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Group of Experts on Consumer Price Indices

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METHODOLOGY, CONCEPTS AND PRACTICES*

Submitted by National Statistical Office of Papua New Guinea

The meeting is organised jointly with the International Labour Office (ILO)

I. INTRODUCTION

1. Papua New Guinea occupies the eastern half of the island of New Guinea, just north of Australia, and many outlying islands. The Indonesian province of West Papua (Irian Jaya) is to the west. To the north and east are the islands of Manus, New Britain, New Ireland, and Bougainville, all part of Papua New Guinea. Its mountainous interior has only recently been explored. The Government is a Constitutional monarchy with parliamentary democracy.

* This paper has been prepared by Mr. Joseph Aka, Deputy National Statistician, National Statistical Office of Papua New Guinea, at the invitation of the Secretariat.

History

2. The first inhabitants of the island New Guinea were Papuan, Melanesian, and Negrito tribes, who altogether spoke more than 750 distinct languages. The eastern half of New Guinea was first explored by Spanish and Portuguese explorers in the 16th century. In 1828, the Dutch formally took possession of the western half of the island (now the province of West Papua [Irian Jaya], Indonesia). In 1885, Germany formally annexed the northern coast and Britain took similar action in the south. In 1906, Britain transferred its rights to British New Guinea to a newly independent Australia, and the name of the territory was changed to the Territory of Papua. Australian troops invaded German New Guinea (called Kaiser-Wilhelmsland) in World War I and gained control of the territory under a League of Nations mandate. New Guinea and some of Papua were invaded by Japanese forces in 1942. After being liberated by the Australians in 1945, it became a United Nations trusteeship, administered by Australia. The territories were combined and called the Territory of Papua and New Guinea.

3. Australia granted limited home rule in 1951. Autonomy in internal affairs came nine years later, and in September 1975, Papua New Guinea achieved complete independence from Britain.

II. BACKGROUND INFORMATION ON PNG CPI

4. The Consumer Price Index (CPI) measures quarterly change in the prices of a "basket" of goods and services which account for a high proportion of expenditures by urban wage earners' households in Papua New Guinea (PNG). CPI also measures change in prices of goods and services that represents the spending pattern of urban wage earners. More specifically, the expenditure represents at least 50% of money income, in the form of wages and/or salaries. By definition, Urban Households are those headed by Papua New Guineans and covers urban areas with an estimated citizen population of 2,000 or more in the reference base year (1977).

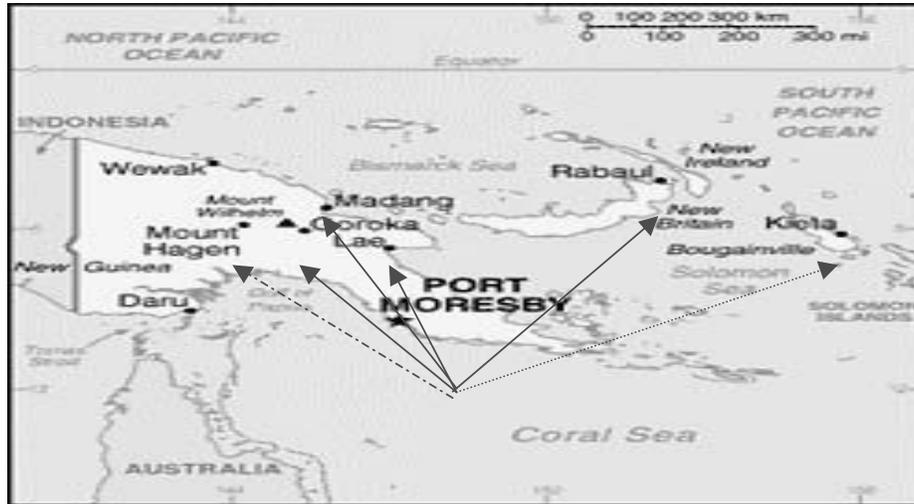
5. Retail Price Index (RPI) was the first series of the index used as measures of the changes in prices of goods and services in PNG. The weightings of the RPI basket were based on the estimates from the household expenditure survey conducted in 1961–62. The RPI has been in use from September quarter 1961 to June quarter 1973, and covered only expatriate households in the urban areas.

