Inputs, Outputs and Outcomes: Measures of Human Wellbeing

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Stiglitz, Sen, Fitoussi Summary

Report of the Commission on the Measurement of Economic Performance and Social Progress, 2009.

Audience:

Political leaders, policymakers, academic community, statisticians, public at large

Improve measures of economic performance:

- Measuring production, particularly services
- Quantitative and qualitative changes to government/collective production
- Shift from production to wellbeing measures

SS&F: Recommendations

Recommendations

1. Wellbeing measured by consumption not production
2. Emphasize household perspective
3. Consider income/consumption together with wealth
4. Provides estimates of distributional features of income / consumption/wealth
5. Broaden income measures to non-market activities
6. Estimate "functionings" via measures of social connections, political voice etc
7. Estimate historical trends in quality of life
8. New QOL surveys for joint distributions of various feature
9. New HDI, specifically positive/negative feelings
10. National Statistical Institutes to collect Hedonic Experience measures
11. Sustainability "dashboard"
12. Separate estimation of critical damage to the physical environment

SS&F: Recommendations

Recommendations

1. Wellbeing measured by consumption not production – **needs** time data
2. Emphasize household perspective
3. Consider income/consumption together with wealth – uses time data
4. Provides estimates of distributional features of income / consumption/wealth – partially provided by time budgets
5. **Broaden income measures to non-market activities** – **requires** time data
6. Estimate "functionings" via measures of social connections, political voice etc
7. Estimate historical trends in quality of life – uses time-use data
8. New QOL surveys for joint distributions of various feature – uses time data
9. New HDI, specifically positive/negative feelings– **requires** time-use surveys
10. National Statistical Institutes to collect "hedonic experience" measures
11. Sustainability "dashboard"
12. Separate estimation of critical damage to the physical environment

In what follows….

3rd party criterion and dual entry accounting.

Most of us here will agree with Stiglitz that GNP is an insufficient measure of national economic wellbeing, since:

1 some real (3rd party criterion) ***activity missing***

2 some sources of wellbeing are ***not directly economic***

TU researcher have thought for many years we know how to deal with at least the first of these. simply:

- Multiply unpaid work time by shadow wages, add result to GNP…
- … subtract "intermediate" expenditure used in HH production.

BUT two big problems emerging with 3rd party criterion

1. manifest vs latent effects of economic activity
2. Some household production uses no unpaid labour

I'll argue:

- Goldschmidt-Clermont (1990s) resolves the "no unpaid labour" issue
- Manifest/latent distinction resolves the "indirectly economic" issue

The Third Person Criterion; manifest functions of economic activity

Reid (1934) 3rd person definition of "work" as answer to the question: *Could you pay someone to do this for you without losing the benefit?*

- *could* pay someone to wash a floor or bake a cake,
- *couldn't* pay someone to go to a concert for you without loss.

HOWEVER: economic activities have multiple consequences.

Manifest consequences *are, broadly* ***satisfaction of wants*** for

- shelter,
- food
- health care
- personal growth or development
- entertainment or recreation.

Maybe these are not actively want***ed*** by all individuals at the instant of their consumption—nevertheless ***manifest consequences*** are:

(1) the reasons for individuals' or households' consumption,
(2) and the benefits referred to in the 3rd party criterion.

Latent consequences of *production* activity

But there are also ***latent consequences*** *of* economic activity, most familiarly in relation to **paid *work***.

Jahoda et al "Marienthal" (1933): public health breakdown following mass unemployment during the Great Depression—identified a number of "latent functions" of paid wor, quite independent of pay:

- the imposition of a time structure (clocking on),
- requirement for physical activity
- structuring of sociability (thru' work-roles and -stations)
- establishing of status through the work content
- A sense of contribution to wider society

The loss of each of these had a cumulating negative, physiological & psychological impact on the unemployed..

(Note: specific to factory phase of production technology.)

Latent consequences of *consumption* activity

Also for ***consumption***. For example: a collective household meal, was a technologically constrained necessity, until mid-20th century, by economies of scale in cooking. It had a range of Jahoda-type latent functions:

- temporo-spatial structuration (enforced copresence of household members),
- Hence pattern of sociability,
- hierarchical stratification (who serves the food)
- social contribution (cook's satisfaction from cooking).

These latent functions of consumption transformed by technical change.

