 2000-2013. The purpose of reducing the length of the time-series to include aid activities in only the most recent years is to capture any specific effect of education aid following the advent of PRSPs and the increased use of 'programme' aid (budget support) - theoretically a period in which aid policy has been more 'recipient-led' - at the same time as allowing for analysis of the effect of education aid since the inception of the MDGs.

The long-term structural panel allows for questions concerning the overall effect of total education aid commitments on primary enrolment and the impact of recipient country heterogeneity (with regard to the quality of governance and conflict status) in influencing aid's eventual impact to be addressed respectively; whilst the short-term annual panel permits examination of the more specific effect of primary education aid disbursements on primary completion rates and gender parity - offering insight into whether the MDGs and the 'recipient-led' aid architecture that came about in the late 1990s have noticeably had greater success in promoting outcomes at the primary level.

### 3.4.2. Sample

Data is collected for countries expected to receive aid to contribute to primary enrolment growth based on the extent of their educational need and their capacity for raising

resources for education domestically. In order to determine a suitable group of countries, those included in the analysis had both an EFA Development Index score of 0.95 or less and are classed as low- or middle-income.

The first step was to identify from the 193 UN recognised member states, countries flagging in their progress towards the Education for All goals. The EFA Development Index (EDI) is a composite index published by UNESCO capturing progress towards four of the six EFA goals - universal primary education, adult literacy, quality of education and gender - selected on the basis of data availability. Each indicator for the four EDI components is assigned equal weight in the overall index. The EDI value for a given country is the mean of the four proxy indicators. Each variable is expressed as a percentage - the higher the EDI value, the closer a country is to achieving Education for All. Countries included in the analysis had an EDI score of less than 0.95 - classed as low or medium EDI - in the EDI (2015) ranking.

Many countries are still excluded from the EDI, among them a number of countries in conflict or post-conflict situations and countries with weak education statistical systems (UNESCO 2016). Given that not all countries in need of aid for education are likely to be captured by the EDI, the second step in selecting countries into the group for analysis of aid effectiveness was to include those classified by the World Bank (2015b) as low- or lower-middle income as defined by their GNI per capita, calculated using the World Bank Atlas Method. Low-income countries have a GNI per capita of $1,045 or less and lower-middle-income countries between $1,046 and $4,125.  Whilst GNI per capita cannot entirely summarise a nation's level of development or measure welfare, it proves a useful and readily available indicator that is closely correlated with other, non-monetary measures of the quality of life, including life expectancy at birth, child mortality rates, and school enrollment, and as such are likely recipients of aid for education. Colclough (2012) argues that low-income countries meet many educational needs criteria. There are 28 countries classed as low- and lower-middle-income in 2015 for which no EDI score was available (see Table 3 below).

Upper-middle and high-income countries are not included in the analysis, as many of these countries have already achieved or are close to achieving the goal of universal primary education and may therefore be focused on other goals. They are also expected to have the facility to raise the necessary resources domestically to finance their education systems. The approach to selecting countries raised only one contentious country – Angola, which

recently transitioned to become an upper-middle-income country but which has a low EDI score of 0.67. Following the country selection framework, Angola is not accounted for in the final sample countries, but it is included in the sensitivity testing of the multivariate analysis described below, with no obvious effect upon the outcome of the final results. Other countries which had EDI scores of less than 0.95 but which are classed as upper-middle-income include Columbia (0.93) and the Dominican Republic (0.90), neither of which has historically been the recipient of significant educational aid programmes.

Finally, countries classed as Small Island Developing States by UN - Cabo Verde, Comoros, Guinea-Bissau, Guyana, Haiti, Kiribati, Micronesia, Papua New Guinea, Samoa, Sao Tome and Principe, Timor Leste, Solomon Islands, Vanuatu were removed in order to address the potential for small country bias - as aid will never have the same impact on India as in Comoros. Countries with insufficient data on enrolment and completion rates - the Democratic Republic of Korea and South Sudan - were also removed. This left a final sample of 61 countries containing approximately 90 per cent of the children who remained out of primary schools in developing countries in 2013 and 84 per cent of the global total.

**Table 3: Final Country Selection for Analysis of Education Aid Effectiveness (61 Countries)**

| Country | EFA Development Index | Income Group | Country | EFA Development Index | Income Group |
|---|---|---|---|---|---|
| Afghanistan | | L | Lesotho | 0.8 | LM |
| Armenia | | LM | Liberia | | L |
| Bangladesh | 0.78 | L | Madagascar | | L |
| Benin | 0.66 | L | Malawi | 0.76 | L |
| Bhutan | 0.86 | LM | Mali | 0.69 | L |
| Bolivia | 0.93 | LM | Mauritania | | LM |
| Burkina Faso | 0.69 | L | Morocco | 0.86 | LM |
| Burundi | 0.83 | L | Mozambique | 0.72 | L |
| Cambodia | | L | Myanmar | | L |
| Cameroon | 0.82 | LM | Nepal | 0.76 | L |
| Central African Republic | 0.56 | L | Nicaragua | | LM |
| Chad | 0.53 | L | Niger | 0.56 | L |
| Congo, Dem. Rep. | | L | Nigeria | 0.72 | LM |
| Congo, Rep. | | LM | Pakistan | 0.66 | LM |
| Côte d'Ivoire | | LM | Paraguay | 0.9 | LM |
| Djibouti | | LM | Philippines | | LM |
| Egypt, Arab Rep. | 0.9 | LM | Rwanda | 0.8 | L |
| El Salvador | 0.93 | LM | Senegal | 0.74 | LM |
| Eritrea | 0.64 | L | Sierra Leone | | L |

| Country | EFA Development Index | Income Group | Country | EFA Development Index | Income Group |
|---|---|---|---|---|---|
| Ethiopia | | L | Somalia | | L |
| Gambia, The | 0.75 | L | Sudan | 0.73 | LM |
| Georgia | | LM | Swaziland | 0.92 | LM |
| Ghana | 0.86 | LM | Tanzania | | L |
| Guatemala | 0.9 | LM | Togo | 0.79 | L |
| Guinea | | L | Uganda | | L |
| Honduras | 0.87 | LM | Ukraine | | LM |
| India | | LM | Vietnam | | LM |
| Indonesia | 0.94 | LM | Yemen, Rep. | | LM |
| Kenya | | L | Zambia | | LM |
| Kyrgyz Republic | | LM | Zimbabwe | | L |
| Lao PDR | 0.85 | LM | | | |

*Source: EDI (2015) and World Bank (2015b)*

Other studies exploring the link between aid and education outcomes have selected countries into their research on the basis of income - accounting for low-, lower-middle- and upper-middle-income countries (Michaelowa and Weber 2007b; Dreher, Nunnenkamp et al. 2008; Christensen, Homer et al. 2011; Birchler and Michaelowa 2015). As stated above upper-middle income countries are unlikely to receive much aid for primary enrolment growth and whilst GNI per capita is a popular means of country selection in econometric analyses of aid, it is certainly not the only criteria used for allocating aid. Moreover, well-recognised associations of aid with richer rather than poorer developing countries may confound attempts to establish the independent effect of aid on educational participation. The approach adopted here that recognises both a country's 'need' for aid as well as its ability to allocate funds domestically to the education sector, is proposed by the researcher as a more accurate reflection of education aid in practice.

### 3.4.3. Model Specification

The conceptual framework guiding the model specification supposes that additional investment in education spending, in the form of aid to education, will result in an improved impact upon education outcomes. Additional resources to finance education resulting in the building of schools, the hiring and training of teachers, the provision of free textbooks and other supplies for pupils, and so forth, ought to improve both the quantity and quality of education. Indeed, anecdotal evidence from a number of countries indicates that education aid results in reduced levels of absenteeism in addition to improved

enrolment and retention rates (Asiedu and Nandwa 2007). The positive association between education aid and enrolment rates is also consistent with some early empirical findings (Michaelowa and Weber 2006; Dreher, Nunnenkamp et al. 2008), although Christensen, Homer et al. (2010) find there to be no effect of education aid on enrolment and only when education aid is decomposed by donor type – with aid from bilateral donors shown to have an effect (2011).

The research questions are addressed by looking beyond aggregate assessments of the effectiveness of education aid found in these few existing empirical studies on this topic, to explore whether aid might be more effective in particular development settings than others - contexts of good political and economic governance as well as in countries experiencing or emerging from conflict. It assumes that the effect of aid is not homogenous and will be influenced by these factors.

### *Dependent Variable*

As a starting point for the model employed here it is stipulated that the allocation of aid to education is meant to support the local education system by providing goods and services not efficiently delivered by the existing education system. Enrolment rates are an effective method for assessing the delivery of services by a local education system, as low enrolment rates suggest that students and families either do not have the opportunity to enrol in primary school, or are persuaded not to do so by the poor quality of education that results from an inadequate supply of school buildings, teachers, supplies etc. (Lewin 2007). Presumably, aid to education should address both of these problems. Education aid programmes are generally intended to reduce the cost of education for the end user by providing financial support to the national education system; through the building of new infrastructure; and by providing improved teacher training, as well as better curricula and learning materials. If aid improves access to, and the quality of, education in recipient countries, then enrolment rates would be expected to increase as a result of these programmes.

It could be argued that it would be preferable for a study of education aid effectiveness to focus on the quality of schooling rather than on schooling 'quantity': on these grounds, Hanushek and Wößmann (2008) question whether EFA and the MDGs may be misguided because of their focus on the quantity of education as opposed to its quality. However, although the quality of education may be conceptually superior as an outcome of education aid, it remains a contested concept, largely due to the fact that it is notoriously difficult to

measure. Breton (2011) finds this to be the case, presenting empirical evidence finding the quantity of schooling statistically superior to measures of education quality when explaining differences in GDP per capita across countries. A further measure of educational outcomes, gender parity, is included in some of the regressions for primary education run on the short-term annual panel as this is an area in which it would be expected that donors concentrate their aid for primary education given the importance that the MDGs place upon the education of girls.

In order to measure the effect that aid has upon education outcomes, a structural enrolment equation is estimated that includes aid for education and other explanatory variables specifying the education system. The selection of control variables is based upon the literature relating to education outcomes. Schultz (1988) models country education systems using a production-demand framework, an approach followed by Roberts (2003) and Baldacci, Guin-Siu et al. (2003), among others. The concept of a social production function has been used in the literature exploring the relationship between government expenditure and social outcomes. The concept is considered well suited to measuring the relation between education outcomes and measurable educational inputs (Hanushek 1995; Birchler and Michaelowa 2015).

### *Explanatory Variables*
Roberts (2003) discusses the expected predictors of education enrolment in terms of supply and demand factors. The supply factors most commonly cited in the education production-demand framework are domestic spending on education and the pupil-teacher ratio. Education aid is included as an additional supply-side factor as it is assumed that additional resources allocated for the purpose of improving the provision of education ought to result in improved educational outcomes.

The main explanatory variable of interest to this is study is education aid. It is assumed that increased aid spending ought to increase participation in education by reducing the cost, and increasing the quality, of education through the provision of additional financing in support of the national education system. The direction of the relationship between education aid and education outcomes might not be altogether clear, however, as donors are likely to allocate aid to countries demonstrating greater need (i.e. with lower rates of enrolment in education) meaning that the possibility of an endogenous relationship between aid and enrolment needs to be addressed, an issue that is discussed later in this

section. Aid may not necessarily have an impact upon education outcomes in the short term and its impact might, therefore, only be perceived in the medium to long-term - prompting the inclusion of a lagged aid variable. A lag of aid over the previous period is included in models run on the short-term annual panel, to explain the fact that the impact of education disbursements may not be automatic. A non-linear specification of aid (aid squared) is also accounted for in order to depict the potentially decreasing returns to aid investment and to assess individual countries' capacity to absorb additional amounts of aid. This is a common feature in the literature on aid and growth (see, for example, Dalgaard, Hansen, and Tarp 2004).

It seems logical that domestic expenditure on education likewise ought to boost enrolment by affording greater access to education. Increased public spending on basic education, it is argued, should allow not only a greater proportion of the population to complete primary and secondary education, but also improve each student's preparation and ability to complete tertiary education (Bergh and Fink 2006). However, Dreher, Nunnenkamp et al. (2008) conclude from their findings that domestic spending on education has virtually no effect on education outcomes. Rajkumar and Swaroop (2008), on the other hand, who specifically analyse the effects of government spending on health and education outcomes, deduce that public spending improves education outcomes in well-governed nations, but has no impact in poorly-governed countries. In spite of the inconclusive findings in the econometric literature on this topic, the inclusion of public education expenditure is a standard feature of education production functions due to it being the most significant source of funding for national education systems (Lewin 2012), and is thus accounted for in the present study.

Student-teacher ratios are a much-discussed aspect of education; with academics querying why in developed countries reduced class size has been shown to increase education outcomes (Krueger and Whitmore 2002), while the effect of pupil-teacher ratio is consistently found to be insignificant in low-income countries (Banerjee, Cole et al. 2007; Duflo, Dupas et al. 2007). Duflo, Dupas et al. (2007) suppose that the insignificant effect of smaller class sizes in poorer countries might be due to weak governance reducing the impact of additional education expenditure. In contrast to much of the rest of the literature on education outcomes which proposes there to be no correlation between class size and education outcomes, Michaelowa and Weber (2006) find high pupil-teacher-ratio to exert a significant and negative effect on completion, which they argue may reflect reduced demand for education and earlier drop-out in the case of crowded classrooms. They

suggest that parents' perception is clearly that crowded classrooms are problematic and that demand is affected by such perceptions independently of whether these perceptions are justified or not.

On the demand side, factors regularly cited in the literature pertaining to enrolment are: per capita income, percentage of the population that is 'youth', the extent of urbanisation, and adult literacy (a proxy for parental level of education) (see, for example, Huisman and Smits 2009; Kazeem, Jensen et al. 2010).

The per capita income indicator is often used as a proxy for household poverty and reflects demand for schooling (Mingat and Tan 1998; Gupta, Verhoeven et al. 1999; Baldacci, Clements et al. 2004). The Education Policy and Data Center (2008) find, across four studies of education growth, that inequality in enrolment is the product of disparity in pupil income; in almost all cases, the poorer the pupils, the smaller the enrolment rates.

The size of the school population is deemed to be reflective of the relative demand for education. This variable is included with the purpose of holding constant the degree of strain that the composition of the national population places on the education system. Countries with a greater percentage of the population aged less than 15 have the potential for more students to be enrolled in education and a smaller percentage of adults to provide and pay for schooling. Gupta, Verhoeven et al. (1999) report that the share of the population under 15 exerts a strong influence on enrolment. Michaelowa and Weber (2006) also find that a relatively high share of youth significantly increases the difficulties in reaching high completion rates.

The extent of urbanisation is also supposed to effect enrolment rates, although the evidence for this is mixed with Dreher, Nunnenkamp et al. (2008) finding the variable to be insignificant, whilst Fafchamps and Wahba (2006) find that in the case of Nepal, children living in urban areas are more likely to attend school than those living in rural areas.

Adult literacy is invariably included in enrolment equations to account for the large effect that parental education is likely to have on education enrolment rates. Though previous literature uses this data as a key control variable (see Dreher, Nunnenkamp et al. 2008) it is excluded from the present study on the grounds of insufficient data and the high potential for collinearity between literacy and enrolment that could affect other coefficients in the

model. Inclusion of a variable to denote adult literacy was considered problematic due to the large number of missing variables. The measure employed by Dreher, Nunnenkamp et al. (2008), held values from 1975 onward only with the majority (64 per cent) of the countries having just 1 to 4 values over the time span. 64 out of the 234 countries for which the WDI publishes data hold no information on adult literacy rates for the entire time period. On this basis, dropping the variable from the model was deemed preferable.

An additional explanatory variable is included in the modelling of education outcomes. A dummy variable - Period - is included to allow for assessments of whether enrolment has been greater in particular periods as compared to others. Inclusion of this variable is, to the author's knowledge, unique to this study.

The basic equation employed in the modelling of the education aid/enrolment relationship takes the following form:

**Equation 1: The Relationship Between Education Aid and Primary Enrolment**

$$school_{i,t} = \alpha + \beta_1 school_{i,t-1} + \beta_2 aid_{i,t-1} + BX + \eta_1 + \varepsilon_{i,t}$$

$School_{i,t}$ signifies enrolment at primary level in country $_i$ in year $_t$; and $aid_{i,t}$ is education aid expressed per capita. X is the vector of control variables, $\eta_1$ denotes country fixed effects, and $\varepsilon_{i,t}$ signifies the disturbance term.

### *Accounting for Endogenous Relationships*

A serious problem with this basic regression model is that some explanatory variables may not be exogenous. Aid is not randomly assigned, with indicators of need having been shown to be related to aid allocations (McKinlay and Little 1977; Thiele, Nunnenkamp et al. 2007). In the case of education, it is plausible that donors make decisions about the allocation of education aid on the basis of prevailing enrolment rates in recipient countries. It may be supposed that if enrolment rates are high, the recipient's education sector is in less need of external educational assistance. In such a scenario, the effect of aid for education on the enrolment rate would be offset by the effect of the enrolment rate on aid and, as such, the endogenous aid-enrolment relationship would lead to an underestimation of education aid's true impact.

It may also be expected that the relationship between domestic education expenditure and the pupil-teacher ratio with enrolment is also endogenous. Higher primary NERs are the result of more primary-aged children enrolling in primary school, lowering the amount of spending per student and increasing the number of students per teacher. In this instance the causal effect runs from the primary NER toward domestic expenditure and the pupil-teacher ratio as opposed to the other way round.

This potential for endogenous relationships prompts the use of instrumentation. By construct, the system GMM dynamic panel model used to estimate the effects of education aid assumes the explanatory variables to be endogenous by using lags of each variable as their own instrument. On the whole, the option to use a lagged explanatory variable as its own instrument has the benefit of a strong correlation with the initial variable. However, as Michaelowa and Weber (2006) argue, there are certain instances in which it may be difficult to maintain that the instrument is strictly uncorrelated with the error term (a key requirement for a valid instrument). This is particularly the case when endogeneity is attributable to reverse causation - where the dependent variable exerts influence on an explanatory variable. As it is not inconceivable to suppose that education aid donors intentionally allocate aid for education on the basis of educational need (as determined by low primary enrolment and completion rates), or that enrolment rates influence the amount of resources available for spending on education and the pupil-teacher ratio, using a lag of the explanatory variable may not be sufficient for addressing these relationships. Clearly, if current educational aid is affected by current educational outcomes, lagged educational aid will be affected by lagged educational outcomes. It is therefore necessary to include an instrumental variable to address the endogeneity issue.

Addressing endogeneity – in this case caused by simultaneity (interdependence) between the education aid and primary net enrolment variables – is a critical aspect of measuring aid effectiveness. Instrumental variable estimation is used to address the endogeneity issue here. This requires that a variable is found that is correlated with the problem variable but which does not suffer from endogeneity – an *instrumental variable* (IV) that is correlated with education aid, but not with the error term. Michaelowa and Weber (2007a) show success with Energy Aid – which captures all assistance allocated to the production of energy, energy sector policy planning, institution building and distribution management (OECD DAC 2015a). Energy aid is both truly exogenous and found to be correlated with education aid, with the relationship between the two variables significant at the 1 per cent level, indicating that it is an appropriate choice as an instrumental variable for the modelling of

aid on education enrolments and addressing the potential for endogeneity.

### *Introducing Interactions to Explore the Differential Impact of Education Aid*

The heterogeneity of countries is likely to be a significant factor in the effectiveness of education aid - differing political, institutional and economic forces will inevitably impinge upon the absorption and application of aid and its outcomes in the education sector across developing countries. By including interactions, the model tests the extent to which factors related to the quality of governance and presence of conflict, work through aid with the intention of revealing the differential impact of aid for education.

#### *Good Governance*

At the turn of the millennium, World Bank research conducted by Collier and Dollar (1999) initiated serious discussion about aid effectiveness and its implications for aid allocations. The key point of debate was over the importance that good policy plays in determining the degree of aid effectiveness. The authors of the World Bank report argued that aid works best when government policies are good, and that pursuing a more selective allocation of aid to poor countries demonstrating sound policies would lead to larger reductions in poverty. In line with this argument, many bilateral and multilateral donors have reassessed their patterns of aid allocation over the course of the past decade, with a particular emphasis on making aid more performance-based (Benyon 2003; Colenso 2011). Whether and to what extent the impact of foreign aid depends on the quality of policy and institutions has been heatedly debated and remains unresolved in the macroeconomic literature. By including interactions to show how the effect of various governance indicators work through education aid, the question of whether aid for education is more conducive to an improvement in education outcomes when recipient countries are well governed can be addressed. Three variables - government stability, the extent of democratic freedom, and economic openness - are used in interaction with education aid to explore this issue.

Although measures of government stability have been widely used in the literature on corruption and governance (see La Porta, Lopez-de-Silane et al. 1997; Armah 2010), its use has not been as widespread in the aid-growth literature. The popularity of the measure has increased, however, as Knack (2001) and Braütigam and Knack (2004) both employ data on government stability to study the impacts of aid on institutions and governance in sub-Saharan Africa, while Rajan and Subramanian (2005), Arndt, Jones et al. (2010) and

Minoiua and Reddyb (2010) employ the measure in aid-growth regressions. These authors report the measure of government stability published by The PRS Group (2015), as adopted in the present research, to provide meaningful and intuitive findings. Government stability, as defined by the ability of a government to stay in power and carry out its programmes, is a sensible measure of governance for this research as it allows for analysis of how the effects of governance work through aid. This helps to test whether arguments found in the aid-growth literature that support the allocation of aid to countries demonstrating 'good' governance, are relevant to aid for education.

That the effectiveness of education aid in determining enrolment might be dependent upon the degree of democratic freedom in recipient countries is also accounted for. It has been argued that greater freedom in democratic institutions affords better checks on governments, encouraging the more productive use of aid (Svensson 1999; Michaelowa and Weber 2007b). It might be assumed therefore that education aid ought to be more effective where there is a greater degree of democratic freedom. However, while Michaelowa and Weber (2007b) argue this to be the case, the findings of Dreher, Nunnenkamp et al. (2008) indicate otherwise. That the two studies find conflicting results may be explained by the fact that no interaction term for democratic freedom status and aid is included in the model constructed by Michaelowa and Weber (2007b). As such, it may only be concluded on the basis of their data that the extent of democratic freedom affects enrolment directly, rather than via aid. By including an interaction term in the model and applying it to the data collected for this study it is hoped that further light will be shed on the role of democracy in influencing education aid's eventual impact.

Greater economic openness might be expected to lead to more aid investment and greater per capita income. There has been much research examining the association between economic freedom and economic growth (see, for example, Carlsson and Lundstrom 2002; Cole 2003). Most of these studies contend that greater degrees of economic freedom, or particular aspects of economic freedom, bring about an independent and significant positive impact on per capita income, investment, and economic growth (Gwartney, Hall et al. 2015). Whether greater economic freedom influences the effectiveness of education aid in particular, is an issue for research in the education literature given the importance placed on education as a predictor of economic growth.

*Conflict*

Accounting for the effect of current or recent emergence from conflict, various measures of conflict are included as interactions with education aid to help understand how aid works in these difficult development environments.

It has been suggested that opportunities for recovery in post-conflict contexts enable a phase when the economic growth effects of aid are supra-normal (Collier and Hoeffler 2004). Aid delivered to post-conflict environments might, therefore, be considered very different from conventional development aid due largely to the stark environments into which it is disbursed. Collier and Hoeffler (2004) find aid to be more effective in post-conflict years, spurring on growth more than in normal development contexts in the middle of the post-conflict decade (the first three years being no different, but absorptive capacity being twice as great in the rest of the decade). They suggest that this effect is particularly pertinent for social policies - including education - stating that they are "differentially important relative to macroeconomic policies" despite not always being an area of priority in reconstruction efforts (Collier and Hoeffler 2004: 1137).

This finding is tested to see whether it holds true for education aid, given the importance that educationalists place on education in reconstruction efforts (see, for example, Buckland 2005; Aguilar and Retamal 2009), to ascertain whether this is an area in which education aid might be more effectively targeted. Interactions of education aid with conflict (in a particular period, or at any point in time) are also included to help create a better understanding of the effects of educational assistance during times of conflict.

Understanding the extent to which education aid has a differential impact upon primary enrolment and completion according to the distinct development environments in to which it is delivered can help to shape donor decisions regarding the allocation of aid for education, and is the main contribution of this research. Discussion now turns to the collection and construction of the data necessary to conduct this analysis.

## 3.5. DATASET CONSTRUCTION

### 3.5.1. Secondary Data

Secondary data are collected from internationally comparable sources (discussed in detail in section 3.6. of this chapter). The data employed in the basic model equation generally originate from official sources - national statistical offices or the statistical departments of international agencies - whilst data relating to measures of political and economic governance as well as the incidence of conflict have been obtained from renowned independent and academic sources that are the subject of peer-review. In pooling the data included in the panel datasets used for analysis, several adjustments have been made in order to improve the comparability of the data across countries over the length of the time-series. Information relating to primary sources, collection methods, and statistical concepts used, as well as other background information regarding the primary data may be found in Appendix 1.

Considerable efforts by the various international organisations that collect the data used in this study have gone in to ensuring that the data are standardised, however, it should be borne in mind that the statistical systems of many developing countries remain weak. Definitions, methods, and coverage vary; and cross-sectional and inter-temporal comparisons imply multifaceted conceptual and technical difficulties that cannot be resolved unequivocally. With regards to coverage, data may not be complete due to particular conditions faced by a country - such as conflict - that affect data collection and reporting. As such, the publishers of such international data rely on those data sources considered to be the most authoritative, but it should be remembered that the data should be interpreted only as denoting trends and indicating diversity amongst countries as opposed to presenting strict quantitative measures of the differences between them (World Bank 2015a). A concerted effort has been made to address these issues in the compilation of the datasets used for this study and details of how these data issues - such as data coverage - were dealt with are outlined in the sections that follow.

### 3.5.2. Statistical Analysis Software - Stata

A panel dataset allows for a sample of countries to be followed across time, with numerous series to be held yearly for each of these countries. Stata is widely accepted as an excellent

statistical analysis package for data manipulation, allowing for data to be moved from external sources into the program; the cleaning of data; generation of new variables; creation of summary datasets; the merging of datasets and looking for merge errors; permitting cross-section time-series data to be collapsed on either of its dimensions; and so forth. Due to this and it being amongst the preferred statistical analysis packages for analysis of panel data, the package was used for all data construction, management and analysis conducted as part of this research. The process of collecting the data and pooling it in order to produce a robust analytic dataset is detailed below.

### 3.5.3. Getting the Data

The precise raw data needed for each of the variables were collected from the various international sources described in section 3.6. as published on their respective websites. Once the correct data had been located, these were initially saved in Excel spreadsheets and then transferred into the Stata data editor. In order to ensure the correct transfer of the data it was important to create an Excel file that imitated the layout of the eventual variable layout necessary for storage in Stata - columns to store variables and rows to store observations. In many instances the original data source displayed only one cell with the recipient country's name in the country column - see, for example, the layout of OECD CRS (2015) - for data held over many years. It was crucial to verify that all cells pertaining to the recipient country had that country's name copied in the Excel file to which the data were exported as, otherwise, the corresponding row would be allocated with a missing value when transformed into an observation in Stata. In some cases cells of data exported to Excel had values stored as text rather than as numeric values. The values were reformatted from text to numeric values so that Stata would eventually be able to perform the relevant calculations on the affected variables.

Once the data had been successfully structured in a 'country-year' format, it was possible to export the data file from Excel and import it into Stata as a .csv file. With the data imported into Stata and in order to check that the information stored there was correct it was possible to run simple summary statistics for each variable detailing the number of observations, mean, standard error, as well as minimum and maximum values. This allowed for verification that the data made sense and that there were no obvious anomalies - for example checking that all the numeric variables had the appropriate number of observations in the datasets - and gave an indication of the number of missing values.

Once each dataset appeared as expected this was then stored on a computer hard drive with additional backup copies made.

### 3.5.4. Combining Datasets

The research questions demand statistical analysis of data that come from a variety of sources, with the data from these needing to be merged into a single original analytic dataset. Stata allows the user to carry out a 'horizontal' combination of the data files that have been imported, permitting different variables to be added to each of the observations. A Master Data file was created and data 'merged' on a country-year basis for each of the variables. Before running the merge command it was necessary to ensure that both the data in the memory Master Data file and the Using Data files (the data to be combined) were sorted by the identifying variables. Once the process was complete, summary statistics and tabulations were produced in order to guarantee the correct combination of files and, again, to check for missing variables and other outlying observations. This helped to identify whether any mistakes had been made along the way. Once the data were shown to be correct, the file was accordingly stored.

### 3.5.5. Data Manipulation

Once data had been gathered from all sources it was then possible to carry out the process of data manipulation, allowing for additional variables to be defined and for data irrelevant to the sample of countries to be dropped. This process was heavily informed by the statistical analyses that were to be performed later in the research process. For example, as the econometric model is quadratic with an interest in measuring the effect of education aid on primary enrolment and completion with both education aid and education aid-squared, it was necessary to create the additional variable education aid-squared. Likewise, it was necessary to create dummy variables for data held on conflict and democratic freedom.

In cases where variables were a simple function of other variables - such as the case of aid-squared - a command was run requesting Stata to generate a new variable that, for each of the observations, evaluated the expression specified in accordance with the value in the original variable.

### 3.5.6. Multiple Imputation

The handling of missing values is extremely important, with Stata recognising all blank cells as missing values. Given the length of the time period (1970-2013) for which data was compiled and the incompleteness of data collected in their raw forms, particularly in the earliest years that this study covers, correctly handling the issue of missing data in the newly created dataset was of paramount importance and central to ensuring the reliability of results.

Multiple imputation was selected over alternative practices such as single imputation as the method with which to deal with the issue of missing values as presented by the pooled dataset that had been constructed for this research. It was deemed preferable as the latter works well only when the fraction of missing values is very small. The multiple imputation method allows for missing values of any variable to be predicted using existing values from other variables. The predicted values - 'imputes' - are substituted for the missing values, resulting in a full 'imputed' dataset. This process is performed multiple times, producing multiple imputed datasets (Wayman 2003). In the estimation process, a model is fitted to each of these datasets and the estimates and their standard errors are combined following the combination rules proposed by Rubin (1987). Imputation was implemented using the -ice- routine in Stata, with the imputation model including each variable in the dataset.

Multiple imputation presents an appealing solution to problems caused by missing data as it furnishes the researcher with quality results, whilst also being straightforward to implement (Wayman 2003). The efficiency of multiple imputation has been well-studied and has been shown to perform favorably under a variety of missing data scenarios (Graham and Schafer 1999; Schafer and Graham 2002). Multiple imputation produces unbiased parameter estimates reflective of the uncertainty associated with estimating missing data. Furthermore, it has been shown that multiple imputation remains "robust to departures from normality assumptions and provides adequate results in the presence of low sample size or high rates of missing data" (Wayman 2003: 4).

In both the long- and short-term analytic panels data is held for 61 countries, with missing values for both dependent and independent variables. In the case of the long-term structural panel (for which each country holds 9 records, one for each time period), the variable with the highest number of missing values was primary net enrolment with 38 per cent of total records missing. Only 22 countries 36 per cent) had all values for NER over

the period 1970-2013. This is a comfortable level at which multiple imputation can be performed, as levels of up to 50 per cent yield unbiased results when data is missing at random (Judi 2002). Data coverage for the short-term annual panel containing data on primary completion rates is much more complete.

## 3.6. DATA

The two panel datasets rely upon secondary data in the form of comparative international statistics on primary enrolment, completion rates and a measure of gender parity in primary education as the dependent variables, and education aid, domestic education spending, pupil-teacher ratio, youth population, extent of urbanisation and per capita income as regressors. Energy aid is included as an instrumental variable. The following section details the source and treatment of each of these variables as well as specific data issues that have been addressed in order to ensure confidence in the reliability of the datasets compiled. Appendix 1 discusses the reliability of primary data sources, collection methods statistical concepts used, and manipulation of data in greater detail.

### *Education Outcomes: Net Primary Enrolment and Completion Rates, Gender Parity*

Measurements of progress towards universal primary education in the period 2000-2015 were internationally agreed in line with the definition of the second MDG on education. The indicators include the net primary enrolment rate, persistence to grade 5 and the primary completion rate. The primary net enrolment (NER) and primary completion (COMPLETION) rates, drawn from World Bank (2015a), are considered to be the most appropriate variables in the context of this analysis.

Persistence to grade 5 requires simultaneous consideration of enrolment because it is defined only with respect to those students who initially enter the education system. The combination of both aspects is captured in completion rates, which relate the number of students completing primary education to the total number of children of the corresponding age group. This indicator is compiled by the World Bank based on two basic data sources used to compute gross and net enrolment ratios: enrolment data from national ministries of education and population data from the UIS. Whilst primary completion rates are therefore suggested as being superior to enrolment rates in measuring progress toward education-related MDGs, accurate data on primary completion are available only since 1988. This variable is therefore used only in regressions run on the

short-term annual panel (2000-2013), with net primary enrolment rates employed in the long-term structural panel (1970-2013). This approach allows for a testing of the sensitivity of the results on net primary enrolment data generated from the long-term structural panel.

For both completion and enrolment rates no specific final grade level is identified, meaning that different durations of primary education might distort the international comparability for those countries which differ from the typical duration of five or six years. Sensitivity testing of the results is conducted by running additional regressions that eliminate those countries with a primary cycle of more than 6 years.

The data limitations of education outcome variables have been widely debated (for further information refer to Roberts 2003). It would be preferable for the outcome variable to include measures of educational attainment and the quality of education, as enrolment rates alone may provide a misleading picture of progress in the education sector. Indeed, research conducted by Clemens (2004) based on detailed country studies indicates that rapid rises in enrolment rates can lead to high pupil-teacher ratios, increases in failure and repetition rates, and lower test scores. The problem remains, however, that 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. In order to address this issue, distortions resulting from the shortcomings of enrolment rates as an education outcome variable can be minimised in several ways. First, as already mentioned, with completion rates being considered as an alternative indicator; and second, with additional estimates being run on a reduced sample that eliminates countries with exceptionally large increases in enrolment rates.

A further data issue concerns the time-series dimension of enrolment data. In 2003, UIS - the original source of the World Bank data from which the enrolment records were drawn - revised its estimates of net primary enrolment for the period 1998-2001. For some countries, this revision is associated with a major break in the series on primary enrolment. These countries can be identified by comparing the old and new data in the years for which both series are available, normally 1998-2000 (see Clemens 2004 ; Dreher, Nunnenkamp et al. 2008 for a similar approach). The problem is dealt with in the present research by replicating the analysis for a shorter period of observation (1970-1995). In this way, the risk of inconsistencies over time is reduced, even though the old series may suffer from the systematic over- or under- reporting by some countries.

A measure of gender parity (GENparity) in primary education is included as an additional outcome variable in the short-term annual panel. The ratio of female to male primary enrolment is the ratio of girls to boys enrolled at primary level in public and private schools.

### Per Capita Income

A measure of per capita income, taken from World Bank (2015a), that takes into account country purchasing power (GDPcapPPP). Deflators published by the World Bank are used to adjust for the effect of inflation. The base year for all calculations in which deflators are used is 2012.

### Youth Population

This accounts for the relative size of the school population measured as the total population under 15 (POPy). Data are drawn from World Bank (2015a).

### Domestic Spending on Education

Total public spending on education (EXPEDUC) is expressed here both as a percentage of GDP and per capita (as an expression of the unit cost of education). The data were collected from World Bank (2015a). The process to move current dollar amounts to constant dollars (taking into account both inflation and exchange rate) involved: first, converting back to the local currency unit according to the relevant exchange rate; second, using local currency deflators to take into account inflation; and third, adjusting to the 2012 base year before expressing the variable per capita.

### Pupil-Teacher Ratio

Number of pupils enrolled in primary school divided by number of primary school teachers (ST-RATIO). Data relating to the pupil-teacher ratio were drawn from World Bank (2015a).

### Education Aid

Reliable data on development cooperation are crucial for the assessment of aid effectiveness. This information can be drawn from the International Development Statistics (IDS) CRS, an internationally recognised source of data on the geographical and

sectoral breakdown of development aid granted by bilateral and multilateral institutions, compiled by the OECD DAC, the main organisation through which the OECD manages issues related to financial co-operation with developing countries. It should be acknowledged that the source does not include all education aid flows to the various recipient countries - data is not collected on aid from non-DAC countries and some other aid-giving entities. It is worth noting, however, that aid from DAC countries constitutes in excess of 90 per cent of ODA to developing countries (Asiedu and Nandwa 2007). The OECD CRS (2015) collects details on both donors' ODA commitments and disbursements to over 180 recipient countries. Information is provided on the source, recipient, amount and type of financial flow, interest rates, the grant element, commitment date, sector code and purpose description, local costs, and technical cooperation. The data account for information including donor and recipient country names, name of the implementing agency, project description, project duration, the level of education - primary, secondary or tertiary - funded, type of aid (grant or loan), amount committed by the donor, the year the commitment was made in as well as the amount disbursed each year. The statistics produced by the DAC provide the most authoritative guide to aid flows available, and they are used widely by academics, donors, recipients and international bodies.

Years of coverage for disbursement data are few for which reason the long-term panel dataset exploring the historical aspects of aid effectiveness concentrates on aid commitments only. These data for assessing the impact of aid for education on education outcomes are not perfect, however, as commitment data tend to overstate actual aid flows (commitments may not be fully disbursed); and because of the under-reporting of education aid commitments (some transactions may be coded in sectors other than education despite having an education component and are therefore not taken into account when considering only the 'all purpose' codes for education[3]). As Michaelowa and Weber (2006) note, these are issues that work in opposite directions. That commitment data overstate aid flows is an issue that cannot be resolved because sector-specific disbursement data are not available prior to 1990. However, Dreher, Nunnenkamp et al. (2008) show that the correlation between commitments and disbursements of aid for education over the period for which both series are available is fairly high, with correlation coefficients of 0.70 for 1990-94, 0.71 for 1995-99, and 0.80 for 2000-04, whilst Hudson (2013) finds considerably higher coefficients for more recent years. Despite the issues associated with

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[3] Personal communication with OECD DAC statistician on 25th August 2011

commitment data, ODA commitments are commonly used measures in the literature on aid effectiveness.


*Long-Term Structural Panel*

To overcome the issue that reporting to the CRS database has, until recently, been incomplete - apparent when the total amounts published in the CRS and DAC databases are compared - an approximation of the true commitment data is derived using the correct total from the DAC database. This approach is adopted by Michaelowa and Weber (2006) who assume the sectoral share presented in the CRS dataset to be accurate. The transformation is equivalent to a simple expansion of the sectoral information available from CRS where EDUCAID = aid for education; TOTALODA = total official development assistance; and the subscripts $_{DAC}$ and $_{CRS}$ denote the respective sources.


**Equation 2: Estimating Education Aid Commitments**

$$EDUCAID = EDUCAID_{CRS} + \left( \frac{EDUCAID_{CRS}}{TOTALODA_{CRS}} \right)\left(TOTALODA_{DAC} - TOTALODA_{CRS}\right)$$

$$\Leftrightarrow EDUCAID = EDUCAID_{CRS}\left( \frac{TOTALODA_{DAC}}{TOTALODA_{CRS}} \right)$$

*Source: Michaelowa and Weber (2006)*


*Short-Term Annual Panel*

Employing sector-specific aid data alone might understate the contribution of aid to education objectives in recent years, during which time there has been a greater emphasis on facilitating government spending and increasing the recipient ownership of aid monies. Several donors now favour general budget support over project aid for specific targets. The extent to which general budget support is ultimately used for educational objectives is not known. Nevertheless, primary education aid in the short-term annual panel includes 10 per cent of general budget support to account for any potential increases in the support of educational objectives through aid that is not picked up by the sector-specific purpose codes. That at least 20 per cent of national budgets is allocated to education is an accepted average of government spending on education, with half of this expected to be directed in support of activities at the primary level (UNESCO 2005; FTI 2006; UNESCO 2015). The variable also accounts for 50 per cent of 'education-level unspecified'.


For both commitments (COMMITMENTS) and disbursements (DISBURSEMENTS), aid is measured on a per capita basis. In aid-growth regressions, aid is typically defined relative

to the recipient country's GDP as this provides a reasonable measure of the importance of foreign support relative to the recipient country's overall resources. However, it may be argued that aid per capita is more appropriate than the aid to GDP ratio in assessing aid effectiveness with respect to specific MDGs, as achievement of universal primary education requires accounting for the number of people among whom the resources devoted to education must be shared.

