

## COVID-19 OUTBREAK: IMPACTS OF BANK DEPOSITS ON BANK LENDING

**Ardit Gjeçi**, Ph.D. (Corresponding author)

University of New York Tirana, Albania

Faculty of Economy and Business, Economics and Finance Department

Rruga e Kavajës, Pranë 21 Dhjetorit (Sheshi Atatürk) Tiranë, Albania

E-mail: arditgjeci@unyt.edu.al ; ORCID: 0009-0002-2173-1470

**Andromahi Kufo**, Dr.

Associate Professor

University of New York Tirana, Albania

Faculty of Economy and Business, Economics and Finance Department

E-mail: andromahikufo@unyt.edu.al ; ORCID: 0000-0003-0990-4471

**Athina Tori**, MSc. ACCA Cand.

University of New York Tirana, Albania

Faculty of Economy and Business, Economics and Finance Department

E-mail: athinatori@unyt.edu.al ; ORCID: 0009-0001-7352-6930

**Monika Kolleshi Syziu**, Dr. Cand.

University Aleksandër Moisiu of Durrës, Albania

Faculty of Business, Department of Finance and Accounting

E-mail: monikakolleshi1@outlook.com

### Abstract

We examine the effect of deposit growth on bank loan growth during COVID-19 in the Western Balkan countries. Our analysis employs a panel dataset comprising bank-level and macro-economic data from 2012 to 2021, using the fixed effect estimation method. Our main finding is that deposit growth has a significant positive effect on banks' lending during the pandemic. Drawing on the credit channel of monetary policy transmission, we contextualise these findings within the structural constraints of Western Balkan banking systems and the regulatory forbearance measures including loan repayment moratoria deployed during the pandemic. The results reveal that deposit growth, primarily due to increased savings and government stimulus efforts, led to an increase in banks' lending activities during the early stages of the pandemic. The results also indicate that the impact is positive and significant during both subperiods: before and during COVID-19. Overall, our findings suggest that fostering deposit growth may be a feasible approach for policymakers to encourage economic recovery dur-

ing crises. Further, the results provide useful guidance for banks in utilising their liquidity and lending policies.

**Keywords:** *COVID-19, Deposit growth, Loan growth, Non-performing loans*

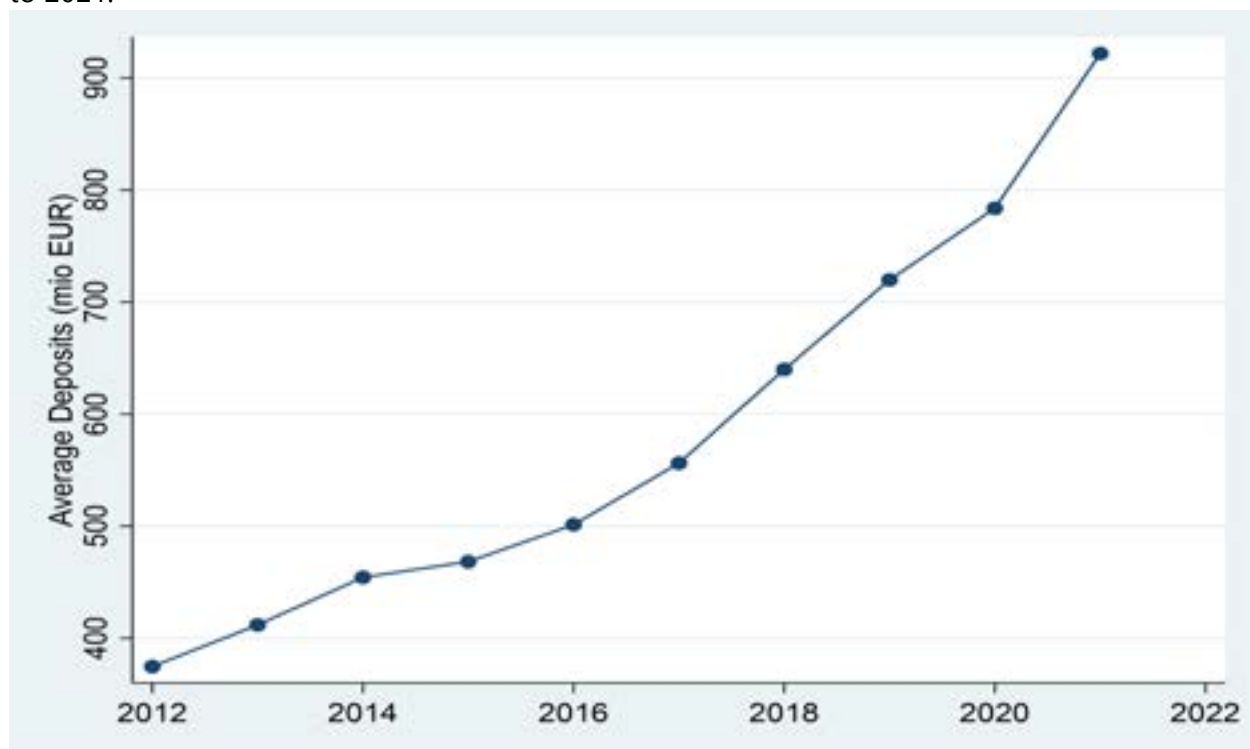
**JEL classification:** *C53, G21, C23*

## 1. Introduction

In March 2020, the World Health Organization announced the COVID-19 outbreak as a global emergency pandemic. This pandemic confronted countries and financial systems with an unprecedented situation and tension for which they were unprepared (Bajra et al. 2023). During the same period, according to the literature, it has been observed that bank deposits have surged. The

average deposit size among U.S. commercial banks from 2018Q1 to 2020Q4 resulted in an increase of approximately \$1.4 billion, starting at \$4.86 billion by the close of 2019 and reaching \$6.26 billion by the close of 2020 (Dursun-de Neef and Schandlbauer 2022). Similarly, focusing on the aggregate bank deposits in the commercial and industrial banks, Li, Strahan, and Zhang (2020) show that within the three weeks spanning from March 11 to April 1, deposits surged by nearly \$1 trillion. This provided banks with ample liquidity, which supported lending activities and helped stabilise the financial system. However, the low-interest rate environment compressed banks' net interest margins, putting pressure on profitability. As the economy recovered and spending normalised, some excess savings gradually decreased, but overall deposit levels remained elevated compared to pre-pandemic levels, as Figure 1 below shows.

**Figure 1.** Average total deposits in the six Western Balkan countries included in our sample (Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, Kosovo, and Serbia) from 2012 to 2021.



Source: Authors' elaboration based on the average total deposits over time.

**A single line connects** annual observations from 2012 through 2021. Deposits increase slowly from 2012 to 2016, more rapidly from 2017 to 2020, and most sharply from 2020 to 2021.

The Western Balkan countries, however, represent a structurally distinct case that warrants separate examination. Unlike most advanced and larger emerging economies, the majority of these countries operate under heavily constrained monetary frameworks, including full euroization in Kosovo and Montenegro, a currency board in Bosnia and Herzegovina, and an exchange rate peg in North Macedonia, leaving their central banks with little or no conventional monetary policy space to respond to the COVID-19 shock through interest rate cuts or asset purchases. Their financial systems are almost exclusively bank-dominated, with underdeveloped capital markets offering borrowers no meaningful alternative to bank credit, which makes the functioning and disruption of the bank lending channel particularly consequential for real economic activity. Compounding this, all six countries deployed loan repayment moratoria as the primary instrument of financial sector relief, temporarily suspending default reclassification rules and artificially stabilising reported asset quality metrics, a policy intervention that simultaneously supported deposit and credit flows in the short run while introducing deferred risks to bank balance sheets and distorting the very indicators that govern subsequent lending behaviour.

