4 Measuring inequalities in income and gender

Why inequalities matter for human development

In the last decade or so, many countries, notably Brazil, China, India and others, have registered impressive economic growth and have reached levels of GDP per capita that place them in the middle income category. Nonetheless, the gap between the rich and poor is widening within many countries and so are the human development achievements among different socio-economic groups.

At the heart of the human development concept is equality of opportunities for all groups in society: rich and poor alike. The reality is that in many societies inequalities are widespread. For instance, a country like Cambodia is marked by severe disparities: in 2005, the poorest quintile of the population accounted for 7 percent of total income, compared to 50 percent for the richest 20 percent. This reflects and also reinforces wider inequalities in human capabilities across many dimensions, as measured by the proportion of births attended by trained health personnel, the survival of infants and children and their nutritional status, for the poorest and richest 20 percent of Cambodia's population (see table 1). As noted above, the HDI, as an aggregate index, masks these disparities between rich and poor, and women and men, in terms of access to education, health and a decent standard of living. A country may perform well in the aggregate HDI even if its people experience large disparities in opportunities.

The global *Human Development Report 2006* (UNDP 2006a) made an important step to address this issue and, for a sample of 13 low- and middle-income and two high-income countries, presented separate HDI values for all five income quintiles. That is, the life expectancy, education and income indices were calculated to generate income quintile-specific HDI values (see Grimm et al. 2008). The results showed that inequality in human development was very high, was typically larger in developing countries and was particularly sizable for African countries in the sample. This was not only due to an unequal income distribution but also to substantial inequalities in education and life expectancy. However, the differentials were also noticeable in the two rich countries. For example, the poorest income quintile in the United States reached only position 43 in the general HDI country ranking, putting it below Lithuania and Slovakia.

This inequality analysis has been extended to cover around 30 countries, including 11 OECD member states (Grimm et al. 2007). The results underline the very stark differences in human development between the richest and the poorest quintiles within countries.

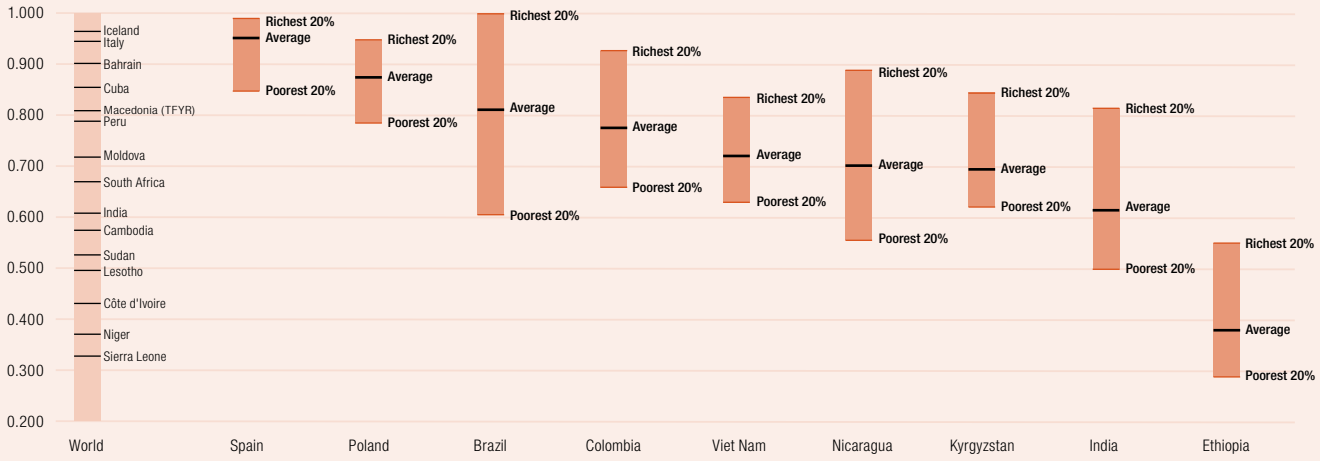
Africa is the region where disparities in human development are most serious. In contrast to comparisons in income inequality (where Latin America is the most unequal region), when we compare HDI values by income quintile, some African countries are more unequal. For example, in Brazil, Guatemala and Peru the ratio of the HDI between the richest and the poorest quintile is between 1.6 and 1.7, whereas it is around 1.9 in Burkina Faso and Madagascar and as much as 2.5 in Guinea. Most of the other African countries for which data are available have differentials between the richest and poorest quintiles around the levels of the three Latin American countries mentioned above (i.e., at 1.6 or higher). India also has very substantial inequality in human development achievements across income groups. The richest quintile in

Table 1 **Inequalities in maternal and child health and income in Cambodia, 2005**

Indicator	Poorest 20%	Richest 20%
Births attended by skilled health personnel (%)	21	90
Infant mortality rate (per 1,000 live births)	101	34
Under-five mortality rate (per 1,000 live births)	127	43
Children under height for age (%)	47	19
Share of income (%) (2002)	7	50

Source: Indicator tables 8 and 15 in UNDP 2007a.

