Community, Comparisons and Subjective Well-being in a Divided Society

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Abstract

The paper poses six questions about the determinants of subjective well-being in South Africa. Much of the paper is concerned with the role of relative concepts. We find that comparator income – measured as average income of others in the local residential cluster - enters the household's utility function positively but that income of more distant others (others in the district or province) enters negatively. The probit equations indicate that, as well as comparator groups based on spatial proximity, race-based comparator groups are important in the racially divided South African society. It is also found that relative income is more important to happiness at higher levels of absolute income. Potential explanations of these results, and their implications, are considered.

Keywords: Subjective well-being; happiness; comparator groups; altruism; envy; relative deprivation; standard-setting; race; South Africa.

JEL classifications: D60, D62, D63, D64, A12, I30

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1. Introduction

In this paper we pose six questions:

1. To what extent is it absolute income, to what extent relative income, and to what extent income rank that determines happiness?
2. Insofar as relative concepts matter, is it only relative income that matters or are comparisons made in other dimensions as well?
3. If relative income matters, who are the relevant others with whom people compare themselves?
4. Does low relative income relative to others decrease or increase happiness, i.e. given own income, does the income of relevant others affect happiness negatively or positively?
5. Does the strength of this relationship weaken as the reference group is broadened to include socially more distant people?
6. Does the importance of relative income vary with the level of absolute income?

We attempt to answer these questions by means of a household survey which, in addition to much socioeconomic information on the individual, the household and the community, contains a question on subjective well-being.

In Section 2 we provide a framework of literature, concepts and hypotheses. Section 3 explains the South African context: a society still divided by great racial differences. Section 4 describes the data and method. The empirical section 5 presents the results, question by question. Section 6 concludes and draws out the implications of the analysis.

2. Concepts and hypotheses

The idea that relative position matters to individual utility has substantial support and acceptance in the social science literature, particularly in sociology (for instance, Runciman 1966) and psychology (for instance, Diener and Biswas-Diener 2000). By contrast, mainstream microeconomic theory generally treats utility as a function of own absolute income. However, some economists have advocated models in which the income of others enters the individual's utility function (prominent among them being Duesenberry 1949; Easterlin, 1974, 1995; Scitovsky,1976). Indeed, Frank (1985), Akerlof and Yellen (1990), Frank and Sunstein (2001) and Layard (1980, 2003a) have argued that some well-established ideas about economic policy would be overturned if relative income were to matter.

There is now also a good deal of empirical support for the notion that subjective well-being depends on relative income (Clark and Oswald, 1996; Watson et. al., 1996; Tsou and Liu, 2001). In some of the studies, utility depends more importantly - or even only (Groot and van den Brink, 1999) - on relative than on absolute income. One study finds that pay satisfaction depends not only on relative income but also on ranked position within a comparison set (Brown et. al., 2003).

Analysis of this sort requires that the comparison set - the group with whom individuals compare themselves when judging their relative position – be specified. Candidates for an individual's reference group are: the individual's own past; her aspiration or desired future; others in her family; her spouse; others with similar characteristics; and others in her residential vicinity or workplace. Since individuals have multiple identities, they may also have multiple comparators. Various definitions of comparator group are found in the literature. Many studies have used 'others with similar characteristics'. For instance, an individual may match with others on the basis of educational level, occupation, region, gender, social background and parental characteristics. If people take many characteristics into account when making comparisons, the multiple dimensions involved present a matching problem for researchers. One solution that has been attempted is to use predicted income, derived from an income function, as the comparator income (Clark and Oswald, 1996; Watson et. al., 1996).

What is the expected sign of the relationship between relative income (or other relative measures) and individual happiness? In general it is posited that subjective well-being varies inversely with the incomes of relevant others (for instance, Easterlin, 1995; Falk and Knell, 2000). In much of the applied literature that tests it, comparator income is indeed found to have a negative effect on the subject's happiness level. The negative relationship is likely to arise from feelings of relative deprivation, which Runciman (1996, p.) defined as follows:

A is relatively deprived of *X* if (i) he does not have *X*, (ii) he sees some person or persons, which may include himself at some previous or expected time, as having *X*, (iii) he wants *X*,and (iv) he sees it as feasible that he should have *X*.

Karl Marx (18 , p.) had developed a similar idea:

Our desires and pleasures spring from society; we measure them, therefore, by society and not by the objects which serve for their satisfaction. Because they are of a social nature, they are of a relative nature.

One reason for feelings of relative deprivation could be a sense of unfairness: envy of or rivalry with others in the reference group. Marx (18 , p.) went on to give an example consistent with this view:

A house may be large or small; as long as the surrounding houses are equally small it satisfies all social demands for a dwelling. But let a palace arise beside the little house, and it shrinks from a little house to a hut … the occupant of the relatively small house will feel more and more uncomfortable, dissatisfied and cramped within its four walls.

A more benign interpretation is also possible, for instance that the reference group provides standards or goals to which the individual aspires. Yet another motive was suggested by Adam Smith (1776, p.) in the *Wealth of Nations*:

By necessaries I understand not only the commodities which are indispensably necessary for the support of life, but whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without.

In his view such customary goods were necessary for the avoidance of shame. Whatever the motive for feelings of relative deprivation – envy, aspirations or shame – we expect a negative effect of reference group income on own happiness.

There are also reasons why the effect of comparator income can be positive. One such reason is altruism or fellow-feeling. In his *Theory of Moral Sentiments*, Adam Smith (17 , p.) argued that it is in human nature to be altruistic, although there is an order in the exercise of human benevolence:

Nature directs us first to take care of ourselves, then members of our family, and then others.

The view that people are altruistic is supported by the findings of an experimental game study by Charness and Grosskopf (2001). Given that the subjects' own payoffs are fixed, the authors find:

… a surprisingly low propensity to prefer lower payoffs: people generally choose to maximize the material payoffs to others, even when they are greater than their own.[1]

Risk-sharing within a community can provide another reason why own happiness is raised by other peoples' income. Members of a community may provide each other with mutual social insurance (Ligon, Thomas and Worrall, 2002). In developing countries, there is commonly an absence of formal insurance mechanisms. This lack of formal instruments is particularly important in high unemployment economies and economies with high dependence on risky agriculture. The literature on risk-sharing in developing country contexts attempts to identify the household's insurance or risk-pooling group. Since the cost of enforcement and monitoring

[1] Charness and Grosskopf, 2001, p. . Participants were undergraduate students. Subjects were not told the identity of their partners in the game.

of contracts increases with the size of and distance between members of the group, an obvious unit in which to observe insurance is the village or neighbourhood. Townsend (1994) finds for rural India that the village is indeed the relevant insurance group. However, Grimard (1997) uses anthropological literature on Cote d'Ivoire to suggest that the insurance group is not the village but a spatially diversified network of members of the same ethnic group.

It is also possible that there is a positive relationship is not [**delete 'is not'?**] between own happiness and community social capital or education. Helliwell (2001), citing the psychological literature, has argued that social capital (defined as 'networks, norms and understandings that facilitate cooperative activities') can have a positive effect on subjective well-being. For instance, it is possible that social capital or education in a community creates positive externalities for its members - if well-being is raised by networking with people with higher levels of community involvement or education.

The composition of the reference group and 'social distance' may be closely related. Akerlof (1997), in modelling social distance, argued that social interaction can influence individual decisions and aspirations, and that social interaction is inversely related to social distance. In *The Theory of Moral Sentiments*, Adam Smith (17 , p.) asked whether a person would be more disturbed by the loss of a hundred million lives in China or by the loss of his own little finger. He argued that sympathetic feelings would be aroused by the great loss of life in a faraway country but that those feelings would be attenuated by the physical and social distance. He suggested (17 , p.) that it is natural to care most about the 'order and society' to which one belongs.

