

Subjective well-being, relative consumption and exposure to economic activity in South Africa

ESSA 02/09/2015

Frances Rousseau 16460111

Table of Contents

Introduction	3
Literature Review	3
Empirical Strategy	6
Data	7
Method	8
The Effect of Relative Consumption on Subjective Well-being.....	8
Do the Poor Care More or Less About Relative Consumption?	9
Do the Isolated Care More or Less About Relative Consumption?	11
Results	11
Descriptive Results	11
Empirical Results	13
Does the relative consumption effect exist?	13
Do the poor care more about relative consumption?	17
Are the isolated less affected by relative consumption?	20
Conclusion	20
Bibliography	22

Introduction

South Africa has one of the most unequal income distributions in the world. Its social landscape is deeply divided due, at least in some part, to the legacy of apartheid. The relative income hypothesis states that, all else equal, a rise in a peer's income creates disutility for the individual. This has also been called the invidious village hypothesis. If this holds in South Africa, within-group inequality could pose a potential threat to social stability as it creates unhappiness.

This paper tests for the existence of the relative income hypothesis by measuring the effect of reference group consumption on the perceived adequacy of five consumption goods. It then attempts to discern whether this effect differs for the poor and non-poor. It uses both the cluster and the district as reference groups and compares these effects. Firstly, a review on the literature regarding subjective wellbeing and relative income or consumption is presented, after which a data and empirical analysis is given. The data is described and discussed in the context of broader South African population descriptive statistics, after which an ordered probit model is used to test for the presence of the relative consumption effect, and furthermore for a difference between this effect on the utility of the poor and non-poor. The results of these tests are then interpreted in light of the existing literature, and brief suggestions for further empirical research are given.

Literature Review

A large body of empirical literature exists which tests the relative income hypothesis, which states that a rise in someone else's income makes one less happy, even if her/his own income increases or remains the same (Oshio et al, 2011:353). This hypothesis speaks to the Easterlin paradox, which notes that increasing incomes does not seem to increase overall happiness, because the positive effect of increasing own income is offset by the rise incomes generally, which creates a higher "living level norm", and thus a dominant negative effect (McBride, 2011:252). What the relative income hypothesis predicts is that there is something more than just one's own income that affects one's subjective wellbeing. Instead, one's own income *in relation* to the mean income of a group of other people to which one can relate, may also be affecting one's utility. This paper intends to test this hypothesis.

Alpizar et al (2001:19) conduct a social experiment on a group of South American students and find that both relative and absolute income matter for utility. They also find that relative consumption has an effect. In Asia, Oshio et al (2011:372) find evidence for the relative income hypothesis, saying that an increase in the income of a group of individuals with similar socioeconomic characteristics negatively enters the individual utility function. The idea to use relative consumption instead of income as the variable of interest is a natural progression of this theory, as relative consumption is more easily-observed by individuals than is relative income, and therefore may have a clearer effect on subjective wellbeing. Guillermo-Royo (2011:263) states that it has peoples' satisfaction with their consumption is proven to be an important determinant of their overall feeling of wellbeing. Hence, Fafchamps & Shilpi (2008) conduct an empirical study of relative consumption in Nepal, and its effects on happiness.

The relative income hypothesis has therefore been tested using a variety of variables. The choice of the independent variable of interest is generally between using absolute and relative income, and absolute and relative consumption. Most studies use the former while Fafchamps & Shilpi (2008) and Guillen-Royo (2011) use the latter for Nepal. It should be noted that while this choice seems more theoretically correct, consumption expenditure is often poorly reported in developing countries, and hence these studies tend to choose the income variable. The choice of dependent variable, which should proxy for happiness, is arguably more contentious due to the possibility of attenuation bias. The more popular choice is to use some direct happiness- or life satisfaction level question such as the one found in the South African NIDS dataset by Posel & Casale (2011:6): "Using a scale of 1 to 10 where 1 means "very dissatisfied" and 10 means "very satisfied", how do you feel about your life as a whole right now?"¹ More recently, however, studies have begun to use a subjective question on the adequacy of an individual's consumption to proxy for utility. As suggested by Alpizar et al (2001:3), "...if income contributes to utility solely instrumentally through consumption, as is typically assumed, then utility must depend on relative consumption". An identical set of five consumption adequacy questions appears in the data used by Guillen-Royo (2011), Fafchamps & Shilpi (2008) and Pradah & Ravallion (2000), and also happens to appear in the first wave of the NIDS dataset for South Africa. Therefore, this study elects to use this

¹ See also: Blanchflower et al (2004), Luttmer (2005) and Rojas (2008).

question in order to provide a comparison with a similar study conducted by Kingdon & Knight (2004).

The invidious village furthers the relative income hypothesis by predicting that a rise in the income of some reference group will cause disutility for the individual due to envy, rivalry or an array of other reasons². Kingdon & Knight (2004) test this using South African data and find the exact opposite effect when the cluster is taken as the reference group. In other words, there appears to be a convivial village effect – that individuals feel happier when their neighbours' incomes are rising. Evidence of invidious behaviour is found at the broader district level, but is not significant. Interestingly, the invidious village hypothesis is confirmed for most other countries, even other developing countries such as Peru, as found by Fafchamps & Shilpi (2008). In only three countries, cited by Guillen-Royo (2011:261-2), is evidence found for an increase in reference group income positively affecting individual utility.

It must be noted that, in opposition to the relative income hypothesis, Boyce et al (2010:5) find evidence for the existence of the “rank-income hypothesis” only. It states that individuals gain utility from achieving a higher rank within an income distribution – and neither from their absolute income nor relative income position in relation to some reference wage. It could be argued that this hypothesis does not directly refute the relative income hypothesis, but is perhaps just a different version of the same story. It should also be mentioned that attempts to expand this work toward becoming more theoretically congruent have been conducted by Posel & Casale (2011:1), who use a subjective question on how individuals perceive their wealth in relation to their peers as the independent variable of interest. They find a larger relative income effect compared to other studies, which use an objective evaluation of relative income or consumption such as distance from the mean. This suggests a potential direction for future empirical research in this area.

