National Bank of the Republic of North Macedonia
Financial Stability and Macroprudential Policy Department

REPORT ON THE RISKS IN THE BANKING SYSTEM OF THE REPUBLIC OF NORTH MACEDONIA IN 2022

April 2023

Contents

I. Summary

Still not recovered from risks related to COVID-19 pandemic, the environment in which the domestic banking system operates became even more complex in 2022, with the onset of the war between Russia and Ukraine. The new challenges imposed by the war conflict, coupled with the problems derived by the post-pandemic opening of the economies and energy crisis, are main source of risk in the environment, especially on the energy and food product markets, enhancing the inflationary pressures that started last year. Despite the unfavorable environment, banks remained resilient to external shocks, maintaining the soundness of the balances and providing additional credit support to the economy.

The overall funding sources of the banking system registered volatile movements which led to a slowdown in 2022, mostly due to the movements in deposits, which had no significant impact on the banks' credit activity which is growing solidly. After the fall registered in the first half of the year, the deposits of non-financial entities significantly increased in the second half, thus registering a growth of 5.4% at the end of the year (8.8% in 2021). Household deposits had the largest contribution to the increase in total deposits, with an annual increase registered in corporate deposits as well. From a currency viewpoint, the growth of both denar and foreign currency deposits decelerated in 2022. Regarding currency preferences, the uncertainty led to greater propensity for foreign deposits, which registered a faster annual growth compared to denar deposits. However, at the end of the year, the expectations stabilized significantly, which led to favorable changes in the currency structure of savings. Credit activity of the banking system moderately accelerated the growth in 2022, reaching a level of 10.1% (8.5% in 2021). In conditions of slower increase in deposits of non-financial entities, banks' liquid assets were partly used (liquid assets decreased by 0.9%), while recapitalizations and reinvested profits (the capital and reserves of the banking system increased by 14.3% in 2022), as well as deposits from financial institutions (mostly from banks' parent entities) were a significant support to banks' solid credit activity. The accelerated credit growth mostly derives from the growth in corporate loans, with a growth in household loans as well, yet at a slower pace. Regarding the currency structure, foreign currency loans had the largest contribution to the credit growth, which is mostly due to the faster growth of foreign currency corporate loans, in conditions of increased liquidity needs amid higher energy prices and import goods in general.

The National Bank started to gradually normalize monetary policy from the end of 2021, in order to keep the short-term price stability, and also made changes in the reserve requirement aimed at reducing euroization, but also encouraging projects for renewable energy sources. Moreover, the National Bank adopted systemic measures and macro-prudential instruments to strengthen the banking system's resilience and maintain financial stability. Thus, the policy rate increased from 1.25% in December 2021, to 4.75% in December 2022 (5.50% as of March 2023), while in the same period, the interest rate on overnight deposits increased from 0.15% to 2.65% (3.40% as of March 2023), while the interest rate on seven-day deposit facilities shifted from 0.30% to 2.70% (3.45% as of March 2023). In order to affect the currency structure of deposits in the banking system, by stimulating savings in domestic currency, the reserve requirement rates changed on several occasions, with a larger discrepancy when calculating reserve requirement for denar, against foreign currency liabilities. Thus, the reserve requirement rate on denar liabilities decreased from 8% to 5%, while the reserve requirement rate on foreign currency liabilities increased from 15% to 19%. Moreover, the part of the foreign currency reserve requirement that banks meet in euros has also been increased, to the level of 77%, which strengthens the effect of the change in this instrument. The reserve requirement base has also decreased for the amount of the newly approved loans to legal entities aimed at financing projects related to domestic production of electricity from renewable sources. In this way, in conditions of energy crisis and strong growth of the global electricity prices, the National Bank contributes to mitigating the pressures and the structural problems in the economy, while the measure also supports "green finance" and sustainable financing as a strategic goal in the latest strategic plan of the National Bank. In the second half of the year, macro-prudential measures were adopted, i.e. a countercyclical capital buffer of 0.5% was introduced for the period August-December 2023 and of 0.75% as of 1.1.2024 for the exposure to residents from the Republic of North Macedonia, as well as provisions for exposures to other countries. Also, at the end of the year (applicable as of 1.7.2023) borrower-based measures were adopted, which obligate banks to calculate, according to unified methodology, and notify the National Bank of indicators related to the natural persons' indebtedness level, when granting new loans or increasing existing debt. The macro-prudential measures are aimed at strengthening the protective mechanisms in the banking system, in order to preserve its resilience and further strengthen financial stability in conditions of a gradual increase in systemic risks.

The solvency of the banking system improved. The capital adequacy ratio increased by 0.4 pp annually, to the record high of 17.7% in the last decade. The improved solvency is a result of the reinvested profits and new issues of capital instruments with banks. Over 90% of the own funds account for the Common Equity Tier I capital, which represents the highest-quality segment of the banks' regulatory capital. Analyzing the use, more than half of own funds account for capital supplements determined according to the supervisory assessment, the capital buffers or are "free", above the necessary minimum, which banks may use in dealing with various challenges in the downward phases of the economic cycle and in crisis conditions. The conducted stress testing of the banking system resilience to the simulated shocks shows satisfactory resilience.

The liquidity indicators remain satisfactory. Liquid assets registered an annual decline (0.9%), which was entirely concentrated in the first half of the year. The indicators for liquidity monitoring and evaluation remained on satisfactory level. Thus, liquid assets account for 30% of total banks' assets (32.4% as of 31.12.2014), while the coverage of short-term liabilities and household deposits with liquid assets account for 47.7% and 61.1%, respectively (as of 31.12.2021, these indicators equaled 52.3% and 65.5%, respectively). The Liquidity Coverage Ratio of the banking system equals 273.8%, which is more by 2.7 times compared to the regulatory minimum (100%) and confirms the sufficient amount of liquidity available to the Macedonian banking system. The results of the stress tests indicate satisfactory resilience of the banking system to the assumed extreme, individual and combined liquidity outflows.

In 2022, total non-performing loans declined (-1.7%), thus reducing their share in total loans by 0.3 pp, to the historic lowest level of 2.9%. Analyzing sectors, non-performing corporate loans decreased (-3.7%), while non-performing household loans increased by 2.5%. The share of non-performing loans in total loans decreased in both sectors, by 0.6 pp to the level of 3.9%, in the portfolio of corporate loans and by 0.1 pp to 1.9%, in the credit portfolio comprised of households.

The banking system's exposure to currency risk and interest rate risk in the banking book are within the prescribed limits and as of 31.12.2022 equal 6.7% and 10.1% of own funds, respectively, which is an annual growth of 4.6 and 0.1 pp, respectively. After a long period of interest rates decline, their movement trend emphasizes the importance of the interest rate risk, as well as banks' credit risk which arises from their clients' exposure to interest rate risk. Therefore, as before, banks need to continue with greater prudence and strengthening of practices for risk management.

In 2022, the domestic banking system continues to increase its profit (by 5.7%), but it is significantly lower compared to the previous year (26.2%). The increased profit mostly results from the growth of net interest income and net commission income. The rates of return on average assets and average equity and reserves equal 1.5% and 12.2%, respectively, which is relatively close to the performances in the previous year (1.5% and 12.9%, respectively). The operational efficiency indicators registered various movements, given increase in the operating costs of 7.8% compared to the preceding year.

The beginning of 2023 registered temporary turbulences on the financial markets, driven by the developments in the US and Swiss banking systems. These events had limited effects given the prompt response from the policy makers, while the global financial system remained stable. The direct effects of these developments in the global financial markets on the Macedonian banking system are limited, given the application of a traditional business model by banks, the low exposure and external liabilities, as well as the comparatively low placements in securities.

In summary, the banking system indicators in 2022 confirm its resilience to shocks, in conditions of solid liquidity and capitalization and careful risk management. However, the general environment remains uncertain and volatile, which, together with the gradual tightening of financial conditions requires further careful credit risk monitoring. The National Bank closely monitors all events and is ready to take all necessary measures within its competence, when needed.

II. Structure of the banking system

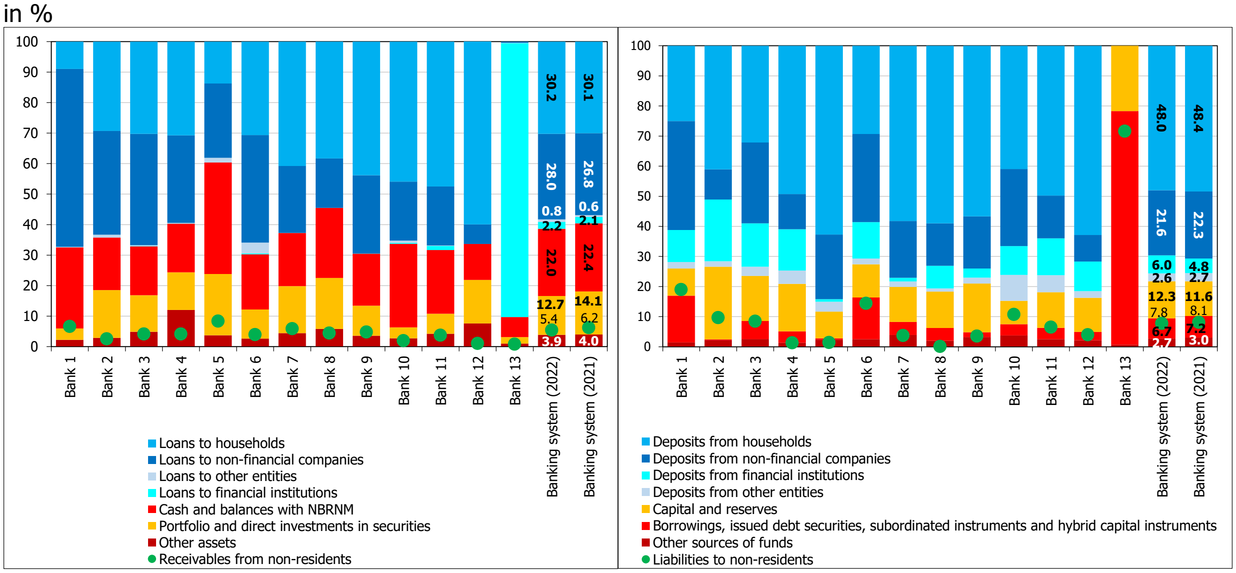
1. Structure of the banking system

1.1. Main features of the business models of banks

Collecting deposits and extending loans are the core activities of the Macedonian banking system. Thus, in 2022 total deposits accounted for 78.2% in total liabilities, while total loans accounted for 61.4% in total assets. Household deposits are the most important source of funding for banks, with a share of 48.0% in the total liabilities of the banking system, which is by 0.4 percentage points less compared to 31.12.2021. Bank-by-bank analysis showed that household deposits are the most important source of funding in ten banks, in one bank the share of household and corporate deposits is almost equal, in one bank corporate deposits prevail, while one bank does not accept deposits at all and uses credit lines from international financial institutions as sources of financing.

On the assets side, loans to non-financial sector had the largest share of 59.1%, with an increase of 1.6 pp compared to 31.12.2021. Household loans have a slightly higher share (30.2%) compared to loans to non-financial companies (28.2%)[1]. Analyzed by bank, household loans are significantly higher in six banks, while this is the case with corporate loans in two banks, four banks have similar shares of both credit types, while in one bank loans to domestic banks prevail.

Chart 1
Structure of the assets (left) and liabilities (right) of banks and the banking system as of 31.12.2022*
in %



Source: National Bank, based on the data submitted by banks.
* The order of banks is random.

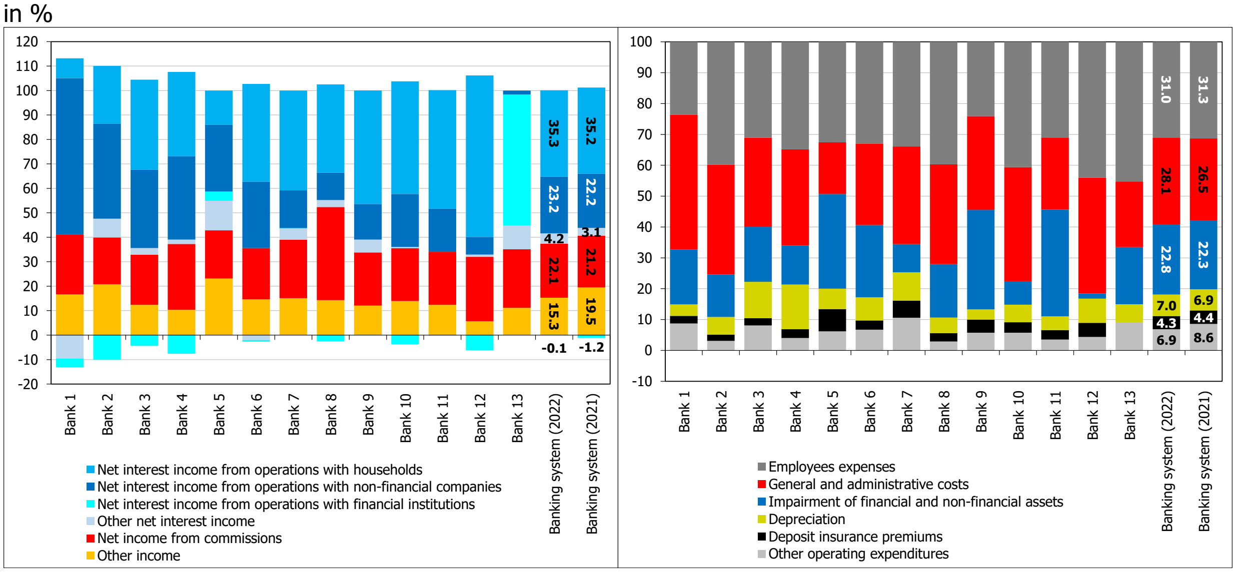
Net interest income prevails in the structure of total banks' income, which corresponds to the banks' traditional business model. Their share amounts to 62.6% which is by 3.3 pp higher compared to 2021, followed by the net commission income with a share of 22.1% which is an increase of 0.9 pp. On the other hand, other revenues reduced their share by 4.2 pp, at the expense of the increase in the shares of these two items, and accounted for

[1] For the purposes of this analysis, loans are calculated on a net accounting basis (after impairment and accumulated depreciation).

15.3% of total revenues. Within the net interest income, the largest portion (35.3%) accounts for income from working with households, while income from working with enterprises accounts for 23.2% in total income. The ratio of these two categories of net interest income with banks largely corresponds with the ratio of shares of approved loans to these two groups of borrowers. Therefore, the net interest income based on working with households is significantly higher in seven banks, net interest income from working with enterprises prevail in two banks, three banks have similar net interest income ratio in both categories, while in one bank net interest income from working with financial institutions prevails in total income.

The expenditures at the level of the banking system are mainly comprised of three items. The share of employee expenses was the highest (31.0%), followed by general and administrative expenses (28.1%), and impairment of financial and non-financial assets (22.8%).

Chart 2
Structure of total income (left) and total expenditures (right) of banks and the banking system of 31.12.2022*
in %



Source: National Bank, based on the data submitted by banks.
* The order of banks is random.

1.2. Number of banks and access to banking services

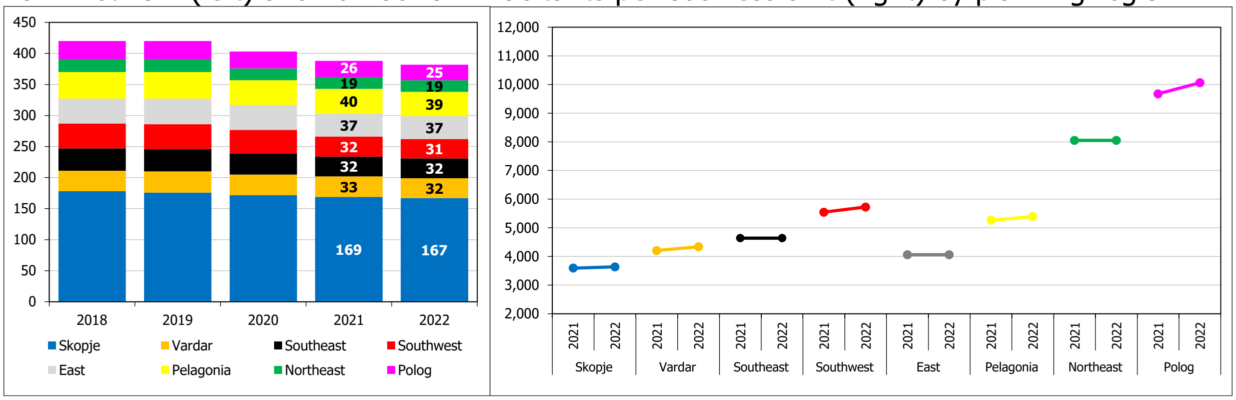
As of 31.12.2022 the Macedonian banking system consists of fifteen depository institutions, i.e. thirteen banks and two savings houses[2], without changes compared to the previous year.

The banking network is spread across almost all cities in the country and consists of 382 business units[3]. The total number of business units continued to decline and decreased by 6 units compared to the previous year, which is an equal change in all planning

[2] The share of savings houses in total assets of depository financial institutions (banks and savings banks) is 0.3%, in total loans of non-financial entities 0.4%, and of total household deposits 0.2%. Given the insignificant share of savings houses in the total banking system, they are subject to analysis only in the Reports on the Financial Stability of the Republic of North Macedonia.
[3] The number of business units includes the banks' windows and branches of the banks, including the headquarters of the banks.

regions in the country. Most of the business units (43.7%) are in the Skopje region, with the easiest physical access to banking services[4], while the hardest access was registered in the Polog region.

Chart 3
Bank network (left) and number of inhabitants per business unit (right) by planning region



Source: National Bank, based on data submitted by banks and the State Statistical Office according to official data of the 2021 census.

1.3. Employment in the banking system

The number of employees in the banking system on 31.12.2022 equaled 5,830 and increased by 75 compared to the previous year. According to the level of education, the qualification structure of employees improved, thus the share of employees with at least university education equaled 86%, which is higher by 0.7 pp annually.

Banking system productivity[5] has increased, due to the higher growth of assets than the number of employees. All analyzed banks registered increasing productivity, half of which with double-digit growth rates. The differences in the productivity among banks are still significant and vary from Denar 28.5 million in the bank with the lowest productivity to Denar 195.3 million per employee in the bank with the highest productivity.

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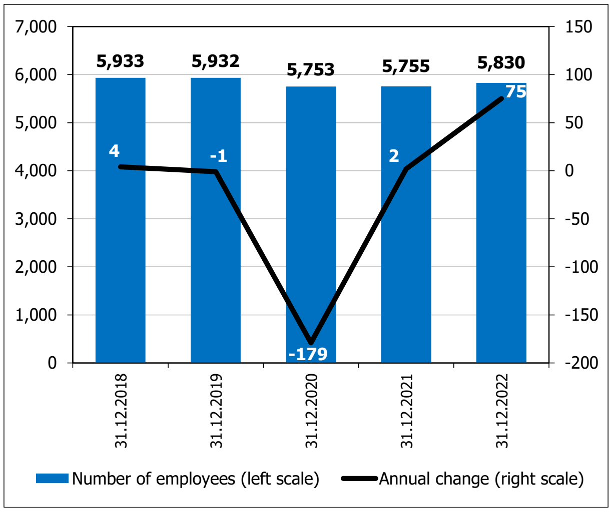
[4]The physical access to banking services is measured by the number of persons per business unit, whereby the higher amount indicates harder access, while the lower amount indicates easier access. Note that the physical access is an incomplete measure of the total access to banking services since banks offer online services as well.

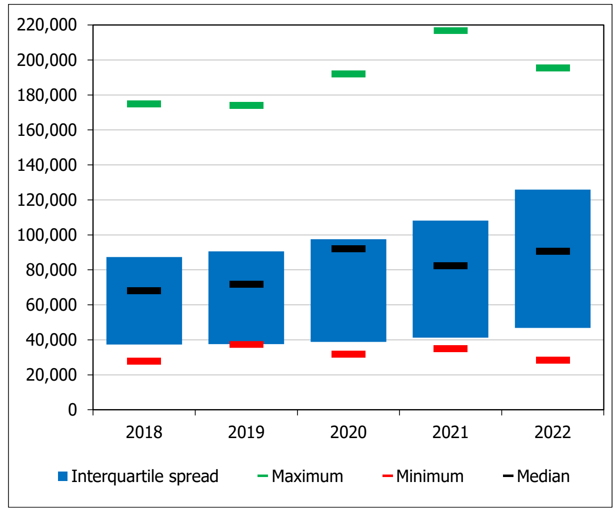
[5]The productivity of the banking system is measured by the total assets per employee, with the higher amount indicating higher productivity, while the lower amount indicating lower productivity.

Chart 4
Number of banking system employees



Source: National Bank, based on the data submitted by banks.

Chart 5
Assets per employee*
in thousands of denars



Source: National Bank, based on the data submitted by banks.
*The DBNM is not included in the analysis due to the type of its operations.

1.4. Ownership structure and concentration of the banking system

Banks with dominant foreign ownership prevail in the structure of the major balance sheets positions of the banking system in 2022. Nine out of thirteen banks are in predominant foreign ownership, five of which are subsidiaries of foreign banks. The share of these banks has not decreased annually in any of the analyzed balance sheet positions, with the most significant growth of the share registered in the financial result by 6.3 pp, while significant increase in the share by 2.9 pp was noted in total revenues as well. Foreign-owned banks have the most pronounced share in loans to non-financial entities (82.0%), which is unchanged compared to the previous year.

Table 1
Structure of the number of banks and major balance sheet positions by banks' majority ownership as of 31.12.2022
in millions of denars and in %

Type of ownership	Number of banks	Capital and reserves		Assets		Loans to non-financial sector		Deposits from non-financial sector		Total revenues*		Financial result*	
		Amount	In %	Amount	In %	Amount	In %	Amount	In %	Amount	In %	Amount	In %
Banks in dominant ownership of foreign shareholders	**9**	**64,566**	**76.5%**	**496,655**	**72.6%**	**346,675**	**82.0%**	**347,745**	**70.4%**	**21,573**	**76.5%**	**7,391**	**76.4%**
- subsidiaries of foreign banks	*5*	*56,453*	*66.9%*	*417,960*	*61.1%*	*292,617*	*69.3%*	*295,515*	*59.8%*	*18,297*	*64.9%*	*6,690*	*69.1%*
- Austria	1	9,626	11.4%	87,073	12.7%	63,900	15.1%	52,673	10.7%	3,074	10.9%	1,033	10.7%
- Bulgaria	1	1,269	1.5%	11,171	1.6%	7,476	1.8%	8,258	1.7%	416	1.5%	38	0.4%
- Greece	1	19,827	23.5%	122,872	18.0%	88,190	20.9%	93,417	18.9%	6,353	22.5%	2,442	25.2%
- Slovenia	1	13,137	15.6%	112,889	16.5%	75,732	17.9%	89,060	18.0%	5,274	18.7%	2,434	25.2%
- Turkey	1	12,594	14.9%	83,956	12.3%	57,319	13.6%	52,106	10.5%	3,180	11.3%	743	7.7%
- other banks in dominant foreign ownership	*4*	*8,112*	*9.6%*	*78,695*	*11.5%*	*54,058*	*12.8%*	*52,230*	*10.6%*	*3,276*	*11.6%*	*701*	*7.2%*
- Bulgaria	2	3,685	4.4%	28,459	4.2%	19,477	4.6%	19,392	3.9%	1,644	5.8%	352	3.6%
- Germany	1	3,791	4.5%	41,997	6.1%	29,090	6.9%	26,640	5.4%	1,217	4.3%	219	2.3%
- Switzerland	1	636	0.8%	8,240	1.2%	5,492	1.3%	6,198	1.3%	415	1.5%	130	1.3%
Banks in dominant ownership of domestic shareholders	**4**	**19,795**	**23.5%**	**187,600**	**27.4%**	**75,847**	**18.0%**	**146,210**	**29.6%**	**6,628**	**23.5%**	**2,284**	**23.6%**
- private ownership	*3*	*16,299*	*19.3%*	*171,493*	*25.1%*	*75,759*	*17.9%*	*146,210*	*29.6%*	*6,473*	*23.0%*	*2,240*	*23.2%*
- state ownership	*1*	*3,496*	*4.1%*	*16,107*	*2.4%*	*88*	*0.0%*	*0*	*0.0%*	*155*	*0.5%*	*44*	*0.5%*
Total:	**13**	**84,361**	**100.0%**	**684,255**	**100.0%**	**422,522**	**100.0%**	**493,955**	**100.0%**	**28,201**	**100.0%**	**9,675**	**100.0%**

Source: National Bank, based on the data submitted by banks.

Financial institutions prevail in the ownership structure of banks with almost two thirds. Their share in the capital and reserves of the banking system as of 31.12.2022 increased by 0.5 pp, with an increased share of the government sector by 0.3 pp. Such increase occurs at the expense of the reduced share of natural persons and non-financial legal entities by 0.4 pp.

At the end of 2022, around thirty foreign shareholders had ownership in the Macedonian banking system, while the cumulative share of their units equaled 72.4% and is higher by 1.0 pp compared to the end of 2021. Most of the shareholders come from the EU (56.1%). By country, the largest share in the total capital and reserves accounts for Greece (21.7%), Turkey (14.9%), Slovenia (13.6%) and Austria (11.1%).

Chart 6
Ownership structure of capital and reserves of the banking system
in %

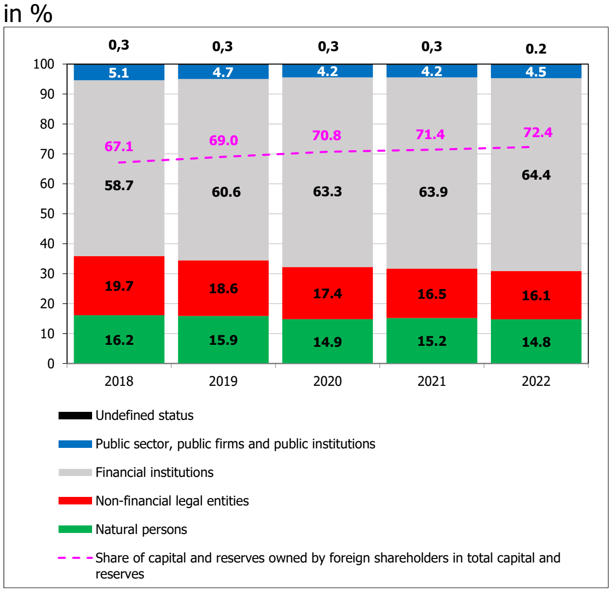
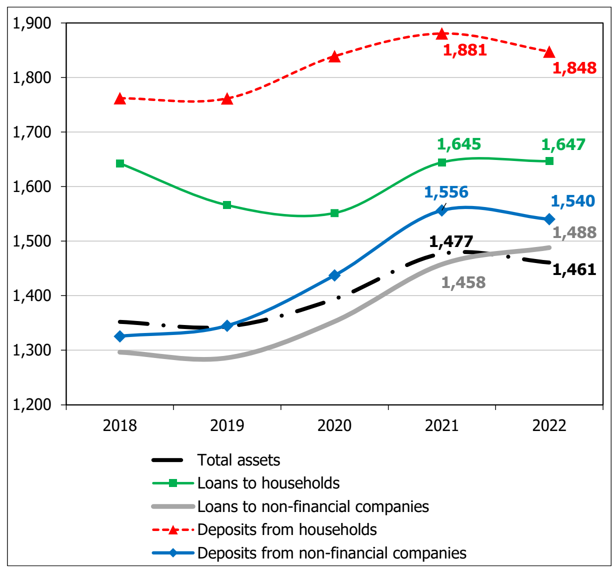


Chart 7
Herfindahl index
in index points



Source: National Bank, based on the data submitted by banks.

The concentration of banking activities in 2022 slightly decreased in certain categories of activities. The values of the Helfindahl index[6] in all categories of activities **are within the acceptable levels[7]**, except the household deposits where, despite the decrease during 2022, the concentration level remains moderately high.

The concentration indicators in the banking system point to slight annual changes in the three and five largest banks. Note that the share of total assets of the three largest banks reduced by 1.5 pp, but the share of the five largest banks increased by 0.5 pp, due to the recapitalization in two banks. The three largest banks registered more pronounced decline in the share of 3.8 pp with regards to the financial result as well.

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[6] The Herfindahl index is calculated according to the formula $HI = \sum_{j=1}^{n} (S_j)^2$, where S is the share of each bank in the total amount of the analyzed category (e.g., total assets, total deposits, etc.), where n denotes the total number of banks in the system.
[7] The level of concentration is considered acceptable when the index ranges from 1,000 to 1,800 points.

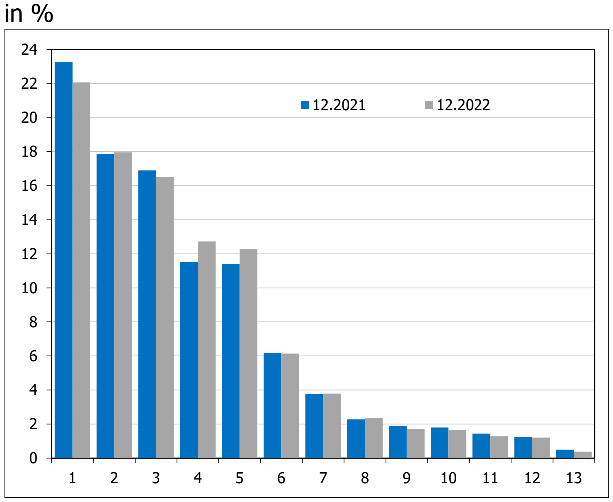
Table 2
Indicators of concentration of major balance sheet positions in the three and the five largest banks
in %

Position	31.12.2022		31.12.2021	
	CR3	CR5	CR3	CR5
Total assets	56.5	81.5	58.0	81.0
Loans to households	61.1	83.5	61.2	83.1
Loans to non-financial companies	51.6	80.4	50.3	78.8
Deposits from households	70.1	86.1	71.0	85.8
Deposits from non-financial companies	54.4	83.2	54.8	84.0
Financial result*	72.6	91.0	76.4	90.5
Total revenues*	60.4	82.6	61.9	82.1

Source: National Bank, based on the data submitted by banks.
*Total income and financial result refer to 2022.

The difference between individual banks by the asset volume remain substantial. However, narrowing of the spread was registered between the bank with the highest (22.1%) and the bank with the lowest share (0.4%) in the total assets of the banking system by 1.1 pp compared to 2021. The five largest banks are the only ones with double-digit share in total assets, while the five smallest banks have individual market share below 2% and their cumulative share equals 6.2% with a decline of 0.6 pp.

Chart 8
Share of individual banks in the total assets of the banking system
in %



Source: National Bank, based on the data submitted by banks.

III. Bank risks

“Heat” map for the stability of the Macedonian banking system

Indicators on banking system risk exposures	Last 10 years (1.1.2013 - 31.12.2022)*					Last 5 years (1.1.2018 - 31.12.2022)**				
	31.12.2021	31.3.2022	30.6.2022	30.9.2022	31.12.2022	31.12.2021	31.3.2022	30.6.2022	30.9.2022	31.12.2022
Insolvency risk										
Capital and reserves / assets										
Capital adequacy ratio										
Tier 1 ratio										
Net-NPLs (non-financial sector) / regulatory capital										
Credit risk										
Default rate of credit exposure to non-financial sector										
Restructured and prolonged loans to non-financial companies and households / loans to households and non-financial companies										
Non-performing loans / total / total loans (non-financial sector)										
NPL coverage ratio										
Impairment losses (balance-sheet) / total credit exposure										
Impairment losses (income statement) / total loans to non-financial sector										
Liquidity risk										
Liquid assets / total assets										
Liquid assets / short-term liabilities										
Loans / deposits										
Liquid assets / household deposits										
Market risks and indirect credit risk										
Open FX position / regulatory capital										
Net weighted position / regulatory capital										
Loans with currency component / total loans										
Loans with variable and adjustable interest rates / total loans										
Profitability										
ROAA										
Net-interest income / average assets										
Operating expenses / total income										
Impairment losses (income statement) / net-interest income										

Legend (percentile ranks):

0-10 percentiles		Historically high level of risk - the realized level of risk is among the 10% worst realized
10-20 percentiles		Realized level of risk is between 10% and 20% worst realized levels in the last 5/10 years
20-40 percentiles		Realized level of risk is between 20% and 40% worst realized levels in the last 5/10 years
40-60 percentiles		Realized level of risk is between 40% and 60% worst (best) realized levels in the last 5/10 years
60-80 percentiles		Realized level of risk is between 20% and 40% best realized levels in the last 5/10 years
80-90 percentiles		Realized level of risk is between 10% and 20% best realized levels in the last 5/10 years
90-100 percentiles		Historically low level of risk - the realized level of risk is among the 10% best realized levels in the last 5/10 years

* The affiliation to the percentile range is determined on the basis of quarterly data set for the indicators in the last 10 years (from 31.12.2012 to 31.12.2022).

**The affiliation to the percentile range is determined on the basis of quarterly data set for the indicators in the last 5 years (from 31.12.2017 to 31.12.2022).

The banking system stability heat map includes five components: insolvency risk, credit risk, liquidity risk, market risks and profitability. For each component, a sum of the normalized values of selected indicators is calculated, by using the method of a so-called empirical normalization on quarterly data set covering the last ten (1.1.2013 - 31.12.2022) and the last five years (31.12.2018 - 31.12.2022). Afterwards, taking into account the calculated aggregate values for each component, its affiliation to appropriate percentile range has been determined (seven percentile ranges are introduced), for each date. Each percentile rank has its own color, and the spectrum of colors varies from green (that, in historical sense, corresponds to lower levels of risk) to red (that, in historical sense, corresponds to higher levels of risk). The preparation of the presented “heat” maps takes into account 22 indicators, arranged by component:

The “heat” map indicators are analyzed in a historical context, i.e. the colors for each indicator on a given date are determined comparatively, taking into account the movement of the indicator in the past 5 or 10 years. The red shades of certain indicators should not be interpreted as a significant vulnerability of the system which has a potential to cause systemic instability, but only that these indicators in 2022 reached levels that are slightly weaker compared to the movements in the last 5 or 10 years. The latter is somehow expected, given the environmental conditions for banking operations in the past few years, amid significant accumulation of external shocks. However, the system remained stable in these complexed conditions, and banks remained resilient to external shocks and without high and sustainable adverse effects on their balance sheets, which in fact is explained in detail further in the report where each segment of the heat map is separately analyzed along with the appropriate indicators.

The banking system solvency further improved during 2022 and reached its historic high. Thus, at the end of the year almost all insolvency risk indicators were in the *green zone*, while, analyzing the last five and ten years, part of them (the capital adequacy ratio and Tier 1 capital ratio) reached historic high levels.

Almost all liquidity risk indicators are closer to the *red zone*. In conditions of decelerated growth of deposits and simultaneous intensification of the bank' lending activity, the liquid assets of the banking system registered a minor annual decrease in 2022. Decline in liquid assets was recorded in the first half of the year, followed by a recovery of the banks' deposit activity, while the liquidity risk indicators improved. Despite the decrease in liquidity indicators, the amount of the liquidity available to the Macedonian banking system is at a satisfactory level and is one of the pillars of the system stability.

Credit risk indicators remained at a low historical level and almost all of them ended the year in the *green zone*. At the end of 2022, the indicator for the share of non-performing loans in total loans reached its historic low, while, analyzing the last five and ten years, the coverage of the non-performing loans with total impairment was at a record low (the most favorable level).

The market risk indicators were in the *red zone* at the end of 2022. The share of open currency position in own funds increased during the year, while the indicator of the exposure to interest rate risk slightly increased and is still at a record high, yet within controlled range. In conditions of strong growth of foreign currency loans, the share of loans with currency component in total loans increased, while the share of loans with variable and adjustable interest rate continued to decline during 2022, although it is still relatively high.

Despite the divergent movements during the year, the banking system profitability ratios were solid and remained similar to the end of the previous year. Thus, the rate of return on average assets remained the same as at the end of 2021, the share of operating costs in total revenues slightly increased, while the ratio between net interest and average assets and impairment modestly improved.

Further in the Report, the movements of the indicators for the exposure of the individual risks are explained in detail.

1. Credit risk

In 2022, both global and domestic economic activity registered post-pandemic recovery, followed by relatively strong price pressures and accelerated inflation rates, caused by tighter monetary policies by almost all central banks. However, the credit risk in the Macedonian banks' portfolios had no significant impact. In fact, the quality of banks' credit portfolio improved, which is evident from the annual fall in non-performing loans by 1.7%, mainly due to mandatory net write-offs, primarily in loans to non-financial corporations. Moreover, the banks registered a solid growth of lending to domestic non-financial entities. Due to these developments, the share of non-performing loans in total loans hit the record low of 2.9% at the end of 2022. Observed by sector, in the non-financial companies' credit portfolio, the share of non-performing in total loans reduced to 3.9%, with a decline in almost all important predominant activities of non-financial corporations. The non-performing loans ratio in the household credit portfolio recorded a modest annual improvement and as of 31.12.2022 reached 1.9%.

The banks continue to have relatively high coverage of non-performing loans with expected credit losses. The part of non-performing loans that is uncovered with expected credit losses accounts for only 4.3% of own funds and the possible additional expenditure to cover non-performing loans with expected credit losses would account 38.6% of the profit for 2022. All of this restricts the potential adverse effects upon stability amid possible complete uncollectedness on these loans. This is confirmed by the results of the credit risk stress-test simulations, according to which the banking system shows satisfactory resilience to relatively extreme deteriorations of the credit portfolio risk.

Unlike the modest credit risk materialization through the rate of non-performing loans, within the performing loan portfolio, in 2022, the transtion rates of higher quality loans (classified in risk category A) to relatively lower quality loans (classified in risk category B and C with regular status) increased. This was registered in both loans to non-financial corporations and loans to households, which slightly increased the expected credit losses of banks in the performing loan portfolio and its average risk.

In 2022, the share of loans with at least one overdue unpaid liability in total regular loans to non-financial entities increased. Moreover, the banks increased the expected credit losses for regular loans to non-financial entities that have past due liabilities, which increased their average risk level. The main drivers of increase in average risk level were the past due regular loans to households that have at least one unpaid liability.

In 2022, the growth of prolonged loans that are mainly part of the non-financial corporations' loan portfolio slightly accelerated. The average risk level of prolonged loans at the end of 2022 was slightly higher than the risk level of total loans and reflects a slightly higher caution of banks in terms of their expectations for credit risk in these loans. In 2022 the restructured loans decreased, which partly reflects the

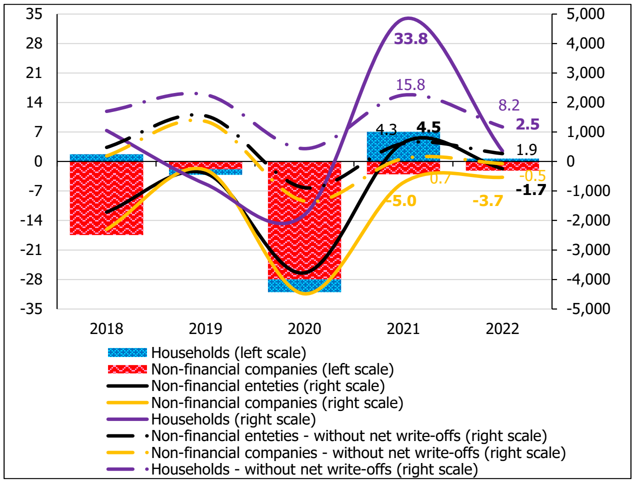
base effect, i.e. their growth in early 2021 as a result of the end of easing due to COVID-19. However, the share of restructured loans in total loans was relatively modest and accounted for 2.5% at the end of 2022 and currently they are not a significant source of risk for the domestic banking system. Yet, there is still need for banks' precaution in both, restructuring customer claims, and formation of the expectations for these loans' credit losses, which is particularly important if the restructuring does not give the expected results.

Chart 9

Annual growth of non-performing loans of non-financial companies

in percent

in millions of denars



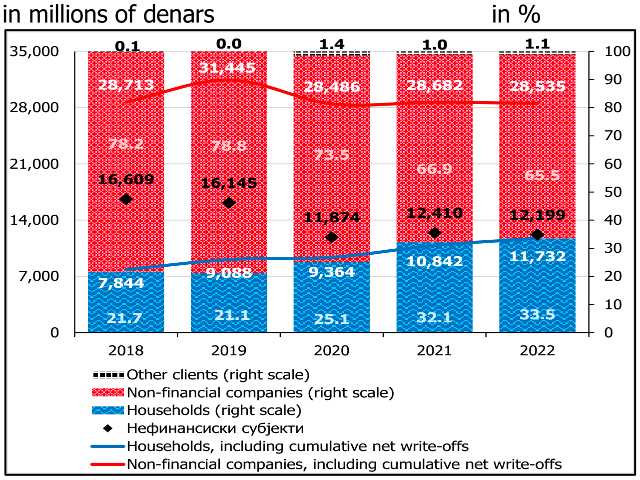
Source: National Bank, based on the data submitted by banks.

