
21 Happiness and the standard of living: the case of South Africa

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1. Introduction

An advert for Oxfam¹ appeals asks people in the UK, 'What do we dream for our children?'. If we were then to stop and think about the question for a minute, most of us would probably respond with success and health. However, according to Oxfam, a more natural response would have been happiness – or more simply, a 'good life' – for our children. The question then is what constitutes happiness? A review of research on well-being by Wilson (1967: p. 294) suggests that happiness comes 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 that would receive aid – are more likely to be food, drinking water, and a shelter that they could call home.

The significant difference in the possible replies to Oxfam's happiness question, though it may seem predictable to many, raises some very important 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 all it takes to be global requirements for human happiness and well-being? Can we assume that happiness patterns are structurally the same in the poorer countries as they are in the more affluent countries?

Recent economic studies on happiness, or subjective well-being, have given us some insights into what makes individuals – or our children for that matter – in wealthy nations satisfied with life. The results are found to be consistent and in keeping with Wilson's conclusion. Using the US and European data, researchers have been able to show how reported well-being is high among those who are married, employed, on a high income, women, white, healthy, highly educated with low aspirations, and looking after the home. Happiness is also apparently U-shaped in age, minimizing around the mid-40s (Deaton and Paxson 1994; Gerdtham and Johannesson 1997; Oswald 1997; Easterlin 2001; Frey and Stutzer 2000; Blanchflower and

448 *Handbook on the economics of happiness*

Oswald 2004, among others). Economists have also found favorable comparison income to be a significant contribution to higher reported well-being for people in the developed world (Duesenberry 1949; Easterlin 1974, 1995; Morawetz et al. 1977; Frank 1985, 1989; van de Stadt et al. 1985; Tomes 1986; Clark and Oswald 1996; McBride 2001; Ferrer-i-Carbonell 2002; Stutzer 2002). The list of happiness research given above is not exhaustive, by far though it still suggests that the growing number of references are all converging towards establishing a unified theory that happy people – at least in the wealthy economies – are characterized by the same criteria.

The common patterns in happiness findings have led a number of economists to take an interest in the rarely available happiness survey data from transitional and developing economies. Using the US and European results as their benchmark, economists have so far been able to show how the effects of socioeconomic factors are similar in the poorer countries to those in the richer countries. For example, Graham and Pettinato (2001) find health, employment and marital status – with the addition of financial satisfaction and expectation in income mobility – to have significant marginal effects on overall happiness levels in Latin America, even after objective levels of wealth are controlled for. In other countries, Ravallion and Lokshin (1999, 2000) discover strong links between happiness levels and the 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 the self-reported happiness levels in Kyrgyzstan and in Hungary to those in the more-developed economies, respectively.

This chapter follows the same line of research as other previous work on happiness in the less-developed economies, with particular focus on South Africa. We explore in detail the general relationships between the already identified socioeconomic variables and the newly introduced basic living indicator variables with the reported perceived quality of life in the post-apartheid South Africa in 1993, both at the individual and household levels. 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 to those that are expected in a more developed economy. The average educational level and occupational status of other individuals living in the same household are found to be significantly correlated to the reported well-being of the respondent. We also find basic living indicators such as durable assets ownership to be just as good a

determinant as income in the assessment of subjective well-being, and that individuals care about relative income once the means of durable consumption in the area are controlled for in the regressions.

In Section 2, we discuss the motivation for subjective well-being research in 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 as given by the existing work on subjective well-being is that it focuses only on wealthy nations. This is not far off the mark. Subjective well-being research has focused largely on the developed economies but only because adequate data are more readily available from these countries. Yet developing economies offer more opportunities for economists to also study poverty and inequalities, the volatility in various socioeconomic and macroeconomic factors, and their implications for the happiness of people living there.

Take Latin America, for example. Happiness in Latin America depends 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. Apparently, the perception of past mobility and prospect of moving upwards on the economic ladder are positively correlated with happiness in Latin America, where the probabilities of moving up or down the income quintiles are much higher than in any advanced industrialized economy.² The majority of people in the developed world may rarely think about the prospect of moving up or down the economic ladder merely because they are less exposed to the same vulnerability than the people living in the emerging market economies. This leads to a possibility that a similar set of economic variables may or may not have the same significant effects on subjective well-being for those coming from a more advanced economy. It does not mean, however, that the same individuals from the developed countries will never respond to the perceived income mobility in the same manner as will the people living in Latin America, given a shock of the same volatile macroeconomic environment. Nevertheless, it can be argued that – given a higher standard of living – the weight regarding what makes us happy has been shifted towards some other factors. Given a high standard of living, contributions to higher happiness levels are more likely to result from individuals enjoying certain elements that are above that of the societal average, be that earning a higher income than our colleagues or owning a better-quality car than our neighbours, for example. Owning a car that has the characteristics of transportation when everybody else also owns one may not have the same marginal effects on

450 *Handbook on the economics of happiness*

happiness in the 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 a norm. However, it still does not necessarily mean that if a car – with its only use being to transport individuals – were to be taken away from the individual living in an advanced economy, then his/her standard of living, *vis-à-vis*, happiness will not drop, *ceteris paribus*. The same idea is put forward but in a slightly different context by Sen (1983) on 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)³

The issue is therefore, given different sets of living standards and providing that living standards are important in determining the level of reported happiness in some sense, the overall picture of what constitutes happiness at a single point in time may well be very different. A comparative-static analysis may find that a middle-income individual who believes that his/her prospect of moving up the economic ladder is high is happier living in a volatile macroeconomic environment than an upper-income individual who believes that his/her situation is deteriorating, even after controlling for the usual absolute and relative income. The influences of these unobservable features on happiness are probably more difficult to test using only developed country data. Nevertheless, recent work on happiness in developing countries argues that with enough controls of the surrounding environment, happy people are structurally the same across poorer countries as they would be in richer countries. And in this chapter, we take a step closer – through the use of South African cross-sectional data – to provide more evidence that will help to support such a claim.

3. South Africa and data description

General background

According to the report by the Inter-ministerial Committee on Poverty and Inequality (ICPI) in 1998,⁴ 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.⁵ Yet despite this relative wealth, South Africa still ranked behind most of the countries with a similar income per capita according to the Human Development Index (HDI) league table, where HDI represents a composite of the following

The case of South Africa 451

three factors: (i) longevity (as measured by life expectancy), (ii) educational attainment (as measured by adult literacy and enrolment rates), and (iii) real standard of living (as measured by real GDP per capita).⁶

In reality, the experience of around 50 per cent of the South African population is either one of outright poverty, or of continued vulnerability to becoming poor. Despite being classified as an upper-middle-income country, the nation holds to date one of the most unequal distributions in income and wealth in the world. This claim is supported by the following inequality indicators: the Gini coefficient and the income shares of households. According to the World Bank's 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's 0.63), where 0 signifies absolute equality and 1 indicates absolute concentration. The measurement of income shares of deciles of households tells us that the poorest 40 per cent of households – equivalent to about 50 per cent of the total population – has only 11 per cent of the total income, while the richest 10 per cent of households – 7 per cent of the total population – has over 40 per cent of the total income. Not surprisingly for a country where diversity is one of the key features, between-group inequality is also considered to be very large, with between-race inequality accounting for about 37 per cent of total inequality. As for the within-race inequality, the calculated Gini coefficients by race at the end of 1993 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 is a strong racial and regional dimension to poverty in South Africa. About 70 per cent of households classified as 'poor'⁷ from a consumption-based poverty measure are found to be living in rural areas, while 61 per cent of the households from the same category come from the black African population. Most of the households classified as 'poor' living in rural areas are black Africans who have been deprived of access to basic services in their homes such as running water, electricity and telephone, as well as decent education and secure employment. There are also other clear relationships between poverty and other human development indicators such as ill-health and poor nutrition, as well as owning no material goods and having to live in a violent environment. Moving out of poverty is also considered to be extremely difficult for the majority of people. A panel study by Carter and May (1999) and a later summary compiled by Graham and Pettinato (2002) on income mobility suggest that a significant proportion of poverty in South Africa is much more chronic or permanent than in any other studied

452 *Handbook on the economics of happiness*

country, namely Peru, Russia and the USA, with about 66 per cent of those below the poverty line in 1993 still in the same place in 1998.

