ECB SPF Data Analysis

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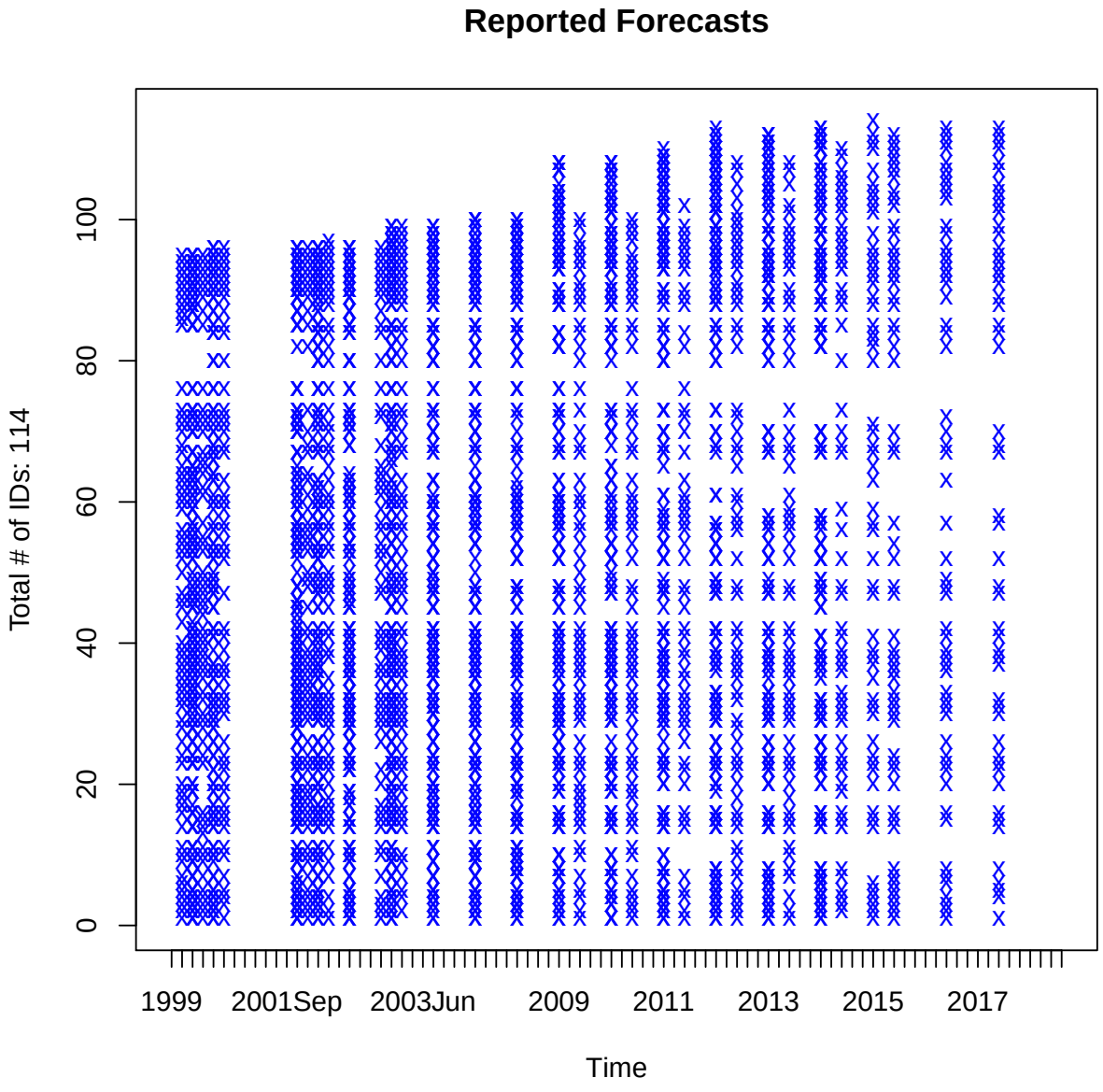
Dataset Description

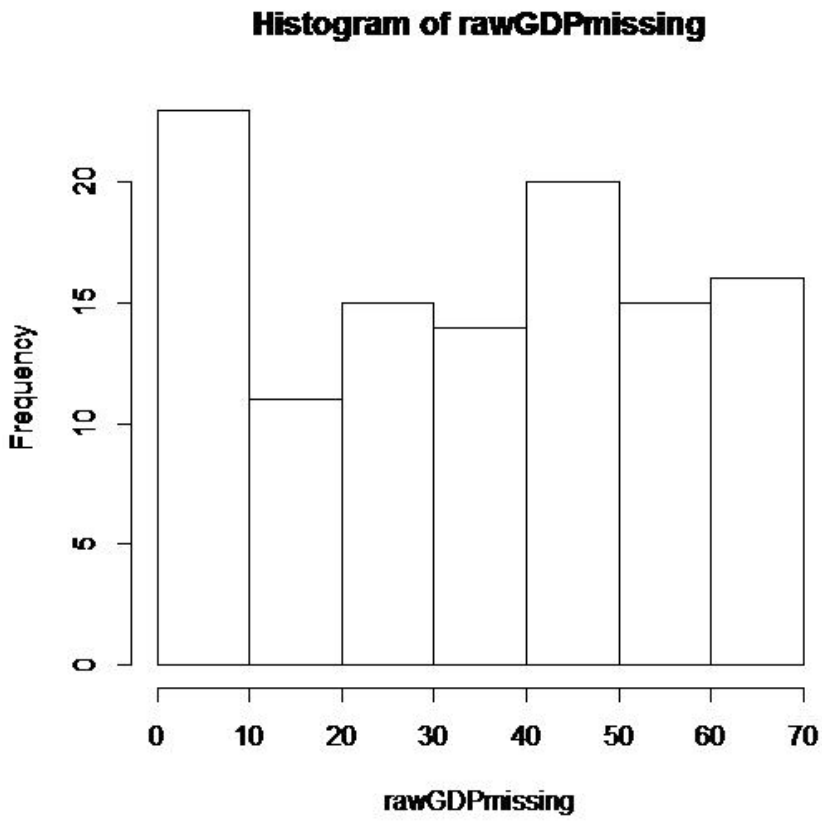
- Observation period from $1999Q1$ to $2014Q2$ (62 quarters)
- Unique forecaster ID assigned to each individual forecaster; remains the same for all forecast rounds
- Included macroeconomic indicators:
  - Inflation (year-on-year percentage change of the Harmonised Index of Consumer Prices (HICP))
  - Real GDP growth (year-on-year percentage change of real GDP)
  - Unemployment rate (defined by Eurostat, calculated as percentage of labor force)
  - Assumptions:interest rate, oil prices, USD/EUR exchange rate, labor costs
- Frequencies of observations
  - Inflation: Monthly
  - GDP: Quaterly
  - Unemployment: Monthly