Note: Dashed lines present the non-performing loans excluding the effect of mandatory write-offs. Starting from December 2019, the data also contains the collected compulsorily written-off loans.

Chart 10

Amount and sector structure of non-performing loans

in millions of denars in %



Source: Credit Registry, based on data submitted by banks.

1.1 Materialization of credit risk in banks' balance sheets

Non-performing loans to non-financial entities in 2022 decreased by 1.7%, or by denar 211 million. Moreover, most of the banks registered an annual decline in non-performing loans. The main reason for the decline in non-performing loans are the regular regulatory write-offs of these loans[8]. If we exclude the effect of the mandatory net write-offs[9], non-performing loans in 2022 registered a minor growth (1.9%), which is significantly slower compared to the growth in 2021 (4.3%). Regardless of the relatively modest annual changes in non-performing loans in 2022, the overall economic and financial environment, in which the domestic economic agents operate, became more complex in 2022, with the increase in macroeconomic risks and tightening of the global financial market conditions. **Therefore, the continuous and careful monitoring of customers' creditworthiness, especially those that currently have higher level of indebtedness and are more sensitive to environmental changes, becomes one of the most important activities that domestic banks should pay attention to.**

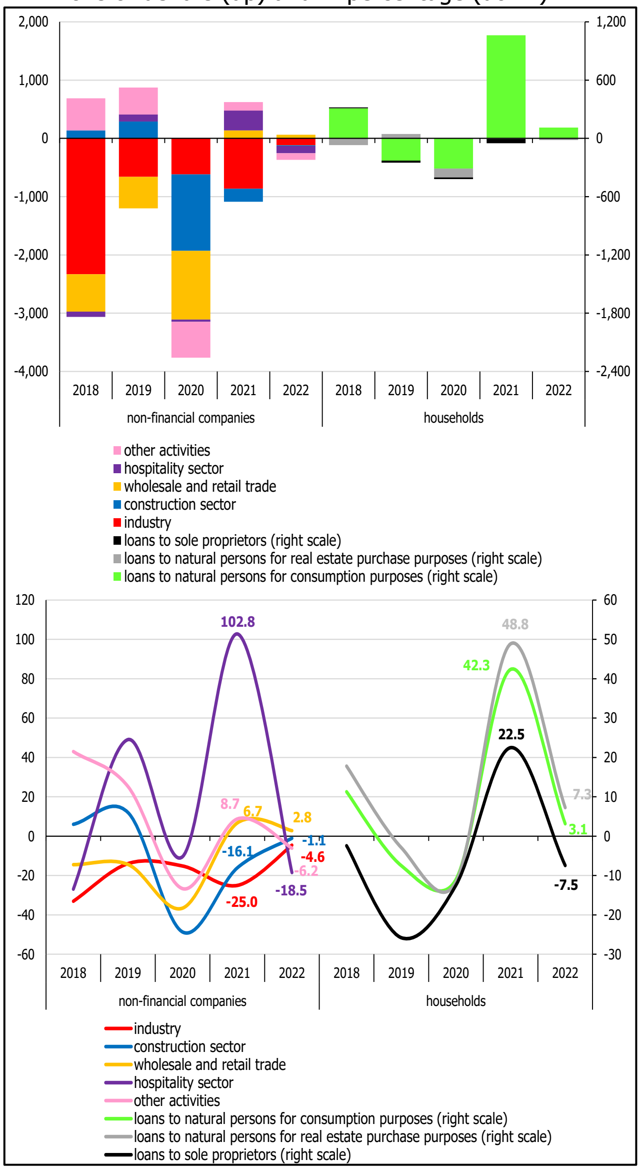
A certain increase in the non-performing loan portfolio of households was recorded in 2022. The growth of non-performing loans to households, which accounts for denar 100 million (i.e. 2.5%), almost entirely stems from non-performing loans to natural person for consumption financing[10]. The new non-performing loans to households can mostly be associated with the effects of the pandemic. On the other hand,

[8]In accordance with the regulation as of mid-2019, each bank has been required to write-off credit exposures where twelve months have passed from the date when the bank was obliged to make full impairment, or allocate special reserve. In the period from 2016 to 1 July 2019, banks were required to write-off credit exposures where twenty four months have passed from the date when there was an obligation for full impairment, or allocation of special reserve. In 2022, around 73% of the total amount of written-off loans resulted from the mandatory write-offs.

[9]The term *mandatory write-offs* refers to the amount of write-offs reduced by the collection of previous write-offs.

[10]Non-performing loans for consumption financing increased by 3.1%, or by Denar 112 million. This was due to the increase in non-performing consumer loans which increased slightly above denar 200 million, while non-performing loans with other credit products (transaction account overdrafts, credit cards, car loans and other loans) reduced by around Denar 90 million.

Chart 11
Distribution of the annual absolute growth (up) and relative growth (down) of non-performing loans to non-financial corporations by selected activities, and to households by credit products
in millions of denars (up) and in percentage (down)



Source: National Bank's Credit Registry, based on data submitted by banks.
Note: The term *construction sector* includes *construction, and real estate activities,* the term *catering,* refers to *accommodation facilities and food services activities,* while the term *loans to natural persons for financing consumption,* refers to consumer loans, overdrafts, credit cards, car loans and other loans to natural persons.

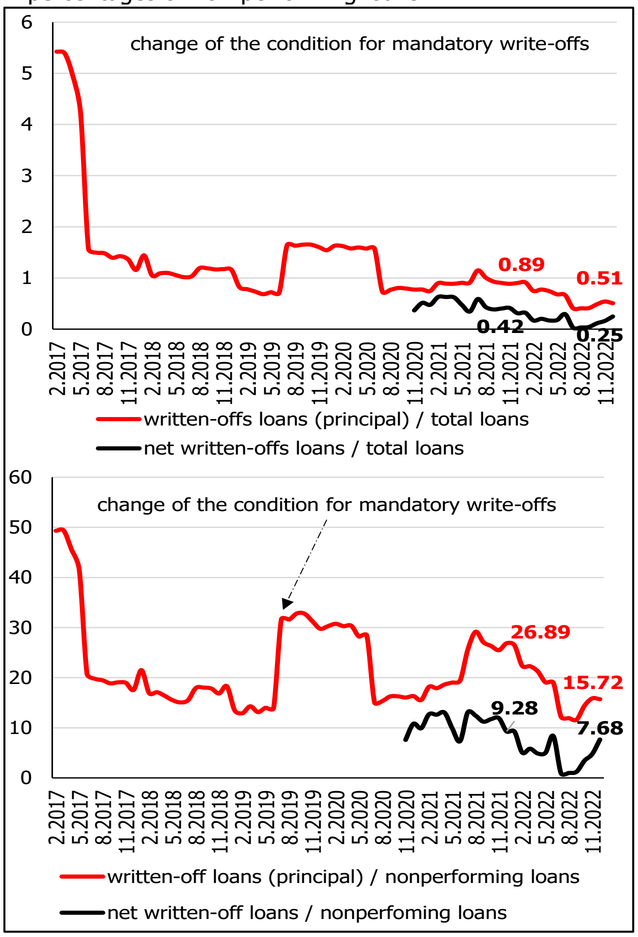
non-performing loans to natural person for financing the purchase of residential and commercial properties reduced by around 3% (or denar 12 million) in 2022, with a decrease in non-performing loans to sole proprietors (by around denar 3 million) as well.

Unlike the *households* sector, non-performing loans to non-financial corporations in 2022 decreased by 3.7%, i.e. slightly above Denar 300 million. Excluding the effect of the mandatory net write-offs, non-performing corporate loans fell by 0.5% annually. Moreover, in 2022 non-performing loans decreased in most of the individual activities. It seems that the post-pandemic normalization of the business activities and recovery of the economic activities in 2022 were the main drivers of the dynamics of non-performing loans in domestic non-financial corporations. In 2022 on the other hand, unfavorable changes in the macroeconomic environment, accompanied by the increase in inflation and gradual growth of interest rates, did not affect the quality of the corporate loan portfolio by creating new non-performing loans.

In 2022, the mandatory write-offs of non-performing loans decelerated compared to the past few years. After the preliminary "cleaning" of the non-performing loan portfolio based on the regulatory, mandatory write-offs, first in 2016 and then again in 2019[11], the amount of mandatory write-offs in the subsequent years is moderate. The written-off loans during 2022 accounted for 0.51% of total loans at the end of 2021, which compared to last year is lower by 0.38 pp. Also, mandatory write-offs registered an annual decline in relation to total non-performing loans at the end of 2021 (from 26.9% to 15.7%). Considering the collection of previous mandatory write-offs, the relative amount of net write-offs in 2022 was also lower compared to 2021. Analyzing sectors, in 2022, for the first time since the

[11]See footnote number 8.

Chart 12
Relative size of mandatory to total write-offs (up) and non-performing loans (down)
in percentages of non-performing loans



Source: National Bank, based on the data submitted by banks.
Note: The charts show the dynamics of mandatory write-offs of non-performing loans calculated for twelve-month moving period to total non-performing loans at the beginning of that period.

introduction of mandatory write-offs, banks have written-off more non-performing loans to households compared to non-financial corporations (54% of total mandatory write-offs of non-performing loans refer to households). Considering that as of 31.12.2022 around 39% of non-performing loans are fully covered with impairment, it is obvious that banks will continue to conduct mandatory write-offs in the following period, unless they are collected in the meantime or the loan is foreclosed.

The collection of non-performing loans by the means of foreclosure had a modest role in the annual decline in non-performing loans. The amount of foreclosed assets during 2022 (denar 427 million) accounted for 3.3% of non-performing exposure at the end of 2021, which is lower compared to last year (7.3% of non-performing exposure at the end of 2020. The total sale of foreclosed assets in 2022 equaled Denar 694 million (Denar 5,703 million in 2021). The collection of previously written-off claims, as well as the sale of the established collateral create additional direct and indirect operating expenses for banks, which in 2022 accounted for 1.2% of total operating expenses of banks (1.5% in 2021).

The decrease in non-performing loans in 2022, amid accelerated credit support of the private sector[12], led to reduced share of non-performing to total loans at the record low of 2.9%, which is lower by 0.3 pp compared to 2021. Decrease in thenon-performing loans ratio is also registered if we exclude the effect of the mandatory net write-offs (9.0% at the end of 2022 and 9.7% in 2021), which is also a record low and is below its ten-year average of 10.9%.

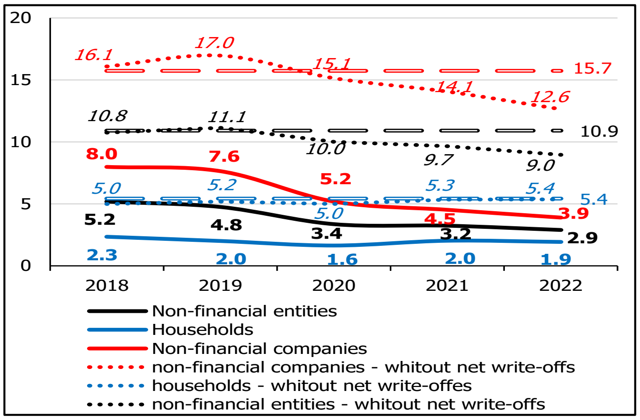
Observed by sector, significant decline in the non-performing loans ratio in 2022 was recorded in loans to non-

[12]Total loans to non-financial entities increased by 10.1% (8.5% in 2021).

Chart 13

Non-performing loans ratio to non-financial corporations and by sector

in %

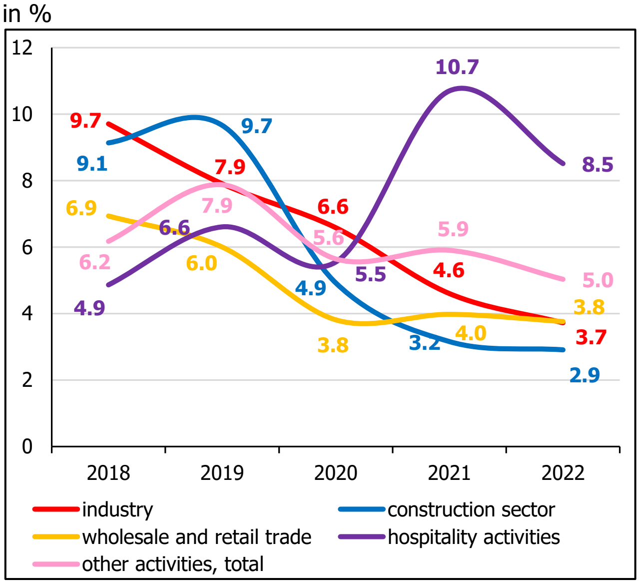


Source: National Bank's Credit Registry, based on data submitted by banks. Note: The dashed lines show the ten-year averages of non-performing loans ratio calculated by excluding the cumulative effect of all mandatory write-offs. Ten-year averages are calculated using quarterly data set.

Chart 14

Rate of non-performing loans to non-financial corporations, by activity

in %



Source: National Bank's Credit Registry, based on data submitted by banks.

financial corporations, by 0.6 pp (from 4.5% to 3.9%). Excluding the effect of the mandatory net write-offs, the non-performing loans ratio in this sector would amount to 12.6%, which is below its ten-year average (15.7%). Moreover, reduced non-performing ratio was recorded in all important predominant activities of non-financial corporations, mostly pronounced in *catering*, which can be partly explained with the post-pandemic renewal of business activities in entities from this sector. According to the size of non-financial corporations[13], at the end of 2022, the non-performing loans ratio is the highest in medium enterprises (4.9%), with a decline of 1.7 pp compared to 2021. Decrease of 0.5 pp was recorded in the non-performing loans ratio in small and micro enterprises, which account for 38% of total exposure to non-financial corporations. Large enterprises, which account for around one third of the total credit risk exposure to non-financial corporations, have the smallest non-performing loans ratio at the end of 2022, of 2.8%.

The annual decrease of the non-performing loans ratio of the household sector, is more modest, amounting to 0.1 pp (from 2.0% to 1.9%). If we exclude the effect of mandatory net write-offs, the non-performing loans ratio to households would amount to 5, 4% which is almost equal to its ten-year average. This indicator decreased in most credit products, and as usually, the lowest level of non-performing loans ratio was registered in loans for purchase of real estate.

The variation coefficient[14] of non-performing loans ratio, calculated for a ten-year period, amounts to 7.5% at the end of 2022, and although it increased slightly compared to 2021, the downward trend is evident and more pronounced in individual

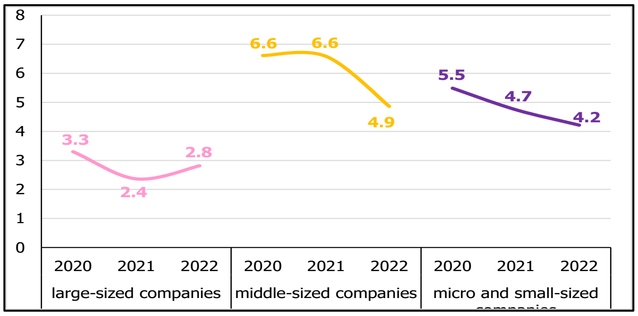
[13] The criteria for classification of entities into large, medium, small and micro traders are defined in Article 470 of the Law on Trade Companies.

[14] Variation coefficient is a standardized measure of dispersion calculated as ratio between standard deviation and the average of certain variable. In this case, the variation coefficient is calculated by using quarterly frequency data for the rate of non-performing loans, excluding the effect of mandatory write-offs.

Chart 15

Rate of non-performing loans by the size of borrowers non-financial corporations

in %

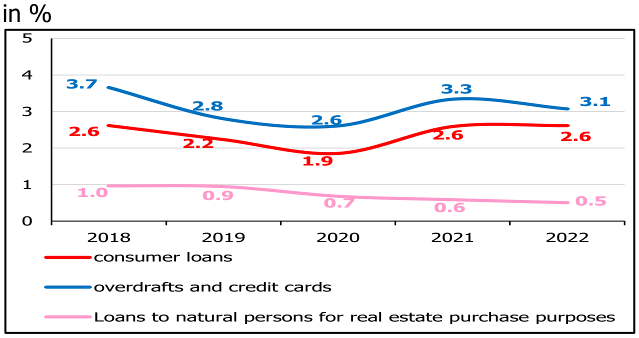


Source: data submitted by banks on a special request of the National Bank

Chart 16

Dynamic of the non-performing loans ratio by credit products to natural persons

in %

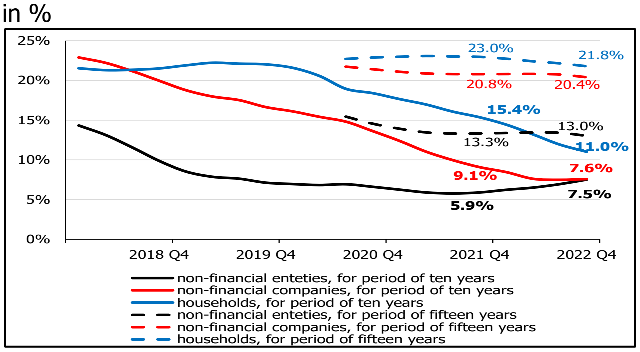


Source: National Bank's Credit Registry, based on data submitted by banks.

Chart 17

Coefficient of variation for a ten-year moving period of the non-performing loans ratio

in %



Source: National Bank's Credit Registry, based on data submitted by banks.

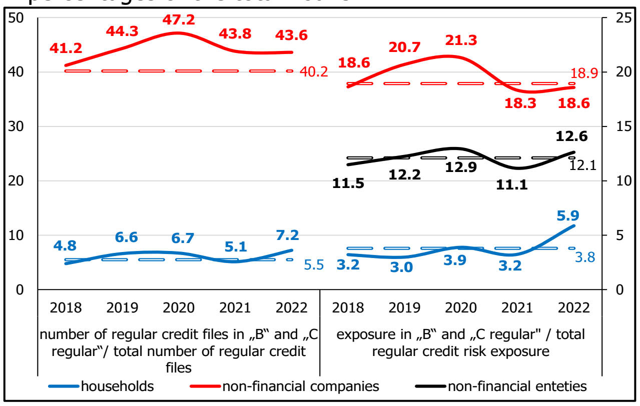
sectors. The low variability in non-performing loans ratio for the past ten years is confirmed by the fact that this coefficient is lower compared to its value, if calculated for a fifteen-year period[15] (13.0%). This could be explained, to a certain extent, by the fact that in the past decade, analyzed in a historical context, looser monetary policy and lending standards prevail (which was case with the domestic financial market), which contributed to relatively modest credit risk materialization in the banks' portfolios, including domestic banks. The changes in these conditions which started in 2022, will probably result in increased variations of non-performing loans ratio measured for the ten-year period and the reduced gap with the fifteen-year measurement period. The variation coefficient of the non-performing loans ratio calculated for a ten-year period is higher in the household sector (11.9%) compared to non-financial corporations (7.6%). The same is registered when the calculation period of the variation coefficient is extended from 10 to 15 years, but the difference is far less (21.8% for households, and 20.4% for non-financial corporations)

Useful early warning indicators, in relation to the credit risk, are the indicators used to monitor the assessed risk level by banks within the performing credit exposure. **In 2022, the share of exposures with regular status with poorer credit quality increased[16] (which also means prolonged delay in repayment of liabilities).** This is noticed through the annual increase in the share of the exposure, classified in the risk categories *B and C regular,* in total regular credit exposure to non-financial entities from 11.1% to 12.6%. The growth of the share is more evident in the exposure to households (growth of 2.7 pp)

[15]The period of fifteen years starts with the first quarter of 2008 and in fact, includes the period after the global financial crisis in 2008.

[16]Credit risk exposures which according to the regulations are classified in the risk categories *B and C regular,* can be considered as approximation of exposures which in compliance with IFRS 9-financial instruments are included in the so-called group 2 of financial assets which are considered to have deteriorated credit quality, after initially recognizing the accounting records, but have no objective signs of damage and inclusion in the so-called group 3 of financial assets yet.

Chart 18
Early warning risk ratios within the banks' regular credit exposure to non-financial entities
in percentages of the total loans



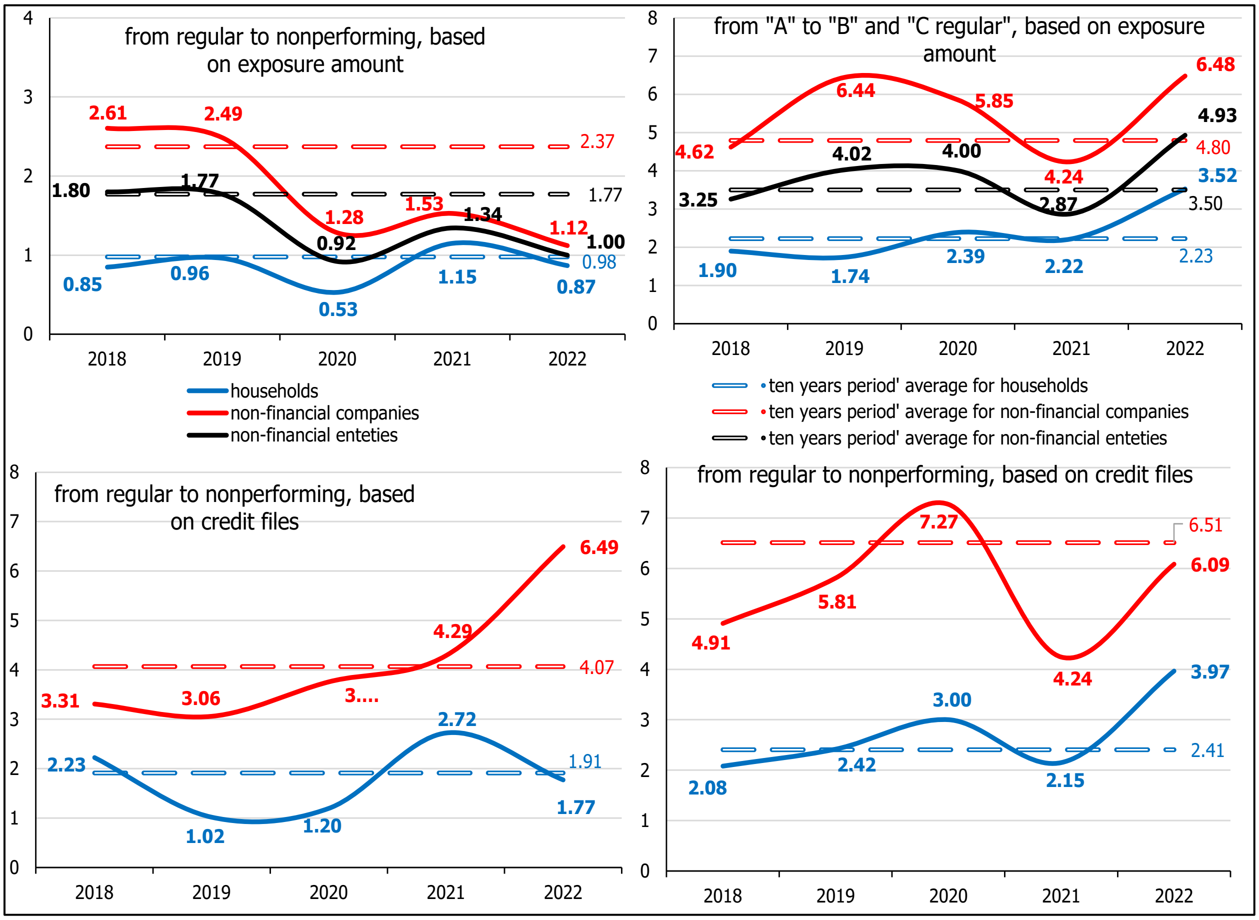
Source: National Bank's Credit Registry, based on data submitted by banks. Note: The dashed line represents the ten-year average of the indicators calculated using quarterly data

compared to non-financial corporations (growth of 0.3 pp). Moreover, this indicator in regular credit exposure to households is significantly higher than its average for the past ten years. This means that, to a certain extent, the banks' credit risk expectations in the portfolio of regular exposures to *households* sector are worsened compared to the previous years.

Despite the decrease in the rate of non-performing loans, **the transition rates within the regular credit exposure increased in 2022[17]**. The transition rates within the regular credit exposure (transition from risk category A to categories B and C-regular), increased in 2022 and were mainly above their ten-year average. This shows that, within the regular loan portfolio, banks have registered increasing credit risk, i.e. they have estimated that there is a certain deterioration in the creditworthiness of credit agreements that form the preforming credit exposure upon approval of the exposure, without having objective signs to classify them as non-performing. However, the annual rates of transition from regular to non-performing exposure are generally below their ten-year average. An exception to this is the transition rate from regular to non-performing exposure calculated by the number of credit agreements for non-financial corporations, which increased in 2022. This indicates that in 2022, default in the non-financial corporations' portfolio was more focused on credit agreements with exposure amounts bellow the average one, which in turn may point to a relatively weaker quality of certain lower amount exposures to enterprises.

[17]The annual migration rates are calculated by the amount of exposure and number of credit agreement at the end of each year for the following calendar year, as follows: From regular to non-performing status and from risk category A to risk category B and C with regular status. The migration rates can be considered as a kind of approximation to the default rates.

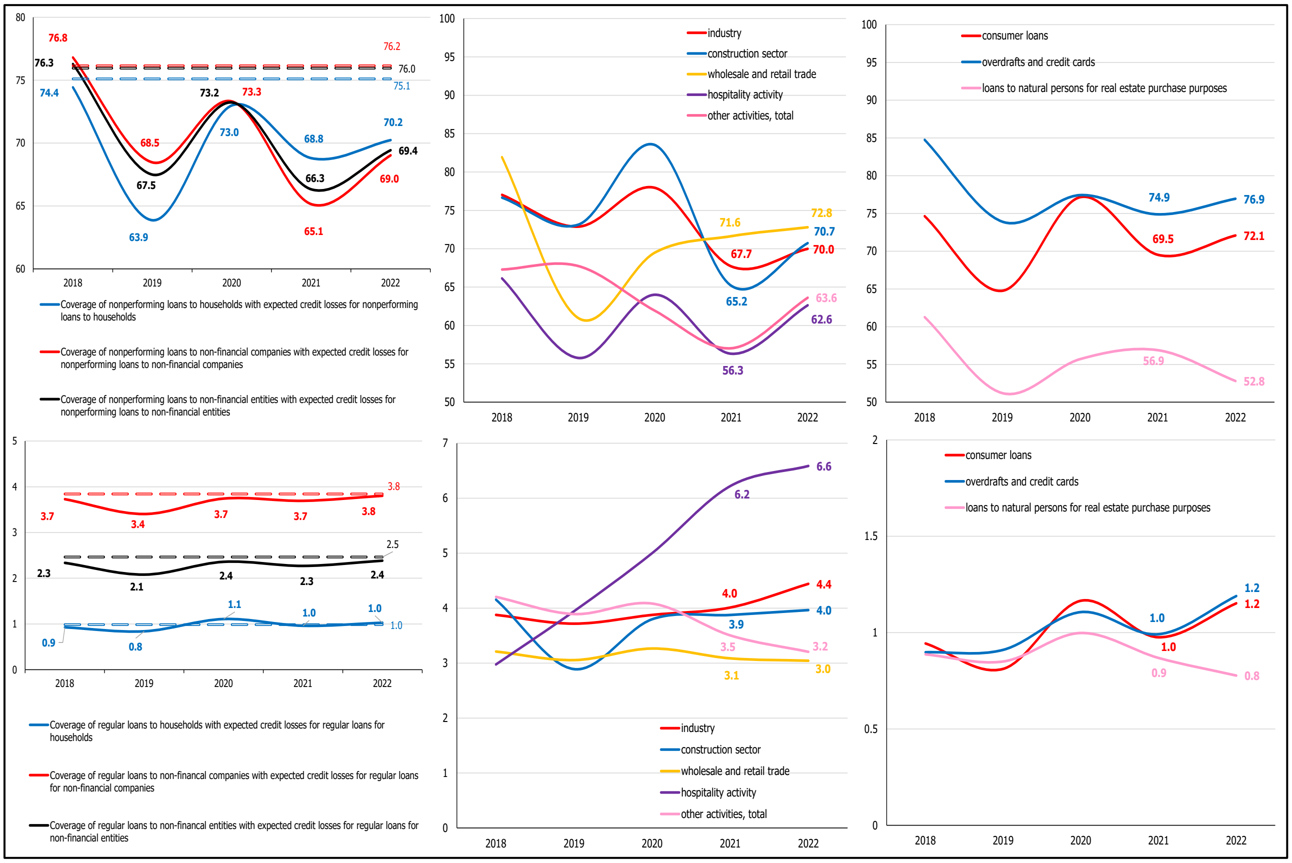
Chart 19
Annual transition rates
in %



Source: National Bank's Credit Registry, based on data submitted by banks.
Note: The dashed line represents the ten-year average of the transtion rates calculated by using quarterly frequency of the annual transtion rates. The calculation of the transtion rates by number of agreements does not show the rates of total non-financial entities, since they are almost identical to the transition rates of households, which is due to the predominant share of this sector in the total number of credit agreements in the banking system (93.4% at the end of 2022, i.e. 93.8% at the end of 2021).

The banks maintain relatively solid coverage of the non-performing loans with the allocated expected credit losses. Namely, 69.4% of the non-performing loans to non-financial entities are covered with expected credit losses, which is more than 3.1 pp compared to the preceding year.

Chart 20
Expected credit loss for the non-performing (top) and regular loans (bottom) by sector (left), by activity of the non-financial corporations (middle) and by credit products with households (right)
in %

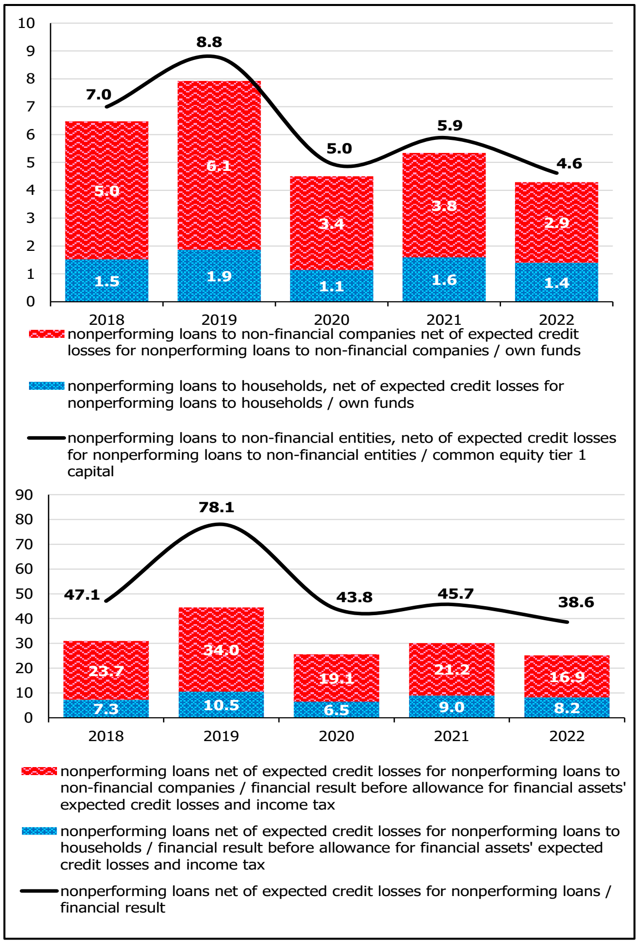


Source: National Bank's Credit Registry, based on data submitted by banks.
Note: The dashed lines in the charts on the left denote the ten year average of the coverage of the non-performing and regular loans with expected credit losses, calculated on the basis of annual data frequency.

At transition rates growth within the regular portfolio, the banks maintained and minimally increased the coverage of the regular loans with expected credit losses. At the end of 2022, the expected credit loss allocated for the regular loans on the non-financial entities are at the level of 2.4%, which is by 0.1% more compared to the end of 2021. At the same time, expected credit losses for regular loans of non-financial corporations are significantly higher compared to households, both for the end of 2022 and for the past ten year average (3.8% versus 1.0%). By activity, at the end of 2022 the expected credit losses are the highest in regular loans for catering activity (6.6%), while the lowest in "wholesale and retail trade" (3.0%). In the case of household credit products, lower coverage with loan expected credit losses for the purchase of real estate is evident, which is also due to the fact that these loans are, as a rule, collateralized by real estate.

Chart 21 Relative importance of the part of the non-performing loans that have not being covered with expected credit losses relative to the own funds and regular tier 1 capital (top) and financial result (bottom)

in %

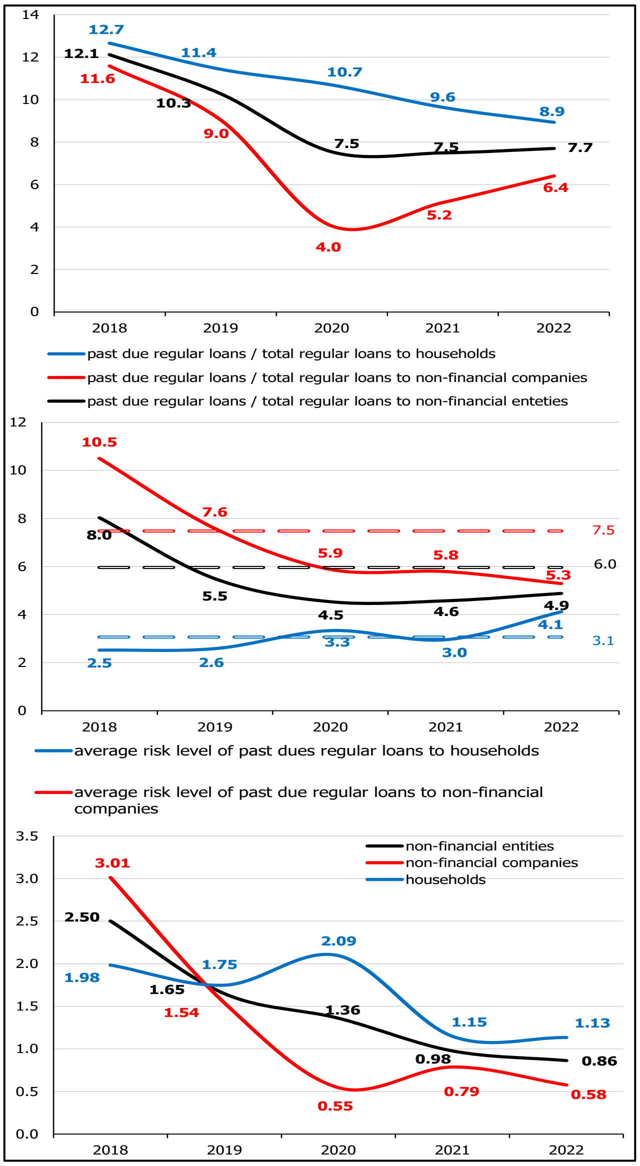


Source: National Bank's Credit Registry, based on data submitted by banks.

The negative effects of possible unexpected credit losses in case of complete uncollectibility of non-performing loans have a limited impact on the solvency of the Macedonian banking system. Namely, the part of the non-performing loans that is not covered by allocated expected credit losses covers only 4.3% of the own funds and 4.6% of the regular tier 1 capital at the level of the banking system, which is an improvement of 1.1 and 1.3 pp, respectively compared to last year. Also, the possible additional cost of full coverage of the non-performing loans with expected credit losses would equal 38.6% of the realized profit for 2022, i.e. 26.7% of the operating financial result (profit before the expected credit losses for financial assets). This means that the full provisioning of the current level of nonperforming loans would not jeopardize the solvency and profitability of the banking system.

Chart 22 Relative importance of overdue regular loans (top), average risk of overdue regular loans (middle) and share of overdue regular loans over 31 days in the total regular loans (bottom)

in %



Source: National Bank's Credit Registry, based on data submitted by banks.

Note: The ten-year average of the average risk level is calculated on the basis of annual data frequency and it is represented by the dashed line.

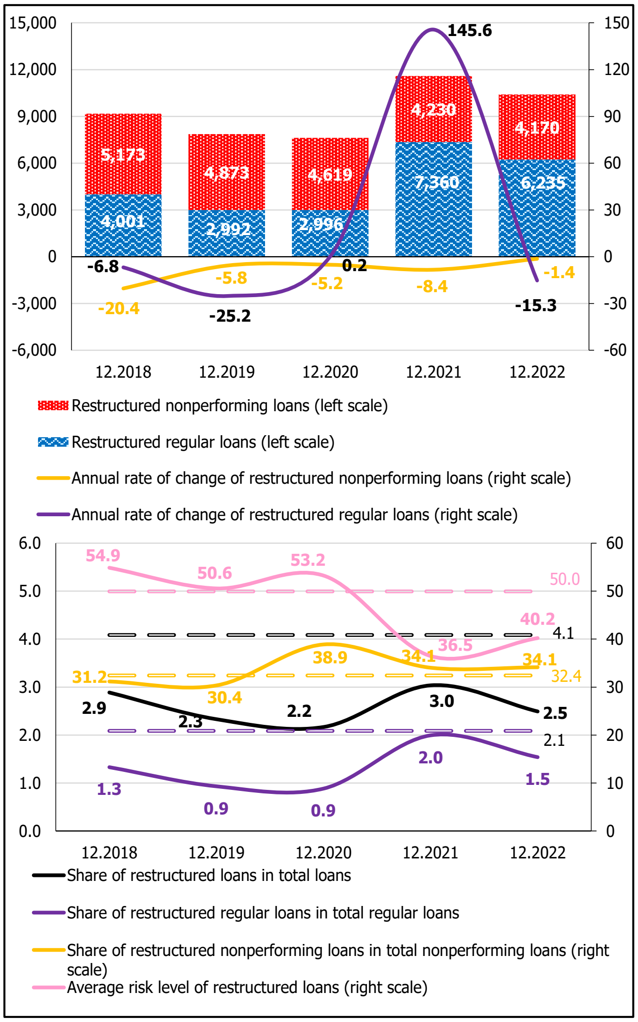
Another indicator of the quality of the banks' credit portfolio is the dynamics of the share of loans that have at least one day of delay in the fulfillment of the agreed monetary liabilities in the total regular loans, that is, there is at least one overdue unpaid contractual liability. Given that the delay in the payment of due contractual monetary liabilities with loans, usually precedes their classification with a non-performing status, practically this indicator reflects the potential for a possible deterioration of the loan quality in the short term. At the end of 2022 **the share of the loans that have at least one overdue contractual liability in the total regular loans of the nonfinancial entities equals 77%, an increase of 0.2 pp compared to the end of the previous year.** This increase mainly results from the annual growth of this indicator in the regular loans of non-financial corporations (by 1.2 pp), while in the case of households, the delay in the repayment of regular loans was lower compared to last year (down by 0.7 pp). In addition, it should be emphasized that the overdue loans where the delay in ther repayment is longer than 31 days (until 90 days)[18], take minor share (0.86% of the regular loanso). **In 2022, the banks registered an increase in the anticipated credit loss based on overdue regular loans of the non-financial entities, so their average level of riskness at the end of 2022 equals 4.9%, which is by 0.3 pp more compared to the end of 2022.** The increase in the average level of riskiness of regular loans to households is noticeable (by 1.1 pp), which practically reached the highest value of this indicator in the last ten years at the end of 2022.

Another potential source of future materialization of the credit risk in the banks' portfolios are the **restructured loans**, because they refer to the claims on customers

[18] Exactly the loans that are overdue for more than 31 days, in case of rolleover can be the main source of the future growth of non-performing loans, taking into account that loans with a delay of more than 90 days are classified as non-performing loans.

Chart 23 Absolute amount and annual change (top) and indicators of relative importance of restructured loans to non-financial entities (bottom)

in millions of denars and in %



Source: National Bank's Credit Registry, based on data submitted by banks. Note: The ten-year average of the indicators of the relative importance of restructured loans is calculated based on the quarterly frequency of the data and is shown with a dashed line.

already facing a deteriorated financial condition and needed to adjust their credit burden. After the relatively high growth in 2021, mainly due to the pandemic effects [19], **in 2022 the restructured loans registered a decrease,** which was more noticeable with the restructured regular loans (a decrease of 15.3%) compared to the restructured non-performing loans (decrease of 1.4%). At the same time, restructured regular loans take larger share in the structure of total restructured loans (about 60%). From the sectoral aspect, the non-financial corporations dominate the structure of the restructured credit portfolio, with a share of 91.5% in the total restructured loans.

