Analyzing the Influence of Various Factors on Global Economies

Adithi Satish
Computer Science & Engineering
PES University
Bangalore, India
adithisatish@pesu.pes.edu

Raksha Ramesh
Computer Science & Engineering
PES University
Bangalore, India
raksharamesh@pesu.pes.edu

Shriya B Shankar
Computer Science & Engineering
PES University
Bangalore, India
shriya.shankar19@gmail.com

***Abstract*—The primary goal of this project is to use statistical analysis methods like multiple linear regression using ordinary least squares and ridge regression to gain insights into the numerous and diverse factors that affect economies of all countries globally, from quite obvious factors like Trade and the Finance Sector, to other parameters like Poverty, Education and Urban & Social Development, using data obtained from the World Bank's reserve of World Development Indicators, collected over the last six decades. A comparison between country groups is performed using the standardized regression coefficients to check for contrasts between developed and developing countries.**

Analysis of these variables on a macroeconomic scale is imperative in order to gain insight on the current global scenario, and to see if minor improvements in any sector would lead to monumental change and growth overall.

***Index Terms*—macroeconomic, world development indicators, time series analysis, multiple linear regression**

I. Introduction

Economic growth is one of the, if not the most important criteria when measuring a country's development. Almost all of the country's problems can be analysed with the context of its economic growth. This economic growth has various factors that influence it's trend; some obvious ones like: GDP per Capita, Unemployment rate, Population Growth, Government Expenditure, etc; and some not so obvious ones like: Firms with female ownership, Lending interest rate, etc.

The World Bank defines the World Development Indicators as "a compilation of relevant, high-quality, and internationally comparable statistics about global development and the fight against poverty". On a global scale, analysis of macroeconomic factors is extremely important in order to make informed decisions that can bring about urban development while improving national and global economies. The WDIs are some of the foremost features considered while doing analytics as they provide almost 1,600 time-series indicators for over 200 global economies. Some of these time-series indicators extend back to 150 years.

Analyzing the influence that different factors have on economies in developed and developing countries is paramount to understanding what kinds of economic and social reform can be brought about. This comparison will also help to pinpoint the areas which developing nations could focus on elevating, to see an improvement in the overall economy.

In order to quantify the economy, the GDP per capita growth (in %) is considered, which makes the comparison easier. Factors like trade, finance and income shares have always been considered while making any sort of inferences on the economy. However, the aim of this paper is to consider several other parameters that may contribute significantly as well, including but not limited to education and literacy rates, military expenditure, gender and urban development.

II. Review of Literature

A. Are We on the Right Path to Achieve the Sustainable Development Goals?

The aim of this research paper [2], was to analyse if the world was on the right track to achieving the targets for the Sustainable Development Goals, set by the UN in 2015, for 2030. The paper tries to forecast the scenario in 2030, using the International Futures (IF) forecasting model to do the same. The targets considered by the authors include indicators for poverty, child mortality and morbidity, undernourishment, access to safe water and sanitation, education and electricity. The datasets used for analysis and forecasting differ with each target, and have been taken from UNICEF, WHO and the World Bank's WDI datasets designated for SDG analysis.
The scenario analysis was done using the SSP2, or the Shared Socioeconomic Pathways. They include five scenarios that frame potential global development trajectories and allow for cross-model collaboration.

The SSP2 scenario analysis done by the authors provided a glimpse of a moderately optimistic world in 2030 in which economies grow and convergence of low and high economic countries are prevalent and conclusively showed that, without considering exogenous factors, the world (i.e all 186 countries analysed) is on its way to achieve two out of the nine targets by 2030 - primary school completion and a decrease in child mortality.

In conclusion, this paper proves to be an incredibly strong starting point, as the dataset used here and in our problem statements seem to intersect. Along with this, the target variables analysed in this study might also be very influential with respect to our problem statement at hand. In addition to this, the study also is a great reference for models like SSPs and IFs, although both have cons that would hinder

their usage and application. The study also fails to consider exogenous variables, which proves to be a deterrent to the credibility of the results obtained. All in all, it can be viewed as a foundation for our analysis, giving a brief idea as to how macroeconomic and socioeconomic analysis is done, in order for us to improve, develop further and newer insights by bringing in other indicators into the foray.

