STT 380

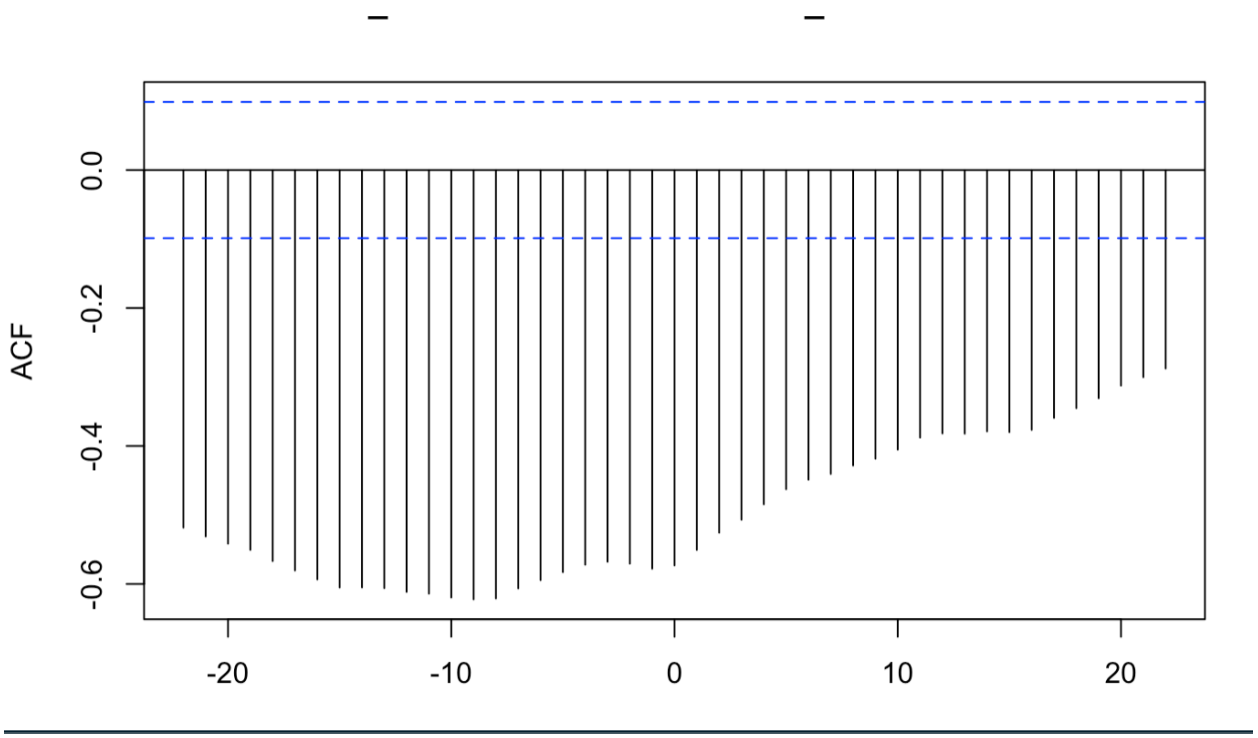
In-Class Assignment 26

For this we will look at the economic data provided. We will use the other variables to predict consumer sentiment. The other variables are unemployment rate

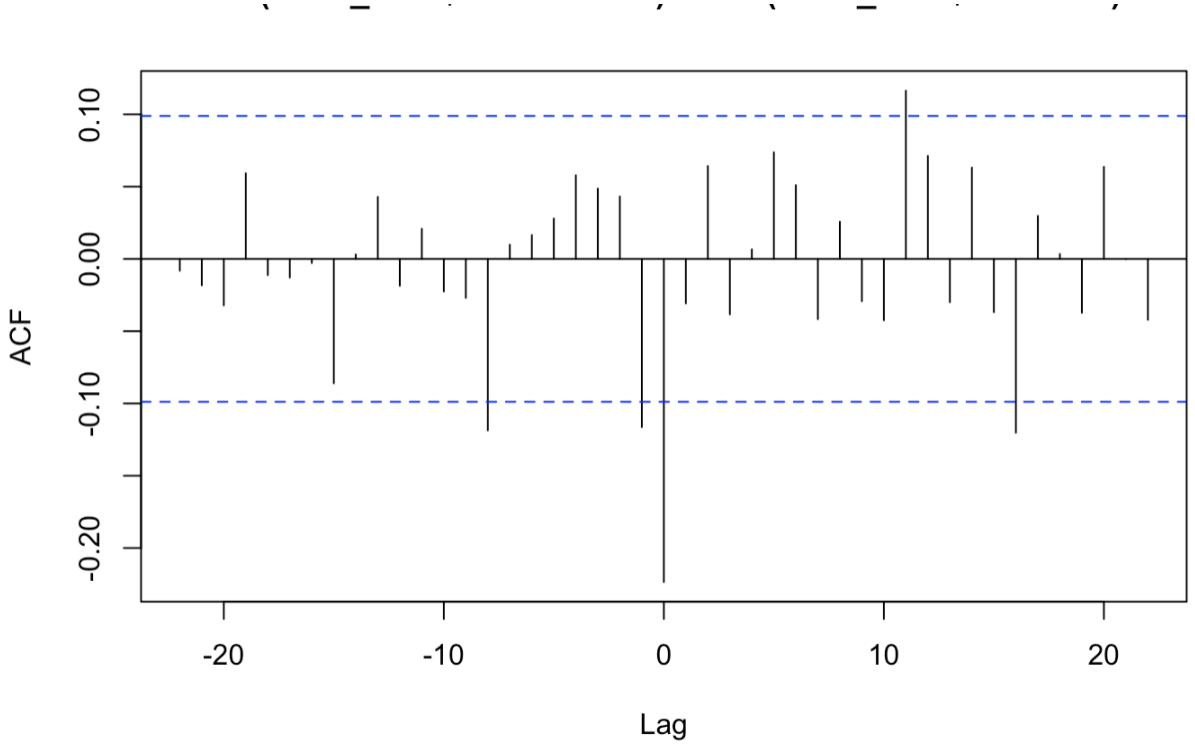
1. Create a cross-correlation plot for each x against the consumer sentiment data (undifferenced). Which lag (to the right of 0) for each appears to be the most useful (don't use past lag 12)? (Be sure to use the correct sign of correlation!)

```
econ_data <- read.csv('econ_data.csv')
```

```
ccf(econ_data$UMConSent, econ_data$UNRATE)
```



2. Built a lm model based on these lagged x's.
    a. summary(lm(econ_data$UMConSent~lag(UNRATE$..0.377,6)))
    b.
3. Based on your model, what is the prediction for November 2022?
    a. 6
4. New, create a cross-correlation plot for each x against the consumer sentiment data, but this time, with differenced data. Which positive lag for each appears to be the most useful?
    a. ccf(diff(econ_data$UMConSent),diff(econ_data$UNRATE))
    b.



5. Built a lm model based on the differenced results. How does the model compare to that of (2) in terms of both R-squared and RMSE?

a. summary(lm(diff(econ_data$UMConSent)~lag(diff(econ_data$UNRATE),5)))

b. Very different values, this is more accurate. Best fit is bette r