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What CIDA Should Do: The Case for Focusing Aid on Better Schools

CIDA could do much more to advance primary education – which, deservedly, ranks as the second-highest UN Millennium Development Goal. In CIDA's "countries of focus" it needs a pragmatic willingness to work with either host governments or major non-government agencies, or both.

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THE STUDY IN BRIEF

The bottom line of this *Commentary* is to make basic education (pre-primary to lower-secondary) a much higher priority for bilateral Canadian aid.

In any country, basic education's most important goal is assuring that the next generation be able to read and write. With few exceptions, literacy is the necessary – if far from sufficient – condition for a country to escape extreme poverty (here defined as per capita GDP below \$2,500). Few countries have risen above this threshold with adult literacy below 80 percent. Furthermore, better health cannot be separated from basic education. Few countries have achieved respectable population health outcomes with female literacy below 80 percent.

This study examines a dilemma faced by all aid advocacy. Achieving universal literacy requires effective governments able and willing to assure the supply of adequate education services of reasonable quality – whether via government schools, schools supported by non-government organizations, or for-profit private schools. But governments in poor countries are usually not effective in delivering basic services.

Given this dilemma what can Canadian aid contribute? The author addresses the question by (i) discussing supply and demand for basic education in the context of low-income countries; (ii) analyzing alternate explanations for primary school outcomes in 53 countries whose per-capita GDP over the last decade ranked below the average for middle-income countries; and (iii) recommending strategies for aid agencies such as the Canadian International Development Agency (CIDA).

In countries with effective government administration operating reasonable-quality schools at low direct cost to families and accessible to all, donors may sensibly choose to work solely with the relevant ministries of the host government. In countries with a weak government school system, donors need to take stock of the diversity of school options and be pragmatic in terms of working with governments and non-government agencies.

Potentially productive projects include (i) heightening parental demand for education by cash subsidies to low-income parents conditional on their children attending school and maintaining acceptable grades; (ii) offering young children nutritious meals to offset diet inadequacies; or (iii) enhancing the performance of a country's education system via curriculum reform, survey systems to assess learning outcomes and improved teacher training.

In deciding development priorities, primary education is too often honoured in the breach than the observance. Over the previous decade, CIDA's budgeting has not reflected the very high rank afforded to primary education among the UN's Millennium Development Goals. (Primary school completion ranked second.) Based on OECD development aid statistics, Canada's share of aid devoted to education has not increased since 2000. By contrast, the share devoted to primary health more than doubled.

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The bottom line of this *Commentary* is simple: make basic education (pre-primary to lower-secondary) the Canadian International Development Agency’s (CIDA) first priority. Currently, CIDA has established three exceedingly general “priority themes” to guide its activities.

The second, “securing the future of children and youth,” can be interpreted to encompass basic education, but in practice CIDA and many of the world’s bilateral donor agencies accord only a secondary priority to basic education.¹ Admittedly, implementing the recommendation is not simple.

WHY EMPHASIZE EDUCATION?

It has long been known that the productivity reward to primary education in low-income countries is very high. In their estimates, Patrinos and Psacharopoulos (2011, 9) found the average social rate of return from completing primary education in low-income countries to be 21 percent.² The estimated returns from secondary (16 percent) and tertiary education (11 percent) were lower.

This raises a conundrum. If productivity gains from basic education are so large, why have host governments in low-income countries not already organized effective school systems? There is no simple answer. In my opinion the starting point to the discussion is the lengthy lag – a decade or more – between incurring the private and social costs

of education and realizing the benefits. There are powerful incentives in the context of poverty that frequently divert parents’ resources to other goals, and divert governments from assuring a reasonably efficient school system.

In any country, basic education’s most important goal is assuring that the next generation be able to read and write. With few exceptions, literacy is the necessary – if far from sufficient – condition for a country to escape extreme poverty.

In this study, a country is deemed to be in extreme poverty if average per capita GDP over the previous decade was less than US\$2,500. Of the 53 low-income countries discussed below in terms of primary school completion, 35 fell below that threshold; 18 registered average annual per capita GDP of more than \$2,500 but below \$4,700.³ This upper threshold is the average for middle-income countries over the previous decade.

The scatterplot in Figure 1 illustrates the relationship between adult literacy and per capita GDP among the 53 countries. The trendline is non-linear, implying that higher literacy is not associated

I gratefully acknowledge comments on an earlier draft from Manmohan Agarwal, Manzoor Ahmed, Karen Mundy and Edgard Rodriguez – who may or may not share the policy conclusions of this *Commentary*.

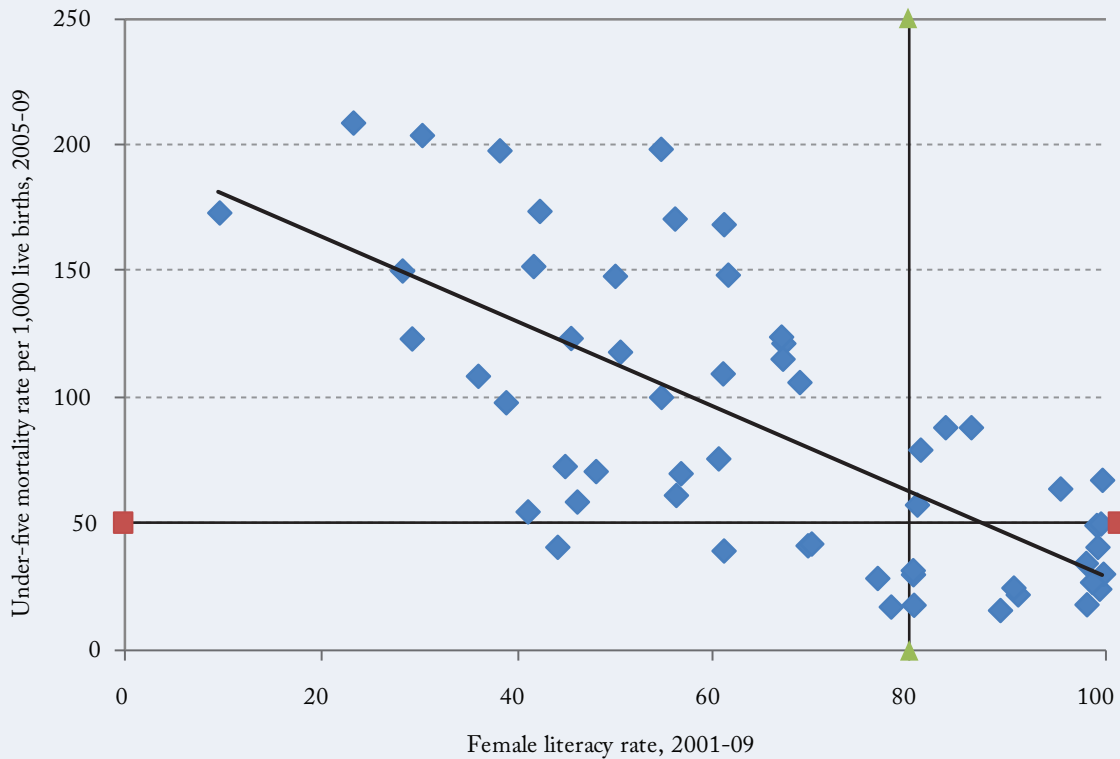
- 1 The two other priorities are “increasing food security” and “stimulating sustainable economic growth.”
- 2 The social rate of return is defined as the discount rate that equates the present value of the cumulative increase in expected earnings (for someone with completed primary education relative to someone without) to the present value of expected public and private opportunity costs incurred.
- 3 The World Bank’s 2001-2009 average for middle-income countries is expressed in purchasing power parity constant 2005 US dollars.

Figure 1: Per Capita GDP by Literacy Rate, 53 Low-Income Countries



Source: Author's calculations from World Bank (2011a).

Figure 2a: Under-Five Mortality Rate by Female Literacy Rate, 56 Low-Income Countries



Source: Author's calculations from World Bank (2011a).

Figure 2b: Total Fertility Rate by Female Literacy Rate



Source: Author's calculations from World Bank (2011a).

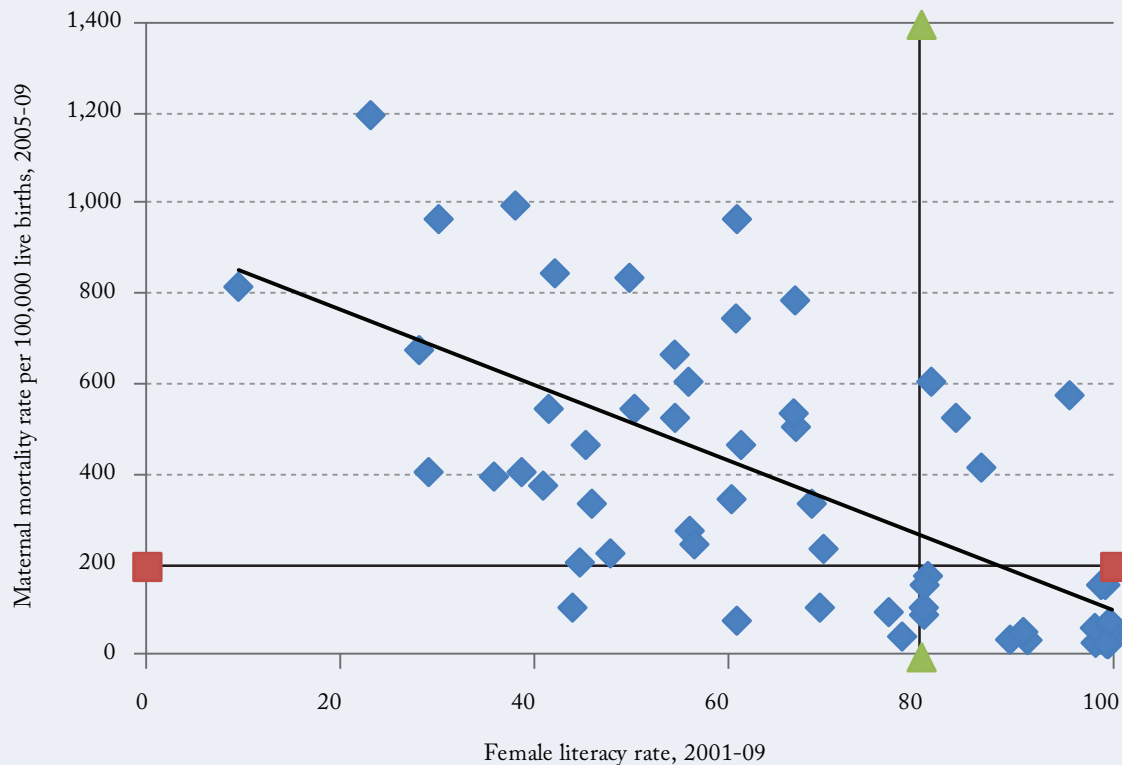
with higher per capita GDP until literacy exceeds 50 percent, and not until literacy exceeds 80 percent is per capita GDP, based on the trendline, likely to be above the \$2,500 threshold. Among the more prosperous 18 countries, adult literacy in all but three averaged more than 80 percent over the decade; all of them averaged more than 50 percent. Among the 35 below the \$2,500 threshold, only three exceeded an 80 percent literacy rate; 10 averaged less than 50 percent.

