

BUS 735: Business Decision Making and Research

Instructor: Dr. James Murray

In-class Exercise: Forecasting

Fall 2011

Directions: Work in groups of up to four people and answer the following questions. All papers will be collected, but only one member's paper will be randomly selected and graded and all members of the group will receive the same grade. Please upload your Excel documents and Word documents to D2L's dropbox.

By signing below, you agree that the following work represents the efforts of everyone in the group, and you are willing to accept as your own grade for the group project the grade earned from this representation of your group's work. Every member must agree to these terms to earn a non-zero grade for this assignment.

_____ Signature Group Member 1	_____ Print Name	_____ Date
_____ Signature Group Member 2	_____ Print Name	_____ Date
_____ Signature Group Member 3	_____ Print Name	_____ Date
_____ Signature Group Member 4	_____ Print Name	_____ Date

The following questions use the dataset `wiearnings.xlsx` on the class website. This is real quarterly data on the average weekly earnings for people living in Wisconsin covering 2001:Q1 through 2010:Q1.

1. Examine the data by answering the following questions:
 - (a) Does there appear to be a seasonal component to average earnings? If so, describe the pattern. Provide an appropriate graph along with your explanation. Clearly label and describe your graph.
 - (b) Does there appear to be a cyclical component to average earnings? If so, describe the pattern. Provide an appropriate graph along with your explanation. Clearly label and describe your graph.
 - (c) Does there appear to be trend component to average earnings? If so, describe the trend. Provide an appropriate graph along with your explanation. Clearly label and describe your graph.
2. Suppose you were recently appointed as Lead Economic Forecaster by the new Governor of the state of Wisconsin, a very highly paid position. The Governor asks you for a forecast for average earnings over the next two years. Provide forecasts and report the root mean squared error (RMSE) and bias for the following forecasts:
 - (a) Naive forecast.
 - (b) Adjusted exponential smoothing with a smoothing parameter equal to 0.15.
 - (c) Linear trend regression model adjusted for seasonality (use the first 5 years as a pre-sample for your regression).
 - (d) Linear regression model with explanatory variables for trend and dummy variables for seasons (use the first 5 years as a pre-sample for your regression).
 - (e) Select your own forecasting method (use a pre-sample of 5 years if appropriate for running regressions or accounting for seasonality). The group with the lowest RMSE (correctly calculated) wins 10 extra credit points and a tasty prize!
3. Which model in problem #2 will you use to provide forecasts for the Governor? Explain.
4. Examine the linear regression results in your answer to #2(d) and answer the following questions.
 - (a) How much do you expect average earnings to increase/decrease every year?
 - (b) Examine the linear regression results in your answer to #2(d). How much different is average earnings in the second quarter relative to the first quarter?