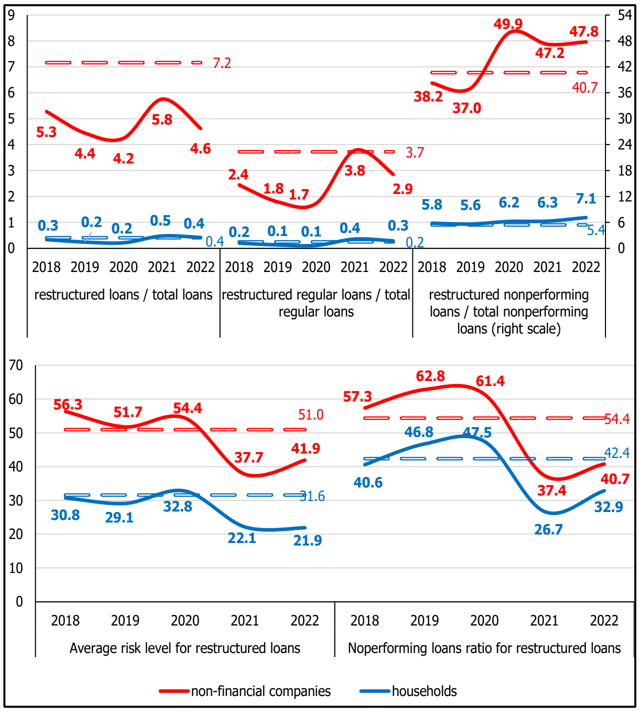
Restructured loans have a relatively moderate share in total loans of 2.5% at the end of 2022 (lower by 0.5 pp compared to the previous year), and only in the regular portfolio the share of restructured loans is even lower and equals 1.5%. But the quality of these regular loans should be monitored more carefully, because in case of a failure of the restructuring process, they would probably acquire a non-functional status. The higher risk inherent in restructured loans leads to their significantly higher average riskiness (40.2%), compared to the average provisioning of total loans (4.3%). The higher expected credit losses that banks determine for restructured loans are especially evident in regular restructured loans. Their coverage with expected credit losses of 21.2% is significantly higher compared to the coverage of total regular loans (2.4%)[20]. On the other hand, the coverage of non-performing restructured loans with expected credi losses (of 68.7%) is almost at the same level as the coverage of total non-performing loans (of 69.4%).

[19] In 2021, the possibilities for approving new regulatory reliefs have been exhausted and in most of the cases where a grace period for repayments was previously approved, it has completely expired, and accordingly the banks have initiated a restructuring of the liabilities with some of the clients (mainly non-financial corporations) who faced with a deteriorated financial condition. This was the main reason for the high growth of restructured loans in 2021.

[20] The coverage with the expected credit losses of the regular restructured loans is 19.5%, compared to 2.3% for the total regular loans.

Chart 24 Indicators for the relative importance (top) and the riskiness of restructured loans by sector (bottom)

in %



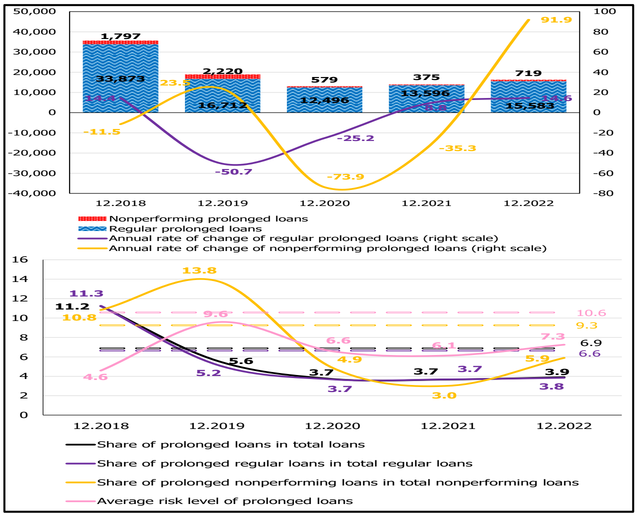
Source: National Bank's Credit Registry, based on data submitted by banks.

The restructured loans of non-financial corporations have a higher average level of risk (41.9%), as well as a higher non-performing loans ratio (40.7%), compared to the restructured loans of the household sector, with these indicators also showing a significant downward divergence from their ten-year average.

In 2022, the growth of prolonged loans accelerated, which can be a potential source of risk, especially if the prolongation is used as a way to ease the debt burden of non-financial corporations that do not have

Chart 25 Absolute amount and annual change (top) and indicators of the relative importance of prolonged loans to non-financial entities (bottom)

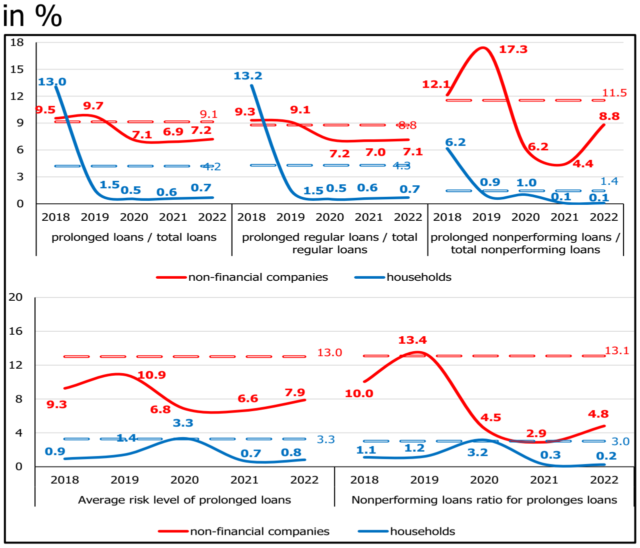
in millions of denars and in %



Source: National Bank's Credit Registry, based on data submitted by banks. Note: Note: The ten-year average of the indicators of the relative importance of prolonged loans is calculated based on the quarterly frequency of the data and is shown with a dashed line.

Chart 26 Indicators of relative importnace (top) and riskness (bottom) of the prolonged loans, by sector

in %



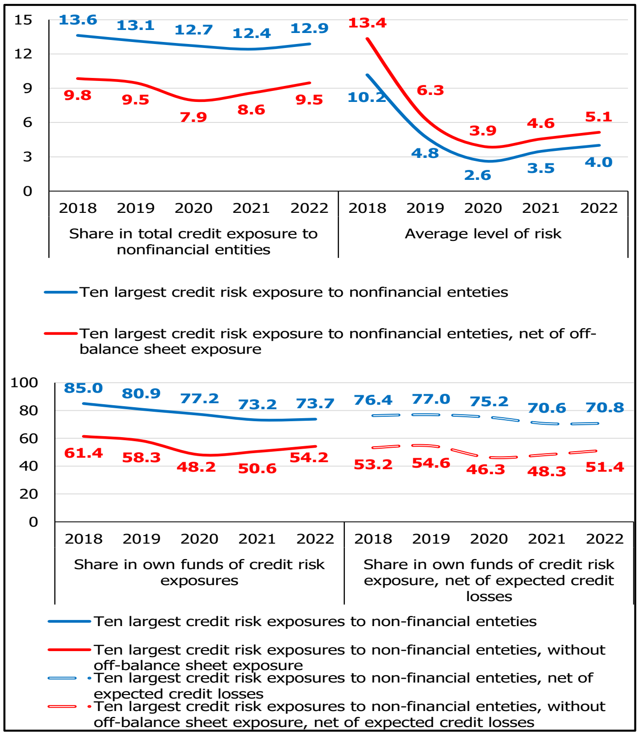
Source: National Bank's Credit Registry, based on data submitted by banks.

Note: The ten-year average of the indicators of the relative importance of prolonged loans is calculated based on the quarterly frequency of the data and is shown with a dashed line.

sustainable operating cash flows or have difficulties in maintaining their competitive ability in the market. Thus, total prolonged loans grew by 16.7%, i.e. by Denar 2,332 million, which is more than double the growth compared to 2021 (6.9%, i.e. by Denar 896 million). In their structure, regular prolonged loans prevail (95.6% share), which also accounted for most of the annual growth of total prolonged loans. From a sectoral point of view, the prolongation is more common among non-financial corporations (with a participation of 91%). **The portion of prolonged loans in the total loan portfolio of banks is not large.** Namely, at the end of 2022 the share of prolonged loans equals 3.9% in total loans and 3.8% in total regular loans, which is at a lower level than their ten-year averages (6.9% and 6.6%, respectively). At the same time, this share is far more relevant for loans to non-financial entities, where prolonged loans account for 7.2% of total loans, compared to households (a share of 0.7%). **At the end of 2022, the average risk of the prolonged loans equals 7.3%, with an annual growth of 1.2 pp**, reflecting a llitle bit larger caution of the banks regarding their expectations about the credit risk with these loans, which is still lower than the ten-year average (10.6%). The average risk is significantly higher in prolonged loans to non-financial entities (7.9%) compared to extended loans to households (0.8%). The rate of non-performing loans for prolonged loans is 4.8% for non-financial corporations, and 0.2% for households.

The concentration of credit risk exposure can have a significant impact on the credit risk dynamics. In 2022, most indicators of exposure

Chart 27 Indicators of concentration of credit risk exposure to non-financial entities
in %



Source: National Bank's Credit Registry, based on data submitted by banks.

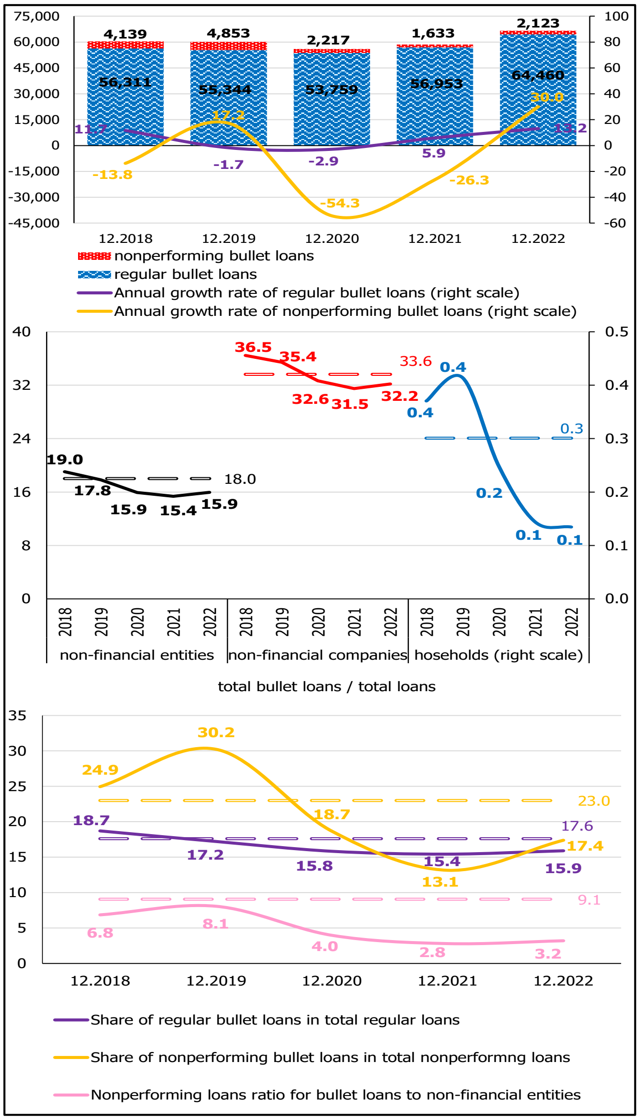
concentration showed increase on annual basis. Thus, the share of the ten largest individual exposures of the banks to non-financial entities in the total exposure to credit risk and in own funds equaled 12.9% and 73.7%, which is an increase of 0.5 pp compared to 2021, in both indicators. If off-balance sheet exposures are excluded, the ten largest exposures would comprise 9.5% of total exposure (annual growth by 0.9 percentage points) and 54.2% of own funds (annual growth by 3.6 percentage points). Annual growth is also observed in the average risk level of the ten largest exposures, as well as in the share in own funds of their part which is uncovered with expected credit losses.

A potential trigger for credit risk materialization can be the loan dynamics, in instances **where the contract obliges the user for a bullet payment**. Such loans are mainly approved to non-financial corporations[21], in form of credit lines that are

[21] At the end of 2022, in the total bullet loans, non-financial corporations participate with 99.6%, while the participation of households is 0.4%.

Chart 28 Bullet loans – absolute amount and annual change (top), share of the total loans by sector (middle) and indicators of their relative importance (bottom)

in millions of denars and in %

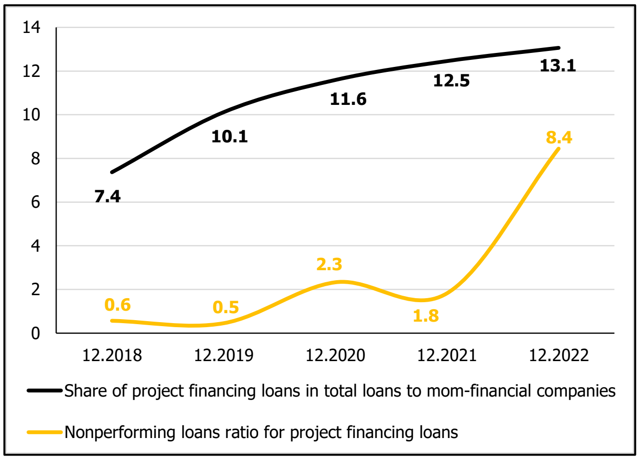


Source: National Bank's Credit Registry, based on data submitted by banks. Note: The ten-year average of the indicators of the relative importance of restructured loans is calculated based on the quarterly frequency of data and is shown with a dashed line.

usually subject to periodic renewal (mostly for up to one year). These loans are specific because they create a potential refinancing risk for their users, from the aspect of both non-renewal of the credit line due to non-fulfillment of contract covenants, and increasing utilization costs. In case of tightening of the credit market conditions, these bullet loans may face higher degree of credit risk materialization. In 2022, the growth of bullet loans to non-financial entities accelerated (reaching 13.7% against 4.7% in 2021), with both regular and non-performing loans also registering an increase (of 13.2% and 30%, respectively). Banks almost do not approve bullet loans to households, while such loans comprise almost one third of loans extended to non-financial corporations. It should also be noted that at the end of 2022, 17.4% of all non-performing loans in the banking system stem from bullet loans. The rate of non-performing loans for bullet loans amounted to 3.2% at the end of 2022 and recorded an increase of 0.4 percentage points compared to the previous year. The bearer of this growth was the borrowers from the construction sector. The average level of risk exposure of banks based on such credit products has also increased (by 0.3 pp to the level of 3.5%).

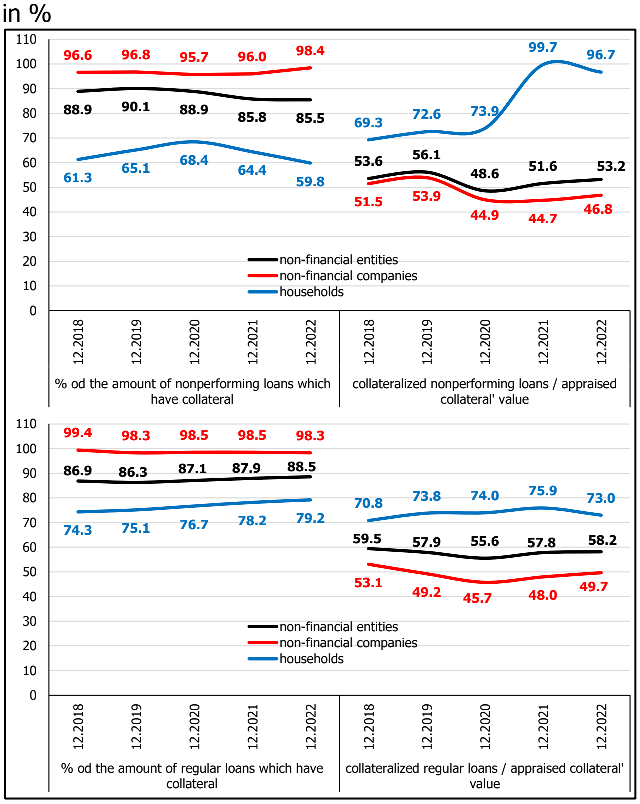
Similar risks as the ones with the bullet loans arise from project financing loans. Their quality primarily depends on the volume and dynamics of the projects' projected cash flows financed by such loans. Beneficiaries of such loans are non-financial corporations, primarily "industry" and "construction sector" activities, which together comprise about 81% of all project financing loans. The importance

Chart 29 Non-financial corporations' loans for financing projects
in %



Source: The data are submitted by banks upon a special request of the National Bank

Chart 30 Share of the collateralized non-performing loans (top) and regular loans (bottom), by sector
in %



Source: National Bank's Credit Registry, based on data submitted by banks

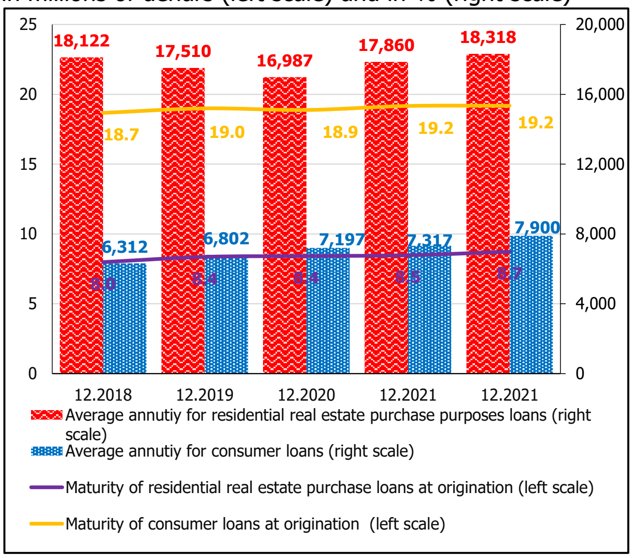
of loans approved for financing projects for the total loan portfolio of banks to non-financial corporations has been constantly increasing in the past few years and at the end of 2022 they occupy 13.1% (12.5% on 12.31.2021). In 2022, there was evident deterioration in the quality of this credit portfolio, which can be seen through the high annual growth of the rate of non-performing loans from 1.8 to 8.4%.

Loans approved by banks have a relatively high degree of coverage with a certain form of collateral. Thus, at the end of 2022, 85.5% of non-performing loans and 88.5% of regular loans were collateralized. This is particularly pronounced in lending to non-financial corporations, where banks have established certain security for over 98% of loans. Among households, the percentage of secured loans is lower (79.2% for regular and 59.8% for non-performing loans), mainly due to lending to natural persons for consumption financing. Namely, about two-thirds of loans for financing consumption, at the end of 2022, are collateralized, which is significantly less compared to loans for the purchase of real estate where almost the entire amount of loans is collateralized.

The banks most commonly approve loans that are being relatively highly covered with the value of the collateral. This is especially significant for loans intended for purchasing residential property, because it is directly related to the participation of the credit user in financing the transctions related to purchase and sale of apartments, and hence indirectly affects both movements of the real estate market and availability of residential real estate for households, as well and with the degree of implicit security that the bank incorporates into housing loan agreements against the deafault risk and unfavorable changes in real estate prices. In 2022, banks concluded a total of 6,211 new credit agreements with natural persons intended for the purchase of

Chart 31 Average weighted maturity at the time of approval and average amount of annuity per borrower for housing and consumer loans

in millions of denars (left scale) and in % (right scale)



Source: National Bank's Credit Registry, based on data submitted by banks.

residential property. These loans were collateralized with immovable property, including the one which is subject to purchase and sale.

The monthly loan repayment obligation per borrower in 2022 registered an increase in the loans for the purchase of residential property (annually by 2.6%) and consumer loans (annually by 8.0%). The trend of maturity prolongation of the newly approved loans continued in 2022, which in certain households may be driven by the need to meet the criteria pertaining to the correlation between the requirement for monthly loan repayment and monthly income. Average weighted maturity[22] when approving loans for the purchase of residential property in 2022, equaled 19.2 years, which is identical to last year, while for consumer loans it is 8.7 years, which is 0.2 years longer compared to 2021.

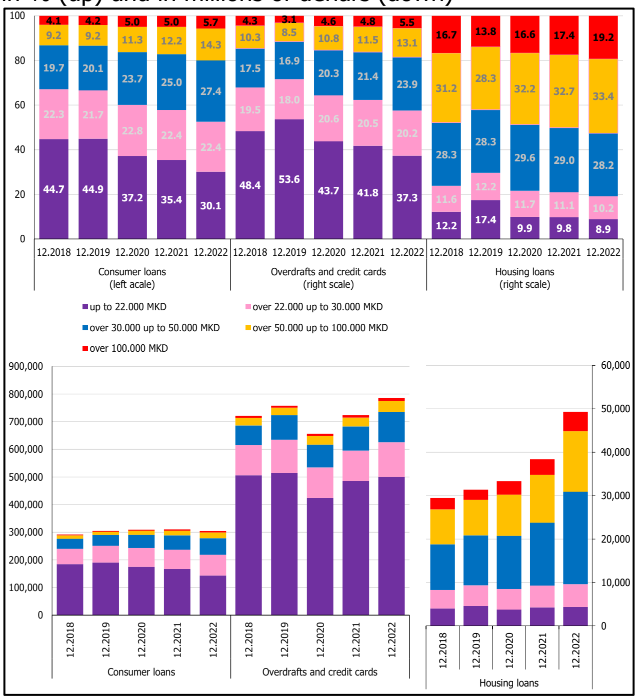
In the structure of the bank exposure to households by the amount of the borrowers' monthly income, the differences by individual credit products are still pronounced. In loans for the purchase of residential property, the highest share accounts for the borrowers with higher monthly income - over Denar 50,000 (52.6%). On the other hand, the population with lower income (with monthly income up to Denar 30,000)[23], which is also considered as financially more vulnerable, especially in conditions of increasing inflation, has a predominant share in the structure of lending to natural persons for finance consumption, with a share in consumer loans of 52.6% and overdrafts and credit cards of 57.5%. However, it should be noted that on an annual basis, the participation of individuals with an income of up to Denar 30,000 decreases in all individual credit products, at the expense of

[22] The share of each bank in the principal at the end of the year is taken as a weight when determining the average maturity of loans at the level of the banking system.

[23] Given that the average net salary in the country for the entire 2022 was Denar 31,868, and in December 2022 it was Denar 34,364, the credit users with a monthly income of less than Denar 30,000 roughly correspond to individuals having a salary below the average.

Chart 32 Structure of credit risk exposure of natural persons for selected credit products by monthly income (top) and by number of borrowers (bottom)

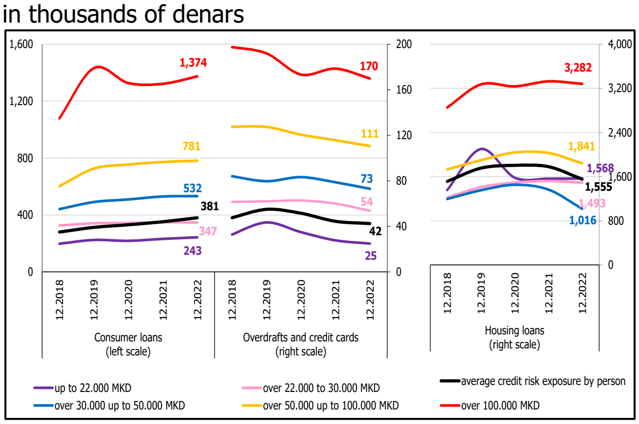
in % (up) and in millions of denars (down)



Source: The data are submitted by banks upon a special request of the National Bank

Chart 33 Average exposure for selected credit prodicts, by individual

in thousands of denars



Source: The data are submitted by banks upon a special request of the National Bank

the increase in the participation of individuals with an income of over Denar 50,000, and partly also the participation of persons with an income of Denar 30,000 to 50,000 (more pronounced in loans for financing consumption). In the total credit risk exposure of banks to natural persons, the participation of persons with monthly income smaller than Denar 30,000 at the end of 2022 is 41.5%, and compared to 31.12.2021, there is a decrease of 4.7 pp, while the participation of individuals with monthly income over Denar 50,000 amounts to 31.4% and is higher by 3.3 pp on an annual basis.

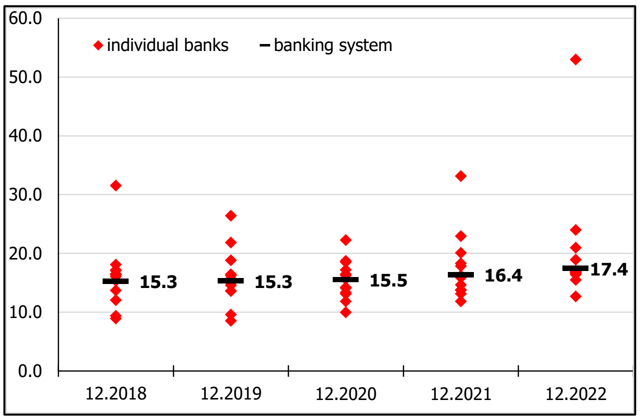
The average amount of credit exposure of the banks by person differs depending on the type of credit product. Thus, the average exposure to individual person on the basis of loans for the purchase of residential property is over Denar 1.5 million, while on the basis of consumer loans it is Denar 381 thousand and for permitted overdrafts and credit cards it is Denar 42 thousand. The number of borrowers for the purchase of residential property is lower by six times compared to the consumer loans beneficiaries and by about 15 times the number of overdrafts and credit card users.

1.2 Stress-testing of the resilience of the banking system to increased credit risk

At the end of 2022, simulations of the resilience of the banking system to increased credit risk show a solid bank capacity to deal with hypothetical

Chart 34 Necessary transition of exposure to non-financial entities from regular to non-functional status so that the capital adequacy ratio can reach the legal minimum of 8%

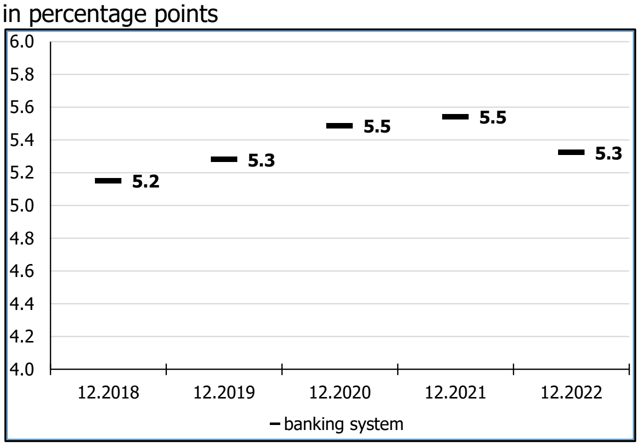
in %



Source: National Bank calculations, based on data submitted by banks

Chart 35 Decrease in the capital adequacy ratio in the simulation for gradation in the deterioration of the quality of the banks' credit risk exposure to non-financial entities from the current in the following two risk categories

in percentage points



Source: National Bank calculations, based on data submitted by banks

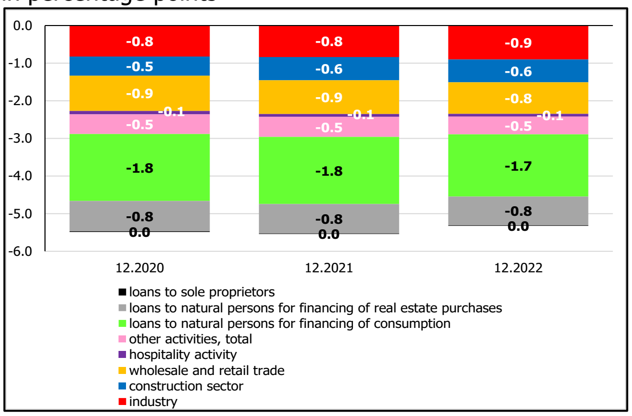
shocks to increased credit risk. The capital adequacy ratio at the level of the banking system would reduce to the legally prescribed minimum of 8% at hypothetical transition of 17.4% of the banks' regular exposure of the non-financial entities to non-functional one. Opposite to this, the ten-year average of the resulting annual rate of transition at the level of the banking system from regular to non-functional exposure is slightly below 2%. The result of the stress simulation shows that the banking system has a fairly high capital buffer to cope with the potential negative effects of a relatively large materialization of credit risk.

The hypothetical simulation of gradation in the portfolio quality deterioration to non-financial entities by transition of 30% of the credit exposure from the current to next two worse risk categories leads to a reduction in the capital adequacy ratio of the banking system from 17.7% to 12.4%, i.e. by 5.3 pp compared to the initial level (as of 31.12.2021, this reduction was 5.5 pp). A bit larger part of the decrease of the capital adequacy at the level of the banking system in this simulation results from the worsened quality of the corporate credit portfolio (2.9 pp of the total decrease). By prevailing activities of the non-financial corporations, in this kind of simulation, the most pronounced impact on the decline of capital adequacy at the level of the banking system would have the deterioration of the creditworthiness of customers from industry and wholesale and retail trade activities, while analyzed by credit products for natural persons, the greatest negative effect on capital adequacy would result from the deterioration of the consumer loans quality.

The simulation of **materialization of the concentration risk** through an assumed transition of the ten largest customers from the non-financial sector of each bank, from the current risk category (mostly "A") to the risk category "C-non-functional", leads to a reduction of the capital adequacy ratio at the

Chart 36 Contribution of the individual prevailing activities of non-financial corporations and household credit products in the reduction of the capital adequacy ratio during the simulation for gradation in the deterioration of the quality of credit risk exposure

in percentage points



Source: National Bank calculations, based on data submitted by banks

level of the banking system by 4.2 pp, from the initial 17.7% to 13.5%. Compared on an annual basis, this result is similar to that of 31.12.2021, when the reduction of the adequacy rate was 4.1 pp (from 17.3% to 13.2%).

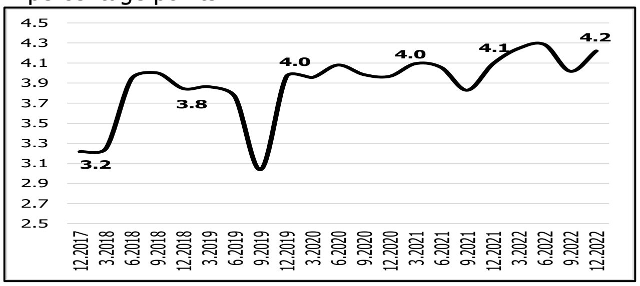
The banking system resilience is also analyzed by extreme simulation based on a combination of eight hypothetical shocks[24] which assume materialization of the credit risk with the bank exposure to the non-financial entities. The shocks refer to different segments of the exposure, determined according to certain characteristics that determine its risk degree (non-functionality, delay in meeting monetary requirements, restructuring, extensions, approved grace period and agreed bullet payment). Moreover, with some of the shocks for the credit portfolio quality, the determining of the intensity of the simulated shock is connected with the historical dynamics of the transition rates of the corresponding exposure, i.e. with their ten-year average. In this simulation, the capital adequacy ratio at the level of the banking system decreases from 17.55%[25] to 12.4% (from 17.06% to 11.52% at the end of

[24] The eight hypothetical shocks to the risk exposure to non-financial entities for each bank are the following: 1. complete non-payment of the existing non-functional credit exposure; 2. The part of the regular loans that are late for more than 32 days receive a non-functional status. The part that receives a non-functional status is determined in the amount of the ten-year average of the transition rate of the exposure from the risk categories "B" and "C-regular" to the risk categories "C non-perf.", "G" and "D" for each bank separately; 3. The total regular restructured exposure that currently has no delay in the fulfillment of monetary obligations receives non-functional status; 4. New restructurings of the regular credit exposure that currently has no delay in the fulfillment of monetary obligations, reduced by the credit exposure with an agreed bullet payment due in the coming year. The volume of new restructurings is based on the ten-year average of the transition rate of the exposure from risk category "A" to risk categories "B" and "C regularly" at each bank separately;5. Part of loans with granted grace period which expires after a period of one quarter to one year after the reporting date receive a non-performing status. The part that receives a non-functional status is determined in the amount of the ten-year average of the transition rate of the exposure from the risk categories "A", "B" and "C regular" to the risk categories "B non-functional", "G" and "D" at each bank separately; 6. Part of the prolonged exposure that currently has no delay in the fulfillment of monetary obligations receives a non-functional status, and this part is determined at the amount of the ten-year average of the transition rate of the exposure from risk categories "A", "B and "C regularly" in risk categories "C non-functional", "G" and "D" at each bank separately; 7. Part of the regular, non-restructured and non-prolonged credit exposure that currently has no delay in the fulfillment of monetary obligations and where a bullet payment has been agreed and which is due in the following year, receives a non-functional status. The part that receives a non-performing status is determined in the amount of the ten-year average of the transition rate of the exposure from the risk categories "A", "B" and "C regular" to the risk categories "B non-functional", "G" and "D" at each bank separately; 6. Part of the prolonged exposure that currently has no delay in the fulfillment of monetary obligations receives a non-functional status, and this part is determined at the amount of the ten-year average of the transition rate of the exposure from risk categories "A", "B and "C regularly" in risk categories "C non-functional", "G" and "D" at each bank separately; 7. Part of the regular, non-restructured and non-prolonged credit exposure that currently has no delay in the fulfillment of monetary obligations and where bullet payment has been agreed and which is due in the following year, receives a non-preforming status. The revaluation coverage after each of the eight shocks is the same as before the shock.

[25] Initial capital adequacy ratio of the banking system is without DBNM AD Skopje, which is excluded from this simulation.

Chart 37 Decrease in the capital adequacy ratio at the level of the banking system at materialization of the concentration risk to non-financial entities

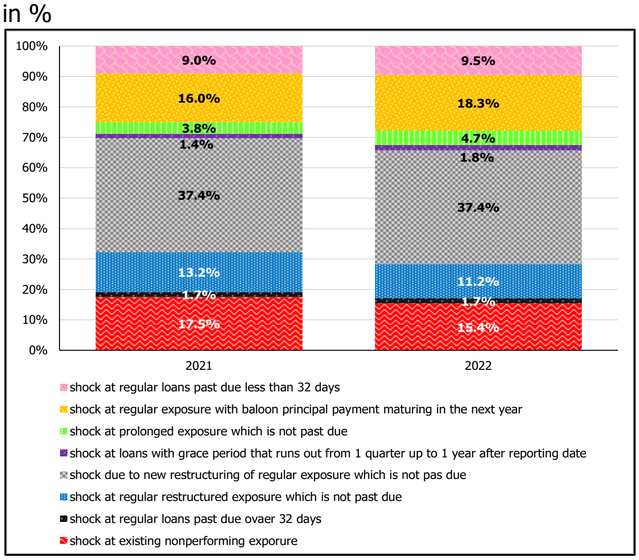
in percentage points



Source: National Bank calculations, based on data submitted by banks

Chart 38 Distribution of the decrease in the capital adequacy ratio at the level of the banking system by shock

in %



Source: National Bank calculations, based on data submitted by banks

2021). The shocks would lead to the absorption of 29.3% of the initial capital adequacy ratio, which is less compared to the end of the previous year (32.5% of the initial level of the capital adequacy ratio). The greatest effect on the reduction of the capital adequacy ratio has the assumed new restructuring of the exposure to credit risk that the banks would implement on the regular exposure where there is currently no delay in the fulfillment of the monetary requirements (contribution of 37.4% in the reduction of the capital adequacy), followed by the deterioration of the credit exposure quality with agreed bullet payment and which falls due the next year (contribution of 18.3%) and complete default of the current non-functional exposure (contribution of 15.4%).

2. Liquidity risk

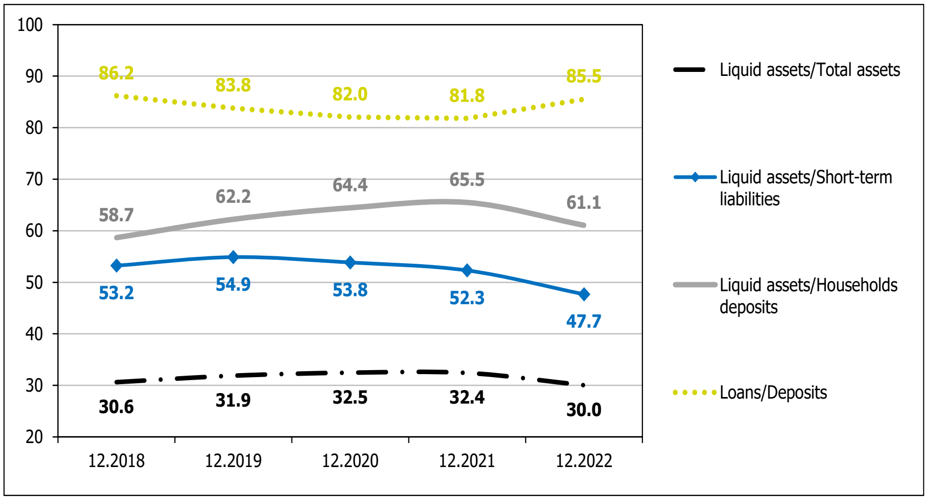
In 2022, despite the highlighted risks resulting from the prolonged military conflict in Ukraine and inflationary pressures and challenges related to the energy crisis, Macedonian banks maintained a stable and solid liquidity position, ensuring the capacity for constant credit support to companies and households. In these conditions, with a smaller annual deposit growth (5.4% in 2022, against 8.8% in 2021) and simultaneously, moderate intensification of the credit support of the economy (10.1% in 2022, against 8.5 % in 2021), the liquid assets of the banking system recorded a slight annual decrease of 0.9%. Thus, the liquidity indicators of the banking system recorded a minimal downward movement, which however did not cause significant deviations of the indicators from their usual satisfactory level. The liquidity coverage ratio of the banking system (Liquidity Coverage Ratio) is 2.7 times higher compared to the regulatory minimum (100%), i.e. it is 273.8%, thus proving the solid volume of liquid assets available to banks and which enables liquidity risk to hover within acceptable limits, without any liquidity pressures. The aggregate gaps between agreed cash inflows and outflows up to 1 year are negative, but banks expect a relatively high level of deposit stability of deposits, as the main source of financing their activities. For comparison, the liquidity coverage ratio at the EU level as of 31.12.2022 equaled 164.7%.The results of the stress tests indicate satisfactory resilience of the banking system to the assumed extreme, individual and combined, liquidity outflows.

2.1. Liquidity indicators

In 2022, in conditions of a moderate reduction in the liquid assets of the banking system and solid credit support, the liquidity indicators recorded a downward movement, but without major deviations from the usual satisfactory levels. The indicators are below their ten-year average, but point to adequate management of the banks' liquidity risk, without any liquidity pressures, which is confirmed by the solid share of liquid assets in the total bank assets (30%) and by the satisfactory coverage of short-term liabilities and household deposits with liquid assets (from 47.7% and 61.1%, respectively[26]).

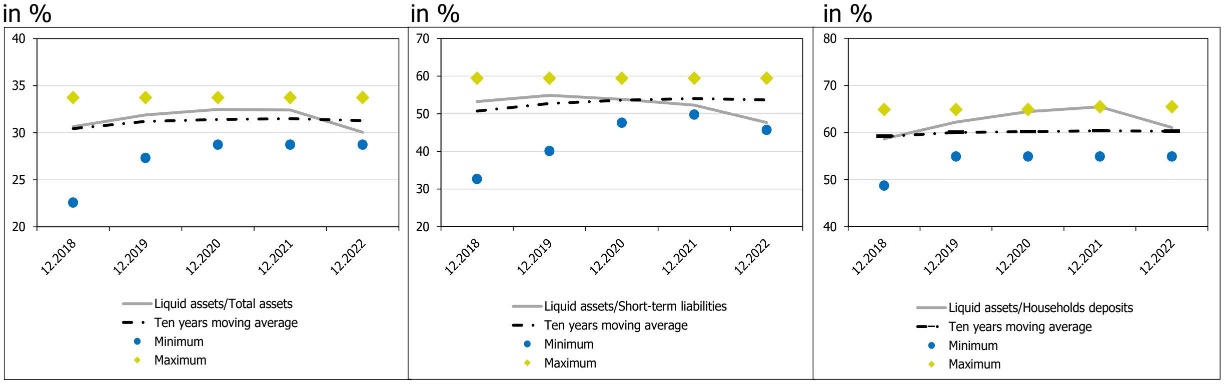
[26] Analyzed by bank, as of 31.12.2022, the share of liquid in total assets ranges between 22.3% and 49.2%, with a median of 25.8% (December 2021: between 21.1% and 53.5%). The coverage of short-term liabilities with liquid assets ranges between 34.6% and 64.2%, with a median of 46.9% (December 2021: between 37% and 72%), and the coverage of household deposits with liquid assets ranges between 35.5% and 105%, with a median of 61.8% (December 2021: between 39.3% and 101.4%). The Development Bank of North Macedonia AD Skopje is excluded from this analysis.

