

## FOUR DECADES OF THE ECONOMICS OF HAPPINESS: WHERE NEXT?

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There has been explosive growth in the analysis of subjective well-being in Economics over the past 40 years. This article reviews some of this growth, and suggests a number of domains in which future research may proceed.

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### 1. INTRODUCTION

Much has changed in Economics over the past 40 years. One such notable change that I would like to discuss here has been the remarkable rise in the interest shown by economists in subjective variables in general and in particular measures of subjective well-being.

While measures of subjective health have long been used in Economics, seemingly without any particular adverse comment, and subjective evaluations of job, life or income appeared as mainstays in Psychology and Sociology, Economics in the 1970s appeared to be virgin territory in this respect. There were a few notable exceptions to this general aversion to subjective well-being data, and these have actually become very well-cited (Easterlin, 1974; Hamermesh, 1977 and Freeman, 1978). But these contributions were rather treated as intellectual curios, and attracted only little attention from Economists in the 1970s and 1980s. In fact, the whole well-being literature seemed to be largely moribund in Economics for roughly 15 years from the end of the 1970s.

The economics of happiness really seemed to take off in the 1990s<sup>1</sup>, and in a remarkable way. It is in particular worth underlining that as I write four of the 20 most-cited articles ever published in the *Economic Journal* explicitly have the

*Note:* This paper draws on my work with very many co-authors, to whom I wish to express my gratitude. An anonymous referee provided helpful comments, and Ed Diener graciously pointed me in the right direction for information on citations to subjective well-being articles. I thank Joyup Ahn, Danny Blanchflower and Conchita D'Ambrosio for useful advice, and seminar participants at the Korea Labor Institute's International Conference of Work and Happiness (Seoul).

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<sup>1</sup>As it did in other disciplines too. Diener *et al.* (2016) note that there were over 14,000 publications in 2015 on subjective well-being (SWB).

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word “happiness” in their title<sup>2</sup> (and two of the three most-cited articles in *Journal of Public Economics* deal with the question of subjective well-being).<sup>3</sup>

Happiness data have been used for broadly three different purposes, which I shall attempt to review in this article. At the first and simplest level, they were used as left-hand side variables in empirical analyses to answer the question: What makes people happy? The role of labor-force status and income were of particular interest among economists here. Second, the roles were reversed, with subjective well-being now appearing on the right-hand side of equations that were estimated to show what happy people did. The outcomes here ranged from income and productivity to labor-market behavior, marriage, children, morbidity and mortality (Freeman’s 1978 paper showing that job satisfaction predicted individuals’ future job quits in panel data was very much a precursor in this field).

Last, happiness data have been used to help address a number of economic puzzles, such as:

- If the self-employed are happier than the employed, why do most of us still work for other people? (Blanchflower and Oswald, 1998 and Frey and Benz, 2008).
- Why do wages differ so much across industries and occupations? (Clark, 2003 and Pischke, 2010).
- How much inequality should there be in a society? (Clark and D’Ambrosio, 2015).
- How harmful is inflation compared to unemployment? (Di Tella *et al.*, 2001).
- How can we value public goods, such as green spaces, pollution and aircraft noise? (Van Praag and Baarsma, 2005; Luechinger, 2009 and Krekel *et al.*, 2016).

My task here will be to look back at what has been done over the past productive 20 years in terms of subjective well-being research. This will cover the three topics mentioned above. But my task is more than that: it is also to set out a kind of wish list of what I would like to see achieved in the next 20 years.

The remainder of the article is organized as follows. Section 2 considers the determinants of well-being, and then Section 3 addresses the consequences. Section 4 discusses some applications of the estimated coefficients in well-being regressions to the labor market and elsewhere, and Section 5 some areas where I think research on well-being may progress in the future. Last, Section 6 concludes.

## 2. THE CORRELATES OF SUBJECTIVE WELL-BEING

This is in a way the most obvious question that can be asked regarding subjective well-being: What does its distribution look like in terms of observable characteristics? These characteristics can be at both the individual level and at a more

<sup>2</sup>Clark and Oswald (1994), Oswald (1997), Easterlin (2001) and Ferrer-i-Carbonell and Frijters (2004).

<sup>3</sup>Clark and Oswald (1996) and Blanchflower and Oswald (2004).

aggregate level.<sup>4</sup> We then turn to the essential policy questions of social comparisons and adaptation.

### 2.1. *Individual Characteristics*

The individual correlates of various measures of subjective well-being were the subject of some of the very first work in Economics: the role of income and relative income (Hamermesh, 1977), trade unions (Borjas, 1979) and race and sex (Bartel, 1981). The literature since then has grown enormously, and covered a wide variety of attributes of individuals and the jobs that they do.

Perhaps the most widely-studied of all personal characteristics is income. It is by now almost universally accepted that individuals who are observed to have higher levels of income in cross-section data also report higher levels of subjective well-being. The literature is by now far too vast to survey satisfactorily, but some examples using individual-level data are Kahneman and Deaton (2010), using the Cantril ladder as the outcome<sup>5</sup> and data from the Gallup-Healthways Well-being Index (GHWBI), Luttmer (2005), using life satisfaction as the outcome and data from the National Survey of Families and Households, and Layard *et al.* (2010), using data from the General Social Survey and the German Socio-Economic Panel (SOEP). At the country level, Deaton (2008) uses data from the Gallup World Poll to show that richer countries have higher average scores on the Cantril ladder. These kinds of empirical analysis introduce income in logarithmic form: this corresponds to the subjective well-being effect of an additional dollar of income being larger for those with lower incomes than for those with higher incomes.

After income, one of the individual attributes that has attracted the most attention is unemployment. Here again, the evidence is pretty much unanimous: unemployment is associated with lower levels of well-being both in cross-sectional data (comparing one individual who is unemployed to another who is in employment) and in panel data (looking at the same individual over time as their labor-force status changes between working and unemployment). This kind of finding was an early staple in psychology (Jahoda, 1982), and has made repeated appearances in the economic literature (Clark and Oswald, 1994; Winkelmann and Winkelmann, 1998 and Grün *et al.*, 2010: see also Layard *et al.*, 2012)

Other work has considered characteristics that are of interest in a descriptive sense, but which are not themselves amenable to policy interventions, such as age, sex, ethnicity and country of birth. But it is not because these characteristics cannot be changed that we do not care about them: a good example is the great attention that has been paid to the gender and race patterns of pay in the labor market.

<sup>4</sup>The literature on the individual-level determinants (and some of the aggregate ones) is by now huge, and I will only be able to mention a small number of references here. Longer reviews appear in Dolan *et al.* (2008) and Layard *et al.* (2012).

<sup>5</sup>In which respondents are asked the following question: “Please imagine a ladder with steps numbered from zero at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?”

