Journal of Corporate Governance, Insurance, and Risk Management
https://www.acadlore.com/journals/JCGIRM

Evaluating the Influence of CEFTA Membership on Financial Integration: An Empirical Panel Data Analysis

Agim Mamuti[1*], Nalda Zubović[2], Engin Boztepe[3]

[1] Faculty of Technical Sciences, Mother Teresa University, 1000 Skopje, North Macedonia
[2] Faculty of Business Administration, International University of Sarajevo, 71000 Sarajevo, Bosnia and Herzegovina
[3] Accounting, Finance and Auditing Department, Sümer Holding A.Ş., 06010 Ankara, Turkey

[*] Correspondence: Agim Mamuti (agim.mamuti@unt.edu.mk)

Received: 06-01-2023 **Revised:** 06-11-2023 **Accepted:** 06-20-2023

Citation: Mamuti, A., Zubović, N., & Boztepe, E. (2023). Evaluating the influence of CEFTA membership on financial integration: An empirical panel data analysis. *J. Corp. Gov. Insur. Risk Manag., 10*(1), 69-78. https://doi.org/10.56578/jcgirm100108.

Abstract: This investigation elucidates the correlation between membership in a Free Trade Agreement (FTA) and the degree of financial integration among Central European Free Trade Agreement (CEFTA) countries. A particular emphasis is placed on discerning whether CEFTA affiliation enhances financial integration. A comprehensive panel data analysis spanning two decades (2000-2020) is implemented, incorporating cross-sectional and time-series data. The influence of various determinants on financial integration is quantified through an Estimated Generalized Least Squares (EGLS) panel regression model, integrating panel-corrected standard errors. The findings consistently reveal that CEFTA membership bolsters financial integration. Moreover, the study substantiates that control variables such as inflation rate, market size, and corporate tax rate, incorporated in the regression model, significantly contribute to the variance of financial integration at a minimum 5% significance level. Conversely, trade openness demonstrated a positive, albeit statistically insignificant, effect. Empirical evidence suggests that CEFTA affiliation positively impacts financial integration, underscoring the necessity for more profound regional economic amalgamation. The significance of these findings can be observed in two dimensions: the contribution to existing literature on CEFTA region trade integration, and the broader discourse on financial integration. Insight gleaned from these findings recommends that CEFTA members should intensify mutual trade integration and diminish trade barriers to foster comparative advantages.

Keywords: Trade integration; CEFTA; Financial integration; EGLS panel regression; JEL Classification Numbers: F15, F43

1. Introduction

Significant potential for trade expansion, investment attraction, and sustainable economic growth in the Western Balkans is inherent in their economic integration with the European Union (EU). Alignment with EU standards and the strengthening of trade ties could enable the Western Balkans to access new opportunities, enhance competitiveness, and cultivate a more prosperous future. The EU's support for trade integration and liberalization processes in the region has been a powerful stimulus for growth and development, rendering the region more attractive to investors and private companies than a decade ago (Ganić, 2020b).

Central European Free Trade Agreement (CEFTA) countries have undertaken a journey towards economic integration, aiming to fortify regional trade relationships and foster economic cooperation. The establishment of CEFTA in 2006 has catalyzed trade liberalization and offered a framework for the harmonization of trade-related policies among member nations. As a consequence, intra-regional trade has experienced significant growth, contributing to increased economic interdependence among CEFTA countries. Within this context, the necessity to investigate whether trade integration in CEFTA countries has effectively catalyzed financial integration becomes apparent. Insights into the dynamics between trade and financial integration within CEFTA countries could provide valuable knowledge for policymakers, helping them formulate strategies to maximize the benefits

of regional cooperation (CEFTA, 2023).

The primary objective of this study is to empirically examine the progress achieved through CEFTA's establishment, with a focus on the role and benefits of CEFTA membership in promoting financial and trade integration. The research aims to:

- Explore whether trade integration enhances financial integration, and
- Ascertain if CEFTA membership has resulted in positive feedback in terms of trade integration, thereby aiding financial integration.

To address these objectives, the study will test the following hypotheses:

H0: There is no connection between FTA membership in the CEFTA and financial integration; thus, FTA membership in the CEFTA does not impact on financial integration.

H1: The FTA membership in the CEFTA is directly linked to financial integration, with either positive or negative correlation.

These hypotheses will be tested to elucidate the nature of the relationship between CEFTA membership and financial integration, and to understand the impact of key economic indicators, policy frameworks, and external factors on this relationship.

The correlation between CEFTA membership and financial integration has not been extensively explored in literature. While some studies have touched upon this issue, their focus has been primarily on other areas such as financial liberalization. This study seeks to bridge this gap by analyzing the relationship between CEFTA membership and financial integration, investigating the mechanisms through which CEFTA membership influences financial integration, and examining the role of essential economic indicators, policy frameworks, and external factors. The findings of this study will augment the existing literature and furnish policymakers with evidence-based insights for advancing economic integration within the CEFTA region.