Chart 39
Liquidity indicators of the banking system



Source: NBRM, based on the data submitted by banks.
Note: The calculation of liquidity ratios of the banking system does not include resident interbank assets and liabilities.

Chart 40
Liquid assets / total assets (left), liquid assets / short-term liabilities (middle) and liquid assets / household deposits (right)

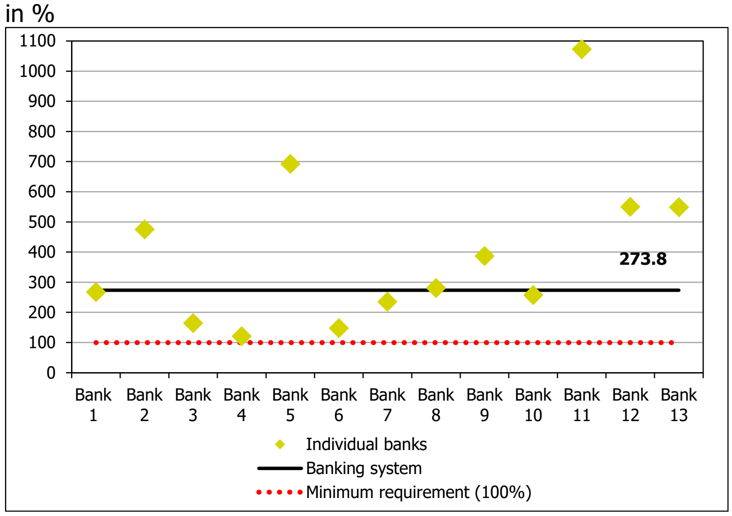


Source: NBRM, based on the data submitted by banks.

The liquidity coverage ratio of the banking system equals 273.8%, which is more by 2.7 times compared to the regulatory minimum (100%[27]) and confirms the sufficient amount of liquidity available to the Macedonian banking system. Analyzed by bank, liquidity coverage ratios range from 120.8% to 1072.3% (with a median of 280.4%), which also points to acceptable limits of liquidity risk the banks are exposed to and stable liquidity management on their part.

[27] In addition to on a cumulative basis, banks are required to determine and monitor a liquidity coverage ratio for each currency that is significant to the bank (each currency whose share of the bank's total balance sheet liabilities is at least 5%). Thereby, the prescribed minimumof 100% refers only to the total liquidity coverage ratio and not to the liquidity coverage ratios by each significant currency. As of 31 December 2022, the liquidity coverage ratios for the two significant currencies, euros and denars, were 98.8% and 302.9%, respectively.

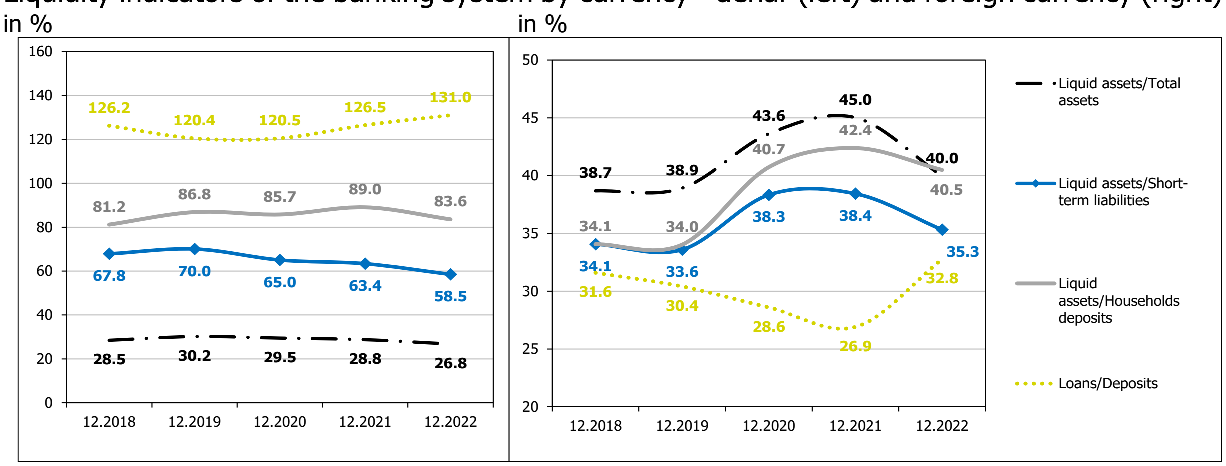
Chart 41
Liquidity coverage ratio, as of 31 December 2022



Source: NBRM, based on the data submitted by banks.

According to the currency features of liquid assets and liabilities, in 2022, the denar liquidity indicators and the foreign currency liquidity indicators also recorded a decrease[28]. The liquidity indicators remain at a higher level compared to the foreign currency liquidity indicators, due to the higher structural share of denar liquid assets in banks' total liquid assets. The risks arising from the lower foreign currency liquidity indicators are mitigated by high denar liquidity and the possibility to provide easily foreign currency liquid assets[29], if necessary.

Chart 42
Liquidity indicators of the banking system by currency - denar (left) and foreign currency (right)



Source: NBRM, based on the data submitted by banks.

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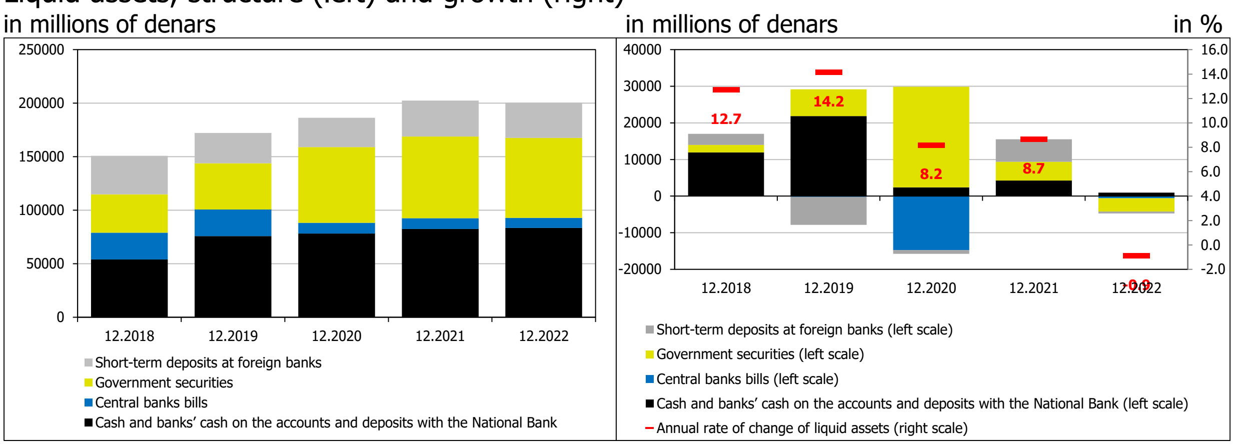
[28] Claims and liabilities with FX clause are considered as denar claims and liabilities, since their cash flow is in denars.
[29] Bank can provide the necessary foreign currency liquid assets at any time, through the National Bank interventions on the foreign exchange market. In addition, the European Central Bank (ECB) decided to extend the validity of repo line granting the National Bank access to euro liquidity for the first time in August 2020, with adequate collateral. The deadline for application of the repo line, worth up to Euro 400 million, has been extended to January 2024. So far, the National Bank has not used funds from the repo line. For more details please visit: https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr221215~6bc5ecf0ff.en.html.

2.2. Dynamics and composition of liquid assets

At the end of 2022, liquid assets[30] of the banking system amounted to Denar 200,559 million. In conditions of a smaler annual deposit growth (5.4% in 2022, against 8.8% in 2021) and emphasized risks due to the prolonged military conflict in Ukraine and inflationary pressures and challenges related to the energy crisis, simultaneously increasing the credit support of the economy (10.1% in 2022, against 8.5% in 2021), **the liquid assets of the banking system recorded a moderate annual decrease of 0.9%.** Analyzed by financial instruments that make up liquid assets, the decrease was most pronounced in the banks' assets on the denar account with the National Bank (a decrease of Denar 10,808 million, or 38.4%). Banks' investments in government securities also recorded a significant decrease (investments in government bonds by Denar 2,644 million, or by 4.6%, while investments in treasury bills by Denar 1,003 million or by 5.8%), as well as the placements of banks in CB bills (by Denar 560 million, or for 5.6%)[31]. At the same time, the banks' assets on correspondent accounts and short-term deposits placed in foreign banks decreased by Denar 526 million, or by 1.6%. On the other hand, there is an increase in the bank placements in overnight deposit facilities with the National Bank (growth by Denar 7,980 million, or by 22.7%), as well as in seven-day deposit facilities with the National Bank (which increased by almost five times, i.e. for 4,733 million denars)[32].

Chart 43
Liquid assets, structure (left) and growth (right)



Source: NBRM, based on the data submitted by banks.

[30] The liquid assets encompass: 1) assets and claims on the National Bank, which include cash, assets on the accounts of banks with the National Bank, deposit facility with the National Bank and CB bills; 2) short-term deposits with foreign banks, including the assets of the banks on their correspondent accounts abroad and 3) the carrying amount of the investments in securities issued by central governments, i.e. government securities issued by the Republic of North Macedonia and issued by foreign countries. For the purposes of analyzing the liquidity, assets and liabilities in denars with foreign exchange clause are considered denar assets and liabilities.

[31] During 2022, as well as at the beginning of 2023, the National Bank, since the end of 2021, has applied more instruments of monetary policy. The interest rate on CB bills was increased in total by 4.25 pp to the level of 5.50% (in March 2023). The amount of CB bills offered remained the same, 10,000 million denars, and the demand increased to the level of 9,473 million denars, in December 2022 and 10,000 million denars in March 2023.

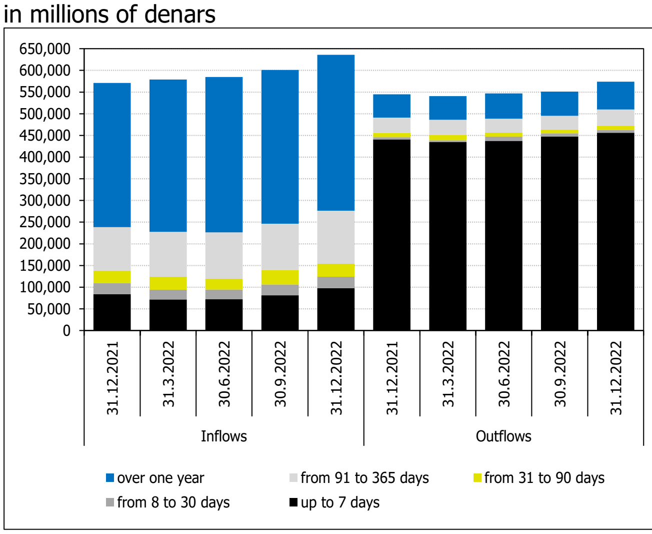
[32] The changes in the policy rate were also supplemented with the growth of interest rates on overnight and seven-day deposit facilities, which in 2022 and in the first three months increased by totally 3.25 pp and 3.15 pp, respectively, to a level of 3.40% and 3.45%, respectively (as of March 2023).

2.3. Maturity structure of the contracted inflows and outflows of bank's assets and liabilities

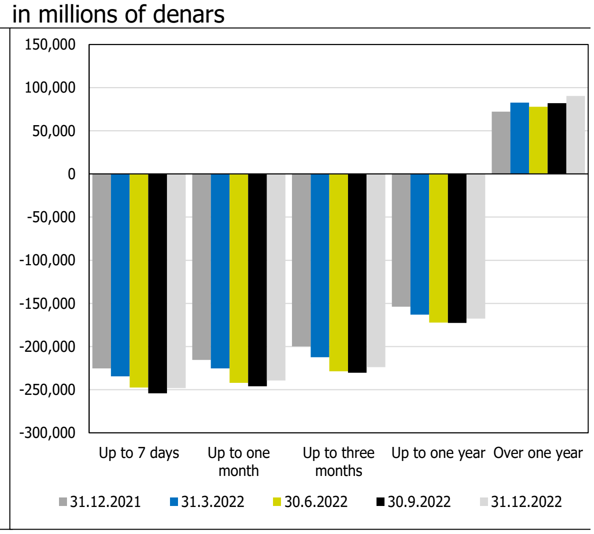
As of 31 December 2022, the agreed inflows of banks distributed in the period over one year and the agreed outflows of banks distributed in the period up to seven days prevail in the maturity structure of banks' inflows and outflows. The largest difference (gap) between the banks' inflows and outflows is registered in the periods up to seven days (negative gap) and over one year (positive gap), which results from the inclusion of the banks' sight liabilities and without a maturity in the maturity segment up to seven days, i.e. due to claims based on loans and advances included in maturity segments over one year (long-term loans at the level of the banking system cover more than 80% of total loans to non-financial entities). Cumulative gaps in relation to the assets of the banking system are 36.3% (the cumulative gap up to 7 days) and 24.5% (the cumulative gap up to 1 year).

Chart 44
Maturity structure of inflows and outflows based on on-balance sheet liabilities (left) and cumulative gap between the agreed inflows and outflows, by including the cumulative amount of unweighted assets

in millions of denars

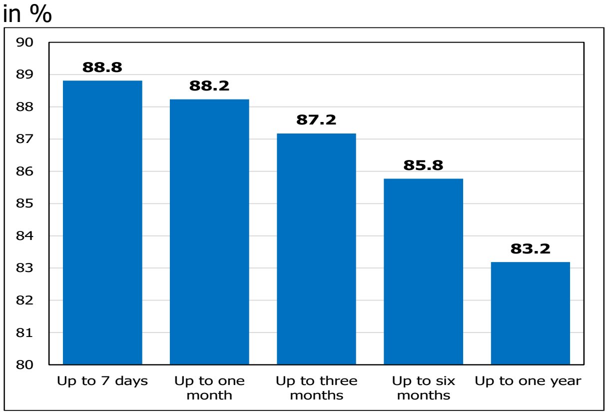


in millions of denars



Source: NBRM, based on the data submitted by banks.

Chart 45
Expected deposit stability, by residual maturity
as of 31.12.2022



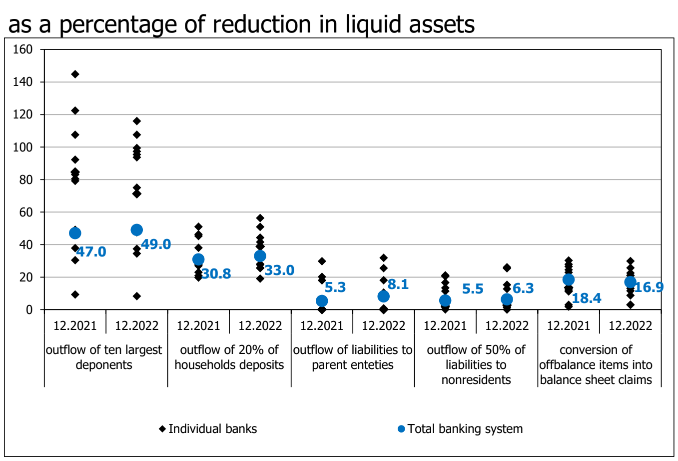
Source: NBRM, based on the data submitted by banks.

According to banks' expectations, the deposit stability, as the main source of funding of their activities will endure. According to the depositor's behavior, the banks estimate that most of the agreed cash outflows (or 83.2%) based on deposits will not be withdrawn by depositors in the next 12 months. The high percentage of stable deposits was maintained in environment of still present risks and uncertainty arising from the Russian invasion of Ukraine, further complicated by the negative implications of the energy crisis and increased inflation.

2.4. Stress-simulations for liquidity shocks

As of 31.12.2022, the results of the conducted stress simulations for liquidity shocks show solid capacity of the banking system, which has sufficient liquid assets to respond appropriately to the individual simulated cash outflows. The resilience of the Macedonian banking system to liquidity shocks has been proven by the results of all individual

Chart 46
Contribution of individual shocks to the decrease in the liquid assets in case of a combined liquidity shock

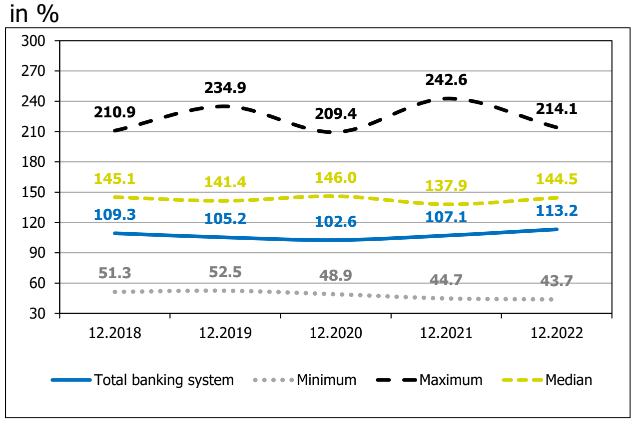


Source: NBRM, based on the data submitted by banks.

simulations of liquidity shocks, with the liquid assets being fully used (or 113.2% as of

31.12.2022) only in case of significantly extreme simulation of liquidity shock, which covers combined outflows[33] of funds from banks on several bases. Having in mind the extremity of the assumption, for the purpose of this simulation, the usual coverage of liquid assets is extended with other financial instruments[34] owned by banks, for which it is estimated that banks will quickly and easily collect or turn into cash. In such a case, simulation of combined assumed shocks, the liquid assets of the banking system have capaicity to cover all assumed outflows (specifically, to cover the liquidity outflows, it would take 99.2% of the available liquid assets, according to the expanded definition).

Chart 47
Reduction in liquid assets after the simulation for combined liquidity shocks (after all shocks)



Source: NBRM, based on the data submitted by banks.

In case of individual simulations of liquidity shocks, the high level of liquidity which Macedonian banks have at their disposal provides settlement also of all assumed, individual, extreme liquidity outflows. The sharpest decrease in liquid assets occurs amid simulation of deposit outflows of the ten largest depositors, and the importance of this simulation to individual banks is different, given the differences in the degree of deposits concentration. On the contrary, simulated materialization of reputation risk and loss of confidence of the population in the banks represented by an outflow of 20% of household deposits shows a greater similarity in the results for individual banks, thereby confirming the importance of public confidence in the banking system. In the assumed conversion of certain off-balance sheet liabilities of the banks into balance sheet claims[35], banks would spend just under 20% of their liquid assets. The small share of liabilities to non-residents, as well as to parent entities in the structure of the total sources of funding for banks, causes moderate impact of the associated shocks on the overall result of this simulation.

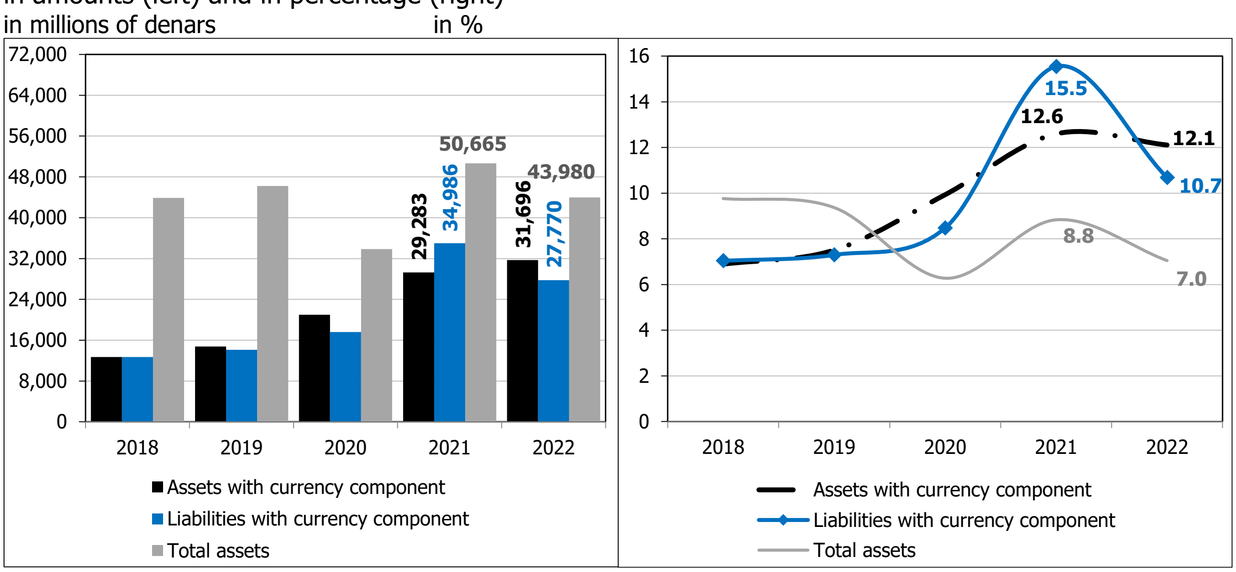
[33] The simulation assumes outflow of: deposits of the ten largest depositors, 20% of household deposits, liabilities to parent entities (liabilities on subordinated instruments and hybrid capital instruments are excluded from the simulation as, according to the regulations for calculating capital adequacy, their repayment is regulated), 50% of the liabilities to non-residents (excluding liabilities to non-resident parent entities of banks which are already covered by one of the previous simulations) and conversion of certain off-balance sheet liabilities of the banks (uncovered letters of credit, irrevocable credit lines and unused limits based on credit cards and approved overdrafts on transaction accounts) into balance sheet claims. The simulations of liquidity shocks exclude the Development Bank of North Macedonia AD Skopje.
[34] Financial instruments that comprise liquid assets, also include the following financial instruments: assets in the guarantee fund in KIBS, long-term deposits in foreign banks, money market instruments issued by foreign non-government issuers, loans with contractual residual maturity of up to 30 days and the effect of reducing the reserve requirement for foreign currency liabilities of banks, which is allocated in foreign currency due to the simulated outflow of households' foreign currency deposits.
[35] Outflow is assumed as a result of the migration of some off-balance sheet liabilities of the banks (uncovered letters of credit, irrevocable credit lines and unused limits based on credit cards and approved overdrafts on transaction accounts) into on-balance sheet claims.

3. Currency risk

In 2022, the direct exposure of the banking system to currency risk increased, which is seen through the growth of the open currency position in relation to own funds, as well as the gap between assets and liabilities with currency component in relation to own funds. The increased exposure is primarily a result of the increased euro assets, and it results primarily from the increased bank placements in loans with a currency component in this currency, but also from investments in deposits with other banks and securities denominated in euros. The aggregate foreign currency position of all banks is in line with the prescribed limit of 30% in relation to own funds, although there is a noticeable convergence in some banks.

Assets and liabilities with currency component recorded an increased share in the banks' balance sheets in conditions of high geopolitical uncertainty and increased liquidity needs due to the high growth in the prices of primary products on the stock markets, especially energy. The increasing euroization degree indicates the importance of applying the strategy of maintaining a stable exchange rate of the denar against the euro to mitigate the indirect currency risk that banks are exposed to through their customers.

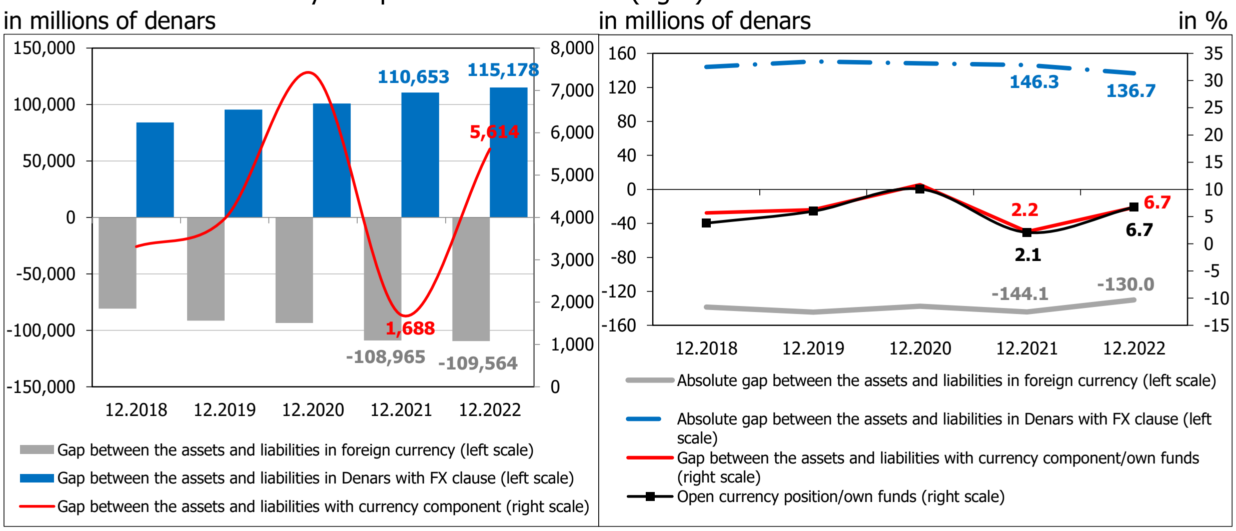
Chart 48
Annual growth of total assets, assets with currency component and liabilities with currency component, in amounts (left) and in percentage (right)*



Source: National Bank, i.e. the report on open currency position based on data submitted by banks.
* The assets are on a net basis, reduced by the impairment of claims that are classified in risk categories "C", "D" and "E", in accordance with the regulations on currency risk management. DBNM is not included in the analysis, because pursuant to the legislation, the regulations for the open foreign exchange position do not apply to the DBNM.

The gap between assets and liabilities with a currency component as of 31.12.2022 was positive and equaled Denar 5,614 million, which is an increase of Denar 3,926 million or over three times more compared to the end of the previous year. The gap widening is results more from higher growth of assets (by Denar 31,696 million or by 12.1%)[36] than the growth of liabilities (by Denar 27,770 million or by 10.7%)[37]. Moreover, the gap between the assets and liabilities in foreign currency was negative and slightly expanded, while a more significant widening was registered in the positive gap between the assets and liabilities in denars with foreign exchange clause. The ratio of the total gap and the own funds is 6.7%, as is the ratio of the open currency position[38] and the own funds. Both indicators increased compared to the previous year and indicate higher direct exposure of banks to currency risk. However, their level is moderate, and the open currency position is below its ten-year average and is way below the prescribed limit of 30%.

Chart 49
Structure of the gap between assets and liabilities with currency component (left) and share of the assets and liabilities with currency component in own funds (right)

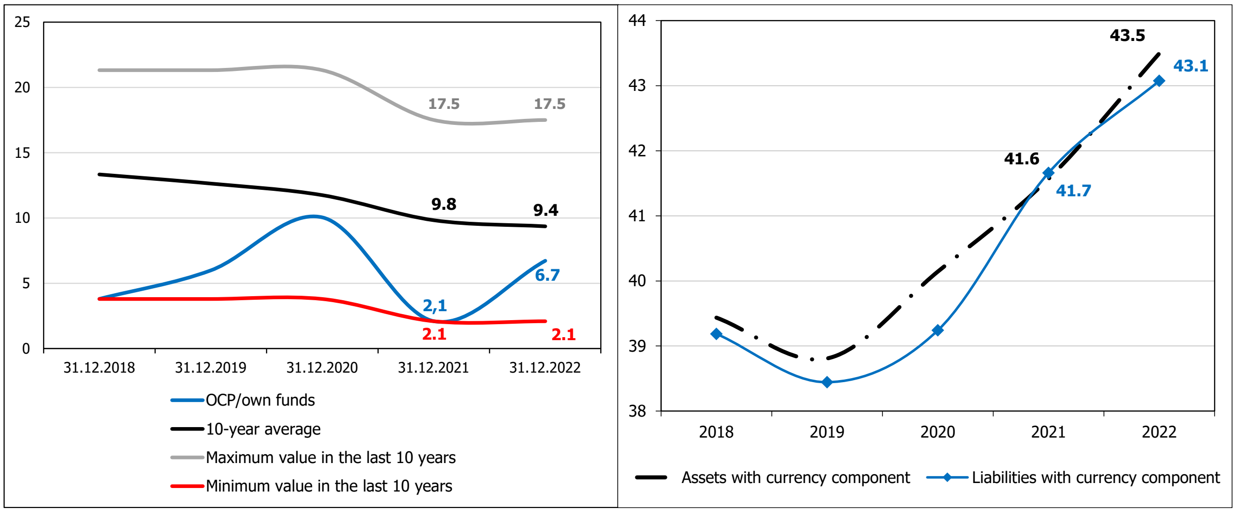


Source: National Bank, based on the data submitted by banks.

Assets and liabilities with currency component registered higher growth than total assets, which grew by 7.0% or Denar 43,980 million, so the share of assets with currency component grew by 1.9 percentage points, while the share of liabilities with currency component rose by 1.4 percentage points.

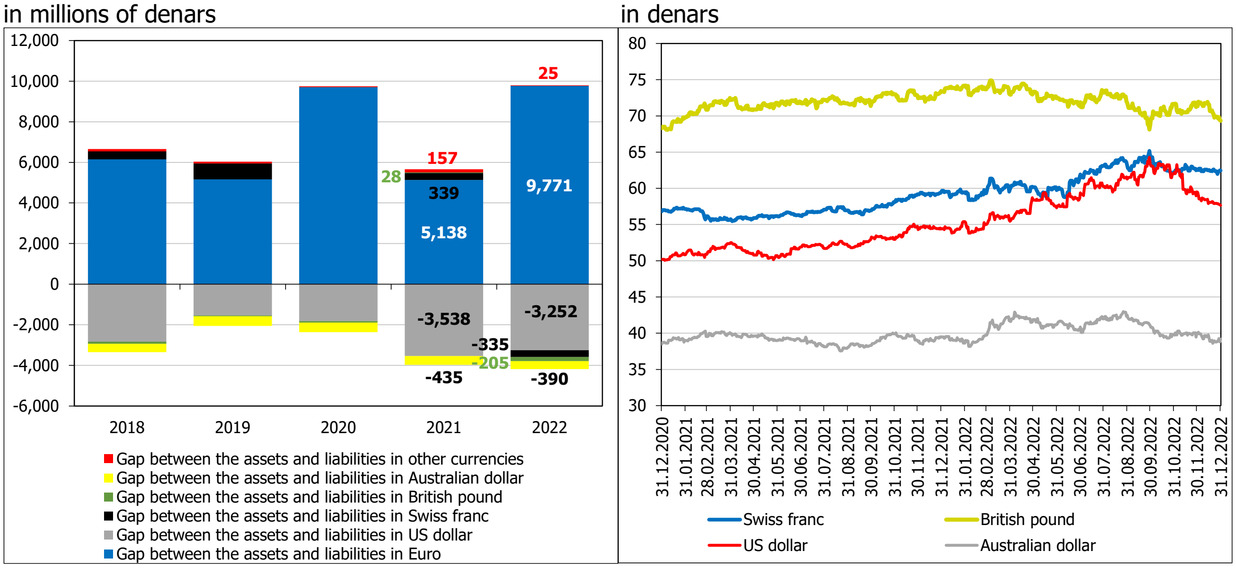
[36] The growth of assets with a currency component mostly results from the increase in loans by Denar 24,720 million (of which foreign currency loans by Denar 18,467 million and loans in denars with a foreign currency clause by Denar 6,253 million), but also by foreign currency deposits with other banks by Denar 6,717 million and financial assets held until maturity in foreign currency by Denar 3,006 million.
[37] The growth of liabilities with a currency component mainly occured as a result of the assets growth on current accounts and other short-term liabilities by Denar 14,455 million (which include assets growth of natural persons by Denar 8,199 million and the assets of private non-financial corporations by Denar 4,162 million). Increased deposits in foreign currency from non-residents (by Denar 9,798 million) and from natural persons (for Denar 6,578 million) also contributed to the growth of liabilities).
[38] The calculation of the open currency position, in addition to the gap between the on-balance sheet assets and liabilities with currency component, also includes the gap between the off-balance sheet assets and liabilities with currency component.

Chart 50
Ten year average, minimum and maximum of the OCP/own funds ratio (left) and share of the assets and liabilities with currency component* in the total banks' assets (right)
in %   in %



Source: National Bank, based on the data submitted by banks.
* Within the assets, claims are shown on a net basis i.e. adjusted for the impairment. The analysis does not include DBNM.

Chart 51
Structure of the gap between assets and liabilities with currency component, by currency (left) and movement of the denar against the US dollar, Swiss franc, British pound and Australian dollar (right)
in millions of denars   in denars



Source: National Bank, based on the data submitted by banks.

The analysis by currency suggests that the widened positive gap between assets and liabilities with currency component is mainly a result of the higher positive gap in euros and in denars with a euro clause. At the end of 2022, this gap is Denar 9,771 million, which is more by Denar 4,633 million, or by 90.2% compared to the end of the previous year, and results from the higher growth of assets[39] relative to liabilities in this currency[40]. The foreign currency position with dollar component registered no significant changes, so the position remains short with a slight narrowing of the negative gap (by Denar 286 million or 8.1%) amid slightly higher growth of assets compared to liabilities[41]. The negative gap in this currency during 2022 was also influenced by the change in its value relative to the euro and consequently relative to the Macedonian denar. However, after the historically high values, which reached their maximum at the end of the third quarter, the value of the US dollar in the last quarter started to decrease, and thus the level of exposure due to the negative gap. The foreign currency positions with currency component in Swiss francs, British pounds and Australian dollars, as well as in denars with clause in these currencies are also short,[42] while the assets and liabilities in Australian dollars registered a significant decrease. Cumulatively, all other currencies have a long currency position, and the amount of the positive gap is insignificant.

Table 3
Currency structure of assets and liabilities with currency component
in %

Currency	31.12.2021		31.12.2022	
	Assets	Liabilities	Assets	Liabilities
Euro	90.7	89.3	91.2	89.6
US dollar	5.9	7.3	5.9	7.1
Swiss franc	1.5	1.3	1.2	1.3
Australian dollar	0.5	0.7	0.5	0.6
British pound	0.6	0.6	0.5	0.6
Other	0.9	0.8	0.7	0.8
Total	**100.0**	**100.0**	**100.0**	**100.0**

Source: National Bank, based on the data submitted by banks.

The largest share in the currency structure of assets and liabilities at the end of 2022 is that of the euro, and its share even slightly increased compared to the end of the previous year. The high share is also reflected through received deposits and approved loans, so about 89.3% of deposits and funds on current accounts with currency component are in euros, while around 99.6% of loans with currency component are in this currency. Hence, the further implementation of the policy of a stable nominal exchange rate of the denar against the euro is the main factor for mitigating the currency risk of banks.

[39] The growth of assets is largely due to the short-term loan in foreign currency used by the government from one bank. This loan was closed at the beginning of 2023.

[40] Assets with Eurocomponent increased by Denar 30,341 million, or by 12.8%, largely due to the high growth of loans by Denar 24,545 million (of which Denar 18,284 million are in euros, and Denar 6,261 million are in denars with Euroclause), and a significant growth was also registered in deposits with other banks by Denar 3,304 million. On the side of liabilities with Eurocomponent, their increase by Denar 25,707 million, or 11.1% mostly results from the growth of funds on current accounts by Denar 12,843 million, but also of deposits of non-residents by Denar 9,160 million and deposits of natural persons by Denar 6,854 million.

[41] Assets with dollar component increased by Denar 1,961 million, or by 12.8%, and the growth is mainly a consequence of the increased deposits with foreign banks by Denar 2,916 million, as well as the financial assets held to maturity by Denar 857 million due to the investment in dollar bills. However, the growth of assets is mitigated by the fall in cash, cash equivalents, gold and precious metals by Denar 2,022 million. Liabilities with dollar component increased by Denar 1.675 million, or by 8.9%, and is almost entirely a result of the increased funds on current accounts by Denar 1,007 million and deposits of non-residents by Denar 642 million. The gap of the on-balance sheet positions in dollars is negative, while the open currency position in dollars (i.e. the gap that includes total activities, both on-balance sheet and off-balance sheet), is positive.

[42] The foreign currency position in Swiss francs is changed from long to short and the negative gap between assets and liabilities is Denar 335 million, and a similar change is also registered in the British pound where the negative gap amounts to Denar 205 million. Regarding the Australian dollars, the negative gap between assets and liabilities registered a slight decrease and amounted to Denar 390 million.

The indirect exposure of the banking system to currency risk increased, which is reflected through the greater share of loans with currency component in the banks' credit portfolios. As of 31.12.2022, loans with currency component accounted for 43.2% in total loans, and their share increased by 2.0 percentage points, which is historically the highest annual increase in the last ten years. Within total loans, the share of both loans to non-financial companies and those to households increased (by 2.6 and 1.1 percentage points, respectively). This increase is a result of the high annual growth in foreign currency loans of 32.5% in conditions of increased geopolitical uncertainty and liquidity needs due to the rising prices of primary products in world markets, and especially of energy. A significant increase was also registered in foreign currency loans to other clients, which reflects the short-term government borrowing in foreign currency in one bank.

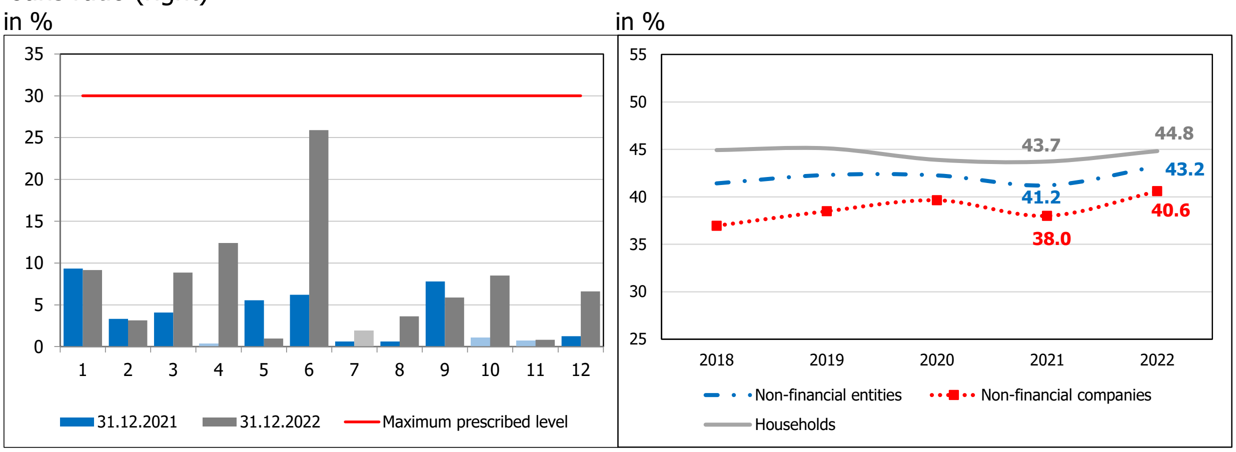
Table 4
Distribution of banks by share of open currency position, by currency and the aggregate currency position in own funds*

Items	Number of banks												
	Open currency position by currency/own funds												Aggregate currency position/own funds
	Euro		US dollar		Swiss franc		British pound		Australian dollar		Other		
	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	
under 5%	3	2	12		9	2	9	2	7	1	11	1	5
from 5% to 10%	5												5
from 10% to 20%	1												1
from 10% to 20%	1												1
over 30%													

Source: National Bank, based on the data submitted by banks.
* Banks that have no assets and liabilities in individual currencies are not taken into account, so the sums do not correspond everywhere to the total number of analyzed banks.

The aggregate currency position to own funds ratio by individual bank at the end of 2022 increased on an annual basis, and all banks complied with the prescribed limit of 30%. Ten banks have a long foreign currency position, and only two banks record a short foreign currency position. Moreover, the highest aggregate foreign currency position equals 25.9% of the own funds, while the lowest is 0.8% of the bank's own funds.

Chart 52
Aggregate currency position to own funds ratio, by bank* (left) and loans with FX component to total loans ratio (right)



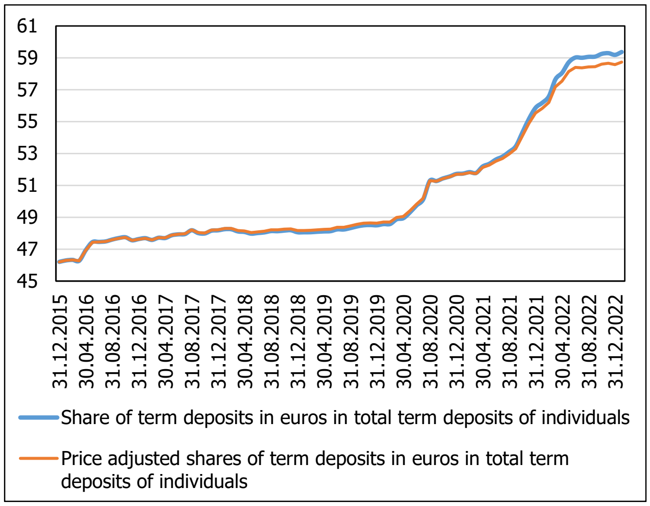
Source: National Bank, based on the data submitted by banks.
* Columns with lighter shades refer to the banks that have a short foreign currency position, but are shown in absolute value. The analysis does not include DBNM.

