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*Valon Ramadani & Kreshnik Bekteshi*

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# Concentration on the banking system in North Macedonia

Valon Ramadani,

Mother Tereza University Skopje, valon.ramadani@unt.edu.mk  
<https://orcid.org/0000-0002-1319-8664>

Kreshnik Bekteshi

Ministry of Economy, North Macedonia,  
[kreshnik.bekteshi@hotmail.com](mailto:kreshnik.bekteshi@hotmail.com)

## Abstract

Business environment, competition, globalization and technology developments are the dominating factors that lead the banking system to drive the changes. In the period under analysis, the Macedonian banking sector was in a developing and evolutionary cycle, particularly after the 2008 crisis, by exhibiting and manifesting several changes over the last years. The present study examines the evaluation of the banking system concentration from 2015 until 2018. The study provides arguments to this approach by applying the Herfindahl-Hirschman Index and the concentration ratio of the CR3 and CR5 indicators by estimating and examining the concentration level on five variables or five largest banks operating in the Republic of North Macedonia. The study shows that increased levels of concentration are consistent with the increased operations of the banks. The banking system resulted highly concentrated on assets and indicated moderate level of concentration on loans and deposits, where the leading banks or institutions are dominating the banking industry.

**Keywords:** banking in North Macedonia, concentration of banking system, banking and finance, HHI Index, CR3 and CR5.

## **Introduction**

Banking system acts the major blood-life role of contemporary trade and modern commerce to ensure them with a significant source of finance. Several factors indicated and made it clear that the banking stability enacts a momentous role for lightly functioning of the country economic system (Jayakumar et al., 2018). The legal framework plays an important role as it directly strengthens the creditors' and borrowers' legal protection, and a banking system with a high degree of legal protection allows improvement of quality of collaterals, debt recovery rates and also forces debt payment, thus resulting in a positive performance of the banking sector. On the other hand, more legal protection automatically indicates higher discipline degree on the part of the borrowers, in the company's administration and reflecting in less willingness of risk taking (Arias, Maquieira & Jara, 2019).

Concentration can be defined as a measurement of subject participation in accumulative assets, loans, market shares, and it is determined by the number of companies in the banking sector and banks' relative size (Zingales & Raghuram, 2003). The concentration concern and issue gained attention and interest especially in the last period of the contemporary crisis in 2008. Concentration level plays a crucial role in the operation and function of each financial institution. Evaluating the concentration level in the banking sector is fundamental for banks in determining a convenient strategy and assuring competitive banking products and services (Naym, 2018). The "golden thread" of the research provides an overview to investigate and calculate the banking concentration degree in the North Macedonian market by summarising characteristics and giving numerical examples for the level of concentration. The Concentration Ratios and HHI (Herfindahl-Hirschman

Index) constitute the indices that are used to figure out the objectives of the study. Through the CR (Concentration Ratio) the study will measure the market dominance of the three and five largest banks, expressed as percentage. To dig into a specific point, the research questions set out the monopoly power in the banking industry in North Macedonia, where the aim is to clarify if the concentration level is equal to 0%, marking perfect banking competition or 100% indicating monopoly. Also, using the Herfindahl-Hirschman Index the objective is to measure the banking concentration to ascertain whether the banking industry indicates highly, moderate or low concentration levels even in respect of assets, loans or deposits (Kwoka, 1985).

The concentration importance in the banking system is reflected in the competition, profitability and efficiency in the banking sector, as well as in the economy of the country (Filipovic & Tanaskovic, 2013). Concentration of the North Macedonian banking market shares under the CR3 and CR5, also HHI, remained high during the 2003-2011 period; the concentration levels were so high for the five largest banks that the market did not show signs of progress (Hourvouliades & Davcev, 2014).

Market concentration and banks pricing power, a study that included 120 banks, indicated that the pricing power follows the reducing rate of deposits and the concentration demonstrates no significant effect on the deposit rate, where the influence of bank's power is substantial in concentrated banking markets (Khattak, Khan, Ali & Rizvi, 2022).

The Republic of North Macedonia as a small country that has organized and developed a banking system, which has gone through a modernization and evolving process over the past 20 years. By applying correct legislation, increasing market liberalization, following most of the developed and developing

European countries, North Macedonia made a consistent and signature step that directly led foreign investors to be attracted and invest in the so called potential local market. The North Macedonian banking sector holds a dominant share in the country's overall financial sector and consists of 15 banks and two saving houses (European Banking Federation, 2020).

Exploring the influence determinants of bank specific and macroeconomic sphere, both indicators pointed to a significant impact on the amount of loans, non-performing loans to North Macedonian enterprises and households (Kjosevski, Petkovski & Naumovska, 2018).

Analysing the banking system of North Macedonia, through the concentration ratio and Herfindahl-Hirschman Index (Hirschman, 1980), the evidence proves that the concentration level in the banking system is proportionately high and moderate in terms of all analysed segments of banks. Broadly speaking, the three largest banks that are highly concentrated play a dominant role in the total Macedonian banking system and also in the domestic economy. The examination of the concentration level also shows that the role of small and medium-sized banks is almost insignificant as reflected in their low activity and passive representation in the market.