Other evidence on South Africa's poverty, which is more closely related to the analysis in this chapter, comes from a subjective measurement of poverty conducted by the 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 non-income variables of the respondents. For example, in the Nhlanguwini community in the province of KwaZulu-Natal, people who had reported themselves to be in the poor category (38 out of 79 households) had all or some of the following criteria: their family members were not working for cash or were doing work that was poorly paid; they were in poor health; they had no parents; they were farm workers. The criteria for those in the average category (21 households) consisted of, for example, households with regular-wage workers or with some income coming from farming. The situation improves significantly for people who had classified themselves as rich (17 households). 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 has provided us with the two main reasons for this study. The first is that the poverty and inequality problem represents a much more serious and widespread issue at the core of human development than general observations have made it out to be, and thus provides us with an interesting framework on which we can base our research. The second is the possibility that happiness responses can be correlated with various objective characteristics of households, as earlier studies suggest. Hence, the need for a more systematic survey involving a larger population, in order to corroborate any previous findings on subjective well-being in South Africa.

The South African integrated household survey

This chapter uses the household data from the South African Labour Research Unit (SALDRU) survey, which 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, among others. The survey, carried out during the last five months of 1993 – shortly before the

election that made Nelson Mandela president in 1994 – consists of approximately 8,800 randomly selected households in as many as 360 communities. The data are collected by personal interview, and are made publicly available from the World Bank's Living Standard Measurement Study (LSMS) website.⁸ One of the main reasons for choosing the SALDRU survey is because it contains a section – other than the information on objective household and personal characteristics – that asked households the perceived quality of life (PQOL) question: '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 rearranged these in order so that the highest level of happiness – 'very satisfied' – is recorded as a 5, 'satisfied' is a 4, 'neither satisfied nor dissatisfied' is a 3, 'dissatisfied' is a 2, and the lowest level of happiness – 'very dissatisfied' – is a 1.⁹ Nevertheless, not all of the 8,800 households responded to the PQOL and relevant questions and had to be eliminated from the sample, leaving us with 7,499 observations (85 per cent from the original sample) for the analysis. The raw sample of PQOL distribution is given in Table 21.1. Data on the distribution of happiness responses in the United States, and the distribution of life satisfaction responses in Europe, respectively, are also shown.

The next section presents some empirical models that try to capture the relationship between PQOL and sociodemographic variables and outline our estimation procedures on cross-sectional data.

4. Empirical strategy and preliminary results

Basic models

We start this subsection by reintroducing a reported well-being function that has already been used by many with regard to US and European data, that is:

$$r = h[u(y, y, z)] + \varepsilon, \quad (21.1)$$

where r is the self-reported well-being of an individual, $h(\cdot)$ is a non-differentiable function that relates actual to reported well-being, $u(\cdot)$ is the true well-being only observable to that individual, y is real income, y is a comparison income level against which the individual compares him- 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 ε is an error term that subsumes the inability of human beings to communicate accurately their well-being levels. The reported well-being is assumed to be increasing with income, y , and reducing with comparison income level, 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.

454 *Handbook on the economics of happiness*Table 21.1 *Distribution of PQOL responses*a. *Distribution of 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

b. *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

c. *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

Note: The PQOL question was 'Taking everything into account, how satisfied is this household with the way it lives today?'. There were five possible answers, with the lowest well-being response being 'very dissatisfied' and the highest being 'very satisfied'. Note also that the people from the US and European nations were more likely to give higher well-being responses (that is, a positive skew towards 'very happy' and 'very satisfied') than the South African population (that is, a negative skew of perception towards 'very dissatisfied' rather than 'very satisfied').

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

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, we 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 evaluate only the relationships between household-level characteristics and the reported well-being. Hence, we run an ordered probit regression with sampling weight on the PQOL data of the form:

$$H_{ihc} = \beta \sum_{j=1}^J a_{jh} + \gamma Y_h + \theta y_h + \lambda HH_h + \delta COM_c + \mu_{hc} \quad (21.2)$$

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 from a set of durables J owned by household h . Y_h represents natural log of total household monthly income,¹⁰ while y_h includes two types of comparison income level: (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 'external comparison income', and the second type 'internal comparison income'. External comparison income is calculated through dividing total household monthly income by the averaged 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 on whether individuals *think* that their household financial situation today is better, the same, or worse off compared with that of their parents at the same point in the life cycle.¹¹ This parental wealth comparison variable would act as proxy for the individual's subjective assessment of the current household's status in comparison with its 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).

HH_h includes a vector of other controlled household characteristics that include household race and location – rural or urban – while COM_c contains a vector of community controls that include the types of road, whether public transport is available within the area, and a cluster food–price index. Lastly, as it is a clustered sample – with clusters being mainly small communities or villages – households living in the same cluster are more likely to share not only the same infrastructure 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 a group dataset may lead to estimations with standard errors that are small. To correct for the underestimated standard errors then, cluster controls have been included in our estimations to capture any grouping effects present within the dataset. See Moulton (1990) for further discussion on

456 *Handbook on the economics of happiness*

potential pitfalls from estimating aggregate variables on micro units when standard errors are not corrected for.

The regression results at the household level shown in Table 21.2 provide some confidence in the structure of the responses in the subjective well-being question. We can see the interactions between household race and reported quality of life quite clearly: individuals living in an African household are more likely to report, on average, a relatively lower subjective well-being score than individuals living in either a coloured (non-white of mixed race), 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 reported the highest level of PQOL score in general. The result is consistent with earlier findings on race and happiness in US and UK data (Oswald 1997; Di Telia et al. 2001). This is also in keeping with other results from Latin America where those individuals who self-reported their nationality (Peruvian or Chilean, for example) first rather than as a racial minority are happier than others (Graham and Pettinato 2001). One explanation for the depressed PQOL could therefore be the mind set shaped by years of discrimination during the apartheid years, despite the fact that the majority of the population are black. A supporting economic finding on the racial discrimination conjecture is provided, but only partially, in Schreiner et al.'s (1997) work on racial discrimination in hire/purchase lending in South Africa. Using a partial-observability model, he finds that black households are 13 percentage points more likely to demand a hire/purchase loan but not to have one supplied than are other households. Hence, the obtained result from the PQOL survey corresponds with other studies that suggest possible racial discrimination towards black households living in South Africa.

Controlling for income and durable ownership, household size is negatively associated with reported well-being. A plausible explanation for the negative correlation could be that, once we normalize for total income, an increase in the size of household will lead to a reduction in the income capita per household, and hence reduces 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 the reported well-being. This could be explained partly by the stress-related and overcrowding problems normally found from 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 in poor conditions with no access to either a job or healthcare in the city. In addition, the low PQOL scores recorded among the urban dwellers

Table 21.2 Life satisfaction equations with household variables for South Africa (ordered probit), 1993

