

Final Exam Review
Eco 5375
Business and Economic Forecasting
Fall 2015

Our final exam is scheduled for **Monday, December 14, 3:00 – 6:00 pm in Room 250 Maguire**. The test will be comprehensive. It will roughly be split as to 30% previous mid-term material and 70% on material since the mid-term. The test is a closed notes test and thus you are not to have any notes in any form open during the test. Also you cannot use your calculators or i-phones during the test. We will provide you with a 4-function calculator if you should need one.

- You should review the previous material covered by the mid-term exam review sheet titled “Mid-Term Review_Fall_15.pdf” and the Mid-Term Key that are posted on the class website. Since the mid-term we have covered Exercises 6 – 12 and QQs 8-13. Study them carefully for the seminal concepts. Your graded QQs and Exercises are available in Room 301F Lee in a filing rack on the east side of the room under the bulletin board. The Keys for the QQs and exercises are posted on the course website.

The main subjects we have covered since the mid-term exam are

- Seasonal Box-Jenkins models ((ARIMA(p,d,q)x(P,D,Q)s) and their ACF and PACF functions. See the pdf file “Seasonal Differencing.pdf” for the notation of seasonal B-J models. For the ACFs and PACFs of selected Seasonal B-J models see “Season.pdf” which is the Walter Vandaele textbook presentation of the ACFs and PACFs of selected seasonal B-J models. For analyzing the Plano Sales Tax Revenue data see Exercise 6.pdf and EX6.sas. The SAS program “Airline.sas” presents the modeling of the famous B-J Airline data and the form of the benchmark “Airline” model.
- Hasza-Fuller and Dickey-Hasza-Fuller tests for a Seasonal Unit root. See Exercise 7.pdf and EX7.sas. See “Seasonal Unit Root Test Tables.pdf” for Seasonal Unit Root test tables.
- Exponential Smoothing models. See the pdf file “Smoothing models_v6.pdf” and EX8.sas that accompanies Exercise 8.pdf on the estimation of exponential smoothing models for the Plano Sales Tax Revenue data set. Also see the pdf file “Comparative Expo.pdf” for a demonstration of the cost of misspecifying the presence or absence of trend and season when choosing between different exponential smoothing models. The SAS program “Exponential Smoothing.sas” generates several different time series plots which demonstrate the appropriate choice of exponential smoothing models depending on the nature of the data being modeled.
- Optimal Inventory Control Theory. See Exercise 9.pdf and the accompanying SAS program EX9.sas.

- Mincer-Zarnowitz Prediction-Realization diagrams and Mincer-Zarnowitz test for unbiasedness of forecasts. See Exercise 10.pdf and EX10.sas.
- The Choice between the log versus level transformation. The %logtest in SAS. See the pdf file “SAS Help_%Logtest.pdf”. Also see the SAS Monte Carlo programs mloglevel1.sas and mloglevel2.sas.
- Out-of-sample forecasting experiments and forecast accuracy measures like MAE and MSE. See the pdf file “Forecasting Experiments.pdf” and the SAS program “BJ M Series.sas”. Here the M-series of Box-Jenkins is introduced.
- Building an equal-lag-length VAR for the purpose of validating a proposed leading indicator of a target series. The notion of the B-J model being the benchmark series and either an unrestricted or restricted VAR to be the competing forecasting method. Also the Granger-Causality test for determining if a restricted VAR might be called for. See Exercise 11.pdf and the SAS programs Varmax1.sas, Varmax4.sas, and Varmax5.sas.
- The Diebold-Mariano tests of significant differences in the MSE and MAE performances of competing forecasting methods. See Exercise 12.pdf, M_Horserace.sas, and Diebold_Mariano_Test_Notes.pdf.
- Combination Forecasting. See the pdf file “Combination of Forecasts_v2.pdf” and “Exercise 13.pdf.” The SAS program “combo.sas” is used to produce the output for Exercise 13.
- Cointegration and the Error Correction Model. The concept of cointegration. See the SAS program Shiller_Price_Div.sas demonstrated in class. Also the EVIEWS program “shiller_price_div.wf1” analyses the same data. For a nice website discussing the concept of cointegration see: <http://www.eco.uc3m.es/~jgonzalo/teaching/Econometrial/cointegration.htm>. A hard-copy of this website is contained in the pdf file “Unit Roots and Cointegrated Series.pdf.”