The research paper design consists of the literature review, banking sector overview and structure, followed by the methodology of analysis, then the section of discussion and interpretation of the analysis, ending with conclusion and recommendation for further research.

## Literature review

The following section of the paper reviews and provides evidence and existing literature that has concentration in the banking sector in its focus. The effects of concentration on banking sector performance are proper since they play substantial implications on banking policy. The North Macedonian economic situation and performance has significant effects on and a crucial role in the banking sector developments. Reviewing the newest literature and books related to the banking and finance sector, the research states the major new findings. For example, Johannes Wernz (2021) concluded that in the last 10 years, after the financial crisis, the banking sector has undergone significant change. The author mentioned the implications that contributed in the transition by including implementation of Basel II and Basel III (Ferreira, Jenkinson & Wilson, 2019), low interest rates, huge public debt and the final indicator, coronavirus. Overall, when banks mistrust each other and stop inter-lending, that directly affects the economy; in those countries where the banking sector has and plays an influential and predominant role, there exists the dilemma of how to fix and what to do in these scenarios and crisis. The functioning of a bank is and has always been a risky business according to major factors such as bank's role, delicate business model, size and the complexity of operating banks, which indirectly contributes to and explains why the current banking sector is one of the most regulated industries, not just in the US, but all over the world (Alexander Dill, 2020).

Investigating the bank capital, regulation, and supervision on bank's stock performance, over a period between 1999 and 2012 in 74 countries, the empirical studies indicated that the higher regulatory capital was not positively related to the bank's stock performance during the analysed

years, while during turbulent times and crisis the higher regulatory capital significantly increased a bank's performance in stocks (Plester, Irresberger & Weiss, 2018). Also, the results indicated that bank stock performance was better when there was strong supervision and corporate governance. Banking as part of the financial system led to a new innovative approach that already is an integral part of the environment and society. The so called "fintech", known as financial technology, is used by the banking sector as a financial tool that directly leads to business innovation, banking applications for services and products (Schindler, 2017). The financial technology, for conventional banks and Islamic banks investigating the influence how the "FinTech" banks growth on the financial performance and that showed impressive or negative relationship between the services provided by FinTech and bank's performance (Almulla & Aljughaiman, 2021).

Several researches involving European banking sector set out different findings in the areas of concentration and competition. For instance, Gelos and Roldos (2002) stated that European banking markets, containing Poland, even with increased concentration during 1995-2000 the banking sector did not become slighter competitive. Contrary to this conclusion, Bikker and Groeneveld (2000) provided evidence that exist negative correlation and relationship between concentration level and competition in the banking sector of European countries. Although, this theory was supported by Jansen and Haan (2003) that also found no relationship between the concentration and the degree of competition. Abbasogul, Aysan and Gunes (2007) investigated the concentration level in the banking sector of Turkey in the period 2001-2005 and found that during that time, the concentration level in terms of total assets has increased.

Maura La Torre (2020) elaborating the Knowledge Risk Management, assessed that there is research to be conducted to attain the systematic and independent research line and the knowledge banking tools and techniques were applied in each banking organizations in the post-crisis period. The author also concluded that the banking sector is a complex business and no longer is characterized with just accepting deposits and lending it to clients.

Research papers have studied the effects of bank's concentration level on economic development. Diallo and Koch (2018) in their study investigated the association of economic growth and bank concentration and conclude that high concentration on banking systems will lead to a decrease in the probability of innovation. Although, several studies contain and show that high concentration significantly increases the cost of credit and also concentration outflows in higher rates in United States banking sector (Bonti, Kalkbrener, Lotz & Stahl, 2006). On other hand, Tom Filip Lesche (2021) comparing concentration and substitutability expressed that the higher the level of concentration in banking-financial sector, a bank could not be replaced quickly and easy. Bank concentration is stated as the main and foremost external factor which impacts the banking industry or the entire country's economy.

In a study published by National Bureau of Economic Research (NBER) working paper series and analysed by Beck, Demirgüç-Kunt and Levine (2003) was concluded that each country with high concentration directly leads to stable and immobility in the banking industry, stating that a concentration level of 72% or above can be closely correlated with some occurrences that can bring bank failure in that country or nation. The concentration level automatically increases the profits for the major or dominant banks within the operating industry and it will be easier for regulatory commission to

monitor the largest banks (Boda, 2014). Particularly, the high concentration on the banking system will significantly lead to low competition levels and higher prices, which for some field experts this is no exception (De Bandt & Davis, 2000).

Banking industry with high concentration in the operating market is not typically a suitable quality and it will lead to higher prices, small consumer surplus and lower outputs. Companies in highly concentrated industries usually lean high profits for long-period of time. Beck, Demirgüç-Kunt and Levine (2006) stated that in many industrialized countries the banking sector is overly concentrated industry and the three top countries are Finland, Norway and New Zealand. They have compared the U.S banking sector to those three countries and the United States has respectively low concentration and the three main banks conquers 19% of the total industry.