6. The second series of the index was the CPI that covers the public servants households in PNG. Its weightings were based on an Urban Expenditure Survey conducted by the Department of Labour in 1970 and 1971. This series has been in use from March quarter 1971 to December quarter 1978. More detailed information about the second series can be obtained in the CPI issue of December quarter 1978.

7. This issue is the third cost of living indexes published by the National Statistical Office (NSO). The weightings were based on the survey of PNG wage earners households in the urban areas conducted in 1975/76. The NSO has been using this index since December Quarter 1975 to date.

III. SCOPE AND COVERAGE

8. The CPI covers 5 major towns including, Port Moresby, Goroka, Lae, Madang and Rabaul. Arawa/Kieta was also included until 1990 due to civil unrest on Bougainville Island.



9. Above, is the map of Papua New Guinea, where Port Moresby the capital city and NSO head quarter is located. The red line shows where the CPI data is collected. Officers from the head quarter travel out every quarter to collect prices from other 4 centers while other collections are carried out using the mailing system.

IV. METHODOLOGY USED

10. These indexes are fixed-weighted index, computed as weighted arithmetic means of relative prices multiplied by 100. The relative price for an item is the ratio of its price in a given current period to its average price in the base year.

11. Base period (1977=100) refers to a given year in which weights and the items in the basket of goods and services in the CPI were selected or adjusted. That is the prices for the selected items in a given period are compared to those in the base period. For instance, the price of the basket increased by 20% since the base year would show the index value of 120; similarly, a decline by 20% represents the index level of 80.

V. CLASSIFICATION OF THE CPI BASKET

12. This basket covers a wide range of goods and services arranged in the following seven major groups:

- (a) Food;
- (b) Drink, Tobacco and Betel Nut;
- (c) Clothing and Footwear;

- (d) Rent, Council Charges, Fuel and Power;
- (e) Household Equipment and Operations;
- (f) Transport and Communication and
- (g) Miscellaneous.

13. From the information collected in the Household Expenditure Survey (HES), lists of items (also known as the 'regimen') were drawn. The regimen is used in compilation of the index. The prices of the regimen are collected from a total of 240 specifications, which represented 124 items. These items were further divided into sub-groups as shown below:

- (a) Food: cereals; meat and fish; fruits and vegetables; miscellaneous food such as dairy products, sugar, tea, pies, etc.
- (b) Drinks, tobacco and betel nut: soft drinks (treated waters and cordials); alcoholic drinks, cigarettes and tobacco, betel nut.
- (c) Clothing and footwear: men and boys' clothing; women and girls' clothing; other clothing such as nappies, accessories, etc; footwear.
- (d) Rent, council charges, fuel and power: dwelling rentals; council charges for water, sewerage and garbage disposal; electricity and kerosene.
- (e) Household equipment and operation: durable goods (e.g. sewing machine, kerosene stove); semi-durable goods (e.g. sheets, tableware), non-durable (e.g. matches, laundry soap, insecticides).
- (f) Transport and communication: motor vehicle purchase; motor vehicle operation (petrol, oil, repairs, parts, accessories, licenses and insurance); airline, taxi, bus and Public Motor Vehicle (PMV) fares; telephone and postal charges.
- (g) Miscellaneous: medical and health care; entertainment and cultural goods and services (e.g. sound equipment, newspapers and magazines, cinema admission, education fees); other goods (e.g. items for personnel care, writing and drawing materials).

