

# **Exploring the Effect Corruption and Government Quality on Bank Stability: Evidence from Transitional Countries**

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Girne, TRNC

# **Exploring the Effect Corruption and Government Quality on Bank Stability: Evidence from Transitional Countries**

By

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A thesis submitted to the Institute of Graduate Studies in partial  
fulfillment of the requirements for the Degree of Master  
in Business Administration

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**FINAL INTERNATIONAL  
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**APPROVAL**

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Stability: Evidence from Transitional Countries

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*To all people on the Earth and for my little Tommy.*

## **ETHICAL DECLARATION**

I, Balguzhina Aigerim Abaykyzy, hereby, declare that I am the sole author of this thesis and it is my original work. I declare that I have followed ethical standards in collecting and analyzing the data and accurately reported the findings in this thesis. I have also properly credited and cited all the sources included in this work.

Balguzhina Aigerim Abaykyzy

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## ABSTRACT

The presence of banking stability in the country is the key to sustainable development of the country's economy. A banking system is stable when lending institutions are able to provide needed financing to households and when economic downturns do not make it vulnerable to internal and external shocks. This indicator assesses the risk of bankruptcy and the degree of system's financial stability. The stability of the banking system can be influenced by many factors, including corruption and the quality of government, which we defined in our work as the indicators under study. In our work, we defined banking stability as a z-score or Altman index, the level of corruption as the indicator of corruption's level from the ICRG (International Country Risk Guide), and six Worldwide Governance Indicators were used to assess the quality of government, which also has a composite indicator, Control of Corruption. Additionally, for doing our research other indicators were taken into account, such as Inefficiency, Credit risk, Cost-Income Ratio etc.

We built 3 models based on the Generalized Method Moments (GMM) based on data from 12 transitional countries of the post-Soviet space for the period 2000-2021. Additionally, Granger causality tests, and other tests were carried out. The results of our thesis show that Corruption has a significantly negative relationship with banking stability, while Government quality has a significantly positive effect. These results suggest that bank stability is higher when corruption level is lower and government quality is higher. Additionally, we identified a positive relationship between z-score and market power, credit risk, income diversification, and a negative relationship z-score with indicators of inefficiency, regulatory capital, banking crisis and market share. At the same time, the indicators of the banking crisis and market share in all three models are insignificant. The remaining indicators are significant in at least one of the three models.

**Keywords:** Banking stability, corruption, government quality.



## ÖZ

Ülkede bankacılık istikrarının varlığı, ülke ekonomisinin sürdürülebilir kalkınmasının anahtarıdır. Bir bankacılık sistemi, borç veren kurumların hane halkına gerekli finansmanı sağlayabildiği ve ekonomik krizlerin sistemi iç ve dış şoklara karşı savunmasız hale getirmediği durumlarda istikrarlıdır. Bu gösterge iflas riskini ve sistemin finansal istikrar düzeyini değerlendirir. Bankacılık sisteminin istikrarı, çalışmamızda incelenen göstergeler olarak tanımladığımız yolsuzluk ve hükümetin kalitesi de dahil olmak üzere birçok faktörden etkilenebilir. Çalışmamızda bankacılık istikrarını z-skoru veya Altman endeksi olarak tanımladık, yolsuzluk düzeyini değerlendirmek için göstergenin ICRG (Uluslararası Ülke Risk Rehberi) bileşeni (yolsuzluk düzeyi) kullanıldı ve altı Dünya Yönetişim Göstergesi kullanıldı. Yolsuzluğun Kontrolü adlı bileşik bir göstergeye de sahip olan hükümetin kalitesini değerlendirmek için kullanılır. Ayrıca Verimsizlik, Kredi Riski, Gider-Gelir Oranı gibi diğer göstergeler de dikkate alındı.

2000-2021 dönemi için Sovyet sonrası uzayın 12 geçiş ülkesinden alınan verilere dayanarak Genelleştirilmiş Uyku Anları Yöntemi'ni temel alan 3 model oluşturduk. Ayrıca Granger nedensellik testleri, ve diğer testler yapılmıştır. Çalışmamızın sonuçları, Yolsuzluğun bankacılık istikrarı ile önemli ölçüde olumsuz bir ilişkisi olduğunu, Hükümet kalitesinin ise istikrar üzerinde önemli ölçüde olumlu bir etkiye sahip olduğunu göstermektedir. Bu sonuçlar, yolsuzluk daha düşük ve hükümet kalitesi daha yüksek olduğunda bankacılık istikrarının daha yüksek olduğunu göstermektedir. Ek olarak, z-puanı ile piyasa gücü, kredi riski, gelir çeşitliliği arasında pozitif bir ilişki olduğunu ve z-puanı verimsizlik, yasal sermaye, bankacılık krizi ve pazar payı göstergeleri ile negatif bir ilişki tespit ettik. Aynı zamanda her üç modelde de bankacılık krizi ve pazar payı göstergeleri önemsizdir. Geri kalan göstergeler üç modelden en az birinde anlamlıdır.

**Anahtar kelimeler:** Bankacılık istikrarı, yolsuzluk, hükümetin kalitesi.

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## LIST OF ABBREVIATIONS

<b>Z_SCORE</b>	Bank stability
<b>MP</b>	Market power
<b>INF</b>	Inefficiency
<b>CR</b>	Credit risk
<b>ROA</b>	Return On Assets
<b>ROE</b>	Return On Equity
<b>GDP</b>	Gross Domestic Product
<b>CR</b>	Capital regulation
<b>ID</b>	Income divarication
<b>%</b>	Percentage
<b>BC</b>	Banking crisis
<b>MS</b>	Market share
<b>WGI</b>	Quality of Government
<b>CC</b>	Control of Corruption
<b>GE</b>	Government Effectiveness
<b>PS</b>	Political Stability and Absence of Violence/Terrorism
<b>ICRG</b>	International country risk guide
<b><math>\epsilon_{i,t}</math></b>	Error
<b>%</b>	Percentage
<b>Ln</b>	Natural logarithm
<b>NPL</b>	Non- performing portfolio
<b>CAR</b>	Equity On Assets
<b>GMM</b>	Generalized method of moments
<b>CPI</b>	Corruption Perceptions Index

# CHAPTER 1

## INTRODUCTION

A financial system of any country is determined as stable if it is able to withstand possible external and internal shocks and imbalances. The system as a whole must be sustainable, not just one institution or bank of the system. The financial and banking systems are defined as stable when lending institutions have capacity to provide the financing to households in a necessary volume, and economic downturns cannot make it vulnerable. In an unstable system, any external shock and imbalance has a negative impact on the economy. For example, it can lead to a reduction in lending, therefore, business activity will decrease, unemployment will increase, and then economic growth will decrease. In addition, banking stability ensures the continuity of the providing financial services and prevents the growth of structural imbalances, contributes to the efficient allocation of economic resources and the distribution of risks, stimulates economic activity and develop the country's welfare. There are external and internal risks that the financial system may face. The external ones include the world economic crisis, the deterioration of the external economic situation, the decline in prices for important export commodities, trade wars, the imposition of sanctions by some countries against others, and disintegration processes. To internal - loss of stability by large financial institutions.

Various indicators are used to assess bank stability, such as one of the main indicators is the z-score or the Altman Index, which allows assessing the risk of bankruptcy of an enterprise, its level of financial stability, margin of safety, and the activities of the enterprise's management (Nurhidayat and Rokhim, 2018; Asteriou et al., 2016; Shim, 2019; Pak and Nurmakhanova, 2013). After all, if the country's banking sector is not stable, then the level of production will decrease, and the entire economy of the country will not be stable and attractive for investment.

There are two main theories regarding corruption. The first one is called "sand on the wheels", the second as "greases the wheels". According to the first theory, corruption has a negative impact on banking stability, while the second theory talks about the positive impact of corruption. Positive impact is justified by a high level of bureaucracy, political delays, and an inexplicably complex system. In such cases, for example, corruption speeds up lending and makes it easier for both the client and the

banking organization. In such countries, there is an increase in lending, profitability and stability (Mongid and Tahir, 2011; Hasan and Ashfaq, 2021). But many works identify the negative impact of corruption on banking stability, for example (Park, 2012; d'Agostino et al., 2016; Tran et al., 2017; Rehman et al., 2020). The negative impact of corruption on the stability of the banking sector can be both at the macro level and at the micro level. At the macro level, corruption has a negative impact overall banking system. For example deteriorating effectiveness of the implementation of legislation and the structure of public spending, decreasing investment in the country by reducing direct injections of entities or opening foreign banks, and increasing external debt and poverty, reducing national income. Some researchers have shown the negative impact of the state on banking. An example would be situations where loans are forcibly directed to finance government projects, which may be unprofitable. Therefore, other private borrowers have no opportunity for financing. For instance, according to Nurhidayat and Rokhim (2018) state intervention increases the influence of corruption on the acceptance of banking risks. This fact can also be explained by the "moral hazard" of the bank during the processes of intervention or financial crisis.

At the micro level, corruption negatively affects at the level of individual banks. For instance, a deteriorate the quality of management, the quality of decision-making on lending, increases the inefficiency in the use of funds, increases the cost of doing business, and creates new barriers to business. Thus, according to the results of the study Park (2012) corruption increases the number of overdue loans in the bank, which reduces stability. That is, corruption through the lending channel distorts the distribution of bank funds from good projects to bad ones, thereby worsening the quality of private investment. According to Ali et al. (2020), corruption encourages an increase in the net interest margin (direct interest rate channel), thereby reducing asset quality by attracting more risky borrowers, and, accordingly, increasing arrears. In addition, in this paper, the authors confirm the non-linear relationship between corruption and the country's income. Thus, it is confirmed that countries with higher income levels have better institutions that help to better control corruption in the country.

However, there are a number researcher found positive role of corruption on banking stability and connected this point with a country's political system. Thus,



according to Shabbir et al. (2016) corruption “acts like sand in the wheels” in countries with a higher degree of political stability and "greases the wheels" in less politically stable countries.

In our work, we also study the impact on financial banking stability of such factors as corruption, government quality, credit risk, liquidity risk, financial availability and other factors. The study base is 12 countries with economies in transition, the former socialist system, which are divided into four regions according to historical and geographical conditions: Baltic (Lithuania, and Estonia and Latvia), Central Asia (Uzbekistan and Kazakhstan), South Caucasus (Georgia and Armenia and Azerbaijan), and Eastern Europe (Belarus and Russia and Ukraine, and Moldova). Countries like Kyrgyzstan, Turkmenistan, and Tajikistan were deleted from the final sample because of unbalanced data.

To best of our knowledge no prior studies has investigated the impact corruption on bank stability on all transitional countries in the same time. Our study contribute to the literature in different way; first, help to enrich the understanding of the mechanism and problems of the functioning of the banking system of transitional countries under the influence of corruption and the quality of government. The reasons of selection of transition countries are to fill the existing gap of literature, that it is important for realization of effective development policies. Second, relates to rapid development of these countries in recent years. Additionally, our decision to study this region was influenced by its diversity. Thus, 15 young countries are about 32 years old with a common historical foundation have a completely different current level of political and economic system. For example, the Baltic countries show a high level of transparency and economic situation (CPI 65 and \$36,701 GDP per capita), while the countries of Central Asia show one of the lowest level (CPI 27.4 and \$11,511 GDP per capita).

According to published data from Transparency International, data on the level of corruption in 15 transitional countries were analyzed. The Corruption Perceptions Index (CPI) was used on a 100-point scale, where the higher the score, the better. At the end of 2022, the lowest level of corruption is in the Baltic region, after the South Caucasus, Eastern Europe, and in last place the countries of Central Asia. The country with the best CPI and ranking is Estonia (as of 01.01.2023 CPI ranks 74th or 14th among countries in the world). The country with the worst consumer price index and

rating is Turkmenistan (as of January 1, 2023, the consumer price index ranks 19th or 168th among the countries of the world).

The Baltic region historically outperforms other regions in terms of corruption. All three countries perform better than other transitional countries. Thus, these three countries are in the TOP-3 among transitional countries in terms of the best CPI indicators (first Estonia, then Lithuania and Latvia). At the same time, the absolute improvement of the indicator over the last 10 years (from 2012 to 2022) in the amount of 9.3 points (or 17%) is the best among transitional countries.

The South Caucasus region consists of three countries, two of which, as of 01.01.2023, are in the TOP-5 best countries among transitional countries in the Baltic countries (Georgia 4th place, Armenia 5th place), and one country is in the TOP-3 transitional countries with the worst consumer price index (Azerbaijan). The average CPI for the region as a whole improved from 2012 to 2022 by 4 points, from 37.7 to 41.7 respectively, or an average of 96 globally to 88.

The performance of countries in the Eastern Europe region as a whole improved from 2012 to 2022. The worst indicator of the CPI is in the Russian Federation, which corresponds to the 11th place among the transitional countries, which has not changed for the last 10 years and remained at the level of 28 points.

The Central Asian region historically has the worst performance on average among other regions of transitional countries. Thus, three countries of this region are in the TOP-5 of the worst countries: Turkmenistan (1st place in the TOP-5), Tajikistan (3rd place in the TOP-5), Kyrgyzstan (4th place in the TOP-5). However, this region has consistently demonstrated a steady increase in CPI over the past 10 years by 7.2 points or 135%.

The third, our study is the level of governance or quality of government. Any financial stability directly depends on the quality of governance, the political system, and the influence of other dependent factors. There are many variations of the calculation of the level of governance, but one of the most common and used at the world level is The Worldwide Governance Indicators WGI. This is the indicator we used in our study. This index is determined according to the method of The World Bank, according to which several hundred variables obtained from various sources are used to calculate the index. The following sources are used: statistical data from

international organizations and national institutions, statistical data and studies' results of non-governmental and international organizations.

