

# Synergies between CPIs and PPPs and Integration of Survey Activities

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# Synergies between CPIs and PPPs and Integration of Survey Activities

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## Abstract

Purchasing Power Parities (PPPs) are both price relatives and spatial deflators used as real currency converters to compare the performance of economies around the world. In their simplest form, they show the ratio of prices in national currencies of the same precisely defined product in different countries. PPPs are essentially estimated by the International Comparison Program (ICP), which is a worldwide statistical initiative that occurs every five/six years. Conversely, the Consumer Price Index is a temporal economic indicator that measures changes over time in the prices of a fixed basket of consumer goods and services and serves as a regular national indicator of inflation in addition to many other purposes such as ‘cost of living index’ and ‘compensation index’. Although not comparable, both indicators require the collection of a specific basket of goods and services. Thus, the integration of the CPI and ICP activities will produce many synergetic effects; the harmonized ICP methodology will help improve the CPI infrastructure, and the specific product descriptions used by the ICP will not only strengthen the national CPI product lists, but will also be integrated within the national CPI lists resulting in a more frequent production of PPPs. Moreover, the development of a harmonized subset in the CPI list of countries can potentially lead to the production of a comparable sub-regional or even regional CPI index. Furthermore, countries with considerable geographical surface and/or federal structures will not only profit from the capacity building benefits of the ICP in terms of improving the CPI processes, but can also integrate a harmonized subset within their sub-national CPI lists to compute sub-national PPPs on a regular basis. Sub-national PPPs will allow governments to draw more accurate economic and financial policies on the sub-national level and will provide investors with reliable economic indicators when assessing the situation in different regions within the country. A pilot project is being implemented in the United Arab Emirates with the year 2015 as base and results should be published by the third quarter of 2016. The outcome of the UAE project will undoubtedly evaluate the feasibility of a regular sub-national PPP production, and will also assess the viability of conducting similar projects not only in Western Asia region but anywhere in the globe.

## **Introduction**

Purchasing Power Parities (PPPs) are spatial price relatives that are used as real currency converters enabling the comparison of prices across different economies. The production of PPPs requires the price data collection of items that are representative of the country and comparable between different countries. PPPs at the global level are computed through the International Comparison Program (ICP), which is a worldwide statistical initiative occurring every five to six years and allowing the comparison of GDP and its main aggregates across different countries. On the other hand, Consumer Price Indices are temporal economic indicators measuring changes over time in the price of a certain basket of goods and services. They act as indicators of inflation, cost of living indices, and compensation indices. The computation of the CPI requires the collection of price data for items that are representative of the economy, but does not call for item comparability across different countries.

However, the computations of PPPs and CPIs both require data collection for a specific basket of goods and services, follow the COICOP classification, and can be used in research on poverty, sub-national price comparisons, compensation indices and salary scales, etc. This is where the benefit of integration between the CPI and PPP activities stems from. The harmonization of classification, the use of one's methodologies in improving the other's structure, and the overlap in the product lists render the integration of activities between the CPI and PPPs not only possible, but also highly valuable given their importance and usefulness in economic indicators and research and as tools for economic development. Through the harmonization between the CPI and ICP activities, the production of more frequent PPPs becomes possible with the synchronization of data collection activities, thus reducing the time, effort, and resources needed for data collection in the production of PPPs. The synergetic effects resulting from such integration are fully explored in this paper.

This paper illustrates the significance of the CPI as a temporal indicator and the possibility of its use in comparing price levels between different countries through the harmonization of CPI methodologies, and the value of PPPs as price deflators and as tools for spatial comparison between countries and their importance on the sub-national level. Additionally, it shows the improvement in the structure of the CPI resulting from the integration between the CPI and ICP through the activities described, as well as the use of the CPI in the production of PPPs. The integration between the CPI and ICP combines the characteristics of both indicators and enables the resulting benefits to be reaped on the global, regional, national, and sub-national levels both spatially and temporally contributing therefore to economic development.

## **Integration Activities in Western Asia**

### ***A- Use of the CPI in PPP computations: Activities for 2012-2013 PPP extrapolations and backcasting of 2015-2014 PPPs in Western Asia***

The integration between the CPI and PPPs is a double-folded process: it is often seen from the perspective of improving the CPI infrastructure through the incorporation of ICP methodologies; nevertheless, the integration can be achieved bilaterally, for instance through the employment of the CPI in the production of PPPs and implementation of the ICP.

