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Gender-related indicators of well-being

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Gender-related Indicators of Well-being

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Abstract

This paper discusses the rationale as well as the challenges involved when constructing gender-related indicators of well-being. It argues that such indicators are critically important but that their construction involves a number of conceptual and measurement problems. Among the conceptual issues considered are the space in which gender inequality in well-being is to be measured, whether the indicators should track well-being of males and females separately or adjust overall measures of well-being by the gender inequality in well-being, whether gender equality in every indicator is necessarily the goal, how to assess gender inequality that is apparently desired by males and females, and what role indicators of agency or empowerment should play in gender-related indicators of well-being. Among the most important measurement issues addressed are; the role of the household in allocating resources, the question of stocks versus flows, as well as significant data gaps when it comes to gender inequalities. Where appropriate, remedies to the conceptual and measurement issues are proposed. The paper also briefly reviews UNDP's gender-related indices to illustrate some of the challenges involved.

Keywords: well-being, inequality, poverty, missing women, GDI

JEL classification: D13, D31, D63, I3, J16

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1 Introduction

There are large and persistent gender gaps in many indicators of well-being across the world. They include gender gaps in control over economic resources, education, earnings, mortality, access to employment, pay, time use, and power in the public and the private sphere (e.g. UNDP 1995, World Bank 2001). Perhaps the most egregious form of gender inequality is that of gender inequality in survival in parts of the developing world, most notably South Asia and China where, as a result of inequalities in access to resources within the household, millions of women have died as a result of these inequalities and have been referred to as 'missing women' by Sen and others (e.g. Sen 1989, Klasen and Wink 2002, 2003) see Table 1.

Yet when it comes to constructing appropriate measures of well-being that take into account these gender differentials, numerous problems emerge. Among the many difficult conceptual issues to be considered are the space in which gender inequality in well-being is to be measured, whether the indicators should track well-being of males and females separately or adjust overall measures of well-being by the gender inequality in well-being, whether gender equality in every indicator is necessarily the goal, how to assess gender inequality that is apparently desired by males and females, and what role indicators of empowerment should play in gender-related indicators of well-being. These issues will be dealt with in the first sections of the paper, which aim to discuss each issue in turn and propose solutions where they seem feasible.

In addition, there are many measurement issues one needs to tackle when devising gender-related indicators of well-being. Among the most serious issues to be addressed is that most information about economic resources is only available at the level of households and it is conceptually and practically difficult to 'assign' household incomes or assets to individuals of different gender within households. This makes assessments about the share of the world's income-poor that are female extremely difficult, for example (and claims about this suspect, see Marcoux 1998). Second, when assessing gender-related indicators of well-being, the question of measuring stocks versus flows appears particularly important. Finally, the data base for assessing gender inequality across space and time is often lacking or particularly shaky due to differences in definitions, approaches to measurement and interpretation so that comparisons of gender-related indicators of well-being require particular care. These issues will be tackled in the latter sections of the paper.

In short, I will argue that it is critically necessary to consider gender when devising measures of well-being, but that such approaches must take special care to address these very difficult conceptual and measurement issues.

Table 1 Missing women, latest estimates

	Year	Actual number of women	Actual sex ratio	Expected sex ratio	Expected number of women	Missing women	% Missing
China	2000	612.3	1.067	1.001	653.2	40.9	6.7
Taiwan	1999	10.8	1.049	1.002	11.3	0.5	4.7
South Korea	1995	22.2	1.008	1.000	22.4	0.2	0.7
India	2001	495.7	1.072	0.993	534.8	39.1	7.9
Pakistan	1998	62.7	1.081	1.003	67.6	4.9	7.8
Bangladesh	2001	63.4	1.038	0.996	66.1	2.7	4.2
Nepal	2001	11.6	0.997	0.992	11.7	0.1	0.5
Sri Lanka	1991	8.6	1.005	1.006	8.6	0.0	0.0
West Asia	2000	92.0	1.043	1.002	95.8	3.8	4.2
of which: Turkey	1990	27.9	1.027	1.003	28.5	0.7	2.4
Syria	1994	6.7	1.047	1.016	6.9	0.2	3.1
Afghanistan	2000	11.1	1.054	0.964	12.1	1.0	9.3
Iran	1996	29.5	1.033	0.996	30.6	1.1	3.7
Egypt	1996	29.0	1.048	1.003	30.3	1.3	4.5
Algeria	1998	14.5	1.018	1.005	14.7	0.2	1.2
Tunisia	1994	4.3	1.021	1.000	4.4	0.1	2.1
Sub-Saharan Africa	2000	307.0	0.987	0.970	312.5	5.5	1.8
Total (World)		1774.8				101.3	5.7

Source: Klasen and Wink (2003).

Note: Turkey and Syria are subsumed in West Asia and are therefore not added separately. The expected sex ratio at birth is based on regressions 2 and 4 in Table 2. Actual and expected sex ratios refer to the number of males per females in the entire population; the expected sex ratio at birth refers to the number of males per female at birth.

2 The case for including gender in an assessment of well-being

The case for including gender inequality in an assessment of well-being rests primarily on two factors. First, gender differences in important well-being indicators are so large that they cannot and should not be ignored in an assessment of well-being. The large inequality existing in two very important indicators of well-being, survival and

education, nicely illustrate this point. Regarding survival, there is a sizeable literature that has demonstrated that girls and women in parts of the developing world suffer from considerable inequalities in survival (e.g. D'Souza and Chen 1980, Sen 1989, Klasen 1994, Klasen and Wink 2002). This is mainly due to inequalities in access to resources within households, but increasingly also due, particularly in China, South Korea, and also in India recently, to sex-selective abortions of female foetuses.[1] As a result of these past and present inequalities in survival, some 100 million women are 'missing' in today's populations in South Asia, the Middle East, and East Asia (Klasen and Wink 2002, 2003).[2] Table 1 gives the distribution of missing women in different parts of the developing world. The death toll of gender bias in survival thus ranks among the most important human catastrophes of our present time and must therefore be considered when we are measuring the well-being of people.