With respect to age, one extremely stable finding is that of a U-shaped relationship between subjective well-being and age (two examples are Blanchflower and Oswald, 2008 and Cheng *et al.*, 2017). While this finding is widespread, there is no current agreement on why well-being should behave in this way. Socially-determined explanations have been called into question by research showing the same U-shape in Great Apes (Weiss *et al.*, 2012).

There are notable sex differences in subjective well-being. In particular, women often report higher values on cognitive-evaluate measures than do men, but also higher stress scores (Nolen-Hoeksema and Rusting, 1999). The analysis of GHWBI data in Kahneman and Deaton (2010) shows that women report more positive affect and higher scores on the Cantril ladder, but also more negative affect and greater stress (see their Table 1). There is debate over the explanation of women's higher satisfaction scores. In the labor market, Clark (1997) considered the potential roles of observable characteristics (such as age and education), selection (of more satisfied women) into the labor market, and different work values in British Household Panel Study (BHPS) data, without being able to fully explain the observed job satisfaction premium in favor of women. He finally suggests a possible role for expectations. If outcomes are related to expectations, and women have lower expectations on the labor market than do men, then any given job outcome will be on average evaluated more positively by women than by men. Suggestive evidence along these lines comes from there being no gender difference in job satisfaction for younger women, women with degrees, women with professional working mothers, and those working in male-dominated workplaces. All four of these groups are likely to have higher expectations regarding the labor market. Sousa-Poza and Sousa-Poza (2003) noted that the gender job satisfaction gap in BHPS data has been shrinking over time, which is consistent with women's rising expectations, and the most recent contribution using the BHPS finds that it has disappeared completely (Green *et al.*, 2018). Stevenson and Wolfers (2009) also find evidence of falling female happiness in a number of countries.

The country ranking of well-being is a subject that has attracted a huge amount of interest, in both academic research and the popular press. Helliwell and Wang (2012) analyse data from the Gallup World Poll and produce a wide variety of country rankings. The results for the Cantril ladder and life satisfaction broadly have OECD countries (and especially Scandinavian countries) towards the top of the world ranking (although both Japan and South Korea lag notably behind other OECD countries in this respect), and poorer African countries towards the bottom. This country ranking is not identical for different subjective well-being measures. Asian countries do rather better on happiness measures, and South American countries are more highly-ranked when the outcome is instead positive affect.

With respect to race, there is an established Black-White well-being gap in the US, which seems to be shrinking over time (Stevenson and Wolfers, 2008). Deaton and Stone (2016) also find a race difference in GHWBI data, with Blacks reporting lower Cantril ladder scores than Whites or Others.<sup>6</sup>

<sup>6</sup>They also underline a significant framing effect, with individuals who were first asked about their satisfaction with the way things are going in the US reporting lower individual well-being scores in the next question. This treatment effect is smaller for Blacks than for Whites, and serves to eliminate the Black-White well-being gap (see Figure 1 in Deaton and Stone, 2016).

Other individual characteristics do change within individuals over time, such as income and labor-market status as discussed above. Without going into an extensive list of these characteristics, we finish this subsection by considering three individual characteristics that have attracted empirical attention: health, family life and education.

The first of these is the most problematic. It is very commonplace to find that health and life satisfaction, for example, are correlated. However, health is very often measured in surveys via a self-report question.<sup>7</sup> As such, both health and life satisfaction are contemporaneous subjective reports that are potentially contaminated by common mood effects (or any other hidden common factor that affects both reported health and well-being). Research has avoided this pitfall by using more objective measures of health, such as the number of health problems that the individual experiences (with respect to sight, hearing, chest, heart etc.), disability, the number of doctor visits over the past year, and the number of days spent in hospital over the past year. The results continue to show a positive correlation between health and subjective well-being.

Marital status is systematically correlated with well-being. The married declare higher levels of satisfaction and happiness than do the single, or the divorced, separated or widowed. Marriage is of course an individual choice, and finding that the married are happier than the single could either show that marriage brings about well-being, or that it is “happy types” who are more likely to become married in the first place. An analogous argument can be made for individuals who divorce. The use of panel data can help us to evaluate selection into marital status as a function of subjective well-being. Stutzer and Frey (2006) analyze this question using SOEP data, and find that the well-being differential associated with marriage is indeed more due to those who were happier when single being more likely to become married in the future.

Perhaps even more than marital status itself, the relationship between children and well-being has produced a wide variety of diverse findings. Cetre *et al.* (2016) consider data from the Gallup World Poll, the European Social Survey (ESS), and the SOEP. They conclude that the relationship between children and happiness differs sharply across countries and populations. In particular, this correlation depends on income, and turns from negative to positive at a GDP level of around 20 000 US Dollars, and on age, being more positive for older adults. Using the panel SOEP data, and following the same kind of approach as used by Stutzer and Frey (2006) for marital status above, it is shown that (prior to any fertility) individuals who will later become parents report higher levels of life satisfaction than do those who will never have children.

The existing work on education has produced a mixed bag of findings. How can this be the case when one of the staple findings in labor economics is that education produces greater earnings (and income is positively correlated with subjective well-being)? One first point is that education may not only raise incomes, but also raise expectations in general about the kind of job or life that the individual

<sup>7</sup>For example, in the BHPS the subjective health question is “*Please think back over the last 12 months about how your health has been. Compared to people of your own age, would you say that your health has on the whole been,*” with response categories of Excellent, Good, Fair, Poor and Very Poor.

believes that they should have:<sup>8</sup> in this case the net effect of education on happiness will depend on the rise in outcomes relative to that in expectations. Education is also an individual choice variable, and it is entirely possible that happier people (say) decide to obtain more education. The ideal experiment here would be to randomly allocate education across individuals, and then look at their subjective well-being: this would reveal the causal effect of education.<sup>9</sup> Various reforms have indeed changed access to education for certain groups: for example, the GI Bill in the US and the raising of the compulsory minimum school leaving age in a number of countries. Oreopoulos and Salvanes (2011) find that a later school-leaving age increased both the income and the well-being of those affected by the change.<sup>10</sup>

## 2.2. Aggregate Characteristics

As well as their own individual characteristics, subjective well-being is systematically linked to the aggregate characteristics of the society in which they live. Perhaps the first of these latter to be systematically investigated was GDP per capita. While Easterlin (1974) found only a weak relationship between well-being and per capita income (based only on a small number of countries), this conclusion has been strengthened in more recent data. In Table 3.1 of Layard *et al.* (2012), GDP per capita explains 65 percent of the cross-country variation in the Cantril ladder in the Gallup World Poll.

