RESEARCH PAPER

THE ROLE OF INSTITUTIONS IN THE ECONOMIC GROWTH OF OECD COUNTRIES

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Abstract

This paper analyzes the role of institutional quality in determining economic growth in the OECD countries from 1995 to 2021, concerning the institutional economics framework developed by North (1990) and further advanced by Rodrik (2000) and Acemoglu et al. (2005). Institutions are viewed as the formal and informal structures that regulate economic, political and social activities and are considered the key to influencing economic performance through the minimization of transaction costs, encouragement of innovation and human capital development. The theoretical framework assumes that inclusive institutions foster sustained economic growth while extractive institutions stifle development by consolidating power and assets. This paper hypothesizes that institutional quality positively influences economic growth in OECD countries. Using panel regression models and employing the Fraser Institute's Economic Freedom Index and the Heritage Foundation's Index of Economic Freedom as measures of institutional quality, it examines how government size, property rights, regulation, and trade freedom affect growth. The findings reveal that institutional quality—measured through indicators of economic freedom—has a positive and statistically significant impact on economic growth, particularly in the areas of small government (reflected through lower tax burden and government spending) and sound monetary policy, indicating the importance of fiscal and monetary stability for promoting growth in OECD countries. This study is useful for policymakers who wish to improve economic growth through institutional change.

Introduction

The link between institutions and economic growth has been a focal area of discussion in economic theory. It has its origin in both classical and modern economic theories. The theoretical background for analyzing this relation is based on the concept of institutions as the rules that regulate economic, political, and social activities and determine the opportunities and constraints of economic actions.

The institutional theory of economic growth is derived from Douglass North (1990), who defines institutions as the 'rules of the game' that govern the relations between people to minimize uncertainties. North underlined that institutions define the context in which economic transactions occur and thus define the cost of transactions and production. From this point of view, institutions lower the cost of transactions by ensuring contracts, property rights, and other business hazards. This results in better resource utilization, increased capital investment and, therefore, increased economic development.

Dani Rodrik (2000) offers a useful categorization of institutions, dividing them into four key types, i.e. market-creating institutions, market-regulating institutions, market-stabilizing institutions and market-legitimizing institutions. Market-creating institutions, including property rights and contract enforcement, offer the right environment for economic transactions and investment. Without them, the private sector cannot venture into long-term investments. Competition authorities and other regulatory bodies are important to ensure that markets are competitive, that monopolies are not formed, and that consumers are protected. Monetary institutions such as the central banks and fiscal authorities are responsible for stabilizing macroeconomic factors such as inflation, interest rates and public debt. Last but not least, market-supporting institutions such as social security nets and labour laws guarantee that the fruits of growth are not monopolized by a few but are distributed across society, hence fostering social order and political stability.

The new institutional economics framework extends these ideas by incorporating institutions into mainstream neoclassical growth theories. This framework provides the important insight that economic growth is a function of physical and human capital and the quality of institutions. Acemoglu et al. (2005) argue that inclusive institutions must allow participation in economic and political activities for economic growth to occur. Inclusive institutions allow people to invest in activities, innovate, and create wealth without fear of having their wealth confiscated or being discriminated against. On the other hand, extractive institutions, which are those that centralize power and assets in the hands of a few, slow down growth by stifling innovation and restricting economic opportunities.

Theoretical findings from the endogenous growth theory also underscore the significance of institutions in long-run economic growth. Romer (1990) and Lucas (1988) stress the role of knowledge, innovation, and human capital as sources of growth. However, the effectiveness of these drivers depends on the existence of institutions that will support them. For instance, property rights help business people invest in new technologies, while legal systems guarantee the protection of intellectual property rights. In this view, institutions are central to creating an environment that supports technological advancement and human capital formation, which are the two critical factors for sustained economic growth.

In addition, research has been made on both institutions and growth, perceived from a political economy perspective. Olson (1993) coined the term 'stationary bandits', referring to economic growth as enhanced by strong institutions, which can only be provided by democracies since they reduce predation by governments or elites. Political stability, non-opacity of governance structures, and accountability structures are regarded as institutional prerequisites that can enhance economic growth by reducing uncertainties and encouraging investments and credibility of institutions.

Institutional complementarities are also the theoretical link between institutions and economic growth. This is an idea that Hall and Soskice (2001) develop in their Varieties of Capitalism perspective; it posits that institutions work optimally with other economic institutions. For instance, labour market regulations, education systems, and financial systems can be mutually supportive to improve the economy's performance. An institutional environment that is well-coordinated is likely to experience high economic growth compared to a poorly coordinated institutional environment that is likely to experience an economic decline.

The theoretical literature stresses that institutions are at the core of growth because they define investment, innovation, and production conditions. Inclusive and well-functioning institutions enable people to engage in economic activities and mitigate the risks of economic transactions, hence promoting efficient use of resources and higher economic growth. Conversely, some institutions may impede economic development by creating barriers to entrepreneurship, innovation, and investment. Consequently, the quality and structure of institutions are considered important factors that explain economic growth in the long run.

This paper tests the hypothesis that institutions positively affect economic growth in the countries of the OECD (Organization for Economic Co-operation and Development) from 1995 to 2021. The paper focuses on the relationship between institutions and economic growth in the OECD countries because institutions are important in determining any country's economic conditions, including the developed ones. Although most of the OECD countries have a stable political environment, strong legal infrastructure, and developed markets, there are still significant differences in the institutional quality that may affect the growth paths. For instance, variations in regulatory environment, property rights, and governance structures may result in varying economic performance among these countries. Furthermore, the structure of the OECD economies has become complex due to technological advancement, globalization, and the shift towards knowledge-intensive industries, requiring complex institutions that can sustain investment in human capital, research, and development. With the growing globalization of markets, the institutional framework for dealing with the risks of internationalization, providing property rights to innovations, and promoting competition is particularly important for continued growth. Furthermore, sound fiscal and monetary frameworks are crucial in managing macroeconomic stability given shocks, demographic factors and market forces. Moreover, political stability and institutions' credibility are critical for investment and economic activities since instability or corruption can negatively affect confidence. Therefore, understanding the role of institutional quality in determining economic growth within the context of the OECD countries is informative in understanding how institutions continue to influence the growth prospects of advanced economies in the context of globalization.

