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Structure and Stability of the Kazakhstan Banking System

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Abstract

One of the most important prerequisites for ensuring economic stability is the existence of effective and stable financial markets, financial institutions and payment systems. In this context, today, central banks have placed financial stability among their main policy priorities as well as price stability. In this study, the banking system, which is one of the most important institutional structures of the financial system, was evaluated in terms of historical, institutional perspective and stability in the Republic of Kazakhstan, and the stability/soundness levels of the banks operating in the country were analyzed with 4 different financial distress forecasting methods for the post-2008 period. According to the results of the analysis, the Kazakhstan banking sector was significantly affected by the 2008 crisis, the soundness indicators of the sector had their lowest values in 2009, it started to recover in the next year, after this date, although there were small-scale deteriorations for some years, it showed a moderately healthy image until 2017. In addition, no serious instability could be detected due to the destruction caused by the Covid-19 pandemic on a global scale in the sector, which started to recover after the decline in 2017. It is seen that non-performing loans came to the forefront as one of the most important financial problems of the sector during the period under consideration.

Keywords: Financial stability, Financial distress, Kazakhstan banking sector, Financial soundness measurements

Article Type: Research Article

Kazakistan Bankacılık Sisteminin Yapısı ve İstikrarı

Öz

Ekonomik istikrarın sağlanmasının en önemli ön şartlarından birisi, etkin ve istikrarlı bir şekilde işleyen finansal piyasaların, finansal kuruluşların ve ödeme sistemlerinin varlığıdır. Bu kapsamda günümüzde merkez bankaları fiyat istikrarının yanısıra finansal istikrarı da temel politika öncelikleri arasına yerleştirmişlerdir. Bu çalışmada finansal sistemin en önemli kurumsal yapılarından biri olan bankacılık sistemi, Kazakistan Cumhuriyeti özelinde tarihsel, kurumsal perspektif ve istikrar üzerinden değerlendirmeye tabi tutulmuş, ülkede faaliyet gösteren bankaların istikrar/sağlamlık düzeyleri 2008 sonrası dönem için 4 farklı ölçüm metoduyla analiz edilmiştir. Analiz sonuçlarına göre, Kazakistan bankacılık sektörü 2008 krizinden önemli ölçüde etkilenmiş, 2009 yılında sektörün sağlamlık göstergeleri en düşük değerlerini almış, bir sonraki yıl toparlanmaya başlamış, bu tarihten sonra bazı yıllar küçük ölçekli bozulmalar olmakla birlikte 2017 yılına kadar orta derecede sağlıklı bir görüntü vermiştir. 2017 yılında yaşanan düşüşün ardından tekrar toparlanmaya başlayan sektörde Covid-19 pandemisinin küresel ölçekte oluşturduğu tahribattan kaynaklı ciddi bir istikrarsızlık tespit edilememiştir. Ele alınan dönem içerisinde sektörün en önemli finansal sorunlarından biri olarak geri dönmeyen kredilerin öne çıktığı görülmektedir.

Anahtar Kelimeler: Finansal istikrar, Finansal sıkıntı, Kazakistan bankacılık sektörü, Finansal sağlamlık ölçümleri

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1. INTRODUCTION

There are sensitive and complex relations between the financial sector and the real sector in an economy. The financial system, which enables the supply and demand of funds to come together, must be stable in order to fulfill its main function, which is the efficient distribution of resources and the transfer of funds. In particular, the 2008 global financial crisis led to the evaluation of the stability of the financial sector as a priority for policy makers, central banks and researchers.

The main components of the financial system are financial institutions and financial markets. In many countries, banks play the most important role in this structure. The effective functioning of the banking system, which finances the real sector by mediating the redistribution of funds, is extremely important for the sustainability of economic growth and development. Accurate determination of the financial stability situation in the banking system will make it possible to eliminate the sources of instability that may occur in the sector and to put into effect anti-crisis strategies beforehand.

As in many developing countries, the banking sector is the most important component of the financial system in Kazakhstan. After the country gained independence in 1991, economic and financial reform efforts were made in the process of transition to a market economy; systemically extremely important steps have been taken such as the introduction of the national currency, the creation of financial markets, comprehensive privatization programs, legal regulations, and the adoption of international standards.

In the Kazakhstan banking system, which developed within the framework of a two-tier structure consisting of the National Bank of Kazakhstan (Central Bank) and the banks under its control, the basic infrastructure was established in the period until the 2008 global financial crisis, important steps were taken in terms of compliance with international standards and the sector showed a rapid development in this period. However, the crisis caused serious damage to the banking sector, and took a long time to repair the damage.

The aim of this study is to examine the financial system of the Republic of Kazakhstan in general, and the banking system in particular, in the historical and institutional context in the light of the policies followed; to evaluate the state of the system after the 2008 global financial crisis with the help of statistical indicators and to analyze the banking system in terms of soundness and stability for the same period. The study will contribute to the literature on the stability of the banking sector through the example of Kazakhstan, by using different measurement methods. On the other hand, the literature on the analysis of the Kazakhstan banking sector from historical, institutional and legal perspectives, and the analysis of the system's problems, stability, soundness and functioning is at the stage of development, and it is aimed to contribute to the said literature with this study.

The study consists of four sections except for the introduction and conclusion parts. In the first section, the importance of financial stability in general and the stability of the banking sector in particular will be emphasized in terms of economic development and growth; In the second section, the Kazakhstan financial system will be examined, and the banking system will be evaluated in the light of basic indicators. In the third section, the literature on the subject will be reviewed; In the fourth and last section, measurements regarding the financial stability of the Kazakhstan banking system will be made.

2. BANKING SYSTEM AND ITS STABILITY

As a dynamic structure, the financial system expresses a complex structure in which many actors interact directly with each other and with the real sector of the economy. The strong ties between these actors make the stability of the system important. In this context, financial stability refers to the resilience of the economic functions (payment system, risk distribution and efficient allocation of

resources) that are part of the financial system against shocks that may occur in an unexpected situation and to maintain their activities in a healthy way (TCMB, 2015: 7). Financial stability is an important and an integral part of financial development. A stable financial system is a fundamental requirement for the formation of capital accumulation, effective resource allocation, economic growth and development, effective management of financial risks, the functioning of payment systems and the prevention of financial crises. On the other hand, there is a broad consensus that an effective financial sector has a vital role to play promoting sustainable development (Jones, Hillier, and Comfort, 2017: 38).

The concept of financial stability is closely related to the financial soundness of financial institutions. "Financial soundness is a bank's condition in which the indicators characterizing capital adequacy, asset quality and liquidity, as well as the effectiveness, are within certain limits, and the transition beyond this leads a sound bank in to unsound status. Thus, financial unsoundness of the bank is a condition in which the indicators characterizing capital adequacy, asset quality, liquidity and efficiency extend beyond certain limits" (Pukhov, 2013, as cited in Salina, 2017: 198).

In order to ensure financial stability, first of all, the sources of financial instability must be identified, then followed by monitoring, predicted before they occur, and precautions must be taken. In this context, financial regulators play a key role in minimizing the extreme risks that threaten the stability of the financial system and thus jeopardize the stability and sustainability of the economy (Ntarmah, Kong, and Gyan, 2019: 710). Unsustainable macroeconomic policies, inadequate regulatory processes, capital flows, current account imbalances, financial innovations and risks that may arise in the financial system are the most important factors causing financial instability (See TCMB, 2015: 8-14). A problem that occurs in one of the institutions in the system can quickly spread to other institutions and even to the whole system through the said ties.

Banks stand out as the most important institutional structures in the financial system, especially in developing countries. Banks also play a central role in the money creation process and payment system. On the other hand, bank loans are an important factor in financing investments and economic growth[†]. There is a risk that the negativities that may arise in this part of the system will cause severe damage to the entire economy. Therefore, in order to maintain monetary and financial stability, central banks and supervisors are closely concerned with the stability of the banking system (Hartmann, Straetmans, and De Vries, 2005: 7). The stability of the system and its sustainability are among the priorities of policy makers. In the relevant literature, the subject has been evaluated mainly on the factors that cause instability in the banking system and especially on the financial crises; In many studies, the determinants of systemic banking crises have been examined and early warning models have been developed to predict crises (See Gaganis et al., 2010: 2).

The financial crisis, which started in the USA in 2007 and spread to the whole world, brought early warning models to the agenda in many countries in terms of the stability of the banking sector. In the period after the 2008 global financial crisis, the banking system in many countries faced significant difficulties in fulfilling its basic functions. Especially after 2013, when the financial crisis turned into a debt crisis in European countries, the issue of how to ensure minimum capital ratios and capital regulation in a particular bank and banking system began to come to the fore in the regulation of the banking sector (Thuy, Le, and Van Chien, 2021: 5).

[†] This is true for all developed and developing countries. For example, Jayakumar et al. (2018) revealed that banking stability is an important driver of economic growth in European Countries (Cited in Ntarmah et al., 2019: 710).

3. KAZAKHSTAN FINANCE SYSTEM

Under this title, first of all, the general view of the economy of Kazakhstan will be examined in the light of basic macroeconomic indicators, and then the financial system of the country will be reviewed in general terms. Then, the historical and institutional structure of the Kazakhstan banking system will be examined in the context of basic indicators and evaluations will be made about its current appearance.