### DAC Deflators

To convert donor aid commitments and disbursements to constant dollars, DAC deflators are used that allow for inflation in the currency in which the flow of education aid took place between the year of the aid flow and the base year of 2012. The DAC deflators adjust for changes in both price and exchange rates, in order that all flows of education aid, across all years, and from all donors, are depicted in a fixed unit of measurement that may be readily understood - the purchasing power of a US dollar in the base year of 2012.

Starting from data expressed in nominal terms, i.e. in US dollars at the rate of exchange at the time of the flow, conversion to reflect the purchasing power of dollars in a given base year requires two adjustments: (i) replacing the exchange rate at the time of the education aid flow by the exchange rate in the (recent) base year; and (ii) allowing for inflation in the currency in which the flow took place between the year of the flow and the base year (OECD 2012).

### Economic Openness

The Fraser Index of Economic Freedom (OPEN) allows for an assessment of the impact of 'good' economic governance. Data are drawn from Gwartney, Hall et al. (2015). The index measures the degree of economic freedom across five major areas: (i) size of government: expenditures, and taxes, enterprises; (ii) legal structure and security of property rights; (iii) access to sound money; (iv) freedom to trade internationally; (v) regulation of credit, labour, and business.

Within the five major areas, there are 23 components, many of which comprise several sub-components - including 42 distinct variables in total. Each component and sub-component is placed on a scale from 0 to 10 that reflects the distribution of the underlying data. The sub-component ratings are averaged to determine each of the components. The component ratings within each of the five major areas are subsequently averaged in order

to obtain ratings for each. The five area ratings are then averaged to derive the summary rating for each country (Gwartney, Hall et al. 2015). This summary rating denoting the degree of economic freedom in any particular country is employed in the two panel datasets. Higher values represent greater economic freedom.

### Government Stability

The ICRG data on government stability (STABLE) is a measure of both a government's ability to carry out its declared programmes and its ability to stay in office. Amongst other things, the ICRG supposes this to depend upon the type of governance; cohesion of the government and governing party or parties; closeness of the next election; government's command of the legislature; and popular approval of government policies.

The ICRG assess government stability on the basis of three sub-variables: (i) government unity - the extent to which the government operates as a unified force; (ii) legislative strength - does the legislature have its own power vis-à-vis the executive branch of the government and can it act coherently as such; and (iii) popular support - a measure of how much the population being governed sees the government as legitimate, whether or not it is the government they prefer. A risk rating is assigned to each with a maximum score of 4 points and a minimum of 0. Twelve points then make up the risk category for government stability with a score of 12 points indicating very low risk and a score of 0 points very high risk (Howell 2007). The ICRG dataset, published by The PRS Group (2015), is recognised by political scientists as offering the most comprehensive and reliable data relating to political stability available. Moreover, as Armah (2010) contends, country rankings according to the political stability measure devised by the ICRG are consistent with alternative indicators of governance, offering reassurance that the measure is accurate. A further quality of the ICRG dataset is that it affords the widest range of data pertaining to government stability, both in terms of the number of countries covered and the length of the time-series.

### Democratic Freedom

The variable (FREE) taken from the Freedom House (2015) index of political rights and civil liberties is an indication of the level of democracy in a given country, covering the broader political and institutional environment. The index is drawn from the assessment of: free elections, the power of elected political representatives, the de facto power of the opposition, the right to organise in groups, freedom of domination by the military or other

powerful groups, and the self-determination rights of minority groups (political rights); in addition to freedom of expression and belief, association and organisational rights, rule of law and human rights, and personal autonomy and economic rights (civil liberties). Each nation state accounted for in the survey is designated two ratings - one for political rights and one for civil liberties - on a scale of 1 to 7; a rating of 1 points to the greatest degree of freedom and 7 the smallest amount of freedom. Although the two scales are theoretically different, they are closely associated in practice: when the rating for one is low, the rating of the other tends to be low also, and vice versa. The two ratings (political rights and civil liberties) are pooled and averaged in order to establish the overall 'freedom status' of each country. Nation states with a combined average rating of 1.0 to 2.5 are regarded as being 'Free'; 3.0 to 5.0, 'Partly Free'; and 5.5 to 7.0 'Not Free' (Freedom House 2015).

In the analytical databases, the three-category freedom status variable is included rather than the two numerical ratings from which it is derived as the categorical variable is deemed to have more essence. For the freedom status the modal value in the 5-year period is used as representative for each period in the long-term structural analytical file, despite there being no variations in the freedom status within these periods for most countries.

### Conflict

Conflict (CONFLICT) is defined as the use of armed force between two parties - at least one of which is the government of a state - and which results in at least 25 battle-related deaths (Gleditsch, Wallensteen et al. 2002; Themner and Wallensteen 2012; UCDP/PRIO 2015a). An indicator taking value one (1) and zero (0) otherwise has been created, if a given country had a conflict within their location/territory within a given year. For the short-term annual analysis this appears as 1/0. For the long-term structural panel where periods are in 5-year intervals, the conflict variable is an indicator/count of the number of years (out of the five in the index period) that the country had conflict, ranging from 0 to 5. Data are drawn from UCDP/PRIO (2015b).

Dummies are used to indicate post-conflict episodes. In order to analyse whether aid might be more effective in post-conflict situations as development aid is phased back in, this is done by creating a dummy of the two 5-year periods following which conflict is found in the current/index period - i.e. conflict occurred in a country in the period 1970-74 then the periods 1975-79 and 1980-84 are deemed to be post-conflict.

**Table 4: Variable Definitions and Sources**

| Variable | Description | Source |
|---|---|---|
| **Primary Completion Rate (PCR)** | Number of students successfully completing the last year of (or graduating from) primary school in a given year divided by the number of children of official graduation age in the population. | World Bank (2015a) |
| **Primary Net Enrolment Rate (NER)** | Net enrolment ratio is the ratio of children of official school age based on the International Standard Classification of children 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. | World Bank (2015a) |
| **Primary Net Enrolment Rate (GENparity)** | The ratio of female to male primary enrolment is the ratio of girls to boys enrolled at primary level. | World Bank (2015a) |
| **Population under 15 (POPy)** | Percentage of total population under 15. | World Bank (2015a) |
| **Extent of Urbanisation (URBAN)** | Percentage of total population living in urban areas. | World Bank (2015a) |
| **Pupil-Teacher Ratio (ST-Ratio)** | Number of pupils enrolled in primary school divided by number of primary school teachers (regardless of their teaching assignment). | World Bank (2015a) |
| **Domestic Education Expenditure (EXPEDUC)** | Total public spending on education, expressed as a percentage of GDP (2012 constant dollars) and as a percentage of the population under 15. | World Bank (2015a) |
| **Education Aid (COMMITMENTS / DISBURSEMENTS)** | Aid commitments and disbursements by all donors. Includes aid for basic education, secondary education, post-secondary education, and unspecified levels of education. CRS guidelines require sector-specific programme assistance and budget support in the form of sector-wide approaches to be subsumed under education when meant to benefit this sector. Expressed per capita (constant 2012 dollars). Aid-squared is used to measure diminishing returns to education aid. | OECD CRS (2015) |
| **Economic Freedom (OPEN)** | The index measures the degree of economic freedom across five major areas: (i) size of government: expenditures, and taxes, enterprises; (ii) legal structure and security of property rights; (iii) access to sound money; (iv) freedom to trade internationally; (v) regulation of credit, labour, and business. | Gwartney, Hall et al. (2015) |
| **Government Stability (STABILITY)** | Assesses a government's ability to carry out its declared programmes and its ability to remain in office. Risk rating assigned is sum of three sub-components (government unity, legislative strength and popular support), each with a maximum score of 4 points and a minimum of 0. A score of 4 points indicates very low risk and a score of 0 points very high risk. | The PRS Group (2015) |
| **Democratic Freedom (FREE)** | The political rights and civil liberties categories contain numerical ratings between 1 and 7 for each country or territory, with 1 representing the most free and 7 the least free. The status designation of Free, Partly Free, or Not Free, which is determined by the combination of the political rights and civil liberties ratings, indicates the general state of democratic freedom of a country or territory. | Freedom House (2015) |
| **Armed Conflict (CONFLICT)** | A contested incompatibility that concerns government and/or territory where the used of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths. | UCDP/PRIO (2015) |

## 3.7. DATA ANALYSIS

Once data handling had been completed and the datasets in their final analytic form, it was possible to move ahead with data analysis. This was a three-step process that included producing a thorough descriptive account of the data and their characteristics; running bivariate analysis on each of the explanatory variables and the main outcome variable of the primary NER in order to understand the correlation between the two with the purpose of

determining the final multivariate model; and finally multivariate regression analysis of the theoretical model. Each of the three steps is described in detail below.

### 3.7.1. Descriptive Data Analysis

Descriptive statistics summarising the sample in a quantitative manner were generated for both panel datasets as the basis of the initial data description ahead of the more extensive econometric analysis that follows (see Appendix 2: Summary Statistics). This univariate analysis involved using Stata commands in order to describe the distribution of each of the variables in terms of their central tendency (mean, median and mode) and the spread of its data (range, variance and standard deviation). Data were compared and contrasted with emerging patterns found in the distribution of other variables of importance to the analysis with the intention of gaining familiarity with the data and helping to indicate where potential relationships might be explored in the next step of analysis in which bivariate regressions were to be run.

### 3.7.2. Bivariate Analysis

Bivariate analysis allows for the relationship between two different variables to be described. A series of regressions were run examining the relationship between the main explanatory variables of interest and the outcome variable NER.

In the first stage of the analysis simple OLS regressions are run on each of the independent variables against the dependent variable on the group of 61 countries. In order to consider whether the significance of the coefficient improved once the potential for endogeneity in the relationship between the independent and dependent variable had been controlled for, instrumental variables were subsequently included. A series of bivariate regressions were then run that take into account the interaction of aid with government stability, democratic freedom, economic openness and conflict status and the correlation with the outcome variable primary NER. All regressions were run for with education aid expressed per capita with the intention of determining significant interactions for inclusion in the final multivariate models.

### 3.7.3. Multivariate Regressions

For the outcome variable primary net enrolment the model was fitted to the sample group pof 61 countries. The following explanatory variables were applied: aid commitment, expressed per capita (COMMITMENT); GDP per capita (GDPcapPPP); fraction of the population below 15 years (POPy); extent of Urbanisation (URBAN); pupil-teacher ratio (ST-Ratio); expenditure on education (EXPEDUC) expressed as per capita or as a percent of GDP; the instrumental variable energy aid (ENERGY). A lag of the dependent variable was included in each model. To depict potentially decreasing returns to aid investment, models also included aid commitment per capita squared as an explanatory variable.

Furthermore, in order to establish whether certain country conditions - the quality of political (STABILITY and FREEDOM) and economic governance (OPEN), conflict status (CONFLICT), or the extent of country need - affect the ability to absorb additional amounts of aid, an interaction term between education aid commitment and each of the corresponding variables were in turn included in each of the models according to their significance based on the first stage of empirical analysis - bivariate models.

All the explanatory variables listed were considered endogenous and by construct the panel model used all their available lags at each time point as instruments. As regressions were restricted to just 61 countries, using all available lags of each variable as instruments would have resulted in the number of instruments being larger than 61, so this was addressed by using lags of up to four time points back as instruments. In these models, robust standard errors of the coefficients assume that there is no correlation across countries in the idiosyncratic errors: time dummies were added to the models to make this assumption more likely to hold as suggested by Roodman (2009a) the author of the routine - xtabond2 - used to fit the models in Stata.

A similar model was subsequently fitted to the same group of countries in the short-term annual panel.  The model applied was broadly similar with the outcome variable being altered to the primary completion rate (PCR) and subsequently the Male : Female enrolment ratio (GENparity). A more specific aid variable - primary education aid (DISBURSEMENT) - was employed with a one- and two-year lag included in each of the respective models. Government expenditure was also narrowed down to account for only public spending on education at primary level. All other explanatory variables remained the same.

### 3.7.4. System GMM Estimator

Panel data allows for analysis that reflects the differences between subjects, and the changes within subjects over time. Whilst it is possible to employ ordinary multiple regression techniques with this type of data, the estimates of coefficients derived from regressions may be dependent on omitted variable bias - a difficulty that occurs when unknown variables that could affect the dependent variable cannot be controlled for. Panel data regression techniques, however, allow for the possibility of controlling for some types of omitted variables even without observing them, by detecting alterations in the dependent variable over time. This allows for the control of omitted variables that are different between cases but remain constant over time. Panel data may also be employed to control for omitted variables that differ over time but are constant between cases (Asiedu and Nandwa 2007).

As aid cannot reasonably be expected to be exogenous to school enrolment, with donors typically granting more aid to countries that are less developed, fixed- and random-effects models that ignore the potential endogeneity are not considered appropriate estimators. Instead, system GMM dynamic panel models were fitted to the data to estimate coefficients as the estimator allows for the endogeneity of aid and other explanatory variables. This estimator is increasingly used in studies of aid effectiveness for precisely this reason. The dynamic panel system GMM estimator exploits an assumption about the initial conditions to obtain moment conditions that remain informative even for persistent data and is considered most appropriate in the presence of endogenous regressors. This is done by using lagged values of the explanatory variables as instruments (Hoeffler 1998). However, as the theoretical model acknowledges the potential for reverse causation caused by the relationship between aid for education and primary net enrolment, it may be difficult to argue that lags of the explanatory variables are truly uncorrelated with the error term (as discussed in section 3.4.3 of this chapter). As such, an instrumental variable is employed to address the endogeneity issue.

The system GMM estimator is preferred to the standard GMM estimator proposed by Arellano and Bond (1991) that has been found to produce large biases and low asymptotic precisions in the presence of weak instruments, and which performs badly when there is a relatively short panel and the time series are persistent (Blundell and Bond 1998; Blundell,

Bond et al. 2000). Recent applications of the two estimators by Blundell, Bond et al. (2000), Bond, Hoeffler et al. (2001) and Hoeffler (2002) show the superiority of the system GMM over the standard GMM.

## 3.8. SENSITIVITY TESTING

In order to ensure the validity and generalisability of the findings a series of robustness checks were run. Sensitivity testing begins by considering an alternative measure of aid. Ideally, aid disbursements for each level of education would be employed in the long-term structural panel; however, disbursement data for aid to education are not available until 1990. Tests are therefore run over the shorter time series of 2000 to 2013 for aid to primary education

In order to account for the issues associated with the data on education outcomes employed in this research, further robustness checks are run on the models to address any uncertainty that might arise as a result of their inclusion. As discussed earlier in this chapter, primary completion rates have been suggested to be superior to enrolment rates in terms of measuring progress toward the education-related MDGs. However, accurate data on primary completion (PCR) are available only for a short time-series; tests are therefore run on the short-term annual panel over the period 2000-2013 employing primary completion as an outcome variable.

As the different durations of primary education may distort the international comparability for those countries which differ from the typical duration of five or six years, sensitivity testing of the results is conducted by running additional regressions that eliminate those countries with a cycle of primary schooling lasting longer than six years. Furthermore, distortions resulting from the shortcomings of enrolment rates as an education outcome variable are minimised by running additional estimates for a reduced sample, eliminating countries with exceptionally large increases in enrolment rates. Robustness tests also include replicating the analysis for a shorter period of observation (1970-1995) to account for the revision of education data and the recent shift from sector-specific aid - including aid for education - toward general budget support.

Additional sensitivity tests include government expenditure on education being dropped from the equation in models run on the short-term annual panel: the reason for this being

that the aid coefficient may be biased downward when government expenditure is included as some aid runs through the budget in the form of general budget and education sector support. The aid coefficient is supposed to capture the expenditure-augmenting effect of education aid in addition to effects on enrolment that are attributable to a higher productivity of aid relative to government expenditure.

## 3.9. A CASE STUDY STRATEGY

A case study strategy allows for holistic, in-depth investigation that provides a systematic way of looking at events without the need for a rigid protocol that is limited by examining a number of pre-determined variables (Fagin, Orum et al. 1991). As an empirical mode of enquiry that investigates a phenomenon within its real-life context, it is the most suitable approach for addressing R.Q. 3 - 'are differing patterns of aid effectiveness discernable when exploring aid dependency and allocative efficiency in education?' - which is concerned with explaining the complex causal links between aid and education outcomes in terms of real-life interventions (Yin 1994). In this way it becomes possible to illustrate how aid has impacted education outcomes at country level, lending context to the findings of the quantitative macro analysis that is employed to address R.Q. 1 and 2.

Case studies lend themselves to multi-perspective analyses, allowing the researcher to consider not just the voice and perspective of actors, but also the relevant groups of actors and interaction between them (Fagin, Orum et al. 1991). This approach to research is well suited to addressing the research question, where the action and opinions of - and relations between - various actors are to be examined.

### 3.9.1. Case Selection

Case study research is not sampling research, a fact asserted by all major proponents of the field, including Fagin, Orum et al. (1991), Yin (1994) and Stake (1995). However, selecting cases must be done so as to maximise what can be learned in the period of time available for the study. The generalisability of case studies can be increased by the strategic selection of cases (Rosch 1978; Ragin 1992). Flyvbjerg (2006: 229) explains that because the typical or average case is often not the richest in information, from an understanding-oriented perspective, it is often more important to clarify the deeper causes behind a given phenomenon and its consequences than to describe its symptoms and how frequently they

occur: "random samples emphasising representativeness will seldom be able to produce this kind of insight; it is more appropriate to select some few cases chosen for their validity". As Mitchell (1984) would argue, the cases selected here should be seen as 'telling', rather than 'typical'.

Two Asian (Pakistan and India) and two sub-Saharan African nations (Malawi and Mozambique) reflecting a mix of high/low aid dependency and high/low education outcomes were selected in order to provide contrasting examples for discussion. Pakistan is identified due to its relatively low levels of aid dependency and low educational outcomes in spite of numerous education aid donors operating in-country. India is considered as it is a unique case - amongst the top recipients of absolute aid, yet one of the least aid dependent countries. Mozambique was chosen for its well-known advances in the education sector as highly aid dependent country; and Malawi as a case of a country that is likewise highly aid dependent but which has demonstrated considerably less progress towards international education goals.

### 3.9.2. Data Collection

Yin (1981) states that the case study involves empirical investigation of a particular contemporary phenomenon within its real-life context using multiple sources of evidence. In support of this view, the case studies are informed by data both in the form of comparable international education statistics compiled whilst constructing the panel datasets used to address R.Q. 1 and 2 and documentary evidence in the form of donor aid evaluations and other grey literature including working papers, technical reports, and government documents. Documentary evidence refers to the use of documents in social research, which provide a record of the social world. The documents in this context are 'socially produced', reflecting a society at the time of their publication (Macdonald and Tipton 1993). Documentary evidence is evaluated and included upon the basis of its authenticity, credibility, representativeness and meaning in order to establish the 'trustworthiness' of the data collected (Guba 1981).

The intention of employing documented accounts of aid recipients and donors is to offer an "experiential understanding" (Stake 1995: 43) of aid effectiveness at country level. The documentary evidence is based largely on qualitative data - primarily interviews with members of the donor community, central government and civil society. The underlying

epistemology of a qualitative approach to research is one that is interpretive; assuming reality to be constructed, contingent on convention, human perception, and social experience. Because the research proceeds from the conviction that the issues determining aid effectiveness - policy, process, governance - are inevitably complex phenomena; providing an analytical account of aid's impact reliant upon the action and opinions of - and relations between - the various actors involved is considered the most appropriate means of uncovering different patterns of aid effectiveness and discussing the complex and multifaceted reality of aid dependency and efficiency in education aid allocation.

### 3.9.3. Data Analysis

Stake (1995) suggests that case studies must always have boundaries as this allows for analytic generalisation and inference-making. The focus of the analysis is therefore upon the level of aid dependency, education outcomes and perceived degree of aid effectiveness – including how issues of aid dependency, donor involvement, and strength of institutions impact the effect that aid is seen to have had. A thematic analysis is made of all the documentation collected. Where demographic and statistical information for the four case study countries is required, this is taken from the short-term panel dataset (2000-2013) collated for the research, so as to be comparable across cases. Where this is not possible or a more detailed degree of disaggregation is required statistics are drawn from country documentation or aid evaluations.

Analysis will be a two-step process. The first step will involve drawing out themes from each piece of documentary evidence which are then placed in a thematic matrix in order to match patterns, allowing for triangulation between different organisational opinions and perspectives (Campbell 1975; Larsson 1993; Yin 1994). This initial phase of data analysis will help to build descriptive cases for each of the countries and to identify what is 'telling' and 'typical' in each of the case studies (Mitchell 1984). The second phase of data analysis will involve a meta-analysis where common themes will be pulled out from across the countries using a case-comparison approach (Yin 1981). As Yin (1981) and Eisenhardt (1989) argue, this process constitutes generalised theory-building. It is likely that some of the common emerging themes will be around the difficulties for recipient countries to manage multiple donor projects or the importance of government will to implement strong education policies.

Data source triangulation is met by selecting evaluations that rely upon data that has been collected and analysed from a wide range of participants with different backgrounds (i.e. local NGOs and Ministry of Education staff), thus contributing to the validity of the research (Stake 1995). Methodological triangulation takes place on two levels: firstly, in terms of data sources (i.e. comparing international education statistics, education aid evaluations, and other documentary evidence); and secondly, in terms of employing an 'iterative' approach to the research, to increase confidence in the validity of the findings (Guba 1981; Denzin 1984).

### 3.9.4. Construct Validity

Construct validity is considered problematic in case study research. It has been a source of criticism because of potential investigator subjectivity. Reliability in the research design outlined above is achieved through the development of the case study protocol following Yin's (1994) remedies for overcoming investigator subjectivity: by using multiple sources of evidence and establishing a chain of evidence. The use of multiple cases also augments external validity (Leonard-Barton 1990).

### 3.9.5. Generalisation

One of the most common criticisms of case studies is focused on the issue of generalisation. Critics of the case study research strategy argue that it is not representative (Miles 1979; Abercrombie, Hill et al. 1984). Yin (1994) in particular refuted this criticism by pointing out that generalisation of results, from either single or multiple designs, is made to theory and not to populations. Multiple cases - as used in this research design - strengthen the results by replicating the pattern-matching, thus increasing confidence in the robustness of the theory (Campbell 1975).

### 3.10. CONCLUSION

The methodology outlined in this chapter allows for examination of the conditions under which aid becomes effective for promoting improved outcomes in education. It describes how the impact of aid on primary outcomes is analysed empirically for developing countries over the period 1970 to 2013 and how issues of aid dependency and the selective

allocation of education aid at country level are examined. The following chapter presents the descriptive statistics and an analysis of the multivariate regressions run, addressing the first two research questions: (i) what is the direct effect of education aid on enrolment over time across developing countries?; and (ii) how does the heterogeneity of aid recipients affect the impact of education aid upon enrolment in, and completion of, primary education?

# 4. When does education aid work?

The Addis Ababa Action Agenda of the Third International Conference on Financing for Development outlines the continued importance of Official Development Assistance as a critical source of education finance in support of the post-2015 Sustainable Development Goals, especially in the world's most vulnerable countries where domestic resources remain scarce:

> International public finance plays an important role in complementing the efforts of countries to mobilize public resources domestically, especially in the poorest and most vulnerable countries with limited domestic resources. Our ambitious agenda puts significant demands on public budgets and capacities, which requires scaled up and more effective international support (United Nations 2015a: 13).

The Agenda for Action reiterates the need for many donor countries to substantially scale up their aid programmes in order to meet the target of 0.7 per cent of ODA/GNI and 0.15 to 0.20 per cent of ODA/GNI to Least Developed Countries (United Nations 2015a: 13). With renewed attention upon the need to scale up existing aid levels and to focus it on those most in need, how can it be ensured that the effectiveness of education aid is itself sustainable?

The post-Dakar EFA decade saw much focus on enhancing aid recipient countries' ability to develop more evidence-based education policies. This focus was embodied in the Fast-Track Initiative (FTI), launched in 2002, that arose out of the commitments of the World Education Forum (2000) to adopt a range of goals and targets to achieve EFA. The FTI emphasised coordinated action at country level, and put primary responsibility on in-country donors to mobilise and deliver external support for 'credible' education sector plans - based on the criteria of an Indicative Framework - endorsed by the FTI. The FTI, now restructured and reformed as the Global Partnership for Education, initially fell short of its ambitions due to weaknesses in its design and implementation (Cambridge Education, Mokoro et al. 2010; Turrent 2011). Although challenges remain for the GPE - which has been the subject of well-grounded criticism with reference to its dependency upon the World Bank, falling short of initial financing targets, and the lack of attention

given to learning goals - commendable progress has been made since in aligning aid with viable education plans (Rose and Steer 2013; Winthrop and Steer 2014).

In spite of this increased focus on evidence-based policy, less attention has been paid to enhancing the catalytic impact of aid through more evidence-based aid allocation (Fredriksen 2013). The Paris Declaration on Aid Effectiveness focuses on enhancing the technical efficiency of aid delivery and use by promoting national ownership, alignment of donor priorities with national plans, coordination of donor efforts and a focus on results and shared accountability for outcomes (OECD DAC 2005). This is important but not sufficient to ensure more effective education aid, if aid is not allocated strategically to sub-sectors, purposes and countries to maximise its impact. With education aid volumes having shown a marked decrease since 2010 – total aid for education fell 10 per cent between 2010 and 2013 and aid to basic education fell 15 per cent (UNESCO 2015) - the ability of aid to stimulate progress towards the post-2015 goals will increasingly depend on it being allocated more strategically. This thesis therefore addresses research questions related to the sustainable allocative efficiency of aid for education amongst recipient countries, the first of which is: what has been the direct effect of education aid on enrolment over time across developing countries?

The economic problems faced by many traditional donor countries (which come together in the OECD's Development Assistance Committee, OECD DAC) in the wake of the 2008 global financial crisis has led to significant political pressure from constituents to reduce foreign assistance (Halsey 2008; Novelli 2010). The pressures on the public budgets of OECD countries are likely to last for the foreseeable future (Glennie and Sumner 2014), for which reason – if we are to agree with the principle of scaling up education aid which the Addis Ababa Agenda promotes - a case needs to be made for the value of aid, and education policymakers, politicians and practitioners helped to make it as effective as possible. If such a narrative does not emerge, the risk is run of gradually declining support for public spending. Therefore, establishing and analysing the effectiveness of aid interventions in the education sector is critical, both for its own sake (so that aid can improve its impacts) but also to make the case for education aid budgets to be sustained.

The second research question asks how the heterogeneity of aid recipient governance and vulnerability to conflict has affected the impact of education aid upon enrolment in, and completion of, primary education. The ongoing, polarised public policy debate between the 'aid works' versus 'aid is a waste of money' camps as outlined in Chapter 2 has focused

primarily on the impact of aid upon economic growth. It is the objective of this thesis to encourage the global debate to move on from asking whether or not aid 'works' to looking at *when* aid works and how it can work better, in order to inform aid allocation policy post-2015. The intention of the analysis presented below is to identify whether critical pointers can be built from the empirical evidence on when education aid has worked and when it has not in order to influence future policy on the effective and efficient allocation of education aid.

It is clear that the theories and practices of development cooperation in education will need to change significantly if they are to respond to the challenges and opportunities of the SDG era in which - as many more countries cross the somewhat arbitrary threshold to middle-income status and are in a position to secure sustainable increases in domestic resources for education (Sumner 2012; Alonso, Glennie et al. 2014) – increasing inequality between countries in terms of education outcomes is apparent as many low-income countries exposed to structural vulnerabilities including weak government systems, undemocratic regimes, closed economies, and the effects of conflict have failed to make progress on earlier education goals (Winthrop, Ndaruhutse et al. 2010; UNESCO Institute for Statistics 2014). Niger, Nigeria, Pakistan and Sudan each have more than 1 million children out of school. Countries such as Afghanistan and Somalia are also struggling to provide every child with a primary education but lack the data to provide accurate counts of their out-of-school populations (UNESCO Institute for Statistics 2014). In many of these countries the scale of resources available for spending on education is shockingly low. Government spending in the least resourced education system - the Central African Republic - is just US$ 18 per child per year[4]. Such low investment in countries that are experiencing or have recently emerged from conflict or that are deemed to be 'fragile states' - "contexts where state structures lack political will and/or capacity to provide the basic functions needed for poverty reduction, development and to safeguard the security and human rights of their populations" (OECD 2007: 2), places a particular responsibility on the shoulders of aid donor countries. The 2015 Addis Ababa Agenda for Action makes special mention of the need for concentrating international aid on these states:

> We recognize the importance of delivering quality education to all girls and boys to achieving sustainable development. This will require reaching children living in extreme poverty, children with disabilities, migrant and refugee children, and those in conflict and post-conflict situations, and provide safe, nonviolent, inclusive and effective learning environments for all (United Nations 2015a: 18).

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[4] Calculated by the author using data collected from World Bank (2015a)

Research on aid and growth, indicates that aid effectiveness depends, among other things, on some specific features of recipient countries. There is evidence that its impact on growth is dependent upon recipient country policies, working most effectively in those countries with better policy regimes (Burnside and Dollar 2000; Collier and Dollar 2002), but also a considerable amount of evidence to suggest that aid works in countries irrespective of the quality of policy regime (Hansen and Tarp 2001; Chauvet and Guillaumont 2002; Clemens, Radelet et al. 2004; Dalgaard, Hansen et al. 2004). A second category of factors related to aid effectiveness is related to structural economic vulnerability and exogenous shocks such as the impact of conflict. While the presence of conflict is a negative factor of growth, aid has been found to dampen its effect, lowering the relative shortfall of resources and helping to avoid economic collapse (Chauvet and Guillaumont 2002). In post-conflict situations aid has been found to facilitate recovery and lower the risk of new conflict (Collier and Hoeffler 2004). Thus the vulnerability to conflict is deemed to increase the marginal effectiveness of aid. The econometric tests of this finding have been found more robust than those of the conventional view on the policy driven aid effectiveness (Roodman 2007) and is confirmed both at the macro and the micro levels (Guillaumont and Laajal 2006; Chauvet and Guillaumont 2009).

As greater emphasis is placed on the need for external resources to support the education systems of the world's most vulnerable countries - those least able to help themselves - it becomes important to understand how educational aid has performed in these countries which present very distinct challenges for the financing of education. Well identified, these features or 'structural vulnerabilities' should be retained as aid allocation criteria, so that education aid may be allocated effectively.

In answering the second research question, the analysis presented in this chapter seeks to understand the broad structural conditions under which aid allocated specifically to the education sector becomes more or less effective – the differential impact of education aid. The intention is to improve education policymakers' understanding of the extent to which these conditions impinge upon the ability of national education systems to use aid effectively. This is important as, as suggested by Colclough (2012: 1), those countries invariably furthest away from achieving international education goals and often the most need of external assistance - are unlikely to remain unaffected "by the polarising pressures of globalisation, recession and civil conflict that have been affecting large parts of the developing world". By analysing how differing contexts of political and economic governance as well as the presence of conflict have influenced the impact that aid for

education has had, the thesis makes an important contribution to the literature on development assistance in the education sector as there are few examples of empirical education literature that cover large swathes of the developing world despite the unmistakable audience for studies that attempt to decipher the impact of aid for education beyond the borders of a single nation.

Education aid evaluations are invariably short-term - a static glimpse of a dynamic process at one particular point in time. Such a perspective may be misleading with education aid reforms in particular countries assessed as successes or failures on the basis of a short-term view without the benefit of context. A limited timeframe that focuses on individual aid interventions such as teacher training or pilot programs in isolation shows something quite different from the view with a long-term perspective (Gillies 2010). The chapter therefore addresses the two research questions by adopting a macro perspective of aid effectiveness that considers the impact of education aid over more than a 40 year period from 1970 to 2013 – looking at aid's impact on growth in primary enrolment (as expansion of education systems has been a consistent objective throughout this period) and the quality of primary education provision. Aid 'working' or 'effective aid' is taken here to mean aid for education that contributes to, or is associated with, positive growth in participation in education, improvements in education quality and the equity of its provision. This is measured across 61 countries demonstrating low EDI scores (indicating high educational need) and classed as low- or lower-middle income countries (assumed need for aid) representing approximately 90 per cent of the children who remained out of primary schools in developing countries in 2013 and 84 per cent of the global total. The chapter explores the associations by pooling the most up-to-date, rich, internationally comparable secondary data available in the form of widely published international aid and education statistics.

Given that the macroeconomic and political relationships of interest – conflict, stability of governance, extent of democracy and economic openness - are typically dynamic in nature (Lloyd, Morrisery et al. 2001) and that the impact of education aid may take time to show effect, panel data methods of analysis that have the potential to analyse causal relationships are adopted. These are applied to over 40 years' worth of data in order to allow for the effect of these structural vulnerabilities to make themselves apparent. The approach is commonly adopted by economists examining the impact of aid on growth (Burnside and Dollar 2000; Bond, Hoeffler et al. 2001; Collier and Hoeffler 2004; Armah 2010). Moreover, aid is not randomly assigned, with indicators of need having been shown to be related to aid allocations (McKinlay and Little 1977; Thiele, Nunnenkamp et al. 2007). In

the case of education, it is plausible that donors make decisions about the allocation of education aid on the basis of prevailing enrolment rates in recipient countries. It may be supposed that if enrolment rates are high, the recipient's education sector is in less need of external educational assistance. In such a scenario, the effect of aid for education on the enrolment rate would be offset by the effect of the enrolment rate on aid and, as such, the endogenous aid-enrolment relationship would lead to an underestimation of education aid's true impact. The benefit of employing the system-GMM method for analysis of the panel data is that it helps to overcome this issue of endogeneity. The system-GMM method, in using lags of the explanatory variables as their own instrument and by allowing for the introduction of an instrumental variable (a variable that is highly correlated with education aid but which has no direct impact upon the outcome variable) in the regression model has the benefit of statistically addressing the potential for endogeneity between the explanatory and outcome variables (for further details refer to Chapter 3: Methodology).

The chapter is divided in two parts. The first offers a descriptive account of the data collated for the group of 61 countries and their characteristics - providing simple summaries of the data, mapping trends, and making early observations ahead of the empirical analysis that follows. The second presents empirical analysis that addresses the overall effect of aid as well as its differential impact. The analysis shows education aid to have had a positive association with primary enrolment – with an average increase of US$ 1 in per capita education aid equated with a 0.3 percentage point increase in primary net enrolment. In a country such as Ghana, for example, where the per capita aid level was US$ 23 in 2012, a doubling of education aid would be expected to be equated with a 6.9 percentage point rise in the level of primary enrolment. Differing political, institutional and economic forces will inevitably impinge upon the absorption and application of aid and its outcomes in the education sector across developing countries, for which reason the model tests the degree to which factors related to the quality of governance as well as the presence of conflict, work through aid with the intention of revealing the differential impact of aid for education allocated. Interactions between education aid and the degree of democratic freedom demonstrate no significant explanatory power with regard to enrolment in primary education, whilst aid committed to countries with more stable governance is shown to be significant in the production of higher levels of primary enrolment. Education aid given during times of conflict is found to have a significant and positive effect upon primary enrolment. The coefficients for primary education aid on primary completion and gender parity remain positive in the annual panel for the period 2000-2013 and the direction of the

144

differing political and institutional forces also remains the same suggesting the model estimating the aid-enrolment relationship to be robust.

## 4.1. DESCRIPTIVE ANALYSIS

The association between aid and enrolment in primary education is explored in section 4.2. by including education aid as an additional explanatory variable in an education outcome equation in which common inputs – for example, domestic resources available for spending on education, per capita GDP – known to contribute to the outcome of interest (the net primary enrolment rate) are included together in order to measure their independent effects on the outcome variable. Surveys of the macroeconomic literature on aid effectiveness indicate that the effect that aid is found to have is largely dependent upon the selection of control variables used in such an equation (Hansen and Tarp 2001), with results being highly sensitive to model specification. In order to address this issue, control variables were selected for inclusion in the datasets built for this study on the basis of a review of the empirical literature relating to education production functions and according to the importance that they were shown to have in the literature on aid effectiveness in the education sector (for more information refer to Chapter 3). These include government spending on education, per capita GDP, share of the population under 15 years, extent of urbanisation, and the pupil-teacher ratio. Controlling for these variables helps to isolate the effect of aid specifically and to determine the additional impact that aid has upon increased enrolment in primary education. Further variables that it has been suggested influence the effect of aid - governance (stability of governance, democratic freedom and economic openness) and the conflict status of a country - are also included in order to test the way in which they interact with education aid. Their inclusion allows for analysis of the differential impact of aid – allowing for insight into whether, for example, education aid delivered in a country where governance is considered stable (defined here as the government's ability to carry out its declared programme(s) and its ability to stay in office (The PRS Group 2015) - see Appendix 1 for further details) has a greater impact upon primary enrolment than aid delivered to the education sector in a country where governance is markedly weaker.

The present section summarises and describes the distribution of data collected for the group of 61 countries over the period 1970-2013 in relation to each of these variables as recorded in the long-term structural panel (refer to Appendix 2 for complete summary statistics). Bivariate analysis, employing the system-GMM estimator, of both the

explanatory variables and the interactions with aid is presented in this section of the chapter to test their individual significance in terms of the association with net primary enrolment, guiding the selection of explanatory variables and interactions for inclusion in the final multivariate model.

### 4.1.1. Net Enrolment in Primary Education

As donor priorities shifted away from growth-centric perspectives of development toward poverty alleviation during the 1970s (King and McGrath 2012) and with the World Bank (World Bank 1974) making the first staunch case for basic education for all, primary NERs in the 61 countries are shown to have grown moderately from 57 per cent[5] in the period 1970-75 to 59 per cent in 1976-80. The stress upon global finances as a result of the oil crises and subsequent loan defaults, coupled with the policy shift away from achieving basic human needs toward 'structural adjustment' (World Bank 1988; Chung 1989; Mutumbuka 1989), meant that many education systems contracted during the 1980s, particularly in Sub-Saharan Africa where rates of enrolment growth were cut sharply to levels which in Africa were lower even than the rate of population growth (Colclough 1997).

By the period 1990-95 the average net primary enrolment rate across the country grouping had gradually begun to re-establish itself at 63 per cent, whilst the gross enrolment rate was approaching 100 percent (due to over-enrolment as a consequence of repetition or late enrolment); demonstrating that by this time, school systems had achieved the capacity necessary to receive all school-age children (Colclough and Al-Samarrai 2000). Net enrolment in primary education had reached 70 per cent by the late 1990s as the policy effect of the 1990 Jomtien World Conference on Education for All which emphasised the importance of "meeting the basic learning needs" of children, began to take hold with a number of African governments – most notably those of Malawi, Ethiopia, Ghana, Rwanda, Uganda – adopting the EFA agenda, though one largely repackaged as Universal Primary Education (King and McGrath 2012).

Further rapid expansion took place over the period 2000-2010 with the United Nations' declaration of the Millennium Development Goals (King 2007). The MDGs included two

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[5] The following figures are based on the author's analysis of data collected for the purposes of this study for 61 countries with a score less than 0.95 on the Education Development Index and that are classed as low- or lower-middle income. Refer to Chapter 3 - Methodology for further details of how this data has been treated.

education goals: achieving universal primary education and gender equality in enrolment in primary and secondary education, a notable narrowing of the EFA agenda. The new goals were accompanied by a new drive to secure their achievement, with the creation of innovative funding mechanisms; investment in secretariats in UNESCO and UNICEF; the publication of a series of Global Monitoring Reports; and funded academic research which included large-scale investment in research programmes made by DfID – notably the work of the Consortium for Research on Educational Access, Transitions and Equity (CREATE) led by Keith Lewin and the Research Consortium on Educational Outcomes and Poverty (RECOUP) by Christopher Colclough. Among the highlights of this research has been a greater understanding of the multiple points at which potential or actual learners are likely to be excluded from formal schooling (Lewin and Little 2011) and a return to a concern about educational quality (Hungi and Thuku 2010; Zuze and Leibbrandt 2011). By 2011-13, the average primary net enrolment had reached 81 per cent.