The discussion in Section 2.1 above noted that individual unemployment was associated with sharply lower levels of well-being. But what about the aggregate unemployment rate? This is typically found also to be negatively correlated with happiness: one well-known contribution in this respect is Di Tella *et al.* (2001), who use information from the Eurobarometer. Di Tella *et al.* not only correlate country-level life satisfaction with the unemployment rate, they also consider the country inflation rate at the same time. The inflation rate is of course a purely aggregate phenomenon. The comparison of the estimated coefficients on aggregate unemployment and aggregate inflation allows us to calculate a trade-off between the two: How much more unemployment would individuals be ready to accept (in the sense of remaining at the same level of life satisfaction) in order to reduce inflation by one percentage point?<sup>11</sup> One standard measure of an economy's health is the misery or Okun index, defined as the sum of the unemployment and inflation rates. The results in Di Tella *et al.* reveal that this assumption of equal weighting is not borne out by the data. In their life-satisfaction regressions, the estimated coefficient on unemployment is over twice as large as that on

<sup>8</sup>Clark *et al.* (2015b) analyse Japanese data and find that education is associated with higher levels of happiness, but also with higher scores on a question asking individuals how happy they believe that they should be.

<sup>9</sup>We would also like to do the same thing with respect to marital status, children, income, and so on.

<sup>10</sup>Although Clark and Jung (2016) cannot replicate the UK results in their analysis of BHPS data, finding a life satisfaction effect that is either zero or negative.

<sup>11</sup>This use of subjective well-being regressions to calculate trade-offs is one of the more interesting applications of this new kind of data. It complements existing work that has tried to infer individual preferences via behavior (i.e., revealed preferences) and hypothetical-choice experiments.

inflation: at the country level, one point of unemployment affects subjective well-being more than does one point of inflation, which is surely a piece of information that can be used to guide macroeconomic policy. This conclusion is confirmed in a recent update of the analysis using newer Eurobarometer data by Bell *et al.* (2014).

As well as the level of income (in the region, or country or whatever), we may also be interested in its distribution. The question of the relationship between inequality and happiness has by now produced quite a number of papers. This research area is surveyed in Clark and D'Ambrosio (2015). Although it may seem natural to think that individuals dislike inequality, there are a number of qualifications that can be made to this simple statement (regarding inequality as an indicator of my own future opportunities, deserved versus undeserved inequality, perceived versus actual inequality, and the role of individual comparisons to others' incomes, as in Section 2.3 below). Perhaps unsurprisingly in this light, the empirical literature on the link between happiness and inequality has come up with a wide variety of findings: in Table 13.1 of Clark and D'Ambrosio (2015) only around half of the 30 or so listed contributions suggest a negative relationship. There is obviously still much to learn here.

Other work has looked at the effect of the environment, considering climate, green spaces and pollution. There are by now a number of carefully-crafted pieces of work showing that pollution reduces life satisfaction: two examples are Van Praag and Barsma (2005) with respect to aircraft noise, and Luechinger (2009) regarding air pollution. Green spaces and amenities in general raise the well-being of those who can access them: see Ferreira and Moro (2010), Ferrer-i-Carbonell and Gowdy (2007), Lora (2008) and Krekel *et al.* (2016). Rehdanz and Maddison (2005) consider the role of climate, and in particular temperature and precipitation. All of these variables are potential policy targets. Public intervention can and has changed the distribution of green spaces and environmental pollution. Although less directly accessible, climate change is one of this century's key challenges, and Rehdanz and Maddison (2005) specifically speculate on how climate change might affect subjective well-being.

The relationship between government in general and subjective well-being has also attracted attention. Research here has considered, amongst others, the size of government in general (Bjørnskov *et al.*, 2007 and Flavin *et al.*, 2014), the quality of government (Helliwell and Huang, 2008), direct democracy (Frey and Stutzer, 2000 and Flèche, 2015), the government's welfare-state position (Pacek and Radcliff, 2008), and its position relative to the progressivity of taxation (Oishi *et al.*, 2014). Research into some institutions such as trade-unionism has revealed correlations with subjective well-being both at the macro (Flavin *et al.*, 2010) and at the individual (union-membership) levels (Bryson *et al.*, 2004).

Some contextual variables result directly from what other people do. We can here consider for example crime, trust, corruption and altruism. Many of these are measured in the World Values Survey: Trust ("*In general, do you think that most people can be trusted, or alternatively that you can't be too careful in dealing with people?*"), Altruism ("*Have you donated money to a charity in the present month?*") and Social Support ("*If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them?*"). Helliwell *et al.*

(2018) uncover a strong relationship between trust and well-being, suggesting that a movement from the lowest to the highest level of trust is worth one point on the 0–10 life satisfaction scale, which is a large effect. Generosity, as measured by charitable giving, is also correlated with well-being. While it is undeniably pleasant to be surrounded by generous people, there is also intriguing work suggesting that altruism raises the well-being of those who are doing the giving (see Aknin *et al.*, 2013 and Dunn *et al.*, 2008). Last, social support has been shown to be important in World Values Survey data: societies where everyone has someone to rely on are predicted to have life satisfaction scores that are two points higher than a society where no-one has anyone to rely on.

Of course, not all the behaviors that others engage in are positive: one obvious example is crime. The local quarterly crime rate in the local Police Force Area has been shown to reduce individual mental health in BHPS data (Dustmann and Fasani, 2016).<sup>12</sup> One salient point to be raised here is that the largest effect of crime on well-being may not transit through actually being a victim of crime, but rather via the fear of becoming a future victim of crime (see Moore and Shepherd, 2007).<sup>13</sup>

One recent example of empirical analysis that attempts to introduce a number of these different types of aggregate variables at the same time is provided in Table 3.1 of Layard *et al.* (2012). This analyzes the relationship between country-level life satisfaction and measures of social support, freedom, corruption, healthy life expectancy, education and income, all at the aggregate level, and the proportion of individuals who are separated, divorced or widowed. The data here is from the Gallup World Poll, and the well-being measures are the Cantril ladder, positive affect and negative affect. The results for the Cantril ladder show significant relationships with income, health and social support (of around the same size) and smaller, but still significant, relationships with freedom and corruption. Marital status and education are not significant in these regressions. The positive and negative affect analysis reveals a role for social support, freedom and corruption: GDP per capita is not significant here (see also Kahneman and Deaton (2010) for a stronger relationship, using individual-level Gallup data, between income and the Cantril ladder than between income and affect).

The past two sub-sections have underlined that both individual and societal characteristics are correlated with subjective well-being. Many will argue that the ultimate aim of studying individual well-being is to help design policies (at the individual or more aggregate level) that will produce greater well-being. To what extent can we use the findings above to guide well-being policy?

There are in particular two phenomena which may prevent these correlations from being a useful guide to societal welfare maximization. The first of these is adaptation: a certain individual or societal characteristic may be welcome in the short run, but in the longer run we become used to the goods or the state in question. Some of the well-being effects outlined above may then be only temporary

<sup>12</sup>See also Powdthavee (2005).

