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Touch points of integration: Identifying synergies in CPI and ICP collection and processing of price data

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1. Introduction

This document aims to sketch the synergies that may be obtained from an integrated approach to the collection of consumer prices for the compilation of Purchasing power parities (PPP) and for national Consumer price indexes (CPI). This issue has become important for the sustainability of the International Comparisons Programme (ICP), but equally offers the potential for the improvement of national CPIs through the adoption of appropriate ICP methodologies. In this way the ICP and CPI data collection processes can be seen as symbiotic – working together to improve and sustain each other.

It is important to note upfront that the compilation of PPPs relies on more than price data on consumer goods and services. These further areas are beyond the scope of this paper.

2. Defining the CPI and the ICP

CPIs are temporal price indices, mainly concerned with measuring price changes over time. The focus of the index is on products and services purchased by consumers. CPIs may be primarily intended to measure inflation in an economy or to track changes in the cost of living. The relative importance of these two objectives guides price statisticians in their choice of methodology. In practice many national CPIs aim to serve both of these purposes.

PPPs on the other hand are a form of spatial price indices. They show the ratio of the prices in national currencies of the same good or service in different economies. PPPs are primarily derived for analytical purposes involving international comparisons of national economic size and growth. PPPs allow cross-country measurement of real per capita income and gross domestic product (GDP). To this

end, PPPs rely substantially on price information for the important components of GDP. Whereas a national CPI is primarily constructed by price indices showing the rate of change of prices, PPPs require indices reflecting price levels. The compilation of PPPs is operationalised through the International Comparisons Programme led globally by the World Bank.

3. Scope for and constraints to integration

An important element to consider in this matter is that national CPIs vary substantially from each other. While much work has been done in identifying basic standards, each country is free to apply these in the way it sees best. Often, national CPIs exhibit historical characteristics as changes may require substantial political and societal buy in.

The ICP programme, by comparison, is extremely standardised and centralised in order to ensure proper comparison of price levels across nations.

Essentially, the possible scope of integration in each country is largely a function of the size of the difference between CPI collection and data management and those pertaining to ICP.

The institutional arrangements and capability for price collection vary across countries. These differences will result in differing opportunities and constraints for CPI-ICP integration. Practically all CPIs are compiled by national statistics offices (NSO). However, the size of the CPI team varies significantly according to the size of the population, economy etc. Furthermore, the organisational structure and associated lines of authority differ. For example in some cases, the price collectors report directly to the price statisticians and their management. In others their primary reporting lines may be to a decentralised (provincial/district) office or a separate division responsible for field operations. In some cases price collectors may split their time between different surveys, and in others may work for CPI on a full time basis. It also happens that the employment contracts for CPI field staff may specify that they are only required to collect CPI data with the consequence that additional remuneration is demanded to perform additional duties.

Other constraints to integration concern resources and funding. In a number of countries, ICP activities have only commenced once additional funding was secured from regional or international organisations. There may also be technical constraints in poorer countries resulting in necessary changes to computer software not being made.

Not all ICP products will appear in the national CPI basket. The integration of overlap products is relatively straightforward as these need to be collected anyway. Non overlap products will need to be allocated codes that distinguish them from those in the CPI basket. Ideally, they should be fully integrated from a process and systems perspective. The index calculation system for the national CPI must know not to include them.

4. Some basic principles

Given that NSOs will sometimes be torn between the desire for integration and the requirements of the national CPI, these basic principles may assist in decision making.

- The national CPI will always attract priority over the ICP. The implication of this is that when faced with a choice that may compromise the national CPI, the NSO should choose the national CPI.
- The national CPI should always be improved. In contrast to the previous principle, the national CPI should constantly look to improve its methods and practices. The ICP provides a useful source of such improvements.
- Integration should be done at the level of description, rather than prescription. This principle aims to balance the previous two. The best way for the CPI to accommodate the different methods of the ICP is to provide for greater description of each variable.

5. Framework for organising integration

A systematic approach to identify areas of possible alignment and integration is to use the statistical value chain (SVC) - also known as the statistics lifecycle or statistical process model. The SVC details the generic sequence of steps required when undertaking a statistical activity and has been developed under the auspices of the UNECE, Eurostat and OECD.

The main headings applicable to this discussion are captured in Figure 1.

Figure 1: Statistical value chain



6. Statistical value chain analysis

a) Need

The similarities and difference in the objectives of the CPI and PPPs has been discussed above. The key point is that while they do have different end points, the requirement for accurate prices of consumer goods and services is the common need.

b) Design

Define variables: The list of variables to be collected goes to the heart of the methods used to collect price data. The ICP stipulates strict requirements for the selection of items for pricing. These restrictions include the type of store, the brand and size of a product. It follows that fields are necessary to record this information.

National CPIs will vary in the extent to which item selection is prescribed. There will also be variation in the way that prices for different commodities are recorded which may differ from ICP requirements.

In order for integration to be effective, the variables required for ICP product selection and pricing must be mainstreamed to the CPI collection. At a minimum, this means that the CPI should incorporate the concepts used to define products in the ICP in the design of CPI collection forms and database. These can be included merely as further description of CPI products, rather than limits to what may or may not be collected.

