THE RELATIONSHIP BETWEEN FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE FROM 27 EUROPEAN UNION COUNTRIES

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Abstract: The present study focuses on the relationship between financial development and economic expansion in the European Union (EU) countries. We compare three different periods: the years before the financial crisis, the years affected by the crisis, and the post-crisis period. Using the System Generalized Method of Moments estimator alongside Granger causality tests, the results reveal a bidirectional causality between finance and growth before the financial crisis. During and after the crisis, financial development Granger causes economic growth only unidirectionally. The strongest positive impact of financial development on growth is observed after the crisis.

1. Introduction

The European Union is a complex economic and financial framework consisting currently of 27 member states. It includes one of the world's largest monetary unions, the Eurozone (European Commission, 2023). From all the categories of monetary financial institutions that were available in European Union countries in 2023, the largest was the category of credit institutions (banks), according to Statista (2023). However, the total number of banks has been decreasing in the last few years. In 2024, there were a total of 4,886 banks operating in the European Union, and Germany led with almost 1,000 more banks than any other European country; the banking industry had here total assets worth more than 10.8 trillion euros in 2023 (Statista, 2024).

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The European regulations promoted after the 2007-2008 financial crisis demand improved risk management. Many economic agents, analysts, policymakers, and researchers understood the risk of over-reliance on traditional banking and, at the same time, the importance of financial diversification. As a result, currently, there is a greater focus on the complementary role of capital markets in the European economies. Additionally, consumers' behaviour has been shaped lately by digitalisation. Technological adaptation has become critical for financial institutions, and the demand for traditional bank branches is decreasing.

Even more, following the 2007-2008 financial crisis, the necessity for greater integration of the banking sector was recognised, and the so-called 'Banking Union' was established (European Commission, 2024a). It currently consists of 21 countries, involving a Single Resolution Mechanism (SRM) and a Single Supervisory Mechanism (SSM) for banks. As described by the European Commission (2024a), when a bank is failing or likely to fail, the resolution mechanism imposes the reorganisation of the bank by a resolution authority. This process guarantees that a bank failure won't result in financial instability or damage to the overall economy. At the same time, the European Central Bank (ECB) is the primary prudential regulator of financial institutions covered by the SSM. While national supervisors continue to keep an eye on the smaller banks, the ECB looks for the largest banks.

A different initiative called the 'Capital Markets Union' (CMU) seeks to establish a single capital market so that businesses, investors, and consumers can profit from savings and investments moving throughout the European Union (European Commission, 2024b). European Commission argues that the European Union capital markets are still fragmented, despite the fact that there has been improvement since the CMU effort was started in 2015. As a response, in September 2020, the Commission approved a revised CMU action plan following three main objectives: construct a genuine single market through integrating national capital markets, make long-term investing and saving in the European Union even safer, and encourage a resilient and environmentally friendly economic rebound.

The comprehensive European financial sector is extremely dynamic. The changes are even more impactful for some of the European Union member countries, which were formerly under communist regimes. Adapting the supranational regulations in order to develop their market-oriented financial systems, while constantly looking for sustainable economic growth, might be considered a one-way road. The present paper seeks empirical evidence that financial development positively impacts economic growth in the European Union countries. Even though the finance-growth nexus has been the focus of a considerable amount of the specific literature already, measuring financial development while simultaneously evaluating the intermediate functions of financial markets and financial institutions remains a major challenge. Moreover, observing the differences in terms of sign and strength of the causality among various time periods, whether they occur during economic recovery or during crisis periods, is an additional critical topic. This paper examines the changes that occur in the relationship between financial development and economic growth in 27 European Union countries, across different time spans, by employing the System Generalized Method of Moments methodology with Granger causality tests, and by using the recently developed Financial Development Index from the International Monetary Fund (Svirydzenka, 2016).

2. Literature review

The importance of the financial system was acknowledged a long time ago, and since then, researchers have been paying attention to the relationship between finance and economic growth. Bagehot (1962, pp. 37-49) described particularly the important and multiple roles played by England's financial system. Through this work, the author started to shape the need for policymakers' responses during financial crises in preventing systemic collapses. When looking at emerging and undeveloped countries, Patrick (1966) emphasised the significance of the financial system as a whole, financial institutions, and the unique role of financial innovation.

