

Emotional Prosperity and the Stiglitz Commission

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Abstract

This paper argues -- in line with the proposals of the recent Stiglitz Commission on the Measurement of Economic Performance and Social Progress -- that we should now be measuring a nation's emotional prosperity rather than its economic prosperity (that is, we ought to focus on the level of mental well-being not the number of pounds in people's bank accounts). The paper reviews recent ideas in this field. It also describes seven recent studies that, worryingly, suggest that emotional prosperity may be declining through time. For labour-market specialists, a key question for future research is how much this downward trend can be traced back to increased pressures in working life. That question currently remains open.

Keywords: Well-being; biomarkers; GHQ; happiness; Easterlin paradox.

JEL codes: I1, I3.

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Emotional Prosperity and the Stiglitz Commission Andrew J. Oswald

*A ... key message, and unifying theme of the report, is that the time is ripe for our measurement system to shift emphasis from measuring economic production to measuring people's well-being.
p.6 Executive Summary: Stiglitz Commission Report*

1. Introduction

This paper, which I hope might be of interest to a range of social scientists, is concerned with what could be called the emotional prosperity of a society. The paper will use that -- admittedly unusual -- term for two reasons. First, the term makes clear an intentional contrast with economic prosperity and Gross Domestic Product. Second, it seems sufficiently general that it allows various measures of well-being (happiness, life satisfaction, mental health) to be considered under a single, broad heading. The aim of this essay is to communicate some of the empirical results that have emerged recently in a new literature that spans journals from economics to medicine. It is thus a review essay rather than an attempt to document new findings. For social and behavioural scientists as a group, the essay's principal argument is that mental well-being can be measured reasonably persuasively and that there is evidence that its level is declining. For industrial relations researchers more specifically, there is evidence in this literature that work matters in a particularly influential way to people's emotional prosperity (a fine paper showing that is Winkelmann and Winkelmann 1998), and there remains an open important question about whether the apparent decline in well-being can be traced back to factors in the modern workplace (Green 2006 is one of the fullest studies of that issue). Labour-market specialists may also be interested in the fact that so-called compensating differential theory, due originally to Adam Smith's idea that different jobs would offer different mixtures of good and bad features, has been used

recently to help to validate subjective well-being data (in US data in Oswald and Wu 2010).

Social-science researchers, including industrial relations researchers, economists, and psychologists, are likely to be sympathetic to some version of the idea that human well-being matters in itself – perhaps as a, or even the, goal of a society. A large research literature on the topic is springing up (including, in the last decade alone, Frey and Stutzer 2002; Easterlin 2003; Kahneman et al 2004; Van Praag and Ferrer-I-Carbonell 2004; Graham 2005; Bray and Gunnell 2006; Clark et al 2008; Diener et al 2008; Stevenson and Wolfers 2008). Human well-being also matters indirectly: it moulds other important phenomena and actions. Recent research on the physiology of the body and the immune system, for example, suggests that happiness and mental health appear to be protective: psychological health is associated with faster physical healing in laboratory tests in which people are given standardized punch biopsies (Ebrecht et al 2004) and also with reduced levels of cortisol and inflammatory markers (Steptoe et al 2005; Steptoe et al 2007). Happier people resist the common cold more effectively than others when exposed to nasal drops that contain a rhinovirus (Cohen et al 2003); they also seem, later in life, to suffer lower rates of hypertension (Jonas and Lando 2000); and happier nations have less hypertension (Blanchflower and Oswald 2008).

The paper also considers, and is partly motivated by, the recent Stiglitz Commission's report on the measurement of economic and social progress in a modern economy. This report, which may not yet be known to all social scientists, was published in 2009 and can be downloaded from www.stiglitz-sen-fitoussi.fr. The Commission was set up by Nicholas Sarkozy of France. An abbreviated list of the recommendations from the Stiglitz Commission is given in the Appendix.

The novel aspect of the report by the Stiglitz group is its emphasis on the need for measures of emotional prosperity (though it did not use that exact term) rather than merely the traditional ones, such as Gross Domestic Product, of pecuniary prosperity:

“Measures of .. objective and subjective well-being provide key information about people’s quality of life.” p.16. Executive Summary of Commission Report.

The following arguments are particularly important parts of the Report (pp. 10-16) and convey its message:

- Life is now more complex (*“The time has come to adapt our system of measurement ... to better reflect the structural changes which have characterized the evolution of modern economies.”*)
- Services, rather than manufacturing, now dominate the world of work. (*“In effect, the growing share of services and the production of increasingly complex products make the measurement of output and economic performance more difficult than in the past.”*)
- We, as a society, need to measure well-being per se. (*“A... unifying theme of the report, is that the time is ripe for our measurement system to shift emphasis from measuring economic production to measuring people’s well-being.”*)
- Inequality itself matters (*“Quality-of-life indicators in all the dimensions covered should assess inequalities in a comprehensive way.”*)
- Official government statistics should blend objective and subjective well-being data. (*“Statistical offices should incorporate questions to capture people’s life evaluations, hedonic experiences and priorities in their own survey.”*)

- Sustainability must be a criterion (*“Sustainability assessment requires a well-identified dashboard of indicators...the components of this dashboard should be ... interpretable as variations of some underlying “stocks”. A monetary index of sustainability has its place in such a dashboard.”*)

2. Well-being and its Measurement

The background to the Stiglitz Report seems clear. In the typical developed country, material prosperity is now remarkably high by the standards of history. No one goes hungry; the chance of death in child-birth is low; almost everyone receives an education; there is little chance of the secret police coming in the night to take a person away; hot showers and fast cars are commonplace; if sickness strikes, there is medical care. Hence, by the standards of almost all countries, and almost all of human history, such nations are financially blessed.

Nevertheless, as Offer (2007) and others have argued, there are reasons to think that not all is well. Some citizens display signs of mental turmoil amid the financial security of modern living (McManus et al 2009 conclude that at any one time approximately 15% of people in the UK suffer from at least one mental disorder: their p.11) and Richard Easterlin’s seminal doubts (Easterlin 1974, 2003) remain. Most modern analysts in this research field believe that the Easterlin Paradox -- the lack of an association between growth in Gross Domestic Product and any trend in reported happiness -- persists stubbornly in the data.

