

UNIVERSITY OF SYDNEY

BUSINESS ANALYTICS

QBUS6830: FINANCIAL TIME SERIES AND FORECASTING

SEMESTER 1, 2019

Lab Sheet 6: Forecasting and forecast accuracy

Q1 (Forecasting) We use the data from the text by Tsay in Chapter 9 from the file `Tsay_FM_data.txt`, being monthly returns on IBM, HPQ, Intel, JP Morgan and Bank of America, from January, 1990 to December, 2008.

- (a) Conduct a brief EDA on the five assets
- (b) For each asset return series, use the following methods to provide horizon 1 forecasts for the last 24 months of returns in the sample:
 - 1. Long-run mean for that asset
 - 2. Mean of last 3 months for that asset
 - 3. Mean of last 12 months for that asset
 - 4. Mean of last 2 years for that asset
 - 5. Naive
 - 6. One adhoc method that you make up yourself.
 - 7. One ARMA model, chosen separately by the properties of each data series.
- (c) Assess the accuracy of these forecasting methods using RMSE and MAD.
- (d) As an experiment, find the returns that would have been made from investing under the following strategies:
 - 1. Equally weighted across all five assets, long 24 month holding.
 - 2. Invest in the single asset, long and for 1 month holding, based on the forecast that gave the highest predicted return in each month, across the five assets, i.e. invest in the asset that had the maximum predicted return in each month. (Repeat this for all 6 forecast methods).
 - 3. Weight the assets proportionally to their predicted returns, in each month.
 - 4. Weight the assets inversely proportionally to their absolute predicted returns.

Conduct these strategies for the last 24 months in the sample and examine risk and return performance.

- (e) Comment on the results obtained regarding forecast accuracy and investment performance over all methods.