The paper employs institutional measures as a proxy of institutional quality, such as The Fraser Institute's Economic Freedom Index and The Heritage Foundation's Index of Economic Freedom and their components. These indices are widely used in literature and offer broad and detailed indicators of the institutional setting in different countries. The Economic Freedom Index of the Fraser Institute measures how a country's policies and institutions foster economic freedom based on factors such as the size of government, legal system and property rights, sound money, freedom to trade internationally and regulation. Likewise, The Heritage Foundation's Index of Economic Freedom contains indicators such as the rule of law, size of government, regulatory practices, and business freedom. Thus, the paper intends to demonstrate the impact of institutions on economic growth in the OECD countries using these indices. Every part of these indices reflects one or another aspect of institutional quality that forms the general economic background, which, in turn, contributes to the understanding of the interconnection between institutions and growth. Using these indicators, this paper aims to establish how the OECD countries with relatively higher institutional quality scores on these indices have supported economic growth during the period under study.

The paper's first section introduces the theoretical background of the relationship between institutions and economic growth. The second section reviews the relevant empirical literature. The third section explains the methodology and data. The fourth section presents the results and discusses them. The last section concludes, gives some policy recommendations and discusses the study's limitations and recommendations for further research.

Literature Review

Institutions and economic growth in OECD countries are complex subjects that have attracted much economic literature. The institutions, the rules, norms, and organizations governing agent relations are central to economic performance. This relationship can be viewed from different perspectives, such as the quality of governance, the regulatory environment, and how institutional frameworks affect economic policies.

One of the key components of this relationship is the concept of institutions which has been positively associated with economic growth in the sample of OECD countries. In a related study, Afonso et al. (2021) establish that institutional quality is a significant factor that influences the growth of these countries in the medium to long run. Using panel data and 2SLS estimation to control the endogeneity of institutional variables, their paper shows that the countries with better institutions enjoy greater economic growth. This is in line with Aldieri et al. (2021), who argue that the quality of governance plays a crucial role in determining economic performance. This supports the argument that good institutions enhance economic performance.

Further, institutional variables are endogenous, so identifying a causal link becomes difficult. Eicher and Leukert (2009) explain that the parameter heterogeneity in economic institutions is challenging and indicate that institutions affect economic performance differently depending on the context and income level. This variability points out the need to consider the institutional setting in each country of the OECD, since they play a critical role in shaping economic development.

In this context, it is important to acknowledge the significance of human capital. Hanushek and Woessmann (2011) opine that the quality of educational outcomes, which is associated with institutional quality, is one of the key factors determining economic growth. They argue that secure property rights and an open economy are the two critical institutional requirements that foster human capital accumulation that, in turn, improve economic performance. This view corresponds with the research of Macek and Janků (2015), who state that fiscal policy plays a crucial role in forming economic growth and is connected with institutional conditions.

Another important factor that defines the connection between institutions and economic growth is the role of political stability and corruption. In their study, Akçoraoğlu and Kaplan (2017) focus on the impact of political instability, such as corruption and government accountability, on economic growth in the OECD countries. Their work suggests that countries with low levels of corruption and high political stability are likely to grow more economically. This relationship is further explained by Peev and Mueller (2012), who opine that property rights and independent judiciaries are critical in developing market systems for growth.

This is in line with the fact that the regulatory environment is another important consideration closely related to governance and political structures. In a recent study, Zhou et al. (2022) examined the effect of institutional friction costs on economic growth and established that a good business environment helps minimize transaction costs and improve economic outcomes. This finding is especially important for OECD countries, where the regulatory environment can support or constrain economic activities.

Besides, the interaction between institutions and economic growth is not fixed but a dynamic process that may be affected by various factors, including globalization and technological change. For example, the digital economy has become one of the most important sources of growth in the OECD countries, as pointed out by Gomes et al. (2022). According to their longitudinal analysis, the effects of the digital economy on growth depend on the level of development of the countries in question, which means that institutional environments should be adjusted to successfully achieve the potential of technological progress.

The relationship between institutions and economic growth is also evident in the case of entrepreneurship. According to Stoica et al. (2020) economic openness and an enabling environment are two significant factors that impact entrepreneurship and drive economic development. Comparing

their results between different groups of countries, they establish that institutional quality affects entrepreneurial dynamics and, consequently, economic performance.

In addition, the impact of fiscal policy in the context of institutional quality is important. Considering institutional factors, Macek (2015) discusses how various tax systems and fiscal policies impact economic growth. The results imply that sound fiscal policies, coupled with sound institutions, can improve economic performance through efficient resource mobilization and efficient investment.

In conclusion, it can be stated that the connection between institutions and economic growth in OECD countries is rather diverse and can be viewed from different angles, including the quality of governance, political stability, regulation, and human capital. Cross-sectional and time series data for a large sample of countries provide evidence that institutions matter for economic growth and that good institutions are necessary for achieving better economic performance, which underlines the importance of institutional development as a policy tool for economic growth. Thus, the institutions will continue to be one of the most important drivers of the future economic development of the OECD countries in the context of the emerging new economy.

Empirical Methodology and Data

We follow the literature (Gwartney et al., 2006; Knack and Keefer, 1995) and set up the panel regression of the following form:

$$y_{it} = \alpha + \beta X_{it} + \gamma inst_{it} + \mu_t + e_{it}$$

where y_{it} is the dependent variable (economic growth per capita) for the country i in period t. X_{it} is a vector of control variables that account for other key factors (lagged GDP per capita physical capital, human capital, population growth and trade), $inst_{it}$ is the institutional variable (the Fraser Institute's Economic Freedom Index or the Heritage Foundation Index of Economic Freedom), α is the intercept term, μ_t describes period fixed effects to account for any unobserved period-specific factors and e_{it} is the intercept term.

