

Income Inequality and Globalization: A New Perspective with Respect to Ethnic and Religious Diversification

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ABSTRACT: Globalization impact on income inequality remains in debates since the advantages of liberalization had been realized by the world over mercantilism. The current study focuses on how globalization has impacted nation's income inequality which are ethically and religiously homogeneous versus heterogeneous. The study examines relationships by using the data of 48 countries for the period of (1990-2022). The countries have been bifurcated in two groups; one with high ethnic and religious diversification and other with low. Driscoll-Kraay standard errors linear regression model was applied to examine the relationship. Our research disclosed unconventional findings; KOF-globalization positively influences the Gini-inequality in homogeneous countries but in heterogeneous nations the relationship is inverse. Secondly, HDI and GDP per capita shows mere impacts as compared to Urbanization and Governance quality driving the inequality in real terms. Conclusively, higher ethnic-religious diversified nations look better off compared to less diversified nations in handling impact of globalization on inequality. As policy recommendation we urge countries to frame their counter-inequality policies by giving due weight to social demography. It warrants further investigation to dig deeper into contrasting relationships between globalization and income inequality in backdrop of ethnic-religious diversification.

KEYWORDS: Inequality, Gini Coefficient, KOF Globalization, Ethnic, Religious

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Introduction

Income inequality remains one of the most pressing global challenges, with significant disparities persisting both between and within nations. According to the world inequality report by Chancel et al. (2022), the top 10% of the global population holds over 76% of the world's wealth, while the bottom 50% controls merely 2%. Within countries, the gap between the richest and poorest segments of society continues to widen, hurting the developing nations the most. The growing gulf of disparity among nations and within countries not only raised ethical nuisance but also triggered debates about its long-term economic and social implications (Muntaner et al., 2020). The adverse effects of income inequality extend beyond mere economic disparities. As (Ajide & Ibrahim, 2022) argues, inequality impact is not limited to unequal access to education, healthcare, and employment opportunities but also causing increase in the environmental issues in the world. It deteriorates public belief in institutions too, and triggers populist movement, fuels political instability in the countries.

As a matter of fact, inequality is consistently rising across the globe due to multiple influential factors introduced in the post-industrial revolution. Technology, innovation and automation favored higher skilled workers compared to low skilled workers, increasing income gap in 23 developed countries (Law et al., 2020). Factors associated with demography of a country like urbanization, aging populations and intracity migrations, have aggregated disparities in income distribution in China (Zhan et al., 2021). Furthermore, governance quality, De-facto and De-jure power disparity fuels corruption and weakens law enforcement results in income disparity in African nations (Kunawotor et al., 2020).

Although trade integration and globalization offered opportunities of prosperity but also fueled disparity as its biproduct. For instance globalization has facilitated economic growth, technological spillover, and employment but on sidelines it has widened income gaps and regional inequalities (Jahanger et al., 2022). Especially in developed nations the lifting trade barriers has intensified the socioeconomic disparity among different strata of society. Conversely, in developing nations, trade integration has shown mixed results, in some parts of the world it alleviated poverty, in others elevated inequality (Dorn et al., 2022).

In response, nations came up with various innovative trade reforms to limit the adverse effects of income inequality. Policies such as trade liberalization, normalizing tariffs, and digital financial systems were raised to support inclusive growth (Biswas et al., 2017). Besides the individual efforts, at global stage one of the task of Sustainable Development Goals (SDGs) is to reduce inequalities through fair trade practices (Apel, 2020). Somehow, the effectiveness of these measures has been remains in shadows. While some nations scored the bronze medal and some got the commemorative, but no one won the gold in reducing inequality. There are several reasons behind the low success rate but major factors includes the weak institutional frameworks and uneven policy implementation (Atkinson, 2013).

These complexities necessitate to evaluate impact of globalization on income inequality from a different lens. Domestic composition normally overlooked by Conventional approaches, which give more weight to economic factors like GDP per capita, unemployment rate etc. Peoples' ethnic and religious affiliations can influence how globalization affects inequality in the region. Diverse societies may experience varying outcomes due to differences in institutional quality, labor market segmentation, and social cohesion.

Researchers experienced that the ethnic and religious diversification do play a role in composing income distribution within countries. Studies by , (Naveed & Wang, 2018) and (Madni, 2019) have suggest that highly diverse nations struggle with balancing resource distribution, which could exacerbate the effects of globalization on inequality. Limited research has been conducted on exploring the role of demographic factors in altering the impact of globalization on inequality. In absence of such study, it will be difficult to understand another dimension inequality with respect of globalization and make it even harder to develop appropriate policies that can encounter inequalities in nation.

The study will make contributions to literature by examining the subtle relationship between globalization and income inequality with backdrop of a clear demarcation of role of ethnic and religious diversification. The objective of the study is to provide new perspectives on how nations can utilize their ethnic and religious diversification as strength to neutralize the impact of globalization on income distribution for better outcome.

To address the econometric issue, this study employs Driscoll-Kraay Standard Errors (DKSE) which helps to counter cross-sectional dependence, heteroskedasticity, and autocorrelation in data, ensuring robust results. The DKSE is versatile regression tool to provides reliable estimates for both balanced and unbalanced panel data, and widely used in panel data analysis (Driscoll & Kraay, 1998). This approach strengthens the study's findings by mitigating biases from violated standard assumptions.

Literature Review

Literature is full of establishing relationships of globalization on income inequality and multiple factors were accounted in analysis to find the answer to question what factors influence the imbalance distribution of wealth within and among countries. These multiple factors identified in literature mainly belong to variables that indicate the wealth and income generated by any economy. With market openness, automation and interconnectivity between nations given rise to intercontinental trades which was also preached by prominent scholars in their well carved trade theories.

Globalization and Inequality

Economic theories focused on trade integration and income inequality highlight how globalization has played crucial part in shaping the income distribution globally. The Heckscher-Ohlin (HO) theory and Stolper-Samuelson (SS) theorem suggest that trade benefits the labor-abundant countries but impairs income gaps in capital-abundant nations (Deardorff, 1994; Ikechukwu et al., 2022; Leamer, 1995).

Globalization's influence on income inequality remains a prominent yet complex issue in economic research. Numerous studies have explored this relationship, yielding mixed conclusions about the extent and nature of its impact. Rudra (2004) analyzed the impact of government expenditures and trade openness on income distribution in developed and underdeveloped countries (UDCs), finding that trade openness increases the inequality in UDCs and government expenditures improves the income distribution in developed countries. Similarly, Silva et al. (2004) studied trade dynamics, such as making import expensive and export cheaper has increase the inequality in United Sates. On a global scale, Felbermayr et al. (2005) established that trade positively correlates with per capita income but didn't found significant evidence that it helps to reduces inequality overall.

