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Universal Education
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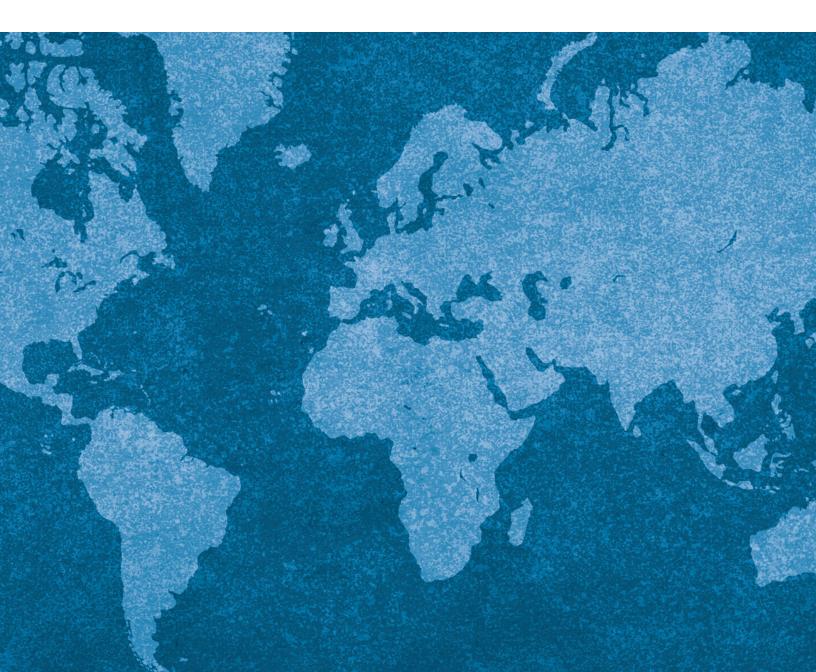# THE POWER OF CIRCUMSTANCE
A NEW APPROACH TO MEASURING EDUCATIONAL INEQUALITY

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THE POWER OF CIRCUMSTANCE
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INTRODUCTION

In recent years, there has been a resurgence of interest in the issue of inequality. Part of this resurgence can be traced to new evidence of persistent and widening wealth gaps. Average incomes may be converging globally as a result of high growth in emerging markets, stronger growth in many poor countries, and slow growth in rich countries. However, the evidence also shows that *within* countries a parallel process of income divergence, marginalization and rising inequality is also taking place (Milanović, 2005, 2011). Put differently, the rising tide of global prosperity is not lifting all boats.

Much of the international debate on inequality focuses on the distribution of income across and within countries. Other dimensions of inequality have received less attention. This is unfortunate. Amartya Sen has described development as "a process of expanding the real freedoms that people enjoy" by building human capabilities or their capacity to lead the kind of life they value (Sen, 1999, p. 3). Income is a means to that end but it is a limited indicator of well-being. Moreover, a person's income reflects not just personal choice but also their opportunities

for improving health, literacy, political participation and other areas. Education is one of the most basic building blocks for the "real freedoms" that Sen describes. People denied the chance to develop their potential through education face diminished prospects and more limited opportunities in areas ranging from health and nutrition, to employment, and participation in political processes. In other words, disparities in education are powerfully connected to wider disparities, including international and intra-country income inequalities. This is why education has been identified as one of the most critical factors in breaking down the disadvantages and social inequalities that are limiting progress toward the United Nations' Millennium Development Goals (MDGs)—development targets adopted by the international community for 2015.

Understanding patterns of educational inequality is critical at many levels. Ethical considerations are of paramount importance. Most people would accept that children's educational achievements should not be dictated by the wealth of their parents, their gender, their race or their ethnicity. Disparities in educational opportunities are not just inequalities in a technical sense, they are also fundamental in-

equities—they are unjust and unfair. They are also fundamental inequities—they are unjust and unfair. In an influential paper, John Roemer differentiated between inequalities that reflect factors such as luck, effort and reasonable reward, and those attributable to circumstances that limit opportunity (Roemer 1988).[1] While the dividing line may often be blurred, that distinction has an intuitive appeal. Most people have a high level of aversion to the restrictions on what people—especially children—are able to achieve as a result of disparities and inherited disadvantages that limit access to education, nutrition or health care (Wagstaff, 2002). There is a wide body of opinion across political science, philosophy and economics that equal opportunity—as distinct from equality of outcomes—is a benchmark of egalitarian social justice. The theories of distributive justice associated with thinkers such as Amartya Sen, John Rawls, Ronald Dworkin and John Roemer argue, admittedly from very different perspectives, that public policy should aim at equalizing opportunity to counteract disadvantages associated with exogenous circumstances over which individuals or social groups have no control. Given the role of education as a potential leveler of opportunity, it is a national focal point for redistributive social justice.