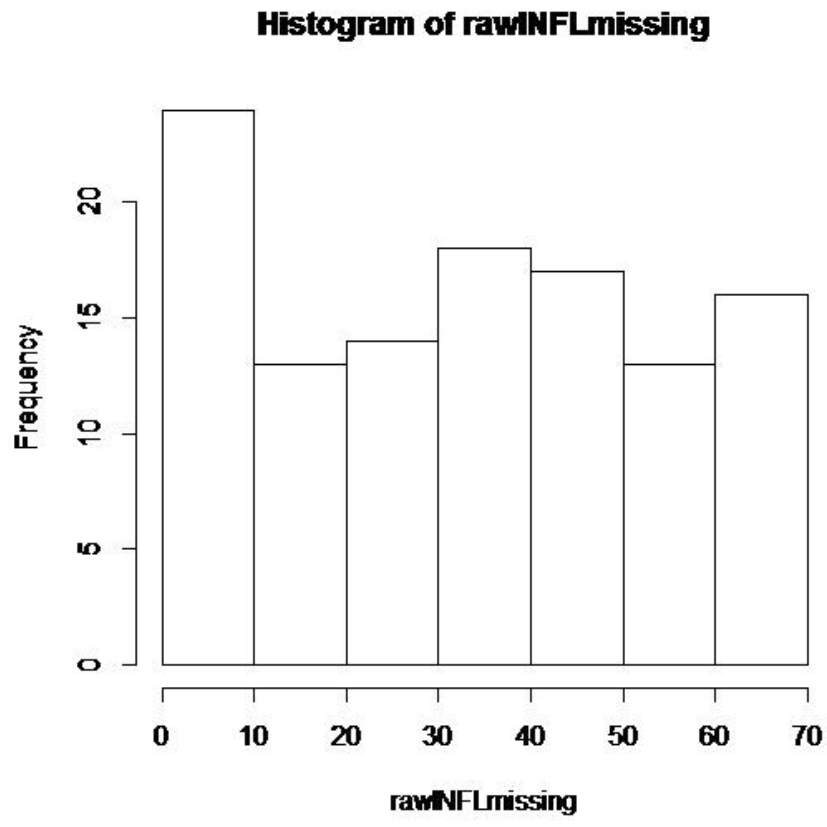
Unbalanced Nature of the Panel



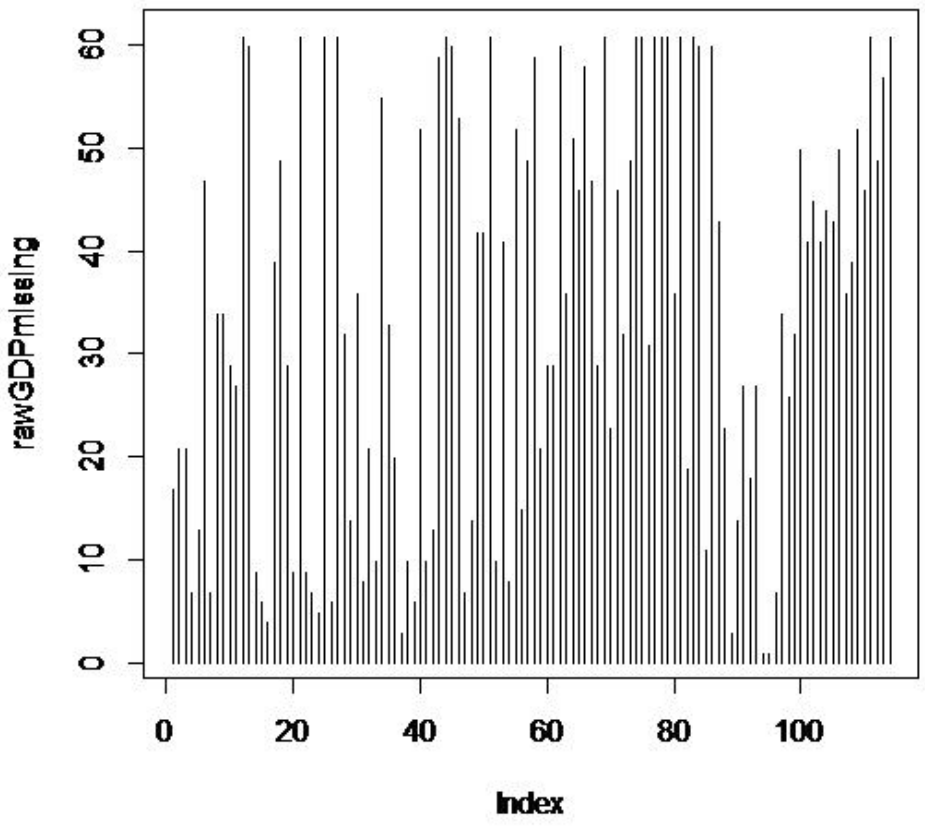
Missing Values: All Forecasters vs. Selected Forecasters

