
Quality Adjustment in the Business Price Indexes

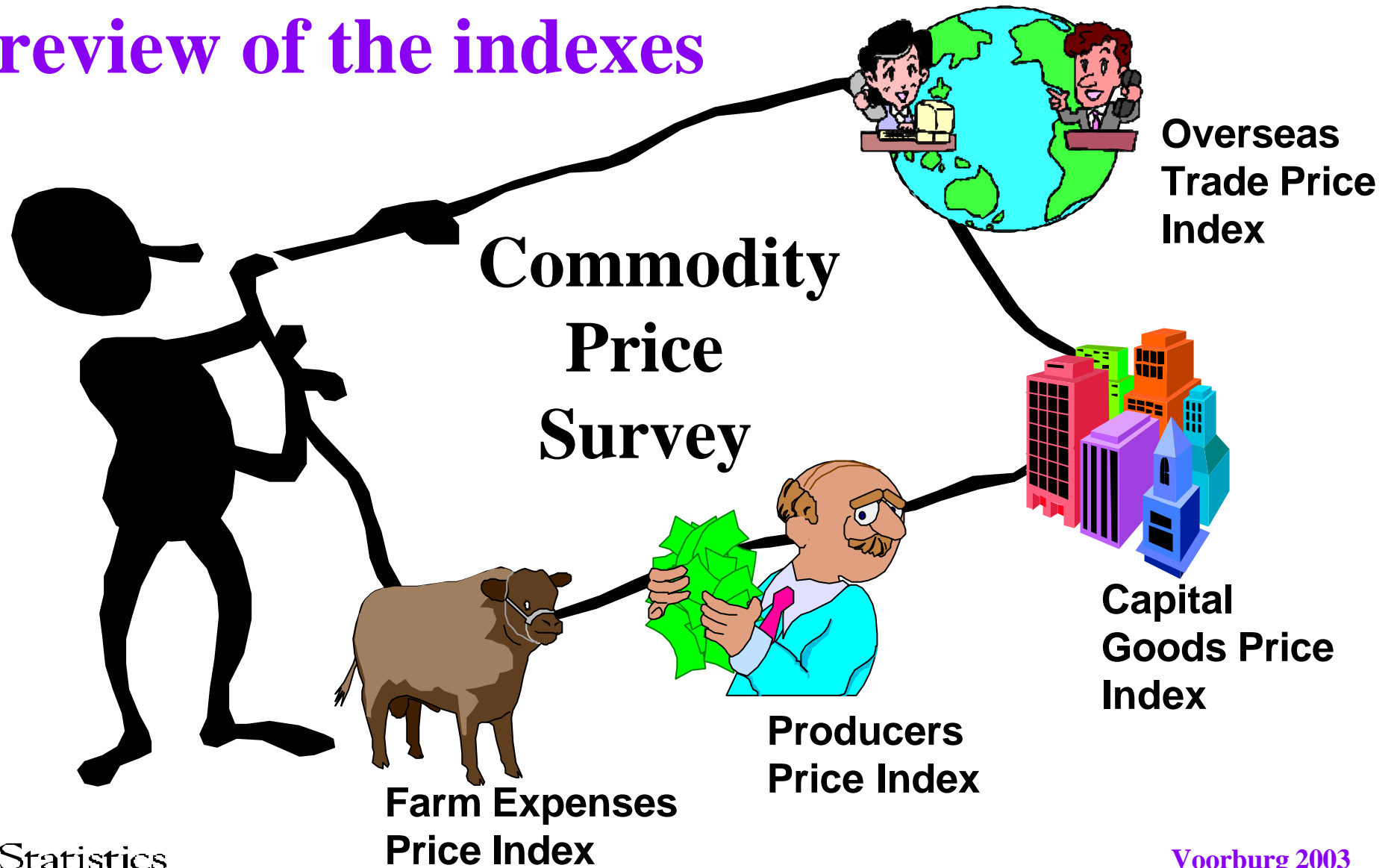
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Overview of Presentation

- Preview of the construction of the indexes
- What is quality adjustment
- Why do we quality adjust
- How do we quality adjust
- What are the challenges or issues
- Practical problems associated with quality adjustment
- Questions / Answers