3.1. General Outlook of Kazakhstan Economy

In Kazakhstan, which is the largest and most economically developed country in Central Asia, the existence of very rich natural resources in terms of volume and diversity constitutes the driving force of the country's economy on the one hand, and on the other hand, the structure that is excessively dependent on oil and natural gas revenues creates a disadvantage in terms of the long-term development of the economy[‡]. In order to overcome this problem, the government implements programs to develop non-energy sectors and to diversify the volume of economic activity in this context.

After gaining its independence from the Soviet Union in 1991, enterprises operating in the public sector were privatized and many private enterprises began operating in the process of alteration/transformation in the economy of Kazakhstan. During the transition to a free market economy, the number of publicly traded domestic and foreign companies in Kazakhstan, which aims to transition from an economy based on underground resources to a more diversified model has increased significantly (Salttürk, 2019: 13). In this context, Kazakhstan joined the Commonwealth of Independent States in 1991 and signed a customs union agreement[§] with Russia and Belarus in 2010. In the meantime, Kazakhstan has become a member of many international organizations such as the International Monetary Fund, the International Bank for Reconstruction and Development, the International Development Association, the Multilateral Investment Guarantee Agency, and the International Finance Corporation (Salina, 2017: 9)

Table 1 consists the main macroeconomic indicators regarding the economy of Kazakhstan after 2008, which was taken as the review period.

Table 1. Development of Key Macroeconomic Indicators in Kazakhstan

	GDP Growth	CPI	Current Balance / GDP	External Debt / GNI	Gross National Savings / GDP	Public Revenues / GDP	Public Expenditures / GDP
2008	3,3	17,0	4,7	93,6	30,2	31,6	26,8
2009	1,2	7,3	-3,6	106,7	29,2	35,6	29,9
2010	7,3	7,1	0,9	92,6	30,4	25,5	20,4
2011	8,9	8,3	5,3	75,4	32,8	27,6	19,3
2012	4,8	5,1	1,1	75,3	29,5	26,3	20,3
2013	6,0	5,8	0,8	70,8	28,6	24,2	19,1
2014	4,2	6,7	2,8	79,4	29,8	23,2	19,8
2015	1,2	6,6	-3,3	88,7	27,9	17,6	19,8
2016	1,1	14,6	-5,9	132,0	24,1	17,6	20,5
2017	4,1	7,4	-3,1	106,9	25,8	19,9	22,9
2018	4,1	6,0	-0,1	99,8	27,7	19,6	18,2
2019	4,5	5,3	-4,0	98,3	26,5	19,1	17,2
2020	-2,6*	6,8	-3,7	-	-	-	-

[‡] The fluctuations in the prices of these products in global markets destabilize the export income of the country.
[§] This agreement was renamed the Eurasian Economic Union in 2015.

Source: ADB, (2021), *Key Indicators for Asia and the Pacific 2021*, Asian Development Bank, Manila.

*: Temporary

As can be seen from the table, the average growth rate was 3.7% during the period under consideration, the severe decline in growth rates after the 2008 crisis left its place to a significant increase after 2010, and similar decreases were experienced in 2015 and 2016. A significant part of the GDP in the country consists of oil revenues. Economic growth rates slowed significantly after the global financial crisis due to the sharp declines in oil prices, which continue to be the driving force of economic growth. The long-term economic growth rate, which was 10.2% in the 2000-2007 period, decreased to 4.2% in this period. According to ADB data, the sectoral distribution of GDP, it is seen that services take the first place with 58.9% in 2020, followed by the industry sector with 35.5%, and the share of the agricultural sector is 5.6%. According to the classification of the World Bank, the ratio of national savings to GDP in Kazakhstan, which is in the group of upper middle income countries in terms of per capita income, was 21% on average. Increasing these rates is seen as an important factor in financing investments.

After the sharp decline at the beginning of the period, inflation rates remained in single digits except for 2016, and the period average was 8%. The foreign trade balance had a surplus of 10.5 billion dollars in 2020 and the current account deficit, which was 7.3 billion dollars in the previous year, decreased to 6.3 billion dollars in 2020. There was a foreign trade surplus throughout the period but the current account balance had a continuous deficit after 2015. There has been a continuous increase in the total amount of external debt, except for the years 2015 and 2017, and the ratio of external debts to Gross National Income was 93% on average. The economic slowdown caused by the falling oil price and the effect of the Covid-19 pandemic caused a decrease in production and an increase in the need for external financing, the ratio of external debt to GDP, which was 163.4 billion dollars at the end of 2020, increased from 87.3% to 96.2%.

The ratio of public revenues, which was to GDP was 31.6% in 2008, decreased to 19.1% in 2019, and there was a similar decrease in public expenditures. After March 2020, when Covid-19 cases started to be seen, the government applied quarantine practices on the one hand, and on the other hand, implemented anti-crisis economic policies in the form of comprehensive social assistance, low-interest loan programs, employment support, postponing tax and loan debts. With the effect of these measures, there were significant increases in budget expenditures within the framework of increasing expenditures for social welfare and social security, health, education and public services. In this process, along with the fiscal policy, significant changes have also emerged in the monetary policy. With an aim to stabilize the situation, the monetary policy measures were taken to change the level of the base rate and the width of its band, which ensured that interest rates in the money market were forming within the target interest rate band (NBK, 2021a: 23).

3.2. Financial Structure and Banking System in Kazakhstan

There is a strong correlation between the realization and sustainability of economic growth and development and the volume, depth, and stability of the financial system. Especially in developing countries, the financial system has a decisive role in the effective distribution of resources in the development process.

In the post-independence period, important reforms were undertaken in the field of money and finance in Kazakhstan, and important steps were taken in establishing the infrastructure of the financial system between 1993 and 1998. In 1993, Kazakhstan's own currency, the Tenge (KZT), was put into effect, the Kazakhstan Stock Exchange was established in the same year and legal regulations regarding

money and capital markets were implemented. The majority of transactions in the Kazakhstan Stock Exchange, which is a member of organizations such as the World Federation of Exchanges and the Federation Eurasia Sec (FEAS), consist of repo and foreign exchange transactions. Only a very limited part of the volume arises from private sector debt instruments and derivative transactions (Salttürk, 2019: 14).

In 2001, the National Wealth Fund was established by the National Bank of Kazakhstan based on the Norwegian model. The Fund has two components, the Stability Portfolio and the Savings Portfolio (Begaliyev, 2006: 116, 117). Established in 2015 and launched in 2018, Astana International Financial Center (AIFC) operates in five areas: capital markets, portfolio management, private banking, Islamic finance, and Fintech. In the same year, Astana Financial Services Institution was established in order to keep company records, to carry out audit and surveillance activities and to regulate financial service activities (Salttürk, 2019: 16-19).

As of the end of 2020, the securities market is represented by 38 brokers and (or) dealers (18 banks and 20 non-banking institutions), 9 custodian banks, 19 investment portfolio managers, 2 transfer agents, as well as 2 infrastructure organizations: Kazakhstan Stock Exchange JSC and Central Securities Depository JSC (ARDFM RK, 2021a: 26).

In 2020, the Agency for Regulation and Development of the Financial Market of the Republic of Kazakhstan became operational. The agency is a government agency that performs control and supervisory functions to ensure the stability of the financial system and the development of financial markets, and to protect the rights and legitimate interests of financial service consumers (Agency for Regulation and Development of the Financial Market of the Republic of Kazakhstan, 2021). Within the framework of its duty to promote the stability of the financial system, the National Bank of Kazakhstan has been publishing the Financial Stability Report periodically since 2006. The report contains the results of a comprehensive analysis and assessment of the main risks and vulnerabilities of financial stability (NBK, 2021b).During the Soviet Union period, the banking system consisted of consisted of a network of state banks, joint-stock banks, mortgage banks, mutual credit institutions, city banks and other lending institutions (Begaliyev, 2006:10). Within the framework of the regulations made in 1987-88, the restructuring process in the banking sector was initiated and a transition to a two-tier banking system was achieved. The National Bank of Kazakhstan (NBK) is the central bank of the state and represents the upper (first) tier of the banking system. Except for the Development Bank of Kazakhstan, which has a special legal status, all other banks constitute the lower (second) tier of the banking system (Smirnova, 2014: 86).

In Kazakhstan, banks could be established in the form of private capital, mixed capital, collective and joint stock companies according to the type of ownership, and banks that were fully paid by the state and could engage in commercial activities could also operate (Begaliyev, 2006: 26). In 1993, the Law on the National Bank of the Republic of Kazakhstan and the Law on Banks of the Republic of Kazakhstan were published. The adoption of the said laws put the two-tier banking system into operation and the functioning of the mutual relations between the NBK and the second-level banks was determined (Begaliyev, 2006:16). In the same year, the Association of Banks of the Republic of Kazakhstan was established. The aim of the association was determined as to help banks, find solutions to their problems and contribute to the development of the country's economy by enabling them to work more effectively (Ordabayeva, 2007: 47).

Between 1998 and 2000, the banking supervision system was reformed in order to bring the banking supervision procedure and methods closer to international standards (Begaliyev, 2006: 75). In 1999 a deposit insurance system was established to ensure the safety of people’s deposits in case of a compulsory liquidation of banks involved in a system of guarantee. The 2008 global financial crisis

accelerated the process of making changes in the principles and regulations regarding the supervision of banks (Salina, 2017: 17, 31).

