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Development of Producer Price Indices of Service Industries in Hong Kong

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I. Introduction

1. Quarterly producer price indices (PPI) are currently compiled by the Census and Statistics Department, Hong Kong, China, in respect of selected Hong Kong's service industries.
2. PPI measures the average changes in the prices received by producers of goods and services of an industry in a reference quarter as compared with the base period. It can be used as a deflator of output series for discounting the effect of price changes so as to measure changes of local output in real terms. It is also a useful economic indicator for monitoring the price movements of local outputs.
3. PPI of service industries has been developed in Hong Kong phase by phase and on a selective basis despite the conceptual and technical complexities involved. The PPI of selected service industries with 1999 as base year have recently been compiled.
4. Presented below are the practices adopted by Hong Kong for compiling PPI in respect of some selected service industries.

II. Coverage

5. Producer prices are transacted prices, net of any discounts, premiums, rebates or allowances given to buyers but including surcharges, received by local producers for their output.
6. The selected service industries in respect of which PPI has been compiled include hotels and boarding houses, telecommunications, miscellaneous communication services, land transport, maritime transport and air transport industries. All local establishments engaging 5 or more persons in these industries are covered.

7. Regarding product coverage, the PPI of a particular industry is compiled on the basis of a selected “bundle” of the more important products of that industry after consultation with major service providers and data users. At present, about 60 service products are covered in the compilation. About 1550 individual service items are surveyed each quarter from some 600 establishments. These service items are selected in view of their relative importance in the industry, the extent to which they can be expected to be continuously available for pricing, and whether they can be clearly described in terms of quantity and quality. To reduce respondent burden, minor service products which account for less than 15% of the total business receipts of an establishment in these service industries are not enquired.

III. Data Sources

8. Average producer prices over a whole quarter are obtained from the Quarterly Survey of Service Industries (QSSI) for service products. The sample covers about 600 establishments selected systematically with stratification by industry and by employment size. Establishments engaging 100 or more persons are selected with certainty and a sample is selected from the smaller establishments.

9. For some service products where price data are collected through the Consumer Price Index (CPI) system, relevant data are extracted from the CPI system instead of being collected through the QSSI. These include:

- Mobile phone operators
- Radio paging services
- Motor buses
- Tramways and Passenger Railways
- Maxicabs
- Vehicular tunnels
- Ship owners / operators of Hong Kong-Macau vessels
- Harbour ferries

10. Average price data are collected quarterly by postal surveys followed by face-to-face enumeration and verification where necessary. Data recorded in paper forms are subject to thorough checking by office staff before being input into computer for validation and processing.

IV. Classification

11. The industry breakdowns of the PPI are classified according to the Hong Kong Standard Industrial Classification, which is based on the International Standard Industrial Classification Rev. 2 with local adaptation to cater for the specific economic structure of Hong Kong.

V. Calculation

12. A chained Laspeyres index formula is used for computing the PPI of an industry from the basic product price indices and aggregated, using the sales values/business receipts of the products as weights, to form the indices of the respective industry. Product price indices are weighted arithmetic average of price relatives defined as the ratio of producer price for the reference quarter to the average producer price of the same product in the preceding year. The general form of the index formula is

$$PI_{t-1,i}^{q,t} = \frac{\sum_j (PI_{t-1,ij}^{q,t} \times W_{ij}^{t-2})}{\sum_j W_{ij}^{t-2}}$$

where $PI_{t-1,i}^{q,t}$ = price index for industry i in current quarter q of year t with year $t-1$ as comparison year

$PI_{t-1,ij}^{q,t}$ = price index for product j in industry i in current quarter q of year t with year $t-1$ as comparison year

W_{ij}^{t-2} = sales values/business receipts of product j in industry i in year $t-2$

13. The sales values/business receipts used as weights for aggregation to industry price indices are updated annually. The weights are obtained from the relevant annual surveys, which include the Annual Survey of Storage, Communication, Financing, Insurance and Business Services, the Annual Survey of Wholesale, Retail and Import and Export Trades, Restaurants and Hotels and the Annual Survey of Transport and Related Services. In general, when compiling the PPI for the four reference quarters of year t , the results of the annual survey in respect of the reference year $t-2$ are used as weights.

14. While data of annual surveys form the basis for weighting the PPI, the detailed level weighting information has to be gathered separately. The average price relatives of commodity/service items are aggregated using sales values/business receipts obtained from QSSI of the preceding year as weights to determine the product price indices.

15. The aggregated result, being an index with the preceding year as comparison base, is converted to the PPI of selected service industries with 1999 as base using the method of chaining. The chained index formula is considered appropriate for compiling the PPI given the rapid changes of products over time.

VI. Release of Results

16. Quarterly PPI of the selected service industries are published in the “Hong Kong Monthly Digest of Statistics”. Plans are in hand to release the statistics within three months after the end of the reference quarter.

VII. Quality Change

17. In general, the index should not be affected by changes in quality or in sales conditions. Quality differences have to be identified and eliminated in calculating price change for inclusion in the index. Product changes that are regarded purely as style changes are not generally considered to be quality changes. Minor changes in specification that do not affect the contents of the service are also regarded as having no effect on quality.

18. To separate pure price movements from other changes when an item is replaced by a substitute item of different quality, the method of splicing is used. Prices for both the old and the new variety are collected in an overlapping quarter. The difference between the prices of the two varieties in the overlapping quarter is assumed to represent the value of their quality differences. For the purpose of calculating the price index, price relative for the new variety in the quarter following the overlapping quarter over the overlapping quarter will be linked with the price index of the old variety in the overlapping quarter.

VIII. New Products

19. If price data for a service product from a selected establishment cannot be collected in a particular quarter, the price change for the product will in general be estimated by averaging the price changes for the same service product reported by other establishments.

20. When the current variety becomes unavailable, a replacement item will be selected based on its popularity and resemblance with the original variety. Subject to the market situation and the results of consultation with major service providers in the annual review, new service products are introduced into the compilation.

IX. Future development

21. Studies are being conducted to explore the feasibility of expanding the coverage of the PPI to more service industries. Extensive consultation with potential data suppliers is being conducted to explore the best way of collecting meaningful price data.

22. After a series of consultation with potential data suppliers, the storage, rental of machinery and equipment, real estate maintenance management and real estate brokerage and agency industries were identified as the target industries for PPI compilation. Data collection will start in the fourth quarter of 2000.

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