In general, strong evidence worldwide is found in support of the importance of reference group outcomes for individual happiness. It appears that “...circumstances of the individual relative to other in some reference group influence perceptions of wellbeing at any given level of individual command over commodities” (Pradahn & Ravallion, 2000:465). Thus, what

² Fafchamps & Shilpi (2008:55-57) empirically test the validity of some of these reasons

matters for the magnitude and direction of this relative effect is the definition of the variables and, more importantly, the definition of the reference group. This paper will follow Fafchamps & Shilpi (2008) in testing the invidious village hypothesis using the consumption adequacy question(s) as the dependent variable(s), and also Kingdon & Knight (2004) in comparing this effect at the cluster and district levels.

Empirical Strategy

A paper by Kingdon & Knight (2004) finds that people tend to compare themselves with other people who started out in similar conditions to them when assessing their level of consumption or income. One may call these ‘other people’ the reference group – a group with which the individual grew up perhaps, to whom he or she tends to relate. This paper will attempt to measure the effect of an increase in an individual’s reference group’s mean income on his own subjective wellbeing in comparison to his own income on his subjective wellbeing. In other words, it will attempt to discern how important reference group income is for happiness, in relation to individual income, and in which direction. The hypothesis is that people are likely to be influenced by the income in the area in which they live or grew up in, when evaluating whether they are experiencing adequate life satisfaction or not. The direction of this relative income effect remains to be seen.

Many studies have used the more direct happiness question i.e. “How happy/satisfied are you with your life”, as the independent variable, often asking the respondent to rate their happiness on a scale from one to ten. While this is the more popular choice, some studies have recently begun to use other subjective questions regarding appraisals of consumption or economic conditions (Guillen-Royo, 2011:261). According Fafchamps & Shilpi (2008:44), using a consumption adequacy question as the outcome (or utility) variable gets closer to utility derived from consumption due to income, rather than, for example, disutility derived from fear of crime or disability which allegedly complicate the life satisfaction question. Asking about the adequacy of an individual’s consumption is also possibly less abstract than asking about overall life-satisfaction and therefore less cognitively demanding. Decomposing the question into five domains also allows one to either combine them into some sort of (weighted) overall satisfaction index, or to keep them separate, treating each domain as a separate type of utility (Pradahn & Ravallion, 2000:463).

Reference groups are constructed in various ways in the literature, for example in the US, Schor (1998) argues that an individual's reference group is the group of income that spans up to three times his own. This is a more aspirational interpretation, however, and Guillen-Royo (2011:262) suggests that the reference group is better defined as one that the individual belongs to, rather than aspires to, especially in a developing context. Hence, in line with other South African studies such as Kingdon & Knight (2004) and Coetzee (2014), this paper will consider two different reference groups: firstly, the smaller 'cluster' to which the individual belongs, and secondly the slightly larger 'district' – an area bigger than a cluster but smaller than a province. An entire South African province is considered too wide to be a reference group as within province heterogeneity in terms of various socio-economic factors is too high. Also, South Africa is a country consisting of complex overlapping cleavages; hence too broad a reference group may miss some of these intricacies.

Data

The data comes from the first wave of the National Income Dynamic Study (2008), a detailed national dataset aimed at understanding the changing face of poverty in South Africa. Although this is a panel dataset, taking observations on the same individuals every two years, the consumption adequacy question in all five domains was only asked in the first wave; hence this is a cross-sectional study. A group of 6547 household heads answered at least one of the five consumption adequacy questions, with 83,85% of respondents answering all five questions. Between 6100 and 6250 household heads answered each of the food, health, clothing and housing adequacy question whereas a substantially smaller proportion (only 4222) answered the schooling adequacy question.

The consumption adequacy asks: "Concerning your household's [some consumption area] over the past month, which of the following is true? (1) It was less than adequate for your household's needs, (2) It was just adequate for your household's needs, (3) It was more than adequate for your household's needs." It is assumed that, when individuals answered this question in NIDS 2008, they interpreted the word "adequate" as the minimum requirement for their household. The five areas of consumption for which this question was asked are: food needs, school needs, health needs, clothing needs and housing needs. These questions are identical to those used in other studies on subjective wellbeing in other developing countries, such as Pradahn & Ravallion's (2000:465) application to Peru and Jamaica, as well as

Guillen-Royo (2011:259) and Fafchamps & Shilpi's (2008:44) application to Nepal, which makes for a useful comparison of results.

Method

This paper uses a similar approach to Fafchamps & Shilpi (2008) in measuring the effect of relative consumption on subjective wellbeing, but compares these effects when the cluster is considered as the reference group, to when the district is the reference group. A cluster is similar to a neighbourhood, whilst a district is larger, but smaller than a province. It is assumed that individuals who are recorded as the "household head" would produce the most accurate judgement on the adequacy of their household's consumption, and thus only their answers are included in the sample.

Firstly, this paper will test whether relative consumption does matter for utility, and in which direction. Secondly, it will then attempt to discern whether the poor care more or less about relative consumption. For example, if the poor are more concerned with their own, absolute consumption than the consumption of those others to which they compare themselves (their reference) group while the rich place more importance on relative consumption, one would expect to see a larger relative consumption effect for the rich in comparison to the poor. Finally, it will test whether being isolated from market activity causes a smaller relative consumption effect on utility.

The Effect of Relative Consumption on Subjective Well-being

The answers to each consumption adequacy question are collapsed into a binary independent variable where "...just adequate..." and "...more than adequate..." owing to the small proportion who selected the former, are grouped together as "adequate", while "...less than adequate..." just becomes "inadequate". An ordered probit model is then used to test whether relative consumption matters for subjective well-being by regressing individual household consumption, average consumption of the reference group and a set of controls on each of the five binary consumption adequacy questions, which proxy for utility. The coefficients on the regressors should reflect their effect on the probability of finding consumption adequate. For the purpose of this research, it may be sufficient to observe the direction of the coefficient and its magnitude only in its *relation* to the coefficients of the other regressions.