In the question if banking concentration level affects other economic sectors, Cetorelli (2001) using empirical evidence of 34 industries from 17 OECD countries concluded that banking concentration level automatically increases the concentration in other highly dependent sectors. Analyzing panel data for the period 1999-2011, Ahamed (2012) argue that the Bangladesh's concentration of banking industry has declined and this decrease is considered as moderately concentrated market. On other hand, Bello and Isola (2014) using panel data from the Nigerian commercial banks for the period 2004-2013 found that concentration level on banking sector is confidently related to profitability. However, Bhatti and Hussain (2010) with the same methodology using panel data from 20 commercial banks from Pakistan for the period 1996-2004, state that the concentration level and profitability are significantly and positively related for the analysed period. Similar Hypothesis was supported by Chirwa (2003) that has done the same experimental on commercial banks of Malawi over 1970-1994 and conclude that

there exist positively correlation or relationship between banking system concentration and profitability.

From the existing literature review about Macedonian banking system, Borko Handziski (2004) concluded that the Macedonian banking sector with 21 banks and 15 saving houses has masterful and authoritarian share in the overall financial sector in the efficiency report of Macedonian banking sector 200-2004. Banks having the majority assets of the banking sector, comparing to saving houses that managed around 1.3% of the total assets. The author stated that the banking sector is largely concentrated, while two banks holding 55% of the total assets and 56% of the total bank activities.

Supporting the comparative analyses with other developing countries, in the cluster of 16 transition banking sectors, North Macedonia in 2005 had the highest number of banks per population, after Slovenia. Regardless the large number of operating banks, high level of concentration of assets was prevailing, with the major banks having 56% of total assets and the other 12 the so called smallest banks estimating only 14% of the total assets.

The economic developments and performance in the region resulted poor and that had a negative implication on the bank's activity, followed by economic and political instability, low foreign investments and in the last years high interest rates that made the situation uncomfortable for banks to face difficult time and not finding suitable projects for investments. The banking system in North Macedonia has irreplaceable function in offering financial assistance to the private sector and calibrating the economic growth.

### **Macedonian structure of the banking system**

According to EBF Facts & Figures 2019 publication related to Banking in Europe, which report provides data up to 2018 for

more than 30 countries. North Macedonia overall milieu and surroundings in 2018 compared to 2017 was significantly more constructive and advantageous, based on economic indicators that showed recovery, low and stable inflation, durable and steady growth in credit flows and was noticed intensive or accelerated growth on loans and deposits. Macedonian economy faced stagnation in 2017, this stagnation was improved with 2.6% increase in 2018. Comparing the last years, the unemployment rate continued to decline, having a historically lowest level in the ending period of 2018 by 19.3%.

At the end of 2019, the banking system had 17 deposit taking institutions operating in the Republic of North Macedonia, 15 banks and two saving houses, which number remains the same as the previous year. The inefficiency of the Macedonian banking system is determined by macroeconomic environment, legislature and in some cases the banks management. The assets side usually is affected by macroeconomic developments in the North Macedonia and the region, also the sometimes is influenced by the fiscal and monetary policy.

**Table 1: North Macedonian banking indicators 2013-2018**

Banking soundness indicators (in EUR mill. unless otherwise stated)	2013	2014	2015	2016	2017	2018
Total Assets	6007	6511	6878	7233	7513	8187
Total Deposits	4215	4668	4971	5250	5518	6038
- Retail Deposits	3082	3359	3498	3596	3818	4180
- Corporate Deposits	988	1150	1301	1469	1504	1642
Total Loans (gross)	3741	4115	4506	4570	4839	5025
- Retail Loans	1495	1676	1897	2059	2258	2492
- Corporate Loans	2198	2389	2553	2459	2529	2647
NPL Ratio	11.5%	11.3%	10.8%	6.6%	6.3%	5.2%

Capital Adequacy Ratio (CAR)	16.8%	15.7%	15.5%	15.2%	15.7%	16.5%
Return on Equity (ROE)	5.7%	7.4%	10.4%	13.6%	13.5%	16.0%
Return on Assets (ROA)	0.6%	0.8%	1.1%	1.5%	1.4%	1.7%
Loans to Deposits Ratio	89.7%	89.4%	91.9%	87.8%	88.0%	85.9%
Cost to Income Ratio	60.6%	55.5%	51.6%	49.8%	48.7%	46.2%
Net Interest Margin	3.4%	3.4%	3.5%	3.5%	3.4%	3.2%

Source: Macedonian Banking Association – Report 2019

### **Macedonian Banking sector overview**

At the end of 2019 the banking system in Republic of North Macedonia consists 15 banks, of which 14 private banks and one state-owned bank and two saving houses. Based on capital, 11 banks have foreign capital ownership and four domestic owned banks including the Macedonian Bank for Development Promotion as state bank. Coordinating the Macedonian Banking Law, banks apply the major principals such maximization of profit, safety, liquidity and profitability. In 2018, foreign capital was dominating and present in 11 banks, holding 71% of total baking assets, 80.1% of granted loans and 71.7% of total deposits, according to Macedonian Banking Association 2019 report. In the same year, one banks out of 15 recorded and accounted loss, the 14 others recorded profit. Related to the country of origin, the sizeable shareholders are from Slovenia and Greece, whose share recorded 19.4% and 14.9% of the total capital in the banking sector of North Macedonia. The network of banks is present in each city of the country which consists around 425 business units.

