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RETHINKING FINANCIAL DEEPENING: FINANCIAL DEVELOPMENT AND GROWTH IN WESTERN BALKANS COUNTRIES WITH REFERENCE TO THE LEVELS OF ECONOMIC DEVELOPMENT AND EURO-INTEGRATION STATUS

Vjolca Hasani-Limani

Abstract

This article provides an empirical analysis of the relationship between financial development and economic growth, using a sample of nine countries in the Western Balkans from 1995–2022. The study addresses the gap in the literature on financial deepening in the region, specifically regarding its impact on economic development and the Euro-integration status. A novel approach is used to construct the Financial Development Index employing principal component analysis, utilizing a comprehensive matrix of financial proxies for both financial institutions and markets, not previously used in the literature. Results of the dynamic generalised method of moments estimation confirm a significant positive impact of financial deepening on economic growth and income per capita. The positive quadratic term of financial deepening suggests that financial development fosters economic growth. Furthermore, European member states have not yet reached a level of financial development, where the effects of "too much finance" would appear, implying that European integration has not deepened financial development.

Keywords: *Financial deepening, Western Balkans, GMM, Financial development index (FDI).*

JEL classification: ***G1, G2, O16.***

1. INTRODUCTION

Financial deepening as a term is broadly used by economists and has gained major importance in the financial literature. It refers to a wide range of factors within the financial sector that define the ratio of financial assets to GDP growth of an economy.

The financial development index of an economy includes many factors that can impact, encourage, and stimulate the economic growth in a country. These factors include both the institutional and market development aspects, such as credits, savings, financial resource allocation, and diversification. Financial deepening leads to financial stability and the reduction of financial crises and panics. Financial development can reduce volatility by avoiding informal asymmetries and by reducing financial constraints. In the light of an ongoing debate regarding the relation and impact of financial development on economic growth, this study will have a major contribution from an empirical perspective with exact estimations that will argue the given hypothesis in the model.

This article studies the relationship of financial deepening and economic growth of the Western Balkans countries, arguing that an increase in financial deepening has a positive relation and impact on the economic growth of these in a time span of

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1995–2022. According to the World Bank data, these countries are at different levels of economic development. Slovenia, Croatia, and Greece are considered high-income economies, and Albania, Bosnia and Herzegovina, Bulgaria, North Macedonia, Montenegro, and Serbia are considered middle/upper-middle-income countries. This categorisation based on the WB data implies a different approach in the model specification for high-income countries. Since these countries are also EU member countries, in the model they must be treated in a separate interaction term in order to observe their finance-growth relationship in particular. This selection of countries is intentionally chosen in order to determine whether they have experienced the impact of EU membership in their financial deepening and growth.

This article studies the relationship and impact of financial deepening in economic growth in WB. Thus, the hypothesis says that financial deepening has a positive relationship and a significant impact on economic growth in these WB countries. The main reason behind this assumption relies on the theoretical and empirical backgrounds, since several studies have emphasised the fact that in middle-income and high-income economies that are still in a developing process, the financial deepening has space to be further developed. These economies have the potential for more enhanced financial development, considering several internal factors that, in an interrelation process, can contribute to increasing their economic potential and growth.

Several studies have been conducted in advanced economies, their evidence has encountered a positive relation between financial deepening and growth. However, the significance is weak regarding the fact that a higher point of financial development did not bring added value to economic growth in highly developed economies. In these countries, further development of the financial sector cannot be productive and can also bring up the so-called 'too much finance'.

On the other hand, in emerging economies we cannot expect to encounter high levels of financial development, or the so-called 'too much finance,' which could comprise the moment where the costs outweigh the benefits of financial deepening and, by the way, can lower its importance in the economy.

In a review of the empirically verified literature background and studies conducted in several countries in the world, we did not find significant empirical evidence on this topic about countries in the Balkans region. Thus, the core aim of this article is to bring forward an important study to serve as a base for comparison.

Another exceptional contribution of this article is in the main concept of financial development index (FDI) compilation. Most of the empirical literature in the past has measured financial development simply by the ratio of private credit to GDP and the level of market capitalization. The FDI analysis in both empirical models in this study includes numerous characteristics of financial institutions (FII) and financial markets (FMI) on different aspects of the financial and economic development of the region. This methodology is explained thoroughly in the methodology section, including other detailed clarifications about the variables and empirical models of this study.

The subsequent sections include a literature review, where I explain the background of the study and the empirical evidence where this study is supported, also in terms of the aforementioned novel procedure of index compilation. The empirical data analysis section analyses the dataset, dividing the data on a country basis in order to present a clearer overview of the actual situation. The result and discussion section comprises the model estimations and the final results of the GMM analysis, which extracts the factual basis where the hypothesis is confirmed. The final section rounds off the conclusions regarding the topic.

2. LITERATURE REVIEW

The literature covering the topic of financial deepening is very rich and extensive among journals and books. The theoretical background includes mainly the financial deepening-economic growth relation and also the impact of financial deepening on advanced and emerging economies growth. There is a huge lack of studies on the relationship between financial deepening and growth in the Balkan region. The empirical contribution of this paper will be an added value and will fulfil the gap in literature regarding the role and impact of financial deepening in the financial stability and economic growth of the economies in the Western Balkans region.

The first study to address the issue of causality between economic growth and financial development was published by King and Levine (1993) in a cross-country regression analysis, which found that the financial depth could predict the growth rates of GDP. In this discussion, Levine and Zervos (1998) incorporated the stock market depth into this causality. The approach used by Beck and Levine (2002) has evolved their empirical estimations using dynamic panel data, including controlling instruments and lagged values.

The last study, which was conducted in a period

from 1980-2013 for 176 advanced and low-income economies, confirms the positive relationship between financial development and growth (Sahay et al. 2015). In this study, the FDI was compiled through a matrix that included the three characteristics (access, depth, and efficiency) of both the financial institutions and financial markets. The previously mentioned paper that was published by IMF officials intrigued our interest in the procedure of index compilation in this study. The applied procedure of this study differs from previous empirical literature as it considers a broader perspective of indicators. The previous studies have estimated the results based only on the ratio of domestic credit to GDP and the market capitalisation ratio, which represents a narrow approach. Therefore, this study uses a novel approach that was not encountered in previous articles on this topic, especially in the Western Balkans. The following process is discussed thoroughly in the methodology section.

Many studies, such as Sugiyanto and Yolanda (2020), Hysa and Rehman (2023), and Stanković, Petrović and Denčić-Mihajlov (2018), which were conducted among groups of states and regions, have shown similar results that confirm the positive relation between financial development and economic growth while enhancing the need for regulation of financial markets and institutions among these developing countries.

Moreover, Gezer (2018) argues that financial deepening can impact economic growth through causal relationships in upper middle-income states. As a result, they mention that it can lead to stability, affecting the growth dynamics. Wanjala and Gogo (2020) also found that financial deepening indicators had a positive, significant effect on economic growth in the East African Community.

Li (2021), in his book, emphasises that financial deepening relies on local-currency-based progress to boost real economy investment and savings channelling, as it is essential for fast investment and requires proactive monitoring and mitigation. A more developed financial access helps small enterprises in their growth and their internationalisation process, as is suggested by the study of Hasani-Limani and Tahiri (2022). Credit access represents a crucial part of the financial development index and a major factor in the development of micro and small enterprises also. Thus, credit access and the size of the company are statistically significant in enterprise development (Hasani-Limani 2022).

Another paper focuses on reevaluating the relationship between financial depth and growth using a semi-parametric approach and finds a positive impact of financial depth on economic growth (Polemis, Stengos and Tzeremes 2020). In a panel threshold regression analysis, it was found that financial deepening in Asian economies enhances growth above the threshold value, boosting economic development (Dahiya 2022). On the other hand, Cavallaro and Villani (2022), in their research on a large panel of countries over 1995–2017, suggests that the marginal effects of financial development on growth differ for economies with uneven long-run growth patterns, and financial development spurs growth when economies enhance the inclusiveness, efficiency, and resilience of financial systems.

