

## Summary

The paper studies the link between changes in the level of aggregate uncertainty in the economy and the decision to participate in the ECB's SPF by professional forecasters. It finds that higher uncertainty discouraged forecasters to send their forecasts to the ECB. It also finds that the forecasters that were discouraged the most were those who perceived the highest levels of uncertainty.

## Contribution

The paper makes a significant contribution to the growing literature that uses ECB's SPF forecasts: it tests whether the missing-at-random assumption used in the literature holds or not. The paper finds that it does not hold and that the forecasters who perceive more uncertainty are less likely to participate when uncertainty is higher.

The implications of these results are important. First, papers using the data from the ECB's SPF may need to start controlling for sample selection. If not, econometric estimates are likely to be biased. Second, the estimates of macroeconomic uncertainty published by the European Central Bank are likely to be biased downwards, as they only take into account the information submitted by the forecasters who decide to participate in the survey.

## Correctness and strengths

The econometric analysis is correct. First, a probit model with random effects is used to investigate the relationship between the probability of participation at the individual level and aggregate uncertainty. Second, a linear relationship between individual point forecasts of GDP growth and the level of uncertainty perceived at the individual level is estimated controlling for sample-selection effects using the technique suggested by Wooldridge (1995).

The measure of uncertainty used in the paper, the Gini index of the density forecast, has advantages over the one used in the SPF literature, the standard deviation of the density forecast.

## Minor weaknesses

1. The list of papers cited on page 2 that used the ECB's SPF dataset is very incomplete. Recent papers that could be added to this list are:

Lyziak, T., and M. Paloviita (2016), Anchoring of inflation expectations in the euro area: recent evidence based on survey data, presented at the 36th International Symposium on Forecasting organized by the International Institute of Forecasters.

Glas, A., and M. Hartmann (2016), Inflation uncertainty, disagreement and monetary policy: evidence from the ECB Survey of Professional Forecasters, forthcoming in the Journal of Empirical Finance.

Kenny, G., and C Melo Fernandes (2016), Understanding the role of uncertainty in the euro area business cycle, presented at the 2nd Workshop on Uncertainty: Impact of Uncertainty Shocks on the Global Economy organized by the University College London.

Poncela, P., and E. Senra (2016), Measuring uncertainty and assessing its predictive power in the euro area, presented at the Universidad Autónoma de Madrid.

2. There is some anecdotal evidence supporting the production cost hypothesis described on page 3. For example, the Deutsche Institut für Wirtschaftsforschung (DIW) announced in 2009 that it would not publish forecasts for the German economy for 2010 due to high uncertainty from the financial crisis (source: [www.morgenpost.de/berlin/article104045045/Berliner-Institut-verweigert-Wachstumsprognose.html](http://www.morgenpost.de/berlin/article104045045/Berliner-Institut-verweigert-Wachstumsprognose.html)). This evidence could be mentioned in the paper.

3. The paper uses data from panelists that replied to two consecutive rounds to obtain a measure of aggregate uncertainty. It is said in the paper that "this avoids changes in the composition of the respondents from one survey round to the next to contaminate the aggregate measure of uncertainty". The technique is fine but the explanation is wrong: using data from panellists that replied to two consecutive rounds avoids mixing changes in uncertainty perceived by a group of forecasters that remains fixed during these two rounds with changes in aggregate uncertainty caused mechanically by forecasters who only replied once during the two rounds.

4. The paper should mention the results of the paper "Inflation Forecasts, Inattentiveness and Uncertainty", by J. Easaw, R. Golinelli and S. Heravi, which shows that at times of high uncertainty forecasters become less inattentive and tend to revise their forecasts more frequently. This evidence supports the production cost hypothesis presented in the paper.

5. Equation (12) has a mistake. It must include the sum from  $t=1$  to  $t=T$  of the  $\gamma(t)w(i,t)$  regressor.

6. The paper shows that forecasters who perceived more uncertainty participated less when uncertainty increased. According to Kenny and coauthors (2015, cited in the paper), the forecasters who submitted density forecasts with less probability in the tails performed significantly worse than the average forecaster. Putting these two results together would imply that, when uncertainty increased, the worst forecasters became overrepresented in the ECB's SPF sample and, then, the ECB's SPF aggregate forecasts were less reliable. This connection is missing in the paper and should be included in the Conclusions.

7. There are some typos in the paper that should be corrected:

Page 5, last paragraph, first and fourth lines, "participation" should be replaced with "response".

Page 6, first paragraph, third and fourth lines, "rounds" should be replaced with "round" and "are" with "is".

Footnote 12, second line, "augmented" should be replaced with "augment".

Page 10, second paragraph, fourth line, "the co-movement" should be replaced with "co-movements in the ranks".

Page 11, last paragraph, second line, "response is" should be replaced with "the number of replies are".

Footnote 23, second and third lines, "willing" should be replaced with "committed".

Page 13, first paragraph, third line, "which rejects" should be replaced with "rejecting". Fifth line, "some" should be replaced with "majority of the".

Page 13, second paragraph, fifth line, replace "its statistical significance" with "even more statistical significance".

Page 15, second paragraph, first and third line, replace "participation" with "response". Also on the third paragraph, third line, in footnote 29, first line, on page 17, fourth paragraph, last line, on page 18, fourth paragraph, third line, and on page 29, first line.

Page 17, third paragraph, sixth line, replace "decided" with "decide".

Page 19, last paragraph, first line, replace "ratio" with "ratios". Same paragraph, last line, replace "Tx1" with "1xT".

Page 21, second paragraph, last line, replace "non-response" with "sample selection".