> That wisdom which contrived the system of human affections … seems to have judged that the interest of the great society of mankind would be best promoted by directing the principal attention of each individual to that particular portion of it which was most within the sphere both of his abilities and of his understanding.

Social distance can also have an attenuating effect on a positive relationship arising from social insurance. People are more likely to share risks within a small community – where they can know and trust each other – than within a large community. The same is true of the argument made in terms of social capital: own happiness is likely to be based on the extent of social interaction as well as on its quality. If attenuation of a positive relationship is stronger than that of a countering negative relationship, it is possible for a net positive effect in a small community to give way to a net negative effect in a large community.

Social distance can also diminish feelings of relative deprivation. Robert Roberts' (1971) account of life in a Salford slum in Edwardian England illustrates how this can happen. The slum-dwellers, he claimed, did not make comparisons between themselves and people outside the slum: the strata of society were recognized without question and respect for their 'betters' and 'superiors' was firmly established. But within the working class, comparisons were constantly made and social rating was of great importance. 'Envy was the besetting sin' despite desperate poverty, but only inside the slum.[2]

One of the most obvious measure of social distance is physical distance. This suggests the need to investigate the role of relativities according to the size of locality, e.g. neighbourhood, village, town, city, and region. The hypothesis is that the effect of locality income – whether positive or negative – diminishes as the size of the locality, and thus of the community, increases.

Akerlof and Kranton (2000) have argued that 'identity', i.e. a person's sense of self, affects individual behaviour and aspirations. Race and ethnicity can provide a strong basis for identity, possibly because of their innateness and immutability. In a society with sharp racial divisions, aspirations may be related to what can be achieved by persons of one's own race. If race identifies the reference group, race-based relativities may be important. However, that in itself does not indicate whether the income of the race group has a positive or negative effect on own happiness. It is possible that space and race interact, i.e. the reference group is best defined by the race group within a small locality.

To the extent that happiness depends on the gratification of certain biological and physiological needs, it is not relative (Veenhoven, 1991). By contrast, Pigou (1920) reasoned that since the rich derive much of their satisfaction from relative rather than absolute income, satisfaction would not be reduced if the incomes of all rich people were diminished at the same time. In a similar vein, others have posited that, in affluent societies, spending increasingly becomes a means to achieve social status rather than to meet economic needs (Veblen, 1949), or that perceived needs change with the general level of affluence of others (Schor, 1998). Easterlin (1995) argues that absolute income matters up to a certain level, after which relative income increasingly matters.

[2] Roberts, 1971, pp. 23,25.

Much of the economic literature on the importance of relative outcomes treats people's reference groups as given, yet they could be endogenously chosen by individuals in the pursuit of certain goals (Falk and Knell, 2000). For instance, if strongly motivated for self-improvement, a person may make comparisons upwards, i.e. her chosen reference group is others superior to herself. On the other hand, if self-enhancement is an important goal, she may select for comparison people who are inferior if that makes her feel better. Such choices can induce self-selection into particular reference groups, for instance via migration or residential relocation (Stark and Taylor, 1991). Nesse (2003) similarly rejects the notion that our 'salient others' are shaped by our culture and genes, and suggests that attention be paid to how individuals, in trying to satisfy particular psychological desires, create their own social groups. The endogeneity of comparator groups can be investigated only with information on individuals' goals, either from attitude surveys or from revealed preferences such as migration to richer or poorer neighbourhoods.

This discussion leads to the following hypotheses in relation to the six questions posed at the start:

1. The income of relevant others, as well as own income, influences own happiness.
2. Other characteristics of the reference group, such as the level of education or the unemployment rate, also influence own happiness.
3. In a racially divided society, the reference group is defined in terms not only of space but also of race.
4. The income of the reference group may either raise or lower own happiness.
5. The strength of this relationship is weakened as the reference group is broadened to include socially more distant people.
6. The relationship between relative income and happiness is stronger at higher levels of absolute income.

3. The South African context

Our data come from the SALDRU national household survey of 1993 in South Africa carried out by the South African Labour and Development Research Unit (SALDRU) of the University of Cape Town. Patterned on the World Bank's Living Standards Measurement Studies, the dataset contains information on about 8800 households, with modules on household

demographics, employment, health, income and expenditure, etc., as well as community information.

In South Africa race was the defining feature of society until the end of apartheid, with most aspects of life being governed by racial segregation. For instance, different education departments catered for the education of the four races – African, coloured, Indian, and white – and there was a marked racial hierarchy in resource allocations to schools. There were restrictions on the movement and migration of non-whites and they had been debarred from entering certain higher positions of employment. In such a racially divided society, race may be an even greater source of identity than it is elsewhere, and it is very likely that people's aspirations are, or at the time of the 1993 survey (just before the formal end of apartheid) were, linked to what they believed to be the range of states attainable for persons of their own race.

We shall test for race-relative effects in two ways: firstly, income relative to that of others of the same race within the locality and, secondly, the same concept applied at the national level. In other words, we shall combine space-based and race-based criteria in defining the reference group of a household.

4. Data and method

Section 9 of the SALDRU survey is on perceived quality of life. It contains, *inter alia*, the question: "Taking everything into account, how satisfied is this household with the way it lives these days?" The five options available in the pre-coded response are: 'very satisfied', 'satisfied', 'neither satisfied nor dissatisfied', 'dissatisfied', and 'very dissatisfied'. This question forms the basis of our empirical analysis. Whereas much of the economic literature on comparison income is concerned with job or pay satisfaction, our focus is on overall satisfaction with life.

Whereas an individual member of the household responded to the survey question, the question itself related to the satisfaction of the household as a whole rather than to that individual's personal well-being. This raises the possibility that the individual answered mostly with his own personal satisfaction level in mind rather than that of the household as a whole. In order to address this concern, we check the robustness of the findings to the inclusion of the individual respondent's own personal characteristics as explanatory variables. Appendix Table 1 shows

that, controlling for household characteristics, individual characteristics are generally unimportant in our subjective well-being equations. This is unsurprising not only because of the question posed but also because there are likely to be interdependencies in well-being among members of the household.

The reference groups that we investigate are defined by race (four races are identified in the survey: African, coloured, Indian and white) and space (enumeration cluster, district and province). Unfortunately we do not have the information (on personal goals or on migration) to investigate the possible endogeneity of spatial location. The four races are distributed in the survey in the proportions 74.6%, 7.6%, 2.9% Indian and 14.8% respectively. 360 clusters, 188 districts, and 9 provinces are included in the survey. The averag size of their populations is A , B , and 4,457,000 respectively, and the average number of observations 24.6, 47.1, and 983.3 households respectively. Whereas it is possible to conduct an analysis of race within districts, there are too few observations in each cell to analyse race at the cluster level**:** most clusters are racially homogenous.

We begin with the subjective well-being function:

$$W_i = \alpha + \beta X_i + \gamma Z_i + \varepsilon_i \qquad (1)$$

where W_i represents reported well-being of the ith individual or household and X is a vector of socio-economic variables and Z a vector of various relative concepts (such as relative income, employment and education). Our measure of W_i is available as a multiple choice variable (effectively, "are you 1. very unhappy; 2. unhappy; 3. so-so; 4. happy; 5. very happy?"). Since there is an inherent ordering, the appropriate estimation procedure is by means of an ordered probit or logit model.

5. Empirical results

Table 1 sets out the definitions of variables used in the analysis. The first column of Table 2 presents a general specification of the ordered probit equation of subjective well-being. Column (2) provides our preferred, parsimonious specification, together with the marginal effects of the variables on the probability of being 'satisfied' or 'very satisfied' with life. The means, standard deviations and the full set of marginal effects of the variables are in Appendix Table 2.