According to Kaufmann and Kraay (2002) for higher per capita income is necessary a higher level of governance. They found a strong causal effect going from governance to per capita income. For estimating they were measuring per capita income using real GDP per capita and governance using The Rule of law index. Zureiqat (2005) using data from 25 countries (5 regions) for period 1985-2002 determined that Political stability has a positive impact on economic growth. The economic growth was measured by the GDP per capita, the politic instability was measured by a country's democratization score. At the time, Kirmanoğlu (2003) examined data for 19 developing countries from 1972 to 2001, but in the end he found no empirical support for relationship between economic growth and political freedom.

Risks of various types have an influence on banking stability. One of the major types of risk is credit risk and liquidity risk. The main goal of any bank, like any commercial enterprise, is to generate income. For doing profit, banks attract depositors' money at interest, and then invests available funds in loans, securities and deposits in other banks. The bank earns on the percentage difference between this deposits and credit products. Therefore, in the event of an increase in credit risk and non-performing loans (NPL), the Bank's available liquidity decreases and, accordingly, decreases the ability to pay its obligations in the form of deposits. All this leads to a default of the bank. Because the banking sector is not so much a vast sector, the default of one bank can lead to system risk of entire bank system of a country. When measuring credit risk, most researchers use NPLs, such as Ali et al. (2020), Ekinci and Poyraz (2019) others supplement it with the level of reserves and other indicators of Arshad and Rizvi (2013). Many studies determine the presence of a significant negative impact of credit risk and liquid risk on stability of financial system. Many studies determine the presence of a significant negative impact of these types of risk on financial stability. For example, these are the works of Rezaei and Garabaghlu Shahabi (2020), Krisvian and Rokhim (2021). However, there are a number of studies where one of the types or both risks is not significant. Thus, according to Ali and Puah (2019), credit risk significantly negatively affects profitability, while liquidity risk does not have a significant impact. Also Taiwo et al. (2017) study found that credit risk

management has little effect on growth in advances by Nigerian banks of deposit money and total loans.

The Market Power is another variable, which is considered in our work. This indicator assesses the strength of the monopoly in the sector, and, accordingly, is the inverse of competition. There are many works studying the influence of competition/monopoly on banking stability. However, there is no single conclusion. Thus, there are two hypotheses about the influence of competition: “competition-stability” and “competition-fragility.” The first hypothesis says that competition increases economic efficiency and stability. Thus, lower lending rates, which are the result of banking competition, reduce the cost of borrowing both for customers, that is, reduce their future non-repayment. Thus, this will reduce the credit risk faced by banks. In addition, competition pushes for the introduction of innovations and diversification of products and income. The second hypothesis says that in a highly competitive environment, bank stability decreases, because banks are forced to take on additional credit risks, which endanger a whole financial system of country.

## **1.1 Problem Statement**

For the central banks of each country ensuring the financial stability of the bank system is an considerable issue. The unstable position of the banking system leads to the financial system’s disruption and an increase of financial problems in the economy as a whole. Therefore, an important indicator of the economic situation of any country is the state of the banking system, which must be monitored and threats to its state identified. In the light of a review of the literature to date, corruption and the quality of government are identified as the main factors in the stability of the bank system. At the same time, there are 2 main theories of the impact of corruption on bank stability, with polar opposite effects (negative and positive). Additionally, there is a lack of literature that establishes a correlation between corruption and economic soundness of bank industry in transitional countries. Hence, it is imperative to conduct an investigation on the matter.

During our research, we encountered the problem of unbalanced data in a number of countries. For some countries, most of the data was collected, but for others, much of it was missing. In this connection, it was necessary to exclude a number of

countries from the sample. Thus, not the entire region of transitional economies was included in the study, as we had planned.

## **1.2 Purpose of the Study**

The aims of this thesis are as follows:

- Evaluation of corruption's impact on bank stability of transitional countries.
- Evaluation of government quality's impact on bank stability of transitional countries.
- Evaluation of other financial variables' impact on bank stability of transitional countries.

## **1.3 Significance of the Study**

This article will contribute to the growing body of literature on the impact of corruption on banking stability and confirm the need and relevance of anti-corruption bodies, anti-corruption policies. In addition, understanding that corruption can be a major cause of banking system crises will help develop regulatory anti-corruption policies. Thus, the Regulators of these countries need to analyze and improve and reform anti-corruption regulation, conduct stricter rules and supervision in order to prevent the risks of the country's economic development. This can be done through increased transparency, disclosure of information, independent external audit. Additionally, it is important to pursue a policy of combating corruption and bribery at the level of financial institutions and their managers, since all this negatively affects banking stability.

The contribution of this article lies in the fact that there is currently no such study separately for countries in transition. We will study the impact of corruption and various types of risk on the banking stability of these countries. The results of this study should help both the regulators of these countries and the management of the banking sector to determine for themselves priorities and areas for focusing attention in order to ensure economic growth.

## **1.4 Research Questions and Hypotheses**

### **1.4.1 Research Questions**

This research aims to address the following questions based on the aforementioned:

- Does corruption have impact on the banking stability of transitional countries?

- Does Government Quality and its factors have influence on the banking stability of transitional countries?

#### **1.4.2 Hypothesis Development**

H1: Market power is negative and significantly associated with the bank stability.

H2: Market share is positively and significantly associated with the bank stability.

H3: WGI indicators are positively and significantly associated with the bank stability.

H4: Credit risk is negative and significantly associated with the bank stability.

H5: Inefficiency is negative and significantly associated with the bank stability.

H6: Capital regulation is negative and significantly associated with the bank stability.

H7: Banking crisis is negative and significantly associated with the bank stability.

H8: Income diversification is positively and significantly associated with bank stability.

#### **1.5 Limitations**

The lack of data for some transitional countries was the reason of their expelling from final data (Kyrgyzstan, Turkmenistan, and Tajikistan).

Only 12 of the 15 transitional countries were included in this study, reducing the generalizability of the results. Due to the study's narrow focus on only 12 countries, we cannot extrapolate the results across countries individually.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Impact of corruption on bank stability

The first stream of literature review is to focusing on the prior papers that investigated affect corruption on bank stability. For instance, Alaukhanov and Akhmedin (2007), where they define Corruption as an increased social danger that undermines the foundations of statehood and, having reached a certain level, becomes a threat to national security. They define the "shadow economy" for Kazakhstan, i.e. unrecorded, unregulated, illegal types of economic activity. Other works based on the study of the impact of corruption in other countries also note the impact of corruption on the banking sector. For instance, Goel and Hasan (2011), based on a sample of more than 100 countries with annual data, also concluded that the higher the level of corruption, the higher the level of non-performing portfolio. Similarly, Park (2012) explained the impact of corruption on economic growth and bank stability. His article collected different countries' selective information about 76 macroeconomic factors for 2002-2004. The regression analysis's results reveal important points. Corruption reduces the quality of assets and the bank sector and increases credit risks, which leads to increased vulnerability of the bank sector and financial difficulties of banks. Corruption, by increasing the number of non-performing loans, reduces bank financing, domestic investment and subsequent economic growth. Similarly, Asteriou et al. (2016) also examined impact of corruption, regulation, transparency and economic freedom on bank stability and profitability. The data included 681 banks in 33 countries of Europe over 2000-2012. On base of unbalanced panel data and a 2SLS estimate, the results showed mixed effects at the aggregate level. At the aggregate level, there was less evidence that reducing corruption increased profitability of bank and there is no evidence that it improved bank stability. Nevertheless, on disaggregation of data, the results showed that corruption is a bigger issue for medium-sized and small institutions than for bigger ones.

Nurhidayat and Rokhim (2018) looked at the anti-corruption commission, corruption's impact, and government intervention on bank risk taking. They used sample of 76 Asian countries' banks such as Malaysia, Indonesia, South Korea, Thailand during 1995-2016 years. They concludes that higher levels of government

intervention in a crisis and corruption will enhance banks' risky behavior due to clear signs of moral hazard and weaknesses in governance and supervision. A similar result is shown by Ali (2020), who assess the direct and indirect corruption's impact on the stability of the bank system. He used data of 38 countries for 2000–2017 years in a study. The direct impact of corruption reflects in an increasing of less stable banks and, consequently, a high likelihood of bank system's crises. At the same time, corruption affects interest margins more than profitability. Corruption encourages exceeding risk taking for increasing interest margins, but this will attract riskier clients-borrowers. It will lead to growth in bad debts and the likelihood of default or crises. Finally, the results of study Rehman et al. (2020) highlighted a significant negative relationship between corruption control and credit risk, as measured by the level of NPL. This indicates that tighter controls on corruption will lead to a reduction in NPL.

However, there are studies that have shown a positive effect of corruption. Mongid and Tahir (2011) also determined that the corruption index is positive, that is, banks are able to benefit from increased corruption in conditions of poor governance. Bougatef (2017) reached the same conclusion based on data from ten Tunisian commercial banks over the period 2003–2014. Using the generalized method of moments (GMM) determines the positive impact of corruption on the bank's activities, while an increase in the level of corruption benefits the bank in improving efficiency. In addition, the study shows that corruption is an important predictor of a bank's profitability. Similarly, Arshad and Rizvi (2013) analyze the impact of corruption on the activities of Islamic banks in countries with high levels of corruption. They applied panel least squares (POLS) to a sample of 10 banks over the period 2000-2010. The evaluation of the results of the POLS test revealed a significant and positive impact of corruption on the bank's activities. The results of the study, to some extent, reflect the confirmation of the hypothesis that some banks, due to corruption in the country, can flourish. Thus, the work of Hasan and Ashfaq (2021) shows a positive relationship between corruption and credit risk for a global sample. Nevertheless, in their work, they defined this hypothesis as "oiling the wheel" for countries with exceeding regulatory pressure and a weak form of governance. For such countries, corruption benefits economic development. The result was made on a sample of 178 countries for the period 2000-2017.



Syed et al. (2022) studied the impact of the corruption component of the ICRG indicator on banking stability. They concluded that in the short-term a positive shock from corruption increases the instability of the banking sector, while a negative shock from corruption reduces the instability of the banking system. This suggests that a 1% increase in corruption increases banking instability by 1.19 %.

There are also works that have not determined the impact of corruption on the stability. Such work includes a study by Ekşi and Doğan (2020). In this paper, they examine the impact of the Corruption Perceptions Index (CPI), GDP, openness, government size on financial development applying the Generalized Moment Method (GMM) in 19 countries of Central Asia and Eastern Europe for the period from 2012 to 2017, no relationship was found between the level of perception of corruption and financial development.

## **2.2 Impact of Government Quality on bank stability**

Another condition for the stability of the economy and its growth is often considered the presence of Political stability, Control of corruption, Rule of law, Voice and Accountability. Therefore, there are a number of works that study this topic. In these papers, the government quality indicator is taken as the World Governance Indicators (WGI), and economic growth is most often associated with the country's GDP. Most often, in the results of these works, one can see the presence of a relationship between these indicators or its components. The earliest study by Brewer (2007) examining government efficiency in Asia concludes that several factors influence the degree of government efficiency: accountability and voting rights, control of corruption, wealth and income. At the same time, the presence of a democratic form of government does not seem to be an important factor, but the authors note that more sensitive measures of democracy could give more positive results. Moreover, Gangi and Abdulrazak (2012) examined the relationship of WGI to foreign direct investment (FDI) flows in 50 countries of Africa over 1996-2010 years. They also determined the presence of influence and dependence between indicators. Thus, three components of the WGI are statistically significant: government effectiveness, voting rights and accountability, the rule of law. For instance, the work of Zubair and Khan (2014) on the example of Pakistan concludes that Political stability contributes largely to positive economic growth. In their work, he notes that ensuring a politically stable environment should be one of the highest priorities of all

governments in developing countries. However, they also have an impact and cannot be ignored (Rule of law, Control of Corruption, Voice and Accountability). Ranasinghe and Peiris (2018) based on a sample of data on 13 commercial banks in Sri Lanka and WGI from 2011 to 2016, studied the impact of management efficiency on bank lending and bank deposits. Although the overall component developed does not show significant results, individual components do have an impact. Thus, the results for the system-GMM model show a significant impact of WGI on bank lending. The rule of law, regulatory quality, voice and accountability demonstrate a significant positive relationship between bank lending and political stability. While the fight against corruption and the effectiveness of the government have a significant negative impact. It was also determined that there is a significant intermediary effect through bank deposits. According, Anastasiou et al. (2019) which used data for the period 1996-2016 and principal components for all Worldwide Governance Indicators (WGI) for Greece determine the overall component and its impact on the level of NPLs in Greek banks. In addition, they determined that systemic liquidity risk combined with WGI has a statistically significant effect on the level of NPL in Greece.

Additionally, other components that affect banking stability were studied. For example, the work of AlKhoury and Arouri (2019), where used data of 69 Islamic and traditional banks over the period from 2003 to 2015 and the System GMM methodology. Lack of competition, government intervention, high control of Central banks, legal protection have a positive impact on the performance.

### **2.3 Impact of Bank diversification on Bank stability**

Banks seek to diversify their income in order to increase their risk tolerance, stability and profitability. Diversification of the bank's income is the activity of the bank to increase financial transactions, through which the bank can receive not only interest income from lending, but also non-interest income from other financial services such as card circulation, electronic banking services, transfer costs, trade, and commission services. Through income diversification, banks seek to increase the share of commissions, net trading income and other non-interest income. In this regard, there are a number of works that study the impact of profit diversification on the bank stability and most of them determine that diversification has a positive effect on the stability of the Bank.

Sanya and Wolfe (2011) based on a sample of 226 listed financial institutions of 11 countries and System GMM approach, claim that diversification in income sources enlarges profitability and decreases bankruptcy risk.

In the same line Hsieh et al. (2013), based on data from 22 Asian commercial banks from 1995 to 2009, examine the relationship between bank diversification and stability. The results from the dynamic ordinary least squares test show that diversification of assets has little effect on bank stability, whilst diversification in income can increase bank stability.

Nguyen et al. (2012) in their work explores the impact of this income diversification on the stability of individual banks. The study was based on data from four South Asian's banks (Sri Lanka, Bangladesh, Pakistan, India) between 1998 and 2008. The results of the Generalized Methods of Moments (GMM) reflect that banks diversifying with both interest and non-interest income are more stable. Later, Köhler (2015) analyzes data from banks in 15 Europe countries for 2002-2011 years. He concludes that if banks increase non-interest income's share, their sustained and profitable will be higher. However, investment banks, by contrast, are becoming significantly riskier.