Building on the experience gained from the 2011 ICP round, ESCWA aspired to construct a PPP time series extending over the period from 2011 to 2016. In the interim period between the 2011 ICP round and the ensuing round, ESCWA took on a new initiative in order to accomplish this goal utilizing data obtained in the 2011 ICP round and national CPI data for 2012 and 2013 for the participating ESCWA member countries to extrapolate PPPs for the years 2012 and 2013. ESCWA is also currently conducting a 2016 regional ICP round, and is planning on applying the same procedure to backcast PPPs for 2015 and 2014 through the use of the resulting 2016 PPPs and national CPIs for 2015 and 2014, thus obtaining PPPs for 2015 and 2014.

As this initiative was innovative, ESCWA developed the methodologies for the extrapolation activity. For household consumption data, ESCWA asked the member countries to provide their monthly or quarterly national CPIs at the most detailed level (product level). Then, ESCWA's ICP team derived and applied the quarterly inflation levels to extrapolate quarterly average prices for the years 2012 and 2013. In the next step, national annual average prices were calculated for each of the years 2012 and 2013 for the goods and services from the household consumption list. Alternatively, the special survey data were extrapolated by each country's national statistical office, wherein some countries' statistical offices preferred to collect new data, while others worked on extrapolating the prices from the 2011 available data using the appropriate indices. The obtained data were afterward supplied to the regional office for intra and inter-country validations during which the ICP team performed validations for the HHC data as well as special survey data, validating therefore national annual prices for goods and services covering all the GDP components. Countries provided the GDP expenditure weights for each of 2012 and 2013 following the same methodology used for obtaining 2011 GDP basic heading weights. The final step consisted of the computation of PPPs for 2012 and 2013. After the computation of 2016 PPPs, the backcasting of 2015-2014 PPPs will be implemented following the same methodology.

The aim of this initiative was the computation of PPPs for 2012 and 2013, and later for 2015 and 2014, without undergoing a new data collection activity. The extrapolation

methodology developed by ESCWA enables the production of more frequent PPPs and the compilation of a continuous PPP time series through the integration with the CPI activities.

### ***B- Use of the CPI lists in the construction of a regional product list for the 2016 regional ICP round***

Another activity conducted by ESCWA and which falls under the framework of integrating ICP with CPI activities is the 2016 regional ICP round for Western Asia (WA). Since there was no global ICP round in 2016, ESCWA decided to carry out a regional round in order to sustain the production of PPPs in WA region.

During this round, the national statistical offices of the participating member countries will collect prices for items from a newly developed and updated regional product list. ESCWA constructed the regional list for the 2016 regional ICP round by merging and incorporating the national CPI product lists of the different participating countries along with the updated global core list and the previous regional product list used for the 2011 ICP round. In other words, products were used from each of the national lists, global list, and the older regional list, thus integrating the CPI and ICP product lists and strengthening the link and connection between them in order to ensure representativeness and comparability of items across the different countries in the region. The work on the list construction did not stop here; in order to ensure the success of the 2016 regional ICP round, the regional team developed the regional product list and an accompanying catalogue using the ICP methodology by applying structured product descriptions on global as well as regional items in order to ensure comparability. The catalogue was developed illustrating the different items along with pictures and detailed specifications for each item in both English and Arabic for household consumption data. Catalogues were also developed for some of the special surveys, hence specifying the items required and making the data collection process easier for the national statistical offices.

The newly constructed 2016 WA regional product list comprises a total of 632 items, of which 428 items are in common with the updated global list, and 204 items are specific to WA region. More specifically, the 204 regional items include 109 items which were also available in the 2011 list, whereas the 95 remaining items are newly added, specific to WA, and formulated according to the national CPI lists of the participating ESCWA member countries. The modifications made on the list and the reduction in the number of items from the 2011 regional list make the data collection process easier for the national statistical offices, especially with the overlap in the regional product list and the national CPI lists.