The following utility function is postulated:

$$U_{ik} = \theta_1 x_{ik} + \theta_2 x_k + \lambda z_{ik} \quad (1)$$

where $x_{ik} = \log X_{ik}$, with X_{ik} being the (per capita) consumption expenditure of each individual household head i living in group k , and $x_k = \log X_k$, where X_k is the mean (per capita) consumption expenditure of the group k . The “group” k here is first defined as the individual’s cluster, and then secondly as his/her district. The variable z_{ik} is a series of control variables or “taste-shifters” correlated to utility. They are included to avoid omitted variable bias. Unfortunately, since the data cannot be used as a panel here, group fixed effects (at both the cluster and district levels) cannot be employed to handle some of the bias created by unobservable group characteristics.

The testing strategy will be to estimate (1) for each of the five answers to the consumption adequacy question (which proxy for utility), first using the cluster as the reference group, and then the district. If θ_2 differs significantly from zero, a relative consumption effect most likely exists. Furthermore, interpreting this mean consumption effect as a proportion of the absolute consumption effect, i.e. θ_1/θ_2 shows how important average reference group consumption is compared to absolute consumption for subjective wellbeing. This is termed the ‘relative consumption effect’ Finally, the sign of θ_2 will reveal whether an individual feels happier or worse about their reference group consumption increasing. This will confirm either the invidious (negative θ_2) or convivial (positive θ_2) village hypothesis referred to by Kingdon & Knight (2004:17).

It is also important to test whether the absolute consumption effect differs from the average reference group consumption effect, i.e. test $\theta_1=\theta_2$ in (1), to ensure that there is a distinction between the absolute and group effect on individual utility. If the effects are not significantly different from each other, a relative consumption effect may not exist.

Do the Poor Care More or Less About Relative Consumption?

If a relative consumption effect is found, it can then be asked whether this effect is more or less pronounced for the poor. It is necessary to distinguish between the poor in an absolute sense, and in a relative sense. The absolute poor are individuals whose consumption

expenditure levels are low enough on the entire distribution of consumption expenditure for the sample. In contrast, the relatively poor are, for the purpose of this analysis, those individuals whose consumption expenditure falls below the mean consumption expenditure of their reference group. A different identification strategy will be used for each of these two concepts.

In order to discern whether the absolute poor or non-poor care more about relative consumption, a similar model to (1) is used, however individual consumption (x_{ik}) and mean reference group consumption (x_k) are included together as an interaction term:

$$U_{ik} = \theta_1 x_{ik} + \theta_2 x_k + \theta_3 x_{ik} x_k + \lambda z_{ik} \quad (2)$$

The interaction term accounts for the possibility that for higher levels of own consumption expenditure (x_{ik}) i.e. the ‘absolutely’ rich, the effect of mean group consumption (x_k) may be either larger or smaller than for lower levels of own consumption expenditure i.e. the ‘absolutely’ poor.

Another way to separate the effect of relative consumption on the poor versus the non-poor is to think of poverty in a relative sense. If an individual’s consumption expenditure is below the average consumption expenditure within his reference group, then he is considered to be relatively poor. If his consumption is above or equal to the mean, then he is relatively non-poor. Thus, the following function estimates the relative consumption effect for the relatively poor versus the relatively non-poor:

$$U_{ik} = \alpha x_{ik} + \theta_{below} I(x_{ik} < x_k)(x_{ik} - x_k) + \theta_{above} I(x_{ik} \geq x_k)(x_{ik} - x_k) + \lambda z_{ik} \quad (3)$$

Where $I(\cdot)$ is an indicator function, which allows the relative consumption effect for the relatively poor and non-poor to be separated and thus compared. The model thus estimates the effect of an individual’s distance from mean consumption for the relatively poor (θ_{below}) and for the relatively rich (θ_{above}). It is hypothesized that the rich would care more about their relative consumption levels versus the poor who would be relatively more concerned with their absolute consumption levels.

Do the Isolated Care More or Less About Relative Consumption?

(forthcoming)

Results

Descriptive Results

Firstly, it is useful to summarize the answers to each of the consumption adequacy questions below in Table 1. In this table the question on perceived wealth is included so as to compare subjective assessments of income with those of consumption. This question asked the individual to rank the household's position of wealth within the village or suburb as being 1) much above, 2) above, 3) equal to, 4) below, or 5) much below average income. This is made compatible with the other questions by grouping 1) & 2), and 4) & 5) together for the two outer groups. A much larger proportion of the survey answered this question.

Table 1

Answers to income and consumption adequacy questions				
	Percentage of responses			n
	Less than adequate	Adequate	More than adequate	
Perceived wealth	50,28	38,13	11,59	33869
Food	38,26	48,12	13,62	7216
Clothing	39,81	48,32	11,87	7202
Housing	38,67	48,64	12,68	7214
Schooling	35,57	49,53	14,89	5049
Health	42,05	46,29	11,66	7204

Approximately half of the respondents perceive their income to be lower than average income. In 2008, 47,3% of South Africans were considered income poor according to the headcount ratio (P_0), and therefore half the population seeing their wealth as less than adequate seems to be in line with measured outcomes (Argent et al, 2009:2). Health consumption receives the worst rating with 42% of respondents stating it as less than adequate for their household's needs, while schooling receives the best rating with a lower 36% finding it less than adequate. If one accepts that a subjective assessment of consumption adequacy gets closer to the actual utility derived from economic goods than a subjective ranking of wealth does, one could conclude that respondents overstate the inadequacy of their

perceived their overall wealth, and understate adequacy. In general, it appears that people feel less well-off when asked about what they 'have' (wealth) compared to when asked about what they actually consume with that wealth (consumption).

