

Ferrer-i-Carbonell, Ada

Article

Happiness economics

SERIEs - Journal of the Spanish Economic Association

Provided in Cooperation with:

Spanish Economic Association

Suggested Citation: Ferrer-i-Carbonell, Ada (2013) : Happiness economics, SERIEs - Journal of the Spanish Economic Association, ISSN 1869-4195, Springer, Heidelberg, Vol. 4, Iss. 1, pp. 35-60, <https://doi.org/10.1007/s13209-012-0086-7>

This Version is available at:

<https://hdl.handle.net/10419/77737>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<http://creativecommons.org/licenses/by/2.0/>

Happiness economics

Ada Ferrer-i-Carbonell

Received: 18 July 2011 / Accepted: 7 February 2012 / Published online: 25 February 2012
© The Author(s) 2012. This article is published with open access at SpringerLink.com

Abstract There is enough evidence to be confident that individuals are able and willing to provide a meaningful answer when asked to value on a finite scale their satisfaction with their own lives, a question that psychologists have long and often posed to respondents of large questionnaires. Without taking its limitations and criticisms too lightly, some economists have been using this measure of self-reported satisfaction as a proxy for utility so as to contribute to a better understanding of individuals' tastes and hopefully behavior. By means of satisfaction questions we can elicit information on individual likes and dislikes over a large set of relevant issues, such as income, working status and job amenities, the risk of becoming unemployed, inflation, and health status. This information can be used to evaluate existing ideas from a new perspective, understand individual behavior, evaluate and design public policies, study poverty and inequality, and develop a preference based valuation method. In this article I first critically assess the pros and cons of using satisfaction variables, and then discuss its main applications.

Keywords Happiness economics · Preferences · Subjective well-being · Welfare

JEL Classification D31 · I1 · I3

This article is a revised version of the one published in *Els Opuscles del CREI*, vol. 28, May 2011
[Ferrer-i-Carbonell \(2011\)](#).

A. Ferrer-i-Carbonell (✉)
Institut d'Anàlisi Econòmica (IAE-CSIC), Barcelona GSE and MOVE fellow,
Campus UAB, 08193 Bellaterra, Barcelona, Spain
e-mail: ada.ferrer@iae.csic.es

1 The convenience of using self-reported happiness

Over the last decades it has become clear that individuals are able to value their happiness or their satisfaction with their own lives. Respondents of many large household questionnaires across the world have given a meaningful and consistent numerical answer to the question “how happy (satisfied) are you with your life?” For example, average happiness is consistently about 7 across all recent Spanish questionnaires.¹

The use of self-reported happiness questions has led to many new insights into individual happiness and motivations (Van Praag and Ferrer-i-Carbonell 2011). While some of the results are unsurprising—for example, “married” healthy and employed individuals are happier than single unhealthy unemployed—, we knew little about some of the findings. In fact, some of the empirical findings are somewhat in contradiction with existing assumptions and theories. These at times puzzling results are the ones that have generated most debate in the literature. This is not only because of their controversial nature but also because they are often the most difficult ones to resolve with current data and knowledge. The rather weak relationship found between income (or economic growth) and reported happiness and the discussion on the deterministic nature of happiness are two of the most controversial issues in happiness economics.

In the last years many researchers, including economists, working with happiness data have concluded that money does not make people happy, or in Oswald’s words (2006) “the hippies were right all along about happiness”. This conclusion, coming from the empirical evidence about the fairly small role of income in explaining happiness, has generated some debate among economists who generally expect income to be one of the driving motives of individual behavior. In fact, observed individual behavior in the labor market, for example, contradicts these happiness findings. Happiness economists have explained this apparent contradiction by referring to the importance of the reference income to determine own happiness—that is, income is valued in relative terms. Most of the current empirical evidence indicates that individuals do indeed judge how good their life is using information on how their situation compares to the relevant others, and therefore equally distributed income growth has little impact on reported happiness.

While there was a consensus on the small role of economic growth on long term happiness (Easterlin 1974 and all the following work on the Easterlin Paradox) and on the relative nature of income, recently Stevenson and Wolfers (2008) opened up the debate by finding (some) opposite empirical evidence. It is important to notice that while they do find a positive relationship between country average income and happiness for some countries, they also find a weak relationship in the US and in some European countries. The Stevenson and Wolfers article has generated much debate and press and we should therefore expect more discussion and empirical evidence in the near future. Up until now the main critical reaction to Stevenson and Wolfers article argues that the positive results found by these two authors are by and large due to the use of short term data and to focusing on transition countries that reflect a very peculiar situation of collapse and recovery of GDP (Easterlin and Sawangfa 2009). Despite all

¹ World Database of Happiness, directed by R. Veenhoven: <http://worlddatabaseofhappiness.eur.nl>. Happiness levels are reported on a 0–10 scale.

efforts, one can predict that the debate on income and happiness will remain in the literature for a long time, at least until longer time series data become available for many countries.

Another much debated issue in this literature is the deterministic nature of happiness, which has experienced an important turn in the very last years with growing evidence against individuals' unlimited capacity to adapt to about everything. Although happiness strongly depends on personality traits (for example, extraversion is positively correlated with happiness) and therefore is to a large extent inborn or genetically determined, life circumstances can affect individual reported happiness levels more than what researchers believed for the last 30 years. The availability of data sets that follow large samples of individuals over time has allowed researchers to revise the "old" belief that happiness levels were individually determined and thus time-invariant—see, for example, the literature on "hedonic treadmill", "preference drift", or "set point theory". This previous literature was based on poorer data; for example, the most cited article to support that individuals completely adapt to lottery wins (i.e., income increases) is based on a cross-sectional sample of 22 lottery winners (Brickman et al. 1978). A new set of research has recently reexamined the degree to which individuals adapt to (un)favorable situations using new data and estimation techniques, suggesting that individuals' capacity to adapt is smaller than previously thought and depends on the type of individual and on the life-changing event. For example, while individuals do eventually adapt to losing a spouse, they seem to be unable to adjust to unemployment which has a negative effect that is very long lasting and that remains even after being reemployed (for example, Lucas et al. 2004).

Although psychologists have already asked and used happiness questions for about 40 years, only recently has such information caught the attention of economists. The happiness economics literature is embedded in the increasing interest on deepening the understanding of individual preferences beyond the evidence which can be obtained from individual choice behavior (for example, buying and voting behavior). This interest has led to the development and expansion of alternative methods, such as observing individual behavior in experiments or asking individuals directly about their happiness; their risk attitudes (Dohmen et al. 2005); their reported (stated) choice over hypothetical lotteries (Dohmen et al. 2005; Hartog et al. 2002), or what they deem a good income to be (Van Praag 1971), among others. These methods complement the most traditional approaches to understanding individual behavior in a large variety of situations, which in turn may provide useful information for modelling. It is in this context that one has to understand much of the work done by economists who use subjective questions as a proxy measure of utility. The key common characteristic defining this line of research is the use of self-reported measures of satisfaction with life or with any aspect of it with the purpose of better understanding individuals' preferences over theoretical and policy relevant issues, such as preferences and tastes over income, relative income, job amenities, unemployment, health determinants, inflation, and inequality. This information in turn has been used to, among others, evaluate existing ideas with new approaches, examine common behavioral assumptions, understand and predict behavior, develop a new preference based approach to value non-market goods, study poverty and inequality from a subjective perspective and evaluate and design public policies.

2 The method at a glance

2.1 How to measure happiness: method and assumptions

There is now enough evidence to be confident that individuals are able and willing to provide a meaningful answer when they are asked to value on a finite scale their satisfaction level with their own lives. Individuals in many questionnaires around the world have been asked to value their satisfaction level with life or with some of its aspects (such as their health, job or financial situation) on a finite scale, which can be numerical (for example, 0–10) or verbal (for example, “very bad” to “very good”). [Cantril \(1965\)](#), [Wilson \(1967\)](#) and [Bradburn \(1969\)](#) are considered the fathers of subjective measures, for they developed and first introduced such questions in large questionnaires. Since then many other researchers have contributed to the development of such measures by, for instance, developing different wordings or using different scales to recode the answer (verbal or numerical)². As a matter of example, the satisfaction question posed to all respondents of the 2006 wave of the German Socio Economic Panel (SOEP) reads as:

In conclusion, we would like to ask you about your satisfaction with your life in general. Please answer according to the following scale: 0 means “completely dissatisfied”, 10 means “completely satisfied”.

How satisfied are you with your life, all things considered?

The answer to this question is known as individual subjective life satisfaction (happiness or well-being). The answers to the satisfaction with aspects of life questions (e.g., satisfaction with job, financial situation, and health status) are termed as domain or partial Satisfactions. The validity and meaningfulness of this satisfaction measure lies on two main assumptions. First, there is a correlation between reported satisfaction and the theoretical concept we are interested in. Second, individuals mean or *feel* about the same when reporting their satisfaction level—that is, individuals reporting an 8 on the 0–10 scale feel more satisfied with their life than those reporting a 6.³

Most of the earlier evidence supporting the above assumptions and thus the reliability of subjective satisfaction measures came from psychologists who have shown over the years that there is a clear correlation between self-reported satisfaction and more objective psychological measures of happiness, such as the amount of smiling in the questionnaire ([Sandvik et al. 1993](#)) and changes in facial muscles ([Kahneman 1999](#)). Since health is considered an important determinant of “objective” happiness, the empirically found positive correlation between self-reported happiness and objective measures of health is also considered as a key result supporting the first of the two above assumptions ([Blanchflower and Oswald 2008](#); [Stephoe and Wardle 2005](#)). Another string of the literature adds to the evidence on the reliability of the subjective measures by testing the relation between happiness reports and physical body reac-

² For an illustration of the variety of questions see, [Veenhoven \(1995\)](#) or Diener’s web page at: <http://www.psych.uiuc.edu/~ediener/>.

