

# Money Talks, What's The Story?

## Relational Analysis of Currency Exchange Rates and International Trade

### ABSTRACT

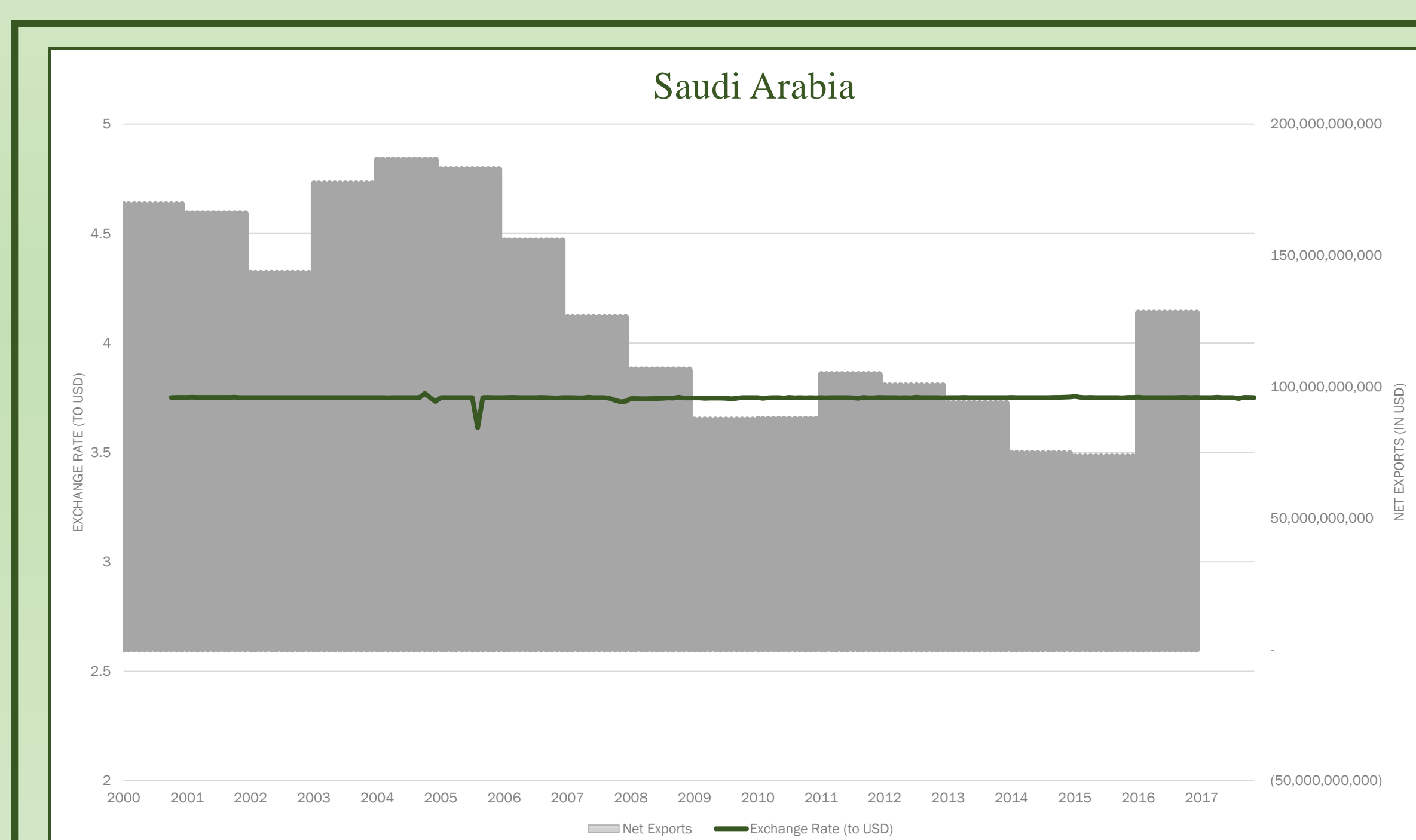
The purpose of this research is to analyze the relationship between a country's currency and their total imports and exports. Theoretically, a currency's flotation in value will influence the net imports or exports for the related nation. A currency that is appreciating in relation to others will cause more foreign purchases, and therefore, an increase in imports and a relative decrease in exports. To analyze this, the currency exchange rate data and international trade data for the corresponding twenty-one nations, for the past seventeen years, was mathematically and graphically examined. When analyzed, the correlation coefficients for the net exports and exchange rates extended from -.896 to +.945. This wide range would generally reflect a weak or non-existent relationship, however, some correlations appeared to be tarnished by different external environmental factors. With further analysis, deviations from a positive correlation could be partially justified. Based upon this research, no definitive conclusion can be made on the validity of the exchange rate and net export relationship.

