PROJECT REPORT

International Business

Globalisation and Inequality

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Abstract

Globalisation is a dynamic phenomenon and it is a process of integrating global economy. Globalisation is opening of domestic economy to world economy. In this report, I have tried to explain how Globalisation is related to inequality by referring to two periods – 2003-08 and 2014-18. By inequality we are considering the Financial Inequality in a country. Our main focus is to study the inequality amongst countries and to model Inequality as a function of Globalisation.

I have used Gini Coefficient as a measure of inequality and tried to do a linear model approach to relate it with economic, social and political dimensions of Globalisations.

I have compared the scenario of two time periods (2003-08) and (2014-18) and reached to a conclusion that countries with higher Globalisation index have less inequality. The linear model statistics is almost same in both cases. Social dimension of Globalisation decreases inequality. The values of the coefficients of Economic, Social, Political Globalisation in Linear Model are nearly same in both time frames. Linear Model R2_score is not much optimistic, so we should focus on Non-Linear Model in future studies.

In my case study, I have collected data of 114 countries in 2003-08 period and data of 157 countries in 2014-18 period. Basically, I have averaged the data available in that time frame and used Data-Analysis Library of python to produce a linear Regression Model.

All the data are collected from World Bank Database.

What is Globalisation?

Globalization or **globalisation** is the process of interaction and integration among people, companies, and governments worldwide. As a complex and multifaceted phenomenon, globalization is considered by some as a form of capitalist expansion which entails the integration of local and national economies into a global, unregulated market economy. Globalization has grown due to advances in transportation and communication technology. With the increased global interactions comes the growth of international trade, ideas, and culture. Globalization is primarily an economic process of interaction and integration that's associated with social and cultural aspects.

In calculation of Globalisation Index the following 3 Aspects of Globalisation are taken into consideration:

Economic Globalisation:

Economic globalisation refers to the interconnectedness of economies through trade and the exchange of resources.

Economic globalization has two dimensions: actual economic flows and restrictions to trade and capital. The sub-index on actual economic flows includes data on trade, FDI, and portfolio investment. The sub-index on restrictions takes into account hidden import barriers, mean tariff rates, taxes on international trade (as a share of current revenue), and an index of capital controls.

Social Globalisation:

Social globalisation refers to the sharing of ideas and information between and through different countries.

Social globalization has three dimensions: personal contacts, information flows, and cultural proximity. The sub-index on personal contacts includes international telecom traffic, degree of tourism,

transfers, foreign population, and number of international letters. The sub-index on information flows includes number of internet users, share of households with a television set, and trade in newspapers. The sub-index on cultural proximity includes trade in books and number of McDonald's restaurants and Ikea located in a country.

Political Globalisation

Political globalisation refers to the amount of political co-operation that exists between different countries.

This ties in with the belief that "umbrella" global organisations are better placed than individual states to prevent conflict. The League of Nations established after WW1 was certainly one of the pioneers in this. Since then, global organisations such as the World Trade Organisation (WTO), United Nations (UN), and more regional organisations such as the EU have helped to increase the degree of political globalisation.

The degree of political globalization is determined by the number of embassies and high commissions in a country, the number of international organizations to which the country is a member, the number of UN peace missions a country participated in, and the number of treaties signed between two or more states.

Impact of Globalisation:

Globalization has more positive outcomes than the negative ones. The impact of globalization on the developing countries such as India, China and some African countries are overwhelming. Foreign investments have created a lot of employment opportunities in the developing countries and have boosted their economy. Globalization has also enabled people to interchange their knowledge and culture.

In a nutshell, globalization has reduced the distance between nations and its people.

What is Inequality?

Income inequality is the unequal distribution of household or individual income across the various participants in an economy. Income inequality is often presented as the percentage of income to a percentage of the population.
The simplest way to understand inequality is by analysing the population by dividing it into quintiles (fifth) from poorest to richest and reporting the proportions of income held by them.

Example: if the bottom 20% of the population held 20% of the economy's income and the top 20% held 20% of the economy's income, then we can call the society highly equal. But it is hardly the case, as the bottom 20% of the population hardly owns more than 3% of the total wealth of the economy.

How to measure Inequality:

Gini Coefficient
Gini is the most popular measure of income inequality. The Gini coefficient is derived from the Lorenz Curve.

Lorenz Curve:

- The Lorenz curve shows the percentage of total income earned by cumulative percentage of the population.
- In a perfectly equal society, the "poorest" 25% of the population would earn 25% of the total income, the "poorest" 50% of the population would earn 50% of the total income and the Lorenz curve would follow the path of the 45° line of equality.
- As inequality increases, the Lorenz curve deviates from the line of equality; the "poorest" 25% of the population may earn 10% of the total income; the "poorest" 50% of the population may earn 20% of the total income and so on.

To construct the Gini coefficient, graph the cumulative percentage of households (from poor to rich) on the horizontal axis and the cumulative percentage of expenditure (or income) on the vertical axis.

The Lorenz curve is shown in the figure. The diagonal line represents perfect equality.