In estimating the panel regression model, we incorporate period fixed effects to account for unobserved time-specific factors that may simultaneously influence all OECD countries while varying across different periods. These effects, represented by μ_t, capture global economic trends, policy changes, and external shocks such as financial crises or shifts in international trade dynamics. This approach ensures that the model isolates the impact of institutional variables from these common temporal influences. We refrain from including cross-sectional (country) fixed effects due to the limited time dimension of our dataset, comprising nine three-year averages from 1995 to 2021, which constrains the model's degrees of freedom and hampers the reliable estimation of country-specific effects. This limitation in methodology means that potential unobserved heterogeneity among countries is not directly addressed. Nevertheless, by integrating period fixed effects, the model effectively captures the essential temporal structure of the data and focuses on evaluating how changes in institutional quality and other explanatory variables over time relate to economic growth across nations. The choice of including only period fixed effects was made on theoretical grounds and is considered reliable, as it controls for common time-varying shocks and macroeconomic influences that could otherwise bias the estimation of the relationship between institutional quality and economic growth.

As proposed by Barro (1991) we use lagged GDP per capita, physical capital, human capital, and population growth as control variables. We also use a country's trade openness as a control variable. Lagged GDP per capita represents conditional convergence, as Barro (1991) suggests that countries with lower starting GDP per capita usually grow faster than wealthier nations, provided that investment and technology levels are similar. Investment in infrastructure and machinery as physical capital will likely boost growth by raising a country's productive capacity. Human capital, quantified through education or skill levels, is a major factor in sustaining growth because a more skilled workforce increases productivity and encourages innovation. A growing population can lead to both positive and negative impacts. At the same time, it can support growth by creating a larger labour force; if it outstrips

investments in capital and human resources, it may strain economic development. Trade openness is important since it supports economic growth by encouraging specialization, increasing market access, and nurturing the sharing of technology and ideas. In total, these factors are important for interpreting the determinants of economic growth and for accounting for important influences on the relationship between institutions and growth.

Firstly, we estimate the regression model with the Fraser Institute's Economic Freedom Index and its components (size of government, legal system and security of property rights, sound money, freedom to trade internationally and regulation). To check the robustness of the results, we estimate additional regressions with the institutional variables of the Heritage Foundation's Index of Economic Freedom and its components (property rights, government integrity, judicial effectiveness, government spending, tax burden, monetary freedom, business freedom, labour freedom, monetary freedom, trade freedom, investment freedom and financial freedom).

Previous research focusing on the relationship between economic development and institutional quality has employed the Fraser Institute's Economic Freedom Index and the Heritage Foundation's Index of Economic Freedom as institutional proxies. The Fraser Institute's Index has been used in seminal work by Gwartney et al. (2006) to show that countries with higher levels of economic freedom, as measured by secure property rights, effective legal structure, and minimal government intervention, experience higher economic growth. They also confirmed the positive relationship between economic freedom and other variables, including per capita income, investment and innovation. In the same vein, Knack and Keefer (1995) have used these indices to underscore the role of institutional quality in growth, pointing out that better institutions, better protection of property rights and efficient regulation reduce the cost of transactions and foster growth. These studies have established the Fraser and Heritage indices as useful tools for measuring institutional quality and economic performance, especially in cross-section growth equations. Furthermore, other sources that are also commonly used and can be used in the present work include the World Bank's World Governance Indicators, the Corruption Perception Index by Transparency International, and the Freedom in the World Index by Freedom House, which are also used to measure institutional quality.

The Fraser Institute's Economic Freedom Index rates the extent to which the policies and institutions in countries facilitate economic freedom. The index comprises five key areas, i.e. the size of government, the legal system, property rights, a sound money supply, the ability to trade internationally, and the regulation of credit, labour, and business. All components receive a scale of 0 to 10, where higher scores indicate greater economic freedom. A score of 9 in 'sound money' indicates that inflation is low and monetary policies are strong. In contrast, a lower score in 'size of government' indicates a larger public sector than the economy. These sectors' total score is a weighted average, permitting international comparisons. According to existing literature, the analysis uses the index (Gwartney et al., 2006), which regards institutional quality as a major factor in economic growth.

The Heritage Foundation's Index of Economic Freedom similarly captures a country's degree of economic freedom. Still, it focuses on twelve components grouped into four broad categories, i.e. the rule of law, the size of government, regulatory efficiency, and open markets. Every component receives a score from 0 to 100, with greater scores indicating increased economic freedom. A score of 80 or more in "property rights" suggests robust protection of private property, while a lower score in "government integrity" may signal greater corruption. The collective score delivers a complete understanding of a nation's economic environment. The Fraser Institute and Heritage Foundation indexes are commonly employed in empirical literature to measure how institutions affect economic growth. (Knack and Keefer, 1995). For robustness, regressions with this index and its components are also estimated.

As a proxy for economic growth, we use the GDP per capita growth rate (annual percentage); for physical capital, we use gross fixed capital formation (as % of GDP); for human capital, the human capital index based on the average year of schooling and an assumed rate of return to education; for population growth, we use the population growth rate; and for trade openness, we use trade as % of GDP (annual percentage). As mentioned above, as proxies for institutional quality, we use the Fraser Institute's Economic Freedom Index and the Heritage Foundation's Index of Economic Freedom. Our

study sample is from all OECD countries, and the study period is 1995-2021, with three-year averages, i.e., nine periods. Table 1 shows the descriptive statistics of the variables and their sources.

Table 1: Descriptive statistics of the variables

Variable	Obs.	Mean	Std. dev.	Min	Max	Source
GDP per capita growth	1020	2.10	3.44	-14.46	23.30	World Bank, GDP per capita growth (annual %)
Log of GDP per capita, PPP	1026	10.45	0.48	9.11	11.70	World Bank, GDP per capita, PPP (constant 2017 international $)
Log of gross fixed capital formation	1026	3.11	0.18	2.37	3.99	World Bank, Gross fixed capital formation (% of GDP)
Log of mean years of schooling	1026	2.40	0.20	1.55	2.66	UNDP, Mean years of schooling for adults aged 25 years and more
Population growth rate	1026	0.58	0.78	-2.26	2.89	World Bank, Population growth (annual %)
Log of trade	1026	4.36	0.52	2.80	5.97	World Bank, Trade (% of GDP)
Log of Fraser Institute index	874	2.04	0.07	1.72	2.19	Fraser Institute, Economic Freedom Index
Log of the Heritage Foundation index	1013	4.24	0.10	3.91	4.44	The Heritage Foundation, Index of Economic Freedom

Source: Authors' calculations

One limitation of this paper, i.e., of this methodology, is that we do not add country-fixed effects due to limited time series data. We can use government final consumption expenditures and inflation to control fiscal and monetary policy, but they are shown to be insignificant in our case. Other institutional variables are used in related studies, such as the World Bank's World Governance Indicators, Transparency International's Corruption Perception Index, and Freedom House's political rights and civil liberties.

