

# Happiness, income and poverty

Andrew E. Clark<sup>1</sup> 

Received: 12 July 2016 / Accepted: 7 March 2017 / Published online: 21 March 2017  
© Springer-Verlag Berlin Heidelberg 2017

**Abstract** There is considerable evidence from a variety of sources to suggest that well-being is a function of relative income. These findings have been used to explain the Easterlin Paradox, whereby a rise in income for all does not lead to a rise in average happiness in a country (even though the cross section relationship between income and happiness is positive). This relativity of utility has led to calls for policy to focus away from GDP. I here first discuss some of the evidence that well-being is indeed relative in income, but then consider two relatively little-analysed issues to suggest that there may continue to be a role for GDP per capita in happiness-based policy: the inequality of subjective well-being, and the specific case of those in income poverty.

**Keywords** Happiness · Income · Inequality · Poverty

**JEL Classification** I31 · D31

## 1 Introduction

One of the mainstays of the empirical literature on subjective well-being is the relationship between well-being and income. There is a broad consensus in the literature that richer individuals or countries are happier than poorer individuals or countries: as such, the cross section relationship between income and subjective well-being at the aggregate level is positive, as is that between income and well-being at the individual level. However, the time-series analysis of how average

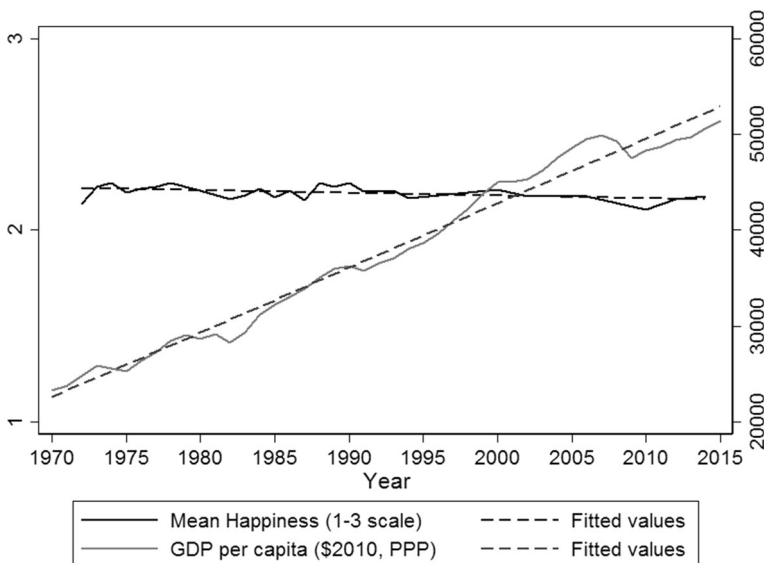
---

✉ Andrew E. Clark  
Andrew.Clark@ens.fr

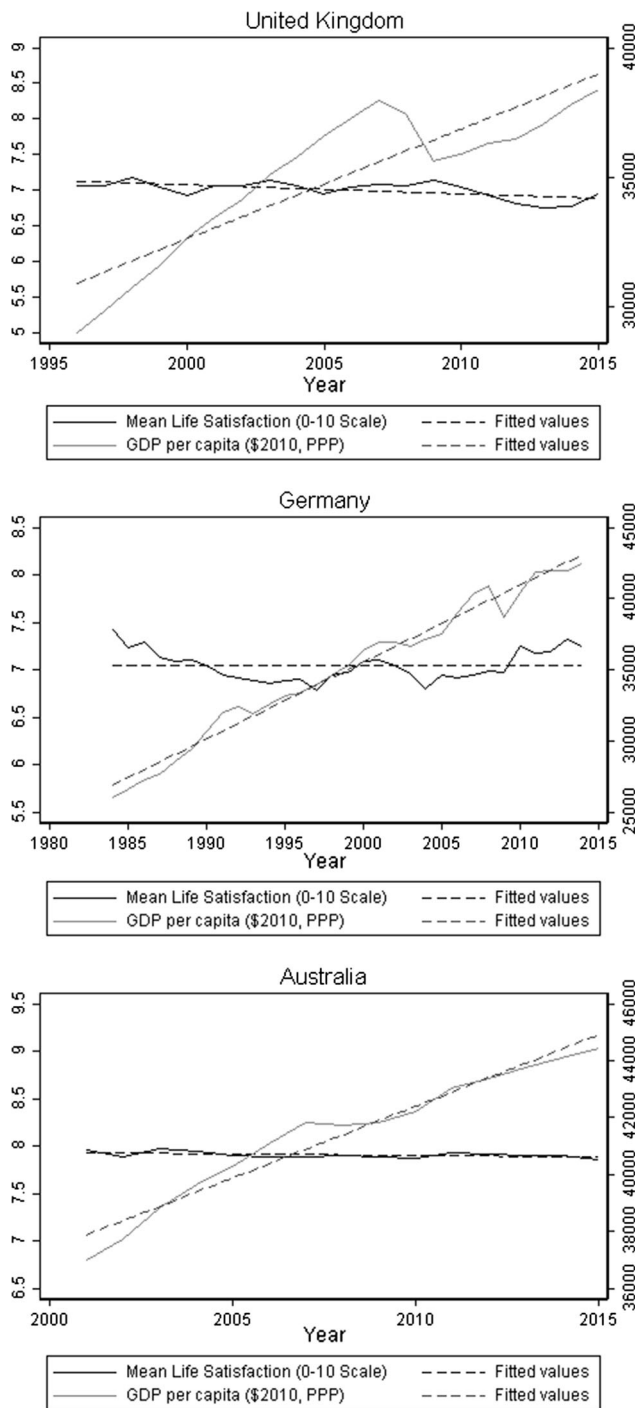
<sup>1</sup> Paris School of Economics – CNRS, Paris, France