When enrolment data for the group of 61 countries are analysed by income it becomes apparent that low-income countries have consistently produced the lowest primary enrolment rates whilst lower-middle-income countries demonstrate far higher average net primary enrolments across time – moving from 40 and 67 per cent in 1970-74 to 76 and 83 per cent in 2010-13 respectively. However, starting in 1995-2000 there is evidence of a marked upward trend in the primary net enrolment rate in low-income countries that has progressed more rapidly as compared to the lower-middle-income group: an increase in the NER of 32 percentage points in LICs as compared to 10 percentage points in LMICs. This accelerated and substantial rise in enrolment might be expected given a focus on enrolling out-of-school children in line with the second MDG of universal primary education. Low-income countries are generally starting from a lower educational base, so efforts to increase enrolments would likely be shown here first and at a greater pace as the existing formal education system is expanded to reach children that have never gained access to the education system before. For lower-middle-income countries with already relatively high enrolment rates by the turn of the millennium, reaching the remaining children out-of-school requires additional efforts that may take longer to complete. Moreover, at these levels of enrolment the focus can be expected to have moved from getting children into school, toward improving the quality of education provision.

### 4.1.2. Education Aid Commitments

In many of the 61 countries for which data is analysed in this thesis, and indeed in many countries across the world, substantial progress has been made in increasing access to education and reducing gender differences in education opportunities. This is apparent even in some of the world's poorest countries such as Ethiopia, where the enrolment rate has more than doubled over the course of the past decade with more than 10 million children having enrolled in primary school. However, significant challenges remain. Even where strong performance may be noted, advances in enrolment and gender equity have been uneven. Sizeable and frequently overlapping disparities may be found between regions, fragile and non-fragile areas, rural and urban areas, and socio-economic groups. Poor children in urban slums in Bangladesh (Hossain and Zeitlyn 2010); the North-Kivu and Kasai-Occidental of the DRC (Jones and Naylor 2014); the nomadic regions of Afar and Somali in Ethiopia (Frost and Rolleston 2013); or the North Eastern states of Nigeria (Nwogu 2015) are much less likely to go to school than children in other areas. Girls account for two out of three out-of-school children in South Sudan (Ministry of Education Science and Technology 2015).

Furthermore, encouraging statistics on access to education mask a crisis in learning. Both national and international studies of learning across countries find unacceptably low and, in some cases, declining levels of learning as coverage expands (Hungi and Thuku 2010; Zuze and Leibbrandt 2011), with high dropout rates as a consequence. In Haiti, just half of children starting in grade 1 complete primary school (World Bank 2015a). It is often argued that the MDGs, by focusing on access, have not paid adequate attention to quality and learning outcomes.

With increasing numbers of children completing a cycle of primary education and demand rising for secondary and tertiary levels (Lewin and Caillods 2001; Lewin 2015b) aid for education in those developing countries where domestic resources remain scarce can be expected to play an important part in meeting some of the financial pressures imposed on the education system.

As years of coverage for aid disbursement data are few - with sector-specific disbursement not available prior to 1990 – education commitment data are routinely used as a proxy in the literature on aid effectiveness (Michaelowa and Weber 2006; Dreher, Nunnenkamp et al. 2008; Christensen, Homer et al. 2010; Birchler and Michaelowa 2015). Although it has

been argued that commitment data are not perfect - in that they may overstate actual aid flows (commitments may not be fully disbursed) and due to the under-reporting of education aid commitments (some transactions may be coded in sectors other than education despite having an education component) - Dreher, Nunnenkamp et al. (2008) demonstrate that the correlation between commitments and disbursements of aid for education over the period for which both series are available to be around 90 per cent and (Hudson 2013) finds that commitments today are almost invariably disbursed in their totality, although in the education sector over a longer lag than in other sectors such as health and humanitarian aid.

The average educational aid commitments across the group of 61 countries have an upward trend over time, similar to that of the average primary enrolment rates. Education commitments in the decade 2000 to 2010, however, show an even steeper rise due to large increases in international finances being made available for education in developing countries following international commitments made to achieve universal primary education and gender parity in education enrolment as part of the MDG agenda. Although this fell in the period 2011-2013 with the corollaries of the global economic downturn and increased pressure on donor education aid budgets.

The impact of any given volume of aid ought to be dependent upon recipient country size (Michaelowa and Weber 2006). The per capita measure of aid commitments accounts for population size by taking into account the number of people who effectively share aid resources in a given country, whilst aid expressed as a percentage of recipient GDP gives an indication of the importance of aid in relation to an individual country's wealth. The per capita measure of aid commitments provides perhaps the most accurate picture of education aid trends, with the figures offering a convenient, easily derived measure for comparing different countries at an instant in time that corrects for the variable of different national populations. An upward trend in education aid commitments per capita over the years is evident, with average country commitments rising from US$ 3 per capita in the period 1970-74 to a peak of US$ 11 per capita in the period 2005-10[6].

As has been referred to in Chapter 2, development 'fashions' have changed over the years and so, consequently, have patterns in the flow of aid to recipient countries. During the 1970s, priorities in development were tilted in favour of low-income countries, with

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[6] Calculated by the author using data from the World Bank (2015a) and OECD CRS (2015). It is important to note that country population size fluctuates between years.

considerable focus on sub-Saharan Africa where famine and conflict appeared to be most obstinate (Lancaster 2007). By the 1980s, mainstream thinking on development was concerned less with basic needs and more with redistribution (Riddell 2007). Emphasis was upon structural adjustment, with aid being tied to economic reforms. This ties in clearly with what is evident in terms of education aid flows during this time - average country per capita education aid figures are lower for both (low- and lower-middle) income groups than perhaps at any other period for which data is available (with the exception of 1970-75). During the 1990s aid 'fatigue' set in as the geopolitical rationale for aid had ceased with the end of the Cold War (Moyo 2009; Novelli 2010). That absolute levels of education aid continue to drop to low-income countries and begin to rise in lower-middle-income countries attests to this as Western donors, who in earlier periods had been the main source of aid funds for low-income African countries in particular, gradually turn off the taps of aid flows and multilateral agencies such as the World Bank begin to dominate the aid architecture (United Nations 2010; Majhanovich and Geo-JaJa 2013). At the turn of the Millennium, the focus of development effectiveness had become the presence of quality governance, at which point higher than ever levels of average per capita education aid expenditure are found in lower-middle-income countries.

It should be noted that, whist absolute aid commitment levels and per capita commitments have shown a substantial increase over the years, education aid commitments expressed as a percentage of recipient GDP have shown little variation – fluctuating between 0.4 and 0.7 per cent of GDP on average across the group of 61 countries. This suggests that, at a global level, recipient countries have experienced economic growth and although absolute education aid commitments have increased, countries have become no more aid 'dependent' than they were in the late 1970s.

That being the case, average education commitments as a fraction of recipient GDP reached as high as 1.1 per cent for low-income countries whilst just 0.6 per cent at their peak in lower-middle income-countries. This is suggestive of a link between a country's GNI per capita (as calculated by the World Bank in their classification of economies according to income group) and their level of 'aid dependency' in terms of education commitments (expressed as a percentage of GDP). That aid dependency is much higher in low-income countries has been argued to be cause for concern given their particular make up (Easterly 2006; Glennie 2008; Moyo 2009) – a position taken by aid 'pessimists' arguing that many low-income developing countries do not currently have a good institutional environment. Braütigam (2000) identifies a variety of reasons why governance and the

institutional environment may be poor in low-income countries: political leaders working to short time horizons or with other priorities may see little immediate benefit in the long-term effort of establishing a capable bureaucracy; economic crises have weakened bureaucratic capacity, destabilised anti-corruption norms, and made it difficult for governments to pay enough to retain talented people; moreover, many low-income countries have only recently emerged from civil wars and in some cases the ravaging of war persists. Aid pessimists argue that in these stark country settings, high levels of aid will have a much less certain impact.

The aid 'optimist' case, as per Jeffrey Sachs' (2005; 2015) thesis, argues that aid can help low-income country governments to more quickly and effectively meet their development objectives, and can improve the standard of living of the poor; thus becoming part of the solution. Sachs rejects the argument that low-income status is the result of poor country governance, positing instead that low economic growth is determined instead by adverse geography and deficient infrastructure - that these countries are stuck in a 'poverty trap' and are in need of external assistance (Sachs 2005: 19). This debate in the aid literature remains highly contentious.

When bivariate regressions of the effect of education aid commitments upon net primary enrolment in the group of 61 countries are run, education aid commitments expressed per capita (and adjusted for purchasing power parity) are found to be significant at the 10 per cent level [0.245 (0.076)]. Aid is not randomly assigned and it is therefore plausible that donors make decisions about the allocation of education aid on the basis of prevailing enrolment rates in recipient countries, alongside other considerations. It may be supposed that if enrolment rates are high, the recipient's education sector is in less need of external educational assistance. In such a scenario, the effect of aid for education on the enrolment rate would be offset by the effect of the enrolment rate on aid and, as such, the endogenous aid-enrolment relationship would lead to an underestimation of education aid's true impact. Addressing endogeneity - in this case caused by simultaneity (interdependence) between variables - is a critical aspect of measuring aid effectiveness, with many statistical techniques used to measure the success of aid highly debated. In order to address the issue here instrumental variable estimation is used which involves finding a variable that is correlated with the problem variable but which does not suffer from endogeneity - an instrumental variable (IV) that is correlated with education aid, but not with the error term. Michaelowa and Weber (2007a) show success with Energy Aid - comprising all assistance allocated to the production of energy, energy sector policy

planning, institution building and distribution management (OECD DAC 2015a).

When the IV Energy Aid is accounted for in the analysis to address the possibility of an endogenous relationship between the primary enrolment and education aid, the size of the effect as well as the significance of the per capita education aid coefficient improves considerably [0.375 (0.042)], indicating that the inclusion of the IV is both relevant and beneficial.

### 4.1.3. Other Explanatory Variables

Hansen and Tarp (2001) argue that aid effectiveness is highly sensitive to model specification, for which reason other factors found to affect Net Enrolment Rates in the development education literature are tested in bivariate regressions in order to inform the specification of the final multivariate model.

The inclusion of public education expenditure is a standard feature of education production functions, although research on its impact is somewhat inconclusive. Bergh and Fink (2006) argue that increased public spending on basic education allows a greater proportion of the population to complete primary and secondary education; whilst Rajkumar and Swaroop (2008) offer evidence that the effect of government spending on education may be positively correlated with the quality of governance. However, RECOUP research on the impact of public expenditure on educational outcomes conducted in Pakistan by Malik and Naveed (2012) demonstrates the difficulties of establishing conclusive causal links between public spending and primary NERs. Likewise, Dreher, Nunnenkamp et al. (2008) conclude from their findings that domestic spending on education has virtually no effect on education outcomes. Al-Samarrai (2003), exploring the relationship between public education spending and education outcomes at the primary school level in developing countries from a cross-country perspective before concentrating on three African case studies – Botswana, Malawi and Uganda – finds the link between resources and education outcomes to be weak, arguing that increased resources are unlikely to be sufficient for achieving international education goals.

In the present study, average domestic expenditure on education as a percentage of GDP across the 61 countries is found to have ranged from 5.2 per cent in the period 1970-74 to 4.5 per cent in the period 2010-13. Although government expenditure on education as a

percentage of recipient GDP marginally contracted, per capita expenditure increased significantly, particularly in the period 2000 onwards. The reasons for this may be three-fold. First, the Monterrey Consensus (refer to United Nations 2002) and the MDGs ask that countries play a much greater role in financing education. Second, in recent years, aid has increasingly been channelled to recipients in the form of general or sector budget support - spent through government structures - swelling public expenditure on education. Third, the spread of multi-party politics following the end of the Cold War has been linked to greater public spending on education. Empirical research conducted by Stasavage (2005) demonstrates that the consequent increases in levels of democracy are associated with greater spending on primary schooling. Per capita domestic spending on education is found to be significant [0.140 (0.100)] at the 10 per cent level in the bivariate regression run for the group of 61 developing countries.

Pupil-teacher ratios are a frequently considered characteristic of education systems; with a questioning of why reduced class size has been shown to increase education outcomes in developed countries (Krueger and Whitmore 2002), whilst the effect of the pupil-teacher ratio is consistently found insignificant in low-income countries (Banerjee, Cole et al. 2007; Duflo, Dupas et al. 2007). Duflo, Dupas et al. (2007) argue that the insignificant effect of smaller class sizes in poorer countries to be the result of weak governance reducing the impact of additional education expenditure. Michaelowa and Weber (2006) find a high pupil-teacher-ratio to exert a significant and negative effect on completion, which they argue may reflect reduced demand for education and earlier drop-out in the case of crowded classrooms. They suggest that parents' perception is clearly that crowded classrooms are problematic and that demand is affected by such perceptions independently of whether these perceptions are justified or not. This point of view is upheld by research on the impact of Free Primary Education in Kenya which saw primary school enrolment increase from 5.9 million in 2002 to 7.2 million in 2003 (MOEST 2004), exerting considerable pressure on the physical and human resources of Kenyan schools with pupil-teacher ratios rising rapidly from 1:40 to 1: 60 (Majanga, Nasongo et al. 2011; Ngware, Oketch et al. 2011). Large class sizes are shown to have led to deteriorating educational quality and eroding initial gains and are an issue of great concern to many Kenyan teachers (Oketch, Mutisya et al. 2010; Majanga, Nasongo et al. 2011; Ngware, Oketch et al. 2011). In the bivariate analysis run here, the average teacher to pupil ratio was observed to drop steadily over time from 1:48 in the period 1970-74 to 1:36 in the period 2010-13. The relationship between pupil-teacher ratio and net primary enrolment is shown to be a highly significant predictor of enrolment [-1.434 (0.000)].

The size of the school population is deemed to be reflective of the relative demand for education. This variable is included with the purpose of holding constant the degree of strain that the composition of the national population places on the education system. A number of countries have well-established education systems that offer near universal primary coverage and are close to doing so at secondary level. A steady decline in the size of the school-age populations has meant that investments in education have grown. As a result, the challenge does not necessarily lie in responding to growing demand for education but problems of teacher supply as related to shortages of specialised teachers, either in terms of subject matter or the ability to work with children with special needs. There are other countries where school-age populations continue to grow steadily and universal primary or basic education has yet to be attained. A greater school-age population may place pressure on the education system for example in terms of the supply or deployment of teachers to meet demand. The availability of resources becomes critical - where countries have abolished primary school fees there has been an influx of millions of new pupils, often without the necessary resources in place (UNESCO Institute for Statistics 2006). Countries with a greater percentage of the population aged less than 15 have the potential for more students to be enrolled in education and a smaller percentage of adults to provide and pay for schooling. Gupta, Verhoeven et al. (1999) report that the share of the population under 15 exerts a strong influence on enrolment. Michaelowa and Weber (2006) also find that a relatively high share of youth significantly increases the difficulties in reaching high completion rates. Whilst absolute numbers of school-age children in the 61 countries analysed in the present study have continued to rise across the country grouping, the fraction of the population that is youth (<15 years) has dropped marginally over time from an average of 44 per cent in the period 1970-74 to 34 per cent in the period 2010-13. There is found to be a highly significant negative correlation between the percentage of the population aged less than 15 and primary net enrolment [-2.795 (0.000)] suggesting that population pressure is an important determinant of enrolment in education. That the correlation is negative indicates that a rise in the youth population places considerable strain on national education systems.

The extent of urbanisation is also supposed to effect enrolment rates, although the evidence for this is mixed with Dreher, Nunnenkamp et al. (2008) finding the variable to be insignificant, whilst Fafchamps and Wahba (2006) find that in the case of Nepal, children living in rural areas were far less likely to attend school than those living in urban areas. That the extent of urbanisation might affect enrolment rates is due to the distance to

school – an issue associated with rural areas (Huisman and Smits 2009). Distance to school is most likely to be problematic for girls, in part as a result of parents' concern for their daughters' safety, which is particularly a hurdle once girls reach puberty. Glick and Sahn (2006) find distance to have a strong negative impact on the demand for education in Madagascar and Colclough, Rose et al. (2000) find the same in the cases of Ethiopia and Guinea. Jakupec and Meier (2015) contend that in order for socio-economic disadvantages to be equalized, adequate funding of education and training systems for rural regions must be realised. The percentage of the population living in urban areas is found to be highly significant in the bivariate analysis, having a positive and substantial effect on primary enrolment rates [1.378 (0.000)].

GDP per capita is frequently employed as a proxy for household poverty (Mingat and Tan 1998; Gupta, Verhoeven et al. 1999; Baldacci, Clements et al. 2004) and is argued to reflect demand for schooling. The Education Policy and Data Center (2008) find, across four studies of growth in access to education, inequality in enrolment to be the product of disparity in pupil income; in almost all cases, the poorer the pupils, the smaller the enrolment rates. Two specifications of GDP per capita - one of which adjusts for purchasing power parity (PPP) – which is expected to reflect demand for education, were run in the bivariate analysis with interesting results. Both measures were found to be significant. In this case, the more intuitive measure of GDP per capita adjusted for purchasing power parity [0.011 (0.000)] is found to be preferable for inclusion in the final model.

The bivariate analysis presented above provides a rich understanding of the correlations between the explanatory variables and the dependent variable of primary net enrolment and may be used to guide the selection of explanatory variables for inclusion in the multivariate model. It shows that once the issue of the potential for endogeneity has been addressed, all explanatory covariates (with the exception of domestic expenditure on education) were found to be statistically significant. Education aid was significant at the 5 per cent level whilst all others were significant at the 1 per cent level (Table 5). Domestic education expenditure was found to be significant at the 10 per cent level in the bivariate analysis. Whilst not significant at the usual levels of acceptable significance (<0.05), given the research's concern with financial inputs and the interest in the effect of public education expenditure in the development education literature, the usual acceptable level of significance was broadened to allow for inclusion of this variable in the multivariate analysis.

**Table 5: Explanatory Variable Selection for Multivariate Analysis**

| Variables | Bivariate Results | Conclusion |
|---|---|---|
| Education aid (per capita) | Significant | Include |
| Public expenditure on education (per capita) | Significant (10%) | Include |
| Pupil teacher ratio | Significant | Include |
| Percentage of youth under 15 years | Significant | Include |
| Share of population in urban areas | Significant | Include |
| GDP per capita adjusted for PPP | Significant | Include |

*Sources: OECD CRS (2015) and World Bank (2015a)*
*NB: 'Significant' indicates a p-value <0.05 (5%) unless otherwise stated*

## 4.1.4. Interactions with Education Aid

Descriptive analysis of the data held for the 61 countries shows that those classed as low-income generally perform worse in terms of educational outcomes and the quality of their political and economic governance. They are also the countries most susceptible to conflict. The relative amount of education aid allocated to low-income countries in particular has been significantly less than that allocated to lower-middle-income countries over the over forty year period. Moreover, aid dependency (as measured by the amount of aid allocated as a percentage of recipient country GDP), is far higher than it is elsewhere in the world - in Zambia and Mozambique, both low-income and highly aid dependent countries, 62 and 51 per cent respectively of total public education expenditure is found to be aid funded[7]. These findings point to the need to understand how education aid performs in these distinct country settings - with the presence of conflict and the quality of political and economic governance considered as factors that have the potential to influence the effectiveness of aid for education.

The bivariate analysis that follows considers how these diverse development environments influence the impact of aid on education outcomes. By including interactions it ought to be possible to examine how country heterogeneity influences the impact of education aid on primary enrolment. As education aid expressed in constant per capita US$ is the most intuitive expression of the aid variable, the interactions of those variables whose effect might reasonably be expected to work through aid (the degree of democratic freedom, economic openness, government stability and the presence of conflict) are discussed

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[7] Calculated by the author using UNESCO Institite for Statistics (2015) and OECD DAC (2015b) data. For further information on how these figures were calculated refer to section 5.1 of Chapter 5.

below. This informs the selection of interaction variables for inclusion in the final multivariate modelling of the education aid-enrolment relationship.

When examining the effect of interactions between aid and variables related to the quality of country governance - government stability; openness to trade; and democratic freedom - on enrolment, the results are found to be mixed (Table 6).

The interaction between government stability and education aid is included in the bivariate analysis as the extent to which the quality of policy and institutions affect the impact of aid is a topic in the development literature that has been heatedly debated (Collier and Dollar 2002; Benyon 2003; McGillivray, Feeny et al. 2005; Nyamongo and Schoeman 2010). There is reason to believe that government stability might affect the degree of impact that education aid may have. (Krauss 2013) finds evidence of political stability being strongly correlated with increased government spending and improved school enrolment in Ghana, arguing a stable and willing government as having been a fundamental condition for tax collection – a prerequisite for public resource spending and a central policy tool for the stimulation of growth and investment in education. In a study on the quality of governance and education spending in Africa, Nyamongo and Schoeman (2010) find 'better' levels of good governance to be associated with higher expenditures on education whereas more corrupt governments will spend proportionately larger amounts on the purchase of military equipment and opportunities for forceful political dominance. As increasingly greater proportions of aid are allocated in the form of budget support, identifying how education aid works in differing contexts of government stability provides insight into the importance of this issue at the education sector level.

Government stability as applied here is a measure both of a government's ability to carry out its declared programmes, and its ability to stay in office; it depends on the type of governance, the cohesion of the government and governing party or parties, the closeness of the next election, the government's command of the legislature, and popular approval of government policies (The PRS Group 2015). The average of the 61 countries' stability indices were between 5 and 6 in the periods 1980-94 with a marked increase in the subsequent period to 9 following the demise of the Soviet Union and end of the Cold War. As government stability increased with the inception of multi-party politics and the consequent reduction in coup d'états, the data show an apparent rise also in the level of aid commitments made to education. Aid during the Cold War period had largely been directed to allies in support of proxy wars (Novelli 2010); following the end of the Cold

War, the declared focus of official aid began to move further towards the alleviation of poverty and the promotion of development. The rise in educational commitments may be reflective of a shift in aid resources toward social sectors during this time of relative peace and is clearly tied with a renewed focus on education following the announcement of the MDGs (Novelli and Robertson 2007). The interaction between aid and government stability is shown to be positively, although weakly, significant [0.074 (0.081)] in its correlation with the net primary enrolment rate, suggesting that aid is likely to be more effective when allocated in countries demonstrating better measures of government stability.

Gwartney, Hall et al. (2015) argue that greater degrees of economic freedom, or particular aspects of economic freedom, bring about an independent and significant positive impact on per capita income, investment, and economic growth. Whether greater economic freedom influences the effectiveness of education aid in particular, is an issue for research in the education literature given the importance placed on education as a predictor of economic growth. The effects of a country's openness to trade, defined here as economic openness, measured by the degree to which the policies and institutions of countries are supportive of economic freedom - the cornerstones of which are considered to be: personal choice, voluntary exchange, freedom to compete, and security of privately owned property (Gwartney, Hall et al. 2015) - show there to have been a very gradual improvement in economic freedom across the group, with countries ranging in place on the index from around 5 in 1970-74 to 6 in 2010-13. Openness to trade is found to have no significance in its working through education aid to impact upon enrolment at primary school level [0.143 (0.273)].

Svensson (1999) and Michaelowa and Weber (2007b) contend that greater freedom in democratic institutions allows for better checks on governments, resulting in the more productive use of aid. It follows that education aid should, therefore, be more effective in countries where there is a greater degree of democratic freedom. Political rights and civil liberties are taken to be an indication of the level of democracy in a given country, covering the broader political and institutional environment (Freedom House 2015). The number of low- and lower-middle-income countries attaining full democratic freedom has increased substantially over time, from just 5 countries in 1970-74 to 15 in 2010-13. Overwhelmingly, the majority of countries indicated not to be free are in the low-income group. Lower-middle-income countries dominate the countries indicated to be free or partly free in most periods. Of those interactions with aid relating to the democratic freedom, it is only the

effect of partial democratic freedom (for a full definition refer to Appendix 1) working through aid that is found to be statistically significant as a predictor of primary enrolment, with the direction of the effect being negative [0.693 (0.077)].

**Table 6: Interaction Between Quality of Governance and Per Capita Education Aid Commitments**

| Interaction | 61 Developing Countries |
| --- | --- |
| Education Aid | -0.282 (0.353) |
| Education Aid * Government Stability | *0.074 (0.081) |
| | |
| Education Aid | -0.063 (0.833) |
| Education Aid * Democratically Partly Free (Ref: Not Free) | *0.693 (0.077) |
| Education Aid * Democratically Free (Ref: Not Free) | 0.374 (0.224) |
| | |
| Education Aid | -0.490 (0.465) |
| Education Aid * Economic Openness | 0.143 (0.273) |

*Sources: Freedom House (2015); Gwartney, Hall et al. (2015); OECD CRS (2015); The PRS Group (2015)*
*P-value in parentheses * significant at 10% ** significant at 5% *** significant at 1%*

There is reason to believe that aid delivered in post-conflict environments may behave differently than in other 'fragile states' where studies have pointed to it being relatively ineffective due to weak capacity and institutions (Burnside and Dollar 2000; Collier and Dollar 2002; Colenso 2011). The cessation of conflict creates an immediate rebound of economic activity as donor and government consumption of local goods and services stimulates broader economic activity, with Collier and Hoeffler (2004) arguing that the economic circumstance of post-conflict societies being therefore quite distinct from other developing countries in the early post-conflict years. They propose that opportunities for recovery enable a phase when economic growth is 'supra-normal', with the need to restore infrastructure juxtaposed against the collapse of revenue, making aid unusually productive.

This finding is tested to see whether it holds true for education aid, given the importance that educationalists place on education in reconstruction efforts (see, for example, Buckland 2005; Aguilar and Retamal 2009; Winthrop, Ndaruhutse et al. 2010), to ascertain whether this is an area in which education aid might be more effectively targeted. Interactions of education aid with conflict (in a particular period, or at any point in time) are also included to help create a better understanding of the effects of educational assistance during times of conflict. Accounting for the effect of current or recent emergence from conflict, various measures of conflict are included as interactions with education aid to help understand how aid works in these difficult development environments. Conflict is defined here as the use of armed force between two parties - at least one of which is the government of a state - and which results in at least 25 battle-

related deaths (Themner and Wallensteen 2012). In each of the five-year time periods, between a quarter and a third of the 61 low- and lower-middle-income countries experienced conflict (UCDP/PRIO 2015). That the prevalence of conflict is found to be so high supports the rationale for exploring the impact of education aid in post-conflict settings, in which education objectives are deemed to be of utmost importance to reconstruction efforts.

Interactions between different measures of conflict - whether conflict was experienced in the given period; whether conflict had taken place in a given country at any point in the period 1970-2013[8]; or whether a country was in a period of post-conflict - and aid are modeled to show the effect of their interaction on primary enrolment. Both the interaction of education aid with conflict in a particular period and conflict at any point in time are found to be significant, whilst the interaction demonstrating the effect of education aid working during periods of post-conflict recovery is shown to be insignificant (Table 7).

**Table 7: Interaction Between Conflict Status and Per Capita Education Aid Commitments**

| Interaction | 61 Developing Countries |
|---|---|
| Education Aid | **0.351 (0.031) |
| Education Aid * Conflict (Ref: No Conflict) | *-0.621 (0.052) |
| | |
| Education Aid | 0.556 (0.157) |
| Education Aid * Conflict at any point during the period 1970-2010 (Ref: No Conflict at any point) | **-2.966 (0.045) |
| | |
| Education Aid | *0.376 (0.035) |
| Education Aid * Post-Conflict (Ref: No Post-Conflict) | -0.429 (0.315) |

*Sources: OECD CRS (2015) and UCDP/PRIO (2015)*
*P-value in parentheses * significant at 10% ** significant at 5% *** significant at 1%*

As the second research question is concerned with how recipient heterogeneity in terms of the quality of governance and the presence of conflict affect aid's impact upon enrolment, a broadening of the usual levels of significance to include those interactions significant at 10 per cent was allowed. The selection of interactions considered in the multivariate modelling of the aid-enrolment relationship is summarised in Table 8.

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[8] Of the 61 countries included in the structural panel, only a third (33.8%) never experienced conflict in the period 1970-2013.

**Table 8: Significant Interactions for Inclusion in Multivariate Analysis**

| Interaction with education aid commitments | Education Aid (per capita constant US$) | Conclusion |
|---|---|---|
| Government Stability | Significant (8%) | Include |
| Democratic Freedom | Significant (8%) | Include |
| Conflict | Significant | Include |
| Post-Conflict | Not significant | |
| Conflict at any Time | Significant | Include |
| Economic Openness | Not Significant | |

*Sources: The PRS Group (2015); Freedom House (2015); UCDP/PRIO (2015); and Gwartney, Hall et al. (2015)*
*NB: 'Significant' indicates a p-value <0.05 (5%) unless otherwise stated*

## 4.2. MULTIVARIATE ANALYSIS

Whilst bivariate analysis may be used to examine the strength of correlation between two variables, multivariate analysis techniques allow the researcher to introduce a number of other variables and to manipulate the association between them in order to understand the connection between the independent and dependent variables. The method can be used to test whether changes (in the case of the panel data used here – changes over time and between countries) in the independent variables have significant effects on the dependent variable. The goal being to determine which variables influence the outcome.

By employing those variables found to be correlated with the outcome variable during the bivariate stage of the regression analysis, the empirical research now turns to address the inclusion of these variables in a multivariate regression model in order to measure the effect of education aid in the group of 61 countries over the period 1970-2013 and the differential impact of aid working in distinct contexts of political and economic governance as well as in the presence of conflict, addressing the two overarching research questions: (i) what is the direct effect of education aid on enrolment over time?; and (ii) how does the heterogeneity of aid recipients affect the impact of education aid upon primary education enrolment and completion?

A critical problem when modelling the aid-enrolment relationship is that education aid cannot reasonably be considered exogenous to enrolment. Aid is not randomly assigned, with both indicators of governance and need having been shown to be related to aid allocations (McKinlay and Little 1977; Thiele, Nunnenkamp et al. 2007). Assuming that aid donors deem the necessity for support of the national education system to be a significant factor in determining their aid allocation patterns, then it would be expected that donors ought to distribute more aid for education to countries demonstrating low NERs. This

indicates a problem of reverse causality. It is also assumed that the relationship between public expenditure on education and the pupil-teacher ratio is likely to be endogenous, with greater NERs (indicating more primary-aged children enrolled in school) plausibly leading to a lowering of the amount of spending available per pupil and increasing the number of students per teacher. Under this scenario, the causal effect is seen to run from the primary enrolment rate towards domestic expenditure on education and the pupil-teacher ratio rather than the other way round.

In order to address the potential for endogeneity and simultaneously to correct for the bias associated with the introduction of the lagged dependent variable in the dynamic panel model context, a system Generalised Method of Moments regression estimator is employed. The estimator has several advantages that favour its use over alternatives such as the Ordinary Least Squares estimator. By design, the system GMM estimator presumes that the independent variables are endogenous and therefore employs lags of each of these variables to act as their own instrument. The possibility of including lagged explanatory variables as their own instrument offers the benefit of a strong association with the initial variable; nevertheless it becomes difficult to make the case that this is not correlated with the error term. The issue usually presents itself in situations where endogeneity is the product of reverse causation, with the outcome variable wielding influence over the regressor concerned.

In the association between education aid and education outcomes if the current level of education aid is affected by the current level of primary enrolment, the lag of education aid will likewise be affected by the lag of primary enrolment and using the lag of the education aid variable may be insufficient to address the reverse causality problem. In order to adequately address the endogeneity issue and potential for reverse causation, the final multivariate model regressions were estimated with Energy Aid as an instrumental variable as carried out in the bivariate analysis, described in section 4.1 of this chapter.

### 4.2.1. The Direct Effect of Per Capita Education Aid Commitments on Primary Net Enrolment

Table 9 displays the results for Model 1 in which an enrolment equation is modelled to measure the effect of per capita education aid commitments on the primary net enrolment rate for the group of 61 developing countries over the period 1970-2013.

**Table 9: The Effect of Per Capita Education Aid Commitments on Primary Enrolment 1970-2013**

| | 61 Developing Countries (Model 1) |
|---|---|
| **NER** | |
| L1. | ***0.308 (0.000) |
| | |
| Period (Reference: 1970-89) | *-2.503 (0.068) |
| Education Aid Commitment | ***0.348 (0.007) |
| Domestic Education Expenditure (per capita) | 0.015 (0.147) |
| Pupil-Teacher Ratio | -0.127 (0.350) |
| Youth Population | *-0.528 (0.079) |
| Extent of Urbanisation | ***0.318 (0.000) |
| Per Capita GDP (adjusted for PPP) | **0.001 (0.027) |
| Education Aid Squared | **-0.000 (0.021) |
| Education Aid*Government Stability | ***0.007 (0.004) |
| Education Aid*Democratically Partly Free (Ref: Not Free) | -0.064 (0.583) |
| Education Aid*Democratically Free (Ref: Not Free) | -0.026 (0.813) |
| Education Aid*Conflict (Ref: No Conflict) | *-0.310 (0.075) |
| Education Aid*Conflict at any Time (Ref: No Conflict) | -0.190 (0.281) |

*Sources: OECD CRS (2015); World Bank (2015a); The PRS Group (2015); Freedom House (2015); UCDP/PRIO (2015); and Gwartney, Hall et al. (2015)*
*P-value in parentheses * significant at 10% ** significant at 5% *** significant at 1%*

It is evident that the lag of the dependent variable - enrolment - holds considerable explanatory power [0.308 (0.000)]. Inclusion of a lag of the dependent variable in the right hand side of the explanatory equation has the advantage of accounting for the possible persistence in outcomes, with the initial level of education predicting future rates of enrolment. It is theoretically appealing as the level of enrolment in primary education in the previous period may be assumed to be highly relevant to primary enrolment in the subsequent period which appears to be the case as indicated by the positive coefficient result. Of course, although NER in year n-1 will always have a correlation with NER in year 1, it should not be assumed that this is a causal driver of enrolment rates in the long term.

A dummy variable 'Period' is included in order to allow comparison of enrolment between the period 1970-1989 and 1990-2013 - offering insight into enrolment outcomes during and following the Cold War. This is of interest because the post-Cold War period (here denoted as 1990-2013) witnessed increasing global consensus towards the objective of achieving universal primary education following the 1990 World Conference on Education for All that was later fully realised with the signing of the Millennium Declaration in 2000, and has also seen dramatic expansions in primary education enrolment. There has been a

particular emphasis on the global community coming together to work toward the attainment of universal primary education. The period variable demonstrates significant power in predicting the outcome of the dependent variable [-2.503 (0.068)]. The period 1990-2013 is correlated with a 2.5 per cent greater rise in primary net enrolment as compared to the period 1970-89. That this period should be such a significant predictor of primary enrolment when controlling for all other covariates indicates that the importance of these global goals runs beyond raising additional resources for education - it suggests a 'policy effect'. The findings indicate that, as the world order shifted from policy driven by political ideology - a politically competitive process with no universal ground in which developing countries sided with either Communist or Capitalist orthodoxy - toward a development-led consensus that culminated in an unprecedented global effort to align education policy in the pursuit of universal primary education, enrolment in education improved dramatically. This finding is a strong advocate for global education goals. Global goals may be effective in themselves as local, national and international policies - and actors at each level - converge and the intensified collaborative effort to create an environment conducive to improving enrolment in primary education does just that.

Education aid commitments expressed per capita have a positive and statistically significant effect on enrolment [0.348 (0.007)] - with a US$ 1 increase in average per capita education aid increasing school enrolment by around 0.3 per cent. A non-linear specification of education aid (Aid Squared) is employed to depict the potentially decreasing returns to aid investment in education. There is evidence of a diminishing effect of aid on primary enrolment with the negative coefficient for commitment per capita squared working in the expected direction, but the magnitude of this effect is negligible.

### 4.2.2. The Influence of Governance and Conflict on Aid's Impact

As the second research question demands an understanding of how governance and conflict influence the impact that education aid can have at the country level, interactions between education aid and variables relating to the quality of governance and the presence of conflict were included in the modelling of the aid-enrolment relationship. Earlier empirical work on the effectiveness of education aid has focused almost exclusively on estimating the overall effect of aid for education (Michaelowa and Weber 2006; Dreher, Nunnenkamp et al. 2008; Christensen, Homer et al. 2010). By including these interactions between the education aid variable and those variables that describe the differing political,

and institutional forces of developing countries as well as their vulnerability to conflict, insight is gained into not only *whether* aid is effective, but also to *where* it is effective.

When the quality of governance - for the purposes of this thesis defined here in terms of government stability and extent of democratic freedom - is argued in the macroeconomic literature on aid effectiveness to affect the impact of aid this is invariably suggested as an indication of the fungibility of resources, implying that additional aid frees government resources for spending activities that may be detrimental to the recipient country's overall development when good policies are not in place. The argument usually proposed in support of the position that aid effectiveness depends on the quality of governance in the recipient country is based on the assumption that aid is fungible (Pack and Pack 1993; Swaroop and Devarajan 1998; Pettersson 2006; Van de Sijpe 2013). It is supposed that recipient countries demonstrating low quality governance will be more likely to substitute aid funds intended for education for tax relief or expenditure in other sectors - for example, expenditure on arms - whilst governments in recipient countries with high quality governance will be less willing and able to do this. Aid, it is argued, will therefore be more effective in countries with high quality governance.

The effect of government stability (in terms of government unity, legislative strength and popular support) - an indicator of good governance that has not been used previously in the education aid effectiveness literature - working through education aid is shown here to be significant in predicting primary net enrolment [0.007 (0.004)], with better indicators of government stability associated with improvements in the impact of education aid upon primary enrolment. The effect of recipient country democracy working through aid - captured by a dummy interaction variable combining education aid with each of the Freedom House (2015) Free, Partly Free, and Not Free categories of democracy - likewise suggests that greater levels of democratic freedom are positively associated with larger gains in the impact of education aid upon enrolment rates. However, in the instance of this variable, the interaction term is not significant.

The findings from Model 1 suggest that whilst better policies and institutions (good governance) do affect the impact that education aid has upon levels of primary enrolment, the issue of fungibility in the education sector may not be as (statistically or substantially) significant as has been previously assumed. Dreher, Nunnenkamp et al. (2008), who include an interaction between democracy and education aid, likewise find the term to be insignificant. Similarly Wolf (2007), who explores the issue of good governance by

including a number of interaction terms relating to the level of decentralisation, freedom of the press, and control over corruption, finds none of these indicators of good governance to be significant. What may be inferred is that whilst aid is likely to have a lesser impact where there is no education plan; political will is lacking; or resource mobilisation is low, the case (based on econometric evidence alone) for not allocating education aid is not sufficiently strong.

Educationalists place significant importance on the role of education during and after conflict (Buckland 2005; Aguilar and Retamal 2009; Winthrop, Ndaruhutse et al. 2010). The effect of aid allocated to countries experiencing conflict is positive - with an average increase of US$ 1 in per capita education aid commitments in a conflict-affected country associated with a 0.3 per cent higher primary enrolment rate than in a country not currently experiencing conflict [-0.310 (0.075)][9]. This finding is particularly interesting as it is well known that conflict affects the immediate provision of education in many ways: due to the death or displacement of teachers, staff and students; through targeted attacks on schools; increasing teacher absenteeism; and restricting access for internally displaced children (Abdi 1998; Buckland 2005; Shemyakina 2011). That education aid given during conflict is more effective may well be due to its 'dampening' effect, meaning that more children enrol in school than might have done otherwise as a direct result of education aid programmes put in place. What these findings imply, with regards to the mechanisms under which aid for education works is that education aid is likely to be most effective in these 'fragile' contexts of conflict when the international community is in place, managing aid directly and being in a position to stem the practices of wastage and corruption.

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[9] It should be noted that the data does not capture humanitarian aid apportioned to education in emergency situations. While ODA capture some humanitarian aid, the majority of humanitarian assistance – which would reasonably be expected to be higher in countries suffering the corollaries of conflict – is disbursed through other channels. Humanitarian assistance is recorded by the UN Office for the Coordination of Humanitarian Affairs (OCHA) Financial Tracking Service. Analysis of humanitarian education aid data show, however, the amounts to be extremely low, ranging between 1.5 and 2.2 percent of total humanitarian assistance in the period 2010 to 2013, with the absolute amount of aid allocated to education in humanitarian situations averaging US$ 165 million in the same period (calculations by author based on UN OCHA FTS data). These totals were to all countries experiencing humanitarian crises: those suffering from floods, earthquakes and other natural disasters, as well as those experiencing conflict. That the per capita education aid coefficient for conflict-affected countries does not capture all humanitarian aid is not considered to be problematic as, given the minimal amounts of humanitarian aid allocated to the education sector during times of conflict, its inclusion would not be expected to significantly change the results presented in this study.