Similarly, there are pervasive gender differences in access to education in most regions of the world. Although the size of gender inequality differs greatly and has generally narrowed in most regions (see Table 2), these gaps remain sizeable and must be considered when we consider well-being more generally (Abu-Ghaida and Klasen 2003).

Table 2 Enrolment and achievement in education by gender

	Primary Gross Enrolment Rate				Secondary Gross Enrolment Rate				Average Years of Attainment [b]			
	1975		1999		1975		1999		1970		1995	
Region	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males
East Asia & Pacific	108	121	106	105	35	49	60	65	3.06	4.54	5.85	6.84
Europe & Central Asia	..	..	93	95	..	..	80	81	8.09	8.93	9.67	9.20
Latin America & Caribbean	97	100	130	133	34	35	87	80	3.52	4.14	5.58	5.91
Middle East & North Africa	64	99	91	99	24	44	67	72	1.39	2.75	4.21	5.74
South Asia	58	91	91	110	15	33	41	57	1.08	2.95	2.94	5.31
Sub-Saharan Africa [a]	45	66	73	85	6	13	23	28	1.56	2.60	2.82	3.98

[a] Latest available data on primary GERs are from 1998 and on secondary GERs from 1996.

[b] Attainment data include schooling beyond secondary. Since data are from Barro and Lee (2000), the regional classification includes some countries with per capita incomes too high to be included in the World Bank's database (the one used for the GERs).

Source: World Development Indicators central database and Barro and Lee (2000).

The second factor that supports the case for including gender inequality in an assessment of well-being is that gender inequality derives from a biological category, one's sex, that is, in general, not changeable and thus rewards and punishes people for an ascriptive characteristic they are born with.[3] In contrast to income inequality which may, in part, occur despite equality of opportunities for everyone, gender inequality is

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1 For a discussion of the issue of sex-selective abortions as a form of gender inequality, see Klasen and Wink (2003) and Klasen (2003).

2 While this problem is particularly severe in the regions mentioned above, it was historically prevalent in many other parts of the world, including Europe, the US, Japan. For a discussion of these historical episodes, see Klasen (1999*a*).

3 Those very few people who do change their sex during their life-time are generally not often subject to other forms of inequalities and discrimination.

precisely a case where there are inequalities of opportunities based purely on one's sex which is particularly objectionable in most theories of justice.[4]

To be sure, this second point does not apply to gender alone. Inequalities based on race or ethnicity would also need to be considered in the same vein, and such inequalities typically are considered in countries where there are significant racial and ethnic divides.[5] While other 'ascriptive' inequalities are thus important to consider as well, there are arguments why a consideration of gender inequality is particularly important and requires special care and attention, compared to other types of 'ascriptive' inequalities. First, some gender gaps observed are rooted in (or justified with) biological differences between males and females and thus require particularly careful analysis. The most important two biological differences are the ability of women to bear children and the differences in average body size and strength between the sexes. While a lot of gender inequality is socially constructed, even those social constructions often relate to these biological differences. Second, while for most other 'ascriptive' inequalities, the locus of these inequalities is largely in the public sphere and often relate to markets (particularly the labour market, the housing market, etc.), a considerable portion of gender inequality is generated in the home and thus outside of formal markets.[6] As a result, gender inequality in the home is often less measurable and visible, compared to inequalities in markets such as the labour market where racial (or gender) inequality can be assessed using standard theoretical and empirical methods.

In addition, some of these gender inequalities that take place in households are unrelated to economic resources but are still likely to have a large impact on the well-being of females. They include items such as enforced female seclusion (purdah), female genital mutilation, or domestic violence. Considering them in a gender-sensitive assessment of well-being would be important (although it is difficult to quantify the well-being impact of these practises).[7]

Thus if we think that our measures of well-being should be reliable in the sense of not glossing over important inequalities within society, and if we believe they should be grounded in a theory of justice that at least calls for equality of opportunities for all, then gender inequality must be considered when devising meaningful measures of well-being. At the same time, a consideration of gender inequality must take careful note of the specific issues relating to gender, which are the link to biological differences and the importance of the household for generating gender inequality.

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4 For a discussion, see Sen (1992). If one applies Rawlsian reasoning to inequality in economic resources by arguing that even our talents and motivations are gifts that we received at birth for which we should not expect any special reward, the difference between 'earned' and 'ascribed' inequality might become much less relevant. The distinction between these two types of inequalities was made by Eastwood and Lipton (2001) in a different context.

5 For an example, see Klasen (2000) which examines well-being in South Africa where race plays an important role.

6 While it may be possible to analyse household relations using market metaphors, they have severe limitations as many of the conditions of competitive markets (easy entry and exit, many buyers and sellers) do not apply to the household. See Sen (1990) for further discussion.

7 Also, here some of the issues discussed in section 5 are particularly relevant.

3 The space of gender-related indicators of well-being

The dimension (or space) in which to measure well-being is a general problem to be addressed when considering indicators of human well-being (and is also addressed in other contributions to this project). When gender is considered, this discussion assumes further urgency and possibly points to different solutions. In particular, specific spaces are quite unsuitable for examining gender dimensions of well-being. For example, focusing on the income space generates the problem that income can usefully be measured only at the household level and not easily ascribed to individual male and female members (see below).[8] Similarly, focusing on the work aspects of well-being, it is not immediately clear that gender inequalities (for example in labour force participation and time use) should necessarily be seen as relevant for a well-being assessment to the extent that they might be based on a consensual division of labour within the household (also see below).

Basing one's well-being assessment on the space of liberties (in the sense of Nozick 1974) might also not do justice to the realities of gender inequality and its impact on well-being, as many gender inequalities in the home or in the labour market occur despite equal procedural liberties for both sexes. While removing any legal and procedural inequalities, where they exist, is certainly an important step to reducing gender inequalities in the household or in the labour market (World Bank 2001), it is clearly not sufficient as other economic, social, and cultural factors might continue to maintain these inequalities.

