

**İSTANBUL BİLGİ UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES
FINANCIAL ECONOMICS MASTER'S DEGREE PROGRAM**

**PERFORMANCE ANALYSIS OF BANKS IN TURKEY USING CAMELS,
STRESS TESTING AND INTERNAL CREDIT RATING APPROACHES
CASE STUDY: SIX TURKISH BANKS DURING 2005 TO 2016**

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**İSTANBUL
2017**

ABSTRACT

This thesis verifies the performance and financial credibility of six Turkish banks for period 2005-2016. I have chosen two State-owned deposit banks, three Private-owned deposit banks and one foreign bank.

First, as one of the most popular methods for measuring banking performance, CAMELS, was chosen which stands for Capital adequacy, Asset quality, Management, Earnings, Liquidity, Sensitivity respectively.

Second, Stress Testing method which is a risk management tool has been used to assess the vulnerability of counterparties to exceptional events. It identifies the impact of extreme expected and unexpected shocks to a counterparty's capital, provides an assessment of its financial strength to withstand shocks and to spot emerging risk(s) and uncover weak spots in the financials. It enables counterparties in identifying their vulnerabilities at an early stage.

Last, some financial ratios have been selected to compare each bank with banking industry and it has been given a rank to each bank which is based on two parts, one quantitative assessment and the other qualitative assessment. According to these assessments we have calculated Internal Credit Rating (ICR) for banks.

Based on my CAMELS model Ziraat Bank and Şekerbank have the highest rate with rate of 29%. Halkbank stands at the last row of this ranking model with rate of 22%. However, based on the calculated ICR for every individual bank all of them remain in the acceptable rang. According to ICR's findings Ziraat Bank yet again stands first with a rate of 3.24 and Garanti Bank is the second in row with a rate of 3.51 while Şekerbank is the last one in the ranking. Yet again the whole range assigned to the banks is within the acceptable domain. At the end of this study, in order to evaluate the credibility of the model, the result, attained in the study, of ICR and CAMELS Ratings for 2016 for

each bank, and the respective rates assigned by International Credit Rating Agencies are compared. This comparison shows no considerable bias.

Keywords: Banking, Performance Analysis, International Rating Agencies, 2001 Turkey's Crisis, 2007-8 Global Crisis, CAMELS Approach, Internal Credit Rating (ICR), Stress Testing (ST), Sensitivity Analysis, Scenario Analysis

ÖZET

Bu tez, 2005-2016 döneminde altı Türk bankasının performansını ve finansal güvenilirliğini analiz etmektedir. Çalışmada iki devlet bankası, üç özel mevduat bankası ve bir de yabancı sermayeli banka örneklem olarak seçilmiştir. İki devlete ait mevduat bankası, üç özel sektöre ait mevduat bankası ve bir yabancı banka seçtim.

İlk olarak, bankacılık performansını ölçmek için kullanılan en popüler yöntemlerden biri olarak, CAMELS yöntemi bu amaçla seçildi. CAMELS'in baş harfleri Sermaye yeterliliği, Varlık kalitesi, Yönetim, Kazançlar, Likidite ve Duyarlılık'a karşılık gelmektedir.

İkinci olarak, bir risk yönetim aracı olan Stres Test yöntemi, karşı tarafların sıradışı olaylara karşı hassasiyetini değerlendirmek için kullanılmıştır. Stres Test Yöntemi, beklenen ve beklenmedik aşırı şokların karşı tarafın sermayesine etkisini belirler, şoklara dayanacak finansal gücünü değerlendirir ve ortaya çıkan riskleri tespit eder ve finansal durumdaki zayıf noktaları ortaya çıkarır. Karşı tarafların güvenlik açıklarını erken bir aşamada tespit etmelerini sağlar.

Son olarak, her bankayı bankacılık sektörüyle karşılaştırmak için bazı finansal oranlar seçilmiş ve her bir bankaya, iki bölümden, bir niceliksel değerlendirme ve diğer nitel değerlendirme temelli bir derecelenmiştir. Bu değerlendirmelere göre bankalar için İç Kredi Derecelendirme (ICR) hesaplanmış bulunuyoruz.

CAMELS modelime göre, % 29 ile TC Ziraat Bankası ve Şeker Bankası en yüksek orana sahiptir. Halk Bankası, bu sıralama modelinin son satırında % 22'lik bir oranla durmaktadır. Bununla birlikte, her bir bankanın hesaplanan ICR'sine dayanarak hepsi kabul edilebilir aralıkta kalır.

ICR'nin bulgularına göre, TC Ziraat Bankası yine 3.24 ile birinci sırayı almaktadır. Garanti Bankası sıralaması 3.51'lik derece ile ikincidir. Şeker Bankası sıralamada son sırada yer almaktadır. Yine, bankalara verilen tüm dereceler kabul edilebilir

değerlerdir. Bu çalışmanın sonunda, sonuçların güvenilirliğini test etmek için her bankanın 2016 yılındaki ICR ve CAMELS Rating değerleri ile Uluslararası Kredi Dereceleri arasında bir karşılaştırma yapılmıştır. Bu karşılaştırmaya göre karşılaştırılan değerler arasında önemli bir fark görülmemiştir.

Anahtar Kelimeler: Bankacılık, Performans Analizi, Uluslararası Derecelendirme Kuruluşları, 2001 Türkiye Krizi, 2007-8 Küresel Kriz, CAMELS Yaklaşımı, İç Kredi Notu (ICR), Stres Testi (ST), Duyarlılık Analizi, Senaryo Analizi.

ACKNOWLEDGMENT

At the outset, I would like to extend my sincere appreciation to Asst. Prof. Dr. Sema Bayraktar Tür who bore the main burden and took trouble and paid considerable attention while reviewing my thesis as the supervisor. Whenever, I ran into a trouble or had a question about some aspects of my research, the door of her office was always open to me with kind face and vibrant guidelines. She always answered my phone-calls and my questions promptly, comprehensively and generously with great patience.

My thanks also go to the other respectful Jury members who were kind enough to spend time and raise delicate points which clarified the way for subsequent essays to extend and improve the accuracy of the evaluation of the counterparties. Precisely I am very grateful to Asst. Prof. Dr. Mehmet Fuat Beyazıt who is a lecturer at İstanbul Bilgi University and teaches various courses on Financial Mathematics degree program and Asst. Prof. Dr. Faik Çelik who is a lecturer at Kocaeli University and teaches various topics in Economics and banking. As referee they contributed a lot in improving the quality of the work.

I would also like to acknowledge the ushering of Ms. Dr. Nazanin Shirzadi, Senior expert of ECO Trade and Development Bank who gave me useful and constructive advices and also provided me moral incentives to push forward my efforts and don't feel tiredness. I am gratefully indebted to her for her very valuable comments on this thesis.

Finally, I have to deeply gratify heartwarming support received from my parents and my fiancé. This accomplishment would not have been possible without them.
God bless you all.

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FOREWORD

Banks in today's world play a very important role in maintaining the stability and financing different sectors of the economy in every nation. Apart from the main function of just being an institution to safeguard people's deposit, it acts as an intermediary to purvey loans to the economy and provide different services for businesses. Therefore, the health and soundness of banks is very crucial to ensure smooth and robust economic development of any country.

If banks do not perform properly; therefore, it may result in systematic risk for the whole economy by which a general crisis may happen to the economy and as a result economy will suffer from hyperinflation, FOREX fluctuations, high rate of unemployment, social unrest and so many other examples of instability. Its effects may hit the financial markets and from there to even real sector. Therefore, we should be able to evaluate the soundness of the banks. According to Basel rules, credit rating of the banks came forward as a normal and general practice which has essential importance. Nowadays; there are several rating agencies throughout the world which rate the banks in terms of their short term and long term debt instrument that they continuously issue. Besides, banks themselves are also supposed to make some internal evaluation of their own soundness on a regular periodic basis. Banks usually interact with their peers as well. Before any serious interaction particularly in the form of treasury and credit mutual cooperation, they need to have a clear evaluation about their counterparties and their respective creditworthiness and the extent of their soundness and credibility in order to be able to better manage their risks. For this purpose; using CAMELS ratios can be very helpful. Furthermore, some deteriorations in different variables may have negative effects on the balance sheet of a typical bank. We need to be able to predict the extent of the effects of those events. For this purpose, Sensitivity and Scenario analysis can be very useful.

Having said that about the necessity and main objective of the essay, it is worth mentioning that this thesis is divided into 8 consecutive chapters.

The first chapter is assigned to introduction in which we delineate the road map ahead. The second chapter is allocated to the literature review. Chapter three discusses necessity for establishment of prudential rules such as Basel rules and the reasons behind emergence of International Rating Agencies as well as a brief introduction to some of the most important agencies of this type. Chapter four shed a light on the recent global financial crisis and its effects on the Turkish economy as well as brief focus on particular financial crisis experienced by Turkey during the last decade of the 20th century. The fifth chapter explains the methodology for calculating CAMELS ratios, stress testing and obtaining ICR. Chapter six and seven brings the empirical results for CAMELS rating and Stress testing respectively. Finally, Last chapter is designed to provide a comprehensive conclusion.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE STUDY: THEORY AND PRACTICE

Nowadays, banks play a considerable role in creating, maintaining and enhancing financial stability in the economy of every nation. Apart from the traditional function of just being used for deposit taking and giving loans, they act as intermediary to finance large businesses and facilitate different types of transactions and provide a diverse range of services to cover many sorts of risks. That is why, the health, robustness and soundness of banks is of the very essence to ensure smooth and strong trend for economic development of any country. *“A strong financial system with competitive environment promotes investment by financing productive business opportunities, mobilizing savings, efficiently allocating resources and makes easy the trade of goods and services.”* (Isanzu, 2016)

Turkey as the country focus of this study, has experienced different economic stages. Before 1980s, a planned economy was on the scene, after these years it moved toward an economy inspired by the liberalization actions. However, due to structural weaknesses, efforts of these years did not succeed as they were intended. Inflation, public sector expenditures and public sector borrowings were high in 1990s. In this span of time, actually banks were not doing their own particular and specialized business which is precisely financial intermediation. Instead, as a pocket for government, they financed the government at high interest rates. What made the situation worse was the currency crisis which emerged in 1994. In 1999, an IMF supported exchange rate anchor program was implemented. However, heavy depreciation of currency resulted in 2001 crisis in Turkey. This crisis more importantly

brought up considerable spill over adverse effects to the Turkish banking sector. The main reason for this incident on banks was because banks had serious open positions on FOREX. Of course; other weaknesses of the banking sector also contributed considerably in the 2001 crisis. That is why for restructuring of the Turkish economy, efforts had been concentrated on the banking reforms. The Banking Regulation and Supervision Agency (BRSA) came to existence and all the related functions were separated from central bank and delegated to this new supervisory and regulatory body. (Akın, Aysan, & Yıldırım, 2008)

In the light of these types of reforms the grounds were so prepared that Consequently, Turkish Banking Sector became so sound and resilient that it was not affected by the 2008 global crisis as much as its counterparts in other countries. (Öztorul, 2011)

The banking sector is very important for the Turkish economy. Banks do not make intermediation only to individuals; they also intermediate to the firms in different sectors. So the performance and soundness of the banking sector is very important for almost all sectors, consequently for the Turkish economy.

World financial organizations such as Bank for International Settlement (BIS), have codified supervisory regulations in different areas. Three sets of these collections are known as Basel I, Basel II and Basel III guidelines. Basel I was announced in 1988, in which it has been emphasized on capital adequacy ratio and classification of their assets. These rules were implemented at the early 1990s in main banks. Since they showed some deficiencies in the course of time, therefore, Basel II was launched, including methods of hedging different risks, according to which internal supervision of banks was more emphasized. According to the recommendations of Basel II, rating agencies also came to the fore and took a considerable role to play in the financial industry. Subsequently, emergence of 2008 global crisis proved that the prudential rules devised by Basel committee needs to be revised and reinforced. Based on the revision, more emphasis has been given to the specific risks related to individual banks and also the weights assigned to different categories of the assets went under serious amendments. According to Basel II, banks can select reliable and independent

international rating institutions for external rating such as Standard & Poor's (S&P), Fitch and Moody's which are three well-known institutions who do this function across the globe. Bank also have to rely on Internal Rating through establishing a system for validating clients and counterparties. According to Basel suggested guideline, in Internal Rating-Based approach banks estimate the probability of non-repayment of their loans' principle and interest and the probability of their exposure to risk through their credit rating system (Zekavat, 2008).

1.2 REVIEW OF TURKISH BANKING SYSTEM, HISTORY AND ACTUAL PICTURE

In Turkey, similar to many other countries, most of the State banks have been established on a sector oriented basis. such as Ziraat Bank in agriculture area. However, private banks are generally interrelated with large industrial groups and holdings. Money-changers in early 1800s played the role of elementary banking and The Galata bankers also as ethnic-minorities in Istanbul were performing similar functions. After the Crimean war, financial situation of the Ottoman Empires deteriorated considerably. At this time several foreign banks established their branches in Istanbul and started to lend at high interest rates. In these circumstances, the Ottoman Bank (Osmanli Bankası) was established in 1856. Its head office was in London. It functioned not only as a commercial bank but also it was performing the role of Central Bank. Of course, in the early 1930s, the Central Bank was founded. It born the regular responsibilities such as issuing banknotes, performing monetary policies, and regulating and supervising the banking system. The Central Bank also plays the role of the government banker by financing the government's budget deficits and it also plays the role of lender of last resort for other public and private banks.

Before 1980 there were only 4 foreign banks in Turkey, but later on some policy reforms were taken into place according to which interest and foreign exchange rates were liberalized and foreign banks were also encouraged to operate in Turkey.

All banks in Turkey have to fully comply with the Banks Act and to the related provisions stipulated in other laws. The new Law created Banking Regulation and Supervision Agency (BRSA, or Turkish BDDK) to protect the rights of depositors. The Banks Association of Turkey (BAT, or Turkish TBB) was also legally established and plays a role as the representative body of the banking industry. It is supposed to self regulate the industry and protect the professional interests of its members. (Sansal,2016)

As of December 2016, there are a total of 47 banks operating in the Turkish banking sector with 34 deposit banks and 13 development and Investment banks. While in 11.05.2017 The Royal Bank of Scotland plc (RBS), has determined to end its operation in Turkey. RBS Turkey branch has entered into liquidation in accordance with Article 20 of the Banking Law No. 5411 related to voluntary liquidation. As of December 2016 total assets of Turkish banking sector was USD 737 billion.

Hence, as of September 2017, there are 46 banks that are working under Bank Regulation and Supervisory Agency of Turkey (BRSA-BDDK) with 10,659 branches in Turkey and 77 branches abroad. There are 33 deposit banks and 13 development and Investment banks. Deposit banks consist of 3 State-owned deposit banks ,9 Privately-owned deposit banks ,1 bank under the deposit insurance fund and 20 foreign banks. Development and investment banks comprise of 3 State-owned, 6 Privately and 4 foreign development and investment banks. (www.tbb.org.tr)

Percentage distribution of total assets among each group as of September 2017 has been illustrated in Figure1 Privately owned commercial banks have a portion of 37% of total assets banking system in Turkey. Following it State-owned commercial banks, Foreign banks, Development and investment banks have portions of 31%,26% and 6% respectively.

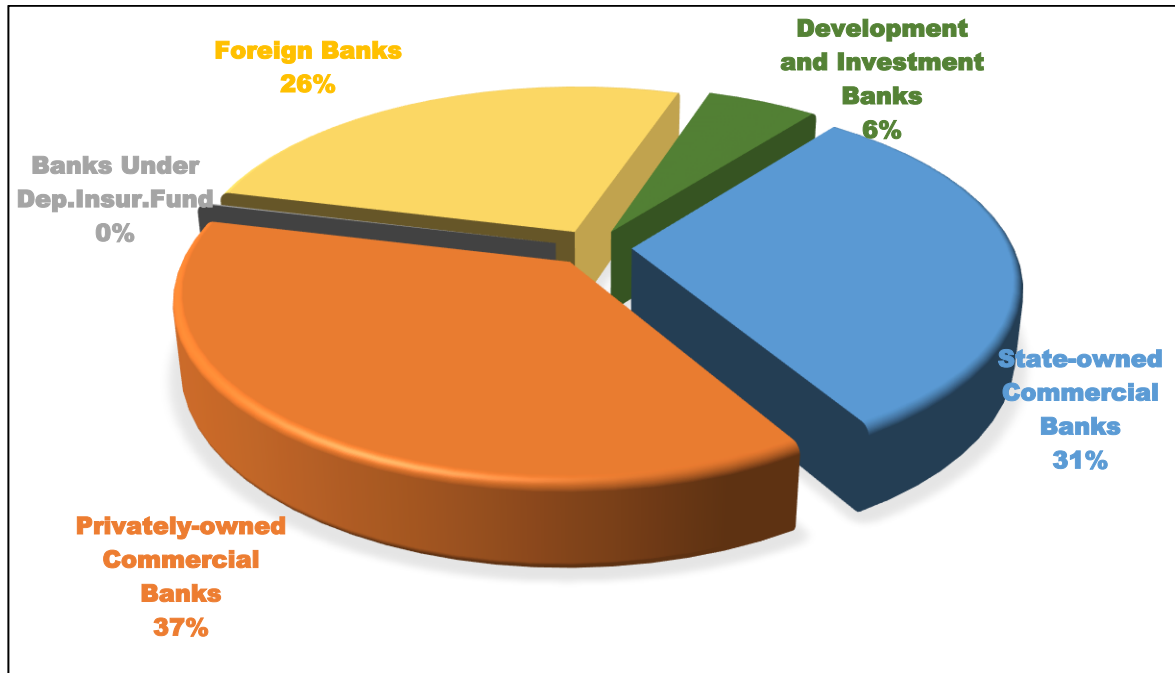


Figure 1. Distribution of Total Assets by Group (%)

Source: Bank Association of Turkey

1.3 OBJECTIVE OF THE STUDY

As a matter of fact, rating is a function which comprise of two main domains namely “Credit Scoring” and “Credit Rating”. An agency in charge of Credit Scoring normally relies on a data bank which includes a vast range of information related to Real and Legal Persons. The information for electricity, water, Telephone bills as well as the information related to quality of honoring cheque issued by the related person and also the information related to quality of honoring the installments of loans and so many other information is systematically gathered in a data bank. Credit Scoring agency tries to utilize and analysis the above-mentioned data to predict the extend of credibility of a person based on his past fiduciary actions. The second domain is related to Credit

Rating. A Credit Rating agency tries to look carefully in to financial statements and other financial information of a company and attempts to calculate different financial ratios and finally predict the probability of future default for company.

To keep performance of the banking sector high, knowing dynamics of it, is very important. This paper aims to analyze the performance of the banking sector in different perspectives.

There are three approaches that have been implemented in this study. First, I have presented a rating system with a numeric range starting from 0 and ending to 100 by using all components of CAMELS ratios. The evaluation factors are as follows: Capital, Assets, Management, Earnings, Liquidity, and Sensitivity.

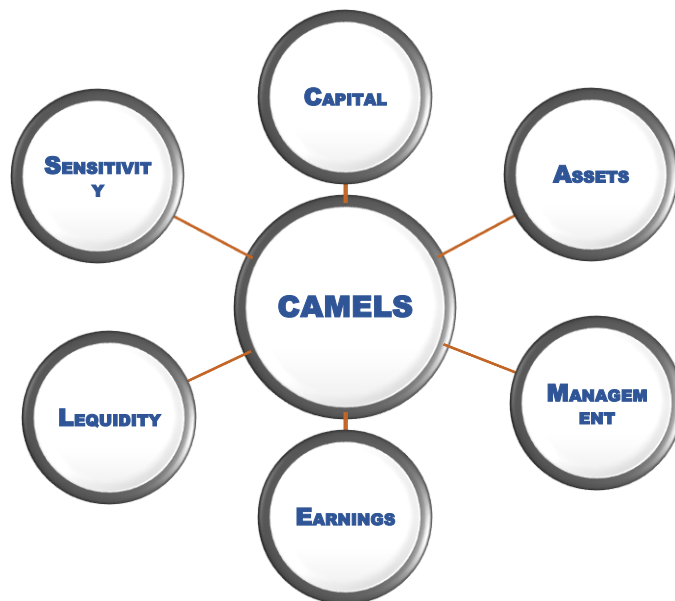


Figure 2. CAMELS Categories

One of the most important purpose of the rating is to evaluate the risk of debtor that may default in paying back debt. Credit risk is one of the main risks in banking and the way a bank manages credit risk is critical to its performance. *“The internal ratings approach relies on banks’ internal risk assessments, while the external ratings*

approach relies on externally provided risk assessments, such as credit ratings.”
(Cantor,2001)

Although the standards and criteria set by the Basel Committee are adopted by many countries, there may be differences in inter-country surveillance and control practices as they do not introduce a legal obligation in practice and are of a recommendation nature. Despite the differences between countries in the supervision and control of the banking sector, there are two main systems being implemented. These are 'On-site' and 'Off-site' systems (Çinko & Avcı, 2008).

After CAMELS rating, second approach is stress testing. Stress test helps us to locate and analyze the risks which might be latent under soft circumstances and in normal situations but, if a trigger happens, these risks can exert immense implications which may take the existence of a financial institution under serious question. Stress testing assess the effect of expected as well as unexpected shocks on a banks' capital. Stress testing is assumed as part of the governance and risk management culture of a bank and its Results should be incorporated in the banks' business strategies.

Last approach is ICR which gives a rank to each bank which is based on quantitative and qualitative assessment. According to these assessments we have calculated Internal credit rating (ICR) for banks. Quantitative assessment is based on some weighted selected ratios and “*Qualitative Assessment*” is based on some qualitative measurements such as Competitive Position, Audit Report and Ownership while CAMELS rating consists of six categories which are Capital, Asset, Management, Earning, Liquidity, Sensitivity. Each category contains of some “*selected*” ratios which has its own weight.

1.4 SUMMARY

Banks in today's world play a very important role in maintaining the stability and financing different sectors of the economy in every nation. Apart from the main function of just being an institution to safeguard people's deposit, it acts as an

intermediary to purvey loans to the economy and provide divers services for businesses. Therefore, the health and soundness of banks is very crucial to ensure smooth and robust economic development of any country.

World financial organizations such as Bank for International Settlement (BIS), have tried to codify some supervisory regulations. Three sets of these collections are known as Basel I, Basel II and Basel III guidelines. Basel I was announced in 1988, in which two key issues were emphasized. The first one was related to capital adequacy ratio for the banks and the other was related to classification of their assets. These rules were implemented at the early 1990s in main banks. Since in the course of time it appeared that Basel I had some deficiencies, therefore Basel II was launched which includes methods of hedging different risks. According to Basel II internal supervision of banks was more emphasized. According to the recommendations of Basel II, rating agencies also came to the fore and took a considerable role to play in the financial industry. According to Basel II, banks can select external rating and Internal Rating for assessment of their performance. Subsequently, emergence of 2008 global crisis proved that the prudential rules devised by Basel committee needs to be revised and reinforced. Based on the revision, more emphasis has been given to the specific risks related to individual banks and also the weights assigned to different categories of the assets went under serious amendments.

As of September 2017, there are 46 banks that are working under Bank Regulation and Supervisory Agency of Turkey (BRSA-BDDK) with 10,659 branches in Turkey and 77 branches abroad.

Rating is a function which comprise of two main domains namely “Credit Scoring” and “Credit Rating”. My focus is on Credit Rating, not Credit Scoring.

For this purpose, First, I have devised a rating system with a numeric range starting from 0 and ending to 100 by using all components of CAMELS ratios while the evaluation factors are as: Capital, Assets, Management, Earnings, Liquidity, and

Sensitivity. Second approach is stress testing. Stress testing is evaluating the impact of large, expected as well as unexpected shocks on a bank's capital.

CHAPTER 2

LITERATURE

Atici and GURSOY, 2011, shed a light on the history of the activities of the banks in Turkey. Then they review a series of crises which have happened in the Turkish economy. Crisis of 1994 is one of them which was mainly related to the banking system. According to their research, the other two shocks to Turkish economy, comprise of the Russian crisis which happened in 1998, and then the earthquakes of Marmara in Turkey in 1999.

Rebel Cole and Jeffery Gunther (1995) use CAMEL ratings to assess the performance of the banks and compare it with an off- site monitoring system based on publicly available financial data. According to their findings, if a bank is not verified for more than two seasons, therefore, off-site monitoring normally result in a more credible assessment.

The banks association of Turkey has also published an article (2009) which explain the financial system and banking sector in Turkey. It also sheds a light on 2000-01 crisis in Turkey and explain the restructuring of the banking sector in Turkey.

Ali Şen and Süleyman Solak (2011) also evaluate Turkish commercial banking sector using CAMELS ratios. They intend to verify if the CAMELS model is able to to predict banking crisis. They cover some public, private and foreign commercial banks for the period of 1995-2008.

The Turkish 2000-01 banking crisis is a research done by Koen Brinke (2013). He describes the main characteristics of the said crisis and tries to explain why this crisis happened. Then he concludes that the crisis paved the way for the authorities to reinforce the banking supervision and regulations.

Another study by Nabilah Rozzani and Rashidah Abdul Rahman (2013) tries to compare the performance of Islamic banks with Conventional ones. They chose 19 conventional banks and 16 Islamic banks for 2008 to 2011. They conclude that among the main categories of CAMELS rating, Management Quality (1.00) received the best rating. Asset Quality (1.91) stood second in order, Shariah Compliance got 2.05, Capital Adequacy had a rating of 2.10, Earnings Quality and Liquidity were in the rest of the row respectively.

There are so many researches about CAMELS analysis in all around the world. For instance, in a study done by Saeid Jalili (2014) he made a comparison between the performance of banking system in Turkey and Brazil based on CAMEL rating for 2007 to 2011. 13 banks have been chosen in each country. He concludes that banks in both countries are facing cost managing problems.

Another study by M.Altan et al(2014) compares the performance of banks in Turkey using CAMEL approach between some state-owned and private banks 2005-12. It covers 15 banks. He concludes that in terms of capital adequacy component, Ada bank stands the highest. In terms of asset quality, Ziraat Bank stood on the top. As for management quality, Ak bank was the highest. Halk bank stood at the top in terms of earning quality and finally in terms of liquidity, Ziraat bank stood at top. Analyzing through CAMEL method results that Ziraat bank was totally first among other banks, then Ak bank, Vakif Bank, İş Bank and Garanti bank are the other efficient banks.

Aydin Karapinar and Ismail Cagri Dogan (2015) demonstrated performance of the participation banks in Turkey. To do this, the CAMELS approach was employed for the comparison of the performance and determination of the differences between the two types of banking practices.

Ishaq AB et al (2016) also by choosing ten commercial banks in Pakistan for 2007-2013 have tried to verify the banks performance based on CAMELS rating.

Specific aspects of my research which distinguish mine from the others are as follows:

- Time period which covers the span of 2005-2016
- The particular composition of Turkish banks set comprising of Ziraat Bank and HalkBank which are state owned, AK Bank, İşbank and Şekerbank which are private one and Garanti Bank which is a foreign one.
- Having three parallel methods namely: CAMELS, ST and ICR
- Presenting comparative analysis for all the designated banks.
- Testing the credibility of provided rating results in this research with the findings of worldwide well known rating agencies.

CHAPTER 3

BASEL PROVISIONS AND INTERNATIONAL CREDIT RATING AGENCIES

3.1. INTRODUCTION

During the history in different parts of the world, many banks bankrupted although wouldn't expect to get stuck this way. Actually, it is not possible to remove the probability of failure for a typical bank regardless of its size or its geographic location. Initiative of deposit insurance taken into place by government may have positive impact on financial stability and boosting public confidence on financial institution, but the governments have to create a situation to prevent banks from encountering moral hazard by lending without proper care. That is why beside deposit insurance, there should be efficient rules and regulations to be followed by the financial institutions very scrupulously and there should be an efficient supervision in place to avoid systematic risk. "Systematic risk "is the risk that a failure by large bank will lead to failures by other large banks and a collapse of the financial system.

Basel Accord as an agreement created in in 1988, indicate the onset of international standards for bank regulations. Of course, Since 1988, bank regulation has undergone an evolutionary process. Basel Accords paved the way for rating agencies to take a considerable role and this way the industry of credit rating has also evolved considerably.

The main role of rating agency is to determine the probability of default for a company or an instrument issuable by a company. In fact, these rates are the risk managements heads and rating agencies tools also play an important role in this regard.

The credit rating industry has grown considerably because of expansion in financial markets. Besides, due to the impact of these institutions' declarations on the decisions made by decision makers, law enforcers, therefore, monitoring of the activities of these institutions is of great importance.

3.2. BANK PRUDENTIAL REGULATIONS BEFORE 1988

Before 1988, in every country there was sort of prudential rule to regulate the required minimum size of capital compare to the total asset size. However, definition of capital and the manner of calculating capital adequacy ratio in terms of defining different categories of the assets and weight associated to every category would differ from one country to another. In some countries prudential rules were being applied very strictly while in others the situation was different. This was despite the fact that in the course of time global interaction of the banks was increasing. Banks were competing with each other in the global scene in a more sensible way. According to this new trend of globalizations banks needed to evaluate each other on the basis of some common criteria and specific financial ratios. But in the absence of unique standards and uniform regulations, in some countries where regulation and supervision have been more slack, the banks had competitive advantage over their competitors in the countries where stricter rules and supervisions were in place. In addition, the huge exposures created by loans from the major international banks to less developed countries such as Mexico, Brazil, and Argentina, as well as the accounting games sometimes used for those exposures were starting to raise questions about the adequacy of capital levels.

Another problem was that banks in order to tackle with new emerging needs of the customers and the markets gradually tried to introduce new products such as interest rate swaps, currency swaps, and foreign exchange options. These contracts increase the credit risks being taken by bank.