happiness within a country changes over time as that country becomes richer (i.e. as its GDP per capita rises) has led to a far less consensual set of results. Easterlin's original 1974 contribution referred to the case of the USA, and it indeed continues to be the case that rising GDP per capita in the USA has not been accompanied by rising happiness in General Social Survey (GSS) data in that country: see Fig. 1. The case in other countries is less clear. The seemingly flat trend in Japan as the economy grew (Easterlin 2005) may be due to changes in the subjective well-being question (Stevenson and Wolfers 2008). Easterlin (2016) in turn has produced an extremely useful summary of the many issues involved in estimating the relationship between subjective well-being and GDP per capita in time-series data, in particular pinpointing changes in the questions over time, and that we are interested in the trend relationship between economic growth and happiness, rather than short-run movements in both that reflect the business cycle. In the short run, income and subjective well-being will very likely be correlated, but this does not inform us about the long-run trend relationship (see Figure 1 in Easterlin 2016). The debate thus remains open, although recent trends in subjective well-being in large-scale panel datasets do indeed appear to be uncorrelated with GDP per capita: see Fig. 2.

We may wonder how much we can learn in the end from the analysis of such time-series data. A first obvious problem is that there are only few data points, and only rarely any individual-level control variables: the demographic characteristics of individuals living in the USA in the 1970s are not the same as those of individuals who lived there in the 2000s, producing a composition effect. Equally, there are very likely country-level omitted variables that may be correlated with both GDP per capita and subjective well-being, such as income inequality, crime and pollution.



**Fig. 1** Happiness and GDP per capita in the US General Social Survey



**Fig. 2** Happiness and GDP per capita in the BHPS, SOEP and HILDA

One popular explanation of the different cross section and time-series relationships between well-being and income does not appeal to composition effects or omitted country-level variables, but rather income comparisons. Here individual well-being ( $W_i$ ) depends not only on the individual's own income ( $y_i$ ) but also on that of the reference group to which she compares ( $y_i^*$ ). Well-being can then be written as:

$$W_i = W(y_i, y_i^*, \dots) \quad (1)$$

We imagine that  $W$  rises in  $y$  but falls in  $y^*$ . In the cross section, high-income individuals have higher levels of well-being than low-income individuals (at least assuming that their values of  $y^*$  are not too wildly different). But over time, it is perfectly possible that  $y$  and  $y^*$  rise at the same rate: if I compare my income to yours, and you compare your income to mine, then a rise in both of our incomes may well cancel out, leading to no rise in either my or your well-being. This relationship between individual well-being and own and others' income can explain the small or zero relationship between GDP per capita and average well-being over time. This translation from the individual to the aggregate level obviously depends on the parametrisation of (1), who is in the reference group that determines  $y^*$ ,<sup>1</sup> and how both own and others' income changes as GDP per capita grows over time.<sup>2</sup> We do not always have good information on all of these elements, so that we should bear in mind that income comparisons are one possible explanation of the Easterlin Paradox, rather than being the definitive explanation.

The remainder of the paper is organised as follows. Section 2 considers the varieties of evidence we have that individual well-being does indeed depend on income comparisons. Section 3 then raises a number of objections against dismissing income and GDP per capita as a well-being policy tool, even if there are income comparison effects in subjective well-being. Last, Sect. 4 concludes.

