

UGANDA BUREAU OF STATISTICS

SOURCES OF WEIGHTING DATA FOR THE CPI

BY

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PRESENTATION DURING THE MEETING OF THE GROUP OF EXPERTS
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Presentation Outline

1. Background
2. Sources of Information for Elementary Aggregates
3. Sources of Information for Regional Weights
4. Sources of Information for Outlet-type Weights
5. Sources of Information for Price Updating of Weights
6. Conclusions and Recommendation

1. BACKGROUND

- Weight is the share of total household expenditure which is spent on a particular product during the weight reference period
- This presentation gives sources of information needed to obtain an accurate set of weights for the Consumer Price Indices (CPI).
- The aim is to give a high light on how the best estimates of household final consumption expenditures could be achieved during the compilation of the CPI weights

1. BACKGROUND Cont...

The recommended weight reference period should be at least twelve consecutive months.

Weights that are based on a shorter periods will not be representative of annual seasonal patterns of household expenditure.

- 2.1 Household Budget Survey (HBS) Data
- 2.2 National Accounts (NA) Data Sources
- 2.3 Data sources on Alcoholic drinks and Tobacco
- 2.4 Special Surveys on chain stores
- 2.5 Special Surveys on Food products alone

- 2.6 Retail Sales Surveys
- 2.7 Production and Trade Statistics Data
- 2.8 Expenditure and Motivation Surveys on foreign visitors
- 2.9 Organizations representing insurance companies
- 2.10 Business Inquiry Surveys
- 2.11 Information from neighbouring countries

2.1 Household Budget Survey (HBS) Data

- An Elementary aggregate is the smallest aggregate for which reliable expenditure data is available and used for the CPI.
- HBS, also known as the Household Expenditure Survey (HES), is the widely used major source of information for the CPI weights.

2.1 Household Budget Survey (HBS) Data Cont...

- Many HBS surveys are divided into a daily diary section
- Respondents record their daily expenditure over a period of, say, two to four weeks.
- These give reliable detailed data on the smaller items, in particular food, drinks, newspapers, small medications such as cough medicines and headache pills, domestic cleaning items, shaving items, cosmetics etc..

2.1 Household Budget Survey (HBS) Data Cont...

- More expensive items are bought less frequently.
- HBS forms also request respondents to record their expenditure on these larger items over a past period, say six months or even a year.
- Data from these sections can be unreliable.
- Thus in the case of larger items, CPI statistician should look for other data sources to act as a cross-check on the HBS results.

2.1 Household Budget Survey (HBS) Data Cont...

- The second common problem with HBS data is the widespread under-reporting of certain products mainly;
 - Alcoholic Drinks and Tobacco
 - Drugs, Gambling, Prostitution and Black market purchases.
 - Expenditures made by children, out of pocket money earned or given to them by their parents.

2.1 Household Budget Survey (HBS) Data Cont...

- In all cases where under-reporting is suspected, steps should be taken to make adjustments to the data.`

There are close links between household consumption data derived from HBS and that from the National Accounts.

- A country should compile its National Accounts on the basis of COICOP classification to the consumption expenditure
- Thus HBS data should map with the National Accounts data, at least at certain levels of aggregation.

2.2 National Accounts (NA) Data Sources Cont...

- The coverage of the NA will normally differ from the CPI coverage. Examples are:
 - Own Account Consumption,
 - Imputed Rent for owner occupied houses which in fact is a specific case of own account consumption,

2.2 National Accounts (NA) Data Sources Cont...

- Expenditure on goods and services which are fully or partially subsidized by the state, such as health and education expenditures and,
- Expenditure on goods and services which are fully or partially subsidized by the Non-profit-Institutions serving households such as churches or trade unions.

2.2 National Accounts (NA) Data Sources Cont...

- The removal of all such coverage differences must be done before comparing HBS and NA data since it provides a very useful cross-check on both of the data-sets.

2.3 Data sources on Alcoholic drinks and Tobacco

- Many countries impose special taxes on both alcoholic drinks and tobacco, usually excise taxes. Thus official data should be used to provide estimates of consumption.