Siregar and Chandra (2017) noted a slight positive impact of income diversification on the stability of the bank. In study a dataset for the period 2011-2014 of twenty banks, that listing on the Indonesian Stock Exchange were used. Thus, it is concluded that non-interest income does not have a higher risk than traditional bank income. Therefore, the efforts of banks to receive not only interest income through lending, but also non-interest income through the provision of other financial services slightly increases its stability.

Abuzayed B. et al. (2018), based on data from listed and non-listed banks operating in the countries of the Gulf Cooperation Council between 2001 and 2014, did not find confirmation of the relationship between sustained state and diversification of income or assets. However, they note an indirect link between non-interest (non-financial) income and stability, suggesting that banks are able to mitigate risk at higher levels of diversification. Ngoc Nguyen (2019) also analyzed the relationship between income diversification, risk and bank performance, but based on data from 26 commercial banks registered and unregistered in Vietnam for the period 2010-2018, using the generalized moment method (GMM). Based on the results of the

study, he came to the conclusion that diversification negatively affects profitability, positively effects on stability.

Shim (2019) assessed the impact of diversification, market concentration and joint interaction of these two parameters on financial steadiness. The results show that banks that diversify their credit portfolio can improve their steadiness (Z-score) more effectively than banks that focus their lending in a specialized area. Market concentration ratios (Herfindahl-Hirschman index) are statistically significant and positive, displaying positively relationship between market concentration and a steadiness of banks. That is, in concentrated market structures (where a few firms occupying a most share of market) banks with one of most market share are more financially secure, than banks in less concentrated market structures (where there are many financial organization with a small market share). Additionally there is a conclusion that the effect of diversification is different for markets with different levels of concentration. Diversified banks working in highly concentrated systems are sounder than diversified banks in less concentrated systems.

The same results had Khattak et al. (2021), who found that diversification enhances the stability of Islamic banks in the Indonesian market. Coming to the same conclusions, Tariq et al. (2021) examines dataset from the financial statements of Pakistani commercial banks for 2005-2019 in his work. Chandramohan et al. (2022) on the sample of 48 banks in India (public, private and foreign banks) from 2007 using a dynamic Generalized Method of Moments (GMM) model determined that geographic, functional and loan-portfolio diversification increase bank sustainability. Adem (2022), using panel data for forty five African countries for 2000-2020 years, confirms early works that diversification decrease risk and strengthen bank resilience in emerging market and developing countries. Šeho et al. (2023) came to have different effects on different types of banks. That is, a study of 46 traditional and 22 Islamic banks from the countries of the Gulf Cooperation Council (GCC) in 2008-2021 shows that the impact of diversification on resilience and stability for Islamic banks is negative, but the stability of traditional banks increases with a high level of diversification. In addition, diversification stabilized the position of banks during the global financial crisis, but negatively reflected the Covid-19 pandemic.

However, there are works, where the relationship between diversification and stability is not found or it has a negative direction. Therefore, work of AlKhoury and

Arouri (2019), where used data of sixty nine traditional and Islamic banks for 2003–2015 years and the System Generalized Method of Moments methodology. The result of its work is non-interest income diversification has a negative impact on banks' performance and stability, but asset-based diversification affects banks performance and stability positively. Similarly Duho et al. (2020) based on a panel regression method on a dataset of 32 banks from 2000 to 2015, the results show that income diversification reduces earnings, earnings efficiency, and financial stability. The impact of asset diversification is negligible. Also, Le (2021) examines the impact of income diversification and geographic expansion on bank resilience in Vietnam for period 2006-2015. The results on base of Systemic generalized method of moments (GMM) show a positive effect of geographic expansion on bank stability, and no effect for diversification of income. Dang (2021) based on a GMM and a group of banks of Vietnam for the period 2007–2017 found that banks of Vietnam, which more involved in non-interest bearing activities, have lower credit risk but in the same time have higher bank volatility.

Similarly, Abbas and Ali (2022) studied data from commercial banks of United States of America between 2002 and 2019. He the GMM method and applied 2-stage instrumental variables. The results showed that diversification of income has a significant negative impact on the steadiness of banks, while the diversification of loans and assets positively contributes to the steadiness of banks.

According to the following works, despite the optimal level of diversification can increase stability, excessively high level of diversification will negatively affect stability. Lahouel et al. (2022) studied the impact of diversification of income on the stability of banks based on 114 European commercial banks in the 2010–2019 years (post-crisis period). The results show that a moderate or average level of banks' income diversification increases their stability, but at the same time, excessive diversification has a negative impact. The results show that higher levels of incomes' diversification worsen bank steadiness. According to the authors, an optimal level of diversification should be observed.

## **2.4 Impact of the Capital Regulation, Efficiently on Bank Stability**

Describing the Efficiently (cost-income ratio or CIR) there are works researching relationships between CIR and profitability and CIR and stability. For

example, Mathuva (2009) on data of Kenyan banks for the period 1998 to 2007 found negative relationships between bank profitability and cost-income ratio, but positive relationships between bank profitability and risk-based capital. Almazari (2013) collects data from the financial statements of 9 (nine) Saudi banks for the period 2007-2011 found identically results for CIR but opposite results for capital regulation. The linear regression method concluded that bank efficiency, measured as the cost-to-income ratio, has negative affect on bank profitability. The ratio of core capital and risk-weighted assets also has a negative impact on profitability. He measured profitability as ROA (return on assets) and ROE (return on equity).

Chortareas et al. (2012) examined the dynamics between regulation and the efficiency and effectiveness of commercial banks in 22 Europe countries for 2000–2008 years. In the article's results suggest that enhancing restrictions of capital and formal supervisory powers are able to increase bank performance.

Jovita and Wahyudi (2017) on base of population Indonesian 92 domestic banks and 10 foreign banks for period from 2011 to 2015 used multiple linear regression analysis. They found that CIR had the greatest and significant negative impact on ROA. Analogically Rupeika-Apoga et al. (2018) wrote that CIR has a significant negative impact on banks' stability.

Lotto (2018) using data of Tanzanian banks for the period between 2009 and 2015 shows a significant positive relationship between bank operating efficiency and capital ratio. Commercial banks of Tanzania are more operationally efficient with more stringent capital regulations. Capital regulatory strengthens stability by providing a capital cushion and increases efficiency by preventing and averting a moral hazard problem between debt-holders and shareholders.

Idawati and Syafputri, S. A. (2022) on data of 40 conventional banks listed on the Indonesia Stock Exchange (IDX) in the period 2016 to 2020 analyzed impact of Cost to bank stability (z-score) for pre\_covid period and Covid-period. They found that Cost ratio (expense divides to total assets) didn't have an effect on steadiness of bank, and Non-Interest Income ratio also didn't have an effect on the period of study #1 and has negative impact on the period of study #2.

Dias (2021) based on a sample of 2,538 banks from 135 countries over the period 2007 to 2015 and using z-score as an indicator of stability and CIR, found a significant

negative relationship between them. Also, having analyzed the regulatory capital (capital to risk-weighted assets), established a positive significant relationship with the z-score.

Al-Sharkas A.A. and Al-Sharkas T.A. (2022) tested the potential impact of capital adequacy ratios and a number of other indicators (including CIR) on bank profitability. They used panel data from 24 banks in Jordan for the period 2008–2018. They came to similar conclusions that CIR is inversely related to both measures of bank profitability (ROE and ROA). Capital to risk-weighted assets has a positive impact on ROE and a negative effect on ROA.

Adem (2023) confirmed Dias's results. He used static and dynamic panel estimation based on panel financial data of 45 countries for 2000–2017. He achieved results that shows negative relationship between inefficiency and z-score. The efficiency was measured as cost-to-income ratio, and a higher value of ratio represents inefficiency. Therefore, on base of his findings banks with lower degrees of efficiency have less steadiness and stability. He also on GMM-test base assessed positive but insignificant impact of regulatory capital on stability. Additionally, established that the impact of bank capital regulation on the solvency, paying capacity and risk of the bank is significantly positive and negative, respectively. Thus, identifying banking regulation as a good strategic factor to ensure stability and minimize the risk of default.

Most studies conclude that regulatory capital is necessary. High capital is associated with higher liquidity, lending, high bank stability and their values in times of crisis. Decreasing capital in the banking sector increases systemic risk and the need for government financial assistance, which could lead to an increase in public debt or a sovereign debt crisis (Thakor, 2014).

Nevertheless, not all works note the positive impact of regulatory capital on bank stability. Thus, capital requirements may entail various costs at the banking and social level to maintain a given level of capital. For example, Oduor et al. (2017) applying a dataset of 167 banks in 37 countries of Africa conclude that financial instability in Africa increases with increasing capital. The implication is that increased capital requirements have not made Africa's banks more stable and secure. In addition, they found that increasing regulatory capital increases price competitiveness for foreign banks and decreases price competitiveness for domestic banks. The reason is the high cost of finding and holding additional capital for domestic banks compared to foreign

banks, which can obtain cheaper credit from outside countries or cheaper capital from parent companies. In addition, there are papers that investigate the usefulness of risk-weighted assets for predicting risk (Das and Sy 2012). Boachie et al. (2021) focused their study on 18 sub-Saharan African countries and used data for an 11-year period from 2008 to 2018. It has been found that in sub-Saharan Africa, the regulation of banking capital negatively affects banking stability.

Some researchers in their work study the influence of financial leverage (the ratio of borrowed capital to equity) on stability. Kiema and Jokivuolle (2014) explored the effect of leverage ratio and concluded that this ratio can encourage banks with low-risk lending strategies to diversify their portfolios with high-risk loans, which in turn may lead to model risk for each category of loans. Acosta-Smith J. et al. (2020) also determines and empirically supports an analysis of a large sample of European banks that requiring a leverage ratio leads to a significant reduction in the probability of disaster for highly leveraged banks. That is, based on the micro-model, it can be seen that the leverage requirement encourages banks to increase their risk taking, but this is outweighed by the benefits of higher capital, which will lead to more stable banks.

## **2.5 Impact of Market Share, Market Power and Competition on Bank Stability**

Many researchers link banking stability to market share, market strength, size of bank and the presence of a competitive environment. Most of the works recognize the positive impact of size of bank on banking stability. For instance, Mirzaei et al. (2013) studied 1929 banks of 40 advanced and emerging economies between 1999 and 2008 and concluded that higher market share leads to enhancer bank profitability and stability in advanced economies. It means that banking systems in developed countries tend to lean toward the relative-market-power hypothesis. According this hypothesis firms producing well-differentiated products have an opportunity to increase and magnify market share and use their bargaining power to set product prices, thus earning excess profits.

Furthermore, Adusei (2015) in his work based on data on the banking sector of rural Ghana concluded that an increase or magnification of a rural bank's size leads to a growing in its sustainability and stability, and the risk of financing positively affects the stability of the bank. In the same line, Rupeika-Apoga et al. (2018) based on data



from Latvian banks for the period 2003-2016 determine that the size of the bank has a significant positive impact on the stability of the bank. Shim (2019) also found that a market concentration is positively associated with bank stability, concordant with the “concentration-stability” view. Rehman et al. (2020) also note that bank size has a positive effect on stability, indicating that larger banks tend to take on risks that are more excessive.

There is a similar conclusion in the works that studied Islamic banks. Louati and Boujelbene (2015), using data from traditional and Islamic banks in 12 MENA countries and Southeast Asia, and a stochastic frontier approach (SFA), show that the size of an Islamic bank accomplish the financial steadiness and stability of that bank and all bank sector. Similarly, Ibrahim and Rizvi (2017) applying a panel data of 45 Islamic banks that located in 13 countries, explored the potential non-linear effect of size on a bank's soundness. The results reflect that the larger an Islamic bank, the more stable it is. At the same time, if the influence of regulation is imposed, then the positive relationship between stability and size weakens with an increase in the powers of private control and supervision. Ibrahim et al. (2019) empirically confirms the relationship between competition and stability, especially in the traditional banking sector. The results were based on traditional commercial banks and Islamic banks in Malaysia. However, there are works with the opposite point of view. For example, Kim et al. (2016) examine the impact of bank structure and size on bank sustainability. He used information about Asian countries' banks for the period from 1994 until 2012. The results show that banks with a large market size have a negative relationship with bank sustainability and stability, which can lead to strengthen systematic risk.

Some researchers attribute banking stability to the presence of a healthy competitive environment, which helps to improve the position of banks through the improvement of the products presented. Most of the papers also reflect the positive impact of competition on stability. For example: Schaeck and Cihák (2014) using a new measure of competition based on the redistribution of profits from inefficient to efficient banks, they investigated the impact of competition on banking stability based on a sample of European banks. They found that competition has a positive effect on strengthening stability, and this effect is for healthy banks than for unsustainable ones. Hendrickson et al. (2014) collected data on surviving and failing banks in Florida and Georgia to investigate the cause of failure. The results show that banks operating in

competitive markets are less likely to fail, and the location of branches does not reduce the risk of bank failure. There is work on the Turkish banking market with similar results. Kasman S. and Kasman A. (2015) analyze the banking industry in Turkey for the period 2002-2012 in their article, using the Lerner index and the Boone indicator as proxies for competition, the Z-scores and the share of non-performing loans (NPL) in total loan assets as proxies for bank steadiness and stability. The main results show that competition reduces the share of non-performing assets, but has a positive effect on stability (Z-score). A high concentration positively affects the NPL and negatively affects the Z-score.

In addition, Shijaku (2017) came to similar conclusions by analyzing the relationship between competition and stability after the global financial crises on a database of 16 Albanian banks operating between 2008 and 2015. In their work, they calculated a new composite dummy variable as a measure of bank steadiness and stability, and used other alternative indicators, such as the Lerner index, earnings elasticity and the Herfindahl index. The results of the work confirm the “competition-stability” view, according to which a higher extent of competition contributes to strengthening the stability of banks after the global financial crises.

