المجلة الأردنية في القانون والعلوم السياسية

اسم المقال: تأثير الديمقراطية على عدم المساواة في الدخل باستخدام مؤشر جيني
اسم الكاتب: أحمد عبد القادر المجالي
رابط ثابت: https://political-encyclopedia.org/index.php/library/8225
تاريخ الاسترداد: 2026/11/02 07:36 +03

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The Effect of Democracy and Income Inequality (Gini Index)

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Received:18/01/2023
Revised:06/08/2023
Accepted:08/08/2023
Published:30/12/2023

DOI:

https://doi.org/10.35682/jjlps.v15i4.501

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Abstract:

This article tests the potential impact of Democracy level on income inequality using static panel data analysis for a sampling of 114 countries during the period 2010-2021. Furthermore, the Global State of Democracy Indices represents democracy (DOM), and the Gini index (GINI) represents income inequality. Panel Unit Root Tests showed that all variables are stationary at the level, and the CD test indicated no cross-sectional dependency. Also, the Hausman Test supported a fixed effects model. The estimation result showed a significant negative relationship between the Gini index and the Democracy index (an increase in one basis point of DOM corresponds to a decrease of GINI by 0.487 basis points (decreasing the income inequality).

Keywords: Income Inequality, Democracy, Gini Index, Global State of Democracy Indices.

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تأثير الديمقراطية على عدم المساواة في الدخل باستخدام مؤشر جيني

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الملخص

يختبر هذا البحث التأثير المحتمل لمستوى الديمقراطية على عدم المساواة في الدخل باستخدام تحليل البيانات المقطعية الثابتة لعينة من 114 دولة خلال الفترة 2010–2021. تم استخدام مؤشر حالة الديمقراطية العالمية (Global State of Democracy Indices) للتعبير عن مستوى الديمقراطية في البلد، ومؤشر جيني (GINI) للتعبير عن عدم المساواة في الدخل. وقد أظهر اختبار جذر الوحدة للبيانات المقطعية أن جميع المتغيرات ساكنة عند المستوى، وأشار اختبار استقرارية النموذج (CD TEST) إلى عدم وجود تبعية مقطعية. وقد دعم اختبار هوسمن نموذج التأثيرات الثابتة. وأظهرت نتيجة التقدير أن هنالك تأثيراً سالبا معنوياً للديمقراطية على عدم المساواة في الدخل حيث إن الزيادة في مستوى الديموقراطية بمقدار نقطة أساس واحدة يؤدي إلى خفض عدم المساواة والمتمثل بمؤشر جيني بمقدار 0.487 نقطة أساس.

الكلمات الدالة: عدم المساواة في الدخل، الديمقراطية، مؤشر جيني، مؤشرات الحالة العالمية للديمقراطية.

تاريخ الاستلام:2023/01/18
تاريخ المراجعة: 2023/08/06
تاريخ موافقة النشر:2023/08/08
تاريخ النشر:2023/12/30

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جميع الحقوق محفوظة، فلا يسمح بإعادة طباعة هذه المادة أو النقل منها أو تخزينها، سواء أكان ذلك عن طريق النسخ، أم التصوير، أم التسجيل، أم غيره، وبأية وسيلة كانت: إلكترونية، أو ميكانيكية، إلا بإذن خطي من الناشر نفسه.

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1.1 Introduction

The influence of political factors on income distribution within an economy is widely recognized. One prevailing hypothesis posits that a more egalitarian distribution of political rights through political democracy should be associated with a fairer income distribution. This hypothesis has been extensively explored in the social sciences, with notable contributions from scholars like (Lipset, 1959), and (Meltzer & Richard, 1981).