In addition to productivity gains associated with literacy, countries with higher literacy rates – higher female literacy in particular – consistently realize large benefits in terms of population health outcomes. This is true even after adjusting for factors such as per capita GDP and health spending.

Figure 2 illustrates the relationship between female literacy and three population health measures (among 56 countries with per capita GDP less than \$4,700 for which data are available). Of these 56, 19 recorded average under-age-five mortality rates between 2005 and 2009 of less than 50 per 1,000 live births. In over two-thirds of these countries, the female literacy rate was more than 80 percent.

Meanwhile, 10 of the 56 countries achieved a total fertility rate of less than 2.5 children per woman. The female literacy rate was more than 80 percent in seven out of the 10 countries. And 21 countries recorded a maternal mortality rate of less than 200 per 100,000 live births; in 16 of the 21, female literacy was more than 80 percent. Schools are not a substitute for health clinics, but the link

Figure 2c: Maternal Mortality Rate by Female Literacy Rate



Source: Author's calculations from World Bank (2011a).

between female literacy and health outcomes is clearly very strong.⁴

Quite reasonably, achieving universal primary education by 2015 ranks high among the UN's Millennium Development Goals (MDGs), second only to the target of reducing by half the share of the world population living on less than US\$1.25/day. No one challenges this high ranking. And no one denies the obvious fact that the foundation for a country's secondary and tertiary education

sectors is a well functioning primary sector. But in development priorities, primary education is too often honoured in the breach than the observance. Too often, both donor agencies and host governments spend relatively little on education and devote little effort to understanding the complexities of managing an education system. In recent years, nearly two-thirds of total basic education donor aid came from just six donors.⁵

4 For a comprehensive but accessible survey of the value of female education and of successful interventions in particular countries see Herz and Sperling (2004).

5 In 2007/2008, the European Commission, International Development Association, the Netherlands, Norway, United Kingdom and United States accounted for 62 percent of basic education aid.

When the G8 leaders met in Canada in 2010, they did not opt for a campaign to meet the primary education MDG; instead they endorsed a campaign of improved maternal and child care. In language that, for a UN agency, is remarkably blunt, UNESCO's 2011 *Education for All* report concludes, "The mentality that leads donors to neglect education in favour of narrowly defined health interventions threatens to hold back progress in both health and education."

It may appear heartless to pit investment in maternal and child care against education, but aid priorities are inevitably translated into budgets. Over the previous decade, CIDA's budgeting has not reflected the very high rank of the primary education MDG. Based on OECD development aid statistics, Canada's share of aid devoted to education, while subject to year-to-year fluctuation, ended the decade at a share close to that in 2000. By contrast, the share devoted to primary health more than doubled.⁶ Based on OECD classifications, Canadian 2010 spending on basic and general health was nearly three times that on basic education. (See Figure 3 and accompanying notes.)

Steer and Wathne (2010) provide an academic analysis of the relatively low donor priority attached to basic education. One of their central observations is the importance of senior political leadership in dictating national aid priorities. Complacency may be the reason for education's relatively low priority. There has been education progress over the last two decades, even in the two regions suffering the most severe illiteracy. In sub-Saharan Africa between 1990 and 2009, the proportion of literate young adults (ages 15 – 24) grew from 65 percent to 72 percent; in South Asia, from 60 percent to 80 percent (UN 2011, 19).

Still, progress is far from adequate to realize the primary education MDG. In 2010, the UN

acknowledged that "hope dims for universal [primary] education by 2015 (UN 2010, 16)." In one-half of the UN-classified least-developed countries, two out of five children drop out of school before achieving the final primary school grade (UN 2011, 17).

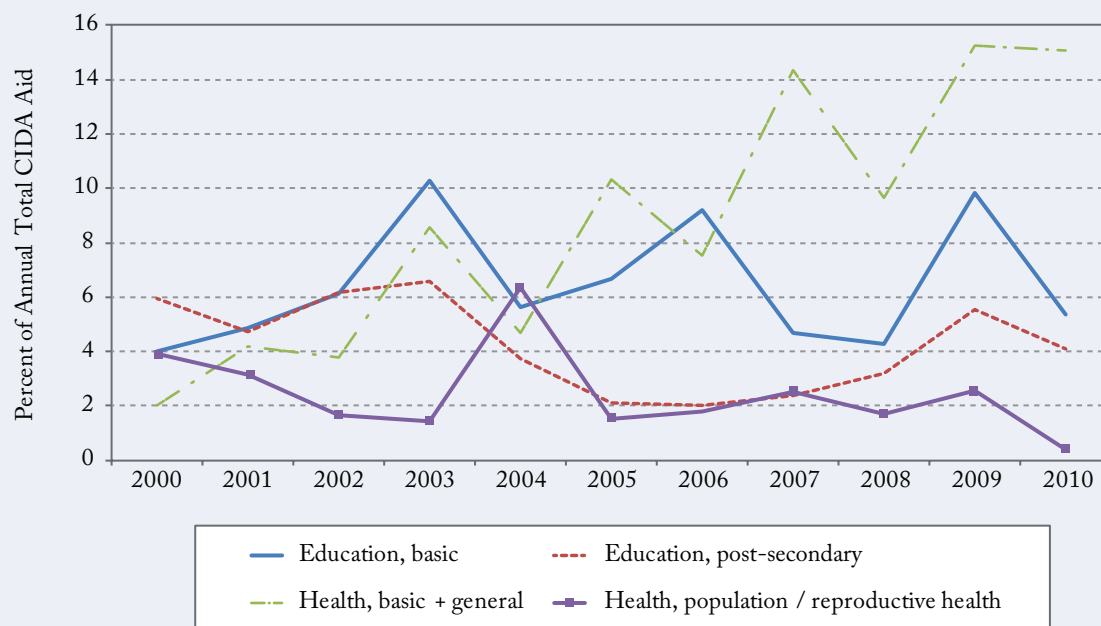
There are reasons beyond complacency that may explain donor reluctance to put more emphasis on education. To be effective, education programs often violate conservative cultural practices in host countries, thereby generating controversies from which donors shy away. For example, girls attending school cannot simultaneously tend younger children at home. If their education continues into the secondary level, this implies delayed marriage. And young educated villagers are more likely to break with tradition – to migrate to the city, choose a non-traditional job and refuse an arranged marriage.

Yet another reason may be that both donors and aid recipient governments want quick results; the benefits from education are realizable only after a lengthy time lag. It will often appear more attractive for host-country governing elites to ignore the problems of a weak school system and instead respond to poverty via policies that provide an immediate income transfer, such as subsidizing food prices or allowing illegal connections to a state-owned power company. Perhaps the explanation is that donors are skeptical of host governments' willingness to monitor and maintain reasonable education standards, without which education investment achieves little. Or perhaps the explanation is all of the above.

Basic education is among the most expensive, complex and labour-intensive activities that governments undertake. While it does not demand as high a level of professional expertise as health-care, teaching is a professional activity. Effective teachers require a minimum of upper-secondary

6 To CIDA's credit, it reallocated some spending from post-secondary to basic education over the decade, and the education envelope in absolute value increased as the overall aid budget rose.

Figure 3: Education and Health, Share of CIDA Aid, 2000 – 2010



Notes:

- a. Basic education comprises the following OECD categories: “basic education” + secondary education + 50% x education, level unspecified.
 b. Education, post-secondary includes the following: education, post-secondary + 50% x education, level unspecified.

Source: OECD (2011).

education, further training in education techniques, field support, decent school facilities and systems to measure learning outcomes. School administrators need to be competent and free from partisan political interference. A good education system also needs to involve parents in local school affairs. Reconciling these requirements and achieving progress is feasible, even on very modest budgets, but it is naïve to think that doing so is politically or administratively easy.

A high adult literacy rate does not guarantee a country will realize more than \$2,500 per capita GDP, or realize good population health outcomes, but its absence almost certainly guarantees extreme poverty for the majority. No country spontaneously achieves a high literacy rate—it requires large long-term investment from government, usually

supplemented by investment from other institutions such as religious and other non-government organizations, as well as for-profit firms engaged in education services. Whether or not the government directly hires teachers and supplies education services or enables NGOs and private schools to flourish, or some combination of the above, assuring an adequate supply of quality education services at low cost to parents requires reasonably effective government. Unfortunately, most governments in very poor countries are ineffective.

