

ADS1 - Assignment 2: Statistics and Trends

Exploring the factors relating to the economy in selected countries

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Github link to repo - [HanaMeah/Assignment-2-ADS1- \(github.com\)](https://github.com/HanaMeah/Assignment-2-ADS1)

Github link to my final submission - [Assignment-2-ADS1-/ADS1 Coursework 2 final submission.py at main · HanaMeah/Assignment-2-ADS1- \(github.com\)](https://github.com/HanaMeah/Assignment-2-ADS1/blob/main/Assignment-2-ADS1-ADS1%20Coursework%20final%20submission.py)

All data used for this report was taken from the Worldbank database

Abstract:

The aim of my analysis in this report is to explore the key factors relating to the economy. My report outlines key factors such as GDP, population, labour force, arable land, and completion of primary education. The results show that each of the factors relate to each other to different extents for each country. The United States GDP has a direct correlation with the population. The United Kingdom, Germany and France have economies directly related to arable land in these countries. The final key factor that is explored is the completion of primary education which shows the largest increase rate in Germany. My analysis shows that all factors mentioned relate.

My analysis is based upon 10 countries in a range of different economic development stages. My report will explore the relationships between the factors I have chosen to explore. The factors include GDP, population, labour force, arable land, and completion of primary education. My analysis finds some links between the datasets I have used and explores the potential causes behind the factors chosen.

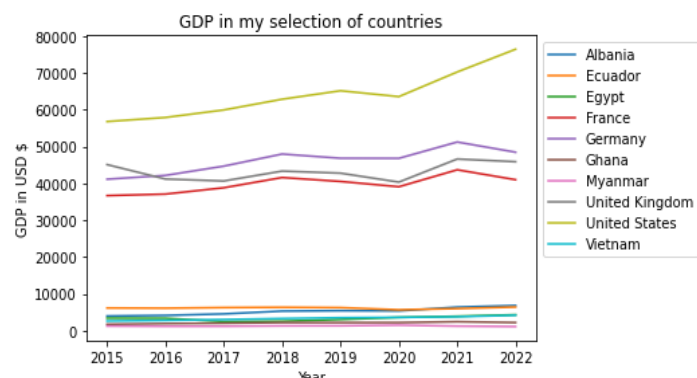


Figure 1: GDP in my selection of countries

The line graph in Figure 1 shows the GDP of 10 countries each year starting from 2015 and ending in 2022. The graph shows clearly that the United States, Germany, the United Kingdom, and France are more economically developed as they have a higher GDP consistently throughout the time series as well as more visible changes each year to the following year. The United States shows the largest GDP out of the countries with a consistent upward trend. This relates to the population of the countries.

The line plot in Figure 2 illustrates population of the

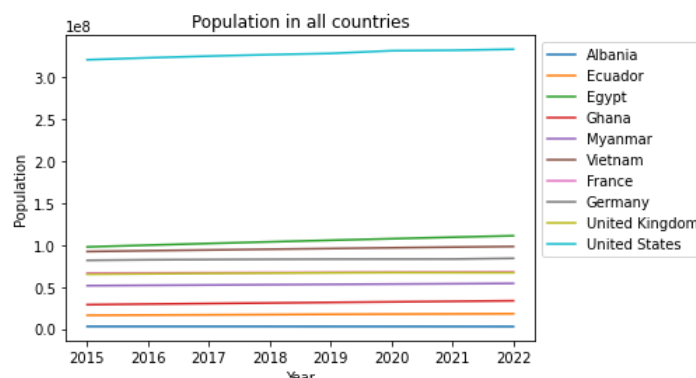


Figure 2: Population in all countries selected

selected ten 10 countries. It shows that this is a notable factor for the United States as the population is considerably higher than the other countries. This is consistent throughout the time frame which may suggest that the United States has an advantage economically due to the high population. On the other hand, Germany, the United Kingdom, and France show lower populations than some of the other countries despite having higher GDPs. This suggests that there are other factors which contribute to the GDPs of these countries more than population. This leads onto my next factor, arable land shown in Figure 3.

