



The relationship between economic freedom and growth: Evidence from the Next Eleven (N-11) countries

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ABSTRACT

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This study examines the association between economic freedom and economic growth in the Next Eleven (N-11) economies from 2001 to 2020. This paper also links the individual areas of economic freedom with growth in these countries. The study obtains economic freedom data from the Fraser Institute and the Heritage Foundation. It uses fixed effects and random effects techniques to examine the relationship between economic freedom and per capita income growth. The paper finds a positive association between economic freedom and growth in N-11 countries. The results also highlight that three areas of the economic freedom index (legal system & property rights, sound money, and free trade) are found to be positively associated with growth. In contrast, the other two areas (size of government and regulation) exhibit an insignificant relationship with growth. The results of this study highlight that N-11 countries with higher levels of economic freedom and better quality of economic institutions are likely to witness higher growth. Therefore, formulating policies that focus on improving the legal system, safeguarding property rights, maintaining a stable macroeconomic environment, and fostering free trade to facilitate economic progress in the N-11 countries is necessary.

Contribution/Originality: This study makes a valuable contribution by examining the relationship between economic freedom and growth in the Next Eleven (N-11 countries). Additionally, this paper obtains data on overall economic freedom from both the Fraser Institute and the Heritage Foundation.

1. INTRODUCTION

Achieving and sustaining high economic growth is essential for enhancing a country's level of economic development. Economists, scholars, and policymakers argue that economic growth has favorable effects on poverty (e.g., (Compton, Giedeman, & Hoover, 2011; Mogess, Eshete, & Alemaw, 2023; Roemer & Gugerty, 1997; Sala-i-Martin, 2006)) and unemployment (e.g., (Abbas, 2014; Soylu, Çakmak, & Okur, 2018)). These linkages imply that the problems of poverty and unemployment can be tackled, at least to some extent, by focusing on economic growth. The neoclassical and endogenous growth models postulate that economic growth depends on four factors: labor, physical capital, human capital, and technology (Romer, 1990; Solow, 1956). In addition to these factors, the quality of institutions exerts a significant influence on economic growth (Acemoglu & Robinson, 2008; North, 1990). There is a vast amount of literature that has examined the relationship between economic growth and the quality of economic institutions as measured by economic freedom (e.g., (Ahmed, Mushtaq, Fahlevi, Aljuaid, & Saniuk, 2023; Brkić, Gradojević, & Ignjatijević, 2020; Carlsson & Lundström, 2002; Gouider, 2022; Gwartney, Lawson, & Holcombe, 1999;

Justesen, 2008; Rode & Coll, 2012; Spruk & Kešeljević, 2018)). These studies find a positive association between economic freedom and growth, i.e., countries with better-quality economic institutions are likely to experience higher economic growth. Economic freedom attempts to measure the extent to which an economy operates as a market economy (Angulo-Guerrero, Pérez-Moreno, & Abad-Guerrero, 2017; Berggren, 2003). Gwartney, Lawson, Hall, and Murphy (2022) state, “The cornerstones of economic freedom are personal choice, voluntary exchange, open markets, and clearly defined and enforced property rights. Individuals are economically free when they are permitted to choose for themselves and engage in voluntary transactions as long as they do not harm the person or property of others.”

The Next Eleven (N-11) countries have the potential to become the major economies of the world and significantly contribute to global economic growth. The average annual gross domestic product (GDP) and per capita GDP growth rates in these countries from 2001 to 2020 are shown in Table 1. During this two-decade period, Vietnam exhibited the highest average annual GDP growth of 6.41 percent, followed by Bangladesh (5.98 percent). On the other hand, Mexico and Iran were the two countries that witnessed the lowest GDP growth of about 1.42 percent and 2.89 per cent, respectively. In terms of average annual per capita GDP growth, Vietnam and Bangladesh emerged as the two fastest-growing countries, whereas Mexico and Iran witnessed the lowest growth in per capita GDP. A wide variation exists in the growth performance of N-11 countries from 2001 to 2020. This study attempts to understand the association between economic growth and economic freedom in N-11 countries.

To understand the extent of economic freedom in N-11 countries, we present their economic freedom scores and world ranking in Table 2. Columns 2-4 are based on the data obtained from the Fraser Institute. Iran, among the N-11 countries, has the least degree of economic freedom. It is ranked 159th internationally with a score of 4.96. Bangladesh, Egypt, Iran, and Pakistan are categorized as the least free countries. Three countries are in the third quartile (Nigeria, Turkey, and Vietnam), and four are in the second quartile (Indonesia, South Korea, and Mexico). South Korea is the most economically free country among the N-11 countries, with a score of 7.42 and a world rank of 43. Columns 5-7 depict the data taken from the Heritage Foundation and exhibit a broadly similar ranking of countries regarding economic freedom. According to the Heritage Foundation data, Iran is classified as ‘repressed’ and has the lowest level of economic freedom among the N-11 countries. About 50% of the countries are classified as ‘mostly unfree’, and only one country (South Korea) is categorized as ‘mostly free’. It is clear from Table 2 that a majority of the N-11 countries have very low levels of economic freedom and thus have weak economic institutions.

Table 1. Growth performance of N-11 countries, 2001 to 2020.

