Office for
National Statistics

GDP and Welfare: A spectrum of opportunity

Richard Heys
Deputy Chief Economist - ONS
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Scope

- From National Accounts to the academic debate
- The welfare David v the GDP Goliath
- Putting options on a spectrum
- Pragmatic steps (and hurdles to overcome)
- Conclusions

Two thoughts

- "*we live in a society in which a priesthood of technically trained economists, wielding impenetrable mathematical formulas, set the framework for public debate*" (Pilling 2018)

- "*Measurement issues have become akin to a religious war*." (Brynjolfsson 2018)

The two philosophies of GDP

- **The Orthodox view:** GDP is a measure of the productive economy, providing insight to economic policy-makers to set fiscal and monetary policy.
- The National Accounts have 'a place for everything and for everything a place' - complete coverage of the concepts it is designed to cover.
- **Therefore:** GDP is a 'perfect measure' and does not need substantive revision.

- **The Moderniser view:** What society needs is a measure of welfare which reflects modern life, particularly as the consumption of material goods is becoming ever less important as a measure of living standards.
- Equally society needs a better measure of sustainability as finite raw materials become scarcer.
- **Therefore:** Because GDP is the dominant measure used to proxy for welfare, GDP should be transformed so it can serve this function properly

Pragmatic issues

Different users need different measures because they are trying to solve different policy problems.

Therefore we need to produce a range of metrics to suit different purposes.

Just as the modern economy is changing, the conditions for creating economic statistics are changing at the fastest pace in their history

This allows us to aspire to use the right measure for the right concept. We don't need to compromise with just one measure.

Statistics are competitive. Strong statistics can push weaker ones from the market

So we need to know what makes a statistic strong if we want it to compete with GDP

Statistics can acquire a life of their own. They don't die.

GDP is going nowhere

David v Goliath

- GDP is a winner, because of its perceived quality as a policy tool:
  - Frequency
  - Accuracy
  - Timeliness / speed of production
  - Back series
  - Granularity and consistency
  - Accessibility
  - Conceptual completeness
- These strengths are enough to overcome the National Accountant's lament – *"GDP is not a measure of welfare.'*
- But, GDP has changed over time to retain these characteristics, in 1947, 1953, 1960, 1964, 1968, 1994 & 2008, so there is always scope to evolve.

So, who is David?

- Start at something very simple, a measure of the value received by consumers / citizen, taking account all the factor which drive welfare.

- Range of options:
    - Real GDP per capita
    - Net National Disposable Income per head
    - Real Household Disposable income per head
    - Whole Economy New Wealth per head
    - Household new wealth per head
    - Perception of financial situation
    - Unemployment rate
    - Inflation Rate (CPIH)