Empirical research has diligently examined this hypothesis, attracting the attention of political scientists, economists, and sociologists, who have debated its validity. However, findings from cross-country regression analyses do not conclusively support a strong relationship between democracy and income inequality. Various studies have produced diverse results: while (Bollen & Jackman, 1985) failed to identify such a relationship, (Li, Squire, & Zou, 1998) found limited evidence of a negative association between democracy and inequality, whereas (Rodrik, 1999) provided evidence linking democracy to a higher share of wages in GDP, leading to reduced inequality. Moreover, (Nikoloski, 2015) highlights the importance of refining the measurement of democracy to gain valuable insights into its relationship with income inequality. (Lee C. , 2016) identifies a robust correlation between democracy, the public sector, and income inequality. Additionally, (Huang & Ho, 2018) put forward the idea that enhancing governance can help alleviate income disparity, particularly in emerging markets and developing countries, while (Park, 2019) argues that domestic political factors, such as government partisanship and party competitiveness, play a vital role in government efforts to address economic inequality.

In light of previous empirical studies, a research gap emerges concerning using a comprehensive indicator of democracy and its impact on income distribution equity.

1.2 The Importance of the Study

The importance of the study is that it illustrates the role that democracy plays in shaping economic outcomes. It also illustrates that promoting democracy may be an effective way to reduce income inequality. The study adds to the existing literature on the relationship between democracy and economic outcomes and provides insights for policymakers who seek to promote economic development and reduce inequality. Also, it is crucial to understand democracy for several reasons. First, democracy refers to the government's ongoing sensitivity to the wishes of its constituents, who are seen as political equals. One may argue that more political equality is desirable, even under autocracies since it gives the populace more power to influence policy. Despite not upholding procedural democracy, certain governments may serve the people's interests more effectively than other non-democracies. Thus, it is crucial in and of itself to research the factors that influence political equality. Second, it has been established that democracy has adverse effects, particularly on long-term economic growth. The rich can use their political influence to dominate economic

activity and hinder those less fortunate from rising in society, among other things, when political power is distributed unequally. In turn, this changes incentives in a negative way for growth.

1.3 Objectives of the Study

The objectives of this research include historical examples of how changes in democracy affected income inequality and present new results to assess in political economy. The study adopts a methodology based on panel data analysis for a sampling of 114 countries from 2010 to 2021 to evaluate the effectiveness of democratic systems in mitigating income disparities. Additionally, the research aims to offer evidence-based recommendations to policymakers on designing and implementing policies that foster social justice and equality within a democratic framework.

1.4 Research Problem

The research inquiry centers on comprehending the relationship between democratic governance and income inequality. It aims to address several questions, including: How do democratic institutions influence economic outcomes? What are the mechanisms through which democratic systems can alleviate income disparities? Can democratic systems effectively advance social justice and equality? The study questions: What is the relationship between political science and economics? Can advancing democracy help to lessen economic inequality?

1.5 Research Methodology

The study examines how democracy impacted the Gini index during 2010-2021 in 114 countries. The study sample was determined based on the availability of data and within the selected period in all the variables chosen in the model; the models can be summarized in (Lee C. , 2016), (Gradstein, Milanovic, & Ying, 2001), (Nikoloski, 2015) (Huang & Ho, 2018) as follow:

$$\boldsymbol{GINI_{it} = \alpha_i + \beta_{1i} DOM_{it} + \beta_{2i} GDPPC_{it} + \varepsilon_t \ \text{for i} = 1, \dots, N ; \ t = 1, \dots, T}$$

Where: GINI: Gini index, DOM: Global State of Democracy Indices, GDPPC: gross domestic product per capita “GDP per capita” (current US$) as a control variable, ε is the error term, i country, t time.

This study's suggested model addresses the following null hypothesis: The Democracy Indices have no statistically significant impact on income equality measured by the Gini index. This research section tested the hypothesis using panel data and estimated multiple panel regression to prove the assumptions made. The fixed-effects and random-effects models are the recommended approaches for this research. Furthermore, the Hausman test is performed to differentiate between the fixed-effects and random-effects models. The F-test (null hypothesis) decides between fixed and random effects. Panel data has been built for 2010-2021 on behalf of 114 countries.

