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Research Article

Income Inequality and Economic Freedom: The 2000s¹

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Abstract

This study examines the relationship between income inequality and economic freedom by using two concepts developed in institutional economics, namely “extractive and inclusive institutions”. We argue that income inequality might be high both in countries with extractive institutions, where the level of economic freedom is low, and in countries with inclusive institutions, where the level of economic freedom is high. We propose a U-shaped relationship between income inequality and economic freedom. We use a panel data set containing 1415 country-year observations from 137 countries for the years from 2000 to 2018 to test our proposition. The results confirm our expectation that the relationship between income inequality and economic freedom is negative at low levels of economic freedom, but positive at high levels of economic freedom.

Keywords: Income Inequality, Economic Freedom, Equality, Gini Coefficient.

JEL Codes: O15, E02, P16, C33

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Araştırma Makalesi

Gelir Eşitsizliği ve Ekonomik Özgürlük: 2000’li Yıllar¹

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Öz

Bu çalışmada, Kurumsal İktisat alanında geliştirilen iki kavram olan “sömürücü ve kapsayıcı kurumlar” kullanılarak gelir eşitsizliği ve ekonomik özgürlük arasındaki ilişki incelenmektedir. Hem ekonomik özgürlük düzeyinin düşük olduğu sömürücü kurumlara sahip ülkelerde hem de ekonomik özgürlük düzeyinin yüksek olduğu kapsayıcı kurumlara sahip ülkelerde gelir eşitsizliğinin yüksek olabileceğinden hareketle gelir eşitsizliği ve ekonomik özgürlük arasındaki ilişkinin U-şeklinde olabileceği önerilmektedir. Bu öneriyi test etmek için 137 ülkeye ilişkin ve 2000-2018 yıllarını kapsayan 1415 ülke-yıl gözlemini içeren bir panel veri seti kullanılmıştır. Sonuçlar, gelir eşitsizliği ile ekonomik özgürlük arasındaki ilişki konusundaki öngörülerimizi doğrulamaktadır: Bu iki değişken arasındaki ilişki düşük ekonomik özgürlük seviyelerinde ters yönlü, yüksek ekonomik özgürlük seviyelerinde ise doğru yönlüdür.

Anahtar Kelimeler: Gelir Eşitsizliği, Ekonomik Özgürlük, Eşitlik, Gini Katsayısı.

JEL Kodlar: O15, E02, P16, C33

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1. Introduction

What is the relationship between income inequality and economic freedom across countries, and through time? Is it negative; that is, if the level of economic freedom increases in a country, should we expect a decrease in the level of income inequality in that country in the future? Or is it positive; that is, would an increase in the level of economic freedom of a country lead to a less egalitarian income distribution in that country? Or maybe it is much more complicated than a straightforward relationship. These are important questions that interest not only theoretical economists, but also economic policy makers. Answering these questions correctly and understanding the true nature of this relationship between income inequality and economic freedom may better prepare us for things that might face us when we implement policies that increase, or decrease, individual economic freedoms.

At first glance, this discussion on economic freedoms that individuals enjoy and the income inequality in the economy in which these individuals live may seem unnecessary. As in Mankiw (2020), in most introductory level economics textbooks, the trade-off between economic efficiency and economic equality is emphasized or at least mentioned. That people become more productive and industrious when they are free to use their own skills, energies and knowledge as they wish, i.e., when they have economic freedom, is a well-known conviction of both classical and modern economists. Therefore, a straightforward positive relationship between economic freedom and income inequality may seem logical since economic freedoms lead to economic efficiency which is in a trade-off relationship with economic equality.

Table 1

Countries with the Highest Gini Coefficients in 2006

	COUNTRY	GINI (percent)	EFI	QUARTILE OF EFI
1	Namibia	65.80	6.57	3rd quartile
2	South Africa	59.60	6.96	2nd quartile
3	Botswana	58.00	7.10	2nd quartile
4	Zambia	55.00	7.06	2nd quartile
5	Haiti	52.50	6.58	3rd quartile
6	Central African Republic	52.40	4.94	Least free (4th quartile)
7	Lesotho	52.10	6.36	3rd quartile
8	Honduras	51.70	7.33	2nd quartile
9	Colombia	51.50	6.51	3rd quartile
10	Peru	50.40	7.66	Most free (1st quartile)

Note. Sources are the Standardized World Income Inequality Database (SWIID, version 8.2) and the Economic Freedom of the World Index (Fraser Institute).

