GROUP 2 | **Akos Furton, Marnelia Scribante, Siow Meng Low, Joaquin Coitino**

BIG DATA IN FINANCE

CONTEMPORANEOUS

VARIABLE RELATIONSHIPS

Direct relationship (positive (+) correlation):

- **Interest differential** - ↑ forward exchange rate = ↑ future spot rate
  - more attractive to save money in currency with higher interest rate
- **IP differential** - higher demand for goods and services = ↑ production
  = stronger economy = ↑ value of currency

Indirect relationship (negative (–) correlation):

- **Inflation differential** - ↑ inflation = more money buys fewer goods = ↓ value of currency
- **MS differential** - all else equal, ↑ supply with constant demand = ↓ spot rate

MODEL

PARA-METERS

Hyper-parameters tuned via cross-validation:

- **LASSO regression**: alpha
- **Elastic net**: L1 ratio and alpha
- **Random forest**: minimum leaf size
- **Bayesian ridge regression**: lambda

WINDOW SIZE

60 months (5 years)

- **Long enough to avoid over-sensitivity to recent events**
- **Short enough to contain relevant information**

COEFFICIENTS

- **Changes according to model**
- **Changes with every iteration**

PERFORMANCE

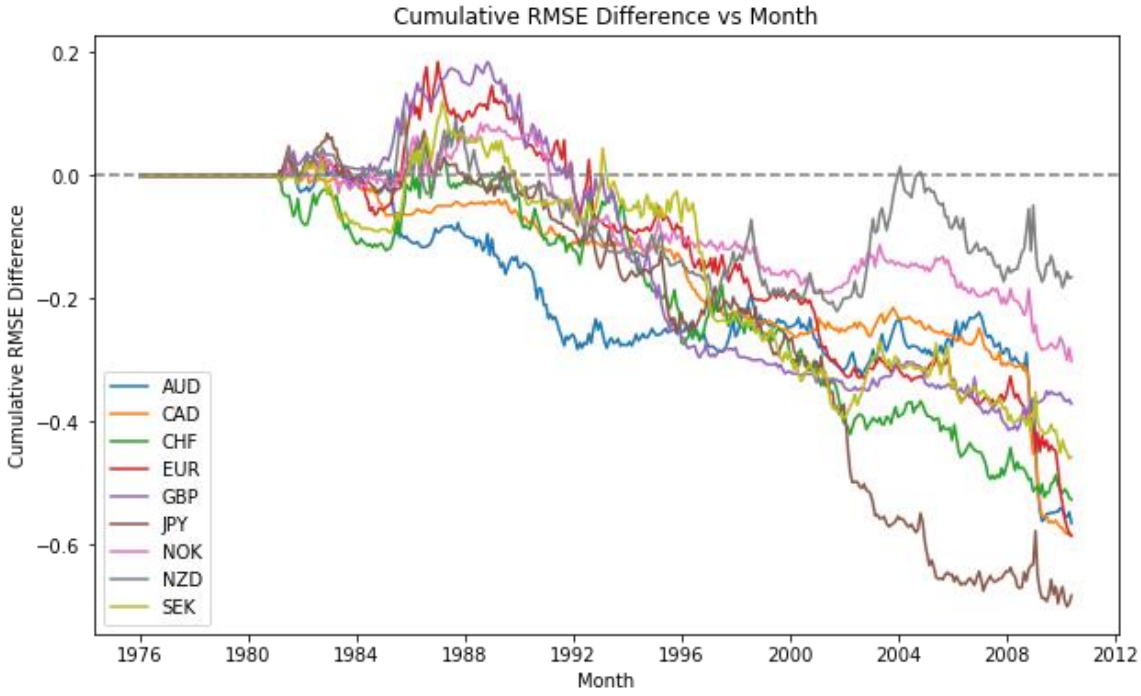
LINEAR REGRESSION

Maximum drawdown

- AUD: **0.593**
- CAD: **0.605**
- CHF: **0.584**
- EUR: **0.770**
- GBP: **0.599**
- JPY: **0.773**
- NOK: **0.386**
- NZD: **0.328**
- SEK: **0.580**

