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Human Development: Beyond the HDI

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Human Development: Beyond the HDI

Abstract

This paper explores ways of enlarging the measurement and understanding of Human Development (HD) beyond the relatively reductionist Human Development Index. From the extensive literature on well-being, we derived eleven categories of HD. Within each category, we then identified a potential set of indicators which were measurable and reflect performance with respect to that category. In order to reduce the number of indicators representing each category, we included only one for any set highly rank order correlated with each other, as well as including indicators not correlated with any other indicator in that category. Our aim was to retain only indicators which are broadly independent of each other.

We subsequently investigated the extent of correlation between the retained indicators and such generally accepted core indicators as the HDI, per capita income and under five mortality rates. We found that HDI and under five mortality performed equally well in eliminating additional indicators, while per capita income did somewhat less well. A further consolidation of indicators, possibly with the help of principal components analysis applied to each category, should help us identify typologies of countries concerning success or failure with respect to the various dimensions of HD.

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Human Development: beyond the HDI

by

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I. Introduction

Human Development (HD) goes well beyond the Human Development Index (HDI), with which it is often equated. Human Development has been defined as 'a process of enlarging people's choices. The most critical ones are to lead a long and healthy life, to be educated, and to enjoy a decent standard of living. Additional choices include political freedom, guaranteed human rights and self-respect' (HDR 1990, p. 10). The HDI itself is thus a reductionist measure, incorporating just a subset of possible human choices. In fact, the measure, which includes life expectancy, literacy, years of education, and a modified measure of income, is directed at the choices referred to as 'most critical' in the first report.

It has long been recognized that the HDI is, therefore, a very incomplete measure of HD, leaving out many aspects of life which are of fundamental importance. The aim of this paper is to identify a wider set of measures of choices which might qualify as part of HD, and to analyze how well or poorly the more extensive list of choices is in practice represented by the HDI, using international cross-country data.

Our first task is to identify which aspects of life might reasonably qualify as part of HD. To do this we survey a few of the many attempts that have been made to define the full life; although these generally have different philosophical underpinnings, they are in broad agreement about the main dimensions to be included. In the light of this, we draw up a list of the categories of life we feel are good candidates to be included as part of HD. Having identified the main categories we wish to include as our definition of the categories of choices associated with HD, we then try to identify indicators of performance in each of the categories, bearing in mind both measurability and data availability. For each category we then explore the relationships among the indicators, aiming to identify a single (or few) indicators to

represent each category. We then show how far these measures correlate across countries with the widely accepted measures of progress, including the HDI, income per capita (PPP) and under-five mortality. This enables us to see whether extending our measures of HD beyond the HDI so as to incorporate a broader concept of HD requires a wider set of indicators to represent relative country performance than the HDI, or indeed per capita income. Insofar as it does, this should permit improved measurement of progress, analysis and policy choices.

We should note that, as with most attempts to assess HD (or indeed Sen's capabilities approach, with which it is closely connected (Sen 1999), we can only observe actual achievements rather than the range of *ex ante* choices available. The actual set of achievements on any variable, of course, indicates that it is a member of the set of possible choices, but the range of choices presumably goes much beyond actual performance, as options *not* chosen are not included.

II. Defining the Full Life, or a broad definition of Human Development

Defining what makes for a fulfilled life has been a central theme of philosophers and politicians throughout history. Aristotle's *Ethics*, for example, was devoted to identifying the conditions needed to achieve *eudaimonia*, commonly interpreted as 'the best life' (Bostock, 2000, p. 15). Alkire (2002) provides lists produced in 39 attempts to identify what makes for a flourishing life produced over the years 1938-2000. Here we will consider six (see Table 1),[1] each of which adopts a different philosophical approach and justification:

- Rawls: identifies primary goods through 'deliberative rationality'. According to *The Theory of Justice*, primary goods 'are in general necessary for the framing and execution of a rational plan of life' 'following full deliberative rationality, that is, with careful consideration of the relevant facts and after a careful consideration of the consequences' (Rawls, revised edition, 1999, p.

[1] Five of these are contained in Alkire; the sixth (from the ESRC Well-being Research Centre) has been produced more recently.

359, p. 380). They are derived from 'some general facts about human wants and abilities' and the necessities of social interdependence.[2]

- Finnis' approach is derived from practical reasoning (Finnis 1980; Finnis et al. 1987) which has a lot in common with 'deliberative rationality', as it is derived from 'critical reflection about the planning of one's life' (Nussbaum 2000, p. 79); or the 'internal reflection of each person upon her own thoughts, reading, imagination and experiences' (Nussbaum 2000, p. 39; and see Table 3.2, p. 110-111).
- Doyal and Gough's definition of basic needs is based on the principle of the avoidance of serious harm where harm is defined as preventing people realizing activities which are essential to their plan of life (Miller 1976; Doyal and Gough 1991).
- Nussbaum's list, which broadly follows Rawls but is more extensive and detailed, is largely based on 'overlapping consensus' (a concept developed by Rawls (1993)) as a basis for justice in a plural society) plus intuition as to what is needed to be 'truly human' (Nussbaum 2000).[3] An overlapping consensus is an informed view of what people agree about, even with different overall philosophies or religions.
- The 'Voices of the Poor' analyzes of Chambers, Narayan-Parker and others (Narayan-Parker 2000), represent what the poor identify as their needs, based on focus groups of poor people carried out around the developing world.
- A similar exercise is being conducted by the ESRC Research Group of Wellbeing in Developing Countries (Camfield 2005), in which people are consulted as to what makes for a good quality of life in four countries.

[2] He adds 'the Aristotelian principle,' which, roughly interpreted, is that more complex and sophisticated activities are generally preferred, and hence more desirable, than simpler ones. For example, according to Rawls, algebra would be preferred to arithmetic and chess to checkers (draughts) because they are more complex activities.

[3] "By 'overlapping consensus', we take John Rawls' meaning: that people may sign on to this conception, without accepting any particular metaphysical view of the world, and particular comprehensive ethical or religious view, or even any particular view of the person or human nature" (Nussbaum 2000, p. 76). However, she argues that the "primary weight of justification remains with the intuitive conception of truly human functioning and what that entails" (ibid., p. 76).

Table 1. Requirements for human flourishing

Authors	Rawls (1972)	Finnis, Grisez, and Boyle (1987)	Doyal and Gough (1993)	Nussbaum (2000)	Narayan-Parker (2000)	Camfield (2005)
Defining concepts	Primary goods	Basic human values	**Basic Needs** and Intermediate needs[a]	Central human functional capabilities	Dimensions of well-being	Quality of life
Bodily well-being		Bodily life – health, vigour and safety	**Physical health**. -Nutrition: food and water -Health care -Safe birth control and child bearing -Safe Physical environment	Life Bodily health Bodily integrity	Bodily well-being Access to health services Good physical environment	
Material well-being	Income and wealth		Protective housing Economic security		Material well-being Food Assets	Food Shelter
Mental development		Knowledge Practical reasonableness	Basic education	Senses, Imagination, Thought Emotions Practical reason Play		Education (Bangladesh and Ethiopia, not Thailand or Peru)
Work	Freedom of occupation	Skillful performance in work and play	Work		Work	
Security			Physical security		Civil peace Physically safe environment Lawfulness (access to justice) Personal physical security Security in old age	
Social relations	Social bases of self-respect	Friendship	Significant primary relationships	Affiliation Social bases for self-respect	Social well-being -Family -Self-respect and dignity -Community relations	Family
Spiritual well-being		Self-integration Harmony with ultimate source of reality				Religion (important in Bangladesh and Thailand)
Empowerment and political freedom	Rights, liberties, opportunities Powers and prerogatives of office and positions of responsibility Freedom of movement		**Autonomy of agency** Civil and political rights Political participation	Control over one's environment	Freedom of choice and action	
Respect for other species				Other species		

Source: Derived from Alkire 2002; Doyal and Gough 1991; Narayan et al. 2000; Camfield 2005. a. Intermediate needs are instrumental for the achievement of Basic Needs, Basic needs are in bold and intermediate are in normal type.