### 4.2.3. Sensitivity Testing

This section presents tests for robustness and extensions of the results discussed above, addressing limitations imposed by the choice of variables, in order to ensure the validity and generalisability of the findings (refer to Appendix 3 for all model results).

As the different durations of primary education may distort the international comparability for those countries which differ from the typical duration of five or six years, sensitivity testing of the results is conducted by running additional regressions that eliminate those countries with a cycle of primary schooling lasting longer than six years (Model 2). Furthermore, distortions resulting from the shortcomings of enrolment rates as an education outcome variable are minimised by running additional estimates for a reduced sample, eliminating countries with exceptionally large increases in enrolment rates. The outliers Indonesia, Malawi, Rwanda, Togo and Uganda - countries where enrolment rates have risen particularly rapidly during certain periods, at least in some cases at the cost of deteriorating education quality (as reflected in high failure and repetition rates in Rwanda and Togo, steeply rising pupil-teacher ratios in Malawi, and lower test scores in Uganda) - are removed (Model 3). Liberia, Lesotho, Malawi, and Tanzania are excluded, because reported enrolment rates increased by more than 20 per cent in a single year and by 10 percentage points at least once over the period under consideration (Model 4). Both relative and absolute changes are considered when defining the cut-off point, because the two deviate considerably at the tails of the distribution. Exclusion of these potentially influential outliers has only a nominal effect on the size of the education aid coefficient, but the results are not statistically significant.

Robustness tests also include replicating the analysis for a shorter period of observation (1970-1995) to account for the 2003 UNESCO revision of estimates for primary NER for the period 1998 to 2001 which may have been distorted as a result (Model 5). For some countries, the revision is associated with a major break in the series on primary enrolment. Comparison of old and new data in years for which both series are available shows that discrepancies were minor (less than 2 percentage points) in 38 of the 61 sample countries for which this comparison was possible. The revision resulted in major discrepancies (more than 10 percentage points) in 7 countries, in 4 of which the old series appears to have overstated enrolment rates. Model 5 likewise assesses the sensitivity of the results as may have been affected by the recent shift from sector-specific aid, including aid for education, toward general budget support and multisector aid. It may be the case that accounting only

for sector-specific aid data understates the contribution of aid to education objectives in recent years. Several donors favour general budget support over project aid for specific targets. The degree to which general budget support is spent upon educational objectives is not known and a similar argument can be made about multisector aid. An evaluation conducted by Thiele, Nunnenkamp et al. (2007) on the composition of aid indicates that this is unlikely to pose serious problems. In contrast to donor announcements, the shares of general budget support and multisector aid in total aid are found to be lower in the period post-2000 than in the early 1990s.

Years of coverage for disbursement data are few for which reason the long-term panel dataset contains data on aid commitments only. These data for assessing the impact of aid for education are imperfect as commitment data tend to overstate actual aid flows – with commitments not being fully disbursed – and, an issue working in the opposite direction, due to the under-reporting of education aid commitments. That commitment data overstate aid flows is an issue that cannot be resolved because sector-specific disbursement data are not available prior to 1990. Aid disbursements to primary education are therefore considered as an alternative measure of aid, with tests run over the shorter time-series of 2000 to 2013. The annual panel allows for analysis of aid data for the same group of 61 countries specifically in the period since the inception of the MDGs (2000-2013) during which time there has also been a shift toward the greater use of budget support and recipient-led aid policies. The availability of data is considerably greater too, allowing for analysis of aid disbursed at a sub-sectoral level meaning that it is possible to examine the effect of education aid disbursed in support of primary education upon outcomes at that level. In this case, the analysis looks at alternative, more meaningful education outcomes at the primary level - primary completion rates and gender parity ratios in primary education.

Models 6 and 7 account for primary completion rates (PCR) - relating to the number of students completing primary education to the total number of children of the corresponding age group – the preferred indicator for measuring participation (and a proxy for educational quality) in primary education. Whilst primary completion rates are suggested as being superior to enrolment rates in measuring progress toward education-related MDGs, accurate data on primary completion are available only since 1988, hence their inclusion in the robustness testing. The results of the annual panel largely confirm analysis of the structural panel (1970-2010) in finding primary education aid to be positively associated with the primary completion rate. In Model 6 (the preferred results), which includes the effect for a one-year lag of primary education aid disbursements on the

primary completion rate over the period 2000-2010, the effect of aid is found to be highly significant, although the coefficient is somewhat smaller [0.080 (0.043)]. That the coefficient is smaller is to be expected given that less variability in completion rates would be expected year-on-year as opposed to in the structural setting where the outcome variable is averaged over a period of five years. The shorter period of observation appears also to affect the interaction variable coefficients. All are found to be insignificant, as these structural variables are likely to show little variation over this shorter timeframe, rendering their effects insignificant in the short-run.

The purpose of aid for primary education is not only to increase enrolment and quality in education, but also to improve equity in access to education. Gender gaps have received a considerable attention in the development literature for many years and continue to be a priority issue for policymakers. MDG 3 is focused on reducing gender inequality in both primary and secondary education. The emphasis placed on gender inequality is partly a result of literature establishing the importance of gender equality in education on economic growth. Gender equality is shown to have both direct and indirect impacts (through investment and population growth) on economic growth (Klasen 2002). Models 8 and 9 account for the outcome of primary education aid upon gender parity within the primary classroom. As is found in a working paper published by Maiga (2014) for aid to primary education, the coefficients are positive but insignificant.

A final additional sensitivity test included government expenditure on education being dropped from the equation in Model 10 run on the short-term annual panel: the reason for this being that the aid coefficient may be biased downward when government expenditure is included as some aid is accounted for in the budget in the form of general budget and education sector support. That the aid coefficient shows an increase is indicative of there being an expenditure-increasing effect of primary education aid, albeit a small one - that it is not larger may be due to limited amounts of aid being accounted for in the budget.

Since aid for education remains positive and significant after performing several sensitivity tests to account for limitations imposed by the choice of variables, the conclusion that aid to the education sector is effective in predicting education outcomes at the primary level appears to be strong. The results are robust to the method of estimation, the control variables incorporated, instrumentation employed to control for the endogeneity of aid, and alternative model specifications.

## 4.3. CONCLUSION

The research presented in this chapter draws on key themes in the broader macroeconomic literature on aid effectiveness that plausibly propose country heterogeneity to be an important influence upon the impact of aid. This study does not suppose the effect of aid to be homogenous, as it is invariably treated in econometric studies on aid's impact in the education sector (see, for example, Dreher, Nunnenkamp et al. 2008; Birchler and Michaelowa 2015); rather it is assumed that differences in the very distinct development environments (in terms of economic and political governance, and the presence of conflict) into which aid for education is disbursed dramatically affect the impact it will have upon education outcomes. Moving beyond previous attempts to examine the overall impact of education aid (whether aid works), the research addresses the issue of country heterogeneity in order to understand the conditions under which education aid works best (*when* aid works and *when* it does not) - pooling data for variables related to the quality of political and economic governance and the incidence of conflict that it is hypothesised ought to affect the impact of aid. Analysis is carried out with the intention of determining the conditions necessary for the optimal allocation of education aid and in doing so the findings offer the possibility of understanding the effectiveness of education aid in different contexts relative to development assistance more generally. As the new international education agenda for the post-2015 period is shaped which emphasizes the need to for external support for those countries least able to help themselves (United Nations 2015a), understanding where aid for education works, under what conditions, and has become of critical importance.

The findings show education aid to have a positive association with primary enrolment – with an average increase of US$ 1 in per capita education aid equated with a 0.3 percentage point increase in primary net enrolment. Differing political and institutional forces are found impinge upon the absorption and application of aid and its outcomes in the education sector across developing countries. Specifically, aid committed to countries with more stable governance is shown to be significant in the production of higher levels of primary enrolment. Likewise, education aid given during times of conflict is found to have a significant and positive effect upon primary enrolment. The coefficients for primary education aid on primary completion and gender parity remain positive in the annual panel for the period 2000-2013 and the direction of the differing political and institutional forces also remains the same indicating the model estimating the aid-enrolment relationship to be robust.

One of the principle attributes of the panel data methods of analysis employed here is that they allows for variation *between* countries over time - allowing for exploration of the additional impact that aid has on primary enrolment, whilst controlling for domestic spending on education and other structural elements of the national education system that are likely to promote enrolment growth. However, it is patterns *within* countries over time that may illuminate where aid has had an impact, and where it has not. Addressing this gap is important, as the successes usually attributed to education aid are, inevitably, also the product of aid dependency, national education policies, donor relations, political will, regional demographics and the innumerable processes at play in the provision of education within a country – all of which are related to individual country circumstance. As such, for those interested in understanding whether education aid works and under what conditions, it is necessary to disentangle these issues at country level. The following chapter therefore seeks to complement the findings of the macro analysis carried out above by illustrating the different patterns of aid effectiveness at country level through use of the disaggregated panel data and a review of education aid evaluations – focusing specifically upon issues of aid dependency and consequences for the efficient allocation of education aid.

# 5. Aid Effectiveness: Issues of Dependency and Allocative Efficiency in Education

Key points of discussion at the World Education Forum held in Incheon, South Korea in March 2015 included attainment of quality primary and secondary education for all children by 2030 as part of the single education goal that is to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (United Nations 2015b); and the possibilities for creating a new financing paradigm engendering a much higher level of investment and mutual ownership, with aid and other development finance prioritised to according to country context.

It is apparent that there is a significant financing gap between the funding currently available for education and that needed to achieve the ambitious new sustainable education development goal. According to UNESCO's (2015: 297) Global Monitoring Report, bringing quality and universal pre-primary, primary and lower-secondary education to low- and lower-middle income countries by 2030 will require an additional US$ 22 billion annually in external financing than is currently available. It is implausible to think that this may be made up by official development assistance alone - greater emphasis will need to be placed on non-traditional donors, private philanthropy, and remittances from the diaspora among other external sources (United Nations 2014) - but no doubt substantial requests will continue to be made of traditional donors and as the primary source of external education financing in the MDG period for which comparable data is available, DAC aid flows provide the most robust evidence base upon which to leverage future external assistance in support of the goals.

The post-Dakar EFA decade witnessed a considerable focus on improving aid recipient countries' potential for developing evidence-based education policies. Laudable progress has been made; however, there has been less notice paid to enhancing the catalytic impact of aid through more evidence-based aid allocation. The Paris Declaration (2005) on Aid Effectiveness is concentrated upon enhancing the technical efficiency of aid delivery and use. As Fredriksen (2013) points out this is important but not sufficient to ensure the most

effective use of education aid if aid is not distributed strategically to sub-sectors, purposes and countries in order to maximise its impact. As a consequence of the 2008 global financial crisis, the volume of education aid is unlikely to increase in the near future at the rate seen during the past decade, meaning that aid will account for a declining share of recipient countries' education budgets. Thus, the ability of aid to stimulate progress towards the post-2015 goals will increasingly depend upon it being allocated more strategically. The stocktaking exercise provided by the consultation process on the post-2015 development agenda offers the chance to contemplate and reinvigorate the aid effectiveness agenda. Demonstrating where, when and how education aid has been effective will play an important role in mobilising the additional aid finances that will be required.

The analysis presented in Chapter 4 has demonstrated that aid for education has had a positive effect on primary enrolment over the period 1970-2013 and upon educational quality in the period 2000-2013, as well as offering insight into how government stability influences the ability of aid to improve education outcomes over a large swathe of countries. One of the principle attributes of the panel data methods of analysis employed is that it allows for variation *between* countries over time - allowing for exploration of the additional impact that aid has on primary enrolment, whilst controlling for domestic spending on education and other structural elements of the national education system that are likely to promote enrolment growth. However, it is patterns *within* countries over time that may illuminate where aid has had an impact, and where it has not. Amongst those countries accounted for in the dataset constructed for this thesis, Tanzania, Ethiopia and Afghanistan have experienced exceptionally large enrolment growth over the last 10 years coincident with major educational aid programmes calculated to increase enrolment. Other countries, such as Malawi and Pakistan, have witnessed only moderate increases in their primary enrolment rates despite having received substantial volumes of aid for education. This chapter draws on the data from the panel dataset relating specifically to the MDG period (2000-2013) to help identify contrasting cases for discussion, comparing similarities and differences in order to gauge how future education aid for spending at primary level can be allocated more strategically to maximize the effectiveness of total education spending - of which domestic resources constitute almost always by far the largest share - for the greatest effect towards the post-2015 education Sustainable Development Goal.

For country-specific aid, an important concern in the strategic allocation of aid is aid dependency efficiency: the extent to which aid is allocated in ways that avoid creating aid

dependency harmful to self-reliant education development. The first section of this chapter therefore examines the extent to which countries accounted for in the analysis are dependent upon aid for the financing of their education systems. Discussion then moves on to identify learning in aid allocated at country level - where it has worked and where it has not, taking into account issues of aid dependency, teasing out the findings of the previous chapter and drawing on country-based aid evaluations and examples. The final section of the chapter looks at the issue of allocative efficiency - the extent to which aid is allocated to purposes and inputs where it has the greatest catalytic impact on national education outcomes. It does so by determining priority countries demonstrating the greatest 'need' for education aid.

## 5.1. AID DEPENDENCY EFFICIENCY

Fredriksen (2008) argues that it is the ability of countries to finance national education systems that has been a key factor in explaining enrolment trends in the period since the 1961 Addis Ababa target of reaching Universal Primary Education (UPE) by 1980. Despite noteworthy growth in gross enrolment rates in the period 1960-80 that far exceeded expectations, the goal was missed due to the unforeseen doubling of the primary school age population in sub-Saharan Africa. GERs subsequently contracted to 72 per cent, only regaining their 1980 level of 80 per cent by 2000. This was, he argues, the result of education budgets increasing by just 2.3 per cent annually between 1980 and 1999, below levels of population growth and betraying the economic crisis that had hit sub-Saharan Africa in the mid-1970s. In order to overcome stagnant public budgets, a number of countries introduced school fees, a cost parents could ill afford with the result of a major setback to UPE (Green, Little et al. 2007; Colclough and Webb 2010). Total education budgets have since increased significantly in the period to present, and school fees have been abolished in many countries. Fredriksen (2008) finds improved public financing to be the result of a combination of resumed economic growth; increases in the share of GDP allocated to education and increased growth in education aid.

The question that is relevant to this last period of educational assistance - that of the MDGs - and to the financing of education in the post-2015 SDG period is whether the increase in education aid has led to increased aid dependency. In the wake of the 2000 Dakar EFA conference, the international community concentrated upon mobilising

additional aid in order to support progress towards the education goals. There has been less consideration of the risks related to aid dependency and to the sustainability of increased education aid. It is important that such risks are examined, not, as Fredriksen (2013) argues, because increases in aid for education are not desirable, but because the risks might be better managed - in particular through the more strategic use of aid to reduce or 'grow out of' aid dependency in future, or curb the potential risks associated with such dependency. Risks include donor interference in domestic policies to issues resulting from dependency problems arising from reliance upon invariably unpredictable aid to finance teacher salaries (Malik and Naveed 2012; Resnick 2012). For example, the Government of India refused the offer of a substantial amount of aid for primary education until 1993 because of concerns that it would lose sovereignty over policy decisions. Even after that, aid was less than 2 per cent of total expenditures on primary education UNESCO (2006: 98).

It may be argued that the level of aid 'dependency' depends crucially upon the development of domestic funding. Increased economic growth is found to explain the increase in GDP allocated to education by approximately 45 per cent in the post-2000 period (Fredriksen 2008: 29-33). While there is still some room in many countries for further increases in the share of GDP allocated to education, the dominant factor in the future development of aid dependency will continue to be economic growth. Moreover, some uses of aid create more 'dependency' than others. For the same level of aid, the extent to which aid represents a 'dependency risk' depends on what it finances. For example the increased use of budget support means that the share of teacher salaries financed by aid has increased, and that an abrupt reduction in aid could interrupt regular payment of teachers. In turn, this could pose political risks for the government including strikes, which could affect students negatively as well as the impact of earlier aid. One way to lessen this risk would be to increase aid predictability. However, this would need to be weighted against other objectives such as making aid more performance-based (Birdsall and Savedoff 2010). Another way could be to use aid to finance items where interruption of aid would cause less risk.

Support for capacity building could impact on dependency in different ways, depending on the type of aid provided. For example, to the extent the long-term resident technical assistance common in earlier periods tended to substitute for rather than build national capacity, this type of aid tended to increase dependency (World Bank 1988). On the other hand, strategic use of technical assistance and foreign training to build national capacity (as

done in many East Asian countries) could lessen dependency and reduce the need for future aid (Fredriksen and Tan 2008).

### 5.1.1. The Relative Importance of Education Aid

In his paper *Bridging the Financial Gap: Implications for Equity and Access* presented to the 18<sup>th</sup> Conference of Commonwealth Education Ministers, Lewin (2012: 1) identifies the resources available to finance progress towards education goals as being determined by national revenue and the amount allocated to public services; the proportion of domestic expenditure apportioned to education; and private household expenditure as a complement to public spending. He goes on to argue that for the provision of education to be financially sustainable it will depend upon the proportion of school-aged children; the cost per child of a school place; the percentage of GDP allocated to education; the amount and distribution of household contributions; as well as the cost of providing the necessary infrastructure and materials for learning. Where insufficient resources are available to finance universal access to basic education, gaps may be filled with external assistance as part of plans that make clear the route to future sustainable self-financing.

Sustainable domestic modes of financing are no doubt the most important sources for achieving education goals. In many countries, widening the tax base and ensuring that an appropriate share of government expenditure is apportioned to education - the UNESCO (2015) EFA Global Monitoring Report suggests a government expenditure target of 15 to 20 percent - will be among the most important means for securing future education goals (IMF, OECD et al. 2011; Bhushan, Samy et al. 2013; UNESCO 2015). However, it is argued that even with such reforms many poor countries will be unable, for the foreseeable future, to bear all the costs of education, particularly given the financial needs related not only to expanding access to schooling but also to improving quality in education provision (UNESCO 2013). Increased domestic resource mobilisation alone will often be inadequate and international aid will therefore be needed (UNESCO 2010).

Colclough (2011) posits that aid for education plays an important contributing role in meeting education goals, particularly for those countries furthest away from achieving EFA. While this point is generally acknowledged, it is in practice, difficult to determine the extent to which aid contributes to education spending in country for a number of reasons, including the complex web made up of multiple sources of education finance - from

government, aid donors, households, individuals and private organisations - as well as incomplete and inconsistent reporting. Moreover, donors finance education through government budgets, but also outside them via different agents such as NGOs and civil society organisations. Top line public expenditure on education statistics collated by the UNESCO Institute for Statistics and published by the World Bank (2015a) represent government spending on education, when the government is acting as the spending *agent*. This point is crucial as it means that what is accounted for in the figures includes not just domestic resources spent on education, but also those aid resources allocated to education that are spent through government channels - aid that is 'on budget'. Aid spent outside of the government budget or government systems - 'off budget' - is left out of public expenditure data, complicating analysis of the extent to which education spending at country level is aid financed and, therefore, whether countries are becoming more or less dependent upon aid to fund their education systems over time.

Aid for education that is channelled off-budget is likely to be sizeable in many countries, and its inclusion in studies wishing to understand the relative importance of aid in public spending on education (and thereby the extent of aid dependency) is therefore important. Total ODA as reported by the OECD DAC has substantially exceeded external aid financing as reported by the government in a number of countries - in Uganda by 10 per cent of GDP (Fagernas and Roberts 2004aa); in Zambia by between 20 and 40 per cent of GDP in certain years (Fagernas and Roberts 2004bb); and in Senegal by 12 per cent of GDP, twice as high as aid reported by the Ministry of Finance (Ouattara 2006). Fagernas and Schurich (2004) report approximately 40 per cent of total aid to be off-budget, while the Republic of Liberia Ministry of Finance (2009 cited in Van de Sijpe 2013) estimate approximately three-quarters of aid in the fiscal year 2009-10 to have been off-budget.

In order to establish a clear picture of the relative contributions of donors and governments to the education sector, the most complete and internationally comparable data currently available on public education expenditure and ODA is used, published by the UNESCO Institute for Statistics and OECD Development Assistance Committee (DAC) Creditor Reporting System (CRS) respectively. A technical note published by UNESCO (2012b) outlines three important issues that must be considered when attempting to untangle education aid from public expenditure:

First, that aid to education reported to the CRS overstates foreign contributions by including aid that does not reach recipient education systems (donors' administrative costs

and 'imputed student costs' - costs incurred by donor countries' higher education institutions when receiving students from developing countries[10] and scholarships). This issue is addressed in the present analysis by using a sub-set of ODA - country programmable aid (CPA) to education data, available at the sectoral level since 2004 and a closer approximation of aid directly supporting developing country education systems - as opposed to total education aid figures.

Second, considering aid specifically allocated to the education system risks missing an important part of donor support that is channelled to the Ministry of Finance in the form of general budget support - aid that is not earmarked to a specific sector and can be spent according to national priorities. UIS questionnaires do not ask about general budget support; the assumption here, then, is that budget support channelled to education will be recorded in public expenditure on education figures as reported by countries. A 20 per cent share of country-programmable general budget support is therefore added to the education aid figures based on the recommended share of the budget that should be dedicated to education (FTI 2006; UNESCO 2015).

Third, determining whether education aid is 'on' or 'off' budget - disentangling whether donor support to education has been channelled through government systems, for example via sector budget support, pooled or programme funds, or earmarked projects recorded in public expenditure accounts; or whether it has been delivered in parallel through projects implemented by NGOs or by private entities - is complicated by the lack of accurate recording of both on and off budget aid by governments. The UNESCO (2012b) estimate of 60 per cent of country-programmable aid to education as being on-budget and 40 per cent off-budget is adopted. The methodology for calculating these estimates compares direct aid to education as stated in country reports and education CPA figures reported by donors to the OECD. Figures for the sample countries for which data is available are averaged over a period of eight years in order to smooth out volatility.

Taking into account the considerations outlined above, and in order to obtain an estimation of the relative importance of aid in education financing using data available at international level, first the share of aid in the education budget (from donors and governments, but only what is on budget) is calculated using the following formula:

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[10] In 2012, the year for which the most recent and complete aid data was available at the time of access, one quarter of all direct aid to education was imputed student costs and scholarships, around 80 per cent of which coming from France, Germany and Japan (OECD CRS 2015).

<div align="center">**Equation 3: Share of Aid in Education Budget**</div>

<div align="center">$(20\% * \textit{general budget support CPA}) + (60\% \textit{ Education CPA})$</div>

<div align="center">*Total education budget*</div>

In order to calculate the share of aid in total public funding of education (from donors and governments both on and off budget), the following formula is employed:

<div align="center">**Equation 4: Share of Aid in Total Public Funding to Education**</div>

<div align="center">$(20\% * \textit{general budget support}) + \textit{Education CPA}$</div>

<div align="center">*Total education budget* $+ 40\%$ *Education CPA*</div>

Table 10 shows the average share of aid in education budgets as well as total public education expenditure (which includes 'off budget' aid to education) for 43 of the 61 countries included in this study where sufficient data was available over the period 2004-2012. While education aid continues to fall far short of the amount required to fill annual financing gaps, it clearly provides a substantial additional contribution to education finance in some of the world's poorest countries where domestic resources are too scarce - amounting to, on average, approximately a quarter of public expenditure on education in those countries in the sample defined as low-income and a quarter of public expenditure on education of those found in sub-Saharan Africa.

**Table 10: Average Share of Aid in Education Budgets and Total Public Expenditure on Education (43 Countries 2004-2012)**

|  | Share of aid in education budget (%) | Share of aid in total public expenditure on education (%) |
|---|---|---|
| Arab States (4) | 9.5 | 13.5 |
| Central Asia (3) | 6.3 | 8 |
| East Asia and the Pacific (4) | 8.5 | 12.5 |
| Latin America and the Caribbean (3) | 4.6 | 7 |
| South and West Asia (6) | 8.2 | 12.2 |
| Sub-Saharan Africa (23) | 20.3 | 25.9 |
| Low-Income (21) | 20 | 26 |
| Lower-Middle-Income (22) | 9.2 | 12.2 |
| TOTAL (43 countries for which data available) | 14.4 | 19 |

*Source: World Bank (2015a; 2015b) and OECD CRS (2015)*

It is clear from Table 10 above, that a large portion of aid reported by donors is not channelled through recipient countries' public accounts, demonstrating the importance of accounting for off-budget education aid when estimating the share of aid relative to

government spending. It should be noted that percentage averages of regional and income groups cannot give a complete picture of dependency on education aid. The proportion of education expenditure apportioned by aid donors differs vastly from country to country. In a number of countries, for example in Latin America and the Caribbean, the donor share is nominal; however, there are many countries where aid contributions account for a significant share of the resources allocable to education. In 20 of the 43 countries - Benin, Burkina Faso, Burundi, Bhutan, Cambodia, Djibouti, D.R. Congo, Eritrea, Gambia, Guinea, Lao PDR, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Uganda, Zambia - education aid represents in excess of 20 per cent of total public education funding, fifteen of these are sub-Saharan African countries (Figure 1).

**Figure 1: Share of Aid in Education Budgets and Total Public Expenditure on Education (Average 2004-2012)**
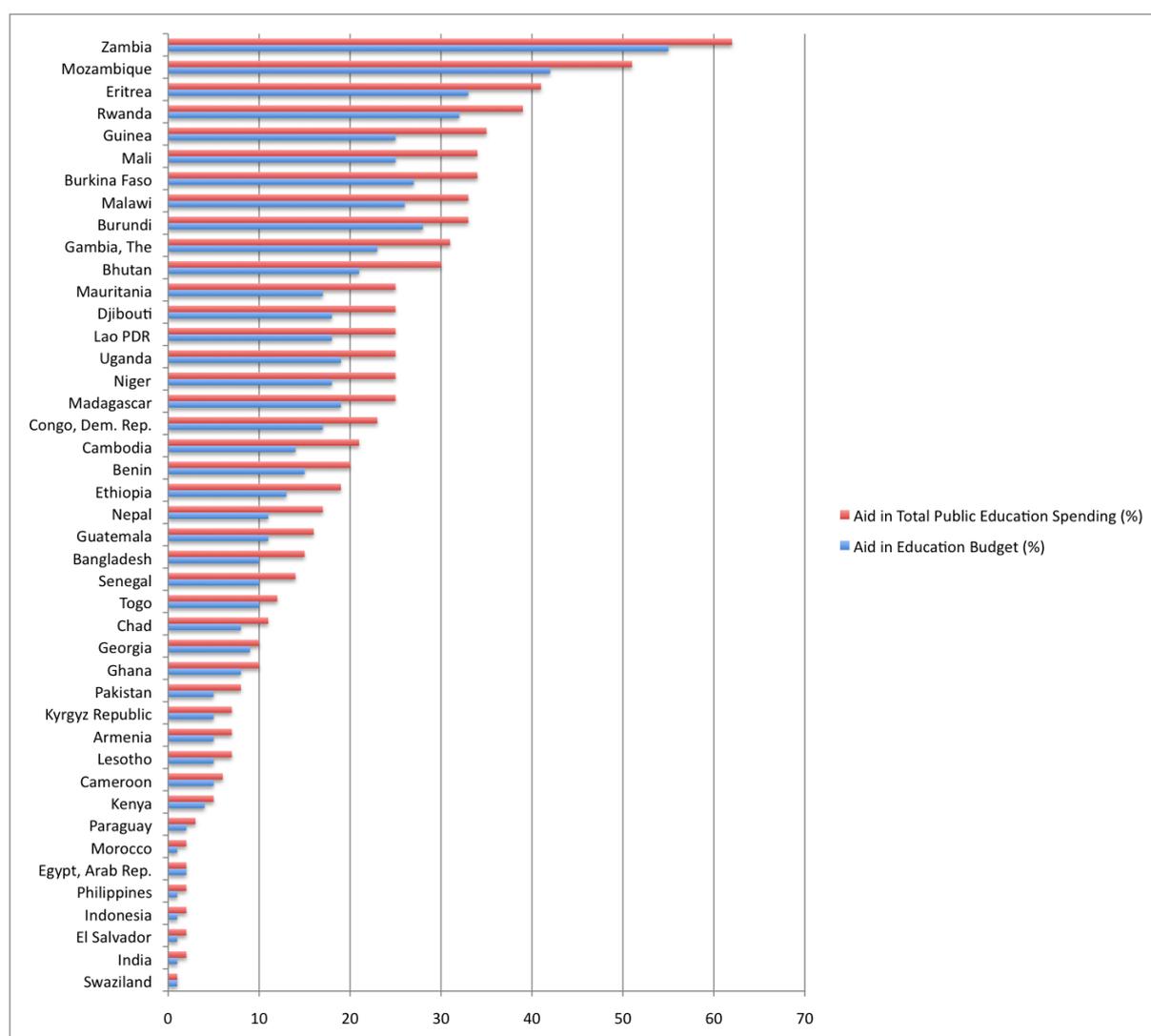


*Sources: World Bank (2015a) and OECD CRS (2015)*

Considerable differences are evident even within similar country groupings. Approximately 5 per cent of public education spending in Kenya is comprised of aid, a significantly smaller percentage than many other low-income countries in sub-Saharan Africa, such as Zambia and Mozambique, where, on average, 62 and 51 per cent respectively of total public education expenditure is found to be aid funded. The majority of Latin American country education spending is financed almost entirely by domestic resources, although Guatemala stands out with 16 per cent of total public expenditure on education (and 11 per cent of its education budget) financed by external donors. Even though in 2013 India remained amongst the top ten recipients of education aid (following significant reductions from key donors such as DFID in recent years), in absolute terms (US$ 233m) the share of education aid relative to government expenditure on education is extremely small at just 1 per cent.

The relative importance of aid in education spending across countries is extremely varied. Significant amounts of aid have been provided to countries where access to basic education was extremely limited prior to the introduction of the MDGs and where there has been considerable progress in primary enrolment. Mozambique, for example, has been witness to unprecedented rises in access to schooling with out-of-school numbers dropping from 1.6 million in 1999 to less than 0.7 million in 2012. Throughout much of this period 51 per cent of total public expenditure on education (42 per cent of the education budget) was funded by aid sources. However, there are a number of examples, of countries highly dependent upon aid, such as Malawi, where far less progress has been evident. The following section looks at contrasting cases of aid dependency, selected on the basis of the analysis above, and examines the effectiveness of their education aid programmes.

### 5.1.2. Aid Dependency and Contrasting Patterns of Aid Effectiveness

Four case study countries were selected for the research. The strategic selection of countries was made on the basis of analysis of the disaggregated educational aid data presented above that groups countries according to their relative aid dependency and according to their 'generalisability' as potential case studies. Flyvbjerg (2006) argues that it is more important to clarify the deeper causes behind a given phenomenon and its consequences than to describe its symptoms and how frequently they occur, emphasising

that is more appropriate to select a few cases on the basis of their validity. Cases are therefore chosen on the basis that they are 'telling' rather than 'typical' (Mitchell 1984).

Two Asian (Pakistan and India) and two sub-Saharan African nations (Malawi and Mozambique) reflecting a mix of high/low aid dependency and high/low education outcomes were selected in order to provide contrasting examples for discussion. Pakistan was identified due to its relatively low levels of aid dependency and low educational outcomes in spite of numerous education aid donors operating in country. India is considered as it is a unique case - amongst the top recipients of absolute aid, yet one of the least aid dependent countries. Mozambique was chosen for its well-known advances in the education sector as highly aid dependent country; and Malawi as a case of a country that is likewise highly aid dependent but which has demonstrated considerably less progress towards international education goals.

The case studies are informed by data both in the form of comparable international education statistics compiled whilst constructing the panel datasets used to address R.Q. 1 and 2 and documentary evidence in the form of donor aid evaluations and other grey literature including working papers, technical reports, and government documents. The intention of employing the documented accounts of aid recipients and donors is to offer an "experiential understanding" of aid effectiveness at country level (Stake 1995: 43). Because the research proceeds from the conviction that the issues determining aid effectiveness - policy, process, governance - are inevitably complex phenomena; providing an analytical account of aid's impact reliant upon the action and opinions of, and relations between, the various actors involved is considered the most appropriate means of uncovering different patterns of aid effectiveness and discussing the complex and multifaceted reality of aid dependency and efficiency in education aid allocation. The cases are therefore bounded by a focus on the level of aid dependency, education outcomes and perceived degree of aid effectiveness - including how issues of aid dependency, donor involvement, and strength of institutions impact the effect that aid is seen to have had.

### *Pakistan: Low Aid Dependency, Low Outcomes*

Despite having made gradual progress towards international education goals over the course of the past few decades, Pakistan's indicators on education continue to be extremely low. Around a third of children of primary school age remain out of school, whilst 42 percent of the population over the age of ten are recorded as being illiterate (Ministry of Education Training and Standards 2014). Vast differences in educational outcomes linger -

particularly apparent between the affluent province of Punjab and less wealthy areas such as Sindh and Balochistan; between rural and urban locations; and in the attainment of gender parity (Barber 2013). In spite of substantial growth in primary gross enrolment rates from less than 50 per cent in 1990 to 92 per cent in 2013, net enrolment rates have grown at a considerably slower pace, reaching 72 per cent in 2013 (World Bank 2015a). It is estimated that more than 6.7 million children remain out of school, the majority which (62 per cent) are girls (Ministry of Education Training and Standards 2014). Low primary net enrolment rates when compared to relatively high gross enrolment rates, indicate that there is a significant share of over- and underage-children enrolled at primary level and that the cycle of schooling is therefore not being completed efficiently. Such inefficiency raises the costs of achieving policy targets and may lead to resources that might otherwise be usefully focused on system development and improving the quality of education provision being reallocated.

Education is recognised as a fundamental right in Pakistan and, as articulated in the National Plan of Action 2013-2016 (Ministry of Education Training and Standards 2013), the government has been committed to expediting progress towards related goals and targets, with reference specifically to EFA and the MDGs. The National Plan of Action articulates the need to substantially increase the enrolment of those children of primary school-age currently out of school; improve primary retention and completion rates; and boost the quality of primary education provision.

Weak governance and budgetary constraints have impeded such ambitions (Malik and Naveed 2012; Barber 2013). Whilst progress has been made in advancing on key educational indicators such as enrolment, literacy and retention rates, it may be questioned whether this progress can be sustained. Pakistan's commitment to education, when considered as a function of the resources allocated to the education sector, is undoubtedly low. Although numerous policy documents and government statements have been made over many years declaring a commitment to raise GDP spending to education to 4 per cent (Alif Ailaan 2015), total national education expenditure continues to hover at around 2 per cent (World Bank 2015a). Spending on education and other social services is limited by especially high expenditure on defence, servicing government debt, and energy payments (Alif Ailaan 2015). Although absolute spending on education is significant, it tends to be in the region of 1.6 to 2.1 per cent, with the Office of the Controller General citing one of the principal determinants to be Pakistan's low tax-to GDP ratio (Office of the Controller General, Government of Pakistan (2013) in Ministry of Education Training and Standards

2014). In order for the National Plan of Action 2013-16 to be implemented effectively, an additional PKR 189bn (US$ 1.8bn) is required which the Ministry of Education, Training and Standards (2013) concludes will need to composed of a greater proportion of the budget being allocated to education and increased aid from Pakistan's international development partners.

The public sector resource gap is widely recognised as a reason for dismal education outcomes, and financing this gap - in addition to the nation's geopolitical/geo-strategic importance - is the raison d'être for donor involvement with the education sector in Pakistan (Killick and Shah 2006; O Malley 2009; Barber 2013). Weak revenue generating capacity, poor resource allocation to the education sector and, as a result, low educational outcomes, present an opportunity for a substantial role to be played by external education aid resources. Whilst Pakistan is not as aid dependent as many of its developing country counterparts, aid finance from international donors has been an historically important source of public finance for education (Malik 2007). Eight bilateral donors operate in Pakistan's education sector - including the Asian Development Bank, the World Bank, USAID and UNESCO. External educational assistance has been influential in the determination of Pakistan's education policy and priorities, primarily due to the conditions that its donors have attached in their allocation of aid resources. This has been especially so at periods in time when project aid modalities have allowed for direct intervention (Riddell 2007). In more recent years, conditions attached to education aid have tended to be linked to the implementation of efficiency reforms associated with reductions in the unit cost of primary education; improving the role of the private sector; establishing standardised testing; and decentralisation (Killick and Shah 2006; Malik and Naveed 2012). Such an approach of imposing conditionalities might be criticised in a country where the political will to finance education adequately and the capacity to implement policies is found lacking, due to the apparent disconnect between the theoretical basis upon which aid donors assume policies will work and the realities of the political and institutional situation.

Whilst donor influence can be detected when reading policy documents, a direct link is often difficult to establish. Amongst the most obvious revolutions in Pakistan's education sector that may be attributed to external donor influence, is the shift towards public-private partnerships (Robertson, Mundy et al. 2012). Whilst much of the growth in private sector schools is indigenous, the establishment of federal and provincial education foundations are specifically attributable to donor influence over Pakistan's education agenda (Zafar 2015). Aid donors have had less success with influencing governance structures and policy

priorities. Although establishment of the Social Action Programme was intended to address shortcomings within the education system at the same time as addressing wider concerns over the delivery of social services, Pakistan has continued to apportion aid monies to 'development projects', in complete disregard to whether the aid is project- or programme-based (Malik and Naveed 2012).

As discussed in King and Malik (2008) financing a standalone development project has greater appeal to donors due to the fact that it permits the bypassing of what are invariably sluggish and convoluted government systems; there is a reduction in transaction costs; and the impact of donor support is likely to be more visible. However, as the authors argue, the bypassing of government systems can lead to development projects not being mainstreamed and eventually becoming part of government recurrent budgets. Such projects continue to be development budget 'projects' for many years as opposed to being accounted for as part of the regular education budget in spite of their success and qualifying criteria. Malik and Naveed (2012) note that in many instances, recurrent activities such as teacher training, assessment, and information management are administered as development projects. As a result, much of Pakistan's external education assistance is primarily allocated to activities accounted for as development expenditures. Whilst aid donors have clearly had some success in contributing to the progress that has been made in enrolment rates, internal efficiency and the quality of provision, it may be argued that they have been less successful at influencing Pakistan's budget priorities.

Nonetheless, as a consequence of donor influence, a reading of official documents suggests that greater attention is being paid by Pakistan's government to education - and to primary education in particular - which, historically, has been grossly under-funded (Alif Ailaan 2015). Notwithstanding persistent hurdles with regards to the share of public spending allocated to education, donor presence has been critical to the government's response in the form of the National Plan for Action concerning improvements in the provision of quality education. Although Pakistan is less dependent upon aid for education than many of its developing country counterparts in South Asia, and in spite of disbursements to Pakistan representing a relatively small share of total public education spending, Malik and Naveed (2012) and Zafar (2015) argue that donors have played a crucial role in education policymaking, leading to advances on a variety of educational outcomes.

In conclusion, aid donors have been instrumental in directing resources to education in Pakistan through direct financial assistance in addition to having an indirect impact on

policy design, direction and implementation. However, it remains the case that research on the wider impact that external education assistance has had upon education outcomes is limited to donors' own assessments, which are invariably evaluations of specific projects in particular provinces conducted over short time periods. This makes the task of determining true associations between policy changes and educational outcomes extremely challenging and is made worse by inconsistency in, and the unreliability of data over time (Malik 2007; King and Malik 2008).

### India: Low Aid Dependency, High Outcomes

International commitments to achieve EFA and the MDGs globally have meant that India has been an important case for education aid donors, with 17 million children of primary school age being recorded as out-of-school in 1999. This figure had dropped dramatically since to 1.4 million children in 2012, but in spite of the drop India still ranks amongst the top five countries with the largest out-of-school populations globally (UNESCO 2015). Historically, India has not been an eager recipient of aid and agreed to the receipt of aid in support of primary education with considerable reluctance (Cheng and Chan 2015). Significant absolute levels of aid to education have undeniably led to donor involvement; but it is noted by Colclough and De (2010) that whilst donors have had some influence over policy implementation and management, education policymaking in India has remained self-determined. Indeed, it is argued by the authors that although the Indian government fell short in its ambitions to achieve universal primary education, it was successful in its employ of aid monies and the technical assistance on offer to meet its own ends, whilst also succeeding to minimise donor influence over policy development.