The traces of the National Bank of Kazakhstan (NBK), the most important component of the system, can be traced back to Tsarist Russia. In addition to the issuance of banknotes, the Russian State Bank, which started its operations in 1860, provided loans not only to banks, but also to industrial and commercial areas, compared to the central banks of other countries. In 1914, this bank had 10 offices, 124 branches and 791 safes (Seyitkasimov, 1999, as cited in Mukumov, 2018: 47).

The NBK was established by the decision of the Supreme Council of the Republic of Kazakhstan dated April 13, 1993, and numbered 2134-XII. In accordance with this Decision, the Kazakh SSR State Bank was reorganized into the National Bank of the Republic of Kazakhstan (NBK, 2021c: 25). The main task of the NBK, which represents the upper (first) level of the country's banking system, is to ensure price stability. For this purpose, the Bank performs the following functions (NBK, 2021a: 6):

- Formulating and implementing the country's monetary policy
- Ensuring the functioning of payment systems
- Carrying out currency exchange regulation and currency control
- Promoting the financial system's stability
- Carrying out statistical activities in the field of monetary statistics, financial market statistics and the external sector statistics

The organizational structure of the NBK consists of 23 business units in the head office (21 departments and 2 stand-alone divisions), Permanent Representative Office of the National Bank in the city of Almaty, 18 branches and 3 republican stateowned enterprises under its jurisdiction (NBK, 2021a: 71). NBK acts as the lender of last resort for banks that are financially sound and have sufficient capital but have temporary liquidity shortages and are experiencing unique liquidity shocks. In addition to standing facilities, open market operations are also used as monetary policy tools (NBK, 2021a:25). The bank determines the official refinancing rate depending on the general state of the money market, supply and demand for loans, inflation and inflation expectations, and by increasing or decreasing this rate, it affects the amount of loans received by commercial banks and their customers, economic growth, money supply and market interest rate (Kaliyeva, 2018: 29).

Since 2015, the NBK has switched to an inflation targeting regime with a floating exchange rate[**]. The main policy instrument of the said regime is interest rates. On the other hand, studies are underway to issue a national digital currency within the NBK, and the final decision on the implementation of the Digital Tenge will be made in December 2022 (NBK, 2021d).

From 2019, the NBK has significantly increased its mandate to eliminate previous audit loopholes and institutional weaknesses that led to state support and financial losses (Tazetdinova, 2020: 2). The NBK carries out its monetary policy in line with the objectives of reducing inflation, ensuring the stability of the national currency and the stability of the financial system. The Bank's clear stance on stabilizing inflation at a low level potentially increases market confidence in the Bank and contributes to sustainable and balanced economic growth (Garifollaevna and Bauirzhanovna, 2019: 104).

3.3. Outlook of the Kazakhstan Banking Sector in the Light of Key Indicators

[**] In February 2014, KZT was pegged to the US dollar. However, when this fixed exchange rate policy made the Tenge weaker than it was in 2013, Tenge, which was under pressure due to the sharp fall in oil prices, was devalued by the government in 2015, and then the floating exchange rate system was adopted (The Eurasia Center, 2016, as cited in Tanınmış Yücememiş et al., 2017: 194).

When the Republic of Kazakhstan gained its independence, the banking system was represented by six banks[††].These banks, which were initially state banks, were later transformed into private commercial banks and formed the basis of the two-tire banking system (Kaliyeva, 2018: 11). The authorization to establish commercial banks was taken from the USSR State Bank and given to the NBK, which accelerated the emergence of private banks. The number of banks, which was 72 in 1991, exceeded 150 in 1992 (Ordabayeva, 2007: 17).

Kazakh banks were among the first banks in the Commonwealth of Independent States (CIS) to start using International Financial Reporting Standards (IFRS). On the other hand, since the first half of the 1990s, steps have been taken to implement the Basel Standards in order for the banking sector to adapt to the international financial system; a gradual transition plan has been started to operate since 2015 in order to comply with the Basel III accord (Salina, 2017: 18, 37).

Issues such as regional or global-scale financial crises, technological developments, and fierce competition caused rapid transformations in the banking system. Since the second half of the 1990s, financial controls on the banking system have been tightened and the number of banks has been reduced. In this framework, the state tried to stabilize the banking sector by liquidating or merging weak insolvent banks (Smirnova, 2014).

According to the information conveyed by Salina (2017: 16,18), "the improvements that emerged in the economy of Kazakhstan in the early 2000s were also reflected in the banking sector; A state-owned development bank was established in 2001; In 2003, Zhilstroysberbank was established to carry out banking functions focusing on medium and long-term loans for residential construction. The rapid economic development caused by the increase in oil prices from 2000 to 2007 increased the confidence in all sectors of Kazakhstan's economy and especially in the banking sector. On the other hand, there was an uncontrolled increase in the external borrowing of banks in this period".

The 2008 global financial crisis, as in many countries, caused significant problems on the Kazakhstan banking sector. There has been instability in the credit markets due to the large amount of debts of banks to foreign financial institutions, devaluation of the national currency due to the crisis, increased unemployment, the existence of high amounts of non-performing loans, and the downgrade of the country's credit rating by international rating agencies, but the satisfactory financial performance of many Kazakhstan banks weakened the possibility of default. On the other hand, the crisis contributed to reveal the weaknesses and defects of the banking system (Anichshenko, 2009: 66, 69).

Prior to the Covid-19 pandemic, the banking sector in Kazakhstan was facing a number of persistent institutional and structural problems. The most important of these were poor risk management resulting in long-standing credit losses, lack of creditworthy borrowers in the corporate sector, supervisory gaps, the increasing role of the government in providing loans to the economy, the lack of stable long-term loans and the phenomenon of high levels of dollarization (Tazetdinova, 2020). The measures taken against the pandemic contributed to the increase in the risks in the banking sector, but there was no serious deterioration in the quality of the loan portfolio. On the other hand, the possibility of a decrease in the loans granted and a further contraction in economic activities continues to exist (ARDFM RK, 2021a: 33).

Table 2 shows the main indicators of the Kazakhstan banking sector after the 2008 global financial crisis.

[††] Gosbank, Vneşekonombank, Promstroybank, Agroprombank, Kredsotsbank and Sberbank.

Table 2. Selected Indicators for Kazakhstan Banking Sector

	Total assets (Billion Tenge)	Total liabilities (Billion Tenge)	Legal Equity (Billion Tenge)	Debts (Billion Tenge)	Non-performing loans (Billion Tenge)
2008	11,889.6	10,437.0	1,452.6	10,292.9	655.4
2009	9,585.9	9,091.5	494.4	9,050.0	1,346.3
2010	10,037.5	8,902.6	1,134.9	8,837.8	1,553.3
2011	11,201.3	9,657.3	1,544.0	9,604.6	1,732.3
2012	12,361.5	10,566.1	1,795.5	10,494.6	1,860.7
2013	13,944.8	12,104.8	1,840.0	12,007.9	2,135.3
2014	16,783.6	14,491.3	2,292.3	14,345.5	1,486.9
2015	23,780.3	21,290.2	2,490.1	20,985.5	1,236.9
2016	25,556.8	22,716.2	2,840.6	22,562.9	1,042.1
2017	24,157.9	21,128.2	3,029.7	20,981.4	1,265.2
2018	25,244.0	22,222.3	3,021.8	21,831.9	1,016.3
2019	26,785.9	23,158.6	3,627.4	22,866.9	1,200.1
2020	31,171.7	27,217.2	3,954.5	27,098.2	1,082.1

Source: IMF, (2021), *Sectoral, Financial Statement Annexe*, International Monetary Fund, (26.01.2022)

As of December 2021, the Kazakhstan banking sector is represented by 22 banks, of which 14 banks with foreign participation, including 11 subsidiary banks, 1 bank with 100% state participation (ARDFM RK, 2021b). According to the table, the assets of the total banking sector increased continuously except for the years 2009 and 2017, and this increase reached its highest level with 42% in 2015 compared to the previous year. A similar course is observed in total liabilities, except for the decrease in 2009, 2010 and 2017, there has been an increase in general; the highest increase in liabilities took place in 2015. It is seen that the legal equity has reached the value of 3.95 trillion KZT with an increase of 172% from the value of 1.45 trillion KZT at the beginning of the period[‡‡]. Although a fluctuating course is observed in the debts of banks in general, an increasing trend is noteworthy. A fluctuating course is also observed in non-performing loans, which are considered as one of the most important indicators for the stability of the system[§§].

The global financial crisis had a significant impact on the state of the banking system in Kazakhstan, and indicators such as the growth of the sector, profitability rates, and asset quality deteriorated significantly. The weakening of access to international borrowing markets due to the crisis, combined with the difficulties experienced in restructuring previously taken loans, faced liquidity insufficiencies in the sector. In this period, there was a significant increase in the volume of non-performing loans, and the World Bank even ranked Kazakhstan in the first place in the world in terms of the volume of non-performing loans in 2012 (Vorotilov, 2013, as cited in Salina, 2017: 28). Despite limited access to external financing resources and slowing economic growth, the banking sector continued to increase its resource infrastructure, and the nominal growth rate of the resource base in 2010, 2014 and 2015 was largely determined by the dynamics of the exchange rate (Kodasheva et al., 2017: 259).

[‡‡] As of 01.01.2021, the core capital adequacy ratio (k1) is 21.3% and the equity adequacy ratio (k2) is 27.0%, which on average significantly exceeds the statutory standards in the system (ARDFM RK, 2021a:16).