The Gini coefficient is defined as A/(A+B), where A and B are the areas shown on the graph. *If A=0 the Gini coefficient becomes 0 which means perfect equality, whereas if B=0 the Gini coefficient becomes 1 which means complete inequality.* In this example, the Gini coefficient is about 0.35.
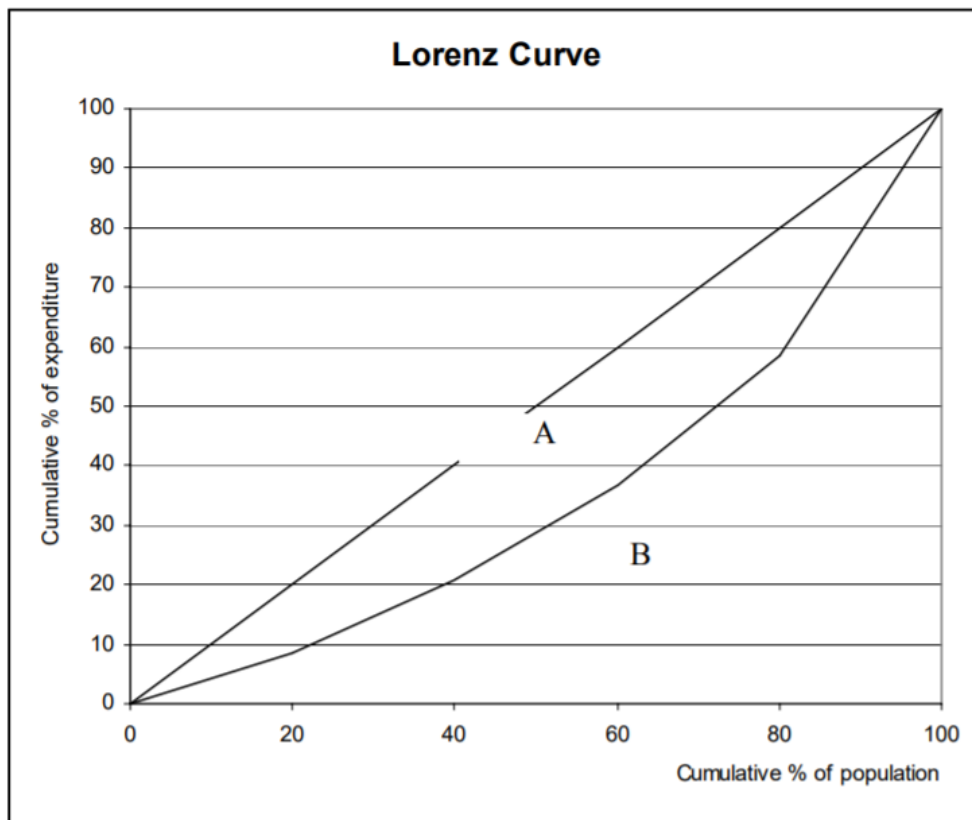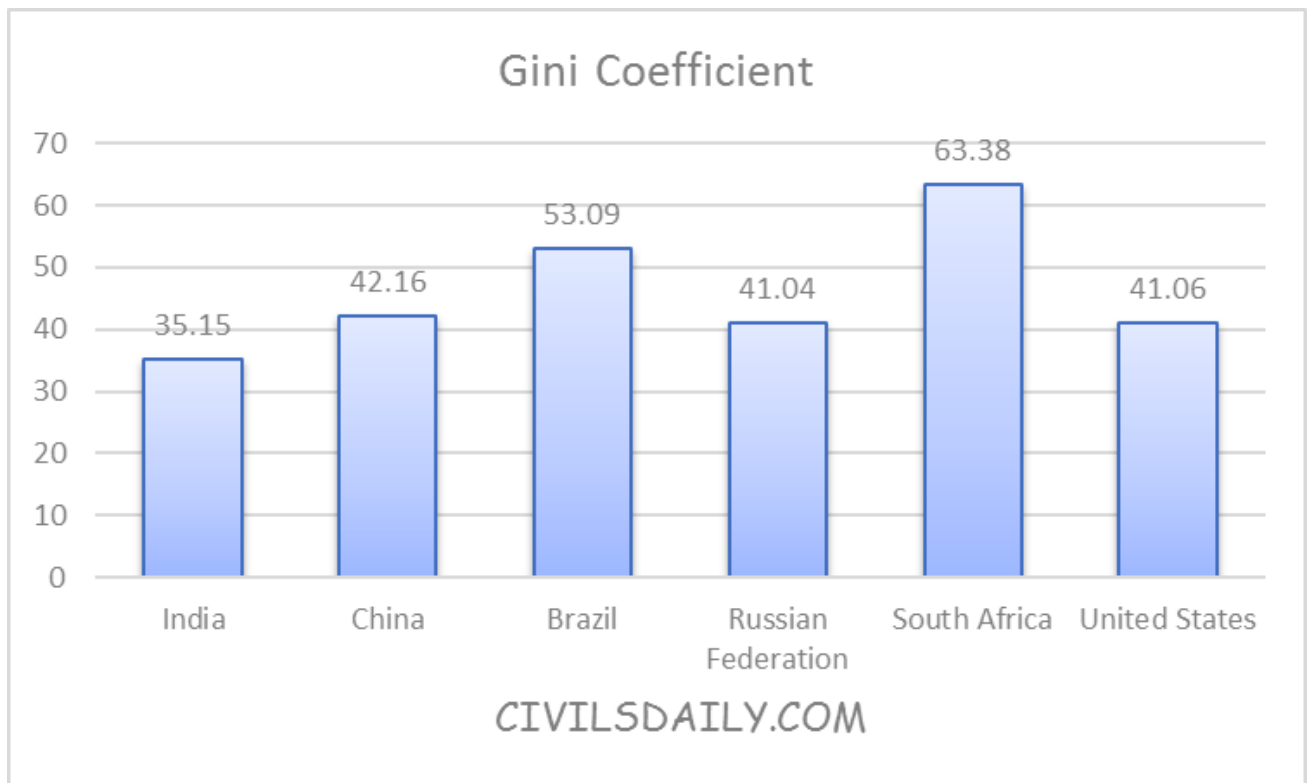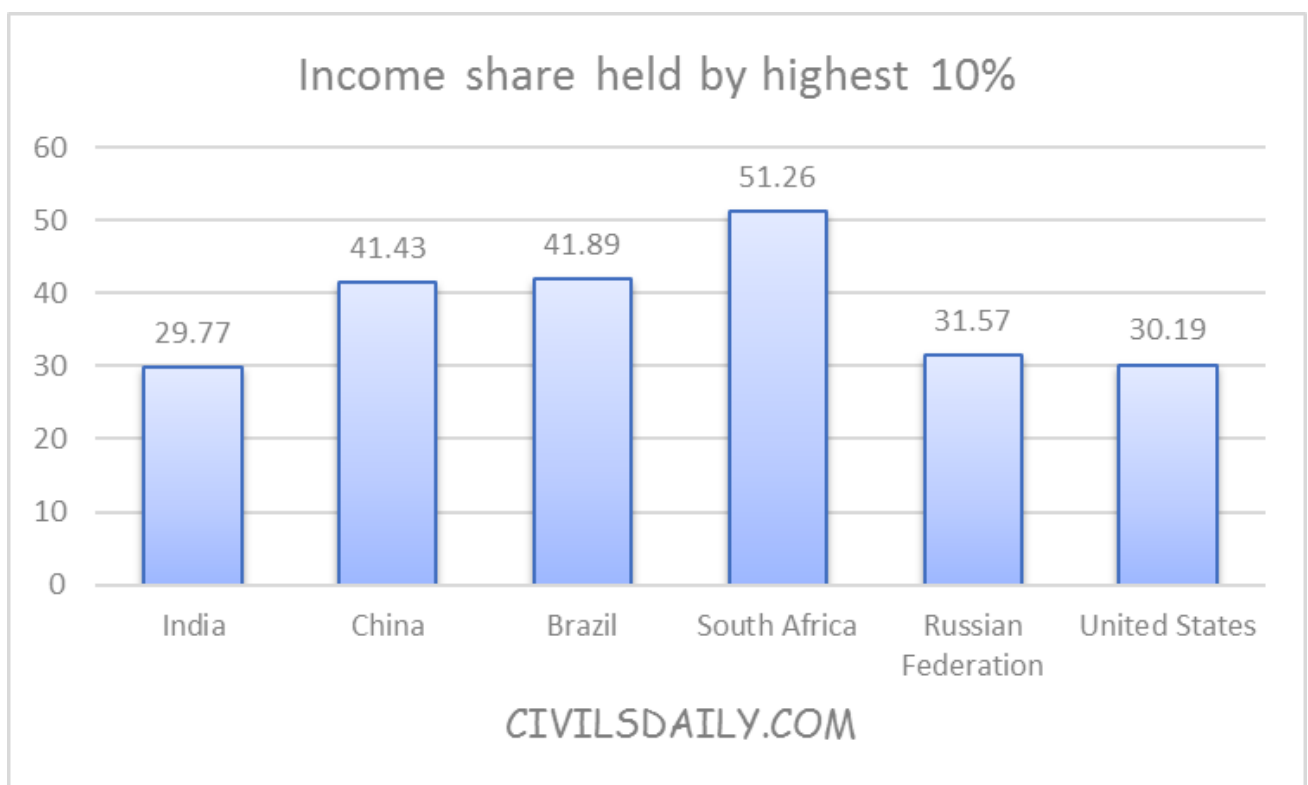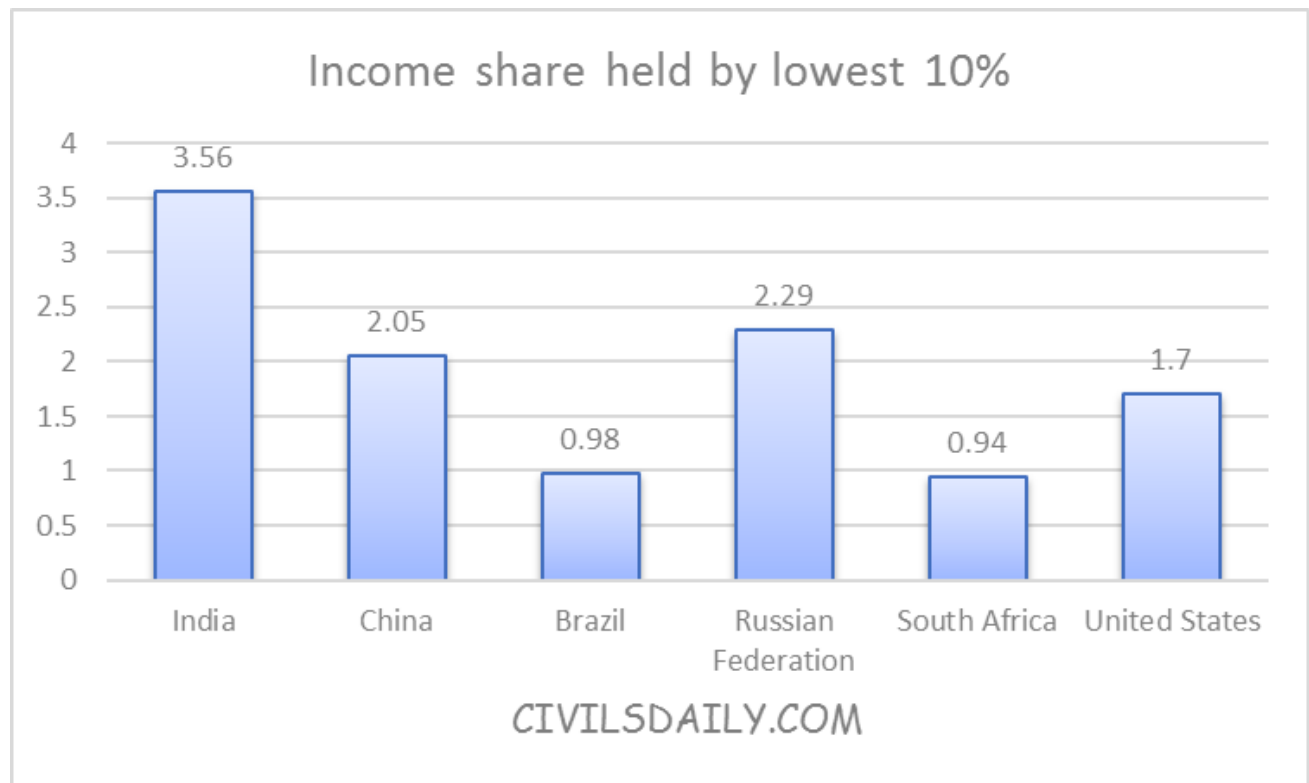