Results and Discussion

This section presents the paper's results and discusses them. First, Table 2 shows the pairwise correlation coefficients between the variables. The results show that the correlation coefficient between the institutional variables is very high, and using them in one regression can cause multicollinearity problems. So, we estimate a separate regression for each institutional variable as the main independent variable of interest. Further research may transform the original variables into a new set of uncorrelated variables to deal with this problem. Also, we can see a negative and significant correlation coefficient between economic growth and institutions. Countries with better institutions face lower economic growth rates and vice versa.

Table 2: Pairwise correlation coefficients between the variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) GDP per capita growth	1.0000							
(2) Log of GDP per capita, PPP	-0.3214***	1.0000						
(3) Log of gross fixed capital formation	0.2686***	-0.0242	1.0000					
(4) Log of mean years of schooling	-0.0892*	0.5853***	0.0406	1.0000				
(5) Population growth rate	-0.2453***	0.1665***	0.0531	-0.2401***	1.0000			

(6) Log of trade	0.1786***	0.2625***	0.0193	0.2816***	-0.1734***	1.0000		
(7) Log of Fraser Institute index	-0.1274**	0.6678***	0.0748	0.6049***	0.0573	0.1074**	1.0000	
(8) Log of the Heritage Foundation index	-0.1479***	0.5349***	0.1779***	0.2653***	0.26530***	0.1116**	0.7654***	1.0000

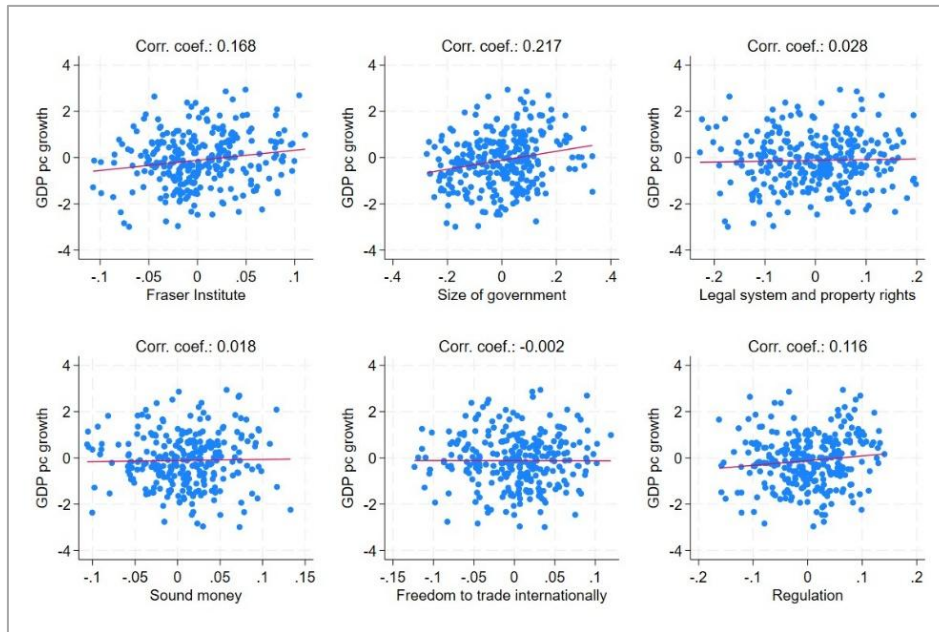*Note: *** p<0.01, ** p<0.05, * p<.0.1. Source: Authors' calculations*

However, to see the real impact of institutions on economic growth, we have to control for other effects. Figure 1 shows the scatter charts between GDP per capita growth and institutional variables from the Fraser Institute after controlling for other factors like physical capital, human capital, population growth, and trade.

The scatter charts in Figure 1 show the correlation between the Fraser Institute's institutional variables and GDP per capita growth after accounting for physical capital, human capital, population, and trade. Therefore, the results suggest that countries with higher institutional quality have higher growth rates, although the degree of association differs depending on the elements of institutional quality. The overall index of the Fraser Institute reveals a moderate but significant relationship of 0.168 with the growth. This supports the idea that countries with higher economic freedom perform better.

Analyzing the "size of government" and "regulation" subcomponents, both are positively related to growth, 0.217 and 0.116, respectively. The "size of government" result suggests that countries with small governments enjoy higher growth rates. This aligns with the assertion that less government interference gives the private sector adequate growth space. Likewise, the positive coefficient for "regulation" implies that less regulation fosters economic development by minimizing restrictions on commercial operations and fostering enterprise. However, the coefficients for "legal system and property rights" and "sound money" are much lower at 0.028 and 0.018, respectively, implying that while these factors are critical in sustaining stability and confidence in the economic system, they are not as influential in determining growth once other factors have been accounted for. Notably, "freedom to trade internationally" has a near-zero or slightly negative coefficient (-0.002), implying that trade openness alone may not enhance growth without supporting institutional reforms.

We have found that better institutions lead to higher economic growth, but the effect is not homogeneous across the different dimensions of institutions. Higher coefficients for a smaller size of government and less regulation indicate their role in creating a vibrant economy. However, legal structures and sound money, though both necessary for stability, seem to play a less direct part in growth. These results indicate that there is a lot more to the institutional environment and economic performance than meets the eye and that there is a need to look at institutions from a broader perspective when explaining growth.

Note: After controlling for other factors in the model.
Source: Authors' calculations

Table 3 shows the regression results between the GDP per capita growth and the institutional variables obtained from the Fraser Institute. In all models, the control variables behave as expected. Lagged GDP per capita is significant and negative, as evidenced by the convergence theory, which states that countries with higher initial GDP per capita grow more slowly. Trade openness is positive and significant in all specifications, further supporting its central position in growth through increased specialisation, markets, and technology. While not statistically significant, gross fixed capital formation has a positive coefficient in most models, indicating a possible, though weak, association with growth. The results for human capital, proxied by the logarithm of mean years of schooling, are somewhat mixed; some models exhibit positive and significant coefficients for this variable, suggesting that education and skills can enhance growth, but the impact differs across models. Population growth is again negative and significant, suggesting that high population growth may exert pressure on resources and slow economic growth, as Barro (1991) pointed out.