Province dummies are included but not reported. The variables are divided up by type. The first is a set of control variables (age and gender composition of the household). The others are variables representing money income/ assets, basic needs, social needs and security variables. In several respects, the well-being equation is quite similar to that found in other countries (Helliwell, 2002; Graham and Pettinato, 2002; Di Tella, MacCulloch, and Oswald, 2001; Winkelmann and Winkelmann, 1998): perceived well-being falls with age and then rises; is increasing in health, education and income; and falls sharply with unemployment.

What is the size of these effects? An increase in absolute household income (log of household per capita income – *lnhhpci*) from one standard deviation below to one standard deviation above the mean raises the probability of being satisfied or very satisfied with life by 11 percentage points. Considering that overall probability of being satisfied/very satisfied is 33%, this is not a very large increase for the large implied increase in income. The African probability of being satisfied or very satisfied is 21.5 percentage points lower than that of whites, even after controlling for observed income, education and employment, etc. Those who live in metropolitan cities are 10 percentage points less likely to be in the highest two subjective well-being categories than are rural-dwellers. The household's own unemployment rate has a smaller effect on the probability of being in the bottom two happiness categories than does the cluster unemployment rate. Going from one standard deviation below to one standard deviation above the household unemployment rate increases that probability by 4.1 percentage points, but doing the same for the cluster unemployment rate reduces it by 9.8 percentage points. The effects of higher education, health, crime and debt are also small, compared with the effect of household income, household assets, and race.

Geographical comparator groups

Table 3 explores the role of relative concepts in determining happiness. This is done by including, in the happiness equation, the average income, unemployment rate and years of education of households in the cluster (and the district), calculated by averaging household characteristics – e.g. income, education, and unemployment - within the cluster (and the district) but net of each household's contribution to the average. Although our usual control variables (from Table 2) and also province dummies and community characteristics (*impass* and *pubtran*) are not shown, all equations standardise for these variables. *Column (a)* presents the parsimonious specification from the last column of Table 2, except that the cluster

unemployment rate (*c_urateb*) has been replaced by the mean of the household unemployment rate of all households within the cluster (*chhurate*).

The household's absolute income (*lnhhpci*) raises and household unemployment rate (*hhurateb*) depresses happiness very significantly. The first relative concept we consider is relative unemployment, defined as the unemployment rate of others in the cluster and then in the district. The cluster mean household unemployment rate (*chhurate*) reduces happiness significantly, suggesting either that the community's welfare enters the household's own utility positively. *Column (b)* adds the district average of household unemployment rate (*dhhurate*). This has no relationship with household happiness but the cluster unemployment variable continues to reduce household happiness significantly. The second relative concept considered is others' income. *Column (c)* adds the log of average household per capita income of the community (*lcchhpci*). This enters positively and significantly. *Column (d)* adds district average income (*lddhhpci*), and this enters negatively and insignificantly. The final relative concept considered is others' education. *Columns (e)* and *(f)* respectively add cluster and district averages of years of education (net of the household's contribution to the average). Cluster education (*cedyrs*) enters positively and significantly and district education (*dedyrs*) negatively but insignificantly.

An interesting and consistent pattern thus emerges: within the cluster, households are altruistic or receive mutual support but within a wider area, the district, they compete with others. When all three dimensions – unemployment, education and income - are added together in *column (g)*, the locality education and unemployment rates do not matter, conditional on income. Only the income dimension is significant: income has positive spill-overs within the cluster and negative spill-overs within the district.

These are fascinating results: Within the local cluster, other people's income has positive externalities on the household's utility. Only when the comparator group is widened to include more distant others, i.e. those in the district as a whole, do other people's incomes have negative externalities on the household's utility. The results are in line with Charness and Grosskopf's (2001) explanations of their own experimental findings. Certain other researchers have also found that small-community characteristics have a positive effect on household outcomes. For example, Narayan and Pritchett (1999) found that when they regress household incomes on social capital of the village and of the household, the entire effect is due to village-level social capital and none is due to the household's own measured social capital.

The results have four alternative potential explanations. One is that people are altruistic towards others in their own clusters, i.e. that clusters are treated like extended families, but that people compete when the geographical orbit is widened to the district. It is pertinent to note here that the cluster is a geographically small unit within which households are likely to know each other at least to some extent[3]. A second explanation is that households within a cluster share risks with each other, i.e. provide mutual insurance. As discussed in the Introduction, this would not be surprising in a high unemployment economy with little unemployment insurance such as South Africa's. Dictator game outcomes suggest that people are more generous with members of their in-group than with out-group (Yamagushi, 2003; Bowles and Gintis, 2003; Burns, 2003) and this is thought to be due to greater expectation of reciprocity within the in-group. Presumably the reason for valuing reciprocity is that it is a form of mutual insurance. A third potential explanation is that cluster income serves as a proxy for the 'social wage', i.e. in better-off clusters, the level of public and other amenities such as education, health, sanitation etc. is higher. However, we found little empirical support for the last explanation: inclusion of cluster averages of amenities such as availability of water, electricity connection, etc., as well as the cluster characteristics, showed that these variables were mostly insignificant but that cluster income remained significant[4]. A fourth possibility is that household income is measured with error and cluster average income proxies household income.

Race-based comparator groups

[3] The documentation for the SALDRU survey (SALDRU, 1994) states: "The sampling frame was drawn up on the basis of small, clearly demarcated area units [clusters], each with a population estimate ....For most of the country, census ESDs [Enumeration Sub-Districts] were used. Where some ESDs comprised relatively large populations as for instance in some black townships such as Soweto, aerial photographs were used to divide the area into blocks of approximately equal population size. In other instances, particularly in some of the former homelands, the area units were not ESDs but villages or village groups". As a robustness test, we divided households into two groups, those living in smaller clusters (<=200 households) and those in larger clusters (>200 households). The results in Table 3 are estimated on the sample of all households, i.e. living in both small and large clusters. Compared to the coefficient on the cluster mean income variable in column (c) of 0.199 (robust t=4.0) when all clusters are included, the coefficient increases to 0.308 (robust t=4.6) for the small clusters and falls to 0.058 (robust t=0.69) for the large clusters. That is, the positive effect of community mean income on subjective well-being exists only in smaller communities - where people are more likely to know each other – and is absent in the large clusters.

[4] Ideally, panel data are required to provide a more powerful control to take out all cluster fixed effects. However, in the absence of such data, this explanation is further tested by first removing all cluster level variables and including cluster dummies instead. Then the estimated cluster fixed effects are regressed on community amenities (Appendix Table 3). Whereas cluster average income (excluding the household's contribution to the average) is significantly positive, the other cluster variables - averages of household's distance to water, iron roof, and electricity connection - are jointly insignificant. Similarly, the ten cluster and district amenity variables that are excluded in the second column of Appendix Table 3 are jointly insignificant in the first column [F(10,299)=0.90; p-value of F test=0.534].

Next we examine the role of race-relative concepts in determining happiness, i.e. the hypothesis that the relevant comparator group for the household is other households of the same race. As stated before, systematic racial segregation in apartheid South African society made it likely that people's aspirations were linked to what they believed to be the highest states attainable for persons of their own race. We tested for race-relative effects in two ways: firstly income relative to that of others of the same race within the district and, secondly, the same concept applied at the national level.