Studies have also explores the effect of regional trade and economic integration between neighboring countries in shaping inequality. Huh et al. (2021) showed that rising socio-economic integration among European countries is positively corelate with climbing Gini coefficient which can be translated as the economic jelling can fuel disparity. Munir et al. (2020) confirmed the phenomenon of resource curse by demonstrating how trade openness with industrialized nations brings income inequality in developing countries, while wealth flow to developed economies helped them to manage income disparities. Moreover, Hartmann et al. (2020) reveal that variation in trade volumes significantly affect income distribution, although the magnitude of impact dependent on a country's income level.

Contrarily, in literature there are numerous researches which provide evidences that under certain condition globalization do has potential to reduce income disparity (Wade, 2020). For example, Villanthenkodath et al. (2023) found that although trade openness increases the inequality in peripheral nations but it reduces the inequality in semi-peripheral countries, which shows a positive role of trade

integration in reducing inequality. Similarly, Mallick et al. (2020) infer that exponential growth in trade by China and attracting foreign direct investment helped China to improve income distribution in country, it is aligned with the thought that globalization's effects are context-specific. Research by Huynh (2021) corroborates this narrative that trade openness, liberalization and institutional policies often support to reduce inequality in various scenarios.

The interrelationship between globalization, financial systems, and technology itself are the new entrants in this debate. Studies like Jaumotte et al. (2013) concluded that outward orientation reduces income disparities, while technological and financial globalization increase it. Cammeraat (2020) found that GDP growth and government expenditure support income equality in society, whereas financial integration has an opposite effect. Globalization is multidimensional in its nature and its impact on income inequalities heavily depends on how trade, institutional structure and socio-economic factors interact with each other in given situation.

The demographic factors' impact on globalization and inequality is seldom discussed in literature. For instance, Dorn et al. (2022) studied 139 countries and infer that trade openness have more profound effects on inequality on middle and lower middle income country as compared to higher income countries. Similarly, Munir and Sultan (2017) observed that factors like urbanization, remittances, and interest rates drive inequality in Pakistan. Khan et al. (2021) rather had explored a different aspect of trade integration and observed that trade integration does not help to reduce income inequality in the short run, but in the long run its results are encouraging which support improvement in income equality. This indicates that globalization interacts differently with various economic and social factors, such as governance quality, demographic trends, and trade structures.

Ethnic Religious Diversification and Inequality

Across the board researchers have examined economic integration, trade openness, inequalities and liberalization with the lens of economic indicators, but how demographic heterogeneity influences these relationships remains out of focus. This missing link is critical because diverse societies may experience globalization's impacts differently, given their unique socio-economic dynamics. Further deep digging is necessary to explore whether and how globalization exacerbates or mitigates inequality in countries with varying levels of ethnic and religious diversity

Research Gap

The ethnic and religious diversification historically played crucial role in socio-economic structure of the nations. Hence, it is critical to accept this reality and investigate how globalization influences income inequality in countries where social diversification is higher as compared to where it is lower, rather segregating them based on orthodox approach of GDP per capita like most researchers did in available literature.

This study contains two main objectives, 1) Does globalization impact income inequality, 2) How its impact differently on socially heterogeneous and homogeneous countries. The findings of study shall contribute to the literature by giving a new perspective that how nations welcome opportunities brought by globalization and what impact it creates on prevailing inequalities in the backdrop of demographic diversification.

Theoretical Background and Hypothesis

Hypotheses

Hypothesis is based on previous studies conducted on the relationship between globalization and income inequality. In general, most researchers have found globalization causes increase in the income inequality in developed nations and reduce the division among the people within developing countries (Dix-Carneiro et al., 2023; Hui et al., 2023). Our research is focused on finding how globalization drives income inequality in countries if grouped together based on low and high ethnic and religious diversification. Hence, our null hypothesis states that: There is similar impact of globalization on income inequality of Group-A and Group-B countries.

Data

Table 1 contains the list of 48 selected countries, which are filtered based on two criteria. Firstly, population is greater than 20 million as on 2023 and secondly data availability of our two main variables Gini (dependent variable) and KOF (independent variable), the first filter given us 62 countries and second shrink the list to 48 countries (UNdata, 2023).

Afterwards countries are divided into two groups, for segregation a Religion Ethnic Index (REI) is established which is based on combining weighted averages of “Ethnic Factorization” calculated by (Fearon, 2003) weighted at 70% and “Religious Affiliation” surveyed by (PRC, 2018) weighted at 30%, the calculated values of Religion Ethnic Index is given in Annexure 1. The 70/30 weightage allocation is based on rational of average number of ethnic groups (which are 7) versus average number of religion (which are 3) per country in the world (Factbook, 2022; Religion by Country, 2024). Countries are sorted by REI score in ascending order and divided into two equal groups. Group-A contains 24 countries with REI scores from 7.02 to 31.75 and Group-B contains 24 countries with REI scores from 31.82 to 48.19. The detailed REI is given in Table 13 (Appendix), and the list of selected counties is given in Table 1.

Table 1

List of Countries, N=48

S.No.	Countries – Group A	S.No.	Countries – Group B
1	Japan	25	Philippines
2	China	26	Turkey
3	S_Korea	27	Thailand
4	Vietnam	28	Uzbekistan
5	Australia	29	Mexico
6	Italy	30	Brazil
7	Germany	31	Pakistan
8	Poland	32	Syria
9	Sri_Lanka	33	Malaysia
10	France	34	Peru
11	Cameroon	35	Colombia
12	Egypt	36	Niger
13	Argentina	37	Kazakhstan
14	Bangladesh	38	Iran

S.No.	Countries – Group A	S.No.	Countries – Group B
15	UK	39	Malawi
16	Russia	40	Burkina_Faso
17	Uganda	41	Mozambique
18	Tanzania	42	Zambia
19	Spain	43	Mali
20	Ukraine	44	Indonesia
21	USA	45	Nigeria
22	Venezuela	46	India
23	Canada	47	S_Africa
24	Morocco	48	Kenya