Table 3: Regression results for the relationship between economic growth and institutional variables from the Fraser Institute

Variable	Dependent variable: GDP per capita growth					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Log of GDP per capita, PPP (L)	-2.283***	-1.705***	-2.124***	-2.146***	-1.925***	-2.016***
	(0.354)	(0.329)	(0.405)	(0.339)	(0.332)	(0.320)
Log of gross fixed capital formation (L)	0.0703	-0.259	0.200	0.136	0.184	0.217
	(0.723)	(0.718)	(0.721)	(0.724)	(0.725)	(0.723)
Log of mean years of schooling (L)	1.144	1.842**	1.481	1.650**	1.791**	1.200
	(0.871)	(0.833)	(0.913)	(0.829)	(0.841)	(0.987)
Log of trade (L)	1.208***	1.237***	1.162***	1.192***	1.148***	1.151***
	(0.226)	(0.219)	(0.227)	(0.224)	(0.206)	(0.217)
Population growth rate (L)	-0.337**	-0.398***	-0.312**	-0.308**	-0.323**	-0.369**
	(0.142)	(0.146)	(0.142)	(0.139)	(0.141)	(0.146)
Log of Fraser Institute index (L)	3.998**					
	(1.898)					

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Log of size of government (L)		1.969***				
		(0.626)				
Log of legal system and property rights (L)			0.814			
			(1.029)			
Log of sound money (L)				1.120*		
				(0.615)		
Log of freedom to trade internationally (L)					-0.245	
					(1.707)	
Log of regulation (L)						1.636
						(1.463)
Constant	10.95***	8.852**	14.64***	13.93***	14.18***	12.83***
	(4.054)	(4.009)	(3.784)	(3.599)	(4.735)	(3.879)
Observations	304	304	304	304	304	304
R-squared	0.464	0.467	0.456	0.460	0.455	0.458
Adj. R-squared	0.440	0.443	0.431	0.436	0.430	0.434
F-statistic	19.63	19.57	19.22	19.42	18.78	18.93
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000
Period fixed effects	YES	YES	YES	YES	YES	YES
White test chi2	114.4	97.35	103	93.97	107.8	125.2
White test p-value	0.00292	0.0500	0.0214	0.0794	0.00969	0.000331
RESET test F	4.082	1.979	2.247	5.685	2.098	2.182
RESET test p-value	0.00734	0.117	0.0830	0.000856	0.101	0.0903

Notes: "L" denotes one-period lag of the corresponding variable; Robust standard errors calculated using the Huber/White/sandwich estimator in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.
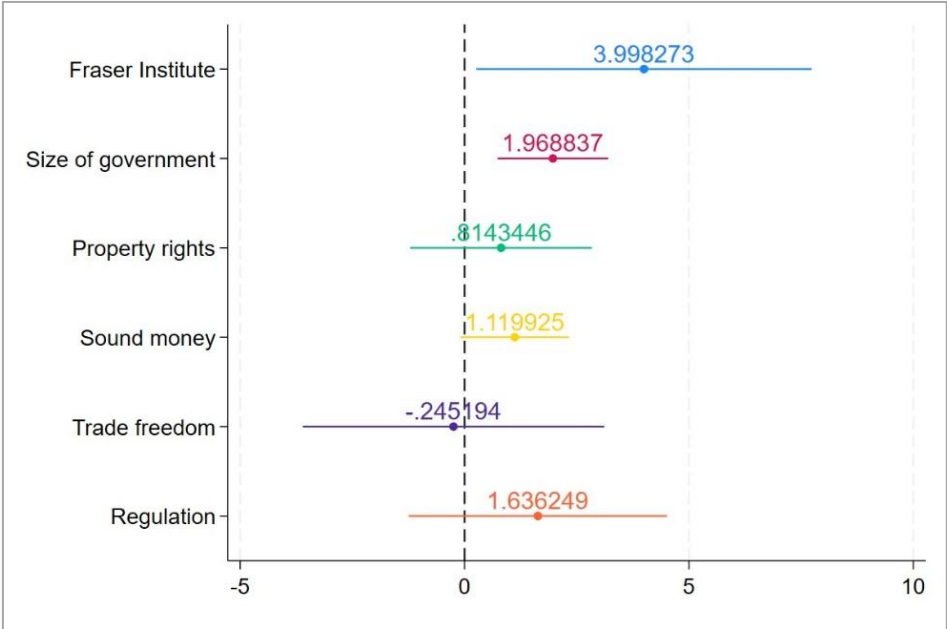*Source: Authors' calculations*

Regarding the institutional factors, the results show that the overall Fraser Institute index (Model 1) is positively related to growth with a coefficient of 3.998. This result supports the studies of Gwartney et al. (2006), which show that countries with higher levels of economic freedom have better economic growth. Looking at each separately, the "size of government" (Model 2) is also positively and significantly correlated with growth. This concurs with Afonso and Furceri (2010), who establish that smaller government sizes lead to efficient resource allocation and encourage private sector activity, hence growth. The "sound money" component (Model 4) also displays a positive influence, although less significant, which conforms with the concept that a stable monetary environment is key to growth, as noted by Fischer (1993), who noted that low inflation is fundamental to economic stability.

However, other institutional components are less revealing in this regard. The "legal system and property rights" (Model 3) and "regulation" (Model 6) components, although positive, are insignificant, which indicates that their impact on growth may be relatively modest in this regard. This contrasts with other works, such as Knack and Keefer (1995), which argues that property rights are the key to long-run growth, suggesting that, in some instances, other institutional variables may be the driving force. "Freedom to trade internationally" (Model 5) has a negative but insignificant coefficient, supported by the earlier scatterplots. This means that while trade liberalisation is important, it may not lead to growth if institutions are not developed further, as argued by Rodríguez and Rodrik (2000).

