Re-basing of the Consumer Price Index: Issues and Challenges

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Abstract

This paper presents the approach to be adopted in re-basing the Consumer Price Index (CPI) in Malaysia and highlights the steps taken to address the issues associated with the endeavor. The input data for re-basing the CPI will be obtained from the results of the Household Expenditure Survey (HES) currently conducted for the period June 2004 till May 2005. The expenditure percentage from the HES will be used as item weights while the population numbers of each state in Malaysia will be the basis in deriving the centre weights used in calculating the CPI. The challenge is in complying with the internationally accepted standards.

Introduction

CPI seems to have acquired a unique status among economic statistics in most countries. There are several factors which help to explain this:

a. All households have their own personal experience of the phenomenon CPI and its measurement. The general public is very conscious of changes in the prices of consumer goods and services and its direct impact on their cost of living. Thus, interest in the CPI is not confined to the press and politicians.

b. Changes in the CPI tend to receive a lot of publicity and its publication can make headline news. The CPI is a high profile statistic.

c. The CPI is published monthly, so that the rate of inflation can be closely monitored. The CPI is

released immediately after the end of the reference period.

d. The CPI is a widely respected and its accuracy and reliability are seldom seriously questioned.

e. Most countries have deliberately adopted a policy of not revising the index once it has been published. This makes it more attractive for many purposes, especially those with financial consequences and link to the index. The lack of revisions may create a spurious impression of certainty, but it also seems to enhance the credibility and acceptability of the index.

In general, CPI could be used as:

a. Key indicator of the health of the economy;
b. Measure of inflation as it affects households;
c. Proxy of general inflation;
d. Adjustment factor for indexation of wages, social security benefits and other payments;
e. Basis for estimation of changes to cost of living;
f. Deflator of series in nominal terms to derive real terms.

The use of CPI has policy and financial implications to governments, employers, workers and households. Due to the widespread use of CPI for all kinds of index linking, movements in the CPI can have major financial ramifications throughout the economy. The implications for the government alone can be considerable, given that the CPI can affect interest payments and taxation receipts as well as the wages in the government service.

The need to re-base

Re-basing is necessary due to the demand for more accurate, reliable and credible measures especially when the rate of

inflation needs to be monitored. The re-basing should consider:

a. Formulae utilized to calculate CPI;
b. The frequency of weights updates;
c. Procedures for quality adjustment and introduction of new goods and new outlets;
d. The sampling methods applied;
e. The use of one single index for many different purposes.

The challenge is to abide to the resolution that the principles and methods used in constructing CPI should be based on the guidelines and methods that are generally accepted as constituting good statistical practices.

Issues in re-basing CPI

Updating Weights

In practice, a CPI uses a set of expenditure weights that relate to some earlier periods. The question that immediately arises is how often the weights should be updated. It follows from the interrelationships between Laspeyres[1], Paasche[2] and Cost of Living (COL)[3] indices that if the same set of weights are used over a number of years, the resulting index will tend to rise faster than the COL index. If the objective is to try to measure a COL index, steps need to be taken to reduce the potential bias as much as possible. One way to do this is to update the

[1] The ratio of the value at current period prices of base-period consumption to its actual base-period value, where the base-period is both the price reference-period and the weight reference-period. It equals a base-period-weighted mean of current to base-period price ratios.
[2] The ratio of actual current period value of consumption to its value at base-period prices, where the current period is both the price reference-period and the weight reference-period. It equals a current-period-weighted harmonic mean of current to base period price ratios.
[3] A theoretical economic concept, is the ratio to the actual value of consumption in a base period of what, if current prices had then ruled, its value would then have had to be to maintain the level of utility unchanged.

expenditure weights frequently, such as every alternate year, once in every 5 or 10 years.

There are other arguments in favour of updating the weights[4] frequently. As most users are mainly interested in the rate at which the CPI has been changing in the immediate past few months rather than the average rate at which it has increased over the last few years, the most up to date weights are the most relevant ones from the users' viewpoint.

Some chaining[5] is almost bound to be taking place anyway in the individual price series used to calculate the elementary indices as new qualities and new goods have to be continually introduced in order to maintain continuity of pricing and adequate product coverage in the face of a universe of products that is continually changing. Consistency between the lower and higher levels indices argues in favour of updating the expenditure weights frequently.

