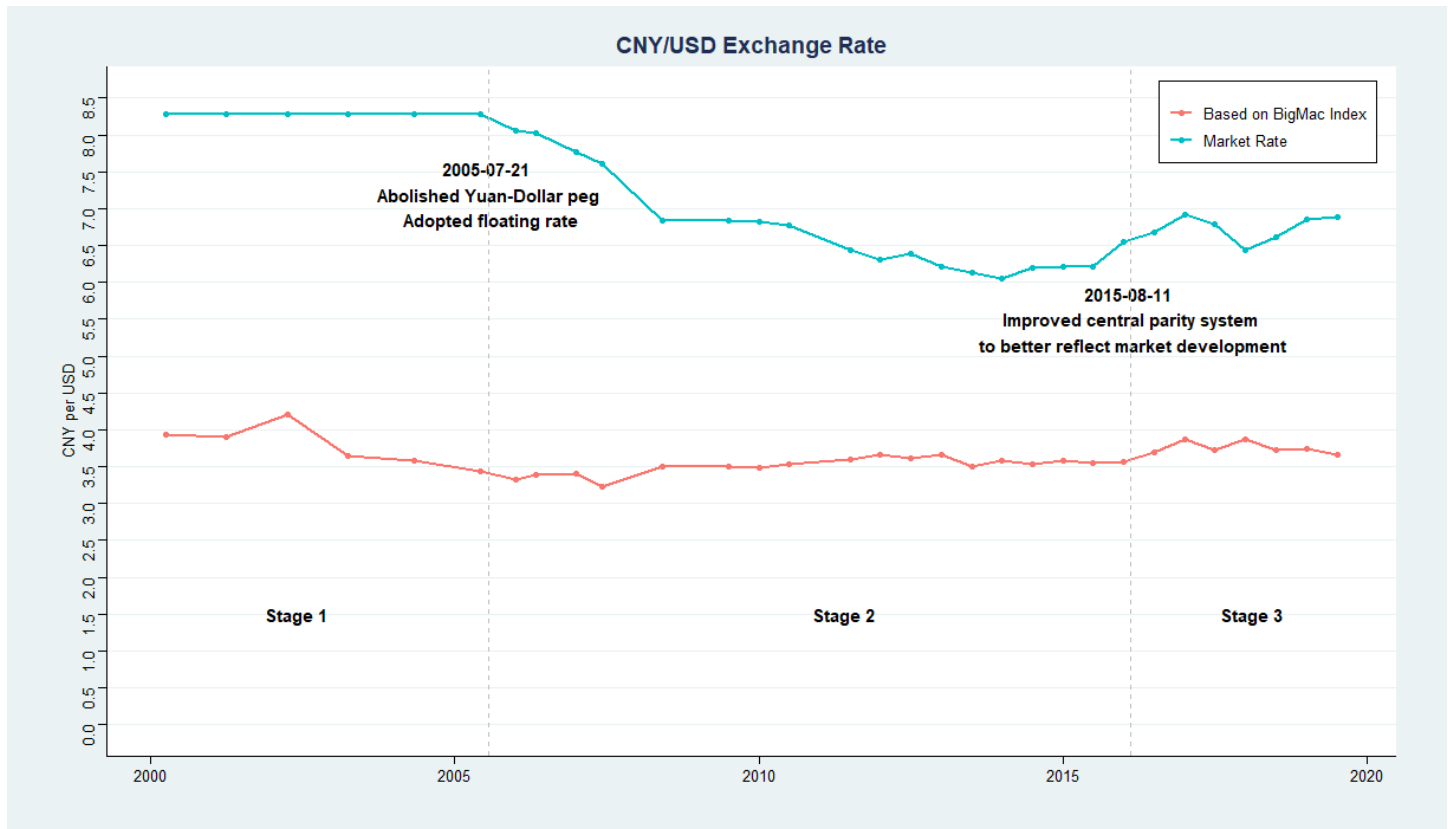Plot 1

- Description
  - The blue line shows the fluctuation for CNY/USD exchange rate from 2000 to 2019.Since 2000, Chinese Yuan has experienced three stages. Before July 21st 2005, China has a rigid exchange rate regime that Yuan is pegged to US dollar. In this stage, CNY/USD exchange rate is stable and basically above 8.0. After the exchange rate reform in 2005, Chinese Yuan entered a new stage. CNY exchange rate was adjusted according to a basket of currencies, which marked the introduction of a more flexible mechanism. As a result, CNY started appreciation against USD. The lowest point for CNY/USD exchange rate is even approximately 6.0. On Aug 11th 2015, Chinese central bank decided to improve its "central parity system" to better reflect market development in the exchange rate, which marks CNY entered the third stage since 2000. In this stage, CNY had more fluctuations than before, and appreciated/depreciated naturally according to market performance. The red line shows the CNY/USD exchange rate which is calculated based on Big Mac index according to Purchasing Power Parity theory. This line is relatively stable compared to the blue line. Big Mac Index shows that CNY has been undervalued against USD for two decades. However, without taking relative economic growth and annual income per capita into consideration, Big Mac Index is a weak indicator of exchange rate.
- Data Processing & Visual encodings
  - Firstly, use *USD_raw* and *dollar_ex* to compute the exchange rate based on Big Mac index. Then, filter *currency_code* with CNY and delete unnecessary rows. When importing data to R studio, set date as date format. This graph's goal is basically to introduce CNY's fluctuations for the past two decades. A line chart with x-axis: date and y-axis: exchange rate will be the easiest and clearest way to convey this idea. As a result, I used *geom_line* to draw this line chart and *geom_point* to highlight these points. Setting *fill/group/color* with category so that two lines have different colors and readers can distinguish them. Setting y-axis ticks with *ylim* because the default setting won't start from zero, which will make the fluctuation more volatile than expected. There are two turning points and I used *annotate* to highlight them. To separate these three stages clearly, I used *geom_vline* to create reference lines and *annotated* three stages.

