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Forecast Evaluation in the Panels of Forecasts: Empirical Evidence

Forecast Evaluation: Simple Tests

- Unbiasedness

$$E(e_{T,h})=0$$

- Efficiency

$$E(e_{T,h}\,f_{T,h})=0$$

- Non-autocorrelation

$$E(e_{T,h}\,e_{T,h-1})=0$$

Features

- Allow to evaluate forecast for definite horizon
- Don’t consider the “panel” structure of forecasts

The “panels” of forecasts

Some analogue of panel data:

for each forecasting point (e.g. month) we have several forecasts made in different moment of time

Data Base

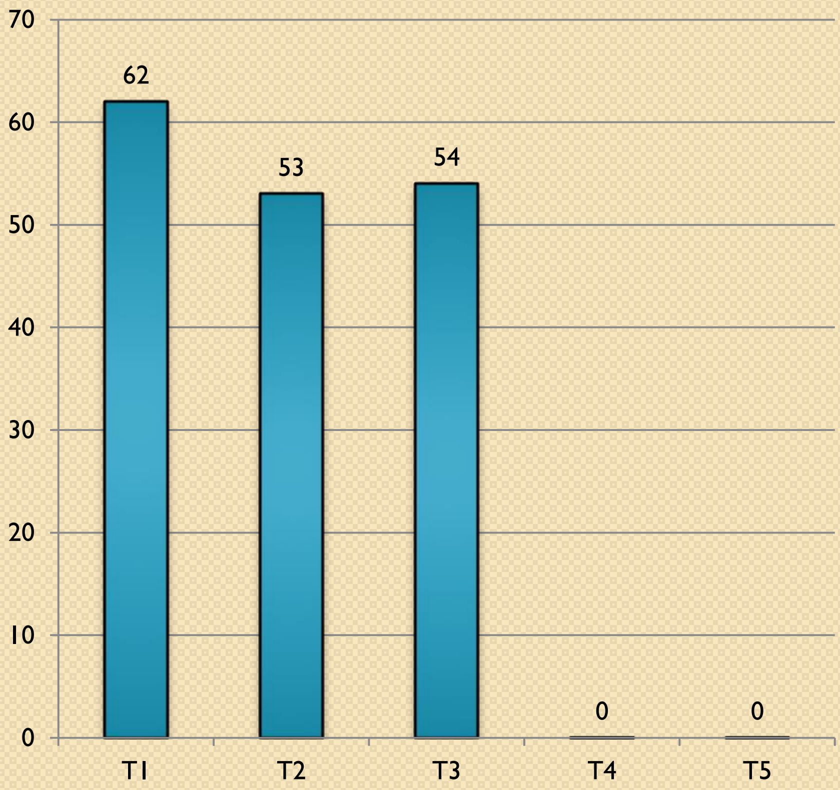
- Real time forecasts (http://www.iep.ru/en/publications/category/123.html)
- August, 2006 – December, 2013 (P=89 month)
- Forecast horizons: 1, 2, …, 6 (h=6)
- $P \times h = 89 \times 6 = 534$
- 57 (62) macroeconomic time-series (industrial production, prices, exchange rates, labor market, etc.)

How to test unbiasedness

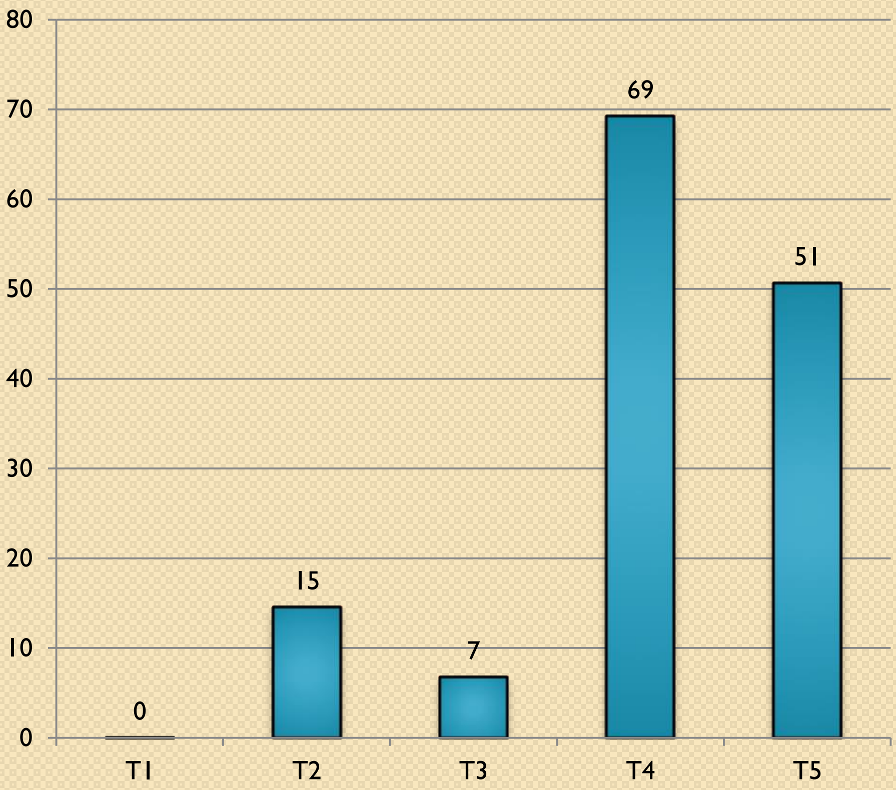
- T1: for each forecast horizon *h* (*h* regressions)
- T2: group unbiasedness (pooled regression with *h* dummies, joint hypothesis)
- T3: individual unbiasedness for horizons (regression with *h* dummies, *h* individual hypothesis)
- T4: individual unbiasedness <u>for month</u> (regression with *P* dummies, *P* individual hypothesis)
- T5: individual unbiasedness <u>in month</u> (regression with *P* dummies, *P* individual hypothesis)

Unbisedness: results

Null hypothesis didn't reject (number of time series)



Average number of null rejection (%)



Effectiveness: results

- For each horizon (*h* regressions):

  number of non-rejections = 48 (out of 62)

  average number of rejection= 12%

- For panel of forecasts (pooled regression):

  number of non-rejections = 22 (out of 62)

  average number of rejection= 64%

Non-autocorrelation

- T1: first-order autocorrelation for each forecast horizon (*h* regression)
- T2: first-order autocorrelation for panel (pooled regression)
- T3: first-order autocorrelation of previous time forecast for each forecast horizon (*h* regression)
- T4: first-order autocorrelation of previous time forecast for panel (pooled regression)

Non-autocorrelation: results

- Strange
- Number of non-rejections for all of the tests very low (3/3/1/2)

Results: Summary

- The “panels” of forecasts evaluation tests allow to reject null hypothesis more often then standard procedure in case of unbiasedness and efficiency
- Non-autocorrelation tests give the same results for both types of procedures