Due to the vast size of India's population and its substantial growth rate, expansion in the primary-age cohort was such that in excess of one million additional school places were required annually in order to prevent retrogression in the net enrolment rate - with the consequence that the enormity of the task of achieving universal primary education was far greater than that faced by any other nation (Colclough and Lewin 1993). India's experience would thus be a critical determinant of global progress. In the years following the 1990 Jomtein World Conference on Education for All, external educational assistance to India, measured in absolute terms, rose to levels higher than for any other country. Even though aid levels subsequently dropped as many bilateral donors began to phase out their aid to primary education in India, substantial disbursements from the remaining donors - DFID, the European Commission and the World Bank - meant that aid to education continued to be comparatively high. Analysis of country programmable OECD CRS (2015) and World

Bank (2015a) data show that aid to basic education per primary school-aged child dropped by 33 per cent between 1999 and 2012, whilst primary NERs rose by 15 per cent over the same period. Although absolute education aid levels remain high, it should be noted that these are dwarfed by domestic spending on education, with aid representing just 1 per cent of India's education budget (Figure 1).

Historically, there has been much alignment between India's national education priorities and those of aid donors and the wider international community. Interestingly, India's focus on primary education was evident in national policy by the late 1980s (see, for example, Government of India 1986) prior to the adoption of universal primary education as part of the EFA agenda in 1990. A District Primary Education programme - the first example of an education project funded by both domestic and external aid resources to have been developed indigenously - that evolved into the Sarva Shiska Abhiyan national primary education programme, both paved the way to the scaling up of primary education provision in India, had been introduced prior to the Dakar Framework for Action and endorsement of the MDGs in 2000 (Bashir and Ayyar 2003; Government of India 2006).

Research conducted by Colclough and De (2010) on the impact of aid upon education policy in India, indicates that there is unanimous agreement amongst key donors that India's education policy priorities have been self-determined. It is argued that there is complete domestic ownership for education policies, supported by strong leadership from the Government of India. Moreover, the survival of the Sarva Shiska Abhiyan programme following successive changes of government suggests that policy continuity has likewise been strong (De and Endow 2008).

Where donors may be recognised as having had some sway is in the dialogue with government on issues associated with process and practice; for example, financial management procedures adopted have been largely been externally driven and determined (Colclough and De 2010; Cheng and Chan 2015). Given sensitivities concerning the autonomy of education policy and that international assistance represents an exceedingly small share of total public education spending, it may be questioned why India has agreed to accept aid monies. Colclough and De (2010) answer that the government has accepted aid for education not so much for its additional resources, but primarily for the other advantages which come with them - although they argue that the relative balance of these advantages is perceived differently by different stakeholders. Key education donors recognise their support as having aided improvements in school quality and innovation and

in furthering inclusive education, with bilateral donors directly supporting NGO activities making similar claims. In contrast, government informants indicated that they saw aid to have been advantageous against the background of elections through the international endorsement of education policies.

India's acceptance of aid resources has been important in bringing global education discourse to the domestic arena and has in certain instances been used as an advocacy tool for the government's own education policies. Aid agencies have advised on pro-poor targeting, greater accountability for outcomes, quality in education provision, and improved financial management. Furthermore, aid donors have also aided in improving capacity in programme supervision and monitoring and boosting the quality of technical analysis by offering perspectives into the policy dialogue based on international experience (Cheng and Chan 2015). The national government has especially acknowledged the important role of donors in making the monitoring and review process more rigorous and in concentrating government efforts on issues associated with the sustainability in educational planning by opening up dialogue on planning, financial management and increased community involvement (Government of India 2006).

### *Malawi: High Aid Dependency, Low Outcomes*

The Malawian education system has had to develop within a complex demographic context. Malawi's population of approximately 13 million is growing at a rate of 2.4 per cent a year (World Bank 2010: 2), with 37 per cent of the total population under the age of 15 - the highest youth population of any country in the region (calculations based on data from World Bank 2015a). The vast majority of the population inhabit rural areas where demand for schooling, and its supply, are weakest (Chimombo, Meke et al. 2014). Poverty is rife, with 63 per cent of Malawians living on less than US$ 2 per day (World Bank 2010: 4). Only a quarter of girls complete the eight-year cycle of primary education, with 58 per cent passing the Primary School Leaving Certificate Examination as compared to 71 per cent of boys (Mzuza, Yudong et al. 2014: 52). Gender disparity is pronounced at post-primary levels of education with girls constituting just 34 per cent of secondary school enrolment (World Bank (2013) in Chimombo, Meke et al. 2014: 34).

The unit cost of primary education in Malawi is very low, chiefly due to the excessively high pupil-teacher ratio of 69:1 (for the year 2013 as shown in World Bank 2015a). The share of the national budget allocated to education, at 19 per cent, is significantly less than other neighbouring countries including Kenya, Lesotho, Madagascar and Tanzania where

education makes up around 30 per cent of the budget (World Bank 2010: 35). Malawi is heavily dependent upon development assistance, with education aid representing 33 per cent of total public spending on education (Figure 1) and education aid per capita at approximately US$ 4 (OECD CRS 2015; World Bank 2015a). Over 60 per cent of external assistance to education goes towards construction in primary education (World Bank 2010: 51). Donors have tended to focus upon the provision of primary education because the domestic education budget is heavily skewed towards higher levels of education (Hall and Mambo 2015).

Development partner activities in Malawi have sought to improve access, equity and quality in primary provision, as well planning and management capacity at all levels of the education system. In the area of access and equity the focus has been on the construction and rehabilitation of primary and secondary schools. In terms of education quality and relevance the focus has been on teacher training; the construction and rehabilitation of teacher training colleges; curriculum review and development; provision of textbooks; and the improvement of school assessment systems. With regards to management and planning, aid monies have been concentrated upon advancing national and district-level education strategies; national school mapping and census exercises; the development of an education information management system; construction and rehabilitation of district education offices; training of educational managers; teachers and other education stakeholder groups (World Bank 2010; Hall and Mambo 2015).

The Debt and Aid Management Department of the Ministry of Finance has formulated a Development Assistance Strategy (2007) with the intent of harmonising donor activities and aligning aid to government practices and systems. Intended to promote greater coordination of aid by resolving significant issues with donors through aid forums, and by implementing sectoral aid allocation groups to make certain that aid to a given sector is apportioned in line with agreed priorities and employed effectively, Malawi's Development Assistance Strategy has shown some considerable success. The African Development Bank, DFID, Norway and the World Bank, following the Strategy's implementation, all made multi-year funding commitments based on their Country Assistance Programmes.

However, the predictability of education aid remains a serious issue - invariably as a result of the government's failings to fulfil aid disbursement conditions or due to donor concerns over corruption. The European Union, DFID and the World Bank halted general budget support to the country in 2014, with DFID suspending sectoral budget support as well - a

move anticipated to have substantial negative consequences upon education spending in Malawi (Hall and Mambo 2015). This is not the first time that donors have suspended aid. The IMF withdrew aid in 2001 and DANIDA in 2011 following corruption scandals under the Muluzi and Mutharika presidencies respectively (Resnick 2012). Ng'ambi (2011) in a review for Open Society Foundations into the Effective Delivery of Public Education Services in Malawi concludes that both donors and the government need to do more to improve the aid relationship by showing willingness to compromise, placing a greater emphasis on the political economy in aid programming, and being more accepting of the development realities faced by Malawi.

Challenges for aid programming are also evident at the sectoral level:

> There is limited knowledge of national policy among key players; no strategic policy thinking among them in critical areas (direction and regulation of private education, future of vocational training, linkage between output of secondary and input into tertiary etc.) There is little capacity for policy implementation and management in the ministry. There is no evidence of any self interest in pooled effort, there has been sharp competition for resources among different sub-sectors (basic vs tertiary etc.) encouraged by donor inconsistencies over the years (Booth, Cammack et al. 2006: 63).

As such, it took considerable time for an education SWAp in Malawi, to be established despite donor interest in merging all donor-funded projects under one strategic framework outlined by the government, with the consequence that the majority of education projects have continued to be managed by project implementation units (Chirwa 2012).

Whilst external assistance is a much needed and appreciated addition to education spending in Malawi, it has faced considerable challenges. Education aid has been unpredictable, frequently uncoordinated and, in many instances, accompanied by conditionalities (World Bank 2010; Hall and Mambo 2015). It is argued that this is the result of failures of governance, weak capacity, and pervasive corruption within the education system (Resnick 2012) - the challenge of finding adequate, beneficial and sustainable funding for education in Malawi is substantial and one that does not appear will become easier without serious will for change on both donor and recipient side.

### Mozambique: High Aid Dependency, High Outcomes
Mozambique inherited at its independence a troubled education system concentrated upon the country's elite and defined by high levels extremely low literacy rates, scarcity in the number of qualified teachers, and severe inequality in gender and between regions (Tomé 2012). As such, the expansion of education services to the entire Mozambican population

was among the newly formed nation's main priorities. A national commitment to education has endured in Mozambique's development programmes continued to feature heavily in the country's development programmes even throughout the long period of civil war that took place between 1977 and 1992 and during difficult economic times. This importance of this commitment is reflected in substantial changes in key educational indicators, evident in the significant decline in levels of illiteracy from approximately 90 per cent at the start of the 1970s to 47 per cent in 2013 and substantial rises in enrolment rates. Mozambique's primary net enrolment rates was 90 per cent in 2013, with the proportion of girls enrolled having increased from 33 per cent at independence to 49 per cent in 2013 (World Bank 2015a).

The advances witnessed in Mozambique have been supported significant tranches of education aid and the country is regularly cited as one of Africa's aid success stories (Tomé 2012; Education Policy and Data Center 2014; UNESCO 2015). Of interest are the exceptional volumes of aid committed - the country received US$ 57.6bn in aid in the period 1947 to 2013 - and the number of aid donors that have been active in Mozambique. External assistance has been given in the form of project and programme aid as well as budget support and in the form of pooled funds from 50 distinct funding agencies and is recorded as having had an impact on 20,028 projects. 780 of these were education (level unspecified) sector projects (Aid Data 2014). CIDA and USAID are the key education donors, apportioning the sector 81 and 75 per cent of their aid to Mozambique respectively (based on average disbursement data 2000-13 OECD CRS 2015).

As is indicated by the sheer size of the aid figures above, the government's spending on education is extremely dependent upon on grants and loans from both bilateral and multilateral donors as well as other international agencies. NGOs operating in Mozambique are likewise important sources of education funding, although their activities tend to be more localised. Due to Mozambique holding a privileged status among its development partners, the country has invariably been used as a model and testing ground for new aid modalities, including both sector and general budget support and for aid financing made available through documents coordinating external assistance via SWAps (Tomé 2012). Indeed, the greater part of the Paris Declaration (2005) on aid effectiveness had already been worked out and in its nascent stages in Mozambique, which was also among the first aid recipients to tie major debt relief to the formation of a PRSP. A number of actions have been taken by the Mozambican government to improve aid coordination and dialogue with its development partners. These have led to a greater

commitment on the part of donors to align and harmonise aid with government planning instruments. Aid disbursed in the form of general or sector budget support is administered according to procedures agreed to in a memorandum of understanding (MoU) - Programme Aid Partners' Performance Assessment Framework - between Mozambique and its development partners (Lister, Batley et al. 2011).

Mozambique's PRSP and the education strategic plan PEEC II form the basis of total aid provision and to the education sector in particular. Mozambique became a partner country of the Education for All Fast Track Initiative in 2003, but only began to receive funding from 2007, resources that were employed in support of PEEC II (Bartholomew, Takala et al. 2010). A further round of funding of US$ 90m for the period 2011-2015 has been used to continue support for the education sector plan through the pooled Education Sector Support Fund - Fundo de Apoio ao Sector da Educação (FASE) - established in 2002 to which 10 donors currently contribute (Global Partnership for Education 2016). FASE special programmes include the financing of Direct Support for Schools (Apoio Directo às Escolas), the construction of low-cost schools, textbook distribution, and in-service training for teachers. In 2009, around 25 per cent of the education budget was made up of resources from FASE, which also represented approximately 60 to 70 per cent of all external assistance to the education sector (Tomé 2012). However, support for the education sector has been gradually declining, with FASE's contribution to the education budget representing just 20 per cent in 2013 (Nerenhausen 2014).

Finding domestic resources to finance the deficit would present an enormous challenge for the education sector, with the Ministry of Education estimating that the annual education budget need increase by at least 5 per cent annually if the sector is to continue its expansion at the same rate, and in order for it to be in a position to improve quality and equity in the delivery of education services (Fox, Santibañez et al. 2012). It will require the Ministry of Education to raise resources from other sectors and, as Tomé (2012) suggests, could be achieved in part through cost-saving and waste-reduction strategies. In accordance recommendations articulated in the Africa Peer Review Mechanism (2010: 512-13) Country Review Report, Mozambique should "begin immediately to explore ways and means of reducing the country's aid dependency over time, by preparing a properly articulated exit strategy". However, Mozambique will remain highly dependent upon aid for the delivery of education services in the medium-term at least; and, as such, it will need

to establish effective means of securing and managing development assistance, including tackling issues raised by donors that have made cut-backs in their education aid or which are contemplating doing addressing the issues that have been raised by donors that have already made cut-backs in their education support or are contemplating that they might do so.

Mozambique is highly dependent upon external assistance, but is recognised as a model aid success story by the international development community, due to it having consistently met its donor partners' demands. However, in recent years a number of aid agencies have voiced concerns over institutional capacity, the quality of public administration, financial management, increasing corruption, and government accountability in a context where one political party dominates and civil society remains weak (Mokoro 2008; Lister, Batley et al. 2011). Renzio and Hanlon (2007) as well as an evaluation of Irish Aid (2011) argue Mozambique's dependency upon aid to be of serious consequence because similar levels of financing cannot be readily raised domestically. In spite of government rhetoric in the PRSP (2014) and tax reform efforts to increase domestic revenues, a reduction in aid dependence has proved elusive as domestically generated resources have remained around 12 per cent of GDP, without evidence of any significant rises. Although considerable inefficiencies in government spending have been identified, there are few areas of the budget in which large cuts to expenditure could be made – for example, Mozambique, already spends comparatively little on defence (Lister, Batley et al. 2011). Cutbacks to expenditure would therefore need to tackle capital costs or the more complex issues of inefficiency in spending, wastage and corruption (Renzio and Hanlon 2007).

Whilst education aid has undoubtedly contributed to many of the significant improvements evident in the education sector, the practicalities of administering large-scale donor support are accompanied by substantial administrative burdens for the recipient government (Nerenhausen 2014). Whilst increasing programme aid and general budget support is seen to be useful due to its reduction of aid fragmentation and increase in the flow of resources via the national budget, a number of costs and contradictions have been experienced. First, whilst government officials are required to have involvement in both a great number of projects and meet the administrative requirements of general budget support, the managerial burden appears to increase rather than lessen. Second, as Batley (2005: 422) notes on the costs of aid ownership, "the demands on government for improved financial management and reporting, however valid, are certainly heavier".

### Lessons from Country Experience

The brief overview of Pakistan, India, Mozambique and Malawi with regards to their differing levels of aid dependency and educational outcomes begs a re-examination of aspects of the international discourse on ownership and sovereignty in aid relationships. As has been shown in the case of Malawi and to some extent Mozambique - both heavily aid dependent countries - the expression of national sovereignty may reasonably be questioned, as there is evidence of it having been undermined at times both by external actors and by internal political dynamics. Malawi in particular has demonstrated weak capacity, meaning that it has been difficult to set the terms of the aid relationship with its donors. In India, on the other hand, where aid for education has been accepted with more reluctance and represents just a small proportion of government expenditure on the sector, sovereignty in the aid relationship has been key to forging ahead with nationally owned education strategies and may be credited with much of the country's success in dramatically reducing the number of children out of school and improvements in gender equity.

Problems that have stymied progress in the more aid dependent countries of Malawi and Mozambique also include over-stretched bureaucratic capacity administering a complex and fragmented set of aid interventions. An unintended consequence of this is that considerable time and attention are being spent on the process of managing aid. It might be argued that attention devoted to aid management may well be at the expense of policy dialogue and internal debates which could reasonably result in the development of a locally owned policy position. On the donor side, a preference for 'partnership' models of aid delivery, while creating opportunities for greater recipient government engagement, clearly remains entrenched in a relationship founded on limited trust. Concerns over the quality of governance, issues of corruption and capacity are clearly evident in Malawi, Pakistan and Mozambique. This ties in closely with what was found in the macro analysis of panel data presented in Chapter 4 which shows education aid to be less effective when delivered to countries where governance is perceived to be weak. It may be that this finding is the result of donors concerns being played out.

Whilst aid to Malawi has been curtailed on several occasions due to evidence of corruption, Whitfield (2008) argues that donors' need to uphold Mozambique as an African aid success story is paradoxically part of a 'pathological equilibrium' in which, while alleging to adopt a long-term perspective that condones short-term concessions on corruption and justice issues as a means to achieving long-term development impact, donors may simultaneously be undermining the very conditions for such long-term success to materialise. By contrast

education aid to India has been shown to have a catalytic impact, not on the establishment or change of education policy objectives, but upon improvements to the efficiency and accountability of the educational process by influencing improvements in public financial management. Donor conditionalities are credited with influencing aspects of education policy in Pakistan in spite of the relatively low levels of education aid received.

It is clear that aid effectiveness in the education sector is highly dependent upon country context, and whist we can see from the findings of Chapter 4 a broad functioning of aid, more detailed analyses on aid dependency and educational outcomes appear to indicate that the percentage of aid received relative to domestic expenditure has little apparent effect upon education outcomes. Volatility in aid flows; overstretched or weak capacity; lack of recipient ownership; and inflexibility in the imposition of specific policy prescriptions on the donor-side invariably have the greatest influence on the impact of education aid. These are factors that are important to the allocation of education aid and should be considered alongside the development and policy context of recipient countries, the accountability of their budgetary processes, as well as a national government's commitment to achieving international education goals. However, as Colclough (2011) argues, underlying all of these is the notion of educational 'need'. As has been demonstrated by the examples presented earlier in this section, those countries most in need of aid will not necessarily boast strong education policy environments or be able to demonstrate effective budgetary processes. It is to this issue that section 5.2 of this chapter now turns.

## 5.2. DETERMING PRIORITIES FOR EFFICIENT EDUCATION AID ALLOCATION

The previous section has shown that development cooperation for education continues to be critical in many low- and lower-middle-income countries in spite of increased economic growth and domestic revenue in many developing countries. In a large number of aid recipient countries, domestic expenditure on education remains considerably lower than levels necessary for ensuring universal access to basic public services, including education (Rose and Steer 2013). Many of the world's poorest countries are reliant upon on development assistance for 20 per cent or more of their total public expenditure on education (Figure 1).

Well-documented declines in the disbursement of basic education aid are evident as development partners have gradually apportioned less priority to education within their aid portfolios (Thiele, Nunnenkamp et al. 2007; UNESCO 2015). Disbursements to basic

education dropped by 16 per cent between 2010 and 2012, and although total ODA disbursements increased in 2013 by 11 per cent in the 61 countries accounted for in this study, basic education aid declined by a further 8 per cent (calculated using data from OECD CRS 2015). Contractions in basic education aid prompts a questioning over how and where limited aid monies might be allocated most effectively. Recent findings on rates of return remain supportive of the case for social returns to pre-primary and primary education being greater than for higher levels of education (Psacharopolous and Patrinos 2014) which demonstrate considerably better private returns (Montenegro and Patrinos 2014). This would logically imply that public education expenditure would be most beneficially concentrated upon the improvement of access, retention and quality of lower levels of education and with a greater focus upon strengthening systems and reaching the most marginalised children (Oketch and Rolleston 2007; Lewin 2008; Amphia and Adu-Yeboah 2011; Govinda and Bandyopadhyay 2011; Lewin 2011).

Optimal education aid levels will need to be decided on the basis of individual country education plans and financing contexts - accounting for their capacity to generate resources for education domestically and access to alternative revenue sources. As Colclough (2011) posits, in order to determine priority countries to which education aid should be directed, a number of factors must be considered including the development and policy context of recipient countries, commitment to achieving international education goals, and the transparency and accountability of budgetary processes. Underlying all of these is some notion of 'need'.

Although the considerable divergences in donor education aid allocation policies and practice are well documented (Hawes and Coombe 1984; Lewin 1994; Banerjee 2007; Malik 2007; Benavot, Archer et al. 2010; Christensen, Homer et al. 2011) - for many donors, achieving universal primary education and ensuring gender equity in education provision have been the focus of their education work (see, for example, DFID 1999; Netherlands Ministry of Foreign Affairs 2005; CIDA 2014). Indeed, the two MDG targets were intended to act as the principal benchmarks against which aid effectiveness - and progress more generally - could be assessed.

When assessing the efficiency of aid allocation in support of international education goals, it is helpful to make a judgement on priority countries in need of educational assistance. A number of relevant criteria for the allocation of aid to education, identified on the basis of Colclough's (2011) index of educational need are considered below.

### 5.2.1. Determinants of Needs-Based Education Aid Allocation

Concern with the statistical issue posed by under-enrolment globally calls for analysis of those countries with high levels of primary-aged children out of school as compared to the amount of basic education aid that they receive. The 61 countries accounted for in this research, and on which the panel analysis found in Chapter 4 was run, are listed in section 3.4.2 of Chapter 3. They include states classified as having an EDI value of less than 0.95 and are classed as low- or lower-middle-income by the World Bank (2015a), representing approximately 90 per cent children in developing countries who were still not enrolled in primary education in 2012 and 84 per cent of the global total. Based on this data, Table 11 below lists the top twenty countries with the greatest numbers of out-of-school children in the years 1999 and 2012 alongside their educational aid receipts from the same period. The data show there to have been continuity over the period between the two sets of estimates, with fifteen of the countries listed for 1999 remaining on in the top twenty countries with the greatest number of out-of-school children twelve years later. It is of interest to note that the total number of primary-aged children out of school halved during the period, and that 50 per cent of the contraction in out-of-school numbers is explained by India where enrolment rates have increased rapidly (Colclough and De 2010; Huisman, Rani et al. 2010).

Approximately three-quarters of the developing world's out-of-school population reside in sub-Saharan Africa and South Asia (UNESCO 2015), with seventeen of the top 20 countries listed in Table 11 belonging to these regions. As such, priority countries for policy change, and for external educational assistance will be found primarily in these two geographical regions. In 2012, over a third of primary-aged children who remained out-of-school were resident in just three countries: Nigeria, DRC and Pakistan. Focusing on the estimated 21 million out-of-school children in these countries would have meant considerable progress towards the numerical target of MDG2 on universal primary education but, as will be discussed later in the section, there are other factors to be accounted for in the allocation of 'needs-based' education aid.

**Table 11: Absolute Number of Out-of-School Children and Total Basic Education Aid Disbursements**

| Countries | Out-of-school children (000) 1999 | Total basic education aid (constant 2012 US$ m) 2002 | Countries | Out-of-school children (000) 2012 | Total basic education aid (constant 2012 US$ m) 2012 |
|---|---|---|---|---|---|
| India | 16 948 | 272 | Nigeria | 8 709 | 50 |
| Pakistan | 7 785 | 127 | Congo, Dem. Rep. | 6 512 | 70 |
| Nigeria | 7 080 | 17 | Pakistan | 5 370 | 207 |
| Ethiopia | 6 602 | 57 | Ethiopia | 3 615 | 140 |
| Congo, Dem. Rep. | 4 886 | 56 | Sudan | 2 562 | - |
| Tanzania | 3 194 | 226 | India | 1 387 | 100 |
| Sudan | 2 405 | - | Indonesia | 1 336 | 172 |
| Kenya | 1 955 | 55 | Afghanistan | 1 288 | 219 |
| Bangladesh | 1 687 | 96 | Kenya | 1 226 | 71 |
| Mozambique | 1 609 | 85 | Côte d'Ivoire | 1 223 | 36 |
| Yemen, Rep. | 1 338 | 23 | Somalia | 1 126 | 31 |
| Philippines | 1 254 | 9 | Niger | 1 049 | 29 |
| Niger | 1 203 | 29 | Burkina Faso | 917 | 76 |
| Burkina Faso | 1 189 | 53 | Chad | 770 | 11 |
| Morocco | 1 172 | 17 | Mozambique | 692 | 105 |
| Ghana | 1 107 | 79 | Tanzania | 684 | 121 |
| Côte d'Ivoire | 995 | 32 | Uganda | 663 | 37 |
| Myanmar | 921 | 6 | Philippines | 646 | 78 |
| Nepal | 906 | 34 | Mali | 637 | 40 |
| Mali | 843 | 54 | Myanmar | 634 | 45 |
| **TOTALS** | **65079** | **1327** | | **33792** | **1636** |

*Source: World Bank (2015a) and OECD DAC (2015b)*
*Notes: Disbursement data only available since 2002.*
*Data for Somalia and Afghanistan, both among countries with the most out-of-school children in 2012 are not available for 1999. Basic education aid data was not available for Sudan in either year.*

Basic education aid disbursements to the 20 countries with the most out-of-school children globally has risen marginally over the period from US$ 1.3bn to US$ 1.6bn. However, total basic education aid apportioned to those countries demonstrating the highest levels of out-of-school children was substantially less than the size of their out-of-school populations would indicate was necessary. For Nigeria, DRC and Pakistan, the three countries that were collectively home to over a third (36 per cent) of out-of-school children in developing countries in 2012, were in receipt of just 6 per cent of total basic education aid, whilst the top twenty countries, representing 58 per cent of the total out-of-school population were allocated less than a third (32 per cent) of all basic education aid.

The quantitative objective of universal primary education seems to have influenced the flow of education only minimally, in spite of there being a very logical argument for

directing a greater proportion of education assistance to those countries with the greatest numbers of out-of-school children. That being the case, there are additional educational outcomes - enrolment rates, quality in education provision and gender equity - that ought to be considered as important factors in the design of a needs-based allocation framework as greater diversity in an aid portfolio ought to minimise risk and broaden the impact of education aid (OECD 2014).

The rate of enrolment, in addition to absolute enrolment numbers is important with regards to the allocation of education aid. Moreover, the quality of education provision also needs to be accounted for if schooling experience is to be considered of value. Inadequate quality in educational provision may result in high drop-out rates or children not completing the cycle of primary education in which the most basic skills of reading and writing are acquired. Where quality is not sufficient this is often the result of overcrowded classrooms, limited learning opportunities and under-qualified teaching staff (Alexander 2008); or where different-aged children with different abilities are mixed together without the necessary adaptation to teaching methods having been made (Little 2008). As argued by Sabates, Akyeampong et al. (2010: 1), taken together with issues of poverty, ill-health and malnutrition, the educational settings described above threaten meaningful access to education for many children: "as a result, many children are registered in schools but fail to attend, participate but fail to learn, are enrolled for several years but fail to progress and drop out from school".

As mentioned in Chapter 3, learning outcomes are the most suitable proxy indicators for measuring quality in education, but internationally comparable data is currently lacking, which impedes such measures being considered here (Hanushek and Wößmann 2007; Colclough 2011; Birchler and Michaelowa 2015). The most appropriate indicator of educational quality, then, is the completion rate, as inadequate quality in the provision of education and high drop-out rates have been shown to be strongly correlated (Hanushek, Lavy et al. 2008).

The MDGs also articulate a commitment to attain gender parity in enrolment, an aspect of education development that remains an important purpose of the recently agreed SDG agenda. Successful delivery of current international education goals would therefore seem to require a combination of the achievement of high primary net enrolment rates, reasonable quality - as proxied by survival rates to at least grade 5 of primary school - and equitable enrolment between the genders.

**5.2.2. Identifying Priority Countries for Education Aid Allocation**

Colclough (2011) builds a series of indices incorporating these indicators with the intention of creating a framework for identifying priority countries for educational assistance. It is a matter of judgement how much significance ought to be placed on these for determining priority in education aid allocation; but these indices are a good representation of the objectives of the education MDGs. As enrolment, survival and gender parity, as well as the absolute number of children out of school remain important to the education SDGs, they are also a useful means for examining more recent and future aid allocation policy and practice. Using the most up-to-date educational statistics and aid data available, the following section discusses the different patterns of educational need in the 61 countries accounted for in this study and considers the extent to which education aid has been apportioned to those countries demonstrating the greatest educational 'need'.

Each of the indices are listed in Appendix 4, with Index 0 giving a simple average of the primary NER and the rate of survival to Grade 5, providing an average measure of both enrolment and quality; Index 1 adding to this a measure of gender parity in primary education; and Index 2 providing an average of the values for primary NER, survival rate to grade 5, gender and the out-of-school population.

Table 12 illustrates how the comparative ranking of countries changes as different criteria are used to measure educational need. Ranking the results in ascending order gives an indication of countries' comparative educational policy performance according to MDG objectives: states with the lowest values for any of the combined indicators - such as Ethiopia, Somalia and Chad in Index 0 - are recognised as having the highest putative need. Afghanistan and Cote d'Ivoire both lose priority in the NER/survival Index 0 as compared to the out-of-school ranking, but rise again in priority with the inclusion of the gender parity measure in Index 1, due to both countries demonstrating high levels of gender inequality. Somalia is shown to be the top priority country in Index 1. With more than one million children out of school, the country was amongst the top twenty countries in the out-of-school ranking, but it is a country that also suffers from extremely low net enrolments, low educational quality, and high gender inequality.

**Table 12: Ranking of Countries According to Different Educational Needs Criteria (2012)**

| Ranking on basis of absolute number of out-of-school children | Ranking on basis of low NER and survival rate to grade 5 (Index 0) | Ranking on basis of low NER, survival rate and gender (Index 1) | Ranking on basis of low NER, survival rate, gender and out-of-school children (Index 2) |
|---|---|---|---|
| Nigeria | Ethiopia | Somalia | Somalia |
| Congo, Dem. Rep. | Somalia | Afghanistan | Congo, Dem. Rep. |
| Pakistan | Chad | Ethiopia | Ethiopia |
| Ethiopia | Madagascar | Chad | Nigeria |
| Sudan | Mozambique | Eritrea | Afghanistan |
| India | Uganda | Congo, Dem. Rep. | Pakistan |
| Indonesia | Eritrea | Sierra Leone | Chad |
| Afghanistan | Central African Republic | Côte d'Ivoire | Eritrea |
| Kenya | Congo, Dem. Rep. | Liberia | Côte d'Ivoire |
| Côte d'Ivoire | Liberia | Central African Republic | Sierra Leone |
| Somalia | Burundi | Niger | Liberia |
| Niger | Congo, Rep. | Guinea | Central African Republic |
| Burkina Faso | Guinea | Togo | Niger |
| Chad | Malawi | Pakistan | Sudan |
| Mozambique | Pakistan | Malawi | Guinea |
| Tanzania | Rwanda | Benin | Malawi |
| Uganda | Nepal | Madagascar | Kenya |
| Philippines | Afghanistan | Djibouti | Togo |
| Mali | Nicaragua | Nicaragua | Madagascar |
| Myanmar | Sierra Leone | Mali | Benin |

*Source: World Bank (2015a)*
*Notes: Index 0 = (NER + survival rate to grade 5)/2; Index 1 = (NER + survival rate to grade 5 + gender parity index)/3; Index 2 = (NER + survival rate to grade 5 + gender parity index + out-of-school children index)/4*

Although the measures employed in Indices 0 and 1 reveal the comparative magnitude of under-enrolment and quality issues between countries, they do not allow for a distinction to be made between countries with significantly divergent out-of-school populations. Nigeria and Nicaragua both have similar primary net enrolment levels - 0.64 and 0.63 respectively (refer to Appendix 4); yet Nigeria is home to approximately 8.7 million out-of-school children as compared to just 54,000 in Nicaragua. When considering universal primary education attainment at a global level, it becomes clear that the absolute scale of the problem confronted by Nigeria dwarfs that of Nicaragua, despite their similar enrolment rates. It follows that, whilst the absolute size of the out-of-school population should not be the only predictor of education aid flows, it ought to retain some sway over the prioritisation and magnitude of external financing that is allocated (Colclough 2011). Index 2 therefore combines the primary net enrolment rate, survival rate and gender parity measure with the out-of-school population in order to take account of and give separate weight to the absolute size of the out-of-school population.

It should be noted that where countries are approaching a 100 per cent net enrolment rate, the other variables employed will also have moved in a positive direction as high levels of enrolment can only be achieved if there are low drop-out rates (with the consequence that survival rates are high); there is near gender parity; and out-of-school numbers are dropping towards zero. As such, these measures are strongly correlated. However, as Colclough (2011) argues, in countries where primary net enrolment rates are low, each of these measures may be pulling in different directions - with large differences in the female : male enrolment ratio and educational quality. This is evident in the case of India - where the primary net enrolment rate was 93 per cent in 2012 despite 1.4 million children of primary age remaining out-of-school (World Bank 2015a) - a high net enrolment rate is not an indication of low absolute levels out-of-school children. Broadly speaking, those countries farthest away from attaining international education goals will be likely to demonstrate low values across all of the criteria accounted for in the indices. Considered at a global level, such underperformance is clearly of greater concern the bigger the size of the school-aged population.

Table 13 shows the needs-based prioritisation of education aid determined by Index 2 which incorporates a broader range of factors that describe an individual country's 'need' for additional assistance compared to actual education aid allocations. Low-income countries outweigh lower-middle-income countries in the highest priority rankings of Index 2; whilst those countries deemed to represent the greatest educational need for aid also demonstrate the weakest governance performance, with 17 of the top 20 countries classed as 'fragile' by the Fragile States Index (2015).

The average basic education disbursement per child across the 58 countries for which data were available was US$ 19, with evidence of considerable variation in this amount between countries, much of this due to population size with India in receipt of just US$ 1 per capita as compared to US$ 154 in Djibouti. Average per capita disbursements tend to be higher in low-income countries as compared to lower-middle-income countries, suggesting a greater focus on low-income countries. However, per capita basic education disbursements in fragile states are shown to be almost half that of non-fragile countries at US$ 13 and US$ 25 respectively. Broadly speaking, there appears to be no obvious correlation between aid and need, with Somalia, DRC and Nigeria - among the 'neediest' countries as defined by Index 2 - in receipt of far less than the average per capita disbursement.

**Table 13: Priorities for Allocation of Education Aid**

| COUNTRY Index 2 Ranking | Low Income Country | Fragile States | School Age Population (000) 2012 | Basic Education Aid Per Child (US$) Av. 2010-12 |
|---|---|---|---|---|
| Somalia | * | * | 1 747 | 18 |
| Congo, Dem. Rep. | * | * | 10 825 | 6 |
| Ethiopia | * | * | - | - |
| Nigeria | | * | 27 050 | 1 |
| Afghanistan | * | * | 5 549 | 39 |
| Pakistan | * | * | 19 503 | 11 |
| Chad | * | * | 2 192 | 5 |
| Eritrea | * | * | 787 | 11 |
| Côte d'Ivoire | | * | 3 100 | 12 |
| Sierra Leone | * | * | 952 | 16 |
| Liberia | * | * | 681 | 47 |
| Central African Republic | * | * | 686 | 7 |
| Niger | * | * | 2 883 | 10 |
| Sudan | | * | - | - |
| Malawi | * | | 2 610 | 31 |
| Guinea | * | * | 1 761 | 10 |
| Kenya | * | * | 7 042 | 10 |
| Togo | * | | 1 030 | 4 |
| Madagascar | * | | 3 032 | 6 |
| Mali | * | * | 2 389 | 17 |
| Benin | * | | 1 619 | 19 |
| Mozambique | * | | 5 100 | 21 |
| Djibouti | | | 91 | 154 |
| Nicaragua | | | 782 | 23 |
| Nepal | * | * | 3 433 | 21 |
| Burkina Faso | * | | 2 759 | 28 |
| Uganda | * | * | 7 628 | 5 |
| India | | | 122 628 | 1 |
| Yemen, Rep. | | * | 3 804 | 14 |
| Rwanda | * | * | 1 791 | 16 |
| Zimbabwe | * | * | 2 441 | 21 |
| Burundi | * | * | 1 442 | 11 |
| Senegal | | | 2 128 | 36 |
| Myanmar | * | * | 4 376 | 10 |
| Congo, Rep. | | * | 671 | 6 |
| Bangladesh | * | * | 15 987 | 20 |
| Cameroon | | * | 3 479 | 2 |
| Mauritania | | * | 573 | 9 |
| Philippines | | * | 13 441 | 6 |

| COUNTRY Index 2 Ranking | Low Income Country | Fragile States | School Age Population (000) 2012 | Basic Education Aid Per Child (US$) Av. 2010-12 |
|---|---|---|---|---|
| Lesotho | | * | 344 | 20 |
| Tanzania | * | | 8 867 | 14 |
| Paraguay | | | 869 | 13 |
| Gambia, The | * | | 286 | 17 |
| Lao PDR | | | 720 | 39 |
| Guatemala | | * | 2 369 | 8 |
| Cambodia | * | * | 1 767 | 15 |
| Indonesia | | | 28 366 | 6 |
| Ghana | | | 3 696 | 23 |
| Bolivia | | | 1 479 | 14 |
| Honduras | | | 1 112 | 31 |
| Swaziland | | | 209 | 29 |
| Zambia | | | 2 760 | 14 |
| Egypt, Arab Rep. | | * | 9 539 | 5 |
| Armenia | | | - | - |
| El Salvador | | | 763 | 17 |
| Kyrgyz Republic | | | 383 | 31 |
| Vietnam | | | 6 783 | 10 |
| Bhutan | | | 98 | 10 |
| Morocco | | | 3 461 | 25 |
| Georgia | | | 271 | 52 |
| Ukraine | | | 1 495 | 7 |

*Sources: Fund for Peace (2015); World Bank (2015a; 2015b); OECD CRS (2015)*

The indices discussed above each give equal weighting to the criteria upon which they are based - changing the weight of any of these criteria would affect the priority ranking of individual countries. Whether or not equal weightings are appropriate is a matter of judgement, as is the question of how much significance such needs-based indices should play in determining education aid allocation; but the objectives of the international goals appear to be well represented by such an approach (Colclough 2011) and afford a convenient means of analysing current education aid allocation practices with respect to a country's need for additional assistance.

## 5.3. CONCLUSION

The analysis presented in this chapter offers evidence that the proportion of public education spending made up by aid for education varies significantly between regions and

from country to country. Moreover, it finds that a large tranche of aid reported by donors is not channelled through recipient countries' public accounts, demonstrating the importance of accounting for off-budget education aid when estimating the share of aid relative to government spending on education.

The chapter has also examined how the variance in aid dependency between countries and within regions is reflected in patterns of aid effectiveness. In its analysis of contrasting examples of countries demonstrating low/high levels of aid dependency with poor/good educational outcomes, it finds aid effectiveness to be highly dependent upon individual country context, with volatility in aid flows; overstretched or weak capacity; lack of ownership on the recipient country-side; and inflexibility in the imposition of specific policy prescriptions on the donor-side invariably having the greatest influence on the impact of education aid.

Of course, many of the countries most in need of aid to support their progress towards international education goals suffer from a combination of these issues including low capacity to implement educational policy, a lack of political will, weak budgetary processes. The analysis presented above demonstrates that education aid - when considering a range of needs-based criteria - has not been aligned to those countries demonstrating the greatest educational need according to the MDG priorities, quite possibility due to a concern over the impact that aid might be expected to have (Turrent 2011) and certainly as a result of the well-documented heterogeneity in donor allocation patterns. Amongst the highest priority countries identified by the composite index of educational needs criteria low-income countries predominate along with those classed as 'fragile states' which are shown to be in receipt of comparatively low levels of external educational assistance. A greater focus on how to redress this imbalance in future could no doubt afford considerable progress towards the new education sustainable development goal.

# 6. Discussion

## 6.1. INTRODUCTION

Following adoption of the 2000 Dakar Framework for Action on Education for All, there was concerted action from the international development community in pursuit of the goal of quality universal education. Although the education MDG targets have not been achieved in full, the momentum created by the EFA movement should not be underrated as there are clear signs that progress in education advanced at a far quicker pace than it would have done had the pace of progress continued at that of the 1990s. That said, the extent of progress was less than had been hoped for and fell short of the scale of ambition as articulated by the MDGs. Millions of children do not achieve minimum learning standards and the most vulnerable and disadvantaged continue to be those least likely to have access to education. Challenges to and within the education systems of many sub-Saharan African and South Asian countries remain particularly severe. Evidence at the global level points to pledges made as part of the Dakar Framework being filled only in part, which it has been argued may have stymied progress as resources were insufficient to meet the scale of ambition (UNESCO 2015).

