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THE IMPACT OF INFLATION ON FINANCIAL SECTOR PERFORMANCE: EVIDENCE. FROM. WESTERN BALKAN COUNTRIES

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ABSTRACT

This research paper aims to investigate. the impact of inflation. on financial sector performance in Western. Balkan. countries. The topic was chosen considering the financial sector's fundamental role and its. impact on sustainable economic growth. This impact is measured through the effect that macroeconomic determinants of financial. performance such. as inflation, GDP. growth, general government final consumption expenditure, trade, and the lending interest rate have on credit to private sector as a share of GDP and broad definition of money as a ratio of GDP, which were used to proxy financial sector development. The data are provided by the World Bank as well as the Central. Banks. of the respective countries, for the period 2002–2021. The research methodology consists of different panel regression models such as OLS, OLS robust,

Fixed effects, Random effects, and Generalized method of moments (GMM). Findings indicate that domestic credit to the private sector and inflation are positively correlated, whereas broad money and inflation are negatively correlated.

Key words: Inflation, financial sector, panel data

JEL CLASSIFICATION: *G1*

INTRODUCTION

Effective financial institutions are crucial in the promotion of economic growth, through a variety of activities (King, 1993; Kunt, 1998; Levine, 1998). According to the theoretical and empirical literature, even if inflation. is predicted, it has a large impact. on financial. performance. It appears to be especially obvious in the efficient distribution of available resources. Commercial banks play pivotal role in the efficient operation of a countries' financial system because of the ability to facilitate economic transactions and encourage savings toward productive investment activities. In this way, commercial banks contribute to the mobilization of resources and improve their allocation (Levine, 1997). Additionally, as a main source. of finance. and credit. to the private. sector, domestic banks play a fundamental role. in raising employment levels and. improving. productivity. The fast fluctuation of price levels is one possible symptom of the absence of macroeconomic stability, inflation, and the volatility it causes is detrimental to the economy, (Moreno, 2004).

Over. time, inflation causes investment uncertainty, and poor economic planning and makes it harder to allocate resources efficiently. These two factors have an impact on economic activity and growth. Therefore, our paper focuses on the impact of inflation on financial sector, keeping in mind that a well-functioning financial sector directly affects economic growth. A stable macroeconomic climate is. one. of the primary conditions for the successful operation of the financial sector (Didier et al., 2014).

A model of economic development with overlapping generations, capital production technologies, and an expensive state. verification (Huybens et al., 1999) creates a model. with money fluctuations and. intermediaries that depict long-term activity. as well as financial market conditions. Providing evidence that steady-state inflation, often known as intensive money

creation, decreases actual activity levels. When inflation rates are expected to be high for the foreseeable future. the long-term growth rate of an economy. can suffer.

Therefore, considering the role of inflation in the economy and especially in the financial sector, this study aims to investigate its effects with a rigorous methodological approach.

This paper is organized as follows: Section 2 provides the literature review; Section 3 contains the research methodology and data of the panel evidence; Section 4 provides the generated results and discussion arising from the relevant topic and Section 5 provides the findings and conclusion given by the authors. Additionally, the main argument for this study is that only a few studies have examined the impact of inflation on financial sector for this period and this sample of countries. Consequently, there is a gap in the literature that this study aims to fill.

LITERATURE REVIEW

Many empirical studies, conducted by various authors, and categorized by various nations and periods examine the impact of inflation on financial sector performance, as a result, of economic growth in general. Growth falls sharply during discrete high inflation crises, then unexpectedly makes a significant recovery once inflation declines (Bruno et al., 1998). Further, macroeconomic instability is linked to high inflation and increased price volatility (Kiley, 2004).

Sarel (1996) identified signs of a fundamental break in the function connecting growth rates to inflation and evaluated the possibility of inflation having nonlinear effects on economic growth. confirming that the break will happen at an inflation rate of 8%. Further, if the rate of inflation is above 8% the impact might be slightly positive while inflation above this rate has a significant negative impact on the growth rate. (Fischer, 1993) through cross-sectional and panel regressions emphasizing that growth is negatively associated with inflation, large budget deficits, and distorted foreign exchange market. Statistics indicate a connection between macroeconomic policy and growth. The framework enables the identification of the mechanisms causing these effects. For example, inflation lowers growth through decreasing investment and productivity growth, while budget deficits do the same. While low inflation and small deficits are not necessary for high growth even over extended periods, an examination of exceptional examples demonstrates that high inflation is inconsistent with sustained growth.