Countries	Avg. annual GDP growth	Rank within N-11	Avg. annual GDP per capita growth	Rank within N-11
Bangladesh	5.98	2	4.62	2
Egypt	4.25	7	2.14	8
Indonesia	4.91	4	3.66	3
Iran	2.89	10	1.42	10
South Korea	3.63	9	3.12	5
Mexico	1.42	11	0.15	11
Nigeria	5.32	3	2.57	7
Pakistan	4.00	8	2.02	9
Philippines	4.78	5	2.88	6
Turkey	4.68	6	3.26	4
Vietnam	6.41	1	5.34	1

Source: World Bank (2023).

Table 2. Economic freedom scores and ranking for N-11 countries, 2020.

Countries	EF (F.I.)	World rank	Status	EF (H.F.)	World rank	Status
Bangladesh	5.89	139	Least free	56.40	122	Mostly unfree
Egypt	5.61	150	Least free	54.00	142	Mostly unfree
Indonesia	7.09	66	2 nd quartile	67.20	54	Moderately free
Iran	4.96	159	Least free	49.20	164	Repressed
South Korea	7.42	43	2 nd quartile	74.00	25	Mostly free
Mexico	7.12	64	2 nd quartile	66.00	67	Moderately free
Nigeria	6.70	92	3 rd quartile	57.20	116	Mostly unfree
Pakistan	6.03	130	Least free	54.80	135	Mostly unfree
Philippines	7.09	66	2 nd quartile	64.50	70	Moderately free
Turkey	6.48	112	3 rd quartile	64.40	71	Moderately free
Vietnam	6.42	113	3 rd quartile	58.80	105	Mostly unfree

Source: Fraser Institute (2023) and Heritage Foundation (2023).

The key objective of this paper is to analyze the link between economic freedom and growth in N-11 economies from 2001 to 2020. This paper contributes to the existing literature in several ways. First, this paper makes one of the first efforts to analyze the association between economic freedom and economic growth in the case of N-11 countries. Second, this paper utilizes the aggregate indices of economic freedom from the Fraser Institute and the Heritage Foundation. The majority of existing studies use either one of these indices. Third, this study links the five areas of economic freedom (Fraser Institute) with income growth to understand the specific aspects of economic freedom that are most conducive to growth.

The subsequent paper is organized in the following manner: Section 2 examines the existing research on the relationship between economic freedom and growth. Section 3 provides a detailed explanation of the technique used, the variables considered, and the sources of data utilized. Section 4 explains the results and engages in a discussion of the findings of the study. Section 5 provides a concise overview of the findings and explores the potential impact on policy as outlined in the rest of the paper. The final section enumerates the limitations of the study and thus offers suggestions for future research.

2. LITERATURE REVIEW

The link between economic freedom and economic growth has been one of the predominant themes in the literature. Several empirical studies have examined this relationship using cross-country data (e.g., (Brkić et al., 2020; Carlsson & Lundström, 2002; De Haan & Siermann, 1998; Gwartney et al., 1999; Justesen, 2008; Saccone & Migheli, 2022)). The initial studies in this area utilized cross-sectional data, but with the increased data availability across countries over long periods, the scholars started using panel data regression methods. One of the important issues in the economic freedom-growth literature is related to the model specification. Specifically, there is a debate about whether both the level and changes in economic freedom need to be included in the regression models. Gwartney et al. (1999) studied the relationship between economic freedom and growth in 82 countries from 1980 to 1995. They found that both the level and change in economic freedom are positively related to economic growth. However, another seminal study by De Haan and Sturm (2000) found that only the change in economic freedom matters for growth, and the level of economic freedom is not important. This paper also compared the indices of economic freedom provided by the Heritage Foundation and the Fraser Institute and reported a similar ranking for the countries analysed. Lawson and Murphy (2018) examined this issue of specification and estimated two different models for 115 countries from 1995 to 2004. Their results showed that including the 'level of economic freedom' improves the in-sample estimates but does not significantly affect the out-of-sample forecasts. Another important area of research in the literature is concerned with the examination of linkages between individual areas and components of economic freedom with growth (e.g., (Ayal & Karras, 1998; Carlsson & Lundström, 2002; De Haan & Siermann, 1998; Heckelman & Stroup, 2000)). Researchers argued that more meaningful policy implications could be derived by

linking the disaggregated components of economic freedom with growth. [Ayal and Karras \(1998\)](#) examined the relationship between the components of economic freedom and growth in 58 countries from 1975-1990. Out of 13 components of economic freedom, they reported a significant association between 6 components of economic freedom and productivity and capital accumulation. Employing economic freedom indices from the Fraser Institute, [Carlsson and Lundström \(2002\)](#) examined the link between areas of economic freedom and growth for 74 countries from 1975 to 1995. They argued that a rise in economic freedom may not favorably affect growth because some components of economic freedom have a negative effect on growth and others are found to have an insignificant effect.