That's why the Basel Committee was established in 1974 comprising of representatives from Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, The Netherlands,

Sweden, Switzerland, under the patronage of the Bank for International Settlements. The first major outcome of their efforts was materialized in the form of a document which has been entitled as “International Convergence of Capital Measurement and Capital Standards.” This was referred to as “The 1988 BIS Accord” or just “The Accord”. Later it became known as Basel I. (Risk Management and Financial Institutions, Hull, Fourth Edition, Chapter 15)

3.3. THE 1988 BIS ACCORD

The 1988 BIS Accord was the first attempt to set international uniform standards for capital adequacy. The criticism soon emerged that these uniform standards for defining capital adequacy ratio had been too simple and somewhat arbitrary. The key innovation in 1988 Accord was Cooke ratio. It is related to the calculation of credit risk exposures which are born by the banks on-balance-sheet as well as off-balance-sheet. In other words, it was related to the manner of calculating the bank’s total risk weighted assets. Credit risk exposures would be divided into three categories:

1. Credit risk exposures related to on-balance sheet assets (excluding derivatives)
2. Credit risk exposures related to off-balance sheet items (excluding derivatives)
3. Credit risk exposures related to over-the-counter derivatives

The Accord required banks to observe a minimum capital adequacy ratio of 8% of the risk-weighted assets and the nominator, more precisely, the capital was comprised of two segments: Tier 1 Capital which includes items such as equity and non-cumulative preferred stock. (Goodwill is subtracted from equity.) Tier 2 Capital or supplementary

Capital which includes instruments such as cumulative perpetual preferred stock. (Risk Management and Financial Institutions, Hull, Fourth Edition, Chapter 15)

3.4. BIS 98

In 1995, the Basel Committee issued a consultative proposal known as the “1996 Amendment.” It was implemented in 1998. It requires to keep capital for the market risks associated with trading activities. Marking to Market or fair value accounting is the practice of revaluating assets and liabilities on a daily basis. Banks are required to use fair value accounting for all assets and liabilities that are held for trading purposes which includes most derivatives, marketable securities, foreign currencies, and commodities. Banks are not required to use fair value accounting for assets that are expected to be held for the whole of their life for investment purposes such as loans and some debt securities (Risk Management and Financial Institutions, Hull, Forth Edition, Chapter 15)

3.5. BASEL II

It was perhaps unfortunate for Basel II that its implementation date coincided, at least approximately, with the start of the worst crisis that financial markets had experienced since the 1930s. Basel II as the second international banking regulatory accord amended the rules for minimum capital requirements. The main difference between Basel II and Basel I is that for determination of regulatory capital ratio, the Basel II incorporates credit risk of assets held by financial institutions. The Basel II has three pillars namely minimum capital requirements, regulatory supervision and market discipline.

3.6. BASEL III

Basel III concentrated on reinforcing the stability of the financial system by increasing the quantity and quality of regulatory capital and liquidity. In the context of increasing bank supervision in the financial markets, the Basel Committee has taken significant steps around the world and has provided several guidelines along with effective ways to improve banking system. First version of Basel III has been published by Basel Committee in 2009. Mainly it is a reaction to credit crisis. Basel III made the prudential regulations related to capital adequacy ratio more stringent. Banks were required to keep higher CAR proportionate to their own specific risks and the weights which have been assigned to different categories of assets have been revised. (Schneider, Schröck, Koch, & Schneider, 2017)

3.7. NOTION OF CREDIT RATING

Credit Rating is an opinion normally expressed by a rating agency which indicates that to what extent the issuer of a debt instrument is willing or able to honor its debt service obligations as and when they arise. Rating is usually presented by alphabetical or alphanumeric symbols. Symbols are easily understood and help the beneficiary audience to differentiate between debt instruments based on the creditworthiness of the issuer. Credit rating establish a relation between risk and return. It also helps the issuers of debt instruments price their issues (whether it is CDs or bonds or whatever else) correctly and communicate with counterparties. Regulators such as central banks also use credit rating to evaluate the eligibility of a Financial Institution (FI) and permit it to issue a particular instrument. It just evaluates the probability of default and does not make any recommendation about buying or selling any instrument. The user of CR is free to accept or reject the results. Ultimately CR is a window which helps to decide more accurately however there is a possibility that may prove wrong some times. CR's importance has grown in the course of time due to the following factors:

- Increasing level and incidences of defaults in the course of time
- Growth of IT
- Globalization of financial markets
- Increasing role of capital and money markets
- Privatization
- Securitization of debt

The rating symbols assigned to an issuer indicate the followings:

- Nature and the term of a particular issue
- Ability and willingness to honor obligations
- Probability of a default
- Degree of protection available to investors

The general factors determining what level of rating should be assigned are as follows:

- Ability and willingness of the issuer to honor its obligations
- Volume and composition of its outstanding debt
- Stability of the future cash flows of the company
- Interest coverage ratio in terms of how many number of times the issuer is able to meet its fixed interest obligations
- Ratio of current assets to current liabilities
- Market position of the company
- Its track record in terms of directors and expertise staff

External CRs are normally done at the request of the issuers and only those ratings which are accepted by the issuers can be published for the first time. Thus once a rating is accepted, it is published and subsequent changes by the rating agency will be published even without the consent of the issuer. If the issuer is not satisfied with the results, it can request a review and it can provide additional information to the rating agency. However, the external rating agency is independent to assess. The important criterion upon which the external rating agencies are being normally assessed is the public opinion towards them in terms of quality and independence. Rating is normally done for a particular issue not for the issuer. Rating process may not only involve

analysis of published information but also intensive discussions with officers of the issuers and auditors.

CR is not only being done in respect of different debt instruments but also in respect of the followings: Country Rating, Real Estate developers, Banks based on CAMELS as well.

Advantages of rating for the investors are as follows: Safety of investment, Recognition of risk and return, Freedom of choices, Easy understanding of investment proposals, providing a possibility and basis for continuous monitoring.

Advantages of CR for the issuer are as follows: Easy to raise resources, reduced cost of borrowing, building up image, facilitating growth, recognition to unknown companies.

Disadvantages of CRs are as follows: Non-disclosure of some other significant information, Static study at one particular point of time, maybe biased from the realities according to individual perceptions, difference in rating grades by different agencies. (“Modern Banking, Theory and Practice”, D. Muraleedharan, 4th printing, 2nd Edition, August 2014)

3.8. GRADING BY CREDIT RATING AGENCIES

According to Basel provisions banks were required not only to establish internal rating system but also they were strongly urged to have themselves rated by external independent rating agencies. That is why International credit rating companies flourished and developed their activities. The basic fundamental ratings categories among different rating agencies remains the same as Highest, High, Moderate, Weak, Poor, Default

Main credit rating agencies are listed below as per their country:

3.9. CR AGENCIES IN THE UNITED STATES

1. A.M. Best Company, Inc.
2. Demotech, Inc.
3. Egan-Jones Rating Company
4. Fitch Ratings, Ltd.
5. Kroll Bond Rating Agency, Inc.
6. Moody's Investors Service
7. Realpoint, LLC
8. Standard and Poors (S&P)
9. TheStreet.com Ratings, Inc.
10. Veribanc, Inc.

3.10. CR AGENCIES IN THE UNITED KINGDOM

1. European Rating Agency (ERA)
2. Fitch Ratings, Ltd.

3.11. CR AGENCIES IN COLOMBIA

1. BRC Investor Services S.A.
2. Duff & Phelps de Colombia, S.A., S.C.V

3.12. CR AGENCIES IN CHINA

1. Chengxin International Credit Rating Co., Ltd.
2. China Lianhe Credit Rating, Co. Ltd.
3. Dagong Global Credit Rating Co., Ltd.
4. Shanghai Credit Information Services Co., Ltd.
5. Shanghai Far East Credit Rating Co., Ltd.

3.13. CR AGENCIES IN TURKEY

In the 7th article of the notification Serial: VIII, No: 51 titled as "Establishments that can be engaged in the rating activities", the rating institutions are authorized by the approval of the Capital Markets Board of Turkey (CMB).

The list of rating agencies that are admitted is as follows:

Credit Rating Agencies in Turkey		
NO.	Rating Institutions Established in Turkey and Authorized by CMB (SPK)	International Rating Agencies Accepted for Activity in Turkey
1	Fitch Ratings Finansal Derecelendirme Hizmetleri A.Ş.	Standards and Poor's Corp. (http://www.standardandpoors.com/)
2	JCR Avrasya Derecelendirme A.Ş. (http://www.jcravrasyarating.com/)	Moody's Investor Service Inc. (http://www.moody.com/)
3	Saha Kurumsal Yönetim ve Kredi Derecelendirme Hizmetleri A.Ş. (http://www.saharating.com/)	Fitch Ratings Ltd. (http://www.fitchratings.com/)
4	Kobirate Uluslararası Kredi Derecelendirme ve Kurumsal Yönetim Hizmetleri A.Ş. (http://www.kobirate.com.tr/)	
5	TURKRATING İstanbul Uluslararası Derecelendirme Hizmetleri A.Ş. (http://www.turkrating.com/)	

Table 1. Credit Rating Agencies in Turkey

Source: (Capital Markets Board of Turkey)

3.14. THE BIG THREE CR AGENCIES

The big three credit rating companies namely Moody's, S&P and Fitch are controlling 95% of rating business. Moody's and Standards and Poor's(S&P) together have a share of 80% of the global market and market share for Fitch is 15%.

3.14.1. STANDARDS AND POOR (S&P)

S&P Global Rating has been in business for more than 150 years and it has presence in more than 28 countries. S&P rating's scales for its opinion are as follows:

AAA (Investment Grade): Extremely strong capacity to meet its financial commitments.

AA (Investment Grade): Very strong capacity to meet financial commitments.

A (Investment Grade): Strong capacity to meet financial commitments, but somewhat susceptible to adverse economic conditions and changes in circumstances.

BBB (Investment Grade): Adequate capacity to meet financial commitments, but more subject to adverse economic conditions.

BB (Speculative Grade): Less vulnerable in the near-term but faces major ongoing uncertainties to adverse business, financial and economic conditions.

B (Speculative Grade): More vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments.

CCC (Speculative Grade): Currently vulnerable and dependent on favorable business, financial economic conditions to meet financial commitments.

CC (Speculative Grade): Highly vulnerable; default has not yet occurred but is expected to be virtual certainty.

C (speculative Grade): Currently highly vulnerable to non-payment, and ultimate recovery is expected to be lower than that of higher rated obligations.

D (Speculative Grade): Payment default on a financial commitment or breach of an imputed promise; also used when a bankruptcy petition has been filed or similar action taken.

Rating from "AA" to "CCC" may be modified by an addition of a plus (+) or minus (-) sign to show relative standing within the major rating categories.

3.14.2. Moody's

Moody's maintains a presence in 41 countries and employs approximately 11,500 people worldwide. The system of rating securities was originated by John Moody in 1909. There are nine symbols as shown below, from that used to indicate the lowest credit risk to that illustrating the highest credit risk: Aaa Aa A Baa Ba B Caa Ca C
Moody's appends numerical modifiers 1, 2, and 3 to each generic rating classification from Aa through Caa. (Moody's)

3.14.3. Fitch

Fitch Group operates in more than 30 countries. The term "investment grade" describes the categories 'AAA' to 'BBB' and the term "speculative grade" is related to the categories 'BB' to 'f'. Investment grade categories indicate relatively low to moderate credit risk, while speculative grade indicates a higher level of credit risk or that a default has already occurred.

Viability Ratings (VRs) measure the intrinsic creditworthiness of a financial institution (FI), and reflect Fitch's opinion on the likelihood that the entity will fail. VRs are assigned on a scale that is virtually identical to the 'AAA' scale but uses lower-case letters, e.g. 'aaa' instead of 'AAA'. There are also no 'D'/'RD' ratings on the VR scale (which on the 'AAA' scale indicate default); at the bottom end of the VR scale, an 'f' rating indicates Fitch's view that a bank has failed.

aaa: Highest Fundamental Credit Quality 'aaa' ratings denote the best prospects for ongoing viability and lowest expectation of failure risk.

aa: Very High Fundamental Credit Quality 'aa' ratings denote very strong prospects for ongoing viability.

a: High Fundamental Credit Quality 'a' ratings denote strong prospects for ongoing viability. This category may be more vulnerable to adverse business or economic conditions than is the case for higher ratings.

bbb: Good Fundamental Credit Quality 'bbb' ratings denote good prospects for ongoing viability. The bank's fundamentals are adequate, such that there is a low risk that it would have to rely on extraordinary support to avoid default. However, adverse business or economic conditions are more likely to impair this capacity.

bb: Speculative Fundamental Credit Quality 'bb' ratings denote moderate prospects for ongoing viability. However, a great vulnerability exists to adverse changes in business or economic conditions over time.

b: Highly speculative Fundamental Credit Quality 'b' ratings denote weak prospects for ongoing viability. Material failure risk is present, but a limited margin of safety remains.

ccc: Substantial Fundamental Credit Risk Failure of the bank is a real possibility.

cc: Very High Levels of Fundamental Credit Risk Failure of the bank appears probable.

c: Exceptionally High Levels of Fundamental Credit Risk Failure of the bank is imminent or inevitable.

f: A bank that, in Fitch's opinion, has failed, i.e. either: has defaulted on its senior obligations to third-party or requires extraordinary support to restore its viability.

(Fitch Ratings)

3.15. A COMPARISON AMONG SYMBOLS ASSIGNED BY THE BIG THREE CREDIT RATING AGENCIES

Scales for the three biggest credit rating agencies are included in the following table.

Credit Quality	S&P	Moody's	Fitch
Extremely Strong	AAA	Aaa	aaa
	AA+	Aa1	aa+
Very Strong (with a very low risk)	AA	Aa2	aa
	AA-	Aa3	aa-
	A+	A1	a+
Strong (Low risk)	A	A2	a
	A-	A3	a-
	BBB+	Baa1	bbb+
Average (Low risk)	BBB	Baa2	bbb
	BBB-	Baa3	bbb-
	BB+	Ba1	bb+
Speculative (Average risk)	BB	Ba2	bb
	BB-	Ba3	bb-
	B+	B1	b+
Highly speculative (with risk higher than average)	B	B2	b
	B-	B3	b-
	CCC+	Caa1	ccc+
Vulnerable (High risk)	CCC	Caa2	ccc
	CCC-	Caa3	ccc-
Highly vulnerable (very high risk)	CC	Ca	cc
Extremely vulnerable (very High risk)	C	C	c
Selective, limiting default	SD	RD	f
Default	D	D	f

Table 2. A comparison among symbols assigned by the big three credit rating agencies

Source: (Credit Rating Agency)
(Nigudkar)

SUMMARY

The main role of a rating agency is to determine the probability of default for a company or an instrument issuable by a company. In fact, these rates are the risk managements and rating agencies tools and play an important role in this regard.

The 1988 BIS Accord was the first attempt to set international uniform standards for capital adequacy. In 1995, the Basel Committee issued a consultative proposal known as the “1996 Amendment.” It requires to keep capital for the market risks associated with trading activities. Fair value accounting is the practice of revaluating assets and liabilities on a daily basis. Banks are required to use fair value accounting for all assets and liabilities that are held for trading proposes. Banks are not required to use fair value accounting for assets that are expected to be held for the whole of their life.

Basel II as the second international banking regulatory accord amended the rules for minimum capital requirements and it has three pillars namely minimum capital requirements, regulatory supervision and market discipline.

Basel III concentrated on boosting the stability of the financial system by increasing quantity and quality of regulatory capital and liquidity.

To maintain confidence in banks, government regulators in many countries have introduced guaranty programs. These typically insure depositors against losses up to a certain level.

According to Basel provisions Banks were required not only to establish internal rating system but also they were strongly urged to have themselves rated by external independent rating agencies. That is why International credit rating companies flourished and developed their activities. They assess a debtor’s ability or willingness to honor his commitments. The big three credit rating companies are controlling 95% of the rating business. Moody’s and S&P together have 80% and Fitch has 15% of the market share.

CR's importance has grown in the course of time due to the following factors: Increasing level and incidences of defaults in the course of time, Growth of IT, Globalization of financial markets, increasing role of capital and money markets, Privatization, Securitization of debt.

Advantages of rating for the investors are as follows: Safety of investment, Recognition of risk and return, Freedom of choices, easy understanding of investment proposals, providing a possibility and basis for continuous monitoring. Advantages of CR for the issuer are as follows: Easy to raise resources, reduced cost of borrowing, building up image, facilitating growth, recognition to unknown companies.

CHAPTER 4

A REVIEW ON RECENT INTERNATIONAL CRISIS

4.1. INTRODUCTION

Emergence of a global crisis in 2007 triggered the Basel Committee to bring a new version of its prudential guidelines named as Basel III. They tried to reinforce the rules to prevent new crisis in the future. It is very much suitable in our essay to take a look at the causes and the manner of evolving of this global crisis. Besides, since our focus in over empirical work is on Turkish banks we have tried in some part of this chapter to review the spillover effects and ramification of the said global crisis on Turkish economy and banking system as well.

4.2. THE U.S. CRISIS OF 2007

In 2007, the United States suffered the worst financial crisis since the 1930s. The crisis spread swiftly from the US to other countries and from financial markets to the real sectors. Some financial institutions failed. Some were bailed out by governments.

Actually starting point was from the U.S. housing market. Between 2002 and 2005, interest rates were low, therefore, mortgage lending was boosted. It caused a bubble in house prices. Subprime mortgage lending (that are considered to be significantly riskier than average) increased considerably. Rising house prices would cover risk of default. Due to high prices, demand declined. Plus, borrowers found that they could no longer afford their mortgages. This led to foreclosures (supply increase of houses) which led to decline of house prices. Since many of the banks and other FIs had MBS in their balance sheets and the prices of MBS went down due to the deterioration of their underlying assets namely mortgage loans. The crisis in real sector spread to financial markets. During the crisis, since governments were worrying about a systematic risk,

they didn't allow for many large financial institutions to fail and intervened to bail them out.

Dodd-Frank Wall Street Reform and Consumer Protection Act was signed into law on July 21, 2010 according to which banks could trade in order to satisfy the needs of their clients and trade to hedge their positions, but they could not trade to take speculative positions. In other countries also similar provisions were taken into place. (Risk Management and Financial Institutions, Hull, Forth Edition, Chapter 6)

4.3. BRIEF RECENT ECONOMIC HISTORY OF TURKEY

During the 1980s and 1990s, Turkey had current account deficit which was financed by short-term capital inflows and economic growth fluctuated between minus and positive figures. Financial markets, interest rates and the exchange rate were also very volatile. Government had a large budget deficit which culminated to 7% of GDP in 1997. It was mainly financed by monetary expansion. Therefore, Inflation rates went above 80%. Interest rates on government debt was also higher than the inflation rate with a margin more than 30 percentage points. Several economic sectors, such as the telecom sector, were dominated by state enterprises, and were generally operating at low levels of efficiency.

Due to the Asian and Russian crises in 1997 and 1998, capital inflows into Turkey decreased and economic growth slowed down from 7.5% in 1997 to 2.5% in 1998. In August 1999, a devastating earthquake hit the industrial heartland of Turkey. These elements caused the economy to enter into a deep recession. In 1999, the economy shrank by 3.6%. The budget deficit reached 12% of GDP and public debt rose to 40% of GDP. That's why a crisis loomed in 2000. (Brinke, 2013)

4.4. TURKISH BANKING SECTOR WEAKNESSES BEFORE THE CRISIS

Before the crisis of 2000-2001, Turkey had a weak banking system. This weakness represented in five areas: 1) Excessive reliance of government budget deficit financing on the banking system in a way that for instance in 2000, more than half of the interest earning assets of private banks consisted of domestic government securities. (Özatay, Sak, Garber, & Ghosh, 2002) 2) Deficiency in regulations and supervision. (Akyüz & Boratav, 2003) 3) Banks were suffering from large maturity mismatch with short term liabilities and long term assets in terms of loan to government and companies, 4) Banks were highly dependent on foreign funding in a way that for instance two-thirds of the liabilities of private banks were denominated in foreign currencies (Akyüz & Boratav, 2003) . 5) The four state-owned banks had large ‘losses’ on bad loans, since they were mandated forcefully to extend subsidized credit (BRSA, 2010) in a way that NPLs ratio reached 11% in 1999 and even worse in 2001 by reaching 19% (Özatay, Sak, Garber, & Ghosh, 2002) . During the recession in 1999, thirteen small and medium-sized banks were taken under the full control of the SDIF (Akyüz & Boratav, 2003) . However, this did not alleviate the banking system’s problems.

In 2000, ratification of law on the privatization of public banks was repeatedly delayed due to political disputes (Özatay, Sak, Garber, & Ghosh, 2002) and fraud investigations in 10 private banks taken over by the Savings Deposit Insurance Fund of Turkey (SDIF) were launched. These events increased the impression that there were large problems in the banking sector. As a result, banks closed their interbank credit lines to vulnerable banks and foreign investors withdrew their funds which brought the banking crisis into a new sensible phase. Interbank rates increased sharply. Private Banks made large losses due to devaluation of national currency and their un-hedged foreign open position. (Brinke, 2013)

4.5. TURKEY'S CRISIS IN 2000-01

On 20 November 2000, Demirbank, couldn't have access to required resource through interbank market (Akyüz & Boratav, 2003) and found no way other than divest part of its government securities, this caused more decrease in the price of securities and an increase in interest rates. It, in turn, raised suspicions whether or not the government can honor its commitments and if the crawling peg exchange rate regime that had been in place since December 1999 could sustain (Özatay, Sak, Garber, & Ghosh, 2002). Ten days later, the Turkish central bank (CBRT) stopped providing emergency lines of credit to banks, to keep its level of domestic assets constant. As a result, the interbank rate jumped to 873%. On December 6th Demirbank failed and was taken over by Saving Deposit Insurance Fund (SDIF). The IMF assisted Turkey with a USD 10.5bn assistance package which helped to calm the markets and stop the decline in reserves. (Brinke, 2013)

On February 21, the prime minister and president had a dispute on fighting corruption in the banking sector (Özatay, Sak, Garber, & Ghosh, 2002) .Due to this political turmoil, once again, confidence in the stability program paled and speculators attacked against national currency (BRSA, 2010). The Istanbul Stock Exchange fell by 14% and interbank rates jumped from 50% to 8,000%. On February 22nd, currency peg abolished, exchange rate became floating and Turkish lira lost about one-third of its value against the dollar. In order to restore the confidence, stabilize the exchange rate and to bring down interest rates, Government borrowed more from IMF in a way that the total borrowing from IMF since December 1999 reached to around USD 30bn (Özatay, Sak, Garber, & Ghosh, 2002) . Nevertheless, the economic growth rate was -7.3% in 2001 and GDP per capita even declines by 6.5%. Since some banks had loss and were taken over by the SDIF, public debt rose from 38% in 2000 to 74% of GDP in 2001. However, although unemployment rate rose from 6.5% in 1999 to 10.4% in

2002, but relative confidence returned and economy began to recover and GDP grew by 5.7% in 2002. (Brinke, 2013)

4.6. RESTRUCTURING OF TURKISH BANKING SYSTEM

As part of the Restructuring programme for banking system, at the end of 1999, Saving Deposit Insurance Fund (SDIF) overtook five commercial banks and the banking licenses of two development and investment banks were cancelled.

Then in order to better implement legal and institutional regulations and improve the supervision and audit systems and risk-management processes, the Banking Regulation and Supervision Authority (BRSA) started its operation in August 2000 while previously its task was done partly by the treasury and partly by the Central Bank. Consequently, banking legislation was considerably aligned with international regulations, best practices and particularly the EU directives which aimed to increase the transparency of balance sheets and ensure compliance with international accounting standards.

Later on, SDIF provided a total of USD 21.9 billion (TL 28.7 billion) as of the end of 2001 to recapitalize the state owned banks or settle the “Losses”, which had reached 50 percent of their balance-sheets at the end of 2000.

Subsequently, in order to help private banks to restructure, regulations were adopted to facilitate the liquidation of bad assets and a three-party audit has been launched as a prerequisite for extending capital support. They were suffering from shortage of provisioning for NPLs. Due to shortage of capital, SDIF overtook one of them. The total cost of restructuring of private banks mounted to USD 7.9 billion. USD 5.2 billion was provided by the SDIF and USD 2.7 billion was extended by the shareholders.

Altogether, SDIF spent a total of USD 28.2 billion (TL 40 Billion) as of the end of July 2003 for restructuring programme of the banks either in the form of debt principal repayments or interest payments and etc.

After the restructuring, SDIF sold some of the banks under its control to the private sector and merged some others under Birleşik Fon Bankası A.Ş. (United Fund Bank) as a new bank.

One may ask how SDIF provided the necessary resources for this type of essential restructuring. The answer is that the government issued special bonds in this regard. Of course, the restructuring costs amounted to 31% of GDP in 2001 and caused the, public debt to rise to 74% of GDP in the same year.

A 3-year program for restructuring the companies' debt to the financial sector, was launched in June 2002 to provide transparency to the balance sheets of manufacturing companies and make them more productive and increase tax incomes as well. A total of 331 companies, including 219 big ones and 112 SME's, went through this Program. Total sum of the restructured loans reached USD 6.02 billion.

The new Law on Foreign Direct Investment also reduced the bureaucracy for foreign companies and resulted in a significant entry of foreign capital into Turkey.

Government also tried to simplify tax legislation.

State enterprises were finally privatized which provided some fresh resources as well. As a result, greater macroeconomic stability and high levels of growth in the following decade were achieved in a way that between 2002 and 2007, the Turkish economy grew by 6.7% on average (EIU, 2012) and public debt declined to 51% of GDP in 2005 and Inflation descended to single digit in 2004, down from over 80% during the 90s. (Brinke, 2013)

4.7. TURKISH BANKING SYSTEM IN RESPONSE TO GLOBAL CRISIS OF 2007

In 2008, GDP growth rate experienced a downward trend from 7.2% to 1% and later on in 2009, it went to negative numbers. The unemployment rate increased. In the public sector, the budget deficit expanded in a way that government debt to GDP increased. Inflation and unemployment rates also increased.

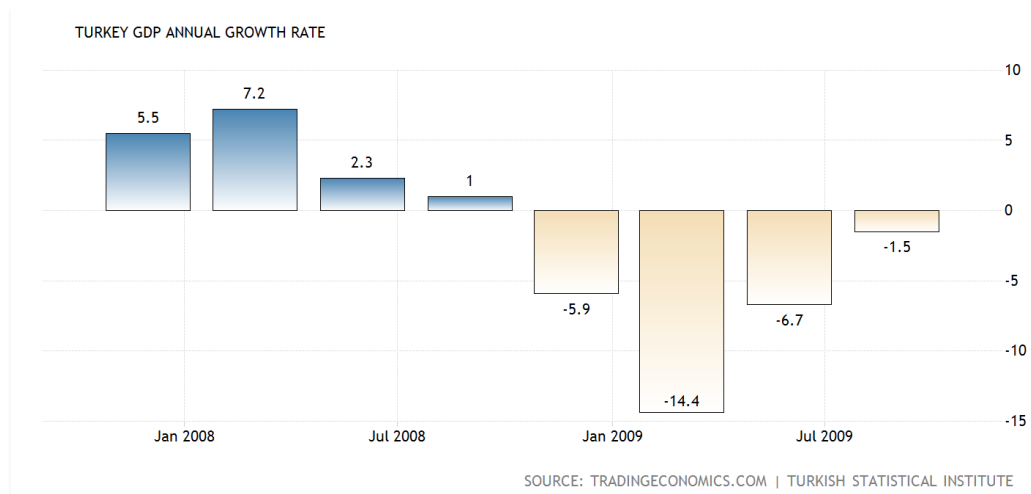


Figure 3. Turkey GDP annual growth rate

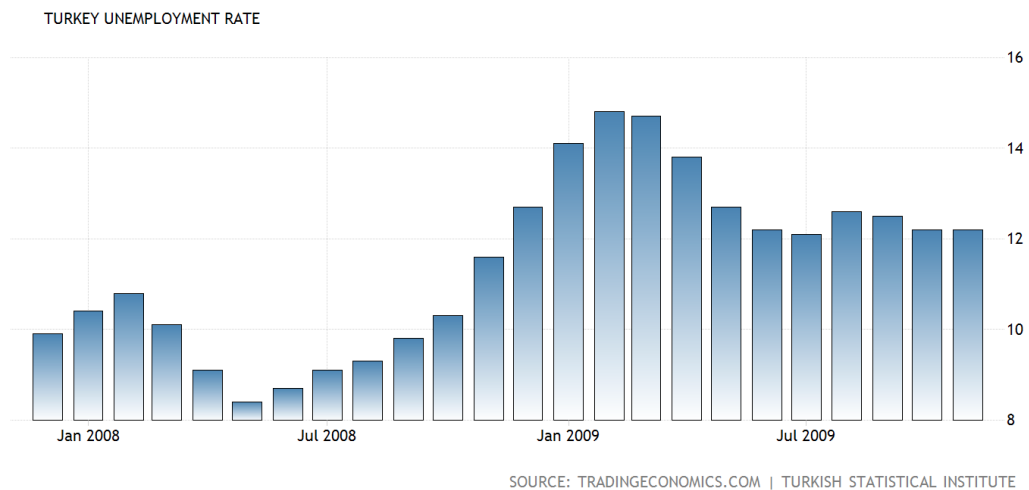


Figure 4. Turkey Unemployment Rate



Figure 5. Turkey Current Account to GDP



Figure 6. Turkey Government Debt to GDP

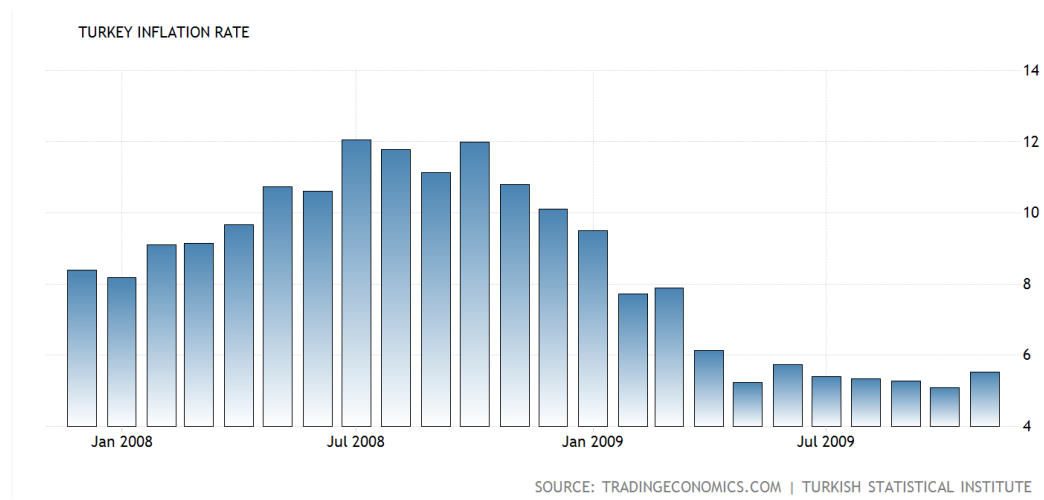


Figure 7. Turkey Inflation Rate

Unemployment rate, which was 10.3 percent in September 2008, increased to 16.1 percent in February 2009. Of course due to some tax reductions for certain sectors, it fell to 13 percent in June 2009.