## 2 Evidence for income comparisons

A number of methods can be employed to evaluate whether income comparisons are a determinant of well-being, as in Eq. (1). The first, and perhaps the most obvious in the light of the discussion in Sect. 1, is to see whether measures of subjective well-being such as life satisfaction do indeed rise in own income ( $y$ ) but fall with comparison income ( $y^*$ ). This question has by now been the subject of a reasonable

<sup>1</sup> In the European Social Survey data discussed in Clark and Senik (2010), the most commonly cited income reference group was work colleagues. In the analysis of American Life Panel data in Dahlin et al. (2014), income comparisons are more likely to be carried out regarding family and friends, work colleagues, and people of the same age, but are less likely with respect to geographical reference groups. The conclusions in Goerke and Pannenberg (2015) using three SOEP pre-test modules are similar: comparisons are more likely to be made to people in the same occupation, work colleagues and those of the same age; they are the least likely to be made to parents and neighbours.

<sup>2</sup> It is also possible that different groups in society do not undertake the same types of comparisons. In the analysis of British and German data in Fitzroy et al. (2014), comparison income is positively correlated with subjective well-being for respondents under the age of 45 but negatively correlated for those aged over 45.

amount of research. One issue here is the adequate definition of  $y^*$ , with various measures being proposed such as a local or regional average income, the income of others with the same objective characteristics as the individual, expectations regarding income, or even the income that the individual has earned in the past.

Our first results in Clark and Oswald (1996),<sup>3</sup> using data on the job satisfaction of 5000 employees in Wave One of the British Household Panel Survey (BHPS), indeed found that job satisfaction<sup>4</sup> rose in own income but fell with the income of other individuals who shared the respondent's characteristics (such as sex, age, education and occupation).<sup>5</sup> Clark (1996) used the same data, considered only couples where both partners are in work, and showed that job satisfaction fell with the income of the respondent's partner. Last, Clark (1999) looked at job satisfaction in the first two waves of the BHPS, and showed that job satisfaction was lower the more the individual had earned the year before.<sup>6</sup>

Other work has considered the reference group to be other workers in the same occupation and industry (as in the airline study of Cappelli and Sherer 1988) or other workers in the same firm, as in Godechot and Senik (2015). The latter appeal to three types of comparison income in French-linked employer–employee data: the median wage in the firm; the wages of similar workers in the same region; and the average wage of the 1% best-paid workers in the firm. Godechot and Senik find comparison effects with respect to regional wages and the firm's top 1% earners. However, satisfaction is higher the larger is the median wage in the firm: this is suggested to reflect a signal effect, whereby (given the individual's own wage) higher firm pay provides information about the wages the individual can expect in the future.<sup>7</sup> This signal effect is particularly apparent for younger workers (echoing the findings in Fitzroy et al. 2014). Regional income is used by Luttmer (2005) in his analysis of US National Survey of Families and Households data, and by Ferrer-i-Carbonell (2005) using German Socio-Economic Panel (SOEP) data. In both

<sup>3</sup> Satisfaction and income comparisons was the first topic that I worked on in subjective well-being. And it was almost the last. Andrew Oswald and I started thinking about this in the context of subjective well-being in late 1991 using data from the pilot of the first wave of the nascent BHPS. We had both been exposed to the idea of income comparisons earlier, through our work on trade-union bargaining where wage differentials between different occupational groups often appeared explicitly as a union goal. That our paper was not published until 1996 hints at the trouble we had: it was conclusively rejected by five top economics journals (with most of the referees not understanding why on earth, even if we were interested in the esoterica of income comparisons, we would also want to look for them in self-reported happiness data). Luckily for my career, times have changed, with self-reported data now being found in many areas of economic research, and subjective well-being and income comparisons have been addressed in a variety of contributions.

<sup>4</sup> Life satisfaction did not appear in the BHPS until 1996.

<sup>5</sup> Reference income here (the income that 'people like me earn') is predicted from a Mincer wage equation.

<sup>6</sup> The comparison income here is the individual's own past income. The corresponding well-being function,  $W_{it} = W(y_{it}, y_{it-1}, \dots)$  implies habituation, so that individuals become used to higher income.

<sup>7</sup> A similar signal effect is found in the Danish-linked employer–employee data in Clark et al. (2009). Satisfaction with work is shown to be positively correlated with earnings at the 75th percentile of the wage distribution within the establishment (for respondents who were in the first three quartiles of the establishment wage distribution).

cases, regional average income was found to be significantly negatively correlated with life satisfaction.

Subjective well-being measures are not the only possible way of showing comparison effects.<sup>8</sup> Others include the Leyden approach, pioneered by Bernard Van Praag. Instead of measuring income and then asking about satisfaction, this approach inverts the question by asking individuals to assign income levels (per period) to six or nine different verbal labels describing that income (such as ‘very good’, ‘sufficient’ and ‘bad’). The income amounts given by individuals reveal which types of individuals require higher levels of income in order to be satisfied. The results from this approach (for example, Van de Stadt et al. 1985) demonstrate that the income amounts supplied by individuals with higher reference group income, and those who had earned more in the past, are higher.