It is also necessary to assess general household characteristics for the 83% of the sample of respondents who answered all of the consumption adequacy questions. We can compare these characteristics in Table 2 to the population characteristics in 2008, reported by Armstrong et al (2008) and Leibbrandt et al (2010:30), although it should be noted that mean values in South Africa have limited descriptive power due to its bimodal income distribution along racial lines. In general this sample seems to be a fair representation of the overall population, although there are some imbalances worth noting. In the sample, 43% of household heads were employed, and according to Armstrong et al (2008:16), 46% of households in the population had one employed member (who would most likely be the household head). 49% of the sample respondents were urban households while 65,1% of households in South Africa were in urban areas in 2008, therefore rural households may be overrepresented. Also, Coloured individuals are overrepresented at 14% in the sample compared to 8,7% in Armstrong et al (2008:11). Finally, female-headed households are overrepresented at 77% compared to 38,9% in the population. Of poor households in 2008, a higher 53,1% were female-headed, and so the sample is better at monitoring effects on the poor population, however this remains an overrepresentation.

Table 2

	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Min</i>
<i>Household characteristics</i>				
hhincome	5363	9485	5034	0
Per capita income	1452	3214	5034	0
Per capita expenditure	1269	2521	5034	33.50723
Age	45	15.5	5031	3
Years of education	7	4.6	5031	0
Number of children	1.80	1.59	5034	0
Number of elders	0.29	0.55	5034	0
<i>Household composition</i>				
% Female-headed	77	42	5034	0
% Employed	43	50	4964	0
% Urban	49	50	5034	0
% African	81			
% Coloured	14			
% Asian/Indian	1			
% White	4			

Empirical Results

Does the relative consumption effect exist?

The testing strategy described above is carried out using Fafchamps & Shilpi's (2008) method:

$$U_{ik} = \theta_1 x_{ik} + \theta_2 x_k + \lambda z_{ik} \quad (1)$$

A regression for each of the five consumption adequacy questions is run in both cases at the cluster level, and the entire process is then repeated for the district level. This allows one to check whether the relative income effect changes as the reference group is broadened. An ordered probit model is used to take into account that the dependent variable is categorical. Following Fafchamps & Shilpi (2008), those who answered "more than adequate" to the five questions are included with the "adequate" answers as they make up such a small proportion

of the answers. This leads to the creation of a binary dependent variable where a 1 indicates that consumption in the domain was adequate and a 0 indicates that it was inadequate for the household's needs. The regression results are reported in Table 3 below.

The coefficient on group mean consumption as a proportion of the absolute consumption effect is reported as β , where:

	Cluster level					District level				
	food	school	health	clothing	housing	food	school	health	clothing	housing
Per capita consumption expenditure (log)	0,2448 (0,0539)***	0,2105 (0,0518)***	0,1588 (0,0460)***	0,2375 (0,0489)***	0,2371 (0,0475)***	0,3122 (0,0507)***	0,2619 (0,0473)***	0,1935 (0,0460)***	0,2751 (0,0484)***	0,3012 (0,0502)***
Mean cluster consumption expenditure (log)	0,1893 (0,0699)***	0,1122 (0,0720)	0,0729 (0,0638)	0,0654 (0,0740)	0,167 (0,0648)**					
Mean district consumption expenditure (log)						0,0153 (0,0585)	-0,1701 (0,0635)***	-0,1111 (0,0660)*	-0,1848 (0,0745)**	-0,0521 (0,0615)
dc2001	-0,0004 (0,0001)***	-0,0004 (0,0002)**	-0,0003 (0,0002)	-0,0003 (0,0002)	-0,0006 (0,0002)***	-0,0004 (0,0001)***	-0,0003 (0,0002)	-0,0002 (0,0002)	-0,0001 (0,0002)	-0,0005 (0,0002)***
Perceived wealth	-0,2641 (0,0361)***	-0,2685 (0,0408)***	-0,2431 (0,0386)***	-0,2903 (0,0383)***	-0,2985 (0,0366)***	-0,2566 (0,0381)***	-0,2658 (0,0405)***	-0,2417 (0,0384)***	-0,2903 (0,0376)***	-0,2920 (0,0377)***
Isolated	-0,1159 (0,1092)	-0,1352 (0,1177)	0,0524 (0,1135)	-0,1963 (0,1109)*	-0,1531 (0,1148)	-0,1202 (0,1083)	-0,1638 (0,1173)	0,0349 (0,1132)	-0,2225 (0,1105)**	-0,1676 (0,1142)
Age	-0,0263 (0,0094)***	0,0117 (0,0104)	0,0103 (0,0110)	-0,0006 (0,0104)	-0,0097 (0,0103)	-0,0255 (0,0096)***	0,0112 (0,0104)	0,0100 (0,0110)	-0,0010 (0,0103)	-0,0095 (0,0103)
Age-squared	0,0003 (0,0001)***	-0,0001 (0,0001)	-0,0000 (0,0001)	0,0000 (0,0001)	0,0001 (0,0001)	0,0003 (0,0001)***	-0,0001 (0,0001)	-0,0000 (0,0001)	0,0000 (0,0001)	0,0001 (0,0001)
Coloured	0,0095 (0,0986)	0,2319 (0,1561)	0,0036 (0,1781)	0,1842 (0,1225)	0,1266 (0,1161)	0,0392 (0,1044)	0,2992 (0,1552)*	0,0455 (0,1751)	0,2446 (0,1232)**	0,1694 (0,1208)
Asian/Indian	-0,2067 (0,3376)	-0,3537 (0,2639)	0,1143 (0,3336)	-0,0256 (0,3489)	-0,3418 (0,2753)	-0,0318 (0,3315)	-0,2284 (0,2523)	0,1977 (0,3253)	0,0600 (0,3414)	-0,1751 (0,2591)
White	-0,1474 (0,2167)	0,2475 (0,2343)	0,1111 (0,1764)	-0,3142 (0,2258)	-0,0578 (0,2323)	0,0416 (0,2084)	0,4133 (0,2282)*	0,2190 (0,1591)	-0,1943 (0,2189)	0,1241 (0,2216)
Employed	-0,0199 (0,0677)	-0,0245 (0,0672)	-0,0193 (0,0602)	0,0096 (0,0718)	0,0484 (0,0795)	-0,0002 (0,0655)	0,0030 (0,0667)	-0,0022 (0,0586)	0,0318 (0,0697)	0,0705 (0,0773)
Education (years)	0,0248 (0,0113)**	0,0159 (0,0110)	0,0285 (0,0100)***	0,0251 (0,0103)**	0,0120 (0,0098)	0,0273 (0,0114)**	0,0173 (0,0112)	0,0293 (0,0101)***	0,0260 (0,0102)**	0,0141 (0,0098)
Female	-0,0380 (0,0847)	0,1319 (0,0794)*	0,0793 (0,0691)	-0,0124 (0,0777)	0,0080 (0,0765)	-0,0333 (0,0839)	0,1378 (0,0776)*	0,0831 (0,0681)	-0,0084 (0,0766)	0,0139 (0,0757)
Urban	-0,1199 (0,0940)	0,0175 (0,0987)	-0,0129 (0,0946)	-0,1150 (0,1056)	-0,1325 (0,1108)	-0,0402 (0,0884)	0,1450 (0,0925)	0,0703 (0,0986)	-0,0045 (0,1035)	-0,0328 (0,1060)
Household size	0,0013 (0,0201)	0,0147 (0,0226)	0,0142 (0,0212)	0,0002 (0,0187)	0,0228 (0,0229)	0,0052 (0,0202)	0,0215 (0,0224)	0,0192 (0,0210)	0,0070 (0,0187)	0,0278 (0,0225)
Children	0,0330 (0,0324)	0,0455 (0,0312)	0,0255 (0,0341)	0,0256 (0,0303)	0,0114 (0,0339)	0,0333 (0,0325)	0,0350 (0,0305)	0,0179 (0,0342)	0,0134 (0,0303)	0,0076 (0,0339)
Constant	1,1999 (0,4808)**	1,4834 (0,4868)***	1,1805 (0,4834)**	0,8908 (0,5237)*	1,2730 (0,5223)**	0,6221 (0,5063)	-0,0034 (0,5059)	0,2178 (0,5763)	-0,5047 (0,5968)	0,3462 (0,5129)
R-squared										
N	4632	4632	4632	4632	4632	4632	4632	4632	4632	4632
β	0,77	0,53	0,46	0,28	0,70	0,05	-0,65	-0,57	-0,67	-0,17
Testing for $\beta=1$										
Wald test p-value	0,595	0,354	0,328	0,088	0,415	0,000	0,000	0,000	0,000	0,000