2.3 Data sources on Alcoholic drinks and Tobacco Cont..

- However, Alcoholic drinks are purchased by individuals, companies or institutions and particularly those in the catering business.
- Thus, Tax-based estimates of total alcoholic drinks sales are likely to overestimate the household part of the consumption
- Hence estimates of the proportions of sales to individual consumers and sales to other sectors should be made.

2.3 Data sources on Alcoholic drinks and Tobacco Cont..

- In the case of tobacco, it is more likely that most purchases are made by consumers, so that tax estimates may need relatively little adjustment.
- Statisticians should always be on the alert for special surveys, not necessarily official surveys, which shed light on consumer behaviour.

2.4 Special Surveys on Chain Stores

- In some countries, a large proportion of sales of food and certain other fast moving consumer goods are sold by supermarkets.
- It may be possible in such cases to organize a special survey of chain stores.
- This would probably not provide an estimate of total sales

2.4 Special Surveys on Chain Stores Cont...

- However, it will provide a means of estimating the weights within the category totals.
- Food purchases carry a large weight in most countries
- Hence special effort should be made to ensure that data on food expenditure obtained is of the highest accuracy

2.5 Special Surveys on Food products alone

- Some countries conduct official surveys on household expenditures on food products alone
- Food surveys often provide more detailed data on food consumption and expenditure than the HBS.
- Thus, maximum use of the results of such surveys should be made during the compilation of the CPI weights

2.5 Special Surveys on Food products alone Cont...

- The results from such surveys could be used to decompose expenditure reported in aggregated form into smaller Elementary Aggregates.
- This can be achieved by first computing the proportions of expenditures on detailed products using the results of such surveys
- The Proportions are then used to disaggregate those product expenditures reported in aggregated form during the HBS.

2.5 Special Surveys on Food products alone Cont..

- The results of such surveys could also be used to improve some expenditures normally misreported during the HBS.
- In such a case, multipliers are developed that are used to adjust the HBS results for specific products.

2.6 Retail Sales Surveys

- Some countries conduct surveys of retail sales data.
- Results of such surveys should be used to derive household expenditure weights over a potentially wide range of products.

2.6 Retail Sales Surveys Cont...

- However, care must be taken to exclude business purchases.
- In some cases, data from retail surveys are aggregated to a relative high level
- Thus it necessary to use detailed HBS data to disaggregate the retail sales information.

- The National Accounts departments of many countries compile Commodity Flow Accounts (CFAs)
- This is done either annually or from time to time.
- These are used to highlight sectors of the economy where the statistics cannot be reconciled
- Thus, points to areas where improvements in data quality need to be made.

2.7 Production and Trade Statistics Data Cont...

- CFAs aim to match the supply and demand data for a wide range of commodity groups.
- Data are shown for each of the main elements of supply and demand;
- Within supply are figures relating to domestic output and imports
- While demand is broken down into household consumption, government consumption, capital formation, stock building and exports.

2.7 Production and Trade Statistics Data Cont...

- Estimates of the proportion of domestic consumption are used to estimate total household consumption.
- These figures are then compared with the results of the HBS
- Thereafter, Conversion Factors (CF) are calculated at different product groups, depending on the CFA aggregations

2.7 Production and Trade Statistics Data Cont...

- The factors are likely to be fairly stable over time,
- Thus they can be used for several years.

2.8 Expenditure & Motivation Surveys on Foreign Visitors

- Some countries compile a CPI based on the Domestic concept.
- Domestic concept refers to a situation where only Household Final Consumption expenditures on the economic territory of a country are included during the compilation of weights
- Thus non business household consumption expenditures by foreign residents, foreign visitors and cross-border purchases are included

2.8 Expenditure & Motivation Surveys on Foreign Visitors Cont....



- However, Household consumption expenditures of resident households outside the economic territory of the country are excluded.
- Economic territory of a country is the geographic territory administered by a government within which persons, goods, and capital circulate freely.
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2.8 Expenditure & Motivation Surveys on Foreign Visitors Cont....



- In the case of Uganda, such surveys are carried out for a period of six months.
- They are spread during a calendar year such that the three months, March to May, cover the low peak of foreign visitors
- While months October to December cover the high peak of foreign visitors.