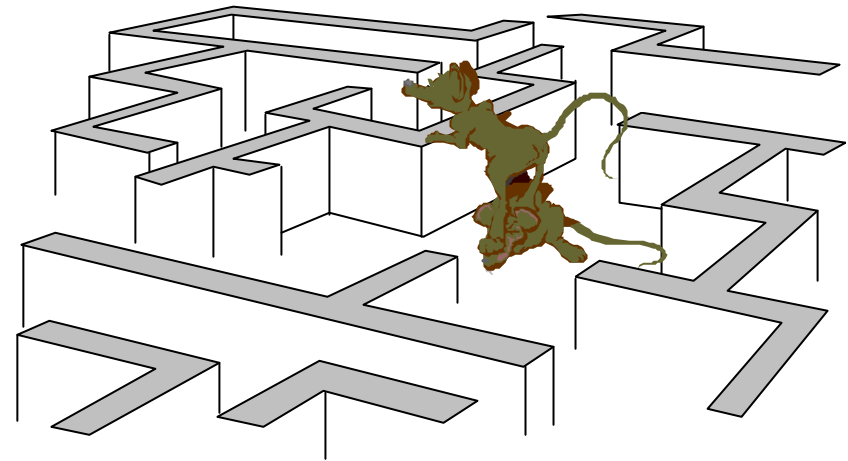


Preview of the indexes



Conceptual Base: Pricing of BPIs

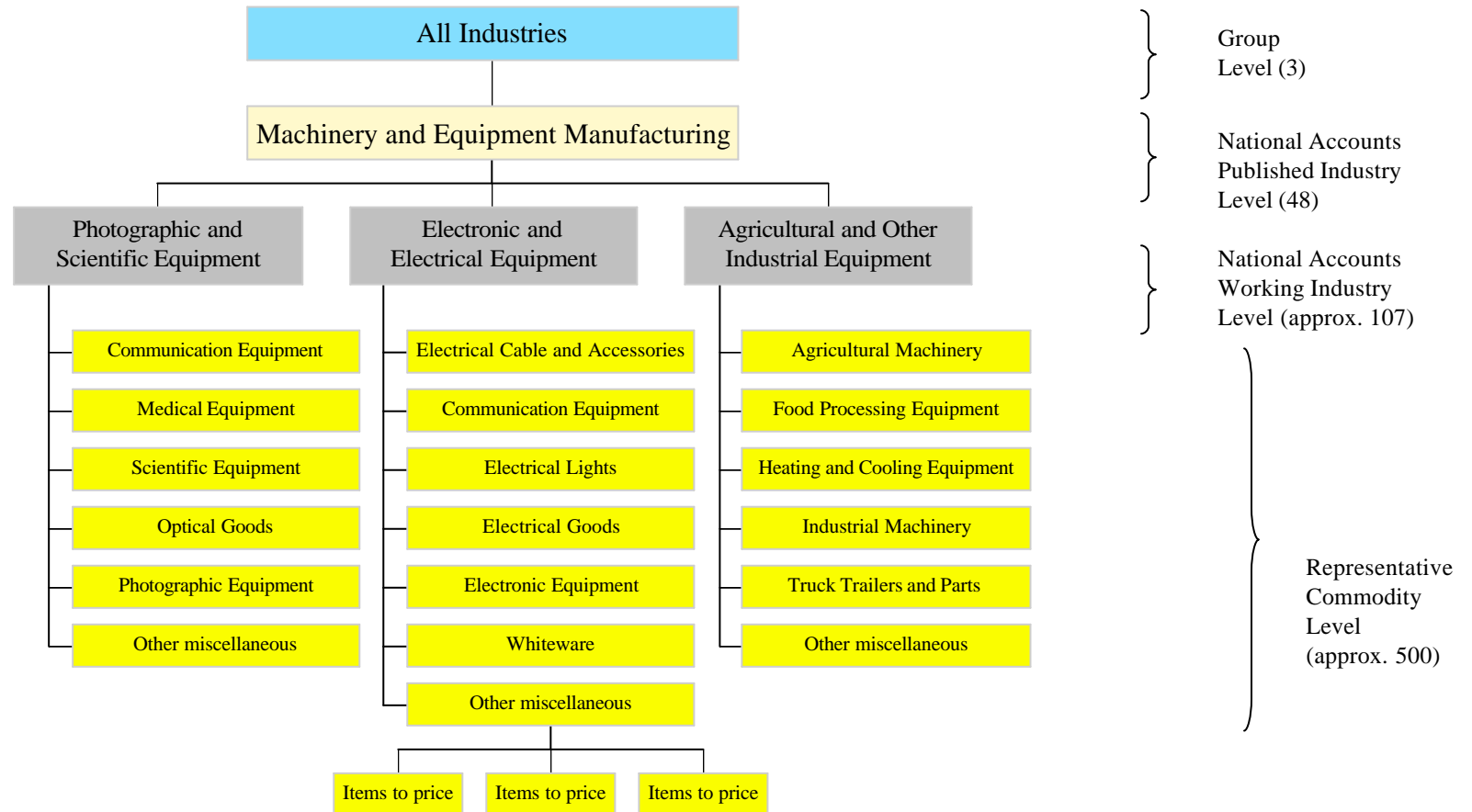
- “Basic” prices - ex factory
- GST excluded (generally)
- Sample pricing
- Mid-point pricing (generally)
- Seasonal treatments
- Coping with quality change