[§§] The ratio of non-performing loans to GDP, which was 4.8% in 2008 right after the crisis, reached 18% in 2009. This rate reached its highest level with 30.8% in July 2012.While this situation caused problems in the banking system, on the other hand, it led many businesses to seek to restructure their debts and finance future projects and operations. Although significant improvements have been achieved as a result of the efforts to solve the non-performing loans, the problem has not been completely overcome (Eberle, 2019).

Thanks to the measures taken, the volume of loans with a high risk of non-repayment by banks has been reduced, the quality of credit decisions has been improved, and thus the credit risk has been reduced. In the process of rehabilitating banks from 2016 to 2020, the industry has undergone a major clean-up of balances from non-performing loans that have accumulated since the financial turmoil in 2008. In this period, non-performing loans in the amount of more than 6 trillion tenge were written off (Rustem, 2021: 17).

The stability of the banking sector has improved significantly in recent years. Within the framework of the program aimed at increasing the stability of the financial sector, the quality of the banks' loan portfolio was improved, and the banks were recapitalized by the shareholders (Rustem, 2021: 17). The Agency for the Regulation and Development of Financial Markets (ARDFM) of the Republic of Kazakhstan and the National Bank of Kazakhstan started the banking sector stress test application in 2020 based on the methodology used by the European Central Bank. In this context, the financial stability of banks is analyzed with the Asset Quality Review (AQR) of second-tier banks. In the first application made in 2020, 14 banks providing 87% of the banking sector assets and 90% of the total loan portfolio were tested; there is no shortage of capital, both at the system level and at the level of banks participating in AQR; It has been found that there is a sufficient margin of safety to absorb potential losses associated with external shocks (ARDFM RK, 2021a: 34, 35). After the examination, banks were divided into three groups as low, medium and high risk banks in terms of financial stability in a crisis; Banks with high and medium risk were forced to develop individual strategies to ensure financial stability.

According to the information obtained from the report of ARDFM (2021b) regarding the current view of the sector, 14 of the existing banks are banks with foreign participation as of December 2021. The assets of its banks amounted to 31.1 trillion KZT by increasing 17.8% in 2021. The main asset category in total banking assets is the loan portfolio, which accounts for 51.6% of total assets. The share of the loan portfolio in GDP, which amounted to KZT 18.9 trillion with an increase of 20.0% in 2021, reached 25.3%. The level of non-performing loans continued to decline in all segments of bank loans, and non-performing loans (overdue loans of more than 90 days) declined to KZT 733.1 billion, 3.9% of the loan portfolio (which was 6.9% at the beginning of 2021). The largest share of banks' total liabilities belongs to customer deposits (79.3%)[***]. There were significant improvements in the profitability level of the sector compared to the previous year, the return on assets increased from 2.62% to 3.45% on average; return on equity increased from 19.91% to 27.89%. In terms of concentration in the sector, the share of the largest 5 banks in total banking assets is 64.9%, their share in the total loan portfolio is 74% and their share in total customer deposits is 66.2%. As of June 2021, the ratio of total banking assets to GDP was 45.4%, the ratio of loan portfolio to GDP was 22.3%, and the ratio of deposits to GDP was 31.8%.

According to the annual report of the National Bank of Kazakhstan (NBK, 2021a), the dollarization rate of deposits decreased to 37.3% at the end of 2020[†††]. High deposit dollarization creates short foreign exchange positions and forces banks to use off-balance sheet derivatives to hedge against these positions. Periods of exchange rate volatility may force banks to switch from the national currency to foreign currency to compensate for their short foreign exchange positions (Tazetdinova, 2020: 9).

[***] Although individual deposits are increasing gradually in the country, their ratio to GDP is still low. The majority of time deposits cannot be qualified as a stable funding source as deposit contracts allow early withdrawal without penalties. This situation increases the liquidity risks for banks and shortens the deposit funding period (Tazetdinova, 2020: 9).

[†††] This rate is around 44.1% for the 1998-2020 period (Rustem, 2021: 17).

The real sector, especially the non-oil traded sector (manufacturing, agriculture) received an average of 13% of all loans given to the economy and 19% of corporate loans for the years 2004-2020. Banks mainly finance sectors that provide fast returns in a short time and have high margins (Rustem, 2021: 19). In 2020, the relative share of KZT loans in the total loan volume increased from 83.4% to 87.0%. The share of long-term loans in the bank loan portfolio structure became 85.4% (December 2019, 85.3%) (NBK, 2021a: 31).

4. LITERATURE

There is a large volume of literature consisting of both institutional and academic studies on the stability of the financial sector in general and the banking sector in particular. The prominent analysis method at the institutional level is the financial stress tests. Stress tests, which were brought to the agenda for the first time within the scope of Financial Sector Assesment Program (FSAP) carried out jointly by the IMF and the World Bank in 1999, later started to have a wide place in the financial stability reports of developed countries, especially in the risk analysis sections. The wide implementation of stress tests, which measure the resilience of the financial system (parts) against crises, and its use to evaluate the soundness of countries' financial systems, mainly took place after the 2008 global financial crisis (Aymanns et al. 2018: 358; Başarır and Toraman, 2014: 129).

In some of the academic studies on the subject, it has been tried to determine whether the banking system is stable or not. In a study by Sanya and Wolfe (2011), the effect of income diversification on bank performance and risk was examined. The Z-Score was used as the main measure of bankruptcy risk in the study using the System Generalized Moments Method on a panel data set of 226 banks in eleven emerging economies. According to the main finding of the study, diversification between interest and non-interest income generating activities reduces the risk of bankruptcy and increases profitability. Kozmenko and Kuzmenko (2013) used quarterly data on equity, assets, loans and liabilities, interest income and net profit (loss) for the 2009-2012 period in their study, in which they tried to model the dynamics of the banking system in the example of Ukraine and make predictions about the stability of the system.

Some other studies have focused on the determinants of the stability of the banking sector; In this context, bank-specific factors, competitive environment, and macroeconomic factors were analyzed. Gaganis et al. (2010) used a total of 11 criteria falling into four general categories. The general categories in question are regulations, other banking and financial sector characteristics, institutional environment and macroeconomic conditions. It is stated that the models developed in the study have useful results in evaluating the soundness of the banking sectors and in monitoring the change of stability levels from the "high stability" group to the "low stability" group. Jokipii and Monnin (2013), in their study, examined the relationship between the degree of stability of the banking sector, real output growth and inflation over a sample of 18 OECD countries with the panel VAR methodology. According to their results, there is a positive correlation between the stability of the banking sector and real output growth, and instabilities in the banking sector increase the uncertainties about future output growth. In the study, no clear link was found between the stability of the banking sector and inflation. Ntarmah et al. (2019) investigated the effects of banking system stability on economic sustainability from the perspective of 37 emerging economies for the period 2000-2016. According to the results of the study, the banking system Z-Scores among developing economies have a positive effect on the economic sustainability of emerging economies. Phan et al. (2019) obtained results that support the traditional competition-vulnerability view in their study, in which they examined the relationships between competition, efficiency and stability in the banking systems of four East Asian countries (China, Hong Kong, Malaysia and Vietnam) for the period 2000-2014. Accordingly, the increase in competition in the sector may result in a decrease in the stability of the system; credit risk, bank size and market concentration

may affect bank stability positively, whereas banks with higher liquidity risk and income diversification may have lower stability. The stability of the banking sector was adversely affected by the global financial crisis is among the other findings of the study. Yin (2019) examined the effect of globalization in the banking sector on financial stability in the study with a data set covering 129 countries between 1995 and 2013. He has obtained strong evidence that foreign bank entry into a country increases both the credit risk and the overall risk of bank failure and threatens the financial stability of the host country. The author emphasizes that this relationship between foreign bank entry and the stability of the banking sector depends on the regulatory and institutional framework of the host country. Accordingly, it is stated that foreign bank entry can reduce risks in the banking sector in cases where host country regulations regarding bank activities are restrictive, capital requirements are less stringent, and/or market entry barriers are low. Thuy et al. (2021), in their study examining commercial banks traded in the Vietnam Stock Exchange, they found that banking sector indicators such as equity-asset ratio, bank size, loan-asset ratio, income diversification have a positive effect on the stability of the bank.

In some other studies on the subject, the relations between the stability of the system and basic macroeconomic indicators have been examined. In this sense, the interaction between the stability of the banking system and economic growth has been the subject of intense study. Apart from individual country studies, there are a significant number of studies examining the effects of the banking system on long-term economic growth using cross-country data. Some studies found a positive relationship between variables, some studies found a negative relationship, while others found no relationship between variables (See Ntarmah et al., 2019: 713).

Examining the studies on the Kazakhstan banking sector, it is seen that the number of studies on the soundness and stability of single country's banking sector at the individual level is limited, though the subject is included in the cross-country studies. De Haas et al. (2010) examined how bank characteristics and institutional environment affect the composition of banks' loan portfolios using the data set based on the Banking Environment and Performance Survey (BEPS) conducted by the European Bank for Reconstruction and Development (EBRD) for transition economies, including Kazakhstan. According to the findings of the study, the most important determinants of the composition of banks' loan portfolios are bank ownership, bank size and protective arrangements for legal creditors. The fact that especially foreign banks play an active role in mortgage loans is among the other findings of the study. Delis, Molyneux, and Pasiouras, (2011) found that regulations and incentives that encourage private monitoring have a positive effect on the productivity level of the economy, in their study examining the relationship between the regulatory and supervisory framework and productivity of banks in 22 countries, including Kazakhstan, during the 1999-2009 period. Other findings of the study are that restrictions on the activities of banks on securities, insurance, real estate and ownership of non-financial firms have a positive effect.