Researchers have also investigated the linkages between economic freedom and growth by using a homogenous set of countries sharing similar characteristics (e.g. [\(Cebula & Clark, 2012; Cervelló-Royo, Devecce, & Blanco-González Tejero, 2023; Erdem & Tugcu, 2012; Kacprzyk, 2016\)](#)). For example, [Kacprzyk \(2016\)](#) argues that analyzing and grouping countries with some common features is more useful from a policy perspective. He examined the linkage between economic freedom and growth in 28 EU countries from 1985 to 2009 and reported that four areas of economic freedom have a positive impact on growth. [Cervelló-Royo et al. \(2023\)](#) employed the Heritage Foundation's index of economic freedom and used fuzzy set qualitative comparative analysis to examine the economic freedom-growth relationship in 23 Eurozone-3 countries from 2015 to 2019. The authors observed that high levels of business freedom, labor freedom, and government integrity will likely raise economic growth. [Cebula and Clark \(2012\)](#) found a positive association between economic freedom and growth in OCED countries from 2004 to 2008. In contrast, [Erdem and Tugcu \(2012\)](#) reported a negative impact of economic freedom on the long-run economic growth of OECD countries.

Though a significant number of studies have tested the connection between economic freedom and economic performance for a large cross-section of countries, the literature focusing exclusively on developing countries has also emerged in recent years (e.g., [\(Ahmed et al., 2023; Gouider, Nouira, & Saafi, 2022; Gwartney & Holcombe, 2019; Kouton, 2019; Santiago, Fuinhas, & Marques, 2020\)](#)). Using the Heritage Foundation's index of economic freedom and applying the panel threshold approach, [Gouider et al. \(2022\)](#) studied the relationship between economic freedom and growth for 35 emerging and developing countries from 1996 to 2018. They found evidence of a non-linear relationship and a differential threshold level of economic freedom in emerging and developing economies. [Nadeem, Yang, Akhtar, Dong, and Niazi \(2019\)](#) found a positive association between economic freedom and growth in five South Asian countries from 1990 to 2015. They reported that all five areas of economic freedom did not exhibit a positive relationship with economic growth. [Ahmed et al. \(2023\)](#) reported a similar finding for South Asian countries. They examined the relationship between economic freedom and growth for four South Asian countries from 1995 to 2021 and reported a favourable effect of economic freedom on growth. This study utilized the Heritage Foundation's index of economic freedom and observed that not all the individual sub-components of economic freedom are positively associated with growth. [Kouton \(2019\)](#) analyzed the linkages between economic freedom and inclusive growth in 30 Sub-Saharan African countries by applying the GMM method. He found a beneficial effect of the level and changes in economic freedom on growth and reported a causal link between economic freedom and growth. In contrast, [Santiago et al. \(2020\)](#) reported an adverse effect of economic freedom on long-run economic growth in the case of Latin American and Caribbean developing countries. [Santhirasegaram \(2007\)](#) found an insignificant effect of economic freedom on growth in 70 developing countries.

Several studies have also investigated the linkages between economic freedom and economic growth at the state/regional level (e.g., [\(Compton et al., 2011; Hall, Lacombe, & Shaughnessy, 2019; Spruk & Kešeljević, 2018; Wiseman, 2017\)](#)). Using ordinary least squares (OLS) with fixed effects and System Generalized Method of Moments (GMM) methods, [Compton et al. \(2011\)](#) found evidence of a positive relationship between economic freedom and growth for 50 U.S. states from 1981 to 2004. Using both methods, the authors reported changes in economic freedom to be positively related to economic growth. However, the level of economic freedom exhibited a positive relationship with growth only while using the OLS method. [Wiseman \(2017\)](#) also found a positive association between changes

in economic freedom and growth for the U.S. states from 1979 to 2011. He reported that relatively large income growth is observed for people in the bottom 90 percent group compared to those in the top 10 percent. Spruk and Kešeljević (2018) reported a favorable effect of economic freedom on growth for 407 German districts from 1995 to 2010. They found that an improvement of one point in the economic freedom index will likely raise economic growth and income levels by 8.5 percent and 12.3 percent, respectively. Hall et al. (2019) accounted for spatial autocorrelation and reported a favourable effect of economic freedom on real per capita gross state product.

3. METHODOLOGY AND DATA

This study follows the literature to study the linkage between economic freedom and economic growth in N-11 countries (e.g., (Carlsson & Lundström, 2002; Gouider, 2022; Kacprzyk, 2016)). The following regression model is employed in this paper:

$$Y_{it} = \beta_0 + \beta_1 EF_{it} + \beta_2 Z_{it} + \eta_i + \gamma_t + \varepsilon_{it} \quad (1)$$

Where Y_{it} denotes the logarithm of GDP per capita in country i at time t , EF_{it} shows the economic freedom index in country i at time t , and Z_{it} represents the two control variables, viz. investment to GDP ratio and labor force participation rate (LFPR). The η_i and γ_t show the country-specific effects and time-specific effects, respectively. ε_{it} represents the error term in the model. Equation 1 shows that a country's economic performance depends on the quality of its economic institutions (as measured by economic freedom), the investment-to-GDP ratio, and the labor force participation rate. In this model, the coefficient of interest is β_1 and we expect it to be positive and statistically significant. In other words, we expect higher economic freedom to have a favorable effect on economic growth. We also expect a positive relationship between investment-to-GDP ratio, LFPR, and economic growth. Countries with higher investment rates and LFPR are likely to witness higher growth.