The process of re-weighting[6] the CPI basket may coincide with a decision to "re-base" the official index. Re-basing is the act of establishing a new reference period for the index, that is, designating the period for which the index equals 100 and recalculating the level of the index numbers to reflect the new base. The official index base for the CPI may be chosen to correspond to the latest expenditure weight reference period or it could be established to coincide with other official statistical series so as to facilitate direct comparison. If the expenditure weight reference period is not chosen as the base

[4] The measures of the relative importance of products in the index, the weight reference-period values of the various components of consumption within scope, or, when expressed as fractions, the shares of the components of consumption. These values may be priced-updated.

[5] Joining together consecutive indices by rescaling one of them to make its value for an overlap period equal to the value of the other for that period, thus combining them into a single time-series. Linking and chaining are the same, though it is helpful to use "linking" in relation to product prices and "chaining" in relation to indices.

[6] Introducing a new set of weights into the index.

period then the weighting information will need to be brought in line with the official base of the index.

Availability of data, particularly from Household Expenditure Survey (HES) is a crucial factor in determining the frequency of re-basing CPI. In Malaysia re-basing of the CPI is done every 5 years starting from 1994 followed by 2000. The previous HES was conducted in 1998/99 starting from July 1998 till June 1999. The result from this survey was used to re-base the CPI (2000=100). The information obtained from the HES survey was used as a basis to derive the CPI basket of goods and services. It was also used to obtain the weights for each expenditure item in compiling the CPI at Malaysia level as well as for the three regions namely Peninsular Malaysia, Sabah and Sarawak.

The next re-basing for the CPI (2005=100) is underway. The new basket of goods and services will be derived from the result of the on-going HES survey from June 2004 – May 2005. Prices for the selected items will be obtained from all the price collection centers (PCCs)[7].

Composition of the CPI Basket

The composition of the CPI basket is based on the results of the HES. The survey is conducted for 12 months to ensure that variation in seasonal expenditure such as festive seasons and the beginning of school semesters are taken into account. The CPI (2000=100) was compiled based on the prices of goods and services collected from 116 price collection centres (PCCs) derived from the information obtained from the Population and Housing Census 1991. The calculation of the Centre Price Relative (CPR)[8] will produce the Item Price

[7] Defined areas and boundaries fixed in the state to differentiate the urban and rural areas for the basis of calculating the urban / rural index as defined in the Population and Housing Census

[8] The ratio of the price of an item in the given period to its price in the base period at centre level.

Relative (IPR)[9] which when multiplied with the item weights produces the CPI at item level.

The re-basing of the CPI (2005=100) will include prices of goods and services collected from PCC created based on information obtained from the Population and Housing Census 2000. The total number of PCCs is 135 with the addition of 19 new PCCs (10 PCCs in Peninsular Malaysia, 3 PCCs in Sabah and 6 PCCs in Sarawak). Each individual PCC will have a new weight using the information obtained from the Population and Housing Census 2000.

The list of items in the CPI basket of goods and services is obtained from the Household Expenditure Survey 2004/2005 conducted from June 2004 - May 2005. These items will be collected from all the PCCs. In conjunction with this, Centre Price Relative (CPR) will be revised based on the items identified from PCC based on selected items from Urban[10] and Rural[11] areas of each state in Malaysia. The items in the CPI basket will be reclassified from the *Classification of Household Goods and Services*, to the *Classification of Individual Consumption According to Purpose (COICOP)*[12].

Concept of Re-basing

In general, the re-basing of the index is purely the changing of the base year[13]. It is the conversion from one time base to

[9] The ratio of the price of an item in the given period to its price in the base period at item level

[10] Gazetted areas with their adjoining built-up areas, which had a combined population of 10,000 or more at the time of the 2000 Population Census.

[11] Rural areas are the opposite of those defined for urban.

[12] Classification of Individual Consumption by Purpose is used to specify harmonized index of consumer prices sub index. It names its-three levels of breakdown as" Division", "Groups" and "Classes", alternatively as 2-digit, 3-digit and 4-digit (the first digit throughout the whole classification is a zero; it would seem more natural to omit it and refer to 1, 2 and 3-digit levels) e.g. 07 transport, 07.3 transport services, 07.3.3 passenger transport by air.