Column (h) includes the natural log of race-specific district mean income (*lrdm_inc*). This enters negatively and has a large coefficient, though it is only weakly significant. It suggests that relative deprivation or rivalry does play a part in the determination of happiness. Controlling for household income, the higher the income of others of the same race in the district, the lower is perceived well-being. The marginal effect (not reported) of *lrdm_inc* on the probability of being satisfied or very satisfied is -0.2145. Thus, if race-specific district mean income increases by one standard deviation above its mean (mean=5.946; sd=0.9889), the probability of being satisfied or very satisfied with life falls by a large 21.2 percentage points.

Column (i) includes the household's quintile position in the race-specific national distribution of income (*r_pciq2* to *r_pciq5*), households in the poorest race-specific income quintile (*r_pciq1*) being the base category. There is a near monotonic increase in happiness as the household's relative quintile position in the national race-specific income distribution increases and, interestingly, the household's absolute income (*lnhhpci*) falls to complete insignificance for the first time. The implication is that, for instance, a white household and an African household with the same income can differ in their subjective well-being because they belong to different race-specific income quintiles[5]. An increase in the income of each household has its effect on happiness solely by improving its race-specific relative income. Apparently people compare themselves only with others of their own race.

Locational relativities are examined further in *column (j)* of Table 3, which includes the household's quintile position in the district distribution of income (*d_pciq2* to *d_pciq5*, the base

[5] For instance, a household with the national average of household per capita income in 1993 (Rand 656.53) would be in the highest quintile of the African (but in the lowest quintile of the White) distribution of per capita income. The national average of the *natural log of* household per capita income in 1993 was 5.57. An African household with the log of per capita income 5.57 would be in the 4th highest quintile of the African distribution of per capita income but in the lowest quintile of the White distribution of per capita income.

category being households in the lowest district income quintile, *d_pciq1*). These dummy variables have small coefficients and are not at all significant. This contrasts with the results *in column (i)* and suggests that in a racially divided society, the relevant others are not 'all others' in society but rather others of one's own race.

The importance of relative income was also tested by including household's rank in the national, provincial, district and cluster distributions of income (separately and then altogether), and including the household's rank in the *race-specific* distributions at the same four levels of aggregation. The results are set out in Table 4 and are similar to those above: while location-specific income rank (using any of the four definitions of location) does not matter to happiness (column 1), household's rank in the race-specific distribution matters positively at high levels of aggregation (i.e. at the national and provincial levels) in column 2. When all four race-specific income rank variables were included together, they were invariably small with insignificant coefficients. This reinforces the conclusion that feelings of relative deprivation relate mainly to others of one's race who are outside of one's local community.

Other comparator groups

Finally, we also explore the importance of two other comparator groups: (1) one's own past and (2) those seen on TV. The SALDRU survey asked the question "when you compare your situation with that of your parents, do you think you are richer, about the same, or poorer than they were?". The answer yields the variable 'parents_' which is coded as follows: richer than parents=1; the same=2; poorer than parents=3. The sample households were distributed across these categories as follows: 24% were richer, 23% were the same, and 52% were poorer than their parents. The results in Table 5 show that those who are poorer compared to their parents (assumed equivalent to one's own past) have very significantly lower subjective well-being than others.

It is also possible that the others one sees on the television provide people with the standards they then aspire to. If this is the case, and if the existence of an opulent/affluent comparator group can be proxied by the presence of a television set in the household, we would expect the dummy variable for whether or not the household has a TV to have a negative sign. Table 5 shows, however, that there is no relationship between the possession of a TV and happiness. This may suggest that people are realistic (opulent lifestyles seen on TV do not lead people to

aspire to unreachable goals) but other interpretations are also possible. If the content of South African TV in 1993 and before was mainly about whites, it may have had little relevance for blacks since it appears that people compare themselves to others of the same race. Hence we estimated the subjective well-being equations separately for blacks and whites. In the equation for blacks, the TV variable had a positive though insignificant coefficient, suggesting that TV ownership was proxying wealth. Interestingly, for whites, there *was* a negative coefficient on the TV dummy variable, though the effect of the variable was not well determined since there was little variation in the variable: only 6% of sample white households did not own a TV.

Does the importance of relative income change with absolute income?

We ask whether relative income affects subjective well-being differently among poor and non-poor households, i.e. whether the importance of relative income varies with absolute income. Households whose per capita income falls below the household supplementary level poverty-line of Rand 251 per month in 1993 – a measure of what is required for basic subsistence - are defined as 'poor' households and the rest as 'non-poor', so that the poverty variable is a 0/1 dummy. Experimentation with other poverty-lines, such as the supplementary living level (Rand 220 per month in 1993) (Julian May, 1998), makes little difference to the results. We use the split-sample approach, which is equivalent econometrically to the conventional approach of interacting the poverty dummy variable with the regressors. Table 6 presents ordered probit models of subjective well-being.

The two columns of Table 6 compare determinants of happiness for the poor and non-poor. Poverty is more detrimental to the perceived well-being of the elderly than of the young: elderly persons (aged 66 or over) are significantly happier than 36-45 year-olds only if they are above the poverty line, but poverty status does not matter much to the young (aged 16-25), who are happier than the 36-45 year-olds irrespective of whether their households are below or above the poverty line. The apparent difference in the effect of race is spurious since there are virtually no whites (only 0.58% of the poor) below the poverty line, i.e. in the base race category in the first column. Vicissitudes such as sickness (*hhdaysic*), crime (*n_victim*), and indebtedness (*debt*) matter more to the poor than they do to the non-poor. However, unemployment (*hhurate1*) matters significantly more to the non-poor than to the poor. This apparently counter-intuitive result may be due to the fact that the poor mostly live in high unemployment areas where one's own unemployment appears less blameworthy or more acceptable because a high proportion of acquaintances are also unemployed. This explanation was tested by fitting happiness equations

separately for low and high unemployment areas; it showed that unemployment depressed perceived well-being significantly only in lower than mean unemployment rate areas (the coefficient and robust t-value of *hhurate1* in high and low unemployment areas were -0.097 (t=-1.5) and -0.399 (t=-4.0) respectively). This result is similar to that in other studies that find that the unemployed suffer less in high unemployment areas. (Clark, 2003; Kingdon and Knight, 2003; Powdthavee, 2003).

The most interesting results concern the differential effects of absolute and relative income. Log of household per capita income (*lnhhpci*) is significantly positive for the poor but not for the non-poor, for whom the coefficients on the race-specific income quintiles are significant instead, rising with the quintile[6]. The other measure of race relative income (*lrdm_inc*) is also significantly only for the non-poor. For people in income-poverty, absolute income matters, but for those above the poverty line, it is relative position in the relevant income distribution that matters to perceived well-being. This may be because people's perceived 'needs' increase with income (Schor, 1998).

5. Conclusions

In this paper, explored the role of relative income and other relative concepts in determining happiness. We considered the importance of three relative outcomes: unemployment, income and education, defining 'relevant others' with respect to physical proximity and race. We asked whether there are positive spill-overs on well-being, suggesting altruism or risk-sharing, or negative spill-over effects on well-being, suggesting standard-setting, envy, rivalry or relative deprivation. We also asked whether the importance of relative income changes with absolute income.

Our results confirm that subjective well-being is indeed partly dependent on relative outcomes. The relevant others with whom comparisons are made were defined in terms of locality and of race. The findings suggest that comparator relevance declines with distance, whether distance is measured geographically or racially.

[6] Similar results are obtained when we divide all households into income terciles and note the results for the lowest and highest terciles.