The six sets of requirements for human flourishing are not in total agreement, and some emphasize some aspects more than others. For example, Finnis and Nussbaum are quite thin on material aspects, but emphasize non-material aspects such as friendship and emotions, which are left out by Doyal and Gough, and get short shrift from Voices of the Poor. Environmental issues only appear explicitly in Nussbaum; she is the only author to record 'respect for other species' as a significant dimension.

It is not our aim here to select among these lists (or characteristics) but rather to identify a comprehensive view of the dimensions of HD. People/societies may or may not choose to promote all aspects identified, and we do not wish to make the choices for them. Hence, as a starting point, the relevant set of dimensions is the set which includes all elements that have been identified as possible aspects of human flourishing, with the aim of trying to measure country achievements on these manifold dimensions. There are obvious problems with such measurement, including, first, identifying what a good measure of each would ideally be, and then finding what (normally imperfect) measures are available in practice. The latter is likely to vary across societies. To make the measurement issue easier, we first draw up a comprehensive set of broad categories to use as a starting point to search for indicators of achievement. For example, we identify 'community well-being' as an important category of HD; then, as indicators of this elusive concept, we include measures of 'crime rate', 'alcohol use', 'corruption', 'orphan rate', 'AIDS deaths', '% in civic associations', 'trust in others', 'rule of law', 'confidence in public institutions', tolerance of neighbors and 'natural disaster rates' .

It is useful to start with the broad dimensions (shown in Table 1 above), first, because objectives of human development are generally thought of in this way. Secondly, while there may be agreement on these broad categories, there is not necessarily the same agreement on selection of better defined and measurable ways of fulfilling the broad categories. For example, we may agree that political freedom and political participation are important dimensions of HD, but this does not imply a precise form of government and constitution. Thirdly, the best ways of achieving progress in broad categories may vary across countries according, for example, to the level of development or geography. Fourthly, partly for this reason, data availability varies

across countries, i.e., each country may have data on some indicators relevant to any single broad category, but not consistency across others.

In the light of the efforts to identify dimensions of human flourishing just cited, we propose the following broad categories of HD:

1. The HDI itself, which includes health, education and a measure of income (i.e., it broadly covers bodily health, literacy and basic aspects of material well-being).
2. Mental well-being (i.e., an individual's psychological state)
3. Empowerment (particularly of the deprived)
4. Political freedom
5. Social relations
6. Community well-being
7. Inequalities
8. Work conditions
9. Leisure conditions
10. Dimensions of security – political (i.e., freedom from political violence or instability)
11. Dimensions of security – economic (i.e., freedom from economic fluctuations)
12. Environmental conditions

In contrast to the lists in Table 1, we have not included spiritual well-being, given problems of definition and measurement, nor have we included respect for other species, though we do consider environmental sustainability. On the other hand, we have separated social relations from community well-being. The former is a matter of people individually having satisfactory relations with others, including such measures as divorce rates, the importance of family and friends, and tolerance for different types of neighbors. The latter, in turn, is a function of the well-being of a community as a whole and includes such elements as low crime rates and a thriving civil society. We have also separated empowerment from political freedom, as the former relates to the power (or lack of it) of the relatively disempowered, such as poor people, women and other groups with little power, while the latter relates to liberal political conditions more generally. We have added inequalities as a general category, which in

principle should measure inequalities in the other categories. We do this because the existence of various inequalities independently affects people's well-being, especially that of the poor. We also have two conditions to represent security, or the absence of risks to people's human development; one encompasses political security (or freedom from risk of political violence), and the other encompasses economic security (or freedom from risk of loss of livelihood through various vicissitudes).

Any list of categories is inevitably both subjective and ethnocentric. This is illustrated by the differences the 'Wellbeing' research group has found in how people define the quality of life, which varies across countries and generations (Camfield 2005). Hence, anyone finding this type of approach helpful should be able to amend the categorization to reflect different views. This applies especially across different cultures.

III. Selection of indicators and procedures for their use

Ideally, there would seem to be many potential measures for each of the broad categories. In practice, there are difficulties. In the first place, some of the categories of HD are in principle difficult to measure (for example, mental well-being). Some data are based on surveys of performance and some on perceptions of observers, with the latter involving an obvious element of subjectivity. In addition, data are often unavailable, or seriously incomplete, covering only a small sample of countries. Some indices are themselves constructed out of a variety of elements and sources in ways that might be subject to challenge. Thus we are aware of the limitations and pitfalls of data in this field. What we have done is to collect whatever we could find; hence our choice of indicators is to a certain extent dictated by data availability. Additional efforts to improve data are clearly warranted.

Table 2 presents our initial set of categories and indicators.

Table 2. Categories and indicators

MENTAL WELL-BEING	EMPOWERMENT	POLITICAL FREEDOM	SOCIAL RELATIONS	COMMUNITY WELL-BEING	INEQUALITY	WORK CONDITIONS	LEISURE CONDITIONS	ECONOMIC STABILITY	POLITICAL SECURITY	ENVIRON-MENTAL CONDITIONS
Male suicide rate	Poverty rates: -$1 a day -national -Human Poverty Index (HPI)	Political and civil liberties	Friends very important	Crime rate	Income gini	Unemployment	Telephone availability	GDP cycle	Political stability	Environ-mental sustaina-bility index
Female suicide rate	Gender Empowerment Measure (GEM)	Freedom of worship	Family very important	Alcohol use	Horizontal Inequalities (HIs)	Employment conditions	Internet use	CPI fluctuations	Refugee flows	
Life satisfaction	Female/Male secondary education enrolment	Political terror index	Tolerance of neighbors	Corruption	Rural/urban inequality	Informal employment	Radio use	Manufactured/total exports	Collective violence	
Prisoners per population	Unmet need for contraceptives	Political freedom	Crude divorce rate	Orphan rate	GDI	Child labor	Cinema attendance	Foreign portfolio investment/GDP	Political violence	
	Married girls, 15-19	Freedom of the Press		AIDS deaths	Happiness inequality	Min wage policy	Newspaper circulation	Terms of trade fluctuations		
	Ratio of females in parliament	Juridical independence		% in civic associations	Health inequality		TV ownership	Social security coverage		
	Union Density			Trust in others						
				Rule of law						
				Public institutions						
				Population affected by natural disasters						
				Tolerance of neighbors						

Source: See Appendix 1 for full details of dataset.