Nonetheless when we look at the data on income inequality and economic freedom from countries across the world, we do not see this straightforward positive relationship. Table 1 shows Gini coefficients and economic freedom indexes of ten countries with the highest Gini coefficients in 2006 within the data set we have. As it is widely known the Gini coefficient measures the income inequality within an economy and theoretically it ranges from 0 (perfect equality) and 1 (maximal inequality). On the table Namibia has the highest Gini coefficient with a value of 65.8 percent. Its economic freedom index is equal to 6.57 and it is within the third quartile of economic freedom, that is, when countries are sorted by economic freedom index from largest to smallest, Namibia is below the median, but above the third quartile

number, which divides the countries below the median into two equal halves. Since a higher economic freedom index number means a higher level of economic freedom, Namibia, with its low level of economic freedom and high level of income inequality, does not fit in well with the idea that there is a positive straightforward relationship between economic freedom and income inequality. A closer look at Table 1 does not change this impression. On this list of countries, in which the world's highest economic inequalities prevail, there is only one country (Peru) with an economic freedom index number high enough to be in the top (first) quartile of economic freedom. Out of nine other countries in the list, one is in the "least free" category, that is, it is in the bottom (fourth) quartile of economic freedom; four are in the third quartile; and four are in the second quartile.

Table 2
Countries with the Highest Gini Coefficients in 2006

	COUNTRY	GINI (percent)	EFI	QUARTILE OF EFI
1	Slovenia	23.80	7.15	2nd quartile
2	Denmark	23.90	8.17	Most free (1st quartile)
3	Sweden	24.30	7.72	Most free (1st quartile)
4	Norway	25.00	7.75	Most free (1st quartile)
5	Czech Republic	25.50	7.48	2nd quartile
6	Belgium	25.60	7.55	2nd quartile
7	Finland	25.60	7.93	Most free (1st quartile)
8	Slovak Republic	25.60	7.62	Most free (1st quartile)
9	Croatia	26.40	6.65	3rd quartile
10	Netherlands	26.60	7.88	Most free (1st quartile)

Note. Sources are the Standardized World Income Inequality Database (SWIID, version 8.2) and the Economic Freedom of the World Index (Fraser Institute).

Table 2 similarly shows Gini coefficients and economic freedom indexes of ten countries with the lowest Gini coefficients in 2006 within the data set we have. On the table Slovenia has the lowest Gini coefficient with a value of 23.80 percent. Its economic freedom index is equal to 7.15 and it is within the second quartile of economic freedom, that is, when countries are sorted by economic freedom index from largest to smallest, Slovenia is above the median, but below the first quartile number, which divides the countries above the median into two equal halves. Among the ten countries on Table 2, which have the world's most egalitarian income distributions, six countries are in the "most free" category, that is, they are at the top (first) quartile of economic freedom. Three of them are in the second quartile and only one is in the third quartile. Such a situation is in stark contrast with the expectation that we will witness high income inequality in economically most free countries.

Not only do Table 1 and Table 2 fail to support the suggestion that there must be a straightforward positive relationship between income inequality and economic freedom, but they also suggest the opposite. If we assume a straightforward (monotonic in mathematical terms) relationship between income inequality and economic freedom, by looking at the Gini coefficient and economic freedom index pairs in these tables we can only propose that this relationship must be negative rather than positive. But, how can we justify such a straightforward negative relationship? Suggesting that economic freedom leads to a decrease in income inequality, i.e., a more egalitarian income distribution, would force us to ignore or reject the two main ideas that almost all economists accept: (i) Economic freedom leads to economic efficiency and (ii) there is a trade-off between economic efficiency and economic equality.

Certainly, these ideas are at the core of economic thinking and discarding them is something that we do not intend to. Thus, we need to suggest another kind of relationship between economic freedom and income inequality and drop the assumption that they are in a straightforward (monotonic) relationship.

In this paper, we propose a non-monotonic relationship between economic freedom and income inequality. The logic of our proposition is clarified in Section 3 which is after the brief literature review in Section 2. In Section 4, model specification and estimation method are explained. The data is described in Section 5 of the paper. The empirical results are discussed in Section 6. Conclusion follows.

2. Related Literature

Berggren (1999) is one of the first papers that concentrated on the topic of how economic inequality and economic freedom are interconnected to each other. The data used in the study are from the years between 1975 and 1985. The empirical results of the paper show that in those countries that increased their level of economic freedom between the years 1975 and 1985, income distribution around the year 1985 was more egalitarian. Therefore, the paper concluded that a country can make the income distribution in its economy more egalitarian by increasing the economic freedoms that its citizens enjoy. Especially trade liberalization and financial deregulation is ascertained to be important in decreasing inequality.

Scully (2002) investigated how economic freedom affects economic growth and income distribution. The 26 countries in sample used for the empirical study in the paper are mostly developed countries, but there are a few newly industrializing Asian countries as well. The country observation years are 1975, 1980, 1985 and 1990. The results of the study indicate that economic freedom enlarges the proportion of national income that the poorest 40 percent of the society (two lowest income quartiles) gets, but lowers the proportion of national income that the richest 20 percent of the society (highest income quartile) receives. Thus, it concludes that the correlation between economic freedom and income inequality is negative.

