

**MEASURING THE IMPACT OF REGULATORY QUALITY AND TRADE
OPENNESS ON ECONOMIC GROWTH IN EUROPEAN COUNTRIES:
EVIDENCE FROM DYNAMIC PANEL ESTIMATORS**

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Abstract

The main objective of this study is to determine the impact of regulatory quality as an indicator of institutional quality and the impact of trade openness as a proxy for the trade dimension of globalization on economic growth in European countries. For this purpose, a panel data set covering 38 countries between 2002 and 2022 is used, GDP per capita growth is taken as the dependent variable, and two control variables are selected, namely gross fixed capital formation and foreign direct investment. To ensure the methodological robustness of the results, a comparative analysis of three panel estimators within a dynamic specification, namely Fixed Effects, System GMM, and Common Correlated Effects, is used. According to the results, regulatory quality has a statistically significant positive impact on economic growth for European economies in all models. Therefore, it can be interpreted as an increase in the quality of regulators being associated with a reduction in uncertainty and a more productive increase in economic activity. The positive and robust results of trade openness across models also indicate the importance of integration into the global economic process through the trade channel to support economic growth. In conclusion, the results of the study indicate the importance of strengthening regulatory institutions and expanding trade openness for sustainable economic development in European countries.

Keywords: *regulatory quality, trade openness, institutional quality, economic growth.*

AVROPA ÖLKƏLƏRİNDƏ TƏNZİMLƏYİCİ KEYFİYYƏTİN VƏ TİCARƏT AÇIQLIĞININ İQTİSADİ ARTIMA TƏSİRİNİN ÖLÇÜLMƏSİ: DİNAMİK PANEL QIYMƏTLƏNDİRİCİLƏRİNDƏN DƏLİLLƏR

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Xülasə

Bu tədqiqatın əsas məqsədi tənzimləyici keyfiyyətin institusional keyfiyyətin göstəricisi kimi təsirini və qloballaşmanın ticarət ölçüsünü ifadə edən ticarət açıqlığının Avropa ölkələrində iqtisadi artıma təsirini müəyyən etməkdir. Bu məqsədlə, 2002-2022-ci illər arasında 38 ölkəni əhatə edən panel məlumat dəsti istifadə olunur, adambaşına düşən ÜDM artımı asılı dəyişən kimi götürülür və iki nəzarət dəyişəni, yəni ümumi əsas kapitalın formalaşması və xarici birbaşa investisiyalar seçilir. Nəticələrin metodoloji möhkəmliyini təmin etmək üçün dinamik spesifikasiya daxilində üç panel qiymətləndiricisinin, yəni Sabit Effektlər, Sistem GMM və Ümumi Korrelyasiya Effektlərinin müqayisəli təhlili istifadə olunur. Nəticələrə görə, tənzimləyici keyfiyyət bütün modellərdə Avropa iqtisadiyyatları üçün iqtisadi artıma statistik cəhətdən əhəmiyyətli müsbət təsir göstərir. Buna görə də, tənzimləyicilərin keyfiyyətinin artması qeyri-müəyyənliyin azalması və iqtisadi fəaliyyətin daha məhsuldar artması ilə əlaqələndirilə bilər. Modellər üzrə ticarət açıqlığının müsbət və möhkəm nəticələri, iqtisadi artımı dəstəkləmək üçün ticarət kanalı vasitəsilə qlobal iqtisadi prosesə inteqrasiyanın vacibliyini də göstərir. Nəticə etibarilə, tədqiqatın nəticələri Avropa ölkələrində davamlı iqtisadi inkişaf üçün tənzimləyici qurumların gücləndirilməsinin və ticarət açıqlığının genişləndirilməsinin vacibliyini göstərir.

Açar sözlər: tənzimləyici keyfiyyət, ticarət açıqlığı, institusional keyfiyyət, iqtisadi artım.