In the empirical research field on economic growth, a new methodology - the panel data technique - began to gain popularity in the 1980s and 1990s. According to some well-known authors (Arellano & Bond, 1991; Arellano & Bover, 1995; Blundell & Bond, 1998), early explanations and pieces of evidence regarding the advantages of employing the panel method can be identified. It was agreed on the importance of using efficient and strong instruments through a Generalized Method of Moments estimation, especially a relevant method when having a large number of observations (N) for a short period of time (T) (Bond et al., 2001). Both the Difference Generalized Method of Moments and the System Generalized Method of Moments were applied to a sample of 74 countries for the period 1960-1995 (Levine et al., 2000). Evidence suggests a positive correlation between economic growth and the exogenous components of financial intermediary development. While the authors demonstrate the role of finance on economic growth using traditional banking indicators such as credit to the private sector or credit by deposit money banks, we take further their work by employing the broader IMF Financial Development Index as a measure for finance. Additionally, their study is limited to the 1960-1995 period, and our work fills this gap by analysing a more recent time span.

Rioja & Valev (2004a, 2004b) argued that finance has a strong positive influence on growth primarily in more developed economies, while in less developed economies the effect of finance on output growth occurs primarily through capital accumulation. The authors used the Difference Generalized Method of Moments and System Generalized Method of Moments methodologies. Again, the authors focused in their study only on the period 1960-1995. Later, for the same analysed period (1960-1995), Henderson et al. (2013) showed that the finance-growth relationship was significantly positive for middle- and high-income countries, while for the low-income countries it was non-existent or to a smaller extent. Financial development became a key determinant of growth in later stages of development, perhaps because market imperfections became less severe and institutions imposed fewer constraints. Even more, in the case of 10 European Union countries, for a period of 14 years, from 1994 to 2007, Caporale et al. showed limited evidence of a finance-growth positive relationship (2015). The research focuses only on national economies that had a period of transition: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. The System Generalized Method of Moments estimator was employed, using as instrumental variables the lagged endogenous and explanatory variables. Gross Domestic Product (GDP) per capita was used as a measure of growth. The final results show a small yet favourable impact of some indicators of financial development on economic growth. The current work extends the sample to all European Union countries.

Ferreira (2017) recognised the importance of the banking industry in the development of 28 European economies, arguing that banking institutions that can guarantee high levels of operational efficiency support economic growth. Through this work carried out for the period 1998-2012, the author examines the differences between pre-crisis and post-crisis years. By employing the Generalized Method of Moments methodology, the empirical results indicate that the Gross Domestic Product (GDP) growth rate may be adversely affected by the decline in the quality of bank assets. We take further the author's work and contribute to the specific literature, firstly, by taking into consideration the comprehensive financial sector, both in terms of financial institutions and financial markets. Secondly, by comparing the effects of financial development on economic growth before, during, and after the crisis, this study makes a contribution to the field. Additionally, the article offers new evidence about the causal relationship between finance and growth, specifically in the context of the European Union's distinctive financial architecture.

Later, in a study on 25 Sub-Saharan African countries, Taddesse and Abebaw (2021) showed using the System Generalized Method of Moments methodology that financial sector depth, access, and efficiency have a positive effect on these countries' economic growth. The empirical study is limited to a short period, from 2010 to 2017. In the same year, Sarwar et al. (2021) presented a one-directional positive effect between financial development and economic growth, with human capital as an interaction term, for 83 emerging economies, between 2002 and 2017. Even more, the authors (Asteriou et al., 2024) tested unidirectionally the impact of finance on growth in 26 European Union countries. Similar to our findings, they assess that financial development supports growth predominantly during normal periods, while its impact weakens during times of economic stress. In the current study, we are extending the objectives by looking for the presence of bidirectional causality between finance and growth.

