Treatment of seasonal breaks in seasonal adjustment of HICPs

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Overview

• Seasonal adjustment of HICPs
• Seasonality of HICPs for industrial goods
• Regulation on treatment of seasonal items
• Seasonal adjustment and seasonal breaks
• Two approaches to break-adjustment of HICPs for industrial goods
• Conclusions and further insights
Seasonal adjustment of euro area HICPs

- Conducted by the ECB – DG Statistics
- Serving ECB purposes:
  - Data commenting, analyses
  - ECB Monthly Bulletin, Statistics Pocket Book
  - Forecasting
- Indirect seasonal adjustment:
  - Unprocessed food
  - Processed food (incl. alcohol and tobacco)
  - Non-energy industrial goods
  - Services
  - Energy (not seasonally adjusted)
Main factor for seasonality in HICP for industrial goods: Sales prices for clothing and footwear
→ very pronounced seasonal pattern

• Representative coverage introduced in early-2000s: for many countries
  → new seasonality in HICPs for industrial goods

• Regulation on seasonal items (330/2009):
  → treatment of out-of-season items
Regulation on treatment of seasonal items

EU Regulation 330/2009 entered into force in January 2011

• Distortion of HICP year-on-year rates in 2011
• Spain introduced regulation as of January 2010 → distortion of HICP year-on-year rates in 2010
• Clothing and footwear → “Counter-seasonal estimation” → HICPs for industrial goods
  – Sign (+/-) of distortionary impact varied
  – Increased volatility
Seasonal adjustment and seasonal breaks

- **Seasonal adjustment procedures** require series without seasonal breaks, at least for four to five consecutive years
  - distorted seasonal adjustment until ≈ 2015

- **Pre-treatment → break-adjustment:**
  - Two approaches
    - Imposing old seasonal pattern on series after the break
    - Imposing new seasonal profile on series before the break

- **Example:** HICP for industrial goods in Italy
Impact on seasonal adjustment

HICP for industrial goods, Italy, index levels

Source: Eurostat and ECB calculations
Break-adjustment: two approaches

• **Undistorted year-on-year growth rates provided by national statistical institutes:**
  - Calculated according to method applied before 2011
  - For 12 months in 2011
  - For significantly affected sub-indices (reported according to HICP classification)
  - Impact on HICP for industrial goods: estimated by us

• **Back-estimation: approach 1**
• **Forward-estimation: approach 2**
• **In both cases: level distortions**
Level effects (1)

HICP for industrial goods, Italy, break-adj., approach 1

Source: Eurostat and ECB calculations
Level effects (2)

HICP for industrial goods, Italy, break-adj., approach 2

Source: Eurostat and ECB calculations
Treatment of level effects

• **Approach 1:**
  Trend-cycle ratio obtained from the break-adjusted series and from the pre-2011 data of the non-adjusted series

• **Approach 2:**
  Annual averages

• **Approach 1 allows applying a more adequate technique**
Results (I)

HICP for industrial goods, Italy, results of approach 1

Source: Eurostat and ECB calculations
HICP for industrial goods, Italy, results of approach 2

Source: Eurostat and ECB calculations
Conclusions and further insights

• Computation of break-adjusted HICPs for industrial goods for seasonal adjustment purposes seems reasonable
• Results show good statistical properties
• Small differences between the two approaches
• Two arguments in favour of approach 1:
  ➢ New seasonal profile is kept untouched
  ➢ Level adjustment more sophisticated
• Future experiences
  → further insights, in particular on usefulness for forecasting purposes