ОЦЕНКА ВЛИЯНИЯ КАЧЕСТВА РЕГУЛИРОВАНИЯ И ОТКРЫТОСТИ ТОРГОВЛИ НА ЭКОНОМИЧЕСКИЙ РОСТ В ЕВРОПЕЙСКИХ СТРАНАХ: ДАННЫЕ ДИНАМИЧЕСКИХ ПАНЕЛЬНЫХ ОЦЕНОК

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Резюме

Основная цель данного исследования — определить влияние качества регулирования как индикатора качества институтов и влияние открытости торговли как показателя торгового измерения глобализации на экономический рост в европейских странах. Для этого используется набор панельных данных, охватывающий 38 стран в период с 2002 по 2022 год, в качестве зависимой переменной выбран рост ВВП на душу населения, а в качестве контрольных переменных — валовое накопление основного капитала и прямые иностранные инвестиции. Для обеспечения методологической надежности результатов используется сравнительный анализ трех панельных оценок в рамках динамической спецификации, а именно: фиксированные эффекты, системный метод GMM и общие коррелированные эффекты. Согласно результатам, качество регулирования оказывает статистически значимое положительное влияние на экономический рост европейских стран во всех моделях. Следовательно, это можно интерпретировать как повышение качества регулирования, связанное со снижением неопределенности и более продуктивным ростом экономической активности. Положительные и надежные результаты влияния открытости торговли во всех моделях также указывают на важность интеграции в глобальный экономический процесс через торговый канал для поддержки экономического роста. В заключение, результаты исследования показывают важность укрепления регулирующих институтов и расширения открытости торговли для устойчивого экономического развития европейских стран.

Ключевые слова: *качество регулирования, открытость торговли, качество институтов, экономический рост.*

Introduction

One of the main topics for research in economic literature in terms of preserving the wealth of countries, rising productivity levels, and ensuring sustainability in economic sustainable development is economic growth. Not only traditional production factors as capital, labor, and technologies are enough to explain economic growth according to studies conducted in recent decades, but also other factors such as institutional quality and international trade integration also play an important role in defining structure of economic growth. Appropriate environment for economic activity, decrease in investment risks, and more effective allocation of resources are

closely related with efficiency of institutional frameworks in country. At the same time, trade openness and integration into global economics support economic development by increasing access to innovative technologies, foreign markets, and investment opportunities.

The particular importance of regulatory quality among indicators of institutional quality has been reflected in the studies. For formulating and implementing strategies and policies to support economic development and the efficiency of market mechanisms, states should have established a proper level of regulatory quality. This environment with a strong regulatory framework promotes entrepreneurial activity, rise in investment into the economy, and decreases uncertainty. On the other hand, the level of integration of countries into the international economic system can be indicated by trade openness as a reflection of the economic dimension of globalization. Therefore, modern economic policy should be formulated by examining the separate effects of regulatory quality and trade openness on economic growth, where trade openness is used as a proxy for the trade dimension of globalization.

Despite the existence of literature where the impact of institutional quality and globalization on economic growth has been extensively studied, there is still less research which focuses on comparing results from various dynamic panel estimators and assessing the results of these factors across European countries. That is why, the aim of this study to define how regulatory quality and trade openness shape the economic growth across 38 European economies during the period from 2002 to 2022 by comparing results from different panel estimators within a dynamic specification, such as Fixed Effects, System GMM, and Common Correlated Effects (CCE) estimators. The study results show a positive association between regulatory quality and economic growth across all three estimators, and statistical significance of this influence is shown in the System GMM, CCE and Fixed Effects estimators. Additionally, trade openness has same type of impact as regulatory quality on economic growth, positive influence, which is statistically significant across all estimators. Therefore, the findings suggest that trade openness, as the trade dimension of globalization, plays an important role in explaining economic growth in European countries. However, since the empirical specification does not include an interaction term, the study does not test whether regulatory quality strengthens or moderates the effect of trade openness. Any possible complementary relationship between these variables is therefore treated only as a theoretically supported possibility and a direction for future research. In conclusion, the study provides

extensive empirical evidence about role of institutional quality and globalization on economic growth to the existing literature.

