

# “Interconnection between bank capitalization and macroeconomic stability in the countries of South-West Asia”

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# INTERCONNECTION BETWEEN BANK CAPITALIZATION AND MACROECONOMIC STABILITY IN THE COUNTRIES OF SOUTH-WEST ASIA

## Abstract

The paper aims to define the specifics of the mutual interconnection between bank capitalization and indicators of macroeconomic stability. This is achieved by the following methods: grouping, analysis and synthesis, analysis of descriptive statistics, and canonical correlation analysis. The study was carried out based on eight bank capitalization indicators and five macroeconomic stability indicators in seventeen South-West Asian countries from 2010 to 2020. The information base of the research is the dataset from the World Bank. The selected list of indicators is determined by the availability of statistical information for the countries participating in the study. It was found that there is a close canonical correlation between the level of bank capitalization and the macroeconomic stability of the countries under investigation – 0.97 (2010) and 0.99 (2020). The variation of the investigated indicators of macroeconomic stability (68.95% (2010) and 70.64% (2020)) is determined by the change in bank capitalization indicators. On the other hand, the difference in macroeconomic stability indicators of countries by 48.66% (2010) and 42.79% (2020) is due to changes in bank capitalization indicators. Four indicators exert the most significant favorable influence on the level of bank capitalization: Bank return on assets – 0.303 (2010) and 13.033 (2020), Bank return on equity – 0.446 (2010) and 13.387 (2020), Bank regulatory capital to risk-weighted assets – 0.812 (2010), and Bank deposits to GDP – 1.580 (2020). The macroeconomic stability of countries is determined by two indicators: GNI – 3.311 (2010) and 3.461 (2020); GDP – 4.748 (2010) and 4.672 (2020).

**Keywords** capitalization, banks, stability, security, model, index, canonical analysis

**JEL Classification** E60, E52, E58, G21

## INTRODUCTION

Banks are critical institutions in any economy, and their stability is essential to the overall health of the financial system. These institutions provide access to financial resources, their preservation and protection, and also create conditions for the adequate circulation of money in the economy. This contributes to financial markets' smooth functioning, liquidity, and economic and social development.

One of the most critical aspects in the functioning of banks is the level of capitalization, which determines their ability to adequately withstand financial shocks and prevent the spread of crisis phenomena in the financial system. The global financial crisis of 2008 and recent global upheavals only emphasized the importance of effective banking regulation, including its capital, as outlined in Basel III. At the same time, according to the European Central Bank, despite the indisputable long-term prospects, there may be a potential reducing effect on credit supply and general economic activity (Mendicino et al., 2019).

The slowdown in the global gross domestic product (GDP) growth by 4.4%, and for the Middle East and Central Asian countries by 4.1% in 2020 (IMF, 2020), undoubtedly impacts the financial system. In particular, according to Alves et al. (2021), there was a deterioration in the creditworthiness of borrowers, especially in the small and medium business sector, a decrease in investment projects, etc. The increase in inflation caused a tightening of monetary policy and an increase in interest rates, capital outflow from the markets, currency depreciation, and other threats to the macroeconomic stability of countries (Belhaj et al., 2022). For the countries of South-West Asia, the situation is also somewhat ambiguous, given the diverse economic landscape (Gentle, 2022), where oil-exporting countries take advantage of high energy prices and developing oil-importing countries struggle with the problems of rising import costs and devaluation currency.

## 1. LITERATURE REVIEW

Macroeconomic stability is critical to a nation's economic health and security (Kharazishvili & Kwilinski, 2022; Kuzior et al., 2022; Litovtseva et al., 2022; Kotina et al., 2023), affecting its growth, employment, and overall well-being. A significant number of scientific works are devoted to the search for the most relevant actors, which make a statistically significant impact on the level of macroeconomic stability. So, for example, Kozmenko and Savchenko (2013), Bensaad and Azzazi (2023), and de Mendonça and Nascimento (2020) explored monetary instruments' influence on its formation; Nguyen et al. (2022), Almerri (2023), Messaoudi et al. (2023), and Kaneva et al. (2023) studied fiscal factors; Dzwigol et al. (2019) and Moskalenko et al. (2022) analyzed the factors of the external environment that can both contribute to and become challenges for the macroeconomic stability of the country; Kerimov et al. (2023a) explored the importance of anti-inflationary policies in ensuring macroeconomic growth and financial stability.