<sup>13</sup>Of course, the same argument can be made about other life domains as well. While we have highlighted the correlation between being unemployed and subjective well-being, the fear of future unemployment (commonly measured as job insecurity) may be just as important. Equally, the well-being consequences of low income may be paralleled by negative effects from financial insecurity.

in nature. Second, some behaviors may raise the well-being of the individual concerned, but reduce the well-being of others. A very obvious example is crime, but we will argue below that this phenomenon may in fact be widespread. The positive effects of my behavior on my own well-being may be entirely wiped out by negative effects on others' well-being. Again, looking at the correlation between my own characteristics and my well-being only will be a poor guide to policy for societal well-being. Man is not an island, and what other people do is essential for individual well-being (see Clark, 2016c).

### 2.3. Social Comparisons

Sections 2.1 and 2.2 considered individual and aggregate characteristics respectively. Some of the characteristics are both individual and aggregate, with the aggregate figure (the regional unemployment rate, country GDP per capita) being the sum of the individual-level values. We may wonder how these two levels interact. By far the most-often analyzed characteristic in this respect has been income. While richer countries are happier than poorer countries as a rule, how is the effect of one's own income moderated by income at a more aggregate level? In other words, is a real annual income of \$40 000 per year just as satisfying in Korea as it would be in a country with significantly lower GDP per capita?

The subject of relative income, or income comparisons, was considered at length in Clark *et al.* (2008a). The broad idea here is that subjective well-being ( $W$ ) is affected positively by own income ( $Y$ ), but negatively by the income of some reference group ( $Y^*$ ):<sup>14</sup>

$$(1) \quad W = f(Y, Y^*)$$

In equation (1), individuals are happier when they earn more, but less happy as others earn more. This is most often suggested to reflect social status, envy or some similar phenomenon. Note that Section 2.1 discussed the relationship between individual income and subjective well-being. But it is not enough to know this relationship to make good policy: we need to know how the individual's income affects the well-being of others as well.

There is by now a very substantial literature that has used a variety of approaches to show that individuals do have well-being functions of this type. In terms of observed behavior, there is large literature on conspicuous consumption (whereby individuals gain status from having more of a particular good than do others). Conspicuous consumption is by nature comparative: you can only be conspicuous relative to what others are doing. A couple of empirical examples are Bloch *et al.* (2004) and Brown *et al.* (2011).

Alternatively, it can be shown directly that measures of individual well-being are negatively correlated with measures of  $Y^*$ . For example, Clark and Oswald

<sup>14</sup>To carry out empirical analysis here, we do need to know who is in the reference group. The literature has used a number of different plausible definitions: those who have the same characteristics (for example, age, sex and education) as me; others in the same household; friends; neighbours; work colleagues; or even myself in the past. For the last definition, the comparison income level to which I would compare my current income is the income that I have myself earned in the past.

(1996) analyze BHPS data and show that the job satisfaction of British employees rises with the individual's own income, but falls with the income of the peer group (other people with the same job and demographic characteristics) rises. Clark (1996a) carries out the same type of analysis, but with the comparison being the partner's income. Luttmer (2005) is a careful attempt using American data to measure comparisons to those who live close to the individual; see also Ferrer-i-Carbonell (2005) using German data. Bellet (2017) is related here, as it considers a measure of wealth, housing, rather than income. Bellet uses American Housing Survey data to show that housing satisfaction is positively correlated with the size of one's own house, but negatively correlated with the size of the houses that have been built in the county since the household moved in: this in particular applies to the average size of all houses bigger than the household's own house, and the average size of the biggest ten percent of houses (see his Table 1).

Income comparisons have also been analyzed using questions on how much money you would need to reach a certain level of well-being (the Leyden "Welfare Function of Income": see Van de Stadt *et al.*, 1985), experimental data (Zizzo and Oswald, 2001 and Abbink *et al.*, 2009), questions on preferences over hypothetical outcomes (Alpizar *et al.*, 2005; Solnick and Hemenway, 2005), and neurological evidence from brain activity in situations where social comparisons are salient (Fließbach *et al.*, 2007).

The conclusion from this work is that well-being is at least partly comparative in income. This is one explanation of the Easterlin Paradox (Easterlin, 1974). If we consider  $Y^*$  to be the country's GDP per capita, then at any point in time richer individuals will be happier than poorer individuals (holding  $Y^*$  constant in equation (1), individual well-being rises in income). But as everyone becomes richer, both  $Y$  and  $Y^*$  rise, and their effects potentially cancel each other out. Higher GDP per capita will then not be accompanied by greater happiness. Easterlin (2017) is a recent discussion.

While income comparisons have attracted the most attention in this literature, the variable  $Y$  in equation (1) can refer to outcomes in many different life domains. In Economics, the relationship between unemployment and individual well-being has figured regularly. The question of social comparisons over unemployment was addressed in Clark (2003) using BHPS data. The well-being effect of unemployment is context-dependent, with own unemployment having a smaller effect on well-being in higher-unemployment regions and in higher-unemployment households. The surprising finding that unemployment matters less in well-being terms when it is shared with others is in line with research on suicide and para-suicide rates by the unemployed, which are highest in low-unemployment regions (Platt *et al.*, 1992).

Research on individual health status has also shown evidence of comparisons. Blanchflower *et al.* (2009) find that self-reports of being overweight rise with own Body Mass Index (BMI), but fall with the average BMI of the reference group (defined as country\*age group\*sex cells) in Eurobarometer data. Carrieri and de Paola (2012) present analogous findings for well-being and height in Italian cross-section data. For a given level of own height, those who are taller than the average of their peer group (at the region\*age\*sex level) report higher levels of well-being. Clark and Etilé (2011) also consider BMI, but with the comparison

being to the partner. The analysis of SOEP data reveals that (as is standard) at least after a certain point own BMI and well-being are negatively related. However, the strength of this relationship is moderated by partner's BMI. In particular, the negative effect of own obesity on well-being is smaller when one's partner is either overweight or obese.

Similar kinds of social-context effects on well-being have been uncovered in the domains of education (Nikolaev, 2016) and religion (Clark and Lelkes, 2009). In general, it seems that there is much more work that can be done to uncover the effects of social comparisons in the determination of subjective well-being.

#### 2.4. *Adaptation*

We now turn to adaptation. The correlations described in Sections 2.1 and 2.2. above were contemporaneous. But for policy purposes, we need to know if these effects will fade away in the longer-run. A recent survey of this area is Clark (2016b). Note that adaptation is just a particular kind of comparison, as in equation (1), where the reference group is now not other people but rather the individual himself or herself in the past.

In terms of comparisons to income, today's income is evaluated in terms of how much I used to earn in the past. My own past good fortune then reduces my current well-being. Clark (1999) used BHPS panel data to define  $Y^*$  as the income of the same individual in the same job one year earlier, and found that own past earnings are indeed negatively correlated with current job satisfaction. Similar results have been obtained in SOEP panel data: see for example Grund and Sliwka (2007), Di Tella *et al.* (2010) and Vendrik (2013). The finding of a negative relationship between past income and current subjective well-being, conditional on the level of own income, is synonymous with individuals adapting to higher incomes.