[13] Price reference-period and/or weight reference-period and/or index reference-period.

another, that is, the arithmetic operation that neither affects the nature of the series nor alters the rate of price changes measured by the series between any two periods. Even though re-basing is done simultaneously with the updating of the basket (or weights) for the price time series, the two operational concepts differ from one to the other. Re-basing is purely the mechanical operation to gain the easier access for presentation and comparison. To re-base an index series, all indices of this series have to be divided by the index within the series, which relates to the desired new time base *b*.

$$\mathbf{P}_{t/b} = \mathbf{P}_{t/o} / \mathbf{P}_{b/o}$$

Where: -

$\mathbf{P}_{t/b}$ = The index for a given period *t* with the new time base *b*;

$\mathbf{P}_{t/o}$ = The index for the same period *t* with the initial time base *o*; and

$\mathbf{P}_{b/o}$ = The index for period *b* with the initial time base *o* (this is a constant factor, independent of the given period *t)*

Take the official "All-items"[14] CPI series for Malaysia published on a 1980 time base as an example of the original index series. An extract of indices of this series, from 1980 to 2000 is shown in Table 1 below in the column headed by the symbol $P_{t/80}$. These indices have been converted into the time bases for 1990, 1994 and 2000 base years. They are presented in Table 1 in the columns headed by the symbols $P_{t/90}$, $P_{t/94}$ and $P_{t/2000}$ respectively. The conversion has been performed by dividing each of the original indices, successively, by 137.8, 117.4 and 120.7 for the years 1980,

[14] The general total (the highest-level aggregate) in the CPI classification of commodities.

1990 and 1994 respectively, that is, the original indices for the different base years. The result of each division has to be multiplied by 100 to get a re-based index in the percentage form.

Both the re-based and original series contain "All-items" consumer price indices for Malaysia. Furthermore, the re-based series relate to the same baskets and retain the same link periods as the original official CPI series. It also shows that the rate of price change for all re-based series is the same as for the original series.

Table 1: All Items CPI

Year	$P_{t/2000}$	$P_{t/94}$	$P_{t/90}$	$P_{t/80}$
1980	51.2	61.8	72.6	100.0
1981	56.2	67.8	79.6	109.7
1982	59.4	71.6	84.1	116.0
1983	61.6	74.4	87.3	120.3
1984	63.8	77.0	90.4	124.6
1985	64.1	77.3	90.8	125.1
1986	64.4	77.8	91.3	125.8
1987	64.9	78.4	92.0	126.8
1988	66.6	80.3	94.3	130.0
1989	68.5	82.6	97.0	133.7
1990	70.6	85.2	100.0	137.8
1991	73.7	88.9	104.4	
1992	77.1	93.1	109.3	
1993	79.9	96.4	113.2	
1994	82.9	100.0	117.4	
1995	85.7	103.4		
1996	88.6	107.0		
1997	91.1	109.9		
1998	95.8	115.7		
1999	98.5	118.9		
2000	100.0	120.7		

Method and computation of Index

Calculation of base price / base price relative

In constructing the CPI (2005=100), determination of *base price*, that is, the average price for 12 months from June 2004 - May 2005 is required. The formula is as follows:

$$ {}^{jk}P_o = \frac{1}{12} \Sigma \, {}^{jk}P_i $$

Where :-

${}^{jk}P_i$ = Price of j th item for i th month at k th collection centre

i = June 2004, July 2004, …, May 2005

Besides this, it also involves the *Price Relative* where the base price will be changed as the base price relative at Center Price level (CPR) change. The base price relative will be linked to the price relative for the previous base year (98/99=100) as shown below:

$$ {}^{tj}CPR_{k} = \frac{{}^{jk}P_{t}}{{}^{jk}P_{o}} = \frac{{}^{jk}P_{t}}{\frac{1}{12}\sum {}^{jk}P_{i}} $$

$$ = \frac{\frac{{}^{jk}P_{t}}{{}^{jk}P_{b}}}{\frac{1}{12}\frac{\sum {}^{jk}P_{i}}{{}^{jk}P_{b}}} = \frac{\frac{{}^{jk}P_{t}}{{}^{jk}P_{t-1}} \cdot \frac{{}^{jk}P_{t-1}}{{}^{jk}P_{b}}}{{}^{j}\overline{CPR}_{k}} $$

$$ = \frac{\frac{{}^{jk}P_{t}}{{}^{jk}P_{t-1}} \times {}^{(t-1)j}CPR_{k}}{{}^{j}\overline{CPR}_{k}} $$

