



Using Time to Weight a Wellbeing Index: Some Observations

**UN NES Beyond GDP Sprint 2023
Sixth Virtual Meeting
September 21, 2023**

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Time is all we have: An Overview



- We experience wellbeing during time
- How we spend time forms a matrix for well-being
 - Wellbeing so far has lacked an accounting framework
- Time Use surveys document how we use time
 - Fill out the wellbeing accounting framework
 - How is our wellbeing during the activities we document?
- Time is democratic and a constraint: we all have only 24 hours in a day, we are all on an equal footing

These slides draw on studies with Coyle and Hulten



- “Time-Use, Productivity, and Household-centric Measurement of Welfare in the Digital Economy” with Diane Coyle (International Productivity Monitor 42, Spring 2022)
 - http://www.csls.ca/ipm/42/IPM_42_Coyle.pdf
- “Is GDP Becoming Obsolete? The ‘Beyond GDP’ Debate,” with Charles Hulten (NBER WP 30196, July 2022)
 - <https://www.philadelphiafed.org/the-economy/macroeconomics/is-gdp-becoming-obsolete-the-beyond-gdp-debate>



What shall I buy
today?

What shall I do
today?



“The real price of every thing, what every thing really costs to the man who wants to acquire it, is the toil and trouble of acquiring it.” Adam Smith

Two simple views of time as weights



- We experience wellbeing over *periods* of time: time allocations (hours) are weights (Kahnemann et al, 1999)
- Time is a constraint in our economic decisions alongside money: how long do we want to work? play? sleep? shop? socialize? care for others?
 - Shadow value of time (Gary Becker, 1965)
 - Time to consume (Ian Steedman, 2001)

Base view of time and wellbeing



- Wellbeing = Sum of wellbeing(s) over time
 - $U = \sum U(t)$, with time in hours (linearity)
- Hypothesis: wellbeing is additive over time
 - Wellbeing may be unidimensional or multidimensional
- If so, all that matters is our experiences over time
- Can different ratings of wellbeing be summed?

If wellbeing is more or less additive



- Wellbeing may be sampled in time use surveys that have wellbeing measures attached to activities (say, rated from 1 to 5)
 - Do ratings per hour average to ratings per day or week?
- But maybe recent wellbeing matters more for overall wellbeing
 - Yesterday's wellbeing matters more to me than wellbeing a year ago

For full wellbeing



- We need to consider our wellbeing
 - While we work (for pay or at home)
 - While we consume at leisure
 - While we invest in ourselves
 - Education/health
 - While we travel to activities
 - While we build relationships and care for others
 - Friendships, love, parenting, caring

Time = value



- To the extent that money can save us time, or time can make us money, time and money are interchangeable
- We can think of the shadow value of time in monetary units, or the shadow value of money in time units
- Progress in wellbeing means we can afford more goods or have more free time

Wellbeing and GDP



- GDP ignores externalities and broad time use
 - GDP focuses on transactions
- The wellbeing movement highlights changes in time use, in externalities like climate, knowledge, and inequality
- But GDP remains a core concern of politics, finance, and business activity
- How do we see wellbeing inclusive of GDP



Adding GDP to wellbeing

- GDP is a part of wellbeing
 - Economists write $U = \sum U(C_t)$ subject to a budget constraint but this is only part of wellbeing
 - Wealth constraint: $W_t = Y_t - \sum C_t + (1+r)W_{t-1}$
- Becker: add time constraint as well
 - $U = \sum U(C_t, z_t)$ where z_t is the time required for activity associated with C_t
 - Time constraint: $T = \sum z_t$

We can use time use to expand GDP using a money metric



- Within a money metric
 - Diane Coyle and I have argued that the rapid changes in time use that we are experiencing are not reflected in GDP
 - International Productivity Monitor 42, Spring 2022
 - Chuck Hulten and I have argued that information and other externalities like climate need to be included in an expanded GDP
 - NBER working paper 30196, 2022
- The value of a money metric is that it is comparable to GDP
- But because time is money, we could also, perhaps, do the reverse:
- Replace money with hours and time can become the numeraire (and GDP expressed in time)

From this (Becker, 1965) perspective



- Shadow cost of time is the wage (e.g. \$30)
- An activity's full cost is its direct monetary cost plus its time cost
- Taylor Swift Eras Tour ticket: average price estimated at \$253 plus 3.5 hours time
 - \$358 in money = $253 + 3.5 * 30$
 - 11.9 hours in time ($3.5 + 253/30$)
- Full costs can be measured in hours or dollars

Why use hours as a numeraire?



- With hours as a numeraire, a given increase in productivity (measured in money terms) is translated into a decrease in time costs for an activity
- Using hours is more democratic: a poor person's hours are as valuable as a rich person's
 - Though the rich one has much more money
- Money metrics are plutocratic, while wellbeing measures are democratic
 - Wellbeing scales are individual averages
 - Aitken and Weale (2018): Democratic measure of household income (ESCoE WP)

Working from home



- Working-from-home implies a decline in total work time (including commuting time)
 - Massive shift to working from home
- This may imply a lesser place for the economy (paid work) in wellbeing
 - Reflected in a higher wage per total work hours, although measured wages are unaffected
 - Most hours are not spent at work

Comments:



- How we feel during work is an important element of wellbeing
 - How does work wellbeing change in remote work?
- Social connections were affected by pandemic and climate
 - Socializing takes time and transportation as well
 - In person vs. phone, email, text, zoom during pandemic
 - Loneliness epidemic?

Further comments:



- Climate change affects all our activities
 - Understanding how climate affects wellbeing is a crucial unmeasured aspect
- Investments are not well incorporated in wellbeing analyses
 - Households invest in children, health, education, lowering carbon emissions
 - Are these investments in the future captured in measured wellbeing?

Thanks!



- This is very much work in progress
- Please email me with comments
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