- microwave + domestic freezer change economies of scale=> more relaxed organisational requirements of food consumption (hot food now browsed by singleton HH members)
- multiple televisions and play stations per household instead of a single radio, so media use is no longer a collective activity, as was the case in the middle half of the 20th century).
- Infrastructure + consumer capital items (home computer) => Internet, changes shopping from the sociable activity and light exercise of in-person retail activity, to isolated sedentary market research.

These have similar scale of impact to Jahoda et al' production-related related latent functions.

Consequences of technological changes are not reflected directly in consumption decisions—economic ***outputs*** but incidental ***outcomes.***

The *revised* third person criterion

Recognising that these latent consequences are generally not part of consumption decisions, 3rd Person Criterion becomes:

Could you pay someone to do this for you without losing the *manifest* consequences of the activity?

It divides all human life into just three categories of activity—compare Aas(1979):

- paid work (and related travel rest-period, job-search activity)
- unpaid work (housework and DIY, child and adult care, voluntary work)
- consumption

Dual Entry accounting in the UN System of National Accounts (SNA)

Fundamental to the UN SNA,
the **dual entry accounting identity**:

The total value of ***inputs*** ***(production)…***
…is ***identical*** ***to…***
…the total value of ***outputs*** ***(consumption)***

(Originally, Nassimbene 1954, used “personal” instead of “consumption”)

Why is the Dual Entry Identity important?

Dual entry accounting reflects the essence of economic activity: interpersonal cooperation, “reciprocity”:

- ‘I do some things, you do other things’.
- Benefits:
  - specialisation and development of skills,
  - opportunities for innovation
  - economies of scale

“Exchange” in the money economy is a special (pairwise) subset of “reciprocity” which also includes work undertaken outside the money economy.

The balanced patterns of activity—production and consumption—emerging from relations of exchange and reciprocation, is the essence of social structure. Dual entry accounting records this balance

“dual entry” accounts—extended!

BUT: there’s lots of economic activity not in “the (money) economy”.

SO: we develop **an equivalent concept in SNA extension accounts:**

INPUTS:

capital, materials, wages + (***unpaid labour*shadow wages)***

Equal

OUTPUTS:

final expenditure + (shadow ***prices of nonpurchased consumption)***

Luisella Goldschmid-Claremont's insight

This extension points to a potential improvement in quality of estimation of non-money-based production from shadow wages alone. Luisella Goldschmidt-Clermont (1999) observes that:

„„we can use an extension of dual entry to improve valuation of extra-economic values—by comparing independent estimates from the two sources. For example, ***compare***:

- cooks' labour-time***shadow wage** values for HH food production ***with*** the **shadow prices** for equivalent meals in restaurants.
- driving-time***shadow wage** values for child delivery services, ***with*** the **shadow prices** of equivalent trips in taxis.

And so on..

Problems emerging from Goldschmidt-Clermont-1

Since all time is either consumption or production we have in one sense a complete and exhaustive estimation of economic activity – every human activity is in principle part of one of these pairs

BUT…

1. what about household production that doesn't involve any unpaid labour time?

Valuing unpaid production with no unpaid labour

- Estimates of value production outside money economy assumes informal enterprises (households, other groups) produce final services analogously to formal enterprises (firms, partnerships, own-account workers) within the money economy.
- In addition to wages, enterprises invest in capital, and are rewarded for doing so by profits related to their investments.
- Informal institutions, *also* organise and invest in capital equipment (domestic furnishing, decorations, equipment). We need to estimate returns on this investment, which are not covered by shadow labour costs.
- Example of informal enterprises' outputs with no unpaid labour:
  - viewing or listening to broadcast/downloaded entertainment:
  - an important aspect of consumption, with parallels in money economy (cinema, theatre, concerts)…
  - but invisible through the shadow labour value (input) estimations

Problems emerging from Goldschmidt-Clermont-2

AND…

2. …remember this is just looking at the manifest implications—
   what about the latent consequences of activities?

Money expenditure surveys tell us about households' investment in consumer durables, but nothing about how they're used.

BUT our time diaries reveal, in parallel to time spent consuming final services such as restaurant, theatre, cinema concerts and so on, ALSO time spent (and N of occasions) watching tv, listening to music, downloading and watching films, and similar.

So: decide on shadow prices for these, estimate, and add, "household surpluses" as the equivalent to profits, covering use of domestic equipment to provide final domestic consumption.

