Does Market Competition Decrease Economic Inequality? Perspectives from Market Competition and the Rule of Law

Yosuke TOMITA

Abstract

This study hypothesizes that economic inequality is more strongly influenced by the rule of law than by market competition. We generated basic scatter plots using aggregated cross-country data for 39 countries from 2000 to 2021 and evaluated our hypotheses through a single regression analysis. The analysis reveals no observed impact of market competition on the Gini index before redistribution. Instead, the rule of law affects the Gini index post-redistribution. This is because the rule of law indicates that the government's behavioral level and redistributive policies depend on the quality of government. This study presents the perspective that economic inequality growth is a challenge that should be overcome through government redistributive policies rather than through market competition only.

Keywords : Economic inequality, Market competition, Gini index, Redistribution, Rule of law

JEL Classification : D30, D40, K10

1. Introduction

Does market competition resolve economic inequalities? Alternatively, does the government implement redistribution corresponding to the level of economic inequality? According to Hayek (1978), from the Austrian School, who taught at the University of Freiburg, market competition is autogenous. However, according to Eucken (1952) from the Freiburg School, who taught at the University of Freiburg, market competition cannot be autogenously formed. Eucken (1952) explains that governments should create and protect market competition. Thus, Hayek and Eucken had different perspectives on government behavior. This study discusses the effectiveness of market competition and the rule of law in reducing economic (income) inequality, using cross-country data for 39 countries from 2000 to 2021.

All the markets are between perfectly competitive and monopolistic. Theoretically, in a perfectly competitive market, there should be no disparity between firms because their profit margins are zero (although firms repeatedly enter and exit the market). Simultaneously, if labor market mobility is high, as long as workers have the same job type, status, and effort level, there will be no wage gap[1]. Thus, Ennis et al. (2019) and Weeden and Grusky (2014) report that economic inequality increases as market dominance increases. By contrast, Gartenberg and Wulf (2020) show that increased competition increases the overall wage gap between firms. Given these research gaps, this study first tests the hypothesis that market competition affects economic inequality before redistribution by the government.

Does the government implement redistributive policies to reduce economic inequality? Meltzer and Richard (1981) used the median voter the-

orem proposed by Black (1948) and Downs (1957) to predict that if the policies desired by median voters in elections are implemented, redistribution will increase as economic inequality increases. Several studies have shown that increasing economic inequality increases government redistribution, as Meltzer and Richard (1981) predicted (Milanovic, 2000; Kenworthy and Pontusson, 2005; Finseraas, 2009). However, a discrepancy has also been reported, with larger redistributions in economically equal countries and smaller redistributions in countries with increased economic inequality (Alesina and Glaeser, 2004; Moene and Wallerstein, 2001).

This study hypothesizes that the rule of law affects a government's redistributive policy. The rule of law restrains and monitors the exercise of power by those in authority, eliminating individual arbitrariness and ensuring that the norms of the law govern all people (Silkenat et al. 2014). Regarding the link between the rule of law and economic inequality, Bhagat (2020) showed that strengthening the rule of law reduces economic inequality. Shafique et al. (2006) argue that if the rule of law is not respected, economic inequality increases because public sector investments are not effective and corruption causes economic inequality. Krieger and Meierrieks (2016) demonstrated that economic inequality is negatively related to the rule of law as a component of economic freedom.

We test two hypotheses from data scatter plots and a single regression analysis: 1) market competition lowers the Gini index before redistribution, and 2) the rule of law reduces the Gini index post-redistribution. If market competition affects economic inequality, there will be a stronger relationship between the Gini index before redistribution and the degree of market competition than between the Gini index after redistribution. For example, if a monopolist's profits are higher, then profit distribution before redistribution is likely to be highly skewed. On the other hand, the

rule of law affects the government and may reduce the Gini index post-redistribution by increasing redistribution. The contribution of this study is to contrast whether market competition or government causes the underlying economic inequality and discuss the prospects for addressing it.

The following section describes the data and sources used in this study. Section 3 presents and discusses scatter plots of the data and their relationships. Section 4 discusses the implications and limitations of the study.

2. Data and sources

This study uses cross-country data to explore the relationships between the Gini index before and after redistribution, market competition, and the rule of law. We extracted the arithmetic mean data for each country over 21 years. The data used in this study target 39 countries for which data are available and cover the period of 2000–2021 (Table 1). Two types of Gini indexes were used to measure economic inequality. One is the Gini index before tax and social security distribution (*Gini index before redistribution*), and the other is the Gini index after tax and social security distribution (*Gini index post-redistribution*). *Redistribution* is the *Gini index before redistribution* minus the *Gini index post-redistribution*. The *Gini index before redistribution*, the *Gini index post-redistribution*, and *redistribution* have values ranging from zero to one. These three variables were obtained from the Organization for Economic Co-operation and Development (OECD) income distribution database[2].