Many authors, such as Zhu, Asimakopoulos, and Kima (2020), Sahay et al. (2015) and Beck (2014), have concluded that in the advanced and emerging economies, financial development has reached a point where any further development doesn't have a significant positive impact on economic growth. This conclusion included the access, depth, and efficiency of financial institutions and markets. Cho, Desbordes and Eberhardt (2022) in their column argue the same effect since the finance-growth nexus is shown to be more complex than it was previously thought of. They added that in countries with intermediate levels of financial development, a non-linearity in the finance-growth relationship is a new consensus. However, they did not find any negative implications of 'too much finance' for long-term growth trajectories in these economies. Also, in a highly developed country, the economic growth and financial development are mutually causal and create a two-way causal relationship based on the findings of Wesiah (2021).

Moreover, a study conducted by Afzal, Firdousi, and Mahmood (2023) in Poland over 2005-2019 using ADF, the Philip-Peron unit root test, and Granger causality has found a bidirectional causal relationship between financial deepening and economic growth in the short run. And control variables showed a significant positive relationship with economic development in the long run. Furthermore, Samargandi, Fidrmuc and Ghosh (2015) argued that financial development has shown a positive relation with economic growth with greater significance in the long run. According to Audi, Ali and Hamadeh (2022) financial innovations have a major impact on economic growth. On the other hand, Imamoğlu and Öznacar (2023) argue that financial development is a significant contributor to economic growth, including education attainment of the population as a major factor.

In terms of economic growth, studies show that financial development influences economic growth in emerging countries with promising conditions for

accelerated economic growth. Financial development in emerging economies serves as a mechanism for poverty alleviation as it enhances the level of GDP and income per capita, improving the standard of living. Several studies show that emerging economies require greater commitment, and the improvement of financial development measures, in order to enhance investment opportunities, resource allocation, and economic growth (Musabeh et al., 2020; Tsaurai 2021; Kar, Nazlıoğlu and Hüseyin 2011). In terms of capital markets, Tyson (2023) argues that capital market development and the development of market infrastructure are crucial factors for further economic development. Moreover, capital markets are essential for financial development in middle-income countries.

Some of the studies on economic development and growth in Western Balkans countries have analysed the topic using several empirical methods. Hysa and Rehman (2023) found a non-linear association between financial and economic growth, using a threshold regression, while incorporating remittances as a crucial factor in the economic growth of Western Balkans countries. On the other hand, a study of Bilalli, Beka, and Gara (2023) used fixed effect regression, and they measured financial development only by the rate of domestic credit. They confirm that trade, interest rates, and domestic credit to the private sector positively impact economic growth. Moreover, another study of Popović and Erić (2018) found that there is no statistically significant relationship between investments and unit labour costs in Western Balkans economies. Furthermore, a study of Vangjel and Mamo (2022) analyses the development of the financial sector, applying variables proxies of the banking sector. With utilisation of FEM, they found that the financial sector was not productive for the economies of the WB. Cakal-Velagic and Silajdzic (2024) have implemented Driscoll-Kraay regression to measure the effect of financial development on income inequality. Contrary to prevailing literature, the findings of this study have suggested that there is no significant impact of financial development on income inequality in WB countries. And the study conducted by Lazarov, Miteva-Kacarski and Nikoloski (2016) analyses the stock market development and growth in Macedonia using dynamic GMM and found that the stock market is underdeveloped and has not shown significant impact.

Regarding the previous studies, where the financial index is measured only by the ratio of domestic credit to private sector, certainly this article will bring a new and broader approach on the topic, which represents a good base for further research studies.

3. METHODOLOGY

3.1 Dataset

The dataset consists of a strongly balanced panel for the period 1995–2022 including annual data for nine countries such as: Albania, Bosnia and Hercegovina, Bulgaria, Croatia, Greece, North Macedonia, Montenegro, Serbia and Slovenia. Kosovo is not included in the sample due to the lack of data on the period.

The data about GDP, financial institutions, and markets are gathered from a secondary dataset from the World Bank Data Bank. For an easier approach in the model, a symbol is given to every country. Based on their level of economic development, in this sample we have three high-income countries (Croatia, Greece, and Slovenia), and at the same time, all three are part of the European Union. And six upper middle-income countries (Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, and Serbia) are still in the process of euro-integration. Those countries are grouped and treated in the model as such.

This sample of Balkan countries is selected based on their level of economic development and integration status. This type of analysis is intriguing, as we presume that countries that already have EU membership status have had more opportunities to implement numerous European policies in terms of the development of their financial deepening factors, which results in improved economic development.

Limitations

During the process of preparation of the dataset, we encountered several series with no data. This problem was present in the dataset in all the countries of the sample.

This problem was mostly present in the process of construction of financial market sub-indices, given the fact that the states in the sample have had underdeveloped or non-existent financial markets for some periods of time since the dataset includes a time span from 1995 to 2022. Thus, the financial markets have not been active in the first years (from 1995).

In order to minimise the problem, we decide that within a period of time where the data about the function of financial markets was missing, these periods were not taken into consideration. If there was existent data about the period and some missing data about some of the years, we have used the approximation method. Therefore, in order to have a more accurate dataset, the calculation of proxies was imposed in order to solve the issue of missing data. This process is described in detail in the next section.

3.2 Construction of the index

The paper introduces a comprehensive financial development index, which is derived from the dataset following the matrix of characteristics as it was developed by Chihak, Kunt, Levine and Feyen (2012).

The data are divided into groups, which form a framework of two columns and three rows. The index is constructed as a new comprehensive index, including both financial institutions and financial markets. At this point, three dimensions of financial development are constructed based on "depth", "access" and "efficiency."

Based on the dataset, Table 1 introduces a better understanding of the process of construction of the Financial Development Index. The naming of the variables is the same as it is in the Global Financial Development Database conducted by Davide, AtaCan and Zhou (2022). This framework serves as a guideline for data classification in different categories and for the construction of the sub-indexes.

Regarding the fact that the countries that are considered in the sample have had several periods of time with inexistent data, meaning that there are periods of time when they did not publish any data, in the dataset there were several missing data points throughout the years; thus, I considered all the methods for treating this issue in order to use as much data as possible. I avoided excluding the series of missing data from the index. Therefore, for the periods where the dataset contains data from the previous years but there was data missing in several years in between, the data about those years were filled in by applying the average approximation based on the growth rate. In the first years, when the markets didn't exist in some countries, that data was treated as "zero."

3.3 Index compilation

After treating the missing data, the next step is compiling the index. All the processing is done using the Stata 14 software. At first glance, the dataset showed some extreme observations. Therefore, the data are winsorized at p (0.05) two ways, following the procedure as referred by the authors of the discussion paper by International Monetary Fund in Sahay et al. (2015). To create the index and the subindices, we refer to the previous table. This procedure takes the min and max values across the countries and respective years.

