National Accounts transformation and improvement to deflator quality

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Outline

- Transforming the UK National accounts
  - ❑ *Increased exposure for use of deflators*

- The deflator dashboard

- Drive for dedicated deflator teams

- Next steps for the team

Transforming the UK National Accounts

Background

- The same production process for compiling national accounts has been in place since the early 1990s

- Based around Supply and Use Tables (SUT) for Current Price balancing and top-level confrontation of volume GDP

- Sector and Financial Accounts and Balance of Payments were subsequently compiled after GDP is settled

- Public Sector Finances compiled alongside national accounts

Reasons for reviewing process

- The old production process was regarded as complex, inefficient and time consuming

- Caused mainly by the approach to balancing data in stages:

Annual CP GDP	→	Quarterly CP&CVM GDP	→	Sector Accounts	→	Balance of Payments
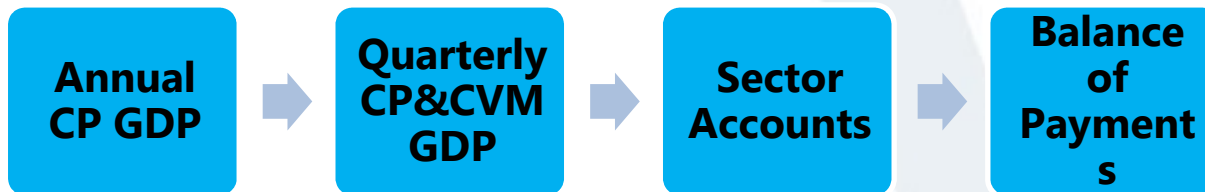
- New requirements (particularly Supply and Use Tables in Previous Years' Prices) meant that the whole process needed reviewing

Key goals

- Implement **double deflation** in order to meet key stakeholder requirement needs
- Produce **SUTs in PYPs** to meet legislative and regulatory requirements
- Develop systems and processes to **produce real GDP on annual basis through SU framework**
- Streamline production process, drawing **closer connection between two key presentations of National Accounts**; product and industry through SUT and Institutional Sectors
- Maintain **consistency across the accounts** (include GDP, SFA & BoP)
- **Exploit new data** and **improve quality of outputs**

Target Production Process

- Implement annual SUTs in PYPs, via the H-Approach, with increased integration with Sector and Financial Accounts

- The approach will see both nominal and real estimates produced via the same detailed framework in a more iterative approach

- As a result there will be greater coherence between the deflators used across the Production and Expenditure measure of GDP

