



CRISE:

Centre for Research on Inequality,
Human Security and Ethnicity

IN BRIEF

Monitoring and measuring horizontal inequalities

Introduction

The existence of major horizontal inequalities (HIs) worsens societal well-being and significantly heightens the risk of violent conflict.¹ It is important, therefore, that measures to reduce HIs are adopted in any multiethnic society where they are severe. Consequently, it is essential to know the magnitude of HIs, in which dimensions they are particularly high, and to be able to track them over time in order to monitor policy impacts. This policy brief thus provides guidance on monitoring and measuring HIs.

HIs are inequalities among salient groups; they are multi-dimensional—economic, social, political and cultural status inequalities among groups can each contribute to political mobilisation, especially where they are consistent in different realms. As a result, it is desirable to monitor all significant dimensions of HIs. One should note that, in some contexts, as might be expected, the measurement and dissemination of findings on HIs can be politically sensitive and hence should be carried out with due attention to this possibility.

Which groups?

People have multiple identities, yet some are more politically relevant than others and can become the source of mobilisation and sometimes violence. The nature of group distinctions varies across societies. In some, ethnicity is

most important, as in a number of African countries; in others, race is a key feature differentiating people, such as in Guyana and South Africa; in still others, it is religion that seems to be fundamental, such as in Northern Ireland and in the Middle East. Although these categories are socially constructed,² fluid, and change over time, they are nonetheless often of great relevance to people. As David Turton (1997, p. 82) states, the ‘very effectiveness [of ethnicity] as a means of advancing group interests depends upon its being seen as “primordial” by those who make claims in its name’.

To monitor group inequalities in a particular country, the first requirement is to identify the relevant groups. These are the groups that people care about, and on the basis of which discrimination or favouritism occurs.

A three-fold approach is apposite to identify such groups:

- An initial *in-depth investigation* of the history and political economy of the country in question, leading to indications of important group distinctions. In Sudan, for example, this would suggest differentiating between southern and northern groups, while in Rwanda, the Hutus and Tutsis would emerge as clearly salient groups.
- Drawing on *surveys of people’s own perceptions* of identity distinctions, where available, or carrying out such an investigation. Such surveys explore which identities are most important to people in different aspects of their lives, for instance by asking them how important different aspects of identity (inter alia, ethnicity, gender, neighbourhood, occupation, region of origin, and religion) are in the way that they think about themselves, and for their social, work and political interactions. To explore the political role of aspects of identity, people may be asked which groups they feel are privileged or deprived and favoured or disfavoured by the government. Even small surveys of say 300 people conducted in several parts of the country can provide a very useful indication of prevalent perceptions of identity.³
- Taking a *variety* of group classifications (ethnic, regional, religious) and seeing where the main inequalities lie. In contexts where groups are differentiated by more than one type of identity (such as ethnicity and geography), it may not matter which is chosen.

Which dimensions and elements?

There are multiple relevant elements within each of the four main dimensions:

- **Economic HIs** include inequalities in access to and ownership of assets—financial, human, natural resource-based, and social. In addition, they comprise inequalities in income levels and employment opportunities, which depend on such assets and the general conditions of the economy.

- **Social HIs** include inequalities in access to a range of services, such as education, health care and housing, as well as in educational and health status.
- **Political HIs** include inequalities in the distribution of political opportunities and power among groups, including control over the presidency, the cabinet, parliamentary assemblies, the bureaucracy, local and regional governments, the army and the police. They also encompass inequalities in people's capabilities to participate politically and to express their needs.
- **Cultural status HIs** include disparities in the recognition and standing of different groups' languages, customs, norms and practices.

The elements which are important may vary across societies. For example, land distribution is a major issue in Zimbabwe, whereas education and employment are more important in Ghana. The aim should be to monitor those elements that are clearly significant in the society in question. Because of strong correlations among the elements, information on one key variable is likely to point towards other inequalities. It is neither possible nor desirable to collect data on every aspect, but it is essential to get an idea of HIs for some elements in each dimension.

Data availability

In many cases, official statistics do not include data along group lines even for socioeconomic variables, while there is almost never any data for political or cultural status inequalities.