Table 1. The framework construction of the Financial Development Index

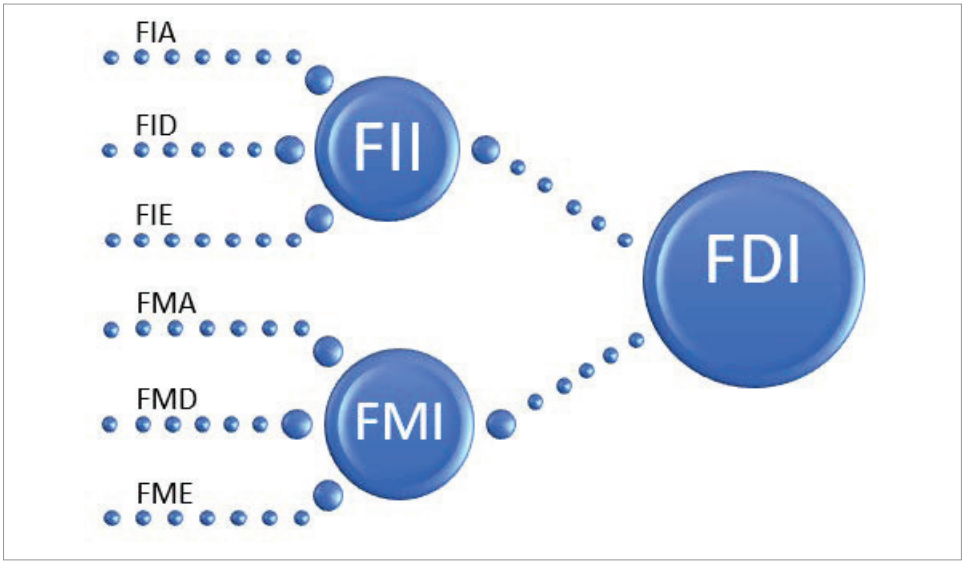
	FINANCIAL INSTITUTIONS	FINANCIAL MARKETS
ACCESS	Bank accounts per 1,000 adults Bank branches per 100,000 adults ATMs per 100,000 adults	Value traded, excluding top 10 traded companies to total value traded (%) Market capitalization excluding top 10 companies to total market capitalization (%) Nonfinancial corporate bonds to total bonds and notes outstanding (%)
DEPTH	Private credit by deposit money banks to GDP (%) Deposit money banks' assets to GDP (%) Nonbank financial institutions' assets to GDP (%) Deposit money bank assets to deposit money bank assets and central bank assets (%) Mutual fund assets to GDP (%) Financial system deposits to GDP (%) Life insurance premium volume to GDP (%) Non-life insurance premium volume to GDP (%) Insurance company assets to GDP (%) Pension fund assets to GDP (%) Domestic credit to private sector (% of GDP)	Stock market capitalization to GDP (%) Stock market total value traded to GDP (%) Domestic private debt securities to GDP (%) Domestic public debt securities to GDP (%) International private debt securities to GDP (%) International public debt securities to GDP (%) Total international debt securities / GDP (%) Gross portfolio debt liabilities to GDP (%)
EFFICIENCY	Bank net interest margin (%) Bank lending-deposit spread Bank noninterest income to total income (%) Bank overhead costs to total assets (%) Bank return on assets (%, after tax) Bank return on equity (%, after tax)	Stock market turnover ratio (stock traded / capitalisation)

The subindices and the final index are created using the Principal Component Analysis (PCA). The final index, i.e., the financial development index (FDI), captures the financial institutions index (FII) and the financial market index (FMI). The financial institutions index (FII) includes the financial institutions access (FIA), the financial institutions depth (FID), and the financial institutions efficiency (FIE). The financial market index (FMI) includes the financial markets access (FMA), the financial markets depth (FMD), and the financial markets efficiency (FME). Moreover, this procedure of index calculation is based on previous studies and literature, as in Chihak, Kunt, Levine, and Feyen (2012) and Sahay et al. (2015), and is described in Figure 1.

As it is shown in the figure, the aggregation of the subindices to the final index is completed using the same principal component analysis.

The analysis helped understand the weight of every variable on the sub-indices and also the weight of the sub-indices on the final index. The sub-indices are weighted as an average of the underlying series. The sub-indices that mostly affect the final index are both in the group of financial institutions index, namely the access and depth, with a variation of respectively 0.4 and 0.29.

Figure 1. Index compilation.



Source: The author.

Figure 2. Principal Component Analysis, individual weights in the final index.

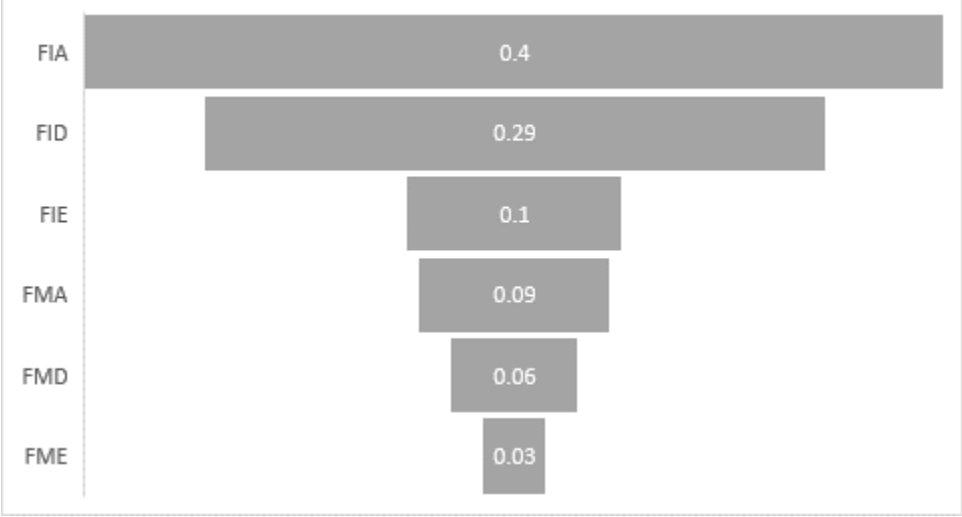
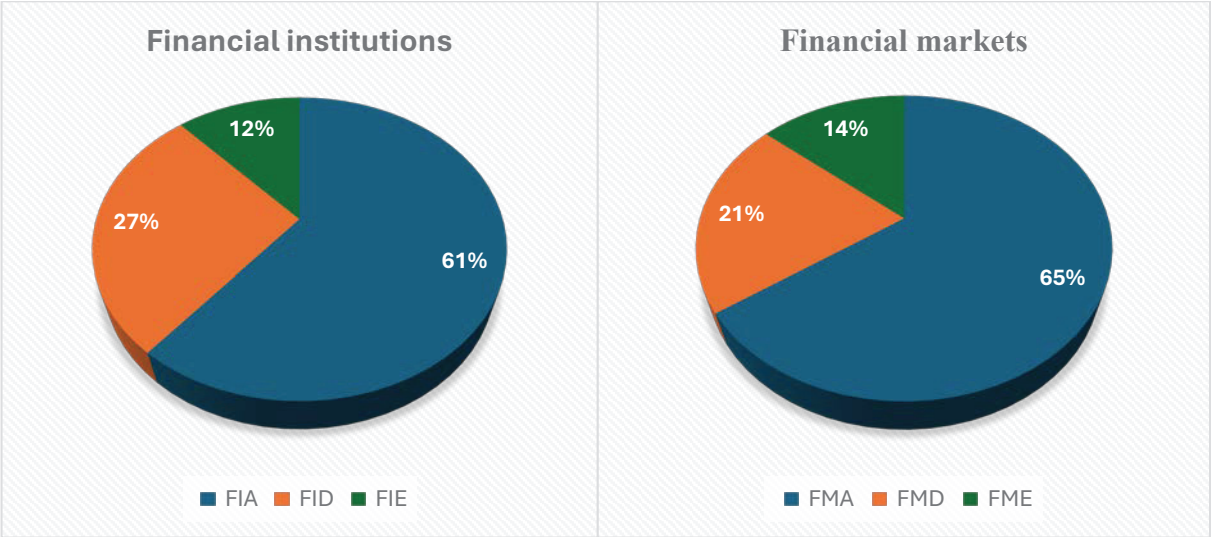


Figure 3. Principal Component Analysis, individual weights on FII and FMI



Source: The Author

Figure 3 shows the weight of first-level sub-indices on their respective indices, i.e., the financial institutions index and the financial markets index. Based on the results, presented in Figure 3, the FIA variation was 0.6, which means that the financial institution's access has the greatest weight in the FII. The FMA variation of 0.65 also shows that financial market access has the greatest weight in the predicted index.

Construction of the model

This paper analyses the financial development and its relation with economic growth from a different approach that substitutes the traditional synonyms, which have estimated the financial deepening only by one set of variables.

The model is built with endogenous variables and controlling variables. GDP growth is considered a dependent variable in the first model, and income per capita (PCI) growth is set as a dependent variable in the second model estimation.

