The Value to the Environmental Movement of the New Literature on the Economics of Happiness

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on the Economics of Happiness

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Abstract

Many environmentalists have not yet discovered and understood the value to them of a new research literature. That literature is the economics of happiness. It offers a potentially important tool for future policy debate. In particular, this literature offers a defensible way to calculate the costs and benefits of the true <u>happiness value</u> of 'green' variables – and to weigh those against the happiness value to people of extra income and consumption. Some of the latest research findings turn out to accord well with environmentalists' intuitions: green variables seem to have large direct effects on human well-being; society would arguably be better to concentrate more on environmental aims and less on monetary or materialistic ones; greater consumption of things in Western society cannot be expected to make us much happier.

<u>Introduction</u>

Economics textbooks continue to teach students that humans are happier if they consume more goods. In almost every country in the world, on almost all weekdays in a year, someone somewhere will be writing $u = u(c)$ on a blackboard or whiteboard. Utility rises with consumption.

Students rarely ask for empirical proof. Yet a new research literature in economics -- indeed broadly across social science -- has started to scrutinize this idea using proxy data on 'utility'. The new literature uses information from happiness and well-being surveys. Because consumption can be hard to observe in data sets, the research has focused on the closely related question of whether 'utility' is an increasing function of income. Technically, this is the idea that the indirect utility function $u = v(y)$ is increasing in income. Money makes people happier.

Early pioneers in well-being research were Richard Easterlin (1974) from the University of Southern California (from economics) and Ed Diener (1999) from the University of Illinois (from psychology). This literature finds that there is plenty of support in the data for the idea that richer people tend to be happier. However, crucially, and of relevance most especially for policy-makers and environmental economists, there is a lot of evidence that it is not true at the macroeconomic level that a country gets happier as it gets richer. This is the Easterlin Paradox and has been the subject of debate since the seminal 1974 paper.

A natural interpretation of Easterlin's finding that happiness-survey numbers run flat as countries get richer is the following: humans care about their relative position and status, and unfortunately the great tide of GDP growth lifts (the size and speed and glamour of) all boats together, so on average nobody feels better-off. Indeed a fine paper by Fliessbach et al. in Science in 2007 has recently shown that there is brain-science evidence for relative-income

effects in the human brain. Their work showed, in a laboratory setting with two side-by-side fMRI scanners, that activity in a key node in brain reward circuitry is sensitive not just to the value of an outcome but to how that outcome compares with that received by someone else in the laboratory. It thus provides a modern underpinning for the various relative-income hypotheses that have been advocated through the decades by Easterlin and other thinkers.

Here it should be pointed out that the work of Arrow and Dasgupta (2009) has made the important conceptual point that to jump immediately -- as some researchers like to -- from a relativistic utility function to the conclusion that there is an inefficient rat-race for consumption does require a set of other assumptions (especially about the value of leisure and its observability). The idea of a 'rat race' is that people as a group may compete too hard for promotion and the pursuit of possessions – too hard, that is, from the point of social optimality. They can get locked into an inefficient Nash equilibrium. Arrow and Dasgupta make it clear that an inefficient rat-race equilibrium is not inevitable (intuitively, even envious humans will bear in mind that they do not want to be relatively poor in their old age, and that may slow their Keeping up with the Joneses while young). Despite their important and correct caveats, Kenneth Arrow and Partha Dasgupta would probably agree that in western society there is now a distinct possibility that such a rat-race exists. That possibility deserves further empirical scrutiny.

Evidence about the World

One area in which modern economics textbooks are particularly weak is real examples of the world of consumption. Say we forget equations for a moment and, bearing in mind the earlier paragraphs, simply take an inductive approach and look at the modern world.

An unusual but potentially interesting starting point for a practical discussion of happiness and consumption is Figure 1. It shows two men's watches. Men's watches seems

particularly useful as examples, because in general in western society it is unusual for men to wear jewelry, so these watches -- unlike, say, fast cars -- can in principle be evaluated purely for their narrow, functional value. The price difference in the Figure is large; some readers may think it shocking. Although the prices of these watches vary 100,000-fold, the watches are almost identical in their ability to tell the time. There may be a few economists in the world who wish to tell a story to try to justify the price difference in Figure 1 in some rational way consistent with standard economics textbooks, but the common sense view is surely that the price difference between these two watches can only be sensibly understood by thinking of one watch as carrying huge 'relative status' that is nothing to do with time-keeping.

This takes us back to the ideas in the literature on the economics of happiness. It complements an older way to think. For nearly a century, policy debate has been dominated by cost-benefit analyses in which monetary gains and losses are summed. A project or policy is viewed by HM Treasury as good if it makes more income and jobs than it loses. By its nature, such an approach ignores a range of less tangible, but potentially extremely important, influences on human life. Yet economists have had few ways of allowing for those non-monetary variables. So calculations about money have ruled the day.