To restate the conundrum: few countries have risen above \$2,500 per capita GDP with adult literacy below 80 percent, and few countries have achieved respectable population health outcomes with female literacy below 80 percent. Achieving a high literacy rate requires effective governments

able and willing to assure the supply of adequate education services at low cost to poor families. But governments in poor countries are usually ineffective in delivering basic services. This conundrum belongs in the same category as the paradox of the lost traveller who asks a local for guidance. “If I wanted to go there,” comes the reply, “I wouldn’t start from here.”

The remainder of this *Commentary* proceeds as follows. The first part introduces the concept of supply and demand for basic education in the context of low-income countries. There follows analysis of countries whose per-capita GDP over the last decade ranked below the average for middle-income countries.⁷ The third part discusses a potential positive role for Canadian development aid.

The first Appendix elaborates on the potential for donor aid via an introduction to the institutional history of basic education in the five major South Asian countries. The second offers a glossary of relevant terms. The third summarizes the regressions discussed in the text.

PART I: SUPPLY OF AND DEMAND FOR FORMAL EDUCATION

Achieving near-universal literacy in a poor country where literacy has not been the cultural norm is daunting. In all societies, children learn traditional knowledge and skills from parents and other adults. They do this by talking and doing. It does not require literacy. Historically, a minority in settled societies received a formal education. This was sufficient for religious elites to assure transmission of their traditions, for political elites to maintain official documents and for commercial elites to

organize their accounts. While this may suffice for a peasant-based agricultural economy, it does not for a developing country experiencing rapid urbanization and aspiring to the prosperity that industrialization potentially affords.

To function tolerably well, industrial sectors require a workforce with, at a minimum, a large fraction possessing the education outcomes of a primary cycle. To become more productive, countries require that an ever-increasing percentage of the workforce achieve the education outcomes of lower-secondary education and that a significant minority advance to upper-secondary and tertiary education.

Stating the education requirements of an industrial economy does not take us very far. It does not explain the dynamics whereby, on the one hand, parents decide whether or not to pursue formal education for their children and, on the other, whether the host government supplies – or enables non-government agencies to supply – the necessary inputs at reasonable cost to enable formal education of reasonable quality.

An important aspect of education supply is the direct contribution of families in educating their children. Students whose parents are not literate are at a severe disadvantage relative to children whose parents can read and write. Hence, other things equal among countries, the higher the adult literacy rate the higher will be the literacy level of the next generation.

And on the demand side? Millions of very poor parents in developing countries sacrifice for their children’s education. Nonetheless, parental income is a rough proxy for parents’ willingness to invest in their children’s formal education. More prosperous parents are less likely to face food insecurity, less likely to require the labour of young children in

7 At the end of the decade, India was above the \$2500 threshold, and China was well above \$4700. During the decade however, both averaged under the \$4700 ceiling. Due to incomplete data, not all qualifying countries are included in the samples used. India is in the sample; China is not.

income-generating activities, and better able to incur schooling's out-of-pocket costs.

The size of the premium in expected incomes of the literate over the illiterate also influences demand. If a country is politically unstable, its society corrupt and its economy stagnant, there will be fewer jobs available yielding the higher incomes that the literate can command. Hence, the expected return from parents' investing in their children's education will be low.

The benefits of literacy extend beyond increases in the economic productivity of the labour force over the next generation. Some parents place a sufficiently high value on less tangible and more indirect benefits to assure education of their children independent of the ability to command higher earnings. These benefits extend from the intrinsic value of reading and writing to the fact that literate girls become literate mothers who, in turn, can make better use of public health facilities and have healthier children.

Cultural expectations influence demand. If, in a caste-stratified society, a family's caste values education, then children of the caste will, holding all else constant, achieve higher education levels than those from other castes.

In patriarchal cultures, women's roles may be severely restricted. Economic expectations reinforce cultural ones: why should parents incur costs to educate their daughters if their daughters will, shortly after puberty, marry into another family? In patriarchal societies, girls may bring little economic benefit to their family of origin beyond the domestic labour performed before marriage. Overcoming traditional cultural norms lies behind female stipend programs that have, for example, provided families with fiscal incentives to increase girls' secondary school completion (Hove 2007).

Female literacy and population health

Across all countries, the correlation between female literacy and health outcomes is very high. Part of the explanation is simply the positive correlation

between countries with higher literacy and higher per capita GDP. More prosperous countries usually provide better health services. Probably of greater importance is that mothers are typically more intimately involved in assuring healthcare for family members than are fathers, and literacy lowers the transaction cost of their negotiating to get nominally free health services from often-inefficient public agencies or to buy care from private agencies. The latest UNESCO *Education for All* report expands on the issue:

Formal education may directly transfer health knowledge to future mothers, make them more receptive to modern medical treatment, and impart literacy and numeracy skills that assist diagnosis. It may also improve confidence and status, enabling educated women to demand treatment for children and to negotiate over resources within the household. (UNESCO 2011, 35-36.)

Encouraging domestic migration

Education plays a role in enabling the agglomeration economies of cities. Most manufacturing and service activities benefit from the proximity of other businesses that supply needed inputs and buy outputs from other sectors. To economize on transaction and transportation costs, most of these activities take place in cities. Among the required inputs is a workforce with average education levels above those in rural sectors.

Provided a country's literacy, political stability and rule of law are above threshold levels – and these levels need not be high – cities grow and prosper. Once a city has entered on this path, self-selection reinforces it. Among young rural adults, the more ambitious usually achieve more from school than their neighbours and are more likely to migrate to the city in hope of more opportunities and higher incomes.

Initially, new arrivals will probably be employed in the informal sector, earning little more than in the village. And, by migrating, they

have weakened their traditional village support networks. From Lagos to Jakarta, mega-cities in developing countries resemble the mega-cities of Europe and North America in the first century of industrialization. They display morally offensive inequalities of wealth and poverty. High rates of industrial accidents shatter the expectations of many who are relying on Rohinton Mistry's "fine balance." Living arrangements in urban slums are those described in *misérabiliste* passages of Dickens, Dostoevsky or Hugo.

The gamble of migration may fail: many migrants ultimately return to their village. But the city presents opportunities that the village cannot match. Those who succeed can send remittances to their rural kin and create families for themselves, thereby establishing a demand for schools. This in turn leads to cities possessing more and better schools than villages, and yet another incentive for villagers to migrate.⁸

The Significance of Primary School Completion

According to the 2011 MDG progress report, the net primary education enrolment rate across the developing world rose from 82 percent in 1998/1999 to 89 percent in 2008/2009. (See Glossary for definitions of education terms.) However, to enrol does not assure completion. In many low-income countries, the quality of instruction is low, attendance rates of both children and teachers leave much to be desired and one-half of the entering cohort may drop out before completing the primary cycle. (Figure 4 illustrates enrolment, retention and dropout rates for a cohort of children in a typical low-income developing country over the basic education cycle.)

Failure to complete the primary cycle usually foretells adult illiteracy. For children to achieve and retain basic literacy and numeracy requires at least five years:

Completion of at least five to six years of schooling is a critical threshold for sustainable mastery of basic competencies, such as literacy and basic numeracy. Literacy surveys conducted in African countries and elsewhere indicate that a high share of the adults who have completed less than five or six years of primary schooling remain functionally illiterate and innumerate for the rest of their lives ... Especially striking in the data is the very limited impact on lifelong literacy from as many as three years of schooling ... (Bruns et al. 2003, 29-30.)

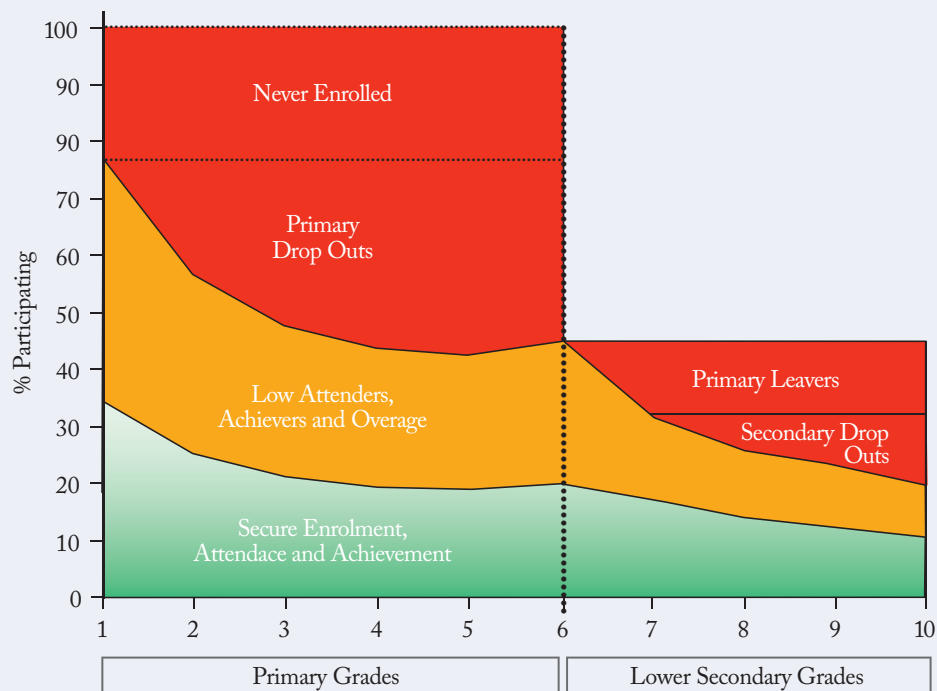
Although it is still an imperfect measure of whether the next generation achieves basic literacy and numeracy, primary school completion is a far better measure than enrolment in assessing overall education performance in low-income countries.