National Bank of Republic of North Macedonia reported that in 2018, the payment values comparing to 2017 grew by 10.3% and the total number of transactions in the country is increased by 2.5%. In 2018, the overall banking sector was significantly advantageous than other periods, based on economic indicators the banking sector activities showed

recovery, no inflation effects which made the system stable, solid growth in credit flows and the total loans and deposits have intensive growth.

## Methodology

Related to previous studies and the material that economic literature uses, there exist numerous methods of evaluating or measuring the concentration of the banking system. With focus to determine the level of banking concentration system in Republic of North Macedonia, the research paper will use the commonly known and applied concentration measure of Hirschman-Herfindahl index of concentration (Hirschman, 1980) and concentration index based on three and five largest banks. Strohe (2009) presented the Hirschman-Herfindahl index as the mostly used indicator counter monopolistic procedures in United States and European Union.

The index value as result is proportional to the average banking shares, weighted by banking sector shares and the results can scale from 0 to 1. The index values also can be expressed as percentages, so the results can scale from 0 to 10.000 points. For example, an index value of 0.15 is the same as 1500 points.

The formula of HHI is calculated by squaring the market share of each market participants observed within the industry, in this case banking sector, and these market shares can be calculated based on assets, loans, deposits and so on.

The Herfindahl-Hirschman index is calculated using the following formula:

$$HI = \sum_{j=1}^n (S_j)^2 ,$$

when  $S$  indicates the participation of each bank in the analysed categories of the total amount of assets, deposits, capital, etc. and  $n$  is the total banks number in the Macedonian system.

- HHI index value below 0.10 intends a non-concentrated market
- HHI index value between 0.10 and 0.18 imply a moderately concentrated banking sector and,
- HHI index value higher than 0.18 indicates a highly concentrated banking sector.

The process of measuring concentration in the banking system usually can be very specific because of the identification problems of traded products and services in the banking market. The banking system of Republic of North Macedonia in this paper to provide and measure the proper results will take in consideration the financial indicators of the balance sheets and income statements: assets, capital, deposits, loans, interest and profit/loss before tax. HHI index as the excessively measure method of banking concentration will attract attention with e presented values and graphs.

In terms of analysis, the author used data from the official published financial reports of the banks that are provided by state institutions in North Macedonia, World Banks official reports and from National Bank of the Republic of North Macedonia risk reports. As a result of that, the concentration analysis envelopments the data provided to the last quarter of 2017.

The research has potential limitations and focuses on analysing and interpreting the data used from 2015 until 2018. The limitation of gathering data, official data from the bank's reports, is due to the Covid-19 pandemic that started in 2020, when in the first quarter of the year banks publish official final reports on their performances.

## **Discussion and Interpretation of Results**

This section of the paper presents the analysis of results indicated by applying the HHI formula to understand the level of concentration in the banking system from Republic of North Macedonia.

The financial system in Republic of North Macedonia consists the National Bank of the Republic of Macedonia (NBRNM), commercial banks, saving houses, financial and insurance companies, pension funds, investment funds, stock exchange and the Deposit Insurance Fund. NBRNM is the money-issuing independent institution responsible for all financial issues like price stability, national currency stability, stability of the banking system up to conducting and administrating the monetary and foreign exchange policy. The major regulatory body under NBRNM is Supervision Department that is responsible for supervision of institutions like banks and saving houses.

### **3.1 Concentration of the banking system**

Compared with other countries, the financial sector and the banking system of Republic of North Macedonia in analysis report from 2018 represented that the number of commercial banks or number of deposit taking institutions was 15 resulting the last country will smallest number after Albania. The analysis of the concentration banking system from the overall aspects of the total assets the HHI index accounted 1352, resulting with the moderate market concentration over the compared country in the report, followed closely by Czech Republic with 1313 HHI index value and Hungary by 1142. Among all compared countries Albania accounted the highly concentration in the banking system with HHI index value of 1652 and Serbia with the lowest index value of 779.

Total banking assets concluded 503.469 million Macedonian Denars (MKD), the assets to GDP ratio in 2018 equalized 76.2%. Under Basel II, the minimum ratio of capital to risk-weighted assets is 8% and the capital adequacy ratio resulted 16.5% indicating that banks are not critical in ensuring enough cushion to absorb a reasonable amount of losses before they become insolvent and in good direction of shape to meet the financial obligations. In 2018, banks in North Macedonia held 5.2% of the non-performing loans. This result indicates that 5.2% of loan recipients were not repaying their bank on time, which is not significant when is compared with Albania, Hungary and Slovenia.

The profitability in the banking system is improved in North Macedonia compared to 2017, Return on Assets and Return on Equity resulted 1.7%, respectively 16.0%. The measure of profit and efficiency, Czech Republic's return on equity resulted the highest percentage with 17.4% and Slovenia's ROE with e smallest percentage, respectively 10.3%. Rankings of 3 banks CR maintain Albania with the highest percentage of concentration ratio, followed with the same percentage resemblance by North Macedonia. CR3 and CR5 ratios indicate that the banking sector almost for all of the countries is moderate concentrated and is not perfectly competitive.

