Operation quality of CPI and chaining procedures

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Quality Controls

Quality controls are carried out with two steps in Turkish CPI.

• Before the dissemination of CPI data
• After the dissemination of CPI data
Quality Control Before the Dissemination

![Image of a computer screen showing a table and a quality control form.](image-url)
Quality Control Before the Dissemination

Price is automatically calculated by considering quantity, discount as a percentage and rayon price.

By comparing the preceding price and current price, if change rate exceeds %20 limit, system gives warning. This is the first alert for the price collector.
Quality Control Before the Dissemination
Quality Control After Dissemination

• CATI is an interactive front-end computer system that aids interviewers to ask questions over the telephone. The answers are then keyed into the computer system immediately by the interviewer.

• The computer program controls branching to or skipping among questions and validates the data as it is entered. CATI application has been used in TURKSTAT since 2006.
Quality Control After Dissemination

- The smart electronic form also performed on-line checks on the responses keyed in and alerted the interviewer of inconsistent or doubtful answers. The outlet or renter is not called twice in a year.
Calculation of An Annual Chain CPI

Factors affecting changes in demand

- Purchaser’s tastes or preferences
- Changes in technology which improve productivity
- Changes in real incomes
- Changes in population and its distribution
Calculation of An Annual Chain CPI

Annual chaining December = 100

Update databases, tables, etc.

Revised December index

Underlying inflation
Update taxes, etc

Revise the weights

Update the sample of outlets

Update the basket of goods
Calculation of An Annual Chain CPI

- Identify new items that have a significant share of consumption, i.e. 0.1 % of the expenditures covered
  - Important to look for new types of items and services, i.e. I-pad, download music, etc
  - Introduce as early as possible – capture the price decrease

- Collect prices for all new items in the price reference month (i.e. December)
  - Collected prices for new items will not be used in the calculating of December CPI. Will enter the CPI in January and work as references prices (base prices)

- Remove items that are obsolete
  - Do not remove from the basket before December index is calculated
Calculation of An Annual Chain CPI

- Use a reliable source, i.e. Household budget survey or National accounts

- Only consumption expenditures are relevant

- If possible use additional information
  - Production and trade statistics, retail sales data, etc.

- Updating the weights is a time consuming task
  - Start as soon as the consumption data are available
Calculation of An Annual Chain CPI

- December price observations must be edited to ensure reference prices of good quality
- All items in the basket must have a price and an index for December when calculating the January CPI
  - Impute December prices for those items that do not have a December price
- Indices for December on every level (item, sub-groups, classes, groups and divisions) work as chaining
  - The December indices for the new items will be equal to 100
Calculation of An Annual Chain CPI

- If you are calculating indicators of underlying inflation:
  - Update taxes
  - Update chain factors on all levels, etc.
- Update databases
- Update tables
- Inform the users about the revised weights and basket of goods and services
  - If possible calculate the CPI with new and old weights to estimate the impact of revised weights
Calculation of An Annual Chain CPI

Frequent weight updates and chained price indices

• Advice is to update at least every 5 years, and more often if there is evidence of rapid changes in consumption/production patterns.

• The shorter the period between weight updates, the less likely that changes in preferences, improved technology, and changes in income will have a large impact on our price measures.
Calculation of An Annual Chain CPI

- So far the discussion has been of direct comparisons – between places $s$ and $t$. There will be seen to be a case for comparing say $s$ and $t$ by comparing say, $s$ with $a$, then $a$ with $b$, then $b$ with $t$. The indices or links between each successive pair of places can then be linked together by successive multiplication to form a chain index. Any index number formula can be used for the links.
Calculation of An Annual Chain CPI

The CPI is calculated as a chain linked index with annual update of the weights. Thus, from January 2005 to December 2005 all higher level indices were calculated as

\[ I_{03:t} = \sum W^i_{03} \cdot I^i_{03:t} \]

From January 2006 to December 2006 all higher level indices will be calculated as

\[ I_{03:t} = I_{03:Dec05} \cdot \sum W^i_{03/04(Dec05)} \cdot I^i_{Dec05:t} \]

Where indicates the weights based on 2/3 of the HBS of 2003 and the HBS of 2004, price updated to December 2005.
Calculation of An Annual Chain CPI

From January 2007 to December 2007 all higher level indices will be calculated as

\[ I_{03:t} = I_{03:Dec06} \cdot \sum W^i_{04(Dec06)} \cdot I^i_{Dec06:t} \]

From January 2008 to December 2008 all higher level indices will be calculated as

\[ I_{03:t} = I_{03:Dec07} \cdot \sum W^i_{05(Dec07)} \cdot I^i_{Dec07:t} \]
Calculation of An Annual Chain CPI

- Laspeyres formula is used to aggregate basic item indices to obtain group and all item indices.
- Aggregated short term indices at the group level are chained to the previous indices.

\[
I_{0:t} = \sum w_b I_{0:t-1}^i \ast I_{t-1:t}^i
\]
Calculation of An Annual Chain CPI

Weights are price updated to ensure period covered by expenditure weights and the base price period correspond.
Calculation of An Annual Chain CPI

<table>
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<tr>
<th>PRICE UPDATE</th>
<th>2010 HBS weights</th>
<th>2010 Index Average</th>
<th>2011 December Index</th>
<th>Index Change</th>
<th>Price Update</th>
<th>Price Update (100)</th>
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Calculation of An Annual Chain CPI

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SAME MONTHLY CHANGE (%)
Thank you...