Abbas et al. (2022) employed various methodologies, including Granger Causality tests within a Vector-Error Correction framework, to examine the causal relationship between finance and growth bidirectionally. The sample of 44 middle-income countries for the period 1995-2018 includes some European countries, like Bulgaria. Our work might add depth by focusing exclusively on the 27 European Union countries, offering a more targeted perspective.

3. Methodology

This paper hypothesises that economic growth in 27 European Union countries is in a positive relationship with financial development over the studied period of 30 years (1990-2019) and that there is presence of Granger causality between finance and growth. We are focusing on the countries that are part of the European Union as of 2025: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Romania, The Netherlands, Slovak Republic, Slovenia, Spain, and Sweden. The empirical analysis is conducted through the System Generalized Method of Moments (GMM) methodology and Granger causality tests, applied to three subperiods.

3.1. Data collection

Our model's dependent variable, gross domestic product per capita growth (annual percentage), was gathered from the World Development Indicators Database and serves as an indicator for economic growth (World Bank, 2023). The model also takes into account the Gross Domestic Product (GDP) growth rate from the previous year in order to reflect the dynamic nature of economic growth. Financial development is represented by the Financial Development Index, which was gathered from the Financial Development Index Database (International Monetary Fund, 2024). We motivate our decision to measure financial development by using this specific index because it takes into consideration variables for depth, access, and efficiency of the financial institutions and financial markets as well. The following steps are applied as a methodology of construction: all variables are normalised (these can be found in Table 1), then they are aggregated into sub-indices that reflect functional dimensions of the financial system and finally, the sub-indices are aggregated into the final index (see for a more detailed description Svirydzenka, 2016). Therefore, a total of nine indices are constructed from 20 indicators, the ninth index representing the comprehensive Financial Development Index (Figure 1):

§ Financial Institutions Depth (FID), Financial Institutions Access (FIA), Financial Institutions Efficiency (FIE), all used together to construct the Financial Institutions Index (FI);

§ Financial Markets Depth (FMD), Financial Markets Access (FMA), and Financial Markets Efficiency (FME), all used together to construct the Financial Markets Index (FMI);

§ Financial Development Index (FD), built as a combination of the Financial Institutions Index (FI) and the Financial Markets Index (FM).

Table 1. Variables used to construct the Financial Development Index

Category	Indicator
Financial Institutions, Depth	Private-sector credit to GDP
Financial Institutions, Depth	Pension fund assets to GDP
Financial Institutions, Depth	Mutual fund assets to GDP
Financial Institutions, Depth	Insurance premiums, life and non-life to GDP
Financial Institutions, Access	Bank branches per 100,000 adults
Financial Institutions, Access	ATMs per 100,000 adults
Financial Institutions, Efficiency	Net interest margin
Financial Institutions, Efficiency	Lending-deposits spread
Financial Institutions, Efficiency	Non-interest income to total income
Financial Institutions, Efficiency	Overhead costs to total assets
Financial Institutions, Efficiency	Return on assets
Financial Institutions, Efficiency	Return on equity
Financial Markets, Depth	Stock market capitalization to GDP
Financial Markets, Depth	Stocks traded to GDP
Financial Markets, Depth	International debt securities of government to GDP
Financial Markets, Depth	Total debt securities of financial corporations to GDP
Financial Markets, Depth	Total debt securities of nonfinancial corporations to GDP
Financial Markets, Access	Percent of market capitalization outside of top 10 largest companies
Financial Markets, Access	Total number of issuers of debt (domestic and external, non-financial and financial corp.)
Financial Markets, Efficiency	Stock market turnover ratio (stocks traded to capitalization)

Source: Reprinted from "Introducing a new broad-based index of financial development", by Svirydzenka, K., 2016, IMF Working Paper, p. 8