Vasilyeva et al. (2019) analyze the main manifestations of transformations in the social, economic and political development of countries based on the bifurcation theory, which directly impacts the formation of strategic and tactical directions for ensuring macroeconomic stability. Tiutiunyk et al. (2022) proved that the level of the shadow economy in the country significantly affects macroeconomic stability. Also, severe threats to macroeconomic stability should include specific internal and external imbalances in the financial sector of the economy (Vasilyeva et al., 2013; Leonov et al., 2012; Shkolnyk et al., 2021), financial risks, in particular, money laundering and other financial

crimes (Vitvitskiy et al., 2021; Pol, 2020; Patel et al., 2023; Filatova et al., 2023), and social challenges (Bovsh et al., 2021; Sheliemina, 2023).

A separate direction of scientific research is devoted to ensuring the country's macroeconomic stability in geopolitical instability. Danylyshyn and Bohdan (2022) note that in such conditions, classic market mechanisms and laws partially cease to operate, and there is a need to modify certain aspects of the central bank's activities by maximizing attention to ensuring the stable functioning of the public borrowing market and control over capital flows. Phan et al. (2022) proved that geopolitical risk harms the stability of banks, while bank capital plays an essential role in resisting such shocks.

Bilan et al. (2019) determine the direction of synchronization of financial and business cycles by highlighting the role of trust factors. The authors prove the influence of optimistic and pessimistic actions of economic agents on the fluctuations of financial processes in the context of ensuring macroeconomic stability. Issues of the development of behavioral finance and ethics, Islamic finance and psychological factors in the context of the transformation of the dominant banking system also take place in the studies by Kobiyh and El Amri (2023), Angelini et al. (2022), effective leadership and team management in banks – in the work of Gentsoudi (2023).

An important place among scientific studies in this direction is occupied by works devoted to the relationship between the activities of the banking sector and macroeconomic stability. The efficiency or strength of banking activity through the prism of macroprudential supervision and the adapta-

tion of Basel II and Basel III were considered by Habiba (2023), Alzoubi et al. (2022), Aljaber and Al-Tamimi (2021), and Vasylieva et al. (2014); the role of systemically essential banks in ensuring macroeconomic stability was studied by Buriak et al. (2015); the focus of banking activities regulation on minimizing the likelihood of financial instability, including banking crises was explored by Mursalov (2022). Kerimov et al. (2023b) find that the likelihood of financial instability is higher in countries with more independent central banks, and that increasing levels of banking system concentration demonstrate a financial crisis prevention effect.

Khan (2022) argues that optimal banking competition contributes to macroeconomic stability by reducing fluctuations in output growth, credit fluctuations, and the probability of bank defaults. Murshudli and Mursalov (2020) analyze the impact of global economic instability on the banking system of Azerbaijan, make a scientifically based conclusion about the need for transformational regulatory measures aimed at achieving its high financial stability, primarily due to an adequate level of capitalization, optimal indicators of financial reserves and liquidity.

The importance of bank capitalization in the operation of a modern bank and its ability to ensure stability in crisis conditions is proven by Jordà et al. (2021) and Gambacorta and Shin (2018). Abbas et al. (2019) and Chiaramonte and Casu (2017) proved that bank capital has a positive effect on the profitability of commercial banks in the USA, Europe, and Asia.

The analysis of the scientific work on this issue led to the following central hypothesis of this study:

*H1: There is a mutual functional relationship between the level of bank capitalization and macroeconomic stability.*

In this article, the existence of such a relationship is empirically tested using data from the countries of South-West Asia.