Figure 6.1. *Lorenz Curve*

Inequality Comparison:

Gini Coefficient

Country	Value
India	35.15
China	42.16
Brazil	53.09
Russian Federation	41.04
South Africa	63.38
United States	41.06

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Income Inequality: Percentage of Income held by top 10% of the Population

Income share held by highest 10%

Country	Value
India	29.77
China	41.43
Brazil	41.89
South Africa	51.26
Russian Federation	31.57
United States	30.19

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Income Share by Lowest 10% of Population

Income share held by lowest 10%

India 3.56
China 2.05
Brazil 0.98
Russian Federation 2.29
South Africa 0.94
United States 1.7

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The percentage of the income held by the poorest 10% in India is close to 3 percent. This is a good indicative of income distribution as in South Africa Most of the money is concentrated by Top-10% of population.

This explains that Gini Coefficient of South Africa being very high.
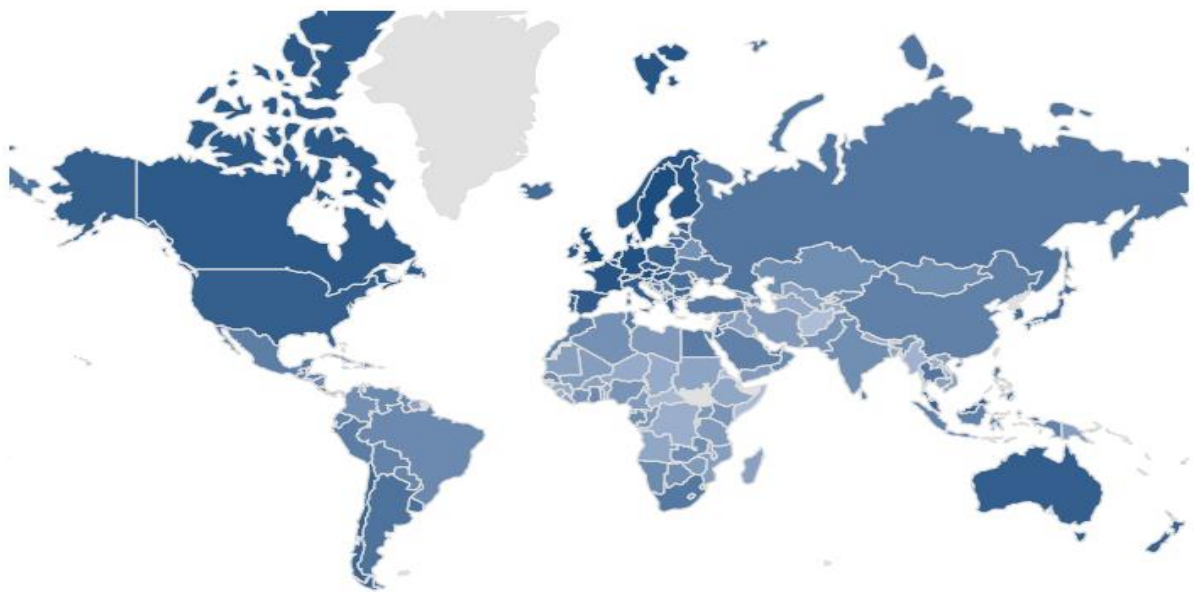
How Globalisation and Inequality is related?

