

## ADB Economics Working Paper Series



### Integration of Consumer Price Indices and the International Comparison Program for the Asia and Pacific Region: How can They be Achieved?

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Michael Ward, Chellam Palanyandy, and Eileen Capilit  
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# **Integration of Consumer Price Indices and the International Comparison Program for the Asia and Pacific Region: How can They be Achieved?**

**Michael Ward, Chellam Palanyandy, and Eileen Capilit**

December 2008

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## **Abstract**

The International Comparison Program (ICP) was established as a system for performing cross-country comparisons. Gross domestic product (GDP) and its components are converted into a single currency using purchasing power parities (PPP) thereby eliminating the shortcomings from using market exchange rates for establishing comparable levels of GDP across countries and estimating poverty based on internationally comparable poverty lines. The 2005 ICP for Asia and the Pacific has been hailed as a milestone in statistics with the participation of 23 economies in the Asia and Pacific region and the simultaneous participation of the People's Republic of China and India, but concerns confronting past ICP activities still remain. This paper attempts to provide alternative ways to improve the operational aspects of ICP price collection on which to base future ICP data operations, and to do so without countries having to incur significant increases in regular budget outlays. Hence the integration of consumer price index and ICP work is confined only to the household consumption aggregate of national accounts. Further, it explores how a more refined approach that modifies and expands existing procedures for price collection can be implemented, and how the ICP approaches can be integrated and sustained by countries even for nonbenchmark years.



## **I. Introduction**

Through the years, the International Comparison Program (ICP) has been a system for performing cross-country comparisons. Gross domestic product (GDP) and its components are converted into a single currency using purchasing power parities (PPP). PPP data have been widely used in poverty analysis, particularly for estimating poverty-based on internationally comparable poverty lines. PPPs eliminate the shortcomings arising from the use of market exchange rates in establishing comparable levels of GDP across countries.

The Asian Development Bank coordinated the ICP Asia Pacific component of the 2005 ICP, which is one of, if not the biggest, global statistical undertakings ever attempted. With the participation of 23 economies in the Asia and Pacific region and the first-time simultaneous participation of the People's Republic of China (PRC) and India, the 2005 ICP was hailed as a statistics milestone whose successful completion was anchored on close and active collaboration between international organizations and national implementing agencies, and strong support from donor agencies. More importantly, the 2005 round paved the way for greater understanding and cooperation among participating countries, and underscored the importance of coming up with comparable and consistent prices and weights across countries.

A key benefit from the ICP Asia Pacific is the use of the program as a major statistical capacity-building initiative in participating countries (ADB 2007). Through the conduct of regional and in-country training and workshops, meetings with senior officials, and regular communications with national statistics offices (NSOs), ADB has established strong synergy between ICP data collection for related economic statistics, in particular price and national accounts statistics. At the same time, ADB benefited directly from the assistance and advice it received from member countries in these areas. This has contributed to a stronger foundation of trust, knowledge sharing, and mutual understanding in the region between ADB and participating member countries, resulting in general improvement in data quality.

The next ICP round for 2011 was endorsed by the United Nations Statistics Commission in February 2008. It is imperative therefore for the Asia and Pacific region to conduct

follow-up activities that will ensure not only the continuity of expertise gained but also increase leverage and readiness of countries for the 2011 round. Efforts leading toward sustained interest and enhanced capacity of statistical agencies specifically in price and national accounts statistics should continue to be part of ADB's commitment to its developing member countries. In congruence with and capitalizing on the valuable lessons from the 2005 ICP, ADB conducted an ICP/CPI Harmonization Workshop in January 2008. Among the goals of the workshop was to discuss issues confronting ICP activities and proposals that can be adopted to support and enable greater integration of ICP with regular price collection surveys. There was a high degree of unanimity on what was viewed as key concerns. These included:

- (i) price collection for “comparable” products, including services, in the ICP list that are mostly priced at a higher level than the equivalent “representative” domestic item normally purchased.
- (ii) unavailability of a majority of comparable products in the rural areas
- (iii) considerable price variation within countries by location according to the nature of the terrain, physical accessibility, and cost of transportation
- (iv) availability of most ICP products mostly in specialist shops or in large urban department stores frequented by middle-class households
- (v) nonrepresentativeness of some products in the local household budgets in some countries
- (vi) unavailability of ICP comparable items across the same number of outlets as their equivalent consumer price index (CPI) items
- (vii) inapplicability of the structured product descriptions that include brands and packaging specifications to regular CPI procedure whose market baskets are particularly concerned with representativity of the consumption of the average households within a given locality, i.e., provinces or regions
- (viii) necessity to undertake special surveys for collecting consumption items from rural areas to extend the national average prices because ICP items were either not collected or not compatible
- (ix) real resource demands placed on countries and their NSOs to produce data for the ICP
- (x) significant increase in costs and consequent burden on the budget of implementing agencies

- (xi) inconsiderable relevance of PPPs, which are basically requirements of international organizations, to national planning or policy work

Many of the issues raised are conceptual and technical in nature and concern not only countries in the Asia and Pacific region, but also the general ICP. Solutions to these conceptual and technical issues such as product specifications; outlet coverage and outlet selection; quality of products; “exact” comparison bias; substitution of “neutral” products; use of bar code information; and data mining from the CPI database could possibly bring about improvement in price comparability and reduce the scope for error. Others are operational in nature. The focus of this paper is on these operational aspects of integrating ICP with CPI. It is hoped that addressing operational issues such as encouraging countries to make greater use of existing CPI organizational structure and system of data collection to compile parallel information required for PPP calculation would be the start of a long-term process in establishing a symbiotic relationship between CPI and ICP. The usefulness of coordinated CPI and ICP price data would also facilitate a better understanding of real incomes and comparative poverty levels. This is further explained in Appendix I.