This study uses the annual data on N-11 countries from 2001 to 2020. The availability of the data determines the choice of this time period. The data on the dependent variable, GDP per capita PPP at constant 2017 international dollars, as well as the two control variables, investment to GDP ratio and labor force participation rate, are sourced from the World Development Indicators of the World Bank. The key explanatory variable in this study is economic freedom. We primarily take the economic freedom index data from the Fraser Institute. This index is widely used in the literature and is considered a suitable measure of the quality of economic institutions (Angulo-Guerrero et al., 2017; Geloso, Hyde, & Murtazashvili, 2022; Lawson & Murphy, 2018; Sharma, 2020; Sharma, Sharma, & Tokas, 2022). This index is based on 44 different variables and has been available annually since 2000. This index has five key areas: the size of government (EF1), legal system and property rights (EF2), sound money (EF3), free trade (EF4), and regulation (EF5) (Fraser Institute, 2023; Hall & Lawson, 2014). The economic freedom index and the five areas take values from 0 to 10, with 0 denoting the lowest level of economic freedom and 10 representing the highest. We also examine the link between economic growth and five areas of the economic freedom index. We also attempt to utilize the index of economic freedom prepared by the Heritage Foundation in the regression model. This index is also commonly used in the literature and takes values from 0 to 100. The value of 0 shows the lowest level of economic freedom, whereas 100 denotes the highest (Bjørnskov, 2016; Heritage Foundation, 2023).

We use the pooled ordinary least squares method (OLS) but do not report these results as they are likely to be biased and inconsistent. Wooldridge (2009) shows that the use of pooled OLS in panel data is associated with heterogeneity bias. This bias occurs because the estimated model excludes a time-invariant variable. We attempt to overcome this problem by estimating the model described in Equation 1 through the panel data regression methods, viz., fixed effects and random effects. The fixed effects model assumes that the unobserved variation across countries is correlated with the explanatory variables of the model, whereas the random effects model assumes no correlation between the unobserved variable and the explanatory variables of the model (Torres-Reyna, 2007; Wooldridge, 2009). We use the Hausman test to select the appropriate estimation method.

The earlier studies on this theme primarily used the OLS method (e.g., (De Haan & Sturm, 2000; Gwartney et al., 1999)). However, the panel data methods have gained popularity with better availability of data across countries over longer time periods. The panel regression techniques used in this paper have been widely used in cross-country studies (e.g., (Fokam, Mbengono, Sato, Noumessi, & Tadadjeu, 2021; Sharma & Sharma, 2023)) and in several studies related to economic freedom (e.g., (Ahmed et al., 2023; Gouider, 2022; Hussain & Haque, 2016; Sharma et al., 2022)). For example, Ahmed et al. (2023) have used OLS and random effects methods to examine the link between economic freedom and growth in South Asian countries. Hussain and Haque (2016) employed both fixed and random effects methods to understand the effect of economic freedom on growth in 186 countries. Gouider (2022) also used fixed-effects and random-effects methods to analyse this relationship in the case of Arab countries. However, scholars prefer the usage of the system GMM method as it is better able to deal with endogeneity concerns (e.g., (Brkić et al., 2020; Compton et al., 2011; Kacprzyk, 2016; Shokhrukh, Ikboljon, & Zamon, 2023)).

Table 3 presents the descriptive statistics of the variables used in this paper. In our sample of N-11 countries, the mean GDP per capita is 12118 US dollars. It has a minimum value of 2337.365 US dollars and a maximum value of 42758.59, showing considerable variation. The average value of the Fraser Institute's economic freedom index is 6.43. The lowest value of the economic freedom index (4.96) was observed for Iran in 2020, and the highest value (7.76) was for South Korea in 2017.

Table 3. Descriptive statistics.

Variable	Mean	Std. deviation	Minimum	Maximum
GDP per capita (PPP)	12118	9417.282	2337.365	42758.59
EF (Fraser)	6.43	0.686	4.96	7.76
EF (Heritage)	56.839	7.488	35.9	74.3
Size of govt (EF1)	7.451	0.998	4.87	8.98
Legal system & PRs (EF2)	4.273	1.049	2.39	6.92
Sound money (EF3)	7.735	1.397	3.59	9.78
Free trade (EF4)	6.319	1.016	2.58	7.99
Regulation (EF5)	6.371	0.832	4.36	7.93
Investment/GDP	24.15	6.191	12.446	35.799
LFPR	59.661	9.606	41.907	81.866

Note: Observations: 218. GDP: Gross domestic product; PPP: Purchasing power parity; EF: Economic freedom; LFPR: Labour force participation rate.

4. RESULTS AND DISCUSSION

This section presents the panel data regression results showing the connection between economic freedom and growth in the N-11 countries. First, we show the bivariate association between economic freedom and per capita GDP in the N-11 countries from 2001 to 2020. Figure 1 shows a positive association between economic freedom and per capita GDP. On average, countries with higher economic freedom have higher levels of per capita GDP, and vice-versa. For example, countries such as Vietnam, Pakistan, and Egypt have low levels of mean economic freedom and exhibit low levels of per capita GDP. On the other hand, South Korea and Mexico, with relatively higher levels of economic freedom, have higher levels of per capita GDP. Because of this positive relationship between economic freedom and a country's per capita income, it is useful to examine the regression results.

Table 4 reports the fixed effects and random effects model results with the natural log of GDP per capita as the dependent variable. All the regression models also include year dummies. Column (1) shows the fixed effects results with the economic freedom index obtained from the Fraser Institute as the main explanatory variable. The coefficient on the economic freedom variable is positive and significant, implying that higher economic freedom levels in a country are associated with higher income growth.