The significance of this study is multifold. Firstly, it represents the first of its kind for the CEFTA region. While extensive research is available on trade liberalization and finance, most studies have been conducted in the United States, the EU, and recently, Asia. The CEFTA region, in contrast, has remained largely unexplored. Secondly, the findings underscore the importance of deepening trade integration and of membership in FTAs like CEFTA. Lastly, this study catalogues the benefits of CEFTA membership, laying the foundation for future studies in the region. It enables future research to track developments in trade integration over time by comparing their results with those of this study. The study aims to empirically examine the progress made through CEFTA's formation and establishment, specifically exploring the role and benefits that CEFTA has conferred upon its member countries in terms of financial and trade integration.

2. Literature Review

The interplay between financial and trade integration is a well-documented and robust area of research that supports the mutual reinforcement of these two elements. Financial integration lays the groundwork for trade, providing critical elements such as financing access, risk management tools, and payment systems. Concurrently, trade integration propels economic growth, thereby yielding opportunities for financial investments and capital flows. Trade agreements foster this interconnectedness, enhancing trade relations and facilitating international trade. These agreements are designed to exchange goods, services, capital, and technology to improve economic cooperation and stimulate investments.

Research studies employing International Financial Integration (IFI) models differ significantly in their objectives and scopes. Agenor (2001), for instance, explored the merits and demerits of IFI, comparing 28 countries from 1980-1998. This foundational research has been frequently referenced in empirical studies assessing the influence of various macro-financial variables on IFI variations across different countries (Quinn et al., 2011; Aizenman & Pinto, 2011). Additionally, Lane & Milesi-Feretti (2006) probed well-developed financial systems in OECD countries using their "External Wealth of Nations" database, which incorporated revised methodologies and changes in the composition of international financial positions (IFS).

An intriguing finding was revealed by Ganić (2021), who investigated the relationship between IFI and income inequality in European countries. It was suggested that in countries with relatively lower levels of IFI (the NMS-11 countries), income inequality tends to contract over the long run. Conversely, in the old EU-15 countries, more integrated into international financial flows, income inequality appears to expand.

Lane & Milesi-Ferretti (2003) analyzed the period between 1978-2001 using panel regressions, employing a proxy variable for IFI measurement. Their findings indicated that factors such as market size, trade openness, tax policy, and market capitalization could explain the observed variations in financial integration. This was not unexpected, given the sample comprised OECD economies, recognized for their well-developed financial systems. They subsequently expanded their methodology (Lane & Milesi-Ferretti, 2006), incorporating information on IFS

composition, including variables such as foreign direct investment (FDI), portfolio investment in shares, foreign debt, and official reserves.

Alfaro et al. (2004) carried out a comprehensive study examining the connections between FDI, financial markets, and economic growth, introducing an expansive set of measures and a new IFI database for 79 countries. Despite the diverse nature of these studies, a significant gap lies in the exploration of trade integration as a variable within the models. Most studies have focused on developed economies, with only a few examining the impact of trade openness. However, these do not conclusively establish the relationship as evidence for developing countries or Free Trade Agreement (FTA) members is lacking.

Shin & Sohn (2006), in their study on trade and financial integration in East Asia, and Vo & Daly (2007) in their research on IFI determinants, identified potential drivers of IFI, such as capital control policy, level of economic and educational development, economic growth, institutional and legal environment, trade openness, financial development, and tax policy.

Despite the importance of FTA operations for member countries, few studies have explored their impact. This gap has resulted in data deficiencies and a lack of insight into the most common FTAs worldwide. Kučerová (2013) probed the interdependence between financial and trade integration processes in EU countries from 1993 to 2012, finding variations across different indicators, time periods, and country groups, with the crisis period exerting a particularly strong impact.

Herwartz & Walle (2014) examined trade openness and financial openness, highlighting their benefits and drawbacks. Trade openness can have both negative and positive effects on economic growth. Their research suggested the use of trade openness as an effective variable in testing a country's level of financial integration.

In a study investigating the determinants of the international financial integration of the Gulf Cooperation Council (GCC) market, Alotaibi & Mishri (2014) found that domestic credit, financial openness, and trade openness had a positive and significant impact on the measurement of IFI.

Garali & Othmani (2015) focused on financial integration in the Middle East and North Africa (MENA) region, analyzing various economic indicators including international trade openness, exchange rate, financial market development, market size, inflation, education levels, country risk, and tax policy over a period of seven years (2006-2012). Their research found a significant positive impact of trade openness and trade integration on financial integration but also identified a significant negative impact of the exchange rate on financial integration.