Literature Review

In the existing empirical literature, the relationship between institutional quality, trade openness, and economic growth has been mainly investigated using dynamic panel approaches. As example from developing country case, the research was conducted about how institutional quality plays an important role in the relationship between trade openness and economic growth in the Ghanaian case and the dynamic GMM approach was used to consider the potential endogeneity problem [1]. Moreover, the relationship between globalization and economic growth in African countries is studied by using a two-stage System GMM and the results demonstrated that the impact of globalization on economic growth mainly shaped by institutional conditions of the countries [2]. Additionally, the relationship between trade openness, governance quality, and economic growth also measured for Latin American and Caribbean countries by using the dynamic panel System GMM method and the study found that institutional quality indicators as regulatory quality, government effectiveness, rule of law, and control of corruption strengthen the impact of trade openness on economic growth [3]. Furthermore, idea about stability in economical and institutional environment is needed to complement the impact of trade and financial openness on economic growth is stated in the research where wide range of developing countries used with a dynamic panel GMM approach [4]. Overall, these studies show that although trade openness and institutional quality are important determinants of economic growth, it is more appropriate to use dynamic panel approaches to properly assess their complex relationships.

The theoretical framework of this study is grounded in New Institutional Economics, which explains economic performance through the role of institutions in shaping transaction costs, incentives, uncertainty, and the behavior of economic agents [5,6,7]. Effective institutional arrangements can reduce the costs of economic transactions, limit opportunistic behavior, improve contractual relations, and create more predictable conditions for economic activity [5,6,7]. From this perspective, regulatory quality represents an important formal institutional mechanism through which governments can reduce administrative and compliance costs, increase the predictability of economic rules, strengthen investor confidence, and create a more favorable environment for private-sector activity [6,7]. Institutional structures may also affect long-term economic development by shaping investment incentives,

property rights, and the allocation of economic opportunities [8]. Accordingly, improvements in regulatory quality may support economic growth by reducing policy uncertainty, facilitating market transactions, improving resource allocation, and encouraging entrepreneurship and productive investment [5,6,7,8]. Therefore, the theoretical expectation of this study is that a transparent, predictable, and market-oriented regulatory framework creates stronger incentives for economic activity and is positively associated with economic growth [5,6,7,8].

The current study differs from and complements existing literature in several ways. While some previous studies have focused on Africa, Latin America, South Asia, and developing countries, this study covers 38 European countries over the period 2002–2022 and assesses the impact of institutional quality and globalization on economic growth in this region based on a larger panel. In addition, in previous studies, institutional quality has often been considered as a general governance index or the combined effect of several institutional indicators. This study focuses specifically on Regulatory Quality and separately assesses its role in economic growth, together with trade openness. Another important difference is that this study does not rely on a single estimator. Therefore, it uses Fixed Effects as the baseline model, and System GMM as the main dynamic estimation method, and CCE as a robustness check that considers cross-sectional dependence. Thus, the study considers both the problems of endogeneity and dynamic panel bias, as well as cross-sectional dependence caused by common macroeconomic shocks among European countries. In this regard, the current study allows for a comparative and methodologically robust assessment of the relationship between institutional quality, trade openness, and economic growth in the European context. Previous studies suggest that institutional quality may strengthen the growth-enhancing effect of trade openness. However, the present study does not directly test this mechanism through an interaction model. Instead, the empirical specification estimates the separate effects of regulatory quality and trade openness on economic growth. Therefore, the possible complementary relationship between these variables is discussed only as a theoretically supported mechanism and is acknowledged as a limitation and future research direction.

Data and Methodology

Table 1. Variables and Data Sources

Variable	Definition	Source
GDPPC	GDP per capita ($\Delta \ln \text{GDPPC}$)	World Bank (WDI)
REG_QUALITY	Regulatory Quality (WGI Estimate)	World Bank (WGI)

TRADE	Trade openness (% of GDP)	World Bank (WDI)
GFCF	Gross fixed capital formation (% of GDP)	World Bank (WDI)
FDI	Foreign direct investment (% of GDP)	World Bank (WDI)

Source: Prepared by author

In this study, GDP per capita was used as an indicator of economic growth, as this indicator is widely used in the economic literature to measure the level of economic well-being and long-term development of countries. Regulatory quality, one of the main explanatory variables of the study, was chosen because it reflects the ability of the state to formulate and implement policies that support a market economy and the development of the private sector. Recent studies show that an effective regulatory environment creates conditions for increased investment, more efficient allocation of resources, and accelerated economic growth [9,10]. The second main independent variable, trade openness, was used as a proxy for the trade dimension of globalization rather than as a comprehensive measure of globalization, as this variable is widely used in literature to reflect the level of integration of countries into the international economic system through trade flows [11]. In addition, previous studies have also highlighted that institutional quality, and related economic conditions can shape the development effects of openness and integration processes [12]. Therefore, the study specifically focuses on the trade channel of globalization and does not directly measure its financial, technological, social, or political dimensions. Additionally, gross fixed capital formation (GFCF) and foreign direct investment (FDI) were included as control variables in the model to control other factors that may affect economic growth in regressions.