The model estimation uses the dynamic generalised method of moments (GMM) similar to Sahay et al. (2015). The General Method of Moments is often utilised by authors who addressed the topic of linear and non-linear growth estimation factors, which applies in both economic and finance in studies such as: Lazarov, Miteva-Kacarski and Nikoloski (2016), Bond et al. (2001), Levine et al. (2000), Beck and Levine (2002), Alimi (2015), Saci et al. (2009), Chatelain (2007), Gulcemal (2021), Kapaya (2023), Robeena and Sumaira (2022), Adusei (2014), and Mhadhbi (2014). Thus, the basic model using Arrellano and Bover (1995) and Bllundell and Bond (1998) is as follows:

$$gdp_{it} = \alpha gdp_{i,t-1} + \beta_0 fdi_{it} + \beta_1 fdi^2{}_{it} + \beta_2 (fdi_{it} * interact) + v_{it} + \mu_{it} \quad (1)$$

In the first estimation, α is the parameter to be estimated, as it represents the lagged GDP annual growth, which is set in a regression with the financial development index and its square. Here $fdi_{it} fdi^2{}_{it}$ combined with interactions, represent the vector of endogenous variables. v_{it} is the vector of endogenous regressors, and other explanatory variables are treated as exogenous variables.

The quadratic form of the financial development index implies that there is a curvature in the relationship with the dependent variable. This means that the curve of financial development and GDP growth is bell-shaped. If the result of the model estimation shows that the quadratic term is not significant, then we can consider that the relationship is linear. In other terms, it means that these countries have not met the point where there is "too much finance or too much financial development." The coefficients β_1 and β_2 represent row vectors of the parameters of the model that are to be estimated and μ_{it} show the disturbance or error term in the model. The lag limits of the dependent variable and the endogenous variables are utilised, and in order to treat the eruption, we have collapsed the instruments. The model assumes that v_{it} and μ_{it} are independent for i over t.

The extended model specification for the dynamic GMM model expresses the variables in a more explicit approach as follows:

$$gdp_{it} = \alpha gdp_{i,t-1} + \beta_0 fdi_{it} + \beta_1 fdi^2{}_{it} + \beta_2 fdi_{it} * d_1 + \beta_3 fdi_{it} * d_2 + \mu_{it} \quad (2)$$

The interaction terms include dummy variables. The first categorical variable used as an interaction is the financial development and the high income/EU membership of the country. Thus, in this case d=1 if the EU member at the same time is considered a high-income country, and d_1 represents the $fdi_{it} * fdieu$. The second interaction is bank crisis, meaning that d=1 if the country that has faced a bank crisis in this case d_2 is *fdib.cris*.

The set of exogenous variables captures the log of net income per capita, foreign investment inflows as a percent of GDP, domestic investments, government expenditure as a percent of GDP, education attainment, labour, and bank crisis. In the GMM model estimation these are concluded *as* v_{it} (*lnicom.pcp, gov_expn, for_invs, labour, gfcf, educ*)

In the second model the dependent variable is the log of income per capita lagged for one period. This step was initiated following the known fact that finance and economic growth (or level of per capita income) have a two-way relationship as explained in Sahay et al. (2015). Therefore, the model is estimated as follows:

$$inc.pcp_{it} = \alpha inc.pcp_{i,t-1} + \beta_0 fdi_{it} + \beta_1 fdi^2{}_{it} + \beta_2 (fdi_{it} * interact) + v_{it} + \mu_{it} \quad (3)$$

In this model, $inc\ pcp_{it}$ represents the dependent variable and $inc\ pcp_{i,t-1}$ is the lagged income per capita. μ_{it} represents the error term, or the indicators that are not considered in the model. The other endogenous variables are treated following the same procedure as explained in the first model.

The extended specification of this model that considers the income per capita as dependent variable is in an explicit approach is as follows:

$$inc.pcp_{it} = \alpha inc.pcp_{i,t-1} + \beta_0 fdi_{it} + \beta_1 fdi^2{}_{it} + \beta_2 fdi_{it} * d_1 + \beta_3 fdi_{it} * d_2 + \mu_{it} \quad (4)$$

3.4. Description of variables

The dependent variable gdp_{it-1} denotes the dependent variable. It shows the GDP growth change over the time period. The data is obtained from the World Bank database in the section on development indicators in February 2024. The data are winsorized in both ends to minimise the extreme outliers and to get a more accurate mean and standard deviation. $\alpha y_{i,t}$ is the lagged dependent variable included in the model to capture the problem of endogeneity.

Financial development index; fdi_{it} is compiled from the sub-indices of financial institutions and financial markets, both generated in terms of "access", "depth ", and "growth." The data that was used in this process is derived from the WB database in the section of global financial development. The process of index compilation is deeply explained in the previous section. The data are also winsorized in order to identify and minimize the extreme outliers in both ends for 5 per cent.

Financial development index of WB&EU countries; $fdi_{it} * eu$ is considered a dummy variable and represents an interaction between the financial development and the probability that the country is a WB country, which is categorised as high-income and is part of the EU also. This data is from the WB database in the section of global financial development.

Financial development of WB country & bank crises; $fdi_{it} * bcris$ represents a dummy variable that considers only the financial development index change in the periods of the series when the countries in the sample have faced crises. The dataset showed that every country has faced these types of crises in their financial institutions throughout some periods of the time span which was considered in this model. This data is from the WB database in the section of global financial development.

Income per capita $Inc.pcp_{1it-1}$ is considered as a dependent variable in the second model estimation, and it measures the logarithm of adjusted net national income per capita (PCI). This variable has a correlation with the economic growth and financial development of a country. Theoretically, it is proven that this variable in the model gives a more concise result as it measures more directly the standard of living of the population in a country. This is in a direct positive correlation with the financial development of the economy.

The exogenous variables represented by v_{it}:

General government final consumption expenditure; gov_expn denotes the total expenditure of the government in a country as a percent of GDP. The data is obtained from the World Bank data in the section of world development indicators. This variable is important as it is in correlation and also part of the gross domestic product estimation procedure.

Foreign direct investment, net inflows; for_invs denotes the total foreign incoming investment flows in the country. The data is obtained from the World Bank data in the section of world development indicators. The variable is an important factor in GDP and shows a positive correlation. These variables are considered in the model in order to minimise the problem of multicollinearity.

Education attainment, at least lower secondary (25+) total population; educ denotes the percentage of the population age 25+ that has completed the lower secondary level of education. The data is obtained from the World Bank data on the world development indicators section.

Labour force participation rate, total (% of total population ages 15-64) (modelled ILO estimate); labour denotes the labour force participation rate as the proportion of the population ages 15-64 that is economically active: all people who supply labour for the production of goods and services during a specified period. The data is obtained from the World Bank data on the world development indicators section.

Gross fixed capital formation (% of GDP); gfcf denotes the Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. According to the 1993 SNA, net acquisitions of valuables are also considered capital formation. The data is obtained from the World Bank data on the world development indicators section.

4. EMPIRICAL DATA AND ANALYSIS

This section is dedicated to the analysis and empirical test of the models explained in the methodology section. The first analysis includes an overview of the indications of two major variables/factors of the financial sector, which are considered by many authors as key factors impacting the growth of an economy. Figure 4 shows the impact of domestic credit to the private sector on GDP, showing the differences in the correlation of these two variables by country.

The figure 5 is an observation of the impact of stock market capitalisation on economic growth. Again, the analysis has shown detailed information of the correlation between the two variables by country.

The figure shows a visual presentation of the results of the index compilation. Figure 6 shows how the two sub-indices, FII and FMI, are weighted on the final index (FDI). In order to get a clearer picture, I have shown the detailed results of these two sub-indices by country. Figure 7 shows how the sub-indices that are part of FII and FMI have impacted the GDP growth in every particular country throughout the period of time that we analyse in this study.

Figure 4. The impact of domestic credit on the private sector on GDP.

