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Is the Structure of Happiness Equations the Same in Poor and Rich Countries? The Case of South Africa

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Abstract

Are happiness patterns structurally the same when comparing poor and rich countries? Using cross-sectional data from the SALDRU93 survey, we show that the relationships between subjective well-being and socioeconomic variables have a similar structure and is U-shaped in age in South Africa as in developed countries. Well-being rises with income. Unemployment is detrimental to reported well-being, both at the individual- and household-level. Living standard indicators such as durable assets ownership seem to determine happiness levels as well as income. Relative income also matters to well-being, after controlling for community wealth. (90 words)

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"[Happiness] is nothing else but a sudden glory arising from some sudden conception of some eminency in ourselves, by comparison with the infirmity of others, or with our own formerly." Thomas Hobbes (17th Century Philosopher).

1 Introduction

A recent advert for an Oxfam appeal asks people in the UK the question, "What do we dream for our children?" If we were to stop and think about the question for a minute, most of us would probably respond with an answer such as success and health. A more natural response according to Oxfam, however, would be happiness for our children. The question may then be asked, what constitutes happiness? A review of research on well-being by Wilson (1967: p.294) suggests that happiness arises from being young, healthy, well-educated, well-paid, religious, married with high self-esteem and job morale, modest aspirations, of either sex and of a wide range of intelligence. Oxfam, on the other hand, mentions none of the above in their list of possible answers. Rather, the things that constitute a good life for our children - at least in the developing countries where the appeals were for - are more likely to be food, drinking water and a shelter they could call home.

The significant difference in the replies, though predictable to many, raises fundamental questions. If individuals' perception of what makes a good life depends, crucially, on how the normative framework for evaluation is formed, can we still, then, be reasonably satisfied with the conclusion that being married and young, highly paid with low aspirations, healthy and well-educated are global requirements for human happiness and well-being? *Can we assume that happiness patterns are structually the same in poorer countries as they are in more affluent ones?*

Recent economic studies on happiness, or subjective well-being, have provided us some insights into what makes individuals in wealthy nations satisfied with life. Most of the empirical results are found to be consistent with Wilson's conclusion. Using US and European data, researchers have been able to show how reported well-being remains high among those

who are married, employed, on high income, female, white, healthy, highly educated with low aspirations, and looking after homes. Happiness is also, apparently, U-shaped in age, minimising around the mid 40's, with older people reported to be relatively happier than the younger generations (see, for example, Deaton and Paxton (1994), Oswald (1997), Frey and Stutzer (2000), Easterlin (2000), Gerdtham and Johannesson (2001), Blanchflower and Oswald (2003), among others). Economists have also found favorable comparison income levels, against which the individual compares himself or herself to, to be a significant contribution to higher reported well-being for people in the developed world (Duesenberry (1949), Easterlin (1974, 1995), Morawetz, D. *et al* (1977), Frank (1985, 1989), van de Stadt *et al* (1985), Tomes (1986), Clark and Oswald (1996), McBride (2000), Ferrer-i-Carbonell (2002), Stutzer (2002)). The literature on the economics of happiness is by no means exhaustive, though it suggests that a growing number of references converge towards the same conclusion, namely that happy people - at least in wealthy economies - have the same general characteristics.

Common patterns in happiness findings have led a handful of economists to take an interest in the available happiness survey data from transitional and developing economies. Using US and European results as a benchmark, economists have begun to examine whether the effects of socioeconomic factors are similar in poorer countries to those of the richer countries. For example, Graham and Pettinato (2001) find health, employment, and marital status - with additions of financial satisfaction and expectation in income mobility - to have a significant marginal effect on overall happiness levels in Latin America, even after controlling for objective levels of wealth. In other countries, Ravallion and Lokshin (2001, 2002) discover strong links between happiness levels and changes in household income and health status, while relative income in the area of residence - as well as absolute income - matters to financial satisfaction in Russia. Namazie and Sanfey (2001) and Lelkes (2002) find evidence on socioeconomic variables such as age, gender, income, education levels, employment and marital status to have similar effects on self-reported happiness levels in Kyrgzstan and Hungary as in the more developed western economies, respectively. However, the literature

on less-developed countries is still relatively small, comparing to more developed countries.

This paper draws on previous work on happiness in less-developed nations, but focusing particularly on a very poor South African economy. We explore in detail the general relationships between the already identified socioeconomic variables and the new living standard indicator variables with the reported perceived quality of life in the post-apartheid South Africa in 1993, both at the individual- and household-level data. We begin by showing that subjective well-being regression equations on a set of household characteristics, and then later, on the personal attributes of the respondent and of other household members, have a generally similar pattern in South Africa as would be anticipated in more developed economies. The average educational level and occupational status of other individuals living in the same household are found to correlate significantly with the reported well-being of the respondent. We also find that household wealth - i.e. durable assets ownership - is important in assessing subjective well-being in South Africa, and that individuals care about relative income once the means of durable consumption in the area are controlled for in the regressions.

We discuss in Section 2 the motivation for subjective well-being research within a developing country framework. Section 3 looks at the background and dataset for South Africa. The empirical strategy and main findings are discussed in Section 4, and conclusions are set out in Section 5.

2   A Good Life in a Less-Developed Environment

The impression given by the existing research on subjective well-being is that it only focuses on wealthy nations. This is not very far off from the truth. Subjective well-being research has focused largely on developed economies, simply because adequate data are more readily available from these countries. Yet developing economies offer more opportunities for economists to study poverty and inequalities, as well as the volatility in various socioeconomic and macroeconomic factors, and their implications for the happiness of people living

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there.

Take Latin America, for example. Happiness in Latin America is found to depend not only on the already identified individual and within-country variables, such as marital status, employment, and inflation, but also on income mobility and inequality driven by technology-led growth. It would seem that the perception of past mobility and the prospect of moving upwards in the economic ladder correlated positively with happiness in Latin America, where the probability of moving up or down the income quantiles is much higher than in any advanced industrialised economies[1]. The majority of people in a more stable economy might only rarely think about the prospect of moving up or down the economic ladder, simply because they are not so exposed to vulnerability as people living in emerging market economies. This leads to the possibility that a similar set of socioeconomic variables may or may not have the same significant effect on subjective well-being for individuals coming from more advanced economies. This does not mean, however, that the same individuals from a developed economy will not respond to the perceived income mobility question in the same manner as is the case with people living in Latin America, given a permanent macroeconomic shock of the same magnitude. It is more likely that, given a higher standard of living, the factors that lie behind the things that make us happy are different. If standard of living is high, contributions to higher happiness levels are more likely to result from individuals enjoying certain elements that are above that of the societal average, whether this be earning higher incomes than our colleagues or owning better quality cars than our neighbours. Owning a car when everybody else also owns one may not have the same marginal effects on happiness in developed countries - providing, of course, that the car in question is not of a particular make or quality that is distinctively different from other cars on the road - as it would have in a less-developed country where car ownership is not considered the norm. However, it still does not necessarily mean that if a car - with the only use of it being the capability of transporting individuals - was to be taken away from

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[1]See Graham and Pettinato (2002) for a summary on income mobility and its implication on happiness in Latin America.

the individual living in an advanced economy, his standard of living, *vis-á-vis*, happiness will not drop, *ceteris paribus*. The same idea is put forward, but in a slightly different context, by Sen (1983) as regards bicycle ownership

> If I am of a cheerful disposition and enjoy life even without being able to move around [as a result of owning a bicycle and have the ability to ride it], I am no doubt a happy person, but it does not follow that I have a high standard of living. A grumbling rich man may well be less happy than a contented peasant, but he does have a higher standard of living than that peasant (p.160)[2].

The issue is thus that, given a different set of living standards and providing that living standards are important in determining the level of reported happiness, the overall picture of what constitutes happiness at a single point-of-time may well be very different. A comparative-static analysis may find that a middle-income individual who believes his or her prospects of moving up the economic ladder is high is happier living in a volatile macroeconomic environment than an upper-income individual who believes that he is on a fall, even after controlling for usual absolute and relative income. Nevertheless, recent work on happiness in developing countries that we mentioned earlier implies that with sufficient control of the surrounding environment, happy people are structually the same across poorer countries as would be the case in richer countries. In this paper, we take a step closer - through

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[2]Sen's message emphasises the observable difference in the standard of living between two people from the opposite end of income quantiles but possessing very different unobserved personal traits (i.e. one was born happy, and the other was not) that may offset the true effects of having low standard of living on the reported subjective well-being. In cross-sectional analysis, such as ours, it is difficult or indeed impossible to control for omitted inborn dispositions. However, as other paper, and later, our results on the correlations between well-being and different sets of personal and household variables, suggest, the structure of the reported well-being data for South Africa is very similar to the well-being structure as if the same regressions were to be run from a panel data elsewhere. See also Clark and Oswald (2002) on comparing fixed-effects equations and cross-section equations in running a well-being regression.

the use of South African cross-sectional data - to providing further evidence that will help support such a claim.

3 On South Africa and Data Description

3.1 General Background

According to a report by the Inter-ministerial Committee on Poverty and Inequality (ICPI) written in 1998[3], South Africa is classified as an upper-middle-income country with a per capita income higher than that of Poland and Thailand, and similar to that of Brazil and Malaysia[4]. Yet despite this relative wealth, South Africa still ranks behind most countries with a similar income per capita, according to the Human Development Index (HDI) league table, where HDI represents a composite of the three following factors: (i) longevity (as measured by life expectancy); (ii) education attainment (as measured by adult literacy and enrolment rates); and (iii) real standard of living (as measured by real GDP per capita).[5].

In reality, the experience of around 50% of the South African population is either one of outright poverty, or of continued vulnerability to becoming poor. Despite being classified as one of the upper-middle-income countries, the nation holds to date one of the most unequal distributions in income and wealth in the world. This claim is supported by the Gini coefficient and the income shares of households. According to the 1996 World Development Report, the Gini coefficient - which measures the degree of income inequality - in South Africa is the second highest in the world in 1996 at 0.58 (behind Brazil of 0.63), where

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[3]The complete report can be downloaded from the South African government webpage at http://www.welfare.gov.za/Documents/2000/Docs/1998/Pov.html. (Document viewed April, 2003).

[4]GNP per capita US$ (1994): Poland ($2,410), Thailand, ($2,410), Brazil ($2,970), South Africa ($3,040), Malaysia ($3,480). Source: Inequality and Poverty Report, South Africa (1998).

