Abstract

- We develop Area-wide Leading Inflation Cycle (ALICE) indicators for headline and core inflation in the euro area.
- The aim is to provide early signals about turning points in inflation.
- Methodology: traditional non-model based composite leading indicators (CLIs) with leading series selected from a large database.
- Both ALICE indicators identify main turning points in the inflation cycle ex post and perform well in a pseudo real-time exercise.
- ALICE demonstrate good performance in terms of forecasting the direction of inflation changes.

Selection of leading series

- The dataset goes back to the 1960s and reflects different areas of the economy: measures of external factors (commodity prices, exchange rates, global indicators, etc.), domestic price and cost variables (such as wages and producer prices); “soft” data from surveys (PMI and European Commission surveys on prices, employment expectations, confidence, etc.); inflation expectations (survey and market-based measures over different forecast horizons); economic activity variables (production, euro area business cycle indicator, various productivity measures, etc.); and financial variables (interest rates, monetary aggregates, asset prices, etc.).
- The cyclical components of candidate leading series are measured applying the same filtering method as for the reference series. The selection of the series for the CLI is conducted in terms of the normalised cycles.
- A general-to-specific selection procedure based upon three main criteria to identify the best leading series is followed (de Bondt and Hahn, 2014):
  - Lead time should be sufficiently long and relatively stable over time (minimum (effective) lead time 3 months).
  - Correlation coefficient between the reference cycle and the candidate series cycle is at least 0.55 in the sample period 1991-2016 (1).
  - Selected series should contain information about different parts of the economy and, preferably, should come from different sources.

Ex post evaluation

- Headline ALICE consists of nine series and has a 3-month effective lead time.
- Core ALICE includes seven series and has the effective lead time of 5 months.
- The component series are combined taking into account their different starting points, i.e. ALICE is calculated backwards and forward using the composite indicators of the subsets of the available underlying series.
- Four (five) series with the longest lead time are used to extend headline (core) ALICE beyond the point where all components are still available.
- Extensions of these indicators increase the effective lead times to 6 and 9 months for the headline and core ALICE, respectively.

The pseudo-real-time analysis of the performance of the headline and core ALICE indicators takes into account the reporting lag of the component series in real time. The cyclical components are re-estimated in each step using the final vintage of the data. Both ALICE based on the full set of leading series and their extensions with a longer lead time are calculated. These pseudo real-time calculations are conducted for the middle of each quarter over the period from February 2010 until mid-November 2016.

- The headline ALICE indicator performs well as new data becomes available:
  - Leads the headline reference cycle
  - Does not suffer from major revisions
  - Identified turning points do not shift substantially over time

Similar results are found for the core ALICE.

Quantitative forecasts

The pseudo-real-time series for the headline (core) ALICE are available 6 (10) months ahead compared to the latest reference data point. Thus, changes in headline inflation could be predicted 2 (3) quarters ahead using changes in ALICE. The forecast performance of ALICE is assessed by comparing it to: (i) the random walk model where the future h-period change in inflation is assumed to be zero; (ii) monthly inflation forecasts from Euro Zone Barometer (EZB); (iii) quarterly Eurosystem/ECB staff macroeconomic projection exercise (MPE).

- ALICE demonstrates on average better performance in terms of forecasting the direction of future inflation developments.
- In terms of quantitative forecast accuracy, ALICE performed better than EZB and MPE in the most recent years, however, it underperformed compared to RW and the performance varied considerably.

Conclusions

The headline and core ALICE identify major cyclical movements in inflation ex post as well as ex ante very well. ALICE indicators performed better than other forecasts in terms of forecasting the direction of future inflation developments two or three quarters ahead. Overall, ALICE is a new tool that has the potential to provide useful input for the real-time monitoring, analysis and forecasting of inflation in the euro area.

References