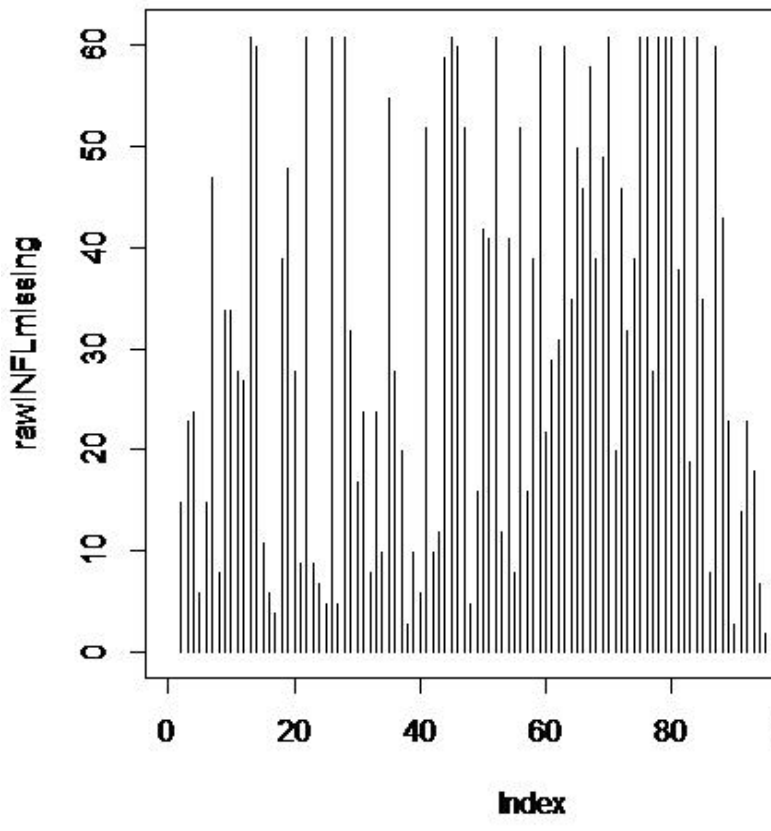
	# Rows	# Columns	# Datapoints	# Missing values
GDP_Interpolated	61	19	1159	0
GDP_Raw	61	114	6954	3921
INFL_Interpolate	61	19	1159	0
INFL_Raw	61	114	6954	3855



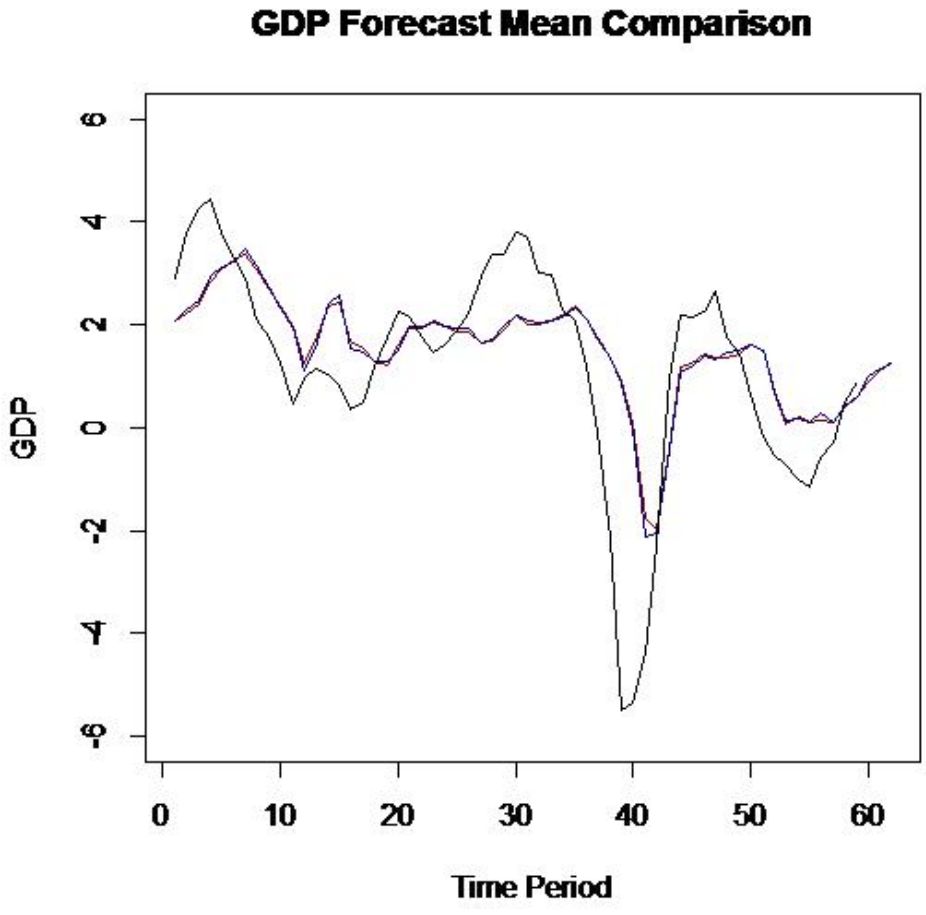


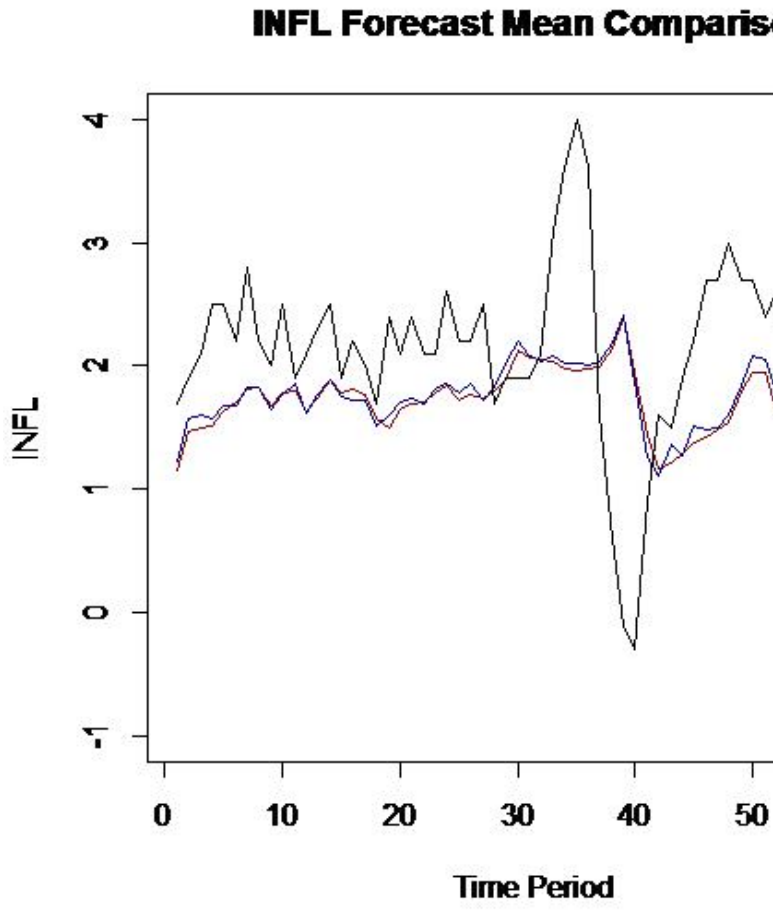
Missing Values: All Forecasters vs. Selected Forecasters



