Forecasting performance of economic sentiment indicators

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Forecast comparison

- Short-term state of business cycle, national accounts published with delay
  - Indicators timely available, minor revision
- Forecasting performance explored in out-of-sample exercise
- Suitability to predict contemporaneous year-on-year growth rate of target variable
  - Private consumption, investment, industrial production
- Mean absolute and root mean squared forecast error
- Tests of equal predictability and encompassing tests

Corresponding frequencies

- Frequencies of indicators and targets do not match in many cases
  - Indicator monthly, target at quarterly frequency
- Bridge equations
  - Quarterly averages of monthly indicators
  - Missing months predicted by time series models
  - Coincident with respect to actual evolution
  - Lead of 1.5 months over national accounts
- Mixed data sampling (MIDAS) equations
  - Target variable directly predicted by indicator: three forecasts if data are quarterly/monthly

Combining information

- Combination of forecasts can improve the accuracy compared to individual predictions
  - Start with individual questions in each survey, proceed with composite indicators
- Different aggregation methods
  - Bridge and MIDAS equations
  - Simple averages, principal components, correlation- and forecast-weighted averages
- Pre-selection of questions according to model confidence set
  - Select only questions with best performance so far

Set of indicators

- Obtained as aggregated balances or diffusion indicators
  - Individual questions vs composite indicators
- EU indicators available for individual sectors
  - Consumers, industry, investment, retail trade, construction, and services
  - Indicator for overall activity is weighted average of individual surveys
- Composite PMIs (Markit Economics) for manufacturing, trade, services, construction

PMI indicators

- Survey information of purchasing managers in more than 400 companies per country
  - Composite index comprises series such as output, new orders, stock levels, prices, etc.
  - Manufacturing (services) data available for 30 (13) countries, lower coverage for construction and trade
- PMIs reported as diffusion indicators
  - Percentage of respondents reported better conditions plus half of the percentage with no change
  - PMI varies between 0 and 100, levels of 50 signal no change over the previous month

Forecasting consumption

- Consumer confidence does not outperform AR benchmark
  - Expected change in financial and general economic situation outperforms benchmark
  - Different optimal questions for countries
  - MIDAS forecasts improve, if later months become available
- Increasing performance of composites, if pre-selection of individual questions is involved
  - Gain in forecasting accuracy is about 15 percent

Forecasting investment

- No specific indicator for investment growth
  - Overall, industrial and construction confidence, PMIs for industry and construction
- Overall economic confidence can outperform AR benchmark
  - Gains in forecasting accuracy about 15 percent
  - PMIs outperform the benchmark, but economic sentiment only for first month in a quarter
- Composite indicators perform better than individual questions

Forecasting GDP growth

- Confidence indicators for particular sectors
  - Overall, consumption, industrial, construction, services, retail trade
  - PMIs refer to composite, manufacturing, and the services sector
- Economic sentiment outperforms competitors
  - Including combined survey indicators
  - AR improved by 30 percent if survey data of the last month are available
  - PMI better in case of early information
- Similar result as in the investment forecast

Forecasting IP growth

- Confidence indicators for particular sectors
  - Overall indicator, industrial and individual questions in the industry survey
  - PMIs refer to composite and the manufacturing sector
- Composite indicators perform better than AR, EU indicators and PMIs
  - Questions pre-selected by data-driven criteria
  - Production expectations especially suited

Conclusions

- Economic sentiment performs quite well in forecasting investment and GDP growth
  - PMIs better for the first month within a quarter
  - Individual PMI components not available
- Self-constructed measures better for private consumption and industrial production
  - Pre-selection of questions by data driven criteria
  - Combined indicators often better than ingredients
- Real-time data have only minor effect