Forecasting U.S. Treasury Interest Rates with RNNs

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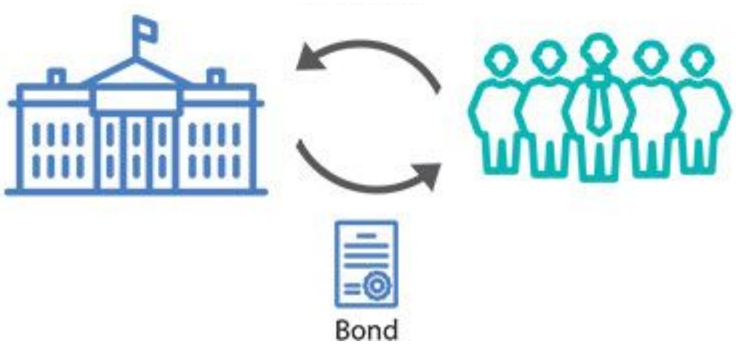
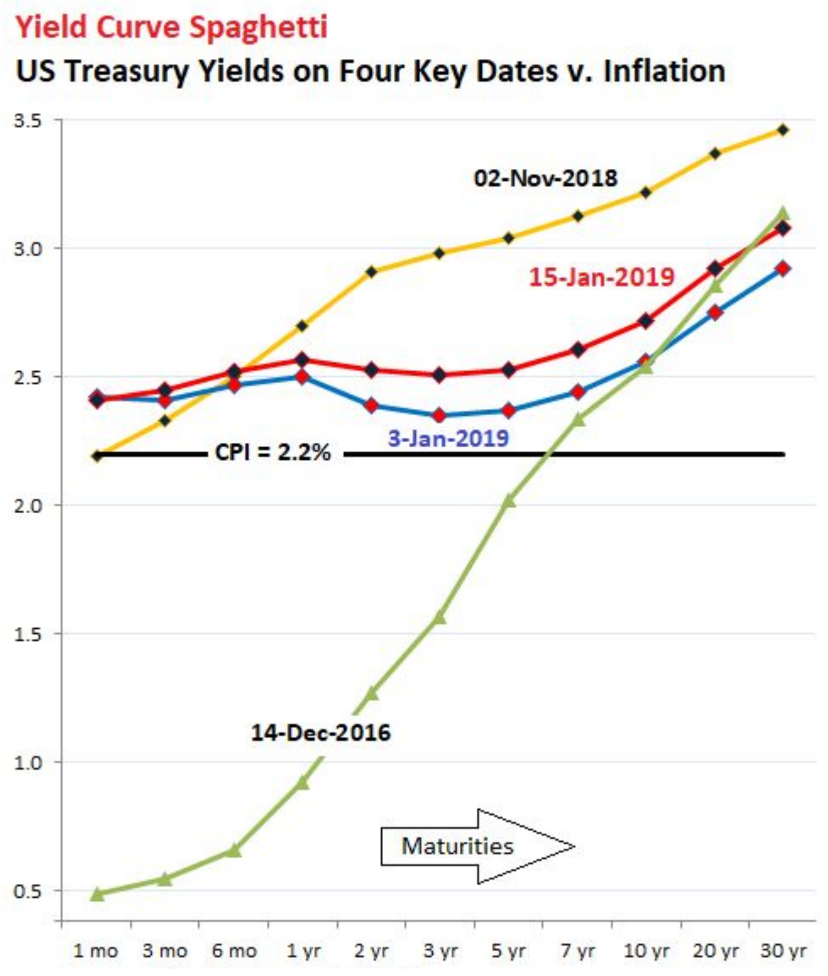
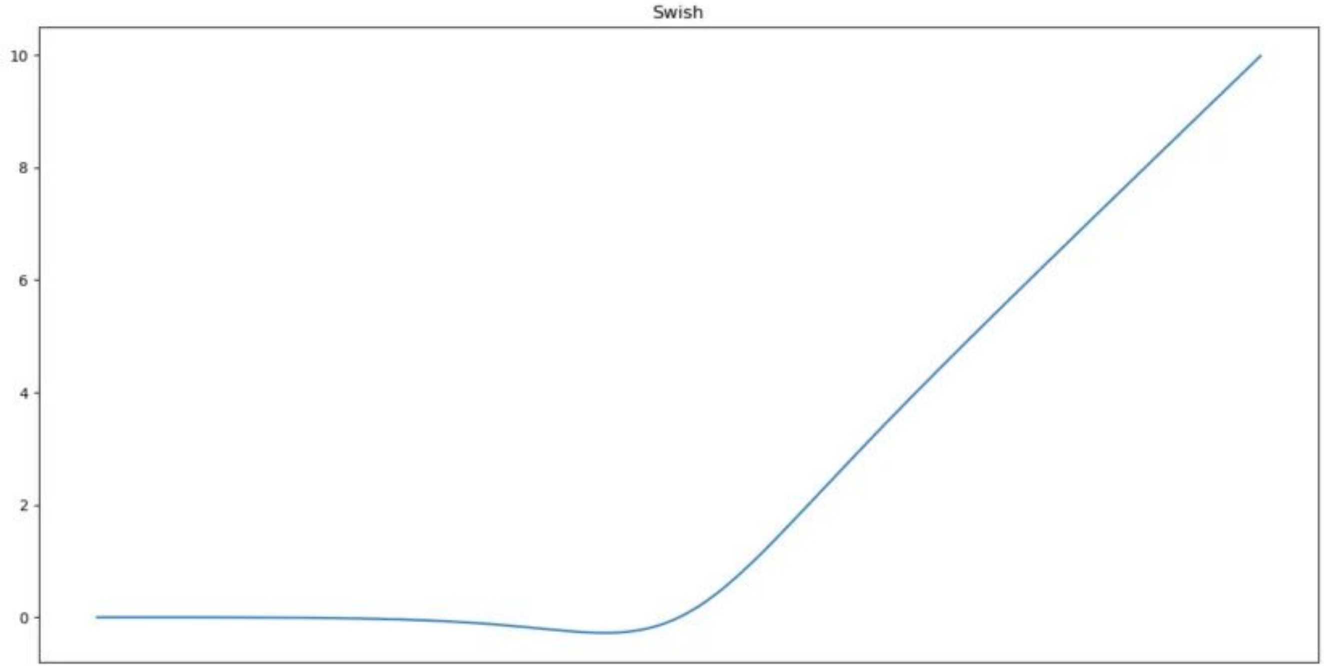
Metis