Egert et al., (2006) examined the determinants of a domestic bank credit to the private sector, measured as the percentage of GDP for 11 Central and Eastern European countries and the

robustness of the results varies within homogeneous country groups, although credit to the private sector is thought to be a proxy for the financial industry's ability to influence economic growth.

Katusiime (2018) found out that private sector credit growth is positively linked to the one period lagged inflation volatility. Financial volatility is commonly acknowledged to be connected across markets and assets (Jondeau et al. 2007). Further, Boyd et al., 2001, analyzed how the rate of inflation affects the financial sector's capacity to allocate resources efficiently and findings indicate a nonlinear, negative significant relationship between inflation, development of banking industry and stock market activity.

Champ (2003) by using cross-country data, examines the relationship between inflation and the financial market performance. Their empirical findings demonstrate that the rate of inflation has a negative effect on the profitability of banks, the banking sector, and real return on financial assets. They also argue that the inflation rate causes the financial sector to perform worse, which in turn hurts economic growth. Recently, Bittencourt (2012) underlined the relevance of macroeconomic stability (in terms of low inflation rates), the institutional framework it encompasses (central bank independence and fiscal responsibility laws), structural reforms that were implemented in the 1990s, as necessary preconditions for financial development, and the consequences sustained growth and prosperity in the region. The analysis covered the period 1980-2007, for four Latin American countries.

Ozturk (2012) used the bounds testing approach (ARDL) and Error Correction Model (ECM) to estimate the effects of inflation on the development of the financial sector. Their results support the idea that inflation has a detrimental short- and long-term impact on the growth of the financial sector, proving that inflation reduces the effectiveness of the financial sector

Existing models also emphasize the consequences which derive from significant movements in inflation rates. Choi et al., (1996) credit market frictions may not be present when inflation is very low. Further, (Boyd, 1998; Huybens et al., 1998; Huybens et al., 1999; Bruno et al., 1998; and Bullard et al., 1995) provide evidence of a threshold effects in the relationship between inflation and real performance.

Azariadis et al. (1996) noted that in economies characterized by high rates of inflation, credit rationing emerges, and monetary equilibrium becomes indeterminate, and as a consequence endogenous economic volatility arises.

Macroeconomic stability is considered a key feature to promote credit expansion and, in particular, a build-up of confidence in policy frameworks that guaranteed a climate of moderate or low inflation, allowing interest rates to decrease (Backé et al., 2005).

Tillmann (2008), outlines an innovative method for evaluating empirically, using Keynesian Phillips curve paradigm, how the cost channel of the monetary transmission affects the dynamics of inflation. The cost channel asserts that higher interest rates lead to greater marginal costs of manufacturing and, ultimately, higher inflation. The direct effect of interest rates on inflation is the cost channel's decisive characteristic.

Nguyen (2019) investigated the long and short run impacts of government spending on inflation, by taking into consideration three Asian emerging economies (India, China, and Indonesia), during the period of (1970 to 2010), applying the cointegration and Vector Error Correction Model. Moreover, despite the disparities in institutional governance among these countries, government expenditure (measured as a share of GDP), seems to have a short-term negative influence on inflation in China while, a positive impact in Indonesia and India.

Sinah (2018) applied a model based on a new standardized reporting format that emphasized that broad money and inflation move in the same direction, an increase in broad money leads to an increase in the consumer price index, known as a measure of inflation.

Hale et al. (2019) analyzed the inflationary effects of trade, and disputes with China. The research was conducted from the standpoint of trade fees, which have a direct influence on pricing through three direct routes: increasing consumer prices for imported items, business investment expenses, and costs for firms that employ imported intermediate inputs.

Kagochi (2019) analyzed the relationship between inflation and the financial sector performance of 22 Sub-Saharan countries from the period 1980 to 2013, applying GMM to panel data, and findings indicate that inflation does not promote financial development, while trade openness has a positive impact. Moreover, to benefit from an active and deeper financial sector the rates of inflation must be maintained low and consistently under control. Almansour et al. (2021), using a regression analysis emphasized that the performance of banks is significantly

affected by the inflation rate in Jordan. The impact of inflation on the exchange rate was examined by Moyo et al. (2020) for some banks in South Africa for the period 2003-2019, applying ARDL, FMOLS, and DOLS models. To measure the financial performance, return on equity was considered as the dependent variable while inflation and exchange rate as the independent, and there was found a significant inverse relationship between inflation and the return on equity and additionally, a weak relationship between the exchange rate and the return on equity.