It is also intended that the cost burden for both national and international agencies of the ICP is reduced, and that the enhanced intellectual investment in data operations and knowledge capacity created by the ICP 2005 is kept engaged.

## **II. ICP and CPI Data Collection in Selected Countries**

The credibility of the ICP rests partly on the quality and range of products regularly priced by countries and partly on the capacity of NSOs to extend their core price survey system to capture the ICP price data requirements. Prior to evaluating how the present ICP procedures could be enhanced and better integrated with existing CPI data and their supporting data collection structures, a preliminary analysis of the various CPI constructs in selected economies was undertaken. Appendix II provides the survey instrument used to enable ADB to compile and compare information on different country practices in the collection of the CPI data and data requirements for the ICP. This section provides a brief summary of the CPI methodology and price collection in Cambodia; PRC; Hong Kong, China; India; Malaysia; Nepal; and Philippines. It should be pointed out however, that the investigation of the countries’ practices on the CPI constructs were conducted around the latter half of 2007 and as such may not reflect changes (such as rebasing and introduction of new methodology, etc.) arising since then.

## **A. Cambodia**

The National Institute of Statistics compiles an overall CPI for Cambodia, comprising of separate indices for Phnom Penh, Provincial Cities, and Urban and Other Urban areas. All the indices incorporate measures for eight conventional categories of household consumption other than a “miscellaneous” group. The index is compiled quarterly but many prices, particularly of fresh food, are collected more frequently, in some cases, fortnightly. The weights are drawn from the 2004 Socio-Economic Survey and compiled from expenditure data collected from a sample of 15,000 households taken over the 15-month period from November 2003 to January 2005. From this, each month, a sample of 1000 households was selected from 60 enumeration areas to generate the relevant product category and location weights.

The standard list identifies 227 items that are priced in Phnom Penh and 225 items in the Provincial Cities. Cambodia faces a special problem of having to price many second-hand, refurbished, refitted and renovated products. The primary constituent items in each index may be different across locations but, generally, across the country, the products are the same and it is only their relative weighting that differs. The component indices of each city center are combined by population weights to produce the CPI for Cambodia.

## **B. People’s Republic of China**

In the PRC, a geographically large country and the most populous in the world, many data collection procedures have developed around the statistical legacy inherited from the comprehensive reporting system of the previous central State Socialist system. This put in place a very extensive geographical and topic-related network of operations for the collection of prices nationwide. The National Bureau of Statistics (NBS) compiles a very impressive range of price data (not only relating to final household consumption) from many locations on a regular basis. Prices are also collected from provinces, which are aggregated by the NBS to provide a national CPI. For this reason, it is not possible for the PRC to produce an unambiguous standard list of items in the national CPI as the actual items priced could differ from one place to the next depending on local preferences and demand conditions. But an overall index for household consumption and its major subcomponents is published.

Although the NBS compiles separate indices for urban and rural areas, there is probably an implicit tendency to give greater emphasis on formal prices for products dominantly found in urban (and peri-urban) locations in rural areas. This is particularly the case where the compilation procedures routinely follow the guiding principle (and actual practice) of collecting time-to-time prices from the same permanent and readily recognized outlets in each successive survey period. Purchases made from itinerant roadside merchants and temporary market stalls may be overlooked because the locations of such outlets change or are unsustainable over time.

Prices, especially of perishable products, are collected very frequently from regular local markets. The NBS observes a varying periodicity in the collection of prices varying from regularly consumed items and perishable products that are priced every two weeks and “fixed” price products such as rail fares and postage and telephone charges priced that are priced every quarter or half-year. More than 220 cities and counties are chosen as sample pricing areas from which the subsample of outlets is further selected.

Weighting is kept up to date every year through the continuous household budget survey process in the PRC. Detailed household expenditures records are compiled at the item product level and then classified to generic categories of significant expenditures associated with them. Items priced and weighted in the CPI are therefore generally representative of household consumption patterns across the regions.

### **C. Hong Kong, China**

Hong Kong, China’s CPI covers the whole territory, has wide-ranging product coverage, and compiles different subindices for broad household income and expenditure groups. These groups account for 90% (see below) of the households in the territory.

The Census and Statistics Department publishes a monthly composite index comprising separate price indices for low, medium, and high expenditure outlay households. These cover, respectively, 50%, 30%, and 10% of all households. The composite CPI is aggregated accordingly and traditionally derived as a base-weighted Laspeyres index. It is noted that over time, the expenditure weights change for the three subindices (for low, medium, and high expenditure households) are fairly insignificant from one year to the next. However, the expenditure ranges applicable to the three categories of households concerned expand progressively as the average spending level increases. The current index is based on October 2004 to September 2005 expenditure weights that are applied to the equivalent prices for that period. Each month, some 45,000 price quotes are obtained from 4,000 retail outlets and service providers. The index is obtained as an average of price change relative to a previous period and is not a measure of the change in the average price of a product. No unit or average prices are calculated or stored in the system. Public utility prices and public housing rents are collected directly and private rents are obtained from a monthly survey.

Despite the absence of calculated average prices, the wide extent and coverage of items in Hong Kong, China means the index is well set up for meeting the requirements of close harmonization with the ICP both along traditional lines and for compiling direct price ratios. Even so, in the last 2005 round of the ICP (Phase VII) around 130 items (or 20%) of the 656 items in the ICP core list could not be priced.

## **D. India**

India has no aggregate national CPI. It has constructed quite specific CPIs to serve different reference populations and policy interests. There are four separate CPIs: for industrial workers, urban nonmanual employees, agricultural laborers, and rural laborers. The base years for these indices have been only recently updated to 2004–2005 using the 61<sup>st</sup> round of the consumer expenditure survey that incorporates a 12-month rollover of surveyed households. Until just a few years ago, the weights for the CPI industrial workers was based on consumer expenditure data referring to 1981–1983, with recorded expenditures shifting in successive biennial steps from 1982 onward. The rural household price index on a base period of 1986–1987 used 1983 weights but the urban nonmanual employment price index, seen by many policymakers as the key price indicator, retained 1982 weights and a base period of 1984–1985. The new urban CPI extends its coverage to all urban areas.

