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Kontakt/Contact
ZBW – Leibniz-Informationszentrum Wirtschaft/Leibniz Information Centre for Economics
Düsternbrooker Weg 120
24105 Kiel (Germany)
E-Mail: *rights[at]zbw.eu*
https://www.zbw.eu/econis-archiv/

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National Bank of the Republic of Macedonia
Supervision, Banking Regulation and Financial Stability Sector
Financial Stability and Banking Regulations Department

REPORT ON THE RISKS IN THE BANKING SYSTEM OF THE REPUBLIC OF MACEDONIA IN 2017

April 2018

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Summary

During 2017 the domestic banks operated in a situation of political instability of the country and reduced economic activity (especially in the first half of 2017), which gradually stabilized in the second half of the year. The unpredictable domestic environment had impact on the domestic economic entities and on their reluctance to invest, which in turn had impact on the modest annual growth of the total assets of the banking system of 3.9%. The insignificant growth of the total activities of the banks is reflection of the dynamics of the deposits of the non-financial entities as main source of financing of the domestic banks, which stagnated in the first half of the year, while in the second half of the year they started to increase again. This is a clear sign of the positive link between the stabilizing of the political environment and stabilizing of the expectations of the economic entities. Still, the improvement in the deposits growth in the second half of the year is not at a level/ volume that could fully compensate for the stagnant tendencies in the previous (almost) two-year period of political instability.

The main reason for the annual growth of the total deposits in 2017 are the deposits from the population (with share of over 80% in the annual growth), in a situation of a slightly stronger growth of denar deposits in comparison to foreign currency deposits. On the other hand, the maturity structure of the deposits continues the trend present in the last two years – the more present tendency of the depositors to increase (primarily) the sight (demand) deposits, and less of the long-term deposits, vs the reduction of the short-term deposits. Beside the domestic political events, additional contribution to this trend of transformation of the maturity structure of the deposits of the banks was provided by the relatively low yield the deposit products provide on a short term, which is essentially a reflection of the global trend of low interest rates.

In a situation of high caution of the domestic non-financial entities in making decisions on investments or on consumption and, accordingly, their reduced demand for loans in the first half of 2017, the banks still managed to maintain a satisfactory dynamic of the credit activity. More specifically, the total loans of the non-financial entities in 2017 increased by 5.9%, which is a faster growth compared to the growth of the total assets and deposits of the banks in 2017. The credit growth was mainly due to the increased credit support of the banks to the households, which contributed with almost three fourths to the total annual growth of the loans to non-financial entities. The growth of the crediting to households was mainly due to the different forms of crediting intended for financing of the non-specific consumption of the population (around 63% of the annual growth), while some smaller portion was directed towards housing loans (around 37% of the annual growth). The credit support to the corporate sector, albeit lower compared to crediting of households, still accelerated in comparison to 2016. The currency transformation of the credit portfolio of the banks continued also in 2017, which is seen through the growth of the denar loans, in a situation of annual reduction of the foreign currency loans.

In 2017 the total non-performing loans of the banking system grew by 2%, mainly due to the faster growth of the non-performing loans to non-financial companies which, in turn, is due to the default of the credit obligations by several larger corporate clients of the banks. With regards to households, the growth of the non-performing loans is slightly more modest and is caused by the non-performing consumer loans, which is an indicator of partial materialization of the risks caused by the relaxation of the requirements for consumer crediting in the past. The

share of the non-performing loans in the total loans on annual basis featured slight decline – at the end of 2017 it is 6.3%. From the aspect of the sectoral structure, the non-performing loans continue to have significantly high share in the loans to non-financial companies (10% at the end of 2017), compared to the loans to population (2.4% at the end of 2017). The coverage of the non-performing loans with allocated impairment is high, and the portion of the non-performing loans not covered with impairment is only 7.9% of the own assets of the banking system. This shows that the risks related to eventual complete uncollectability of the non-performing loans i.e. risks of creating unexpected losses for the banks are small. The average level of risk in relation to the regular loans to non-financial entities established by the banks at the end of 2017 is 2.3% and, at the end of 2017, it was higher than the realized annual rate of uncollectability of the credit exposure with regular status of 1.8%.

The dynamics of the quality of the credit portfolio of the banks is related to the impact of the system factors that cannot be influenced by the banks – mainly the increase of the potential and sustainability of the growth of the economy and the implementation of structural reforms in that regard which, in turn, definitely requires predictable and stable political environment. However, in addition to the system factors, there are also factors related to market behavior, the policies and the credit process of the banks that can be influenced or changed by the management of the banks. In this regard, potential source of eventual future materialization of the credit risk is the tendency, the quality i.e. relevancy and timeliness of the changes of the credit requirements (prolonging or restructuring). Important role here also plays the inherent risk from the structure of the cash flow in the bullet loans (one-off repayment of the principal) – they cover almost one third of the total loans to non-financial companies. The high share of the loans for which any type of collateral is provided, especially among the non-financial companies, mitigates the credit risk that was undertaken, hence it is an important potential secondary source for collection; on the other hand it emphasizes the importance of the quality of the collateral – this means that the eventual forfeiting of the collateral means, for the banks, is a substitution of one type of risk (credit risk) with other risks related to market tendencies for the assets forfeited for collection of the non-performing loans, especially the market of various forms of real estate, as one of the most common forms of collateral.

Due to the modest annual growth of the liquid assets (0.8%), their share in the total assets of the banks, on annual basis, is smaller by around one percentage point and at the end of 2017 it was 29.8%. The indicators of coverage of the different liability categories of the banks with liquid assets also declined in 2017, but they are at a satisfactory level, which enables the banks to ensure successful operational management with the liquidity. The prolonging of the maturity of the liquid assets of the banks due to the intentions to achieve greater yield from their investments in longer-term instruments, in a situation of gradual increase of the share of the demand deposits in the structure of the sources of financing of the banks, contributed towards deepening of the gap between the assets and the liabilities in terms of their contractual residual maturity, which is more evident in the foreign currency gap due to the currency transformation performed by the banks. On the other hand, the direct exposure to currency risk of the domestic banks at the end of 2017 was at the lowest relative level in the last five years, which is confirmed through the ratio of the gap between the assets and liabilities with currency component, and the own assets of the banks, which dropped to 6.4%.

At the beginning of 2017, the National Bank resumed the normalization of the monetary policy by increasing the offer of CB bills and reduced their interest rate twice, by a total of 0.5

percentage points, thereby returning the policy rate to the level from the beginning of 2016 (3.25%). These changes stem out of the balance on the foreign currency market and the absence of instability on the deposit market which was present in the first half of 2016. The achieved market balance that was maintained during 2017, regardless of the unstable political events, which was also the basis for additional reduction of the interest rates of the CB bills by the National Bank at the beginning of 2018 and reduction of the interest rates on the available overnight and seven-day deposits.

In 2017 the banking system showed profit in a total amount of 6.6 billion denars, which is more by 3.6% compared to the profit achieved in 2016. Contrary to the last several years, when the net interest income had the biggest share in the growth of the profit of the banks, the non-interest revenues had the greatest contribution in the increase of the profit in 2017. More specifically, in 2017 there is a slowdown of the annual growth of the net interest income of the banks due to the decline of the interest revenues from non-financial companies. On the other hand, the growth of the non-interest revenues is not due to the introduction of new financial products and services but it is mainly due to the increase of the non-operational revenues, that are of non-repeatable character, such as collection of receivables that were already written off and capital gains from sales of assets. The impairment costs increased by 11.1% on annual basis, thus also contributing to slowed annual growth of the profits of the banking system. The slowed growth of the profit also had impact on the indicators of profitability and efficiency of the banking sector. Following several years of continuous growth, the rates of return of the average assets and of the average capital and reserves feature minimal decline of 0.1 percentage point each, and the end of 2017 they are 13.5% and 1.4%, respectively.

The banking system of the Republic of Macedonia continued to successfully maintain its solvency during 2017. The capital positions of the banks featured faster growth compared to the risk-weighted assets, mainly due to the reinvesting of some of the profits of the banks and due to the issuing of new subordinated instruments. This provided for increase of the solvency ratios, where the capital adequacy ratio at the end of the year was 15.7% i.e. more than half percentage point compared to the end of 2016.

In 2017 the banks complied to the new regulatory requirements related to the structure of the own assets and the capital buffers. The relatively high amount and quality of the own assets of the banks enabled them to undergo this process of compliance to the new capital requirements without larger limitations of their activities or needs for some significant new recapitalizations. With this, one of the more important components of the Basel III International Framework was also applied in the domestic banking system. In accordance with these new capital requirements, in addition to the minimal capital adequacy ratio (at the amount of 8%), the banks are also required to calculate and to maintain a minimal level of the core capital (in the amount of 6%) and a rate of regular core capital (in the amount of 4.5%). In addition, each bank is required to maintain so called capital buffer for protection of the capital (in the amount of 2.5% of the risk-weighted assets). The National Bank, using the methodology prescribed in accordance with the international standards, established the called 'banks significant for the system' (seven banks in total) which are also obliged to comply to the so-called capital buffer for banks significant for the system – one part until 30 September 2017 and the remainder no later than 31 March 2018. The National Bank, as the relevant supervisory body, established also a capital supplement relevant to the established risk profile of particular banks. All these changes in the regulatory framework and their official enforcement are not only determining the

international competitiveness of the domestic banking system due to the harmonization with the international capital adequacy standards, but they are also expected to contribute towards further strengthening of the capital position of the banks and to introduce new opportunities for greater flexibility in terms of management and maintenance of the capital adequacy of the banks.

I. Structure of the banking system

1. Structure of the banking system

1.1 Main features of the business models of banks

Graph 1
Structure of the assets (above) and liabilities (below) of the banks, as on 31 December 2017
In percentages

Source: NBRM, using data provided by the banks.
The order of the banks is coincidental.

The main business model of the banks in the Republic of Macedonia, as financial mediators, did not change compared to 2017. The household deposits have a dominant presence in the total liabilities i.e. they are the most important source of financing of the banking activities (in 2017 their share in the total assets reached 50.8% i.e. 1.1 percentage point more compared to 2016). In ten out of fifteen banks in the country, the household deposits have the largest share in the total sources of assets[1]. On the assets side, the trend of more intensive crediting to households that was common in the last several years, continued in 2017 as well, reaching the share of 29.2% (which is an increase of 1.6 percentage points). The share of the loans to non-financial companies[2] declined by 0.1 percentage point and was 29.9% on 31 December 2017 in the total assets of the banking system.

If analyzed per specific banks, there is no-change of the situation in the credit orientation of the banks compared to the previous year. In other words, six banks are more oriented towards crediting of non-financial companies, five banks mainly credit households, three banks equally finance both sectors and one bank places loans in the domestic banks (acting as a mediator for the credit lines approved by the international financial institutions).

[1] In one of the banks, the deposits from non-financial companies have the largest share in the liabilities, while in three banks the deposits from households and from non-financial companies have almost equal share. MBPR AD Skopje is the only one funded with credit lines from the international financial institutions, and MBPR AD Skopje on-lends these loans to the final beneficiaries through other banks in the country.

[2] The loans to non-financial companies and households are analyzed on net basis (taking into account the impairment and the accumulated amortization of the loans), but the conclusion would not change if the analysis of the loans is done on gross basis.

Graph 2
Structure of the total revenues of the banks in 2017
In percentages

Source: NBRM, using data provided by the banks.
The order of the banks is coincidental.

Graph 3
Structure of the total expenditures of the banks in 2017
In percentages

Source: NBRM, using data provided by the banks.
The order of the banks is coincidental.

The structure of the total revenues as on 31 December 2017 corresponds to the traditional business model of the banks. In this regard, the net interest income (with a share of 65%) are the most important in the structure of the total revenues, regardless of the decline in their share by 2 percentage points compared to 2016.

The greater orientation of the banks towards working with households resumed also during 2017, as seen from the changes in the sectoral structure of the net interest income. More particularly, the share of the net interest income from doing business with non-financial companies declined by 4.2 percentage points compared to 2016 vs the increased share of the net interest income from doing business with households, by 2.6 percentage points. With this, the share/s of the net interest income from doing business with these two sectors is 29% of the total income.

The most important expenditures on the banking system level are the expenditures for impairment of the financial and non-financial assets, and the employee-related costs. At the end of 2017 the impairment has the largest individual share in the total expenditures, which was increased by 3.5 percentage points during 2017. Furthermore, the employee-related costs feature smaller increase (by 1.2 percentage points) and they are on the second place in terms of their share. The structure of expenditures had significant differences per individual banks – depending on the current exposure of the banks to credit risk, there are visible differences in the share of the impairment in the total expenditures among different banks.

1.2 Total number of banks and access to banking services

As on 31 December 2017, there are seventeen deposit institutions in operation in the Republic of Macedonia – fifteen banks and two savings houses[3]. The number of the banks remained unchanged, while the number of savings houses declined by one[4] compared to the previous year.

Graph 4
Bank network* (left) and number of inhabitants per business unit (right), by regions in the Republic of Macedonia

Source: NBRM, based on data submitted by banks, State Statistical Office of the Republic of Macedonia according to official data of the 2002 Census.
*The calculation does not include banks' windows.

The banking network that is spread across almost all cities in the Republic of Macedonia includes 427 business units[5]. During 2017 the total number of business units reduced by six (two new business units opened and eight were closed). Around 43% of the total number of business units are concentrated in the Skopje region, where the **access to banking services,** as measured by the number of inhabitants per business units, is still the best. By regions, in the Southeastern and in the Northeastern regions there is slight improvement in the access to banking services, while the situation is slightly deteriorated in the Pelagonia and in Polog regions.

[3] The share of the savings houses in the total assets of the deposit financial institutions (banks and savings houses) and in the total loans to non-financial entities declined by 0.2 percentage points and is 0.4% and 0.5% respectively, and 0.4% of the total deposits of the households. Due to the insignificant share of the savings houses in the total banking system, they are subject of analysis only in the reports that cover the financial stability of the Republic of Macedonia.
[4] Pursuant to the Decision on Transformation into Financial Entity of the MAK BS DOO savings house from Skopje, made on 29 December 2016, the number of savings houses was reduced by one.
[5] The number of the business units also includes the headquarters of the banks, but excludes the windows of the banks.

Table 1
Comparative indicators on number of residents per credit institution and per business unit of banks

Country	Number of inhabitants by bank	Country	Number of inhabitants by business unit of banks
Luxembourgh	4.030	Cyprus	1.559
Austria	12.947	Spain	1.612
Malta	17.324	France	1.791
Cyprus	18.852	Italy	2.068
Lithuania	32.825	Portugal	2.098
Montenegro	41.481	Austria	2.212
Germany	50.291	Bulgaria	2.429
Denmark	52.360	Luxembourgh	2.505
Sweden	59.343	Germany	2.566
Poland	61.139	Poland	2.782
Portugal	70.349	Belgium	3.379
Estonia	82.247	Slovenia	3.541
Latvia	85.607	Hungary	3.580
Hungary	92.740	Croatia	3.670
Slovenia	108.641	Romania	4.118
Italy	110.906	Slovakia	4.197
Belgium	119.064	Serbia	4.235
France	122.666	Malta	4.249
Croatia	130.958	Greece	4.624
Macedonia	138.085	Macedonia	4.851
The Netherlands	173.256	The Czech Republic	5.390
Spain	179.305	Sweden	5.681
Albania	180.377	Lithuania	5.709
The Czech Republic	188.461	Denmark	5.736
Slovakia	193.795	Albania	5.854
Serbia	228.270	Latvia	7.544
Bosnia and Hercegovina	234.399	The Netherlands	10.143
Greece	239.639	Estonia	13.292
Bulgaria	264.955	Montenegro	н.п.
Romania	534.063	Bosnia and Hercegovina	н.п.

Source: The NBRM, EU Structural Financial Indicators 2016, BSCEE Review 2016, the website of the European Union, the website of the World Bank, the Bank of Albania (Supervision Annual Report 2016), the National Bank of Serbia (Banking Sector in Serbia, Report on the Third Quarter of 2017).
Note: Data on Macedonia are as of 31 December 2017, on Serbia as of 30 September 2017, while data for other countries they are as of 31 December 2016.

The banks in the Republic of Macedonia still have underdeveloped banking network compared to the majority countries in the region and the EU covered in the analysis. The number of residents served by a bank i.e. by a business unit places Macedonia in the second half of the list of analyzed countries, which is almost unchanged compared to the previous year.

1.3 Employment in the banking system

Graph 5
Number of employees in the banking sector

Source: NBRM, using data provided by the banks.

In 2017 the number of people employed in the banking system reduced by 56[6] and is now 5,929. The share of the employees with at least university education continues to increase, reaching 78.8% (increase of 2.1 percentage points), which is an indicator of further improvement of the qualifications structure of the employees in the banking sector.

The productivity of the banking system continues to improve. During 2017 the assets grew, albeit at a slower pace compared to the previous year, and there is negative change in the number of employees. Analyzed by individual bank, measured as assets amount per employee, the productivity was improved in twelve banks, where in seven of

[6] The largest reduction in the number of employees happened in one middle-sized bank (by 53 people) and in one small bank (by 21 people). On the other hand, there is obvious growth of employees in one large bank (by 38 people).

Graph 6
Assets per employee *
In thousands denars

Source: NBRM, using data provided by the banks.
*MBPR is excluded from the analysis due to the type of activities it performs.

those banks this is due to the growth of the assets in a situation of simultaneous decline in the number of employees; in four of these banks this is due to the faster growth of the assets compared to the increase in the number of employees; and in one of those banks the increased amount of assets per employee is due to the faster decline in the number of employees compared to the decline in the assets amount. Despite the increase in productivity of the banking system, due to the mentioned decline in the number of employees in one middle-size bank, the spread between the bank with the highest and the bank with the lowest productivity significantly expanded; while the spread between the first and the third quartile of the assets per employee ratio features almost no change in comparison to 2016.

1.4 Ownership structure and concentration of the banking system

In 2017, the number of banks owned by foreign shareholders (eleven), as well as the number of subsidiaries of foreign banks (six) remains unchanged compared to the situation at the end of 2016.