Where :-

${}^{tj}CPR_{k}$ = Price comparison for j th item at t th time for k th collection centre

${}^{jk}P_{b}$ = Price at old base year (98/99=100) for j th item at k th collection centre

${}^{j}\overline{CPR_{k}}$ = Comparison of average prices for j th item on old base price (98/99=100) at k th collection centre

${}^{(t-1)j}CPR_{k}$ = Comparison of prices for j th item on old base period (98/99=100) at t-1 th time for k th collection center

Weights determination for Price Collection Centres (PCC)

Based on "Maps showing administrative district boundaries and urban areas" obtained from the Population and Housing Census 2000, the boundaries for administrative districts and boundaries for urban are identified to determine the Price Collection Centres (PCCs) in every states. Subsequently, the PCC weights (ratio of population) are calculated based on the total population for each regional, which is also derived from the Population and Housing Census 2000. The calculation of PCC weights is as follows:

$$\text{PCC Population Ratio} = \frac{\text{PCC Total Population}}{\text{Regional Total Population}} \times 10{,}000^{15}$$

Determination of the Item Price Relative (IPR)

Before the determination of the item price relative (IPR), it is necessary to determine the centre price relative (CPR) where the calculation will be based on current prices (P_n) divided with the base year price (P_0) at the centre level.

$$CPR_n = \frac{P_n}{P_0} = \left(\frac{P_n}{P_{n-1}}\right) CPR_{n-1}$$

The CPR will be weighted by the Price Collection Centre (PCC) to obtain the IPR.

$$IPR = \frac{{}^{n}\Sigma_{i=1}\, W_i \;\; CPR_i}{{}^{n}\Sigma_{i=1}\; W_i} \quad x \quad 100$$

[15] For the states of Sabah and Sarawak, the population ratio is multiplied by 1000 because the number of PCCs in these states is not as many as those in Peninsular Malaysia.

Where : -

CPR_i = Price comparison up to centre i^{th}

W_i = Weights up to centre i^{th}

Role and Determination of Item Weights

The CPI is calculated from myriad of prices collected from most parts of the country and from all types of outlets, covering selected goods and services. The collected prices are first combined to compile indices for each individual product. For example, 10 prices of chicken may be collected from outlets in all PCCs in one state, and these prices have to be combined to represent the prices of chicken for that state. The next step is to combine all the states prices, weighted by the individual PCC weights to produce the index of chicken at the item level. The sub-group and group indices namely sub-group fresh and frozen meat and group meat, the items within the sub-group will be further multiplied with item weights at regional level products to derive the index figure. As some items are more important than others in the sense that more money was spent on them by the average consumer, each item is given a "weight" to represent its relative importance in the average household's total expenditures during the reference (base) period for the weights.

CPI estimate using a Laspeyres type index number formula uses a fixed market basket to hold the base period consumption patterns. This means that unless a major revision of the CPI and a new basket is determined, the quantities and quality of items consumed are held constant. However, consumers do not continue to purchase the same basket of goods and services. Rather, they adjust the types, qualities and quantities of items in their baskets in response to the availability of items and changes in relative prices. Generally, average baskets will change over time due to changes in the demographic composition of the population,

technological development and changes in the level and distribution of household income and consumption preferences. Due to this problem, the items are revised at the interval of every six months to capture the availability of the items in the markets. Items that are no longer available are substituted with similar terms in the same sub-group level.

In practice, it is desirable to divide the most detailed item headings distinguished in a standard international expenditure classification such as COICOP into more homogeneous groups of products for CPI purposes, assuming that the expenditure data can be disaggregated to the level of these more homogeneous groups. It is convenient to refer to the headings of the sets of products that are actually used for CPI purposes elementary headings. An elementary heading will usually identify a sub-set of products within a COICOP class, but if the expenditure data are not available in the required level of detail, an elementary heading might have to coincide with a class, or possibly even more than one class. The first objective when compiling CPI is to estimate a price index for the set of products within each elementary heading. Such an index is referred to as an elementary price index.

Selection of items

The selection of products, that represents the price movements of each expenditure class in the classification used, is based on the results of the HES. As soon as these results are available, the next step is to determine what goods and services should constitute each class of the CPI. The HES data is made up of a larger variety of goods and services than can possibly be observed when collecting the prices to be used in the calculations of the CPI. For this reason, each expenditure class has to be represented by selected goods and services that are considered either important or typical for their class. This can be accomplished through probability selection or by judgemental process. The selection done through probability selection is known as Probability Proportionate to Size (PPS) for those items with significant

weights. The price changes of these particular goods and services are then monitored and their weighted average is subsequently used as a measure of price changes for that class.