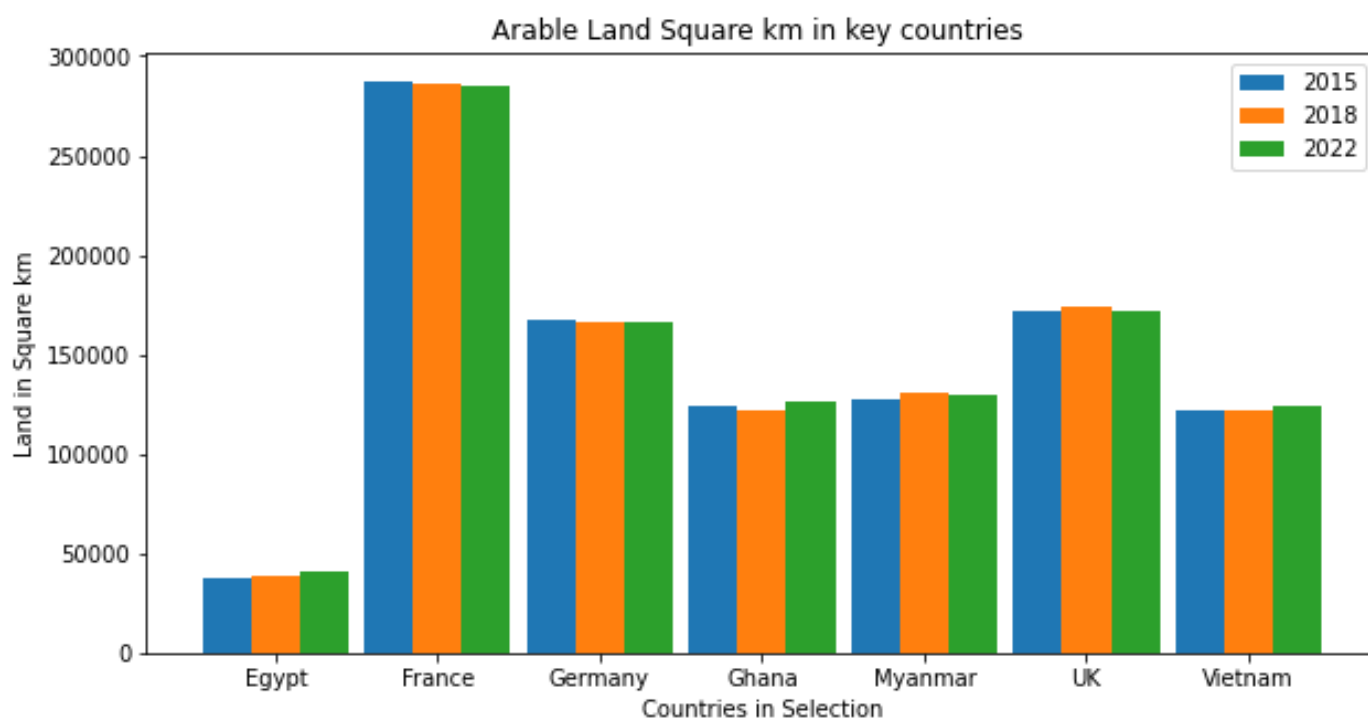


Figure 3: Arable Land Square km in key countries

Figure 3 shows the measure of arable land in 2015, 2018, and 2022 for some of my selected countries. I have excluded the countries where the measure is insignificant to the overall picture. The bar plot shows that arable land is a significant factor to France, Germany, and the United Kingdom compared to the other countries selected. This suggests this contributes notably to the GDP of these 3 countries.

The change in arable land from 2015 to 2018 and 2022 is very small although still worth noting. This change may have contributed to France as we can see 2022 has a lower amount of arable land than 2015 which correlates with the lower GDP France shows in Figure 1 in 2018 compared to 2022. Vietnam does not show change in population, or arable land in my graphs from 2015 to 2018 suggesting that these factors are not key to Vietnam's economy in this time interval. GDP in Vietnam is quite stagnant although there is a slight increase between 2018 to 2022. This correlates with figure 3 where we can see the arable land also shows a slight increase from 2018 to 2022.

