The real dirt on happiness economics:
A reply to 'The unhappy thing about happiness economics'[1]

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Introduction

In their recent article *The Unhappy Thing about Happiness Economics* http://www.paecon.net/PAEReview/issue46/JohnsOrmerod46.pdf Helen Johns and Paul Ormerod make the strong claim that "time series data on happiness tells us nothing".[2] Their argument is based on three main points: that statistically significant correlations between time series happiness data and other important socioeconomic indicators cannot be found, that the nature of happiness scales makes them insensitive and difficult to compare with most other economic data, and that using time series happiness data for policy-making creates several undesirable problems. While some of Johns and Ormerod's concerns about the rigour of studies using time series happiness data should be taken note of, their main conclusion lacks the strong evidence such a claim requires. This article will evaluate all of the main points from Johns and Ormerod's paper and provide considerable evidence that, far from telling us nothing, time series happiness data can actually tell us a great deal.

There is no relationship between happiness and other variables that we would expect to observe a relationship between

Johns and Ormerod begin by criticising the apparently "widely mentioned" argument that there is no correlation between measures of economic growth and measures of well-being. I assume that they are referring to the argument: 'If there is no correlation between economic growth and happiness, then economic growth must not bring happiness'. They then refer to several other major social trends that should have affected average happiness through recent history, but (according to them) have not done so. Johns and Ormerod take these lack-of-relationships very seriously and assert that happiness researchers should admit that either no government's actions since World War Two have ever affected their citizens' happiness or that time series happiness data is completely useless.

Considering that some of the six major concurrent social trends that Johns and Ormerod point out are expected to increase happiness, and the others decrease it, it is hardly surprising that relationships between any of these individual trends and average happiness over time are not obvious in simple correlative analyses! Most economists who study happiness do not make crude arguments like the one above. Rather, unexpected findings are usually posed as questions inviting further investigation (e.g. 'why does it appear that a considerable increase in real income has not made U.S. citizens any happier over the last 50 years?'). These investigations often use multivariate regression analysis and control for certain factors in order to isolate the variables that are being studied. When studies comparing societal trends with happiness are carried out in this manner, like those discussed below, significant relationships are discovered.

[1] Many thanks to Lucas Kengmana for several particularly insightful comments on this paper.

[2] H Johns and P Ormerod (2008), 'The unhappy thing about happiness studies', *Real-World Economics Review*, 46, 139-146, http://www.paecon.net/PAEReview/issue46/JohnsOrmerod46.pdf

Johns and Ormerod show evidence for a statistically insignificant relationship between income inequality and well-being in the U.S. over the last 30 years, but fail to mention the results that *do* show a significant relationship between income inequality (using the same measure) and happiness in Europe during the same time period. In Europe, rising income inequality significantly explains some of the variation in reported happiness; income inequality generally made Europeans less happy.[3] Why the difference? Economist Bruno Frey puts it down to U.S. citizens' higher belief in social mobility; they don't mind the inequality because they (mostly mistakenly) believe that they will be one of the rich folk in the near future.[4]

Johns and Ormerod believe that the best explanation for the supposed lack of correlation between happiness and these socioeconomic indicators is that, in its current state, the happiness data is simply not worth the paper that it's printed on. The fact of the matter is, however, that significant relationships between reported happiness and many other socio-political factors *are* being discovered in careful studies that properly isolate the variables in question.[5] Nevertheless, Johns and Ormerod's criticisms of the construction of happiness scales (why they think the data is not worth anything) will now be addressed.

Happiness scales are insensitive

The two main criticisms that Johns and Ormerod pin to the construction of happiness scales are that they are insensitive and that the type of data they produce is not easily comparable to most of the data that economists use.

There is some legitimacy to Johns and Ormerod's claim that time series happiness data is insensitive, but much of their argument is misleading on this point. Happiness is usually measured by asking participants to choose the option, from a number of discrete categories, which describes them best (e.g. 1 = Very happy, 2 = Quite happy, 3 = Not very happy, 4 = Not at all happy). Johns and Ormerod give the example of a 3-point scale and then proceed to discuss how insensitive scales with only three options are. First of all, many happiness scales have four or more options, like the example above from the World Values Survey,[6] and many well-being scales have up to ten options.[7]

Secondly, Johns and Ormerod assert that to observe a 10% increase from 2.2 in average happiness on a 3-point scale, 22% (net) of a population would have to place themselves in a higher category, an increase that they consider "very difficult" to imagine occurring over "a few years".[8] Well, they are not the only ones. An enduring 10% increase in

[3] A Alesina, R Di Tella and R MacCulloch (2004), 'Inequality and happiness: Are Europeans and Americans different?', *Journal of Public Economics*, 88, 2009-2042.