To derive an index for the whole of India relevant to each of these categories, the detailed data are collected first by the 28 states (35 in total counting the Union Territories) and then aggregated by major expenditure subgroups. In the case of the urban index, the coverage extends to 59 selected urban areas. The index relates to five major expenditure categories: Food, Beverages and Tobacco; Fuel and Light; Housing; Clothing and Footwear; and a catch-all Miscellaneous group that includes transport and communications, education costs and health care, entertainment, etc. There are, in all, 23 distinct subcategories of spending identified.

## **E. Malaysia**

Like with other large countries such as the PRC, India, and Philippines, the Department of Statistics, Malaysia compiles a monthly CPI for what it defines as a distinct administrative region or geographical location. The CPI covers three specific regions and also, separately, the urban and rural areas within them to generate an index with comprehensive national coverage. The index incorporates component subindices for Peninsular Malaysia, Sabah, and Sarawak, and the respective weights are based on relative expenditures in these regions. Each of the regional indices is composed of separate urban and rural indices that are combined in accordance with their respective expenditure weights. The index is a conventional Laspeyres measure that monitors the changing cost of a fixed basket of unchanged quantities and qualities of goods and services every month across the whole country. The only prices that are not obtained monthly are for perishable products (these are collected every week); and rents that are obtained quarterly.

The “basket” follows a COICOP classification (a recent update of a previous methodology that reflected expenditure groups) of individual consumption. The goods and services are broken down into 12 main categories of products. The weights are taken from average

household expenditures from June 2004 to May 2005 and a 2005 reference base is used for monitoring price changes. The weights are updated every 5 years, the previous index being based on 2000.

Prices are obtained from 135 price collection centers, 87 of which are urban and 48 rural. Unlike in the other large countries in the region where local enumerators, in consultation with local shopkeepers, are given some latitude in the initial actual selection (and replacement) of items, almost all of the price data collected are for specifically selected items. By region, 98 centers are in Peninsular Malaysia, 19 in Sabah, and 18 in Sarawak. Over these centers, there are 20,000 outlets used for price reporting in Peninsular Malaysia; 2,000 in Sabah; and 2,400 in Sarawak. These outlets were purposively selected to identify those with the highest turnover. More than 150,000 prices for 460 products are collected each month.

In addition, Malaysia produces the CPI by income groups. There is also an index for calculating the Cost of Living Allowance adjustment payable to civil servants, and an index drawn from the CPI to reflect the average expenditure patterns of the poor. This is given by the outlays of those households in the lowest expenditure quintile. The feature of household size and age composition as it is related to total expenditure levels, however, is another factor that tends to have an important effect.

## **F. Nepal**

The CPI for Nepal is compiled by the Central Bank as part of its mandate for the surveillance and regulation of inflation. It is a national urban index that combines three separate indices for the Kathmandu Valley, the foothills, and the hills. In these regions, the price survey concentrates on areas where there are markets. The index is divided into two overall expenditure categories based on the 1995/1996 household surveys where the extremes of spending have been filtered and truncated from the distribution. The groups are Food and Beverages, and Non-Food and Services. At the national level, these two broad categories have roughly equal weights of 53.2 and 46.8, respectively. The former category includes the customary main groups of outlays on food and beverages whereas the latter incorporates Clothing and Footwear; Housing, Fuel and Light; Transport and Communication; Education; Medical and Personal Care; and Tobacco. Around 500 prices are collected from fixed outlets but a number of new department stores are not included. The index is a standard Laspeyres measure with weights centered on average 1995/1996 expenditures obtained from the Living Standards Measurement Survey and a base reference of 1996=100. The combined index is derived using relative urban population weights.

Although a rural household survey was conducted in 1999 and another Living Standards Measurement Survey in 2003, there is no immediate agenda for updating the CPI, but plans are under way to transfer the responsibility for compiling the index to the Central Bureau of Statistics.

## G. Philippines

The National Statistics Office (NSO) compiles monthly CPI for the Philippines and collects the large part of the prices in the CPI commodity basket. Meanwhile, the Bureau of Agricultural Statistics collects prices of the agricultural products component of the CPI such as fruits and vegetables. The index uses 2000 as its base and the 2000-based CPI was first made available on 5 February 2004 providing linked price details up to January 2004. The weights were obtained from the Family Income and Expenditure Survey that is conducted nationwide every 3 years. The 2000 round covered a national representative sample of 41,000 households. The expenditure behavior of households belonging to separate provinces and cities was obtained, with each area treated as an individually distinct domain. Corresponding to these locations, a specific consumption basket for each was identified. Thus, for the rebased 2000 index, 89 (five more than the previous index) of such baskets are defined for this purpose. The expenditure data by provinces and cities are then aggregated according to the level of expenditures of these provinces in their respective (13) regions. The regions are combined in a similar way to provide the national CPI.

The index is a weighted arithmetic mean of price relatives but is, in essence, a base-weighted Laspeyres measure. All together, 9,500 outlets are used with market prices being collected twice a month in all areas, except for the National Capital Region centered on Metro Manila, where prices are gathered weekly. The index is composed of two major subgroups, Food and Non-Food. For the country as a whole, the respective share of these components is almost identical at 50% each. Updating of the previous 1994 index and consumption basket involved a Commodity and Outlet Survey in 2000. In this survey, interviews were conducted with key informants on the availability and popularity of products and on the completeness of stocks of various items offered for sale in the outlets considered. The stability and consistent availability of the outlet itself was also taken into account.