- This paper takes NNDI per head as a good starting point as a measure, but what do we need to add into this to fully take account of welfare – digital economy and the like?
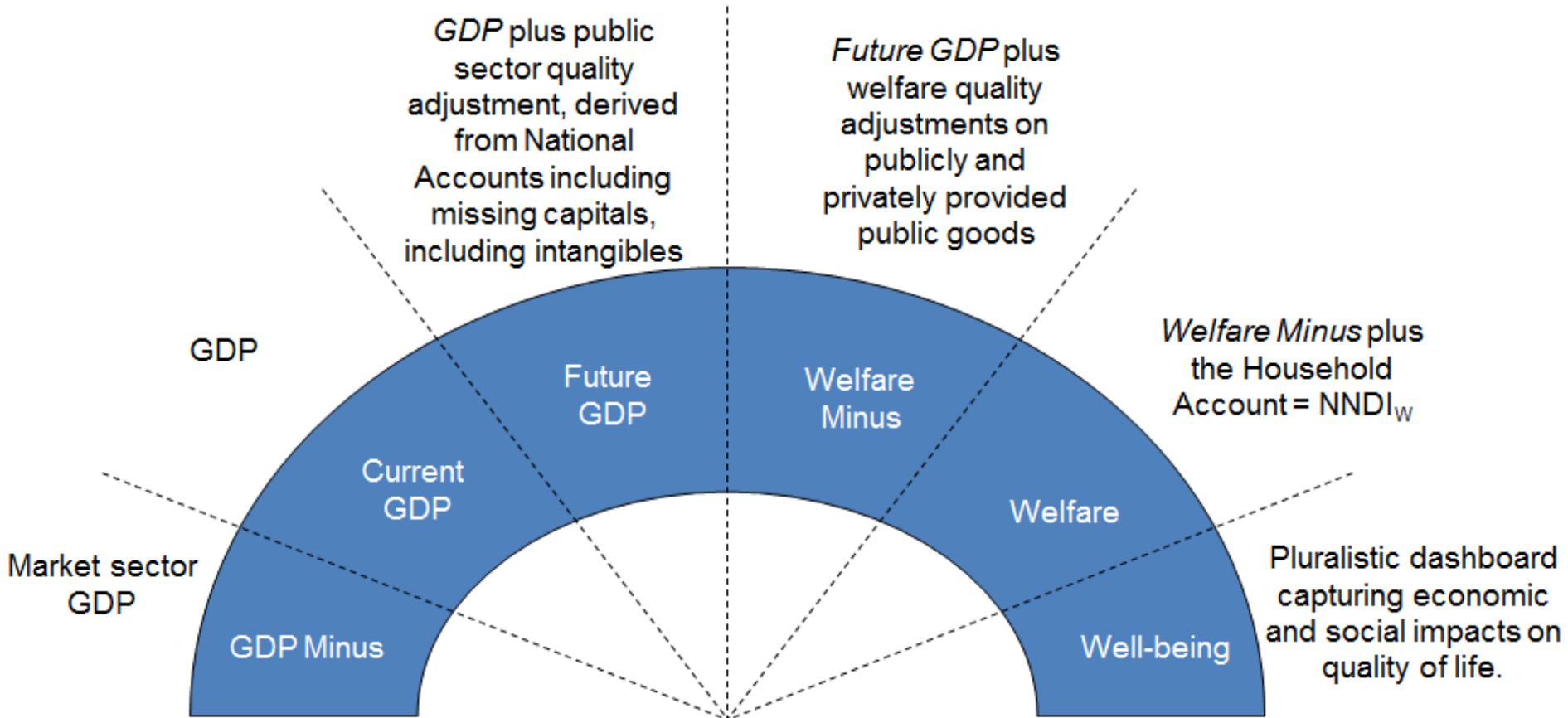
Net National Disposable Income – a definition

- Eurostat:
- *"…derived from National Income by adding all current transfers in cash receivable by resident institutional units from non-resident units and subtracting all current transfers in cash payable by resident institutional units to non-resident units"*
- *"GNI corresponds to the better known GDP minus primary income payable by resident units to non-resident units, plus primary income receivable by resident units from the rest of the world. Net national Income equals Gross National income after deduction of the consumption of fixed capital."*
- So, does our measure of National Income capture everything it should?

The Three Gaps

- GNI / NNI both *'represent total primary income receivable by resident institutional units in return for some engagement in productive activity.'*

- Are we happy we're measuring *'returns from productivity activity'* in the right way?
  - Missing capitals and intangibles
  - Public service output

- And what about the welfare gains individuals / institutional units receive from other than *'engagement in productive activity'*?
  - Free Goods (public and private)

A spectrum of theoretical options

GDP plus public sector quality adjustment, derived from National Accounts including missing capitals, including intangibles

Future GDP plus welfare quality adjustments on publicly and privately provided public goods

GDP

Market sector GDP

Welfare Minus plus the Household Account = $NNDI_W$

Pluralistic dashboard capturing economic and social impacts on quality of life.

Future GDP

Welfare Minus

Current GDP

Welfare

GDP Minus

Well-being

Missing Capitals

- Potential to add missing capitals to National Accounts and derive better estimates, particularly from a productivity perspective.