Carter (2007) used a fixed effect model to examine how economic freedom affects income inequality. The control variables of this study include industrial composition, education, income per person, demographics and political structure. The data set of the estimations consists of 39 countries with 6 time periods, which are 1980, 1985, 1990, 1995 and 2000. Due to missing observations on some variables, number of observations used in the estimations are only 104. The results indicate that trade-off exists between economic freedom and income equality; i.e., there is a positive relationship between income inequality and economic freedom. The inequality increasing effect of economic freedom is somewhat milder in nations with low levels of economic freedom.

Clark and Lawson (2008) tried to contribute to the empirical discussion concerning the effect of tax policy on income distribution and economic growth. By using data of the years 1980-1922, they regressed Gini coefficient (income inequality variable) on yearly growth rate of real GDP per person, square of yearly growth rate of real GDP per person, the highest marginal tax rate, change in the highest marginal tax rate, composite economic freedom rating and change in composite economic freedom rating. Their findings suggest that there is a very vigorous negative correlation between income equality and economic freedom.

By using cross-sectional data about U.S. states for three time periods, which are 1980-82, 1990-92, and 2001-03, Ashby and Sobel (2008) tried to understand how economic freedom affects income inequality. They found that increases in the level of economic freedom lead to higher income levels and higher income growth rates and also decreases in relative income

inequality. Nevertheless, their work fails to find support for a strong negative relationship between income inequality and the level of economic freedom. They suggest that by reducing minimum wages and taxes, states can promote higher income levels, higher income growth rates and greater income shares for the poorest 20 percent of the population.

Bennet and Vedder (2013) also used data for U.S. states in order to investigate the dynamics of the relationship between income inequality and economic freedom. Their data set covers the years from 1979 to 2004. Their regression analysis indicates that increases in the level of economic freedom are related to reductions in income inequality. It is discovered that the starting level of economic freedom affects the nature of the relationship between these two variables. It is suggested that an inverted U-shaped relationship might exist between them. Their explanation for this kind of relationship is that at the low levels of economic freedom improvements in economic freedom lead to more inequality since it increases the incomes of the rich more than the poor, but as improvements in economic freedom continue, the situation changes and the poor relatively gets more than the rich. Therefore, the relationship between income inequality and economic freedom might be positive at low levels of economic freedom, but negative at high levels of economic freedom.

Murphy (2015) investigated the long run effects of economic inequality on economic freedom across countries. The data set used in the study contains observations from 70 countries for the years 1980, 1985, 1990, 1995, 2000 and 2001. The regression results of the study show that increase in income inequality leads to worsening (reduction) in economic freedom. This outcome has certain policy implications. It suggests that those who want to promote economic freedom should better start with the liberalization reforms that also decrease income inequality. By this way, they can increase the chance of further uplifting economic freedoms in the future.

Pérez-Moreno and Angulo-Guerrero (2016), using a panel data set on 28 European Union member countries for the time span from 2000 to 2010, examined the relationship between economic liberalization and income inequality. Their empirical analysis discovers a strong (positive) relationship between income inequality and economic freedom. By looking at effects of different areas of economic freedom on income inequality, they ascertain that especially the linkage between size of government and income inequality is quite strong. This is not surprising when considering the fact that within the EU context the size of government could be regarded as an indicator of welfare state characteristics.

Ahmad (2017) examined the relationship between economic freedom and income inequality by taking into account the role of political regime. The data set used in this study covers 115 nations for the time span from 1970 to 2014. The results of the analysis conducted in the study indicates a positive relationship between economic freedom and income inequality. Political regime affects the intensity of this effect; in democracies this inequality increasing effect of economic freedom is low compared to undemocratic regimes.

Apergis and Cooray (2017) use a panel data set consisting of 138 countries in order to examine the relationship between economic freedom and income inequality. Their linear regression analysis shows a negative relationship between these two variables. Their non-linear regression analysis on the other hand shows that this relationship is negative up to a certain threshold, and after that threshold it is positive.

Bennet and Nikolaev (2017) review previous literature on the relationship between capitalistic institutions and income inequality. Their survey indicates that there is no commonly accepted results or conclusions that could be extracted from the previous literature. They argue that this is due to the fact that previous studies used different variables and measurements to

describe income inequality and also the time periods and country sets used in these studies were different from each other. The authors themselves conduct a functional polynomial regression analysis in order to understand whether there is a non-linear relationship between income inequality and economic freedom. Their results are not unambiguous, that is, although some of their regression results suggest a U-shaped relationship between inequality and economic freedom, some others show the opposite (inverted U-shaped relationship).