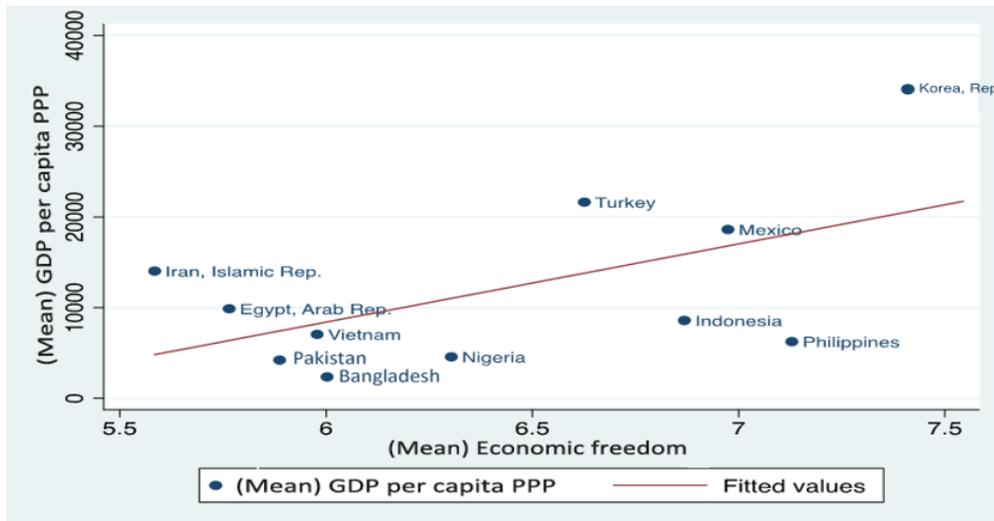


Figure 1. Economic freedom and GDP per capita relationship: N-11 countries.

A one-point improvement in the economic freedom index is associated with a 0.106 percent growth in GDP per capita. We check the robustness of this result by using the Heritage Foundation’s index of economic freedom. This model is represented in column (2), which also shows that increased levels of economic freedom are associated with higher growth in N-11 countries. Even though the coefficient on the economic freedom variable in column (2) is positive and significant, it is considerably smaller in magnitude than that obtained in column (1). Column (2) shows that a one-point increase in the economic freedom index is associated with about 0.01 percent growth in GDP per capita. The sign on the control variables is in the expected direction, but these are insignificant in both the fixed effects models in columns (1) and (2). The Hausman test is used to select the appropriate model specification. The p-value is greater than 0.05, suggesting that the random effects model is suitable in this case. The random effects results are reported in the last two columns of Table 4. Column (3) shows the findings with the Fraser Institute’s economic freedom index, highlighting the positive effect of economic freedom on growth. Specifically, it shows that a one-point improvement in the economic freedom index is associated with about 0.108 percent growth in GDP per capita. We obtain a similar result in column (4) using the Heritage Foundation’s index of economic freedom. Thus, the results in Table 4 highlight the favorable impact of economic freedom on growth in N-11 countries. The coefficient on the investment/GDP variable is positive and significant in column (4), indicating the favorable effect of investment on economic growth. For most of the control variables, the signs are positive, but the effects are found to be weak.

Table 4. Relationship between GDP per capita and economic freedom.

Independent variables	(1)	(2)	(3)	(4)
	FE	FE	RE	RE
Economic freedom (F.I.)	0.106** (0.044)		0.108** (0.044)	
Investment/GDP	0.007 (0.005)	0.009 (0.005)	0.007 (0.005)	0.009* (0.005)
LFPR	0.005 (0.006)	0.000 (0.006)	0.004 (0.005)	-0.001 (0.005)
Economic freedom (H.F.)		0.010** (0.003)		0.011*** (0.003)
_Cons	7.767*** (0.450)	8.047*** (0.295)	7.779*** (0.441)	8.050*** (0.353)
Observations	218	218	218	218
R-squared	0.84	0.84		

Note: Robust standard errors are in parenthesis.
 *** p<0.01, ** p<0.05, * p<0.1.
 All regressions include time dummies.

We also analyze the linkage between the five areas of economic freedom and growth in N-11 countries. These results are presented in Table 5. As the Hausman test indicated using the random effects model, we only present the results based on the random effects model. As in Table 4, all the regression models include year dummies, and the dependent variable is the logarithm of GDP per capita. Column (1) of Table 5 indicates that the size of government (EF1) has an insignificant effect on economic growth. The coefficient on EF1 is negative but insignificant. The sign on EF2 is positive and significant, which implies that an improvement in the legal system and property rights is associated with higher economic growth. This is shown in column (2). A one-point increase in the EF2 index corresponds to about 0.121 percent growth in GDP per capita. Column (3) shows the effect of sound money (EF3) on economic growth. The coefficient on EF3 is positive and significant, implying that stable inflation and macroeconomic health are associated with higher economic growth. A one-point improvement in the EF3 index corresponds to about 0.027 percent growth in GDP per capita. The effect of free trade (EF4) on growth is shown in column (4). A rise in free trade is associated with increased economic growth in N-11 countries. The coefficient on EF4 is positive and takes the value of 0.061, implying that a one-point improvement in the EF4 index corresponds to about 0.061 percent growth in GDP per capita in N-11 countries. Column (5) shows the effect of regulation (EF5) on economic growth. The coefficient on EF5 turns out to be insignificant, which suggests that fewer regulatory constraints do not significantly impact economic growth in N-11 countries. Broadly, the findings in Table 5 suggest that three areas of economic freedom, viz., legal system and property rights (EF2), sound money (EF3), and free trade (EF4), are positively related to growth in N-11 countries. The other two areas, namely, the size of government (EF1) and regulation (EF5), have an insignificant effect on growth.