2.9 Organizations Representing Insurance Companies

- Insurance is a process by which large groups of households co-operate in such a way that if one household suffers some form of loss, the other households will jointly compensate the first household for the value of its loss.

2.9 Organizations Representing Insurance Companies Cont...



- This is achieved by means of premiums paid by all households into a communal fund, from which compensation claims are paid out.
- Thus the CPI weights for insurance products are computed entirely by using the total service charges of all the insurance companies within the economy.

2.9 Organizations Representing Insurance Companies Cont...

- The required data on service charges cannot be obtained from Household Budget Surveys.
- Thus, such data is obtained from insurance companies,
- Either individually or from an organization representing insurance companies.

2.9 Organizations Representing Insurance Companies Cont...

- In the case of Uganda, such information can be obtained from the “Uganda Insurance Authority.”
- However, the difference between premiums paid and claims paid tends to fluctuate considerably from one year to the next, and can occasionally be negative.

2.9 Organizations Representing Insurance Companies Cont...

- Expenditures for most other products in the CPI, remain relatively stable from one year to the next,
- Thus, it would be unreliable to use a single year's data for insurance expenditures.
- Hence, it requires a country to calculate insurance weights on the basis of a three-year average expenditure.

2.10 Business Inquiry Surveys

- Results from the Business Inquiry Survey provide information on the performance of the main sectors of the economy and their contribution to the GDP.
- Information is collected from all the sectors of the economy.
- In case of Uganda, the activities of the economy have been categorised into eleven major sectors

2.10 Business Inquiry Surveys Cont...

- Each sector has its own questionnaire. The sectors are;
 - Agriculture
 - Trading which covers large establishments
 - Finance
 - Insurance
 - Small Mining and Manufacturing

2.10 Business Inquiry Surveys Cont..

- Small Trading and Services
- Manufacturing
- Hotels & Restaurants
- Education & Health
- Construction and
- Non Government Organisations

The information collected from such surveys includes

- Sales of goods bought for resale to public as well as those of own produce,
- Sale passenger and freight transport services to the public,
- Sale of accommodation, food and bed to the public.

- Income received from the public for services rendered in form of:
 - Interest,
 - Rent,
 - Professional fees
 - Income from foreign exchange transactions.

- Receipts from the public for repair and maintenance such as machineries, equipments, dwellings and the like.
- Information on nursing fees, tuition fees.
- Sales of medicine and medical goods, uniforms etc. to the public.

- The information should be used to compare the accuracy of the HBS results
- Where there is inconsistency, multiplying factors should be computed that would be used to improve on the HBS results.
- In addition, the information can be used to fill the gap as a result of missing information from the HBS and other supplementary sources.

- However, there is a need to decompose receipts of sales of goods and services to the public into those sold for
 - Household final consumption and
 - The rest.

- However, there are some sectors whose receipts from the public are almost for household final consumption

- This implies that they can be utilised with no adjustments

- The second limitation is that the information is in aggregated form
- Thus it cannot be utilised directly to compute CPI Elementary Aggregate weights.
- Despite those two limitations, the information is very useful and it should be utilized during the computation of weights for the CPI

2.11 Information from Neighbouring Countries

- There is always a need to look at the weights from the neighbouring countries and compare them with the finally computed weights.
- This is very useful more especially for countries within a similar economic climate like; the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC) and the like.

2.11 Information from Neighbouring Countries Cont...

- In situations where a country has failed to undertake an HBS for a very long time, weights from neighbouring countries with wider economic ties and with similar culture could be used to come up with a better estimate of national CPI weights.
- The CPI computed using such information is more representative and gives a better picture of the current expenditure pattern instead of continuing to compile a national CPI using a very old base.

3 Sources of Information for Regional Weights

- National CPI may be compiled on the basis of aggregating regional CPIs,
- Thus, all the elementary aggregates will have a regional as well as a product dimension.
- Countries which compile regional CPIs will usually have a national HBS which is designed in such a way as to be able to give statistically reliable estimates of household expenditures by region.