Table 2
Structure of the number of banks and major balance sheet positions, by banks' majority ownership (as of 31 December 2017)
In millions denars and in percentages

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	**11**	**35.097**	**70,1%**	**325.711**	**70,5%**	**233.427**	**78,4%**	**236.629**	**69,7%**	**17.469**	**72,9%**	**5.502**	**83,9%**
- subsidiaries of foreign banks	*6*	*30.179*	60,3%	*267.316*	57,9%	*191.891*	64,5%	*195.970*	57,8%	*14.529*	60,7%	*5.084*	77,6%
- Austria	1	2.348	4,7%	18.878	4,1%	12.540	4,2%	11.852	3,5%	914	3,8%	29	0,4%
- Bulgaria	1	1.201	2,4%	8.636	1,9%	5.879	2,0%	6.327	1,9%	353	1,5%	-5	-0,1%
- Greece	1	11.590	23,1%	86.374	18,7%	63.998	21,5%	68.447	20,2%	5.326	22,2%	2.044	31,2%
- Slovenia	1	7.395	14,8%	75.947	16,4%	53.481	18,0%	60.287	17,8%	4.483	18,7%	2.125	32,4%
- Turkey	1	4.670	9,3%	42.221	9,1%	28.458	9,6%	24.655	7,3%	1.788	7,5%	539	8,2%
- France	1	2.976	5,9%	35.258	7,6%	27.534	9,3%	24.403	7,2%	1.664	6,9%	351	5,4%
- other banks in dominant foreign ownership	*5*	*4.918*	9,8%	*58.396*	12,6%	*41.536*	**14,0%**	*40.659*	12,0%	*2.940*	12,3%	*418*	6,4%
- Bulgaria	2	1.743	3,5%	18.795	4,1%	12.555	4,2%	13.649	4,0%	970	4,0%	66	1,0%
- Germany	1	2.277	4,5%	22.910	5,0%	17.950	6,0%	14.504	4,3%	1.075	4,5%	293	4,5%
- Switzerland	2	899	1,8%	16.691	3,6%	11.031	3,7%	12.506	3,7%	895	3,7%	59	0,9%
Banks in dominant ownership of domestic shareholders	**4**	**14.984**	**29,9%**	**136.281**	**29,5%**	**64.149**	**21,6%**	**102.652**	**30,3%**	**6.478**	**27,1%**	**1.053**	**16,1%**
- private ownership	*3*	*12.519*	25,0%	*123.797*	26,8%	*64.129*	21,6%	*102.652*	30,3%	*6.304*	26,3%	*964*	14,7%
- state ownership	*1*	*2.465*	4,9%	*12.484*	2,7%	*20*	0,0%	*0*	0,0%	*174*	0,7%	*90*	1,4%
Total:	**15**	**50.081**	**100,0%**	**461.992**	**100,0%**	**297.576**	**100,0%**	**339.281**	**100,0%**	**23.947**	**100,0%**	**6.555**	**100,0%**

Source: NBRM, using data provided by the banks.
*The total revenues and the financial result pertain to 2017.

Graph 7
Ownership structure of capital and reserves of the banking system
In percentages

Source: NBRM, using data provided by the banks.

Graph 8
Herfindahl index*
In index points

Source: NBRM, using data provided by the banks.

* The Herfindahl index is calculated with the following formula $HI = \sum_{j=1}^{n} (S_j)^2$, where S is the participation of each bank in the total amount of the category being analyzed (for example: total assets, total deposits, etc.), while *n* is the total number of banks in the system. The concentration level is considered acceptable if this index is somewhere between 1,000 and 1,800 points.

The ownership structure of the banks did not undergo significant changes during 2017. In the banking system of the Republic of Macedonia there is prevalence of banks in predominant ownership of foreign shareholders, for all relevant balance sheet positions. Their dominance is particularly evident in the credit activity (78.4%) and in the financial result (83.9%), which is an indicator of the more aggressive approach these banks have on the credit market and realization of higher profit margins. Per types of shareholders, the financial institutions continue to have the highest share in the ownership structure of the capital and reserves of the banking system, regardless of the decline of 1.7 percentage points, on the account of increase of the share of the individuals. Among foreign shareholders, in terms of country of their origin, the share of shareholders from Greece and Slovenia in the total capital and reserves of the banking system is the highest, which is 21.3% и 14%, respectively. In 2017 the share of the capital originating from Germany[7] increased by 0.8 percentage points. The share of the foreign capital in the total capital and reserves of the banking system declined by 1.1 percentage point, but this reduction is mainly due to the higher growth of the total capital and reserves than the growth of the foreign capital.

In terms of size, several banks are the key banks for the overall banking sector and the domestic economy, while the growth of the middle-size banks is more and more reducing the relevance and importance of the three largest banks in the system. According to the Herfindahl index, the concentration in the banking system continued the trend of decline in 2017, and all parameters of this index are within the interval of acceptable values. The CR5 and CR3[8] indicators, as on 31 December 2017 show insignificant annual decline in all segments of the

[7] During 2017, one bank owned by a German shareholder was recapitalized by the parent entity (through emission of new shares).
[8] The CR5 i.e. CR3 indicator shows the share of particular analyzed category (for example, assets) of the five i.e. the three banks with highest value of that category, in the total amount of that analyzed category (for example, in the total assets) in the banking system.

Table 3
Concentration indicators of the most important items of the balance sheets in the three and in the five largest banks
In percentages

Position	31.12.2016		31.12.2017	
	CR3	CR5	CR3	CR5
Total assets	58,2	74,3	57,8	74,6
Loans to households	62,9	79,2	61,5	78,8
Loans to non-financial companies	55,5	74,9	53,0	73,4
Deposits from households	70,5	79,9	70,1	80,0
Deposits from non-financial companies	53,9	76,9	51,1	76,6
Financial result*	72,7	87,0	76,1	89,7
Total revenues*	61,3	75,5	63,2	77,6

Source: NBRM, using data provided by the banks.
*The total revenues and the financial result are calculated for 2017.

Graph 9
Distribution of the share of the assets, per individual banks

Source: NBRM, using data provided by the banks.

banking operations, except the share of the three largest banks in doing business with companies, which declined by 2.5 percentage points on the side of the loans and by 2.8 percentage points on the side of the deposits. The share of the five largest banks in the total assets of the banking system (74.6%) featured minimal increase of 0.3 percentage points, vs the reduction of the share of the three largest banks by 0.4 percentage points. The share indicators of the three and the five largest banks in the total revenues and the financial result are increasing. The spread between the bank with the largest (22.7%) and the bank with the lowest share in the assets (0.6%) of the system is at almost the same (high) level of the last year, and ten banks (that have a total share of one fourth in the total assets), have individual share of less than 5%.

The domination of several banks is also confirmed if we compare the share of the assets, per bank, with the standard[9] distribution. We can notice that their distribution is positively asymmetric or asymmetric towards right i.e. there are several banks that have "extreme" values of this indicator. Three banks had shares that go beyond 15% and ten banks are under the average of 7%.

[9] Normal distribution is distribution of data in a bell-like shape, where the average, the median and the modus i.e. the most common value match, where 68% of the data are within a single standard deviation from the mean, and 95% of the values are within two standard deviations from the mean. In the positively asymmetric distribution, several extreme values are located at the positive end of the distribution, and the mean (the average) is larger from the median and from the modus (due to the presence of the extreme values at the positive side of the distribution). The vice-versa goes for the negative asymmetric distribution i.e. asymmetric to the left where the mean is smaller than the modus.

II. Bank risks

Heatmap for specific indicators (as on 31 December 2017)
Review of the key indicators of the risks in the banking sector

	Indicator	Intervals	Trend*	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	EU Q2 2017
Solvency	Tier 1 capital/Risk weighted assets	>15%		31,3%	32,0%	32,2%	55,5%	54,8%	54,3%	54,3%	53,9%	51,5%	**50,5%**
		[12%-15%]		35,2%	52,0%	51,3%	28,1%	11,7%	13,8%	29,1%	29,5%	31,8%	**39,7%**
		<12%		33,6%	16,0%	16,5%	16,4%	33,6%	31,9%	16,6%	16,6%	16,7%	**9,8%**
Credit risk	NPL ratio (for non-financial entities)	<3%		14,2%	14,5%	20,8%	21,0%	21,1%	22,0%	22,3%	22,3%	22,5%	**44,3%**
		[3%-8%]		28,3%	27,8%	53,9%	53,7%	53,5%	52,3%	50,1%	49,9%	52,2%	**43,0%**
		>8%		57,4%	57,7%	25,3%	25,3%	25,5%	25,7%	27,6%	27,8%	25,3%	**12,7%**
	Impairment allocated for non-performing loans/Non-performing loans (only non-financial entities are included)	>55%		100,0%	100,0%	100,0%	91,9%	100,0%	100,0%	100,0%	100,0%	100,0%	**10,9%**
		[40%-55%]		0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	**50,8%**
		<40%		0,0%	0,0%	0,0%	8,1%	0,0%	0,0%	0,0%	0,0%	0,0%	**38,3%**
Profitability	ROAE (Return on average equity)	>10%		60,5%	63,7%	62,0%	66,4%	61,7%	52,9%	62,1%	61,9%	63,4%	**12,0%**
		[6%-10%]		3,1%	24,1%	6,5%	23,4%	29,6%	12,5%	1,7%	1,8%	25,1%	**47,7%**
		<6%		36,4%	12,2%	31,4%	10,2%	8,7%	34,5%	36,1%	36,4%	11,5%	**40,3%**
	Cost to income	<50%		61,8%	69,7%	52,5%	68,9%	68,6%	67,9%	67,5%	67,4%	67,3%	**14,7%**
		[50%-60%]		10,3%	7,7%	21,5%	0,0%	10,1%	0,0%	0,0%	0,0%	9,4%	**16,9%**
		>60%		27,9%	22,6%	26,0%	31,1%	21,4%	32,1%	32,5%	32,6%	23,3%	**68,4%**
Balance sheet structure	Loan to deposit ratio (for non-financial entities)	<100%		75,2%	76,9%	78,4%	78,2%	77,6%	74,1%	73,0%	73,9%	73,5%	**35,7%**
		[100%-150%]		24,8%	23,1%	21,6%	21,8%	22,4%	25,9%	27,0%	26,1%	26,5%	**51,7%**
		>150%		0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	**12,6%**
	Debt to equity ratio	<12%		88,3%	88,7%	96,5%	96,6%	89,4%	97,7%	96,4%	96,2%	96,3%	**27,3%**
		[12%-15%]		9,5%	7,6%	1,2%	1,2%	8,3%	0,0%	1,4%	0,0%	1,4%	**25,4%**
		>15%		2,2%	3,7%	2,2%	2,2%	2,2%	2,3%	2,3%	3,8%	2,3%	**47,4%**

Source: NBRM.
*The intervals are taken from "EBA – Risk Dashboard Data as of Q2 2017", in order to provide for comparison between the selected indicators in Macedonia, in relation to EU.
**The EU indicators for the second quarter of 2017 is the last available data.

Methodology used for construction of the heatmap

The heatmap provides quick overview of the main indicators of the financial stability, from which we can see the type of risk, the specific indicator and its historical development, and the three baskets in which each data is distributed in the time, according to the interval (green for the "best" basket, yellow for the "middle" and red for the "worst" basket). Quarterly data is used, starting from the fourth quarter of 2015 and ending with the fourth quarter of 2017. For each value of the indicator, the distribution throughout the three baskets is calculated in accordance with the assets of the banks that enter into the respective interval for the indicator, in relation to the total assets of the banking system. For example, if there is obvious increase of the percentage in any of the baskets that means more assets of the banking system are distributed in that basket. However, that does not necessarily mean that more banks are included in that basket. The color in the "trend" column for each indicator can be green, yellow or red, depending on the latest tendencies of the "worst" basket for the specific indicator, compared to the entire time series. If the "worst" basket is making positive progress (when less assets are distributed in this basket) the color should be moving from red towards green. In this respect, the color is determined by calculating the thirty third and the sixty seventh percentile of the time series, for the "worst" basket. If the percentage for the last quarter in the "worst" basket is smaller than the thirty third percentile, in that case we mark the trend with green color; if it is between the value of the thirty third (33rd) and sixty seventh (67th) percentile we mark the trend with yellow color; and if it goes beyond the sixty seventh (67th) we mark the trend with red color. The green color of the trend refers to improvement of the specific indicator, in the last quarter, compared to past observations.

This approach in the analysis of specific indicators makes it possible, through the use of the trend color, to identify whether more or less of the assets in the total banking system are distributed in the "worst" basket, but also to identify the most recent trends of the "worst" basket of the specific indicator compared to past values of the same basket.

For easier reading of the heat map, below we are showing a short explanation of one of the ratios (indicators) – the indicator for non-performing loans in relation to the gross-loans, per bank, for the fourth quarter of 2017. First, the assets of those banks that have a value of this indicator lower than 3%, are expressed as percentage of the total assets, and as a result we get that 24.2% of the total assets are distributed in the green basket. In the yellow basket we have the assets of the bank that have the value of the indicator between 3% and 8% (here we have half of the assets of the banking system). In the red (the "worst") basket we have the share in the total assets of the banking system (25.3%) of the assets of those banks that have value of the indicator above 8%. Next, in order to determine the trend, this share of 25.3% in the "worst" basket is compared against the 33rd and the 67th percentile of the time series for the "worst" basket. The result we are getting is that the 33rd percentile is 25.4% and the 67th percentile is 27.7%. Since 25.3% is smaller than the value of the 33rd percentile, we mark the color of this trend with green, which means that this indicator is improving through the time. The same conclusion can be drawn if we compare the share of the assets in the "worst" basket from Q4 2015 (57.4%) with the share in Q4 2017 – it was reduced by half and it is 25.3%, which is a clear sign of improvement.

Conclusion

We can conclude that the risks in the Macedonian banking system are small. A slightly higher level of risk is noticeable when it comes to the share of the non-performing loans in the total loans, because one fourth of the assets of the banks is in the red basket. Still, the overall level of the credit risk is not high if we consider the two selected indicators, and on top of that their trend is improving.

Analyzed per indicators (ratios), the solvency indicator shows average improvement in its behavior through the time i.e. the percentage of the assets in the fourth quarter of 2017 is improving in comparison to the past values, which was not the case in the fourth quarter of 2015 and in the fourth quarter of 2016 when the "worst" basked included one third (both quarters, per quarter) of the total assets of the banking system. Compared to the indicators for EU[10], in the second quarter of 2017 the "worst" basket for this ratio included 9.8% of the total assets of the banks while the trend of improvement is the same like with us. When it comes to debt-to-equity ratio, there is very small change in the percentage of the assets that belong to the "worst" basket through the time, but this percentage is already very low and does not pose any risk to the banking system. In the EU banks there is improvement of this ratio through time, but the "worst" basket, in the second quarter of 2017, continues to have almost half of the assets of the banking system (47.4%).

In terms of other indicators (ratios), the green color of the trend refers to improved behavior of these indicators, which also means that a larger and larger percentage of the total assets goes to better baskets (yellow and green). Compared to the EU indicators, the non-performing loans to gross-loans ratio has a room for further improvement because in the second quarter of 2017 the "worst" basket included 12.7% of the assets of the banks in EU, while here this share is 25.3%, in the fourth quarter of 2017. In this regard, the allocated provisions for non-performing loans in the total non-performing loans in Macedonia are not less than 55%, while in the EU 38.3% of the assets of the banks belong to the "worst" basket, where the value of the indicator is less than 40%. The profitability ratios are better compared to those for the EU and the loan-to-deposit ratio shows that most of the assets are concentrated in the "best" basket and there is no bank where the value of this indicator is greater than 150%.

[10] Indicators for EU, used for the comparative analysis, undertaken from "EBA – Risk Dashboard Data as of Q2 2017".

1. Credit risk

In 2017 there were no significant changes in the level of the credit risk in the banking system, regardless of the materialization of the risk from some larger corporate clients of the banks. The total non-performing loans of the banking system increased by 2.0%, but this growth did not have impact on the non-performing loans in the total loans (which was reduced by 0.2 percentage points and at the end of 2017 was 6.3%). Per sectors, the most important credit risk for the banks continues to be the corporate sector, whose share in non-performing loans[11] is 10% as on 31 December 2017 and is larger compared to 2016. The growth or this share was due to the more emphasized increase of the non-performing loans in relation to the development of the credit activity of the banks towards this segment of the credit market. The credit risk from placements of the banks to households is low – the non-performing loans rate was reduced to the lowest historical level of 2.4%. The banks have good capacity for dealing with the credit risk that mainly would originate from non-performing loans. The prudent regulation and supervision, but also the cautious approach of the banks when measuring the credit risk provide for high coverage of the non-performing loans with allocated impairment and for minimizing of the risks for the solvency of the banks from eventual complete uncollectibility (default) of these loans.

In 2017 the National Bank developed a draft-strategy for stimulation of dealing with, and improvement of, the management with non-performing loans. The implementation of this Strategy requires coordinated activities by a number of different institutions in the country, and is about proposing changes or explanations in the legislation with regards to enforcement, evaluation, taxation, write-offs, supervision, as well as measures and activities for improvement of the flow of the non-performing receivables.

Graph 10
Annual growth of non-performing loans to non-financial entities

Source: NBRM, using data provided by the banks. Pursuant to the regulation, starting from 1 January 2016 the banks are required to regularly write-off all receivables that are entirely reserved longer than two years. The biggest write-off on this basis was in June 2016.

1.1 Materialization of the credit risk in the balances of the banks

The total non-performing loans of the banking system were increased by 2% in 2017. The growth of the non-performing loans was mainly present among the non-financial companies, whose non-performing loans increased by 3.8%. This growth is due to the deteriorated credit capacity of several larger clients in the following sectors: "Production of metals, machinery, tools and equipment", "Information and communications", "Food industry" and "Other processing industry". The

[11] The rate of non-performing loans is the share of the non-performing loans in the total loans.

Graph 11
Annual growth of non-performing loans of specific credit products to non-financial companies

in millions of denars in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

Graph 13
Structure of the consumer loans per type of collateral

in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

growth partially slowed in the third quarter of the year due to the "collection" of specific non-performing receivables by forfeiting their collateral[12].

Graph 12
Annual growth of non-performing loans of specific credit products to households

in millions of denars in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

With regards to households, the growth of the non-performing loans is moderate – it is 1.4%. This growth is entirely due to the non-performing consumer loans (these are greater by 8.1%), which is an indicator of partial materialization of the risks from the fast growth and the relaxed requirements for consumer crediting in the past period (mainly about lower interest rates, longer time periods for repayment of the loans[13] and more liberal collateral requirements[14]). The growth of the consumer loans did not allow the growth of the non-performing consumer loans[15] to have impact on the rate of the non-performing loans for this credit product[16].

[12] The forfeited assets originate from one non-financial company from the "Construction" sector and from other smaller non-financial companies related to this company.
[13] At the end of 2015 the National Bank introduced greater capital requirement for the consumer loans with original maturity equal to, or longer than, eight years. The intention of this measure was to limit the risks by contributing towards slowing down of the fast growth of the long-term consumer loans, or towards their higher coverage with capital.
[14] As on 31 December 2017, 37% of the total consumer loans were loans with no collateral (22% in 2013).
[15] The total consumer loans grew by 11.2% (7,539 million denars), while the non-performing loans grew by 8.1% (139 million denars).
[16] The rate of the non-performing consumer loans remains unchanged in relation to the previous year and is 2.5%.

Graph 14
Share of non-performing loans to households
in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

Graph 15
Share of non-performing loans to non-financial entities
in percentages

Source: NBRM, using data provided by the banks.

Pursuant to the regulation, the banks were required, in the period 1 January – 30 June 2016, to write-off the non-performing loans that are entirely reserved longer than two years, and to continue such practice for all loans that will meet this requirement. Therefore, in 2016 a total of 13 billion denars were written-off, which is around half of the total non-performing loans. All further write-offs on this basis are in much smaller amounts, and their effect, when making comparison analysis for December 2016 – December 2017 is insignificant. Around 80% of the loans that are written-off are to corporate sector.

The rate of non-performing loans to households is low (2.4%) and features decline compared to the previous year, thus being at a historically lowest level. This rate is also reducing in some credit products[17] which, in a situation of solid discipline in the collection of the existing loans, is due to the increased volume of new crediting[18].