Examining well-being in the space of capabilities, as advocated by Sen (e.g. 1999, 1992), might be particularly suitable to capture the gender dimension of well-being. The capability approach calls for people to have the largest possible set of valuable functionings among which people can then choose a life they have reason to value. Among the basic capabilities are the ability to be lead a long life in good health, be well nourished, educated, housed and adequately clothed, and integrated into the community.[9]

The advantages of considering this space are that they focus on substantive 'positive' freedoms that males and females have reason to value.[10] Moreover, it focuses on aspects of life that are amenable to measurement and do not face the disaggregation problem of household-based measures (such as income or assets), and it considers outcomes rather than focusing purely on procedures or means which might lead to different outcomes for males and females. By placing priority on freedoms (rather than just outcomes which he calls functionings), due recognition is also made of the fact that

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8 Using the space of primary goods, advocated by Rawls would lead to similar problems. Other problems with choosing the income space for measuring well-being are that they focus on a well-being means rather than an end and that the transformation of income into well-being might differ across people. For a discussion, see Sen (1999) and Klasen (2000).

9 For details on the approach, refer to Sen (1999) and the literature cited therein. For an application of the approach to measuring well-being, see Klasen (2000).

10 Also, by focusing on substantive freedoms, it is possible to highlight issues of violations of basic rights (such as freedom from domestic violence) and inequalities in *de jure* or *de facto* rights such as unequal marriage and divorce arrangements.

males and females might, for reasons of biology or sociology, end up with different outcomes despite enjoying the same capabilities.

This last point is, however, only a theoretical advantage. In practise, most applications of Sen's capability approach to measuring individual well-being (and aggregate indicators based loosely on it, such as the Human Development Index), have ended up measuring functionings, rather than capabilities as it is exceeding difficulty to observe people's choice sets, while their choices (outcomes or functionings) are more readily observable (e.g. Klasen 2000). Thus in practise we ascribe a lack of the capability 'to be able to be adequately nourished' to those who are fasting and starving alike, even though only the latter is suffering from that short-fall. Similarly, we may observe women's poor health or nutrition (functioning failure) and may not distinguish between their inability to be adequately nourished (capability failure) or, for example, their willingness to sacrifice resources for the sake of their children (no capability failure?).[11]

It thus appears that the capability approach is particularly suited to considering gender dimensions of well-being, but as we have seen, limiting oneself to observing functionings might reduce one of the key advantages of that approach (although, as discussed below, might generate different advantages).[12]

4 Is equality of outcomes the goal?

While a capability approach might call for equal capabilities for everyone, it is, as mentioned above, exceedingly difficult to observe people's capability sets and instead, actual outcomes are usually measured to assess inequalities of well-being. Gender inequalities in such outcomes (e.g. health, nutrition, education, employment, earnings) are then usually seen as a well-being problem to be redressed as the implicit assumption is that the inequalities constitute a well-being loss for those it disfavours. While in most cases, this appears plausible, special care is necessary in a well-being assessment of such gender gaps in outcomes.

First, in some cases, biological differences might lead to erroneous conclusions about the presence of gender gaps in opportunities or treatment. The best example of this is longevity. There is a sizeable literature documenting that males suffer from a survival disadvantage vis-à-vis females (e.g. Waldron 1983, 1993, 1998, Klasen 1994). This is particularly well-documented among infancy and old age where males suffer from significantly higher mortality rates for well-known biological reasons (Waldron 1983, 1993). Equal infant mortality rates would therefore actually be an indication of significant gender bias in treatment favouring males. The fact that female life expectancy at birth exceeds male life expectancy by a significant margin (3-7 years) in most countries of the world (with the exception of those in South and East Asia), also does not signify gender inequality favouring females.

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[11] There is a large literature documenting that women are more willing to give up resources to their children than their husbands are (e.g. World Bank 2001, Haddad, Hoddinott, and Alderman 1997). See also discussion by Gasper (2004) and below.

[12] Unfortunately, it seems exceedingly difficult to measure capabilities in a comprehensive manner so that there appears to be no easy way out.

While this is well understood, it is more difficult to assess the precise magnitude of this 'biological' survival disadvantage and separate it from gendered behavioural patterns that contribute to the actually observed gender gap in longevity. For example, it is well-known that part of this gap is due to higher male rates of abuse of nicotine and alcohol, their more dangerous traffic and workplace behaviour, as well as their higher rates of homicides and suicides (Waldron 1993, Klasen 1999*a*). As no society, past or present, treated the two sexes equally and the two sexes did not differ in survival-related behaviours, it is hard to separate biology from behaviour. Thus it is hard to say whether females 'should' enjoy a longevity advantage of 3, 4, or five years.[13] As I have argued elsewhere (Klasen 1994, Klasen and Wink 2002, 2003), there are approximate ways of addressing these issues, drawing on the Princeton Model Life Tables (Coale, Rosati, and Tzannatos 1983) which report mortality experiences where the gendered behaviours that cause today's large survival differentials were not so prevalent. The calculations of 'missing women' in Table 1 are based on such an approach.

Similar problems might emerge in the assessment of gender gaps in undernutrition. Males and females have different body sizes and their growth to attain these body sizes follows different patterns. Here the solution has been to examine undernutrition of males and females by comparing the anthropometric shortfall of males and females with reference to a sex-specific reference standard. In the cased of children, this reference standard refers to male and female children that grew up in the US between the 1930s and the 1970s (WHO 1995).[14]

To some extent, a portion of gender gaps in earnings might also be due to differences in strength in particular manual occupations where strength is an important determinant of productivity. Here is it not a priori obvious how to separate these effects from discriminatory treatment. It is clear, however, that this can possibly explain only a small portion of the large gender gaps in earnings that exist not only in manual occupations.

Second, some inequalities in outcomes might be the result of informed choices by males and females and thus do not signify inequalities in opportunities or capabilities. For example, there are plausible economic arguments for a sexual division of labour in the household (between market and household work) and if, as argued by Becker (1981), females have a comparative advantage in their ability to combine child-bearing and child-rearing, it might be optimal for couples to specialize in different forms of production and the resulting inequality in time use and (market) labour force participation might be the result of this optimal decision. If this is anticipated, it could then also be an argument for females to invest less and differently in human capital than males and gender gaps in education might emerge.