In order to reduce stationarity problems in panel data, variables were transformed. The natural logarithm of the dependent variable, GDP per capita, was calculated and its first difference was taken to obtain the economic growth indicator ($\Delta \ln \text{GDPPC}$). The independent variables, regulatory quality (REG_QUALITY), trade openness (TRADE), fixed capital formation (GFCF), and foreign direct investment (FDI), were included in the model in the form of first differences. This approach allows us to assess the impact of changes in variables over time on economic growth rather than their levels and allows for more reliable results in dynamic panel models. In addition, to take into account the sustainability of economic growth, a one-period lagged value of the dependent variable was included in the model [13, 14].

$$\Delta \ln \text{GDPPC}_{it} = \alpha + \gamma \Delta \ln \text{GDPPC}_{it-1} + \beta_1 \Delta \text{REG_QUALITY}_{it} + \beta_2 \Delta \text{GFCF}_{it} + \beta_3 \Delta \text{TRADE}_{it} + \beta_4 \Delta \text{FDI}_{it} + \varepsilon_{it} \quad (1)$$

It should be noted that the current specification estimates the separate effects of regulatory quality and trade openness on economic growth. The model does not include an interaction term between these two variables. Therefore, the possible complementary mechanism between regulatory quality and trade openness is not directly tested in this study and is treated as a limitation and a direction for future research.

The choice of a dynamic panel model is due to the existence of a potential endogeneity problem between institutional quality, trade openness, and economic growth. It is noted in literature that just as institutional quality affects economic growth, economic development can in turn lead to an improvement in the institutional environment. At the same time, it is assumed that there is a mutual relationship between trade openness and economic growth. For this reason, static panel models may not fully reflect the relationships between variables. For example, the importance of considering the endogeneity problem in assessing the relationship between institutional quality and economic growth has been studied in the recent study [15]. Similarly, dynamic panel approaches are used in assessing the impact of trade openness on economic growth with considering endogeneity issue [16]. Therefore, in this study, a dynamic panel regression model was applied to consider the continuous nature of economic growth, potential reverse causality relationships between variables, and the endogeneity problem.

In this study, Fixed Effects (FE), System GMM and Common Correlated Effects (CCE) estimators were used to more reliably estimate the impact of regulatory quality, which is used as an indicator of institutional quality, and trade openness, which reflects the economic dimension of globalization, on economic growth. In panel economic growth models, unobserved country-specific fixed characteristics, the presence of a lagged dependent variable, and the potential endogeneity of explanatory variables may affect the estimation results [13, 14]. In this regard, the FE model was applied as a basic estimation method to control country-specific fixed factors. However, since the inclusion of a lagged dependent variable in the model in a dynamic panel structure may create bias in FE estimations, the System GMM estimator was chosen as the main estimation method [13, 14]. At the same time, since the economic integration of European countries assumes the existence of common macroeconomic shocks and unobserved common factors, the CCE estimator was used to test the robustness of the results against cross-sectional dependence and the influence of common factors [17, 18, 19]. This approach is consistent with econometric literature, which allows us to consider the problem of unobserved heterogeneity, endogeneity, dynamic persistence, and common factors in panel data.

A number of diagnostic tests were performed before and after the estimation procedure to check the fit of the models. First, the Pesaran CD test was applied to determine the presence of common economic shocks among European countries. Since the presence of cross-sectional dependence can affect the results of classical panel estimators, this test is important in terms of justifying the use of the CCE estimator. Then, the homogeneity of the coefficients was checked by using the Delta and Adjusted Delta tests [20]. The Arellano–Bond AR(1) and AR(2) tests were applied to assess the validity of the System GMM model. These tests allow us to determine the autocorrelation properties of the residuals in the model, and particularly the result of the AR(2) test plays an important role in assessing the accuracy of the instruments. Finally, the Sargan test was applied to assess the overidentifying restrictions and the overall validity of the instrument set. However, unusually high p-values may also indicate limited test power associated with the size and composition of the instrument set. Thus, the diagnostic tests applied were used to assess both the fit of the selected estimators and the statistical validity of the obtained results.

