Life has ups and downs. It would not be thought profound to say that someone who becomes unemployed or ill generally becomes less happy, or that someone who gets married or becomes richer generally becomes happier. But which is worse: divorce or unemployment? Which is better: a large pay rise or getting married? Until recently, there has been no way to assess the size of different life events upon psychological health and well-being.

In the last few years, economists have developed a way to measure, and to put a financial value upon, the happiness induced by different kinds of life events. To do so, they take random samples of individuals, record the mental well-being levels of the people in these samples at different points in time, study the incomes of and events that occurred to the individuals, and then use simple statistical methods (regression equations) to work out the implied consequences upon well-being of different occurrences in life. In this way, put loosely, economists use happiness surveys to average across individuals in order to understand a representative person.

Intuitively, what this method does is to face up to the fact that many factors shape human happiness. Relationships matter; health matters; money matters. Within an equation, these and other factors are allowed for at the same time, and their respective weights in well-being can then be calculated. The marginal impact of each life factor is assessed by reading off its coefficient in the well-being regression equation.

This paper is written for non-economists. It describes two aspects of recent economic and psychological research on subjective well-being measures. First, we show how regression analysis of subjective well-being scores can be used to construct a monetary valuation of life events. Loosely, this is done by dividing the estimated coefficient on income by the estimated coefficient on the life event being studied. The application of this method to both British and international data reveals that unemployment and ill-health, in particular, create enormous

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**Background**
Life events—like illness, marriage, or unemployment—have important effects on people. But there is no accepted way to measure the different sizes of these events upon human happiness and psychological health. By using happiness regression equations, economists have recently developed a method.

**Methods**
We estimate happiness regressions using large random samples of individuals. The relative coefficients of income and life events on happiness allow us to calculate a monetary ‘compensating amount’ for each kind of life event.

**Results**
The paper calculates the impact of different life events upon human well-being. Getting married, for instance, is calculated to bring each year the same amount of happiness, on average, as having an extra £70 000 of income per annum. The psychological costs of losing a job greatly exceed those from the pure drop in income. Health is hugely important to happiness. Widowhood brings a degree of unhappiness that would take, on average, an extra £170 000 per annum to offset.

Well-being regressions also allow us to assess one of the oldest conjectures in social science—that well-being depends not just on absolute things but inherently on comparisons with other people. We find evidence for comparison effects.

**Conclusion**
We believe that the new statistical method has many applications. In principle, it can be used to value any kind of event in life.

**Keywords**
Happiness, well-being, economics, income, health, marriage, unemployment

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psychological costs for individuals—in the sense that they can only be compensated by huge increases in income.

Second, we show that regression equations can be used to test the claim that happiness depends partly on comparisons (against, for instance, what one has relative to some reference level). In economics, such ideas can be found going back to the work of Adam Smith, and were famously revived by Veblen and Duesenberry.

The subjective well-being literature is expanding fast. Such measures have been put to a variety of uses by economists—in the analysis of sexual and racial disparities in labour market outcomes, the calculation of society’s preferences over inflation and unemployment, the effect of income inequality and the value of democratic rights, amongst others.

One background question is whether it is possible to measure well-being at all using survey questions. Some sceptics argue: what can we learn by asking, say, if someone is satisfied with their life on a one to seven point scale? Maybe the people in data sets just argued with their partner, or have a hangover: these answers are not going to reveal anything of interest. Even worse, the extreme sceptics continue, different people may well understand the same satisfaction or happiness question differently. Individual A may then say that she is happier than individual B, but not really ‘mean it’: the difference in their answers could be due to some difference in the way that the question is understood.

We argue that subjective well-being numbers are meaningful and amenable to statistical analysis. Psychologists have made recent advances here—showing that those who say that they are happy actually smile more, and are more likely to be described as happy by their friends (see some of the references contained in the earlier review by Oswald). Other research has considered the role of well-being measures in predicting observable future behaviours or outcomes. Amongst others, it has been shown that measures of subjective well-being predict:

- Length of life
- Coronary heart disease
- Quitting a job
- Absenteeism
- Counter- and non-productive work
- The duration of unemployment

Finally, some of the research uses measures that are closer to being medically conventional, such as General Health Questionnaire (GHQ) mental-strain scores.

