

Rahmije, Mustafa Topxhiu; Xhelili Krasniqi, Florentina

Article

Remittances, financial development and economic growth: A dynamic panel data approach

Contemporary Economics

Provided in Cooperation with:

VIZJA University, Warsaw

Suggested Citation: Rahmije, Mustafa Topxhiu; Xhelili Krasniqi, Florentina (2025) : Remittances, financial development and economic growth: A dynamic panel data approach, Contemporary Economics, ISSN 2300-8814, VIZJA University, Warsaw, Vol. 19, Iss. 2, pp. 208-229, <https://doi.org/10.5709/ce.1897-9254.562>

This Version is available at:

<https://hdl.handle.net/10419/323491>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

Primary submission: 13.02.2024 | Final acceptance: 22.07.2024

Remittances, Financial Development and Economic Growth - A Dynamic Panel Data Approach

Rahmije Mustafa Topxhiu  and Florentina Xhelili Krasniqi 

ABSTRACT

This study investigates the relationships between remittances, financial development, and economic growth in Western Balkan countries during 2002-2022. Employing a dynamic panel data approach, the research encompasses a multi-faceted regression strategy, including Ordinary Least Squares (OLS), Fixed Effects, and Two-Stage Least Squares (2SLS) models. This approach is particularly designed to address potential endogeneity issues in remittances and financial development indicators. The analysis reveals that remittances have been a significant growth driver in the Western Balkans, with their impact being more pronounced in countries with less developed financial systems. This finding suggests a substitutive relationship between remittances and financial development. The study also indicates that financial development, measured through Money Supply and Net Interest Margin, has a complex and unclear impact on economic growth. The interaction between remittances and financial development is also a focal point, with significant negative coefficients indicating that in regions with limited financial development, remittances play a crucial role in filling the gaps left by inefficient financial markets. The study contributes to the understanding of how remittances and financial development interact and influence economic growth, providing valuable insights for policy formulation in the Western Balkans.

KEY WORDS:

remittances, financial development, economic growth, Panel Data.

JEL Classification: F24, F43, O16.

University of Pristina, Faculty of Economics, Republic of Kosovo

1. Introduction

The economies of the Western Balkans have advanced in structural reforms to create jobs, stimulate economic growth, and approach European living standards over the past decade. However, the slow pace of convergence and significant development gap with other countries have prompted citizens of these countries to seek better conditions and jobs in other European countries and beyond. The emigration rate from the Six Western Balkans has increased by 10% over the past decade. In 2020, more than one in five citizens born in the region live abroad, generating a large diaspora. This trend is likely to continue, especially among the youth,

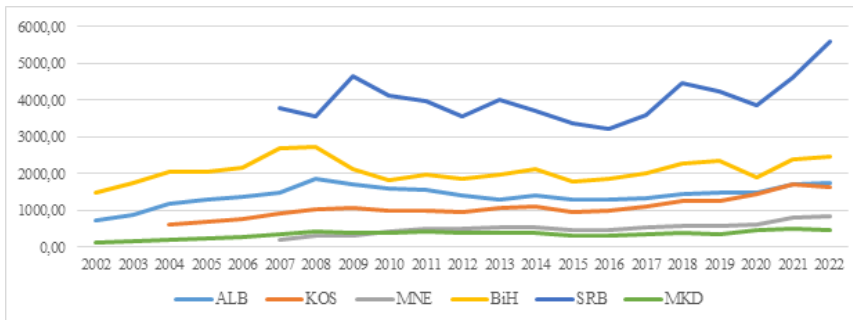
which could pose significant challenges for development in their home countries. However, according to the OECD (2023) at the same time, a large diaspora could also offer opportunities for the region.

The diaspora from the Six Western Balkans has generated a significant source of income in the form of remittances. Serbia is the largest recipient of remittances in the region, with an inflow of 5.6 billion dollars in 2022. The second major recipient of remittances, Bosnia and Herzegovina, also experienced a slight increase in remittances between 2021 and 2022 – from 2.4 billion dollars in 2021 to 2.6 billion dollars in 2022. Meanwhile, remittances sent to Kosovo and North Macedonia saw a slight

Correspondence concerning this article should be addressed to:

Rahmije Mustafa Topxhiu, University of Pristina, Faculty of Economics, Republic of Kosovo.

E-mail: rahmije.topxhiu@uni-pr.edu

Figure 1*Remittances to the Western Balkan Six Region (in million USD), 2002-2022*

Source: World Bank data and author's contribution

decline in the same period (OECD, 2023).

If we analyze remittances in current US dollars for the period 2002 - 2022 on average, it can also be seen that Serbia is their biggest recipient, followed by Bosnia and Herzegovina, Albania, Kosovo, and North Macedonia.

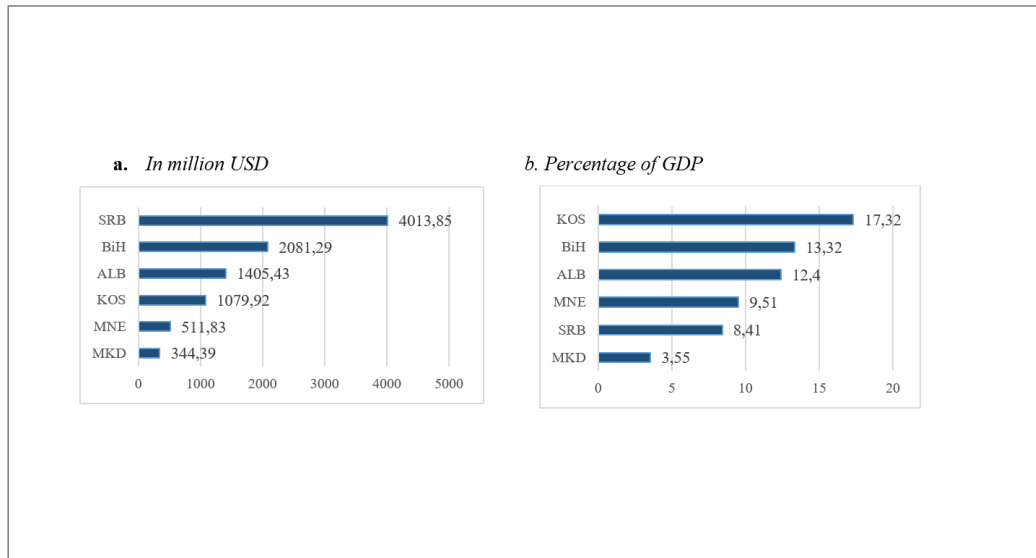
The situation appears different when looking at the flow of remittances as a percentage of GDP (average 2002-2022), where Kosovo has the highest participation with 17.32 percent, while North Macedonia has the lowest with 3.55 percent. The ratio of remittances to GDP is also significant in Albania (12.4%), Bosnia-Herzegovina, and Montenegro (13.32% and 9.51% respectively). The importance of remittances for the economy has remained relatively stable over time for most of the six Western Balkan economies.

The flow of remittances in some Western Balkan countries is also significant when compared to recipients of remittances in Europe and Central Asia. Kosovo (17.8%), Montenegro (11.6%), and Bosnia and Herzegovina (9.7%) are among the top 10 recipients in Europe and Central Asia in terms of GDP share, while Serbia is among the top 10 re-

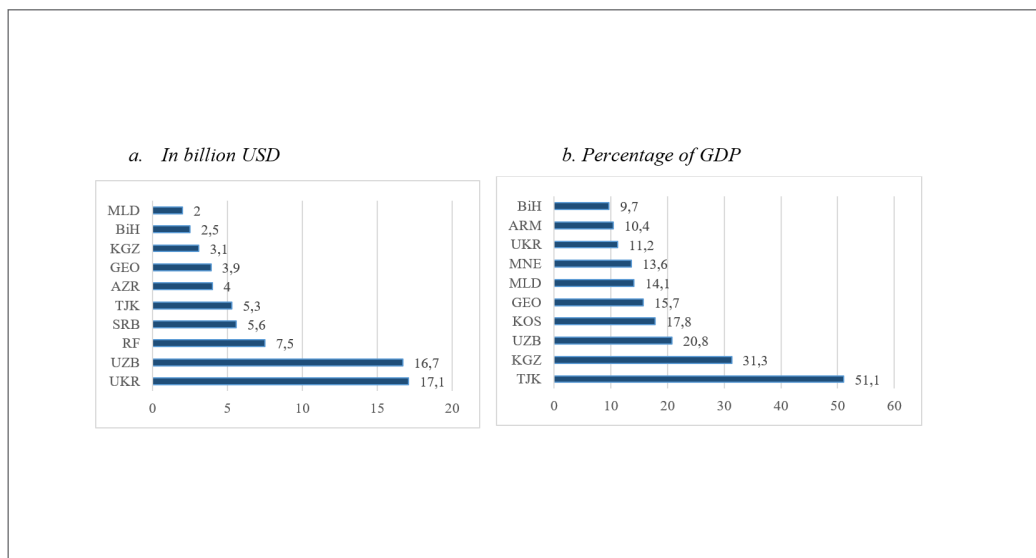
cipients of remittances in billions of dollars (5.6 billion USD) and Bosnia and Herzegovina (2.5 billion USD) in 2022.

