



Group Coursework Submission Form

Specialist Masters Programme

Please list all names of group members: (Surname, first name) 1. Chaturavichanan, Voravich 2. Gooda, Anusha 3. Simon, Amy	4. Sohail, Azlin Fathima 5. Williams, Thomas 6. Yang, Qiyuan <div style="text-align: right;"> GROUP NUMBER: <div style="border: 1px solid black; display: inline-block; width: 40px; height: 30px; text-align: center; line-height: 30px; font-weight: bold; margin-left: 10px;">7</div> </div>
MSc in: Business Analytics	
Module Code: SMM635	
Module Title: Data Visualisation	
Lecturer: Dr. Simone Santini	Submission Date: November 11 2020
Declaration: <p>By submitting this work, we declare that this work is entirely our own except those parts duly identified and referenced in my submission. It complies with any specified word limits and the requirements and regulations detailed in the coursework instructions and any other relevant programme and module documentation. In submitting this work we acknowledge that we have read and understood the regulations and code regarding academic misconduct, including that relating to plagiarism, as specified in the Programme Handbook. We also acknowledge that this work will be subject to a variety of checks for academic misconduct.</p> <p>We acknowledge that work submitted late without a granted extension will be subject to penalties, as outlined in the Programme Handbook. Penalties will be applied for a maximum of five days lateness, after which a mark of zero will be awarded.</p>	
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GROUP 7

SMM635 DATA VISUALISATION

Abstract: Since its announcement in 2016, the notion of Brexit has had an impact on numerous industries across Europe. Analysing the financial data of the English, French and German markets between January 2014 and December 2018, the members of group 7 have gained valuable insights about the long-term and short-term impacts of Brexit. These insights are visualised keeping in mind the aim to support the write up for the upcoming article in The Economist.

The Brexit Referendum took place on June 23rd, 2016. On this day, it was decided that the UK was set to leave the European Union. The effects of this decision on the financial markets are conveyed in this report.

- **Data transformation and modification**
 - a. The data was subjected to quality and consistency checks. All leading and trailing white spaces were removed.
 - b. The “date” column was utilised to create new columns that held the corresponding year, month, and month name values.
 - c. For the purpose of this assignment, France and Germany have been collectively taken into account as “EU”. This helps in achieving the purpose of comparing UK with the same.
- **Design Choices**
 - a. The graphs were aimed at maximising the data to ink ratio while conveying insights.
 - b. The colours chosen go hand in hand with the Economist’s colour palette. They were used cleverly to communicate features apart from the ones shown by the axes.
 - c. In order to comply with Tufte’s Minimalist approach, axis lines were omitted and the use of dotted grid lines with the same colour as the background was preferred where possible.

The following section of the report will explain the objectives of each visualization, associated data transformation tasks and design choices.

1. Horizontal Bar Graph (Figure 1)

- a. This bar chart plots the standardized average share price (X-axis) against the year (Y-axis).
- b. The colour aspect of the bar chart has been manipulated in a way such that another attribute is represented apart from the axes. This attribute is if the country is UK or EU.
- c. To best visualize the comparison of EU vs. UK, lines joining each horizontal bar for UK and EU respectively were extended
- d. Further, the percentage difference post-Brexit was highlighted to estimate lost potential to the UK economy as a result of the announcement of Brexit.

Data transformation

- a. The data was first divided into 2 data frames depending on whether they belonged to UK or to EU.
- b. These data frames were then used to derive the average share price for the years 2014-2018.
- c. It was then noticed that the average share price of EU was 64.838 and the average share price of UK was 1038.462. In order to depict both in the same chart, rescaling

was conducted. This was done by multiplying the share prices of the EU entries with the quotient of the average share price of UK and the average share price of EU.

2. Slope Chart (Figure 2a, 2b, 2c & 2d)

The 4 slope charts created can be divided into 2 groups displaying the following attributes:

- Group 1: % change in average price of stocks for sectors in UK and EU in 2016
- Group 2: % change in debt to assets ratio for sectors in UK and EU in 2016

These 4 slope charts are tools to analyse the lost growth opportunity of individual UK sectors, relative to the EU counterparts, 6 months after Brexit. The debt-to-asset ratio segment provides insight into the percent change for the average balance sheet of each sector during this tumultuous time.

Data Transformation

- a. The data was first prepared to calculate the average price and debt-to-asset ratio sorted by country, sector, and year.
- b. This manipulated data frame was used to create index values based on the base year of 2014. The standardized values represented aggregate percentage change from the base value.
- c. Using a pivot table, the data was formatted to fit a slope chart.
- d. Once the pivot tables were created, subsequently the percentage change from 2016 to 2017 was calculated and the data was imported.

Design Choices

These charts demonstrate the percentage changes that are indicated by firebrick and dark cyan based on the market favourability of the same and the nature of the attributes considered.

3. Line Graph (Figure 3)

The Line Graph represents percent change in average price in both UK and EU. The objective is to allow the audience to compare the overall price fluctuation of the EU vs the UK market before, during, and after the Brexit announcement. In the case of a No-Leave scenario the UK price fluctuations would have likely imitated what was shown by the EU segment of this graph.

Data Transformation

- a. The data was first prepared to calculate the average price sorted by country, month, and year.

- b. This manipulated data frame was used to create index values based on the base year of 2014. The standardized values represented aggregate percentage change from the base value.
- c. An additional column was created in our dataset presenting the percent change of price in 2016 based on the indexed values of 2014. This only considers price fluctuations in 2016, based on the indexed value on the beginning of 2016.
- d. The same transformation of data was performed for UK and EU separately.

Conclusion

Working on this data helped the members of group 7 analyse the impacts of Brexit on the financial markets. The key takeaway from the analysis points are as follows:

- The short-term impacts of Brexit in terms of percentage of price changes are not very noteworthy and look like any other normal market fluctuation.
- However, the long-term impacts of Brexit evaluated by rescaling the data is indicative of the fact that this is not the case. The average share price of EU was lower than that of UK before Brexit and took a drastic leap after it. This was not the case with the UK stock prices which show a stunted growth rate.