

Happiness, Contentment (and other Emotions) for Central Banks

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Economists are trained to infer preferences from
observed choices - so watch what people do,
not listen to what is said

‘Well-being’ researchers depart from this tradition. They are
interested self-reports of well-being which may be as simple
as an answer to a question of form:

“How Satisfied are you with Life?”

Answers are used to proxy for what economists call ‘utility’

Standard models used by economists make 4 assumptions:

1. There is something called utility (Σ measure)

2. Utility depends on income only (consumption & leisure)

3. There is one “representative” agent

~~**4. It is better to measure Utility indirectly**~~

4. It is better to measure Utility directly

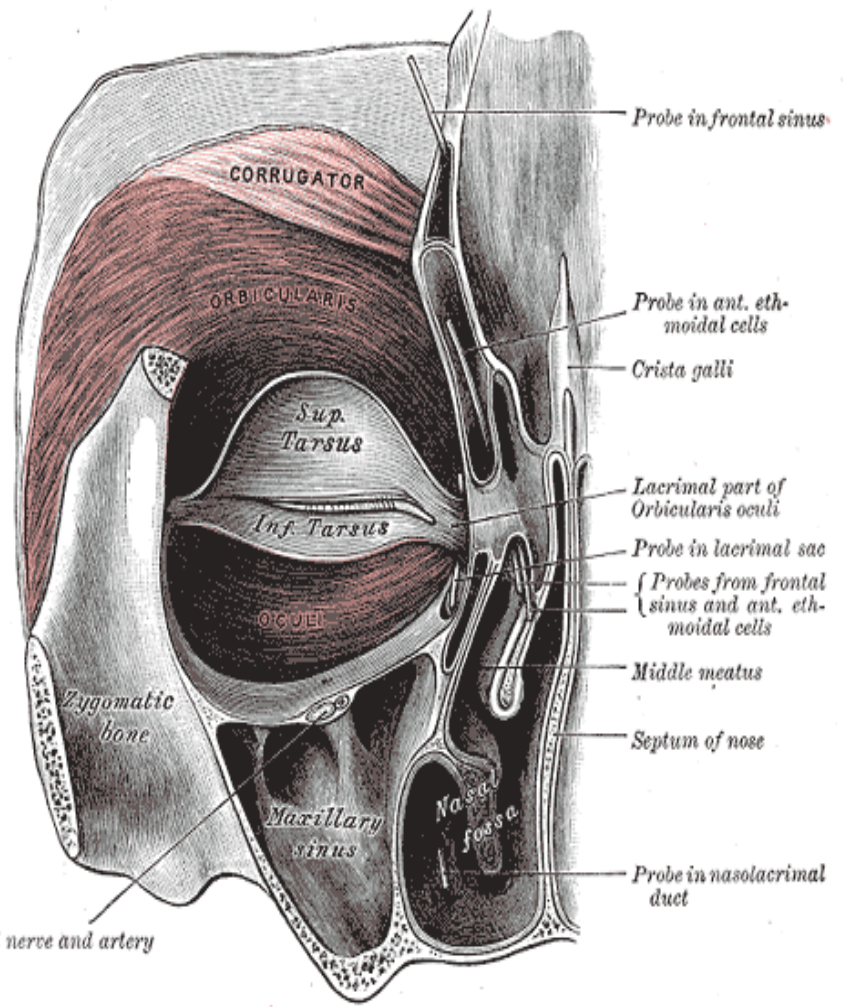
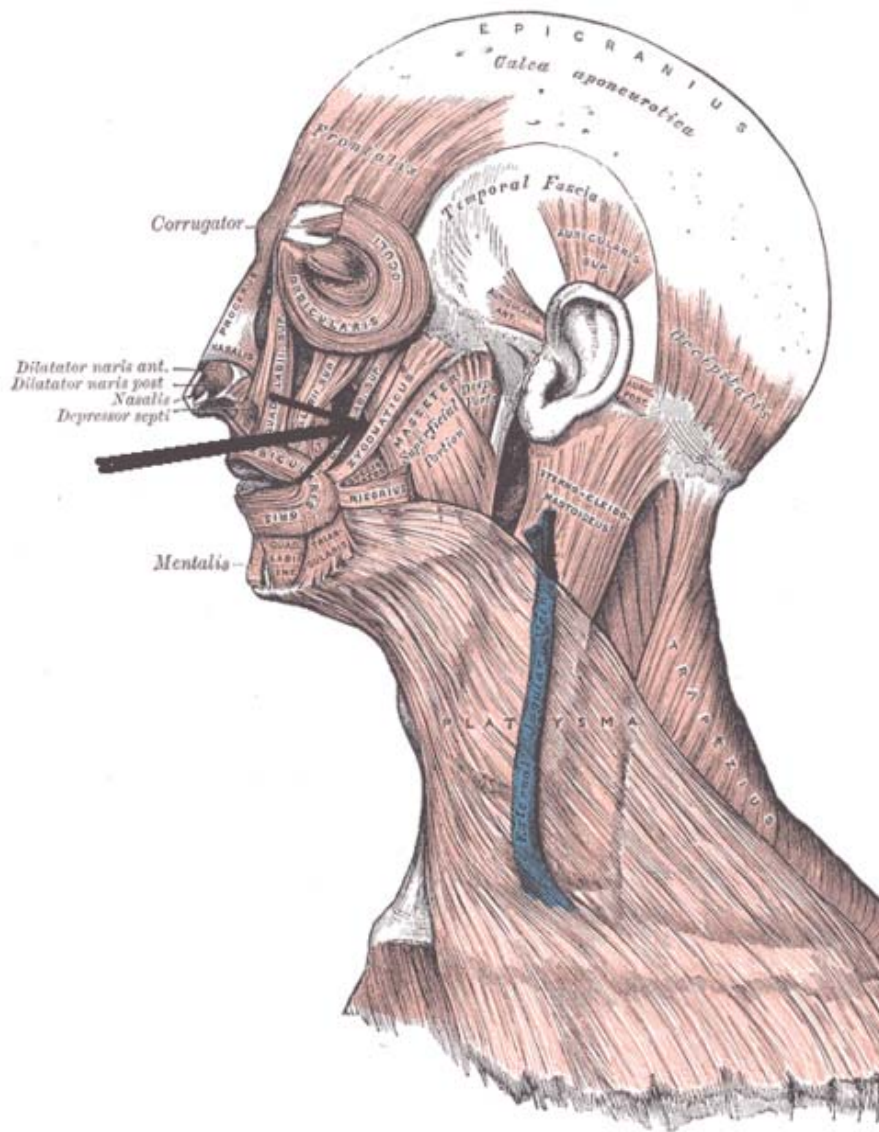
QUESTION

