

STAT 673
Homework 8
due Wed. Nov. 18

Show all work.
Please work in Groups of 2! There are 3 problems.

1. p. 106, Problem 5.9 (a) and (b)

2. **U.S. Unemployment Rate Data:** The U.S. unemployment rate series can be found in the file in ur.dat off the class web page at

`http://www-rohan.sdsu.edu/~babailey/stat696/ur.dat`

To read this file into an R dataset and make it an R time series object use the R commands:

```
> ur <- scan("http://www-rohan.sdsu.edu/~babailey/stat696/ur.dat")  
> ur <- ts(ur, start=1948, frequency=4)
```

(a) Plot the time series, sample ACF and sample PACF.

(b) Is an AR(2) model appropriate for the data? Explain.

(c) Fit an AR(2) model to the data using the R function `arima`.

(d) Make diagnostics plots using the R function `tsdiag`. How well does the model fit the data?

(e) Use the first 115 data points to fit an AR(2) model. Forecast the next 6 observations and construct the 95% forecast limits. Compare your forecasts with the real data. Are your forecasts within the forecast limits?

3. p. 106, Problem 5.6 (a) and (b).