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[13] One might also take an extreme position and argue that we should ignore this biological survival advantage of females in an assessment of well-being as the inherent male disadvantage is also based on 'ascriptive' characteristics and males should have the right to redress for their greater vulnerability. While this would imply favouring males in the allocation of resources to counteract their greater biological vulnerability, one might argue that such preferential treatment is well-accepted in the case of disabilities and could possibly be defended within a capability approach.

[14] It is not clear that this is the appropriate way to assess gender gaps elsewhere as both genetic and environmental factors might affect the growth of males and females in ways they did not in the reference population of the US (Klasen 1999*b*).

It is unlikely that the existing sexual division of labour and the resulting gender gaps in education and employment are largely based on this optimizing calculus. They are more likely an outcome of constraints and barriers facing women and girls as well as different socialization. Nevertheless, it is possible that these considerations do play a role and thus full equality in labour force participation, time use and even education might not necessarily maximize well-being for both concerned.[15] In these cases, there are no easy solutions other than recognizing that not all gender differences in these outcomes necessarily reflect lower well-being for those who have the lower outcome.

5 Agency versus well-being

A related issue arises when considering Sen's distinction between agency and well-being. Sen (1990, 1999) argues that strengthening female agency, which he defines as the 'role of the individual as a member of the public and as a participant in economic, social, and political actions' (Sen 1999: 19), should be considered as a separate worthwhile goal alongside improving female well-being. While Sen (1999) makes this case largely on instrumental grounds by arguing that strengthening female agency tends to promote female well-being (as well as the well-being of children, male and female), the question arises as to whether strengthening female agency, i.e. promoting female empowerment, is an integral part of female well-being.

There is overwhelming evidence for the important instrumental significance of female empowerment for female well-being. In particular, the bargaining approaches to intrahousehold resource allocation, which empirically are able to explain household behaviour much better than unitary household models (e.g. Haddad, Hoddinott, and Alderman 1997, World Bank 2001, Sen 1999), allocate a central role to the threat point of males and females. Improving the threat point of women outside of marriage (and also inside, see Lundberg, Pollack, and Wales 1997) improves their well-being inside of marriage. Measures to improve the threat point include better education and income-earning opportunities, better economic and legal support in the case of divorce, and resource transfers by the state directed at them. In short, economic and legal empowerment will improve their well-being.

There is also evidence that greater female political representation, particularly at the local level, improves public policy favouring female well-being (Chattophadhyay and Duflo 2003, Bardhan and Klasen 1999).

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[15] Empirically, it is difficult to assess whether such decisions are indeed based on informed consent based on these types of efficiency arguments. One possible way to examine this would be to study satisfaction of women and men in households that have chosen a sexual division of labour. It is important to point out, however, that the claim of higher efficiency of some inequalities needs to be carefully inspected. While there might be some efficiency gains to a sexual division of labour in households, it is not clear how large they are. Similarly, claims that favouring males over females to maximize household resources which would thus help women themselves usually do not stand up to closer scrutiny. In fact, many studies have documented that even if, for example, female education leads to lower labour market returns, there are significant externalities associated with female education that might more than outweigh these lower returns (e.g. Klasen 2002, World Bank 2001). Also, if individuals exhibit inequality aversion, this should significantly lower any well-being benefit of such inequalities.

But is female empowerment a well-being end in itself? One may argue that the ability to achieve positions of economic and political power might be an important capability and should thus be included in a measurement of well-being.[16] But, as above, one might have to exercise caution when claiming, for example, that less than 50 per cent female representation necessarily represents a well-being relevant capability short-fall.

Related to this there arises a second question about the distinction between agency and well-being. This arises in situations where gender gaps in own well-being (measured in the space of functionings or capabilities), are accepted and even wanted by all concerned, including those it apparently disfavours. There is a sizeable literature that shows that women are more willing to sacrifice resources for their children (e.g. Thomas 1997, World Bank 2001, Klasen 1998), even if that means lower well-being outcomes for themselves. Similarly, Sen (1990) claims that women in some contexts, including in South Asia, might equate their well-being with the well-being of their family and thus accept lower allocations for them. The origins of this greater female altruism are somewhat controversial, but quite clearly socialization of girls and women into accepting such a role has played an important role. To the extent that women are the agents of their own lower achievements, how can one asses gender inequality in these outcomes? If one took a capability perspective, one would have to say that despite the functioning short-fall, there is no capability problem as these women could have secured more resources for themselves.[17] If one considered agency as an important aspect of well-being, the ability of women to pursue their goal of sacrificing themselves for the good of the family should positively influence their well-being, if though their own worse nutritional and health status would have to be assessed against that.

Sen (1990) argued that it is still possible to claim that females in South Asia are worse off than males as they suffer from lower objectively measurable functionings, despite being agents of their inferior outcomes (by agreeing to deprive themselves of nutrition and health care to favour their husbands or children). This is akin to arguing that these females suffer from 'false consciousness' in the sense of not putting their own interests first and it repudiates a central starting point of much economic analysis which is not to question the preferences of individuals (e.g. Becker and Stigler 1977). While we may often have little grounds to question people's preferences, it appears perfectly possible to claim that such preferences will reduce well-being, as measured by objective indicators. To the extent that this phenomenon is empirically relevant, it is actually an argument favouring the functioning over the capability space (or a broader agency perspective) for well-being assessments as functionings focuses on measuring own well-being outcomes while examining capability sets of goals beyond one's own might overlook these problems of 'false consciousness.'

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16 See also the discussion by Gasper (2004). Gasper poses the question whether well-being should be confined to own achievements and capabilities, or also include agency achievements or even agency freedoms. He criticises Sen for confining the term 'well-being' to achievements and freedoms related to oneself and thus having a rather narrow concept of 'well-being' that ignores these important agency aspects as part and parcel of well-being.