	(1)	(2)	Per capita variables
Race of household			
Coloured	0.359 (2.74)***	0.355 (2.64)***	0.465 (3.50)***
Indian	0.428 (3.24)***	0.377 (3.02)***	0.560 (4.53)***
White	0.639 (4.76)***	0.648 (4.91)***	0.764 (5.76)***
Durable goods			
<u>Motor vehicle</u>	0.080 (2.73)***	0.084 (2.84)***	0.203 (2.24)**
<u>Bicycle</u>	0.024 (1.26)	0.020 (1.03)	0.133 (1.55)
<u>Electric stove</u>	-0.033 (-0.58)	-0.046 (-0.81)	-0.216 (-1.75)*
<u>Electric kettle</u>	0.027 (0.46)	0.005 (0.09)	-0.125 (-0.83)
<u>Fridge</u>	0.001 (0.03)	0.009 (0.28)	-0.055 (-0.56)
<u>Gas cooker</u>	0.010 (0.27)	0.002 (0.04)	-0.114 (-0.81)
<u>Geyser</u>	0.206 (3.32)***	0.189 (3.03)***	0.297 (1.86)*
<u>Primus cooker</u>	-0.008 (-0.27)	-0.012 (-0.45)	0.018 (0.17)
<u>Radio</u>	0.023 (1.33)	0.017 (0.99)	-0.030 (-0.61)
<u>Telephone</u>	0.153 (3.38)***	0.165 (3.74)***	0.302 (2.94)***
<u>TV</u>	0.045 (1.41)	0.026 (0.77)	0.231 (2.38)**
Rural/urban			
Urban (=1)	-0.195 (-2.60)***	-0.171 (-2.31)**	-0.154 (-2.01)**
HHSize (members)	-0.041 (-3.54)***	-0.035 (-3.23)***	0.006 (0.67)
<u>Log of household monthly income</u>	0.132 (6.54)***	0.114 (4.88)***	0.156 (4.84)***
Parental wealth comparisons			
PWealth: same as parents		0.498 (9.34)***	0.493 (9.41)***
PWealth: richer than parents		0.476 (10.68)***	0.486 (10.92)***
<u>Relative income</u>		-0.013 (-1.07)	-0.015 (-1.11)
<i>N</i>	7,499	7,499	7,499
Log likelihood	-10,082.028	-9,912.1554	-9,910.8806
Pseudo <i>R</i> ²	0.0935	0.1088	0.1089

Note: * 10% CI (confidence interval), ** 5% CI, *** 1% CI (z-values in parentheses). Relative income = household monthly income/averaged 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). Per capita variables replace underlined variables in (1) & (2) for 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.

458 *Handbook on the economics of happiness*

could to an extent have been the cause of some hidden political unrest in urban South Africa in the early 1990s, and which had not been captured in our model.

Consumer durables and quality of life We test for the relationships between the different types of durable good consumption 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 on durable goods come from the survey question that asks households how many of the listed durables are owned by someone in the household. These include the following items: (i) motor vehicle, (ii) bicycle, (iii) electric stove, (iv) electric kettle, (v) fridge, (vi) gas stove, (vii) geyser,¹² (viii) primus cooker, (ix) radio, (x) telephone and (xi) television. The average correlation is about 60 per cent between the quantity of each durable good, while none of the goods is correlated by more than 77.9 per cent (electric stove and kettle). The correlation is even lower between the quantity of each durable good and log household income (the maximum correlation being about 59 per cent) across the cross-sectional data.¹³ As a result, we can base our analysis on the assumption that there are no two goods in the sample that are perfectly correlated with each other and with household income, which makes a further interpretation of the results plausible. We do not, however, have any relevant information on the quality and condition of the reported household durables. In other words, we do not know whether they are old or do not work, for example.

We find only 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 number of motor vehicles, geysers and telephones owned by the household – including the ownership of televisions if per capita ownership is to be analysed instead. On the other hand, consumer durables such as electric kettles, gas cookers, primus cookers, bicycles, electric stoves, radios and refrigerators do not seem to register significantly in most people's evaluation of their life at all. The significance of the correlations seems plausible enough once each durable's ability to function are taken into account. For example, owning a motor vehicle or having a telephone in the household – both of which are rated widely as having a very high ability to function in themselves – is more likely to result in householders reporting a higher PQOL level than if they owned other durables with considerably less intrinsic use such as an electric kettle or a radio, *ceteris paribus*. None the less, despite the fact that durables such as motor vehicles and TVs 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, such as gas cookers or refrigerators, are not at all robust.

Although we do not have a conclusive answer to this issue, intuition tells us that durables such as gas and primus cookers are not the type of goods that are difficult to find substitutes for and as a result individuals may take their availability for granted. However, there is also the possibility that if they do not own these durables, their living standard, *vis-à-vis*, reported well-being would probably fall.

Comparison income We also find strong evidence of people reporting high PQOL scores when they believe that the household is doing just as well financially – if not better – compared to its past, even after controlling for current income. The result is in keeping with the previous work on the effects of perceptions 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 the US and European data see Table 21.1, the coefficient of objective external comparison income is insignificant and has the wrong sign. In other words, we did not find objective external comparison income level to be significantly correlated 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 a small number 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.

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:

$$H_{ihc} = \beta \sum_{j=1}^J a_{jh} + \gamma Y_h + \theta y_h + \lambda HH_h + \delta COM_c + \Pi IND_{ih}^{p=0,1} + \xi OHH_h + \mu_{ihc} \quad (21.3)$$

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

460 *Handbook on the economics of happiness*

alone or that of aggregated individual variables across all household members (for example, proportion of household members with higher education or in regular wage employment and so on), respectively.¹⁴ 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 as the aggregated individual variables, IND_{ip} , except that OHH_h includes only the aggregated personal characteristics taken from the people within the same household of the respondent but who 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 as 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.¹⁵

We begin our analysis in Column 1 of Table 21.3 with a regression that includes only the personal characteristics of the PQOL respondent, $IND_{ip=0}$ (leaving out for now the aggregated individual variables of other household members, OHH_h). The reported well-being is found to be significantly correlated with some of the already identified personal variables at the individual-level data, such as age and employment status of the respondent, even when the PQOL question is asked at the household rather than at the individual level. The results on 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 (Warr et al. 1988; Clark and Oswald 1994; Theodossiou 1998; Kingdon and Knight 2001). Individuals who look after the home or are in formal education still fared better than the unemployed, while the correlations are not as strong for the self-employed and the retired. There is also a non-linear relationship between age and happiness. 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-40s).

The results on education do not appear to support the claim that well-educated individuals are happier than the less-educated ones, however. 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 the reported well-being scores. Instead, the relationship between higher education and happiness is negative and significant for the responding individuals. One plausible

The case of South Africa 461*Table 21.3 Life satisfaction equations with personal variables at individual and average household level for South Africa*

	Individual level	Household level
Gender		
Male (=1)	0.000 (0.01)	0.085 (0.67)
Race of household		
Coloured	0.347 (2.57)***	0.372 (2.76)***
Indian	0.384 (3.14)***	0.387 (3.23)***
White	0.644 (5.13)***	0.602 (4.69)***
Education level		
Std 1-3	0.040 (0.80)	0.122 (1.54)
Std 4-6	-0.112 (-2.09)**	-0.116 (-1.17)
Std 7-8	-0.087 (-1.58)	-0.002 (-0.02)
Std 9-10	-0.124 (-2.20)**	0.070 (0.79)
Std 10 or Higher	-0.009 (-0.13)	0.282 (2.63)***
Employment status		
Housewife/formal education	0.159 (3.93)***	0.282 (4.56)***
Regular wage employment	0.220 (3.54)***	0.387 (3.33)***
Casual wage employment	-0.091 (-1.13)	-0.021 (-0.19)
Self-employed	0.029 (0.45)	0.313 (3.44)***
Retired	0.117 (1.73)*	0.318 (3.78)***
Durable goods		
Motor vehicle	0.087 (2.91)***	0.076 (2.57)***
Bicycle	0.016 (0.82)	0.024 (1.14)
Electric stove	-0.040 (-0.71)	-0.042 (-0.77)
Electric kettle	0.002 (0.03)	-0.004 (-0.08)
Fridge	0.026 (0.89)	0.015 (0.51)
Gas cooker	0.017 (0.44)	0.002 (0.06)
Geyser	0.192 (3.12)***	0.188 (3.08)***
Primus cooker	0.002 (0.09)	-0.005 (-0.19)
Radio	0.016 (0.97)	0.018 (1.04)
Telephone	0.175 (3.78)***	0.158 (3.48)***
TV	0.037 (1.14)	0.035 (1.08)
Rural/urban		
Urban (=1)	-0.137 (-1.85)*	-0.139 (-1.89)*
HHSize (members)	-0.028 (-3.74)***	-0.024 (-3.34)***
Log of household monthly income	0.091 (4.30)***	0.065 (2.80)***
Parental wealth comparisons		
PWealth: same as parents	0.481 (9.36)***	0.480 (9.40)***
PWealth: richer than parents	0.469 (10.52)***	0.465 (10.71)***
Relative income	-0.009 (-0.82)	-0.008 (-0.64)
Age	-0.025 (-3.52)***	-0.011 (-2.19)**