Inputs, outputs….and out*comes*

"Outcomes" are the ***latent consequences*** ***of the production and consumption of economic outputs—***in principle ***quite distinct from the economic outputs themselves***:

- Individual: psycho/physiological sensations, **states of being**:
  health, physical abilities, happiness, life-domain satisfaction, personal safety.
- Collective: conditions or **states of the world**:
  environmental order (or beauty) and sustainability, liberty and collective security.

These are not readily or sensibly valued in money terms—since they have **no counterpart market costs or prices.**

Independence of economic circumstance and perceptions of wellbeing

- "non-money wellbeing" ***may*** motivate activities (exercise=>good health).
- *But* outcomes may be unconsidered (driving cars=>global warming) or even be ignored (negative consequences of addictive behaviours).

Single entry accounts to complement dual entry

"Outcomes", as defined, are the generally unconsidered latent consequence of ***both*** production ***and*** consumption activities. Examples:

- All activities, from the most sedentary to the most physically active, have some metabolic consequences for the actor. We can estimate the extent of physical activity by multiplying time devoted to each activity by appropriate METs coefficient (Ainsworth et al 2012) and sum the products across the day to produce a summary of total of physical activity Harms et al (2019).
- Similarly: most people can score each daily activity—work as well as leisure—by how much they enjoy it (on an ordinal scale). Collect scores as a diary field; multiply duration in each activity by the associated enjoyment score, sum across the day, and we have a measure of daily mean instantaneous utility (Kahneman 1999).
- Other examples: estimates of daily infection risk (Sullivan et al 2021), of pollution or energy demand footprints of daily activity (Schipper 1989).

These, unlike dual entry measures, are estimated by multiplying **all** daily activities by appropriate coefficients, then summing **all** the products.

Examples of single-entry statistics

Instantaneous utility:

outcome value = sum of **durations** in each diary episode

* **simultaneous diary enjoyment scores**

(Kahneman et al 2004 suggest summing above- vs below-median scores)

Individual metabolic load (exercise status)

outcome value = sum of ***durations*** *in each diary activity*

* ***MET value*** *for activity*

(METs scores from "Ainsworth Compendium", Ainsworth et al 2011)

Environmental footprint

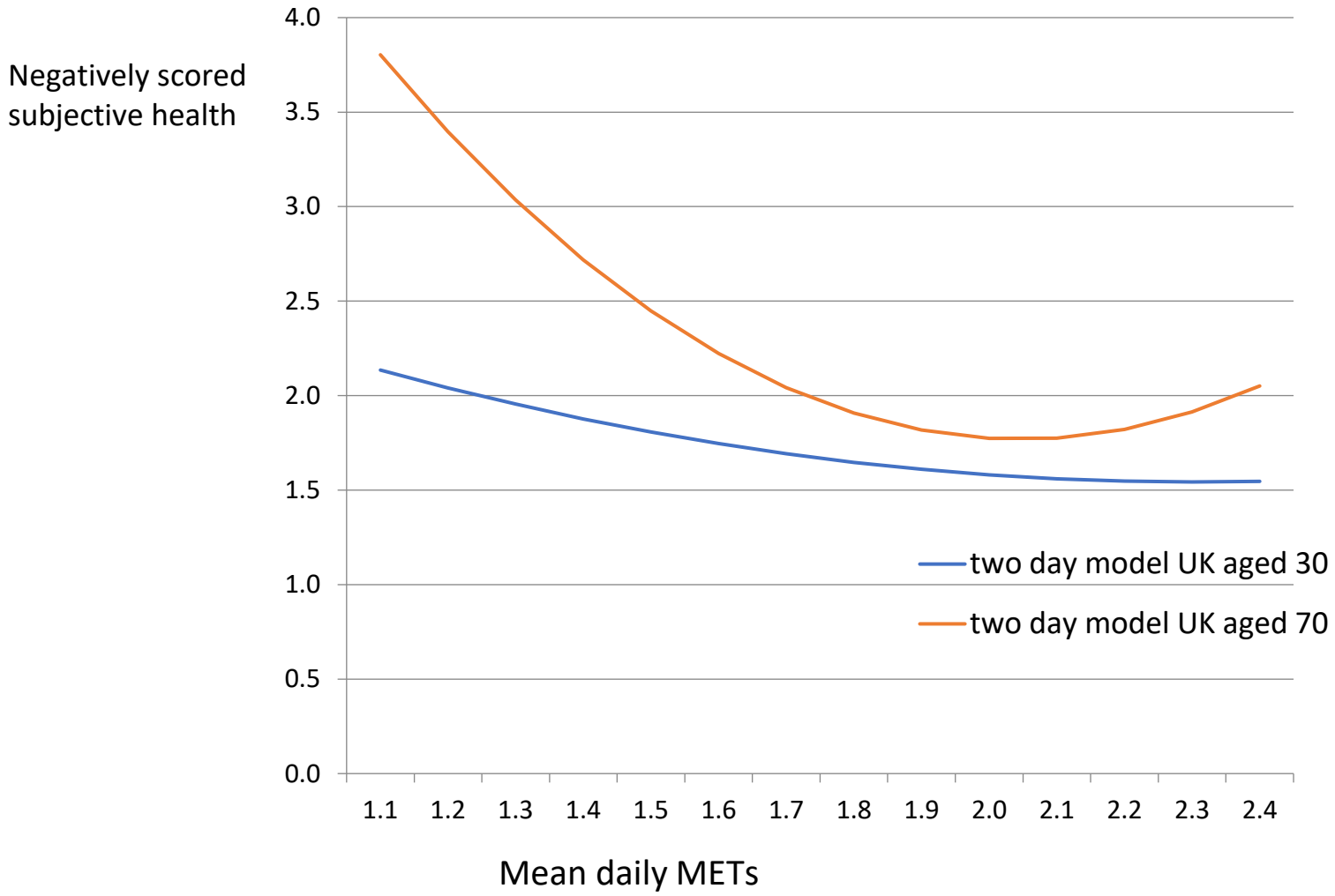
outcome value = sum of **durations** in each diary activity