Application of a price-adjusted indicator for the level of euroization in the banks' deposit base

One of the most frequently used indicators for the level of euroization (dollarization) in the banks' deposit base is the share of foreign currency deposits in total deposits. The higher levels of this indicator are usually interpreted through the greater propensity of depositors to hold their savings in (certain) foreign currency due to the perception of the specific foreign currency as a better store of value of their deposits. On the other hand, the propensity to save in foreign currency is determined by different factors which by their nature can be financial, economic and geopolitical, and their influence is variable from time aspect.

In order for the share of foreign currency deposits in total deposits to be considered an efficient indicator in relation to the propensity of depositors to a certain foreign currency, this share should be adjusted for the movements of the value of the foreign currency in which the deposit is denominated, as well as for the movements of the interest rate paid to depositors for their deposits in banks. Excluding the impact of price changes on the movements of deposits (the exchange rate for the appropriate foreign currency and the interest rate on deposits) clearly determines the perceptions of depositors about the desired currency of their deposit and ensures a more consistent comparison of the currency preference of depositors in different time periods. The occurrence of a wider gap between the original and the price-adjusted level of the indicator for the share of foreign currency deposits in total deposits indicates a stronger impact of the level of interest rates on deposits and/or the exchange rate on the movements of this indicator. In such a case, the banks, with their interest rate policy, for the deposit products they offer, can also affect the levels of euroization in their deposit portfolios.

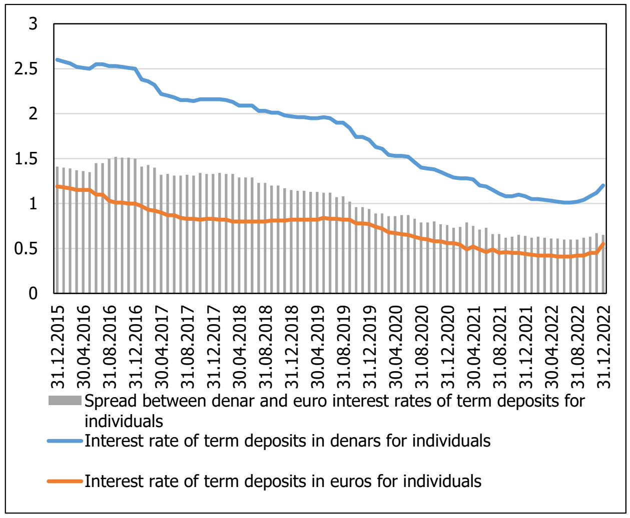
This new, price-adjusted indicator for the level of euroization in the banks' deposit base is constructed on the pattern of term deposits of natural persons (individuals) in euros. Natural persons are the most important depositor in the banking system and their deposits account for 60.9% of total deposits of the financial and non-financial sector, i.e. they account for 66% of total deposits of the non-financial sector. When it comes to term foreign currency deposits of natural persons, as much as 92% of these deposits are denominated in euros. The following chart comparatively shows the original and the price-adjusted[43] levels of the indicator for the share of term deposits in euros of natural persons in total term deposits of natural persons.



The chart shows that the original and the price-adjusted levels of the indicator for the share of term deposits in euros in total term deposits of natural persons, with the exception of the last twenty months, almost ideally coincide in the analyzed period. The reasons for such movements should be sought in the implementation of the policy of a de facto fixed exchange rate of the denar against the euro and the relatively low (and declining, in the almost entire analyzed period) interest rates on savings deposits, in both denars and euros. Hence, the share of term deposits in euros in total term deposits of natural persons, calculated without making a price adjustment to its levels, can be considered a relatively efficient indicator

[43] The price adjustment is made to the value of term deposits in euros and in denars, taking into account the average interest rate applied in the corresponding period (given the application of a de facto fixed exchange rate of the denar against the euro, the price adjustment does not take into account the denar/euro exchange rate). Namely, it starts from the assumption that the expected change in the amount of deposits (in euros and in denars) within a given time period should be equal to the interest rate that is applied in that period. All other changes in the amount of deposits, above/below the expected change, are associated with the currency preference of depositors in the analyzed period.

in relation to the currency preference of depositors, when the choice between savings in denars or in euros is in question. In other words, the currency preferences of depositors are those that mainly determine the level and the movement of the indicator for euroization in the banks' deposit base.



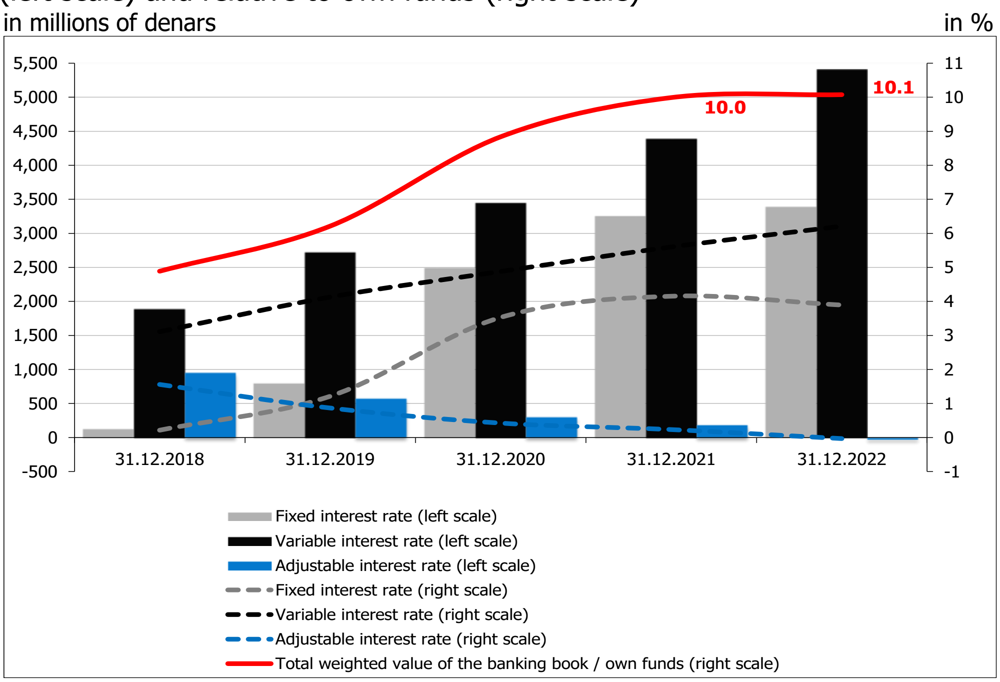
A slightly wider, but still rather small, positive gap between the original and the price-adjusted levels of the analyzed indicator occurred, for the first time, from the end of April 2021 and gradually widened, to the highest level of 0.6 percentage points registered in May 2022, when it stagnated, until December 2022 (the last month of the analysis). Namely, in this period of more pronounced preferences of natural persons to save in euros due to the increased uncertainties, the banks, with their interest rate policies for the offered deposit products, also contribute to increasing the shares of term deposits in euros in total term deposits of natural persons, slightly above the levels that correspond to and are determined by the current currency preferences of these persons. Thus, as of 31.12.2022, the share of term deposits in euros of natural persons in total term deposits of these persons is 59.2% and is higher by 0.6 percentage points than the corresponding, price-adjusted level of this indicator. Observing these movements, among others, the National Bank undertook target measures, i.e. made changes to the reserve requirement, in response to such tendencies. Namely, through the reduction of the reserve requirement rate from denar liabilities (first, from 8% to 6.5%, and then to the level of 5%) and the simultaneous increase in the reserve requirement rate from liabilities in foreign currency (first, from 15% to 16.5%, and then to the level of 18%), which apply from June, i.e. from August 2022[44], one seeks to affect the interest rates on bank deposits and consequently the currency structure of deposits in the banking system. Hence, from August 2022, the interest rates on term deposits of natural persons registered small growth, which is slightly more pronounced in denar interest rates on these deposits (cumulatively analyzed, for the period from August to December 2022, the interest rates on denar term deposits of natural persons increased by 0.05 percentage points more, compared to the growth of the interest rates on term deposits in euros).

[44] In addition, since January 2023, even higher reserve requirement rate for liabilities in foreign currency has been applied, of 19%.

4. Interest rate risk in the banking book

The weighted value of the banking book relative to the own funds, as a measure for the exposure to the interest rate risk, at the end of 2022 minimally increased. However, its share in the own funds of the banking system remains twice lower than the prescribed threshold of 20%. On a cumulative basis, the net interest income of the banking system is exposed to the risk of reducing interest rates, given the positive total gap between the interest-sensitive assets and liabilities. The significant presence of the loans with variable and to a lesser extent with adjustable interest rates continues to emphasize the indirect exposure to the risk of increasing interest rates.

Chart 53 Total weighted assets of the banking book*, by interest rate type, in absolute amount (left scale) and relative to own funds (right scale)



Source: National Bank, based on data submitted by banks.
* The total weighted value of the banking book denotes the potential loss of the economic value of this portfolio, amid assumed unfavorable interest shock of ±2 percentage points.

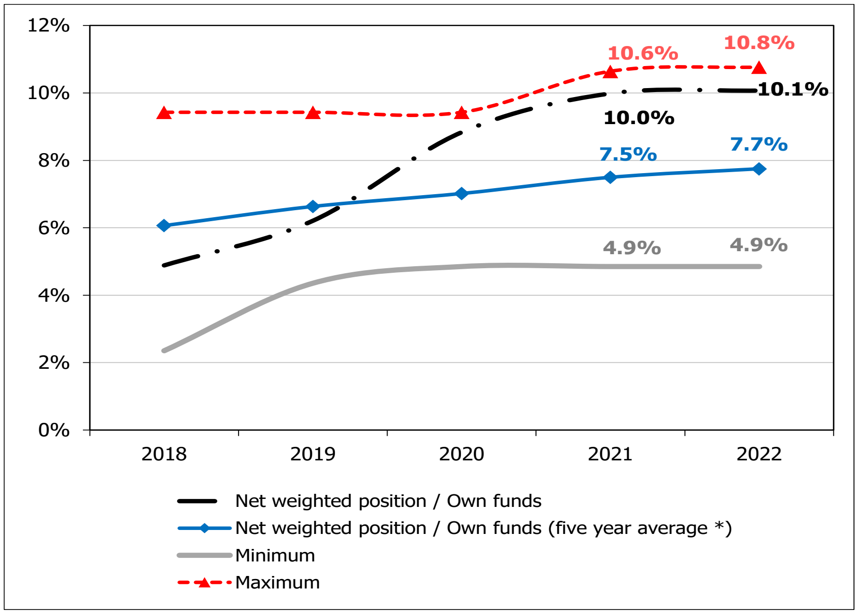
The total weighted value of the banking book registered an annual growth of 12%, or by Denar 940 million, reaching a level of 10.1% of the own funds of the banking system (10.0% at the end of 2021). Analyzing by bank, this ratio ranges from 0.5% to 17%, which is below the level of the prescribed 20%[45]. By type of interest rate, the weighted values of the portfolios with variable and with fixed interest rate increased (by Denar 1,016 million or by 23.2% and by Denar 134 million or by 4.1%, respectively). In contrast, the weighted value of the portfolio with adjustable interest rate registered an annual decrease of Denar 210 million, or by 115.2%.

[45] According to the regulation, when total weighted value of the banking book to own funds ratio exceeds 20%, the bank is required to propose measures to reduce this ratio, and the National Bank may also require allocation of appropriate amount of capital for covering the interest rate risk in the banking book.

Chart 54

Total weighted value of the banking book / own funds

in %



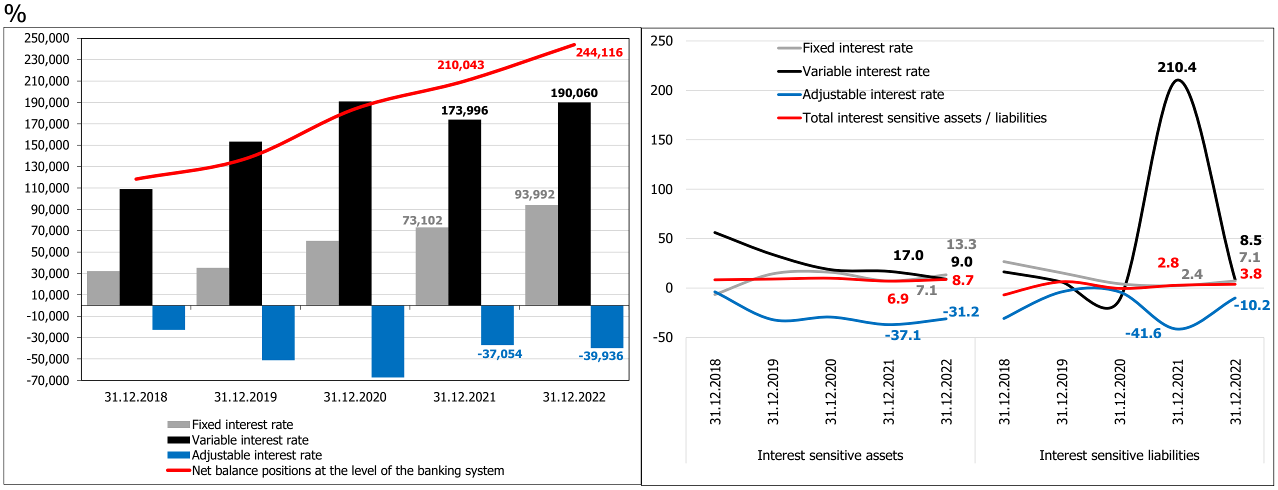
Source: National Bank, based on data submitted by banks.

In 2022, the realized level of the ratio between the total weighted value of the banking book and the own funds exceeded the calculated average of this indicator for the last 5 years and came close to the maximum level registered in the last 5 years[46].

Chart 55

Interest-sensitive assets and liabilities by type of interest rate, gap (left) and annual growth (right)

in millions of denars in %



Source: National Bank, based on data submitted by banks.

46 Data on the exposure of banks and the banking system to the interest rate risk in the banking book are available since 2010.

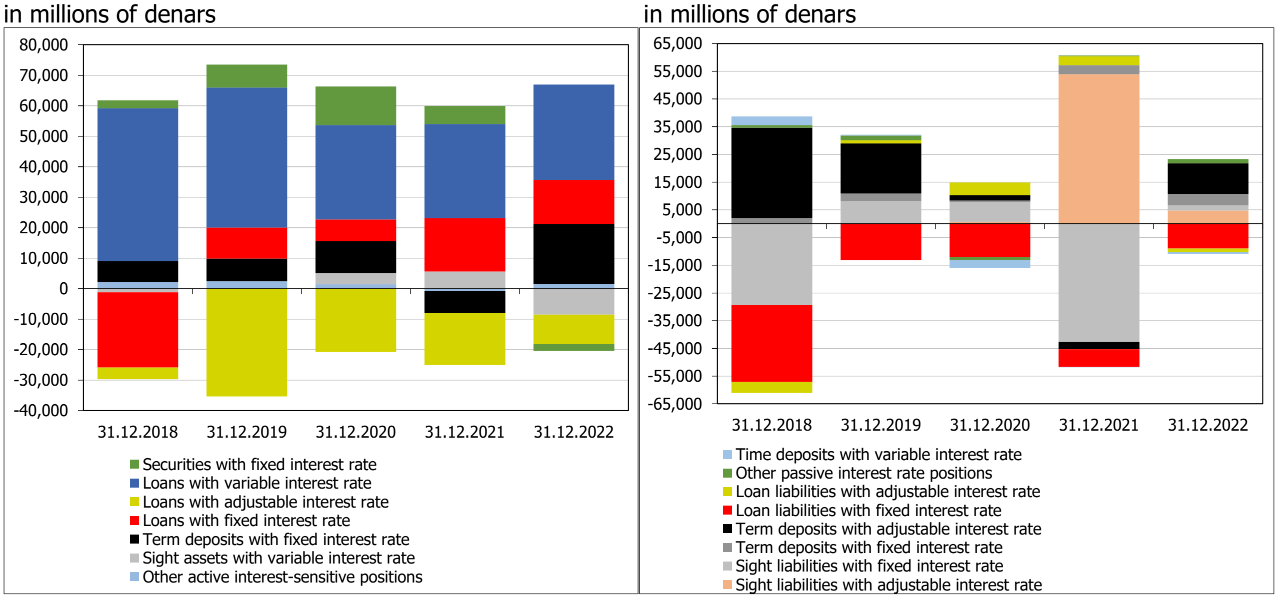
In 2022, the total gap, i.e. the net non-weighted position between interest-sensitive assets and liabilities, registered an annual growth of 16.2%, or by Denar 34,073 million. The growth is due to the annual changes in the gaps between the positions with fixed and variable interest rate. The positive gap between assets and liabilities with fixed interest rate registered an annual widening (of Denar 20,891 million, or by 28.6%), mostly due to the growth of placements in term deposits (by Denar 19,736 million) and placements in loans (by Denar 14,445 million), compared to the increase in liabilities on the basis of term deposits (by Denar 11,049 million) with this type of interest rate. The annual growth of placements in loans (by Denar 31,250 million) with this type of interest rate made the largest contribution to the widening of the positive gap between assets and liabilities with variable interest rate (by Denar 16,064 million, or 9.2%). The negative gap between assets and liabilities with adjustable interest rate registered an annual widening (of Denar 2,882 million or by 7.8%), mostly due to the reduction of placements in loans (by Denar 9,733 million), amid a smaller decline in liabilities on the basis of term deposits (by Denar 8,989 million) with this type of interest rate.

Chart 56

Annual growth of interest sensitive assets (left) and liabilities (right), by type of instrument and type of interest rate

in millions of denars

in millions of denars



ource: National Bank, based on data submitted by banks.

Analyzed by time period until the next interest rate revaluation, in 2022, the largest contribution to the widening of the total gap between interest-sensitive assets and liabilities was made by the gap up to 1 year (growth of Denar 39,117 million). This widening is mostly due to the growth of placements in loans with variable interest rate and placements in term deposits with fixed interest rate. Significant change, but in the opposite direction (decrease of Denar 19,539 million), was registered in the gap between the positions where the time period until the next interest rate revaluation is from 1 to 5 years, which is mostly a consequence of the reduced placements in securities and the increased liabilities on the basis of term deposits with fixed interest rate.

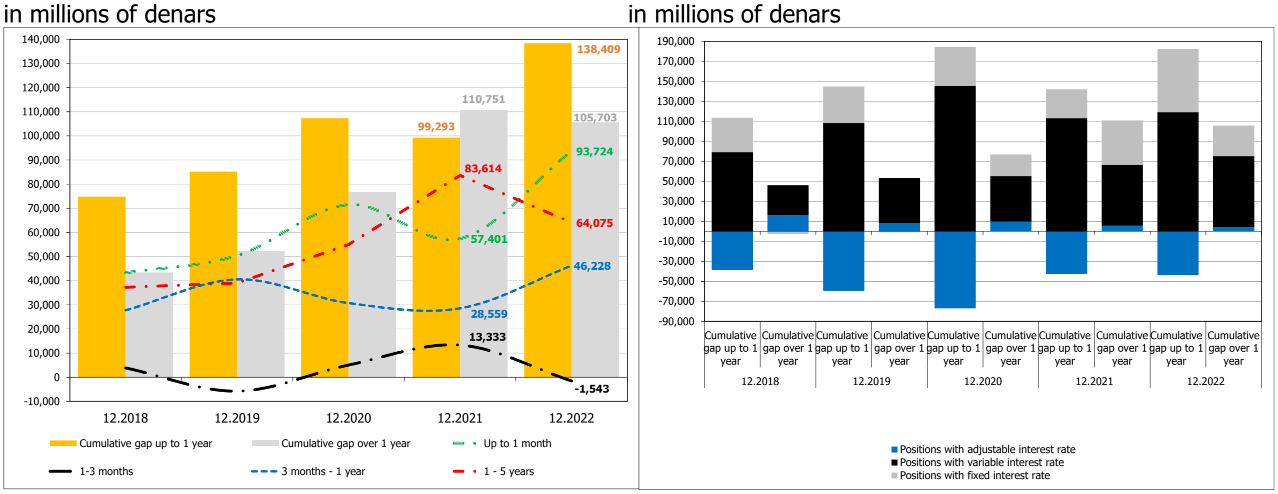
On a cumulative basis, the net interest income of the banking system is exposed to the risk of reducing interest rates, given the positive total gap between the interest-sensitive assets and liabilities. Hence, the upward change in interest rates should mainly lead to higher amounts of net interest income[47]. However, one of the most important risks associated with the interest rate change results from the positions with fixed interest rates and is in the form of increased opportunity costs for the banks. Thus, almost 38% of the total exposure to the interest rate risk (3.8% of the own funds) accounts for long positions with fixed interest rates where the residual maturity is longer than 1 year. These positions mostly result from banks' long-term placements in loans and securities with fixed interest rates (they account for 15.4% of banks' total placements in loans and securities[48]), where in the short term, for most of these placements, banks will not be able to apply higher interest rates, in accordance with the level of the higher market interest rates.

Chart 57

Asset-liability gap, by period until next interest rate revaluation (left) and gap structure by interest rate type (right)

in millions of denars

in millions of denars



Source: National Bank, based on data submitted by banks.

The indirect exposure to the risk of increasing interest rates, which results from the presence of loans with variable and adjustable interest rate remains significant, although it registered certain reduction in 2022. As of 31.12.2022, the cumulative share of these loans in the total loans is 70.1%[49] (71.1% as of 31.12.2021), whereby 64.8% of the total loans have variable interest rate, while 5.3% are with adjustable interest rate. It should be borne in mind that in accordance with regulations, in the interest rate risk reports, the amount of all positions (including loans) that are envisaged to be regulated by a different type of interest rate in different time periods to maturity, is distributed depending on the type of interest rate that will apply in the corresponding time period. Thus, as of 31.12.2022, fifteen percents of total

47 Within the regular stress-testing, on 31.12.2022, an additional (ad hoc) simulation has also been made, which assumes an upward change in all interest rates by 2 percentage points, in addition to the (regulatory) determining of the change in the economic value of the banking book, but also for determining the effect on net interest income. Such application of an upward standard interest shock would increase net interest income by about 10% in a horizon of one year. Otherwise, according to the regulation on managing the interest rate risk in the banking book, the parallel change in interest rates by 2 percentage points is determined as a standard interest shock, used to determine the change in the economic value of the banking book, which should not exceed 20% of the own funds.

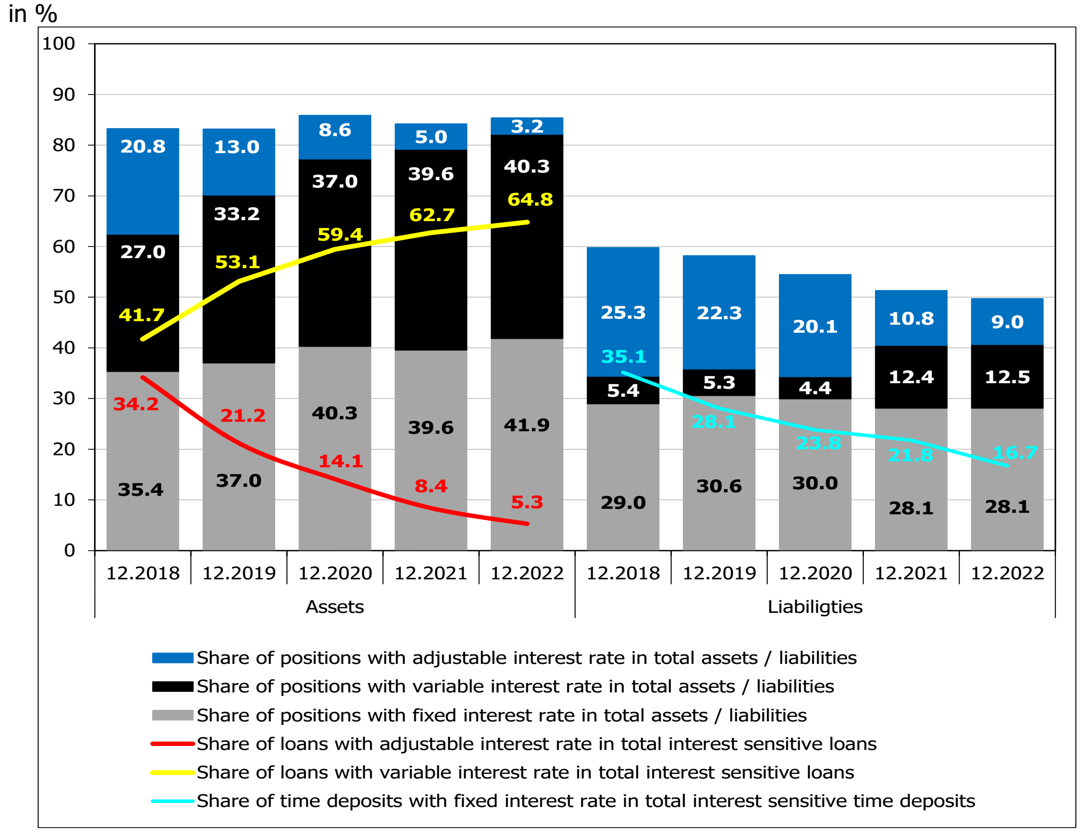
48 From these 15.4%, 13.3% are placements in loans and securities that are classified as held to maturity and are measured at amortized cost.

loans, for the purposes of these reports, are shown as loans with variable interest rate, in the respective future time block which is envisaged to be regulated by variable interest rate, although they are currently regulated by fixed interest rate[50].

The share of the positions with adjustable interest rate has been decreasing in 2022. Thus, the share of the adjustable interest rate in interest-sensitive assets decreased from 5.0% at the end of 2021, to 3.2% at the end of 2022, while in interest-sensitive liabilities, from 10.8% as of 31.12.2021, to 9.0% as of 31.12.2022.

Chart 58

Structure of assets and liabilities, by type of interest rate



Source: National Bank, based on data submitted by banks.

For more details about the structure of interest-sensitive items of the banks see Annexes to this Report.

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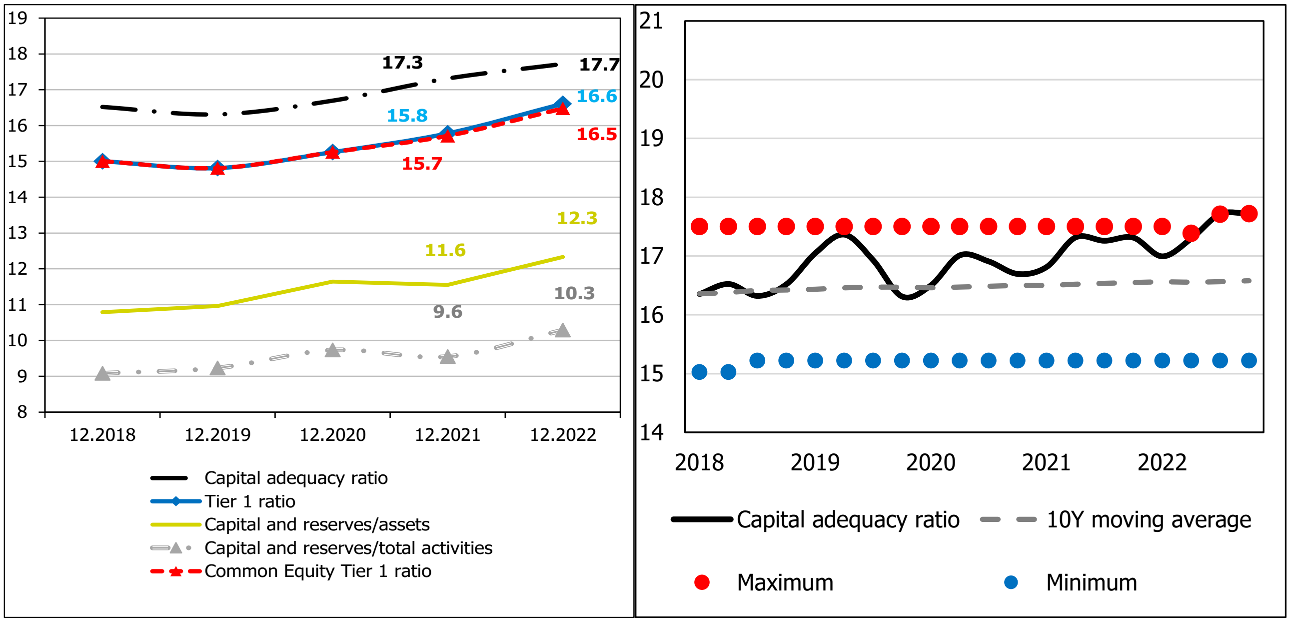
[50] Or in other words, as of 31.12.2022, for about 50% of the amount of loans, a variable interest rate is applied, while for the remaining about 15% (up to the presented 64.8% as of 31.12.2022), a fixed interest rate is currently applied, which during the life expectancy of the loans (usually after several years) will be replaced by a variable or adjustable interest rate.

5. Insolvency risk

At the end of 2022, the banking system registered higher solvency and capitalization ratios, compared to the previous year. The higher growth of the banks' own funds relative to the risk exposure led to a better solvency position, and thus better capacity of banks to deal with unexpected losses. The capital adequacy ratio registered an annual increase of 0.4 percentage points to the level of 17.7%, reaching its maximum in the last ten and more years. The growth of own funds is mostly due to the retained earnings from last years and from the current year and the issue of ordinary shares, while the growth of the risk weighted assets was mostly concentrated in the credit risk weighted assets. About 89% of the growth of own funds was used to meet the regulatory and supervisory requirements in relation to the banks' capital levels. The remaining part of the annual increase in the own funds increased the "free" capital above the minimum regulatory (including the capital buffers) and supervisory requirements, which has the same share in own funds like last year, of 10.9%. Also, this surplus, together with the capital buffers, accounts for slightly above 20% of the own funds of the banking system, which are especially important in conditions of crisis episodes, when they can be used to deal with challenges of different nature and intensity. The conducted stress testing of the banking system resilience to the simulated shocks with extremely conservative assumptions shows increased resilience of the banking system compared with the previous year. This is especially important, taking into account the challenges faced by banks and their clients, including the higher inflation level, the military conflict between Russian and Ukraine, as well as the shocks on the financial markets in the first quarter of 2023. In such conditions, the solvency of the banking system, which is at a satisfactory level, significantly mitigates the negative effects of possible significant materialization of risks of any nature.

5.1. Solvency and capitalization of the banking system

Chart 59
Indicators of solvency and capitalization of the Macedonian banking system (left) and capital adequacy ratio (right)
in %

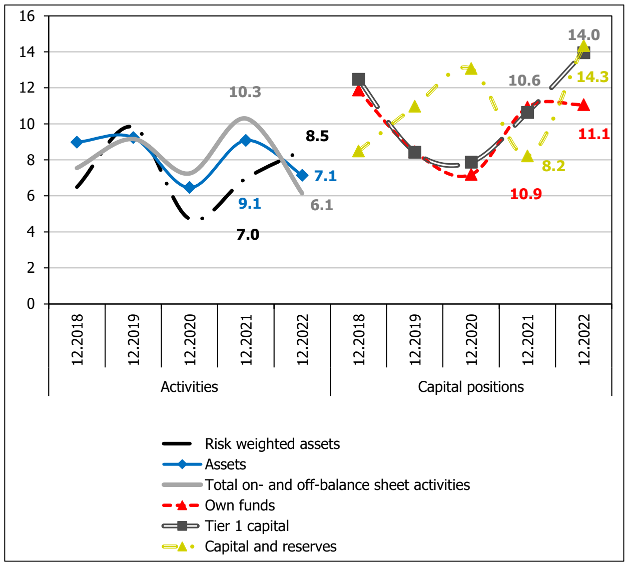


Source: National Bank, based on data submitted by banks.

In 2022, the banking system maintained its high capitalization and stable solvency position. On an annual basis, the capital adequacy ratio increased by 0.4 percentage points, to the level of 17.7%, which is above the calculated ten-year average of this ratio (16.6%) and is at the level of the maximum registered in the past ten years (17.7%). An annual increase of 0.8 percentage points was also registered in the Tier I capital ratio and the Common Equity Tier I capital ratio, which as of 31.12.2022 equal 16.6% and 16.5%, respectively and are significantly higher than the prescribed minimum of 6% and 4.5%, respectively (only one bank has issued Additional Tier I capital instruments). In contrast, the share of capital and reserves in total assets increased by 0.7 percentage points (12.3%), while the ratio between capital and reserves and the total activities of the banking system increased minimally to the level of 10.3%, also by 0.7 percentage points. The improvement of the capitalization ratios is mainly due to the rapid annual growth of capital and reserves (by 6.1 percentage points) mostly as a result of the increase in retained earnings and recapitalizations during the year. Consequently, the own funds, the Tier I capital and the capital and reserves registered a solid annual growth of 11.1%, 14% and 14.3%, respectively, which is faster compared to the growth of the risk-weighted assets (which increased by 8.5%) and the on-balance sheet assets and the total (on-balance sheet and off-balance sheet) activities of the banks (which increased by 7.1% and 6.1%, respectively).

In order to ensure an appropriate level of capital and prevent excessive indebtedness, banks are obliged to determine and monitor the leverage ratio on a semi-annual basis (as the ratio between the Tier I capital and the total on-balance sheet and off-balance sheet exposure). In circumstances of faster growth of the Tier I capital relative to the total on-balance sheet and off-balance sheet exposure, the share of the Tier I capital in the total on-balance sheet and off-balance sheet exposure calculated for 2022 equaled 11%[51] and increased by 0.4 percentage points compared to 2021. For comparison, this indicator at a level of the EU is 5.6% at the end of 2022, which shows a better position of the domestic banking system from this aspect.

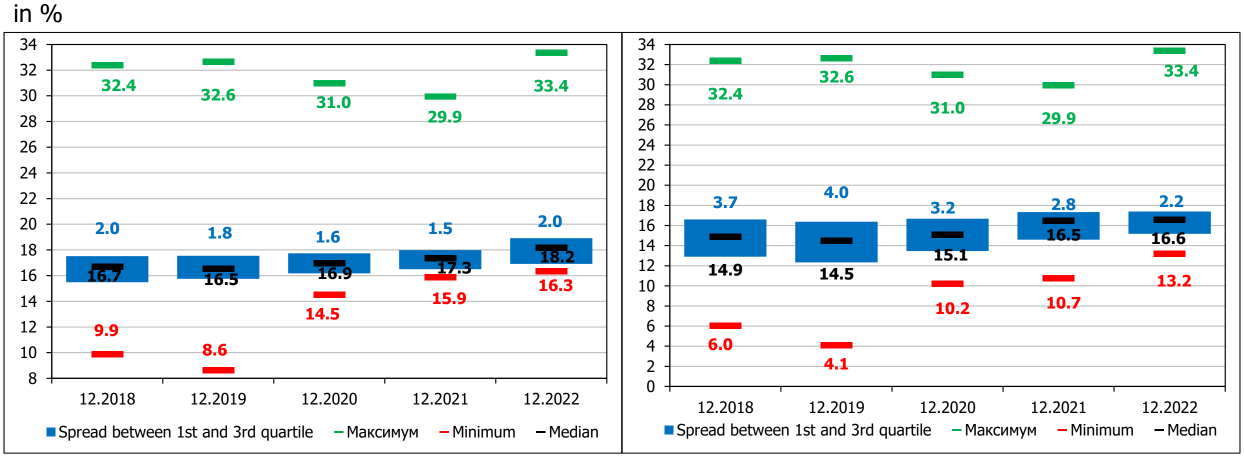
Chart 60
Annual growth of solvency ratio components



Source: National Bank, based on data submitted by banks.

Analyzed by individual bank, the capital adequacy ratios of most of the banks registered an annual increase (in an interval from 0.1 to 10 percentage points).

Chart 61
Measures for capital adequacy ratio distribution (left) and Tier 1 capital ratio (right) in the banking system

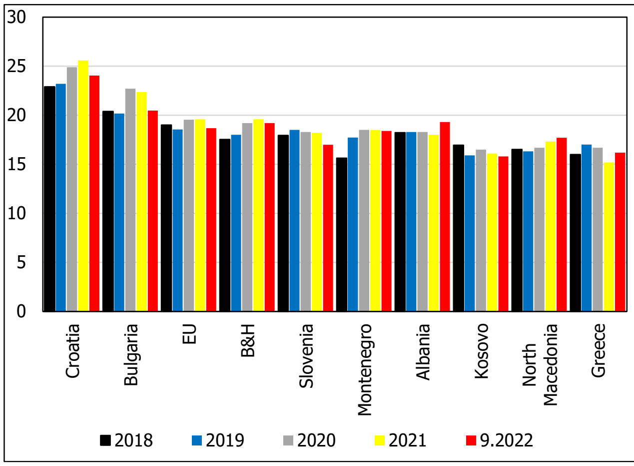


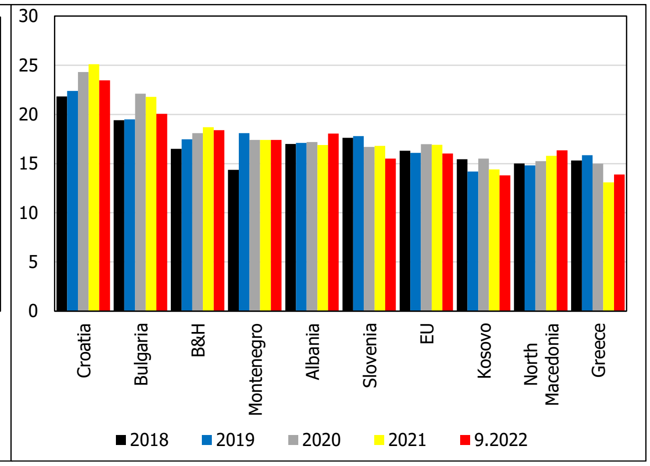
Source: National Bank, based on data submitted by banks.

[51] The average ratio of this indicator calculated for the first half of 2022 amounts to 10.7%, and for the second half of the year it amounts to 11.3%.

In 2022, there was an increase in the minimum, maximum and median value of the capital adequacy ratio and the Tier 1 capital ratio at a level of the banking system, reaching the highest level in the past five years.

Chart 62
Capital adequacy ratio (left) and Tier 1 capital ratio (right) for the banking systems of selected countries
in %





Source: IMF, ECB and websites of institutions.
* Data on the banking system of the Republic of North Macedonia are as of 30.09.2022, for the purpose of better comparability with other countries' banking systems, for which the latest available data is as of September 2022.

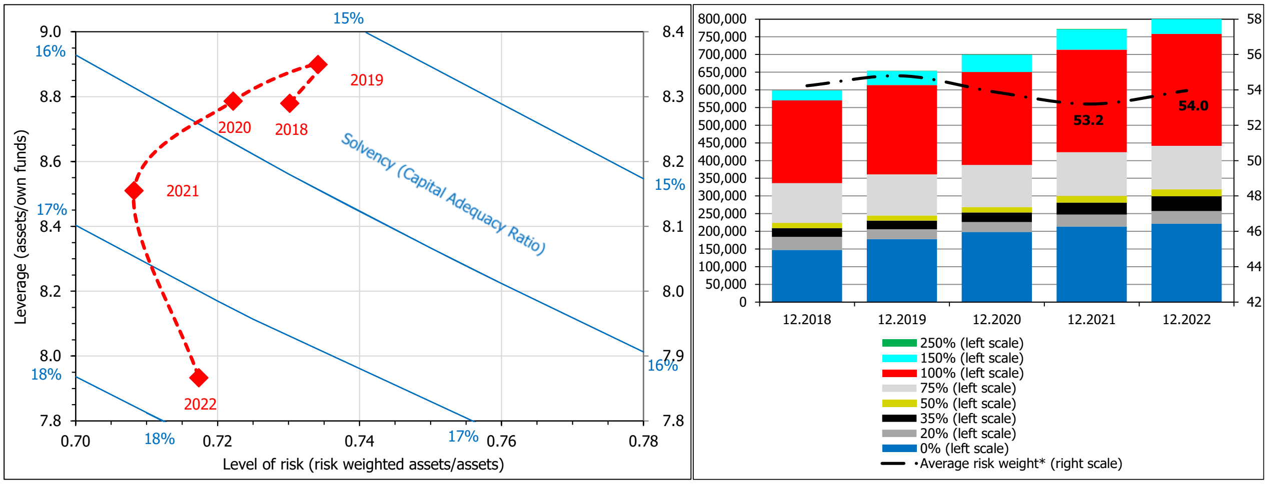
Compared to the banking systems of most analyzed countries, the solvency of the Macedonian banking system was strengthened in 2022. Namely, during 2022, in the periods of reduction of the capital adequacy ratios of the countries taken into account in the analysis (including the average for the euro area), our banking system was one of the three systems that registered an increase in the capital adequacy ratio, while the Common Equity Tier I capital ratio exceeded the European average as of the data for the third quarter of 2022[52].