462 *Handbook on the economics of happiness*

Table 21.3 (continued)

	Individual level	Household level
Age ² /100	0.025 (3.39)***	0.016 (2.55)**
Sick during the last 2 weeks?		
Yes (=1)	-0.013 (-0.21)	0.004 (0.03)
<i>N</i>	7,499	7,499
Log likelihood	-9,866.9079	-9,854.8809
Pseudo <i>R</i> 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 21.2. Additional reference variables are: Female (Gender), No Education (Education level), Unemployment (Employment status), No (Sick during the last 2 weeks?). Personal controls at the individual level represent personal variables for the PQOL respondents only, while personal controls at the household level represent average personal variables across all household members, including the PQOL respondent from each household (for example 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, and so on).

explanation for this is that the return to higher education in developing countries may be measured purely in terms of higher wealth. The correlation between education and income is probably higher in less-developed countries, whereas in more advanced economies more-educated people probably have the luxury or more 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 during the previous two weeks), though it has the right sign, is insignificant.¹⁶ In addition, 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 the determination of the reported PQOL. Column 2 (Table 21.3) alters the assumption a little to allow for the idea that the PQOL data may correlate more with the personal characteristics taken from all household members, rather than from the respondent's attributes alone. The previous individual variables now take aggregate forms, $IND_{hp=1}$, in our new regression.

The case of South Africa 463

With the aggregated personal variables data, we can see the proportion of household members in regular wage employment, and of those looking after the home and in formal education, are positively associated with higher reported PQOL in general. However, increasing 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 per cent self-employed and 50 per cent unemployed household would still be more preferable to an individual than a 0 per cent self-employed and 100 per cent unemployed household, given the fact that unemployment is the single most detrimental factor to lower well-being.

An increase in the proportion of household members with a Standard IO education level or higher is associated positively with PQOL scores, where the coefficient for the same education level for PQOL respondents was previously negative and insignificant. The result on the aggregated education level variable is of some interest, and will be analysed in more detail below.

Average age and age-square are significant at the household level – the average age across all household members has a non-linear relationship with the reported well-being for South Africa – while 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.

In Table 21.4 we integrate the assumptions on the effects of two different individual characteristics 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 minimize the covariance between IND_i and OHH_h variables.

The first set of results are consistent with what have been found in both columns of Table 21.3. Both the respondent's personal characteristics and the aggregated individual variables of other household members are significant determinants of the reported PQOL, and not one or the other. For example, being regularly employed still associates positively with the reported well-being. There is a drop in the coefficient magnitude for employment with regular wage, from 0.202 to 0.164, which would only suggest that some of the positive effects picked up earlier come from the omission of other household members' personal characteristics. Increasing in the proportion of other people employed with a regular wage is also

464 *Handbook on the economics of happiness*

Table 21.4 Life satisfaction equation with personal variables at the individual-level and controls for average household-level data for other members in the household

	(1)	(2)
Gender		
Male (=1)	-0.016 (-0.37)	-0.020 (-0.41)
Proportion of other male members in the HH	0.111 (1.84)*	0.064 (0.78)
Race of household		
Coloured	0.375 (2.71)***	0.374 (2.78)***
Indian	0.343 (2.80)***	0.398 (3.28)***
White	0.665 (5.27)***	0.619 (4.97)***
Education level		
Std 1-3	0.022 (0.37)	0.018 (0.35)
Std 4-6	-0.084 (-1.49)	-0.115 (-2.27)**
Std 7-8	-0.116 (-1.76)*	-0.112 (-1.98)**
Std 9-10	-0.147 (-2.18)**	-0.112 (-2.89)***
Std 10 & Higher	-0.046 (-0.56)	-0.058 (-0.80)
Prop. of other HH members with Std 1-3	0.091 (1.07)	0.102 (1.55)
Prop. of other HH members with Std 4-6	0.013 (0.14)	-0.009 (-0.11)
Prop. of other HH members with Std 7-8	-0.054 (-0.58)	0.081 (0.98)
Prop. of other HH members with Std 9-10	0.111 (1.16)	0.179 (2.30)**
Prop. of other HH members with Std 10 & Higher	0.141 (1.15)	0.210 (2.24)**
Employment status		
Housewife/formal education	0.137 (3.18)***	0.131 (3.27)***
Regular wage employment	0.164 (3.11)***	0.202 (3.61)***
Casual wage employment	-0.136 (-1.29)	-0.066 (-0.81)
Self-employed	-0.078 (-0.94)	-0.047 (-0.66)
Retired	0.098 (1.15)	0.090 (1.22)
Prop. of other housewife/formal education in HH	0.157 (2.76)***	0.169 (3.44)***
Prop. of other regular wage employment in HH	0.075 (1.19)	0.147 (2.03)**
Prop. of other casual wage employment in HH	-0.086 (-0.76)	0.010 (0.12)
Prop. of other self-employed in HH	0.369 (3.29)***	0.319 (3.51)***

Table 21.4 (continued)

	(1)	(2)
Prop. of other retired members in HH	0.166 (1.95)**	0.174 (2.41)**
Durable goods		
Motor vehicle	0.062 (1.86)*	0.081 (2.76)***
Bicycle	0.027 (1.40)	0.032 (1.56)
Electric stove	0.037 (0.62)	-0.042 (-0.75)
Electric kettle	-0.033 (-0.59)	-0.001 (-0.02)
Fridge	0.033 (1.09)	0.026 (0.90)
Gas cooker	0.050 (1.33)	0.011 (0.30)
Geyser	0.209 (3.56)***	0.193 (3.17)***
Primus cooker	0.004 (0.16)	0.001 (0.04)
Radio	0.023 (1.20)	0.014 (0.85)
Telephone	0.137 (2.86)***	0.172 (3.71)***
TV	0.034 (1.01)	0.040 (1.27)
Rural/urban		
Urban (=1)	-0.196 (-2.60)***	-0.131 (-1.76)*
HHSIZE (members)	-0.016 (-2.20)**	-0.013 (-2.01)**
Log of household monthly income	0.108 (4.15)***	0.073 (3.23)***
Parental wealth comparisons		
PWealth: same as parents	0.390 (9.17)***	0.476 (9.42)***
PWealth: richer than parents	0.469 (10.69)***	0.462 (10.65)***
Relative income	-0.004 (-0.36)	-0.007 (-0.58)
Age	-0.012 (-1.55)	-0.027 (-3.59)***
Age ² /100	0.011 (1.27)	0.025 (3.23)***
Average age of other HH members	-0.007 (-1.24)	-0.000 (-0.08)
Average age ² /100 of other HH members	0.013 (1.91)*	0.006 (0.98)
Sick for the last 2 weeks?		
Respondent: Yes (=1)	-0.088 (-0.99)	-0.026 (-0.34)
Other members in the HH: Yes (=1)	-0.175 (-1.37)	0.016 (0.18)
N	5,209	7,499
Log likelihood	-6,703.016	-9,835.0735
Pseudo R ²	0.1307	0.1157

Note: Personal and cluster controls as in Table 21.2. Household-level average data for 'other' household members consist of averaged personal variables taken from all household members, excluding the PQOL respondent from each household. Column (1) consists only of HHSIZE > 1 sample, while Column (2) includes also the household-level average data taken from PQOL respondents from households with HHSIZE = 1.