The share of the non-performing loans in the total loans decline by 0.3 percentage points in 2017, thus being at a historically lowest level[19] (6.3%). In the portfolio of non-financial companies, the rate of the non-performing loans featured minimal growth of 0.1 percentage point and at the end of 2017 it is 10.0%.

In terms of specific sectors, the non-performing loans rate is the highest among the clients in the following sectors: "Industry", "Construction and real estate related activities" and "Wholesale and retail trade". In 2017 there is a more significant increase of the rate of the non-performing loans (by 4.6 percentage points) only in the credit indebtedness towards the "Industry"[20] sector, which is due to the significant growth of the non-performing loans (by 35.4% vs their decline by 40.7% compared to the previous year), in a situation of simultaneous decline of the total loans to clients in this sector by 2.7%. The increased materialization of the credit risk in the "Industry" sector is reflection of the unfavorable tendencies in the processing industry, which caused reduction in the volume of

[17] With automobile loans this rate was reduced by 6.6 percentage points and reached 3.8% (while on 30 September 2017 it reached the record low level of 2.6%) after good number of years in which the rate of the non-performing loans was the highest exactly in this credit product. More specifically, in the last couple of years there is a trend of abandoning of this credit product in the balance sheets of the banks and "cleansing" of the portfolio of the non-performing loans.

[18] In housing loans and in other loans.

[19] Only at the end of February 2017 the share of the non-performing loans in the total loans is insignificantly lower and is 6.2%.

[20] The credit exposure to clients in the "Industry" sector has a share of 21.5% in the total credit exposure to non-financial companies, by the non-performing loans to clients in this sector have almost twice larger share – they participate with 40.1% in the total non-performing loans to non-financial companies.

Graph 16
Share of non-performing loans to non-financial companies
in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

Graph 17
Sector "Industry", annual change of the total (above) and of non-performing loans (middle) and dynamics of the quality indicators of the credit exposure (below)
in millions denars in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

the industrial production as well as reduction of the inventories of finished products, in a situation of lower average utilization of the production capacities. The average level of risk in this sector is improving, which is due to the reduction in the exposure towards this sector because of the partial "collection" of the non-performing receivables from one larger client by forfeiting the property established as collateral for those receivables, as well as write-off of the receivables from another larger client, in a situation of moderate increase of the allocated provisions. Still, the positive impressions about the economic condition of the business entities, the demand for the production (secured with existing pre-orders) and the expectations for increase of the volume of the production and increase of the average sale prices of the finished products[21] - are all together expected to have positive impact on the business performance of the companies in this sector which, in turn, should improve their creditworthiness and ensure smooth servicing of their liabilities.

The reduction of the non-performing loans rate in the sector **"Construction and real estate related activities"** (by 3.5 percentage points) is due to the above-mentioned "collection" of the non-performing receivables by forfeiting the property established as collateral for those receivables. More specifically, the credit exposure to this sector does not anymore have the highest rate of non-performing loans (which in certain periods was even 20%). The average level of risk of the construction sector is improving as a result of the increased volume of crediting of the existing clients in this sector, in a situation of simultaneous (moderate) increase of the allocated impairment. Still, the activities in the construction sector are declining after several years of continuous growth (mainly due to the decline of the public infrastructural investments), which hints to a possible growing level of credit risk from this sector.

[21] Source: Survey of the business tendencies in the processing industry for the period January – December 2017.

Graph 18
Sector "Construction and real estate related activities", annual change of the total (above) and of non-performing loans (middle) and dynamics of the quality indicators of the credit exposure (below)

in millions denars in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

There is also some decline in the rate of the non-performing loans (of 0.5 percentage points) in the credit exposure to "Wholesale and retail trade" sector, which is related to the favorable evaluation of the current business and financial situation of the companies, reduced inventories and sale prices, including expectations for increased volume of orders, in a situation of decline in the wholesale trade[22]. The favorable shift of the non-performing loans rate in the trade is related to the improved discipline in servicing of the liabilities i.e. re-assigning of some clients in this sector from 'non-performing' to 'regular' status.

The concentration of the non-performing credit portfolio is high, since the ten largest non-performing exposures[23] participate with 60.9% in the total non-performing exposures of the banking system. This means that the non-performing exposures of the banks are mostly originating from several larger clients. Analyzed per individual banks, the share of the ten largest non-performing exposures in the total credit exposure is between 0% to whooping 90.9%.

The solid reserve of the largest non-performing exposures of the banks (85.2%) is reducing the unexpected losses from these exposures, thus also reducing the possible negative effect on the own assets.

[22] Source: Survey of the business tendencies in the retail trade – first, second, third and fourth quarter of 2017.
[23] Each of these ten exposures covers the exposure to particular client, including the entities related to that client.

Graph 19
Comparison between the concentration of the total and the non-performing loan portfolio of the non-financial entities, by bank
in percentages

Source: NBRM, using data provided by the banks.
Note: The black line shows the trend.

1.2 Capacity of the banks to deal with the credit risk

The coverage of the non-performing loans with allocated impairment features decline, but is still high, thus limiting the negative effects from the eventual complete uncollectability (default) of the non-performing loans. More specifically, the non-provisioned portion of the non-performing loans covers only 7.9% of the own assets of the banking system, to be used for eventual coverage of the unexpected losses in a hypothetical situation of extreme event of complete uncollectability of these loans. In a case of such extreme scenario, the capital adequacy rate of the banking system would decline by only 1.2 percentage points (almost identical to the previous year).

Graph 20
Coverage of the non-performing loans and share of the net non-performing loans in own assets of the banks
in percentages

Source: NBRM, using data provided by the banks.

1.3 Other potential sources of materialization of the credit risk

In 2017, **the actual annual rate of uncollectability rate (default)** of the credit exposure with regular status[24] is 1.8% (same with the previous year) and is lower compared to the average risk level of the regular loans to non-financial entities (2.3%), which level is determined by the banks. This shows that the banks are more cautious and allocated slightly higher reserve on the regular loans compared to the historical annual rate of uncollectability (default) of these receivables.

Per specific sectors, the annual default rates are generally improving, except the deterioration in the "Industry" sector which is due to the transfer into 'non-performing' status of several larger clients dealing with production of metals and production of tobacco products,

[24] The annual default rate of credit exposure is calculated as a percentage of the credit exposure with regular status, which for a period of one year migrates into exposure with a 'non-performing' status.

Graph 21
Annual default rates of the credit exposure with regular status, per sectors of non-financial companies
in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

Graph 22
Annual default rates of credit exposure with regular status and average level of risk of the regular loans, per specific products to households
in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

and of several small clients in the "Other processing industry" sector[25]. Regardless of the deterioration of the annual default rate in this sector, the impairment for the regular loans in the sector is declining, which points out to weaker assumptions of the banks regarding materialization of the credit risk from the loans in this sector[26]. Also, the impairment for the regular loans to clients in the "Construction and real estate related activities" sector featured annual growth, albeit the improvement of the annual default rate in this sector.

In addition to the adequate coverage of the regular loans with allocated impairment, **there is also high share of the regular loans for which collateral is provided** (85.9% of the total regular loans to non-financial entities), which is essentially a secondary source for collection if the beneficiary of the loan defaults in his obligations with regards to the loan contract.

The high share of the loans with collateral is typical primarily for the regular receivables from non-financial companies (98.3%). With regards to households, the share of the regular loans with collateral in the total regular loans is significantly lower and it is 73.1%, which is due to the loans related to overdrafts on transaction accounts, credit cards and consumer loans[27] (almost half of which feature no collateral). Still, the loan agreements very often use the so called 'enforcement clause'[28] according to which, in a case of eventual default by the clients, the bank

[25] The annual default rate is 8.8% and 9.9% for the following sectors: "Production of metals, machinery, tools and equipment" (1.1% as on 31 December 2016) and "Other processing industry" (0.9% as on 31 December 2016), respectively.
[26] The share of the "Industry" sector is 24.4% in the total loans approved to non-financial companies, 22.6% of the regular and 40.1% of the non-performing loans.
[27] The share of the consumer loans with no collateral, in the total regular consumer loans is increasing compared to the previous year and is 36.7%, but it is still lower than the third quarter of 2017 when this share exceeded 40% for the first time.
[28] The National Bank does not have information about the amount of loans in which contracts this executive clause is introduced.

Graph 23
Share of regular loans for which no collateral is provided in the total regular loans, per specific sectors and credit products
in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

Graph 24
Concentration indicators of the credit exposure level to non-financial entities
in percentages

Source: NBRM, using data provided by the banks.

is entitled to collect the loan from the property of the credit users[29].

The concentration of the credit portfolios of the banks is not high, seen from perspective of the indicator on the share of the large exposures[30] in the own assets of the banks, which is 51.9% and has emphasized downward trend in the last two years (80.8% as on 31 December 2015) due to the reduction of the large exposures towards non-financial entities. Per individual bank, this indicator is much smaller than the legally determined maximum[31]. Nevertheless, this indicator needs to be carefully monitored, especially in a situation when it significantly exceeds the own assets of the bank[32] because the actual higher ratio with the own assets of the banks increases the negative effect that the materialization of the risk from these exposures and the inability to collect them could have on the own assets. Exactly because of this, the credit quality of these exposures is especially relevant – on aggregate level this quality does not refer to high risk because most of the exposures are classified in risk categories "A" and "B".

The ten largest exposures of the banks to non-financial entities[33] have a share of 95.8% in the own assets of the banks, which is an indicator of a moderate level of concentration risk. However, per individual banks, this share is between 5.8% to whooping 175.0%[34]. On aggregate level, these

[29] Pursuant to the Law on Enforcement ("Official Gazette of the Republic of Macedonia" No. 72/16) and the Law on Notary Activity ("Official Gazette of the Republic of Macedonia" No. 72/16).
[30] Large exposure to entity, or to entities related to it, refers to exposure that is equal to, or higher than, 10% of the own assets the bank.
[31] According to the regulation, the total amount of large exposures must not be greater than the amount of the own assets (increased by eight times) of the bank.
[32] Per individual banks, the share of the large exposures to non-financial entities is in the interval from 0% to 133.6%, where the higher shares are indicator of more significant level of concentration risk which the bank usually covers with respective amount of own assets.
[33] The total exposure to one entity and the entities related to that one entity must not exceeded 25% of the own assets of the bank.
[34] The upper threshold of this interval of share of the ten largest exposures in the own assets of the respective bank is indicator of

Graph 25
Dynamics and annual growth of the total restructured and prolonged loans to non-financial entities
in millions of denars in percentages

Source: NBRM, using data provided by the banks.

Graph 26
Dynamics of prolonged loans and structural indicators (above) and average level of risk of the prolonged loans to non-financial entities and to specific sectors (below)
in millions of denars and in percentages (above), in percentages (below)

Source: Credit Registry of the National Bank, using data provided by the banks.

exposures have high risk (mostly in the risk categories "A" and "B"), but still, within the frames of the largest exposures we can notice individual exposures with higher level of risk.

The prolonging of the agreed deadline for maturing of the loans is a usual practice of the banks, in situations when the financial situation of the client is not disrupted. However, multiple prolonging of the deadline could hide the true quality of the loans but can be also indicator of higher credit risk i.e. indicator of deteriorated financial situation of the client which, according to the regulation, should be treated as restructuring and higher impairment needs to be allocated, some of them should be even assigned a 'non-performing' status.

At the end of 2017, the prolonged loans have a share of 10.6% in the total loans to non-financial entities. For the first time in the "Households" sector, this share reached two-figure value (as a comparison, in 2014 this share was below 1%) and is mainly due to the consumer loans[35], 15.6% of which are prolonged loans[36]. In addition, the growth of the prolonged loans significantly exceeds the growth of the total loans, both among the households and among the non-financial companies[37].

Having in mind these tendencies, it is very important to consider the quality of the prolonged loans. The rate of the non-performing loans to non-financial companies that were initially prolonged (12.7%)[38] is higher by 2.7 percentage points compared to this rate in

more significant level of concentration risk, which the bank usually covers with respective amount of own assets.

[35] In 2017 the prolonged consumer loans featured annual growth of 32.6%.

[36] In 2014 the share of the prolonged consumer loans in the total consumer loans was 0.7%.

[37] In 2017 the prolonged loans to households and to non-financial companies grew by 33.3% and 21.8%, respectively, while the actual growth of the total loans was 9.7% and 2.9%.

[38] This rate shows the share of the non-performing loans to non-financial companies that were initially prolonged, in the total prolonged loans.

Graph 27
Dynamics of the restructured regular loans and indicators of their quality (above) and share of the restructured regular loans in the total restructured loans (middle) and in the total non-performing loans (below), per specific activities/ sectors of the non-financial companies
in millions of denars and in percentages (above), in percentages (middle and below)

Source: Credit Registry of the National Bank, using data provided by the banks.

the total credit portfolio of non-financial companies, but features quite faster growth (deterioration of the quality) compared to the total corporate portfolio[39]. The average level of risk of the regular prolonged loans to non-financial companies is almost the same like for the entire regular credit portfolio to non-financial companies. In terms of households, the quality of the prolonged loans is at a way higher level[40]. The historical rate of default of the regular prolonged loans (3.7%)[41] exceeds the average level of risk, which points out to their weaker reserve but also to whether expectations of the banks for eventual materialization of the risks related to these loans. In addition, the historical default rate of the regular prolonged loans is twice higher than the total regular credit portfolio and features twice greater increase compared to the previous year, which points out to high likelihood that some of these regular loans will be transferred into the category of non-performing receivables.

Additional likely source for materialization of the credit risk are also the tendencies in the restructured loans. These are loans to clients facing financial distress that would be probably assigned 'non-performing' status if the banks do not change the credit requirements. In 2017 the restructured regular loans declined (by 14.7% i.e. by 732 million denars)[42], which was concentrated in the non-financial companies (that actually dominate the portfolio of the restructured loans). The decline in the restructured regular loans is mostly due to

[39] The non-performing rate of initially prolonged loans in 2017 was increased by 2.9 percentage points, while the rate of the non-performing loans of the total corporate portfolio increased by only 0,1 percentage point.
The rate of non-performing prolonged loans that were initially prolonged, is the highest in the "Industry" sector (32.3%).

[40] The non-performing loans to households that were initially prolonged have a share of only 0.8% of the total prolonged loans to households, while the average risk of the regular prolonged loans is very low.

[41] The historical rate of uncollectability (default) is calculated as a percentage of the amount of the credit exposure with regular status that was assigned a 'non-performing' status within a period of one year, using the data provided by the banks in the Credit Registry of the National Bank.

[42] The regular restructured loans feature significant increase of 84.6% (213 million denars) only in the "Construction" sector.

Graph 28
Structure of the loans restructured two years ago, as at specific date

in percentages

Source: NBRM, using data provided by the banks.

the transfer into 'non-performing' status of several large restructured receivables[43], which can be considered as indicator of late or inappropriate restructuring of the receivables. To less extent, the decline in the restructured regular loans is also due to the collection of several loans that were initially restructured[44].

The historical rate of uncollectability of the regular restructured loans (8.9%) significantly exceeds this rate for the total regular loans to the non-financial sector, which is normal because here it is about clients with deteriorated financial situation. Furthermore, the banks allocated solid reserve on the regular restructured loans (22.6%), which corresponds to the higher level of risk of these loans and the likelihood of eventual difficulties in their collection.

The success of the banks in the restructuring of the loans, from the aspect of timely identification of the need for restructuring and the necessity to change the credit requirements accordingly, is assessed by monitoring the performance of these loans two years[45] after the actual restructuring was done. 'Successfully restructured' are the loans that have been collected, or have a status of regular loan, two years after the restructuring. In this regard, at the end of 2017 the restructuring is successful among (a bit less than) two thirds of the total restructurings carried out during 2015. The percentage of success of the restructured receivables was doubled in both segments of the non-financial sector[46] which is indicator of

[43] From the clients in the following sectors: "Wholesale and retail trade", "Information and communications" and "Industry" (more specifically, clients in these activities: "Textile industry and production of garment and footwear" and "Chemical industry, production of construction materials, production and processing of fuel ").

[44] The collection of the restructured regular loans pertains to the receivables from several clients belonging to the following sectors: "Real estate related activities" and "Wholesale and retail trade".

[45] Pursuant to the standards for restructuring and management with the restructured receivables, introduced internationally and especially in the EU, it is considered that the two-year period is sufficient to identify the effects of this activity of the banks (so called 'trial period').

[46] At the end of 2017, 61.8% and 68.4% of the restructurings carried out two years ago on the receivables from non-financial companies and households, respectively, are considered successful (36.2% and 35.1% at the end of 2016, for the restructurings carried out during 2014).

Graph 29
Dynamics of the bullet loans (EOG) and indicators of their structure and quality

Source: Credit Registry of the National Bank, using data provided by the banks.

Graph 30
Dynamics an average level of risk of the loans with late repayment of the principal between 61 and 90 days

Source: Credit Registry of the National Bank, using data provided by the banks.

significant improvement of the quality of this activity of the banks. The greater presence of collected loans and of those where the clients repay the matured liabilities on regular basis, compared to the restructurings carried out during 2014, points out to **increased success of the restructurings** and improvement of the capacities of the banks in the implementation of these activities.

Another possible "source" of new non-performing loans are the receivables of the banks where the period of late repayment of the principal is between 61 and 90 days (essentially, this makes them border cases to be assigned 'non-performing' status). These receivables have a share of 1.0% of the total regular loans and their average level of risk is 12.4%. They also decline in 2017 by 7.1% i.e. by 218 million denars, which was entirely due to the non-financial companies. However, this (on a first look) positive tendency is not due to the collection but due to the transfer into 'non-performing' status of one large client that deals with production of metals who was late with repayment of the principal at the end of 2016. Positive is the fact that in January 2018 only 1.7% of the loans that matured between 61 and 90 days were assigned 'non-performing' status, which is an indicator of solid collection of the part that matured between 61 and 90 days. Among the households[47], this percentage is greater and it is 4.8%[48].

Potential source of unexpected credit losses, due to their higher inherent risk, are also the loans with one-off repayment of the principal (bullet loans). In terms of these loans, the banks evaluate how regular is the client in repayment of the liabilities solely on the basis of collection of the interest – i.e. the eventual inability to repay the liabilities can be through the maturing of the principal. At the end of 2017 around one third of the total loans to non-financial companies featured a bullet clause

[47] Most of the transferred non-performing loans pertain to consumer loans.
[48] Among the non-financial companies, the percentage of transfer of these loans into 'non-performing' status is at a lower level compared to the total non-financial sector and it is 1.2%.

Graph 31
Share of the bullet loans (EOG) in the total loans (above), of the non-performing loans with EOG in the total non-performing loans (middle) and of the non-performing loans with EOG in the total loans with EOG (below), per specific sectors of non-financial companies
in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

(for one-off repayment of the principal), which is not a small number[49]. According to the rate of non-performing loans (which is 8.7% and is increasing by only 0.8 percentage points), the bullet loans[50] have better quality in comparison to the prolonged and restructured loans. In the same time, the average level of risk of the regular bullet loans to non-financial companies is 2.9% (the average level of risk of the total credit portfolio consisted of non-financial companies is 3.5%). The historical rate of default (uncollectability) of these loans (1.4%) is lower in comparison to the total regular credit portfolio and features improvement in comparison to the previous year when these two rates were at identical level (1.8%). The twice greater average level of risk of the regular bullet loans, from historical perspective of default, shows that the banks did higher impairment in comparison to the expected losses identified through the historical rate of default (uncollectability) of these receivables. These tendencies confirm the low risk of the regular bullet loans as well as their low likelihood to be transferred into 'non-performing' status, although this hypothesis is considered as realistic scenario for some more risky receivables.