³ Notice that this is not the same as to advocate the use of subjective measures to make welfare comparisons.

tions. For example, a set of studies show that certain health *treatments* are more effective on those individuals that report higher levels of happiness or lower levels of psychological stress (Hayney et al. 2003; Cohen et al. 2006).⁴ In brain science, evidence shows that happiness reports correlate with physical measures of brain activity (Urry et al. 2004).⁵

Besides the above mentioned evidence on the correlation between reported satisfaction and objective measures of happiness, health, or physical reactions, there is a set of studies that test the existence of a “universal” shared concept of satisfaction or happiness. In other words, to see whether individuals feel about the same when reporting their happiness (second assumption). The existing empirical evidence clearly supports this; that is, individuals do have a very similar understanding of concepts such as satisfaction and happiness. For example, individuals are quite good at predicting other individuals’ happiness (or emotions) by looking at pictures and videos (Diener and Lucas 1999; Sandvik et al. 1993). On a related issue, Van Praag (1991) found evidence that individuals belonging to the same language community translate verbal labels in a context-free framework into similar numerical values. More specifically, not only is the meaning of “good” and “bad” the same for all respondents, but also the relationship between these verbal labels and a numerical scale (for example, 0–10) is judged in a similar way by respondents.

In addition to the two already described assumptions, there are two empirical assumptions that have important implications for the statistical analysis: (1) Whether the subjective satisfaction answers have a cardinal or an ordinal meaning; and (2) What is the nature of individual unobservable time persistent traits (notably personality traits) that largely determine satisfaction.

If satisfaction were to be cardinal, the distance between satisfaction levels would be meaningful (for example, someone reporting an 8 would be exactly twice as happy as someone reporting a 4). Instead, if utility were to be ordinal, the distance between satisfaction levels would not provide any information. Although from a theoretical perspective this distinction is very relevant, empirically it is not very interesting, as it does not really matter for the results (Ferrer-i-Carbonell and Frijters 2004; see also Boyce 2010). Based on this, many researchers in the field have used linear econometric methods and assumed cardinality, since from an econometric perspective it is more convenient to assume cardinality. Notwithstanding this, some of the applications do require cardinality, for example when averaging happiness over groups or countries and when studying poverty.

From a statistical perspective, the use of subjective questions requires some further assumptions concerning the nature of the unobserved factors. Besides the usual time varying unobservable factors (for example, whether the day of the interview was a sunny day or the respondent’s car had just broken down), subjective questions also depend on individual unobservable time persistent traits, such as intelligence, neu-

⁴ See <http://www.choosingbrillianthealth.com/medical-research/research-studies.html> for a long list of articles that examine the relationship between well-being and psychological factors in general and health outcomes.

⁵ For an overview on the empirical evidence supporting the reliability of subjective satisfaction measures see Clark et al. (2008) and Layard (2010).

roticism, and optimism. In contrast with the usual unobservable variables, the latter remain constant over all the years in which we observe an individual. Although at the beginning most of the studies only used cross-sectional data and were therefore unable to correct for these unobserved personal traits, recent studies have mostly used the increasingly available longitudinal data, which allow taking account of time persistent unobserved individual traits. Ferrer-i-Carbonell and Frijters (2004) show that the correct inclusion of such individual effects has a large impact on the results, which means that studies employing cross-sectional data should be taken with precaution. For example, Ferrer-i-Carbonell and Frijters (2004) find that in Germany the income effect on life satisfaction falls to as much as one third when controlling for individual fixed effects. In other words, since individuals differ in their abilities and tastes, it is important to compare happiness reports of the same individual across time instead of comparing individuals with each other. For example, the effect of unemployment on happiness is more accurately estimated when examining individuals' happiness changes when they loss a job instead of comparing happiness reports of unemployed and employed individuals. This type of analysis requires using panel data, which has limited the literature that wants to rely on countries for which this type of data is available, notably the German Socio-Economic Panel and the British Household Panel Survey. Nevertheless, there are many studies that do use cross-section data such as the Eurobarometer, the U.S. General Social Survey data, or the European Social Survey. In the future, one can expect an increase in the number of studies that examine life satisfaction in non-western countries, using data such as the Life in Transition Survey (LiTS) or the Russian Longitudinal Monitoring Survey, which is a panel data.

Although most of the current literature on examining individuals' preferences trough subjective well-being is based on the type of questions described in this section, there are also other important projects to the subjective measuring of well-being. Krueger, Kahneman, Schkade, Schwarz, and Stone have a project on National Time Accounting (2008) in which they draw from the distinction between experienced happiness, which relates to the daily feelings individuals experience from moment to moment, and the reported subjective happiness, which reflects the evaluation individuals make about their own life over a long period. The last concept is captured by the measures presented in this section, while experienced utility can be measured through the National Time Accounting project developed by these same authors (Kahneman et al. 2004).

2.2 The estimation procedure

We start by postulating that reported satisfaction (S), which is a function of the theoretical concept of utility (U), depends on a set of individual characteristics (X). In regression analysis language, we then write:

$$S_{it} = \alpha + \sum_k \beta_k x_{k,it} + v_i + \varepsilon_{it}$$

where i indexes the individual, t the time period, usually the year, and k the characteristic. The vast majority of the literature has been based on using different econometric

techniques, specifications, data, and approaches, to identify the relationship between individual characteristics x_k and reported satisfaction and to use this information for, among others, understanding individuals' preferences, testing some existing theories or assumptions, developing valuation studies of non-market goods, and studying subjective poverty and inequality.

The explanatory variables that have interested economists the most relate to the individuals' current situation (for example, family or individual income, health status, and job status or unemployment), to individuals' relative position (for example, own past income, income changes, and income of the reference group), and to the environment where individuals live (for example, inflation and unemployment rate, income inequality, and air quality).

The choice of the econometric approach when working with satisfaction measures is based on a few important considerations. First, depending on the willingness to assume cardinality or ordinality, researchers can and have used linear models such as OLS and other cardinalizations (Van Praag and Ferrer-i-Carbonell 2004, 2008, chapter 2) or ordered response models (logit or probit). As mentioned above, the difference between these two sorts of econometric methods has no important consequences for the results, as the trade-offs (ratios) between the coefficient estimates are fairly constant across regression techniques. Second, the nature of the individual persistent traits also determines the econometric method to follow. The increasing availability of panel data—that is, individuals are followed over time—has allowed researchers to control for these individual time persistent traits, which despite not being the main interest of economists can substantially bias the results of the variables of interest (Ferrer-i-Carbonell and Frijters 2004). The intuitive reason behind this finding is that controlling for individual time invariant effects probably takes part of the endogeneity problem away by removing a crucial share of the unobservables from the error term. Suppose that money makes people happy but also happier individuals are more likely to be richer. Then taking away personality traits correlated with happiness from the error term will solve an important component of the endogeneity problem. For example, Stutzer and Frey (2006) find that happier individuals are more likely to get married—that is, not only does marriage make people happier but also happier people have a larger chance to marry. Similarly, the results of Ferrer-i-Carbonell and Frijters (2004) suggest that although money does seem to make people happier, happier individuals are also more likely to be richer.

Aside from correcting for individual time persistent traits and therefore identifying the effect of individuals' situation on happiness by looking only at changes in own circumstances (individual fixed effects), the happiness literature has not yet been very successful at finding adequate methods to examine and evaluate some possible reverse causality. One of the main concerns in the literature has been the causal relationship between income and happiness (as mentioned above, to see whether more satisfied individuals also have a larger chance to obtain higher incomes). The most obvious approach to answer this question would be either to find an instrument for income or to have a “design” experiment that would identify the effect of an exogenous income change on individual happiness. Ideally one would want to run an experiment in which randomly selected individuals unexpectedly get a large amount of money and compare them with identical individuals who did not receive such a windfall. Alternatively, one

can seek for real life situations that mirror this scenario. Since wage rises depend on individual effort and inheritances and bequests are likely to be predictable (i.e., individuals can anticipate them), none of these income changes are good instruments to mirror the ideal scenario described above. In practice this means that so far only lottery winnings have been considered to be a good instrument for the effect of income on happiness. Since data on lottery winnings is limited (data sets that include happiness questions usually contain information only about rather large winnings, which very few respondents get), up until now there is only one study that uses this instrument to assess the causality between income and mental well-being (Oswald and Gardner 2007). In other studies, Frijters et al. (2004) and Frijters et al. (2005) argue that the income changes in former East Germany after the fall of the Wall were unanticipated and therefore can be used as an exogenous measure of income. Frijters et al. (2005) estimate that about 35–40% of the life satisfaction increase experienced in East Germany after the fall of the Wall was due to the large income increase. In a related study, Frijters et al. (2004) use the same event to examine the causal relationship between income and health satisfaction. These authors conclude that although income affects health satisfaction positively, the effect is rather small. Besides income, there are other variables suspected of suffering from reverse causality in the happiness regression, regression, such as health or marital status (Stutzer and Frey 2006).

3 What makes individuals happy?

The use of satisfaction questions as a proxy measure of utility has been mostly used to understand individuals' preferences over theoretical and policy relevant issues, such as preferences over income, job amenities, employment, health determinants, inflation, and inequality. Although an exhaustive review of all the results and its implications is a difficult if not impossible endeavor, in what follows I will go through the main evidence on the determinants of satisfaction.