466 *Handbook on the economics of happiness*

positively correlated with the reported PQOL, controlling for the respondent's employment status.

Having more of other male members in the household is also good for the quality of life, even though being a male respondent has a negative – though insignificant – sign on the reported happiness. Respondents' education levels (namely, Standards 9–10) retain their significance with negative values, even after controlling for the education levels of other household members 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 this accounts for about 15 per cent 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 apply these observations to our model we assume, for example, an employed PQOL respondent living in a one-member household to automatically have a 100 per cent 'employment with 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 are now significantly correlated with the reported well-being, while average age and average age-squared have remained largely insignificant. The reported PQOL is found to be high among households with a high proportion of other self-employed members, looking after the home and in formal education, and the retired members, *ceteris paribus*. A paradox emerges, however, between the respondent's and the aggregated education variables when we incorporate the remaining 1,127 households. The coefficients of the aggregated education variables at the higher levels are positive and statistically significant, while the respondent's education at the higher levels (namely at Standards 7–10) is still associated negatively with the reported well-being. This is an interesting result which suggests that own education, and not the aggregated household education level, is the only source for high aspirations which is used to reduce subjective well-being in South Africa. We nevertheless need to make the same analysis using the individual's earnings data rather than those at the household income level, and possibly on a panel dataset to see whether well-educated individuals who are unhappy will remain in the same job through time, in order to make the finding on education conclusive.

Conclusion 2 Both the respondent's personal attributes and aggregated individual variables across household members matter in the assessment of well-being. Unemployment at the individual and household levels is

The case of South Africa 467

detrimental to the 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 with regard to age.

Compensation variation and selected marginal effects In Tables 21.5 and 21.6 we use the estimated coefficients from Column 2 in Table 21.4 to

Table 21.5 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: www.quinns.com.au/accountant/tax_table/foreign.

Table 21.6 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 $Y \cdot \exp^1$ (= +R1,658.61)	-2.25%	+0.53%	+1.72%
Increase income by $Y \cdot \exp^2$ (= +R6,167.18)	-4.61%	+1.04%	+3.57%
Increase income by $Y \cdot \exp^3$ (= +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 21.4. 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 of income = 6.87241 (or about R965.27).

468 *Handbook on the economics of happiness*

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 an unemployed respondent so that he/she 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 generalized compensation equation (CP) with log of income will depend upon Y and can be expressed in the following form:

$$CP = Y \cdot \left\{ \exp \frac{\lambda_1 - \lambda_0}{\gamma \ln Y} - 1 \right\}. \quad (21.4)$$

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.

Results in Table 21.5 tell us that a household monthly income of about R1,491 (or about £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 about 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, it requires a large sum of money to compensate an average individual earning R100 per month for being black (approximately R481,381.09 or a 4,813 per cent increase from the original income level), in terms of PQOL level. This supports our earlier hypothesis on the possible 'searing effects' that racial discrimination during the apartheid years have had on the black population.

Table 21.6 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 would increase in a selected variable for everybody, 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 vehicles owned is associated with an increase of 1.93 per cent of the population in the satisfied category. The effect is non-monotonic as an increase in the motor vehicles

owned by threefold is associated with a rise in the proportion satisfied of 6.27 per cent. The marginal effects are greater for unit increases in telephones, 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 about R965.27). A proportionate increase in household income (by 1 point in the natural log, or an increase in income of R1,658.61 per month) is associated with 1.72 per cent, while a 1,800 per cent increase (a 3-point rise in the natural log scale) leads to a rise in the proportion of 5.55 per cent. The results from Tables 21.5 and 21.6 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.

With the happiness equation used in Table 21.4 firmly established, we can now move on to subsample analysis. We begin in Table 21.7a by separating the data to be examined by race (black/non-black), location (rural/urban), gender (male/female), and age group (under/over 30 years old). This yields some interesting patterns in the reported PQOL responses. Looking at the black sample, the highest level of education of the respondent (Standard 10 or higher) is now significantly associated 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 Standard 10), but were probably employed more favourably because of the possible racial discrimination. 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 the regression is run on the rural sample, while remaining well-defined for the urban South African. Generally, urban male respondents are reported to be less satisfied with life than females. Self-employment and employment with regular wage with reference to being unemployed have insignificant relationships with the recorded well-being in the rural area, although this could be because employment is defined differently in the two geographical settings. The idea of unemployment in the rural area is probably not as clearly defined as in the 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 not to feel more relatively secure or socially superior than those who are unemployed in the rural areas, once income is controlled for in the regression.

The happiness structures are very similar between male and female subsamples. Being employed with regular wage 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

Table 21.7a Life satisfaction 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 (-0.61)	-0.010 (-0.13)	0.086 (1.27)	-0.112 (-1.95)*			-0.125 (-1.86)*	0.030 (0.53)
Race of household								
Coloured		-0.133 (-0.85)	-0.010 (-0.04)	0.347 (2.40)**	0.511 (3.07)**	0.267 (1.77)*	0.531 (2.80)**	0.309 (2.05)**
Indian		-0.041 (-0.30)	0.903 (1.17)	0.307 (2.37)**	0.617 (3.58)**	0.245 (1.78)*	0.360 (2.18)**	0.366 (2.68)**
White		(Reference)	0.423 (1.24)	0.512 (3.61)**	0.728 (4.99)**	0.539 (3.44)**	0.755 (3.81)**	0.518 (3.90)**
Education level								
Std 1-3	0.011 (0.21)	-0.145 (-0.91)	-0.019 (-0.31)	0.058 (0.65)	0.058 (0.63)	-0.001 (-0.02)	0.191 (1.54)	-0.000 (-0.01)
Std 4-6	-0.132 (-2.34)**	-0.145 (-1.24)	-0.058 (-0.95)	-0.191 (-2.32)**	-0.156 (-1.65)*	-0.086 (-1.58)	-0.000 (-0.00)	-0.119 (-2.09)**
Std 7-8	-0.107 (-1.56)	-0.156 (-1.41)	0.033 (0.40)	-0.211 (-2.47)**	-0.145 (-1.46)	-0.106 (-1.65)*	0.069 (0.57)	-0.152 (-2.31)**
Std 9-10	-0.146 (-1.95)**	-0.238 (-2.31)**	-0.196 (-2.11)**	-0.192 (-2.18)**	-0.242 (-2.41)**	-0.128 (-1.86)*	0.032 (0.28)	-0.216 (-2.97)**
Std 10 or Higher	-0.395 (-3.33)**	-0.002 (-0.22)	-0.238 (-1.62)	-0.055 (-0.59)	0.001 (-0.01)	-0.124 (-1.32)	0.052 (0.37)	-0.072 (-0.89)
Employment status								
Housewife/formal education	0.143 (3.27)**	0.019 (0.50)	0.122 (2.57)**	0.413 (3.55)**	0.041 (0.32)	0.132 (2.88)**	0.043 (0.65)	0.185 (3.30)**
Regular wage employment	0.502 (3.70)**	0.052 (0.43)	0.137 (1.29)	0.309 (3.07)**	0.1370 (2.60)**	0.154 (2.55)**	0.194 (1.76)*	0.220 (3.84)**