1.4 Stress-test simulation of the banking system's resilience to the increase of the credit risk

The results of the stress-testing confirm the resilience of the banking system to the simulated shocks[51] and they register improvement compared to the previous year. This is mainly due to the higher rate of the capital adequacy of the banking

[49] Per individual sectors, this share is even greater than the aggregate one in the "Industry" (38.4%) and "Wholesale and retail trade " (41.9%).

[50] This rate shows the share of the non-performing loans bullet loans in the total bullet loans.

[51] In order to examine the sensitivity of the banking system to deterioration of the quality of specific segments of the credit portfolio of the banks, simulations are carried out for hypothetical migration of 10% (first simulation) and 30% (second simulation) of the credit exposure to non-financial companies (by activity sectors) and households (by credit products), separately, and then to the two sectors jointly – from the existing ones towards the following two higher risk categories.

Graph 32
Capital adequacy rate pre specific sectors and credit products, in the first (above) and the second (below) simulation for both sectors together
in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

system prior to the simulations but also to the less-present sensitivity of some banks to hypothetical shocks. In this regard, the capital adequacy of the banking system is not reduced below 8% in any of the simulations, although in just one bank there is hypothetical need for recapitalization but only during the second extreme simulation. Per sectors, the largest effect on the capital adequacy ratio is exercised by the simulated deterioration of the creditworthiness of the clients in the "Industry" and "Wholesale and retail trade" sectors.

The resilience of the banking system is also tested by implementing exceptionally extreme simulation which is based on combination of hypothetical shocks of deterioration of the quality of the credit portfolio[52], where the capital adequacy ratio of the banking system is reduced by 1.9 percentage

Graph 33
Capital adequacy rate before and after the three combined shocks, per specific sectors of the non-financial companies
in percentages

Source: Credit Registry of the National Bank, using data provided by the banks.

[52] 1. All non-performing loans to non-financial entities are totally uncollectable (defaulted), 2. The total regular restructured credit exposure is assigned 'non-performing' status; and 3. The banks do new restructurings of the regular portion of the credit portfolio that, in terms of their volume, correspond to the amount of the restructured exposures that were assigned a 'non-performing' status.

points (almost identical with the previous year). Even in this simulation, the largest decline of the capital adequacy ratio is noticed in a situation of the assumed deterioration of the creditworthiness of the clients belonging to "Industry" and "Wholesale and retail trade" sectors, thus confirming the exceptionally high sensitivity of the quality of the credit portfolio in a situation of deterioration of the performance of the clients in these sectors.

2. Liquidity risk

In a situation of gradual stabilization of the expectations of the domestic economic entities, the total liquid assets of the banks in 2017 continue to grow, albeit with small and slower growth compared to the previous year. The annual increase of the liquid assets was mostly present among the investments of the banks in domestic long-term government securities and in CB bills, including also increase of the short-term foreign currency assets of the banks in foreign banks. Despite the effects of non-economic factors that have unavoidable impact on the overall environment in which the banks operate, the share of the liquid assets in the total assets of the banking system continue to be at a stable level, including satisfactory coverage of the short-term liabilities and household deposits with liquid assets. The structure of the assets and liabilities of the banks, in terms of their residual maturity, features deepening in the difference (most of which is in the shortest maturity bucket – up to seven days; and significantly less in the maturity bucket of six months to one year). The simulations of the combined liquidity shocks also confirm that the banks in the Republic of Macedonia maintain a satisfactory level of liquid assets which enables proper management with the liquidity risk and satisfactory resilience to the suspected extreme liquidity outflows.

Graph 34
Liquid assets, structure and growth
in millions of denars and in percentages

Source: NBRM, using data provided by the banks.

2.1 Dynamics and composition of the liquid assets

At the end of 2017, the liquid assets[53] of the banking system were 133,784 million denars. Despite the quarterly decline during the year, on annual basis in 2017 they featured growth by 1,121 million denars i.e. 0.8%,

[53] The liquid assets include: 1) Assets and receivables of the National Bank, which include cash, assets on the accounts of the banks in the National Bank, foreign currency deposits and 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) Book value of the placements in securities issued by foreign governments. For the purposes of analyzing the liquidity risk, the assets and liabilities in denars with foreign exchange clause are considered denar assets and liabilities.

Graph 35
Annual change of the liquid assets per components – absolute (above) and relative (below)
in millions of denars and in percentages

Source: NBRM, using data provided by the banks.

Graph 36
Amount of offer and demand in the auctions of CB bills of the National Bank
in million denars and in percentages

Source: National Bank.

compared to the previous year. The annual growth of the liquid assets, which is now a bit slower compared to the previous year, is mainly due to the increased placements of the banks in government securities, as well as due to the increased short-term foreign currency assets in foreign banks. On the other hand, the **cash assets and the assets of the banks placed in the National Bank** declined by 1,100 million denars i.e. 1.6%), which is primarily due to the placements of the banks in foreign currency deposits in the National Bank which, in the absence of new auction events for foreign currency deposits, were maturing in full in the third quarter of 2017 and were paid off by the National Bank[54]. Significant contribution in the decline of the cash assets and receivables of the banks from the National Bank in 2017 was provided by the available seven-day maturity deposits in the National Bank[55], while the reduction of the investments of the banks in the available overnight deposits in the National Bank was significantly smaller. The investments of the banks in **CB bills** increased in 2017 by 2,003 million denars i.e. 8.7%). The auctions of CB bills during 2017 continued to be implemented through volume tender and limited amount offered, while the National Bank resumed the normalization of the monetary policy from December 2016[56] and reduced the policy rate twice (in January and in February) by a total of 0,50 percentage points – to 3.25%.

[54] The instrument 'auctions for foreign currency deposits of the banks' used to be applied by the National Bank in the period May – October 2016. In this period the banks had the opportunity to place foreign currency deposits in the National Bank under conditions that are more favorable compared to the conditions prevailing on the international financial market. Due to the different maturity till the actual maturity of the foreign currency deposits, their status was gradually declining in the first half of 2017 and the deposits matured in full at the end of August 2017.

[55] According to the Decision on the Deposit Facility ("Official Gazette of the Republic of Macedonia" No. 49/12, 18/13, 50/13, 166/13 and 35/15), the banks could place deposits in the National Bank every working day with a maturity of one business day and once a week with a maturity of seven days. These deposits are placed without the possibility of partial or full early withdrawal. During the whole 2017, the interest rates on these deposits equaled 0.25% on overnight deposits and 0.5% on seven-day deposits, and in March 2018 they were reduced by 0.15% and 0.3%, respectively.

[56] In December 2016 the National Bank reduced the interest rate of the CB bills from 4% to 3.75%.

Graph 37
Cash assets and receivables of the banks from the National Bank, per specific instruments, structure (above) and annual change (below)
in percentages

Source: NBRM, using data provided by the banks.

Graph 38
Investments of the banks in domestic government securities
in percentages

Source: Ministry of Finance and the National Bank, using data provided by the banks.
Note: The investments of the banks in government securities are shown according their nominal value.

As a consequence of these tendencies, in the structure of the liquid assets of the banks, there was annual decline of the share of the cash assets and placements of the banks in the instruments of the National Bank (from 51.3% to 50.1%) vs the increase of the structural share of government securities (from 24.6% to 25.3%) and of short-term deposits in foreign banks (from 24.1% to 24.6%). However, despite the decline, the cash assets and the assets of the banks placed in the National Bank are the most frequently present component of the liquid assets of the banks within which the investments in CB bills have the greatest share.

The placements of the banks in continuous government securities[57] featured annual growth of 3% (according to their nominal value), which was entirely due to the increase of the placements in domestic government bonds (by 4,272 million denars i.e. 52.5%), while the investments in treasury bills declined by 3,308 million denars i.e. 13.7%)[58]. In the structure of government securities owned by the banks there is still a more emphasized share of treasury bills (their share is around two thirds), compared to the government bonds, which points out to a more emphasized tendency of the banks to invest in government securities with shorter contractual maturity. The government bonds owned by the banks are mainly continuous government bonds issued by the Republic of Macedonia – half of them are two-year bonds and the rest have longer maturity (three-year, five-year, ten-year and fifteen-year maturity). The investments in government bonds issued by other countries have modest share of only 2% in the total portfolio of the government securities of the banks.

[57] Treasury bills and government bonds are considered continuous government securities issued in the domestic financial market, while the structural securities i.e. bonds for denationalization are not included.
[58] At the end of December 2017, the share of the banks in the issued continuous government securities is 36.1%, vs the pension funds the share of which is greater by 1 percentage point (37.1%).

Graph 39
Short-term deposits in foreign banks, structure and growth
in millions of denars and in percentages

Source: NBRM, using data provided by the banks.

Graph 40
Tendencies of the key domestic interest rates (above) and of the key inter-bank interest rates SKIBOR, EURIBOR and LIBOR for US dollar (below)
in percentages

Source: National Bank and website of the European Money Markets Institute for Euribor and website of Federal Reserve Bank of St. Louis (so-called FRED) for LIBOR for US dollars.

The most important foreign currency component of the liquid assets of the banks[59] are the assets placed in foreign banks with contractual maturity of less than one year. Following the two-year trend of decline, these assets increased in 2017 by 3.2% compared to the previous year. This additionally increased the already high share of these assets in the total foreign currency liquid assets – from 77.7% at the end of 2016 to 83.3% at the end of 2017). The largest annual increase is among the assets in foreign banks that are termed between one and three months – their share almost doubled. However, most of the short-term assets invested in foreign banks continue to be placed overnight i.e. they are placed on correspondent accounts of the domestic banks abroad (that usually provide low yield, which can sometimes even be negative, which is reflection of the current structure of the monetary instruments of the more relevant central banks in the world and the low interest rates on the international financial markets), regardless of their decline of 14.6% on annual basis.

The reduction of the policy rate of the National Bank (in a situation of stabilization of the foreign currency market and of the deposits of the banking segments – two segments that were mainly affected by the political crisis) was accompanied by adaptation of the indicative interest rate for inter-bank trading in deposits (SKIBOR), while the inter-bank interest rate on transactions performed overnight (MKDONIA) remained stable at the level of 1.0%. On the other hand, the interest rates of the available denar deposits in the National Bank remained unchanged during the entire year of 2017.

The interest rates on the inter-bank markets in the Eurozone continue to be exceptionally low, even negative for some maturities, which

[59] The foreign currency liquid assets include the short-term deposits in foreign banks, including assets in corresponding accounts, investments in foreign government securities, foreign currency liquid assets and placements of foreign currency deposits in the National Bank.

Graph 41
Tendencies in the SKIBOR spread, in relation to EURIBOR, for certain maturities
in percentage points

Source: NBRM calculation using publically available data for inter-bank interest rates.

Graph 42
Share of new sources of funding, annually
in percentages

Source: NBRM, using data provided by the banks.

corresponds to the unchanged structure of the monetary policy of the ECB during entire 2017. On the other hand, in 2017 FED resumed with normalization of the monetary policy and increased three times during the year the target for the spread of the market interest rates, by a total of 0.75 percentage points. In such circumstances, the inter-bank interest rate LIBOR for US dollars featured certain increase in 2017 and reached the highest level since 2008.

The interest rate spread between the market indicative interest rates in the Republic of Macedonia and in the Eurozone featured certain narrowing in the first half of 2017, while the narrowing in the second half of the year was very small.

The volume of the new sources[60] of funding by the banks declined in comparison to the previous year. The decline is primarily due to the weaker dynamics of the deposits of non-financial entities, as main source of funding of the domestic banks. However, the deposits of the domestic non-financial entities continue to have a dominant role in the sources of funding of the activities of the domestic banks, which is one of the main characteristics of the Macedonian banks[61]. The increased appetite for crediting of the banks can be best seen in the way in which the banks are using the sources of funding. In this regard, during 2017 there was increased tendency of the banks to undertake new credit risk, accompanied by reduction in the tendency to invest the new sources of funding in liquid financial instruments. This was especially visible in the second half of the year when the banks were almost fully using the new sources of funding for crediting purposes.

[60] The new sources of funding for banks and their use are obtained in an indirect calculation, i.e. by changing the balances of individual accounts of the banks' balance sheet. The effect on the banks' cash flows, which is due to the income and expenditures that do not represent cash outflow or inflow (e.g. loan write-offs, revaluation of securities available for sale or held for trading, depreciation of fixed assets, net foreign exchange differences, etc.) is an integral part of the change in the corresponding balance sheet items, the respective inflow or outflow refers to, while the effect of the impairment of loans and other assets is included in the total sources of funding. In the calculation the effect of domestic inter-bank receivables and liabilities is excluded.

[61] In 2017 (except for the first quarter of the year), the annual change of the deposits of non-financial entities had a share of over three quarters in the structure of the new sources of financing of the banks.

Graph 43
Liquidity indicators of the banking system
in percentage points

Source: NBRM, using data provided by the banks.

2.2 Liquidity indicators

In 2017, the liquidity indicators[62] of the banking system featured moderate deterioration, but still remained at satisfactory level. In a situation of increase of the total liquid assets of the banks, the declining trend did not have equal dynamics among different indicators, primarily due to the differences in the dynamics of particular categories of liabilities of the banks. The most obvious is the decline in the coverage with liquid assets of liabilities with contractual residual maturity of up to 30 days, while there is a slightly more modest decline in the coverage with liquid assets of the household deposits (in a situation of significant increase of the household deposits, compared to the increase of the liquid assets). Still, the values of these indicators are at a satisfactory level and they do not deviate from their common values – the liquid assets participate with around one third in the total assets of the banks, in the same time covering more than half of the short-term liabilities and almost 60% of the total deposits of the households.

In 2017, the ratio between the loans and deposits of the non-financial entities featured a minimal increase mainly due to the stronger growth of the loans (5.9%) in comparison to the growth rate of the deposits (5.1%). At the end of the year this ratio is 87.7% which is 0.7 percentage points higher compared to the end of 2016. This ratio is a standard deviation below its' five-year moving average, as well as below its' twelve-month moving average. In only four banks in the system, that have a share of 25.8% in the total assets of the banking system (19% as on 31 December 2016), this ratio is above 100%, which hints to financing of some of the loans with the use of non-deposit sources of assets which, as a rule, are considered sources of financing with higher variability.

[62] The calculation of liquidity indicators of the banking system does not take into account the resident inter-bank assets and liabilities.

Graph 44
Share of the liquid in the total assets (above), coverage of the short-term liabilities (middle) and of the liabilities with contractual residual maturity of up to 30 days (below) with liquid assets, per individual bank
in percentages

Source: NBRM, using data provided by the banks.

In terms of **currency characteristics of the liquid assets and liabilities**[63], during 2017 both the denar and the foreign currency liquidity indicators featured decline, with minimal differences in the dynamics. The liquidity ratios in denars featured smaller decline in comparison to the foreign currency liquidity indicators. Also, the denar liquidity indicators continue to be at a higher level in comparison to the foreign currency liquidity indicators, which us due to the higher structural share of the denar liquid assets in the total liquid assets of the banks.

The regulatory liquidity ratios of the banking system[64], presented as a ratio between assets and liabilities that mature in the following 30 and 180 days, remained at almost the same level as in the previous year.

2.3 Maturity structure of assets and liabilities

In 2017, the shifts in the structure of the assets and liabilities, according their residual maturity, were in the direction of increase of the share of assets with residual maturity of over one year and of the liabilities with a residual maturity of up to one month. On the assets side, the increase of the share of assets with a residual maturity of over one year is explained through the significant increase of the long-term loans, as well as the growth of the liquid assets of the banks (primarily the increased investments of the banks in long-term domestic government securities). On the other hand, when it comes to liabilities of the banks, the annual increase of the liabilities of up to one month corresponds to the stronger tendency of the depositors to place deposits on shorter terms (in 2017 the growth of the deposit potential of the banking system was mainly due

[63] Banks accept and return denar liabilities (deposits) and liabilities (deposits) in denars with foreign exchange clause in denars, creating cash flow (inflow or outflow) in denars. Foreign currency liabilities, according to the Law on Foreign Exchange Operations, banks accept and return in the respective foreign currency and therefore, have an expected cash flow (inflow or outflow) in foreign currency.

[64] The manner of calculation of the liquidity rates up to 30 and up to 180 days is determined in the Decision on Management with the Liquidity Risk of the Banks ("Official Gazette of the Republic of Macedonia" No. 126/11, 19/12 и 151/13), and their value should be at least 1.

Graph 45
Loans/ deposits
in percentages

Source: NBRM, using data provided by the banks.
Note: The shadowed section of the graph is the spread of one standard deviation above and under the five-year movable average of the indicator.

Graph 46
Banking system liquidity indicators, according to currency structure – denars (above) and foreign currencies (below)
in percentages

Source: NBRM, using data provided by the banks.

to the increase of the demand deposits of the households).

These changes in the maturity structure of the assets and liabilities of the banks contributed towards deepening of the gap in accordance with the contractual residual maturity. The greatest maturity mismatch can be noticed between the assets and liabilities with residual maturity of seven days. This difference is usually due to the inclusion in this maturity bucket of banks' liabilities on demand and without determined maturity. The increase of maturity of the liquid assets of the banks due to the tendency to invest in long-term instruments also caused deepening of the gap in the contractual residual maturity of the assets and liabilities in the maturity bucket of six months to one year.

In 2017 the expectations of the banks regarding the stability level of deposits improved. Therefore, at the end of 2017 the banks expected that 84.6% of term deposits with residual maturity up to three (83.5% as on 31 December 2016) will show stability i.e. to remain in the banks. The banks also expect similar percentage of stability for the sight deposits (including here the assets on the transaction accounts), which is the key determinant for having a positive summary difference between the assets and liabilities in terms of their expected maturity, in all maturity buckets (Annex 33).

Graph. 47
Relative importance of the difference between the assets and liabilities of the banks according to the contractual and residual maturity
percentage of assets with same contractual residual maturity

Source: NBRM, using data provided by the banks.

Graph 48
Structure of the assets and liabilities of the banks per their contractual residual maturity (above) and structure of the gap between the assets and liabilities with contractual residual maturity of up to one year (below)
in percentages and in millions of denars

Source: NBRM, using data provided by the banks.

2.4 Stress-simulations for liquidity shocks

The results obtained from the simulations for liquidity shocks carried out as on 31 December 2017 confirm the stable liquid position of the Macedonian banking system, which is primarily due to the satisfactory level of liquid assets available. The results of the individual simulations of liquidity shocks show that the banks have sufficient liquid assets to pay-off the simulated cash outflows. Only in the simulation of exceptionally extreme liquidity shock, which includes combined outflows[65] of a number of different sources of financing outside the banks, there could be a situation of full use of the liquid assets of the banks (111.2% as on 31 December 2017). If, for the purpose of this simulation, we extend the usual coverage of liquid assets, to include also other financial instruments[66] owned by the banks, that are assumed to have been recoverable relatively quickly and easily or convertible into cash, in that case the banking system would have sufficient liquid assets i.e. the decline of the liquid assets on the banking system level would be less and would amount to 99.5% (which means that even after such extreme shocks, banks would have held certain amount of liquid assets, analyzed on a banking system level).