Are Well-being Surveys Related to True Utility?

Well-being Survey Data are correlated with 'Duchenne smiles'

These are studied by psychologists & involve movement of both the zygomaticus major muscle near the mouth and the orbicularis oculi muscle near the eyes.

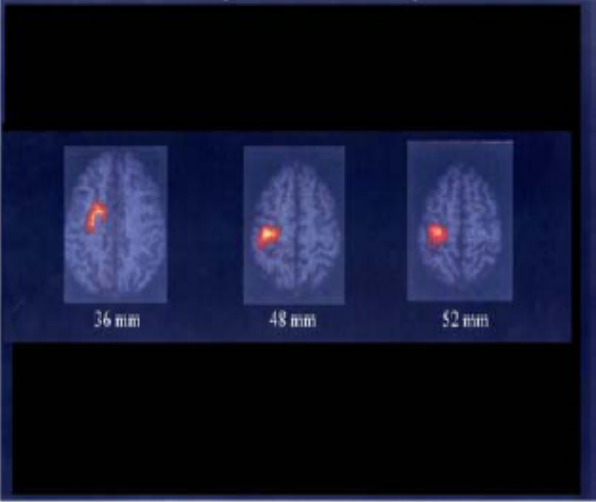
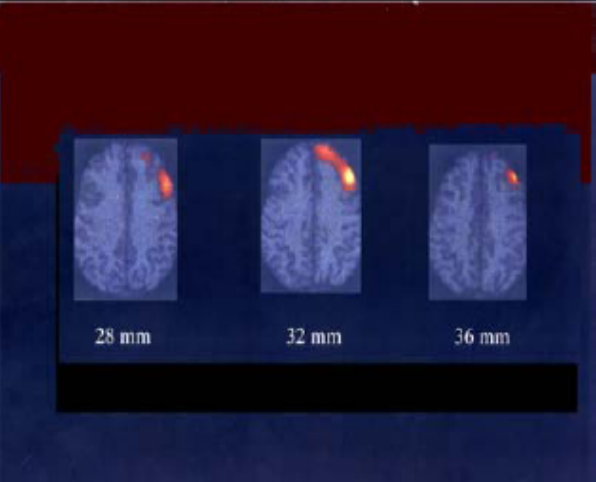
The Duchenne smile is only produced as an involuntary response to genuine emotion - so is what one could call a “genuine” smile



The 'Pan American smile', on the other hand, is the voluntary smile involving only the zygomaticus major muscle.