Considerations of economic efficiency reinforce the ethical case for equalizing educational opportunities. Education is a powerful driver of productivity, economic growth, and innovation. Econometric modeling for both rich and poor countries suggests that an increase in learning achievement (as measured by test score data) of one standard deviation is associated on average with an increase in the long-run growth rate of around 2 percent per capita annually (Hanushek and Wößmann, 2010; Hanushek, 2009; Hanushek and Wößmann, 2008). Such evidence points to the critical role of education and learn-

ing in developing a skilled workforce. Countries in which large sections of the population are denied a quality education because of factors linked to potential wealth, gender, ethnicity, language and other markers for disadvantage are not just limiting a fundamental human right. They are also wasting a productive resource and undermining or weakening the human capital of the economy.

International development commitments provide another rationale for equalizing educational opportunities. This is for two reasons. First, the commitments envisage education for *all* and achievement of universal primary education by 2015. Second, there is mounting evidence that inequality is acting as a brake on progress toward the 2015 goals. Since around 2005, the rate of decline in the out-of-school population has slowed dramatically. Based on current trends, there may be more children out of school in 2015 than there were in 2009. Caution has to be exercised in interpreting short-run trends, especially given the weakness of data. However, the past three editions of the UNESCO Education for All *Global Monitoring Report* (GMR) have highlighted the role of inequality in contributing to the slowdown with governments struggling to reach populations that face deeply entrenched disadvantages (UNESCO, 2008, 2010, 2011). Therefore, picking up the pace toward the 2015 goals requires a strengthened focus on equity and strategies that target the most marginalized groups and regions of the world (Sumner and Tiwari, 2010; UN-DESA, 2009; UNESCO, 2010).[2] It should be added that disparities in education relate not just to access, but also to learning achievement levels.

Accelerated progress in education would generate wider benefits for the MDGs. Most of the world's poorest countries are off-track for the 2015 MDG target of halving income poverty and a long way from reaching the targets

on child survival, maternal health and nutrition. Changing this picture will require policy interventions at many levels. However, there is overwhelming evidence showing that education—especially of young girls and women—can act as a potent catalyst for change. On one estimate, if all of sub-Saharan Africa's mothers attained at least some secondary education, there would be 1.8 million fewer child deaths in the region each year. Thus while education may lack the "quick fix" appeal of vaccinations, it can powerfully reinforce health policy interventions.

DEPRIVATION AND MARGINAL-IZATION IN EDUCATION INDICATOR

Most governments operate under constitutions or laws that enshrine the principle of equal opportunity in education for all citizens. Yet across the world, parental wealth and education, gender, race and ethnicity have a strong influence on what children are likely to achieve in education, which in turn perpetuates wider patterns of inequality.[3] Understanding the configuration of inherited disadvantages is a first step toward identifying the policies needed to equalize opportunity. The Deprivation and Marginalization in Education (DME) indicator was developed by UNESCO's *Global Monitoring Report* team to inform policy by mapping patterns of inequality. The DME provides a partial measure of departures from equal opportunity generated by the weight of exogenous circumstances. One of the advantages of the DME is that it can be used to capture not just the disadvantage associated with single characteristics (such as parental wealth) but also the incremental layers of disadvantage created by overlapping characteristics (for example, parental wealth, membership of a specific linguistic or ethnic group, and gender).