Results and Discussion

The tests conducted on the Regulatory Quality model generally justify the use of the selected estimators. First, the existence of cross-sectional dependence is confirmed, since the p value of the Pesaran CD is zero. It indicates that European countries are jointly affected by common macroeconomic shocks and integration processes and the application of the CCE estimator is justified. Another crucial point is not rejection of the slope homogeneity hypothesis, according to the Delta test where p value is 0.202 and the Adjusted Delta test where p value is 0.123. Therefore, there is no strong evidence that the coefficients across countries are completely heterogeneous. For System GMM, the AR(1) test where p value is 0.0001, indicating the presence of the expected first-order autocorrelation. However, the main diagnostic indicator for System GMM, the AR(2) test, where p value is 0.1572, confirms the absence of second-order autocorrelation. The Sargan test does not reject the overidentifying restrictions. Nevertheless, the unusually high p-value of 1.0000 should not be interpreted as conclusive evidence of perfect instrument validity, since it may be associated with instrument proliferation and the limited power of the test when the instrument set is relatively broad. Therefore, the System GMM findings are interpreted cautiously and are not evaluated solely based on the Sargan test. Instead, they are considered together with the AR(1) and AR(2) diagnostics and with the consistency in the direction of the main coefficients across the Fixed Effects and

CCE estimators. Accordingly, the System GMM estimates are treated as supportive dynamic evidence rather than as the sole basis for the conclusions of the study. The results of tests for Fixed Effects model which F-statistic and p value, which are 45.43 and zero accordingly indicate the overall statistical significance of the estimator. While 0.2507 for within R² indicates that, the model explains a certain part of the within-country variation. Thus, the test results indicate that the FE model is suitable for baseline estimation, the System GMM estimates provide supportive dynamic evidence, although they should be interpreted cautiously given the unusually high Sargan test p-value, and the CCE model is necessary to account for cross-sectional dependence.

Table 2. Comparative Estimation and Diagnostic Results for Regulatory Quality

Variable / Test	System GMM	Fixed Effects	CCE
Lagged GDP per capita	0.2329 (p = 0.000)	0.3591 (p=0.000)	0.0886 (p = 0.055)
Regulatory Quality	0.1093 (p = 0.000)	0.0751 (p = 0.000)	0.0438 (p = 0.000)
GFCF	0.0021 (p = 0.407)	0.00198 (p = 0.433)	0.00941 (p = 0.000)
Trade Openness	0.0023 (p = 0.000)	0.00184 (p = 0.000)	0.00251 (p = 0.000)
FDI	0.00010 (p = 0.068)	0.0000821(p= 0.000)	0.00167 (p = 0.061)
AR(1) test	-4.0468 (p = 0.0001)	—	—
AR(2) test	-1.4144 (p = 0.1572)	—	—
Sargan test	36.8747 (p = 1.0000)	—	—
Within R ²	—	0.2507	—
Between R ²	—	0.6573	—
Overall R ²	—	0.2822	—
F-statistic	—	45.43 (p = 0.0000)	—
Pesaran CD test	—	—	p = 0.000
Delta test	—	—	p = 0.202
Adjusted Delta test	—	—	p = 0.123

Source: Calculations by author

The results show that the coefficients of the main variable, regulatory quality, are generally positive for all three estimators. According to the results, a one-unit