The volume of international trade which was USD 348 billion as of September 2008, fell to USD 258 billion as of June 2009 and for the same period, the current account deficit decreased from USD 47 billion to USD 20 billion.

As a matter of fact, in order to rein the negative effects of the global crisis on the Turkish economy, the related authorities took some measures into place. For instance, Central Bank took the following initiatives:

It resumed its activities as an intermediary in the FOREX deposit market (9 October 2008) and extended the lending maturity to 1 month from 1 week in this market and to 3 months from 1 month in TL interbank market (21 November 2008); It doubled its transaction limits to USD 10.8 billion (23 October 2008) ; it decreased reserve requirement ratio for FOREX liabilities to 9 percent from 11 percent (28 November 2008) and by this the central bank provided an additional liquidity of USD 2.5 billion to the banking system; It increased the exports rediscount credit line from USD 500

million to USD 1 billion and decreased lending rate to 5.5 percent from 7.0 percent for USD, and to 6.5 percent from 9.0 percent for euro.

The BRSA, also, took some other initiatives to preserve the financial strength of banks: It required the banks to get permission for distribution of the 2008 earnings and let them to classify the securities in their balance sheet as investment portfolio for once only rather than trading portfolio to prevent them showing loss in this regard. Furthermore, it allowed banks to reschedule some loans not be classified as NPLs.

The Government also received an authorization from the Parliament to insure by itself all the deposits. Payment of the tax dues before 1 September 2008 was also decided to be deferred to December 2008 and with 18 installments. Consumption tax for durable goods and automobiles lowered for a period of 3 months, and value added tax (VAT) for real estates lowered to 8 percent from 18 percent for a period of 3 months as well.

Thanks to these measures the banking sector maintained healthy functioning and negative effects were limited. Besides, the banking system enjoyed a high capital adequacy ratio, a high asset quality, low currency and liquidity risks. Loans to GDP remained the same at 37 percent and loans to deposits fell to 76 percent, down by 8 percentage points. Loans in total assets decreased by 5 percentage points and dropped to 47 percent. Non- performing loans to total loans (gross) was 3.1 percent in the third quarter of 2008 and rose to 5.2 percent in July 2009. Share of government securities to total assets increased as well as securities portfolio to total assets increased by 4 percentage points to 30 percent at the end of year.

Selected Balance-Sheet Items (TL million)

	Sept. 2008-July 2009				
	Sept. 2008	Dec. 2008	July 2009	Difference (TL million)	Change (%)
L. assets	85.965	104.803	98.962	12.997	15
Securities	178.358	193.964	225.185	46.827	26
Loans	343.201	349.967	348.157	4.956	1
Npl's (net)	1.907	2.416	3.382	1.475	77
Npl's (gross)	10.871	13.044	18.348	7.477	69
Per. assets	19.131	19.095	20.071	940	5
Other assets	10.838	11.966	38.077	8.528	29
Total	656.204	706.949	730.452	74.248	11
Deposits	400.895	435.554	451.768	50.873	13
-TL	266.764	283.158	295.699	28.935	11
-Fx	134.131	152.397	156.069	21.938	16
Non-deposit funds	129.224	137.914	129.949	725	1
Equity	79.564	82.618	96.323	16.759	21
Other liabil.	37.726	41.074	52.412	5.891	13
Total	656.204	706.949	730.452	74.248	11

Source: BRSA

Table 3. Selected Balance-Sheet Items (TL million)

Falling interest rates had a positive effect on the interest margin and banks also took measures to rein their operating costs. Hence, the profitability experience a slight growth and accordingly, shareholders' equity strengthened in a way that as of July 2009, excluding subordinated loans, shareholders' equity rose by 21 percent to USD 66 billion compared to the end of 2008. The capital adequacy ratio increased by 1.3 percentage points compared to the year-end and reached 19.4 percent as of June 2009 (The financial System and banking sector in Turkey, The banks association of Turkey, October 2009)

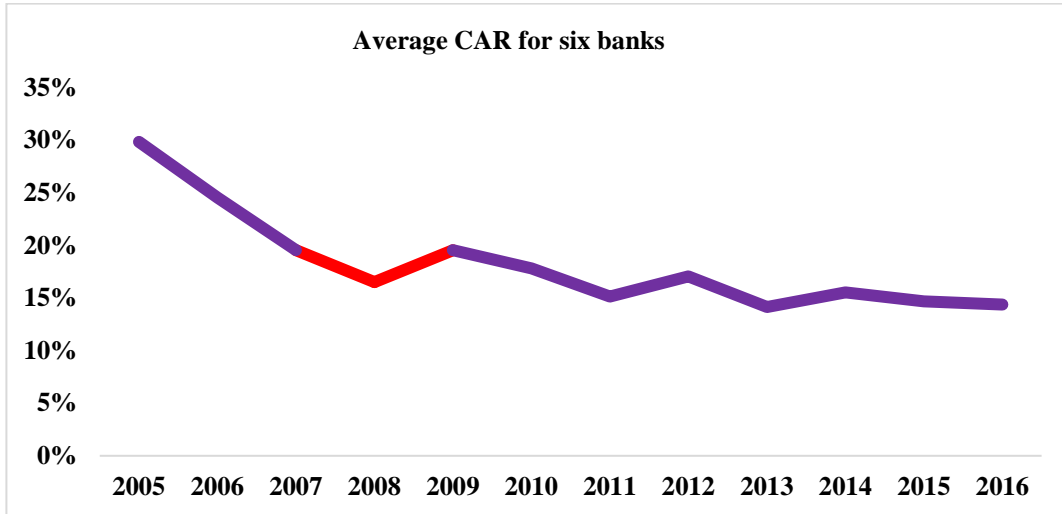


Figure 8.Average CAR for Six Banks

4.8. RECENT DEVELOPMENT OF TURKISH ECONOMY

Turkey is known to be one of the most important developing countries. A key driver of the Turkish financial sector has been its robust economy with a bright future. Over the past 13 years, Turkish economy has been growing with an average annual real GDP growth rate of approximately 5 percent and the growth momentum is expected to continue. Turkey's sizeable and diversified economy has achieved remarkable growth and became 17th largest economy in the world as of 2015.

The Turkish GDP advanced 5 percent year-on-year in the first quarter of 2017, following 3.5 percent growth in the previous period and beating market expectations of a 4 percent rise. The expansion was driven by higher government spending, investment and exports. On a quarterly basis, the economy grew 1.4 percent. GDP Annual Growth Rate in Turkey averaged 4.68 percent from 1999 until 2017, reaching

an all-time high of 11.70 percent in the first quarter of 2011 and a record low of -14.40 percent in the first quarter of 2009. The main pillars of the economy continued to show weakness to carry the economy to its long-run average growth of 5%. Considering that (i) the real GDP grew on average 6.8% since the 2001 local banking crisis up until the global economic recession of 2008 and (ii) the economy displayed Chinese-type strong growth performance in overall 2010 and 2011 with near 9% real economic growth, the Turkish economy has slowed down significantly in the past four years. Most recently the economy grew 4.8% year-on-year in Q1 2016 by the support of private consumption despite the fact that private investment continued not to add any contribution to the overall growth.

Total assets of banking sector had reached TRY 2,595 billion at the end of 2016 (302% of GDP) which is another historic peak in local and fx-currency. Total assets are up 16% year-on-year which is slightly up from the performance of 2015. According to the most recent sector data gathered and disseminated by BRSA, total assets reached TRY 2,726 as of March 2017 which is up 19.37% year-to-date.

SUMMARY

Emergence of a global crisis in 2007 triggered the Basel Committee to bring a new version of its prudential guidelines named as Basel III. They tried to reinforce the rules to prevent new crisis in the future. It is very much suitable in our essay to take a look at the causes and the manner of evolving of this global crisis. Besides, since our focus in over empirical work is on Turkish banks we have tried in some part of chapter 4 to review the spillover effects and ramification of the said global crisis on Turkish economy and banking system as well.

In 2007, the United States suffered the worst financial crisis since the 1930s. The crisis spread swiftly from the US to other countries and from financial markets to the real sectors. Some financial institutions failed. Some were bailed out by governments.

Actually starting point was from the U.S. housing market. Between 2002 and 2005, interest rates were low, therefore, mortgage lending was boosted. It caused a bubble in house prices. Subprime mortgage lending (that are considered to be significantly riskier than average) increased considerably. Rising house prices would cover risk of default. Due to high prices, demand declined. Plus, borrowers found that they could no longer afford their mortgages. This led to foreclosures (supply increase of houses) which led to decline of house prices. Since many of the banks and other FIs had MBS in their balance sheets and the prices of MBS went down due to the deterioration of their underlying assets namely mortgage loans. The crisis in real sector spread to financial markets. During the crisis, since governments were worrying about a systematic risk, they didn't allow for many large financial institutions to fail and intervened to bail them out.

Dodd-Frank Wall Street Reform and Consumer Protection Act was signed into law on July 21, 2010 according to which banks couldn't trade in order to satisfy the needs of their clients and trade to hedge their positions, but they could not trade to take speculative positions. In other countries also similar provisions were taken into place. Turkish economy and its banking sector proved to be relatively resilient against the global crisis of 2007. In order to understand the reasons behind this resilience, we need to review the successful restructuring plan which was taken into place following the crisis of 2001. Actually before to the Turkish crisis of 2001, the Turkish economy had serious weaknesses such as current account deficit financed by short-term capital inflows, fluctuation of economic growth rate, interest rates and exchange rate, large budget deficit financed by monetary expansion, Deficiency in banking regulations and supervision, large maturity mismatch between liabilities and assets of the bank, open position. Add to those, the political disputes over fraud in banks gave the impression that there were large problems in the banking sector. As a result, in around 2000, banks closed their interbank credit lines to vulnerable banks and foreign investors withdrew their funds which brought the banking crisis into a new sensible phase. Interbank rates

increased sharply. Private Banks made large losses due to devaluation of national currency and their un-hedged foreign open position. IMF assisted Turkey with almost USD 30bn in total. Structural reforms were taken into place by creating an independent watchdog for banks to reinforce the regulations and supervision and also banks undergone a vast restructuring. Afterwards, the economy vigorously recovered. These measures prepared the ground in a way that Turkish economy and its banking sector proved to be relatively resilient against the global crisis of 2007. Although they have been affected but negative outcomes were limited because banking system had its own strength points and authorities also reacted promptly For instance Central Bank, among other things, resumed its activities as an intermediary in the FOREX deposit market (9 October 2008) and extended the lending maturity to 1 month from 1 week in this market and to 3 months from 1 month in TL interbank market (21 November 2008); It doubled its transaction limits to USD 10.8 billion (23 October 2008) ; it decreased reserve requirement ratio for FOREX liabilities to 9 percent from 11 percent (28 November 2008). BRSA, also required the banks to get permission for distribution of the 2008 earnings and let them to classify the securities as investment portfolio. Government also received an authorization from the Parliament to insure by itself all the deposits. Payment of the tax dues before 1 September 2008 was also decided to be deferred to December 2008 and with 18 installments.

CHAPTER 5

METHODOLOGY

5.1 RESEARCH DATA

The current study splits into three parts; CAMELS rating, Stress Testing and ICR. Most of the Data used in this study has been collected from official sources such as Bank Association of Turkey, Banking Regulation and Supervision Agency (BRSA-BDDK) and also official websites of each bank.

5.2 CAMELS RATING

CAMELS is an abbreviation which stands for Capital, Assets, Management, Earnings, Liquidity, and Sensitivity.

In this study, 27 ratios divided in 6 categories have been used to measure the performance of banks. Each ratio has a weight in its own category. Each specific ratio has been multiplied by its own weight and as a result they have been summed up to give one for each category. As a result of calculations there are 6 numbers for 6 categories. Later, these 6 numbers have been multiplied by their own assigned weights to give one number for the bank. This number has been computed for 12 years (2005-2016).

All the categories and their components have been explained in details in following pages of this chapter.

$$Category's Index = \sum W_i * R_i$$

Equation 1. Category's Index

W_i = Weight of each ratio and R_i = Ratio

In this study for computing CAMELS rating as a tool of measuring performance of banking sector, 27 ratios have been used.

There is a relationship between each ratio and CAMELS rating. Ratio can increase or decrease the CAMELS rating based on positive (+) or negative (-) relation depending on its effect on the general rating of the bank. For instance, if NPLs goes up, it is an undesired event and should be expected to affect negatively the bank's stability. Hence the relationship between the level of NPLs and the global rating of the related bank is negative. In contrast, the relationship between CAR and global rating of the related bank is positive since the higher the level of CAR is, the better the situation of the related bank will be.

Elements of CAMELS rating have specific weights which shows their impact on the performance of the bank for example C which stands for Capital adequacy and A which stands for Asset quality both have been weighted as 20% and etc. These weights are based on discretion of the experts.

Furthermore, every individual category of CAMELS ratios has got its own weight yet again upon the discretionary approach. For instance, in the category of Capital adequacy, a weight of 20% has been assigned to the ratio of Equity to Total Liabilities. In some cases, some categories may have overlap. In a sense that one ratio may be suitable to contribute to the measurement of two different categories. In other words, the same indicator may be useable for more than one category and it may affect more than one component of CAMELS rating. Let's take the example of ratio for NPLs to Gross Loans. It affects both Asset Quality and Management Performance. However, we may consider it under one category which deem to us more prioritized, the one which is most affected.

Criteria used in the selection of reference indicators are understandable, successful in measuring performance, used by banking authorities and close to standardization in the sector. Let's start to explain every individual category and its related ratios.

5.2.1 Capital Adequacy

Capital adequacy ratios as one of the six categories of CAMELS model is a measure for the amount of a bank's capital expressed as a percentage of its risk weighted assets. Capital Adequacy is a prominent indicator of the financial soundness. Satisfactory CAR prevents the bank from bankruptcy. It also reflects whether or not a bank has sufficient capital to bear unexpected losses arising in the future and based on a certain amount of leverage. As far as Capital Adequacy category is concerned, four ratios have been taken into consideration. The Table4 illustrates these four ratios together with their assigned weights and their positive or negative impact on the category and also on the global rating of the related bank.

CAPITAL			
Short Name	Variables (%)	Weight	Relationship
C	CAPITAL	0,20	
CAR	Capital Adequacy Ratio	0,40	+
ETL	Equity / Total Liabilities	0,20	+
ENL	Equity / Net Loans	0,20	+
ETA	Equity / Total Assets	0,20	+

Table 4. Capital Adequacy Category Ratios

Capital Adequacy also known as capital-to-risk weighted assets ratio (CRAR), it is used to protect depositors and promote the stability and efficiency of financial systems. Two types of capital are measured: tier one capital, which can absorb losses without a bank being required to cease trading, and tier two capital, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors. Equity capital is categorized as “Tier 1 capital” while subordinated long-term debt is categorized as “Tier 2 capital.”

$$CAR = \frac{\text{Tier One Capital} + \text{Tier Two Capital}}{\text{Risk Weighted Assets}}$$

Equation 2. Capital Adequacy Ratio

This ratio has the most important role in Capital adequacy by being positively related and weight of 40%.

As the second ratio in the category, Equity to Total Liabilities measures total equity over total liabilities with a weight of 0.20 and it is positively related to the category ratio.

Equity on Net Loans measures the total equity over net loans (Gross Loans - NPLs) that bank allocated to customers and other banks with a weight of 0.20 and positively related to the category ratio.

The last ratio in this category is Equity on Total Assets. It measures the total equity (Paid up capital + Reserves) over total assets with a weight of 0.20 and positively related to the category ratio.

5.2.2. Asset Quality

The main objective to measure the Assets Quality is to ascertain the composition of non-performing assets (NPAs) as a percentage of the total assets.

Table5. Presents the diversification of weights to the five ratios under this category and their relationships.

ASSET			
Short Name	Variables (%)	Weight	Relationship
A	ASSET	0,20	
LTA	Loans / Total Assets	0,20	+
FATA	Fixed Assets / Total Assets	0,20	-
NPLGL	NPL / Gross Loans	0,30	-
SPRNPL	Specific Provision Reserve / NPL	0,15	+
BATA	Bearing Assets / Total Assets	0,15	+

Table5. Asset Quality Category Ratios

The first ratio in this category, Loans on Total Assets, expresses the proportion of total assets that have been devoted to net loans for the customers. It has a 20% weight with positive relation.

The ratio, Fixed Assets on Total Assets, measures the proportion of assets that are less liquid to the Total Assets. This ratio is negatively related to model and it has a weight of 20%.

Nonperforming Loans (NPLs) on Gross Loans is the third ratio in this category. “NPL is sum of borrowed money upon which the debtor has not made his scheduled payments for at least 90 days.” (Nonperforming Loan - NPL) . This ratio is negatively related to the model and it has weight of 30%.

The fourth ratio is the Specific Provision Reserve on NPLs. It shows the proportion of provision that has been taken compare to NPLs. It is positively related and weighted by 15%.

The final ratio is Bearing Assets on Total Assets. Bearing assets which is numerator in this ratio consisting of net loans, Interbank loans and deposit with banks, Investment securities and Derivative financial instruments. Denominator includes all assets. It is positively related and has a weight of 15%.

5.2.3. Management Quality

Management Quality guarantees the survival and growth of a bank. It is the management which sets vision and goals for the organization and ensures that it achieves them. Management efficiency means adherence to some norms, ability to plan and respond to changing environment, leadership and administrative capability of the bank.

Six ratios have been applied for this category which are explained in Table6.

MANAGEMENT			
Short Name	Variables (%)	Weight	Relationship
M	MANAGEMENT	0,10	
CSDTD	Current + Saving Deposits / Total Deposits	0,15	+
NIPB	Net Income Per Branch (Growth Rate)	0,20	+
NIPE	Net Income Per Employee (Growth Rate)	0,20	+
NIEIETA	Non-Interest Exp. + Impairment Exp. / Total Assets	0,15	-
NIINI	Net Interest Income / Net Income	0,15	+
NIINIE	Net Interest Income / Non-Interest Expenses	0,15	+

Table6. Management Quality Category Ratio

The first ratio in this category, Current and Saving Deposits on Total Deposits, has a weight of 15% and it is positively related to the model.

The second ratio indicates that branches are the most important channels of banks for reaching customers. So, general expectation is that as a bank increases its branches it means that it reaches more and more customers, then its profit level should increase. Growth Rate of Net Income per Branch measures whether or not this expectation is met. In this ratio, growth rate of number of branches has been used. In a typical bank, it indicates to what extent every branch has contributed to the creation of net income. It is positively related with weight of 20 %.

The third ratio, Growth Rate of Net Income per Employee shows the surplus earned per employee. It can be calculated by dividing profit after tax on total number of employees. The higher the ratio, the higher the efficiency of the management is. In a typical bank it shows to what extent every branch has contributed to the creation of net income. It is positively related with weight of 20%.

In the fourth ratio, Non-Interest Expenses and Impairment Expenses on Total Assets, the numerator is non-interest expenses and impairment expenses which includes loan impairment charges and securities and other impairment charges (From Income Statement). This ratio is negatively related to the model and has a weight of 15%.

In the fifth ratio, Net Interest Income on Net Income, the numerator is net interest income which means total interest income minus total interest expenses and the denominator is net income from the income statement. This ratio has weight of 15% and it is positively related.

The last ratio, Net Interest Income on Non-Interest Expenses, shows how much net interest income is exceeded from non-interest expenses. The denominator of this ratio represents personnel expenses plus other operating expenses. This ratio is positively related to the model with 15% weight of management category.

5.2.4. Earning Quality

It shows the quality of a bank's profitability and its capability to maintain quality and earn consistently. Table 7. Illustrated the details of five ratios in Earning Quality.

EARNINGS			
Short Name	Variables (%)	Weight	Relationship
E	EARNINGS	0,15	
ROA	Net Income/Total Assets	0,25	+
ROE	Net Income/Equity	0,25	+
NIM	Net Interest Margin	0,20	+
NIENIINI	Non-Interest Exp./ Net Interest Inc.+ Non-Interest Inc.	0,15	-
NIINIINI	Non-Interest Inc./Net-Interest Inc. + Non-Interest Inc.	0,15	+

Table7. Earning Quality Category Ratios

It is necessary for the banks to generate sufficient earning to stay in the market for a longer period of time, to make shareholders satisfied, protect and improve its capital. To measure earnings, the ratios used are, Return on Assets, and Return on Equity. The first ratio in this category is Net Income on Total Assets. $ROA = \text{Net Income} / \text{Total Assets}$. This ratio avoids the volatility of earnings linked with unusual items, and measures the profitability of the bank. The higher the ratio, the greater profitability. This ratio as it is obvious has positive relationship with 25% weights of earnings category.

The second ratio, Net Income on Equity ($ROE = \text{Net Income} / \text{Equity}$) which also measures the performance of a bank. This ratio shows the efficiency of the bank, that how the bank uses its own capital in an efficient manner. One way a bank might consider improving its ROE is by buying back its shares and replacing them with deposits so the equity which is in the denominator becomes smaller and makes ROE larger. (Christopoulos, et al, 2011, p. 13). This ratio is positively related with a weight of 25%.

To measure the earning capacity of the selected banks, Net Interest Margin is computed and analyzed. Spread or Net Interest Income is the difference between the interest received and interest expensed. It is an important measure of a bank's core income (income from lending operations). Higher ratio indicates better earning capacity and efficiency in profitability of the banks and vice versa. This ratio is Net Interest Income

on Total Assets Earnings. This ratio is positively related to the category ratio with weight of 20%.

In the numerator of fourth ratio, Non-Interest Expenses on Net Interest Income and Non-Interest Income, non-interest expenses, consisting of personnel expenses and other operating expenses. The denominator includes net interest income and non-interest income. Net interest income means total interest income minus total interest expenses. This ratio is negatively related to the category ratio with weight of 15%.

The last ratio, Non-Interest Income on Net-Interest Income and Non-Interest Income which is positively related to the category ratio with weight of 15%.

5.2.5. Liquidity Quality

For a bank, liquidity illustrates its ability to honor its financial obligations promptly. Liquidity problem can endanger the reputation of a bank. An adequate liquidity position means a situation, where organization can obtain sufficient liquid funds, either by increasing liabilities or by converting its assets quickly into cash. Table8. shows the four Liquidity Quality ratios for this study.

LIQUIDITY			
Short Name	Variables (%)	Weight	Relationship
L	LIQUIDITY	0,25	
LATA	Liquid Assets/Total Assets	0,30	+
LATFL	Liquid Assets/Total Foreign Liabilities	0,25	+
GLD	Gross Loans/ Deposit	0,20	-
CDTF	Customer Deposits/ Total Funding	0,25	+

Table 8. Liquidity Quality Category Ratios

First ratio of the category, namely, Liquid Assets on Total Assets, is a ratio in which the numerator includes Liquid assets such as investment securities, enable a bank to

respond quickly to unexpected demands for cash and the proportion of it on Total Assets represents how much of bank's assets consists of Liquid assets.

Liquid Assets include cash with central bank, placement with other banks, money market securities and financial assets available for sale. The ratio of liquid assets to total assets shows how liquid a bank's assets. That is to say, it is the ratio of assets due less than 1 year in total assets. This ratio is positively related and weighted as 30%.

Second ratio of the category, Liquid Assets on Total Foreign Liabilities, shows that how much liquid assets could cover for liabilities that are held in foreign currencies such as Euro, US Dollar. This ratio is positively related to the model with weight of 25%.

Gross Loans on Deposits as the third ratio of the category shows proportion of the deposits of the bank to issue loan and its dependence on the interbank market. If the result of this ratio is lower, it means that bank maintains good level of liquidity, and shows that deposits of the banks are enough to cover the loan obligations. This ratio is negatively related to the category with weight of 20%.

The last ratio of this category is Customer Deposits on Total Funding which is positively related to the category with weight of 25%.

5.2.6. Sensitivity to Market Risk

Income and capital of financial institutions can be adversely affected by changes in exchange rate, interest rate, equity price or commodity price. Many financial institutions consider changes in interest rates as market risk. This "S" component of the CAMELS rating system mainly focuses on the ability of the bank to recognize, monitor, manage and control the market risk and inform managers about where there are some supervision problems. (Grier, 2007)

Sensitivity of the market risk are examined by the banks to assess the changes in foreign currency, interest rate, product purchase and selling prices which significantly affects the bank assets' values and profits. Banks nowadays have to change themselves

because of market demands. Portfolio may boost the bank's profit if the price movement is in favor of banks, and if it is not then it may create big problems for the bank. (Christopoulos, Mylonakis, & Diktapanidis, 2011)

This component has been included in CAMEL component in 1997 and started to be used in performance evaluation of banks. This component helps to measure the profitability of the banks and the level of risk at the interest rates and exchange rates may affect the capital adequacy. Three ratios have been chosen for this category which are as follows in Table9.

SENSITIVITY			
Short Name	Variables (%)	Weight	Relationship
S	SENSITIVITY	0,10	
SPTA	Securities Portfolio/Total Assets	0,30	-
BACL	Bearing Assets/Costly Liabilities	0,30	+
NIITA	Net Interest Income/Total Assets	0,40	+

Table 9. Earning Quality Category Ratios

First ratio of the category is Securities Portfolio on Total Assets. This is a ratio in which the numerator consists of financial assets held for trading, available for sale, held to maturity and investments in associates and subsidiaries. Portfolio may boost the bank's profit if the price movement is in favor of banks, and if it is not, then it may create big problems for the bank. The ratio tells the correlation of banks securities with total assets and provides us the percentage change of its portfolio with respect to alteration in interest rates or other issues associated with the issuer of the securities. The higher value of this ratio means that the bank's portfolio is subjected to market risk at greater scale. This ratio is negatively related to the category ratio with weight of 30%.

Second ratio of the category, Bearing Assets on Liabilities, which is total earning assets over total interest bearing liabilities. This ratio is positively related to the category ratio with weight of 30%.

Third ratio of the category is Net Interest Income on Total Assets which is positively related to the category with weight of 40%.

5.3 STRESS TESTING (ST)

Stress Test is a risk management tool used to assess the vulnerability of counter- parties to exceptional events. It identifies the impact of extreme expected and unexpected shocks to a counterparty's capital, provides an assessment of its financial strength to withstand shocks and to spot emerging risk(s) and uncover weak spots in the financials. It enables counterparties in identifying their vulnerabilities at an early stage.

“Stress test helps to identify and analyze the risks which might be latent under benign conditions but, if triggered, could have serious implications for the very existence of a financial institution.” Banking Supervision Department (2005), State Bank of Pakistan, Guidelines on Stress Testing)

In terms of methodologies, normally two techniques are used for stress testing which are Sensitivity Analysis and Scenario Analysis.

Sensitivity Analysis typically examines the short-term impact of a change in a key variable while holding other variables constant under different levels of shock, namely minor, moderate and major shock.

Key variables may include changes in variables including decline in net interest margin (NIM), decline in lending rate, rise in NPLs, rise in borrowing cost, increase in operating expense etc. The sensitivity analysis looks at the impact of these changes on the overall financial position of the borrower and on the internal credit rating (ICR).

Scenario Analysis assesses the impact of extreme but plausible scenarios on the financial position of a borrower. Scenarios could be historical events experienced in the past such as stock market crash, regional turmoil, currency depreciation, natural disasters or a hypothetical event that may be extreme but not improbable. Macro stress testing has become popular among supervisors as a tool to assess vulnerabilities of the

overall financial system. Moreover, leading financial institutions use macro stress testing mostly in conjunction with their internal credit risk models.

Financial institutions design their own scenarios using either a portfolio-driven approach or an event-driven approach. The former approach starts with risk identification at the portfolio level and then works backwards to conceive plausible scenarios which would cause identified risks to materialize. Scenarios can be hypothetical (based on expert judgment) or historical like the global financial meltdown in 2008.

Possible Scenarios that may be taken to account include: Macro-Economic slowdown, Political or regional turmoil, Un-professional management and Natural disasters (floods, earthquakes). (Banking Supervision Department (2005), State Bank of Pakistan, Guidelines on Stress Testing)

As it has been described in methodology in this study for Stress Testing, two approaches have been applied; one is sensitivity analysis and the other one is scenario analysis. For both approaches prior and subsequent figures have been compared.

First, for sensitivity analysis five different variables with three levels of shock have been assumed. They have varied impacts on Income Statement and Balance Sheet.

Second, in case of scenario analysis three level of shocks have been used; while assuming a rise in NPLs, also a rise in borrowing interest rate and a decrease in net trading income have been taken into account. It is worth mentioning that by *Net Trading Income* we mean Sum of Capital Market Trading Gains/(Losses), Derivative Instrument Gains/(Losses), Foreign Exchange Gains/(Losses).