Glass, Kenjegalieva, and Weyman-Jones, (2013) analyzes some functions (cost, income, standard profit, alternative profit) of the Kazakh banking sector with the help of monthly data for the period 2007-2010, using the Stochastic Boundary Analysis method. In the study, it is concluded that an increase in the ratio of non-performing loans to total loan volume reveals the expected effects on the cost and alternative profit limit, and the increase in the ratio of non-performing loans to total reserves causes negative effects on the cost and income limits. Bhatti (2013) tested the technical and scale efficiency of 20 Kazakh banks with the help of annual data for the period 2007-2011 and concluded that the performance of Kazakh banks deteriorated significantly during the 2008 global financial crisis, and foreign banks performed relatively better than domestic banks. According to the results of the study by Smirnova (2014), in which the internal and external factors affecting mergers and acquisitions in the

Kazakhstan banking sector are examined, among the internal reasons for mergers and acquisitions in the banking sector, issues such as growth and expansion to CIS countries, increasing capital/equity, increasing income and strengthening financial/market position, diversifying products and services, and increasing the number of customers came to the fore. Among the external factors, legal, political, technological and competitive forces were decisive. As a result of the study of Zaitenova and Baibulekova (2016), in which they examined the effects of macroeconomic factors on the Kazakhstan banking sector, it was determined that the exchange rate is an important variable that affects non-performing loans, the banking system is vulnerable to the dynamics of the exchange rate, and this situation destabilizes the system. Another finding of the study is that there is a negative relationship between non-performing loans and financial depth. Kodasheva et al. (2017) analyzed the reasons for the decrease in the share of bank loans in GDP in Kazakhstan. The findings of the study show that devaluation processes, financing gap, increase in non-performing loans stand out among the quantitative factors; among the qualitative factors, the weak diversification and the uneven distribution of the loans were determinative. According to the author, banks in Kazakhstan are focusing on short-term high-yield and high-risk consumer loans and in case of deterioration in macroeconomic indicators, this situation may lead to high credit risks. Bolat (2017) tried to evaluate the financial performance of 23 banks operating in Kazakhstan in the period of 2011-2015 in his study, in which he tested the approaches to evaluate the probability of bankruptcy with the help of banks' financial indicators. In the study, it was concluded that the Altman Z-Score model did not give satisfactory results in estimating the financial situation of the banks in the country, but the Bankometer (S-score) model had a much stronger predictive ability in this sense. According to the results of the Altman Z-Score model, it is predicted that some banks within the scope of the examination carry a risk of bankruptcy, such a prediction cannot be made in the Bankometer model. Salina (2017) analyzed the financial soundness of the banking sector both at the sectoral and at the individual bank level in Kazakhstan with cluster analysis. In the study, it was determined that Altman models gave moderately successful results in predicting the financial soundness of banks in Kazakhstan. It is stated that a proposed cluster-based methodology gives very good results in determining the financial soundness of banks and can be used as a reliable technique to give an early warning signal for disruptions in the banking system. According to the results of this analysis, unsound banks had low capital adequacy, low net interest rate margin and interest rate spread, lowest asset quality and return on assets, and highest debt-to-equity ratio. Turusbekova et al. (2020) analyzed the relationship between competition and stability in the Kazakh banking sector with the help of quarterly data, and the hypotheses that competition positively affects stability in the banking sector and that there is a statistically significant relationship between different competition measures were rejected. Tazetdinova (2020) examined the effects of the economic recession triggered by the Covid-19 epidemic and the significant decreases in oil prices on the Kazakhstan banking sector; in particular, author focused on assessing the temporary regulatory relief provided to banks to prevent credit contraction. According to the study, banks appear to be in a better position compared to previous crisis periods, except for a few small failing banks, due to the massive clean-up of balance sheets prior to the Covid-19 outbreak. The most important threat for banks arises from increased credit risks due to tightening financial conditions on borrowers and uncertain prospects for economic recovery (Tazetdinova, 2020).

5. FINANCIAL STABILITY IN KAZAKHSTAN BANKING SYSTEM

In this part of the study, the financial stability of the Kazakhstan banking after the 2008 global crisis system will be analyzed with the help of the methods used in the literature to measure the financial success of the companies.

5.1. Model

Apart from traditional methods (Stress tests and CAMELS), several different methods are used to quantitatively measure the soundness and stability of the banking sector. It is of great importance for the future of the company to anticipate the financial failure, which affects the financial situation, working capital, solvency, and sales growth of a company, and to take measures. Examining the tendencies of some of the ratios belonging to the companies for this purpose, although it is not sufficient, creates a general opinion (Aksoy and Göker, 2018:422). Various methods have been developed to overcome this lack of sufficiency. Altman Z-score, Bankometer S-score, Grover score, Ohlson (1980), Whalen and Thomson (1988), and Zmijewski J-Score (1984) models are among the models most widely used in the literature to measure the financial success or failure of the firm (Shafitranata and Arshed, 2020: 233). Although Altman's Z-Score is the most frequently used of these models, it is known that this model does not give satisfactory results outside of industrial companies (Budiman, Herwany and Kristanti, 2017:16; Özbek, Hazar, and Babuşçu, 2021: 13). For this reason, it is important not only to rely on Altman's Z-Score, but also to use other models to obtain satisfactory results about the financial success of banks. Whalen and Thomson (1988) model could not be used because the necessary variables could not be reached due to insufficient data. In addition, the Ohlson (1980) method could not be used because the signs of the variables were different from the desired signs[‡‡‡] although the required variables could be reached. Therefore, four methods were used, in which we were able to find the variables suitable for the respected model's criteria, including the Altman Z-score. These four methods and their explanations are given below.

5.1.1. Altman Z-Score

As stated above, one of the commonly used financial distress forecasting model in the literature is the Z-Score method developed by Altman (1968). In the model, the general structure of which was put forward by Edward Altman, the multivariate discriminant analysis method, which reflects the financial failures and bankruptcy possibilities of the companies, is used (Aksoy and Göker, 2018: 422; Shafitranata and Arshed, 2020: 235; Al Zaabi, 2011: 161). Discriminant analysis is a statistical technique that identifies some financial ratios that are considered the most important in influencing the value of an event and then transforms it into a model in order to facilitate inference from an event (Husein and Pambakti, 2015: 409).

In his first study, Altman (1968) analyzed 22 ratios of 66 companies, half of which were in the process of filing for bankruptcy in the USA between 1946 and 1965. He classified these ratios in five main groups (liquidity, profitability, leverage, solvency and operating efficiency) and formed function variables. He determined the Z-Score value by obtaining the weighted coefficients of the variables he created by discriminant analysis (Kiracı, 2021: 1564; Shafitranata and Arshed, 2020: 235; Al Zaabi, 2011: 161). Altman revised the model he created in 1968 in 2002 (Qamruzzaman, 2014: 117). In this context, the Z-Score links a bank's capitalization with returns with risk (volatility of returns) to estimate a bank's solvency risk, and theoretically, a larger Z-Score means a higher level of banking stability (Thuy et al., 2021: 4).

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‡‡‡ That is, some variables expected to be negative (positive) but they happen to be positive (negative)

The final version of Altman's model is as follows (Altman, 2013:13):

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5 \quad (1)$$

Here, X_1 is the ratio of working capital to total assets; X_2 is the ratio of retained earnings to total assets; X_3 is the ratio of earnings before interest and taxes to total assets; X_4 represents the ratio of market value of equity to book value of total liabilities and X_5 represents the ratio of sales to total assets and Z is the overall index.

Altman (1968) explained the reasons for using these variables as follows:

- X_1 is a measure of the net liquid assets of the firm relative to the total capitalization.
- X_2 measures the leverage of the firm.
- X_3 measures operating efficiency outside of tax and leverage factors.
- X_4 shows how much a firm's assets can decline in value before liabilities exceed the assets and the firm becomes insolvent.
- X_5 is the standard measure for total asset turnover (varying widely from industry to industry).

In this model created by Altman, since the fifth variable (X_5) gives high values for non-manufacturing companies, a new model was created for non-manufacturing sectors (Al Zaabi, 2011: 161). Since this model was created by removing X_5, the weights of the remaining four variables had to be changed. The new model created is as follows (Altman, 2002: 22):

$$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4 \quad (2)$$

In this model, the variables are the same as in equation (1), and, as mentioned, only the coefficients were altered. In this model, the fact that the obtained Z value is less than 1.10 indicates that the firm is in financial distress.

Stating that this model, which is valid for companies in the USA, may yield deviant results in developing countries, Altman obtained the emerging market model by adding a constant term (+3.25) to equation (2) in order to standardize the scores obtained. The Emerging Market (EM) model is as follows (Altman, 2013:27):

$$Z = 3.25 + 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4 \quad (3)$$

To have information about the financial situation of the company, the Z value obtained with this equation is evaluated according to Table 3.