## 2. RESEARCH METHODS

The information base of the study is World Bank data for seventeen countries of South-West Asia: Cyprus, Turkey, Syrian Arab Republic, Libya, Israel, Jordan, Iraq, Kuwait, Saudi Arabia, Bahrain, Qatar, United Arab Emirates, Oman, Yemen, Azerbaijan, Armenia, and Georgia. The research period is 2010–2020.

Thirteen indicators were selected to form the array of input data for this study, including eight indicators characterizing the level of bank capitalization and five indicators characterizing macroeconomic stability (Table 1).

This set of input indicators is due to the availability of statistical information from open sources for the selected list of countries.

Any research study addresses the need for a well-defined procedure to select appropriate research methods in the field of management sciences (Dzwigol, 2019, 2022). It employs qualitative

**Table 1.** Array of input data

Notation	Indicator	Unit of measurement
cap1	Bank return on assets	%, after tax
cap2	Bank return on equity	%, after tax
cap3	Bank non-performing loans to gross loans	%
cap4	Bank capital to total assets	%
cap5	Bank branches per 100,000 adults	Units
cap6	Bank regulatory capital to risk-weighted assets	%
cap7	Bank cost to income ratio	%
cap8	Bank deposits to GDP	%
macro1	Inflation, consumer prices	Annual %
macro2	Unemployment, total	% of total labor force
macro3	Gross National Income	Bln, current LCU
macro4	Gross Domestic Product	Bln, current LCU
macro5	Employment to population ratio, 15+, total	%

and quantitative research methods to answer specific research hypotheses (Dzwigol, 2021, 2023).

Canonical correlation analysis was chosen as the primary methodological tool of this study, which allows determining the relationship between the characteristic  $Y_0$  and a set of characteristics  $Y_1, \dots, Y_n$ , where the multiple correlation coefficient is a key indicator, which is equal to the correlation coefficient between  $Y_0$  and its linear modeled value (1).

$$\hat{Y} = \alpha_0 + \alpha_1 Y_1 + \dots + \alpha_n Y_n. \quad (1)$$

This principle allows us to determine the dependence between two sets of characteristics ( $Y_1, \dots, Y_n$ ), and ( $Y_{r+1}, \dots, Y_{r+n}$ ). Mathematical formalization is based on the calculation of random quantities  $U_1$  and  $V_1$  together with the corresponding canonical coefficients  $\alpha_n$  (2-3).

$$U_1 = \alpha_{10} + \alpha_{11} Y_1 + \dots + \alpha_{1r} Y_r, \quad (2)$$

$$V_1 = \alpha_{10} + \alpha_{11} Y_{r+1} + \dots + \alpha_{1n} Y_{r+n}. \quad (3)$$

The correlation between  $U_1$  and  $V_1$   $R_1 = \text{corr}(U_1, V_1)$  (equation 4) should be maximal.

$$R_{n(i)} = \frac{\text{cov}(U_i V_i)}{\sqrt{\text{var}(U_i) \text{var}(V_i)}}, \quad (4)$$

where  $i_{th}$  is canonical function;  $cov$  is the value of the covariance between the quantities  $U_i$  and  $V_i$ ;  $var$  is dispersion  $U_i$  and  $V_i$ .

According to the terminology of canonical analysis, two sets of variables are formed based on the input parameters of the study:  $U_i$ , which is determined by eight variables of the capitalization of the banking system, and  $V_i$ , which is determined by five variables of macroeconomic stability. The following properties characterize the defined canonical parameters:

- canonical parameters are independent linear combinations of initial variables distributed by groups;
- canonical variates are calculated in such a way that the corresponding canonical correlations are maximal;

- canonical variates are ordered according to the descending value of the corresponding canonical correlations; and
- canonical variates from different pairs are not correlated.

Thus, canonical correlation analysis allows simultaneous analysis of the relationship between several dependent variables and many determining factors. Canonical variates (roots) represent a set of certain hidden (implicitly expressed) variables underlying the studied phenomenon. The number of canonical roots corresponds to the smallest number of variables in the group of variables. As the ordinal number of the canonical root increases, the proportion of the studied phenomenon that is described by this root decreases.