[5]The HDI for selected middle-income countries in 1992 were (rated out of 1): Poland (0.815), Thailand (0.798), Malaysia (0.794), Brazil (0.756), South Africa (0.677). Source: the United Nations Development Programme (UNDP).

0 signifies absolute equality and 1 indicates absolute concentration. The measurement of income shares of deciles of households informs us that the poorest 40% of households - equivalent to around 50% of the total population - only have 11% of total income, while the richest 10% of households - 7% of the total population - have over 40% of the total income. Not surprisingly, between-group inequality is also considered to be very large in South Africa, where diversity is one of the key features, and where between-race inequality accounts for around 37% of total inequality. As for the within-race inequality, the calculated Gini coefficients by race at the end of 1993, drawn from a sample of approximately 8,000 households, also display substantial values at 0.449, 0.412, 0.377, and 0.336 for Blacks, Coloureds, Indians, and Whites respectively, see Deaton (1997: p.157).

Looking more closely at the poor, a disaggregated analysis in the ICPI report on living standards has shown that there remains a strong racial and regional dimension to poverty in South Africa. Around 70% of households classified as 'poor' in the ICPI report from a consumption-based poverty measure are found to be living in rural areas, while 61% of the households from the same category come from the population of black Africans. Almost all of the 'poor' households, the majority of whom were black Africans, are deprived from access to basic services such as running water, electricity, and telephone in dwelling, as well as from decent education and secured employment. There are also clear relationships to be found between poverty and other human development indicators, such as ill-health and poor nutrition in-take, as well as owning no material goods and having to live in a violent environment in South Africa. Moving out of poverty is also considered to be extremely difficult for the majority of people in South Africa. A panel study by Carter and May (2001) and a later summary on income mobility drawn up by Graham and Pettinato (2002) suggests that a significantly higher proportion of the poverty of South Africa remains chronic or permanent than in any other studied countries, namely Peru, Russia, and USA, with around 66% of those below the poverty line in 1993 still remaining in the same place in 1998.

Other evidence relating to South Africa's poverty background, which is more closely

related to the analysis in this paper, comes from a subjective measurement of poverty conducted by the recent South African Participatory Poverty Assessment (SA-PPA) team in 1997. The exercise was carried out by asking people from a number of participating communities to subjectively place themselves (or their households) on the community wealth ladder. The SA-PPA team found subjective responses to be correlated with many of the objective characteristics, and other nonincome variables of the respondents. For example, the experiment carried out on members of the community of Nhlangwini in the province of KwaZulu-Natal leads to the following findings. People who had reported themselves to be in the poor category (38 out of 79 households) had all or some of the following criteria: no family member working for cash or only doing cheap labour, ill-health, no parents, or were farm workers. The criteria for the people in the average category (21 households) consisted of households with regular-wage workers or with some incomes coming from farming. The situation improves significantly for the people who classified themselves as rich (17 households). As it happens, some of these 'rich' households ran more than one business while others had a number of family members in salaried work. Other supporting work on subjective well-being in South Africa can also be found in Klasen (1997) and Møller (1998). However, the relationships between subjective well-being and socioeconomic factors established in these studies were made through general observations only, and not by econometric evaluation.

All in all, the evidence given above has provided us with the two main rationales for this paper. The first is that the problems of poverty and inequality in South Africa represent much more serious, wide-spread issues at the core of human development than general observations have made them out to be, and thus provides us with an interesting framework on which to base our research. The second is that happiness responses in South Africa can be correlated with various objective characteristics of households, as earlier studies suggest. Hence, the research on happiness response is open for a more systematic experimentation at a larger population sample, in order to make any previous findings on subjective well-being in South Africa conclusive.

3.2   The South African Integrated Household Survey

The present study uses household data from the South African Labour Research Unit (SAL-DRU) survey. The SALDRU is a nationally representative, cross-sectional household survey which contains information on a series of subjects including - but not limited to - household composition, education, employment status, and other income earning activities. The survey, carried out during the last five months of 1993 - shortly before the election that made Nelson Mandela the South African president in 1994, consists of approximately 8,800 randomly selected households in as many as 360 communities. The data are collected by personal interviews with the respondents, and are made publicly available on the World Bank's Living Standard Measurement Study (LSMS) website[6]. One of the main reasons for choosing the SALDRU survey is that it contains a section in the survey - other than the information on objective household and personal characteristics - that asks households the Perceived Quality of Life (PQOL, henceforth) question as follows: "Taking everything into account, how satisfied is this household with the way it lives today?" The five possible answers were 'very satisfied', 'satisfied', 'neither satisfied nor dissatisfied', 'dissatisfied', and 'very dissatisfied'. We rearrange these in order that the highest level of happiness - 'very satisfied' - is recorded as a 5, 'satisfied' as a 4, 'neither satisfied nor dissatisfied' as a 3, 'dissatisfied' as a 2, and the lowest level of happiness - 'very dissatisfied' - as a 1[7]. Nevertheless, not all of the 8,800 households responded to the PQOL question, and hence we were left with 7,499 observations (85% from the original sample) for the present analysis. However, there is a sampling weight given to each observation, making the reduced sample representative at the national level. The raw sample of PQOL distribution is given in Table 1. The next section of this paper then presents some empirical models whose purpose is to capture the

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[6]See the LSMS website at http://www.worldbank.org/html/prdph/lsms/index.htm for access to the dataset. Last viewed April, 2003.

[7]To our knowledge, the PQOL data has been studied in part once by Kingdon and Knight (2001) where they conclude using the South African survey that individuals in high unemployed households have generally reported lower life satisfaction than individuals residing in low unemployed households.

relationship between PQOL and sociodemographic variables, and to outline our estimation procedures on cross-sectional data.

[TABLE 1 HERE]

4 Empirical Strategy and Preliminary Results

4.1 Basic Models

We begin this section by reintroducing a reported well-being function that is used by others with regard to US and European data before us, that is

$$r = h(u(y, \overline{y}, z)) + e \tag{1}$$

where r is the self-reported well-being by an individual, $h(.)$ is a non-differentiable function that relates actual to reported well-being, $u(.)$ is the true well-being only observable to that individual, y is real income, $\overline{y}$ is an income level against which the individual compares himself or herself (such a comparison could be made against the individual's cohorts' earning levels or past income), z is a set of demographic personal characteristics, and e is an error term that subsumes the inability of human beings to communicate accurately their well-being levels. The reported well-being function is assumed to be increasing with income, y, and reducing with comparison income level, $\overline{y}$. Using this simple happiness model as our benchmark, we can begin our empirical modelling on the reported perceived quality of life in South Africa.

Nevertheless, as the PQOL question was directed at how the respondent perceives the quality of life as it appears from the household's point of view, it was considered prudent to first single out the individual characteristics (such as age and gender - normal variables in a general happiness equation) of the interviewees from the happiness regression equation, and to evaluate only the relationships between household-level characteristics and reported well-being. Hence, we run an ordered probit regression with sampling weight on the PQOL

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data of the form

$$H_{ihc} = \beta \sum_{j=1}^{J} a_{jh} + \gamma \, Y_h + \theta \, \overline{Y}_h + \lambda \, HH_h + \delta \, COM_c + \mu_{hc} \qquad (2)$$

where H_{ihc} is the reported well-being by individual i for household h in a community c, while a_{jh} represents a vector of durable goods, in quantities, from a set of durables J owned by household h.

Y_h represents a natural log of total household monthly income[8], while $\overline{Y}_h$ includes two types of comparison income level. They are (i) comparison income level according to the people living in the same community, and (ii) comparison income level according to our past. For simplicity we shall call the first type of comparison income (i) external comparison income, and the second type (ii) internal comparison income. External comparison income is calculated by dividing the total household monthly income by the average household monthly income of other people within the same cluster area, and is allowed to vary between households.

Internal comparison income, on the other hand, comes from a dummy variable containing information as to whether the individual *thinks* that the financial position of his household today is better, the same, or worse off when compared with that of his parents when they were at the same point in the life cycle[9]. This parental wealth comparison variable would act as proxy for the individual's subjective assessment of the current household's status, in comparison to his or her past experience, regardless of today's actual earning level. For example, an individual who grows up with wealthy parents will be likely to have a higher consumption standard than an individual who grew up in poverty (see McBride, 2001).

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[8] The reason for using log of household monthly income comes from the fact that it is a proportionate increase in income, rather than a unit increase in income, that associated positively with happiness (Easterlin, 2001). The income, which was calculated by the World Bank Group, includes all household income earning activities and any income from non-employment sources.

[9] The question is phrased as followed: "When you compare your situation today with that of your parents, do you think you are richer, about the same, or poorer than they were? - 1.Poorer, 2.The same, 3.Richer."

HH_h includes a vector of other controlled household characteristics that include household race and location (rural/urban), while COM_c contains a vector of community controls that include the types of road, on whether public transport is available within the area, and cluster food-price index. Lastly, as the sample is a clustered one - with clusters mainly being small communities or villages - households living in the same cluster are more likely to share not only the same infrastructures such as motorable roads but also the same climate, food prices, crime rate, or even the same local eccentric traits (Deaton, 1997). As a result, homogeneity in group data may lead to estimations with small standard errors. To correct for underestimated standard errors, cluster controls have been included in our estimations so as to capture any grouping effects present within the dataset. See Moulton (1990) for more discussions on potential pitfalls of estimating aggregate variables on micro units when standard errors are not corrected for.

[TABLE 2 HERE]

The regression results at the household level in Table 2 may serve to provide some confidence in the structure of the responses in the subjective well-being question in South Africa. We can clearly see the interactions between household race and reported quality of life: individuals living in an African household, for example, are more likely to report, on average, a lower subjective well-being score relatively to individuals living in either a coloured (non-white of mixed race in South Africa), an Indian, or a white household, even after income and durable assets ownership are controlled for. Individuals from white households, on the other hand, have in general reported the highest level of PQOL scores. This result is consistent with earlier findings found on race and happiness in US and UK data (Oswald, 1997; Di Tella *et al*, 2003). This is also in keeping with other results from Latin America, where those individuals who self-reported in terms of their nationality (Peruvian or Chilean, for example) first rather than as a racial minority are happier than others (Graham, 2002). One explanation for the depressed PQOL could be the mind set shaped by years of discrimination during the apartheid years, despite the fact that the majority of the population are black. To take just a few examples, racial discrimination of various kinds in South Africa

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appears in studies on job discrimination (Knight and McGrath, 1977), wage discrimination (Moll, 1990), hire/purchase lending (Schreiner *et al*, 1997). Hence, the obtained result from the PQOL corresponds with other studies that suggest possible racial discrimination against black households living in South Africa.