According, Goetz (2018) which believes that increasing competitiveness in the market significantly increases the stability of the bank and reduces the likelihood of bank failures, the share of overdue loans and enlarge profitability. That is, competition through increasing the profitability of the bank and the quality of its assets also increases stability. Duho et al. (2020) determined, that high competition reduces both profitability and profit efficiency, but increases financial stability.

Rahman et al. (2021) The study examines the impact of banking competition (Lerner index and Boon indicator) and efficiency on the financial stability and soundness of the banking sector (non-performing loans and Z-score) in Bangladesh over the period 2011-2018. The results of the study show that the Lerner index is significantly negatively related to the Z-score, meaning that higher bank competition can lead to higher bank stability and sustainability. The same Boone indicator showed that an increase of 1 (one) unit led to a decrease in the Z-score by 6.15 units. It has also been found that lower competition increases non-performing loans and bad debts. It can be concluded that higher economic efficiency leads to higher bank stability.

Nevertheless, there are works that reflect the negative impact of competition. For example, Pak and Nurmakhanova (2013) analyzed the impact of banking market power on credit risk and the overall stability of the banking system in Kazakhstan. The sample was compiled based on data on 19 Kazakhstan's banks of the period 2007-2011 and key parameters such as the Lerner index, the share of overdue loans, the Z-score index. This work is relevant at the moment, as the financial system of Kazakhstan is constantly going through a process of consolidation and intense regulation, and, accordingly, to a reduction in the number of banks. An increase in the concentration of the banking market and an increase in market power is accompanied by a restriction of competition. This study concluded that increased market power is negatively related to credit risk taking by Kazakh banks, but positively related to bank stability.

Beck et al. (2013), based on a large 510 banks' sample of 22 countries for the period 1995-2009, show results from regression analysis that bank competition is closely related to bank stability. They note the influence of supervision and regulation, and other institutional factors on the relationship between competition and soundness or stability. For example, their result shows that competition is more detrimental to stability in countries with more generous deposit insurance, more homogeneous market structures, more stringent activity restrictions, and more efficient credit information exchange.

Diallo (2015) explored the relationship and connection between banking competition using data from 145 countries from 1997 to 2010. The work used the Lerner index and the adjusted Lerner index, the Boone indicator, and two econometric methods. According to the results, banking competition has a negative impact on stability, that is, it damages it, and reduces the survival time of bank systems. Additionally, Siregar and Chandra (2017) studied the impact of market power on the stability of 20 banks in Indonesia based on secondary data for the period 2011-2014. Using multiple linear regression, they concluded that market power has a significant positive effect on a soundness of banks.

Similarly, Sanderson et al. (2018) examines in his work whether the Zimbabwean banking system adheres to the hypothesis of stability of competition or the hypothesis of fragility of competition. For this purpose, the indicators of competition and stability of the financial sector were assessed through a number of parameters, including the Lerner index. The results show that the Zimbabwean bank

sector supports the fragility hypothesis, which means that enlarged competition in the bank sector leads to instability in the bank system. Thus, recommending that the central bank provide moderate policies that promote competition.

Albaity et al. (2019) come to results by examining the impact of competition on banks' steadiness based on data from 276 banks in eighteen countries in the North Africa and Middle East between 2006 - 2015. The result of the work reflects that banks that face little competition tend to take on fewer insolvency and credit risks and achieve higher profitability. Also, Khattak et al. (2021) found that competition in the banking sector reduces stability. At the same time, competition and diversification complement each other in increasing stability.

## **2.6 Impact of Credit Risk on Bank Stability**

One of the indicators that determine bank stability is capital and risk. Therefore, many researchers are studying this issue. Kolapo et al. (2012) also reflect the impact of credit risk. In this way, they measured the quantitative impact of credit risk on the activities of Nigeria's commercial banks from 2000 to 2010 (11 years). That is, a 100 percent increase in non-performing loans decrease ROA (profitability) by about 6.2 percent. Ovi et al. (2014) based on the data of 2005-2019 Vietnam commercial banks show that the credit risk of the bank, profitability and stability of the bank have a direct relationship and have a partial indirect relationship. Non-performing loans, provisions for possible losses on loans, non-interest income, the efficiency and growth of bank credit have a negative impact on the profitability of the bank and the stability of the bank. Non-performing loans, non-interest income reduces the stability of the bank, while the reserve for possible losses on loans increases it.

An article of Djalilov and Piesse (2016) identifies the factors that affect bank profits in transition countries. Based on data from Central and Eastern European countries in transition and late transition countries formed after the USSR collapsed for the period 2000-2013. They found mixed results. Thus, in particular, countries with an early transition period and in a more competitive environment are characterized by positive results, including the positive impact of credit risk, capitalization and banking performance on bank profits. In addition, for countries with a late transition period, negative results were obtained. In addition, the study revealed the negative impact of public spending and financial independence on the activities of banks. Ghenimi A. et

al. (2017), based on a dataset of 49 banks working in the region MENA between 2006 and 2013, showed that credit and liquidity risks are not economically significant, mutual simultaneous or temporal relationship. However, both risks separately affect the soundness and stability of the bank, and their interaction and cooperation contributes and facilitate to the bank's instability. Amara and Mabrouki (2019) found the similar result on a sample of 49 banks operating in Tunisia between 2006 and 2015 showing that credit risk and liquidity risk don't have a significant relationship. However, both risks separately affect the stability of the bank, and their interaction contributes to the instability of the bank. Rupeika-Apoga et al. (2018) stated that on data from Latvian banks for the period 2003-2016. Determine that efficiency ratio (cost-income ratio) and credit risk have a negative significant impact on the stability of banks, while the liquidity ratio, size of the bank, profitability, GDP growth and inflation have a positive significant impact on the sustainability of the bank.

Djebali and Zaghoudi (2020) they examined based on panel data from 75 traditional banks located in 11 countries in the region MENA, over the period from 1999 to 2017, the relationship and binding between liquidity risks and credit risks to bank stability. In their work, they determined the optimal thresholds above which credit and liquidity risks become detrimental to a bank's stability. Saputra et al. (2020) studied on 10 banks in Indonesia for the period 2019-2020, using descriptive statistics and building multiple linear regression. He proves in his work that credit risk, capital adequacy and liquidity risk simultaneously affect the stability of the bank. Capital adequacy has a positive influence, while liquidity risk and credit risk have a negative effect on the sustainability of banks. Likewise, Setiawan et al. (2021) used a sample of 28 traditional banks in Indonesia in 2013-2017. The results of their study showed that credit risk had a negative effect on the probability of default, while liquidity risk separately and the interaction of liquidity risk and credit risk have a positive impact on the probability of default. At the same time, credit risk and liquidity risk didn't affect to each other, or at any rate there was no mutual dependence. Matey (2021) using data from nine banks of Ghana from 2008 to 2018 and using panel regression, he confirms the inverse relationship between liquidity risk, credit risk, bank stability, emphasizing the need to funnel untapped funds into securities. Anh and Phuong (2021) used a Z-score to investigate the impact of credit risk on the financial strength of 27 Vietnamese commercial banks. The data was collected for the period from 2010 to 2019. The

results of the analysis show the negative impact of problem loans on the financial stability and soundness of banks, that is, with an increase in problem loans, there is a decrease in financial stability.

Idawati, W., & Syafputri, S. A. (2022) on data of 40 conventional banks listed on the Indonesia Stock Exchange (IDX) in the period 2016 to 2020 found, that Credit risk has a negative effect for pre-Covid period and Covid-period.

Wagner (2007) in his work, on the contrary, shows that enlarged bank assets' liquidity enhance banking instability. The reason is that the high liquidity of assets, contributing to stability, will encourage banks to reduce risks on a balance sheet, that is, crises become less high-costly for a bank. As an outcome, banks have a stimulus to take on a new risk, thereby affecting stability. Hassan et al. (2019) using data for the period 2007-2015, and the result shows that credit risk and liquidity risk have a negative relationship, while identifying a negative relationship between liquidity risk and soundness, stability, sustainability for Islamic banks.

## CHAPTER 3

### DATA AND RESEARCH METHODOLOGY

#### 3.1 Population and Sampling

We used unbalanced country-level panel data for 12 countries of the Soviet regime for the period from 2000 to 2021. Despite the fact that the Baltic countries declared independence in 1988-1989, all 12 countries received legally recognized sovereignty because of the collapse of the USSR in 1991. Thus, statistics cover 21 years out of 33 years of independence. For a number of reasons, there is no relevant data for the first 9 years of independence from 1991 to 1999 inclusive. Moreover, for a number of reasons, some countries don't have complete data on the variables we have chosen. The selected period allows us to assess the natural development of the new country, assess the impact of the recent world crises on the stability and profitability of the banking system of the observed countries, as well as their chosen political, social and economic course. For instance, we will see radically different levels of banking stability in less developed and more developed countries like the Baltic, which are even part of the Eurozone. In addition, due to the availability a data of countries Turkmenistan, Kyrgyzstan and Tajikistan has been removed from the analysis. In the end, we have 12 countries divided into four regions according to historical and geographical conditions: Baltic (Lithuania and Estonia and Latvia), Central Asia (Uzbekistan and Kazakhstan), Eastern Europe (Moldova, Ukraine and Russia, Belarus), South Caucasus (Georgia, Armenia and Azerbaijan).

To assess the impact on banking stability (represented by depended variable 'z-score'), two types of independent indicators were used: the indicators assessing banking performance and the indicators assessing the level or degree of corruption in the country.

#### 3.2 Variable's Description

##### 3.2.1 The Dependent Variable Assessing Banking Stability:

As a dependent variable for analyzing banking stability, we use an indicator z-score that characterizes the inverse of the probability of insolvency or bankruptcy. Thus, the higher the indicator, the higher the banking stability and the lower the

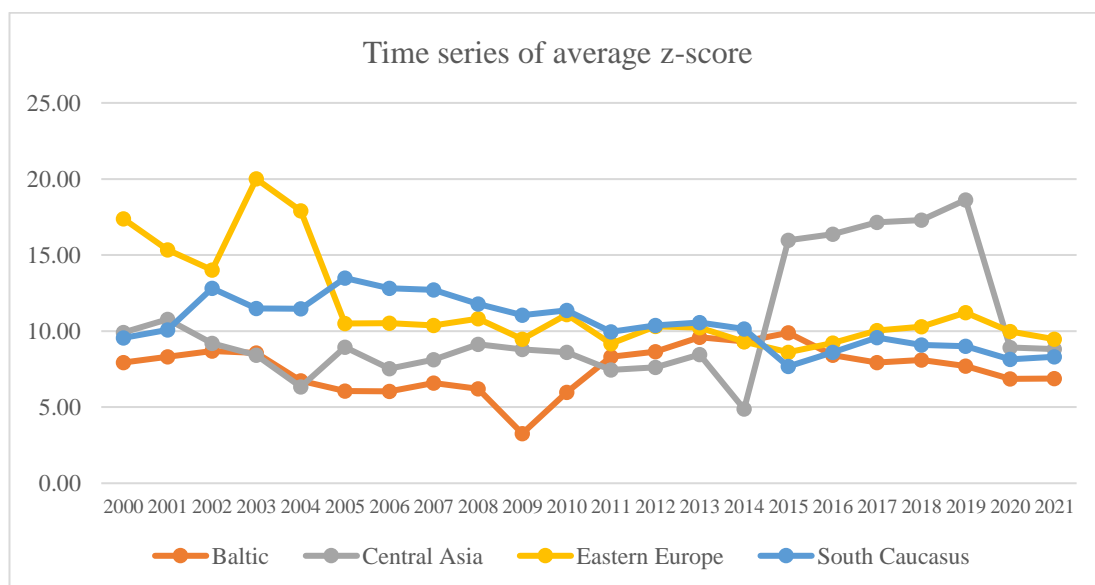
probability of bankruptcy. Data was collected from Databank of Worldbank. This indicator is used in other works.

Z-score is estimated on a country-level aggregate variables as (return on assets + equity to total asset ratio)/(standard deviation of ROA). It compares the buffer of a country's banking system (capitalization and returns) with the volatility of those returns. Also, calculated with no less than 4-5 bank-level observations from underlying bank-by-bank unconsolidated data from Bankscope and Orbis. The result is not reported if a country-year has less than 3 bank-level observations. Technically speaking, a z-score is a statistical measurement that shows a value's relationship to the mean. Z-scores indicate if a value is typical or atypical for a data set.

Below are visual data of average z-score in the form of a graph broken down by country and time period.

**Figure 1:**

*Data of average z-score.*



### 3.2.2 The Indicators Assessing Banking Performance:

The bank sector-specific variables were collected from Databank of Worldbank, which is one of the largest and most reliable sources of global financial statistics. We selected data for 21 years as balance panel due to data availability. The



database contains isolated data for some of the monitored countries since 1993, but this data was excluded for the purposes of analysis.

The independent variables are represented the bank-specific variables. The bank-specific variables are represented by Banking stability, Market power, Market share, Inefficiency, Credit risk, Capital regulation, Income divarication, Banking crisis, Financial market development. Table 1 « Variable's description » provides descriptions of the variables and sources of data collected.

In our hypotheses market power and market share indicators to have a negative impact on banking stability due to the presence of monopoly and reduced competition. Reduced competition will lead to new credit risks and may lead to systemic risk. That is, it leads to a situation where the reliability of the country's financial system and the well-being of citizens depends on one or a couple of the largest participants in the banking sector. There is also a hypothesis where negative impact on bank stability from such indicators as Inefficiency, Credit Risk and Banking crisis, which through the default of one bank can undermine the country's financial system.

