Exercises 01:

1. Write a brief description of the time series plots of the data in WILL5000 file.

    a. Do the series look stationary?

    b. Describe the time series components (if any) by using the graph only?

2. Find the sample mean, sample median, and standard deviation of the series.

3. Create a normal plot of the series. Do the series look normally distributed? If not, in what ways do they appear non-normal?

    - What is the interpretation of a convex pattern?
    - What is the interpretation of a concave pattern?
    - What is the interpretation of a convex-concave pattern?
    - What is the interpretation of a concave-convex pattern?

4. What can you say about the normality of the data by using a histogram?

5. Does Box-Plot consistent with histogram?

6. Test for normality using the Shapiro–Wilk test or Kolmogorov-Smirnov. What is the p-value? Can you reject the null hypothesis of normal distribution at 0.05?

Take the first difference of the data

7. Write a brief description of the time series plot of the differenced data.

    a. Do the series look stationary?

    b. Describe the time series components (if any) by using the graph only?

8. Create a normal plot of the series. Do the series look normally distributed? If not, in what ways do they appear non-normal?

9. What can you say about the normality of the data by using a histogram?

10. Test for normality using the Shapiro–Wilk test or Kolmogorov-Smirnov. What is the p-value? Can you reject the null hypothesis of normal distribution at 0.05?

Take the logarithm of the data (LN or LOG)

11. Do the series look stationary?

12. What can you say about the normality of the data by using a histogram?

13. Test for normality using the Shapiro–Wilk test or Kolmogorov-Smirnov.

14. If your only option is to use Ordinary Least Squares methodology and you have to one of this data (Level, Differenced, Log), which one do you prefer? Briefly explain why?