Table 5. Relationship between GDP per capita and the areas of economic freedom.

Independent variables	(1)	(2)	(3)	(4)	(5)
	GDP PC				
Size of govt. (EF1)	-0.021 (0.044)				
Investment/GDP	0.009 (0.006)	0.008 (0.005)	0.007 (0.005)	0.010** (0.005)	0.009 (0.006)
LFPR	0.004 (0.007)	0.006 (0.004)	0.004 (0.006)	0.002 (0.004)	0.004 (0.005)
Legal sys. & PRs (EF2)		0.121** (0.055)			
Sound money (EF3)			0.027* (0.016)		
Free trade (EF4)				0.061*** (0.023)	
Regulation (EF5)					0.046 (0.036)
_Cons	8.549*** (0.716)	7.832*** (0.293)	8.258*** (0.385)	8.109*** (0.381)	8.101*** (0.452)
Observations	218	218	218	218	218

Note: Robust standard errors are in parenthesis
 *** p<0.01, ** p<0.05, * p<0.1
 All regressions include time dummies.

The findings of this paper indicate that a rise in economic freedom is likely to positively affect the growth of per capita GDP in N-11 economies. This positive link between economic freedom and growth suggests the importance of formulating policies that promote economic freedom. The N-11 countries must improve the quality of their economic institutions by undertaking market-oriented reforms, which are likely to have a favorable effect on their economic growth. The findings of this study are in agreement with the extant literature (e.g., (Gouider, 2022; Hussain & Haque, 2016; Islam, 1996; Kouton, 2019)). The findings concerning the relationship between areas of economic freedom and growth suggest that these three areas have a positive and significant association with growth. These are

the legal system and property rights (EF2), sound money (EF3), and free trade (EF4). These results suggest that N-11 countries should focus on developing a robust legal system, ensuring property rights protection, and undertaking policies that stabilize inflation and promote international trade. The results also indicate an insignificant effect of the size of government (EF1) and regulation (EF5) on per capita GDP growth. Several studies in the literature have found an insignificant effect of the size of the government on growth (e.g., (Ayal & Karras, 1998; Kacprzyk, 2016)).

5. CONCLUSION AND POLICY IMPLICATIONS

The majority of the N-11 countries have low levels of economic freedom, and thus, considerable potential exists to improve the quality of economic institutions in these countries. This paper examines the association between economic freedom and growth in the N-11 economies from 2001 to 2020. This paper also attempted to understand the linkages between the five areas of economic freedom and economic growth. The study used panel regression methods and the indices of economic freedom obtained from the Fraser Institute and the Heritage Foundation. The paper found a positive association between economic freedom and growth in the N-11 countries. Specifically, the random effects model results showed that a one-point improvement in the Fraser Institute's index of economic freedom is associated with a 0.108 per cent growth in per capita GDP. The results based on the individual areas of economic freedom index revealed a positive association between three areas of the economic freedom index (legal system & property rights, sound money, and free trade) and growth. In contrast, the other two areas (size of government and regulation) exhibited an insignificant relationship with economic growth. The results of this study highlight that N-11 countries with higher levels of economic freedom and better quality of economic institutions are likely to witness higher growth. This implies that policies aimed at strengthening the legal system, protecting property rights, stabilizing the macroeconomic environment, and promoting free trade need to be formulated, as these policies are likely to prove conducive to growth in the N-11 economies.

6. LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

This study analyses the connection between economic freedom and growth in the context of N-11 countries and thus makes a useful contribution to the literature. However, this paper has several drawbacks that may be tackled in future research. First, the findings presented in this paper do not establish causality between economic freedom and growth. Using fixed effects and random effects models does not completely solve the endogeneity problems. Second, the model used in this study only considers the 'level of economic freedom' and not the 'change in economic freedom' (see Lawson and Murphy (2018)). Thus, future studies could attempt to re-estimate the model by incorporating the effects of both 'level of economic freedom' and 'change in economic freedom'. Third, there is a wide variation in the N-11 countries with respect to growth performance and the level of economic freedom. Disaggregated studies at the micro-level could provide more rich insights into the relationship between economic freedom and growth.

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REFERENCES

- Abbas, S. (2014). Long term effect of economic growth on unemployment level: In case of Pakistan. *Journal of Economics and Sustainable Development*, 5(11), 103-108.
- Acemoglu, D., & Robinson, J. (2008). *The role of institutions in growth and development* (Vol. 10). Washington, DC: World Bank.