The degree of market competition refers to the rents defined in Blundell et al. (1995), Nickell (1996), Köke and Renneboog (2002), and Aghion et al. (2021)[3]. If the market is competitive, firms have a more challenging time acquiring rent, but if the market is not competitive, the oligopolistic market contributes more to the acquisition of rent. To facilitate cross-

Table 1. Targeted countries

Country name
Australia, Austria, Belgium, Brazil, Bulgaria, Canada, China, Costa Rica, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, South Korea, Spain, Sweden, Switzerland, Türkiye, United Kingdom, United States

Note: The 39 countries covered are those for which data are available.

country comparisons, we replace firm-level indicators with macro indicators. The measure of market competition used in this study is presented in the equation below.

$$Market\ conpetition = 1 - \frac{Operating\ surplus - Corporate\ tax}{GDP}$$

Here, market competition is defined as 1 − *rents*. Typically, rents are the ratio of net income to value-added in company-level data. *Operating surplus* is the share of firms on the distribution side of the GDP. Generally, the rent numerator (net income) subtracts corporate tax and the cost of capital from the operating surplus. Unfortunately, this deduction was not possible in this case because of the immeasurable cost of capital for firms in the macro data. Therefore, simplified rents are used in this study to indicate market competition[4]. Market competition is one minus the rent, with a higher value of market competition indicating that the market is competitive. The *Operating surplus* is obtained from the OECD's National Accounts Statistics, and the *Corporate tax* is obtained from the OECD's Corporate Tax Statistics[5]. *GDP* was obtained from the International Monetary Fund (IMF)'s World Economic Outlook Database[6].

Labor share is an income-based percentage referenced from the International Labour Organization (ILO)'s SDG indicator[7]. The higher the value for the *rule of law*, the stronger the effectiveness, ranging from −2.5 to 2.5.

Table 2. Definition and source

Variables	Definition	Source
Gini index before redistribution	Gini index before adjustment by tax and social security. It ranges from 0 to 1.	OECD: Income Distribution Database
Gini index post-redistribution	Gini index after tax and social security adjustment. The value is between 0 and 1.	
Redistribution	*Redistribution* = *Gini index before redistribution* − *Gini index post-redistribution* The data range from 0 to 1.	
Market competition	Rents as the degree of market competition. (1−*rents*) *Market competition* $= 1 - \frac{Operating\ surplus - Corporate\ tax}{GDP}$	OECD: National Accounts Statistics (Operating surplus) Corporate Tax Statistics (Corporate tax revenues) IMF : World Economic Outlook Database (GDP)
Labor share	Labor share rate (of income) (%)	ILO: SDG indicator
Rule of law	Rule of law index. Higher values mean a stronger rule of law. Data are aggregated and range from −2.5 to 2.5.	The World Bank: Worldwide Governance Indicator

Note: The period covered by the data is from 2000 to 2021. Missing values were used for one year only for the previous year's data if the previous year's data existed. When data from the previous year were not available, ensuing year's data were used for one year only to supplement the values. The imputation was limited to one year to prevent an arbitrary reduction in standard errors. As the Gini index varies slightly over a long period, missing values are complemented by data from the previous year. We use operating surplus and mixed income as "*Operating surplus*" for convenience.

Table 3. Descriptive statistics

	Mean	Median	S.D.	Min	Max	95% C.I.	Obs.
Gini index before redistribution	0.475	0.482	0.045	0.369	0.585	0.015	39
Gini index post-redistribution	0.328	0.325	0.068	0.243	0.514	0.022	39
Redistribution	0.147	0.157	0.058	0.003	0.229	0.019	39
Market competition	0.589	0.604	0.074	0.334	0.695	0.024	39
Labor share	54.904	56.079	7.015	35.605	67.242	2.274	39
Rule of law	1.103	1.110	0.722	−0.528	1.976	0.234	39

Note: S.D., 95% C.I., and Obs. mean standard deviation, 95% confidential interval, and number of observations, respectively. The target countries for this study are 39 countries. Data are arithmetic mean from 2000 to 2021.

The rule of law is sourced from the World Bank's Worldwide Governance Indicators[8]. The definitions of the variables used in this study are summarized in Table 2, and the descriptive statistics are presented in Table 3. If missing data existed, we supplemented the values with the previous year's data for only one year. If the previous year's data did not exist, they were supplemented with the following year's data for only one year. The imputation was limited to one year to prevent arbitrary suppression of standard errors.