The results show that incomes of same race persons and past incomes of own parents have a negative relationship but that incomes of others have no relationship with subjective wellbeing. This suggests that when setting goals for themselves, people look for a comparable group such as parents and those with similar demographic characteristics. Given their goals, subjective wellbeing is higher the greater the extent to which a person meets those goals. Conversely, subjective wellbeing is lower the greater the shortfall between a person's own achievement and this goal or reference standard. However, the results also suggest that people directly value the well-being of nearby others (those in the cluster). But such altruism (or mutual insurance) declines with distance. Thus, the comparator group with the negative sign in the subjective wellbeing equation is the group that is farther way in space (than the local cluster) but close in comparability (of same race). That group provides a person with the goal or reference standard to which she aspires. The greater the shortfall between own income and that standard, the less happy the individual is. Thus, a negative sign on the incomes of distant others of own race in the happiness equation does not necessarily imply relative deprivation or envy but rather that they provide the relevant standard for the individual. There is much literature in psychology and psychiatry about the utility of choosing comparator groups that spur one on without dragging one down, i.e. choosing something attainable and abandoning fruitless ventures. For envy, rivalry and relative deprivation to be plausible motivations, we would expect that incomes of *all* distant others (and not only of same race persons) should lower subjective wellbeing. While these motivations may well be present, they are unlikely to be as important an explanation of the negative relationship between relative income and subjective wellbeing as the role of aspiration towards one's reference standard. .

The result that race is the relevant comparator group could suggest perverse implications, namely that a governments need not redress between-race inequality since people are apparently not bothered by it. Such an inference would be wrong for two reasons. Firstly, there is evidence in the data that between-race inequality does lower subjective well-being: even after controlling for everything else, the SWB of non-whites is very significantly lower than that of whites and our controls for income may not be adequate. If we had panel data, it would be expected to show that it subjective well-being levels among non-whites rose in South Africa as between-race income inequalities fell over the 10 years since the end of apartheid. Secondly, while race based comparator groups may have been appropriate in apartheid South Africa - since deliberate legal and institutional barriers systematically excluded non-whites from higher echelon jobs, making it pointless for non-whites to aspire to white income levels – they are unlikely to be

important in racially diverse countries that are without legalised and institutionalised racism: employment equity legislation and numerous other affirmative action measures in post-apartheid South Africa imply that the importance of race based comparator groups would have declined.

The findings also show that the importance of relative income varies with absolute income: relative income is more important to subjective well-being at higher incomes than at lower incomes. In particular, we found absolute income to be an important determinant of the well-being of people who are below the poverty line, but relative income (defined in terms of race) to be important for those above the poverty line.

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Table 1
Variable Definitions

Control variables	
age16-25	proportion of persons within the household aged 16-25
age26-35	proportion of persons within the household aged 26-35
age36-45	proportion of persons within the household aged 36-45 (omitted category)
age46-55	proportion of persons within the household aged 46-55
age56-65	proportion of persons within the household aged 56-65
age>=66	proportion of persons within the household aged 66 and older
hhsizem	household size
hhnchild	number of children below age 16 within the household
male	proportion of males in household
migrate	whether household migrated to its current area within the past 5 years
Basic needs variables	
primary	proportion of household members with primary level education
junior	proportion of household members with junior level education
secondary	proportion of household members with secondary level education
higher edu	proportion of household members with higher level education
hhdaysic	total number of person days that household members were sick in the past 14 days
ironroof	Whether house has an iron roof
pipeint	Whether house has piped water internally
wdist	Distance to nearest source of water in meters
personpr	Persons per room in the house
connecte	Whether house has an electricity connection
hhurate1	household unemployment rate, i.e. proportion of household labour force participant members that are unemployed. . hhurate1 is undefined (missing) for households with no labour force participants, so for these households, the included variable hhurate1 takes value 0 and the indicator variable nolfpb takes
nolfpb	the value 1. nolfpb=0 for households with >=1 labour force participant
impass	whether community roads become impassable at certain times of the year
pubtran	whether community has public transport
Income/assets variables	
lnhhcpi	natural log of household per capita income
assetval	value of assets owned by the household, calculated as follows: assetval =(ncar*8)+(nphone*3) +(nkettle*0.5)+(nradio*0.2)+(nfridge*5)+(nbike*1)+(nestove*0.5)+(ngstove*1)+(ntv*3) +(ngeyser*2), where the preface 'n' before each variable means 'number of'. Thus, ncar is number of cars, nbike means number of bikes, ntv means number of TVs, nestove is number of electric stoves and ngstove is number of gas stoves, etc
Social functioning variables	
african	race dummy=1 if household is of African race, 0 otherwise
colored	race dummy=1 if household is of coloured race, 0 otherwise
indian	race dummy=1 if household is of Indian race, 0 otherwise
racialm	household is a racial minority in its cluster
metropol	household lives in metropolitan city
urban1	household in urban non-metropolitan area (base category is rural)
homeland	household lives in a former 'homeland'/Bantustan
Security variables	
n_victim	number of times in the past 12 months that household members have been victims of crime (robbery, assault, rape, murder, and abduction and 'other')
ownship_	whether household lives in owned home
debt	whether household owes any debt: yes=1; no=0
c_urateb	cluster unemployment rate
Relative concept variables	
chhurate	Cluster average of household unemployment rate, excluding index household's contribution
dhhurate	District average of household unemployment rate, excluding index household's contribution
lcchhpci	Log of cluster average of household per capita income, excluding index household's contribution
lddhhpci	Log of district average of household per capita income, excluding index household's contribution
cedyrs	Cluster average of household mean years of education, excluding index household's contribution
dedyrs	Cluster average of household mean years of education, excluding index household's contribution

Table 2
Ordered Probit of Perceived life satisfaction

	Column 1		Column 2 (parsimonious specification)		
	Coeff	Robust t value	Coeff	Robust t value	Marginal effect*
Control variables					
age16-25	0.322	3.7 ***	0.339	3.9 ***	0.121
age26-35	0.060	1.1	0.067	1.1	0.023
age46-55	0.031	0.4	0.036	0.5	0.012
age56-65	0.117	1.2	0.128	1.2	0.046
age>=66	0.253	2.3 **	0.266	2.4 ***	0.094
hhsizem	-0.014	-1.2	-0.018	-1.6	-0.007
hhnchild	0.051	2.9 ***	0.052	3.1 ***	0.019
male	0.000	0.0			
migrate	0.213	2.1 **	0.213	1.9 *	0.076
Basic needs variables					
primary	-0.031	-0.4			
junior	-0.036	-0.6			
secondary	0.018	0.3			
higher edu	0.199	2.2 **	0.218	2.8 ***	0.078
hhdaysic	-0.005	-2.3 **	-0.005	-2.2 **	-0.001
ironroof	-0.123	-2.0 **	-0.120	-1.9 *	-0.042
pipeint	-0.047	-0.4			
wdist	0.000	0.8			
personpr	-0.023	-1.1			
connecte	0.041	0.6			
hhurate1	-0.152	-3.2 ***	-0.145	-3.0 ***	-0.052
nolfpb	-0.010	-0.2	0.001	0.0	0.000
impass	-0.072	-1.2	-0.057	-0.9	-0.020
pubtran	0.103	1.7 *	0.107	1.7 *	0.038
Income/assets variables					
lnhhcpi	0.105	5.2 ***	0.110	5.0 ***	0.039
assetval	0.014	5.4 ***	0.014	5.9 ***	0.005
Social functioning variables					
african	-0.597	-5.3 ***	-0.576	-5.0 ***	-0.215
colored	-0.225	-2.0 **	-0.228	-1.9 *	-0.077
indian	-0.193	-1.8 *	-0.209	-2.0 **	-0.071
racialm	0.246	2.7 ***	0.249	2.6 ***	0.092
metropol	-0.244	-1.9 *	-0.291	-2.8 ***	-0.100
urban1	-0.212	-2.2 **	-0.251	-3.0 ***	-0.086
homeland	0.103	1.0			
Security variables					
n_victim	-0.091	-2.3 **	-0.089	-2.3 **	-0.031
ownship_	0.079	1.8 *	0.097	2.2 **	0.034
debt	-0.065	-1.6 *	-0.062	-1.5	-0.022
c_urateb	-0.581	-3.2 ***	-0.529	-2.7 ***	-0.188
Province	yes		yes		
LogL	-11111.19		-11117.50		
Restr. LogL	-12199.69		-12199.69		
Psuedo R^2	0.0892		0.0887		
N	8279		8279		

* Marginal effect of a variable on the probability of being satisfied or very satisfied.

