

# Exploring World Bank Data

A decorative graphic consisting of multiple parallel, wavy lines of small blue dots. The dots are arranged in a way that creates a sense of depth and movement, flowing from the bottom left towards the top right, framing the central text.

By: Nicholas Steele

# Problem Statement

Can you predict a country's GDP growth based on its taxes?

# Where Did The Data Come From?

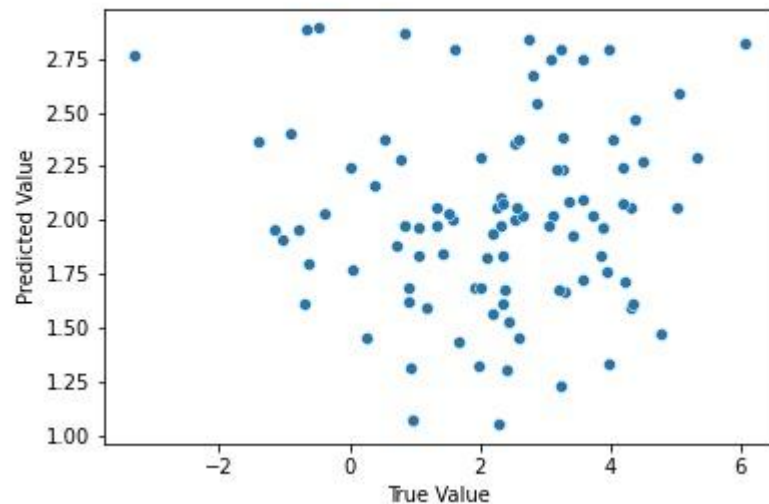
- Came from the World Bank's online databank
- Took data from 82 countries from around the world
- Gathered 50+ different features
- 7 of the features measure taxes
  - Taxes on income, profits and capital gains (% of revenue)
  - Taxes on exports (% of tax revenue)
  - Taxes on goods and services (% of revenue)
  - Tax revenue (% of GDP) etc.

# What is GDP?

- Gross domestic product (GDP) is the total monetary or market value of all the finished goods and services produced within a country's borders in a specific time period.
- Used as an indicator of economic growth

# Modeling

- ❖ Made a model using the 7 measures of taxes to predict annual percent change in GDP
- ❖ Narrowed down to 10 countries in Europe
- ❖ Model had train  $R^2$  score of .054 and test  $R^2$  score of -0.073
- ❖ The 7 features of taxes averaged correlation coefficient -0.016 compared with the change of GDP
- ❖ Taxes account for very little of GDP growth according to my model and data



Example plot of one of the tax features plotted against GDP growth.

- The data is all over the place with no correlation at all
- The other tax features have similar spreads
- Too much noise to use taxes a reliable indicator



# Where To Go From Here?

❖ Took the subset of 10 countries from Europe and started exploring how the other 50+ features from the World Bank Interacted with each other.