R^2_{oos} = **-0.1394**

Economic significance
= **-1161.72 %**



PERFORMANCE

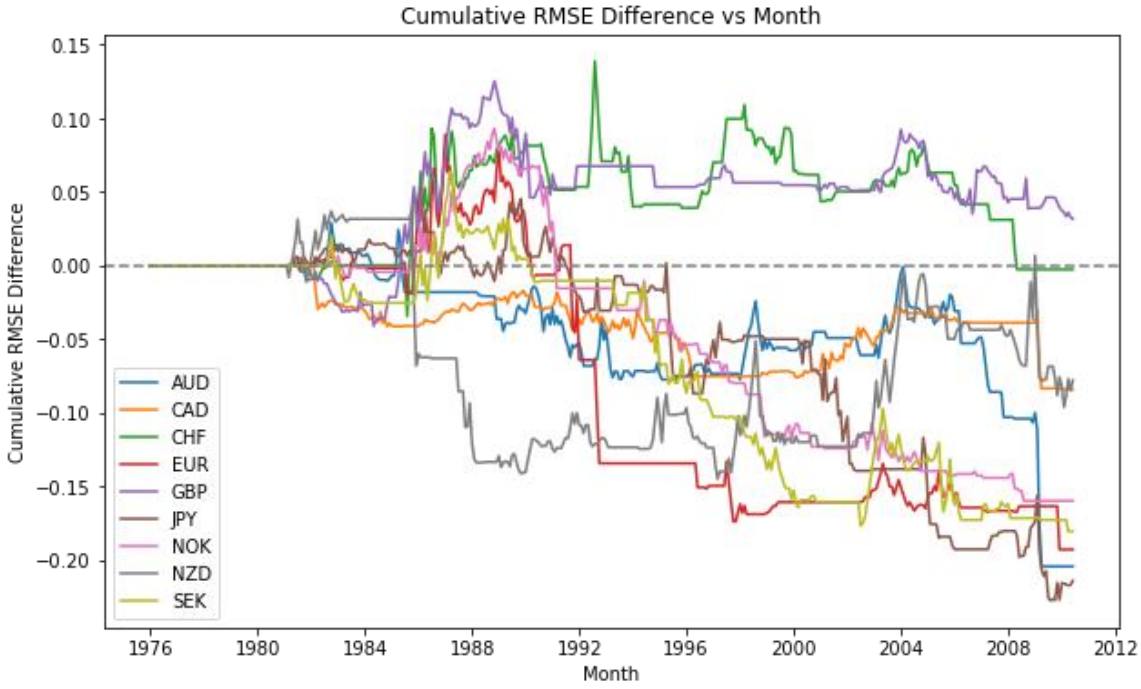
LASSO REGRESSION

Maximum drawdown

- AUD: **0.233**
- CAD: **0.089**
- CHF: **0.141**
- EUR: **0.282**
- GBP: **0.094**
- JPY: **0.273**
- NOK: **0.253**
- NZD: **0.182**
- SEK: **0.244**