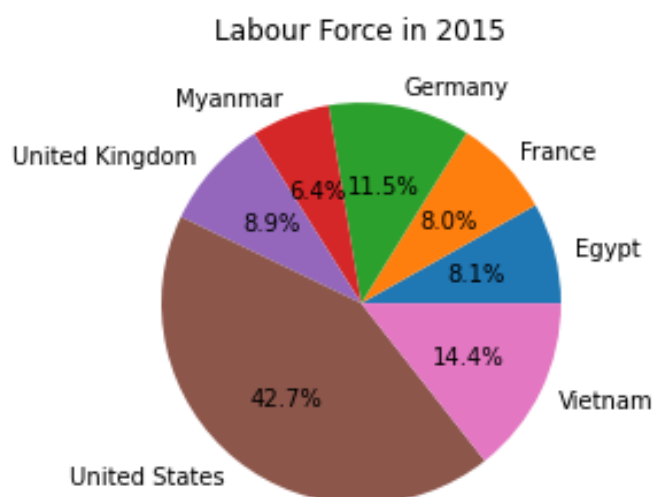


Figure 4: Pie chart for Labour Force in 2015

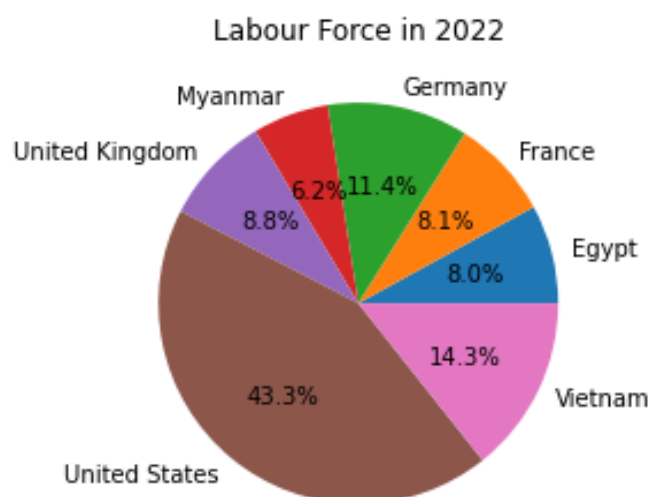


Figure 5: Pie chart for Labour Force in 2022

Figure 4 shows a pie chart for the labour force in 2015 and Figure 5 shows the labour force in 2022. The labour force has decreased for every country except France which has increased by 0.1% proportionally. This increase in labour force may suggest that more people have begun working in France from 2015 to 2022. This could potentially be due to more people moving to France or an increase in people working in general. The United States has the largest proportion of labour force in both years which is likely due to the high population since these factors are directly linked. This also directly contributes to the GDP as more labour intuitively suggests more money into the country's economy. Vietnam shows the second highest labour force but one of the lowest GDPs. This could be due to having such a low population. This could also be due to other factors such as the Vietnamese currency having little value compared to the other countries or the political structure of the country.

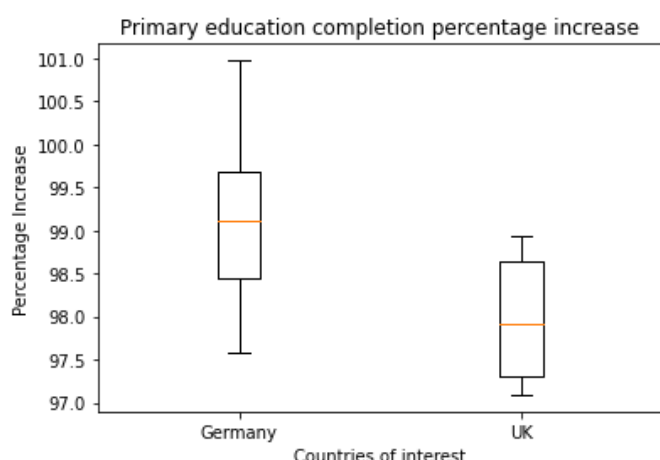


Figure 6: Primary Education in Germany and UK

Germany and the UK show competing GDPs in Figure 1 so I grew an interest in investigating why they are so close, as well as how Germany quickly overtook the UK and remained at a higher GDP up to 2022. Figure 6 shows a box plot for the percentage increase in completing primary education for Germany and the UK. Quartile values were calculated between 2015 and 2022. The graph shows that Germany has a higher increase rate than the UK. The maximum increase rate is massively larger than the UK's maximum value. The inter quartile range region is also at considerably higher values than the UK reaffirming the observation. We can conclude that primary education completion is a key factor in Germany's GDP and economic growth. I would have liked to include France in Figure 6 but unfortunately there was not sufficient data to do this.