De Soysa and Vadlamannati (2021) not only investigate the effect of economic freedom on income inequality, but also on the equity of access to opportunity. They argue that in order to understand the effect of economic freedom on overall economic equality in an economy it is not adequate to look at only the income inequality variable. Since an increase in income inequality can occur even when all incomes in an economy increase and everyone becomes better off, it is necessary to look at the effect of economic freedom on other variables that effect people's relative economic well-being. In order to see these effects, they use a data set consisting of 128 countries and the time period 1990-2017. Their results indicate that although economic freedom increases income inequality, it also increases people's access to health, education and justice, which implies that economic freedoms that increase economic growth rates do not impede future economic gains of poorer segments of society.

The literature review that we have provided above shows that the previous literature on the subject of our paper has mixed results. Some papers show a positive linear relationship between these variables and some others suggest a negative linear one. There are also papers which indicate a non-linear relationship (either U-shaped or inverted U-shaped). Overall, the effect of economic freedom on income inequality debate is an ongoing one and it does not seem that it will lead to a consensus in the foreseeable future.

3. Conceptual Framework

In order to understand the true nature of the relationship between income inequality and economic freedom, we believe that we should use the concepts developed by Acemoglu and Robinson (2012). The most useful concepts for our purposes are extractive and inclusive institutions. Institutions, which are basically formal and informal rules that people follow when they interact with each other in a society, could be inclusive or exclusive. Inclusive institutions protect economic rights of wide sections of society and provide economic freedom to a large portion of the society. Under such conditions people have high incentives to increase their productivity since they can freely reap the benefits of their own efforts. In contrast to inclusive institutions, extractive institutions do not protect economic rights of wide sections of society. Instead, they provide special privileges for the elites who are almost always a minority in society. As a result, elites, who contribute less to economic production, get richer and richer at the expense of large segments of society, in which most people do not get a fair share of the economic pie of the society. It is not surprising that most people will have no incentive to increase their productivity since they cannot freely reap the benefits of their own efforts under such conditions.

If we consider the level of economic freedom that individuals enjoy in a country to be an indicator of how close the country is to the ideal inclusive institutions -in other words, how far away the country is from the most extreme exclusive institutions-, then we may have a better chance of understanding the true nature of the relationship between income inequality and economic freedom. When we look at the subject of this paper from this new perspective, the first thing that we notice is that income inequality might be quite high both in countries where institutions are extractive and the level of economic freedom is low, and in countries where institutions are inclusive and people enjoy high level of economic freedom. In countries where

institutions are extractive, the elite class, which holds political and economic power although it is only a small segment of the whole population, controls, regulates and manipulates markets. It imposes high and unfair taxes on the rest of the society and does not allow non-elites to enter certain markets. Naturally in such an environment, labor productivity and overall economic efficiency cannot be high. But at the same time, income distribution becomes extremely unequal because of the elites' extraction of economic wealth from the rest of the society. On the other hand, in countries where institutions are inclusive, we might also see high level of income inequality because of a different reason. Since individuals enjoy economic freedom in these countries, they may use their own skills and energies as they wish in order to increase their incomes and economic well-being. Overall people will become more productive and more industrious and the country will prosper. On the downside of this development, because of the fact that skills and energies, which play a significant role in income determination in free economies, are not uniformly distributed among the individuals, we will witness a rather important level of income inequality. When we look at who gets rich, or rather prosperous, compared to others in society; we see that in countries where institutions are extractive, elites who hold political and economic power get richer by exploiting other segments of society whereas in countries with inclusive institutions people who have better skills and exert more effort in the production of goods and services get more prosperous. Although in both situations we see income inequality in the society, it is not unreasonable to say that in the case of extractive institutions the inequality that we see in the society is completely unfair, whereas in the case of inclusive institutions it might be regarded as somewhat "fair".

The fact that we witness high income inequality both in countries with extractive institutions and in countries with inclusive institutions, albeit for different reasons, allows us to make predictions about the direction and the trend of the relationship between economic freedom and income distribution. If the extractive character of the institutions of a country with extractive institutions increases, that is, if these institutions become more extractive, the economic freedoms of individuals will be further restricted and the control of the elite class over income distribution and consequently its income share will increase. In such a case, it is clear that income inequality will increase even more. On the other hand, if the country with extractive institutions starts making its institutions less extractive and more inclusive, the decrease in the influence and power of the elite on the income distribution together with the increase in economic freedoms of large segments of society may lead to an increase in the incomes of non-elites and a decrease in the incomes of the elites, which reduces the income inequality. While economic freedoms increase, we can expect income inequality to continue to decrease for a while. However, it would not be surprising if, after a certain level of economic freedom, an increase in economic freedoms may again cause an increase in income inequality since these freedoms allow talented and hardworking people to increase their incomes in free markets much more than others. In short, as the level of economic freedom progresses from the lowest to the highest, it is expected that income inequality will first decrease, then reach a minimum at a certain point, and then increase again, thus forming a U-shaped graph.