As with enrolment, there has been recent progress in primary school completion. Figure 5 illustrates improvements over the last four decades in completing the primary cycle in our 53-country sample. The sample is divided into three income intervals in terms of average per capita GDP in the 2000s. Not surprisingly, the higher the average GDP in recent years, the higher the average completion rate in previous decades.

Figure 4 also illustrates why "hope dims" for meeting the primary education MDG target. If, for example, the primary completion rates continue to rise by 18 percentage points per decade (the average reported by these countries between the 1990s and 2000s) in each of the countries with average per capita incomes of less than \$1,000, the typical country in this group would achieve 90 percent

8 Doug Saunders (2010) offers an informal discussion, with multiple examples, of the massive rural-to-urban migration that is taking place throughout the world, in both industrialized and developing countries. His key concept is the importance of particular neighbourhoods ("arrival cities") that cater to the needs of recent immigrants attempting to establish a foothold in an urban economy.

Figure 4: Trend of Typical School Enrolment/Attendance/Completion in a Cohort of Children in Low-Income Countries



Source: UK (2010, 22).

primary school completion in approximately 2028. Translating this completion rate into an adult literacy rate above 80 percent depends on a more complex calculation involving quality of primary school outcomes (what percentage of students completing can read and write) and age distribution of the country's population.

PART II: EXPLAINING OUTCOMES: SOME EVIDENCE

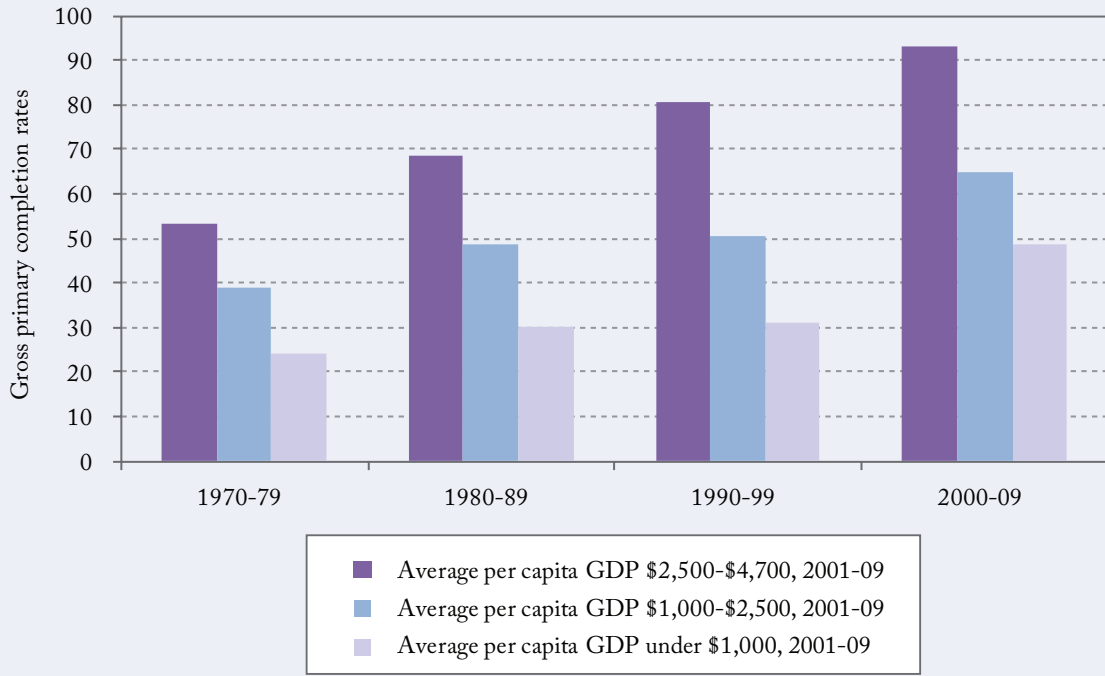
To its credit, the World Bank makes available time series data on hundreds of socioeconomic variables assembled in a more-or-less consistent manner among the world's countries. However, several caveats need to be made. Much of the data is assembled by national statistics agencies, with varying standards of rigour. The data series often

have missing observations, a problem overcome by exclusion of some countries and averaging over intervals. (See Appendix 2 for definitions of variables and data sources.)

The regressions assess outcomes at a national level; they ignore individual student performance. The basic reason for undertaking national level analyses is that many relevant determinants of education and public health outcomes cannot be divined by observations of individuals or of particular health and education institutions within a country. For example, the political will and effectiveness of elites in charge of government and of major NGOs matter.

In constructing the primary school completion regressions, several variables are used as proxies for the supply of education services by the state and by parents: two measures of government education spending, two indices of quality of governance

Figure 5: Gross Primary Completion Rates, 1970-79 to 2000-09, by Average per Capita GDP 2001-09, 53 Low-Income Countries



Source: Author's calculations from World Bank (2011a).

derived from comparative surveys, and adult literacy. The one proxy for parental demand for their children's education is per capita GDP.

Regression 1 shows what is statistically not important in explaining differences in primary completion rates. Across countries, neither differences in public perceptions of political leaders' accountability to those they govern nor differences in normalized per-student expenditures matter. (The regression results are available in Appendix 3.) Democracy, assessed here by country scores on the voice/accountability dimension of the World Bank governance indicators, matters in explaining differences among middle-income,

but does not matter in explaining education outcomes among the low-income countries under review. Among the latter countries, relatively free elections and a reasonably free press do not have any consistent impact on outcomes. Some authoritarian governments perform well in the sense of having above-average school completion rates and below-average voice/accountability scores (e.g., Cambodia); some relatively accountable governments have below-average completion rates (e.g., Benin).⁹

The absence of any measurable effect of per student expenditure is consistent with the findings of Eric Hanushek (2007) and others. A reasonable

9 This outcome is consistent with the conclusions of Paul Collier (2009) about the irrelevance of democracy in explaining economic growth among countries with per capita GDP below approximately \$2,500.

interpretation is that the impact of spending money on schools cannot be separated from the one variable that is significant in this regression: effectiveness of governments in delivering a range of services.

To further illustrate this, we can classify each sample country in one of four groups. The first comprises the top quarter in terms of government effectiveness scores. And so on for each of the three other groups. Regression 2 illustrates that, among countries in the first group, spending more on education has the intuitively expected positive impact on completion rates. It also illustrates that, among countries in the three other quarters, spending more has no statistically significant impact.

Regression 3 retains normalized spending among countries of the first group and introduces adult literacy, a proxy for the ability of parents to contribute to the learning accomplishments of their children. Adult literacy obviously looms large inasmuch as the explanatory power of the regression (the adjusted R^2 statistic) rises by a factor of three relative to Regressions 1 and 2. Another way of saying the same thing is that success in educating the current generation of children depends crucially on the effectiveness of the country's education system at the time when current parents were themselves children.

Regression 4 adds per capita GDP, a proxy measure of parental demand for formal education for their children. The additional ability to explain education outcomes is not large, but this new variable is clearly statistically significant. Given the crucial role of adult literacy in encouraging the next generation's primary school completion and that literacy is the key element of human

capital formation at this stage of development, it is no surprise to find a high correlation between per capita GDP and school completion among these 53 countries. It is also no surprise that higher per capita GDP and better governance are highly correlated. The high correlation between explanatory variables means that estimates of the independent impact of each—per capita GDP and governance in this case—become suspect.

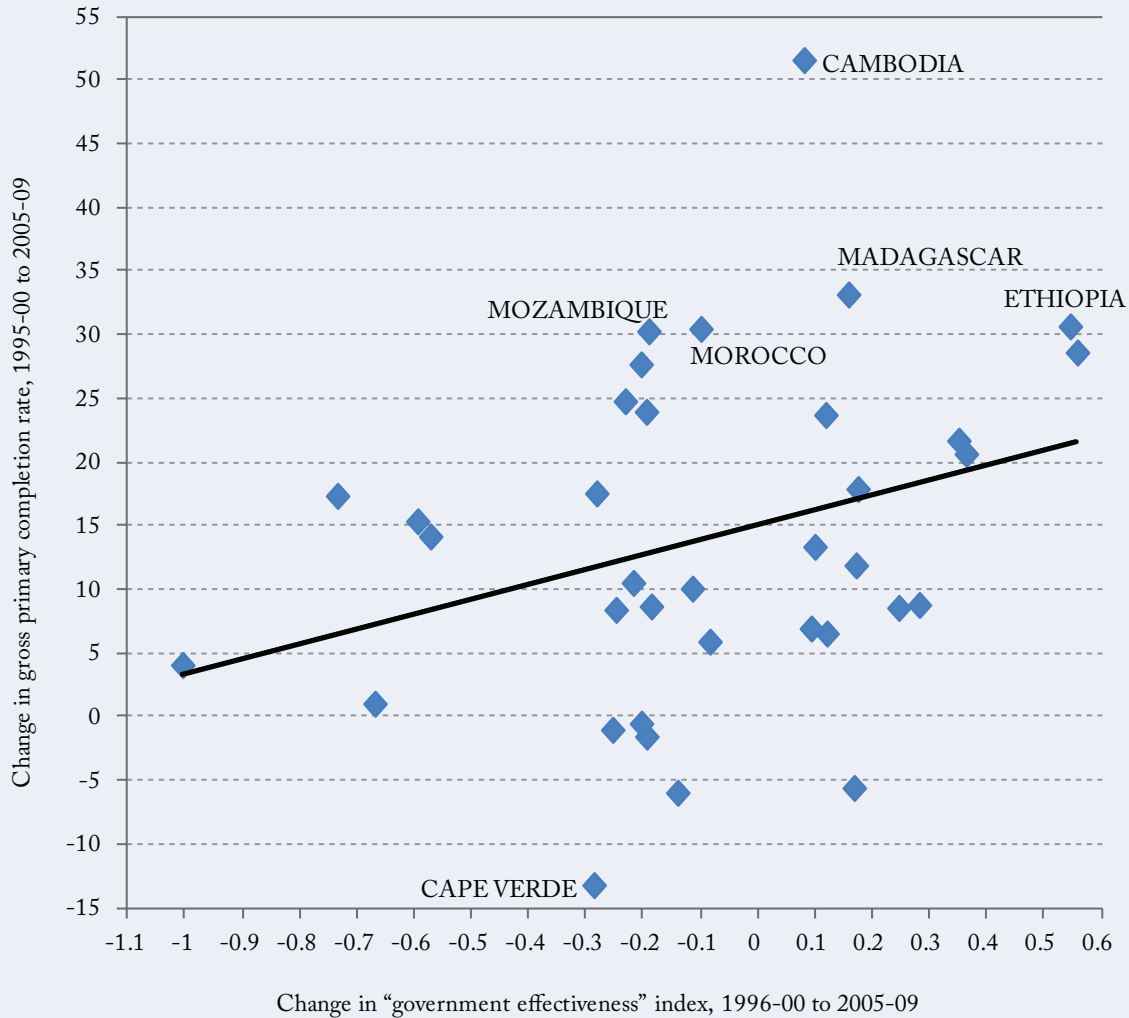
Since government effectiveness appears to be only marginally statistically significant in Regression 4, maybe quality of governance is not as important as I am claiming. Perhaps, governance should instead be considered an outcome dependent on the level of a country's prosperity.