Ganić's (2020a) study on financial integration in the Emerging Balkans highlighted the low and weak market capitalization of GDP in these countries, indicating underdevelopment and modest progress in financial integration. However, Ganić and Hrnjić (2021) explained in the study how International financial integration affects post-transition countries' growth. Through different empirical evidence, they concluded that when it comes to post-transition countries, there is no strong link between finance integration and growth. They found a reversal relationship between growth and international financial integration. One of the reasons is the fact that national financial markets in transition countries are organized on national lines. Secondly, this study has shown that financial openness policy is more relevant for growth in the long run. It means that countries with greater level of financial openness tend to have greater growth in the long run.

The scopes of the studies vary significantly from one study to another in terms of the variables included in the estimation of the economic models. Most of the studies are focused too narrowly on the macroeconomic variables and institutional details but less on FTA membership. It leads to giving less attention to relations with, and power dynamics in, partner countries in FTAs. Empirical investigation of these theoretical foundations indicates large variations in the distribution of benefits from trade integration to financial integration. EU and Asian countries involved in the integration process have been rewarded with high financial integration, while developing and transition countries are lagging behind despite efforts to improve trade integration.

3. Methodology

This study encompasses the period from 2000 to 2020, a span characterized by significant economic events. The focal point of this investigation pertains to the CEFTA member countries: Albania, Montenegro, Kosovo, Bosnia and Herzegovina, Serbia, North Macedonia, and Moldova. The relationship between trade integration and financial integration is examined through five selected explanatory variables. Data have been sourced from World Bank, Our World in Data and the International Monetary Fund (IMF).

3.1 Definition of Variables

International Financial Integration (IFI)

The concept of International Financial Integration (IFI) encapsulates the degree of interconnectedness and interdependence between national financial systems and markets across nations. It quantifies the level of participation of a country in global financial activities encompassing cross-border capital flows, foreign direct investment (FDI), portfolio investment, and financial market integration. The IFI variable is a quantitative tool

utilized in research to measure and compare the degree of financial integration amongst nations. The concept has been explored and elucidated in studies by Alfaro et al. (2004), Lane & Milesi-Ferretti (2003), Ganić (2020a), and Ganić & Hrnjić (2021).

Trade Integration

Trade integration is quantified using a proxy variable, distinguishing between the pre-CEFTA and post-CEFTA periods. A dummy variable can be employed to denote these intervals, where 0 signifies the pre-CEFTA period and 1 refers to the post-CEFTA period. By incorporating this dummy variable, the influence of CEFTA membership on trade integration can be assessed. The use of a dummy variable allows the discernment of fluctuations or differences in trade integration between these periods. By controlling for pre-CEFTA and post-CEFTA periods, this research aims to isolate the influence of the trade agreement on trade integration, thereby providing insights into the effectiveness of the regional trade agreement. Balassa (1961) proposed a categorization of integration levels based on the extent of economic relations, with full economic integration denoting the creation of a single market with shared institutions. Markevičius (2011) endorsed Balassa's viewpoint, underscoring that the initial stage of the integration process involves economic integration.

Trade Openness (TRO)

The inclusion of trade openness in this study is inspired by its use in research by Vo & Daly (2007), Herwatz & Walle (2014), Kučerová (2013), Garali & Othmani (2015), and Alotaibi & Mishri (2014). Trade openness is regarded as a crucial determinant of economic growth and development, allowing countries to leverage specialization, economies of scale, and wider access to goods, services, and technological transfers. However, the degree of trade openness varies significantly amongst countries and is influenced by factors such as government policies, trade agreements, geographical location, and stage of economic development. Empirical studies such as Lindelwa Makoni (2018), Sahoo (2006), Imbs (2003), and Cerdeiro & Komaromi (2019) have identified a positive relationship between trade openness and IFI, illuminating the intricate interplay between trade and financial integration.

Corporate Tax Rate (CTAXR)

The corporate tax rate constitutes an economic variable symbolizing the percentage of profits or income that corporations are obligated to pay as taxes to the government. The rate is influenced by government tax policies and regulations and can vary across countries and corporations of different sizes or operating in different industries. A higher corporate tax rate implies a greater tax burden on businesses, thereby reducing after-tax profits available for reinvestment, expansion, or distribution to shareholders. In contrast, a lower corporate tax rate alleviates the tax burden on corporations, potentially stimulating investment, economic growth, and competitiveness. The corporate tax rate has been included in this study due to its incorporation in similar studies such as Ganić (2020a) and Lane & Milesi-Ferretti (2007).

Inflation (INFL)

Inflation is an economic variable that quantifies the rate of increase in the general level of prices for goods and services in an economy over a specified period. It signifies the decline in purchasing power of a unit of currency over time. Remesh (2021) provides an overview of inflation and the significant changes it induces. Empirical studies such as Garali & Othmani (2015) and Ganić (2021) explored the relationship between IFI and inflation, demonstrating the contribution of macroeconomic stability to the level of financial integration. In this study, inflation is used to evaluate the state of CEFTA countries when inflation reaches different levels. It also sheds light on the changes in financial and trade integration over 20 years of varying economic conditions. Another study that was using inflation as the control variable, similarly as in this study is written by Mudiyanselage et al. (2021). Inflation is an important economic indicator monitored by policymakers, businesses, and consumers. Stable and moderate inflation is generally considered desirable as it supports economic growth and stability, while high or volatile inflation can create economic distortions and erode the purchasing power of individuals and businesses.