R^2_{oos} = **-0.0375**

Economic significance = **-312.68%**



PERFORMANCE

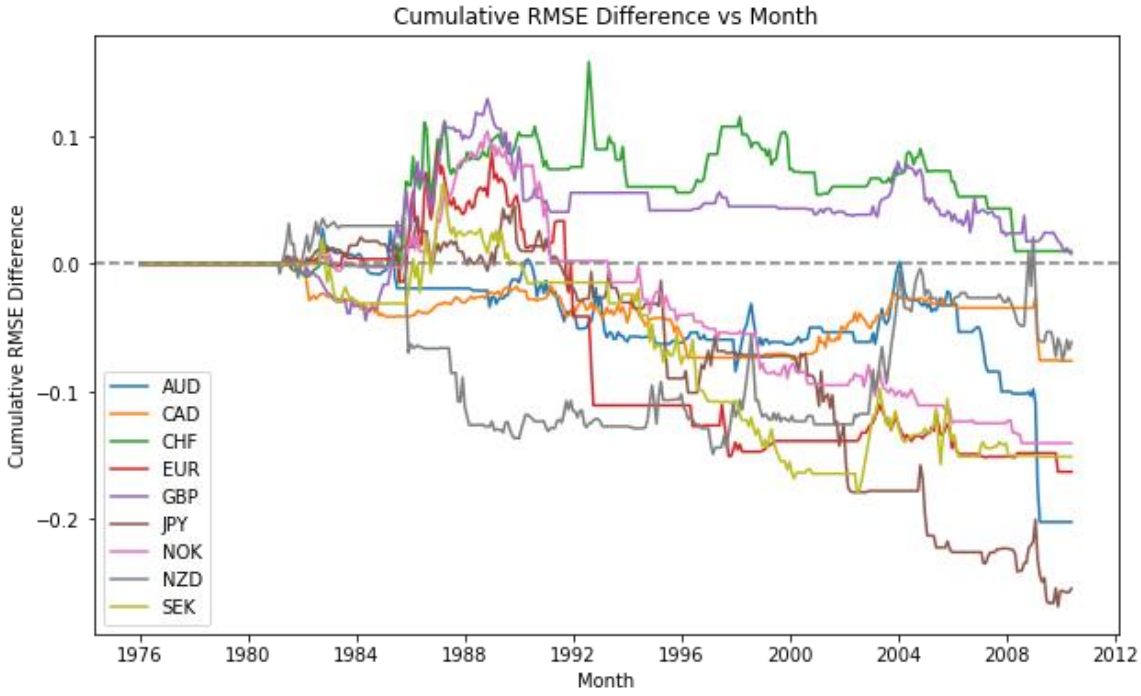
ELASTIC NET

Maximum drawdown

- AUD: **0.230**
- CAD: **0.081**
- CHF: **0.148**
- EUR: **0.254**
- GBP: **0.122**
- JPY: **0.314**
- NOK: **0.244**
- NZD: **0.185**
- SEK: **0.242**