Why Bills Matter, Especially America's

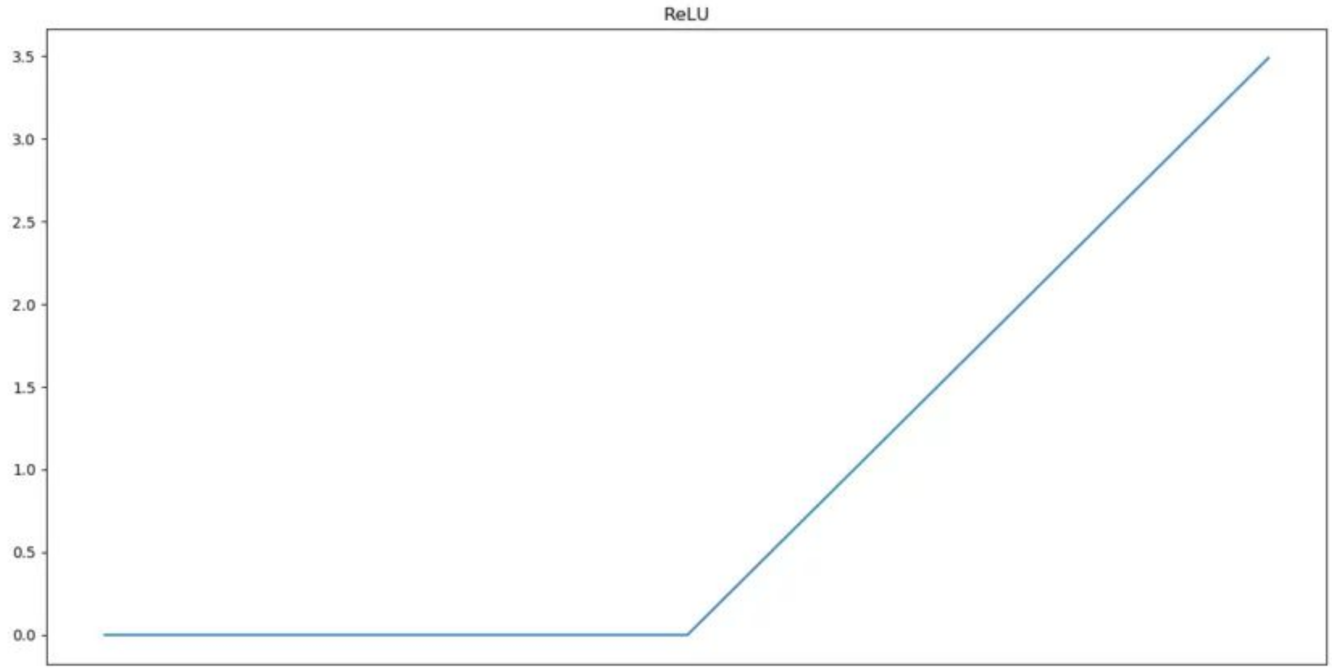


Yield Curves Change Over Time





Activation Functions: Swish vs ReLu



Activation Functions: Swish vs ReLu

Neural Net Results

Most Common Outcome

Poor short-term forecasts

More reliable long-term forecasts

Details

15 (day) batch size
50 epochs
50-neuron LSTM layer
Swish activation function

Weekends/holidays treated as extensions of Friday rates - no averaging, to prevent invalidating results by looking forward

Neural Net Results

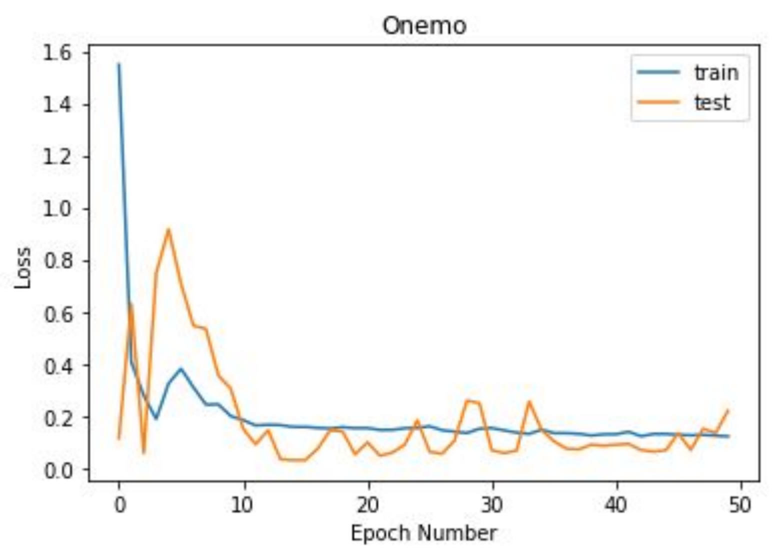
Most Common Outcome

Poor short-term forecasts

More reliable long-term forecasts

Test RMSE: 0.594

Proportion from last data point (0.05): 11.88



Neural Net Results

Most Common Outcome

Poor short-term forecasts

More reliable long-term forecasts

Test RMSE: 0.229

Proportion from last data point (1.44): 0.12