Although it is harder than to count up pound notes, we therefore seem to need somehow to be able to assess emotional prosperity. The present paper is concerned with that for rich countries (I shall here ignore developing nations, where, in my personal view, economic growth is still needed) and is partly about the economics of happiness. Some will think that the words ‘economics’ and ‘happiness’

do not deserve to go together in a sentence, but much research is starting to link those two notions. The field of quantitative social science has changed noticeably in the last 20 years and there is a sense in which social scientists are drawing closer to subjects like medicine. Economists, in particular, 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 seems 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 and, second, what explains the levels of happiness and mental health across different nations. Some researchers believe it may eventually be possible to learn how to make whole countries happier. 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 that aim, of four BMWs for everybody, by the end of the century? The spirit of the Stiglitz Commission report is that such a path would be the wrong one, and that emotions not pound notes should be measured. Second, at the micro level, what shapes 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.

To assess 'emotional prosperity', it is presumably necessary to have a yardstick that is as psychological as it is economic. The most-used approach has been to ask survey questions about how content people are with their lives. In

western countries, most individuals say they are rather satisfied and happy with life. As an example, Figure 1 gives well-being answers for Britain. Here the data are from a question “How satisfied are you with your life overall?” in which interviewees were asked to give an answer on a scale from 7 (I am completely satisfied with my life) down to 1 (completely dissatisfied). Figure 1 reveals the skewness typically found in well-being data. It should perhaps be emphasized that researchers are not dominantly interested in the exact words that interviewees use. Instead, they are interested in the ordering of answers across categories and why some sorts of people mark themselves high and others low.

Life is a mixture of ups and downs and it is therefore unsurprising that in the data a person’s happiness score is strongly correlated -- in sensible ways -- with the good and bad things that happen in life. Work is central to emotional prosperity. Perhaps of particular interest to industrial relations researchers and labour economists is the finding from happiness research that unemployment has a huge, negative impact on people’s well-being and that the size of this effect goes far beyond that of the drop in take-home income. Researchers such as Winkelmann and Winkelmann (1998) demonstrate this in German panel data: they show that approximately 80% of people’s measured decline in mental well-being after being made unemployed stems from non-pecuniary rather than pecuniary sources. Similarly, before couples divorce, we see in longitudinal data a low level of well-being, and then eventually a rise in their levels of happiness; before a first-baby is born, there is a surge in reported well-being, but after that a marked drop to below the earlier levels. It is now known that there is also a striking life-cycle pattern. A typical person, in a developed economy, will slide down a giant U shape of happiness though life. Figure 2, which is due to the economist Nick Powdthavee, is

based on a random sample for Britain. The general U-shape has appeared in the published literature since at least Clark and Oswald (1994) and in the last decade has been replicated by large numbers of research teams. The numbers in a figure like Figure 2 are statistical averages traced out from survey data and the U-shape is only an approximation. A few years before people die, there is some evidence that reported happiness begins to drop down again (not shown in the figure); presumably that is because of the incapacity that occurs, fairly commonly, at the end of life.

Following researchers such as Richard Easterlin and Edward Diener, the earliest approach to the formal measurement of human happiness and wellbeing, was to take a survey such as the General Social Survey of the USA which asks individuals, randomly sampled, “taken altogether how would you say that things are these days?” Do you think of yourself as very happy, pretty happy or not too happy?” It was quickly found that approximately one third of Americans will tick the box saying they feel very happy with their life, and around 10 percent to 20 percent will tick the “I’m not too happy with my life” box.

Another potential measure of emotional prosperity is a GHQ score. It is an indicator of psychological distress and mental strain (explained at length, for example, in Goldberg et al 1997); the now-famous GHQ acronym comes from “general health questionnaire”. This measure originally was used by epidemiologists and doctors; it is a summary statistic that aggregates people’s answers to a particular string of queries. In one version of this measure, individuals answer 12 separate mental-distress questions: “Have you lost much sleep over worry?”; “Been able to concentrate on things?”; “Felt you are playing a useful part in things?”; “Felt capable of making decisions about things?”; “Felt constantly under strain?”; “Felt you could not overcome your difficulties?”; “Been able to enjoy your normal day-to-day

activities”; “Been able to face up to your problems”; “Been feeling unhappy and depressed?”; “Been losing confidence in yourself?”; “Been thinking of yourself as a worthless person?”; “Been feeling reasonably happy all things considered?”. People in the surveys are asked to answer on a scale from ‘much more than usual’ down to ‘much less than usual’. More recently, Hu et al (2007) and other researchers have suggested that GHQ scores can be used to measure positive mental well-being and not merely identify signs of clinical mental-health problems (although Huppert and Whittington 2003 argue that there are necessarily separate components to positive and negative well-being).

Well-being researchers take information on life-satisfaction numbers and GHQ scores and then estimate regression equations -- in everyday language, the researchers take large numbers of data points and estimate best-fitting lines -- and in that way they try to uncover the relationships between income and education, gender, having children, and reporting whether or not people are happy with your life and have good mental health. Given the evident complexity of a concept such as human well-being, it is natural to be concerned with the issue of whether this can be done in a believable, systematic manner. Debates about that continue. One thing we know is that if researchers look at slices through human brains while people are in an MRI scanner, emotions such as happiness and sadness do show up in distinct ways in different parts of the brain (Urry et al 2004), so there at a physiological level we know something about what looks like high happiness relative to low happiness. We know also that well-being scores are correlated with blood pressure and heart-beat (Steptoe et al 2005). On happiness and hypertension, it has recently been shown in Blanchflower and Oswald (2008) that a statistical relationship exists in which countries where people actually say they are happy are also nations in which

there is less reported hypertension (high blood pressure). Hence these subjective responses of people in surveys are correlated with objective well-being criteria. There is increasing interest in the idea that some mixture of biomarkers and subjective well-being data might help us to measure human well-being. This links social-science to an epidemiological and physiological literature represented by work such as Crimmins et al (2008), Edmunds (1982), Powdthavee (2009), Seeman et al (2009), Singh and Rose (2009), and Troubat et al (2009). The last is suggestive of the idea that the human fight-or-flight response may allow mental stress to be measured in an objective way.