In 2022, Kosovo received remittances corresponding to approximately 17.8% of its GDP, which made it the highest recipient of remittances among the Six Western Balkan countries and Central Eastern European countries, as well as one of the largest receivers in the Europe and Central Asia region. (See Figures 2 and 3).

Migrant remittances play a significant role in driving national economies and improving individual and family well-being in countries with migrant origins. At the national level, remittances constitute an important source of external financing – sometimes more significant than Foreign Direct Investment (FDI) flows, which is the case for most of the six Western Balkan economies – that can strengthen the balance of payments, stimulate economic growth, and reduce poverty and inequality. At the family and individual level, remittances can help alleviate credit constraints and encourage investments in productive activities such as land and business purchases, as well as in productive

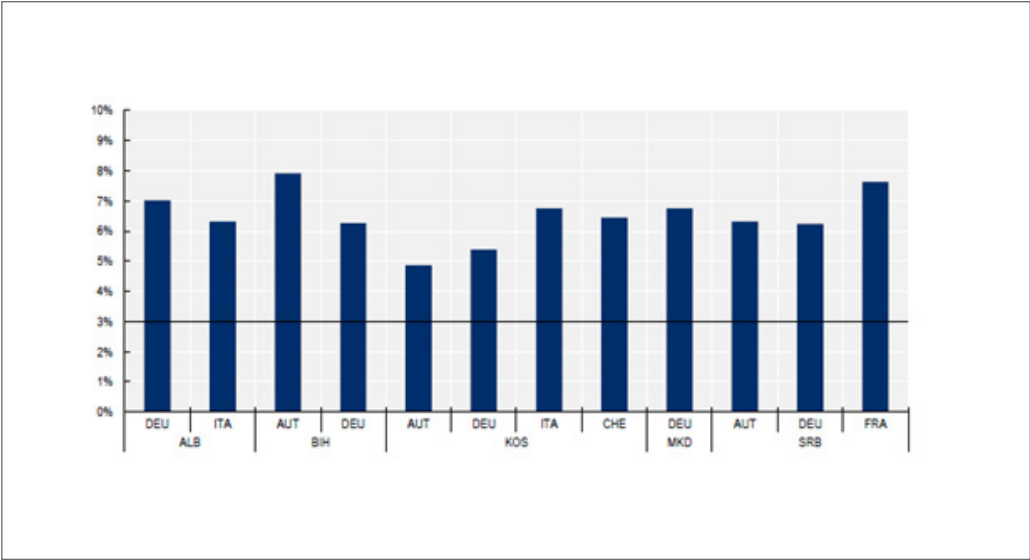
Figure 2*Remittances to the Western Balkan Six Region 2002-2022 (Average)*

Source: World Bank data and author's contribution; Note: KOS- Kosovo; BiH- Bosnia and Hercegovina; ALB- Albania; MNE- Montenegro; SRB- Serbia; MKD- North Macedonia

Figure 3*Top Remittance Recipients in Europe and Central Asia, 2022*

Source: WB, Remittances Remain Resilient but Are Slowing, Migration and Development Brief 38, 2023; Note: UKR- Ukraine; KOS- Kosovo; BiH- Bosnia and Hercegovina; UZB- Uzbekistan; RF- Russian Federation; SRB- Serbia; MNE- Montenegro; TJK- Tajikistan; AZR- Azerbaijan; GEO- Georgia; KGZ- Kyrgyzstan; MLD- Moldova; ARM- Armenia

Figure 4
Remittance Transfer Costs to Western Balkan Economies



Source: (OECD, 2023, pg 144).

assets and human capital. Remittances can also increase savings and assist families in managing risk by smoothing income and consumption over time (OECD, 2023). (WB, Remittances Remain Resilient but Are Slowing, Migration and Development Brief 38, 2023).

Nonetheless, the enduring issue lies in the substantial costs linked to remittance transactions, which exceed the 3% target set by the United Nations Sustainable Development Goal Indicator 10.c.1, as illustrated in Figure 4, presented by the line. This concern is underscored by the average expense of sending EUR 140 in major remittance corridors during the third quarter of 2021. These costs for the WB6 economies remain higher than the Sustainable Development Goal (SDG) 10.c target, which aims to reduce transaction costs of migrant remittances to less than 3%.

In the fourth quarter of 2022, the global average cost of sending \$200 to low- and middle-income countries was 6.2 percent, twice the target goal (WB, Remittances Remain Resilient but Are Slowing, Migration and Development Brief 38, 2023).

The effectiveness of remittances for fostering

growth relies heavily on the financial development of the receiving country. The financial sector plays a crucial role in channeling remittances towards productive investments, as highlighted by Levine, (2005). This dynamic interaction can contribute significantly to stimulating economic growth in developing nations, with a particular focus on the Western Balkans. Thus, comprehending the correlation between remittances and economic growth necessitates a careful examination of the financial sector's development.

In well-developed financial environments, it is easier, cheaper, and safer to make payments at home, so remittances can be more easily directed toward projects that can stimulate economic growth. Higher remittance volumes elevate financial institutions' earnings, fostering financial sector expansion. Consequently, heightened financial development amplifies the impact of remittances on economic growth, indicating a complementary relationship between remittances and financial development. (Giuliano & Arranz, 2009; Bettin & Zazzaro, 2012; Chowdhury, 2016).

Conversely, within an ineffective financial sector,

remittances can serve as an alternative to inefficient or non-existent credit markets. They assist local entrepreneurs in sidestepping collateral shortages or high borrowing costs, enabling the launch of productive ventures. This scenario signifies a substitutive relationship between remittances and financial development (Giuliano & Arranz, 2009; Bettin & Zazzaro, 2012; Nyamongo et al. 2012).

The research aims to analyze and see what the relationship is between remittances, financial development, and economic growth in the Western Balkans. Do remittances and financial development have complementary or substitutive relationships, and how do they affect the economic growth of these countries?

Research Hypothesis: This research aims to test the hypothesis that remittances and financial development have either complementary or substitutive relationships and to determine how these relationships affect the economic growth of Western Balkan countries.

The rest of the paper is organized as follows. Section 2 provides a literature review; Section 3 presents the methodology, including the theoretical framework and empirical model; Section 4 presents the empirical results; and Section 5 offers the conclusion and policy recommendations.

2. Literature Review

The relationship between remittances, financial development, and economic growth has been the subject of extensive scholarly research. This review aims to synthesize and analyze the corpus of literature that examines this intricate relationship across various global contexts and economies.

2.1. Remittances and Economic Growth

There is considerable literature that addresses the effect of remittances on economic growth: (Amuedo-Dorantes, 2014; Azam, 2015; Ragg, (2017); Levine, (2005); Barajas et al., 2009; Bucevska, 2022; Cazachevici et al., 2020; Chami et al., 2008; Chowdhury et al., 2023), etc. Giuliano & Arranz, 2009; Goschin, 2014; Kumar, 2013; Islam, 2022; Jongwanich, 2007; Maimbo & Ratha, 2005; Meyer & Shera, 2017; Mohapatra et al., 2010; Qutb, 2022; Topxhiu & Xhelili, 2016; Topxhiu & Xhelili,

2017) etc.

There is no consensus among authors and studies regarding the effect of remittances on economic growth. Cazachevici et al. (2020), note that remittances from migrant workers represent a significant source of financing for low and middle-income countries. They conducted a Meta-Analysis on the impact of remittances on economic growth, including 95 studies with a total of 538 reported evaluations. In this direction, they find that approximately 40% of the studies report a positive effect, 40% report no effect, and 20% report a negative effect. Their results show publication bias in favor of positive effects. By correcting biases and using recently developed techniques, they discover that the average effect of remittances on growth is still positive but economically small. According to them, studies that do not control for alternative sources of external financing, such as foreign aid and direct foreign investments, misestimate the effect of remittances.

2.2. Financial Development and Economic Growth

Also, regarding the relationship between financial development and economic growth, there is abundant literature and studies: (Amuedo-Dorantes, 2014; Dawson, 2010; Graff, 2003; Grassa & Gazdar, 2014; Halkos & Trigoni, 2010; Hao, 2006; Khan & Senhadji, 2003; Masoud & Hardaker, 2012; Rousseau & Wachtel, 2011; Seetanah & Ramessur, 2009; Tang, 2006; Valickova et al., 2014; Yu et al., 2012) etc.

In a comprehensive Meta-Analysis examining the impact of financial development on economic growth, Valickova et al. (2014) scrutinized 1334 estimates from 67 studies. Their findings reveal an overall positive and statistically significant effect, albeit with significant variation in individual estimates. Within their sample, 638 estimates demonstrate a positive and statistically significant effect at the 5% level, 446 show a positive but insignificant impact, 128 exhibit a negative and significant effect, and 122 display a negative but insignificant outcome. This diversity in outcomes underscores substantial heterogeneity in the reported effects. The authors attribute disparities in results to both research design and underlying effect

heterogeneity. Notably, they observe that studies neglecting to address endogeneity tend to overstate the impact of finance on growth. Furthermore, the influence of financial development appears to be weaker in economically challenged countries, while its global significance diminishes post the 1980s. The study's results also suggest that stock markets contribute to economic growth at a faster rate than other financial intermediaries.

