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The Global Challenge in Basic Education:

Why Continued Investment in Basic Education is Important

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The Global Challenge in Basic Education: Why Continued Investment in Basic Education is Important

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Acronyms

CEE	Central and Eastern Europe
DFID	Department for International Development, UK
EFA	Education for All
FDI	foreign direct investment
FSU	former Soviet Union
ILO	International Labour Organization
ISCED	International Standard Classification of Education, UNESCO
MDG	Millennium Development Goal
OECD	Organisation for Economic Co-operation and Development
PIRLS	Progress in International Reading Literacy Survey, OECD
PISA	Programme for International Student Assessment
TIMSS	Trends in International Mathematics and Science Study, OECD
UN	United Nations
UNICEF	United Nations International Children‘s Educational Fund, Geneva
UNESCO	United Nations Education, Scientific, and Cultural Organization

Executive Summary

The current global economic and financial crisis threatens to reverse recent progress in education in developing counties. Education programs are likely to suffer as slower growth and reduced foreign direct investment (FDI) lead to cutbacks in budget support for education in poor countries and cause many low-income families to find that education is an unaffordable luxury for their children.

Very significant gaps remain in basic education coverage, predominately among children from the poorest households, children in rural areas of poor countries, and children from socially excluded groups. About 75 million children of primary school age currently do not attend school, as well as a larger number of children of post-primary basic education age. The number of children of primary-school age who are not in school due to income-related or demand-side constraints has been conservatively estimated at over 14 million worldwide.

The gaps between rich and poor countries in terms of learning achievement are even greater than the gaps in school coverage. Many children who do attend school are not acquiring even basic literacy and other key skills that they need to raise families and compete effectively in the global economy. One important implication is that the coverage gaps between rich and poor countries understate the actual differences in the benefits that education provides to individuals and society. Poor countries are even further behind rich countries in reaping the benefits of education than enrollment differences suggest. ***Unless they are corrected, these gaps in coverage and quality of education will lead to poverty and vulnerability of many kinds when today's children become adults and parents***.

Regardless of the strategies used to achieve past improvements in basic education coverage, different strategies are often needed to reach the last 10 or 15 percent of out-of-school children. The school attendance and school performance of this group are often affected by income and quality constraints. Effective strategies to address these constraints often involve a combination of focused investment, financing for essential recurrent inputs, and supportive policy change.

Donor support for basic education in poor countries can help protect vulnerable children from becoming innocent casualties of the current economic crisis and help serve as a hedge against future economic shocks. Targeted, donor-financed preschool programs, for example, can compensate for the educational and nutritional handicaps of children from low-income households. Admittedly, advanced industrialized countries face difficult choices of their own during the current economic slowdown. Aid donors and aid recipients can maximize the impact of education investments by concentrating on proven, cost-effective interventions.

It is important to target education interventions to low-performing regions, schools, and individuals. Inadequate coverage and quality of education tend to be concentrated in low-income households and regions, rural areas, and schools with a history of substandard performance. Focusing interventions on such at-risk subjects will increase the development impact of a given level of expenditure. Addressing the income constraint by lowering the cost of school attendance for poor households has proven a cost-effective means of raising primary school enrollments. Other interventions that have proven effective in this regard include suspension of school fees, conditional cash transfers to poor parents, scholarships for girls, and the provision of free school uniforms and free school meals.

Even where available evidence confirms the need for expanded school capacity, infrastructure investments need to be designed with care to ensure that the investments will have the intended outcomes. For example, ***the provision of water and sanitation facilities in schools, as well as perimeter walls to ensure security and privacy, can help raise school attendance—particularly by girls***. In some cases, investments in new schools may also need to be accompanied by salary incentives to attract teachers to serve in those schools.

The success of education programs and investments should be measured not in terms of their inputs, but in terms of their learning and development outcomes. Education and foreign assistance strategies in the past have often focused on improving education inputs, particularly by expanding the capacity of the school network. Governments and donors have been too quick to declare success when schools were made available to all children. However, education results in individual and societal benefits only when it leads to effective teaching and learning.

Money must be spent intelligently if it is to raise learning achievement: it must address the binding constraints to learning achievement and do so in a cost-effective manner. Although more resources for education do not consistently lead to improved learning achievement across an entire education system, more resources can lead to improved learning achievement for individual schools**,** especially schools that have been relatively deprived of resources.

Introduction

Education has played a key role in global economic growth and poverty reduction. These gains are the result of major education investments made in the past by national governments, local governments, individuals, and donor agencies. Many countries have reached essentially full coverage in basic[1] and secondary education and are rapidly expanding the coverage of higher education.

The individual benefits of education include higher lifetime earnings, reduced infant mortality, better health status, and reduced vulnerability to exploitation of various kinds. ***At the aggregate level, greater basic education coverage leads to increased productivity and national income,*** as well as less tangible benefits, such as improved social cohesion, reduced fertility, and slower growth of public expenditures for social services. The measured returns to basic education, moreover, understate its full returns because these measurements do not include the role of basic education in raising the earnings of individuals who go on to secondary and higher education after completing basic education.

The impressive global progress in education coverage has sometimes been interpreted to mean that further investments in education are no longer a priority—particularly in basic education, where most countries have reached full coverage. This impression is false. As this paper documents, ***very significant gaps remain in basic education coverage, predominately among children from the poorest households, children in rural areas of poor countries, and children from socially excluded groups***. In addition, many children who do attend school are not acquiring even basic literacy and other key skills that they need to raise families and compete effectively in the global economy.

Reducing current gaps in the coverage and quality of basic education will require significant further investments. The importance of education as a means of individual betterment is generally recognized throughout the world, which accounts for the large sacrifices that families often make in order to send their children to school. But additional support will be needed from governments and donors in order to make the benefits of education available to children who are currently not attending school or who are attending, but receiving an inferior education. This support is justified not only by humanitarian concerns, but also by the economy-wide and society-wide benefits of effective basic education.

Investments in schools and educational materials need to be accompanied by policies and measures that ensure schools and teachers have the means and incentives to teach

[1] Basic education refers in this paper to the initial 8 or 9 years of formal schooling, comprising primary education and lower-secondary education in most national education systems. This duration of schooling corresponds to levels 1 and 2 in the UNESCO International Standard Classification of Education (ISCED). See UNESCO (1997).

effectively and that focus on improved learning outcomes for all students. At early stages of education system development, investments appropriately focus on expanding the availability of schooling. As education coverage increases, education strategies need to be more discriminating in addressing the specific causes of incomplete coverage and the poor quality of basic education, which differ across countries and often even within countries. In order to effectively improve coverage and quality, education investments need to be targeted to address the specific constraints responsible for gaps in each situation.

The current global economic and financial crisis threatens to reverse recent progress in education in developing counties. Education programs are likely to suffer as slower growth and reduced foreign investment lead to cutbacks in budget support for education in poor countries and as many low-income families find that education is an unaffordable luxury for their children. Donor support for basic education in poor countries can help protect vulnerable children from becoming innocent casualties of the current economic crisis and help serve as a hedge against future economic shocks. Admittedly, the industrialized countries face difficult choices of their own under the current economic slowdown. Aid donors and aid recipients can maximize the impact of education investments by concentrating on proven, cost-effective interventions and by targeting safety-net programs to children who are most at risk of becoming casualties of the economic slowdown.

This paper documents the importance of continued investment in basic education and argues that investments need to be carefully targeted to address the constraints that limit the coverage and quality of education if they are to provide expected benefits. Part I begins with a discussion of the returns to investment in education. Part II then describes gaps in the coverage and quality of basic education and evaluates some key constraints responsible for those gaps. The conclusion offers a set of recommendations for planning and implementing effective investments in basic education, based on the lessons of global experience.

I. The Private and Social Returns to Investment in Basic Education

Education is an investment for both individuals and society, providing long-term benefits such as increased earnings and economic growth in exchange for short-term outlays of time and money. The investment nature of education was recognized by Adam Smith over two hundred years ago. An extensive body of research has been carried out since then—most during the past fifty years—to examine the benefits of education for individuals and society.

Rate-of-return analysis provides a convenient framework for evaluating whether the benefits of an education investment (or any investment) justify its cost (see Psacharopoulos and Patrinos 2007). The rate of return is the interest rate that equates the discounted stream of benefits with the discounted stream of costs of an investment. Investments with a positive rate of return generate benefits that are greater than their cost, with benefits and costs discounted to the present. Investments with a higher rate of return generate a higher yield than investments with a lower rate of return. Applied *ex ante* to alternative investments, rate-of-return analysis allows the selection of the particular investment that provides the highest prospective yield.

Education provides a number of benefits for individuals, including higher lifetime earnings, better health status, and improved capacity to recognize and take advantage of opportunities for self-improvement. Analyses of private rates of return compare the benefits that accrue to individuals as a result of education with the costs of education paid by those individuals, providing a succinct indication of whether the long-term benefits are worth the short-term costs in terms of time and money.

Education also provides important benefits for society, including collective or external effects on technology development, productivity of other workers, and improved social cohesion. Social rates of return compare the total benefits and costs of investments, consisting of the sum of individual benefits and costs (as measured by private rates of return) plus external benefits and costs. Net external benefits of an investment, then, can be derived as the difference between net social benefits and net private benefits. Together, private and social rates of return help answer the question of whether the publicly borne cost of education is more than offset by the collective benefits of education in the form of improved economic growth, better health status, a more well-informed populace, and so forth. Combined with information on the tax structure, such analyses can also help determine whether an education investment will generate enough tax revenues in the future to repay the initial cost of the investment. (If not, the investment could impose a fiscal burden on current and future taxpayers, even though it may be justified in terms of its return to individuals and society.)

Estimating private returns to education

The returns to individuals on education investments have been examined in a voluminous literature that documents research carried out in most countries of the world over the past four decades. These studies use a number of different approaches to assess the contribution of education to development. To estimate the benefits of education for individuals, ***most private rate-of-return studies look at how the earnings of current workers differ by educational attainment (years of schooling) and work experience, then use these differences to project the future earnings of students*** once they have completed their education.

These studies generally find that ***the private rate of return to an additional year of schooling ranges from 5 percent to 15 percent*** (see Psacharapoulos 1994; Psacharapoulos and Patrinos 2007). There have been numerous variations on this basic theme to correct for potential bias in such estimates due to ability differences, technology change, long-term income trends, and other factors affecting individual earnings. Overall, however, the downward adjustments resulting from these refinements tend to be offset by the upward adjustments, with the net result that the adjusted rates of return remain in the 5–15 percent range.

Two consistent patterns are observed in the findings of these studies: (i) ***private returns to education are generally highest for primary education*** and somewhat lower for secondary and higher education; and (ii) ***private returns to secondary and higher education tend to be higher in low-income countries*** (where skills are scarce) than in higher-income countries (where skills are more abundant). (See Psacharapoulos and Patrinos 2004). These patterns are summarized in tables 1 and 2.

Table 1. Private returns to investment in education, by level of education and region (%*)

	Primary	*Secondary*	*Higher*
Asia**	20.0	15.8	18.2
Europe, Middle East, North Africa*	13.8	13.6	18.8
Latin America and Caribbean	26.6	17.0	19.5
OECD	13.4	11.3	11.6
Sub-Saharan Africa	37.6	24.6	27.8
All regions	26.6	17.0	19.0

Note: *Percentages are regional averages for latest available year. ** Non-OECD.
Source: Psacharopoulos and Patrinos (2004, table 1).