Economic and social data

Such data are sparse because ethno-cultural variables are often not included in surveys, sometimes because of their political sensitivity—for example, ethnic data are not collected in Nigeria for this reason (Okolo, 1999). Working with recipient countries to develop appropriate mapping tools forms an important part of the agenda in such settings, but for the quick assessment needed in fragile societies and post-conflict contexts, it may be necessary to take some other characteristic as a proxy for ethno-cultural difference. Two options are regional data and language.

Regional socioeconomic data are often more readily available, such as from household surveys. Whether regional data are useful depends on how far identity groups are geographically segregated. As a rule of thumb, region is a useful proxy for measurement and policy if more than half of the members of the deprived group are concentrated in the targeted region while less than half of the privileged group are in the targeted region. In many African countries, ethnic and religious groups are regionally concentrated so regional inequality may be a suitable proxy for ethnic or religious inequality, and in some cases, region itself defines group identities.

The second alternative is a language variable, which is sometimes available in situations where ethnic variables are not present—as in Indonesian surveys during the New Order period. A comparison of language statistics at the district level with ethnic data that became available later indicated that language was an effective proxy for ethnicity in the Indonesian context (Mancini, 2008). In general, however, one needs to exercise caution, as subordinate groups tend to adopt the language of the dominant groups over time. In Sudan, for instance, over several decades a number of marginalised groups have adopted Arabic as a *lingua franca* and even as a first language, due to a combination of a deliberate policy by the regime and an appreciation of the need to speak the dominant language in order to move up the social hierarchy. The same is true of Spanish among indigenous populations in some Latin American countries.

In addition to these proxies, particular surveys frequently include ethnic or religious variables. The first need in any country is to conduct an inventory of available data and of urgent data needs. Imaginative use of existing data generally can contribute considerably to tracking HIs. Possible data sources include:

- census data, which often include ethnic or language data and sometimes information on religion;
- Demographic and Health Surveys, many of which include ethnic identification, as well as information on access to social services, ownership of domestic assets and child mortality, which can serve as a useful proxy for other basic socioeconomic variables;
- Living Standards Measurement Surveys, which sometimes include ethnic variables;
- regional data from household surveys, the census and sometimes public expenditure accounts where region is a relevant group identifier; and
- specific sectoral data (such as from hospitals and schools), which often contain ethnic and regional information.

Gaps may be filled by 'light' surveys, including small surveys and the use of focus groups. This approach is used increasingly to map poverty and to collect data on health status in cases where large-scale surveys are deficient.⁴

Political data

Information needed to assess political HIs includes the group distribution of positions in the cabinet, parliament, bureaucracy, the army, the police, and so forth. This requires knowledge of the background of relevant officials or politicians. In a few instances, this information may be publicly available—for example, in Nepal (see Brown and Stewart, 2006) and Kenya (see Kanyinga, 2007). More generally, though, it is not. In some contexts, one can gather political data through 'name-recognition' techniques in

order to attribute group background (see box below and Langer, 2005). Moreover, where group distinctions are important, most informed political observers in a society can readily highlight broad trends in important political positions. A key concept here is that of 'relative representation' (see box), defined as each group's share of the positions available divided by its share of the population. This can be used as a measure of political HIs, although one should note that while relative representation may be fair, certain groups may still be disempowered as minorities where majority decision-making occurs. To gain a true understanding, therefore, it is necessary to go beyond the numbers and to analyse the workings of the political system.

Political HIs are particularly relevant to political stability, especially where they occur along the same lines as socio-economic inequalities. Consequently, despite the difficulties in gathering data, it is very important to acquire an appreciation of the existence and dynamics of political HIs.

Cultural status data

This is a matter of recording the cultural recognition accorded to various groups, notably to what extent their buildings, language practices, and holidays are respected, and changes over time in these aspects. Judgment enters the assessment here as much as numbers. Sources of information include the media and local observers. While it is generally impractical to derive a quantitative 'measure' of cultural status inequalities, it is important nonetheless to assess such inequalities.

Perceptions

Although this policy brief is primarily concerned with measurement and monitoring of 'objective' HIs, people's perceptions of inequalities (that is, 'subjective' HIs) are crucial for determining their socio-political impacts. Thus, unravelling such perceptions is a critical element of any investigation of group behaviour and mobilisation (violent

Measuring political and socioeconomic HIs: the case of Côte d'Ivoire

Côte d'Ivoire displays sharp inequalities among regions and ethnic and religious groups which have had a major impact on Ivorian society, contributing to the emergence of a violent conflict in September 2002. A number of surveys contain data on socioeconomic disparities between regions in Côte d'Ivoire, including the World Bank Living Standards Surveys, the Core Welfare Indicators surveys as well as government household surveys, but only the Demographic and Health Surveys (DHS) provide ethnically differentiated data.