The H-Approach in 5 Stages

Visual look at the new framework
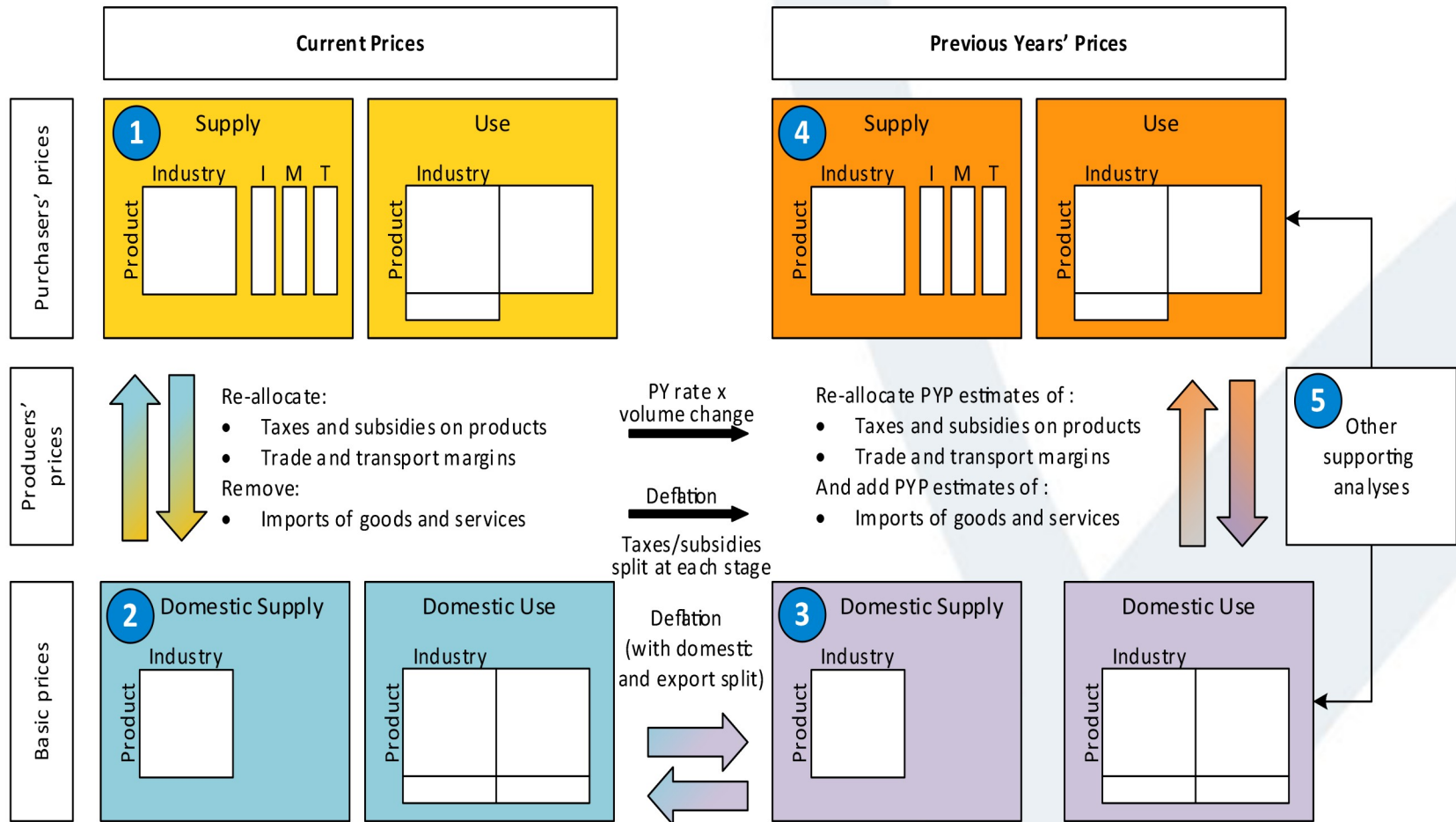
Recap on previous approach

- Fundamental difference in the balancing approach for current price and volume estimates
  - ➢ Volume only reconciled at aggregate GDP level, not by product and industry through the SUT framework
- Sequential approach
  - ➢ Close current price balancing before moving onto later stages
- Inconsistent use of deflators
  - ➢ Applied directly to each transaction, at varying degrees of detail and different classifications

Deflator dashboard – increased understanding to support the new process

Deflators approach to national accounts transformation

- The new framework confronts data at a product level across both CP and volume indicators
  - ➢ Each matrix has product detail, so appropriate deflator required for each
- Required us to review deflators at this level of detail right across the accounts
- For each matrix and each product, there is a default deflator (e.g. IPIs for Trade in Goods import matrix)
- Develop a way to evaluate if these are most appropriate and evidence decisions to change
- Review the data deflated with each choice to confirm the recommendation makes sense