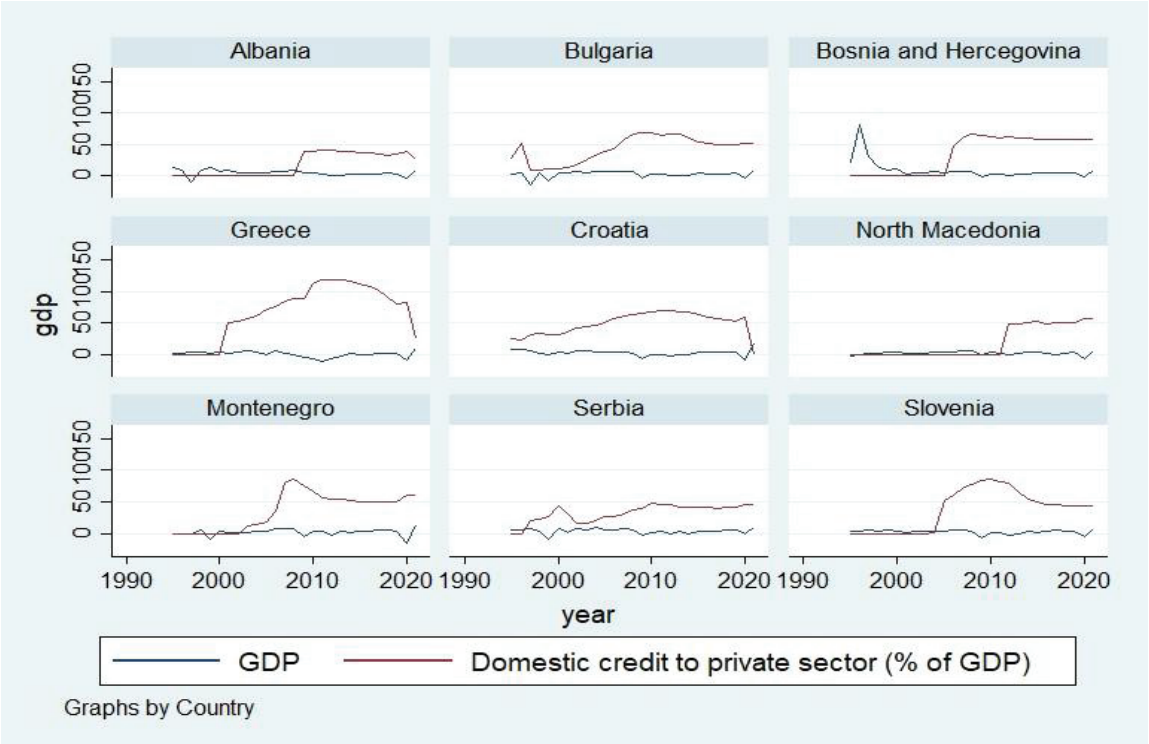


Figure 5. Stock market capitalization on economic growth

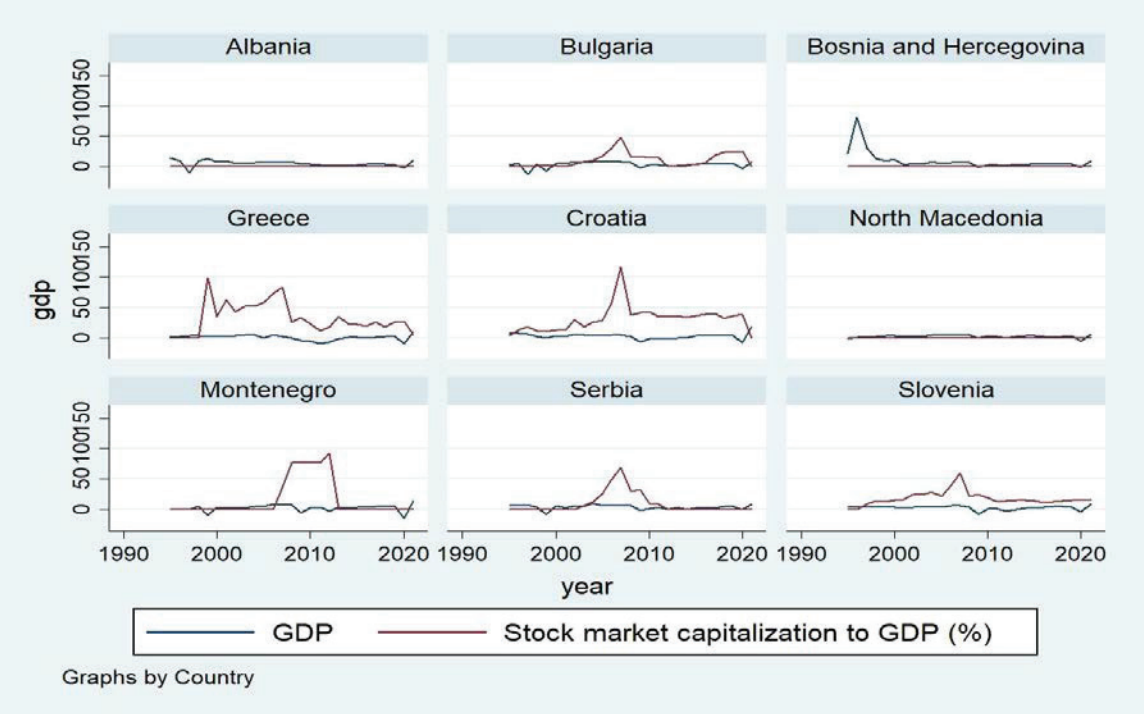


Figure 6. FII and FMI weigh on the final index (FDI).

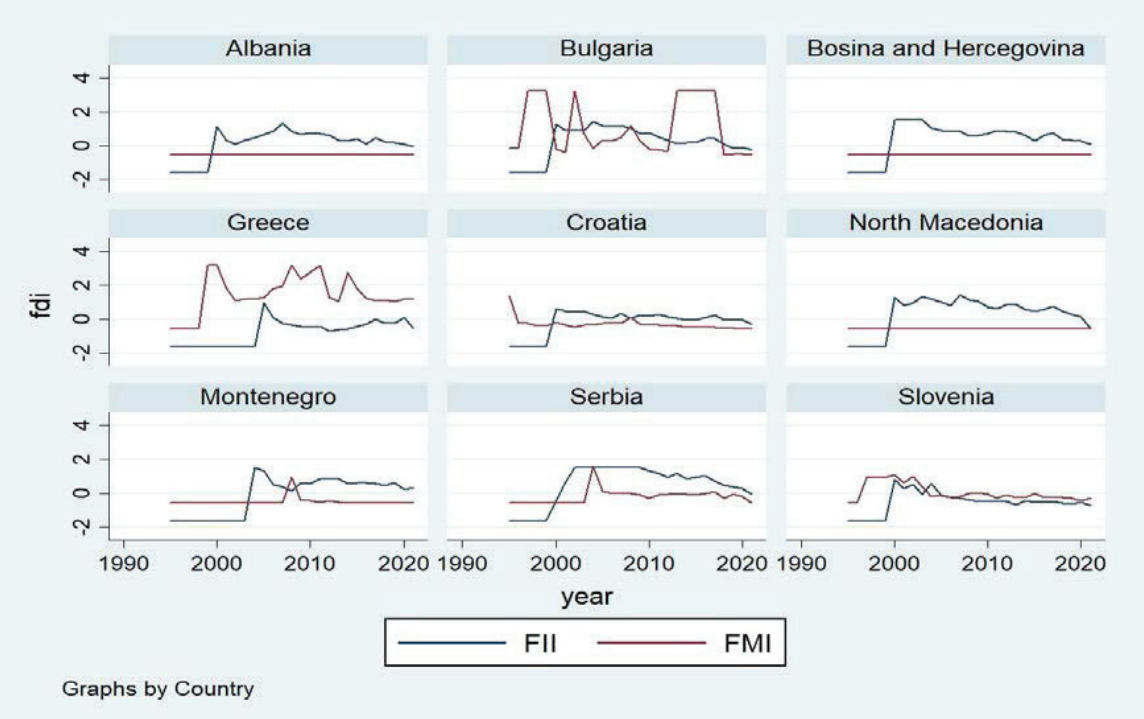
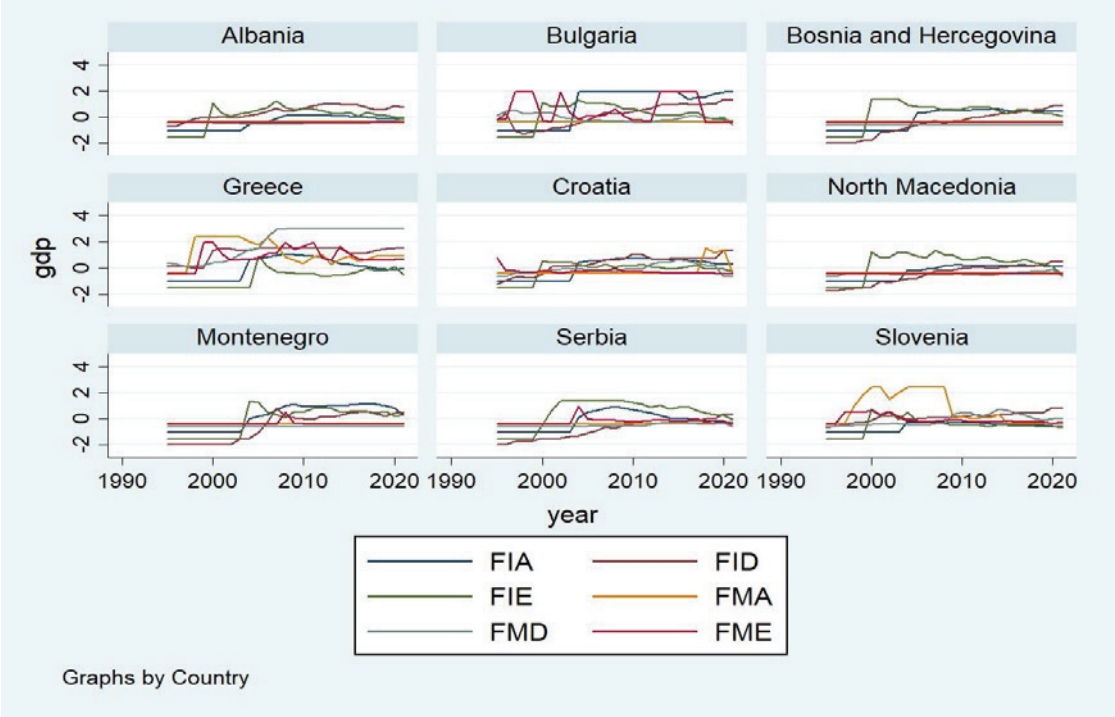