Last, based on some weighted selected ratios internal credit rating (ICR) has been computed. Internal credit rating is relied upon two parts; Quantitative Assessment and Qualitative Assessment. Internal credit rating based on these quantitative and qualitative assessments allocate a score for a typical bank. ICR is a measurement for evaluating a bank's performance and give us a chance to compare banks based on this score. Internal credit rating (ICR) scale is between 1 to 10. 1 is the best score while 10

is the worst. Score 1 to 6 indicates that bank's situation is "Standard". 7, 8 and 9 score mean "Watchful", "Sub-standard" and "Doubtful" respectively. Score 10 is the worst situation for a typical bank that went through a distressed situation. Score 10 shows that bank is in a serious financial difficulty.

Quantitative Assessment with weight of 70% of total assessment is based on some ratios that have been used in CAMELS rating.

Ratios related to 5 categories of CAMELS have been used in this assessment. Some ratios are positively related to ICR and some are negatively related to ICR. Each ratio is between the highest and lowest range of numbers that has been allocated to a specific ratio. First category is Earnings with a weight of 30% consisting of Return on Assets (ROA), Return on Equity (ROE), Cost to Income, Net Interest Margin and Non-interest income to total income. Return on Assets (ROA) with a positive relation and weight of 25% which allocates to itself numbers between 0 and 1,50.

Return on Equity (ROE) with a positive relation and weight of 25% which allocates to itself numbers between 0,3 and 5. Cost to income ratio is any number between 55 and 100. This ratio with a negative relation and weight of 30%. Net interest margin with a positive relation and weight of 10%. It is between 0 and 3. Net Interest income to total income is positively related and has weight of 10%. It is between 0 and 50.

Capital Adequacy is the second category with weight of 20% of quantitative assessment. It includes total equity to total assets, total loans to total assets, Capital adequacy ratio, total capital to total loans. Total equity to total assets ratio with 30% weight and positive relationship. It has a range of 0 to 10. Total loans to total assets ratio with weight of 20%. It is positively related and has a range between 0 and 90.

Capital adequacy ratio (CAR) is positively related with 30% weight. It has a range between 0 and 15. Total capital to total loans ratio with weight of 20% and positively related which could be between 0 and 11. Liquidity is the third category of quantitative assessment ratios. It consists of Loans to customer deposits, Loans to total funding, liquid assets to total assets and customer deposit to total deposit. Loans to customer deposits ratio is negatively related and has a weight of 35%. It has a range between 75

and 200. Loans to total funding ratio is negatively related and has a weight of 25%. It is between 65 and 110. Liquid assets to total assets ratio is positively related with weight of 20%. It is between 0 and 40. Customer deposits to total deposits is a ratio with 20% weight and has a positive relation. It is between 0 and 40. Asset quality is the fourth category of quantitative assessment. NPL to total loans, Provisions to NPLs (Coverage ratio), Provisions to Operating income and portfolio diversification has been implied in this category. NPL to total loans ratio has a 25% weight with a reverse relationship. It could be between 4 to 20. Provisions to NPL ratio is positively related with weight of 30%. It could be between 20 to 95.

Provisions to operating income ratio is negatively related and weighted by 25%. It is between 20 and 100. Portfolio diversification is based on Herfindahl-Hirschman Index (HHI).

HHI is a general measure of market concentration. It is calculated by squaring market share of each firm competing in a sector, and then summing the resulting numbers, and can range from close to zero to 10,000. If HHI is between 0 and 3,300 it is low concentration, if it is between 3,300 and 6,600 it is moderate concentration and if it is between 6,600 and 10,000 it is high concentration. So in here portfolio diversification is a measurement of concentration of a bank in different sectors. Sectors like agricultural, manufacturing, construction and services and others. According to HHI, portfolio diversifications can be low, moderate or high.

First each sector proportion has been calculated then sum up squared of sectors.

$$HHI = S_a + S_m + S_c + S_s + S_o$$

Equation 3. HHI: Herfindahl-Hirschman Index

S_a : Square of Portfolio share of agriculture

S_m : Square of Portfolio share of manufacturing

S_c : Square of Portfolio share of construction

S_s : Square of Portfolio share of services

S_o : Square of Portfolio share of other sectors

Management is the fifth and last category of quantitative assessment which has a 5% weight. It includes of profit after tax to number of employee ratio and profit after tax to number of branches which each of them are positively related and has a 50% weight. Qualitative Assessment which allocate 30% weight of whole assessment to itself consisting of Competitive Position, Audit Report and Ownership with 30%,40% and 30% weights respectively.

Competitive Position indicates the proportion of total assets of specific bank to total assets of the bank industry. Bank with highest ratio has been named as Market Leader. The rest accordingly is named as High Market Share, Average Market Share and Low Market Share.

$$\text{Competitive Position} = \frac{\text{Total Assets of Bank A}}{\text{Total Assets of Banking Sector in Turkey}}$$

Equation 4. Qualitative Assessment- Competitive Position

Auditor report is a statement issued by an internal auditor or an independent external audit company in order for the user to make decisions based on the result of audit.

Audit report is important for this assessment that declares the independent external audit company's statement on the bank. Audit report of bank may express opinion as Clean or Clean with considerable observations or Qualified. The reports are mostly with a Clear Opinion and only includes a paragraph. If the audit report is qualified, basis for Qualification is normally mentioned after Scope paragraph and before the Opinion paragraph. Opinion paragraph in addition to its standard wording includes "except for the matter described in Basis for Qualification paragraph the financial statements give true and fair view."

Ownership of the bank is an element of Qualitative Assessment. The ownership could be as State listed, State un-listed, Private listed and Private un-listed.

A bank could be a state owned or privately owned bank, also it may be listed in Borsa Istanbul Stock Exchange (BIST) or not. Banks that are State owned have got a better score because they have Government's support and if they are listed in Borsa Istanbul Stock Exchange (BIST) it also affects their score positively since they have to be more transparent to the public.

5.4. FREQUENCY OF STRESS TESTING AND LEVEL OF SHOCKS:

Stress Test (ST) is to be conducted on periodic basis, normally once a year. However, for those counter parties where the Internal Credit Rating (ICR) is greater than 4 (ICR > 4), ST may be conducted on semi-annual basis.

There are three levels of shocks under sensitivity as well as scenario analysis were used; Minor, Moderate, Major.

Level of shocks increases from Minor to Moderate and to Major shocks. Minor shock has the lowest level of shock to variable(s) while Major shock has the highest and toughest level of shock to variable (s).

5.5. STRESS TEST (ST) ASSUMPTIONS FOR BANKS UNDER SENSITIVITY ANALYSIS

Assumption No. 1

Rise in NPLs while other variables are held constant

Under minor shock, impact on Profit after Tax (PAT) is measured assuming that NPLs rise by 5%. Similarly, under moderate shock, NPLs is assumed to rise by 10% and under major shock we assume that NPLs rise by 20%.

For instance, if NPL increases by 5% it will impact the income statement and balance sheet. In Income statement, Impairment loss on financial assets will rise by Δ NPL

which is 5% increase in NPL. So Net Operating income and Tax provision for continued operations will decrease and finally net income declines.

On the left hand side of balance sheet, Loans decline, NPL and Provision rise. By the same level of decline in Tax provision for continued operations in income statement, Cash and balanced with central bank will increase.

On the right hand side of balance sheet, in Equity, profit will fall.

Assumption No. 2

Rise in Lending rate while other variables are held constant

Rise in lending rate may be considered as a positive element that could surge the net income of a bank. It has been assumed to emphasize that changes may affect bank positively. Under minor shock, the impact on income statement and balance sheet of the bank is measured when Lending rate increases by 1%. Similarly, under moderate shock, Lending rate is assumed rise by 2% while under a major shock Lending rate is assumed to increase by 3%. For example, rising Lending rate by 1% it means that interest on loans goes up which is consequently increases total interest income so tax will rise and finally net income goes up. In case of balance sheet, on assets side cash gets affected and to keep balance sheet in equilibrium on right side in equity, profit rises.

Assumption No. 3

Decline in Lending rate while other variables are held constant

Under minor shock, the impact on PAT is measured when Lending rate declines by 1%, under moderate it declines by 2% and under major shock it declines by 3%.

Decreasing lending rate affects income statement and balance sheet similar to assumption No.2 but in a reverse direction. Therefore, by decreasing 1% in lending rate Interest on loans rises which means net income will go up. In balance sheet cash and profit decrease from Assets side and Liabilities and Equity respectively.

Assumption No. 4**Rise in borrowing rate while other variables are held constant**

Under minor shock, the impact on PAT is measured when borrowing cost of bank increases by 1%. Similarly, under moderate shock, we assume that the borrowing cost rises by 2% and under major shock we assume that the borrowing cost rises by 3%. In income statement increase in borrowing rate affects interest on deposits. It will increase interest on deposits. It means borrowing money is more expensive for bank.

In the asset side of balance sheet, cash declines and in the liabilities and Equity side, profit declines.

Assumption No. 5**Decline in Net Trading Income while other variables are held constant**

Trading income consists of trading in money market, capital market, foreign exchange and derivative financial transactions. Net trading income is the net profit or loss in above-mentioned transactions.

Under minor shock, the impact on income statement and balance sheet of the bank is measured when Net Trading Income decreases by 1%. Similarly, under moderate shock, Net Trading Income decreases by 2% while under a major shock Net Trading Income decreases by 3%.

For example, by 1% decrease of net trading income, it will decrease income statement. Also in balance sheet cash and equity will be affected negatively.

5.6. STRESS TEST (ST) ASSUMPTIONS FOR BANKS UNDER SCENARIO ANALYSIS

Stress Test under scenario analysis measures the impact on the balance sheet, income statement and internal credit rating (ICR) of the customer when multiple key variables are changed simultaneously. In order to measure the impact on the financial position of the bank and on its internal credit rating (ICR) multiple assumptions under various

stressed conditions are tested. Similar to sensitivity analysis, the impact is measured under three levels of shocks, namely minor, moderate & major shocks.

5.6.1 Minor Shock

Under minor shock, the impact on the financials of the bank and on its ICR is determined when NPLs rise by 5%, Borrowing interest rate increase by 1% and Net Trading Income decreases by 1%.

5.6.2 Moderate Shock

Under moderate shock, the impact on the financials of the bank and on its ICR is determined when NPLs rise by 10%, Borrowing interest rate increase by 2% and Net Trading Income decreases by 2%.

5.6.3 Major Shock

Under major shock, the impact on the financials of the bank and on its ICR is determined when NPLs rise by 20%, Borrowing interest rate increase by 3% and Net Trading Income decreases by 3%.

Table 10 shows a summary of all discussions done in this chapter. Chapter 6 discusses result of CAMELS rating for Ziraat Bank, Halkbank, İşbank, Akbank, Şekerbank and Garanti Bank in details. Chapter 7 discusses the result for Stress Testing of the selected banks for this study.

		1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	Score	
Quantitative Assessment	70%												
Earnings	30%	Standard						Watchfull	Sub-Standard	Doubtful	NPL		Dec-16
Return on Assets (ROA)	25%	+ 1,5	1,4	1,2	1,1	0,9	0,8	0,6	0,4	0,2	0,0	-	
Return on Equity (ROE)	25%	+ 5,0	4,6	4,2	3,8	3,3	2,9	2,5	1,8	1,0	0,3	-	
Cost / Income	30%	- 55,0	58,3	61,7	65,0	68,3	71,7	75,0	83,3	91,7	100,0	-	
Net Interest Margin	10%	+ 3,0	2,8	2,5	2,3	2,0	1,8	1,5	1,0	0,5	0,0	-	
Non Interest Income / Total Income	10%	+ 50,0	44,2	38,3	32,5	26,7	20,8	15,0	10,0	5,0	0,0	-	
Capital Adequacy	20%												
Total Equity / Total Assets	30%	+ 10,0	9,2	8,3	7,5	6,7	5,8	5,0	3,3	1,7	0,0	-	
Total Loan / Total Assets	20%	+ 90,0	86,7	83,3	80,0	76,7	73,3	70,0	46,7	23,3	0,0	-	
CAR	30%	+ 15,0	14,3	13,7	13,0	12,3	11,7	11,0	7,3	3,7	0,0	-	
Total Capital / Total Loans	20%	+ 11,0	10,3	9,7	9,0	8,3	7,7	7,0	4,7	2,3	0,0	-	
Liquidity	20%												
Loan / Customer Deposit	35%	- 75,0	78,3	81,7	85,0	88,3	91,7	95,0	130,0	165,0	200,0	-	
Loan / Total Funding	25%	- 65,0	68,3	71,7	75,0	78,3	81,7	85,0	93,3	101,7	110,0	-	
Liquid Assets / Total Assets	20%	+ 40,0	36,7	33,3	30,0	26,7	23,3	20,0	13,3	6,7	0,0	-	
Customer Deposit / Total Deposit	20%	+ 40,0	35,8	31,7	27,5	23,3	19,2	15,0	10,0	5,0	0,0	-	
Asset Quality	25%												
NPL / Total Loans	25%	- 4,0	4,7	5,3	6,0	6,7	7,3	8,0	12,0	16,0	20,0	-	
Provisions / NPL (Coverage Ratio)	30%	+ 95,0	90,0	85,0	80,0	70,0	60,0	50,0	40,0	30,0	20,0	-	
Provisions / Operating Income	25%	- 20,0	23,3	26,7	30,0	33,3	36,7	40,0	60,0	80,0	100,0	-	
Portfolio Diversification	20%	Low Concentration			Moderate Concentration			High Concentration				-	
Management	5%												
PAT/No Employee (Million TL)	50%	+ 0,40	0,35	0,30	0,25	0,20	0,15	0,10	0,07	0,04	0,01	-	
PAT/No Branches (Million TL)	50%	+ 6,00	5,50	5,00	4,50	4,00	3,50	3,00	2,10	1,20	0,30	-	
Qualitative Assessment	30%												
Competitive Position	30%	Market Leader		High Market Share		Average Market Share			Low Market Share			-	
Audit Report	40%	Clean			Observations			Qualified				-	
Ownership	30%	State listed		State un-Listed		Pvt - Listed		Pvt Un- Listed			-		
Quantitative Factors	70%												
Qualitative Factors	30%												
Rate													
ICR													

Table 10. Internal Credit Risk Methodolog

SUMMARY

The purpose of CAMELS rating is to determine a bank's overall condition and to identify its strengths and weaknesses in Financial, Operational and Managerial aspects. CAMELS is an abbreviation which stands for Capital, Assets, Management, Earnings, Liquidity, and Sensitivity. In this study 27 ratios under 6 categories have been used to measure the performance of banks. Every ratio has a weight as every category also has a weight. One specific ratio has been multiplied by its own weight and as a result they have been summed up to give one number for each category. After all of the calculations there are 6 number for 6 categories. These 6 numbers have been multiplied by their own assigned weights which at end results in one number for each year. This number has been computed for 12 years (2005-2016). Stress Test is a risk management tool to assess the vulnerability of counter parties to exceptional conditions. For stress testing, normally two techniques are used namely Sensitivity Analysis and Scenario Analysis. Sensitivity Analysis examines impact of change in a key variable while holding other variables constant under different levels of shock, namely minor, moderate and major shock.

For sensitivity analysis five different variables with three levels of shock have been assumed. They have significant impact on Income Statement and Balance Sheet.

In case of scenario analysis three level of shocks have been used while rises in NPLs, rise in borrowing interest rate and decrease in net trading income have been taken into account. Then based on some weighted selected ratios internal credit rating (ICR) has been computed. Internal credit rating is relied upon two parts. One is Quantitative Assessment and the other one is Qualitative Assessment. Internal credit rating based on quantitative and qualitative assessments allocate a rate for a typical bank. ICR is a measurement for evaluating a bank's performance and give us a chance to compare banks based on this score. Internal credit rating (ICR) scale is between 1 to 10. 1 is the best score while 10 is the worst. Score 1 to 6 indicates that bank's situation is "Standard". 7,8 and 9 score mean "Watchful", "Sub-standard" and "Doubtful"

respectively. Score 10 is the worst situation for a typical bank that went through a distressed situation. Score 10 shows that bank is in a serious financial difficulty.

CHAPTER 6

EMPRICAL RESULTS FOR CAMELS RATING

6.1 INTRODUCTION

In this chapter all the ratios from 2005 to 2016 for each bank have been pictured and at the end overall rate has been illustrated by using index method. Year 2005 has been chosen as base year.

The banks under verification for CAMELS rating are six banks as follows: Ziraat Bank, Halkbank, İşbank, Akbank, Garanti Bank and Şekerbank

6.2 ZIRAAT BANK

6.2.1 Brief History

The bank initiated under the leadership of Midhat Pasha with the formation of an organization “Homeland Funds” in the town of Pirot in 1863. After the Homeland Funds Regulations came into effect in 1867 funds were set up throughout the Ottoman State and continued providing service successfully for many years. With the transition to the Benefit Funds the administration was reorganized. Registration and accounting was carried out in accordance with modern, scientific principles, and control was placed in the hands of the central government. Therefore, on August 15, 1888 the modern financial institution Ziraat Bank was officially established to undertake the operations of the Benefit Funds. As of that date the Benefit Funds started to function as branches of Ziraat Bank. Ziraat Bank, with nominal capital of 10 million Lira, comes under government auspices as a state institution controlled by the Ministry of Trade and Public Works. In 1920, Parliament in Ankara announced that all branches and funds in territories under the Parliament's control are to be administered from the Ankara Branch of the Ziraat Bank. (Official Website of Ziraat Bank) (The Banks Association of Turkey)

6.2.2 Trend Analysis of Main Ratios under CAMELS Model for Ziraat Bank during 12 Years

In this section we take a glance on the developments of the main ratios under the CAMELS model for 12 years: The reason behind taking this long period into account is that we would like to include an era which covers the immediately afterwards Turkish crisis in the early decade of the 21st century together with the global crisis of 2007.

During 12 years Capital rate as the first category for CAMELS has decreased from 31.49% to 13.67%. Starting from 2005 by 31.49% and sharply decrease to 15.73%. (Figure9.)

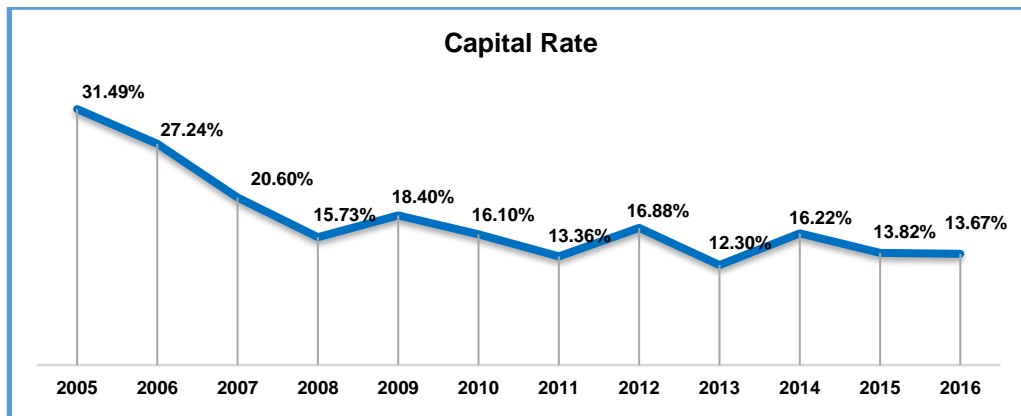


Figure 9. Capital rate of Ziraat Bank during 2005-2016

All components of this category demonstrated in Figures below:

Capital adequacy in the course of time declined from 47.88% to 14.55%. (Figure 10)

However, “equity to total liabilities ratio” was almost in the same level which is 12% in 2016. (Figure11.)

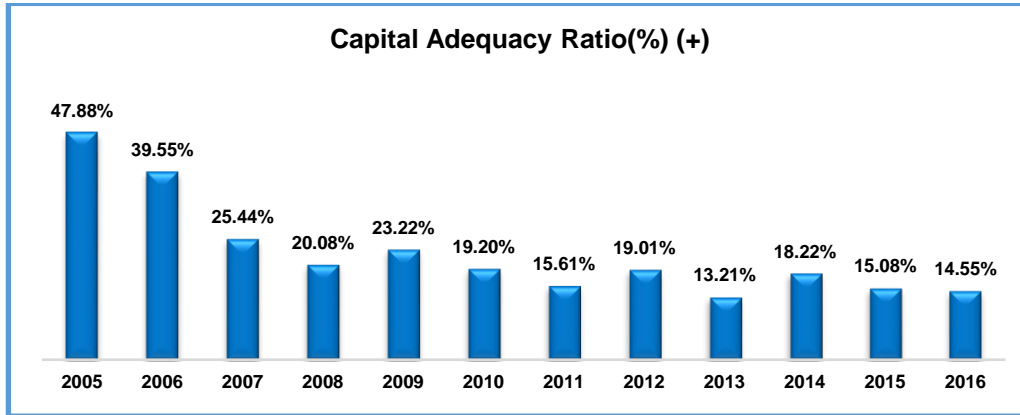


Figure 10. Capital Adequacy Ratio of Ziraat Bank during 2005-2016

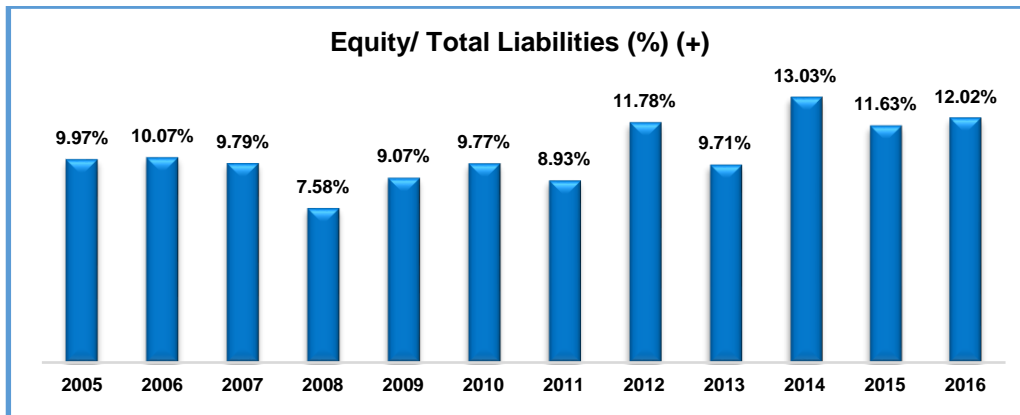


Figure 11. Equity to Total Liabilities of Ziraat Bank during 2005-2016

“Equity to net loans ratio” severely decreased from 42.65% to 16.50% due to greater growth in net loans rather than equity. (Figure12.)

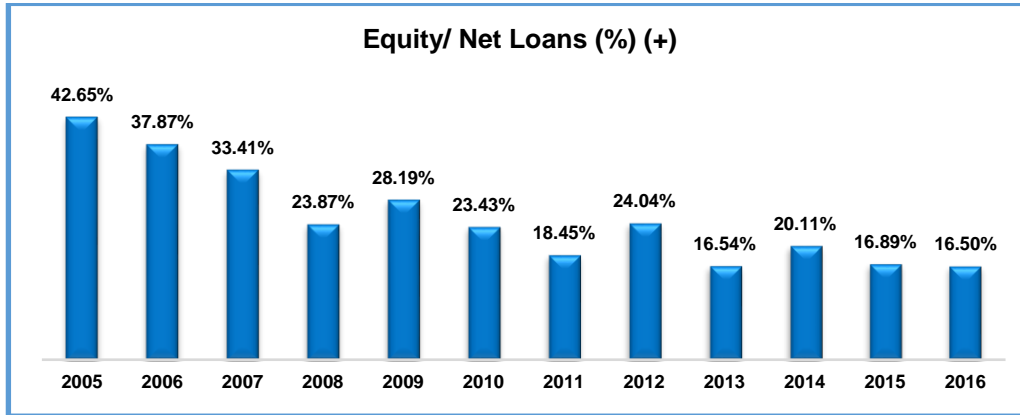


Figure 12. Equity to Net Loans of Ziraat Bank during 2005-2016

“Equity to total assets Ratio” shows numbers between the range of 9.07% and 10.73%. At lowest level it was 7.05% in 2008 as world was experiencing global crisis. (Figure13.)

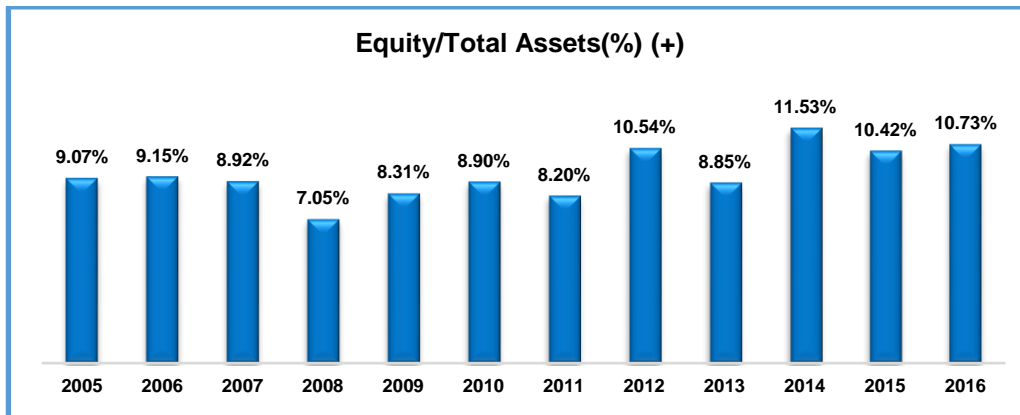


Figure 13. Equity to Total Assets of Ziraat Bank during 2005-2016

“Assets quality rate” as the second category for CAMELS shows a gradual rise during these 12 years. (Figure14.)

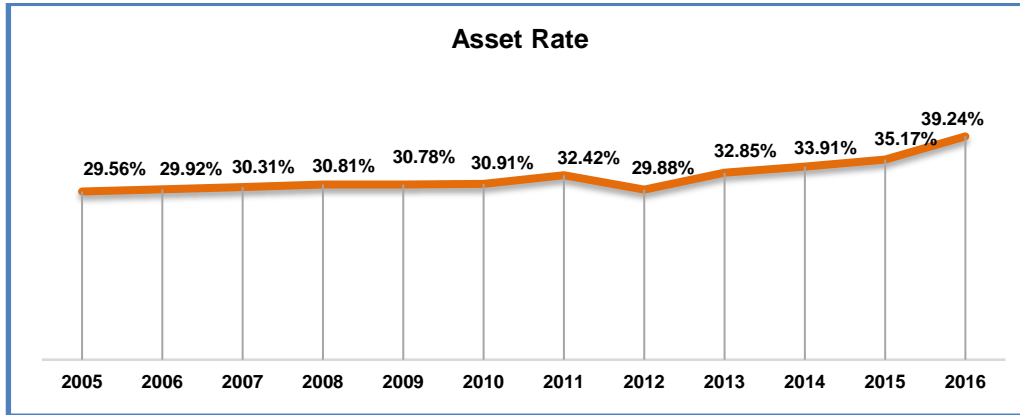


Figure 14. Asset Quality rate of Ziraat Bank during 2005-2016

Asset quality ratios for Ziraat Bank are demonstrated in the following figures. “Loans to total assets ratio” has increased year by year and reached 65.03% in 2016. (Figure 15.)

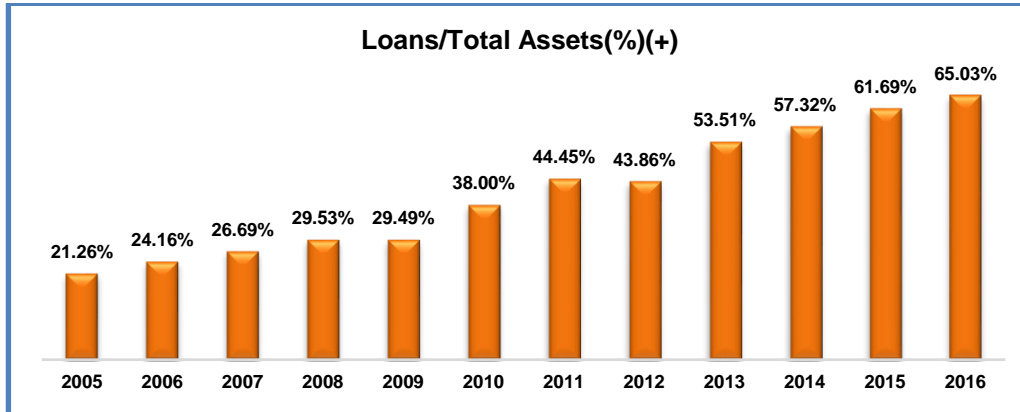


Figure 15. Loans to total Assets of Ziraat Bank during 2005-2016

“Fixed assets to total assets ratio” did not change significantly. (Figure16) except for the era of 2014 onward that has gone up to 1.96%.

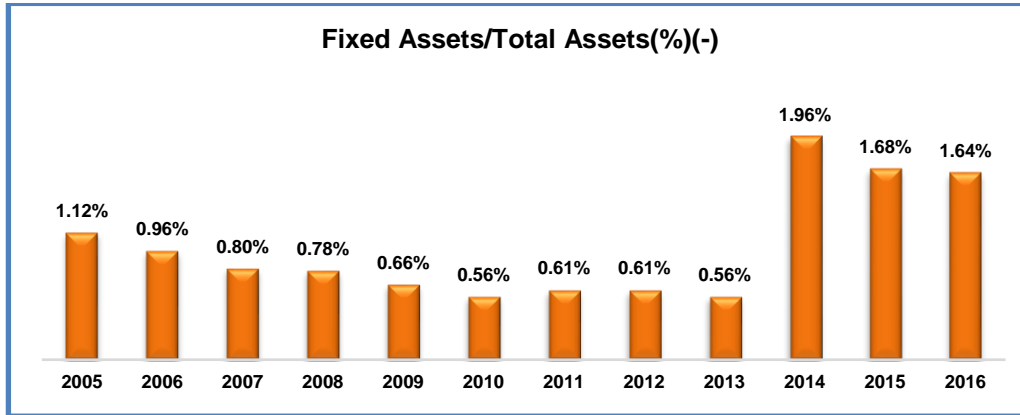


Figure 16. Fixed Assets to Total Assets of Ziraat Bank during 2005-2016

“Non performing loans to gross loans ratio” was in the highest level in 2012 (2.83%) and looking forward it continued by a percentage around 2% from 2013 to 2016. Therefor the global crisis of 2007 has not exerted a considerable negative effect on the NPLs ratio.