Controlling for income and durable ownership, household size is negatively associated with reported well-being. A possible explanation for the negative correlation might be that, once we normalise for total income, an increase in the size of the household will lead to a reduction in the income capita per household, and hence may reduce the quality of life for everybody in the household. Running the same regression equation on per-capita variables helps to support such a claim, as the coefficient for household size has now been reduced to an insignificant value. Also, living in urban areas is negatively associated with reported well-being. This could be explained partly by stress-related and overcrowding problems normally found in urban living. Urban areas in many developing countries are also vulnerable to large inflows of migration from the rural population looking for a better life in the city, but often, these people find themselves living under poor conditions, with no access either to jobs or health care. Urban households may also have higher aspirations and reference norms, as they have more readily available information about how others around them live. In addition, the low PQOL scores recorded among people living in urban areas could have been caused by some hidden political unrest in urban South Africa in the early 1990s, which we have not been able to control for in our model.

4.1.1 Consumer Durables and Quality of Life

We test for the relationships between the different types of durable good consumption (or, more generally, household wealth) and the reported well-being for an average household in our first regression, in order to see which of the consumer durables, if any, is associated with higher PQOL responses. The data relating to durable goods comes from the survey question that asks households for the quantity of the listed durables that someone in the household owns. The listed household durables includes the following items: (i) motor

vehicle; (ii) bicycle; (iii) electric stove; (iv) electric kettle; (v) fridge; (vi) gas stove; (vii) geyser (or domestic gas water heater); (viii) primus cooker; (ix) radio; (x) telephone; (xi) television. The average correlation is around 60% between the quantity of each durable good, while none of the goods are correlated by more than 77.9% (electric stove and kettle). The correlation is even lower between the quantity of each durable good and log household income (the maximum correlation being around 59%) across cross-sectional data[10]. As a result, we can base our analysis on the assumption that there are no two goods in the sample that correlate perfectly to each other and on that of household income, which makes a further interpretation of the results plausible. However, we do not have relevant information as to the quality and condition of the reported household durables. In other words, we do not know whether some of these durables are old or do not work, for example.

We find some, but not all of the household durables to be significantly associated with higher PQOL levels. Reported quality of life seems to improve with the numbers of motor vehicles, geysers, and telephones owned by the household - including the ownership of television, if per-capita ownership is to be analyzed instead. On the other hand, consumer durables such as electric kettle, gas cooker, primus cooker, bicycle, electric stove, radio, and refrigerator do not seem to significantly register within most people's evaluation of lives. The significance of the correlations seems plausible enough once each durable's capabilities to function is taken into account. For example, owning a motor vehicle or a telephone in the household - both of which are widely rated to have a very high capability to function in themselves - is more likely to result in householders reporting a higher PQOL level than if they were to own other durables with considerably fewer intrinsic uses such as an electric

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[10] See appendix (a) for the full summary of correlation matrix for durable goods and income. In addition, there is a matter of question as to why, if durable goods are important to individual's standard of living, high income households do not automatically leads to durable assets ownership. One plausible explanation could be that these durable assets are passed down from one generation to another, regardless of today's earning levels. Moreover, living under apartheid rules may reduce the access to assets market for the non-white population living in a relatively well-off household (Schreiner et al (1996)).

kettle or a radio, *ceteris paribus*. Nonetheless, despite the fact that durables such as motor vehicles and telephones are positively correlated with the reported quality of life of an average household, the positive findings on assets that are a necessity to everyday life like gas cooker or primus cooker are not at all robust. Though we do not have a conclusive answer to this issue, our intuition tells us that durables such as gas cookers are not one of those goods that are difficult to find substitutes for, and as a result, individuals may take the availability of them for granted. Nevertheless, there exists the possibility that if they do not own these durables, their living standard, *vis-á-vis*, reported well-being would probably fall.

4.1.2 Comparison Income

We also find strong evidence of people reporting high PQOL scores when they believe that the household is doing as well financially - if not better - as compared to its past, even after controlling for the current income. The result is in keeping with the previous work on the effects of the perception of past progress: the perception of one's present situation in a positive light compared to the past has positive and significant effects on subjective well-being, see McBride (2001) and Graham and Pettinato (2002). However, unlike the results obtained from US and European data, the coefficient of objective external comparison income is insignificant and has the wrong sign. In other words, we did not find the objective external comparison income to correlate significantly with higher levels of reported well-being in South Africa under our first run of happiness regression equations.

Conclusion 1 *Reported perceived quality of life at the household level in South Africa is high among whites, households with small numbers of family members, those living in rural areas, and among households with some durables ownership. A positive perception of past progress is also associated with higher levels of reported quality of life.*

4.2 Personal Attributes

In order to test for the influence of individual characteristics on the reported quality of life, the original model has been extended to the following form:

$$H_{ihc} = \beta \sum_{j=1}^{J} a_{jh} + \gamma\ Y_h + \theta\ \overline{Y}_h + \lambda\ HH_h + \delta\ COM_c + \Pi\ IND_{i|h}^{p=0,1} + \xi\ OHH_h + \mu_{ihc} \quad (3)$$

The new variable, IND, represents a vector of personal characteristics such as gender, age, employment status, health status, and education level. The subscripts i and h refer to the fact that personal variables can be run in the happiness regressions using the characteristics of the PQOL respondent alone or that of aggregated individual variables across all household members (e.g. proportion of household members with higher education or in regular wage employment, etc.), respectively[11]. The superscript p corresponds to the choices between the two alternatives ($p = 0$: personal characteristics of the PQOL respondent, $p = 1$: aggregated individuals variables).

OHH_h is a vector of individual characteristics of household members, *other than* the PQOL respondent from each household. It takes a similar form to the aggregated individual variables, IND_h, except that OHH_h includes only the aggregated personal characteristics taken from the people within the same household of the respondent but did not answer the PQOL question. Let us assume for now that OHH_h can only be calculated from households with more than one member (or recorded to having household size greater than one). We also include a personal control, the relationship to the head of household, to differentiate between the roles held by the respondent within the household in our empirical model[12].

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[11]A similar model using household level averaged data has been used in a paper by Kingdon and Knight (2001) to test for the unemployment effects on reported well-being in South Africa. As a result, they found household unemployment rate to correlate significantly with low PQOL scores, controlling for household income per capita and other factors.

[12]The life satisfaction equation (3) is closest to the equations used in US/UK happiness data:

$H_i = \alpha\ Y_i + \beta\ Y_i^* + \Sigma\ \text{Personal}_i + \epsilon_i$, where H_i represents happiness for individual i, Y is real income, Y^* is relative income, Personal is a set of sociodemographic and personal characteristics, and ϵ is the error term.

[TABLE 3 HERE]

We begin our analysis in Column 1 of Table 3 with a regression that includes only the personal characteristics of the PQOL respondent, $IND_{i|p=0}$ (leaving out for now the aggregated individual variables of other household members, OHH_h). Reported well-being is found to correlate significantly with some of the already identified personal variables at the individual-level data, such as the age and employment status of the respondent, even when the PQOL question is asked at the household rather than individual level. The results of employment status are consistent with the literature on employment and subjective well-being: employed individuals with a regular wage have reported a higher subjective well-being than the unemployed in general (War *et al*, (1988), Clark and Oswald, (1994), Theodossiou, (1998), Kingdon and Knight, (2001)). Individuals who look after the home or are in a formal education still fare better than the unemployed, while the correlations are not as strong for the self-employed or the retired. The non-linear relationship between age and happiness is confirmed. Like individuals across the developed world, happiness in South Africa is U-shaped in age, with a minimum around the middle of life (early to mid 40's). Though not shown in the table, the coefficient on age remains significantly negative, even if we remove the age-squared variable. This suggests that the prospect of growing old may not appeal to South African people: the young appeared to be happier there than the older population. One interpretation of this is that individuals tend to live shorter, unhealthier lives in poor countries than in rich countries, and therefore become less happy as they age.

The results for education do not, however, appear to support the claim that well-educated individuals are happier than the less-educated ones. When controlling for wealth (durable assets ownership and income - both absolute and relative - included), a happiness regression equation with the respondent's personal characteristics for South Africa does not yield a positive correlation between education level and reported well-being scores. Instead, the relationship between higher education and happiness is negative and significant for responding individuals. One credible explanation for this is that the return to higher education in developing countries may be measured purely in terms of higher wealth. The correlation

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between education and income is probably higher in less-developed countries, whereas in more advanced economies, more educated people probably have the luxury or security of working in lower paying, but more satisfying jobs, as in NGOs or universities, for example (Graham and Pettinato, 2001). The theory of high aspiration levels found among people who are highly educated can also help to explain the negative relationship between education and happiness, when wealth is being controlled for in the regression. The coefficient on the proxy for health status (whether the respondent has been sick for the last 2 weeks), though it has the right (negative) sign, is insignificant[13]. Moreover, there is no evidence of a significant relationship between gender and the reported PQOL scores at the individual level.

So far we have presented the results with the assumption that only the respondent's personal characteristics matter in determining the reported PQOL level. Column 2 now alters the assumption somewhat to allow for the idea that PQOL data may correlate more with personal characteristics taken from all household members than from the individual attributes of the respondent alone. The previous individual variables now take aggregate forms, $IND_{h|p=1}$, in our new regression.

With the aggregated personal variables data, we can see that the proportions of household members in regular wage employment, of those looking after home and in formal education, are positively associated with higher reported PQOL in general. However, increases in the proportions of household members in the self-employed and the retired categories - with the proportion of unemployed individuals in the household being the reference point - now correlate significantly with higher reported PQOL scores. This makes sense as, holding everything else constant, a 50% self-employed and 50% unemployed household will be more preferable to an individual than a 0% self-employed and 100% unemployed household, given the fact that unemployment is the single most detrimental factor to lower well-being.

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[13]Our proxy for individual's health status is different from the usual self-rated health status in a 4-point scale (From 'very poor health' to 'excellent health', for example) and only takes in the account of the respondent's health status in the past 2 weeks. This may help to explain the insignificancy between the health variable and the reported well-being.

An increase in the proportion of household members with an education level of STD 10 or higher is associated positively with PQOL scores, where the coefficient for the same education level for PQOL respondents was negative and insignificant before. The result of the aggregated education level variable is of some important interest, and will be analysed in more detail later in the paper.