Gross National Income Per Capita (GNIPC)

Higher levels of income, as represented by GNI per capita, generally correspond to greater consumer demand and purchasing power. Countries with higher GNI per capita are often perceived to have larger and moredeveloped financial markets, hence are more likely to be financially integrated on an international level. GNI per capita can also be indicative of the level of economic development and the relative wealth of a country's population. Some of the studies that mentioned and explained GNI per capita are Fleurbaey & Blanchet (2013), and Offer (2007).

Table 1 shows all used variables throughout this study, their definitions and labels, as well as expected effects that were satisfied or different from the expectation. All these data were obtained from World Bank.

Table 1. Variables, definitions and labels

Variable	Definition	Label	Expected Effect
International financial integration	The measure of the degree to which countries participate in global financial activities.	IFI	Either to increase or decrease, based on the other explanatory variables.
Trade integration	In this case, dummy variable presents pre CEFTA, and post CEFTA period, in order to assess the impact of CEFTA on trade integration.	DUMMY_ CEFTA	If dummy variable is positive number, it means that higher trade integration, enhances financial integration (IFI).
Trade openness	Trade openness refers to the ratio of the arithmetic mean of merchandise exports and imports to GDP.	TRO	It is expected to have a positive correlation with financial integration.
Corporate tax rate	It refers to the percentage of profits or income that corporations are required to pay in taxes to the government.	CTAXR	The lower corporate tax rate is more attractive for foreign investors, and vice versa.
Inflation	It measured by the CPI represent the annual percentage changes in the cost to the average customer.	INFL	Lower and stable inflation means that the capital is relatively secured.
Gross national income per capita	It measures the total income earned by residents of a country, including both domestic and international sources.	GNIPC	Greater GNI per capita means higher and better standard of living of certain country.

Source: (World Bank, 2023)

3.2 Model Specifications

A critical step in panel data analysis is the selection between dynamic random effects (RE) and fixed effects (FE) methodologies. In the application of the RE estimator, the assumption is that the random effects are uncorrelated with the explanatory variables. The decision concerning the appropriateness of either the FE model or the RE model in panel data analysis is informed by the Hausman test. This test operates under the assumption that if there is no correlation between α_i and the explanatory variables x_{it}, both estimators are consistent. The null hypothesis posited by the Hausman test is that the random error is uncorrelated with any of the independent variables. If the null hypothesis is not rejected, the conclusion drawn is that the random effect estimator is more efficient, and vice versa. The Hausman test begins with the premise that both models are consistent if there is no correlation between the individual effects and independent variables. Therefore, upon the determination of the persistence of individual effects, their nature is also established (FE or RE model).

The FE model

The FE model is specific to the group of CEFTA countries and our conclusion is limited to the behavior of these countries. The conclusion is conditional on the six understudied CEFTA members who are subject to observation.

FE regression equation model can be expressed as follows:

$$LNIFI_{it} = \beta_{oi} + \beta_1 \mathrm{DUMMY\_CEFTA_{it}} + \beta_2 \mathrm{LNCTAXR_{it}} + \beta_3 \mathrm{LNTRO_{it}} + \beta_4 \mathrm{LNIGNIPC_{it}} + \beta_5 \mathrm{LNINFL_{it}} + \mathrm{u_{it}} \quad (1)$$

i= 1, 2, ..., N and t= 1, 2, ..., T represent respective panel members and time periods.

where:

β_{oi} denotes y- the intercept of CEFTA country, LNIGNIPC refers to logarithmic value of Gross National Income per capita, logarithmic value of LNCTAXR, LNTRO logarithmic value of trade openness, DUMMY_CEFTA refers dummy variable that takes the value of 0 in times when a country had not joined the CEFTA and takes the value of 1 in times when a country is part of the CEFTA, LNINFL denotes to logarithmic value of Inflation rate and u_{it} refers to the error of CEFTA country *i* at time *t.*

The RE models

The main difference between fixed and stochastic effects models is related to the question of whether the excluded individual effect represents an integral part of the element associated with the regressors in the model. In the model that is based on previous assumptions, i.e., the random error consists of two members (individual effects and residual error) is called the model of random (stochastic) effects. The RE (stochastic effects) model implies that εi is a random element specific to a certain group, similar to it, except that for each group there is one "withdrawal" that is identical in the regression in each period.

