CSC – 425 Time Series Analysis and Forecasting

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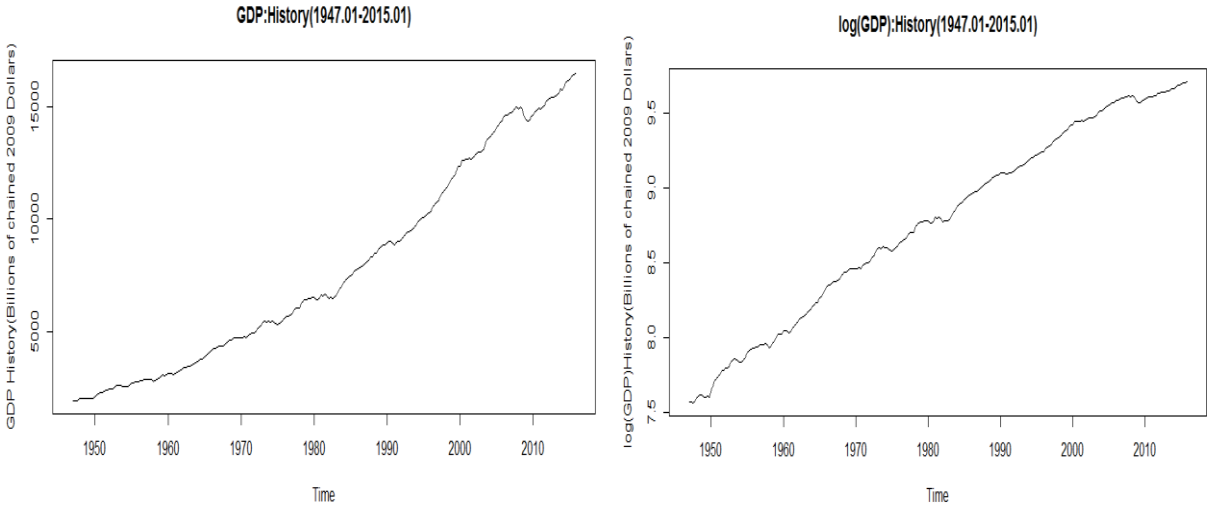
Non-Technical Summary

Introduction

The national income and product accounts (NIPAs) produced by the Bureau of Economic Analysis. The NIPAs feature several widely followed measures of aggregate U.S. economic activity, including gross domestic product (GDP), gross domestic income (GDI), personal income, and personal saving among others. GDP covers the goods and services produced by labor and property located in the United States and is thus consistent with key economic indicators of employment, productivity, and industry output. The change also facilitated comparisons of economic activity in the United States with that in other countries. Gross domestic product (GDP), the featured measure of U.S. output, is the market value of the goods and services produced by labor and property located in the United States. Because the labor and property are located in the United States, the suppliers— that is, the workers and, for property, the owners—may be either U.S. residents or residents of the rest of the world. Our goal in this project is to observe and predict the real gross domestic product is the inflation adjusted value of the goods and services produced by labor and property located in the United States.

Goal: To identify the best fit model that represents real gross domestic product.

Approach: Quarterly data from 1947:01 to 2015:01 was analyzed for this paper. The data was provided by the Bureau of Economic Analysis (BEA) website as measured in billions of chained year 2000 dollars. Below are charted the raw real GDP historical data and the log of this data:



Immediately evident from visual inspection of these two figures are two points. First, the real GDP series appears to be an exponential one, evidenced by the near linear nature of the log (GDP)

Conclusion:

Real gross domestic product is the inflation adjusted value of the goods and services produced by labor and property located in the United States. Based on real GDP values measured in billions of chained year 2000 dollars we state ARIMA (3, 1, 2) model is the best fit model in forecasting values and provide a 20 quarter look-ahead forecast of the GDP.