Table 1: Financial analysis of the region 2018

	North Macedonia	Czech Republic	Hungary	Albania	Serbia	Slovenia
<b>Number of banks</b>	15	23	35	14	27	15
<b>Concentration in banking system:</b>						
<b>HHI Index</b>	0.1352	0.1313	0.1142	0.1652	0.0779	0.1064

<b>CR3</b>	57.3%	56.3%	46.1%	58.4%	53.5%	47.0%
<b>CR5</b>	74.5%	71.8%	61.3%	75.9%	37.4%	62.4%
<b>Capital adequacy ratio</b>	16.5%	19.63%	23.3%	18.24%	22.3%	19.8%
<b>Foreign ownership</b>	71.6%	91.8%	80.4%	83.4%	75.4%	64.9%
<b>ROE</b>	16.0%	17.4%	13.7%	12.96	11.3%	10.3%

Source: BSCEE review 2018

### 3.2 Concentration of assets in the Macedonian banking system

The total value of assets in the Macedonian banking sector reached 5.05 billion Macedonian Denars (MKD), i.e. 8.190 million euros at the end quarter of 2018. Analysing the entire provided data from 2013-2018, the total assets of the Macedonian banking have been distinguished by growth rates. Comparing the last year, the growth rate remark 8.26% increase of total assets in 2018 towards 2017.

The total deposits increased by 8.61% and the total loans grew by 7.03% on an annual basis. The non-performing loan ratio noticed a slight decrease percentage resulting with the lowest value in 2018 by 5.2% indicating that the percentage of debtors not repaying the loans are substantially getting lower due to the improved corporate sector of loans. The capital adequacy ratio of the Macedonian banking system is constantly during the analysed period, expect that faced a lightly increase in 2018 by 16.5%.

**Table 2: Banking system of Republic of North Macedonia 2013 - 2018**

<b>Banking soundness indicators (in EUR mill.)</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
<b>Total Assets</b>	6007	6511	6878	7233	7513	8190
<b>Total Deposits</b>	4215	4668	4971	5250	5518	6038

## Concentration on the banking system in North Macedonia

<b>Total Loans (gross)</b>	3741	4115	4506	4570	4839	5205
<b>NPL Ratio *</b>	11.5%	11.3%	10.8%	6.6%	6.3%	5.2%
<b>Capital Adequacy Ratio (CAR)</b>	16.8%	15.7%	15.5%	15.2%	15.7%	16.5%
<b>Return on Equity (ROE)</b>	5.7%	7.4%	10.4%	13.6%	13.5%	16.0%
<b>Return on Assets (ROA)</b>	0.6%	0.8%	1.1%	1.5%	1.4%	1.7%
<b>Loans to Deposits Ratio</b>	89.7%	89.4%	91.9%	87.8%	88.0%	85.9%
<b>Net Interest Margin</b>	3.4%	3.4%	3.5%	3.5%	3.4%	3.2%

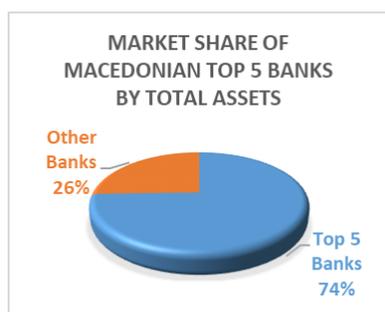
Source: Report of National Bank of North Macedonia

**Table 3: Top 5 Banks in Republic of North Macedonia  
- Total Assets**

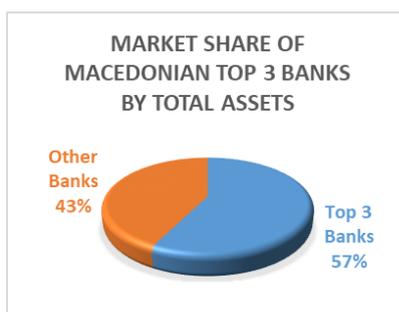
Top 5 Banks	
Name	Total Assets (in million EUR) - 2018
Komercijalna Banka	1.861
Stopanska Banka	1.493
NLB Banka	1.334
Halk Bank	767
Ohridska Banka	644

Source: Author's calculation based on the financial reports of banks

**Chart 1: Largest 5 Banks - Assets**



**Chart 2: Largest 3 Banks - Assets**



Observing the value of assets, the two above charts indicate the market share of five and three largest banks in Macedonian

banking system. The five main or largest banks in Republic of North Macedonia have the market share of 74% and the system involve the following banks: Komercijalna Banka, Stopanska Banka, NLB Banka, Halk Bank and Ohridska Banka.

The three largest banks, Komercijalna Banka, Stopanska Banka and NLB Bank accounted 4.688 million euros of total assets in 2018 and they hold the market share of 57.2%, the total loans analysis resulted that they hold 49.9% and accumulate 50.67% of the total deposits. The Macedonian banking system is comparatively concentrated, based on the banks holding percentage of the total assets.