As for the discussion of social comparisons in Section 2.3, there are a number of “non-happiness” ways of looking at adaptation to income. Work on the Leyden Welfare Function of Income has shown that individuals who earned more in the past say that they require a higher level of income today in order to be satisfied.<sup>15</sup> It is also possible to use information on observed behavior to look for evidence of income adaptation. This has been carried out with experiments on revealed preferences over hypothetical income profiles (Loewenstein and Sicherman, 1991 and Frank and Hutchens, 1993), and the analysis of survey data on labour supply (Hotz *et al.*, 1988).

If individuals adapt to income, then the well-being response to higher income will be only temporary, as in Figure 1 below.

In Figure 1, a permanent rise in income at the end of year 2 produces a contemporaneous rise in well-being. But this effect does not last, with well-being progressively dropping back down to its pre income-rise level. As in Section 2.3 above, we might wonder whether the same phenomenon of adaptation is found in other life domains. This work has been carried out for the labour market, marital status, children, and health in particular. The analysis of adaptation to

<sup>15</sup>Van Praag (1971) calls this “preference drift:”

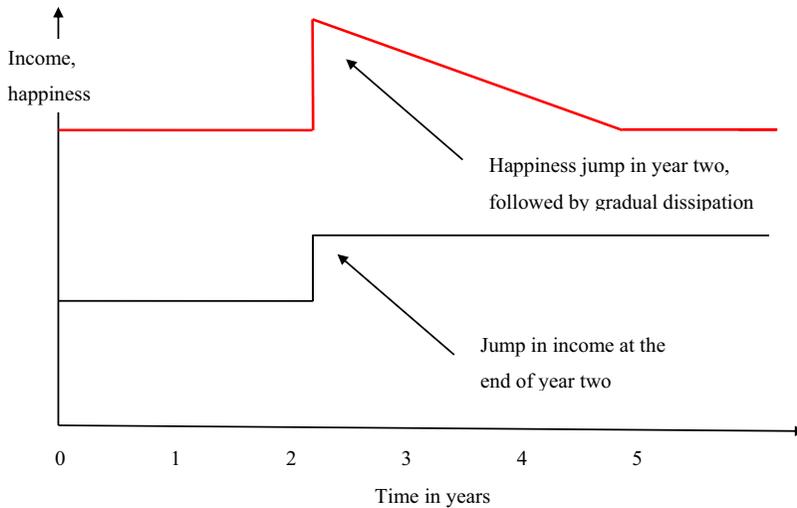


Figure 1. Happiness Adaptation following an Income Shock

Source: Clark (2016b).

unemployment, for example, consists in following the same individual in panel data before and after they enter unemployment. Of key interest here is whether the pattern of well-being while the individual remains unemployed shows evidence of adaptation (by first dropping and then bouncing back).

Figure 2 below illustrates the adaptation results for five life events (unemployment, marriage, divorce, birth of child, and widowhood) in BHPS data from Clark and Georgellis (2013). The results here are similar to those in the SOEP (Clark *et al.*, 2008b) and in other panel datasets (as surveyed in Clark, 2016b). Unemployment stands out here as being a status to which individuals do not adapt. On the contrary, there is evidence of fairly complete adaptation to all of marriage, children, divorce and widowhood.

While Figure 2 (and work on other panel datasets besides) concludes for only a temporary well-being impact of marriage, in most of the countries analyzed marriage is preceded by a number of years of being in a couple. When we instead apply the same analysis technique to becoming a couple (i.e. entering a relationship), we instead find only partial or no adaptation in BHPS, SOEP and Australian HILDA data (see Chapter 5 of Clark *et al.*, 2018).

There is still much work to be done in the area of well-being adaptation using large-scale panel datasets. The evidence so far suggests that adaptation is not a universal truth. As can be seen in Figure 2, unemployment is an outlier in terms of the events considered there. But it is not the only one. Some of the work cited in Clark (2016b) concludes as to partial or no adaptation to disability, cosmetic surgery and job insecurity (but full adaptation to moving house and becoming self-employed). In addition, although there is evidence for adaptation to income in general, Clark *et al.* (2016b) use SOEP data to show that individuals do not adapt to entry into poverty (and indeed do not adapt to drops in income in