To follow the nature of the relationship between the studied groups of variables, canonical analysis is performed for the data of 2010 and 2020. All calculations in this paper are performed using the statistical software Statistica 12.

### 3. RESULTS

One of the assumptions of canonical analysis is the normal distribution of the sample of variables involved in the study. The Shapiro-Wilk test allows us to test the hypothesis regarding the normality of the distribution of variables by calculating the estimated value of the criterion and the corresponding confidence level of the results (p-level), which must be greater than 0.05. The results of the Shapiro-Wilk test for both sets of variables are presented in Table 2.

Considering the results of the Shapiro-Wilk test and the corresponding confidence level (p-level), all variables of bank capitalization and macroeconomic stability do not conform to a normal distribution law. However, the technological potential of canonical analysis allows continuing research despite the current situation.

The analysis of the main descriptive statistics of variables of bank capitalization and macroeconomic stability of the studied countries (Table 3) and the scale diagram (Figure 1) shows the following trends:

**Table 2.** Results of checking compliance with the normal law of the distribution of variables of bank capitalization and macroeconomic stability based on the Shapiro-Wilk test

Variable	Obs.	Shapiro-Wilk Criterion			
		W	V	z	Prob > z
cap1	184	0.676	44.814	8.710	0.000
cap2	184	0.701	41.275	8.521	0.000
cap3	184	0.574	39.800	8.238	0.000
cap4	184	0.973	2.267	1.816	0.035
cap5	184	0.297	86.442	10.144	0.000
cap6	184	0.916	7.948	4.638	0.000
cap7	184	0.798	28.047	7.638	0.000
cap8	184	0.804	22.694	7.075	0.000
macro1	184	0.756	30.923	7.820	0.000
macro2	184	0.941	8.246	4.838	0.000
macro3	184	0.710	40.472	8.481	0.000
macro4	184	0.711	40.260	8.469	0.000
macro5	184	0.951	6.904	4.430	0.000

- Among the studied variables of bank capitalization, the variables cap5 (Bank branches per 100,000 adults), cap7 (Bank cost to income ratio), and cap8 (Bank deposits to GDP) have the most extensive range. The cap5 value ranges from a low of 1.623 in Yemen to 1784.2 in Saudi Arabia. The value of the cap7 varies from a minimum value of 7.655% in Syria to 86.983% in Libya. The cap8 value varies from a minimum value of 11.669% in Azerbaijan to 295.307% in Libya.
- Among the investigated macroeconomic variables, the macro3 to macro5 variables (Gross National Income, Gross Domestic Product, Employment to population ratio, 15+, total) have the most extensive scope. The variance in this category of variables is caused by different levels of economic development among

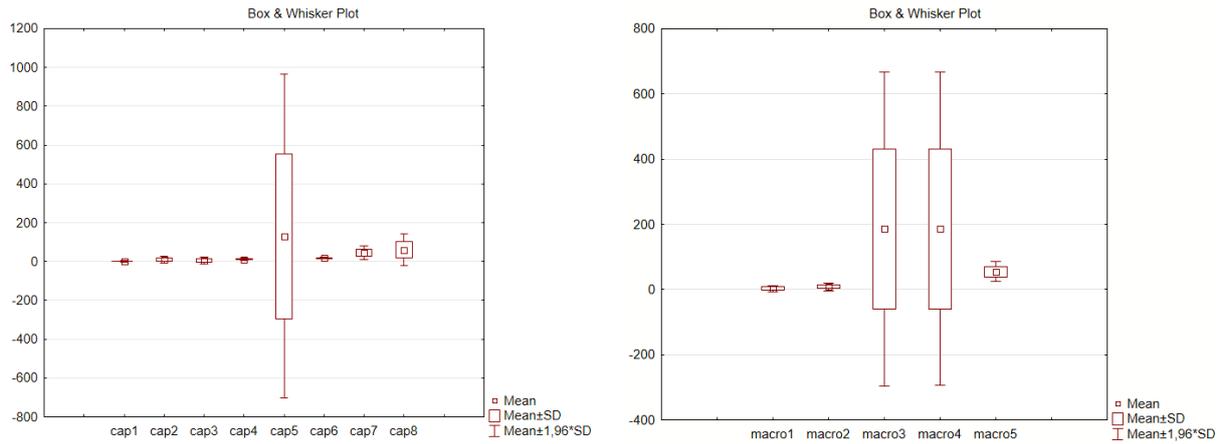
the studied countries. Thus, Jordan, Syrian Arab Republic, and Yemen are the countries with a low level of economic development; and United Arab Emirates, Bahrain, Cyprus, Israel, Kuwait, Oman, Qatar, Saudi Arabia are the ones with a high level of economic development.