- Issues:
    - Completeness
    - Double-counting
    - Allocation of services

Completeness

Type	National Accounts?	Investment (CP)	Investment (CVM)	Stock (CP)	Stock (CVM)	Consumption of fixed capital	Other outflows
Fixed Assets	Yes	✔	✔	✔	✔	✔	✔
Inventories	Yes	✔	✔	✔	✔	N/A	✘
Valuables	Yes	✔	✔	✘	✘	N/A	✘
Non-produced assets	Yes	✔	✔	✔	✔	N/A	✘
Natural Capital	No	✘	✘	✔	✔	N/A	✔
Broader intangible assets	No	✔	✘	✘	✘	✘	✘
Human capital	No	✘	✘	✔	✔	✘	✘

Key: ✔ = Data available; ✘ = Data not currently available; N/A = Not applicable.

Notes:

- Consumption of fixed capital is only recorded on fixed assets, such as buildings, machinery, software, etc. Human capital could be thought of as a type of fixed asset, as it could reduce in value over time due to anticipated obsolesce, i.e. the normal aging of the population and resultant decrease in its human capital.
- Investment flows between sectors are possible for non-produced natural resources and natural capital, but must sum to zero across the whole economy. Other non-produced assets in the national accounts include contracts, leases and licences, and goodwill and marketing assets, for which non-zero investment flow across the economy are possible.
- The quality of the available data in each category is variable.
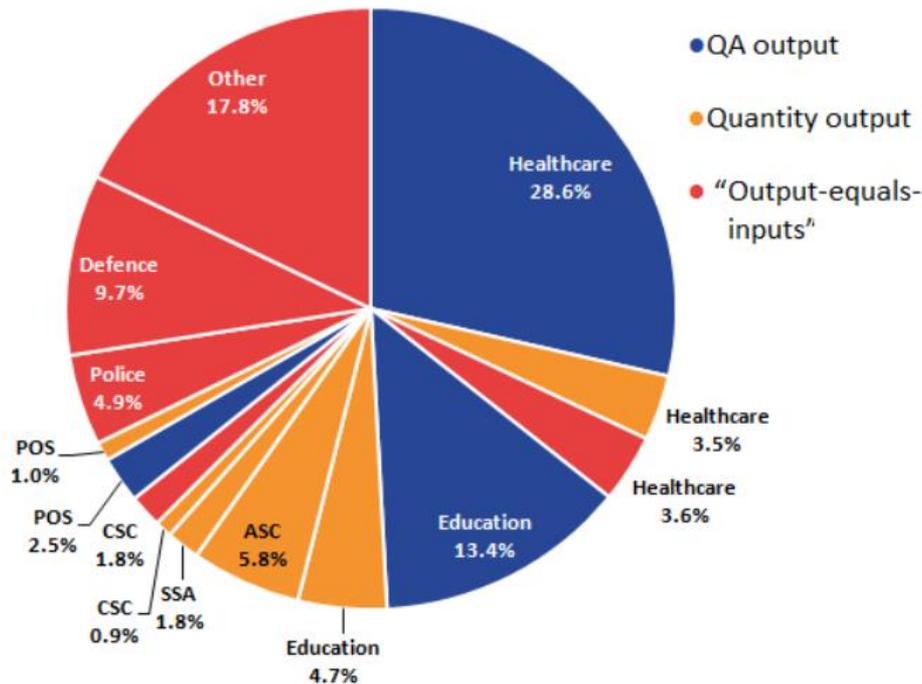
Double-counts

Different measures of capital, produced for different accounts, can contain overlapping estimates. We have identified (non-exhaustive list):

- **Grass and Feed:** National accounts 'cultivated biological resources' are likely to include some duplication with 'agricultural biomass (crops)' as included in the Natural Capital accounts. Farmed animals are not included as they are a produced asset rather than natural. The grass and feed the animals consume is included.

- **Timber and Minerals:** Timber and minerals may be contained in 'materials and supplies' within National Accounts 'inventories'. These are likely to also be found in 'timbers' and 'minerals' in the Natural Capital accounts.