However, a straightforwardly relevant question to ask is whether subjective responses on people's feelings of psychological well-being are reliable. Krueger and Schkade (2008), who argue in the affirmative, show that people's own satisfaction answers through time are correlated with a Pearson's r of approximately 0.6. To probe this issue further, a sharp test would be needed where humans' subjective assessments can be compared to objective ones. By its nature, that is likely to be difficult for variables such as happiness and mental health.

A recent attempt to address the broad issue -- that of whether objective and subjective data match up -- in another kind of setting is described in the study of Oswald (2008), which collected data on human height. Height may seem a strange variable to study, but it has the scientific advantage that it is verifiable in a way that is not open to dispute. In that study, the simple question asked of individuals was, in a similar kind of spirit to happiness-questionnaire inquiries,

How tall do you feel you are relative to your gender (put a cross on the line)? Very short Very tall.

People answered this question, about how tall they felt, by marking a point anywhere they wished along a horizontal line that was written out for them on a sheet of paper. The line had a low end marked *Very Short* and a high end of *Very Tall*. There were ten small vertical dashes spaced along the line, to help respondents visually, but subjects were not obliged to make a mark literally on one of those. Although no integers were used on the subjects' answer sheets, for the analysis their answers were coded from a low of 0 to a maximum of 10. By measuring the marks made by subjects, an exact position (to one decimal point) could be assigned to their position along the unit interval.

Objective data were then recorded in centimetres. After they gave their subjective scores, people were measured for actual height (it should be explained that when answering the first question about their subjective feeling about their height, they could probably tell, from the way the study was set up, that they were likely actually to be measured). The male mean height was 179.5 centimetres and for women 165.0 centimetres. These data were collected in a public setting at Warwick University. As an incentive, small rewards were given to those taking part. The sample size was 219, which was approximately equally divided between men (113) and women (106). The subjects were university students.

As can be seen in Figure 3, using data drawn from Oswald (2008), a strong correlation exists between subjective and objective height. When separated into two sub-samples, by gender, it was not possible to reject the null hypothesis of linearity in the reporting function. In Figure 3, measures of objective and subjective tallness are correlated with a Pearson's $r = 0.8$.

The point of this is straightforward: it is to illustrate that people's subjective feelings can be an accurate guide to reality. Some social scientists (especially

certain kinds of applied psychologists) will not find that surprising; but there is a long tradition in a subject such as economics that, because of their likely inaccuracy, all subjective measures should be resisted.

Further evidence of a match between subjective and objective, and thus of the potential validity of well-being data, comes from Oswald and Wu (2010). An illustration of this kind of result is given in Figure 4. Their study builds indirectly on labour-market theory, and the idea of a spatial equilibrium in which people move to nice places to live, as represented in a source such as Gabriel et al (2003). The Oswald-Wu study reveals, with the help of data from the Behavioural Factor Response Survey System, which is organized by the Centres for Disease Control of the United States, that there is a marked correlation across the states of the USA between people's life satisfaction answers and the implied quality-of-life estimate (based only on objective data on things like sunshine hours and levels of congestion) from a compensating-differentials theory from neoclassical economics. This seems to be valuable information because it makes it hard for sceptics of subjective well-being questions to claim that the numbers do not measure anything reliable.

For an environmentalist, or an environmental economist, the new methods of 'happiness economics' are potentially valuable, because in the last few years it has become feasible, using statistical techniques, to put dollar, euro, pound values on the happiness from clean air, lack of noise, lack of chemical additives, and so on. A well-designed example is that of the work by Luechinger (2009) on sulphur monoxide emissions, who is able to value the well-being produced by clean air. Although many economists are not yet aware of such research (and perhaps even fewer environmentalists are), this could turn out to be a large research area. The technique of estimating happiness equations, reading off the coefficients, deriving

backwards the implied monetary values, and thus the happiness coming from certain things, potentially offers an objective way to calculate the values of different 'green' variables.

Researchers have also examined the happiness of nations. It has been known for a long time, and has recently been pointed out in a comprehensive way by Stevenson and Wolfers (2008), that if we look at a scatter plot across countries, with GDP per capita on the x axis and standardised life satisfaction on the y axis, there is a positive association. On average, mental wellbeing is greater the greater is that nation's real GDP; so there is a simple cross-section connection between a country being richer and feeling happier. As noted in the Stiglitz Report, however, the potential problem for economic policy in western society is Richard Easterlin's famous Paradox -- that if you take random sample surveys (e.g. from the United States) where you ask people "how happy are you with your life?" the happiness answers run flat through the years.

This Easterlin result is either false or is of fundamental importance to policymakers and politicians; in principle, his result undermines the *raison d'être* of GDP growth. The paradox is intellectually, and arguably even personally and emotionally, a threat to the philosophy and speeches of policymakers, bankers, politicians. It is against the spirit of much that has been taught to economics students – that more economic growth and the sheer possession of extra things should lead society to greater happiness.

3. What is Happening to Emotional Prosperity through Time?

If we turn to broader measures of psychological well-being, there is some reason to be even more pessimistic than Easterlin, and to believe that emotional prosperity is declining through time. The following section illustrates that and

provides thumbnail summaries, drawing sometimes on the authors' own statements of why their work is interesting, of seven studies:

Sweeting et al (2009)

In this important examination of young people, data were drawn from three longitudinal samples identical in respect of their age (15 years), school year (final year of statutory schooling) and geographical location (the West of Scotland). Each group filled in the 12-item General Health Questionnaire in 1987 (sample size N = 505), 1999 (N = 2,196) and 2006 (N = 3,194). The authors then examine changes in: GHQ 'caseness' (which, loosely, is a measure of high mental strain); individual items; and factors, derived via confirmatory factor analysis representing (a) 'negative' and 'positive' items, and (b) 'anxiety and depression', 'loss of confidence or self-esteem' and 'anhedonia and social dysfunction'. The authors find that GHQ levels worsen considerably through the studied period. Measuring mental distress with the standard (2/3) cut-off definition, 'caseness' rates in 1987, 1999 and 2006 were 12.7, 15.1 and 21.5% (males) and 18.8, 32.5 and 44.1% (females). Similar increases were observed with other, more stringent 'caseness' cut-offs. Examination of individual items showed some to have increased much more markedly over time than others. There were larger increases in mental distress among females for all except two items and some evidence, among both genders, of slightly steeper increases among 'negative' items compared with 'positive' ones. Although the authors accept that larger increases in 'negative' items raise the possibility that endorsing such symptoms may have become more acceptable, they dismiss any extreme concerns here. They argue that the worsening on all dimensions of psychological distress suggests that their measured outcome is likely to be a genuine one (rather than the result of how people used language differently by 2006).