Considered insincere because, in some cultures, it is observed in work settings (it is called the "Professional Smile"). Observed in flight attendants on a former airline of the same name

Well-being answers (and Duchenne smiles) are correlated with left versus right frontal brain activity.

Brain response	
Happy	 <p>Three axial brain scans showing activation in the left frontal region. The scans are labeled with their respective depths: 36 mm, 48 mm, and 52 mm. The activation is shown as a red/orange area on the left side of the brain (viewer's left).</p>
Sad	 <p>Three axial brain scans showing activation in the right frontal region. The scans are labeled with their respective depths: 28 mm, 32 mm, and 36 mm. The activation is shown as a red/orange area on the right side of the brain (viewer's right).</p>

Micro Self-reported Well-being (SWB) equations have similar “structure” across countries

1. Self-reported Well-being is monotonically increasing in income
2. Self-reported Well-being is U-shaped in age (Min=38 in the US)
3. Unemployed individuals have lower SWB. Large effects
(= to dropping from top to bottom income quartile)
4. Males have lower SWB except in Mediterranean nations.
Battle of sexes undecided in Spain, Portugal, Italy, Greece

Ultimately, the research agenda takes the view that Self-reported Well-being (SWB) measures 'true internal utility' with noise, but that the signal to noise ratio is sufficiently high to make empirical research productive.

*Conceptually, we need not have to rely on SWB:
we could use suicide & depression to proxy true utility*

*Note the difference with previous subjective data:
require a minimum of information; no strategic manipulation*