Plot2
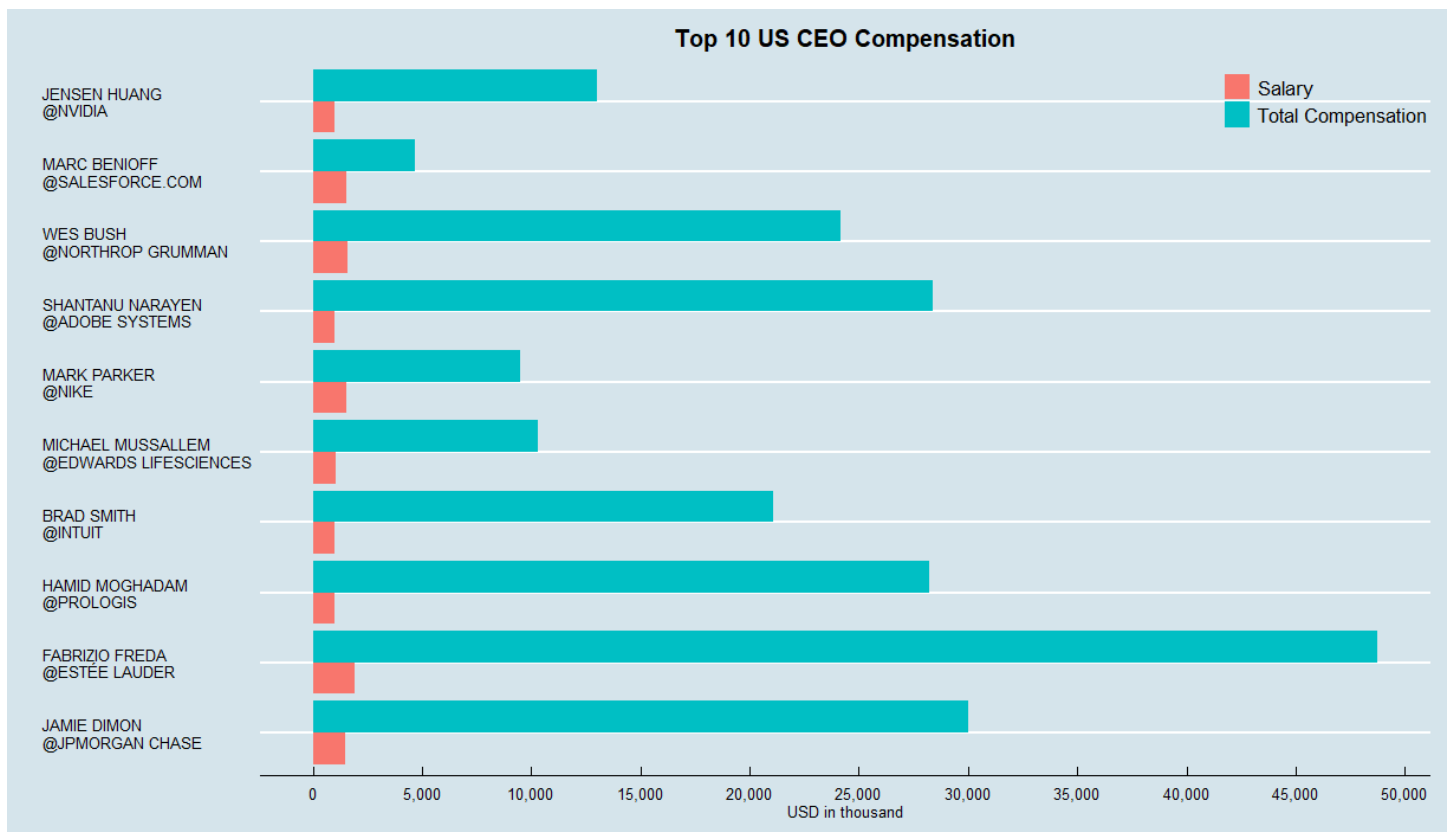
Source: SEC DEF 14A (2019)

- This bar chart shows top ten US CEO's salaries and total compensation in 2018. The compensation data is collected from SEC Proxy Statement DEF 14A, which listed companies should disclose each year. According to this chart, we could see that top CEO's salaries are basically the same, which is around USD1,500,000. Readers might regard CEO's salaries as attainable at first place. However, total compensation is made up of bonus, stock awards, non-equity incentive plan compensation, etc. As a result, the median total compensation is USD 22,629,000 (median salary: USD 1,267,000). Among these CEOs, Fabrizio Freda of Estee Lauder has the highest pay. Marc Benioff has the lowest pay because of compensation adjustment in 2018. To make this bar chart compares salary and total compensation together, I used *fill=data$category*, and set *geom_bar(position='dodge')*. To see ranks clearly, I used *coord_flip* to flip the axis. Moreover, I set the ticks on the axis to 5,000 each unit and added comma to display the number using *scale_y_continuous(labels = comma,breaks=seq(0,50000,5000))*.