There is no satisfactory statistical answer to the skeptic on this matter, but several observations need to be made.¹⁰ Many factors militate against effective governance in very poor countries. In such countries, there is an intense collective demand for immediate increases in consumption, which renders perilous the fate of governing elites attempting to invest in good quality services whose benefits arise only after a time lag. Populist political campaigns for diversion of resources from investment to current consumption usually meet with wide support and, consequently, such campaigns regularly surface as tactics among competing elites. Countries toward the upper end of the income range (closer to \$4,700 per capita GDP) are far from rich, but the press of extreme poverty is less and the probability of a relatively effective governing coalition higher.

Another test of the role of government effectiveness is to explore the link between changes in perceptions of government effectiveness over the last decade and changes in the gross primary school completion

10 An alternate specification of Regression 4 is a model using an instrument for per capita GDP. A suitable instrument is exports as a share of GDP, which typically rise with per capita GDP. According to the Hausman test, the coefficient estimates arising from the ordinary least squares (OLS) regression reported are not significantly different from those arising from the instrumental variable regression.

Figure 6: Change in Gross Primary Completion Rate by Change in “Government Effectiveness,” 36 Low-income Countries



Source: Author's calculations from World Bank (2011a).

rate.¹¹ (See Figure 6.) In regressions (not shown), changing perceptions of government effectiveness is the most statistically significant variable.

While changes in government effectiveness matter somewhat, the major conclusion in

analyzing changes in primary completion rates over the last decade is that there is no good statistical explanation. To understand why Cambodia is the outstanding success, the point of departure is that in the late 1990s the government finally extinguished the embers of the Khmer Rouge

¹¹ Note that the exercise, performed for 36 countries with data available, refers to gross primary completion rate and not the net rate.

Table 1: Impact of Changes in Selected Variables on Gross Completion and Population Health Rates

	Primary School Completion Rate (percent)	Under-five Mortality Rate (deaths per 1000 live births)	Maternal Mortality Rate (deaths per 100,000 live births)	Total Fertility Rate (live births per woman)
<i>Sample averages</i>	73.2	87.2	384.6	4.01
	(change in percentage points)	(change in under-five deaths)	(change in maternal deaths)	(change in total live births)
Higher adult literacy ^a	8.5			
Higher female adult literacy ^a		-17.2	-77.8	-0.46
Higher per capita GDP ^a	2.8	-5.5	-38.7	-0.12
Higher normalized spending per student + improved effectiveness ^b	6.0			
Higher health spending share of GDP + improved effectiveness ^c		-15.9	-67.2	-0.88

Notes:

a. This scenario is based on a 25 percent increase in the relevant variable, relative to its sample mean value.

b. The benchmark for this scenario is a country spending the sample average in terms of normalized spending per primary school student, and currently not in the top quarter of countries, ranked by effectiveness. The scenario is based on a 25 percent increase in normalized spending per primary school student, plus an improvement in government effectiveness sufficient to raise the country to the top quarter.

c. The analogous benchmark for this scenario is a country spending at the average health/GDP ratio, and currently not in the top quarter of countries, ranked by effectiveness. The scenario is based on a 25 percent increase in health spending as share of GDP, plus an increase in government effectiveness to raise the country to the top quarter.

guerrilla armies, and the country's leaders turned to social policy, including education. Somewhat similar explanations underlie the outcomes in Ethiopia and Mozambique. Cape Verde, which suffered the largest decline in primary school completion rates suffered severe droughts and emigration of its population over the previous decade.

Among the poorest of countries—those below \$2,500 per capita GDP—the direction of causation is almost certainly from better governance, via its impact on several intermediate variables, to higher GDP, and not the other way around. It may well be impossible to know, *ex ante*, whether the rulers of a particular very poor country will prove themselves effective – tackling basic education being a major component of what “effective” means.

Over the last decade, the average literacy rate among our 53-nation sample was 68 percent; average per capita GDP was \$2,020 and average normalized per student spending 13 percent of per capita GDP. To appreciate the relative importance of the variables invoked as factors determining school completion, Table 1 summarizes several sensitivity scenarios:

- A 25 percent increase in a country's adult literacy rate (from 68 percent to 85 percent) should, other factors constant, increase the primary education completion rate by 8.5 percentage points.
- A 25 percent increase in per capita GDP (from \$2,020 to \$2,530) should increase primary education completion by 2.8 percentage points.
- The benchmark for the third scenario is a country that spends the sample average per primary

school student but is not in the top quarter of countries ranked by effectiveness. This scenario assumes a 25 percent increase in normalized spending per primary school student (from 13 percent to 17 percent) plus an improvement in government effectiveness sufficient to raise the country to the top quarter, ranked by government effectiveness. The scenario should, on average, generate a 6.0 percentage-point-increase in primary school completion.

In the short run, per capita GDP and adult literacy are fixed parameters. The only policy scenario open to government is the third—increased spending and increased government effectiveness.

To make the discussion more tangible, contrast Canada with Bangladesh. Bangladesh is a populous country (165 million) that figures among CIDA's "countries of focus" as a prime beneficiary of bilateral aid. Its per capita GDP over the last decade averaged \$1,100; Canada's, \$34,600. Bangladesh spent slightly more than \$100 per primary school student; Canada, about \$8,000.

The 2005-2009 Worldwide Governance Indicators (WGI) effectiveness score for Bangladesh placed it at the 24th percentile among some 200 countries and, similarly, among our 53-country sample it fell in the third quarter. Canada's score placed it in the 97th percentile. For Bangladesh to move from the third quarter to the top quarter in the sample would require it to move up to the 48th percentile among all countries. A 25 percent increase in normalized annual per student spending in Bangladesh is about \$30.

Analogous results arise in assessing simple regressions of national variations in under-five mortality, maternal mortality and total fertility rates. (See Regressions 5, 6 and 7.) Only in the top quarter of countries, ranked by government effectiveness, does an increase in health spending have statistically significant impacts on these

three key population health measures. Meanwhile, a country's presence in the bottom quarter has particularly dire consequences for population health. Per capita GDP affects health in the expected direction.

We can undertake an analogous set of sensitivity scenarios to those conducted on primary school completion. (See Table 1). Over the last decade, average female literacy in the sample countries¹² was 65 percent and average public health spending as a share of GDP was 5.8 percent. Our scenarios consider:

- A 25 percent increase in a country's female literacy rate (from 65 percent to 82 percent).
- A 25 percent increase in per capita GDP (from \$2,240 to \$2,800).
- A scenario assuming a 25 percent increase in health spending as a share of GDP, plus an increase in government effectiveness to raise the country to the top quarter, ranked by government effectiveness. The benchmark for this scenario is a country spending at the sample average health/GDP ratio, and currently not in the top quarter of countries, ranked by effectiveness.

The same caveats apply as above. In the short run, female literacy and per capita GDP are fixed parameters. In the longer run, higher female literacy is one consequence of improved primary education. It is worth noting just how significant its impact is across the 56 sample countries. In the case of under-five and maternal mortality rates, a 25 percent increase in female literacy is associated with a larger improvement than from the two other scenarios; in the case of total fertility rate, it ranks a respectable second.

PART III: THE ROLE OF DEVELOPMENT AID

As in other sectors, there is no lack of specific education projects that CIDA or other donors

12 Data are available for 56 countries, three more than for primary school completion regressions. Given additional countries, average values of variables differ somewhat from the primary completion regressions.

can choose to sponsor.¹³ They include projects to heighten parental demand for education such as targeted subsidies to low-income parents conditional on their children attending school and maintaining acceptable grades. Or supply-oriented projects such as nutritious meals to offset diet inadequacies among children in low-income families. Or programs to enhance the performance of a country's education system such as reforming curriculum, implementing survey systems enabling accurate assessment of learning outcomes and improving teacher training.

Choice of specific projects to support should ideally vary by recipient country, based on an assessment of gaps. But who should make the assessment? There is an obvious need for coordination between donors and host governments. Equally, there is need for coordination among donors.