The relationship between financial development and economic growth can be severely impacted by inflationary conditions even though financial development promotes economic growth. Higher inflation levels lower the investor's incentive, which lowers investment. Hoomani et al. (2021) studied the threshold inflation rate for the effect of financial development on economic growth by applying the panel smooth transition regression (PSTR) model on the data extracted for eight Islamic developing countries of the D-8 Group for the period of 1990–2017. An asymmetric relationship at different levels of inflation between financial development and economic growth was recognized. As a result, for low inflation rates, countries with higher inflation rate thresholds must have access to an effective financial system.

Wang et al. (2022) offer a comprehensive review of inflation to reveal the evolution and trends, by using the five-year impact factors as the evaluation criteria and 1,637 high-quality documents on inflation from (1906 to 2022), extracted from the database of Web of Science Core Collection. In terms of methodology, the focus has been on a descriptive statistical analysis of high-quality and highly cited documents as well as journals with a high impact factor. Following that, the visualization tool is used to represent the cooperative network of nations namely regions, writers, and different institutions, as well as determine the nature of their cooperation. The findings added value corresponds to the statement that the governments of different countries, especially the United States still face certain challenges in terms of the formulation of policies and measures to mitigate the impact of inflation.

METHODOLOGY

In this section, the impact of inflation on financial sector performance is measured using panel data for six Western Balkan countries during the period 2002–2021. Methodologically, we employ panel data model such as Pooled OLS, Pooled OLS Robust, Fixed Effects (FE), and Random Effects (RE). For comparison purposes, we apply the Hausman test to choose the reliable

model between the Fixed and Random Effects. In general, to produce objective, reliable, and effective estimations of this coefficient, a suitable estimation method should be employed. Additionally, in our analysis, we use the system GMM estimator, created by Arellano and Bover (1995) which combines a regression in differences. This estimator lessens the inconsistencies and inefficiencies of alternative panel estimators, as demonstrated by Arellano and Bond (1991), Blundell and Bond (1998), and Blundell et al. (2000). Characterized, by the validity of the instruments and the presumption that the differenced error terms do not display second-order serial correlation. These elements are both necessary conditions for the GMM estimator to be consistent. To verify these presumptions, we apply the Sargan test of overidentifying limitations, which examines the sample analog of the moment conditions utilized in the estimating technique to assess the overall validity of the instruments.

The specification of the Models

We specify a log-linear model for the study to estimate the responses of financial variables to inflation. The study uses macroeconomic series that consists of yearly observations between 2002 and 2021. The specification of the models is as follows:

Model A:

$$lnDCPD_{it} = \beta_0 + \beta_1 ICP_{it} + \beta_2 GDPG_{it} + \beta_3 lnGGFCE_{it} + \beta_4 lnT_{it} + \beta_5 lnLIR_{it} + u_i$$

Model B:

$$lnBMONEY_{it} = \beta_0 + \beta_1 ICP_{it} + \beta_2 GDPG_{it} + \beta_3 lnGGFCE_{it} + \beta_4 lnT_{it} + \beta_5 lnLIR_{it} + u_i$$

Where domestic credit to private sector (DCPD) and broad money (BMONEY) are considered as dependent variables in Model A and Model B, respectively, while other variables, such as, inflation rate (ICP), GDP growth (GDPG), general government final consumption expenditure (GGFCE), trade (T), and lending interest rate (LIR), are independent variables.

Table 1. Definition of variables

Variable	Definition	Unit	Source
ICP	Inflation, consumer prices	*(annual* (%)	WBD
DCPS	Domestic credit to the private sector	*(% of GDP)*	WBD
BMONEY	Broad Money	*(% of GDP)*	WBD
GDPG	GDP growth	*(annual %)*	WBD
GGFCE	General government final consumption expenditure	*(% of GDP)*	WBD
T	Trade	*(% of GDP)*	WBD
LIR	Lending interest rate	(%)	WBD, CBK, NBS

Data

Our panel contains annual data, obtained from the World Bank (WBD), and the central banks of respective countries. The dataset covers an unbalanced panel of 6 Western Balkan countries (Kosovo, Albania, North Macedonia, Bosnia and Herzegovina, Montenegro, and Serbia) over the period 2002-2021. The lack of data for the financial sector before the year 2002 for this set of countries limits the sample. Even the last data is for the year 2021 for some countries, whereas for others 2020. To prevent the loss of degrees of freedom because of those missing data, the moving average method (with factor 2) was used to supplement some of those missing observations, mostly for domestic credits, broad money, and lending interest rate. This is one of the statistical techniques available for tackling issues with missing data, which is simple to apply, yet most suitable for this case.