Time span: Year 1990 to 2022, T=33

Figure 1
REI with respect to Index value

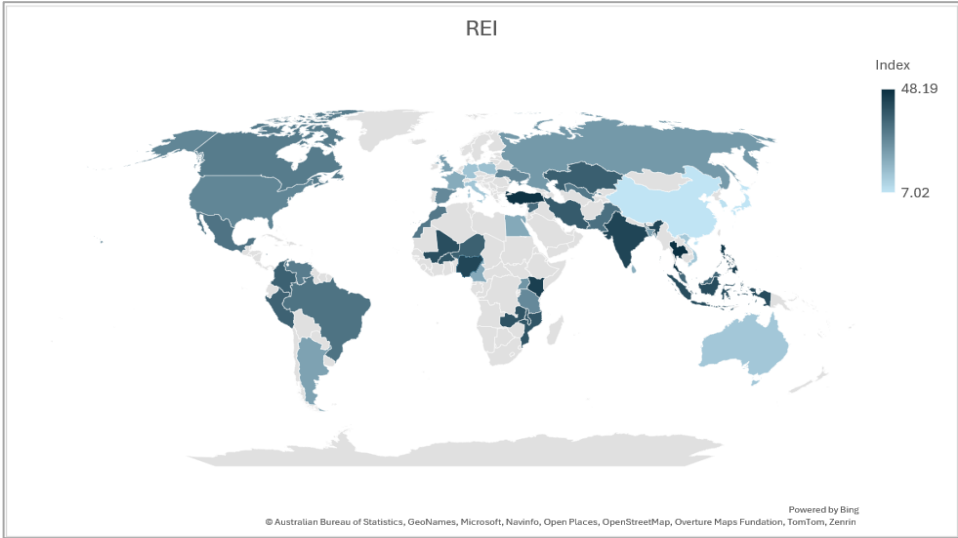


Figure 2
REI with respect to Grouping; A & B

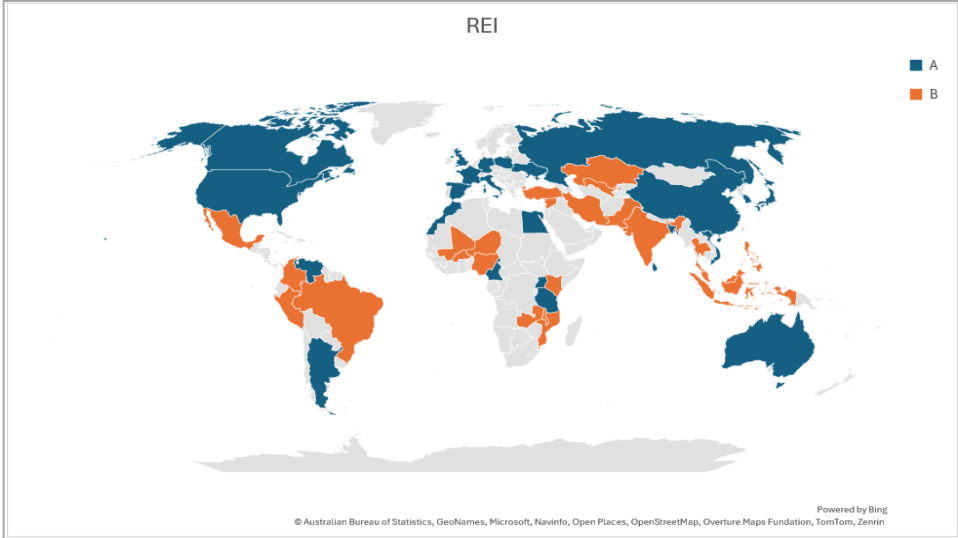


Table 2*Variables description and data sources*

Variable	Unit	Symbol	Source
Gini Coefficient – Income Inequality	Index	Gini	Our World in Data
KOF Globalization Index	Index	KOF	ETH Zurich
Human Development Index	Index	HDI	UNDP
Rate of Unemployment	%	UnEp	WorldBank
Urbanization	%	Urban	UNDP
World Governance Index	Index	WGI	WorldBank
Gross Domestic Product per Capita	USD	GPC	WorldBank

Data Featuring and Transformation

Table 2 contains the dependent, main independent and control variables and their sources from where data is obtained. The data is collected from various reputable organizations and processed using specific methodologies to ensure both accuracy and relevance. Here is a detailed explanation of how the data for each variable is sourced and transformed:

Gini Coefficient – Income Inequality (Gini)

Is calculated by Corrado Gini (1884–1965), it measures income inequality on the scale of 0 to 1 and it can also be used as index in percentage from 1 to 100%, higher the value higher shall be the inequality. The data is sourced from Our World in Data Hasell and Roser (2023).

KOF Globalization Index (KOF)

Is introduced by Dreher (2006) and being used to determine the openness to globalization of any nation, it is measured on the scale of 1 to 100 and being used as level of nations' exposure on the cultural, economic and political domains. The data is sourced from ETH Zurich online dataset (KOF Globalisation Index, 2023).

Human Development Index (HDI)

Is developed by Pakistani economist Mahbub-ul-Haq (1995), it measures the human wellbeing in the country on the basis Education, Health and Income. The index rank nations on the scale of 1-100, the higher the number higher is human wellbeing and development in the country. The data is sourced from United Nation Development Program database (UNDP, 2023).

Rate of Unemployment (UnEp), Urbanization (Urban) and GDP per capita (GPC)

Are percentage of unemployed persons in the country on average in the year, percentage of people living in the cities, and the productivity per person in USD, respectively. UnEp data is sourced from World Bank site and Urban data is sourced from United Nation Development Program, and GDP per capita data is sourced from World Bank database and transformed into log values by taking natural logarithm (UNDP, 2023; WorldBank, 2024).

World Governance Index (WGI)

Is established to measure the governance quality of the institutions of any country. For analysis purposes the average of 6 governance indicators has been taken, which ranges from min -2.02 to max 1.66 (Kraay, 2023).

It is sourced from World Bank database (WorldBank, [2022](#)).

Model Specification

To analyze the impact of globalization on income inequality following variables are selected:

- **Depended on Variable:** Gini Coefficient-Income Inequality (Gini)
- **Independent Variable:** KOF Globalization Index (KOF)
- **Control Variable:** Human Development Index (HDI), Rate of Unemployment (UnEp), Urbanization (Urban), Gross Domestic Product per capita (GPC), and World Governance Index (WGI)

All variables in linear regression form are given in equation 1.

$$Gini_{it} = \alpha + \beta_1 KOF_{it} + \beta_2 HDI_{it} + \beta_3 UnEp_{it} + \beta_4 Urban_{it} + \beta_5 WGI_{it} + \beta_6 \ln GPC_{it} + \varepsilon_{it} \quad (1)$$

In the above models, “ α ”, “ β ” “ ε ” are the constant, coefficient, and error terms respectively, where as “ t ” is the years and “ i ” is the countries.