One of the main and earliest interests in this literature has been to understand the relationship between income and life satisfaction, a venture that started in the early 1970s (Van Praag 1971; Easterlin 1974) and continued with the modern happiness economics (Clark et al. 2008). The main result is that the relationship between individual income and self-reported satisfaction is rather small (although always statistically different from zero) and this is even more so when controlling for individual fixed effects (Ferrer-i-Carbonell and Frijters 2004). The magnitude of the income coefficient on a satisfaction regression is fairly small when compared to the coefficients of other variables such as unemployment or marriage. In a cross-country comparison study, Clark et al. (2005) allow for some heterogeneity and show that the effect of income on happiness differs across countries and it depends on individual characteristics as well. This result implies that not everybody translates money into satisfaction in the same way. When using macro data, most of the studies have also found a very weak relationship between country average GDP per capita and average self-reported satisfaction (Easterlin 1974; Di Tella and MacCulloch 2008), although there are a few exceptions (Stevenson and Wolfers 2008). These findings (both with micro and macro data) contradict not only most existing theories but also challenge our common sense

as well as individuals' observed behavior. This "paradox" has stimulated researchers in the field to test empirically the different existing explanations for these findings, notably the relative nature of income and individuals' adaptation patterns.

If individuals were to derive happiness depending on how well they perform as compared to others, equally distributed income increases would not lead to substantial happiness changes, which would explain the weak relationship between happiness and income found in the literature. In economics, as in many other disciplines, there is a sizeable amount of work on the interdependence of preferences to examine, for example, the effect that comparing to others has on individual consumption and other behavior. The use of satisfaction measures has allowed researchers to test empirically the relevance of relative income (i.e., relative to the others) for own satisfaction, a theoretical idea that has a long tradition in economics (Frank 1985; Knight 1922; Duesenberry 1949). Although based only on few observations obtained from a survey carried out in 1995 among faculty, students, and staff at the Harvard School of Public Health, it is interesting to mention the results of Solnick and Hemenway (1997) who report that about 50% of the respondents in their survey preferred a world in which their relative income was higher and their own income lower to one with opposite characteristics. The existing literature using large panel data sets shows that in developed countries there is a negative and statistically significant correlation between own happiness and the income of the reference group.⁶ This seems to indicate not necessarily that individuals are envious but that they use the others to assess how good their own income is. Since the size of the reference income coefficient is in some cases similar to the one for own income (Ferrer-i-Carbonell 2005), if incomes grew in a similar way for all individuals in the same reference group, no one would get much happier from it.

There is another branch of the literature emphasizing that, in some cases, individuals compare their income to that of others, not to evaluate their own position but to acquire information about their own future income prospects. In these scenarios, the income of others is a proxy for "expectations about future income" and therefore has a positive sign in the happiness regression. For a set of less developed countries Stutzer (2004) finds such a positive sign of the reference income and argues that this is an indication that individuals in these countries who face high uncertainty take the reference income as a signal about own income expectations. Similarly, Clark et al. (2009a) find with linked Danish employer–employee data a positive effect of the income of other workers in the firm on own satisfaction and appeal to similar arguments. In a recent study, Clark et al. (2009b) show empirically that the income of your direct neighborhood (in their study a neighborhood has around 9,000 individuals) actually has a positive effect on self-reported happiness. The authors argue that the positive effect may be due to the link between the quality of the local conditions and the average income of the neighborhood. To separate this from the comparison effect, the authors include (besides own income and median income of the neighborhood) a variable that indicates the income rank of the individual in the neighborhood. The results show that

⁶ Clark and Oswald (1996), Ferrer-i-Carbonell (2005), Luttmer (2005), McBride (2001), Stutzer (2004), Vendrik and Woltjer (2007), and Helliwell and Huang (2010).

the higher the individuals are in the “local income rank”, the more satisfied they are, while the effect of the median income of the neighborhood remains positive.

An important limitation of all these studies is that the reference group is defined in a rather ad hoc way by the researcher, usually taking education, age, region, and occupation as the variables defining the reference group. Very recently, the European Social Survey included some questions in the 2006/2007 wave in which respondents were asked to define how much and with whom they were comparing themselves. [Clark and Senik \(2010\)](#) analyze these questions in great detail and conclude that the intensity of income comparisons decreases with income (i.e., richer individuals compare less), people who compare the most are the least happy, and that there is a large diversity of groups (for example, colleagues and family members) to which individuals compare themselves. The way in which individuals form their reference groups and to which degree this is an endogenous process (for example, if individuals would choose their reference groups so as to maximize happiness) is not yet understood.

There are also very few studies that rely on laboratory experiments to understand this complex relationship between income and happiness. In these papers, individuals are faced with different experimental settings and asked about their satisfaction. [McBride \(2010\)](#) finds that expectations and comparisons impact reported satisfaction negatively, although its effects are smaller than the one of own income. These results are consistent with the findings based on survey data, even though subjective data tends to find that others’ income is about as important as own income. In another experiment, [Charness and Grosskopf \(2001\)](#) find that individuals’ behavior in the lab was driven by achieving higher social payoffs rather than by increasing their relative payoffs and that was independently of their reported happiness level. In other words, their participants showed little relative concerns. Nevertheless, individuals with low reported level of happiness were showing a larger willingness to lower other participants’ payoffs if they were larger than theirs.

Another alternative explanation for the small income coefficient found in happiness regressions is based on the inability of individuals to foresee to what extent they will adapt to a new situation by changing their norms about what is a good and a bad income. The importance of adaptation to income and other life events has been tested with subjective measures since the early 1970s mostly by psychologists (for an exception, see [Van Praag 1976](#) and [Hagenaars and Van Praag 1985](#)). The most famous study in this arena is by [Brickman et al. \(1978\)](#) who compare a group of 22 lottery winners with another 22 non-winners (control group) who were living in the same geographical area. In this study, based on these small sample sizes, they conclude that lottery winners were not significantly happier compared to others and to their own past situation. This study has to be taken with precaution since its small size makes it difficult to assess the statistically insignificant differences and also because of the reservations one may have to extrapolate the results of lottery winners to the overall population. Despite these limitations, the [Brickman et al. \(1978\)](#) study has been recurrently used as a leading reference to show individuals’ complete adaptation to income increases. Apart from few exceptions, however, there has hardly been any evidence on income adaptation from an economist’s perspective. The main reason for this is the lack of data, as one needs a large panel to be able to identify the effect of income changes on large population samples. So far there are only two papers that look at

income adaptation with long panel data sets (Di Tella et al. 2007; Ferrer-i-Carbonell and Van Praag 2009), and these find opposite results. While Ferrer-i-Carbonell and Van Praag (2009) find that individuals adapt only partially to income, Di Tella et al. (2007) find stronger support for income adaptation—but no support for adaptation to status. It seems clear that given the small amount of evidence, the empirical tests on income adaptation should be considered rather tentative.

Besides studying income adaptation, there are some empirical studies that also examine peoples' adaptation to other life events. Up until recently psychologists generally believed that individuals adapted to about every life event and that the happiness level was individual specific and thus rather constant. According to these theories, happiness was predetermined and after a distressing life event individuals' happiness would only temporarily move from its baseline level (for example, Headey and Wearing 1989 on set point theory; Lykken and Tellegen 1996). In other words, individuals were assumed to have a tremendous capacity to adapt. Recent evidence stemming from large panel data sets, however, challenges these theories (for example, Lucas et al. 2003). This new evidence seems to indicate that individuals' adaptation depends on the life event as well as on individuals' characteristics (Lucas et al. 2003; Clark et al. 2008). The evidence, however, is still scarce and tentative and may be challenged in the near future as more data become available.

Unemployment is one of the worst life events, at least in western societies. The existing empirical evidence clearly and consistently shows that unemployment has a strong detrimental effect on happiness⁷. This evidence is corroborated by suicide statistics that show that being unemployed is one of the main causes of emotional distress (Oswald 1997). Moreover, the “non-pecuniary” negative effect of unemployment on happiness is substantially larger than the detrimental effect brought about by the ensuing income fall.⁸ On top of all this, the negative effect of unemployment on happiness seems to persist over time—that is, individuals do not seem to adapt to unemployment (Clark et al. 2008; Ferrer-i-Carbonell and Van Praag 2009). From a policy perspective, it is also important to notice that the effect of unemployment on satisfaction is smaller for individuals living in areas with high unemployment rate, which may help explain unemployment hysteresis (Clark and Oswald 1994; Clark 2003).

Some of the happiness literature has used domain instead of life satisfactions questions. Domain satisfaction questions reflect individuals' satisfaction with an aspect of life, notably financial situation, job, and health status. Van Praag et al. (2003) present a two-lawyer model in which individuals' situation explain each domain and these in its turn determine satisfaction with life as a whole. The empirical results show that domain satisfactions are much interrelated among themselves and that life satisfaction can be view as an aggregate measure of those different satisfactions.

A considerable part of the satisfaction literature has focused on the use of self-reported job satisfaction to examine the importance of job characteristics and amenities (for example, hourly wage, working hours, time shifts, type of contract,

⁷ Clark and Oswald (1994), Frey and Stutzer (1999), Gerdtham and Johanesson (2001), Korpi (1997), Oswald (1997), Winkelmann and Winkelmann (1998), and Woittiez and Theeuwes (1998).