For many areas, the same pricing of items from the previous 1994 CPI was retained. In some poorer and more remote areas, only around 300 products are priced every month, but in dominantly urban centers, over 700 products have been included in the index. Prices for the items concerned are obtained from a multiplicity of outlets. The existence of different expenditure baskets comprising the national index means that local preferences, in respect also of the units in which quantities are usually sold and their quality, are taken into account at this level. Thus the same items are not priced in all areas. In other words, an annual national average price cannot be uniquely and readily derived for a given product, despite the extensive coverage of prices and high frequency of reporting involved in national price collections. The NSO reports that 459,000 prices are collected every month.

### **III. The Proposals**

The associated proposals made in this paper, the feasibility of which needs to be discussed with NSOs, are intended to ease the burden on countries of the increasingly demanding statistical requirements of the ICP. The ICP has wide-ranging data coverage and is a program requiring intensive use of resources. Because of the demands on management and the high cost involved in carrying out the program, the ICP has been conducted only as an irregular exercise. This poses major budgetary problems for countries as a one-off work program, as much of the work is in addition to the regular continuing official tasks of NSOs. Signing up to the ICP program involves making substantial resource commitments to the exercise, over and above the approved amounts allocated under the regularly budgeted national program. This paper tries to identify some ways to lower overall costs while enhancing the quality and consistency of the ICP results.

#### **A. The “Rolling Benchmark”**

A complementary procedure for creating an ongoing data bank and for preserving a ready national data capacity that can cover all ICP pricing requirements is to adopt a “rolling benchmark” approach. In this labor-saving method, subaggregates of GDP relating to major components of household expenditure are priced over several different time periods instead of being bunched together in a single survey period over a single relatively short time span. At predetermined times in the run-up to the benchmark date, the regular CPI price collectors will be required to undertake an additional (but not separate) survey to obtain the prices of items in selected product components belonging to certain defined major PPP expenditure categories. This would involve the introduction of a rotational price survey program that sequences the price surveys of various household consumption expenditure groups and carries them out in a regular manner. The procedure requires the conduct of regulated partial surveys of different expenditure categories, which continues until all categories of final consumption have been covered, although not all at the same time. The method would then go on to link each time referenced price survey to the chosen benchmark period by applying the movements in the respective items and components in the CPI to the items identified. This technique was pioneered and is in operational use by the Organisation for Economic Co-operation and Development (OECD) and EUROSTAT, the agencies responsible for gathering data for the ICP region of the industrially advanced countries. It was designed as a means to spread data collection costs and at the same time establish the core capacity to generate annual PPP estimates. The approach was first applied, however, in an experimental mode by the World Bank as part of the proposed “reduced information method” for calculating PPPs. It is now used routinely in the effective conduct of the joint OECD/Eurostat PPP exercise.

The procedure enables the prices for PPP calculation to be routinely compiled alongside CPI data collection. But it also means that the same team of price collectors has to be

used for all expenditure categories, thus they have to be more flexible in the type of pricing work they are prepared to undertake. The work is split and evenly spread across a series of years on an annual basis so that it does not overburden annual costs and the practical survey process.

The organization of the additional price survey modules that need to be undertaken for each distinct major expenditure category over a different time cycle is a quite complex activity, especially as the additional modules would probably need to be rotated every half year within an overall 3-year period, as in the OECD schedule. These rolling programs, therefore, emphasize the need for the careful planning and management of the defined modules of different categories of expenditure to take account of seasonal variations (such as outlays for fruits and vegetables and clothing and utility services) and key physical logistical issues. Each module will contain standard listings of all products that have to be priced, which will pose challenges of timing and coordination. A core authority is required to take on the task of orchestrating the project tasks, agreeing on the schedules of product lists and the survey timing, arranging the pricing program, supervising the processing of data according to a strict timetable and pre-determined deadlines, and assuming overall responsibility for delivering the results.

This method also requires good CPI item price series to extrapolate the prices identified in the index to the corresponding matched products from the chosen national accounts category (ICP products), and project the estimates forward to the chosen reference year. The best results will be achieved by linking individual product group price relatives in as fine a product detail as possible to the observed ICP item prices. But the match does not have to be exact because a fundamental assumption underlying product selection in the CPI is that similar products are substitutes and their price changes move together.

The choice of rotation procedure is dependent on the particular categories of products that are most usefully tied to the main elements of final household consumption. The length of each cycle considered most convenient for maintaining staff skill capacity and maintaining a core group of survey staff employed to conduct the work, however, has to be agreed between countries.

In Europe, over the course of these “continuous” surveys, it has been found that there is some scope for generalizing common product descriptions across countries. The availability of cross-country ICP data has helped to underpin the development of “harmonized” indexes of consumer prices across the European Union members.

The OECD and European Union have found, over the years, that the consistency and comparability of their price measures across member countries have improved and that spreading pricing surveys for major expenditure categories has saved both time and real resources, and has shown considerable cost savings. It has also led to a closer

harmonization of the ICP with the CPI, as very detailed CPI product price series must be applied to the surveyed PPP prices to bring all data to the same reference benchmark.

The exact details of how the pricing modules are conducted needs to be worked out. They may be dependent on the capacity and resources available in each respective country. NSO staff will have to become skilled in price collection across the whole range of household consumption and actual expenditures. But this may also help to ensure a better distribution of staff workloads. The practice in Europe where each product is priced at least twice over the period of the rotation may pose problems in the Asia and Pacific region, not least of which are logistical where a country is large and physical communications are difficult. As mentioned earlier, any scheme of partial pricing spread over given time periods will need to resort to the detailed CPI in order to link the reported prices for nonsurvey years to the chosen benchmark. (This is already done in the current procedures for selected items like housing services and certain expensive durable goods.)

As earlier indicated, this simple standard procedure ensures that a closer link between the CPI and ICP pricing programs is maintained, encouraging some mutual strengthening of each procedure by the other. In Europe, a 3-year cycle has been found suitable for those products purchased on a more regular basis, but for items of a more durable nature, the cycle could be longer. Food item prices on the other hand could, in practice, be collected annually. This product group perhaps needs special attention because it plays such an important part in the budgets of households in many parts of Asia and especially of those with low disposable incomes.