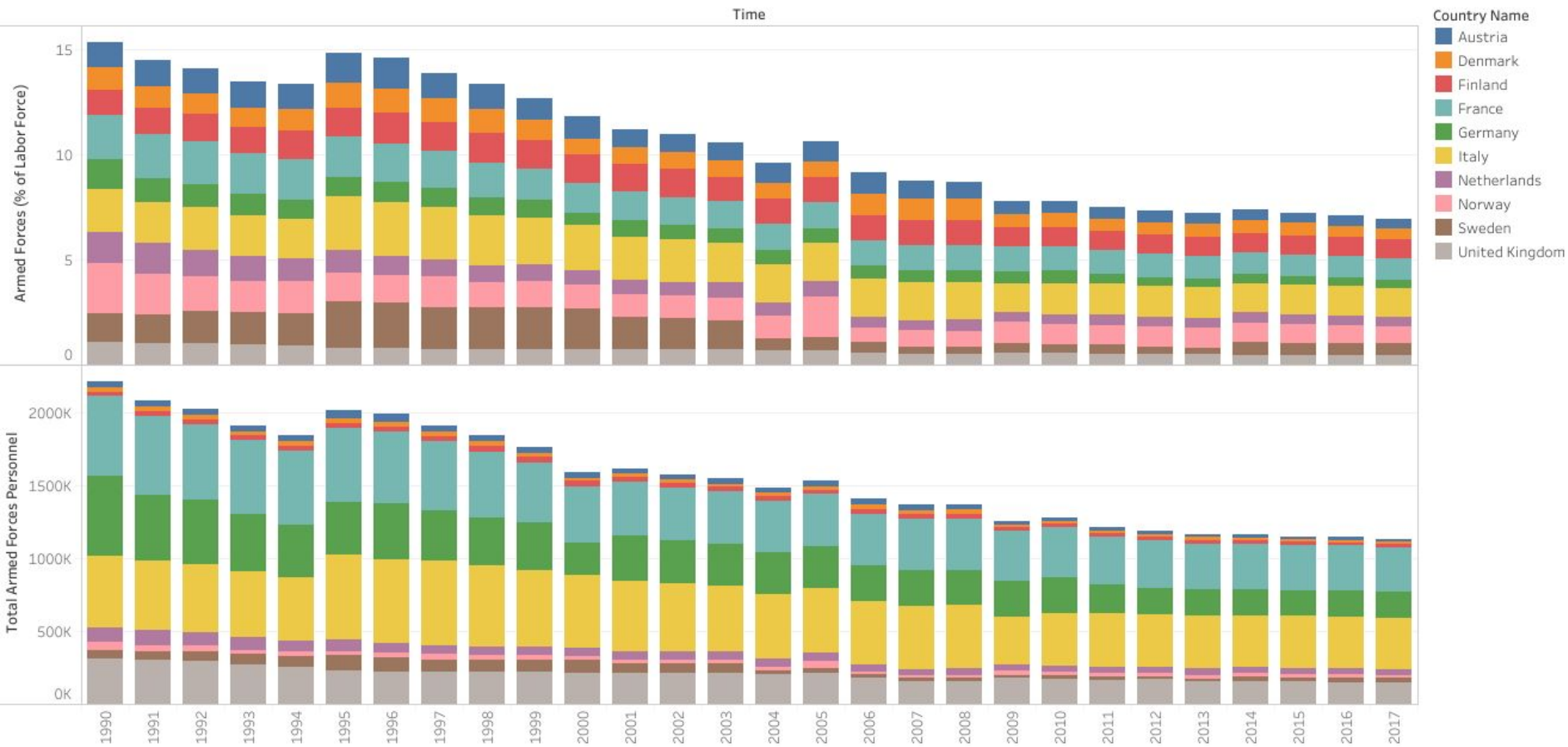
❖ Some of the type of features include

- Military
- Healthcare
- Trade





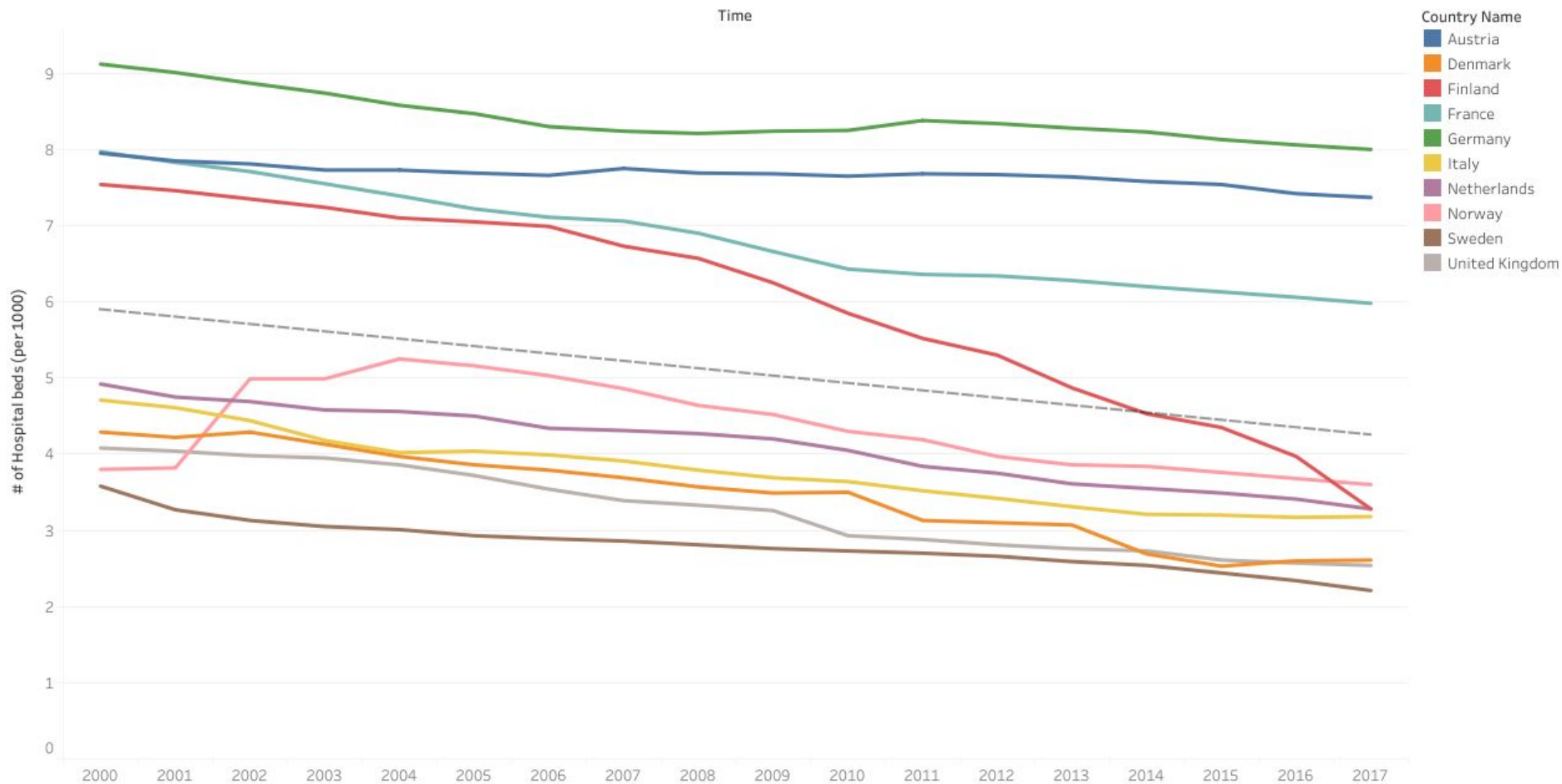
# Military Personnel/Time



The size of the military and the percent of resource a country uses for the military has shrunk over time.