* **impact value** per minute

Note: no direct market or other money basis for valuing these effects

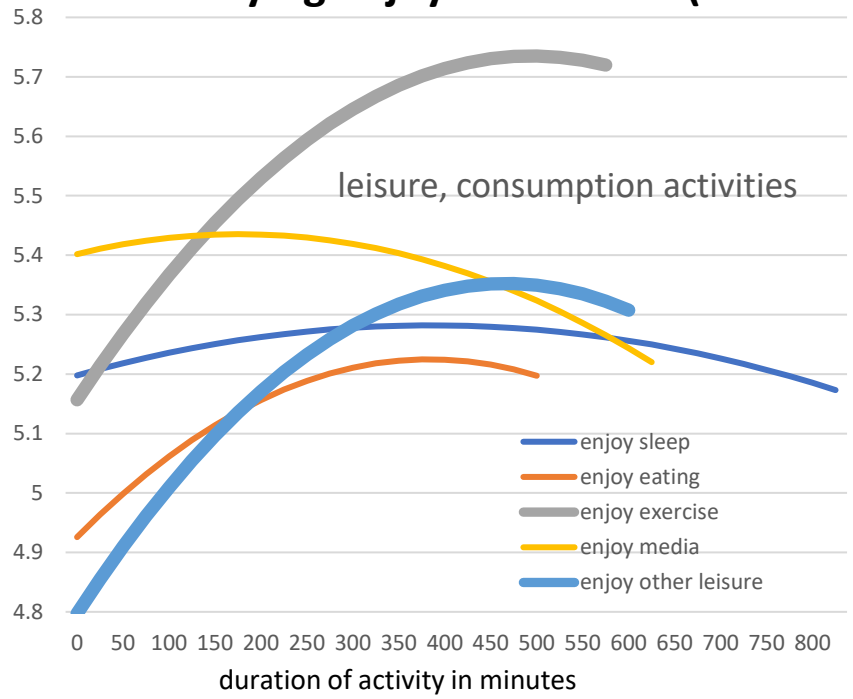
METs and subjective health status

UK 2014-15 diary respondents, combining weekday and weekend days