RE regression equation model can be expressed as follows:

$$LNIFI_{it} = \beta_{oi} + \beta_1 \text{DUMMY\_CEFTA}_{it} + \beta_2 \text{LNCTAXR}_{it} + \beta_3 \text{LNTRO}_{it} + \beta_4 \text{LNIGNIPC}_{it} + \beta_5 \text{LNINFL}_{it} + u_{it} + \varepsilon_{it} \quad (2)$$

i= 1, 2, ..., N and t= 1, 2, ..., T represent respective panel members and time periods.

To evaluate this assumption the study uses a Hausman test (1978) comparing two sets of estimates. The first group, which is consistent both under the null and alternative hypothesis, and the second, consistent only under the null hypothesis. In case the idiosyncratic effects are random, then the RE estimator is a more efficient estimator. After choosing between RE estimator and FE estimator, a decision should be made about the correct subtest. By applying the Panel EGLS method, we want to fix the issue of heteroscedasticity in a certain dimension and autocorrelation between errors simultaneously and over time. The impact of determinants on financial integration is estimated using an EGLS panel regression model that includes panel-corrected.

4. Empirical Findings

Table 2 elucidates the descriptive statistics for six variables: LNIFI, LNIGNIPC, LNCTAXR, LNTRO, DUMMY_CEFTA, and LNINFL. The one variable that has not been previously defined is the Dummy CEFTA variable, which denotes the pre-CEFTA and post-CEFTA periods. No significant deviations that could introduce problems or unusual activities were identified. The mean value for LNIFI approximates 8.3, for LNGNIPC it approximates 10.5, and for the remaining variables, it hovers around 2. The highest documented value of IFI was observed in Serbia (10.8), with the lowest value recorded in Kosovo (5.66).

Table 2. Descriptive statistics

	LNIFI	LNIGNIPC	LNCTAXR	LNTRO	DUMMY_CEFTA	LNINFL
Mean	8.33308	10.74831	2.508215	4.45438	0.77477	1.0479
Median	8.50714	11.69882	2.302585	4.45165	1.0000	1.0647
Maximum	10.7989	13.55877	3.401197	4.92199	1.00000	4.5538
Minimum	5.66296	0.000000	2.197225	3.11316	0.00000	-2.99537
Std. Dev.	1.13522	2.453712	0.303776	0.23402	0.41962	1.1276
Skewness	-0.15081	-1.537647	1.196888	-1.51296	-1.31556	-0.1313
Kurtosis	3.03356	7.338793	3.710420	11.1348	2.7306	4.5317
Sum	924.972	1193.063	278.4119	494.436	86.000	116.32
Sum Sq. Dev.	141.761	662.2771	10.15077	6.02425	19.369	139.88
Observations	111	111	111	111	111	111

Source: (Authors' calculation, 2023)

Positive skewness reflects a longer tail on the distribution's right side, while negative skewness signifies a longer tail on the left side. In this case, only LNTRO displays a positive skewness, suggesting a right-skewed tail. Furthermore, elevated kurtosis values imply a more peaked distribution with heavier tails. The results indicate that TRO presents the highest degree of peakedness among the distributions, denoting substantial variations in trade openness across countries. Conversely, the Dummy CEFTA shows relatively consistent levels, inferring lesser variability in comparison.

An elementary Panel Least Squares regression model was employed initially in this research to scrutinize the relationship between the dependent variable (financial integration, IFI) and a set of explanatory variables. This regression model aids in evaluating the association and statistical significance of the explanatory variables in accounting for the dependent variable's variation.

Table 3. Panel least squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNTRO	1.119818	0.148627	7.534417	0.0000
LNCTAXR	-0.155572	0.251891	-0.617618	0.5382
DUMMY_CEFTA	1.617152	0.210739	7.673731	0.0000
LNIGNIPC	0.227628	0.031170	7.302771	0.0000
LNINFL	0.024569	0.062001	0.396272	0.6927
Root MSE	0.708838	R-squared		0.606578
Mean dependent var	8.333084	Adjusted R-squared		0.591731
S.D. dependent var	1.135227	S.E. of regression		0.725363
Akaike info criterion	2.239710	Sum squared resid		55.77209
Schwarz criterion	2.361761	Log likelihood		-119.3039
Hannan-Quinn criter.	2.289223	Durbin-Watson stat		0.470989

Source: (Authors' calculation, 2023)

Table 3 exhibits the outcomes of this preliminary regression analysis, detailing the estimated coefficients, standard errors, and other pertinent statistical data for each of the five explanatory variables. The coefficients denote the estimated impact or correlation between each of the five explanatory variables and the IFI.