Collectors' lack of detailed product knowledge and their brand loyalty can result in non-representative goods being selected. Market sales data indicate that this is a problem particular to high technology goods, where initial selection problems are compounded by a high rate of change in the market which limits the life of the sample.

The approach that has been adopted uses local probability sampling that reflects and is operationally defined in terms of the selling patterns of a combination of attributes (e.g. for television, there are screen size, sound quality, picture frequency etc.) rather than, for instance, model numbers, to create a representative sample.

For items which are not fully specified, the collectors are given the upper hand in choosing the required items in the market. These non-specified items need to be replaced if they no longer appear or sold in the market. To do this, the collectors are suppose to select an item which is very similar to the previous in terms of the unit priced, similar specification and very small price variation. If these criteria cannot be fulfilled then they revert to the method of looking for the best sold item in the outlet.

For practical and other reasons, the CPI basket cannot include every product bought by households[16], but it does include all the important kinds of products. It is not necessary to include all the products people buy since many related items are subject to similar price changes. The idea is to select representative items so that the index reflects price

[16] A small group of persons who share the same living accommodation, pool some of their income and wealth and consume certain types of goods and services collectively, mainly housing and food.

changes for a better range of goods and services than is actually priced. When determining what items are to be priced for the CPI basket, various factors are taken into consideration whereby items:

a. must be representative of purchases made by the CPI population group;
b. must have prices that can be associated with an identifiable and specific commodity or service; and
c. can be expected to be available in the market for a reasonable length of time.

In general, the CPI basket is required to cover all expenditure groups in the classification used. Once the percentage shares for each group is calculated, it might be decided, for example, to exclude groups with very marginal weights. The lower minimum threshold for the food items might be set because the prices for these items tend to display greater variability and that prices for food items are normally cost less to collect.

Some items are not sampled because they have a negligible share of the expenditure in the market basket or are difficult to define in terms of specifications and price characteristics. These items have an explicit expenditure weight assigned to them and since their prices are not collected, their price movements will be represented by the price movements of similar priced goods and services. By implication, their weights are reassigned to these related items.

The same product should be priced in each period as long as it is representative. Thus, it is necessary to monitor the characteristics of the products being priced to ensure that the impact of any differences in price-relevant characteristics can be excluded from the estimated price change. When a quality change is detected, an adjustment must be made to the price, so that the index reflects as nearly as possible the pure price change. If this is not done, the index will either record a price change that has not taken place or fail to record a price change that did happen. The choice of method for such

adjustments will depend on the particular goods and services involved. The methods for estimating quality-adjusted prices may be:

a. *Explicit (or direct) quality adjustment methods* that directly estimate the value of the quality difference between the old and the new product and adjust one of the prices accordingly. Pure price change is then implicitly estimated as the difference in the adjusted prices.

b. *Implicit (or indirect) quality adjustment methods* which estimate the pure price change component of the price difference between the old and new products based on the price changes observed for similar products. The difference between the estimate of pure price change and the observed price change is considered as change due to quality difference.

Some of these methods are complex, costly and difficult to apply. The methods used should as far as possible be based on objective criteria.

One of the major items in the CPI which need to be debated is on housing. In most countries, expenditure on rented houses and on owner-occupied houses form a substantial part of total consumption expenditure solely due to the weight. Both are important but housing in its own right as a basic necessity also calls for attention. Housing and in particular owner-occupied housing raises some special problems which are discussed below.

Rented houses

Rents cover all rentals paid by tenants to the landlord. There are two options on prices. First, the total rent for the houses can be taken as the price. The total rent includes the rent paid by the tenants regardless of any social benefits the tenants receive from the public authorities in order to reduce their rent.

In other words payments from public authorities are not deducted. This corresponds to National Accounting principles where such payments are considered as social benefits in cash and therefore treated as income transfers, not as subsidies.

However, according to the use of the index, it may be appropriate to include the tenant's net payment only, that is, the own-payment of the tenant where payments from public authorities are deducted. This could be the case, if the index is used for compensation purposes.