2.3. Remittances, Financial Development, and Economic Growth

The interplay between remittances, financial development, and economic growth has been a focal point of scholarly research. Giuliano and Arranz (2009) pioneered this exploration, examining how the maturity of local financial sectors influences the capacity of countries to harness remittances for growth. Their investigation, encompassing around 100 developing nations, revealed that remittances foster growth, particularly in financially underdeveloped regions by offering alternative investment financing and mitigating liquidity constraints. They posited an investment mechanism through which remittances could accelerate growth, especially in areas lacking adequate credit facilities. Building upon this, Mundaca (2009) focused on Latin American and Caribbean countries, uncovering a long-term positive correlation between remittances and economic growth. Her study, employing the First-Difference Generalized Method of Moments for panel data, concluded that financial intermediation amplifies this growth response, suggesting the potential benefits of widespread financial services access.

Bettin and Zazzaro (2012) delved into the nuances of this relationship, examining 66 developing countries from 1991 to 2005. Their multifaceted approach included both quantitative and qualitative assessments of financial development. They found the impact of remittances on growth to be multifaceted, benefiting primarily countries with efficient banking systems. The role of governance, including market regulation, corruption control, and property rights protection, emerged as crucial in maximizing the growth potential of remittances

Nyamongo et al. (2012) extended the study to 36 African countries, spanning 1980-2009. They

recognized remittances as a significant growth source, functioning as a complement to financial development. However, they observed a relatively weaker influence of financial development in propelling economic growth. Their methodological approach included Pooled, Fixed, and Random effects models. Additionally, they used both Ordinary Least Squares and Two-Stage Least Squares methodologies, offering a comprehensive and rigorous analysis of the complex dynamics between remittances, financial development, and economic growth in the African context.

In examining the influence of remittances on economic growth across varying degrees of financial development, Chowdhury (2016) employed dynamic panel estimation methods in a study encompassing 33 developing countries over the period 1979 to 2011. His investigation concluded that financial development neither substitutes for nor complements the relationship between remittances and economic growth. According to Chowdhury's findings, remittances exert a notable positive impact on economic growth, while the influence of financial variables remains statistically insignificant. Nevertheless, it was observed that more advanced financial systems may attract increased remittance inflows. Intriguingly, the interactive effect of financial development and remittances doesn't significantly enhance economic growth. The author suggests initiatives such as promoting financial education, reducing remittance transfer costs through banks, and encouraging widespread engagement with formal financial institutions to fortify the link between remittances and economic growth.

Bandura et al. (2019) analyzed the relationship between remittance inflows, financial development, and economic growth in the Southern Africa Development Community (SADC) during 2006-2016, across 14 countries, using the GMM dynamic approach. Among other findings, they discovered that remittances positively impact economic growth, while also identifying a negative correlation between remittances and financial development. These results suggested a reverse relationship between financial development and remittances, where private investors might opt for alternative, non-bank credit sources. This scenario supports the substitution hypothesis in the context of remittances and financial development.

Peprah et al. (2019) conducted a study utilizing

macroeconomic data to explore the interconnections among financial development, immigrant remittances, and economic growth in Ghana spanning from 1984 to 2015. Employing a dynamic Heterogeneous Autoregressive Distributed Lag (ARDL) model, the researchers illustrated that financial booms do not consistently act as catalysts for growth. The findings of their investigation suggested that the combined impact of financial development and remittances surpasses the influence of each factor individually. One notable policy implication derived from this research advocates for the concurrent implementation of measures to attract remittances and enhance the financial sector.

Sobiech (2019) assessed the significance of remittances in economic growth considering financial development in developing countries using a newly created comprehensive financial development index. This index, developed by the author, includes the size, depth, and efficiency of the financial sector. Analyzing a sample of 61 developing countries from 1970-2010, using specific models like Dynamic Factor Model and System GMM, she concluded that the more financially developed a country is, the smaller the impact of remittances on economic growth. Remittances can stimulate growth, but the effect is significant only at lower levels of financial development. Her results suggest that while attracting immigrant transfers can have short-term benefits for poverty alleviation, in the long run, it might be more beneficial for governments to promote financial sector development.

In his analysis, Titoe (2019) delved into the intricate dynamics among remittances, financial development, and economic growth within the Economic Community of West African States over the period 2004-2016. Utilizing a range of statistical methodologies, including Ordinary Least Squares (OLS), Fixed Effects, Random Effects Estimations, and System-GMM Estimations, Titoe's examination yielded noteworthy conclusions. Specifically, the study revealed a positive link between remittances and economic growth, whereas the impact of financial development on overall economic growth was deemed insignificant. Notably, the interaction between remittances and financial development variables displayed a significant negative coefficient, implying that remittances may serve as a substitute in areas where financial markets are inefficient or nonexistent.

Olayungbo and Quadri (2019) research delved into the economic landscapes of 20 Sub-Saharan African nations during the 2000-2015 period. Their extensive analysis yielded significant findings, affirming the positive contributions of both remittances and financial development to economic growth over both short and long-term horizons. The examination of the interplay between financial indicators and remittances revealed an intriguing dynamic, suggesting that these elements acted as substitutes for fostering economic growth. The study also unveiled unidirectional causal links, emphasizing the impact of GDP on remittances and the influence of financial development on GDP. Notably, no causality was observed between immigrant remittances and financial development across the examined countries. Methodologically, the authors employed a dual-pronged approach, utilizing Pooled Mean Group and Mean Group/ARDL estimations, supplemented by thorough panel unit root and cointegration tests.

Cao and Kang (2020) investigated 29 transition economies (2000–2015), finding that remittances directly enhance growth and indirectly affect it based on financial development levels, suggesting a substitutive relationship between remittances and financial development in fostering growth.

Lastly, Rehman and Hysa (2021) analyzed six Western Balkan countries (2000-2017), affirming the positive impact of remittances on growth and financial development. However, they noted a significant negative interaction effect, indicating a substitutive relationship and a less robust financial system.

In summary, while remittances are generally a vital source of growth, especially in less financially developed regions, their overall impact is influenced by a range of factors, including the state of the financial sector, governance structures, and the broader economic context. The literature underscores the need for nuanced policies that consider these interdependencies to effectively harness remittances for economic development.

Contribution to Literature: This study contributes to the literature by focusing on the Western Balkans, a region that has received less attention in existing research. It provides new insights into how remittances interact with financial development to influence economic growth in these countries, addressing gaps related to regional specificity and the dynamic nature of these relationships.

3. Data and Methodology

3.1. Data and Variable Description

The data used in this study were primarily obtained from the World Development Indicator of the World Bank for the period 2002-2022, focusing on six Western Balkan countries (Albania, Kosovo, Monte Negro, Bosnia i Hercegovina, North Macedonia and Serbia). The variables of interest are personal remittances, financial development, and their impact on economic growth.

Personal remittances consist of three components: personal and capital transfers between resident and non-resident families, and employee compensation, minus taxes and social contributions (Sobiech, 2019). These data, as a percentage of GDP, are readily available in the World Bank's World Development Indicators dataset. As it provides a comprehensive summary, we utilized it in this study.

The broad multidimensional approach defines Financial Development as a combination of depth (the size and liquidity of markets), access (the ability of individuals and companies to access financial services), and efficiency (the ability of institutions to provide financial services at the cost of low and stable income, and the level of capital markets activity) (Svirydzenska, 2016).

The literature offers limited consensus on the most

suitable measure of financial development. Consequently, many researchers employ various definitions of financial development to confirm the robustness of their findings (Valickova et al., 2014).

We opted to utilize three conventional quantity-based indicators as stand-ins for financial development: Money Supply to GDP (M2/GDP), Credit to GDP, and Net Interest Margin (NIM). These indicators are conveniently available in the World Bank's database.

The financial variable Broad Money Stock (M2/GDP) as a percentage of GDP measures an economy's monetization level, including currency plus demand and interest-bearing obligations of banks and other non-bank financial intermediaries relative to GDP. This indicator reflects the actual size of a growing economy's financial sector. A higher M2/GDP rate suggests a broader financial sector and greater financial intermediation. If the financial sector expands faster than the real sector, the M2/GDP rate will increase over time (Nyamongoa et al., 2012).

As part of our study, we are analyzing another metric known as Credit/GDP. This metric is used to evaluate the depth of the financial sector. It represents the amount of financial resources provided to the private sector by deposit-taking entities (excluding central banks). This indicator includes loans, non-equity se-

Table 1
Description of Variables

Variables	Description
GDP growth	Annual growth (%)
GDP growth -1	Lag GDP growth one period... Growth rate of GDP at t-1 period
Remitt/GDP	Remittances (% of GDP)
Credit/GDP	Domestic credit to private sector by banks (% of GDP)
M2/GDP	Broad money (% of GDP), M2
NIM	Bank's Net Interest Margin (%)
Interaction Term	Remittances x Fin. Dev. indicator
Trade/GDP	Trade (% of GDP)
Invest/GDP	Gross fixed capital formation (% of GDP)
INF	Inflation Measured by the Consumer Price Index, (annual %)
GE/GDP	General government final consumption expenditure (% of GDP)
Ln LF	Natural log of Labor force
Dummy	Dummy coded 1 if pandemic = 2020. Otherwise 0

curity purchases, trade credits, and other receivables that require repayment. In some countries, these claims might also include credits given to public enterprises. The World Bank's Metadata Glossary provides more information on this indicator.