3. Analysis and perspectives

In this section, we observe the relationships between the data and discuss the relevance of economic inequality, market competition, and the rule of law. Figure 1 presents the Gini index post-redistribution, redistribution, market competition, and rule of law by country. In Figure 1, the Gini index before redistribution is the sum of the Gini index after redistribution and that achieved through taxes and social security.

According to Figure 1, Iceland, Switzerland, and Korea had relatively low Gini indices before redistribution, whereas Brazil and China had relatively high Gini indices before redistribution. The Gini index before redistribution reflects the firms' market activities. Therefore, market competition may have affected the Gini index before redistribution.

To achieve the desired income equality, the scale of redistribution should be higher in countries with higher Gini indices before redistribution (Milanovic, 2000; Kenworthy and Pontusson, 2005; Finseraas, 2009). However, given the unbalanced and contradictory nature of redistribution and economic inequality in some countries, a high Gini index before redistribution may not necessarily indicate a high level of redistribution implemented by the government. Therefore, the redistribution levels vary across

Figure 1. Gini index, market competition, and rule of law

Note: This study included 39 target countries. The data represent arithmetic means from 2000 to 2021.

Source: The data in Table 2 are used. Prepared by the author.

countries.

As redistribution is a government policy, the rule of law is expected to affect the Gini index post-redistribution. Although intuitive, the higher the Gini index post-redistribution, the lower the level of the rule of law (Figure 1).

The graph on the left-hand side of Figure 2 shows the relationship between labor share and market competition. The model captures causality in the sense that market competition affects labor share and the rule of law. According to Karabarbounis and Neiman (2014), Market competition is positively associated with labor share. In this study, the coefficients were significant at the 1% level in the regression model of the scatter plots, which is consistent with Karabarbounis and Neiman (2014). The adjusted R-squared is also high at 0.582; therefore, the variable of *Market com-*

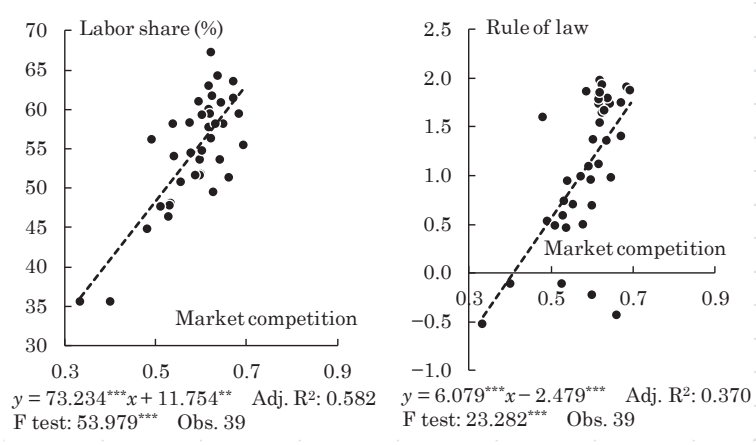

Figure 2. Market competition, labor share, and rule of law

Note: This study included 39 target countries. The data represent arithmetic means from 2000 to 2021. ***, **, and* are significant at the 1%, 5%, and 10% levels, respectively. The regression equations were estimated using the ordinary least squares method.

Source: The data in Table 2 are used. Prepared by the author.

petition is reliable as a value indicating (1−*rents*). Simultaneously, the graph on the right side of Figure 2 shows a positive association between the rule of law and market competition. We believe that the rule of law makes markets more competitive because it increases confidence in market transactions by increasing the effectiveness of the law.

Figure 3 presents a scatter plot of the relationship between each Gini index and market competition. The association between market competition and the Gini index before redistribution is negative but not significant. Regarding the relationship between market competition and the Gini index post-redistribution, the coefficient is negative and significant at the 5% level. However, the adjusted R-squared in the regression models in Figure 3 is low at −0.011 and 0.112, respectively. Therefore, the association between market competition and Gini coefficient is not robust. The argument that

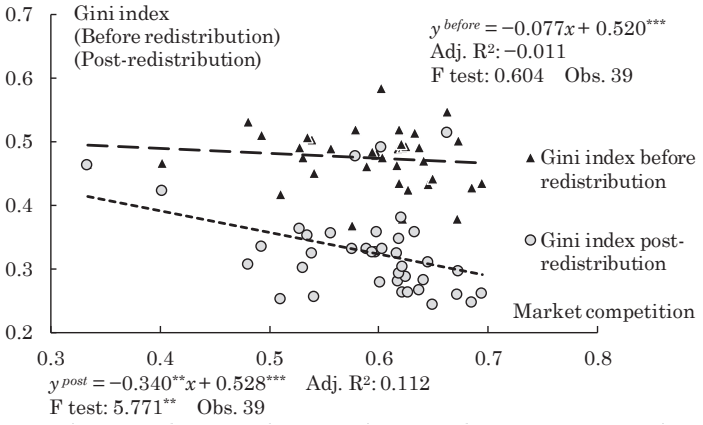

Figure 3. Relevance of the Gini index and market competition.