The next section introduces the idea of regression analysis of subjective well-being measures, and shows how the estimated parameters provide a simple measure of the valuation of life events. A further section considers how this form of statistical analysis can be used to test for absolute versus relative influences upon mental well-being. What binds these two sections together is their use of regression analysis. The last section summarizes.

**The valuation of life events using subjective well-being data**

Think of a person who experiences good and bad events. Imagine, too, that the person enjoys money—preferring more income to less income. In principle, then, it might be possible to calculate how much extra income would have to be given to the person to compensate exactly (neither too much nor too little) for a bad occurrence in life. That amount of cash can be thought of as a measure of the unpleasantness of the event. Equivalently, good events can be studied.

The monetary valuation of events can be determined by using an equation in which the dependent variable is mental well-being or happiness. This is a type of utility function. When estimated as a regression equation using actual data, the equation might take the form:

\[ u = A + \beta_1 S_1 + \beta_2 S_2 + \ldots + \gamma Y + \delta X + \epsilon \]  

(1)

where \( u \) is a measure of individual utility or happiness or well-being, \( A \) is a constant, \( Y \) is some measure of income, the \( S_i \) are dummy variables for various kinds of labour market and life events (such as whether in work and whether married or single), and \( X \) is a vector of other influences. The \( X \) vector is known, in practice, to include demographic variables, regional location, day-of-the-week effects, variables from childhood such as whether parents divorced, and so on. The estimated coefficients from equation (1) can be used to calculate the unpleasantness or unpleasantness of the \( S_i \) events. Imagine that an individual changes from employment to unemployment (respectively states \( S_1 \) and \( S_2 \), say*). The compensating differential for this transition is the amount of extra money, or increment to \( Y \), which would be required exactly to compensate the worker for being unemployed, i.e. to keep the worker at the same level of subjective well-being.

Think of a level curve of equation (1), that is, one for a given value of \( u \). From equation (1), the cost of unemployment, for an individual starting with income \( Y_0 \) can then be thought of algebraically as

\[ SPU = (\beta_1 - \beta_2)/\gamma. \]  

(2)

In other words, an unemployed individual with income of \( Y_0 + SPU \) would have the same level of well-being as an employed individual with income of \( Y_0 \). Thus SPU (the ‘shadow price’ of unemployment, in economists’ language) is a measure of the unpleasantness of unemployment. Its units are financial, such as pounds sterling (\( \£ \)).

This method generalizes. It has been used by economists to calculate the ‘shadow wage’ (the sum which compensates workers for extra hours of work), the happiness loss from being Black rather than White, the value of a lasting marriage, and the valuation of aircraft noise around Schiphol airport.

Table 1 presents some valuations of life events using data from the first seven waves of the British Household Panel Survey (BHPS): see http://www.iser.essex.ac.uk/bhps for more details. Two measures of subjective well-being are used. The first is the GHQ-12 measure of mental strain (Appendix), but reversed so that higher scores indicate higher well-being. The second is a question on overall happiness that is part of the GHQ-12. Both the GHQ-12 score and the responses to the happiness question are ordinal, so that a score of 4 does not indicate exactly twice

* The omitted category with respect to labour force status in the above illustration would be the inactive: those who neither work nor are employed.

<table>
<thead>
<tr>
<th>Event</th>
<th>GHQ-12 equation</th>
<th>Happiness equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment to Unemployment</td>
<td>–15 000</td>
<td>–23 000</td>
</tr>
<tr>
<td>Single to Married</td>
<td>n.s.</td>
<td>6000</td>
</tr>
<tr>
<td>Married to Separated</td>
<td>–8000</td>
<td>–11 000</td>
</tr>
<tr>
<td>Married to Divorced</td>
<td>–1000</td>
<td>n.s.</td>
</tr>
<tr>
<td>Married to Widowed</td>
<td>–7000</td>
<td>–14 000</td>
</tr>
<tr>
<td>Health excellent to Health good</td>
<td>–10 000</td>
<td>–12 000</td>
</tr>
<tr>
<td>Health excellent to Health fair</td>
<td>–32 000</td>
<td>–41 000</td>
</tr>
</tbody>
</table>

- n.s. Not significantly different from zero.