Our paper is closely related to the study by Dursun-de Neef and Schandlbauer (2022), which has examined the impact of the increase in bank deposits during COVID-19 and how this has also led to an increase in household loan exposure, especially in countries with higher capital ratios and real estate prices, and highly exposed to Covid-19. In this paper, our main analysis focuses on banks from the Western Balkan countries, examining the impact of the COVID-19 pandemic on the spread of bank deposits and whether banks increased bank lending during uncertain events (i.e., the COVID-19 pandemic). We use a sample spanning over 6 (six) countries, Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, Kosovo and Serbia. We focus on the period 2012–2021 to ensure sufficient pre-COVID observations and to use consistent, comparable bank-level data across the six Western Balkan countries.

In evaluating the current situation resulting from the COVID-19 pandemic, our contribution focuses on three main directions. First, to the best of our knowledge, this is the first study to examine the effect of the COVID-19 pandemic on the spread of bank deposits and whether banks increased bank lending during uncertain events covering Western Balkan countries. We are especially focused on the effect of the pandemic on bank lending behaviour. Second, we focused on the Western Balkan countries because most emerging economies rely on bank lending to finance economic growth, and this is also true for the Western Balkan countries. Third, we investigate these effects by analysing data at the bank level, which enables us to mitigate the influence of differences between banks and minimise the susceptibility of our analysis to endogeneity biases.

In this paper, we first show that in the Western Balkan countries, while overall bank deposits grew during the pandemic and positively correlated with loan growth, the COVID-19 pandemic itself had a negative and significant effect on lending growth, indicating a slowdown in credit extension. Further analysis of high and low growth banks strengthens the evidence that deposits influence loans. The research also finds that a higher non-performing loan ratio and deposit interest rate negatively impact loan growth, positioning this study as a comprehensive analysis of bank lending behaviour during uncertain events in the Western Balkans.

The remainder of the paper is organised as follows: Section 2 reviews the relevant literature and develops the hypothesis, comprising two subsections that cover the theoretical credit channel framework and bank performance and risk-taking during the pandemic. Section 3 addresses the moratoria and monetary policy responses of the six countries during COVID-19. Section 4 describes the data, variable definitions, and empirical methodology, including the model specification and empirical results. Section 5 presents robustness checks, and Section 6 concludes with a discussion of findings, policy implications, and directions for future research.

## 2. Literature review and hypothesis development

This section explores the major academic contributions related to monetary policy and its response during COVID-19, and the factors affecting bank performance and bank lending during the same period, to establish context for the following discussion and analysis.

### 2.1. Monetary policy framework and bank lending during COVID-19

The theoretical foundation for understanding how monetary policy affects credit quantity and quality is provided by Bernanke and Gertler (1995), who argue that the conventional interest rate channel alone is insufficient to explain the magnitude, persistence, and sectoral composition of monetary policy's real effects. Their credit channel theory posits that informational frictions in credit markets most notably asymmetric information between lenders and borrowers give rise to an external finance premium, defined as the wedge between the cost of external borrowing and the opportunity cost of internal funds. Critically, this premium is not fixed but varies endogenously with monetary policy: a tightening raises the external finance premium beyond the direct effect of higher risk-free rates, amplifying the contractionary impulse through two distinct mechanisms. The first, the balance sheet channel, operates on the demand side of the loan market: higher interest rates erode borrower net worth and collateral values, increasing agency costs for lenders and reducing the creditworthiness of borrowers, which in turn restricts their access to and raises the cost of external finance. The second, the bank lending channel, operates on the supply side: a monetary contraction reduces bank reserves and deposit funding, and because banks particularly smaller ones cannot costlessly substitute alternative funding sources, loan supply contracts independently of borrower demand, creating a genuine credit supply shock for those with no recourse to capital markets. Together, these two mechanisms constitute a financial accelerator that propagates and amplifies shocks well beyond what the interest rate channel would predict, with the

earliest and sharpest effects falling on sectors most dependent on external finance, notably residential investment, consumer durables, and inventory financing. This framework carries particular analytical relevance for bank-dominated financial systems such as those of the Western Balkans, where limited capital market development and high financial euroization structurally strengthen both sub-channels, making monetary policy transmission and its disruption during crisis episodes such as the COVID-19 pandemic especially consequential for credit availability.

In addition, a body of literature has examined how the credit channel operated in practice across Central, Eastern and South-Eastern European (CESEE) banking systems during and after the COVID-19 shock, covering both the structural features and the policy interventions. Mérő and Bethlendi (2022) in their analysis find that the widespread use of loan repayment moratoria, regulatory forbearance, direct state support, and monetary easing collectively relieved banks' immediate burdens and contributed to a rapid recovery in capital markets. But the financial systems of the region were not fully equipped with all necessary shock-absorption tools at the onset of the pandemic. Additionally, country-specific factors produced considerably heterogeneous outcomes across what is not a homogeneous region.

Bethlendi (2025) extends this line of inquiry by examining eleven CEE countries in the Covid and post-Covid period, assessing specifically whether the financing of the real economy was impaired from the shock. He also demonstrates that the resilience of banking sectors in a significant part of CEE countries is weaker than in advanced economies. The fiscal and monetary policy broadly moved in the same direction across most countries, and a clear expected relationship emerged between payment moratoria and lending dynamics. They found that while the moratorium proved a suitable tool for managing short-term shocks, its longer-term application weakened lending processes rather than supporting them. This finding directly corroborates the dual nature of the moratorium instrument identified in the Western Balkans context: protective in the acute phase, but distortive of credit allocation over time. Bethlendi,

Mérő, and Orlovits (2024) examine shadow banking dynamics in CEE, while Žunić, Kozarić, and Žunić Dželihodžić (2021), demonstrate for Bosnia and Herzegovina that COVID-19 exerted a delayed effect on non-performing loans precisely because of the moratorium's temporary suppression of reclassification. This finding is consistent with the broader pattern of artificially masked asset quality deterioration documented across the Western Balkans during the forbearance period. Taken together, this regional literature situates the credit channel not merely as a theoretical construct but as an active and empirically traceable mechanism, whose functioning was systematically altered by the exceptional policy toolkit deployed across CESEE economies between 2020 and 2023.

A foundational structural insight comes from Kozak and Wierzbowska (2021), who examine the relationship between market concentration and profit efficiency across 150 banks in 11 EU and 8 non-EU countries in the Southern, Eastern and Central European (SECE) region between 2005 and 2019. They find that concentration positively and non-linearly affects bank efficiency in both EU and non-EU sub-samples, and that bank size and income diversification further enhance efficiency. This evidence is directly relevant to the credit channel framework: more efficient and larger banks are better positioned to sustain lending during shocks, while the concentrated, often foreign-owned structure of banking markets in the region shapes the supply-side conditions under which the bank lending channel operates. Rebić, Paunović, and Popović (2022) deepen this structural inquiry with a focus on Bosnia and Herzegovina, using panel data for 26 banks over the period 2008–2017. Applying the structure-conduct-performance and efficiency hypotheses, they find that concentration enhances banking profitability through the efficient structure mechanism rather than via market power, and that credit risk, deposit risk, cost efficiency and GDP growth are all statistically significant determinants of performance. Their finding that credit risk is a central driver of banking outcomes in BiH provides important empirical grounding for understanding how the moratorium-induced suppression of NPL reclassification distorted the very indicators that banks and regulators depend on to assess

portfolio quality.

The monetary policy transmission dimension of the credit channel receives direct empirical treatment in Petrovska et al. (2022), who deploy a Bayesian FAVAR framework on 140 monthly time series from North Macedonia spanning January 2010 to January 2019. Their findings show that monetary tightening reduces output, inflation, employment, and crucially, bank lending, while raising lending rates and only in the immediate aftermath of the shock the NPL ratio. Importantly, the authors also document the challenges facing monetary authorities of small open economies operating under fixed exchange rate regimes a context shared by North Macedonia, Bosnia and Herzegovina, Kosovo and Montenegro in calibrating a policy instrument whose transmission is partial and structurally constrained. This finding corroborates why the COVID-period policy response in most Western Balkan countries defaulted to regulatory and supervisory tools rather than interest rate action: the conventional credit channel was either unavailable or severely attenuated.