The integration between the ICP and CPI activities achieved in this project will produce many benefits both on the regional and national levels. The overlap in the product lists between the national CPIs and the ICP, the harmonized methodologies of the ICP, and the structured product descriptions used by the ICP for each item will improve the CPI infrastructure and strengthen the national CPI product lists, thus benefiting the countries on the national level. Moreover, the illustrated catalogue developed by the ICP team will not only guide the national statistical offices in the data collection for the 2016 regional ICP round, but will also prove useful on the national level since the participating countries' statistical offices will be able to extract part of the catalogue comprising the corresponding national items for national use in the CPI data collection. In addition, the beneficial effects of the integration between the CPI and ICP on the national level will also be reflected regionally, through the production of more frequent PPPs. The 2016 regional ICP round for WA will result in the production of PPPs for 2016, which will be followed by a backcasting of PPPs for 2015 and 2014, thus complementing the WA PPP time series extending over the period from 2011 to 2016. In other words, this integration activity paved the way for the implementation of a new regional ICP round, showing how both the CPI and ICP complement each other and how the infrastructure of each can benefit from the methodologies of the other through the bilateral integrating nature between the two.

### ***C- Regional/Sub-regional CPI harmonization***

Moreover, another important synergetic aspect of the integration between the CPI and ICP is the computation of harmonized national consumer price indices, which facilitates the comparison of inflation levels between different countries and enables the computation of a sub-regional or regional index, hence accurately measuring inflation on a sub-regional or regional level. The harmonization of CPIs will be realized through the application of ICP classification and the overlap of items in the ICP and CPI product lists, thus improving the infrastructure of the national CPI through this exercise. This integrating activity will have positive outcomes both on the national and regional levels, namely by enabling the sound assessment of the economic situation in the country and the region and by providing guidance in the formulation of appropriate economic and financial policies.

On this note, ESCWA is undertaking a new project involving the production of harmonized consumer price indices in a group of its member countries, which will allow the computation of a harmonized consumer price index for the sub-region as well. For this activity, the countries composing the pilot group were selected based on the similarities in their consumption patterns, thus facilitating the construction of a basket of goods and services and smoothing the progress of the activity. Following the

completion of the first exercise and depending on the evaluation of its outcomes, the project may become a permanent element in ESCWA's statistical endeavors towards the enhancement of statistical practices, quality of data, and accuracy of economic indicators in the region. The group of participants might also be enlarged to comprise an additional number of countries and eventually all of ESCWA's member countries.

In order to launch this exercise, harmonized methodologies were devised and will be followed by each of the participating countries, thus ensuring the comparability of the resulting national indices. The first step consisted of a comparison by the regional office of the different national CPI product lists provided by the participating countries and classified according to the ICP basic headings, thus making the HCPI and ICP lists compatible in format. Next, incomparable items were eliminated to construct the final product lists to be used for the purposes of this exercise.<sup>1</sup> The resulting lists will include national items which are common with items in the 2016 regional ICP list.

The harmonization of consumer price indices will have substantial effects on the countries starting by enabling them to compare the temporal changes in the price levels between their economy and the other economies in the region. This comparison will allow for additional tools for assessment of a country's economic situation in terms of the region which comprises similar economies with similar consumption patterns. The HCPI can also be used as a guiding tool in the formulation of economic and financial policies, and subsequently play an active role in the economic development of the countries and the region. Moreover, the region as a whole can benefit from this exercise in the computation of a regional or sub-regional HCPI which accurately captures the price changes in the region and measures the regional inflation level.

In conclusion, the integration between the CPI and ICP in the computation of harmonized consumer price indices on the national and regional levels combines the characteristics of both the CPI and the PPPs. As a result, it allows spatial and temporal comparisons of inflation levels across different countries through the production of a time series of HCPIs using harmonized methodologies and unified definitions. In addition, the harmonization of classification between the CPI and ICP and the overlap in the product lists achieved throughout this activity will reduce the countries' burden by merging the data collection processes, thus resulting in a more frequent production of PPPs.

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<sup>1</sup> *The resulting product lists may differ across countries on the product level depending on the most consumed products in each country.*

#### ***D- Computation of sub-national PPPs***

Furthermore, ESCWA is implementing an ongoing project with the UAE for the computation of sub-national PPPs capitalizing on the experience gained from the ICP. In this project, work has been conducted to integrate the ICP work into UAE's existing CPI work, resulting in many benefits on the national and sub-national levels. It is not only the unique geographical structure of the UAE which comprises seven different Emirates appearing as a group of countries, each Emirate representing a country, but it is also the existing differences in the consumption patterns and prices of goods and services between the seven Emirates which inspired the choice of the UAE as a pilot country for the implementation of this project.