Various indicators assess institutional efficiency, reflecting the financial sector's capacity to provide high-quality products and services cost-effectively. These include metrics like Net Interest Margin (%), Interest Rate Spread, Deposit Interest Rate (%), Overhead costs to total assets (%), and more (Sobiech, 2019). Numerous authors employ a range of indicators. In our study, we've selected Net Interest Margin (%), a metric that evaluates a bank's net interest revenue relative to its average interest-bearing assets. This indicator offers insight into a bank's performance in terms of managing interest income against its interest-bearing assets. Saksonova (2014) suggests that Net Interest Margin stands out as the most fitting indicator for appraising the efficacy and stability of bank operations. It serves as a measure of a bank's proficiency in managing its interest-bearing assets. Surprisingly, a decline in Net Interest Margin is seen as a positive signal, indicating an improved efficiency in how the banking system reallocates its resources. This shift suggests a more effective use of assets within the banking sector (Saksonova, 2014).

The additional variables employed in this study are conventional in economic growth literature and are easily accessible through the World Bank's World Development Indicators. Among them, we selected the Gross Fixed Capital Formation to GDP, as a proxy for investment (Invest/GDP), the Government Expenditure to GDP as a proxy for government investment (GE/GDP), Trade openness (Trade/GDP) (the sum of exports and imports to GDP) as a measure of the economy's openness, Inflation (INF), the annual percentage change in the Consumer Price Index, as a proxy for macroeconomic stability which assesses uncertainty about the future market environment, and the Labor force total. The total labor force serves as an indicator of the size of the labor supply available for producing goods and services within a specified period. The labor force total comprises people ages 15 and older who supply labor for the production of goods and services during a specified period. It includes people who are currently employed and people who are unemployed but seeking work as well as first-time job-seekers (WB, Metadata

Glossary, 2024).

Additionally, to capture the persistence of the output variable, we have included lagged GDP growth (GDP-1) as an explanatory factor.

In addressing multicollinearity concerns among the independent variables, we have omitted certain variables, including GE/GDP and Credit/GDP, from the regression analysis. For further details, please refer to the Correlation matrix.

In line with the findings of other researchers, we've introduced an interaction term (Remitt x Fin. Dev. Indicator) into our analysis. This variable aims to illustrate the impact of remittances on economic growth through the transmission mechanism of the financial sector. The decision to include this interaction term is rooted in the ongoing debate within the literature regarding whether these two variables—remittances and financial development indicators—act as complements or substitutes in driving economic growth. This addition allows us to explore the nuanced relationship between remittances and financial sector development within the context of economic growth (Giuliano & Arranz, 2009; Chowdhury M. 2016; Cao & Kang, 2020; Giulia Bettin & Zazzaro, 2012; Michael D. Titoe, 2019; Mundaca, 2009; Sobiech, 2019).

The dependent variable is the real GDP growth (annual %), which reflects the economic performance of the countries under study. The real GDP growth present the annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2015 prices, expressed in U.S. dollars (WB, Metadata Glossary, 2024).

3.2. Descriptive Statistics

This table delves into the examination of key economic indicators spanning over 21 years across West Balkan Countries. The dataset encompasses various facets of economic performance, including GDP growth, Remittances, Gross capital formation, Trade openness, M2 money supply, Net interest margin (NIM), inflation, Government expenditure, and Credit to the private sector by banks and labor force.

Through a detailed analysis of mean values, standard deviations, and minimum and maximum values, this research aims to provide a nuanced understanding of the economic dynamics within the region.

The descriptive statistics scrutinize critical variables to

discern patterns, trends, and disparities, shedding light on the economic landscape of the region. The mean GDP growth rate of 3.3% suggests a moderate, yet stable, economic expansion across the Balkan region. However, the wide standard deviation of 3.5% highlights substantial variability among countries. Notably, the negative minimum and maximum values (-15% and 13%, respectively) underscore periods of economic contraction, requiring further investigation into the underlying causes.

Remittances play a pivotal role in the economic fabric of Balkan countries, constituting an average of 10.62% of GDP. The relatively low standard deviation of 4.96% suggests a consistent contribution across the region, while the wide range (2.64% to 22.23%) indicates varying degrees of reliance on remittances. With an average of 22.84%, gross capital formation (Invest/GDP) showcases a commitment to investment and infrastructure development in the Balkans. The standard deviation of 4.52% reflects some variability, emphasizing the need for a nuanced examination of individual countries' policies and strategies. The high mean value of trade openness (91.62%) underscores the region's strong integration into the global economy. However, the substantial standard deviation of 19.63% indicates heterogeneity in trade policies and practices among Balkan nations, necessitating a closer examination of factors influencing this variability. Averaging at 53.21%, the M2 money supply suggests a reasonably controlled monetary environment. The stan-

dard deviation of 17.13%, coupled with a broad range (11.27% to 88.44%), points to diverse monetary policies and practices that merit further investigation. The banking sector's health is reflected in the NIM, averaging at 4.6%. The low standard deviation of 1.29% suggests relative stability, indicating that the financial systems in Balkan countries have maintained prudent interest margin management. A moderate average inflation rate of 3.36% signals price stability, with a standard deviation of 4.12%, implying some variability. The negative minimum value of -2.41% warrants scrutiny to discern deflationary periods and their implications on economic performance. Since the variables could be correlated with each other it is important to look also at the correlation between the variables of interest. The correlation matrix provides insights into the relationships between different variables.

The correlation matrix highlights the varying degrees of association between remittances and other economic indicators, emphasizing the importance of exploring these connections in a more detailed and context-specific analysis. These correlation coefficients provide a preliminary understanding of the relationships within the dataset. While some associations are discernible, it is important to note that correlation does not imply causation. The results show that multicollinearity is not present in our data.

Table 2
Descriptive Statistics

	Mean	Median	SD	Skewness	Min	Max	OBS
GDP growth (annual %)	3.29	3.71	3.51	-1.55	-15.31	13.04	119
Remit/GDP	10.62	10.52	4.96	0.27	2.64	22.23	124
Ln LF	5.97	6.09	0.36	-0.16	5.38	6.54	126
Invest/GDP	22.84	21.9	4.52	0.79	13.3	39.22	120
Trade/GDP	91.62	86.15	19.63	1.12	56.87	170.82	126
Credit/GDP	40.68	41.26	14.05	-0.1	6.48	86.45	120
M2/GDP	53.21	52.02	17.13	0	11.27	88.44	126
NIM	4.71	4.52	1.29	0.51	0.06	8.39	120
INF	3.36	2.05	4.12	1.58	-2.41	19.49	117
GE/GDP	16.99	17.49	4.58	0.15	10.13	29.94	126

Source: World Bank data and author's calculation

Table 3
Correlation Matrix

	GDP growth	Remitt/ GDP	Invest/ GDP	Ln LF	Trade/ GDP	Credit/ GDP	M2/ GDP	GI/ GDP	NIM	INF	Dummy	GDP growth_ lag1
GDP growth	1.00											
Remitt/ GDP	0.14	1.00										
Invest/ GDP	0.10	0.40	1.00									
Ln LF	0.00	(0.15)	(0.41)	1.00								
Trade/ GDP	0.03	(0.47)	0.14	(0.24)	1.00							
Credit/ GDP	(0.26)	(0.16)	0.44	(0.15)	0.54	1.00						
M2/GDP	(0.09)	0.09	0.02	0.12	0.07	0.33	1.00					
GI/GDP	(0.14)	(0.32)	(0.17)	(0.00)	0.17	0.28	(0.48)	1.00				
NIM	0.13	0.01	(0.09)	0.09	(0.35)	(0.40)	(0.69)	0.34	1.00			
INF	0.20	(0.12)	(0.12)	0.30	0.07	(0.07)	(0.26)	0.15	0.23	1.00		
Dummy	(0.59)	(0.02)	0.05	(0.00)	(0.02)	0.15	0.21	0.01	(0.19)	(0.15)	1.00	
GDP growth_ lag1	(0.11)	0.12	0.23	0.01	(0.04)	(0.15)	(0.08)	(0.10)	0.20	0.33	0.03	1.00

3.3. Models and Methodology

We have utilized a basic economic growth regression model in line with the approach taken by Guilano and Arranz (2009) and other authors as summarized in the literature review. Our model incorporates remittances, financial development, and an interaction term between remittances and the financial development indicator as the key variables of interest. Additionally, we have included a set of control variables (described below) denoted by X .

$$GDP\ growth_{it} = \beta_0 + \beta_1 GDP\ growth_{it-1} + \beta_2 Remitt_{it} + \beta_3 Fin\ Dev_{it} + \beta_4 [Remitt \times Fin\ Dev]_{it} + \sum_{j=1}^n \beta_j X_{jit} + \mu_i + \eta_i + \varepsilon_{it}$$

Where,

$GDP\ growth_{it-1}$ denotes lagged Real GDP growth
 $Remitt$ refers to the ratio of remittances to the GDP
 Fin , is a financial development indicator,

$Remitt \times Fin\ Dev$ is interaction term between remittances and the financial development indicator,

and X_{it} is the matrix of control variables described in the previous section,

μ_i is a time-specific effect,

η_i is an unobserved country-specific fixed effect and
 ε_{it} is the error term.