Figure 3 **Same country, different worlds—a human development index by income group**



a. Countries are ranked in order of their average HDI values.

Source: Grimm et al. 2007 and 2008.

India ranks among the high human development countries ahead of the former Yugoslav Republic of Macedonia, whereas the poorest quintile ranks among the low human development countries behind Lesotho (see Figure 3).

The differences within OECD countries for which data are available are more muted, with ratios between the top and bottom quintiles typically of the order of 1.1–1.2. Nevertheless, these differences would translate into differences of at least 30 places, and in some cases over 50 places, in HDI ranking between the richest and poorest population groups for most countries. For example, in Poland, which ranks 39th in this year's HDI, there are wide differentials between rich and poor: while the richest quintile ranks 19th at the same level as Italy, the poorest quintile falls only at medium human development levels and ranks 79th putting it at the same level as Peru.

The Human Poverty Index (HPI-1)

This year, 27 more countries have been included in the HPI-1—twenty Central and Eastern Europe and CIS countries that are usually in HPI-2 plus Afghanistan, Bahrain, Iraq, Liberia, Libyan Arab Jamahiriya, Oman and Saudi Arabia. This has pushed some countries down the ladder even when their HPI values have not fallen relative to those reported in the 2007/2008 *Human Development Report* on climate change.

Trends in the HPI-1 values show that while a number of countries have made progress in the last 10–15 years, significant proportions of their populations do suffer some form of human deprivation. This is most marked in sub-Saharan Africa where—with the exception of Cape Verde, Comoros, Congo, Gabon, Mauritius and South Africa—more than a quarter of the population suffer one or more forms of human poverty.

Some countries in South Asia suffer similar deprivations. In Afghanistan, Bangladesh, Bhutan, Nepal and Pakistan, one in three persons suffers one or more forms of human deprivation. The same holds true for Haiti, Lao People's Democratic Republic and Timor-Leste. There is relatively less human deprivation in Central and Eastern Europe and CIS countries.

It should be borne in mind that, unlike the income poverty headcount ratio, it is difficult to associate the HPI with a specific number of people. Anand and Sen (1997) point out that in a case where the HPI is say 30 per cent, this could be the same 30 per cent of people suffering deprivations in all the dimensions, it could also be a different 30 per cent on each dimension.

Typically, the HPI is a combination of subsets of people suffering deprivation in some

or all the dimensions measured in the index. Understanding what drives the observed HPI measure is crucial in order to prioritise public interventions. In Chad for example, more than 3 out of 4 adults are illiterate, a third are not likely to survive to age 40 and more than half do not have access to improved water. In Angola, Botswana, Guinea, Malawi and Swaziland nearly half of children born alive are not likely to survive to age 40, while more than a third of children under the age of 5 in these countries are malnourished.

Gender

"Women and men share many aspects of living together, collaborate with each other in complex and ubiquitous ways, and yet end up—often enough—with very different rewards and deprivations"

Anand and Sen (1995)

Tremendous progress has been achieved in bridging the gap between women and men, especially in access to education. Yet more than a decade after the fourth World Conference on Women held in Beijing, gender inequalities are still pervasive in many dimensions of life. This is in spite of 183 countries having signed and ratified the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (UN 1979).

The nature and extent of gender discrimination vary considerably across countries and regions in terms of access to and control of resources, economic opportunities, decision-making powers and political voice. Violence is still perpetrated against women in North American and European cities, as well as in remote villages in poor countries. Sadly, many women have been socialized in such a way that they believe their spouse has the right to abuse them physically. Two out of three African women and more than one in two South Asian women believe that "a husband or partner is justified in hitting or beating his wife under certain circumstances" (UNICEF 2007).

While women and girls bear the most direct costs of gender inequalities, wider society is ultimately affected. It is widely agreed that no nation can achieve sustainable human development if its female population is deprived of their basic rights. For example, gender discrimination in access to education will thwart policy goals to reduce fertility levels, curb infant mortality and expand education for the next generation. At the same time, gender inequalities can also negatively affect men. Because of the emphasis on women in response to long-standing discrimination against them, opportunities to address discrimination towards men and male vulnerabilities are often overlooked. For example, boys are increasingly becoming disadvantaged in the area of educational attainment in a number of countries, including some that rank high in the HDI.