Casual wage employment	-0.105 (-1.08)	0.045 (0.25)	-0.151 (-1.18)	0.151 (1.12)	-0.122 (-0.89)	0.026 (0.26)	0.031 (0.17)	-0.056 (-1.58)
Self-employment	0.049 (0.56)	-0.323 (-2.30)**	-0.190 (-1.76)*	0.333 (3.31)**	-0.109 (-0.86)	0.014 (0.15)	0.278 (1.71)*	-0.108 (-1.36)
Retired	0.027 (0.32)	0.222 (1.27)	0.114 (1.14)	0.345 (2.68)**	0.115 (0.83)	0.118 (1.32)	0.128 (1.65)*	0.030 (0.52)
Durable goods	0.142 (3.28)**	0.026 (0.67)	0.013 (0.29)	0.106 (2.91)**	0.056 (1.22)	0.086 (2.12)**	0.030 (0.52)	0.100 (3.13)**
Motor vehicle	0.037 (0.94)	0.061 (2.49)**	-0.033 (-0.88)	0.057 (2.44)**	0.029 (0.88)	0.035 (1.22)	-0.012 (-0.27)	0.048 (2.20)**
Bicycle	-0.048 (-0.67)	0.054 (0.70)	-0.023 (-0.25)	-0.039 (-0.58)	-0.016 (-0.20)	-0.049 (-0.70)	-0.078 (-0.90)	-0.023 (-0.37)
Electric stove	0.032 (0.37)	-0.007 (-0.10)	0.072 (0.52)	-0.014 (-0.22)	-0.057 (-0.69)	0.024 (-0.33)	0.008 (-0.09)	-0.008 (-0.13)
Electric kettle	0.011 (0.25)	0.016 (0.39)	0.045 (0.97)	0.035 (1.01)	-0.003 (-0.06)	0.032 (0.89)	-0.002 (-0.03)	0.033 (0.98)
Fridge	0.051 (0.93)	0.008 (0.15)	0.068 (1.24)	-0.006 (-0.12)	-0.025 (-0.40)	0.048 (0.99)	0.051 (0.63)	0.007 (0.18)
Gas cooker	0.198 (1.51)	0.204 (3.85)**	0.367 (2.49)**	0.153 (2.34)**	0.301 (3.64)**	0.104 (1.30)	0.443 (3.97)**	0.133 (2.05)**
Geyser	0.002 (0.08)	-0.008 (-0.08)	0.009 (0.29)	-0.036 (-0.78)	-0.047 (-1.08)	0.030 (1.01)	0.031 (0.65)	-0.005 (-0.19)
Primus cooker	-0.015 (-0.57)	0.031 (1.33)	0.017 (0.51)	-0.006 (-0.31)	0.026 (0.95)	0.006 (0.25)	0.008 (0.22)	0.012 (0.66)
Radio	0.059 (0.67)	0.204 (4.21)**	-0.127 (-0.90)	0.210 (4.67)**	0.225 (3.59)**	0.132 (2.52)**	0.213 (2.65)**	0.173 (3.39)**
Telephone	0.119 (2.48)**	-0.005 (-0.12)	0.055 (0.96)	0.041 (1.03)	-0.00 (-0.00)	0.089 (2.09)**	0.086 (1.44)	0.042 (1.21)
TV	-0.058 (-0.72)	-0.165 (-1.19)	-0.023 (-0.23)	-0.023 (-0.23)	-0.023 (-0.23)	-0.222 (-2.73)**	-0.156 (-1.55)	-0.117 (-1.55)
Rural/urban								
Urban								

Table 21.7a (continued)

	Black	Non-black	Rural	Urban	Male	Female	Age<30	Age≥30
HHSIZE	-0.013 (-1.75)*	-0.046 (-2.41)**	-0.007 (-0.77)	-0.032 (-3.22)***	-0.020 (-1.37)	-0.016 (-2.29)**	0.012 (0.78)	-0.023 (-3.05)***
Log of household monthly income	0.049 (1.75)*	0.213 (3.87)***	0.065 (2.15)**	0.084 (2.65)***	0.107 (2.85)***	0.077 (3.04)***	-0.005 (-0.14)	0.105 (4.06)***
Parental wealth comparisons								
PWealth: same as parents	0.536 (8.54)***	0.374 (6.14)***	0.495 (7.05)***	0.455 (8.63)***	0.441 (6.24)***	0.460 (9.78)***	0.504 (7.14)***	0.465 (8.89)***
PWealth: richer than parents	0.460 (7.97)***	0.413 (7.37)***	0.415 (6.17)***	0.483 (9.16)***	0.412 (6.10)***	0.490 (9.58)***	0.480 (7.42)***	0.465 (9.40)***
Relative income	0.01 (0.27)	-0.025 (-2.74)***	0.008 (0.72)	-0.009 (-0.39)	-0.022 (-2.15)**	0.006 (0.31)	-0.020 (-0.56)	-0.008 (0.71)
Sick during the last 2 weeks? (Yes = 1)	0.042 (0.43)	-0.244 (-1.73)*	-0.002 (-0.02)	-0.066 (-0.63)	-0.035 (-0.29)	-0.077 (-0.79)	-0.099 (-0.56)	-0.003 (-0.03)
Age	-0.016 (-1.95)**	-0.066 (-4.03)***	-0.013 (-1.35)	-0.036 (-3.31)***	-0.035 (-2.72)***	-0.018 (-2.28)**	0.109 (0.89)	-0.006 (-0.61)
Age ² /100	0.015 (1.75)*	0.064 (3.71)***	0.012 (1.18)	0.035 (2.92)***	0.039 (2.93)***	0.013 (1.51)	-0.304 (-1.20)	0.005 (0.61)
N	5,479	2,020	3,575	3,924	2,674	4,825	2,056	5,443
Log likelihood	-7,178.3271	-2,500.9554	-4,763.7128	-4,931.3974	-3,424.7554	-6,277.0526	-2,663.8340	-7,104.4972
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 21.4. Controls for other household members include proportion of other males in the household, proportion of people in each of different classified education level and employment status, proportion of household members who have been sick during 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 21.7b.

formal education category has no significant bearing on the reported well-being for males, while the coefficient for the same employment status is both positive and well-defined in the female subsample. Female respondents are reported to be happier if they come from a rural area or if there are television sets in the household, *ceteris paribus*.

The last two columns of Table 21.7a look at the age of the respondents. Being young and male is apparently worse than being young and female, while household size and household income have an insignificant relationship with the happiness responses for the young age group. Higher education levels, however, have a positive correlation with the reported well-being for the young, although the coefficients are not well-defined.

Table 21.7b shows the average household-level data of other household members, OHH_p , 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 subsample 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 greater household security and greater productivity for household consumption from working on the farms.

In summary, it can be seen how different groups of people have fared differently in terms of subjective well-being responses. Non-financial variables such as gender, education and employment status can have different influences on human welfare, depending on the social norms of the respondents. One other possible variable that could have some effect on individuals' well-being is marital status: married people claim to be happier than the singletons (Oswald 1997; Alesina et al. 2004; Clark and Oswald 2002). However, the survey did not include a question on marital status (that is, married, divorced, widowed). A survey with the additional dummy of whether the individual is living with a spouse, 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.

Relative income and durable consumption

None of the tables reveals an external comparison income variable that could be entered significantly and positively into the well-being equation in any of the subsamples or the full sample. This is in contrast to the relative

Table 21.7b Life satisfaction equations and household-level average data for different groups of people in South Africa