Note: African is reference group for race

* p<0.1, ** p<0.05, *** p<0.01

$$\beta = \frac{\theta_2}{\theta_1}$$

which is interpreted as the relative consumption effect.

At the cluster level, a positive sign on β is found in all domains; however it is only significant for food and housing. Firstly, this effect is in the opposite direction to what is found by Fafchamps & Shilpi (2008:50) in Nepal and secondly, the effect is slightly smaller for food and very similar for housing. They find effects between 0,54 and 1,13 whereas the largest effect at the cluster level in Table 3 for food at 0,77. Blanchflower et al (2004) find a coefficient of 0,4, which is lower than these estimates on average. Fafchamps & Shilpi (2008) do suggest that their results may be overestimated due to the presence of a few wealthy outliers within the ward overemphasizing the envy effect. In general it appears that Table 3's results fall somewhere between those of Fafchamps & Shilpi (2008) and Blanchflower et al (2004). Once additional controls are included, the coefficient on mean cluster income is greatly reduced. Therefore the omission of these variables may have yielded a result closer to Fafchamps & Shilpi (2008:52), however this would have been a biased estimator. A joint significance test of $\beta=1$ is included, which finds that only for clothing there exists a group mean consumption effect significantly different from the absolute consumption effect i.e. we reject the null hypothesis of a pure consumption effect. Although the other domains do not pass this test, the consistency of the direction and magnitude of the betas in all five regressions speaks to a clear positive effect of relative consumption on utility.

The left hand side of Table 3 largely confirms the convivial village hypothesis that an increase in neighbours' income increases one's own subjective wellbeing, provided we accept the perception of consumption adequacy as a good proxy for happiness (at the cluster level) and that consumption affects happiness largely through income. This positive relationship between relative income and happiness is the opposite to the invidious results found in the majority of other countries, with the exception of Graham & Felton's (2006) findings in Latin America and Caporale et al (2009) in Eastern Europe. The results found here are corroborated by the work of Kingdon & Knight (2007), which tested the convivial village hypothesis on South Africa itself, finding strong evidence in support of it. Guillen-Royo (2011:262-3) points out that the common thread between these three studies is that they all focus on people in transition or developing countries. Hence, theories explaining this positive relative income effect refer predominantly to the idea that higher group income, made visible through

consumption, could signal better opportunities for the future or the expectation of better public services. This is consistent with the significant positive effects found on food and housing in Table 3. A second explanation identifies a strong sense of community or group solidarity as supporting feelings of reciprocity, which then encourages altruistic behaviour among members of the village. It is likely that both theoretical explanations for the convivial village hypothesis are valid at the cluster level in South Africa.

The results at the district level provide a striking contrast. The relative consumption effect is smaller and in the opposite direction to the cluster level, although only significant for the schooling, health and clothing questions – complementary to cluster level significance. Additionally, the district level consumption effects are all jointly significant. The relative consumption effect of clothing is the largest at -0,67, with schooling coming in close second at -0,65. This may be indicating that, within a larger reference group, individuals become more ‘envious’ of others when thinking about whether their consumption of more visible goods, like which school their child attends and what clothing they have, is at an adequate level. In other words, the relative consumption effect is more pronounced for goods that are actually visible.

At a more intimate level, supposing that one can consider the cluster to be the respondent’s village, he responds positively to an increase in the mean consumption of the village when assessing his own household’s food, schooling, health and housing consumption adequacy. The convivial village hypothesis seems to be confirmed here. However, if the reference group is extended beyond this village to the district level, the effect of an increase in mean consumption of the district has a larger, negative effect on the respondent’s utility, at least in the domains of assessing clothing adequacy. In other words, it is plausible that the invidious village hypothesis is at play here – that the respondent feels jealous when distant neighbours are doing better.