increase of the lagged economic growth variable will cause 0.2329 increase in current gross domestic product per capita growth for the System GMM model, 0.3591 increase for the Fixed Effects model, and 0.0886 increase for the CCE model, holding other variables constant. Results of lagged economic growth are statistically significant at the 1% significance level for Fixed Effects and System GMM models and are statistically significant at the 10% significance level for CCE model, because p-value is 0.055 in case of CCE model. The main independent variable, regulatory quality is positive and statistically significant at the 1% significance level in all three estimators. So, a one-unit increase of regulatory quality variable will cause 0.1093 increase in current gross domestic product per capita growth for the System GMM model, 0.0751 increase for the Fixed Effects model, and 0.0438 increase for the CCE model, holding other variables constant. Another main independent variable, trade openness, is also positive and statistically significant at the 1% significance level in all three models. So, a one-unit increase of the trade openness variable will cause 0.0023 increase in current gross domestic product per capita growth for the System GMM, 0.00184 increase for the Fixed Effects model, and 0.00251 increase for the CCE model, holding other variables constant. The gross fixed capital formation as control variable is not statistically significant in System GMM and Fixed Effects model, but it is statistically significant at the 1% significance level in the CCE model. Therefore, a one-unit increase of gross fixed capital formation variable will cause a 0.00941 increase in current gross domestic product per capita growth in CCE model, holding other variables constant. Moreover, foreign direct investment as control variable is statistically significant at the 1% significance level in Fixed Effects model and statistically significant at the 10% significance level in System GMM and CCE models. These results show that a one-unit increase of the foreign direct investment variable will cause 0.00010 increase in current gross domestic product per capita growth for the System GMM, 0.0000821 increase for the Fixed Effects model, and 0.00167 increase for the CCE model, holding other variables constant. Overall, obtained coefficients and p-values show that the regulatory quality and trade openness variables have more stable and statistically significant results across all three models. Gross fixed capital formation as variable has statistically significant parameter only in the CCE estimator, and foreign direct investment variable has higher fluctuation in terms of statistical significance across all three estimators despite having a positive coefficient.

The results of the regulatory quality model show that economic growth in European countries is closely related not only to traditional macroeconomic indicators, but also

to the quality of the institutional environment and the level of global economic integration. The positive results of regulatory quality in all assessments indicate that state policies that support market mechanisms, facilitate the activities of the private sector, reduce uncertainty in the business environment, and create stable rules for the implementation of economic decisions play an important role in the process of economic growth. This result is especially logical for European countries, since economic integration, investment flows, market competition, and foreign trade relations in these countries seriously depend on the quality of the institutional framework. A more effective regulatory environment reduces entrepreneurial costs, makes investment decisions more predictable, creates conditions for directing resources to more productive areas, and ultimately supports economic growth. In this regard, the positive effect of the regulatory quality variable should be evaluated not only as a formal institutional indicator, but also as a coordination mechanism of economic activity. The results of trade openness indicate that the trade dimension of globalization is an important channel for economic growth. In European countries, access to foreign markets, regional trade relations, technology and knowledge transfer, integration into international production networks and increased competition act as the main mechanisms supporting economic growth. The consistently positive result of the trade openness variable shows that trade integration is not limited to an increase in trade volume, but also affects the domestic economic structure to be more competitive, productive, and open to innovation. The separate positive coefficients of regulatory quality and trade openness indicate that both variables are independently associated with economic growth, conditional on the other variables included in the model. However, these results do not demonstrate that the effect of trade openness depends on the level of regulatory quality. Establishing such a complementary or moderating relationship would require an interaction term between regulatory quality and trade openness, which is not included in the current specification. The positive result of the lagged economic growth variable indicates the existence of continuity and inertia effect in the economic growth process. In other words, the economic performance formed in previous periods affects the growth potential in the current period, which indicates that factors such as production structure, human capital, infrastructure, investment environment and institutional stability in European countries have not completely changed in the short term. Therefore, the dynamic structure of the model is economically justified, because current economic growth is not only the result of current institutional and macroeconomic changes, but also a continuation of economic performance in previous periods. The fact that the growth cap results are more clearly visible only

in some estimates indicates that the impact of fixed capital accumulation on economic growth is not simple and direct. Capital investments can support economic growth, but the strength of this impact depends on the quality of investments, whether they are directed to productive sectors, the institutional environment, and general macroeconomic conditions. In relatively developed economic systems such as European countries, the impact of capital accumulation on growth is not only related to the volume of investment, but also to its efficiency, technological productivity, and structural compatibility. Therefore, the gross fixed capital formation results should be interpreted with more caution like that capital formation is an important factor, but does not act as a main and stable determinant of economic growth on its own. The results on the foreign direct investment variable similarly require cautious interpretation. Economic growth can be supported by several channels of foreign investment such as transfer of innovative technologies, increase in management expertise, expanding of financial resources, and integration into international production chains. However, the institutional quality of the host country and the sectors in which the investment is directed shape the level of actual influence of foreign direct investments on economic growth. Therefore, the positive but less stable effect of foreign direct investment suggests that the quality of the regulatory environment and the local economic structure play an important mediating role in the translation of foreign capital into economic growth. Overall, the results show that regulatory quality and trade openness are the most stable explanatory variables across the three estimators. Their positive and statistically significant coefficients suggest that improvements in regulatory quality and increases in trade openness are independently associated with higher economic growth in European countries. Nevertheless, the current empirical specification does not allow conclusions to be drawn about whether these two factors reinforce each other. In addition, the unusually high Sargan test p-value indicates that the System GMM results should be interpreted cautiously, since the size and composition of the instrument set may reduce the discriminatory power of the overidentification test.

