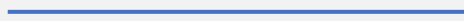# Composite Indices

Richard Heys

Chair, Beyond GDP Sprints Task-team

Agenda

- Composites v Dashboards

- What makes a good composite index?
  - Drawing on already-available manuals and best practice

- The Big Questions
  - The available options

Composites v Dashboards

Defining Terms

- Composite Indices (I) are produced by compiling varied types of data series (S) through a process of weighted aggregation:

- $I_t = w_{1t}S_{1t} + w_{2t}S_{2t} + w_{3t}S_{3t} + w_{4t}S_{4t}.....$

- Which is rather different from how Dashboards operate, in presenting all the data series in detail.
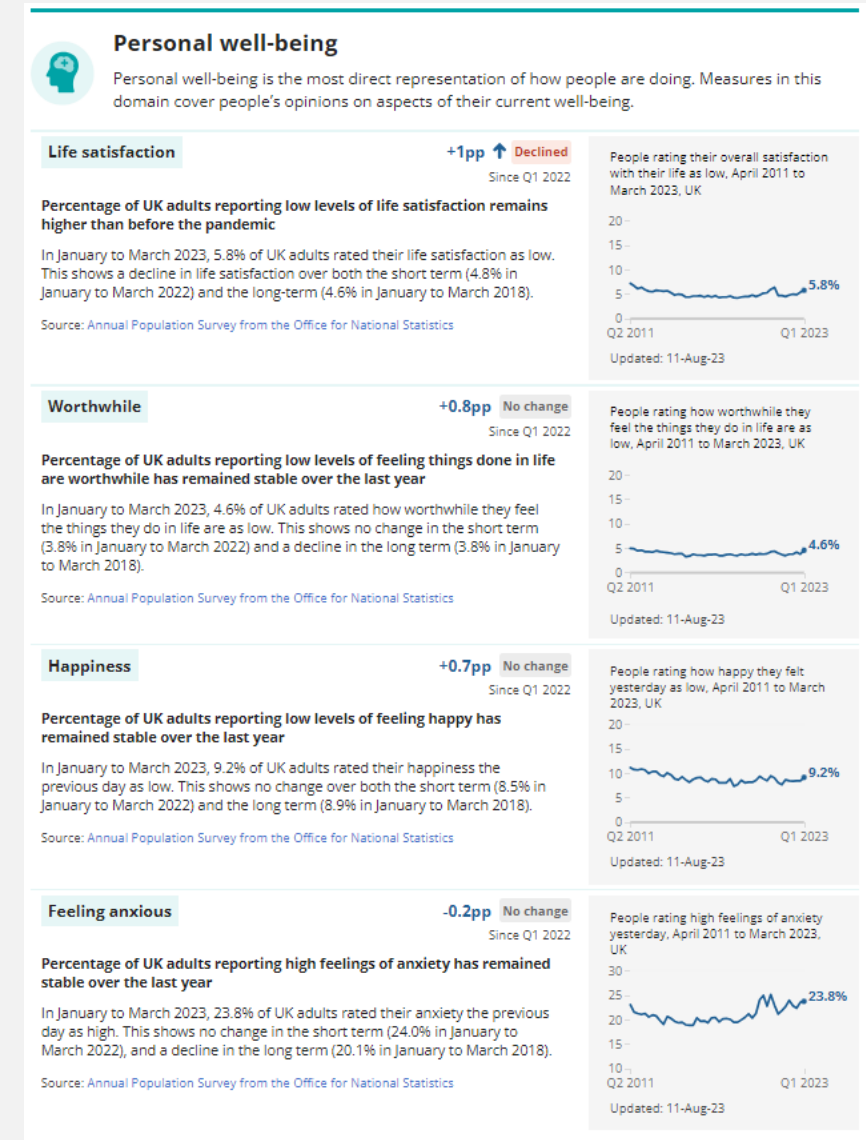
The core of the debate

- *'It often seems easier for the general public to interpret composite indicators than to identify common trends across many separate indicators, and they have also proven useful in benchmarking country performance (Saltelli, 2007). However, composite indicators can send misleading policy messages if they are poorly constructed or misinterpreted.' (OECD 'Handbook on Constructing Composite Indicators')*