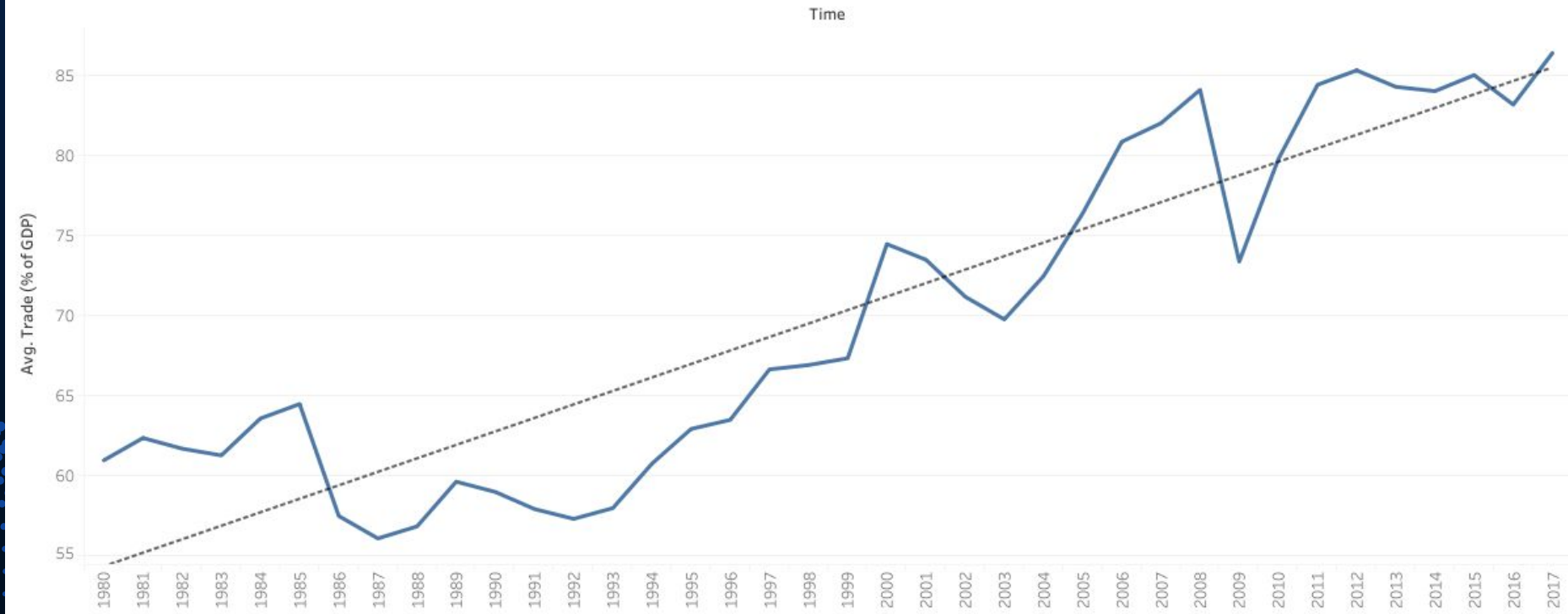


# # of Hospital Beds



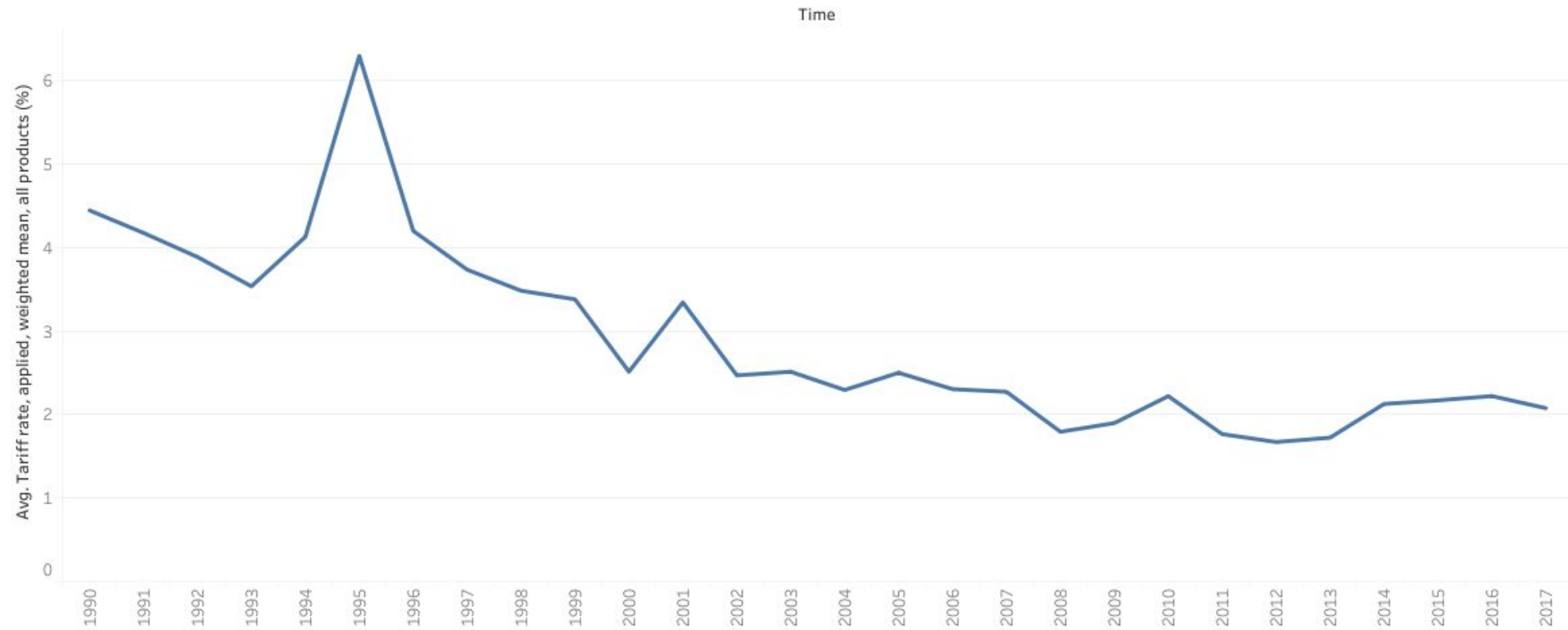
The number of hospital beds per 1000 people have decreased over time.