- **Precious metals and stones:** Contained within 'valuables' in the National Accounts, these are possibly also included within 'minerals' in the Natural Capital accounts.

Allocation of capital services (Heys & Martin, forthcoming)

Type	Example	Capitalised?	Ownership?	Capital services flow to	Allocation in growth accounting
Private capital (tangible & intangible)	IT Hardware	Yes	**Private**	**Owners of assets**	Correct
Private infrastructure	Energy network	Yes	Private	Owners of assets and rest of economy	Only to owners of assets
Public infrastructure	Roads	Yes	Public Sector	Whole economy	None, in residual
Uncapitalised intangibles	Branding	No	**Private**	**Owners of assets**	None, in residual
Free/open information	Official statistics	No	Public	Whole economy?	None, in residual
Natural resources	Land	Yes (non-produced)	Public/private	Whole economy? Especially users	None, in residual
Inventories		Yes	**Private**	**Owners of assets**	None, in residual
Social infrastructure	Healthcare	No	Public	Whole economy?	None, in Hours/LC/Residual
Human capital	Education	No	Household sector	Owners of assets, and employers	None, in Hours/LC/Residual
Consumer Durables	Car / washing machine	No	Household Sector	Owners of assets / shared economy users	None, in residual
Capital replacement services	Cloud Computing	No	Private	Whole economy	Intermediate consumption / final output of computing services industry
Labour replacement services	Outsourced labour	No	Private	Whole economy	Intermediate consumption / final output of employment agencies industries

Public Sector Output (Grice, Foxton, Heys & Lewis – forthcoming)

- QA output
- Quantity output
- "Output-equals-inputs"

Pie chart segments:
- QA output — Healthcare 28.6%
- Education 13.4%
- Healthcare 3.5%
- Healthcare 3.6%
- Education 4.7%
- ASC 5.8%
- SSA 1.8%
- CSC 0.9%
- CSC 1.8%
- POS 2.5%
- POS 1.0%
- Police 4.9%
- Defence 9.7%
- Other 17.8%

- Still a long way from 'completing Atkinson agenda'.
- SNA08 says include quality adjustments.
- ESA10 bans including quality adjustments
- In long-term ESA may move in line with SNA, so significant extra 'value' generated by public sector would be 'added' to GDP and hence GNI.

But this is not the whole story

Atkinson was asked how to measure the value of public services, not welfare improvements from better lives. Therefore his measures exclude welfare gains _not attributable_ to the public services. Therefore, if we were trying to measure welfare, we would need to also capture non-attributable gains on a consistent basis

- **Atkinson:** Health quality adjustment generated from complex basket of indicators relating to health gains, short-term survival and waiting times
- Output (number of operations etc) is uprated by the growth rate of the quality adjustment. This assumes a 1% improvement in quality = 1% increase in outputs
- Hard to compare across countries.
- Complex to process

- **GHFL Method:** Health quality adjustment calculated from change in life expectancy, valued at QALY price of £20,000
- This provides total value to citizens of health gains.
- This is split into two parts – 'attributed to health services', & 'attributed to wider factors'
- OECD estimate 20% of life gains due to Health services. UK estimates claim 12.5%. Such a figure could be used as a weight.
- Could be calculated for many countries.
- Replicable to education (human capital growth), justice (re-offending) etc

Privately provided free goods

- Time Use Survey (under development at ONS) to investigate usage of free digital goods, particularly change through time if possible.

- Willingness to Pay Survey (number of options) to collect 'price' data for these free goods.

- Multiplied together these can be added, alongside public free goods (non-attributable) to National Accounts and Household Accounts to generate a welfare adjusted $NNDI_W$.

Conclusions

- GDP in its current form is here to stay, but the world can move around it.

- Producing a new measure is not enough – it has to meet the varied aspects of quality at least as well as GDP to make users shift across.

- Lots of core building blocks to create new measures exist, and the Digital Economy Act and new technology make further exploration feasible.

- Need to complete existing agendas (capitals, Atkinson) at least as important as exploring new ones (free digital goods).

A spectrum of theoretical options