B. Forecasting Egyptian GDP Using ARIMA Models

This paper[3], seeks to forecast the Egyptian GDP and perform time-series analysis on the same using well known methods like the ARIMA using the Box-Jenkins approach to do the same, as well as running diagnostic tests to check for most optimal parameters and homoscedasticity of residuals. This paper uses data from the World Bank over the last 5 decades (from 1965 to 2016) for analysis and forecasting, 52 data points to be precise.

The exploratory analysis done shows that the time-series in this case is non-stationary, and hence, differencing has to be applied to the dataset (the ARIMA model is used). The equation for the ARIMA(1,2,1) model was found to be

$$X_t = 0.0005 + 0.1081X_{t-1} + 1.0478\epsilon_{t-1} + \epsilon_t$$

On passing all diagnostic checks and analysing the out-of-sample forecasts, the authors further infered that the Egyptian GDP is predicted to rise over the next ten years, also noting that this model is just a prediction and cannot be expected to accommodate the complex and dynamic nature of the economy.

This paper provides a crisp analysis of one of the most common forecasting methods, ARIMA(p,d,q) used in the industry, and also highlights the interdisciplinary applications of statistical and data analysis models in real-world scenarios. The dataset used for analysis and forecasting is taken from the World Bank's WDI GDP indicator, which reflects the data chosen for our problem statement. However, further valuable insights could be drawn from taking other features that underline a nation's economy into consideration and finding out the correlation between those attributes and the GDP. In conclusion, this paper provides a very clear and concise procedure that can be followed while performing time-series analysis using the ARIMA and Box-Jenkins approach.

C. Factors Affecting Economic Growth in Developing Countries

This study tested whether the theory of economic growth that held true for most of the countries in his sample will hold true for a set of developing countries by attempting to find the factors that determine economic growth in developing countries. The list of developing countries was taken from the World Bank (2015). Each year was tested separately and then compared with the other years to see if the results yielded were similar. The GDP per capita was used as a stand in for the overall economic growth, which was used as the dependent variable. The dependent variables were chosen as follows: starting level of GDP per capita, volume of exports, natural resources produced by the country, government debt, net foreign aid received, life expectancy, investment and foreign direct investment inflow into the country.

The results obtained showed no evidence of multicollinearity (Checked by using the variance inflation factor (VIF)). The results showed a strong positive impact of features like increase in the volume of exports, production of natural resources, life expectancy and investment. Validation was done by comparing the results of all the countries of one year to the next.

However, this paper does not entirely bring about a comparison between developed and developing nations and also does not consider any other parameters related to education, poverty, unemployment or education. All in all, this paper tackled a very similar problem statement using a dataset that was mostly coherent with ours, serving as a context with which we can build our approach.

D. International Futures (IFs) and Integrated, Long-Term Forecasting of Global Transformations

This paper [1] provides a thorough review of the International Futures model used by Moyer and Hedden[2]. The International Futures (IFs) project focuses on 3 dimensions: Human Capabilities, related to development of individual capabilities, Social Systems i.e. increased transparency and inclusive democracy, and Sustainability, providing rich interactions between human systems and their environment, and protection of natural systems from human activities and outputs.

The paper highlights the advantages of the International Futures model, namely the representation of a wide range of fundamental structures in global issue systems, as well as of the agent-driven flows that change those structures over time, the extensive data foundations of the system, its integration of important global subsystems, and its usability and transparency.

While this paper talks a great deal about IFs as a tool for analysis, it also needs to be acknowledged that the model is still in a very early stage. An IF model doesn't wholly grasp the influencing factors during analysis. Secondly, the relationship between entities is not always known, and this could be a drawback while using IFs. For example, a country might have its own specific influencing factor which might not be visible while accounting for various trends. And lastly, we live in a dynamic world with high amounts of instability. While the past data can be extrapolated to give a fair idea of future trends, it still can't entirely account for advancements in fields like technology, which is growing at a rapid pace. IFs are also "black-box" models, i.e. a lot of the internal parameters that they are dependent on, cannot be tweaked by the user, which in some circumstances, might have a negative effect on the predicted results. Due to these disadvantages, although IFs serve as a great model to for analysis of urban development, they do not cater to our problem statement directly.