Our basic purpose is to identify a set of indicators which broadly represent the more all-encompassing version of HD, covering the categories identified above. For this, we need to know how far existing core indicators already achieve this. We shall, therefore, correlate representative indicators of each category with what we call the three core indicators. These core indicators are those commonly used to assess country performance: HDI, per capita income and under-five mortality rates. The HDI, as noted, represents a reductionist approach to measuring human development, incorporating basic aspects of health, education and material well-being. Income per capita is, of course, the most common way of assessing overall country performance, used in particular by the World Bank. We have also chosen under-five mortality, used by UNICEF as a way of assessing country performance, for two reasons: one is that we want to be able to focus on health alone as is often advocated (instead of as part of a composite in the form of the HDI); secondly, we prefer under-five mortality to life expectancy because it is a much more accurate measure of changes over time, while encompassing a rather wider concept of health than the infant mortality rate, which is often used. We are using all three indicators in spite of the fact that they are highly correlated with each other because we wish to investigate whether different core indicators are better or worse at representing the other categories of HD.

In exploring each category we have two objectives: first, to explore the relationships among the variables within each set, which we will do by calculating rank order correlations among them across developing country performance for the same time period. Secondly, we aim to identify variables that would be appropriate to represent each category as a whole so that we can determine how the categories relate to HDI and the two other core measures of country performance. The second depends on the first in the sense that, where variables are strongly and significantly related to each other, we select just one to represent the set of highly correlated variables. Where variables in a particular category are not highly correlated with each other, we choose more than one variable to represent the category.

We decided on a number of rules of procedure. When the sample size for an indicator is twenty five or less, we do not select that variable as one of the indicators representing the category. We define the rank-order correlation as being ‘very high’ when the correlation coefficient is above 0.8; ‘high’ when the correlation coefficient

is 0.6 and over, and below 0.8; 'moderate' when it is 0.3 and over, and below 0.6; and low when it is below 0.3. In determining which variables represent others because of high intercorrelation, we take 0.6 and above as our requirement. Only significant correlations (at the 5% level) are counted and all statements about correlations refer only to significant ones.

To select which of two or more variables that are correlated at the required level is chosen to represent the category, we first consider which variable 'carries' (i.e., is correlated at the required rate) most other variables. When they are equal, we consider which shows the greater level of correlation with the other variables.

An alternative procedure would have been to adopt principal components analysis. While we may add this in future work, one disadvantage of this method is that one is left with mechanically-generated composite indicators, which can obscure the variable of interest while the weights that are used are not immediately transparent.

IV. Correlations within the categories

Adopting the procedures outlined above, we get the following results:

1. Mental well-being.

Our mental well-being indicators (see Table 3) cover measures of unhappiness, as shown by suicide, lack of adjustment to society as shown by the prison population, and life satisfaction.

Of the indicators available, male and female suicide are highly correlated, and neither is correlated with the other variables – i.e., a measure of life satisfaction, unhappiness and prisoners per population. It is therefore not particularly important which we select, but we choose the male suicide rate because, in most countries, it is larger than the female rate. The other variables – life satisfaction and prisoners – are not significantly related to each other.

We therefore select life satisfaction, prisoner population and male suicide as independent indicators of mental well-being.

Table 3. Mental well-being indicators

	MaleSuicide	FemaleSuicide	LifeSatisfaction	Prisoners
MaleSuicide	1			
	44			
FemaleSuicide	0.8632*	1		
	0			
	44	46		
LifeSatisfaction	-0.0403	-0.0228	1	
	0.874	0.926		
	18	19	30	
Prisoners	0.2588	0.0536	0.2881	1
	0.0898	0.7235	0.1226	
	44	46	30	124

Source: See Appendix 1.

Note: The first line is the correlation measure, the second gives the significance level (all observations that are significant at the 95 percent level are starred) and the third gives the number of observations available for each calculation. Indicators retained to represent the category are shaded.

2. Empowerment.

Our empowerment indicators cover various measures of poverty and of the status of females (see Table 4).

The $1 a day poverty rate is highly correlated with national poverty rates, the Human Poverty Index (HPI) and the share of girls aged 15-19 years who are married, while the other poverty indices are highly correlated with fewer variables within the category. Therefore, following our procedures, we adopt the $1 a day poverty rate as an indicator for this category.

The GEM is highly correlated with female parliamentarians. We choose GEM because it represents a wider range of female empowerment. The ratio of female to male secondary education is not highly correlated with any other variable, though it is moderately (negatively) correlated with the poverty measures and the rate of teenage marriage, and (positively) with the unmet need for contraceptives.

The rate of union density is not correlated with any of the other variables, while unmet need for contraceptives is not highly correlated with other variables in the category.

Consequently, we choose the $1 a day poverty rate, GEM and female/male secondary education, the unmet need for contraceptives and union density as representing the empowerment category.

Table 4. Empowerment indicators

	Poverty1day	PovNational	HPI	GEM	FemSecMale	ContraceptiveLack	MarriedGirls	FemParliamnt	UnionDensity
Poverty1day	1								
	70								
PovNational	0.7271*	1							
	0								
	59	70							
HPI	0.7350*	0.5392*	1						
	0	0							
	66	66	94						
GEM	-0.0537	-0.1712	-0.5318*	1					
	0.7742	0.4133	0.0014						
	31	25	33	40					
FemSecMale	-0.4073*	-0.3535*	-0.5831*	0.2623	1				
	0.003	0.0101	0	0.1403					
	51	52	68	33	92				
ContraceptiveLack	-0.5883*	-0.3245*	-0.7539*	-0.0647	0.5799*	1			
	0	0.0156	0	0.7864	0				
	52	55	64	20	53	79			
MarriedGirls	0.6264*	0.5937*	0.5498*	-0.3393*	-0.5017*	-0.5033*	1		
	0	0	0	0.0322	0	0			
	70	68	86	40	83	68	112		
FemParliamnt	-0.0073	-0.0436	-0.1283	0.8685*	0.1957	0.0815	-0.1051	1	
	0.9519	0.7202	0.228	0	0.0692	0.4838	0.2882		
	70	70	90	40	87	76	104	127	
UnionDensity	-0.0453	-0.145	0.0015	0	0.2097	0.076	-0.2508	0.1016	1
	0.8023	0.4616	0.9936	1	0.3253	0.7368	0.1462	0.5615	
	33	28	32	19	24	22	35	35	36

Source: See Appendix 1. Note: The first line is the correlation measure, the second gives the significance level (all observations that are significant at the 95 percent level are starred) and the third gives the number of observations available for each calculation. Indicators retained to represent the category are shaded.

3. Political freedom

As indicators for political freedom (see Table 5), we have chosen: two composite indicators, 'political rights and civil liberties', produced by Freedom House; 'political freedom', prepared by the World Bank; and distinct indicators of 'political terror' (Amnesty International), 'freedom of worship' (Freedom House), 'free press' and 'juridical independence' (World Economic Forum). Both 'political and civil liberties' and 'political freedom' are highly correlated with each other, and with free worship and freedom of the press, and therefore can be used to represent them. There is not much to choose between the two, therefore, but we select political and civil liberties as its correlation with free press is a little higher. Political terror and juridical independence are not highly correlated with any other variables and we retain them as well.

