Can “Happiness Data” Help Evaluate Economic Policies?

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The goal of public policy should be to increase *"social welfare",* at least according to most economists.

In the 18th Century, Bentham argued that welfare is best measured by summing up the "utility" or "happiness" of individuals.

But economists have traditionally refrained from trying to measure "happiness" directly. Instead they have been trained to infer preferences from observed choices - so watch what people do, not listen to what is said.

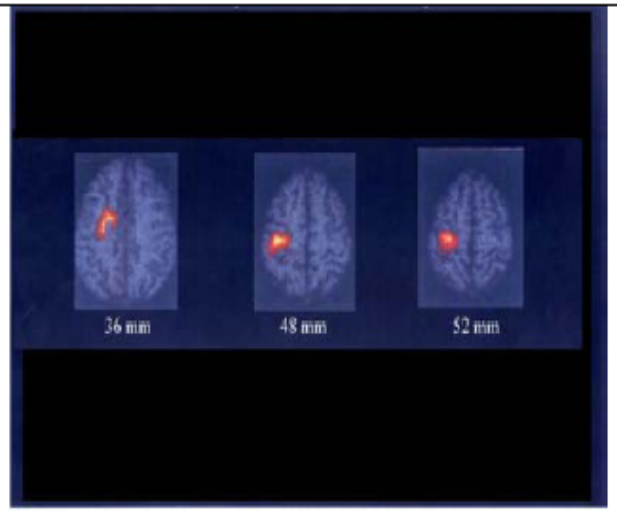
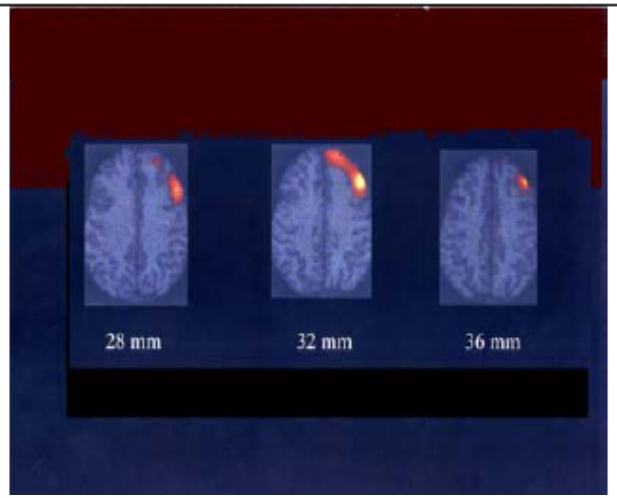
“Happiness researchers” depart from this tradition. They are especially interested in self-reports of well-being.

For example, the US General Social Survey has a question that asks:

“*Taken all together, how would you say things are these days - would you say that you are very happy, pretty happy, or not too happy?”*

This question is used to proxy for what economists call ‘utility’.

Happiness answers are correlated with left versus right frontal brain activity.

Brain response	
Happy	
Sad	

How will an economic policy affect social welfare?

Politicians can rely solely on their own discretion to make this kind of judgment …

… or they can instead seek the advice of the Treasury, whose traditional approach has been to get estimates of the costs and benefits of the proposed policy.

To do so, it would first need to know how behaviour is affected.

An Example:

Are the Reserve Bank's Loan to Value Ratio (LVR) restrictions good for social welfare?

"Restricting the extent of high LVR lending has seen average LVRs in bank mortgage books gradually decline, with the proportion of high LVR mortgage loans on bank balance sheets falling from 21 percent to 14 percent". Grant Spencer, RBNZ, 2015.

Maybe behaviour has been influenced by LVR restrictions, but we still don't know if they have raised welfare, which would require using a theory of how the economy works.

Estimating the welfare effects of many policies has proved difficult … in particular, ones relating to "*public goods*".

A possible solution is to use surveys whereby people are asked questions like:

"What is the most you would be willing to pay each year through higher taxes, prices, or user fees to improve environmental services?"

But doubt has been cast on the numbers obtained from these kinds of "willingness to pay" or "contingent valuation" surveys, like the $32 billion per year set aside for the preservation of the whooping crane.