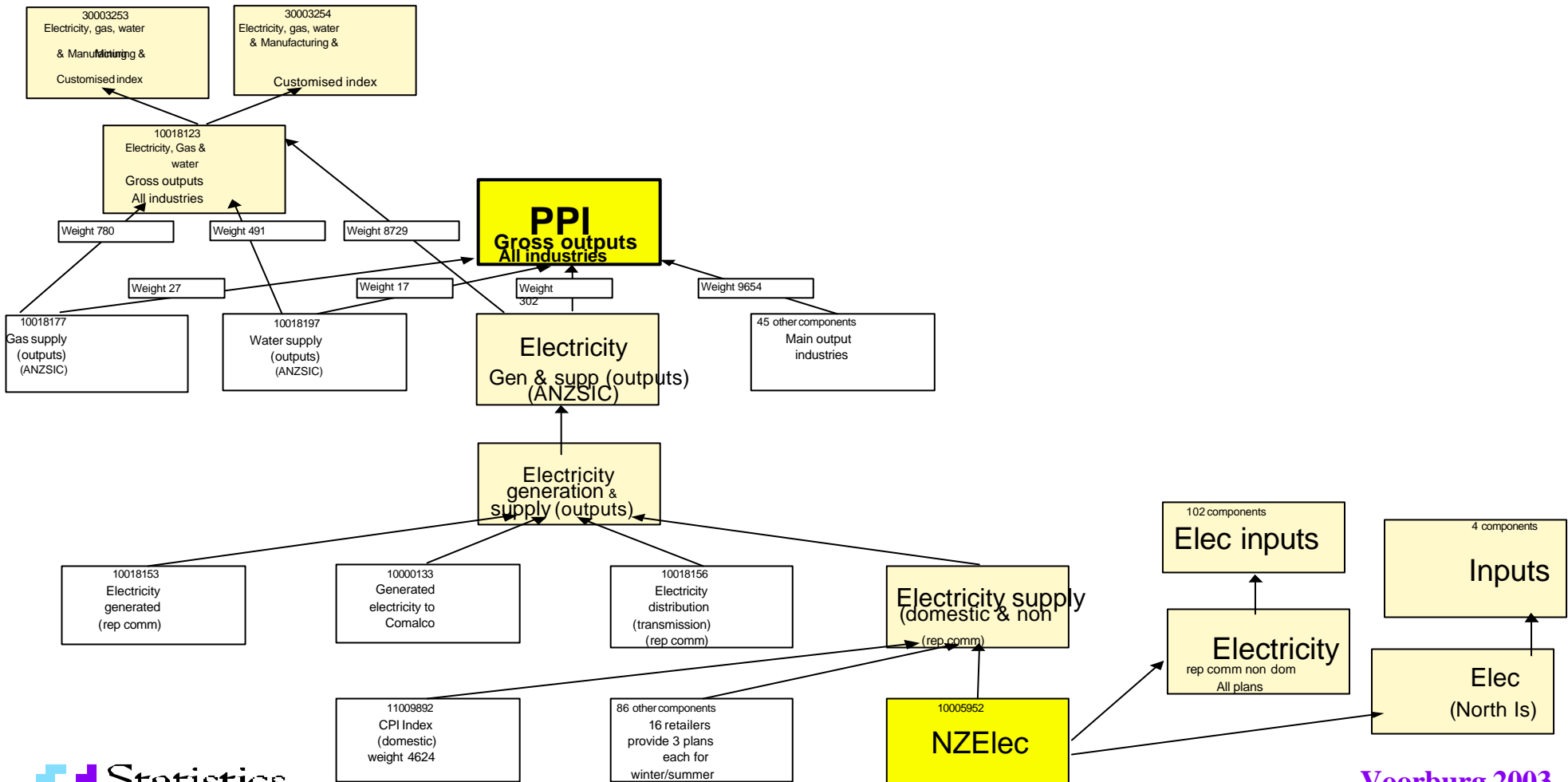
Building block structure of the indexes

Index Structure

Example: PPI Outputs - Machinery and Equipment Manufacturing



Flowchart of the use of one price in the BPI indexes



What is quality adjustment

- **Definition**

- *identification of product differences and elimination of the effect thereof*
- *SNA93*