Trade (% of GDP)/Time



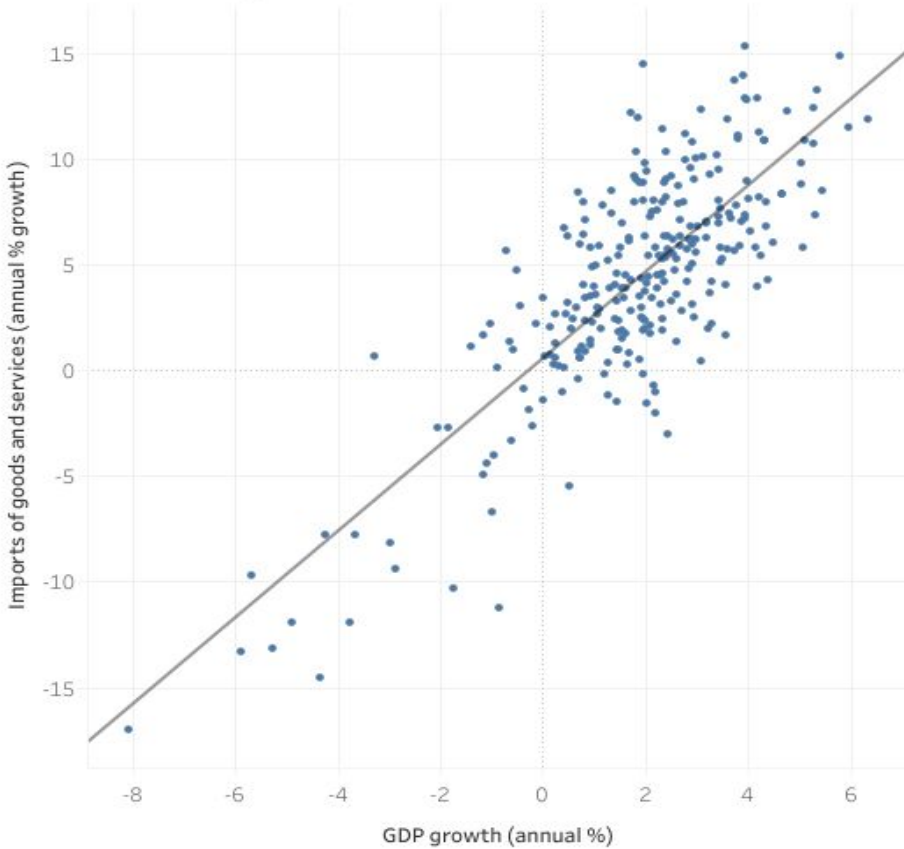
Over the last 40 years trade has gone up