Average age and age-square are significant at the household-level - the average age across all household members have a non-linear relationship with the reported well-being for South Africa - whilst a regression on the proportion of male members and of individuals having been sick in the last two weeks both yield positive and insignificant coefficients. The already identified household variables, such as household income and durable assets ownership, retain their significance in our happiness regression at the household-level.

[TABLE 4 HERE]

In Table 4, we integrate the assumptions as to the effects of two different individual characteristic levels, and run a regression with the respondent's personal characteristics, $IND_{i|p=0}$, and the aggregated individual variables of other members in the same household, OHH_h, in the model. We use only the households that have recorded more than one household member (HHSize > 1) in Column 1, so as to minimise the covariance between IND_i and OHH_h variables.

The first set of results are consistent with what has been found in both columns of Table 3. Both respondent's personal characteristics and the aggregated individual variables of other household members remain significant determinants of the reported PQOL, and not one or the other. For example, being regularly employed still associates positively with reported well-being. There is a drop in the coefficient magnitude for employment with regular wages, from 0.202 to 0.161, and this suggests that some of the positive effects picked up earlier come from the omission of other household members' personal characteristics. Increasing the proportion of other people employed with regular wages also correlates positively with reported PQOL, controlling for respondent's employment status.

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Having more of other male members in the household is also good for the quality of life, though slightly insignificant. Respondent's education levels (namely, STD 9-10) retain their significance with negative values, even after controlling for the education levels of other household members of which remain positive (though are now slightly insignificant) at the highest education level.

In Column 2, we add in the remaining households with only one household member (HHSize = 1) into the regression, and the additional information accounts for around 15% of the full sample (1,127 observations). For these households, the PQOL question acts more like a normal happiness question asked at the individual level. To include these observations into our model we take, for example, an employed PQOL respondent living in a one-member household to automatically have a 100% 'employment with a regular wage' in the OHH_h variable set.

The results are remarkably similar to those obtained in Column 1, where almost all of the identified variables in Column 2 still retain their significance and signs. Personal variables such as age and age-squared now correlate significantly with the reported well-being, while average age and average age-squared have remained largely insignificant.

The reported PQOL is found to be high amongst households with high proportions of other self-employed members, looking after the home and in formal education, and retired members, *ceteris paribus*. A paradox emerges, however, between the respondent's and the aggregated education variables when we seek to incorporate the remaining 1,127 households. The coefficients of the aggregated education variables at higher levels are positive and statistically significant, whilst the respondent's education at the higher levels (namely at STD 7 to10) are still associated negatively with the reported well-being. This is an interesting result, which suggests respondent's education level, and not the aggregated household education level, to be the only source for high aspirations that appear to reduce subjective well-being in South Africa. One interpretation could be that the more educated (and less happy) respondents still prefer to live - and indeed benefit from - living with more educated family members. We nevertheless need to carry out the same analysis using the individual's

earning data rather than at the household income level, and possibly on a panel dataset to see whether well-educated individuals who are unhappy will remain at the same jobs through time, in order to make the finding on education conclusive.

Conclusion 2 *Both respondent's personal attributes and aggregated individual variables across household members matter in the assessment of well-being. Unemployment at the individual- and household-level is detrimental to reported happiness levels. Own education levels are negatively associated with well-being, but the aggregated education variable has an opposite effect. Happiness is also U-shaped in age.*

4.2.1 Compensation Variation and Selected Marginal Effects

In table 5 and 6 we use the estimated coefficients from Column 2 in Table 4 to calculate the 'compensation variations' for different life states and the 'marginal effects' of some selected variables, respectively. The first calculates how much extra household income per month is required to compensate for a bad occurrence in life, for instance, how much extra income will be needed to compensate for an unemployed respondent so that he obtains the same level of reported well-being as people who are employed. Let us say, for example, that λ_1 represents a coefficient for the employed respondent with regular wages and λ_0 be the reference coefficient of being unemployed, our generalised compensation equation (CP) with log of income will depend upon Y and can be expressed in the following form:

$$CP = Y \cdot \left\{ \exp \frac{\lambda_1 - \lambda_0}{\gamma_{\ln Y}} - 1 \right\} \tag{4}$$

This is equivalent to saying that an unemployed individual will require a compensation income of CP to achieve the same level of well-being as an employed individual with the same monthly income, Y. Thus, CP represents the measurement of unpleasantness in unemployment.

[TABLE 5 & 6 HERE]

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The results in Table 5 tell us that a household monthly income of around R1,491 (or around £305) per month is required in order to compensate for being unemployed, for an average individual with a monthly income of R100. The compensation premium rises to around R30,780 or £6,295 per month for people earning at the average household income level of R2,064. The value goes up much higher for other life events: from no education to completing a university degree, from perceiving that you are richer than your parents, and from being black to being white. Some figures seem implausible: for instance, a huge sum of money is needed to compensate an average individual earning R100 per month for being black in South Africa (approximately R481,381.09 or a 4,813% increase from the original income level), in terms of PQOL level. This supports our earlier hypothesis regarding the possible "scaring-effects" racial discrimination during the apartheid year have on the black population in South Africa. Nonetheless, we must bear in mind that, due to the possibility of income being endogenous in the happiness regression equation, the causal interpretation of the compensating variation calculations is not necessarily straightforward.

Table 6 follows the same method used by Lydon and Chevalier (2001) in calculating marginal effects from the sample means of all the other estimated variables. Starting from the sample average, we calculate by how much a unit increase in a selected variable for everybody would change the percentage of people reporting to be in a (i) dissatisfied (1,2), (ii) neither (3), or (iii) satisfied (4,5) category. With an average of zero motor vehicles owned by the household, a unit increase in motor vehicle owned is associated with an increase by 1.93% points of the population in the satisfied category. The effect is non-monotonic as an increase in the motor vehicle owned by threefold is associated with a rise of 6.27% points in the proportion satisfied. The marginal effects are greater for unit increases in telephone, and smaller - with an opposite direction - for the household size. The increase in household income is based on the average log of income of 6.87 (or around R965.27). A proportional increase in household income (by 1-point in natural log, or an increase in income of R1,658.61 per month) is associated with a rise of 1.72% points in the satisfied group, while a 1,800% increase (a 3-point rise in natural log scale) leads to a rise in the proportion satisfied by 5.55%

points. The results from Table 5 and 6 thus suggest that the relationship between income and well-being may be (very) weak when compared to other factors such as employment status and racial differences.

[TABLE 7A HERE]

With the happiness equation used in Table 4 being firmly established, we can now move on to sub-sample analysis. We begin in Table 7a by separating the data to be examined by race (black vs. non-black), location (rural vs. urban), gender (male vs. female), and age group ($30 <$ age vs. age $=> 30$ years old). This yields interesting patterns in the reported PQOL responses. Looking at the black sample, the highest level of education of the respondent (STD10 or higher) now correlates significantly with lower well-being. This is particularly interesting, as it suggests that black workers may be earning less relative to those with lower education (less than STD 10), but were probably employed on more favourable terms because of possible racial discrimination in South Africa (see Knight and McGrath (1977), and Moll (1990)). The correlations between employment status and some of the already identified durable assets ownership disappear for the non-black sample. The significance of the coefficient for health status (- negative sign) has improved, however, for the non-black population.

The non-linear relationship between age and happiness disappears when regression is run on the rural sample, while remaining robust for the urban South African. Urban male respondents are reported to be less satisfied with life than urban females in general. Being self-employed and in employment with regular wages, as set against being unemployed, has an insignificant relationship with recorded well-being in rural areas, although this could be due to how employment is defined differently between the two geographical settings. The idea of unemployment in rural areas is probably not as clearly defined as in urban areas. Unemployed individuals may have things to do in the rural setting, even if they are not working on a farm. It is perhaps not surprising for an average employed person that they do not feel relatively secure, nor socially superior to those who are unemployed in a rural areas, once income is controlled for in the regression.

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Happiness structures are very similar when comparing male and female sub-samples. Being employed with regular wages is positively associated with well-being for both genders, with the coefficient being larger for males at 0.210(2.60) than females at 0.154 (2.55). Looking after the home or studying in a formal education category has no significant bearing on the reported well-being for males, whilst the coefficient for the same employment status is both positive and well-defined in the case of female sub-sample. Female respondents are reported to be happier if they come from the rural area or if there are television sets in the household, *ceteris paribus.*

The last two columns of Table 7a look at age of the respondents. Being young and male is apparently less positive with regards to well-being responses than being young and female, while household size and household income have insignificant relationships with the happiness responses for the young age-group. Higher education levels, however, have positive correlations with the reported well-being of the young, although the coefficients are not well defined.

[TABLE 7B HERE]

We show in Table 7b the averaged household level data of other household members, OHH_h, for different groups of people. In contrast to the non-black sample, the correlations between the proportion of household members in higher education and the reported well-being - although having the correct sign - are insignificant for the black households. Nevertheless, the proportion of household members with regular wage employment in an average black family is associated positively with the PQOL scores. The other significant finding from the sub-sample analysis comes from the proportion of male members in the household. The number of males in a household enters positively in the well-being equation providing that you are from the rural area. This could be explained partly by the fact that an increase in the number of male members leads to more household security and more productivity for household consumption from working in the farms.

In summary, it may be seen how different groups of people in South Africa have fared differently in terms of subjective well-being responses. Non-financial variables such as

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gender, education, and employment status can have different influences on human welfare, depending on the social norms the respondents are in. One other possible variable that could have some effect on individuals' well-being is marital status: married people tend to report themselves happier than the singletons (Oswald (1997), Clark and Oswald (2002), Di Tella *et al* (2003)). Nonetheless, the South African survey did not include a question on marital status (i.e. married, divorced, widowed). An experiment with the additional dummy of whether the individual is living with a spouse or not however yields an insignificant coefficient, and since it did not change the nature of our results we have decided not to include the spouse variable in our specification.

4.3   Relative Income and Durable Consumption

Looking across the tables, however, we still do not find that the external comparison income variable entered significantly and positively into the well-being equation in any of the sub-samples, or indeed, the full sample. This is in contrast to the relative income findings from the data of developed countries, where objective external comparison income enter positively into the happiness equation: an increase in one's own income over the community earning level leads to higher reported welfare levels (Clark and Oswald (1996), McBride (2001), Stutzer (2002), Blanchflower and Oswald (2003)).