[65] The simulation assumes outflow of: deposits of the twenty largest depositors, 20% of household deposits, liabilities to parent entities (with the exception of liabilities on subordinated instruments and hybrid capital instruments that are excluded from the simulation as according to the regulations for calculating capital adequacy their early 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 credits, irrevocable credit lines and unused limits based on credit cards and approved overdrafts on transaction accounts) in balance sheet claims. The simulations of liquidity shocks exclude MBDP AD Skopje.

[66] In addition to financial instruments that comprise liquid assets, the following financial instruments from the balance of the banks are added (if present): the assets in the reserve guarantee fund in KIBS, the long-term deposits in foreign banks, the 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 compulsory reserve requirement for foreign currency liabilities of banks, which is allocated in foreign currency due to the simulated outflow of foreign currency deposits of the households.

Graph 49
Expected stability of the deposits with contractual residual maturity of up to three months, by the banks
in percentages

Source: NBRM, using data provided by the banks.

Graph 50
Decline of the liquid assets following the simulation for combined liquidity shocks (all shocks)
in percentages

Source: NBRM calculations, using data provided by the banks.

When applying individual simulations of liquidity shocks, that are combined for the purpose of this simulation, the usual most important individual simulation is the one regarding total outflow of the deposits of 20 largest depositors, followed by the simulation of outflow of 20% of the deposits of the households. The former of these shocks has different meaning for different banks, mainly due to the differences in the degree of concentration of deposits. On other hand, the latter simulation (20% of the household deposits) features significantly higher similarity in the results for individual banks, since the main source of funding for the Macedonian banks are exactly the household deposits. Therefore, the management with liquidity of the banks is closely related to their strategy for operating on the market, the reputation and the ethical behavior – and they altogether have impact on maintenance of the trust of the domestic depositors in the Macedonian banks.

In terms of other shocks, somewhat more significance is registered in the simulation for transfer of the selected off-balance items in the balance claims, and the shocks that are associated with outflows of liabilities to non-residents or outflows of liabilities to parent entities without treatment of equity instruments, have a small contribution in forming the total combined outflows, which is a reflection of the modest volume of funding of the banks through such type of liabilities.

Graph 51
Contribution of the individual shocks in the decline in liquid assets in the simulation for combined liquidity shock, per bank
as a percentage of decline of the liquid assets

Source: NBRM, using data provided by the banks.

3.Currency risk

Contrary to 2016 when the tendencies towards foreign currency were greater, in 2017 the exposure of the banking system to the currency risk declined. More specifically, the gap between the assets and liabilities with currency component, and its ratio with the own assets dropped to 6.4%, and there is also decline in the share of the receivables and liabilities with currency component in the total assets and liabilities of the banking system. Furthermore, the ratio between the aggregate foreign currency position and own assets in each of the banks is within the prescribed regulatory limit (30% of the own funds of the banks). The euro is the most present foreign currency in the balance sheets of the banks and hence, the applied strategy for maintaining a stable nominal exchange rate of the denar against the euro is of exceptional importance for maintenance of low probability of materialization of the currency risk.

Graph 52
Annual change of assets and liabilities with currency component
In millions of denars

In percentages

Source: NBRM, using data provided by the banks.

Graph 53
Gap between the assets and liabilities with currency component, structure (left) and share in the own funds (right)

In millions of denars

In percentages

Source: NBRM, using data provided by the banks.
*The "MBPR" AD Skopje is excluded.

Graph 54
Share of assets and liabilities with currency component* in the total assets of the banks

In percentages

Source: NBRM, using data provided by the banks.
*Within the assets, loans are on net basis i.e. they are adjusted for the impairment. MBPR AD Skopje is not included.

In 2017, the positive gap between the assets and liabilities with currency component narrowed by 3,462 million denars i.e. 51%), which is due to the higher growth of the liabilities with currency component (5,185 million denars i.e. 3.0%) compared to the increase of the assets with currency component (1,723 million denars i.e. 0.9%)[67]. Subsequently, the ratio between this gap and the own assets of the banking system also declined on annual basis by 7.9 percentage points. The banks are covering the negative gap in the foreign currency (which is mainly deriving from the foreign currency deposits) with the positive gap in the items with currency clause (mainly the denar loans placed with foreign currency clause). Per sectors, the banks maintain long foreign currency position in the operations with companies and short foreign currency positions in the operations with individuals.

The lower annual growth rates of the assets and liabilities with currency component, compared to the growth of the total assets,

[67]On the side of the liabilities with currency component, the growth of the foreign currency deposits from households, the denar deposits with foreign currency clause from non-financial companies and the foreign currency deposits from non-resident non-financial entities – all had the biggest contribution towards the annual increase of the assets with currency component. The increase of the assets with currency component is due to the increased placements in denar loans with foreign currency clause to households.

Graph 55
Dynamics and structure of the gap between the assets and liabilities with currency component, per currencies
In millions of denars

Source: NBRM, using data provided by the banks.

Graph 56
Exchange rate of the denar against the US dollar, Swiss franc, British pound and Australian dollar
In denars

Source: NBRM

contributed towards reduction of their share in the total assets or liabilities by 1.5 and 0.6 percentage points, respectively.

Analyzed per specific currencies, the gap in euros declined by 2,014 million denars and had the largest contribution in the annual narrowing of the overall gap between the assets and liabilities with currency component. This change is due to the higher annual growth of the liabilities in euros (by 4,127 million denars i.e. 2.7%), compared to the increase of the assets in euros (by 2,113 million denars i.e. 1.3%)[68]. Certain contribution to the reduction of the total gap with currency component was exercised by the negative gap between the assets and liabilities in US dollars, which deepened by 1,109 million denars. These tendencies are due to the annual decline in the assets in US dollars (by 741 million denars i.e. 5.7%), in a situation of simultaneous increase of the liabilities in US dollars (by 368 million denars i.e. 2.7%)[69]. The euro is the currency that dominates in the balance sheets of the banks in the Republic of Macedonia and therefore the maintenance of stable exchange rate of the denar against the euro has exceptional importance for the probability of materialization of the exposure of the banks to currency risk.

[68] The largest contribution to the growth of the assets in euro currency was provided by the denar credit placements in euro currency clause, and the current accounts in foreign accounts in euro currency. On the side of the liabilities un euros, the growth on the current accounts, the short-term liabilities in euros and the foreign currency deposits from individuals and non-residents – all had the biggest contribution to the increase of the liabilities.

[69] The decline of the assets in US dollars is mainly due to the annual decline of the loan placements in US dollars and on current accounts in foreign banks designated in this currency. On the other hand, the growth of the liabilities in US dollars was mainly due to the increase on the current accounts and other short-term liabilities.

Table 4
Currency structure of the assets and liabilities with currency component
In percentages

Currency	31.12.2016		31.12.2017	
	Assets	Liabilities	Assets	Liabilities
Euro	88,4	87,6	88,7	87,4
US dollar	7,1	7,9	6,6	7,8
Swiss franc	2,0	1,8	2,1	1,9
Australian Dollar	1,0	1,2	0,9	1,1
British pound	0,6	0,6	0,7	0,8
Other	1,0	1,0	1,0	0,9
Total	100,0	100,0	100,0	100,0

Source: NBRM, using data provided by the banks.

Graph 57
Aggregate currency position to own funds ratio, by bank
In percentages

Source: NBRM, using data provided by the banks.

The exit of the United Kingdom from the EU caused slightly greater volatility of the British pound in 2017, albeit less compared to 2016. Still, these tendencies do not have significant impact on the domestic banking system because of the small presence of the British pound in the structure of the assets and liabilities with currency component. In the same time, the values of the Swiss franc, US dollar and the Australian dollar (currencies that individually have a share of more than 1% of the assets and liabilities with currency component of the banking system) featured certain decline against the euro and against the Macedonian denar, respectively.

Graph 58
Deposits in foreign currency* of the individuals (left) and of the non-financial companies (right)
In millions denars

Source: NBRM, using data provided by the banks.
The deposits do not include transaction accounts of the individuals and non-financial companies.

As on 31 December 2017, all banks complied with the prescribed regulatory limit for the amount of the aggregate foreign currency position which should not exceed 30% of the own assets of the banks. There is only one bank where this ratio is close to the prescribed allowed limit, which is mainly due to the growth of the open foreign currency position in euros in this bank. Analyzed per individual currencies, most of the banks have long position which exposes them to the risk of drop of the value of the respective currency.

Table 5
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		Australian Dollar		Other		
	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	
under 5%	4	3	9	5	11	2	8	1	12	2	7
from 5% to 10%	4										4
from 10% to 20%	2										2
from 20% to 30%	1										1
over 30%											

Source: NBRM, using data provided by the banks.

4. Interest rate risk in the banking book

At the end of 2017, there was increase of the banking system exposure to the risk of interest rate change in the banking book although, due to the faster growth of the own assets, the ratio between the total weighted value of the banking book with own assets, as a measure of exposure to this risk, was almost at the same level. In 2017 the banks reduced the use of the adjustable interest rates, vs the greater use of variable interest rates (among the receivables) and fixed interest rates (among the liabilities). This structure of the interest-sensitive assets and liabilities of the banks is risk of loss for the banks, in a situation of reduction of the interest rates. The gradual reduction of the use of adjustable interest rates by the banks points out to the need for the banks to strengthen their capacities for management with the risk related to change in the interest rates.

Graph 59
Total weighted value of the banking book*, by interest rate type, in absolute amount (left scale) and relative to own assets (right scale)

Source: NBRM, using data provided by the banks.
*The total weighted value of the banking book denotes the potential loss of the economic value of this portfolio, given assumed unfavorable interest shock of ±2 percentage points.

During 2017, the total weighted value of the banking book increased by 7.8% (329 million denars). According to the interest rate type, the weighted value of the banking book with fixed interest rate increased[70] by 351 million denars, vs the decline of the weighted value of the adjustable interest rate by 110 million denars. Still, the growth of the own assets of the banks provided for the ratio between these two positions to remain on almost the same level like in the previous year. The ratio between the total weighted value of the banking book and the own assets per individual bank is between 0.6% and 16.0%, which is still below the level of 20%[71].

The gap between the interest-sensitive assets and liabilities featured annual growth by almost 3.5 times (45,396 million denars), which is primarily due to the expansion of the positive gap among the items with variable interest rates (by 46,425 million denars), in a situation of simultaneous narrowing of the positive gap among the items with fixed interest rate (by 26,352 million denars) and narrowing of the

[70] This change, in a situation of increased use of the fixed interest rates in the deposits, is mainly due to the shorter maturity of the deposits with fixed interest, which contributes less to the total weighted value, contrary to the loans with fixed interest rate the maturity of which is longer.
[71] According to the regulation, when the ratio between the total weighted value of the banking book and own funds of the bank 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 the interest rate risk in the banking book. For 2018 none of the banks was required to allocate capital for covering of this risk.

Graph 60
Interest-sensitive assets and liabilities by type of interest rate, gap (above) and annual change (below)
In millions of denars (above) and in percentages (below)

Source: NBRM, using data provided by the banks.

negative gap among the items with adjustable interest rates (by 25,323 million denars). These changes are due to the less and less use of the adjustable interest rate by the banks, in favor of the use of variable or fixed interest rate. In other words, in October 2016 the National Bank recommended to the banks to abandon the use of adjustable interest rates and replace them with variable or fixed interest rates. This recommendation had the greatest effect in the second quarter of 2017 when significant changes started to be obvious in the structure of the interest-sensitive assets and liabilities of the banks according to the type of the interest rate i.e. decline in the items with adjustable interest rate.

Graph 61
Annual changes of the interest-sensitive assets (left) and liabilities (right), by type of the instrument and the type of the interest rate

In millions of denars

Source: NBRM, using data provided by the banks.

Thus, the decline of the loans with adjustable interest rate (by 51,903 million denars) was accompanied by growth of the loans with variable interest rate (by 64,091 million denars)[72]. In the same time, at the end of 2017, there was annual decline in the term deposits with adjustable interest rate (by 34,842 million denars), while the deposits with fixed interest rate increased by 29,368 million denars. In addition, the sight liabilities with adjustable interest rate featured annual decline of 41,626 million denars, which also contributed towards the absolute reduction of the gap among the items with adjustable interest rates. In 2017 there was mainly decline in the sight liabilities, as interest- sensitive item in the balance sheets of the banks, due to the decision made by some of the banks to stop calculating interest on those liabilities. This interest strategy of the banks exposes them to losses in a case of downward change of the interest rates.

Graph 62

Average period till next reevaluation of the interest rates*, total (left) and by type of interest rate (right)

In number of months

Source: NBRM, using data provided by the banks.

*the average period till next reevaluation of the interest rates is calculated as share of the amount of the active/ passive item in each of the maturity blocks in the total interest-sensitive assets/ liabilities, multiplied by maturity of each maturity block, expressed in months. In items with fixed interest rate, the average period till next reevaluation refers to the average remaining maturity period.

[72] In the last quarter of 2017, NBRM submitted questionnaire to all banks on the system they use to manage the risk from change in the interest rates in the banking book, in order to identify the changes the banks implemented in their internal acts and practices due to the gradual abandoning of the adjustable interest rates. The conclusion was that most of the banks (except for two), since 1 July 2017, started to use fixed or variable interest rates in the new contracts with their clients. In relation to the existing contracts for loans and deposits, no changes are foreseen in most of the banks i.e. the products with adjustable interest rate will remain in the portfolio of the banking products and products with adjustable interest rate, until the maturity date or collection/ pay-off of the respective product.

Graph 63
Structure of assets and liabilities, by type of interest rate
In percentages

Source: NBRM, using data provided by the banks.

The significant reduction in the use of adjustable interest rates in the loans (accompanied also by greater use of variable interest rates), as well as the transformation of the sight deposits from interest-sensitive into interest-non-sensitive items **resulted in reduced share of the adjustable interest rate in the structure of the interest-sensitive assets and liabilities**. The use of interest rates determined in advance, or the change of which will be based on market parameters, points out to the need for the banks to strengthen their capacities for interest rate risk management. More details on the structure of the interest-sensitive items of the banks are provided in Annexes 1XX and 2XX.

In 2017 the banks increased the average time period till next reevaluation of the interest rates, which was more the case in the passive than in the active items, so the gap between the average periods till next reevaluation of the interest rates in the active and passive items was reduced. If analyzed per specific types of interest rate, there is minimal increase of the average period till next reevaluation of the interest rates among the term deposits of the banks with adjustable interest rates, while in the active items there was greatest increase in the average period till next reevaluation of the interest rates among loans with fixed interest rate.

Graph 64
Gap between the active and passive items, according to the period till next reevaluation of the interest rates (left) and structure of the gap per type of the interest rates (right)

In millions of denars

In millions of denars

Source: NBRM, using data provided by the banks.

The reduction of the interest-sensitive sight liabilities in 2017 caused changes in the gap between the interest-sensitive assets and liabilities whose next reevaluation of the interest rates is up to one year – from negative to positive. Per type of interest rate, the gap is negative in items with adjustable interest rate with next reevaluation up to one year, while in the items with variable and fixed interest rates whose next reevaluation is up to one year (the residual deadline to maturity, in case of items with fixed interest rates), the gap is positive.

5. Insolvency risk

The indicators of solvency and capitalization of the banking system increased in 2017, which is mainly due to the faster growth of the capital items, in a situation of slowed growth of the specific categories of activities. The growth of the own funds is due to the retained profit and the issuing of new subordinated instruments, while the growth of the risk-weighted assets is due to the growth of the credit-risk-weighted assets. Most of the annual growth of the own assets was used to meet the capital supplement established with the supervisory evaluation and assessment (in accordance with the Pillar II of the Basel Capital Framework). The results of the stress-test simulations, using the situation as on 31 December 2017 are better compared to the previous year.

One of the most important challenges the banks were faced with in 2017 was the compliance to the capital requirements established by the Basel III International Framework (both in terms of the new structure of the own assets, and in terms of the requirement to maintain specific amount of capital buffers) which started with implementation in March 2017. However, the relatively high amount and quality of the own assets the banks have at their disposal, provided for solid capacity for compliance to the new capital requirements. More specifically, starting from March 2017, the banks are required to calculate and to maintain minimum level of capital adequacy ratio of 8%, but also the level of core capital (6%) and the level of the regular core capital (4.5%). In addition, all banks are required to maintain capital buffer for protection of the capital, in the amount of 2.5% of the risk-weighted assets. Furthermore, seven banks, designated by the National Bank as banks significant for the system, are also required to meet the capital buffer for the banks significant for the system (which is – the banks significant for the system were supposed to meet half of the requirement for this capital buffer by 30 September 2017 and the other half by 31 March 2018).

Table 6

Capital requirements for the banks in the Republic of Macedonia and capital rates as on 31 December 2017

In percentages of the risk-weighted assets

Type of capital requirement	Regular core capital rate	Core capital rate	Capital adequacy ratio
Minimum capital requirements	4.5%	6%	8%
Capital supplement established by supervisory assessment and evaluation (Pillar II)	3.5% (1.6% - 9.5%) *		
Capital buffer for protection of the capital	2.5%		
Capital buffer for the banks significant for the system	0.3% (0.5% - 1%) **		
Countercycle capital buffer	0.0%		

Source: National Bank.

* The percentages in the brackets pertain to the interval of capital requirements per individual bank, while the percentage outside the brackets pertains to the capital requirement calculated on the level of the total banking system.

**The capital buffer for the banks significant for the system pertains to half of the amount that the banks were supposed to meet no later than 30 September 2017.

5.1. Indicators for solvency and capitalization of the banking system, and risk level of the activities

Graph 65
Solvency indicators (above) and annual change rates of their components (below)
In percentages

Source: NBRM, using data provided by the banks.

Graph 66
Level of leverage, risk and solvency of the banking system
In times (x) and in percentages

Source: NBRM, using data provided by the banks.

In 2017, the solvency and capitalization indicators of the banking system[73] featured upward changes. The capital adequacy ratio is 15.7% and featured annual increase of 0.5 percentage points. The increase of the capital adequacy ratio in 2017 is due to the reduced level of indebtedness (leverage), measured as ratio between the assets and the own funds, regardless of the increase of the level of risk (measured as a ratio between the risk-weighted assets and the total assets).

Analyzed per individual bank, the capital adequacy ratios in most of the banks featured growth compared to the previous year. The difference between the bank with the highest and the bank with the lowest capital adequacy increased in comparison to 31 December 2016, but the lowest capital adequacy noticed in a specific bank featured increase, so at the end of 2017 it reached the level of 13.4% (12.2% on 31 December 2016).

[73] The annual increase of the solvency ratios is solely due to the capital items of the banking system that accelerated the growth which, at the end of 2017, was in the internal from 6.1% to 9.2%. The activities of the banking system featured smaller annual growth (3.9% - 5.7%) compared to the increase of the capital items.

Graph 67
Measures for distribution of the capital adequacy in the banking system
In percentages

Graph 68
Core capital rate and regular core capital rate, by banks
In percentages

Source: NBRM, using data provided by the banks.
*The core capital and the regular core capital are almost the same, therefore the rate of the core capital and the rate of the regular core capital on the banking system level differ very little.