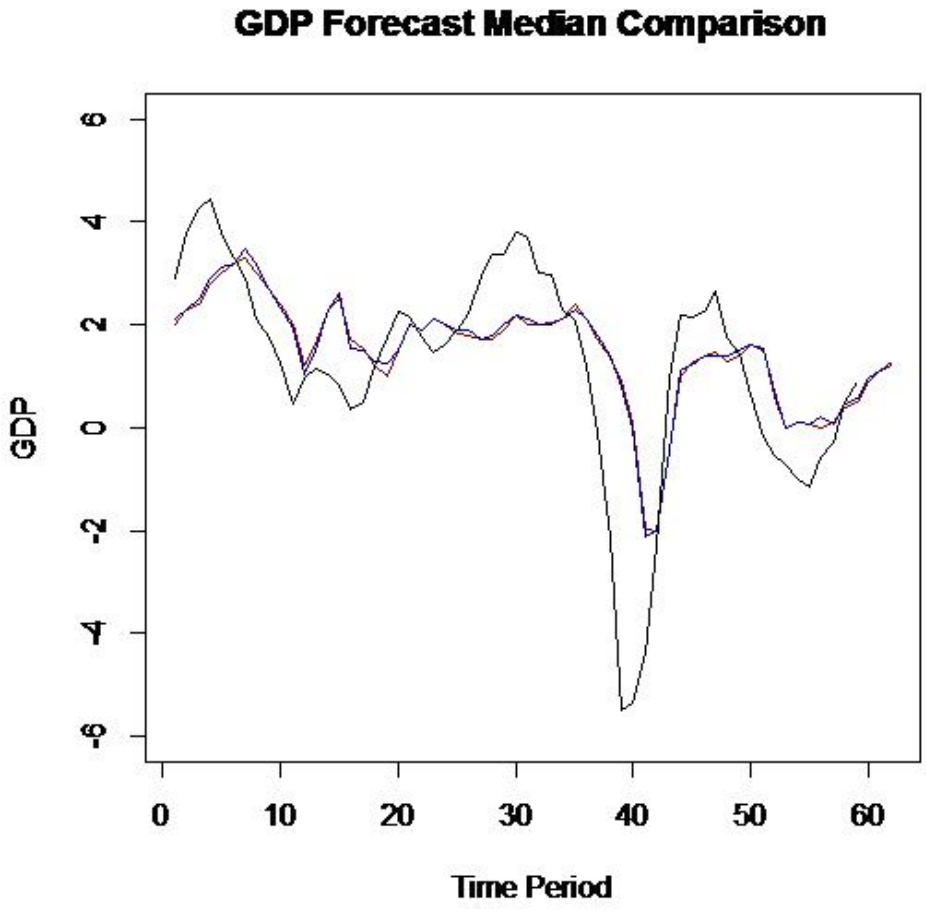


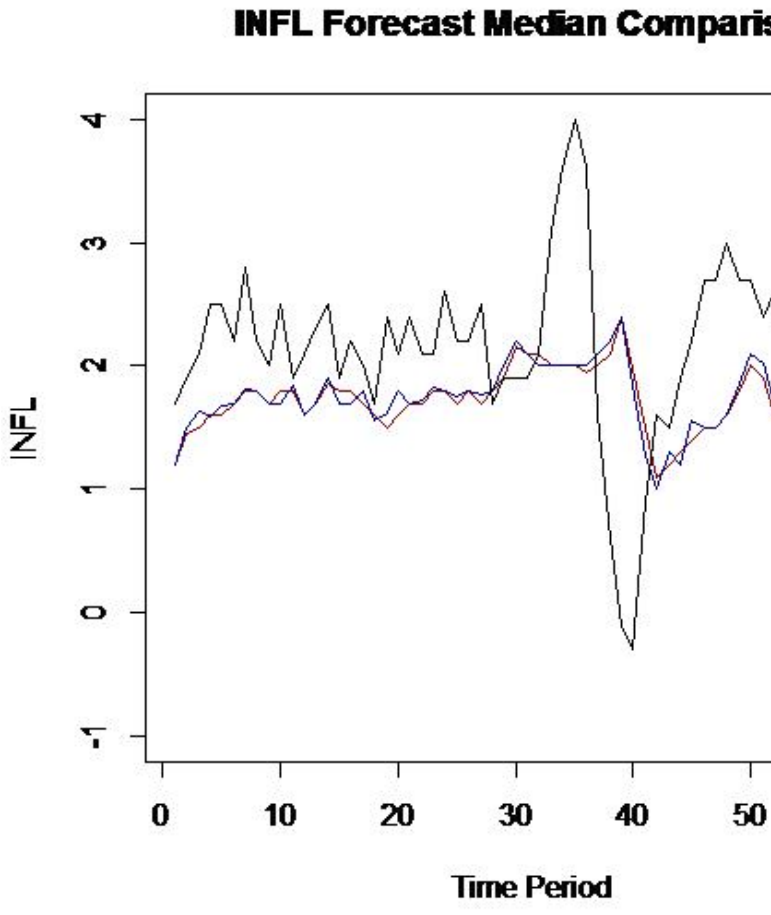
Summary Statistics Comparison: Mean



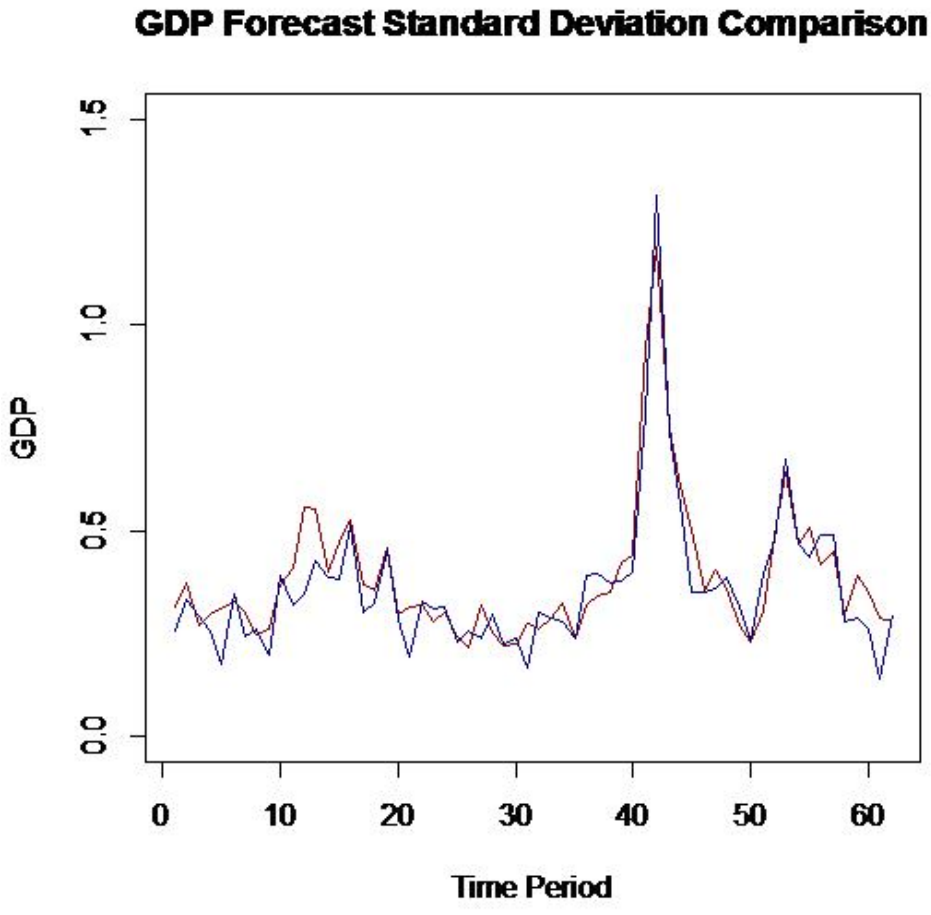


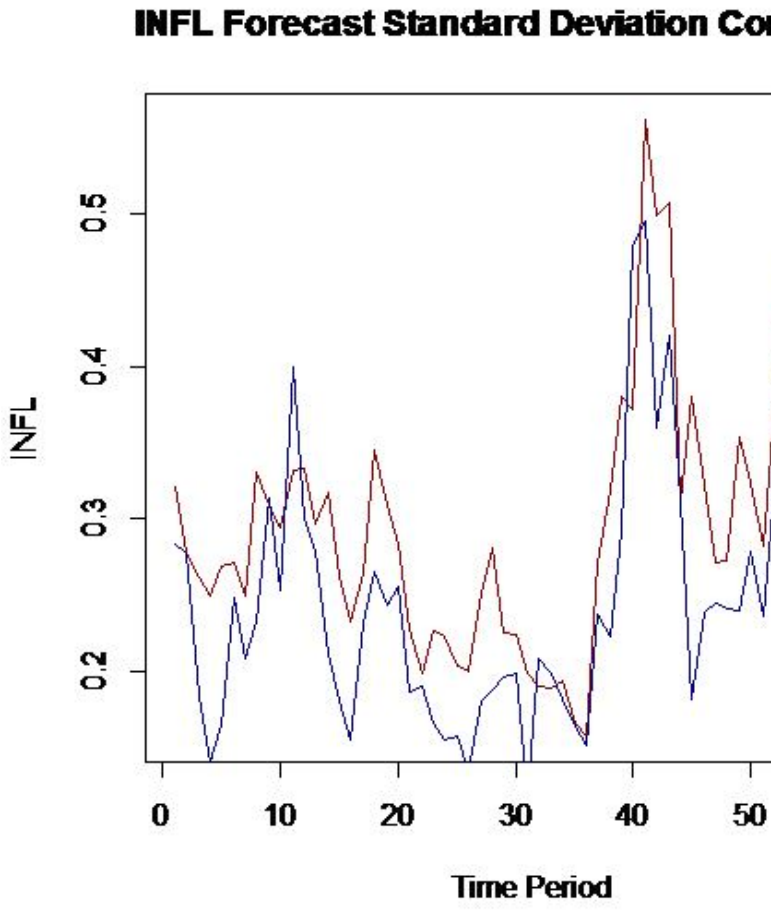
Summary Statistics Comparison: Median





Summary Statistics Comparison: Standard Deviation





Forecast Starting Point and Horizons

- Time points to begin forecast differ across predicators.
  - Start from the most recent official release.
- Forecast horizons evolute across time.
  - Four consistent horizons
  - Longer-term horizon begins available from 2001Q1.

SPF ROUND / FORECAST HORIZON	1999Q1	1999Q2	1999Q3	1999Q4	2000Q1	2000Q2	2000Q3	2000Q4	2001Q1	2001Q2	2001Q3	2001Q4	2002Q1	2002Q2	2002Q3	2002Q4	2003Q1	2003Q2	2003Q3	2003Q4	2004Q1	2004Q2	2004Q3	2004Q4	2005Q1	2005Q2	2005Q3	2005Q4	2006Q1	2006Q2	2006Q3	2006Q4
Current calendar year	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Next calendar year	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Calendar year two years ahead							■	■			■	■			■	■			■	■			■	■			■	■		■	■	■
* Calendar year five years ahead	■				■				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
One year ahead rolling horizon	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Two years ahead rolling horizon	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Five years ahead rolling horizon	■				■				■																							