Table 5. Political freedom indicators

	PolrtCivlib	FreeWorship	PolTerror	PolFreedom	FreePress	JuridIndp
PolrtCivlib	1					
	137					
Freeworship	0.7951*	1				
	0					
	39	39				
PolTerror	0.3420*	0.1728	1			
	0.0002	0.2996				
	111	38	111			
PolFreedom	-0.9351*	-0.7942*	-0.4492*	1		
	0	0	0			
	136	39	111	136		
FreePress	0.7526*	0.5551*	0.251	-0.6894*	1	
	0	0.0027	0.0621	0		
	61	27	56	61	61	
JuridIndp	0.2096	0.3264	0.3106*	-0.4378*	0.1856	1
	0.1049	0.0966	0.0198	0.0004	0.1522	
	61	27	56	61	61	61

Source: See Appendix 1.

Note: The first line is the correlation measure, the second gives the significance level (all observations that are significant at the 95 percent level are starred) and the third gives the number of observations available for each calculation. Indicators retained to represent the category are shaded.

4. Social relations

This is an area where information is particularly scarce and available samples are small. We have indicators for values placed on friends and family, tolerance for different types of neighbors[4], as well as the divorce rate (Table 6). The crude divorce rate is moderately (negatively) correlated with the importance of families, but there are no high correlations among the variables. We therefore retain all four variables – the value placed on families, value placed on friends and the divorce rate – to represent this category.

Table 6. Social relations indicators

	FriendsVeryImpt	FamilyVImpt	NgbTol	CrudeDivorce
FriendsVeryImpt	1			
	75			
FamilyVimpt	0.3563*	1		
	0.0017			
	75	75		
NgbTol	-0.0388	0.1856	1	
	0.7464	0.1185		
	72	72	73	
CrudeDivorce	-0.1367	-0.3792*	-0.2633	1
	0.3489	0.0072	0.0771	
	49	49	46	68

Source: See Appendix 1.

Note: The first line is the correlation measure, the second gives the significance level (all observations that are significant at the 95 percent level are starred) and the third gives the number of observations available for each calculation. Indicators retained to represent the category are shaded.

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5. Community well-being

We have a wide variety of potential indicators here (see Table 7). However, there are only small samples for trust in others, the crime rate, the share of the

[4] Tolerance for different kinds of neighbors seemed to us to be a feature both of social relations and of community wellbeing, so we included the indicator in both categories.

population involved in civic work, and, therefore, for the moment, we drop them. AIDS deaths are highly correlated with the rate of orphans. AIDS deaths represent a more comprehensive condition, and are a cause of the high orphan rates and of other problems in society, so we choose it. The public institutions variable is highly correlated with the rule of law and the rate of corruption. We chose that to represent these two variables, since the latter two were only highly correlated with one other variable. The three variables, rule of law, public institutions and corruption are all highly intercorrelated, with little to choose among them. We choose the rule of law (a World Bank measure of the extent to which agents have confidence in the rules of society and abide by them) as a more comprehensive indicator than the other two. The share of the population involved in natural disasters was not highly correlated with any of the other indicators, nor was tolerance of neighbors. Consequently, we selected AIDS deaths, the rule of law, tolerance of neighbors and the rate of natural disasters as representative of community well-being.

Table 7. Community well-being indicators

	Crime	Alcohol	Corruption	Orphans	AIDS	CivicWork	Trust	RuleofLaw	PublicInst	NatDisaster	NgbTol
Crime	1										
	17										
Alcohol	0.4893*	1									
	0.0462										
	17	128									
Corruption	0.0847	0.2089*	1								
	0.7466	0.0469									
	17	91	93								
Orphans	-0.1121	-0.04	-0.4405*	1							
	0.6907	0.7047	0.0001								
	15	92	70	93							
AIDS	0.1149	0.0974	-0.4777*	0.7162*	1						
	0.6718	0.3532	0	0							
	16	93	77	84	94						
CivicWork	0.2857	0.5242	0.1956	0.1242	-0.1736	1					
	0.5345	0.0543	0.5028	0.7006	0.5707						
	7	14	14	12	13	14					
Trust	-0.4	-0.4856*	-0.2464	0.2721	-0.0904	-0.2187	1				
	0.2861	0.0139	0.2351	0.2458	0.6967	0.5183					
	9	25	25	20	21	11	25				
RuleofLaw	-0.1495	0.1223	0.8879*	-0.4519*	-0.4707*	0.0396	-0.0131	1			
	0.5668	0.1691	0	0	0	0.893	0.9505				
	17	128	93	93	94	14	25	134			
PublicInst	0.05	0.1585	0.8866*	-0.1665	-0.3060*	0.1963	-0.0805	0.8229*	1		
	0.8541	0.2265	0	0.2528	0.0244	0.5013	0.7086	0			
	16	60	61	49	54	14	24	61	61		
NatDisaster	-0.1054	0.0117	-0.2887*	0.1217	0.1899	-0.0485	0.2936	-0.1526	-0.4470*	1	
	0.6873	0.8958	0.0052	0.2453	0.0683	0.8693	0.1544	0.0806	0.0003		
	17	128	92	93	93	14	25	132	60	134	
NgbTol	-0.5394	0.0981	0.0764	0.215	-0.0185	-0.2421	-0.0574	0.1006	0.2162	-0.2679	1
	0.1076	0.6059	0.6935	0.3245	0.9301	0.4255	0.79	0.597	0.2691	0.1523	
	10	30	29	23	25	13	24	30	28	30	30

Source: See Appendix 1.

Note: The first line is the correlation measure, the second gives the significance level (all observations that are significant at the 95 percent level are starred) and the third gives the number of observations available for each calculation. Indicators retained to represent the category are shaded.

6. Inequalities

Of the various measures of inequality (Table 8), GDI (UNDP's composite measure of gender inequality) is very highly correlated with happiness inequality. We select GDI because it encompasses a broader set of variables. While health inequality is moderately correlated with the income Gini, the correlation is not high enough to allow us to eliminate either indicator, as is also the case with rural-urban inequality and horizontal inequality (HI). Consequently, we select the income Gini, HI, rural/urban inequality, GDI and health inequality to represent their category.

Table 8. Inequality indicators

	IncomeGini	HI	RurUrbIneq	GDI	HappyIneq	HealthIneq
IncomeGini	1					
	78					
HI	0.1803	1				
	0.1719					
	59	78				
RurUrbIneq	-0.2788	-0.4065*	1			
	0.0577	0.0125				
	47	37	48			
GDI	-0.1016	-0.0646	0.0136	1		
	0.3824	0.5795	0.9268			
	76	76	48	122		
HappyIneq	-0.1307	-0.151	0.0572	0.9982*	1	
	0.2844	0.212	0.7189	0		
	69	70	42	111	111	
HealthIneq	0.2950*	0.2248	-0.0305	-0.0186	-0.0775	1
	0.0288	0.1127	0.8579	0.8881	0.574	
	55	51	37	60	55	61

Source: See Appendix 1.