### INTRODUCTION

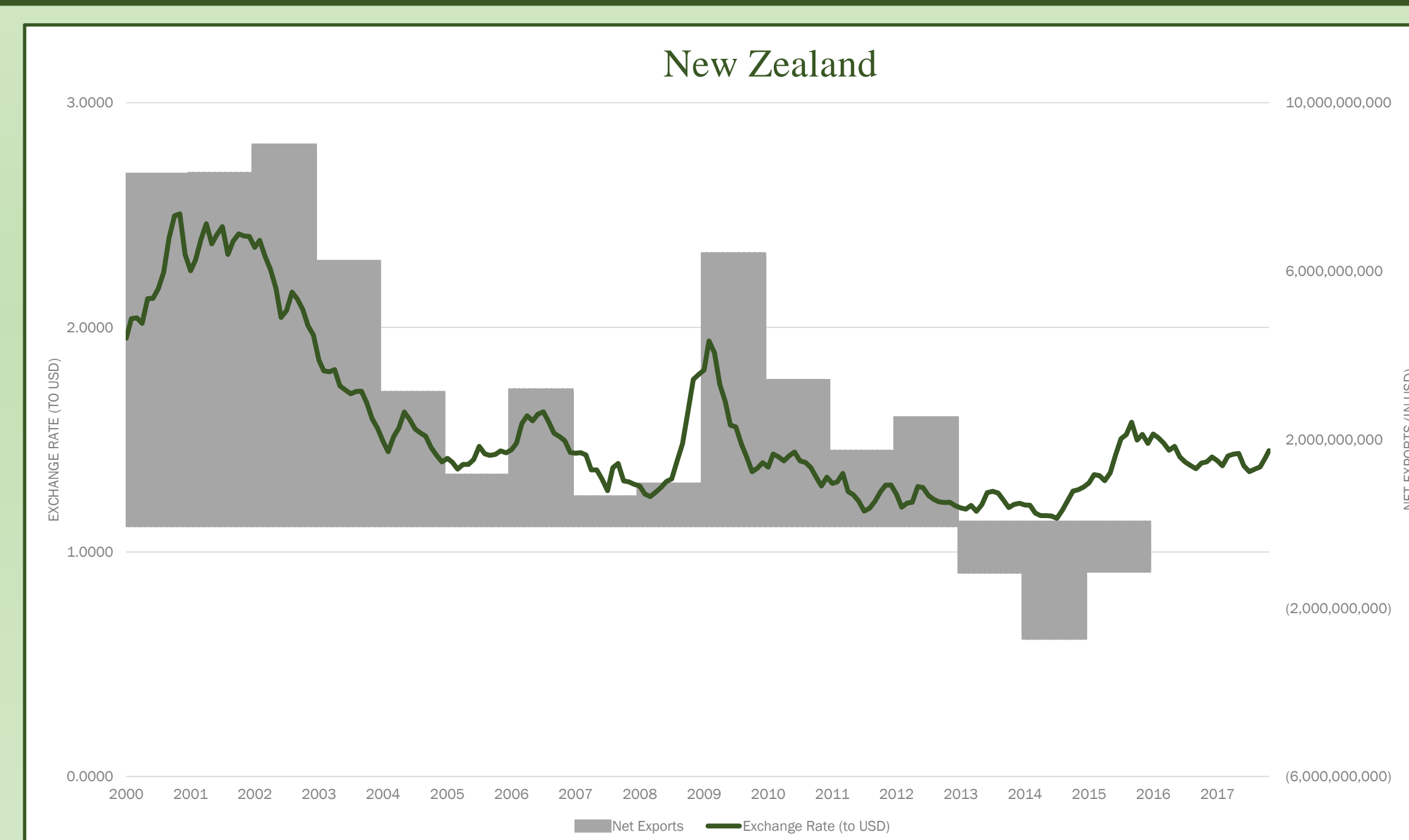
Economics is a unique realm of business where there are clearly notated rules and trends however there are many theories whose underlying elements have not or cannot be quantified and proven. One example of this is the relationship between a currency's relative global value to its related nation's imports and exports. In theory a country should see an increase in imports and a decrease in exports when its currency appreciates and strengthens compared to others and vice versa for a depreciating currency. Research has been conducted regarding exchange rates and their effect on a country's overall economy and gross domestic product, however, results tend to provide inconclusive data or show an insignificant relationship.