Interestingly, at the cluster level, group effects are most clear and largest in impacting subjective wellbeing regarding non-visible goods such as food (although this does not pass the Wald test). In contrast, at the district level this effect becomes significant only for goods of a more positional nature i.e. schooling, clothing and health. This could be suggesting evidence for conspicuous consumption behaviour, where individuals seek to display their wealth in order to gain recognition or envy from their reference group by spending on more

visible items (O’Cass & McEwan, 2004:29). This negative, envious effect is seen in a district where, perhaps, individuals see each other as rivals. In contrast, an opposite, positive effect is seen at the cluster level where individuals derive happiness from seeing their village or ‘wider family’ do better, as this may signal future improvement for basic needs such as food and housing (Graham & Felton, 2005:108). Alternatively, we could interpret the insignificant effect of mean district consumption on food adequacy as some sort of information problem. These basic needs are less visible, and thus perhaps the district is too large a group against which individuals can reasonably compare themselves regarding the attainment of this more intimate good.

Although the most statistically convincing result is that the relative consumption effect exists strongly and negatively at the broader district level, the consistent positive effect at the smaller cluster level provides evidence in favour of the convivial village hypothesis that should not be rejected too easily.

Do the poor care more about relative consumption?

The results of equation 2 are reported in Table 4 below. The almost nonexistent significance of the relative consumption effect for different levels of individual consumption at the cluster level may either be pointing to the fact that the relationship, in reality does not exist, or alternatively that is incorrectly specified by this model. The latter is supported by this paper. At the district level, however, one jointly significant effect is found for clothing consumption adequacy. A negative sign on the interaction coefficient may be suggesting that the relative consumption effect in fact increases as own consumption increases i.e. the rich do tend to care *less* about relative consumption compared to the poor. However, since this result is generally not robust across almost all of the regressions, it is not convincing.

	food	school	health	clothing	housing	food	school	health	clothing	housing
	Cluster level					District level				
Per capita consumption expenditure (log)	-0.2115 (0.2842)	-0.3266 (0.2550)	-0.0083 (0.2567)	0.2672 (0.3003)	0.0641 (0.3476)	0.2272 (0.4079)	0.1679 (0.3915)	0.6594 (0.3721)*	1.0120 (0.4598)**	0.5299 (0.4556)
Mean cluster consumption expenditure (log)	-0.2650	-0.4249	-0.0941	0.0949	-0.0048					
Per capita consumption expenditure (log)	(0.2983)	(0.2609)	(0.2709)	(0.3148)	(0.3603)					
Per capita consumption expenditure (log)*Mean cluster consumption expenditure (log)	0.0651 (0.0414)	0.0767 (0.0366)**	0.0236 (0.0375)	-0.0042 (0.0439)	0.0245 (0.0511)					
Mean district consumption expenditure (log)						-0.0607 (0.3685)	-0.2542 (0.3404)	0.3085 (0.3392)	0.4725 (0.4048)	0.1515 (0.4076)
Per capita consumption expenditure (log)*Mean district consumption expenditure (log)						0.0117 (0.0572)	0.0130 (0.0533)	-0.0642 (0.0519)	-0.1011 (0.0638)	-0.0315 (0.0637)
de2001	-0.0004 (0.0001)***	-0.0004 (0.0002)**	-0.0003 (0.0002)	-0.0003 (0.0002)	-0.0006 (0.0002)***	-0.0004 (0.0001)***	-0.0003 (0.0002)	-0.0002 (0.0002)	-0.0001 (0.0002)	-0.0005 (0.0002)***
Perceived wealth	-0.2664 (0.0368)***	-0.2718 (0.0413)***	-0.2442 (0.0388)***	-0.2901 (0.0385)***	-0.2992 (0.0370)***	-0.2568 (0.0382)***	-0.2661 (0.0406)***	-0.2407 (0.0387)***	-0.2895 (0.0380)***	-0.2916 (0.0379)***
Isolated	-0.1361 (0.1103)	-0.1606 (0.1189)	0.0430 (0.1121)	-0.1946 (0.1097)*	-0.1620 (0.1140)	-0.1214 (0.1085)	-0.1654 (0.1173)	0.0437 (0.1121)	-0.2094 (0.1090)*	-0.1636 (0.1136)
Age	-0.0271 (0.0094)***	0.0108 (0.0105)	0.0099 (0.0110)	-0.0005 (0.0103)	-0.0101 (0.0101)	-0.0255 (0.0096)***	0.0112 (0.0104)	0.0103 (0.0110)	-0.0005 (0.0104)	-0.0093 (0.0103)
Age-squared	0.0003 (0.0001)***	-0.0001 (0.0001)	-0.0000 (0.0001)	0.0000 (0.0001)	0.0001 (0.0001)	0.0003 (0.0001)***	-0.0001 (0.0001)	-0.0000 (0.0001)	0.0000 (0.0001)	0.0001 (0.0001)
Coloured	0.0173 (0.0967)	0.2437 (0.1553)	0.0080 (0.1760)	0.1834 (0.1219)	0.1306 (0.1148)	0.0384 (0.1042)	0.2985 (0.1551)*	0.0502 (0.1765)	0.2474 (0.1251)**	0.1712 (0.1213)
Asian/Indian	-0.2870 (0.3354)	-0.4833 (0.2811)*	0.0851 (0.3328)	-0.0207 (0.3659)	-0.3799 (0.3123)	-0.0369 (0.3289)	-0.2346 (0.2468)	0.2256 (0.3177)	0.0981 (0.3328)	-0.1621 (0.2565)
White	-0.2837 (0.2495)	0.0927 (0.2509)	0.0616 (0.2100)	-0.3047 (0.2553)	-0.1118 (0.2437)	0.0323 (0.2242)	0.4018 (0.2298)*	0.2763 (0.1660)*	-0.1014 (0.2133)	0.1532 (0.2111)
Employed	-0.0226 (0.0675)	-0.0270 (0.0671)	-0.0197 (0.0602)	0.0096 (0.0718)	0.0483 (0.0800)	-0.0010 (0.0652)	0.0021 (0.0664)	0.0015 (0.0584)	0.0365 (0.0688)	0.0717 (0.0776)
Education (years)	0.0247 (0.0113)**	0.0159 (0.0109)	0.0284 (0.0100)***	0.0252 (0.0103)**	0.0119 (0.0097)	0.0273 (0.0114)**	0.0174 (0.0113)	0.0289 (0.0102)***	0.0255 (0.0103)**	0.0140 (0.0098)
Female	-0.0405 (0.0842)	0.1309 (0.0787)*	0.0782 (0.0688)	-0.0121 (0.0771)	0.0067 (0.0761)	-0.0330 (0.0837)	0.1385 (0.0775)*	0.0806 (0.0688)	-0.0116 (0.0762)	0.0129 (0.0761)
Urban	-0.1055 (0.0941)	0.0320 (0.0987)	-0.0064 (0.0945)	-0.1164 (0.1045)	-0.1256 (0.1102)	-0.0387 (0.0888)	0.1463 (0.0921)	0.0610 (0.0980)	-0.0199 (0.1014)	-0.0371 (0.1050)
Household size	-0.0013 (0.0201)	0.0117 (0.0225)	0.0131 (0.0211)	0.0005 (0.0182)	0.0216 (0.0224)	0.0051 (0.0202)	0.0214 (0.0224)	0.0194 (0.0213)	0.0080 (0.0189)	0.0279 (0.0225)
Children	0.0293 (0.0326)	0.0406 (0.0312)	0.0240 (0.0346)	0.0258 (0.0308)	0.0100 (0.0346)	0.0328 (0.0327)	0.0344 (0.0307)	0.0211 (0.0344)	0.0174 (0.0308)	0.0090 (0.0343)
Constant	-1.9833 (2.0292)	-2.2726 (1.8196)	-0.0055 (1.8291)	1.1015 (2.1086)	0.0573 (2.3911)	0.0721 (2.6593)	-0.6118 (2.5462)	3.2585 (2.4366)	4.2841 (2.9347)	1.8251 (2.9118)
N	4632	4632	4632	4632	4632	4632	4632	4632	4632	4632
Testing for joint significance										
p-value	0.440	0.151	0.871	0.526	0.898	0.803	0.913	0.168	0.083	0.414