Figure 1 shows the evolution of the major ethnic groups' relative educational and literacy situation between 1994 and 1998 on the basis of two DHS surveys.

Data on a country's political HIs are arguably even more important for understanding the potential for conflict, yet are almost never collected. As an approximation for the prevailing political HIs, one can generate data on the *ethnic* composition of the most important state institutions by collecting the names of the individuals within these institutions and identifying ethnicity through *name recognition*, with checks by local officials or scholars. Despite possible shortcomings, this approach can provide important insights into the evolution of the prevailing political HIs over time. Figure 2, showing ethnic representation in the Ivorian government for the period 1980–2003, illustrates the approach.

Figure 1 note: * The Education-Literacy Index is a composite of educational level and literacy. The indices refer to an ethnic group's *relative* position with respect to Côte d'Ivoire's average.

Figure 2 note: * Each ethnic group's RR is calculated by dividing an ethnic group's relative proportion in government by its relative size in the entire population. Consequently, unity means proportional representation; figures higher than one point to over-representation and less than one to under-representation.

Figure 1 Education-Literacy Index, 1994 and 1998*
Relative educational position

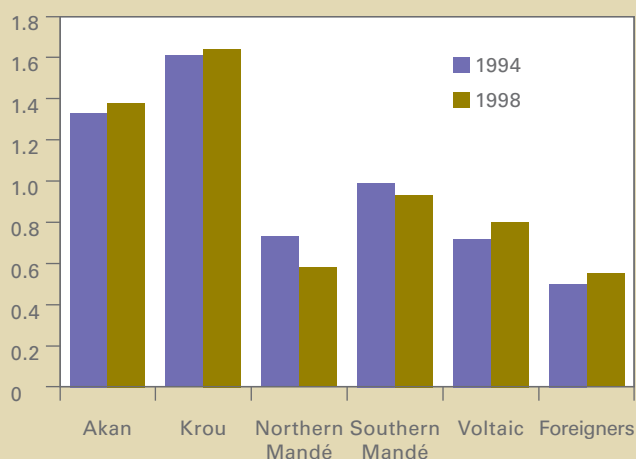
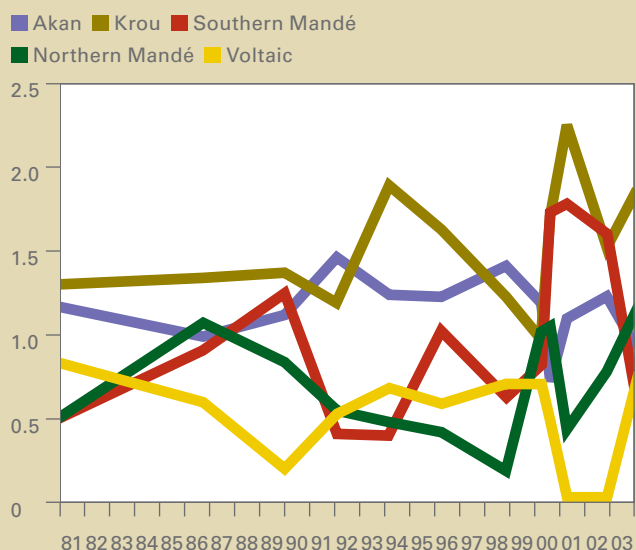


Figure 2 Relative Representation (RR) of the major ethnic groups in government, 1980–2003*



or otherwise). Moreover, the extent to which people's perceptions of horizontal inequality accurately reflect a country's 'objective' political and economic realities is a critical empirical question. Survey research provides an appropriate way of obtaining data on HI perceptions. Such an endeavour should aim to determine people's perceptions with respect to the following, *inter alia*:

- their own and other groups' socioeconomic situation, progress and access to economic resources and networks;
- their own and other groups' representation in the most important political-administrative institutions;
- the treatment of their own and other groups' cultural norms, practices and customs by the state and para-statal institutions;
- the role of 'culturally' defined identities (such as ethnicity or religion) in gaining access to state employment, services and resources; and
- the extent to which the state is seen as favouring or discriminating against their own and/or other groups in the distribution of resources.