It is necessary to investigate the level of correlation between the studied variables, considering their redistribution between groups U and V using correlation analysis (Table 4). This will test assumptions about data redundancy.

Given the results of correlation coefficients presented in Table 4, the values of which are higher than 0.7, it is impossible to talk about data redundancy. This gives grounds for continuing the canonical analysis.

**Table 3.** Descriptive statistics

Variable	Mean	Median	Minimum	Maximum	Variance	Std.dev.
cap1	1.342	1.302	-8.652	12.988	2.480	1.575
cap2	10.052	9.771	-53.902	77.107	90.137	9.494
cap3	6.684	4.135	1.080	47.748	74.690	8.642
cap4	12.077	12.550	5.295	20.238	10.283	3.207
cap5	131.536	15.399	1.623	1784.200	180224.172	424.528
cap6	17.479	17.379	7.343	29.600	7.227	2.688
cap7	46.689	45.059	7.655	86.983	34.165	8.444
cap8	60.054	52.670	11.669	295.307	1690.768	41.119
macro1	3.326	2.444	-2.540	36.702	20.970	4.579
macro2	8.433	8.150	0.100	20.343	33.751	5.810
macro3	185.796	70.677	9.719	949.181	60262.276	245.484
macro4	186.127	74.161	9.260	957.799	60103.314	245.160
macro5	55.094	54.891	31.639	87.493	244.556	15.638



**Figure 1.** Diagram of the range of bank capitalization variables and macroeconomic stability variables

**Table 4.** Results of the correlation analysis for the studied groups of variables

Variable	macro1	macro2	macro3	macro4	macro5
cap1	-0.091	-0.225	0.323	0.318	0.178
cap2	-0.131	-0.371	0.556	0.554	0.306
cap3	0.506	-0.024	-0.173	-0.181	0.038
cap4	0.555	0.037	-0.009	-0.019	0.107
cap5	0.072	-0.116	0.461	0.449	-0.057
cap6	0.244	-0.352	0.129	0.122	0.557
cap7	0.334	0.586	-0.219	-0.210	-0.429
cap8	-0.354	-0.237	0.119	0.121	0.195

The primary results of the canonical analysis for the studied groups of variables in 2010 and 2020 are presented in Table 5.

It is worth noting that in 2010, 66.131%, and in 2020, 63.17% of bank capitalization variables are included in the analysis (variance extracted equals 66.131% and 63.17%, respectively). Variables characterizing macroeconomic stability are 100% involved in the analysis (variance extracted equals 100%). The total redundancy

value indicates what percentage of the sample variance is due to changes in the variables of another sample. The results presented in Table 6 show that 68.95% and 70.64% of the variance of the studied macroeconomic stability variables in 2010 and 2020 is determined by the change in the studied bank capitalization variables. On the other hand, the change in macroeconomic stability variables of countries by 48.66% (2010) and 42.79% (2020) is caused by the variance of bank capitalization variables.