R^2_{oos} = **-0.0351**

Economic significance = **-292.13%**



PERFORMANCE

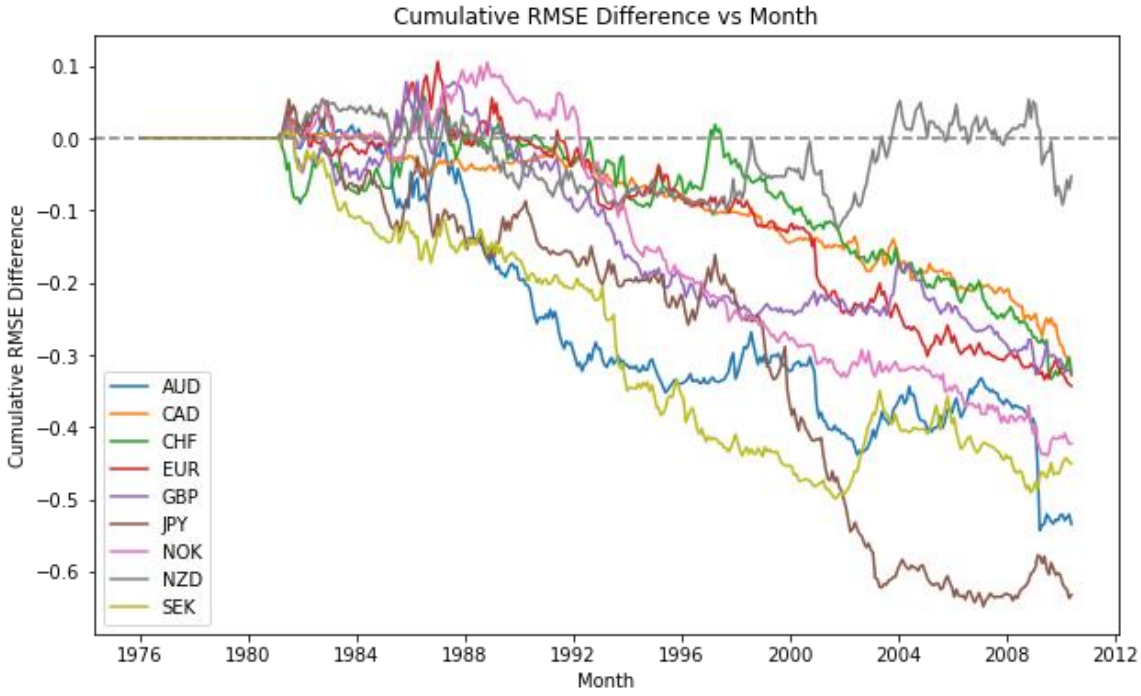
RANDOM FOREST

Maximum drawdown

- AUD: **0.570**
- CAD: **0.356**
- CHF: **0.392**
- EUR: **0.449**
- GBP: **0.407**
- JPY: **0.703**
- NOK: **0.545**
- NZD: **0.181**
- SEK: **0.508**

R^2_{oos} = **-0.0981**

Economic significance
= **-817.77%**



PERFORMANCE

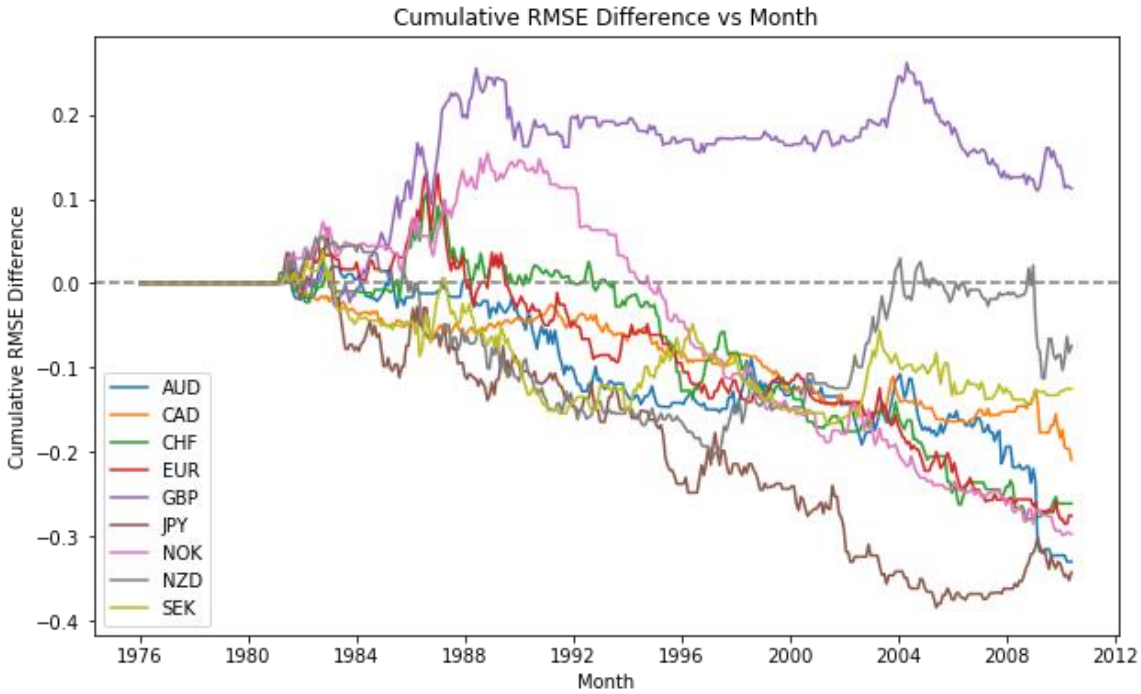
RANDOM FOREST WITH LASSO

Maximum drawdown

- AUD: **0.355**
- CAD: **0.221**
- CHF: **0.385**
- EUR: **0.415**
- GBP: **0.151**
- JPY: **0.450**
- NOK: **0.452**
- NZD: **0.263**
- SEK: **0.204**