The rates of the regular core capital and of the core capital at the end of 2017 are 14.2%. Per individual banks the rate of the core capital is in the interval from 8.4 to 27.4% and the rate of the regular core capital is in the interval from 6.8 to 27.4%. More specifically, these two rates differ in only one bank which, besides the regular core capital, also has additional core capital.

Starting from the second half of 2017, the banks also started to report about the indebtedness rate[74], which is also one of the new requirements established with Basel III. The average indebtedness rate, calculated for the last six months of 2017, is 0.1% and per individual banks varies between 4.9% and 17.4%.

The total risk-weighted assets increased by 5.7% i.e. 18,530 million denars, which is due to the growth of the credit-risk-weighted assets (increase of 7.0% i.e. 19,811 million denars) which, in turn, mainly originates from the credit activity of the banks towards the "Households" sector[75].

[74] Pursuant to the Decision on Methodology for Managing the Indebtedness Risk ("Official Gazette of the Republic of Macedonia" No. 26/17), according which the banks are required to calculate the indebtedness rate as a ratio between the value of the capital (the core capital) and the value of the exposures of the banks (the total balance sheet and off-balance sheet assets, defined in the Decision).

[75] For more details on the credit activity of the banks please refer to the "Activities of the banks" section.

Graph 69
Amount and structure of the total balance sheet and off-balance sheet exposure, by risk weights

Source: NBRM, using data provided by the banks.
Note: *the average risk weight is calculated as a ratio between the credit-risk-weighted assets and the total balance sheet and off-balance sheet exposure of the banking system.

In 2017, the level of risk of the banking activities, measured as a ratio between the risk-weighted assets and the total on-balance and off-balance exposure, increased by 1.2 percentage points. Within the credit-risk-weighted assets, the highest growth is featured in the activities with risk weight of 100% and 150%, which is mainly due to the growth of the receivables from other companies and the small loans portfolio. Contrary to that, the activities of the banks which are included in the calculation of the credit-risk-weighted assets with a risk weight of 50%, declined by 2,137 million denars (by 11.1%), which is due to the decline in the receivables from banks.

Graph 70
Z-index for the banking system

Source: NBRM, using data provided by the banks.

According to the Z-index movements[76], the stability of the banking system is declining, which is mainly due to the higher variability of the banking profits. However, despite the Z-index decline, the overall stability of the banking system is at a high level and it takes a negative shock of at least 35.5 standard deviations from the rate of return on assets to fully exhaust the capital potential of the banking system.

[76] The Z Index is calculated as follows: $Z = \frac{ROAA+E/A}{\sigma(ROAA)}$, where *ROAA* is the rate of return of the average assets, *E* is equity and reserves, *A* is assets, and *σ(ROAA)* is the standard deviation of the rate of return on average assets, calculated for the last three years. The formula shows that this measure as such, combines several indicators: banks' performance and profitability indicator (*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.

Graph 71

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

In percentages

Source: NBRM, using data provided by the banks.

* Calculated with the application of 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 premium market risk) and 3) the premium for country risk (defined as the difference between the yields of the Macedonian Eurobonds and comparable German bonds).

The calculation includes eight banks with shares being listed on the official market of the Macedonian Stock Exchange. Market risk premiums is calculated as the average premium for market risk for each bank separately, weighted by the size of their assets.

The cost of capital (required rate of return to investors in bank stocks), calculated by using the so-called CAPM model (Capital-Asset Pricing Model), to a sample of eight banks, features annual decline, which is due to the decline in the market risk premium. The cost of the capital, calculated using this model, declined by 1.7 percentage points and reached the level of 14.4% at the end of 2017. This is lower by 1.5 percentage points compared to the return rate realized by the banks included in this analysis. The required lower yield rate of bank shares is due to the reduced market risk premium, which declined by 2.3 percentage points as a result of the reduced yields of the issued Macedonian Eurobonds and, to a less extent, due to the decline of the risk-free yield rate (by 0.1 percentage point). The trading with shares on the Macedonian stock exchange increased compared to 2016, which corresponds to the increased prices of these share, including the ratio between the prices in auctions and their book value.

Graph 72

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

In number of times (x) | In percentages

Source: NBRM, using data provided by the banks.

5.2. Movements (tendencies) and quality of the own funds/assets of the banking system

Graph 73
Annual change structure of the own assets

Source: NBRM, using data provided by the banks.
Note: *Refers to the changes in the amounts of the already issued subordinated instruments that stem out of the compliance/ non-compliance to the regulatory rules for inclusion of these instruments in the calculation of the own assets.

At the end of 2017, the own assets of the banking system featured annual growth of 4,555 million denars (9.2%), which is mostly due to the retained profit in the capital funds of the banks. The subordinated instruments are secondary in the annual growth of the own assets. In this respect, 69.1% of the total liabilities in relation to subordinated instruments, as on 31 December 2017, have residual maturity longer than 5 years (69.0% on 31 December 2016), which enables the banks, in accordance with the regulations, to fully include these instruments in the calculation of the own assets. However, we have to have in mind that the subordinated instruments are one of the most expensive sources of financing for the bank because they include a subordination clause[77]. Furthermore, in the course of the year, one bank converted the hybrid capital instrument into ordinary shares, which provided for improvement of the quality of its own assets. Most of the reinvested profit in 2017 increased the ratio between the reinvested profit in own assets and the profit from the previous year. This is something to be expected, considering the higher capital requirements introduced for the banks in 2017.

The quality of own assets is at a high level. The share of the regular core capital (the most quality component of the own assets) in the total own assets is 90.1%.

[77] According to the subordination clause, in the case of bankruptcy or liquidation of the bank, the subordinated liabilities will be paid before settling the liabilities towards the bank's shareholders and holders of hybrid instruments, but after settling the liabilities to other creditors.

Graph 74
Amount and structure of the total liabilities of the banks based on subordinated instruments, by residual maturity (left) and interest expenses rate*, for individual sources of funding (right)

In millions of denars

In percentages

Source: NBRM, using data provided by the banks.
*Note: The interest expenses rate is calculated as a ratio between the amount of interest expenses realized during the year, and the average amount of sources of funds, calculated for the last five quarters.
**Total liabilities of the banks based on subordinated instruments are expressed according to the net carrying amount, from the balance sheet.

5.3. Movements (tendencies) and structure of the capital requirements and available capital of the banking system

Most of the annual growth of the own assets was used to meet the minimum capital requirements established with the supervisory assessment and evaluation (Pillar II), as well as for compliance to the capital buffer requirements. In addition, there is also growth of the capital requirements for covering of the risks. The share of the "available" capital above the minimal regulatory and supervisory requirements is 8.8% (47.4% as on 31 December 2016). The decline of the available capital is mainly due to the regulatory changes and the larger capital requirements for the obligation to meet the capital buffers.

Graph 75
Structure of the annual changes (left) and of the status (right) of the own assets, by the purpose for covering specific risks

In millions of denars

In percentages

Source: NBRM, using data provided by the banks.

The total capital requirements for covering of the risk increased by 1,482 million denars i.e. 5.7%), which is due to the increase of the capital required for covering of the credit risk (by 1,585 million denars i.e. 7.0%). On the other hand, the capital required for covering of the currency risk declined on annual basis by 221 million denars i.e. 29.9%. The growth of the capital requirements for covering of the credit risk is due to the increase of the receivables in the small loans portfolio.

More details on the capital requirements for covering of the risk and the capital adequacy rate, by groups of banks, are included in Annex 39.

Graph 76
Stock and structure of the capital requirements for covering of the credit risk, by categories of exposure

In millions of denars

Source: NBRM, using data provided by the banks.

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

The results of the stress testing with regards to resilience of the banking system and of the individual banks in the Republic of Macedonia, using simulated shock, mainly shows improved resilience of the banks in 2017, compared to 2017. The capital adequacy of the banking system does not

fall below 8% in any of the simulations. This is due to the higher adequacy of the capital of the banking system before doing the simulations, but also due to the less expressed sensitivity of some banks to the hypothetical shocks.

Graph 77
Comparison of results obtained from simulations of credit and combined shocks
In percentages

Source: NBRM, using data provided by the banks.
*Stress testing includes the following simulations:
I simulation: Increasing the non-performing credit exposure to non-financial entities by 50%;
II simulation: Increasing the non-performing credit exposure to non-financial entities by 80%;
III simulation: Migration of 10% of the regular to a non-performing credit exposure to non-financial entities;
IV simulation: Reclassification in risk category "C – non-performing" of the five largest credit exposures to nonfinancial entities (including related entities);
V simulation: Increasing the non-performing credit exposure to non-financial entities by 80% and increase in interest rates from 1 to 5 pp.;
VI simulation: Increasing the non-performing credit exposure to non-financial entities by 80%, depreciation of the Denar exchange rate by 30%, and increase in interest rates from 1 to 5 pp.
**Note: The credit exposure to non-financial entities includes the total credit indebtedness, reduced by the exposure of the banks to financial institutions and the government i.e. to clients in the following sectors: "Financial activities and insurance activities" and "Public administration and defense and compulsory social insurance".

The hypothetical shocks on the part of the credit risk have the greatest impact on the stability of the banking system. In the frames of the credit exposure to non-financial entities, the simulations show that it is necessary to have growth of the non-performing credit exposure of 179.7% i.e. migration of 14.0% from 'regular' to 'non-performing credit exposure', in order for the capital adequacy of the banking system to drop to the level of 8%. These simulations would result in an increase (by three times) of the share of the non-performing exposure in the total credit exposure to non-financial entities.

Graph 78
Required deterioration of the quality of the credit exposure in order for the capital adequacy of the banking system to drop to 8%
In percentages

Source: NBRM, using data provided by the banks.

III. Significant balance sheet changes and profitability of the banking system

1. Activities of the banks

The activities of the banks in 2017 had different tendencies in the first and in the second half of the year. In the first half of 2017 the activities of the banks were under the influence of the reduced economic activity and the still present risks from the domestic political events and the global environment. The total assets of the banks in this period featured modest growth which was primarily due to the decline in the deposit potential of the banks in the first quarter of 2017, and due to the minimal growth in the second quarter of the year.

The gradual stabilizing of the situation and of the ascertainments of the economic entities in the second half of 2017 has relevant impact on the positive tendencies on the foreign currency market and on the upward tendency of the deposit base of the banks, mainly from the households. These tendencies provided annual growth of the deposit potential of the banks, which was still at a lower level compared to the actual growth in 2016. The growth of the deposits was mainly due to the increase of the household deposits in denars, mainly of the sight deposits, which is a signal of gradual returning of the tendency of the depositors to save in domestic currency. The dynamics of the credit activity of the banks followed to a large extent the tendencies of the deposits. The credit growth was due to the increased credit support of the banks to the households sector, but also due to the growth in the crediting of the corporate clients.

Graph 79
Assets (left) and liabilities (right) of the banking system, annual growth in millions of denars (above) and structure in % (below)
In millions of denars

Source: NBRM, using data provided by the banks.

Graph 80
Annual change of assets of the banking system
In millions of denars and in percentages

Source: NBRM, using data provided by the banks.

As on 31 December 2017, the total assets of the banking system were 461,992 million denars, which is an annual growth of 17,312 million denars i.e. 3.9%. The growth is slower compared to 2016, mainly due to the slower annual growth of the deposit base. The growth of the assets is primarily due to the increase of the credit activity with non-financial entities and due to investments of the banks in securities.

In 2017 the overall role of the banking system as financial mediator features certain increase, which is mostly present in the credit activity. Compared with most of the EU countries under analysis, the financial mediation in the Republic of Macedonia is at a lower level, but still similar to that of some countries in the region.

Graph 81
Financial mediation in the Republic of Macedonia, EU countries and the region
In percentages

Source: NBRM, based on the data provided by the banks, websites of the IMF, ECB and of the central banks.
Note: The data in the right graph refer to December 2016, with the exception of Macedonia (December 2017) and Serbia (September 2016).

Graph 82
Amount (above) and annual growth (below) of the loans to non-financial entities
In millions of denars

Source: NBRM, using data provided by the banks.

Pursuant to the regulation, the banks were required, in the period 1 January – 30 June 2016, to write-off the non-performing loans that are entirely reserved longer than two years, and to continue such practice for all loans that will meet this requirement. Therefore, in 2016 a total of 13 billion denars were written-off, which is around half of the total non-performing loans. All further write-offs on this basis are in much smaller amounts, and their effect, when making comparison analysis for December 2016 – December 2017 is insignificant. Around 80% of the loans that are written-off are to corporate sector.

1.1 Loans to non-financial entities

In a situation of moderate healing of the domestic economy and stabilization of the expectations and the trust of the economic entities, the crediting to non-financial entities[78] featured growth in 2017 (by 16,613 million denars i.e. 5.9%).

Analyzed per individual bank, the annual change of the loans to non-financial entities is mainly due to the tendencies of the loans of eight banks in the banking system.

Graph 83
Annual growth of the total loans to non-financial entities, by banks
In millions of denars and in percentages

Source: NBRM, using data provided by the banks.

Most of the credit growth was due to the increased credit support of the banks to the households, but also due to the growth of the crediting to corporate clients. This is entirely reflection of the increased tendency of most of the banks to credit households because of the lower risks compared to the corporate sector, including the greater diversification of the *"retail/ small-scale crediting"*. At the end of 2017, in six (out of fourteen) banks, the share of the

[78] The loans to non-financial entities include the loans to non-financial entities – residents and non-residents, which includes loans to private and public non-financial companies, central government, local self-government, non-profit institutions serving households (loans to other clients), sole proprietors and individuals (loans to households).

Graph 84
Structure of the loans to households, by products
In percentages

Source: NBRM, using data provided by the banks.

loans to households in the total loans of the banks is larger in relation ot the share of the corporate loans. More specifically, the loans of these banks participate with 48% in the credit portfolio of the banking system. Analyzed per credit products, almost 72% of the credits to households are intended for financing of non-specific consumption of individuals[79].

Graph 85
Structure of the total loans, by sector (left) and currency (middle), and by regular loans, by maturity (right)
In percentages

Source: NBRM, using data provided by the banks.

[79] Consumer loans, allowed overdrafts and credit cards.

Graph 86
Annual change of the loans, per sector, currency and maturity
In millions of denars and in percentages

Source: NBRM, using data provided by the banks.

In 2017 the growth of the denar loans determined the annual growth of the total credit activity of the banks, in a situation of further decline of the loans in foreign currency. The corporate[80] loans have slightly higher contribution (54.8%) in the growth of the denar loans, in comparison to the contribution (45%) of the loans to households. In the same time, the reduction of the loans in foreign currency is almost entirely due to the decline of the loans to non-financial companies[81]. The denar loans with foreign currency clause grew in the amount of 1,791 million denars (2.4%) on annual basis, mostly due to the loans to households.

[80] The denar loans to households are larger by 7,313 million denars (10.8%) on annual basis, while the annual growth of the denar loans to non-financial companies is 8,891 million denars (10.3%).
[81] The foreign currency loans to non-financial companies on annual basis declined by 2,782 million denars (6.5%).

Graph 87
Amounts of deposits of non-financial entities
In millions of denars

Source: NBRM, using data provided by the banks.

With regards to maturity, the long-term lending continues to be the main driver of the growth of the lending activity. The long-term loans featured annual growth of 7%, thus additionally strengthening their share in the structure of the total loans. In this regard, 78.3% of the growth of the long-term loans originates from the crediting in denars[82].

Graph 88
Annual change of deposits of non-financial entities
In millions of denars and in percentages

Source: NBRM, using data provided by the banks.

Graph 89
Contribution of individual components to the annual growth of the total deposits of non-financial entities
In percentages

Source: NBRM, using data provided by the banks.

1.2 Deposits of non-financial entities

The negative growth rate of the deposits in the banks in the first quarter of 2017, and their minimal growth in the second and in the third quarter of the year, contributed to certain slowdown of the growth rate of the total deposit potential of the banks in 2017, regardless of the solid growth of the deposits in the last quarter of the year.

The deposit potential of the banks remained the main source of financing of the banking book (73.4% of the total assets, which is almost no-change situation compared to the end of 2016). The annual dynamics of the deposit base of the banks in most part (82.9%) was determined by the **household deposits** whose growth (by 13,662 million denars i.e. 6.2%[83]) was six times higher than the annual growth of the **deposits of the non-financial companies** (2,158 million denars i.e. 2.4%[84]). In this regard,

[82] The long-term loans in denars are increasing on annual basis by 11,279 million denars, which is mostly due to the growth of the long-term denar loans to households (by 6,896 million denars) and to a less extent from the growth of the long-term denar loans to non-financial companies (by 4,340 million denars).
[83] 12.7% in 2016.
[84] 2.6% in 2016.

Graph 90
Annual growth of the total deposits of non-financial entities, per individual bank
In millions of denars and in percentages

Source: NBRM, using data provided by the banks.

the households continue to be the most important depositor in the domestic banking system, with share of 69.8% in the total deposits (68.5% as on 31 December 2016). Per individual banks, the annual change of the total deposit base is mainly due to the tendencies of the deposits of the five largest banks in the banking system.

Graph 91
Annual change of deposits, by sector, currency and maturity
In millions of denars and in percentages

Source: NBRM, using data provided by the banks.

The *denarization* of the deposits in the banks was mainly present in 2017 as well, although the share of the denar deposits in the total deposits (which was 56.9%[85] at the end of 2017) remains unchanged compared to 31 December 2016. In 2017 the denar deposits grew by 9,597 million denars i.e. 5.2% (4.1% in 2016), which was mainly due to the growth of the household deposits (by 8,329 million denars i.e. 7.4%[86]). On the other hand, the annual growth of the foreign currency deposits (5,917 million denars i.e. 4.3%[87]) slowed down and the households had the biggest contribution in that slowdown (90.1%).

Graph 92
Total deposits structure, by sector, currency and maturity
In percentages

Source: NBRM, using data provided by the banks.

Graph 93
Maturity structure of household deposits
In percentages

Source: NBRM, using data provided by the banks.

In 2017 the further shortening of the maturity of the deposit base of non-financial entities continued. For six consecutive years, the short-term deposits feature negative growth rate, on the account of the growth of the **demand deposits**. The households have significantly greater contribution (81.6%) in the growth of the demand deposits[88] compared to the contribution of the corporate sector (11.6%). The annual growth of the long-term deposits is 6,372 million denars (7.5%) and is mainly due to the growth of the denar deposits of the households (share of 51.3%). The existing maturity transformation of the deposits, although it contributes to smaller interest expenditures in the balance sheets of the banks, still complicates the liquidity risk management and creates a need for greater vigilance and probably holding larger amounts of liquid asset reserves.

[85] From the total denar deposits, 62.5% are deposits of households (61.3% as on 31 December 2016).
[86] 11.2% in 2016.
[87] 7.6% in 2016.
[88] The annual growth of the sight deposits of households was mostly (57.5%) due to the denar deposits and to a less extent (42.5%) due to foreign currency deposits. The annual growth of the sight deposits to non-financial companies was entirely due to the denar deposits.

Graph 94
Maturity structure of the investments of the banks in government securities
In percentages

Source: NBRM, using data provided by the banks.

Graph 95
Structure (above) and annual change rate (below) of the securities portfolio and investments in associated companies
In percentages

Source: NBRM, using data provided by the banks.