There is no shortage of core data relating to education outcomes. Results from household surveys, national census exercises and administrative data

on schools reported through governments to the UNESCO Institute for Statistics (UIS) provide a great deal of valuable statistical information on attainment levels. The widely used Barro and Lee database, which now covers 147 countries, uses mean years of schooling to measure human capital stock across countries (Barro and Lee, 2010a, 2010b). This is one of the component parts of the composite education indicator in the Human Development Index calculated by the United Nations Development Programme's *Human Development Report* (UNDP, 2010). The number of years of education, sometimes disaggregated by wealth and gender, has also been widely used to construct Gini coefficients and other measures of inequality to map the distribution of education attainment within countries (Holsinger and Jacob, 2009; Ling and Tang, 2007; Patrinos and Psacharapoulos, 2011; Thomas et al., 2002). Disaggregated primary net enrollment rates (which measure the share of primary school age children in school) and gross enrollment rates (which measure the number of children in school as a proportion of the relevant age group) reported by governments through the UNESCO Institute for Statistics (UIS), along with the reported school attendance figures in demographic and health surveys, provide further sources of disaggregated data.

While helpful, these approaches to the measurement of inequality in education suffer from several shortcomings. Some can be traced to data constraints, and others to more conceptual problems. For example, the mean number of years of schooling can be compared across many countries, but when applied to the entire adult population it measures capital stock and past performance, not current performance or changes across generations. This limits its usefulness in informing public policy. Moreover, the mean number of years in school is

a poor guide to assessing the quality of education and learning achievement. Most people would accept that a year in school in Burkina Faso produces a very different outcome from a year in Singapore. But learning achievement surveys also document large differences between countries at more comparable levels of development. This calls into question the relevance of cross-country measurement based solely on years of education. Recent evidence on the relationship between education and economic growth confirms that what children learn is far more important than years in school. In many countries, mean attainment levels are also a weak proxy for the level of education attained because high dropout and repetition rates mean that two children with five years of reported education may still be separated by several school grades.

Arguably more serious than these built-in data problems is the question of *what* is being measured. The U.N. Millennium Development Goal framework invites governments to report on national average performance in education, not on the dispersion of performance across society. Unfortunately, data on mean years of schooling or average learning achievement can obscure as much as it reveals. In particular, it obscures the dispersion of results across children with different social characteristics.

The Deprivation and Marginalization in Education indicator is a contribution to the wider tool-kit for capturing the dispersion of opportunity. Unlike single-indicator measures, it can be used to provide a window on the interaction between different drivers of inequality.[4] The DME indicator's primary point of reference is the reported number of years in school for specified age cohorts, as recorded in Demographic and Health Surveys published from 2003. This provides a basis for identifying average education attainment for specific age groups and the average level of attainment for groups identified by specified household characteristics. The demographic and health surveys themselves document the patterns of education deprivation associated with, say, wealth or gender. But the real lives of individuals behind the data are not neatly compartmentalized. The people facing the most limited opportunities in education are often poor *and* female *and* rural *and* a member of an ethnic minority, to name just some of the relevant markers for disadvantage. The way in which the social disadvantages associated with each of these and other characteristics interact and become mutually reinforcing is critical not only to understanding the underlying cycle of disadvantage but also to designing policies aimed at breaking that cycle. While the DME indicator provides a static snapshot of one dimension of deprivation in education related to years in school, it also offers a window through which to view the dynamic processes that predispose some social groups toward restricted opportunities.

One of the most striking findings to emerge from the DME data is the sheer scale and intensity of national deprivation in education. There are no ready-made benchmarks against which to measure absolute or relative deprivation in education. The widely used $1.25 (purchasing power parity) threshold used to denote absolute income poverty has no counterpart in education. Similarly, there are no conventions for measuring deprivation in education relative to a median or mean performance. In applying the DME indicator, the *Global Monitoring Report* establishes two thresholds for capturing absolute disadvantage. Taking the population aged 17 to 22, it sets a threshold for "education poverty" at four years in school and "extreme education poverty" at two years. There are some obvious difficulties associated with these (or

any other) thresholds. While four years of education is widely recognized as a bare minimum for acquiring basic literacy and numeracy skills, it is not a sufficient condition. As documented in a wide range of learning achievement assessments in low-income countries, many children reach grade 4 of primary school or higher without gaining even the most basic reading and mathematics competencies. Nonetheless, adults with less than four years in education are extremely likely to fall below what might be considered a global minimum, while those with less than two years are unlikely to have reached even the most limited levels of learning achievement.