⁸ Oswald (1997), for the UK; Winkelmann and Winkelmann (1998), for Germany; Frey and Stutzer (1999), for Switzerland.

over-education, and commuting time) on individuals' satisfaction. With no market failures, preferences over job amenities/characteristics would be internalized in the labor market through wages (compensating wage differentials) and one would then not find any separate effect of, say, commuting time or type of contract on job or life satisfaction after controlling for income or wages. Nevertheless, many studies do find statistical and quantitatively significant effects of various job amenities on job and life satisfaction after controlling for wages and many other relevant characteristics.⁹ Holding a temporary contract is negatively correlated with job satisfaction in most countries (for example, [Kaiser 2002](#)), although what matters the most is the individual perception on the possibility to lose the job (for example, [Origoa and Paganib 2009](#); [Theodossiou and Vasileiou 2007](#)). Other job characteristics that have been found to affect reported job satisfaction include over education ([Cabral Vieira 2005](#)), working hours, and firm size ([Gardner and Oswald 2001](#)), which correlate negatively with job satisfaction, while pay, being a civil servant ([Gardner and Oswald 2001](#)), and self-employment show a positive correlation.

There are also a few studies that have focused on health or health related issues, notably but not exclusively by examining the impact of individual health on individual's (health) satisfaction. In the empirical literature, there are various proxy measures for individual health, such as individuals' self-reported disabilities or incapacity to perform daily activities, self-reported chronic illnesses or the number of visits to the doctor or days staying at hospital. Some studies, for example, estimate the importance of different chronic illnesses on self-reported health satisfaction while controlling for individual characteristics such as income, age, and working situation (for example, [Ferrer-i-Carbonell and Van Praag 2002](#); [Groot et al. 2004](#)). This type of estimations allows identifying the relative importance of the different chronic illnesses from an individual subjective perspective, which in turn may help to assess the benefits of various medical interventions when having a limited budget. In another study, [Oswald and Powdthavee \(2008a\)](#) take adaptation into account when analyzing the effect of disability on life satisfaction. Their results show a negative but declining effect of disability on satisfaction as time passes. In other words, individuals seem to partially (30–50%) adapt to being disabled. Besides examining the effect of health on happiness, there are some studies that use subjective measures of satisfaction to look at health related issues. [Blanchflower \(2009\)](#) empirically estimates the effect of “having access to health” on life satisfaction by using US data. He finds a negative and statistical significant correlation between individual happiness and reporting to have been unable to see a doctor in the past 12 months because of its cost. [Finkelstein et al. \(2008, 2009\)](#) use life satisfaction measures to empirically test the impact of health status on the curvature of the utility function—that is, whether utility is health state dependent. In their 2008 article they test the effect of health status on the marginal utility of consumption and find, for example, that relative to a healthy individual a one standard deviation increase in the reported number of chronic diseases leads to an 11% decrease in the marginal utility of consumption.

⁹ For example, [Cabral Vieira \(2005\)](#), [Clark \(1997\)](#), [Clark \(1999\)](#), [Clark \(2003\)](#), [D'Addio et al. \(2007\)](#), [Drakopoulos and Theodossiou \(1997\)](#), [Green and Heywood \(2008\)](#), [Theodossiou and Vasileiou \(2007\)](#), [Van Praag and Ferrer-i-Carbonell \(2004, 2008\)](#), and [Van Praag et al. \(2003\)](#).

A branch of the literature is concerned about the impact of region or country characteristics on individual life satisfaction instead of focusing on the effect of individual characteristics—and how they relate to others. These studies have combined information on individual satisfaction with macro data to look at, notably, the impact of inflation, unemployment rate, GDP per capita, inequality, and environmental quality on self-reported individual satisfaction. The first papers focused on the impact of GDP per capita (already discussed above) and of inequality; later on, the other macro/country variables were also introduced into the analysis. Already in 1977, Morawetz et al. compared the happiness levels of two villages in Israel and observed that individuals living in the most egalitarian village (Isos) were happier than those living in the less egalitarian village (Anisos). Using a larger set of cross-sectional data, Van Praag et al. (1982) found empirical evidence of the importance of the country's log income variance for individuals' evaluation of hypothetical incomes—that is, a proxy for financial satisfaction. Very recently, and already using larger household panel data sets, there have been a few studies that empirically test the impact of income inequality (typically measured by the regional Gini coefficient for every time period) on happiness. Alesina et al. (2004) find a clear negative effect of the Gini coefficient on satisfaction for various European countries and for the USA, the impact being much smaller for the latter. Most recently, similar results were found for Germany (Ferrer-i-Carbonell and Ramos 2009; Schwarze and Harpfer 2007). However, Grosfeld and Senik (2008) find different results for a transition country (Poland) and relate it to the possible impact of political distrust on individuals' taste for equality. In particular, they find that Polish were rather tolerant towards inequality until 1996, their dislike for inequality increasing afterwards. The authors argue that the year break (1996/1997) corresponds with an increasing mistrust in the political system and elites, which would explain the change in (dis)taste for inequality.

The relative importance of unemployment and inflation rate for individuals' utility is an interesting topic from a macro economic perspective, a field in which the objective function of the policy maker is often defined, among others, on inflation and unemployment. Di Tella et al. (2001) presented the first empirical study that estimated the relative importance of inflation and unemployment rate of the country for individual' self-reported satisfaction. In this study, they combined micro data on individuals' reported satisfaction and other personal characteristics (for example, their own employment situation and income) with macro data for 12 European countries (Euro-Barometer) from 1975 to 1991 and for the United States (US General Social Survey) from 1972 to 1994. The results show that both unemployment rate and inflation rate correlate negatively and statistically significantly with happiness, although the effect of unemployment is larger (the relation between the two rates ranges between 1 and 1.7, depending on the country and year). Their estimates indicate, for example, that a 4% increase in unemployment (this is the standard deviation in the sample) would lead to a reported happiness decrease of 0.11 on a 1–4 scale. A 1% increase in the inflation rate (also the standard deviation in the sample) would reduce happiness 0.012 points on the same scale. In a similar exercise and using roughly the same data and empirical approach, Di Tella et al. (2003) examine the effect of other macro-economic variables on individual reported satisfaction. The main conclusion is that the macro-economic situation of a country does matter for individual self-reported satisfaction even after

controlling for individuals personal characteristics and their situation. Their empirical results show, for example, that economic recessions generate important losses of happiness on top of the negative effect of GDP slow down or increase number of unemployed. Indeed, they do find as well that the effect on happiness is positive for GDP, negative for unemployment, and positive for the unemployment benefits in the country.

Likewise, individuals' self-reported satisfaction with life seems to also depend on the environmental quality (notably air quality) of the region where individuals live (see [Frey et al. 2009](#) for a survey). For example, [Welsch \(2006\)](#) studies the effect of air pollution (i.e. nitrogen, particles and lead) on average country satisfaction using aggregate data for ten European countries between 1990 and 1997, and finds a negative impact of lead and nitrogen (the latter being larger) but no (statistically significant) effect of particles. Studies employing aggregate country data, both on happiness and environmental quality, suffer from three important limitations. First, they cannot control for individual characteristics (both observed and unobserved personal traits); second, they impose interpersonal comparisons at the cardinal level; and finally, they assume that aggregate country pollution measures properly capture the air quality of every single location (for example, that pollution is fairly evenly distributed across the whole country). Some studies partially overcome some of the above limitations by using individual data on satisfaction—but still rely on aggregate country data for pollution. This is, for instance, the set up of [Di Tella and MacCulloch \(2008\)](#) when studying the impact of country average SO_x emissions for various European countries and the USA (1975–1997). After taking due account of individual characteristics, their findings corroborate the negative effect of pollution (measured here as SO_x emissions) on satisfaction found in previous studies using aggregate data on satisfaction. Only recently, [Luechinger \(2009\)](#) was able to overcome all three limitations by combining data on individual happiness (from the German SOEP) with information on SO₂ emissions at the very local level from 1985 to 2003, and his results confirm the negative impact of (air) pollution on individual happiness.

The studies discussed above include only a selected sample of topics which have captured a great deal of attention amongst economists. The literature on subjective life satisfaction, however, is vast and growing. By now, there is evidence on the impact of another wide array of individual and aggregate covariates, such as age, religion or political system. Next I briefly mention some of the ones I have not discussed previously. Life satisfaction follows a U-shape relationship with age, with a minimum satisfaction level at about 40 years old. It seems as if many individuals start their adult life with high expectations that are difficult to meet and thus get unhappier as time passes up until around their midlife, when they seem to revise their expectations downwards. In most Western countries, high education (for example, the number of years of education) correlates negatively with satisfaction (for example, [Clark and Oswald 1994](#)), which is taken as an indication that the positive effect derived from the opportunities that higher education gives (for example, 'social status' and having an 'exciting job') is smaller than the negative effect resulting from the difficulty to meet the higher expectations that highly educated individuals may have. Gender differences are, in general, not that large—if at all. Although women are more frequently depressed than men, they are not consistently unhappier because they also experience

more positive emotions (Diener et al. 1999). Having a partner with whom to share daily life contributes positively to life satisfaction.¹⁰ In addition, the only exploratory evidence on causality indicates that having a partner increases individual well-being instead of being happy improving the probability of finding a partner (Stutzer and Frey 2006). The number of children is usually found to have a negative although small impact on life satisfaction (see Powdthavee 2009 for an excellent account). Other findings show that, for example: religion correlates positively with satisfaction (Clark and Lelkes 2005; Ellison 1991); commuting time (even after controlling for earnings) is negatively correlated with happiness (Stutzer and Frey 2004); direct democracy correlates positively with satisfaction in Switzerland (Frey and Stutzer 2000), and obesity (body mass index) is negatively correlated with well-being (Oswald and Powdthavee 2007).