4. Model Specification and Estimation

Our discussion in the previous section indicates that income inequality is a quadratic function of economic freedom. Thus, we specify the following model to analyze this relationship:

$$\ln(\text{inequality})_{it} = \alpha_0 + \alpha_1 \ln(\text{efreedom})_{it} + \alpha_2 \ln(\text{efreedom})_{it}^2 + \mathbf{x}'_{it} \boldsymbol{\beta} + \varepsilon_{it} \quad (1)$$

where, *inequality* is income inequality, *efreedom* is economic freedom, \mathbf{x}' is a vector of controls

for other potential influences, including property rights protection, growth in GDP per capita, the standard deviation of inflation, FDI inflow, trade openness, unemployment, educational expenditures, agricultural employment, and year, and ε is the idiosyncratic error. The reason why we have included *year* as an explanatory variable is to control for unobserved time-varying factors causing contemporaneous movements (e.g., upward trends) in our dependent and explanatory variables.

The assumption of independent and identically distributed normal errors, which is generally needed for valid inferences, is unlikely to hold in our context, because our study utilizes a panel data set that includes repeated observations on a set of countries. Thus, the error term in Equation (1) most likely contains the effect of unobserved country-specific heterogeneity that may create correlations between the error term and included explanatory variables, violating the assumption of independent and identically distributed errors. This problem generates the omitted variable bias in the OLS estimate of Equation (1). We further stipulate that there might be time-fixed effects that exert influences on our dependent variable. We address these problems by first decomposing the error term, ε , into three parts as follows:

$$\varepsilon_{it} = \tau_t + \omega_i + \epsilon_{it} \quad (2)$$

where, τ represents the year-specific effects in terms of dummies for all (19-1=18) years covered by our sample, ω represents the country-specific unobserved (time-invariant) heterogeneity, and ϵ is the remaining error.

Consequently, we estimate the following equation:

$$\ln(\text{inequality})_{it} = \alpha_0 + \alpha_1 \ln(\text{efreedom})_{it} + \alpha_2 \ln(\text{efreedom})_{it}^2 + \mathbf{x}'_{it} \boldsymbol{\beta} + \tau_t + \omega_i + \epsilon_{it} \quad (3)$$

Although several estimators are available to estimate Equation (3), empirical works generally employ either the fixed-effects (within) estimator or the feasible generalized least-squares (FGLS) estimator, also known as the random-effects estimator. While the FGLS estimator is more efficient, it is not consistent if the individual (the country-specific) effects are related to the included explanatory variables, which is generally the case. Also, the Hausman test ($\chi^2 = 110.84$; $p\text{-value} < 0.0005$) favored the use of the fixed-effects (within) estimator in our dataset. Thus, we test our hypothesis based on results from the fixed-effects estimate of Equation (3).

5. The Data

We combine data from four sources to examine the relationship between economic freedom and income inequality. Our data of income inequality come from the Standardized Income Inequality Database (Version 8.2). Because of its broad coverage, this database has been favored in previous works by researchers across a wide range of disciplines (for more detail on this database, see Solt, 2020). To measure economic freedom, we exploit the Economic Freedom of the World Index available from the Fraser Institute (see Gwartney et al., 2017). The data on this index are available for intervals of five years from 1965 to 2000, and for every year since then. The data used to measure our control variables were obtained from the World Bank, the Freedom House, and the Fraser Institute. Table 3 presents the specific variables that we use in our analysis, how we measure these variables, and their sources. Our final dataset is unbalanced due to missing observations on some variables and it contains 1415 country-year observations from 137 countries for the years from 2000 to 2018.

Table 3
Variables Used in This Study

Variable	Description	Years	Source
Inequality	The extent to which income is distributed unequally in a country. As our measure of inequality, we use the “gini_disp” indicator taken from the Standardized World Income Inequality Database (SWIID, v. 8.2). “gini_disp” is an estimate of the Gini index of inequality measuring “the distribution of money after all direct taxes and government transfers ... across the entire population.” (Solt, 2020: 1196). In our analysis we use the natural log-transformed values of this variable.	1960-2018	SWIID (v. 8.2)
Efreedom	We use Fraser Institute’s Economic Freedom of the World Index data as our overall measure of economic freedom. In our analysis, we use the natural log-transformed values of this variable.	1965-2020	Fraser Institute
Political rights	An indicator coded on a scale from 1 (best) to 7 (worst), measuring the extent to which citizens in a country enjoy a wide range of political freedoms and rights (Tag, 2021).	1973-2022	Freedom House
Growth in GDP per capita	The yearly percentage growth rate in GDP per capita. GDP is measured at market prices.	1960-2021	WDI
Inflation Std. Dev.	The standard deviation of the annual inflation (CPI).	2000-2021	Fraser Institute
FDI inflow (%GDP)	Annual foreign direct investment net inflow as a percentage of GDP. In our analysis, we use the natural log-transformed values of this variable.	1970-2021	WDI
Trade openness	The sum of imports and exports as a percentage of GDP. In our analysis, we use the natural log-transformed values of this variable.	1960-2021	WDI
Unemployment	The share of the labor force seeking but unable to find employment.	1990-2021	WDI
Educational expenditures	General government expenditures on education as a percentage of total general government expenditures.	1980-2021	WDI
Agricultural employment	The share of employment in the agriculture sector.	1990-2021	WDI