The 2010 *Global Monitoring Report* used the demographic and health survey data to identify how many of those aged 17 to 22 fell below the four-year and two-year education thresholds in 63 predominantly low-income and lower-middle-income countries. In 22 of these countries, 30 percent or more had less than four years schooling (Figure 1). Most of these countries were in Sub-Saharan Africa. In a broad group of 13 countries in the region—including Mozambique, Senegal, Ethiopia, Chad, Mali and Burkina Faso— over half of the age group fell below the four-year threshold; and in 11 of these countries, 40 percent or more had less than two years in school. But it is not just the very poorest countries that register high levels of deprivation. In Morocco and Guatemala, over one-third of the 17- to 22-year-old age group had less than four years in education.
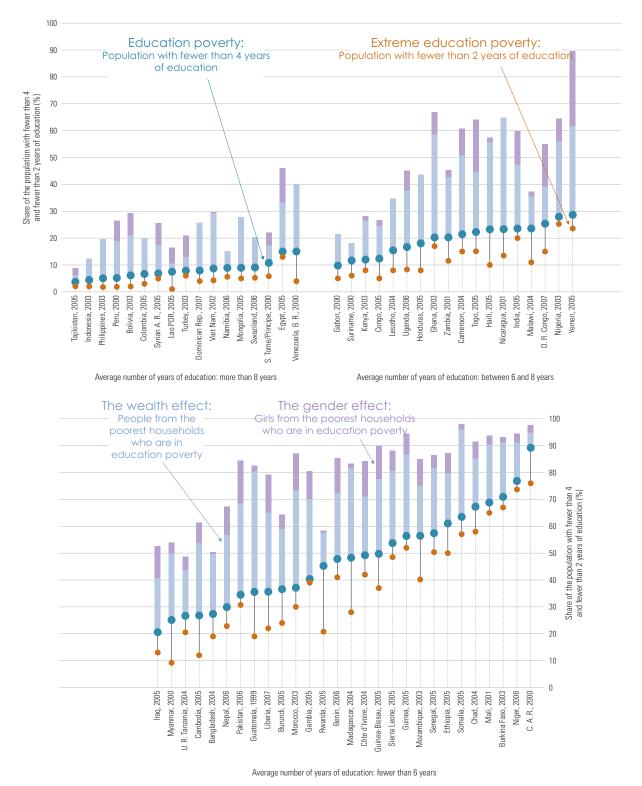
Figure 1: Scale of Disadvantage: The Shares of the Population aged 17–22 with Less than Four Years and Less than Two Years in School

Average number of years of education: more than 8 years

Average number of years of education: between 6 and 8 years

Average number of years of education: fewer than 6 years

Source: UNESCO-DME (2009)

PATTERNS OF DISADVANTAGE IN EDUCATION

As is evident from Figure 1, wealth and gender have strong and mutually reinforcing effects in structuring patterns of disadvantage. These effects are far more marked than those revealed in administrative data on school enrollment. Being born into the poorest 20 percent of households is a universal source of disadvantage across all countries covered in the DME sample and being born as a female into these households is a significant multiplier of disadvantage. However, the pattern of risk varies. For example, Guatemala is an extreme example of a wealth effect in operation. Over 80 percent of the people from the poorest households get less than four years in education. Being a poor female carries a small incremental disadvantage. By contrast, in countries such as Pakistan, Yemen and Egypt, being a poor female strongly reinforces the disadvantage associated with household wealth. In Yemen, poor females face a risk of receiving less than four years in school that exceeds three times the national average.

Comparisons across countries at different levels of wealth produce some striking results. While it has a per capita income comparable to that in Vietnam, Pakistan has more than three times the share of its population with fewer than four years in school. With more than double the average income of Lesotho, Morocco has twice the share of people with less than four years in school. Such contrasts underline the fact that inequalities in basic education do not automatically shrink with rising incomes.

The DME data make it possible to look behind national averages into the more detailed social contours of inequality and marginalization in education. In Nigeria, 17- to 22-year-olds have received on average just under seven years schooling (Figure 2). For rich urban males and females, that figure rises to almost 10 years. But poor, rural, Hausa females average less than one year. While extreme, this pattern of unequal opportunity is not untypical, as the 2010 *Global Monitoring Report* documents:

- India's wealth gap has a marked effect on the distribution of educational opportunity. Young adults from households in the poorest 20 percent of the population average just over four years in school, compared with a national average of over seven years and almost 12 years for the wealthiest 20 percent of households. Gender gaps among children from the wealthiest households are minimal. However, poor rural females in India's Bihar state attain on average less than two years in school. That represents around one-quarter of the national average and less than half of the attainment level for poor rural boys.