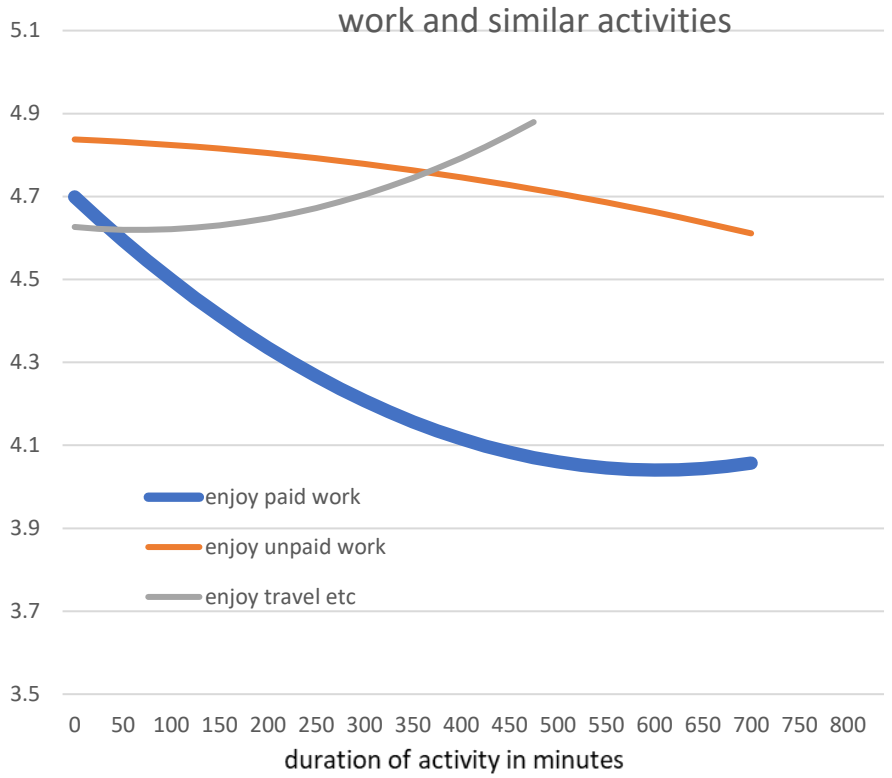


Instantaneous utility by activity duration

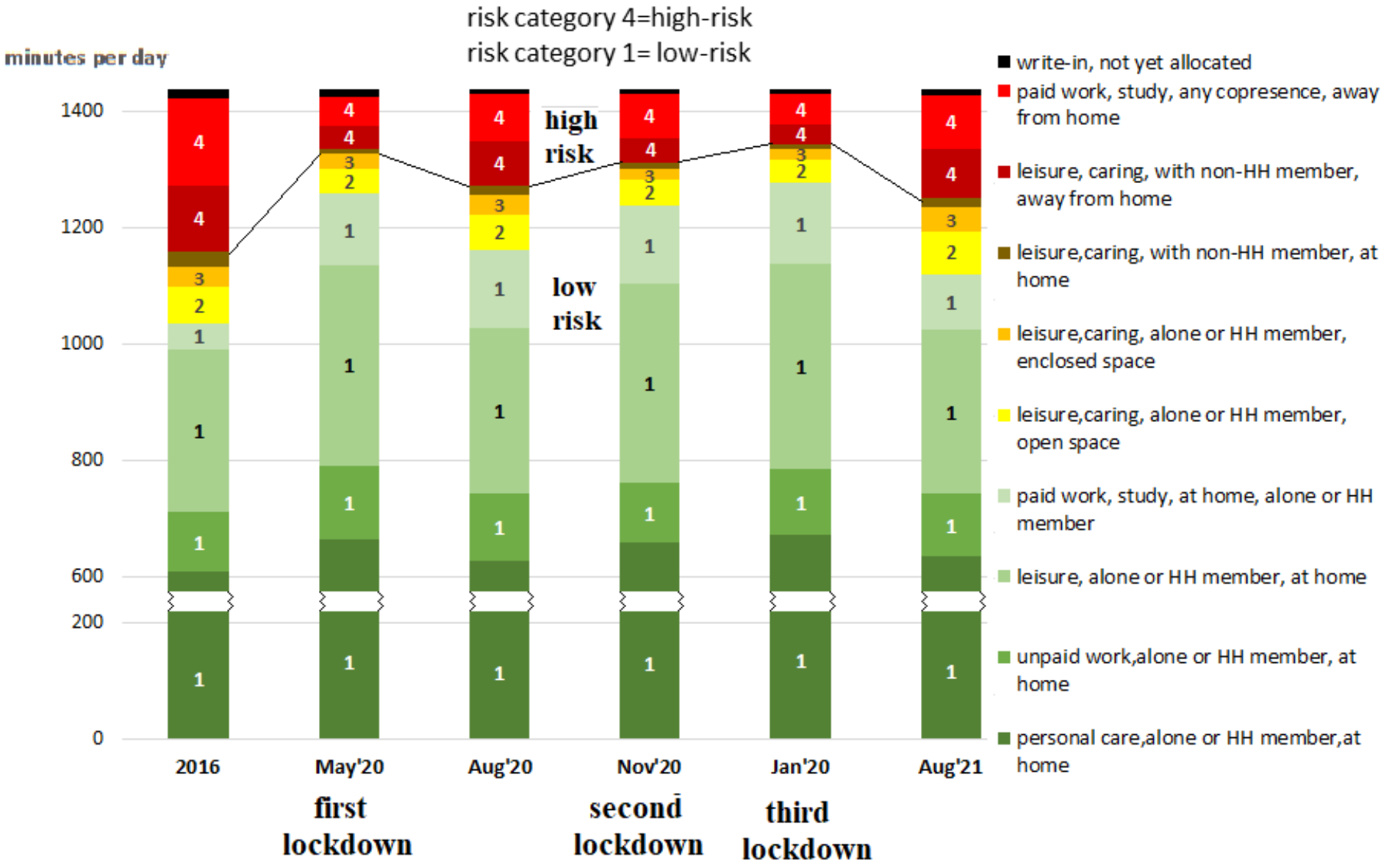
OLS regression models instantiated for UK women aged 35, time-varying enjoyment levels (CaDDI data 2016-22)