The research utilizes a multi-faceted regression strategy, including Ordinary Least Squares (OLS), Fixed Effects, and Two-Stage Least Squares (2SLS) models. Our choice of Pooled OLS, Fixed Effects (FE), and Two-Stage Least Squares (2SLS) methodologies was deliberate and grounded in their robustness for addressing endogeneity and omitted variable bias. Pooled OLS provides a baseline comparison, while FE controls for unobserved heterogeneity across countries. The 2SLS approach is particularly valuable for handling endogeneity through instrumental variables, ensuring that the instruments used are strong and valid, as evidenced in empirical research (Angrist & Pischke, 2009).

By balancing these methodologies, we ensure a comprehensive approach that addresses endogeneity without the pitfalls associated with GMM estimators. Furthermore, the 2SLS method has been widely recognized for its robustness in handling endogenous regressors in various econometric studies (Wooldridge, 2010).

Arellano & Bond (1991) discuss the use of GMM estimators for panel data, emphasizing their effectiveness when the number of individuals (N) is large and the number of time periods (T) is small. They state on page 278, line 41: “We assume that a random sample of N individual time series (y_i, \dots, y_iT) is available. T is small and N is large” (Arellano & Bond, 1991).

Roodman (2009) introduces the difference and system generalized method-of-moments (GMM) estimators in his work. In his abstract, he highlights the increasing popularity of these estimators, originally formulated by Holtz-Eakin, Newey, and Rosen (1988), Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998). Designed to handle panel data characterized by “small T , large N ” dimensions—few time periods and many individuals—the estimators offer broad applicability and robustness.

However, our study involves only six Western Balkan countries ($N=6$) over 21 years ($T=21$), thus $T > N$, failing to meet the initial condition required for the GMM estimator, whether DIF-GMM or SYS-GMM.

While GMM estimators, such as DIF-GMM and SYS-GMM, are powerful tools for addressing endogeneity, they come with notable limitations, including overfitting and instrument proliferation. Overfitting occurs when the model becomes excessively complex, capturing noise rather than the underlying data pattern. Instrument proliferation can lead to weak instruments, undermining the reliability of the results (Roodman, 2009).

The baseline of the Ordinary Least Squares (OLS) model provides an initial understanding of the relationship between Real GDP growth (the dependent variable) and the selected indicators. Recognizing potential time-invariant country-specific factors, a Fixed Effects model is employed to control for unobserved heterogeneity across countries. The inclusion of country-fixed effects η_i captures time-invariant heterogeneity, enhancing the model's ability to discern the impact of the independent variables on GDP growth.

Incorporating a lagged variable as an explanatory variable converts the regression equation into a dynamic model. Attempting to estimate this dynamic specification through Ordinary Least Squares (OLS) would result in inconsistent coefficient estimations (Greene, 2017). We have adopted a Two-Stage Least Squares (2SLS) approach with robust standard errors to address potential endogeneity issues, especially concerning Remittances and Financial Development indicators. This instrumental variable strategy is designed to tackle endogeneity, a common issue in static panel data models, by using two time-lagged variables as instruments. The 2SLS method helps to mitigate potential simultaneity bias and strengthens the robustness of the estimated coefficients. The 2SLS method specifically incorporates lagged Remittances and M2 as instruments to address potential endogeneity concerns, aiming to enhance the reliability of the analysis results. This multistep strategy enables a comprehensive exploration of the relationship between variables while addressing potential issues like endogeneity. Our multi-faceted regression strategy is intended to provide a detailed understanding of the influence of financial indicators and remittances on economic growth in the Balkan Countries. The initial OLS and Fixed Effects models establish a baseline by capturing the general relationships. The 2SLS model then addresses any potential endogeneity concerns, ensuring the reliability and validity of the findings. The comprehensive insights gained from this methodology will be valuable for economic policymakers, aiding them in making informed decisions to promote sustainable economic growth in the Balkan region.

The hypothesis investigates how the degree of financial development in the receiving country shapes the effect of remittances on economic growth. To investigate this, we incorporate an interaction term between the remittances variable and a metric of financial development. Through evaluating the significance of this interacted coefficient, our objective is to determine whether remittances and financial development operate as substitutes or complements in promoting economic growth. This analysis seeks to reveal the nature of the relationship between these factors—whether they enhance each other's influence on growth or function as distinct drivers shaping the trajectory of economic growth.

Table 4
Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	FE	2SLS	OLS	FE	2SLS
GDPgrowth -1	-0.191 (0.112)	-0.267** (0.101)	-0.173** (0.0884)	-0.220** (0.0774)	-0.292** (0.0965)	-0.240** (0.0992)
Remit/GDP	0.0967 (0.0862)	0.0801 (0.164)	0.171 (0.112)	0.584** (0.196)	0.602** (0.204)	1.776*** (0.5)
M2/GDP	0.0326 (0.0307)	-0.0901 (0.125)	-0.0475 (0.0371)	-0.0472 (0.0503)	-0.181 (0.112)	-0.292*** (0.092)
NIM	0.354 (0.39)	0.404 (0.466)	-0.471 (0.505)	0.366 (0.375)	0.47 (0.441)	-0.545 (0.57)
Trade/GDP	0.0152 (0.0176)	0.0797 (0.0659)	0.00845 (0.0252)	0.0124 (0.0136)	0.0833 (0.0567)	0.0177 (0.0267)
Invest/GDP	0.115 (0.0999)	0.15 (0.101)	0.116 (0.0945)	0.142* (0.0567)	0.184 (0.0943)	0.101 (0.0971)
INF	0.155* (0.0716)	0.0927 (0.0762)	0.131 (0.0992)	0.179** (0.0687)	0.111 (0.0717)	0.193* (0.104)
Ln LF	-0.00275 (0.00764)	0.0793 (0.218)	0.00317 (0.0111)	0.00381 (0.00817)	0.13 (0.182)	0.0299* (0.0157)
Dummy	-0.0894** (0.0225)	-0.0714** (0.0264)	-0.0865*** (0.013)	-0.0910** (0.0239)	-0.0730** (0.0277)	-0.0917*** (0.0146)
Interaction Term				-1.011** (0.331)	-1.233** (0.362)	-3.163*** (0.878)
Constant	-0.0466 (0.065)	-0.492 (1.362)	-0.0163 (0.103)	-0.0117 (0.0642)	-0.00099 (0.0737)	-0.176** (0.0808)
Observations	126	126	117	120	126	117
R-squared	0.402	0.44	0.362	0.446	0.477	0.201
Hausman Test (RE vs FE)		Prob>chi2 = 0.0000				
Countries		6			6	

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

To determine the impact of remittances on economic growth, we will analyze the coefficients of the interaction term (β_4) and the remittance coefficient (β_2). A positive value of the remittance coefficient ($\beta_2 > 0$) combined with a negative value of the interaction coefficient ($\beta_4 < 0$) between remittances and the financial depth indicator indicates that remittances primarily contribute to economic growth in countries with underdeveloped or weaker financial systems. This aligns with the concept that remittances and financial development act as substitutes for fostering economic growth, which has been discussed by Guilano and Arranz (2009), Betin (2011), and other scholars.

If the remittance coefficient is negative ($\beta_2 < 0$) and

the interaction coefficient of remittances with the financial depth indicator is positive ($\beta_4 > 0$), or both coefficients are positive and significant together, then it indicates that a stronger financial sector and efficient banks direct remittances towards activities that promote growth. In such a scenario, the positive effect of remittances on economic growth gets amplified in countries that have more developed financial systems. This supports the idea that remittances complement other financial flows and can be viewed as supporting financial growth, which is also supported by Guilano and Arranz (2009), Betin (2011), and other researchers.

4. Results and Analysis

This section presents the regression analysis results from the empirical specification. Specifications 1, 2, and 3 show the regression analysis outcomes using three different methods (OLS, FE, and 2SLS) for the variables of interest (remittances and financial indicators) as well as for the control variables. Specifications 4, 5, and 6 present the results of all three methods, incorporating an interaction term between remittances and the financial indicator, in our case remittances and M2 to GDP.

The analysis of the Ordinary Least Squares (OLS) method, outlined in Specification 1, delves into the relationship between GDP growth and several independent variables. The study encompasses 126 observations across various countries. Here, GDP growth, the dependent variable, is regressed against a set of independent variables: Lagged GDP from the previous period, Remittances, Money Supply M2, Net Interest Margin, Trade Openness, Inflation, Investment, Log of Labor Force, and a dummy variable for the pandemic's impact.

Key findings from the OLS analysis include a negative association between the last period's GDP and current GDP growth, as indicated by the -0.191 coefficient for Lagged GDP. Remittances show a positive but statistically insignificant relation to GDP growth, with a coefficient of 0.0967. The Money Supply M2 positively correlates with GDP growth, having a coefficient of 0.0326. Notably, the Net Interest Margin has a significant positive effect on GDP growth, with a coefficient of 0.354. Trade Openness and Inflation also display positive relationships with GDP growth. Investment shows a positive but minor influence. The Ln of Labor Force Total has an insignificant negative coefficient. The pandemic's impact is captured by a negative coefficient, suggesting a dampening effect on GDP growth. The model's R-squared value of 0.391 indicates it explains around 39.1% of the variation in GDP growth.