See Peter Diamond and Jerry Hausman "Contingent Valuation: Is Some Number Better than No Number?", *Journal of Economic Perspectives*, 1994.

Example 1: Valuing the Environment

A person's level of happiness can be measured and correlated with the level of pollutants in the area where they live and with their income:

$$Happiness_{ict} = -a.\ Pollution_{ct} + b.\ Income_{ict} + c.\ Personal\ Characteristics_{ict} + \varepsilon_{ict}$$

for individual, *i*, living in county, *c*, at time, *t*

This allows Simon Luechinger in "Valuing Air Quality Using the Life Satisfaction Approach", *Economic Journal*, 2009, to calculate the amount of income needed to compensate a person for lower environmental quality.

He estimates that an increase in sulphur dioxide emissions of 1 $\mu g/m^3$ makes people feel worse off by an amount equivalent to a 1.5% decline in their household income.

Example 2: Cigarette Taxes

Should cigarette taxes be increased ?

Studies often estimate that cigarette purchases fall when prices rise.

But will welfare rise or fall ?

- If people are "rational" then welfare may *fall*. Since the cigarettes which they enjoy become more expensive.

- However if people have "self-control problems" then welfare may *rise* …. since higher cigarette taxes may force them to stop smoking, which would be a good thing.

Setting Taxes on Cigarettes - An Answer using Happiness Data

Happiness data are available for both smokers and non-smokers in the US and can be correlated with cigarette tax data from the US states. Cigarette tax changes should only affect the happiness of smokers:

$$Happiness_{ist} = -a.\ Tax_{st} - b.\ Smoker_{ist} + \mathbf{c.\ Tax_{st} * Smoker_{ist}} + d.\ Personal\ Characteristics_{ist} + \varepsilon_{ist}$$

for individual, *i*, living in state, *s*, at time, *t*

Jonathan Gruber and Sendhil Mullainathan, *BE Journal of Economic Analysis and Policy,* 2005, find that the happiness of smokers is raised, compared to non-smokers, the higher are taxes on cigarettes, presumably by helping them to give up.

Example 3: The Welfare State

Can happiness data help inform a government facing the question of whether to cut unemployment benefit generosity?

Economists have found evidence suggesting that if unemployment benefits are reduced then the unemployment rate may fall.

However, like the smoking example above, the welfare effects are uncertain.

There are conflicting forces arguing both sides of this issue, with lots of associated costs and benefits.

For the unemployed

On the positive side, to the extent that unemployment falls as a result of benefit cuts, then the unemployed may find it easier to get a job, leaving them happier.

On the negative side, those still unable to find work may become more miserable due to a drop in their benefits.

For the employed

On the positive side, they may spend less time out of work if they lose their job in the future, due to the expected reduction in unemployment related to the benefit cuts. Their taxes may also be reduced.

On the negative side, their welfare may drop, since the risk of becoming unemployed in the face of less generous benefits now involves a greater personal cost.

Happiness

Employed

Unemployed

Source: Di Tella, MacCulloch and Oswald, *Review of Economics and Statistics*, 2003.