We can also ask people pretty much directly about their preferences for absolute versus relative income. In Solnick and Hemenway (2005), individuals are asked to choose between different states of the world, as follows.

A: Your current yearly income is \$50,000; others earn \$25,000

B: Your current yearly income is \$100,000; others earn \$200,000

Absolute income is higher in B than in A, while relative income is higher in A than in B. Individuals have a marked preference for A over B. This taste for positionality differs according to the domains over which choice is being made. In Alpizar et al. (2005) this taste is stronger for cars and housing, and weaker for vacations and insurance.

A number of pieces of work in the huge experimental literature are consistent with income comparisons. In the well-known ultimatum game, responders frequently reject offers that are under 25% of the total sum, even though this involves turning down higher absolute income (as such the vast majority of offers in the ultimatum game are between 40 and 50% of the sum to be shared). A more direct test of feelings of envy with respect to others’ income is found in Zizzo and Oswald (2001), where subjects can (at the end of an experiment in which a standard betting game is played) pay to burn the earnings of other experimental participants. These post-experiment earnings are public knowledge. Most subjects chose to burn, and half of all experimental earnings were destroyed (see also Abbink et al. 2009).

Natural experiments can sometimes help by providing exogenous movements in variables of interest. In Card et al. (2012), a court decision rendered the salary of any California state employee public knowledge. A local newspaper set up a website making it easy to find this information. Following this website launch, Card and co-authors sent an e-mail to a random subset of employees at three University of California campuses informing them about this site. Note that this is an intention-to-treat model. Some employees who received the e-mail will not have read it, or will not have followed the link to the website; some employees who did not receive the e-mail will have gone to the website on their own

<sup>8</sup> A far more detailed discussion of these other approaches appears in Clark et al. (2008b).

accord. And the treatment is not a change in the value of  $y^*$ , but rather being informed about what  $y^*$  is.

Some days after the e-mail was sent, all of the employees on the three UC campuses were surveyed about their satisfaction and their intention to quit their job. Comparing the treatment group (those informed about the website) to the control group reveals the impact of information on others' salaries. Defining the reference group as co-workers in the same occupation group (faculty vs. staff) and administrative unit in the university, the survey found lower job satisfaction for those with pay below the reference group median and a greater intention to look for a new job. The effect on both for those who were relatively well-paid was insignificant. There is also some evidence of an actual quitting effect on those who were found to be in the bottom earnings quartile in the reference group.

As the treatment here is via knowledge, the satisfaction and quitting effects are identified by comparing two individuals who have the same pay: the difference is that the treated individual is more likely to know how her pay compares to that of her reference group than does the individual in the control group.<sup>9</sup>

Last, there is evidence from neuroanalysis. In Fließbach et al. (2007) paired individuals carry out tasks (estimating the number of dots on a screen that they see for  $1\frac{1}{2}$  s) for reward, while they are in two separate MRI scanners. If they succeed in the task, they receive a payoff (and if they do not, they receive zero). The payoffs for both players vary randomly across the different rounds of the task throughout the experiment. The goal here is to see whether, conditional on own reward, the reward received by the other player is associated with brain activity (measured by blood flow in various voxels of the brain). Particular attention was paid to the ventral striatum: the 'neural circuitry of reward'.<sup>10</sup> Brain activation was shown to depend on relative income. Holding the individual's own earnings constant at 60 Euros, there was more activity in the ventral striatum when the other player earned 30 Euros than when he (all players were male) earned 120 Euros.

### 3 The Easterlin Paradox and Public Policy

There is thus a considerable variety of evidence suggesting that well-being is relative in income. It is then common to find statements to the extent that increasing GDP per capita will not lead to any improvements in average well-being (and therefore that policy should concentrate on something else instead). I believe that there are at least three reasons why such a conclusion might be premature. I discuss these in turn below.

<sup>9</sup> Somewhat along the same lines, Perez-Truglia (2015) uses a natural experiment in Norway (the easy provision of information regarding others' income) to argue that this greater income transparency produced a more positive relationship between income rank and both happiness and life satisfaction.

<sup>10</sup> Striatum activity has been shown to predict both hedonic outcomes (subjective well-being) and physiological outcomes (cortisol output: the body's response to stress).

### 3.1 How relative is relative income?

The question of *whether* income comparisons exist seems by now to have generally been answered in the affirmative.<sup>11</sup> Leaving to one side the important question of whether some groups are more affected by such comparisons than others, it is, however, not clear that the *degree* to which income comparisons matter for well-being has been established.<sup>12</sup> The key policy question here is to know how well-being changes in a society as everyone's income rises: this is the time-series question that was mentioned in the Introduction. In terms of Eq. (1), is  $W_1 + W_2 > 0$  (so that GDP growth raises subjective well-being), or is  $W_1 + W_2 = 0$ , so that economic growth does indeed not improve the human lot?