In an attempt to lay out workable procedures, the OECD in 2005 convened a "high-level forum" of most donor and aid-receiving countries. The resulting statement, *The Paris Declaration on Aid Effectiveness* (OECD 2005), is a useful statement of goals for all concerned. While couched in qualified prose, the spirit of the document is that donors should, in each recipient country, negotiate their contributions as a group with the host government as opposed to supporting non-state agencies. The success of such a strategy depends, on the one hand, on the effectiveness of coordination among donors and, on the other, on the effectiveness of the host government.

Donors inevitably face a strategic choice: to what extent should they operate in any country in concert with other donors and agencies of the host government, or make an independent assessment and work pragmatically with a diversity of government and non-government agencies?

The Aga Khan Foundation, a major NGO with a long tradition of work in the education sector, has addressed this strategic question with more lucidity than have most national donors. The question is most pertinent in countries with weak governance. To quote an Aga Khan's report to UNESCO:

A reality check may be useful here. The countries that are lagging behind in their progress towards Education for All goals are characterized by either extreme poverty or lack of political will. In many extremely impoverished countries, poverty levels make the requisite government investments in education a complete impossibility without massive investments from the international community. At present these are nowhere near the levels required to ensure decent learning opportunities for all children, nor will they be in the foreseeable future without a complete turn around in minority/majority world relations There is also a group of governments which have more interest in maintaining high levels of military spending than in investing in education. (Aga Khan Foundation Team 2007, 9.)

The report documents that, since 1990, non-state schools have been expanding enrolment much more rapidly throughout the developing world than have government schools, admittedly starting from a much smaller share of the total. The report concludes from this "reality check" that donors should pursue – as diplomatically as possible – "pluralism," by which the Aga Khan – admittedly an interested party in this discussion – means simultaneous support for government and, where warranted, non-government options:

The key point ... may be [host country] government commitment to education, rather than government necessarily doing it all ... A pluralist system – which includes, in addition to government schools, non-state, demand-responsive schools and agencies that deliver

13 The UK Department for International Development is an example of a bilateral donor that affords high priority to basic education projects. For a summary of its portfolio of projects, see *Learning for All: DFID's Education Strategy 2010–15* (UK 2010).

quality education – could provide significant added value in reaching Education for All and Millennium Development Goals targets. (Aga Khan Foundation Team 2007, 9.)

In countries with effective government administration operating reasonable-quality schools at low direct cost to families and accessible to all, donors may sensibly choose to work solely with the relevant ministries of the host government. In countries with a weak government school system, donors need to take stock of the diversity of school options and be pragmatic in terms of working with governments and non-government agencies. In making such judgments, there is no substitute for on-the-ground decisionmaking by professional field staff.

Implicit in this *Commentary* is that CIDA should be more open to working with a range of non-government agencies involved in providing basic education services. (As illustration of the potential for donors to contribute to basic education, Appendix 1 elaborates in some detail on the state of primary education in South Asia, one of two global regions facing the most acute problems of underperforming schools.) Realistically, CIDA can undertake a serious bilateral commitment – whether to health or basic education – in only a few countries. To CIDA's credit, it has over the previous decade reduced the number of countries in which it undertakes significant bilateral development aid.

There are two standard objections to donors aiding non-government educational agencies. The first is that it will further erode the effectiveness of the country's public school system as more parents opt for non-government schools. That may be the immediate consequence, but the starting point is, by definition, a country with an under-performing public system. Non-government schools may be offering vital substitutes to government schools, and the competition they provide may in time prompt improvements in the public sector.

It helps to recall the history of universal basic education in now-industrialized countries, including our own. Historically, Canada has known a series of school options: government-run schools,

religious schools and fee-paying private schools. Not until the 1960s did the Quebec government establish a provincial education ministry and preempt religious control of the francophone school system. Provinces have worked out compromises to fund non-government school systems, many of which have religious origins. The key to a workable compromise is agreement on core curriculum and a shared system of student evaluation.

The second objection is that most non-government schools are fee-based and subsidizing them will exacerbate socioeconomic inequalities in access to education. However, not all non-government schools impose fees. Some large-scale NGOs offer tuition-free instruction to children of families unlikely to attend government-run schools. Such NGOs rely on a combination of cross-subsidization from commercial activities and donor aid.

Furthermore, nominally "free" government-run schools are often not free. Under weak systems, government schools function tolerably well only if parents engage private tutors. (See discussion of north Indian states in Appendix 1.) The private tutors are often the students' own teachers who thereby supplement very low salaries. This is, in effect, an opaque form of school privatization: the government justifies low teacher salaries and unduly small education budgets – teacher salaries are typically four-fifths of education budgets – on the grounds that many teachers are earning supplementary income from tutoring.

CONCLUSION

I return to the conundrum posed in the introduction. If the case for better schools and effective governance is strong, the skeptic might ask why governing elites of poor countries don't simultaneously spend more on basic education and improve the effectiveness of their respective school systems? And why do they need donor interventions to supplement their domestic education strategies?

The answer to the first question turns ultimately on the heavy discount applied by governors and governed to benefits that will be realized only after a lag of a decade or more. The benefits of a literate population do not materialize quickly and, in the context of extreme poverty, the incentive for governing elites – and for parents of young children – is to favour policy that generates immediate increases in income. Investment in human capital makes good sense, but only if politicians and parents look to the future.

The answer to the skeptic's second question can best be answered by noting the impact of the

UN Millennium Development Goals and the many donor programs it inspired. Among the 35 countries in this study with average 2001–2009 per capita GDP below \$2,500, the average increase in the primary education completion rate in the 1990s relative to the 1980s was less than two percentage points; the increase in the 2000s relative to the 1990s was more than 15 percentage points. (See Figure 5.) Perhaps these countries would have realized equivalent increases without the UN MDGs and donor initiatives, but I doubt it.

APPENDIX 1

THE ROLE OF THE STATE, NGOS AND PRIVATE INSTITUTIONS IN ADVANCING UNIVERSAL LITERACY: THE CASE OF SOUTH ASIA

Sub-Saharan Africa and South Asia are the two global regions with the most severe problems in terms of basic education. As of 2009, one-half of the world's school-age children not in the classroom were in the former and one-quarter in the latter (UN 2011,17). As well, many children in school in these two regions will drop out before completing the primary cycle. (See Figure A1.1 for trends in gross primary school completion among the five major South Asian countries over the last two decades.)

The outstanding performer in South Asia has been Sri Lanka. Despite a protracted civil war from the early 1980s to the late 2000s, its gross completion rate has been above 90 percent over the last quarter century. It is the one South Asian country to have achieved universal literacy; not coincidentally, it also enjoyed the highest regional per capita GDP over the last decade. (See Table A1.1.)

Sri Lanka is a case of a reasonably competent national government (based on its WGI effectiveness score) running a centralized education system. Perhaps the explanation for Sri Lanka's primary education success is simply the consistent support afforded by governing elites to provision of basic social services, including primary and secondary schools, since independence. A necessary condition for successfully running a centralized system may be a small population. Sri Lanka and Nepal both have populations below 30 million; the three others have populations above 150 million.

Culture may well matter: alone among South Asian countries, the Sri Lankan elite are Buddhist. Already, by the early 1960s, adult literacy exceeded 60 percent, and by the early 1970s it was near the important threshold of 80 percent. Between 1970

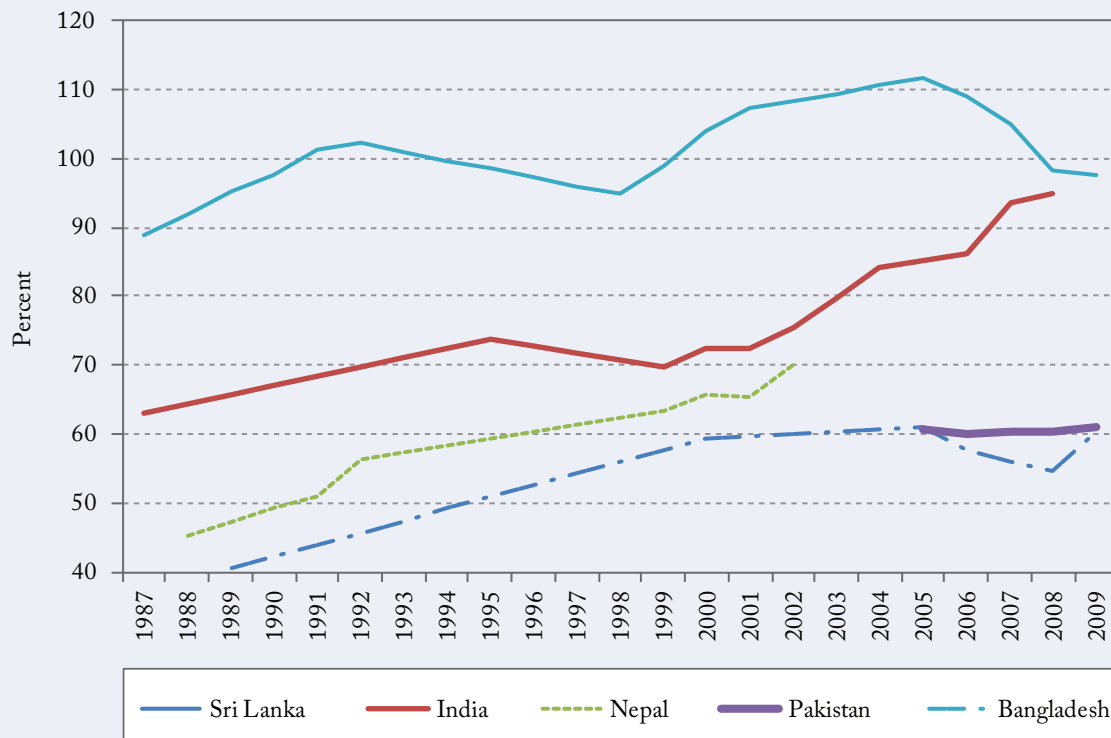
and 1981, Sri Lanka spent on average 3.1 percent of its GDP on education, considerably more than the 2.6 percent spent at the time by India. Almost certainly, Sri Lanka targeted a higher proportion of its education budget on primary and secondary than did India. Until the civil war, Sri Lanka devoted approximately one-half of its public expenditures to the combination of basic education, public health and targeted food subsidies (Isenman 1980).