Note: The first line is the correlation measure, the second gives the significance level (all observations that are significant at the 95 percent level are starred) and the third gives the number of observations available for each calculation. Indicators retained to represent the category are shaded.

7. Work conditions

We have five indicators of work conditions (Table 9) – the unemployment rate at a recent date, child labor (5-14), an index of employment conditions reflecting the regulatory situation, informal employment as a proportion of the total and an index indicating the existence of a minimum wage policy. Child labor is inversely correlated with the unemployment rate, although there are only 12 cases of countries with both sets of data. We retain unemployment because the indicator is available for a much larger number of countries. However, it is well known that data for this (as well as for child labor) are unreliable and variable, since definitions differ markedly across countries. Since none of the other indicators is highly correlated with each other, although there is a moderate correlation between minimum wage policy and employment conditions, we retain the remaining three variables – informal employment, minimum wage policy and employment conditions – as well as the unemployment rate to represent the work conditions category.

Table 9. Work conditions indicators

	Unemployment	EmplConditions	InformalEmpl	ChildLabor	MinWagePol
Unemployment	1				
	67				
EmplConditions	-0.0391	1			
	0.7964				
	46	76			
InformalEmpl	0.192	0.14	1		
	0.4452	0.4862			
	18	27	28		
ChildLabor	-0.7881*	0.1617	-0.0387	1	
	0.0023	0.4401	0.9002		
	12	25	13	41	
MinWagePol	0.0279	0.3922*	0.2263	.	1
	0.8755	0.0085	0.2468	1	
	34	44	28	16	47

Source: See Appendix 1.

Note: The first line is the correlation measure, the second gives the significance level (all observations that are significant at the 95 percent level are starred) and the third gives the number of observations available for each calculation. Indicators retained to represent the category are shaded.

8. Leisure conditions

We have six variables in this category (Table 10) – phone availability, internet use, radio use, television ownership, newspaper use per person and cinema attendance. The first five are all highly correlated with each other. We choose phone availability, because the correlations are highest, and cinema attendance (which is moderately related to the other variables), as our indicators for this category.

Table 10. Leisure conditions indicators

	PhoneAvail	InternetUse	RadioUsage	CinemaAtt	Newspaper	Television
PhoneAvail	1					
	135					
InternetUse	0.9064*	1				
	0					
	134	134				
RadioUsage	0.7235*	0.6928*	1			
	0	0				
	130	129	130			
CinemaAtt	0.5078*	0.4712*	0.3717*	1		
	0.0022	0.0049	0.0304			
	34	34	34	34		
Newspaper	0.8204*	0.8067*	0.6766*	0.4299*	1	
	0	0	0	0.0284		
	67	66	67	26	67	
Television	0.8249*	0.7728*	0.6775*	0.4348*	0.8068*	1
	0	0	0	0.0102	0	
	130	129	128	34	66	130

Source: See Appendix 1.

Note: The first line is the correlation measure, the second gives the significance level (all observations that are significant at the 95 percent level are starred) and the third gives the number of observations available for each calculation. Indicators retained to represent the category are shaded.

9. Economic stability

Variables chosen because they are likely to cause fluctuations in incomes include the share of manufacturing exports (inversely related), portfolio investment as a

share of GDP and fluctuations in the terms of trade. We also include the actual GDP business cycle. Individual economic vulnerability is likely to result from these macro-fluctuations and also from fluctuations in the inflation rate, although individual economic insecurity may be reduced by social security coverage. Our data for all these variables are for 1980-2000, except for social security which relates to 2000. A high correlation was observed between the terms of trade fluctuations and the share of manufacturing exports in output. Since terms of trade fluctuations are likely to have an immediate effect on many people's incomes, we retain it instead of manufacturing exports as a share of total exports. None of the other variables was highly correlated with other variables, although portfolio share of investment and social security polices were moderately positively correlated, presumably because each is higher at higher levels of per capita income. We therefore retain all the other indicators noted above.

Table 11. Economic insecurity

	GDPcycle	CPIcycle	ManufExpts	Portfolio	TermsofTrade	SocSecPol
GDPcycle	1					
	108					
CPIcycle	0.1137	1				
	0.2944					
	87	92				
ManufExpts	-0.4426*	-0.2529*	1			
	0.0001	0.0389				
	72	67	76			
Portfolio	0.0312	0.1669	0.229	1		
	0.7891	0.1838	0.0866			
	76	65	57	79		
TermsofTrade	0.2117	0.4209*	-0.5989*	0.0224	1	
	0.0577	0.0003	0	0.866		
	81	69	56	59	89	
SocSecPol	0.0201	-0.0815	0.0965	0.5786*	-0.0537	1
	0.8983	0.6266	0.57	0.0002	0.7423	
	43	38	37	36	40	46

Source: See Appendix 1.

Note: The first line is the correlation measure, the second gives the significance level (all observations that are significant at the 95 percent level are starred) and the third gives the number of observations available for each calculation. Indicators retained to represent the category are shaded.

10. Political stability

The four indicators in this area (Table 12) are: 'political stability', a composite index reflecting the likelihood of the overthrow of government compiled by the World Bank; net refugee outflows as a proportion of the population 1998-2002 (from UNHCR); an index of collective violence, including excessive civilian targeting (Marshall); and one for political violence (defined as any type of armed conflict from 1990) (derived from Marshall's dataset). Political stability, collective violence and political violence are all highly intercorrelated. We choose political violence since the correlation coefficients are higher than in the other two cases. The refugee flow indicator is only moderately correlated with the other indicators and is therefore retained as an indicator representing this category.

Table 12. Political security indicators

	PolStability	Refugees	CollViolence	PolViolence
PolStability	1			
	125			
Refugees	-0.4202*	1		
	0.001			
	58	58		
CollViolence	-0.6072*	0.4692*	1	
	0	0.0003		
	109	56	109	
PolViolence	-0.6153*	-0.0407	0.6217*	1
	0	0.7617	0	
	125	58	109	137

Source: See Appendix 1.

Note: The first line is the correlation measure, the second gives the significance level (all observations that are significant at the 95 percent level are starred) and the third gives the number of observations available for each calculation. Indicators retained to represent the category are shaded.

11. Environmental conditions

We have just one composite indicator for this category, environmental sustainability, produced by the World Economic Forum, Yale Center for Environmental Law and Policy and CIESIN, which will therefore represent this category.

V. Relating the selected indicators to the core indicators

Now that we have selected indicators to represent each category , we shall explore how these relate to the three core measures used to assess country performance for the same period of time – the HDI, income per capita (PPP) and under-five mortality. We start with the HDI, currently the most prominent measure of HD performance. Table 13 shows the correlations between HDI and the 30 retained indicators representing our eleven categories. We then follow similar procedures as before, i.e., we eliminate any variable which has a high correlation (i.e. above 0.6) with the core indicator. Life satisfaction, the rate of contraceptive use , the divorce rate, the rule of law, phone availability and social security policies are all highly positively correlated with the HDI, while $1 a day poverty, AIDs deaths and the rate of child labor are highly correlated negatively. The HDI may therefore represent all these indicators and a broader measure of HD would not need to include them (with the exception of the divorce rate since a higher rate is generally viewed as worse for HD).