Nevertheless, we find in this paper that income is not alone in determining an individual's well-being, but that the number of durable assets owned by a household also matters significantly in the individual's assessment of quality of life. We also find, through comparative-static analysis, that durable assets ownership does not correlate very strongly with household income for South Africa. See Appendix a. What happens, then, if people also care about relative consumption as much as relative income? If that is the case, then relatively higher household income comparing to the average household income level in the community does not necessarily lead to higher standard of living, if we do not allow for controls of relative durable consumption in the regression as well.

In Table 8, we analyse some of the relationships between relative income (defined as

household income/avg. community income) and a selected set of durable assets ownership. Absolute durable ownership of motor vehicles, geysers, telephones and television sets appear to have clear, positive correlations with relative income at all levels. This is to be expected as we know that higher household income is associated with higher quantities of durable goods owned by the household. The relationships between relative income and the average number of assets in the community, on the other hand, are not as robust.

We anticipate, of course, that if income is a good representative of wealth, as a household grows to be relatively more affluent than those of its neighbours, this should automatically suggests that the household would also be much better off than the other households in the same area in terms of general wealth, which includes ownership of household appliances. A point-of-time analysis should also yield a negative correlation between relative income and the average consumption of others in the community. In other words, relatively richer individuals should find themselves living in areas where the majority of their neighbours are placed below them in the overall economic ladder, providing that people can derive utility from higher relative wealth in general, and vice versa for the relatively poorer individuals. Also, the absolute gaps in the average durable ownership and the average number of goods owned by others in the community should roughly be the same for both ends of the relative earning quantile.

[TABLE 8 HERE]

Nonetheless, instead of a monotonically rising average consumption by others in the community as we move up the relative income ladder, we find the average consumption levels, which vary between households, have a possible concave relationship to relative income, with the maximum point being displayed for people earning around the same income as the community means. One interpretation of this could be that purchasing/decision depends not only on income, but also on various other factors such as the time and the degree of social norm. Black Africans may also have been limited in their purchasing decision and power during the apartheid years, despite earning good incomes. In addition, poorer people

may also self-select into communities where they feel relatively better off in terms of overall wealth as well. The analysis of discrimination and self-selection, however, lie beyond the scope of this paper. Nevertheless, taking the information at face value, if people really do care about relative consumption in general and that distribution of wealth is not evenly distributed among all income levels, then we should also take into account the effects of relative consumption in our relative income analysis as well.

[TABLE 9 HERE]

In Table 9 we include in the happiness regression equations the average consumption levels for motor vehicle, geyser, telephone, and television in the community, all of which were significant at their absolute consumption levels, and run them on different groups of people in South Africa. Controlling for relative consumption, we can see that relative income now enters positively and significantly into the well-being regression for the full sample. Absolute income still matters significantly in the evaluation of well-being. The averaged variables, on the other hand, are significant and positive (negative) for motor vehicle and telephone (television).

Looking across the columns, it can be seen that a higher level of relative income is associated even more robustly with higher reported PQOL scores for black, urban, and female samples, while absolute income variable retains its significance in all except for the urban sample and under 30 age-group. The results thus support our earlier hypothesis as to the relationship between external comparison income and subjective well-being, and are consistent with previous work on relative income in more developed economies.

Conclusion 3 *Relative income enters positively into the individual's assessment of well-being. Relative consumption also matters per se.*

5 Conclusions

This paper has been an attempt to address what constitutes the global requirements for a good life, and to consider whether happy people are the same across rich and poor countries.

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We examine the pattern of happiness responses in a developing economy framework via estimations of ordered probit well-being equations on a set of micro-economic variables for South Africa in year 1993. We study people who are extremely poor by Western standards. Nevertheless, our main findings have been that, in most comparable cases, the coefficient signs of the already identified socio-economic factors in the happiness regression equations are the same in South Africa as is the case in more-developed countries[14]. See Table 10.

[TABLE 10 HERE]

First, we find that household variables correlate well with the perceived quality of life responses at the household level. Household income enters positively in the well-being equation, while household size has a negative relationship with reported happiness levels. Black respondents in South Africa appear to be much less satisfied with the quality of life than whites, despite constituting the majority of the population. This may be because the best part of the population has been governed for generations by apartheid law. Past perception of financial well-being at the household level is also important in the evaluation of subjective well-being: if a respondent considers his or her current household situation to be the same or better than that of his parents at the same age, he or she is more likely to report a relatively higher well-being. The geographical setting of the household matters: rural people are generally happier than urban people. We also find basic living-standard indicators such as ownership of selected household appliances - namely, motor vehicle, geyser, telephone, and television set - to be correlated positively with the recorded welfare at the household level.

Second, the already identified individual characteristics correlate well with the reported perceived quality of life at the household-level. Controlling for personal attributes of other members in the household, we find the reported well-being of the respondent to correlate significantly with age, employment status, and education levels. People who are employed with regular wages are more likely to be satisfied with life, *ceteris paribus*, than the unemployed, those looking after home or in a formal education, the self-employed, and the retired.

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[14]See appendix (b) for the full summary of conclusions on the UK and US well-being data.

Like people in richer countries, age has a U-shaped relationship with individual's well-being, with a minimum around the early to mid 40's.

As opposed to many studies on happiness, education levels are negatively associated with the respondent's quality of life for South Africa. One interpretation of this is that a high education level also leads to high aspiration levels, and if these aspirations are not met by current incomes - as is often the case for many of the black employees in South Africa, they are likely to result in a lower reported subjective well-being by the respondent, *ceteris paribus*. The education of other household members, however, enters positively into the happiness equation.

Third, our calculations of compensation variations and selected marginal effects suggest that non-economic factors, such as race and employment status, probably matter more psychologically than income. Given a household's monthly income of R100 (£21), the happiness value of a move from a state of unemployment to being employed with a regular wage is the same as a move from a rise in household income of approximately R1,495 (£305) per month, while an extra R481,000 (£98,400) per month is required to compensate for being black in South Africa. However, as income is potentially endogenous in the happiness regression, the interpretation of these results are only illustrative and should therefore be treated with caution.

Fourth, we find that individuals care about their relative income standings in the community, all else being equal. The relative consumption of durables also matters to the evaluation of subjective well-being *per se*.

In sum, the overall finding regarding the well-being structure in South Africa does not offer us a completely new set of results. This is a crucial information to welfare economists, as the results potentially support the notion that perhaps, subconsciously, people are the same everywhere.

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Table 1: The Distribution of Perceived Quality of Life (PQOL) responses in South Africa (1993)

Whole Sample	Observations	Percentage	Cumulation
Very Dissatisfied	1817	24.23%	24.23%
Dissatisfied	2431	32.42%	56.65%
Neither	707	9.43%	66.08%
Satisfied	1981	26.42%	92.49%
Very Satisfied	563	7.51%	100.00%
Total	**7499**	**100%**	**100%**

Table 1a: The Distribution of Happiness Responses in the United States: 1972 - 1994

Happiness in USA	Percentage
Not Too Happy	11.55%
Pretty Happy	55.79%
Very Happy	32.66%
Total	**100%**

Table 1b: The Distribution of Life Satisfaction Responses in Europe: 1975 - 1992

Life Satisfaction in Europe	Percentage
Not At All Satisfied	4.80%
Not Very Satisfied	14.19%
Fairly Satisfied	53.72%
Very Satisfied	27.29%
Total	**100%**

Source: The reported happiness levels in US and life satisfaction in Europe are taken from Di Tella *et al* (2001).

Note: The Perceived Quality of Life (PQOL) question was "Taken everything into account, how satisfied is this household with the way it lives today?" There are five possible answers, with the lowest well-being response being 'very dissatisfied' and the highest being 'very satisfied'. Note also that people from US and European nations are more likely to give higher well-being response levels (i.e. a positive skew towards "Very Happy" and "Very Satisfied") than South African population (i.e. a negative skew of perception towards "Very Dissatisfied" rather than "Very Satisfied").

Table 2: Happiness Equations with Household Variables for South Africa (Ordered Probit), 1993

	(1)	(2)	Per Capita Variables
Race of Household			
Coloured	0.359	0.355	0.465
	(2.74)***	(2.64)***	(3.50)***
Indian	0.428	0.377	0.560
	(3.24)***	(3.02)***	(4.53)***
White	0.639	0.648	0.764
	(4.76)***	(4.91)***	(5.76)***
Durable Goods			
Motor Vehicle	0.080	0.084	0.203
	(2.73)***	(2.84)***	(2.24)**
Bicycle	0.024	0.020	0.133
	(1.26)	(1.03)	(1.55)
Electric Stove	-0.033	-0.046	-0.216
	(-0.58)	(-0.81)	(-1.75)*
Electric Kettle	0.027	0.005	-0.125
	(0.46)	(0.09)	(-0.83)
Fridge	0.001	0.009	-0.055
	(0.03)	(0.28)	(-0.56)
Gas Cooker	0.010	0.002	-0.114
	(0.27)	(0.04)	(-0.81)
Geyser	0.206	0.189	0.297
	(3.32)***	(3.03)***	(1.86)*
Primus Cooker	-0.008	-0.012	0.018
	(-0.27)	(-0.45)	(0.17)
Radio	0.023	0.017	-0.030
	(1.33)	(0.99)	(-0.61)
Telephone	0.153	0.165	0.302
	(3.38)***	(3.74)***	(2.94)***
TV	0.045	0.026	0.231
	(1.41)	(0.77)	(2.38)**
Rural/Urban			
Urban (=1)	-0.195	-0.171	-0.154
	(-2.60)***	(-2.31)**	(-2.01)**
HHSize (members)	-0.041	-0.035	0.006
	(-3.54)***	(-3.23)***	(0.67)
Log of Household Monthly Income	0.132	0.114	0.156
	(6.54)***	(4.88)***	(4.84)***
Parental Wealth Comparisons			
PWealth: Same as Parents		0.498	0.493
		(9.34)***	(9.41)***
PWealth: Richer than Parents		0.476	0.486
		(10.68)***	(10.92)***
Relative Income		-0.013	-0.015
		(-1.07)	(-1.11)
N	7499	7499	7499
Log-Likelihood	-10082.028	-9912.1554	-9910.8806
Pseudo^2	0.0935	0.1088	0.1089

Note: * 10% C.I., ** 5% C.I., *** 1% C.I. (z-values in parentheses). Relative income = household monthly income/average community household monthly income. Cluster controls are types of community roads, public transports (yes/no), provinces (9), and cluster food prices. Reference variables are: Black (Race), Rural (Rural/Urban), and Pwealth - Poorer than Parents (Parental Wealth Comparisons). Underlined variables become per capita variables in column (1) & (2), namely, log of household monthly income per capita, durable goods per capita, and relative income per capita = household monthly income per capita/average community household monthly income per capita.