Measurement issues

This section focusses on ways of presenting measures of HIs. The aim is to identify a measure of HIs that will summarise the extent of HIs within a society, and which can be used as a measure of the severity of HIs, for the purpose of comparison across countries and over time. For simplicity, we start with incomes as the measure of performance and we assume data availability.

Generating summary information on inequality is problematic even for vertical inequality (VI) (inequality among individuals), as there are many different ways of summarising differences between distributions. It is more complex for HIs precisely because we are now concerned with *groups*. Two issues are of particular significance in this regard. The first is how to summarise information on group inequality for societies where there are more than two groups. The second is whether and how to explore differences across the whole distribution of each group, or whether simply to focus on comparisons of mean performance.

Aggregation of HIs where there are multiple groups

Although the question of how to aggregate HIs across society is similar to that of identifying a single measure of VI, there are some important differences. The most obvious is that, by definition, there are fewer groups in a society than individuals—in fact, many countries may only have a small number of salient ethnic or religious groups. Indeed, in some contexts, there are just two groups, and then a straightforward comparison of group means is possible. Most societies, though, have more than two

significant groups. In Nigeria, for example, there are more than 300 groups, although not all of them are politically salient; nonetheless, at least five are at the national level, and many more are in particular localities. In this case, we need to move beyond the two-group comparison of means. One possibility is to choose the two groups that seem to be politically competitive (not necessarily the two that are largest in terms of population size) in the particular context. But this injects a large element of political judgement into the selection process. Hence, in general, to assess to what degree a society is unequal and to test how far group inequality affects various objectives, a synthetic measure is needed that integrates *all* group inequalities into a single measure of HI, or at least all groups above a certain size, such as those accounting for more than five per cent of the population. However, it is possible that 'irrelevant' alternatives will influence such a synthetic aggregate measure, and for some purposes, therefore, it may still be helpful to look at simple ratios of each group to the mean, as well as a synthetic measure.

A further complication in measuring inequality among groups is that different groups are often of different sizes with respect to the number of individuals in each group. Hence, it is necessary to decide whether to weight the measure by the size of the group. With an unweighted measure, the position of small groups receives the same weight as that of large groups. Yet, from a well-being and political perspective, this seems incorrect, since very different numbers of individuals are affected. Therefore, a population-weighted index is generally desirable.

There is wide agreement on a number of principles that a good measure of vertical distribution should reflect. We accept two basic principles as relevant to measures of group distribution as well:⁵

- first, the measure of distribution should be independent of the mean; and
- second, transfers from a richer person (group) to a poorer person (group) should reduce inequality (known as the Pigou–Dalton principle).

Some measures of distribution deliberately incorporate a normative element (that is, some aversion to inequality—see Atkinson's (1970) famous measure). Here, though, we aim to avoid this, as far as possible, and to arrive at a descriptive measure, since it is desirable to know what the situation is and not confuse this matter by including some evaluation. This is not perfectly achievable as any measure involves some implicit valuation, but we seek to minimise this and hence discard measures with explicit inequality aversion built in.

Many measures of group inequality do not measure group inequality as such but rather the contribution of group inequality to either social welfare for the whole society (such as the gender-weighted Human Development Index

(GDI) or income distribution as a whole (Zhang and Kanbur, 2003). In contrast, we advocate here a straightforward measure of HIs that does not depend for its value on the contribution of group inequality to aggregate individual inequality *because HIs are important in themselves and not only or mainly because they contribute to VI*.

Given these principles, the most appropriate summary measure of HIs in a society with multiple groups is the group coefficient of variation (GCOV) weighted by population size.⁶

The formula for this is:

$$\frac{1}{\bar{y}} \left(\sum_r^R p_r (\bar{y}_r - \bar{y})^2 \right)^{\frac{1}{2}}$$

Where y is income, \bar{y} is the mean income of the sample, \bar{y}_r is the mean income of individuals in group r , R is the number of groups, and p_r is the population share of group r .

This formula is particularly helpful for tracking HIs as a whole over time in a particular society. In addition, it captures inequalities across societies. But since it may not highlight the most relevant inequalities, it may need to be supplemented, in both cases, with information on inequalities facing the most politically salient groups.