The Fixed Effects method, explored in Specifications 2, considers country-specific factors. It echoes some of the OLS findings, with adjustments in the magnitude and statistical significance of the coefficients. To determine the appropriateness of the fixed effects model, we conducted the Hausman

test. The results of the Hausman test indicated that the fixed effects model is preferred over the random effects model ($\text{Prob} > \chi^2 = 0.0000$). This suggests that the fixed effects model is adequate for our analysis, ensuring consistent and reliable estimates.

The Two-Stage Least Squares (2SLS) results (Specifications 3), reveal intriguing insights into the complex interplay between key economic indicators and GDP growth in the context of Balkan countries, providing a nuanced perspective that reflects the intricacies of economic dynamics. The negative coefficient for lagged GDP suggests a persistent trend of economic inertia, where the previous period's economic performance influences the current growth trajectory. This underscores the importance of addressing historical economic conditions in forecasting future growth.

According to Arellano & Bond (1991), the dynamic term (lagged growth) is defined by the absolute value of α ($|\alpha| < 1$). This indicates that the dynamic term can indeed take both positive and negative values (p. 278). The equation demonstrating this relationship is as follows: $y_{it} = \alpha y_{it-1} + \eta_i + u_{it}, \dots, |\alpha| < 1$. Furthermore, our findings are consistent with existing literature, where similar results indicating a negative sign for the dynamic term have been documented (Bettin & Zazzaro, 2012; Nyamongo et al. 2012; Titoe, 2019).

The standout result comes from remittances that lagged two periods, revealing a significant positive impact on GDP growth. This underscores the crucial role of remittances as a stabilizing force and a source of economic stimulus for the region, emphasizing the importance of policies that support remittance flows. Finally, the negative impact of the pandemic, as captured by the dummy variable, underscores the disruptive influence of external shocks on economic growth. This emphasizes the need for adaptive policy measures to mitigate the adverse effects of unforeseen events.

Specifications (4), (5), and (6) add the interaction term between Remittances and Money Supply.

The OLS, Fixed Effect, and 2SLS results unveil crucial dynamics in the economic landscape of Balkan countries. The negative coefficient for lagged GDP highlights the enduring influence of past economic conditions on current growth trends.

Remittances, emerge as a substantial positive factor, acting as a stabilizing force and a significant driver of economic growth in the region. After controlling for the interaction term, remittances become positive and remain throughout all the specifications.

The Money supply, expressed through $M2/GDP$, in all specifications, has turned out to be negative and with an insignificant impact, except in the case where we used 2SLS, where the impact seems to be negative and significant at the 1% level of significance.

The matter of the relationship between money supply and economic growth has been a subject of debate over an extended period. Various economists hold differing views on this connection. Some assert that boosting the money supply is essential for fostering economic growth, whereas others contend that it may result in inflation and have adverse effects on the economy. The Quantitative Theory of Money and the Monetarist Theory posit that the quantity of money circulating in an economy directly influences price levels, potentially causing inflation and impeding economic growth. Consequently, proponents of this perspective argue that governments should prioritize regulating the money supply to uphold price stability and stimulate economic growth. (Van, 2020), (Mahara, 2020).

The interaction term in our model is designed to capture the conditional effect of remittances on economic growth, contingent on the level of financial development. This sophisticated approach allows us to understand how the impact of remittances varies with different levels of financial development, providing deeper insights into their relationship.

The coefficients on the interaction term in Model (6) of Table 4 indicate that the overall impact of remittances on GDP growth, conditional on financial development (measured by $M2/GDP$), is negative. This adverse effect becomes more pronounced with higher levels of $M2/GDP$.

To interpret the interaction term in Model (6) of Table 4, we focus on a partial specification of the relevant variable:

$$GDP\ growth = \beta_1 Remitt / GDP_t + \beta_2 M_2 / GDP_t + \beta_3 (Remitt / GDP \times M_2 / GDP)$$

The impact of remittances on economic performance, conditional on financial development, is as follows:

$$\frac{\partial(GDP\ growth)}{\partial(Remitt / GDP)} = \beta_1 + \beta_3 M_2 / GDP = 1.776 + (-3.163)M_2 / GDP$$

The negative coefficient of the interaction term ($\beta_3 = -3.163$) indicates that the impact of remittances on economic growth decreases as financial development increases. The positive coefficient of Remittances to GDP ($\beta_1 = 1.776$) signifies the base-line positive impact of remittances on GDP growth when $M2/GDP$ is zero. The negative coefficient of the interaction term represents a reduction in the positive impact of remittances as financial development increases. For higher levels of financial development, the net effect of remittances on GDP growth becomes increasingly negative. When financial development is low, remittances have a positive impact on GDP growth. However, as financial development ($M2/GDP$) increases, this positive impact diminishes and can turn negative, indicating that in financially developed economies, remittances might not contribute positively to growth or might even hinder it.

These findings suggest that remittances might be more beneficial in less financially developed economies, where they can address gaps in financial services. In highly developed financial systems, remittances may lead to less productive uses, potentially causing inflation or creating dependencies (Catrinescu et al. 2009; Aggarwal et al. 2011; Barajas et al. 2009; Giuliano & Arranz, 2009).

The interaction variable between remittances and financial indicators in all three specifications turns out to be negative and significant. This implies that remittances stimulate economic growth in Western Balkan countries in which the financial system is shallow.

This provides evidence of a substitute relation between remittances and financial instruments in economic growth (Giuliano & Arranz, 2009; Bettin & Zazzaro, 2012; Nyamongo et al. 2012; Rehman & Hysa, 2021).

These results offer a rich narrative for policymakers and economists, guiding them in crafting strategies that leverage the positive contributors to economic growth while addressing potential

impediments. The nuanced economic meaning derived from these coefficients provides valuable insights for shaping informed and targeted policy interventions in the dynamic context of the Balkan economies.

5. Conclusion

This study focused on analyzing the relationships between remittances, financial development, and economic growth in Western Balkan countries during the 2002-2022 period. To this end, a three-pronged regression strategy was employed, encompassing Ordinary Least Squares (OLS), and Fixed Effects. Acknowledging potential endogeneity issues with Remittances and Financial Development indicators, a robust Two-Stage Least Squares (2SLS) approach is adopted using two time-lagged variables as instruments.

Key among the results is the affirmation that remittances have played a significant role in the economic growth of Western Balkan nations throughout the study period. However, the potential of remittances remains partially untapped due to high transfer costs, suggesting the need for formalization strategies. In less economically developed contexts, such as the Western Balkans, remittances are often directed towards immediate consumption, which could potentially limit savings and investment in the economy. It is therefore imperative for governments and policymakers to devise remittance-centric policies that not only encourage the inflow of remittances but also ensure their effective utilization in productive economic activities. Integrating these remittances into an efficient banking system could further enhance their impact on financing growth-oriented projects and activities.

The study also delves into the influence of financial development, as indicated by metrics like Money Supply and Net Interest Margin, on economic growth. The results here are less definitive, suggesting a need for incorporating additional quantitative and qualitative measures of financial development to gain a more comprehensive understanding of its impact on economic growth.

A particularly notable finding is the significant negative coefficient observed in the interaction between remittances and financial development. This suggests that in the context of the Western Balkans, remittances may be compensating for inefficiencies or gaps in the

financial markets. For countries in the region, especially those with underdeveloped financial systems, it becomes essential to facilitate and encourage remittance flows. Remittances, in this regard, are not just a source of income but also serve as a substitute for the credit and insurance services that are otherwise lacking due to inefficient or absent financial markets.

In conclusion, this study underscores the pivotal role of remittances in the economic landscape of the Western Balkans, highlighting both their direct impact on growth and their compensatory role in the face of financial underdevelopment. It calls for targeted policy interventions to optimize the use of remittances and further explores the nuanced role of financial development in shaping economic trajectories in the region

References

- Aggarwal, R., Demirgüç-Kunt, A., & Peria, M. S. (2011). Do remittances promote financial development? . *Journal of Development Economics*, 96, 255–264, . <https://doi.org/10.1016/j.jdeveco.2010.10.005>
- Amuedo-Dorantes, C. (2014). *The good and the bad in remittance flows*. San Diego: San Diego State University, USA, and IZA, Germany. <https://doi.org/10.15185/izawol.97>
- Angrist, J. D., & Pischke, J.-S. (2009). *Mostly harmless econometrics: An empiricist's companion*. Princeton University Press.
- Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, 58, 277–297.
- Azam, M. (2015). The role of migrant workers remittances in fostering economic growth: The four Asian developing countries' experiences. *International Journal of Social Economics*, 42(8), 690 – 705. <https://doi.org/10.1108/IJSE-11-2013-0255>
- Bandura, W. N., Zivanomoyo, J., & Tsaurai, K. (2019). Remittances, financial development and economic growth: A Case of southern african development community. *OECONOMICA*, 15(4), 67–82.
- Barajas, A., Chami, R., Fullenkamp, C., Gapen, M., & P., M. (2009). *Do workers' remittances promote economic growth?* (IMF Working Paper No. 09/153). International Monetary Fund. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1442255
- Boopen Seetanah, Shalini T. Ramessur, & Rojid, S. (2009). Financial development and economic growth - New evidence from a