It has been often stated that the EFA movement suffered with the adoption of the MDGs as attention was focused disproportionately on achieving universal primary education (Unterhalter 2013; UNESCO 2015). Whilst the target of universal primary education was attractive to those poorest countries farthest from it and to the many education donors willing to back it financially, the consequence was that the EFA agenda held less appeal to those developing countries that were close to achieving the goal or had already done so. On a more positive note, greater attention was increasingly paid to learning and assessment over the period, an area that captured the attention of bilateral and multilateral donors alike (Riddell and Niño-Zarazua 2015). In passing the 2015 deadline for completing the MDGs, learning must be taken forward from the successes of previous periods of international support to education, and specifically the period of working towards Education for All. Key aspects of progress may be defined by emphasis on technical areas of educational assistance with the creation of global initiatives, campaigns and financing mechanisms intended to influence strategic and technical capacity, garner political support for the sector, and encourage the greater pooling financing in support of common goals.

Ingrained in the Sustainable Development Goals are even more ambitious education policy priorities, intended to be universal in application, transformative in their purpose, and inclusive and equitable in practice (Benavot 2015). However, concerns are raised that elements of the EFA agenda may be sidelined; that targeted funding for the lowest-income countries and most vulnerable populations will decrease; and that national level commitment to securing universal access to and completion of a free basic education of quality may be distracted. Benavot (2015: 3) goes on to state that situating priorities for education with the broader sustainable development agenda could plausibly "risk promoting a predominantly instrumentalist view of education, as a driver for economic, political and environmental change".

The seriousness of these risks is yet to be seen. What is clear though is that significant additional financial resources will be required in order to harness progress towards the new sustainable education goal of ensuring 'inclusive and equitable quality education and promote lifelong learning opportunities for all' (United Nations 2015b). As discussed in Chapter 5, domestic financing will continue to be the most important source for achieving this. Broadening the tax base and securing an appropriate share of public spending for education would undoubtedly substantially increase the resources available to the sector. It is likely that, even with such reforms, there will still be many low-income countries unable to meet all the costs associated with education provision for many years to come. Private sector and non-DAC donor financing of education remains very low and has not tended to be aligned with EFA and SDG objectives (UNESCO 2013). Official development assistance for education from DAC donors will, then, continue to be an important source of finance for most of these countries. As the analysis presented in Chapters 4 and 5 has shown, aid continues to play an important part in many of the poorest countries of the world - particularly those in sub-Saharan Africa. As international ambitions for global goal-making increase and objectives are broadened, maintaining a focus on the efficiency and effectiveness of aid allocation will be vital in order to ensure its sustainability. Many studies have focused on technical aspects of aid - the importance of aid harmonisation, coordination, country ownership and the efficacy of various aid modalities (Riddell 2007; Leiderer 2015). Whilst these technical considerations are important, they are not sufficient to ensure more effective aid if the aid is not allocated strategically to sub-sectors, purposes and countries to maximise its impact (Fredriksen 2013).

The research presented in this thesis addresses this aspect of aid effectiveness, that which is concerned with the optimal allocation of aid. It has sought to identify the overall additional impact of aid allocated to the education sector and its differential effect in contexts of weak/strong political governance as well as situations of conflict. It has explored the issue of aid dependency and the contrasting results of international agency involvement in countries with both high and low levels of aid dependency. Recognising that the ability of aid to stimulate progress towards the post-2015 goals will increasingly depend on it being allocated more strategically. The thesis has also explored means of identifying countries with the greatest need for aid - based on a range of educational criteria - in order to assess past needs-based allocation performance and inform future policy making on the strategic allocation of education aid.

The chapter begins with a brief summary of the study that considers the research design, data collection and analysis strategies, as well as a summary of the main findings in order to set the stage for the discussion that follows. The discussion presented in section 6.3 highlights the most interesting results and positions them within current debates in the field. It is intended to serve as a critical reflection on how the investigation has contributed to the knowledge field of aid effectiveness, how it speaks to other authors, and how the findings may be interpreted. The chapter then turns to examine the implications of the research for practice and theory. It concludes by considering the study's limitations and avenues for future research.

## 6.2. SUMMARY OF THE STUDY

### 6.2.1. Investigation Design

The absence of a counter-factual is possibly the greatest hurdle to establishing the impact of education aid. Rising aid volumes in recent decades have led to increasing numbers of studies trying to ascertain the impact and benefits of educational aid, with the intention of better understanding how its effectiveness can be improved. Analysis is complicated by the fact that education aid does not operate in isolation from the many other elements that give rise to progress in education. The precise nature of education aid's contribution to education outcomes is not, therefore, straightforward when viewed alongside other contributing factors. Establishing sustainable improvements is even more complex as this

necessitates consideration of social, political and economic contexts (Riddell and Niño-Zarazua 2015).

The benefit of methods of panel data analysis in addressing the issues outlined by Riddell and Niño-Zarazua (2015) is that the data are multi-dimensional, containing observations on multiple phenomena observed over multiple time periods. The use of panel data was found to be a highly appropriate means of addressing the study's research questions - allowing analysis of the impact of aid on education outcomes to be explored at a country level whilst still accounting for individual country heterogeneity by allowing for the controlling of both unobserved variables and those variables that are time invariant.

The adoption of a panel dataset and methods of panel data analysis - rather than cross-sectional data analysis - to assess empirically the question of aid effectiveness in the education sector has been important, as it has permitted a long-term view of aid data and national education systems to be taken. The approach has also allowed for political and economic predictors to be taken into account when assessing the conditions under which aid might be expected to work best. The research design allows for examination of the impact that education aid has had over time; and, in this sense, goes beyond the scope of many aid evaluations in the education sector, which are largely qualitative by design - tending to be case-specific - and invariably conducted over a much shorter timeframe (see, for example, American Institutes for Research 2010; Musker, Clist et al. 2014; DFID 2015; University of Southern California 2015). The panel research design is the approach most commonly adopted by economists examining the impact of aid on growth (Burnside and Dollar 2000; Bond, Hoeffler et al. 2001; Collier and Hoeffler 2004; Armah 2010). It was found to be well suited to the examination of aid's impact on education enrolment, as it allows the researcher to understand what is happening in countries over time: this is helpful given that the macroeconomic and political relationships of interest are typically dynamic in nature (Lloyd, Morrisery et al. 2001). The panel approach was deemed to be the most appropriate and effective research design for addressing the issue of aid effectiveness at the macro level due to its potential for the analysis of causal relationships.

By applying the panel research design to analysis of education aid, it makes it possible for the findings on aid effectiveness at the sectoral level to be discussed in the light of the macroeconomic literature on aid and growth. This is important as it allows the locus of education aid discussions to be drawn away from assessments based on purely project perspectives, to engage with the international debate on aid effectiveness that so very often

informs donor decisions on the allocation of education aid. As discussed in Chapter 2 of this thesis, the macro-level aid debate questions whether aid effectiveness may be improved by allocations being made in accordance with the strength of recipient country governance. The research design adopted here creates an entry point for education aid to be considered in this debate, with the belief that research based on sector-specific aid analysis can more usefully determine the future allocation of aid at the sectoral level - in this case for education.

Perhaps the most obvious difficulty with employing panel data covering a large swathe of countries, as compared to programme or project aid evaluations conducted at country level, is that data collected at the macro level effectively compresses a complex and multifaceted reality into a single statistic - for example a nation's Net Enrolment Rate. Data and indicators must, therefore, be considered as part of a wider picture of individual and dynamic country environments that are themselves evolving within a larger sub-regional or regional contexts (UNESCO 2016) and their strengths and limitations taken into account.

Moreover, education aid is composed of a considerable number of heterogeneous components - grants and long-term loans, technical cooperation, and budget support - and is channelled from a number of distinct sources - multilateral institutions, bilateral donor aid agencies, regional institutions, non-governmental organisations and private funds amongst whom there is great heterogeneity in aid allocation practice. Diversity in the definition and channels of education aid, in addition to the availability and completeness of aid data, goes some way to explain why the relationships between education aid and its outcomes are so complex.

Panel data methods of analysis have been exploited in Chapter 4 to understand the overall effect of aid over time and the conditions under which it has been most/least effective. In order to complement and 'unpack' the findings of the econometric modelling in a way that accepts the need for a contextual understanding of the complexities of aid effectiveness, the data gathered in the collation of the panel dataset is used in Chapter 5 to identify contrasting country case studies for discussion. Drawing on both the quantitative panel data and a review of aid evaluations and official government documentation, the chapter explores issues related to aid dependency and allocation at country level to gauge how future education aid for spending at primary level might be allocated more strategically.

The application of the mixed-method approach in this thesis - the benefits of which are

extolled by Rao and Woolcock (2003) - is methodologically driven, recognising the benefits of triangulating different sources and types of data. When the principally quantitative data are subjected to a stronger process of generalisation by comparing against data derived through qualitative methods, then claims to evidence may be stronger than if the panel method of data analysis were the sole method applied to establish the effectiveness and differential impact of education aid. Easterly, Levine et al. (2004), in a critique of Randomised Control Trials, advocate that a more constructive approach in order to hold aid accountable for results might be the application of diverse types of evidence including case studies and well-executed macro regressions. The approach is not new, with Greene and Caracelli (1997) likewise arguing for the benefits of mixed-methods evaluation designs.

### *Sample*

The sample of countries accounted for in the study includes those developing countries with both an Education Development Index (EDI) Score of 0.95 (classed low or medium on the EDI (2015) scale) and those classified as low- or lower-middle-income by the World Bank (2015b). Upper-middle- and high-income countries were not included in the analysis as it was assumed that they would have sufficient domestic resources to fund their national education programmes. Countries that were classed as low- or lower-middle-income but which had no EDI score were also added as it was assumed that they would be some distance from meeting the EFA goals (Colclough 2011). Small Island Developing States and countries with insufficient data were removed from the final group of countries for analysis. This resulted in a total of 61 countries for analysis in both the long-term structural (1970-2013) and short-term annual (2000-2013) panels.

The 61 countries represent approximately 90 per cent of the children who remained out of primary schools in developing countries in 2012 and 84 per cent of the global total, indicating that the sample covers a substantial amount of countries with the most heightened educational need. The sampling method outlined above is quite distinct from the approach adopted by Michaelowa and Weber (2007b); Dreher, Nunnenkamp et al. (2008) and Birchler and Michaelowa (2015) who select countries into their analyses on the basis of GNI alone, and include upper-middle-income countries as part of this - countries unlikely to be in receipt of large sums of educational assistance for the purpose of promoting access to primary education.

### Model Specification

The conceptual framework guiding the model specification supposes that additional investment in education spending, in the form of aid to education, will improve both the quantity and quality of education through the building of schools, the hiring and training of teachers, the increased provision of teaching and learning resources, and so forth. The model developed to address research questions 1 and 2 assumes that the effect of aid is not homogenous and that education aid will have a greater impact in certain development settings than it will in others.

The departure point for examining the impact of aid in the education sector was the consideration of enrolment rates as an effective means for judging the delivery of local education system services (Lewin 2007). The quality of education was captured by including primary completion rates as the dependent variable in the short-term annual panel (2000-2013). The measure is deemed to be a good indication of quality as a school system that is able to retain children until the end of the course may be considered to be a good one. If the quality of education is poor, in all likelihood the first to drop out will be the poorest for whom regular attendance and completion presents the highest opportunity cost. Gender parity was included as a further alternative measure of educational outcomes in the short-term panel - since, given the importance that the MDGs place upon girls' education, this is an objective on which donors would be expected to concentrate their aid for primary education.

A structural enrolment equation, including aid for education and other explanatory variables specifying the education system, was estimated in order to measure the effect of education aid upon these education outcomes at the primary level. The selection of control variables was made with reference to the literature relating to education outcomes and based on the notion of the production-demand framework as proposed by Schultz (1988). The approach was found to be convenient as a means of specifying the model and also, conceptually, for disentangling the findings as shown in section 6.2.3 below. The supply factors included domestic spending on education and the pupil-teacher ratio, with education aid included as an additional supply-side factor. On the demand side, per capita income, the percentage of the population categorised as 'youth', and the extent of urbanisation were included as control variables.

Additional variables added to the enrolment equation in this study include: a lag of the dependent variable in order to address the potential for auto-correlation and to account for

a possible persistence in outcomes - assuming that the initial level of education will, to some extent, predict future rates of enrolment; a non-linear specification of education aid as a means by which to depict the potentially decreasing returns to aid investment in education; and a dummy variable allowing for comparison of enrolment between the periods 1970-1989 and 1990-2010, since the inception of the EFA goals.

As the second research question demands an understanding of how the quality of governance and presence of conflict influence the impact that education aid can have at the country level, interactions between education aid and variables relating to political and institutional governance (defined in terms of government stability and the degree of democratic freedom); and the presence, or recent emergence from, conflict were included in the modelling of the aid-enrolment relationship. Earlier empirical work on the effectiveness of education aid has focused almost exclusively on estimating the overall effect of aid for education (Michaelowa and Weber 2006; Dreher, Nunnenkamp et al. 2008; Christensen, Homer et al. 2010). By including these interactions between the education aid variable and those variables that describe the differing political, institutional and economic forces of developing countries, the debate then turns from not only *whether* aid is effective, but also to *where* it is most effective.

Determining the scenarios under which aid volumes can be increased in order to maximise the efficiency of education aid - thereby leading to increases in enrolment rates and a greater number of children completing a primary cycle of education - will be critical to policy discussions in the new era of the education sustainable development agenda as it will be important to understand the effectiveness and efficiency of education aid in different contexts relative to development assistance more generally if the ambitious education targets are to adequately and sustainably resourced. Understanding at a global level where education aid works, under what conditions and why, will be of vital importance.

### 6.2.2. Data Collection and Analysis Strategies

A definitive answer to the question of whether and where aid for education works is necessary, as billions of dollars of aid have been directed to education in support of the MDGs and in particular the goal to increase primary enrolment. By constructing datasets that incorporate the most up-to-date, rich, internationally comparable, data over a forty-year period for 61 low- and lower-middle-income countries with low to medium EDI scores, the research presented in this thesis offers the most comprehensive assessment of

aid effectiveness in the education sector available. It goes beyond previous attempts by Michaelowa and Weber (2006), Dreher, Nunnenkamp et al. (2008) and Christensen, Homer et al. (2011) that examine the overall impact of education aid to address the issue of country heterogeneity in order to understand the conditions under which education aid works best - pooling data for variables related to the quality of governance and the incidence of conflict that it is hypothesised ought to affect the impact of aid. Furthermore, the macro-level findings are complemented by analysis of country-based education aid evaluations in order to provide context on the specific country conditions that have helped or impeded the success of donor aid programmes. The process of collecting and analysing the data that this study relies upon in order to do this is reflected upon below.

### *Use of Secondary Data*

The research presented in this thesis relies upon secondary statistics drawn from a number of recognised international sources containing information on aid flows, education outcomes and various development indicators, in addition to data relating to conflict and the quality of economic and political governance. Secondary cross-national datasets increasingly play an ever-bigger role in empirical economic research (Atkins and Brandolini 2001). The approach of building a panel dataset to research questions of international development policy drawing on multiple data sources is widely accepted, as is evidenced by the many research papers published that adopt this methodology in the area of aid effectiveness alone (see, for example, Collier and Dollar 1999; Burnside and Dollar 2000; Dreher, Nunnenkamp et al. 2008; Armah 2010; Findley 2010).

In order to address the question of the impact of aid for education upon school enrolment and to understand the political, institutional, and economic factors that drive aid effectiveness, large sample sizes are required that cut across countries over a substantial period of time. Obtaining such data directly from the field proves time-consuming and expensive for the individual researcher. By comparison, secondary data available at a national level and published by internationally recognised sources constitutes a low-cost alternative for a macro-level policy study such as this; and it has the added advantage of comparable statistics being available over a time-series that is sufficient for econometric analysis (Atkins and Brandolini 2001). The use of existing data from international sources permits timely and credible input into the policy-making process - in this case allowing the researcher the opportunity to model the aid-enrolment relationship over a period of 40 years and to comment on the most recent patterns of education aid flows. This is

important, as the purpose of this research is to contribute to the debate on aid effectiveness in the education sector and to influence donors' thinking with regard to the practice of education aid allocation in the post-MDG period.

The data are recorded in two different settings: a long-term structural panel employing data from 1970 to 2013 used to examine the impact of total education aid commitments on primary net enrolment; and an annual panel for the period 2000 to 2013 to explore the effectiveness of aid disbursements directed specifically toward primary level educational activities aimed at improving primary completion rates and gender parity. Whilst the first of these panel datasets is theoretically more appealing in terms of its long time span, the second has the benefit of results based on sub-sectoral (aid directed specifically to the objective of primary education) and arguably more reliable data.

Although there are clear advantages to employing secondary data in a study such as this, it is important to remember that - as with any primary data source - there are drawbacks. Whilst large-scale administrative data can aid the researcher in understanding *what* is happening at country level, when compared to data collected at the individual or institutional level in this sense they are imperfect or only partial reflections of reality. Without proper interpretation and analysis they do not help the researcher in gaining an understanding of *why* a particular phenomenon is taking place (UNDP 1997). Secondary data therefore needs to be cross-analysed in order to gain a better understanding of a particular situation, thereby allowing for judgments and recommendations for areas of intervention to be made. The analysis found in Chapter 4 is made up offers coefficients for each of the variables of interest aggregated across large groups of countries over time. In order to gain a deeper understanding of aid effectiveness, this data is then cross-analysed in Chapter 5 by looking at the issue of aid dependency within individual countries over time using multiple evidence sources in order to illuminate where aid has had an impact, where it has not, and why.

Moreover, sources may 'conflict' with one another. This was found to be the case with the definition of secondary and tertiary education as used by UIS, who gather the statistics relating to education enrolment, and that used by the OECD CRS in relation to education aid disaggregated by each of these levels of education. Although the data have been used for sub-sectoral analysis elsewhere to examine the effect of aid committed specifically to secondary and tertiary education on secondary and tertiary enrolment rates (see Michaelowa and Weber 2007b), it was felt that that the definitions were too distinct for a

valid analysis to be run at this level of disaggregation. This restricted the extent to which this research could make claims about the effectiveness of sub-sectoral aid beyond that of primary education.

Central to the process of using secondary data for quality analysis, then, is the ability to appraise critically the quality of the data that has been collected. Awareness of the purpose of data collection assists in evaluating the quality of the data and discerning the potential degree of bias (Hakim 1982). Clearly there is the danger when relying on secondary sources that they are used mechanically, without knowledge of the underlying sources (Atkins and Brandolini 2001). This is perhaps the greatest disadvantage of secondary data and has been addressed in this research by gaining familiarity with all the sources of original data collection, understanding how data have been cleaned, and addressing issues that this could pose to the analysis. Appropriate treatment was made of the data, and sensitivity tests were run in order fully to address the data issues that arose from the critical evaluation of the statistics and their sources. Perhaps the greatest such data limitation found was with the primary NER variable where the international comparability of data could potentially have been distorted by durations of primary education which differ from the typical duration of five or six years; exceptionally large increases in enrolment rates; or as a result of the 2003 UNESCO revision of estimates for primary NER for the period 1998 to 2001. As has been described in full in Chapter 4, this was dealt with by running a series of sensitivity tests in order to address this and the other limitations described that were imposed by the choice of variables in order to ensure the validity and generalisability of the findings. The sensitivity testing process showed only nominal effects on the size of the coefficients, without any statistically significant change to the overall results. In view of the wide use that the data collated for this thesis can reasonably be expected to have, it was important that it is the subject of such careful scrutiny.

### *Estimating the Aid-Enrolment Relationship*

Surveys of the macroeconomic literature on aid effectiveness indicate that the effect that aid is found to have is largely dependent upon the selection of control variables used in the model (Hansen and Tarp 2001), with results being highly sensitive to model specification. In order to address this issue - as discussed in section 6.2.1 above - control variables were selected for inclusion in the datasets on the basis of a review of the empirical literature relating to education production functions, and according to the importance that they were shown to have in the emergent empirical literature on aid effectiveness in the education

sector. Bivariate analysis of each of these variables was then run to test their individual significance in terms of the correlation with net primary enrolment prior to their inclusion in the multivariate regression analysis models.

A critical problem when modelling the aid-enrolment relationship is that education aid cannot reasonably be considered exogenous to enrolment. Aid is not randomly assigned, with both indicators of governance and need having been shown to be related to aid allocations (McKinlay and Little 1977; Thiele, Nunnenkamp et al. 2007). Assuming that aid donors deem the necessity for support of the national education system to be a significant factor in determining their aid allocation patterns, then it would be expected that donors ought to distribute more aid for education to countries demonstrating low NERs - implying a problem of reverse causality. It was also assumed that the relationship between public expenditure on education and the pupil-teacher ratio was likely to be endogenous, with greater NERs (indicating more primary-aged children enrolled in school) plausibly leading to a lowering of the amount of spending available per pupil and increasing the number of students per teacher. Under this scenario, the causal effect is seen to run from the primary enrolment rate towards domestic expenditure on education and the pupil-teacher ratio rather than the other way round.

In order to address the potential for endogeneity and simultaneously to correct for the bias associated with the introduction of the lagged dependent variable in the dynamic panel model context, a system-GMM regression estimator was employed. The estimator has several advantages that favour its use over alternatives such as the OLS estimator. By design, the system GMM estimator presumes that the independent variables are endogenous and therefore employs lags of each of these variables to act as their own instrument. The possibility of including lagged explanatory variables as their own instrument offers the benefit of a strong association with the initial variable; nevertheless it becomes difficult to make the case that this is not correlated with the error term. The issue usually presents itself in situations where endogeneity is the product of reverse causation, with the outcome variable wielding influence over the regressor concerned.

In the example of the association between education aid and education outcomes if the current level of education aid is affected by the current level of primary enrolment, the lag of education aid will likewise be affected by the lag of primary enrolment. In order to adequately address the endogeneity issue and potential for reverse causation, the final multivariate model regressions employed instrumental variable estimation. This technique

involves finding a variable that is correlated with the problem variable but which does not suffer from endogeneity. In this case the variable energy aid was selected as it was found to be correlated with education aid, but not with the error term. Energy aid has been used successfully by Michaelowa (2007a; 2007b) in their econometric analyses of aid effectiveness in the education sector. This approach to instrumentation was found to be highly advantageous, demonstrating considerable improvements in the significance of the education aid variable at the bivariate stage of the empirical analysis. The implication of this is that the true effects of these important explanatory variables can be underestimated if the effect of endogenous relationships is not appropriately instrumented.

### Measuring Aid Dependency

Whilst an estimation of the overall aid-enrolment relationship will be of interest to policymakers wishing to understand that effect that education has had over time in order to make the case for aid in a climate of aid skepticism, panel studies can tell us little about the within country differences in outcomes. As Sen (2006) explains in a review of William Easterly's (2006) *The White Man's Burden*, where the use of panel data may be considered compromised is in the "difficulty of comparing diverse experiences as countries can differ significantly in variables other than those that are brought under cross-sectional scrutiny". Indeed, there are many examples where foreign aid has played a significant role in the growth and development of a country including Ghana, Uganda, Tanzania and Mozambique, but also several examples where countries, in spite of receiving large sums of aid have failed to use it for their educational development such as the Democratic Republic of the Congo and Somalia.

For this reason, it was seen to be important to complement the findings of the macro analysis with an understanding of aid effectiveness at country level. When assessing the differing patterns of aid effectiveness (as a concern for the strategic allocation of education aid) amongst recipient countries, an important consideration is aid dependency efficiency: the extent to which aid is allocated in ways that avoid creating aid dependency harmful to self-reliant education development.

Measuring the extent of aid dependency in the education sector is complicated, not least by the fact that education spending is a complex web made up of multiple sources of education finance - from government, aid donors, households, individuals and private organisations - as well as incomplete and inconsistent reporting. Moreover, donors finance

education through government budgets, but also outside them via different agents such as NGOs and civil society organisations. Additional measurement issues encountered were that aid to education reported to the CRS overstates foreign contributions by including donors' administrative costs as well as costs incurred by donor country higher education system's when receiving students from developing countries; considering aid allocated to the education system risks missing the contribution of general budget support to the education sector; as well as the problems associated with determining whether education aid is 'on' or 'off' budget due to a lack of accurate recording by recipient governments. These issues, discussed in detail in section 5.1 of Chapter 5, were dealt with by employing country programmable aid to education data (a sub-set of ODA); including a 20 per cent share of general budget support; and adopting the UNESCO (2012b) estimate of 60 per cent of CPA to education as being on-budget and 40 per cent off-budget respectively.

The analysis, for the 43 countries for which sufficient data was available, allowed for comparisons of educational aid dependency to be drawn between individual countries included in the study and to identify those geographical regions where aid dependency was highest/lowest. Having identified contrasting country examples according to the level of aid dependency, the researcher was then able to explore, through a review of country-based aid evaluations, contrasting patterns of aid dependency, the role of donors, and the impact of education aid had had in each of the four countries.

### *The Strategic Allocation of Education Aid*

In order to assess the effectiveness of aid for education in the period 2000-2015, the question arises as to how to adjudicate priorities amongst those countries in need of aid-support in order to reach international education goals. In deciding priorities for the allocation of aid to education amongst potential recipients, a range of criteria are relevant. These include judgements about the development and policy context of recipient states, about the strength of their governments' commitments to achieving internationally agreed education goals, about the transparency and accountability of their budgetary processes, and a range of other matters. As Colclough (2011) posits, underlying all of these is a notion of 'need'. The final section of Chapter 5 considers this issue of allocative efficiency - the extent to which aid is allocated to purposes and inputs where it has the greatest catalytic impact on national education outcomes. It does so by examining criteria upon which needs-based aid allocation might be made and, as part of this, determining priority countries for aid at primary level to have the greatest impact.

The 61 countries accounted for in the present study are ranked according to needs criteria defined by Colclough (2011) - the number of out-of-school children, primary NER, survival rate to grade 5 and progress towards gender parity in enrolment - and the corresponding levels of aid assistance that priority countries have been apportioned explored. How much significance the index should have for the purpose of determining priority in education aid allocation is subjective, but it is clear that the objectives of the education MDGs - enrolling all eligible children in primary education and of removing gender disparities - which remain important to the SDG agenda, are well represented by such an approach.

### 6.2.3. Results of the Study

This section briefly summarises the key findings under the heading of each of the thesis' research questions ahead of a discussion of their significance in section 6.3.

***R.Q.1: What has been the direct effect of education aid on enrolment over time across developing countries?***

The results of the analysis run on the structural panel for the period 1970-2013 found per capita education aid to be highly significant as a predictor of primary enrolment - with an increase in average per capita aid of US$ 1 equated with an increase of 0.3 per cent in primary enrolment.

The variable 'Period' is also shown to have a substantial impact on enrolment. Coefficients contrasting primary net enrolment in the period 1970-1989 with net enrolment for 1990-2013 demonstrate that the period in which education aid had been given to be of considerable importance in determining education outcomes, with the period 1990-2013 being correlated with a 2.5 per cent greater rise in primary net enrolment as compared to the period 1970-89.

***R.Q. 1.1.*** *To what extent has aid directed specifically to primary education contributed to ensuring that, by 2015, children everywhere - boys and girls alike - will be able to complete a full course of primary schooling?*

The annual panel captures education aid data for the MDG period (2000-2013). The availability of internationally comparable published data is considerably greater than that

available for the structural panel which stretches over a period of more than 40 years. The shorter-period therefore allows for analysis of aid disbursed at a sub-sectoral level, meaning that it is possible to examine the effect of education aid disbursed in support of primary education upon outcomes at that level. In this case, the analysis looked at alternative, more meaningful education outcomes at the primary level - primary completion rates and gender parity ratios in primary education.

The results of the annual panel largely confirmed analysis of the structural panel (1970-2010) in finding primary education aid to be positively associated with the primary completion rate. The preferred results showed the effect of aid to primary education to be highly significant, although the coefficient is somewhat smaller, leading to an average 0.08 increase in primary enrolment per additional US$ 1 of per capita primary education aid allocated. That the coefficient is smaller is to be expected given that less variability in completion rates would be expected year-on-year as opposed to in the structural setting where the outcome variable is averaged over a period of five years. Likewise, the impact of primary education aid upon gender parity was positive; however, the results were statistically insignificant.

### R.Q.2. How does the heterogeneity of aid recipients affect the impact of education aid upon enrolment in, and completion of, primary education?

*R.Q.2.1. What are the conditions under which aid has been most/least effective? Is aid given to well-governed countries (as defined by government stability, economic openness, and democratic freedom) more effective than aid to less well-governed countries?*

As raised in Chapter 2, differing political, institutional and economic forces will inevitably impinge upon the absorption and application of aid and its outcomes in the education sector across developing countries, for which reason the research tested the degree to which factors related to the quality of governance and the presence of conflict, work through aid with the intention of revealing the differential impact of aid for education allocated in these contexts.

In the final multivariate regression modelling, interactions between education aid and the degree of democratic freedom demonstrate the effect of education aid upon primary NERs to be greater in those recipient countries that have attained 'full' or 'partial' democratic freedom, although the findings are not statistically significant. However, education aid

committed to countries with more stable governance is shown to be statistically significant in the production of higher levels of primary enrolment, increasing the primary NER by a nominal 0.007 per cent by each increase on The PRS Group (2015) index of government stability.

***R.Q.2.2.*** *How does a country's conflict status affect the ability to absorb additional amounts of aid?*

The possibility that the impact of aid on school enrolment might be dependent upon the presence of, or recent emergence from, conflict in the recipient countries was also taken into account. The interactions - that are supposed to reveal the differential impact of aid – point to education aid allocated during periods of conflict being significantly and positively associated with primary enrolment, with primary NERs increasing by 0.3 per cent as compared to the average recipient country where conflict was not present.

## R.Q.3. Are differing patterns of aid effectiveness discernible when exploring aid dependency and allocative efficiency in education?

***R.Q.3.1.*** *To what extent are recipient countries dependent upon aid for the financing of their education systems and how does the degree of aid dependency affect the impact that education aid can have?*

Section 5.1.1 offers evidence that the share of public education spending funded by aid donors varies greatly between region and from country to country. Moreover, it finds that a large portion of aid reported by donors is not channelled through recipient countries' public accounts, demonstrating the importance of accounting for off-budget education aid when estimating the share of aid relative to government spending on education. In Latin America and the Caribbean, donor contributions remain negligible, representing 7 per cent of total public expenditure on education (4.6 per cent of the education budget); whilst the average share in 23 Sub-Saharan African countries was 25.9 per cent (20.3 per cent of the education budget). Yet even within the sub-Saharan region, significant differences in the aid share of national education expenditure are apparent between countries. Approximately 5 per cent of public education spending in Kenya (4 per cent of education budget) is comprised of aid, a significantly smaller percentage than many other low-income countries in sub-Saharan Africa including Zambia and Mozambique, where, on average, 62 and 51 per cent respectively of total public education expenditure (55 and 42 per cent of the education budget) is found to be aid funded.

Section 5.1.2 of the thesis goes on to explore how this variety in aid dependency between countries and within regions is reflected in patterns of aid effectiveness. In its analysis of contrasting examples of countries demonstrating low/high levels of aid dependency with poor/good educational outcomes, it finds that aid effectiveness is highly dependent upon individual country context. The analysis of aid dependency indicates that the percentage of aid received relative to domestic expenditure has no obvious effect upon educational outcomes and that it is overstretched or weak capacity and lack of ownership on the recipient country-side and inflexibility in the imposition of specific policy prescriptions and volatility in aid disbursements on the donor-side that invariably have the greatest influence on the impact of education aid.

*R.Q.3.2. Has aid during the MDG period been strategically allocated to those countries showing the greatest educational need?*

Section 5.2 of the analysis considers different criteria for the needs-based allocation of education aid and concludes that aid to education has not been aligned to those countries demonstrating the greatest educational need according to the MDG priorities. Furthermore, amongst the high priority countries identified by the composite index of educational needs criteria - number of out-of-school children, primary NER, survival rate to grade 5 and gender parity - it is low-income countries that predominate along with those classed as 'fragile states'. These countries are also shown to have, comparatively, been in receipt of the least amounts of educational assistance.

## 6.3. DISCUSSION

The research set out to establish the criteria that ought to determine priorities for aid allocation in the education sector - seeking to establish the impact of education aid on primary enrolment and completion across developing countries and the specific factors that influence its effectiveness. This section addresses each of the research areas in turn: whether education aid works; the impact of political governance and conflict upon aid effectiveness; as well as the issue of aid dependency and the strategic allocation of education aid. It presents a critical reflection on how the thesis has contributed to the field of knowledge on aid effectiveness, on how it speaks to other authors conducting empirical research on this issue in the education sector, as well as how the results of the study might be interpreted.

### 6.3.1. Does Aid Work?

That the announcement of EFA in 1990 and the declaration of the MDGs in 2000 were met with promises of increased international support for education is built on the assumption that greater investment in education - both domestic and in the form of foreign aid - can increase enrolment and, thereby, the collective stock of human capital. This is logical as aid programmes would be expected, for example, to increase both access to and the quality of education through the provision of new infrastructure; improved teacher training; and better curricula and learning materials (Christensen, Homer et al. 2011). However, to date, there has been only minimal empirical testing of these claims.

The findings of this research confirm a potential relationship, though perhaps less strong than thought by some, between aid inputs and education outcomes. This study's robust findings indicate that education aid has a positive and statistically significant impact on education outcomes at the primary level in developing countries with an average increase of US$ 1 in per capita education aid equated with a 0.3 percentage point increase in primary net enrolment. The positive association found between education aid and enrolment confirms the conclusions generally drawn from existing empirical literature on the impact of aid in the education sector that promote education aid as being effective (Michaelowa and Weber 2007b; Dreher, Nunnenkamp et al. 2008; Christensen, Homer et al. 2011). However, that the positive relationship between education aid and primary education outcomes is not stronger should not come as a surprise as numerous studies have been published that find the relationship between public expenditure on education and education outcomes to be weak (Colclough and Lewin 1993; Mingat and Tan 1998; McMahon 2002; Colenso 2011).

Michaelowa and Weber (2006) and Dreher, Nunnenkamp et al. (2008) look specifically at the effect of aid on outcomes in the education sector. While these are often held up as testaments that aid for education is effective, close examination shows that the relationship is invariably weak and often insignificant. In both cases, positive correlations between education aid and education outcomes are found, suggesting that aid does have some positive influence upon school enrolment although the relationship appears to be not so significant substantively. Due to data availability, both studies looked at the effect of all education aid on primary school enrolment, rather than solely the effect of primary school aid on enrolment. Attempting to address this issue, Michaelowa and Weber (2007a)

considered the effects of aid disaggregated by education level on education outcomes. The results are largely inconclusive, although the most significant positive effects are recorded for secondary education levels. The conclusion drawn by the authors is that education aid is effective, although significant coefficients are found in only 8 out of the 24 regressions run.

Moreover, the 'at best' scenario identified by Michaelowa and Weber (2006) that increasing aid to any level of education by 1 per cent of the recipient country's GDP would improve completion rates by a maximum of 2.5 percentage points - effectively an increase in aid corresponding to approximately twice the level of current education commitments - is equally pessimistic, as it would require huge and unprecedented rises in education aid to produce comparatively nominal increases in enrolment. Notably, the authors find the effect of primary-only education aid on primary completion rates to be insignificant. That the present research finds this effect to be both significant and positive when a one-year lag of primary education aid is introduced in the annual panel covering the period 2000-2013 may be due to the improved modelling of the relationship and to country sampling procedure in particular.

Asiedu and Nandwa (2007) and Wolf (2007) also find the effect of education aid to be positive and significant. Only Christensen, Homer et al. (2010), who employ latent growth modelling to explore the issue of aid effectiveness over the period 1975-2005 using AidData, find there to be no significant relationship between education aid and education outcomes at the primary level. However, the authors subsequently find a positive effect for education aid allocated by bilateral donors, whilst multilateral aid is found insignificant, when disaggregating bilateral and multilateral aid flows (Christensen, Homer et al. 2011).

Since aid for education remains positive and significant after performing several sensitivity tests, the conclusion that aid in the education sector is effective in predicting education outcomes at the primary level - even if the relationship is relatively weak - appears to be robust. Several arguments may be made for the relatively weak relationship between education aid and primary net enrolment. First, that insufficient aid has been allocated to education, meaning that there has been little room for it to make an impact. This ties in neatly with Sachs' (2005: 310) case that "it is no surprise that there is so little to show for the aid to Africa, because there has in fact been so little aid to Africa!".

Second, that small coefficients may point to aid expenditure inefficiencies being of such consequence that education outcomes are only loosely correlated with financial inputs, at least in a multi-country comparison. Certainly this has been the case for national education expenditure (Colclough and Lewin 1993; Mingat and Tan 1998; Colclough and Al-Samarrai 2000; Gupta and Verhoeven 2001; McMahon 2002), and as aid is increasingly spent in the form of budget support - through domestic education budgets - this reasoning appears quite plausible. Moreover, linked to this is the notion that corruption may be at play (Colenso 2011).

Third, in reference to aid allocation, that aid has possibility not been adequately directed towards the correct goal. Even in recent years when we suppose that there ought to have been a focus upon primary education as a result of donor emphasis on achieving the MDGs, it is possible that education aid may not be being effectively directed towards the goal of universal primary education. The relatively small amounts of aid apportioned to education at the primary level by a number of donors including Switzerland, Portugal, Japan, Italy, Germany and France (all of whom direct less than a quarter of their education aid to basic education (OECD CRS 2015) - given the extent of the MDG ambition on primary education - may go some way to explaining the difficulty in finding a statistically significant coefficient, due to its lack of prioritisation in spite of global commitments to universal primary education. Certainly, Thiele, Nunnenkamp et al. (2007) postulate that the fact that the share of education aid allocated to primary education has been decreasing relative to earlier years explains the weak relationship between financial inputs and education outcomes, arguing that, if donors were to have collectively focused their allocation of aid on primary education, a much stronger effect would be apparent. A further point, in relation to the optimal allocation of aid, is that donors simply may not direct education aid to the most effective projects. Indeed, as Banerjee (2007), contends there are numerous examples of empirical research showing education aid projects to be ineffective. Inefficiency in this sense is due to projects having been inadequately piloted and/or the necessary cost-effectiveness considerations not having been taken into account.

As mentioned in Section 6.2.3, a dummy variable 'Period' was included in the modelling of the education aid-enrolment relationship in order to allow comparison of enrolment between the two periods 1970-1989 and 1990-2013 – offering a means of comparing changes in enrolment outcomes during and following the Cold War. The period 1990-2013 is correlated with a 2.5 per cent greater rise in primary net enrolment as compared to the period 1970-89. This is of interest to the present discussion on aid because the post-Cold

War period (denoted in the research for this thesis as 1990-2013) witnessed increasing global consensus towards the objective of achieving universal primary education following the 1990 World Conference on Education for All that was later fully realised with the signing of the Millennium Declaration in 2000 and has also seen dramatic expansions in primary education enrolment (Novelli 2010). That this period should be such a significant predictor of primary enrolment when controlling for all other covariates (including financial inputs in the form of education aid and domestic education expenditure) indicates that the importance of these global goals runs beyond raising additional resources for education and is suggestive of a 'policy effect'. The findings indicate that, as the world order shifted from policy driven by political ideology - a politically competitive process with no universal ground in which developing countries sided with either Communist or Capitalist orthodoxy - toward a development-led consensus that culminated in an unprecedented global effort to align education policy in the pursuit of universal primary education, enrolment in education improved dramatically. This finding is a strong advocate for global education goals, whatever their caveats may be. The finding suggests that the goals may be effective in themselves as local, national and international policies - and actors at each level - converge and the intensified collaborative effort to create an environment conducive to improving enrolment in primary education does just that. It is conceivable that this coefficient captures the effect of the introduction of free primary education policies at the national level along with the abolition of user fees in many developing countries, leading to dramatic increases in primary enrolment in many of these countries. Whilst this clearly should be an area of interest for future research, the conclusion that may be drawn from this finding is that policy matters a great deal: international consensus on the direction of aid efforts and national education policy in the education sector is particularly important in the poorest countries, those that tend to be furthest from achieving universal primary enrolment.