Sacker and Wiggins (2002)

This study exploits data from two unusually powerful data sets. These are the 1958 National Child Development Study (effective sample size approximately 12000) and the 1970 British Cohort Study (effective sample size approximately 13000) collected when the cohort members were aged between 23 and 42. Multilevel logistic regression models were used to examine the effects of social class, gender, age, period and cohort on psychological distress as measured by a so-called Malaise Inventory, developed from the Cornell Medical Index Questionnaire from which 14 of the items are derived. This self-completion questionnaire was administered at the end of the interview or postal questionnaire. It includes statements relating to the symptoms of anxiety, depression and associated psychosomatic distress with which the respondent either agrees or disagrees. As the authors explain, their total symptom score is derived from a count of the number of items that elicit a positive response. The authors do manage to identify social inequalities in psychological distress during 1981-2000 and to demonstrate that these reduced in magnitude over this period (consistent with the idea that things became worse more sharply for those who were initially doing well psychologically). Non-linear age effects were observed: psychological distress declined on approaching mid-life. The 1970 cohort had poorer psychological distress than the 1958 cohort. Over this run of years, therefore, the authors discover that on their calculations the risk of psychological distress among Britain's citizens approximately doubled (p. 984 of Sacker and Wiggins).

Hodiamont et al (2005)

These authors took repeated cross-sectional data; their underlying survey information is on citizens in a region of the Netherlands. The authors calculated the prevalence of psychiatric disorders in the general population of this area for two

separate years, namely, 1983 and 1997. With this usefully wide interval of 14 years, 2 two-phase studies of psychiatric prevalence were carried out among the inhabitants of the Dutch Health Area of Nijmegen. In phase 1, a random sample of persons answered the General Health Questionnaire (in this case, it was the so-called GHQ-30). After that, in phase 2, the respondents were interviewed using a clinical semi-structured interview. Both samples were of approximately 4500 people. Only phase 1 data are reported in the authors' study. The authors' key finding is that the mean GHQ-score worsened significantly from 3.1 (+/-1.0) in 1983 to 4.6 (+/-1.8) in 1997. The authors show that psychiatric prevalence increased in all socio-demographic categories. They conclude that 'despite the improved socioeconomic conditions in the survey population as a whole... the increasing complexity of life apparently takes its toll, even of the socially best-equipped'. Although this Dutch study is careful to point out that it could not ensure absolutely identical designs in 1983 and 1997, the paper seems an important contribution.

Wauterickx and Bracke (2005)

This research paper built upon data from 1992 to 1999 from the panel study of Belgian Households (PSBH), which is a longitudinal database with yearly surveys that includes 3,546 longitudinal respondents (1,612 men and 1,933 women). The authors use a formal measure of depression. That is assessed with a modified version of the Health and Daily Living Form (HDL) that contains 13 depression items. With latent variable growth-curve modelling, and their statistically representative sample of the Belgian population, the authors conclude that -- regardless of age, sex, educational attainment, work loss or divorce -- there is evidence of an underlying upward trend in rates of depression. There is a slightly larger growth rate in depression for the female respondents. The authors argue that the way that

depression is measured captures gender differences adequately and that the scale itself is significantly reproducible over the 8-year period.

Verhaak et al (2005)

Using two comparable morbidity studies carried out in the Netherlands and in primary care, this study compares Dutch mental well-being between 1987 and 2001. Their first sample is approximately 9000 in size; the second sample is approximately 10,000 citizens. The authors' aim is to assess the following: possible differences in mental health between 1987 and 2001; possible differences in prevalence of mental disorder as diagnosed by GPs in those years; possible differences in the socio-demographic determinants of mental health and mental disorder in primary care through time. The results uncover an increase in mental and social problems in the population between 1987 and 2001. However, GPs diagnosed fewer patients as having a mental disorder in 2001 than they did in 1987. The risk of mental disorders or social problems in several socio-demographic groups remained largely the same, as did the chance of receiving a psychological or social diagnosis. The researchers conclude that, while mental disorder in the Dutch population is increasing, the role of primary care has changed. Although GPs diagnose a lower percentage of mental problems as such, they refer an increasingly larger proportion of these to secondary care.

Green and Tsitsianis (2005)

This paper is of a slightly different, but complementary, kind, and makes the labour market central to thinking about the topic. It measured the levels of job satisfaction over time in Britain and Germany. Contrary to what might be expected from popular commentary, changing job insecurity does not explain the fall in job satisfaction in either country. It is found, in data from BHPS and GSOEP, that job satisfaction has

declined through time. In Britain, from 1972 to 1983, it fell slightly according to General Household Survey data, although the downward trend is at the margin of statistical significance; then from 1992 to 2002 the rate of decline is quicker, and statistically significant. The authors show a similar trend for Germany between 1984 and 2002. They then examine data on the intensification of work effort and declining task discretion, and conclude that these can account statistically for the fall in job satisfaction in Britain. In Germany, the changes were in the same broad direction as for Britain, but were too small to account for the fall in job satisfaction.

Oswald and Powdthavee (2007)

One further research study to find evidence of worsening emotional prosperity is that of Oswald and Powdthavee (2007). The authors examine British BHPS data from the early 1990s. GHQ psychological distress scores rose from 1991 to 2004. The increase is statistically significant at normal confidence levels. In a regression equation, pooling the years 1991-2004, the authors find that, where the mean of GHQ is approximately 11.2 (with SD 5.4.):

GHQ = 0.01 time trend + constant + controls for age, gender, marital status, employment status, education level.