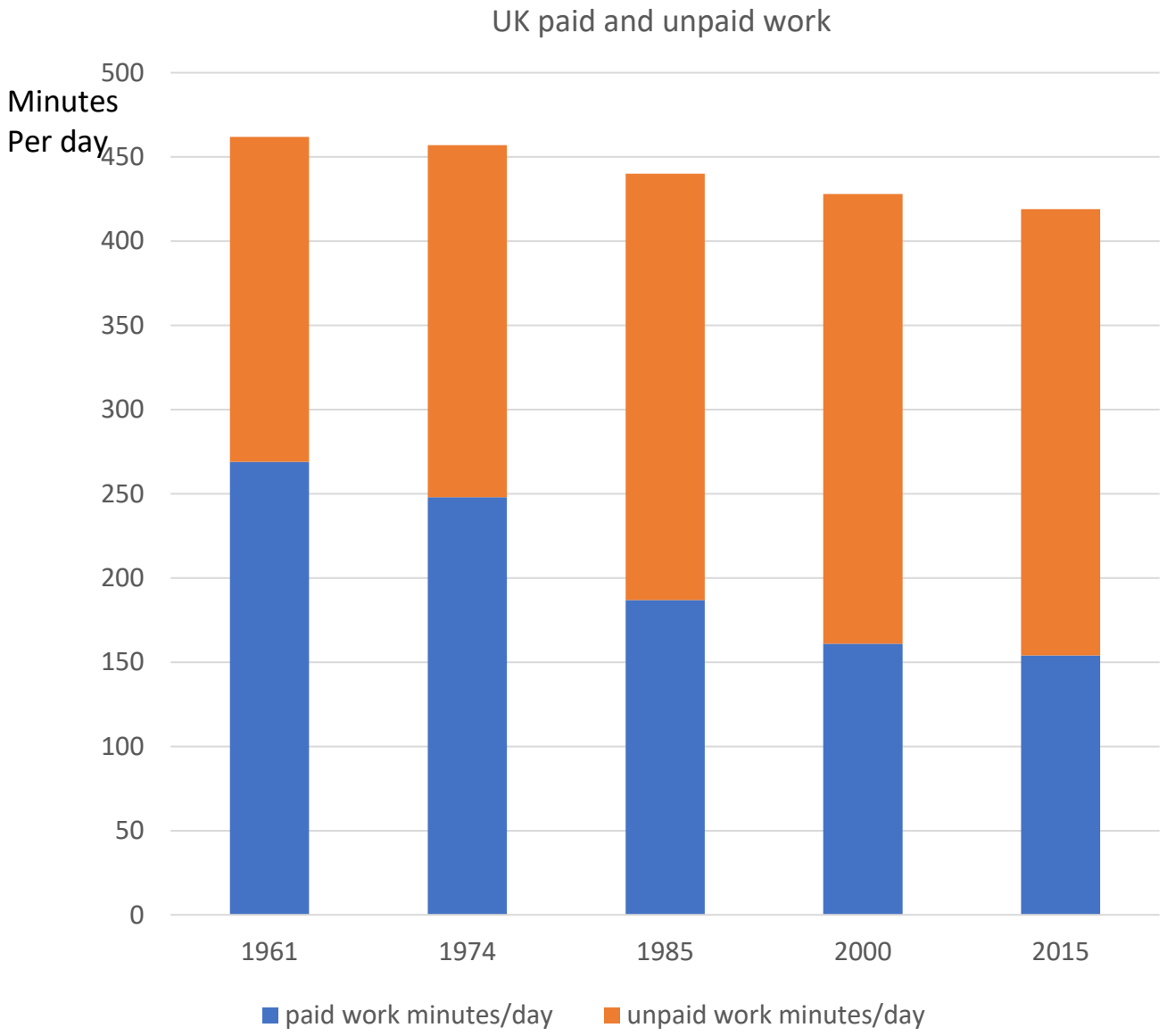
(Heavier lines indicate that both duration and duration-squared regression coefficients are statistically significant.)