The Fixed effect technique allows the intercept in the regression to fluctuate across space while maintaining the slope coefficient constant, which means that the fixed effect model is suitable in cases where each cross-sectional unit may have unique features, notably if an intercept specific to

one unit can be correlated with one or more independent variables. The Random effect model is an alternative to the Fixed effect model. The Random effect technique implies that an individual unit's intercept is a random element of a larger population with a constant mean value. So, the individual intercept may be expressed as its departure from the mean. The random effects model assumes based on the assumption that the individual-specific impact or variation among individuals is a random variable that is uncorrelated with the predictor/explanatory factors. (Greene, 2003) notes that "the choice between the two models is based on the correlation between unobserved effects and explanatory variables, not on whether these effects are stochastic. Hausman (1978) presents a testing process that generally compares one of the stable and consistent estimators, dismissing whether the null hypothesis is accurate against any other estimators (Lee & Okui, 2012). The fundamental concept behind this test is to demonstrate that without the Hausman test refuses the assumption that individual intercept (a_i) is uncorrelated with the independent variable (x_{itj}), we would prefer the random effects approach on the fixed effects method (Clark & Linzer, 2015). Failure to reject indicates that either the random-effects and fixed-effects estimates are so near that it makes no difference whether one is chosen or the sampling variance in the fixed-effects estimates is so high that variations are not statistically significant (Wooldridge, 2019). In other words, if the test fails to reject the null hypothesis, the Hausman test validates the Random effect estimates, but if the null is rejected, either the Fixed effect or pooled panel (no effects) must be chosen. Choosing the best model is mainly determined by the overall robustness of the model, the quality of the findings, and the importance of the variables of interest.

1.6 Limits of the Study

This study relies on existing data for panel data analysis, covering a specific period from 2010 to 2021 and encompassing a sample of 114 countries. However, it is essential to acknowledge that the data may have some limitations concerning its coverage, accuracy, and consistency across different countries. Furthermore, certain critical variables related to political science and economics might be unavailable or difficult to acquire.

1.7 Literature review

The impact of democracy on economic inequality has been the subject of previous research that yielded varying theoretical predictions and varied empirical data. However, by employing different key variables, most studies have demonstrated a significant relationship between them, particularly in democracy and income equality. (Muller, 1988) examination of the link between democracy and income inequality, which estimated the conclusion indicates a substantial adverse impact for a sample of 55 countries. They have identified an inverse relationship between income inequality and regime stability for 33 democracies. After accounting for income inequality, it is discovered that economic progress has no direct bearing on democratic stability. Also (Gradstein et al., 2001) used cross-country empirical analysis of 126 countries from 1960 to 1998 to assess the connection between Democracy and Income Inequality; they discovered that increased democratization appears to lead to lower inequality in Judeo-Christian societies but no influence in Muslim and Confucian cultures. They say that Muslim and Confucian cultures utilize informal transfers to accomplish the basic level of inequality, while Judeo-Christian groups use political activity since familial relationships are weak.

On the other hand (Reuveny, 2003) uses a Gini coefficient data set to calculate national income inequality. Trade flows, foreign direct investment inflows, and financial capital inflows indicate economic openness. The study covers 1960 to 1996, the analysis unit is a country decade, and 69 countries are included in the sample. The authors discover that democracy and trade reduce income inequality, whereas foreign direct investments raise it, and financial capital does not affect income inequality. Likewise (Shen & Yao, 2008) examined the relationship between village elections and income distribution using survey data from 48 villages in eight Chinese regions from 1986 to 2002. The within-village Gini coefficient was calculated by applying a fixed-effect panel data model. The result shows that holding elections lowers the Gini coefficient by 0.04, or 14.3% of the sample average. It was also shown that elections tend to boost the income fractions of the poorer sections of the population.

Furthermore (Nikoloski, 2015) investigated the prolonged- and short-/medium-term interactions between democracy and income inequality. He examined averaged and panel data from 1962 to 2006 and found no proof that democracy is linked to a more even distribution of wealth between developed and developing nations. He hypothesizes that the various transmission mechanisms, along with the nature and definition of the democracy variables (both Polity IV and Freedom House), influence his results, and the Improvement in the measurement of democracy could shed light on the relationship between democracy and inequality. Also (Lee C. , 2016) Based on panel data for 64 developing and developed countries and 341 observations from 1970 to 1994, the researcher tests how public sector size and democracy affect income inequality. The results show a strong relationship between democracy and the public sector and income inequality. In limited democracies, expanding the expansion of the public sector leads to worse distributional.