1.3 Other activities

At the end of 2017, **the investments of the banks in securities** and affiliates[89] (according to the net carrying amount) grew by 3,036 million denars i.e. 5.3%. This tendency is due to the increased placements of the banks in domestic government bonds. With that, the share of the securities portfolio and the investments in affiliates in the total assets of the banks **reached 13% (from 12.8% at the end of 2016**). The growth of the investments of the banks in domestic government bonds (mostly pronounced in two-year government bonds) in the amount of 3,324 million denars (39.6%) had the biggest contribution in the increase of the total securities portfolio. There is also annual increase of 2,003 million denars (8.7%) in the investments of the banks in CB bills[90]. On the other hand, the investments in treasury bills declined on annual basis by 2,782 million denars i.e. 11.5%. **In a situation of limited investment alternatives,** the key characteristics of the securities portfolio of the banks remains the non-diversification and dominance of CB bills and debt securities issued by the Republic of Macedonia.

[89] Pension funds and subsidiaries – other financial companies.

[90] In January 2017, the National Bank adopted a decision to reduce the interest rate of the CB bills of 0.25 percentage points, and this change was accompanied by increase of the amount of CB bills offered – from 23,000 million denars to 25,000 million denars, and in March 2017 it was increased to 30,000 million denars i.e. 5,000 million denars more than the amount of the matured CB bills. In July 2017, the National Bank reduced the amount of offered CB bills (from 30,000 million denars to 27,500 million denars) and in August 2017 (from 27,500 million denars to 25,000 million denars). In March 2018, the National bank additionally relaxed the monetary policy i.e. it reduced the interest rate of the CB bills from 3.25% to 3,00%, while the amount offered remained unchanged (25,000 million denars).

Graph 96
Annual change of the placements in financial institutions (left), loan liabilities (middle) and deposits of financial companies (right)
In percentages

Source: NBRM, using data provided by the banks.

The placements with banks and other financial institutions in 2017 declined (by 1,299 million denars i.e. 2.6%), almost entirely due to the reduced long-term loans to domestic banks in foreign currency, placed by "MBPR" AD Skopje. On the other hand, there is growth in the balances on accounts and deposits in foreign banks which is due to the short-term deposits in foreign banks[91].

Analyzing the liabilities, **the loan liabilities** declined by 5,597 million denars i.e. 15.5%, which is primarily due to the reduced liabilities based on long-term loans to non-resident financial companies, that is deleveraging of "MBPR" AD Skopje towards the international financial institutions. This was also the reason for decline in the liabilities in relation to long-term inter-bank lending in foreign currency (deleveraging of some of the domestic banks to "MBPR" AD Skopje).

In 2017, the deposits of banks and other financial institutions continue to be very minute source of financing for the banks. Their share in the total assets and in the total liabilities is 4.8% and 5.5%, respectively. In comparison to 2016, these deposits increased by 2,271 million denars i.e. 11.5%, most of which was due to the long-term deposits of the resident financial companies (from one to two years, in denars). The increased deposits of the non-resident[92] financial companies had slightly smaller contribution to the growth of the deposits of the banks and other financial institutions.

[91] The balances on accounts and deposits in foreign banks featured growth of 403 million denars i.e. 1.2%. In those frames, the short-term deposits abroad in foreign currency grew by 3,041 million denars i.e. 18% (mostly term deposits between one and three months), while the balances on the regular current accounts abroad, in foreign currency, declined by 2,539 million denars i.e. 14.8%.

[92] The deposits of non-resident financial companies increased by 638 million denars (13.6%). Within these, the short-term deposits in foreign currencies grew by 2,338 million denars vs the reduction on the balances on the current accounts in foreign banks in denars by 1,593 million denars.

Graph 97
Liabilities (left) and receivables (right) to/ from non-residents
In millions of denars and in percentages

Source: NBRM, using data provided by the banks.

In 2017, the banks in the Republic of Macedonia continued to perform their activities primarily on the domestic market. More specifically, the receivables and liabilities from/ to non-residents are at a low level, and in 2017 there was even further decline in the liabilities to non-residents by 1,858 million denars i.e. 5% as a result of the said decline in the liabilities in relation to long-term loans to non-residential financial companies. Contrary to that, the receivables from non-residents featured small growth of 323 million denars (0.9%). In 2017, the banking system claims more than it owes to non-residents. The share of the receivables and payables of the banks to/ from non-residents, in the total assets/ liabilities, are 7.8% and 7.6%, respectively[93].

There is continuous tendency of the domestic banks to be net-debtors towards the parent entities[94]. However, the use of loans from parent entities[95] is not a significant/ important source of financing of the activities of the banks. More specifically, the share of the liabilities towards parent entities (together with the subordinated liabilities and the hybrid equity instruments) in the total assets of the domestic banking system as well as in the liabilities to non-residents[96] at the end of 2017 were 2.0% and 25.9%, respectively. The total liabilities of the banks towards their parent entities declined by 267 million denars i.e. 2.9% in comparison to 2016. **The receivables from the parent entities of the banks** are very minute and in 2017 their share is only 0.4% in the total assets of the domestic banking system, while their share in the total receivables from non-residents is 5%. In comparison to 2016, the receivables from parent entities of the banks featured growth of 205 million denars i.e. 12.7%.

[93] Analyzed per individual bank, the share of the receivables of the banks from non-residents in the total assets is in the interval between 1.3% and 18.9%, while the share of the liabilities of the banks to non-residents, in the total assets, is in the interval between 0.1% and 15%. "MBPR" AD Skopje is excluded from this analysis.
[94] As on 31 December 2017, eight (from a total of eleven) banks are net –debtors to the parent entities.
[95] The sources of financing of the banks from the parent entities are primarily in a form of short-term deposits and liabilities in relation to subordinated and hybrid capital instruments.
[96] Analyzed per individual bank, the share of the liabilities of the banks to parent entities, in the total liabilities to non-residents, is in the interval between 0.001% and 85.6%. Analyzed per individual bank, the share of the liabilities of the banks to parent entities in the total assets are in the interval between 0.001% and 12.9%.

Graph 98
Sources of funding (above) and receivables (below) to/ from parent entities of the banks
In millions of denars and in percentages

Source: NBRM, using data provided by the banks.

2. Profitability

The banking system increased the profits in 2017 as well, albeit with far less growth rate compared to the last several years. The largest contribution to the increase of the profit in 2017 was provided by the non-interest revenues, contrary to the usual trend from the last years when the net interest income was the continuous main contributor to the growth of the profit. In other words, the growth of the net interest income featured more significant slowdown, which is mainly due to the larger decline of the interest revenues from non-financial companies in 2017, compared to the actual decline in 2016, in a situation of simultaneous smaller decline of the interest expenditures from dealing with households, compared to the decline from the previous year. The impairment costs featured more significant growth in 2017 vs the decline in 2016, and they also contributed to the slower annual growth of the profits of the banking system. The operational costs continue to grow but at a slower rate compared to 2016. These tendencies resulted in likely (mainly minimal) decline in most of the indicators of profitability and efficiency of the banking system, which continue to be at a relatively high level. The active and passive interest rates continued to decline in 2017 as well. In an environment of low interest rates, one of the largest challenges for the banks is to maintain the high profitability and to continue to provide solid amounts of net interest revenues.

Graph 99
Profit after taxation (above) and annual change in the main revenues and expenditures (below)
In millions of denars

Source: NBRM, using data provided by the banks.

2.1 Profitability and efficiency indicators of the banking system

In 2017 the banking system generated profit of 6.6 billion denars, which is more by 230 million denars i.e. 3.6% in comparison to the profit realized in 2016. The annual growth of the profit features certain slowdown compared to the last five-year period (2011 - 2016), when it was growing at an average of 40% per year. In 2017 the non-interest revenues had the biggest share in the increase of the profit, followed (far behind) by the net interest income, which is also contrary to the common trend – net interest income to contribute the most in the growth of the profit. The more significant slowdown of the growth of the net interest income (their growth in 2017 is less by more than four times compared to the increase in 2016) and the increase of the impairment costs in 2017 (vs their decline in 2016) contributed the most to the significantly slower growth of the profit in 2017. Only two banks finished the year with loss.

Graph 100
ROAA and ROAE (left) and their components (right)

Source: NBRM, using data provided by the banks.

The significantly slower growth of the profit in 2017 had influence on the indicators of profitability and efficiency of the banking sector. Following several years of continuous growth, the rates of return on average assets and of the average equity and reserves[97] featured minimal decline of 0.1 percentage point each, and the end of 2017 they are 13.5% and 1.4%, respectively. The analysis of particular components[98] of the rate of return points out to certain decline in the profit margin and in the turnover of the average risk-weighted assets, which also contributed to the minimal decline of the rates of return. The indicators of profitability and efficiency of the banking system and of the specific groups of banks are shown in Annex 40.

[97] The average assets and the capital and reserves are presented as average of the situation of the assets or the capital and the reserves as on 31 December 2016 and 31 December 2017.

[98] The rate of return of the average capital and reserves can be shown as follows: $\mathrm{POAE} = \frac{P}{CR} * \frac{S}{S} * \frac{A}{A} * \frac{RWA}{RWA} = \frac{P}{S} * \frac{S}{RWA} * \frac{A}{CR} * \frac{RWA}{A} = PM * RWAturnover * L * RBAratio$, where: P=profit after taxation; CR=average capital and reserves; S=total regular revenues; A=average assets; RWA=average risk-weighted assets; PM=profit margin; RWAturnover=turnover of the average assets weighted by the risks; L=leverage or indebtedness; RBAratio=ratio of the level of the undertaken risk. Furthermore, the rate of return on the average assets can be shown as follows: POAA = $PM * RWAturnover * RBAratio$. Practically, the difference between the two rates of return is in the component L – leverage or indebtedness.

Graph 101
Net interest margin as on 31 December 2017 on a level of the banking system (above) and by individual banks (below)
In percentages

Source: NBRM, using data provided by the banks.

Graph 102
Banks operational efficiency ratios
In percentages

Source: NBRM, using data provided by the banks.

The net interest margin declined by 0.1 percentage point and is 4.0% in 2017, which is due to the faster growth of the average interest-yielding assets (by 14,730 million denars i.e. 3.9%), compared to the increase of the net interest income (by 243 million denars i.e. 1.6%). In other words, in a situation of slowed growth of both components of the net interest margin, there was more significant slowdown of the growth of the net interest income (the growth of the net interest income slowed down from 7.2% in 2016 to 1.6% in 2017[99], while the growth of the average interest-yielding assets slowed down from 7.3% in 2016 to 3.9% in 2017).

The increase of the net interest income in 2017 is due to the larger decline in the interest expenditures (by 471 million denars i.e. 9.9%) compared to the decline of the interest revenues (by 229 million denars i.e. 1.1%). The largest share (of over 90%) in the decline of the interest expenditures was by the households sector, where the interest expenditures were reduced by 15.8% (427 million denars). Contrary to that, the decline of the interest revenues was mainly present in the non-financial companies sector (where the interest revenues declined by 637 million denars i.e. 7.8%), regardless of the increase of the interest revenues from doing business with the households (by 489 million denars i.e. 5.6%). Lastly, three fourths of the growth of the interest-yielding assets is due to the increased credit activity to the "Households" sector.

The indicators of operational efficiency of the banking system have

[99] The significantly slower growth of the net interest income is due to the increased cutting of the interest revenues from doing business with non-financial companies in 2017, in comparison to the decline of these revenues in 2016 (in comparison to 2015). In the same time, the decline of the interest expenditures from doing business with households in 2017 is smaller compared to their decline in 2016 (in comparison to 2015), which contributed to smaller decline in the interest expenditures i.e. slowing of the growth of the net interest income.

Graph 103
Amount (above) and annual change rates (below) of the costs for impairment of the financial and non-financial assets
In millions of denars (above) and in percentages (below)

Source: NBRM, using data provided by the banks.

Graph 104
Impairment costs to gain and net interest income ratio
In millions of denars and in percentages

Source: NBRM, using data provided by the banks.

different tendencies. For example, the operational costs per total revenue unit are declining, per net interest revenue unit are increasing, and per average assets unit remain unchanged. The operational costs in 2017 are higher by 290 million denars i.e. 2.5%[100], compared to 2016. The special reserve for potential credit losses from off-balance sheet exposures had the biggest contribution in the increase of these costs[101]. In 2017 this exposure is greater by 217 million denars compared to the previous year. Furthermore, there is annual growth of 108 million denars (2.3%) in the costs for employees, that have the highest individual share in the operational costs of 40.4%. On the other hand, the total revenues from regular business operations of the banks increased more (by 4.7% i.e. 1,068 million denars), contributed the most (77.3%) by the non-interest revenues (primarily on the basis of capital gains from sale of assets and collection of receivables that have been initially written-off). Regardless of the above-mentioned slowdown in the growth of the net interest income (growth of 1.6% in 2017), they continue to have the highest share in the total revenues from regular business operations (65.4% in 2017).

In 2017 the total costs for impairment increased by 11.1% (495 million denars) compared to 2016. The increased (net) impairment costs are due to the actual higher costs (net) for impairment of the financial assets (growth of 1,232 million denars i.e. 32.7%) which, in turn, is due to the deteriorated creditworthiness of clients in the following sectors: "Production of metal, machinery, tools and equipment", "Information and communications", "Food industry" and "Other processing industry". Contrary to that, the (net) costs for impairment of the non-financial assets declined by 737 million denars (by 107.2%), which is due to the sale of forfeited property on the basis of uncollected receivables.

[100] As a comparison, the operational costs in 2016 were greater by 340 million denars (3.1%) in comparison to 2015.
[101] As of 1 January 2018, in accordance with the MSFI 9 financial instruments, the special reserve for potential credit losses from off-balance sheet exposure (together with the respective releases of this reserve) will be registered as part of the impairment costs, not as part of the operational costs of the banks.

Graph 105
Active (above) and passive (below) interest rates
In percentages

Source: NBRM, using data provided by the banks.

Graph 106
Interest spread, by currency
In percentage points

Source: NBRM, using data provided by the banks.

2.2 Movements (tendencies) in interest rates and interest rate spread

The decline of the active and passive interest rates of the banks, for all currencies, continued in 2017[102] as well. The average active and passive interest rate in 2017 is 6.0% and 1.6%, respectively, which is decline of 0.4 and 0.2 percentage points, respectively, in comparison to the previous year. The highest decline of the average interest rate of 0.5 percentage points is in the foreign currency loans[103]. The comparison of the interest rates in December 2017 in relation to December 2016 shows decline in all active and passive interest rates.

During 2017 the interest rate spreads also declined. As on 31 December 2017, the interest rate spread between the active and passive rates is 4.2 percentage points, which is decline of 0.2 percentage points in relation to 31 December 2016. The average spread between the active and passive interest rates in 2017 is 4.4 percentage points, which is decline of 0.2 percentage points compared to 2016.

[102] During 2017, the policy rate, the interest rate of CB bills was reduced in February 2017 (from 3.5% to 3.25%).
[103] There is also a decline of 0.5 percentage points in the interest rate of the deposits in denars with foreign currency clause, but the amount of these deposits is minimal.

Analysis of the profitability of the banks,
in a situation of low and downwards interest rates

The banks in the Republic of Macedonia are mainly using the traditional business model in their operations – collecting deposits from the domestic private sector and placing them in loans in the domestic non-financial sector. Hence, it is natural to expect that the net interest income is the most important component of the revenues of the banks and, accordingly, main source for generating profits. Since 2012 the profit of the banking system in the Republic of Macedonia features a continuous trend of annual growth, with average rates of around 40%. The only exception is the year of 2017 when the profits increased by modest 3.6%.

Graph 107
Structure (left) and use (right) of the total revenues
in percentages

Source: NBRM, using data provided by the banks.

Graph 108
Interest revenues and expenditures for interest – status and growth
in millions of denars and in percentages

Source: NBRM, using data provided by the banks.

In the period 2007 - 2014, the net interest income is almost continuously increasing the already dominant share in the structure of the total revenues. In 2015 and 2016, the share of the net interest income remains almost unchanged, and in 2017 this share declined by 2 percentage points. In the same time period, the net revenues from commissions reduce the share in the total revenues and there is some greater variability in the share of other regular revenues – their share in the last three years is increasing. This analysis only confirms the use of the traditional business model in the operations of the banks and refers to its very solid presence. In other words, the banks are hesitant to start expanding their business operations towards some non-traditional activities that would provide them with additional revenues from commissions and

greater diversification of the total revenues. On the other hand, the more prominent variability of the share of other non-interest regular revenues only confirms their mostly ad-hoc character.

In terms of use of the revenues, following the period after the global financial crisis (until 2010 – 2011), there is continuous increase of the share of the operational expenses (reduced operational efficiency), growth in the share of the impairment costs (damaging of the credit portfolio) and reduced profit margins (reduced share of the profit in the total revenues of the banks). However, starting from 2012 there is significant improvement in the operational efficiency of the banks, and the same goes for the credit risk management. This, in combination with the solid growth of the revenues, provided for more significant profits.

Graph 109
Sectoral structure of the revenues from (left) and expenditures for (right) interest
in percentages

Source: NBRM, using data provided by the banks.

For quite some time now (since 2010, and especially since 2012), in a situation of continuous downward trend of the interest rates, the banks manage to maintain a quite stable level of the interest revenues of around 20 billion denars, without significant oscillations throughout the years. One of the factors that provide for stable level of the interest revenues is the continuous expansion of the interest-yielding activities of the banks. Another factor that maybe contributes even more to the stable level of the interest revenues are the existing transformations in the credit portfolios of the banks. More specifically, there is a trend of greater and greater crediting to households where the interest rates are usually higher (mainly in the loans for financing of consumption of the households), which also had influence on the more significant increase of the share of the interest revenues from households in the total interest revenues of the banks (in the period 2007-2012 their share increased by almost 15 percentage points and since 2016 the interest revenues from the households have the highest individual share in the total interest revenues). We must also mention the present *denarization* of the credit portfolios, which especially gained in speed since 2012 (with the increase of the debt crisis in the Eurozone) resulting in higher interest revenues for the banks due to the included premium for currency risk in the interest rates of the denar loans, in a situation of *de facto* fixed foreign currency exchange rate. Lastly, we should mention that, in a situation of downward interest rates, the decline of the active interest rates is slower and less compared to the decline of the passive interest rates (*loan rate stickiness*).

Contrary to the relatively stable amount of the interest revenues, the interest expenditures feature continuous decline since 2012, with annual change rates rooted in a deeply negative territory (however, in 2016 and 2017 the negative rates are moving upwards, which is probably a signal that the room for further even bigger cutting of the interest expenditures is gradually exhausted). In terms of sectoral structure of the interest expenditures, the share of interest expenditures from doing business with the

households is the largest since 2010 (albeit at downward trend since 2014). These tendencies point out that the cutting of the total interest expenditures was achieved mainly by reducing the interest expenditures for the households. The changes in the household deposits structure also goes in favor of the downward interest expenditures for this sector. More specifically, in the last period the sight deposits are the fastest growing component of the total deposits of the households, which yields smallest interest expenditures, and in the recent years they yield zero interest expenditures for the banks (good number of banks do not foresee payment of interest for the sight deposits in their interest policies).

