Measuring the Economy

Georgia Tasker-Davies

Office for National Statistics

September 2021

Office for **National Statistics**

Why write a book on Measuring the Economy

"Good policymaking relies on good economic data, and an understanding of how that data can help us make sense of a system as vast, complex and fast-moving as a modern-day economy.

"For those interested in economics and economic policy, this book explains clearly the concepts, challenges and controversies that lie behind our measurement of the economy, and the methods we use to make measurement practical."

Andy Haldane

Chief Economist, Bank of England

Aims and Objectives

- Increase the wider capability of undergraduate economists

- Provide theoretical and practical examples of economic measurement

- Collaborate with the academic community in providing teaching resources

Chapters

- Measuring Inflation
- Gross Domestic Product
- National Income and Expenditure
- Supply-use Framework
- Labour Market
- Productivity and Growth
- Inequality
- Sub-National Statistics
- Trade and Balance of Payments

- The Financial Sector
- The Environment and Natural Capital
- Hard to Measure Sectors
- Innovation Statistics
- [Public Finances]
- Appendix: Sources of Economic Statistics
- Appendix: Basic Statistical Skills
- Appendix: International Context
- Appendix: External Engagement

Office for **National Statistics**

www.measuringtheeconomy.uk

Why are we at the DEE Conference

- Increase our understanding of teaching economics

- Raise awareness of the teaching material available and identify how this might be incorporated more into teaching

- Recruit to a user community to help us tailor the material to your specific needs

Measuring The Economy: Developments in Economics Education

Sumit Dey-Chowdhury

Senior Economist

Macroeconomics Statistics and Analysis

September 2021

Office for **National Statistics**

Background

- Economics is becoming increasingly more empirical – but it rarely focuses on understanding the data itself

- Many professional economist jobs require the ability to analyse and understand data

- Describes how key economic statistics used to measure the economy are compiled

- Explains the theoretical and practical applications of these key economic statistics

- Discusses their limitations and the challenges in developing new and better economic statistics

Aims and Objectives

- Provide a useful guide to aid students through their studies and enhance their employment opportunities

- Increase public understanding of economics

- Each chapter covers a specific area of economic statistics

- A practical guide to how important economic statistics are produced

- Applications showing how economic data can be used to understand current developments and evolving trends in the UK economy

Office for **National Statistics**

Content

- Each chapter starts with a set of key questions that summarise the contents – these can be thought of as your learning objectives

- For Chapter 1 on Measuring Inflation:
  - What is inflation and why do we measure it?
  - Why do we not have just one measure of inflation?
  - How do we decide what prices to use when we calculate inflation?
  - Does inflation accurately measure the increase in the cost of living?
  - How far back in time can we measure inflation?
  - Should inflation measures include house prices?

Office for **National Statistics**

Compiling A Price Index (1)

- Key measures of UK inflation
    - Currently: CPIH / CPI
    - Historically: RPI / RPIX

- Basic approach – prices and weights
    - Price relatives (current price and base price)
    - Prices collected every month - 180,000 quotes for 700 products
    - Weights: expenditure patterns from annual surveys (*Living Costs and Food Survey*)
    - The CPI basket – updated every March
    - Weight together price changes from the bottom up (Product → Elementary aggregate → Item index → Class index → Group index →All items index)

Office for **National Statistics**

Worked Example (1)

Product	Jan	Apr	July	Oct
Rum	1.00	0.85	0.80	0.74
Wine	1.00	0.88	0.78	0.71
Coffee	1.00	1.24	1.49	1.08
Oranges	1.00	1.23	1.24	0.94
Butter	1.00	1.20	1.07	0.89
Quinoa	1.00	1.56	1.47	0.96
Ham	1.00	1.31	1.26	1.28
Bread	1.00	1.37	1.43	1.04
Apples	1.00	1.02	1.00	1.01
Chocolate	1.00	1.30	1.65	1.53
Nuts	1.00	0.04	2.40	7.92
Olives	1.00	1.05	3.05	8.59

Unweighted averages of prices

- Dutot (arithmetic): ratio of averages - problem of heterogenous prices
- Carli (arithmetic): average of the ratios - problem of variable prices
- Jevons (geometric): cannot be used if any price is zero

- RPI – mainly Dutot and Carli
- CPI – mainly Jevons

How would the quarterly price indices look if constructed using Dutot, Carli and Jevons averages?

Worked Example (2)

	Jan	Apr	July	Oct
Dutot	100.00	101.55	101.64	91.89
Carli	100.00	108.69	146.97	222.56
Jevons	100.00	87.88	135.83	141.57

- Clearly the choice of average matters – this has an important bearing on the measurement of UK inflation

Office for **National Statistics**

Compiling A Price Index (2)

- From the elementary level upwards - weighting information available

- Aggregation using **<u>Laspeyres</u>** price index

$$I_{t,0} = 100 \times \sum_i (P_{i,t}/P_{i,0}) \, w_i \, / \, \sum_i w_i$$

Where

$I_{t,0}$ is the index for time t where the base period is 0

$P_{i,t}$ is the price for the ith item at time t

$P_{i,0}$ is the price for the ith item in the base period

w_i is the weight of the ith item

- Annual chain linking : allows weights to be updated each year (February)

Office for **National Statistics**

Controversies and Developments

- Switching from the RPI to the CPI/CPIH
  - RPI (Carli problematic – overestimates inflation)
  - Formula effect – geometric means < arithmetic means
  - Since 2010, formula effect widened from 0.4-0.7ppt to 0.9-1ppt
  - Change in the Bank of England inflation target (2.5% RPIX to 2% CPI/CPIH)

- Decommissioning or reforming the RPI?
  - Longstanding index and entrenched in private sector pension schemes and government issued index linked gilts
  - Continuity valued – but no longer a National Statistic – leaving RPI in limbo
  - House of Lords Economic Affairs Committee (2019) pushing for RPI reform

Next Steps (1)

- Understanding the potential of the teaching material here for lectures/ courses that are run now

- Identifying the additional teaching resources that would be of most value

- Learning more about how beneficial podcasts, blogs and videos to supplement the material here

- measuring.the.economy@ons.gov.uk

Next Steps (2)

- Instructor resources?
  - Lecture slides
  - Seminar questions and discussion topics

- Student resources?
  - Recorded lectures
  - Multiple-choice chapter review questions and practice seminar exercises
  - Case studies / further applications
  - Blogs / articles
  - Data guide

  Other resources that would be useful to have?

Office for **National Statistics**