Figure 2 presents the coefficient estimates from the regression model analysing the relationship between economic growth and the Fraser Institute's Economic Freedom Index, along with its core components. The overall index demonstrates a strong and statistically significant positive correlation with GDP per capita growth, indicating that greater economic freedom is associated with enhanced economic performance. Among the individual components, the size of government, property rights, sound money, and regulation all show positive coefficients, suggesting that a smaller government, stronger property rights, stable monetary conditions, and a reduced regulatory burden contribute to higher growth. Conversely, trade freedom exhibits a negative coefficient, implying that its impact within

the OECD context may be limited or moderated by other interacting factors. The figure underlines the relative strength of institutional dimensions, highlighting the statistically significant positive effects associated with the overall index, size of government and regulation.

Figure 2: Coefficient plot from the regression results for the relationship between economic growth and institutional variables from the Fraser Institute

Source: Authors' calculations

The findings show that institutional quality enhances economic growth, especially a small government and a good money supply. These results are consistent with a vast amount of literature, which corroborates that institutions are pivotal to determining growth prospects in the long run. The other components, as shown in Table 3, have mixed results, and this implies that the relationship between institutions and growth is complex and that while some aspects of institutional quality may have a direct impact on growth, others may have indirect impacts or may only impact growth under certain conditions within the economy. The fact that the Fraser Institute index has a positive sign indicates the need to promote economic liberty to develop sustainable growth paths (Figure 2).

The diagnostic tests for the regressions in Table 3 show that the overall model is fairly well specified. The F-test results show that models are statistically significant, with F-statistic running from 18.78 to 19.63. The corresponding p-values indicate strong statistical significance at the 1% level. This allows for rejecting the null hypothesis that the model coefficients are jointly equal to zero, confirming that the overall models are well-specified. The adjusted R-squared values are 0.430 to 0.443, which shows the variation in GDP per capita growth that can be explained by the independent variables controlling for the number of predictors in the model. Model 2, which contains the "size of government" variable, has the highest adjusted R-squared of 0.443, meaning that this model fits the data best among all the models. On the other hand, model 5, which has "freedom to trade internationally", has the lowest adjusted R-squared of 0.430, meaning that it only explains the least variation in the GDP per capita growth. In general, the differences in adjusted R-squared values are not significant, but they indicate the differences in the extent of the institutional components included in each model.

The White test for heteroskedasticity produces chi-squared statistics across models between 93.97 and 125.2, and most of the p-values suggest the existence of heteroskedasticity, especially in columns 1 and 6, with very low p-values. This raises the spectre of heteroskedasticity, but using robust standard errors lessens this problem. The RESET test for functional form misspecification is significant at less than 0.1 in several models, especially Models 1 and 4, suggesting that functional form misspecification might be somewhat present.

Figure 3 contains scatterplots that shed light on the link between GDP per capita growth and institutional factors from the Heritage Foundation, net of physical capital, human capital, population, and trade. The overall Heritage Foundation index correlates with economic growth at 0.127, which indicates that the higher the economic freedom according to this index, the higher the growth rates. However, this moderate relationship indicates an interaction of different institutional dimensions in determining growth.

The scatterplots in Figure 3 provide insight into the relationship between GDP per capita growth and institutional variables from the Heritage Foundation after controlling for factors like physical capital, human capital, population growth, and trade. The overall Heritage Foundation index exhibits a positive correlation of 0.127 with economic growth, suggesting that higher economic freedom, as measured by this index, is generally associated with higher growth rates. However, this relationship is moderate, pointing to the complexity of how different institutional dimensions interact to influence growth.

When grouped by strength, the positively correlated variables include "government spending" (0.208), which has the strongest positive correlation. This is consistent with the view that reducing government consumption as a share of GDP is conducive to growth, probably because it leads to efficiency and innovation in the private sector. The same can be said about "tax burden" (0.099) and "financial freedom" (0.081), which also have a positive correlation. From these results, it can be concluded that smaller tax rates and more open financial policies are associated with greater growth. However, they have a weaker impact than government expenditure. "Government integrity" has a correlation coefficient of 0.030, and "monetary freedom" has a correlation coefficient of 0.009, which are relatively low positive coefficients, suggesting that these institutional factors, though important for growth, do not have as direct a bearing on growth as the fiscal variables.

Figure 3: Scatter charts between GDP per capita growth and institutional variables from the Heritage Foundation
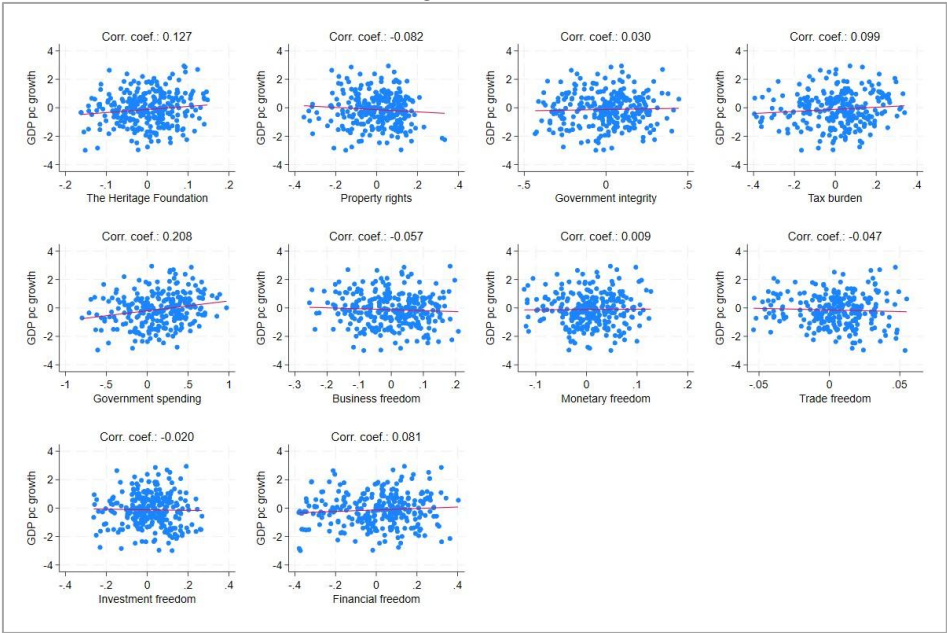
Note: After controlling for other factors in the model.
Source: Authors' calculations

The regression results of the institutional variables from the Heritage Foundation and the GDP per capita growth are presented in Table 4. As with previous results, the control variables act as expectedly. The lagged GDP per capita has a negative coefficient in all the equations, and the coefficient is statistically significant, indicating conditional convergence where countries with higher initial income levels grow more slowly. Trade openness continues to be positive and significant in all models, which underlines its importance for growth through the expansion of market access and increased competitiveness. Human capital, measured by the logarithm of mean years of schooling, is positive and significant in several specifications, which suggests that education is conducive to economic growth. Gross fixed capital

formation, however, does not reveal a significant impact across any of the models. Population growth continues to exert a strong negative impact, which supports the notion that population increase slows down development, as proposed by Barro (1991).