Table 3
Community, comparison and subjective well-being

	(a)		(b)		(c)		(d)		(e)		(f)	
	Coeff	Robust t	Coeff	Robust t	Coeff	Robust t	Coeff	Robust t	Coeff	Robust t	Coeff	Robust t
higher	0.212	2.7 ***	0.210	2.7 ***	0.194	2.5 ***	0.188	2.5 ***	0.186	2.4 ***	0.186	2.4 ***
hhdaysic	-0.005	-2.2 **	-0.005	-2.2 **	-0.005	-2.0 **	-0.005	-2.0 **	-0.005	-2.2 **	-0.005	-2.2 **
ironroof	-0.122	-2.0 **	-0.122	-1.9 *	-0.105	-1.6 *	-0.101	-1.5	-0.129	-1.9 *	-0.127	-1.9 *
hhurate1	-0.189	-4.0 ***	-0.192	-4.0 ***	-0.199	-3.9 ***	-0.200	-3.9 ***	-0.224	-4.4 ***	-0.224	-4.4 ***
nolfpb	-0.036	-0.7	-0.038	-0.8	-0.023	-0.4	-0.029	-0.5	-0.060	-1.1	-0.061	-1.1
lnhhpci	0.113	5.1 ***	0.113	5.0 ***	0.090	4.2 ***	0.091	4.2 ***	0.105	4.7 ***	0.105	4.7 ***
assetval	0.015	6.1 ***	0.015	6.1 ***	0.014	5.7 ***	0.014	5.6 ***	0.014	6.0 ***	0.014	6.0 ***
african	-0.596	-5.2 ***	-0.595	-5.2 ***	-0.473	-4.2 ***	-0.467	-4.1 ***	-0.582	-5.2 ***	-0.580	-5.2 ***
colored	-0.227	-1.9 *	-0.227	-1.9 *	-0.087	-0.8	-0.082	-0.7	-0.199	-1.7 *	-0.199	-1.7 *
indian	-0.208	-2.0 **	-0.204	-2.0 **	-0.142	-1.4	-0.132	-1.3	-0.199	-1.9 *	-0.195	-1.9 *
racialm	0.245	2.5 ***	0.243	2.5 ***	0.217	2.4 ***	0.210	2.4 ***	0.237	2.5 ***	0.236	2.4 ***
metropol	-0.273	-2.6 ***	-0.267	-2.4 ***	-0.370	-3.4 ***	-0.327	-2.8 ***	-0.401	-3.7 ***	-0.393	-3.5 ***
urban1	-0.237	-2.9 ***	-0.234	-2.8 ***	-0.293	-3.3 ***	-0.279	-3.0 ***	-0.336	-3.8 ***	-0.333	-3.7 ***
n_victim	-0.089	-2.3 **	-0.090	-2.3 **	-0.093	-2.4 ***	-0.094	-2.4 ***	-0.089	-2.3 **	-0.090	-2.3 **
ownship_	0.081	1.9 *	0.079	1.9 *	0.111	2.7 ***	0.108	2.6 ***	0.050	1.1	0.050	1.1
debt	-0.063	-1.6	-0.064	-1.5	-0.057	-1.4	-0.059	-1.4	-0.063	-1.5	-0.064	-1.5
Relative concepts												
chhurate	-0.499	-2.0 **	-0.602	-2.1 **								
dhhurate			0.168	0.4								
lcchhpci					0.221	5.1 ***	0.265	4.7 ***				
lddhhpci							-0.070	-1.2				
cedyrs									0.052	3.0 ***	0.056	2.4 ***
dedyrs											-0.007	-0.3
Controls+	Yes		Yes		Yes		Yes		Yes		Yes	
Province	Yes		Yes		Yes		Yes		Yes		Yes	
Log L	-11125.93		-11125.52		-11093.273		-11091.02		-11117.44		-11117.33	
Pseudo R^2	0.0880		0.0880		0.0907		0.0909		0.0885		0.0885	

Note: Variable definitions as in Table 1.
+Control variables include age, hhsizem, hhnchild, and migrate, as well as impass and pubtran, as in the parsimonious specification column (2) of Table 2.
N = 8279 ; Restricted LogL = -12199.69.

Table 3 (continued)

	(g)		(h)		(i)		(j)	
	Coeff	Robust t	Coeff	Robust t	Coeff	Robust t	Coeff	Robust t
higher	0.182	2.4 ***	0.189	2.5 ***	0.167	2.1 **	0.178	2.4 ***
hhdaysic	-0.005	-2.0 **	-0.005	-1.9 *	-0.005	-1.9 *	-0.005	-1.9 *
ironroof	-0.105	-1.7 *	-0.113	-1.8 *	-0.097	-1.5	-0.101	-1.6
hhurate1	-0.199	-4.1 ***	-0.189	-3.7 ***	-0.188	-3.7 ***	-0.201	-3.9 ***
nolfpb	-0.030	-0.6	-0.024	-0.5	-0.015	-0.3	-0.028	-0.5
lnhhpci	0.090	4.1 ***	0.104	5.3 ***	0.010	0.3	0.093	2.1 **
assetval	0.013	5.6 ***	0.014	5.7 ***	0.013	5.2 ***	0.013	5.7 ***
african	-0.454	-3.8 ***	-0.617	-4.0 ***	-0.710	-5.8 ***	-0.469	-4.1 ***
colored	-0.072	-0.6	-0.203	-1.5	-0.250	-2.0 **	-0.083	-0.7
indian	-0.141	-1.4	-0.198	-1.7 *	-0.236	-2.2 **	-0.133	-1.3
racialm	0.214	2.5 ***	0.214	2.5 ***	0.205	2.3 **	0.208	2.3 **
metropol	-0.355	-3.1 ***	-0.344	-3.1 ***	-0.329	-2.8 ***	-0.327	-2.8 ***
urban1	-0.305	-3.4 ***	-0.278	-3.1 ***	-0.277	-3.1 ***	-0.280	-3.0 ***
n_victim	-0.092	-2.4 ***	-0.093	-2.4 ***	-0.095	-2.4 ***	-0.096	-2.5 ***
ownship_	0.101	2.5 ***	0.114	2.7 ***	0.101	2.4 ***	0.109	2.6 ***
debt	-0.061	-1.5	-0.059	-1.4	-0.058	-1.4	-0.059	-1.4
Relative concepts								
curateb	0.094	0.3						
durateb	-0.246	-0.5						
lcchhpci	0.273	3.3 ***	0.296	5.2 ***	0.260	4.6 ***	0.266	4.7 ***
lddhhpci	-0.123	-1.4 *	0.003	0.0	-0.069	-1.2	-0.071	-1.1
ccedyrs	0.005	0.2						
ddedyrs	0.021	0.6						
Lrdm_inc			-0.170	-1.9 *				
r_pciq2					0.105	2.2 **		
r_pciq3					0.105	1.8 *		
r_pciq4					0.276	3.6 ***		
r_pciq5					0.319	2.8 ***		
d_pciq2							-0.049	-1.0
d_pciq3							-0.006	-0.1
d_pciq4							-0.062	-0.7
d_pciq5							-0.001	0.0
Controls+	Yes		Yes		Yes		Yes	
Province	Yes		Yes		Yes		Yes	
Log L	-11086.54		-11083.29		-11080.53		-11088.52	
Pseudo R^2	0.0910		0.0915		0.0917		0.0911	

Note: Variable definitions as in Tables 1 and as follows: d_pciq2 = district per capita income quintile 2; d_pciq3 = district per capita income quintile 3, etc.; lrdm_inc=natural log of district mean of household per capita income of index household's race; r_pciq2 etc.=per capita income quintile of the national distribution of income for the index household's race.
+Control variables include age, hhsizem, hhnchild, and migrate, as well as impass and pubtran. N = 8279 ; Restricted LogL = -12199.69.