- **Factors that influence differences between products**

- *physical differences*
- *location*
- *time*
- *sale conditions*
- *circumstances of delivery or environment*



Why do we quality adjust

- Fixed basket of goods that stays identical
- To measure only real (actual) price changes
- Use of indexes - for deflation - removal of price to measure real production
- Laspeyres base weighted price formula

$$L_t = \frac{\sum_{i=1}^n p_{it} q_{io}}{\sum_{i=1}^n p_{io} q_{io}}$$
$$= \sum_{i=1}^n \frac{p_{it}}{p_{io}} \times w_i$$

where L_t = Laspeyres price index in period (t)

p_{it} = Price of good (i) in period (t)

q_{io} = Quantity of good (i) in period (t)

w_i = Expenditure weight of good (i) in the base year



How do we quality adjust

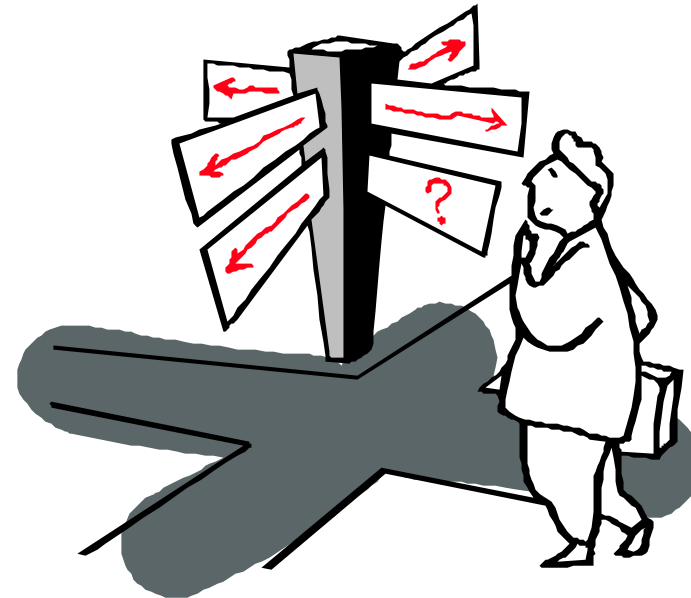
- **Methods: Implicit vs explicit**

- **Implicit**

- *Overlap $P_n * (P_t/P_{t*})/P_0$*
- *Overall mean/targeted mean*
- *Class mean*
- *Comparable replacement*
- *Carried forward*

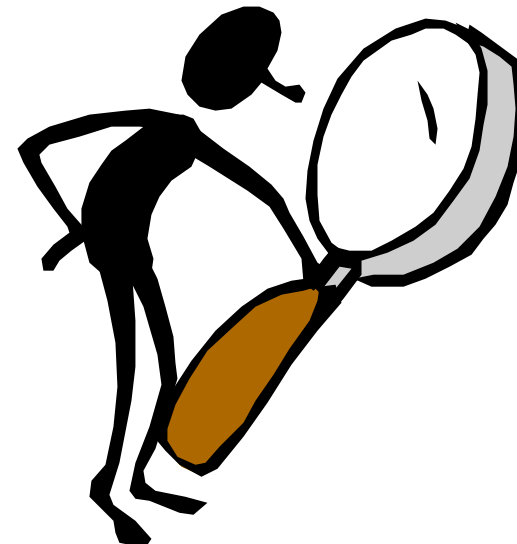
- **Explicit**

- *Explicit valuation of characteristics*
- *Hedonic regression*
- *Expert judgement*
- *Quantity adjustment $(P_1/P_0)*(Q_0/Q_1)$*
- *Production cost/option cost approach $(100+x)/(100+y)$*



What are the challenges/issues

- **Time of replacement**
- **Comparability**
- **Sampling issues**
- **Use of the price in the indexes**
- **Price discrimination**
- **Product mixes**



Practical problems with quality adjustment

- Respondent burden to obtain information
- Reasons for change
- Time of replacement
- Knowledge to test decisions
- GIFT structure



Questions/Answers