At the borrower level, the credit channel's balance sheet sub-channel is empirically examined by Krasniqi, Kotorri, and Aliu (2023) using loan-level data from Kosovo's bank credit register a dataset of 2,320 observations drawn from an individual bank. The study finds that stronger firm–bank relationships significantly reduce the probability of default, while tighter credit policies higher collateral requirements and higher interest rates have the opposite effect. Controlling for banking sector concentration via the Herfindahl-Hirschman Index and net interest margin, the relationship banking effect loses significance, implying it matters primarily in competitive markets. The economic crisis variable enters negatively, consistent with the financial accelerator mechanism: aggregate downturns erode borrower net worth and collateral values, increasing the external finance premium that all borrowers face. The authors' deployment of Fairlie's decomposition technique to test the interaction between relationship banking and collateral adds methodological rigor to the regional literature on credit risk.

Finally, Hasani Limani (2025) provides long-run empirical evidence for nine Western Balkan

countries over the period 1995–2022, constructing a novel financial development index via principal component analysis and estimating its impact on growth via dynamic GMM. The results confirm a significant positive effect of financial deepening on both economic growth and income per capita, with the positive quadratic term suggesting that the region remains well below the threshold at which “too much finance” could become harmful. This long-run evidence frames the COVID-period disruption in its structural context: the Western Balkans entered the pandemic with shallow financial systems where the credit channel’s real-economy effects are particularly consequential, making both the protective function of the moratorium and the risks of its prolongation all the more acute.

## **2.2. Bank performance and risk-taking practices during COVID-19**

The effects of the monetary policy and the loan moratoria during the same period affected the bank’s performance as well. According to the extant literature, research has examined bank performance during COVID-19. One such study was conducted by Demirgüç-Kunt, Pedraza, and Ruiz-Ortega (2021), who used stock returns based on the event study methodology to measure bank performance. They reveal that announcements of borrower assistance programs significantly boosted bank stock prices, especially for larger banks, likely due to the transfer of risk to the government through guarantees. This positive impact, however, was exclusive to developed countries with greater fiscal capacity, as similar announcements in developing countries had no discernible effect on stock prices. The market response suggests that the feasibility of extensive borrower support is constrained in economies with limited fiscal space. Liquidity support measures positively impacted bank stock prices, particularly for smaller banks and those with less liquid assets. Conversely, announcements of countercyclical prudential measures led to negative abnormal returns, suggesting market concern over depleted capital buffers and potential increases in riskier lending. Monetary policy rate cuts showed mixed results overall but did reduce the liquidity premium, indicating their continued

relevance in the early stages of the crisis response. Cucinelli (2016) found that most banks that experienced rapid growth in the pre-crisis period also exhibited a higher increase in non-performing loans and a more significant decline in lending activity during the financial crisis. However, 34% of banks that grew quickly before the crisis showed only a modest rise in non-performing loans in the years after the crisis. However, Tran et al. (2022) analyse a global sample of listed banks from Q1 2020 to Q1 2021 and find a decline in loan growth, asset quality, and earnings ratios during the pandemic year. The authors indicate a global increase in both accounting- and market-based risks, signaling reduced banking stability across U.S. and non-U.S. banks, and across high- and low-income countries. Additionally, they find that country-wide economic support and stringency policies significantly moderate the pandemic’s negative impact on banks’ riskiness.

The reasons behind the increase in bank deposits, as examined in the literature, include shifts in consumer behaviour (Parker et al. 2022), government interventions (Aizenman, Jinjark, and Spiegel 2022), and economic uncertainty. During this period, many individuals and businesses increased their savings due to reduced spending opportunities (e.g., travel, dining, entertainment) (Dursun-de Neef and Schandlbauer 2022) and increased economic uncertainty (Coibion et al. 2024). This behavior was amplified during the pandemic as people sought the security of insured bank accounts over riskier investments. This led to a sharp rise in bank deposits. Moreover, governments worldwide rolled out massive fiscal stimulus programs (Feyen et al. 2021), including direct payments to individuals (e.g., stimulus checks in the U.S.) and support for businesses. A substantial share of these funds ended up in bank accounts, thereby boosting deposit levels. In parallel, fear of job losses, income instability, and economic uncertainty prompted households to save more as a precautionary measure (Coibion et al. 2024). Furthermore, central banks worldwide slashed interest rates to historic lows to stimulate economic activity. As a result, deposit interest rates fell, reducing returns for savers. However, this did not deter deposit growth, as individuals and businesses

prioritized safety and liquidity over returns. The pandemic also accelerated the adoption of digital banking services, making it easier for individuals and businesses to manage their deposits online. This shift also contributed to deposit growth, as people moved money into banks for convenience and security.

Specifically, using a bank-level COVID-19 exposure measure, Dursun-de Neef and Schandlbauer (2022) found that banks with higher exposure to the COVID-19 pandemic experienced a notable increase in their core deposits, with a 1 percentage point rise in pandemic exposure corresponding to a 0.23 percentage point increase in core deposits relative to total assets. In addition, they investigated the surge in bank deposits during COVID-19 and examined whether banks utilised these increased funds for lending. It further confirms that deposit accumulation was partly driven by reduced spending due to pandemic-related restrictions, supporting the "forced savings" view. In addition, banks with higher pandemic exposure in counties with greater spending reductions increased their real estate loan issuance. This increase in real estate lending was more evident for banks with higher capital ratios and those in counties with higher house prices. In summary, the research suggests that pandemic-induced spending limitations led to substantial deposit increases, which banks channeled into expanding their real estate loan portfolios. Levine et al. (2021) examine the factors that contributed to the substantial inflow of bank deposits during the pandemic. The research revealed that heightened concerns about potential job and income losses resulted in decreased current spending, increased local bank retail deposits, and reduced local deposit interest rates.

On another note, exploring literature on the impact of the COVID-19 pandemic on bank lending results in two categories of studies: single-country and cross-country macro studies. Kryzanowski, Liu, and Zhang (2022), using a sample of Chinese banks covering the period Q1 2017 – Q1 2022, found that banks in China are associated with a reduction in bank lending and provide some evidence of an increase in the non-performing loan ratio during the COVID-19 pandemic. In the same vein, Allen et al. (2017) investigate the

relationship between bank lending dynamics, ownership structures, and various crisis types in Central and Eastern European (CEE) banking systems from 1994 to 2010, using a dataset of over 400 banks. They found that the influence of ownership structure on lending activities is contingent on the type of crisis host, home, global, or simultaneous while bank-specific factors like deposit growth and profitability significantly affect credit growth across normal and crisis periods. Kořak et al. (2015) show a significant positive impact of the Tier 1 capital ratio on bank loan growth during the global financial crisis. This effect appears particularly pronounced among smaller banks and those in non-OECD and BRIC countries. In addition, Gjeçi, Marinč, and Rant (2023) examine the impact of non-performing loans (NPLs) on bank lending across 42 countries from 2000 to 2017, revealing a significant negative association between NPL levels and bank loan growth across various regions. Interestingly, this negative impact is more pronounced for well-capitalised banks. The research finds no evidence that asset management companies mitigate this negative relationship, and the results remain consistent with alternative measures of credit risk and different model specifications. In addition, Dursun-de Neef and Schandlbauer (2021) investigate the responses of European banks to the COVID-19 outbreak, specifically examining the divergence in behaviour between banks with weaker and stronger pre-pandemic capital positions. Using a bank-level COVID-19 exposure measure, the study showed that European banks reduced lending at the pandemic's onset, but those more exposed to COVID-19 experienced a smaller decrease. The analysis reveals significant differences in capitalisation: worse-capitalized banks reduced lending less, while better-capitalized banks reduced lending more substantially. Furthermore, better-capitalized banks saw a greater increase in delinquent and restructured loans than their less-capitalized counterparts.

Çolak and Öztekin (2021) investigate how the COVID-19 pandemic impacted bank lending worldwide. The research revealed that countries facing a more severe health crisis experienced a decrease in bank lending activity. This negative effect on lending was found to be influenced by a

bank's financial health, the structure of the banking market, the prevailing regulatory and institutional landscape, the maturity of financial intermediaries, and debt markets. Vo (2018) found that bank lending behaviour in emerging markets depends on bank-specific and macroeconomic factors. On the other hand, there is no significant impact of bank market structure on bank-lending behavior. The extant literature suggests that COVID-19 exerted a pronounced impact on banks' performance, growth, risk activities, bank deposits, and bank lending.