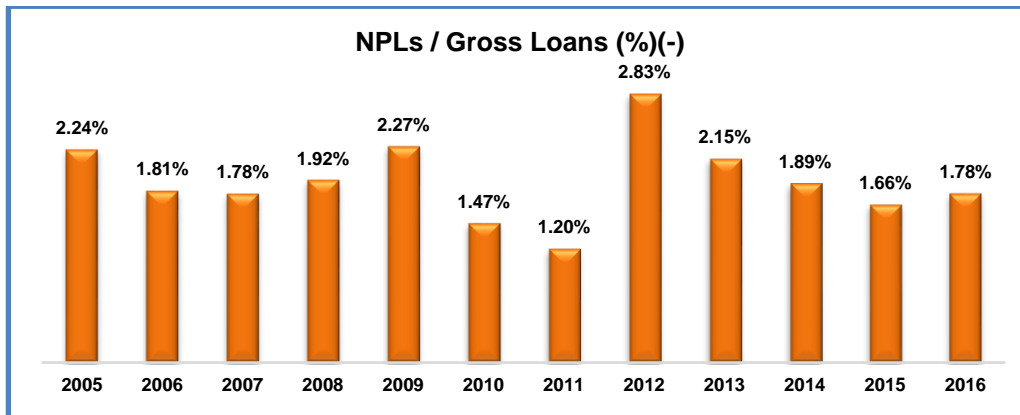


Figure 17. NPL to Gross Loans of Ziraat Bank during 2005-2016

“Specific provision reserve to NPLs ratio” was around 80% from 2005 to 2009 which decrease to around 70% from 2010 to 2015. In 2016 NPLs rose by 34% which also leads to holding more provision. Altogether having a strong provision ratio is a good point. (Figure 18.)

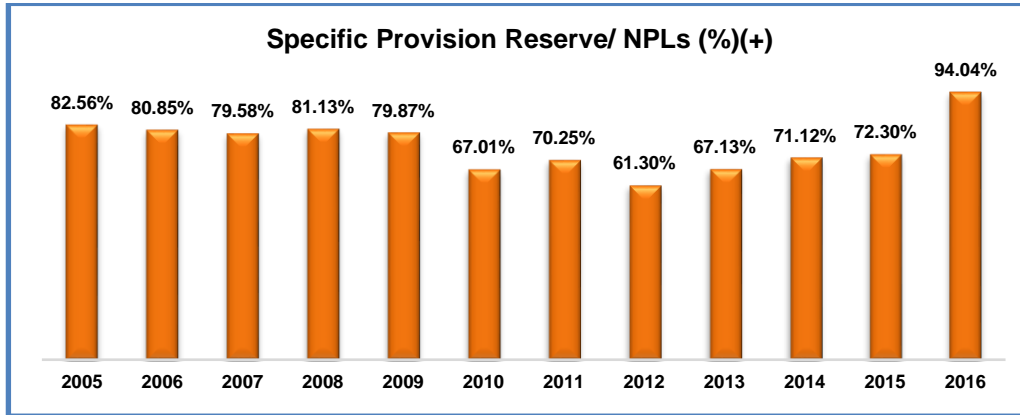


Figure 18. Specific Provision Reserve to NPL of Ziraat Bank during 2005-2016

“Bearing assets to total assets ratio” was approximately between 80% and 90% from 2005 to 2016.

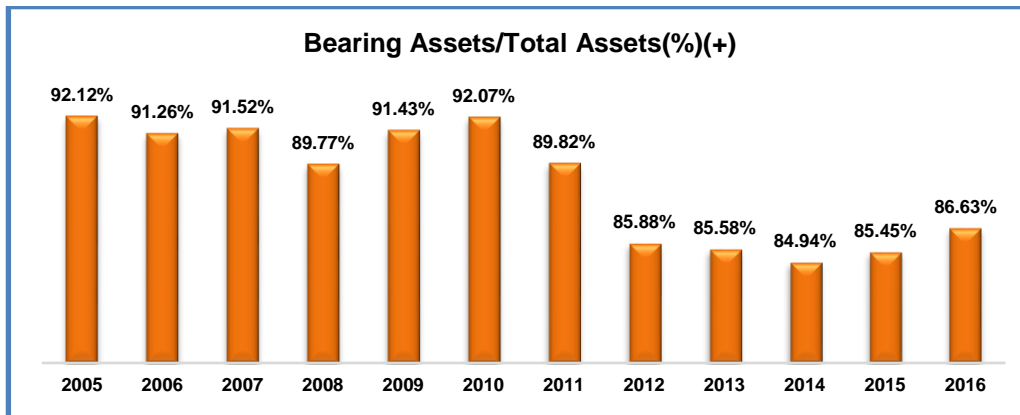


Figure 19. Bearing Assets to Total Assets of Ziraat Bank during 2005-2016

Overall Management rate was at the highest level in 2009 (106.12%). Moving from 2015 to 2016 it rose by 19% from 76.60% to 91.22%.

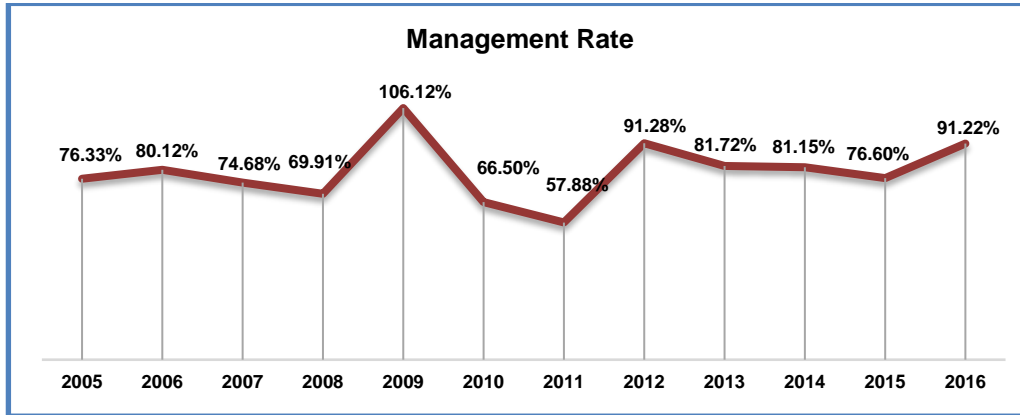


Figure 20. Management Rate of Ziraat Bank during 2005-2016

“Current plus savings deposits over total deposits ratio” did not change significantly. The slight downward trend is in line with the universal trend as the share of cost less deposits to total deposit has taken a downward movement in everywhere. In 2015 and 2016 it was around 58%. (Figure 21.)

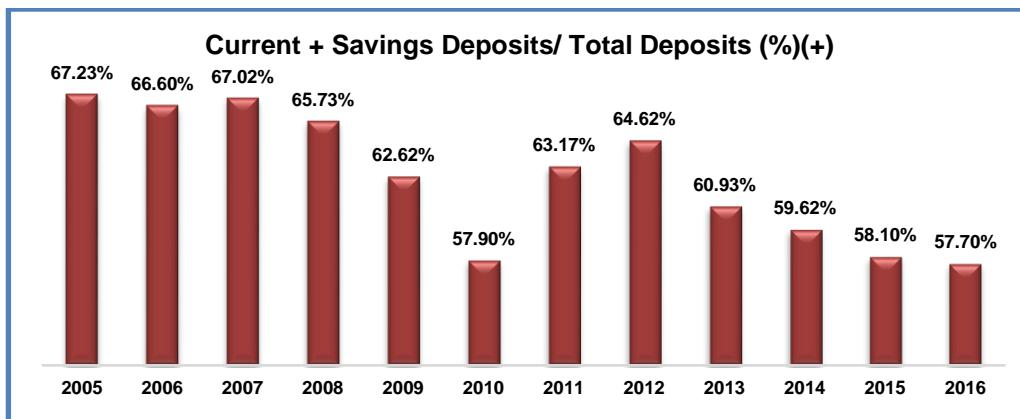


Figure 21. Current plus Saving Deposits to Total Deposits of Ziraat Bank during 2005-2016

In the course of 12 years since 2005 “net income per branch (Growth rate)” varied a lot. In 2009 net income increased by 65%. This ratio moved up to 58.58%. In 2011 was the only year that this ratio became sharply negative (-45.59%) that is mainly due to -

43% decline in net income (Annex1.). From 2013 to 2016 it shows a gradual increase from 14.43% to 27.39% (Figure 22.)

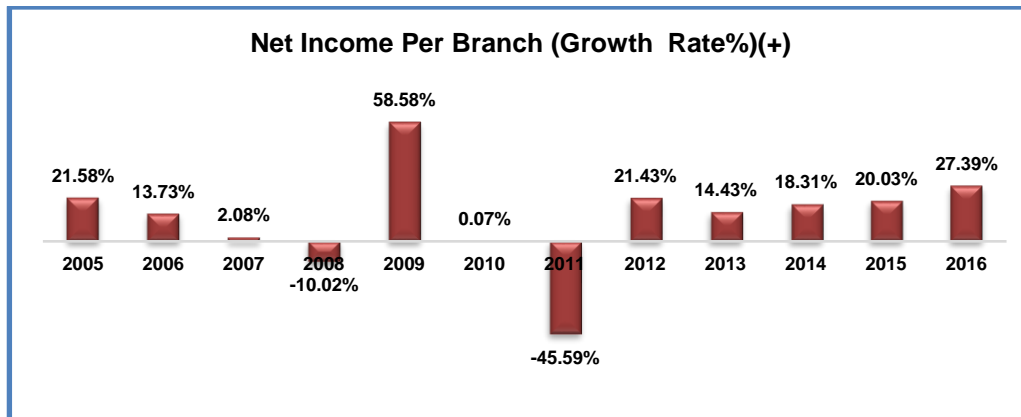


Figure 22. Net Income per Branch (Growth Rate) of Ziraat Bank during 2005-2016

Subsequently, “net income per employee (growth rate)” in 2009 was 56.78% and in 2011 it was -47.84%. (Figure 23.)

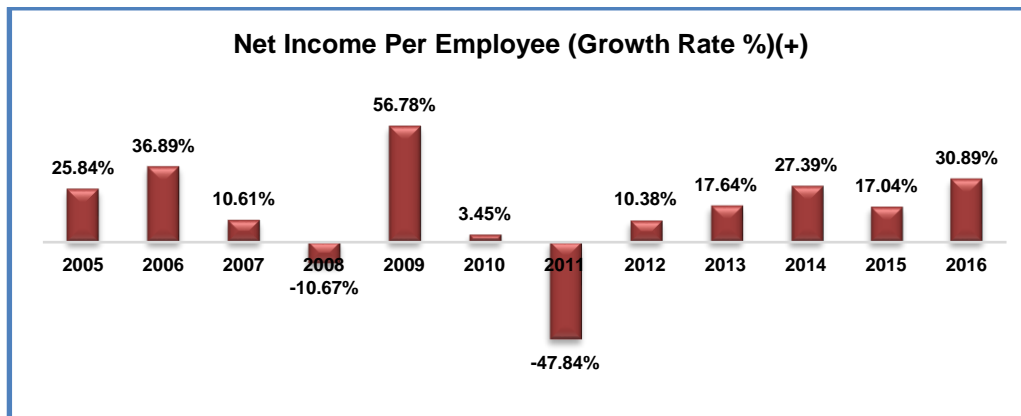


Figure 23. Net Income per Employee (Growth Rate) of Ziraat Bank during 2005-2016

“Non-interest expenses plus impairment expenses to total assets ratio” vary between 1.58% and 2.84%. (Figure 24.)

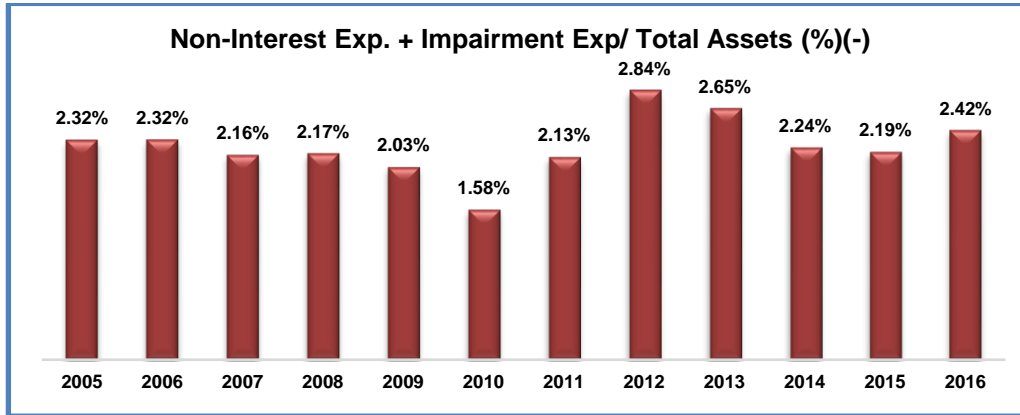


Figure 24. Non-Interest Exp. Plus Impairment Exp. to Total Assets of Ziraat Bank during 2005-2016

“Net interest income to net income ratio” was in top in 2012 (260.37%). It is worth mentioning that by net income here we mean net profit (Figure 25.)

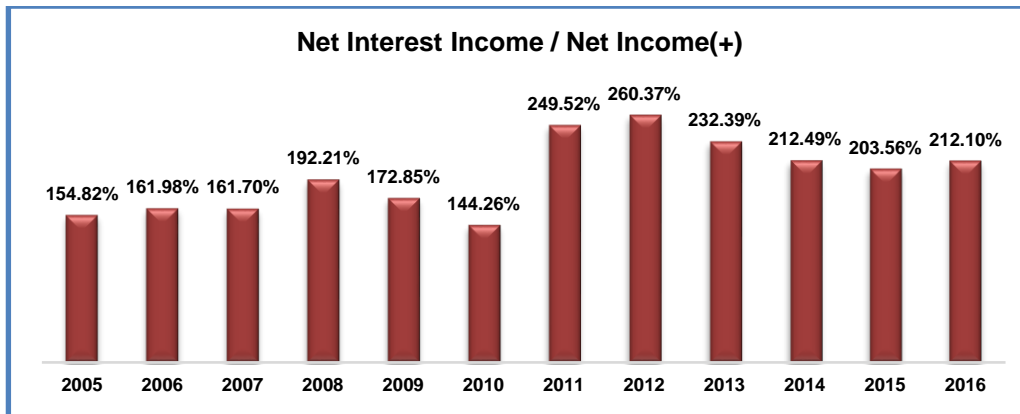


Figure 25. Net Interest Income to Net Income of Ziraat Bank during 2005-2016

“Net interest income to non-interest expenses ratio” was always positive. In the highest level it was 320.24%(2009) and in the lowest level it was 198.87%(2011).

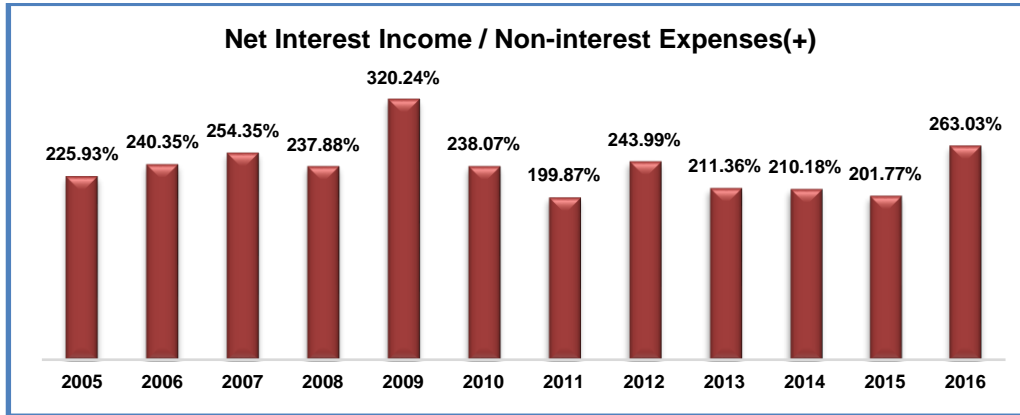


Figure 26. Net Interest Income to Non-Interest Expenses of Ziraat Bank during 2005-2016

Earning rate as another category for CAMELS shows a deep decline from 6.66% to 1.04% between 2010 and 2011. (Figure 27.)

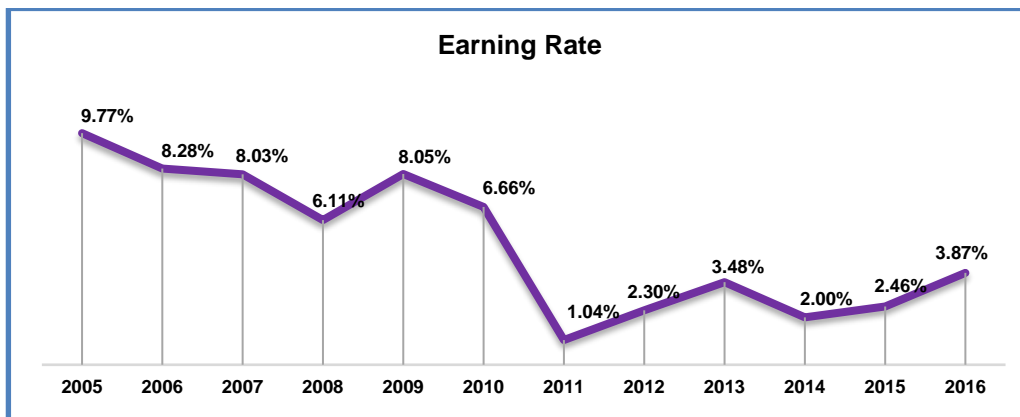


Figure 27. Earning Rate of Ziraat Bank during 2005-2016

Earning category ratios are explained in the following figures:

Net income to total assets ratio was between 2% and 3.87% from 2012 to 2016. (Figure 28.)

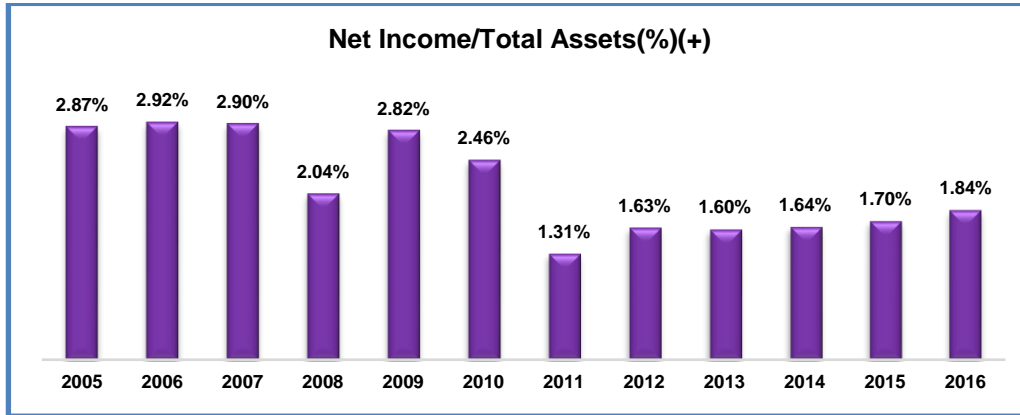


Figure 28. Net Income to Total Assets of Ziraat Bank during 2005-2016

“Net Income to equity ratio” fell from 27.59% (2010) to 15.94% (2011) and it continued with same level and ended to 17.13% in 2016. (Figure 29.)

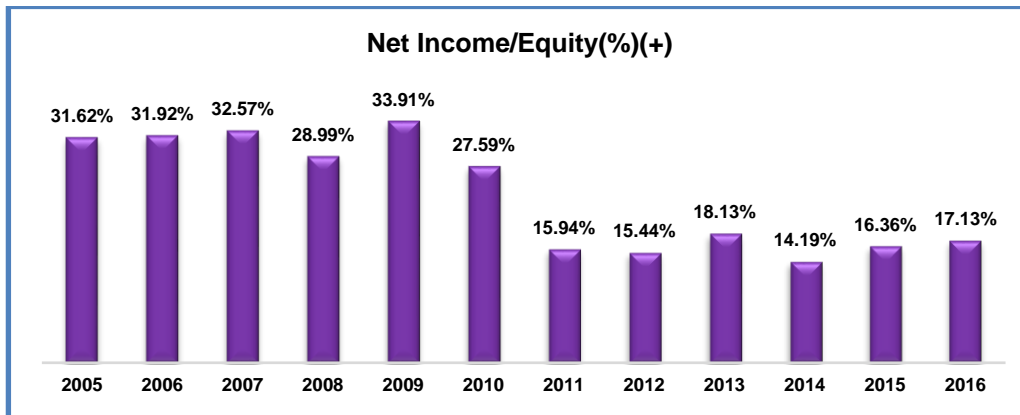


Figure 29. Net Income to Equity of Ziraat Bank during 2005-2016

“Net interest margin ratio” was between 3.63% and 5.33%. It was 4.50% in year 2016. (Figure 30.)

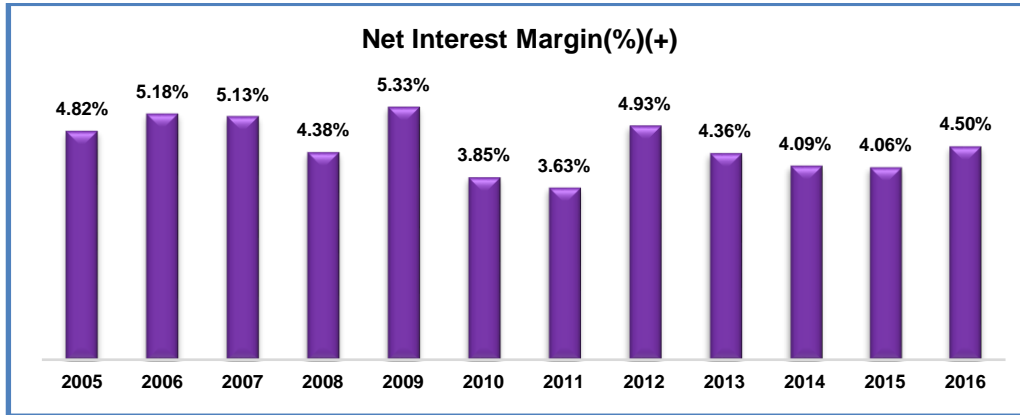


Figure 30. Net Interest Margin of Ziraat Bank during 2005-2016

The ratio in below shows non-interest expenses was always less than 50% so net interest income plus non-interest income could cover up for non-interest expenses. (Figure 31.)

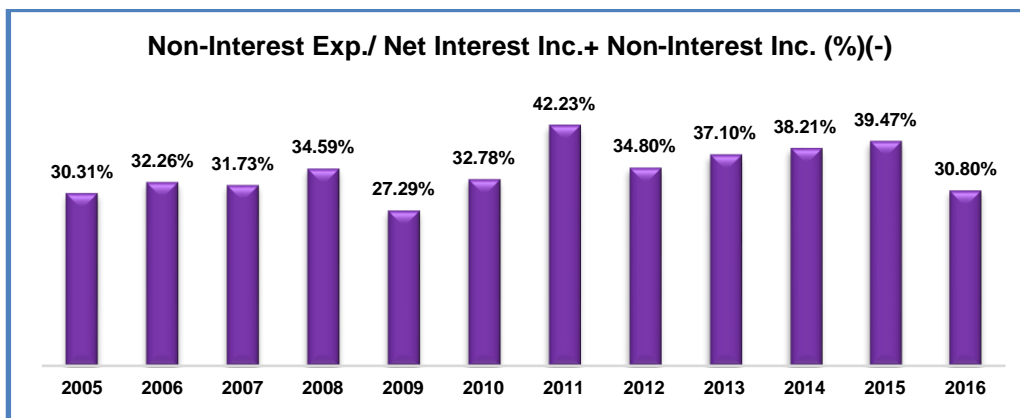


Figure 31. Non-Interest Exp. to Net Interest Inc. plus Non-Interest Inc. of Ziraat Bank during 2005-2016

This ratio compare to the abovementioned ratio is lower for different years that indicates non-interest income was less than non-interest expenses. (Figure 32.)

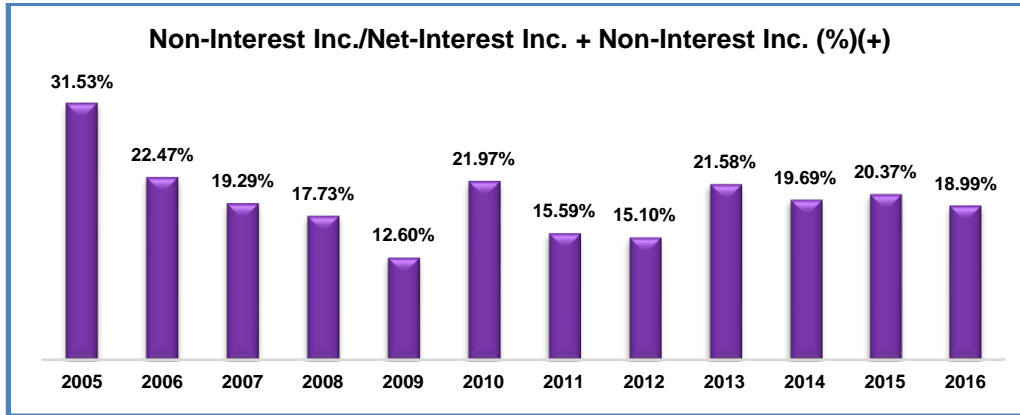


Figure 32. Non-Interest Inc. to Net-Interest Inc. plus Non-Interest Inc. of Ziraat Bank during 2005-2016

Liquidity rate for CAMELS model for Ziraat Bank was at the highest level in 2005 (90%) and at lowest level in 2016 (26%) (Figure 33.)

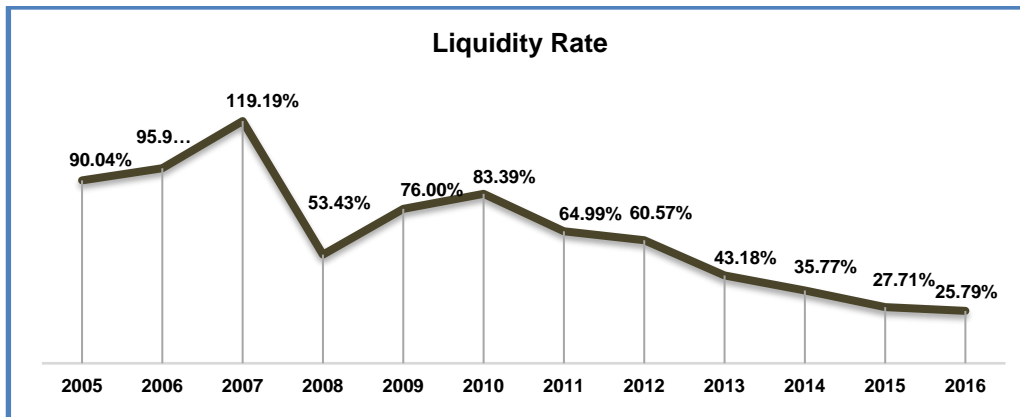


Figure 33. Liquidity Rate of Ziraat Bank during 2005-2016

“Liquid assets to total assets ratio” was 21.22% in 2008 in the middle of global crisis which goes up in succeeding years and end up with 28.43% in 2016 (Figure 34.)

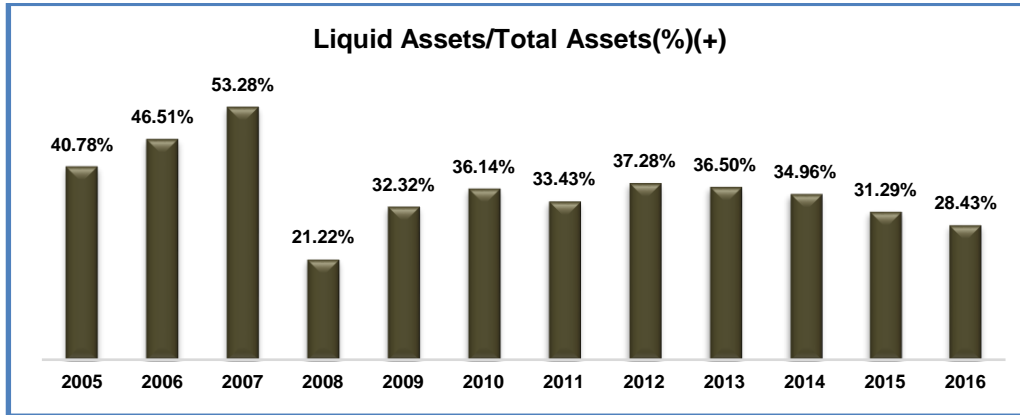


Figure 34. Liquid Assets to Total Assets of Ziraat Bank during 2005-2016

The ratio in below shows that except for last two years, liquid assets could cover total foreign liabilities. (Figure 35.)