[4] B Frey (2008), *Happiness: A revolution in economics*, MIT Press. See pp57-58.

[5] See for example: B Frey (2008), *Happiness: A revolution in economics*, MIT Press. And, P Dolan, T Peasgood and M White (2008), 'Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being', *Journal of Economic Psychology*, 29, 94-122.

[6] See <http://www.worldvaluessurvey.org/> for more information and access to the full data set.

[7] See, for example, the life satisfaction question from the World Values Survey (question V22).

[8] It should be noted that another way to interpret the data suggests a smaller increase. It would take 22% of a population to change if a 10% increase in happiness meant multiplying the current average of 2.2 by 1.1 (which equals 2.42). But consider that the average comes from a scale limited to values

happiness is a lot to ask for in a few years, regardless of the scale used. On a 4-point scale 30% of respondents would have to judge themselves as a category happier and on a 10-point scale 90% would have to go up a category or 22.5% would have to go up four categories. Naturally, the gap between categories gets smaller as the number of them to choose between gets larger, but the proportion of respondents required to report higher happiness increases too. With 3-point scales, researchers simply have to pay more attention to smaller changes in the average value – thank goodness for decimal places!

Despite being hard to imagine, a 10% increase in average reported happiness (on 4-point scales) has actually occurred in some countries over just a few years, such as in Lithuania (1997-1999), Mexico (1996-2000), and Slovenia (1992-1995). Furthermore, since 1980 at least 21 countries have reported a 10% or more increase in happiness over longer periods of time, including Johns and Ormerod's home country of Great Britain (1998-2006).[9] In light of these results, the claim that time-series happiness data is too insensitive to capture trends is totally unfounded.

Having said this, the general consensus in the psychological community is that 3-point scales are not ideal for measuring well-being.[10] Fortunately, happiness studies, and especially well-being studies, are increasingly using much more precise and robust measures, such as the Subjective Well-Being construct used by Inglehart and colleagues, which combines a 4-point happiness scale and a 10-point life satisfaction scale.[11]

Happiness scales are hard to compare with other economic measures

Johns and Ormerod's other criticism of happiness scales is that the type of data they produce is not easily comparable to most of the data that economists use because the scales are discrete and bounded. They are correct that discrete data is not completely easy to compare with non-discrete data because it makes it harder to find statistically significant results. However, this problem is one faced by many different types of data, most of which are widely considered to contain useful information when studied carefully.

On the point of time series happiness data being bounded, Johns and Ormerod admit that short term trends in reported happiness data might exist, but correctly note that no trend in happiness data can *persist* using the present measuring technique. This is because if happiness increased until everyone rated themselves as happy as possible on a discrete scale, then they could not communicate any increase in happiness from that point. Of course, this is true but the chances of everyone reporting maximum happiness on any realistic scale do not seem high enough to warrant this being considered a problem at this stage.

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between 1.0 and 3.0. The accessible part of the scale can be split into 10 equal portions of 0.2. This clearly indicates that a 10% movement on the scale would increase the average from 2.2 to 2.4, which would only require 20% of respondents to opt for a higher happiness category.

[9] R Ingleheart, R Foa, C Peterson and C Welzel (2008), 'Development, freedom, and rising happiness: A global perspective (1981-2007)', *Perspectives on Psychological Science*, 3(4), 264-285.

[10] R Cummins and E Gullone (eds.) (2002), *The universality of subjective wellbeing indicators: A multi-disciplinary and multi-national perspective*, Kluwer Academic Publishers.

[11] R Ingleheart, R Foa, C Peterson and C Welzel (2008), 'Development, freedom, and rising happiness: A global perspective (1981-2007)', *Perspectives on Psychological Science*, 3(4), 264-285.

Johns and Ormerod then make the fair point that calculating correlations between trend-exhibiting variables and *non*-trend-exhibiting variables is "fraught with inherent problems". However, they then combine this point with their misleading assertion that time series happiness data cannot show trends to conclude that comparing time series happiness data with trend-exhibiting data is very problematic. The problem here for Johns and Ormerod is that happiness data do in fact exhibit trends in many countries. Inglehart and colleagues' recent study of reported happiness in 52 countries from 1981-2007 revealed that nearly all of them exhibit upwards trends in happiness.[12] They also suggest several reasons for why this trend might have been missed by some researchers. The oldest data on happiness comes from the most developed countries, such as the U.S., all of which had already passed the point of economic growth where gains in happiness could be easily attained through economic development. Furthermore, increases in tolerance and democratisation, which help increase a sense of freedom and happiness, have been relatively recent and do not always have significant effects on other measures of well-being.