4 The role of happiness in economics: from happiness reports to utility

4.1 Happiness, individual preferences and behavior

One way to derive and understand individual preferences or tastes is by looking at consumer choices not only in market situations—that is, revealed preferences, first developed by Samuelson (1938)—but also in controlled settings or questionnaires. Revealed preferences studies include the valuation of many non-market goods, such as noise and pollution through house prices (Smith and Huang 1995), and the evaluation of risk attitudes through the examination of job or insurance markets (Viscusi 1993) (see also the literature on compensating differentials). In summary, under some assumptions, one can derive indifference curves by looking at consumer choices.

Similarly, and under certain assumptions, subjective satisfaction questions can also be used to derive indifference curves and to understand individuals' tastes. In order to derive preferences from satisfaction questions we need to assume that individuals follow some systematic behavioral rule based on maximizing (or at least improving) their satisfaction. This assumption is analogous to assuming utility maximization to derive preferences from observed choices. The identification of indifference curves by linking the reported satisfaction level (i.e., at which indifference curve individuals are) with the objective situation of many individuals, relies on the fact that individuals face different constraints with different or equal slopes. This means that we need to assume that individuals have homogenous preferences, although this assumption can be slightly relaxed by allowing some exogenously defined groups in the sample to have different preferences. Under the above described assumptions and conditions, we can draw indifference curves by looking at combinations of goods or situations that maintain the “satisfaction” level constant by means of regression analysis.

Up until very recently economists had not faced the challenge to demonstrate that utility is measurable through subjective satisfaction reports—that is, that individual behavior relates to their reported happiness, which in turn can be used to predict

¹⁰ See, for example, Argyle (1999), Blanchflower and Oswald (2004), Clark and Oswald (1994), Lee et al. (1991), and Oswald (1997).

or explain behavior. In the last years however there is emerging empirical evidence demonstrating the predictive capacity of the happiness reports and its relation with individuals' behavior. For example, [Clark \(2001\)](#) shows that reported job satisfaction can predict future job quits, even after controlling for a set of job characteristics, and [Guven et al. \(2010\)](#) find that the satisfaction gap between spouses explains the probability of a future divorce. In a recent paper, [Oswald et al. \(2009\)](#) find a positive causal correlation between happiness reports and individuals' productivity, which is evidence towards the idea that happiness affects individual economic relevant behavior. The results of [Oswald et al. \(2009\)](#) are based on a laboratory setting in which the researchers induce individuals' happiness by exposing them to comedy clips, and on real-life data drawing information from unhappiness shocks.

The link between happiness reports and observed behavior has also been examined by looking at the correlation between suicide data and reported (subjective) well-being. Since suicide can be seen as the final individual observed decision under very low levels of happiness, a correlation between the two would indicate that subjective satisfaction can explain observed behavior. Although suicide data has many limitations mainly due to underreporting, the literature indicates that there is a negative correlation between the probability to commit suicide and self-reported life satisfaction (see, for example, [Helliwell 2007](#)). [Daly and Wilson \(2009, 2011\)](#) also compare suicide data with reported satisfaction and conclude that both variables are influenced by the same individuals' objective situations (such as income, income of the reference group, and unemployment).

Another recent approach followed by economists to test the reliability of reported happiness as a proxy measure for utility has been to examine the correlation between subjective measures of happiness and a market derived indicator of quality of life—that is, an indicator based on observed behavior. In particular, [Oswald and Wu \(2009\)](#) correlate reported happiness of one million US individuals with an objective measure of regional quality of life ([Gabriel 2003](#)) and find a very strong correlation between the two.

4.2 Happiness and welfare analysis

Since the beginning of the 1930s the measurement of utility fell into disgrace and although the utility concept has remained a central element in economics, most of the major developments in the field only need to take utility as a mathematical representation of preferences. The advances in the happiness economics literature have revived the debate on the measurement of utility and although utility measurement could be brought into welfare economics, its acceptance has been very limited. Economists in general are very skeptical about making welfare judgments based on reported satisfaction (or utility). In fact, the possibility to compare individuals' happiness refers to one of the most controversial issues in economics: the impossibility of interpersonal comparisons.¹¹

¹¹ It is important to mention that despite the dominance and importance of the work known as new welfare economics [[Robbins \(1932, 1938\)](#); see also [Arrow \(1950\)](#)], there are some economists who have argued

Despite the uneasiness of economists to make interpersonal comparisons and the success and attractiveness of the new welfare economics approach, much of the empirical work in the field—notably the study of poverty and inequality—needed a measure in which to compare individuals and corrected income has been the most used, although not exclusively. Such an approach is consistent with the fact that welfare can be interpreted as the extent to which preferences (utility) are satisfied and that the main restriction to the unlimited wants is the limited individual budget constraint. There is also a considerable amount of empirical work that does take into account that individual characteristics (such as health) may influence the amount of welfare that individuals can derive from a given income. In addition, there is a string of literature, known as the non-welfarist, or not utilitarian, approach, that bases its poverty and inequality assessments on a concept of quality of life that is broader than income. This literature has mainly evolved around the capability approach developed by Sen (1985) and operationalized by Nussbaum (2000) (see also Nussbaum and Sen 1993).

The use of subjective questions can complement this research by providing new information on what are the determinants of individuals' welfare—that is, on what makes individuals happy and what affects the utility they derive from income (for example, Finkelstein et al. 2008). Nevertheless, the use of satisfaction questions to make welfare judgments or to derive money values for non-market goods or to make poverty and inequality judgments, is often severely criticized. The criticism comes mainly from the belief that individuals adapt fairly easily to adverse situations and therefore the use of subjective satisfaction may overlook the objective bad situation in which some individuals live. Suppose an extreme situation in which individuals completely adapt to income, then using self-reported satisfaction to make welfare judgments would lead us to conclude that income redistribution is not welfare improving. Although this criticism has been directed to all the subjective literature, it is important to notice that it only refers to the use of such measures to make welfare judgments. The empirical analysis on the determinants of happiness is undamaged by this criticism, as it only examines individuals preferences and actually can show whether adaptation does indeed take place. The researchers in favor of using subjective measures to make welfare judgments would argue against this criticism by saying that (1) individuals do not seem to adapt completely to everything; (2) subjective questions can actually help us to understand adaptation and therefore allow us to take it into consideration when making welfare judgments; and (3) if individual nature uses adaptation to smooth the impact of inequalities, poverty, and bad events in general, it is rather paternalistic not to take it into account.

In the next section I will describe the two main types of research that have been done by economists who were willing to assume the measurability of utility, interpersonal comparability of happiness or the use of happiness reports to make welfare judgments.

Footnote 11 continued

in favor of different degrees of interpersonal comparison so as to broaden up the role of social welfare judgments [for example, Hammond 1996; Harsanyi 1987; Ng 1996, 1997; Sen 1999; and Tinbergen 1991].

5 Valuation studies and welfare analysis

One of the main applications resulting from the research described above is the use of estimated indifference curves to value non-market goods. From these estimations one can calculate the amount of income that would be equivalent to a change in a non-market good, such as health status, children, climate, noise, and provided hours of care. This “equivalent income” has been used to assign a money value to non-market goods. Alternatively, one could also calculate the necessary income to compensate for a change in a non-market good. Let us take an example to illustrate and write satisfaction as

$$S_{it} = \alpha \log(y_{it}) + \beta h_{it} + \sum_k \gamma_k z_k + \varepsilon$$

where y_{it} is individual income and h_{it} is the variable that we want to value, say individual health status measured, for example, by the number of chronic illnesses. Then, we can use the estimated α and β to calculate the income change that would be equivalent to a change in the initial health status (“equivalent income”). Similarly, although leading to different results, one can calculate the necessary income to bring the individual satisfaction back to its initial level after a health deterioration (δh_{it}) (“compensating income”). The estimated relation between α and β can be thus used to calculate the monetary value of a marginal change (δ) of health. The main attractiveness of this valuation method is that it is preference based and that it is relatively cheap to implement.

This method has some distinctive features that are worth discussing. First, since one expects and therefore assumes that there is decreasing marginal utility of income, income is often introduced in the satisfaction equation in logarithm terms. This implies that the monetary value of a good depends on the current level of income, and that richer individuals need larger monetary compensation. Second, this method can only provide a monetary value for goods that have no related market or whose related market fails. Suppose we want to know the cost of commuting time. With no market failures, the cost of commuting would be embedded into wages and house prices, and thus commuting should have no impact on happiness, once we control for income. Commuting will only affect happiness if the labor and housing markets do not entirely compensate for commuting time (Stutzer and Frey 2004). In this case, the monetary value of commuting estimated with the satisfaction method includes only the costs that are not already compensated, internalized, through wages and house prices.

The use of subjective questions for valuation studies has been recently applied to various goods. In health economics it has been used to value illnesses (Ferrer-i-Carbonell and Van Praag 2002; Groot et al. 2004), hours of provided informal care (Van den Berg and Ferrer-i-Carbonell 2007), and the death of a relative (Oswald and Powdthavee 2008b). This method has also been used to value many other non-market goods, notably noise (Van Praag and Baarsma 2005), climate (Brereton et al. 2008; Frijters and Van Praag 1998), family size (Plug and Van Praag 1995), flood disasters (Luechinger and Raschky 2009), air quality or pollution (Welsch 2006; Levinson 2009; Luechinger 2009), and terrorism (Frey et al. 2009b).