Taken together, the reviewed literature suggests that in bank-dominated financial systems with constrained monetary policy frameworks such as those of the Western Balkans deposit inflows constitute the primary funding source for loan supply, and their growth during the pandemic period should have supported lending activity through the bank lending channel. At the same time, the simultaneous rise in non-performing loans, heightened uncertainty, and demand-side contraction introduced countervailing forces that may have offset this supply-side stimulus, making the net direction of the deposit–lending relationship an empirical question. Accordingly, the hypothesis to be tested for the Western Balkan countries is stated as follows:

*Hypothesis:* Loan growth is influenced by deposit growth during the COVID-19 period, either positively or negatively.

### 3. Institutional and policy background

Due to the different monetary regimes, the response of monetary policies to COVID-19 was highly differentiated across the six countries. Montenegro and Kosovo have unilaterally euroized with the ECB. For central banks in Kosovo, Montenegro, and Bosnia and Herzegovina, the long period of low interest rates negatively affected their revenues more pronouncedly because they cannot use seigniorage to finance their operations. QE is structurally impossible for these institutions.

Bosnia and Herzegovina operates a currency board pegging the convertible mark to the euro at a fixed rate. The Central Bank of BiH maintains 100% foreign-exchange cover of the monetary base and cannot conduct open-market operations, set interest rates, or create liquidity at will. Its role in the COVID-19 response was essentially limited to regulatory measures and coordination with the banking agencies. These three had essentially no conventional monetary levers to pull. Their COVID-19 response on the monetary/financial side was confined to: supervisory flexibility on NPL classification and loan restructuring, encouraging banks to offer payment deferrals, temporary restrictions on dividend payments to preserve capital, and coordination with parent bank groups (most banks are EU-headquartered subsidiaries) through the Vienna Initiative framework to prevent deleveraging.

North Macedonia operates an exchange rate peg against the euro (denar–euro). While the NBRM has a key policy rate, its room to maneuver is constrained by the need to defend the peg and by the structurally weak pass-through of its policy rate to bank lending rates. The interest rate pass-through of the monetary policy rate to domestic market interest rates in North Macedonia is modest compared to peers in the region, partly due to structurally high liquidity in the banking system and a shallow interbank market. The North Macedonia NBRM revised its credit risk regulation to encourage banks to temporarily restructure loans and relaxed loan classification standards for NPLs. The NBRM also reduced the base for the reserve requirement by the amount of new loans extended to affected sectors of the economy, effectively incentivizing fresh credit to COVID-hit sectors. The NBRM also cut its key interest rate, though with the caveat that rate transmission to actual lending rates is structurally weak.

Serbia, on the other hand, followed the most aggressive conventional easing liquidity operations. The NBS had the broadest toolkit among the six and used it most actively. The response had several layers, including: (a) Rate cuts, (b) Liquidity operations, (c) ECB set up of repo line arrangement for Serbia, (d) Reserve requirement adjustment, and (e) Exchange rate stability.

Albania's response was the most thoughtful and transparently documented in the region. The Bank of Albania cut interest rates early on, bringing them to an all-time low of 0.5%. It also adopted a strategy of quantitatively unrestricted injections of liquidity and gave transparent forward guidance emphasizing its commitment to supporting the economy. The Bank of Albania did not engage in quantitative easing, although it had a contingency plan to deploy it. The stimulus also took the form of removing the quantitative limits on liquidity injection into the system, aiming to better supply the banking market and the Albanian economy. The volume of liquidity injected each week fluctuated around 2% of the system. Albania also received an ECB euro liquidity repo line (parallel to Serbia's) and drew on the IMF's Rapid Financing Instrument, as well as EU macro-financial assistance, meaning international institutions supplemented the domestic CB's limited toolkit.

In terms of how CB interest rates affected lending during COVID-19, the transmission was real but partial and varied sharply by country. Serbia showed the clearest transmission: the 125bp of cuts in 2020 brought Serbia's lending rate to an all-time low of 1.9%, a dramatic fall. New credit grew at roughly 9% in 2020 (one of the strongest in the region), driven particularly by corporate and government-backed lending. The cheap liquidity lines reinforced the rate signal. However, demand for credit contracted for the first time in five years during this period, as investment collapsed while working capital needs continued to play a positive contributing role. So the rate cuts kept borrowing costs low, but demand-side uncertainty meant new investment lending fell anyway. Albania saw a similar story: the rate cut to 0.5% and unlimited liquidity supported existing borrowers' debt service costs and sustained credit flow, with moratoria covering an estimated 20,000+ firms with over €2 billion in credit. Lending rates fell and credit growth remained positive through 2020, picking up sharply in 2021.

North Macedonia's rate cuts had limited direct transmission to lending rates due to the structural issues noted above (excess liquidity in banks, a shallow interbank market). The reserve requirement reduction targeted at new lending

was a more direct and effective instrument for stimulating credit to COVID-19 affected sectors. Montenegro, Kosovo, and Bosnia had no interest rate lever. Their banking systems, dominated by EU-headquartered parent groups, were affected more by group-level funding conditions (i.e., what the ECB did) than by any local CB action. Montenegro's credit actually contracted in 2020, the worst outcome in the region because its tourism-dependent economy was so severely hit that demand for credit collapsed regardless of funding conditions.

While the Fed, ECB, Bank of England, and others deployed trillions in outright asset purchases, yield curve control, corporate bond buying, and emergency facilities of unprecedented scale, in the Western Balkans, the CB toolkit was constrained from the start by euroization, currency pegs, underdeveloped bond markets, and shallow interbank markets. Only Albania and Serbia had inflation-targeting frameworks capable of meaningful conventional easing, and neither deployed outright QE, though Albania had the contingency plan ready. The main macro stabilization work was instead carried out by fiscal policy (spending and guarantees backed by IMF, EU, and World Bank loans), moratoria, and the regulatory forbearance described in the previous analysis.

#### 4. Data sample and methodology

Our analysis focused on the Western Balkan countries and covered commercial, savings, and cooperative banks from 2012 to 2021. We combine bank-level and country-level data. We obtained bank-level data from the Fitch Connect platform. The database provides detailed information on the bank's balance sheet and income statement. Furthermore, all bank deposit and loan data are expressed in euro currency. Consequently, the impact of exchange rate fluctuations is expected to be limited, particularly in the presence of relatively high euroization and broadly balanced foreign currency positions across the banking sectors included in the sample. We removed all duplicate observations and winsorised all the variables at the 1% level to eliminate the presence of outliers. Our sample accounts for several macroeconomic

variables obtained from the World Bank (WB) and the International Monetary Fund (IMF) database. Table 1 presents the descriptive statistics of the main variables.

#### 4.1. Empirical model

We examine whether the Western Balkan countries experienced an increase in their savings during the COVID-19 pandemic outbreak and whether this increase might lead to an increase in loan growth using the following specification:

$$\text{LoanGrowth}_{i,j,t} = \alpha_i + \beta \text{DepositGrowth}_{i,j,t} + \gamma \text{Bank}_{i,j,t} + \delta \text{Macro}_{j,t} + \mu_i + \theta_t + \epsilon_{i,j,t} \quad (1)$$

where:  $\text{LoanGrowth}_{i,j,t}$  is the dependent variable, measured by the total gross loan rate for bank  $i$ , located in country  $j$ , in year  $t$ . We expect that loan growth is positively associated with developments in lending activity, it is worth noting that certain studies have demonstrated an adverse relationship. Our main explanatory variable is  $\text{DepositGrowth}_{i,j,t}$  which indicates the growth rate of total deposits for bank  $i$ , located in country  $j$ , in year  $t$ .  $\text{Bank}_{i,j,t}$  represents the vector of bank-specific variables as a control variables.  $\text{NPL}_{i,j,t}$  present the non-performing loans, measured by the total impaired loans over total gross loans for bank  $i$ , located in country  $j$ , in year  $t$ . We use this indicator to measure the quality of bank loan portfolio (similar to e.g., Ghosh 2015; Louzis, Vouldis, and Metaxas 2012; Gjeçi and Marinč 2022).  $\text{Capitalization}_{i,j,t}$  is the ratio of equity over total assets for bank  $i$ , located in country  $j$ , in year  $t$ . According to Foos,

Norden, and Weber (2010), Kishan and Opiela (2006) and Gjeçi, Marinč, and Rant (2023) more solvent banks play an important role in lending. Thus, a positive relationship is expected.  $\text{ROAE}_{i,j,t}$  present the return on average equity and was used as proxies for financial performance (see Kořak et al. 2015; Athanasoglou, Brissimis, and Delis 2008).