Time series happiness data is not useful for policy-making

So far, Johns and Ormerod's allegations of missing relationships have proven to be false and their criticisms of happiness scales relatively inconsequential. However, they also claim that happiness data should not be used in policy-making. Johns and Ormerod justify this claim by arguing that governments will inevitably "influence" the data, which is only possible because it doesn't contain any "real information". Presumably they mean that governments will 'cook' the happiness 'books', as opposed to create policies that make their citizens happier (thereby influencing them to report higher levels of happiness). Naturally, governments will attempt to present happiness data in the best light (for them at that time), just like managing directors *and governments* now do with financial data. Without the actual falsification of the data itself, such unscrupulous behaviour cannot continue for long without being spotted. And, happiness data is just as open to falsification as financial data. However, if every set of happiness data contained as much information as a random set of numbers, then it would be somewhat more difficult to identify happiness 'book cooking' (mainly because no one would care about it).

Is time series happiness data really indistinguishable from a purely random series like Johns and Ormerod allege? They claim that time series happiness data provides a flat autocorrelation and no statistically significant individual values and that this makes it impossible to create accurate forecasts from it. However, they just tested one set of happiness data from one country. Reported happiness in many countries exhibits clear trends over time, as discussed above, so implying that *all* time series happiness data provides a flat autocorrelation is very misleading. Furthermore, our ability to forecast time series happiness data is constantly increasing due to careful comparisons of changes in reported happiness over time between different countries (or distinct groups within countries). By identifying changes in happiness that occur in some countries or groups, but not others experiencing very similar conditions, variables that might explain the variance in happiness can be isolated. The prevailing conditions in some of these comparisons will even allow for the direction of causality to be assessed and thereby begin to provide useful information for predicting the effects on future reported happiness of some upcoming change in circumstances.

[12] R Ingleheart, R Foa, C Peterson and C Welzel (2008), 'Development, freedom, and rising happiness: A global perspective (1981-2007)', *Perspectives on Psychological Science*, 3(4), 264-285.

Economist David Dorn and colleagues recently showed not only that the more democratic countries in their study had higher average reported happiness values, but also that as the countries in the study became more democratic, their average reported happiness values increased too.[13] By observing how happiness and other variables interact within populations and comparing that with the interactions observed under similar circumstances in other populations we can gain valuable insight as to the direction of causality between the happiness and the other variable.

So, Johns and Ormerod have not yet provided any good reason for us to believe that happiness data contains no information. However, they go on to cite an unpublished mathematical paper, showing that the variation observed in time series happiness data can be completely explained by sampling error. What the paper actually shows is that some of the variation of happiness over time in one set of 3-point time-series happiness data from one country could be explained by sampling error. Johns and Ormerod implicitly generalise this lone result to *all* time series happiness data in their paper. Since many other time series happiness data is based on more sensitive scales, shows clear trends, and shows more variation from year to year, generalising such a finding to *all* time series happiness data in not a valid inference.

Nevertheless, the example that they use is potentially damaging enough for time series happiness data for it to also be investigated. Based on U.S. 3-point time-series happiness data from 1971-2006, Johns shows that only about 22% of the data points fall outside of the 95% confidence interval for sampling error (from the mean of the data set). This means that we cannot be 95% confident that most of the average reported happiness values are different from the mean reported happiness throughout the whole period. Contrary to the claims of Johns and Ormerod, this result far from implies that there is no real information in this data. First of all, even in Johns' analysis we can be very confident that nearly a quarter of the average reported happiness values cannot be explained by sampling error and we can be fairly (90%) confident that nearly half of the average reported happiness values cannot be explained by sampling error. What should we think then of the other half of the values? Johns and Ormerod would have you believe that they are as good as random. However, a better interpretation of them (along with the values that we are more confident about) is that all of them probably carry some sampling bias and some real information *regardless* of their proximity to the mean for the period. Johns' interpretation of the data implies that the values closer to the mean carry less information than those further away. If, as Johns and Ormerod claim, reported happiness really remains flat over time, we should actually be more suspicious of the samples that produce average reported happiness values further from the mean for the period *not* those closer to it.