The different inflation levels across different regions of the same country and the dissimilar consumption patterns across sub-national regions caused by demographic diversity emphasize the need for the computation of sub-national PPPs or CPIs. Moreover, the differences in the cost of living and income per capita between the different regions of the country highlight the need for tracking the purchasing power of the same national currency across the country. Below is a more exhaustive description of UAE's experience in the integration between the CPI and ICP activities through the sub-national PPP project proposed by ESCWA and its impact on each of the Emirates individually as well as on the UAE as a whole.

In order to compute sub-national PPPs, ESCWA worked on unifying the different sub-national CPI lists and deriving a common one for use throughout this activity, ensuring therefore comparability by enabling the different Emirates' statistical offices to collect price data for the same basket of goods and services. ESCWA led the project implementation, walking the UAE through the different steps of the project. The household consumption list was constructed using a similar process to the construction of the regional list for the 2016 regional ICP round. The unified list assembled through integration between the sub-national CPI product lists and developed with additions from the regional ICP list was also adopted by Abu Dhabi's statistical office to be used as the new sub-national CPI list. Moreover, some special surveys were also developed by integrating the 2011 ICP special surveys with the existing national surveys, such as the construction survey, while other special surveys, like the rentals survey, were developed using existing sub-national surveys with improvements using the ICP 2011 surveys. The prices of a comprehensive list of goods and services were thus collected for the seven Emirates covering all the components of GDP expenditure. Several validation workshops were conducted during the later stages of the sub-national project to ensure the production of accurate PPP estimates. The quarterly HHC data and special survey data were validated using the ICP software and then provided to the regional office along with the estimated national accounts data for intra-Emirate and cross-Emirate validations following the same validation technique used in data

validation for the extrapolation of 2012-2013 PPPs. The next step involves the computation of the 2015 UAE sub-national PPPs, which is planned to be released in the last quarter of 2016.

Multiple benefits arise from this exercise both on the national and sub-national levels, and in both public and private sectors. The improvement in the CPI infrastructure, increased coordination between sub-national statistical offices, unified methodology, and expansion of the frame and coverage of price data collection are only some of the multiple benefits of the CPI-ICP integration through the computation of sub-national PPPs. The public sector will benefit from the production of sub-national PPPs in the improved assessment of comparative sub-regional growth and advantages within the country, solid estimation of the cost of living in the different Emirates, better evaluation of the economic situation and formulation of more suitable policies to attract more investment. Apart from the benefits gained by the public sector, other advantages arising from this project are also in favor of the private sector including the determination of the real market size of each Emirate, development of salary scales, and evaluation of sub-regional investment costs. Individuals can also use the sub-national PPP results in assessing the real income and purchasing power across the Emirates.

This project involves mutual integration between the CPI and ICP, highlighting the dual nature of the integration process, whereby both are effectively and simultaneously improving one another through the incorporation of the ICP classification and methodologies within the CPI work, and the use of the CPI ongoing processes for the production of PPPs at the sub-national level.

## **Improvement of the CPI infrastructure through the integration between the CPI and ICP: Palestine's experience**

As discussed earlier throughout this paper, the integration between the CPI and ICP activities results in many positive outcomes, one of the key outcomes being the improvement in the CPI infrastructure through the incorporation of ICP methodologies and its effect on the national level. This part will focus on the experience of one of ESCWA's member countries, namely Palestine, in the ICP and the improvement in the CPI infrastructure resulting from the integration between the CPI and ICP activities.