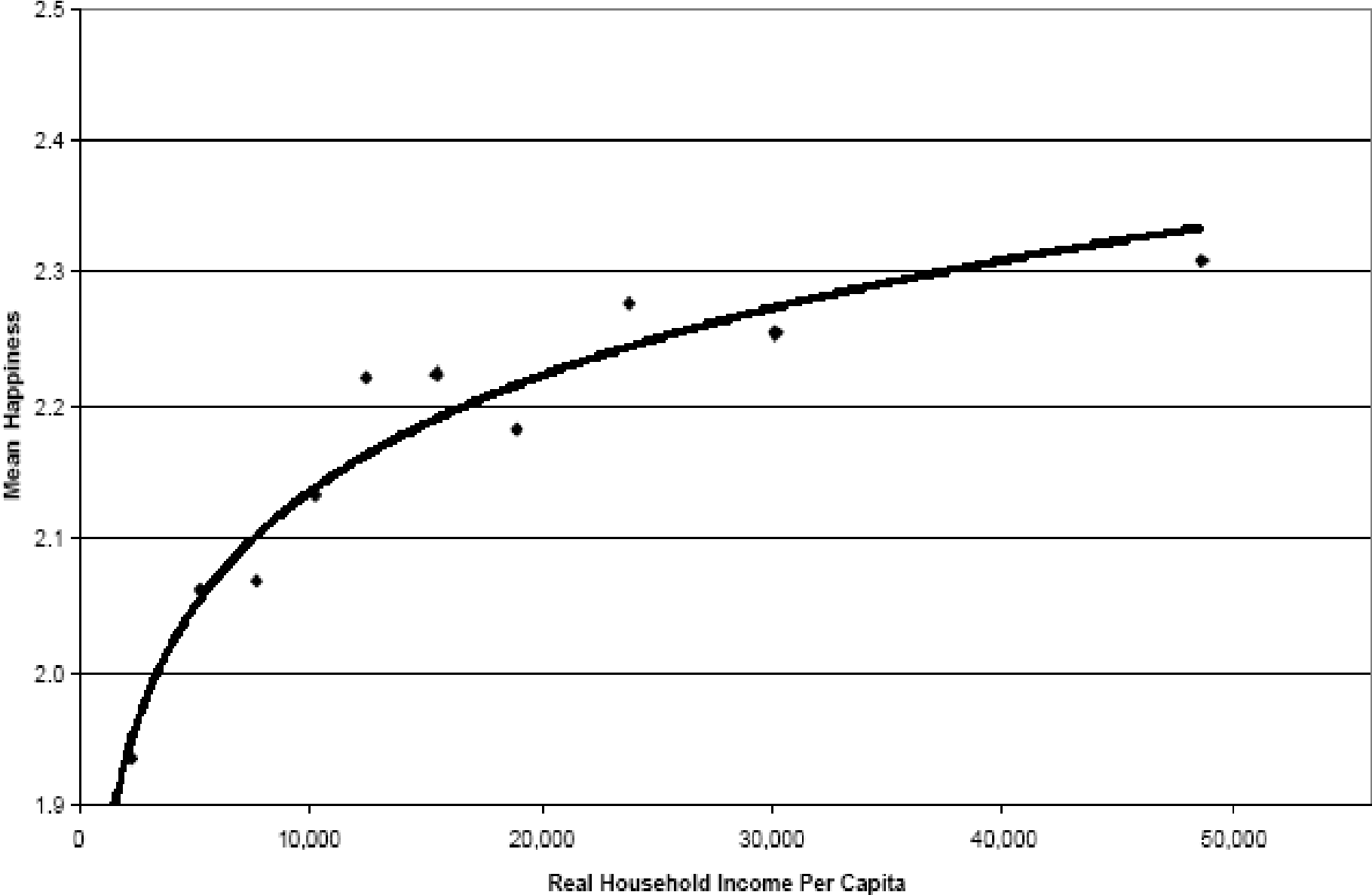
A Puzzle

Most utility functions assume that higher levels of current personal income lead to higher utility.

In 1974, Richard Easterlin observed that the basic pattern of well-being data were at odds with this assumption.

Self-reported Well-being responses are positively correlated with personal income *at any point in time*: the rich report higher levels of well-being than the poor within the US in a given year.

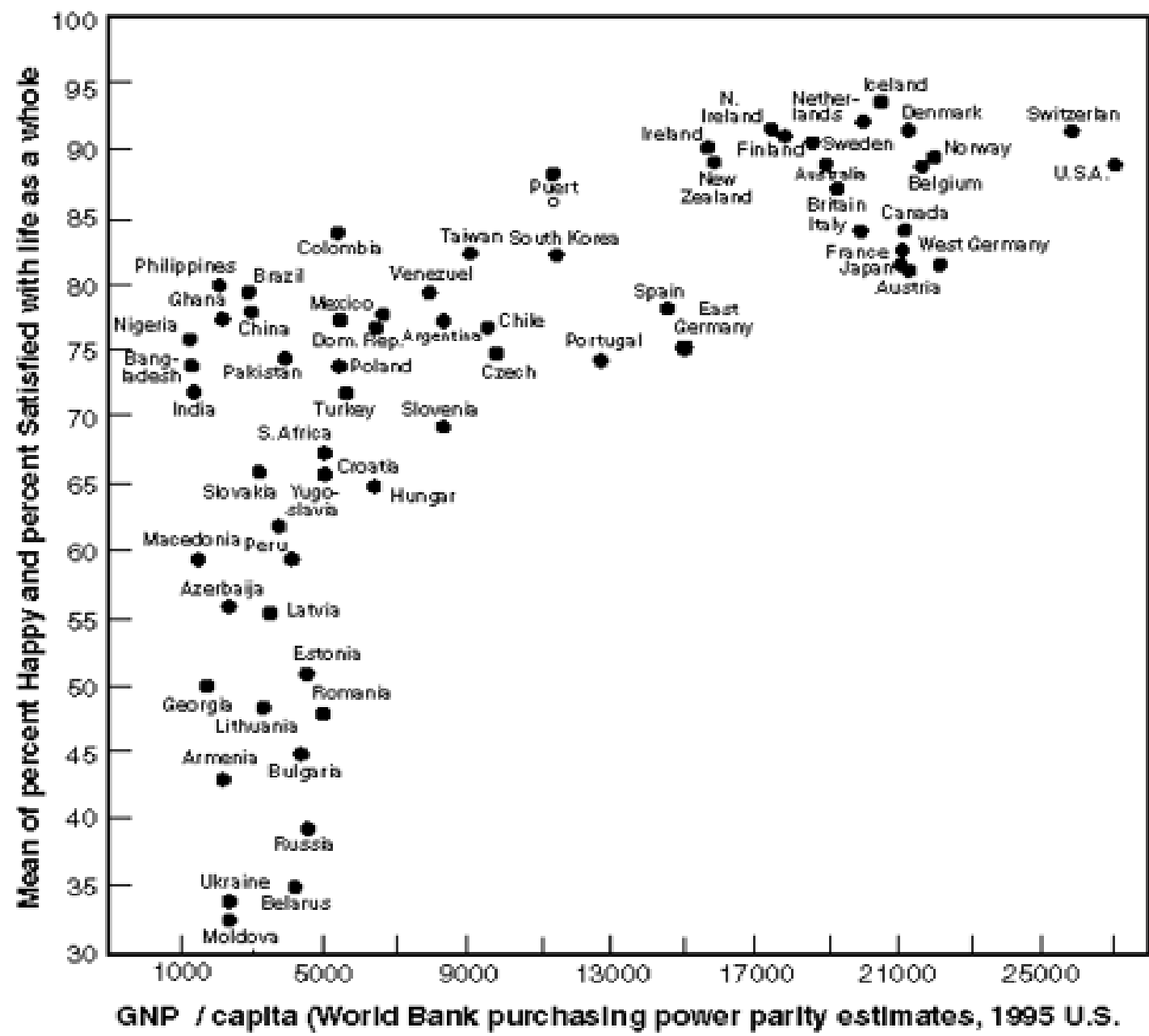
Mean Self-reported Well-being and Real Household Income for a Cross-section of Americans in 1994.