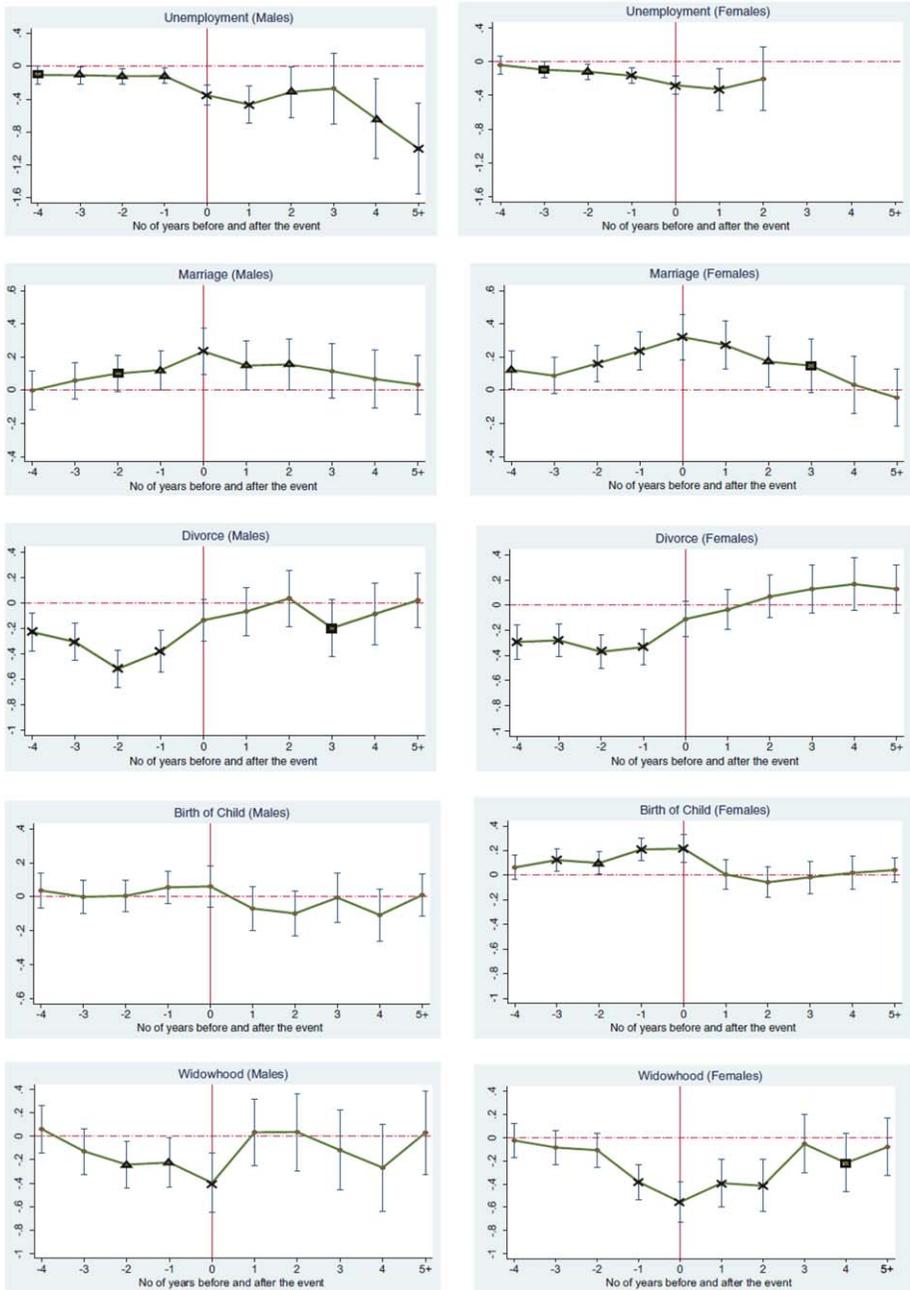


Figure 2. Adaptation to life events in the BHPS

Notes: X, Δ and □ denote significance at the 1 percent, 5 percent and 10 percent levels respectively; the error bars represent the 95 percent confidence intervals. The analysis here concerns people who became unemployed (for example) at time zero and who stay unemployed over the period in question. The change in life satisfaction between times  $t+1$  and  $t+2$  is the average well-being (conditional on other control variables) of individuals who are unemployed at  $t+1$  and remain unemployed at  $t+2$  (Source: Clark and Georgellis, 2013).

general). This underlies that there might be different well-being effects according to the direction of the change that we identify in panel data, which is one of the frontlines of research that I will consider in Section 5 below.

### 3. WHAT DO HAPPY PEOPLE DO?

The literature on the determinants of happiness has been growing fast. But so has that on the consequences of well-being. This literature has in part been carried out with the validation of subjective well-being data in mind. One common objection to the use of such data is exactly that they are subjective. However, if happier people can be shown to be more likely to have some objective outcome in the future, then there must be some “real” information in the subjective well-being scores that different individuals report. The advantage of using subjective data to predict future observable outcomes is that economists have traditionally been more comfortable with objective measures of behavior (what people do) than with subjective evaluations (what people say).

Section 2.1 above asked whether income buys happiness; we can also ask the reverse question of whether happy people earn more. Well-being has been shown to increase productivity (Oswald *et al.*, 2015), and to help predict future earnings (De Neve *et al.*, 2013). In Flèche (2017), teacher satisfaction predicts pupil value-added in Maths: as such, satisfaction can not only affect the individual’s own outcomes, but also those of others. Workers with higher well-being scores have been shown to be less likely to quit their jobs (Freeman, 1978 was an early contribution here) and less likely to retire (Clark *et al.*, 2015c).

Individuals with higher well-being scores also have better health outcomes. One famous contribution here is the “Nun Study,” in which nuns who wrote more positive short descriptions of their life in their late teens and early twenties were significantly more likely to still be alive 60 years later (Danner *et al.*, 2001). Banks *et al.* (2012) find large-scale equivalent findings relating measures of well-being to survival probabilities six years later in English Longitudinal Survey of Ageing data. In Diener and Chan (2011), happier people are shown to have stronger immune systems, experience less inflammation and cardiovascular disease and suffer from fewer infections. They also suffer from less telomere shortening (see Epel, 2009).

Turning to marriage and the family, as noted in Section 2.1 above, happiness scores help to predict future marriage. Along the same lines, in SOEP data lower levels of life satisfaction predict future divorce or separation (Clark *et al.*, 2008b) and future fertility (Cetretcuken *et al.*, 2016).

So being happy is good for you. And it may also be good for other people around you. Leaving to one side the vexed question of whether happiness is contagious, it has been shown that subjective well-being helps predict social behaviors that others value. As noted in Section 2.2, individuals with higher (previously-elicited) happiness scores are subsequently more generous when deciding how much money to give to others; equally, Thoits and Hewitt (2001) suggest that happier individuals volunteer more. Flavin and Keane (2012) underline a relationship between subjective well-being and political participation. Two recent contributions in this domain are

Liberini *et al.* (2017), who find that life satisfaction predicts political support for the incumbent government in BHPS data (even controlling for income and the change in the financial situation), and Ward (2017), who uses 40 years of Eurobarometer data covering 15 European countries to show that life satisfaction is a stronger predictor of incumbent vote share than are economic growth, unemployment and inflation. Last, De Neve *et al.* (2013) note that happier people are in general more cooperative and more sociable.

The mirror image of this correlation is that those with lower well-being are more likely to engage in activities that hurt others. Layard *et al.* (2014) find that average childhood emotional health over the ages 5 to 16 predicts (negatively) the number of adult crimes between the ages of 16 and 34 in British Cohort Study data.

#### 4. SOME USES OF WELL-BEING DATA

The previous two sections have addressed the key questions of what determines happiness, and what does happiness predict. In addition to these central issues, subjective well-being has been exceedingly useful in providing estimates of economic magnitudes that are difficult or impossible to obtain from other sources.

Preferences are not absolute. It is not helpful to say “*I like X*” or “*I like Y very much.*” In a world of constrained maximisation, we need to know how much you would be willing to give up to have one unit more of *X* or *Y*. Were we to be able to observe some cardinal measure of utility, then we could say (for example) that one more hour of leisure is worth some number of utils. But many people don’t think of utils as a natural unit of measure.<sup>16</sup>

We often refer to trade-offs in order to quantify preferences: how much money would you give up to have that new car (i.e. What is the car’s shadow price)? Or how much extra weekly labour income would you require to work one more hour per week (i.e. What is your shadow wage)?

Information on these trade-offs can be obtained from a life-satisfaction equation that is estimated as a function of weekly income (*Y*), weekly hours of work (*h*) and a set of other controls,  $\underline{X}$ :

$$(2) \quad \text{Life satisfaction} = \beta_1 Y + \beta_2 h + \theta' X + \varepsilon$$

Here one more hour of work per week would be compensated (in the sense of leaving life satisfaction unchanged) by a rise in weekly labor income of  $-\beta_2/\beta_1$ . Clark (1996b) was an early attempt at this kind of calculation on data from the first (1991) wave of the BHPS, producing a reasonable-sounding figure of £8.60 per hour.<sup>17</sup> A far more recent estimation of this type, appealing to an exogenous movement in hours of work due to the reductions in the standard workweek in

<sup>16</sup>Although Clark *et al.* (2018) argue that it is becoming more natural to think of life satisfaction on a zero to ten scale as an outcome, so that individuals do have an idea of what one life-satisfaction point represents.

<sup>17</sup>This is equivalent to around £17.50 per hour in 2017 prices.