Table 2. Average private returns to education, by level of education and per capita income (%*)

	Primary	*Secondary*	*Higher*
High income (> US$9,265)	25.6	12.2	12.4
Middle income (US$755 to US$9,265)	27.4	18.0	19.3
Low income (< US$755)	25.8	19.9	26.0
All countries	26.6	17.0	19.0

Note: *Percentages are regional averages for latest available year
Source: Psacharopoulos and Patrinos (2004, table 2).

Another finding in the literature is that the returns to schooling tend to decline somewhat as coverage increases over time, while the returns to higher education tend to rise. A recent review of these studies finds that average private rates of return declined by 0.6 percentage points over the past twelve years (Psacharapoulos and Patrinos 2004). The evidence on declining returns to basic education does not refute the basic finding that further investments in basic education are justified. This is true for two reasons:

- Private returns measure the earnings benefit that accrues to individuals from acquiring a given level of education and entering the labor market with only that level of education. Since basic education is a prerequisite for higher education, increasing demand for higher education implies increased derived demand for primary and secondary education. The ***measured returns to basic education understate the full returns to basic education because they do not include the role of basic education in raising the earnings of individuals who go on to secondary and higher education*** after completing basic education.
- Despite the modest recent decline in returns to basic education, ***average private returns to primary education remain high,*** as shown in tables 1 and 2. This means that education still provides a very respectable return to individual investments in most countries. Moreover, private returns to education are rising in some countries, despite an overall decline in average returns. In the Czech Republic, for example, the private rate of return to an additional year of schooling rose from 3 percent in 1970 to 9 percent in 1997 (Psacharapoulos and Patrinos 2007).
- ***Country-specific differences and differences by level of education are relevant to individual decisions about acquiring further education.*** They are one of several important pieces of information that should be used to inform individual decisions about whether it makes sense to pursue additional education, and, if so, what type of education would provide the greatest long-term benefits.

Returns to education under economic shocks

Economic shocks have very different effects for individuals at different levels of education. Education provides some protection against job dislocation and falling wages for relatively highly educated workers during economic downturns. In Argentina, for example, the returns to higher levels of education increased during the economic crisis of the late 1990s, even as overall wage levels fell, with returns declining to normal levels as the crisis ended (Giovagnoli, Fiszbein, and Patrinos 2007). Similar patterns have been reported for Mexico and Thailand during economic crises (Patrinos 2008). Workers who have not progressed beyond basic education are more vulnerable to job loss and falling wages during such crises than are workers with secondary and, especially, higher education (Hoynes 2000). ***An implication of these patterns is that economic shocks tend to lower the return to unskilled labor and raise the return to high-skilled labor.***

Estimating social returns to education

A fundamental question that rate-of-return analysis seeks to answer is whether the collective or external benefits of public investments in education are worth the cost of these investments.[2] But ***the collective benefits of education are more diverse and less tangible, and therefore less measurable, than are the private benefits.*** Although often referred to as social benefits, they are more accurately called the external benefits of education. Some external benefits involve changes in aggregate economic performance, whereas others involve changes in social outcomes, such as health status and infant mortality.

Because of the difficulty of observing the non-market, external benefits of education, many rate-of-return studies approximate social rates of return by using the same benefit figures as private rates of return, to which the publicly borne costs of education are added. The two figures use the same benefit calculation, but by including public as well as private costs, the resulting social rate of return is lower than the corresponding private rate of return—on average, one-third lower, as shown by a comparison of tables 1 and 3.

Table 3. Social returns to investment in education, by level of education and region (%)*

	Primary	*Secondary*	*Higher*
Asia**	16.2	11.1	11.0
Europe, Middle East, North Africa	15.6	9.7	9.9
Latin America and Caribbean	17.4	12.9	12.3
OECD	8.5	9.4	8.5
Sub-Saharan Africa	25.4	18.4	11.3
All Regions	18.9	13.1	10.8

Notes: * The narrow definition of social returns is used, based on private earnings and public and private costs. Percentages shown are regional averages for latest available year. **Non-OECD.
Source: Psacharopoulos and Patrinos (2004, table 1).

Much of the benefit of education with respect to economic growth is presumably captured by private rates of return. (Indeed, the narrow social rates of return shown in table 3 assume that all of it is.) Education has been shown to have economic benefits that transcend individual benefits in various ways, such as stimulating the development and diffusion of more productive technologies and providing opportunities for learning from other community members outside the classroom. For example, a recent study of farmer productivity in Uganda found that a one-year increment in the average level of primary schooling led to a 4.3 percent increase in average farmer output, while a similar increase an individual‘s schooling was associated with a smaller increase (2.8 percent) in that individual‘s own productivity (Appleton 2000). Similar findings have been reported for the Philippines and India (Rosenzweig 1995).

[2] In addition to actual out-of-treasury expenditures on education, these costs include the administrative costs of public revenue and expenditure management, as well as deadweight costs (i.e., efficiency losses resulting from the side effects of taxes, including tax evasion and reduced work effort).

Effects on aggregate income and growth.

Early attempts to capture the income and growth benefits of education using aggregate observations of the association between average educational attainment and levels of per-capita income and rates of economic growth proved frustrating. Recent refinements in estimation techniques, however, have led to the finding that higher education quality—as measured by student performance on internationally comparable student assessment tests—makes a strong and statistically significant contribution to economic growth, with rates of return ranging from 18 to 30 percent.[3] More recent studies have reported consistent findings on the positive growth effects of education.[4]

External benefits of education investments

Estimates of the growth effects of education based on cross-country analysis yield estimates of the external economic benefits of education of the same order of magnitude as those for private returns to education (see table 1). These findings provide additional evidence in support of further public investment in education.

Table 4. Estimates of average external economic benefits of education investments, by region (%)

Region	*External benefits (Social rate of return – private rate of return)*
Africa	15.7
Latin America	14.8
Asia	14.2
OECD	14.0

Source: McMahon (2007, table 6.2).

The inclusion of growth effects in these studies is an improvement over social return estimates that look only at individual earnings benefits, but the former still understate the actual social benefits of education. A number of studies have found significant benefits of education in terms of non-market development outcomes, as summarized in table 5. Other studies have found similar benefits, as the examples below illustrate:

> [C]hildren of more educated women tend to be better nourished and get sick less often. The effect of a mother's education on her child's health and nutrition is so significant that each extra year of maternal education reduces the rate of mortality for children under the age of 5 by between 5 percent and 10 percent, according to a review of extensive evidence from the developing world.
>
> UNICEF (1999, 19)

> Education, especially for girls, empowers families to break the cycle of poverty for good. Young women with a primary education are twice as likely to stay safe from AIDS, and their earnings will be 10–20 per cent higher for every year of schooling completed. Evidence gathered over 30 years shows that educating

[3] See Krueger and Lindahl (2001); Hanushek and Wößmann (2007); Sala-I-Martin, Doppelhofer, and Miller (2004); and Cohen and Soto (2007).

[4] See, for example, Hanushek and Wößmann (2007); Sala-I-Martin, Doppelhofer, and Miller (2004); and Cohen and Soto (2007).

> women is the single most powerful weapon against malnutrition—even more effective than improving food supply. Without universal primary education, the other Millennium Development Goals—stopping AIDS, halving the number of people living in poverty, ending unnecessary hunger and child death, amongst others—are not going to be achieved.
>
> Global Campaign for Education (2005, 1)

Table 5. Estimated impacts of education: selected non-market benefits

Impact category	*Estimated impact*
Better public health	Positive, magnitude unknown
Population growth	Zero net effect in Africa, negative population growth elsewhere
Democratization	Increase in Freedom House index from 3.7 to 6.6
Human rights	4% improvement in Freedom House index
Political stability	3.1% improvement in International Country Risk Guide
Lower crime rate	2.1% decline in homicide rate, 1.2% increase in property crime, 2% rate of return through lower incarceration costs
Deforestation	0.3% reduction in forest depletion rate
Clean water	13% decline in water pollution
Clean air	14% increase in air pollution (through growth effects)
Poverty	18% reduction in poverty incidence
Inequality	8% reduction in GINI coefficient

Source: Adapted from McMahon (2007, table 6.4).

Although individually significant, ***the various non-market benefits listed in table 5 are difficult to incorporate in rate-of-return estimates because of the lack of a monetary equivalent,*** or *numeraire,* for comparing the magnitude of different types of benefits. Estimates based on cost imputations for various categories of non-market benefits find that these external benefits of education are roughly of the same magnitude as estimated private benefits (Haveman and Wolfe 1984). More recent analyses suggest that the external benefits of education may even be greater than estimated private returns (Acemoglu and Angrist 2000; Rauch 1994).

Other social benefits

The estimates of the external benefits of education described above tend to underestimate actual social benefits because they do not include non-monetary benefits, which are intrinsically difficult to express in monetary terms. Two categories of education benefits that are particularly relevant to public investment decisions are the effects of education on governance and income distribution—key ingredients of social stability. ***Schooling generally has a positively effect on political engagement and voter participation,***[5] ***although not necessarily at very high levels of educational attainment.***[6] More generally,

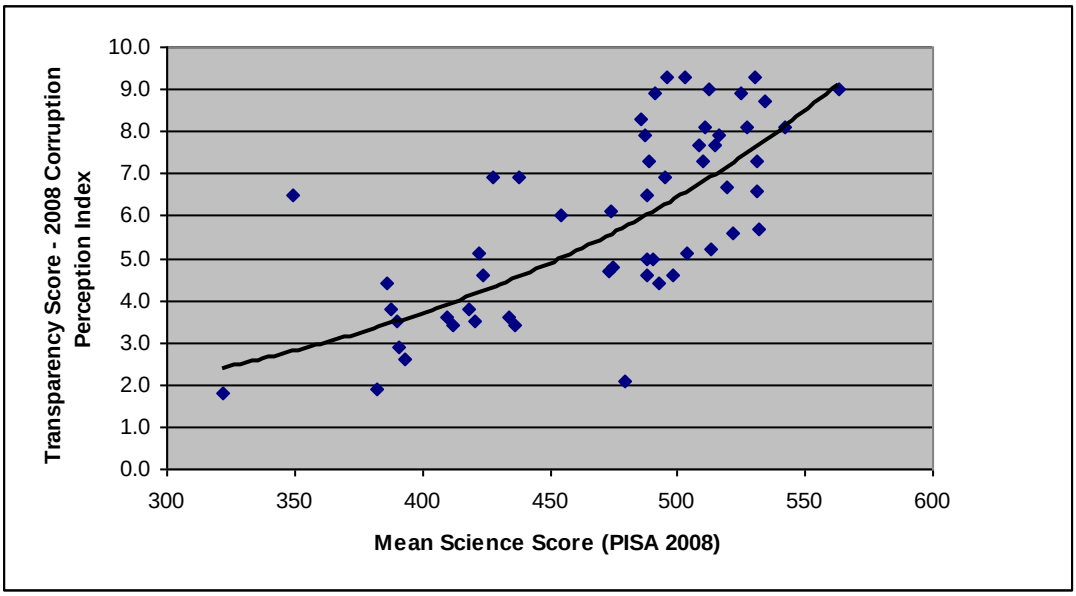
[5] See Dee (2004); Glaeser, Ponzetto, and Shleifer (2006); Milligan, Moretti, and Oreopoulos (2003); Campbell et al. (1976); and Gintis (1971).

[6] Voter participation has declined recently in some OECD countries, despite high educational attainment. See OECD (2007).

education coverage and, especially, quality (i.e., learning achievement) encourage reduced corruption and better governance.