An illustration of alternative aggregate measures

Data for South Africa for 1970–2000 illustrates how incorporating more than two groups generates different perspectives (see Figure 3).

A simple ratio of black to white average income reveals sharply declining HIs, but when other groups (notably Indians and coloureds) are incorporated, there is much

less of a decline in inequality. This illustrates the fact that the appropriateness of the measure depends on the purpose of the measure. For many South Africans, the politically salient division is between blacks and whites so the simple black–white ratio is the relevant one, but if one wants an aggregate perspective of HIs in South Africa to make comparisons with other societies, the more comprehensive measure, the weighted GCOV, may be appropriate.

Allowing for inequalities of distribution within each group

The performance of a group includes the *whole* distribution of the group. When this is represented by average per capita performance, distributional differences within groups are concealed. Yet, from a political and policy design perspective, how groups compare at different points in the distribution is relevant. The following cases need to be distinguished:

- Case 1: where one group outperforms another at every income level;
- Case 2: where a group's elite (such as the top five per cent) enjoys a level of income far higher than the elite of the other group, but the remaining 95 per cent of the distribution has similar income levels;
- Case 3: where both groups are broadly equal at the top, but the bottom 40 per cent of one group is far poorer than the bottom 40 per cent of the other; and
- Case 4: where one group enjoys higher income levels at the top of the distribution, but lower levels at the bottom.

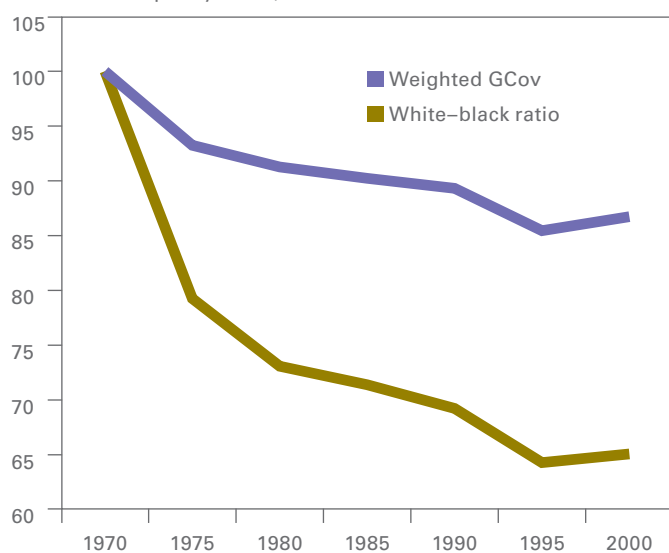
These differences have both political and policy implications. From a political standpoint, in the first case, both the elite and the masses have grievances and so rebellion may be likely. Apartheid South Africa is an example. In the second case, the elite has a grievance but not the rest of the population, making rebellion less likely.⁷ In the third and fourth cases, the major grievances will be among the lower income groups—but lacking leadership, they may not rebel; a politically disenfranchised or threatened elite, however, will find it easy to mobilise support among the lower income groups—the Rwandan situation in 1994 is an example.

The differences are relevant from a policy perspective, too. In the first case, policies are needed both to increase opportunities at the top (capital ownership, entrepreneurial and civil service ones) and to provide basic services and economic opportunities to the masses. In the second case, the focus should be on elite opportunities. In the third and fourth cases, it is a matter of improving the position of the worst off.

Therefore, comparisons of the whole distribution of each group are needed. An illuminating way of doing this is to

Figure 3 Aggregate measures of HI in per capita income, South Africa, 1970–2000

Horizontal Inequality Index, 1970=100



adopt a general means approach, derived from the work of James Foster (see, for example, Foster, Lopez-Calva and Szekely, 2003). Basically, this calculates group means for each group at different points of the income distribution, using parametric means.⁸ The value of the parameter determines how much weight is given to different sections of the distribution. Hence, the estimate of HI varies according to the chosen value of the parameter, α . Where $\alpha=1$, the measurement is equivalent to an arithmetic mean. For values of $\alpha < 1$, α -means are more sensitive to population performance at *low values* of achievement, and increasingly so as α becomes smaller. For values of $\alpha > 1$, more weight is given to *higher achievements*, again increasing the higher the value of α . Comparing α -means for different values of α thus indicates how HIs differ in different parts of the income distributions of the two groups.