These are the value of life events, expressed in pounds (£). They are monthly figures. Hence the pain from losing your job is equivalent to losing £15 000/month. In other words, a move from employment to unemployment would have to be compensated, according to the first estimate in the first column, by a monthly payment of £15 000.

The first column is derived from a well-being equation in which the dependent variable is the (negative of) a GHQ score. The second column is derived from a well-being equation in which the dependent variable is a reported happiness level.

Average monthly household income (in 1992 £) over the whole sample is just under £2000.

At the time of writing the value of £1 is approximately US$1.5.

The regressions use a sample of approximately 7500 individuals, sampled annually.

as much well-being as a score of 2. Linear methods such as ordinary least squares (OLS) are therefore inapplicable, and Table 1 reports results from ordered probits (although OLS results are qualitatively similar). A positive estimated coefficient in an ordered probit equation implies that the variable shifts the probability mass to the right, which increases the probability that a person will report high well-being.

Table 1 shows the estimated valuations of various life events, computed as shown in equation (2). A positive figure implies that an individual who moves from the first status to the second would need to receive that financial amount in order for their subjective well-being to be (just) unaffected by the transition in question. In other words, Table 1 tells us the value of the events that strike human beings. These are, of course, for the average individual. The regression method implicitly uses a best-fitting linear function and thus averages across the data points.

As with most regression analysis, the underlying assumption here is that a linear equation is a useful approximation to reality. The largest valuation in these regressions comes from health. Someone whose self-reported health declines from excellent to good would require a payment of tens of thousands of pounds per month in order for the GHQ or happiness score to remain unchanged.** Unemployment (compared to employment) has a quantitatively smaller but still very large valuation. The vast majority of the well-being impact of unemployment thus does not stem from the loss of wages (see also Clark and Oswald,16 and Winkelmann and Winkelmann17). The main cost of job loss is psychological.

Marriage (compared to being single) is estimated to be worth about £6000 a month, or in other words a little over £70 000 per annum.*** This is strikingly large. For instance, it is three times the average monthly household income in this sample.

The cost of the end of a marriage seems to depend on how the breakdown occurs. Both widowhood (valued at approximately –£170 000) and marital separation have high negative valuations, but the subjective well-being of the divorced is, in these data, not much lower than the well-being of the married, which implies only a small valuation. Some studies, however, have found divorced people have very low well-being.

One concern is individuals’ unobservable heterogeneity. If people who marry were born happier than those who do not marry (as conjectured by Veenhoven18), then the subjective well-being gap between the married and single people may be a determinant of marriage, rather than a consequence of marriage. This is a technical problem. One route to a solution is to carry out the analysis in first-differences. This looks at the longitudinal change in individual subjective well-being when, say, the individual marries. The results using this approach turn out to be similar to those in Table 1.

Is well-being relative or absolute?

This section takes a step further. It asks how happiness regression equations might be used to assess one of the oldest conjectures in social science—that well-being depends not just on absolute things but inherently on comparisons with other people.

Put differently, happiness may depend on the relative level of certain variables, rather than their absolute level. If we consider income, for example, we can think of the following utility or happiness functions:

\[ u = W(y, \ldots) \]
\[ u = W(y/y^*, \ldots). \]

The variable \( y^* \) here is what is sometimes called ‘comparison income’ or ‘reference group income’. The central implication of comparison theory is that subjective well-being falls as those in the reference group earn more. This equation uses a ratio specification: \( y/y^* \) but the comparison could be linear (\( y-y^* \)), or something more complicated.