### METHODS

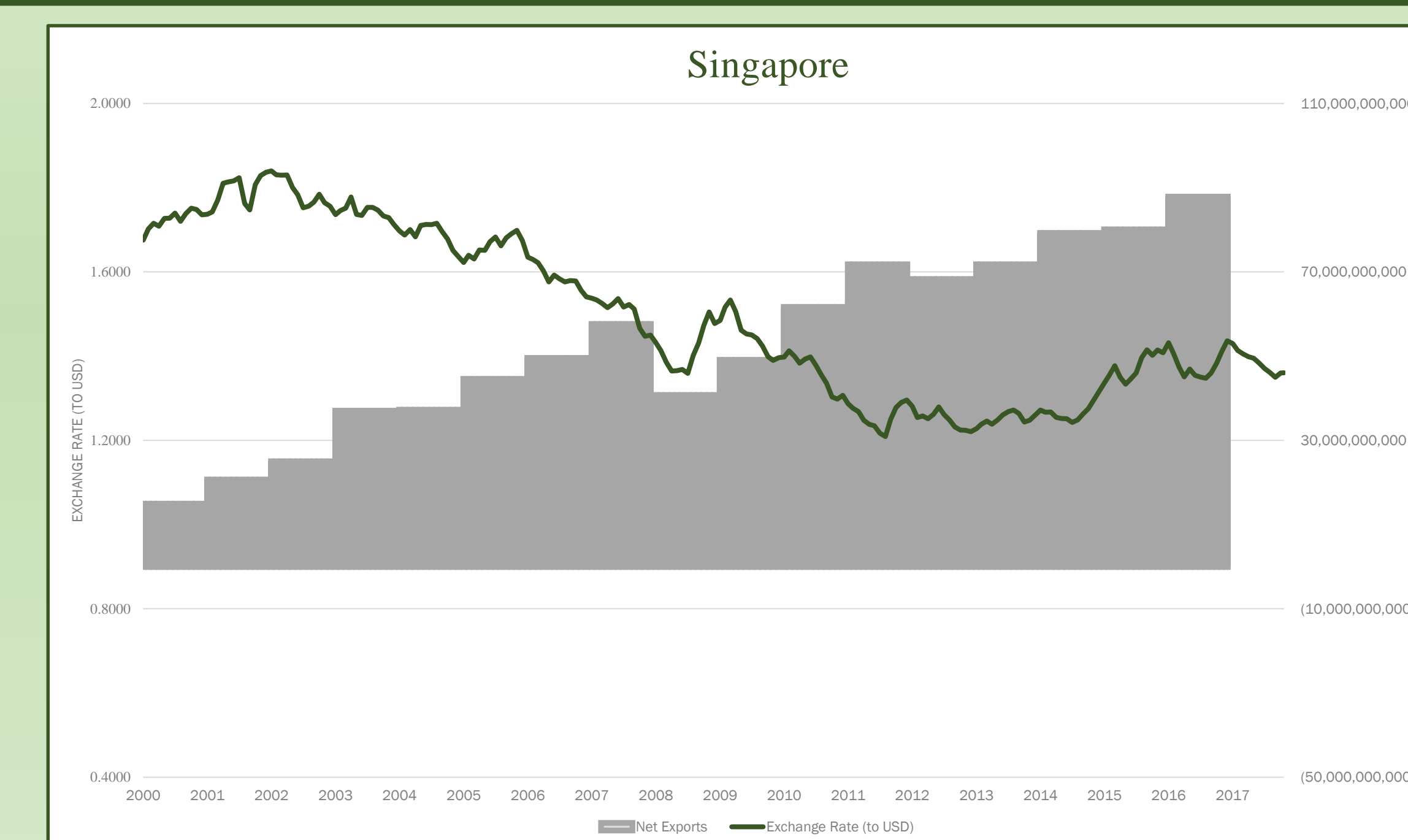
The methodology for this research consisted of a focused examination of the specific statically data sets that were available relating to exchange rates and international trade and then acquiring said data. The exchange rate values were calculated by taking the average mean valuation for the corresponding month. Said figures were retrieved from the USForex database. International trade data was determined by including a broad range of goods and services for a given calendar year and was gathered through the World Bank Group's World Development Indicators data base. It should be noted that some countries' 2016 and all 2017 trade data were not available and were not included in relationship calculations. Microsoft Excel was used to analyze the relationships by using the correlation and to create dual axis graphs for visual comparison.