- Ahmed, S., Mushtaq, M., Fahlevi, M., Aljuaid, M., & Saniuk, S. (2023). Decomposed and composed effects of economic freedom on economic growth in South Asia. *Heliyon*, 9(2), e13478. <https://doi.org/10.1016/j.heliyon.2023.e13478>
- Angulo-Guerrero, M. J., Pérez-Moreno, S., & Abad-Guerrero, I. M. (2017). How economic freedom affects opportunity and necessity entrepreneurship in the OECD countries. *Journal of Business Research*, 73, 30-37. <https://doi.org/10.1016/j.jbusres.2016.11.017>
- Ayal, E. B., & Karras, G. (1998). Components of economic freedom and growth: An empirical study. *The Journal of Developing Areas*, 32(3), 327-338.
- Berggren, N. (2003). The benefits of economic freedom: A survey. *The Independent Review*, 8(2), 193-211.
- Björnskov, C. (2016). Economic freedom and economic crises. *European Journal of Political Economy*, 45, 11-23. <https://doi.org/10.1016/j.ejpoleco.2016.08.003>
- Brkić, I., Gradojević, N., & Ignjatijević, S. (2020). The impact of economic freedom on economic growth? New European dynamic panel evidence. *Journal of Risk and Financial Management*, 13(2), 1-13. <https://doi.org/10.3390/jrfm13020026>
- Carlsson, F., & Lundström, S. (2002). Economic freedom and growth: Decomposing the effects. *Public Choice*, 112(3-4), 335-344.
- Cebula, R. J., & Clark, J. (2012). Lessons from the experience of OECD nations on macroeconomic growth and economic freedom, 2004-2008. *International Review of Economics*, 59, 231-243. <https://doi.org/10.1007/s12232-012-0162-0>
- Cervelló-Royo, R., Devece, C., & Blanco-González Tejero, C. (2023). Economic freedom influences economic growth and unemployment: An analysis of the Eurozone. *Economic Research*, 36(2), 2175007. <https://doi.org/10.1080/1331677X.2023.2175007>
- Compton, R. A., Giedeman, D. C., & Hoover, G. A. (2011). Panel evidence on economic freedom and growth in the United States. *European Journal of Political Economy*, 27(3), 423-435. <https://doi.org/10.1016/j.ejpoleco.2011.01.001>
- De Haan, J., & Siermann, C. L. (1998). Further evidence on the relationship between economic freedom and economic growth. *Public Choice*, 95(3-4), 363-380.
- De Haan, J., & Sturm, J. (2000). On the relationship between economic freedom and economic growth. *European Journal of Political Economy*, 16(2), 215-241. [https://doi.org/10.1016/S0176-2680\(99\)00065-8](https://doi.org/10.1016/S0176-2680(99)00065-8)
- Erdem, E., & Tugcu, C. T. (2012). New evidence on the relationship between economic freedom and growth: A panel cointegration analysis for the case of OECD. *Global Economy Journal*, 12(3), 1-16. <https://doi.org/10.1515/1524-5861.1796>
- Fokam, G., Mbengono, P., Sato, G., Noumessi, W., & Tadamjeu, D.-K. (2021). Women in parliament and public health expenditure: Evidence from Sub-Saharan African countries. *Journal of Social Economics Research*, 8(2), 66-76. <https://doi.org/10.18488/journal.35.2021.82.66.76>
- Fraser Institute. (2023). *Economic freedom of the world*. Retrieved from <https://www.fraserinstitute.org/studies/economic-freedom>
- Geloso, V., Hyde, K., & Murtazashvili, I. (2022). Pandemics, economic freedom, and institutional trade-offs. *European Journal of Law and Economics*, 54(1), 37-61.
- Gouider, A. (2022). The nexus between economic freedom and economic growth in Arab countries. *Montenegrin Journal of Economics*, 18(1), 117-125. <https://doi.org/10.14254/1800-5845/2022.18-1.9>
- Gouider, A., Noura, R., & Saafi, S. (2022). Re-exploring the nexus between economic freedom and growth: Is there a threshold effect? *Journal of Economic Development*, 47(3), 147-167.
- Gwartney, J., Lawson, R., Hall, J., & Murphy, R. (2022). *Economic freedom of the world: 2022 annual report*. Vancouver: Fraser Institute.
- Gwartney, J. D., & Holcombe, R. G. (2019). Economic freedom, constitutional structure, and growth in developing countries. In *Institutions and Collective Choice in Developing Countries*. In (pp. 33-60): Routledge.
- Gwartney, J. D., Lawson, R. A., & Holcombe, R. G. (1999). Economic freedom and the environment for economic growth. *Journal of Institutional and Theoretical Economics*, 155(4), 643-663.
- Hall, J. C., Lacombe, D. J., & Shaughnessy, T. M. (2019). Economic freedom and income levels across US states: A spatial panel data analysis. *Contemporary Economic Policy*, 37(1), 40-49. <https://doi.org/10.1111/coep.12287>