That is now changing – and fundamentally.

This paper describes some of the ideas in the new research on the economics of happiness and human well-being. Its focus is on how the environmental movement will benefit from this new branch of social science. The paper suggests that the results in policy debate may be dramatic.

In this new literature, clean air, for example, has been shown to be worth more (in terms of happiness) to people than is a large pay rise. There is also much evidence that the pursuit of higher GDP is close to pointless in a country that is already wealthy. More broadly, it is

probably not currently realised by the Green movement around the world that the new research literature provides conceptual and empirical methods for anyone who believes that a particular feature of the environment matters to human beings – and it has demonstrated that green factors influence human happiness just as much as, or more than, material prosperity.

These new statistical methods make it possible to measure a fuller range of the forces that shape humans' mental well-being[1]. In principle, and remarkably, these techniques allow researchers to calculate subtle things such as the happiness value from different economic, social and environmental factors. 'Green' variables in the economics of happiness turn out empirically to be especially important.

Some readers may think that the words 'economics' and 'happiness' do not deserve to go together in a sentence, but research is starting to link those two notions. The field of quantitative social science has changed in the last 20 years and social scientists are drawing closer to subjects like medicine. For example, economists have begun to publish in epidemiology journals, in science journals, and more broadly. Some observers will see this as a good step for the economics profession, although it is inevitable that the borders between economics (officially defined) and other social science disciplines are going to become increasingly blurred.

To do this kind of work, researchers take random samples of people from nations across the world and are interested in understanding what it is that explains -- in a statistical sense -- the patterns of happiness or mental health across different sorts of people. They try, second, to explain the levels of happiness and mental health across different nations. Some researchers are optimistic that it may eventually be possible to learn how to make whole countries

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[1] An introduction to the happiness literature, and these methods, can be found in Oswald (1997) and Clark and Oswald (2002).

happier. Of course some of the people who would agree that maximising GDP is not a sensible objective may not yet be persuaded that, even if it can be accurately measured, maximising well-being (or happiness) is a legitimate goal (e.g. liberals might argue that this is not a legitimate goal for public policy). These issues merit future debate. Nevertheless, the new literature has reached the point where it seems to offer a tractable alternative to GDP maximization. Moreover, papers like Oswald and Wu (2010) have shown that there is a match between happiness measures and some of the traditional economic ways of measuring utility.

In this area of intellectual inquiry, two questions are central. One is: should our goal for the rest of this century be, as it more or less has for the past 50 years, to try to maximise GDP? Should we have the aim of four BMWs for everybody, by the end of the century? The spirit of the Stiglitz Commission report (2009) on the measurement of human well-being was that such a path would be the wrong one, and that emotions not just pound notes should be measured. Second, at the individual level, what determines human well-being? This is the subject matter of an empirical literature in which many different sorts of researchers estimate multiple regression equations with well-being as a dependent variable. In plainer English, researchers search for -- and find -- interesting patterns in data on what makes people happy.

Reasonably enough, many readers who encounter the field for the first time ask the question: well how on earth can you study happiness anyway?

Research is normally done in the following way. First, economists take a large random sample of people, as in the British data captured in Figure 2. Second, each of those individuals is asked how they feel about the quality of their own life. Each gives an answer to a question like "Taking everything into account, how happy do you feel overall?" where people can answer on a scale from, say, a low of 1 to a high of 7. Third, each person answers

many other questions, such as about their age, gender, marital status, job type, earnings, educational qualifications, and so on. By using normal statistical methods (of the sort used to study how smoking or eating fresh vegetables affects the chance of long life, say), it is then straightforward to examine the patterns in people's life-satisfaction or happiness answers.

This approach might seem too simple or potentially just unreliable. The trick to understanding the method intuitively is to think -- behind the equations themselves -- of people's idiosyncrasies as averaging out. Different people care about different things and may even use language differently from one another. But by taking information on large enough numbers of human beings, most of that statistical 'noise' washes out. What is then left behind is an underlying pattern for the typical individual human (just as in medical science, where a few people can actually smoke safely until they are 95 and survive it, but the average person cannot). The assumption that much of the variation in the individual determinants of happiness can be treated as 'noise' might sound a Draconian one, but almost all empirical research in economics and epidemiology makes technically equivalent assumptions, and the robustness of happiness patterns in different countries provides a reasonable degree of reassurance.

Researchers work empirical with a kind of <u>happiness equation</u>. Happiness can be thought of as being captured by an expression like:

Happiness depends on x + y + z

where *x* is a group of economic variables, *y* a group of social variables, and *z* a group of environmental variables. Crucially, in this research, it is possible to <u>measure</u> the separate

effects on happiness of having clean air in the environment, of being married, of having a high income, of having lots of friends of living in Scotland, of having a long commuting time, and so on, and on.

