University of Sydney

Business Analytics

QBUS6830: Financial Time Series and Forecasting
Semester 1, 2019

Lab Sheet 7: Forecasting ARMA and Reg-ARMA

Q1 (Forecasting) In this lab session we will use daily data on BHP and Telstra returns, from Jan, 2000 to April, 2017, together with the ASX All Ordinaries index returns over the same period. The data can be found in the files `BHP00-17.csv`, `TLS00-17.csv` and `AORD00-17.csv`.

(a) Conduct a brief EDA on the assets and the market return series.

(b) Set your in-sample or learning period to be the first 75% of data points in your sample. Set your forecast period to be the last 25% of your sample period. For the two asset return series, use the following methods to choose and estimate suitable forecasting models using the in-sample data only:

1. Naive
2. 1 month mean for that asset
3. 1 year mean for that asset
4. A regression using lag 1 market return
5. A suitably chosen ARMA model
6. A suitably chosen Reg-ARMA model, using the lag 1 market index return series.
7. A Reg-AR(1) plus 1 suitable seasonal lag of the asset return series; e.g. for daily data a seasonal lag would be 5 (the same day last week)

Report and discuss the estimates from each regression or ARMA model above.

(c) Generate moving origin horizon 1 forecasts for each observation in your forecast sample from all methods above. Assess the accuracy of these forecasting methods using plots, RMSE and MAD.

(d) Comment on the results obtained regarding forecast accuracy over all methods.