- Hall, J. C., & Lawson, R. A. (2014). Economic freedom of the world: An accounting of the literature. *Contemporary Economic Policy*, 32(1), 1-19. <https://doi.org/10.1111/coep.12010>
- Heckelman, J. C., & Stroup, M. D. (2000). Which economic freedoms contribute to growth? *Kyklos*, 53(4), 527-544.
- Heritage Foundation. (2023). *Explore the data*. Retrieved from <https://www.heritage.org/index/explore?view=by-region-country-year>
- Hussain, M. E., & Haque, M. (2016). Impact of economic freedom on the growth rate: A panel data analysis. *Economies*, 4(2), 1-15. <https://doi.org/10.3390/economies4020005>
- Islam, S. (1996). Economic freedom, per capita income and economic growth. *Applied Economics Letters*, 3(9), 595-597. <https://doi.org/10.1080/135048596356032>
- Justesen, M. K. (2008). The effect of economic freedom on growth revisited: New evidence on causality from a panel of countries 1970-1999. *European Journal of Political Economy*, 24(3), 642-660. <https://doi.org/10.1016/j.ejpoleco.2008.06.003>
- Kacprzyk, A. (2016). Economic freedom-growth nexus in European union countries. *Applied Economics Letters*, 23(7), 494-497. <https://doi.org/10.1080/13504851.2015.1083076>
- Kouton, J. (2019). Relationship between economic freedom and inclusive growth: A dynamic panel analysis for Sub-Saharan African countries. *Journal of Social and Economic Development*, 21(1), 143-165. <https://doi.org/10.1007/s40847-019-00076-y>
- Lawson, R., & Murphy, R. (2018). Economic freedom and growth specification debate: A retrospective. *Applied Economics Letters*, 25(15), 1038-1040. <https://doi.org/10.1080/13504851.2017.1391997>
- Mogess, Y. K., Eshete, Z. S., & Alemaw, A. T. (2023). Economic growth and poverty reduction: Evidence from Sub-Saharan African (SSA) countries. *Poverty & Public Policy*, 15(2), 251-278. <https://doi.org/10.1002/pop4.364>
- Nadeem, M., Yang, J., Akhtar, T., Dong, W., & Niazi, M. (2019). Does really economic freedom matter for growth in South Asia? Empirical evidences from pre-economic crises and post-economic crises period. *Asian Economic and Financial Review*, 9(1), 52-63.
- North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge: Cambridge University Press.
- Rode, M., & Coll, S. (2012). Economic freedom and growth. Which policies matter the most? *Constitutional Political Economy*, 23(2), 95-133. <https://doi.org/10.1007/s10602-011-9116-x>
- Roemer, M., & Gugerty, M. K. (1997). *Does economic growth reduce poverty?* Cambridge, MA: Harvard Institute for International Development.
- Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economy*, 98(5, Part 2), S71-S102.
- Saccone, D., & Migheli, M. (2022). Free to escape? Economic freedoms, growth and poverty traps. *Review of Development Economics*, 26(3), 1518-1554. <https://doi.org/10.1111/rode.12868>
- Sala-i-Martin, X. (2006). The world distribution of income: falling poverty and convergence, period. *The Quarterly Journal of Economics*, 121(2), 351-397. <https://doi.org/10.1162/qjec.2006.121.2.351>
- Santhirasegaram, S. (2007). The impact of democratic and economic freedom on economic growth in developing countries: Pooled cross country data evidence. *Journal of Applied Sciences*, 7(11), 1484-1489.
- Santiago, R., Fuinhas, J. A., & Marques, A. C. (2020). The impact of globalization and economic freedom on economic growth: The case of the Latin America and Caribbean countries. *Economic Change and Restructuring*, 53, 61-85. <https://doi.org/10.1007/s10644-018-9239-4>
- Sharma, A. (2020). Does economic freedom improve health outcomes in Sub-Saharan Africa? *International Journal of Social Economics*, 47(12), 1633-1649. <https://doi.org/10.1108/IJSE-01-2020-0008>
- Sharma, A., Sharma, V., & Tokas, S. (2022). Institutional quality and health outcomes: Evidence from the EU countries. *Economics and Business Letters*, 11(2), 70-78. <https://doi.org/10.17811/eb1.11.2.2022.70-78>
- Sharma, V., & Sharma, A. (2023). An analysis of India's export potential in South Asia under SAFTA. *Journal of Social Economics Research*, 10(2), 59-68. <https://doi.org/10.18488/35.v10i2.3372>

- Shokhrukh, O., Ikboljon, K., & Zamon, X. (2023). The role of economic freedom in the relationship between foreign direct investment and economic growth. *Journal of Economic Integration*, 38(2), 322-334. <https://doi.org/10.11130/jei.2023.38.2.322>
- Solow, R. M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics*, 70(1), 65-94. <https://doi.org/10.2307/1884513>
- Soylu, Ö. B., Çakmak, İ., & Okur, F. (2018). Economic growth and unemployment issue: Panel data analysis in Eastern European Countries. *Journal of International Studies*, 11(1), 93-107. <https://doi.org/10.14254/2071-8330.2018/11-1/7>
- Spruk, R., & Kešeljević, A. (2018). Economic freedom and growth across German districts. *Journal of Institutional Economics*, 14(4), 739-765.
- Torres-Reyna, O. (2007). Panel data analysis fixed and random effects using Stata (v.6.0). Data & Statistical Services. In (pp. 1-58). United States: Princeton University.
- Wiseman, T. (2017). Economic freedom and growth in US state-level market incomes at the top and bottom. *Contemporary Economic Policy*, 35(1), 93-112. <https://doi.org/10.1111/coep.12173>
- Wooldridge, J. M. (2009). Introductory econometrics: A modern approach. In (4th ed., pp. 22-68). Boston: South-Western College Publishing, Cengage Learning.
- World Bank. (2023). *World development indicators*. Retrieved from <https://data.worldbank.org/indicator>

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