Table 3: Happiness Equations with Personal Variables at Individual level and at Household level averaged data for South Africa

	At Individual level	At Household level
Gender		
Male (=1)	0.000	0.085
	(0.01)	(0.67)
Race of Household		
Coloured	0.347	0.372
	(2.57)***	(2.76)***
Indian	0.384	0.387
	(3.14)***	(3.23)***
White	0.644	0.602
	(5.13)***	(4.69)***
Education Level		
STD 1-3	0.040	0.122
	(0.80)	(1.54)
STD 4-6	-0.112	-0.116
	(-2.09)**	(-1.17)
STD 7-8	-0.087	-0.002
	(-1.58)	(-0.02)
STD 9-10	-0.124	0.070
	(-2.20)**	(0.79)
STD 10 or Higher	-0.009	0.282
	(-0.13)	(2.63)***
Employment Status		
Housewife/Formal Education	0.159	0.282
	(3.93)***	(4.56)***
Regular Wage Employment	0.220	0.387
	(3.54)***	(3.33)***
Casual Wage Employment	-0.091	-0.021
	(-1.13)	(-0.19)
Self-employed	0.029	0.313
	(0.45)	(3.44)***
Retired	0.117	0.318
	(1.73)*	(3.78)***
Durable Goods		
Motor Vehicle	0.087	0.076
	(2.91)***	(2.57)***
Bicycle	0.016	0.024
	(0.82)	(1.14)
Electric Stove	-0.040	-0.042
	(-0.71)	(-0.77)
Electric Kettle	0.002	-0.004
	(0.03)	(-0.08)
Fridge	0.026	0.015
	(0.89)	(0.51)
Gas Cooker	0.017	0.002
	(0.44)	(0.06)
Geyser	0.192	0.188
	(3.12)***	(3.08)***
Primus Cooker	0.002	-0.005
	(0.09)	(-0.19)
Radio	0.016	0.018
	(0.97)	(1.04)
Telephone	0.175	0.158
	(3.78)***	(3.48)***
TV	0.037	0.035
	(1.14)	(1.08)

Rural/Urban		
Urban (=1)	-0.137	-0.139
	(-1.85)*	(-1.89)*
HHSize (members)	-0.028	-0.024
	(-3.74)***	(-3.34)***
Log of Household Monthly Income	0.091	0.065
	(4.30)***	(2.80)***
Parental Wealth Comparisons		
PWealth: Same as Parents	0.481	0.480
	(9.36)***	(9.40)***
PWealth: Richer than Parents	0.469	0.465
	(10.52)***	(10.71)***
Relative Income	-0.009	-0.008
	(-0.82)	(-0.64)
Age	-0.025	-0.011
	(-3.52)***	(-2.19)**
Age^2/100	0.025	0.016
	(3.39)***	(2.55)**
Sick for the last 2 weeks?		
Yes (=1)	-0.013	0.004
	(-0.21)	(0.03)
N	7499	7499
Log-Likelihood	-9866.9079	-9854.8809
Pseudo^2	0.1129	0.1140

Note: Relative income = household monthly income/average community household monthly income.
Personal control is the relationship of the PQOL respondent to head of the household (48% of whom responded were resident heads, 33% were wives or husbands or partners, 13% were sons or daughters, and the rest were other family members). Cluster controls are the same as in table 1. Additional reference variables are: Female (Gender), No Education (Education level), Unemployment (Employment status), No (Sick for the last 2 weeks?).
Personal controls at the individual-level represent personal variables for the PQOL respondents only, whilst personal controls at the household-level represent average personal variables across all household members, including the PQOL respondent from each household (e.g. the age variable at the individual-level now takes the form of an average age across all household members, or from no formal education to the proportion of household members with no formal education in the regression at the household level, etc.)

Table 4: Happiness Equation with Personal Variables at the Individual level and Personal Controls for Other Members in the Household

	(1)	(2)
Gender		
Male (=1)	0.021	-0.020
	(0.51)	(-0.41)
Proportion of other Male members in the HH	0.087	0.064
	(1.57)	(0.78)
Race of Household		
Coloured	0.331	0.374
	(2.47)***	(2.78)***
Indian	0.332	0.398
	(2.85)***	(3.28)***
White	0.556	0.619
	(4.50)***	(4.97)***
Education Level		
STD 1-3	0.032	0.018
	(0.60)	(0.35)
STD 4-6	-0.078	-0.115
	(-1.54)	(-2.27)**
STD 7-8	-0.102	-0.112
	(-1.70)*	(-1.98)**
STD 9-10	-0.136	-0.112
	(-2.18)**	(-2.89)***
STD 10 & Higher	-0.025	-0.058
	(-0.33)	(-0.80)
Prop. of other HH members with STD 1-3	0.081	0.102
	(1.15)	(1.55)
Prop. of other HH members with STD 4-6	0.016	-0.009
	(0.20)	(-0.11)
Prop. of other HH members with STD 7-8	0.000	0.081
	(0.00)	(0.98)
Prop. of other HH members with STD 9-10	0.147	0.179
	(1.68)*	(2.30)**
Prop. of other HH members with STD 10 & Higher	0.190	0.210
	(1.71)*	(2.24)**
Employment Status		
Housewife/Formal Education	0.143	0.131
	(3.44)***	(3.27)***
Regular Wage Employment	0.161	0.202
	(3.45)***	(3.61)***
Casual Wage Employment	-0.090	-0.066
	(-0.99)	(-0.81)
Self-employed	-0.025	-0.047
	(-0.34)	(-0.66)
Retired	0.099	0.090
	(1.31)	(1.22)
Prop. of other Housewife/Formal Education in HH	0.157	0.169
	(3.14)***	(3.44)***
Prop. of other Regular Wage Employment in HH	0.069	0.147
	(1.25)	(2.03)**
Prop. of other Casual Wage Employment in HH	-0.072	0.010
	(-0.76)	(0.12)
Prop. of other Self-employed in HH	0.363	0.319
	(3.84)***	(3.51)***
Prop. of other Retired members in HH	0.130	0.174
	(1.75)*	(2.41)**

Durable Goods

	(1)	(2)
Motor Vehicle	0.072	0.081
	(2.30)**	(2.76)***
Bicycle	0.037	0.032
	(1.91)*	(1.56)
Electric Stove	0.002	-0.042
	(0.04)	(-0.75)
Electric Kettle	-0.016	-0.001
	(-0.32)	(-0.02)
Fridge	0.052	0.026
	(1.78)*	(0.90)
Gas Cooker	0.039	0.011
	(1.13)	(0.30)
Geyser	0.188	0.193
	(3.56)***	(3.17)***
Primus Cooker	0.010	0.001
	(0.40)	(0.04)
Radio	0.022	0.014
	(1.23)	(0.85)
Telephone	0.151	0.172
	(3.43)***	(3.71)***
TV	0.024	0.040
	(0.80)	(1.27)
Rural/Urban		
Urban (=1)	-0.189	-0.131
	(-2.59)***	(-1.76)*
HHSize (members)	-0.019	-0.013
	(-2.84)***	(-2.01)**
Log of Household Monthly Income	0.119	0.073
	(5.39)***	(3.23)***
Parental Wealth Comparisons		
PWealth: Same as Parents	0.404	0.476
	(10.05)***	(9.42)***
PWealth: Richer than Parents	0.456	0.462
	(11.20)***	(10.65)***
Relative Income	-0.008	-0.007
	(-0.76)	(-0.58)
Age	-0.014	-0.027
	(-2.03)**	(-3.59)***
Age^2/100	0.013	0.025
	(1.85)*	(3.23)***
Average Age of other HH members	-0.009	-0.000
	(-1.91)*	(-0.08)
Average Age^2/100 of other HH members	0.015	0.006
	(2.72)***	(0.98)
Sick for the last 2 weeks?		
Respondent: Yes (=1)	-0.056	-0.026
	(-0.72)	(-0.34)
Other members in the HH: Yes (=1)	-0.022	0.016
	(-0.26)	(0.18)
N	6372	7499
Log-Likelihood	-8220.8744	-9835.0735
Pseudo^2	0.1249	0.1157

Note: Personal and cluster controls as in table 2. Household level averaged data for 'other' household members consist of average personal variables taken from all household members, excluding the PQOL respondent from each household. column (1) consists only of HHSize > 1 sample, whilst column (2) includes also the household level averaged data taken from PQOL respondents from households with HHSize = 1.

Table 5: Valuations in Household Monthly Income of Life Events

Income = R100 per month	Compensation Income per Month
Unemployment to Reg. Wage Emp.	R1,491.28
Poorer to Richer than Parents	R55,946.52
Black to White	R481,381.09
Income = R2,064 (Avg. HH income)	Compensation Income per Month
Unemployment to Reg. Wage Emp.	R30,780.00
Poorer to Richer than Parents	R1,154,736.14
Black to White	R9,935,705.74

Note: £1 = R4.89 on average in 1993. (Source: Quinn Consultant FX rate: http://www.quinns.com.au/accountant/tax_table/foreign). (Document last viewed: April, 2003).

Table 6: Selected Marginal Effects

	Dissatisfied	Neither	Satisfied
Increase motor vehicle by 1	-2.52%	+0.59%	+1.93%
Increase motor vehicle by 2	-5.18%	+1.15%	+4.02%
Increase motor vehicle by 3	-7.96%	+1.69%	+6.27%
Increase telephone by 1	-5.49%	+1.22%	+4.27%
Increase telephone by 2	-11.54%	+2.31%	+9.24%
Increase telephone by 3	-18.04%	+3.19%	+14.86%
Increase household size by 1	+0.40%	-0.10%	-0.30%
Increase household size by 2	+0.78%	-0.19%	-0.59%
Increase household size by 3	+1.17%	-0.29%	-0.88%
Increase income by Y*exp^1 (= +R1,658.61)	-2.25%	+0.53%	+1.72%
Increase income by Y*exp^2 (= +R6,167.18)	-4.61%	+1.04%	+3.57%
Increase income by Y*exp^3 (= +R18,422.74)	-7.08%	+1.53%	+5.55%

Note: The marginal effects are calculated at the sample means of all variables estimated in table 4. The figures represent shifts in the probability between people reporting to be in (i) Dissatisfied (1,2), (ii) Neither (3), (iii) Satisfied (4,5) category as a result of changes in values of the selected variables. The (absolute) average motor vehicle ownership in the sample = 0; average telephone ownership = 0; average household size = 4. Average log income = 6.87241 (or around R965.27).