As an illustration, next I briefly describe some of the existing valuation studies. In the health arena, and using a representative sample of care givers in the Netherlands, [Van den Berg and Ferrer-i-Carbonell \(2007\)](#) estimate by means of subjective questions the monetary value of providing one extra hour of informal care. In the questionnaire, there was also a module with contingent valuation questions, which allowed comparing the values from the subjective method with those obtained from the more widely used contingent valuation method. The results with the two methods are surprisingly similar. The monetary value with the subjective satisfaction method for an average individual was 8–9 euros per hour if the care giver was family related to the care receiver and 7–9 euros per hour otherwise. For the contingent valuation method, the values were 10 and 9 euros, respectively. [Van Praag and Baarsma \(2005\)](#) estimated the monetary value of aircraft noise nuisance around Schiphol airport in Amsterdam. Given that the house prices and rents already internalize part of the noise externality, the values found with the subjective well-being method are only the residual effect that is not compensated in the market. The monthly money value for an average household ranges from 17 to 56 euros depending on the noise level. [Oswald and Powdthavee \(2008b\)](#) examine the effect on happiness of bereavement over time after the death of a spouse and a child on various measures of subjective well-being while taking adaptation into account. Despite the tentative nature of their results that would need to be replicated in more countries and with larger time spans, they report that, for example, the income compensation in the first year for the death of a child is of the order of 200,000 euros.

Most of the studies discussed until now only needed to assume an ordinal measurement of utility, even though some researchers may have assumed cardinality in order to ease their empirical challenges by using linear regression methods. If one were willing to assume cardinality of the answers, however, other lines of research would open up, notably the study of subjective poverty and inequality. Assuming cardinality also allows aggregating happiness levels across individuals to create a global happiness index, for example. Although these indices exist (for example, the Happy Planet Index from “the new economics foundation”), they will not be discussed in this article.

The study of poverty, its incidence, structure and development, requires in the first place a definition and a measure of poverty, a shared concept that should fairly unequivocally characterize poverty. This is obviously not an easy task and the literature has provided objective and subjective measures. The distinction between objective and subjective measures is based on who determines whether an individual or family is poor. While objective measures define poverty in terms of income or any other proxy measure of welfare (for example, access to health and education), subjective measures are based on individuals’ own perception. It is in this subjective approach where self-reported satisfaction measures can play a role. For example, one can use self-reported measures of satisfaction with own financial situation to determine whether an individual feels poor or not ([Ferrer-i-Carbonell and Van Praag 2001](#)). In order to evaluate poverty one needs to define a financial satisfaction level below which an individual is considered poor. Besides the financial satisfaction question, there are also other subjective questions that have been used to evaluate the incidence of poverty,

notably the Income Evaluation Question (Goedhart et al. 1977) and the Economic Ladder Question (Ravallion and Lokshin 1999; Lokshin and Ravallion 2000).

Likewise, the study of inequality can be based on subjective measures and one can analyze the distribution of subjective financial satisfaction in a region in the same way as one does for income inequality. Such an approach allows not only assessing the existing inequalities in perceived financial situation but also decomposing financial satisfaction inequality according to its causes. Ferrer-i-Carbonell and Van Praag (2003) show that, besides unobserved heterogeneity, the variables that most account for financial satisfaction inequality in Germany are income, household composition, and age. In a recent article, Van Praag (2011) presents a model showing the importance of incorporating information on the reference group (notably the reference income) when estimating and examining subjective inequality. He argues that the important role of the reference group on own well-being (see Sect. 3 of this article) implies that reference mechanisms also should play a role in determining individual subjective feelings of inequality. Since the importance of the reference group for own happiness and feelings of inequality depends on social transparency, it is not clear a priori what is the optimal level of social transparency from a social well-being perspective.

The studies just mentioned contrast with most of the literature on poverty and inequality which makes welfare comparisons based on “commonly agreed criteria”, often income and sometimes a broader measure such as the capability approach proposed by Amartya Sen (Nobel Prize Laureate 1998). In fact, and as discussed in Sect. 4, most economists and specially the non-welfarist actually argue about the potentially perverse effect of using happiness reports to make welfare judgments because of the weak link between individuals’ psychological conditions (for example, how satisfied they are) and their material achievements. These authors argue that this weak link is due to the individuals’ immense capacity to adapt to adverse outcomes.¹²

In the last years, however, there have been some studies by non-welfarist economists that have examined the usefulness of happiness reports and its possible incorporation into their type of analysis. In fact, Anand et al. (2005) and Anand and van Hees (2006) find that there is a strong link between individual happiness reports and some measures of capabilities and functionings. This clearly indicates that the two concepts and approaches do not differ that much. In other words, what non-welfarist researchers have traditionally considered as important *measures* of welfare seem to correlate with individual happiness reports. In a more theoretical paper, Schokkaert (2007) examines what are, from a non-utilitarian perspective, the opportunities of using and incorporating some of the results from the happiness economics literature into the non-welfarist tradition.

¹² Although it is not often mentioned in the literature, the fact that individuals reported happiness depends on how well they perform as compared to others, may also be an ethical argument against using happiness reports to make welfare judgments.

6 Concluding remarks

In this article I described the main characteristics and contributions of a fairly new line of research that is based on the use of subjective measures of satisfaction as a proxy for utility. This literature, recently known as Happiness Economics, has experienced an important growth in very recent years (Clark et al. 2008; Kahneman and Krueger 2006), which probably reflects the value of having a direct measure of utility even if it has some shortcomings. The objective of this article was to convince the reader about the meaningfulness of subjective measures (the reliability of the measure and of its assumptions) and its usefulness in providing information about individuals' preferences.

This literature is only in its infancy but its possibilities are broad and challenging. It is for the first time that there is a direct measure of utility that has such a fairly sizeable acceptance. If we are able to measure utility, new roads open up. The work done until now has shown the potential of subjective measures, but some of the evidence should be still considered as tentative since the empirical evidence is yet scarce. In the near future, researchers interested in this area will have to build up a theory to formalize the link between reported satisfaction, utility, preferences, and behavior, while reflecting on the necessary assumptions. I expect that researchers will exploit the data further by making full use of the panel structure, something that is already happening when studying adaptation, notably to income, health, and employment status. The empirical analysis will also need to improve on econometric methods and empirical approaches to deal with difficult issues such as reverse causality and dynamics.

The ability to measure utility will increasingly allow researchers to make public policy recommendations based on their empirical results. This does by no means imply that there will be a time in which individual reported happiness will be aggregated to an index to be compared to other “progress” indicators such as GDP or unemployment rate. Although there have been some initiatives to create happiness indices, I do not think this is the road to follow, even less so in the academic world. Instead the importance of happiness questions lies on its usefulness to better understand individuals' likes and dislikes, which should contribute to theoretical developments, empirical studies and policy oriented applications.

Open Access This article is distributed under the terms of the Creative Commons Attribution License which permits any use, distribution, and reproduction in any medium, provided the original author(s) and the source are credited.

References

- Alesina A, Di Tella R, MacCulloch R (2004) Inequality and happiness: are Europeans and Americans different? *J Public Econ* 88:2009–2042
- Anand P, van Hees M (2006) Capabilities and achievements: an empirical study. *J Socio Econ* 35:268–284
- Anand P, Hunter G, Smith R (2005) Capabilities and well-being: evidence based on the Sen-Nussbaum approach to welfare. *Soc Indic Res* 74:9–55
- Argyle M (1999) Causes and correlates of happiness. In: Kahneman D, Diener E, Schwarz N (eds) *Well-being: the foundations of hedonic psychology*. Russell Sage Foundation, New York (Chapter 18)
- Arrow KJ (1950) A difficulty in the concept of social welfare. *J Polit Econ* 58:328–346
- Blanchflower DG (2009) Happiness and health care coverage. IZA discussion paper no 4450