A survey framework for pricing consumption expenditure categories in the Asia and Pacific region could be as follows:

Year I	1 <sup>st</sup> six months	Food and beverages
	2 <sup>nd</sup> six months	Personal and household care
Year II	1 <sup>st</sup> six months	Furniture and furnishings
	2 <sup>nd</sup> six months	Household durables
Year III	1 <sup>st</sup> six months	Transport and communications
	2 <sup>nd</sup> six months	Recreation, entertainment and other services

This is very close to how both national accounts final household expenditure categories are defined and also how the expenditure weights of the CPI are structured. But equally important, the proposed timing for pricing these final expenditure components recognizes that the CPI details are probably best for items belonging to the food and personal care categories and less detailed for equipment goods and personal services. In other words, the categories with potentially the strongest time series of price data links should be canvassed first. As in both the CPI and previous ICP phases, housing services may have to be treated as a separate category for pricing purposes and the survey should be taken in the base reference year.

It is possible to distinguish more than six expenditure categories, eight for example, in which case the countries will need to extend the cycle to a 4- year period with eight half-year surveys to accommodate each category. This course of action is not recommended as it would require countries to resort to the CPI updating process over a longer period, a process that would expose the derived estimates to greater error and different coverage with the passage of time.

In the example above, Year III represents the benchmark year (or base reference year) for estimating PPPs on a consistent basis. Provisional figures for the benchmark year could be based on the average of the June and July Year III figures. There is an advantage in doing this “trial run”; it would give some advance warning of the potential incompatibility of some estimates of price ratios. In practice, however, the figures are more likely to reveal that the predefined binary price ratios for particular items between any two countries over a relatively short period of 6 months are fairly stable.

The “rolling benchmark” methodology clearly makes it feasible to estimate PPPs on a more regular basis, a feature that would be desirable in itself. It is however necessary that intensive discourse is held between the countries in the Asia and Pacific region to straighten out organizational and logistics issues.

## **B. Subregional Stratification of Countries**

There are additional benefits to be gained in terms of improved comparability and achievement of greater product equivalence across a wider range of items from grouping ADB members in the region into more homogeneous categories. There is a distinct lack of homogeneity in the ADB members. The respective populations of the region possess strong ethnic, religious, and cultural differences; are spread across very different ecological and climatic regions; and some have only low income levels while others very high incomes, all of which influence their spending patterns, especially on food and clothing. Given this diversity, the countries in the region cannot be viewed as single markets, which is why the region was divided into subgroups. In the 2005 ICP, the product lists for consumption were set up so that characteristics of the various parts of the region were taken into account. The simplest example was including a large number of specifications for rice, which is most commonly consumed in South Asia, as well as a large number of specifications for noodles, which are most common in East Asia. In this way subregional characteristicity was taken into consideration. Subregionalization therefore would allow for a more tightly defined product list for each subregion making quality differences less significant. Moreover, product lists can be focused on a smaller range of products enabling countries to price a larger proportion of them, i.e., increase the overlap between CPI and ICP product lists; and would make it easier to use CPI products and specifications in a subregional approach.

How could countries in the region be grouped? Various alternatives are available. Some possible criteria are geographical proximity, per capita income, quantity structure, price structures, population, and ethnicity. To maintain the merit in dealing with a somewhat smaller number of regional groupings, the following subclassification of country groups was followed. These groupings possessed an internally consistent logic that reflected many of the above characteristics and still preserved the important feature of manageability (note that there is no significance attached to the actual numbering of the groups).

#### Group A

1. Hong Kong, China
2. People's Republic of China
3. Taipei, China
4. Mongolia
5. Macao, China

#### Group B

1. India
2. Pakistan
3. Bangladesh
4. Sri Lanka
5. Maldives
6. Nepal
7. Bhutan

#### Group C

1. Singapore
2. Viet Nam
1. Thailand
2. Lao People's Democratic Republic
3. Cambodia
4. Malaysia
5. Philippines
6. Indonesia
7. Brunei Darussalam
8. Myanmar

#### Group D

1. Fiji
2. Papua New Guinea
3. Other Pacific Islands
4. Maldives

The above groups usefully correspond with other political associations of countries such as the Association of Southeast Asian Nations and South Pacific Commission. Each of the above groups adopted a currency of one of the countries that served as the base currency. The subsequent linking of the subregional groups, in principle, was quite simple and was carried out at the stage of comparing basic heading level ratios. This was done in aggregate by applying the Eltetö-Köves-Szulc procedure to all ratios combined for a category expressed in the chosen subregional base currency, or at the detailed basic heading level. Thus, in the ratio  $P_a/P_b$ ,  $P_a$  relates to outlays in subregion A's base values and  $P_b$  to the corresponding base currency values for subregion B. The linking was simpler as a result of using ratios directly, and because for any set, the denominator currencies were the same.

The process of matching countries to their respective groups, aggregating the groups to the region, and then linking the region to produce a global comparison occurred in several stages. Alternatively, the groups were joined through links at the first stage in a “star” system. It should be pointed out that the “star” approach also requires a center, in other words, the identification of a country that belongs to one of the groups that will serve as the focal point and the binary link to each and every country in all the groups in the region. In this case a single country took on the task of matching items with products in its own basket and used its own currency as the core. This was the procedure adopted in the first OECD PPP comparisons in the 1980 when the exercise was extended to incorporate the Group II countries (former socialist economies of Central and Eastern Europe) into the full OECD comparisons. That procedure required Austria to serve as the core country at the center of the star system matching prices of the products identified by the Group II countries. In any future ADB-supported ICP program, Malaysia could similarly serve as the core for the Asia and Pacific region. But this clearly imposes an unfair burden on one country. It also violates other desirable qualities of a multilateral comparison such as transitivity and base country invariance. However deriving links at the basic heading level, the lowest stage at which weights have been calculated, at least so far, can circumvent some of the traditional regional aggregation concerns.