- *'The justification for a composite indicator lies in its fitness for the intended purpose and in peer acceptance.' (Rosen, 1991).*

- *'I want you to help me to do an index, which is just as vulgar as GDP, except it will stand for better things.' Mahbub ul Haq, asking Amartya Sen to help develop the Human Development Index.*

The core of the debate

- Composites

  - <u>Benefits</u>

  - Easy to engage users

  - Clarity on messages – goes up, goes down or stays constant

  - Can provide a framework to explain the trade-offs between components

  - <u>Disadvantages</u>

  - (Too) easy to engage users

  - Requires a principled theoretical and weighting framework – easy to disagree on

  - The method of weighting can appear to deliver a prejorative perspective on relative value

- Dashboards

  - <u>Benefits</u>

  - Let's the data speak for itself

  - Doesn't apply any judgements in terms of the importance of difference data-series

  - Allows different users to 'pick and choose' the data of most importance to them.

  - <u>Disadvantages</u>

  - How to consider trade-offs between metrics is not always obvious

  - Can become too large to be digestible to policy-makers

At its simplest:

- *'The **aggregators** believe there are two major reasons that there is value in combining indicators in some manner to produce a bottom line. They believe that such a summary statistic can indeed <u>capture reality and is meaningful</u>, and that stressing the bottom line is extremely useful in <u>garnering media interest and hence the attention of policy makers</u>.*

- *The second school, the **non-aggregators**, believe one should stop once an appropriate set of indicators has been created and not go the further step of producing a composite index. Their <u>key objection to aggregation is what they see as the arbitrary nature of the weighting process</u> by which the variables are combined.'* (Sharpe, 2004)

- People who worry about composite indices see them as over-simplifying complex issues and 'converting everything into money'

- People who worry about dashboards feel important information is drowned in too much data.

- But there are stronger and weaker examples of composite indices, just as there are stronger and weaker examples of dashboards.

The requirements of a high quality Composite Index

'The quality of a composite indicator as well as the soundness of the messages it conveys depend not only on the methodology used in its construction but primarily on the quality of the framework and the data used.' (OECD 'Handbook on Constructing Composite Indicators')

- A clear theoretical framework which justifies the inclusion of the factors being aggregated.

- Analytical sound and robust input series

- Transparent methods to impute missing data

- Indicators should be aggregated using objective weights which fairly reflect relative values.

Weights and value judgements

- The most contentious point: Regardless of which method is used, **weights are essentially value judgements**

- The question of weights compels us to tackle the concept of value, as we wish to use a structure whereby those components of greater value are given the greater weight, whether one is designing a composite metric or a dashboard.

- The aim has to be to find **a mechanism to expose, across a society, the relative value that people as a collective place on different outcomes or outputs in an unbiased fashion**. We want to expose people's preferences in a format that is not subject to a bias or *a priori* opinions from the collecting body or agent or a sub-population.