17 This is, of course, only true to the extent that women would actually be able to secure equal resources for themselves if they chose to. Whether this is empirically correct, is somewhat doubtful. See also discussion below.

In addition, one should also see the clear limitations of the claim that women are consenting agents of their own discrimination. While this may be due in some circumstances, most discrimination in survival in South Asia occurs in childhood (Klasen and Wink 2002) and it is not plausible that all women and girls (including very young girls where most discrimination occurs) freely consent to reduced allocations for them. Evidence of significant public discussion and activism by grass-roots organizations to improve women's well-being suggests that other factors, including lack of political, economic, and legal power to change matters, are often more important in explaining gender inequality in health, education, nutrition, and mortality than the willing consent of females to it.

A related problem emerges in the assessment of differences in self-destructive behaviour which is not motivated by self-sacrifice. For example, how is one to treat the fact that men in Russia, largely due to higher rates of alcoholism and related accidents, violence, and diseases, have life expectancies that are fully ten years below those of women? Is this gender inequality to be treated in the same manner as the reverse gaps in South Asia where women suffer from inequalities in health care that lead to similar gender gaps in mortality?[18] Interestingly, UNDP's Gender-Related Development Index (GDI) which defined equality in survival as females having a five year higher life expectancy than males, thus treat the 10 year gap in Russia equivalently to the 0 year gap in Nepal (UNDP 1995, Bardhan and Klasen 1999). I would argue that the two situations are substantively different although once again, one may simply state from a well-being perspective measured in the functioning space, the outcome is equivalent.

6 Gender-disaggregated measures versus gender-sensitive aggregate measures

In principle, one can tackle the issue of gender-related measures of well-being using two different approaches. One just disaggregates well-being measures by gender to see whether males and females fare differently in different well-being outcomes. The advantages of this approach are that it yields direct information about the well-being of both genders and that it side-steps the tricky issue of having to define what is meant by gender equality (see discussion above). Also, such disaggregations might be particularly useful for policy purposes, where such gaps can then focus the attention of policy-makers as for example has been achieved through the Millennium Development Goal of achieving equality in enrolments between the sexes (UNDP 2003, Abu-Ghaida and Klasen 2003). The major disadvantage is that it is not always obvious how to interpret such indicators. In fact, when interpreting the gender-disaggregated indicators, the question of what constitutes equality will become relevant again. Moreover, such an approach says nothing about the consequences of gender inequality for overall well-being in a society.

The second approach is to construct gender-sensitive measures of well-being which try to assess the impact of gender inequality on aggregate well-being. UNDP's GDI is a prominent example of such an approach. The approach is based on the notion that societies exhibit inequality aversion (which can be derived from concave utility functions or from axioms such as rank-order weighting, Grün and Klasen 2002). One

[18] Or should we treat it as 'rational addiction' as proposed by Becker and Murphy (1988).

formulation of such an approach is to use Atkinson's concept of equally distributed equivalent achievement which adjusts the average achievement of a certain well-being outcome downward by applying a penalty for gender inequality based on a presumed inequality aversion.[19] The advantage of this approach is that it assesses the aggregate well-being costs of gender inequality and thus rightly emphasizes that gender inequality is not only hurting females but imposes an aggregate well-being loss on societies. The disadvantage is that it must include an implicit notion of equality upon which it can levy penalties for deviations from that equality standard. As argued above, such a definition of equality might in some cases be controversial. Moreover, it includes an assumption about the magnitude of inequality aversion which is equally controversial.

There is no reason to choose between the two approaches. Each yield important information so that it is useful to construct both types of indicators, bearing in mind the respective advantages and disadvantages.

7 Dealing with the household in gender-related measures of well-being

As argued above, a critical distinguishing characteristic of gender, compared to other social divisions, is that much of inequality is generated within households. As argued above, some of these inequalities (e.g. in labour force participation or time use) might partly be based on joint (or at least coordinated) household decisions with the aim of maximizing well-being for the household as a whole. Understanding such considerations necessitates models and theories that can explain household behaviour, particularly as they relate to division of labour and time use.

Moreover, it is also important to recognize that the household plays a very important and not always well-understood role in generating and allocating most well-being relevant resources. Households earn incomes and get other well-being resources and allocate them among primarily two types of goods. The first type refers to household-specific private goods which are used by only one person. Spending on food, clothing, health care, education, etc. are all such private goods where it is, at least in theory, possible to identify the ultimate beneficiary of a certain expenditure of money (or time). While the ultimate beneficiary is in theory discernible, in practise it is exceedingly difficult to actually determine how much of certain private goods were used by particular members. Surveys of food intake (involving weighing of food after it has been allocated), for example, require intrusive survey methodologies that might have an impact on usual household behaviour. Thus for important portions of private goods (esp. food), it is not easy in practise to determine the ultimate beneficiary of a particular expenditure. On the other hand, it appears to be possible to ascribe the expenditure of certain goods more readily to particular members. For example, tobacco tends to be consumed primarily by adult men, women's clothing by adult women, etc. Examining these expenditure categories have been used to better understand marginal effects of certain policies or changed circumstances (e.g. Deaton 1997, Lundberg, Pollack, and Wales 1997, World Bank 2001). These studies have examined whether changes in unearned income of males and females affect expenditures on these assignable goods

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[19] See UNDP (1995) or Bardhan and Klasen (1999) for a detailed description and discussion of this procedure.

(and found that they do, e.g. Lundberg, Pollack, and Wales 1997) or whether males are more willing to give up resources for an additional son or an additional daughter (the evidence is rather mixed on this one, see Deaton 1997). While these are useful tests of models of intrahousehold resource allocation and of the presence of son preference, they only are able to study these marginal effects and say very little about the *total* distribution of private goods within households.

The other types of goods are household-specific public goods that have, within the household, the classical public goods qualities, i.e. they are non-rival and non-excludable. Spending on housing, utilities, and many durable goods fall into this category. It is not possible to ascertain with any certainty how much these public goods are used by one person versus another.