Using Transparency International's *2008 Corruption Perceptions Index*[7] as an indicator of the quality of governance, figure 1 plots the exponential relationship of transparency and learning achievement,[8] as measured by mean science scores for the 57 countries that participated in the OECD's 2006 Programme for International Student Assessment (PISA) for 15-year-old students. The two main outliers from the trend line are Qatar, with a high transparency score (6.5) but the second-lowest mean science score (349), and Russia, with a score only slightly below the OECD mean (479), but the third-lowest transparency score (2.1).

Figure 1. Transparency and learning achievement



Source: Transparency International (2008) and OCED (2007a).

Education interventions can also have important equity benefits. The private benefit of education in raising the income of the poor is captured in private rates of return, but there are also ***social benefits associated with reduced poverty and a less unequal distribution of income***. Tax policy is often used as a deliberate tool of income redistribution in industrialized countries. But since there is less scope for tax policy in countries with a less-developed revenue structure, public expenditure policy is the main instrument available to low-income countries for income redistribution. In principle, the redistributive benefits of alternative public investments can be assessed through the use of "shadow prices" or adjustment weights (see Little and Mirrlees 1969; Squire and van

[7] The *Corruption Perception Index* of Transparency International measures the perceived transparency of government and business on a scale of 1 to 10, with 10 being full transparency (see Transparency International 2008).

[8] Transparency is also positively related to educational attainment, but the relationship is not as significant as that for education quality.

der Tak 1975). In practice, this approach has rarely been applied because setting redistributive objectives for public expenditures is, by nature, a political choice appropriately resolved through the political process rather than the application of technical criteria.

Once public objectives for income redistribution are established, benefit incidence analysis can be used to select alternative investments with different redistribution outcomes. Benefit incidence analysis uses survey information to examine the income characteristics of individuals who benefit from specific education expenditures. A consistent finding of this work is that ***overall public expenditures on education disproportionately benefit higher-income households, while expenditures on primary education disproportionately benefit lower-income households.***

This outcome reflects the fact that unit costs of higher education are much higher than those of primary and secondary education, and that a greater proportion of secondary graduates from upper-income households than lower-income households pursue higher education. This pattern is illustrated in table 6, which shows the benefits of overall public expenditures on education in general and on primary education that accrue to the highest and lowest income quintiles in the population, respectively. ***In every case, expenditures on primary education are more pro-poor than overall education expenditures.*** If society seeks to improve well-being for the poorest households, this is an additional reason for further public support of basic education.

Table 6. Distribution of benefits of education expenditures by income quintiles of beneficiaries (%)?

	All education		*Primary level only*	
Country	*Poorest quintile*	*Richest quintile*	*Poorest quintile*	*Richest quintile*
Armenia (1996)	7	29	27	12
Azerbaijan (2001)	18	22	19	19
Bangladesh (2000)	12	32	22	14
Brazil (NE & SE, 1999)	18	25	26	7
Cambodia (1996/97)	15	29	21	17
Colombia (1992)	23	14	39	4
Costa Rica (2001)	21	20	28	9
Cote d'Ivoire (1995)	13	35	19	14
Ecuador (1998)	12	25	24	11
FYR Macedonia (1996)	9	49	18	22
Ghana (1992)	16	21	22	14
Guinea (1994)	5	44	11	21
Guyana (1993)	15	32		
Indonesia (1989)	15	29	25	13
Jamaica (1998)	22	15	26	12
Kazakhstan (1996)	8	26		
Kenya (1992)	17	21	22	15
Kosovo (2000)	9	40	18	22
Kyrgyz Rep. (1993)	14	27		
Lao FDR (1993)	12	34		
Madagascar (1993/94)	8	41	17	14
Malawi (1995)	16	25	20	16
Mauritania (1995/96)			11	19
Mexico (1996)	19	21	30	10
Morocco (1998/99)	12	24	17	18
Nepal (1996)	11	46		
Nicaragua (1998)	11	35	23	10
Pakistan (1991)	14	29		
Panama (1997)	12	21	34	4
Peru (1994)	15	22	26	16
Romania (1994)	22	17	21	10
South Africa (1994)	14	35	19	28
Tanzania (1993/94)	14	37	19	18
Uganda (1992/93)	13	32	19	18
Vietnam (1998)	18	21	26	13
Yemen (1998)	19	22	21	18

Source: Filmer (2003).

Conclusions on rates of return

As summarized above, the available evidence from a voluminous body of research on rates of return shows that investments in education yield high returns at both the individual and societal level. This is true despite the recent modest overall declines in average private returns that have been observed at the regional level. And although technical questions have been raised about estimation techniques and findings in some studies, most of these concerns have been adequately addressed by the refinements introduced in estimation techniques as research has progressed. ***The basic findings of high private and social rates of return are robust and support the case for further investment in education***.

Basic education is widely seen as a basic human right and a prerequisite for living in modern society.[9] To that extent, rate-of-return evidence may be seen as superfluous to the more fundamental human-rights rationale for further support of basic education. Even so, rate-of-return evidence adds further impetus to the human-rights rationale for expanded support.

Limitations of rate-of-return analysis

Despite the usefulness of rate-of-return analysis, the approach does have limitations that are important to understand (see Jimenez and Patrinos 2008). These are summarized in the bullet points below and discussed at greater length in the following sections:

- ***The findings of rate-of-return analysis are a guide to future investments, not a guarantee of future outcomes.*** The design of education investments crucially affects future development outcomes. Not all education investments will yield high returns, even if prior education investments in a particular setting have been found to do so. Conversely, judiciously designed education investments can yield high returns even if prior investments have not done so.
- ***Most rate-of-return analysis evaluates the returns to investments in terms of expanded school capacity.*** In some cases, however, factors other than school availability are responsible for children not attending school. In these cases, efforts to attract out-of-school children and reduce early dropouts will help ensure that past investments in school expansion yield intended benefits.
- ***Many children attend school but fail to acquire basic reading literacy and other skills that lead to improved productivity, earnings, and growth.*** In these cases, investments that focus on improved learning achievement in both existing and new schools are likely to yield higher returns than investments in new school infrastructure. The growth effects of improved learning achievement were described earlier; improved learning achievement also yields important benefits for individuals in the form of higher lifetime earnings (Hanushek and Wößmann 2007).

[9] The basic right to education is articulated in the Convention on the Rights of the Child (UNICEF 1989) and the Millennium Development Goals for Education (see UN n.d.).

II. Gaps in Basic Education Coverage and Quality

The current global economic and financial crisis threatens to reverse recent progress in education in developing counties. Education programs are likely to suffer as slower growth and reduced FDI lead to cutbacks in budget support for education in poor countries and many low-income families find that education is an unaffordable luxury for their children. Indonesia's experience during the Asian financial crisis of the late 1990s illustrates the risk: falling education budgets shifted education expenses to families. Given shrinking incomes, many poor households withdrew their children from school in order to conserve schooling costs (and, in some cases, to help supplement falling household income). A common pattern was for poor families to withdraw the youngest children from school in order to continue sending their older siblings (Thomas et al. 2004). ***Donor support for basic education in poor countries can help protect vulnerable children from becoming innocent casualties of the current economic crisis and serve as a hedge against future economic shocks.***

Gaps in basic education coverage

Despite impressive gains in education coverage during the past decade, large gaps in basic coverage remain and will require sizeable investments to overcome (see UNESCO 2008). Tables 7 and 8 show total primary school enrollments and estimated out-of-school children by region and gender for the 1998–99 and 2004–05 school years. As the tables document, global primary enrollments increased by 41.5 million between 1999 and 2005, and the number of out-of-school children of primary-school age declined by almost 25 million—a very significant accomplishment.

However, there are still about ***75 million children of primary-school age who are not enrolled*** in school. Almost all of these children (95.4 percent) live in developing countries and ***56.8 percent are girls***. Moreover, among children who are enrolled in school, a substantial number do not actually attend. Based on household survey data, UNICEF estimates that there were 93 million children of primary-school age who were not attending school in the 2005–2006 school year (UNICEF 2007).

Table 7. Change in global primary-school coverage by region, 1999–2005

	1999			*2005*		
	Enrollment (millions)	*Net enrollment ratio*	*Children not in school (millions)*	*Enrollment (millions)*	*Net enrollment ratio*	*Children not in school (millions)*
Sub-Saharan Africa	81.6	0.56	45.0	116.1	0.70	35.1
Arab states	35.4	0.78	8.0	40.1	0.84	5.7
Central Asia	6.9	0.87	0.5	6.0	0.89	0.4
East Asia and Pacific	218.0	0.96	5.1	192.7	0.93	9.6
South and West Asia	157.5	0.76	35.0	192.0	0.86	18.2
Latin America & Caribbean	70.2	0.96	3.5	68.6	0.92	2.6
North America & Western Europe	52.9	0.97	1.4	51.4	0.95	2.0
Central & Eastern Europe	26.1	0.91	2.0	21.8	0.92	1.6
Total	**648.6**		**100.5**	**688.7**		**75.2**

Source: UNESCO Institute for Statistics database.
Note: Figures adjusted for differences in duration of primary schooling.

Table 8. Estimated number of out-of-school children of primary-school age, by region, 1999 and 2005

	1999			*2005*		
Country	*Total (000)*	*% by region*	*% female*	*Total (000)*	*% by region*	*% Female*
World	96,459	100.0	58.7	72,124	100.0	56.8
Developing countries	92,534	95.9	59.1	68,825	95.4	57.3
Developed countries	1,886	2.0	49.0	2,270	3.1	44.7
Countries in transition	2,039	2.1	51.0	1,029	1.4	49.4
Sub-Saharan Africa	42.423	44.0	53.2	32,774	45.4	54.3
Arab States	7.720	8.0	59.4	6,122	8.5	59.7
Central Asia	490	0.5	52.0	381	0.5	51.7
East Asia and the Pacific	6,824	7.1	50.5	9,524	13.2	52.0
East Asia	6,377	6.6	50.5	9,189	12.7	51.9
Pacific	447	0.5	49.9	335	0.5	55.5
South and West Asia	31,434	32.6	69.0	17,092	23.7	66.3
Latin America and the Caribbean	3,595	3.7	54.3	2,433	3.4	49.0
Caribbean	435	0.5	51.5	449	0.6	52.8
Latin America	3,160	3.3	54.7	1,983	2.7	48.1
North America & Western Europe	1,465	1.5	49.1	1,808	2.6	44.6
Central & Eastern Europe	2,508	2.6	56.7	1,901	2.6	53.1

Source: UNESCO (2008, table 2.7).

Sub-Saharan Africa and South and West Asia made the most progress in primary-school coverage between 1999 and 2005, with net enrollment ratios increasing 14 and 10 percent, respectively. ***Sub-Saharan Africa has by far the highest proportion and number of out-of school children: 30 percent of primary school-age children are not enrolled in school***. Despite remarkable progress in enrollment coverage, the number of out-of-school children declined less in Sub-Saharan Africa than in South and West Asia because of its higher rate of population growth.

Table 9. National definitions of basic education

Basic education definitions (number of countries)		*Countries*
Primary education only	(8)	Cape Verde, Ethiopia, Guinea-Bissau, Haiti, Maldives, Mozambique, Nicaragua, Portugal
Primary education plus at least one year of pre-primary education	(17)	Albania, Bhutan, Botswana, Brazil, Burkina Faso, Burundi, Cameroon, Democratic Republic of the Conga, Djibouti, Ecuador, Guinea, Macao (China), Mexico, the Niger, Panama, Tunisia, Zimbabwe
Primary education plus lower secondary and at least one year of upper secondary education	(7)	Argentina, Brazil, Republic of Korea, Oman, Philippines, Slovenia, Saint Lucia
Primary education plus some pre-primary and lower secondary and some upper secondary education	(5)	China, Kenya, Myanmar, Peru, Thailand
Primary and lower secondary education	(76)	Remaining countries which use the term basic education

Source: UNESCO (2008, table 1.5).

