

ISyE 2028 – Basic Statistical Methods - Fall 2015

Bonus Project: “Big” Data Analytics Proposal

1 INTRODUCTION

Exchange rate is one of the important factors that give a huge impact on economy. Levels and fluctuations in the exchange rate exert a powerful impact on a nation’s exports, imports and the trade balance. These subjects of exchange rate’s influences, then, impacts on businesses and households in a nation. In addition, families of students who study abroad always keep their eyes on the exchange rate because the amount of money their parents need to send internationally changes depends on the exchange rate. Even though the daily change in exchange rate highly depends on many factors that happen irregularly and unexpectedly, such as the trading relationship between two countries, as a student whose parents live in South Korea, I would like to investigate in which month the exchange rate most likely increases or decreases, when the exchange rate between two countries was the highest and lowest, and see if there is a trend or pattern in the exchange rate.

2 COLLECTING AND ANALYZING DATA

In this experiment, since my parents are currently in South Korea, I will observe the monthly average of exchange rate from United States Dollar (\$) to South Korean Won (₩) for the past 10 years (from Oct/2005 to Oct/2015). Data will be collected from the exchange rate website called X-rates (www.x-rates.com). Monthly average exchange rate from USD to KRW for 10 years will be collected using Python programming language. After the data is collected, using R software, I will find out when the maximum and minimum number of exchange rate between South Korea and United States of American occurred and derive the 5-numerical summary for each year, each month for 2 years, 5 years, and 10 years. I will construct the numerous boxplots and histograms of the data in order to see if there is a trend in the exchange rate. Finally, I will construct the 4 following confidence intervals for the mean value of the exchange rate for each month (80%, 90%, 95%, 99%) also using the R software to see how confident I am the sample mean for each month will fall within a certain range. As stated in introduction, exchange rate is mostly influenced by the governmental activities every month so it is not sure if statistical methods can analyze the change in the exchange rate accurately and efficiently; however, these analyses by using the R software will show the historical data analysis of the exchange rate and whether or not there is a trend in the exchange rate.