Conversely, we expect a positive impact from such indicators as Capital regulation, Income divarication and Financial market development. Capital regulation can be monitored through the presence of a mandatory prudential standard on the part of the Central Bank and other Regulatory Authorities. This standard allows you to increase the capital of banks and keep it at the required level to ensure the stability of the bank. Thus, the higher this indicator, the higher the stability of the banking system. Diversification of income will allow banks to enrich the services they provide, thereby avoiding complete dependence on lending activities and an increase in non-performing assets. Financial market development measures the depth of the banking sector in terms of size, which contributes to economic growth and poverty reduction

### **3.2.3 The Indicators Assessing the Level of Corruption in the Country:**

For estimating corruption, we took Level of freedom from Corruption (LFC) from International country risk guide (ICRG). The assessment of ICRG is made for more than 140 countries based on economic, political and financial risks, based on the results of which a single indicator is formed. In this case, level of corruption was estimated through Political risk, that is assessed using 12 variables (Socioeconomic Conditions, Government Stability, Internal Conflict, Investment Profile, Military in

Politics, External Conflict, Law and Order, Corruption, Democratic Accountability, Religious Tensions, , Ethnic Tensions, Bureaucracy Quality). We took only Corruption variable for our research, which are updated on a monthly basis. The Corruption indicator takes into account both financial corruption and actual or potential corruption. Financial corruption faced by a business in the form of payments and bribes for licensing, import/export, exchange controls, taxes, loans or protection. Actual or potential corruption is presented in the form of excessive patronage, cronyism, job retention, quid pro quos, secret party funding or loans, and suspiciously close bonds between business and politics. This corruption type carries an equally dangerous risk, as it can lead to reputational losses, public discontent, and the development of a black market due to ineffective state control over the economy. As a result of such corruption, there is a possibility of a major scandal arising that will negatively affect the public reaction to the government. All this puts the country's political institutions at risk. Additionally, ICRG remains one of a dozen firms worldwide that provides Transparency International with data on corruption indicators that help compile the annual Corruption Perceptions Index (CPI).

#### **3.2.4 The Indicators Assessing the Level of Government Quality:**

The next variable is used to assess government quality is a data from the Worldwide Governance Indicators (WGI). We expect to determine that the higher level of governance regulation leads to higher level of bank stability. Six indicators form the WGI:

- "Voice and Accountability" assesses various political processes' aspects, civil liberties and political rights;

- "Political Stability and Absence of Violence/Terrorism" assesses the probability of a government being destabilized and overthrown by unconstitutional and violent means;

- "Government Effectiveness" reflects the quality of public services, the level of qualification of civil servants and the degree of their independence or freedom from political pressure, the effectiveness of public policy;

- "Regulatory Quality" characterizes the government's ability to formulate and implement rational policies, conduct regulatory activities, which positively affects the development of the private sector;

- "Rule of Law" measures the degree of citizens' confidence in the effectiveness of domestic legislation and a following the established rules;

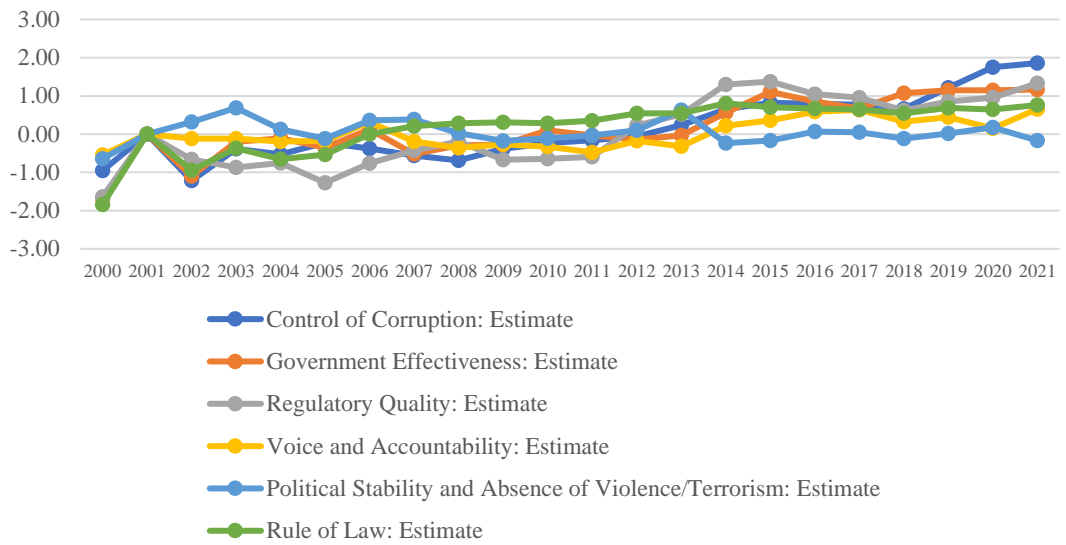
- "Control of Corruption" reflects the attitude of society towards corruption, i.e. the possibility of using one's official position for extracting private benefits.

Each of these six indices was additionally presented in six more subparagraphs: "Number of Sources", "Estimate", "Percentile Rank", "Percentile Rank, Upper Bound of 90% Confidence Interval", "Percentile Rank, Lower Bound of 90% Confidence Interval", "Standard Error". Thus, for each country we initially had several indicators. By combining the sub-items, we built single indices for each indicator. That is, to assess its impact on banking stability, we left six indicators for each country. Indicators of the quality of public administration are calculated by calculating variables based on sociological surveys and expert assessments. Each country is assigned its own rating for each of the six indices, which corresponds to the country's position among all countries in the world. For counting 'Estimate' all means are normalized to zero and standard deviations are normalized to one. Thus, their mean is zero, and 99% of the observations fall between -2.56 and 2.56. The higher the number, the higher the quality of government. The 'Percentile' indicator range between 0 - 100 and shows the position of an individual country among others by determining the percentage of countries that have the same or lower indicators. Accordingly, the higher the percentile for a particular indicator, the better the quality of public administration. Below are visual data of the average generated (combined) WGI indicator in the form of a graph broken down by country regions and time period.

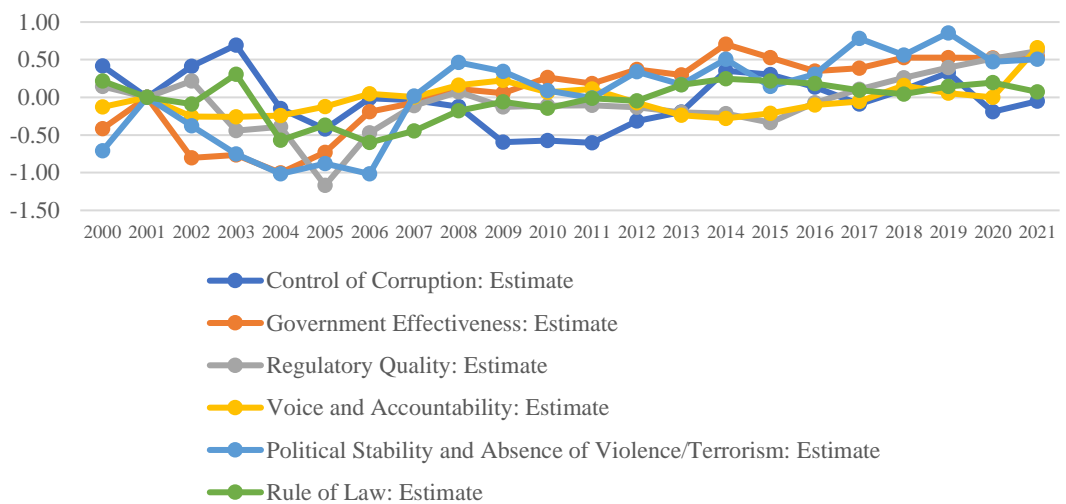
**Figure 2:**

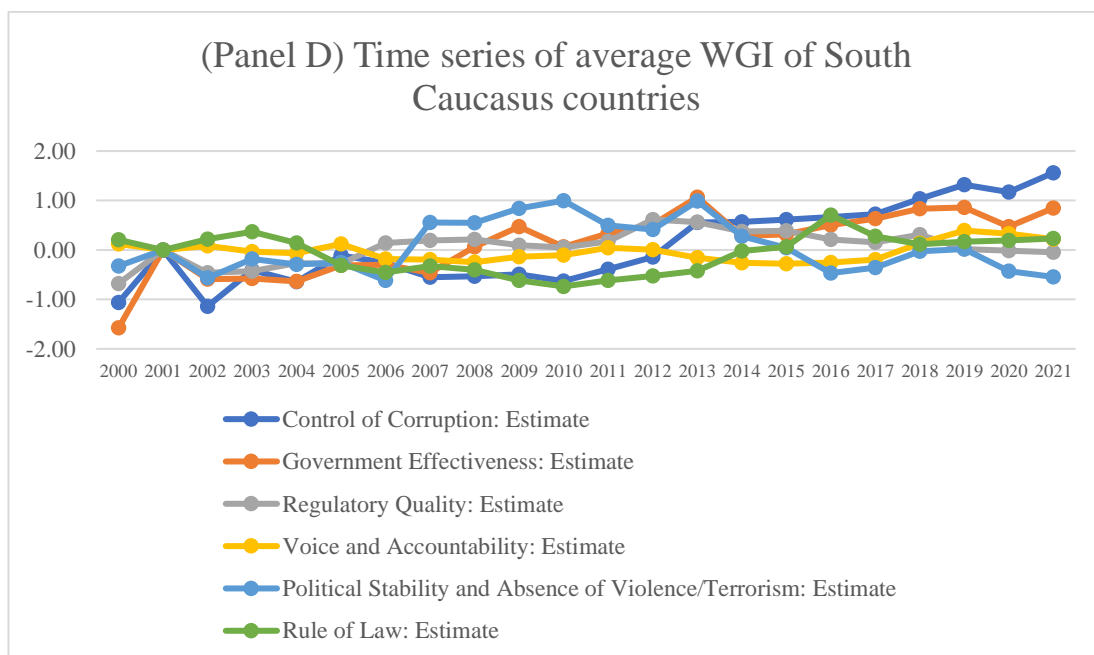
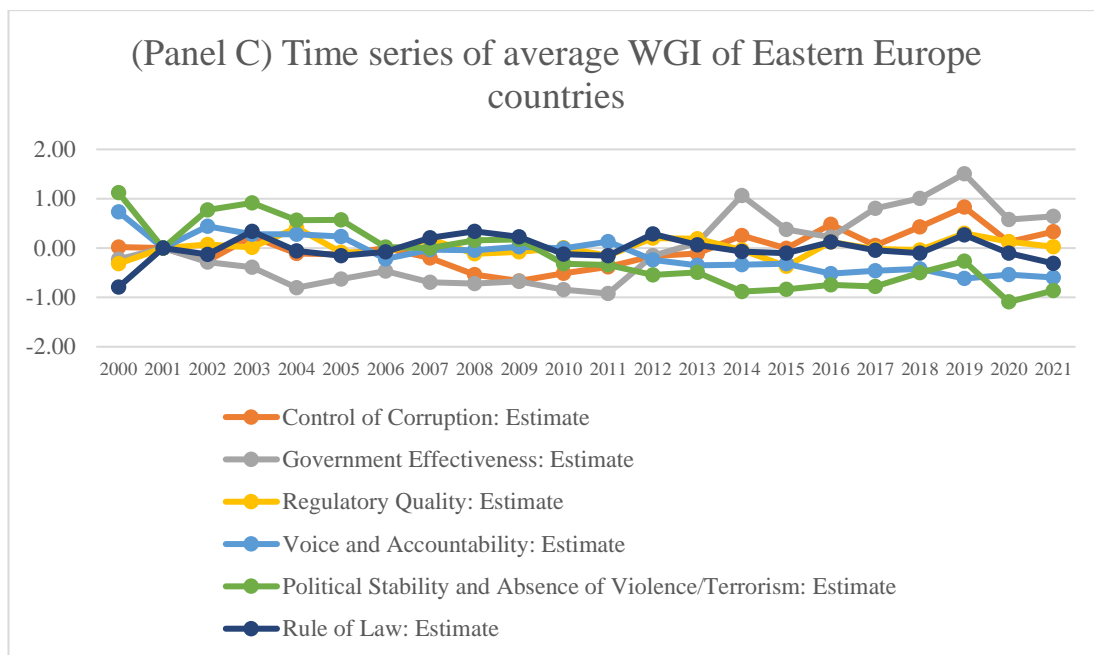
*Set of data of average combined WGI.*

(Panel A) Time series of average WGI of Baltic countries



(Panel B) Time series of average WGI of Central Asia countries





### 3.2.5 The pivot information about all variables:

Full information about used independent variables and dependent variables is showed in below Table 1.

**Table 1**

*Variable's description*

#	Variable's name	Variable's short name	Definition of variable	The source of data
---	-----------------	-----------------------	------------------------	--------------------

1	Banking stability	Z_SCORE	<p>It embraces the probability of default of a bank system of countries. It is estimated as <math>(ROA+CAR)/(\text{standard deviation of ROA})</math>, where ROA is the return on assets, CAR is equity to total asset ratio</p> <p>Assessed for country with more than 4 bank-level observations. Equity, ROA, and assets are country-level aggregate variables.</p> <p>Z-score is the reverse of the probability of bankruptcy, that is, a bigger Z-score points out that the bank takes less risk and it is more stable.</p>	Databank of Worldbank
2	Market power	MP	<p>The Lerner index grants a brief and short measure of monopoly's power and is expressed in the following formula: "The price of the good set by the firm" - "The firm's marginal cost". MP assesses the percentage markup that a firm can charge above its marginal expenses and cost. The MP index has ranges from 0 to 1 and than higher the value of MP, the greater a monopoly power.</p>	Databank of Worldbank
3	Inefficiency	INF	Bank cost to income ratio (%)	Databank of Worldbank
4	Credit risk	CR	Bank non-performing loans to gross loans (%)	Databank of Worldbank
5	Capital regulation	REG	Bank regulatory capital to risk-weighted assets (%)	Databank of Worldbank
6	Income divarication	ID	Bank noninterest income to total income (%)	Databank of Worldbank
7	Banking crisis	BC	Banking crisis dummy (0=none, 1=banking crisis)	Databank of Worldbank
8	Market share	MS	Bank deposits to GDP (%)	Databank of Worldbank
9	Level of freedom from Corruption	LFC	The indicator from ICRG	The PRS Group
10	Quality of Government	WGI	Indicators of quality of public administration. Consist of 6 indicators displayed below.	
10.1	Control of Corruption	CC	Reflects the attitude of society towards corruption, i.e. the possibility of using one's official position for extracting private benefits.	Worldwide Governance Indicators
10.1	Government Effectiveness	GE	Reflects the quality of public services, the level of qualification of civil servants and the grade of their independence and freedom from political pressure, the effectiveness of public policy	Worldwide Governance Indicators

10.2	Political Stability and Absence of Violence/Terrorism	PS	Assesses the likelihood of a government being destabilized and overthrown by unconstitutional and violent means	Worldwide Governance Indicators
10.3	Regulatory Quality	RQ	Characterizes the government's capacity or aptitude to formulate and implement rational policies, conduct regulatory activities, which positively affects the development of a private sector	Worldwide Governance Indicators
10.4	Rule of Law	RL	Measures the degree of citizens' confidence in the effectiveness of domestic legislation and how they follow the established rules	Worldwide Governance Indicators
10.5	Voice and Accountability	VACC	Assesses various aspects of civil liberties, political processes, and political rights	Worldwide Governance Indicators

### 3.3 Data Analysis Procedures

This study estimates the impact of financial indicators and the level of corruption on the steadiness or stability of the bank sector. For estimating impact of independent variables on dependent variable, three models were built.