Figure 1. Indices used to construct the Financial Development Index
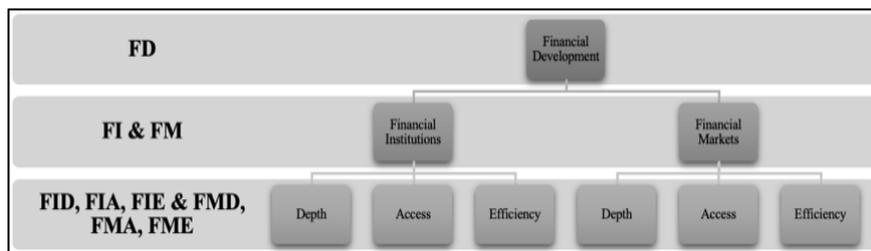
When necessary, the series of the financial proxy has been transformed into natural logarithms to ensure that the data distribution is normal. The model incorporates trade openness as a measure for economic growth, and data is collected from the World Bank (2023). As the European Union promotes a single internal market without borders, we consider that trade might have a positive impact on economic growth in the member states.

The following lagged variables are employed as instruments to control endogeneity: the one-year lagged financial development index, the one-year lagged trade openness variable, and the one-year lagged GDP per capita growth for the crisis years and the two-year lagged GDP per capita growth for the remaining years.

3.2. Data analysis

Considering a broad timeframe of 30 years, which includes the Great Recession or the Global Financial Crisis that began as a subprime mortgage crisis in 2007, we think it is essential to give the crisis-affected years more weight for a panel study. Asteriou and Spanos (2019) argued that the sign and strength of the financial-growth link are significantly more vulnerable to change during a crisis. Therefore, three sub-panels are constructed: the pre-crisis years (1990-2007), the crisis-affected years (2008-2014), and the post-crisis years (2015-2019).

The growth literature increasingly consists of sophisticated methods of estimation, particularly in panel data estimation, which is seen as being a good approach under the present circumstances. As long as the GMM estimator is effective and the instruments employed are robust (Bond et al., 2001), it is a viable method for unbalanced panels with short time periods and a higher number of observations (Arellano & Bond, 1991; Arellano & Bover, 1995; Blundell & Bond, 1998). The methodology relies on the moment conditions, which are statistical equations that capture relationships between parameters, instrumental variables, and overall observed data (Caporale et al., 2015). To model the hypothesis, the relationship between economic growth and financial development using the Generalized Method of Moments (GMM) estimation is initially stated as follows (1):

$$GDP_{it} = \alpha GDP_{i,t-1} + \beta FD_{i,t} + \delta Trade_{i,t} + \mu_i + \epsilon_{it}, \quad (1)$$

Where GDP_{it} is the dependent variable, the economic growth rate of country i at time t, $GDP_{i,t-1}$ is the lagged dependent variable, $FD_{i,t}$ is the independent variable, Financial Development Index, $Trade_{i,t}$ is the trade openness variable, μ_i is the unobserved

country-specific effect, ε_{it} is the error term for country i at time t, and α, β, δ are coefficients to be estimated.

In order to choose between different methodologies, we use the rule of thumb approach (Bond et al., 2001), which requires applying the Pooled Ordinary Least Squares (POLS) estimation with Fixed Effects (FE), then the Difference Generalized Method of Moments (DGMM). In order to conclude whether the Difference GMM is appropriate, we need to compare the α coefficients of GDP$_{(t-1)}$ obtained in the previous estimations. If αDGMM $>$ αFE, then we stop at the Difference GMM estimator; if αDGMM $<=$ αFE, then the System Generalized Method of Moments estimation needs to be applied further, as Difference GMM has a downward bias due to weak instrumentation (the results are shown in Table 2).

Table 2. Comparing different methods of estimation

Estimation	Period	GDP(-1) Coefficient	Total panel observations	Implication*
POLS, Fixed Effects	1990-2007	0.270124	418	Not efficient
POLS, Fixed Effects	2008-2014	-0.153036	162	Not efficient
POLS, Fixed Effects	2015-2019	-0.285757	108	Not efficient
Difference GMM	1990-2007	0.242645	390	Not efficient
Difference GMM	2008-2014	-0.234430	135	Not efficient
Difference GMM	2015-2019	-0.449292	81	Not efficient
System GMM	1990-2007	-1.511529	755	Efficient
System GMM	2008-2014	-13.12159	243	Efficient
System GMM	2015-2019	17.31308	135	Efficient