Considering the average reported happiness values for what they really are, we should not expect to see perfectly smooth trends (such as the flat line Johns and Ormerod propose) because while some of the factors that we expect to affect average happiness change steadily over long periods of time, many others change much more erratically over shorter periods. Therefore, calculating the confidence that we should have in the average reported happiness values (when other happiness-influencing variables are not controlled for) should not be based on comparison to a smooth trend. However, even if time series

[13] D Dorn, J Fischer, G Kirchgässner and A Sousa-Poza (2007), 'Is it culture or democracy? The impact of democracy, income and culture on happiness', *Social Indicators Research*, 82(3), 505-526.

happiness data were always treated as smooth long-term trends, we could still gain useful information out of the data from countries exhibiting clear long-term trends (which is nearly all of them).

For example, the fact that the recent average reported happiness scores in Iraq and Zimbabwe are currently amongst the lowest in the world should be no surprise.[14] If those countries ever get back on their feet and become free, safe and prosperous societies, then we would predict that their reported happiness would increase generally inline with their redevelopment. However, if Johns and Ormerod are correct that *all* variation in time series happiness data is probably due to sampling error, then we should not bother celebrating that increase in happiness when it comes (and neither should the people who live in those countries) because it's probably just caused by sampling error.

Johns and Ormerod are certainly right to warn against taking the dramatic year-to-year zigzagging of average reported happiness values completely at face value, because some of the variation is inevitably going to be caused by sampling error. However, some of the year-to-year variance is also going to be caused by changes in the average happiness that the population would report. Good happiness researchers should bear this in mind when interpreting their results by looking for highly significant relationships with high explanatory value, as many of them do.

Knowing that not all time series happiness data is as sensitive as it could be and that (as with much social science data) some of its variation is probably due to sampling error, should time series happiness data ever be used for public policy? At most, combining these findings should result in the conclusion that *some* happiness studies should not be used to guide policy because their results should not inspire enough confidence. However, the other time series happiness studies can be useful for policy-making in many ways.[15] For example, by carefully comparing results from several populations in circumstances as similar as possible, and implementing the policy change in only some of those populations, changes in reported happiness can be recorded and compared. If other variables are sufficiently controlled for and the changes in happiness are significant, then useful information can be gained about how the policy might affect other populations in similar circumstances.

Johns and Ormerod also note that they are not alone in their dislike of time series happiness data, referring to a recent report by economist and well-being expert Paul Dolan and colleagues.[16] Johns and Ormerod quote the following from the report:

> "One very firm conclusion that can be drawn from our review is that the existing evidence base [for well-being] is not quite as strong as some people may have suggested….This, in addition to lack of clear evidence on causality, makes it difficult to make clear policy recommendations at this stage."

[14] R Ingleheart, R Foa, C Peterson and C Welzel (2008), 'Development, freedom, and rising happiness: A global perspective (1981-2007)', *Perspectives on Psychological Science*, 3(4), 264-285.

[15] See Frey (2008, Chap 13) for more on how happiness studies should be used in public policy.

[16] P Dolan, T Peasgood and M White (2008), 'Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being', *Journal of Economic Psychology*, 29, 94-122.

While the quote is accurate, it is certainly not all Dolan and colleagues had to say on the matter. Johns and Ormerod's editing of the passage removed this: "… and there are some important avenues for further research that could be explored with the existing panel datasets." And in the conclusion of the report, Dolan and colleagues noted that there are some clear determinants of self-reported well-being (age, separation, unemployment and health) and that they hope policy-makers become aware of these relationships. Furthermore, Dolan himself is a supporter of using measures of subjective well-being (which often include self-reports of happiness) for policy-making, as discussed in his article *In Defense of Subjective Well-Being*.[17]

Closing remarks

Johns and Ormerod's bold claim that time series happiness data does not tell us anything at all has been shown to rest uneasily on the generalisation of just one study of one country to a whole range of different types of studies conducted in dozens of countries around the world. Examination of other happiness studies reveals some very useful information, which policy-makers should take note of. Naturally, policy-makers should not base their decisions wholly on happiness studies. Rather, they should take potential affects on happiness into account in decisions where useful happiness or subjective well-being-related information is available.

Johns and Ormerod's parting shot is to remind us that the flatness of average reported happiness cannot be pinned on economic growth. But not many people ever really thought that increasing GNP caused happiness to remain fairly flat in developed countries. However, many people *have* wondered why average reported happiness does not respond more than it does to large GNP increases in developed countries. This unintuitive result has helped attract interest to the burgeoning field of happiness studies, a field that continues to provide insights into how we might help populations to become happier.

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[17] P Dolan (2008), 'In defence of subjective well-being', *Health Economics, Policy and Law*, 3, 93-95.