Methodology

The step wise methodology is given in Table 3. The STATA software used to run these test and regression model.

Table 3

Econometrics and Methodology

S.No.	Method/Test Name	Description	Reference
1	Descriptive Statistics	Provides the insight of the data including mean, standard deviation, and normality test to further investigate protentional issues if any.	(Fisher & Marshall, 2009 ; Kaur et al., 2018)
2	Correlation Matrix	Provides the significance of correlation between each variable in linear regression model.	(Dziuban & Shirkey, 1974 ; Steiger, 1980)
3	Variance Influence Factor (VIF)	Provide the existence of multicollinearity in the model. VIF test the variance, covariance of the estimators as pairwise partial correlation coefficient increases.	(Daoud, 2017)
4	Friedman, and Breusch-Pagan LM	Detects the presence of Cross-Sectional Dependency (CSD) occurs due to shocks to one country affects the other countries in the panel too.	(Friedman, 1937) (Breusch & Pagan, 1980)
5	Cross-Sectionally augmented Im Pesaran (CIPS), and Covariat Augmented Dickey Fuiller (CADF)	Check for stationarity of variables in the model. If variables are non-stationary it may lead to biased or spurious regression.	(Pesaran, 2007) (Haldar & Sethi, 2023)
6	Westerlund	Identify existence of long run relationship (Cointegration) between depended and independent variables in the model.	(Westerlund & Edgerton, 2008)

S.No.	Method/Test Name	Description	Reference
7	White's Heteroskedasticity	Heteroskedasticity tells behavior of error term's variance, either constant or not and detect non-linear relationships which may lead to biased conclusion.	White (1980)
8	Wooldridge	Search for any serial autocorrelation among the variables in the model.	Wooldridge (2003)
9	Husman	The test determines which model is preferred between Fixed Effect or Random Effect.	Hausman (1978)
10	Model Selection: Panel Corrected Standard Error (PCSE), OR Generalized Least Square (GLS), OR Driscoll-Kraay standard errors (DKSE)	Based on the test results final appropriate regression model selected which can amicably address issues of CSD, Heteroskedastic, and Autocorrelation if found in the cross sectional data.	(Beck, 2001) (Bai et al., 2021).

Analysis and Findings

Analyzing summary statistics of variables is the first step which is followed by the multiple diagnostics test as mentioned in section 4.5, these test results helped to identify and filter the appropriate estimator for linear regression analysis. The summary statistics shown in Table 4.

Table 4

Descriptive Statistics; 1584 Observations per variable

Var	Mean	S.D	Min	Max	CoV	S-Wilk	S-Fran
Gini	39.49	7.47	23.30	63.60	0.19	0.000	0.000
KOF	58.46	15.35	23.00	89.46	0.26	0.000	0.000
HDI	66.17	17.69	4.30	95.10	0.27	0.000	0.000
lnGPC	8.05	1.57	4.57	11.26	0.20	0.000	0.000
UnEp	5.10	3.85	0.12	26.30	0.76	0.000	0.000
Urban	54.74	23.19	11.08	92.35	0.42	0.000	0.000
WGI	-0.14	0.82	-2.02	1.66	-5.76	0.000	0.000

The per normality tests (Shapiro-Wilk and Shapiro-Francia) reveal significant departures from normality for all variables, with p-values consistently at 0.000 (Ahmad, 2015). Unemployment rate shows high positive skewness and high kurtosis which hint presence of out layers. Following Table 5 presents the comparison of Group A (with low REI) and Group B (with high REI).

Table 5

Descriptive Statistic Comparison of Group A and B

Var.	Mean	SD	CoV	Skew	Kurtosis
Gini	35.84	5.79	0.16	0.29	2.01
KOF	64.84	15.58	0.24	-0.36	2.12
HDI	74.21	16.06	0.22	-0.73	2.46

Var.	Mean	SD	CoV	Skew	Kurtosis
LnGPC	8.71	1.67	0.19	-0.35	1.84
UnEp	5.65	3.60	0.64	1.36	5.81
Urban	61.78	23.59	0.38	-0.68	2.06
WGI	0.20	0.94	4.61	0.15	1.55
Group B					
Gini	43.14	7.19	0.17	0.45	3.51
KOF	52.08	12.15	0.23	0.01	2.45
HDI	58.14	15.47	0.27	-0.56	2.40
LnGPC	7.39	1.14	0.15	0.05	1.88
UnEp	4.54	4.02	0.89	1.87	7.61
Urban	47.69	20.51	0.43	0.10	1.89
WGI	-0.49	0.45	-0.93	-0.43	3.55

Mean value of Gini in Group A is lower than value in Group B rest all the variables; KOF, HDI, LnGPC, UnEp, Urban and WGI having higher mean values than Group B. Group A with lower religious and ethnic diversification having lower income inequality and Group B with higher REI having higher income inequality. Noticeably, Group A's Human Development Index and GDP per capital are also high which gives hint of mostly developed countries with low ethnic religious diversification having lower income inequality.

The variance-inflation factor (VIF) is the measure of the multicollinearity in the model and if its value falls between 0 to 10 then it is acceptable level, and multicollinearity is not a potential issue to address.

Table 6

Multicollinearity test (VIF)

Variable	All	Group A	Group B
LnGPC	13.53	14.32	9.23
HDI	8.93	11.88	6.45
Urban	4.5	4.3	4.3
KOF	3.97	4.22	3.75
WGI	2.83	3.46	1.53
UnEp	1.27	1.45	1.29
Mean VIF	5.84	6.6	4.42

In Table 6, the Mean VIF is 5.48, 6.6 and 4.42 for all data, Group A and Group B respectively, so we may infer that multicollinearity is nonexistent. The next is to check cross-sectional dependence (CSD), we employed two independent a) Friedman b) Breusch-Pagan LM, tests to check the presence of CSD in the models.