* p<0.1, ** p<0.05, *** p<0.01

In contrast to the methodology above, which attempts to separate the relative consumption effect for the absolute poor versus non-poor, the results of equation 3 reported in Table 5 present a more convincing motivation for the story that this effect is different for poor and rich individuals insofar as they are *relatively* poor or rich. Recall equation 3:

$$U_{ik} = \alpha x_{ik} + \theta_{below} I(x_{ik} < x_k)(x_{ik} - x_k) + \theta_{above} I(x_{ik} \geq x_k)(x_{ik} - x_k) + \lambda z_{ik} \quad (3)$$

which estimates the effect of being further away from mean consumption on utility for the rich and for the poor. Consistent with the findings above, we cannot reject that the two effects

are the same at the cluster level. Perhaps this suggests that rich and poor care more or less equally about relative consumption. However, at the district level, the effect for the rich versus poor are significantly different from each other for school, clothing and housing – again goods that are arguably more visible. While interpreting the individual coefficients on relative consumption for the poor and rich separately is difficult given that we cannot assume that there is a predominant jealousy or altruistic effect, we need only interpret them in terms of their relation to each other i.e. δ is the relative consumption effect of the rich as a proportion of the same effect for the poor:

$$\delta = \frac{\theta_{above}}{\theta_{below}}$$

Thus a δ larger than one would indicate that the rich care more about relative consumption than the poor do, regardless of whether this “caring” is predominantly envious or predominantly convivial (altruistic). Table 5 shows that, at the district level, the rich care, at best, only half as much about relative consumption as do the poor. This finding contradicts the original hypothesis that the rich are more concerned with their relative consumption. The ratio is smallest for schooling (0,08) meaning that the relative consumption effect for the relatively rich is only 8% of that of the relatively poor.

Perhaps this result can be better understood by noticing that we are separating the result for people in a given district who are above average versus below average. In a ‘rich’ district, for example, the ‘relatively poor’ are not really poor in the absolute sense of the word. In a ‘poor’ district, in contrast, being ‘relatively poor’ means being extremely poor in an absolute sense, while ‘relatively rich’ may not actually mean rich at all, but rather ‘not that poor’. Since this sample over-represents poorer South Africans, it makes sense that the effect of being below mean consumption on someone’s happiness dominates the effect of being above it because the disutility from being extremely poor could be greater than the utility of being not that poor.