Easterlin, 2006

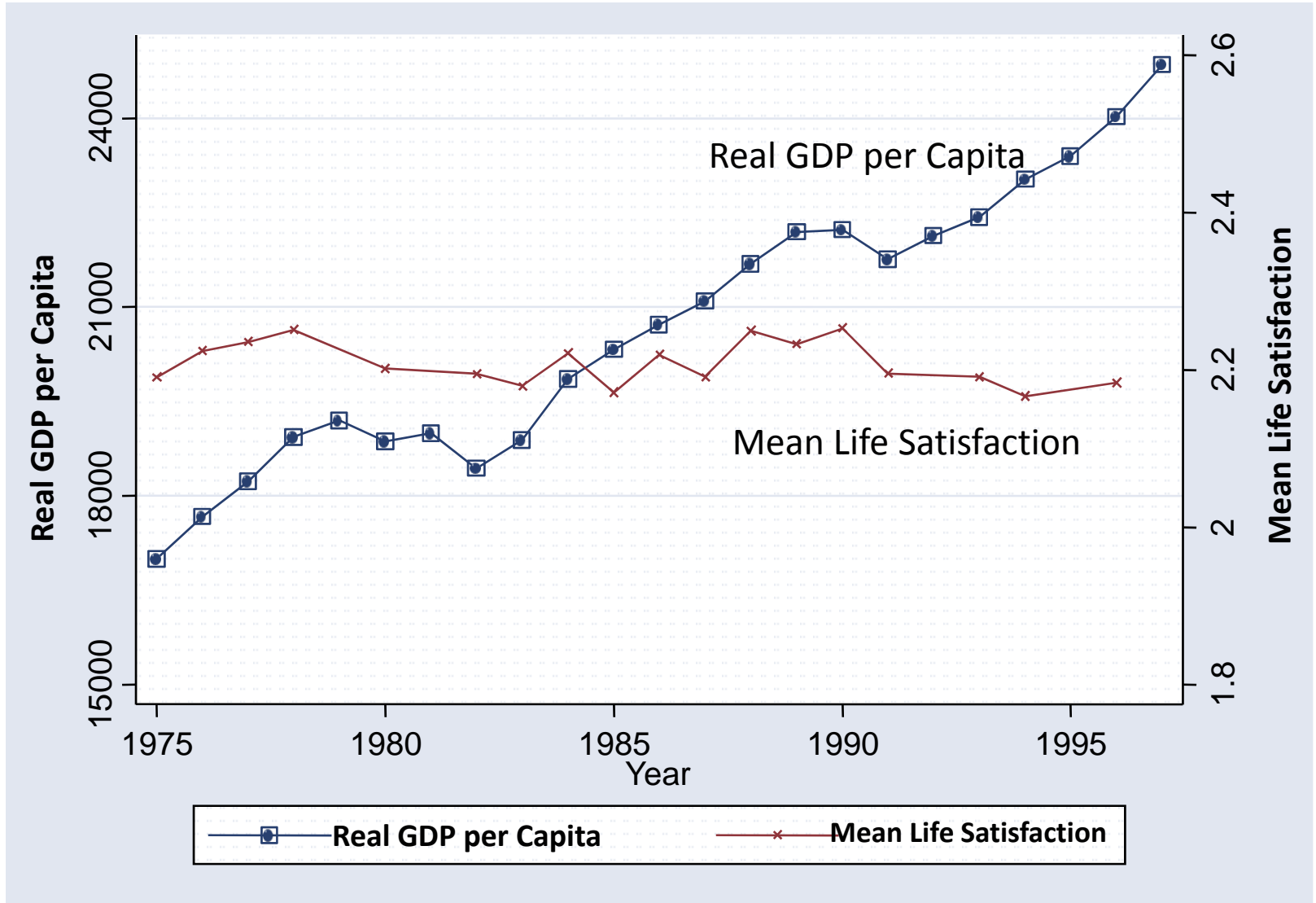
... and people in rich countries report higher levels of Well-being than people in poor countries in a given year.