- The data for Egypt point to pronounced wealth, gender and regional effects. Those aged 17 to 22 average nine years in education, comparable with the level in Indonesia, which has a far lower level of income. Those from the poorest 20 percent of households in rural upper Egypt average just six years in school. But that figure obscures a three-year differential between boys (who average almost eight years) and girls (who average slightly over four years). In other words, girls born in rural upper Egypt are likely to have half as many years in school as boys.

- Several countries at higher average income levels register marked inequalities. Poor Kurdish females living in Turkey average just around three years in school (Figure 3). This is comparable on an international scale with the average level in Chad and half the average level in Bangladesh. In the Philippines, fewer than 3 percent of people living in the national capital region fall below the four-year education poverty threshold, but this rises to 15 percent in the Autonomous Region in Muslim Mindanao.
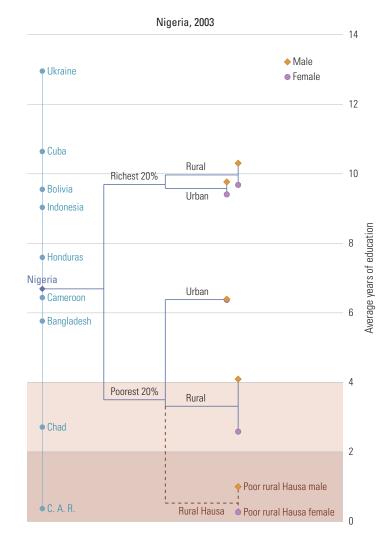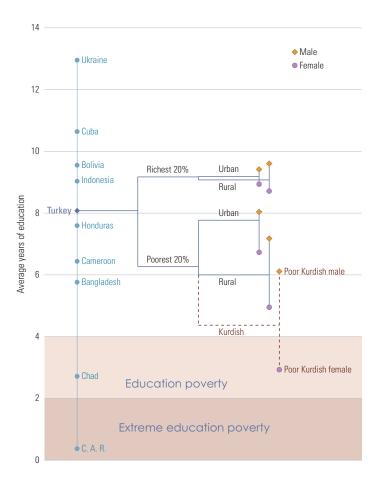
Figure 2: Nigeria's Inequality Tree: Patterns of Disadvantage in Education

Source: UNESCO-DME (2009).

Figure 3: Unequal Opportunity in Turkey

Average number of years of education of the population aged 17 to 22 by wealth, location, gender and Kurdish language, 2005
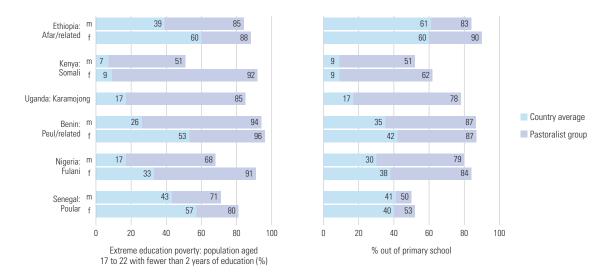

Source: UNESCO-DME (2009).

Lurking behind the disparities recorded by the DME is a broad array of inherited social disadvantages that vary across countries. Some of these are associated with identifiable livelihood groups. The DME data presented in the 2010 *Global Monitoring Report* illustrates this by reference to evidence on pastoralists (Figure 4). For example, in Kenya around 7 percent of males and 9 percent of females attain fewer than two years of schooling, while the figures for ethnic Somali pastoralists in Kenya rise to 51 percent and 92 percent respectively. The pattern recorded for other pastoralist groups—Afar in Ethiopia, Karamajong in Uganda and Poular in Senegal—are consistent with this pattern, suggesting that pastoralists in general and female pastoralists in particular would figure near the bottom of any national or global league table for education attainment. In Benin, 53 percent of young women aged 17 to 22 years report having less than two years of education. For women in the same age group from the Peul pastoralist community, the figure rises to 96 percent.