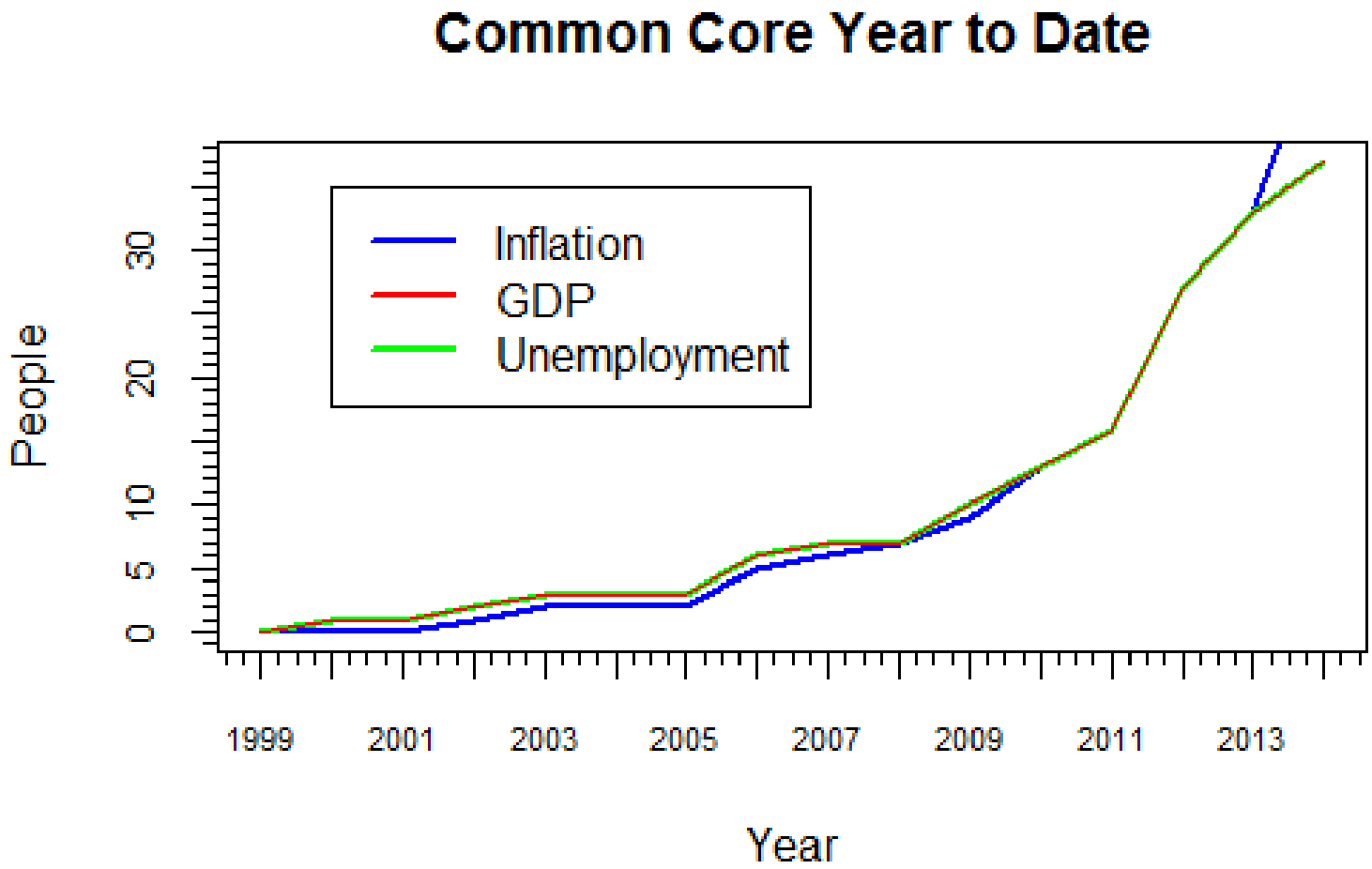
SPF ROUND / FORECAST HORIZON	2007Q1	2007Q2	2007Q3	2007Q4	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1	2009Q2	2009Q3	2009Q4	2010Q1	2010Q2	2010Q3	2010Q4	2011Q1	2011Q2	2011Q3	2011Q4	2012Q1	2012Q2	2012Q3	2012Q4	2013Q1	2013Q2	2013Q3	2013Q4	2014Q1	2014Q2
Current calendar year	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Next calendar year	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Calendar year two years ahead			■	■			■	■			■	■			■	■			■	■			■	■			■	■	■	■
Calendar year five years ahead	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
One year ahead rolling horizon	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Two years ahead rolling horizon	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Five years ahead rolling horizon																														

■ forecast horizons surveyed in that particular round

ECB Dataset of Realized Indicators

- Observation period from $1999Q1$ to $2014Q1$ (61 quarters)
- Frequency of observations can be specified: monthly, quarterly, half-annually, annually
- Figures are kept to most recent:
  - Inflation rate: last update Jun-16, 2014
  - GDP growth: last update Jun-4, 2014
  - Unemployment rate: last update Jun-3, 2014
- Other indicators available: Monetary aggregate M3, Unit labor costs, Population, USD/EUR exchange rate etc.