**Table 5.** Canonical analysis summary

Characteristic	2010		2020	
	U	V	U	V
Number of variables	8	5	8	5
Variance extracted	66.13%	100%	63.17%	100%
Total redundancy	48.66%	68.95%	42.79%	70.64%
Chi-Square	62.462		73.906	
p	0.013		0.001	
R <sup>2</sup>	0.97		0.99	

**Table 6.** Resulting values of the Chi-Square coefficients, canonical R<sup>2</sup> and p-values (2010 and 2020)

Years	Root Removed	Canonical R	Canonical R <sup>2</sup>	Chi-Square	df	p	Lambda Prime
2010	1	0.84	0.70	17.78	9	0.04	0.24
	2	0.37	0.14	2.84	4	0.59	0.80
	3	0.27	0.08	0.98	1	0.32	0.92
	4	0,86	0.73	18.18	9	0.03	0.23
	5	0.31	0.09	1.59	4	0.81	0.88
2020	1	0.991	0.983	73.906	40	0.001	0.000
	2	0.955	0.911	37.444	28	0.110	0.016
	3	0.764	0.584	15.651	18	0.617	0.176
	4	0.737	0.544	7.752	10	0.653	0.423
	5	0.272	0.074	0.693	4	0.952	0.926

The values of the Chi-Square coefficients and p ( $p < 0.05$ ) for both years of analysis confirm the statistical significance of the obtained results. The canonical correlation coefficient R<sup>2</sup> for both models is greater than 0.9, which indicates the high quality of the resulting dependencies and the close relationship between variables of bank capitalization and macroeconomic stability (increase in bank capitalization).

In this case, the canonical variates consist of eight bank capitalization variables and five macroeconomic stability variables, so the maximum number of canonical roots for each sample will be five.

To find the optimal canonical root, it is necessary to analyze statistical variables: The Chi-Square coefficients, canonical R<sup>2</sup> and p-values (Table 6).

Having analyzed the significance criterion p ( $p < 0.05$ ) from Table 7, one can conclude that further analysis of the results must focus on the first canonical roots for both years of the study.

The next step of the canonical analysis is the study of the factor loadings within the first canonical roots for the sets U and V for 2010 and 2020 (Table 7).

The obtained factor loadings of the studied variables within the first canonical root allow us to determine:

- cap3 (Bank non-performing loans to gross loans), cap4 (Bank capital to total assets) and cap6 (Bank regulatory capital to risk-weighted assets) have the largest correlation with the level of bank capitalization in 2010; for 2020, it is cap1 (Bank return on assets), cap2 (Bank return on equity) and cap8 (Bank deposits to GDP);
- macro1 (Inflation, consumer prices) and macro5 (Employment to population ratio) have the most significant correlation with the level of macroeconomic stability in 2010; in 2020, macro2 (Unemployment) was also added to these two variables.

**Table 7.** Structure of factor loadings of variables within Root 1 for groups of variables of bank capitalization and macroeconomic stability in 2010 and 2020

Variable	2010	2020
	Root 1	Root 1
U	cap1	-0.507
	cap2	-0.500
	cap3	0.023
	cap4	-0.097
	cap5	-0.033
	cap6	-0.107
	cap7	-0.040
	cap8	0.596
V	macro1	-0.500
	macro2	0.669
	macro3	-0.214
	macro4	-0.216
	macro5	-0.400

**Table 8.** Canonical weights of variables of bank capitalization and macroeconomic stability within Root 1 in 2010 and 2020

Variable		2010	2020
		Canonical Weights	
		Root 1	Root 1
U	cap1	0.303	13.033
	cap2	0.446	13.387
	cap3	0.176	-0.215
	cap4	0.188	0.700
	cap5	-0.091	-0.211
	cap6	0.812	-0.313
	cap7	-0.050	-0.125
	cap8	0.030	1.580
V	macro1	1.134	-0.706
	macro2	-0.032	-1.166
	macro3	3.311	4.748
	macro4	3.461	4.672
	macro5	1.130	0.318

To define the coefficients of canonical regression equations, it is necessary to determine canonical weights (the contribution of each variable to the formation of canonical variates (roots)). Canonical weights for both samples as of 2010 and 2020 are presented in Table 8.

