**DSO 522: Time Series Regresssion**

**Case 1**

**Background:** The U.S. recession that began in December 2007 ended in June 2009, making the 18-month slump the longest since the Great Depression, according to the National Bureau of Economic Research. The slumping economy almost wiped out the domestic auto industry. In late 2008, the combination of an historic recession and financial crisis pushed the American auto industry to the brink of collapse. Access to credit for car loans dried up and auto sales plunged 40 percent. Auto manufacturers and suppliers dramatically curtailed production. Amidst an historic recession and financial crisis, the liquidation of major American auto companies threatened to eliminate more than one million jobs. Also at risk were the thousands of auto dealers across the country, as well as small businesses in communities with concentrations of auto workers.

**Data**: Quarterly Car Sales (in thousands of cars), Quarterly Light Truck Sales (in thousands of light trucks), Quarter, and Time. **Case1Data.xls**

**Task**: How badly did the recession hit this industry? Use a regression model to quantify the magnitude of losses from the recession on car sales. What would we have expected had the recession not happened, and car sales had instead followed the prior pattern? Build a forecasting model to explain the pattern and predict sales of the new cars in the US.

**Case 2**

**Background:** Retailer Best Buy sells computers, software, music, cameras, and other electronic goods.

**Data**: The data(**Case2Data.xslx**) for this case are quarterly gross profits of Best Buy, in millions of dollars from 1995 through 2011(Gross profits subtract the cost of goods that were sold from the total sales amount). The data table includes a column named Time that indicates the date of each quarter.

**Task**: Management has proposed making changes in the way the company is run. To measure the success of these changes, we need a point of reference. We would like to forecast profits in 2012 and use the forecast to measure the success of changes. Managers at Best Buy expect that there is a substantial increase in profits during the holiday season, but they would like to have a measure of the size of this effect. Can we confidently forecast whether sales will rise or fall?