The outcomes of the Panel Least Squares regression model, as shown in Table 3, suggest promising results that necessitate further analysis via robust statistical tests. These tests can offer additional insights and bolster the reliability of the findings. For instance, if the same values for standard errors across the variables (LNCTAXR, LNTRO) are maintained, it implies heterogeneity across the countries. This unobserved heterogeneity leads to biased and inconsistent estimations for the utilized variables. As evidenced by Table 3, substantial differences exist in corporate tax rates and levels of trade openness among the countries under study. It is crucial to account for this heterogeneity to procure more reliable estimates. Given that the study employs panel analysis, it is vital to resolve whether to use fixed effects (FE) or random effects (RE) estimators. The RE effects would be consistent if there is no statistically significant disparity between the CEFTA countries and their cross-sections, or there is no specific covariance between the unobserved heterogeneity among the CEFTA countries and the independent variables. However, if the independent variables fluctuate over time, for example, due to tax rate levels, macroeconomic stability, trade openness, market size among the CEFTA members, the FE should be strictly consistent. The outcomes of the Hausman correlated random effects test indicate that the RE model, with a Chi-Sq. Statistic of 3.807583 and a Prob of 0.5774, is unbiased and evidences its consistency for identifying IFI determinants (Table 4).

Table 4. Correlated random effects - Hausman test

Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		3.807583	5	0.5774
Variable	Fixed	Random	Var(Diff.)	Prob.
LNTRO	0.279957	0.274222	0.001421	0.8791
LNCTAXR	-0.591543	-0.610070	0.000822	0.5182
DUMMY_CEFTA	1.396403	1.400800	0.000182	0.7446
LNIGNIPC	0.280723	0.273179	0.000168	0.5609
LNINFL	-0.165776	-0.165269	0.000039	0.9357

Source: (Authors' calculation, 2023)

Additionally, owing to the high values for standard errors across the variables in Table 3, the study incorporates three additional tests. The first is the Breusch-Pagan test, used to evaluate the presence of heteroscedasticity of the residuals in the linear regression model (Table 5). If the null hypothesis of the non-existence of heteroskedasticity is rejected at a 5% significance level ($p<0.05$), it suggests evidence of heteroskedasticity. Due to unobserved idiosyncratic heterogeneity, the study will employ alternative statistical methods resistant to heteroscedasticity.

Table 5. Residual cross-section dependence test
Null hypothesis: No cross-section dependence (correlation) in residuals

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	70.92133	21	0.0000
Pesaran scaled LM	7.703028		0.0000
Pesaran CD	4.187472		0.0000

Source: (Authors' calculation, 2023)

The outcomes from the Residual Cross-Section Dependence Tests, as detailed in Table 5, reject the null hypothesis of no cross-sectional dependence (or correlation) in the residuals at an extremely significant level ($p < 0.001$). This suggests that we cannot confidently assert that our results are unbiased and consistent due to potential correlation or heteroskedasticity within the residuals. To rectify the issues of heteroskedasticity and correlation within our model, the study explores the possibility of using a feasible Generalized Least Squares (GLS) specification. The Panel Estimated Generalized Least Squares (EGLS) and Panel Corrected Standard Error (PCSE) methodologies demonstrate superior performance compared to other methods, displaying higher significance and lower standard error values (S.E). These approaches retain the weighting of the observations, which helps to address the issue of autocorrelation. As such, the study decided to further use Panel EGLS (PCSE - Corrected standard error), panel weights, and panel-corrected standard error analysis, all of which facilitate the accommodation of heteroskedasticity in the relevant dimension. Incorporating a constant (or intercept term) into the regression model, as shown in Table 6, allows us to consider the average impact of all variables not explicitly included in the model as independent variables. This intercept term signifies the baseline or average effect when all independent variables are set to zero.

The CEFTA dummy variable demonstrates a statistically significant influence on financial integration at the 1% level. The process of trade integration broadens the scope of market access for nations, enabling them to penetrate

larger markets and cater to a more extensive customer base. This escalated market accessibility can potentially enhance export volumes, resulting in positive impacts on the dependent variable, such as economic growth, GDP, or trade volume. Trade integration fosters a culture of industry specialization in countries based on their comparative advantages. This focus on their strengths and the facilitation of trade with other nations can bolster productivity and efficiency. In summary, the positive coefficient for trade integration in the Panel EGLS (PCSE - Corrected standard error) model suggests that trade integration exerts a beneficial impact on financial integration in the context of CEFTA countries. This implies a rejection of the null hypothesis.