Palestine participated in the International Comparison Program for the first time in the 2011 round, which included many statistical activities related to price statistics and national accounts. The various activities conducted during the implementation of the 2011 ICP round presented some challenges for Palestine in terms of sharing the same statistical language with the different participating countries, having globally unified definitions in order to accurately measure the intended information, and comparing different economies globally in terms of national accounts and price data. However, those activities also represented an opportunity for accumulating knowledge and improving capacities, especially in the field of consumer price statistics and national accounts. The integration between the CPI and ICP activities resulting from Palestine's participation in the program's 2011 round from its beginning until the publication of the results has a positive impact on different levels:

### *1- Basket selection and data collection:*

Items composing the consumer basket in Palestine's national CPI are selected according to the Household Expenditure Survey and are based on the most sold items. In the ICP however, the large amount of participating countries and diversity of the different consumption patterns render the item selection process more elaborate and comprising multiple steps on the global, regional, and national levels; the first step consists of the selection of the global basket followed by the selection of a regional basket including global products and other regional specific products (since items that are important in one country or region may not be available or important in another), and the next step involves the determination of item importance according to the national CPI. In Palestine, the CPI and ICP baskets were merged into one database consisting of three types of items: common items composing 50% of the total basket; national CPI items amounting to 20% of the basket; and ICP-specific items making up the remaining 30%. This initiative allows the ICP work to be conducted by the national CPI team, enables the use of the same equipment for data collection of both indicators, and enables skipping the repetition of the data entry process thus saving time, efforts, and money.

## *2- Product update and unspecified items*

Another important practice learned from the participation in the ICP is the application of structured product descriptions which provide detailed characteristics enabling the identification of products considering that item names may vary between countries. This practice has been implemented in the national CPI facilitating data collection and ensuring that the same item is being priced between the different governorates.

## *3- Catalogue for data collection*

A catalogue for the consumer products basket similar to the illustrated catalogue of the ICP was introduced at the national CPI level. This exercise facilitates data collection, improves data quality, ensures that all the field workers are pricing the same product, and solves the problem of unidentified items.

## *4- Data validation*

Moreover, Palestine improved its CPI activities by implementing the ICP validation rules at the national CPI level, precisely rules specifying upper and lower average price limits during the same round and an acceptable rate of change for the same product between different periods. The evaluation of outcomes was also improved by improving calculation tools using the ICP software rules.

To summarize, Palestine gained a very good experience through the participation in the 2011 ICP round, helping it improve its price statistics. The data collection and data validation processes were also enhanced by improving the electronic checks at the different work stages, in addition to the enhancement of data processing and outcome evaluation by incorporating elements from the ICP. Furthermore, the application of the ICP tools helped improve the calculation tools of the CPI as well, not to mention the importance of the development of a single common database for the CPI and ICP. The CPI-ICP integration activities accomplished by Palestine will result in the smooth and easy implementation of the next ICP round with few updates and adjustments in the current database according to the new international requirements, and the introduced comprehensive price database will simplify the work needed for the sub-regional harmonized consumer price index since the needed data will be available during 2016.

## **Conclusion**

In summary, both PPPs and CPIs contribute to economic well being through their various uses. They are different indicators with different purposes, the PPP providing spatial comparisons and the CPI temporal comparisons. However, although not comparable, the integration between the CPI and ICP activities is possible due to the similarities between the two in some aspects as previously mentioned, and can produce synergetic effects on the global, regional, national, and even sub-national levels.

The integration between the CPI and ICP activities can prove to be challenging. The products figuring on the ICP global core list may not be matched on the national lists; for instance, some products may not be representative of a certain country or not available in all regions of a country equally, presenting disparities between urban and rural areas, or not consumed by households from different income levels in the same country.

Nevertheless, the double-folded process of integration between the CPI and ICP provides multiple benefits, thus overthrowing the possible challenges. Some of the integrating activities include the use of the CPI in the extrapolation and backcasting of PPPs, the construction of a regional product list and implementation of regional ICP rounds, the production of national and regional harmonized consumer price indices, and the production of sub-national CPIs and PPPs. Subsequently, integration between the CPI and ICP activities and methodologies may potentially lead to the strengthening of the national CPI product lists and improvement of the national CPI infrastructure (CPI survey, special surveys, product lists and specifications), the synchronization of data collection activities, the production of more frequent PPPs and compilation of PPP time series, which in turn, owing to their multiple uses in economic and development indicators, poverty studies, economic reports, and research papers, can produce a ripple effect whereby the positive impacts of the integration will extend to the economy as a whole through the production of better price statistics, the sound evaluation of the economic situation, the formulation of appropriate economic and financial policies, and economic development in general.

The progress that ESCWA is making regionally through the use of the ICP methodology is a proof of the importance of the integration between the CPI and ICP and the value of the production of more frequent PPPs by adopting the ICP as a permanent element in the worldwide statistical practices.