Table 4
Coefficient on the variable 'Household's rank' in the income distribution within each geographical area

Geographical area	Rank in the distribution of income within the geographical area	Rank in the *race-specific* distribution of income within the geographical area
National	0.0013	0.0056*
	(0.6)	(3.7)
Provincial	0.0034	0.0050*
	(1.8)	(3.7)
District	-0.0009	0.0016
	(-0.7)	(1.2)
Cluster	-0.0018	0.0008
	(-1.6)	(0.7)

Note: robust t-values in parentheses. The basic preferred specification was used from Column 2 of Table 2 and then the household's rank in the national, provincial, district and cluster distributions of income were included as an extra explanatory variable, one at a time. Similarly with the household's position in the race-specific distributions of income at each of the four levels of aggregation.

Table 5
Subjective well-being: Exploring the importance of other comparator groups

	With Dummy variable 'TV'		With variable 'Parents_'	
	Coeff	**Robust t**	**Coeff**	**Robust t**
Control variables				
age1625	0.339	3.9 ***	0.313	3.5 ***
age2635	0.068	1.2	0.061	1.0
age4655	0.039	0.5	0.043	0.6
age5665	0.129	1.2	0.115	1.2
age_66	0.266	2.4 ***	0.284	2.6 ***
hhsizem	-0.019	-1.7 *	-0.020	-1.8 *
hhnchild	0.053	3.1 ***	0.050	2.9 ***
migrate	0.214	2.0 **	0.217	2.0 **
Basic needs variables				
higher	0.218	2.8 ***	0.179	2.3 **
hhdaysic	-0.005	-2.2 **	-0.004	-1.9 *
ironroof	-0.120	-1.9 *	-0.139	-2.3 **
hhurate1	-0.145	-3.0 ***	-0.130	-2.7 ***
nolfpb	0.001	0.0	-0.013	-0.3
Income/assets variables				
lnhhpci	0.109	4.8 ***	0.079	3.5 ***
assetval	0.013	5.5 ***	0.012	5.2 ***
Social functioning variables				
african	-0.583	-4.9 ***	-0.617	-5.4 ***
colored	-0.238	-2.0 **	-0.273	-2.3 **
indian	-0.218	-2.0 **	-0.283	-2.9 **
racialm	0.248	2.6 ***	0.236	2.5 ***
metropol	-0.298	-2.9 ***	-0.278	-2.7 ***
urban1	-0.258	-3.2 ***	-0.234	-2.9 ***
Security variables				
n_victim	-0.087	-2.2 ***	-0.081	-2.0 **
ownship_	0.097	2.2 **	0.067	1.6
debt	-0.063	-1.5 *	-0.068	-1.7 *
curateb	-0.525	-2.6 ***	-0.508	-2.6 ***
TV	0.040	0.8		
Parents_			-0.256	-11.6 ***
province	Yes		Yes	
N	8279		8244	
LogL	-11116.82		-10926.59	
Restr LogL	-12199.69		-12148.93	
Psuedo R^2	0.0888		0.1006	

Note: TV = 1 if household owned a Television, 0 otherwise. Parents_ is a variable with values 0, 1 and 2 indicating whether respondents think they are richer, the same or poorer than their parents were, respectively.
Province dummies included as well as cluster controls (impass and pubtran).

Table 6
Subjective well-being, by poverty status

	Below poverty line				Above poverty line			
	coeff	Robust-t	Coeff	Robust-t	Coeff	Robust-t	coeff	Robust-t
age1625	0.267	2.2 **	0.272	2.3 **	0.357	3.3 ***	0.348	3.3 ***
age2635	0.140	1.1	0.141	1.1	0.039	0.6	0.022	0.4
age4655	-0.070	-0.4	-0.070	-0.4	0.057	0.7	0.060	0.7
age5665	0.172	1.0	0.178	1.0	0.106	0.8	0.088	0.7
age_66	0.125	0.6	0.128	0.6	0.357	2.5 ***	0.362	2.5 ***
hhsizem	-0.010	-0.9	-0.010	-0.9	-0.003	-0.2	-0.008	-0.4
hhnchild	0.044	2.3 ***	0.045	2.4 ***	0.037	1.3	0.043	1.5
migrate	0.146	1.9 **	0.150	2.0 **	0.218	1.8 *	0.196	1.7 *
higher	0.041	0.2	0.039	0.1	0.181	2.4 ***	0.169	2.3 **
hhdaysic	-0.008	-2.9 ***	-0.008	-2.9 ***	-0.001	-0.2	-0.001	-0.4
ironroof	-0.038	-0.7	-0.039	-0.7	-0.181	-2.2 **	-0.152	-1.8 *
hhurate1	-0.121	-2.2 **	-0.117	-2.1 **	-0.309	-3.1 ***	-0.345	-3.5 ***
nolfpb	0.030	0.5	0.031	0.5	-0.045	-0.4	-0.052	-0.5
lnhhpci	0.091	3.6 ***	0.071	2.2 ***	0.132	3.3 ***	-0.087	-1.0
assetval	0.018	4.6 ***	0.018	4.5 ***	0.012	4.4 ***	0.011	4.1 ***
african	-0.012	0.0	-0.089	-0.3	-0.802	-4.8 ***	-0.920	-5.7 ***
colored	0.011	0.0	-0.042	-0.1	-0.280	-1.8 *	-0.328	-2.1 **
indian	-0.038	-0.1	-0.048	-0.1	-0.229	-1.8 *	-0.262	-2.1 **
racialm	-0.012	-0.1	-0.012	-0.1	0.303	3.0 ***	0.304	2.8 ***
metropol	-0.495	-3.4 ***	-0.494	-3.4 ***	-0.319	-2.5 ***	-0.265	-1.9 *
urban1	-0.183	-1.9 *	-0.178	-1.8 *	-0.310	-2.7 ***	-0.264	-2.1 **
n_victim	-0.188	-3.1 ***	-0.188	-3.1 ***	-0.042	-0.9	-0.039	-0.8
ownship_	0.126	2.0 **	0.127	2.0 **	0.072	1.5	0.048	1.0
debt	-0.081	-2.0 **	-0.080	-2.0 **	-0.068	-1.3	-0.054	-1.0
Relative income variables								
lcchhpci	0.164	2.0 **	0.164	2.1 **	0.351	5.7 ***	0.259	4.2 ***
lddhhpci	0.014	0.2	0.029	0.4	0.092	1.2	-0.030	-0.4
Lrdm_inc	0.026	0.3			-0.385	-3.7 ***		
r_pciq2			0.072	1.3			0.071	0.8
r_pciq3			0.038	0.6			0.149	1.3
r_pciq4			0.103	1.0			0.449	3.3 ***
r_pciq5			--	--			0.536	2.7 ***
N	4142		4142		4137		4137	
LogL	-5302.997		-5301.9212		-5636.746		-5641.9665	
Restr LogL	-5540.3536		-5540.3536		-6238.7515		-6238.7515	
Psuedo R^2	0.0428		0.0430		0.0965		0.0957	

Note: Province dummies included as well as cluster controls (impass and pubtran).
Poverty line used is the Household Supplementary Level, which was Rand 251 per month in 1993.