[52] The reduction of solvency ratios in the euro area, during 2022, largely reflects the relatively high growth of lending in the euro area, given the migration of the exposures related to Russia to lower credit ratings as well as regulatory changes in the risk weights of certain loans, which increased the total risk weighted assets. On the other hand, the growth of undistributed earnings with banks, as an integral part of the Common Equity Tier 1 capital, had a neutral effect on solvency ratios, due to the increased dividend payments, the purchases of treasury shares as well as to the negative changes in the fair value of the placements in securities available for sale (as a result of the deteriorated credit rating of the countries - issuers of those instruments). For more details, please visit the following link. For comparison, in the Macedonian banking system, the growth of own funds exceeded the growth of risk-weighted assets.

Chart 63

Leverage, risk and solvency of the banking system (left) and amount of total on-balance sheet and off-balance sheet exposure, by risk weights (right)

in times and in % in millions of denars in %



Source: National Bank, based on data submitted by banks.

Note: The average risk weight is calculated as a ratio between risk weighted assets and total banking system balance and off-balance sheet exposure.

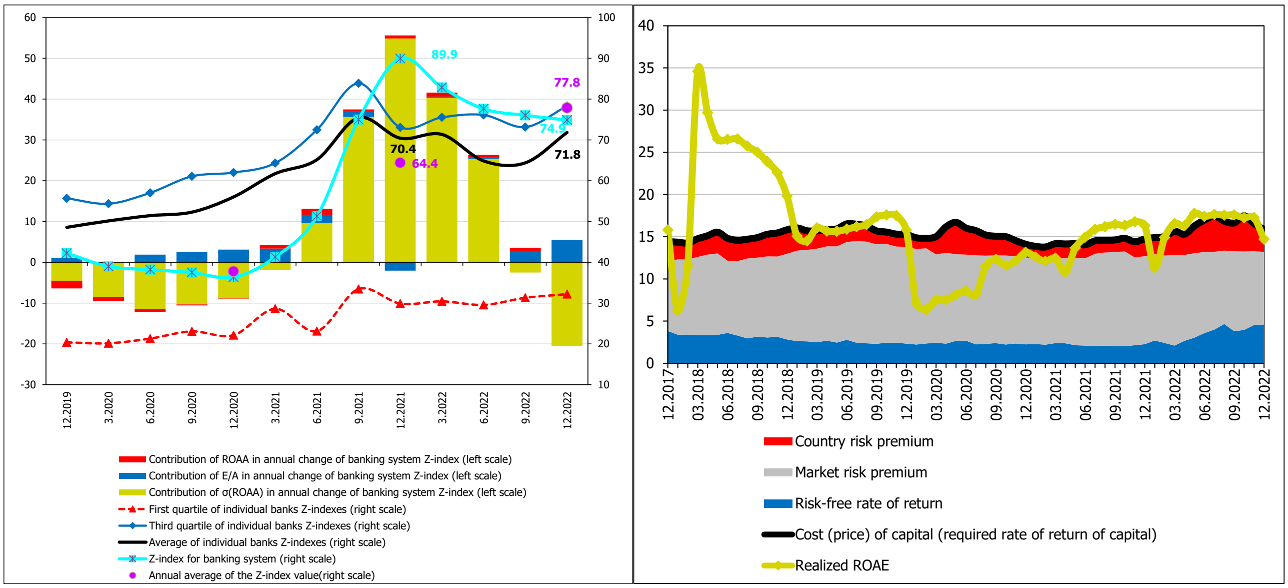
The breakdown of the capital adequacy ratio into its components indicates a simultaneous reduction of the ratio between assets and own funds (indicator for a reduced level of leverage), and a moderate increase in the share of the risk weighted assets in the total assets (indicator for the level of risk of the activities of the banking system), which increased the capital adequacy ratio in 2022.

The total risk weighted assets increased by 8.5% (7% in 2021) or by Denar 38.535 million, mostly due to the growth of the credit risk weighted assets, of Denar 31,411 million, or by 7.6%. The fastest growth in the total on-balance sheet and off-balance sheet exposure of the banking system was registered in the banks' activities related to the claims on other trade companies (risk weight of 100%), the claims collateralized with residential properties (risk weight of 35%), the claims collateralized with commercial properties (risk weight of 100%) and the retail loan portfolio (risk weight of 100% and 150%). **Such movements in the credit risk weighted assets contributed to moderately increasing the average level of bank risks (as measured by the credit risk-weighted assets to total on-balance and off-balance sheet exposure ratio) by 0.8 percentage points, to 54%.**

Chart 64

Z-index (left) and level and structure of the cost (price) of the capital of the banks whose shares are listed on the official market of the Macedonian Stock Exchange (right)

in levels / in levels in %



Source: National Bank, based on data submitted by banks.

* Upward movement of the Z-index indicates lower risk level and higher overall stability.

The comprehensive analysis of the Macedonian banking system by using the Z-index, the CAPM and the Altman Z-score indicates a stable solvent position of the system.

The stability of the banking system, measured by the so-called Z-index[53], is at a relatively stable level. On average, it requires a greater negative shock of at least 71.8 standard deviations from the rate of return on average assets, compared to the previous year (70.4 standard deviations in 2021), to fully exhaust the capital potential of the banking system. Although at the end of 2022 there was a moderate decrease in the value of the Z-index, the annual average of its quarterly values compared to last year increased due to the reduced volatility of banks' profits during the year, measured by the standard deviation of the rate of return on average assets, as well as due to the increased rate of return on average assets and simultaneously increased share of capital and reserves in assets.

The expected rate of return to investors in the shares of banks, calculated by applying the so-called CAPM[54], on a sample of seven banks whose shares are listed on

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[53] The Z-index is calculated as follows: Z=(ROAA+E/A)/(σ(ROAA)), where ROAA is the rate of return on assets, E is equity and reserves, A is assets and σ(ROAA) is the standard deviation of the rate of return on assets, calculated for the last three years. The formula shows that this measure as such, combines several indicators: banks' profitability (ROAA), bank risk indicator (σ (ROAA)) and banks' soundness and solvency measure (E/A). Calculated as such, the Z-index measures the bank's "distance" from full depletion of its capital potential, expressed in number of standard deviations from the rate of return on assets and as such, it is a measure of the banks' capacity to absorb losses. Higher levels of this index indicate lower risk levels and higher overall stability of the banks. The Z Index is usually presented in a logarithmic form (natural logarithm of the previously given formula), but it is easier to interpret and more indicative when presented in levels.

[54] Calculated using the so-called Capital-Asset Pricing Model (CAPM), where the price of equity is the sum of: 1) risk free yield rate (determined as the average of the yields to maturity of bonds listed on the Macedonian Stock Exchange), 2) the product of beta coefficient per share and the difference between the market rate of return and risk free rate on return (or market risk premium) and

the official market, registered an annual increase. Namely, the cost of capital, calculated using this model, increased by 1.1 percentage points, to the level of 15.8%, at the end of 2022. Although the rate of return on equity, realized from the banks covered by the analysis, at the end of 2022, was slightly below the level of the required rate of return on the shares, on average during the year the rate of return on equity of banks was slightly higher than the average required rate of return. The higher required rate of return on the banks' shares mostly results from the increased risk-free rate of return, which increased by 2.3 percentage points on an annual basis (which is a result of the trend of increasing the rates of return on government bonds during 2022). The increase in this premium was more pronounced in the second half of 2022, in conditions of prolonged tightening of the monetary policy in response to the high inflation rate. Regarding the other components of the required rate, a moderate annual increase of 0.6 percentage points was registered in the weighted country risk premium, and only the market risk premium decreased by 1.8 percentage points (indicating reduced market risk premium of the shares issued by banks listed on the market).

The analysis of the Macedonian banking system by using the Altman Z-score[55] suggests that the system is within a safe zone, i.e. the insolvency risk is at a very low level. The median and average value of the score in 2022 registered a slight decrease, but are still at a high level of 4.45 and 4.48 respectively (4.68 and 4.74 in 2021) and well over the minimum threshold of the green zone of 2.6. Analyzed by individual components of the score calculation formula, the average value of the profitability and solvency ratios increased, while the average value for the liquidity and activity ratios registered a slight decrease. This confirms that strong profitability and solvency are the supporting pillars of the stability of the Macedonian banking system.

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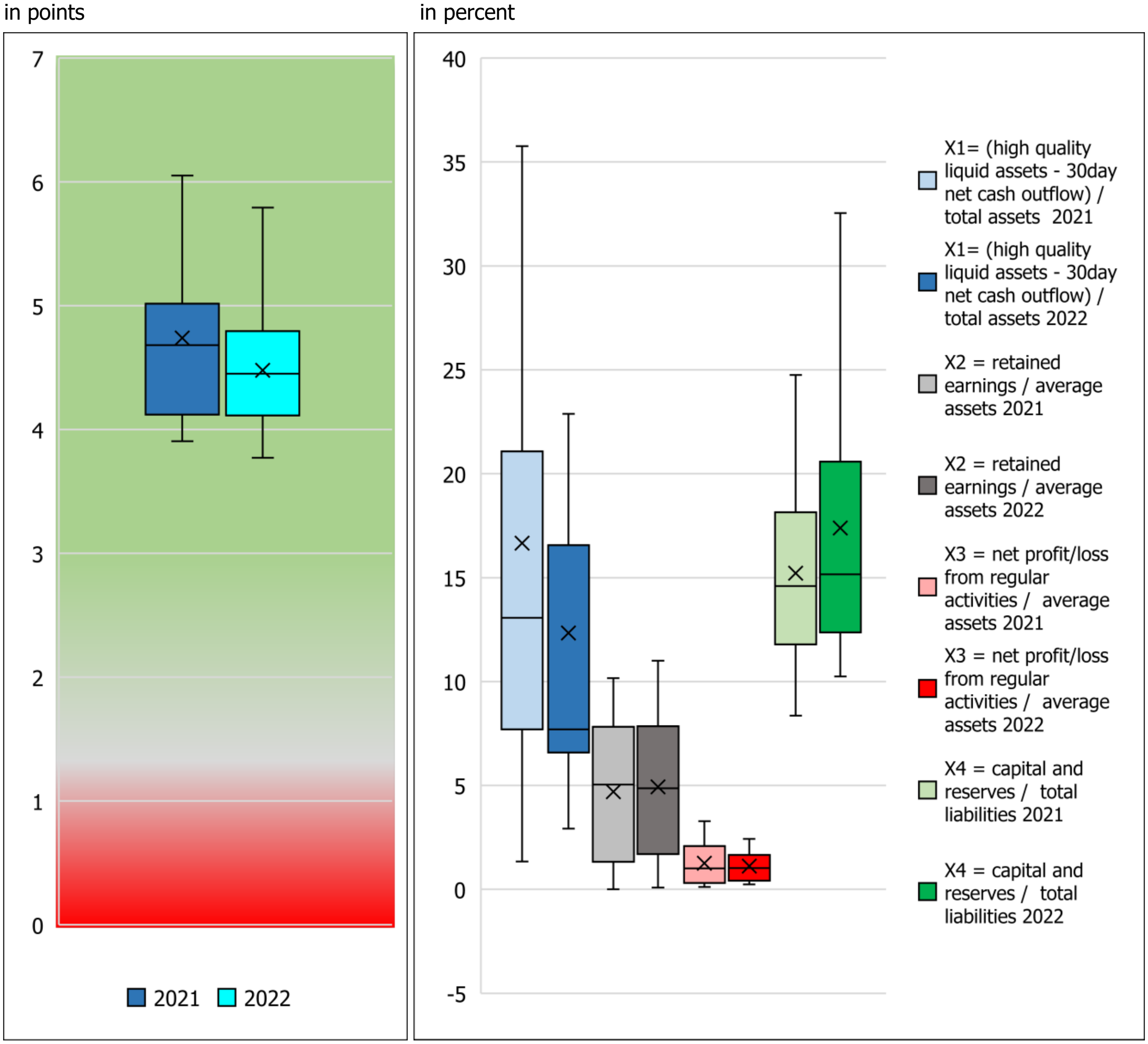
3) the premium for country risk (defined as the difference between the yields of the Macedonian Eurobonds and comparable German bonds). Market risk premiums is calculated as the average premium for market risk for each bank, weighted by the size of their assets.

[55] The Altman Z-score is an often used tool in corporate finance, with the help of which one can predict the probability that a firm will go into bankruptcy within two years. The Z-score uses values from the income statement and the balance sheet to measure the financial status of the company. The initial formula underwent a series of changes in order to respond to different types of business models. The analysis of the individual banks uses the following formula that is applicable to a general business model company and to developing markets (Altman Z-score): $Z'' = 3.25 + 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$. More information on the model is given in the paper from the original author on the following link (p. 19). The coefficients for each indicator are derived by analyzing the movements of these indicators for relevant samples of solvent and insolvent companies, taking into account the sector and size (assets) of companies. The indicators in the analysis are adjusted to match the banks' features, whereby X_1 = (high-quality liquid assets – 30 day net cash outflow) / total assets, X_2 = retained earnings / average assets, X_3 = net p/l from regular activities / average assets and X_4 = equity and reserves / total liabilities. The Z-score is calculated for each bank and a median and average value of the score at a level of the system is obtained. The interpretation of the obtained results has also changed over the years, and the analysis uses the interpretation according to which: $Z > 2.6$ (safe zone, small probability of insolvency), $1.1 < Z < 2.6$ (grey zone, it requires an additional analysis to determine the accuracy), $Z < 1.1$ (distress zone, there is strong probability of insolvency) (Altman E. I. 2006). A similar analysis has also been made in a recent study on the assessment of some of the banks in the Indian banking system. For more details, please visit the following link.

Chart 65

Altman Z-score at a level of a banking system (left) and analysis of the measures of dispersion of the components of the Altman Z-score in 2022 and 2021 (right)

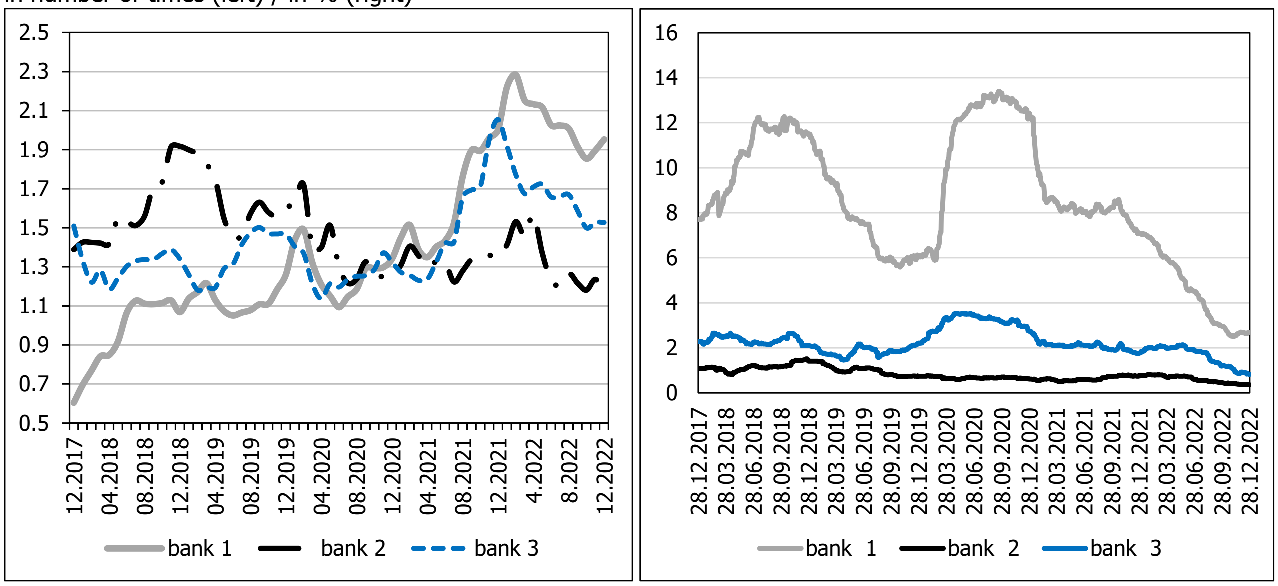


Source: National Bank, based on the data submitted by banks.

* The average value is marked with X, while the median value is marked with the middle horizontal line within the column. The column indicates the interquartile difference, i.e. the dispersion of half of the values of the indicators for all banks in the system. The left chart is colored in accordance with the zones of the score (the green color indicates a safe zone).

In 2022, the price-to-book ratio for the three largest banks in the system decreased. Capital markets mainly responded to the increase in the risk-free rate and remain exposed to a constant correction in case of weaker growth prospects in 2023 or increased risk aversion of investors. The stock valuation models take into account the future expected profit reduced to current value by using the required rate. In circumstances of growth in the risk-free interest rate, as well as due to the risk premium imposed by the ongoing uncertainty, the intrinsic value of the shares decreased. Hence, the sale of banks' shares amid a reduced volume of traded shares exerted a downward pressure on the prices relative to the book value.

Chart 66
Price-to-book ratio for the shares (left) and percentage of turnover ratio for the previous one-year period (right), for the three largest banks in the system
in number of times (left) / in % (right)



Source: National Bank, based on data submitted by banks.

5.2. Quality of own funds of the banking system

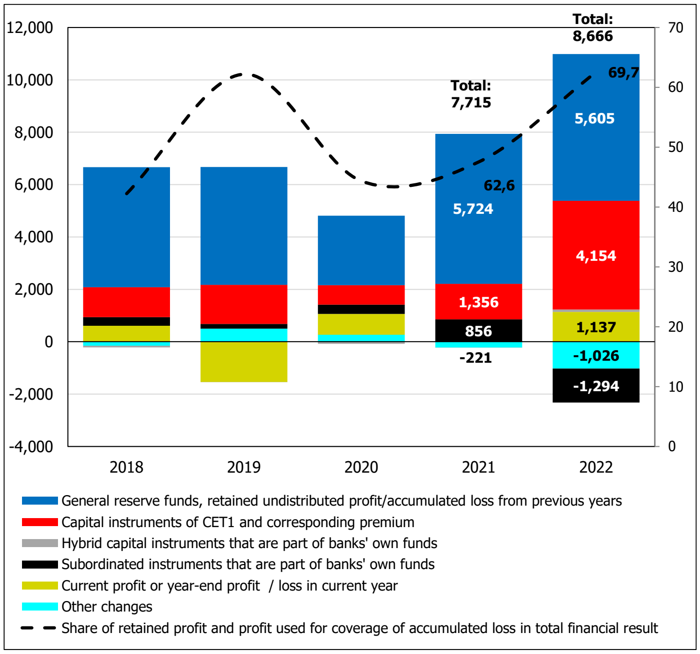
The structure of the own funds at a level of the banking system shows that the sector has high-quality capital positions, which provide it with satisfactory resilience to potential stressful scenarios. At the end of 2022, the highest-quality buffer of the own funds of the banking system (the Common Equity Tier I capital) accounts for 93.0% of the total own funds, the Additional Tier I capital accounts for only 0.5% of the own funds of the banking system, while the Tier II capital makes up 6.5%.

In 2022, the own funds of the banking system registered a rapid annual growth of Denar 8,666 million, or by 11.1% (10.9% in 2021). The largest contribution to the growth of own funds in 2022 was made by the reinvestment of banks' profits achieved in the previous years, the issue of new ordinary shares (by two large banks[56], one medium-sized bank[57] and one small bank[58]), as well as by the retention of earnings for the current year (by two banks). During 2022, one medium-size bank issued perpetual bonds.[59] A certain slight decrease was registered in subordinated instruments (in part due to reduction of the accounting value because of entering the last five years to maturity and in part due to transformation of subordinated loans into Common Equity Tier 1 capital), and the other changes were also with a negative sign (as a result of the changes in the fair value of the instruments held as available for sale and are appropriately

[56] For more information visit: July Korrik 2022 p. 6 and August Gusht 2022 p. 6.
[57] For more information visit: Monthly for November 2022 p. 10.
[58] For more information visit: September - Shtator 2022 p. 6.
[59] For more information visit: August Gusht 2022 p. 7.

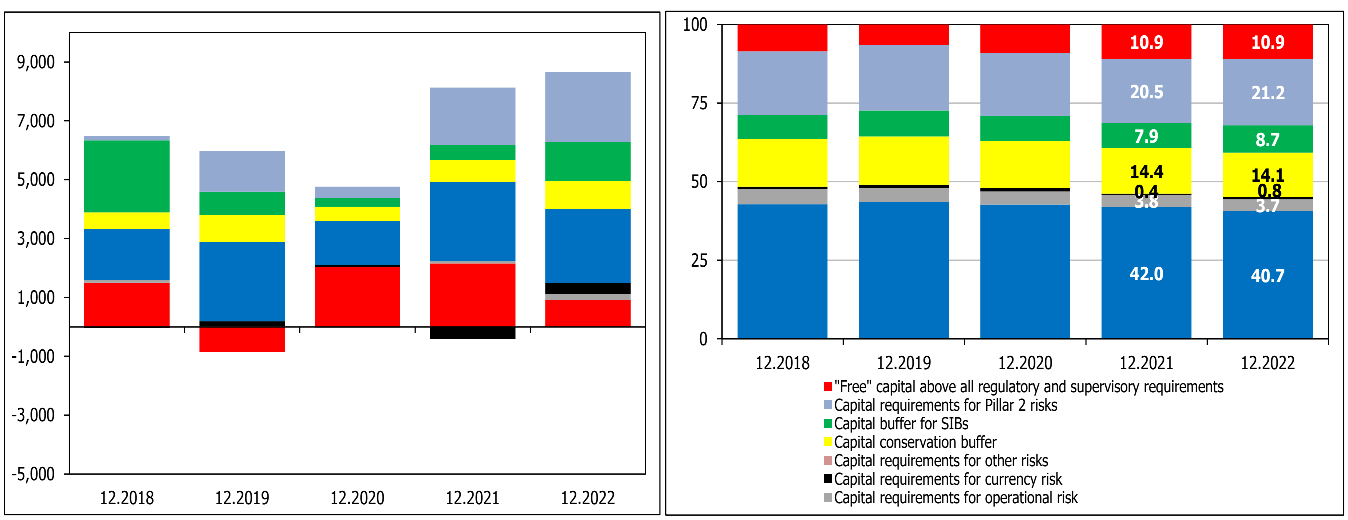
reflected in revaluation reserves). For more details about the level of own funds by group of banks see annexes to this report.

Chart 67
Structure of annual changes in own funds



Source: National Bank, based on data submitted by banks.

Chart 68
Structure of annual growth (left) and balance (right) of own funds, by the requirement for covering risks and for maintaining the required capital buffers
in millions of denars and in %

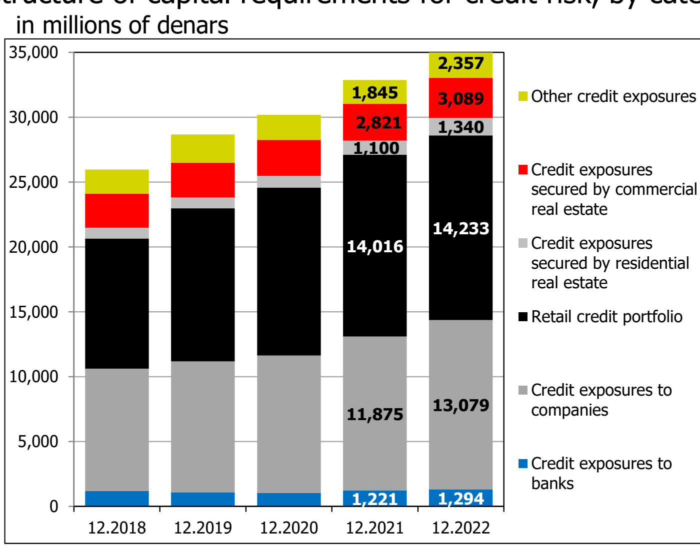


Source: National Bank, based on data submitted by banks.

Analyzed by their purpose, all the elements of the own funds registered an annual growth. Capital requirements for covering risks (from pillar 1) increased by Denar 3,083 million, or by 8.5% and as of 31.12.2022, they account for 45.1% of the total own funds of the banking system (46.2% as of 31.12.2021). The annual growth of the capital requirements for covering risks largely stems from the increased capital requirement for credit risk, mostly from banks' activities with companies (claims on other trade companies and claims collateralized with commercial properties) and households (claims based on retail loan portfolio and claims collateralized with residential properties). Capital buffers[60] (for capital conservation and for systemically important banks[61]) increased by Denar 2,278 million, or by 13%, on an annual level, and at the end of 2022 account for 22.8% of the total own funds of the banking system (22.4% as of 31.12.2021). The amount of the capital supplement determined by the supervisory assessment (pillar 2) registered an annual increase of Denar 2,388 million, or by 14.9% and accounts for 21.2% of the total own funds of the banking system. Finally, the free own funds, above the required regulatory and supervisory requirements, registered a moderate annual growth of Denar 917 million, or by 10.7%, and maintained the share of 10.9% in the total own funds, like last year.

For more details on the capital requirements for covering risks and on the capital adequacy ratio, by group of banks, see annexes to this Report.

Chart 69 Stock and structure of capital requirements for credit risk, by category of exposure



Source: National Bank, based on data submitted by banks.

[60] From the four capital buffers specified by the Banking Law, in 2022, all banks were required to meet the capital conservation buffer, while six banks that were identified as systemically important banks, are also required to meet an appropriate rate of capital buffer for systemically important banks.

[61] Pursuant to the Decision on the methodology for determining systemically important banks (Official Gazette of the Republic of Macedonia No. 26/17 and Official Gazette of the Republic of North Macedonia No. 88/21), not later than 30 April of each year, the National Bank identifies the systemically important banks and determines the rates of capital buffer that these banks should maintain. Systemically important banks are required to comply with the prescribed capital buffer rates for systemically important banks by 31 March next year. The calculation for identifying systemically important banks for the period April 2022 - March 2023 is conducted on the basis of the data, as of 31 December 2021. According to this calculation, six banks have been identified as systemically important banks (which should meet the determined rate of capital buffer for systemically important bank, not later than 31.3.2023). For more information visit: Skopje, 11 . Also, during 2022, the National Bank Council adopted a decision on introducing a countercyclical capital buffer of the banks for the exposures in the Republic of North Macedonia, in the amount of 0.5% of the risk-weighted assets, with application from 1 August 2023 to 31 December 2023 and 0.75% with application from 1 January 2024. For more details, please visit the following link.

5.3. Stress-testing of the banking system resilience to hypothetical shocks

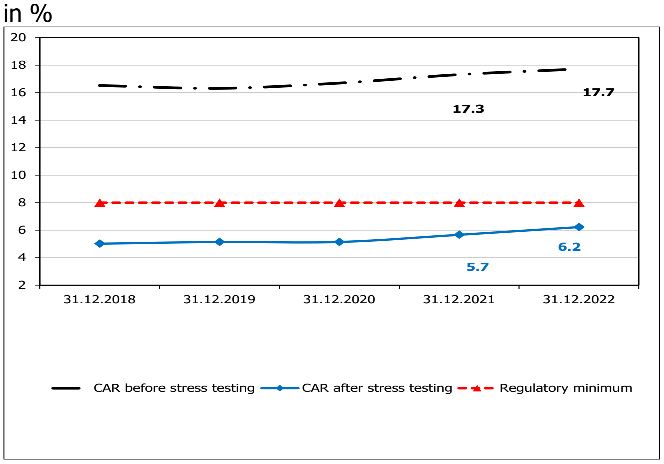
The banking system shows a satisfactory level of resilience to the conducted regular simulated shocks, which assume extreme materialization of the credit risk (in combination with materialization of the currency and/or the interest rate risk). The results of the simulation for simultaneous materialization of credit, currency and interest risks indicate an increased resilience of the banking system compared to 31.12.2021, which is mainly due to the higher initial capital adequacy rate, before the shocks. The capital adequacy ratio of the banking system after the shocks decreases from 17.7% to 6.2% (from 17.3% to 5.7% in 2021).

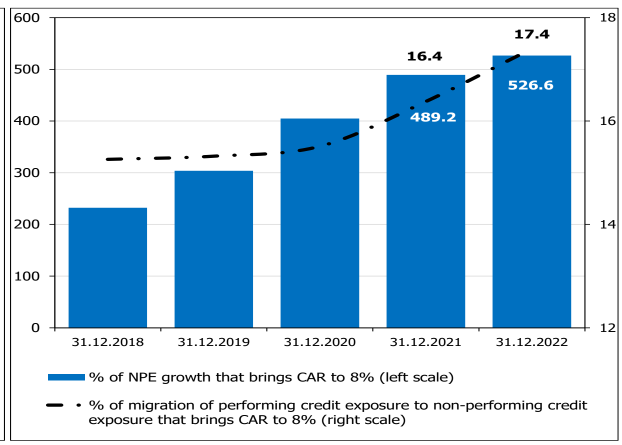
The simulation of transition rates that banks' capital can withstand showed improved results compared to past years, indicating that capital adequacy would reduce to 8% when 17.4% of regular credit exposure migrate to non-functional exposure. This migration corresponds to the growth in non-performing loan exposure to non-financial entities by 526.6%. These rates equaled 16.4% and 489.2%, respectively in 2021. However, these are rather extreme and less likely simulations, especially in the short term, given that in 2022, the non-performing credit exposure to non-financial entities registered an annual decrease of 0.4%. On the other hand, in 2022, only 1% of the regular credit exposure to the non-financial sector received a non-performing status. Banks' exposure to credit risk which arises from exposure of their clients to interest rate risk becomes particularly important with the increase in interest rates due to the increased risks to borrowers' creditworthiness. In such conditions, the banking system solvency, which is satisfactory, is a significant buffer for significant materialization of any risk.

Chart 70

Results of the stress test simulation[62] (left) and deterioration of credit exposure quality that could reduce the banking system capital adequacy to 8% (right)

in %





Source: NBRM, based on the data submitted by banks.

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[62] Stress-testing includes simulation of simultaneous materialization of credit, currency and interest rate shocks, through:
- deterioration of the quality of credit exposure to non-financial entities, assuming a migration of 20%, 25% and 30% of the credit exposure to the non-financial sector of A, B and C-performing risk categories, respectively, to C-non-performing, D and E, where the migrated exposure is distributed equally (33.3% each) to the weaker risk categories, while maintaining the same percentage of coverage with impairment;
- growth of exposure to financial entities and government, which is non-performing by 100%, at the expense of reducing the exposure in A risk category. Please note that the non-performing exposure to financial entities and government is minor and this assumption has almost no impact on the final result;
- depreciation of the denar against the euro by 30%; and
- growth of lending and deposit interest rates from 1 to 5 percentage points;

IV. Major balance sheet changes and profitability of the banking system

1. Bank activities

Despite the uncertain macroeconomic environment caused by global factors while followed by energy crisis, growth of inflation and tightening of financial conditions, the banking system assets continued to grow in 2022, albeit at a slightly slower pace.

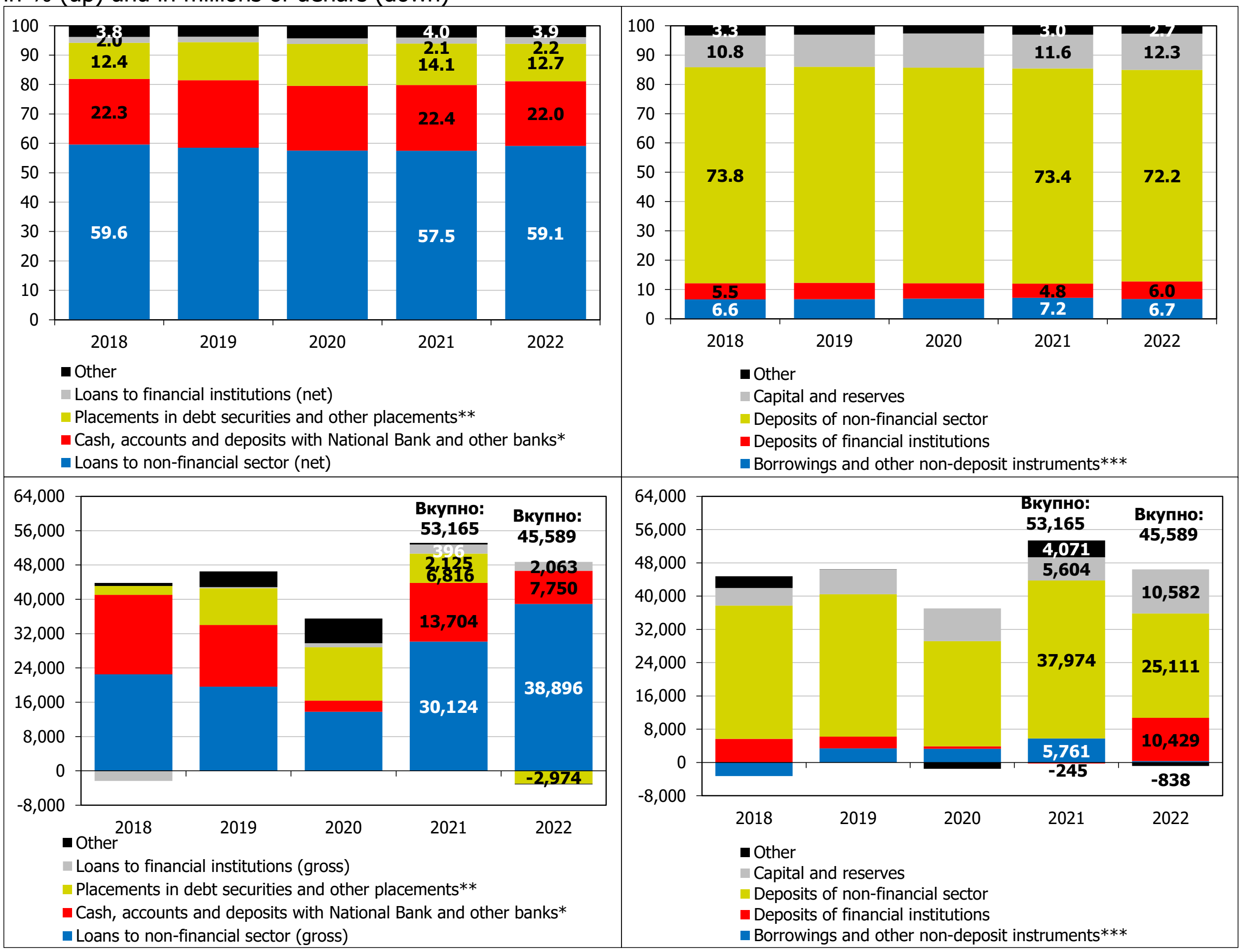
Analyzing the sources of funds, deposits of non-financial entities made the greatest contribution to the annual growth, amid solid growth of deposits of financial institutions. However, the increase in deposit base was more moderate compared to the previous year, with slower growth registered in corporate deposits and households. The uncertainty urged depositors to hold their assets in foreign currency, yet the National Bank's differentiation of reserve requirement rates by currency of deposits determined a higher growth of deposits in denars in the last months of 2022. Analyzing the deposit maturity, besides the usually highest contribution of demand deposits to the increase of total deposit base, in the second half of the year, longer term savings recorded monthly growth, as a response to higher yields and an indicator of confidence in the banking system. The higher level of capital and reserves due to the recapitalization of some banks and higher operating profit also contributed to the annual growth of the sources of funds.

In 2022, banks provided the highest annual credit growth in the last ten years. The upward movement of bank lending is more pronounced in the corporate sector, as opposed to the credit support to households, whose annual growth slowed down. Green loans also rose in 2022 due to the National Bank measures in the area of reserve requirement on newly approved green loans. Such endeavors of the National Bank to encourage investment in renewable energy projects contribute to alleviating the burden of current and future price shocks from the energy market. However, the green loan to total loan ratio is still modest. Besides the lending activity with the non-financial sector, the placements in the National Bank deposit facilities also increased.

The war in Ukraine, which exacerbated the energy crisis that began at the end of 2021, and the subsequent rise in the cost of living, continue to be the greatest source of risk for economic activity and for the stability of energy and food markets, and consequently for the banking system surrounding, which will have a corresponding impact on the banking system activities and risk profile in the following period. The end of the first quarter of 2023 witnessed temporary turbulences on financial markets, driven by the developments in banking systems of the US and Switzerland. These events had limited effects given the prompt response from the policy makers, while the global financial system remained stable. The direct effects of the latest developments in the global financial markets on the Macedonian banking system are limited, given the application of a traditional business model by banks, the low exposure and external liabilities, as well as the comparatively low placements in securities.

Chart 71 Structure of assets (top left) and liabilities (top right) and structure of quarterly growth of assets (bottom left) and liabilities (bottom right) of the banking system in percentages (top) and in millions of denars (bottom)

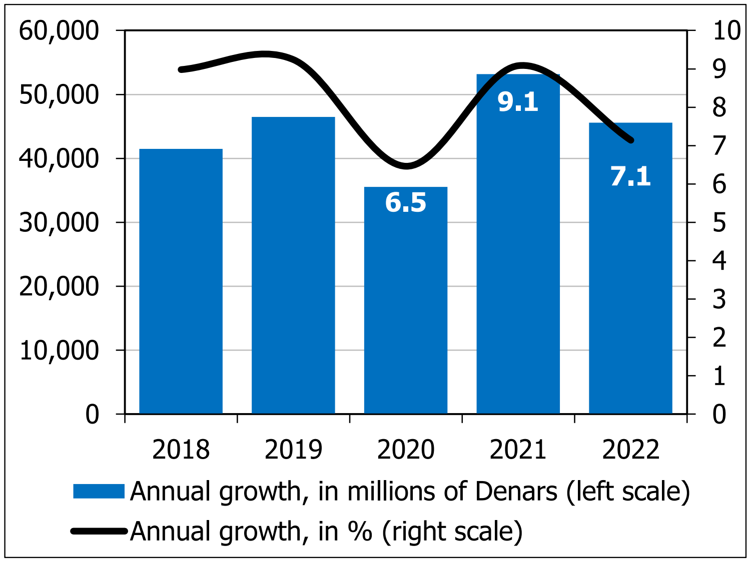
in % (up) and in millions of denars (down)



Source: National Bank, based on data submitted by banks. Note: * Cash, accounts and deposits with the NBRNM and other banks also include the assets in the guarantee fund of KIBS, as well as the reserve requirement in foreign currency; ** Other issued non-deposit instruments include issued subordinated and hybrid capital instruments.

In 2022, the balance sheet of the banking system continues to grow, but at a slower pace compared with the previous year. Annually, total assets of the banking system increased by Denar 45,589 million, or by 7.1% (in 2021, the assets increased by Denar 53,165 million or by 9.1%). About 85% of the growth in assets is due to the significant increase in loans granted to non-financial entities, which grew rapidly on an annual basis, as well as the growth in placements in the National Bank deposit facilities and loans of domestic banks. On the liability side, deposits of non-financial entities are the most significant engine of growth, with solid positive contribution to the increase in funding sources made by deposits of financial entities (largely of banks' parent entities), capital and reserves (due to the increase in share capital through the issuance of common shares by several banks and the issuance of a perpetual bond by a medium-sized bank) and the higher current operating profit.

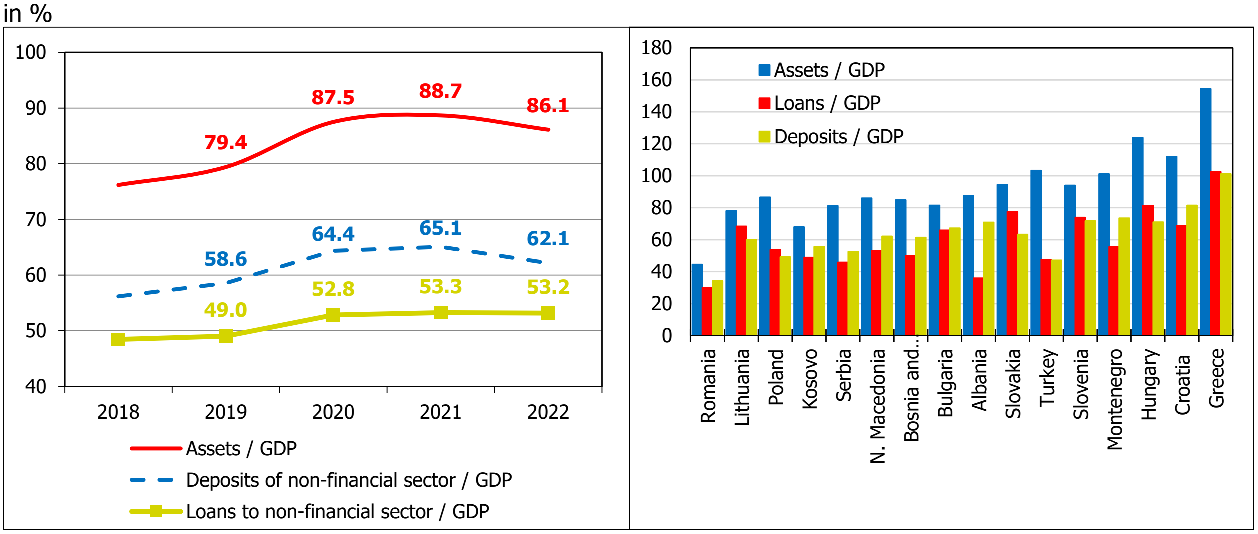
Chart 72 Banking system assets
in millions of denars and in %



Source: National Bank, based on data submitted by banks.