There are also goods that are in-between, in the sense that they are a private good consumed by one member which nevertheless provides positive externalities on other household members. There is some literature that argues that education is such a good, as it has been found to clearly benefit the person who receives it but also provides positive externalities on other household members (Basu and Foster 1998, Basu, Nayaran, and Ravallion 2002). Assigning the precise magnitude of this externality to all household members is, however, very difficult and requires significant further research.[20]

Faced with the serious practical problems associated with household-specific private goods (and their externalities) and the insurmountable conceptual problems associated with assigning use of household-specific public goods, it is impossible to say with any certainty how consumption is distributed by gender within households. As a result, studies of income or consumption poverty have usually assumed an equal distribution of resources within the households and then determined whether a household as a whole is poor (i.e. everyone in that household is poor) or not (i.e. no one in the household is poor). While this is clearly unsatisfactory, it is not clear that one can do better than that.

This has serious implications for attempting a gender disaggregation of income or consumption poverty. As we cannot say anything about intrahousehold distribution of consumption, gender differentials in income or consumption poverty can only come about by differences in poverty rates of different types of households depending on their gender composition.

It is all the more surprising that UNDP (1995) and many others thereafter have claimed that of the world's (income) poor, 70 per cent are female. To my knowledge, no clear methodology or evidence for this claim was ever provided (see also Ravallion 1997), and it is impossible to derive this figure by differences in poverty rates of different household types.

This has been shown convincingly by Marcoux (1998) and will be briefly discussed here. About one-third of the world's population (and probably considerably more of its

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[20] Basu, Nayaran, and Ravallion (2002) only demonstrate the labour market externality in one particular setting, Bangladesh. From a well-being perspective, other types of externalities are also important and the results would have to be generalized to other settings. This is huge and daunting (but very interesting) research agenda.

poor population) are children below the age of 15. It is not likely that households with more male than female children of those age groups are systematically richer.[21] A large share of adults live in families where there are as many adult males as there are adult females (one each in a nuclear or several couples in extended families) so that these households cannot contribute to differential poverty rates by gender. The most important household categories which are gender-imbalanced are single households, and lone parent households. Single households consist primarily of widows/widowers or single men or women living alone. In developing countries, both types of households are quite rare (although increasing, see United Nations 2000). While it is likely the case that widow households are poorer than widower households at least in some countries (Drèze and Srinivasan 1997), the share of these households is simply too small to generate such a huge imbalance in poverty by gender. The last group of households are lone parents. They do constitute a significant share of households in some regions (esp. in Africa, see United Nations 2000), but as shown by many studies they are not invariably poorer than two-parent households (Marcoux 1998), nor is the gender imbalance in these households large enough to get even close to the aggregate gender imbalance of poverty that was claimed.

Not only is this particular claim not verifiable, but due to the problems described above, it appears conceptually not possible to arrive at a serious alternative estimate of consumption disparities by gender.

While some might see this as a serious problem, it may simply be seen as another argument for not focusing on the income or consumption space when evaluating well-being by gender. When moving to a functioning or capability space, these problems are much less severe as one can more easily observe individual well-being outcomes (and their gender differentials) even within households and thus can come to reliable estimates of gender inequality in these spaces.[22]

8 Stocks versus flows

Most well-being measures are based on flow concepts. Per capita income, (period) life expectancy,[23] and school enrolment all refer to well-being that is generated by contemporaneous flows of income, health, or education services. For income and

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21 This could only come about if male children were able to bring in considerably more resources than female children. As child labour rates are quite low in these age groups, the gender differentials in earnings are not large, and the absolute earnings constitute a small share of household resources (Cigno, Rosati, and Tzannatos 2002), this is not likely.

22 To a more limited degree, similar problems might emerge when the functioning space is considered. For example, one will have to assume that everyone in a household is equally well housed (or equally badly housed) as it is impossible to ascribe different functionings 'being housed' to different members of a household sharing the same housing unit. But here the assumption of equal access by all to this functioning might not be such a bad approximation. With many other functionings (e.g. health, nutrition, etc.), these problems do not arise.

23 Life expectancy figures are generated by examining simultaneously the age specific mortality rates of all age groups in a single year. They thus refer to a hypothetical individual that is facing all these mortality rates simultaneously, and this say little about the actual life expectancy of a particular cohort.

education, there are also corresponding stock indicators, referring to wealth per capita and educational stock per capita (or adult literacy rates as a simplified measure).[24] For life expectancy, it is trickier to generate a corresponding stock measure (but will nevertheless be attempted below).

The reason why flow measures might, in some cases, be problematic is that there might be substitutions between gender inequality in stocks and flows that would not receive due recognition when just examining flow measures. One particular problem relates to gender inequality in mortality. It appears to be the case that gender inequality in mortality in some countries, most notably China, has moved from post-birth to pre-birth discrimination. As parents use sex-selective abortions to influence the sex of their off-spring, the survival conditions of girls that are allowed to be born have improved. Focusing purely on flow measures such as life expectancy would therefore indicate reduced gender bias, although this has come at the expense of killing female foetuses (Bardhan and Klasen 1999, Klasen 2003). One way to circumvent this problem is to have gender-related well-being that combine stock and flow measures. In the case of education, this is already done in the HDI which combines adult literacy (stock) with school enrolments (flow). In the case of life expectancy, one could combine life expectancy with a stock concept and adjust this stock concept by gender gaps One way to implement this would be to assume that average potential life expectancy for males is, say, 80, and for females it is 85. In this case, the cumulative number of potential males alive would the number of males that have been born in the past 80 years. The shortfall would then be one minus the share of those potentially alive males that are actually alive (i.e. the share that has died). The same could then be done for females and thus one could then see the gender differences in this shortfall which would be a measure of 'missing women'.[25]

Clearly, just focusing on flows might miss important dimensions of well-being that have particularly important implications for the gender-sensitive well-being indicators.