Note: This study included 39 target countries. The data represent arithmetic means from 2000 to 2021. ***, **, and * are significant at the 1%, 5%, and 10% levels, respectively. The regression equations were estimated using the ordinary least squares method.

Source: The data in Table 2 are used. Prepared by the author.

market competition affects economic inequality needs to be tested in detail in the future because the simple regression model in this study did not observe an association between the Gini index and market competition before redistribution.

Figure 4 presents a scatter plot of the relationship between economic inequality and the rule of law. In particular, the association between the Gini index post-redistribution and the rule of law is negative and significant at the 1% level. Simultaneously, the adjusted R-squared is relatively high at 0.469. The negative correlation between the rule of law and the Gini index post-redistribution can be attributed to the government's redistributive policies based on the rule of law. Figures 3 and 4 show the causal directions of the impacts of market competition and the rule of law on economic inequality.

Figure 5 shows a scatter plot, with the left-hand side showing the relationship between redistribution and market competition and the right-

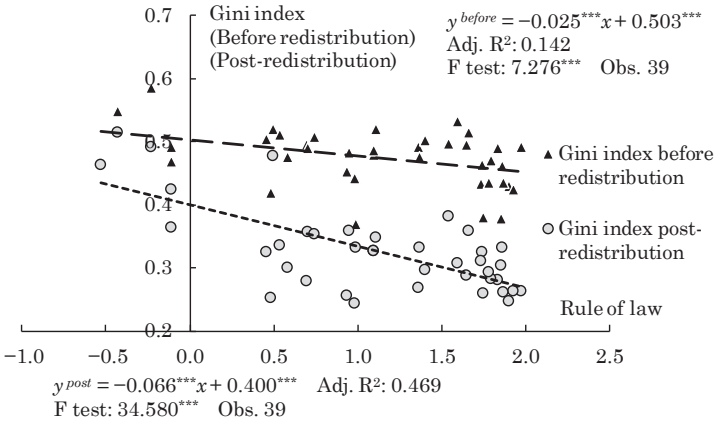

Figure 4. Relationship between the Gini Index and the rule of law.

Note: This study included 39 target countries. The data represent arithmetic means from 2000 to 2021. ***, **, and * are significant at the 1%, 5%, and 10% levels, respectively. The regression equations were estimated using the ordinary least squares method.

Source: The data in Table 2 are used. Prepared by the author.

hand side showing the relationship between redistribution and the rule of law. The coefficients in the single regression model were positive and significant at the 5% and 1% levels for both models. However, the adjusted R-squared is 0.236 in the nexus between redistribution of wealth and the rule of law, which is higher than that in the market competition model (Adj. R2: 0.089). Thus, the redistributive policies implemented by the government are determined in part by market competition but mainly by the rule of law. However, the enhancement of redistribution policies through market competition may result from the rule of law guaranteeing market competition. The causal link implied in Figure 5 is that market competition and the rule of law influence redistribution.

Thus, there is little hope for the hypothesis that market competition reduces economic inequality. Furthermore, we believe that the focus should

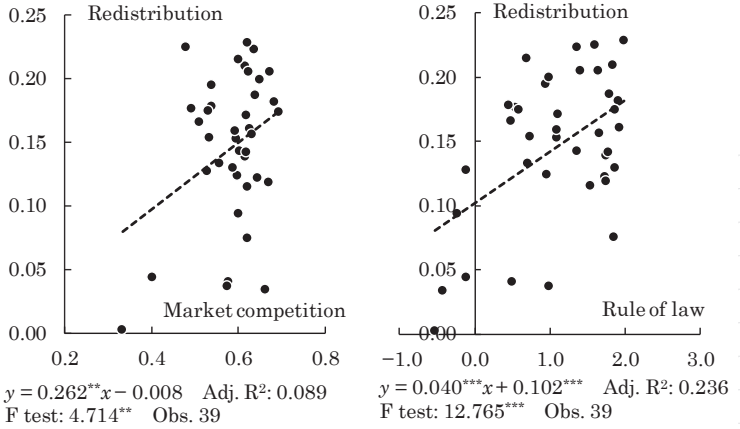

Figure 5. Redistribution, market competition, and rule of law.