* If [GDP(-1) Coefficient DGMM] greater than [GDP(-1) Coefficient FE], Difference GMM Estimation to be performed

* If [GDP(-1) Coefficient DGMM] lower or equal than [GDP(-1) Coefficient FE], System GMM Estimation to be performed

Source: Author's estimation results performed in EViews econometric program, using data from the World Bank Database & International Monetary Fund Database

By comparing different methods, we determined that the System Generalized Method of Moments methodology should be used. The first-difference equation, which is expressed using the Δ difference operator (2), is added to equation (1):

$$GDP_{it} = \alpha GDP_{i,t-1} + \beta FD_{i,t} + \delta Trade_{i,t} + \mu_i + \epsilon_{it}, \quad (1)$$
$$\Delta GDP_{it} = \alpha \Delta GDP_{i,t-1} + \beta \Delta FD_{i,t} + \delta \Delta Trade_{i,t} + \Delta \epsilon_{it}, \quad (2).$$

Orthogonal Deviations transformation is employed as it can control unobserved heterogeneity, and, as it has already been shown, the transformation is a good alternative „regardless of whether N is large, or T is large, or both are large" (Phillips, 2022). Orthogonal Deviations GMM estimation addresses endogeneity by orthogonalizing the used instruments. Moreover, White Period transformation improves the efficiency of the GMM estimator, as it can correct heteroskedasticity over time. The J-statistic test is applied to assess the overall validity of the model. The null hypothesis is that the restrictions (moment conditions) are valid, so the used instrumental variables are correctly specified in the GMM estimation. A probability of J-statistic greater than the 0.1 threshold (significance level of 10%) suggests that there is insufficient evidence

to reject the null hypothesis, meaning that the used instruments are considered valid. In this case, the model's output could be confidently accepted.

Furthermore, the causal relationship between financial development and economic growth is evaluated using pairwise Granger causality tests (Granger, 1988). Because it captures the average influence of one variable's predictability on another, over the entire panel, the panel-level Granger causality technique is mostly employed in the related research. Therefore, in the current study, the Granger tests results provide an overview of the causality between financial development and economic growth in the European Union countries. The null hypothesis (H_0) states that financial development does not Granger-cause economic growth and vice versa, as the relationship is tested bidirectionally.

4. Results

The results sustain our initial hypothesis, that there is a positive relationship between finance and growth in all 27 European Union countries, over the analysed period of 30 years, by taking into consideration the development of both financial sectors: the development of financial institutions and the development of financial markets. The empirical results by employing the System Generalized Method of Moments methodology, including the J-Statistic Test, can be found in Table 3 for the period 1990-2007, in Table 5 for 2008-2014, and in Table 7 for 2015-2019. We consider the results relevant since if the financial development is high, the macroeconomic stabilisation is enhanced, and there is a positive effect on economic growth. Additionally, Table 4, Table 6, and Table 8 present the results for the Granger causality tests for each analysed subperiod.

The empirical findings show that the lagged dependent variable, which represents the historical GDP per capita growth, had a favourable impact on economic growth for the pre-crisis period (1990–2007). Moreover, trade openness and the financial proxy had considerable effects on economic growth (Table 3).

Table 3. System GMM results for the pre-crisis years, 1990-2007

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP (-1)	0.246453	0.005344	46.11471	0.0000***
FD	0.768662	0.181409	4.237179	0.0003***
T	0.029033	0.001519	19.11903	0.0000***
J-Statistic	24.57407			
Prob (J-Statistic)*	0.429193			

$* * *p < 1\%, * * p < 5\%, *p < 10\%$

Total panel (unbalanced) observations: 390

Method: Panel System Generalized Method of Moments

Transformations: Orthogonal Deviations, White Period

Instrument Specification: @DYN(GDP, -2), FD(-1), T(-1)

Source: Author's estimation results performed in EViews econometric program, using data from the World Bank Database & International Monetary Fund Database