In the first model the dependent variable is a *z\_score*, and the influence of the indicators under consideration is assessed through the following linear model:

$$\begin{aligned}
 \text{Ln}(Z\_SCORE) & \\
 &= a_0 + a_1 \text{Ln}(Z\_SCORE)_{it-1} + a_2 MP_{it} + a_3 INF_{it} + a_4 CR_{it} \\
 &+ a_5 REG_{it} + a_6 ID_{it} + a_7 BC_{it} + a_8 MS_{it} + \varepsilon_{it}
 \end{aligned}$$

where 'it' describes the country and time, accordingly, ' $\varepsilon_{it}$ ' is an independent error term. Dependent variable  $\text{Ln}(Z\_SCORE)$  is assesses stability of bank sector. The country-level factors and specific-banking sector contain market power (MP); inefficiency (INF); credit risk (CR); capital regulation (REG); income diversification (ID); bank crisis (BC); and financial market development (FD); and market share (MS).

The second model is shown below:

$$Ln(Z\_SCORE)$$

$$= a_0 + a_1Ln(Z\_SCORE)_{it-1} + a_2MP_{it} + a_3INF_{it} + a_4CR_{it} \\ + a_5REG_{it} + a_6ID_{it} + a_7BC_{it} + a_8MS_{it} + a_9LFC_{it} + \varepsilon_{it}$$

where ‘it’ describes the country and time, accordingly, ‘ $\varepsilon_{it}$ ’ is an independent error term. Dependent variable  $Ln(Z\_SCORE)$  is assesses stability of bank sector. The country-level factors and specific-banking sector contain market power (MP); inefficiency (INF); credit risk (CR); capital regulation (REG); income diversification (ID); bank crisis (BC); and financial market development (FD); market share (MS); and Level of freedom from Corruption (*LFC*).

The third model includes data from the first model and six WGI indicators. Corruption data from the second model is not included in the third model, since one of the WGI indicators is Control of Corruption. The third model is shown below :

$$Ln(Z\_SCORE)$$

$$= a_0 + a_1Ln(Z\_SCORE)_{it-1} + a_2MP_{it} + a_3INF_{it} + a_4CR_{it} \\ + a_5REG_{it} + a_6ID_{it} + a_7BC_{it} + a_8MS_{it} + a_{10}CC_{it} + a_{11}GE_{it} \\ + a_{12}PS_{it} + a_{13}RQ_{it} + a_{12}RL_{it} + a_{13}VACC_{it} + \varepsilon_{it}$$

where ‘it’ describes the country and time, accordingly, ‘ $\varepsilon_{it}$ ’ is an independent error term. Dependent variable  $Ln(Z\_SCORE)$  is assesses stability of bank sector. The country-level factors and specific-banking sector contain market power (MP); inefficiency (INF); credit risk (CR); capital regulation (REG); income diversification (ID); bank crisis (BC); and financial market development (FD); market share (MS); Control of Corruption (CC); Government Effectiveness (GE); Political Stability and Absence of Violence/Terrorism (PS), Regulatory Quality (RQ), Rule of Law (RL), and Voice and Accountability (VACC).

To estimate the regression model, this study uses a dynamic panel data approach, Generalized Method of Moments (GMM), to control for endogeneity issues and country-specific fixed effects, using lagged values as instruments. This method handles endogeneity well and is capable of producing effective results over many limited periods. It also allows the number of moment conditions to exceed the number of parameters. Using these additional torque conditions makes GMM more efficient than MM.



## CHAPTER 4

### RESULT AND DISCUSSION

This section presents the results of the data analysis. Statistical tests were used to consider the variables in the suggested model, and correlation and multiple regression analyses were used to identify the associations between the dependent variable and the independent variables.

#### 4.1 Descriptive Statistics

Table 2 below shows the descriptive summary of the variables.

**Table 2**

*Descriptive statistics (2000-2021)*

Variables	Observations	Mean	Std. Dev.	Min	Max
Z_SCORE	264	9.57	6.27	1.47	50.86
MP	264	0.28	0.09	0.00	0.62
INF	264	56.04	11.57	25.48	98.92
CR	264	7.94	10.07	0.00	59.76
REG	264	19.58	6.48	7.70	48.60
ID	264	42.99	12.82	12.76	95.42
BC	264	0.07	0.26	0.00	1.00
MS	264	30.29	13.58	0.00	74.51
LFC	264	53.92	7.64	35.00	70.21
CC	264	0.03	0.90	-1.92	2.32
GE	264	0.04	0.91	-2.41	2.22
PS	264	0.00	0.88	-2.85	2.25
RQ	264	-0.02	0.87	-2.34	3.24
RL	264	-0.02	0.88	-2.74	1.82
VACC	264	-0.07	0.81	-1.78	3.60

#### 4.2 Correlation Analysis

This correlation illustrates the interrelationship between the dependent and explanatory factors (independent variables).

Table 3 displays the Pearson correlation matrix for the variables. We conclude that there are no serious issues with multicollinearity in the our estimation models between the explanatory variables.

**Table 3***Pearson correlation matrix*

	Z_SCORE	MP	INF	CR	REG	ID	BC	MS	LFC	CC	GE	PS	RQ	RL	VACC
Z_SCORE	1.0														
MP	-0.1	1.0													
INF	0.1	-0.4	1.0												
CR	-0.2	-0.2	0.0	1.0											
REG	0.4	0.2	-0.1	0.0	1.0										
ID	0.0	-0.1	0.4	-0.1	0.0	1.0									
BC	-0.2	-0.1	0.0	0.3	-0.1	0.0	1.0								
MS	-0.2	-0.2	-0.1	0.0	-0.1	-0.1	0.1	1.0							
LFC	-0.2	0.2	-0.1	0.0	0.0	-0.2	-0.1	0.1	1.0						
CC	-0.1	0.2	-0.3	0.0	0.0	-0.2	-0.1	0.4	0.2	1.0					
GE	-0.2	0.0	-0.2	0.1	0.0	-0.2	0.0	0.4	0.2	0.5	1.0				
PS	0.1	0.0	-0.1	-0.1	0.1	-0.1	-0.2	-0.1	0.2	0.0	0.1	1.0			
RQ	0.1	0.2	-0.1	0.0	0.2	0.0	-0.1	0.2	0.1	0.3	0.4	0.1	1.0		
RL	-0.1	0.2	-0.3	0.1	0.1	0.1	0.0	0.3	0.2	0.3	0.2	0.0	0.4	1.0	
VACC	0.0	0.1	-0.1	0.0	0.2	-0.1	0.0	0.0	0.5	0.1	-0.1	0.1	0.1	-0.1	1.0

### 4.3 Panel unit root test

For Pre-estimation tests, firstly the stationarity of the variables is checked using the panel unit root methods applied in the work. As shown in Table 4, a panel unit root results indicate that the studied factors are stationary by rejecting the null hypothesis that the panels have unit roots after adopting the first difference.

By determining the stationarity of panel data. In our work, we used two tests: the Im, Pesaran and Shin test (hereinafter referred to as IPS) and the Levin, Lin and Chu test, which are used on unbalanced panel data and are based on the assumption of cross-sectional independence. IPS tests do not require balanced data sets, but there cannot be any gaps in the panel. The hypothesis of the Levi-Lin-Chu (LLC) test is based on the homogeneity of the conclusion about the presence of a unit root in the dynamics of a variable: either the hypothesis of stationarity for all objects is rejected or not. Im, Pesaran, and Shin 2003 weakened the homogeneity hypothesis of the

Levin–Lin–Chu test (2002) by allowing homogeneity to vary from item to item according to the alternative hypothesis, and therefore took into account the heterogeneity of autoregressive coefficients between the various objects that make up the panel. IPS allows for heterogeneity in the value of  $\rho_i$  under the alternative hypothesis. The null hypothesis is defined as  $H_0: \rho_i = 0$  for all  $i = 1, \dots, N$ . That is, the autoregressive process is nonstationary. Alternative hypothesis:  $H_1: \rho_i < 0$  for  $i = 1, \dots, N_1$  and  $\rho_i = 0$  for  $i = N_1 + 1, \dots, N$ ; with  $0 < N_1 \leq N$ . That is, the autoregressive process is stationary. An alternative hypothesis admits and allows that not all but some individual series can to have unit roots. Thereby, instead of pooling the data, the method of IPS uses separate root unit tests for the  $N$  cross-sectional units. The test is based on using of the Dickey-Fuller statistic averaged across groups.

According to the table above, we see that according to the results of the Levin, Lin, and Chu and Im-Pesaran-Shin test we have verified that a number of the variables under consideration have a unit root at level. If a panel data is not stationary, it can be converted to stationary using differences.

**Table 4**

*Panel unit root test results*

Variables	Panel (A): Levin–Lin–Chu (2002)		Panel (B): Im–Pesaran–Shin (2003)	
	With trend	With cross-sectional dependence	With trend	With cross-sectional dependence
Z_SCORE	-4.443*	-3.535*	-4.524*	-5.296*
MP	-5.326*	-5.417*	-5.643*	-2.247**
INF	-3.514*	-4.664*	-3.352*	-4.355*
CR	-6.267*	-4.282*	-4.575*	-3.324**
REG	-3.231*	-5.494*	-4.447*	-4.264*
ID	-2.425*	-2.217**	-6.538*	-5.732*
BC	-3.678*	-4.753**	-4.743*	-4.329*
MS	-4.214*	-6.526*	-4.522*	-2.224**
LFC	-5.456*	-5.744*	-2.143**	-5.584**
CC	-2.374**	-3.337*	-5.364*	-4.564**
PS	-4.532*	-4.283*	-3.666*	-4.359*
GE	-3.232*	-3.083*	-2.466*	-2.359*
RQ	-2.121**	-2.125**	-5.445*	-5.845*
RL	-5.359*	-5.474*	-6.654*	-4.286*
VACC	-5.678*	-5.587*	-3.650	-4.328*

Note: Table 4 shows the panel unit root test results employing Levin–Lin–Chu (LLC) and Im–Pesaran–Shin (IPS) unit root test ( $H_0$ : Panels include unit roots). The symbols \*, \*\*, and \*\*\* imply statistical significance at the 1%, 5%, and 10% levels, correspondingly.

## 4.4 Granger causality test

The Granger causality test, according to which the cause-and-effect relationship for time series in panel data is formalized. That is, we determine whether one time series is useful for predicting another. According to the null hypothesis (H0), the time series x is not the time series y due to Granger reason. According to the alternative hypothesis (HA), the time series "x" causes the Granger time series "y". In the Table 6 below, we see the results of this test with the F-test statistic and the corresponding p-value. For each indicator considered, the p-value is less than the 5% significance level (i.e.  $\alpha = 0.05$ ). Accordingly, we can reject the null hypothesis and reached a conclusion that we have enough evidence to declare that time series "x" Granger causes time series "y". Alternatively, that time series "x" (independent variables) can be used in predicting time series "y" (banking sector stability).

As we see from the table below the most causality variable are Voice and Accountability (VACC, 5.656 F-statistics), than Market Share (MS, 5.427 F-statistics) and Control of Corruption (CC, 5.351 F-statistics). All of them have a significance level at 1%. The less causality variable are Inefficiency (INF, 2.125 F-statistics) and Credit risk (CR, 2.125 F-statistics) with significance level at 5%.

**Table 5**

*Granger causality test*

Table 6. Granger causality test

	Null Hypothesis	F-statistics	[Prob. value]	Granger Causality
MP	→ Ln (Z)	4.365*	[0.000]	Yes
INF	→ Ln (Z)	2.125**	[0.022]	Yes
CR	→ Ln (Z)	2.125**	[0.001]	Yes
REG	→ Ln (Z)	4.536*	[0.000]	Yes
ID	→ Ln (Z)	2.243**	[0.003]	Yes
BC	→ Ln (Z)	4.365*	[0.035]	Yes
MS	→ Ln (Z)	5.427*	[0.000]	Yes
LFC	→ Ln (Z)	2.243**	[0.042]	Yes
CC	→ Ln (Z)	5.351*	[0.001]	Yes
PS	→ Ln (Z)	2.202**	[0.000]	Yes
GE	→ Ln (Z)	1.282*	[0.000]	Yes
RQ	→ Ln (Z)	4.276*	[0.000]	Yes
RL	→ Ln (Z)	4.412*	[0.027]	Yes
VACC	→ Ln (Z)	5.656*	[0.027]	Yes

Note: \* and \*\* imply 1% and 5% statistical significance levels, respectively.

## 4.5 GMM Estimation

Table 7 presents the results of the equation estimation with using the methodology of System GMM. Data by country were consolidated into a single whole, since analysis in the context of individual countries and regions did not give valid results.