The gender-related indices

The introduction in 1995 of the GDI and the GEM coincided with growing international recognition of the importance of monitoring progress in the elimination of gender gaps in all aspects of life, following the Beijing World Conference on Women in September 1995. A decade after their introduction, the Human Development Report Office undertook a critical review of the two indices. In this section we will describe current limitations of existing indices and outline some possible solutions, while emphasizing the need for further consideration of these issues in the run up to the 2010 report.

The Gender-related Development Index (GDI)

The GDI is not a true measure of gender inequality, though it is often misinterpreted as such. As noted by Klasen (2006), one cannot deduce the extent of gender gaps in a country from its GDI value, though comparing the GDI with the HDI reveals how gender gaps in the relevant dimensions lower the country's overall human development achievement. For example, the HDI and GDI values for the Occupied Palestinian Territories for 2006 are 0.731 and 0.678, respectively, indicating a human development shortfall of 0.053, due to gender gaps in

the three dimensions. By contrast, in Viet Nam the HDI and GDI values are 0.718 and 0.717, respectively—a gap of just 0.001.

Like any synthetic index, the GDI is subject to inherent limitations, both conceptual and practical, some of which are highlighted here:

- The earned income component disaggregated by sex does not measure what it is intended to assess—that is, gender gaps in human development achievements conferred by incomes, such as nutrition, shelter and clothing (Klasen 2006). There is extensive evidence of intra household inequality. Decisions on individual consumption, for example, are influenced by gender power relations that are not captured in the income component of the GDI.
- Relying on earned income as a measure can also give the misleading impression that unpaid work, which is mainly undertaken by women, does not contribute to human development. Care of children and family members and other work in the household contribute immensely to human development. Likewise, subsistence farming, which is critical to the well-being of households in many poor countries, is often done by women but does not, by definition, generate cash earnings.
- Furthermore, there are practical data problems. The difficulty in accessing direct measures of income disaggregated by sex means that the index has to rely on the estimated female-to-male ratio of non-agricultural wages. However, earnings are not well measured in poorer countries and this ratio is unlikely to hold in all sectors; for example, the ratio may be lower in the subsistence agricultural sector.
- Two issues have been raised with regard to life expectancy at birth: first, whether women's biological advantage in terms of longevity should be considered as a gender gap or normal, and second, whether the measure should consider the 'potentially alive' as a relevant population for determining the inequality aversion parameter—this would take into account missing girls due to sex-selective abortion or post-birth neglect.
- Finally, gender gaps are penalized in the same way, irrespective of the direction. Hence, the areas where women are disadvantaged are offset by those where they fare better. For example, in the Russian Federation, females on average live nearly 14 years longer than males, their combined GER is eight percentage points higher than males but female estimated earned income is only about 63 percent that of males. This makes the interpretation of the GDI very difficult.

The GDI has nonetheless contributed to global debates on gender inequalities and has sparked a search for more robust measures.

Towards an improved measure of gender inequality

Female and male HDI values

In order to address the first of these limitations, and in an attempt to measure gender inequalities in basic human development more directly, one option is separate HDI values for males and females, ranking countries on the basis of the ratio of female-to-male HDI values (Klasen and Schüler 2007).

The female and male HDI values can be calculated using the same component indicators as the HDI: life expectancy at birth, education and income for females and males. The inherent problem remains that income data disaggregated by sex are not readily available and must be estimated using the same methodology and assumptions as in the GDI, thereby being subject to the criticisms noted above. This notwithstanding, the female and male HDI values are arguably an improvement over the GDI in that they measure more directly—and more intuitively—gender inequalities in basic human development.

At the same time, important aspects of gender inequalities are neglected in the female and male HDI values. The fact that males have a far shorter lifespan in some transition countries should be a concern. For example, women live on average 11 years longer than males in Kazakhstan and 14 years longer in the Russian Federation; these are among the biggest gaps

between female and male life expectancy at birth worldwide and they reflect, to a large extent, lifestyle choices that expose males to life-threatening illness and early death. Clearly, this calls for specific interventions to address men's vulnerability to early death.

To avoid the problems associated with estimates of female and male earned income, there is a need for a measure that does not rely on income. One option is to replace estimated earned income with the labour force participation rate because the ability to participate in the labour force constitutes freedom to earn a living and enjoy a decent life. However, this is not free of measurement difficulties either: unpaid work in the family may not be formally recorded as participation in the labour force. Further, labour force participation does not necessarily mean either being employed or earning a decent wage: the unemployed are also part of the labour force and many of those who are employed may fall in the categories of low-paid or subsistence-level work. Nor does labour force participation account for the earnings gaps that may exist even where participation is high. Finally, women may choose not to work.