** This provides some quantitative support to the old adage ‘as long as you’ve got your health’.

*** Blanchflower and Oswald14 find a similar figure of £60 000 per annum using American General Social Survey (GSS) data.
It might be thought that the valuation method set out earlier in this paper would be invalid if the comparisons model is true. But that is wrong. First, if the ‘comparison other’ against whom a man judges himself stays fixed (say, whatever good or bad happens to you your next door neighbour is still there), the technique described in the previous section goes through unchanged. Second, if the comparison level is itself endogenous, and thus muddled by circumstance, then a version of the earlier method is still correct. Its interpretation, however, then needs care. Because an explicit comparison variable y* is not being held constant in the regressions, but is itself a function of life events, then what is effectively being estimated is a reduced-form relationship between life events and well-being. Statistically that is not invalid; but it means, of course, that the exact transmission mechanism within the chain is not then uncovered; life events partly have their effect because they alter one’s comparisons.

What have recent regression tests actually shown?

**Income and subjective well-being**

A number of studies, starting with Easterlin,19 have used data at the country level to plot a country’s average happiness against gross national product (GNP) per head (see also Hagerty and Veenhoven,20 Oswald,3 and Veenhoven21). The resulting graphs typically show some evidence of a positive relationship, but not a strong one. In addition, the plot of well-being against prosperity does not look linear. Higher income is associated with higher happiness for poor countries, but the evidence is less strong among richer countries.

Through time, we see something similar. It is now known that happiness survey scores within a nation do not rise noticeably as that nation becomes wealthier (a discovery of Easterlin,19 and recently updated in, for instance, Blanchflower and Oswald14). In other words, economic growth does not seem to buy happiness for the citizens of a country that is already rich.

The cross-section country-level evidence also suggests that the level of income, y, does not affect subjective well-being very strongly. However, if it is true that W = W(y/y*, ...), then we would not expect to find a particularly strong relationship between W and y without having an idea of how y* differs between individuals. This leads to the fundamental question: what determines the reference income level y*? Who is in the reference group: against whom exactly do we compare ourselves? A number of concepts have been proposed:

- Peer group/people like me (same sex, age, education, etc.), as in the research of the Leyden school (e.g. van Praag and Kapteyn,22 and Hagenauers23).
- Others in the same household.
- Myself in the past.
- Friends and neighbours.
- Others who work for the same firm.

Empirical research has addressed the first three, but has had little to say about the others, probably due to a lack of suitable data.

Some of our work, using the BHPS, has considered job satisfaction as a measure of well-being in the workplace. Job satisfaction in the survey is recorded on a one to seven scale, where one corresponds to ‘not satisfied at all with my job’, seven corresponds to ‘completely satisfied’, and the integers from two to six represent intermediate levels of satisfaction. The papers look for evidence of comparison effects, whereby job satisfaction depends not only on y, but on some measure of y* as well. Empirically, the definitions of y* have been as follows:

- The pay of ‘others like you’, i.e. with your educational and other personal characteristics.24
- Partner’s pay, and the pay of all other adults in the same household.25
- The pay that you received in the same job one year ago.26

Job satisfaction is shown to rise with own income, so that people like being paid a high salary, but to be lower when the value of y* is higher. This is evidence consistent with the famous cartoon where an employee leans across the boss’s desk and says ‘I was happy with my pay rise. But you went and ruined it by giving everyone else one too.’

Intriguingly, we cannot statistically reject the hypothesis that a pay raise (of 10%, say) for everyone would leave no-one more satisfied. This seems consistent with the aggregate evidence that countries do not appear to feel more satisfied though the years as their real income goes up.

**Unemployment and subjective well-being**

An active research area in the analysis of well-being has been the effects of a person’s labour market behaviour, and particularly whether he or she is unemployed. It has been known for a long time that the unemployed report significantly lower well-being scores than other labour force groups, and that losing your job matters far more than the associated lower income alone would imply. Recent work in economics has used large-scale data sets to address this question.16,27 As far as is known, it holds in all western countries.