Mean Self-reported Well-being for a Cross-section of 65 Nations in 1995



Yet since World War II in the US and Britain,
Self-reported Well-being responses have been flat in
the face of considerable increases in
average income.

Mean Self-reported Well-being and Real GDP per Capita from 1975-97 for Repeated Cross-sections of (different) Americans.



How Can Central Banks use Well-being Surveys ?

Standard models used by Central Banks assume that social welfare is reduced by higher inflation & higher unemployment

... but there is an important question of magnitudes: *how much extra inflation is equal to 1% higher unemployment?*

Standard Costs of Inflation

2 Channels emphasized:

Money balances (spend time and mental energy to save on holdings of money). These seem small (e.g., Lucas, 2000).

Relative price oscillations (with staggered price adjustments) inflation induces spurious volatility in prices, distorting the allocation of resources.

Standard Costs of Unemployment

The welfare costs of recessions in classical economics arise from lost output that occurs when actual output falls below potential.

In Real-Business-Cycle theories people optimize & adjust to shocks → small costs of cycles ($\approx 0.1\%$ of total consumption).

As downturns typically follow booms, business cycles don't affect average levels of economic activity. So attention turned to economic growth & away from fluctuations (e.g Lucas, 2003).

Standard Costs of Unemployment & Inflation Compared

The estimates in Rotemberg & Woodford (1997) using a Real-Business-Cycle model calibrated for the US, imply a weight on inflation equal to 20 times the weight on the output gap in society's welfare (or about 10 times the weight on unemployment)

Basic Estimate of a Social Welfare Loss function

$$LIFE\ SATISFACTION_{ntj} = \alpha Unemp_{nt} + \beta Inflation_{nt} + \delta \Omega_{ntj} + \gamma_n + \eta_t + \mu_{ntj}$$

- ***LIFE SATISFACTION:***

“On the whole, are you satisfied with the life you lead?”

The four possible answers are:

‘not at all satisfied’; ‘not very satisfied’; ‘fairly satisfied’; ‘very satisfied’.

The standard interpretation in Macroeconomics is that the above equation is a reduced form of how inflation & unemployment affect utility

How LIFE SATISFACTION Varies with Unemployment & Inflation: 16 OECD Countries, 1973 to 2002.

Dependent variable:	<i>Life Satisfaction</i>
Macroeconomic Variables	
<i>Unemployment rate</i>	-1.6 (0.4)
<i>Inflation rate</i>	-1.2 (0.3)
<i>Personal Characteristics</i>	Yes
<i>Country & Year Dummies</i>	Yes
Unemployment Inflation Trade-off (standard error)	1.3 (0.4)
No. of Observations	609,243
Country-year clusters	309
Pseudo R ²	0.09

Rather than 10 to 1, we get 1 to 1.3, for the inflation to unemployment trade-off.

In other words, our estimates find that a 1% point rise in unemployment causes 1.3 times more dissatisfaction than a 1% point rise in inflation

Di Tella and MacCulloch, Boston Federal Reserve, 2008

Why are these two estimates so different ?