Tariff Rate/Time

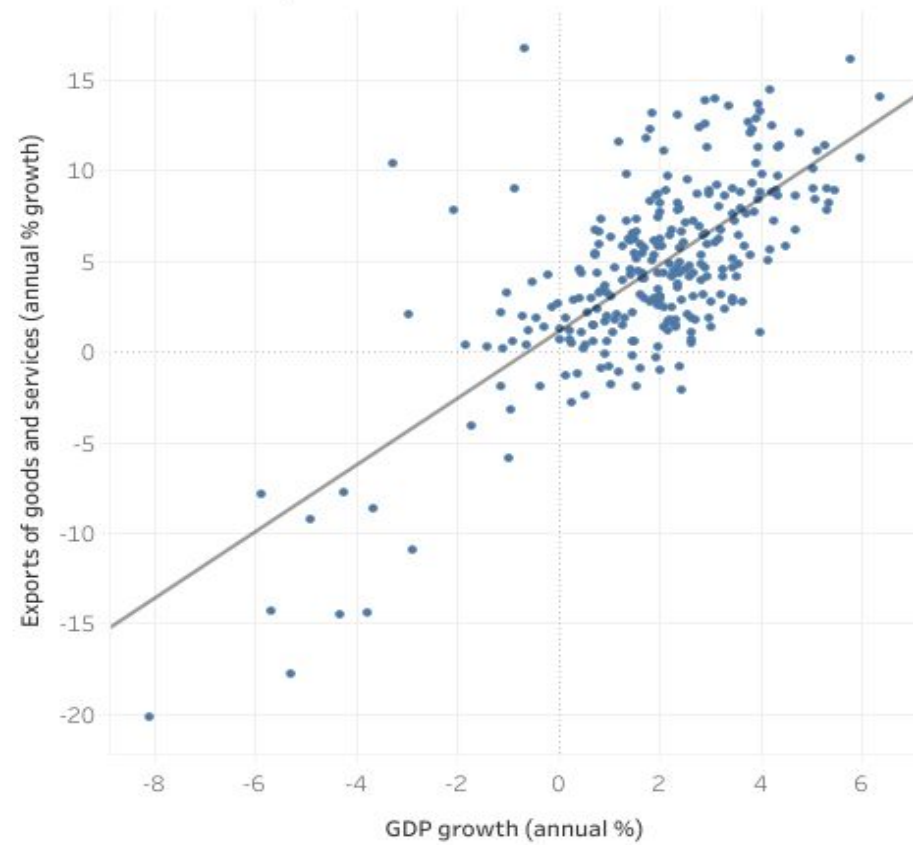


An increase in trade could be linked to a decrease in tariffs

Import Growth\GDP Growth



Export Growth\GDP Growth

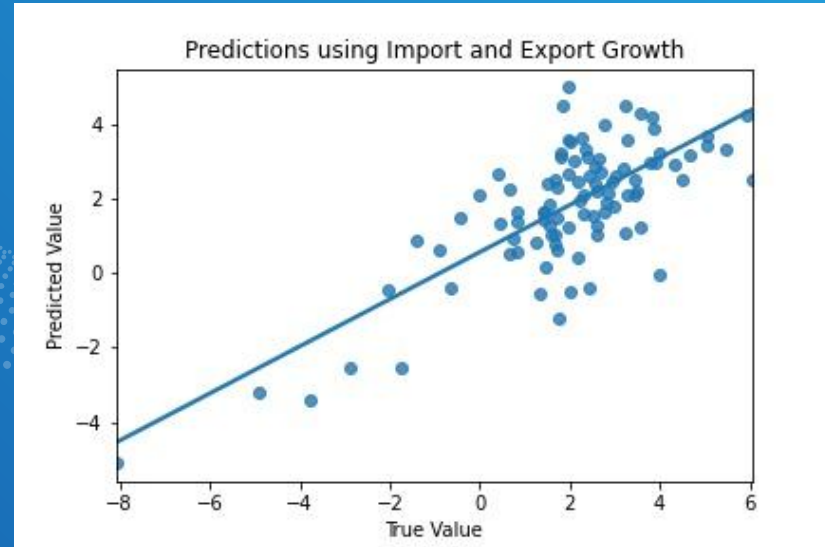


Growth in trade shows a huge impact on GDP growth

# Lets Try A Modeling Again!

- ❖ Created a new model using annual growth of imports and exports to find the annual growth of GDP
- ❖ Using a Linear Regression model with default parameters
- ❖ Model had train  $R^2$  score of .6 and test  $R^2$  score of .56 with just 2 features

The increasing global economy is what has driven economic growth over the past decades.



# Policy implications

This information could help influence nations to make better policy decisions on trade.

Such as the United Kingdom in 2016.

# To The Interactive Graphs!

[https://public.tableau.com/profile/nicholas.r.steele#!/vizhome/WorldBankData\\_16209578927590/TradeDashboard](https://public.tableau.com/profile/nicholas.r.steele#!/vizhome/WorldBankData_16209578927590/TradeDashboard)



# Thank You ALL!

The background features a solid blue color. In the lower half, there are decorative wavy lines composed of many small, light blue dots, creating a sense of movement and depth.

Special thanks to my instructors as General Assembly instructors Chuck, Varun, Grant, and classmates that have helped guided my learning.