To show whether comparisons are important here also, we can look at the psychological impact of unemployment for two specific groups:

- Those who lived in high unemployment regions or high unemployment households, using British BHPS data and the GHQ-12 as a measure of subjective well-being.
- Those who have been unemployed more often in the past, using German Socio-Economic Panel (GSOEP) data, with life satisfaction as the well-being measure.

Multivariate regression techniques are again used. Well-being equations are estimated, using data on both the employed and the unemployed, of the following form:

\[ w_i = \alpha + \beta_1 u_{i1} + \beta_2 u_{i2} + \beta_3 (u_{i1} \cdot u_{i2}) + \gamma X + \epsilon_i \]

where \( w_i \) is the well-being score of individual i, \( u_{i1} \) is a dummy variable showing whether the respondent is unemployed, and \( u_{i2} \) is the comparison unemployment rate. This latter variable is introduced both as a main effect and interacted with the individual’s own unemployment status. Considering \( u_{i2} \) as regional unemployment, it may well be that higher regional unemployment reduces the well-being of those in employment, but increases the well-being of the unemployed. Jobless people may not blame themselves as much when they see many around them also out of work. We thus expect \( \beta_3 \) to have a positive
coefficient: an individual’s own unemployment has a smaller psychological impact when the individual is in a high unemployment region/household, or when the individual has been unemployed more often in the past.

Empirically, unemployment always has a strong and well-defined negative impact on well-being. However, this impact is mitigated by the unemployment of others and by one’s own past unemployment: β3 is positive and significant. In Great Britain, an unemployed man in a region with 20–25% unemployment would have the same level of well-being as an average employed man elsewhere. In other results, an employed man in a household where all other adults work is estimated to have the same level of well-being as a jobless man in a household where all others are unemployed. Last, the psychological cost of current unemployment is estimated to be zero for a man who has been unemployed for 60% of the time over the past 3 years.

Much more needs to be done to understand adaptation and how human beings choose their ‘comparison other’.

Conclusion

Economists have started to study happiness. They have developed a simple method for valuing life events. It relies on regression equations in which happiness or mental strain is a dependent variable. The method estimates that marriage brings approximately the same amount of happiness, on average, as having an extra £70 000 of income per annum. Widowhood brings a degree of unhappiness that would take, on average, an extra £170 000 per annum to offset. Physical health is shown to be one of the most important variables explaining human well-being. The psychic losses from unemployment are much larger than the purely financial ones, and so on. The technique described in this paper can be used to put a value—positive or negative—on almost any kind of event in life. We have described three or four examples.

It is possible that this method will become widely used in social science.

Acknowledgements

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KEY MESSAGES

- Self-reported happiness or mental well-being scores can be used in a regression framework to calculate the value of different life events.
- For example, getting married is calculated to bring each year the same amount of happiness, on average, as having an extra £70 000 of income per annum, and the psychic costs of losing a job greatly exceed the simple drop in income.
- The same framework can be used to address the question of whether well-being depends not just on absolute things but inherently on comparisons with other people. We have found some evidence that this is the case.

References

When making choices we compare the expected utility of alternatives, at least when we try to choose rationally. Comparison is easier when the utility of different things can be expressed in a common unit. Economists use monetary value for this purpose. This unit is quite helpful for comparing goods and services that have a market price, such as houses and bicycles. It is less helpful in assessing the relative value of things like fresh air and true love, since these matters are not traded for money. For this reason economists sometimes try to estimate ‘shadow prices’. This is of course a tricky business. Estimates are easily influenced by ideological preconceptions and like ‘shadow cabinets’ in British politics, proposed shadow prices often serve only to promulgate propaganda.


Appendix
Table 1 uses a measure of mental stress known as a GHQ level (where GHQ stands for General Health Questionnaire). The twelve questions used to create a so-called GHQ-12 mental well-being measure for each person appear in the BHPS questionnaire as follows:

1. Here are some questions regarding the way you have been feeling over the last few weeks. For each question please ring the number next to the answer that best suits the way you have felt.