EMPIRICAL FINDINGS AND DISCUSSION

The table below provides. descriptive. statistics of the selected variables used in empirical research.

Table 2. Descriptive statistics of the variable used

	OBS.	MEAN.	STD. DEV.	MIN.	MAX.
ICP	113	3.645	3.52	-2.83	19.50
DCPS	98	45.09	14.21	8.05	86.52
BMONEY	108	52.55	17.47	11.27	88.62
GDPG	113	3.23	3.57	-15.31	12.43
GGFCE	114	17.41	4.52	10.12	29.94
T	112	78.49	28.95	17.36	148.47
LIR	98	8.74	3.34	2.59	15.30

Source: STATA Author's Calculation; Data from the World Bank database, Central Bank of Kosovo, and NBS.

The sample countries have an average inflation consumer price (ICP) of 3.645% for the aforementioned period. Domestic credit to the private sector (DCPS) is at 45.09%, GDP growth (GDPG) is at 3.23%, general government final consumption expenditures (GGFCE) are averaged at 17.41%, trade (T) is averaged at 78.49%, and the average of landing interest rate (LIR) is at 8.74%. Worth noting that in 2020, Montenegro has resulted in a considerable decrease in GDP, especially by 15.21%. Moreover, the correlation matrix, for each of the corresponding variables, is shown in Table 3. This matrix depicts the relationship that exists between certain variables.

Table 3. Correlation analysis

	ICP	DCPS	BMONEY	GDPG	GGFCE	T	LIR
ICP	1.0000						
DCPS	-0.2692	1.0000					
BMONEY	-0.5446	0.2958	1.0000				
GDPG	0.4181	-0.3181	-0.3116	1.0000			
GGFCE	0.3431	0.3105	-0.4781	-0.0977	1.0000		
T	-0.2941	0.6481	0.3993	-0.1915	0.1557	1.0000	
LIR	-0.2271	0.0032	0.0394	0.0924	-0.3428	0.0656	1.0000

Source: STATA Author's Calculation; Data from the World Bank database, Central Bank of Kosovo, and NBS.

Based on the coefficients, there is a weak negative correlation between domestic credit to the private sector and inflation (r=-0.27). Also, a negative correlation exists between broad money and inflation (r=-0.54). General government final consumption expenditures and inflation are positively correlated (r=0.34), and a negative relationship between trade and inflation (r=-0.29), as well as lending rate and inflation (-0.23). Meanwhile, a positive relationship between the gross domestic product and inflation (r=0.42).

Based on the results generated by the correlation analysis, economic growth has influenced the increase in the interest rate. Surprisingly, there is an extremely weak relationship between lending interest rate and domestic credits with a correlation coefficient of 0.003 that is closer to zero. Also, between broad money and the lending interest rate the correlation is very weak r=0.04. So, it is expected for this variable to have an insignificant influence on domestic credits and broad money, i.e., above specified models.

The regression results are summarized in the following table, which in total includes five applicable econometric models: Pooled OLS, Pooled OLS Robust, Fixed Effect, Random Effect, and GMM.

Table 4. Econometric models for Model A

Variables	Pooled OLS		OLSR		FE		RE		GMM	
	Coef.	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat**	**Coef.**	**t-stat**	**Coef.**	**z-stat**
ICP	-0.012	-1.33	-0.012	-0.99	0.004	0.53	-0.012	-1.33	0.03***	8.94
GDPG	-0.01	-1.19	-0.01	-1.50	-0.3***	-3.86	-0.01	-1.19	-0.08**	-2.08
GGFCE	0.25**	2.06	0.25	1.09	-0.9***	-3.02	0.25**	2.06	-0.14**	-2.24
T	0.39***	5.98	0.39***	5.41	0.68***	3.69	0.39***	5.98	0.19***	4.28
LIR	0.04	0.56	0.04***	0.35	0.12	1.45	0.04	0.56	-0.001	-0.03
$DCPS_{t-1}$									0.75***	19.23
Hausman Test=0.014										
Sargan Test									83.15	
Prob > F	0.000		0.000		0.000		0.000		0.0000	
N	98		98		98		98		82	
R^2	0.57		0.57		0.27		0.57			

t statistics in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Source: STATA Author's Calculation; Data from the World Bank Database, Central Bank of Kosovo (CBK), and NBS.

