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Session 4.3:
Benchmarking

Regional Course on Integrated Economic Statistics to Support 2008 SNA Implementation

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Content

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Introduction

General objective of benchmarking is:

- To preserve as much as possible the period to period movements subject to the constraints of the annual benchmark
- To ensure, for the forward series, that the sum of the four quarters for the current year is as close as possible to the unknown future annual data
- Note that the short-term movements in the series are the central interest of QNA, about which the indicator provides the only available explicit information

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The Proportional Denton Method

(Basic version)

$$\text{Min} \sum_{t=2}^{T} (X_t / I_t - X_{t-1} / I_{t-1})^2 \qquad \text{for } t=1\ldots 4y \ldots T)$$

Under the restriction that, for flow series,

$$\sum_{t=4y-3}^{4y} X_t = A_y, \qquad \text{for } y = 1\ldots Y$$

Where

t	is time;
X_t	is the derived QNA estimate for quarter t;
I_t	is the level of the indicator for quarter t;
A_y	is the annual data for year y;
Y	is the last year for which an annual benchmark is available; and
T	is the last quarter for which quarterly source data are available.

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The Proportional Denton Method
(Basic version)

- Implicitly, the Proportional Denton Method (PDM) constructs from the annual observed BI ratios a time series of quarterly BI ratios that is as smooth as possible.

- For the forward series, the BI ratios are kept constant and equal to the ratio for the last quarter of the last benchmark year (an implicit forecast of BI ratio)

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The Enhanced PDM

- Need to improve the estimates for the most recent quarters (the forward series)
    - to reduce the size of later revisions
    - the later quarter estimates are typically of the keenest interest to users

- Can be achieved by incorporating information on past systematic movements in the annual BI ratio.

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The Enhanced PDM

- In the basic PDM:
  - Use of BI ratio from the last quarter of the last year is an implicit forecast of the annual BI ratio
- Denton technique can be enhanced by adding a forecast of the next annual BI ratio

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The Enhanced PDM, *Constructing BI ratios*

- To produce a series of estimated quarterly BI ratios taking into account the forecast,
- The same principles of least-square minimization used in the Denton formula can also be used with a series of annual BI ratios that include the forecast
- Once a series of quarterly BI ratios is derived, the QNA estimate can be obtained by multiplying the indicator by the estimated BI ratio (X= QBI * I)

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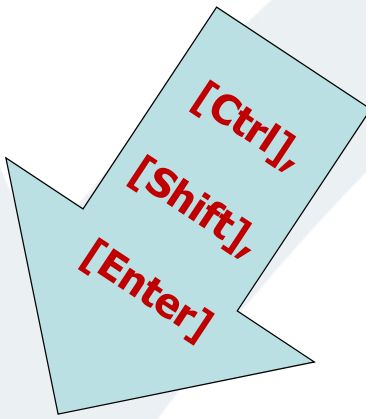
Use of XLPBM or BENCH

The command syntax of XLPBM (or BENCH) is:

= XLPBM (*Quarterly series,*
Annual series,
Bench Method (optional),
Extrapolation (optional))



Bench Method :
1 for Denton; 2 for Cholette-Dagum

Extrapolation :
B/I ratio

=Bench(G5:G48,B5:B15,1,0)

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Summary and practical exercise

- While national accountants are usually reluctant to make forecasts, all possible methods are based on either explicit or implicit forecasts,
- Implicit forecasts are more likely to be wrong because they are not scrutinised.