It is apparent that the prospect of universal primary education remains a challenge for many developing countries, and one that it must not be assumed can be addressed by modest increases in education aid alone. With the redefining of international educational goals as part of the SDG agenda, and the need to find adequate and sustainable finance in support of their realisation, there is the occasion to exploit knowledge of education aid's successes and failures. In particular, given the nominal influence that education aid has had to date in increasing access to primary schooling, it will be important to understand how aid can be most efficiently orientated in the future - specifically *where* it ought to be directed in order to have the greatest effect.

### 6.3.2. Heterogeneity of Aid Recipients

In answer to the second question, 'how does the heterogeneity of aid recipients affect the impact of education aid upon enrolment?' the effect of aid is found to be stronger when working in countries with stronger political governance although, as in the case with the overall effect of aid, this effect is found to be weaker substantively than might have been expected given the emphasis placed on quality governanc by the international aid community. Interestingly, education aid given during times of conflict was found to have a significant and positive effect upon primary enrolment.

***Aid and Governance***

The multivariate models built to address the research questions include interaction terms for education aid with two governance indicators: government stability and democratic freedom. The interactions between education aid and the degree of democratic freedom demonstrated no significant explanatory power with regard to enrolment in primary education, although the coefficient itself was found to be positive - suggesting education aid to be more effective in those countries with greater degrees of democratic freedom. Aid committed to countries with more stable governments was shown to be more effective in producing higher levels of enrolment. Whilst this finding was statistically significant, the magnitude of the effect was found to be small.

Good governance has been argued to be an important predictor of aid effectiveness (Burnside and Dollar 2000; Collier and Dollar 2002; Michaelowa and Weber 2006). Certainly the research that promotes this concept has built the foundations for the aid effectiveness declarations from Monterrey to Paris and beyond. It should be noted, of course, that the influential research conducted by Burnside and Dollar (2000) has been been contested by the likes of Hansen and Tarp (2001), Benyon (2003), and Easterly (2003), although the favouring of good governance as part of a broader approach to aid allocation continues to be adopted by most major aid agencies (Colenso 2011).

The argument usually proposed in support of the position that aid effectiveness depends on the quality of governance in the recipient country is based on the assumption that aid is fungible (Pack and Pack 1993; Swaroop and Devarajan 1998; Pettersson 2006). It is supposed that recipient countries demonstrating low quality governance will be more likely to substitute aid funds intended for education for tax relief or expenditure in other sectors

(for example, expenditure on arms); whilst governments in recipient countries with high quality governance will be less willing and able to do this. Aid, it is argued, will therefore be more effective in countries with high quality governance.

Michaelowa and Weber (2007b) find a lack of political freedom and civil liberties to be negatively related to primary enrolment, concluding that under very bad political and institutional conditions aid can have a negative impact upon primary enrolment and completion. Their conclusions are based upon the inclusion of democratic freedom in the explanatory part of the equation, rather than as an interaction with education aid as is the case in the present research. Dreher, Nunnenkamp et al. (2008), on the other hand, who likewise include an interaction between democracy and education aid in their modelling of the aid-enrolment relationship for over 100 developing countries, find the term to be insignificant. Similarly, Wolf (2007), who explores the issue of good governance by including a number of interaction terms relating to the level of decentralisation, freedom of the press, and control over corruption, finds none of these indicators of good governance to be significant.

As discussed in Chapter 2, the empirical evidence base is clearly mixed in its findings. On balance, in the education sector at least, it appears that aid for education is more effective in settings where there is a greater degree of democratic freedom and political governance is stable, but that this relationship is not always statistically significant and not as significant substantively as might be expected given the emphasis placed upon the importance of governance in determining aid effectiveness in the macro-economic literature published at the turn of the millennium. Certainly, the findings of this research - whilst not ignoring the obvious benefits incurred by strong educational policy and political will for education as a national priority - would suggest that the issue of fungibility (at least in the education sector) might not be as significant as previously assumed.

### *Aid and Conflict*

Collier and Hoeffler (2004) find aid to be more effective in post-conflict years, spurring on economic growth more than in normal development contexts in the middle of the post-conflict decade (the first three years being no different, but absorptive capacity being twice as great in the rest of the decade). The authors state that the effect is especially strong in the case of social policies, despite these not always being a priority area for reconstruction. Given the importance that educationalists place on the role of education in reconstruction

efforts (Buckland 2005; Aguilar and Retamal 2009), the impact of education aid working in post-conflict environments was tested in this study, but found to be insignificant as a predictor of enrolment. The effect of education aid on primary enrolment when working in situations of conflict, however, was found to be positive and significant.

What these findings imply, with regards to the mechanisms under which aid for education works is that it is likely to be most effective in these 'fragile' contexts when the international community is in place, managing aid directly and being in a position to stem the practice of corruption. By contrast, when aid is allocated during the post-conflict period at a time when countries are undergoing a process of transition, education aid may be more readily susceptible to wastage and/or corruption.

That the findings with respect to the effect of education aid in post-conflict States are in contrast to those of Collier and Hoeffler (2004) is not necessarily surprising as they are primarily concerned with the effect of development assistance taken as a whole. It may be read that the effect of education aid works differently in such contexts. To the author's knowledge, the present research represents the first attempt to assess empirically the effect of education aid in situations of current or recent conflict using panel data. Future research could usefully be directed to explore the processes that explain these findings.

### 6.3.3. Aid Dependency and the Strategic Allocation of Education Aid

For much of the last decade, the global aid community has viewed aid effectiveness focus almost entirely from the point of view of on enhancing technical efficiency. The Paris Declaration on Aid Effectiveness (2005) articulates five key objectives for improving aid efficiency: greater national ownership; increased alignment of aid with national priorities; improved coordination among donors to harmonise procedures and avoid duplication; more attention on development results; and mutual responsibility for results. Progress towards these objectives has been uneven. It has been monitored by the OECD and debated at several international High-Level Fora on Aid Effectiveness as well as the first Global Partnership for Effective Development Co-operation meeting, held in Mexico City in 2014. Little consideration has been made of the two other definitions of aid effectiveness relevant to country-specific aid as identified by Fredriksen (2012: 1-2): allocative efficiency – "the extent to which aid is allocated to purposes and inputs where it has the greatest catalytic impact on national education outcomes"; and aid dependency efficiency – "the extent to which aid is allocated in ways that avoid creating aid dependency

harmful to self-reliant education development". The analysis presented in sections 5.1 and 5.2 of this thesis has addressed each of these types of aid effectiveness and is discussed below.

### *Aid Dependency*

Although improvements in technical efficiency are indispensable as a means of increasing the impact that education aid can have, these alone are insufficient - aid must be apportioned strategically if education outcomes are to be maximised; allocation must be sustainable; and afford progress to increasing national ownership and self-reliance. Whilst Chapter 5 finds levels of aid dependency to be particularly high in many sub-Saharan African countries, in most aid recipient countries, the vast amount of public financing for education will be from domestic resources. Given that this is the case, external assistance for education must be strategically allocated with the intention of maximising the total education resources (both external and domestic) available. Sustainable domestic modes of financing are no doubt the most important sources for achieving education goals, whilst aid for education should play an important role in those countries furthest away from the goals and least able to 'help themselves' for a variety of reasons including income, weak governance, and the presence of, or recent emergence from, conflict.

Whilst aid maintains a significant role in education financing, particularly in low-income countries and those furthest from international education goals, aid dependence is risky. It is regularly argued that aid is susceptible to volatility or may even stop suddenly as the result of political instability in recipient countries or changing priorities in donor countries (Bulíř and Hamman 2003; Levin and Dollar 2005; UNESCO 2014). Ultimately, a sustainable education system that is accountable to its citizens must be built on domestic funding, but understanding the impact that education aid can have will be important in influencing donor decisions on whether and where to apportion aid at a time that donor budgets are being stretched and the appetite for aid financing among heavily hit citizens of 'rich' donor countries has been diminished in the prolonged wake of the 2008 global financial crisis.

Issues found by the study to have hampered progress in aid dependent countries include over-stretched bureaucratic capacity contending with invariably complex and often fragmented sets of aid interventions, with the result that government officials spend considerable time attending to the processes involved in managing aid and inevitably less

on education policy dialogue. For donors, 'partnership' models of development cooperation that emphasise greater recipient government involvement, are limited by concerns regarding local capacity and prevalence of corruption. While the Mozambique example illustrates donors having made short-term concessions on corruption justified by a long-term view, it has been argued that such an approach may simultaneously undermine the long-term development impact, with donors effectively sabotaging the conditions necessary for long-term success.

The brief overview of the relationship between Pakistan, India, Mozambique and Malawi and their donors in relation to each country's level of aid dependence made in Chapter 5 questions how the international discourse on 'ownership' and 'sovereignty' in aid relationships is translated into practice at country level. The expression of national sovereignty has been a contested issue in Malawi - threatened on occasion by development partners and internal political dynamics, with evidence of there having been weak capacity to establish the terms of the aid relationship over the years. By contrast, India has clearly 'owned' its educational policies from the start and been in a position to negotiate the extent of terms of its aid relationship with donors. Pakistan has witnessed the benefits of donor involvement in its policymaking whilst its degree of aid dependency has remained low. The evidence paints a mixed picture of aid dependency and country ownership over education policies and their implementation.

It is clear that aid effectiveness is highly dependent upon country context - and whilst we can see from the results presented in Chapter 4 that education aid is broadly effective, more detailed analysis on aid dependency and outcomes appears to suggest that the percentage of aid received relative to domestic expenditure has no relation to education outcomes; and that it is issues of political will and governance, education policy, bureaucratic capacity, the presence of conflict, donor coordination, and volatile aid flows that are most likely to influence its effectiveness.

Aid dependency and sustainability risks are largely dependent upon whether revived economic growth can be sustained. Economic growth, in turn, is dependent upon a variety of influences including whether a nation's education and training systems respond to national economic and social development needs. Both recipient countries and education aid donors could usefully devote greater attention to better allocating and using aid for education in support of this objective. The more aid is used to promote national development, the lesser the risk of harmful aid dependency.

### Strategic Allocation of Education Aid

Fragile states and other low-income countries are reliant upon education aid, but the amounts of aid allocated tend to differ widely and are not readily explained by each country's contrasting needs or institutional performance. A number of countries are in receipt of less external education assistance than their counterparts that are otherwise comparable in terms, for example, of population size or extent of educational need. That so many countries are 'under-aided' is due to the complexities of the global aid architecture that is defined by practices in aid allocation that are largely un-coordinated (Fredriksen 2013). Education aid programmes invariably have very different objectives, are rooted in distinct historical backgrounds, and with varying degrees of donor coordination.

Bilateral donors, through which most education aid is directed, do not tend to rely upon quantitative aid allocation formulae, although there are exceptions including DFID and the Netherlands. Whilst there is considerable heterogeneity between donor allocation practices, most bilateral donor education aid allocation decisions are based on a range of criteria including needs assessments (income, progress towards education goals, measures of poverty), institutional performance (as an indicator of associated fiduciary risk and whether aid is likely to be effective), historical and colonial ties, commercial and geopolitical interests, in addition to specific attention to countries affected by conflict and fragility (Hawes and Coombe 1984; Lewin 1994; Mavrotas 2005; Berthélemy 2006; Banerjee 2007; Christensen, Homer et al. 2011; Riddell and Niño-Zarazua 2015). An OECD (2013) report on the *Identification and Monitoring of Potentially Under-Aided Countries* concludes that in selecting their priority countries for assistance, the majority of bilaterals have already made a decision on eligibility - on the basis of income or political grounds, for example - before any more detailed cross-country comparisons are made.

The on-going debate regarding the optimal allocation of aid can be broadly summarised by three areas. First, the issue of whether aid should target poor people or poor countries - should aid be conceived in terms of per capita allocations or aggregate country envelopes? Evidence points to aid allocations being biased towards countries with smaller populations (Collier and Dollar 2001; OECD 2013; Selwyn 2014), although 'small country bias' has been in decline over the last decade with populous low-income countries such as Tanzania and Ethiopia in receipt of large sums of educational assistance.

Second, is the question of how to measure needs and how much relative weight to assign them. Focusing exclusively on income covers up serious underlying development challenges and is thus insufficient as a means for measuring multidimensional poverty. Consequently, donors have explored alternative measures such as progress towards international development targets such as the MDGs and the Human Development Index (see, for example, DFID 2011; UNDP 2012b), which is regarded as a broader measure of a nation's economic and social progress.

Third, is the issue of whether a country's institutional performance should be the prevailing criterion for apportioning aid. Many approaches to aid allocation have been, to differing degrees, influenced by Collier and Dollar's (2002) research on 'poverty-efficient aid allocations' which argues that aid ought to be apportioned to those countries demonstrating the greatest levels of poverty and where - due to the quality of the policy environment - aid is anticipated would have the most effect. However, adoption of the approach is by no means universal as it has been challenged for unfairly penalising those most in need (Benyon 2003; OECD 2013), and is certainly not entrenched in the allocation approaches of emerging donors and non-official providers of aid such as NGOs and private foundations (Riddell and Niño-Zarazua 2015).

A common trait of the status quo is that decisions regarding aid allocation are largely taken unilaterally (unless a pooled fund or other such global mechanism has been established), without consideration for what other donors may be planning to do. Moreover, few donors take into account in their aid allocation approaches whether a given country is, by whatever benchmark deemed applicable, over- or under-aided when all other aid for education is accounted for (OECD 2013). It is unlikely that the fundamentals of the situation described above will change any time soon as each development partnership determines the priorities and objectives of its aid portfolio individually. There is however, room for improved coordination between donors to ensure efficiency in the allocation of education aid - achieved when the maximum net benefit is received from their use (i.e. more children have access to and are completing a quality education that is equitable in its provision). Correcting under-funding in education by making aid monies available to countries with the greatest need would undoubtedly make faster progress towards attaining internationally set education goals possible.

A major hurdle in tackling the issue of under-aided countries is that there is no singly recognised definition or allocation benchmark in education that might be used to

determine those countries most in need of support. This thesis has taken the position that optimal levels of education aid ought to be established on the basis of each country's development goals and financing contexts (including domestic revenue capacity and access to alternative sources of finance) and that in order to determine priorities for the allocation of aid to education amongst potential recipients, this should be done not on the basis of which nations are in receipt of inadequate levels of educational assistance in order to meet development goals but, rather, which countries might be deemed to be most in need of aid relative to others if resources are to be allocated efficiently.

Section 5.2 addresses the question of to how to adjudicate priorities amongst those countries in need of aid-support in order to reach international education goals. Colclough (2011) provides a useful framework for determining priority countries in the strategic allocation of education aid which is applied to the 61 countries accounted for by this study in order to examine the extent to which education aid has been allocated according to need in recent years and where future external development assistance for education might be most usefully directed. In its finding that low-income and fragile states are overwhelmingly the most important to aid on the grounds of allocative efficiency, the research draws attention to the point that these are also countries least likely to be aided and that will be most dependent upon aid to supplement their national education spending. Invariably these countries are not prioritised in aid allocations due to concerns over fiduciary risks (Turrent 2011), suggesting that there is an urgent need to find alternative ways of working in these contexts and mitigating such risks in order for aid allocated to have a greater impact. Turrent (2011: 412) identifies ten criteria for addressing such donor 'trust-gaps' that would contribute to effective aid financing in countries where capacity and/or political will may be low - these include disbursing aid that is transitional in nature, with a clear emphasis on progressively building national capacity; making aid available to needs beyond those of traditional education programmes; and aid that is risk-mitigating, whilst also risk tolerant, accepting that a degree of risk-taking is necessary in order to work with the weakest institutions. If a re-imagining of the aid architecture is not sought out and put into practice, the implications for education are ever-widening gaps in progress towards education goals between those countries already on a sustainable path to educational development and those farthest away, and least able to help themselves.

## 6.4. IMPLICATIONS

This section relates to how the outcome of the research questions, influences and changes understanding of aid effectiveness in education in relation to current practice and theory.

### 6.4.1. Implications for Practice

Despite decades of scepticism about development aid, big commitments have been made to meet the basic needs of the world's poor. But the question remains as to how much good has come from large increases in aid. The results of this study confirm a potential relationship between aid and education outcomes, though these are perhaps less strong than thought by some. Overall, more aid leads to modest improvements in education outcomes, although it is to be expected that there will have been specific projects revealing far greater degrees of success. Exploring behind the aggregate numbers, the research paints a picture that is broadly consistent with expectations. Education aid tends to be more effective in well-governed countries with sound institutions and in contexts where there is a clear alignment of objectives between donors and recipients; although, again, this relationship is found to be weaker than in the macro-economic literature on the effects of total ODA upon economic growth. The results of the thesis bolster the well-known paradox that aid tends to be most effective where it is least needed. But the paradox may not always apply in countries experiencing or emerging from conflict. Of course, the ill-effects of aid could be amplified in fragile states where institutions and political accountability are already weak, particularly if fragile states are set to receive a greater portion of aid resources in future as proposed by the Addis Ababa (2015a) Action Agenda on Financing for Development. Modes of working in fragile states need to be well-tailored to country context as sizeable and prolonged education aid programmes have the potential to have a corrosive effect on local education systems when the focus evolves to once concerned with attracting aid as opposed to solving problems. Donors will need to pay close attention to the scale and composition of education aid programmes to ensure that resource flows do not overwhelm local ability to manage them and undermine recipient country systems of governance. They should also be supportive of national audit and public financial management systems and incorporate a credible exit strategy.

While practitioners may regard it as unfortunate that the findings indicate only a small effect of education aid upon its anticipated outcomes, the findings offer a valuable contribution both to the continuing academic dialogue on aid effectiveness held at the

macro-level, and to more targeted education sector discussion. The current pattern of education aid-giving is dictated, primarily, by political and strategic considerations, with governance assessments a substantial determinant of aid allocation to poor countries for many donors (OECD 2013). Certainly, until recently, the international education aid architecture postured a development partnership between developed and developing countries that committed development partners to sound policies and good governance at all levels. It also committed to mobilising domestic resources, increasing international financial and technical cooperation for development, and enhancing the coherence and consistency of the international monetary, financial and trading systems (United Nations 2002). Insistence upon working towards 'good' educational governance as the primary grounds for aid effectiveness seems logical as aid will ultimately be of little use in the long-term where there is no plan, corruption is rife, or demonstration of effort to raise resources for education domestically.

Nonetheless, the quality of governance should not be a decisive factor for aid allocations in the education sector as such an approach is prone to result in severe repercussions for those countries cursed by frail governance and capacity, many of which continue to endure the long lasting effects of conflict. How are low-income countries that are poorly governed expected to develop the capacity to manage education aid effectively if they are bypassed in successive rounds of aid commitments? Countries deemed to be demonstrating 'weak' governance are generally the neediest, if education aid is understood as being the means by which the significant gaps between present educational indicators and those proposed by international education goals are to be closed. This is illustrative of the 'need-ability' dilemma in development aid. As Lewin (2015a) has argued, "'reaching the furthest behind first' makes sense where failure to deliver services is systemic, rather than on the margin of fundamentally sound education systems".

Development aid does not have the ability to change bad governments into good ones (Easterly 2006), but aid donors are able to assist local endeavours to improve capacities in the time during which they are supplying education aid funds. This necessitates close engagement with recipient countries' political cultures as well as their socio-historic processes (Riddell 2007; Booth and Fritz 2008; OECD 2014; Riddell and Niño-Zarazua 2015). Successive rounds of international aid effectiveness fora and conferences since Busan, South Korea (2011) have highlighted the need to re-envisage the global donor-recipient compact, and to restructure the aid orthodoxy apparent in the practices of the grant-based system away from a focus upon domestic reform in exchange for aid, towards

tackling specific local issues that impede aid absorption in the education sector. A handful of key bilateral donors including DFID (which is committed to spending 30 per cent of UK aid in fragile states) and the Netherlands have already taken this on board, but many are yet to follow suit.

Understanding how aid for education reacts under 'good' or 'bad' governance conditions or in a situation where a country is emerging from conflict, is essential to our understanding of how education aid can be allocated most effectively. In a world concerned with the geopolitical consequences of state failure and increasingly aware of the economic interdependency of nation states, it is critical to ensure that education aid flows address the needs of the poorest and those living in the most chronic conditions. However, it would be prudent to remember that there are no blueprints offering an explanation for how education aid donors ought to engage with recipient governments. Mutual understanding and greater experimentation are vital elements necessary to the improvement of donor-recipient relations, and central to sustaining the benefits of education aid realised by the recipients of education aid with the support of donors. Moreover, even very basic information sharing and co-ordination between education donors could help to make aid allocations more efficient. Bilateral donors could use data on aid allocations for internal analysis and for co-ordination with other donors when drafting aid policies and preparing decisions on aid allocations. Multilateral organisations might usefully factor information on other donors' actions into their aid allocation models, or as a means of complementing them.

### 6.4.2. Implications for Theory

> "It is widely urged that the great need in schooling is more money to build more facilities and to pay higher salaries to teachers in order to attract better teachers. This seems a false diagnosis. ... The problem is not primarily that we are spending too little money - though we may be - but that we are getting so little per dollar spent" (Friedman 1962: 93-94).

The aid literature points to the need for sectoral level assessments in order to determine more accurate accounts of aid effectiveness (Findley 2010). Laying to one side the significance of education for economic growth, or even for human growth, it is of utmost importance to appreciate whether aid attains the short-term aims on which it is concentrated. As Christensen, Homer et al. (2010) point out, the direct aid outcome to evaluate is: does education aid increase enrolment? If children are not in school, it becomes impossible to assess whether aid has any impact beyond the very simple equation of

whether more schools built and more teachers trained results in more children in the classroom - whether it contributes to the quality of education, or indeed, whether those children contribute to economic growth through enhanced productivity or whether they go on to take advantage of the 'capabilities' that an education bestows.

The earliest instances of serious investment of development assistance in education are roughly contemporary with the revolution in economic thought associated with human capital investment that was initiated by Schultz (1961). The role of education aid, when broadly conceived under the umbrella of human capital theory, is to spur on and sustain the long run cumulative process of human capital formulation. As the theoretical framework for this thesis, through the application of the education production function, human capital theory allows for examination of the relationship between various education inputs and the consequent outcomes of the process - in this case primary enrolment and completion. The success of education aid in achieving this may be judged on the basis of the number of children acquiring a quality education that prepares them to become effective 'producers', contributing to economic growth. If neither aid nor domestic expenditure are effective in producing the expected education outcomes, governments' choice to invest in education when considered from a purely human capital perspective is put into question. Even an expanded vision of human capital theory, that encompasses the importance of developing human capabilities by expanding access to primary education, is rendered moot as a rationale for aid-giving if aid is found ineffectual in expanding access to, and participation in, schooling.

Of course, the implications of the research findings do not in any way undermine the theoretical framing of the thesis - the tenets of human capital theory remain solid as the foundation for the education MDGs. However, the concomitant assumption that large increases in education aid will automatically translate into substantial improvements in education outcomes is questionable, as inefficiencies in the processes at play are apparent. Aid for education is found to have had a smaller effect on primary enrolment and completion than might have been expected. Evidence on aid dependency in section 5.1.2 of Chapter 5, indicates that weak public financial management and accountability; corruption; the imposition of donor conditionalities; volatility in the flow of aid resources; and a lack of local ownership for education policies are among the factors that thwart a greater impact of aid at the local level. Clearly, as has been discussed earlier in this section and is emphasised by Friedman (1962), there is more to be done to ensure that resources spent on education have a far greater impact than has been the case to date.

The development education literature emphasises the bleak prospects of insufficient access to education: if demand is not met and quality education not provided, great swathes of children and youth are unlikely to achieve their development potential (Sen 1999); exclusion from education may lead to political and societal tensions (Bush and Saltarelli 2000), and greater equity will be found to be unobtainable (Lewin and Caillods 2001). This position suggests that there is universal demand for education which needs to be met by ensuring adequate supply, which comes down to a simple financing issue - making sure that there are sufficient schools, trained teachers, learning materials etcetera available. However, as greater levels of enrolment are approached, or in countries where education does not demonstrate obvious economic returns, a stumbling block is reached. Human capital theory suggests that individuals will maximise their economic wellbeing by seeking out education, but if appropriate jobs and opportunities are not available, or general health is not good (issues that would affect demand) then it would be reasonable to assume that enrolment does not increase substantially regardless of supply.

Despite objections to the neo-liberal approach having been raised through competing epistemological critiques rooted in post structuralism, post-modernism, and post-colonialism and through alternative development paradigms such as dependency theory and sustainable development (see Klees 2008), the economic growth imperative has endured, supported by, major donors and international financial institutions. Accordingly, most developing countries have shaped their education systems to support neo-liberal objectives and the parallel global EFA and MDG agendas.

Critics of the MDGs argue that one of the reasons the MDGs failed to meet all their education targets was the absence of a critical consciousness that considered the structural causes of poverty, with the development sector's preoccupation with ODA resulting in a failure on the part of the development community to relate the dominant neo-liberal economic model to the underlying causes of persistent levels of poverty (McCloskey 2015). This may very well be true, but in the SDG era sustainable financing should be a central part of the agenda. As tax revenue and concomitant economic growth increase, it is anticipated that additional domestic resources will be available by 2030. During this transition aid will need to fill the gap for those countries most in need and any remaining financing gaps for countries that have not met the goals by that time (Rose 2014). How this might be operationalised and monitored to prioritise the most marginalised will need to be

discussed, but it is clear that aid still has a vital role to play and a focus on aid financing remains very relevant.

## 6.5. LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The technical limitations of research adopting a macro-econometric approach to analysing internationally comparable data on aid and national education systems have been dealt with at the start of this chapter in section 6.2.2, which offers a discussion of the study's data collection and analysis strategies. The limitations include those that are imposed by the selection of variables in the final multivariate modelling - for example, that education aid cannot be disaggregated prior to the late 1990s - and the fact that the panel data methods employed, whilst allowing for analysis of variation between countries over time, do not allow for analysis of patterns of aid effectiveness within countries over time. These methodological limitations have been dealt with by undertaking tests for robustness and extensions of the preferred model results to address the limitations imposed by the choice of variables to ensure their validity; and by viewing the macro-level findings within the frame of specific, dynamic country contexts in the form of case studies informed by country-level aid evaluations and official government documentation.

The issue of aid effectiveness in development finance is a broad one, and one of concern cross-sectorally. With regards to the scope of the research, this thesis has dealt with aid effectiveness both across countries and at country-level, in terms of allocative and aid dependency efficiency. Future research might usefully build upon this thesis' findings to explore how technical efficiency - the extent to which education aid is delivered efficiently by donors, and used efficiently by recipient countries - could help reach "the furthest behind first" (United Nations 2015b) by addressing the systemic failures of many of those countries that are flagging behind in their progress towards international education goals. How can the concerns of risk-adverse donors be appeased? How can aid donors best support progress towards fundamentally sound education systems that can eventually find sustainable means of domestic financing to support their education programmes? This will require consideration of the role of donors working in contexts of conflict and fragility and to the appropriate use of aid mechanisms and modalities by which to deliver education aid in what are often harsh environments open to corruption and or where there may be a lack of political will and transparency.

Of course, at the risk of being banal, future research may be most productively concentrated on a smaller sphere of aid effectiveness in the education sector. The statistical evidence, drawn from the macro analysis, is concerned with the average impact of aid, across countries and across donors. It does not identify the marginal effect of different forms of *additional* aid from a specific donor to a specific set of recipient countries. Field experiments pertaining to particular facets of education and development might help to establish the kinds of education aid projects - particularly in fragile and conflict-affected states - that are the most effective, offering a useful contribution to education aid policy discussion. Improved assessments of who receives aid for education and why may be of assistance in interpreting the impact of donor policies on improved educational outcomes.

That the relationship between education aid and enrolment is not stronger begs the question - why is it not more effective? Although the claim that the causal link between education aid and outcomes such as primary enrolment and completion is significant but not so significant substantively is a simple case to make, it is far more difficult to elaborate upon the dynamics inherent in this relationship that may prevent education aid from performing as well as it might be hoped. Is it the case that corruption puts a stop to aid monies reaching the intended beneficiaries? If so, many of the planned aims of education aid - for example, new schools and the payment of teacher salaries - may not be realised. Or is it the case that a deficiency in sustained funding results in the understaffing and underuse of newly built schools? It is plausible that a number of reasons might explain the finding. Moreover, these causes are liable to differ between countries and over years. Nonetheless, further research into aid 'fashions', programmes, and processes in the education sector ought to facilitate our understanding of the factors that put a barrier between additional education aid finance and a greater number of children enrolling in and completing a quality basic education.

Further work could proceed on several fronts. First, studies should continue to disaggregate aid and understand that aid effectiveness depends upon the exact nature of the aid and the context in which it is delivered. 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; Steer and Wathne 2010; Riddell and Niño-Zarazua 2015), 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 between these groups. Whilst non-traditional donors and foundations have not, to date, invested significantly in education, these donors are becoming increasingly

prominent in aid financing and will no doubt shape the way that aid business is done in future. The varied motivations and ways of working of this increased array of actors throws open aid effectiveness debates previously thought closed, such as the acceptability of tied aid or aid not focused on basic education and the importance or otherwise of using country systems. Third, private flows are also becoming increasingly important and may overtake public sectors in terms of development contributions in the future (Kharas and Rogerson 2012). Focusing on their aid efforts at the education sectoral level will also give an extended analysis of the aid business.

# 7. Conclusion

Considered a key instigator of development, development assistance directed to education has been the subject of considerable discourse since the end of the Second World War. The aid environment has made radical transformations on a number of occasions since, and in recent years with international focus on achieving the MDGs and setting out to establish a new set of Sustainable Development Goals for the period 2015-2030, important questions have been raised: does aid for education promote educational outcomes in the developing world? To what extent does the quality of recipient country governance shape the effectiveness of education aid? Would a new 'big push' hasten progress towards internationally agreed education goals? What can be deduced from the lessons of half a century of education aid?

As this thesis has argued, it remains open to debate whether any judgement concerning aid effectiveness can be made whilst the debate is confined to discussions of the aid-growth nexus. It has been argued that ambiguity in the findings of the aid effectiveness literature may be due to the disparity of aid motives and the convoluted nature of the causal link between development assistance and its outcomes (Bourguignon and Sundberg 2007; Birchler and Michaelowa 2015), and that donors, by admission, tend to pursue multiple and often contradictory aims when allocating aid (Isenman and Ehrenpreis 2003; Fredriksen 2013; OECD 2013). The precise purpose that development assistance is intended to fulfil as detailed in donor policy declarations - such as poverty reduction through improved health and education, as well as increased institutional and participatory development - has a tendency to evade analysis concentrated narrowly on the link between aid and economic growth (Mavrotas and Nunnenkamp 2007; Christensen, Homer et al. 2011).

Although aid effectiveness has been investigated in terms of overall economic development over a long period of time, cross-country examinations of the impact of aid within specific sectors has started only in the last decade. In the education sector this began with studies by Michaelowa and Weber (2007b) and Dreher, Nunnenkamp et al. (2008). Following these early studies has been complementary research seeking alternative means of handling the potential for endogeneity (D'Aiglepierre and Wagner 2010) and making distinctions between the type of education aid allocated (Christensen, Homer et al. 2011; Birchler and Michaelowa 2015). Central to these studies is the belief that conclusive answers to

questions concerning aid effectiveness will only be found by examining the more direct causal link that is likely to exist between education inputs and outputs; and that as education is an important development goal in its own right, it is important to understand whether education aid works.

As White (2009) suggests, the decisive measure of aid effectiveness is the way in which aid impacts the lives of the poorest individuals living in developing countries. The wealth of literature on aid's macroeconomic impact has astonishingly little to contribute to this matter, and even less guidance to give those in charge of handing out aid on how to improve its effectiveness. It is therefore important that practical and policy-centred research should focus on aid effectiveness in the education sector in relation to recipient country characteristics in order to develop this area.

With this goal in mind, the research presented in the thesis has empirically analysed the effect of education aid on enrolment and completion over the period 1970-2013 for 61 low- and lower-middle-income countries demonstrating low levels of educational development. A structural equation was estimated to test the extent to which aid for education has made an impact upon educational outcomes at primary level; and how country characteristics in terms of the quality of governance and the presence of conflict influence the overall effectiveness of education aid.

The data collected for the multivariate analysis is then disaggregated to consider issues of aid dependency and the strategic allocation of aid. Pakistan, India, Malawi and Mozambique are identified as 'telling' cases of countries with contrasting levels of dependency upon aid that have had varying degrees of success in their progress towards achieving international educational goals. The case studies, informed by country-level aid evaluations and official government documentation, provide analytical country-based accounts of aid's impact that are reliant upon the action and opinions of - and relations between - the various in-country development actors; uncovering different patterns of aid effectiveness and discussing the complex and multifaceted reality of aid dependency and efficiency in education aid allocation, offering context to complement the macro findings of Chapter 4.

The results produced by this study find education aid to be statistically significant as a predictor of primary enrolment, although not so significant substantively. Indeed, it is reasoned that education aid could have achieved more. The case study analysis argues that

education aid has not achieved as much as might have been expected due to the complex background of donor-recipient relations, inadequacies in public financial management and accountability procedures, and in some cases a lack of political commitment to education priorities, against which aid is allocated; although evidence does suggest that aid has contributed in many countries and, despite its many flaws, can continue to do so. It also makes the case that the effectiveness of education aid is dependent to some degree upon the stability of institutions in the recipient country, but that this relationship is weaker than might have been expected. Although the effects of better government stability are shown to work positively through aid for education, the additional impact is minimal. It is argued that future research could build on these findings by accounting for the interaction between aid for education and specific aspects of good educational policy - education plans, political will toward education, resource mobilisation, and viable implementation strategies - as internationally comparable data becomes available.

Augmenting education aid expenditure, then, may not be considered a panacea. As with domestic education expenditure, increases in spending are not an inevitable predictor of improved educational outcomes. In situations where implementation capacity is weak or where there is low system efficiency, additional aid spending alone may prove to be an inappropriate remedy to a nation's educational complaints. Certainly the findings of this research are supported by findings elsewhere in the development education literature with Hanushek and Kim (2000) and Birchler and Michaelowa (2015), for example, both demonstrating that on the basis of empirical analysis conducted on education expenditure and student achievement data, increases in expenditure are not correlated with substantial improvements in student outcomes.

Therefore, making aid more effective matters as much as giving more. A consequence of this conclusion is that substantially increasing aid efforts through a transferral of additional resources to developing countries would be insufficient - it is doubtful that amplifying aid efforts would have the desired effects. Development aid is a scarce resource, and it is therefore of fundamental importance that the development community works to maximise the benefits that it can generate when spent well. With pressure raised on donor budgets as the result of global economic decline, and in the wake of the endorsement of the Sustainable Development Goals, the requirement to ensure the effectiveness of education aid has taken on even greater significance. Indeed, the potential for education aid to spur on momentum towards the newly formed international education goals will increasingly depend on it being allocated more strategically.

Domestic financing should rightfully remain the most important source for achieving the new and ambitious 'sustainable' education goal. Broadening the tax base and ensuring that an adequate share of public spending is apportioned to education would substantially increase resources to the sector in many countries. Nonetheless, even with such reforms (and these will be difficult to implement in those countries without the political will and/or capacity to do so), there are numerous low-income countries that will be unable to afford all the costs of education for the foreseeable future, particularly given the financial needs associated not only with expanding access at both primary and secondary levels, but also with improving educational quality. The findings of Chapter 5 have shown that many of these countries are already the furthest away from achieving universal access to primary education and are amongst the most dependent upon aid resources. Moreover, innovations in financing from the private sector and contributions from non-DAC donors are currently very small, and not necessarily aligned with EFA or SDG objectives. Aid from DAC donors is, therefore, likely to remain an important part of the way forward for many of these countries for some time to come.

How then can policymakers ensure that the limited aid resources available for education are allocated most efficiently? The research has demonstrated that there is currently no clear, shared rationale for the strategic allocation of education aid. Indeed, it is well documented that bilateral donors' allocation criteria vary wildly and are invariably influenced by aid selectivity on the basis of the quality of governance and policy indicators, historical ties and other geopolitical concerns. Section 5.2 of Chapter 5 recognises the complexities associated with aid allocation, but argues for a more coherent and integrated framework of aid allocation criteria in the education sector that captures progress towards education goals and equity in aid provision. It explores efficiency in aid allocation from a normative point of view on the basis of the educational 'need' for aid and makes the case that equity principles in education aid allocation involve promoting equal opportunities to progress towards education goals, which will inevitably entail apportioning more aid to those countries facing more severe structural handicaps, many of which are classed as fragile or conflict-affect states. It challenges current approaches to aid selectivity on the basis of the relatively weak relationship between indicators of governance and education aid's eventual impact, and the risk of leaving further behind countries already severely struggling to make progress towards international education goals. The suggestion that education aid would be most usefully directed to those countries demonstrating the greatest need ties in closely with what has been stipulated at various points during the

formation of the SDG agenda (United Nations 2014; United Nations 2015a; United Nations 2015b). Of course, this engenders its own set of challenges around the best types and sequencing of aid, partnerships, and aid modalities that ought to be employed in what are often complex development environments in order to improve the impact that education aid may have; issues which should be the subject of future research. Other donor-side issues will also need to be dealt with - namely the appropriateness of conditionalities, aid shortfalls and volatility.

As Samoff (2009: 4) posits, "because education matters and because education has continued to be central to foreign aid to Africa, studying aid to education permits exploration of the structural features of the global aid system". The task of this thesis has been to explore the effectiveness of education aid within the global aid system, taking into account the perspectives of both educationists and economists, the latter of which have tended to dominate discussion on the effectiveness of education aid at the global level. Weaknesses in the approaches adopted by both are identified - aid evaluations can provide a rich account of the processes and experiences of international educational assistance, but are often donor-driven and the conclusions that may be drawn are limited to the country context within which they were carried out; whilst cross-country econometric studies invariably offer less tangible results and are devoid of country context. The thesis contributes to the literature on education aid by bridging this divide, presenting longitudinal panel data evidence on where education aid has worked and when, combined with disaggregated analyses of the data and country cases studies to illustrate the perspective of donors and recipients at country level - bringing aid actor views, evidence and conceptualisations to bear on the macro results. A balanced view of the literature and data presented in the thesis indicate that aid does support enrolment growth as well as improvements in quality and gender equity. These benefits may not be as large, and the effect of governance, not as strong as sometimes argued but the findings nonetheless offer a critical insight into the impact of the global education aid system that will allow education policymakers to critically reassess donor aid allocation strategies in the early implementation stages of the education sustainable development goal.

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# Appendix 1: Primary Sources and Data Manipulation

This appendix holds details relating to the primary sources[11], collection methods, and statistical concepts used, as well as other background information regarding the primary data pooled for the purpose of constructing each of the variables included in the econometric analysis. The variables are listed in alphabetical order.

## CONFLICT

### Data Source
UCDP/PRIO Armed Conflict Dataset. The Uppsala Conflict Data Program at the department of Peace and Conflict Research, Uppsala University and the Centre for the Study of Civil War at the International Peace Research Institute Sweden have collaborated in the production of a dataset of armed conflicts, both internal and external, covering the period 1946 to present. The dataset has been widely used since it was first made available, both by researchers and policy makers - see, for example, Collier (2003).

### Variable Definition
UCDP defines conflict as a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths.

### Primary Data Collection
The calendar year is the basic unit of every observation. Thus, if a conflict during the period June-September results in 30 casualties, that year will be recorded as a year of conflict. However, if the same number of casualties occurred in the period November-February and the conflict failed to reach the threshold of 25 battle-related deaths in either calendar year, neither year will be coded as in conflict. This has a number of consequences. Start dates frequently refer to years prior to the first calendar year of a conflict, as the start of a conflict might be in a year with less than 25 casualties. Small conflicts might not be included. Certain observations might be based on a single event, such as the Omagh bombing in Northern Ireland in 1998, which exceeded the minimum threshold for armed conflict.

### Data Handling/Manipulation
Data relating to conflict are publicly available and were downloaded on 13th March 2015 from the Uppsala Universitet Department of Peace and Conflict website. The data were downloaded as an Excel file for the period 1970 to 2013. The data were subsequently uploaded to and stored in Stata. An indicator taking value one (1) and zero (0) otherwise has been created, if a given country had a conflict within their location/territory within a given year. For the short-term annual analysis this appears as 1/0. For the long-term structural panel where periods are in 5-year intervals, the conflict (CONFLICT) variable is

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[11] Text relating to the variable definition and description of primary data collection methods for each of the variables has, in most instances, been adapted from the original data source (as cited in the corresponding section).

an indicator/count of the number of years (out of the five in the index period) that the country had conflict, ranging from 0 to 5.