9 Data and measurement issues

While the availability and quality of data for some aspects of gender-related well-being (e.g. life expectancy, education) has improved in many countries, there are large data and measurement gaps that need to be overcome when developing sensible gender-related well-being measures.

The first important and well-recognized issue is that work in the home is not well-measured and included in standard national income accounting (UNDP 1995). Related

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24 There is also a time dimension to this. One may argue that enjoying $5000 per capita incomes for 40 years is worth less than enjoying $4500 per capita incomes for 80 years (Ray 1998).

25 It would not, however, generate the share and numbers of 'missing women' that have so far been used in the literature (e.g. Klasen and Wink 2002). Those calculations do not take all males and females born in the past 80 or 85 years into account, but take the male population (and thus their mortality over the past 80 years) as given and calculate how many more females would be alive if they had received equal treatment to those males. See also Bardhan and Klasen (1999) and Kanbur and Mukherjee (2002) for a related discussion.

to this, we know very little about time use outside of time spent in formal labour market activities. As time use is a critical ingredient to well-being, this is a huge data gap that is only slowly being filled (UNDP 1995).

Third, much relevant well-being information at the household level is not available at all, or only in extremely patchy format. That includes information about issues such as domestic violence, about division of labour in household and caring activities, and about power over decision-making. All of these aspects are likely to affect well-being in important ways, yet we do not know much about the nature of these issues as well as their well-being impact. More research and data gathering efforts in those aspects are critically needed.

Fourth, a lot of gender-related data suffer from inconsistencies over time and across countries. For example, data on female labour force participation, employment, and earnings, suffer from particularly severe inconsistencies (e.g. Bardhan and Klasen 1999).

Last, despite improvements there remain serious concerns about data quality for those data that do exist in many countries. In many countries data on education, longevity, mortality, and incomes are estimated, not measured as there are no reliable national income accounting data, recent censuses or household surveys, many of the existing micro data sets are not strictly comparable to one another, and there is a great shortage of reliable panel data information.[26] The quality of these estimates is open to question. Much work remains to be done before consistent data are available to reliably assess and compare gender-related indicators of well-being.

10 UNDP's gender-sensitive development indicators

As part of the 1995 *Human Development Report* focusing on gender, UNDP proposed two measures of tracking gender-related well-being across space and time, which are probably the most visible attempts to date to devise gender-related measures of well-being. The measures are discussed in detail in Bardhan and Klasen (1999, 2000) and, partly in response to the first paper, the GDI was revised in 1999 to rectify a particular problem in the income component of the GDI. Here, we will briefly review them in light of the discussions above. For illustrative purposes, Table 3 provides these measures for a sample of countries in 1999 and 2003.

The first, the GDI is an overall well-being indicator that simply adjusts the HDI downward by existing gender inequalities in longevity, education, and incomes. It thus tries to incorporate the aggregate well-being costs associated with existing gender inequality in critical well-being outcomes, rather than generate a separate index of well-being for males and females. The difference between the two measures (see fourth column of Table 3) is thus an indication of the well-being loss associated with gender inequality in the three components of the HDI. As shown in Table 3, the implied

[26] For a discussion, see Sumner 2003 and Srinivasan 1994.

Table 3 HDI, GDI, and GEM for selected countries in 2003

Country	HDI	GDI	Implied penalty	GEM
Norway	0.944	0.941	0.003	0.837
United States	0.937	0.935	0.002	0.760
Italy	0.916	0.910	0.006	0.561
Korea, Rep. Of	0.879	0.873	0.006	0.363
Poland	0.841	0.839	0.002	0.594
Mexico	0.800	0.790	0.010	0.516
Malaysia	0.790	0.784	0.006	0.503
Russian Federation	0.779	0.774	0.005	0.440
Saudi Arabia	0.769	0.743	0.026	...
Sri Lanka	0.730	0.726	0.004	0.272
South Africa	0.684	0.678	0.006	...
Honduras	0.667	0.656	0.011	0.408
Egypt	0.648	0.634	0.014	0.253
Botswana	0.614	0.611	0.003	0.564
Bangladesh	0.502	0.495	0.007	0.218
Pakistan	0.499	0.469	0.030	0.414
Yemen	0.470	0.424	0.046	0.127
Ethiopia	0.359	0.347	0.012	...
Mozambique	0.356	0.341	0.015	...

Source: UNDP (2003). The implied penalty is arrived at by subtracting the HDI from the GDI.

penalties are very small, particularly in countries with higher human development, so that neither value nor rank of the GDI differs greatly from the corresponding HDI. As shown in Bardhan and Klasen (1999, 2000), the differences, where they do exist, are largely driven by large gender gaps in earned income, while gender gaps in education and longevity have a very small influence on the implied penalty.

The longevity component of the GDI assumes a survival advantage of five years of females and treats countries that have larger or smaller female advantages symmetrically. In light of the discussion above, it is unclear whether symmetric treatment of male excess mortality due to health-damaging behaviour should be treated in the same way as female excess mortality due to reduced allocations of resources.[27] Also, the longevity component is a pure flow measure and thus omits the stock considerations that I discussed above. This is of particular relevance if there is some substitution between pre-birth and post-birth discrimination, i.e. if parents abort

[27] There is also a question whether the 'biological' survival advantage of females is indeed five years everywhere. Some argue that it is smaller in high mortality populations and possibly larger in low mortality populations. Adjustments here would not have a large quantitative impact on the GDI.

unwanted females and consequently give more equal allocations to the females that are allowed to be born (Klasen 2003). Including a stock measure that considers the cumulative survival disadvantage for present cohorts would address this concern.

One potential problem with the otherwise uncontroversial education component of the GDI relates the question whether some of the differences in educational achievement are based on optimal assessments of comparative advantage and sexual division of labour. But one should not overemphasize this point as the empirical relevance of this issue is likely to be minor. While such considerations might justify some gender differentials in education subjects and degrees (esp. at higher levels), the relevance for justifying gender gaps in literacy or the amount of primary, secondary, and tertiary education is likely to be small. Moreover, there are many more well-being benefits to education beyond the human capital considerations that are the focus in this criticism.