The coefficient on the time trend has a t-statistic of approximately 2.3. Hence psychological health in Great Britain is apparently gradually worsening, *ceteris paribus*, by approximately 0.1 GHQ point per decade.

One final piece of evidence, although not published in an academic journal, comes from the UK National Health Service's recent report *Adult Psychiatric Morbidity in England in 2007: Results of a Household Survey*. It compares randomly selected samples for the years 1993, 2000, and 2007. In technical language, the report concludes, among other findings, that (page 29 of the report, where the

acronym CIS stands for Clinical Interview Schedule): *Overall, the proportion of people aged 16-64 with a CIS-R score of 12 or more increased between 1993 and 2000, but did not increase again between 2000 and 2007 (14.1% in 1993, 16.3% in 2000, 16.4% in 2007).*

Here, a CIS-R score is a measure of neurotic symptoms and common psychiatric disorders, so that the survey evidence is consistent, once again, with the idea that mental well-being may be worsening secularly through the decades. The interesting issue of whether the marginal rise of 0.1% between 2000 and 2007 marks a plateau will only be answered when the next sweep of this survey is done.

Taken together, these studies seem to paint a similar picture. Unfortunately, it is not one that most citizens or politicians would find reassuring. It is sensible, as ever, to view all these empirical studies as ones that need further verification; this is an intellectual area where the issues are inherently difficult and subtle ones; further work, especially on longitudinal measures of mental well-being for other countries, needs to be undertaken. Nevertheless, the papers' statistical results do appear to be consistent with the idea that well-being, measured broadly in human terms (namely, in terms of emotional prosperity), rather than in the pound notes of GDP, is if anything diminishing through time. Even with the appropriate caveats, and they are plentiful, that is troubling.

4. Conclusions

This paper has argued that we should measure, and focus attention upon, emotional prosperity. The time-series facts described in the paper -- looking particularly at the seven studies listed earlier -- seem sufficiently worrying to justify further research and to throw a confirming light on the concerns of the Stiglitz Commission.

What is it that goes wrong in a country as it gets richer? Although we do not yet know, one possibility is, as Green's (2006) research suggests, that modern work

itself may put extreme pressure on people. The Stiglitz report also emphasized the changed nature of today's work tasks. Nevertheless, more empirical research will be needed before we can be certain of the role of modern workplaces in the apparent drop in emotional prosperity. A second possibility is that humans are animals of comparison (some of the latest evidence of the importance of relativities, from brain scans, is reported in Fliessbach et al 2007). What I want, if only subconsciously, may be to have three BMWs and for my friends to have old Fords. In well-off countries, the tide of economic growth lifts all boats and, unfortunately, where having two BMWs was unusual, eventually it becomes the norm and thus there is potentially a kind of generalised neutrality -- a sort of washing-out effect of the supposed benefits of economic progress. Easterlin (1974) made this form of argument and it is continued today in sources such as Clark et al (2008) and Layard (2010). A third possible reason is that people may make bad choices and do things that, despite what they think, will not make them happier. Economists have resisted this idea (about so-called affective forecasting mistakes) for a long time; the economics profession has so far not listened to psychologists like Daniel Gilbert (2006); that may prove to be a significant mistake.

This paper's evidence in Section 3 could be viewed as complementary to that compiled earlier, on the levels of happiness and life satisfaction, by Richard Easterlin. Although Stevenson and Wolfers (2008) doubt the veracity of it, the weight of the published work in economics journals is currently in line with Easterlin's paradox. The Stevenson and Wolfers critique remains an interesting one and a valuable intellectual contribution that makes further research on the topic essential. However, it is open to the objection that much of the authors' evidence is cross-sectional, that their key long-difference estimates in their Table 4 do not attain

conventional levels of statistical significance, and that their regression equations do not allow for the effects of the unemployment rate upon nations' happiness and life satisfaction (those are known to be important, and are correlated in the short-run with GDP movements, so the omission of an unemployment variable in country-panel estimation of well-being equations may lead to upward bias on a GDP variable). They also stand outnumbered. Once again, more research would be desirable.

As undergraduates, many people were taught that the appropriate definition of economics -- one generally attributed to Lionel Robbins of the London School of Economics -- is that of a social science concerned with the efficient allocation of scarce resources. At the time of writing, I believe it would be valuable, at least in the rich nations of the modern world, to alter that definition: economics should perhaps now be viewed as a social science concerned with the way to allocate plentiful resources to maximize a society's mental well-being. That is a more complex task that Lionel Robbins had in mind. It seems reasonable to expect that in the future it will take teams with mixtures of researchers (psychologists, medical statisticians, industrial relations researchers, economists, physicians, sociologists, and others) to get us to a real understanding of emotional prosperity.

Appendix

The Stiglitz Report's Formal Recommendations (an abbreviated form of the list in the Executive Summary of the Report)

#1: When evaluating material well-being, look at income and consumption rather than production.

#2: Emphasise the household perspective.

#3: Consider income and consumption jointly with wealth.

#4: Give more prominence to the distribution of income, consumption and wealth.

#5: Broaden income measures to non-market activities

#6: Quality of life depends on people's objective conditions and capabilities. Substantial effort should be devoted to developing and implementing robust, reliable measures of social connections, political voice, and insecurity that can be shown to predict life satisfaction.

#7: Quality-of-life indicators in all the dimensions covered should assess inequalities in a comprehensive way

#8: Surveys should be designed to assess the links between various quality-of-life domains for each person, and this information should be used when designing policies in various fields

#9: Statistical offices should provide the information needed to aggregate across quality-of-life dimensions, allowing the construction of different indexes.

#10: Measures of both objective and subjective well-being provide key information about people's quality of life. Statistical offices should incorporate questions to capture people's life evaluations, hedonic experiences and priorities in their own survey.