The canonical regression equations constructed based on the obtained canonical weights have the following form (5-8).

$$U_{2010} = 0.303cap1 + 0.446cap2 + 0.176cap3 + 0.188cap4 - 0.091cap5 + 0.812cap6 - 0.050cap7 + 0.030cap8, \quad (5)$$

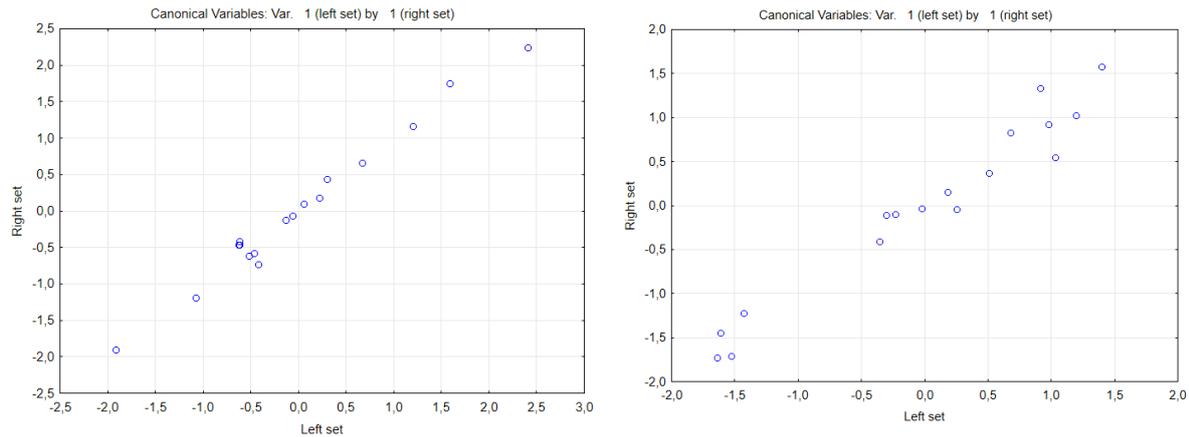
$$V_{2010} = 1.134macro1 - 0.032macro2 + 3.311macro3 + 3.461macro4 + 1.130macro5, \quad (6)$$

$$U_{2020} = 13.033cap1 + 13.387cap2 - 0.215cap3 + 0.700cap4 - 0.211cap5 - 0.313cap6 - 0.125cap7 + 1.580cap8, \quad (7)$$

$$V_{2020} = -0.706macro1 - 1.166macro2 + 4.748macro3 + 4.672macro4 + 0.318macro5. \quad (8)$$

The received canonical weights make it possible to identify the following functional dependencies:

- In 2010, the most significant influence on the level of bank capitalization was exerted by cap1 (Bank return on assets), cap2 (Bank return on equity), and cap6 (Bank regulatory capital to risk-weighted assets). With cap1 increasing by one unit, the level of bank capitalization would increase by 0.303 units. With cap2 increasing by one unit, the level of bank capitalization would increase by 0.446 units. With cap6 increasing by one unit, the level of bank capitalization would increase by 0.812 units.
- In 2020, the most significant influence on the level of bank capitalization was exerted by cap1 (Bank return on assets), cap2 (Bank return on equity), and cap8 (Bank deposits to GDP). With cap1 increasing by one unit, the level of bank capitalization would increase by 13.033 units. With cap2 increasing by one unit, the level of bank capitalization would increase by 13.387 units. With cap8 increasing by one unit, the level of bank capitalization would increase by 1.580 units.
- In 2010 and 2020, macro3 (the Gross National Income) and macro4 (the Gross Domestic Product) variables significantly influenced macroeconomic stability. For both years of the study, these variables positively affected the level of macroeconomic stability. In 2010, increasing of these variables by one unit caused an increase in macroeconomic stabil-



**Figure 2.** Scatter diagram of bank capitalization variables (left set) and macroeconomic stability variables (right set) in 2010 and 2020

ity by 3.311 and 3.461 units, respectively. In 2020, it was 4.748 and 4.672, respectively.