Have you recently ...

a) been able to concentrate on whatever you’re doing?
   Better than usual 1
   Same as usual 2
   Less than usual 3
   Much less than usual 4

then
b) lost much sleep over worry?
c) felt constantly under strain?
d) felt you couldn’t overcome your difficulties?
e) been feeling unhappy or depressed?
f) been losing confidence in yourself?
g) been thinking of yourself as a worthless person?

with the responses:

Not at all 1
No more than usual 2
Rather more than usual 3
Much more than usual 4

c) felt that you were playing a useful part in things?
d) felt capable of making decisions about things?
e) been able to enjoy your normal day-to-day activities?
f) been able to face up to problems?
g) been feeling reasonably happy, all things considered?

with the responses:

More so than usual 1
About same as usual 2
Less so than usual 3
Much less than usual 4

In this context Clark and Oswald\(^1\) propose estimating shadow prices on the basis of observed effects on happiness. This idea has been advanced in the past, e.g. by Van Praag and Plug,\(^2\) but now as the study of happiness matures, it becomes more practicable.

**Merits**

A strong point of this approach is that it is based on an equivalent of market behaviour. Common preference, as revealed in the market, is substituted by average enjoyment as revealed in surveys. This makes estimates of shadow prices less vulnerable to wishful thinking. Another advantage is that the happiness criterion is widely applicable and thus allows for a similar estimation of shadow prices for quite different things.

The method is particularly suited in cases where a money price for non-market goods is required, such as an indemnification for the death of a child. It can also be applied in social policy, for instance when the cost of a school crossing patrol is balanced against the suffering of children run over. An accessory advantage of the method is that it presents differences in happiness in an understandable way. For some people at least, an amount of US$10,000 says more than half a point on a 10-step happiness scale.

**Limitations**

However, the proposed method has some limitations, some of these can be dealt with, some are inherent to the approach.

**Measure of happiness**

In Clark and Oswald’s analysis happiness is measured using the General Health Questionnaire (as shown in the Appendix to their paper).\(^1\) A look at the response scales shows that this questionnaire taps perceived change in well-being, rather than the recent state of well-being. Response options on the happiness item (1) range from ‘more so than usual’ to ‘much less than usual’. This way of putting the question is not ideal. What we want to know is how happy people really feel, not whether they think they feel better than ‘usual’, whatever that may be. Such estimates with an indistinct past are also easily distorted by stereotypes and may make the unemployed seem more miserable than they really feel. This problem is easily solved by using more appropriate data. A list of suitable questions is available at the World Database of Happiness, Catalog of Happiness Queries.\(^3\)

**Capturing change in happiness**

The application in Clark and Oswald’s paper draws on cross-sectional data. The shadow prices in Table 1 are derived from regression coefficients and reflect the difference in happiness at the same point in time. These differences do not necessarily reflect causal effects. The rich may be happier than the poor because money buys happiness, but it is also possible that happiness boosts earning power. Such dual causality can also be involved in the differences in happiness between the employed and the unemployed and between married and divorced people. When estimating the shadow price of losing one’s job or getting a divorce, we need data about average change in happiness following such events. These data are available in the study at hand, but not used. The analysis is performed on pooled waves and not by comparing wave to wave change. The authors admit this shortcoming but play it down, saying that this is a mere technical problem and suggesting that the effect of happiness is relatively small. However, these effects seem quite substantial,\(^4\) taking them into account could halve the shadow prices in Table 1.