- *Maybe Self-Reported Well-being data are unreliable.*
- *Maybe the standard economists' models are unreliable.*
 - Economists use models to discover logically plausible channels (through which π and unemployment affect welfare).

Tests for the relative importance of these different channels are complex. Models combining all channels are not available at present.

- Most standard economists' models assume standard preferences, $U(y)$. So all channels must be reduced to income values.
- But survey evidence in Shiller (1997) suggests people care about inflation for other reasons. There is also lots of evidence that people care about unemployment beyond the monetary costs of losing a job.
- And since there are MANY potential behavioral channels, it's hard to decide what weight to give each one of them.

Estimating a Social Welfare Loss Function using Well-being Data is a way to aggregate *all* relevant Social Costs of inflation & unemployment, *whether standard or behavioral*.

How LIFE SATISFACTION Scores Vary with Inflation & Unemployment: Controlling for Income & Hours

Dependent variable:	<i>Life Satisfaction</i>
Macroeconomic Variables	
<i>Unemployment rate</i>	-1.1 (0.4)
<i>Inflation rate</i>	-2.0 (0.4)
<i>GDP per capita</i>	0.07 (0.04)
<i>Hours</i>	-0.03 (0.01)
<i>Personal Characteristics</i>	Yes
<i>Country & Year Dummies</i>	Yes
Unemployment Inflation Trade-off (standard error)	0.6 (0.2)
No. of Observations	607,467
Country-year clusters	306
Pseudo R ²	0.09

A behavioral-based approach also introduces the difficulty that people often mis-predict utility (Gilbert *et al*, 1998).

Then calculating the correct welfare costs of events becomes extremely difficult, in part because taking a position on whether there is a “right to be wrong” is controversial.

Time Horizons: Life-time versus Instantaneous

- A serious difficulty is that ambiguity remains concerning the time horizon of our *LIFE SATISFACTION* survey responses.
- Usual interpretation: *'It is a global retrospective judgment, which in most cases is constructed only when asked & is determined in part by the respondent's current mood and memory, and by the immediate context'*. Kahneman & Krueger, 2006
- Small shocks (e.g., finding a dime) may have an effect but can be treated as noise.

- Reasonable people may object to the idea that one can sum up human emotions into one number (utility).
- An alternative is to exploit differences in survey question wording to try to capture different emotions. Two positive emotions described by psychologists are 'contentment' and 'happiness'.
- Happiness is considered by psychologists to refer to some (bubbly) feature more associated with (transient) mood.

Our *LIFE SATISFACTION* survey question seems a relevant measure of 'Contentment':

Q: 'On the whole, are you satisfied with the life you lead?'

A: 'not at all satisfied' ; 'not very satisfied'; 'fairly satisfied'; 'very satisfied'

... a different question seems to measure the emotion, 'Happiness':

Q: 'Taking all things together, how would you say things are these days?'

A: 'very happy'; 'fairly happy'; or 'not too happy' these days?'

Interpretation

The *LIFE SATISFACTION* question that asks about ‘.. *the life you lead*’ introduces a longer horizon than asking if you are ‘.. *happy these days*’

To the extent we think of macroeconomics as mattering beyond the moment, one may argue the appropriate emotion to focus on is contentment - and *LIFE SATISFACTION* is the best available proxy.

Is Contentment the Correct Emotion for Central Banks to Target?

- Contentment may be stable whilst more transient emotions like happiness are declining → Targeting contentment may be less popular than targeting happiness.
- The success of populist political platforms is one indicator of their appeal - and maybe looser monetary policy ?

- Asset bubbles may be caused by investors trying to minimize **Regret** (e.g., Rotemberg, 2009). There is an asymmetry whereby the regret felt by missing out is borne in solitude whereas if the bubble collapses, the misery is collectively shared.
- A Central Bank focusing on ‘contentment’ may leave interest rates unchanged when asset prices rise, making economists who worry about bubbles wary of ‘contentment’ as a target for policy.

Conclusion

We show that direct data on 'contentment', measured as self-reported life satisfaction for > 600,000 Europeans, are negatively correlated with unemployment & inflation rates.

Our preferred interpretation is that an emotion close to 'utility' is affected by macroeconomic fluctuations. Even if one takes the view that contentment is just one of many emotions that need to be studied, it may also be possible to construct direct measures of these other emotions.