Table 3. U.S. Bond Rating Equivalent Based on EM Z-score

U.S. Equivalent Rating	Average EM Score
AAA	8.15
AA+	7.60
AA	7.30
AA-	7.00
A+	6.85
A	6.65
A-	6.40
BBB+	6.25
BBB	5.85
BBB-	5.65
BB+	5.25
BB	4.95
BB-	4.75
B+	4.50

B	4.15
B-	3.75
CCC+	3.20
CCC	2.50
CCC-	1.75
D	0

Source: Altman, E. I., (2013). Predicting Financial Distress of Companies: Revisiting the Z-Score and ZETA® models, in Handbook of Research Methods and Applications in Empirical Finance. Edward Elgar Publishing.

As can be seen from Table 3, if the Z Score obtained using the (3) model is less than 2.50, it can be said that the firm is in financial distress.

Z-Score analysis has advantages as well as disadvantages. According to Čihák (2007), the main advantage of this measurement is that it can be easily calculated for a financial institution or company. Its disadvantage is that it cannot catch the correlation between financial institutions (Cited in Diaconua and Oanea, 2014: 331).

5.1.2. Zmijewski J-Score

Another model used to measure firms' levels of financial distress is the Zmijewski J-score. This score is a bankrupcty model used to predict whether a firm will fall into financial distress within two years (Ycharts, 2021). Zmijewski (1984) developed this model using the probit analysis applied to 40 companies in bankruptcy and 800 companies operating at that time (Husein and Pambekti, 2015: 409; Ick and Tarigan, 2018: 46). The ratios used in the model were chosen not on a theoretical basis, but rather on the basis of their performance in previous studies (Kiracı, 2021: 1565). The model of Zmijewski (1984), which extends the firm bankruptcy prediction by adding fiscal ratio validity as a corporate financial failure detection tool, is as follows (Hantono, 2019: 3):

$$J = -4.3 - 4.5J_1 + 5.7J_2 + 0.004J_3 \quad (4)$$

Here, J_1 is the ratio of net income to total assets showing the return on assets, J_2 is the ratio of total debt to total assets showing the financial leverage, and J_3 is the ratio of current assets to current liabilities showing the liquidity (Zmijewski, 1984: 66). If the J-Score obtained with this equation is greater than or equal to 0.5, the firm is considered is under risk of failure or else healthy (Zmijewski 1984: 70).

5.1.3. Grover Score

Grover Score, which is another model examining the financial distress situations of companies, is a model created by re-evaluating the Altman Z-Score model. Jeffrey S. Grover created his model with the help of a sample of 70 companies in the 1982-1996 period, half of which went bankrupt. In the model, Grover added the profitability ratio indicated by ROA to the X_1 and X_3 variables in the Altman Z-Score model (Hantono, 2019: 3; Prihanthini and Sari, 2013: 420; Ick and Tarigan, 2018: 47). The Grover model given in Prihanthini and Sari (2013) is as follows:

$$Grover\ score = 1.650X_1 + 3.404X_3 - 0.016ROA + 0{,}057 \quad (5)$$

Here, as mentioned above, X_1 and X_3 represent the ratio of working capital to total assets and the ratio of earnings before interest and taxes to total assets, respectively. ROA represents the ratio of net income to total assets, which shows the return on assets.

If the Grover score value of the firm examined with the Grover model is equal to or less than -0.02, the firm is included in the class of firms in bankruptcy, while if the obtained value is equal to or

greater than 0.01, it is considered in the class of healthy firms. If the value is between these two limits, the firm is considered in the gray area (Prihanthini and Sari, 2013: 421; Hungan and Sawitri, 2018: 56).

5.1.4. Bankometer S-Score

The fact that the Altman Z-Score model did not provide sufficient results for companies outside the manufacturing industry and the CAMELS model's inability to predict the 2008 financial crisis triggered the search for indicators to be used to measure the financial fragility of companies (Özbek et al., 2021: 13)[§§§]. Considering this situation, Shar, Shah, and Jamali, (2010), taking into account the recommendations of the IMF (2000), aimed to develop a scale that could better measure the vulnerability of financial institutions than traditional models (CAMELS and CLSA-stress test). To this end, they focused on assessing the soundness of banking institutions in Pakistan using data for the period 1999-2002. They compared the results of the scale they called "Bankometer" with CAMELS and CLSA-stress test (Shar et al., 2010: 81).

The Bankometer scale is a scale that has the quality of giving results with high accuracy by using a minimum number of parameters (Aksoy and Göker, 2018: 427; Onyema et al., 2018: 23; Qamruzzaman, 2014: 116). The model used in calculating the solvency score of this scale is as follows (Shar et al., 2010: 82; Ouma and Kirori, 2019: 96; Aksoy and Göker, 2018: 427):

$$S = 1.5CA + 1.2EA + 3.5CAR + 0.6NPL + 0.3CI + 0.4LA \quad (6)$$

Here, CA stands for the ratio of capital to assets, EA stands for the ratio of equity to assets, CAR stands for the ratio of capital adequacy, NPL stands for the ratio of non-performing loans to total loans, CI stands for the ratio of cost income, and LA stands for the ratio of loans to assets.

The S value obtained using this model is interpreted as follows (Shar et al., 2010: 83):

If $S < 50$, the company has financial difficulties and high risk,

If $50 \leq S \leq 70$, the company is in the gray area,

If $S > 70$, the company is in very healthy condition.

5.2. Findings

In this part of the study, the stability of the Kazakhstan banking sector will be analyzed with the help of the four models described above. Quarterly data for the period 2008Q1-2021Q2 were used in the analysis. Information on the variables used in the models is given in the Table 4.

Table 4. The Variables Used in Analysis

Variable	Code	Source
Interest income	II	IMF-Sectoral_Financial_Statement_Annexe
Interest expense	IE	IMF-Sectoral_Financial_Statement_Annexe
Noninterest income	NI	IMF-Sectoral_Financial_Statement_Annexe
Noninterest expenses	NE	IMF-Sectoral_Financial_Statement_Annexe
Net income (before extraordinary items and taxes)	NIBT	IMF-Sectoral_Financial_Statement_Annexe

[§§§] CAMELS is a commonly used supervisory framework that groups indicators of bank soundness into six categories. The categories are capital adequacy, asset quality, management soundness, earnings, liquidity, and sensitivity to market risk (IMF, 2006).

Net income after extraordinary items and taxes	NIAT	IMF-Sectoral_Financial_Statement_Annexe
Retained earnings	RE	IMF-Sectoral_Financial_Statement_Annexe
Total assets	TA	IMF-Sectoral_Financial_Statement_Annexe
Total Liabilities	TY	IMF-Sectoral_Financial_Statement_Annexe
Debt	D	IMF-Sectoral_Financial_Statement_Annexe
Total regulatory capital	TRC	IMF-Sectoral_Financial_Statement_Annexe
Risk-weighted assets	RWA	IMF-Sectoral_Financial_Statement_Annexe
Short-term liabilities	STL	IMF-Sectoral_Financial_Statement_Annexe
Nonperforming loans (value)	N	IMF-Sectoral_Financial_Statement_Annexe
Total gross loans	TGL	IMF-Financial_Soundness_Indicators_FSD

Note: The variables used are in KZT

5.2.1. Altman Z-Score

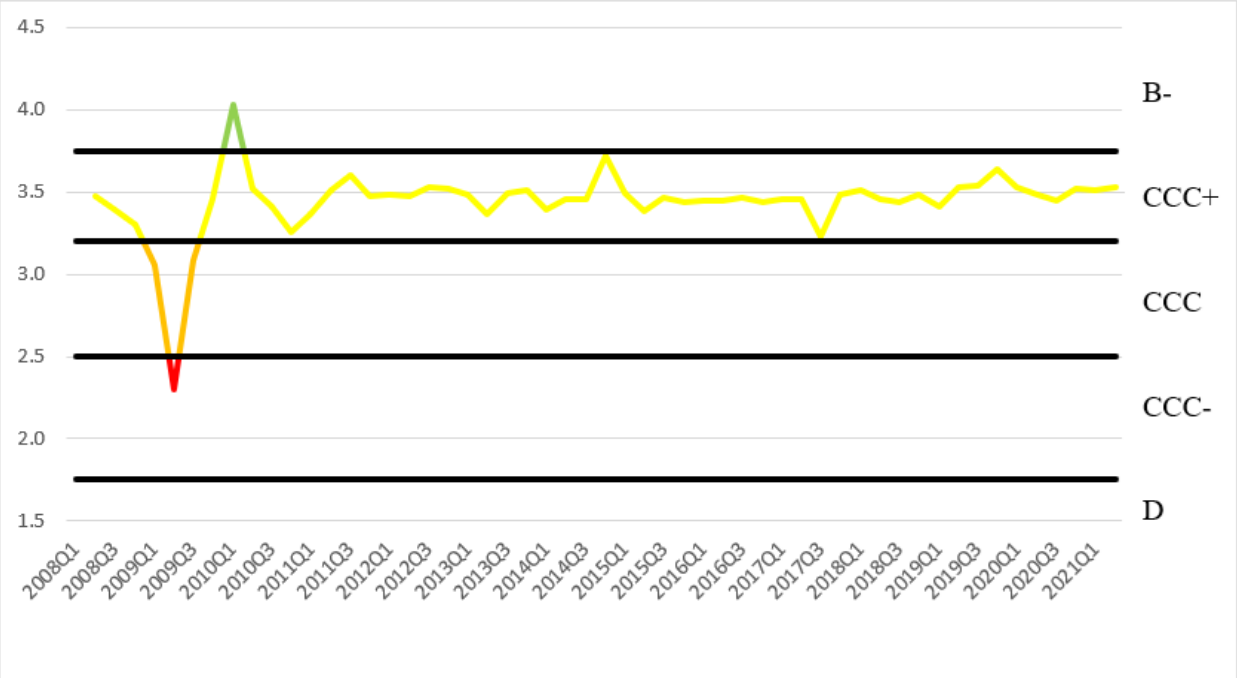
We chose the emerging market model of the Altman Z-Score to determine the stability status of the Kazakhstan banking sector. The EM Altman Z-Score model applied to the Kazakhstan banking sector using the variables of Table 4 is given in Table 5.