**Table 6**

<i>Dependent Variable: Ln(Z)</i>	(1)	(2)	(3)
MP	0.022 (2.53)	0.0709 (0.118)	0.223* (0.080)
INF	-0.053** (0.007)	-0.058* (0.041)	-0.121*** (-0.011)
CR	0.0413* (0.074)	0.0291 (0.62)	0.041** (0.030)
REG	-0.032 (0.148)	-0.016 (0.350)	-0.033** (0.049)
ID	0.057** (0.042)	0.063** (0.070)	0.0621 (0.230)
BC	-0.031 (0.170)	-0.148 (0.330)	-0.022 (0.470)
MS	-0.014 (0.440)	-0.012 (0.310)	-0.023 (0.661)
LFC	-	0.356*** (0.000)	-
CC	-	-	0.222** (0.009)
PS	-	-	1.32* (0.002)
GE	-	-	0.201 (0.067)*
RQ	-	-	1.224* (0.001)
RL	-	-	0.333*** (0.000)
VACC	-	-	-1.321 (0.002)
R2	0.401	0.903	0.923
Adj. R2	0.388	0.892	0.921
SE of Reg.	0.308	0.226	0.176
Long run var.	0.282	0.075	0.031

---

*Note: The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.*

Based on the independent variables, three models were built that included different variables. In the table they are numbered accordingly in columns. The first model was built taking into account financial independent variables. The second model includes data from the first model and the corruption indicator from ICRG. The third model includes data from the first model and six WGI indicators. The level of freedom from Corruption index from the second model is not included in the third model, since one of the WGI indicators is Control of Corruption. Below is a description of the results in the context of each model. All three models show the same direction of the relationship and bonding between the dependent variable and the independent variable. The difference is observed in determining the significance of this connection in the context of each model.

Our hypotheses about the direct dependence of the corruption indicator on banking stability is based on the theory of “acts like sand in the wheels”. Since both indicators have a “bigger-better” dimension (the higher the indicator, the lower the level of corruption), it is the direct connection between the indicators that means the negative corruption’s impact on bank stability. Corruption indicators were included in model 2. At the same time, in model 2 the LFC corruption indicator was taken into account, and in model 3 the WGI corruption indicator was taken into account. According to the results of both models, we observe a positive significant relationship between indicators of corruption and z-score. This confirms “acts like sand in the wheels” theory in the countries of the post-Soviet space, that means if a country has less corruption level, it’s stability increases. And vice versa if corruption increases, bank stability decreases. At the same time, in model 2, the corruption indicator has the largest coefficient. This research output will help to reinforce the understanding of central banks, regulators and governments of these countries about the negative impact of corruption on the country's economy. Thereby justifying measures to combat corruption.

The results showed a positive impact of the market power coefficient on the z-score and consistent with “competition- fragility” theory. The market power indicator has a direct connection with the indicator of banking stability. Moreover, for models 1 and 2 it is insignificant, and for model 3 it is significant. Since this indicator is assessed

by the Lerner index, the larger this coefficient, the higher the monopoly in the market. The presence of a positive relationship indicates that an increased level of monopoly leads to increased banking stability, and an increased level of competition reduces a banking stability. Thus, we can conclude that in the post-Soviet countries the theory of “competition-fragility” works. This can be explained by the youth of the country’s independent banking sector, its formation at the moment. Increased market power gives stability to the financial system, protects it from unwanted volatility. This result will help confirm the policies being pursued in a number of these countries to consolidate the banking structure and regulation.

Market share shows an inverse relationship with z-score. However, this indicator does not have a significant impact on banking stability in any of the models.

Income diversification has a positive relationship with banking stability, which is consistent with most previous studies. Moreover, it is significant for models 1-2, and insignificant for model 3. This relationship implies that the more non-interest income banks have, not related to interest on loans, the more stable they are. thereby the banking system as a whole will be more stable. High diversification and the presence of non-interest income allows banks to be more stable when credit risk increases, that is, when problem assets arise and become uncollectible. This helps offset the resulting expenses from interest-bearing products. This result will help justify the strategy of banks to diversify their income, improve settlement and cash services, and search for new ways of income that are not related to lending or complement lending.

The indicator of the presence of a banking crisis showed a logical negative impact on banking stability in all three models. However, its influence is insignificant. While credit risk showed a positive effect. That is, with an increase in the non-performing loans’ share, the stability of the bank increases. There are other results of other works where positive relationship between NPL and z-score. According Atoi (2015) relationship between these variables also positive, but in a short-run. In a long-run term impact becomes negative. In addition, based Adusei (2018) found positive impact. He explained it dividing z-score to 2 part: return on equity and return on assets, which z-score consists on. He found positive relationship between NPL and return to assets. Moreover, we should not forget that the bank sector of these countries is very young. Increasing NPL can be explained by growth of loan portfolio, development of banking sector and not by crises.

The ineffectiveness indicator have an inverse significant relationship with banking stability in all models. CIR is the percentage ratio of expenses to operating income for a certain period, that is, how much the bank spends against what it earns. Accordingly, the more efficiently a bank uses its earned funds, the more stable it is. This result helps to substantiate the importance of this indicator in the bank's activities for management, central banks and other regulatory authorities.

The regulatory capital indicator also has a negative relationship with the z-score. In model1-2 this relationship is not significant, while in the model 3 is significant. This result may correspond to the results of studies where this indicator reduced return on assets (Al-Sharkas A.A. and Al-Sharkas T.A., 2022); required additional funds from expensive sources to maintain the required level of capital (Oduor et al. 2017); an increase in lending with a corresponding increase in credit risk; or lack of reflection RVA of the real risk level (Das and Sy 2012).

The remaining Worldwide governance indicators (WGI), except for the Voice and Accountability (VACC), showed a significant positive impact on banking stability. With an increase in Regulatory Quality (RQ), Rule of law (RL), Political stability and the absence of violence (PS), the stability of the financial system increases. At the same time, these indicators in model 3 have the highest coefficient values. The only indicator of the six "Voice and Accountability" showed a negative relationship with Bank stability, but its influence is insignificant. This indicator reflects the level of participation of the population in government elections and the degree of freedom of expression. As is known, the level of this indicator in the countries of the post-Soviet space is not high due to the characteristic political regime. Accordingly, the development of banking stability occurs under the influence of other parameters of the WGI.



## CHAPTER 5

### CONCLUSIONS AND IMPLICATIONS

#### 5.1 Conclusions and Discussions

The main goal and purpose of this study is to investigate and research the impact of corruption on the sustainability or stability of the bank sector in transitional countries. In addition, this study aims to explore what additional financial and governance indicators may affect banking stability. This paper helps fill the missing gaps by providing a comprehensive framework for studying competition, quality of governance and banking sector stability in transition economies from 2000 until 2021.

The results of this work show that bank stability increases as the level of corruption in the country decreases, as well as by improving the quality of public administration. Moreover, our results show that bank sector-specific factors have significantly influence or impact on the sustainability or stability of the bank system.

#### 5.2 Implications and Recommendations

The results allow us to offer several recommendations below. The Firstly, it suggests that governments and regulators consider the significant importance of corruption not only in the political sphere, but also in the financial sphere. Work to reduce the level of corruption and its influence should be carried out everywhere and include reforms, changes in legislation, tightening of responsibility for giving and accepting bribes, as well as educational work to change public opinion towards corruption. Banking sector regulators must create a reliable system for assessing the quality of work and assets of banks, risk management and supervision for constant and continuous monitoring and prevention of risks in the country's financial sector.

The bank's management should also carry out work. This includes training employees in ethics, strict adherence to the risk assessment process, developing risk management not only in credit departments, but also in purchasing departments, automating the process to eliminate the human factor, and conducting post-control.

Secondly, national governments must consider the impact of governance on banking stability. Indicators such as Regulatory Quality, Government efficiency, Political stability and the absence of violence, Rule of law closely correlate with the

degree of bank stability. This means that in addition to ensuring a peaceful political regime, work must be carried out in terms of competent policy development, increasing the competency or expertise of public servants and their independence and freedom from political pressure, improving the quality of service delivery and resource management, especially in terms of centralization and automation of digital banking and personal data. This digitalization of data and its automatic transfer both from commercial banks to the central bank and back will help speed up the quality of services provided several times. It is necessary to implement and maintain a policy for the development of a private sector, as well as the rule of law in terms of the protection of property rights and the execution of contracts, including banking ones.

Thirdly, we can recommend that the government and bank managers, in order to maintain banking stability, work to reduce problem loans and inefficiency, as well as increase income diversification.

Further research examining the short-run term and long-run term effects of competition on the stability of the banking sector would be useful. In addition, it would be noteworthy to study the impact of competition not only on bank stability, but also on bank performance itself, in order to identify cross-dependencies.

Additionally, we talk about recommendations and improvements for the work:

- Cross-study of the relationships between corruption, government quality and banking stability. To examine the influence of independent variables on other financial variables as non-performing loans, profitability, marginality, the volume of the loan portfolio, etc., for understanding which component of financial system depends more on corruption and WGI.

- A more comprehensive study of the positive relationship between credit risk and banking stability. To determine the impact of NPL on other financial indicators. Similar to other works, it is possible to divide z-score into its components to understand which part has a positive relationship with credit risk. Moreover, to research the relationship in the short term and long term using lags when building models.

## REFERENCES

- Abbas, F., & Ali, S. (2022). Dynamics of diversification and banks' risk-taking and stability: Empirical analysis of commercial banks. *Managerial and Decision Economics*, 43(4), 1000-1014.
- Adem, M. (2022). Impact of diversification on bank stability: evidence from emerging and developing countries. *Discrete Dynamics in Nature and Society*, 2022.
- Adem, M. (2023). Impact of income diversification on bank stability: a cross-country analysis. *Asian Journal of Accounting Research*, 8(2), 133-144.
- Adusei, M. (2015). The impact of bank size and funding risk on bank stability. *Cogent Economics & Finance*, 3(1), 1111489.
- Abuzayed, B., Al-Fayoumi, N., & Molyneux, P. (2018). Diversification and bank stability in the GCC. *Journal of International Financial Markets, Institutions and Money*, 57, 17-43.
- Acosta-Smith, J., Grill, M., & Lang, J. H. (2020). The leverage ratio, risk-taking and bank stability. *Journal of Financial Stability*, 100833.
- Al-Sharkas, A. A., & Al-Sharkas, T. A. (2022). The impact on bank profitability: Testing for capital adequacy ratio, cost-income ratio and non-performing loans in emerging markets. *Journal of Governance and Regulation/Volume*, 11(1).
- Алауханов, Е. О., & Ахмедин, К. (2007). Проявления коррупции в экономике Казахстана. Вестник Института законодательства и правовой информации Республики Казахстан [Manifestations of corruption in the economy of Kazakhstan. Bulletin of the Institute of Legislation and Legal Information of the Republic of Kazakhstan], (1 (5)), 101-105.

- Ali, M., & Puaah, C. H. (2019). The internal determinants of bank profitability and stability: An insight from banking sector of Pakistan. *Management research review*, 42(1), 49-67.
- Ali, M. S. B., Fhima, F., & Noura, R. (2020). How does corruption undermine banking stability? A threshold nonlinear framework. *Journal of Behavioral and Experimental Finance*, 27, 100365.
- Albaity, M., Mallek, R. S., & Noman, A. H. M. (2019). Competition and bank stability in the MENA region: The moderating effect of Islamic versus conventional banks. *Emerging Markets Review*, 38, 310-325.
- AlKhoury, R., & Arouri, H. (2019). The effect of diversification on risk and return in banking sector: Evidence from the Gulf Cooperation Council countries. *International Journal of Managerial Finance*.
- Almazari, A. A. (2013). Capital adequacy, cost income ratio and the performance of Saudi banks. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 3(4), 284-293.
- Amara, T., & Mabrouki, M. (2019). The Impact of Liquidity and Credit Risks on the Bank Stability. *Journal of Smart Economic Growth*, 4(2), 97-116.
- Anastasiou, D., Bragoudakis, Z., & Malandrakis, I. (2019). Non-performing loans, governance indicators and systemic liquidity risk: evidence from Greece.
- Anh, N. Q., & Phuong, D. N. T. (2021). The impact of credit risk on the financial stability of commercial banks in Vietnam. *Ho Chi Minh City Open University Journal of Science-Economics and Business Administration*, 11(2), 67-80.

- Arshad, S., & Rizvi, S. A. R. (2013). Impact of corruption on bank profitability: an analysis of Islamic banks. *International Journal of Business Governance and Ethics*, 8(3), 195-209.
- Asteriou, D., Pilbeam, K., & Tomuleasa, I. (2016). The impact of economic freedom, business regulation and corruption on bank profitability and bank stability: evidence from Europe.
- Atoi, N. V. (2018). Non-performing Loan and its Effects on Banking Stability: evidence from National and International Licensed Banks in Niger. *CBN Journal of Applied Statistics (JAS)*, 9(2), 3.
- Barbieri, L. (2009). Panel unit root tests under cross-sectional dependence: An overview. *Journal of Statistics: Advances in Theory and Applications*, 1(2), 117-158.
- Beck, T., De Jonghe, O. and Schepens, G. (2013), “Bank competition and stability: cross-country heterogeneity”, *Journal of Financial Intermediation*, Vol. 22 No. 2, pp. 218-244.
- Ben Lahouel, B., Taleb, L., Kočišová, K., & Ben Zaied, Y. (2022). The threshold effects of income diversification on bank stability: an efficiency perspective based on a dynamic network slacks-based measure model. *Annals of Operations Research*, 1-38.
- Boachie, R., Aawaar, G., & Domeher, D. (2021). Relationship between financial inclusion, banking stability and economic growth: a dynamic panel approach. *Journal of Economic and Administrative Sciences*, (ahead-of-print).
- Bougatef, K. (2017), “Determinants of bank profitability in Tunisia: does corruption matter?”, *Journal of Money Laundering Control*, Vol. 20 No. 1, pp. 70-78.