On the other hand, in full democracies, the larger public sector size results in better distributional outcomes because the democratic political mechanisms allow the state institutions to be more receptive to the demands of lower classes and more dedicated to achieving better distributional outcomes. Moreover, (Huang & Ho, 2018) examine the influence of governance quality (including democratic quality and technical quality) on income inequality in ten Asian nations categorized as "advanced economies" and "emerging market and developing economies" using panel data analysis spanning the 1996 to 2015 timeframe. The empirical findings demonstrate that in "emerging market and developing countries," the effects of democratic quality and technological quality on income inequality are markedly adverse. For the "advanced economies," however, the impacts of democratic quality and technological quality on income inequality are non-significantly positive and significant. These results suggest that improving governance helps reduce income disparity for "emerging markets and developing countries," but the impact may not benefit "advanced economies".

Furthermore (Park, 2019) analyzes how democracy, globalization, and its interplay have influenced economic inequality in developing countries. Analyze cross-country time series and perform a case study on South Korea. The quantitative research revealed that democracy is unrelated to income inequality, regardless of whether a binary or continuous measure of democracy is utilized. However, the Korean instance demonstrates that domestic political factors such as government partisanship and party competitiveness impact government efforts to minimize economic inequality, even when democracy or democratization may not always result in a more equitable society.

2. Study Variables

2.1 Democracy

Inequality has increased over the past three decades and has become a significant global problem. Incomes at the top of the distribution have increased. In contrast, those at the bottom have witnessed an actual income decline, which conflicts with Democratic ideology, which presupposes an autonomous, equitable, and free society. Also, according to political economics theories, democracy affects income inequality. So, this paper provides the most extensive empirical test of democracy differences caused by a lack of income inequality using panel data from 114 countries worldwide using variables that have not been considered in previous research, like the Global State of Democracy Indices by International IDEA and its effect on income inequality using the Gini parameter.

Democracies may be evaluated using several key metrics, one of which is the Global State of Democracy Index, which evaluates the performance of democracy in 173 nations worldwide. They aid in assessing and contrasting the effectiveness of democracy for decision-makers, analysts, academics, the press, and society at large. Figure 1 illustrates the framework concept, which includes five pillars (representative government, fundamental rights, participatory impartial administration, and government checks), and each is divided into 2-4 sub-pillars. Moreover, it compiled 116 unique indicators derived from 14 different data sources, the largest of which is the Varieties of Democracy data set. All scoring runs from 0 to 1, with 0 being the lowest and highest accomplishment in the overall sample. The Global State of Democracy Indices interactive website allows downloading national and regional scores, trend graphs, and country profiles (International IDEA, indices,2022)[1].