Table 5. The EM Altman Z-score

$$Z = 3.25 + 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$
$$X_1 = \frac{Working\ capital}{TA} = \frac{Current\ Assets - Current\ Liabilities}{TA} = \frac{(TA_t - TA_{t-1}) - (TL_t - TL_{t-1})}{TA}$$
$$X_2 = \frac{RE}{TA}$$
$$X_3 = \frac{NIBT}{TA}$$
$$X_4 = \frac{Equity}{TL} = \frac{TA - TL}{TL}$$
Critical values
4.15≤Z B
3.75≤Z<4.15 B-
3.20≤Z<3.75 CCC+
2.50≤Z<3.20 CCC
1.75≤Z<2.50 CCC-
Z<1.75 D

Note: Since the variables of current assets and current liabilities are in the form of comparison of two periods, first period observations could not be calculated. Therefore, the Altman Z-Score has no value in the first period (2008Q1).

The results obtained by the Altman EM Z-Score model in Table 5 are given in the Graph 1.



Graph 1: Altman EM Z-Score Results

According to the Altman EM Z-Score, Kazakhstan's banking sector suffered greatly in 2009 with the effect of the 2008 financial crisis and received a rating of CCC-. In the first period after the crisis, that is, in the first quarter of 2010, the sector increased its rating to B-. In the following periods, the sector showed a normal appearance with a rating of CCC+. In addition, it is seen that the Covid-19 pandemic did not have negative effect on the sector in terms of the worsening its current situation.

In fact, in the last quarter of 2014 and the last quarter of 2019, this EM Z-Score came very close to the upper limit rating (B-). Among these two, the last quarter of 2014 coincides with the results of Bolat (2017). In his study covering the period of 2011-2015, Bolat (2017) obtained quite different results for Kazakhstan commercial banks compared to the Altman Z-Score Model, but he concluded that the average Z-Score in the market is in the "Safe Zone". He stated that the EM Z-Score average of banks in Kazakhstan in 2015 was 3.93, that is the average rating of the banks was B-. The difference arises from the fact that he did not take into account the weight of the banks in the total banking sector. In another study (Salina, 2017), it was analyzed whether Altman models were effective in predicting the financial soundness of Kazakhstan banks (12 banks) for the period 2008-2014 and it is concluded that the Altman models show a modest ability to predict the financial soundness of Kazakhstan banks. In the study, cluster analysis was also conducted with the help of data from 34 banks for 2008 and 37 banks for 2014. The results show that the cluster analysis can define the Kazakhstan banking sector according to its degree of financial soundness.

5.2.2. Zmijewski J-Score

Details of the Zmijewski J-Score model applied to the Kazakhstan banking sector using the variables of Table 4 is given in Table 6.

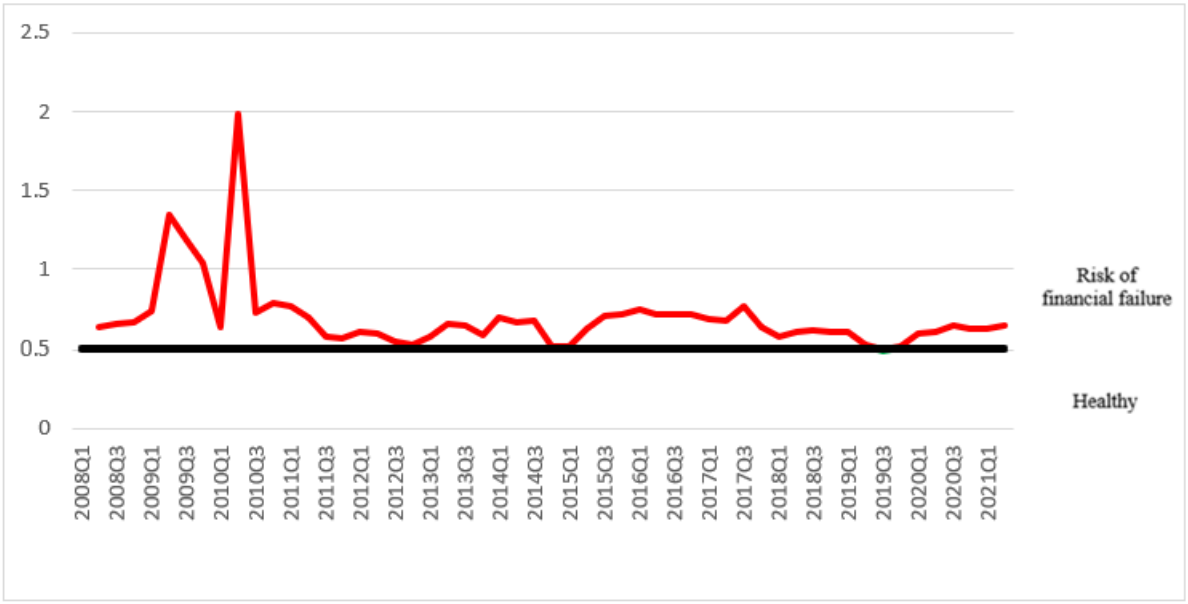
Table 6. Zmijewski J-Score

$$J = -4.3 - 4.5J_1 + 5.7J_2 + 0.004J_3$$	
$$J_1 = \frac{NI}{TA}$$	
$$J_2 = \frac{D}{TA}$$	
$$J_3 = \frac{Current\ Assets}{Current\ Liabilities} = \frac{(TA_t - TA_{t-1})}{(TL_t - TL_{t-1})}$$	
Critical values	
J<0.5	Healthy
J≥0.5	Risk of financial failure

Note: Since the variables of current assets and current liabilities are in the form of comparison of two periods, first period observations could not be calculated. Therefore, as in Altman EM Z-Score, the Zmijewski J-Score has no value in the first period (2008Q1).

As can be seen from the Table 6, high values of the J-Score indicate that the risk of financial failure has increased. This shows that, unlike other scores, it is better for the firm to have lower J-Score values.

The results obtained by the Zmijewski J-Score model in Table 6 are given in the Graph 2.



Graph 2. Zmijewski J-Score Results

According to the Graph 2, the Kazakhstan banking sector got the highest two J-Scores in 2009 and 2010, that is, the most negative. Although the sector seems to be strating to recover from 2008 financial crisis in the first quarter of 2010, it reached its worst value (1,98) in the following period, albeit for a period. After the second quarter of 2010, the sector started to get better scores than previous periods. Even though it remained in the financial risk area in the following periods, it got values very close to the limit, and even transitioned to the healthy area in the third quarter of 2019. After this brief recovery in 2019, it continued to remain in the financial risk area in 2020 and 2021.

5.2.3. Grover Score

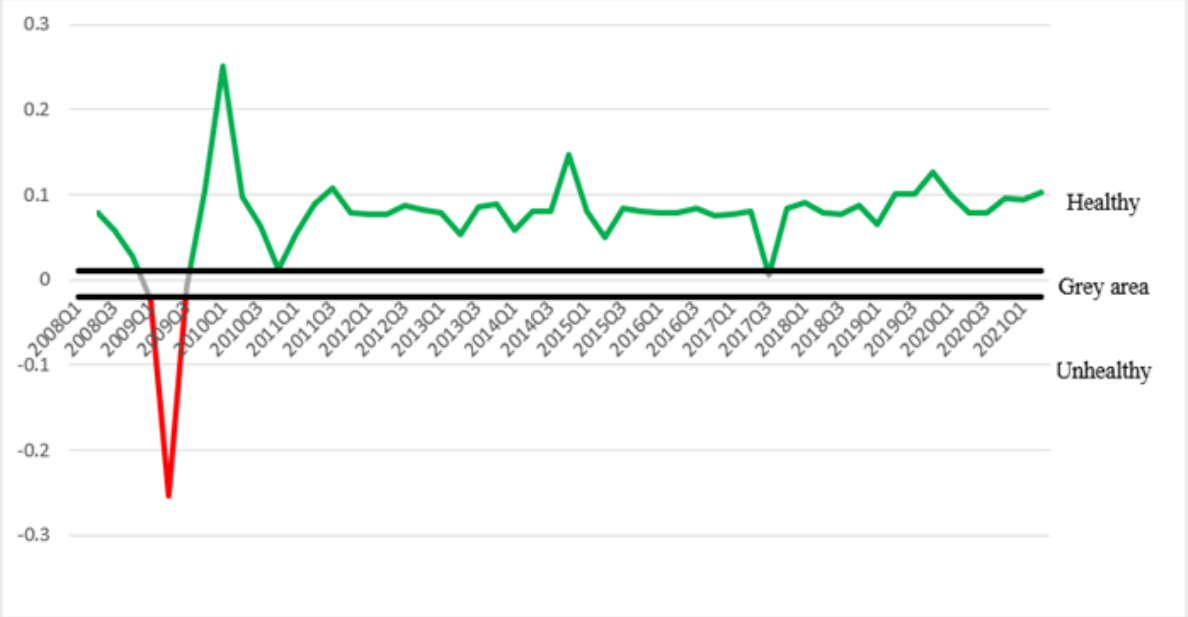
Details of the Grover Score model applied to the Kazakhstan banking sector using the variables of Table 4 is given in Table 7.