Dummies are used to indicate post-conflict episodes. In order to analyse whether aid might be more effective in post-conflict situations as development aid is phased back in, this is done by creating a dummy variable of the two 5-year periods following which conflict is found in the current/index period - i.e. conflict occurred in a country in the period 1970-74 then the periods 1975-79 and 1980-84 are deemed to be post-conflict.


# DEMOCRATIC FREEDOM

### Data Source
*Freedom in the World*, Freedom House's flagship publication, is the standard-setting comparative assessment of global political rights and civil liberties. Published annually since 1972, the survey ratings and narrative reports are used by policymakers, the media, international corporations, civic activists, and human rights defenders to monitor trends in democracy and track improvements and setbacks in freedom worldwide. The *Freedom in the World* data and reports are publicly available in their entirety on the Freedom House website.

### Variable Definition
The Freedom House index of political rights and civil liberties is an indication of the level of democracy in a given country, covering the broader political and institutional environment. The index is drawn from the assessment of: free elections, the power of elected political representatives, the de facto power of the opposition, the right to organise in groups, freedom of domination by the military or other powerful groups, and the self determination rights of minority groups (political rights); in addition to freedom of expression and belief, association and organisational rights, rule of law and human rights, and personal autonomy and economic rights (civil liberties).

### Primary Data Collection
The *Freedom in the World* survey provides an annual evaluation of the progress and decline of freedom in 195 countries and 14 related and disputed territories. The survey, which includes both analytical reports and numerical ratings, measures freedom according to two broad categories: political rights and civil liberties. Political rights ratings are based on an evaluation of three subcategories: electoral process, political pluralism and participation, and functioning of government. Civil liberties ratings are based on an evaluation of four subcategories: freedom of expression and belief, associational and organizational rights, rule of law, and personal autonomy and individual rights.

The methodology of the survey is grounded in basic standards of political rights and civil liberties, derived in large measure from relevant portions of the Universal Declaration of Human Rights. These standards apply to all countries and territories, irrespective of geographical location, ethnic or religious composition, or level of economic development. The survey does not rate governments or government performance per se, but rather the real-world rights and freedoms enjoyed by individuals. Freedoms can be affected by state actions as well as by non-state actors, including insurgents and other armed groups. The findings are reached after a multilayered process of analysis and evaluation by a team of in-house and consultant regional experts and scholars.

Each nation state accounted for in the survey is designated two ratings - one for political rights and one for civil liberties - on a scale of 1 to 7; a rating of 1 points to the greatest degree of freedom and 7 the smallest amount of freedom. Although the two scales are

theoretically different, they are closely associated in practice: when the rating for one is low, the rating of the other tends to be low also, and vice versa. The two ratings (political rights and civil liberties) are pooled and averaged in order to establish the overall 'freedom status' of each country. Nation states with a combined average rating of 1.0 to 2.5 are regarded as being 'Free'; 3.0 to 5.0, 'Partly Free'; and 5.5 to 7.0 'Not Free' (Freedom House 2015).

### Data Handling/Manipulation

Data relating to democratic freedom are publicly available and were downloaded on 14th April 2015 from the Freedom House website. The data were downloaded as an Excel file for the period 1972 to 2013 inclusive for 195 countries. The data were subsequently uploaded to and stored in Stata.

In the analytical databases, the three-category freedom status variable (FREE) is included rather than the two numerical ratings from which it is derived as the categorical variable is deemed to have more essence in the analysis. For the freedom status the modal value in the 5-year period has been used as representative for each period in the long-term structural analytical file. However, it should be noted that for the majority of countries there was no variation in the freedom status within these periods.


# DOMESTIC EDUCATION EXPENDITURE

### Data Source

UIS produces internationally accepted methodologies to measure and monitor trends at national and global levels. It delivers comparative data for countries at all stages of development to provide a cross-national perspective on education, science and technology, culture, and communication. The UIS is the official UN agency responsible for the collection of education data and indicators to monitor the MDGs related to universal primary education and gender parity in primary and secondary education, as well as the EFA goals. The UIS is the main source of education data for the EFA Global Monitoring Report, the MDG Report, the World Bank's WDI and the World Development Report, the Human Development Report, UNICEF's State of the World's Children report and many others.

### Variable Definition

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

### Primary Data Collection

The UIS collects education statistics annually from official national statistical authorities. Each Member State designates the statistical authorities which respond to UIS questionnaires. In many cases, it is the ministry of education or the national statistical office which submits education data to the UIS. The information collected includes data on educational programmes, access, participation, progression, completion, internal efficiency, and human and financial resources by all levels of education.

Each UNESCO Member State submits education data to the UIS through one of three education questionnaires. Most UNESCO Member States respond annually to the UIS education questionnaire. Other countries belong to jointly administered data collection programmes, such as the UNESCO-OECD-Eurostat survey and the World Education

Indicators programme.

UIS calculates domestic education expenditure by dividing total public expenditure on education incurred by all government agencies/departments by the gross domestic product and multiplying the result by 100. The data required for this calculation include total public expenditure on education as well as annual GDP figures. These are collected from annual financial reports prepared by the Ministry of Finance; national accounts reports by the National Statistical Office and financial reports from the various government departments engaged in education activities especially the Ministry of Education

### Data Handling/Manipulation

Data on domestic education expenditure are publicly available and were downloaded on 21st March 2015 from the WDI website. The data were downloaded as an Excel file for the period 1970 to 2013 inclusive and were subsequently uploaded to and stored in Stata. Current dollar amounts were converted to constant dollars (taking into account both inflation and exchange rate). This involved first, converting back to the local currency unit according to the relevant exchange rate; and second, using local currency deflators to take into account inflation; and third, adjusting to the 2012 base year before expressing the variable per capita. An upper limit of 100 was assigned to the variable labelled EXPEDUC. The same process was followed for data capturing public expenditure per pupil as a % of GDP per capita, which are employed to denote domestic education expenditure for the period 2000-2013 in the short-term annual panel.


# ECONOMIC OPENNESS

### Data Source
Fraser Institute. The Fraser Institute is a prestigious public policy research and educational organisation investigating the impact of markets and government interventions on the welfare of individuals.

### Variable Definition
The Fraser Index of Economic Freedom allows for an assessment of the impact of 'good' economic governance. The index measures the degree of economic freedom across five major areas: (i) size of government: expenditures, and taxes, enterprises; (ii) legal structure and security of property rights; (iii) access to sound money; (iv) freedom to trade internationally; and (v) regulation of credit, labour, and business.

### Primary Data Collection
Within the five major areas, there are 23 components, many of which comprise several sub-components - including 42 distinct variables in total. Each component and sub-component is placed on a scale from 0 to 10 that reflects the distribution of the underlying data. The sub-component ratings are averaged to determine each of the components. The component ratings within each of the five major areas are subsequently averaged in order to obtain ratings for each. The five area ratings are then averaged to derive the summary rating for each country (Gwartney, Hall et al. 2015). This summary rating denoting the degree of economic freedom in any particular country is employed in the two panel datasets. Higher values represent greater economic freedom.

The construction of the index is based on three important methodological principles. First, objective components are always preferred to those that involve surveys or value judgments. Given the multi-dimensional nature of economic freedom and the importance of legal and regulatory elements it is sometimes necessary to use data based on surveys,

expert panels, and generic case studies. To the fullest extent possible, however, the index uses objective components. Second, the data used to construct the index ratings are from external sources such as the IMF, World Bank, and World Economic Forum that provide data for a large number of countries. Data provided directly from a source within a country are rarely used, and only when the data are unavailable from international sources. Importantly, the value judgments of the authors or others in the Economic Freedom Network are never used to alter the raw data or the rating of any country. Third, transparency is present throughout. Additional information pertaining to data sources, the methodology used to transform raw data into component ratings, and how the component ratings are used to construct both the area and summary ratings is provided in the explanatory notes appendix of the Gwartney, Hall et al. (2015) report.

### Data Handling/Manipulation
Data on economic freedom are publicly available and were downloaded on 2nd March 2015 from the chain-linked index as published on the Fraser Institute website as this offers the most consistent data through time. The data were downloaded as an Excel file for the period 1980 to 2013 inclusive for 141 countries. The data were subsequently uploaded to and stored in Stata. An upper limit of 10 (indicating the greatest degree of economic freedom) was assigned to the variable labelled OPEN.


# EDUCATION AID

### Data Source
Data on development cooperation are drawn from the International Development Statistics Creditor Reporting System, an internationally recognised source of data on the geographical and sectoral breakdown of development aid granted by bilateral and multilateral institutions, compiled by the OECD DAC, the main organisation through which the OECD manages issues related to financial co-operation with developing countries. The statistics produced by the DAC provide the most authoritative guide to aid flows available, and they are used widely by academics, donors, recipients and international bodies.

### Variable Definition
ODA consists of flows to developing countries and multilateral institutions provided by DAC members[12] each transaction of which meets the following two criteria: (1) it is administered with the promotion of the economic development and welfare of developing countries as the main objective, and (2) it is concessional in character and contains a grant element of at least 25 percent.

### Primary Data Collection
The CRS collects details on both donors' ODA commitments and disbursements to over 180 recipient countries. Information is provided on the source, recipient, amount and type of financial flow, interest rates, the grant element, commitment date, sector code and purpose description, local costs, and technical cooperation. The data account for information including donor and recipient country names, name of the implementing agency, project description, project duration, the level of education - primary, secondary or tertiary - funded, type of aid (grant or loan), amount committed by the donor, the year the commitment was made in as well as the amount disbursed each year.

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[12] There are 26 members of the DAC: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, European Union, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, South Korea, Spain, Sweden, Switzerland, United Kingdom, United States. The World Bank, the IMF and UNDP participate as permanent observers

### Data Handling/Manipulation

Data on education ODA are publicly available and were downloaded on 4th March 2015 from the Creditor Reporting System website. The data were downloaded in Excel files for the period 1970 to 2013 inclusive. The data were subsequently uploaded to and stored in Stata.

To overcome the issue that reporting to the CRS database has, until recently, been incomplete - apparent when the total amounts published in the CRS and DAC databases are compared - an approximation of the true commitment data is derived using the correct total from DAC database (for further details see section 3.6 of the methodology chapter). Primary education aid in the short-term annual panel includes 10 per cent of general budget support and 50 per cent of the category 'education-level unspecified'.

To convert donor aid commitments and disbursements to constant dollars, DAC deflators are used that allow for inflation in the currency in which the flow of education aid took place between the year of the aid flow and the base year of 2012. The DAC deflators adjust for changes in both price and exchange rates, in order that all flows of education aid, across all years, and from all donors, are depicted in a fixed unit of measurement that may be readily understood - the purchasing power of a US dollar in the base year of 2012. For both commitments (COMMITMENTS) and disbursements (DISBURSEMENTS), aid is measured on a per capita basis.

## EXTENT OF URBANISATION

### Data Source

The United Nations Department of Economic and Social Affairs Population Division. The established source is used by all entities of the UN system for the calculation of indicators that require population as an input. Several organisations distribute the results of World Urbanization Prospects through their own databases (e.g., the World Bank, the Statistics Division/DESA, the Food and Agriculture Organization). As the official UN urbanisation estimates and projections, the results of *World Urbanization Prospects* are considered to embody the authoritative view on the extent of urbanisation, as well as of trends and characteristics.

### Variable Definition

Urban population refers to people living in urban areas as defined by national statistical offices.

### Primary Data Collection

The definition of the 'urban' population follows the definition that is used in each country. The definitions are generally those used by national statistical offices in carrying out the latest available census. When the definition used in the latest census is not the same as in previous censuses, the data are adjusted whenever possible so as to maintain consistency. In cases where adjustments are made, that information is included in the sources listed online. UN estimates and projections are based, to the extent possible, on actual enumerations. In some cases, however, it is necessary to incorporate other estimates of urban population size. When this is done, the sources of data indicate it. Urban population (% of total) is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects.

*Data Handling/Manipulation*
Data relating to the extent of urbanisation are publicly available and were downloaded on 10th March 2015 from the WDI website. The data were downloaded as an Excel file for the period 1970 to 2013 inclusive and were subsequently uploaded to and stored in Stata. An upper limit of 100 was assigned to the variable labelled URBAN.


## GENDER PARITY

*Data Source*
UIS produces internationally accepted methodologies to measure and monitor trends at national and global levels. It delivers comparative data for countries at all stages of development to provide a cross-national perspective on education, science and technology, culture, and communication. The UIS is the official UN agency responsible for the collection of education data and indicators to monitor the MDGs related to universal primary education and gender parity in primary and secondary education, as well as the EFA goals. The UIS is the main source of education data for the EFA Global Monitoring Report, the MDG Report, the World Bank's WDI and the World Development Report, the Human Development Report, UNICEF's State of the World's Children report and many others.

*Variable Definition*
Ratio of female to male primary enrolment is the percentage of girls to boys enrolled at primary level in public and private schools.

*Primary Data Collection*
The UIS collects education statistics annually from official national statistical authorities. Each Member State designates the statistical authorities which respond to UIS questionnaires. In many cases, it is the ministry of education or the national statistical office that submits education data to the UIS. The information collected includes data on educational programmes, access, participation, progression, completion, internal efficiency, and human and financial resources by all levels of education.

Each UNESCO Member State submits education data to the UIS through one of three education questionnaires. Most UNESCO Member States respond annually to the UIS education questionnaire. Other countries belong to jointly administered data collection programmes, such as the UNESCO-OECD-Eurostat survey and the World Education Indicators programme.

*Data Handling/Manipulation*
Data on gender parity in primary enrolment are publicly available and were downloaded on 8th March 2015 from the World Development Indicator website. The data were downloaded as an Excel file for the period 2000 to 2013 and were subsequently uploaded to and stored in Stata. An upper limit of 100 was assigned to the variable labelled M:F RATIO.


## GOVERNMENT STABILITY

*Data Source*
The PRS Group International Country Risk Guide. The ICRG system presents a comprehensive risk structure for countries with ratings for their overall, or composite, risk, in addition to their political, financial, and economic risk and for the risk components that

make up these broad risk categories. The approach enables the user to track the effect of a single risk component, or group of components, on the overall risk of a country and as such is used widely by academics and policymakers alike - see, for example, McMahon (2002) and Collier (2007).

### Variable Definition

Government Stability measures both the government's ability to carry out its declared programme(s), and its ability to stay in office. This depends on the type of governance, the cohesion of the government and governing party or parties, the closeness of the next election, the government's command of the legislature, popular approval of government policies, and so on. Government Stability is assessed on the basis of three sub-variables: 1) *Government Unity* (4 points) - the extent to which the government operates as a unified force; 2) *Legislative Strength* (4 points) - does the legislature have its own power vis-à-vis the executive branch of the government and can it act coherently as such? 3) *Popular Support* (4 points) - a measure of how much the population being governed sees the government as legitimate, whether or not it is the government they prefer.

### Primary Data Collection

Government Stability is one of the 22 components derived by the ICRG grouped into three categories of risk: political, financial, and economic. Political risk comprises 12 components, whilst financial and economic risk each comprise of five components. Each component has a maximum numerical value (risk points), with the highest number of points indicating the lowest potential risk for that component and the lowest number (0) indicating the highest potential risk. The maximum points for any particular risk component are pre-set within the system and depend on the importance (weighting) of that component to overall risk of a country.

The ICRG staff collects political information and financial and economic data, converting these into risk points for each individual risk component on the basis of a consistent pattern of evaluation. The political risk assessments are made on the basis of subjective analysis of the available information, while the financial and economic risk assessments are made solely on the basis of objective data. In addition to the 22 individual ratings, the ICRG model also produces a rating for each of the three risk factor groups plus an overall score for each country.

After a risk assessment (rating) has been awarded to each of the 22 risk components, the components within each category of risk are added together to provide a risk rating for each risk category (Political, Financial, or Economic). The risk ratings for these categories are then combined on the basis of a formula to provide the country's overall, or composite, risk rating. As with the risk component ratings, the higher the rating computed for the political, financial, economic, or composite rating, the lower the risk, and vice versa.

### Data Manipulation

Data on Government Stability were purchased from the PRS Group website on 15th April 2015 and downloaded as an Excel file for the period 1984-2013 inclusive for 140 countries. The data were subsequently uploaded to and stored in Stata. An upper limit of 12 (indicating the lowest risk category) was assigned to the variable labelled STABLE.

# PER CAPITA INCOME

### Data Source
The World Bank International Comparison Program database provides a collection of comparative price data and detailed expenditure values of countries' gross domestic product, and estimates of purchasing power parities for the world's economies.

### Variable Definition
GDP per capita is measure of per capita income that takes into account country purchasing power.

### Primary Data Collection
PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current international dollars.

### Data Handling/Manipulation
Data relating to per capita income are publicly available and were downloaded on 12th March 2015 from the WDI website. The data were downloaded as an Excel file for the period 1980 to 2013 inclusive and were subsequently uploaded to and stored in Stata. An upper limit of the highest recorded value was assigned to the variable labelled GDPcapPPP. Deflators published by the World Bank are used to adjust for the effect of inflation. The base year for all calculations in which deflators are used is 2012.

# PRIMARY COMPLETION RATE

### Data Source
UIS produces internationally accepted methodologies to measure and monitor trends at national and global levels. It delivers comparative data for countries at all stages of development to provide a cross-national perspective on education, science and technology, culture, and communication. The UIS is the official UN agency responsible for the collection of education data and indicators to monitor the MDGs related to universal primary education and gender parity in primary and secondary education, as well as the EFA goals. The UIS is the main source of education data for the EFA Global Monitoring Report, the MDG Report, the World Bank's WDI and the World Development Report, the Human Development Report, UNICEF's State of the World's Children report and many others.

### Variable Definition
Number of students successfully completing the last year of (or graduating from) primary school in a given year divided by the number of children of official graduation age in the population.

### Primary Data Collection
The UIS collects education statistics annually from official national statistical authorities. Each Member State designates the statistical authorities which respond to UIS questionnaires. In many cases, it is the ministry of education or the national statistical office which submits education data to the UIS. The information collected includes data on

educational programmes, access, participation, progression, completion, internal efficiency, and human and financial resources by all levels of education.

Each UNESCO Member State submits education data to the UIS through one of three education questionnaires. Most UNESCO Member States respond annually to the UIS education questionnaire. Other countries belong to jointly administered data collection programmes, such as the UNESCO-OECD-Eurostat survey and the World Education Indicators programme.

### Data Handling/Manipulation
Data on primary completion rate are publicly available and were downloaded on 28th March 2015 from the World Development Indicator website. The data were downloaded as an Excel file for the period 2000 to 2013 and were subsequently uploaded to and stored in Stata. An upper limit of 100 was assigned to the variable labelled PCR.

# PRIMARY NET ENROLMENT RATE

### Data Source
UIS produces internationally accepted methodologies to measure and monitor trends at national and global levels. It delivers comparative data for countries at all stages of development to provide a cross-national perspective on education, science and technology, culture, and communication. The UIS is the official UN agency responsible for the collection of education data and indicators to monitor the MDGs related to universal primary education and gender parity in primary and secondary education, as well as the EFA goals. The UIS is the main source of education data for the EFA Global Monitoring Report, the MDG Report, the World Bank's WDI and the World Development Report, the Human Development Report, UNICEF's State of the World's Children report and many others.

### Variable Definition
Net enrolment ratio is the ratio of children of official school age based on the International Standard Classification of children 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.

### Primary Data Collection
The UIS collects education statistics annually from official national statistical authorities. Each Member State designates the statistical authorities which respond to UIS questionnaires. In many cases, it is the ministry of education or the national statistical office that submits education data to the UIS. The information collected includes data on educational programmes, access, participation, progression, completion, internal efficiency, and human and financial resources by all levels of education.

Each UNESCO Member State submits education data to the UIS through one of three education questionnaires. Most UNESCO Member States respond annually to the UIS education questionnaire. Other countries belong to jointly administered data collection programmes, such as the UNESCO-OECD-Eurostat survey and the World Education Indicators programme.

To calculate the NER the data required are enrolment by single years of age for a given level of education and the population of the age group corresponding to the given level of

education. This is collected from school registers, via school surveys or census for data on enrolment by age as well as the population census or estimates for school-age population.

### Data Handling/Manipulation
Data on the primary NER are publicly available and were downloaded on 3$^{rd}$ March 2015 from the World Development Indicator website. The data were downloaded as an Excel file for the period 1970 to 2013. The data were subsequently uploaded to and stored in Stata. An upper limit of 100 was assigned to the variable labelled NER.

# PUPIL-TEACHER RATIO

### Data Source
UIS produces internationally accepted methodologies to measure and monitor trends at national and global levels. It delivers comparative data for countries at all stages of development to provide a cross-national perspective on education, science and technology, culture, and communication. The UIS is the official UN agency responsible for the collection of education data and indicators to monitor the MDGs related to universal primary education and gender parity in primary and secondary education, as well as the EFA goals. The UIS is the main source of education data for the EFA Global Monitoring Report, the MDG Report, the World Bank's WDI and the World Development Report, the Human Development Report, UNICEF's State of the World's Children report and many others.

### Variable Definition
Number of pupils enrolled in primary school divided by number of primary school teachers (regardless of their teaching assignment)

### Primary Data Collection
The UIS collects education statistics annually from official national statistical authorities. Each Member State designates the statistical authorities which respond to UIS questionnaires. In many cases, it is the ministry of education or the national statistical office that submits education data to the UIS. The information collected includes data on educational programmes, access, participation, progression, completion, internal efficiency, and human and financial resources by all levels of education.

Each UNESCO Member State submits education data to the UIS through one of three education questionnaires. Most UNESCO Member States respond annually to the UIS education questionnaire. Other countries belong to jointly administered data collection programmes, such as the UNESCO-OECD-Eurostat survey and the World Education Indicators programme.

In order to calculate the pupil-teacher ratio, UIS divide the total number of pupils enrolled at the specified level of education by the number of teachers at the same level. Data relating to the number of pupils enrolled and teaching staff for the specific level of education are collected from school registers, teacher records, school census or surveys for data on enrolment and teaching staff in order to do so.

### Data Handling/Manipulation
Data relating to the primary pupil-teacher ratio are publicly available and were downloaded on 11$^{th}$ March 2015 from the World Development Indicator website. The data were downloaded as an Excel file for the period 1970 to 2013 and were subsequently uploaded to and stored in Stata. An upper limit of 100 was assigned to the variable labelled PTR.

# YOUTH POPULATION

## Data Source

The United Nations Department of Economic and Social Affairs Population Division. The established source is used by all entities of the UN system for the calculation of indicators that require population as an input. Several organisations distribute the results of World Population Prospects through their own databases (e.g., the World Bank, the Statistics Division/DESA, the Food and Agriculture Organization). As the official UN population estimates and projections, the results of *World Population Prospects* are considered to embody the authoritative view of population levels, trends and characteristics

## Variable Definition

Youth population is defined as the population between the ages of 0 and 14 as a percentage of the total population.

## Primary Data Collection

*World Population Prospects* presents estimates for 231 countries and areas. About half of those countries or areas do not report official demographic statistics with the detail necessary for the purposes of the Population Division. Estimation work is therefore undertaken in order to close those gaps. The availability of data gathered by major survey programs, such as the Demographic and Health Surveys or Multi Indicator Cluster Surveys, are used in generating some of the data that is not produced by official statistics.

## Data Handling/Manipulation

Data relating to youth population are publicly available and were downloaded on 18th March 2015 from the WDI website. The data were downloaded as an Excel file for the period 1970 to 2013 inclusive and were subsequently uploaded to and stored in Stata. An upper limit of 100 was assigned to the variable labelled POPy.

# Appendix 2: Summary Statistics

| Variable | Mean | Minimum | Maximum | Standard Deviation |
|---|---|---|---|---|
| **Primary Net Enrolment Rate (NER)** | 68.22 | 21.78 | 100 | 15.58 |
| **Primary Completion Rate (PCR)** | 58.78 | 19.58 | 99 | 23.06 |
| **Domestic Education Expenditure (EXPEDUC_cap)** | 94.21 | 3.13 | 685.4 | 109.89 |
| **Domestic Education Expenditure (EXPEDUC_GDP)** | 4.16 | 0.81 | 11.63 | 1.79 |
| **Education Aid (COMMITMENTS_cap)** | 21.28 | 0 | 664.93 | 49.55 |
| **Primary Education Aid (DISBURSEMENTS_cap)** | 5.26 | 0 | 156.42 | 14.71 |
| **GDP per capita (GDP_capPPP)** | 4762 | 502 | 15998 | 3501 |
| **Population under 15 (POPy)** | 37.02 | 14.99 | 50.87 | 9.14 |
| **Extent of Urbanisation (URBAN)** | 47.89 | 4.97 | 92.58 | 21.53 |
| **Pupil-Teacher Ratio (ST-Ratio)** | 31.61 | 10.17 | 76.88 | 12.6 |
| **Democratic Freedom (FREE)** | 4.06 | 1 | 7 | 1.85 |
| **Armed Conflict (CONFLICT)** | 0.07 | 0 | 0.79 | 0.15 |
| **Government Stability (STABILITY)** | 7.78 | 2.31 | 11.04 | 1.82 |
| **Economic Freedom (OPEN)** | 5.67 | 2.8 | 7.6 | 0.95 |

*Sources: OECD CRS (2015); World Bank (2015a); The PRS Group (2015); Freedom House (2015); UCDP/PRIO (2015); and Gwartney, Hall et al. (2015)*

# Appendix 3: Sensitivity Testing of Panel Data Analysis

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 | Model 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| **L1.** | ***0.308 (0.000) | ***0.372 (0.004) | ***0.369 (0.003) | ***0.351 (0.005) | **0.301 (0.080) | 0.120 (0.219) | 0.152 (0.148) | -0.009 (0.940) | 0.036 (0.733) | 0.234 (0.198) |
| | | | | | | | | | | |
| **Period (Ref: 1970-89)** | *-2.503 (0.068) | | | | | | | | | |
| **Education Aid Commitment (per capita)** | ***0.348 (0.007) | **0.301 (0.048) | 0.308 (0.261) | *0.316 (0.098) | 0.345 (0.179) | | | | | |
| **Primary Education Aid Disbursement (per capita)** | | | | | | 0.141 (0.684) | 0.218 (0.541) | 0.014 (0.949) | 0.087 (0.652) | 0.149 (0.521) |
| **Lag Primary Education Aid Disbursement (per capita)** | | | | | | **0.080 (0.045) | 0.042 (0.253) | 0.029 (0.129) | 0.025 (0.102) | **0.104 (0.034) |
| **Domestic Education Expenditure (per capita)** | 0.015 (0.147) | 0.023 (0.414) | 0.019 (0.398) | 0.021 (0.378) | 0.020 (0.131) | | | | | |
| **Domestic Expenditure on Primary Education (% GDP per capita)** | | | | | | -0.062 (0.640) | 0.073 (0.546) | -0.007 (0.910) | -0.014 (0.808) | |
| **Pupil-Teacher Ratio** | -0.127 (0.350) | | | | | ***-0.475 (0.005) | ***-0.459 (0.002) | -0.102 (0.260) | -0.101 (0.286) | |
| **Youth Population** | *-0.528 (0.079) | | | | | ***-1.211 (0.002) | ***-1.153 (0.003) | ***-0.551 (0.003) | ***-0.523 (0.008) | |
| **Extent of Urbanisation** | ***0.318 (0.000) | | | | | *0.364 (0.069) | 0.234 (0.202) | 0.141 (0.116) | 0.069 (0.434) | |
| **Per Capita GDP (adjusted for PPP)** | **0.001 (0.027) | | | | | -0.002 (0.149) | -0.002 (0.466) | *-0.002 (0.045) | -0.001 (0.172) | |
| **Education Aid Squared** | **-0.000 (0.021) | | | | | | | | | |
| **Education Aid*Period** | | | | | | | | | | |
| **Education Aid*Government Stability** | ***0.007 (0.004) | | | | | | | | | |
| **Education Aid*Partly Democratically Free (Ref: Not Free)** | -0.064 (0.583) | | | | | | | | | |

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 | Model 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Education Aid*Democratically Free (Ref: Not Free)** | -0.026 (0.813) | | | | | | | | | |
| **Education Aid*Conflict (Ref: No Conflict)** | *-0.310 (0.075) | | | | | | | | | |
| **Education Aid*Conflict at any Time (Ref: No Conflict)** | -0.190 (0.281) | | | | | | | | | |
| **Primary Education Aid Squared** | | | | | | -0.001 (0.409) | -0.002 (0.466) | **-0.001 (0.060) | *-0.002 (0.064) | |
| **Primary Education Aid*Government Stability** | | | | | | 0.002 (0.968) | 0.007 (0.807) | 0.001 (0.993) | 0.002 (0.934) | |
| **Primary Education Aid*Conflict (Ref: No Conflict)** | | | | | | 0.263 (0.685) | 0.749 (0.355) | -0.284 (0.491) | 0.116 (0.810) | |
| **Primary Education Aid*Conflict at any Time (Ref: No Conflict)** | | | | | | 0.159 (0.828) | -0.318 (0.656) | 0.137 (0.639) | -0.099 (0.745) | |
| **Primary Education Aid*Democratically Partly Free (Ref: Not Free)** | | | | | | 0.164 (0.548) | 0.031 (0.919) | 0.143 (0.350) | 0.084 (0.568) | |
| **Primary Education Aid*Democratically Free (Ref: Not Free)** | | | | | | 0.175 (0.472) | 0.120 (0.662) | 0.162 (0.281) | 0.142 (0.306) | |
| | | | | | | | | | | |
| **Number of Countries** | 61 | 61 | 57 | 57 | 61 | 61 | 61 | 61 | 61 | 61 |
| **Panel Dataset** | Structural | Structural | Structural | Structural | Structural | Annual | Annual | Annual | Annual | Annual |

*Sources: OECD CRS (2015); World Bank (2015a); The PRS Group (2015); Freedom House (2015); UCDP/PRIO (2015); and Gwartney, Hall et al. (2015)*

*Models:*   *1. NER (preferred results)*
    *2. NER cycles of >6 years removed*
    *3. NER Reduced sample - exceptionally large increases in enrolment rates*
    *4. NER Reduced sample - more than 20 increase in enrolment in single year or 10 percent in any period*
    *5. NER 1970-1995*
    *6. PCR 1 Year Lag*
    *7. PCR 2 Year Lag*
    *8. M:F Ratio 1 Year Lag*
    *9. M:F Ratio 2 Year Lag*
    *10. PCR 1 Year Lag, government expenditure removed*

# Appendix 4: Classification of Educational Need

| COUNTRY | Index 2 | Index 1 | Index 0 | Index OOS 2012* | Net Enrolment 2012 | Gender Parity 2012 | Survival Rate to Grade 5 2011 | Out-of-School Children (000) 2012 | Total aid to basic education (constant 2012 US$m) 2012 |
|---|---|---|---|---|---|---|---|---|---|
| Somalia | 0.55 | 0.43 | 0.50 | 0.89 | 0.20 | 0.5 | 0.60 | 1126 | 31 |
| Congo, Dem. Rep. | 0.57 | 0.64 | 0.63 | 0.35 | 0.30 | 0.88 | 0.74 | 6 512 | 70 |
| Ethiopia | 0.60 | 0.59 | 0.48 | 0.64 | 0.58 | 0.75 | 0.44 | 3615 | 140 |
| Nigeria | 0.62 | 0.78 | 0.81 | 0.13 | 0.64 | 0.84 | 0.86 | 8 709 | 50 |
| Afghanistan | 0.65 | 0.57 | 0.67 | 0.87 | 0.73 | 0.39 | 0.60 | 1288 | 219 |
| Pakistan | 0.69 | 0.73 | 0.64 | 0.57 | 0.72 | 0.87 | 0.61 | 5 370 | 207 |
| Chad | 0.70 | 0.62 | 0.51 | 0.92 | 0.63 | 0.77 | 0.47 | 770 | 11 |
| Eritrea | 0.71 | 0.63 | 0.60 | 0.95 | 0.33 | 0.87 | 0.69 | 518 | 9 |
| Côte d'Ivoire | 0.74 | 0.68 | 0.78 | 0.89 | 0.56 | 0.64 | 0.85 | 1 223 | 36 |
| Sierra Leone | 0.75 | 0.68 | 0.67 | 0.97 | 0.59 | 0.74 | 0.70 | 327 | 15 |
| Liberia | 0.76 | 0.69 | 0.63 | 0.96 | 0.41 | 0.95 | 0.70 | 389 | 32 |
| Central African Republic | 0.77 | 0.69 | 0.61 | 0.98 | 0.72 | 0.79 | 0.57 | 194 | 5 |
| Niger | 0.77 | 0.73 | 0.69 | 0.9 | 0.63 | 0.84 | 0.71 | 1 049 | 29 |
| Sudan | 0.77 | 0.78 | 0.82 | 0.75 | 0.52 | 0.9 | 0.92 | 2 562 | - |
| Malawi | 0.79 | 0.74 | 0.64 | 0.95 | 0.80 | 0.83 | 0.58 | 455 | 80 |
| Guinea | 0.79 | 0.73 | 0.64 | 0.96 | 0.74 | 0.86 | 0.60 | 431 | 17 |
| Kenya | 0.79 | 0.76 | 0.76 | 0.88 | 0.77 | 0.77 | 0.75 | 1226 | 71 |
| Togo | 0.80 | 0.73 | 0.77 | 0.98 | 0.82 | 0.63 | 0.75 | 180 | 4 |
| Madagascar | 0.80 | 0.74 | 0.53 | 0.97 | 0.89 | 0.92 | 0.41 | 272 | 17 |
| Mali | 0.81 | 0.76 | 0.71 | 0.94 | 0.69 | 0.88 | 0.71 | 637 | 40 |
| Benin | 0.81 | 0.74 | 0.75 | 1 | 0.95 | 0.59 | 0.68 | 83 | 31 |
| Mozambique | 0.81 | 0.77 | 0.58 | 0.93 | 0.86 | 0.95 | 0.49 | 692 | 105 |
| Djibouti | 0.81 | 0.74 | 0.72 | 1 | 0.58 | 0.89 | 0.76 | 39 | 14 |
| Nicaragua | 0.81 | 0.74 | 0.67 | 1 | 0.92 | 1.01 | 0.59 | 54 | 18 |

| COUNTRY | Index 2 | Index 1 | Index 0 | Index OOS 2012* | Net Enrolment 2012 | Gender Parity 2012 | Survival Rate to Grade 5 2011 | Out-of-School Children (000) 2012 | Total aid to basic education (constant 2012 US$m) 2012 |
|---|---|---|---|---|---|---|---|---|---|
| Nepal | 0.83 | 0.77 | 0.66 | 1 | 0.98 | 0.78 | 0.55 | 45 | 73 |
| Burkina Faso | 0.83 | 0.80 | 0.77 | 0.91 | 0.66 | 0.95 | 0.80 | 917 | 76 |
| Uganda | 0.84 | 0.81 | 0.59 | 0.93 | 0.91 | 1.03 | 0.48 | 663 | 37 |
| India | 0.85 | 0.84 | 0.83 | 0.86 | 0.93 | 0.8 | 0.79 | 1 387 | 100 |
| Yemen, Rep. | 0.85 | 0.81 | 0.76 | 0.95 | 0.86 | 0.84 | 0.73 | 490 | 52 |
| Rwanda | 0.85 | 0.80 | 0.64 | 1 | 0.99 | 0.9 | 0.52 | 23 | 29 |
| Zimbabwe | 0.86 | 0.82 | 0.73 | 0.96 | 0.83 | 0.94 | 0.70 | 429 | 52 |
| Burundi | 0.87 | 0.83 | 0.64 | 1 | 0.94 | 1 | 0.54 | 81 | 16 |
| Senegal | 0.88 | 0.85 | 0.73 | 0.96 | 0.73 | 1.08 | 0.73 | 439 | 76 |
| Myanmar | 0.88 | 0.86 | 0.78 | 0.94 | 0.88 | 0.96 | 0.75 | 634 | 45 |
| Congo, Rep. | 0.89 | 0.85 | 0.64 | 1 | 0.9 | 1.09 | 0.55 | 56 | 4 |
| Bangladesh | 0.89 | 0.87 | 0.73 | 0.94 | 0.92 | 1.04 | 0.66 | 621 | 316 |
| Cameroon | 0.89 | 0.86 | 0.82 | 0.97 | 0.92 | 0.88 | 0.79 | 295 | 8 |
| Mauritania | 0.89 | 0.86 | 0.79 | 0.98 | 0.70 | 1.07 | 0.82 | 169 | 5 |
| Philippines | 0.90 | 0.88 | 0.80 | 0.94 | 0.94 | 0.96 | 0.75 | 646 | 78 |
| Lesotho | 0.91 | 0.87 | 0.78 | 1 | 0.82 | 1.04 | 0.76 | 62 | 7 |
| Tanzania | 0.91 | 0.90 | 0.90 | 0.93 | 0.91 | 0.89 | 0.90 | 684 | 121 |
| Paraguay | 0.91 | 0.88 | 0.84 | 0.98 | 0.82 | 0.99 | 0.84 | 150 | 11 |
| Gambia, The | 0.91 | 0.88 | 0.82 | 1 | 0.71 | 1.06 | 0.86 | 75 | 5 |
| Lao PDR | 0.91 | 0.88 | 0.77 | 1 | 0.96 | 0.98 | 0.70 | 30 | 28 |
| Guatemala | 0.92 | 0.89 | 0.80 | 0.99 | 0.93 | 0.99 | 0.75 | 110 | 19 |
| Cambodia | 0.92 | 0.89 | 0.79 | 1 | 0.98 | 0.97 | 0.73 | 29 | 27 |
| Indonesia | 0.93 | 0.94 | 0.91 | 0.87 | 0.92 | 1.01 | 0.90 | 1 336 | 172 |
| Ghana | 0.93 | 0.92 | 0.88 | 0.95 | 0.87 | 1 | 0.88 | 467 | 84 |
| Bolivia | 0.93 | 0.91 | 0.88 | 0.98 | 0.83 | 1 | 0.89 | 194 | 20 |
| Honduras | 0.93 | 0.90 | 0.80 | 1 | 0.94 | 1.02 | 0.75 | 67 | 35 |
| Swaziland | 0.93 | 0.91 | 0.85 | 1 | 0.93 | 0.97 | 0.82 | 48 | 6 |
| Zambia | 0.94 | 0.92 | 0.84 | 1 | 0.94 | 1.02 | 0.80 | 59 | 39 |
| Egypt, Arab Rep. | 0.94 | 0.93 | 0.97 | 0.97 | 0.95 | 0.88 | 0.97 | 258 | 43 |
| Armenia | 0.94 | 0.92 | 0.93 | 1 | 0.84 | 0.97 | 0.96 | - | 9 |

| COUNTRY | Index 2 | Index 1 | Index 0 | Index OOS 2012* | Net Enrolment 2012 | Gender Parity 2012 | Survival Rate to Grade 5 2011 | Out-of-School Children (000) 2012 | Total aid to basic education (constant 2012 US$m) 2012 |
|---|---|---|---|---|---|---|---|---|---|
| El Salvador | 0.95 | 0.93 | 0.89 | 1 | 0.93 | 1 | 0.87 | 41 | 13 |
| Kyrgyz Republic | 0.96 | 0.95 | 0.95 | 1 | 0.91 | 0.98 | 0.96 | 6 | 12 |
| Vietnam | 0.97 | 0.96 | 0.97 | 0.99 | 0.98 | 0.94 | 0.97 | 122 | 65 |
| Bhutan | 0.98 | 0.97 | 0.96 | 1 | 0.91 | 1.03 | 0.97 | 8 | 1 |
| Morocco | 0.98 | 0.97 | 0.95 | 1 | 0.98 | 0.99 | 0.94 | 43 | 88 |
| Georgia | 0.99 | 0.98 | 0.96 | 1 | 0.98 | 1.01 | 0.95 | 4 | 14 |
| Ukraine | 1.00 | 1.00 | 0.99 | 1 | 0.98 | 1.02 | 0.99 | 24 | 10 |

*Sources: OECD CRS (2015) and World Bank (2015a)*
*Notes: Where data were not available for the stated year, they were taken from the most recent year or an alternative source*
*\*Each percentile point represents 100,000 out-of-school children, up to a maximum of 10 million. Where countries have fewer than 100,000 out-of-school children, the measure is assigned a value of unity. For other countries, as the numbers of children out of school increases, the value declines towards zero.*