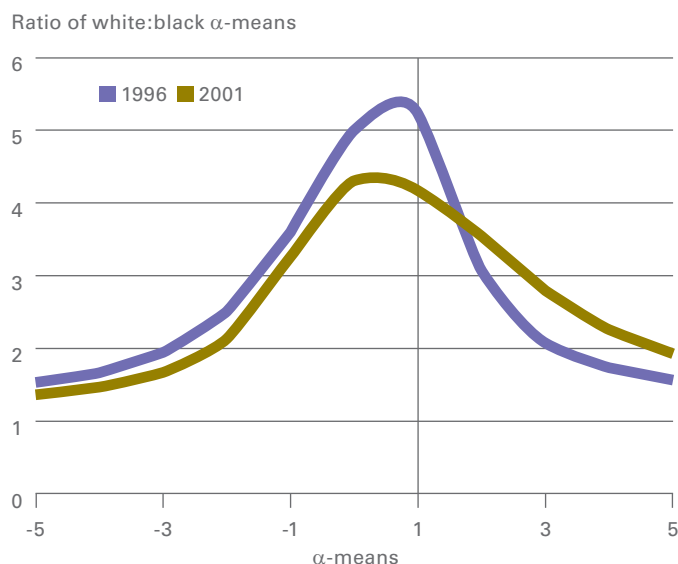
The formula for calculating α -means is:

$$\alpha\text{-means} = \begin{cases} \bar{y}_{r\alpha} = \left(\frac{\sum_i y_{ir}^\alpha}{n} \right)^{\frac{1}{\alpha}} & \alpha \neq 0, \alpha \in \mathfrak{R} \\ \bar{y}_{r\alpha} = \exp \left(\frac{\sum_i \ln(y_{ir})}{n} \right) & \alpha = 0 \end{cases}$$

where $\bar{y}_r = \frac{1}{n_r} \sum_i y_{ir}$ is the mean value of y , which is a measure of the element of interest (e.g. income) of group r , p_r is the population share of group r , y_{ir} is the value of y for the i^{th} member of group r , Y_r is the total value of y for group r as a whole, Y is the grand total value of y in the sample/population, and α is a scalar.

We can illustrate this approach using income data from the 1996 and 2001 South African censuses (see Figure 4).⁹

Figure 4 Comparison of white:black α -means ratios, South Africa, 1996 and 2001



What Figure 4 shows is that differences between blacks and whites are highest in the middle of the distribution, while they are less for both the rich and the poor. This is true both in 1996 and 2001. Comparing 2001 and 1996 shows that the gap between rich blacks and rich whites has lessened, while that between poor blacks and poor whites has widened. Taking the arithmetic mean ($\alpha=1$), one can see that the gap has narrowed, as shown in Figure 3 as well.

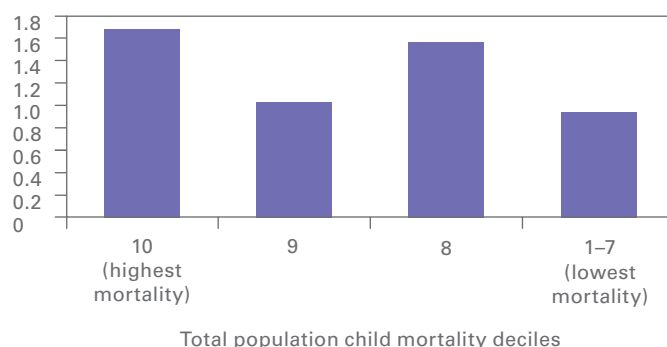
Non-income dimensions of inequality

Evidence on the multiple dimensions of HIs is essential because to plan public expenditure one needs to know where the main problem lies—for instance, whether it is a matter of access to education or poor economic opportunities, or both. In addition, one needs to know whether access to land or employment demonstrates the sharpest inequalities or is the most important issue for people. Ideally, one should collect data on major inputs and outcomes in a wide range of areas, suggesting extensive data requirements. Although data availability constrains which variables can be included in the short term, certain elements that seem to be generally fundamental to well-being have priority for data collection. These include land and other assets, incomes, employment, educational access at various levels and health outcomes such as life expectancy and infant mortality.

Where data permits, it is also desirable to compare performance along non-income dimensions across the whole distribution. Figure 5 provides an example for child mortality for a region of Indonesia. In this case, among the three worst deciles, Muslims experience higher child mortality rates than Christians, but the top 70% of Muslims experience slightly better mortality rates than Christians.