Amid high, accelerated nominal GDP growth and slower growth of bank assets, financial intermediation indicators recorded a certain decrease in 2022. The comparative analysis with other countries of Central and Southeast Europe indicates a still modest level of financial intermediation in our country.

Chart 73 Financial intermediation in the Republic of North Macedonia (left) and by country (right)
in %



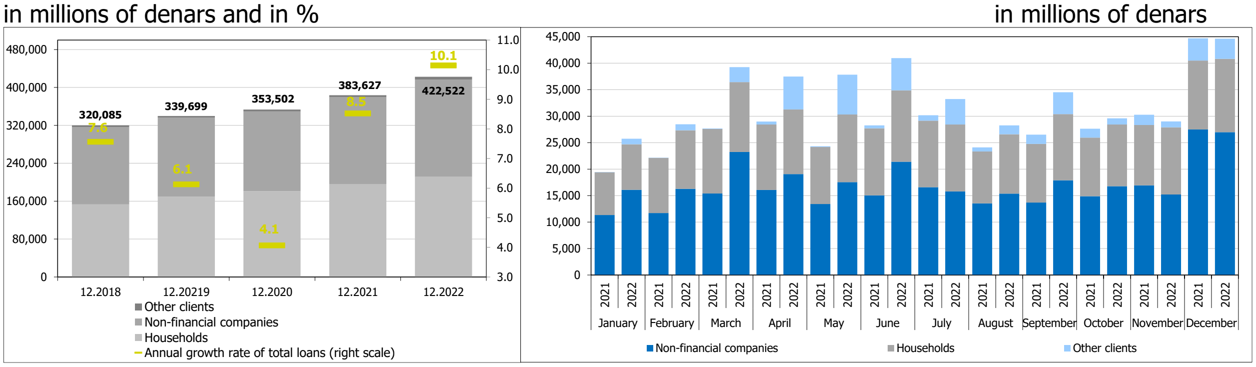
Source: The National Bank and the SSO, based on data submitted by banks, the IMF and the websites of the individual central banks.

1.1. Loans to non-financial entities[63]

During 2022, the banking sector provided further solid credit support to the non-financial sector. The loan volume grew faster than last year, so that loans to the non-financial sector increased by Denar 39 billion, or by 10.1%[64]. Almost 60% of the annual growth of credit activity arose from lending to non-financial companies, while the contribution of household loans was lower (39%), which increased the contribution to total credit growth of lending to the corporate sector compared to the end of 2021. Analyzed by bank, annual credit growth was recorded at ten out of twelve banks[65], and the increased lending of the group of large banks contributed almost entirely to the annual growth of loans to non-financial entities.

Chart 74 Stock and annual flow of loans of non-financial entities (left) and newly approved loans, by sector (right)

in millions of denars and in % in millions of denars



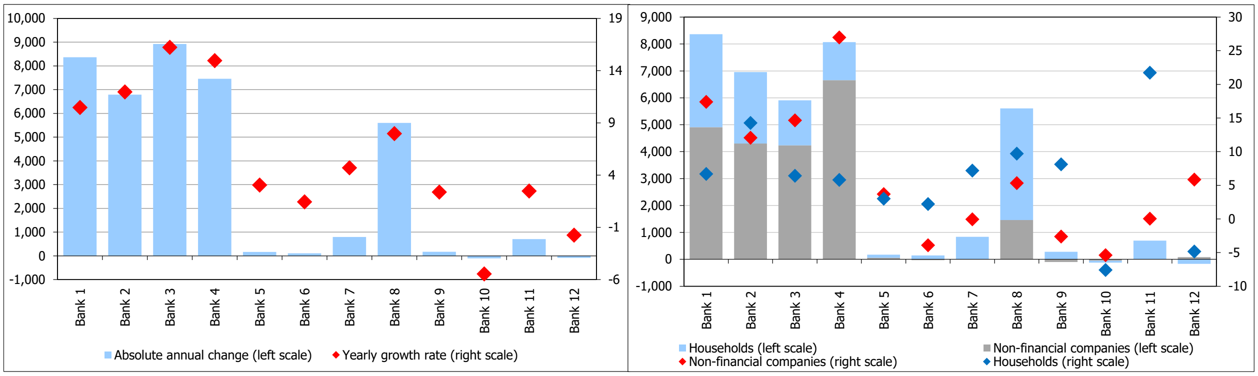
Source: NBRM, based on the data submitted by banks.

The volume of new loans to the non-financial sector recorded accelerated growth, reaching 22.4% in 2022 (19.2% in 2021). On a monthly basis, the volume of new loans was higher in 2022 compared to last year (with the exception of the last months), in the both loan portfolio segments. Almost half of the growth in newly approved loans is due to increased corporate lending, with a higher growth in the corporate sector (19.1%) compared to the household sector (7.7%).

[63] Loans to non-financial entities include loans to resident and non-resident non-financial entities, including loans to private and public non-financial companies, central government, local government, non-profit institutions serving households (loans to other clients), sole proprietors and natural persons (loans to households).
[64] In 2021, loans to non-financial entities increased by Denar 30 million, or by 8.5%.
[65] The DBNM AD Skopje is not taken into account.

Chart 75 Annual growth of total loans to non-financial entities (left) and of loans to non-financial corporations and households (right), by bank

in millions of denars | in % | in millions of denars | in %



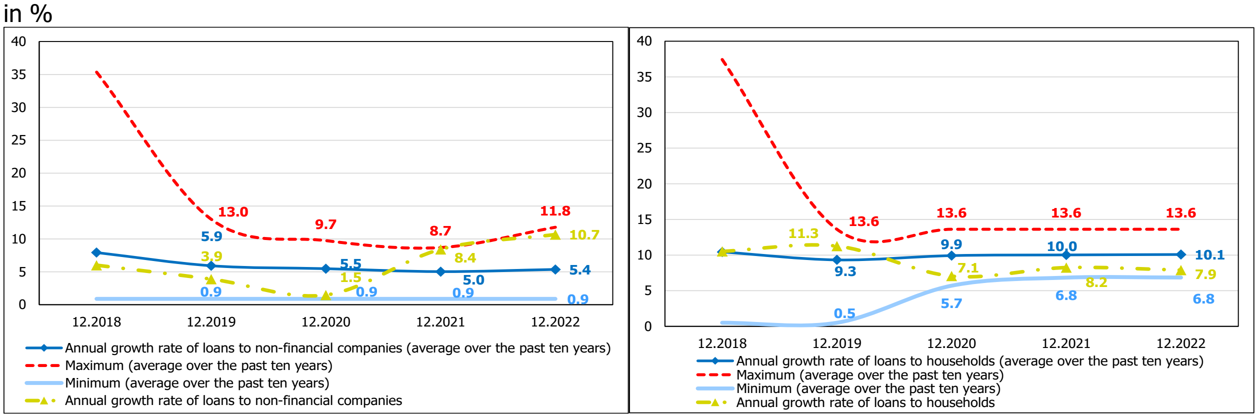
Source: NBRM, based on the data submitted by banks.

For the second year in a row after the pandemic, loans to non-financial companies are growing rapidly, i.e. the increase was Denar 21,595 million, or 11.8%[66] at the end of 2022 (the growth at the end of 2021 was Denar 15,219 million, or 9%).

Acceleration of credit growth to non-financial companies can be associated with a more pronounced net increase in total demand for corporate loans, despite further stronger net tightening of credit conditions by banks for granting corporate loans throughout the year[67].

Chart 76 Ten-year moving average of annual growth rates of loans to non-financial corporations (left) and household loans (right)

in %



Source: National Bank, based on data submitted by banks.

* Note: Excluding the effect of all mandatory write-offs made in the period 1.1.2016 - 31.12.2022. Starting from December 2019, the data also contains collected compulsorily written-off loans.

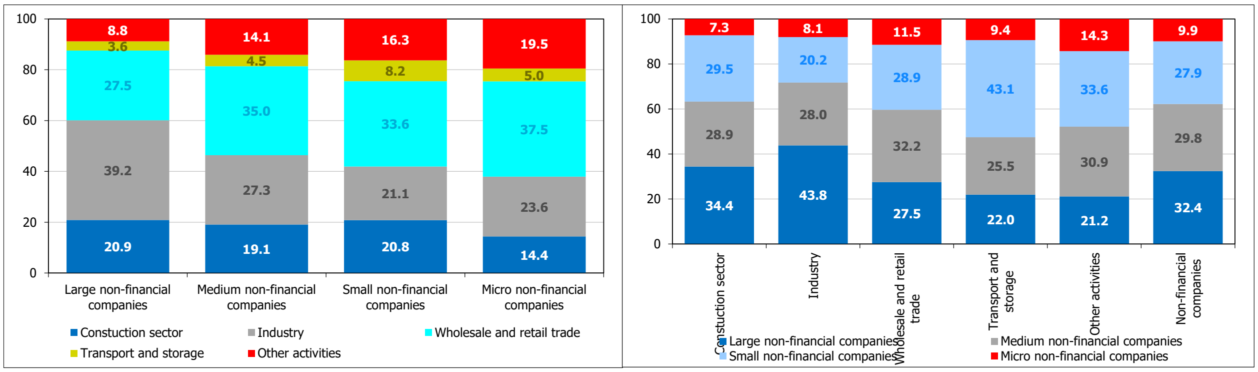
According to the economic activity of the clients, the structure of loans to non-financial companies is predominated by loans approved to clients from wholesale and retail trade and

[66] If we exclude the effect of the mandatory net write-offs, the annual growth of loans to non-financial companies is 10.7% (8.4% as of 31.12.2021).

[67] Analyzing the conditions for corporate lending, the banks indicate that all conditions, i.e. the interest rate, non-interest income, collateral requirements, the size of loan or credit line and loan maturity, contributed to a net tightening of credit conditions in 2022, mostly in the interest rate. Source: Bank Lending Survey, January 2023. https://www.nbrm.mk/content/MPI%20publikacii/Istrazuvanje_Anketa_kreditna_aktivnost_januari_2023.pdf

industry[68], with a share of 61.5% in total loans to non-financial corporations. If the loans approved for construction are added, these activities occupy a little over 80% of the total corporate credit portfolio. Analyzed according to the size of non-financial corporations[69], the distribution of loans between large, medium and small enterprises is very similar (with a share of 32.4%, 29.8% and 27.9%, respectively, in total corporate loans). The loans of large enterprises from the industry activity and those of microenterprises from the trade activity contributed the most to the annual growth of total corporate loans.

Chart 77 Structure of loans to non-financial companies, by activity and by size
in %



Source: National Bank's Credit Registry, based on data submitted by banks.

Credit support to households continued to grow, but the growth in 2022 of 7.7%[70] or Denar 15,167 million is slightly slower compared to last year (which was 8.3% or Denar 15,001). Moreover, the annual growth of household loans (excluding the effect of net write-offs) remained below the 10-year moving average of the annual growth rates of these loans and also came closer to the minimum value of its 10-year moving average (the difference between the two growth rates is only 1.1 pp).

The credit growth deceleration in households can be associated with the tightening of credit standards in the second half of 2022 (after a longer period of net easing of the standards in this sector) amid simultaneously reduced demand for these loans in the same period. At the end of 2022, banks pointed to a slightly stronger net tightening of total credit standards in households[71]equally in housing and consumer loans.

These movements in corporate and household loans reduced the share of household loans in the total loan portfolio, to 50%[72] at the end of 2022, and increased the share of corporate loans to 48.6%[73]. By credit product, 62.3% of loans to natural persons are non-purpose loans

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[68] Within the industry activity, from the beginning of 2022, there is a significant annual growth of loans approved for the supply of electricity, gas, steam and air conditioning, especially in the second half of the year. Thus, on an annual basis, these loans grow by MKD 5,310 million, or by a high 65.2%. At the same time, these loans occupy one fifth of the total loans granted to industrial customers. However, their share in the total loans of non-financial corporations at the end of 2022 is a modest 6.7%.

[69] The classification criteria for entities by size (large, medium, small and micro) are defined in Article 470 of the Law on Trade Companies.

[70] Excluding the effect of mandatory net write-offs, household loans increased by 7.9% (compared with the growth of 8.2% in 2021).

[71]In terms of individual credit standards, housing loans registered stronger net tightening in the interest rate, moderate in commissions and slightly stronger tightening in loan maturity, in the second half of 2022. Banks reported a stronger net tightening in interest rates of consumer loans almost throughout the entire year, while in collateral requirements, loan maturity and non-interest income, net tightening was registered only in the last quarter of 2022. Source: Bank Lending Survey, January 2023.

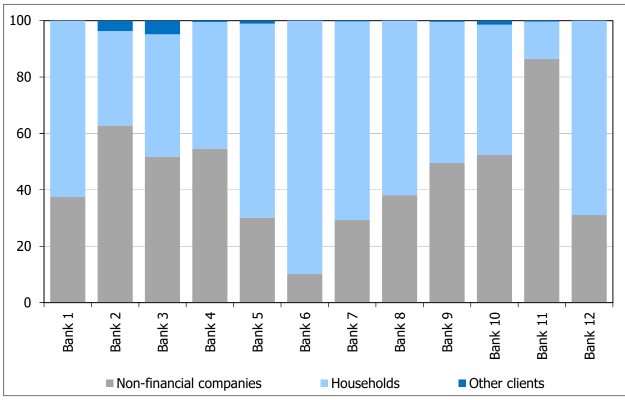
[72] Household loans to total loans was 51.1% at the end of 2021.

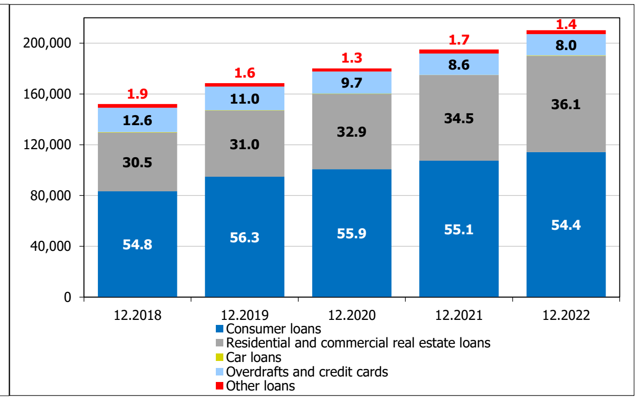
[73] Corporate loans to total loans was 47.9% at the end of 2021.

(consumer loans, overdrafts and credit cards). In 2022, housing and consumer loans recorded the largest contribution to the total increase in loans to natural persons, as well as the highest absolute growth. However, both credit products grew more slowly (12.8% housing loans and 6.3% consumer loans), compared to the previous year (13.9% and 6.7%), respectively. Housing loans to total loans of natural persons increased from 34.1% at the end of 2021, to 35.7% at the end of 2022, while consumer loans to total loans moderately decreased from 55.1% as of 31.12.2021, to 54.4% as of 31.12.2022.

Chart 78 Sectoral structure of loans to non-financial entities, by bank (left) and structure of loans to natural persons, by product (right)

In % | in millions of denars and in %

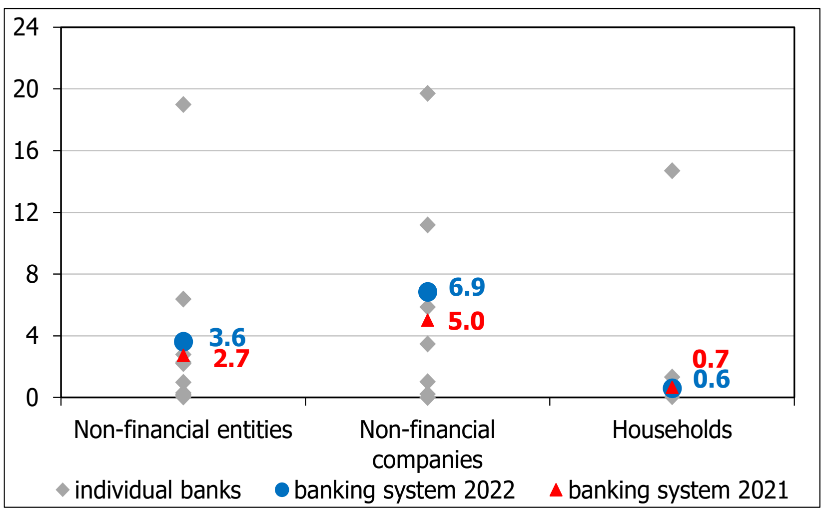




Source: National Bank's Credit Registry, based on data submitted by banks.

Chart 79 Share of green loans to total loans to non-financial entities and by sector, by bank

in %



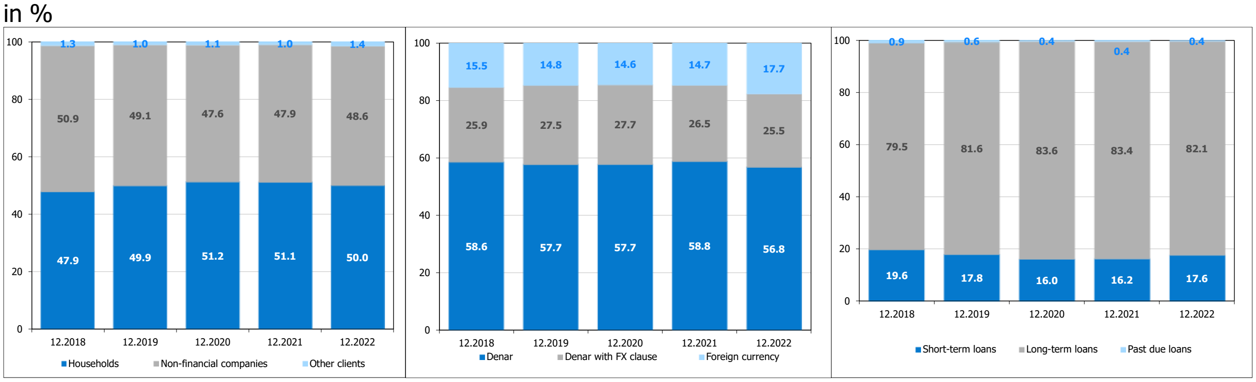
Source: National Bank, based on data submitted by banks.

In 2022, there is greater support from the banking system for green projects, yet the share of these loans in the total credit portfolio of the banking system is modest, although since the end of 2019, green lending has doubled, while only in the past one-year period it increased by as much as 45.9%. At the end of 2022, green loans[74]

[74]The term *green loan* refers to the manner of financing which allows the borrower to invest exclusively in projects with significant positive environmental impact and in projects that reduce the negative effects from climate changes.

reached Denar 15,389 million and accounted for 3.6% of the total loans to non-financial entities. The growth of green lending was driven by the corporate loans that account for 6.9% of the total corporate loans[75]. On the other hand, green loans to households minimally decreased as of 31.12.2022, while their share in total loans of the households sector was modest and equaled 0.6%.

Chart 80 Structure of total loans, by sector (left) and currency (middle), and structure of regular loans, by maturity (right)
in %



Source: National Bank, based on data submitted by banks.

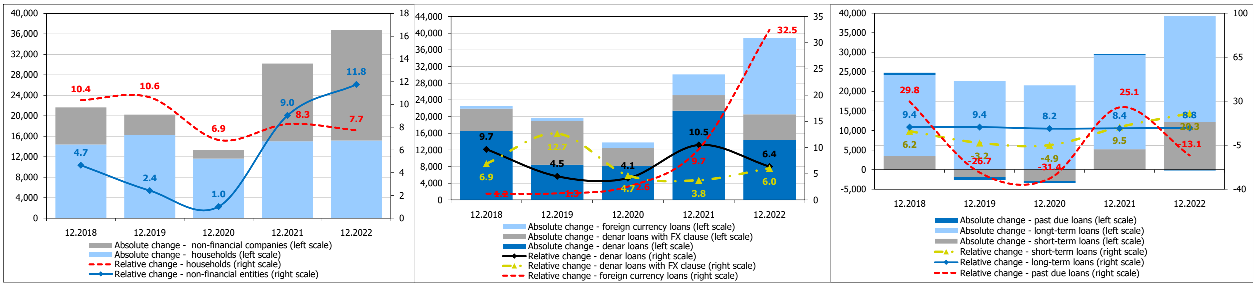
Observing currency in 2022, almost two thirds of the annual increase in total loans to non-financial entities resulted from loans with currency component (especially foreign currency loans)[76], with smaller contribution from denar loans[77]. The currency structure of total loans suffered certain changes in 2022, whereby denar loans still prevail, but their share reduced to the level of 56.8% (58.8 as of 31.12.2021) at the expense of the increase in the share of foreign currency loans, which reached 17.7% (14.7% as of 31.12.2021). Such increase in the share of foreign currency loans results from the sharp annual growth in foreign currency loans (32.5%), due to the stronger growth in foreign currency corporate loans, amid higher prices of energy and of import goods in general.

Long-term lending[78] still makes the largest contribution to the increased lending activity of banks, which grew rapidly the end of 2022 (from 8.4% in 2021 to 8.8% in 2022). Short-term loans also grew twice as fast (by Denar 12,174 million or 20.3%), compared to the end of 2021 (by Denar 5,197 million or 9.5%). Most (about 54%) of the growth of long-term loans is due to household loans, while the growth of short-term

[75]Out of twelve analyzed banks, only one bank from the group of small-sized banks has not approved green loans as of 31.12.2022. In the banks that have approved such loans, the share of green loans in total loans ranges from 0.05% to 19%. Observed by sector, the share of green loans in total loans by bank ranges between 0.002% and 19.7% in corporate loans, i.e. between 0.1% and 14.7% in household loans.
[76]Foreign currency loans increased annually by Denar 18,366 million, or by a high 32.5% which mostly results from loans to non-financial corporations (growth of Denar 13,560 million, or 31.1%) and less from loans to households (growth of Denar 2.593 million, or 22.6%) and loans from other clients (growth of Denar 2,213 million, or 147.6%). Denar loans with currency clause increased by Denar 6,140 million, or 6%, due to household loans (growth of Denar 6,353 million, or 8.6%), amid negative contribution of loans to non-financial corporations (decline of Denar 25 million, or 0.1%) and loans to other clients (decline of Denar 188 million, or 17.7%).
[77] Denar loans increased annually by Denar 14,389 million, or 6.4%, amid slightly larger contribution to the increase in loans to non-financial companies (of Denar 8,060 million, or 7.1%) as well as the increase in household loans (growth of Denar 6,221 million, or 5.6%).
[78] The analysis of maturity structure of loans excludes non-performing loans. The long term loans increased by Denar 27,151 million annually.

loans contributed the most to the annual growth of loans to non-financial corporations. The due loans are rather volatile because of their negligible amount[79].

Chart 81 Annual credit growth, by sector (left), currency (middle) and maturity (right)
in millions and in %



Source: National Bank, based on data submitted by banks.

1.2. Deposits of non-financial companies

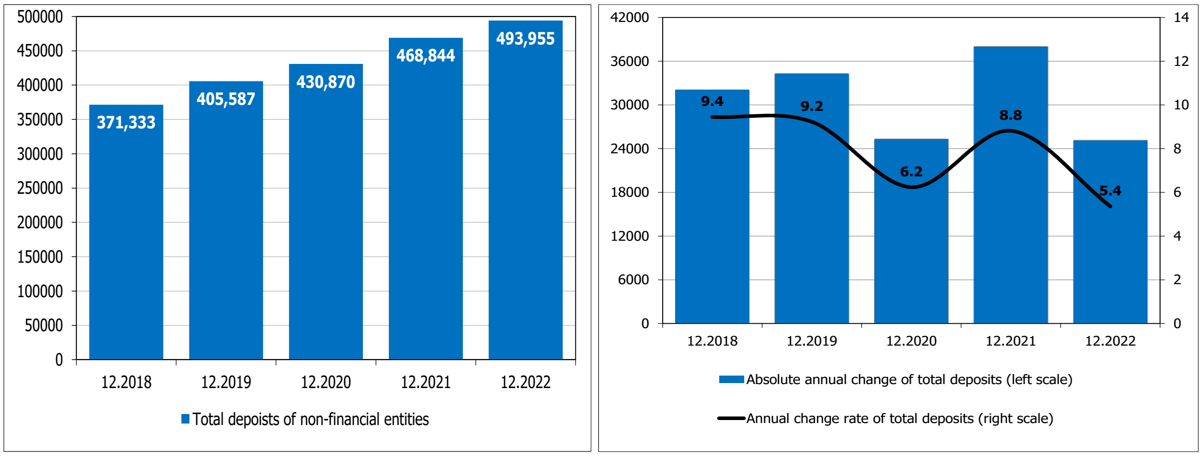
In 2022, deposits of non-financial entities increased (by Denar 25,111 million, or 5.4%), slower though compared to the previous year (8.8% growth). Deposits continued to grow, but at a slower pace, amid highlighted risks in the domestic economy, caused by global factors. The outbreak of the war in Ukraine had some effects on household savings, but they were short-lived and limited. Analyzed by bank, the share of large banks exceeds 80% of the annual deposit growth, and only one of them constitutes about one fifth of the total annual growth.

The sector-by-sector analysis shows that both sectors registered decelerated growth, primarily the non-financial corporations sector. Households, as traditionally crucial depositor in the Macedonian banking system (share of 66.5% in total deposits), increased in 2022, thus rising their deposits in banks by Denar 19,385 million, or 6.3% (6.9% in 2021), and contributing the most to the total deposit growth.

[79] The due loans make up minor 0.3% of total performing loans.

Chart 82 Stock (left) and flow (right) of deposits of non-financial entities

in millions of denars | in millions of denars and in %

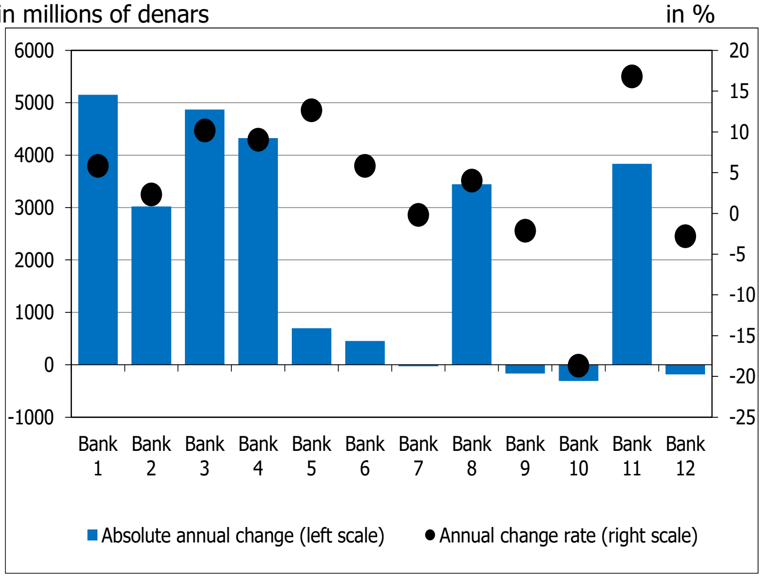


Source: National Bank, based on data submitted by banks.

Deposits of non-financial corporations registered an annual growth of Denar 5,354 million, or 3.8%, which is a significant deceleration compared to the growth registered in 2021 (Denar 15,094 million or 11.8%).

Chart 83 Growth of deposits of non-financial entities, by bank

in millions of denars | in %



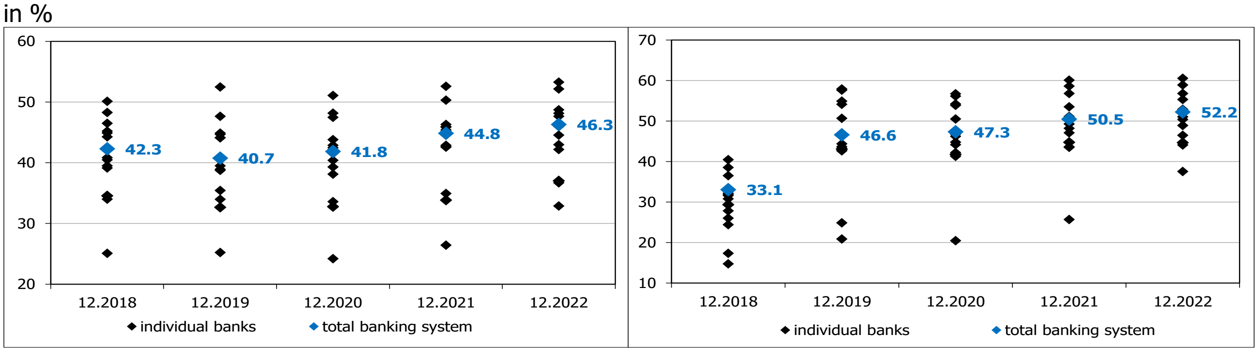
Source: National Bank, based on data submitted by banks.

Observing currency, largest contribution to the annual growth of deposit base was made by foreign currency deposits (73.2%) which increased during 2022 by Denar 18,382 million, or 8.7%, almost twice as slow compared to the growth in 2021 (by denar 29,970 million, or 16.6%). By the end of the year, amid measures taken by the National Bank and more stable context, the currency preferences improved, while denar deposits stabilized and at the end of 2022 grew by 2.7% annually. The annual growth of foreign currency deposits mostly stems from demand deposits, with a more pronounced contribution of the household sector, as well as of non-financial corporations[80]. Similar, and within denar deposits, the contribution of household sector is larger (55.4%) compared to the contribution of non-financial corporations deposits (36.6%). Moreover, the growth in the household sector entirely resulted from demand deposits, while in non-financial corporations, the demand deposits and short-term deposits had almost equal share[81].

As a result, the share of denar deposits in total deposits decreased to 53.6% at the end of 2022 (55% as of 31.12.2021), while the share of foreign currency deposits increased to 46.3%, exceeding the level at the end of 2021 (44.8%), but is still considerably lower compared to the level at the onset of the global financial crisis (of around 60%).

Chart 84 Share of total foreign currency deposits in total deposits of the banking system (left) and of the foreign currency household deposits in total household deposits (right)

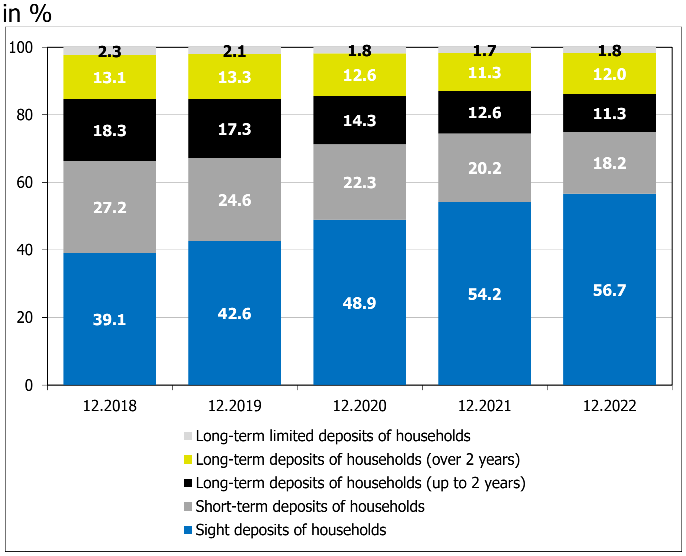
in %



Source: National Bank, based on data submitted by banks.

Chart 85 Maturity structure of household deposits

in %



Source: National Bank, based on data submitted by banks.

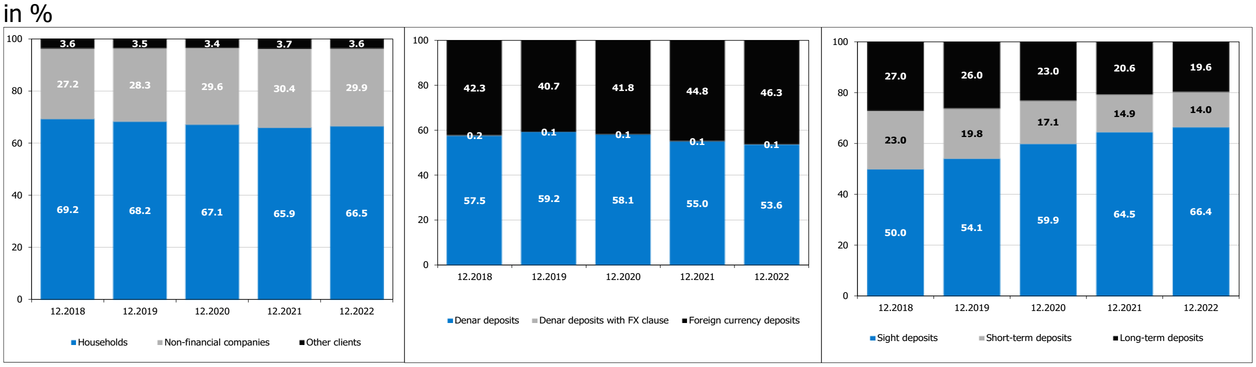
[80]The annual increase in foreign currency demand deposits of households was Denar 10,658 million, or 13.9%, amid minor increase in foreign currency demand deposits of non-financial corporations which amounted to Denar 3,986 million, or 10.7%.

[81]The annual increase in denar demand deposits of households was Denar 7,832 million, or 8.6%, while denar demand deposits of non-financial corporations grew by Denar 1,708, or 2%, and the growth of short-term denar deposits of non-financial corporations equaled Denar 1,482 million, or 40.7%.

Observing the maturity, in 2022, depositors preferred to hold shorter term deposits in banks, while demand deposits determined the annual growth of the deposit potential, with a growth of Denar 25,611 million, or 8.5%, as a result of the growth of deposits in both sectors. In contrast, short-term deposits registered an annual decline of Denar 715 million, or 1%[82]. On the other hand, during the second half of the year, positive monthly shifts were evident in long-term deposits, which indicates a reaction to the growth of yields, as well as positive expectations and depositors' confidence. Thus, long-term deposits grew by Denar 165 million, or 0.2% annually[83].

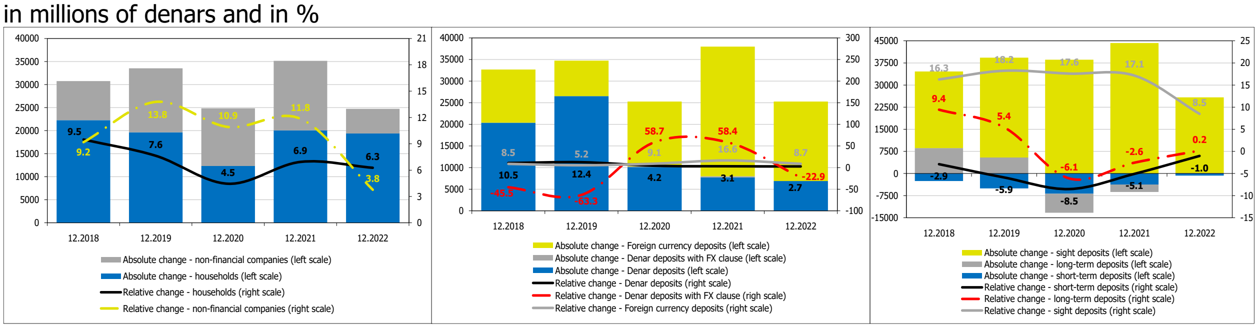
The analysis of maturity structure of household deposits in 2022 shows an increase in the structural share of demand deposits (from 54.2% as of 31.12.2021, to 56.7% as of 31.12.2022) and further decrease in the share of short-term deposits (from 18.8% as of 31.12.2021 to 18.2% as of 31.12.2022).

Chart 86 Structure of total deposits, by sector (left), currency (middle) and maturity (right)
in %



Source: National Bank, based on data submitted by banks.

Chart 87 Annual deposit growth, by sector (left), currency (middle) and maturity (right)
in millions of denars and in %



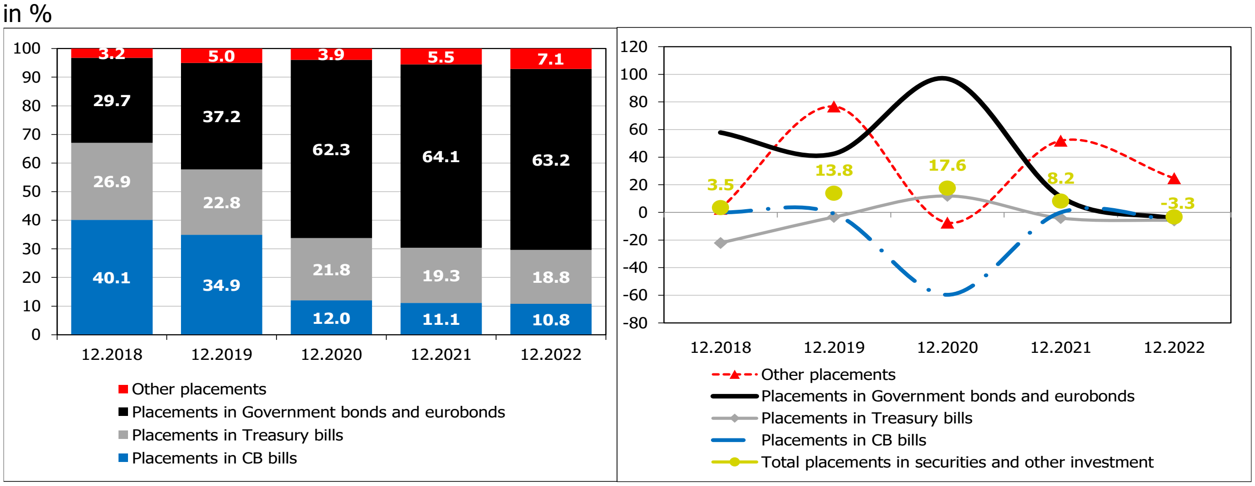
Source: National Bank, based on data submitted by banks.

1.3. Other activities

[82]The annual decrease in short-term deposits entirely results from the household sector (decrease of Denar 2,689 million, or 4.3%), with the most significant contribution from denar deposits (93.3%).
[83]The annual increase in long-term deposits entirely results from foreign currency deposits of the household sector (by denar 5,092 million, or 13.3%).

At the end of 2022, banks' placements in securities, subsidiaries and associates[84] registered a faster decrease of Denar 2,974 million (or 3.3%), which reduced their share in total assets of banks to 12.7% as of 31.3.2022 (14.1% as of 31.12.2021). The National Bank placements in CB bills[85] declined by Denar 560 million, or 5.6%. Moreover, banks' investments in government bonds decreased by Denar 2,644 million, or 4.6%, with a fall in treasury bills investments by Denar 1,003 million (or 5.8%) annually. Such developments decreased the share of investment in government bonds in total placements in debt securities and other banks' investment to 63.2% as of 31.12.2022 (64.1% as of 31.12.2021) amid slower decrease in the share of investment in treasury bills (from 19.3% as of 31.12.2021 to 18.8% as of 31.12.2022) and decrease in the share of investment in CB bills (from 11.1% as of 31.12.2021 to 10.8% as of 31.3.2022). However, placements in government bonds and Eurobonds continue to dominate the structure of investments in securities. Banks' placements in debt securities issued by foreign countries are trivial, with an increase during 2022 (their structural share in total investment in securities, subsidiaries and associates increased from 2% as of 31.12.2021 to 3.7% at the end of 2022), i.e. a growth of 75.7% (or Denar 1,393 million) in 2022. It is noteworthy that during 2022, two banks made a small investment in a corporate bond issued by a domestic insurance and brokerage company (the share of this investment is negligible of about 0.01% of total investment in securities and other bank investments).

Chart 88 Structure (left) and quarterly growth (right) of investments in securities, subsidiaries and associates
in %



Source: National Bank, based on data submitted by banks.