Table 7

Test statistic	Group A	Group B
Friedman Cross test for CSD	33.93**	77.35***
Breusch-Pagan LM Test for CSD	2505.85***	2767.73***

*, ** and *** Shows 10%, 5% and 1% significance level

The results are given in Table 7, both tests were significant at 1% significance level for both groups, hence null hypothesis (H_0) "No cross-sectional dependence" cannot be accepted and there is a presence of CSD among

the countries. We checked for the order of stationarity in the variables used in model, the CIPS and CADF unit-root tests is conducted, and the results are provided in Table-8.

Table 8

Unit Root Test – CIPS & CADF

Variables	CIPS I(1)	CADF I(1)
Gini	-3.136***	-3.2115***
KOF	-5.23***	-2.7339***
HDI	-4.558***	-2.0007***
lnGPC	-4.841***	-3.3322***
UnEp	-4.291***	-3.2188***
Urban	-1.265***	-1.3309***
WGI	-4.331***	-3.1686***

*, **, and *** indicate the 10%, 5% and 1% significant level respectively

As per results all variables in the study are stationary at first differencing I(1) within 1% significant level for both CIPS and CADF tests. To detect cointegration we use Westerlund (2007) test to analyze the existence of long-run association between variables as depicted in Table 9.

Table 9

Unit Root Test – CIPS & CADF

	All
Gt (Group-mean t-statistic)	-1.314
Ga (Group-mean a-statistic)	-2.199
Pt (Panel t-statistic)	-6.45
Pa (Panel a-statistic)	-1.476

The critical values of the cointegration test have p -values > 0.9 (that's why none of the critical values shown with *) which are far higher than the standard 0.05 p -value level implies that none of the critical value statistics are significant, hence there is no long-run association possibility detected variables.

Table 10

Heteroskedasticity and Autocorrelation Test

Test	Value
White's test for Heteroskedasticity:	643.12***
Wooldridge test for Autocorrelation:	671.31***

*** p -value < 0.01

Further, the other diagnostic tests results are presented in Table 10, in which the White's Heteroskedasticity test shows significant evidence of heteroskedasticity as the p -value is < 0.01 . The results of Wooldridge Autocorrelation test evident the presence of autocorrelation in error term with p -values < 0.01 . The preference between fixed effects and random effects models is determine through Hausman (1978) test.

Table 11

Diagnostic Test Result

Test statistic	Combine	Group A	Group B
Hausman Test	18.24***	62.72***	33.90***
*, ** and *** Shows 10%, 5% and 1% significance level			

All combined and group wise results favor the fixed effects model at 1% significance level as shown in the Table 11.

Finally, in the presence of CSD, Heteroskedasticity and Autocorrelation in panel data structure where N=48 and T=33 the best model suggested in literature to estimate Gini Coefficient is Driscoll-Kraay standard errors (DKSE) (Ozyilmaz et al., 2022).

Table 12

DKSE Estimation of Group A and B

VARIABLES	Group A	Group B	Combine
	Gini	Gini	Gini
KOF	0.118*** (0.0253)	-0.110** (0.0471)	-0.0142 (0.0338)
HDI	-0.0859 (0.0629)	0.0384 (0.0469)	-0.0158 (0.0426)
lnGPC	-0.420 (0.377)	-0.923** (0.341)	-0.623** (0.299)
UnEp	0.216*** (0.0382)	0.0962 (0.0595)	0.132** (0.0504)
Urban	0.0886** (0.0359)	-0.0595*** (0.0180)	-0.00255 (0.00992)
WGI	1.620*** (0.446)	1.836*** (0.455)	2.277*** (0.326)
Constant	31.36*** (2.014)	56.91*** (1.474)	46.33*** (1.514)
Observations	672	672	1,344
Countries	24	24	48
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1			

Findings

In Table 12, there are three regression results; namely Group-A, Group-B and Combine, showing results of Gini estimated using DKSE regression model.

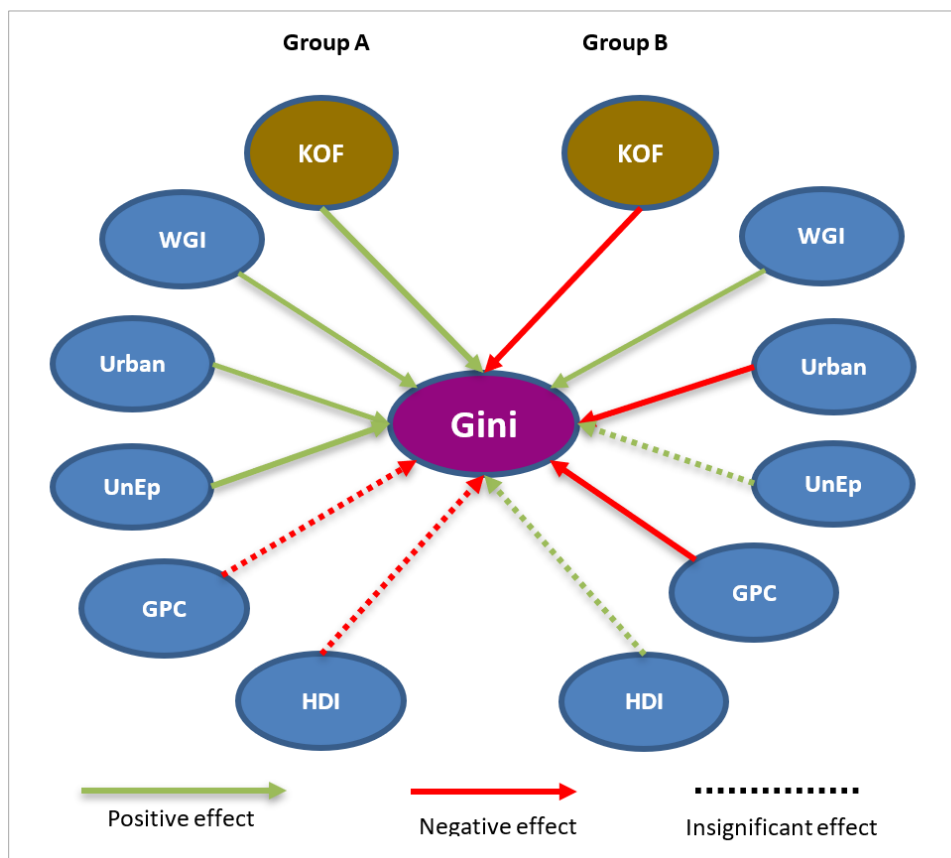
The countries of Group-A (low ethnic and religious diversification index); indicates a positive and significant relationship between the KOF globalization index and Gini, suggesting that increased globalization correlates with higher income inequality (coefficient = 0.118, $p < 0.01$). Whereas the Group-B (High ethnic and religious diversification index) shows a negative and significant relationship (coefficient = -0.110, $p < 0.05$), indicating that the impact of globalization on inequality may vary depending on the ethnic and religious association of the citizens of the countries involved in the economic activity. Furthermore, the urbanization variable shows

mixed effects: positively associated with Gini in the Group-A (coefficient = 0.0886, $p < 0.05$) but negatively in the Group-B (coefficient = -0.0595, $p < 0.01$), highlighting the nuanced role of urbanization in shaping inequality. Institutional quality (WGI) is consistently and significantly positive across both groups, suggesting that better governance may have a complex relationship with inequality, potentially through its influence on resource distribution and policy effectiveness. Lastly, regression results for combine where all countries are included, where mostly variable having insignificant results including our core variable of KOF, which further strengthen the idea of countries must be looked at for foreign impacts with respect to local demographic constituents.