The Hausman test encourages us to place more weight on the contribution that the fixed effects make to the overall effect while ignoring the part that the random effect plays in the process of producing this effect. However, results generated by the GMM model will be interpreted. Furthermore, when the instruments for the first difference equation are distinct values of variables, Sargan's test for overidentification is found to fail to reject the null, indicating that the instruments are reliable.

Based on the results, inflation has a positive impact on domestic credit to the private sector (DCPS), with a coefficient of 0.03 which is highly statistically significant. Some studies also found a positive relationship between inflation and financial development, cases in which higher permanent inflation leads to higher real economic activity or to super-neutrality, where higher inflation has no effect on real interest rates or real activity. Studies that hold this assertion are those of Mundell (1963), Tobin (1965), and Bittencourt (2011). The GDP growth has a negative impact on domestic credits, with a coefficient of 0.08. Trade expresses a positive impact on the increase of domestic credits, with a coefficient of 0.19, while (GGFCE), has a negative impact on the increase of domestic credits, with a coefficient of -0.14. Further, the lending interest rate (LIR) has not a significant effect on domestic credits. Additionally, based on the results of the Prob>F value, all models are statistically significant at the 1% level. Furthermore, the interpretation of the coefficients is done under the ceteris paribus assumption.

Table 5 displays the results of Model B whereas dependent variable is considered the broad money, i.e., money in circulation in the economy plus current account and savings deposits and foreign currency deposit in the financial institutions as ratio of GDP.

Table 5. Econometric models for Model B

Variables	Pooled OLS		OLSR		FE		RE		GMM	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	z
ICP	-0.01	-1.52	-0.01	-1.23	-0.002	-0.52	-0.01	-1.52	-0.7***	3.19
GDPG	-0.02**	-2.43	-0.02	-2.81	-0.1***	-4.80	-0.02**	-2.43	-0.01***	-5.48
GGFCE	0.8***	-10.04	-0.8***	-8.34	-0.8***	-4.68	-0.8***	-10.04	-0.45***	-8.15
T	0.46***	9.33	0.5***	7.54	0.67***	6.80	0.46***	9.33	0.32***	9.72
LIR	-0.2***	-3.68	-0.2***	-3.1	-0.15***	-3.8	-0.2***	-3.68	-0.08***	-3.96
BMONEY t-1									0.46***	13.83
Hausman Test=0.7070										
Sargan Test									91.33	
Prob > F	0.000		0.000		0.000		0.000		0.0000	
N	98		98		98		98		82	
R^2	0.75		0.75		0.72		0.75			

t statistics in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Source: STATA Author's Calculation; Data from the World Bank Database, Central Bank of Kosovo (CBK), and NBS

According to the obtained results of the GMM model, inflation has a negative impact on broad money, with a coefficient of -0.7 which is highly statistically significant. Also, the GDP growth and government consumption expenditures have a negative impact on broad money, with coefficients of -0.01 and -0.45, respectively. Trade expresses a positive impact on the increase of broad money, with a coefficient of 0.32. Further, the lending interest rate (LIR) has a negative significant effect on broad money, meaning that for one percentage increase of lending interest rate, the broad money decreases by 0.08 percent, ceteris paribus.

CONCLUSION

For any economy, the growth and effective functioning of the financial sector are essential, moreover, inflation is a macroeconomic factor that has an impact on this sector.

The paper aims to investigate the impact of inflation on financial sector performance by evaluating dynamic panel data, over the years 2002-2021.

The GMM Model, characterized by the validity of the instruments and the assumption that the differenced error terms do not exhibit the second-order serial correlation, reveals that variables in the sample have a significant relationship. Moreover, to verify these presumptions, we apply the Sargan test of overidentifying limitations, which examines the sample analog of the moment conditions utilized in the estimating technique to assess the overall validity of the instruments. The evidence indicates that there is a statistically significant relationship between domestic credit to the private sector and inflation as well as broad money and inflation.

Worth noting that inflation may affect economic growth through many channels. Further, the impact of the banking sector is by directly reducing the whole amount of credit, which is available to businesses. Lenders will demand higher interest rates since the buying power of the money they will get in the future will diminish. In general, the level of interest influences borrowing, lending, and spending, which keeps the economy running. Future research should also need to identify policies that will improve the efficient performance of the financial sector performance, by taking into account the fundamental role of the mentioned sector in the long-term economic growth of the country, in particular, the Western Balkan countries. Therefore, it is essential to strengthen and grow these financial institutions' performances to accomplish their responsibilities successfully and distinctively.

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