If we do compare over time, we meet with several problems of panel analysis. One of these problems is that a change in happiness does not always occur immediately after a ‘happiness promoting’ event. For example, in the case of divorce we mostly see a gradual decline in happiness in the years before the split and a slight recovery when it is settled. Unemployment is mostly not a surprise either. This requires that both the after-effect of events are considered, and the costs of anticipation. This brings us to a third problem, the problem of incorporating duration of effects. Some events have a short-lived effect on happiness, for instance the burning down of one’s house. Other events affect happiness lastingly, such as the death of one’s spouse. The ‘simple statistical method’ proposed here assumes that all afflictions last equally long and expresses the shadow price in one yearly amount. Real compensation would typically require diminishing payment. This is just one aspect of the duration problem. Another aspect is that some events also affect longevity and thereby change the time one feels happy or unhappy. Marriage adds not only to happiness but also to longevity, so the extra happiness is enjoyed longer. This duration effect is not captured by this method and hence the impact of marriage is underestimated. Likewise it could over-estimate the yields of promotion at work. If the Peter Principle holds, promotion boosts happiness only in the beginning but ends up in failure, which sometimes leads to premature death. However, promoted people could appear to be somewhat happier on average, since the dead are not polled.

It is not impossible to adapt the model to reflect these points, though availability of data will set some restrictions. However, such an adjusted model is likely to yield different results.

**Comparability across time and culture**

A last problem is in the variability of the relationship between income and happiness. This relationship is typically small in affluent nations such as Britain, which gives rise to the high shadow prices shown in Table 1. If the effect of income on happiness declines even more, the shadow prices will inflate in proportion, falsely suggesting that the costs of unemployment and divorce increased. Likewise a growth of the difference in happiness between rich and poor (Thatcher back in power) would seem to reduce the costs of unemployment and divorce. For the same reason shadow prices differ across nations. This makes sense in some cases; for instance the compensation for unemployment will be lower in India than in Britain. Yet, though bereavement is about equally traumatic in all western nations, the shadow price of widowhood will be lower in the US than in Sweden, because happiness depends more on income in the former country than in the latter. Likewise shadow prices will differ across sub-cultures. Since the effect of income on happiness is typically greater among materialists, one can expect a lower shadow price for employment among MBA-students than among hippies, which is again counter-intuitive.
All in all, the method applies only to a certain place, at a certain time and in a certain social milieu. Though this is better than nothing, it is less than we would want.

**Alternative: expressing utility in happy life-years**

Expressing happiness in money equivalents may be helpful in some cases, but mostly we do better by considering happiness as such. Not only do we evade the above problem of hedonic ‘exchange rates’; we also keep closer to the problem, that is, estimating the final utility of behavioural alternatives.

When trying to quantify effects of events on happiness we can simply note the average yield or loss in per cent of the actual scale range. For instance, we can say that marriage boosts happiness by 10% and that bereavement reduces it by 25%. Effects can also be expressed in changes in ‘school-like’ marks on the common range from 1 (bad) to 10 (excellent). While this may do for the general public, expert demands can be served by more sophisticated statistics.

As noted above, we should not only consider how much happiness changes, but also how long people are affected by that change, given the effects on length of life. We can deal with that problem by applying a unit commonly used in epidemiology. The adverse effects of bad sanitation of infectious disease are often expressed in years of life lost. This measure is also used for quantifying the severity of social problems. For instance, Wilkinson\(^5\) claims that a high degree of income inequality reduces the life expectancy of the poor considerably. His unit of utility is ‘life-years’.

Recently this method has been extended by including the quality of the years lived. This measure is also understood and appeals to a common notion of the good life.

Happy life-years can be computed by combining registration data on length of life with survey data on appreciation of life. A simple method is to express happiness on a range 0–1 and then to weight each year by the average.

\[
\text{HALY} = H_1 + H_2 + \ldots + H_l
\]

where \(H\) is average 0–1 happiness in a year, 1 is the first year considered and \(l\) the last.

Expressing the impact of events in HALY has several advantages. First of all we bypass the above mentioned problems of shadow prices. Temporal effects are systematically included and HALY compare well across place, time and culture. Further this unit nicely combines intensity and duration of happiness and evades the problem of short-sighted hedonism.

This measure is also applicable at the national level. We can then determine what kind of policies produce the most happy life-years on the average, in other words what ‘rules’ are most conductive to the ‘greatest happiness of the greatest number’. Data on average happiness in nations are available in the World Database of Happiness.\(^3\) Last but not least, this unit is easily understood and appeals to a common notion of the good life.

References