Table 7: Grover Score

$$Grover\ score = 1.650Z_1 + 3.404Z_3 - 0.016ROA + 0,057$$
$$X_1 = \frac{Working\ capital}{TA} = \frac{Current\ Assets - Current\ Liabilities}{TA} = \frac{(TA_t - TA_{t-1}) - (TL_t - TL_{t-1})}{TA}$$
$$X_3 = \frac{NIBT}{TA}$$
$$ROA = \frac{NIAT}{TA}$$
Critical values
0.01≤Grover score — Healthy
-0.02<Grover score<0.01 — Grey area
Grover score≤-0.02 — Unhealthy

Note: Since the variables of current assets and current liabilities are in the form of comparison of two periods, first period observations could not be calculated. Therefore, as in Altman EM Z-Score and the Zmijewski J-score, Grover Score has no value in the first period (2008Q1).

The results, obtained by the Grover Score model in Table 7, are given in the Graph 3.



Graph 3. Grover Score Results

According to the Grover Score, the Kazakhstan banking sector showed financial distress signals by getting very low values in the first two quarters of 2009 when the effects of the 2008 financial crisis were observed. In the third quarter of 2009, there was a transition to the gray area and the fourth quarter to the healthy area. In fact, the sector had a very healthy value in the first quarter of 2010. In the following periods, it fell into the gray area only in the third quarter of 2017. However, the sector recovered in the following period. In addition, after 2010, it had its highest value in the healthy region in the last quarter of 2014 and 2019. The absence of any negativity in 2020 and the first quarter of 2021 shows that the Covid-19 pandemic did not cause any significant damage in the sector.

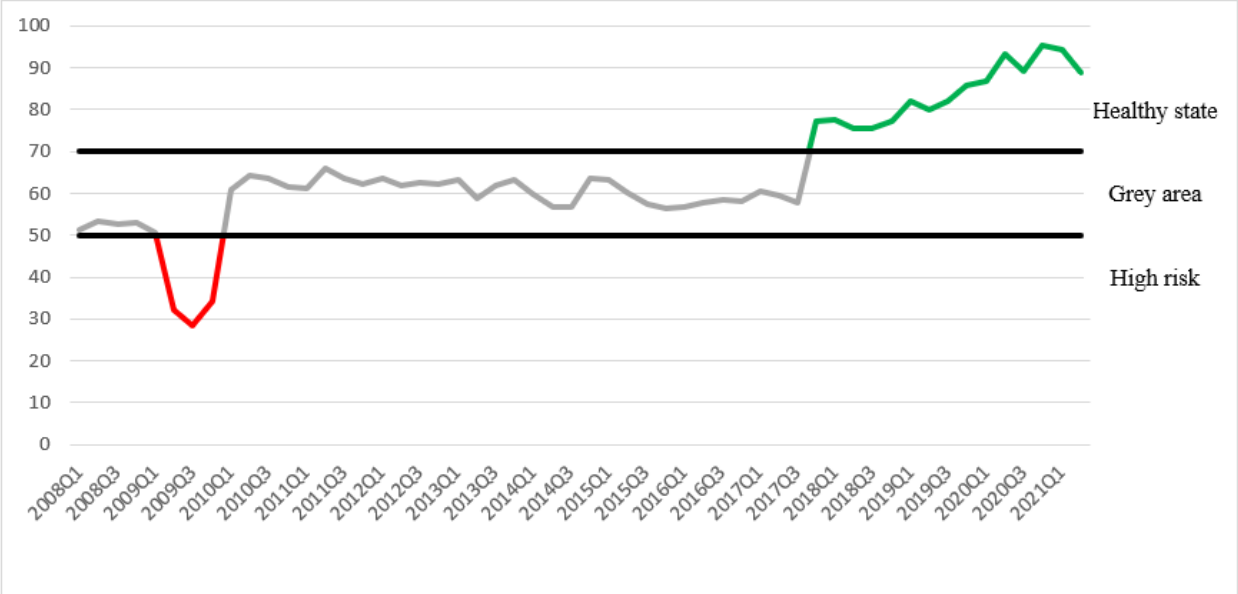
5.2.4. Bankometer S-Score

The Bankometer S-Score model applied to the Kazakhstan banking sector using the variables of Table 4 is given in Table 8.

Tablo 8. Bankometer S-Score

$S = 1.5CA + 1.2EA + 3.5CAR + 0.6N + 0.3CI + 0.4LA$	
$CA = \frac{TRC}{TA}$	
$EA = \frac{Equity}{TA} = \frac{TA - TL}{TA}$	
$CAR = \frac{TRC}{RWA}$	
$NPL = \frac{N}{TGL}$	
$CI = \frac{Cost}{Income} = \frac{IE + NE}{II + NI}$	
$LA = \frac{TGL}{TA}$	
Critical values	
70<S	Healthy state
50≤S≤70	Grey area
S<50	High risk

The results obtained by the Bankometer S-Score model in Table 8 are given in the Graph 4.



Graph 4. Bankometer S-Score Results

As in other scores, the Kazakhstan banking sector had its lowest Bankometer S-Score value in 2009. The value, which transitioned to the gray area in 2010, showed a downward trend for a period in the third quarter of 2017, and transitioned to the healthy zone with an increase in the last quarter of 2017. In Bolat's study (2017), it was determined that the financial soundness levels of all banks in his sample were better according to the Bankometer S-Score Model. The author states that the Bankometer S-Score has a superior predictive ability in determining the financial situation of Kazakhstan banks, while the Altman Z-Score model is weak in this sense.

6. CONCLUSION

Today, due to financial instability, which manifests itself mainly in the form of financial crisis, the effective distribution of resources is prevented, financial intermediaries cannot fulfill their functions and significant disruptions are experienced in the functioning of economies. In this framework, especially after the 2008 global financial crisis, ensuring and maintaining financial stability has been considered as one of the main priorities of economic policies, and financial stability has taken its place among the main objectives of central banks as well as price stability. As the banking sector is the most important component of the financial system in many countries, determining and monitoring the stability of the sector in question and predicting the sources of instability are of great importance in terms of financial stability.

Kazakhstan's financial system has undergone significant transformations within the framework of the reform and restructuring processes carried out since 1991; significant improvements have emerged in the system in terms of legal, administrative, and institutional aspects. The establishment of the central bank, the enactment of the national currency, the activation/improvement of the banking sector, the formation of the capital market, and the strengthening of competition and market discipline are the important building blocks of this process.

Evaluating in the context of transition economies, which are the countries that gained independence from the Soviet Union, it can be said that Kazakhstan banking system has an above-average appearance in terms of institutional structure and functioning, performance, and efficiency criteria. The presence of subsidiaries or representations of global-scale banks in the country can be considered as a reflection of this positive outlook of the sector.

In the study, with the help of 4 different financial stability measurements, which are accepted in the related literature, stability/soundness analysis was carried out in the Kazakhstan banking sector in the post-2008 period. According to the findings, it is seen that the Kazakhstan banking sector was highly affected by the 2008 financial crisis. The scores of the sector, which experienced financial distress with the effect of the financial crisis, got their most negative values in 2009 and 2010. According to the scores (except Zmijewski J-Score), the sector showed a healthy image in the first two quarters of 2010. After this period, the sector has generally shown a moderately healthy image for all scores. Although the sector experienced a one-term decline in the third quarter of 2017, it recovered again in the next period, displaying a healthy image. It is among the other findings of the study that the Covid-19 pandemic has not yet caused negative effects on the general stability level of the sector. It is seen that the Altman Z-Score and Bankometer S-Score values obtained by Bolat (2017) for the period of 2011-2015 are close to our findings. On the othet hand, both Bolat (2017) and Salina (2017), indicate that Altman model's predicting power of the stability of Kazakhstan banking sector is not sufficient enough. As we stated above, Altman Z-Score does not give satisfactory results outside of industrial companies.

In order to overcome the existing problems and increase the performance level in the Kazakhstan banking sector, where the 2008 global financial crisis caused significant damage and the Covid-19 pandemic can potentially have negative effects, first of all, it is necessary to identify the weak and vulnerable parts of the system and develop long-term strategies for these areas. In this framework, issues such as increasing the capital of banks, improving the efficiency of regulation and supervision processes, operating effective risk management processes, improving credit quality, and reducing the loan volume with high non-repayment risk and dollarization in deposits appear as priority areas, as well as eliminating macroeconomic imbalances.

In future studies, other models developed in this area may be included in the analysis if data are available. These models can be applied at the individual bank level and the performances of these models can be compared.

Ethical Statement

Research and Publication Ethics rules were complied with in the study. No falsification was made in the data obtained for the study. Ethics committee approval is not required for the study.

Contribution Rate Statement

The authors contributed to all processes at every stage of the study and read and approved the final version of the study.

Conflict of Interest

The authors declare that there is no conflict of interest.

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