Much of the work on income comparisons using satisfaction data has produced estimated coefficients on own and others' income that are equal and opposite in sign (so that  $W_1 + W_2 = 0$ )<sup>13</sup>: this is the case in Cappelli and Sherer (1988), Clark and Oswald (1996), Clark (1996, 1999), Ferrer-i-Carbonell (2005) and Luttmer (2005); it is not the case in Godechot and Senik (2015), where the estimated coefficient on own income is four times larger than that on regional average income.<sup>14</sup>

In Van de Stadt et al. (1985), the analysis of Dutch panel data produces estimates that are compatible with utility being completely relative in income. The experimental literature has produced rather more varied results. The hypothetical choices in Alpizar et al. (2005) reveal a mean degree of positionality in income of 0.45 (a degree of positionality of 0.5 means that equal weight is given to own absolute income and to the ratio of own income to others' income). The results from ultimatum games do reveal that small offers are refused, but also suggest that utility is not completely relative (otherwise presumably all offers of under one half of the

<sup>11</sup> Intriguing work by Sacks et al. (2013) suggests that the between-country and within-country estimated coefficients on log GDP per capita for some well-being measures are remarkably similar, which is consistent with there being no relative income effects at work at all within countries. See however Easterlin (2016) regarding the estimation of short run (business cycle) rather than long-run (trend) relationships between subjective well-being and income: it is the latter that interest us in terms of the Easterlin Paradox.

<sup>12</sup> The type of work listed in Sect. 2 has established that  $W_2 < 0$  in the well-being function  $W = W(y, y^*, \dots)$ . Regarding social interactions, we are also interested in the sign of  $W_{12}$ : does the *marginal* utility of my own income depend on reference-group income? If the cross-partial derivative is positive ( $W_{12} > 0$ ), then a rise in others' income makes my own income more valuable. Such a set-up has been used to explain social interactions in hours of work: as others work more and earn more, my best reaction is to work more and earn more myself: but this leads others (who compare to me) to react by working more and earning more, and so on. See Clark and Oswald (1998) and Schor (1992).

<sup>13</sup> Other work has not related satisfaction to the level of own and others' income, but rather to individual income rank: this is another way of showing that own income compared to that of others is important for well-being. Boyce et al. (2010) analyse seven years of BHPS data, and show that life satisfaction is strongly positively correlated with income rank (within the same region-year, sex-education-year and age group-year cells), but not correlated with log income. Similarly Daly et al. (2015) find that income rank predicts a variety of health outcomes in BHPS and English Longitudinal Study of Aging (ELSA) data, while income level does not when both level and rank are introduced simultaneously into health equations. If only income rank matters, then there will be no relationship between satisfaction and a change in GDP per capita, as the amount of rank in a society is fixed by definition.

<sup>14</sup> It may be that reference groups in France are different to those in other countries (see footnote 1), or that there is less precision in the measurement of regional income, leading to attenuation bias.



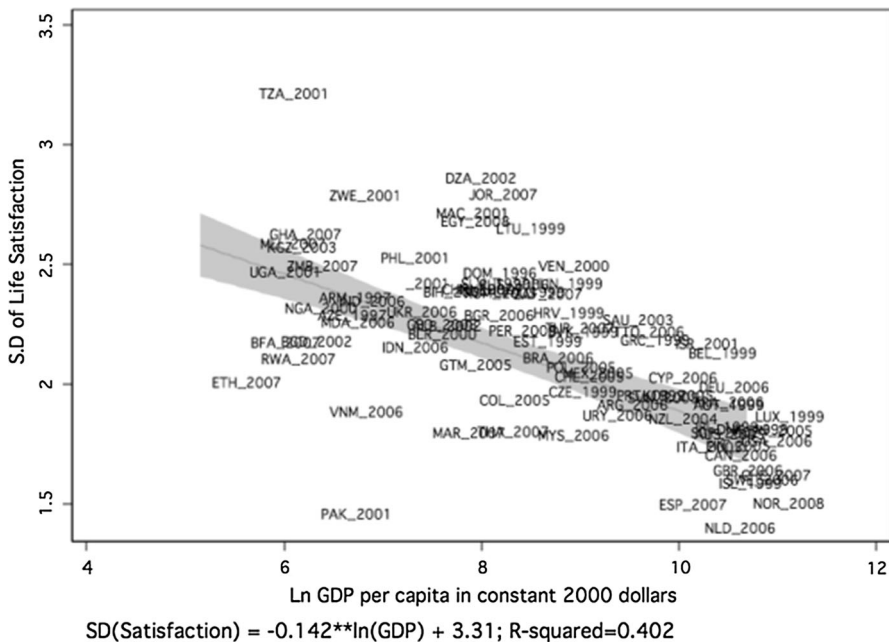
total amount to be shared would be refused). Last, in the neuro experiments of Fließbach et al. (2007), the brain activation subsequent to own earnings of 60 and others' earnings of 60 seems to be almost identical to that where both players earn only 30 (see their Figure 3b), so that in this experiment brain activation is completely relative in income.

