External Assumptions and Macroeconomic Forecasts: Disagreement, Revisions and Forecast Errors

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Motivation
- Expert’s macroeconomic expectations are shaped by their ex-ante assumptions on e.g., future oil prices and exchange rates.
- Few papers have analyzed the linkage between forecasts and assumptions (Engelke et al. 2019, Fioramanti et al. 2016) ⇒ small samples and focus on GDP growth.
- We analyze the connection between assumptions and forecasts with respect to heterogeneity, revisions and accuracy in the European Central Bank’s Survey of Professional Forecasters.

Research questions:
- Is forecast disagreement related to assumption heterogeneity?
- Are macro forecasts and assumptions jointly updated?
- Are forecast errors linked to incorrect assumptions?
- Do experts predict macroeconomic outcomes in line with well-known theoretical relationships?

Survey of Professional Forecasters (SPF)
- The SPF provides forecasts and assumptions for the current and the next calendar year.
- Forecast horizons: \( h \in \{1, 2, \ldots, 8\} \) quarters
- 72 quarterly survey rounds for the period 2002Q1–2019Q4
- Institutions: 101 (approx. 50 per wave)
- Macroeconomic variables (\( y \)):
  - Inflation rate (\( \text{infl} \))
  - Real GDP growth (\( \text{gdp} \))
  - Unemployment rate (\( \text{lab} \))

Forecast vs. Assumption Revisions

\[
\Delta \hat{y}_{t,h} = \alpha + \sum_{x} \beta_{x} \Delta \hat{x}_{t,h} + \lambda_{t} + \lambda_{h} + \nu_{y,t,h},
\]

where \( \Delta \hat{x}_{t,h} = \hat{x}_{t,h} - \check{x}_{t,h} \) for \( z \in \{x, y\} \) and \( \lambda_{t} \) denotes a institutional-fixed effect.

Forecast vs. Assumption Errors

\[e_{y,t,h} = \alpha + \sum_{x} \beta_{x} e_{x,t,h} + \lambda_{t} + \lambda_{h} + \nu_{y,t,h},\]

where \( e_{z,t,h} = \hat{z}_{t,h} - \check{z}_{t,h} \) for \( z \in \{x, y\} \).

Summary and Conclusion

- Heterogeneity, updating and accuracy of expert’s macro forecasts are related to underlying assumptions.
- Importance of assumptions varies across macro variables:
  - Oil price assumptions → inflation forecasts
  - Interest rate assumptions → GDP growth and unemployment forecasts
  - Smaller role of exchange rate and wage growth assumptions.
- Survey participants could improve forecast accuracy by up to 50% by reducing assumption errors
- Survey operators should elicit assumptions along with forecasts.

References

Note: OLS estimates along with HAC standard errors. ‘*’, ‘**’ and ‘***’ indicate 10%, 5% and 1% significance levels.