Table 7a: Happiness Equations with Controls for Other Members in the Household for Different Groups of People in South Africa

	Black	Non-Black	Rural	Urban	Male	Female	Age<30	Age=>30
Gender								
Male (=1)	-0.035	-0.010	0.086	-0.112			-0.125	0.030
	(-0.61)	(-0.13)	(1.27)	(-1.95)*			(-1.86)*	(0.53)
Race of Household								
Coloured		-0.133	-0.010	0.347	0.511	0.267	0.531	0.309
		(-0.85)	(-0.04)	(2.40)**	(3.07)***	(1.77)*	(2.80)***	(2.05)**
Indian		-0.041	0.903	0.307	0.617	0.245	0.360	0.366
		(-0.30)	(1.17)	(2.37)**	(3.58)***	(1.78)*	(2.18)**	(2.68)***
White		(Reference)	0.423	0.512	0.728	0.539	0.755	0.518
			(1.24)	(3.61)***	(4.99)***	(3.44)***	(3.81)***	(3.90)***
Education Level								
STD 1-3	0.011	-0.145	-0.019	0.058	0.058	-0.001	0.191	-0.000
	(0.21)	(-0.91)	(-0.31)	(0.65)	(0.63)	(-0.02)	(1.54)	(-0.01)
STD 4-6	-0.132	-0.145	-0.058	-0.191	-0.156	-0.086	-0.000	-0.119
	(-2.34)**	(-1.24)	(-0.95)	(-2.32)**	(-1.65)*	(-1.58)	(-0.00)	(-2.09)**
STD 7-8	-0.107	-0.156	0.033	-0.211	-0.145	-0.106	0.069	-0.152
	(-1.56)	(-1.41)	(0.40)	(-2.47)**	(-1.46)	(-1.65)*	(0.57)	(-2.31)**
STD 9-10	-0.146	-0.238	-0.196	-0.192	-0.242	-0.128	0.032	-0.216
	(-1.95)**	(-2.31)**	(-2.11)**	(-2.18)**	(-2.41)**	(-1.86)*	(0.28)	(-2.97)***
STD 10 or Higher	-0.395	-0.002	-0.238	-0.055	0.001	-0.124	0.052	-0.072
	(-3.33)***	(-0.22)	(-1.62)	(-0.59)	(0.01)	(-1.32)	(0.37)	(-0.89)
Employment Status								
Housewife/Formal Education	0.143	0.019	0.122	0.413	0.041	0.132	0.043	0.185
	(3.27)***	(0.50)	(2.57)***	(3.55)***	(0.32)	(2.88)***	(0.65)	(3.30)***
Regular Wage Employment	0.502	0.052	0.137	0.309	0.210	0.154	0.194	0.220
	(3.70)***	(0.43)	(1.29)	(3.07)***	(2.60)***	(2.55)**	(1.76)*	(3.84)***
Casual Wage Employment	-0.105	0.045	-0.151	0.151	-0.122	0.026	0.031	-0.056
	(-1.08)	(0.25)	(-1.18)	(1.12)	(-0.89)	(0.26)	(0.17)	(-0.58)
Self-Employment	0.049	-0.323	-0.190	0.333	-0.109	0.014	0.278	-0.108
	(0.56)	(-2.30)**	(-1.76)*	(3.31)***	(-0.86)	(0.15)	(1.71)*	(-1.36)
Retired	0.027	0.222	0.114	0.345	0.115	0.118		0.128
	(0.32)	(1.27)	(1.14)	(2.68)***	(0.83)	(1.32)		(1.65)*
Durable Goods								
Motor	0.142	0.026	0.013	0.106	0.056	0.086	0.030	0.100
	(3.28)***	(0.67)	(0.29)	(2.91)***	(1.22)	(2.12)**	(0.52)	(3.13)***
Bicycle	0.037	0.061	-0.033	0.057	0.029	0.035	-0.012	0.048
	(0.94)	(2.49)**	(-0.88)	(2.44)**	(0.88)	(1.22)	(-0.27)	(2.20)**
Electric Stove	-0.048	0.054	-0.023	-0.039	-0.016	-0.049	-0.078	-0.023
	(-0.67)	(0.70)	(-0.25)	(-0.58)	(-0.20)	(-0.70)	(-0.90)	(-0.37)
Electric Kettle	0.032	-0.007	0.072	-0.014	-0.057	0.024	0.008	-0.008
	(0.37)	(-0.10)	(0.52)	(-0.22)	(-0.69)	(0.33)	(0.09)	(-0.13)
Fridge	0.011	0.016	0.045	0.035	-0.003	0.032	-0.002	0.033
	(0.25)	(0.39)	(0.97)	(1.01)	(-0.06)	(0.89)	(-0.03)	(0.98)
Gas Cooker	0.051	0.008	0.068	-0.006	-0.025	0.048	0.051	0.007
	(0.93)	(0.15)	(1.24)	(-0.12)	(-0.40)	(0.99)	(0.63)	(0.18)
Geyser	0.198	0.204	0.367	0.153	0.301	0.104	0.443	0.133
	(1.51)	(3.85)***	(2.49)**	(2.34)**	(3.64)***	(1.30)	(3.97)***	(2.05)**
Primus Cooker	0.002	-0.008	0.009	-0.036	-0.047	0.030	0.031	-0.005
	(0.08)	(-0.08)	(0.29)	(-0.78)	(-1.08)	(1.01)	(0.65)	(-0.19)

Radio	-0.015	0.031	0.017	-0.006	0.026	0.006	0.008	0.012
	(-0.57)	(1.33)	(0.51)	(-0.31)	(0.95)	(0.25)	(0.22)	(0.66)
Telephone	0.059	0.204	-0.127	0.210	0.225	0.132	0.213	0.173
	(0.67)	(4.21)***	(-0.90)	(4.67)***	(3.59)***	(2.52)**	(2.65)***	(3.39)***
TV	0.119	-0.005	0.055	0.041	-0.000	0.089	0.086	0.042
	(2.48)**	(-0.12)	(0.96)	(1.03)	(-0.00)	(2.09)**	(1.44)	(1.21)
Rural/Urban								
Urban	-0.058	-0.165			-0.023	-0.222	-0.156	-0.117
	(-0.72)	(-1.19)			(-0.23)	(-2.73)***	(-1.55)	(-1.55)
HHSize	-0.013	-0.046	-0.007	-0.032	-0.020	-0.016	0.012	-0.023
	(-1.75)*	(-2.41)**	(-0.77)	(-3.22)***	(-1.37)	(-2.29)**	(0.78)	(-3.05)***
Log of Household Monthly Income	0.049	0.213	0.065	0.084	0.107	0.077	-0.005	0.105
	(1.75)*	(3.87)***	(2.15)**	(2.65)***	(2.85)***	(3.04)***	(-0.14)	(4.06)***
Parental Wealth Comparisons								
PWealth: Same as Parents	0.536	0.374	0.495	0.455	0.441	0.460	0.504	0.465
	(8.54)***	(6.14)***	(7.05)***	(8.63)***	(6.24)***	(9.78)***	(7.14)***	(8.89)***
PWealth: Richer than Parents	0.460	0.413	0.415	0.483	0.412	0.490	0.480	0.465
	(7.97)***	(7.37)***	(6.17)***	(9.16)***	(6.10)***	(9.58)***	(7.42)***	(9.40)***
Relative Income	0.01	-0.025	0.008	-0.009	-0.022	0.006	-0.020	-0.008
	(0.27)	(-2.74)***	(0.72)	(-0.39)	(-2.15)**	(0.31)	(-0.56)	(-0.71)
Sick for the last 2 weeks?								
(Yes = 1)	0.042	-0.244	-0.002	-0.066	-0.035	-0.077	-0.099	-0.003
	(0.43)	(-1.73)*	(-0.02)	(-0.63)	(-0.29)	(-0.79)	(-0.56)	(-0.03)
Age	-0.016	-0.066	-0.013	-0.036	-0.035	-0.018	0.109	-0.006
	(-1.95)**	(-4.03)***	(-1.35)	(-3.31)***	(-2.72)***	(-2.28)**	(0.89)	(-0.61)
Age^2/100	0.015	0.064	0.012	0.035	0.039	0.013	-0.304	0.005
	(1.75)*	(3.71)***	(1.18)	(2.92)***	(2.93)***	(1.51)	(-1.20)	(0.61)
Number of Observations	5479	2020	3575	3924	2674	4825	2056	5443
Log Likelihood	-7178.3271	-2500.9554	-4763.7128	-4931.3974	-3424.7554	-6277.0526	-2663.8340	-7104.4972
Pseudo R^2	0.0563	0.1023	0.0627	0.1616	0.1467	0.1125	0.1142	0.1238

Note: Cluster and personal controls as in table 4. Controls for other household members include proportion of other male in the household, proportion of people in each of different classified education level and employment status, proportion of household members who have been sick for the last two weeks, average age and average age-squared/100. The results on the controls of other household members on different groups of people are shown separately in table 7b.