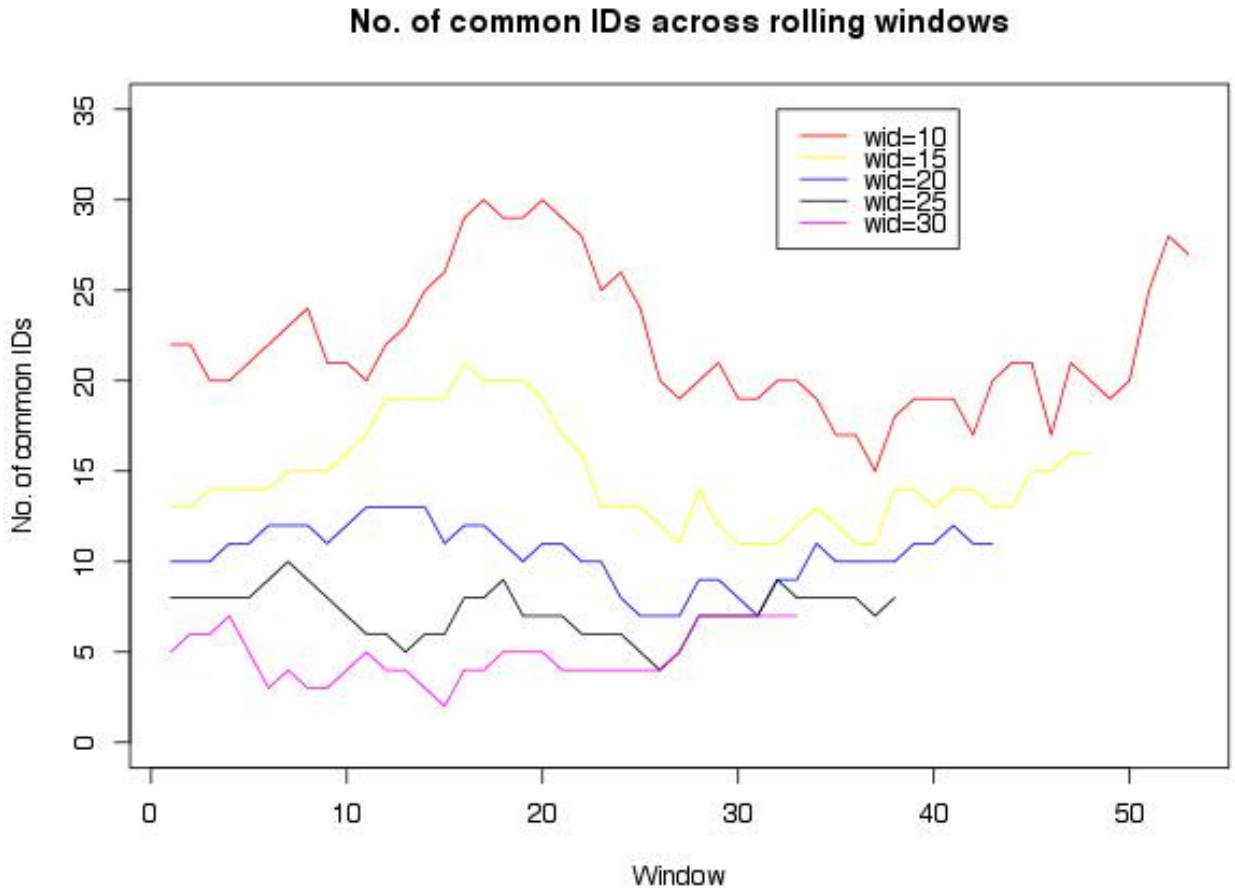
Common Core to Present



- Forcasters differ slighlty across indicators
- No clear starting point due to

Common Forecasters Under Rolling Window

- With a fixed window width (w), we roll from window 1 (Quarter w-Quarter 1) to the last (Quarter 62-Quarter 63-w, current year inflation).
- The x-axis is the No, of the window; y-axis is the number of common forecasters in that window

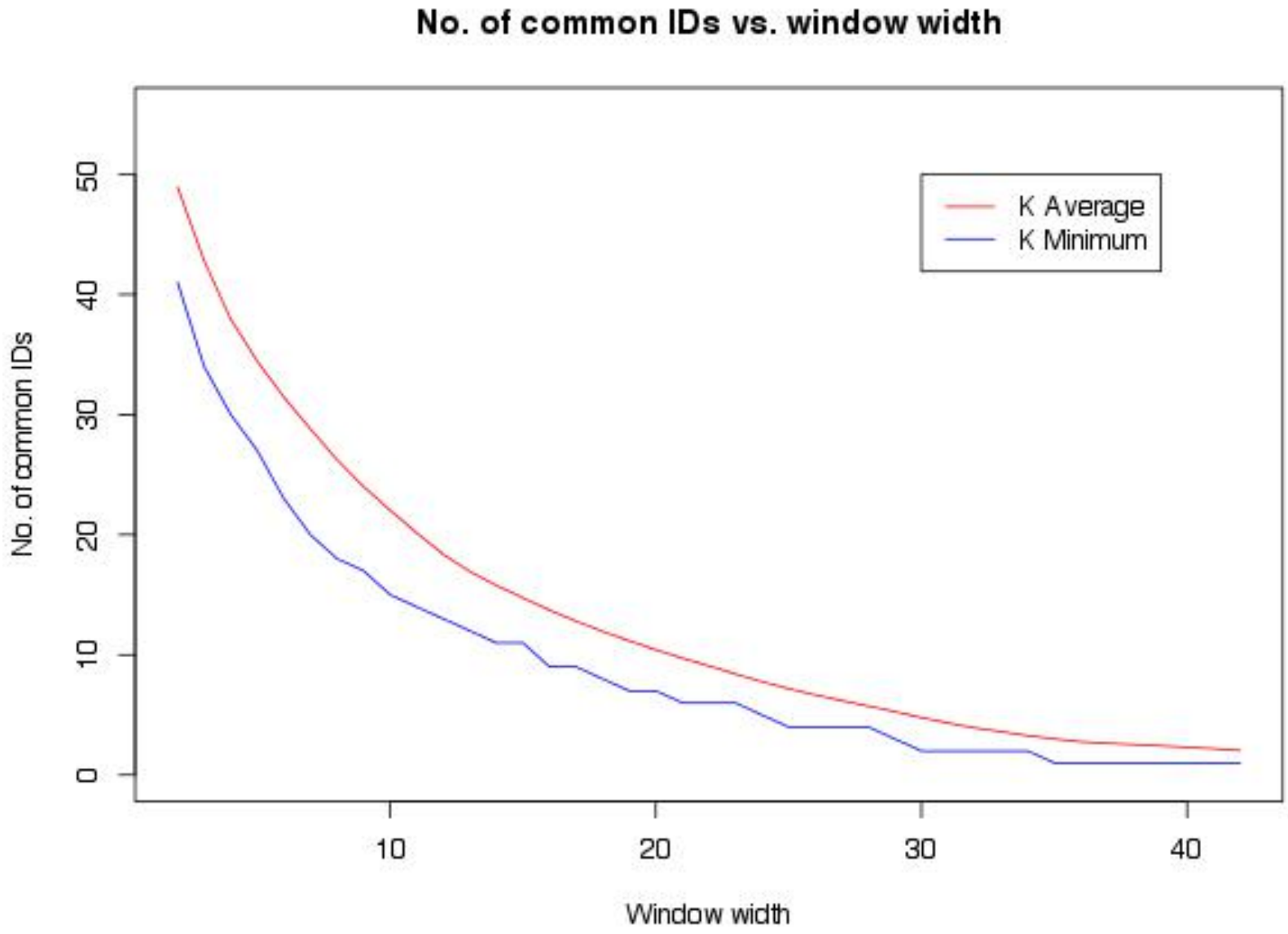


Common Forecasters Under Rolling Window

- With a fixed window width, we use the average (red) and the minimum (blue) of the number of common forecasters across rolling windows to represent the number of common forecasters of that window width.
- The first graph: varying the window width (w), the x-axis is the window width; y-axis is the number of common forecasters of that window width.
- The second graph: varying the window width (w), the x-axis is the window width; y-axis is the ratio of the number of common forecasters of that window width and the window width.