	Black	Non-black	Rural	Urban	Male	Female	Age < 30	Age ≥ 30
Gender								
Proportion of other males in the HH	0.107 (1.06)	-0.003 (-0.04)	0.276 (2.13)**	-0.036 (-0.57)	0.140 (1.57)	0.024 (0.38)	0.126 (1.05)	0.023 (0.29)
Education level								
Prop. of Std 1-3	0.055 (0.78)	0.272 (1.68)*	0.059 (0.68)	0.142 (1.54)	0.211 (2.16)**	0.020 (0.24)	0.067 (0.50)	0.121 (1.76)*
Prop. of Std 4-6	-0.073 (-0.86)	0.151 (1.13)	-0.028 (-0.25)	-0.010 (-0.11)	0.020 (0.19)	-0.012 (-0.13)	0.104 (0.63)	-0.039 (-0.54)
Prop. of Std 7-8	0.080 (0.80)	0.228 (1.78)*	0.058 (0.45)	0.089 (0.92)	0.156 (1.48)	0.013 (0.12)	0.287 (1.80)*	0.018 (0.20)
Prop. of Std 9-10	0.011 (0.11)	0.434 (3.14)***	0.026 (0.21)	0.214 (2.06)**	0.211 (1.83)*	0.204 (1.95)**	0.222 (1.68)*	0.148 (1.63)*
Prop. of Std 10 or Higher	0.148 (0.82)	0.335 (2.17)**	0.169 (0.67)	0.217 (1.91)*	0.291 (1.86)*	0.187 (1.49)	0.291 (1.56)	0.189 (1.69)*
Employment status								
Prop. of housewife/formal education	0.139 (2.73)***	0.204 (1.36)	0.147 (2.31)**	0.242 (2.74)***	0.224 (2.32)**	0.122 (2.14)**	0.263 (2.43)**	0.131 (2.25)**
Prop. of regular wage employment	0.200 (2.35)**	-0.041 (-0.33)	0.278 (2.37)**	0.060 (0.82)	0.156 (1.52)	0.094 (1.37)	0.352 (2.83)***	0.065 (0.92)
Prop. of casual wage employment	0.043 (0.46)	0.034 (0.17)	-0.053 (-0.39)	0.079 (0.70)	-0.051 (-0.36)	0.012 (0.11)	0.086 (0.50)	-0.025 (-0.24)
Prop. of self-employment	0.332 (3.26)***	0.142 (0.65)	0.414 (2.98)***	0.247 (2.04)**	0.264 (1.58)	0.300 (2.55)**	0.253 (1.55)	0.335 (3.29)***
Prop. of retired	0.160 (2.00)**	0.099 (0.53)	0.119 (1.33)	0.227 (1.85)*	0.198 (1.30)	0.150 (1.76)*	0.414 (2.59)***	0.101 (1.29)

income findings from developed country data where objective external comparison income enters positively into the happiness equation: an increase in own income over the community earning level leads to higher reported welfare levels (Clark and Oswald 1996; McBride 2001; Stutzer 2002; Blanchflower and Oswald 2004).

Nevertheless, we find that income is not the only determinant of individual 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 is not highly correlated with household income. What happens then if people also care about relative consumption as much as relative income? If that is the case then it would simply suggest that high household income across the community does not necessarily lead to a higher standard of living, if we do not allow for controls of relative durable consumption in the regression as well.

Running a correlation matrix between relative income and the averaged consumption levels of different durable goods in the community gives us a first glance at the relationship. The average consumption levels, which are allowed to vary between households, all appear to correlate negatively with relative income, except for primus cooker.¹⁷ An increase in the average consumption level of a durable good reduces the probability of individuals reporting a higher relative income and, providing that the probability generated from such a good is significant, its average consumption level also has to be taken into account in the relative income analysis.

In Table 21.8 we include into the happiness regression the average consumption levels of different durable assets in the community for different groups of people. 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 average variables, on the other hand, are significant and positive (negative) for motor vehicles, radios and telephones (gas cookers and televisions) in the full sample regression. Looking across the columns, it can be seen that a higher level of relative income is associated significantly with higher reported PQOL scores for black, urban and female samples, while absolute income variable retains its significance in all except the urban sample and the under 30 age group. The results support our earlier hypothesis on the relationship between external comparison income and subjective well-being, and are consistent with previous work on relative income in the more developed economies.

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

Table 21.8 Life satisfaction equations with controls for relative durable consumption and relative income

	Full sample	Black	Non-black	Rural	Urban	Male	Female	Age < 30	Age ≥ 30
Average no. of motor vehicles	0.312 (2.12)**	0.501 (1.99)**	0.081 (0.58)	0.213 (0.65)	0.227 (1.48)	0.206 (1.12)	0.245 (1.53)	0.334 (1.52)	0.309 (2.13)**
Avg. no. of bicycles	0.169 (1.59)	0.271 (1.64)*	0.251 (2.11)**	0.011 (0.05)	0.214 (1.52)	0.257 (1.64)	0.141 (1.19)	0.177 (0.98)	0.201 (1.83)*
Avg. no. of electric stoves	-0.124 (-0.50)	-0.019 (-0.06)	-0.212 (-0.57)	-0.587 (-1.31)	-0.237 (-0.74)	-0.109 (-0.31)	-0.067 (-0.25)	-0.455 (-1.39)	-0.109 (-0.43)
Avg. no. of electric kettles	0.311 (0.89)	0.227 (0.48)	0.549 (2.03)**	1.478 (2.08)**	0.017 (0.05)	0.413 (0.79)	0.105 (0.34)	1.021 (2.20)**	0.136 (0.41)
Avg. no. of fridges	0.150 (0.82)	-0.322 (-1.12)	0.449 (2.55)**	-0.087 (-0.25)	0.234 (1.09)	0.092 (0.40)	0.255 (1.25)	-0.006 (-0.02)	0.196 (1.02)
Avg. no. of gas cookers	-0.313 (-1.79)*	-0.353 (-1.54)	-0.003 (-0.02)	0.578 (1.89)*	-0.549 (-2.39)**	-0.052 (-0.23)	-0.320 (-1.79)*	-0.495 (-1.81)*	-0.245 (-1.40)
Avg. no. of geysers	-0.005 (-0.03)	-0.265 (-0.95)	-0.084 (-0.63)	-0.014 (-0.02)	-0.016 (-0.09)	0.400 (1.91)*	-0.180 (-0.95)	0.382 (1.52)	-0.104 (-0.61)
Avg. no. of primus cookers	0.121 (1.06)	0.158 (1.27)	-0.364 (-1.24)	0.143 (0.92)	-0.065 (-0.33)	0.250 (1.62)	0.068 (0.60)	0.253 (1.55)	0.078 (0.69)
Avg. no. of radios	0.207 (2.09)**	-0.038 (-1.48)	0.109 (0.98)	0.218 (1.24)	0.105 (0.75)	0.066 (0.50)	0.319 (3.17)**	0.042 (0.25)	0.247 (2.46)**
Avg. no. of telephones	0.460 (2.14)**	1.193 (3.32)**	0.023 (0.15)	-0.036 (-0.05)	0.629 (3.29)**	0.353 (1.31)	0.514 (2.45)**	0.611 (2.00)**	0.439 (2.06)**
Avg. no. of TVs	-0.548 (-2.75)**	-0.293 (-1.05)	-0.770 (3.53)**	-0.856 (-2.23)**	-0.352 (-1.41)	-0.861 (-3.74)**	-0.328 (-1.48)	-0.822 (-3.05)**	-0.439 (-2.16)**
Log of household monthly income	0.055 (2.43)**	0.048 (1.88)*	0.178 (3.26)**	0.062 (2.06)**	0.025 (0.79)	0.093 (2.46)**	0.048 (2.03)**	-0.031 (-0.80)	0.086 (3.40)**

Table 21.8 (continued)

	Full sample	Black	Non-black	Rural	Urban	Male	Female	Age<30	Age≥30
Relative income	0.017 (1.82)*	0.025 (1.74)*	-0.011 (-1.34)	0.014 (1.28)	0.056 (2.44)**	-0.002 (-0.22)	0.036 (2.90)***	0.034 (0.93)	0.014 (1.63)
N	7,499	5,479	2,020	3,575	3,924	2,674	4,825	2,056	5,443
Log likelihood	-9,715.6728	-7,033.8054	-2,481.5927	-4,727.2829	-4,849.5685	-3,393.0698	-6,184.3257	-2,617.7536	-7,014.7138
Pseudo R ²	0.1265	0.0753	0.1093	0.0699	0.1755	0.1546	0.1256	0.1296	0.1349

Note: Relative income = household monthly income/averaged community household monthly income. Personal, household, cluster, and other household members controls as in Table 21.6.