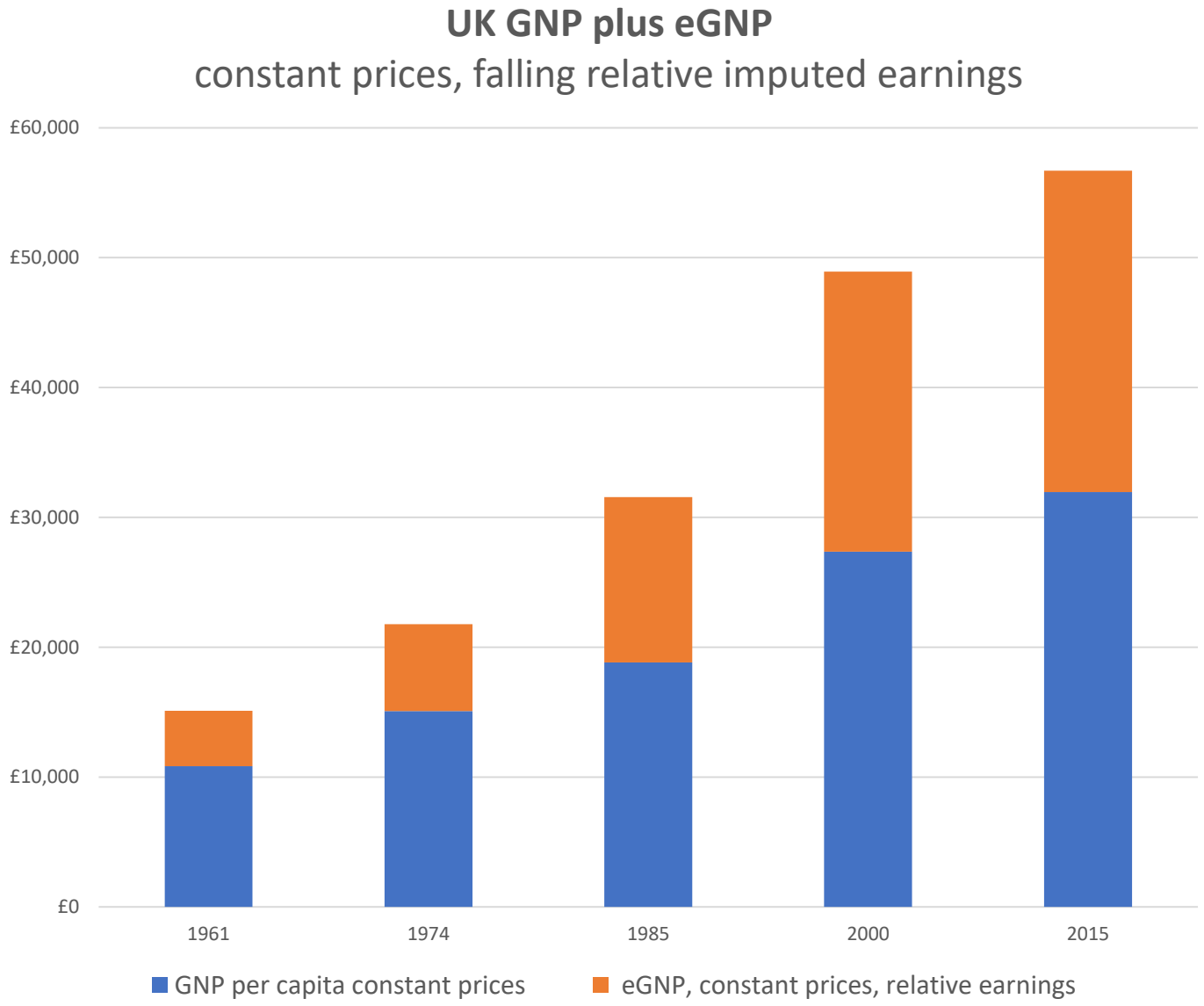
Change in Infection-risk behaviour (UK CaDDI data; Sullivan et al PNAS 2021)