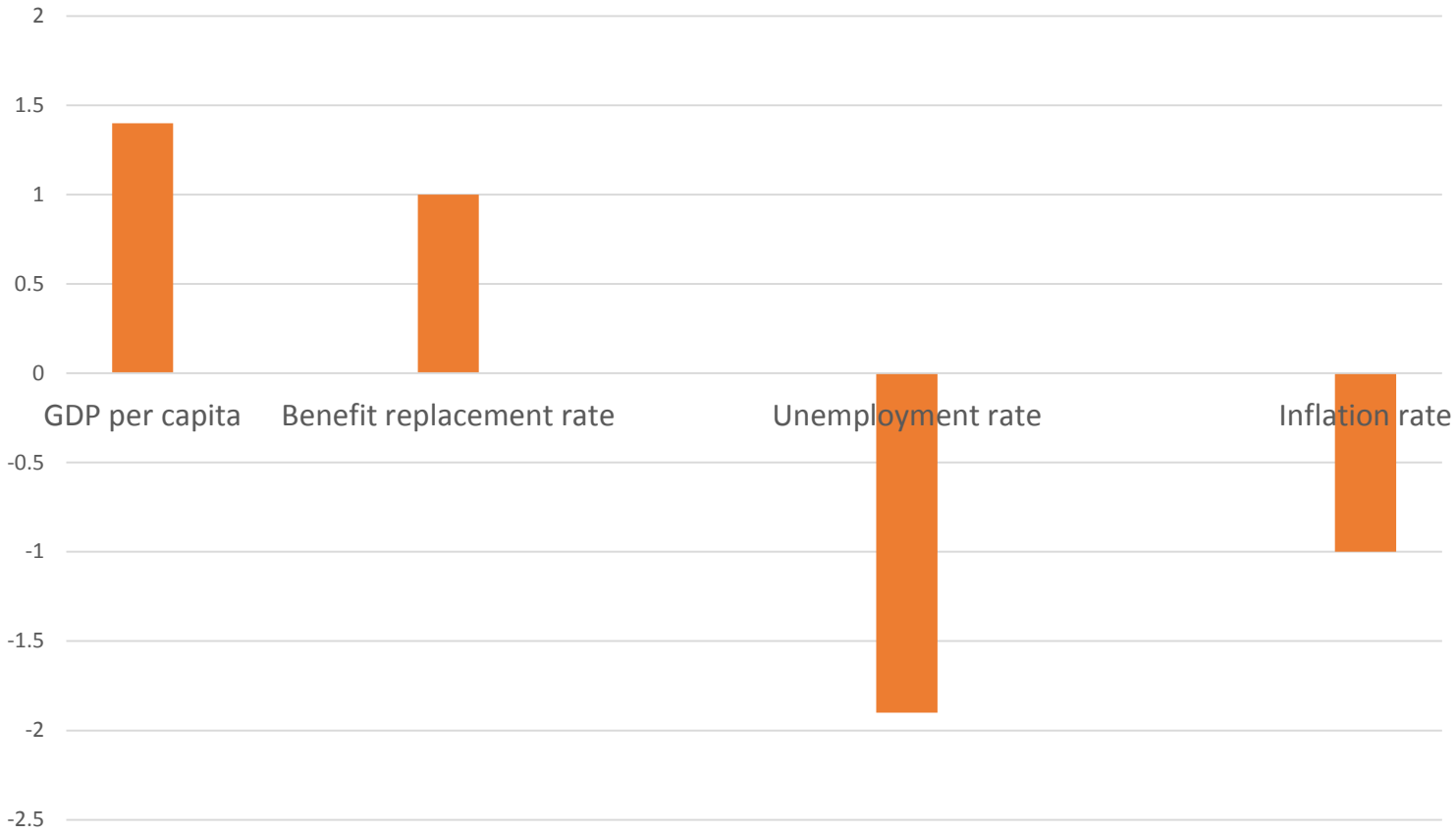
We correlated these happiness responses of Europeans with the level of GDP per capita, unemployment benefits, and the inflation and unemployment rates in their countries across several decades:

$$Happiness_{ict} = a.\ \text{GDP per capita}_{ct} + b.\ Benefits_{ct} - c.\ Unemployment_{ct} - d.\ Inflation_{ct} + Personal\ Characteristics_{ict} + \varepsilon_{ict}$$

for individual, *i*, living in country, *c*, at time, *t*

This regression can also be run separately for the unemployed and the employed.

How Happiness is Correlated with GDP per capita, Benefits, and the Unemployment and Inflation rates



Note: The vertical axis reports coefficients from a 'well-being regression' across 271,244 Europeans from 1975 to 1992. Standard errors are 0.4 for GDP, 0.2 for Benefits, 0.7 for Unemployment and 0.5 for Inflation. Well-being is measured by the question: '*On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead?'*

But will "happiness" data ever be used in practice ?

They *are* already being used in New Zealand, by the government's Pharmaceutical Management Agency …….

'PHARMAC' chooses which drugs to subsidise using a number of criteria, one of which is 'QALYs' or 'Quality Adjusted Life Years'. These measurement units weight the time spent in different 'happiness' / 'quality of life' states.

When combined with a measure of cost, one can rank drugs according to which are cheap (i.e., low cost per QALY) and which are expensive (i.e., high cost per QALY).

