

# Draft Chapter Outline for Revised PPI Manual

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[comment on Chapter 1](#)

1. **Introduction** (Use the free [Adobe Acrobat Reader](#) to view this pdf file)
  - I. History and development of the PPI
    - basic definition of a price index
      - the variable price change cannot be directly observed and must be estimated by measuring actual prices at different points in time
    - brief historical background
    - discussion of the changing uses of the PPI (*links to Ch 2*)
    - international standards
  - II. Background and purpose of the revision
    - discussion of the revision process
    - links to relevant groups such as the Ottawa and Voorburg Groups
    - identification of users of the manual & target audience
    - references to related manuals and handbooks
  - III. Structure of the manual
    - explanation of the split between conceptual and practical sections
    - description of how the manual can be used

## PART I : CONCEPTS OF PPI MEASUREMENT

[comment on Chapter 2](#)

2. **Purpose and uses of the PPI** (Use the free [Adobe Acrobat Reader](#) to view this pdf file)
  - I. Range of possible PPIs
    - recognition of the different PPIs that can be compiled (more detail in Ch 4 and 5)
    - listing and description of the variety of PPIs and related indexes which can be compiled, and purposes for which they would be compiled, for example
      - national PPIs (by product, by industrial activity)
      - sectoral PPI (mining, manufacturing, agriculture, business services)
      - intermediate input indexes (including or excluding imports)
      - index of underlying / core inflation
      - compensation indexes
      - national HPPs(Eurostat?)
      - zone / country group PPIs (e.g. zone HPPs)
      - regional / sub-national PPIs
      - sub-group PPIs by SOP / end use
      - demand or supply based
    - net or gross output indexes (*links to manufacturing aggregation in Ch 14 and sampling issues in Ch 8*)
    - issues to consider

- broader measures of inflation (*links to Ch 4.IV*)
- distinction between sources of inflationary pressure and price change
- tax switches between direct and indirect taxation

II. Main uses (not exhaustive)

- general measure of inflation
- target rate for central banks
- indexation in legal contracts and regulations
- taxation liability adjustment
- adjustment of bond payments
- current cost accounting
- national accounts deflation
- measurement of internal changes in purchasing power
- others?

3. **Index numbers**

This chapter should be up to date, authoritative and definitive. It is not necessary, however, to prove every proposition as references can be given to the extensive literature. It also should not be too mathematical, although readers must be presumed to have a good basic knowledge of mathematics, statistics and economics if they are to be capable of making sense of the theory underlying price indices. (The following outline is an expanded version of the outline suggested by Peter Hill for the CPI and adapted to the PPI.)

I. Price indices and value aggregates (based on K. Zieschang's text, section 1)

- decomposing the change in a value aggregate into price and volume components
- the Laspeyres, Paasche, and Fisher decompositions
- the Divisia index and discrete chain approximations

II. The axiomatic approach to index numbers

- summary of the main 'tests': which indices satisfy which tests
- pure price indices and their properties

III. The economic approach to index numbers

- the fixed input-output price index and the theory of producer behavior
- the fixed-cost output price index and the theory of producer behavior
- pure substitution effect when the set of available goods is unchanged: Laspeyres and Paasche limits
- exact and superlative index numbers: Fisher, Walsh and Törnqvist
- the treatment of new and disappearing goods
- industrial production and revenue functions

IV. Comparison between pure price (fixed-base) index and the fixed input-output price index

- bias in pure price index
- minimizing or eliminating bias by using symmetric indices, mid-point weights or chaining
- conditions in which chaining is appropriate

- fixed input-output price index from the axiomatic viewpoint

#### 4. **The system of price statistics**

This chapter should try to present an overall framework for price statistics making clear the way in which PPIs fit within the broader context of price statistics and other economic statistics. This chapter should be seen as a central element for both this manual and other price statistics manuals. The text by Kim Zieschang on "A Framework for Price Statistics" can be treated as a first draft of their chapter and need not be summarized here. However, the first section of Kim's paper on price indices and value aggregates is moved to become a first draft of section I in chapter 3 as outlined above.