Possible Concerns

Various sensible objections come to mind. One is that, surely, asking a simple happiness question of this type produces special answers, and ones that are not very believable? In fact, the research indicates that this worry seems to be incorrect. What appears to be going on, when human beings give answers in these surveys, is that they are providing a rough sense of the quality of their own life as they themselves perceive it. Critics sometimes argue that people's happiness answers are untrustworthy because those answers may be influenced by those people's perceptions of others' happiness; but we know from Fliessbach and colleagues (2007) that relative effects are genuine, in the sense that others' incomes matter objectively in the brain and not just as revealed subjectively (as critics might say) in happiness answers. Moreover, the precise language of the question does not turn out to make a big difference. Intriguingly, the econometric structure of well-being equations seems to be similar across the world and largely unaffected by the exact wording of survey questions.

Another natural objection is probably the most famous in the whole of social science (and perhaps even science). Can we really sort out cause-and-effect here? The latest evidence suggests that we can. One way of doing so is to follow the same people through time – and watch what happens to their mental wellbeing as good and bad events strike them. Then we can measure longitudinally the changes in happiness in response to things like marrying,

becoming disabled, winning money in a lottery, etc. Much more needs to be understood here scientifically, but important progress is being made.

Finally, and crucially, researchers have developed ways to put monetary values on the good and bad events in life.

It is hard to explain fully intuitively how that is done, but one attempt is the following. Think of the different points on the happiness scale that people are given in a survey question. They can answer from a low of 1 to a high of 7, let us imagine. By averaging across everyone's answers, it is then possible to work out (i) that, say, an extra 40,000 pounds a year will move people on average up the happiness scale by one point, and (ii) that being married rather than single gives people one and a half points on the same happiness scale. Then, on average, the happiness 'value' of marriage is 60,000 pounds a year.

Recent Findings

Large effects on human well-being are found to stem from the quality of the environment. The happiness literature offers a new way to assess that. The new approach offers a method that is additional to the conventional approach where people are asked their willingness to pay (reviewed in sources such as Horowitz and McConnell 2002), and one that does not require individuals to be able to value complex hypothetical scenarios and respond to non-trivial questions like "how much would you pay to have air that is 10% cleaner"). Recently, for instance, a substantial number of papers -- listed at the end -- have shown that clean air and lack of noise have strong and statistically significant consequences. In some of the best research, Simon Luechinger (2009) uses German data to show that people's reported

happiness depends sensitively upon the level of SO2 in the air they breathe (probably without those individuals realising that). To demonstrate a causal relationship, he uses information on the direction of the wind and on the installation of certain kinds of power plants in different parts of Germany. His latest work (2001) is on US air pollution. Luechinger finds[2] that, on his best estimate, *a halving of air pollution would make the same contribution to a typical citizen's happiness as a 25% rise in that person's income*.

Arik Levinson (2012) does something similar for the United States. He takes data on daily air pollution across the regions of the USA. He matches those numbers with the happiness levels of randomly sampled Americans in the data different areas of the country. Again, after controlling for other influences on people's lives, the quality of the air turns out to have strong effects on personal happiness.

Both researchers use an equation approximately of the following form:

Human happiness = a + b(Income) + c(Air quality) +d(Other factors affecting people's happiness).

These and other researchers (such as Welsch 2002, 2006, 2009; Van Praag and Baarsma 2005; Rehdanz and Maddison 2005; MacKerron and Mourato 2009; Frey et al. 2010) are able to measure the coefficients *b* and *c*. The first of these coefficients gives economists an estimate of the extra happiness that humans get from a rise in their income. The second gives an estimate of the extra happiness they obtain from better air quality. The true value of air quality -- namely, the happiness value of clean air expressed as a monetary value -- is then given by the ratio of *c* to *b*. This method is the way in which the different, subtle, intangible

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[2] I am grateful to Simon Luechinger for providing for me the following interesting calculations. According to the 2009 paper in the EJ, an income INCREASE by 10 percent is equivalent to a reduction in sulfur dioxide pollution by 67 percent (OLS estimate) or 39 percent (IV estimate) at the mean income of EUR 21,500 and mean pollution concentration of 17 mcm. According to the 2010 paper in Economics Letters, the respective figures are 44 percent (OLS estimate) and 21 percent (IV estimate) at the means of USD 27,300 and 39 mcm.

forces in people's lives can be measured and weighed within a statistical cost-benefit equation of a more accurate kind than the traditional one that looks only at narrow monetary influences on human well-being.