Table 13. Correlations between retained indicators and HDI

INDICATOR	HDI RANKING	INDICATOR	HDI RANKING	INDICATOR	HDI RANKING
HDI ranking	1	NgbTolerance	-0.1017	InformalEmpl	-0.295
			0.5929		0.1275
	126		30		28
MaleSuicide	0.3041*	CrudeDivorce	0.6764*	MinWagePol	-0.2115
	0.0448		0.0008		0.1535
	44		21		47
LifeSatisfaction	0.6877*	AIDSdeaths	-0.6585*	PhoneAvail	0.8585*
	0		0		0
	30		93		125
Prisoners	0.5817*	RuleofLaw	0.6528*	CinemaAtt	0.5074*
	0		0		0.0019
	117		126		35
Poverty1day	-0.7843*	AlcoholUse	0.2483*	GDPcycle	-0.1127
	0		0.0058		0.2502
	70		122		106
Contraceptive	0.7610*	NatDisaster	-0.3223*	CPIcycle	-0.3413*

	0		0.0003		0.0009
	75		124		92
GEM	0.4555*	IncomeGini	0.0621	Portfolio	0.2466*
	0.0031		0.5891		0.0295
	40		78		78
FemSecmale	0.5666*	HorizIneq (HI)	0.3370*	TermsofTrade	-0.171
	0		0.0033		0.1176
	90		74		85
UnionDensity	0.0606	RurUrbIneq	-0.5379*	SocSecPol	0.6072*
	0.7257		0.0001		0
	36		48		46
PolrtCivlib	-0.2991*	GDI	0.013	Refugees	0.0276
	0.0007		0.8916		0.8428
	126		113		54
PolTerror	-0.2719*	HealthIneq	-0.3866*	PolViolence	-0.4276*
	0.0048		0.0021		0
	106		61		126
JuridIndp	-0.3344*	Unemployment	-0.0266	EnvSustain	0.2553*
	0.0084		0.8309		0.0152
	61		67		90
FriendsVeryImpt	0.1404	ChildLabor	-0.7339*		
	0.4594		0		
	30		39		
FamilyVimpt	-0.1849	EmplConditions	-0.1506		
	0.3281		0.1941		
	30		76		

Source: See Appendix 1. Variables retained are shaded.

Table 14 summarizes our results, showing which indicators are retained for each category.

Table 14. The Relationship of Indicators to the Core Measures

CATEGORY OF HUMAN DEVELOPMENT	INDICATORS ELIMINATED	INDICATORS RETAINED
Mental well-being	Life satisfaction	Male suicide rate Prisoners
Empowerment	$1 a day poverty Contraceptive access	GEM Fem/male secondary educ. Union density
Political freedom	None	Political/civil liberties Political terror Juridical independence
Social relations	None	Value of friends Value of family Tolerance of neighbors Divorce rate
Community well-being	AIDS deaths Rule of law	Alcohol consumption Natural disasters Tolerance of neighbors
Inequalities	None	Income gini Horizontal inequality Rural/Urban inequality GDI Health inequality
Work conditions	Child Labor	Unemployment Employment conditions Informal sector proportion Minimum wage policy
Leisure conditions	Phone availability	Cinema attendance
Economic stability	Social security	GDP cycle CPI cycle Portfolio investment Terms of trade
Political stability	None	Political violence Refugee flows
Environment	None	Environmental sustainability

Source: See Appendix 1. Shaded areas indicates retained indicators.

This exercise shows that HDI alone does not encompass many other important dimensions of HD, even on our rather modest requirements of a 0.6 correlation. For each of the eleven categories, at least one other variable needs to be included in order to assess the overall state of Human Development, and altogether we add 31 indicators.

We proceed in the same way with per capita income (PPP). For the most part the results were the same as for HDI (See Appendix 2). The differences were:

- In the mental well-being category, life satisfaction was moderately rather than highly correlated with income, so that the three variables – life satisfaction, prisoners and male suicide would need to be retained.
- In community well-being, in contrast to HDI, AIDS deaths are only moderately correlated with income, and thus should be retained.
- In all the other categories, the same indicators are retained as in the case of the HDI.

Thus HDI is a somewhat more encompassing general indicator of HD than per capita income. Income per capita is, of course, also a less good measure of the basic elements of HD than HDI, which is designed for this very purpose. This is confirmed by the stronger correlations of HDI with life expectancy, infant mortality, maternal mortality and adult illiteracy than shown by per capita income (see Table 15).

Table 15. Correlation among basic indicators of human development

	HDIranking	IncomePPP	Under5mort	AdultIllit	MatMortality	LifeExpectancy	InfantMort
HDIranking	1						
	126						
IncomePPP	0.8789*	1					
	0						
	113	113					
Under5mort	-0.8789*	-0.8258*	1				
	0	0					
	125	112					
Adultillit	-0.8091*	-0.7082*	0.7393*	1			
	0	0	0				
	106	99	107	108			
MatMortality	-0.8760*	-0.8227*	0.9177*	0.6895*	1		
	0	0	0	0			
	115	105	120	105	120		
Lifeexpectancy	0.8784*	0.7462*	-0.9184*	-0.6216*	-0.8745*	1	
	0	0	0	0	0		
	120	109	125	107	120	126	
Infantmort	-0.8762*	-0.8142*	0.9947*	0.7393*	0.9050*	-0.9135*	1
	0	0	0	0	0	0	
	125	112	136	107	120	125	136

Source: See Appendix 1.

Note: The first line is the correlation measure, the second gives the significance level (all observations that are significant at the 95 percent level are starred) and the third gives the number of observations available for each calculation.

The correlations with under-five mortality yield exactly the same results as HDI. Under-five mortality also shows similar correlations with the basic elements of HD as with HDI (See Table 15). HDI is, of course, a much more widely accepted measure. But the under-five mortality rate has advantages for some purposes, since it is more precise in terms of changes over time and less complicated to calculate.

Given the fact that – for most categories – more than one variable (and in most cases several) emerge as a result of following these procedures, the question arises of whether one should seek a composite indicator for each category, similar to the HDI. We should note the very fact that since more than one variable emerges, we are left with variables that are not highly correlated with one another. The weighting of the variables in any composite is bound to be arbitrary, yet there could be advantages from the point of view of comparing country performance in different

categories and also changes over time. However, we have not developed such composites at this stage.

Conclusions

This paper has explored possible ways of enlarging our understanding and measurement of Human Development. Following other contributions in this area, we developed eleven categories of HD extending beyond the HDI. Within each category, we then identified a potential set of indicators which seem to us plausible measures and for which data are available. In order to reduce the number of variables representing each category, we included only one indicator for any set of indicators that are highly correlated with each other, as well as including each indicator that does not show high correlations with the other indicators in its category. The aim was to include only variables which are broadly independent of each other.

Our next step was to see how well the selected variables for each category are correlated with the HDI. Any variable in any category that was highly correlated with HDI was then eliminated on the grounds that these variables were already encompassed by the HDI measure. We were left with 31 variables, each representing independent dimensions of HD.

We then performed the same exercise with two commonly used alternative aggregate measures of country progress – income per capita (PPP) and under-five mortality – to see whether they 'carried' a larger set of our HD indicators. We found that under-five mortality performed exactly as the HDI, while income per capita did less well, i.e., using income alone misses even more dimensions of a broad conception of HD than using HDI alone. And, of course, income per capita is also a less good indicator of the basic elements of HD.