Figure.1: Conceptual Framework Global State of Democracy Indices

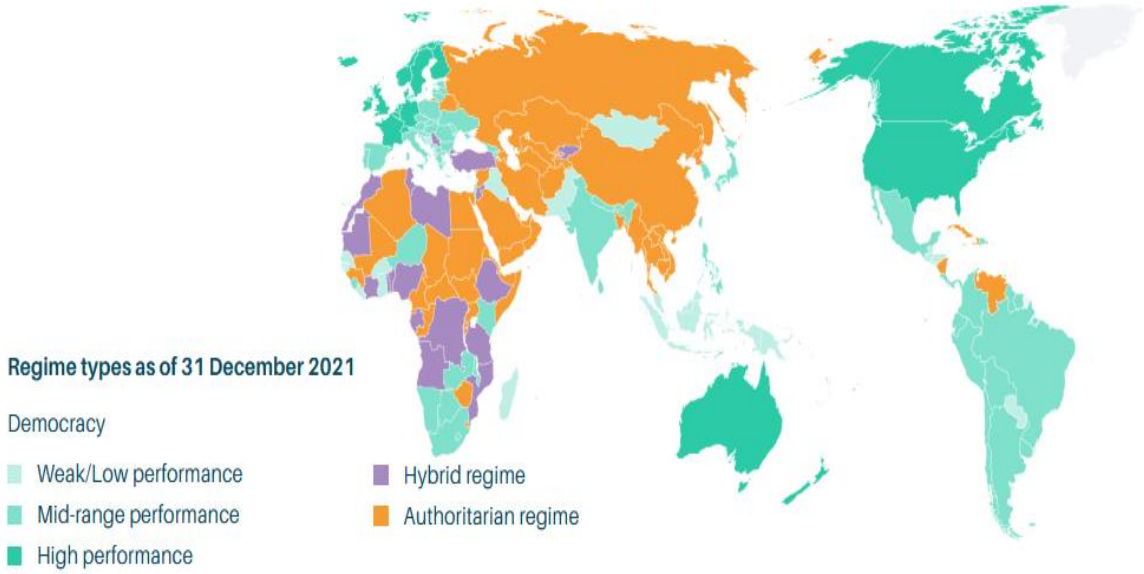


Source: International IDEA, 2022, www.idea.int.

[1] International IDEA, 2022, www.idea.int.

Figure 2 shows the distribution of countries according to the five categories, where 59 of 167 countries are classified as authoritarian regimes, 34 as Hybrid regimes, 53 as Flawed d, and 21 as Full Democracies.

Figure.2: The Global State of Democracy Indices: World Map



Source: International IDEA, 2022, The Global State of Democracy initiative.

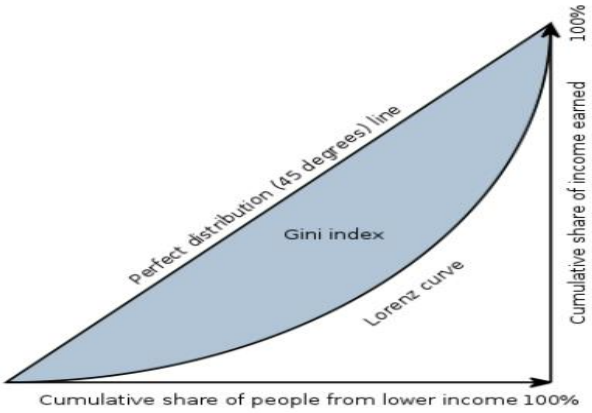
The Global State of Democracy initiative (idea. int), 2022.

2.2 Income Inequality (Gini Index

We utilized the Gini index to quantify how an economy's income distribution (or, in some instances, consumer spending) deviates from a fully equal distribution. Lorenz curve illustrates the cumulative percentages of total revenue received vs. the total number of recipients, beginning with the lowest person or family. The area between the Lorenz curve and a fictitious line of absolute equality is measured by the Gini index (Figure 3), a percentage of the most significant area under the line. As a result, a Gini index of zero (or total equality) and one hundred (or perfect inequality) (World Bank, data indicator, 2022)[2].