Deflator Dashboard

- An interactive tool bringing together information on deflators
    - ➢ Conceptual Scores
    - ➢ Data Quality Scores
    - ➢ Coverage of the aggregation structure
    - ➢ Data Content Score – how many items/prices are collected for each index
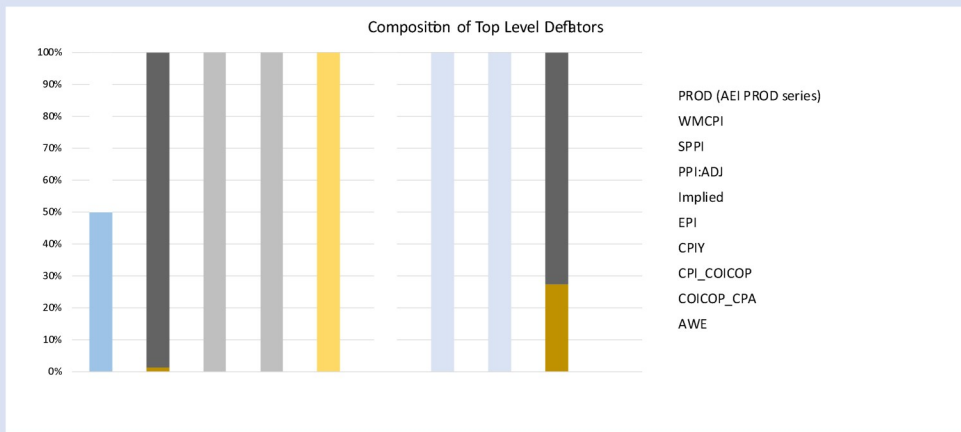   - ➢ Price and Volume data and deflator variability over time

Deflator Dashboard

Quality measures

- Conceptual quality
- Data content
- Data coverage
- Deflator changes over time

Conceptual scores

- Based on the A, B, C methods in the Eurostat Price and Volume handbook

  A method – most appropriate deflator

  B method – used where an A method cannot be applied (less appropriate)

  C method – not an appropriate deflator

  – should not be used

- Implied deflators scored as B methods
- Converted to numerical scores to allow visual graphs to be produced in a dashboard format:

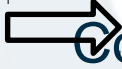| Method type	Score
A	10
B	7
C	4

Conceptual scores
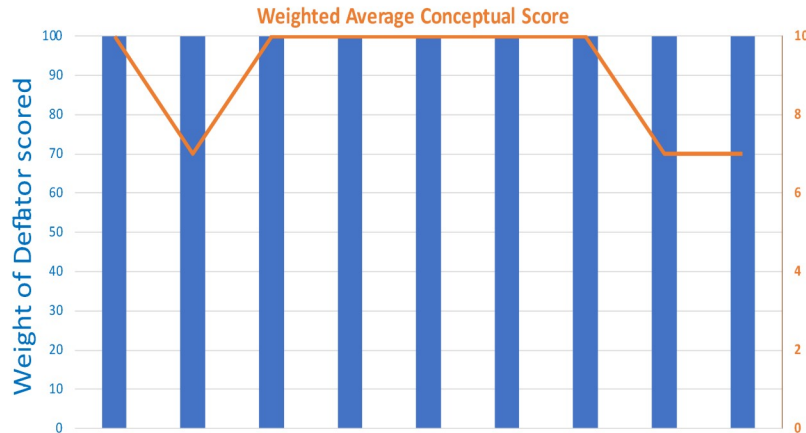
- Based on the A,B,C methods in the Price and Volume handbook. (A=10, B=7,C=4)

- Applies to the concept it is currently used to deflate.
- Any deflator 'swaps' would need to be reviewed for conceptual appropriateness.

Average data quality score

- Overall quality scores given to deflator types – i.e CPI, PPI, IPI, EPI or SPPI and selected others.

- Based on 21 factors such as pricing methods, geographical coverage, frequency of updating weights, sampling methods etc.

Average Data Quality Score

Coverage score

- Reflects how much of the CPA structure is covered by the available deflators

  PPI, SPPI, EPE, IPI and CPI-type deflators

- For a CPA product:

  % Coverage score = 100 *

- Eg. CPA 1.1:   72 separate 6-digit indices   ⟹ Coverage = 13%

  9 have prices collected

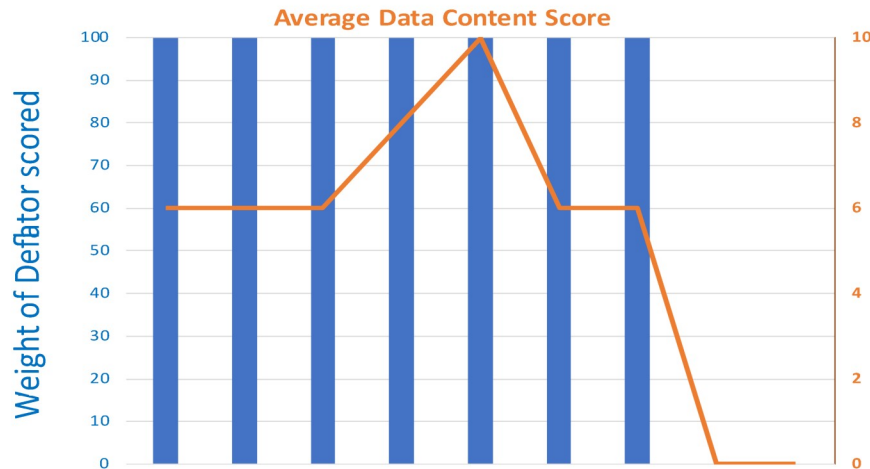# Coverage score

Average % Aggregation structure covered
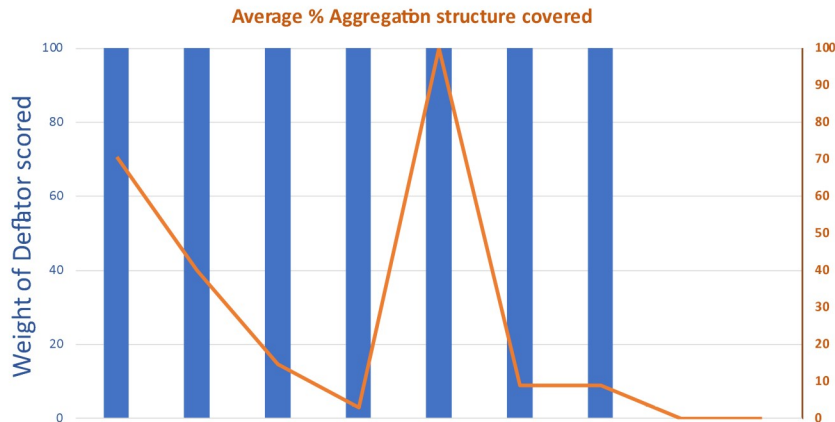
- Blue bar – proportion of each top-level deflator with coverage score assessed

    No blue bar indicates not possible to score deflator coverage within matrix for the selected product

    - All main deflators under ONS responsibility were assessed
    - Analysis did not extend to some smaller or externally held deflators – consideration for future

- Orange line – shows % coverage
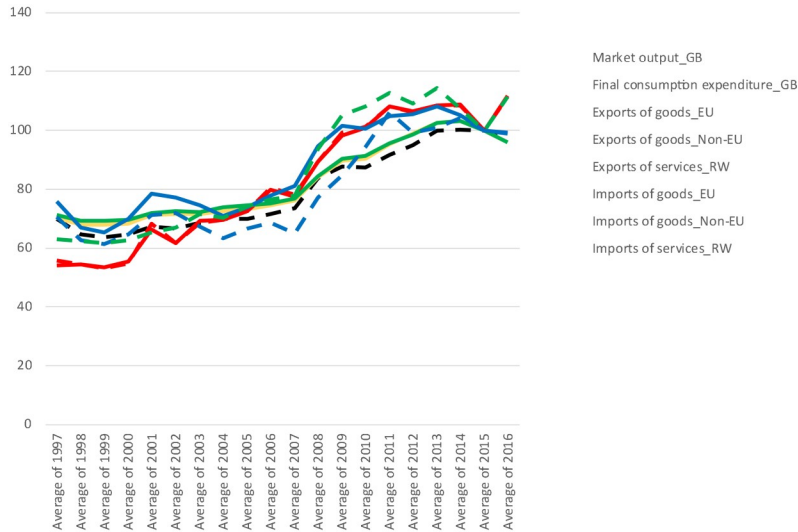
Average data content score

- RAG score assigned to each 6-digit index

  According to the number of prices collected:
  - Red – Minimal
  - Amber – Acceptable
  - Green – Good

- Product level indices are then scored numerically

  Range 0 – 10

  Based on % R, A and G 6-digit indices within that product level

- Ignores indices where no data is collected; shows the quality of the sample <u>where</u> a sample was collected

Data content score

Average Data Content Score

- Each 6-digit index is assigned a RAG score based on the number of prices collected for each index.

