

The Reliability of Inflation Forecasts Based on Output Gap Estimates in Real Time

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Discussion

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Vincent Labhard (Bank of England)

What makes this an interesting paper?

- application with real-time data
- focus on forecasting
- relevance for policy makers
- importance of knowing ‘where we are now’

What does the paper do?

- extension of Orphanides and Van Norden (2002)
- real-time data for US, based on Croushore and Stark (2001)
- real output: quarterly vintages for 1965 Q1 to 2003 Q3
- real output gaps: 12 models, quarterly vintages (e.g. UC models 1969 Q1 - 2002 Q2 = 134 vintages)
- price index: CPI, 2003 Q3 ‘vintage’

The forecast experiment

- (i) fixed lags, final gap estimates of output gap (FL-FL)

$$\pi_{t+h}^h = \hat{\alpha}^{t-1} + \sum_{i=1}^{\hat{n}} \hat{\beta}_i^{t-1} \pi_{t-i}^l + \sum_{i=1}^{\hat{m}} \hat{\gamma}_i^{t-1} y_t^{T, T-1} + e_{t+h}$$

- (ii) fixed lags, quasi-final estimates of output gap (FL-QF)

$$\pi_{t+h}^h = \hat{\alpha}^{t-1} + \sum_{i=1}^{\hat{n}} \hat{\beta}_i^{t-1} \pi_{t-i}^l + \sum_{i=1}^{\hat{m}} \hat{\gamma}_i^{t-1} y_t^{T, t} + e_{t+h}$$

- (iii) variable lag, real-time estimates of output gap (VL-RT)

$$\pi_{t+h}^h = \hat{\alpha}^{t-1} + \sum_{i=1}^{\hat{n}^{t-1}} \hat{\beta}_i^{t-1} \pi_{t-i}^l + \sum_{i=1}^{\hat{m}^{t-1}} \hat{\gamma}_i^{t-1} y_{t-i}^{t, t-1} + e_{t+h}$$

The forecast evaluation

- forecast horizon: 4(8)-quarter horizon
- benchmarks: autoregressive (AR) and augmented by growth (Δy , TF)
- criteria: RRMSE criterion, as in McCracken (2000) and test of Diebold and Mariano (1996), West (1996), Harvey et al (1998)

$$MSE - F = P \frac{MSFE_1 - MFSE_2}{MFSE_2}$$

$$z = C \frac{\bar{d}}{\sqrt{\hat{V}(\bar{d})}}$$

where \bar{d} is the mean difference in the loss function of the forecast and C the Harvey et al correction.

The conclusions

- (1) ‘many measures appear to be useful for predicting inflation ex-post’
- (2) ‘forecasts based on ex-post estimates severely overstate the gap’s usefulness for predicting inflation’
- (3) ‘relative performance seems to vary considerably over time’ and ‘past performance may provide little guidance in selecting an operationally useful definition’
- also: promising are BP filter (although depends on horizon) and TF model with real output rather than gap

What is there to discuss?

- inclusive range of output gap concepts? - other gaps? other SVARs?
- forecasting CPI sensible? - other price variables?
- other forecast horizons? - relevant for policy?
- can we generalise for other countries? - UK? EA? properties of inflation?

What is there to discuss?

- how useful is the forecasting model?

How useful is the forecasting model?

- paper: single linear equation with alternative regressors

$$\pi_{t+h}^h = \alpha + \sum_{i=1}^n \beta_i \pi_{t-i}^l + \sum_{i=1}^m \gamma_i y_{t-i} + e_{t+h}$$

- often used, but maybe there are other (more useful) models?
- what about using factors / time-varying coefficients?
- what about forecast combinations? - eg new methods in Kapetanios, Labhard and Price (2005a, ITMA) and Kapetanios, Labhard and Price (2005b, PLMA)

What is there to discuss?

- how useful is the forecasting model?
- how to evaluate forecast performance?

How to evaluate forecast performance?

- paper: pairwise comparison
- how useful are pairwise comparisons?
- what about model confidence sets, as suggested by Hansen, Lunde and Nason (2003), and extended in Kapetanios, Labhard and Schleicher (2005)
- how does forecast performance improve with subsequent vintages?

What is there to discuss?

- how useful is the forecasting model?
- how to evaluate forecast performance?
- how costly would forecast error have been?

How costly would forecast error have been?

- paper: ‘this severely overstates gap usefulness in real time’
- how bad would it be?
- how can we explain the change over time?
- how can we capture the impact of changes in real-time data quality vs properties of inflation?

What is there to discuss?

- how useful is the forecasting model?
- how to evaluate forecast performance?
- how costly would forecast error have been?
- what next?

What next?

- (i) which output gap measure is the best?
- (ii) which vintage means we can beat the benchmarks?
- (iii) how do forecast combinations fare with real time data?

Selected references

- Croushore and Stark (2001), ‘A Real-time data set for Macroeconomists’, *JE*, vol.105, pp111-30
- Hansen, Lunde and Nason (2003), ‘Model Confidence Sets for Forecasting Models
- Kapetanios, Labhard and Schleicher (2005), ‘Conditional Model Confidence sets with an Application to Forecasting Models’
- Kapetanios, Labhard and Price (2005a), ‘Forecasting using Bayesian and Information Theoretic Model Averaging: An Application to UK Inflation’, Bank of England Working Paper 268.

Selected references (continued)

- Kapetanios, Labhard and Price (2005b), 'Forecasting Using Predictive Likelihood Model Averaging'
- Orphanides and Van Norden (2002), 'The Unreliability of Output Gap Estimates in Real Time' RES, vol.84, pp569-83

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