To see how these two parameters – Globalisation and Inequality- are related to each other, lets see some Maps that depicts how Globalisation is spread across the World and the condition of Inequality at present Scenario.
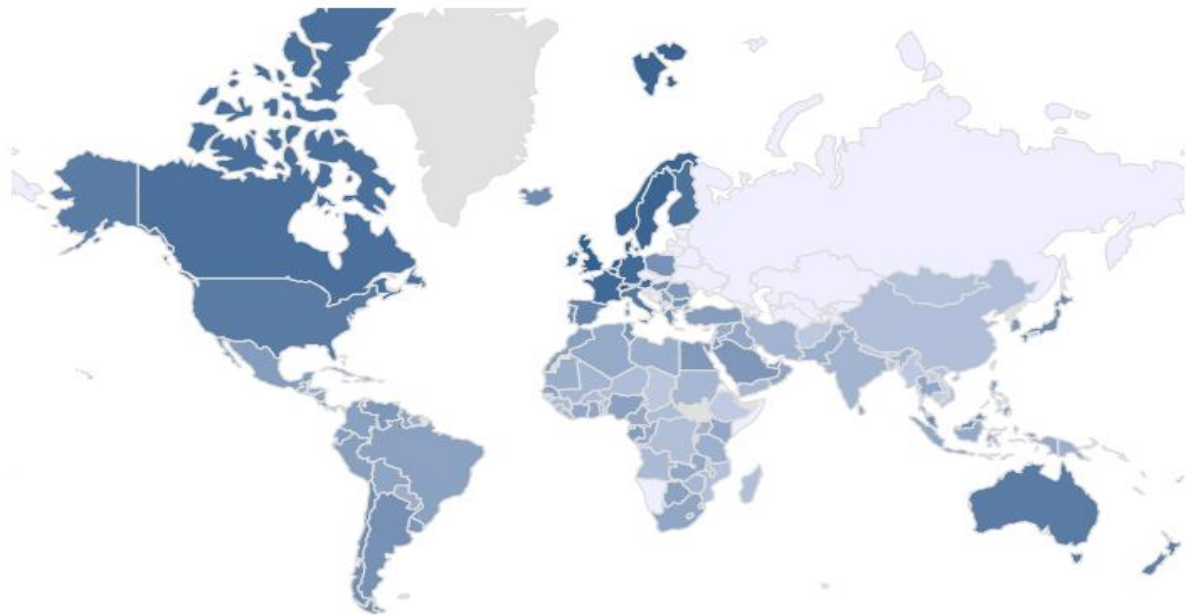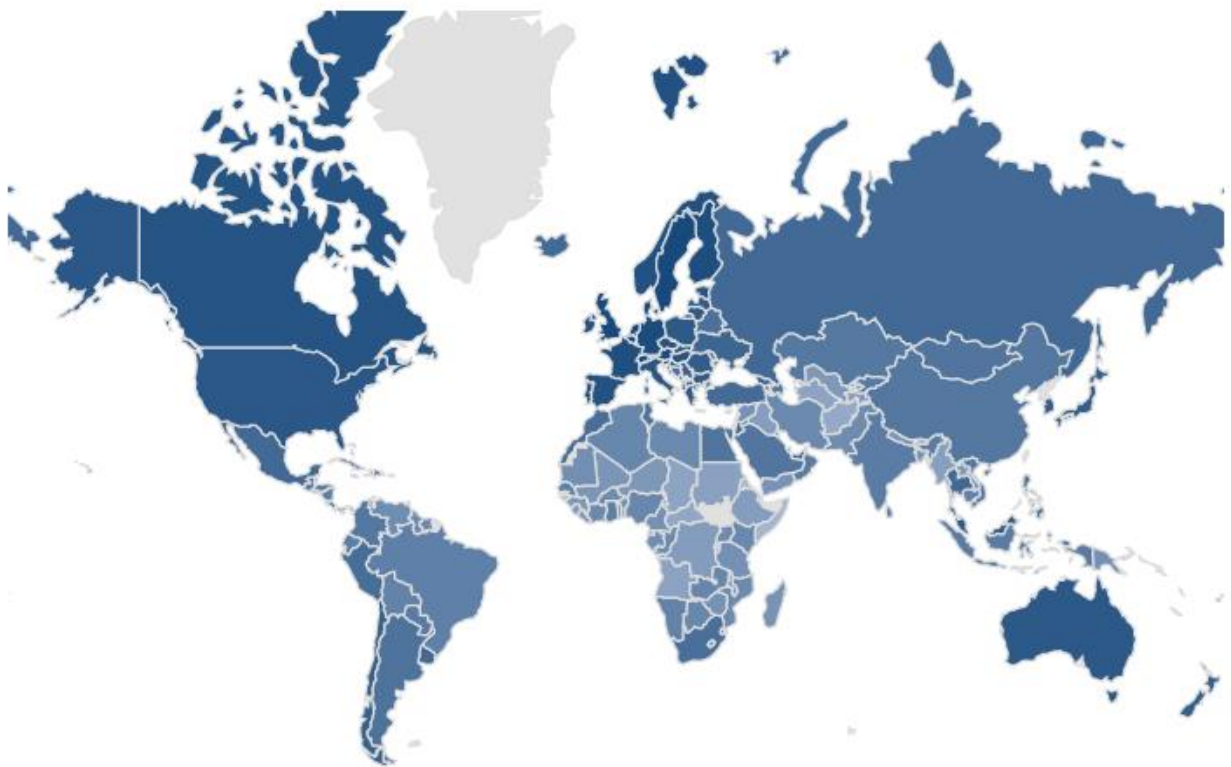

1980
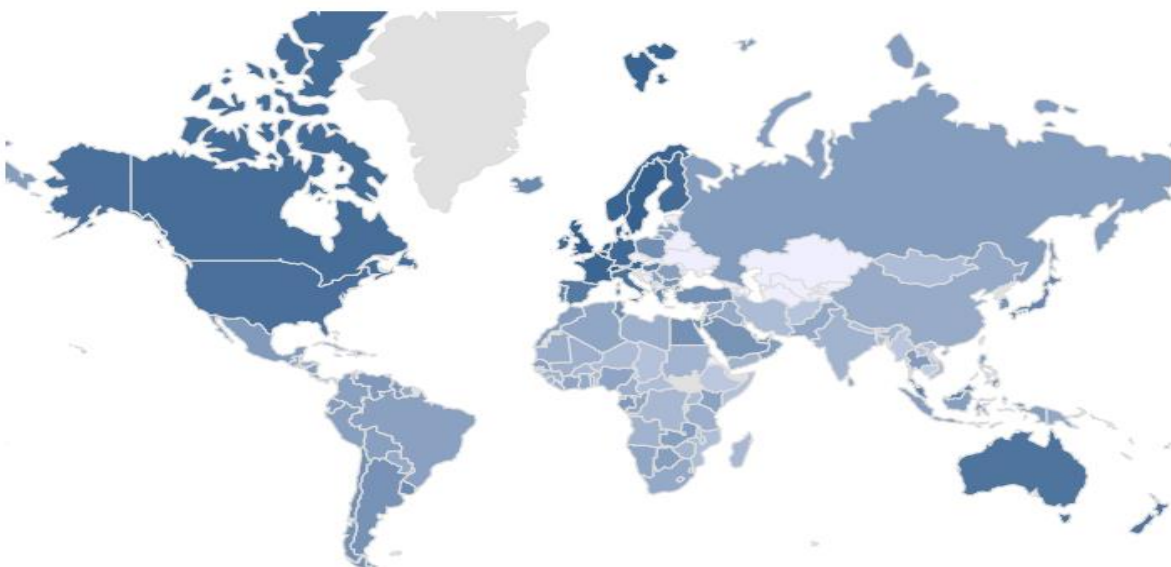
1990

2004

2017

Description: The map above shows how Globalisation index (World Bank estimate) varies by country from 1980's to 2017. The darker the blue shade signifies more Globalisation Index.