Placements with banks and other financial institutions (accounting for 7.7% of the total assets of the banking system) in 2022 increased by Denar 1,106 million, or 2.1%. Such increase was mostly due to the growth of loans to domestic banks (of Denar 1,987 million or 15.7%[86]), and less to the growth of placements to accounts and deposits with

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[84] The analyses of these investments are based on their net book value.

[85] The reduced placements in CB bills result from the banks' lower demand for this instrument given the higher interest rates offered at the CB bill auctions and the unchanged offer by the National Bank (of Denar 10 billion) (in December 2022, the interest rate on CB bills was 4.75%, and increased in the coming months to 5.50% in March 2023). Thus at the CB bills auction of the National Bank held on 14 December 2022, Denar 10,000 million of CB bills were offered, whereby Denar 9,473 million were sold, at an interest rate of 4.75% and with a maturity of 35 days.

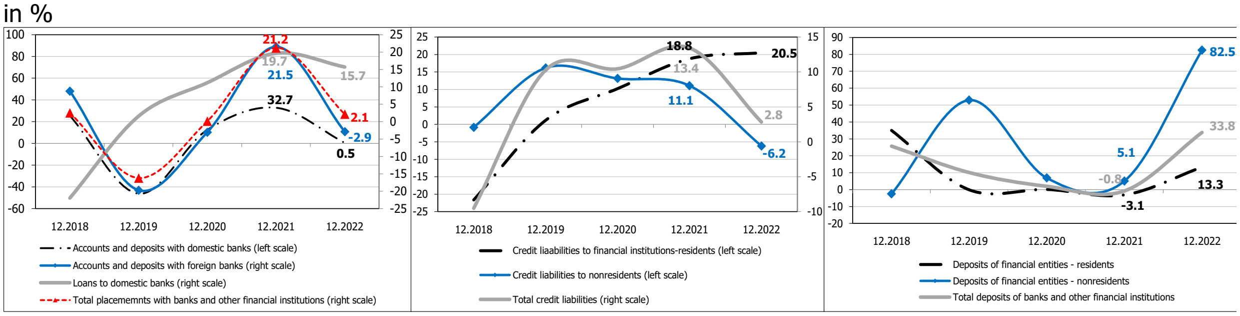
[86] The increase in 2022 solely stems from the placements of DBNM AD Skopje in domestic banks.

domestic banks[87], amid reduced bank's placements to current accounts in foreign banks (of Denar 1,023 million or 2.9%)[88].

Total **loan liabilities**, which account for 5.8% of total liabilities of the banking system, increased by Denar 1,089 million or 2.8% annually, which is entirely due to increased liabilities based on loans to domestic banks (by Denar 2,669 million)[89].

Deposits of banks and other financial institutions remain a small source of banks' financing, but their share increased reaching 6% of total liabilities of the banking system (4.8% in 2021). The significant annual growth of deposits of banks and other financial institutions of Denar 10,429 million (by significant 33.8%) mostly results from the growth of deposits of non-resident financial institutions of Denar 7,532 million, or 82.5%, with the greatest growth registered in short-term deposits in foreign currency (an increase of Denar 4,319 million), amid simultaneous growth in long-term deposits in foreign currency (an increase of Denar 2,519 million).

Chart 89 Annual growth rate of claims on financial institutions (left), loan liabilities (right) and deposits of financial institutions (middle)
in %



Source: National Bank, based on data submitted by banks.

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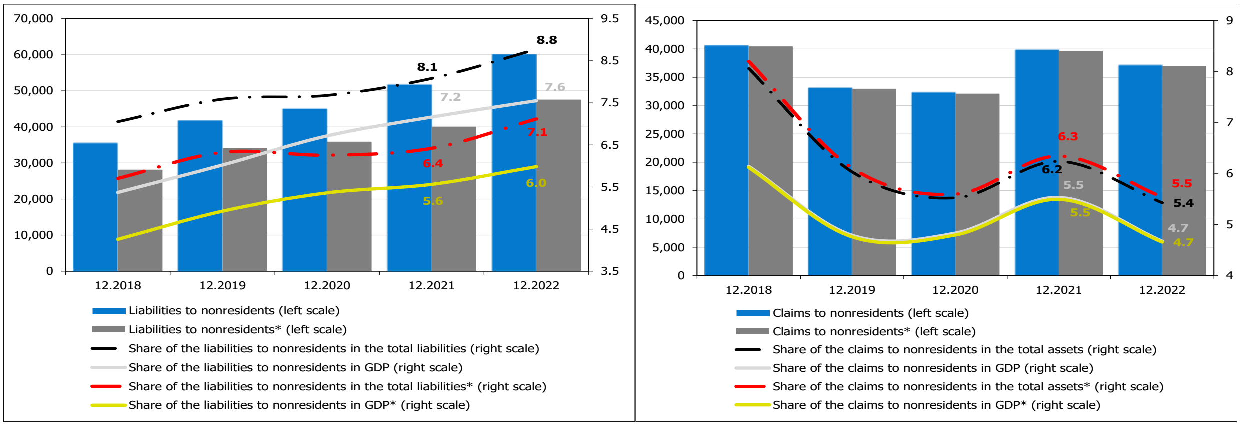
[87] The funds on the accounts and deposits with domestic banks increased by Denar 9 million, or by 0.5%, which is mostly due to the growth of balances of foreign currency time deposits of domestic banks from one to three months (by Denar 115 million) at one small bank.

[88]In 2022, certain maturity transformation of banks' investments in foreign banks was registered, i.e. decrease in placements on foreign accounts (by Denar 7,205 million) and simultaneous increase in placements of term deposits in foreign banks (by Denar 6,207 million), in maturity buckets of three months.

[89]The annual increase in liabilities based on loans to domestic banks was mostly due to the growth in liabilities based on foreign currency loans over 5 years to one large bank (by Denar 1,451 million) and to a lesser extent to the growth of liabilities based on long-term denar loans to banks (by Denar 705 million).

Chart 90 Liabilities to (left) and claims on (right) non-residents
in millions of denars and in %

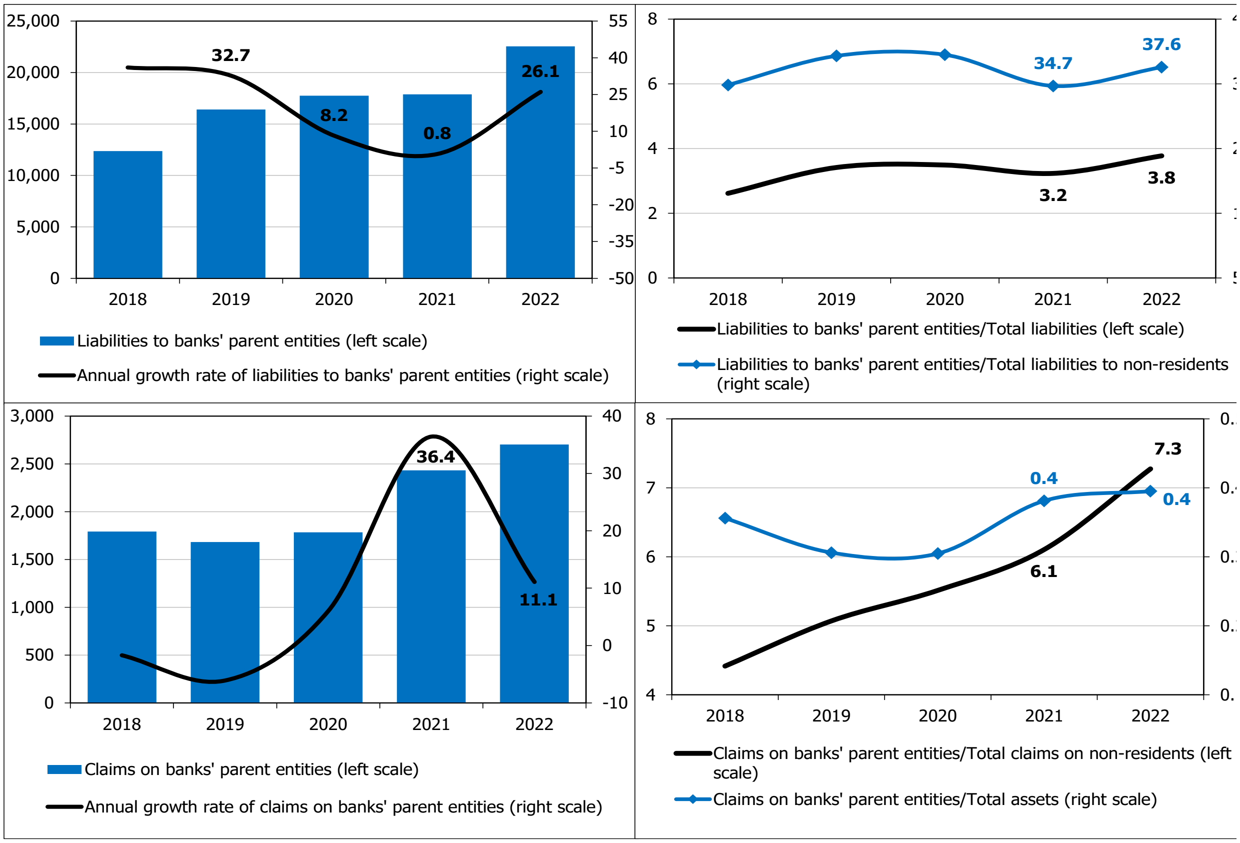


Source: National Bank, based on data submitted by banks.
*Without DBNM AD Skopje

The scope of banking system activities with non-residents is negligible, with bank-to-bank differences. As usual, at the end of 2022, banks owe[90] more than they claim from non-residents, with liabilities recording stronger growth compared to the decline in claims on non-residents. Domestic banks' liabilities to non-residents went up annually by Denar 8,416 million, or 16.3%, and their share in total banking system liabilities hiked to 8.8%[91] at the end of 2022 (8.1% as at 31.12.2021). Such annual increase entirely stems from short-term and long-term foreign currency deposits of non-resident financial corporations. Contrary to liabilities, the banks' claims on non-residents dropped annually by denar 2,707 million, or 6.8%, due to the decrease in funds on foreign bank accounts and loan placements of non-residents.

[90] As of 31.12.2022, seven of thirteen banks owe more than they claim on non-residents.
[91] If DBNM AD Skopje is excluded from the analysis, the share of liabilities to non-residents in total liabilities would be 7.1%.

Chart 91 Liabilities to (top) and claims on (bottom) banks’ parent entities
in millions of denars and in %



Source: National Bank, based on data submitted by banks.

Bank liabilities to parent entities grew faster during 2022, but still do not represent a significant source of financing domestic banks’ activities, although there are bank-to-bank differences. In 2022, banks' liabilities to their parent entities increased by Denar 4,665 million (or 26.1%), which is mostly due to the increase in short-term deposits (at two large banks), as well as the increase in long-term deposits (at other large bank) of financial companies. Considering the accelerated annual growth, the share of banks' liabilities to parent entities (including subordinated liabilities and hybrid capital instruments) in total liabilities of the domestic banking system, and in liabilities to non-residents increased to 3.8% and 37.6%[92], respectively. Claims on parent entities registered a minor annual growth of Denar 270 million, or 11.1%, keeping its slight share in the total asset to 0.4%, while their share in total claims on non-residents increased to 7.3% (6.1% as of 31.12.2021).

[92] As of 31.12.2021, these rates equaled 3.2% and 34.7%, respectively.

2. Profitability

In 2022, the domestic banking system reported higher operating profit compared to the previous year, albeit the profit growth was significantly slower. The higher financial result mostly stems from higher net interest income, with certain contribution from higher net fee and commission income. As usual, the greatest positive contribution to the formation of net interest income was made by financial intermediation with households, while the greatest contribution to the growth of net interest income was made by the financial intermediation with non-financial corporations. The accelerated growth of corporate lending caused higher net interest income in this sector, which was not the case over the past few years, when net interest income from working with enterprises decreased.

The slower profit growth affected some of the profitability ratios of the banking system. The rate of return on banks' average equity decreased by 0.7% in 2022 and equaled 12.2%, while the rate of return on average assets was unchanged (1.5%). Operational efficiency ratios of the banking system register divergent movements, amid growth of operating costs.

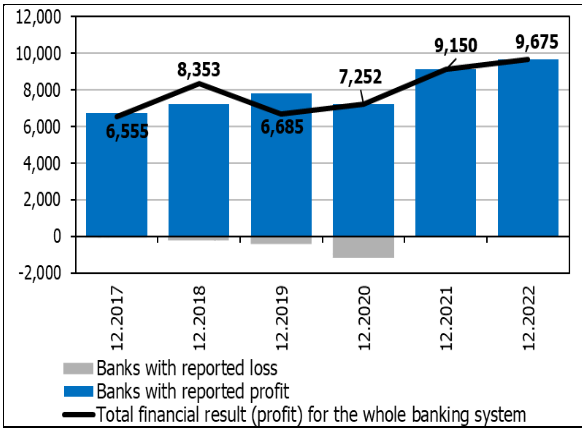
2.1. Banking system profitability and efficiency ratios

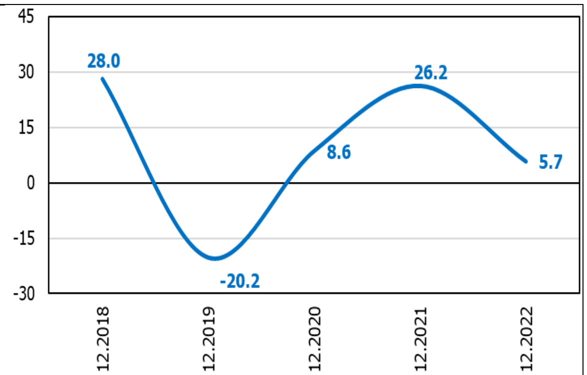
In 2022, the banking system generated operating gain of Denar 9,675 million, which is by Denar 525 million or 5.7% higher compared to the previous year. The profit growth decelerated significantly compared to the last year, when the profit was higher by 26.2% or Denar 1,898 million compared to 2020. Net interest income was the main driver of the profit growth (higher by Denar 1,996 million, or 12.7%), with a certain contribution from higher net fee and commission income (by Denar 641 million or 11.5%). Contrary to these movements, negative contribution to the profit growth in 2022 was made by the reduced collection of previously written off claims (by Denar 1,271 million, or 46.6%)[93], amid growth of other operating costs (by Denar 631 million, or 8.9%)[94], impairment costs (by Denar 372 million, or 9.7%) and staff costs (by Denar 338 million, or 6.3%).

Analyzed by bank, all banks reported positive financial operating result.

[93]In 2021 banks reported higher collection of previously written-off claims (by Denar 1,609 million).
[94]In 2022, material costs increased by Denar 307 million, or 71.5%, services costs (by Denar 162 million, or 4.8%) and representations, marketing and propaganda costs (by Denar 147 million, or 29.9%).

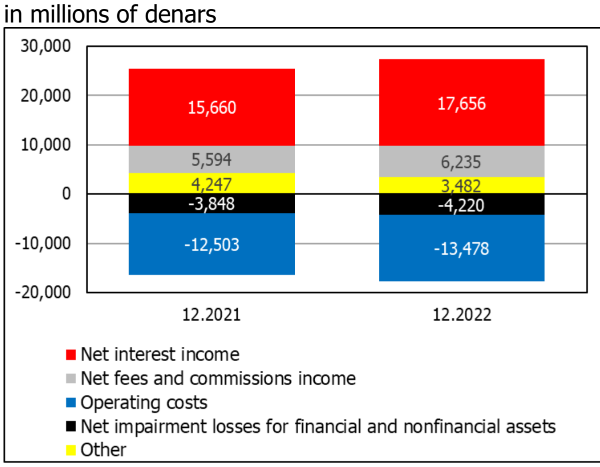
Chart 92 Dynamics of the presented total profit of banks (left) and its annual change (right)
in millions of denars

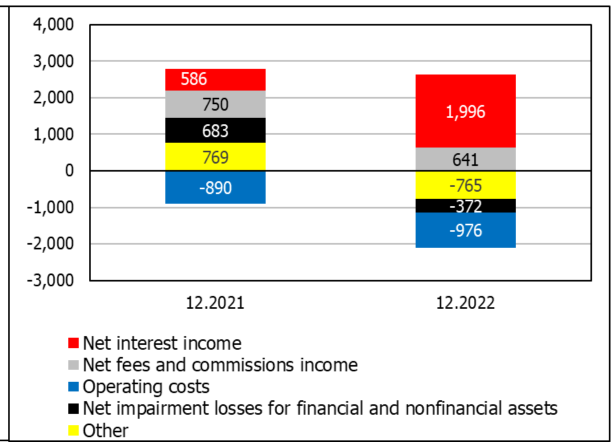




Source: National Bank, based on data submitted by banks.

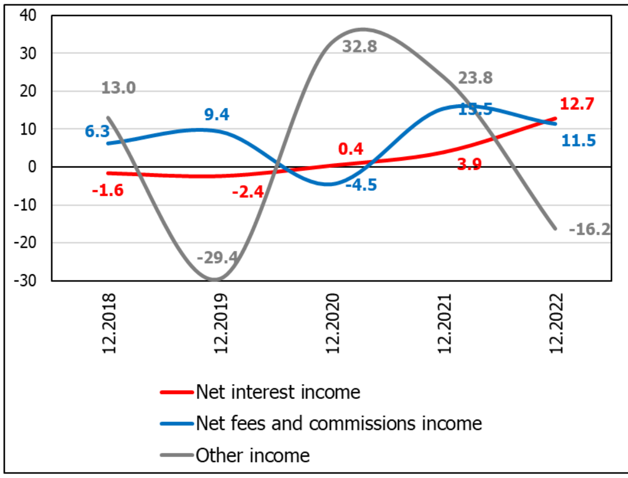
Chart 93 Contribution to the generation of profit (left) and to the growth of profit (right) of banks
in millions of denars

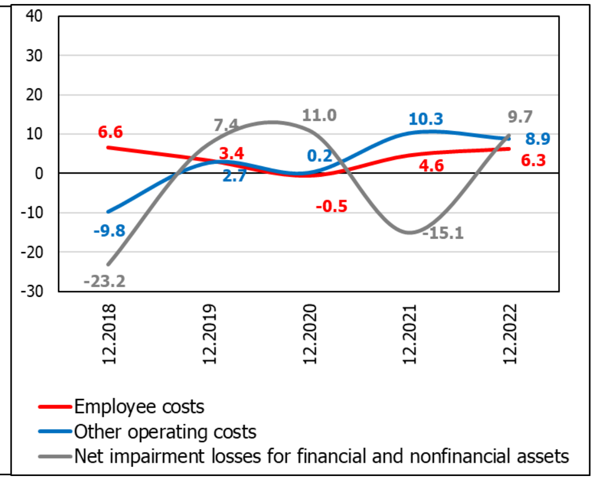




Source: National Bank, based on data submitted by banks.

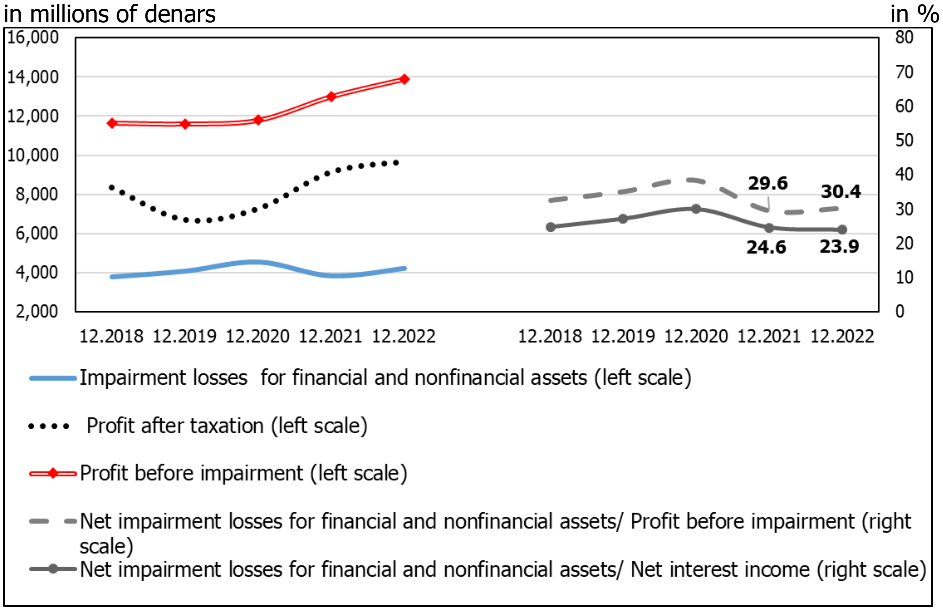
Chart 94 Annual growth rate of the main income (left) and expenditure items (right) of banks
in millions of denars





Source: National Bank, based on data submitted by banks.

Chart 95
Net impairment expenditures compared to profit and net interest income
in millions of denars

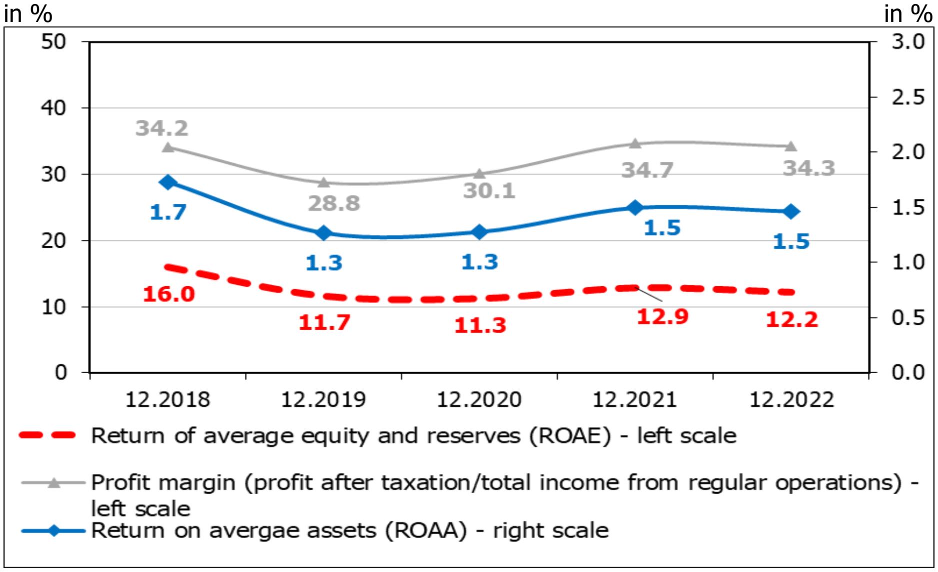


Source: National Bank, based on data submitted by banks.

The slower profit growth in 2022 influenced some of the profitability ratios[95] of the banking system. Compared to the previous year, the rate of return on average equity and reserves and the profit margin decreased by 0.7 and 0.4 pp, respectively, while the return on average assets remained unchanged.[96]

[95] Profitability and efficiency ratios of the banking system and bank groups are presented in the Annexes to this Report.
[96]The profit growth in 2022 recorded a greater slowdown (by 20.4 pp) compared to the growth of total revenues (by 2.8 pp). On the other hand, the average capital, as well as the average assets, recorded a faster growth compared to the last year (by 0.9 and 0.2 pp, respectively).

Chart 96
Rates of return on average assets and on average equity and profit margin



Source: NBRM, based on the data submitted by banks.

In 2022, the downward trend of net interest margin halted, i.e. it grew minimally compared to the last year. This is due to the faster growth of net interest income (12.7%) compared to the average interest assets (8.0%).

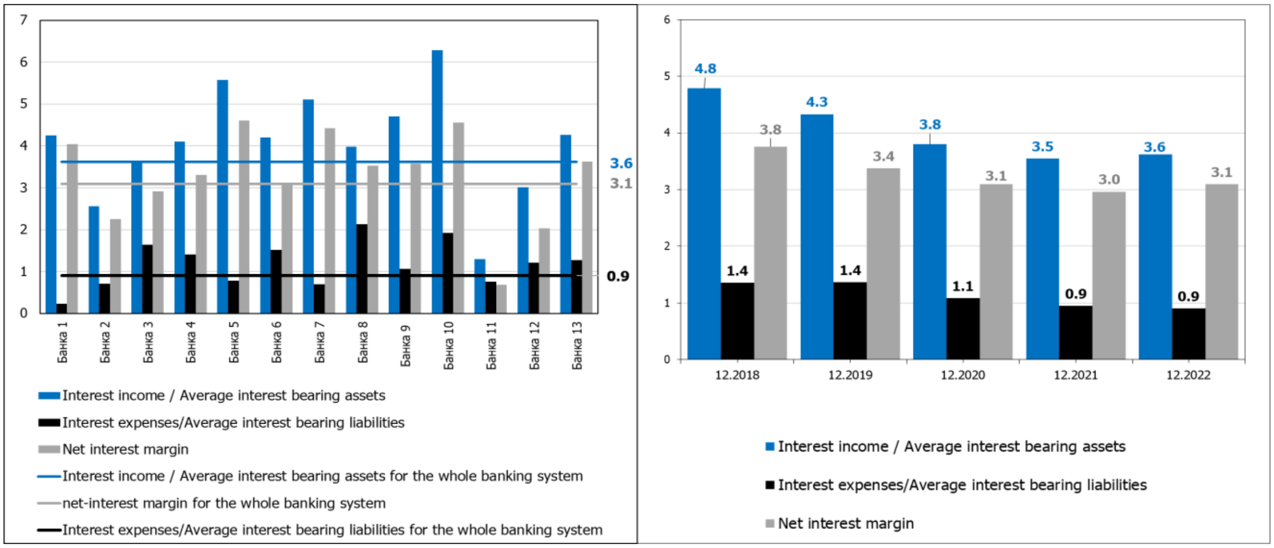
Net interest income increased compared to the same period last year, primarily due to higher interest income (by Denar 1,933 million, or 10.3%), amid certain decrease in interest expenses (by Denar 63 million, or 2.1%). The greatest contribution to the formation of net interest income (56.3%) was made by the financial intermediation with households, while the greatest contribution to the growth of net interest income was made by the interest income from non-financial corporations (34.3%). Net interest income from non-financial corporations and households increased annually by Denar 684 million, or 11.7% and Denar 653 million or 7.0%, respectively. The increased credit support of banks to enterprises in the past period, halted the yearslong decline in interest income in this sector[97] followed by its growth in 2022. Interest income from non-financial corporations increased by Denar 656 million, or 10.6%, compared to the decrease in interest expenses to these corporations (by Denar 29 million, or 9.0%), while interest income from the household sector increased by Denar 400 million, or 3.8%, compared to the decrease in interest expenses to this sector by Denar 253 million, or 20.9%.[98] Net interest income from other sectors (government, non-profit institutions serving households and non-residents) grew (by Denar 510 million, or by more than three times).[99]

[97]As of 31.12.2021, net interest income from non-financial corporations decreased by Denar 41 million, or 0.7%.
[98]The decrease in interest expenses to non-financial corporations and households resulted from the slower deposit growth, as well as from the effects of the currency and maturity transformation of deposits.
[99]The growth of interest income from other sectors mostly stems from lower net interest expenses to financial sector (by Denar 294 million), and the growth in net interest income from government (by Denar 182 million).

Chart 97

Net interest margin as of 31.12.2022, by bank (left)* and of the banking system (right)

in %



Source: NBRM, based on the data submitted by banks.

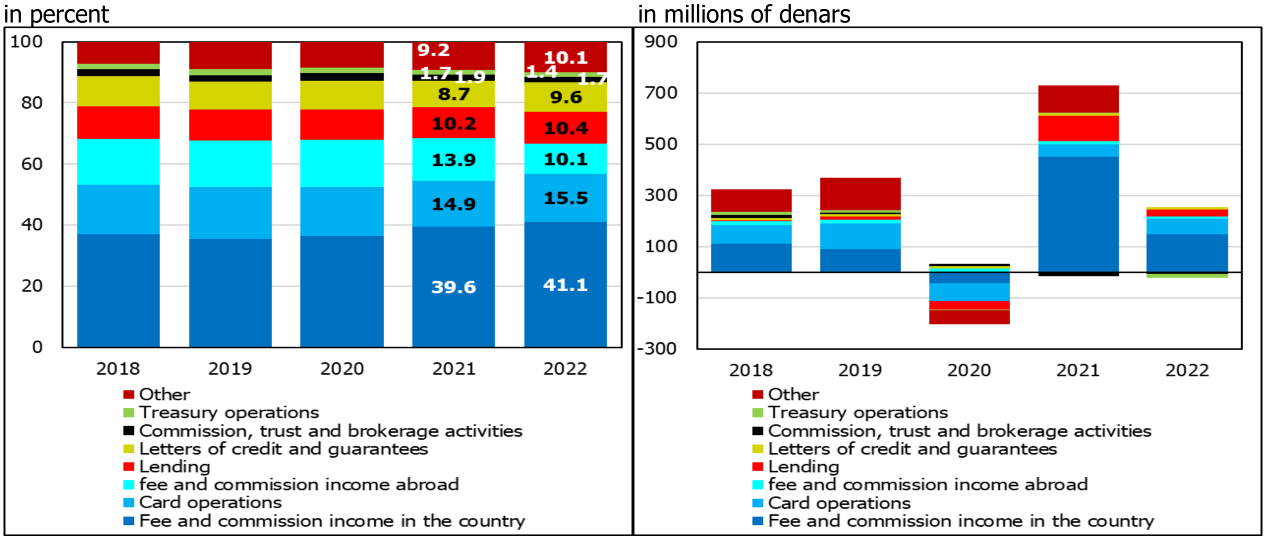
* Indicators of the banking system are shown in lines.

Net fee and commission income from domestic payment operations made the largest contribution of 98% to the growth of total net fee and commission income in 2022. This income has had the highest structural share in total net commission income, which for 2022 increased by 1.5 pp and reached 41.1%. Payment services, lending and vault operations of banks generate 63.1% of total net income from fees and commissions (65.4% in 2021).

Chart 98

Net fee and commission income, structure (left) and annual growth (right)

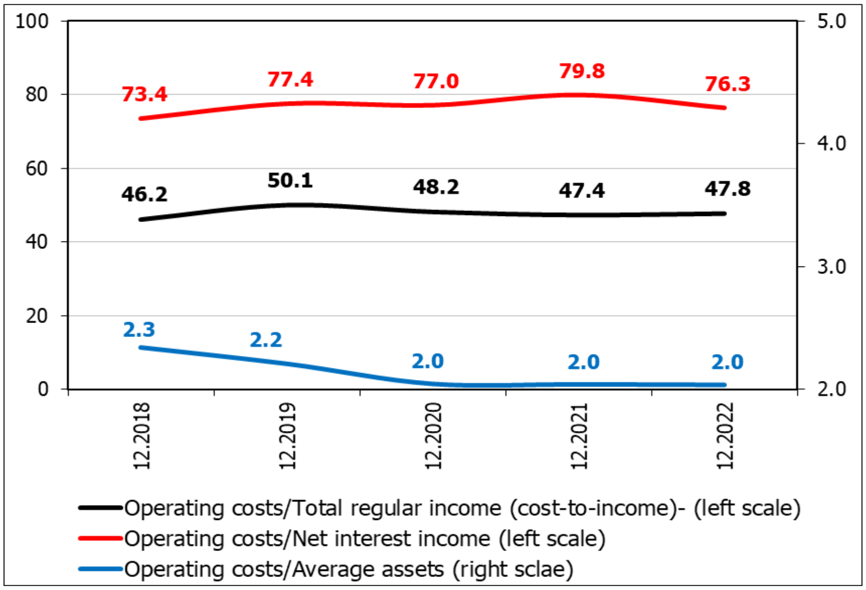
in percent / in millions of denars



Source: NBRM, based on the data submitted by banks.

The indicators of banking system operating efficiency registered divergent movements. Operating costs to regular income ratio increased by 0.4 pp, which results from the faster relative growth of operating costs (7.8%)[100], compared to the growth in total regular income (6.9%)[101]. Despite this deteriorated indicator, the operating costs to net interest income ratio improved by 3.5 pp, due to the faster growth of net interest income (12.7%) compared to the operating costs. Operating costs to average assets ratio is unchanged (2%).

Chart 99
Operational efficiency ratios
in %



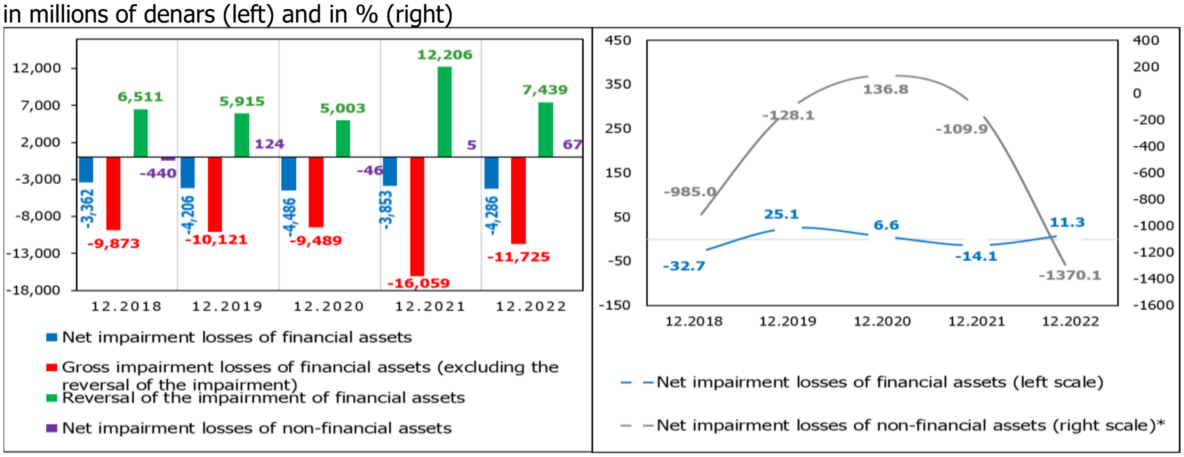
Source: NBRM, based on the data submitted by banks.

In 2022, impairment costs for financial and non-financial assets (net) increased by Denar 372 million or 9.7%. The increase in these costs is due to impairment costs of financial assets (which is a net increase of Denar 434 million or 11.3%). This growth was driven by the greater reduction in the release of impairment of financial assets (by Denar 4,768 million, or 39.1%), compared to the reduction in gross impairment costs of financial assets (by Denar 4,334 million, or 27.0%). Moreover, the decline in gross impairment costs of financial assets is mostly pronounced in loans and other placements (decrease of Denar 3,155 million, or 23.6%).

In 2022, net impairment costs of non-financial assets decreased by denar 62 million. In conditions of certain decrease in foreclosed assets with some banks, the release of impairment of non-financial assets increased by Denar 108 million, amid growth in gross impairment costs of these assets by Denar 46 million.

[100]The increase in operating costs in 2022 is mostly due to higher general and administrative expenses and higher staff expenses.
[101]In the structure of total regular income, the largest rise was observed in net interest income (by Denar 1,996 million, or 12.7%), net fee and commissions income (by Denar 641 million, or 11.l5%) and net income from exchange rate differences (by Denar 627 million, or 54.8%). Despite this growth, the income based on collected previously written-off claims in 2022 decreased compared to the previous year (by Denar 1,271 million, or 46.6%).

Chart 100
Impairment cost for financial and non-financial assets, stock (left) and annual flow (right)
in millions of denars (left) and in % (right)

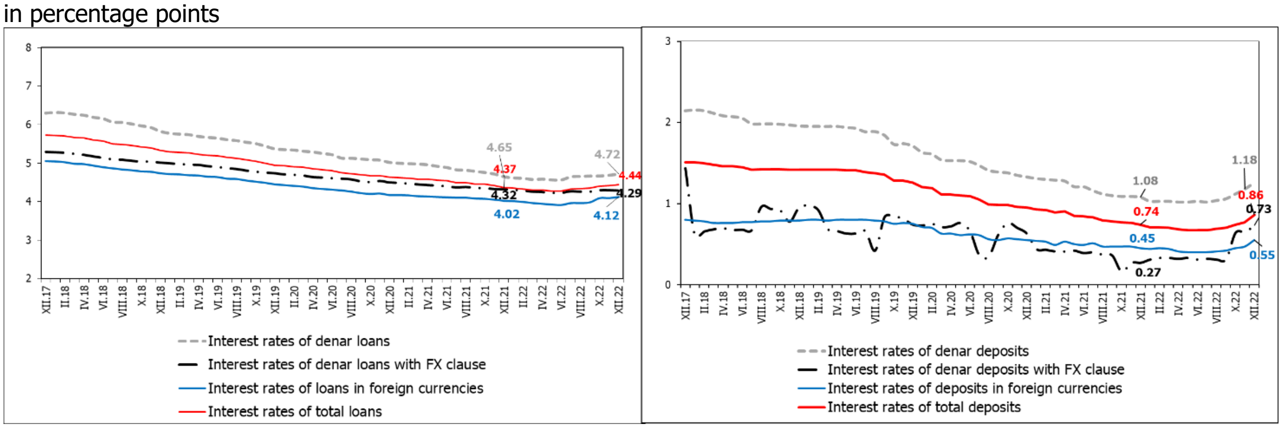


* Annual percentage growth are due to the small amounts of this item.
Source: National Bank, based on data submitted by banks.

2.2. Movements in interest rates and interest rate spread

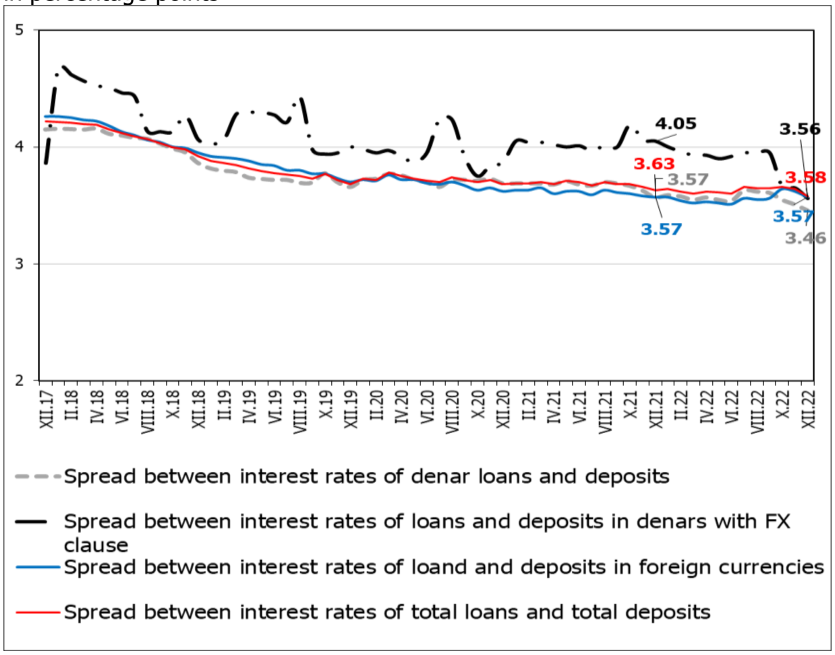
In 2022, the National Bank increased the interest rate on CB bills on several occasions, for a total of 3.5 pp, to the level of 4.75%.
These changes halted the downward trend of interest rates (lending and deposit), thus in the second half of the year they started to moderately increase. Thus, at the end of the year, the total interest rate on loans and deposits amounted to 4.44% and 0.86%, respectively, which is an increase compared to the end of the previous year by 0.07 and 0.15 pp, respectively. The interest rate spread narrowed, due to the faster growth in deposit interest rates, relative to the growth in lending interest rates. The interest rate spread between the total interest rate on loans and the total interest rate on deposits in December 2022 equaled 3.58 pp, compared to 3.63 pp at the end of 2021 (a decrease of 0.05 pp).

Chart 101 Lending (left) and deposit interest rates (right)
in percentage points



Source: National Bank.

Chart 102 Interest spread
in percentage points



Source: National Bank.

Analyzing the rates on newly agreed activities of banks (lending and deposit) in 2022, changes were registered in terms of interest rate increase, which were mostly pronounced in the rates on newly accepted denar deposits. Such movements are in accordance with the National Bank measures taken in the past period to encourage denar savings by changing the reserve requirement instrument and by increasing the policy rate, which is transmitted to the banks' interest rate policy by offering more favorable interest rates on denar deposit products. Thus, the interest rate on newly accepted denar deposits in December 2022 amounted to 1.62%, compared to 0.74% at the end of the previous year (increase of 0.88 pp). The total interest rate on newly accepted deposits (denar and foreign currency) in December 2022 equaled 1.34%, and compared to the end of the last year increased by 0.63 pp, with an increase of 1.22 pp in the total interest rate on newly approved loans (denar and foreign currency) which in December 2022 amounted to 4.83% (3.61% in December 2021).

ANNEXES