**Table 4: Concentration indicator of assets - 2018**

<b>Herfindahl index - in index points</b>	
	Year 2018
<b>Concentration ratio CR3</b>	57.0%
<b>Concentration ratio CR5</b>	74.2%
<b>HHI index</b>	1352

Source: Author's calculation based on the financial reports of banks

Finally, analysing and observing the variable of total assets from 2012 until 2018 the HHI index value shows a slightly downward tendency. The Herfindahl-Hirschman index value gives a clearly notion by allowing and giving weight to the largest banks of banking system under this research paper.

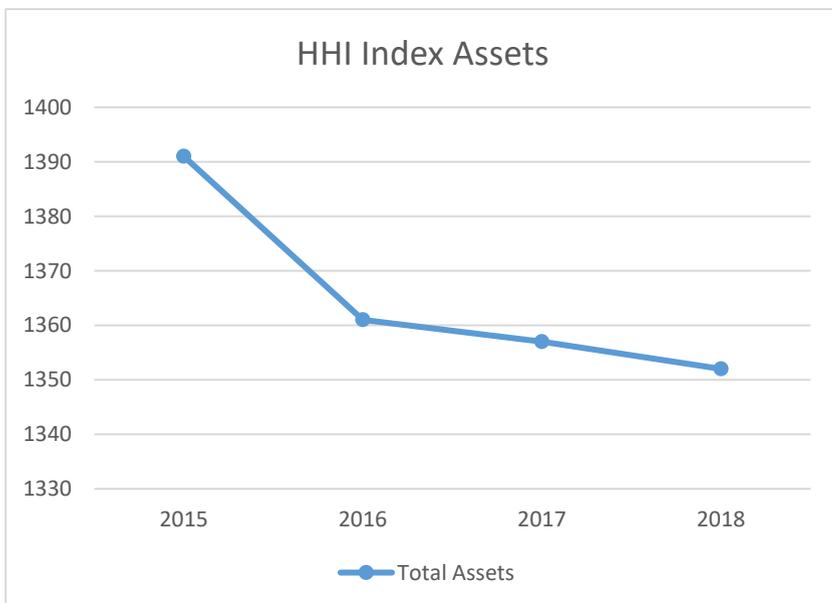
The method to evaluate the Macedonian banking system used is the CR3 and CR5 indicators, that represent the total assets percentage that the three and five largest banks are holding. The tables verify the results and arguments that the three largest banks account the majority of shares in the assets

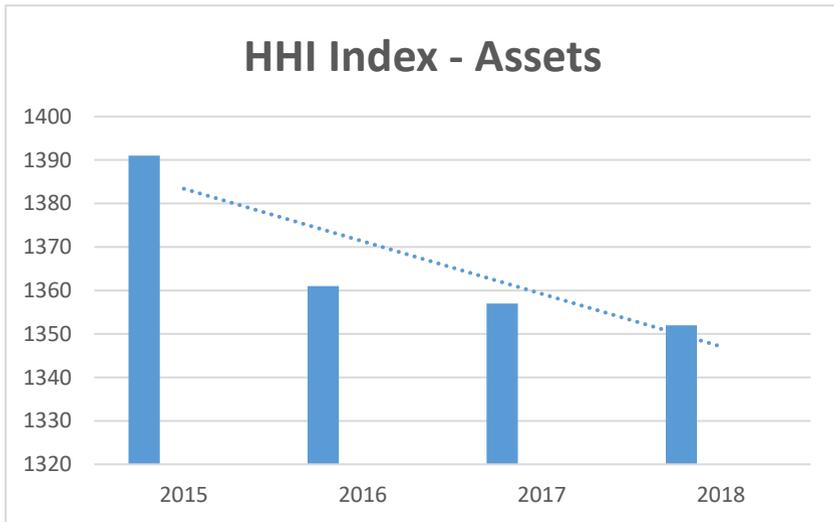
category, followed by the two small banks yielding the largest 5 banks.

A closer look on the CR3 indicator expresses a highly concentration market of the total assets. The value of Hirschmann-Herfindahl index of 2018 indicates and imply highly concentrated CR3 banking system. The same index applied to CR5, based on the generally accepted values, the index of 0.1352 indicates moderately concentrated banking system in Republic of North Macedonia.

Analysis from Figure 1, expresses the HHI Index value from 2015 to 2018, the banking system of North Macedonia resulted to be significantly concentrated in 2015 with 1391 index value then the falling trend continues until 2018 resulting 1352 index value.