Secondary education coverage is also a concern. Most countries define basic education and compulsory education to include the lower secondary education cycle (see tables 9 and 10). Table 11 shows official gross enrollment ratios for lower and upper secondary education by region. Because gross enrollment ratios include overage students, actual coverage rates for children in the corresponding age groups are substantially lower than the figures in table 11 indicate.

Participation in lower-secondary education is particularly low in sub-Saharan Africa, but table 11 indicates that substantial numbers of children in this age group are not enrolled in other regions as well. Including out-of-school children of post-primary ages and those missing from compulsory schooling more than doubles the estimated number of out-of-school children. Table 12 presents an estimate of the total non-enrolled population of basic schooling age by region, based on the definitions of basic education summarized in table 9.

Table 10. Minimum (compulsory) and actual duration of schooling by region, 2007 (years)

Region	*Minimum duration*	*Mean duration*
Arab states	6	9.1
Central and Eastern Europe	8	9.1
Central Asia and Caucasus	8	9.7
East Asia and Pacific	5	9.2
Latin America and Caribbean	6	9.8
North America and Western Europe	9	10.4
South and West Asia	5	7.2
Sub-Saharan Africa	4	7.4

Source: UNESCO Institute for Statistics database, http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx?ReportId=163 (accessed December 2008).

Table 11. Lower and upper secondary education enrollment ratios by region, 1999 and 2005 (%)

	Gross enrollment ratios (%)			
	Lower secondary		*Upper secondary*	
	School year ending in		*School year ending in*	
	1999	*2005*	*1999*	*2005*
World	72	79	47	53
Developing countries	66	75	38	46
Developed countries	102	104	93	99
Countries in transition	92	91	87	89
Sub-Saharan Africa	26	38	19	24
Arab States	73	81	45	55
Central Asia	90	95	77	76
East Asia and the Pacific	60	93	45	55
East Asia	60	93	45	54
Pacific	69	89	139	132
South and West Asia	59	66	34	41
Latin America & the Caribbean	95	100	62	73
Caribbean	67	75	40	43
Latin America	96	101	63	74
North America & Western Europe	103	105	93	99
Central & Eastern Europe	92	91	81	87

Source: UNESCO (2008, table 2.10).

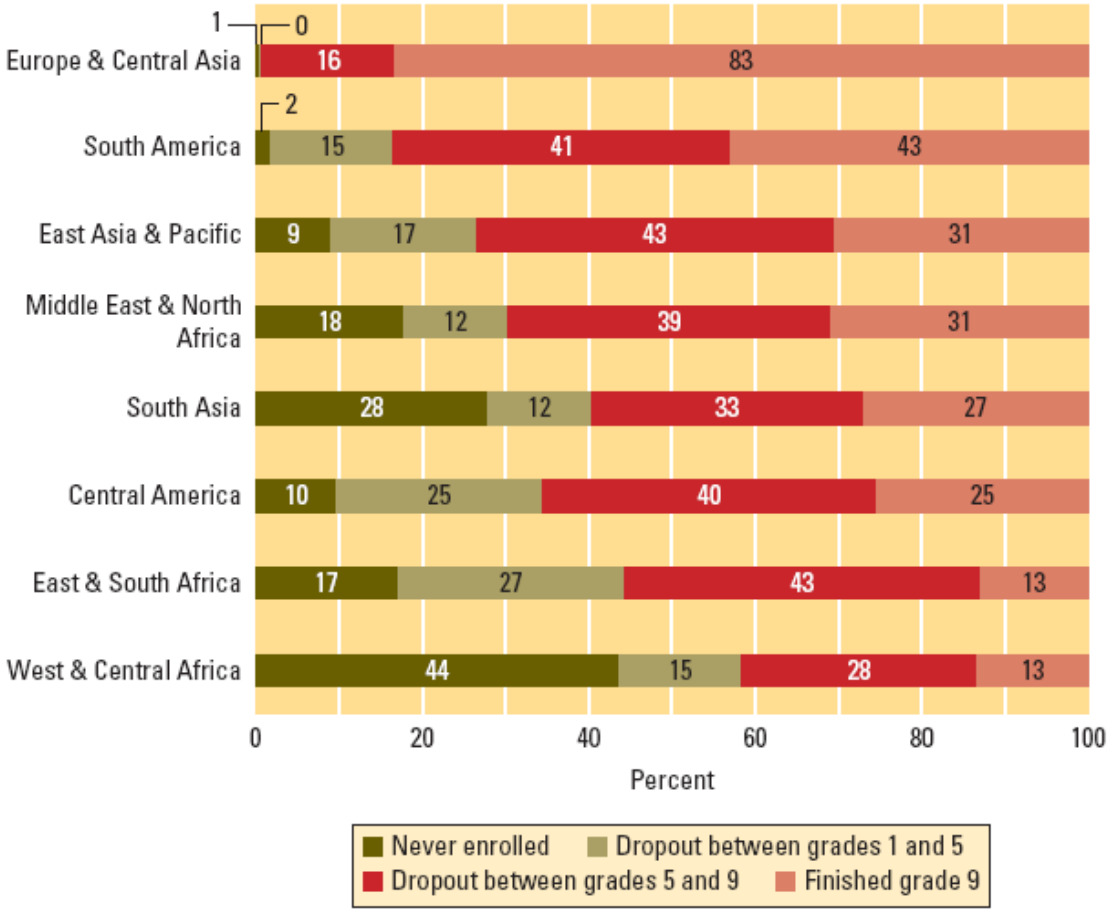
Table 12. Estimated out-of school population of basic schooling age by region, 2005 (millions)

	Children not in school		
	Primary	*Post-primary basic*	*Total basic education*
Sub-Saharan Africa	35.1	41.0	76.1
Arab states	5.7	5.8	11.5
Central Asia	0.4	0.4	0.8
East Asia and Pacific	9.6	21.6	31.2
South and West Asia	18.2	41.3	59.5
Latin America and Caribbean	2.6	6.0	8.6
North America and Western Europe	2.0	0.2	2.2
Central and Eastern Europe	1.6	2.4	4.0
Total	**75.2**	**118.7**	**193.9**

Source: Derived from figures presented in tables 9, 10, and 12 above, based on the assumption that the proportion of overage students in post-primary basic education is the same as in primary education.

Non-attendance of basic education programs takes different forms. As shown in figure 2, most children in West and Central Africa either do not start school at all (44 percent), or drop out before completing primary school (15 percent). Children in East and South Africa are more likely to start school, but those that do are also more likely to drop out before completing the primary cycle. In order to be effective, then, interventions to raise school attendance in basic education need to address these different forms of absence from school and their specific causes.

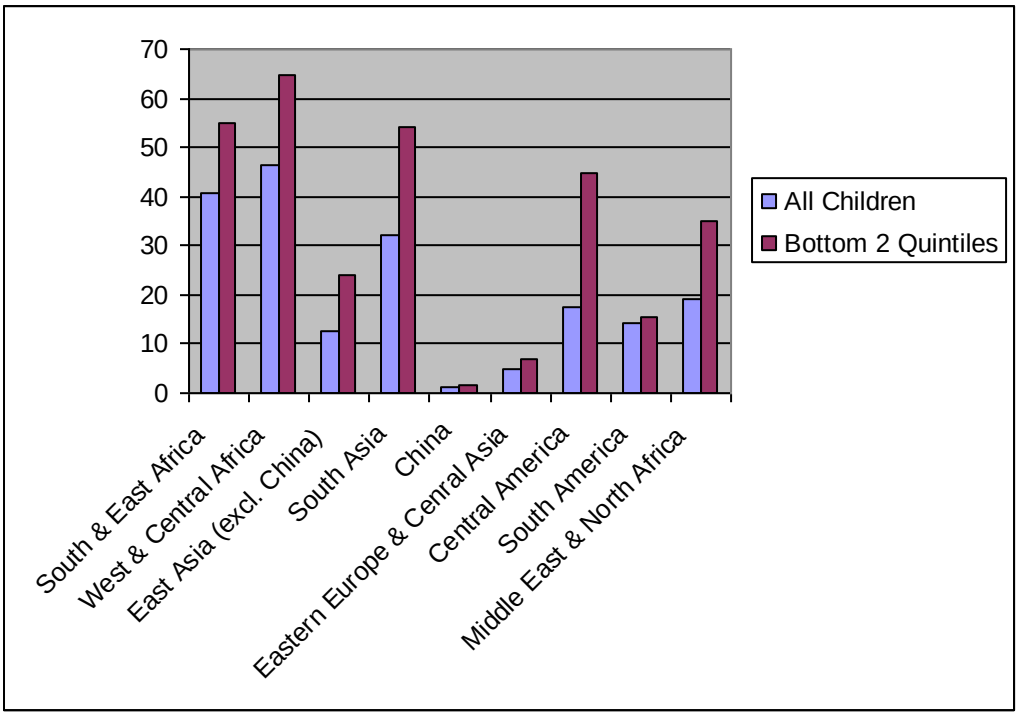
Figure 2. Patterns of school attendance and dropout rates by region (%)



Note: Figures reflect most recent available data for each region.
Source: Hanushek and Wößmann (2007, figure 7), based on data provided in Pritchett (2004a).

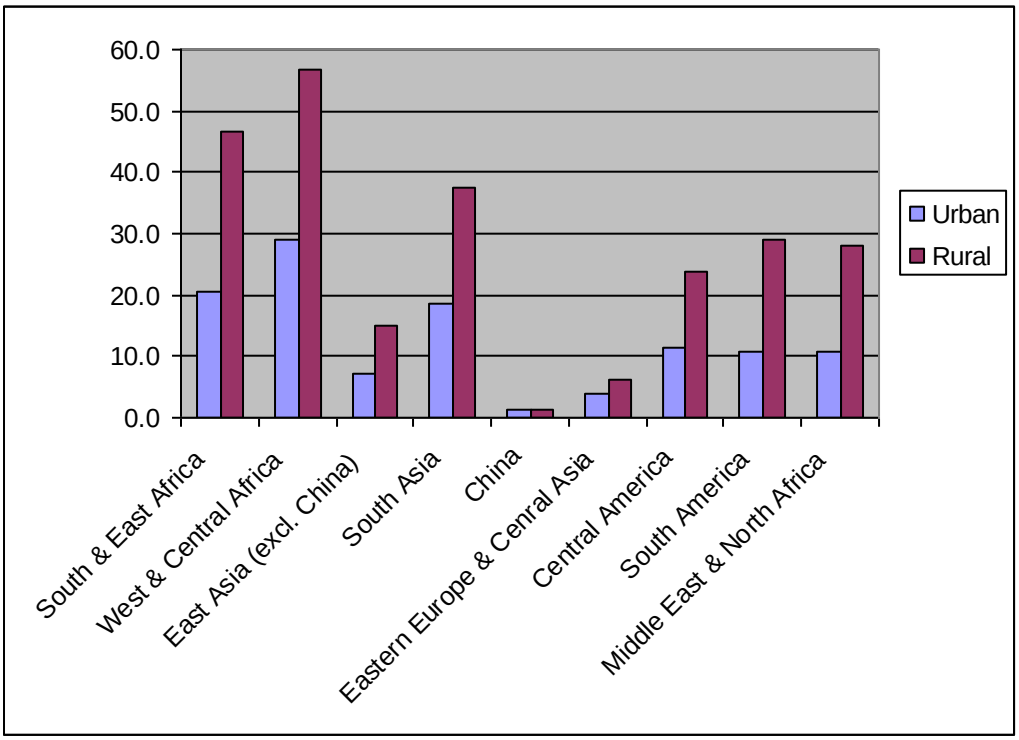
Gaps in school attendance are strongly income related. Data from demographic and health surveys confirm that school participation is lowest among poor and rural populations. Gaps in school participation also differ by region. As shown in figure 3, the percentage of children who do not complete five years of primary schooling is higher among children from the lowest two income deciles than it is among all children. This is true for all regions, with the greatest differences in completion rates in Central America, South Asia, and the Middle East and North Africa. ***Gaps in primary school completion are even greater between rural and urban areas*** (see figure 4). In most regions, ***less than half the number of children in rural areas complete five years of primary schooling than do children in urban areas.*** Primary school completion rates are also lower for girls in all regions except Central and South America (see figure 5).