Secondly, the rents may be collected from landlords, agents, or tenants. Collecting rents from landlords has several advantages. Many landlords let several houses of which many price observations can be collected from one source only. Collecting the rents from the tenants usually will involve more respondents as compared to collecting the rents from the landlords. In addition, in cases where part of the rent is paid by the public authorities directly to the landlords, the landlord may know the actual rent for the houses better. In Malaysia, this concession rate is not taken into consideration in the calculation of the rent index.

When rents are collected using a questionnaire, the questionnaire should contain the address of the house and the previously reported rent. What is needed to be recorded is the actual rent, whether the rent paid includes electricity, water, sewage, etc. In the case where the total rent is measured, it has to be clear if any social benefits are paid by the public authorities other than the amount paid by the tenant.

Adjusting for quality changes may be difficult. One way of dealing with this problem is to ask the respondents to indicate if any major changes in the house have taken place since the previous price collection. Those changes may include conversion or extension of the house or major repairs of the

kitchen. The respondent should then be asked to indicate the part of the rent (if any) that is caused by the major changes.

Owner-occupied housing

Owner-occupied housing is one of the more difficult areas in the compilation of consumer price indices, conceptually as well as in practice. There are many possible ways to treat owner-occupied housing and methods and practices vary among countries. The different ways of dealing with owner-occupied housing can be attributed to the following factors:

a. The complex nature of home-ownership;
b. The conceptual basis underlying the CPI;
c. The purpose of the CPI;
d. The structural and institutional set-up of the owner-occupied housing market;
e. Availability and reliability of data; and
f. Resources.

Depending on the concept underlying the CPI, there are different ways in which to treat owner-occupied housing. The CPI uses a 'rental equivalent' approach to owner-occupied house. This is the same basic approach used in the inflation indices of all advanced countries. Rental equivalent measures the change over time in the value of the house services provided by owner-occupied house.

Constructing the CPI (2005=100)

In constructing the CPI for 2005 as the base year, only the base year will be changed from the period (June 2004 – May 2005) =100 to (2005=100). However, the weights and the CPI basket is still using the 2004/2005 HES. The calculation is as shown below:

$$
\begin{aligned}
{}^{t}I_{o} &= \frac{\sum p_t q_b}{\sum p_o q_b} \times 100 \\
&= \frac{\sum p_t q_b}{\sum p_b q_b} \cdot \frac{\sum p_b q_b}{\sum p_o q_b} \times 100 \\
&= \left[{}^{t}I_{b} \cdot {}^{b}I_{o} \right] \times \frac{1}{100} \\
&= \left[{}^{t}I_{b} \div {}^{o}I_{b} \right] \times 100
\end{aligned}
$$

Where:-

${}^{t}I_{o}$	=	Index at time-*t* in respect to the base period (2005=100).
P_t	=	Price at time-*t*
q_b	=	Quantity for period June 2004 – May 2005
P_o	=	Price at base period (2005=100)
P_b	=	Price for the period June 2004 – May 2005
${}^{t}I_{b}$	=	Index at time-*t* in respect to the period June 2004 – May 2005
${}^{o}I_{b}$	=	Index for base period (2005=100) in respect to the period June 2004 – May 2005

Other Related Issues

The Department of Statistics, Malaysia was requested to view the possibilities of introducing other indices besides those already published and these include:

a. State index;
b. Urban / Rural index;
c. Capital city index;
d. Major town index (basically 22 major towns have been identified);
e. Urban and rural index for each states;
f. Comparative index Kuala Lumpur / Kota Kinabalu and Kuala Lumpur / Kuching;
g. Comparative index for major town (20 towns) using Kuala Lumpur as the base;
h. Comparative index Urban / Rural for Peninsular Malaysia; and
i. Different income groups index.

Necessary Steps Taken

In order to realize the above-mentioned indices, efforts should be focused on the representativeness of the items as well as the item weights. From the past HES survey, the sample size from the individual states was not large enough to provide representative weights for the states. As for some of the indices, the Department of Statistics, Malaysia has compiled the indices for internal use and stakeholders only. These figures are not published.

The Regional Offices in Peninsular Malaysia, Sabah and Sarawak are currently in the process of producing their own state indices. If the exercise proves to be successful, the merging and compilation of Malaysia's level/country's index will be done at the Headquarters (HQ). On the contrary, the compilation of CPI at regional level will be calculated taking into account only those states having significant weights for selected items in HQ. The Information and Technology

Division (IT Division) was requested to create a program on data capture till producing the final tables where the indices at all levels are calculated.