**Figure 1: Hirschmann-Herfindahl concentration index of assets in the period 2015-2018**





Source: Report of National Bank of Republic of North Macedonia

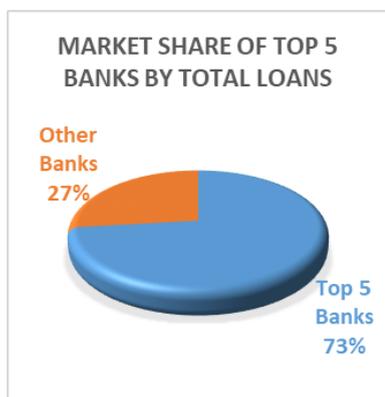
### 3.3 Concentration of loans in the Macedonian banking system

Table 5: Top 5 Banks in Republic of North Macedonia – Total Loans

Top 5 Banks	
Name	Total Loans (in million EUR) - 2018
Komercijalna Banka	795.6
Stopanska Banka	1087
NLB Banka	916
Halk Bank	551
Ohridska Banka	465

Source: Author's calculation based on the financial reports of banks

**Chart 3: Largest 5 Banks - Loans**



**Chart 4: Largest 3 Banks - Loans**



Source: Author's calculation based on the financial reports of banks

The total loans value in the Macedonian banking system amounted 5205 million euros in 2018. Significant growth was recognized in the granted loans in continuous path year after year according to the total banking system loans and individual bank's loans. The five top banks in Republic of North Macedonia related to the value of total loans share the portion of 73.0% in the market share. Analysis also have been constructed in the market share of the three largest banks in the banking system and they hold the market share of 53.7%. The values and the coefficients indicate that the banking system in the sector of loans shows a moderate concentration level.

**Table 6: Concentration indicator of loans - 2018**

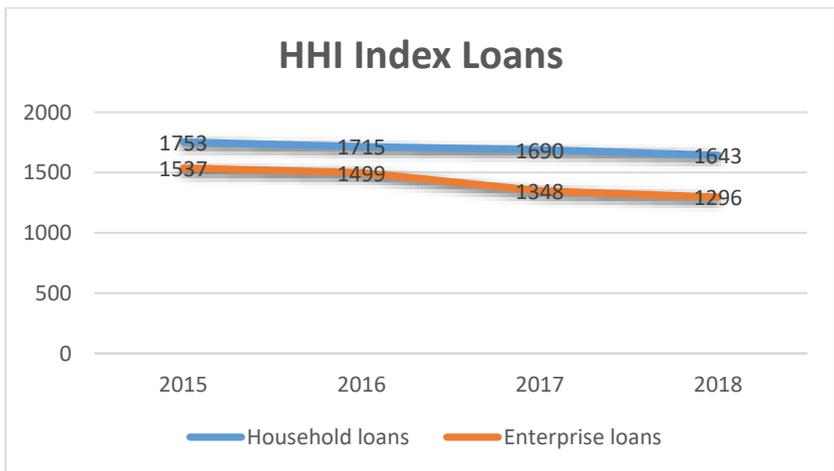
Herfindahl index - in index points	
	Year 2018
<b>Concentration ratio CR3</b>	53.7%
<b>Concentration ratio CR5</b>	73.0%
<b>HHI index value (household)</b>	1643

<b>HHI index value (enterprises)</b>	1296
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Source: Author’s calculation based on the financial reports of banks

As the HHI concentration index indicates, the loans concentration level of household and enterprises decreased steadily, from 2015 until 2018. HHI values in the analysis on average for the period found to be moderately or acceptable concentrated since all enterprises loan values are between 1000 and 1500, except household loans that are considered as highly concentrated in 2015 with value index 1753 and decreasing in the following years. The HHI concentration index of household loans at the end quarter of 2018 accounted 1643, indicating quietly decreasing moderate concentration value comparing to all analysed years. The HHI of loans showed a stable trend of declining index value in enterprises and household loans.

**Figure 2: Hirschmann-Herfindahl concentration index of loans in the period 2015-2018**



Source: Report of National Bank of Republic of North Macedonia

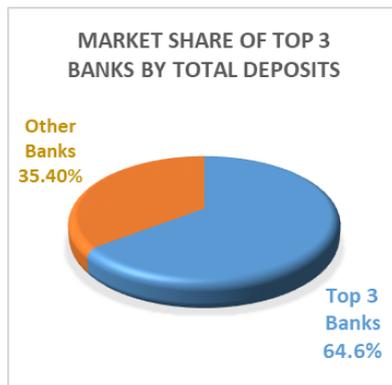
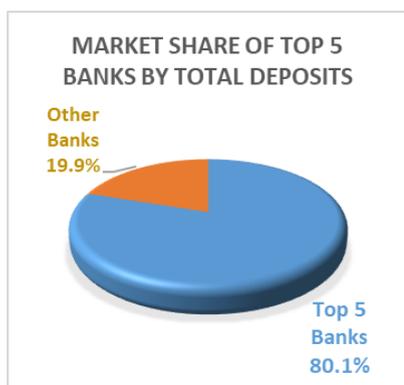
### 3.4 Concentration of total deposits in the Macedonian banking system

Table 7: Top 5 Banks in Republic in North Macedonia – Total received deposits

Top 5 Banks	
Name	Total Deposits (in million EUR) - 2018
Komercijalna Banka	1617
Stopanska Banka	1236
NLB Banka	1050
Halk Bank	447
Ohridska Banka	485

Source: Author’s calculation based on the financial reports of banks

Chart 5: Largest 5 Banks – Deposits    Chart 6: Largest 3 Banks - Deposits



Source: Author’s calculation based on the financial reports of banks

Comparing the last year, total deposits increased by 8.6%, which in almost twice differentiating to the increase in 2017.

According to European Banking Federation facts and figures report, the increased deposits represented a significant stable and satisfactory paying capacity of the banking system.