- Ignores indices where no data is collected i.e the quality of the sample where a sample was collected.

Deflator changes over time

Legend:
- Market output_GB
- Final consumption expenditure_GB
- Exports of goods_EU
- Exports of goods_Non-EU
- Exports of services_RW
- Imports of goods_EU
- Imports of goods_Non-EU
- Imports of services_RW

Price and Volume Data
- The Deflator Value graph shows the time series of top level deflators over time, using the annual average of the deflator for each year between 1997 and 2017 (Data provided by the PPIP Team).

Average Annual Change in Deflator
- The average change in a deflator year to year was aggregated to generate a variance score.

- Those which deviated by two standard deviations from the mean are highlighted as having high variance.

- Information on the number of years since the deflator value changes is provided to allow for early detection of flat lining.

Average Annual Change in Deflator

Years of flat lining   0
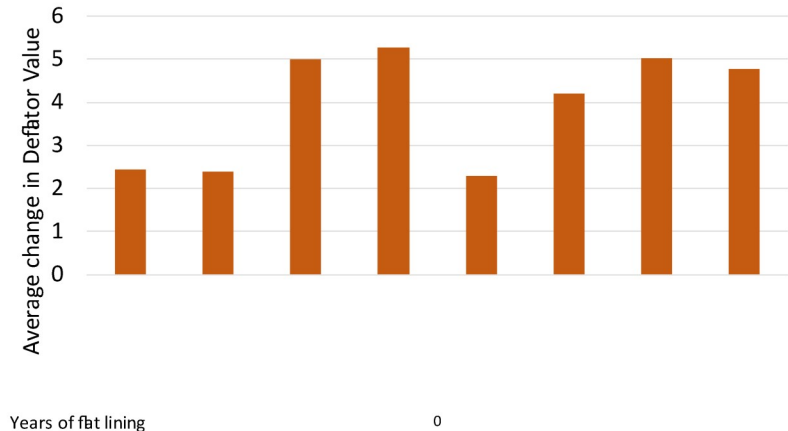
Outcome of this work

- Much clearer understanding of the quality of our deflators across National Accounts
  - Not the end of the journey though, as have lots more work to do here
- In a better position to support adoption of new target approach – able to make more informed decisions
- Also has shone a light on weak areas
  - Allowed us to identify priority areas of deflator development from point of view of core accounts compilation
  - Given us a framework for measuring progress

Dedicated deflator team

Why we need a deflator team

- Bean Economic review- recommends a better understanding and use of deflation across the accounts
- No clear ownership of deflators causing inconsistent application and lack of understanding
- Integration of annual chain linked business prices into national accounts
- Raising visibility of quality assurance and story telling for deflators
- Improving consistency of deflators used in national accounts

Structure for the deflator teams

- Split into 2 teams with 2 different functions

Deflator Production team	Deflator Development team
•Use Price indices and other sources (admin, microdata) to compile the best quality deflators—gateway into National Accounts •Ensure consistent use of deflators across Economic Statistics •Feed requirements to Deflators development team e.g. priorities areas •Providing briefing and training to National Accounts colleagues •Providing deflators to meet needs of ESG and wider outputs. •Explain the impact on volume estimates as a result of changes to deflators	•Deflator methods – horizon scanning, sourcing new data inputs, continuous improvement •Working with colleagues across National Accounts to identify priority areas for development •Key emphasis on areas raised by key external stakeholders (e.g. Bean review), exploring role that mismeasurement of deflators could have on such things as the productivity puzzle •Working closely with Prices division to set requirements for prices development, making the optimum use of Price indices in the creation of deflators

Next steps for the deflator team

- Collect and refine requirements from short term indicator teams and national accounts

- Develop deflators highlighted with areas of improvement in line with transformation

- Develop the dashboard and metrics for ongoing measurement and reporting on deflator quality

- Set up the team structure for making this a production area- work with Finland