### **C. Development of a Core or Primary Product List**

In the 2005 ICP round, the full regional product list for the Asia and Pacific region for individual consumption by households consisted of 656 goods and services. The product list was prepared following a structured product description to ensure comparability of goods and services priced across countries. Given the stringent specifications for each product, most countries in the region had difficulty pricing all the products (from a minimum of 373 to a maximum of 593). No country in the region priced all the 656 products. Further, the extent to which the ICP price data collection could be integrated with the CPI varied vastly. In most cases the ICP data collection was an almost separate exercise and most countries found these surveys to be very costly in terms of both human resource and budgetary requirements.

A balanced reduction in the number of ICP products for price collection could enable mainstreaming the ICP more closely with routine statistical programs of NSOs. The 2005 ICP has generated a rich database. The potential of utilizing this database and exploiting it for the purpose of developing a core or a reduced product list has been little explored. A more intensive use of information from the database could be made to generate a core product list based on the principle that the list should be optimal, in the sense of delivering minimum deviations from the full list for the whole set of countries. Such a reduced list will enable PPP pricing requirements to “piggy-back” more effectively on the CPI. This would not only significantly reduce operational costs but would also ensure compiling quick updates of PPPs for the years in between benchmark years.

A preliminary exercise<sup>1</sup> using the 2005 ICP database and applying the principle of “minimum deviations from the full list” was conducted in June–August 2008 by the Development Indicators and Policy Research Division (ERD), Economics and Research Department, Asian Development Bank. Using the combinatorial approach,<sup>2</sup> 269 products from a total of 656 products were identified as candidates for the core list. Parameters used in the selection criterion was at least 30% of the products priced for each basic heading (of the 2005 ICP) and in cases where the number of products within the basic heading was too low, (e.g., two or three), then all the products from those basic headings are included in order not to affect the level of precision of estimates. This exercise, which brings the core list to about 41% of the total as shown in Table 1 below, has effectively demonstrated the possibility of having a reduced list and the potential for integrating the ICP price collection with the regular price collection surveys.

Another modification that is being explored by ERDI to reduce cost and manpower resources and increase the prospects for integration is the possibility of collecting prices for household goods and services from outlets in major capital cities only and on a quarterly frequency. Naturally, prices will have to be adjusted to represent national annual averages using either CPI data or the 2005 ICP prices or both for each country. The methodology for adjusting the prices will vary countrywise, depending on geographical diversity and statistical capabilities of each country.

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<sup>1</sup> The preliminary exercise is part of the activities of RETA 6482: Improving Price Collection and Updating PPP Estimates for Selected Developing Member Countries currently being implemented by ERDI.

<sup>2</sup> The combinatorial process is further described in the background paper titled “ICP Asia Pacific: 2009 PPP Update” prepared by the World Bank (Dikhanov 2008).

**Table 1: Comparison of Items in the 2005 ICP Asia Pacific vs. the Core List**

<b>Economies</b>	<b>Number of Items</b>		<b>Percent Share ( b / a )</b>
	<b>2005 ICP (a)</b>	<b>Core List (b)</b>	
Bangladesh	525	215	41.0
Bhutan	393	165	42.0
Brunei Darussalam	421	192	45.6
Cambodia	462	214	46.3
China, People's Republic of	487	215	44.1
Fiji Islands	443	192	43.3
Hong Kong, China	519	225	43.4
India	556	233	41.9
Indonesia	590	245	41.5
Iran, Islamic Republic of	418	189	45.2
Lao, PDR	379	175	46.2
Macao, China	491	212	43.2
Malaysia	575	245	42.6
Maldives	373	166	44.5
Mongolia	489	226	46.2
Nepal	512	217	42.4
Pakistan	593	244	41.1
Philippines	550	239	43.5
Singapore	473	211	44.6
Sri Lanka	552	232	42.0
Taipei,China	533	235	44.1
Thailand	529	233	44.0
Viet Nam	560	243	43.4
<b>Regional List</b>	<b>656</b>	<b>269</b>	<b>41.0</b>

## IV. Merits of the Proposals

The latest round (Phase VII) of the ICP was successfully completed in the Asia and Pacific region in 2007. The next round of this semi-decadal global survey is scheduled to commence in 2011. This means that if there are no changes to the operational procedure in conducting the ICP price surveys and remains as in the 2005 round much of the PPP price survey work will be concentrated around 2011. The expenditure estimates could well be carried out more than a year later. The *raison d'être* for the above proposals is that they should help to ensure that ADB members are able to preserve their technical capacity to carry out the required statistical activities for the next phase of PPP work.

The expected merits and outcomes of the proposals are as follows:

- (i) The processes suggested will assign greater ownership of the operational management of the ICP, including making all the national calculations as well as conducting the actual data collection, to the participating countries themselves.
- (ii) The suggested operational improvements may put more pressure on NSOs but they will lessen many time-consuming processes and reduce the actual operational burden of data collection. NSOs, moreover, will have more time to plan

- the organization of what will be a complex but better phased pricing exercise.
- (iii) It is well recognized that it is crucial to conduct PPP work with the least disruption of the regular statistical duties of the NSO, and particularly to its monthly price measurement tasks. The proposals should enable countries to assume their roles without having to incur any significant and unexpected additional cost burdens, and thus avoid having to make extra irregular claims on the budget.
  - (iv) The proposals offer a way to accomplish ICP objectives through more extensive data mining of existing sources. Specifically, they allow the PPPs to be built more effectively around the existing framework of regular price collections. The intention would be to use more fully the reporting procedures for the CPI.