The final stage of the canonical analysis is constructing a scatter diagram for the first canonical roots of both groups of variables in 2010 and 2020 (Figure 2).

As can be seen from the presented scatter diagrams, the clustering of values of both groups of variables in 2010 and 2020 visually resembles the linear nature of the dependence without pronounced outliers, which also confirms the presence of a close functional relationship between variables of bank capitalization and macroeconomic stability.

## 4. DISCUSSION

The preceding analysis has provided valuable insights into the interconnection between bank capitalization and macroeconomic stability in South-West Asia. Yudaruddin (2022) studied the complex relationship between bank concentration, financial stability, capital regulation, and financial openness in Central Asian countries from 1993 to 2017. The study underscores the significance of well-capitalized banks in enhancing financial stability. Banks with robust capital buffers are better equipped to absorb losses and mitigate risks, which ultimately contributes to the overall stability of the financial system. This finding emphasizes the importance of the effective capital regulation and supervision to ensure banks maintain adequate

capital levels. In contrast to this work, this study not only reveals the functional relationship between variables of bank capitalization and macroeconomic stability but also allows identifying the most influential key variables of bank capitalization and macroeconomic stability.

A group of authors led by Santoso et al. (2021) offers a comprehensive analysis of the impact of bank market power on various aspects of banking in the Asia-Pacific region from 2000 to 2016. It highlights both positive and nuanced effects of market power, emphasizing the role of bank capitalization and the broader regulatory environment. In contrast to this study, this article analyzes a specific region of South-West Asia, which is characterized by significant variation differences between the studied countries of this region.

Noman et al. (2018) offer valuable insights into the intricate relationship between bank competition, financial stability, and the role of various regulatory measures in Southeast Asian countries throughout 1990–2014. They explore the impacts of capital requirements, activity restrictions, deposit insurance, and official supervision on this relationship. Despite the value of the results obtained in Noman et al. (2018), this article is distinguished by the originality of the methodological approach, which allows for a comprehensive analysis of the two-way interaction between the level of bank capitalization and macroeconomic stability.

## CONCLUSION AND RECOMMENDATIONS

As a result of the canonical analysis, it was found that there is a close canonical correlation between the level of bank capitalization and the macroeconomic stability of the studied countries. In addition, based on the obtained total redundancy, it was found that 68.95% and 70.64% of the variance of the investigated variables of macroeconomic stability in 2010 and 2020 is determined by the change in the investigated bank capitalization variables. On the other hand, the change in variables of macroeconomic stability of countries by 48.66% (2010) and 42.79% (2020) is caused by the variance of bank capitalization variables. It indicates the growing importance of bank capitalization regarding the country's macroeconomic stability.

The analysis of canonical weights revealed that in 2010, the following variables had the most significant influence on bank capitalization: Bank return on assets, bank return on equity, and bank regulatory capital to risk-weighted assets. In 2020, bank return on assets and bank return on equity remained among the most influential variables of bank capitalization (the measure of the influence of these two variables on the level of bank capitalization increased significantly compared to the previous period of the study), and a new bank deposits to GDP variable was added. All these variables are stimulators for the growth of bank capitalization. In the case of the received results of the canonical weights, it was found that in 2010 and 2020, the Gross National Income and Gross Domestic Product variables had the most significant positive impact on the level of macroeconomic stability. In addition, their importance increased in 2020 compared to 2010.

Thus, the proposed research hypothesis regarding a mutual functional relationship between the level of bank capitalization and macroeconomic stability has been confirmed. However, it is worth noting that bank capitalization is the basis of a country's macroeconomic stability and not vice versa. The strength and stability of a country's banking system are at the heart of ensuring financial stability, promoting credit availability, mitigating risks, and attracting investment. Therefore, understanding and promoting the development of bank capitalization is vital in promoting a country's overall economic development and well-being.

## AUTHOR CONTRIBUTIONS

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