Figure 7. Weight of the subindices of FII and FMI on GDP.



Source: The author

4.1. Descriptive statistics

After the process of index compilation, the variables are firstly analysed using a basic statistical description. The summary statistics table, which shows the mean, standard deviation, and the minimum and maximum values of the variables is presented in table 2.

The matrix shows the level of correlations between the dependent variable and the endogenous and exogenous variables. The important correlation coefficients show a positive relationship between GDP and FDI (i.e., 0.126), and GDP and FII (i.e., 0.12). The FM index has shown a small negative correlation at 0.12. The bank crisis has an expected negative correlation with economic growth. The high-income EU member countries show a positive correlation with GDP and the financial development indexes. The labour participation rate (total) and education attainment (minimum lower secondary level, 25+) did not show a positive correlation with GDP and FDI, as it was expected. Domestic investments show a positive correlation with GDP and FDI of 0.49 and 0.2 respectively.

Table 2. Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
FIA	243	-0.04	0.886	-1.032	1.929
FID	242	-0.02	0.946	-1.962	1.505
FIE	242	-0.03	0.943	-1.531	1.393
FMA	243	-0.06	0.768	-0.377	2.405
FMD	242	-0.096	0.908	-0.623	3.038
FME	243	-0.091	0.637	-0.442	1.949
FDI	240	0.001	1.000	-1.585	1.506

Source: The author

Table 3. Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) laggdp	1.000											
(2) fdi	0.126	1.000										
(3) fii	0.126	1.000	1.000									
(4) fmi	-0.127	-0.178	-0.178	1.000								
(5) inc_pcp	0.039	0.336	0.336	-0.035	1.000							
(6) for_invs	0.094	0.410	0.410	-0.163	0.498	1.000						
(7) educ	-0.080	0.046	0.045	0.102	0.240	0.086	1.000					
(8) gov_expn	-0.103	0.108	0.110	0.020	-0.194	-0.254	-0.149	1.000				
(9) bankcrisisd	-0.109	-0.343	-0.344	0.323	-0.210	-0.312	0.051	0.202	1.000			
(10) fdieu	0.031	0.539	0.539	-0.225	0.188	0.275	-0.047	-0.027	-0.407	1.000		
(11) labour	-0.219	-0.136	-0.136	0.258	0.104	0.073	0.475	-0.222	0.104	-0.165	1.000	
(12) gfcf	0.479	0.200	0.200	-0.119	0.315	0.311	-0.140	-0.257	-0.068	0.014	-0.143	1.000

Source: The author

5. RESULT AND DISCUSSION

The approach in this research study was based on and intrigued by the well-known traditional measures of financial deepening, which have considered the financial depth measurement based on a small number of variables. Several studies conducted by Levine (2004) and Chihak, Kunt, Levine and Feyen (2012) have been carried out in the past and have included groups of countries classified by their level of economic development in order to analyse their level of financial development. There were not yet published studies about the Western Balkans. The results of this research confirm that financial deepening, as the main interest of this study, has positively impacted growth in WB countries.

The results derived in the empirical analysis are presented in Table 4, where the two-step system GMM estimates are shown. The process is implemented using the *xtabond2* Stata command following the correction term as in Windmeijer (2005). The standard errors are robust to heteroscedasticity. The process of analysis has considered the problem of too many instruments and their validity using the Sargan-test as in Roodman (2009) and the problem of Hansen test *p*-value. Dauti and Elezi (2022) note the Bowsher results that keeping the instrument count below N does not safeguard the Sargan-test. Thus, the danger is compounded by a tendency among researchers to view p-values on specification tests above 'conventional significance levels of 0.05 or 0.10 with complacency. Those thresholds, thought to be conservative when deciding on the significance of a coefficient estimate, are liberal when trying to rule out correlation between instruments and the error term. I conclude that the Hansen and Sargan tests have shown good results in our model estimations.

Based on these tests we can conclude that the diagnostic tests prove the instrument's validity. And the *p*-value of the F test of 0.000 rejects the null hypothesis. Therefore, the independent variables are not zero.

With regard to the results presented in Table 4, we emphasise that the estimations confirm the expected results based on previous theoretical background, as discussed at the beginning. The financial development index, which is compiled using "access", "depth", and "growth" of the financial institutions and markets, shows a positive impact on economic growth in the sample, and the results are highly significant. Regarding the result, we can confirm that a lagged GDP is associated with a significant increase in current GDP. A significant result is encountered also in the second model regarding the income per capita, which increases by 4.23%.

Thus, an increase in the financial development index (FDI) by one per cent indicates an economic growth by 4% on average, ceteris paribus. The table shows a significant result of this independent variable with a t-statistic of 4.2. The FDI has a positive impact also on the income per capita (PCI) of these counties, which increases by 0.7% on average, ceteris paribus, and the variable is significant with a significant p-value at the 10% level.

The quadratic term of the financial development index confirms that the impact is non-linear, suggesting increased economic growth led by the financial

Table 4. Results from panel-data estimation, two-step system GMM

Explanatory variables	Dependent variables	
	gdp	inc.pcp
L	1.91* (1.42) p(0.048)	4.23*** (9.73) p(0.0)
fdi	4.039*** (4.20) p(0.00)	0.771* (1.8) p(0.08)
fdi^2	3.782*** (2.92) p(0.007)	-0.792** (-2.12) p(0.04)
fdi*eu	-19.444*** (4.24) p(0.00)	0.588 (0.48) p(0.63)
fdi*b.cris	-12.914* (1.86) p(0.075)	-3.734*** (-2.8) p(0.01)
gfcf	0.021*** (3.48) p(0.02)	0.009*** (4.3) p(0.00)
educ	//	0.009* (1.71) p(0.99)
cons	-1.91 (-1.42) p(0.16)	4.23 (3.73) p(0.00)
Diagnostic tests		
Observations	216	216
Number of groups	27	27
Number of instruments	15	15
F test	15.00	177
F statistics, p value	0.000	0.000
AR test (1) in 1st difference	0.05	0.06
AR test (2) in 1st difference	0.16	0.12
Sargan test overd. rest, p	0.126	0.107
Hansen test overd. rest, p	0.617	0.406
Hansen test for excl. groups	0.50	0.22
Difference in Hansen tests	0.63	0.87
Gmm instruments levels		
Hansen test, p	0.50	0.31
Difference	0.63	0.25
Gmm lag(1 2)		
Hansen test, p	0.32	0.16
Difference	0.73	0.98

Notes: *** $p<.01$, ** $p<.05$, * $p<.1$

Dependent variable in the model is gdp and income per capita. T-statistics is in brackets. For the endogenous variables are used internal instruments. Lag limits for the endogenous regressors are 1/2. The collapse option is used, the orthogonal deviations equation is used also.