This paper explores empirical correlations and does not attempt to investigate causality. We recognize that our procedures are somewhat arbitrary and a change in the data used, thresholds etc., would yield somewhat different results. Our basic purpose is not to be definitive but to show that extending the concept and measurement of Human Development to a broader set of dimensions seriously affects

the way one should measure and assess country performance. We are open to suggestions as to alternative categories, indicators, data sources and rules of procedure.

In future work in this area we intend to extend this exploration to developed countries and to differentiate between high, middle and low HDI countries. To the extent that data are available, we would also like to trace the historical progress of the current rich OECD countries in the various categories, which may help in drawing conclusions about transitions over time. We also hope to identify typologies of countries/regions according to their success or failure with respect to the different dimensions of HD. Comparing country performance would be facilitated, for example, by a change in the correlation coefficient cut-off from .6 to .5, substantially reducing the number of retained indicators. In this connection, the application of principal components analysis to each category would, of course, also substantially reduce the number of retained (or independent) indicators and assist in the identification of relevant typologies.

APPENDIX 1. SUMMARY OF INDICATORS AND SOURCES

INDICATOR	CODE	NOTES	DATE	ORIGINAL SOURCE	SOURCE TAKEN FROM (if different)
CORE INDICATORS					
HDI rank	HDI	Composite of life exp., adult literacy & mean schooling, & p/c GDP	2002		UNDP Human Development Report (HDR) 2004
p/c GDP	IncomePPP	PPP US$	2002		World Bank Development Indicators (WBDI) 2004
Child mortality rate	Under5Mort	under 5 years old, per 1,000 live births	2002		UNDP HDR 2004
PHYSICAL WELL-BEING					
Adult illiteracy	AdultIllit	Adult illiteracy rate (% age 15 and above)	2002	UNESCO	UNDP HDR 2004
Maternal mortality	MatMortality	Maternal mortality rate (per 100,000 live births)	2000	WHO, UNICEF, UNFPA	Millennium Dev Goals website
Life expectancy	LifeExp		2000-05 estimate		WHO (www.who.org)
Infant mortality	InfantMort	per 1,000 live births	2002		UNDP HDR 2004
INDIVIDUAL MENTAL WELL-BEING					
Suicide rates	MaleSuicide, FemSuicide	per 100,000 people	2003 (or most recent av)		WHO
Life satisfaction	LifeSatis	0-10 ladder, 10 most satisfied	1990s		World Database of Happiness, www2.eur.nl/fsw/research/happiness
Population incarcerated (%)	Prisoners	per 100,000 of population	2004		King's College World Prison Brief, www.prisonstudies.org
EMPOWERMENT					
Population living below $1/day (%)	Poverty1day		1990-2002 (more recent av)		WBDI 2004
Population living below the national poverty line (%)	PovNational		1990-2001 (most recent av)		WBDI 2004

INDICATOR	CODE	NOTES	DATE	ORIGINAL SOURCE	SOURCE TAKEN FROM (if different)
Human Poverty Index (HPI)	HPI	Composite of deprivation in life expect., illiteracy, and lack of access to safe water & health services & malnutrition	2002		UNDP HDR 2004
Gender empowerment measure (GEM)	GEM	Composite of gender inequality in parliament, occupational status & income	2002		UNDP HDR 2004
Ratio of female to male secondary school enrolment	FemSecMale		2000-2001	UNESCO	UNDP HDR 2004
Unmet need for family planning	ContraceptiveLack	% of sexually active men/women not using modern contraception who don't want children for at least 2 yrs	most recent year av., 1990-2002	UNFPA	Population Reference Bureau
Currently married females age 15-19 (%)	MarriedGirls		most recent year av., 1985-2002		UN Population Division World Fertility Report
Women in parliamentary seats (%)	FemParliamnt		2004	Inter-parliamentary union (IPU)	Millennium Dev Goals website
Union Density	UnionDensity	% of labor force affiliated with labor unions	1997	ILO Laborstat & World Bank 2001	Yale International Institute for Corporate Governance, http://iicg.som.yale.edu/data/datasets.shtml
POLITICAL AND CULTURAL FREEDOM					
Combined pol rights/civ liberties indicator	PolRtCivLib	Scale of 1-7 with 1 most free; average of 'political rights' & 'civil liberties' scales.	2003		Freedom House
Freedom of worship	FreeWorship	Scale of 1-7 with 1 most free	2000	Religious Freedom in the World	Freedom House Center for Religious Freedom
Amnesty international political terror index	PolTerror	1 to 5 with 5 most repressive	avg. 2000-2003	Amnesty International	http://www.unca.edu/politicalscience/faculty-staff/gibney_docs/pts.xls
Voice and Accountability index	PolFreedom	Measures political rights & ability of citizens to participate, higher #s better	2002		World Bank Governance Indicators
Freedom of the press	FreePress	Business leaders perceptions, 104 countries (rank order)	2004		World Economic Forum Global Competitiveness Report (2004/2005)
Juridical Independence	JuridIndp	Business leaders perceptions, 104 countries (rank order)	2004		World Economic Forum Global Competitiveness Report (2004/2005)

INDICATOR	CODE	NOTES	DATE	ORIGINAL SOURCE	SOURCE TAKEN FROM (if different)
SOCIAL RELATIONSHIPS					
FriendsVeryImpt	FriendsValue	lower numbers indicate more imptance	1999/2001		World Values Survey
FamilyVeryImpt	FamilyValue	lower numbers indicate more imptance	1999/2001		World Values Survey
Neighbor Tolerance	NgbTol	Average response to whether would want to live next to various types of people; lower numbers indicate more tolerance.	1999/2001		World Values Survey
Crude Divorce Rate	CrudeDivorce	Ratio of number of divorces to population.	2001 or most recent		UN Demographic Yearbook
COMMUNITY WELL-BEING					
People victimized by crime	CrimeRate	% of population	most recent year av. (1990-2001)	UNODC	UNDP HDR 2004
Alcohol consumption, recorded	AlcoholUse	p/c litres pure alcohol, ages 15+	2003 data	FAO World Drink Trends 2003	WHO Global Status Report on Alcohol, 2004
Corruption index	Corruption	0 to 10 with 10 least corrupt	2004		Transparency International
Orphaned children	OrphanCount	% of children w/o 1 or both parents	2003		UNICEF
Estimated AIDS deaths	AIDS	% of population	2003	UNAIDS	Millenium Dev Goals website
Participation in civic associations	CivicWork	% of economically active population (includes paid & volunteer work)	2003		John's Hopkins Comparative Nonprofit Sector Project
Trust in others	Trust	Extent to which people feel “most people can be trusted”, lower numbers show more trust	1999/2001		World Values Survey
Rule of law	RuleofLaw	Extent to which agents have confidence in & abide by rules of society; higher better	2002		World Bank Governance Indicators
Public institutions index	PublicInst	Business leader perceptions of quality of public institutions	2004		World Economic Forum Global Competitiveness Report (2004/2005)
Share of population affected by natural disasters	NatDisaster	Average for period of number affected each year divided by total population.	Average of 1980-2000		Calculated from The OFDA/CRED International Disaster Database - www.cred.be/emdat & WBDI (2004).
Neighbor Tolerance	NgbTol	Average response to whether would want to live next to various types of people; lower numbers indicate more tolerance.	1999/2001		World Values Survey