Additionally,  $\text{Macro}_{j,t}$  is a vector of macroeconomic variables.  $\text{GDP growth}_{j,t}$  denotes the annual percentage growth rate of GDP in country  $j$ , at time  $t$ . We expect a positive relationship between loan and GDP growth (Gambacorta and Mistrulli 2004).  $\text{Inflation}_{j,t}$  measures the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services in country  $j$ , at time  $t$ .  $\text{Deposit Ir}_{j,t}$  stands for the deposit interest rate, which is the rate paid by commercial or similar banks for demand, time, or savings deposits in country  $j$ , at time  $t$ .  $\mu_i$  presents the bank fixed-effect, which controls for time-invariant bank characteristics.  $\theta_t$  presents the year fixed effect, which mitigates the influence of time-varying macroeconomic variables that might otherwise result in fluctuations in the loan growth rate.  $\epsilon_{i,j,t}$  is the error term.

#### 4.2. Descriptive statistics

Table 1 presents descriptive statistics. Our sample's average deposit growth rate is 14.55%, and the average loan growth rate is 9.57%. The average non-performing loans ratio is 15.20%, which indicates that the high level of NPL in WB countries continues to pose a challenge.

**Table 1.** Descriptive statistics

| Variables      | Obs.  | Mean  | St.Dev | Min    | Max   |
|----------------|-------|-------|--------|--------|-------|
| NPL            | 781   | 15.20 | 19.77  | 0.730  | 97.98 |
| ROAE           | 987   | 3.257 | 15.60  | -80.07 | 31    |
| Loan Growth    | 975   | 9.569 | 22.83  | -37.87 | 153.8 |
| Capitalization | 1,018 | 15.25 | 7.237  | 3.890  | 43.33 |
| Deposit Growth | 935   | 14.55 | 29.05  | -31.84 | 197.3 |
| GDP growth     | 1,240 | 2.316 | 3.645  | -15.31 | 12.43 |
| Inflation      | 1,240 | 1.672 | 1.967  | -1.584 | 7.694 |
| Deposit Ir     | 866   | 1.833 | 1.279  | 0.371  | 5.425 |

Source: Authors' calculation

The average capitalisation level stands between 3.890% and 43.33%, with an average value of 15.25%, signifying that the banks are in a state of being well-capitalised.

### 4.3. Model testing

We have conducted diagnostic assessments to ensure the accuracy of our dataset and to identify the optimal econometric panel regression model. We conducted the study using fixed and random effect panel regression models. Additionally, we employed the Hausman test to choose between the fixed and random effects models. The Hausman test indicates that the fixed effects model is more appropriate ( $\chi^2 = 31.85$ ,  $p = 0.0000$ ), confirming that the random-effects specification would be inconsistent for our data.

Our analytical focus encompassed two pivotal diagnostic evaluations: the initial aimed at mitigating multicollinearity, while the latter probed the presence of heteroskedasticity within our data. Table 2 presents the correlation matrix. We observe

that deposit and loan growth rates are positively correlated (0.627). This coefficient, 0.627, is statistically significant and the highest among the independent variables, which indicates that we do not have the presence of multicollinearity in our data. According to O'Brien (2007), multicollinearity assumes critical importance as variance inflation factors exceed the threshold of 10. Consequently, we posit that the potential for multicollinearity to undermine the validity of the estimated parameters is limited (see also Bajra and Čadež 2018). In addition, the non-performing loans ratio is negatively correlated with the deposit and loan growth ratios (-0.042) and (-0.056), respectively. Loan growth and deposit growth have a strong positive relationship (0.627). This relationship implies that banks with higher loan growth rates often experience higher growth in deposits due to effective marketing and service strategies that drive both lending and deposit activities in this region. Interestingly, there is a positive association between the loan growth ratio and GDP growth, but the correlation coefficient is very low (0.006).

**Table 2.** Full-Period Correlation Matrix

| Variables          | (1)               | (2)               | (3)               | (4)               | (5)               | (6)               | (7)              | (8)   |
|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|-------|
| (1) Loan Growth    | 1.000             |                   |                   |                   |                   |                   |                  |       |
| (2) Deposit Growth | 0.627<br>(0.000)  | 1.000             |                   |                   |                   |                   |                  |       |
| (3) NPL            | -0.042<br>(0.245) | -0.056<br>(0.128) | 1.000             |                   |                   |                   |                  |       |
| (4) Capitalization | -0.019<br>(0.551) | -0.010<br>(0.752) | 0.116<br>(0.001)  | 1.000             |                   |                   |                  |       |
| (5) ROAE           | 0.102<br>(0.002)  | 0.011<br>(0.731)  | -0.272<br>(0.000) | -0.111<br>(0.000) | 1.000             |                   |                  |       |
| (6) GDP growth     | 0.006<br>(0.860)  | 0.044<br>(0.182)  | -0.039<br>(0.282) | -0.040<br>(0.206) | 0.084<br>(0.008)  | 1.000             |                  |       |
| (7) Deposit Ir     | 0.041<br>(0.281)  | -0.001<br>(0.977) | 0.326<br>(0.000)  | 0.061<br>(0.102)  | -0.105<br>(0.005) | -0.132<br>(0.000) | 1.000            |       |
| (8) Inflation      | 0.037<br>(0.249)  | 0.083<br>(0.011)  | -0.025<br>(0.484) | 0.091<br>(0.004)  | -0.093<br>(0.004) | 0.091<br>(0.001)  | 0.146<br>(0.000) | 1.000 |

Note: The table reports pairwise correlation coefficients, with corresponding p-values presented below each estimate. Source: Authors' calculation.

To examine whether the relationships between variables changed during the COVID-19 period, we

estimated the correlation matrix for the COVID-19 period only. The results are presented in Table 2.1.

**Table 2.1.** Correlation Matrix — COVID-19 Period

| Variables          | (1)               | (2)               | (3)               | (4)               | (5)              | (6)               | (7)              | (8)   |
|--------------------|-------------------|-------------------|-------------------|-------------------|------------------|-------------------|------------------|-------|
| (1) Loan Growth    | 1.000             |                   |                   |                   |                  |                   |                  |       |
| (2) Deposit Growth | 0.822<br>(0.000)  | 1.000             |                   |                   |                  |                   |                  |       |
| (3) NPL            | -0.044<br>(0.573) | -0.009<br>(0.905) | 1.000             |                   |                  |                   |                  |       |
| (4) Capitalization | -0.192<br>(0.009) | -0.106<br>(0.157) | -0.039<br>(0.619) | 1.000             |                  |                   |                  |       |
| (5) ROAE           | 0.018<br>(0.806)  | 0.006<br>(0.937)  | -0.172<br>(0.028) | -0.219<br>(0.003) | 1.000            |                   |                  |       |
| (6) GDP growth     | 0.004<br>(0.961)  | 0.103<br>(0.167)  | -0.030<br>(0.702) | -0.035<br>(0.631) | 0.133<br>(0.071) | 1.000             |                  |       |
| (7) Deposit Ir     | -0.012<br>(0.898) | -0.079<br>(0.391) | -0.250<br>(0.009) | 0.009<br>(0.918)  | 0.053<br>(0.566) | -0.212<br>(0.007) | 1.000            |       |
| (8) Inflation      | 0.144<br>(0.053)  | 0.125<br>(0.093)  | -0.116<br>(0.137) | 0.028<br>(0.706)  | 0.096<br>(0.193) | 0.715<br>(0.000)  | 0.021<br>(0.792) | 1.000 |

Comparison of the correlation matrices shows that the COVID-19 period altered the relationships among key variables. In the full period (Table 2), loan growth and deposit growth were positively correlated (0.627), while ROAE was negatively correlated with NPL (-0.272). During the COVID-19 period (Table 2.1), the loan-deposit growth correlation strengthened (0.822), whereas correlations involving ROAE, such as with loan growth and capitalization, weakened. These suggest that banking activity became more closely linked in terms of growth during the pandemic, while profitability indicators became less connected to traditional financial measures.