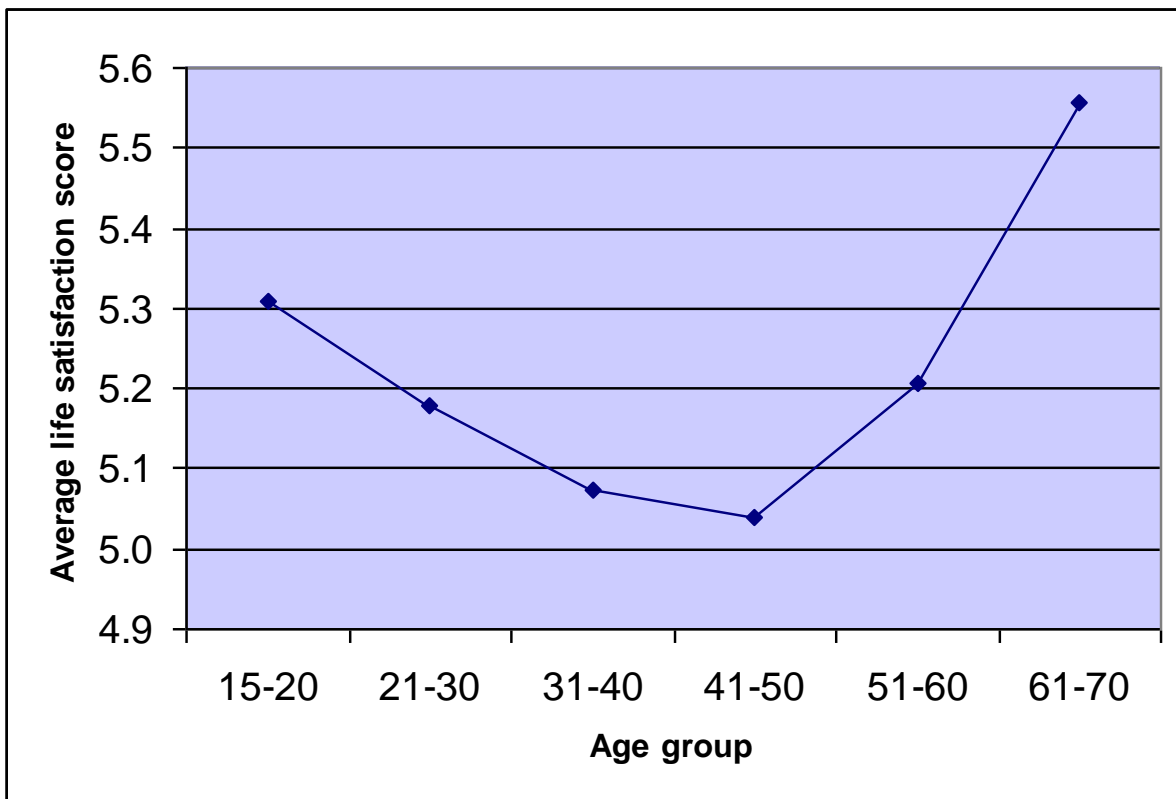
#11: Sustainability assessment requires a well-identified dashboard of indicators. The distinctive feature of the components of this dashboard should be that they are interpretable as variations of some underlying "stocks".

#12: There is need for a clear indicator of our proximity to dangerous levels of environmental damage (such as associated with climate change or the depletion of fishing stocks.)

Figure 1: The Distribution of Life-Satisfaction in Britain (BHPS data – sample size approx 75,000 observations) where 7 is Completely Satisfied. 1991-2002 data.



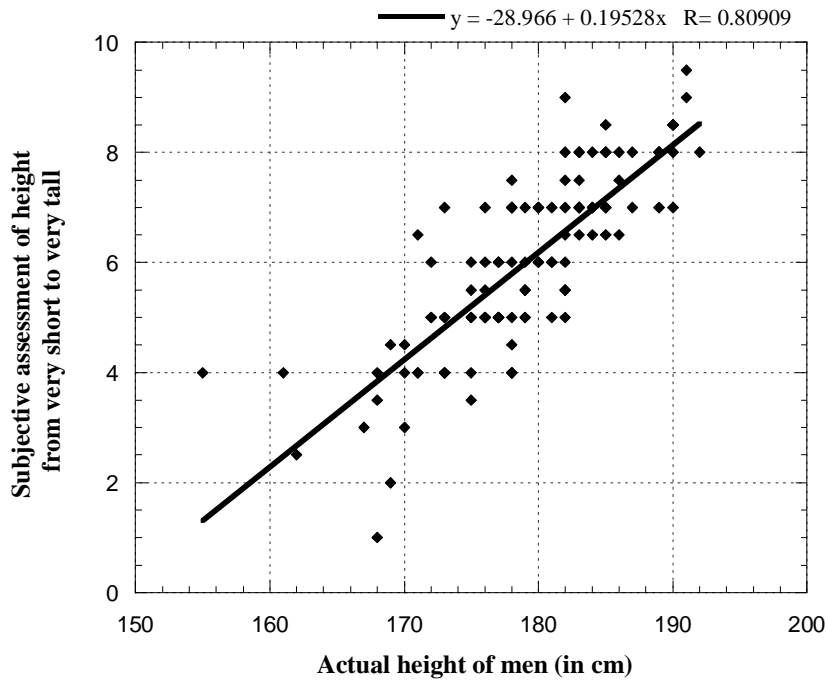
Figure 2: Well-being Through the Lifespan in British Data (BHPS data, 1991-2002)



Source: N. Powdthavee, Department of Economics, University of York.