Table 6. Panel EGLS (Corrected standard error)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.797595	0.437233	3.338078	0.0012
LNTRO	0.274222	0.126315	1.029691	0.3055
LNCTAXR	-0.610070	0.175401	-2.215211	0.0289
DUMMY_CEFTA	1.400800	0.181338	7.724799	0.0000
LNIGNIPC	0.273179	0.021057	8.795913	0.0000
LNINFL	-0.165269	0.052080	-3.173358	0.0020
Root MSE	0.389943	R-squared		0.837829
Mean dependent var	1.311307	Adjusted R-squared		0.830107
S.D. dependent var	0.977294	S.E. of regression		0.400929
Sum squared resid	16.87813	F-statistic		108.4931
Durbin-Watson stat	1.272104	Prob(F-statistic)		0.000000

Source: (Authors' calculation, 2023)

The coefficient for LNIGNIPC is determined to be 0.273179. This indicates a positive correlation between market size and financial integration, signifying that as the Gross National Income per Capita (GNIPC) increases, so does the living standard in the CEFTA countries under study. Table 6 also illustrates the relationship between the corporate tax rate and International Financial Integration (IFI). An inverse relationship is observed, which aligns with the expectation that a lower corporate tax rate enhances the attractiveness of a business or country to investors. These findings underscore the crucial role that lower corporate taxes can serve in fostering financial integration. Based on these outcomes, the study advises authorities to persist in their efforts to reduce corporate tax rates.

For trade openness, it was expected to have a positive correlation with financial integration, but in our case it is statistically insignificant. In the studies done by Ganić & Hrnjić (2021), Ganić (2020a), and Herwartz & Walle (2014), it was explained what is to expect out of countries like these ones. It should be emphasized that the specific difficulties and downsides can differ among Balkan countries, as each nation possesses distinct circumstances and characteristics. Additionally, progress is being made in addressing these challenges, and the region also offers opportunities for growth and development.

5. Conclusions

This research, the first of its kind focused on the Central European Free Trade Agreement (CEFTA) region, provides an empirical exploration of the progress made through the formation and operation of CEFTA. Specifically, the study examines the role and benefits of CEFTA in promoting financial and trade integration among its member countries. The findings augment the existing body of literature on the subject and offer policymakers empirical insights to further advance economic integration within the CEFTA region.

While previous research on trade liberalization and financial integration abounds, the majority of such studies have been conducted in the context of the United States, the European Union, and, more recently, parts of Asia. The unique contribution of the present study lies in its focus on the CEFTA region, which has not previously been the subject of such research.

The results of the present investigation underscore the significant role of deep trade integration and free trade agreement (FTA) membership, exemplified by CEFTA. It further documents the benefits of a country's affiliation with CEFTA, providing a foundational basis for future research on the topic within the region. This allows subsequent studies to observe trends over time in trade integration by comparing their results with those reported here.

The study follows a methodological approach similar to those employed in the empirical studies conducted by Ganić (2020a), Agenor (2001), and Herwartz & Walle (2014). The findings indicate variations in the relationship between explanatory variables and financial integration within the CEFTA trade bloc.

Evidence suggests that regional free trade membership significantly contributes to the promotion of financial integration. The statistical significance of the CEFTA dummy variable indicates that a country's affiliation with FTAs results in increased financial integration within the respective trade bloc. As CEFTA countries strengthen

trade relationships through the elimination of tariffs and trade barriers, economic cooperation is enhanced, leading to increased cross-border flows of goods and services. This, in turn, necessitates deeper financial integration, including the integration of financial markets, investment flows, and banking systems. Several control variables, such as the inflation rate, market size, and corporate tax rate, are also shown to be statistically significant.

Policy implications derived from these findings include the need to continue strengthening trade agreements within the CEFTA region, maintain macroeconomic stability, and foster a business-friendly tax environment to stimulate financial integration. The implementation of these policies can create an environment conducive to deeper financial integration, contributing to economic development, investment attractiveness, and regional stability.

However, researchers should be mindful of potential limitations, including the availability and quality of data, and the influence of external factors such as global economic conditions, geopolitical events, policy changes in non-CEFTA countries, or regional integration initiatives outside CEFTA.

Future research could enhance the empirical evidence by incorporating additional proxy variables for trade integration, such as the Trade Intensity Index, Trade Complementarities Index, and Index of Export Market Penetration. These additions may provide a more nuanced understanding of the actual economic benefits of CEFTA membership.

Data Availability

The data used to support the research findings are available from the corresponding author upon request.

Acknowledgements

The Authors would like publicly to thank Prof. Dr. Mehmed Ganic for his very valuable advices shared related to this research.

Conflicts of Interest

The authors declare no conflict of interest.

References

Agenor, P. R. (2001). Benefits and costs of international financial integration: Theory and facts. *World Econ.*, *26*(8), 1089-1118. https://doi.org/10.1111/1467-9701.00564.

Aizenman, J. & Pinto, B. (2011). Managing financial integration and capital mobility--policy lessons from the past two decades. *World Bank Policy Res. Working Paper*, *5786*, 1-39.

Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2004). FDI and economic growth: The role of local financial markets. *J. Int Econ.*, *64*(1), 89-112. https://doi.org/10.1016/S0022-1996(03)00081-3.

Alotaibi, A. & Mishra, A. V. (2014). Determinants of international financial integration of GCC markets. In M. E. H. Arouri, S. Boubaker, & D. K. Nguyen (Eds.), *Emerging Markets and the Global Economy* (pp. 749–771). http://dx.doi.org/10.1016/B978-0-12-411549-1.00031-4.