The Nepalese governing elites – whether royalists, leaders of the bourgeois parties or Maoist revolutionaries – have been mostly upper caste Hindus from the Kathmandu valley. In terms of share of GDP devoted to education over the last decade, Nepal has been generous by South Asian standards but the efficacy of this spending has been low.

According to the country's WGI effectiveness score, Nepal has been the least efficient of the five over recent years in provision of social services. In part, the explanation for inefficient governance is the civil war from the mid-1990s to 2006, in part other problems of ethnic, religious and linguistic diversity. Literacy and primary school completion rates are mediocre. Literacy is similar to Bangladesh and Pakistan. Nepal's completion rate up to 2002 (the latest year of available data) ranked consistently above that of Pakistan and Bangladesh, but behind Sri Lanka and India. Nepal also suffers a large male/female literacy gap.

Pakistan and Bangladesh are respectively the world's sixth and seventh most populous countries, with a combined population of 350 million. In terms of primary school completion, they have lagged the three others. Over the previous decade, they achieved high enrolment rates and thereby achieved approximate gender equity in enrolment, but high grade-repetition and dropout rates resulted in essentially stagnant completion rates. (The data for Pakistan cover only the second half of the decade; there may have been some progress in the

Figure A1.1: Gross Primary Completion Rate, South Asian Countries, 1987 – 2009



Source: Author's calculations from World Bank (2011a).

undocumented early years of the decade.) Both these countries have suffered weak governance, as reflected in their WGI score.

Bangladesh's comparative advantage relative to Pakistan is the presence of several of the world's largest NGOs, which make a major contribution to provision of social services. The largest of these is BRAC (formerly Bangladesh Rural Advancement Committee), with 2010 revenues of US\$465 million.¹⁵ BRAC's 32,000 "non-formal" primary schools are an important component of the country's primary school system.

With a population in excess of 1.2 billion and a rapidly growing economy, India – like China – is of overwhelming importance to world economic development this century. To generalize for such a large and culturally complex country is dangerous, but irresistible in this context. Since independence, the variance across Indian states in social outcomes has been high: some states (such as Kerala) have achieved basic education and population health outcomes as good as Sri Lanka's; other states (notably Bihar) performed at lower levels than Nepal, Pakistan or Bangladesh.

15 BRAC income is expressed in US dollars using an exchange rate of US\$1 = 70 Bangladesh takas.

Table A1.1: Selected Summary Statistics, South Asian Countries

	Adult literacy, average 2001-09			Public education spending, share of GDP, average 2001-2009	Per capita GDP, 2005 constant, average 2001-09	Government effectiveness	
	male	female	male/female gap			score* average 2005-09	change in averages: 1996-00 to 2005-09
	<i>(percent)</i>		<i>(percentage points)</i>	<i>(percent)</i>	<i>(ppp US\$)</i>	<i>(score)</i>	<i>(change in average score)</i>
Bangladesh	57	46	11	2.4	1086	-.88 (167)	-.26
India	74	49	25	3.3	2341	.02 (94)	.17
Nepal	67	41	26	3.7	965	-.93 (172)	-.43
Pakistan	67	38	29	2.5	2159	-.64 (149)	-.02
Sri Lanka	92	89	3	3.0	3623	-.25 (112)	.11

Note:

* Rank in brackets refers to country's position among 211 countries in terms of WGI government effectiveness index, average 2005-09.

Source: author's calculations from World Bank (2011a, 2011b).

In 2001, the national Indian government launched an ambitious series of primary education reforms that expanded the years-of-schooling goal from five to eight (Sankar 2007; Colclough and De 2010). While the majority of primary school funding derives from the states, there has been a dramatic increase in contributions from Delhi, which has attempted more rigorously to decentralize management. Since 2001, India has accepted more donor advice and aid than in earlier decades, but reduced the number of donors participating to, effectively, only three (World Bank, DFID and European Union).

At regular intervals since independence, Delhi has launched education plans with ambitious targets but, until the past decade, overall outcomes remained desultory. Why the difference over the 2000s? Perhaps the international emphasis on achieving the MDGs deserves credit. Perhaps Indian elites, having realized significant economic gains in the previous two decades, finally appreciated the constraint on future growth posed by the country's

weak basic education performance. Whatever the explanation, governing elites in both Delhi and in most state capitals have undertaken major primary education reforms over the past decade.

However, there remain serious problems of school quality, discussed below.

Multiple Options: Government Schools, NGO Schools and Private Schools

At the time of independence, schools in South Asian countries disproportionately targeted children of the elite. The quality of these schools contrasted sharply with woefully inadequate schools available to non-elite children. The optimistic assumption in the mid-20th century was that newly independent governments would diligently redress this inequality via a nationwide network of publicly funded government-run schools. In a few cases – Sri Lanka and the Indian state of Kerala are the most prominent – government leaders did persistently devote financial and managerial resources to basic education. However, government

schools in most of South Asia over the last half century have usually been of far lower caliber than in Sri Lanka or Kerala. Admittedly, this summary conclusion ignores the dedicated work of millions of public school educators working in difficult circumstances for low wages.

In the last decade, the demand for better education has manifested itself in many ways. As discussed above with respect to recent Indian reforms, there has been renewed government attention to basic education. There has also been a flourishing of non-government education options, some sponsored by NGOs, others by religious institutions and yet others by for-profit firms. Currently, one-quarter of Indian children attend private fee-charging schools (Pratham 2011). This option has been gaining popularity even among modest-income families.

In Bangladesh over the decade 1998 – 2008, the estimated share of children attending government primary schools declined from 68 percent to 57 percent. As of 2008, 21 percent attended one of a range of non-government schools, many of them privately run and charging fees; seven percent attended *madrasahs* and 10 percent non-formal schools, most run by BRAC (CAMPE 2009, 64).

BRAC's non-formal school strategy is to target a cohort of about 30 children from low-income families in a village or urban slum, children unlikely to complete their primary education in a government or private school (Nath 2002). BRAC builds a one-room temporary school for the cohort. The teacher, usually a young woman with upper-secondary education, follows the cohort throughout the primary cycle. Teachers undergo a brief in-house teacher-training program. BRAC schools levy no fees and supply all teaching materials required. They use an adapted version of the government five-year curriculum, taught in four years. This is a "bare bones" system: school facilities are clean but rudimentary, without electricity or running water; teacher salaries are low. Relative to government schools, however, learning outcomes among

students in non-formal schools have been superior. (See discussion below.)

Promotion of well-managed substitute school models is one direction for donor activity. Over the two fiscal years 2009 and 2010, BRAC received US\$68 million in donor support for its education program, the overwhelming majority from the UK and the Netherlands. CIDA's contribution was minor – one percent of the donor total (BRAC 2010a, 2010b).

Measuring School Performance and Student Outcomes

Over the last generation has emerged a comprehensive concern in industrial countries to measure school outcomes and analyze variables that potentially explain student performance. In the last decade this concern has spread to South Asia. I introduce here two NGOs that have pioneered basic education surveys in their respective countries. Both have benefited from donor financial and technical support.

Since 2005, Pratham has undertaken ambitious annual random surveys of student performance throughout rural India. Its results are widely discussed in domestic media. Here is a sample of results from the 2010 report:

- Between 2006 and 2010, non-attendance of rural girls in early elementary years (ages 7-10) fell from nearly 6 percent to slightly over 2 percent, and in later years (ages 11-14) from over 10 percent to 6 percent (Pratham 2011,1).
- Some states recorded meaningful improvements in quality. In Punjab, the proportion of rural children in grade four able to read at a grade two level rose from 30 percent in 2008 to 50 percent in 2010. Tamil Nadu has broken the tradition of rote learning and has pioneered a child-oriented curriculum in grade one. This increased the proportion of children who, in grade two, were able to read words from 34 percent in 2006 to 44 percent in 2010 (pp.2,3).
- In states with weak systems, a syndrome of high teacher absenteeism and high student absenteeism thwarts progress. In Uttar Pradesh, a

state with relatively weak results, the proportion of schools surveyed with over 75 percent student attendance declined from 31 percent in 2007 to 17 percent in 2010 (p.13).

- The proportion of children attending private schools has been increasing. Nationally, it reached 24 percent in the 2010 survey – ranging from a low of 5 percent in several northern states to over 50 percent in the southern state of Kerala (p.58). In the three northern states with low private school attendance, over half the sampled children in grade five received supplementary private instruction (p.52).
- While quality improvements have occurred in particular states, Pratham has emphasized that higher participation and completion rates have taken place in a context of low school performance: “notwithstanding ... the Right of Children to Free and Compulsory Education Act, 2009, and the millions of rupees spent on elementary education through [the major 2001 reform program] in the last ten years ... learning levels continue to remain stagnant, with nearly half the children in Grade 5 unable to read a simple text; even worse, this figure seems to have declined from 58 percent reported in 2007 to 53 percent in 2010. Only 36 percent of children in Grade 5 are able to complete a simple division, and here too, the percentage has declined from the 42 percent measured in 2007.” (p.13.)