Source: The author

development of the country. This result encourages a well-developed financial sector. However, they did not reach the point where the growth curve would become bell-shaped. These results are similar to the conclusions of Ahmad and Siong (2022) in a study conducted in 82 countries.

In the second model the square of FDI appears to be negative at 5% significance level, meaning that further financial development index doesn't have positive impact on the income per capita of the residents.

The fdi*eu interaction term shows that the countries of the sample that have gained EU membership have not reached the stage of complete financial development, where they would face the effect of "too much finance". Meaning that being an EU member did not impact a deeper financial development in these countries. Their level of financial development raises questions regarding the extent to which they have met the criteria for EU membership.

In the second model, the coefficient appears negative; however, it is not significant in the model.

And the interaction coefficient of bank crisis has negatively impacted the financial development index by 12.9%. As it was expected, this result shows that the crisis period has negatively impacted the financial development index. This interaction appears negative in the second model also. In a 1% significance level, the financial development index increase during a bank crisis would decrease the income per capita by 3.7%.

Among the exogenous variables included in the first model, the only significant coefficient was the gfcf capturing the gross fixed capital formation or domestic investments. This result indicates that investments in fixed assets impact GDP growth. The set of the other exogenous variables in the model appeared non-significant; therefore, these variables are not presented in the table.

In the second model, among the exogenous set of variables included, there is significant impact on income per capita by the education attainment at the 10% level, and the domestic investments at the 1% level.

The postestimation diagnostics support the results and the overall specification on both models. The F test indicates significance in the model and the p-value supports the goodness of fit of the model. The autocorrelation test difference shows that there is no presence of any type of autocorrelation in the residuals.

The Sargan test p-value of 0.126 indicates the validity of the instruments and consistency in the model. Also, the Hansen test p-value is 0.617 which confirms that the model does not suffer from the problem of overidentification. This result reinforces

the instrument's validity and supports the robustness. The difference in the Hansen test shows a non-significant difference; therefore, the instruments used in the model are considered appropriate. The GMM instruments (level) and the GMM lag (1 2) also indicate that the instruments are valid.

6. CONCLUSION

The core aim of this study was to analyse the impact of financial deepening on economic growth in emerging economies in the Balkans. The estimations are done by utilising the dynamic system GMM analysis in Stata. The empirical examinations were preceded by the compilation of sub-indices and the final index of the financial development. The index compilation process uses Principal Component Analysis and follows a well-known matrix that considers several variables of the financial institution and financial markets.

The final results confirm the theoretical background on this topic and the hypothesis that says that there is a positive relation and significant impact of financial deepening and financial development index on the growth process of an economy. The economies considered in the sample are in the meantime both similar and different also. Some are similar by region, or by the stage of their economic development. Some of them are EU members; others are candidate countries.

Another exceptional contribution of this article is the main concept of financial development index (FDI) compilation. The FDI analysis in both empirical models in this study includes numerous characteristics of financial institutions (FII) and financial markets (FMI) in a well-constructed matrix that considers their access, depth, and efficiency. The research estimations show that the major part of the final index is influenced by the sub-indices of financial access and financial depth. The financial markets sub-indices played a minor role in the final index due to their delayed and underdeveloped state in every country in the sample.

The FDI shows a positive and significant impact on the economic growth and the income per capita of the countries in this sample. This result is in line with the literature and studies carried out by many aforementioned authors. In the second model, the impact of the financial development index shows a positive impact on income per capita increase, which represents a significant result.

The interaction of FDI and banking crises has an expected negative correlation, showing that the periods of crises in the banking sector of these economies have negatively impacted economic growth and income per capita, and has decreased the financial development index of these economies.

The result in the EU member countries was expected to be positive, indicating a positive impact on FDI squared. This quadratic form of the financial development index imposes that there is a curvature in the relationship with the dependent variable. This would mean that the curve of financial development and GDP growth is bell-shaped. However, the result of the model estimation shows that in this case the quadratic term is not significant. In other terms, it means that these countries have not met the point where there is "too much finance or too much financial development." In addition, the negative coefficient of the second interaction between financial development and the categorical variable shows that being an EU member country doesn't necessarily bring forward a deepened financial development. The $fdi_{it} * eu$ interaction coefficient shows negative relation, arguing that being an EU member country did not have a greater effect for a better financial development index in these countries (Bulgaria, Croatia, Greece, and Slovenia). Based on the result, we can conclude that in the financial sector in these countries there is still space for financial development. Their level of financial development raises questions regarding the extent to which they have met the criteria for EU membership.

This approach requires an in-depth analysis in my future studies, where I will address the topic at the country level, including more variables and characteristics. This serves as a good opportunity for future research and studies about this topic.

During the process of dataset preparation, we faced some limitations in terms of missing data; however, we overcame the obstacle using statistical methods as explained in the section above. Therefore, the results may differentiate in a moment of time, when the relevant institutions of these countries will fulfil the gaps in their data publication.

This article brings forward some meaningful results that represent a solid contribution for policymakers in order to increase their efforts in the regulation of the financial sector and to make the financial sector development serve as an impeller and booster of economic growth of the region.

This study confirms that financial deepening, where we include the access, depth, and efficiency of financial institutions and financial markets, has a positive and significant correlation with the economic growth of these countries in the Western Balkans. This indicates a strong recommendation for the countries to devote their institutional capacities in order to create and implement developing policies and regulations for financial development and enhancement of financial policies.

References

Adusei, M. 2014. Does Economic Growth Promote Financial Development. Research in Applied Economics 6 (1): 209-220.

Afzal, A. Firdousi, S. F. and Mahmood, K. 2023. The links between financial depth and economic variables: evidence from Poland. Journal of Risk Finance 24 (4): 449-463.

Ahmad, M. and Siong, H. 2022. Financial development, institutions, and economic growth nexus: A spatial econometrics analysis using geographical and institutional proximities. Munich Personal RePEc Archive. MPRA Paper No. 114471. https://mpra.ub.uni-muenchen.de/114471/. (Accessed June 2024)

Alimi, R. S. 2015. Financial deepening and economic growth: A System GMM Panel Analysis with application to 7 SSA countries. Munich Personal RePEc Archive 65789. https://mpra.ub.uni-muenchen.de/65789/.

Arrellano, M. and Bover, O. 1995. Another Look at the Instrumental Variable Estimation of Error-Components Models. Journal of Econometrics 68 (1): 29-51.

Audi, M. Ali, A. and Hamadeh, H.F. 2022. Nexus Among Innovations, Financial Development and Economic Growth in Developing Countries. Journal of Applied Economic Sciences 17 (78): 373 – 393.

Beck, T. 2014. Finance and Growth: Too Much of a Good Thing? Revue d'économie du développement 22 (2): 67-73.

Beck, T. and Levine, R. 2002. Stock Markets, Banks, and Growth: Panel Evidence. National Bureau of Economic Research. Working Paper 9082. http://www.nber.org/papers/w9082.

Bilalli, A. Beka, A. and Gara, A. 2023. Financial development and economic growth: evidence from Western Balkan countries. InterEULawEast: Journal for the international and European law, economics and market integrations 10 (1): 209-222.

Blundell, R. and Bond, S. 1998. Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. Journal of Econometrics 87 (1): 115-143.

Bond, S. R. et al. 2001. GMM Estimation of Empirical Growth Models. Available at: jontemple.org.uk.

Cakal-Velagic, J. and Silajdzic, S. 2024. The effects of macroeconomic and financial development on income inequality: evidence from the Western Balkans. South East European Journal of Economics and Business 9 (2): 50-62.