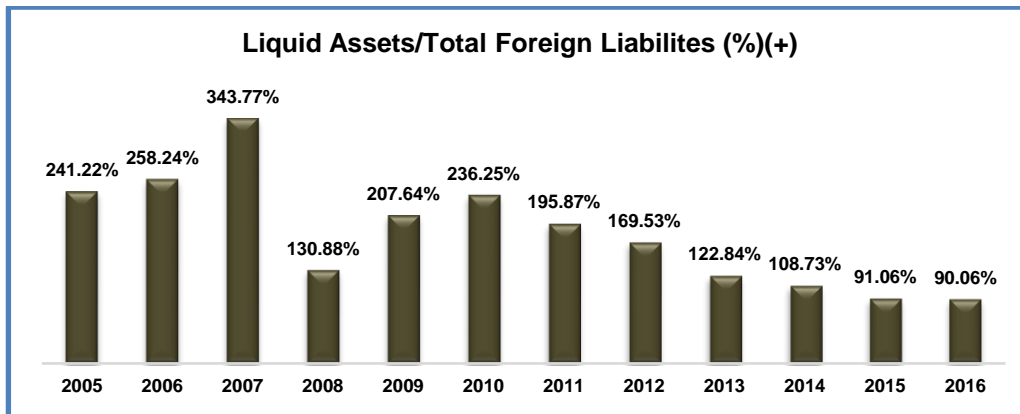


Figure 35. Liquid Assets to Total Foreign Assets of Ziraat Bank during 2005-2016

“Gross loans to deposit ratio” shows a gradual increase which was at highest level in 2016 (112.28%). (Figure 36.)

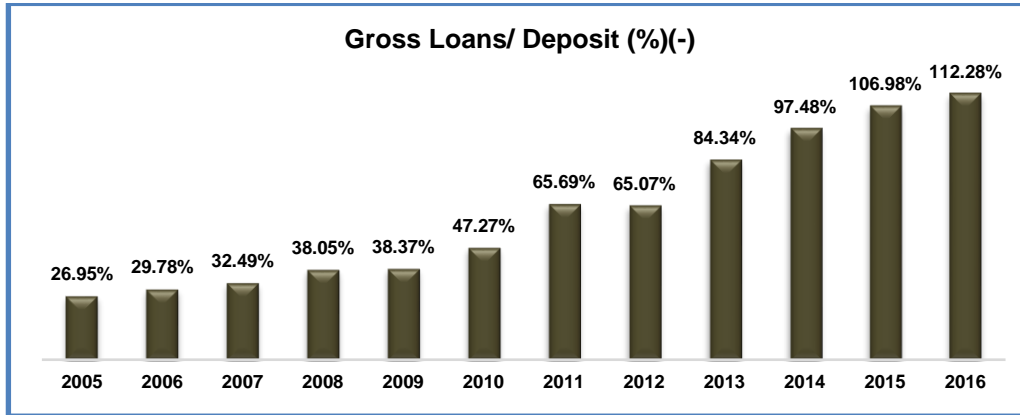


Figure 36. Gross Loans to Deposit of Ziraat Bank during 2005-2016

“Customer deposits to total funding ratio” was 67.82% and 68.82% in 2015 and 2016 respectively. (Figure 37.)

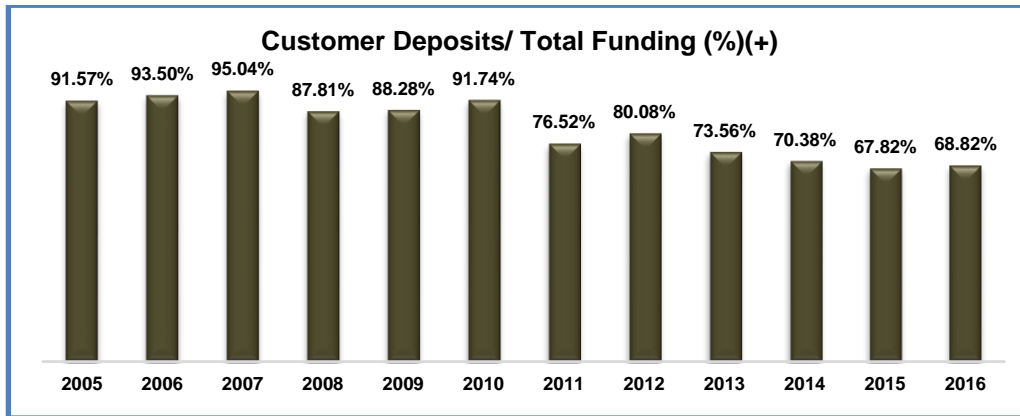


Figure 37. Customer Deposits to Total Funding of Ziraat Bank during 2005-2016

Sensitivity rate as the last category for CAMELS gradually got improved during these 12 years and stands at the highest level in 2016 (26%). (Figure 38.)

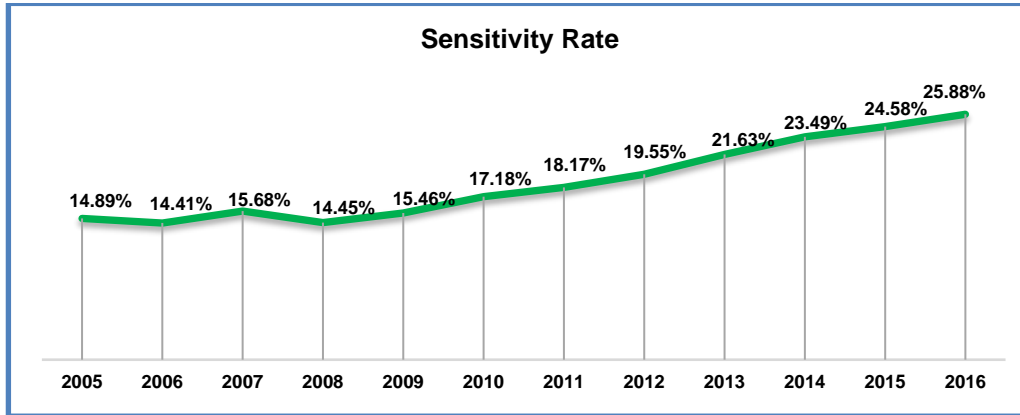


Figure 38. Sensitivity Rate of Ziraat Bank during 2005-2016

“Securities portfolio to total assets ratio” was at lowest level with 20.04% in 2016 which is better off for Sensitivity rate since it is negatively related. (Figure 39.)

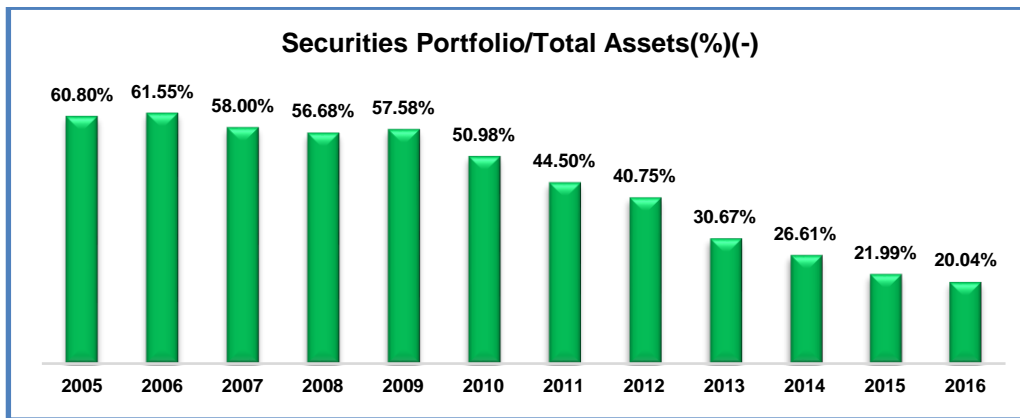


Figure 39. Securities Portfolio to Total Assets of Ziraat Bank during 2005-2016

The graph below shows that “Bearing Assets over Costly Liabilities ratio” was between 97.81% and 104.52%.

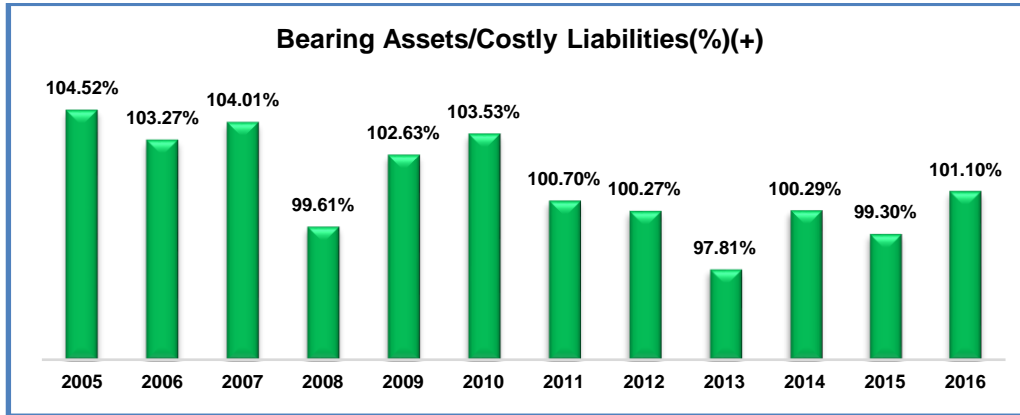


Figure 40. Bearing Assets to Costly Liabilities of Ziraat Bank during 2005-2016

“Net interest income over total assets ratio” was almost stable between 3.26% and 4.87%. (Figure 41.)

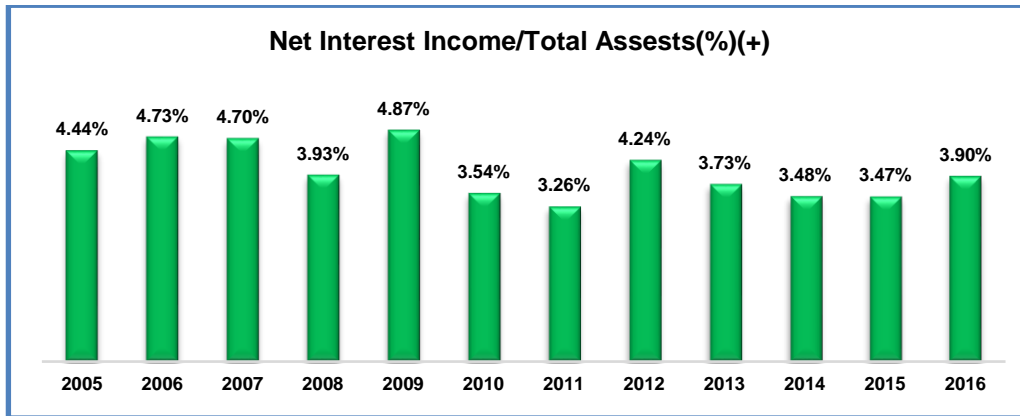


Figure 41. Net Interest Income to Total Assets of Ziraat Bank during 2005-2016

6.2.3 CAMELS rating for Ziraat Bank

Based on the methodology which was explained in Chapter 5, we calculated the CAMELS rating for Ziraat Bank during 12 years and the trend is as shown in the

following figure. After the following figure we have illustrated a table which includes all the details and the related numbers for just one year namely 2016:

Overall rate for all categories of CAMELS comes up with one figure. (Figure 42.)

But for better understanding indexation method also has been used (Figure 43.)

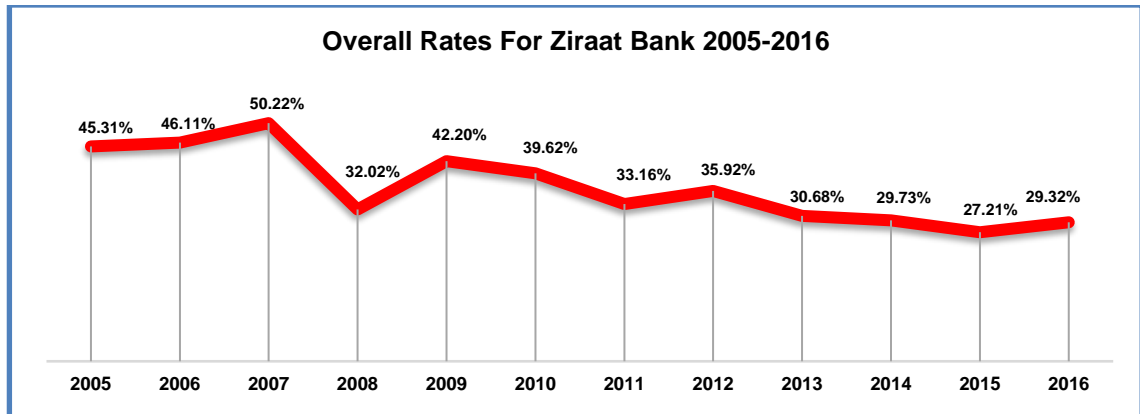


Figure 42. CAMELS Overall Rates for Ziraat Bank during 2005-2016

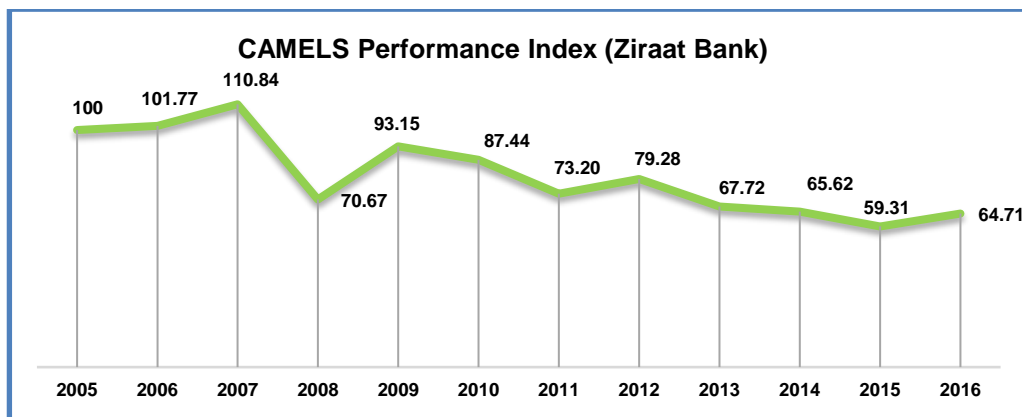


Figure 43. CAMELS Performance Index for Ziraat Bank during 2005-2016

When CAMELS has been described according to indexation therefore smallest changes of the index in the course of time will be fully understandable and absorbable while decimal figures by themselves cannot demonstrate properly small changes because

they usually have to be round up. Figure 43. considers 2005 as base year with an index of 100 and the other rates can be easily compared to this initial value.

Ziraat Bank as the table below shows, has the best score for Management category with 91% and the least score was for Earnings with a rate of 4% in 2016. It has overall score of 29% for the same year.

Short Name	No.	Weight	Ratios	Relationship	2016
C					
		<i>Overall Weight</i>	<i>Capital</i>		
			0,20		
CAR	1	0,40	Capital Adequacy Ratio%(+)	+	15%
ETL	2	0,20	Equity/ Total Liabilities %(+)	+	12%
ENL	3	0,20	Equity/ Net Loans %(+)	+	16%
ETA	4	0,20	Equity/Total Assets%(+)	+	11%
<i>Capital Rate</i>					14%
A					
		<i>Overall Weight</i>	<i>Asset</i>		
			0,20		
LTA	5	0,20	Loans/Total Assets%(+)	+	65%
FATA	6	0,20	Fixed Assets/Total Assets%(-)	-	2%
NPLGL	7	0,30	NPL / Gross Loans %(-)	-	2%
SPRNPL	8	0,15	Specific Provision Reserve/ NPL %(+)	+	94%
BATA	9	0,15	Bearing Assets/Total Assets%(+)	+	87%
<i>Asset Rate</i>					39%
M					
		<i>Overall Weight</i>	<i>Management</i>		
			0,10		
CSDD	10	0,15	Current + Savings Deposits/ Total Deposits %(+)	+	58%
NIPB	11	0,20	Net Income Per Branch (Growth Rate%(+)	+	27%
NIPE	12	0,20	Net Income Per Employee (Growth Rate%(+)	+	31%
NIETETA	13	0,15	Non-Interest Exp. + Impairment Exp/ Total Assets %(-)	-	2%
NIINI	14	0,15	Net Interest Income / Net Income(+)	+	212%
NINIE	15	0,15	Net Interest Income / Non-interest Expenses(+)	+	263%
<i>Management Rate</i>					91%
E					
		<i>Overall Weight</i>	<i>Earnings</i>		
			0,15		
ROA	16	0,25	Net Income/Total Assets%(+)	+	2%
ROE	17	0,25	Net Income/Equity%(+)	+	17%
NIM	18	0,20	Net Interest Margin%(+)	+	5%
NIENIINI	19	0,15	Non-Interest Exp. / Net Interest Inc.+ Non-Interest Inc. %(-)	-	31%
NIINIINI	20	0,15	Non-Interest Inc./Net-Interest Inc. + Non-Interest Inc. %(+)	+	19%
<i>Earning Rate</i>					4%
L					
		<i>Overall Weight</i>	<i>Liquidity</i>		
			0,25		
LATA	21	0,30	Liquid Assets/Total Assets%(+)	+	28%
LATFL	22	0,25	Liquid Assets/Total Foreign Liabilities %(+)	+	90%
GLD	23	0,20	Gross Loans/ Deposit %(-)	-	112%
CDTF	24	0,25	Customer Deposits/ Total Funding %(+)	+	69%
<i>Liquidity Rate</i>					26%
S					
		<i>Overall Weight</i>	<i>Sensitivity</i>		
			0,10		
SPTA	25	0,30	Securities Portfolio/Total Assets%(-)	-	20%
BACL	26	0,30	Bearing Assets/Costly Liabilities%(+)	+	101%
NICTA	27	0,40	Net Interest Income/Total Assets%(+)	+	4%
<i>Sensitivity Rate</i>					26%
<i>Overall Rates For Ziraat Bank 2005-2016</i>					29%

Table 11. CAMELS Rating for Ziraat Bank 2016 (Numbers are rounded)

6.3. HALKBANK

6.3.1. Brief History

For the purposes of supplying tradesmen and artisans on favorable terms in order to promote economic development, Halkbank was established under Statute 2284 in 1933 as a credit union by small cooperatives and began its operations in 1938. Between the years 1938-1950 Halkbank provided its loans through public funds named as “People’s Fund”. Halkbank was authorized to directly open branches and grant loans to customers in 1950. Despite having been established by local cooperatives, the structure was changed in 1963, whereupon it became a state owned bank, where original shareholders were unable to contribute capital increases.

Throughout 1990s, Halkbank’s assets grew rapidly through the absorption of certain failed smaller sized state banks, including TÖBANK, Sümerbank and Etibank. In 2001, 96 branches of Emlakbank, another state bank which was then in the process of liquidation, were transferred to Halkbank.

One of the major turning points for Halkbank is the acquisition of Pamukbank in 2004. The merger with Pamukbank significantly strengthened the Bank’s retail banking capabilities, provided it with a more technologically advanced IT system (Mistral) which was deployed throughout the Bank’s networks and created other synergies from the combination and rationalization of the branch, operations and employee bases.

After the Pamukbank merger, Halkbank underwent a serious restructuring process which was initiated by the Statute 4603 relating to public banks with the aim of preparing them for privatization. In line with this restructuring process, Halkbank’s organizational structure was completely made over and a customer-focused approach was adopted in the Bank’s activities.

Although initially the Bank had been planned to be privatized through a block sale under the resolution of the Privatization High Council in 2006, the government surprisingly cancelled the initial plan and decided to privatize 25% of the shares through an IPO in early 2007. As of 10 May 2007, 24.98% of the shares of the Bank

have been sold through a very successful public offering and the shares have been listed in Istanbul Stock Exchange. Halkbank’s IPO represents the largest one that ever occurred in the Turkish capital markets. (Official Website of Halkbank) (The Banks Association of Turkey)

6.3.2. Trend Analysis of main Ratios under CAMELS model for Halkbank during 12 years

In this section each CAMELS model’s ratio has been illustrated. Trend of each ratio from 2005 to 2016 has been showed. Capital rate for Halkbank from 2013 to 2016 was almost stable between 13.17% and 11.80%. (Figure 44.)

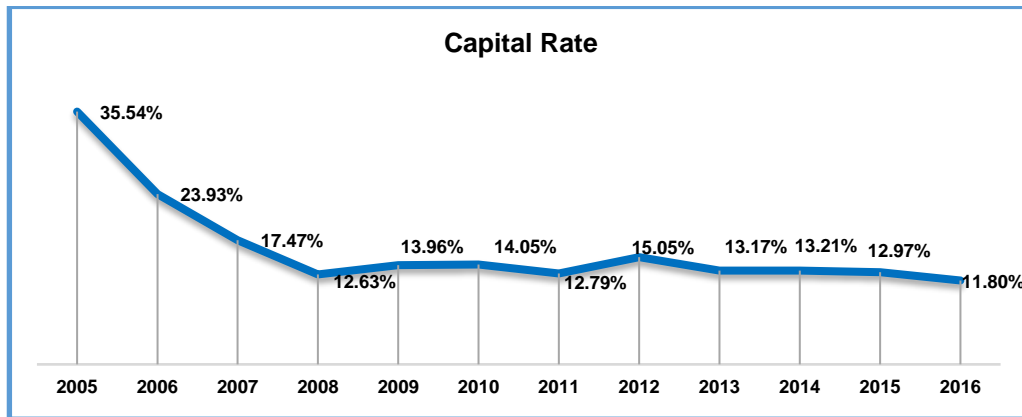


Figure 44. Capital for Halkbank during 2005-2016

“Capital adequacy ratio” dropped from 49.64% to 13.08% during last 12 years.

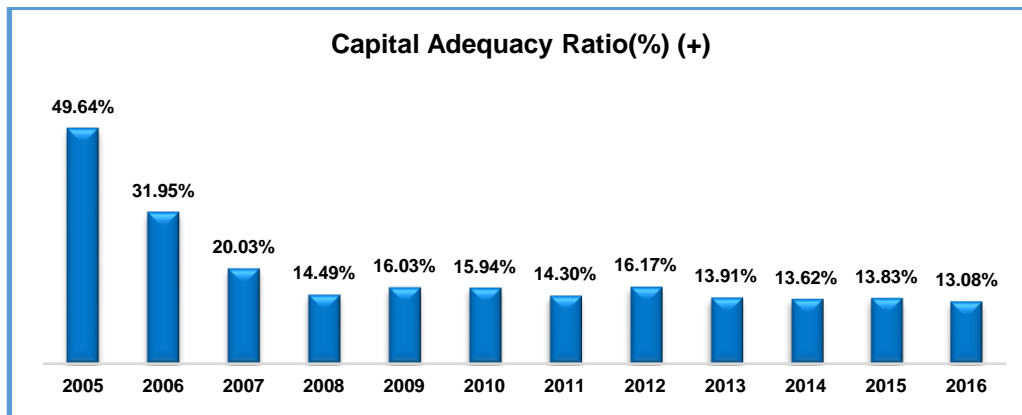


Figure 45. Capital Adequacy Ratio for Halkbank during 2005-2016

“Equity to total liabilities ratio” was between 14.01% and 9.16%. (Figure 46.)

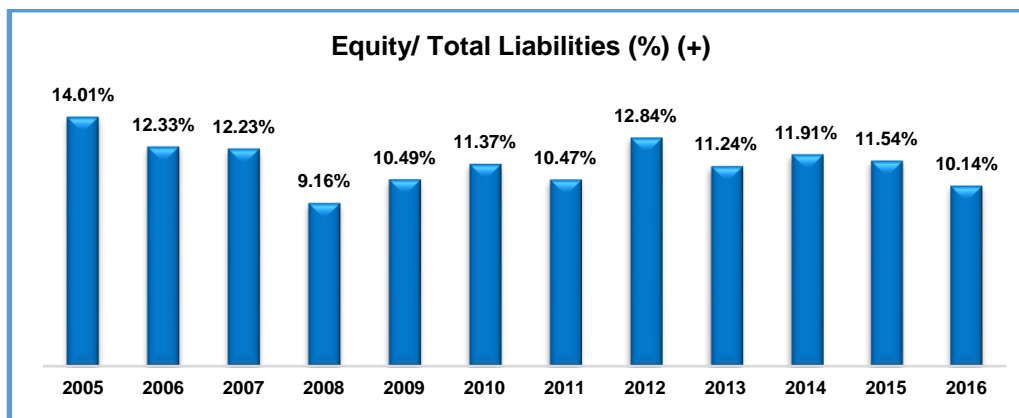


Figure 46. Equity to Total Liabilities for Halkbank during 2005-2016

“Equity to net loans ratio” decreased significantly from 2005 to 2016 from 52.12% to 13.46%.

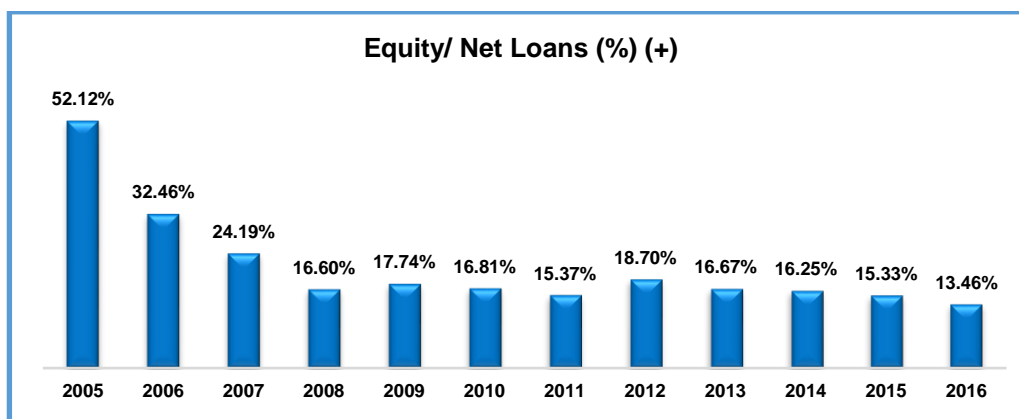


Figure 47. Equity to net loans for Halkbank during 2005-2016

“Equity to total assets ratio” was almost in range of “Equity to Total Liabilities ratio”. It was between 12.29% and 8.39%.

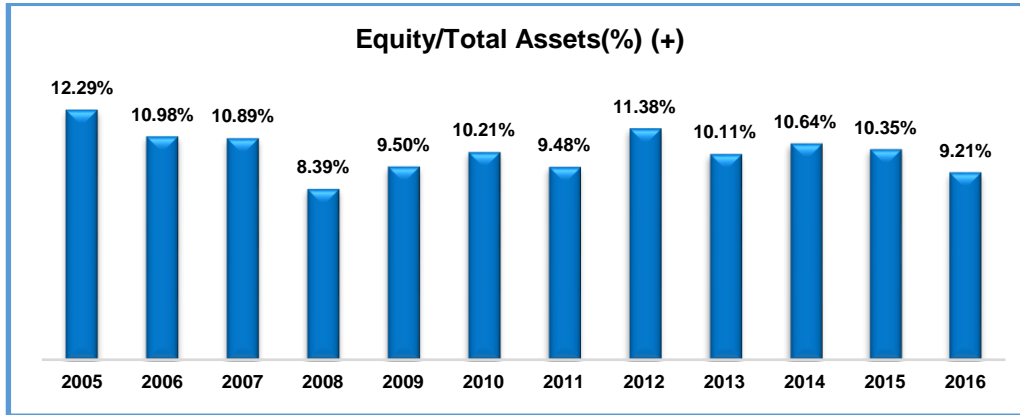


Figure 48. Equity to Total Assets for Halkbank during 2005-2016

The Asset category for Halkbank shows a gradual rise in the trend. In 2005 it was 27.98% and in 2016 it was 36.83%.

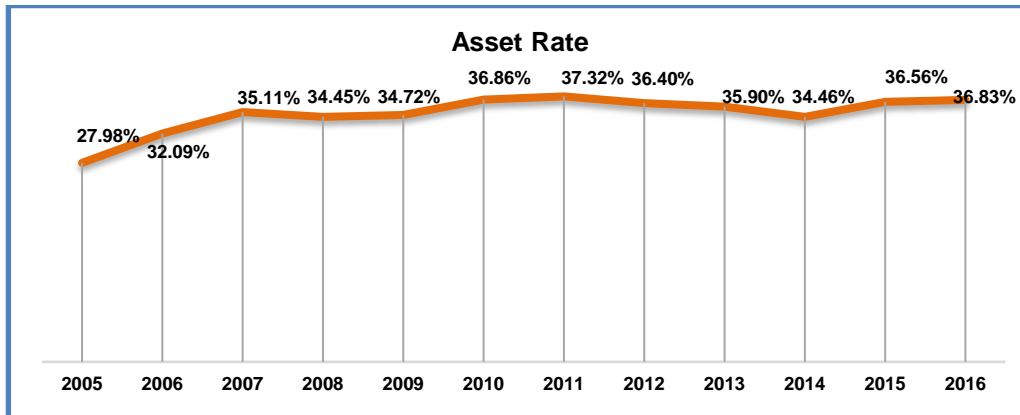


Figure 49. Asset rate for Halkbank during 2005-2016

“Loans to Total Assets ratio” shows its highest level in 2015 and 2016 with 68.42%.

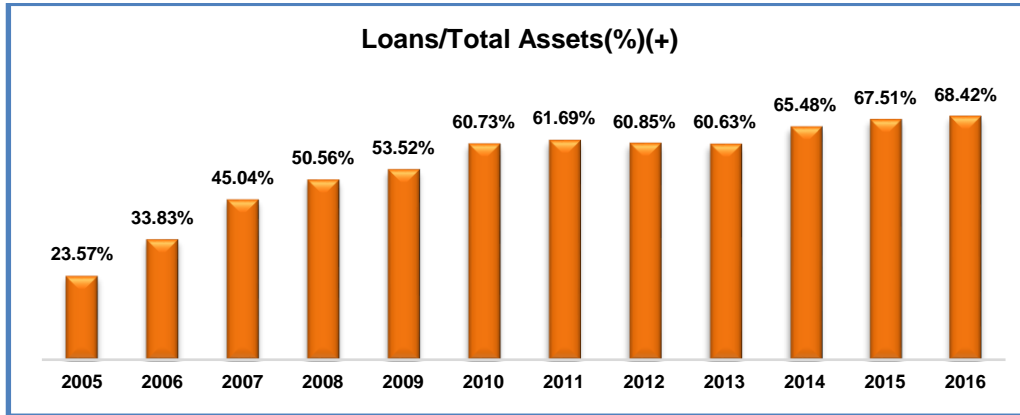


Figure 50. Loans to Total Assets for Halkbank during 2005-2016

“Fixed Assets to Total Assets ratio” is between range of 0.76% and 2.61% during 2005 and 2016.