The earned income component of the GDI, however, is deeply problematic in light of the discussions above. The earned income component calculates the earned income of males and females, based on sex-specific labour force participation rates and earnings differentials, and uses the gender inequality in these earned incomes to downwardly adjust the income component of the HDI.[28] The income component of the HDI is meant to be a proxy for important functionings such as nutrition, housing, clothing and other basic functionings relating to consumption that tend to be provided in markets and thus the amount of functionings at one's disposal depends largely on incomes. The gender gap in this achievement should therefore measure gender gaps in consumption or access to these basic functionings. But gender gaps in earned income are unlikely to be a good proxy for gender gaps in consumption because of the role households play in the distribution of these resources. While earned incomes affect bargaining power and thus access to resources at the margins, it is clear that women even without any earned incomes still have access to resources within the household. They consume the household-specific public goods (especially housing), and they receive a share of household resources (e.g. food, clothing, etc.). To claim that women in, say Saudi Arabia where the share of female earned incomes is among the lowest in the world, have also a commensurately low access to consumption goods in households, is a vastly exaggerated claim and seriously distorts the well-being assessments in the GDI.[29]

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28 There was a mathematical error in the calculating this component in the GDI from the 1995 to the 1998 reports which we pointed out in Bardhan and Klasen (1999) and which led to a particularly high penalty for gender inequality in earned incomes in relatively rich countries. This was corrected in the 1999 HDR (without any comment) and commented briefly upon in the 2000 HDR. Bardhan and Klasen (2000) discussed the implications of the revised version of this measure.

29 This point was readily acknowledged in the HDR (UNDP 1995) and in a technical annex by Anand and Sen (1995*a*). It was justified by arguing that gender gaps in earnings reflect gender gaps in agency which have an important impact on well-being. But in the logic of the HDI and GDI, it is unclear how one can adjust the income component of the HDI with gender gaps in agency (rather than gender gaps in the consumption which that income is meant to track). See also Bardhan and Klasen (1999). As it is clear that gender gaps in earnings do have an impact on gender gaps in consumption but do not accurately reflect gender gaps in consumption, one way to address this would be to transform the gender gaps in earned income by some concave function that would be guided by the literature on the impact of bargaining power on relative consumption within households and use this transformed gender gap for the GDI calculation. It is not clear, however, that we have robust data on how such a concave transformation should look like.

Second, the earned income component implicitly assumes that equality in (market) labour force participation and earnings should be the goal of all societies. As discussed above, there might be economic and other reasons why such a goal is not necessarily shared by everyone.

Third, the measure ignores household production and thereby argues specifically for gender equality in market earnings. This ignores household production as a significant source of well-being; conversely, it also ignores the well-being consequences of the double burden that many women, who work in the market but continue to work in the household, carry.

These problems are aggravated by severe data gaps in calculating the earned income component which were overcome using highly problematic assumptions which are discussed in detail by Bardhan and Klasen (1999).[30] As it turns out that the overall penalty for gender inequality implicit in the GDI is largely due to the gender gaps in earned incomes, these short-comings in this component largely drive the rank changes between the HDI and the GDI. Due to the overwhelming influence of this component and the many problems associated with it, the GDI does not appear to be a reliable indicator of gender-sensitive development. Due to these serious limitations of the earned income component, we had suggested that the GDI (and a corresponding reduced HDI) should just concentrate on average achievements and gender gaps in longevity and education.[31]

Lastly, as shown in Table 3, the implied penalties for gender gaps are really so small that they might give the misleading impression that gender gaps are really irrelevant, particularly in richer countries. But this conclusion would be mistaken as the components of the GDI are simply too crude to pick up the more subtle gender gaps (e.g. in type of education, in earnings in the labour market, in time use, in control over resources, etc.) that exist everywhere, including in industrialized countries (see Bardhan and Klasen 2000).[32]

The Gender Empowerment Measure does not aim to measure well-being, but instead focuses on the relative empowerment of males and females. Although also here there are questions and issues (see Bardhan and Klasen 1999), women's empowerment plays an important intrinsic and instrumental role in an assessment of well-being and thus such a measure should be included in a comprehensive assessment of well-being by gender. As shown in Table 3, the GEM also provides a drastically different picture from the HDI and GDI so that indeed new insights are gained. For example, some successful developing countries in terms of GDP and human development do terribly in the GEM (e.g. South Korea) and to the extent that empowerment is not only means but also an end, this points to serious problems.

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30 The gender gaps in other components are also somewhat suspect, particularly since the data are often based on extrapolations from much older information.

31 For details on this and further recommendations, see Bardhan and Klasen (1999).

32 The policy implications of the GDI are also somewhat unclear. Given the very close correlation with the HDI, it might even give the misleading impression that all one needs to do is boost the HDI and the GDI will rise accordingly, so that one need not worry too much about gender.

While the GEM has thus usefully provided some cross-country comparisons on aspects of female empowerment, the GDI is at present still a highly problematic and unreliable indicator of gender-sensitive development. There is scope for improvement as suggested above, but also it is advisable to move beyond the three very crude indicators that are used to measure human development and gender gaps in these achievements and consider more indicators of gender inequality that receive less attention. The section on data and measurement suggested a few such areas of investigation.

11 Conclusion

This cursory survey of issues relating to gender-related indicators of well-being has demonstrated that there is much value to be gained in considering the gender dimensions of well-being. At the same time, much more work is needed to arrive at reliable measures that track the gendered nature of well-being across space and time and current measures and claims appear not to have always usefully advanced the measurement of gender-related well-being.

But a few more constructive conclusions also emerge. First, it appears that a functioning or capability space might be preferable for considering gender-related well-being issues. Second, it is useful to generate both gender-disaggregated and gender-sensitive aggregate well-being measures as both yield useful information. Third, one should consider including stock measures alongside flow measures when considering gender-related well-being. Fourth, there are many dimensions of gender inequality that have important well-being consequences about which we know very little. Here, it is critical to gather more data and work on analysing the well-being consequence of these issues.

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