Analysing the total deposits of the banking system in North Macedonia, household deposits rose by 9.2% and enterprise deposits grew by 7.4%, due to household and enterprise loans increase by 10.3%, respectively 4.65%. The total deposits as value that the Macedonian banking system received in the last quarter of 2018 is 6.038 million euros.

The increasing characteristics and trends of total deposits was continued over the entire analysed period. Although, the significantly increased deposits was sharply evident year by year in the 5 largest banks operating in the Macedonian banking system, starting from Komecijalna Bank up to Ohridska Banka.

According to table 8 and charts, which resulted that the five top banks by the value of total deposits account the market share of 80.1%. Analysis of the present three largest banks reached the value of 64.6% of received deposits as the market share of the banking system in 2018.

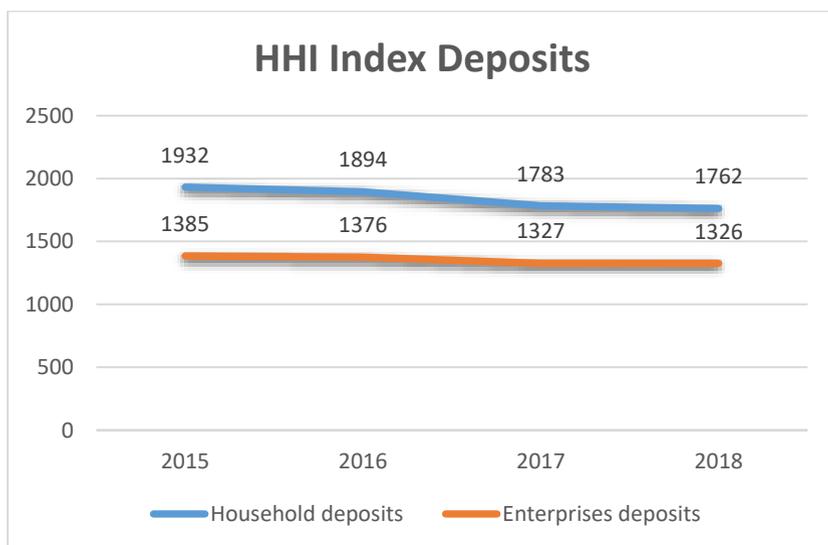
**Table 8: Concentration indicator of deposits - 2018**

<b>Herfindahl index - in index points</b>	
	<b>Year 2018</b>
<b>Concentration ratio CR5</b>	80.1%
<b>Concentration ratio CR3</b>	64.6%
<b>HHI index value (household)</b>	1762
<b>HHI index value (enterprises)</b>	1326

Source: Author's calculation based on the financial reports of banks

The Hirschmann-Herfindahl deposit household concentration index in the last quarter of 2018 accounted 1762 i.e. 0.1762 and enterprises deposits with index value of 1326, marking moderately level of concentration structure of the Macedonian banking system. Although, from Figure 3, analysis expressed that the deposit concentration shows a significant and trend decreased scale of HHI index from 2015 up to 2018 in both indicators.

**Figure 3: Hirschmann-Herfindahl concentration index of deposits in the Macedonian banking system in the period 2015-2018**



Source: Authors calculations based on financial reports

## **Conclusion and recommendation**

Acknowledging the noteworthy role and importance of the banking system as crucial factor in the economic growth of North Macedonia, the concentration level in the banking system have been analysed over 2015-2018. Therefore, to evaluate the concentration of the banking system, analysis is based on concentration of assets, loans and deposits.

Macedonian banking system significantly and substantially improved over the past years, even that the North Macedonia's financial system compared to other Western countries is proportionately developing. Certain banks are the major operating banks for the banking system and the overall economy, the other banks are improving to reduce the importance and relevance of the three largest banks. Summarizing the results of the conducted analysis, it is clearly that the top 5 banks and 3 largest banks are characterized with high and moderately concentrated structure. This argument is evident by analysis according on presenting tables, charts and figures which are based on concentration index and HHI calculated values.

Comparing the Macedonian banking system with the current situation on the banking sector of region and specific EU-countries, North Macedonia is characterized under the countries with acceptable or moderate concentration index in the banking system that continues decreasing trend of the ratio concentration level. Macedonian banking system of total assets on average over the last years recorded decreasing concentration level, based on HHI index and concentration ratio. Such trend would strength also the concentration level of loans, which based on methods of analysis amounted moderately stable concentration level in the banking system. Compared with assets and loans, the concentration level of

deposits accurate the same trend with visible decrease year after year.

The analysis using concentration ratio and HHI index and taking in consideration the data from the balance sheets and income statements of the 5 largest banks in North Macedonia indicate moderate declining concentration level of the banking system in assets, loans and deposits. Financial reports also indicate clear differences between the operating banks in expression of profitability and financial strength. The present research paper includes quantitative evaluation and assessment of banking system concentration based on three indicators.

Besides, opportunity for future research related to Macedonian banking sector can include empirical exploration including the capital structure, interest income, net income after tax, net loss. Also explore the concepts or the relationship between competition and concentration by cross country comparative methods of analysis with aim to provide the significant positions and implications of the banking system.

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