There is not then complete agreement in the existing empirical literature. The degree of positionality would seem worthy of a more systematic investigation, including reflection on why different analytical methods do not seem to give exactly the same results in this context.

### 3.2 Happiness inequality

Even if utility does turn out to be completely relative in income, we may well still be able to make arguments for the use of GDP per capita as a potential source of societal well-being. The first of these is that almost without exception empirical analysis has concentrated on the mean level of subjective well-being in a society, without paying attention to its distribution. In the current context, economic growth may not then affect the average level of life satisfaction, as Figs. 1 and 2 show, but still be correlated with the distribution of life satisfaction.

Two recent papers (Clark et al. 2014, 2016b) suggest that this is indeed the case. The illustration in Fig. 3 shows the standard deviation of happiness and log GDP per



**Fig. 3** Happiness inequality and GDP per capita in the World Values Survey. *Notes:* these figures are based on the most recent available year for each country in the World Values Survey. *Source:* Clark et al. (2016b)

capita in the last available year of the World Values Survey (WVS), in the 2000s. The inequality of happiness is lower in richer countries, as shown by the regression equation at the foot of the figure. Doubling GDP leads to a fall in the standard deviation of happiness by around 0.1,<sup>15</sup> compared to the mean standard deviation life satisfaction figure of 2.1 in Fig. 3.

We can also look at how happiness inequality changes within countries over time. The left-hand panel of Fig. 4 shows these changes for WVS countries that recorded positive real GDP per capita growth (from the Penn World Tables) in all of the intervening years between the two consecutive WVS observations. Happiness inequality falls over time on average in growing countries, as shown by the grey line. On the contrary, the right-hand panel of Fig. 4 depicts countries that had at least some years of negative or zero growth: here the happiness inequality trend is rather upwards.

There are a number of other results in Clark et al. (2014, 2016b) relating to income and happiness inequality. The standard deviation of life satisfaction has fallen over time in BHPS, HILDA,<sup>16</sup> SOEP and GSS data (with recent upturns in the latter two). In cross sections of individuals, the standard deviation of life satisfaction is lower in richer income deciles, and in panel data the within-person standard deviation of life satisfaction is smaller for individuals in higher income deciles.

All of the above suggests that while average subjective well-being might not be affected by economic growth, the latter may serve to reduce the inequality of well-being. This is a desirable outcome in terms of any social welfare function in which the less well-off are assigned higher weights.

### 3.3 Income poverty

The last reason why income may still be of use is also based on the idea of a distribution, but this time that of income rather than subjective well-being. Most existing work on income and happiness supposes that the same relationship holds at all points of the income distribution. But income may play a more important role in determining well-being at certain points of the income distribution than at others.

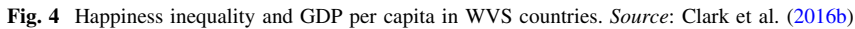
Instead of looking at the entire income distribution, some current work considers the particularity of low income, and especially poverty. With a poverty line of  $z$ , individual  $i$  is said to be poor if  $x_i < z$ , where  $x$  is their income. The normalised deprivation of individual  $i$  who is poor with respect to  $z$  is given by their relative shortfall from the poverty line, i.e.

$$d_i^z = \left( \frac{z - x_i}{z} \right)^\alpha \quad (2)$$

where  $\alpha \geq 0$  is a parameter. When  $\alpha = 0$ , the only dimension of poverty which counts is its incidence; when  $\alpha = 1$ , normalised deprivation also reflects the intensity of poverty, with a higher value of  $d$  being assigned to poorer individuals. The normalised deprivation of those with income of  $z$  or more is always zero.

<sup>15</sup> As  $0.142 \times \ln 2 = 0.098$ .

<sup>16</sup> The Household, Income and Labour Dynamics in Australia dataset.


$$W_{it} = \alpha_i + \gamma_t + \beta C_{it} + \theta \text{PI}_{it} + \varepsilon_{it} \quad (3)$$

One of the reasons put forward to explain the lack of a relationship between GDP per capita growth and happiness is adaptation: individuals quickly get used to higher income. Does this hold for poverty too? Adaptation is investigated by splitting the currently poor up into groups according to how long ago they entered poverty (within the past year, 1–2 years ago, and so on). If individuals adapt to poverty, then recent entry into poverty should reduce life satisfaction more than poverty entry a long time ago.<sup>17</sup>

The second explanation for why rising GDP does not come together with rising happiness is social comparisons. It has been shown in BHPS data that the negative

<sup>17</sup> This is the same method that was used to consider adaptation to unemployment, marriage, divorce, widowhood and children in SOEP data by Clark et al. (2008a).

effect of own unemployment on subjective well-being is smaller in high unemployment regions (Clark 2003), and that the correlation between own obesity and life satisfaction is smaller for those with overweight or obese partners (Clark and Etilé 2011). Equally, the negative effect of own divorce on well-being is smaller in high divorce regions (Brochmann 2011). Might we find the same pattern for poverty?