## V. Conclusions

This paper discussed integration and more effective and efficient use of scarce resources and existing statistical capabilities to improve the operational aspects of ICP price collection on which to base future ICP data operations. From the 2005 ICP, it was found that all countries could identify and collect some of the internationally comparable items on the ICP product list in their countries. The looser the specifications used domestically, the easier it was to find such an item in the CPI but, for the most part, prices have to be collected by special additional surveys. Resource availability and funding posed problems for the ICP but countries were able to extend their usual price collection survey system to gather additional data required by the ICP. However, countries also regarded the explicit use of the CPI price collection mechanism as a core foundation for creating a different set of prices for the ICP to create some difficulties in view of the political and operational policy importance attached to the CPI. A large proportion of the comparable items found on the list were not similarly available in the regular CPI listing. Furthermore, the ICP list sometimes needed the implementation of special surveys covering new and extra outlets. The length of period since the last updating of the CPI also exerted a significant impact on the relevance of the reporting outlets used in the CPI for identifying item prices for the ICP. It must also be acknowledged that CPIs have a very high political and public profile and are used both statutorily and as core indicators in wage monitoring and performance targeting. Hence there are certain institutional “codes of conduct” regulating official procedures that exert pressure on NSOs not to alter or add to the initial specifications “mandated” or “gazetted” about the CPI, a measure formally approved by a legislative or parliamentary process.

This paper suggested methods to capitalize on the common organizational structures for generating data from existing resources to the mutual benefit of the CPI and the ICP.

Thought should also be given as to how the actual design of the CPI system, such as the organization of price collections and their frequency, could benefit the ICP. The reason for appealing to the standard CPI price collection procedure arises not only because of the desirability to strengthen PPP prices but also to reduce substantial costs entailed in conducting the ICP. This has as much to do with trying to preserve the unique technical capacity and expertise in PPP compilation methods of the NSOs as it is to keep costs in check.

The ICP has, without doubt, significantly increased the data burden on NSOs in the Asia and Pacific region. The proposals made in this paper are designed to make effective use of the existing price collection infrastructure, lower the potential burden of new data work on annual budgets, meet resource demands, and smooth out the process of actual budgeting and timing of the operations demanded by the complex nature of ICP activities. These are also intended to strengthen general management in data compilation and overall organization of price collection activities in particular. It has to be recognized, however, that the CPI is a mandatory regular pricing exercise that must preserve consistency over time, and that “integration” will be a slow process. Change will have to come, for the most part, from adjustments made on the ICP side.

## **Appendix I: Usefulness of Coordinated CPI and ICP Data: An Example of Poverty Measurement**

### **Some Practical Policy Applications of Better Price Measures**

Blending consumer price information and PPP data facilitates a better overall understanding of working class real incomes in each country. Internationally defined low-income threshold levels are useful to identify comparative poverty levels. This is particularly relevant in those ADB members where CPI data have been relevantly disaggregated between different income groups (as in India, for example) to allow “low income” price indices relevant to the working classes to be separately developed.

### **The Role of the CPI and PPPs in Poverty Measurement**

The problem of global poverty is one of the most crucial development issues facing the governments of poor countries as well as international policy makers and donors. Measuring poverty and the number of poor in terms of income, in particular in terms of some predetermined threshold of income level, is an important dimension of poverty and relevant prices contribute to a better understanding of this problem.

Crucially, price-level data and income measures of poverty enable analysts to trace the dynamics of poverty and its incidence on different households and how it is linked to economic and social policy. PPP-adjusted measures of national expenditures highlight what needs to be done. Among several purposes, income poverty measures are required to count the total number who are poor according to some notion of an absolute standard of “bare necessity”. This goes beyond that traditional “breadline” concepts used in early cost of living studies to derive estimates of the number of people who fall below some predefined and predetermined poverty datum covering basic needs for sustained survival and to monitor how their living standards were affected by monthly price changes.

This use of price level and price change data allowed early social reformers and policy makers to look at the extent price relatives and price absolutes accentuated income polarization between the richest and the poorest groups in society. Later the data were used to identify vulnerable groups and also to devise social protection and minimum income support policies.

Separate PPPs intended specifically to identify, on the basis of location and where poor people shop and the products they tend to buy, the lowest-income households in different countries. These have been compiled partly using CPI information, and mapped to the ICP 2003/4 surveys. These PPPs are designed to capture the expenditure behavior of low-income households and the prices poor people pay for the goods and services they regularly consume.

The type of outlet (as well as the location) where people shop is significant to the volume and pattern of spending by the poor and to the prices they pay. Usually, there is a different scale of shopping by low-income households and in the quantity by which many goods are purchased. This also has an direct effect on the respective item prices. Prices are also affected by how these goods are (or are not) packaged in some form. Finally, how poor people pay for their goods and

services and when they buy them has a bearing on real prices. Evidence suggests that for a wide variety of daily needs, the poor can pay more for the goods they buy compared with other households.

It is worth mentioning here that ADB has conducted a poverty-specific price survey as an extension of the 2005 ICP Asia Pacific, in its attempt to address the very issues raised above. The *Research Study on Poverty-Specific Purchasing Power Parities* was conducted in 16 of the 23 countries that participated in the 2005 ICP Asia Pacific. The participating countries collected data on prices of goods and services considered typical of the consumption of the poor in compiling poverty specific PPPs (see ADB 2008).

## Appendix II: ADB Survey of Developing Member Countries' Price Collection Practices

This short and simple survey provided basic information on how best to support countries' efforts at harmonizing the established official regular collection of consumer price data with the infrequent but more comprehensive "census" style price data requirements of the international community for the calculation of GDP expenditure-based PPPs. The structure of the survey was designed to compile and compare information on different country practices in both of these important fields of inquiry.