#### 5. **Economic concepts of the PPI**

- I. Coverage of the PPI: Hierarchy of PPIs based on the inter-related SNA categories in the Supply and Use Tables
  - total domestic supply (output) includes domestic uses and exports
  - domestic uses include intermediate and final consumption
  - type of market
- II. The treatment of certain specific sectors
  - household production
  - financial intermediation services
  - long-term durable goods and investment goods
- III. Price concepts: definition and discussion of relevant price concepts
  - unit values
  - average prices
  - relative prices
  - basic and purchasers prices
  - temporal price changes and spatial price changes
  - margins (including retail and transport margins and the link to service quality change)
  - gross and net prices
- IV. definition and discussion of the treatment of particular price index issues (*links to Ch 9*)
  - indirect taxes
  - price discrimination
  - controlled and subsidized prices
  - price reductions (rebates, discounts, supplements, bonuses)
  - bundled prices
  - model prices (*link to construction in Ch. 14*)
  - estimated prices
- V. PPI scope and transaction boundaries (*links to Ch 2 and 7*)
  - investment versus consumption
  - intermediate versus final consumption
  - output versus input measurement
  - flows versus stocks

## PART II : THE PRACTICE OF PPI MEASUREMENT

[comment on Chapter 6](#)

6. **[An overview of PPI compilation](#)** (Use the free [Adobe Acrobat Reader](#) to view this pdf file)  
This chapter should provide a summary of the basic steps which are undertaken in PPI compilation. It is designed to give those with little knowledge of price index construction some broad idea of the issues involved before commencing detailed discussion of the relevant issues in the following chapters. Of particular importance is an explanation of the different levels at which an index is constructed.

### I. The basic steps in PPI compilation

- define the purpose and coverage of the index
- choose appropriate classifications
- identify the level at which sampling and explicit weighting should be undertaken
- select a sampling technique
- specify the products for price collection
- collect the price observations
- select the weights according to the classification structure
- calculate elementary and upper level indexes
- adjust for quality and variety change
- release the index

### II. Sampling budget and other practical considerations

- discussion of issues to be considered in determining which type of index is possible - defining priorities
- issues of response burden and confidentiality
- seasonal issues

## 7. Coverage and classification of the index

### I. Population coverage

- discussion of the economic activities to be included
  - industrial activities (mining, mfg., agric., etc.)
  - construction
  - services
- treatment of non-market goods and services
- treatment of government and intermediate consumption
- treatment of the illegal / hidden economy
- short-lived production units (virtual corporations)

### II. Price coverage

- discussion of transaction prices based on terms in contracts
- treatment of own account capital formation
- treatment of subsidized prices
- treatment of transfer prices
- treatment of discounts

### III. Geographic coverage

- treatment of foreign purchases of residents/ domestic purchases of non-residents
  - index in terms of the purchaser
- application of treatment to a regional / sub-national level
- treatment of exports / imports at national and regional levels

#### IV. Statistical units

- discussion of various price collection points
  - establishments
  - mail order
  - internet, e-commerce (issue of short-lived unit)
  - central / head offices

#### V. Classification

- discussion of the role of classification in the PPI
  - determining scope of price collection
  - determining appropriate weights and weighting level
  - determining categories and level of product specification
  - determining publication level (industry and commodity)
- brief discussion of key / common classifications (may affect sampling issues in Ch. 8)
  - CPC
  - CPA
  - ISIC (rev. 3), NACE (rev. 1)
  - country extensions / modifications

### 8. Sampling issues in price collection

#### I. Sample frames

- coverage and frame limitations
- interaction of sample frame with industry / commodity classification structure
- alternative frames

#### II. Sample design

- the nature of the elementary index
- principles of selection
  - clarity
  - error minimization
  - classification
- methods of sampling
  - enterprises/central offices
  - establishments
  - products
  - varieties in each establishment
  - in time

#### III. Optimum sample allocation and sample efficiency

#### IV. Sample rotation

- recruiting new units
- augmenting existing sample
- V. Sampling techniques
  - probability sampling
    - simple and stratified random sampling
    - sampling proportional to size
  - non-probability sampling
    - cut-off sampling
    - judgmental sampling
    - quota sampling