Design collection form

Price collection forms must contain all the variables identified as necessary for meeting the objectives of the survey. In many cases, CPI collection forms are basic and will not contain the variables needed for ICP collection. A redesign of forms will be required in order to describe the products to the standard required for the ICP. The layout of the form should incorporate the additional variables in logical flow for recording, rather than being an 'add on'.

Select sample

The sample design is a key factor in the integration as it is here that the additional work load comes in. In many developing countries, additional money has been required to ensure collection of the additional products for the ICP. Ending this subsidisation is important to the sustainability of the ICP.

There are three levels to consider here. The first is the geographic the second is outlet, and third product.

Geographic sample

The ICP typically is based on prices in the main urban areas. Most CPIs will collect prices in these locations and more. Integration could provide the ICP with an opportunity to broaden its coverage within each country if it included additional locations in the CPI sample.

Outlet sample

Statistical offices have different methods for selecting outlets from which to gather prices. Ideally the CPI should contain a mix of outlets somewhat proportional to the variety and number available to consumers. In the absence of a formal sample frame, the actual choice of outlet is often left to the price collector.

The ICP specifies that particular products should be priced in particular outlet types. The key question to consider here is the extent to which the ICP outlet types are included in the CPI outlet sample. It may be necessary for the CPI to create a variable “Type of outlet”, the possible answers to which should be translatable into the ICP prescriptions. This may have benefits for the CPI by reviewing the mix of type of outlets. It may also be necessary for the ICP outlet categories to be broadened to accommodate different and changing retailing realities in different countries.

Product sample

The expansion of the product sample is the main additional workload imposed on the CPI by the ICP collection. CPI teams will want to keep the number of additional items to a minimum.

Building processing and editing systems is discussed below as part of the editing phase.

c) Collection

Support materials and training

Price collection is probably the most important aspect of effectively achieving integration of the two processes. Because price collection arrangements are embedded in the structure and relationships between statisticians and the field workers, there is no need to make major changes to them. Rather, integration of ICP can be seen as an opportunity to enhance the quality of collection for the CPI.

There are two important elements of training to consider. Firstly, fieldworkers must understand the new variables to be recorded and the ways that they are to do this. If there are changes required in the format of recording existing fields (such as a more structured description of a product), they must be able to do this.

Secondly they must have a certain knowledge of the additional ICP products that need to be collected. This knowledge includes the restrictions on each product such as brand/size/outlet type.

A product catalogue is a useful tool for price collectors. This is a visual aid containing a photographic example of the type of item and a description by way of completed variables that appear on the price collection form.

Schedule and logistics

The schedule should be designed so that all products are collected as part of the normal collection timeframes. This will avoid ICP products being left to the end of the month and possibly not being collected if there are time overruns. It should also reduce travelling and time costs for the NSO as price collectors will not need to return to an area especially to collect ICP data.

Ideally all price collectors should be involved in collecting the additional products for the ICP. This is on the assumption that they are collecting prices for the overlap products which would require the same descriptions as the additional products. Should the additional payments to price collectors from ICP fall away, then obtaining this incentive also falls away as a reason to allocate additional ICP work to selected staff members.

d) Processing and editing

Capture data

All prices should be captured in one computer system. This means that adaptations will need to be made to the CPI system to allow capturing of additional variables as discussed above. Because of the precision required in defining products for the ICP, and ensuring that identical products are compared for calculating average prices, wherever possible, the fields should be populated by predetermined drop down lists. This is to eliminate variations in spelling, punctuation etc which retard the speed and efficiency of ICP editing processes.

Validate and edit data

All CPI programmes should have quality assurance processes in place to detect errors made in price collection and capturing. Applying additional requirements for the ICP may enhance the accuracy of data used in the CPI. The aim of editing is to ensure that the data is fit for purpose for the next phase of the process.

The initial editing phases of the data should include everything collected. This editing would identify any errors or omissions from either data collection or capturing. Where possible corrections should be made to the data – so long as these are not making unsubstantiated assumptions about the missing information. So for example, editing could easily fix a spelling error or a unit of measure but perhaps not the actual weight or quantity. Entries that cannot be corrected suitably should be excluded from further

processes. A log of all changes should be maintained for later analysis. This can point to areas in which staff may require further training.

The final processing phase will only apply to those price observations that are to be used in the ICP calculations. The ICP has its own SEMPER editing system that ensures compliance to strict definitions and standardisation in an iterative fashion.

Following the recommendations above will substantially reduce the time needed for this final editing process. It should also reduce the need for regional meetings to conduct editing activities.

7. Conclusion and next steps

The task force on country operational guidelines and procedures has as an overarching aim the mainstreaming of ICP activities into the ongoing work of the national statistics office. It has been recognised that the lack of a clear notion of what this practically means has been a stumbling block to progress.

This paper has outlined the major steps in collecting and processing price information in a way that can ensure the continuous availability of data for ICP, but also provide improvement opportunities for national statistics offices.

Should this framework be adopted, the next steps would be to identify successes and obstacles in different environments. A template could be sent to several countries that have achieved some integration to capture their experiences. This information could enhance the generic guidance provided here, and be turned into case studies to illustrate the workability of the recommendations.