- Blanchflower DG, Oswald A (2004) Money, sex, and happiness: an empirical study. *Scand J Econ* 106:393–415
- Blanchflower DG, Oswald AJ (2008) Hypertension and happiness across nations. *J Health Econ* 27:218–233
- Boyce AJ (2010) Understanding fixed effects in human well-being. *J Econ Psychol* 31:1–16
- Bradburn NM (1969) *The Structure of psychological well-being*. Aldine Publishing Company, Chicago
- Brereton F, Clinch JP, Ferreira S (2008) Happiness, geography and the environment. *Ecol Econ* 65:386–396
- Brickman PCD, Coates D, Janoff-Bulman R (1978) Lottery winners and accident victims: is happiness relative? *J Personal Soc Psychol* 36:917–927
- Cabral Vieira JA (2005) Skill mismatches and job satisfaction. *Econ Lett* 89:39–47
- Cantril H (1965) *The pattern of human concerns*. Rutgers University Press, New Brunswick
- Charness G, Grosskopf B (2001) Relative payoffs and happiness: an experimental study. *J Econ Behav Organ* 45:301–328
- Clark AE (1997) Job satisfaction and gender: why are women so happy at work? *Labour Econ* 4:341–372
- Clark AE (1999) Are wages habit-forming? Evidence from micro data. *J Econ Behav Organ* 39:179–200
- Clark A (2001) What really matters in a job? Hedonic measurement using quit data. *Labour Econ* 8:223–242
- Clark AE (2003) Unemployment and social norms: psychological evidence from panel data. *J Labor Econ* 21:323–351
- Clark AE, Diener E, Georgellis Y, Lucas R (2008) Lags and leads in life satisfaction: a test of the baseline hypothesis. *Econ J* 118:F222–F243
- Clark AE, Etilé F, Postel-Vinay F, Senik C, Vander Straeten K (2005) Heterogeneity in reported well-being: evidence from twelve European countries. *Econ J* 115:C118–C132
- Clark AE, Frijters P, Shields MA (2008) A survey of the income happiness gradient. *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, Kristensen N, Westergård-Nielsen N (2009) Economic satisfaction and income rank in small neighbourhoods. *J Eur Econ Assoc* 7:519–527
- Clark AE, Lelkes O (2005) Deliver us from evil: religion as insurance. University of Granada, papers on economics of religion no 06/03
- Clark AE, Oswald AJ (1994) Unhappiness and unemployment. *Econ J* 104:648–659
- Clark AE, Oswald AJ (1996) Satisfaction and comparison income. *J Public Econ* 61:359–381
- Clark AE, Senik C (2010) Who compares to whom? The anatomy of income comparisons in Europe. *Econ J* 120:573–594
- Cohen S, Alper CM, Doyle WJ, Treanor JJ, Turner RB (2006) Positive emotional style predicts resistance to illness after experimental exposure to rhinovirus or influenza A virus. *Psychosom Med* 68:809–815
- D’Addio AD, Eriksson T, Frijters P (2007) An analysis of the determinants of job satisfaction when individuals’ baseline satisfaction levels may differ. *Appl Econ* 39:2413–2423
- Daly MC, Wilson DJ (2009) Happiness, unhappiness, and suicide: an empirical assessment. *J Eur Econ Assoc* 7:539–549
- Daly MC, Wilson DJ (2011) Relative status and well-being: evidence from U.S. suicide deaths. *Rev Econ Stat* (forthcoming)
- Diener E, Lucas RE (1999) Personality and subjective well-being. In: Kahneman D, Diener E, Schwarz N (eds) *Well-being: the foundations of hedonic psychology*. Russell Sage Foundation, New York (Chapter 11)
- Diener E, Suh EM, Lucas RE, Smith HL (1999) Subjective well-being: three decades of progress. *Psychol Bull* 125:276–302
- Di Tella R, Haiksen-De New J, MacCulloch R (2007) Happiness adaptation to income and to status in an individual panel. NBER working paper n 13159
- Di Tella R, MacCulloch R (2008) Gross national happiness as an answer to the Easterlin paradox? *J Dev Econ* 86:22–42
- Di Tella R, MacCulloch RJ, Oswald AJ (2001) Preferences over inflation and unemployment: evidence from surveys of happiness. *Am Econ Rev* 91:335–341
- Di Tella R, MacCulloch RJ, Oswald AJ (2003) The macroeconomics of happiness. *Rev Econ Stat* 85:809–827
- Dohmen T, Falk A, Huffman D, Sunde U, Schupp J, Wagner GG (2005) Individual risk attitudes: new evidence from a large, representative, experimentally-validated survey. IZA discussion paper no 1730
- Drakopoulos SA, Theodossiou I (1997) Job satisfaction and target earnings. *J Econ Psychol* 18:693–704

- Duesenberry JS (1949) *Income, saving and the theory of consumer behavior*. Harvard University Press, Cambridge
- Easterlin RA (1974) Does economic growth improve the human lot? Some empirical evidence. In: David PA, Reder MW (eds) *Nations and households in economic growth. Essays in honor of Moses Abramowitz*. Academic Press, New York, pp 89–125
- Easterlin R, Sawangfa O (2009) Happiness and economic growth: Does the cross section predict time trends? Evidence from developing countries. IZA discussion paper no 4000
- Ellison CG (1991) Religious involvement and subjective well-being. *J Health Soc Behav* 32:80–99
- Ferrer-i-Carbonell A (2005) Income and well-being: an empirical analysis of the comparison income effect. *J Public Econ* 89:997–1019
- Ferrer-i-Carbonell A (2011) Happiness Economics. *Els Opuscles del CREI*, vol 28. http://www.crei.cat/opuscle_swf.php?f=/files/filesOpuscle/31/111028120404_ENG_Opuscle_28_ANG.swf
- Ferrer-i-Carbonell A, Frijters P (2004) How important is methodology for the estimates of the determinants of happiness? *Econ J* 114:641–659
- Ferrer-i-Carbonell A, Ramos X (2009) Inequality aversion and risk attitudes. IZA discussion paper no 4703
- Ferrer-i-Carbonell A, Van Praag BMS (2002) The subjective costs of health losses due to chronic diseases. An alternative model for monetary appraisal. *Health Econ* 11:709–722
- Ferrer-i-Carbonell A, Van Praag BMS (2001) Poverty in the Russia. *J Happiness Stud* 2:147–172
- Ferrer-i-Carbonell A, Van Praag BMS (2003) Subjective income inequality and its causes. *J Econ Inequal* 1:107–127
- Ferrer-i-Carbonell A, Van Praag BMS (2009) Do people adapt to changing circumstances? The discussion is not finished yet. (unpublished manuscript)
- Finkelstein A, Luttmer EFP, Notowidigdo MJ (2008) What good is wealth without health? The effect of health on the marginal utility of consumption. NBER working paper 14089
- Finkelstein A, Luttmer EFP, Notowidigdo MJ (2009) Approaches to estimating the health state dependence of the utility function. *Am Econ Rev Pap Proc* 99:116–121
- Frank RH (1985) The demand for unobservable and other non-positional goods. *Am Econ Rev* 75:101–116
- Frey BS, Stutzer A (1999) Measuring preferences by subjective well-being. *J Inst Theor Econ* 155:755–778
- Frey BS, Stutzer A (2000) Happiness, economy and institutions. *Econ J* 110:918–938
- Frey BS, Luechinger S, Stutzer A (2009a) The life satisfaction approach to environmental valuation. IZA discussion paper no 4478
- Frey BS, Luechinger S, Stutzer A (2009) The life satisfaction approach to the value of public goods: the case of terrorism. *Public Choice* 138:317–345
- Frijters P, Van Praag BMS (1998) Climate equivalence scales and the effects of climate change on Russian welfare and well-being. *Clim Change* 39:61–81
- Frijters P, Haisken-Denew JP, Shields MA (2004) Money does matter! Evidence from increasing real income and life satisfaction in East Germany following reunification. *Am Econ Rev* 94:730–740
- Frijters P, Shields MA, Haisken-DeNew JP (2005) The effect of income on health: evidence from a large scale natural experiment. *J Health Econ* 24:997–1017
- Gabriel SA, Matthey JP, Wascher WL (2003) Compensating differentials and evolution in the quality-of-life among U.S. states. *Reg Sci Urban Econ* 33:619–649
- Gardner J, Oswald AJ (2001) Does money buy happiness? A longitudinal study using data on windfalls. Warwick University, UK (unpublished manuscript)
- Gerdtham UG, Johannesson M (2001) The relationship between happiness, health, and socio-economic factors: results based on Swedish microdata. *J Socio Econ* 30:553–557
- Goedhart Th, Halberstadt V, Kapteyn A, van Praag BMS (1977) The poverty line: concept and measurement. *J Human Resour* 12:503–520
- Green C, Heywood JS (2008) Are flexible contracts bad for workers? Evidence from job satisfaction data. SSRN: <http://ssrn.com/abstract=1033436>
- Groot W, van den Brink HTM, Plug E (2004) Money for health: the equivalent variation of cardiovascular diseases. *Health Econ* 13:859–872
- Grosfeld I, Senik C (2008) The emerging aversion to inequality: evidence from Poland 1992–2005. IZA discussion paper no 3484 (also forthcoming in *Econ Trans*)
- Güven C, Senik C, Stichnoth H (2010) You can't be happier than your wife. Happiness gaps and divorce. IZA discussion paper no 4599
- Hagenaars AJM, Van Praag BMS (1985) A synthesis of poverty line definitions. *Rev Income Wealth* 31:139–153