VI. Statistical errors (*links to Ch 15*)

- sampling errors
- non-response bias
  - methods for adjustment

**9. Price collection**

I. Timing of collection

- point-in-time index or period index
- discussion of frequency of collection (monthly/quarterly/annual)
  - definition of a price observation
  - issues for high/hyper inflation situations

II. Product specification

- description of the purpose of product specification
- discussion of the different levels at which specification can be carried out (e.g. product / variety / transaction)
- generic versus specific specification
- presentation of check lists
- model pricing

III. Collection procedures

- questionnaire design (sample forms)
- survey techniques
- field procedures
  - price reductions (rebates, discounts, supplements, sales, bonuses) (*links to Ch 4*)
  - others (*links to Ch 13*)
- delinquency follow up
- electronic reporting (use of hand held computers, email, telephone data entry, other methods)
- central / head office collection

IV. Verification and outliers (data edits)

V. Related issues

- use of scanner data
- related collection issues for PPPs outside of PPI system
- documentation/storage of collected information

## 10. **Weights and sources for weights**

This chapter is designed to present information on the role of weights in the calculation of an index and possible data sources for weights. A more detailed explanation of the procedures for using weights is in chapters 11 and 12.

- I. Value of production/shipments and weights
  - description of the role of weights
  - production versus value of shipments
  - discussion of value versus quantity weights at different levels of the index
  - treatment of unimportant expenditures
  - seasonality in weights
- II. Basic heading or stratum weights
  - classification issues
  - sources for weights
    - industry-based surveys
    - economic censuses
    - national accounts
    - production and trade statistics
- III. Product and quote weights
  - explicit and implicit weights
  - classification issues
  - sources for weights
    - selection probabilities of products and establishments
    - selection probabilities of product specifications
    - other sources

## 11. **Calculation of the index : routine production**

- I. Calculation of elementary indexes
  - description and discussion of alternative formula
- II. Calculation of higher level indexes
  - description and discussion of alternative formula
- III. Aggregation across products/economic activity/stage of processing
- IV. Geographic aggregation
- V. Estimation of missing price observations
  - in-house procedures when price exists but not collected
  - in-house procedures when price does not exist
    - lack of supply (shortages) or lack of demand
- VI. Computation
  - identification / treatment of outliers
  - description and discussion of alternative techniques
    - manual (algorithms)
    - computerized (software choices)
  - verification of data
- VII. Related issues

- the calculation of sub-indexes
- annual average index estimation
- average prices
- calculation of user specific indexes
- potential effects of non response

## 12. Calculation of the index : chain linking and reweighting

The aim of this chapter is to examine issues that are more specific to reweighting. In part this is due to the fact that this is often a task performed infrequently but there are also a number of considerations which fall outside the scope of routine production of the index and deserve separate mention.

- I. Frequency of weight and product updates
  - choice of weight year (weight month)
- II. Updating weights and products
- III. Linking reweighted index to historical index (chain linking)
  - procedures for linking products
  - procedures for linking weights
  - partial re-weighting
- IV. Issues concerning seasonality in weights
- V. Weighting errors (*links to Ch 15*)
  - problems of coverage

## 13. Quality and variety change

- I. Appearance/disappearance of products/establishments
  - procedures for allowing for such change
    - product and outlet monitoring
- II. Product substitution
  - procedures for product substitution
- III. Adjusting for quality change
  - explicit adjustment - standard approaches
    - differences in production costs
    - quantifiable product characteristics
    - price ratios
    - option cost
  - explicit adjustment - advanced approaches
    - hedonics
    - other approaches (e.g., match models)
  - implicit adjustment
- IV. Treatment of seasonal products / estimation of seasonal effects

## 14. Treatment of specific products

The aim of this section is to take a case study type approach looking at the concept and measurement issues on a product by product basis. Many of the ideas will be a repetition of the contents of earlier chapters but the perspective should allow a thorough understanding of the issues facing index compilers and act as a ready-

reference to particular issues. The chapter should be structured using the basic ISIC (rev. 3) classification by category with specific problems associate with individual divisions, groups or classes.