Conclusions

What the research suggests -- repeatedly and from different research teams -- is that environmental quality matters enormously to people's feelings of happiness and satisfaction with their life. Green variables are more important to human well-being than many economists have realised, and these variables operate on people's well-being in subconscious as well as conscious ways (for example, at the conscious level, individuals do not appreciate how much they are affected by, say, the quality of the air, so it is hard for them to act wisely if asked to vote on giving more of their tax money towards cleaning up the environment).

By offering formal ways to assess the contribution to human well-being of non-pecuniary variables, the economics of happiness seems likely to change the future of the environmental movement and of policy debate in the world. That is not widely realised by environmentalists. I believe that it is a matter of time before these methods come to figure in public debate about our environment and its true 'happiness' value to human beings.

Figure 1: Observing the World of Watches as Evidence of Relative Concerns in Human Beings
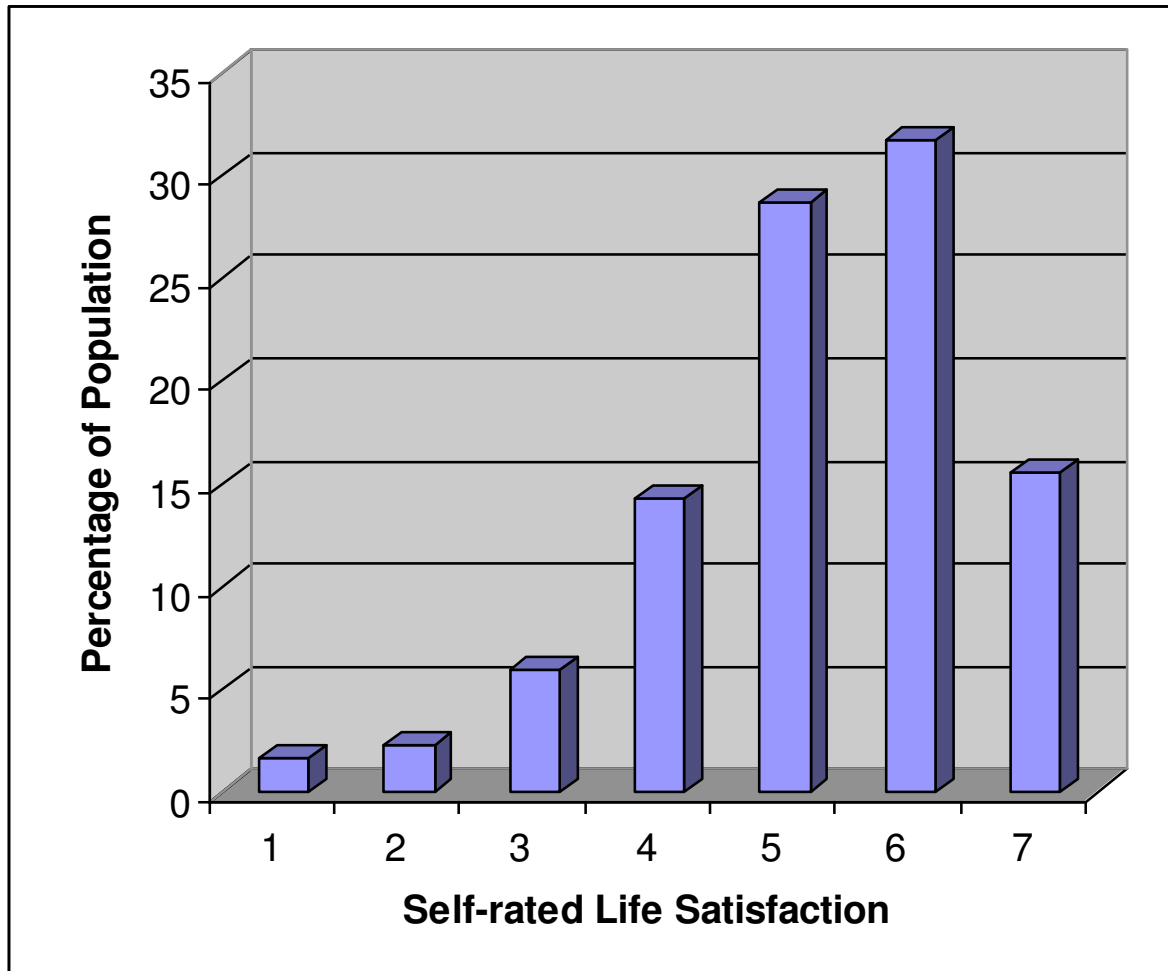
A 5 Euro Watch

A 500,000 Euro Watch

Figure 2: The Distribution of Life-Satisfaction in Britain (British Household Panel Study data – Sample size approx 75,000 observations: where 7 is Completely Satisfied).

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