VI. CALCULATION OF INDEX

14. In calculating the index, the relative price of each item or group of items is multiplied by a factor (or weight) that reflects the importance of the item or group in relation to the household covered in the CPI. The factor including the groups, sub-groups and specific items are contained in Technical Note No. 3, published by the NSO. The Technical Note also provides information on the system of weighting used to derive differences in expenditure pattern between the different urban areas. Technical Note No. 4 provides description of methods used in the price collection and the compilation of the index.

15. The CPI is also expressed in index points. This enables the users to make direct comparison between various quarters and from year to year. The movement in the index from one period to another is usually expressed as percentage change rather than as differences in index value (or index point), because the level of the index relative to the base period affects the index point.

16. Movement in index for one period to another can be expressed as a percentage change or changes in index points. The difference between the two approaches to describe movements in indexes is shown by the following example:

17. All groups CPI:

Weighted average of all urban area index numbers:

March Quarter 1996	344.4
Less December quarter 1995	333.2
Change in index points	11.2

18. The index number of 344.4 for March Quarter 1996 indicates an increase of 244.4 % since the reference base year (1975/76).

19. The percentage change in an index between any two periods is calculated by subtracting the index value for the earlier period from the later period, and dividing the result by the value for the earlier period, then multiplied by 100.

20. Percentage change from December quarter 1995 to March quarter 1996 =
 $(11,2/333,2)*100=3,4\%$.

21. The percentage changes in the index shown in this bulletin are calculated from unrounded values expressed in three decimal places.

22. The contribution of any group, sub-group or item to the change in an overall index is calculated by multiplying the change in the index for the group, sub-group or item by its percentage weight in the overall index and dividing the result by 100.

VII. UNDERLYING MEASURE

23. The CPI measures price changes across a range of goods and services that represent the spending pattern of PNG's urban population. Inflation measured by the CPI is called "headline" inflation. The CPI can be highly volatile partly due to climate effects (droughts and floods), seasonal patterns, or government policy decisions such as tax reform. High volatility hampers interpretation of current inflation and forecasting future inflation. In response to this problem, the June quarter 2002 issue of the Consumer Price Index introduced an additional measure of price change called the "underlying rate of inflation".

24. The underlying rate filters out passing movements in inflation while retaining persistent movements. This is more useful than the headline for developing and monitoring monetary policy. A variety of underlying rate measures can be constructed though there is no ideal measure that perfectly satisfies both the needs for forward looking policy making and backward looking measurement of price change. NSO has developed a single measure of price change. NSO has developed a single measure of underlying inflation based on the average of three "exclusion-based" measures.

- (a) CPI excluding seasonal: Excludes the CPI item *Betelnut* and the subgroup *Fruit and Vegetables*.
- (b) CPI excluding seasonal and excise: Excludes the seasonal items in (a) plus the subgroups effected by changes in excise duties - *Alcoholic drinks* and *Cigarettes and tobacco*.
- (c) CPI excluding seasonal, excise and price control: Excludes the seasonal and excise effected items and subgroups noted in (b), plus the selected price-regulated category *Rents, council charges, fuel and power*, and the *Fares, Communication and Medical and health care* sub-groups.

25. The underlying rate of inflation presented here is the average of these three exclusions based measures. The published estimates of underlying inflation should be regarded as "experimental" and may be revised. NSO will continue to investigate alternative methods for calculating underlying inflation and incorporate improvements to the published series where appropriate.

VIII. THE CPI BULLETIN

26. The CPI bulletin is published on a quarterly basis, and released 2 weeks after the reference month. Several officers received the bulletin 24 hours before the embargo date (that is 6am), they includes Ministers for Treasury and National Planning, Secretary for Treasury and National Planning, and the Governor of Reserve Bank of PNG.

27. The bulletin contains 5 main tables and 5 other tables which derived from the main ones. The tables are presented in index and percentage change in the index.