- I. Agriculture, hunting and forestry
  - problems of pricing fresh produce
    - seasonality
- II. Fishing
- III. Mining and quarrying
- IV. Manufacturing
  - problems of pricing clothing and footwear
    - seasonality
    - measuring quality change
    - fashion and taste changes
  - problems of pricing computers
    - measuring quality change
  - problems of pricing cars
    - measuring quality change
    - fashion and taste changes
  - problems of customized machinery
- V. Electricity, gas and water supply
  - problems of pricing utilities services
    - non-market services issues
- VI. Construction
  - model pricing
- VII. Wholesale and retail trade
- VIII. Hotels and restaurants
  - gambling
- IX. Transport, storage and communications
  - problems of pricing telecommunication services
    - measuring quality change
    - adjustment for new products
    - separation of goods and services
- X. Financial intermediation
  - problems of defining and pricing financial services
    - treatment of indirect charges by financial institutions
    - treatment of interest rates
    - treatment of credits
    - problems of defining and pricing banking services
    - problems of defining and pricing insurance services
    - options trading (stock brokerage)
- XI. Real estate, renting and business activities
- XII. Education
  - problems of pricing education services
    - measuring quality change
- XIII. Health and social work

- problems of pricing medical care services
  - pricing bundled goods and services
  - measuring quality change
- XIV. Other community, social and personal service activities
  - problems of pricing public transport

## 15. Issues in index quality

This chapter covers two main themes in index quality. One is the issue of index bias of which awareness has been heightened following the release of the Boskin Report a few years ago. The second is other types of measurement error, some of which have been discussed in earlier chapters. In particular, this chapter should clearly distinguish between a PPI's conceptual relevancy with respect to specific uses and the accuracy of measuring price change as conceptually defined. Drawing these two themes together is done to consider the measurement of index error or bias and also to consider ways of minimizing this error. Often the methods for minimization are similar across the two themes.

### I. Types of index bias

- description of types of index bias (*links to Ch 4 and 5*)
  - product substitution bias
  - establishment substitution bias
  - elementary index bias
  - quality adjustment bias
  - new product bias
  - seasonal bias

### II. Types of data error

- description of types of data error
  - statistical sampling errors and non-response (*links to Ch 8*)
  - weighting errors including issues of coverage (*links to Ch 12*)
  - processing errors, response errors and non-statistical sampling errors

### III. Measuring error and bias

- estimation of variance
- estimation of total index bias
- other issues

### IV. Procedures to minimize error and bias (*links to Ch 8, 12, 13 and 16*)

- description of relevant issues and approaches

## 16. Organization and management

### I. Practical steps in compilation (*links to Ch 6*)

- field procedures
- central office procedures
- treatment of processing errors, response errors and non-statistical sampling errors

### II. Organizational structure and responsibility

### III. Quality control in index construction

- data editing techniques

- process control
- IV. Computing resources
- V. Training requirements

## **17. Publication, dissemination and user relations**

### I. Types of presentation

- revision policy
- time series presentation of level and change
- seasonal adjustment and smoothing of the index
- analysis of contributions to change
- on of related / alternative measures
  - core inflation
  - sub-aggregate indexes
- economic commentary and interpretation of the index
- model press release, bulletin and methodology statement
- the IMF GDDS and SDDS / other international standards

### II. Dissemination issues (*links to Ch 16*)

- timing of release
- timeliness of release vs. data accuracy
- access to data
- issues of electronic/internet release
- confidentiality

### III. User consultation

- explanation of different uses of PPIs (*links to Ch 3*)
- presentation of methodology
- role of advisory committees
- presentation of issues concerning index quality

## **18. Glossary / nomenclature**

### **References / bibliography**

### **Index**

### **Annexes**

#### I. International classifications

- ISIC (rev. 3), NACE (rev. 1)
- CPC

#### II. HIPP (?)