III. Proposed Solution

The problem statement involves measuring the influence certain parameters have had on the economy (represented here by the growth in GDP per capita) for the last decade (data is considered from 2007 to 2018), for the world at large and for individual countries, and country groups.

The dependencies of the economy on the features in developed nations, when juxtaposed with that of developing countries, is useful to provide insights as to how drastic of an effect important sectors may have on the economy. This can further be used in order to make decisions on government expenditure, with the naïve assumption made that some, if not all of these parameters, have different impacts on the economies of developed countries as opposed to developing countries.

The parameters considered were: population growth, gini index (as a measure of income distribution), unemployment as a percentage of the total labour force, life expectancy, poverty at $1.90 a day, adult literacy rate, military expenditure, refugee asylum and the total labour force. The target variable used was GDP per capita growth percentage.

The initial solution approach was to determine the impact that these parameters have on the GDP per capita growth, by subjecting these features and target variable to a Multiple Linear Regression model, using Ordinary Least Squares to estimate their respective coefficients. This needed to be done for each country in order to draw a comparison and determine which factors are more likely to influence economic activity in developed and developing nations. The decision to use a Multiple Linear Regression model came from Upreti [4] who subjected similar data to an MLR model, resulting in satisfactory results.

A. Dataset

The World Development Indicators (WDI) is the World Bank's premier compilation about relevant, credible and internationally comparable statistics to determine global development. It consists of enumerable indicators, encompassing measures of poverty, growth (in public and private sectors), education, trade and finance, economy, climate change, to list a few. The data provides a comparison on how countries and the world in general has fared over the span of almost 6 decades, from the 60s upto 2019 (as of now). It aims to provide a quantitative look at some of the issues that have been plaguing the world in recent times.

Given the large amount of data, dating way back to the 60s, it was correctly assumed that the data representing most of the indicators was incredibly sparse. For indicators like government expenditure on education and unemployment, there was barely any or no data recorded until the late 90s or 2000s. In addition to this, using recent data (the last two decades or so) would be able to provide much more relevant insights than data from half a century ago. In order to perform dimensionality reduction, feature selection was used to drop the attributes with more than 70% of the data missing. Other methods of data cleaning, like mean replacement of missing values were also used in order to make the datasets suitable for exploratory data analysis. Certain specific values had to be manually checked and replaced, like China's GDP per capita growth for 2014 and 2015, as using other methods to estimate this data would be redundant.

B. Data Preprocessing

A significant part of the project involved preprocessing the data in order to bring it to a suitable form that could then be subjected to models. The raw dataset considered of multiple Comma-Separated Values (CSV) files that had to be joined and filtered. Each dataset had attributes for Indicator Code, Name, Country Name, and years from 1960 to 2018 (this has since been updated to 2020 on the World Bank website). Data from 2007 to 2017, inclusive were considered for this, as all the other years had incredibly sparse data. This was done for all indicators, including the target variable. Once extracted, data for each of the indicators were joined grouping by year, resulting in 10 dataframes (one for every year), each having all the indicators and GDP. Each of these were then split into Developed and Developing countries. Developed countries include most parts of Europe, the United States, Japan, Australia, New Zealand, Israel and some countries in East Asia (refer to Appendix for full list).

This had to be further cleaned. All rows with missing values for GDP were dropped. To clean the other attributes, median replacement was used. The final cleaned datasets (two for each year - for developed and developing countries) consisted of 11 attributes namely, country, population growth, gini index, unemployment, life expectancy, poverty, military expenditure, adult literacy rate, labour force, refugee asylum and GDP per capita growth.

C. Fitting the Models

A multiple linear regression model was then modelled using these features for each country group/country, running diagnostic checks to test for accuracy, multicollinearity, homoscedasticy and normality of the residuals. This was done in order to compare the standardized beta coefficients of the regressors to see the difference between the impacts they have on the respective GDPs.