Figure 3. Percentage of 15–19-year-olds not completing five years of primary schooling, by household income and region



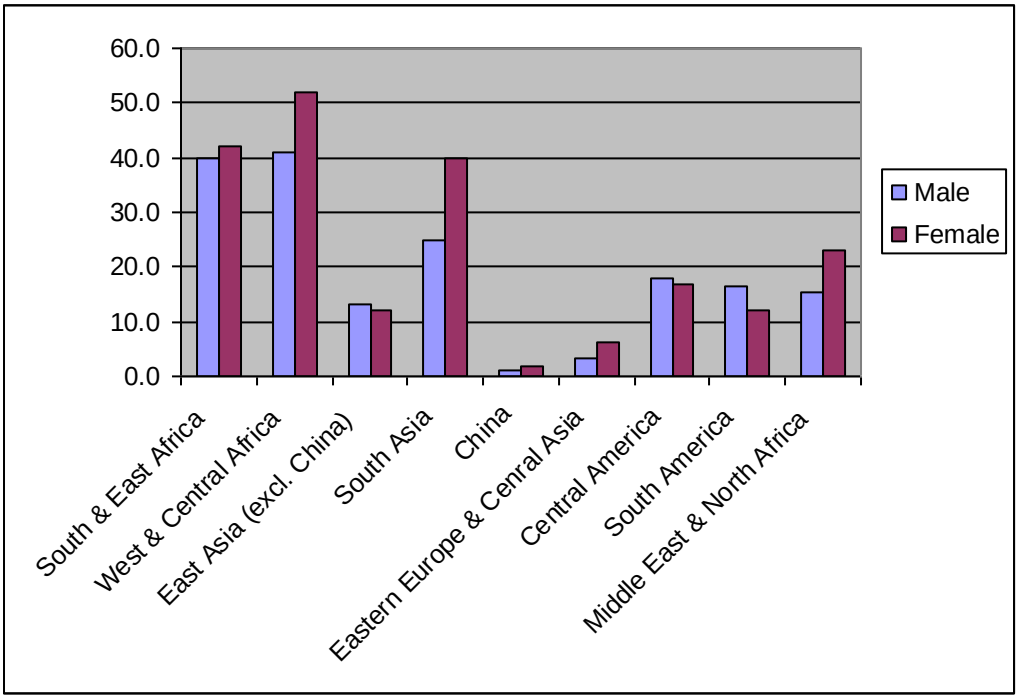
Note: Percentages reflect most recent available data for each region.
Source: Orazem, Glewwe, and Patrinos (2007, table 2).

Figure 4. Percentage of 15–19–year-olds not completing five years of primary schooling, by urban/rural location and region



Note: Percentages reflect most recent available data for each region.
Source: Orazem, Glewwe, and Patrinos (2007, table 2).

Figure 5. Percentage of 15–19-year-olds not completing five years of primary schooling, by gender and region



Note: Percentages reflect most recent available data for each region.
Source: Orazem, Glewwe and Patrinos (2007, table 2).

Children from socially excluded groups have particularly low participation rates in basic education. A recent review of studies that researched girls' absences from school found that ***nearly three-fourths of 7-to-12-year-old girls who are not in school belong to socially excluded groups***, such as the Roma in Eastern Europe, the hill tribes in Laos, indigenous peoples in Latin America, and the lowest caste groups in India and Nepal (Lewis and Lockheed 2006).

Table 13. Estimated number of girls not attending school, total and excluded groups, by region (millions)

Region	*Girls not attending school*	*Girls from excluded groups not attending school*	*Main excluded groups*
Sub-Saharan Africa	23.8	17.9	Members of non-dominant tribes
South Asia	23.6	15.8	Rural people in Afghanistan, scheduled castes and tribes in India, lower castes in Nepal, rural tribes in Pakistan
Middle East and North Africa	5.1	1.7	Berbers, rural populations
East Asia and Pacific	4.9	4.4	Hill tribes, Muslim minorities, ethnic minorities
Eastern Europe and former Soviet Union	1.6	1.4	Roma, rural populations in Turkey
Latin America and Carribbean	1.5	1.5	Indigenous and Afro-Latino populations
Total	**60.4**	**42.6**	

Source: Lewis and Lockheed (2006, table 1.2).

Gaps in basic education quality: Learning achievement

Learning achievement has a substantial and consistent positive effect on the earnings of individuals, as well as on macroeconomic growth. This finding is most extensively documented by studies in the United States; studies carried out in other countries (including developing countries) report similar findings.[10] School attendance may be a prerequisite for learning and its economic benefits, but it does not guarantee these outcomes. A recent review of global research on the impacts of differential education quality concluded the following:

> Cognitive skills are related, among other things, to both the quantity and quality of schooling. But schooling that does not improve cognitive skills, measured here by comparable international tests of mathematics, science, and reading, has limited impact on aggregate economic outcomes and on economic development…. International comparisons incorporating expanded data on cognitive skills reveal much larger skill deficits in developing countries than generally derived from just school enrollment and attainment. The magnitude of change needed makes clear that closing the economic gap with developed countries will require major structural changes in schooling institutions.
>
> Hanushek and Wößmann (2008, 607–608)

[10] A comprehensive review of research findings on the effects of learning achievement on income is provided in Hanushek (2003). The literature on the effects of learning achievement on economic growth are reviewed in Hanushek and Wößmann (2007 and 2008) and Hanushek and Kimko (2000).

The gaps between rich countries and poor countries in terms of learning achievement are even greater than the gaps in school coverage. One important implication is that the coverage gaps between rich and poor countries summarized above understate the actual differences in benefits that education provides to individuals and society. Poor countries are even further behind rich countries in reaping the benefits of education than enrollment differences suggest.

International student assessment is the preferred instrument for documenting cross-country differences in student learning achievement. The most inclusive source of internationally comparable data on what students learn is the Programme for International Student Assessment (PISA) of the OECD. This assessment was carried out most recently in 2006 for a sample of 15-year-olds in 30 OECD countries and 27 other countries. The 2006 PISA survey focused on applied science competencies.[11]

As shown in table 14, there were considerable differences in learning achievement by region, with ***the lowest mean science scores in the Middle East and North Africa, followed closely by Latin America and Central and Eastern Europe (CEE) and the former Soviet Union (FSU)—all of which were far below the 30 countries of the OECD.*** The relatively high average for the five non-OECD Asian countries in table 14 is far from representative of the overall situation in Asian education, as it comprises three small participants with high achievement (Hong Kong China, Chinese Taipei, and Macao China) and two larger participants with low achievement (Thailand and Indonesia). No sub-Saharan African country participated.

Table 14. Mean student performance in science by region, 2006 PISA

Region (number of countries)	*Mean science score*
OECD (30)	500
Non-OECD:	
Asia (5)	480
CEE & FSU (12)	416
Latin America (5)	407
Middle East & North Africa (4)	403

Note: Number of countries refers to countries that participated in PISA 2006.
Source: OECD (2007a, figure 2.11c).

These differences in mean scores represent profound differences in student mastery of the same subject matter (selected for relevance to curricula of all participating countries). The average score of participating Middle East/North African and Latin American countries corresponds to competency level 1 in the PISA hierarchy. At this level, as the PISA manual indicates, "[S]tudents have such a limited scientific knowledge that it can only be applied to a few, familiar situations. They can present scientific explanations that are obvious and that follow explicitly from given evidence" (OECD 2004, 43).

[11] The 2003 PISA assessment focused on mathematics performance (OECD 2004).

The average scores for participating countries from Asia and Central and Eastern Europe and the former Soviet Union correspond to PISA competency level 2, which is somewhat better than level 1, but still falls below the proficiency attained by OECD countries. At this level, students have a better grasp of scientific knowledge as it may explain observed phenomena, but lack the deeper knowledge needed to interpret and apply scientific concepts from different disciplines. Average student scores for OECD countries correspond to higher levels of mastery of scientific knowledge, which confer clear advantages in terms of technology applications and higher learning.

OECD student assessment findings are sobering in their implications for the future economic competitiveness of developing countries. Although relatively few developing countries participated in the PISA survey, the countries that did participate are among the most advanced countries in their respective regions. Other developing countries would presumably perform no better, and in most cases would likely not perform as well. Findings from other international student assessment surveys are consistent with the pattern of learning achievement differences reported in the PISA surveys.[12] The 2006 PIRLS grade 4 reading literacy assessment, for example, found that the reading proficiency of more than two-thirds of fourth-grade students in South Africa, Morocco, Kuwait, and Qatar did not even attain the lowest of the four proficiency levels in the survey (Mullis et al. 2007). Similarly, the TIMSS 2003 international assessment of 8th-grade mathematics proficiency found that 20 to 90 percent of students from participating low- and middle-income countries did not reach the lowest performance benchmark (Mullis, Martin, and Foy 2005).

Another disturbing finding from the PISA surveys is that the countries with the lowest mean scores also tend to have the greatest between-school variance in scores (OECD 2007a)—implying inequality across schools and neighborhoods such that students from the most poorly endowed schools consistently perform well below the country average. Many of the countries with the highest mean scores—notably, the Scandinavian countries—achieved a high mean score with very little between-school variation, implying a high degree of equality in learning achievement regardless of differences of neighborhood, region, and urban/rural location.

Country-specific information from developing countries which have not participated in international student assessments provides further evidence of deficient education quality and low levels of learning achievement. The findings of national-level assessments include:

- *Haiti:* A 2005 assessment of grade 5 students in mathematics, Creole, and French found that 56 percent of students did not perform to expectation, with especially weak performance in mathematics and French (Desse 2005).
- *Morocco:* A 2006 assessment of grade 6 students found that very high percentages of students failed to meet minimum standards: 82 percent of

[12] Other assessments include the Trends in International Mathematics and Science Study (TIMSS) and Progress in International Reading Literacy Survey (PIRLS). See the TIMSS and PIRLS International Study Center Web site, Boston College, Chestnut Hill, Massachusetts, http://timss.bc.edu (accessed December 2008).

students in French, 64 percent in Arabic, 57 percent in mathematics, and 35 percent in science (Hddigui 2007).

- *Uganda:* A 2006 assessment of students in grades 3 and 6 found that 57 percent of grade 3 students and 69 percent of grade 6 students failed to meet minimum performance standards in mathematics (Uganda National Examinations Board 2006).