IX. THE CPI DATA PROCESSING

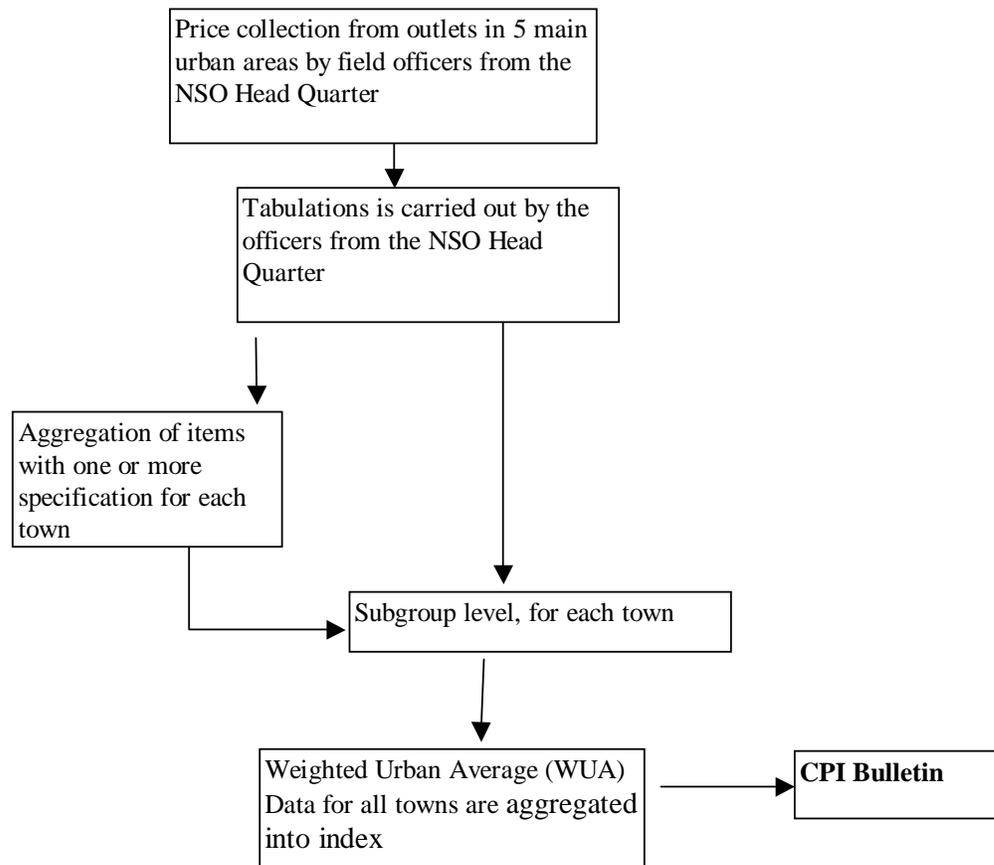
28. Diagram 1 shows the stages of data processing of the CPI data.

29. From the field collection prices are averaged using tabulation sheets, for items with more than one specification, for example, rice we have 25kg bag, 10kg bag, 5kg bag and 1kg bag, all these prices will be aggregated to derive a average, then an index is calculated at subgroup level for each town.

30. Data is collected weekly for fresh fruits and vegetables, monthly for food items, quarterly for clothing and others, annual for school fees and service fees. Collection methods used are

- (a) mailing – for monthly collection;
- (b) personal visit – for quarterly collection;
- (c) hire of provincial officer – weekly collection.

Diagram 1



X. CONCLUSION

31. The NSO is currently under restructure with the aim to improve quality, and timelines of its statistics especially CPI being the most frequent statistics with high demand. Under this change 5 provincial offices are created mainly in CPI towns.

32. CPI data is now computerized using an excel spread sheet, which had improved our time of release and that was greatly appreciated by the users like Bank of PNG.

33. A new household survey is needed to revise the weights and basket to replace the existing, which is outdated, about 22 years old.

34. Training is needed for our young officers, especially in the area of computer and price statistics.