However, this model failed to provide any kind of satisfactory results, with the p-values of each of the coefficients being much higher than 0.05. The AIC and BIC values of 178.6 and 193.3 respectively, also indicated that the model was not a good fit for the data. A Durbin-Watson statistic of 2.082 indicated small negative autocorrelation. The condition number obtained was extremely large at 1.46e+08, which was a result of strong multicollinearity between the parameters. This brought to light the need to explore other models in order to determine the impact each of these paramters have on GDP growth.

The second model proposed was a Polynomial Linear Regression model, with the target variable being a polynomial function of the features. However, this resulted in excess variables and combinations of multiple parameters, which was

counterproductive to the problem statement of finding out how each of these chosen parameters affects GDP growth individually, instead of having them grouped together.

Principal Component Analysis and Lasso Regression were also tried in order to perform feature selection on the data. On applying MLR on the principal component, the results and performance metrics achieved were just as undesirable as the metrics obtained with plain MLR. This unfortunately held even with Lasso regression, as the data wasn't sparse or irrepresentable for the model to fit correctly, with the regressor predicting a coefficient of 0 or approximately 0 for all the parameters. Additionally, a linear kernel support vector regressor was also implemented which did produce non-zero weights for the parameters, however the accuracy and the coefficient of determination of the model were significantly worse than the other models, with the R2 value fluctuating but always negative, i.e., arbitrarily worse off.

Since the data suffered from significant multicollinearity, Ridge Regression was used to fit the data. Ridge Regression is generally used to analyze multiple regression data that suffer from multicollinearity. When multicollinearity occurs, as indicated by the condition number, the least squares estimates turn out to be unbiased, however their variances are large resulting in very low precision. Ridge avoids the problem of multicollinearity by adding just enough bias so that the estimations are reasonable and reliable approximations to the true population values.

A train-test split of 85-15% was used for fitting and validating the data. The Ridge Regression model was fitted on each dataset (20 in total) independently, and the resulting coefficients were aggregated and grouped on whether the data was representative of developed or developing nations. The alpha value for the regressor was found to be 1.0 on tuning. In order to validate the data, K-Fold cross validation was used, with a k-value of 10. The performance metric tested was Root Mean Squared Error, which had a mean value of 2.69% for developed countries and 4.3% for developing countries. The accuracy obtained by the model peaked at 45% which is not satisfactory, but higher than all the previous models that were tried. The coefficients of this regression model were then analysed in order to derive insights from the data, relevant to the problem statement.

IV. Results and Drawing Insights

A. Expected Results

Assumptions were made as to how each parameter/indicator would influence a country's GDP per capita growth, and how these would differ with respected to developed and developing countries. The mean of the coefficients aggregated over 2007-2017 are compared for both the categories. The assumed signs of the respective coefficients are given in the table below.

Indicator	Developed	Developing
Population Growth	Positive	Negative
Gini Index	Negative	Negative
Unemployment	Negative	Negative
Life Expectancy	Positive	Positive
Poverty	Negative	Negative
Military Expenditure	Positive	Negative
Adult Literacy Rate	Positive	Positive
Labour Force	Positive	Positive
Refugee Asylum	Negative	Negative

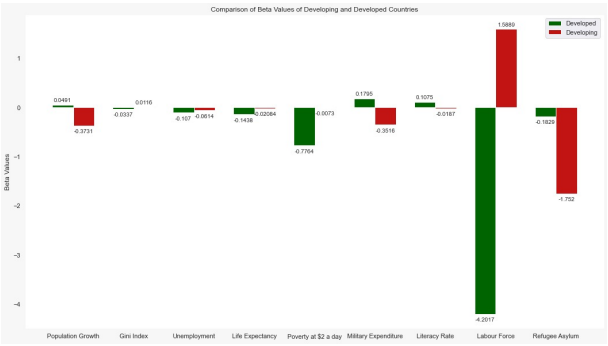
Population growth is expected to be negative for developing countries as in regions like Sub-Saharan Africa or South-East Asia, rapidly increasing population will result in a strain on resources that are stretched thin as is. A higher Gini index number indicates that there is greater wealth disparity and unequal distribution of income with the cream at the top making the lion's share, and the rest left with barely anything. Hence, this is expected to have a negative impact on the GDP growth's of both developed and developing countries.