Given the multidimensional nature of HIs, the question arises as to whether a multidimensional index should be developed. Although there are various approaches that could be adopted for devising a multidimensional index, since all solutions to the problem of weighting the various elements in multidimensional indices are somewhat arbitrary and conceal where the major inequalities arise,

Figure 5 Relative representation of Muslims vis-à-vis Christians in Central Sulawesi, Indonesia





Interviewing a worker at the Isheri cow market in Lagos, Nigeria, during the country's 2006 census.

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our view is that it is more enlightening for policy to present the evidence separately for each element. However, it is also enlightening to use a dominance approach, permitting analysis of whether one group (or quantile of a group) is poorer along all dimensions than some other group. For a discussion of multidimensional poverty indices using this method, see Alkire and Foster (2008).

Conclusion

Given the significance of HIs as a potential cause of violent conflict as well as a constituent of well-being, it is important to develop policies to reduce HIs where they are acute. But this requires knowledge of the nature of HIs in a society. Given that data, measurement and monitoring are frequently absent, this policy brief has presented some guidance for data collection and measurement of HIs.

The first requirement is to identify the salient groups in a society. This requires knowledge of the country's history and contemporary politics, and may be aided by surveys of perceptions of identities. The second requirement is to compile an inventory of sources of data, and where necessary, to conduct a rapid survey of the major missing elements. While some socioeconomic data are typically available from diverse sources, data on political and cultural status inequalities are mostly absent. These gaps can be filled by detailed work on who carries out what function in the political system, and by an analysis of how much public recognition and visibility are accorded by the state to different groups' cultural traditions and

customs. However, generally, an initial swift enquiry among local political observers can provide information on the main dimensions of political and cultural status inequalities.

The development of measures to provide aggregate information on HIs in a society are less well advanced than in the case of VI. This policy brief suggests two measures:

- the population-weighted coefficient of variation for assessing aggregate HIs where there are a number of groups; and
- the α -means approach to permit an evaluation of two (or more) groups across the whole distribution.

The first measure is useful for comparisons across countries or over time; the second is useful for acquiring knowledge about the part of the income distribution in which particular inequalities are worst, and hence for devising policies. One should note, though, that comparisons of simple averages across just two groups along the different dimensions, and for important elements within them, are extremely enlightening for policy design. We do not propose a multidimensional index, as we believe this would conceal information in an unhelpful manner. However, a dominance approach, showing the proportion of dimensions and elements where one group dominates another, may be useful in providing an assessment of the overall magnitude of privilege and deprivation.

—Frances Stewart and Arnim Langer

Endnotes

- 1 This *In Brief* is largely drawn from Mancini, Stewart and Brown (2008).
- 2 'Modern Central Africa tribes are not so much survivals from a pre-colonial past but rather colonial creations by colonial officers and African intellectuals' (Wim van Binsbergen, quoted in Ranger, 1983, p. 248).
- 3 CRISE has carried out such surveys in seven countries. For a report on such surveys in Ghana and Nigeria, see Langer and Ukiwo (2009).
- 4 See Frerichs and Tar Tar (1989); Marchant and Grootaert (1991); Narayan and Srinivasan (1994); Fuji (2005).
- 5 However, we do not think group distribution measures need obey all of the same principles as individual distribution measures. In particular, we reject the commonly accepted principle that the transfer of an equal amount from rich to poor counts for more than one from rich to less rich.
- 6 For a discussion of a wide range of possible measures and justification of the choice of the population-weighted coefficient of variation among groups, see Mancini, Stewart and Brown (2008).
- 7 In Calabar, Nigeria, the elites of the Quas and the Efuts perceived themselves as disadvantaged compared with the Efiks in terms of political appointments and business opportunities, but the mass of the population felt equally treated with respect to employment and amenities. Consequently, no conflict occurred. In neighbouring Warri, in contrast, where there were both elite and popular perceptions of HIs, there have been recurrent violent conflicts (Ukiwo, 2006).
- 8 Foster, Lopez-Calva and Szekely (2003) define these parametric means as 'general means'.
- 9 Data obtained from the Integrated Public Use Microdata Series (IPUMS) at the Minnesota Population Center, University of Minnesota.

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