Other national assessments have documented similarly high proportions of students who did not meet national learning standards. A survey of students in 22 states of India (Watkins 2001) reported an average grade 4 achievement level of 32 percent in mathematics and science, compared with a pass mark of 35 percent. In Zambia, only 25 percent of sixth-grade students reached minimum reading standards and in Tanzania, a survey of 45 schools reported mean grade 4 mathematics performance below the minimum pass level.

Even where evidence of quality deficiencies is not available, information from other sources indicates deficiencies in the teaching and learning environment of many developing countries. These deficiencies inevitably translate into low learning achievement by students. A recent review of schooling conditions in developing countries describes the situation in the following terms:

> Grade repetition and leaving school at an early age are common, teachers are often absent from classrooms, and many children learn much less than the learning objectives set in the official curriculum…. Many schools lack the most basic equipment and school supplies—textbooks, blackboards, desks, benches, and sometimes even classrooms (in which case classes meet outside and are cancelled when it rains). In rural areas of Vietnam's Northern Uplands region in 1998, 39 percent of primary school classrooms did not have blackboards. In India in 1987, more than 8 percent of schools did not have a building in which to meet.
>
> Teacher quality and availability is also a common problem. In rural areas of Northeast Brazil in the early 1980s, 60 percent of primary school teachers had not even completed primary education. Shortages of teachers and school buildings can result in double shifts (which shorten the school day for individual pupils) or very large class sizes. In Vietnam, more than 90 percent of children in rural areas attend schools with two or more shifts, resulting in an average class time of only 3 hours and 10 minutes per day. In districts with low literacy rates in the Indian State of Tamil Nadu, the average class size in primary school was 78 students.
>
> Teachers often have weak incentives and little supervision, and their absenteeism runs high…. When enumerators made surprise visits to primary schools in six developing countries, on average about 19 percent of teachers were absent. Beyond absence, many "present" teachers were found to not be actually teaching; for example, in India one-quarter of government primary school teachers were absent from school, but only about half of the teachers were actually teaching in their classrooms when enumerators arrived at the schools.
>
> Glewwe and Kremer (2006, 2)

Conclusion and Recommendations: Improving the Effectiveness of Education Investments

General principles

In order to improve development outcomes, ***education investments need to address the specific constraints responsible for incomplete coverage and inadequate learning achievement.*** Planning of education investments should start with a focus on improved learning and an understanding of the constraints (discussed below) that are currently preventing effective learning.

Regardless of the strategies used to achieve past improvements in basic education coverage, ***different strategies are often needed to reach the last 10 or 15 percent of out-of-school children.*** The school attendance and school performance of this group is often affected by income and quality constraints. Even when school capacity is adequate, interventions are often needed in order to improve education quality in schools where student learning falls short of national standards. In addition to inadequate school facilities, other key constraints that contribute to unsatisfactory learning achievement are:

- poverty-related issues that affect the affordability of basic education and children‘s readiness for learning once they start school;
- lack of textbooks, educational materials, and teacher support for effective teaching and learning; and
- lack of clear accountability of teachers and schools, as well as incentives for them to focus on student learning outcomes.

Effective strategies to address these constraints often involve a combination of focused investment, financing for essential recurrent inputs, and supportive policy change. ***Investment is most effective when it is embedded in a consistent strategy that includes these complementary actions and focuses on improved learning outcomes.***

Because resources and implementation capacity are limited, education strategies need to be selective. This selectivity requires judicious use of information about the prospective cost and effectiveness of alternative interventions. Some interventions may bring about a given improvement in basic education coverage and/or quality at a lower cost than others. Some may lead to greater benefits of other kinds, such as improved distributional effects. Limiting interventions to least-cost options will, moreover, maximize the impact of education investments. ***In order to maximize the benefit of education expenditures, investment strategies need to:***

- be clear about their objectives and how these objectives are related to expected development outcomes;
- identify the constraints that are preventing attainment of those objectives; and
- implement cost-effective measures found to be effective in overcoming these constraints.

Global experience with alternative approaches to basic education provides two valuable lessons for making education investments more effective: First, it can help focus investments on the activities that are likely to produce the highest payoff in terms of improved coverage and better learning achievement in basic education. Second, global experience can suggest changes in the policy and incentive framework that would improve the educational outcomes of such investments.

It is important to target education interventions to low-performing regions, schools, and individuals. As described above, these tend to be low-income households and regions, rural areas, and schools with a history of substandard performance. Focusing interventions on such at-risk subjects will increase the development impact of a given level of expenditure. For example, selective grants to offset school-related costs for children from very poor households may be more effective in improving attendance than across-the-board fee reductions incurring the same budget cost, as recent experience with preschool fee reduction in Egypt suggests.[13]

The role of school construction: Is school availability the constraint?

In many of the poorest countries, access to basic education is constrained by inadequate classroom capacity, implying a major need to build and equip new classrooms. This situation is true in much of sub-Saharan Africa and other regions where the school network does not cover all parts of the country. In such cases, school construction programs can bring about major improvements in education coverage, such as Indonesia's *Sekolah Dasar INPRES* presidential priority program for primary school construction in the 1970s (Duflo 2000) and the recent national school construction program in Turkey (which accompanied the extension of basic education from five to eight years in 1997[14]). Investment in additional school capacity is also indicated when schools are available but not in sufficient quantity to serve the school-age population, leading to overcrowding and impaired teaching effectiveness.

In situations where investments in school infrastructure are justified, they need to be accompanied by adequate and consistent budget provision for teachers, teaching materials, and other key educational inputs. Coordination of recurrent and investment

[13] The Government of Egypt recently reduced preschool fees for all students in public preschools in order to make preschool more accessible to children from poor households. But despite this measure, costs of school-related necessities such as books and school uniforms remain a deterrent to preschool attendance for very poor families (Annex 9, "Economic and Social Analysis," in "Project Appraisal Document on a Proposed Loan in the Amount of US$20.0 Million to The Arab Republic of Egypt for An Early Childhood Education Enhancement Project," World Bank Report No. 31182-EG, January 11, 2005, World Bank, Washington, DC).

[14] The policy was legally adopted in 1997 and progressively implemented over the next four years. ("Project Appraisal Document on a Proposed Adaptable Program Loan in the Amount of US$300 Million Equivalent to the Republic of Turkey for a Basic Education Project in Support of the First Phase of the Basic Education Program," World Bank Report No. 17877-TU, May 13, 1998, World Bank, Washington, DC.)

budgets to ensure these complementary inputs is often discouraged by separate, non-intersecting budget processes for the two types of budgets. Comprehensive approaches to education investment can therefore help ensure that essential recurrent budget support is available to permit schools to function effectively. ***Freeing more resources for basic education often involves a strategic decision to reallocate budgets from higher to basic education,*** since higher education consumes a disproportionate share of education expenditures in low-income countries.[15]

Building more schools is not always the solution for incomplete basic education coverage. Statistical investigations have generally found that where schools are already available, closer proximity of schools tends to have only a small effect on improved school attendance (Filmer 2007; Pritchett 2004b). In such cases, other constraints are usually responsible for children not attending school. A 2004 survey of households in East Asia and the Pacific Region found that only 4 percent of households with out-of-school children reported that their children were not attending school because no school was available (UNICEF 2003). Rather, most of these children were not attending school because of income-related constraints. Responses from demographic and health surveys in Sub-Saharan Africa, Central Asia and Europe, and South and East Asia indicate that lack of schools plays an even smaller role in explaining non-attendance (see table 15).

Table 15. Reasons for not attending school, by region and urban/rural location (%)

	All world regions		*Sub-Saharan Africa*		*North Africa & Middle East*		*Central Asia & Europe*		*South & East Asia*		*Latin America & Caribbean*	
	Urban	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*
Work outside the home	7.4	4.2	3.3	1.8	0.7	0.7	9.3	7.8	8.7	4.4	18.3	10.0
Housework	7.3	11.5	5.3	7.9	5.6	9.9	6.3	9.3	107	19.7	11.7	17.9
Inadequate school supply	1.9	4.9	1.8	3.2	2.0	6.2	1.3	3.0	1.7	2.7	2.6	10.8
Poverty	18.2	18.1	24.1	23.9	4.6	3.4	1.3	0.8	24.2	26.3	11.9	11.3
Lack of interest	47.3	44.0	45.2	42.7	76.6	69.4	65.0	58.2	49.3	41.7	34.0	33.5
Health reasons	6.3	5.0	7.9	7.6	1.2	0.5	0.7	0.4	1.5	0.9	9.4	4.2
Other	11.5	12.3	12.4	12.9	9.3	9.9	16.0	20.5	4.0	4.3	12.1	12.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Percentages reflect most recent available data for each region.
Source: Orazem, Glewwe, and Patrinos (2007, table 3). Estimated from demographic and health survey findings.

Even where available evidence confirms the need for expanded school capacity, infrastructure investments need to be designed with care to ensure that the investments will have the intended outcomes. For example, ***the provision of water and sanitation facilities in schools, as well as perimeter walls to ensure security and privacy, can help raise school attendance—particularly by girls*** (see DFID 2008; NGO Forum 2007). In some cases, investments in new schools may also need to be accompanied by salary incentives to attract teachers to serve in those schools.

[15] ~~"~~On average, governments in low-income countries spend 34 times more on a student in tertiary education than they spend on a student in primary education and 14 times more than on a student in secondary education. The analogous figures for high-income countries are 1.8 and 1.4" (Glewwe and Kremer 2006, 9).

The location of schools can also have important implications for attendance. When Turkey extended the duration of compulsory schooling from 5 years to 8 years in 1997, it had a well-developed network of 5-year primary schools throughout the country that included essentially every village in the country, but only limited middle-school capacity for grades 5 through 8. Turkey accordingly built a new network of centralized schools to accommodate the expansion of enrollments in these grades, as well as adopting a national busing program to transport students. In the process, a number of 5-year village schools were closed and replaced by centralized schools in nearby towns. The busing program worked well in most parts of the country, but ***rural parents in some provinces were unwilling to have their daughters bused to schools outside the village***. Overall, the new policy led to sharply increased enrollments in grades 6 through 8,[16] but girls' enrollments in some rural areas declined.

A lesson from this experience is that investment strategies for new school construction need to be tailored to the constraints of each setting. In this case, a different approach to communities with cultural sensitivities regarding *in situ* education—for example, by busing teachers to villages rather than students to schools—might have avoided the decline in girls' enrollments. ***Tailoring interventions to locally binding constraints is more likely to involve new approaches to education delivery rather than new school construction.*** For example, a pilot program in Burkina Faso that offered the first three grades of school in existing facilities of village satellite schools in the mother tongue led to a large improvement in attendance and learning achievement (UNICEF 2003).[17] Similarly, a program to support multigrade teachers in Colombia (the *Escuela Nueva* program) achieved significant improvements in attendance and learning achievement in the early primary grades (McEwan 1998; Psacharapoulos, Rojas, and Velez 1993).

In some cases, infrastructure investments can also lead to improved learning achievement by reducing classroom overcrowding. Investments to expand the capacity of classrooms and other teaching spaces are likely to improve learning outcomes only in situations of extreme overcrowding (Hanushek 2003), where expanded classroom capacity leads to a reduction in the number of multiple-shift schools and, consequently, an expansion of instructional time and student time on task (Abadzi 2006; Stallings 1976).