France and Portugal, appears in Lepinteur (2016). The same approach is taken for shorter workweeks in Japan and Korea in Hamermesh *et al.* (2017).

Running an equation such as (2) produces one estimated coefficient on each variable, and so only one value for the trade-off between two determinants of life satisfaction. If we would instead like to predict why some people act differently from others (i.e. to predict behavior) then we require the trade-offs to be different for across groups of individuals. We will likely never have enough data to estimate (2) separately for each individual, but we can separate individuals up into groups. This can either be done *ex ante*, by running separate regressions for men and women, or for the older and the younger, or by using latent-class estimation techniques, where a number of different regression lines (and so estimated coefficients) are identified endogenously via maximum likelihood (see Clark *et al.*, 2005). The findings from the latter kind of estimation have shown that those with a higher estimated marginal utility of income (a higher value of  $\beta_1$  in equation (2) above) retire from the labour market later (Clark and Fawaz, 2016) and tend to vote more right-wing (Clark and Etilé, 2013).

The estimated trade-offs in subjective well-being equations can be compared to those obtained by other more traditional means. The estimated income-leisure trade-off seem to be similar in subjective well-being equations and standard labor-supply estimation (Akay *et al.*, 2015). However, Benjamin *et al.* (2014) strike a note of caution, as their estimated trade-offs in life-satisfaction equations do not correspond well to the trade-offs that individuals actually make in observed choices.

Subjective well-being analysis can also inform us about the value of the kinds of aggregate variables discussed in Section 2.2 above. As noted there, Di Tella *et al.* (2001) compared the estimated coefficients on unemployment and inflation. We can also compare the estimated coefficient on income to that on a more aggregate variable to calculate the nuisance value of noise pollution (as in Van Praag and Baarsma, 2005) and air pollution, or the value of access to green spaces, for example.

The estimated coefficients in well-being equations also contribute to the understanding of choice. One initial vexed question on the labor market concerned the extent of voluntary unemployment (in the aftermath of the huge rise in unemployment following the first and second oil-price shocks in the 1970s). If unemployment is chosen over employment, then it should yield a higher level of well-being. Clark and Oswald (1994) compared the well-being of the employed to the unemployed in the first wave of the BHPS and found a large gap between unemployment and employment, which is not consistent with unemployment being for the most part a choice. In the same vein, a very well-known contribution by Blanchflower and Oswald (1998)<sup>18</sup> looked at self-employment versus employment: Is self-employment a choice, or is it rather the last resort of those who cannot find an adequate job? Job- and life-satisfaction data reveal that the self-employed actually have higher levels of well-being than do the employed. This itself poses a new question: Why are we not all self-employed then, if it is preferable to employment? Blanchflower and Oswald hypothesize that some people

<sup>18</sup>This is the most-cited paper ever published in the *Journal of Labor Economics*.

would like to become self-employed, but are not able to obtain the necessary capital to do so (as there is asymmetric information, and banks do not necessarily fund all good projects). As a test, the sample is split into those who inherited money and those who did not, with the argument that the former are less likely to be capital-constrained. The satisfaction differential between the employed and the self-employed is large and significant for the latter group, but zero for the former group. In the same way that the unemployed would prefer employment (but can't find a job), some employees would prefer to be self-employed (but cannot obtain the necessary capital to do so).

The same kind of analysis of allocation on the labor market can be carried out within employees, looking at public- versus private-sector jobs (Luechinger *et al.*, 2008), part-time versus full-time jobs (Booth and Van Ours, 2008), and temporary versus permanent work (Busk *et al.*, 2017). Moving away from simple binary comparisons of this type, we can consider the choice of different occupations and industries. There has been a huge amount of work in labor economics on wage differentials at this level. Yet there is still no agreement on what these represent: Are they compensating for unobserved job characteristics (as in the theory of compensating differentials), or do they reveal that jobs in some occupations and industries are really more attractive than others (so that the wage differentials reflect rents)? One way of distinguishing between these two explanations is to see whether the observed wage differences map onto observed job-satisfaction differences. Any such mapping will be consistent with wage rents, while the lack of a correlation suggests compensating differentials rather. This is what Clark (2003) does using BHPS data. There is no correlation between the industry wage and job satisfaction structures; however, there is a strong relationship between the occupation wage and job satisfaction structures. The proposed interpretation is in terms of tournaments. Tournaments involve moving up job ladders (and changing occupation, but not industry), and the "prize" associated with winning the tournament is a wage rent.

Last, we can consider allocations outside of the labour market, and in particular the attraction of different regions. Oswald and Wu (2011) show that the pattern of life satisfaction across the States of the US closely matches the associated distribution of objective amenities.

These applications of the estimated coefficients in well-being regressions still remain relatively unexplored. Much more work in this area is to be expected.

## 5. CURRENT AND FUTURE FRONTLINES

Since empirical research in subjective well-being in Economics really started to take off in around 2000, there has been a great deal of replication, contention and confirmation, as is normal in pretty much any empirical science. While some results have now entered into well-being lore (relative effects of income, the U-shaped relationship with age), others are much more in the frontline of current research. In addition to the ongoing research mentioned a number of times above, this last section discusses a number of promising research areas, in no particular order.

A first very general point is that research tends to be rather monolithic in terms of the datasets used, and thus in terms of the populations whose well-being we analyse. It is true that there is cross-country work on the Gallup World Poll and the World Values Survey, but large-scale work using panel data has in the vast majority been reduced to three countries: Australia (HILDA), Germany (SOEP) and the UK (BHPS). This restriction is of course by necessity rather than choice, but we should always be aware of the potential lack of external validity of many of our findings.

Second, almost every single well-being paper of the type described in Section 2 has modelled averages. It is undoubtedly true that we care about average well-being in a society, but we probably care about its distribution too: for given average satisfaction, we would prefer the variance of well-being to be lower, as this would imply fewer people with low well-being (and our social-welfare function may put more weight on those in misery than on those with high subjective well-being). There are very few contributions in this sense. One recent one (Clark *et al.*, 2016a) underlined that the correlates of the mean and variance of well-being may well not be the same. While there has been a lot of work on the potential lack of a relationship between GDP growth and average satisfaction or happiness in a country, GDP growth does seem to be systematically correlated with a lower variance in well-being.

Another way of broadening the area of empirical inquiry would be to take quantile effects into account (as in Binder and Coad, 2011 and 2015). A variable that is overall uncorrelated with well-being in a regression may instead exhibit a strong correlation at some point of the well-being distribution, making it potentially useful for policy purposes.

Research has also been concentrated on the adult determinants of adult subjective well-being. There are at least two possible extensions here. One is to consider the distal (childhood and family) correlates of adult well-being (as in Layard *et al.*, 2014, and Clark *et al.*, 2018). The other is to consider childhood well-being as an outcome in its own right. Partly because the childhood we live is part of what makes a good life, and partly because childhood well-being is such a strong predictor of well-being throughout adulthood. The concentration on family and childhood here requires birth-cohort data for the measurement of family background, childhood outcomes, and well-being throughout life.