#### 4.4 Empirical results

To capture the effect of COVID-19 on loan growth and due to a limited amount of data, we divided our database based on the median value of the loan growth over the 2019 to 2021 period. We have estimated three different models. Model 1 is based

on the entire dataset, providing a comprehensive analysis that includes all banks regardless of their loan growth ratio. As an indicator to divide the database, the median loan growth ratio of 8.41% was used. In contrast, Model 2 focuses specifically on banks with a loan growth ratio above this median value, thereby analysing the subset of banks experiencing higher-than-average loan growth. This allows to examine the characteristics and behaviours of more aggressively growing banks. Conversely, Model 3 targets banks with a loan growth ratio below the median value of 8.41%, thereby focusing on the subset of banks with slower loan growth. This model analyses the remaining data. The empirical results are presented in Table 3.

The results show that the deposit growth rate is positively and statistically significantly associated with the loan growth ratio in all three models. This proves that during uncertain economic events, individuals and businesses become more risk-averse and prefer to maintain their funds in a secure and easily accessible form of assets. We observe that

the magnitude of the coefficient in Model 2 is greater compared with Model 3, such as 0.803 and 0.100, respectively. This indicates that the effect of the deposit growth on the loan growth is stronger in Model 2 compared to Model 3. This indicates that Model 2 displays a stronger relationship between deposit growth and loan growth, suggesting that fluctuations in deposit growth exert a greater influence on loan growth in this model. Regarding the control variables, the non-performing loan ratio and deposit interest rate are negative and statistically significant in Model 1, indicating that banks tend to reduce their lending activities and increase their deposit interest rates during periods of high deposit growth, respectively. This indicates that banks could exercise greater caution

in lending practices during periods of high deposit growth, likely due to heightened risk aversion or more stringent regulatory standards. On the contrary, in Models 2 and 3, the association between NPL and loan growth is not statistically significant.

The positive deposit lending relationship is consistent with the bank lending channel (deposits are the raw material of loan supply), the negative NPL effect is consistent with the balance sheet channel (deteriorating asset quality raises the external finance premium and constrains new lending); the insignificance of the central bank interest rate (Table 4) is consistent with the constrained monetary transmission documented for most of the six countries in Section 3.

**Table 3. Fixed effects panel regression analysis**

| Dependent variable<br>Loan Growth | Model (1)           | Model (2)          | Model (3)          |
|-----------------------------------|---------------------|--------------------|--------------------|
| Deposit Growth                    | 0.611***<br>(4.91)  | 0.803***<br>(5.12) | 0.100***<br>(3.61) |
| NPL                               | -0.136**<br>(-2.33) | 0.115<br>(0.97)    | 0.00483<br>(0.13)  |
| Capitalization                    | 0.580**<br>(2.07)   | 1.211***<br>(2.87) | 0.0480<br>(0.36)   |
| ROAE                              | 0.157*<br>(1.91)    | -0.0292<br>(-0.21) | 0.158**<br>(2.26)  |
| GDP growth                        | 0.830**<br>(2.06)   | 1.549**<br>(2.15)  | 0.129<br>(0.67)    |
| Deposit Ir                        | -4.571**<br>(-2.24) | -5.637*<br>(-1.76) | 0.501<br>(0.64)    |
| Inflation                         | -1.020<br>(-1.02)   | -0.560<br>(-0.53)  | 0.495<br>(0.77)    |
| Intercept                         | -2.427<br>(-0.66)   | -5.838<br>(-0.72)  | -4.577<br>(-1.50)  |
| Coefficient estimates             | FE                  | FE                 | FE                 |
| No. Obs.                          | 477                 | 194                | 320                |
| Bank fixed-effect                 | Yes                 | Yes                | Yes                |
| Time fixed-effect                 | Yes                 | Yes                | Yes                |

Note: The robust standard errors are clustered at the bank and year level. T-statistics are in parentheses, and asterisks \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively. Source: Authors' calculation.

## 5. Robustness check

In this section, we perform a robustness check by adding COVID-19 as an additional independent variable to examine its impact on loan growth. Including the COVID-19 variable allows us to account for the pandemic's potential effect on bank risk-taking. We find a significant negative relationship between COVID-19 and loan growth. Additionally, the central bank interest rate (CBIR) was included to reflect the stance of monetary policy. The estimated coefficient is positive but statistically insignificant, suggesting that monetary policy does not have a measurable effect on loan growth within this model.

**Table 4. Fixed effects panel regression analysis**

| Dependent variable<br>Loan Growth | Model (1)            | Model (2)          |
|-----------------------------------|----------------------|--------------------|
| COVID-19                          | -3.298**<br>(-2.37)  |                    |
| CBIR                              |                      | 1.663<br>(0.45)    |
| Deposit Growth                    | 0.577***<br>(5.91)   | 0.565***<br>(3.49) |
| NPL                               | 0.0293<br>(0.30)     | -0.0794<br>(-1.27) |
| Capitalization                    | 0.657*<br>(1.70)     | 0.729*<br>(1.84)   |
| ROAE                              | 0.199**<br>(2.33)    | 0.226**<br>(2.36)  |
| GDP growth                        | -0.751***<br>(-3.00) | 0.947*<br>(1.77)   |
| Deposit Ir                        | -1.947***<br>(-2.69) | -6.091<br>(-1.26)  |
| Inflation                         | 0.867*<br>(1.98)     | -0.280<br>(-0.20)  |
| Intercept                         | -3.765<br>(-0.68)    | -0.940<br>(-0.17)  |
| Coefficient estimates             | FE                   | FE                 |
| No. Obs.                          | 535                  | 301                |
| Bank fixed-effect                 | Yes                  | Yes                |

Note: The robust standard errors are clustered at the bank and year level. T-statistics are in parentheses, and asterisks \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

Source: Authors' calculation.

This finding should not be read as contradicting the positive deposit–lending relationship established in the baseline models, but rather as its necessary complement. The two results together tell a coherent story: the bank lending channel was functioning deposit inflows were being converted into loans at statistically significant rates but the pandemic simultaneously exerted an independent contractionary force on credit demand that operated through a separate mechanism. That is the collapse of investment appetite heightened borrower risk aversion and the deterioration of net worth and collateral values consistent with the balance sheet channel described by Bernanke and Gertler (1995). In other words, banks had the liquidity and, in the aggregate, the willingness to lend, but the demand-side destruction brought by the COVID-19 shock falling incomes, suspended business activity, and acute uncertainty about future cash flows was sufficiently severe to produce a net contraction in credit extension, echoing the creditless recovery pattern documented by Bethlendi (2025).

## 6. Conclusion and discussion

This paper examines whether the surge in bank deposits observed across Western Balkan countries during the COVID-19 pandemic translated into expanded bank lending and situates this question within the structural constraints and policy responses specific to the region. Drawing on a bank-level panel dataset spanning six countries over the period 2012–2021 and employing fixed-effects estimation, our findings confirm that deposit growth positively and significantly affects loan growth across all model specifications. This relationship strengthened during the pandemic period, as evidenced by the higher correlation between deposit and loan growth in the COVID-19 sub-period correlation matrix, and was more pronounced among high-growth banks, suggesting that the deposit channel of credit supply operated most powerfully where banks had the institutional capacity and appetite to deploy liquidity.

