Key Issues Concerning the Treatment of Seasonal Products to Calculate Inflation from the Point of View of Central Banks

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Central banks as the primary users of price indices
Key concepts and issues
A case study
Conclusion and discussion of policy implications
Statistical offices are the supplier of the price indices.

Central banks on the other hand, are the main users of the price indices as they design the monetary policy framework taking into account the inflation.

Central banks are obliged to monitor the level of inflation.

Equally important, they are also interested in inflation volatility.

In general, seasonal products are the major source of the volatility.

The course of inflation is therefore affected by the treatment of seasonal products to a large extent, through volatility channel.

Hence, the reading of the situation by the central banks may provide insights to statistical offices in designing the optimal treatment strategy.
Non-seasonal products are available in the market and consumed all year around
- Bread, books, motor vehicles...
- Easy to set representative goods and to follow prices
- No big challenges for treatment

Seasonal products are consumed at specific months only
- University fees, cherries, t-shirts...
- Difficult to set representative goods and assign weights
- Treatment can be quite challenging
Strongly seasonal products are only available in certain months of the year.

Major examples are **fresh fruits and vegetables** and **clothing**.

Difficult to incorporate into price index.
- What representative goods to include at each month?
- How to choose the relative weights?

**Using fixed weights:**
- Prices need to be imputed for the months where item is not available.
  - Price of watermelon in January??

**Using variable weights:**
- The months of entry of items should be decided.
  - Do plums come to market in April or May??
The presence of seasonality is a major challenge for inflation analysis.

Seasonal patterns for strongly seasonal products are not homogeneous.

Some of them are very regular:
- Clothing

Some of them are very irregular:
- Fresh fruits and vegetables

Irregular seasonality is easy to detect:
- Check the seasonally adjusted figures
Strongly Seasonal Items: Seasonality

% Change CLOTHING
% Change Final seasonally adjusted series
Strongly Seasonal Items: Seasonality

% Change Final seasonally adjusted series
% Change FRESH_FRUITS_VEGETABLES
Regular seasonality is not an issue in terms of inflation or inflation volatility.

However, the presence of irregular seasonality is a big challenge.

- This irregularity causes fluctuations.
- If the share of such items in CPI is high, then the headline index becomes quite volatile as well.

Irregular seasonality introduces unpredictable volatility.

As in the case of Turkey, items with irregular seasonality can affect the headline inflation as much as 2 percentage points in one month - a much higher contribution than other typical items with volatile prices.
Monthly Net Contributions to Annual CPI Inflation (Percentage Points)
Sources of Irregularity and Unpredictable Volatility

- As a general rule, supply and demand conditions determine the level of prices.
- *Consider the clothing prices:*
  - Production takes place before the season starts.
  - Firms already have available stocks in hand.
  - Depending on the level of demand, they arrange the supply level by adjusting the stocks.
  - No significant price movement.
Consider the fresh fruits and vegetables prices:

- Supply conditions dominate the picture
- Production highly depends on the weather conditions
- If there is a supply shock prices can jump dramatically
- May create a large impact on overall inflation
The headline inflation jumped from 4.3 to 7.2 in May 2011 in Turkey

A 2.9 points increase in the inflation, possibly a worrying outcome

About 2.6 of the jump supported by food prices

More importantly, about half of the total rise in inflation came from two items: cherry and plum

Check the historical prices of cherry:

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<td>4.0</td>
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<td>4.4</td>
<td>4.3</td>
<td>4.9</td>
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</tbody>
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Supply shocks combined with the treatment choice can bring about considerable inflationary effects
From perspective of a central bank, there is certainly a need for special treatment of seasonal items on several grounds:

**Economic Intuition:**

Extremely high prices (or size fluctuations) continue only for a few weeks

>> Consumers adjust the quantity they demand

>> Usually they do not consume that item

>> But weights in the basket are not adjusted dynamically accordingly

>> Given that, even though no consumption takes place, inflationary effects are considerable!
From perspective of a central bank, there is certainly a need for special treatment of seasonal items on several grounds:

*Inflation Targeting Policy (Monetary policy in general):*

Seasonal irregularity may change headline inflation considerably (up to 2 percentage points in Turkey) month-on-month

>> Introduces challenges for monetary policy communication

>> Central banks are obliged to rely on core inflation indicators in their communications - usually entirely disregarding seasonal products

>> May harm inflation expectations and contracts
From perspective of a central bank, there is certainly a need for special treatment of seasonal items on several grounds:

**Welfare implications:**

The hike in inflation caused by seasonal products is usually reversed after some time.

>> However, the higher inflation in the meantime adversely affects the expectations and pricing behaviour of the economic agents.

>> Prices are indexed to headline inflation to some extent. Thus price increases occur at rates higher than what would have been in the presence of hike in headline inflation.
Treatment of seasonal products in CPI should consider the following issues:

- Seasonal vs strongly seasonal items
- Regular vs irregular seasonality
- Sources of irregularity in seasonality
- Predictable vs unpredictable volatility
- Sources of unpredictable volatility
- Effects of such volatility on headline inflation
- Optimal weighting schemes
- Consumption behaviour of consumers
Treatment of seasonal products is also a country-specific issue:

- Identify strongly seasonal products
- Determine the nature of prices of such products
  - Periods of consumption, typical entry-exit prices, volatility of prices
- Think about the main driver of the prices (demand vs supply)
- Pay specific attention to products with relatively high share in basket and have unpredictable prices
- Design a treatment strategy accordingly, in line with an objective

*Concentrating on inflation volatility -given the consumption pattern- may be a good objective to pursue*
Thank you.

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