- Brewer, G. A., Choi, Y., & Walker, R. M. (2007). Accountability, corruption and government effectiveness in Asia: an exploration of World Bank governance indicators. *International Public Management Review*, 8(2), 204-225.
- Cao, Y., Chou, J., Gregory-Smith, I., & Montagnoli, A. (2020). Bank competition and financial stability: evidence from the US banking deregulation. *The Sheffield Economic Research Paper Series (SERPS)*, 2020003(2020003).
- Chandramohan, K., Lunawat, C. D., & Lunawat, C. A. (2022). The impact of diversification on bank stability in India. *Cogent Business & Management*, 9(1), 2094590.
- Chortareas, G. E., Girardone, C., & Ventouri, A. (2012). Bank supervision, regulation, and efficiency: Evidence from the European Union. *Journal of financial stability*, 8(4), 292-302.
- d'Agostino, G., Dunne, J. P., & Pieroni, L. (2016). Government spending, corruption and economic growth. *World Development*, 84, 190-205.
- Dang, V. D. (2021). Non-interest income, credit risk and bank stability: Evidence from Vietnam. *Institutions and Economies*, 97-125.
- Das, M. S., & Sy, M. A. N. (2012). How risky are banks' risk weighted assets? Evidence from the financial crisis. *International Monetary Fund*.
- Djalilov, K. and Piesse, J. (2016), "Determinants of bank profitability in transition countries: what matters most?", *Research in International Business and Finance*, Vol. 38, pp. 69-82.
- Djebali, N., & Zaghdoudi, K. (2020). Threshold effects of liquidity risk and credit risk on bank stability in the MENA region. *Journal of Policy Modeling*, 42(5), 1049-1063.

- Diallo, B. (2015). Bank competition and crises revisited: New results. *Economics Letters*, 129, 81-86.
- Dias, R. (2021). Capital regulation and bank risk-taking—new global evidence. *Accounting & Finance*, 61(1), 847-884.
- Duho, K. C. T., Onumah, J. M., & Owodo, R. A. (2020). Bank diversification and performance in an emerging market. *International Journal of Managerial Finance*, 16(1), 120-138.
- Ekinci, R., & Poyraz, G. (2019). The effect of credit risk on financial performance of deposit banks in Turkey. *Procedia Computer Science*, 158, 979-987.
- Ekşi, İ. H., & Doğan, B. (2020). Corruption and financial development: Evidence from Eastern Europe and Central Asia countries. *PÉNZÜGYI SZEMLE/PUBLIC FINANCE QUARTERLY*, 65(2), 196-209.
- Gangi, Y. A., & Abdulrazak, R. S. (2012). The impact of governance on FDI flows to African countries. *World Journal of Entrepreneurship, Management and Sustainable Development*.
- Ghenimi, A., Chaibi, H., & Omri, M. A. B. (2017). The effects of liquidity risk and credit risk on bank stability: Evidence from the MENA region. *Borsa Istanbul Review*, 17(4), 238-248.
- Goel, R.K., Hasan, I., 2011. Economy-wide corruption and bad loans in banking: international evidence. *Appl. Financial Econ.* 21 (7), 455–461.
- Goetz, M. R. (2018). Competition and bank stability. *Journal of Financial Intermediation*, 35, 57-69.
- Hasan, R., & Ashfaq, M. (2021). Corruption and its diverse effect on credit risk: global evidence. *Future Business Journal*, 7, 1-13.

- Hassan, M. K., Khan, A., & Paltrinieri, A. (2019). Liquidity risk, credit risk and stability in Islamic and conventional banks. *Research in International Business and Finance*, 48, 17-31.
- Hendrickson, J.M., Nichols, M.W. and Fairchild, D.R. (2014), "Bank branch location and stability during distress", *Journal of Financial Economic Policy*, Vol. 6 No. 2, pp. 133-151.
- Hsieh, M.-F., Chen, P.-F., Lee, C.-C. and Yang, S.-J. (2013), "How does diversification impact bank stability? The role of globalization, regulations, and governance environments", *Asia-Pacific Journal of Financial Studies*, Vol. 42 No. 5, pp. 813-844.
- Hurlin, C., & Mignon, V. (2007). Second generation panel unit root tests
- Ibrahim, M. H., & Rizvi, S. A. R. (2017). Do we need bigger Islamic banks? An assessment of bank stability. *Journal of Multinational Financial Management*, 40, 77-91.
- Ibrahim, M. H., Salim, K., Abojeib, M., & Yeap, L. W. (2019). Structural changes, competition and bank stability in Malaysia's dual banking system. *Economic Systems*, 43(1), 111-129.
- Idawati, W., & Syafputri, S. A. (2022). The Effect of Digital Financial, Credit Risk, Overhead Cost, and Non-Interest Income on Bank Stability. *INQUISITIVE: International Journal of Economic*, 3(1), 23-44.
- Jovita, A., & Wahyudi, S. (2017). The Impact Of Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), Loan To Deposit Ratio (LDR), and Cost To Income Ratio (CIR) Toward Banks Profitability (Comparison Study of Domestic Bank and Foreign Bank in Indonesia from 2011 to 2015) (Doctoral dissertation, Diponegoro University).
- Kasman, S., & Kasman, A. (2015). Bank competition, concentration and financial stability in the Turkish banking industry. *Economic Systems*, 39(3), 502-517.



- Kaufmann, D. and A. Kraay (2002) Growth without Governance. World Bank Policy Research Working Paper No. 2928, Washington, DC
- Khattak, M. A., Ali, M., Hamid, B. A., & Islam, M. U. (2021). Competition, diversification, and stability in the Indonesian banking system. *Buletin Ekonomi Moneter dan Perbankan*, 24, 59-88.
- Kiema, I., & Jokivuolle, E. (2014). Does a leverage ratio requirement increase bank stability?. *Journal of Banking & Finance*, 39, 240-254.
- Kim, H., Park, K., & Song, S. (2016). Banking market size structure and financial stability: evidence from eight Asian countries. *Emerging Markets Finance and Trade*, 52(4), 975-990.
- Kirmanoglu, H. (2003, July). Political freedom and economic well-being: A causality analysis. In *ECOMOD Annual Meeting* (pp. 1-10).
- Köhler, M. (2015). Which banks are more risky? The impact of business models on bank stability. *Journal of Financial Stability*, 16, 195-212.
- Kolapo, T. F., Ayeni, R. K., & Oke, M. O. (2012). CREDIT RISK AND COMMERCIAL BANKS' PERFORMANCE IN NIGERIA: A PANEL MODEL APPROACH. *Australian journal of business and management research*, 2(2), 31.
- Krisvian, A., & Rokhim, R. (2021). The Effect of Liquidity Risk and Credit Risk on Bank Stability in ASEAN Countries Experiencing Recession Due to the Covid-19 Pandemic. *NEW CHALLENGES AND OPPORTUNITIES*.
- Lahouel, B. B., Taleb, L., & Kossai, M. (2022). Nonlinearities between bank stability and income diversification: A dynamic network data envelopment analysis approach. *Expert Systems with Applications*, 207, 117776.

- Le, T. D. (2021). Geographic expansion, income diversification, and bank stability: Evidence from Vietnam. *Cogent Business & Management*, 8(1), 1885149.
- Lotto, J. (2018). The empirical analysis of the impact of bank capital regulations on operating efficiency. *International Journal of Financial Studies*, 6(2), 34.
- Louati, S. and Boujelbene, Y. (2015), "Banks' stability-efficiency within dual banking system: a stochastic frontier analysis", *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 8 No. 4, pp. 472-490.
- Matey, J. (2021). Bank Liquidity Risk and Bank Credit Risk: Implication on Bank Stability in Ghana. *International Journal of Scientific Research in Multidisciplinary Studies*, 7(4), 01-09.
- Mirzaei, A., Moore, T., & Liu, G. (2013). Does market structure matter on banks' profitability and stability? Emerging vs. advanced economies. *Journal of Banking & Finance*, 37(8), 2920-2937.
- Mathuva, D. M. (2009). Capital adequacy, cost income ratio and the performance of commercial banks: The Kenyan Scenario. *The International journal of applied economics and Finance*, 3(2), 35-47.
- Mongid, A., & Tahir, I. M. (2011). Impact of corruption on banking profitability in ASEAN countries: An empirical analysis. *Impact of corruption on banking profitability in ASEAN countries: an empirical analysis*, A Mongid, IM Tahir-Banks and Bank Systems, 6(1).
- Ngoc Nguyen, K. (2019). Revenue diversification, risk and bank performance of Vietnamese commercial banks. *Journal of Risk and Financial Management*, 12(3), 138.

- Nguyen, M., Skully, M., & Perera, S. (2012). Market power, revenue diversification and bank stability: Evidence from selected South Asian countries. *Journal of International Financial Markets, Institutions and Money*, 22(4), 897-912.
- Nurhidayat, R. M., & Rokhim, R. (2018). Corruption and government intervention on bank risk-taking: Cases of Asian Countries. *JDM (Jurnal Dinamika Manajemen)*, 9(2), 228-237.
- Oduor, J., Ngoka, K., & Odongo, M. (2017). Capital requirement, bank competition and stability in Africa. *Review of development finance*, 7(1), 45-51.
- Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review*, 18(4), 329-340.
- Ovi, N. Z., Perera, S., & Colombage, S. (2014). Market power, credit risk, revenue diversification and bank stability in selected ASEAN countries. *South East Asia Research*, 22(3), 399-416.
- Pak, O., & Nurmakhanova, M. (2013). The effect of market power on bank credit risk-taking and bank stability in Kazakhstan. *Transition Studies Review*, 20, 335-350.
- Park, J. (2012), "Corruption, soundness of the banking sector, and economic growth: a cross-country study", *Journal of International Money and Finance*, Vol. 31 No. 5, pp. 907-929.
- Rahman, S. M. K., Chowdhury, M. A. F., & Tania, T. C. (2021). Nexus among bank competition, efficiency and financial stability: a comprehensive study in Bangladesh. *The Journal of Asian Finance, Economics and Business*, 8(2), 317-328.
- Ranasinghe, M. B. M., & Peiris, T. U. I. (2018). Effect of Good Governance on Bank Lending: Evidence from Commercial Banks in Sri Lanka.

- Rehman, A., Abdul Adzis, A., & Mohamed Arshad, S. B. (2020). The relationship between corruption and credit risk in commercial banks of Pakistan. *International Journal of Innovation, Creativity and Change*, 11(1), 701-715.
- Rezaei, N., & Garabaghlu Shahabi, A. (2020). The effect of liquidity risk and credit risk on bank stability. *Quarterly Journal of Fiscal and Economic Policies*, 8(30), 7-26.
- Rupeika-Apoga, R., Zaidi, S. H., Thalassinos, Y. E., & Thalassinos, E. I. (2018). Bank stability: The case of Nordic and non-Nordic banks in Latvia.
- Sanderson, A., Le Roux, P., & Mutandwa, L. (2018). Competition and bank stability. *International Journal of Economics and Financial Issues*, 8(3), 86.
- Sanya, S., & Wolfe, S. (2011). Can banks in emerging economies benefit from revenue diversification?. *Journal of financial services research*, 40, 79-101.
- Saputra, A. A., Najmudin, N., & Shaferi, I. (2020). The Effect Of Credit Risk, Liquidity Risk And Capital Adequacy On Bank Stability. *Sustainable Competitive Advantage (SCA)*, 10(1), 153-162.
- Schaeck, K., & Cihák, M. (2014). Competition, efficiency, and stability in banking. *Financial management*, 43(1), 215-241.
- Šeho, M., Shaiban, M. S. M., & Ghafoor, A. (2023). Loan and financing diversification and bank stability in dual-banking systems. *Finance Research Letters*, 51, 103395.
- Setiawan, A., Sudarto, S., & Widiastuti, E. (2021). The Influence of Credit Risk and Liquidity Risk on Bank Stability. *Icore*, 5(1).
- Shijaku, G. (2017). Bank stability and competition: Evidence from Albanian banking market.
- Shim, J. (2019). Loan portfolio diversification, market structure and bank stability. *Journal of Banking & Finance*, 104, 103-115.

- Siregar, H. S., & Chandra, G. (2017). The effect of Lerner Index and income diversification on the general bank stability in Indonesia. *Banks and Bank Systems*, 12(4), 56.
- Shabbir, G., Anwar, M., & Adil, S. (2016). Corruption, political stability and economic growth. *The Pakistan Development Review*, 689-702.
- Syed, A. A., Kamal, M. A., Ullah, A., & Grima, S. (2022). An asymmetric analysis of the influence that economic policy uncertainty, institutional quality, and corruption level have on India's digital banking services and banking stability. *Sustainability*, 14(6), 3238.
- Taiwo, J. N., Ucheaga, E. G., Achugamonu, B. U., Adetiloye, K., & Okoye, O. (2017). Credit risk management: Implications on bank performance and lending growth. *Saudi Journal of Business and Management Studies*, 2, 584-590.
- Thakor, A. V. (2014). Bank capital and financial stability: An economic trade-off or a Faustian bargain?. *Annu. Rev. Financ. Econ.*, 6(1), 185-223.
- Tariq, W., Usman, M., Tariq, A., Rashid, R., Yin, J., Memon, M. A., & Ashfaq, M. (2021). Bank maturity, income diversification, and bank stability. *Journal of Business Economics and Management*, 22(6), 1492-1511.
- Tran, S. H., Nguyen, M. Q. C., & Nguyen, L. T. (2017). Corruption and the soundness of banking systems in middle-income countries. *VNUHCM Journal of Economics, Business and Law*, 1(Q5), 82-91.
- Wagner, W. (2007). The liquidity of bank assets and banking stability. *Journal of Banking & Finance*, 31(1), 121-139.
- Zureiqat, H. M. (2005). Political Instability and Economic Performance: A Panel Data Analysis, Award Winning Economics Papers. Paper 1.

Zubair, D. S. S., & Khan, M. (2014). Good governance: Pakistan's economic growth and worldwide governance indicators. *Pakistan Journal of Commerce and Social Sciences* (ISSN: 1997-8553), 8(1), 258-271.