There has not been enough work on the effect of exogenous movements in explanatory variables on well-being. Of course, a number of key variables are exogenous by construction (age, ethnicity and sex) and others seem to pretty much act as if they were (unemployment). Exogenous movements in some others are quite easy to imagine, such as lottery winnings for income (Apouey and Clark, 2015 and Gardner and Oswald, 2007), or the minimum school-leaving age for education (Clark and Jung, 2016 and Oreopoulos and Salvanes, 2011). However, instruments for other variables are rather more difficult to think of, such as marital status, and children.<sup>19</sup>

<sup>19</sup>Of course some events are exogenous by nature, and there have been a number of analyses of the well-being consequences of events such as natural disasters (Rehdanz *et al.*, 2015) and terrorism (Frey *et al.*, 2009; Metcalfe *et al.*, 2011 and Clark *et al.*, 2017).

Panel data has greatly advanced our understanding of the causes and consequences of subjective well-being. One obvious contribution has been the ability to control for individual fixed effects, thereby conditioning out any unobserved individual variables that do not vary over time and might be correlated with well-being. One obvious candidate here is reporting style, whereby some individuals tend to use lower numbers to reflect the same latent feelings than do others. Panel data also allows us to correlate current well-being to past values of the explanatory variables. This was behind the analysis of adaptation described in Section 2.4; another application is to consider the role of past completed events on current well-being, such as the scarring effect of past unemployment (Clark *et al.*, 2001 and Knabe and Rätzel, 2011). To date this kind of dynamic analysis has only been quite simple. Other more complicated analyses are possible, including the use of lagged dependent variables and the introduction of different time profiles of the explanatory variables (such as the order of different past poverty spells in Clark *et al.*, 2015a).

The use of panel data also allows us to consider potential asymmetries in reactions to positive and negative movements. The estimation of fixed-effects models works via comparing intra-individual changes in well-being to the intra-individual changes in the explanatory variables. This estimation is symmetric, in the sense that the same relationship is assumed to hold when the explanatory variable is above the individual-level mean and below the individual-level mean:

$$(3) \quad WB_{it} - \overline{WB}_i = \beta(x_{it} - \bar{x}_i) + \varepsilon_{it}$$

In the case of income, a jump of 1000 Euros above the individual-level mean induces a change in life satisfaction of the same absolute size (we here assume that the dependent variable is life satisfaction and the explanatory variable,  $x$ , is income) as does a drop of 1000 Euros below the individual-level mean:  $\beta$ . But it is far from clear that this is the case, and loss-aversion would suggest that falls in income produce well-being movements that are larger in size than those from an equivalent rise in income. Some empirical evidence along these lines using SOEP data appears in D'Ambrosio and Frick (2012) and Boyce *et al.* (2013).

This asymmetry is not limited to income, or even to cardinal explanatory variables. Considering a binary explanatory variable, labor-force status say, entry into unemployment from employment is assumed to produce the same movement in life satisfaction in absolute value as the inverse switch when the individual exits unemployment to start a new job. In general, much remains to be explored regarding the role of the time profiles of explanatory variables and current subjective well-being.

The next two research areas concern the exploration of more unusual data in the context of subjective well-being. There has been only very little work on happiness and brain activity (two examples are Urry *et al.*, 2004 and Fliessbach *et al.* 2007). Neuro evidence is very valuable here not only for what it tells us about the sources of well-being, but also because it arguably avoids any bias in well-being scores due to the individual reporting function. The well-being measures here come straight from the horse's mouth, as it were.

There is great interest in the role of genetics. Are we pre-determined by our genes, including in terms of our subjective well-being? While recent research has identified genes that are correlated with subjective well-being (De Neve *et al.*, 2012) this does not mean that happiness is pre-determined. Research has underlined the importance of gene-environment interactions. For simplicity, imagine that there are less-favorable and more-favorable genotypes. Individuals with a more-favorable genotype are not susceptible to low well-being; those with the less-favorable genotype are susceptible to low well-being, but only if they experience negative events. Empirical analysis will reveal a correlation between genotype and subjective well-being. But this is not an individual fixed effect: it rather reflects an interaction between genes and the events that befall the individual. In this simple illustration, policy that avoided the occurrence of negative events (perhaps unemployment or poverty) would prevent the less-favorable genotype from playing a role, effectively shutting off any observed relationship between genes and happiness.<sup>20</sup>

Last, the rise of subjective well-being across the social sciences has been accompanied by an increase in the availability of ways of measuring it. Which way of measuring well-being is the best? There is no simple way of answering this question, but research has shown that life satisfaction, measures of recent positive and negative emotions (or “affect”) and eudaimonic measures (that reflect notions of mastery, relations with others, self-acceptance and purpose) are reasonably similar, especially in terms of how they are related to a standard set of explanatory variables (Clark, 2016a). But they are not the same. It is important to distinguish between affect (how you feel right at this moment: your emotions) and cognitive/evaluative measures such as life satisfaction, which refer to your evaluation of your life overall. We might expect the latter to be some kind of sum of the former, but this does not seem to be the case. This raises the very difficult question of which of affect or life satisfaction we should have as a goal as policy-makers. What matters more: life as you live it day-to-day or moment-to-moment, or life as you remember it? Would you prefer to live a good life, or to remember having lived a good life?

There is still a great deal that we do not know about these different measures. For example, the work on social comparisons and adaptation has almost exclusively appealed to information on life satisfaction. But would the same phenomena be revealed were we to consider the emotion of sadness, or Eudaimonia?

Beyond these correlations, future work may appeal to the ability of measures of subjective well-being to predict behavior, as discussed in Section 3 above. There is however a dearth of research of this type comparing a number of different well-being measures. The fascinating work in Benjamin *et al.* (2012) shows that own happiness is not the only factor that predicts individual choice (in hypothetical-choice experiments): there are independent effects of control, purpose, fun and social status. It is worth noting that own happiness is the largest single predictor of choice by far, and that the addition of these non-happiness terms does not improve the predictive power of the equation that much. The search for the “best” measure of well-being is likely to continue for some time.

<sup>20</sup>See Pluess (2015) for a recent survey of this fascinating area.

## 6. CONCLUSION

The remarkable rise of subjective well-being across the social sciences, and in particular Economics, seems to continue apace. Once considered as an intellectual curiosity at best, and most definitely not part of Economics, it has seemingly started to enter the mainstream. Happiness articles appear in the top-ranked journals, and are amongst the best-cited articles published by those journals. Just over 15 years ago, a review article asked “What can economists learn from happiness research?” (Frey and Stutzer, 2002). That article is currently the sixth most-cited article ever published in the *Journal of Economic Literature*: the answer would then appear to be “a very great deal.” The past four decades of happiness research have been inventive, and to my mind have brought social sciences closer together. The coming decades have every chance of being just as exciting.

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