Regarding the institutional variables, the total Heritage Foundation index (Model 1) is significantly and positively correlated with economic growth, with a coefficient of 2.831. The above finding supports other literature, such as that of Knack and Keefer (1995), who noted that economic freedom enhances growth. Among the individual components, "tax burden" (Model 4) and "government spending" (Model 5) have positive impacts on growth. A low tax burden (1.208***) means that countries with lighter taxes have higher growth, as suggested by Barro and Sala-i-Martin (1995), who posited that low taxes increase incentives for investment and innovation. The positive impact of "government spending" (0.291**) also strengthens the argument that efficient government spending leads to the expansion of the economy by directing spending on productive factors (Figure 4).

Figure 4 illustrates the coefficient estimates from the regression analysis utilizing the Heritage Foundation's Index of Economic Freedom and its subcomponents. The aggregate index demonstrates a clearly positive and statistically significant relationship with economic growth. Among the individual components, property rights, tax burden, government integrity, government spending, monetary freedom, and trade freedom exhibit positive coefficients, indicating their beneficial contribution to growth. Conversely, several dimensions, including business freedom, investment freedom, and financial freedom, show negative or near-zero coefficients, suggesting more nuanced or potentially context-dependent effects within OECD countries. This visualization facilitates a straightforward comparison of the varying degrees of influence across different institutional areas, highlighting the statistically significant stronger impacts of overall index of economic freedom, tax burden and government spending or fiscal-related variables.

Table 4: Regression results for the relationship between economic growth and institutional variables from the Heritage Foundation

Variable	Dependent variable: GDP per capita growth									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log of GDP per capita, PPP (L)	-2.037***	-2.001***	-2.185***	-1.563***	-1.751***	-1.927***	-2.056***	-2.046***	-1.944***	-1.942***
	(0.323)	(0.386)	(0.355)	(0.367)	(0.346)	(0.325)	(0.341)	(0.372)	(0.323)	(0.329)
Log of gross fixed capital formation (L)	-0.0552	0.166	0.218	-0.0320	0.0235	0.194	0.160	0.188	0.191	0.197
	(0.734)	(0.744)	(0.721)	(0.709)	(0.716)	(0.720)	(0.722)	(0.725)	(0.722)	(0.733)
Log of mean years of schooling (L)	1.065	1.708*	1.419	1.548*	1.708**	1.849**	1.655**	1.768**	1.790**	1.801**
	(0.926)	(0.914)	(0.943)	(0.857)	(0.855)	(0.863)	(0.831)	(0.838)	(0.818)	(0.825)
Log of trade (L)	1.155***	1.148***	1.173***	1.100***	1.153***	1.131***	1.173***	1.138***	1.142***	1.144***
	(0.216)	(0.230)	(0.228)	(0.208)	(0.216)	(0.238)	(0.224)	(0.219)	(0.211)	(0.220)
Population growth rate (L)	-0.447***	-0.329**	-0.354**	-0.363**	-0.397***	-0.315**	-0.318**	-0.302**	-0.318**	-0.317**
	(0.155)	(0.139)	(0.144)	(0.147)	(0.152)	(0.140)	(0.141)	(0.139)	(0.140)	(0.140)
Log of the Heritage Foundation	2.831*									
	(1.523)									
Log of property rights		0.194								
		(0.808)								
Log of government integrity			0.567							
			(0.590)							
Log of tax burden				1.208***						
				(0.418)						
Log of government spending					0.291**					
					(0.115)					
Log of business freedom						-0.277				
						(0.945)				
Log of monetary freedom							0.857			
							(0.751)			
Log of trade freedom								1.559		
								(1.978)		

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log of investment freedom									-0.00975	
									(0.801)	
Log of financial freedom										-0.0385
										(0.503)
Constant	5.385	13.83***	14.63***	6.563	11.52***	14.78***	11.62***	8.262	13.89***	13.93***
	(6.140)	(3.601)	(3.386)	(4.834)	(3.856)	(4.998)	(4.158)	(7.694)	(4.565)	(3.525)
Observations	304	304	304	304	297	304	304	304	304	304
R-squared	0.462	0.455	0.457	0.465	0.458	0.455	0.457	0.456	0.455	0.455
Adj. R-squared	0.438	0.430	0.433	0.441	0.433	0.430	0.432	0.431	0.430	0.430
F-statistic	19.19	18.64	18.69	19.51	19.04	20.12	19.27	21.08	19.59	18.79
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Period fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
White test chi2	115.9	108.2	110	96.71	92.36	105.3	91.53	99.13	108.8	102.3
White test p-value	0.00219	0.00903	0.00649	0.0547	0.0977	0.0146	0.108	0.0386	0.00815	0.0239
RESET test F	2.415	2.126	2.084	2.220	2.399	2.255	4.504	2.572	2.135	2.119
RESET test p-value	0.0667	0.0971	0.102	0.0860	0.0682	0.0822	0.00417	0.0544	0.0960	0.0980

Notes: "L" denotes one-period lag of the corresponding variable; Robust standard errors calculated using the Huber/White/sandwich estimator in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Source: Authors' calculations.