Cavallaro, E. Villani, I. 2022. Beyond financial deepening: Rethinking the finance-growth relationship in an uneven world. Economic Modelling 116.

Chatelain, J. B. 2007. Improving Consistent Moment Selection Procedures for Generalized Method of Moments Estimation. Economics Letters 95 (3): 380-385

Chihak, M. Kunt, A. Levine, E. and Feyen, E. 2012. Benchmarking Financial Systems around the World. Policy Research Working Paper 6175. The World Bank.

Cho, R. Desbordes, R. and Eberhardt, M. 2022. Too Much Finance... For Whom? The Causal Effects of the Two Faces of Financial Development. VOXEU CEPR Discussion Papers 17022. Available at https://cepr.org/voxeu/columns/little-evidence-too-much-finance.

Dahiya, S. 2022. Does financial deepening matter for economic growth in Asian economies Fresh evidence from panel threshold analysis. Global Business and Economics Review 27 (2): 192-208.

Dauti, B. and Elezi, S. 2022. Economic growth in the Central East European Union and the Western Balkan countries in the course of Stability and Growth Pact and COVID-19. Zbornik Radova Ekonomskog Fakulteta u Rijeci / Proceedings of Rijeka School of Economics 40 (1): 29-61.

Davide, S. M. AtaCan, B. and Zhou, N. 2022. The Global Financial Development Database. The World Bank. Accessed September 2024. Available at https://www.worldbank.org

Gezer, M. A. 2018. The relationship between financial deepening and economic growth: Bootstrap causality approach for the selected upper middle-income countries. Theoretical and Applied Economics (Asociatia Generala a Economistilor din Romania - AGER) 1 (614): 95-112.

Gulcemal, T. 2021. Financial globalization, institutions and economic growth impact on financial sector development in fragile countries using gmm estimator. Journal of Business, Economics and Finance 10 (1): 36-46.

Hasani-Limani, V. 2022. Credit utilization and firms' growth in a developing country – A firm-level analysis based on controlling characteristics. International Journal of Scientific and Research Publications (IJSRP) 12 (4): 421-430.

Hasani-Limani, V. and Tahiri, H. 2022. Enterprise' development and Internationalization as a Major Factor Towards Economic Growth of North Macedonia. Economic Vision: International Scientific Journal in Economics, Finance, Business, Marketing, Management & Tourism 9 (17-18): 158-169.

Hysa, E. and Rehman, N. 2023. Economic Growth Through Financial Development: Empirical Evidences from New Member States and Western Balkan Countries. In: Crisis after the Crisis: Economic Development in the New Normal. By: L., De Los Ríos Carmenado, I., Andrei, J.V. (eds) Chivu, 49-67. Springer, Cham.

Imamoğlu, H. and Öznacar, B. 2023. The Role of Higher Education and Financial Development on Economic Growth: Evidence from Northern Cyprus. Trends in Business and Economics 38 (2): 76-82.

Kapaya, S. M. 2023. Financial development in Africa: Do expenditure and population matter? Evidence through pooled mean group and generalized method of moments

estimators. Journal of International Development 36 (1): 728-750.

Kar, M. Nazlıoğlu, Ş. and Hüseyin, A. 2011. Financial Development and Economic growth in MENA Countries: Bootstrap Panel Granger Causality Analysis. Economic Modelling 28 (1-2): 685-693.

King, R. G. and Levine, R. 1993. Finance and growth: Schumpeter might be right. The Quarterly Journal of Economics 108 (3): 717-737.

Lazarov, D. Miteva-Kacarski, E. and Nikoloski, K. 2016. An Empirical Analysis of Stock Market Development and Economic Growth: the case of Macedonia. South East European Journal of Economics and Business 11(2):71-81.

Levine, R. 2004. Finance And Growth: Theory and Evidence. NBER Working Paper No. 10766, Cambridge: National Bureau of Economic Research. Available at: http://www.nber.org/papers/w10766.

Levine, R. and Zervos, S. 1998. Stock Markets, Banks and Economic Growth. The American Economic Review 88 (3): 537-558.

Levine, R. et al. 2000. Financial intermediation and growth: causality and causes. Journal of Monetary Economics 46 (1): 31-77.

Li, D. D., Shi, J., Chen, D., Lu, L., Wang, X., and Liu, K. 2021. Financial Deepening and Financial Stability. In: Li, D.D. (ed). Economic Lessons from China's Forty Years of Reform and Opening-up. Springer.

Mhadhbi, K. 2014. Financial Development and Economic Growth: A Dynamic Panel Data Analysis. International Journal of Econometrics and Financial Management 2 (2): 48-58.

Musabeh, A., Alrıfaı, K. and Kalloub, M., 2020. Financial development, economic growth and welfare: evidence from emerging countries. Journal of Business, Economics and Finance 9 (2): 118-131.

Polemis, M. Stengos, Th. and Tzeremes, N. 2020. Revisiting the impact of financial depth on growth: A semi-parametric approach. Finance Research Letters 36.

Popović, G. and Erić, O. 2018. Economic development of the Western Balkans and European Union investments. Economic research-ekonomska istrazivanja 31 (1): 1539-1556.

Robeena, B. and Sumaira, K. 2022. The relationship between trade openness, financial development and economic growth: Evidence from Generalized method of moments. Journal of Environmental Science and Economics.

Roodman, D. 2009. How to do xtabond2: An introduction to difference and system GMM in Stata. The Stata Journal 9 (1): 86-136.

Saci, K., Giorgioni, G., and Holden, K. 2009. Does Financial Development Affect Growth? Applied Economics 41 (3):1701-1707. (Leibnitz Institute).

Sahay, M.R., Cihak, M., N'Diaye, M.P., Barajas, M.A., Pena, M.D.A., Bi, R., Gao, M., Kyobe, M.A., Nguyen, L., Saborowski, C. and Svirydzenka, K. 2015. Rethinking Financial Deepening: Stability and Growth. Monetary and Capital Markets Department and Strategy and Policy Review Department. International Monetary Fund. Discussion Note SDN/15/08.

Samargandi, N. Fidrmuc, J. and Ghosh, S. 2015. Is the Relationship Between Financial Development and Economic Growth Monotonic? Evidence from a Sample of Middle-Income Countries. World Development 68: 66-81.

Stanković, J. Petrović, I. and Denčić-Mihajlov, K. 2018. The Financial and Institutional Environment for Sustainable Economic Growth of Developing Countries: The Case of Western Balkan. European Financial Systems 2018 - Proceedings of the 15th International Scientific Conference. Brno: Institute for financial Market and Faculty of Economics and Administration, Masaryk University. 689-696. ceeol.com.

Sugiyanto, C. and Yolanda, Z. 2020. The Effect of Financial Deepening on Economic Growth, Inequality, and Poverty: Evidence from 73 Countries. South East European Journal of Economics and Business 15 (2):15-27.

Tsaurai, K. 2021. Economic growth-financial development-poverty nexus in emerging markets. International Journal of Services, Economics and Management 12 (1): 93-108.

Tyson, J. E. 2023. Capital market development in emerging economies. In: Research Handbook on Global Capital Markets Law. Edited by: Chiu I. and MacNeil I. 120-140. Edward Elgar Publishing.

Vangjel, R. and Mamo, J. 2022. Development of the Financial Sector and Its Impact on Economic Growth in the Western Balkans. Universal Journal of Accounting and Finance 10 (2): 584-590.

Wanjala, K. and Gogo, P. 2020. The Effect of Financial Deepening on Economic Growth in the East African Community. Finance & Economics Review 2 (2).

Wesiah, S. 2021. The Relationship Between Financial Development and Economic Growth in The United Kingdom: A Granger Causality Approach. Quantitative Economic and Management Studies 2 (1).

Windmeijer, F. 2005. A finite sample correction for the variance of linear efficient two-step GMM estimators. Journal of Econometrics 126 (1): 25-51.

Zhu, X. Asimakopoulos, S. and Kima, J. 2020. Financial development and innovation-led growth: Is too much finance better? Journal of International Money and Finance 100.