It is quite evident that there is a sudden rise in Globalisation after 1980's, as Asia got integrates to Europe and America. In 1990's most Asian countries adopted Globalisation and Liberalisation polices and hence we can find more Blue spots in Asia after 1990.

But from 2004 -2017 we cannot find much changes in Globalisation, so we can presume that Globalisation has reached a constant stage.

Distribution of Gini Coefficient:

25   63
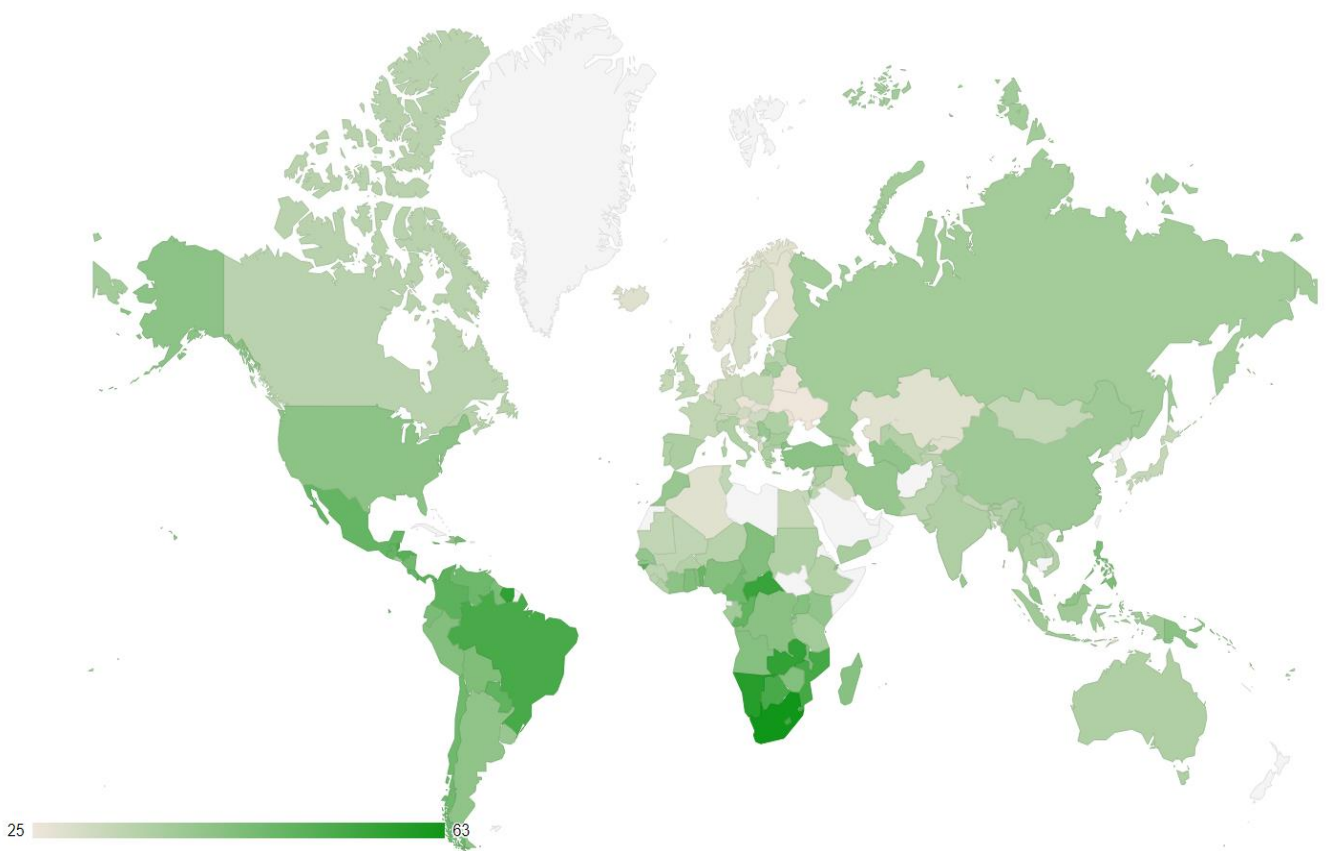
Description: The map above shows how GINI index (World Bank estimate) varies by country. The shade of the country corresponds to the magnitude of the indicator. The darker the shade, the higher the value. The country with the highest value in the world is South Africa, with a value of 63.00. The country with the lowest value in the world is Ukraine, with a value of 25.00

From the Gini-Coefficient Distribution we can find that Europe has least Income Inequality, and in Asia Inequality is nearly moderate and uniform. The African Countries have high inequality (especially countries around diamond mines region). In South-America the Inequality is higher than that of Asia. In North America, Mexico has highest Inequality and its Globalisation index is also less as compared to USA and Canada.

Observations and Inference:

1. The spread of Globalisation and Inequality is highly uneven and regional variations in continents even complicate this process.
2. Globalisation reached a static state from 2004-2017 as most spots in map remain unchanged.
3. In most South American Nations, Globalisation Index is high, but also their Income Inequality is high. It is more prominent in Brazil.
4. The inequality in developed North American nations (like USA) is as much of that in India, because USA prefers Capitalistic society and wealth is accumulated with some people.
5. In European Nations like Italy has high Political Globalisation and hence it has less inequality. Most Nations like Sweden, Luxemburg have high Globalisation Index and very less Income Inequality.
6. Amidst a lot of variation, we can find some local pattern, like high inequality in lower South African region because of Diamond & Gold owner are rich, while, countries near Mediterranean belt are more influenced by European and have less inequality.
7. In Developing countries like Indian Subcontinent or most Asian Nations, Inequality has increased with increase in Globalisation (over last three decades)as could be deduced from the below graph.
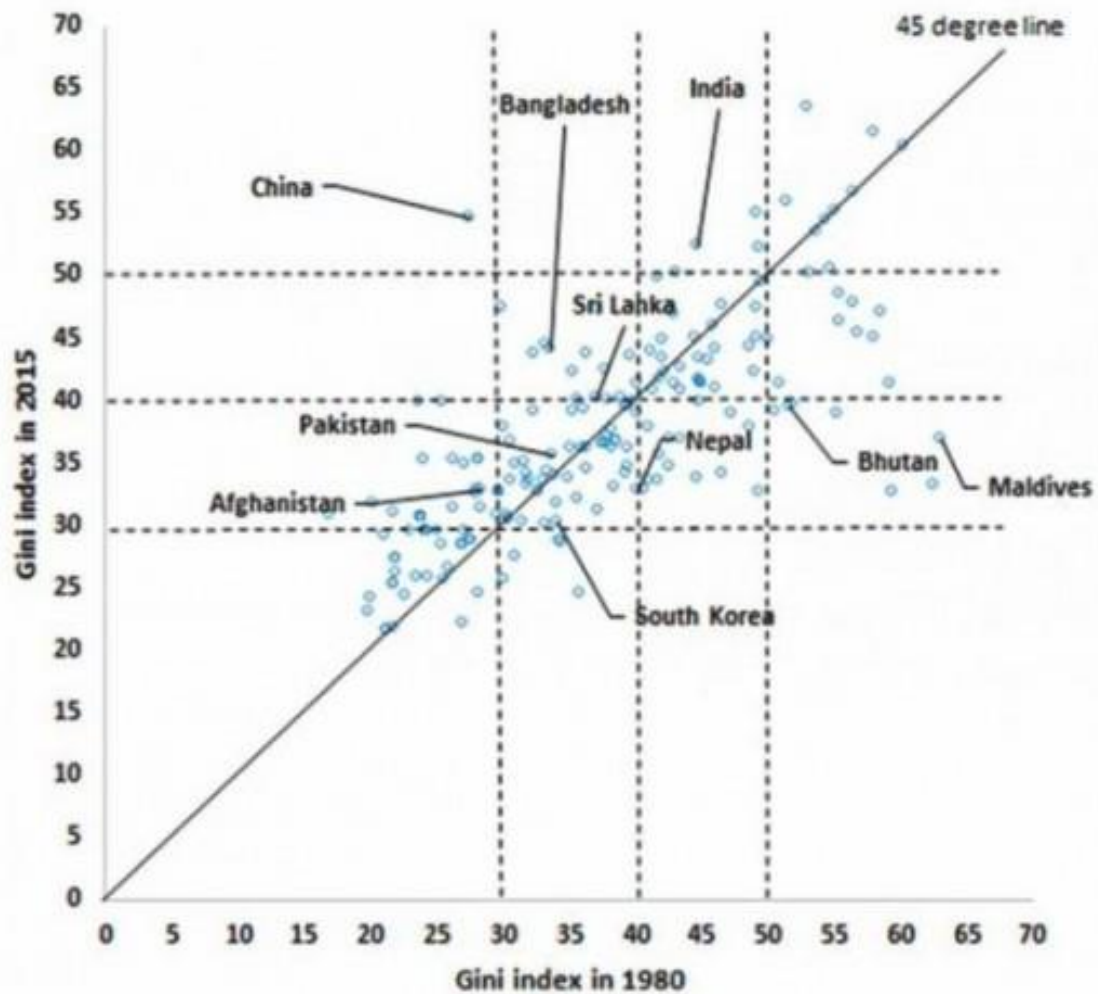
During 1980's to 2015, Globalisation is one of the most important parameter that has changed amongst all Asian countries, So we can say Globalisation has increased inequality in Asian nations.

8. Countries who are trade partners like Indian Sub-continent, African Nations they have nearly same Globalisation Index.

9. Russia and China are socialist and communist countries and hence adopt nearly same policies and so same Globalisation and Inequality index.
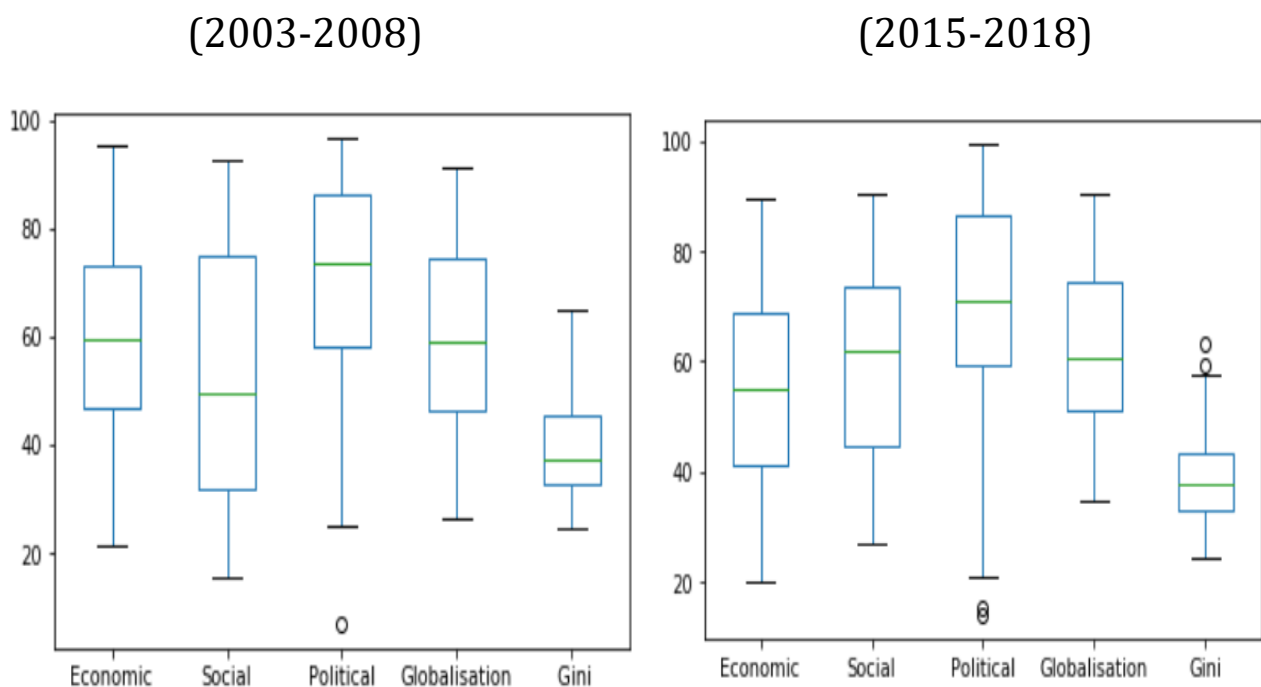
Mathematically Model Inequality as a function of Globalisation.

How Globalisation index is calculated by World-Bank is given in Appendix[1]

Graphical Representation:

1. Box-Plot

The middle green line is the median and the box represent the data of 1st and 3rd Quartile.

<div style="display:flex">

(2003-2008)   (2015-2018)

</div>

Box plot is used to show how the data set is distributed. Median gives us a good estimate about the variation in data.

Observation and Inference:

1. Social Globalisation has increased by more than 10 units. This has happened due to advancement in technology, transportation & communication, internet and social and cultural osmosis.

