Macro-Finance:
Class 6

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Predictability

Practical examples with predictive power:

1. Dividend-yield (equity)
2. Yield curve (spread, bonds, etc.)
3. Vix, implied vol (options)
4. Forward-guidance
5. Sentiments (official announcements, etc.)

Which inflation indicator is more able to capture foreign prices impact?

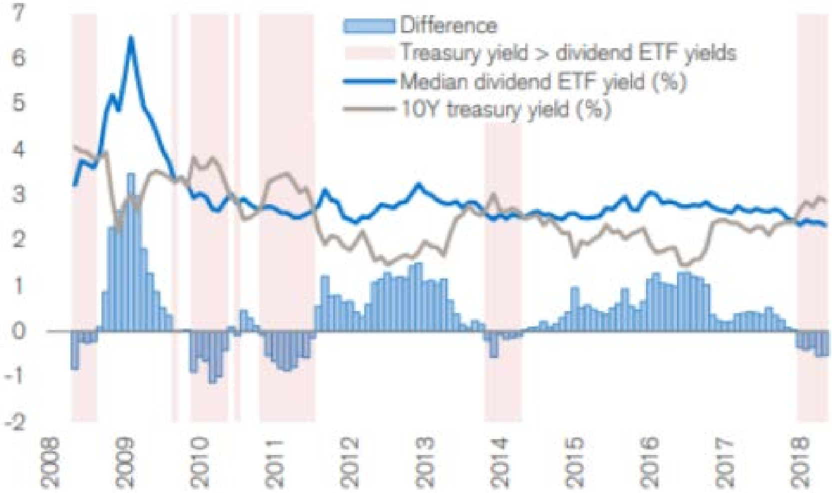
1. $\%\Delta$CPI
2. $\%\Delta$GDP-deflator

Model

- univariate, one-lag
- univariate, multiple-lags, additional predictors
- VAR, VARX, etc.

Validate

- More sophisticated model (more parametrization)
- FMSE (out-of-sample)

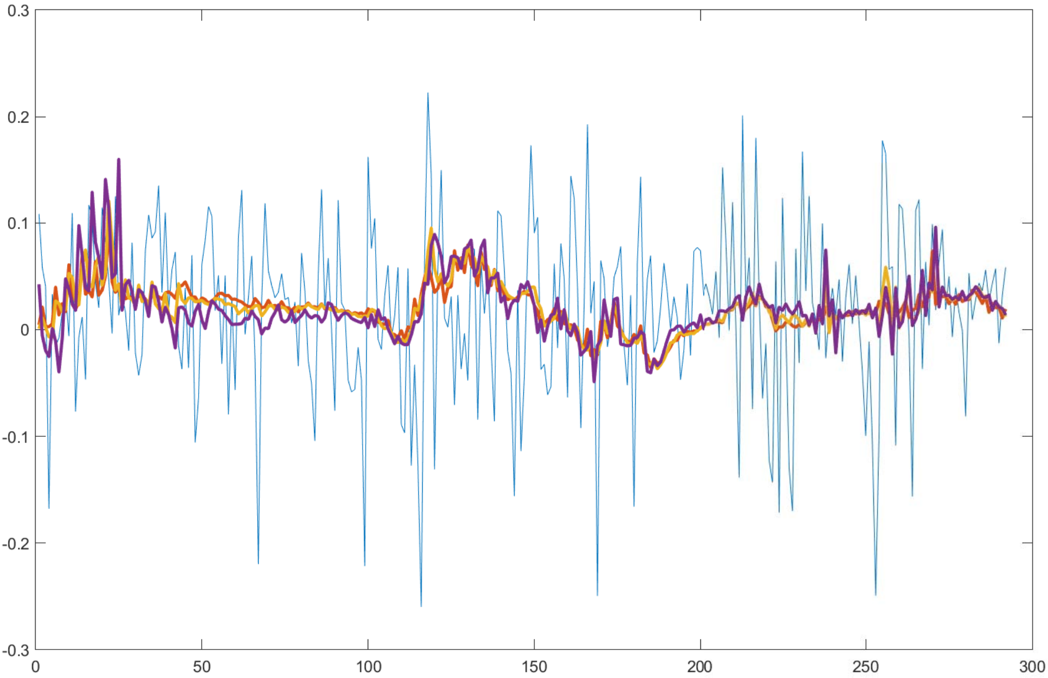


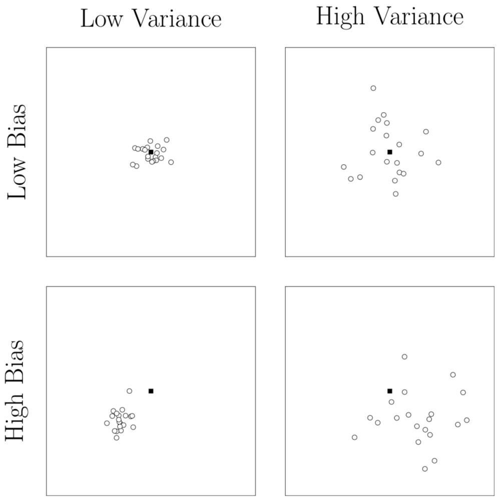
Difference
Treasury yield > dividend ETF yields
Median dividend ETF yield (%)
10Y treasury yield (%)
7
6
5
4
3
2
1
0
-1
-2
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