The findings align with the broader literature on globalization and inequality, such as Yang et al. (2022), who argue that the impact of globalization on inequality depends on factors like institutional quality and economic context. The positive link between urbanization and inequality in the first model echoes the Kuznets hypothesis, which posits that early stages of urbanization and development can exacerbate inequality before redistributive mechanisms take effect (Jermisittiparsert, 2021). Additionally, the negative association of GDP per capita (lnGPC) with Gini in the Group-B supports the idea that Topuz (2022), as suggested by . These results clearly show how presence of ethnic groups, religious associates and overall high diversification within country can take globalization differently, and the role of HDI, GDP per capita and Unemployment also looks not convincing while defining the income inequality in the country if divided into two groups on the basis of demographic diversification.

Figure 3

Comparison Group-A and Group-B Relationship to Gini



Conclusion

This study examines the impact of globalization on income inequality, emphasizing the role of ethnic and religious diversification in moderating this relationship. The findings have rejected our null hypothesis that there is similar effect on globalization on both groups of countries bifurcated based on the ethnic and religious diversification. The countries with high diversification tend to exhibit positive effect of globalization on inequality, which means globalization causing increase in income inequality among people. Contrarily, globalization is causing decrease in income inequality in group of countries where ethnic and religious diversification is on higher side. This unique finding beefs up the thought that globalization tends to provide equal opportunities to the locals so that they can avail the economic benefits from unbiased source without the hinderance of other fellow citizens belongs to different ethnic or religious group. The positive impact of governance indicator on increasing the inequality in both group hint, how bureaucracy and political forces protect the well beings of their own supporters and associates. Urbanization exacerbates the inequality in homogeneous population, tends to moderate the uneven distribution of wealth among urban migrants. It is quite interesting to reveal that HDI did not play critical role in defining economic inequality in nations when looked at from social diversification perspective.

In nutshell, economic policies are implied to taper inequality, countries with lower ethnic diversity – diligently need to understand the dynamics of their demography and search for the root causes why their state is taking negative effects of opportunities offered by the trade and globalization. In our study both HDI and GDP per capita not convincing impacting the inequality but positive relationship of urbanization in homogeneous countries may urge researchers to investigate; will discouraging city migration helps in reduce income inequality? Secondly, as per our findings heterogeneous countries look better off compared to homogeneous countries in naturally controlling inequality due to their demographic composition.

References

- Ahmad, F., & Khan, R. A. (2015). A power comparison of various normality tests. *Pakistan Journal of Statistics and Operation Research*, 11(3), 331-345. <https://doi.org/10.18187/pjsor.v11i3.845>
- Ajide, K. B., & Ibrahim, R. L. (2022). Environmental impacts of income inequality: Evidence from G7 economies. *Environmental Science and Pollution Research*, 29(2), 1887-1908. <https://doi.org/10.1007/s11356-021-15720-6>
- Apel, H. (2020). Inequality in development: The 2030 Agenda, SDG 10 and the role of redistribution. *Real-World Econ. Rev*, 92, 228-237. <http://acdc2007.free.fr/whole92.pdf#page=228>
- Atkinson, A. (2013). Reducing income inequality in Europe. *IZA Journal of European Labor Studies*, 2(1), 12. <https://doi.org/10.1186/2193-9012-2-12>
- Bai, J., Choi, S. H., & Liao, Y. (2021). Feasible generalized least squares for panel data with cross-sectional and serial correlations. *Empirical Economics*, 60(1), 309-326. <https://doi.org/10.1007/s00181-020-01977-2>
- Beck, N. (2001). Time-series-cross-section data. *Statistica Neerlandica*, 55(2), 111-133. <https://doi.org/10.1111/1467-9574.00161>
- Biswas, S., Chakraborty, I., & Hai, R. (2017). Income inequality, tax policy, and economic growth*. *The Economic Journal*, 127(601), 688-727. <https://doi.org/10.1111/ecoj.12485>
- Breusch, T. S., & Pagan, A. R. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. *The Review of Economic Studies*, 47(1), 239-253. <https://doi.org/10.2307/2297111>
- Cammeraat, E. (2020). The relationship between different social expenditure schemes and poverty, inequality and economic growth. *International Social Security Review*, 73(2), 101-123. <https://doi.org/10.1111/issr.12236>
- Chancel, L., Piketty, T., Saez, E., & Zucman, G. (Eds.). (2022). *World inequality report 2022*. Harvard University Press.
- Daoud, J. I. (2017). Multicollinearity and regression analysis. *Journal of Physics: Conference Series*, 949, 012009. <https://doi.org/10.1088/1742-6596/949/1/012009>
- Deardorff, A. V. (1994). Overview of the Stolper-Samuelson theorem. *Deardorff and Stern, eds*, 7-34.
- Dix-Carneiro, R., & Traiberman, S. (2023). Globalization, trade imbalances and inequality. *Journal of Monetary Economics*, 133, 48-72. <https://doi.org/10.1016/j.jmoneco.2022.10.002>
- Dorn, F., Fuest, C., & Potrafke, N. (2022). Trade openness and income inequality: New empirical evidence. *Economic Inquiry*, 60(1), 202-223. <https://doi.org/10.1111/ecin.13018>
- Dreher, A. (2006). Does globalization affect growth? Evidence from a new index of globalization. *Applied Economics*, 38(10), 1091-1110. <https://doi.org/10.1080/00036840500392078>
- Driscoll, J. C., & Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of Economics and Statistics*, 80(4), 549-560. <https://doi.org/10.1162/003465398557825>
- Dziuban, C. D., & Shirkey, E. C. (1974). When is a correlation matrix appropriate for factor analysis? Some decision rules. *Psychological Bulletin*, 81(6), 358-361. <https://doi.org/10.1037/h0036316>
- Factbook, C. s. W. (2022). Field Listing-Ethnic groups. <https://www.cia.gov/the-world-factbook/about/archives/2022/field/ethnic-groups/>
- Fearon, J. D. (2003). Ethnic and cultural diversity by country. *Journal of Economic Growth*, 8(2), 195-222. <https://doi.org/10.1023/a:1024419522867>