Both unemployment and poverty are expected to have a detrimental effect on a country's economy regardless of whether it is developed or developing. Similarly, life expectancy is an indicator of a country's healthcare system and is hence expected to be positive for both categories. Literacy rate and labour force go hand in hand in providing the skilled labour necessary for a country to become reliable and to provide a boost to the economy. Countries ravaged by war fall under developing and hence are expected to have negative coefficients for both military expenditure and refugee asylum.

B. Observed Results

Indicator	Developed	Developing
Population Growth	0.0491	-0.3731
Gini Index	-0.0337	0.0116
Unemployment	-0.1070	-0.614
Life Expectancy	-0.1438	-0.02084
Poverty	-0.7764	-0.007
Military Expenditure	0.1795	-0.3516
Adult Literacy Rate	0.1075	-0.0187
Labour Force	-4.2017	1.5889
Refugee Asylum	-0.1829	-1.7520

The above results are visualized as a grouped bar chart to get a clear comparison between the two categories.



- Population Growth: This follows what was expected, i.e, it is positive for developed countries and negative countries. In developed countries, as population increases, the different industries strive to provide better quality of life, thereby increasing GDP overall. However, in developing nations, with increasing population, there aren't enough jobs and opportunities for all, thereby increasing government expenditure. An example would be India, with rapidly shooting population, there is an increasing proportion of unskilled population that don't end up contributing to the country's economy in a significant manner and hence may have a negative impace on the GDP growth.
- Gini Index: As explained above, a higher Gini Index is indicative of more inequality when it comes to wealth disparity. The results for developed countries are as expected, with a negative coefficient. This means that a decrease in the Gini index, or rather, a more equal distribution will positively affect the growth of a developed country's economy. However, the results for developing countries is unexpected. One supposed reason for this could be that the proportion of the rich is extremely small, especially in African and Mediterranean countries like Kenya and Egypt, %, and these are usually businessmen holding large market shares, thereby influencing GDP growth slightly.
- Unemployment: The results for this indicator hold true with what was expected, with both coefficients being negative. As unemployment increases, there is less contribution by the citizens to the GDP of the country rather, the government's spending to tackle this issue greatly increases. This is true across both developed and developing countries.
- Life Expectancy: Results of this indicator were very surprising, as both coefficients, which were expected to be positive, turned out to have negative influence on the GDP per capita growth. A reasoning could be drawn that as life expectancy rate increases, there is an increased population of senior citizens who do not contribute towards a country's economy directly. However, this may be a pitfall of the ridge regression model fitted on the data.
- Poverty: Poverty was quatified as the percentage of people living on less than $1.90 a day. This conformed to the expected results, with both coefficients having negative effects on the GDP although the severity of the coefficient of developed nations is much higher than that of developing. Poverty is one of the most significant factors that comes into play while measuring not just a country's economy, but it's urban and social development as well, and hence eradicating poverty is one of Sustainable Development Goals set by the United Nations as well.
- Military Expenditure: For a developed country, although spending on military is a huge investment, it provides much needed stability and reduces risk of war. This has become clearer than ever with the United States spending enormous amount of money on the maintenance of its armed forces. However, excessive military expenditure has quite the opposite effect when it comes to developing countries, more so with war torn countries like Syria and Afghanistan. Spending a large amount of the government budget on the military is counterproductive and damaging to the economy of a developing nation.
- Adult Literacy Rate: This can be considered another pitfall area of the model as it predicts a negative relationship with the GDP growth of a developing nation. However, a possible argument could be made that the quality of education in most developing countries is not up to standards and hence even though people might fall into the category of 'literate', they may not be able to provide for an efficient workforce. Another interesting insight could be that a lot of students from these countries tend to move to other places like Europe and the United States, negating any positive effect literacy rate might have had on the GDP growth.
- Labour Force: The highly negative coefficient for developed countries is an outlier with respect to the results of the regression model. However, the labour force is not an indicator of the skills possessed by the citizens, rather just a count of how many individuals can be put to work. With advancing tech quickly replacing manual labour in developed nations, an increasing labour force may not be as beneficial as one might presume. However, with respect to developing countries, we see an increasingly positive dependence of the GDP growth on the labour force, as most of the work does not necessarily require skilled professionals and is still dependent on large manual labour, which is exactly what a large labour force provides.
- Refugee Asylum: Although countries providing asylum to refugees is great on the humanitarian side, the economic impact does not turn out to be positive in either categories. As there is an increase in the intake of refugees, there are more individuals dependent on government aid, and are usually uneducated/lack professional skills to immediately be employed in the workforce. Similar to the trend seen in developed nations, developing countries usually fall short on funds to even provide refugee asylum. Consequently, taking in refugees is going to cost the government in terms of monetary expenditure and hence the GDP.