Although the financial development coefficient is smaller in pre-crisis years than in the other periods under study, it is still statistically significant at 1%. The J-statistic coefficient and its probability assure the efficiency of our model, supporting its robustness. The results, in our opinion, perfectly represent the economic situation in Eastern European nations following the dissolution of communism: Poland, Hungary, the Czech Republic, the Slovak Republic, East Germany, Bulgaria, Romania, Slovenia, Croatia, Estonia, Latvia, and Lithuania. After transitioning from centrally planned to market-oriented economies, these economies made an effort to align their policies with the requirements and norms of the European Union. They started their journey toward economic systems based on the free market, democracy, and important social values promoted in the European Union membership. It is possible that the necessary infrastructure for a significant financial impact on growth did not come into place until later. This, together with the fact that most European economies had only modest capital market activity at the beginning of the 2000s and that the banking industry was still in the beginning stages, are reasons that may support our findings even more. Also, we identified evidence of a two-way Granger causal relationship between economic growth and financial development (Table 4).

Table 4. Pairwise Granger causality test, 1990-2007

Null Hypothesis	Obs	F-statistic	Prob.*
FD does not Granger Cause GDP	367	7.96099	4.E-05
GDP does not Granger Cause FD	367	2.54778	0.0557
T does not Granger Cause GDP	363	2.10623	0.0991
GDP does not Granger Cause T	363	2.18472	0.0895

*Significance threshold: 10%

Sample: 1990-2007

Source: Author's estimation results performed in EViews econometric program, using data from the World Bank Database & International Monetary Fund Database

As anticipated, the results during the period 2008–2014, representing the years affected by the crisis, show that there is a negative influence from the GDP per capita growth rate from the prior year, but the development of the financial sector had a favourable impact on economic growth (Table 5). Additionally, there is evidence of a positive impact of trade openness on growth.

Table 5. System GMM results for the years affected by crisis, 2008-2014

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP (-1)	-0.302937	0.008566	-35.36627	0.0000***
FD	5.116583	1.745137	2.931909	0.0069*
T	0.299601	0.013623	21.99300	0.0000***
J-Statistic	23.41678			
Prob (J-Statistic)*	0.219483			

$***p < 1\%, **p < 5\%, *p < 10\%$

Total panel (unbalanced) observations: 135

Method: Panel System Generalized Method of Moments

Transformations: Orthogonal Deviations, White Period

Instrument Specification: @DYN(GDP, -1), FD(-1), T(-1)

Source: Author's estimation results performed in EViews econometric program, using data from the World Bank Database & International Monetary Fund Database

There are many variables that may influence how quickly a nation transitions to a stable state of economic growth during a crisis, including the nature and severity of the crisis, the nation's economic structure, the policies adopted by the government during the crisis, and the country's links to the global economy. As the economy adjusts to decreased levels of production, the lagged dependent variable, which reflects historical levels of economic growth, has a negative impact on current economic growth. Reduced investment and consumption, but also the lowered general economic activity, might be the result of a set of pessimistic predictions about the future economy. Moreover, the efficiency of the policy responses in order to mitigate the effects of economic crises certainly has an impact on the relationship between historical and actual values of growth. Governments, central banks, and, in our case, the European Central Bank are all addressed here. Once more, the probability and J-statistic coefficient ensure our model's effectiveness. Granger causality between financial development and economic growth has been confirmed, although only unidirectionally (Table 6).

Table 6. Pairwise Granger causality test, 2008-2014

Null Hypothesis	Obs	F-statistic	Prob.*
FD does not Granger Cause GDP	135	15.7304	8.E-07
GDP does not Granger Cause FD	135	0.93319	0.3959
T does not Granger Cause GDP	135	10.6918	5.E-05
GDP does not Granger Cause T	135	22.2227	5.E-09

*Significance threshold: 10%

Sample: 2008-2014

Source: Author's estimation results performed in EViews econometric program, using data from the World Bank Database & International Monetary Fund Database