6. Results

We start with a simple inspection of our data. Table 4 indicates that the average Gini coefficient (that is, the average inequality) in our data set is 37.7. This number is quite close to the long-term average, which is 38.2. Figure 1 shows the median splines of the Gini coefficient over the period from 1960 to 2018. According to Figure 1, median inequality began to increase around early 1970s and remained relatively high until 2006, when it started steadily decline. Meanwhile, there has been a substantial increase in economic freedom around the world (see Figure 2). However, it appears that the improvement in economic freedoms has stalled and even started to decline after 2010. Whether these two trends are related, and if so, how they are related are empirical questions, to which we turn next.

Table 4
Decriptives

Variables	Obs.	Mean	Std. Dev	Min.	Max.
Inequality	1,415	37.68	8.47	21.80	66.10
E Freedom	1,415	6.94	0.95	3.92	8.85
ln (Inequality)	1,415	3.60	0.23	3.08	4.19
ln (E Freedom)	1,415	1.93	0.14	1.37	2.18
Political rights	1,415	2.65	1.87	1.00	7.00
Growth in GDP per capita	1,415	2.59	3.93	-15.04	33.00
Inflation Std. Dev.	1,415	12.43	288.24	0.12	10799.60
FDI inflow (% GDP)	1,415	1.79	1.17	-4.31	6.81
Trade openness	1,415	4.34	0.51	0.18	6.08
Unemployment	1,415	7.54	4.96	0.21	33.29
Educational expenditures	1,415	4.55	1.51	0.79	12.08
Agricultural employment	1,415	24.85	23.22	0.06	92.30

Figure 1
Median Splines of Inequality

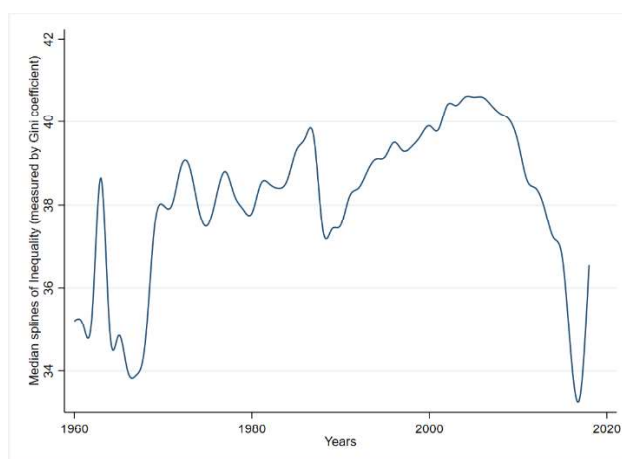


Figure 2
Median Splines of Economic Freedom

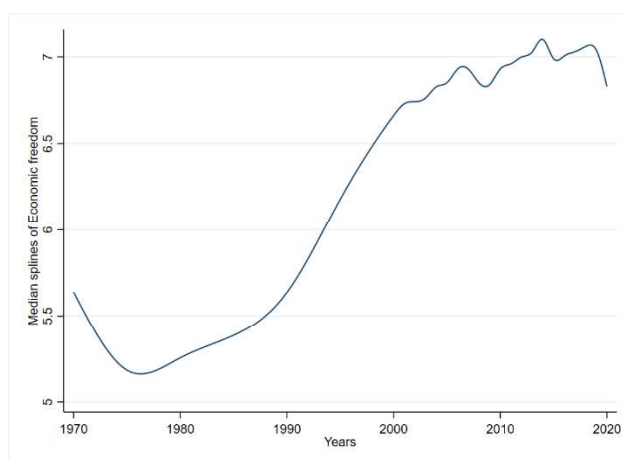
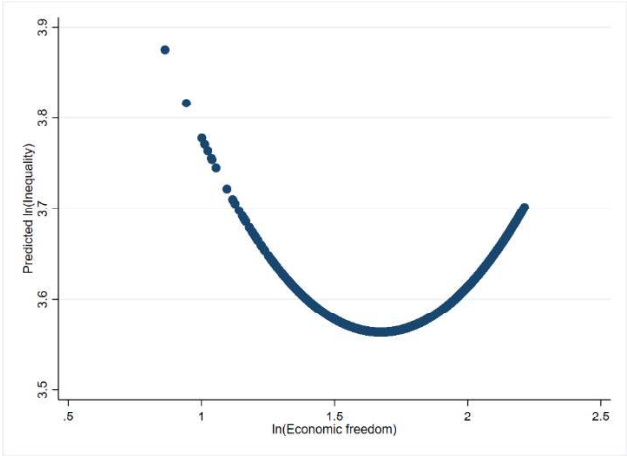