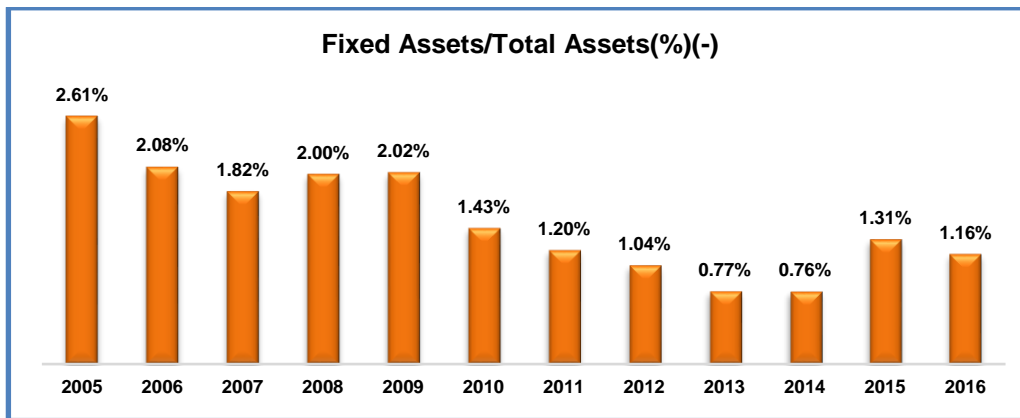


Figure 51. Fixed Assets to Total Assets for Halkbank during 2005-2016

“NPLs to Gross Loans ratio” from 2005 to 2006 dropped by 7.44% from 15.96% to 8.52%.

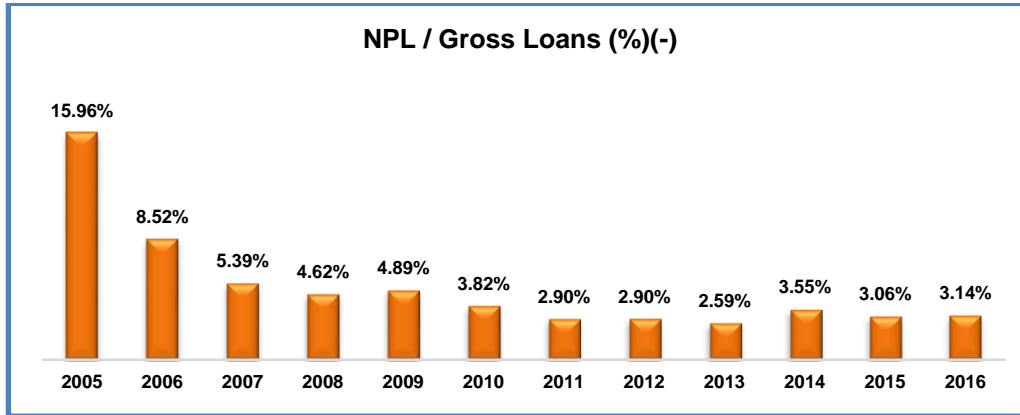


Figure 52. NPL to Gross Loans for Halbank during 2005-2016

“Specific provision reserve over NPLs ratio” from 2005 (98.36%) to 2007 (98.66%) was stable. In 2008 it dropped to 82.94% from 98.66% and it continued with a stable range up to 2013(80.63%). In 2014 it fell to 65.25%. For 2015 and 2016 it was 76.20% and 77.12% respectively.

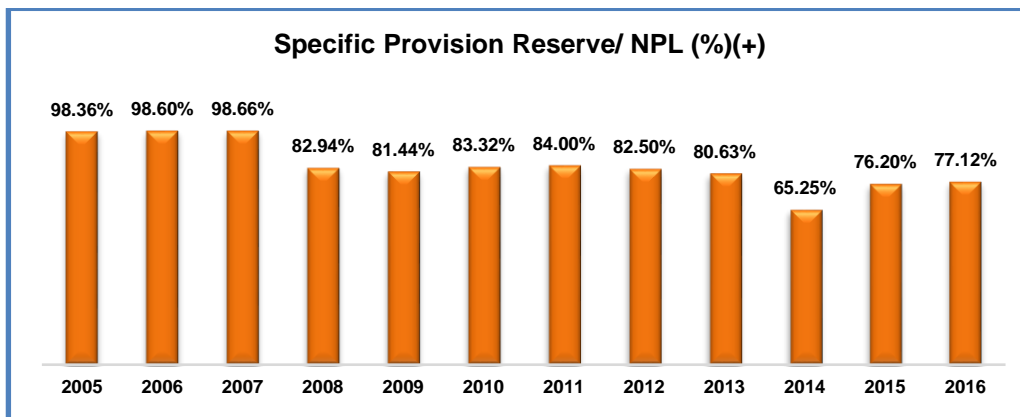


Figure 53. Specific provision reserve to NPL for Halkbank during 2005-2016

“Bearing Assets to Total Assets ratio” dropped from 89.95% to 86.23% in year 2011 to year 2012 and it stopped at 85.01%.

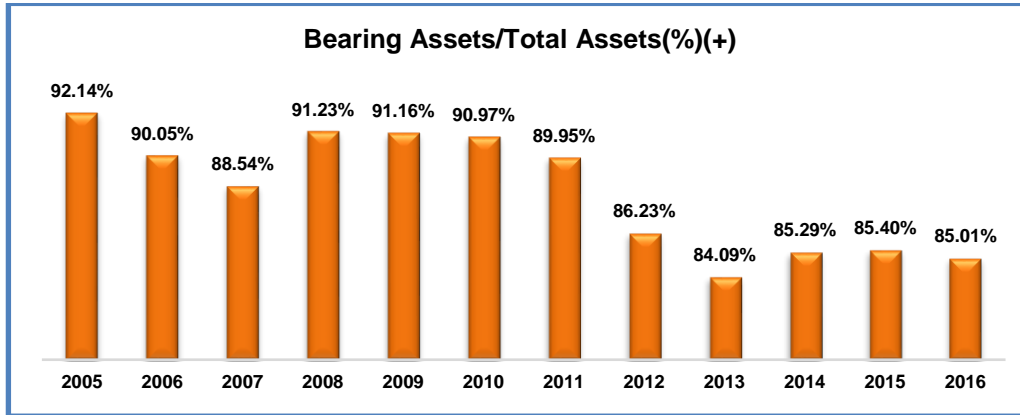


Figure 54. Bearing Assets to Total Assets for Halkbank during 2005-2016

The Management rate in year 2009 was at the highest level (95.26%). In year 2014 it was at lowest level (56.74%).

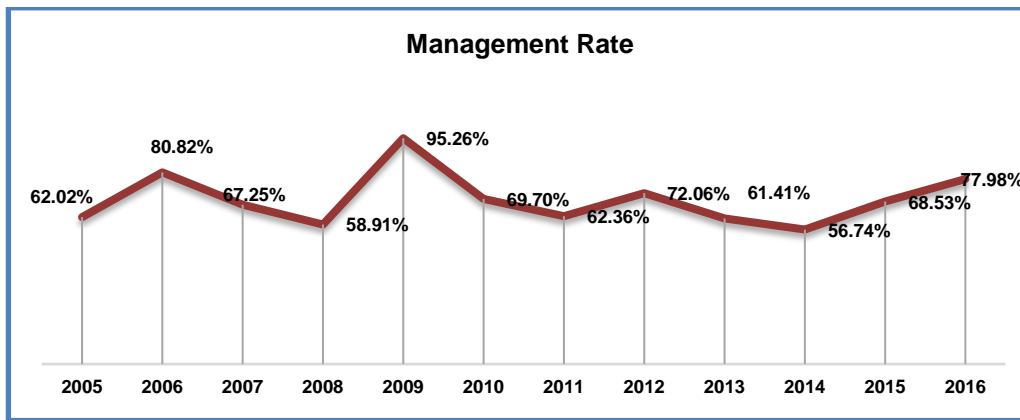


Figure 55. Management rate for Halkbank during 2005-2016

“Current Deposits and Saving Deposits to Total Deposits ratio” was in the highest level in 2005 (60.80%) and its lowest level was 16.79% in 2007.

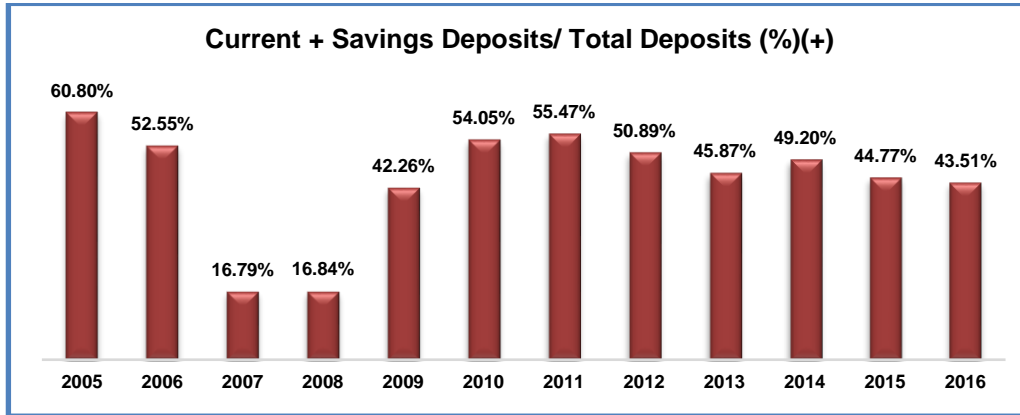


Figure 56. Current plus Savings Deposits for Halkbank during 2005-2016

In the graph below growth rate of Net Income per branch for Halkbank was illustrated. In 2014 it was the lowest level of this ratio despite year 2006 which was the highest level with 54.85%.

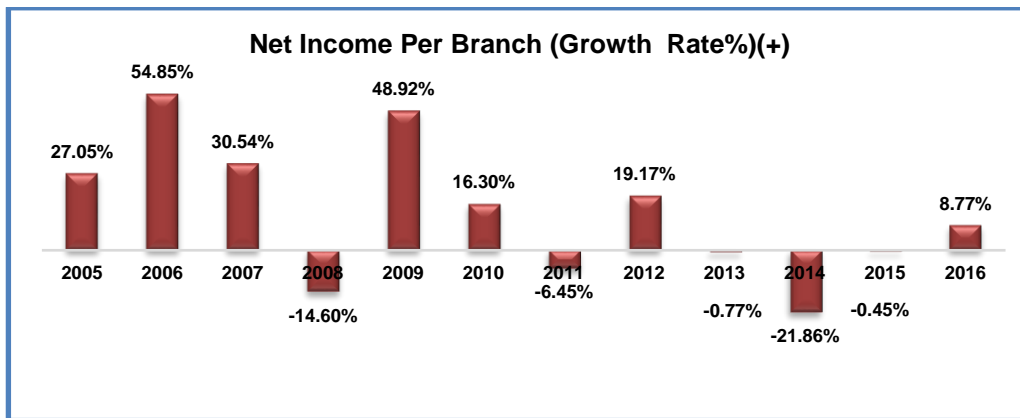


Figure 57. Net Income per Branch for Halkbank during 2005-2016

Growth rate for net income per capita was in the highest level at 59.69% in 2009 and the lowest level stands at -31.47% in 2014.

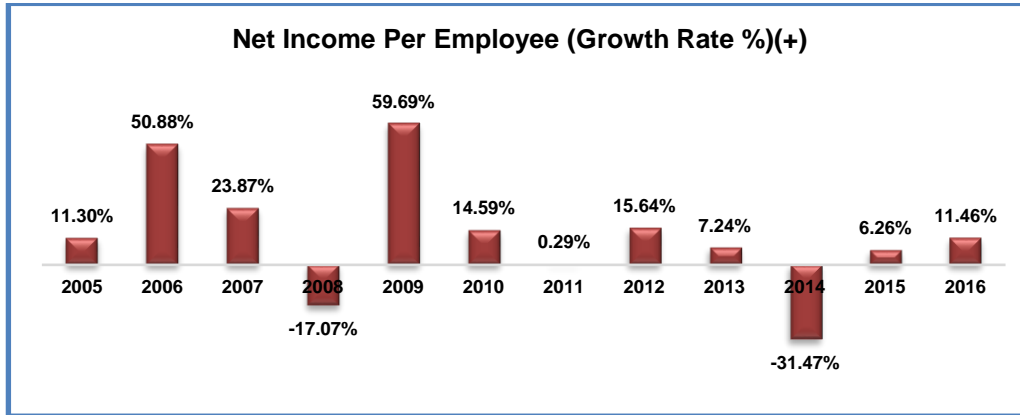


Figure 58. Net Income per Employee for Halkbank during 2005-2016

“Non-Interest expenses plus Impairment Expenses over Total Assets ratio” during twelve years was around 3%.

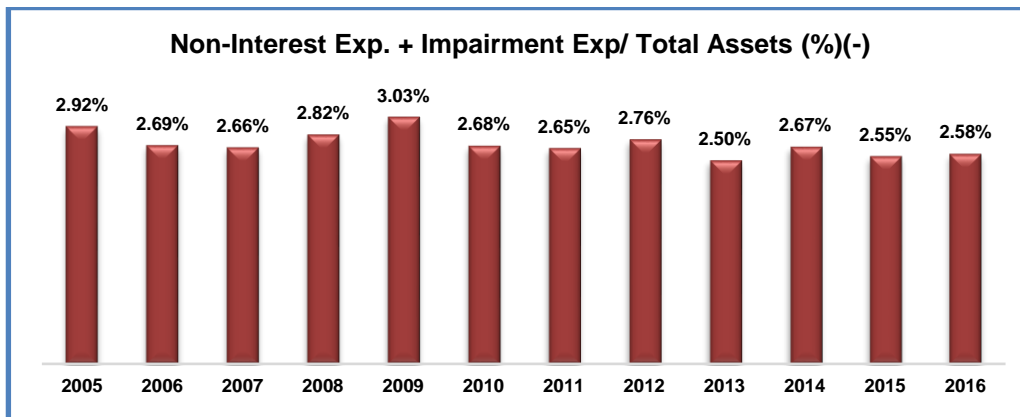


Figure 59. Non-Interest Expenses plus Impairment Expenses to Total Assets for Halkbank during 2005-2016

“Net Interest Income to Net Income ratio” was in the highest level in 2016 (271.93%). The lowest level was 154.92% in year 2007.

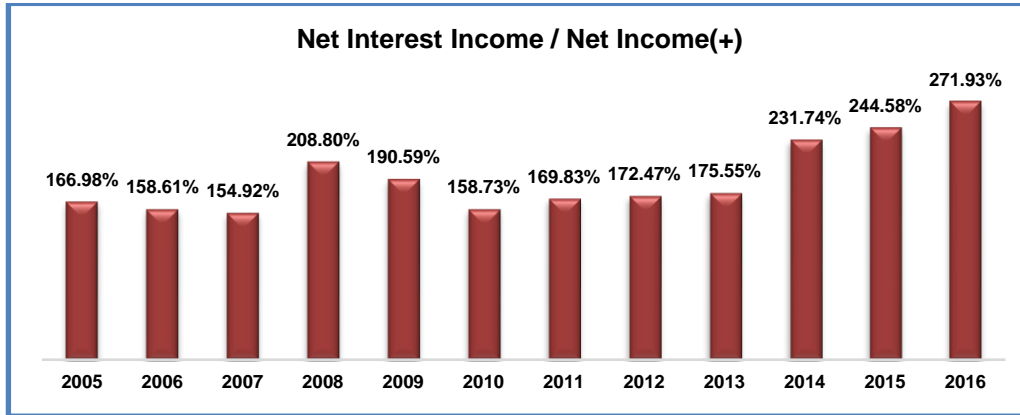


Figure 60. Net Interest Income to Net Income for Halkbank during 2005-2016

“Net interest income to non-interest expenses ratio” was in the highest level at 260.44% in 2009 and in 2005 was at the lowest level which was 137.51%.

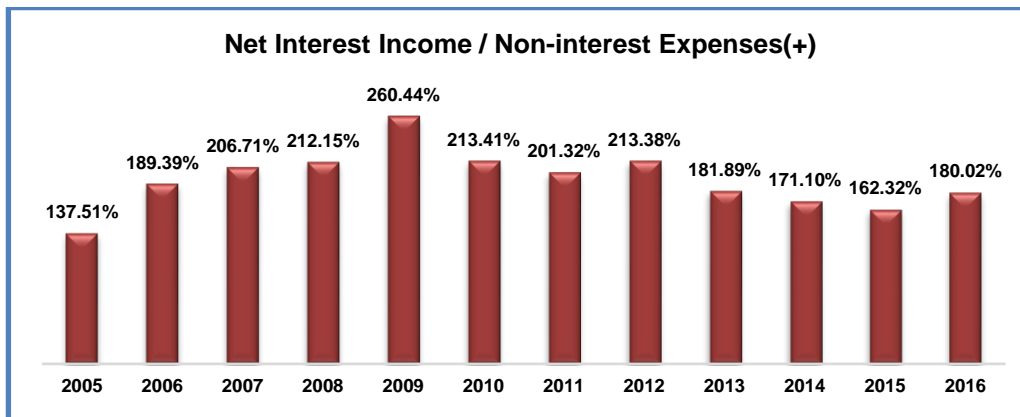


Figure 61. Net Interest Income to Non Interest Expenses for Halkbank during 2005-2016

The Earnings Rate as a category of CAMELS model in Figure62. shows the highest level at 7.14% in 2010 and in 2015 it was 1.04% which was the lowest level.

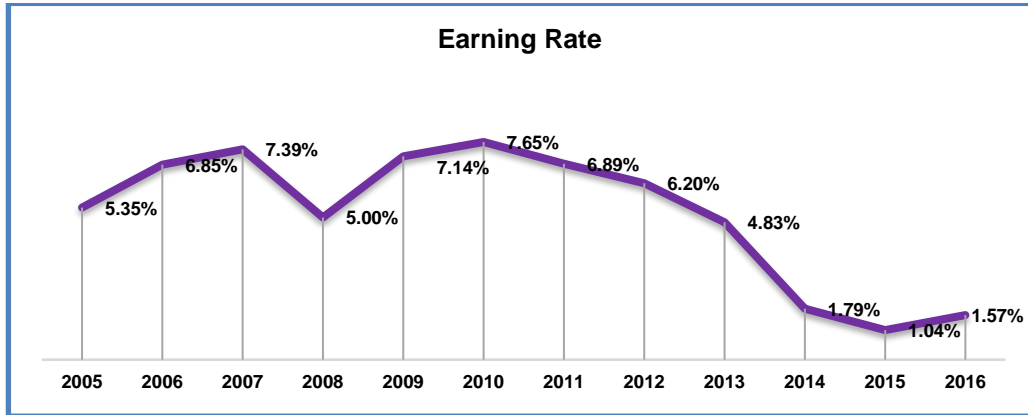


Figure 62. Earning rate for Halkbank during 2005-2016

“Net income to total assets ratio” was between 1% and 3% during the twelve years.

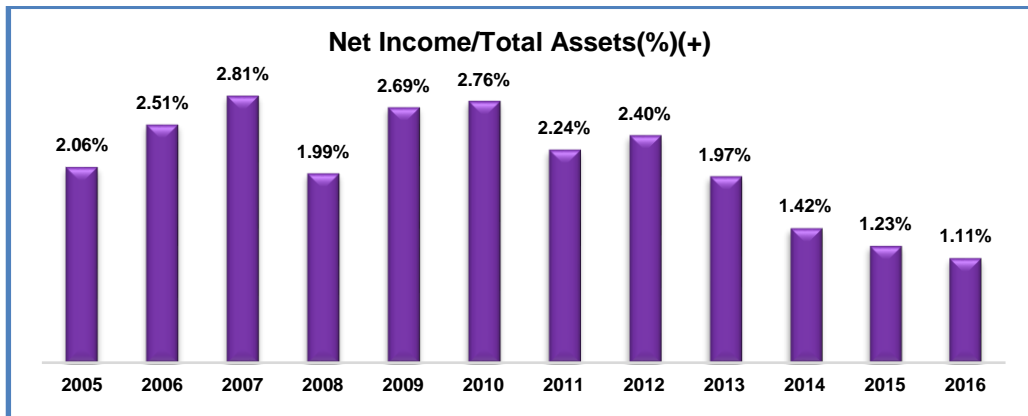


Figure 63. Net Income to Total Assets for Halkbank During 2005-2016

“Net income over equity ratio” was in the highest level in 2009 (28.32%) and it was in the lowest level in 2016 with rate of 12%.

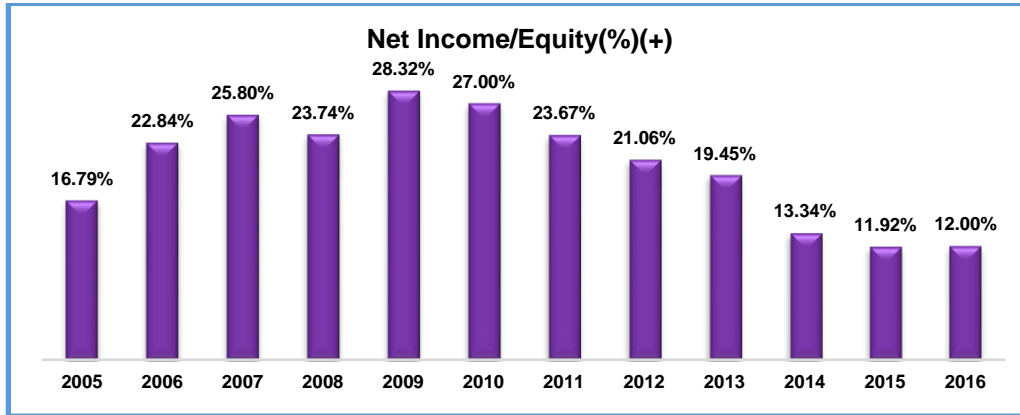


Figure 64. Net Income to Equity for Halkbank during 2005-2016

NIM ratio as the graph below shows it was in the best circumstances in 2009 (5.62%) and for the rest of the years it was between between 3.53% and 4.92%.

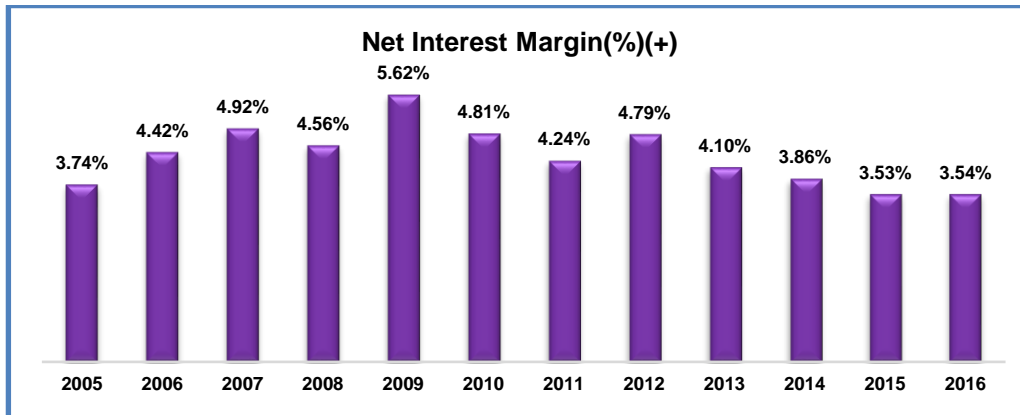


Figure 65. Net Interest Margin for Halkbank during 2005-2016

“Non-interest expenses over net interest income plus non-interest income ratio” was between 30.95% and 45.63%.

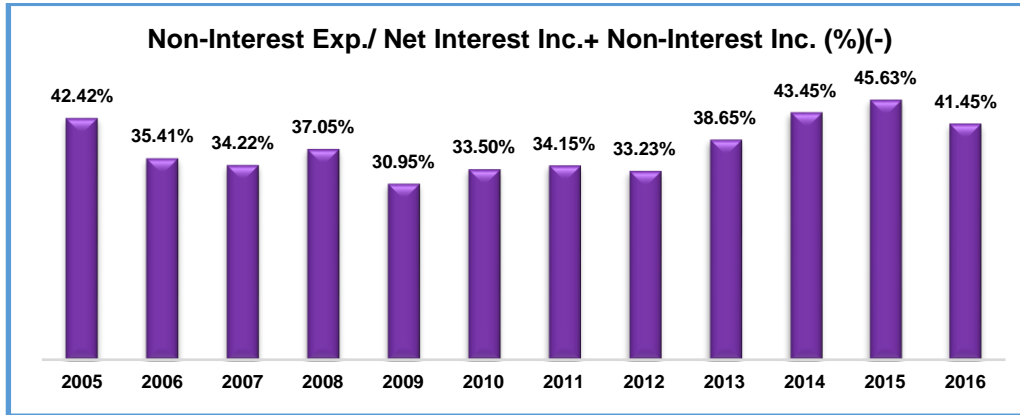


Figure 66. Non-Interest Exp. to Net Interest Inc. plus Non-Interest Inc. for Halkbank during 2005-2016

“Non-interest income to Net-interest income plus Non-interest income ratio” was in range of 19.40% and 41.66%.

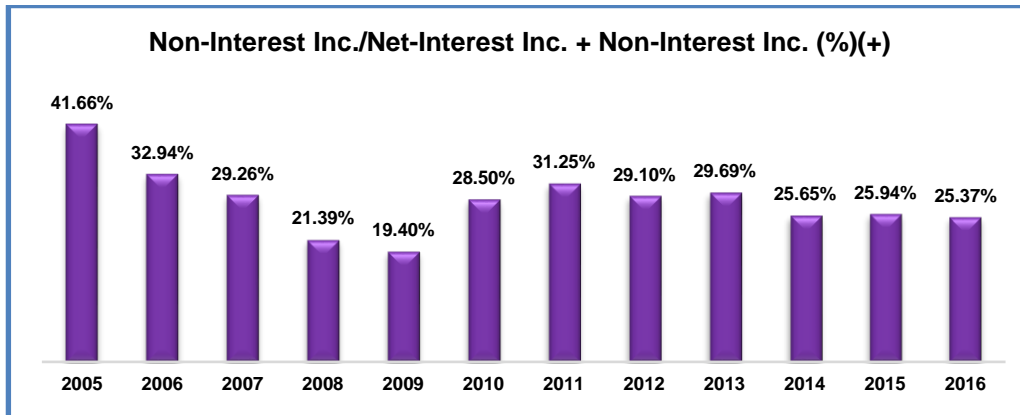


Figure 67. Non-Interest Inc. to Net-Interest Inc. plus Non-Interest Inc. for Halkbank during 2005-2016

Liquidity rate as the fourth category of CAMELS model in the recent year of our study it dropped from 19.11% in 2013 to 6.48% in 2016.

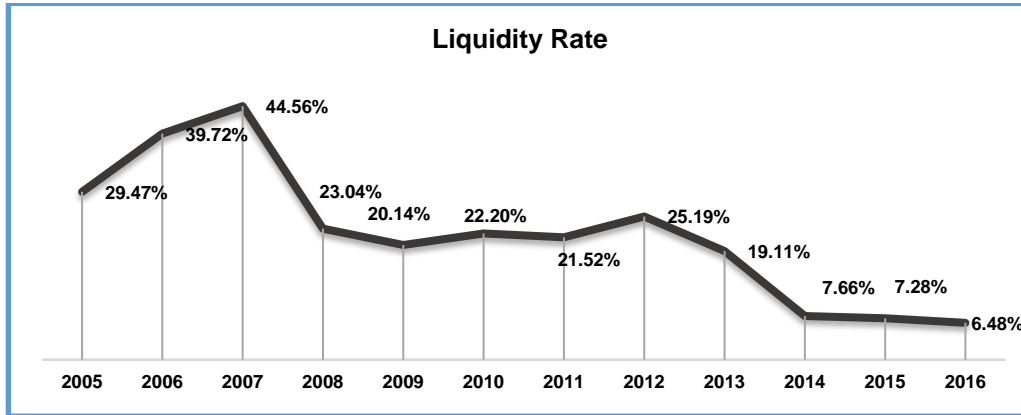


Figure 68. Liquidity Rate for for Halkbank during 2005-2016

“Liquid assets to total assets ratio” was in the highest level in 2007 (32.58%) and its lowest level was 14.62% in 2005.

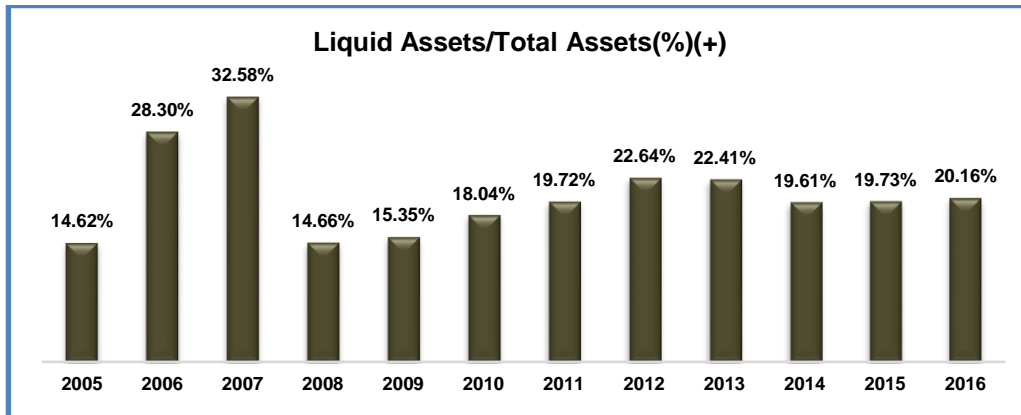


Figure 69. Liquid Assets to Total Assets for Halkbank during 2005-2016

“Liquid assets to total foreign liabilities ratio” in 2007 was at the highest level (104.50%) and its lowest level was 35.60% in 2015.

