

Name _____

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Mgt 264b
Regression Analysis with Applications to Marketing and Finance

Problem Set #7

This problem set is designed to reinforce material on time series models covered in chapter VI.

1. Forecasting from the AR(1) model

Consider the AR(1) model

$$Y_t = 1 + .8Y_{t-1} + \varepsilon_t \quad \varepsilon_t \sim N(0, 4)$$

- Forecast Y_{T+1} given Y_T
- Construct an approximate 95 per cent PI for the forecast in a).
- Forecast Y_{T+2} given Y_T .

Hint:

$$Y_{T+2} = 1 + .8Y_{T+1} + \varepsilon_{T+2}$$
$$Y_{T+2} = 1 + .8(1 + .8Y_T + \varepsilon_{T+1}) + \varepsilon_{T+2}$$

- compute the 95 per cent PI for the forecast in c.

2. Market Efficiency

Examine the Google, Apple and S&P500 prices series and check for market efficiency. `data(stocks)`

3. Time Series Modeling

Build an auto-regressive model for the ADVINF series in `data(persistence)`. Consider lags of one or greater (particularly quarterly (lag 3), semi-annual, and annual). Verify that the residuals of your model are not autocorrelated.