Conclusion

In this study, the impact of regulatory quality and trade openness, which is used as a measure of the trade dimension of globalization, on economic growth in European countries for the period 2002–2022 was investigated based on a dynamic panel approach. For this purpose, Fixed Effects, System GMM and Common Correlated Effects estimators were used, and the results were evaluated comparatively. The results obtained show that regulatory quality and trade openness act as key factors

supporting economic growth in European countries. In particular, the positive effect of regulatory quality shows that policies that support market activity, create conditions for the development of the private sector and form a stable institutional framework for the implementation of economic decisions are of great importance in terms of long-term economic development. The positive results of trade openness show that the trade dimension of globalization contributes to economic growth through access to foreign markets, competition, technology transfer, and expansion of production links. In this regard, the results of the study reveal the importance of explaining economic growth in European countries not only by macroeconomic indicators, but also by institutional quality and the level of global economic integration.

Although the results of the study show that regulatory quality and trade openness are important factors for economic growth in European countries, certain limitations remain, and these limitations create new directions for future research. First, since the study only covers European countries, generalization of the results to other regions should be done with caution. In addition, since globalization is measured only by trade openness, the study captures only the trade dimension of globalization. Therefore, financial, technological, social and political globalization channels are not directly analyzed. At the same time, using only the regulatory quality variable as the main indicator of institutional quality does not fully reflect the impact of other components of the institutional system. In future studies, taking these limitations into account, broader globalization indicators such as the KOF Globalization Index, other components of institutional quality or composite indices can be used. Furthermore, future studies may directly test the complementary relationship between regulatory quality and trade openness by including an interaction term between these variables in dynamic panel estimations. In addition to this approach, applying division of countries into subgroups according to their EU membership status, income level, and development stage in this dynamic model comparison may allow future research to reach deeper and complex view to the topic.

Several policy recommendations can be formulated based on the results of this study. First, improving regulatory quality should be considered a priority to strengthen the sustainability of economic growth in European countries. Moreover, more transparent, predictable and market-oriented manner public policies should be formulated by reducing administrative barriers for the businesses and strengthening institutional mechanisms focusing on the development of the private sector. At the same time, countries should use regional economic integration more effectively for expanding international trade relations and increasing export potential due to the

positive impact of trade openness on economic growth. The policy implications should therefore be interpreted as relating to two separate channels. The results support both the improvement of regulatory quality and the expansion of trade openness, but they do not establish that regulatory quality increases the growth effect of trade openness. Overall, the study indicates that regulatory quality and trade openness are independently important factors associated with sustainable economic growth in European countries. The possible joint or complementary effect of these factors should be examined through interaction models in future research. The scientific novelty of this study lies in the comparative assessment of regulatory quality and trade openness using Fixed Effects, System GMM and Common Correlated Effects estimators within the same dynamic panel specification based on a large European panel. The practical significance of the study is that the results suggest the importance of considering both trade openness and transparent, predictable, and market-oriented regulatory institutions when designing policies for sustainable economic growth. The economic significance of the study lies in showing that regulatory quality and trade openness are separately and positively associated with economic growth across alternative panel estimators.