Figure 4: Coefficient plot from the regression results for the relationship between economic growth and institutional variables from the Heritage Foundation
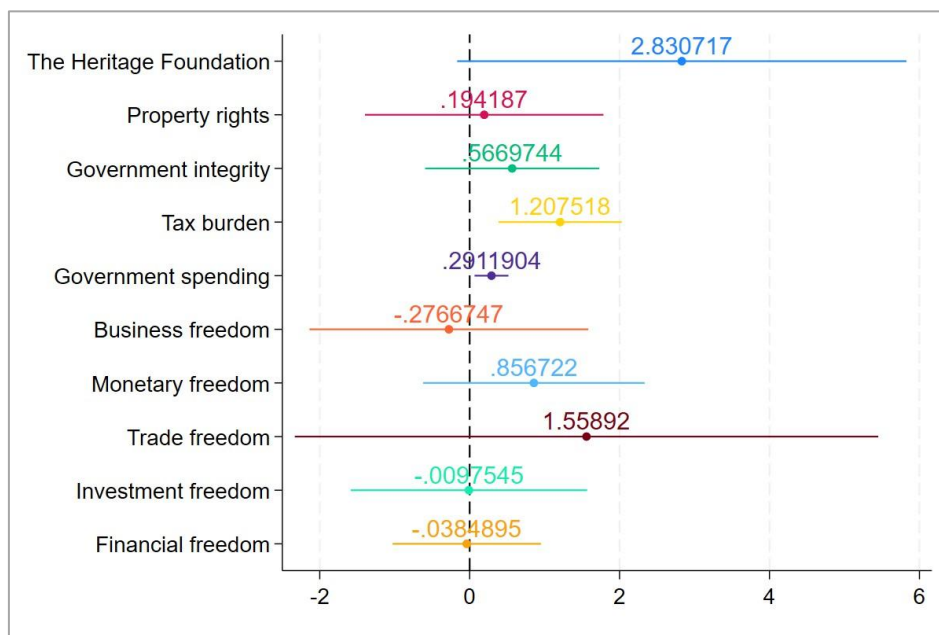
Source: Authors' calculations

Other institutional factors, including "government integrity" (0.567) and "monetary freedom" (0.857), are also positive but not significant, which implies that while these factors are relevant to stability, they are not as influential to growth in this regard. The "property rights" (0.194) and "business freedom" (-0.277) coefficients are also insignificant, implying that increasing these indicators may not be enough to spur economic growth without other changes. Notably, "trade freedom" (1.559) is positive but insignificant, as prior studies have suggested that trade liberalisation may need supporting institutions to ensure that growth benefits are realised.

The findings underscore the significance of economic liberty, especially through taxation and public expenditure, for growth. Some of the institutional variables are positively related to growth. Still, the coefficients are not always significant, which underlines that the institutional environment's influence is far from straightforward. The fact that the Heritage Foundation index has a positive overall significance

strengthens the claim that other aspects of institutional quality are important for determining long-run economic growth (Figure 4).

The F-test results for Table 4 indicate that all models are statistically significant, with F-statistics ranging from 18.64 to 21.08. The corresponding p-values are 0.000 across all models, confirming statistical significance at the 1% level. This allows for rejecting the null hypothesis that the coefficients are jointly zero, indicating that the models are well-specified. The adjusted R-squared values range from 0.430 to 0.441, showing how well the independent variables explain the variation in GDP per capita growth, adjusted for the number of predictors. Model 7, which includes the "monetary freedom" variable, has the highest adjusted R-squared at 0.441, suggesting it best explains the variation in economic growth. Conversely, Model 2, which includes the "property rights" variable, has the lowest adjusted R-squared at 0.430, indicating it explains the least variation. Although the differences in adjusted R-squared values are small, they reflect variations in the explanatory power of different institutional components.

Table 4 also reveals some heteroskedasticity problems. The White test chi-squared values vary from 91.53 to 115.9, and the p-value is less than 0.1 in all the models, suggesting heteroskedasticity. The results presented here use robust standard errors to correct for this. The RESET test results of Model 7, where the p-value of 0.00417, suggest that there is likely misspecification and that nonlinear terms or other variables might be useful in explaining the variation in the dependent variable.

Conclusion

This paper also analyzes the impact of institutional quality on economic growth in the context of OECD countries using a panel regression model with institutional data from the Fraser Institute and the Heritage Foundation from 1995-2021. The findings continue to affirm the role of economic freedom in growth and reveal that aspects such as a smaller government, lower taxes, and sound money contribute greatly to the growth in the region. While macro-institutional quality promotes conditions that support economic growth, the effects of micro-institutional factors like property rights, trade, and business freedom seem to be less clear and, at times, either constrained or insignificant.

The results align with the literature that posits that institutions matter for sustained economic development. However, not all institutional dimensions are equally influential. The review of findings reveals that fiscal discipline, achieved through proper government spending and low taxation levels, is a major growth factor, indicating that governments should enhance efficiency in the public sector. Trade and financial freedoms are important, which is a positive sign, yet it also shows that openness may not be enough to sustain growth without the right institutions to support these freedoms.

As for policy recommendations, governments should aim to increase the effectiveness of spending and decrease the share of spending financed by the state. This can be done by focusing on the key sectors that require capital, such as transport and communication, schools and hospitals. At the same time, tax reform should work towards reducing tax burdens, making them simpler, more transparent, and less costly for the private sector. It is also important to maintain the independence and commitment of central banks to monetary stability to develop a stable macroeconomic environment for growth.

The direct effects of reforms in areas such as property rights, trade freedom, and business freedom are weaker, but these areas should not be ignored. To increase business risk mitigation, governments must focus on the quality of legal environments, minimise bureaucratic restraints, and strengthen the rule of law. Moreover, although the openness of trade and investment policies continues to be relevant, policymakers should understand that these strategies require other institutional changes to achieve the greatest impact on growth.

Therefore, institutional quality is an essential factor determining an economy's growth; however, efforts should be directed towards the areas that significantly contribute to growth, including fiscal discipline, tax reforms, and monetary stability. Institutional changes across other dimensions are required to foster a coherent and enabling environment to realise economic growth fully.

The main limitations of the paper, as mentioned above, are that we do not add country-fixed effects due to limited time series data. We can use government final consumption expenditures and inflation to control fiscal and monetary policy, but they are shown to be insignificant in our case. Other institutional variables are used in related studies, such as the World Bank's World Governance Indicators, Transparency International's Corruption Perception Index, and Freedom House's political rights and civil liberties.

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