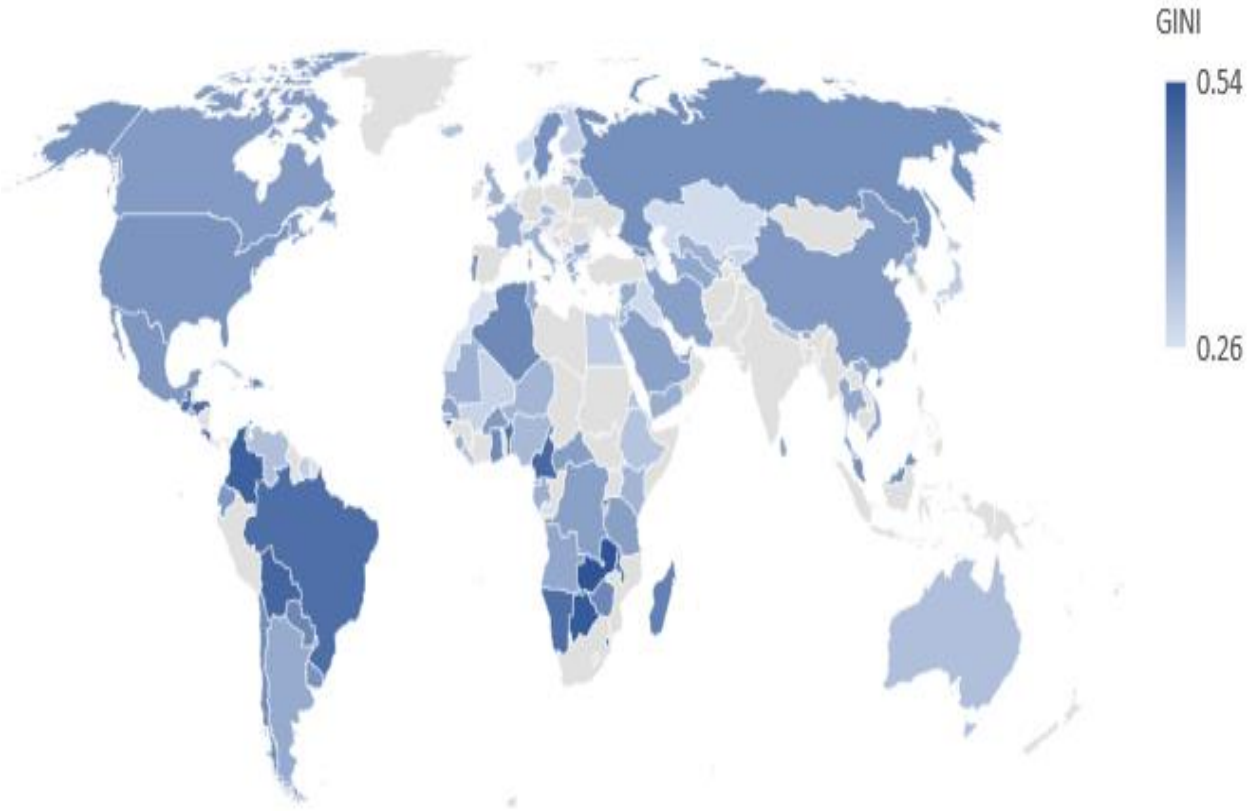
[2] : world bank, 2022, World Development Indicators, www.data.worldbank.org.

Figure.3: Lorenz curve



The average Gini index for the 114 countries included in the analysis is shown in Figure 4 for 2010 to 2021.

Figure.4: Gini index average (2010-2021)



Source: World Bank, 2022, World Development Indicators, www.data.worldbank.org.

3. Results

3.1 Descriptive Statistics

Table 1 summarizes the descriptive statistics for the sampled nation's dependent and independent variables. The average GINI is 0.376 basis points, with standard deviations of 0.083. We also found that the mean of the Global State of Democracy Indices (DOM) is 5.4 basis points, and the standard deviation is 2.2 basis points. In contrast, we found mean values of 14688.6 US dollars and standard deviations of 22936.9 US dollars for gross domestic product per capita (GDPPC).

Table.1: Descriptive Statistics

	GINI	DOM	GDPPC
Mean	0.376	5.412	14688.6
Median	0.368	5.575	5453.0
Maximum	1.066	9.930	189487.0
Minimum	0.000	1.130	224.0
Std. Dev.	0.083	2.188	22936.9
Skewness	0.359	0.063	3.52
Kurtosis	7.351	1.964	21.37

Where: GINI: Gini index, DOM: Global State of Democracy Indices, GDPPC: gross domestic product per capita GDP per capita (current US$).

3.2 Panel Unit Root Tests

Unit root tests are used to determine the stationarity of a time series. Stationarity exists in a time series when a change in time does not induce a change in the distribution; unit roots are one source of non-stationarity. As shown in Table 2, a panel unit root test (Pesaran's test) was employed to determine whether the variables utilized were stationary (Pesaran, 2007). Table 2 shows that all variables are stationary at the level, so the variable is used at its level without taking the deference.

Table.2: Unit Root Tests Result (Pesaran's Test)

	with intercept		with intercept and trend	
	Level	First deference	Level	First deference
GINI	-4.16***	-23.7***	-12.87***	-1.53*
DOM	-7.51***	-17.08***	-8.33***	-2.63**
GDPPC	-1.81**	-13.07***	-13.10***	-1.66**

Notes: * indicates statistical significance at the 10% level. ** indicates statistical significance at the 5% level, while *** indicates statistical significance at the 1% level. The Akaike information criterion determines the lag order.