Note: This study included 39 target countries. The data represent arithmetic means from 2000 to 2021. ***, **, and * are significant at the 1%, 5%, and 10% levels, respectively. The regression equations were estimated using the ordinary least squares method.

Source: The data in Table 2 are used. Prepared by the author.

be on the rule of law as an essential factor in restraining economic inequality. Hence, this study suggests that, although market competition may not have an impact on economic inequality before redistribution, economic equality can be achieved through government redistributive policies, even if the Gini index before redistribution is high.

4. Conclusion

This study discusses whether economic inequality is reduced if markets are competitive or whether the rule of law reduces economic inequality. The first hypothesis is that market competition affects the Gini index before tax and social security adjustments. This is because market competition reduces economic inequality before redistribution by leveling profits. Second, the rule of law affects the Gini index after adjusting for taxes and social security. This is because the rule of law optimizes economic inequalities in redistribution by facilitating the redistributive policies of governments through taxation and social security and by curbing the arbitrary behavior of the governed.

Using cross-country data for 2000–2021 for 39 countries, this study provides perspectives on the relationships among economic inequality, market competition, and the rule of law from scatter plots of the data. No significant relationship was found between the Gini index before redistribution of wealth and market competition; however, we observed a negative association between the Gini index post-redistribution and market competition. However, this has low explanatory power for the negative relationship between market competition and economic inequality.

A negative relationship was observed between economic inequality and the rule of law. In particular, the rule of law has a higher adjusted coefficient of determination for the Gini index post-redistribution. Simultaneous-

ly, redistribution implemented by the government is positively associated with the rule of law. This study reaffirms the importance of government redistributive policies because the rule of law, rather than market competition, reduces economic inequality.

One limitation of this study is that it only shows fundamental trends in economic inequality, market competition, and the rule of law through scatter plots. We require sophisticated models, and future studies must address endogenous biases owing to the simultaneity of the rule of law and incorporate control variables in the models. Moreover, the nexus between market competition on the supply side and economic inequality on the demand side presupposes the existence of a competitive labor market. Therefore, future studies should examine the relationships among economic inequality, market competition, and the rule of law in greater detail. However, it is significant that we consider not only the role of market competition in economic inequality but also its relevance to the rule of law. As argued by Eucken (1952), it was important that market competition was not autogenous and that a competitive order needed to be guaranteed by the government.

Notes

1) Theoretically, if the market is perfectly competitive, the profit earned by all firms will be at par. Furthermore, whether realistic or not, if the labor market is also perfectly competitive, there is theoretically no difference in wage levels (Suppose that no differences exist in wages between positions). Logically, market competition does not generate economic inequalities. Thus, the market competition used in this study is a supply-side indicator. Simultaneously, economic inequality is an indicator on the consumer side. The nexus between market competition and economic inequality is established by the precondition that the labor market is perfectly competitive.

2） OECD; Data warehouse. Retrieved Dec. 2023.
https://stats.oecd.org/index.aspx?lang=en

3） The firm-based rents in Blundell et al. (1995) are shown in the formula below.

$$\text{Rent} = \frac{S - Kr}{q}$$

Where q is value-added, meaning $q = Y - M$. Y is total revenue, and M is intermediate input (pre-benefit cost). S is gross revenue minus intermediate inputs and labor costs, denoted as $S = Y - (M + W)$.

Where W is the labor cost, K represents the book value of shareholders' equity, and r is the cost of capital, denoted as $r = \sigma + rf$. σ is the risk premium, which can be measured by $\sigma = m\beta$, where m is the average market rate of return, β is the firm's beta, and rf is the risk-free interest rate.

The model in Blundell et al. (1995) does not consider corporate income taxes. However, according to Aghion et al. (2021), the numerator of rent is net income; according to Saez and Zucman (2019), corporate income taxes affect economic inequality. Therefore, in this study, we deduct corporate taxes from operating income.

4） GDP statistics include corporate taxes and capital costs (interest and dividends paid) in the operating surplus. In addition, operating surplus uses data on operating surplus and mixed income.

5） OECD; Data warehouse. Retrieved Dec. 2023.
https://stats.oecd.org/index.aspx?lang=en

6） IMF; World Economic Outlook Database, October 2023 Edition. Retrieved Dec. 2023.
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7） ILO; Labour statistics for the Sustainable Development Goals (SDGs). Retrieved Dec. 2023.
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8） World Bank; Worldwide Governance Indicators. Retrieved Dec. 2023.
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（とみた・ようすけ／東洋学園大学現代経営学部准教授）