We are currently investigating this in 1985–2012 SOEP data (Clark et al. 2016c). We have three income groups here the poor, the ‘quasi-poor’ (above the poverty line, but not more than 50% above it) and the rich. We find, unsurprisingly, that the poor and quasi-poor are less satisfied than the rich in fixed-effect regressions. However, the pattern of results regarding the interaction between own income and the regional poverty and quasi-poverty rates does not seem to be consistent with a simple model of income comparisons.

The interaction of poverty and the regional poverty rate attracts a positive significant coefficient: the poor have higher life satisfaction in regions where the poverty rate is higher. The same applies to the quasi-poor and the quasi-poverty rate. However, the estimated coefficient on the interaction between own poverty and the regional quasi-poverty rate is zero, as is that on the interaction between own quasi-poverty and the regional poverty rate. Were this to be a simple comparisons story then we would expect both of these latter to be positive and significant (in a region with more poor people, the quasi-poor are relatively richer etc.).

We do not yet know exactly what this reflects: something of a local public goods effect related to income, or perhaps that income comparisons are only local rather than global. However, the relative income results at the bottom of the income distribution do for the moment look rather different to those that have been found for the entire population in a number of large general surveys, as discussed in Sect. 2.

## 4 Conclusion

This paper has tried to contribute to the ongoing debate on the potential role of income as a policy tool to increase national well-being. Observation at the country level continues in many cases to suggest a flat relationship between GDP per capita and average happiness in a country. One explanation proposed at the individual level is that individuals compare their income to that in some reference group. The relationship between GDP per capita and average happiness will then depend on who compares to whom, and how higher GDP per capita is distributed among the different individuals in the economy.<sup>18</sup>

There is by now quite a wide and varied literature that has produced results that are consistent with the existence of comparison income terms in the individual well-being function. However, while a great deal of intellectual effort has been expended in demonstrating that comparison income terms exist—the extensive margin of

<sup>18</sup> The potentially complicated relationship between income distribution and subjective well-being in an economy is analysed in Clark and D’Ambrosio (2015).

comparisons—much less attention has been paid to the intensive margin of comparisons: Do own income and comparison income cancel each other out partially or totally in the well-being function?

If own and comparison income do cancel each other out entirely, then income growth for all will not affect average societal happiness. Yet this need not banish income from our roster of policy tools. Recent research has underlined the role of GDP per capita growth in reducing the inequality of subjective well-being, which is desirable if we care more about the well-being of the worst off. Equally, the bottom end of the income distribution seems to behave rather differently than income in general with respect to both income comparisons to others and adaptation. The relationship between the Easterlin Paradox, income comparisons and policy in terms of subjective well-being will likely remain a rich vein to mine in future research.

**Acknowledgements** I am grateful to the Editor and an anonymous referee for useful suggestions. I thank Christopher Boyce, Conchita D'Ambrosio, Dick Easterlin and seminar participants at the AISSEC Workshop (Rome), the HEIRS Happiness Conference in Rome and Nanyang Technological University for help and useful comments. I am grateful for support from CEPREMAP, the US National Institute on Aging (Grant R01AG040640), the John Templeton Foundation and the What Works Centre for Wellbeing. Sarah Flèche kindly helped with the figures.