2. Economic Globalisation has reduced due to increase in trade restrictions and taxes imposed by countries.
3. Political Globalisation has not changed much, between 2005-2015.
4. The reduction in Gini Coefficient (though a very little is caused due to Social Globalisation).
5. Even if there is huge rise in Social Globalisation but there is a little impact on Inequality.

Graphical Representation:

Between 2003-08:
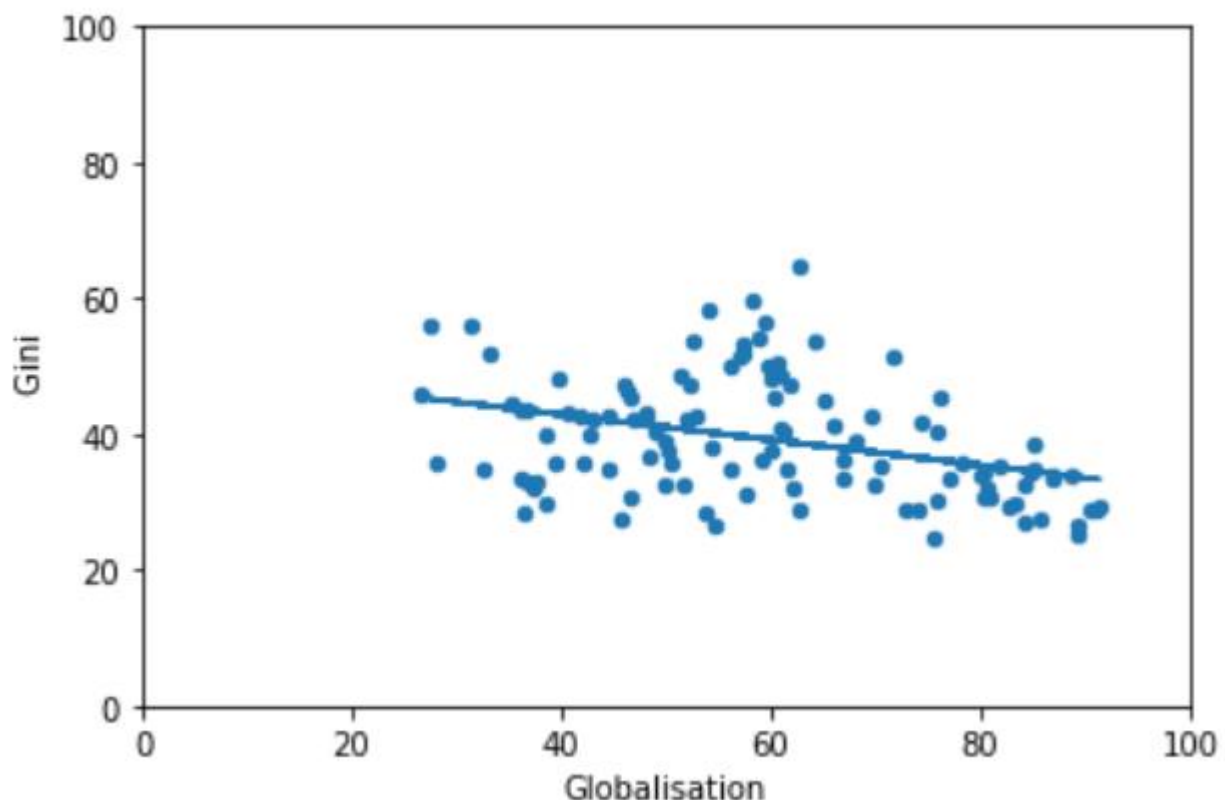
The Linear Regression Model of Gini with Net Globalisation:

Slope= -0.186 ;   Intercept= 50.315
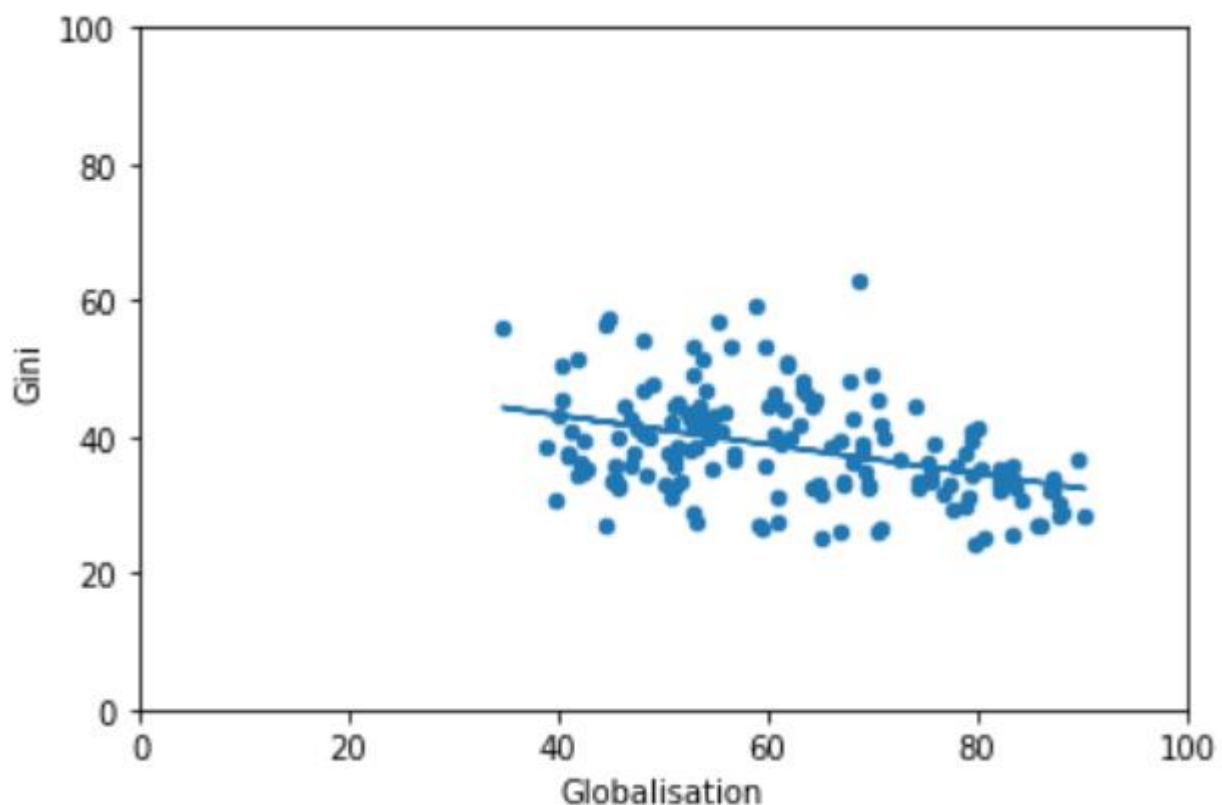R2_score= 0.134

R-squared (R2) is a statistical measure that represents the proportion of the variance for a dependent variable that's explained by an independent variable or variables in a regression model. So, if the R2 of a model is 0.50, then approximately half of the observed variation can be explained by the model's inputs.
R2 score of 1 is absolutely ideal model and score of above 0.8 is considered a good model.