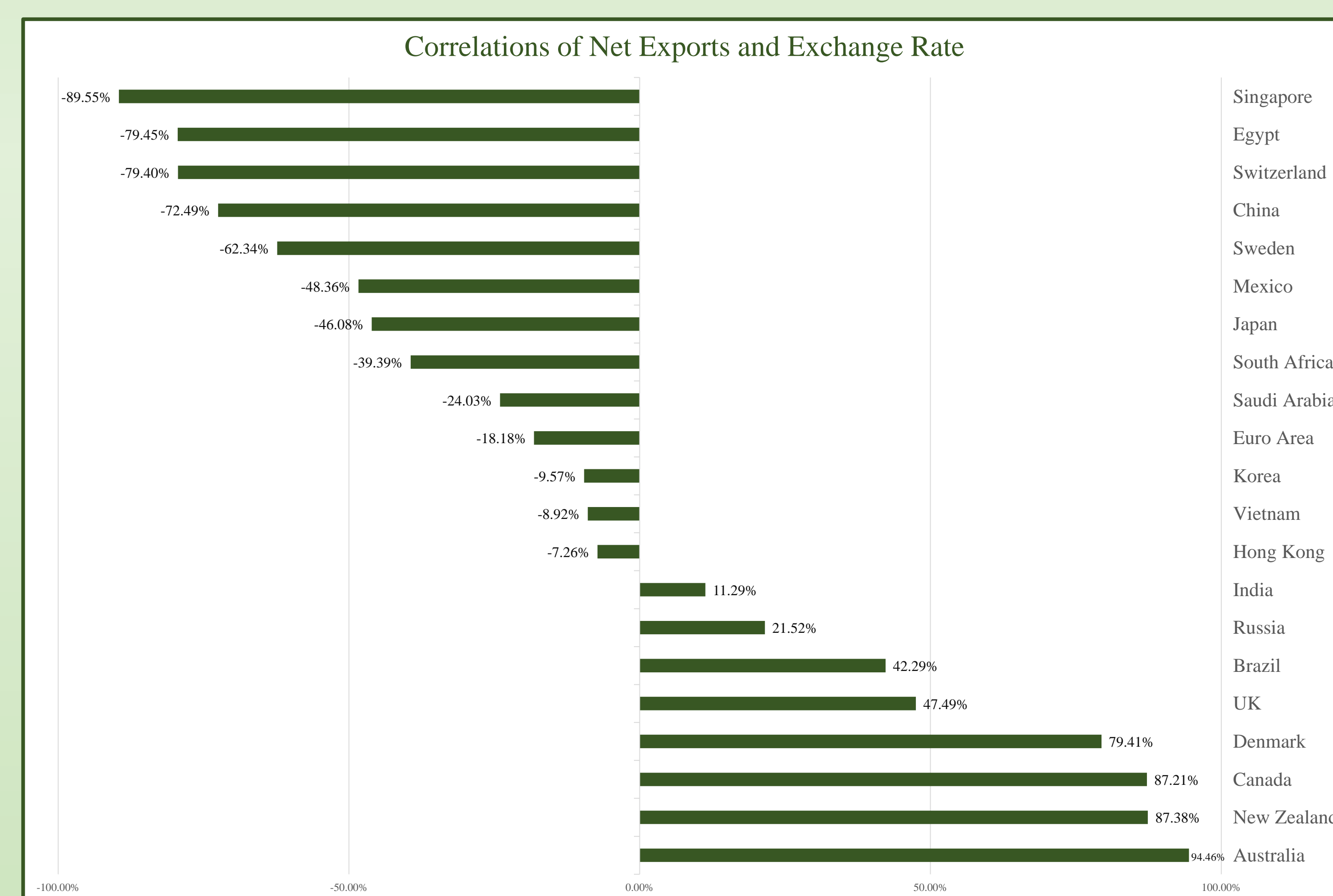
The Saudi Arabian Riyal's exchange rate to the US Dollar has been stagnant due to it being a pegged to the Dollar since 2007 at an effective rate of 1:3.75. This serves as a pseudo-control group for the exchange rate and net export relationship. Since Saudi Arabia's net exports have varied for the past seventeen years, it can be initially assumed that the exchange rate does not have a significant effect on international trade.