"We use cost-utility analysis rankings … which consider effects on quality of life (e.g., ability to work / perform usual activities, pain / anxiety, mobility) as well as effects on the duration of life". PHARMAC, 2011.

“Happiness Data” may also be used to measure the welfare effects of many other policies:

- Sugar taxes ?

- Gambling / Sky City pokies ?

Problems with "Happiness Data"

1. Which measure of well-being should one use ?

(a) evaluation: a global judgment on how close we are to "the good life"

(e.g., "On the whole, are you satisfied with the life you lead?")

(b) experience: feelings over short periods of time

(e.g., "Are you happy these days?")

(c) eudemonic: realization of a person's potential and degree to which their life has meaning and purpose

(e.g., "To what extent do you get a chance to learn new things?").

2. Most happiness studies make strong assumptions about "cardinality".

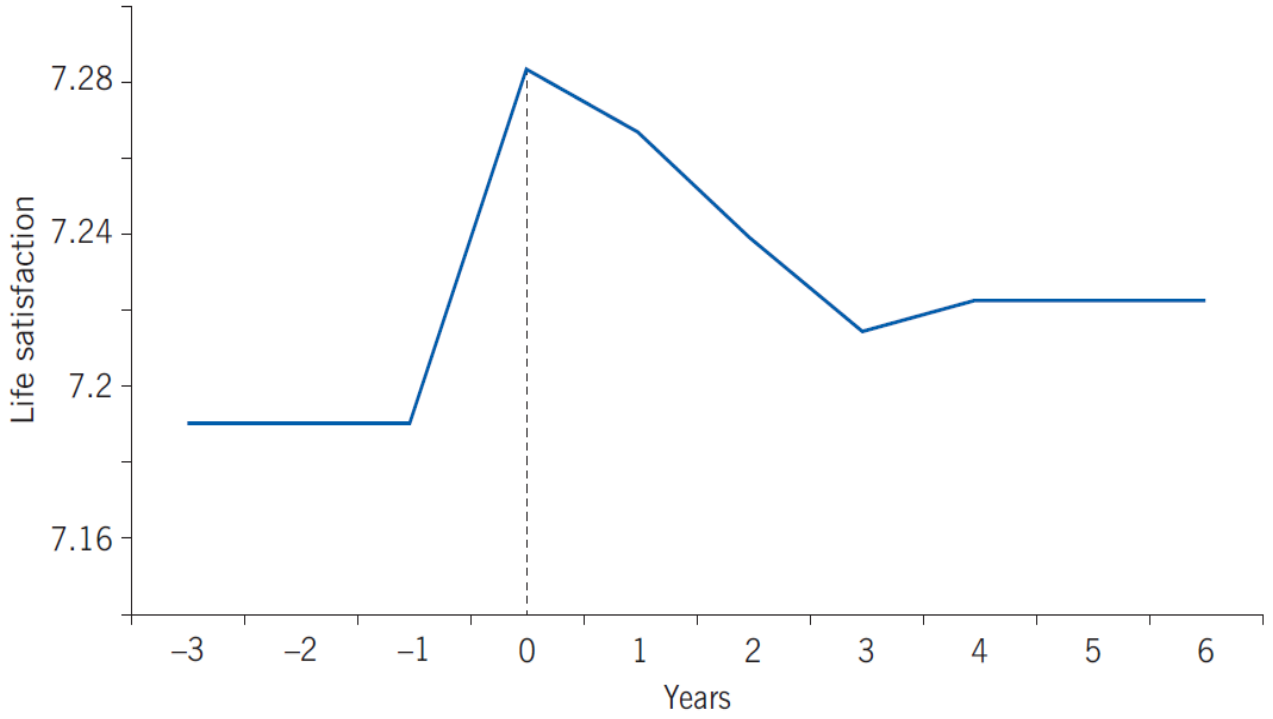
That is, they assume that one person's happiness score can be compared with another person's.

However, it may not be valid to do so: some people may exaggerate their "true" level of well-being, whereas others may report modestly.

For example, Bill Gates may report that an extra $1m increases his well-being by only 0.1 happiness units on a 1-10 scale, whereas a poor person may say it will increases theirs by 8 units.