Between 2014-18

Slope= -0.214 ;   Intercept= 51.725
R2_score= 0.150

From this we can conclude that over time linear model is insensitive to relation between Globalisation and Inequality. So, instead of Net Globalisation we need to include Economic, Social, Political also in Globalisation and use regressor model.

The regressor line though bisects the dataset in 2 parts, but it is not a good estimate

Correlation Between Various Parameters

Between 2003-08

	Economic	Social	Political	Globalisation	Gini
Economic	1.000000	0.808791	0.415587	0.902513	-0.325099
Social	0.808791	1.000000	0.465532	0.937177	-0.419789
Political	0.415587	0.465532	1.000000	0.670950	-0.124192
Globalisation	0.902513	0.937177	0.670950	1.000000	-0.366035
Gini	-0.325099	-0.419789	-0.124192	-0.366035	1.000000

Between 2014-18

	Economic	Social	Political	Globalisation	Gini
Economic	1.000000	0.814616	0.199080	0.806225	-0.356145
Social	0.814616	1.000000	0.375614	0.887317	-0.323738
Political	0.199080	0.375614	1.000000	0.703622	-0.259948
Globalisation	0.806225	0.887317	0.703622	1.000000	-0.387730
Gini	-0.356145	-0.323738	-0.259948	-0.387730	1.000000

Observation and Inference:

- If we look at the correlation between the Social and Economic Globalisation, then the value is nearly 0.8 which is high. So, rise in Social Globalisation is nullified by reduction in Economic Globalisation and hence a very little impact on fall in Gini-Coefficient.

- Economic, Social and Political Globalisation are negatively correlated with the Gini- Coefficient. So, Increase in Globalisation helps in reduction of Inequality. And, Moreover, The correlation coefficient of Net Globalisation, is nearly same with Economic, Social and Political Globalisation, so we are motivated to choose a linear model:

$$\text{Globalisation (G)} = m_0 + m_1 * Ec + m_2 * Sc + m_3 * Po$$

Linear Regression Model:

Between 2003-08

$m_0 = 45.3$;   m1= 0.14 ;   m2 = -0.19;   m3 = 0.04

R2_score = 0.183

Between 2014-18

m_0= 51.82; m1= -0.151 ;   m2 = 0.009; m3 = -0.08

R2_score = 0.163

Observation:

- Between 2003-08, Social Globalisation had negative coefficient signifying increase in Social Globalisation would reduce inequality and Economic and Political Globalisation had positive coefficient, signifying they increases Income inequality.
- This scenario changed in 2015, as now Social Globalisation had positive coefficient, indicating that now it will increase inequality.
- Economic and Political had negative coefficient.
- R2_score is nearly same when we took Linear model with all dimensional aspect or only Net Globalisation aspect.

Conclusion:

If we try to explain the Regression model results:

Around 2005, internet and communication was not much advanced and hence during this period growth of communication, transportation facility resulted in decrease in Inequality. Moreover, this was the peak period of Industrialisation, so, increase in Economic or political Globalisation was resulting in mass accumulation of wealth, leading to more inequality.

Around 2016, internet and communication got saturated and now increase in this was creating inequality, as rich people can only afford costly goods, luxuries and hence in a sense inequality increased. This is more prominent in South-African. Now by doing Global integration of trade and organising international political meetings, we are establishing friendship and thus, countries are helping each other to reduce inequality.

If we look at the Linear Model, then we do not get satisfactory result as R2 score is nearly 0.17 for regression model during 2005 and 2015. This may happen because Globalisation at Global scale have not seen much change from 2005-2015.

In fact, from Box-plot we found that Social Globalisation has increased, Economic Globalisation has decreased and net Globalisation is unchanged, so does Gini Coefficient. *So, we can say technology is playing a main role here for change in change in Social Globalisation over these past 20 years, and that has lead to a slight decrease in inequality. This is because technology could not be afforded by lower strata of population.*

If we look at the correlation between the Social and Economic Globalisation, then the value is nearly 0.8 which is high. So, rise in Social Globalisation is nullified by reduction in Economic Globalisation and hence a very little impact on fall in Gini- Coefficient.

Moreover, we can say that, Globalisation index is more in developed countries, and in these countries (especially in Europe) inequality is very less. So, while calculating the correlation coefficient, in a Global scale, we are finding there is negative relation Globalisation and Gini-Coefficient, or Increase in Globalisation is reducing Inequality.

But when we take regional aspect into consideration, we find it is contradicting the result found in South America and Africa, where, Globalisation index is moderate and high Gini Coefficient or Inequality.

So, we can say Highly Globalised country have little income inequality, but moderately Globalised country have greater inequality.

Even, African countries which has same Globalisation index as that of Asian countries have greater Inequality.

Globalisation is causing more inequality in under-developed countries than in developing nations.

Future scope of Work:

1. Since Globalisation index was getting static during 2005-2015, and showed sudden jump during 1980-90 phase, taking a logarithmic scale approach could give better results.
2. We need to add technology as a aspect of Globalisation and interpret it as another dimension.
3. Instead of taking Global picture into account we should concentrate more in cluster and regional pattern. Dividing countries amongst continents and then studying this could give better results.
4. We can include Palma Ratio, Interdecile P50/P10, P90/P50, S80/S20 quintile share to estimate inequality instead of considering Gini-coefficient only

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11. Income Inequality Data-Base:
https://www.indexmundi.com/facts/indicators/SI.POV.GINI/compare#country=au:in:ru

Appendix-1:

2015 KOF Index of Globalization

Indices and Variables	Weights
A. Economic Globalization	**[36%]**
i) Actual Flows	(50%)
Trade (percent of GDP)	(22%)
Foreign Direct Investment, stocks (percent of GDP)	(27%)
Portfolio Investment (percent of GDP)	(24%)
Income Payments to Foreign Nationals (percent of GDP)	(27%)
ii) Restrictions	(50%)
Hidden Import Barriers	(24%)
Mean Tariff Rate	(28%)
Taxes on International Trade (percent of current revenue)	(26%)
Capital Account Restrictions	(23%)
B. Social Globalization	**[38%]**
i) Data on Personal Contact	(33%)
Telephone Traffic	(25%)
Transfers (percent of GDP)	(3%)
International Tourism	(26%)
Foreign Population (percent of total population)	(21%)
International letters (per capita)	(25%)
ii) Data on Information Flows	(35%)
Internet Users (per 1000 people)	(36%)
Television (per 1000 people)	(38%)
Trade in Newspapers (percent of GDP)	(26%)
iii) Data on Cultural Proximity	(32%)
Number of McDonald's Restaurants (per capita)	(44%)
Number of Ikea (per capita)	(44%)
Trade in books (percent of GDP)	(11%)
C. Political Globalization	**[26%]**
Embassies in Country	(25%)
Membership in International Organizations	(27%)
Participation in U.N. Security Council Missions	(22%)
International Treaties	(26%)

Source:

Dreher, Axel, 2006, Does Globalization Affect Growth?
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