Figure 4: Education Poverty for Pastoralists in Selected Countries

Percentage of the population aged 17 to 22 with fewer than two years of education and % of primary school age children not attending primary school, by gender and membership of selected pastoralist groups, latest available year

Extreme education poverty: population aged 17 to 22 with fewer than 2 years of education (%)

% out of primary school
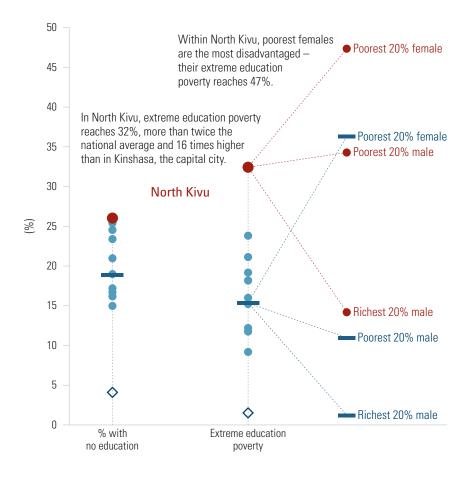
Country average
Pastoralist group

Language and ethnicity, often linked to regional factors, are strong predictors of disadvantage, with wealth and gender having strong multiplier effects. The southern "poverty belt" states of Mexico illustrate the interaction. Average years of education range from 5.7 for females in Chiapas, a predominantly indigenous state, to over 10 in the federal district; and one quarter of 17- to 22-year-olds in Chiapas have less than four years in school, which is more than double the national average. In Peru, poor indigenous females average just five years in school, which is two years less than the average for indigenous people and almost five years below the national average. In Cambodia, the situation facing rural girls in the indigenous regions of Mondol Kiri and Rattanak Kiri is even more extreme. Over 70 percent of them attain less than two years schooling, which is six times the national average.

The DME data provides a useful window on inequality in different regions of the same country. The can be particularly useful in countries experiencing violent conflict at the sub-national level. The 2011 *Global Monitoring Report* used the DME indicator to disaggregate education attainment levels for different groups living in identifiably conflict-affected regions, such as North Kivu in the eastern part of the Democratic Republic of Congo, the Autonomous Region in Muslim Mindanao in the Philippines, and eastern Myanmar.

The results of the data analysis highlight the destructive force of conflict in its impact on education. They also draw attention to unequal effects across gender and wealth groups. In the case of the DRC, the province of North Kivu, one of the worst-affected by

conflict, has among the highest levels of education deprivation in the country. But, the conflict appears to have had relatively minor effects on males from the wealthiest households, while the poor in general and poor females in particular have been hit very hard (Figure 5). Possible explanations for this include the impact of targeted sexual violence against young girls, which is widespread in North Kivu, and the differential effects of conflict on the rich and the poor. With fewer assets and savings than the wealthy, poor households may be less able to mitigate the effects of crop losses and disruption of livelihoods, forcing them to cut spending in other areas, such as education, or transfer children from schools to jobs.

Figure 5: Armed Conflict and Inequality in Education: Evidence from North Kivu Province, Democratic Republic of Congo

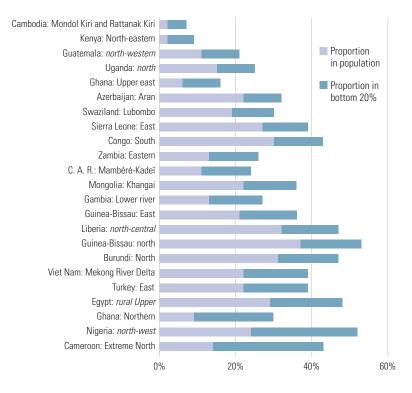*The share of the population by province with less than two years in school*

How useful is the DME in profiling the degree of disadvantage associated with identified characteristics? This is one of the several areas in which more work is needed. However, some of the initial results are striking.