Table 5 presents the results of our fixed-effects (within) estimates of the relationship between economic freedom and inequality. Column (1) presents the estimate of a model specifying a simple linear relationship between the two variables. This estimate shows that there is a positive and significant relationship between economic freedom and inequality. Assuming that there is no misspecification in this model, the results seem to suggest that 1% increase in the index of economic freedom is associated with 0.14% increase in inequality. However, as we have argued in previous sections, a model specifying a non-linear (U-shaped) relationship between economic freedom and inequality may better explain our data. Column (2) presents the fixed-effects estimate of a model, that is, Equation (3), with a quadratic term in economic freedom. This estimate provides strong support for a U-shaped relationship between economic freedom and inequality. Overall, the data indicate that the relationship between economic freedom and inequality depends on the level of economic freedom. That is, inequality tends to be high when the level of economic freedom is either low or high. On the other hand, inequality is relatively lower in countries with medium levels of economic freedom. Figure 3 illustrates this relationship by plotting economic freedom against predicted inequality using the results of Column (2).

Figure 3
The Relationship Between Economic Freedom and Predicted Inequality



Regarding the control variables, our results in both columns show that increases in the standard deviation of inflation, international trade openness, and unemployment worsen inequality. On the other hand, the inflow of foreign direct investment is negatively related to inequality. Lastly, an increase in educational expenditures (as a share of total government expenditures) has negative impact on inequality, though this relationship seems to be marginally significant.

Table 5
Fixed-effects (within) Estimation Results

	(1)	(2)
ln (E Freedom)	0.1360*	-1.5910***
	(0.0617)	(0.4650)
ln (E Freedom) ²		0.4754***
		(0.1335)
Political rights	-0.0002	0.0003
	(0.0022)	(0.0021)
Growth in GDP per capita	0.0002	0.0003
	(0.0003)	(0.0003)
Inflation Std. Dev.	0.0001*	0.0001*
	(0.0001)	(0.0001)
ln (FDI inflow % GDP)	-0.0028*	-0.0027*
	(0.0011)	(0.0011)
ln (Trade openness)	0.0266	0.0269*
	(0.0139)	(0.0135)
Unemployment	0.0031**	0.0036***
	(0.0010)	(0.0010)
Educational expenditures	-0.0040	-0.0039
	(0.0025)	(0.0024)
Agricultural employment	-0.0003	-0.0002
	(0.0008)	(0.0007)
Year	-0.0016	-0.0018
	(0.0012)	(0.0011)
Constant	6.4535**	8.2652***
	(2.3244)	(2.3163)
Std. dev. of the fixed effects	0.253	0.248
Std. dev. of the error term	0.027	0.026
ρ	0.989	0.989
N	1415	1415
Number of countries	137	137
F	1.97	2.57
Prob > F	0.006	0.0001
R ² (within)	0.18	0.23
R ² (between)	0.00	0.00
R ² (overall)	0.04	0.09
Time fixed effects	YES	YES
Country fixed effects	YES	YES

Note. ***p-value is less than one-thousandth; **p-value is less than one-hundredth; *p-value is less than five-hundredth. The dependent variable is natural logarithm of inequality, which is measured by the Gini coefficient. Heteroskedasticity-robust standard errors are given in parentheses. All tests are two-tailed.

7. Conclusion

In this study we have examined the relationship between income inequality and economic freedom by using two concepts developed in institutional economics, namely extractive and inclusive institutions. We argue that income inequality might be high both in countries with extractive institutions, where the level of economic freedom is low, and in countries with inclusive institutions, where the level of economic freedom is high. In countries where institutions are exclusive, elites, who constitute a small minority in society, receive an unfairly large share of economic output by preventing the rest of the society from having political and economic rights; whereas in countries where institutions are inclusive, people enjoy economic freedom and get their share of economic output by using their skills and exerting their efforts in the production of goods and services in free markets. The reason of inequality in countries with extractive institutions is outright theft endorsed by political power, while in countries with inclusive institutions, it is simply the fact that skill and stamina are not uniformly distributed in society.