V. Conclusions

The project aimed to provide an investigative look into the various factors affecting a nation's economy, as indicated by the GDP per capita growth. In most economic analysis papers, parameters that are considered are almost always similar, while other factors that may actually impact growth are left out. This project aimed to incorporate some of these factors as well, like military expenditure, literacy rate and refugee asylum. Although the performance metrics were not as up to the mark

as hoped, the ridge regression model did prove to be the most adequate. However, it wasn't without its pitfalls in areas like labour force and literacy rate.

This project is heavily reliant on domain knowledge and the literature reviews done, along with experimenting with the dataset did provide a glimpse of how analysis of economic factors is done in the world. There is a lot of future scope in this area where other models like ARIMAX could be implemented to check for better performance metrics. In conclusion, this project provides a comprehensive analysis into some of the multiple dependencies of a country's economy and how they vary across different regions in the world.

ACKNOWLEDGMENTS

We would like to express our profound gratitude to Dr. Gowri Srinivasa and the entire Data Analytics team, for encouraging and providing us with this opportunity to get hands-on experience in the field, and guiding us along the way. This project has proven to be a great experience in learning how statistical analytics is used in real-world scenarios in order to make large scale decisions with global impacts. We also learnt a great amount about how macroeconomic factors influence changes and what drives these said changes. We would like to thank the Computer Science and Engineering department at PES University, for always inspiring us to conduct frequent research and inculcating a problem-solving discipline in us.

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APPENDIX

A. Contributions

- Adithi Satish: Literature survey, exploratory data analysis, trying different models to compare performance metrics, fitting and validating the Ridge regression model, analysing the results, drawing inferences for the coefficients obtained and comparing them for both categories.
- Raksha Ramesh: Literature survey, data preprocessing and cleaning, exploratory data analysis, tuning hyperparameters for each model and validating the Ridge regression model with 10-fold cross validation.
- Shriya Shankar: Literature survey, drafting the problem statement, data extraction, creating datasets in the required format, exploratory data analysis and analysing the results of the Ridge regression model.

B. Developed and Developing Countries

A developed country is defined as "a sovereign state that has a developed economy and advanced technological infrastructure relative to other less industrialized nations". The countries considered to be "developed" in this project are: Andorra, Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Faroe Islands, Finland, France, Germany, Greece, Guernsey, Holy See, Iceland, Ireland, Italy, Jersey, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, Hong Kong, Israel, Japan, Macau, Singapore, South Korea, Taiwan, Bermuda, Canada, Puerto Rico, United States, Australia and New Zealand.

Wikipedia defines a developing country as "a country with a less developed industrial base and a low Human Development Index relative to other countries".

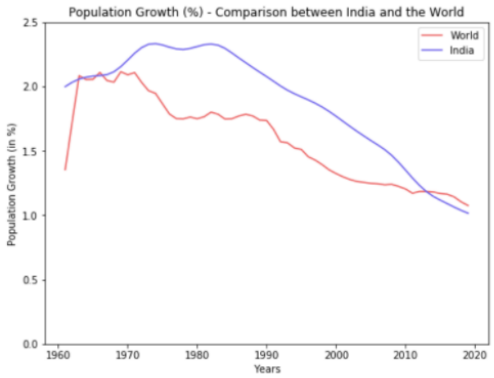
C. Visualizations

In order to understand the nature of the data, some of the indicators mentioned above were analysed independently and compared on a global and nation wise scale, in order to find correlations and check for trends and seasonality.