R^2_{oos} = **-0.0617**

Economic significance = **-514.45%**



PERFORMANCE

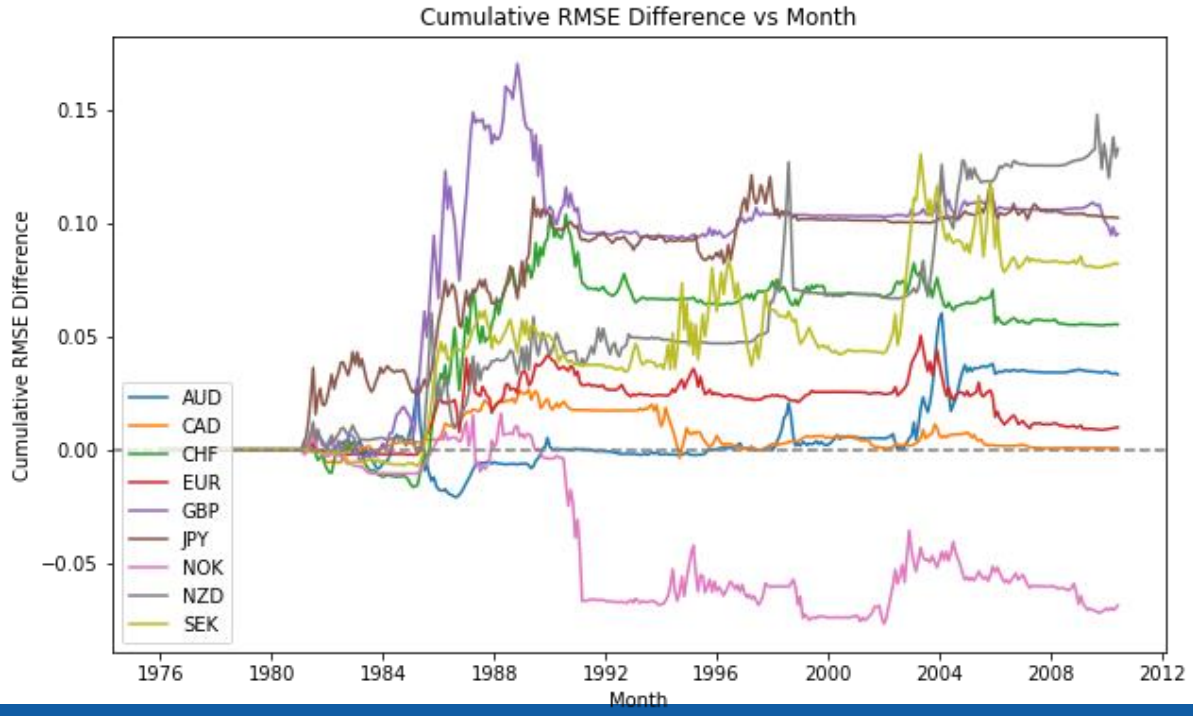
BAYESIAN RIDGE REGRESSION

Maximum drawdown

- AUD: **0.052**
- CAD: **0.030**
- CHF: **0.049**
- EUR: **0.042**
- GBP: **0.077**
- JPY: **0.029**
- NOK: **0.093**
- NZD: **0.060**
- SEK: **0.052**

R^2_{oos} = **0.0056**

Economic significance = **46.50%**



UNDERSTANDING

PERFORMANCE

Consistency:

- Consistent performance with limited downside risk
- Long periods of performance similar to the mean
- Short bursts when model outperforms and delivers abnormal returns

Economic forces:

- Structural change in the currency itself to dislodge Bayesian estimators (monetary policy, inflation, interest rate etc.)