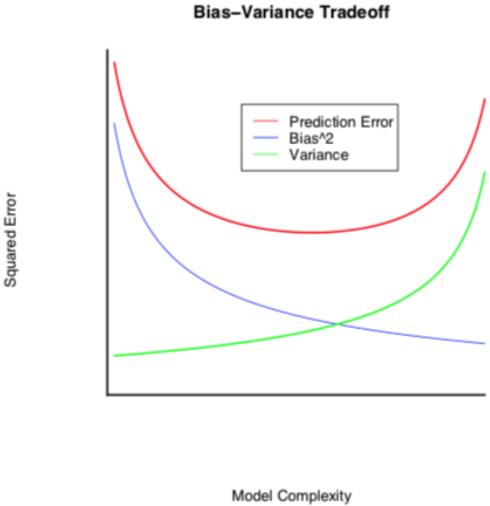
Specification

Choose a window (60 quarters or more) and one of the following models:

$$
\begin{aligned}
\log R^{\$}_{t+1} - \log R^{\$}_{f,t+1} &= \beta_0 + \beta_1 \left(\frac{\texttt{vwretd}_t}{\texttt{vwretx}_t} - 1 \right) + u_{t+1} \\
\log R^{\$}_{t+1} - \log R^{\$}_{f,t+1} &= \beta_0 + \beta_1 \left(\frac{\texttt{vwretd}_t}{\texttt{vwretx}_t} - 1 \right) + \beta_2 \left(\frac{\texttt{vwretd}_{t-1}}{\texttt{vwretx}_{t-1}} - 1 \right) + v_{t+1} \\
\begin{bmatrix} \log R^{\$}_{t+1} - \log R^{\$}_{f,t+1} \\ \dfrac{\texttt{vwretd}_{t+1}}{\texttt{vwretx}_{t+1}} - 1 \end{bmatrix} &= B_0 + B_1 \begin{bmatrix} \log R^{\$}_{t} - \log R^{\$}_{f,t} \\ \dfrac{\texttt{vwretd}_{t}}{\texttt{vwretx}_{t}} - 1 \end{bmatrix} + U_{t+1}
\end{aligned}
$$


0.3
0.2
0.1
0
-0.1
-0.2
-0.3
0
50
100
150
200
250
300

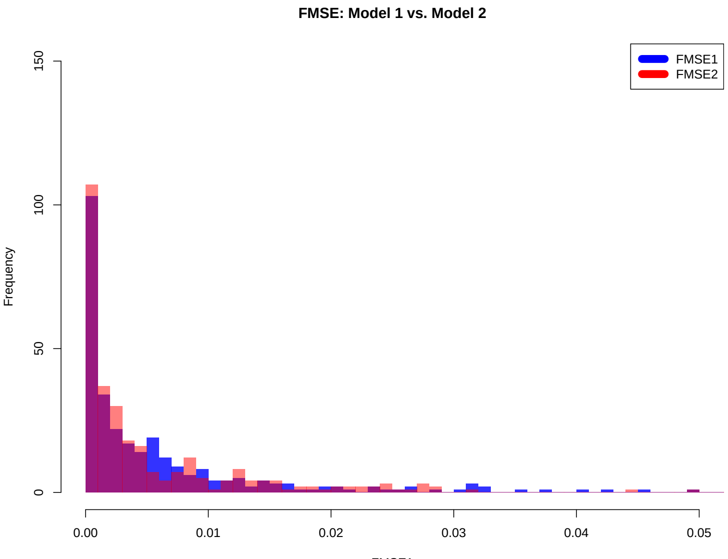

Low Variance
High Variance
Low Bias
High Bias


Bias–Variance Tradeoff
Prediction Error
Bias^2
Variance
Squared Error
Model Complexity

Forecast Mean Squared Error

For a forecast value $\widehat{x}_{t+h}$ where h is the forecast horizon:

$$\mathrm{FMSE}[\widehat{x}_{t+h}] = \mathrm{var}[\widehat{x}_{t+h}] + \mathrm{bias}[\widehat{x}_{t+h}]^2$$



Predictability

Extended examples (more analysis needed to interpret)

1. Leverage (liabilities)
2. Credit (assets and liabilities side)

Credit cycles:

- hedge financing (safest): companies can repay debts with their earnings
- speculative financing (riskier): companies can cover their interest payments but must roll over their principal.
- Ponzi financing: earnings cover neither principal nor interest; firms are betting that their assets will appreciate. If not, they are in trouble.

When asset values fall, overstretched investors must sell their positions, which further hits asset values.

- In a healthy economy, debt is *irresistible*
- When growth *seems* guaranteed, why not borrow more?
- Banks add to the dynamic, lowering their standards and extend over-lending. If defaults are minimal, why not lend more?

A potential unsettling conclusion: periods of stability breed financial fragility.