Balassa, B. (1961). *The Theory of Economic Integration. London George Allen & Unwin*. George Allen & Unwin Ltd. London.

CEFTA. (2023). Central European Free Trade Agreement. https://cefta.int/about/.

Cerdeiro, D. A. & Komaromi, A. (2019). *Financial openness and capital inflows to emerging markets: In search of robust evidence. IMF Working Papers.* https://www.imf.org/-/media/Files/Publications/WP/2019/wpiea2019194-print-pdf.ashx.

Fleurbaey, M. & Blanchet, D. (2013). *Beyond GDP: Measuring Welfare and Assessing Sustainability*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199767199.001.0001.

Ganić, M. (2020a). Are determinants of international financial integration in the European transition countries different from post-transition countries?. *Stud. Bus. Econ.*, *15*(1), 40-54. https://doi.org/10.2478/sbe-2020-0005.

Ganić, M. (2020b). New regionalism and the emerging Balkans: Regional trade integration and EU accession process. *In Financial Globalization in the Emerging Balkans*, pp. 49-67. https://doi.org/10.1007/978-3-030-65009-4_4.

Ganić, M. (2021). Is financial integration a driver of income inequality A panel co-integration analysis in Europe? *Int J. Econ. Policy Emerg Econ.*, *14*(1), 66-84. https://doi.org/10.1504/ijepee.2021.111950.

Ganić, M. & Hrnjić, M. (2021). How does international financial integration really affect post-transition countries' growth? Empirical evidence from the CEE-10 countries. *J. Cent Bank. Theory Pract.*, *10*(3), 117-136. https://doi.org/10.2478/jcbtp-2021-0027.

Garali, W. & Othmani, S. (2015). The determinants of international financial integration in the MENA area. *Procedia Econ. Financ.*, *26*, 535-541. https://doi.org/10.1016/S2212-5671(15)00951-X.

Herwartz, H. & Walle, Y. M. (2014). Openness and the finance-growth nexus. *J. Bank. Financ.*, *48*, 235-247. https://doi.org/10.1016/j.jbankfin.2014.06.031.

Imbs, J. (2003). *Trade, finance, specialization, and synchronization.* https://www.imf.org/en/Publications/WP/Issues/2016/12/30/Trade-Finance-Specialization-and-Synchronization-16431.

Kučerová, Z. (2013). Financial and trade integration in the EU countries. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, *61*(4), 981-993. http://dx.doi.org/10.11118/actaun201361040981.

Lane, P. R. & Milesi-Feretti, G. M. (2006). Examining global imbalances. *Financ. Dev.*, *43*(1), 38.

Lane, P. R. & Milesi-Ferretti, G. M. (2003). International financial integration. *IMF Staff Papers*, *50*(Suppl 1), 82-113. https://doi.org/10.2307/4149916.

Lane, P. R. & Milesi-Ferretti, G. M. (2007). Europe and global imbalances. *Econ Policy*, *22*(51), 520-573.

Lindelwa Makoni, P. (2018). FDI and trade openness: the case of emerging African economies. *J. Account. Manage.*, *8*(2), 141-152.

Markevičius, N. (2011). Optimisation of degree of economic integration between Lithuania and Belarus. *Socialinių Mokslų Studijos*, *3*(1), 107-121.

Mudiyanselage, M. M., Epuran, G., & Tescașiu, B. (2021). Causal links between trade openness and foreign direct investment in Romania. *J. Risk Financ Manage.*, *14*(3), 90. https://doi.org/10.3390/jrfm14030090.

Offer. (2007). Economic Welfare Measurement and Human Well-Being. Retrieved from: https://academic.oup.com/book/37237/chapter-abstract/329689709?redirectedFrom=fulltext.

Quinn, D., Schindler, M., & Toyoda, A. M. (2011). Assessing measures of financial openness and integration. *IMF Econ Rev.*, *59*(3), 488-522. https://doi.org/10.1057/imfer.2011.18.

Remesh, V. P. (2021). A study of inflation. *SSRN*. https://dx.doi.org/10.2139/ssrn.3816410.

Sahoo, P. (2006). Foreign direct investment in South Asia: Policy, trends, impact and determinants (No. 56). ADBI Discussion Paper.

Shin, K. & Sohn, C. H. (2006). Trade and financial integration in East Asia: effects on co-movements. *World Econ.*, *29*(12), 1649-1669. https://doi.org/10.1111/j.1467-9701.2006.00862.x

Vo, X. V. & Daly, K. J. (2007). The determinants of international financial integration. *Global Financ. J.*, *18*(2), 228-250. https://doi.org/10.1016/j.gfj.2006.04.007.

World Bank. (2023). https://www.worldbank.org/en/home.