ADB's long-term aim is to provide continued support for PPP calculation by developing member countries and to help them complete the general requirements of the ICP with less disruption on their normal work program to ease the burden on annual budgets of producing data for the ICP. The primary outcome of this study will be an initial report not only for ADB use but also for country review and consideration. ADB later intends to commission a manual and workbook to help guide countries on how best to coordinate the collection and production of data used to depict price changes within countries and, at the same time, to measure differences in relative price levels between countries. For detailed analytical purposes, such comparisons are also required for major product groups below the level of GDP to strengthen the basis of economic comparisons of expenditures and standards of living.

The survey was prepared in two parts. The aim of the first section was to establish what ICP price data countries have already provided and retained on their regular databases and how these have been utilized. The second section relates to the CPI and provides the basis to identify the operational price collection problems that have been encountered in different countries and how each has dealt with the issues that have arisen. An "open" section was included for respondents to add their own specific comments and to elaborate on the index formulae they use.

The questionnaire sent to participating ADB members is shown below:

### Part A. Participation in the ICP

N.B. The information sought below relates only to final household consumption.  
[Please tick as appropriate.]

1. Did your country participate in the latest, 2005-6, round of the ICP?  
YES [ ] NO [ ]
2. Has your country participated in any previous ICP rounds?  
YES [ ] NO [ ]
3. Did you complete most pricing details for consumers' expenditure?  
YES [ ] NO [ ]
4. What percentage coverage of item prices were you able to obtain?  
Under 50% [ ] 50-79% [ ] Over 80% [ ]

5. Did you have to conduct any additional price surveys to achieve this level of coverage?  
YES [ ] NO [ ]
6. Were there specific categories of products where extra surveys were most needed?  
[Please list main areas below]
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
7. For how many basic headings did your country provide data?
8. For how many of these basic headings did you need to carry out special price surveys so as to provide a comparison of at least one item?  
All 155 [ ] 100-154 [ ] 50-99 [ ] 30-49 [ ] Under 30 [ ]
9. For those prices to which you already had access in your database, please tick all the available sources you used:  
CPI/RPI [ ] Agriculture Dept [ ] PPI [ ] Market research [ ]
10. Adverts and trade publicity  
[ ] State/Administered/Utility prices [ ]
11. Standard/Regulated fees  
[ ] Other [ ] Please state \_\_\_\_\_
12. In carrying out extra surveys did you visit outlets used in the CPI data collection?  
YES [ ] NO [ ]
13. Did you also find it necessary to include other additional retail outlets?  
YES [ ] NO [ ]
14. Did you sub-contract any of the EXTRA surveys to private agencies?  
YES [ ] NO [ ]

## Part B. Regular consumer price collections

1. What is the name of your primary price index of consumer spending?

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2. Do you compile your overall CPI or RPI on a monthly basis?

YES [ ] NO [ ]

3. Does the CPI have national coverage? YES [ ] NO [ ]

4. If the answer to Q.3 is 'NO' is it an 'Urban' CPI? YES [ ] NO [ ]

5. What is the latest base year for this index? \_\_\_\_\_

6. Is the index linked back to earlier years? YES [ ] NO [ ]

7. Do you cover the 10 broad COICOP categories in your CPI?

YES [ ] NO [ ]

8. If you answered 'NO' to Q.7, what main categories do you exclude?

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9. Which of the main categories are mostly not collected monthly?

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10. Does the index cover a representative cross-section of households?

YES [ ] NO [ ]

If the answer to Q.9 is 'NO' please state to which population group(s) your CPI refers.

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11. Are the richest and poorest households excluded? YES [ ] NO [ ]

12. Do you select reporting outlets according to where most people shop?

YES [ ] NO [ ]

13. Do you price any types of items in a broad cross-section of outlets?

YES [ ] NO [ ] If so, please state to which classes of goods this answer refers:

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14. Do you generally price more than one type of item in the same outlet?

YES [ ] NO [ ]

15. How many items are covered by your CPI?

16. How many prices do you collect each month?

17. For how many items is it necessary to collect just one price?

18. Generally, was it easier to collect information about certain price determining characteristics than to find a comparable product?

## Selected References

- ADB. 2007. *Purchasing Power Parities and Real Expenditures*. Asian Development Bank, Manila.
- . 2008. *Research Study on Poverty-Specific Purchasing Power Parities*. Asian Development Bank, Manila.
- Hill, R. J., and T. P. Hill. 2007. Regionalization and Its Implications for Price Index Construction: The Case of the International Comparison Program. Discussion Papers, School of Economics. University of New South Wales, Sydney.
- Rao, D. S. P. 2001. "Integration of CPI and PPP: Methodological Issues, Feasibility and Recommendations." Paper presented at the Joint World Bank-OECD Seminar on Purchasing Power Parities, 30 January–2 February, Washington, DC.
- Kravis, I. B., A. Heston, and R. Summers. 1982. *World Product and Income*. International Bank for Reconstruction and Development/The World Bank. Baltimore and London: Johns Hopkins University Press.
- OECD. 2006. Eurostat-OECD Methodological Manual on Purchasing Power Parities. Organisation for Economic Co-operation and Development, Paris.
- ILO. 2006. Integration of ICP and CPI. Inter-Secretariat Working Group on Prices Statistics, International Labor Organization. Geneva.
- UN Statistical Commission. 1999. *Evaluation of the International Comparison Programme*. Proceedings of the Thirtieth session, Economic and Social Council. Statistical Commission, New York.
- World Bank. 2008. *Global Purchasing Power Parities and Real Expenditures, 2005 International Comparison Program*. Washington, DC.

## **About the Paper**

Michael Ward, Chellam Palanyandy, and Eileen Capilit provide alternative ways of integrating International Comparison Program (ICP) price collection with regular price collection activities of national statistical offices for future ICP data operations. The methods avoid imposing significant increases in the countries' regular budget outlays, thus ensuring the availability of ICP price inputs.

## **About the Asian Development Bank**

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries substantially reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two thirds of the world's poor. Nearly 877 million people in the region live on \$1.25 or less a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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