#### Compliance with ethical standards

**Conflict of interest** The author declares that he has no conflict of interest.

## References

- Abbbink K, Masclet D, Van Veelen M (2009) Reference point effects in antisocial preferences. CBESS, Discussion paper 09-03
- Alpizar F, Carlsson F, Johansson-Stenman O (2005) How much do we care about absolute versus relative income and consumption? *J Econ Behav Organ* 56:405–421
- Boyce C, Brown G, Moore S (2010) Money and happiness: rank of income, not income, affects life satisfaction. *Psychol Sci* 21:471–475
- Brochmann M (2011) Divorce as a social norm: evidence from household panel data. Université Paris 1 masters dissertation
- Cappelli P, Sherer P (1988) Satisfaction, Market Wages and Labor Relations: An Airline Study. *Ind Relat* 27:56–73
- Card D, Mas A, Moretti E, Saez E (2012) Inequality at work: the effect of peer salaries on job satisfaction. *Am Econ Rev* 102:2981–3003
- Clark AE (1996) L'utilité est-elle relative? Analyse à l'aide de données sur les ménages. *Econ Prévis* 121:151–164
- Clark AE (1999) Are wages habit-forming? Evidence from micro data. *J Econ Behav Organ* 39:179–200
- Clark AE (2003) Unemployment as a social norm: psychological evidence from panel data. *J Labor Econ* 21:323–351
- Clark AE, D'Ambrosio C (2015) Attitudes to income inequality: experimental and survey evidence. In: Atkinson A, Bourguignon F (eds) *Handbook of income distribution*, vol 2A. Elsevier, Amsterdam
- Clark AE, Etilé F (2011) Happy house: spousal weight and individual well-being. *J Health Econ* 30:1124–1136
- Clark AE, Oswald AJ (1996) Satisfaction and comparison income. *J Public Econ* 61:359–381
- Clark AE, Oswald AJ (1998) Comparison-concave utility and following behaviour in social and economic settings. *J Public Econ* 70:133–155
- Clark AE, Senik C (2010) Who compares to whom? The anatomy of income comparisons in Europe. *Econ J* 120:573–594

- Clark AE, Diener E, Georgellis Y, Lucas R (2008a) Lags and leads in life satisfaction: a test of the baseline hypothesis. *Econ J* 118:F222–F243
- Clark AE, Frijters P, Shields M (2008b) Relative income, happiness and utility: an explanation for the Easterlin Paradox and other puzzles. *J Econ Lit* 46:95–144
- Clark AE, Kristensen N, Westergård-Nielsen N (2009) Job satisfaction and co-worker wages: status or signal? *Econ J* 119:430–447
- Clark AE, Flèche S, Senik C (2014) The Great Happiness Moderation. In: Clark AE, Senik C (eds) *Happiness and economic growth: lessons from developing countries*. Oxford University Press, Oxford
- Clark AE, D'Ambrosio C, Ghislandi S (2016a) Adaptation to poverty in long-run panel data. *Rev Econ Stat* 98:591–600
- Clark AE, Flèche S, Senik C (2016b) Economic growth evens-out happiness: evidence from six surveys. *Rev Income Wealth* 62:405–419
- Clark AE, D'Ambrosio C, Ghislandi S (2016c) Poverty comparisons. PSE, mimeo
- Dahlin MB, Kapteyn A, Tassot C (2014) Who are the Joneses? CESR-Schaeffer working paper no. 2014-004
- Daly M, Boyce CJ, Wood AM (2015) A social rank explanation of how money influences health. *Health Psychol* 34:222–230
- Easterlin R (2005) Diminishing marginal utility of income? Caveat emptor. *Soc Indic Res* 70:243–255
- Easterlin R (2016) Paradox lost? IZA, Discussion paper no. 9676
- Ferrer-i-Carbonell A (2005) Income and well-being: an empirical analysis of the comparison income effect. *J Public Econ* 89:997–1019
- FitzRoy F, Nolan M, Steinhardt M, Ulph D (2014) Testing the tunnel effect: comparison, age and happiness in UK and German panels. *IZA J Eur Labor Stud* 3:1–30
- Fließbach K, Weber B, Trautner P, Dohmen T, Sunde U, Elger C, Falk A (2007) Social comparison affects reward-related brain activity in the human ventral striatum. *Science* 318:1305–1308
- Godechot O, Senik C (2015) Wage comparisons in and out of the firm. Evidence from a matched employer–employee French database. *J Econ Behav Organ* 117:395–410
- Goerke L, Pannenberg M (2015) Direct evidence for income comparisons and subjective well-being across income groups. *Econ Lett* 137:95–101
- Luttmer E (2005) Neighbors as negatives: relative earnings and well-being. *Q J Econ* 120:963–1002
- Perez-Truglia R (2015) The effects of income transparency on well-being: evidence from a natural experiment. Microsoft Research, mimeo
- Sacks D, Stevenson B, Wolfers J (2013) Growth in income and subjective well-being over time. Wharton, University of Pennsylvania, mimeo
- Schor J (1992) *The overworked American: the unexpected decline of leisure*. Basic Books, New York
- Solnick S, Hemenway D (2005) Are positional concerns stronger in some domains than in others? *Am Econ Rev* 95:147–151
- Stevenson B, Wolfers J (2008) Economic growth and subjective well-being: reassessing the Easterlin Paradox. *Brookings Papers on Economic Activity Spring*, pp 1–102
- Van de Stadt H, Kapteyn A, Van de Geer S (1985) The relativity of utility: evidence from panel data. *Rev Econ Stat* 67:179–187
- Zizzo DJ, Oswald AJ (2001) Are people willing to pay to reduce others' incomes? *Ann Econ Stat* 63–64:39–65