- Felbermayr, G. J., & Licandro, O. (2005). The underestimated virtues of the two-sector AK model. *Topics in Macroeconomics*, 5(1). <https://doi.org/10.2202/1534-6005.1322>
- Fisher, M. J., & Marshall, A. P. (2009). Understanding descriptive statistics. *Australian Critical Care*, 22(2), 93-97. <https://doi.org/10.1016/j.aucc.2008.11.003>
- Friedman, M. (1937). The use of ranks to avoid the assumption of normality implicit in the analysis of variance. *Journal of the American Statistical Association*, 32(200), 675-701. <https://doi.org/10.1080/01621459.1937.10503522>
- Haldar, A., & Sethi, N. (2023). The effects of renewable energy, innovation, and governance on climate change and economic growth—Investigating the opportunities and challenges for emerging Asia. *Asian Economics Letters*, 4(2). <https://doi.org/10.46557/001c.73683>
- Hartmann, D., Bezerra, M., Lodolo, B., & Pinheiro, F. L. (2020). International trade, development traps, and the core-periphery structure of income inequality. *Economia*, 21(2), 255-278. <https://doi.org/10.1016/j.econ.2019.09.001>
- Hasell, J. (2023). Measuring inequality: what is the Gini coefficient?. *Our World in Data*. <https://ourworldindata.org/what-is-the-gini-coefficient>
- Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica*, 46(6), 1251. <https://doi.org/10.2307/1913827>
- Huh, H., & Park, C. (2021). A new index of globalisation: Measuring impacts of integration on economic growth and income inequality. *The World Economy*, 44(2), 409-443. <https://doi.org/10.1111/twec.12998>
- Hui, Y., & Bhaumik, A. (2023). Economic globalization and income inequality: A review. *Asia-Pacific Journal of Management and Technology*, 03(04), 01-09. <https://doi.org/10.46977/apjmt.2023.v03i04.001>
- Huynh, C. M. (2021). Foreign direct investment and income inequality: Does institutional quality matter? *The Journal of International Trade & Economic Development*, 30(8), 1231-1243. <https://doi.org/10.1080/09638199.2021.1942164>
- Ikechukwu, I. F., Fyनेface, P., & Anochie, C. (2022). Assessing The Concept of Heckscher Ohlin Model. *BW Academic Journal*, 7-7. <https://mail.bwjjournal.org/index.php/bsjournal/article/view/956>
- Jahanger, A., Usman, M., Murshed, M., Mahmood, H., & Balsalobre-Lorente, D. (2022). The linkages between natural resources, human capital, globalization, economic growth, financial development, and ecological footprint: The moderating role of technological innovations. *Resources Policy*, 76, 102569. <https://doi.org/10.1016/j.resourpol.2022.102569>
- Jaumotte, F., Lall, S., & Papageorgiou, C. (2013). Rising income inequality: Technology, or trade and financial globalization? *IMF Economic Review*, 61(2), 271-309. <https://doi.org/10.1057/imfer.2013.7>
- Jermisittiparsert, K. (2021). Does urbanization, industrialization, and income unequal distribution lead to environmental degradation? Fresh evidence from ASEAN. *International Journal of Economics and Finance Studies*, 13(2), 253-272.
- Kaur, P., Stoltzfus, J., & Yellapu, V. (2018). Descriptive statistics. *International Journal of Academic Medicine*, 4(1), 60. https://doi.org/10.4103/ijam.ijam_7_18
- Khan, M. A., Walmsley, T., & Mukhopadhyay, K. (2021). Trade liberalization and income inequality: The case for Pakistan. *Journal of Asian Economics*, 74, 101310. <https://doi.org/10.1016/j.asieco.2021.101310>
- KOF Globalisation Index. (2023). ETH Zurich. <https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html>

- Kraay, D. K. a. A. (2023). The Worldwide Governance Indicator.
- Kunawotor, M. E., Bokpin, G. A., & Barnor, C. (2020). Drivers of income inequality in Africa: Does institutional quality matter? *African Development Review*, 32(4), 718-729. <https://doi.org/10.1111/1467-8268.12473>
- Law, S. H., Naseem, N., Lau, W. T., & Trinugroho, I. (2020). Can innovation improve income inequality? Evidence from panel data. *Economic Systems*, 44(4), 100815. <https://doi.org/10.1016/j.ecosys.2020.100815>
- Leamer, E. E. (1995). The Heckscher-Ohlin model in theory and practice. In: *International Finance Section, Department of Economics, Princeton University*.
- Madni, G. R. (2019). Probing institutional quality through ethnic diversity, income inequality and public spending. *Social Indicators Research*, 142(2), 581-595. <https://doi.org/10.1007/s11205-018-1924-1>
- Mahbub-ul-Haq. (1995). *Reflections on human development*. oxford university Press.
- Mallick, H., Mahalik, M. K., & Padhan, H. (2020). Does globalization exacerbate income inequality in two largest emerging economies? The role of FDI and remittances inflows. *International Review of Economics*, 67(4), 443-480. <https://doi.org/10.1007/s12232-020-00350-0>
- Munir, K., & Sultan, M. (2017). Macroeconomic determinants of income inequality in India and Pakistan. *Theoretical & Applied Economics*, 24(4). https://www.ebsco.ectap.ro/Theoretical_&Applied_Economics_2017_Winter.pdf#page=109
- Munir, K., & Bukhari, M. (2020). Impact of globalization on income inequality in Asian emerging economies. *International Journal of Sociology and Social Policy*, 40(1/2), 44-57. <https://doi.org/10.1108/ijssp-08-2019-0167>
- Muntaner, C., Lynch, J., & Oates, G. L. (2020). The social class determinants of income inequality and social cohesion. *The Political Economy of Social Inequalities*, 367-399. <https://doi.org/10.4324/9781315231051-22>
- Naveed, A., & Wang, C. (2018). Can religion explain cross-country differences in inequality? A global perspective. *Social Choice and Welfare*, 50(3), 481-518. <https://doi.org/10.1007/s00355-017-1093-1>
- Ozyilmaz, A., Bayraktar, Y., Isik, E., Toprak, M., Olgun, M. F., Aydin, S., & Guloglu, T. (2022). The impact of refugees on income inequality in developing countries by using Quantile regression, ANN, fixed and random effect. *Sustainability*, 14(15), 9223. <https://doi.org/10.3390/su14159223>
- Pesaran, M. H. (2007). A simple panel unit root test in the presence of cross-section dependence. *Journal of Applied Econometrics*, 22(2), 265-312. <https://doi.org/10.1002/jae.951>
- PRC. (2018). The Age Gap in Religion Around the World.
- Religion by Country. (2024). World Population Review. <https://worldpopulationreview.com/country-rankings/religion-by-country>
- Rudra, N. (2004). Openness, welfare spending, and inequality in the developing world. *International Studies Quarterly*, 48(3), 683-709. <https://doi.org/10.1111/j.0020-8833.2004.00320.x>
- Silva, J. A., & Leichenko, R. M. (2004). Regional income inequality and international trade. *Economic Geography*, 80(3), 261-286. <https://doi.org/10.1111/j.1944-8287.2004.tb00235.x>
- Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin*, 87(2), 245-251. <https://doi.org/10.1037//0033-2909.87.2.245>
- Topuz, S. G. (2022). The relationship between income inequality and economic growth: Are transmission channels effective? *Social Indicators Research*, 162(3), 1177-1231. <https://doi.org/10.1007/s11205-022-02882-0>