When we consider the characteristics of extractive and inclusive institutions and take into account how they affect economic agents' actions through the incentives and/or disincentives they create, we can predict the dynamics of income inequality when a country changes its institutions. When a country with extractive institutions increases the level of economic freedom that its citizens have, i.e., when its institutions become less extractive, the income distribution in the country must become somewhat more egalitarian than before because of the decreasing income share of the elites and the increasing income share of the non-elites. On the other hand, when a country with inclusive institutions moves farther along the way of inclusiveness, i.e., when it further increases the level of economic freedom that its citizens enjoy, then the income distribution in the country must become less egalitarian than before, because this new increase in the level of economic freedom will increase the income share of those -people with high skills and stamina- who are already in an advantageous position in an economically free environment. Thus, as the level of economic freedom moves from lowest to highest, income inequality is expected to first decrease, then reach a minimum at a certain point, and then increase, forming a U-shaped graph.

The results of the empirical analysis that we have conducted by using a panel data containing 1415 country-year observations from 137 countries for the years from 2000 to 2018 fully support our proposition. The relationship between income inequality and economic freedom seems to be negative at low levels of economic freedom, but positive at high levels of economic freedom, which means that it is U-shaped as we suggested.

In the literature there are very few papers which indicate a U-shaped relationship between income inequality and economic freedom. For example, some of the econometric models Bennet and Nikolaev (2017) used indicate a U-shaped relationship, but some of their other models indicate the opposite (an inverted U-shaped relationship). But these papers do not provide the type of justification (economic reasoning) as we have done by using the concepts of "inclusive institutions" and "extractive institutions".

The policy implications of our findings are twofold. First, in countries where institutions are extractive and the level of economic freedom is low, market-based reforms that increase economic opportunities for large segments of society could be desirable not only because of their growth-enhancing nature but also because of their potential contribution to a more egalitarian society. Second, in countries where institutions are inclusive and the level of economic freedom is high, further liberalization might lead to an increase in income inequality which might weaken the support for economic liberalization in the future. Therefore, those who

want to go further along the way of freedom in these countries had better think about finding ways of limiting inequality increasing effects of these policies.

References

- Acemoglu, D., & Robinson, J. A. (2012). *Why nations fail: The origins of power, prosperity, and poverty*. Currency.
- Ahmad, M. (2017). Economic freedom and income inequality: does political regime matter? *Economies*, 5(2), 18.
- Apergis, N., & Cooray, A. (2017). Economic freedom and income inequality: Evidence from a panel of global economies—a linear and a non-linear long-run analysis. *The Manchester School*, 85(1), 88-105.
- Ashby, N. J., & Sobel, R. S. (2008). Income inequality and economic freedom in the US states. *Public Choice*, 134(3), 329-346.
- Bennett, D.L., & Nikolaev, B. (2017). On the ambiguous economic freedom–inequality relationship. *Empirical Economics*, 53(2), 717–754.
- Bennett, D. L., & Vedder, R. K. (2013). A dynamic analysis of economic freedom and income inequality in the 50 US states: Empirical evidence of a parabolic relationship. *Journal of Regional Analysis & Policy*, 43(1), 42-55.
- Berggren, N. (1999). Economic freedom and equality: Friends or foes? *Public Choice*, 100(3), 203-223.
- Carter, J. R. (2007). An empirical note on economic freedom and income inequality. *Public Choice*, 130(1), 163-177.
- Clark, J. R., & Lawson, R. A. (2008). The impact of economic growth, tax policy and economic freedom on income inequality. *The Journal of Private Enterprise*, Fall.
- De Soysa, I., & Vadlamannati, K. C. (2021). Free market capitalism and societal inequities: assessing the effects of economic freedom on income inequality and the equity of access to opportunity, 1990–2017. *International Political Science Review*, 01925121211039985.
- Gwartney, J., R. Lawson, and J. Hall. (2016) *Economic Freedom of the World: 2016 Annual Report*. Vancouver, Canada: Fraser Institute.
- Mankiw, N. G. (2020), *Brief Principles of Macroeconomics*, 9th Ed., Cengage Learning
- Murphy, R. H. (2015). The Impact of Economic Inequality of Economic Freedom. *Cato J.*, 35, 117.
- Pérez-Moreno, S., & Angulo-Guerrero, M. J. (2016). Does economic freedom increase income inequality? Evidence from the EU countries. *Journal of Economic Policy Reform*, 19(4), 327-347.
- Scully, G. W. (2002). Economic freedom, government policy and the trade-off between equity and economic growth. *Public Choice*, 113(1), 77-96.
- Solt, F. (2020). Measuring income inequality across countries and over time: The standardized world income inequality database. *Social Science Quarterly*, 101(3), 1183-1199.
- Tag, M. N. (2021). Judicial institutions of property rights protection and foreign direct investment inflows. *International Review of Law and Economics*, 65, 105975.