Making education more affordable

Private costs of school participation

Participation in basic education entails significant costs for students and households. ***Out-of-pocket costs of school participation usually include the cost of textbooks and other educational materials, and often includes expenditures for school uniforms, school transport, school meals, and various other charges and fees.*** Higher education claims a

[16] Two years after the program went into effect, girls' enrollments in grade 6 increased by 160 percent (World Bank 2000) .

[17] A brief description of this program can be in Annex A of the UNICEF report (UNICEF 2003), available online at the UNICEF Web site, http://www.unicef.org/sowc04/files/AnnexA.pdf (accessed December 2008).

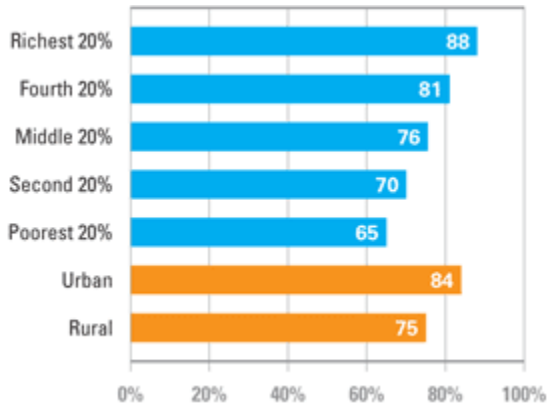
much higher share of public expenditures on education in low-income countries than in middle- and high-income countries, with the result that households bear a larger share of expenditures for basic education (Glewwe and Kremer 2006).

A recent survey of 79 developing countries found that school attendance in basic education almost always entails mandatory payments of various kinds (Kattan and Burnett 2004). Only two countries in the survey (Algeria and Uruguay) did not impose fees of any kind. Most countries charged several kinds of fees, including formal tuition fees (31 countries), textbook fees (37 countries), mandatory school uniforms (40 countries). Charges for PTA or community contributions were the most prevalent type of fee. ***Not surprisingly, school fees account for the largest share of expenditures in poor households*** (Bray 1996) ***and thus have the greatest effect on limiting school attendance for children from poor households and girls*** (Gertler and Glewwe 1989; King and Mason 2001).

In addition to out-of-pocket costs, school participation often entails opportunity costs in the form of foregone earnings or foregone contributions to household production. Opportunity costs are less often an element of school costs in basic education than at higher levels of education, but they are an important element of school costs in low-income countries where child labor is prevalent. The Statistical Information and Monitoring Programme on Child Labour of the International Labour Organization (ILO) estimates that there are currently 191 million children aged 5–14 years who are engaged in economic activity (Hagemann et al. 2000). For these children school participation often means a loss of income, which may seriously deter their attendance.

In a UNICEF survey of households in several East Asia and Pacific countries, 81 percent of households with out-of-school children reported that school costs were responsible for their not being in school (UNICEF 2003). Among children from these households, 43 percent could not afford the costs of schooling; 22 percent had started school but dropped out in order to work; and another 22 percent cited the need to help with work at home. Findings from demographic and health survey responses show somewhat smaller but still significant proportions of out-of-school children due to income-related reasons (see table 15 above). Figure 6 below shows average primary-school attendance rates for developing countries by household income quintile (UNICEF 2007). Average school attendance among the poorest income quintile is more than 20 percentage points lower than for the richest income quintile. The deterrent effect of school-related costs on participation is also apparent in regional data on school attendance, as shown earlier in figure 3.

Figure 6. Primary-school attendance rates in developing countries by household income quintile, 2000–2006 (%)



Source: UNICEF (2007).

The number of children of primary-school age who are not in school due to income-related or demand-side constraints has been conservatively estimated at over 14 million worldwide (Orazem, Glewwe, and Patrinos 2007).[18] A recent global review of programs to address the income constraint by lowering the cost of school attendance for poor households concludes that these interventions can be a cost-effective means of raising primary school enrollments:

> Although some programs had higher costs, $250 would pay for all but the most expensive of the interventions…. That means that for $3.6 billion, we could significantly raise the schooling attainment of these 14.4 million children. If the mechanism involves transfers that improve the child's health and nutrition, we could also improve the child's cognitive capabilities and school performance. Any external benefits from individual schooling just add to the plus side of the ledger. These collateral benefits come at no added cost, raising the potential value of the intervention.
>
> Orazem, Glewwe, and Patrinos (2007, 40)

Interventions to reduce the cost of school participation

Interventions that have proven effective in raising enrollments—most of which involved donor financing and donor participation in design—include:

- ***Suspension of school fees*** in Kenya, Tanzania, Malawi, and Uganda led to large and immediate increases in primary-school enrollments (Glewwe and Kremer 2006; Watkins 2001).
- ***Conditional cash transfers to poor parents*** to keep their children in school have proven effective in raising school attendance in Brazil, Mexico, Ecuador,

[18] This estimate is conservative because it is limited to children who start school but drop out before completing grade 5; it thus ignores children who are deterred from ever starting school by the cost of attendance.

Bangladesh, Honduras, Nicaragua, Chile, and Colombia (Lewis and Lockheed 2006; Rawlings and Rubio 2005; Schultz 2004).

- ***Scholarships for girls*** in Bangladesh led to a doubling of girls' enrollments in some areas and a reduction in dropout rates from 15 percent to 4 percent (Raynor and Wesson 2006).
- ***Provision of free school uniforms*** to students in rural primary schools in Kenya led to a 38-percent reduction in dropouts and attracted many students to transfer from non-program schools to schools offering free uniforms (Evans, Kremer, and Ngatia 2008).
- ***Provision of free school meals*** in over 4,000 schools in 11 countries in Sub-Saharan Africa and Latin America increased average school attendance by more than 10 percent (World Food Programme 2002).

Conditional cash transfers—provided to poor families on the condition that they send their children to school—are growing in popularity as an instrument of immediate poverty alleviation. Such transfers build human capital and help equip low-income individuals to free themselves from poverty in the future. Most conditional cash transfers in education have been implemented in Latin America and middle-income countries. Program monitoring has confirmed their positive impacts on enrollment in most countries, as well as reduced child labor in others (Rawlings and Rubio 2003).

However, conditional cash transfers are not a panacea. They tend to be demanding in terms of administrative requirements, raise questions of sustainability, and can be inefficient—providing cash transfers to families who would have sent their children to school in the absence of the transfer—unless effectively targeted (Reimers, da Silva, and Trevino 2006). But the experience of programs such as *Progresa* in Mexico shows that careful targeting of beneficiaries can minimize efficiency losses, yielding major equity benefits at reasonable cost (de Janvry and Sadoulet 2006).

Improving learning achievement

As described earlier, the quality of education in terms of learning achievement plays a key role in determining the actual benefits of education for individuals and society. ***The quality of basic education can also affect attendance***. In a beneficiary assessment carried out for a rural education pilot project in Eastern Turkey (Karasar 1992), for example, many rural parents reported that they were reluctant to keep their children in school beyond the initial two or three grades of primary school because the low quality of village schools meant that their children would not have a good chance of meeting the entry requirements for secondary education, even if they completed school.

Similar findings have been reported in Ghana (Glewwe and Jacoby 1994) and Egypt, where longitudinal analysis of primary-school students found that students were more likely to complete primary schooling in higher-quality schools (defined as schools that are more effective in raising learning achievement) than lower-quality schools (Hanushek, Lavy, and Hitomi 2008). An analysis of measures used to improve learning achievement

in rural schools in Northeast Brazil found that these efforts had powerful effects on improved enrollments as well:

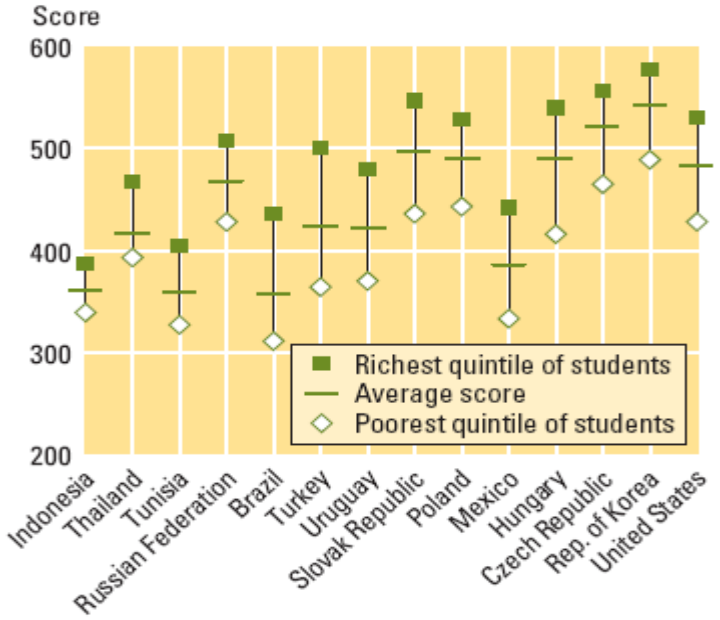
> A wide range of investments to improve educational quality can actually be thought of as making money. In other words, the savings from improved flow efficiency are often larger than the original costs of providing improved inputs in the schooling process…The normally postulated trade-off between quality and quantity of schooling appears to be quite the opposite in circumstances of severe educational deprivation. Instead, there is a positive interaction wherein enhanced quality engenders increased quantity.
>
> Harbison and Hanushek (1992, 135)

Another sense in which the quality of education affects coverage involves the efficiency of student progression. ***Where attendance is constrained by lack of school capacity, improvements in education quality can lead to reduced repetition rates and thus liberate school places for other students.*** UNICEF reports that one in six children of secondary-school age attends primary school because they started school late or had to repeat grades (UNICEF 2007). The places occupied by these over-age children could accommodate children of primary-school age who are currently not attending school. This situation illustrates another area where investments need not choose between improved access and improved quality but can promote both objectives simultaneously.

Who are the low-performing students?

As described above, children from the poorest households and excluded groups are at greatest risk of not attending school. Once there, these children also face a high risk of sub-standard performance. ***Within countries, there is a steep gradient of learning achievement by household income,*** as demonstrated by the large within-country difference in average 2003 PISA mathematics scores by household income level (see figure 7). For example, Turkey‘s mean performance in the 2003 survey put it above six other countries and comfortably (67 points) above the lowest-performing country (Brazil), but the average performance of students from the lowest income quintile of households in Turkey was virtually the same as the mean score of Brazil.

Figure 7. Student performance in mathematics by income quintile (PISA 2003)



Source: World Bank (2006, figure 3.2).

There are many reasons for the observed negative association between income and learning achievement. As rate-of-return analysis suggests, parents in low-income households tend to be less educated than parents in higher-income households and thus less capable of guiding and supporting their children's learning at home. In addition, the ***teachers of these students tend to be less qualified; their schools less well equipped, particularly in countries with decentralized systems of educational financing; and their home and community environment less likely to provide resources and stimuli to support effective learning.*** In addition, children from poor households often have to divide their time between school and work, leaving less time for homework and sometimes causing them to miss school during periods of peak labor demand, such as planting and harvest times (Glewwe and Michael Kremer 2006; Lewis and Lockheed 2006).

Using education resources to improve education quality

In view of the consistent negative association between household income and learning achievement, one might expect that providing more money for schools would lead to better learning achievement. But international comparisons of spending levels and learning outcomes confirm that ***the simple act of spending more money on education throughout an education system does not assure higher learning outcomes*** (Hanushek 2003; Wößmann 2000). The United States, which has one of the highest levels of per-student expenditure but middling performance on international student assessments, is a good example of this principle. Qatar is an even more graphic case: it has per-capita education expenditures more than three times as high as Estonia's, but the second-lowest

2006 PISA mean science score (349, versus Estonia's mean PISA science score of 531—the fifth highest of all participating countries[19]).

