ANALYSIS
ON
INCOME INEQUALITY

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INTRODUCTION

This analysis investigates income inequality around the globe and further breakdown of income disparity among world regions. According to global standard, income inequality is reported as Gini coefficient, which indicates disparity in distributions. Further to the analysis, the group also looked at how economic growth has impacted inequality and further investigated whether there is a correlation between the income share distribution of various groups and the reported Gini coefficient.

KEY PARAMETERS

- Gini Coefficient – Measured from 1 – 100. Higher Gini coefficient means higher income inequality in a country and vice versa
- Gross domestic product (GDP) – used in this analysis as a proxy for wealth of a country
- Resource Share - % share of national resources (income, consumption earnings etc) for various population distributions (deciles: 1-10, quintiles: 1-5, top 5, bottom5) e.g. d10 represents the richest 10% of the population and q5 the richest 20%

DATA SOURCES

The data source for inequality was extracted from the World Income Inequality Database (WIID) from the United Nations University World Institute of Development and Economic Research (UNU-WIDER).

https://www.wider.unu.edu/project/wiid-%E2%80%93-world-income-inequality-database

The WIID data is collected from various sources including the national statistical authorities. Luxembourg Income Study (LIS) is by far the highest quality comprehensive data source with wider coverage of all geographic regions. Since this data is reported by a statistical analysis body of each country or a research study at various inconsistent intervals some parts of our analysis supplemented GDP data from the World Bank GDP database.

https://data.worldbank.org/indicator/NY.GDP.MKTP.CD

The Gini coefficient has been reported through different studies over time. Different surveys may employ different methods of calculating household income and the reported Gini coefficients resulting in inconsistencies in the measurement standard. Our analysis has considered all studies despite their differences in calculation and have selected the highest quality of data available for each country in any given year. The data was filtered to reduce any biases and the team prioritized reported observations by ranking them based on the data quality scores and prevalence of data attributes.

ANALYSIS

KEY CHALLENGES

The key challenges for the dataset were:

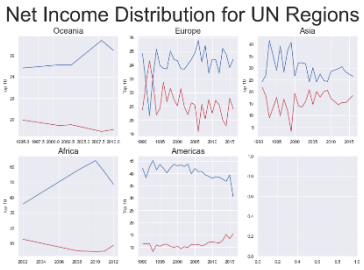
For a country in a particular year, it was observed that there were multiple data points as different studies (sources) would have reported different Gini coefficients. Therefore, sources were ranked, and highest quality data points were kept, and the rest were not used in our analysis. To prepare the data to eliminate any biases, filters were used on various fields. When considering Gini reported, the team ensured that the surveys covered entire population and all areas of the country.

The temporal distribution of many countries is not uniform, therefore, we had to select years that had a 50 or more countries reporting data and further classified the data into five-year bins so that each bin would have at least 100 countries represented. Furthermore, missing GDP data was supplemented from the World Bank GDP database to minimize data gaps.

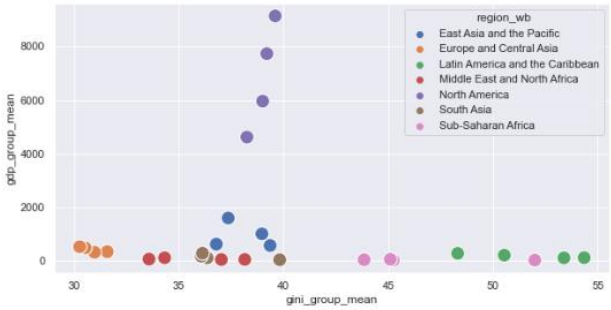
When studying the resource types such as net income, gross income and earnings as well as equivalence scale i.e. per capita vs equivalized distribution, the team discovered that many data points were not reported for all countries each year and there were not enough records to analyze. Therefore, the detailed analysis of income distribution has been limited to per capita net and gross income distributions.

TREND ANALYSIS

The analysis aimed to glean insights on 3 aspects of income inequality.