5. Conclusion

This chapter has attempted to answer the question of what are the global requirements for a good life, and whether happy people are the same across rich and poor countries. We examined the pattern of happiness responses in a developing economy framework via estimations of ordered probit well-being equations on a set of microeconomic variables for South Africa in 1993. Our main findings have been that there are similar patterns in the effects of already identified factors in the individual's assessment of happiness in South Africa as there are in the more-developed countries,¹⁸ which can be summed up as follows.

First, we find that household variables correlate well with the perceived quality of life responses at the household level. The log of household income enters positively into the well-being equation, while household size has a negative relationship with the reported happiness levels. Black respondents appear to be much less satisfied with the quality of life than whites, despite comprising the majority of the population. This, however, is to be expected from a country where the majority has for generations been subject to apartheid. 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/her current household situation to be the same or better in comparison with his/her parents at the same age, then the respondent is more likely to report a relatively higher well-being. Geographical setting of the household matters: urban dwellers are generally happier than those in the country. We also find basic living-standard indicators such as ownership of selected goods – namely, motor vehicles, geysers, telephones and television sets – to be positively correlated 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 be significantly correlated with age, employment status and education level. People who receive a regular wage are more likely to be satisfied with life, *ceteris paribus*, than the unemployed, those looking after the home or in formal education, the self-employed and the retired. Like people in the richer countries, age has a U-shaped relationship with individual well-being, with the minimum being around the early to mid-40s. Contrary 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 higher education also leads to higher aspiration levels, and if these aspirations are not met by current incomes – as is often the case for many of the black employees – then the respondent is likely to report a lower subjective well-being, *ceteris*

paribus. 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. To compensate for a state of unemployment compared to receiving a regular wage would take 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, given that a household's monthly income is R100 (£21).

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

The overall finding on the well-being structure in South Africa does not offer us a completely new set of results in this field, and yet some economists may consider that to be a good thing. It signifies that there could be some merit in the study of subjective well-being responses in the less-developed nations. The results also support the idea that, subconsciously, people are the same everywhere. For example, employment keeps individuals happy because it provides security for people everywhere, both in the developed and less-developed countries. Education, on the other hand, may be negatively related to well-being in places like South Africa, *ceteris paribus*. However, we cannot conclude from the results that education is purely detrimental to well-being, but rather that the given developing economy environment does not allow for the variable to fulfil its purposes, that is to provide social status and stability for individuals. Socioeconomic factors are associated with individual happiness levels if the surrounding conditions allow individuals to satisfy their basic physical and psychological needs. In other words, it may be plausible to say that happy people are structurally similar everywhere, providing that their living standards are also similar, and that Wilson may be right in drawing his conclusions on what makes a happy person happy – all those years ago.

Notes

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- 1. Oxford Committee for Famine Relief, a non-governmental organization (NGO).
- 2. See Graham and Pettinato (2002) for a summary on income mobility and its implication on happiness in Latin America.
- 3. Sen's message emphasizes the observable difference in the standard of living between two people from opposite ends of the income quintile but possessing very different unobserved personal traits (that is, one was born happy, and the other was not) that may offset

The case of South Africa 481

the true effects of having a low standard of living on the reported subjective well-being. In a cross-sectional analysis such as this, it is virtually impossible to control for the omitted inborn dispositions. However, as other papers, 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 what would be obtained if the same regressions were to be run from panel data elsewhere. See also Clark and Oswald (2002) on comparing fixed-effects equations and cross-section equations in running a well-being regression.

4. The complete report can be downloaded from the South African government webpage at www.welfare.gov.za/Documents/2000/Docs/1998/Pov.html.
5. 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).
6. HDI for selected middle-income countries in 1992 (rated out of 1): Poland (0.815), Thailand (0.798), Malaysia (0.794), Brazil (0.756), South Africa (0.677). Source: United Nations Development Programme (UNDP).
7. Defined in the ICPI report as the poorest 40 per cent of households.
8. See the LSMS website at www.worldbank.org/html/prdph/lms/index.htm.
9. To our knowledge, the PQOL data have been studied in part by Kingdon and Knight (2001), who 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.
10. The reason for using log of household monthly income is because it is a proportionate rather than a unit increase in income, that is associated positively with happiness (Easterlin 2001). The income, which was calculated by the World Bank Group, includes all household income-earning activities and any money in-takes from non-employment sources.
11. The question is phrased as follows: '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'.
12. That is, a domestic gas water heater.
13. See Appendix for the full summary of the correlation matrix for durable goods and income. In addition, why, if durable goods are important to an individual's standard of living, do high-income households not automatically imply to durable assets ownership. One plausible explanation could be that these durable assets are passed down intergenerationally, irrelevant to today's earning levels (Carter and May 1999). Moreover, living under apartheid rules may have reduced access to the assets market for the non-white population living in a relatively well-off household (Schreiner et al. 1997).
14. A similar model using averaged household-level 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 be significantly correlated with low PQOL scores, controlling for household income per capita and other factors.
15. The life satisfaction equation (21.2) is closest to the equations used in US/UK happiness data:

$$H_i = \alpha Y_i + \beta Y_i^* + \Sigma Personal_i + \varepsilon_i$$

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.

16. Our proxy for an individual's health status is different from the usual self-rated health status on a 4-point scale (from 'very poor health' to 'excellent health', for example) and takes into account only the respondent's health status in the previous two weeks. This may help to explain the insignificance between the health variable and the reported well-being.
17. See Appendix for the summary of correlation matrix for the average consumption levels for different durable goods and relative income.
18. See Appendix for a summary of conclusions on the UK and US well-being data.

482 *Handbook on the economics of happiness***References**

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The case of South Africa 483

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484 *Handbook on the economics of happiness***Appendix 21A1***Table 21A1.1 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	Telephone	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 21A2*Table 21A2.1 Correlation matrix for the community means of different durable goods and relative income*

	MMotor	MBicycle	MEStove	MEKettle	MFridge	MGas
MMotor	1.000	-	-	-	-	-
MBicycle	0.802	1.000	-	-	-	-
MElectric Stove	0.709	0.514	1.000	-	-	-
MElectric Kettle	0.810	0.622	0.941	1.000	-	-
MFridge	0.868	0.699	0.907	0.937	1.000	-
MGas	0.260	0.249	0.275	0.308	0.303	1.000
MGeysers	0.886	0.697	0.804	0.885	0.889	0.283
MPrimus Cooker	-0.633	-0.500	-0.762	-0.785	-0.725	-0.190
MRadio	0.880	0.774	0.619	0.714	0.778	0.225
MTelephone	0.906	0.693	0.842	0.899	0.917	0.280
MTV	0.860	0.710	0.887	0.914	0.949	0.368
Relative income	-0.019	-0.014	-0.019	-0.022	-0.024	-0.010

	MGeysers	MPCooker	MRadio	MTelephone	MTV	Relative Y
MMotor	-	-	-	-	-	-
MBicycle	-	-	-	-	-	-
MElectric Stove	-	-	-	-	-	-
MElectric Kettle	-	-	-	-	-	-
MFridge	-	-	-	-	-	-
MGas	-	-	-	-	-	-
MGeysers	1.000	-	-	-	-	-
MPrimus Cooker	-0.720	1.000	-	-	-	-
MRadio	0.781	-0.515	1.000	-	-	-
MTelephone	0.908	-0.709	0.810	1.000	-	-
MTV	0.873	-0.697	0.789	0.913	1.000	-
Relative income	-0.017	0.001	-0.019	-0.020	-0.020	1.000

Note: Relative income = household monthly income/average community household monthly income. M(.) is the community means of (.) good, and is allowed to vary between households.

Appendix 21A3 Summary of conclusions on the 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 involve a rise in income at the mean of approximately \$60,000 per annum, and to 'compensate' for being black would involve an 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 40.

Sources: A. Oswald (1997), 'Happiness and economic performance', *Economic Journal*, **107**, 1815-31; D. Blanchflower and A. Oswald (2003), 'Well-being over time in Britain and the USA', *Journal of Public Economics*, forthcoming.