- Hence, the estimation of CPI weights is done region by region in the same way as for national weights as described in the previous slides of this presentation.
- Where the HBS does not provide sufficiently reliable estimates of regional expenditure at the Elementary Aggregate level

3 Sources of Information for Regional Weights Cont...

- Other sources should be sought if regional sub-index of the CPI are to be calculated.
- These estimates could come from a variety of different sources as indicated in previous slides
- The purpose of any regional dimension is to improve the accuracy of the national CPI by introducing stratification at the regional level.

3. Sources of Information for Regional Weights Cont...

- In addition, Weights for each region has to be computed
- Where the HBS does not provide sufficiently reliable estimates of regional expenditures,
- Other sources should be sought including official data on incomes which may be used as a proxy for the regional expenditures.
- Thus, regional household Income can be used as a proxy for allocating regional weights

3. Sources of Information for Regional Weights Cont...

- There cases where some households live in one region but make their purchases in the adjoining region.
- There is a need to assign such expenditures to regions where the economic transactions take place.
- Thus, the HBS questionnaire should require the respondent to indicate the place of purchase

3. Sources of Information for Regional Weights Cont..

- Countries should avoid using population figures as their sources of information for deriving regional weights.
- The crucial and false assumption made is that total expenditure in each region is directly proportionate to its population.
- This would ignore the fact that the region where the capital city is located has much larger average household incomes and expenditures, while any one of the regions can be almost entirely rural, with a relatively poor population.

4 Sources of Information for Outlet-Type Weights

- Some countries will have a three dimensional set of weights for their CPI
 - Elementary aggregate (EA)
 - Regional and
 - Outlet-type.

- It is also possible to have only two dimensions, EA and outlet-type weights

4 Sources of Information for Outlet-type Weights Cont..

- The principles involved in estimating outlet-type weights are similar to those of estimating regional weights.
- However, the data sources are different.
 - Surveys on points of purchase
 - the results of the business inquiries

- Price updating is a procedure whereby the quantities in an earlier period are revalued at the prices of a later period.
- The price-updated expenditures are obtained by multiplying the original expenditures by price relatives or price indices.
- Weights derived from the price updated expenditure are described as “hybrid” weights.

- Price-updating is usually applied at the Elementary Aggregate level
- Each expenditure weight is multiplied by its corresponding elementary aggregate price relative for the period between the weight reference period and the price reference period.

- Thus, the source of information to carry out this process are the price relatives at the Elementary Aggregate of the existing CPI that a country needs to revise her weights.
- Alternatively, this can be done by using index numbers for a group elementary aggregates that could give a representative picture in cases where indices of a specific elementary aggregate cannot be used.

- However, Price-updating should not be used to update weights obtained from an old HBS, to align with a price reference period many years later.
- Thus, it should not be used as an alternative to carry out a new HBSs, e.g. to update weights which do not meet the “age” standards recommended by the CPI manual.

- Secondly, price-updating of weights should not be done in an automatic or mechanistic way but only by taking care is such a way that it is appropriate for each elementary aggregate.

6 Conclusion and Recommendations

- This presentation has reviewed various sources of data that could be used during the construction of weights for the CPI. The sources highlighted in this paper are;
 - Household Budget Surveys
 - National Accounts Data
 - Official Statistics Data on Alcoholic Drinks and Tobacco

6 Conclusion and Recommendations Cont...

- Special Surveys on Chain Stores
- Special Surveys on Food Products alone
- Retail Sales Surveys
- Production Statistics Data
- Trade Statistics Data
- Expenditure and Motivation Surveys on Foreign Visitors
- Organizations representing Insurance Companies
- Business Inquiry Surveys

6 Conclusion and Recommendations Cont...

- The presentation should be taken as a tool for all Statisticians responsible for construction of CPI weights to always look around for whatever source of information that could be used to compute household final consumption expenditures for any category of products.
- It should be noted that all sources of information including HBS are supplementary to one another.

6 Conclusion and Recommendations Cont...

- The sources of information should not be limited to those given in this presentation
- Given the sensitivity of the CPI and its wide use, Statisticians should avoid using a single source of information while compiling the CPI weights

APPRECIATION

- I THANK YOU VERY MUCH FOR LISTENING
- MERCI BAUCOUP POUR VOTRE ATTENTION