These examples do not mean that more money is irrelevant to education quality and learning achievement. What it does mean is that ***money must be spent intelligently if it is to raise learning achievement: it must address the binding constraints to higher learning achievement and do so in a cost-effective manner.*** It also suggests—although it does not confirm—that there may be an expenditure threshold beyond which additional expenditures, even intelligent expenditures, will not lead to further improvements in learning.

Although more resources for education do not consistently lead to improved learning achievement across an entire education system, more resources can lead to improved learning achievement for individual schools, especially schools that have been relatively deprived of resources. The FUNDEF national finance equalization program in Brazil provides a good example of this type of intervention. As in many countries, finance and management of primary schools are decentralized in Brazil, leading to sizeable differences in school resources across richer and poorer jurisdictions. To address these inequalities, FUNDEF pools state and municipal revenues for primary education and redistributes them on a uniform, per-student basis. It also provides federal top-up grants for the poorest states. This redistribution program led to a marked improvement in teacher qualifications and teaching conditions in poor districts, with improved attendance and reduced dropout rates (Gordon and Vegas 2005).

Interventions to improve the distribution of resources for schools need not be as comprehensive as FUNDEF. Other, ***more limited targeting initiatives can also help close the performance gap***. In Chile, for example, a program that provided supplemental support to the lowest-performing schools for more than ten years significantly reduced gaps in learning achievement (McEwan 2008). Examples of other targeted programs to raise learning achievement include the after-school program for low-performing students in Minas Gerais, Brazil, and the *Balsakhi* program for second- and third-grade students in the urban slum areas of 20 Indian cities (Lewis and Lockheed 2006).

Key inputs to improved learning achievement

In the search for more effective strategies to raise learning achievement with limited resources, education planners and education economists have carried out a long quest to identify the inputs that have the greatest impact on improved learning achievement (see Vegas and Petrow 2008). An early review of the literature summarized the findings of this effort, as shown in table 16. The –confirmation percentages" shown in the far right column of this table record the frequency with which each input was found to have had a statistically significant effect (in the expected direction) on learning achievement. ***For***

[19] Figure 2.11b, OECD 2007a; UNDP, *2007/2008 Human Development Report: Fighting Climate Change; Human Solidarity in a Divided World* (New York: UNDP, 2007), http://hdrstats.undp.org/countries/data_sheets/cty_ds_EST.html); CIA, *The 2008 World Factbook,* an online publication, CIA, McLean, Virginia, 2008, https://www.cia.gov/library/publications/the-world-factbook/print/qa.html (both URLs accessed January 2009.)

primary schooling, class instructional time, class frequency of homework, presence of a school library, and availability of textbooks had the most consistent positive effects on improved learning achievement. For secondary schooling, class instructional time and availability of textbooks most consistently led to improved learning outcomes. These findings on the key inputs associated with learning achievement have generally been confirmed by subsequent research (Vegas and Petrow 2008; Wößmann 2000).

Table 16. Educational inputs with consistent impacts on learning achievement

	Number of studies	*Positive and significant relation*	*Confirmation percentage*
Primary schools:			
Teacher‘s salary level	11	4	36.4
Schoolteacher/pupil ratio	26	9	34.6
Teacher‘s years of schooling	18	9	50.0
Teacher‘s experience	23	13	56.5
Class instructional time	17	15	88.2
Class frequency of homework	11	9	81.8
School library	18	16	88.9
School textbooks	26	19	73.1
Secondary schools			
Teacher‘s salary level	11	2	18.2
Schoolteacher/pupil level	22	2	9.1
Teacher‘s experience	12	1	8.3
Class instructional time	16	12	75.0
School textbooks	13	7	53.8

Source: Fuller and Clarke (1994), as cited in Pritchett and Filmer (1999).

Meta-analyses of the type shown in table 16 are valuable for highlighting variables that have potential policy leverage. However, such analyses provide only limited guidance for expenditure and investment decisions because they simply show the consistency of relationships between educational inputs and learning achievement, not the strength of those relationships. ***More useful for investment and expenditure decisions are analyses of the cost effectiveness of alternative education investments that combine information on the consistency and strength of these relationships with information on their relative costs.***

An analysis carried out with an unusually rich data set on rural primary schools in Northeast Brazil provides a good example (Harbison and Hanushek 1992). The study examines changes in student test scores in grade 2 and grade 4 mathematics and in Portuguese language after the schools in the program received different combinations of educational inputs. Based on the strength of the relationships between the educational inputs and learning achievement, as well as the per-student cost of those inputs, the analysis calculates which inputs delivered the largest gain in learning achievement for each dollar spent.

As summarized in table 17, ***the most cost-effective inputs for 2nd grade students in Northeast Brazil were found to be textbooks, writing materials, and other educational inputs. For 4th grade students, writing materials and other educational inputs*** led to the most cost-effective improvements in learning achievement. Increased teacher salaries were found to be the least cost-effective intervention for bringing about better learning outcomes at both grade levels. Subsequent research has tended to confirm the importance of these inputs, while shedding more light on the role of teachers and the importance of how institutional factors affect the use of resources (Vegas and Petrow 2008; Wößmann 2000).

Table 17. Cost-effectiveness of learning inputs for rural primary schools in Northeast Brazil, (U$)

	Portuguese language	*Mathematics*
Second grade		
Infrastructure	0.37	0.39
hardware		
Material inputs		
Textbooks	3.73	2.50
Writing materials	1.30	1.52
Other educational materials	2.13	1.47
Teacher education		
Curso de Qualificação	0.13	0.27
Logos	0.91	0.75
Four-year primary school	0.93	1.45
Three-year primary school	0.28	0.43
Increased teacher salaries	0.11	0.11
Fourth grade		
Infrastructure		
Hardware	0.64	0.65
Material inputs		
Textbooks	0.58	0.00
Writing materials	2.35	4.42
Other educational materials	0.98	1.62
Teacher education		
Curso de Qualificação	0.20	0.90
Logos	0.54	0.37
Four-year primary school	0.00	0.42
Three-year primary school	0.00	0.12
Increased teacher salaries	0.04	0.08

Note: Cost effectiveness measured as achievement gain per U.S. dollar spent on the input.
Source: Harbison and Hanushek (1992, table 6.2).

The role of teachers

A consensus reached by a wide range of studies is that teacher effectiveness is one of the most important determinants of learning achievement (Hanushek and Wößmann 2007). ***But effective teachers distinguish themselves in ways that elude measurement.*** After controlling for the contribution of many other factors to learning achievement—including teachers‘ formal qualifications and experience—recent investigations have found a sizeable unexplained residual effect associated with individual teachers. After accounting for other variables, the students of certain teachers consistently achieved higher results, while students of other teachers consistently achieved lower results. Despite numerous attempts, research has not been able to isolate the individual attributes that make effective teachers effective. The most readily quantifiable attributes of teachers—including formal qualifications and duration of teaching experience—are only weakly related to student learning achievement, as are teacher salaries (Hanushek and Rivkin 2006).

The role of institutional factors: Incentives and accountability

The most promising approach for solving the riddle of teacher-specific effects on learning achievement examines how institutional factors shape teacher and school incentives for using different kinds of educational inputs. Institutional factors help explain why teachers in some schools are more effective in bringing about improved learning than teachers in other schools (although they do not explain why some teachers are more effective than others in the same school). ***A recent study that gathered data on more than 260,000 students in 39 countries found that institutional factors accounted for 74 percent of observed cross-country differences in mathematics test scores and 60 percent of differences in science test scores*** (Wößmann 2000). By comparison, studies of the effects of family background variables and educational inputs on the same test scores explained no more than 25 percent of the observed differences.

Key institutional factors that have been found to affect teaching effectiveness are: (a) choice and competition among schools, (b) decentralization and autonomy of school management, and (c) accountability of teachers and schools for learning outcomes (Hanushek and Wößmann 2007). These factors all played an important role in the multi-country study cited above, as the following quote illustrates:

> After controlling for resource and family background effects, the influence of institutional incentive mechanisms adds substantially to an explanation of differences in student performance in mathematics and in science. Both centralized examinations and the size of the private schooling sector are shown to have statistically significant positive effects on student performance. In general, school autonomy also seems to yield positive effects. However, the effect of the distribution of responsibilities between schools and administration differs for different kinds of decisions. On the one hand, extensive decision-making powers of schools over the purchase of supplies, the hiring and rewarding of teachers, and the organization of instruction have statistically significant positive effects on student performance. On the other hand, it seems also positive for students‘ learning if responsibility for the determination of the curriculum syllabus, for the

> approval of textbook lists, and for the school budget does not lie at the school level.
>
> The effects of increased decision-making influence of teachers again depend on the relevant domain of decision making and on the way in which it is exerted. While an increased influence of individual teachers on the curriculum has statistically significant positive effects on student performance, an increased influence of school teachers acting collectively in teacher unions has statistically significant negative effects. It is conducive to student performance if the class teacher has influence on the choice of supplies, but it seems detrimental if she has influence on the amount of subject matters to be taught. Extra time devoted by teachers to student assessment has a strong positive effect on student performance, while there is no linear relationship between minutes of homework assigned and student performance. Parents‘ influence on class teaching seems conducive to students‘ test score performance, while there remain some ambiguities concerning the overall effect of parents‘ involvement.
>
> Wößmann (2000, 5 and 6)

Most of these messages are consistent with the findings of other recent studies on the impact of institutional factors on learning achievement (see World Bank 2007), as well as with ***the accountability framework proposed in the World Development Report 2004*** (World Bank 2003). Key elements of that framework include:

- increased autonomy of school management, staffing, and finance;
- increased accountability for results—especially for complete coverage and improved learning achievement;
- increased involvement of all members of the community in setting and monitoring goals for school performance;
- increased reliance on objective evidence of school performance in the form of community-monitored information on enrollment and attendance, together with external assessment of learning achievement; and
- allocation of school budgets based on available evidence of which expenditures are most likely to expand enrollments and improve learning outcomes for all school-age children.

Readiness for school

Another important determinant of improved learning achievement is cognitive student development at primary-school entry (Abadzi 2006). Because cognitive development is related to parental education and socioeconomic background, children in basic education from low-income households face a higher likelihood of lower achievement, as well as higher rates of grade repetition and early dropout than children from higher-income households. Nutritional deficiencies that hamper cognitive development are also more likely among children from low-income households. Results of the PIRLS international student assessment show a positive relationship between fourth-grade reading achievement and the amount of time spent in preprimary education (Mullis et al. 2007).

Preschool education can play an important compensatory role in preparing at-risk children for success in primary school by addressing the learning handicaps that these children face due to family and community circumstances. But the children most in need of preschool for this purpose are the least likely to benefit from it: the costs of participation are unaffordable for most low-income households. Moreover, preschools are rarely available in the rural areas and urban neighborhoods where poor and excluded groups typically reside.

Targeted, donor-financed preschool programs that compensate for the educational and nutritional handicaps of children from low-income households can make an important contribution to improving learning achievement among vulnerable children. The Mother-Child Program in Turkey is an example of a home-based program in which mothers of preschool children in slum neighborhoods are trained to help their children prepare for primary schooling. Evaluation of the program has documented sustained learning and health benefits for both children and mothers alike (Kağitçıbaşı, Sunar, and Bekman 1993). Similar results are reported for preschool nutritional programs.

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