In a situation of absence of more significant recapitalizations of the banks, it seems that the generated profits are the most important source for increasing of the capital items/ positions. Their importance is highly relevant in a situation of strict regulatory and supervisory requirements in terms of the size and quality of the capital items of the banks. Hence, the maintenance of stable and high profitability rate is significant challenge for the banks because of maintenance of the capital items at the required level, without jeopardizing the volume of the activities and the financial mediation they implement. This challenge is especially present in a situation of significant concentration of the total revenues of the banks around the net interest income, and in a situation of historically low and (continuously) downward interest rate, whose realistic size especially declined in 2017 (due to the acceleration of the inflation rate).

Annex 1

Relations between the indicators for specific companies from the corporate sectors, and their average level of risk in the banking system

After the end of the project for interconnection between the data of the Credit Registry and the annual accounts data the National Bank receives from the Central Registry, the first effort was made to identify the items and the indicators from the financial reports that could explain the dynamics of impairment of the entities included in the corporate sector. Enclosed is the actual analysis of the tendencies of the selected set of more relevant indicators (from a broader list of indicators) for 18,802 legal entities from the corporate sector for 2016 (17,634 for 2015 and 17,767 for 2014), depending on the classification of the legal entities in terms of their status – "regular"/"non-performing" client (defined in the database as a total impairment/ total exposure below and above 30%, respectively) and on the level of impairment per specific legal entity. Furthermore, the entities in which regular status of the credit exposure was identified are divided in several intervals according to the level of the allocated impairment. The indicators in which the largest change of the respective indicator was identified, when changing the average level of risk, are also shown in the graphs, with special emphasis on their median and their inter-quartile difference. Judging by the data shown in the tables and the graphs, it seems that the indicators of profitability, and especially the indicators of the operational profit margin and the net profit margin, have the highest explanatory relevance for the level of the credit risk. In addition, in some of the indicators (for example, in the indicator of total debt or the indicator of coverage of the interest expenditures with operational profit) we can notice that the legal entities from the corporate sector for which the impairment is in the interval from 5% to 10%, show clear deviation from the expected tendency of the median for these indicators, which hints that there is probably some problem with the accounting data for the legal entities in this group, or points out to differences in some banks in the level of conservatism when determining the amount of impairment for the approved loans.

Below is a list of the manner of calculation of the indicators that were used for this analysis, but also of other indicators showing the operation of the corporate sector.

Indicators	Calculation metodology
DEBT INDICATORS	
Total debt ratio	(Total assets - equity and reserves) / Total assets
Debt to equity ratio	(Total assets - equity and reserves) / Equity and reserves
Long-term debt ratio	(Long-term provisions for covering risks and costs + Long-term liabilities) / (Long-term provisions for covering risks and costs + Long-term liabilities + Equity and reserves)
Leverage ratio - assets/equity	Assets / Equity
Interest bearing debt / Equity	(Liabilities for credits, includint loans from connected enteties + Other financial liabilities + Long-term epension and other mployees benefits) / (Equity and reserves)
Long-term interest bearing debt / Capital	(Long-term liabilities for credits, including credits to conected enteties + Long-term other financial liabilites + Long-term epension and other mployees benefits) / (Long-term liabilities for credits, including credits to conected enteties + Long-term other financial liabilites + Long-term epension and other mployees benefits + Equity and reserves)
Financial expenses coverage ratio	EBIT / Financial expenses
Interest coverage ratio	EBIT / Interest expenses
Earnings before interest and taxes	Operating income - Operating expenses
LIQUIDITY	
Current ratio	Current assets / (Short-term liabilities + Deffered liabilities and unearned revenues)
Acid-test ratio	(Current assets - Inventories) / (Short-term liabilites + Deffered liabilities and unearned revenues)
Cash ratio	(Short-term financial assets + Cash and cash equivalents) / (Short-term liabilities + Deffered liabilities and unearned revenues)
Net working capital	Current assets - Short-term liabilities - Deffered liabilities and unearned revenues
EFFICIENCY	
Days of sales outstanding	365 / Receivables turnover
Days of inventory on hand	365 / Inventories turnover
Number of days of short-term payables outstanding	Short-term liabilities (average of two previous years)*365 / Operating expenses without the effect of depreciation, amortization and impairment of assets
Total assets turnover	Operating revenues / Total assets (average of two previous years)
Inventories turnover	Operating revenues / Inventories (average of two previous years)
Receivables turnover	Operating revenues / Long-term and short-term receivables (average of two previous years)
Curret receivables turnover	Operating revenues / Short-term receivables (average of two previous years)
Fixed assets turnover	Operating revenues / (Property, plant and equipment + investment property) (average of two previous years)
Net working capital turnover	Operating revenues / Net working capital turnover
Equity and reserves turnover	Operating revenues / Equity and reserves (average of two previous years)
Coverage of operating non-current assets with long-term sources of financing	(Equity and reserves + Long-term provisions for covering costs and risks + Long-term liabilities) / (Intangible assets + Tangible assets + Property investments)
Operating non-current assets / Total assets	(Intangible assets + Tangible assets + Property investments) / Total assets
PROFITABILITY	
Return on average assets	Net profit or loss / Total assets (average of two previous years)
Return on average equity	Net profit or loss / Total equity and reserves (average of two previous years)
Net profit margin	Net profit or loss / Operating income
Retrun on average capital employed	EBIT / (Equity and reseves + Long-term provisions for covering risks and costs + Long-term liabilities) (average of two previous years)
Operating income / Total assets	EBIT / Total assets
Operating profit margin	EBIT / Operating income
Operating income per employee, in millions of denars (productivity indicator)	Operating revenues / Number of employees (the data for number of employees is provided by State statistical office)
Net income after tax per employee, in millions of denars (productivity indicator)	Net income / Number of employees (the data for number of employees is provided by State statistical office)

Table 1

Median, first and third quartile for companies from the corporate sector according to the level of coverage of the credit exposure with impairment, for specific more relevant indicators (as on 31 December 2014)

31.12.2014		Total debt ratio (%)	Assets/equity ratio (times)	Interest bearing debt/equity (times)	Interest coverage ratio (times)	Current liquidity (times)	Net profit margin (%)	Operational profit margin (%)	Return on assets - ROA(%)	Return on capital and reserves - ROE(%)	Turnover of total assets (times)	Current receivables turnover (times)	Days of inventory on hand (times)	Days of sales outstanding (times)	Operating revenues (annual change)	Current assets (annual change)	Interest bearing debt (annual change)
MEDIAN	NP	72.83	1.30	0.00	-1.53	0.96	-2.13	-1.88	-0.15	0.92	0.27	1.08	39.50	251.00	-13.09	-0.01	0.00
	20-30%	72.66	1.77	0.10	0.99	1.06	0.27	0.61	0.11	1.87	0.58	2.24	71.37	150.83	-8.82	-1.57	0.00
	10-20%	71.40	2.21	0.19	2.19	1.16	0.92	1.97	0.63	3.32	0.71	2.77	54.90	129.92	-2.03	0.21	0.00
	5-10%	46.36	1.43	0.00	317.25	1.51	1.60	1.95	2.25	7.33	1.49	7.21	27.74	50.35	12.15	9.05	0.00
	1-5%	53.89	1.84	0.23	9.31	1.39	1.82	3.01	2.09	6.49	1.09	4.24	41.74	86.04	3.95	5.54	0.00
	0-1%	51.92	1.85	0.26	8.97	1.47	2.49	3.91	2.70	7.44	1.07	3.86	44.12	94.57	5.70	7.15	0.00
Q1	NP	34.03	-0.18	0.00	-80,822	0.35	-128.02	-126.26	-13.10	-7.77	0.01	0.04	0.00	40.17	-70.65	-22.64	-7.40
	20-30%	43.71	0.00	0.00	-111.73	0.57	-33.17	-31.62	-7.15	-9.36	0.16	0.74	1.77	45.87	-48.98	-17.05	-19.71
	10-20%	42.29	1.19	0.00	-7.95	0.72	-4.94	-9.21	-2.60	0.00	0.31	1.07	6.59	44.43	-32.00	-14.62	-22.39
	5-10%	19.30	1.07	0.00	-115.40	0.82	-2.98	-3.98	-3.68	0.06	0.74	2.61	0.00	9.99	-9.92	-12.77	-5.59
	1-5%	30.34	1.26	0.00	1.06	0.88	0.24	0.37	0.20	0.76	0.59	1.93	3.24	35.16	-14.26	-11.16	-21.93
	0-1%	31.95	1.35	0.05	1.36	0.96	0.40	0.77	0.39	1.31	0.60	1.97	3.97	42.74	-12.61	-9.70	-24.85
Q3	NP	115.94	2.70	0.18	2,870.76	1.91	3.67	4.88	2.04	17.93	0.97	5.59	297.92	2,533.30	18.16	13.30	0.00
	20-30%	100.76	3.53	0.82	21.08	1.82	3.52	6.47	3.05	17.48	1.21	7.45	240.03	429.84	23.17	19.06	12.74
	10-20%	91.12	4.26	1.07	14,239.00	1.97	4.29	8.77	3.98	20.86	1.29	7.95	187.55	314.76	42.53	30.07	15.21
	5-10%	80.81	2.48	0.22	89,606.25	3.44	8.08	9.00	12.21	35.58	2.81	35.91	101.16	138.55	68.06	66.46	14.06
	1-5%	78.24	3.15	0.84	28,270.27	2.54	6.91	9.14	8.39	21.32	1.98	10.33	126.81	188.56	31.84	33.68	87.35
	0-1%	74.32	3.02	0.76	23,138.00	2.56	7.70	10.04	8.90	22.55	1.79	8.56	135.56	185.57	30.18	32.36	99.65

Source: NBRM, using data from the annual accounts.

Table 2

Median, first and third quartile for companies from the corporate sector according to the level of coverage of the credit exposure with impairment, for specific more relevant indicators (as on 31 December 2015)

31.12.2015		Total debt ratio (%)	Assets/equity ratio (times)	Interest bearing debt/equity (times)	Interest coverage ratio (times)	Current liquidity (times)	Net profit margin (%)	Operational profit margin (%)	Return on assets - ROA(%)	Return on capital and reserves - ROE(%)	Turnover of total assets (times)	Current receivables turnover (times)	Days of sales outstanding (times)	Operating revenues (annual change)	Current assets (annual change)	Interest bearing debt (annual change)
MEDIAN	NP	70.76	1.30	0.00	0.00	1.03	0.00	0.00	0.00	1.63	0.41	1.78	204.11	-11.24	-0.76	0.00
	20-30%	74.90	1.76	0.04	1.14	1.11	0.35	1.16	0.19	3.47	0.61	3.01	119.42	-6.51	-0.33	0.00
	10-20%	71.93	2.01	0.17	2.41	1.10	0.81	1.58	0.68	3.55	0.74	3.74	98.04	0.34	0.15	0.00
	5-10%	46.72	1.46	0.00	355.30	1.51	1.73	2.11	2.21	6.87	1.51	7.57	48.64	8.42	11.21	0.00
	1-5%	53.78	1.86	0.24	11.74	1.36	2.28	3.58	2.48	7.09	1.08	4.19	87.42	4.11	8.92	0.00
	0-1%	51.24	1.85	0.26	12.11	1.49	2.96	4.31	3.14	8.09	1.08	3.92	93.48	5.17	9.18	0.00
Q1	NP	31.91	-0.14	0.00	-64,048	0.40	-60.39	-59.33	-13.54	-8.86	0.10	0.41	42.54	-61.83	-21.85	-10.77
	20-30%	40.01	1.01	0.00	-126.01	0.64	-23.38	-20.79	-8.97	-5.22	0.26	1.03	50.74	-40.31	-17.30	-24.99
	10-20%	46.18	1.08	0.00	-8.14	0.62	-13.44	-13.06	-4.71	-1.62	0.31	1.30	39.20	-31.86	-16.64	-19.25
	5-10%	19.91	1.08	0.00	-77.05	0.83	-1.98	-3.44	-2.61	0.08	0.75	2.79	10.44	-12.80	-9.46	-0.69
	1-5%	31.02	1.28	0.01	1.23	0.88	0.33	0.56	0.32	0.98	0.57	2.02	35.59	-14.66	-8.35	-21.24
	0-1%	30.95	1.33	0.04	1.65	0.97	0.56	0.94	0.59	1.56	0.62	2.06	40.26	-12.27	-6.69	-23.43
Q3	NP	113.51	2.64	0.20	15,040.75	2.13	6.51	8.51	3.44	20.54	1.16	8.31	853.54	30.01	14.35	0.00
	20-30%	98.33	4.20	0.83	6,102.69	1.97	4.51	7.85	4.30	33.76	1.28	7.19	353.86	29.15	22.36	9.08
	10-20%	94.98	4.11	0.96	7,409.00	1.65	4.36	7.56	4.11	20.31	1.65	9.31	283.34	40.34	28.29	18.48
	5-10%	79.94	2.53	0.26	86,851.00	3.52	8.27	9.21	12.34	32.01	2.84	35.34	131.09	66.07	70.34	18.22
	1-5%	77.70	3.14	0.85	27,888.00	2.56	7.99	10.16	9.01	23.72	1.89	10.29	180.37	30.90	37.58	77.41
	0-1%	73.10	2.99	0.79	25,497.44	2.58	8.67	10.56	9.56	23.16	1.82	9.09	177.29	28.60	36.07	94.19

Source: NBRM, using data from the annual accounts.

Table 3

Median, first and third quartile for companies from the corporate sector according to the level of coverage of the credit exposure with impairment, for specific more relevant indicators (as on 31 December 2016)

31.12.2016		Total debt ratio (%)	Assets/equity ratio (times)	Interest bearing debt/equity (times)	Interest coverage ratio (times)	Current liquidity (times)	Net profit margin (%)	Operational profit margin (%)	Return on assets - ROA(%)	Return on capital and reserves - ROE(%)	Turnover of total assets (times)	Current receivables turnover (times)	Days of sales outstanding (times)	Operating revenues (annual change)	Current assets (annual change)	Interest bearing debt (annual change)
MEDIAN	NP	72.59	1.27	0.00	-1.96	1.01	-1.50	-2.28	-0.02	0.81	0.27	1.07	257.20	-10.89	0.00	0.00
	20-30%	69.01	1.66	0.02	1.56	1.14	0.82	1.35	0.45	4.37	0.68	3.10	110.05	-4.36	1.78	0.00
	10-20%	73.49	2.03	0.18	2.20	1.10	0.82	1.71	0.64	4.29	0.72	3.25	109.05	-1.57	0.01	0.00
	5-10%	46.62	1.43	0.00	242.75	1.48	1.65	1.94	2.17	6.61	1.44	7.67	47.36	7.18	10.74	0.00
	1-5%	52.36	1.80	0.23	10.41	1.44	2.38	3.60	2.67	7.56	1.08	4.31	84.29	4.28	7.96	0.00
	0-1%	50.68	1.85	0.26	12.52	1.50	3.35	4.74	3.45	8.59	1.02	3.81	95.73	5.15	8.18	0.00
Q1	NP	32.38	-0.17	0.00	-85,072	0.38	-151.20	-152.24	-12.95	-6.86	0.01	0.02	42.44	-70.25	-18.39	-2.97
	20-30%	36.07	1.02	0.00	-3,643.66	0.62	-27.51	-27.40	-7.03	-3.00	0.24	1.02	38.95	-39.79	-9.68	-22.33
	10-20%	46.42	1.11	0.00	-25.78	0.61	-10.01	-10.47	-3.56	0.05	0.31	1.14	36.47	-28.70	-17.88	-26.39
	5-10%	18.95	1.08	0.00	-140.68	0.83	-2.39	-3.67	-2.93	0.12	0.75	2.81	9.25	-11.06	-9.73	0.00
	1-5%	29.67	1.26	0.00	1.20	0.89	0.29	0.45	0.31	1.06	0.60	2.10	34.47	-12.68	-8.64	-24.38
	0-1%	29.89	1.32	0.03	1.73	0.95	0.68	1.12	0.61	1.82	0.58	2.04	44.55	-10.32	-6.07	-20.44
Q3	NP	118.60	2.63	0.21	2,278.00	2.14	3.36	4.30	2.06	15.03	1.00	5.72	3,556.34	14.24	12.71	0.00
	20-30%	97.22	3.59	0.60	17,753.00	2.03	9.00	11.30	7.67	29.95	1.55	7.93	304.66	17.60	33.98	2.21
	10-20%	94.72	4.20	1.03	3,668.44	1.70	5.29	7.95	4.13	25.39	1.60	9.59	299.64	27.79	20.96	9.76
	5-10%	79.76	2.54	0.27	72,387.50	3.54	7.94	8.94	11.48	32.26	2.72	39.12	129.08	52.18	60.32	23.39
	1-5%	75.85	2.98	0.77	13,078.25	2.55	8.39	10.37	9.39	24.20	1.90	10.41	172.66	27.62	33.42	65.62
	0-1%	72.12	2.93	0.79	6,617.00	2.66	9.19	11.20	9.86	23.44	1.69	8.16	179.34	28.78	32.37	74.06

Source: NBRM, data from the Credit Registry and the Central Registry, data from the annual accounts.

[1] The median, as a measure of central tendency, is a value that separates the statistical series in two equal parts. These parts are ordered in ascending or descending order i.e. half of the observations have higher and the other half have lower value than the median. The median is equalized with the second quartile i.e. Q_2 and Q_1. The first quartile i.e. even "middle value" includes the first quarter of the ordered statistical series, as a mean value between the median and the lowest value in the series (the minimum). The third quartile i.e. Q_3, is a value under which we have 75% of the observations in the statistical series and it shows as a mean value between the median and the maximum value in the series. The IQR i.e. the inter-quartile difference is calculated as a difference between Q_3 and Q_1, thus excluding the influence from 25% of the data with lowest values and 25% of the data with highest values. In other words, it measures the dispersion of 50% of the total data.

Graph 1

Interdependency of the average level of risk per specific companies from the corporate sector and selected relevant indicators, as on 31 December 2015, median (left) and interquartile difference (right):

- for the total indebtedness,

- the current liquidity,

- net profit margin,

- operational profit margin, and

- operational revenues

Source: NBRM, using data from the annual accounts.

Graph 2

Interdependency of the average level of risk per specific companies from the corporate sector and selected relevant indicators, as on 31 December 2016, median (left) and interquartile difference (right):

- for the total indebtedness,

- the current liquidity,

- net profit margin,

- operational profit margin, and

- operational revenues

Source: NBRM, using data from the annual accounts.

On the basis of the tables and graphs we can conclude that the banks allocate higher impairment amount i.e. they ascertain that there is higher risk in companies that have worse financial indicators, or whose financial indicators are deteriorating. Hence, the growth of the impairment corresponds to the deterioration of the indicators for:

- Profitability of the companies in the corporate sector (net operational margin, operational profit margin, ROAA and ROAE are declining),
- Liquidity (the current liquidity indicator is declining),
- Indebtedness (the total indebtedness indicator is growing and the assets/ capital and the interest-yielding debt/ capital indicators are declining; the burden of the operational profit with interest payments is increasing),
- Efficiency in the operations.

Exception from this relation between the financial indicators and the volume of impairment is present in the legal entities in the corporate sector for which the impairment is in the interval between 5% and 10%. More specifically, these companies have better indicators compared to the companies for whose debt the banks have established impairment below 5%.

ANNEXES