3.3 Cross-Sectional Dependence Test and Hausman Test

While employing panel data, examining the time series cross-sectional dependency is essential. Ignoring this issue may result in biased and inconsistent estimators. We use the Pesaran (2004) cross-sectional dependency (CD) test to determine if panel data dependence exists for the models under discussion, with the null hypothesis being that there is no cross-sectional dependence (correlation) in residuals. According to (Pesaran et al., 2004), This test is a generic experiment applicable to a wide variety of balanced panel data analysis, including stationary and non-stationary dynamic heterogeneous panel data. We reject the null hypothesis of no cross-sectional dependency based on the CD test findings in Table 3.

Table 3. CD Test Results

CD Statistic	Probability
342.3	0.000 *

Notes: * indicates statistical significance at the 1% level.

The Hausman test determines whether the fixed or random effects models are appropriate for the panel. Table 4 demonstrates that the Chi-Square for the model is significant at all significance levels. We reject the null hypothesis of using a random model in support of a fixed effects model.

Table 4. Hausman Test (Cross-section random)

Chi-Sq. Statistic	Chi-Sq.d.f.	Probability
13.77	2	0.0010 ***

*** indicates significance at 1%.

3.4 The Model Estimation Results

There is a negative relationship between the Gini index and the Democracy index (an increase in one basis point of DOM corresponds to a decrease of GINI by 0.487 basis points and (a decrease in income inequality). This relationship is statistically significant at the 1% level, which is consistent with the result of (Gradstein, Milanovic, & Ying, 2001) (Houle, 2018) (Nikoloski, 2015). In addition, there is a negative relationship between GINI and GDPPC. This relationship is statistically significant at the 1% level.

The coefficient of determination (R2) for the model equals 0.79. that shows that independent variables explain 79% of the variation in Return on assets. The F test value is 100.4 and probability (0.000), so it can be said that there exists a relationship between DOM and GINI. The null hypothesis can be rejected here and shows the fitness of the model used in this study, which is the Fixed Effects Model. Furthermore, the Durbin-Watson Test, with a result of around 2, indicates no serial correlation issue in the estimation. Panel Cross-section Heteroskedasticity LR Test shows a probability of more than 5% to accept the null hypothesis of homoskedasticity. To check for the

Multicollinearity, we conduct a variance inflation factor (VIF), the value of the test less than 10%, which means no Multicollinearity in the estimate.

Table 8. The Estimated Results with Fixed Effects Model & Dependent Variable: GINI

Explanatory Variables	Coefficient	t-Statistic
DOM	-0.487	-7.2***
GDPPC	-0.020	-4.8***
c	36	25.1***
R-squared	0.79	
R^2-Adj	0.87	
F-Statistic	100.4***	
DW	1.99	
Panel Cross-section	Value	Probability
Heteroskedasticity LR Test	3.8	0.126
Multicollinearity Test VIF		
DOM	9.9	
GDPPC	9.9	

Note: *, **, and *** signify 10%, 5%, and 1% respectively.

4 Research Implications

This paper theoretically and empirically evaluates the impact of the relationship between democracy and income inequality, using static panel data analysis for a sampling of 114 countries during the period 2010-2021, and represents income equality by the Gini index and democracy by Global State of Democracy Indices represents democracy. Also, the paper ran the Unit Root Tests and found all variables are stationary at the level, and the CD test indicated no cross-sectional dependency. Also, the Hausman Test supported a fixed effects model. The negative relationship between the Gini index and the Democracy index (an increase in one basis point of DOM corresponds to a decrease of GINI by 0.487 basis points (a decrease in income inequality). The findings of this paper indicate that good democracy plays an essential role in improving income inequality and the domestic political institutions that affect redistributive outcomes.

The paper recommends that countries focus on raising democracy by enhancing participation and integration in local and parliamentary elections, enhancing transparency in public policy, and supporting party representation and partisan participation, which improves democracy in general. All of this improves the quality of economic decisions that contribute to the promotion of justice, and foremost among them is equitable income distribution.

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