- Hammond PJ (1996) Interpersonal comparisons of utility: why and how they are and should be made. In: Hamlin AP (1996) *Ethics and economics*, vol I, chap 22. Edward Elgar Publishing Company, Cheltenham, UK
- Hayney MS, Love GD, Buck JM, Ryff CD, Singer B, Muller D (2003) The association between psychosocial factors and vaccine-induced cytokine production. *Vaccine* 19–20:2428–2432
- Harsanyi JC (1987) Interpersonal utility comparisons. In: Eatwell J, Milgate M, Newman P (eds) *The new palgrave: utility and probability*. Macmillan Publishers Ltd., Hampshire, pp 128–133
- Hartog J, Ferrer-i-Carbonell A, Jonker N (2002) Linking measured risk aversion to individual characteristics. *Kyklos* 55(1):3–26
- Headey B, Wearing A (1989) Personality, life events, and subjective well-being: toward a dynamic equilibrium model. *J Personal Soc Psychol* 57:731–739
- Helliwell JF (2007) Well-being and social capital: does suicide pose a puzzle? *Soc Indic Res* 81:455–496
- Helliwell JF, Huang H (2010) How's the job? Well-being and social capital in the workplace. *Ind Labor Relat Rev* 63:205–227
- Kahneman D (1999) Objective happiness. In: Kahneman D, Diener E, Schwarz N (eds) *Foundations of hedonic psychology: scientific perspectives on enjoyment and suffering*. Russell Sage Foundation, New York (chap 1)
- Kahneman D, Krueger AB (2006) Developments in the measurement of subjective well-being. *J Econ Perspect* 20:3–24
- Kahneman D, Krueger AB, Schkade D, Schwarz N, Stone AA (2004) A survey method for characterizing daily life experience: the day reconstruction method (DRM). *Science* 306:1776–1780
- Kaiser LC (2002) Job satisfaction: a comparison of standard, non-standard, and self-employment patterns across Europe with a special note to the gender/job satisfaction paradox. EPAG working paper 27
- Knight FH (1922) Ethics and the economic interpretation. *Q J Econ* 36:454–481
- Korpi Y (1997) Is utility related to employment status? Employment, unemployment, labor market policies and subjective well-being among Swedish youth. *Labour Econ* 4:125–147
- Krueger AB, Kahneman D, Schkade D, Schwarz N, Stone AA (2008) National time accounting: the currency of life. <http://www.krueger.princeton.edu/Subjective>
- Layard R (2010) Measuring subjective well-being. *Science* 29:534–535
- Lee GR, Seccombe K, Shehan CL (1991) Marital status and personal happiness: an analysis of trend data. *J Marriage Fam* 53:839–844
- Levinson A (2009) Valuing air quality using happiness data: the case of air quality. NBER working paper series N15156
- Lokshin M, Ravallion M (2000) Welfare impacts of Russia's 1998 financial crisis and the response of the public safety net. *Econ Trans* 8:269–295
- Lucas RE, Clark AE, Georgellis Y, Diener E (2003) Re-examining adaptation and the setpoint model of happiness: Reactions to changes in marital status. *J Personal Soc Psychol* 84:527–539
- Lucas ER, Clark A, Georgellis Y, Diener E (2004) Unemployment alters the set-point for life satisfaction. *Psychol Sci* 15:8–13
- Luechinger S (2009) Valuing air quality using the life satisfaction approach. *Econ J* 119:482–515
- Luechinger S, Raschky P (2009) Valuing flood disasters using the life satisfaction approach. *J Public Econ* 93:620–633
- Luttmer E (2005) Neighbors as negatives: relative earnings and well-being. *Q J Econ* 120:963–1002
- Lykken D, Tellegen A (1996) Happiness is a stochastic phenomenon. *Psychol Sci* 7:186–189
- McBride M (2001) Relative-income effects on subjective well-being in the cross-section. *J Econ Behav Organ* 45:251–278
- McBride M (2010) Money, happiness, and aspirations: an experimental study. *J Econ Behav Organ* 74:262–276
- Morawetz D, Atia E, Bin-Nun G, Felous L, Gariplerden Y, Harris E, Soustiel S, Tombros G, Zarfaty Y (1977) Income distribution and self-rated happiness: some empirical evidence. *Econ J* 87:511–522
- Ng Y-K (1996) Happiness surveys: some comparability issues and an exploratory survey based on just perceivable increments. *Soc Indic Res* 38:1–27
- Ng Y-K (1997) A case for happiness, cardinalism, and interpersonal comparability. *Econ J* 107:1848–1858
- Nussbaum M (2000) *Women and human development. The capabilities approach*. Cambridge University Press, Cambridge
- Nussbaum M, Sen A (1993) *The Quality of Life*. Clarendon Press, Oxford

- Origoa F, Paganib L (2009) Flexicurity and job satisfaction in Europe: the importance of perceived and actual job stability for well-being at work. *Labour Econ* 16:547–555
- Oswald AJ (1997) Happiness and economic performance. *Econ J* 107:1815–1831
- Oswald AJ (2006) The hippies were right all along about happiness. In: *Financial Times*, 19 Jan 2006. The Financial Times Ltd., London
- Oswald A, Gardner J (2007) Money and mental wellbeing: a longitudinal study of medium-sized lottery wins. *J Health Econ* 26:49–60
- Oswald A, Powdthavee N (2007) Obesity, unhappiness, and the challenge of affluence: theory and evidence. *Econ J* 117:F441–F454
- Oswald A, Powdthavee N (2008) Does happiness adapt? A longitudinal study of disability with implications for economists and judges. *J Public Econ* 92:1061–1077
- Oswald A, Powdthavee N (2008) Death, happiness, and the calculation of compensatory damages. *J Leg Stud* 37:S217–S252
- Oswald AJ, Proto E, Sgroi D (2009) Happiness and productivity. IZA discussion paper no 4645
- Oswald AJ, Wu S (2009) Well-being across America: evidence from a random sample of one million US citizens (unpublished manuscript)
- Plug E, Van Praag BMS (1995) Family equivalence scales within a narrow and broad welfare context. *J Income Distrib* 4:171–186
- Powdthavee N (2009) Think having children will make you happy? *Psychol* 22:308–311
- Ravallion M, Lokshin M (1999) Subjective economic welfare. World bank policy research working paper n 2106. Washington D.C.
- Robbins L (1932) An essay on the nature and significance of economic science. MacMillan, London
- Robbins L (1938) Interpersonal comparisons of utility: a comment. *Econ J* 48:635–641
- Sandvik E, Diener E, Seidlitz L (1993) Subjective well-being: the convergence and stability of self-report and non-self-report measures. *J Personal* 61:317–342
- Samuelson P (1938) A note on the pure theory of consumers behavior. *Economica* 5:61–71
- Schwarze J, Harpfer M (2007) Are people inequality averse, and do they prefer redistribution by the state? Evidence from German longitudinal data on life satisfaction. *J Socio Econ* 36:233–249
- Sen AK (1985) Commodities and capabilities. North Holland, Amsterdam
- Sen AK (1999) The possibility of social choice. *Am Econ Rev* 89:349–378
- Senik C (2004) When information dominates comparison: learning from Russian subjective panel data. *J Public Econ* 88:2099–2123
- Smith VK, Huang JC (1995) Can markets value air quality? A meta-analysis of hedonic property values models. *J Polit Econ* 103:209–227
- Schokkaert E (2007) Capabilities and satisfaction with life. *J Hum Dev* 8:415–430
- Solnick S, Hemenway D (1997) Is more always better? A survey of positional concerns. *J Econ Behav Organ* 37:373–383
- Stepoe A, Wardle J (2005) Positive affect and biological function in everyday life. *Neurobiol Aging* (Suppl 1):108–112
- Stevenson B, Wolfers J (2008) Economic growth and subjective well-being: reassessing the Easterlin paradox. *Brookings papers on economic activity*. Spring, pp 1–102
- Stutzer A (2004) The role of income aspirations in individual happiness. *J Econ Behav Organ* 54:89–109
- Stutzer A, Frey B (2004) Stress that doesn't pay: the commuting paradox. Institute for empirical research in economics working paper no 151
- Stutzer A, Frey B (2006) Does marriage make people happy, or do happy people get married? *J Socio Econ* 35:326–347
- Theosdossiou I, Vasileiou E (2007) Making the risk of job loss a way of life: does it affect job satisfaction? *Res Econ* 61:71–83
- Tinbergen J (1991) On the measurement of welfare. *J Econom* 50:7–13
- Urry HL, Nitschke JB, Dolski I, Jackson DC, Dalton KM, Mueller CJ, Rosenkranz MA, Ryff CD, Singer BH, Davidson RJ (2004) Making a life worth living: neural correlates of well-being. *Psychol Sci* 15:367–372
- Vanden Berg B, Ferrer-i-Carbonell A (2007) The well-being of informal caregivers: a monetary valuation of informal care. *Health Econ* 16:1227–1244
- Van Praag BMS (1971) The welfare function of income in Belgium: an empirical investigation. *Eur Econ Rev* 2:337–369

- Van Praag BMS (1976) The individual welfare function of income and its offspring. In: Cramer JS, Heertje A, Venekamp P (eds) *Relevance and precision. Essays in honour of Pieter de Wolff*, North-Holland Publish Company, Amsterdam
- Van Praag BMS (1991) Ordinal and cardinal utility: an integration of the two dimensions of the welfare concept. *J Econom* 50:69–89
- Van Praag BMS (2011) Well-being inequality and reference groups. An agenda for new research. *J Econ Inequal* 9:111–127
- Van Praag BMS, Baarsma B (2005) Using happiness surveys to value intangibles: the case of airport noise. *Econ J* 115:224–246
- Van Praag BMS, Hagenaaars A, van Weeren J (1982) Poverty in Europe. *Rev Income Wealth* 28:345–359
- Van Praag BMS, Ferrer-i-Carbonell A (2004) *Happiness quantified: a satisfaction calculus approach*. Oxford University Press, Oxford
- Van Praag BMS, Ferrer-i-Carbonell A (2008) *Happiness quantified: a satisfaction calculus approach*. Oxford University Press, Oxford (paperback/revised edition)
- Van Praag BMS, Ferrer-i-Carbonell A (2011) *Happiness Economics: a new road to measuring and comparing happiness*. *Found Trends Microecon* 6:1–97
- Van Praag BMS, Frijters P, Ferrer-i-Carbonell A (2003) The anatomy of subjective well-being. *J Econ Behav Organ* 51:29–49
- Veenhoven R (1995) World database of happiness. *Soc Indic Res* 34:299–313
- Vendrik MCM, Woltjer GB (2007) Happiness and loss aversion: is utility concave or convex in relative income? *J Public Econ* 91:1423–1448
- Viscusi WK (1993) The value of risks to life and health. *J Econ Lit* 31:1912–1946
- Welsch H (2006) Environment and happiness: valuation of air pollution using life satisfaction data. *Ecol Econ* 58:801–813
- Wilson W (1967) Correlates of avowed happiness. *Psychol Bull* 67:294–306
- Winkelmann L, Winkelmann R (1998) Why are the unemployed so unhappy? Evidence from panel data. *Economica* 6:1–15
- Woittiez I, Theeuwes J (1998) Well-being and labor market status. In: Jenkins SP, Kapteyn A, van Praag BMS (eds) *The distribution of welfare and household production: international perspectives*. Cambridge University Press, Cambridge, pp 211–230