These findings are consistent with the bank lending channel of the credit channel of monetary policy transmission, as theorised by Bernanke and

Gertler (1995). In bank-dominated financial systems with limited capital market alternatives which describes all six Western Balkan countries the availability of deposit funding is a primary determinant of loan supply. When deposit inflows surged, driven by precautionary saving, restricted consumption opportunities, and government transfers, banks had the raw material to expand credit. Our results therefore extend the evidence of Dursun-de Neef and Schandlbauer (2022) who document the deposit–lending link for U.S. banks — to a set of emerging, structurally distinct banking markets where capital market substitution is not available.

At the same time, the robustness check findings reveal the other side of the same period: COVID-19 itself exerted a negative and statistically significant effect on loan growth. This is not contradictory but complementary. As Bethlendi (2025) documents for the broader CEE region, credit growth decelerated or contracted in real terms across most countries despite ample liquidity, because demand-side destruction collapsed investment, heightened uncertainty, and income losses offset the supply-side stimulus provided by deposit inflows and regulatory forbearance. Montenegro offers the starkest illustration: its credit stock actually contracted in 2020 despite the moratorium framework, because tourism-sector income collapse was severe enough to overwhelm any liquidity-side support. The negative and significant NPL coefficient in the baseline model reinforces this: asset quality deterioration even when artificially suppressed by moratorium-induced forbearance rules constrained new lending through the balance sheet sub-channel of the credit channel, consistent with the findings of Krasniqi, Kotorri, and Aliu (2023) for Kosovo-level loan data.

The monetary policy context documented in this paper underscores an important structural asymmetry in the region's policy transmission. Only Albania and Serbia possessed inflation-targeting frameworks capable of meaningful rate cuts; the remaining four countries were constrained by euroization or hard pegs. The finding that the central bank interest rate is statistically insignificant in the robustness model is therefore not surprising it reflects the structural reality identified by Petrovska et al. (2022) for North Macedonia and consistent

across most of the region, that the interest rate channel of credit transmission is attenuated, and that supply-side measures (moratoria, reserve requirement adjustments, liquidity injections) did more work during the COVID period than conventional monetary policy.

The moratorium framework, discussed extensively in the literature review, interacts with our findings in a nuanced way. The moratoria sustained deposit flows by preventing a wave of defaults that would have eroded bank balance sheets and tightened credit supply; in this sense they reinforced the positive deposit–lending relationship we document. But as Mérő and Bethlendi (2022) and Bethlendi (2025) warn, and as the NPL evidence across the region confirms, the moratoria also masked the true deterioration of asset quality, creating a deferred reckoning that manifested only when forbearance was unwound. The long-run financial deepening evidence of Hasani Limani (2025) contextualises this further: the Western Balkans entered the pandemic with shallow financial systems, meaning credit channel effects, both in their protective and distortive dimensions were particularly consequential for real economic activity.

Several limitations of the present study suggest avenues for future research. First, our dataset covers 2012–2021, ending before the full post-moratorium NPL unwinding was complete; extending the sample through 2023–2024 would allow examination of whether the creditless recovery pattern identified for CEE by Bethlendi (2025) is replicated in the Western Balkans. Second, our bank-level analysis does not distinguish between household and corporate loan segments, which exhibited markedly different dynamics during the pandemic, a disaggregated analysis would enrich the credit channel interpretation. Third, the six countries studied span very different monetary regimes; future work using interaction terms between the monetary regime type and deposit growth could test whether the deposit–lending channel is stronger in the euroized economies (where there is no central bank safety valve) than in the inflation-targeting ones. Finally, cross-border ownership effects the majority of Western Balkan banks, which are subsidiaries of EU-headquartered groups

represent an additional channel of credit transmission that bank-level fixed effects only partially absorb, and which deserves direct investigation.

### Acknowledgment

The authors would like to express their gratitude for the support provided by the University of New York, Tirana. The paper has been presented at the 2<sup>nd</sup> Conference on International Finance, Sustainable and Climate Finance and Growth (CINSC) in Ljubljana, Slovenia, on June 18<sup>th</sup> - 20<sup>th</sup>, 2023, and at the 33<sup>rd</sup> International Conference organised by RSEP at the University of Washington Center in Rome on 23–24 November 2023. All views expressed in this publication are entirely those of the authors. All errors remain our own.

### Conflict of interest

The authors declare that they have no conflict of interest.

### Funding

This research received no external funding.

## References

- Aizenman, J., Jinjark, Y., and Spiegel, M. M. 2022. *Fiscal stimulus and commercial bank lending under COVID-19*. NBER Working Paper 29882. Cambridge, MA: National Bureau of Economic Research.
- Allen, F., Jackowicz, K., Kowalewski, O., and Kozłowski, Ł. 2017. Bank lending, crises, and changing ownership structure in Central and Eastern European countries. *Journal of Corporate Finance* 42: 494–515.
- Athanasoglou, P. P., Brissimis, S. N., and Delis, M. D. 2008. Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money* 18 (2): 121–136.
- Bajra, U. and Čadež, S. 2018. Audit committees and financial reporting quality: The 8th EU Company Law Directive perspective. *Economic Systems* 42 (1): 151–163.
- Bajra, U., Aliu, F., Aver, B., and Čadež, S. 2023. COVID-19 pandemic-related policy stringency and economic decline: Was it really inevitable? *Economic Research-Ekonomska Istraživanja* 36 (1): 499–515.
- Bernanke, B. S. and Gertler, M. 1995. Inside the black box: The credit channel of monetary policy transmission. *Journal of Economic Perspectives* 9 (4): 27–48.
- Bethlendi, A. 2025. Financing the real economy in the Central and Eastern European countries in the COVID and post-COVID period. *Külgazdaság* 69 (3–4): 125–158.
- Bethlendi, A., Mérő, K., and Orlovits, Z. 2024. Shadow banking in Central and Eastern Europe: Specificities and drivers. *South East European Journal of Economics and Business* 19 (2): 13–29.
- Coibion, O., Georgarakos, D., Gorodnichenko, Y., Kenny, G., and Weber, M. (2024). The effect of macroeconomic uncertainty on household spending. *American Economic Review* 114 (3): 645–677.
- Cucinelli, D. 2016. Can speed kill? The cyclical effect of rapid credit growth: Evidence from bank lending behavior in Italy. *The Journal of Risk Finance* 17 (5): 562–584.
- Çolak, G. and Öztekin, Ö. 2021. The impact of COVID-19 pandemic on bank lending around the world. *Journal of Banking & Finance* 133: 106207.
- Demirgüç-Kunt, A., Pedraza, A., and Ruiz-Ortega, C. 2021. Banking sector performance during the COVID-19 crisis. *Journal of Banking & Finance* 133: 106305.
- Duan, Y., El Ghouli, S., Guedhami, O., Li, H., and Li, X. 2021. Bank systemic risk around COVID-19: A cross-country analysis. *Journal of Banking & Finance* 133: 106299.
- Dursun-de Neef, H. Ö. and Schandlbauer, A. 2021. COVID-19 and lending responses of European banks. *Journal of Banking & Finance* 133: 106236.
- Dursun-de Neef, H. Ö. and Schandlbauer, A. 2022. COVID-19, bank deposits, and lending. *Journal of Empirical Finance* 68: 20–33.
- Feyen, E., Alonso Gispert, T., Kliatskova, T., and Mare, D. S. 2021. Financial sector policy response to COVID-19 in emerging markets and developing economies. *Journal of Banking & Finance* 133: 106184.