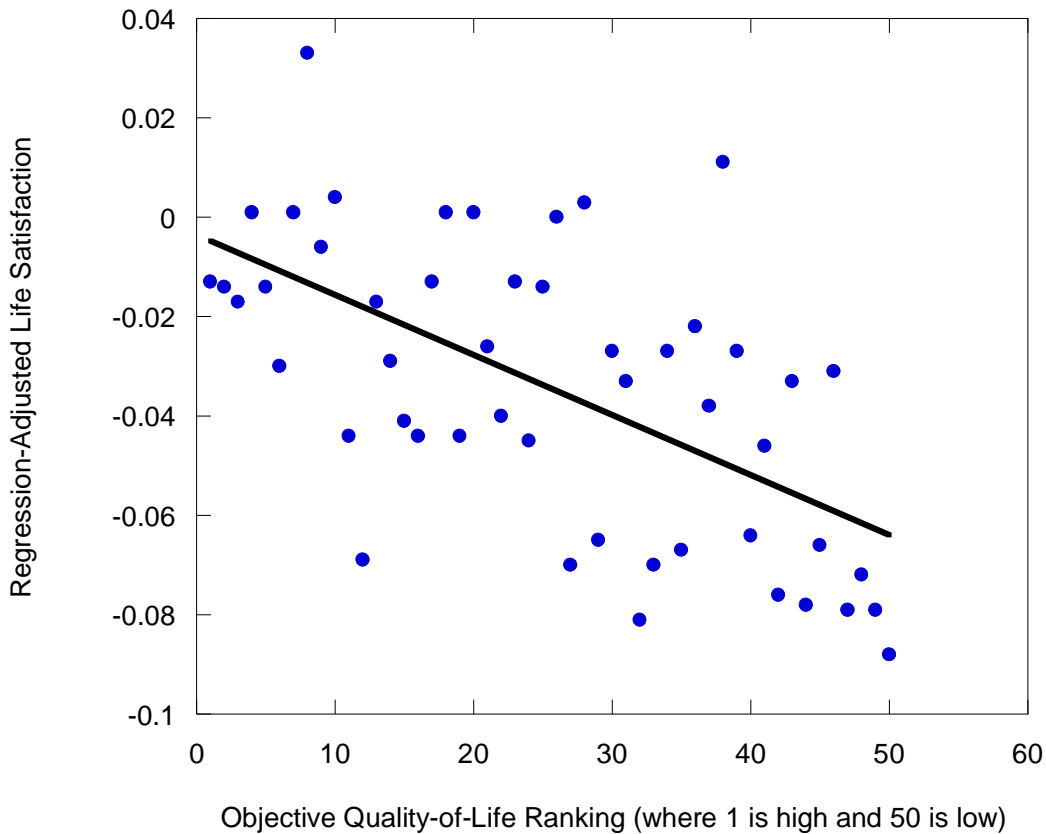
Figure 3:

An Example of Close Correlation between Subjective Feelings and Objective Data: Heights in a Sample of 113 Males



Note: By marking a point on an interval, respondents were asked to record how tall they felt, using a continuous un-numbered line with the words 'very short' written at the left-hand end to 'very tall' at the right-hand end. The numbering zero to ten was used afterwards to code their marked answers along the interval.

Figure 4: A Demonstration of the Match Between Subjective and Objective Well-being across the States of the USA



Fitted Equation: $Adjusted\ Life\ Satisfaction = -0.0035 - 0.0012\ Objective\ Rank$ $R=0.598$

This uses data taken from Oswald and Wu (2010). The x axis relies on a compensating-differentials theory of labour market equilibrium. Each dot is a state. The correlation is significant at $p < 0.001$ on a two-tailed test. This figure plots state dummy coefficients from a life-satisfaction equation against state rank in quality-of-life from the compensating-differential results, using only objective data, of Gabriel et al (2003). Life satisfaction is coded for each individual from a score of 4 (very satisfied) to 1 (very dissatisfied). On the y-axis, the regression controls for household income as well as the survey respondent's gender, age, age squared, education, marital status, unemployment, and race, and also year dummies and month-of-interview dummies. Alabama is included. Washington DC is omitted from Gabriel et al (2003) and thus here. The bottom right hand observation is New York. Question wording in the BRFSS questionnaire is:

In general, how satisfied are you with your life?
 (BRFSS Questionnaire Line 206)
 1 Very satisfied
 2 Satisfied
 3 Dissatisfied
 4 Very dissatisfied

References

- Blanchflower, D.G., and Oswald, A.J. (2008). Hypertension and happiness across nations. *Journal of Health Economics*, 27(2): 218-233.
- Bray, I., and Gunnell, D. (2006). Suicide rates, life satisfaction and happiness as markers for population mental health. *Social Psychiatry and Psychiatric Epidemiology*, 41: 333-337.
- Clark, A.E., and Oswald, A.J. (1994). Unhappiness and unemployment. *Economic Journal*, 104: 648-659.
- Clark, A.E., Frijters, P. and Shields, M.A. (2008). Relative income, happiness, and utility: An explanation for the Easterlin paradox and other puzzles. *Journal of Economic Literature*, 46: 95-144.
- Cohen, S., Doyle, W.J., Turner, R.B., Alper, C.M., and Skoner, D.P. (2003). Emotional style and susceptibility to the common cold. *Psychosomatic Medicine*, 65: 652-657.
- Crimmins, E., Vasunilashorn, S., Kim, J.K., and Alley, D. (2008). Biomarkers related to aging in human populations. *Advances in Clinical Chemistry*, 46: 161-216.
- Diener, E., Lucas, R.E., and Schimmack, U. (2008). *National accounts of well-being*. Oxford, UK: Oxford University Press.
- Easterlin, R.A. (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; p. 89-125.
- Easterlin, R.A. (2003). Explaining happiness. *Proceedings of the National Academy of Sciences*, 100: 11176-11183.
- Ebrecht, M., Hextall, J., Kirtley, L.G., Taylor, A., Dyson, M., and Weinman, J. (2004). Perceived stress and cortisol levels predict the speed of wound healing in healthy male adults. *Psychoneuroendocrinology*, 29: 798-809.
- Edmunds, O.P. (1982). The heart rate of students in examinations. *Journal of Social and Occupational Medicine*, 32: 32-36.
- Fliessbach, K., Weber, B., Trautner, P., Dohmen, T., Sunde, U., Elger, C., and Falk, A. (2007). Social comparison affects reward-related brain activity in the human ventral striatum. *Science*, 318: 1305-1308.
- Frey, B.S., and Stutzer, A. (2002). *Happiness and economics*. Princeton University Press: Princeton.
- Gabriel, S.A., Matthey, J.P., and Wascher, W.L. (2003). Compensating differentials and evolution in the quality-of-life among U.S. states. *Regional Science and Urban Economics*, 33: 619-649.
- Gilbert, D. (2006). *Stumbling on happiness*. Alfred A Knopf: New York.
- Goldberg, D.P., Gater, T., Sartorius, N., Ustun, T.B., Piccinelli, M., Gureje, O., and Rutter, C. (1997). The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychological Medicine*, 27: 191-197.
- Graham, C. (2005). Insights on development from the economics of happiness. *World Bank Research Observer*, 20: 201-231.
- Green, F. (2006). *Demanding work: The paradox of job quality in the affluent economy*. Princeton University Press: Princeton.
- Green, F., and Tsitsianis, N. (2005). An investigation of national trends in job satisfaction in Britain and Germany. *British Journal of Industrial Relations*, 43: 401-429.