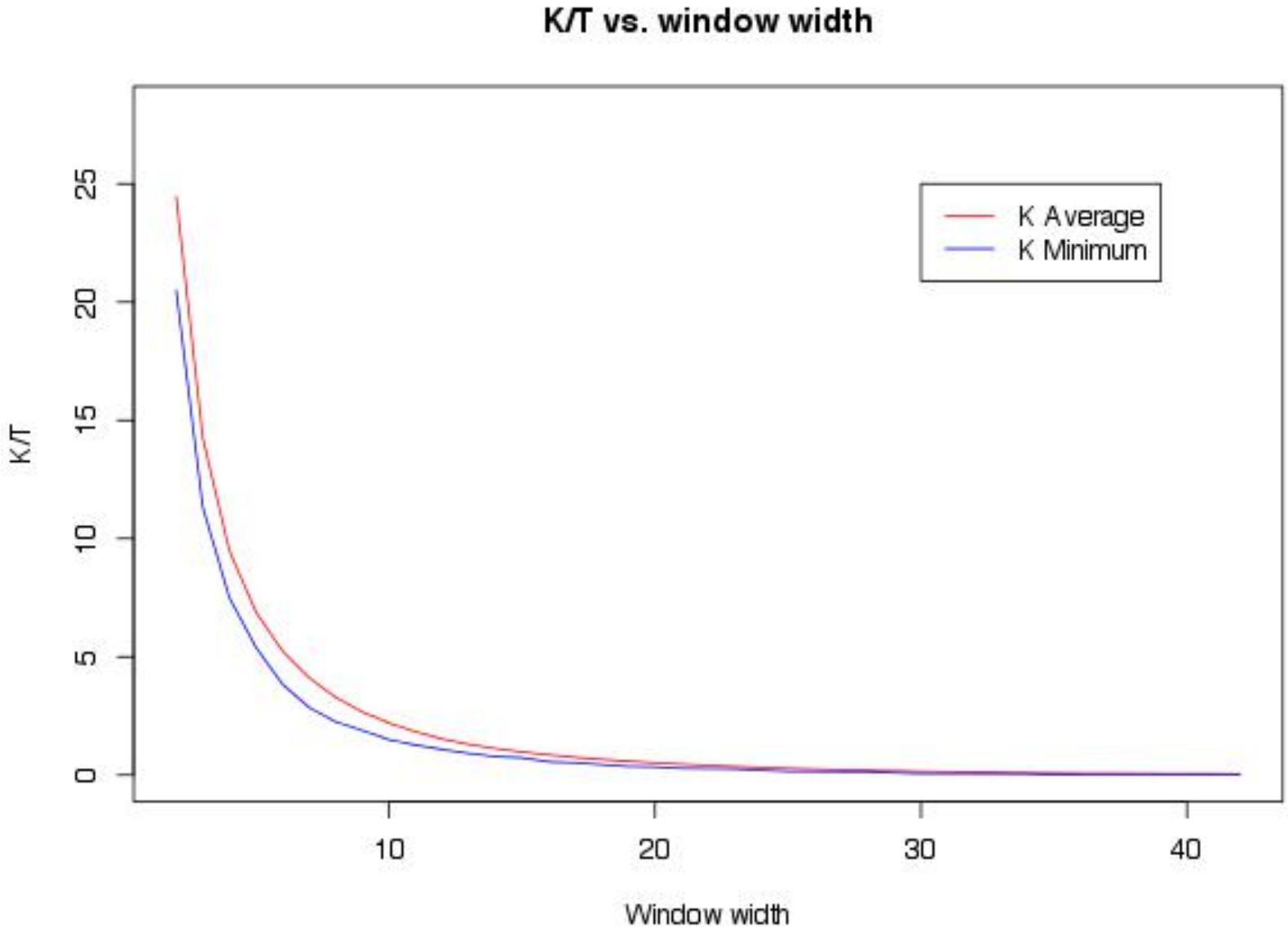
Common Forecasters Under Rolling Window

- The first graph



Common Forecasters Under Rolling Window

- The second graph



Dealing with Missing Observations

We study two cases:

1. Conflitti, De Mol, Giannone (2013), *Optimal Combination of Survey Forecasts*
2. Genre, Kenny, Meyler, Timmermann (2013), *Combining Expert Forecasts: Can Anything Beat the Simple Average?*

Conflitti, De Mol, Giannone (2013)

1. Exclude forecasters with more than *25 missing survey rounds*
2. For the remaining forecasters, the unreported point forecasts are filled with the most recent one
3. Missing forecasts at the early rounds are replaced with the average opinion of the respondents

Genre, Kenny, Meyler, Timmermann (2013)

1. Exclude forecasters with more than four *consecutive* missing observations
2. Missing values are filled up using a simple AR(1) process panel regression of the form:

$$\hat{y}_{i,t+h} - \bar{y}_{t+h} = \beta_i(\hat{y}_{i,t+h-1} - \bar{y}_{t+h-1}) + \varepsilon_{i,t+h}$$

Reletive deviation of each forecaster from the simple average in period t is linked to its relative deviation in period $t-1$

- If $\beta_i = \beta = 1.0$, missing observations are set to the previously reported individual forecast, updated with the change in the average of the forecasters who do respond
- For $0 \leqq \beta \leqq 1.0$, missing observations are replaced with the period t average forecast plus a fraction of the previously observed deviation from the average forecast.

Proposal for Treating Missing Observations

To be filled...

References

http://www.ecb.europa.eu/stats/prices/indic/forecast/html/index.en.html
http://sdw.ecb.europa.eu/home.do?chart=t1.3