- UNdata. (2023). Demographic Statistics Database <http://data.un.org/Explorer.aspx>
- UNDP. (2023). Human Development Index: Human Development Report <https://hdr.undp.org/data-center/documentation-and-downloads>
- Villanthenkodath, M. A., Pal, S., & Mahalik, M. K. (2023). Income inequality in globalization context: Evidence from global data. *Journal of the Knowledge Economy*, 15(1), 3872-3902. <https://doi.org/10.1007/s13132-023-01342-5>
- Wade, R. H. (2020). Is globalization reducing poverty and inequality? In *Neoliberalism, Globalization, and Inequalities* (pp. 143-176). Routledge.
- Westerlund, J. (2007). Testing for error correction in panel data. *Oxford Bulletin of Economics and Statistics*, 69(6), 709-748. <https://doi.org/10.1111/j.1468-0084.2007.00477.x>
- Westerlund, J., & Edgerton, D. L. (2008). A simple test for Cointegration in dependent panels with structural breaks. *Oxford Bulletin of Economics and Statistics*, 70(5), 665-704. <https://doi.org/10.1111/j.1468-0084.2008.00513.x>
- White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for Heteroskedasticity. *Econometrica*, 48(4), 817. <https://doi.org/10.2307/1912934>
- Wooldridge, J. M. (2003). Diagnostic testing. *A Companion to Theoretical Econometrics*, 180-200. <https://doi.org/10.1002/9780470996249.ch10>
- World Bank. (2015). *World Development Indicators* | DataBank. Worldbank.org. <https://databank.worldbank.org/indicator/NY.GDP.PCAP.CD/1ff4a498/Popular-Indicators>
- WorldBank. (2022). The Worldwide Governance Indicator.
- Yang, B., Ali, M., Hashmi, S. H., & Jahanger, A. (2022). Do income inequality and institutional quality affect CO2 emissions in developing economies? *Environmental Science and Pollution Research*, 29(28), 42720-42741. <https://doi.org/10.1007/s11356-021-18278-5>
- Zhan, P., Ma, X., & Li, S. (2021). Migration, population aging, and income inequality in China. *Journal of Asian Economics*, 76, 101351. <https://doi.org/10.1016/j.asieco.2021.101351>

Appendix

Table 13

Group A and Group B REI

<i>Group A</i>					<i>Group B</i>				
Sr.#	Countries	Ethnic	Religion	Index	Sr.#	Countries	Ethnic	Religion	Index
1	Japan	1	44	7.02	1	Philippines	48	99	31.82
2	China	15	13	7.33	2	Turkey	54	93	32.91
3	S_Korea	0	54	8.24	3	Thailand	55	92	33.03
4	Vietnam	23	36	13.55	4	Uzbekistan	53	100	33.62
5	Australia	15	57	13.75	5	Mexico	58	95	34.57
6	Italy	4	85	14.14	6	Brazil	60	99	35.70
7	Germany	9	76	14.72	7	Pakistan	64	96	36.73
8	Poland	5	93	15.60	8	Syria	66	94	37.06
9	Sri_Lanka	43	30	19.50	9	Malaysia	64	99	37.14
10	France	27	72	20.32	10	Peru	66	95	37.50
11	Cameroon	16	100	20.63	11	Colombia	67	100	38.41
12	Egypt	16	100	20.73	12	Niger	83	70	39.51
13	Argentina	25	89	22.27	13	Kazakhstan	70	100	39.63
14	Bangladesh	22	100	22.82	14	Iran	77	87	39.83
15	UK	32	77	22.91	15	Malawi	73	99	40.25
16	Russia	33	85	24.40	16	Burkina_Faso	75	100	41.40
17	Uganda	30	99	25.30	17	Mozambique	77	100	41.80
18	Tanzania	43	85	27.85	18	Zambia	80	100	43.17
19	Spain	50	70	28.08	19	Mali	81	100	43.38
20	Ukraine	42	93	28.60	20	Indonesia	88	93	44.74
21	USA	49	77	28.73	21	Nigeria	85	100	44.82
22	Venezuela	48	93	30.86	22	India	89	98	45.73
23	Canada	60	67	30.92	23	S_Africa	93	100	47.54
24	Morocco	48	100	31.75	24	Kenya	95	99	48.19

Table 14

Correlation Matrix

	Gini	KOF	HDI	InGPC	UnEp	Urban	GI
Gini	1						
KOF	-0.382***	1					
HDI	-0.431***	0.828***	1				
InGPC	-0.395***	0.826***	0.925***	1			
UnEp	0.0781**	0.301***	0.339***	0.327***	1		
Urban	-0.287***	0.682***	0.825***	0.848***	0.431***	1	
WGI	-0.315***	0.696***	0.663***	0.756***	0.194***	0.520***	1

*, **, and *** indicate the 5%, 1% and 0.1% significant level respectively