Table 7b: Happiness Equations and Household level averaged data for Different Groups of People in South Africa

	Black	Non-Black	Rural	Urban	Male	Female	Age<30	Age=>30
Gender								
Proportion of other Male in the HH	0.107	-0.003	0.276	-0.036	0.140	0.024	0.126	0.023
	(1.06)	(-0.04)	(2.13)**	(-0.57)	(1.57)	(0.38)	(1.05)	(0.29)
Education Level								
Prop. of STD 1-3	0.055	0.272	0.059	0.142	0.211	0.020	0.067	0.121
	(0.78)	(1.68)*	(0.68)	(1.54)	(2.16)**	(0.24)	(0.50)	(1.76)*
Prop. of STD 4-6	-0.073	0.151	-0.028	-0.010	0.020	-0.012	0.104	-0.039
	(-0.86)	(1.13)	(-0.25)	(-0.11)	(0.19)	(-0.13)	(0.63)	(-0.54)
Prop. of STD 7-8	0.080	0.228	0.058	0.089	0.156	0.013	0.287	0.018
	(0.80)	(1.78)*	(0.45)	(0.92)	(1.48)	(0.12)	(1.80)*	(0.20)
Prop. of STD 9-10	0.011	0.434	0.026	0.214	0.211	0.204	0.222	0.148
	(0.11)	(3.14)***	(0.21)	(2.06)**	(1.83)*	(1.95)**	(1.68)*	(1.63)*
Prop. of STD 10 or Higher	0.148	0.335	0.169	0.217	0.291	0.187	0.291	0.189
	(0.82)	(2.17)**	(0.67)	(1.91)*	(1.86)*	(1.49)	(1.56)	(1.69)*
Employment Status								
Prop. of Housewife/Formal Education	0.139	0.204	0.147	0.242	0.224	0.122	0.263	0.131
	(2.73)***	(1.36)	(2.31)**	(2.74)***	(2.32)**	(2.14)**	(2.43)**	(2.25)**
Prop. of Regular Wage Employment	0.200	-0.041	0.278	0.060	0.156	0.094	0.352	0.065
	(2.35)**	(-0.33)	(2.37)**	(0.82)	(1.52)	(1.37)	(2.83)***	(0.92)
Prop. of Casual Wage Employment	0.043	0.034	-0.053	0.079	-0.051	0.012	0.086	-0.025
	(0.46)	(0.17)	(-0.39)	(0.70)	(-0.36)	(0.11)	(0.50)	(-0.24)
Prop. of Self-Employment	0.332	0.142	0.414	0.247	0.264	0.300	0.253	0.335
	(3.26)***	(0.65)	(2.98)***	(2.04)**	(1.58)	(2.55)**	(1.55)	(3.29)***
Prop. of Retired	0.160	0.099	0.119	0.227	0.198	0.150	0.414	0.101
	(2.00)**	(0.53)	(1.33)	(1.85)*	(1.30)	(1.76)*	(2.59)***	(1.29)
Sick for the last 2 weeks?								
Prop. of Other HH members: (Yes = 1)	0.042	0.057	0.041	0.005	0.124	-0.027	0.175	-0.028
	(0.43)	(0.36)	(0.29)	(0.04)	(0.86)	(-0.26)	(0.91)	(-0.28)
Averaged Age	0.003	-0.002	0.000	-0.000	-0.001	-0.004	0.007	-0.004
	(0.54)	(-0.21)	(0.05)	(-0.00)	(-0.14)	(-0.66)	(0.72)	(-0.71)
Averaged Age^2/100	-0.001	0.005	0.006	0.004	0.003	0.009	-0.008	0.010
	(-0.19)	(0.40)	(0.65)	(0.51)	(0.26)	(1.32)	(-0.58)	(1.59)
Number of Observations	5479	2020	3575	3924	2674	4825	2056	5443
Log Likelihood	-7178.3271	-2500.9554	-4763.7128	-4931.3974	-3424.7554	-6277.0526	-2663.8340	-7104.4972
Pseudo R^2	0.0563	0.1023	0.0627	0.1616	0.1467	0.1125	0.1142	0.1238

Note: Household level averaged data are taken from all household members, excluding the PQOL respondent from each household, if HHSize > 1. For households with HHSize = 1, the household-level average data are taken from PQOL respondents themselves.

Table 8: Relative Income and Durable Assets Consumption

Average Number of Durable Assets Owned by Each Household					
Relative Income	Motor Vehicle	Geyser	Telephone	Television	Log of HH income
Q1	0.151	0.144	0.119	0.301	5.540
Q2	0.305	0.262	0.251	0.497	6.738
Q3	0.493	0.374	0.382	0.664	7.320
Q4	0.671	0.388	0.453	0.803	7.893
Average Number of Durable Assets in the Community					
Relative Income	Motor Vehicle	Geyser	Telephone	Television	**N**
Q1	0.376	0.244	0.258	0.517	1875
Q2	0.397	0.290	0.298	0.572	1875
Q3	0.463	0.343	0.344	0.614	1874
Q4	0.401	0.291	0.301	0.576	1875
Average Number of Durable Assets Owned by Each Household					
Relative Income	Motor Vehicle	Geyser	Telephone	Television	Log of HH income
Rel.Y < 0.25	0.123	0.124	0.080	0.251	5.018
0.25 <= Rel.Y < 1	0.304	0.255	0.250	0.484	6.693
1 <= Rel.Y < 1.5	0.599	0.423	0.444	0.762	7.531
1.5 <= Rel.Y < 2	0.599	0.369	0.443	0.789	7.829
Rel.Y > 2	0.910	0.376	0.441	0.855	8.461
Average Number of Durable Assets in the Community					
Relative Income	Motor Vehicle	Geyser	Telephone	Television	**N**
Rel.Y < 0.25	0.412	0.263	0.270	0.515	977
0.25 <= Rel.Y < 1	0.387	0.280	0.289	0.560	3687
1 <= Rel.Y < 1.5	0.508	0.370	0.379	0.662	1463
1.5 <= Rel.Y < 2	0.386	0.283	0.290	0.565	1061
Rel.Y > 2	0.277	0.189	0.197	0.433	311

Note: Relative income = household monthly income/average community household monthly income. The sample means for absolute consumption (average consumption in the community) for each selected durable assets are: motor vehicle 0.405 (0.409), geyser 0.292 (0.292), telephone 0.301 (0.300), television 0.566 (0.569).

Table 9: Happiness Equation with Average Durable Assets Consumption in the Community

	Full Sample	Black	Non-black	Rural	Urban	Male	Female	Age<30	Age=>30
Average no. of Motor Vehicle	0.473	0.683	0.377	0.399	0.388	0.371	0.444	0.454	0.515
	(3.74)***	(3.12)***	(3.01)***	(1.27)	(3.00)***	(2.36)**	(2.96)***	(2.57)***	(4.00)***
Avg. no. of Geyser	0.068	-0.211	0.043	0.333	-0.021	0.437	-0.111	0.504	-0.066
	(0.40)	(-0.80)	(0.29)	(0.66)	(-0.12)	(2.21)**	(-0.57)	(2.15)**	(-0.38)
Avg. no. of Telephone	0.545	1.140	0.052	0.115	0.670	0.300	0.652	0.703	0.494
	(2.41)**	(3.07)***	(0.29)	(0.15)	(3.36)***	(1.17)	(2.86)***	(2.19)**	(2.21)**
Avg. no. of TV	-0.356	-0.360	-0.345	-0.509	-0.257	-0.609	-0.108	-0.718	-0.226
	(-2.07)**	(-1.57)	(-2.15)**	(-1.54)	(-1.35)	(-3.08)***	(-0.60)	(-2.90)***	(-1.39)
Log of household monthly income	0.055	0.050	0.183	0.068	0.026	0.096	0.049	-0.026	0.084
	(2.43)**	(1.93)*	(3.27)***	(2.24)**	(0.80)	(2.54)**	(2.12)**	(-0.67)	(3.33)***
Relative income	0.016	0.027	-0.014	0.010	0.056	-0.003	0.035	0.032	0.013
	(1.66)*	(1.96)**	(-1.63)	(0.93)	(2.47)**	(-0.46)	(2.83)***	(0.86)	(1.47)
N	7499	5479	2020	3575	3924	2674	4825	2056	5443
Log-Likelihood	-9736.9807	-7053.2965	-2493.4012	-4755.2512	-4862.8809	-3399.9047	-6202.0770	-2628.4653	-7031.5209
Pseudo^2	0.1246	0.0727	0.1051	0.0644	0.1732	0.1529	0.1231	0.1260	0.1328

Note: Personal, household, and cluster controls as in table 4.

Table 10: The Relationships between Happiness Responses and Socio-economic Variables in Rich Countries and South Africa

	Rich Countries	South Africa
Income	+	+
Education	+	-
Unemployment	-	-
Household Size	-	-
Black	-	-
Married	+	?
Male	-	?
External Relative Income	+	+
Internal Relative Income	+	+
Age	**U-Shaped**	**U-Shaped**

Source: Oswald (1997), McBride (2000), Blanchflower and Oswald (2003).

Note: (+) positive, (-) negative, (?) inconclusive.

External relative income = household income/avg. regional income level. Internal relative income: current income level/past income level (Richer Countries), feeling richer than parents at the same age (South Africa).

Appendix: (a) Correlation Matrix for Different Durable Goods and Log Household Income

	Motor	Bicycle	EStove	EKettle	Fridge	Gas
Motor	1.000	-	-	-	-	-
Bicycle	0.403	1.000	-	-	-	-
Electric Stove	0.492	0.253	1.000	-	-	-
Electric Kettle	0.547	0.285	0.746	1.000	-	-
Fridge	0.620	0.332	0.665	0.687	1.000	-
Gas	0.167	0.113	0.125	0.149	0.196	1.000
Geyser	0.637	0.355	0.640	0.685	0.649	0.140
Primus Cooker	-0.294	-0.148	-0.455	-0.443	-0.368	-0.117
Radio	0.545	0.383	0.384	0.438	0.480	0.133
Telephone	0.628	0.335	0.621	0.664	0.649	0.136
TV	0.576	0.337	0.613	0.644	0.677	0.212
Log HH income	0.549	0.311	0.570	0.596	0.588	0.168
	Geyser	**PCooker**	**Radio**	**Telep**	**TV**	**Log income**
Motor	-	-	-	-	-	-
Bicycle	-	-	-	-	-	-
Electric Stove	-	-	-	-	-	-
Electric Kettle	-	-	-	-	-	-
Fridge	-	-	-	-	-	-
Gas	-	-	-	-	-	-
Geyser	1.000	-	-	-	-	-
Primus Cooker	-0.417	1.000	-	-	-	-
Radio	0.485	-0.137	1.000	-	-	-
Telephone	0.691	-0.366	0.490	1.000	-	-
TV	0.606	-0.322	0.514	0.618	1.000	
Log HH income	0.583	-0.310	0.462	0.582	0.580	1.000

Appendix: (b) Summary of conclusions on US and UK well-being data

1) Black people in the US are much less happy, ceteris paribus, than whites. One interpretation comes from the possible existence of racial discrimination in America.

2) Higher income is associated with higher happiness.

3) Reported well-being is greatest among women, healthy and married people, the highly educated, and those whose parents did not divorce.

4) Unemployed people are very unhappy.

5) To 'compensate' men for unemployment would take a rise in income at the mean of approximately $60,000 per annum, and to 'compensate' for being black would take extra $30,000 per annum.

6) Relative income matters per se.

7) Happiness and life-satisfaction are U-shaped in age. In both Britain and the US, well-being reaches a minimum, other things held constant, around the age of forty.

Source: Oswald (1997), Blanchflower and Oswald (2003).