The New Zealand Dollar's exchange rate and New Zealand's net exports show a correlation close to one (.874) over the first part of the twentieth century. The NZD is considered as one of the world's strongest and most stable currencies. Additionally, the country has maintained a traditional international trading pattern without any significant changes in policy.



The Singapore Dollar (SGD) and the net exports of the country show a strong inverse relationship having a correlation coefficient of -.896. This is one of the many examples where the hypothesized relationship is not present. Additionally, there were not notable events that occurred relating to the Singapore's Dollar and trade.



### RESULTS AND DISCUSSION

When correlation coefficients were calculated, they revealed a variety of results. Correlations can range from 1, which is perfectly correlated, 0 which shows no relation, and -1, which would be perfectly inversely correlated. Correlations ranged from the exchange rate and net exports from -.9855 to .9446 (-89.55% to 94.46%) and everywhere in between. Of the twenty-one countries and currencies analyzed, three rough groups can be created based on their correlation coefficients. The related, the inversely related and the inconclusive. Shown to the left is the complete list of the countries and their trade-exchange correlation coefficients. Only four of the countries followed the proposed economic trend however many of the other countries have prominent reasons for their unexpected characteristics. For example, the Egyptian Pound experienced hyperinflation in recent years due to heightened political tensions, China had a significant increase in exportation originating from the state, etcetera.

### CONCLUSION

Based upon the data analyzed and gathered, a conclusive conclusion cannot be accurately drawn. By just looking at the correlations figures, a more wide and inconclusive range would be difficult to create. However, this does not mean that one can assume that the exchange rate of a country's currency and their net exports are not related. Many instances of mathematical unrelation can be attributed to other external factors that had a more drastic impact on either the exchange rate or the international trade numbers. Additionally, this data and analysis is not insignificant and shouldn't be disregarded. It can be assumed that whatever relation there is between the two variables, that there are frequently outliers and more dynamic factors present. Additionally, the correlation data can misrepresent the overall story.

### ACKNOWLEDGEMENTS

I would like to thank Dr. Biqing Huang for her academic guidance and cooperation over the duration of this research and Dr. Shirley Eoff for her support through the Honors Program.

### REFERENCES

Adeniran, J O, et al. "The Impact of Exchange Rate Fluctuation on the Nigerian Economic Growth: An Empirical Investigation." *International Journal of Academic Research in Business and Social Sciences*, vol. 4, no. 8, 2014, pp. 224-233.

Heim, John J. "Do Declining Exchange Rates Help the US Economy?" *Journal of Finance and Accountancy*, Oct. 2010, pp. 1-20., [www.aabri.com/manuscripts/09250.pdf](http://www.aabri.com/manuscripts/09250.pdf).

"Historical Exchange Rates Tool & Forex History Data." *OFX*, USForex Inc, 2017, [www.ofx.com/en-us/forex-news/historical-exchange-rates/](http://www.ofx.com/en-us/forex-news/historical-exchange-rates/).

Staff, Investopedia. "The Effects of Currency Fluctuations on The Economy." Investopedia, *Investopedia*, 13 Feb. 2016, [www.investopedia.com/articles/forex/080613/effects-currency-fluctuations-economy.asp](http://www.investopedia.com/articles/forex/080613/effects-currency-fluctuations-economy.asp).

"World Development Indicators | DataBank." *Worldbank*, The World Bank Group, 2017, [databank.worldbank.org/data/reports.aspx?source=world-development-indicators](http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators).



Research conducted by Brandon Painter  
Angelo State University College of Business and Honors Program