Even more, the findings for the post-crisis years (2015–2019) demonstrate that while financial development has a positive, statistically significant impact on growth, the previous GDP per capita growth rate continues to have a negative effect, and trade does not have a significant impact on growth (Table 7). The weaker global demand and some protectionist policies after the crisis might be the reason for this. However, when compared to the other periods, the financial development coefficient is the highest. Governments and central banks implemented a variety of policy initiatives to lessen the impact of the financial crisis and encourage economic recovery. These policies (such as banking sector reforms and fiscal stimulus) might have affected the connection between financial development and economic expansion. The adjustments in terms of financial supervision and regulation initiated by European Union policy helped to stabilise the financial industry and, eventually, encouraged growth. The J-statistic coefficient and probability support the robustness of the model. We also found evidence for the presence of Granger causality between finance and growth (Table 8). However, it is only unidirectional, as financial development and trade Granger-cause economic growth, but the reversal is not applicable.

Table 7. System GMM results for the post-crisis years, 2015-2019

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP (-1)	-0.442408	0.068565	-6.452408	0.0000***
FD	17.31043	7.850243	2.205082	0.0365**
T	0.051803	0.071187	0.727700	0.4733
J-Statistic	7.406335			
Prob (J-Statistic)*	0.192132			

$***p < 1\%, **p < 5\%, *p < 10\%$
Total panel (unbalanced) observations: 81
Method: Panel System Generalized Method of Moments
Transformations: Orthogonal Deviations, White Period
Instrument Specification: @DYN(GDP, -2), FD(-1), T(-1)
Source: Author's estimation results performed in EViews econometric program, using data from the World Bank Database & International Monetary Fund Database

Table 8. Pairwise Granger causality test, 2015-2019

Null Hypothesis	Obs	F-statistic	Prob.*
FD does not Granger Cause GDP	54	4.04426	0.0123
GDP does not Granger Cause FD	54	0.79280	0.5040
T does not Granger Cause GDP	54	2.96090	0.0417
GDP does not Granger Cause T	54	0.26145	0.8528

*Significance threshold: 10%
Sample: 2015-2019
Source: Author's estimation results performed in EViews econometric program, using data from the World Bank Database & International Monetary Fund Database

5. Discussion

The findings of the current paper, by employing the System Generalized Method of Moments estimator as well as Granger causality tests, underline once again the importance of existing policies that increase the financial sector resilience. By prioritising the strengthening of the financial system for resilience, EU policymakers might support the positive impact of finance on growth even during stress times. This condition could be even more enhanced by focusing on countercyclical fiscal and monetary policies. During downturns, like the previous Global Financial Crisis, maintaining credit flows could stabilise demand, while stricter regulations must be implemented during booms to avoid excessive financial risk-taking. Additionally, as the results were obtained by using the comprehensive Financial Development Index as a measure for the financial sector, with a focus on both financial institutions and financial markets, we consider that a balance between banking and capital markets might reduce the risks of over-reliance on banks. Given the obtained results that provide evidence that there is a positive impact of financial development on growth, such policies might support further economic growth.

6. Conclusions

Although we found some differences in terms of magnitude during the studied time spans, the empirical findings support the hypothesis that between financial development and economic growth there is a positive causal relationship in the European Union countries. The presence of Granger causality between finance and growth is also acknowledged, sometimes even bidirectional (for the pre-crisis period). The highest financial development coefficient in the employed System Generalized Method of Moments estimation occurred between 2015 and 2019, the post-crisis years. As a result, the impact of financial development on growth differs depending on the overall economic environment. The policymakers in the European Union may consider continuing to encourage the development of the financial sector as a whole, including banking, capital markets, and insurance institutions, while also facilitating access to a variety of financial products. We consider it absolutely necessary for policymakers to sustain initiatives that promote financial inclusion, initiatives that can reduce the borrowers' dependence on banks, and even more initiatives that promote diversification of the financial sources. All these measures together could help in sustaining economic growth in an unfavourable context, as there is empirical evidence that access, depth, and efficiency of the financial institutions and financial markets positively Granger-cause economic growth. The results of the current study raise an additional challenge, as we intend to employ a threshold dynamic panel technique in our future research, in order to look deeper into the level of financial development that contributes to the economic growth, not only across the European Union, but in high-income economies, in general.

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