Whole UK adult population: paid and unpaid work

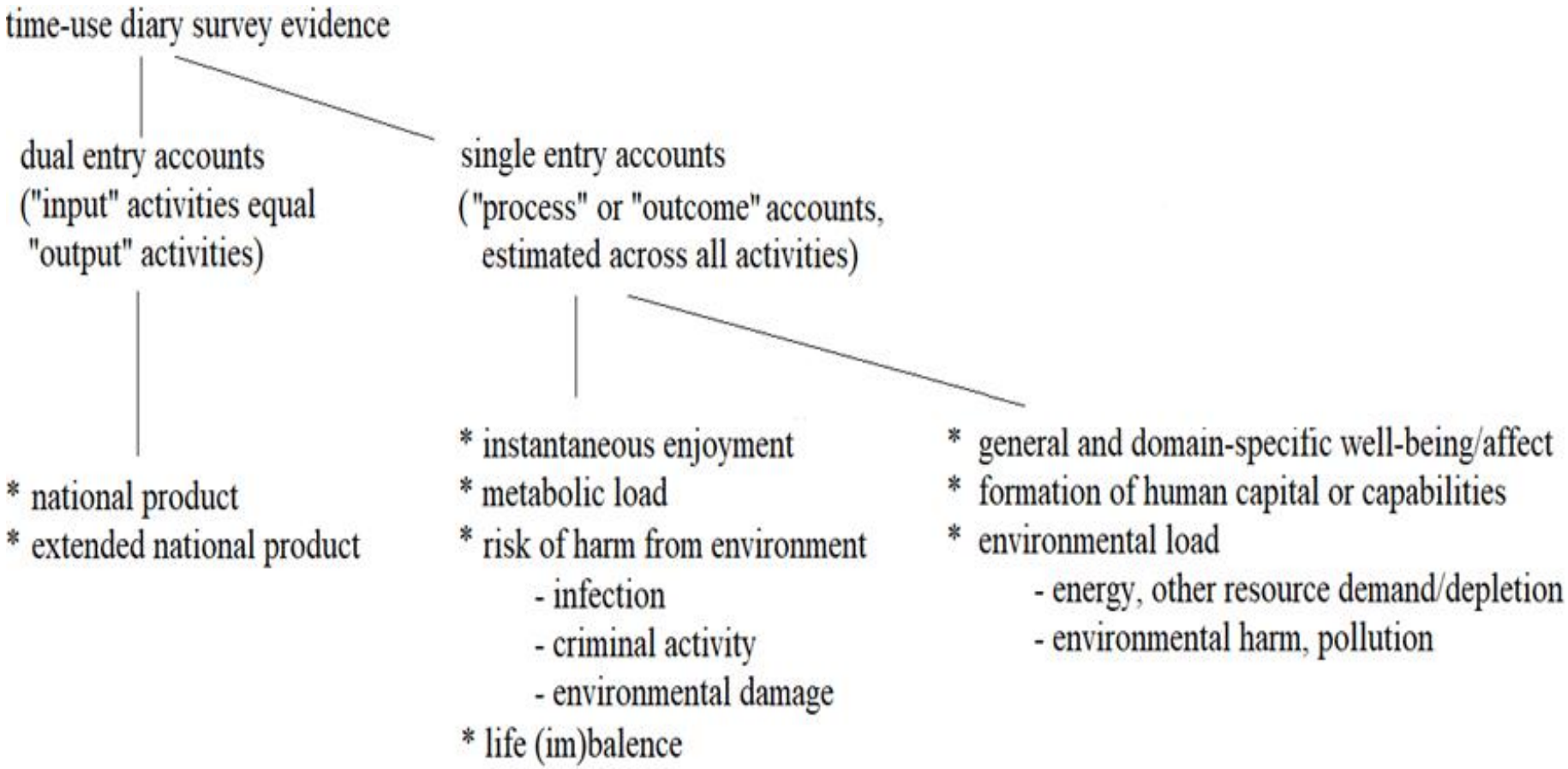


Speculative comparison of GNP and eGNP—estimated from unpaid labour alone



A Stiglitz "dashboard".
A family of social indicators all derived from time use diary studies.

Multiple social indicators all derived from the same single source.



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