Income of top 10% with bottom 40% of population in various nations across the world – This analysis compared net income of top 10% income earners vs bottom 40% income earners. All regions had unbalanced distributions of income with the bottom 40% receiving close to 5% at some points. However, the income trend especially after 2013 is that income distribution for the top 10% is decreasing except for North America where the top 10% population is increasing their income and the bottom 40% is decreasing.



Global wealth distribution over time and its correlation with income inequality – Global wealth distribution analysis overtime includes grouping data in 5-year bins and taking the median of the Gini coefficient and GDP. Regionally, the Gini is improving as the economy grows. However, North America showed a worsening Gini, indicating increasing income disparity with economic growth. Other regions are exhibit strong and weak correlation of Gini improving (reduced income disparity) with the GDP growth.

Region	Correlation
Latin America and the Caribbean	-0.983
Europe and Central Asia	-0.859
South Asia	-0.758
Middle East and North Africa	-0.617
Sub-Saharan Africa	-0.392
East Asia and the Pacific	-0.271
North America	0.957

region_un_sub	region_un	gini_reported	gini_reported_region	diff_from_region
Eastern Africa	Africa	34.65	65.55	-30.90
Northern Africa	Africa	52.60	65.55	-12.95
Southern Africa	Africa	65.90	65.55	0.35
Caribbean	Americas	54.70	48.00	6.70
Central America	Americas	48.40	48.00	0.40
Northern America	Americas	33.80	48.00	-14.20
South America	Americas	48.50	48.00	0.50
Central Asia	Asia	39.70	34.60	5.10
Eastern Asia	Asia	33.00	34.60	-1.60
South-eastern Asia	Asia	39.00	34.60	4.40
Southern Asia	Asia	50.30	34.60	15.70
Western Asia	Asia	39.10	34.60	4.50
Eastern Europe	Europe	28.25	29.50	-1.25
Northern Europe	Europe	29.55	29.50	0.05
Southern Europe	Europe	33.10	29.50	3.60
Western Europe	Europe	28.70	29.50	-0.80
Australia and New Zealand	Oceania	33.30	33.30	0.00

region_un_sub	region_un	gini_reported	gini_reported_region	diff_from_region
Eastern Africa	Africa	42.600	41.785	0.815
Middle Africa	Africa	42.410	41.785	0.625
Northern Africa	Africa	33.000	41.785	-8.785
Southern Africa	Africa	59.385	41.785	17.600
Western Africa	Africa	40.880	41.785	-0.905
Caribbean	Americas	37.860	38.030	-0.170
Central America	Americas	45.360	38.030	7.330
Northern America	Americas	28.700	38.030	-9.330
South America	Americas	53.000	38.030	14.970
Central Asia	Asia	28.800	35.780	-6.980
Eastern Asia	Asia	35.820	35.780	0.040
South-eastern Asia	Asia	37.000	35.780	1.220
Southern Asia	Asia	36.390	35.780	0.610
Western Asia	Asia	36.900	35.780	1.120
Eastern Europe	Europe	28.765	29.730	-0.965
Northern Europe	Europe	35.935	29.730	6.205
Southern Europe	Europe	30.040	29.730	0.310
Melanesia	Oceania	37.630	39.140	-1.510
Micronesia	Oceania	40.060	39.140	0.920
Polynesia	Oceania	39.140	39.140	0.000

Income inequality by geographical region – The analysis compared sub regions within each region to get an overview of the variation of income inequality within each region by taking a median of the past decade. The sub regions within African regions showed the largest variation of income inequality in comparison to each other.

To the left is income inequality based on income and to the right is based on consumption

CONCLUSION

Income of top 10% with bottom 40% population in various nations across the world

- In Asia and Europe, Income distribution gap between the Top 10% vs Bottom 40% is closing. However, America, Africa and Oceania region income inequality has become more obvious and is increasing.

Global wealth distribution over time and its correlation with income inequality

- The income distribution is improving in many regions of the world with increasing wealth. However, North America region is further worsening despite a significant economic growth

Income inequality by geographical region

- African subregions are showing the largest range of income inequality when compared to each other while subregions Europe and Oceania are showing the smallest ranges of income inequality.