Appendix Table 1
Subjective well-being equation with individual respondent's personal characteristics

	Parsimonious Equation from Table 4 (a)		(a) with personal characteristics of the household respondent (b)	
	Coeff	**Robust t**	**Coeff**	**Robust t**
Control variables				
age16-25	0.339	3.9 ***	0.267	2.9 ***
age26-35	0.067	1.1	0.020	0.3
age46-55	0.036	0.5	0.084	1.1
age56-65	0.128	1.2	0.200	1.8 *
Age>=66	0.266	2.4 ***	0.331	2.7 ***
hhsizem	-0.018	-1.6	-0.012	-1.0
hhnchild	0.052	3.1 ***	0.044	2.5 ***
migrate	0.213	1.9 *	0.218	2.0 **
Basic needs variables				
higher	0.218	2.8 ***	0.250	2.8 ***
hhdaysic	-0.005	-2.2 **	-0.005	-2.2 **
ironroof	-0.120	-1.9 *	-0.114	-1.8 *
hhurate1	-0.145	-3.0 ***	-0.140	-2.7 ***
nolfpb	0.001	0.0	0.013	0.2
impass	-0.057	-0.9	-0.062	-1.0
pubtran	0.107	1.7 *	0.111	1.8 *
Income/assets variables				
lnhhcpi	0.110	5.0 ***	0.115	5.1 ***
assetval	0.014	5.9 ***	0.015	6.2 ***
Social functioning variables				
african	-0.576	-5.0 ***	-0.566	-5.0 ***
colored	-0.228	-1.9 *	-0.210	-1.8 *
indian	-0.209	-2.0 **	-0.197	-1.9 *
racialm	0.249	2.6 ***	0.247	2.6 ***
metropol	-0.291	-2.8 ***	-0.300	-2.8 ***
urban1	-0.251	-3.0 ***	-0.255	-3.2 ***
Security variables				
n_victim	-0.089	-2.3 **	-0.092	-2.3 **
ownship_	0.097	2.2 **	0.099	2.3 **
debt	-0.062	-1.5	-0.061	-1.5
curateb	-0.529	-2.7 ***	-0.542	-2.8 ***
r_age			-0.010	-1.9 *
r_agesq			0.000	1.3
r_edyrs			-0.006	-0.5
r_edyrsq			0.000	0.1
r_male			-0.021	-0.6
r_empld			0.003	0.1
Province	yes		yes	
LogL	-11117.50		-10984.71	
Restr LogL	-12199.69		-12063.84	
Psuedo R^2	0.0887		0.0895	
N	8279		8190	

Note: r_age and r_agesq are respondent's age and its square; r_edyrs and r_edyrsq are respondent's years of education and its square; r_male is gender and r_empld whether the respondent is employed or not.

Appendix Table 2
Means, standard deviations, and detailed marginal effects of variables, using parsimonious specification of Table 2

	Descriptive statistics		Marginal effects on probability of being			
	Mean	s.d.	Very dissatisfied	dissatisfied	satisfied	Very satisfied
Control variables						
age16-25	0.198	0.244	-0.094	-0.039	0.089	0.032
age26-35	0.186	0.282	-0.018	-0.008	0.017	0.006
age46-55	0.083	0.194	-0.010	-0.004	0.009	0.003
age56-65	0.059	0.166	-0.035	-0.015	0.034	0.012
Age>=66	0.051	0.158	-0.073	-0.031	0.069	0.025
hhsizem	4.562	2.984	0.005	0.002	-0.005	-0.002
hhnchild	1.849	1.963	-0.014	-0.006	0.014	0.005
migrate	0.117	0.310	-0.059	-0.025	0.056	0.020
Basic needs variables						
higher	0.075	0.218	-0.060	-0.025	0.057	0.021
hhdaysic	3.002	6.378	0.001	0.001	-0.001	0.000
ironroof	0.561	0.496	0.033	0.014	-0.031	-0.011
hhurate1	0.218	0.357	0.040	0.017	-0.038	-0.014
nolfpb	0.156	0.363	0.000	0.000	0.000	0.000
impass	0.387	0.487	0.016	0.007	-0.015	-0.005
pubtran	0.731	0.443	-0.030	-0.012	0.028	0.010
Income/assets variables						
lnhhcpi	5.578	1.412	-0.030	-0.013	0.029	0.010
assetval	9.558	13.216	-0.004	-0.002	0.004	0.001
Social functioning variables						
african	0.746	0.435	0.140	0.087	-0.145	-0.070
colored	0.076	0.266	0.068	0.019	-0.059	-0.018
indian	0.029	0.169	0.063	0.018	-0.054	-0.017
racialm	0.103	0.304	-0.063	-0.036	0.064	0.028
metropol	0.283	0.450	0.085	0.028	-0.075	-0.025
urban1	0.220	0.414	0.074	0.023	-0.065	-0.021
Security variables						
n_victim	0.115	0.356	0.025	0.010	-0.023	-0.008
ownship_	0.650	0.477	-0.027	-0.011	0.025	0.009
debt	0.447	0.497	0.017	0.007	-0.016	-0.006
c_urateb	0.324	0.237	0.146	0.061	-0.138	-0.050

Appendix Table 3
OLS regression of cluster fixed effects on cluster/district variables

	Coeff	t value		Coeff	t value	
pub_tran	-0.021	-0.2		-0.002	0.0	
distrans	-0.004	-1.2				
numfaci	0.001	0.3		0.001	0.2	
disfaci	0.000	1.5				
impass	-0.085	-1.0		-0.080	-1.0	
tarroad	0.021	0.2				
wcape	0.535	3.8	***	0.640	4.9	***
ncape	1.047	4.1	***	1.076	4.4	***
ecape	0.330	2.1	**	0.403	2.8	***
natal	0.493	3.4	***	0.595	4.4	***
ofs	0.383	2.2	**	0.303	1.8	*
etvl	0.551	3.1	***	0.524	3.1	***
ntvl	0.425	2.5	***	0.459	2.8	***
nw	0.118	0.7		0.090	0.6	
homeland	0.065	0.5		0.111	1.0	
metropol	-0.349	-2.2	**	-0.268	-2.0	**
urban1	-0.251	-2.2	**	-0.171	-1.8	*
c_wdist	0.000	0.9				
c_ironroof	-0.135	-1.1				
c_electri	0.015	0.1				
c_personp	-0.126	-1.6		-0.158	-2.2	**
c_cedyrs	0.006	0.1				
ddedyrs	0.060	1.2				
curateb	0.218	0.6				
durateb	-0.472	-1.0				
lcchhpci	0.311	2.7	***	0.293	3.9	***
lddhhpci	-0.162	-1.3		-0.013	-0.2	
_cons	-0.399	-0.7		-0.876	-1.7	*
N	327			332		
Adjusted R-sq	0.2614			0.2654		
Mean of dependent var	0.8235			0.8235		

Note: Dependent variable is the coefficient on cluster dummies in the ordered probit equation of subjective well-being, using parsimonious specification of Table 2, last column. The cluster variables cwdist, cironroof and celectri are jointly insignificant. Similarly, all the 10 variables excluded in the second column are jointly insignificant in the first [F(10,299)=0.90; p-value of F test=0.534]. All the variables are defined in Table1 except for the following: the prefix C stands for 'cluster'. Thus, c_wdist is the cluster average of distance to water, c_ironroof is cluster average of the 0/1 variable whether the family home has an iron roof, c_electri is cluster average of the 0/1 variable whether the household has electricity, and so on.