Another methodological change would be to take female-to-male ratios of achievements in the relevant indicators and use the geometric mean to construct an average (Klasen and Schüler 2007). In this sense, the measure is closer to being a direct measure of gender inequality. Conceptually, this measure is clearer than the GDI and also easy to interpret. Another advantage is that it does not treat as equal situations in which all gender gaps hurt women and situations where they hurt women in some dimension and men in others.

Under this method, the female-to-male ratio of achievement in one dimension can exceed unity—for example, due to female longevity. Furthermore, as with the female and male HDI values, it is possible for a disadvantage in one component to be compensated for by advantage in another.

Many sub-Saharan African countries would perform much better on this measure than they currently do on the GDI. This is mainly explained by the relatively high female labour force participation rates, in spite of significant gender gaps in adult literacy rates and, in some cases, school enrolment. But as noted above, labour force participation does not necessarily imply either being employed or earning a decent wage. Further, gender gaps exist in other important areas in these countries, notably in decision-making power and access to and control over assets.

Other countries that would likely do much better include most CIS countries and also a number in Asia and the Pacific.

Further work

Neither of these proposed innovations addresses all of the conceptual drawbacks of the existing indices, nor all the data related hurdles that hamper gender-sensitive measurement. The rationale, therefore, is not to add these measures to the existing GDI but to stimulate discussion about which of these measures is close to determining gender inequalities in human development and could be used in the short term, while efforts towards the long-term development of a better measure continue.

A more general point, which is not captured in any of the existing or proposed measures, is that state parties to CEDAW need to intensify efforts towards eliminating gender discrimination. This involves, among other things, incorporating relevant CEDAW provisions into their national laws, putting in place appropriate budgets for their implementation and mechanisms for their enforcement, and taking note of the cultural norms and values under which such practices take place.

The Gender Empowerment Measure (GEM)

This year, the GEM has been calculated for 108 countries although the number of developing countries included in the measure is still very low. For example, only eight sub-Saharan African countries (up from 5 in the 2007/2008 global Report) have a GEM value this year. Under-representation of developing countries in the GEM is due to the absence of data for the economic and decision-making component—as measured by females' and males' percentage

shares of two occuptational groups (legislators and senior managers and professional and technical workers).

The few developing countries included in the GEM league table trail the more developed ones, mainly because their income levels are low, not because they have relatively higher gender gaps. The earned income component of the GEM uses both income levels and female and male income shares in the calculation. However, income levels tend to dominate the index and as a result, countries with low income levels cannot achieve a high GEM score even where gender disparities in the distribution of earnings and other components of the GEM are minimal. For example, the past few decades have witnessed important achievements in the parliamentary representation of women across much of the world. Towards the end of 2008, Argentina, Costa Rica and Cuba had become among the top ten such countries, with women holding close to 40 percent of parliamentary seats. A number of sub-Saharan African countries have also improved female parliamentary representation in the last decade, including in particular Rwanda where women now hold a majority of the parliamentary seats. However, lower income levels mean that their GEM values remain low. A case in point is a comparison of the GEM values for Canada and Lesotho. The latter has higher female representation in parliament and in managerial and professional positions yet, its GEM value is only 0.589 against Canada's 0.829. Canada ranks 11th while Lesotho is in 53rd position. This anomaly calls for a review of the GEM methodology to better reflect women's empowerment in developing countries. Qatar and Saudi Arabia are two countries with relatively high income levels but very low GEM values (0.380 and O.297 respectively). This is because of the huge gender gaps in all the GEM components. There are no female members of parliament and fewer than 10 per cent of managerial positions are held by females in either country.

In order to address these limitations two modifications have been investigated (Klasen and Schüler 2007). The first uses the same basic indicators as the GEM but calculates the geometric mean of the female-to-male ratios of achievement in the components. This allows good achievements in one or more dimensions to compensate for shortfalls in other components.

Another option is to improve the income component by using female and male *shares* of earned income instead of income levels. This would allow countries with relatively low levels of gender inequality in the dimensions measured by the GEM to achieve a high rank despite low income. Further areas being explored are described in box 6.

This innovation would also allow the relatively strong performance in women's political and economic representation in some of the countries in sub-Saharan Africa to affect the rankings. Since 2000 the number of countries with more than 20 percent female parliamentary representation has increased sharply in almost all developing regions, from almost tripling in sub-Saharan Africa to a 10-fold increase in the CIS region (Tripp 2003) (see box 7).