- Foos, D., Norden, L., and Weber, M. 2010. Loan growth and riskiness of banks. *Journal of Banking and Finance* 34 (12): 2929-2940.
- Gambacorta, L. and Mistrulli, P. E. 2004. Does bank capital affect lending behavior? *Journal of Financial Intermediation* 13 (4): 436-457.
- Ghosh, A. 2015. Banking-industry specific and regional economic determinants of non-performing loans: Evidence from US states. *Journal of Financial Stability* 20: 93-104.
- Gjeçi, A. and Marinč, M. 2022. Corruption and non-performing loans. *Economic and Business Review* 24 (4): 240-259.
- Gjeçi, A., Marinč, M., and Rant, V. 2023. Non-performing loans and bank lending behaviour. *Risk Management* 25 (1): 1-26.
- Hasani Limani, V. 2025. Rethinking financial deepening: Financial development and growth in Western Balkan countries with reference to the levels of economic development and Euro-integration status. *South East European Journal of Economics and Business* 20 (1): 113-128.
- Kishan, R. P. and Opiela, T. P. 2006. Bank capital and loan asymmetry in the transmission of monetary policy. *Journal of Banking and Finance* 30 (1): 259-285.
- Kozak, S. and Wierzbowska, A. 2021. Banking market concentration and bank efficiency: Evidence from Southern, Eastern and Central Europe. *South East European Journal of Economics and Business* 16 (1): 38-52.
- Košak, M., Li, S., Lončarski, I., and Marinč, M. 2015. Quality of bank capital and bank lending behavior during the global financial crisis. *International Review of Financial Analysis* 37: 168-183.
- Krasniqi, B., Kotorri, M., and Aliu, F. 2023. Relationship banking, collateral, and the economic crisis as determinants of credit risk: An empirical investigation of SMEs. *South East European Journal of Economics and Business* 18 (2): 49-62.
- Kryzanowski, L., Liu, J., and Zhang, J. 2022. Effect of COVID-19 on non-performing loans in China. *Finance Research Letters* 52: 103372.
- Levine, R., Lin, C., Tai, M., and Xie, W. 2021. How did depositors respond to COVID-19? *The Review of Financial Studies* 34 (11): 5438-5473.
- Li, L., Strahan, P. E., and Zhang, S. 2020. Banks as lenders of first resort: Evidence from the COVID-19 crisis. *Review of Corporate Finance Studies* 9 (3): 472-500.
- Louzis, D. P., Vouldis, A. T., and Metaxas, V. L. 2012. Macroeconomic and bank-specific determinants of non-performing loans in Greece: A comparative study of mortgage, business and consumer loan portfolios. *Journal of Banking and Finance* 36 (4): 1012-1027.
- Mérő, K. and Bethlendi, A. 2022. Financial markets: Banks and capital markets. In *Emerging European economies after the pandemic*, edited by L. Mátyás, 53-111. Cham: Springer.
- O'Brien, R. M. 2007. A caution regarding rules of thumb for variance inflation factors. *Quality and Quantity* 41 (5): 673-690.
- Parker, J. A., Schild, J., Erhard, L., and Johnson, D. S. 2022. Economic impact payments and household spending during the pandemic. *Brookings Papers on Economic Activity* 2022 (2): 81-156.
- Petrovska, M., Tonovska, J., Nikolov, M., and Sulejmani, A. 2022. Evaluating monetary policy effectiveness in North Macedonia: Evidence from a Bayesian FAVAR framework. *South East European Journal of Economics and Business* 17 (2): 67-82.
- Rebić, M., Paunović, S., and Popović, B. 2022. Measuring concentration and efficiency in Bosnia and Herzegovina banking sector using dynamic panel model. *South East European Journal of Economics and Business* 17 (1): 14-29.
- Tran, D. V., Hassan, M. K., Alam, A. W., and Dau, N. 2022. Banks' financial soundness during the COVID-19 pandemic. *Journal of Economics and Finance* 46 (4): 713-735.
- Vo, X. V. 2018. Bank lending behavior in emerging markets. *Finance Research Letters* 27: 129-134.
- Žunić, A., Kozarić, K., and Žunić Dželihodžić, E. 2021. Non-performing loan determinants and impact of COVID-19: Case of Bosnia and Herzegovina. *Journal of Central Banking Theory and Practice* 10 (3): 5-22.

## APPENDICES

### Appendix 1. Summary of theoretical and empirical literature

| Author(s)                                      | Geographical Coverage                           | Time Horizon                            | Method                                      | Macroeconomic Variables                                | Bank-Specific Variables                                           | Other Variables                                                   | Main Results                                                                                                                                                                    |
|------------------------------------------------|-------------------------------------------------|-----------------------------------------|---------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aizenman, Jinjara, and Spiegel (2022)          | Multi-country (advanced and emerging economies) | COVID-19 period (2020–2021)             | Panel regression; difference-in-differences | GDP growth, fiscal stimulus size, government transfers | Bank lending volumes, commercial bank credit                      | COVID-19 policy stringency, pandemic severity indicators          | Fiscal stimulus significantly supported commercial bank lending during COVID-19; larger stimulus packages mitigated lending contractions.                                       |
| Bethlendi (2025)                               | Central and Eastern Europe (CEE)                | COVID period and post-COVID (2020–2024) | Descriptive and comparative analysis        | GDP growth, inflation, interest rates, fiscal policy   | Bank lending trends, credit growth, loan structure                | EU policy frameworks, real economy financing needs                | CEE banking systems showed resilience; credit to the real economy held up during COVID; post-COVID inflationary pressures and rate hikes constrained lending recovery.          |
| Demirgüç-Kunt, Pedraza, and Ruiz-Ortega (2021) | Multi-country; global bank-level panel          | COVID-19 (2020)                         | Event study; panel regression               | GDP growth expectations, sovereign risk, country risk  | Bank stock returns, capital adequacy, liquidity ratios, bank size | Government support measures, COVID-19 case growth                 | Bank performance deteriorated significantly during COVID-19; better-capitalised and more liquid banks were more resilient; government interventions partially cushioned losses. |
| Duan et al. (2021)                             | Multi-country; global bank-level panel          | COVID-19 (2020)                         | Panel regression; cross-country analysis    | GDP growth, government debt, institutional quality     | Bank systemic risk (CoVaR, MES), capital adequacy, leverage       | COVID-19 severity, government policy response, country governance | COVID-19 significantly elevated bank systemic risk globally; stronger institutional environments and better-capitalised banks showed lower systemic risk increases.             |

|                                        |                                    |                             |                                             |                                                              |                                                                                 |                                                                          |                                                                                                                                                                                                       |
|----------------------------------------|------------------------------------|-----------------------------|---------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                        |                                    |                             |                                             |                                                              |                                                                                 |                                                                          |                                                                                                                                                                                                       |
| Dursun-de Neef and Schandlbauer (2021) | Europe; bank-level panel           | COVID-19 (2020)             | Difference-in-differences; panel regression | GDP contraction, pandemic stringency                         | Bank capital ratios, loan growth, liquidity buffers                             | Government loan guarantee programs, COVID-19 exposure                    | European banks with stronger capital positions maintained lending better; government guarantees were effective in supporting credit supply during the pandemic shock.                                 |
| Kryzanowski, Liu, and Zhang (2022)     | China; bank-level panel            | COVID-19 (2020–2021)        | Panel regression; difference-in-differences | GDP growth, economic policy uncertainty, pandemic indicators | Bank capital, liquidity, profitability, NPL ratio, bank size                    | COVID-19 policy response, loan moratoria, government directives          | COVID-19 significantly increased NPLs in China; state-owned banks and banks with stronger capital showed more resilience; government-directed lending moderated the NPL rise.                         |
| Levine et al. (2021)                   | USA; depositor and bank-level data | COVID-19 (2020)             | Panel regression; event study               | GDP contraction, unemployment, fiscal stimulus transfers     | Bank deposit flows, bank size, branch network                                   | COVID-19 shock timing, government stimulus payments, depositor behaviour | Depositors shifted funds to larger, safer banks during COVID-19 (flight to safety); fiscal stimulus payments significantly boosted household deposits; bank-specific factors shaped deposit dynamics. |
| Li, Strahan, and Zhang (2020)          | USA; firm and bank-level data      | COVID-19 (March–April 2020) | Difference-in-differences; event study      | GDP shock, economic disruption measures                      | Bank capital, liquidity (deposit base), credit line drawdowns, loan commitments | Corporate credit line drawdowns, relationship banking                    | Banks acted as lenders of first resort during COVID-19; firms drew down credit lines massively; deposit-rich banks better able to accommodate demand; relationship banking mattered.                  |