The Campaign for Primary Education (CAMPE), a coalition of NGOs engaged in provision of basic education, has conducted similar surveys in Bangladesh. Here is a sample of statistics from their major field surveys conducted over the previous decade:

- Teachers’ salaries are low. In response, teachers’ school attendance is often low and students’ parents must hire tutors if their children are to succeed. The tutors are often the students’ own teachers. In late 1990s one fifth of primary school children in Bangladesh had private tutors; a decade later, two fifths relied on private tutors (CAMPE 2009,44).
- In the 2008 survey across Bangladesh, one in eight teachers was absent; two in five teachers arrived late by, on average, a half hour (CAMPE 2009,45).
- Anecdotal evidence suggests political interference in school administration is a problem in many districts. In Bangladesh, members of parliament control many school management committees. They use their influence in choosing school principals who, in turn, hire teachers. Teachers and principals are expected to contribute to the MPs’ political campaigns. Politically influential teachers may shirk in taking classes (CAMPE 2009,39).
- Student/teacher ratios are still too high. The average ratio in government schools in Bangladesh in 2008 was 49. Admittedly, this is a marked improvement from the situation a decade earlier when the ratio was 73 (CAMPE 2009,42).
- Primary school completion rates are disconcertingly low, although higher in urban than rural schools. Among students attending government schools the 2008 rates were 67 percent and 51 percent respectively. The non-formal schools achieved a superior completion rate of 95 percent among students in their cohort-based system (Sabur and Ahmed 2011,180).
- CAMPE has surveyed student performance in terms of 27 competencies, ranging from reading Bangla to basic mathematics and knowledge of nutrition. In a survey conducted in 2000, the mean number of competencies achieved by students in government schools was 16.1, in non-government schools 15.2, and in non-formal schools 17.2. According to a more recent survey in 2008, performance improved somewhat among students in all three of the school types. The respective mean competencies achieved were 19.0, 18.0 and 20.0.
- According to a test of literacy administered to students, ages 11 and over, who had attended various school types, 52 percent of students who had attended government primary schools were rated as literate. The analogous statistic for non-government school graduates was 42 percent, for graduates of non-formal schools 75 percent, and for Ebtedayee madrasa graduates 52 percent (CAMPE 2005,6).

APPENDIX 2

GLOSSARY AND DESCRIPTION OF REGRESSION VARIABLES

The **gross primary completion rate** is the percentage of all students completing the last year of primary school relative to the total in the relevant age cohort. The numerator is the total number of students in the last grade of primary school, minus the number of repeaters in that grade. The denominator is the total number of children of official graduation age, assuming no grade repetition and student entry into Grade One at the designated age. This is a “gross” rate inasmuch as it includes all students completing, regardless of age. If a country undertakes a concerted campaign to increase school enrolment and completion, the gross completion rate will rise dramatically and may exceed 100 percent for a number of years. If the campaign is sustained and enrolment approaches 100 percent among children of appropriate school-entry age, the gross completion rate will decline, even as the net completion rate continues to rise toward 100 percent.

The **net primary completion rate** restricts the numerator to students at the appropriate completion age, assuming entry at the appropriate age and no grade repetition. (Unless indicated, all completion rates cited are gross as opposed to net completion rate.) The measure employed in the level regressions is the 2005–2009 average gross completion rate; the difference between this average and that for the years 1995–2000 is used in the difference regressions.

Two measures of expenditure on education are employed. The first is a **normalized government spending per primary student** statistic. The numerator is public current spending on primary education divided by the total number of primary students. The denominator is GDP per capita. Public spending (current plus capital) includes government spending on both private and public educational institutions, education administration as

well as subsidies for private entities (e.g., incentives to families to send children to school).

Education is a labour-intensive service – the great majority of expenses are compensation for teachers and other personnel. In most countries at most times, teachers’ average salaries are at a roughly constant ratio to per capita income. Under these assumptions, for a government to increase resources per student requires that per student expenditures rise relative to per capita income. This normalized statistic, used in the level regressions, is averaged over the years 2001–2009. For many countries, time series for this statistic do not extend back to the 1990s.

The population health regressions employ, as a variable, **total health expenditure** as a share of GDP, averaged over the years 2005–2009. Health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation.

The **adult literacy rate** is the percentage of people aged 15 and above who can, with understanding of their action, read and write a short, simple statement on their everyday life. For the level regressions, literacy is calculated as the average rate for the years 2001–2009. For the difference regressions, it is the difference between that average and the average between 1990 and 2000. While this statistic allows for two states only (literate or illiterate), the concept of literacy is better viewed as a continuum of ability with respect to use of language (Ahmed 2011a). Also to be noted, the standards applied by national statistical agencies in preparing this statistic vary.

Since 1996, the World Bank has prepared indices that attempt to measure six dimensions of governance: Voice and Accountability, Political Stability and Absence of Violence/Terrorism,

Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. The Worldwide Governance Indicators (WGI) are based on several hundred variables obtained from 31 different data sources, capturing governance perceptions as reported by survey respondents, non-governmental organizations, commercial business information providers and public sector organizations worldwide (Kaufmann et al. 2010). The index values for each country and each dimension in any year are relative to the others. They do not measure governance in any absolute sense. For each year the distributions across countries are normalized with mean zero and standard deviation of one. This study utilizes two of the six indicators:

- The **government effectiveness index**: “captur[es] perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies (Kaufmann et al. 2010, 3).”
- The **voice and accountability index**: “captur[es] perceptions of the extent to which a country’s citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association and a free media (Kaufmann et al. 2010, 3).”

For the level regressions, the effectiveness and accountability variables are defined as the average of the respective indices over the years 2005-2009. For the difference regressions, the change in each variable is the difference between this average and that covering the years 1996-2000.

The population health regressions attempt to explain three commonly used measures:

- The **under-five mortality rate** is the probability per 1,000 live births that a newborn baby will die before reaching age five, if subject to current age-specific mortality rates.
- The **total fertility rate** is the number of children born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age-specific fertility rates.
- The **maternal mortality rate** is the number of women who die during pregnancy and childbirth, per 100,000 live births. The data are estimated with a regression model using information on fertility, birth attendants and HIV prevalence.

APPENDIX 3

REGRESSION RESULTS

Table A3.1: Primary Completion Rate				
	Reg. (1)	Reg. (2)	Reg. (3)	Reg. (4)
	Primary Completion Rate (percent)			
Intercept	87.75***	70.80***	23.62***	26.28***
Government effectiveness	19.586***			
Voice and accountability	3.37			
Normalized expenditure per primary student (percent of per capita GDP).	-0.035			
Normalized expenditure x index (1: top quarter by effectiveness; 0: elsewhere)		1.277***	0.763***	0.353*
Normalized expenditure x index (1: 2 nd quarter by effectiveness; 0: elsewhere)		0.140		
Normalized expenditure x index (1: 3 rd quarter by effectiveness; 0: elsewhere)		-0.072		
Normalized expenditure x index (1: bottom quarter by effectiveness; 0: elsewhere)		-1.008		
Adult literacy rate (%)			0.689***	0.501***
Per capita GDP (\$)				0.006***
Adjusted R ²	0.19	0.18	0.61	0.66
Legend (one-tail significance)				
* significant at .15				
** significant at .05				
*** significant at .025				
Source: author's calculations from World Bank (2011a, 2011b).				

Table A3.2: Population Health Rates

	Reg. (5)	Reg. (6)	Reg. (7)
	<i>Under-five mortality rate (per 1,000 live births)</i>	<i>Total fertility rate (per adult woman)</i>	<i>Maternal mortality rate (per 100,000 live births)</i>
Intercept	169.69***	6.39***	815.04***
Expenditure/GDP x index (1: top quarter by effectiveness; 0: elsewhere) (%)	-2.21*	-0.12***	-9.31
Index (1: bottom quarter by effectiveness; 0: elsewhere)	45.67***	0.34*	191.97***
Female literacy (%)	-1.05***	-0.028***	-4.77***
Per capita GDP (\$)	-0.01***	-0.0002**	-0.07***
Adjusted R ²	0.68	0.54	0.57
Legend (one-tail significance) * significant at .15 ** significant at .05 *** significant at .025 Source: author's calculations from World Bank (2011a, 2011b).			

Table A3.3: Countries Included in Regressions

53 countries included in primary school completion regressions	56 countries included in population health regressions
Armenia	Angola
Bangladesh	Armenia
Benin	Bangladesh
Bhutan	Benin
Bolivia	Bolivia
Burkina Faso	Burundi
Burundi	Cape Verde
Cambodia	Central African Republic
Cameroon	Chad
Cape Verde	China
Central African Republic	Comoros
Chad	Congo, Dem. Republic
Comoros	Cote d'Ivoire
Cote d'Ivoire	Eritrea
Eritrea	Gambia
Ethiopia	Georgia
Gambia	Ghana
Georgia	Guatemala
Ghana	Guinea
Guatemala	Guinea-Bissau
Guinea	Honduras
India	India
Indonesia	Indonesia
Jordan	Kenya
Kenya	Kiribati
Lao PDR	Kyrgyz Republic
Lesotho	Lao PDR
Liberia	Lesotho
Madagascar	Malawi
Malawi	Mauritania
Maldives	Moldova
Mali	Mongolia
Mauritania	Morocco
Moldova	Mozambique
Mongolia	Nepal
Morocco	Nicaragua
Mozambique	Niger
Nicaragua	Nigeria
Niger	Papua New Guinea
Paraguay	Rwanda
Philippines	Samoa
Rwanda	Sao Tome and Principe
Samoa	Senegal
Senegal	Sierra Leone
Sierra Leone	Sri Lanka
Swaziland	Sudan
Syria Arab Republic	Swaziland
Tanzania	Syria Arab Republic
Togo	Tajikistan
Tonga	Tanzania
Uganda	Turkmenistan
Vanuatu	Uzbekistan
Zambia	Vanuatu
	Vietnam
	Yemen
	Zambia

Source: World Bank.

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