This approach would avoid the outcomes whereby a high-income country can rank highly in the GEM, largely because of income and despite gender gaps.

Box 6 Measuring empowerment

"The ends and means of development call for placing the perspective of freedom at the center of the stage. The people have to be seen, in this perspective, as being actively involved—given the opportunity—in shaping their own destiny, and not just as passive recipients of the fruits of cunning development programs."

Sen (1999, p.53)

Human development views people as active agents of their own destinies and supports the participation, agency, voice and empowerment of people and communities. In this way human development goes beyond the necessary focus on outcomes evinced, for example, in the MDGs, by including a concern for process.

One basic challenge, however, is determining how measures of human development can meaningfully reflect the degree of empowerment of all people, particularly of women and marginalized groups. Among the various difficulties faced is the trade-off between indicators that are of deep relevance locally and those that can be compared across countries.

Building on the work of Sen (1999), a number of studies have focused on the cross-comparability of empowerment measures (Alkire 2005, 2008; Alsop and Heinsohn 2005; Ibrahim and Alkire 2007; Narayan 2005). These have mainly been comprised of two subcomponents:

- *Opportunities*, or *real possibilities* that are available to a person or a community; often measured using data on access to services, service provision, etc.
- *Agency*, or a person's *ability to advance his or her valued goals*. The most widespread measures of agency are questions, usually asked of women, regarding household decision-making in different domains, such as control of the family finances. However, these questions only identify one source of disempowerment (the family). Community, economic and political institutions can also empower—or disempower—individuals.

Explorations are underway to enrich perspectives on empowerment (see Ibrahim and Alkire 2007). For example, one important issue is the extent to which people feel their fate is determined by themselves or by others, as well as how much control they have over personal decisions.

To measure the extent to which people feel themselves to be coerced, as opposed to acting on their own initiative and values, autonomy-measures from psychological testing have been used. These questions probe people's motivation for their actions across a set of domains that might include, for example, employment, housework, educational decisions, responses to health crises, group participation, mobility, self-protection from violence, and cultural or religious practices. The objective is to determine whether the actions are motivated by lack of choice, by coercion, by a desire for approval or to avoid guilt, or by the person's own values. One test of the indicators occurred in a survey in India covering 220 women in southern Kerala; it found, interestingly, that some respondents who were destitute in socio-economic terms nonetheless did indeed enjoy high autonomy, and vice versa.

Another set of vital questions explores the extent to which individuals feel empowered to bring about change *at both individual and community levels*. How do they assess their collective as well as their individual efficacy to bring about positive change?

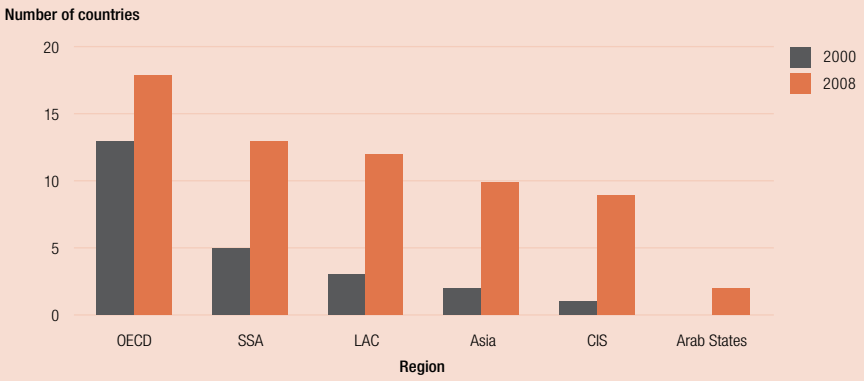
These are among the important questions that will be explored more deeply and extensively to inform the 2010 *Human Development Report*.

Source: Alkire 2005, 2008; Alsop and Heinsohn 2005; Alsop et al. 2006; Chirkov et al. 2003; Drèze and Sen 2002; Ibrahim and Alkire 2007; Narayan 2005; Ryan and Deci 2000; Sen 1999.

Box 7 Female parliamentary representation on the rise in Africa

Some 13 sub-Saharan African nations now have female shares in parliament of more than 20 percent. Rwanda is a particular case in point, with 51 percent of seats in parliament held by women since the 2008 election that brought 45 women to parliament, the highest representation in the world (IPU 2008a). One factor associated with this trend has been the adoption of quotas that reserve a certain number of seats in parliament for women; Rwanda and the Niger have established quotas for women in their national parliaments of 30 and 10 percent, respectively (IIDEA 2008).

Countries with more than 20% female parliamentary representation



Source: IPU 2008a.

Source: IIDEA 2008; IPU 2008a.