- Hodiamont, P.P.G., Rijnders, C.A.T., Mulder, J. and Furer, J.W. (2005). Psychiatric disorders in a Dutch Health Area: A repeated cross-sectional survey. *Journal of Affective Disorders*, 84: 77-83.
- Hu, Y.J., Stewart-Brown, S., Twigg, L., and Weich, S. (2007). Can the 12-item General Health Questionnaire be used to measure positive mental health? *Psychological Medicine*, 37: 1005-1013.
- Huppert, F. and Whittington, J.E. (2003). Evidence for the independence of positive and negative well-being: Implications for quality of life assessment. *British Journal of Health Psychology*, 8: 107-122.
- Jonas, B.S., and Lando, J.F. (2000). Negative affect as a prospective risk factor for hypertension. *Psychosomatic Medicine*, 62: 188-196.
- Kahneman, D., Krueger, A.B., Schkade, D., Schwarz, N., and Stone, A. (2004). Toward national well-being accounts. *American Economic Review*, 94: 429-434.
- Krueger, A.B. and Schkade, D.A. (2008). The reliability of subjective well-being measures. *Journal of Public Economics*, 92: 1833-1845.
- Layard, R. (2010). Measuring subjective well-being. *Science*, 327: 534-535.
- Luechinger, S. (2009). Valuing air quality using the life satisfaction approach. *Economic Journal* 119: 482-515.
- McManus, S., Meltzer, H., Brugha, T., Bebbington, P., and Jenkins, R. (Eds.) (2009). Adult psychiatry morbidity in England, 2007: Results of a household survey. NHS Information Centre, and Department of Health Sciences, University of Leicester.
- Offer, A. (2007). *The challenge of affluence: Self-control and well-being in the United States and Britain since 1950*. Oxford University Press: Oxford.
- Oswald, A.J., and Powdthavee, N. (2007). Obesity, unhappiness, and the challenge of affluence: Theory and evidence. *Economic Journal*, 117: F441-454.
- Oswald, A.J. (2008). On the curvature of the reporting function from objective reality to subjective feelings, *Economics Letters*, 100: 369-372.
- Oswald, A.J., and Wu, S. (2010). Objective confirmation of subjective measures of human well-being: Evidence from the USA. *Science*, 327: 576-579.
- Powdthavee, N. (2009). Does education reduce blood pressure? Estimating the biomarker effect of compulsory schooling in England. Working paper. University of York.
- Sacker, A., and Wiggins, R.D. (2002). Age-period-cohort effects on inequalities in psychological distress, 1981-2000. *Psychological Medicine*, 32: 977-990.
- Seeman, T., Merkin, S.S., Crimmins, E., Koretz, B., Charette, S., and Karlamangla, A. (2008). Education, income, and ethnic differences in cumulative biological risk profiles in a national sample of US adults: NHANES III (1988-1994). *Social Science & Medicine*, 66: 72-87.
- Singh, I., and Rose, N. (2009). Biomarkers in psychiatry. *Nature*, 460: 202-207.
- Steptoe, A., Hamer, M., and Chida, Y. (2007). The effects of acute psychological stress on circulating inflammatory factors in humans: A review and meta-analysis. *Brain, Behavior, and Immunity*, 21: 901-912.
- Steptoe, A., Wardle, J., and Marmot, M. (2005). Positive affect and health-related neuroendocrine, cardiovascular, and inflammatory processes. *Proceedings of the National Academy of Science of the United States*, 102: 6508-6512.
- Stevenson, B., and Wolfers, J. (2008). Economic growth and subjective well-being: Reassessing the Easterlin Paradox. *Brookings Papers on Economic Activity*, Spring: 1-102.

- Sweeting, H., Young, R., and West, P. (2009). GHQ increases among Scottish 15 year olds 1987–2006. *Social Psychiatry and Psychiatric Epidemiology*, 44: 579–586.
- Troubat, N., Fargeas-Gluck, M.A., Tulppo, M., and Dugue, B. (2009). The stress of chess players as a model to study the effects of psychological stimuli on physiological responses: An example of substrate oxidation and heart rate variability in man. *European Journal of Applied Physiology*, 343-349.
- Urry, H.L., Nitschke, J.B., Dolski, I., Jackson, D.C., Dalton, K.M., Mueller, C.J., Rosenkratz, M.A., Ryff, C.D., Singer, B.H., and Davidson, R.J. (2004). Making a life worth living: Neural correlates of well-being. *Psychological Science*, 15: 367-272.
- Van Praag, B., and Ferrer-I-Carbonell, A. (2004). *Happiness quantified: A satisfaction calculus approach*. Oxford University Press: Oxford; 2004.
- Verhaak, P.F.M., Hoeymans, N., Garssen, A.A., and Westert, G.P. (2005). Mental health in the Dutch population and in general practice: 1987-2001. *British Journal of General Practice*, 55: 770-775.
- Wauterickx, N., and Bracke, P. (2005). Unipolar depression in the Belgian population: Trends and sex differences in an eight-wave sample. *Social Psychiatry and Psychiatric Epidemiology*, 40: 691–699.
- Winkelmann, L., and Winkelmann, R. (1998). Why are the unemployed so unhappy? Evidence from panel data. *Economica*, 65: 1-15.