- Weights should reflect a universally applicable and **objective** perspective of value, where objective means reflective of societal preferences.
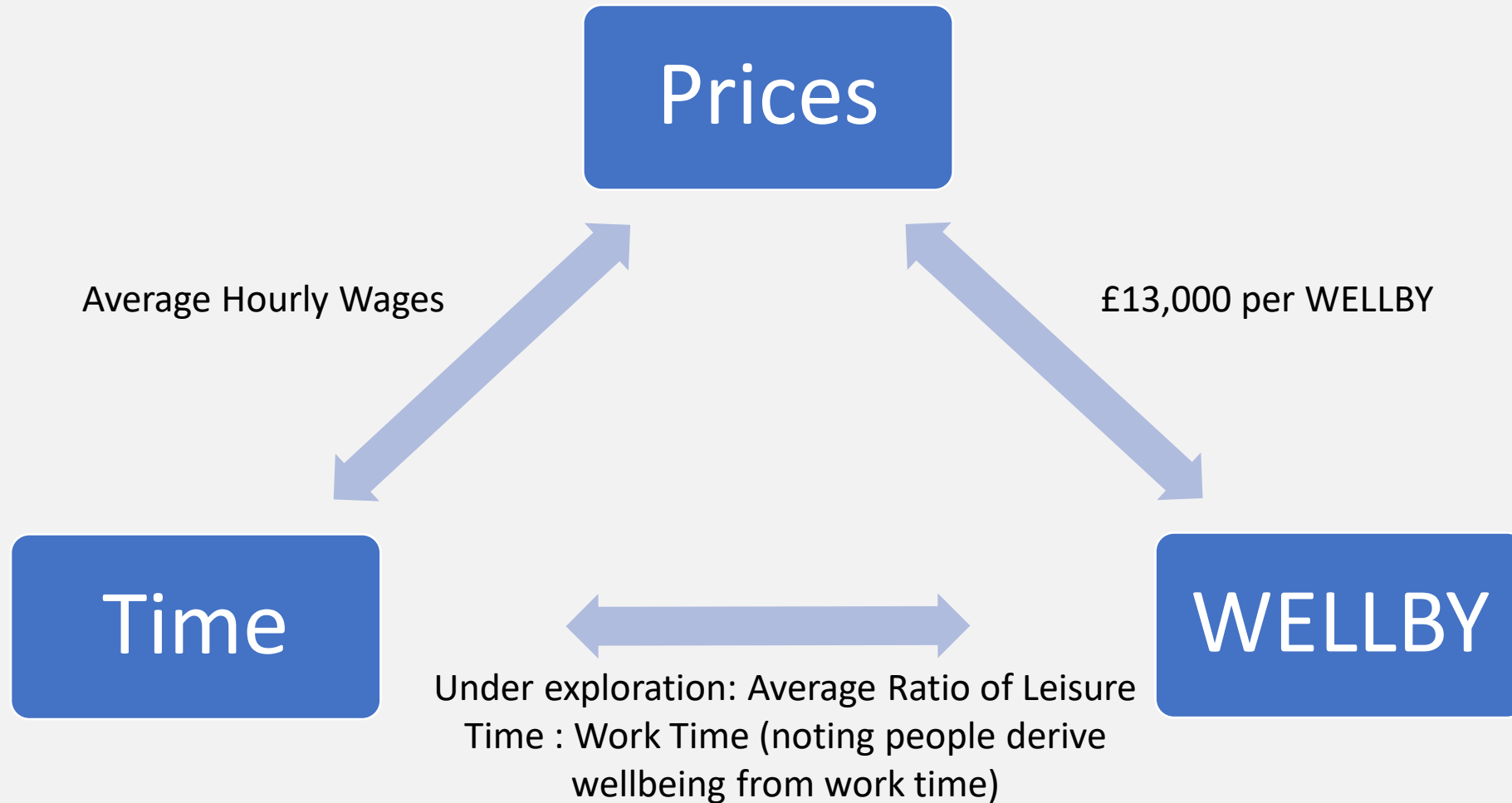
What are the options to weight indicators?

- <u>Prices</u>, if one accepts that 'market prices' are independently set and unbiased estimators of relative value, then one can use these as an objective set of weights which fully incorporate the collective wisdom of society and delivers a clean mechanism for removing subjectivity. This requires a transparent mechanism to impute prices for non-markets items.

- <u>Time,</u> Leonard Nakamura will talk us through this later today.

- <u>Wellbeing years </u>(WELLBYs) (as per Layard and De Neve (2023) – i.e. the average level of subjective wellbeing over a year

- Potentially survey data to source ranked preferences

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Does the choice of *numeraire* depend on the framework?

- Alongside needing valid data or transparent imputations, some *numeraires* may have a credibility problem if they appear to have too little relationship with the domain.

- There is a valid argument that prices, for example, may not be able to stretch too far beyond the market economy.

- Entirely feasible to want to create a composite in a particular domain where one *numeraire* has more credibility than others, whilst simultaneously wanting to creating a different composite using a different *numeraire* in a different domain?

Are these alternatives or complements?

Prices

Time

WELLBY

Average Hourly Wages

£13,000 per WELLBY

Under exploration: Average Ratio of Leisure Time : Work Time (noting people derive wellbeing from work time)

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Today's sprint

- New composite indices

- New methods development

- Focus on how composites are used in practice.