References

1. E. Duodu, S.T. Baidoo, E. Lau (2020). How does quality of institutions affect the impact of trade openness on economic growth of Ghana?, *Cogent Economics & Finance*, 8(1), 1812258, <https://doi.org/10.1080/23322039.2020.1812258>
2. P.B. Beri, G. Mhonyera, G.F. Nubong (2022). Globalisation and economic growth in Africa: New evidence from the past two decades, *South African Journal of Economic and Management Sciences*, 25(1), a4515, <https://doi.org/10.4102/sajems.v25i1.4515>
3. O.A. Onafowora, O. Owoye (2024). Trade openness, governance quality, and economic growth in Latin America and the Caribbean, *International Economics*, 179, 100527, <https://doi.org/10.1016/j.inteco.2024.100527>
4. T.M. Seti, S. Mazwane, M. Christian (2025). Financial Openness, Trade Openness, and Economic Growth Nexus: A Dynamic Panel Analysis for Emerging and Developing Economies, *Journal of Risk and Financial Management*, 18(2), 78, <https://doi.org/10.3390/jrfm18020078>
5. R.H. Coase (1937). The Nature of the Firm, *Economica*, 4(16), pp. 386–405, <https://doi.org/10.1111/j.1468-0335.1937.tb00002.x>
6. D.C. North (1991). Institutions, *Journal of Economic Perspectives*, 5(1), pp. 97–112, <https://doi.org/10.1257/jep.5.1.97>
7. O.E. Williamson (2000). The New Institutional Economics: Taking Stock, Looking Ahead, *Journal of Economic Literature*, 38(3), pp. 595–613, <https://doi.org/10.1257/jel.38.3.595>
8. D. Acemoglu, S. Johnson, J.A. Robinson (2001). The Colonial Origins of Comparative Development: An Empirical Investigation, *American Economic Review*, 91(5), pp. 1369–1401, <https://doi.org/10.1257/aer.91.5.1369>
9. S. Filip, R. Setzer (2025). The impact of regional institutional quality on economic growth and resilience in the EU, ECB Working Paper No. 3045, <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp3045~ad74f198a7.en.pdf>

10. S.A. Dirir (2023). The Effect of Institutional Quality on Economic Growth: Evidence from Tripartite Approaches in the Context of War-Torn Countries, Organizations and Markets in Emerging Economies, 14(3), pp. 508–535, <https://doi.org/10.15388/omee.2023.14.3>
11. K.J. Alam, K.K. Sumon (2020). Causal Relationship between Trade Openness and Economic Growth: A Panel Data Analysis of Asian Countries, International Journal of Economics and Financial Issues, 10(1), pp. 118–126, <https://doi.org/10.32479/ijefi.8657>
12. F. Ahmed, S. Kousar, A. Pervaiz, A. Shabbir (2022). Do institutional quality and financial development affect sustainable economic growth? Evidence from South Asian countries, Borsa Istanbul Review, 22(1), pp. 189–196, <https://doi.org/10.1016/j.bir.2021.03.005>
13. M. Arellano, S. Bond (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations, Review of Economic Studies, 58(2), pp. 277–297, <https://doi.org/10.2307/2297968>
14. R. Blundell, S. Bond (1998). Initial conditions and moment restrictions in dynamic panel data models, Journal of Econometrics, 87(1), pp. 115–143, [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8)
15. S.H. Law, T.C. Lim, N.W. Ismail (2013). Institutions and economic development: A Granger causality analysis of panel data evidence, Economic Systems, 37(4), pp. 610–624, <https://doi.org/10.1016/j.ecosys.2013.05.005>
16. P. Zahonogo (2018). Globalization and economic growth in developing countries: Evidence from Sub-Saharan Africa, The International Trade Journal, 32(2), pp. 189–208, <https://doi.org/10.1080/08853908.2017.1333933>
17. M.H. Pesaran (2006). Estimation and inference in large heterogeneous panels with a multifactor error structure, Econometrica, 74(4), pp. 967–1012, <https://doi.org/10.1111/j.1468-0262.2006.00692.x>
18. A. Chudik, M.H. Pesaran (2015). Common correlated effects estimation of heterogeneous dynamic panel data models with weakly exogenous regressors, Journal of Econometrics, 188(2), pp. 393–420, <https://doi.org/10.1016/j.jeconom.2015.03.007>
19. J. Ditzén (2021). Estimating long-run effects and the exponent of cross-sectional dependence: An update to xtdcce2, The Stata Journal, 21(3), pp. 687–707, <https://doi.org/10.1177/1536867X211045560>
20. M.H. Pesaran, T. Yamagata (2008). Testing slope homogeneity in large panels, Journal of Econometrics, 142(1), pp. 50–93, <https://doi.org/10.1016/j.jeconom.2007.05.010>