One, admittedly imperfect, way of approaching the weight of disadvantage is to consider the risk of being in the bottom 20 percent of the distribution for educational opportunity as measured by years in school. In a purely random distribution that might approximate to a hypothetical situation of equal opportunity, the presence of any group at any point in the distribution would broadly reflect its population share. No country in the world registers a random distribution in education. But the DME indicator provides some striking examples of the skewed risk of marginalization associated with inherited circumstances over which children have no influence. Taking the 17- to 22-year old age group as

a reference point, the DME data produce some stark examples of institutionalized inequality. In countries such as India, Madagascar and Bolivia, the poorest fifth account for over half of all people in the bottom 20 percent of the distribution for years in school. Similarly, language has a particularly marked bearing on the chance of an individual being in the bottom end of the distribution. In Turkey, Kurdish-speaking people account for just under one-fifth of the population but twice that share of people in the bottom 20 percent of the distribution. In Nigeria, over half of people in the bottom 20 percent speak Hausa as their mother tongue—a language group that accounts for just one-fifth of the population. Regional factors are also pervasive (Figure 6). In Cameroon, for example, three regions accounting for just one-quarter of the population account for three-quarters of people in the quintile with the fewest years in school.

Figure 6: Regional Disparities in Education

Percentage of selected regions* in the bottom 20% of the education distribution, population aged 17 to 22, selected countries, latest available year

* Regions presented in the graph are the first level of administrative division, except those in italics which are geographical areas
Sources: UNESCO-DME (2009); census calculations by Harttgen and Klasen (2009).

There are many problems and limitations with the DME indicator. Most obviously, the data provide a quantitative measure of years in school and not a qualitative measure of learning achievement.[5] As the growing body of evidence from national learning assessment exercises demonstrates, factoring in what children learn in school would powerfully magnify the inequalities revealed by the DME data. For this reason, the exercise conducted in the 2010 *Global Monitoring Report* understates inequality in education by several orders of magnitude. Another limitation is the demographic and health survey data on which the analysis is based. For several smaller language groups, sample sizes are too small to capture overlapping dimensions of disadvantage. Moreover, the marked variability in education data that emerges across national census, demographic and health surveys as well as other surveys serves to underline the cause for caution in drawing overly strong conclusions from a sometimes uncertain evidence base.

CONCLUSION

The DME data captures a range of education outcomes. They are not a substitute for detailed analysis of the factors behind these outcomes. The strength of the DME resource is in its use as a data tool that can help shed light on past and present patterns of disadvantage and the underlying social, cultural and economic dynamics that perpetuate them. Understanding these dynamics and developing a public policy response are vital to greater equity in education. Beyond its analytic value, the DME can also help to inform public debates and policy design. It provides policymakers, nongovernment organizations and researchers with a simple tool that reveals patterns of disadvantage that are often hidden, in some cases by government intent. The data help to trace the fault lines in educational opportunities that run across different societies and measure the degree to which governments are acting on the commitment they made in 2000 to deliver education for *all*.

The indicator may also have a wider political application. With international attention starting to turn toward the post-2015 agenda, there is an opportunity to fill some of the conspicuous gaps in the current Millennium Development Goal framework. That framework currently sets education targets in terms of national average achievement. Given that inequality is such a major barrier to accelerating progress, it is surely time to use equity-based criteria to assess the performance of governments. This does not mean abandoning national goals, but adopting targets that will facilitate the achievement of those goals by reducing social disparities. To take one example, governments could commit to halving disparities in school attendance or learning achievement associated with wealth, location, ethnicity and other markers for disadvantage. Of course, some governments would be loath to go down this road and would prefer the U.N. reporting system to remain fixed on national aggregates that serve to obscure social inequalities. Viewed from a different perspective, this is precisely why UN agencies, nongovernment organizations and the wider research community should focus far more strongly on equity.

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ENDNOTES

1. (Roemer, 1998). On the distinction between the role exogenous circumstance over which people have no control and effort, luck and talent in determining outcomes see (Crespo and Ferreira, 2009), where the authors attempt to quantity the weight of circumstance for several countries in Latin America; see also (Ferreira and Gignoux, 2008).

2. See also (Gwatkin, 2007)

3. For a discussion of the dynamic interaction between inequality in education and wider inequalities see (UNESCO, 2010)

4. The remainder of this article draws on evidence set out in the 2010 GMR (UNESCO, 2010)

5. Both the 2010 and 2011 GMRs look at inequalities associated with learning outcomes. For example, the 2010 report draws on data from the 2007 Trends in International Mathematics and Science Studies to highlight the extreme learning disparities in the United States. Similarly, the 2011 report provides a detailed assessment of disparities in developing countries drawing on national learning assessments, school test results and regional learning assessments.