	Cluster level					District level				
	food	school	health	clothing	housing	food	school	health	clothing	housing
Per capita consumption expenditure (log)	0.35577 (0.05218)***	0.28401 (0.05113)***	0.21703 (0.04989)***	0.32705 (0.04985)***	0.39239 (0.05136)***	0.30721 (0.05306)***	0.18551 (0.05406)***	0.15699 (0.05355)***	0.24648 (0.05634)***	0.31910 (0.05558)***
Relative consumption below mean (-)	-0,00002 (0.00005)	0,00001 (0.00005)	0,00002 (0.00004)	-0,00003 (0.00004)	-0,00007 (0.00004)*					
Relative consumption above mean (+)	-0,00003 (0.00002)*	-0,00003 (0.00002)*	-0,00003 (0.00002)	-0,00005 (0.00002)**	-0,00006 (0.00002)***					
Relative consumption below mean (-)						0,00001 (0.00005)	0,00013 (0.00006)**	0,00005 (0.00005)	0,0001 (0.00006)*	0,00006 (0.00005)
Relative consumption above mean (+)						0,00000 (0.00002)	0,00001 (0.00002)	0,00001 (0.00002)	-0,00001 (0.00002)	-0,00003 (0.00002)
Perceived wealth	-0.25629 (0.03750)***	-0.26290 (0.04214)***	-0.23800 (0.03879)***	-0.28712 (0.03851)***	-0.29314 (0.03709)***	-0.25688 (0.03808)***	-0.26608 (0.04086)***	-0.24163 (0.03862)***	-0.28675 (0.03805)***	-0.28937 (0.03725)***
Isolated	-0.11498 (0.10928)	-0.13598 (0.11791)	0.05406 (0.11339)	-0.18623 (0.11086)*	-0.14107 (0.11455)	-0.12413 (0.10856)	-0.16581 (0.11731)	0.03867 (0.11257)	-0.20747 (0.10935)*	-0.15742 (0.11325)
Controls (see Table 3)	included but not shown									
Constant	0.78158 (0.40965)*	1.27258 (0.43819)***	1.11212 (0.40304)***	1.06581 (0.41413)**	1.25994 (0.40933)***	0.48269 (0.43710)	0.58640 (0.43700)	0.70532 (0.42882)	0.53195 (0.44257)	0.81389 (0.40604)**
N	4632	4632	4632	4632	4632	4632	4632	4632	4632	4632
δ	1,50	-3,00	-1,50	1,67	0,86	0,00	0,08	0,20	-0,10	-0,50
Testing for $\delta=1$										
Wald test p-value	0.855	0.438	0.313	0.641	0.909	0.949	0.042	0.427	0.046	0.098

* p<0.1, ** p<0.05, *** p<0.01

Are the isolated less affected by relative consumption?

(forthcoming)

Conclusion

Happiness studies find that people derive happiness not only from an increase in their own standard of living but also from faring better than their peers. This idea has been termed the relative consumption hypothesis, which has been empirically tested across both developing and developing countries, and is confirmed in most cases. This paper has attempted to test whether this effect exists in South Africa by measuring the impact of relative consumption on happiness. Happiness, here, is proxied for by whether the household head finds the consumption level of food, clothing, schooling, health and housing to be adequate for his or her household's needs or not. It defines 'peers' or the reference group first at the cluster level, and then at the district level. The reference group or invidious village hypothesis is confirmed at the district level, and is especially pronounced for food, health and clothing. People derive satisfaction from faring better than their peers. The convivial village hypothesis is suggested at the smaller cluster level, where the relative consumption effect is positive and largest for

food and housing. At this level, people derive satisfaction from seeing their peers' standard of living improve, possibly because it could signal future own improvement. In general South Africans care about relative consumption when the reference group is defined as the district, and less convincingly as the cluster

To test whether this effect is different for the poor, the relative consumption effect on utility for the poor versus non-poor is compared. Firstly, it is found that the poor in an absolute sense seem to care more or less the same as the non-poor about relative consumption. Those who are poor in a relative sense, however, seem to care more than the relatively rich about relative consumption at the district level for some domains.

Further research will explore the ideas of relative consumption further, with the goal of discerning whether it arises due to economic activity, rather than as some innate human feature. The effect of being isolated from economic activity will be tested.

Bibliography

- Kingdon, G.G. & Knight, J. 2004. Community, Comparisons and Subjective Well-being in a Divided Society. CSAE, Oxford University, Oxford. WPS 2004–21.
- Blanchflower, D.G. & Oswald, A.J. 2004. Well-being over time in Britain and the USA. *Journal of Public Economics*, 88(7):1359-1386
- Fafchamps, M. & Shilpi, F. 2008. Subjective welfare, isolation, and relative consumption. *Journal of Development Economics*, 86(1): 43-60.
- Boyce, C. J., Brown, G.D.A, & Moore, S.C. 2010. Money and happiness rank of income, not income, affects life satisfaction. *Psychological Science*, 21(4):471-475.
- Pradhan, M. & Ravallion, M. 2000. Measuring poverty using qualitative perceptions of consumption adequacy. *Review of Economics and Statistics*, 82(3):462-471.
- Oshio, T., Nozaki, K., & Kobayashi, M. 2011. Relative income and happiness in Asia: Evidence from nationwide surveys in China, Japan, and Korea. *Social Indicators Research*, 104(3): 351-367.
- Alpizar, F., Carlsson, F., & Johansson-Stenman, O. 2005. How much do we care about absolute versus relative income and consumption?. *Journal of Economic Behavior & Organization* 56(3):405-421.
- Posel, D. & Casale, D. 2011. Relative standing and subjective well-being in South Africa: The role of perceptions, expectations and income mobility. University of KwaZulu Natal Working Paper 210.
- Guillen-Royo, M. 2011. Reference group consumption and the subjective wellbeing of the poor in Peru. *Journal of Economic Psychology*, 32:259–272.
- Armstrong, P., Lekezwa, B., & Siebrits, K. 2008. Poverty in South Africa: A profile based on recent household surveys. Stellenbosch Economic Working Paper 04/08.
- McBride, M. 2001. Relative-income effects on subjective well-being in the cross-section. *Journal of Economic Behavior & Organization*, 45:251–278.
- Argent, J., Finn, A., Leibbrandt, M., & Woolard, I. 2009. Poverty: Analysis of the NIDS Wave 1 Dataset. Discussion Paper no 13.
- O’Cass, A. & McEwen, H. 2004. Exploring consumer status and conspicuous consumption. *Journal of Consumer Behaviour*, 4(1):25-39.
- Coetzee, M. 2014. Subjective well-being and reference groups in post-apartheid South Africa. Unpublished doctoral dissertation. Stellenbosch: Stellenbosch University.

- Graham, C., & Felton, A. 2005. Inequality and happiness: Insights from Latin America. *The Journal of Economic Inequality*, 4(1):107–122.
- Luttmer, E. 2005. Neighbours as negatives: Relative earnings and well-being. *The Quarterly Journal of Economics*, 120(3):963–1002.
- Rojas, M. 2008. *Relative income and well-being in Latin America*. Report for the Inter-American Development Bank.
- Schor, J. B. 1998. *The overspent American*. New York: Basic Books.