- sample of Island economies. *Journal of Economic Studies*, 36(2), 124-134. <https://doi.org/10.1108/01443580910955033>
- Bucevska, V. (2022). Impact of Remittances on economic growth: Empirical evidence from south-east european countries. *South East European Journal of Economics and Business*, 17(1), 79-94. <https://doi.org/10.2478/jeb-2022-0006>
- Cao, S., & Kang, S. J. (2020). Personal remittances and financial development for economic growth in economic transition countries. *International Economic Journal*, 1-22. <https://doi.org/10.1080/10168737.2020.1765187>
- Catrinescu, N., Leon-Ledesma, M., Piracha, M., & Quillin, B. (2009). Remittances, institutions, and economic growth. *World Development*, 37(1), 81-92. <https://doi.org/10.1016/j.worlddev.2008.02.004>
- Cazachevici, A., Havranek, T., & Horvath, R. (2020). Remittances and economic growth: A meta-analysis. *World Development*, 134. <https://doi.org/10.1016/j.worlddev.2020.105021>
- Chami, R., Barajas, A., Cosimano, T., Fullenkamp, C., Gapen, M., & Montiel, P. (2008). *Macroeconomic consequences of remittances*. Washington DC: International Monetary Fund, Occasional paper; 259. <https://doi.org/10.5089/9781589067011.084>
- Chowdhury, E. K., Dhar, B. K., & Gazi, M. I. (2023). Impact of remittance on economic progress: Evidence from low-income Asian frontier countries. *Journal of Knowledge Economy*, 14, 382-407. <https://doi.org/1007/s13132-022-00898-y>
- Chowdhury, M. (2016). Financial Development, remittances and economic growth: Evidence using a dynamic panel estimation. *Margin—The Journal of Applied Economic Research*, 10(1), 35-54. <https://doi.org/10.1177/0973801015612666>
- Dawson, P. J. (2010). Financial Development and Economic Growth: A Panel Approach. *Applied Economics Letters*, 17(8), 741-745. <https://doi.org/10.1080/13504850802314411>
- Giulia Bettin, & Zazzaro, A. (2012). Remittances and Financial Development: Substitutes or Complements in Economic Growth? *Bulletin of Economic Research*, 64(4), 509-536. <https://doi.org/10.1111/j.1467-8586.2011.00398.x>
- Giuliano, P., & Arranz, M. R. (2009). Remittances, financial development and growth. *Journal of Development Economics*, 90, 144-152. <https://doi.org/10.1016/j.jdeveco.2008.10.005>
- Goschin, Z. (2014). Remittances as an economic development factor. Empirical evidence from the CEE countries. *Procedia Economics and Finance*, 10, 54 - 60. [https://doi.org/10.1016/S2212-5671\(14\)00277-9](https://doi.org/10.1016/S2212-5671(14)00277-9)
- Graff, M. (2003). Financial Development and Economic Growth in Corporatist and Liberal Market Economies. *Emerging Markets Finance and Trade*, 39(2), 47-69.
- Grassa, R., & Gazdar, K. (2014). Financial development and economic growth in GCC countries: A comparative study between Islamic and conventional finance. *International Journal of Social Economics*, 41(6), 493-514. <https://doi.org/10.1108/IJSE-12-2012-0232>
- Greene, W. (2017). *Econometric Analysis 8th Edition*. Pearson.
- Halkos, G. E., & Marianna K. Trigoni. (2010). Financial development and economic growth: evidence from the European Union. *Managerial Finance*, 36(3), 949-957. <https://doi.org/10.1108/03074351011081268>
- Hao, C. (2006). Development of financial intermediation and economic growth: The Chinese experience. *China Economic Review*, 17, 347-362. <https://doi.org/10.1016/j.chieco.2006.01.001>
- Islam, S. (2022). Do personal remittances influence economic growth in South Asia? A panel analysis. *Review of Development Economics*, 26(1), 243-258. <https://doi.org/10.1111/rode.12842>
- Jongwanich, J. (2007). *Workers' Remittances, economic growth and poverty in developing Asia and the Pacific countries*. UNESCAP Working Paper.
- Khan, M. S., & Senhadji, A. S. (2003). Financial development and economic growth: A review and new evidence. *Journal of African Economies*, 12(2), ii89-ii110. https://doi.org/10.1093/jae/12.suppl_2.ii89
- Kumar, R. R. (2013). Remittances and economic growth: A study of Guyana. *Economic Systems*, 462-472. <https://doi.org/10.1016/j.eco-sys.2013.01.001>
- Levine, R. (2005). *Finance and growth: Theory and evidence*. National Bureau of Economic Research. (NBER).
- Mahara, T. S. (2020). Money supply-economic growth nexus: Evidence from a Landlocked Country. *Quest Journal of Management and Social Sciences*, 2(1), 132-153. Retrieved from <https://ssrn.com/abstract=3649376>
- Maimbo, S. M., & Ratha, D. J. (2005). *Remittances: Development impact and future prospects*. Washington, D.C.: World Bank Group. <https://doi.org/10.1596/0-8213-5794-8>

- Masoud, N., & Hardaker, G. (2012). The impact of financial development on economic growth: Empirical analysis of emerging market countries", 371211246830. *Studies in Economics and Finance*, 29(3), 148-173. <https://doi.org/10.1108/10867371211246830>
- Meyer, D., & Shera, A. (2017). The impact of remittances on economic growth: An econometric model. *Economia, ScienceDirect*, 18(2), 1-9. <https://doi.org/10.1016/j.econ.2016.06.001>
- Michael D. Titoe, J. (2019). Remittances, financial development and economic growth in the economic community of West African states. *West African Journal of Monetary and Economic Integration*, 19(2), 71-83. Retrieved from <http://hdl.handle.net/10419/264260>
- Mohapatra, S., Ratha, D., & Silwa, A. (2010, April 23). *Outlook for Remittance flows 2011-12 : Recovery after the crisis, But Risks Lie Ahead. Migration and Development Brief; No. 13*. Washington DC: World Bank, Washington, DC. Retrieved from <http://hdl.handle.net/10986/10907>
- Mundaca, B. G. (2009). Remittances, Financial Market Development, and Economic Growth: The Case of Latin America and the Caribbean. *Review of Development Economics*, 13(2), 288-303. <https://doi.org/1111/j.1467-9361.2008.00487.x>
- Nyamongo, E. M., Misatib, R. N., Kipyegon, L., & Lydia Ndirangua. (2012). Remittances, financial development and economic growth in Africa. *Journal of Economics and Business*, 64, 240-260.
- OECD. (2023). *Labour migration in the Western Balkans: Mapping patterns, Addressing challenges and reaping benefits*. Swiss Confederation: OECD. Retrieved from <https://www.oecd.org/south-east-europe/programme/Labour-Migration-report.pdf>
- Olayungbo, D. O., & Quadri, A. (2019). Remittances, financial development and economic growth in sub-Saharan African countries: evidence from a PMG-ARDL approach. *Olayungbo and Quadri Financial Innovation*, 5(9), 1-25. <https://doi.org/10.1186/s40854-019-0122-8>
- Peprah, J. A., Ofori, I. K., & Asomani, A. N. (2019). Financial development, remittances and economic growth: A threshold analysis. *Cogent Economics & Finance*, 7, 1-20. <https://doi.org/10.1080/23322039.2019.1625107>
- Qutb, R. (2022). Migrants' remittances and economic growth in Egypt: An empirical analysis from 1980 to 2017. *Review of Economics and Political Science*, 7(3), 154-176. <https://doi.org/10.1108/REPS-10-2018-0011>
- Raggl, A. K. (2017). The relevance of remittance inflows to CESEE countries: Evidence from macro- and micro-level data. *Focus on European Economic Integration, Oesterreichische National Bank*(2), 80-102. Retrieved from <https://ideas.repec.org/a/onb/oenbf/y2017i2b2.html>
- Rehman, N. U., & Hysa, E. (2021). The effect of financial development and remittances on economic growth. *Cogent Economics & Finance*, 9(1). <https://doi.org/10.1080/23322039.2021.1932060>
- Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. *The Stata Journal*, 9(1), 86-136.
- Rousseau, P. L., & Wachtel, P. (2011). What is happening to the impact of financial deepening on economic growth? *Economic Inquiry*, 49(1), 276-288. <https://doi.org/10.1111/j.1465-7295.2009.00197.x>
- Saksonova, S. (2014). The role of net interest margin in improving banks' asset structure and assessing the stability and efficiency of their operations. *Procedia - Social and Behavioral Sciences*, 150, 132 - 141. <https://doi.org/10.1016/j.sbspro.2014.09.017>
- Sobiech, I. (2019). Remittances, finance and growth: Does financial development foster the impact of remittances on economic growth? *World Development*, 113, 44-59. <https://doi.org/10.1016/j.worlddev.2018.08.016>
- Svirydenka, K. (2016). *Introducing a new broad-based index of financial development*. International Monetary Fund. Retrieved from https://www.imf.org/-/media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/wp/2016/_wp1605.ashx
- Tang, D. (2006). The effect of financial development on economic growth: Evidence from the APEC countries, 1981-2000. *Applied Economics*, 38, 1889-1904. <https://doi.org/10.1080/00036840500427239>
- Topxhiu, R., & Xhelili, F. (2016). The role of migrant workers remittances in fostering economic growth: The Kosovo experience. *The Romanian Economic Journal*.
- Topxhiu, R., & Xhelili, F. (2017). The Relevance of Remittances in Fostering Economic Growth in the West Balkan Countries. *Ekonomika*, 96(2), 28-42.
- Valickova, P., Havranek, T., & Horvath, R. (2014). Financial Development and Economic Growth: A Meta-Analysis. *Journal of Economic Surveys*, 00(00), 1-21. <https://doi.org/10.1111/joes.12068>
- Van, D. D. (2020). Money supply and inflation impact on economic growth. *Journal of Financial Economic Policy*, 12(1), 121-136. <https://doi.org/10.1108/JFEP-10-2018-0152>