INDICATOR	CODE	NOTES	DATE	ORIGINAL SOURCE	SOURCE TAKEN FROM (if different)
INEQUALITIES					
Gini of income	IncomeGini		1990-2000 (most recent av.)	World Bank	UNDP HDR 2004
Horizontal inequalities	HI	Range from -2 to +4, higher no. represents more disadv.	2000		Minorities at Risk
Rural urban inequalities	RuralUrbIneq	ratio rural/urb pov * share rural/urb pop (Calculated from WBDI data)	1990-2002 (most recent av)		Calculated from WBDI 2004 data.
Gender Development Index	GDI	Human Development Index adjusted to account for gender inequality.	2001		UNDP HDR 2004
Life satisfaction inequality	HappyIneq	Dispersion of responses on 0-10 ladder of life satisfaction (std dev.)	1990s		World Database of Happiness
Inequality in health care	HealthIneq	Perceived inequality in access to health care, rich & poor, business leaders survey; lower no. less ineq.	2004		World Economic Forum Global Competitiveness Report 2004/05
WORK CONDITIONS					
Unemployment rate	Unemployment		Most recent av (1992-2003)		ILO LaborStat
Extent to which empl. conditions are regulated	EmpConditions	Index 1-100 with higher no. reflecting more regulation	1999		Djankov et al. 2000, *The Regulation of Entry*, World Bank working paper (see www.nationmaster.com)
Share employed in informal sector	InformalEmp	% of labor force employed in unofficial economy in capital city of each country as % of official labor force. Data from surveys & econometric estimates.	2000		Yale International Institute for Corporate Governance, http://iicg.som.yale.edu/data/datasets.shtml
Child labor	ChildLabor	% age 5 to 14 involved in labor.	1999-2001 (most recent av)		UNICEF
Existence of minimum wage policy	MinWage	Dummy equals "1" if min wage policy in country.	2000		Yale International Institute for Corporate Governance, http://iicg.som.yale.edu/data/datasets.shtml
LEISURE CONDITIONS					
Telephone/Cell phone subscribers	PhoneUse	per 100 population	2002	ITU	Millennium Development Goals website
Internet users	InternetUse	per 100 population	2002	ITU	Millennium Development Goals website
Radios	RadioUsage	per 1,000 people	1997	UNESCO	WBDI 2004

INDICATOR	CODE	NOTES	DATE	ORIGINAL SOURCE	SOURCE TAKEN FROM (if different)
Cinema attendance	CinemaAtt	per 1,000 people	1995-1999 (most recent av)		UNESCO
Newspaper circulation	Newspapers	per 1,000 people	1997-2000 (avg)		UNESCO
TV ownership					
ECONOMIC STABILITY					
GDP Cycle	GDPcycle	Avg. annual deviation from mean	1981-2002		Calculated from WBDI 2004 data.
CPI Cycle	CPIcycle	Avg. annual deviation from mean	1981-2002		Calculated from WBDI 2004 data..
Share of manufactured exports in total	ManufExpts	Avg. of 1980, 1990 and 2000 (or closest year)	1980-2000		Calculated from WBDI 2004 data.
Portfolio Cycle	Portfolio	Avg. for period of share of portfolio inv. (current $ excluding LCFAR) as share of GDP	1980-2000		Calculated from WBDI 2004 data.
Terms of Trade Cycle	TermsTrade	Avg. annual deviation from mean	1980-2000		Calculated from WBDI 2004 data.
Social security policy	SocSecPolicy	Measures social security benefits as avg. of old age, disability, death benefits; sickness/health benefits; unempl. benefits.	2000		Yale International Institute for Corporate Governance, http://iicg.som.yale.edu/data/datasets.shtml
POLITICAL STABILITY					
Political stability measure	PolStability	Composite reflecting perceptions of likelihood of destab/overthrow of govt.	2002		World Bank Governance Indicators
Net refugee outflow	Refugees		1998-2002		UNHCR Statistical Yearbook 2002
Collective political violence in 1990s	CollViolence	Reflects levels of violence within country & whether excessive civilian targetting, 0-8 with 8 worst.	1990s		Marshall, M.G. (2002). *Global terrorism: An overview and analysis.*
Countries with major episode of political violence since 1990	PolViolence	Dummy equals "1" if any type of armed conflict	1990 on		Derived from data given in Marshall, M.G. (2005), *Major episodes of pol violence, 1946-2004*
ENVIRONMENTAL WELL-BEING					
Environmental sustainability index	EnvSustain	Multicomponent measure of progress toward env sustainability; higher measure indicates greater progress.	2002		World Econ Forum, Yale Center for Environmental Law & Policy & CIESIN (see www.ciesin.org)

APPENDIX 2. Correlations between retained indicators and per capita income

Indicator	IncomePPP	Indicator	IncomePPP	Indicator	IncomePPP
IncomePPP	1	NgbTol	-0.129	InformalEmpl	-0.1158
			0.4967		0.5574
	113		30		28
Malesuicide	0.1575	CrudeDivorce	0.6663*	MinWagePol	-0.3431*
	0.3318		0.0025		0.0182
	40		18		47
LifeSatisfaction	0.5540*	AIDSdeaths	-0.5447*	PhoneAvail	0.8708*
	0.0015		0		0
	30		89		113
Prisoners	0.6229*	RuleofLaw	0.6748*	CinemaAtt	0.4968*
	0		0		0.0045
	107		113		31
Poverty1day	-0.7592*	AlcoholUse	0.2718*	GDPcycle	-0.1729
	0		0.0039		0.0822
	70		111		102
ContraceptiveLack	0.6497*	NatDisaster	-0.3084*	CPIcycle	-0.4379*
	0		0.0009		0
	71		112		86
GEM	0.4735*	IncomeGini	0.1911	Portfolio	0.2430*
	0.002		0.0937		0.0383
	40		78		73
FemSecmale	0.5404*	HorizIneq (HI)	0.3487*	TermsofTrade	-0.2962*
	0		0.0027		0.008
	82		72		79
UnionDensity	0.0802	RurUrbIneq	-0.5347*	SocSecPol	0.6419*
	0.642		0.0001		0
	36		48		46
PolrtCivlib	-0.3471*	GDI	-0.0671	Refugees	-0.0677
	0.0002		0.4966		0.6442
	113		105		49
PolTerror	-0.2806*	HealthIneq	-0.4017*	PolViolence	-0.4530*
	0.0059		0.0015		0
	95		60		113
JuridIndp	-0.4524*	Unemployment	0.1517	EnvSustain	0.2990*
	0.0003		0.2354		0.0054
	60		63		85
FriendsVeryImpt	0.0937	ChildLabor	-0.7154*		
	0.6225		0		
	30		38		
FamilyVimpt	-0.1909	EmplConditions	-0.2259		
	0.3123		0.0513		
	30		75		

Source: See Appendix 1.

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