… but maybe Gates is just being modest.

3. How does one deal with adaptation ?



Note: The figure reports average life satisfaction scores for a panel of 7,812 people for three years before and six years after the income shock. Life satisfaction is measured on a 0 to 10 scale where 0 is "completely dissatisfied" and 10 is "completely satisfied" with life.

Source: Di Tella, R., J. Haisken-De New, and R. MacCulloch. "Happiness adaptation to income and to status in an individual panel." *Journal of Economic Behavior and Organization* 76:3 (2010): 834–852 [8].

Happiness Data and Public Policy in NZ

"Our vision is to be a world-class Treasury working for higher living standards for New Zealanders. By living standards we mean much more than just income or GDP.

It includes a broad range of material and non-material factors which impact on well-being .... The five key focus areas that Treasury suggests are economic growth, reducing macroeconomic vulnerability, sustainability for the future, growing social capital, and increasing equity..."

Traditional "text book" economics assumes: *Happiness = f (GDP)*

The Treasury appears to be taking more of a "Gross National Happiness" approach:

Happiness = f (GDP, equity, sustainability, social cohesion, risk)

Ben S. Bernanke, University of South Carolina Commencement Address, May 8, 2010 on "The Economics of Happiness"

"When thinking about the sources of psychological well-being, economists have tended to focus on … the promotion of economic, growth …. [But] this traditional perspective on happiness is not as narrow and Scrooge-y as you might think.

If I were to ask what you value in life besides goods & services … you might begin with your health. Well, richer countries have more resources to devote to medical care, good nutrition & sanitation … [leading to] generally better health indicators than poor countries.

Another thing that most people value is a clean environment. Air & water quality are not included in GDP. But again, rich nations have more resources to devote to maintaining the environment & tend to have better air & water quality than poor & middle-income nations.

Again, these linkages, together with the benefits of enjoying a wide variety of goods and services, are the reason that economic policymakers - at the behest of the public - usually put heavy emphasis on job creation and growth."

“[GDP] does not allow for the health of our children, the quality of their education, or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials. It measures neither our courage, nor our wisdom, nor our devotion to our country. It measures everything, in short, except that which makes life worthwhile and it can tell us everything about America except why we are proud that we are Americans”.

Senator Robert Kennedy on **GDP**

Some Political Economy Issues

Lets assume:

Gross National Happiness = a. GDP + b. Equity + c. Sustainability + d. Social cohesion + e. Risk

How are the weights, *a*, *b*, *c*, *d* and *e*, chosen ?

One view:

Politicians are elected to decide what weights should be applied to each of these variables ….

Another view:

We can use happiness data to run regressions of the form:

$$\textbf{Gross National Happiness}_{ict} = \hat{a}.\ \textbf{GDP}_{ct} + \hat{b}.\ \textbf{Equity}_{ct} + \hat{c}.\ \textbf{Sustainability}_{ct} + \ldots.\ \textbf{Personal Characteristics}_{ict} + \varepsilon_{ict}$$

for individual, *i*, in country, *c*, and time, *t*.

That is, we can now estimate the weightings, $\hat{a}, \hat{b}, \ldots$, which people *actually* place on these factors and help inform politicians as to the *true* weights in their country's social welfare function.

Weightings differ across countries. For example, whereas European happiness falls when inequality rises, happiness in the US is unaffected. See Alesina, Di Tella and MacCulloch, "Inequality and Happiness: Are Europeans and Americans Different?", *Journal of Public Economics*, 2004.

For NZ evidence, see Kevin Jia and Conal Smith, "Subjective Wellbeing in NZ".

Conclusion

Imagine a government facing some controversial policy questions, like whether it should cut the level of unemployment benefits. Or whether it should raise cigarette taxes. Or spend funds on some form of environmental protection.

Will social welfare rise as a result? Will some groups be winners and other groups losers?

‘Happiness data’ offer a new way to make these kinds of evaluations.

These data allow us to track the well-being of the whole population, and also sub-groups like the employed and unemployed, the poor and rich, left-wingers and right-wingers, and correlate the results with relevant policy changes.