

**FINANCIAL MODELING AND ECONOMETRICS**  
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**Assignment 3: Due on Friday March 24, 2017**

**Each group will submit a single typed report of less than or equal to 5 pages. Please be sure that you include only the relevant SAS output and your interpretations in answering each question.**

**Time Series Modeling of Home Resales in US**

Consider the monthly data given in the file "Homerresales.txt". The data is in free-format and the only variable is the monthly time-series (January 1989 through February 2003; 170 observations) of the Home Resales in US (RESALES).

In performing any statistical analysis, please use SAS PROC REG and a 5% level of significance.

(1) Look at a time-series plot of the data and using the plot discuss any seasonal behavior that you can observe from the data. Obtain box plots for each month using SAS and using the plot discuss at which months the home resales peak and drop.

(2) Create the necessary monthly seasonal indicators and a time index to develop a seasonal model using August as the reference month. That is, in addition to the seasonal indicators, include also a first order (linear) time trend component in your model to capture possible trend in the data.

Estimate the model using SAS and identify the statistically significant components of the model. (HINT: Unless you believe there is any strong evidence of changing variability in the resales, there is no need to use a log transformation of the data.)

(3) Using the output discuss interpretation of the constant (intercept) term and the coefficients for January and November.

(4) Based on your analysis, would you conclude that there exists seasonality in the home resales? Would you conclude that there is an upward trend in the home resales ?

(5) Test the hypothesis that June and July coefficients are equal to each other in your model and briefly describe your findings. HINT: You can use TEST statement for this purpose.

(6) Obtain a time series plot of actual versus predicted home resales based on your model. What percent of the variation in the home resales is explained by your model ?

(7) Assume that you use January as the reference month. Using the output only, that is, without doing any additional SAS runs, obtain the estimates of coefficients for January and August in this new model. Please show your computations.