- WB. (2023). *Remittances remain resilient but are slowing, migration and development brief* 38. World Bank. <https://www.worldbank.org/en/news/press-release/2023/06/13/remittances-remain-resilient-likely-to-slow>
- WB. (2024). Metadata glossary. Washington. Retrieved May 26, 2024
- Wooldridge, J. M. (2010). *Econometric Analysis of cross section and panel data*. The MIT Press.
- Yu, J.-S., Hassan, M. K., & Sanchez, B. (2012). A re-examination of financial development, stock markets development and economic growth. *Applied Economics*, 44, 3479–3489. <https://doi.org/10.1080/00036846.2011.577019>

Appendix A

Table 1A

Summary of Selected Empirical International Literature on Remittances, Financial Development and Economic Growth

Year	Author/s	Country/es	Data	Method	Findings
2021	Rehman & Hysa	Six West Balkan Countries	2000-2017	System GMM, Fixed effect	Financial development and remittances positively affect economic growth.
2020	Cao & Kang	29 transition countries	2000-2015	The GMM dynamic panel estimator	Remittances have a direct positive impact on economic growth in transition economies. Additionally, they can indirectly foster growth in nations with limited financial development, while potentially exerting a negative impact on countries possessing moderate to high financial development levels.
2019	Olayungbo & Quadri	20 Sub-Saharan African countries	2000-2015	Pooled Mean Group and Mean Group/ARD; Panel unit root and Cointegration tests.	Both remittances and financial development exhibit positive impacts on short and long-term economic growth. Additionally, financial development acted as a substitute within the relationship between remittances and growth.
2019	Sobiech	61 developing countries	1970-2010	Dynamic factor model; System GMM	Remittances can boost growth, but the effect is significant only at low levels of financial development.
2019	Michael D. Titoe	Economic Community of West African States	2004-2016	OLS, Fixed Effects, and the Random Effects Estimations System-GMM Estimations	Remittances positively impact economic growth, whereas financial development appears to lack a significant influence on economic growth. Moreover, remittances seem to substitute for inefficient or absent financial markets.
2019	Peprah et al.	Ghana	1984 - 2015	Dynamic heterogeneous Autoregressive Distributed Lag (ARDL) model	The cumulative effect of financial development and remittances outweighs the influence of each individual.
2019	Bandura et al.,	Southern Africa Development Community (SADC)	2006-2016	GMM dynamic approach	Remittances positively influence economic growth, yet they exhibit a negative correlation with financial development. This scenario aligns with the substitution hypothesis, wherein private investors opt for non-bank alternative credit sources.
2016	Chowdhury M.	33 developing countries	1979-2011	The GMM dynamic panel estimator	Financial development does not act as a substitute or complement to the remittance-growth nexus. Remittances effectively stimulate economic growth, while the influence of financial variables is insignificant.

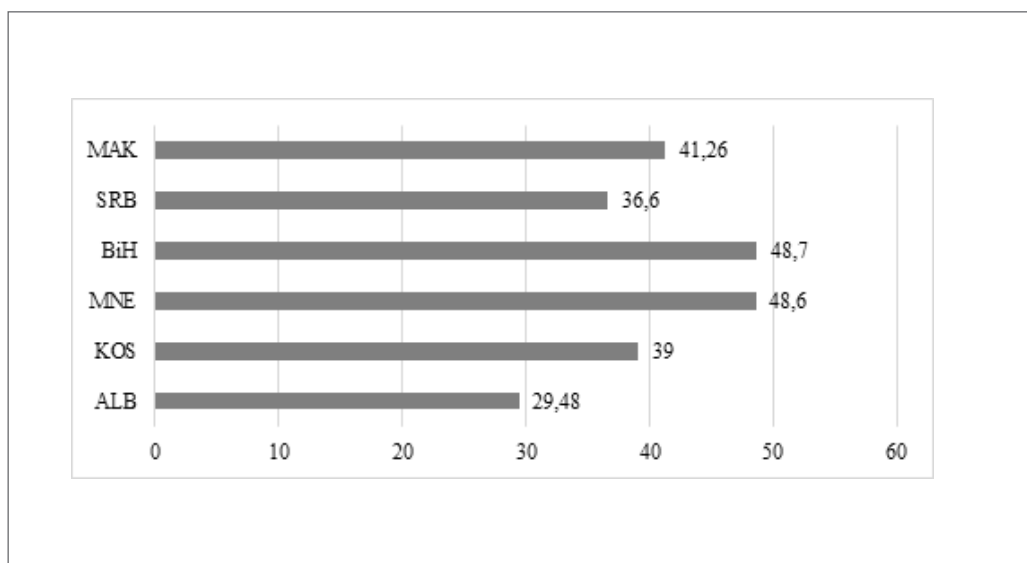
Table 1A

Summary of Selected Empirical International Literature on Remittances, Financial Development and Economic Growth (Continued)

Year	Author/s	Country/es	Data	Method	Findings
2012	Nyamongo et al.	36 countries in Africa	1980–2009	The pooled, fixed effects and the random effects, using the OLS and the Two Stage Least Squares, (TLSL)	Remittances serve as a significant source of growth and seem to act as a supplement to financial development. The importance of financial development in driving economic growth appears weak, at least among the countries under study.
2012	Bettin & Zazzaro	66 developing countries	1991–2005	OLS and SGMM estimators	The impact of remittances on growth is unclear, and only a limited number of countries with a well-functioning domestic banking sector can leverage the potential positive influence of remittances on GDP growth.
2009	Giuliano & Arranz	100 developing countries	1975–2002	System GMM, OLS, and Fixed effect	Remittances catalyze growth in countries with limited financial development, offering an alternative means of financing and aiding in overcoming liquidity challenges.
2009	Mundaca	Countries of Latin America and certain countries in the Caribbean	1970–2002	First-Difference Generalized Method of Moments (GMM) for panel data	Over time, the contribution of remittances to economic growth is favorable, and this effect is heightened through the involvement of financial intermediaries.

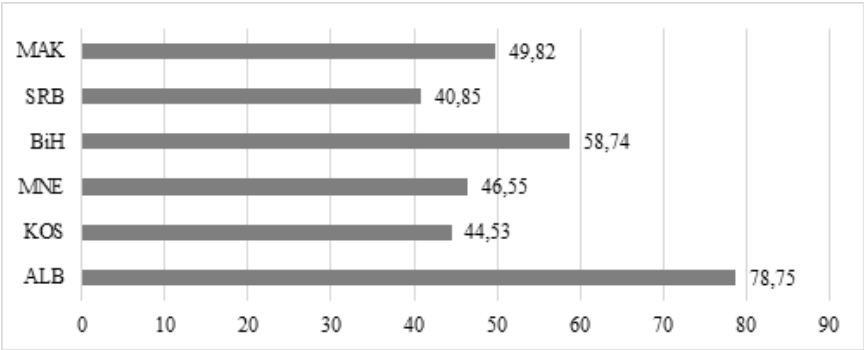
Figure 1A

Credit to the Private Sector by Banks in West Balkan Countries - % of GDP 2002–2022 - Average



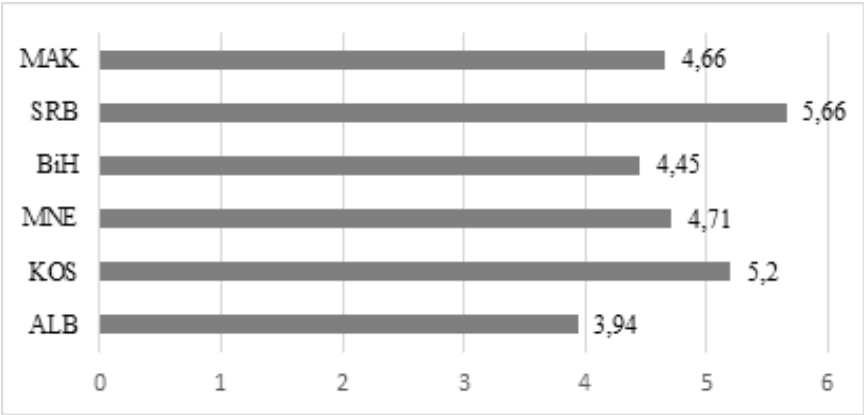
Source: World bank data and author's calculation

Figure 2A
Money Supply in West Balkan Countries - % of GDP - 2002-2022 - Average



Source: World bank data and author's calculation

Figure 3A
NIM in West Balkan Countries, 2002-2022 - Average



Source: World bank data and author's calculation