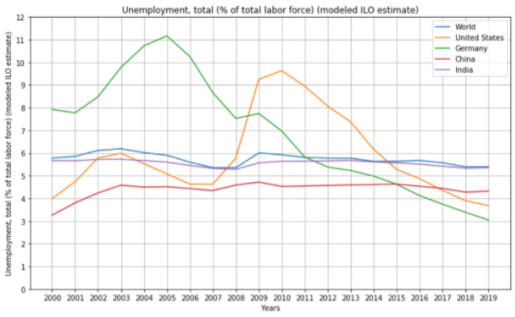
Population Growth (in %) : The growth of the population can play a very significant role in shaping the economy. On plotting a comparison between population of the world and India, it is seen that the population growth of the world saw a sharp increase in the 1960s, and maintained it until the mid 1970s after which there is a gradual decline. India's growth however, rose gradually up to the mid 1980s, following which there is a steeper decline than that of the world, with India's relative population growth being lesser than that of the world from the early 2010s.

In order to find out the causes of this decline, the crude birth and death rates (per 1000 people) aggregated to represent the world were considered. The downward trend of the population growth is reflective of that of the birth and death rates as well; however the birth rate was found to be decreasing more sharply than the death rate. This is corroborated by the R-values calculated for world population growth with respect to birth and death, to be 0.952 and 0.745 respectively.

Unemployment: The unemployment rate is measured as a fraction of the total labour force of a country/ the world. It is a closely watched indicator and can have a cascading effect that ripples through a country's economy, often during recessions.



The graph shows a comparison between the United States, Germany, China and India.

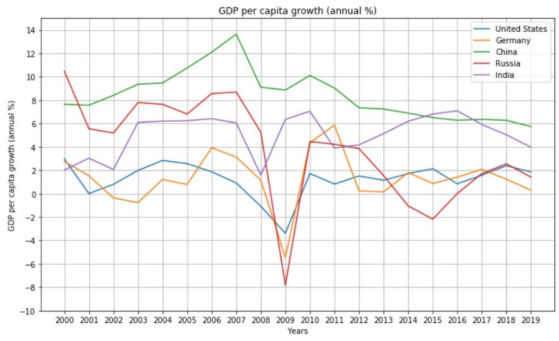


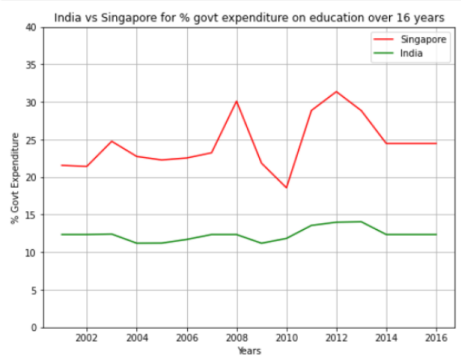
Germany seems to have fared very well when compared to the other heavy weight economies over the last fifteen years, and now has the smallest unemployment rate amongst the four, at around 3% of its total workforce. The United States has a predictable curve, with unemployment peaking in 2009 and 2010, which followed right after the Wall Street crash of 2008. However, the rate has declined over the last ten years, standing at around 4.8% in 2019.

GDP per Capita Growth (in %): This indicator explains the growth rate of GDP per capita or the rate of increase of income per person. The following indicates the GDP per capita growth rate for India as a comparison with some of the most developed countries. There is a sharp decline around 2008-2009 for all countries which is explained by the 2008 financial crisis that took the world by storm. Despite the US being a leading contributor to the crisis, it is seen that Russia was the worst hit. Until the financial crisis, China seems to be on an exponential rise, after which the growth rate has steadied.

Education expenditure (% of government expenditure): It was found that the countries having the highest % expenditure on education out of their total government expenditure are Tunisia, Ethiopia, Singapore and Ghana. A comparison was drawn between India and Singapore.

Here, it can be observed that Singapore dipped drastically to 18% between 2008-2010 in terms of educational expenditure.





However, their lowest was still far above India's expenditure on the same. It can be seen that India has remained fairly constant within the bracket of 10-15% in the last 2 decades.