The other challenges will include the usage of COICOP. All the item codes at the specification levels will be changed to 6 digit codes in accordance with the requirements of COICOP. The IT Division of the Department of Statistics need to take the necessary steps to convert these old item codes to the ones required by COICOP.

Preparation for time series index (98/99=100)

For the re-basing, the IT Division was requested to produce time series tabulation of the indices for all groups according to the old center using COICOP starting from reference year 2000 to 2002. The tabulation on the combination of old and new centres as well as using the new centre weights according to the COICOP classification will be produced starting from reference year 2003 till 2004. The Department of Statistics, Malaysia, therefore needs to monitor the tabulation and to ensure that the tables will run parallel by end of reference year 2004 before the actual table for 2005 was used. At the same time, the time series for year 2005 (January-December 2005) using 98/99=100 will be run parallel with the new base year 2004/2005=100. The purpose of getting the average price is for splicing the indices backwards (using the average of 2005 (98/99=100)) as the denominator to re-base the previous years indices.

Construction of the CPI (2004/05=100)

For the construction of the CPI, the following steps need to be taken:

a. To study the result from the HES 2004/2005 so as to identify the items required for price collection[17].

[17] Prices for new items are required to be collected before HES

b. To calculate the item weights based on the result of the 2004/2005 HES, that is, the weights at 6 digits level used in data processing to construct the CPI.

c. To prepare the Item Base Price Relative at the Price Collection Centre, that is, the average price relative for the period June 2004 – May 2005 at every price collection centre for all items using the following formula:

$$ {}^{j}\overline{CPR}_{k} = \frac{1}{12}\left(\frac{{}^{jk}P_{jun\,o4}}{{}^{jk}P_{98/99}} + \frac{{}^{jk}P_{jul\,04}}{{}^{jk}P_{98/99}} + \ldots + \frac{{}^{jk}P_{mei\,05}}{{}^{jk}P_{98/99}} \right) $$

d. To select items with *significant* weights from 2004/2005 HES.

e. To get the P_b (base price) of selected items[18] for integration with CPR.

f. CPI (2005=100) will be processed using the item weights derived from the result of 2004/2005 HES and using June 2004 – May 2005 as a base year (June 2004 – May 2005 = 100) until December 2005.

g. For the January 2006 CPI, the period (June 2004 – May 2005 = 100) will be transformed to base year (2005=100) and published as transformed figures whereas the weights and the CPI basket will be based on the result for the period June 2004 – May 2005.

[18] Refers to those CPR within the range for the selected items. The off-range CPR will be re-calculated using base-period P_b

Issues and challenges

As discussed earlier, the Department of Statistics, Malaysia must decide on the frequency of the re-basing, as this is an important factor to be looked upon. Even though it is currently re-based at an interval of five years, a shorter time interval should be seriously considered. Some developed countries conduct the HES spanning over a period of three years. The choosing of the right timing is important to ensure it does not coincide with any recession or boom period that will indirectly affect the expenditure pattern of the consumer behavior.

The selection of outlets must cover wide and evenly distributed geographical areas. The outlets must not only be representative, but more importantly, must be cooperative in providing the required prices for the selected items. The Point of Purchase (POP) should be considered as this is the method used in the United States in the selection of outlets and the required information can be obtained from the HES survey. On the other hand, the selection of items must be confined only to those items with significant weights. Since the indices will be calculated not only at the national level but also at the state level, the selection of items must be representative of the individual state. Indirectly, the basket of goods and services for Malaysia would be derived from the combination of items in all states in Peninsular Malaysia, followed by Sabah and Sarawak.

Conclusion

The year 2005 will be a challenging year especially for the Department of Statistics, Malaysia and in particular the Prices Division because work needs to get started soon after the HES survey ends in May 2005. The re-basing will be more challenging this time because the re-basing will be done at the state level before aggregating at the Peninsular level. It is also expected to have a more representative set of weights for all the states in Peninsular Malaysia. At the same time, the tabulation series based on the existing centers and new

centers, must run parallel to the existing tabulation before re-basing can take place.

If all the requirements are properly tackled together with proper planning by the Department of Statistics, Malaysia, the first publication is expected to be released by the middle of February 2006. This publication will only refer to the national level index whereas the subsequent indices as mentioned under the other related issues would hopefully be produced in the following six months.

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