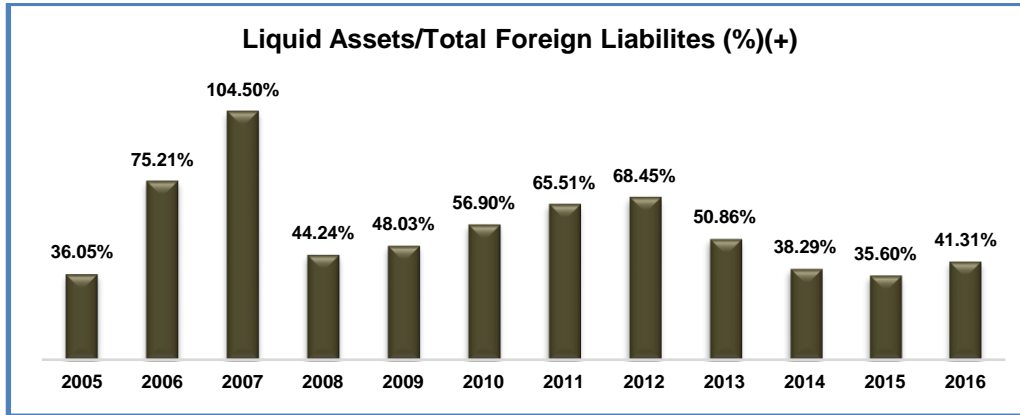


Figure 70. Liquid Assets to Total Foreign Liabilities for Halkbank during 2005-2016

“Gross loans to deposit ratio” has gradually increased from 2005 (35.79%) to year 2016 (128.30%)

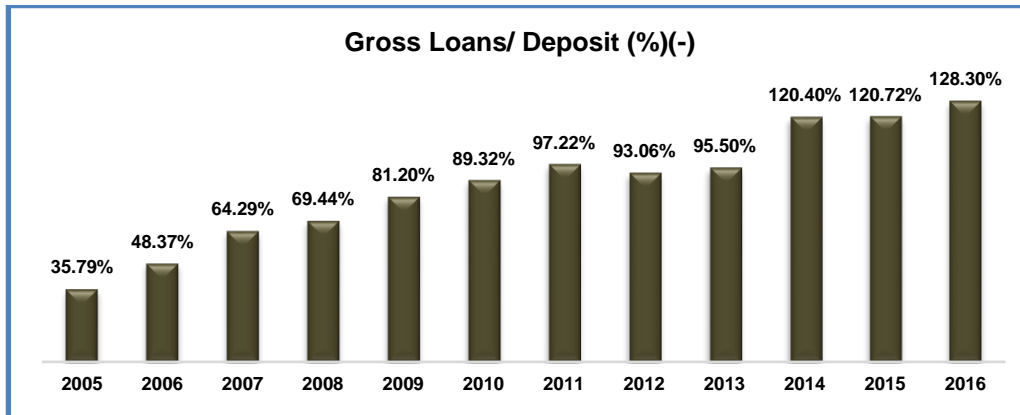


Figure 71. Gross Loans to Deposit for Halkbank during 2005-2016

“Customer deposits to total funding ratio” has dropped gradually from year 2005(92.93%) to year 2016 (63.07%).

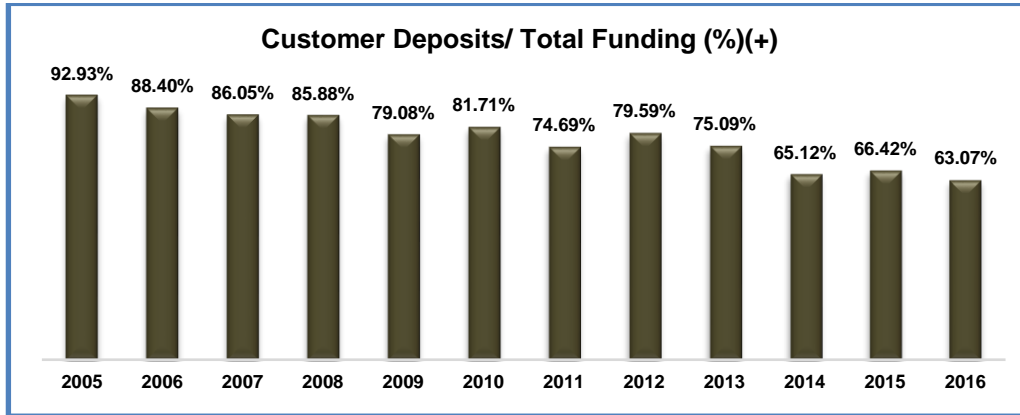


Figure 72. Customer Deposits to Total Funding for Halkbank during 2005-2016

Sensitivity rate as the last category of CAMELS model gradually increase from 14.43% to 25.65%.

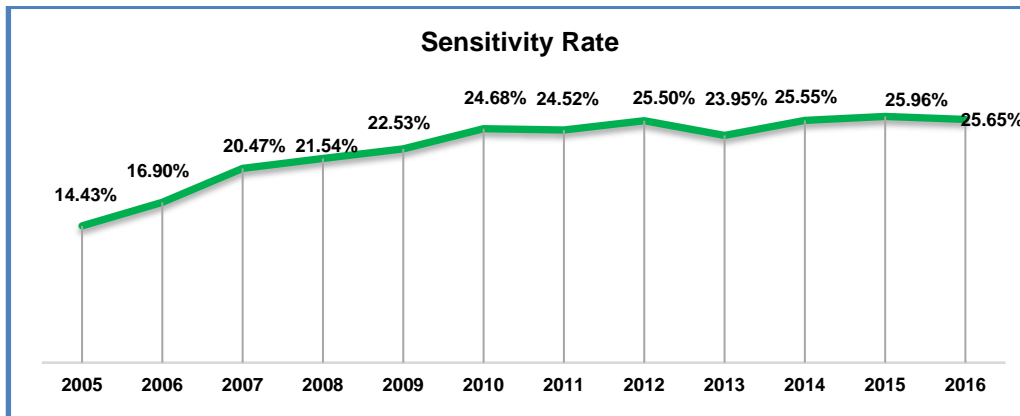


Figure 73. Sensitivity Rate for Halkbank during 2005-2016

“Securities portfolio over total assets ratio” sharply decreases from 2005 (65.76%) to 2016 (15.87%).

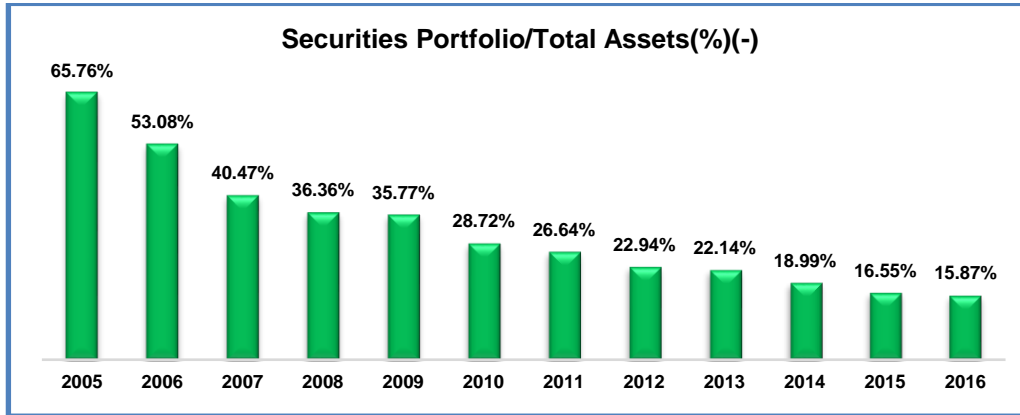


Figure 74. Securities Portfolio to Total Assets for Halkbank during 2005-2016

“Bearing assets over costly liabilities ratio” fluctuates between 97.39% to 109.26%. It was in the highest level in 2005 (109.26%) and its lowest level stands at 97.36% in 2016.

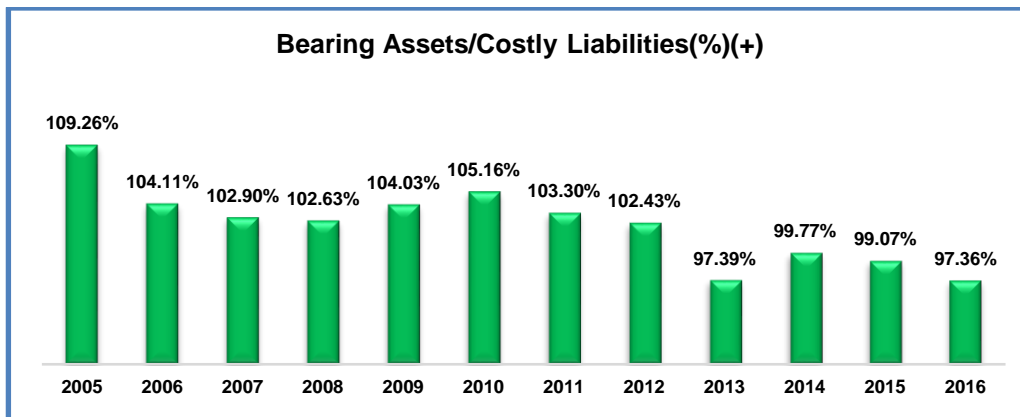


Figure 75. Bearing Assets to Costly Liabilities for Halkbank during 2005-2016

“Net interest income over total assets ratio” was at the lowest level in 2016 (3.01%) and it was at highest level in 5.13%.

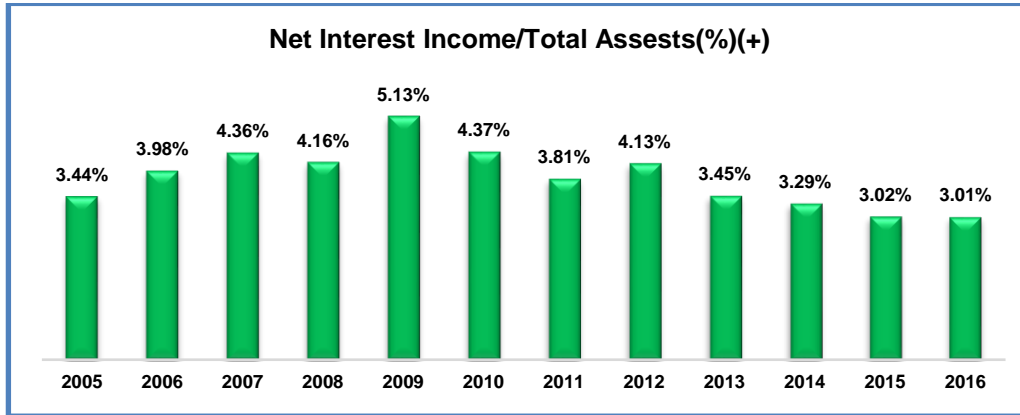


Figure 76. Net Interest Income to Total Assets for Halkbank during 2005-2016

6.3.3. CAMELS rating for Halkbank

The trend for CAMELS rating for Halkbank during the past twelve years is as follows: It is at the highest level in 2006 (31.93%).

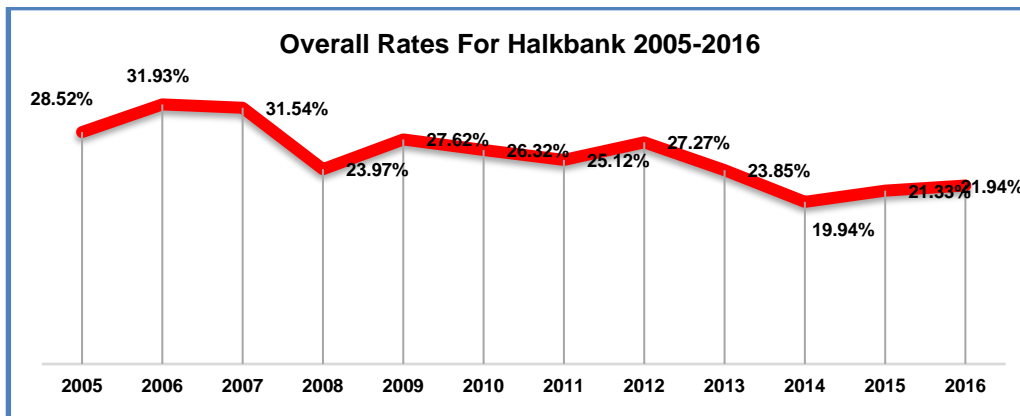


Figure 77. CAMELS Overall Rates for Halkbank during 2005-2016

Also for a better understanding CAMELS rating can be presented as an index.

As the graph below shows rate for 2005 has considered as base year and rates for other years has compared to 100 (year 2005). So in this case it is much clearer for which year

bank performed well. Again here for year 2006 and 2007 index was higher than base year (2005) which was 111.98 and 110.58 respectively.

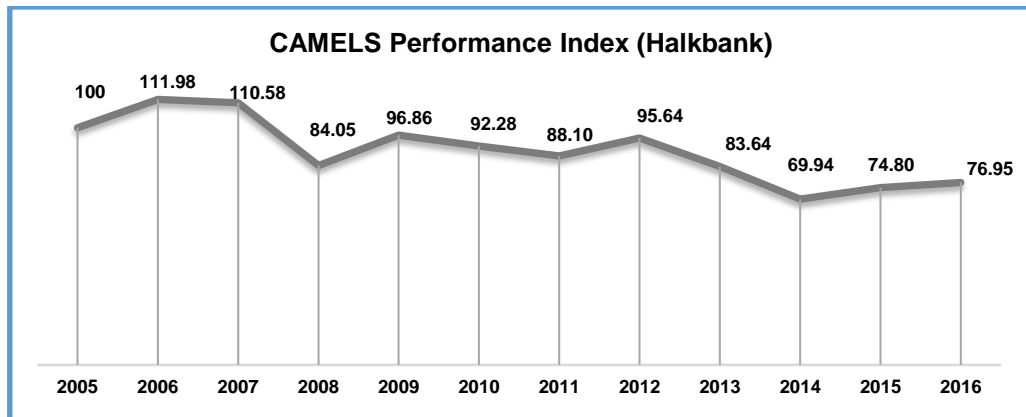


Figure 78. CAMELS Performance Index for Halkbank during 2005-2016

Management has the highest score with 78% among all categories of CAMELS model. Earnings has the lowest score with 2%. Overall rate for Halkbank is 22%.

Short Name	No.	Weight	Ratios	Relationship	2016
C Overall Weight Capital					
C 0,20					
CAR	1	0,40	Capital Adequacy Ratio(%) (+)	+	13%
ETL	2	0,20	Equity/ Total Liabilities (%) (+)	+	10%
ENL	3	0,20	Equity/ Net Loans (%) (+)	+	13%
ETA	4	0,20	Equity/Total Assets (%) (+)	+	9%
Capital Rate					12%
A Overall Weight Asset					
A 0,20					
LTA	5	0,20	Loans/Total Assets(%) (+)	+	68%
FATA	6	0,20	Fixed Assets/Total Assets(%) (-)	-	1%
NPLGL	7	0,30	NPL / Gross Loans (%) (-)	-	3%
SPRNPL	8	0,15	Specific Provision Reserve/ NPL (%) (+)	+	77%
BATA	9	0,15	Bearing Assets/Total Assets (%) (+)	+	85%
Asset Rate					37%
M Overall Weight Management					
M 0,10					
CSOTD	10	0,15	Current + Savings Deposits/ Total Deposits (%) (+)	+	44%
NIPB	11	0,20	Net Income Per Branch (Growth Rate) (%) (+)	+	9%
NIFE	12	0,20	Net Income Per Employee (Growth Rate) (%) (+)	+	11%
NIEIETA	13	0,15	Non-Interest Exp. + Impairment Exp/ Total Assets (%) (-)	-	3%
NIINI	14	0,15	Net Interest Income / Net Income (+)	+	272%
NINIE	15	0,15	Net Interest Income / Non-interest Expenses (+)	+	180%
Management Rate					78%
E Overall Weight Earnings					
E 0,15					
ROA	16	0,25	Net Income/Total Assets (%) (+)	+	1%
ROE	17	0,25	Net Income/Equity (%) (+)	+	12%
NIM	18	0,20	Net Interest Margin (%) (+)	+	4%
NIENIINI	19	0,15	Non-Interest Exp./ Net Interest Inc.+ Non-Interest Inc. (%) (-)	-	41%
NIINIINI	20	0,15	Non-Interest Inc./Net-Interest Inc. + Non-Interest Inc. (%) (+)	+	25%
Earning Rate					2%
L Overall Weight Liquidity					
L 0,25					
LATA	21	0,30	Liquid Assets/Total Assets (%) (+)	+	20%
LATFL	22	0,25	Liquid Assets/Total Foreign Liabilities (%) (+)	+	41%
GLD	23	0,20	Gross Loans/ Deposit (%) (-)	-	128%
CDTF	24	0,25	Customer Deposits/ Total Funding (%) (+)	+	63%
Liquidity Rate					6%
S Overall Weight Sensitivity					
S 0,10					
SPTA	25	0,30	Securities Portfolio/Total Assets (%) (-)	-	16%
BACL	26	0,30	Bearing Assets/Costly Liabilities (%) (+)	+	97%
NICTA	27	0,40	Net Interest Income/Total Assets (%) (+)	+	3%
Sensitivity Rate					26%
Overall Rates For Halkbank 2005-2016					22%

Table 12. CAMELS Rating for Halkbank 2016 (Numbers are rounded)

6.4. İŞBANK

6.4.1. Brief History

The inception goes back to 26 August 1924, mandated by Atatürk, consequent to the First Economy Congress in İzmir. İşbank begun to operate with two branches and 37 staff under the leadership of Celal Bayar, the first General Manager to run the bank.

The Grand Victory which preceded the proclamation of the Republic order entailed a period during which resolutions to the state's economic and social problems were sought. There was a growing and deeply rooted sentiment signaling the need for a national establishment and the birth of a banking system that was capable of the financing means to back up economic activities, managing funds accumulated as a result of policies providing savings incentives and where necessary extending resources which could trigger industrial impetus.

The birth of a new country depended heavily on the presence of banking activities nation wide, the drive for industrial development, animating national savings, financing fundamental economic breakthroughs and the means to meet financial borrowings. The aftermath of World War I culminated in a wide array of progress, including financial services which soon took off with an accelerated pace leading to technological advances and the designation of previously unheard methods and criteria governing business. Turkey was to suffer deprivation from such innovations and lacked qualified and skilled human resources. İşbank began operating at a time of such economic strain.

İşbank, is a publicly traded firm. 40.15% of İşbank shares are held by İşbank's own private Pension Fund, 28.09% are Atatürk's shares that are represented by Republican People's Party and 31.76% are free float. In May 1998, 12.3% of the Bank's total shares previously held by the Turkish Treasury have been sold to national and international investors in a highly successful public offering. The Bank's market capitalization amounts to TL 20,699,862 thousand by the end of December 2015. (Official Website of İşbank) (The Banks Association of Turkey)

6.4.2. Trend Analysis of Main Ratios under CAMELS Model for İşbank during 12 years

Capital category is the first category of CAMELS model which gradually dropped from 24.82% in 2005 to 14.51% in 2016.

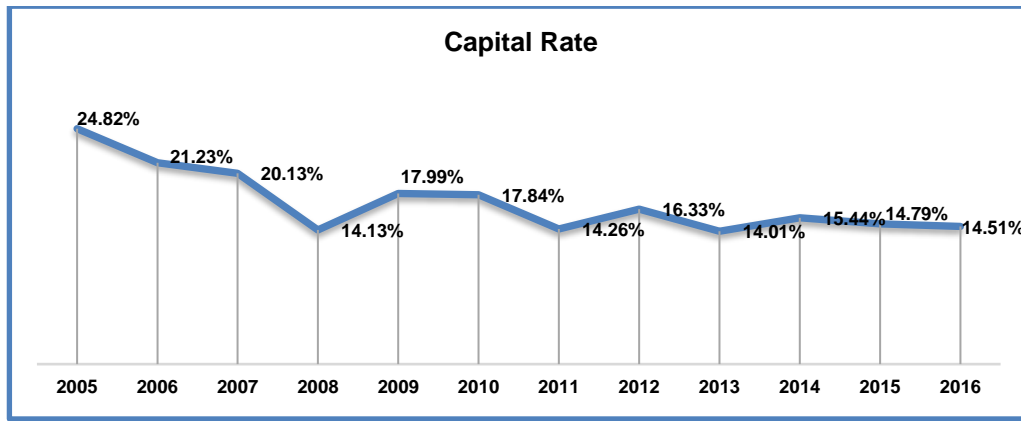


Figure 79. Capital rate of İşbank during 2005-2016

“Capital adequacy ratio” (CAR) gradually dropped from 25% in 2005 to 15.17% in 2016.

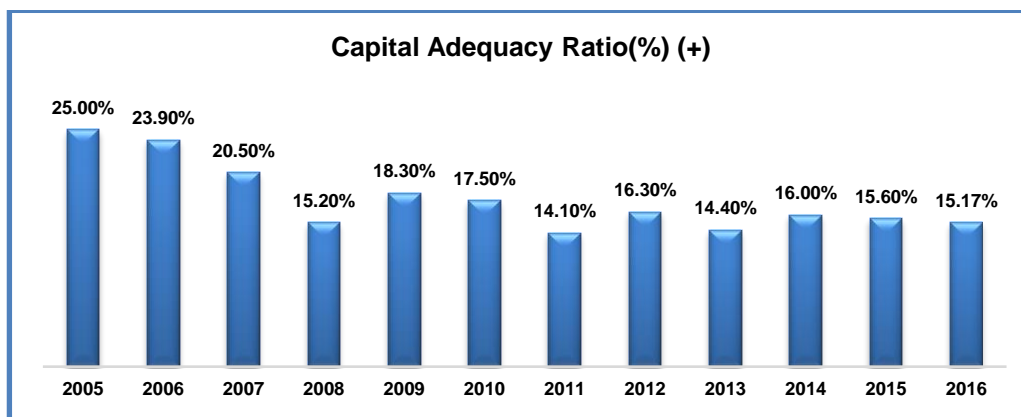


Figure 80. Capital Adequacy Ratio of İşbank during 2005-2016

“Equity over total liabilities ratio” was between 10.72% and 17.05% during 12 years.

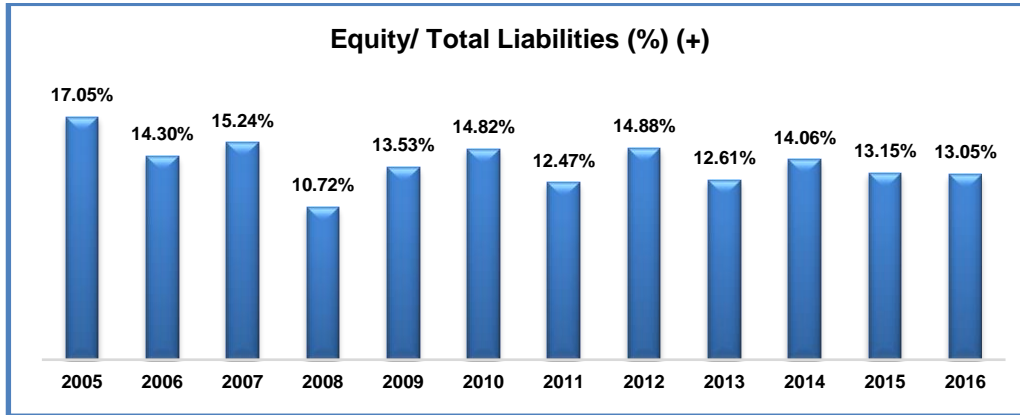


Figure 81. Equity to Total Liabilities of İsbank during 2005-2016

“Equity over net loans ratio” was between 17.43% and 42.49% during twelve years.

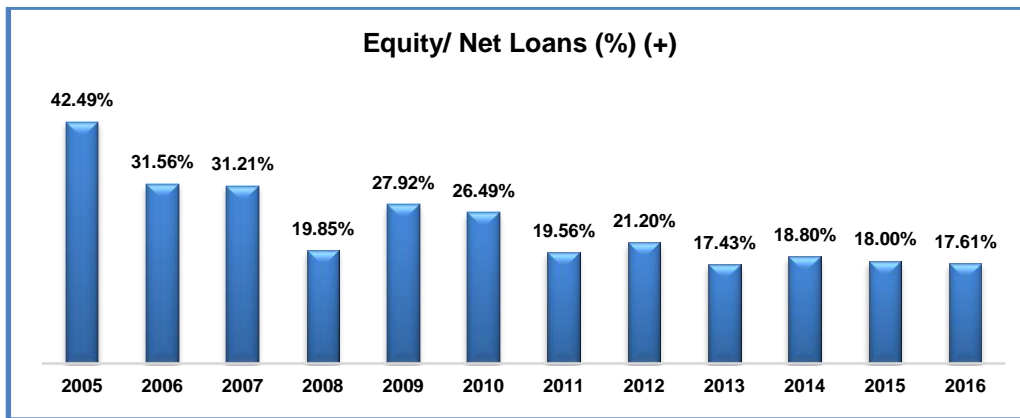


Figure 82. Equity to Net Loans of İsbank during 2005-2016

“Equity over total assets ratio” was stable between 2005 (14.57%) and 2016 (11.54%).

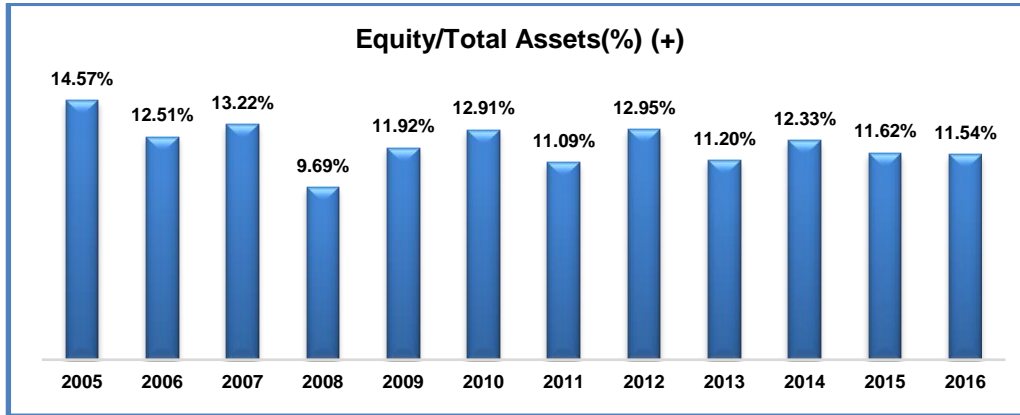


Figure 83. Equity to Total Assets of İşbank during 2005-2016

Asset rate trend shows a gradual increase from 2005 (32.82%) to 2016 (36.74%).

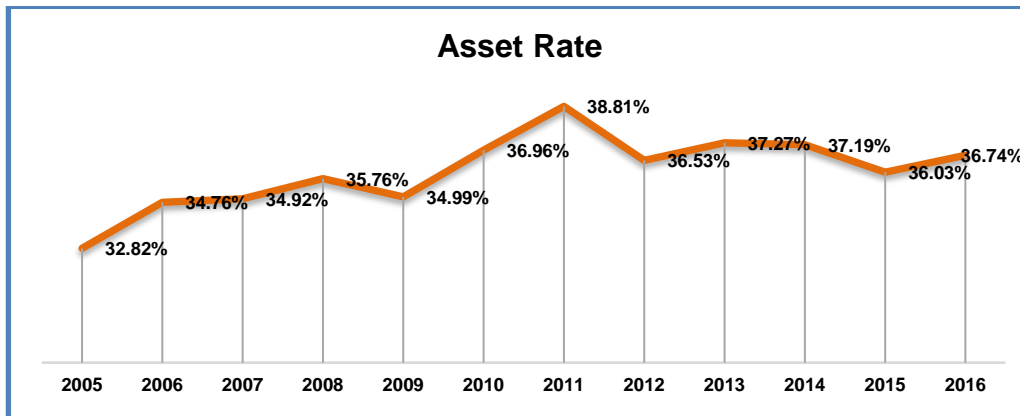


Figure 84. Asset Quality rate of İşbank during 2005-2016

“Loans over total assets ratio” gradually increased from 34% in 2005 to 66% in 2016.

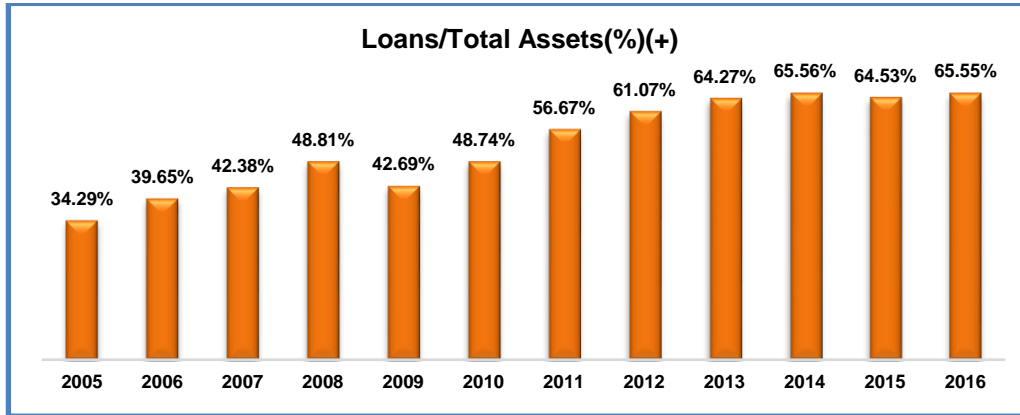


Figure 85. Loans to total Assets of İsbank during 2005-2016

“Fixed assets over total assets ratio” was between 0.83% and 2.76% during 12 years.

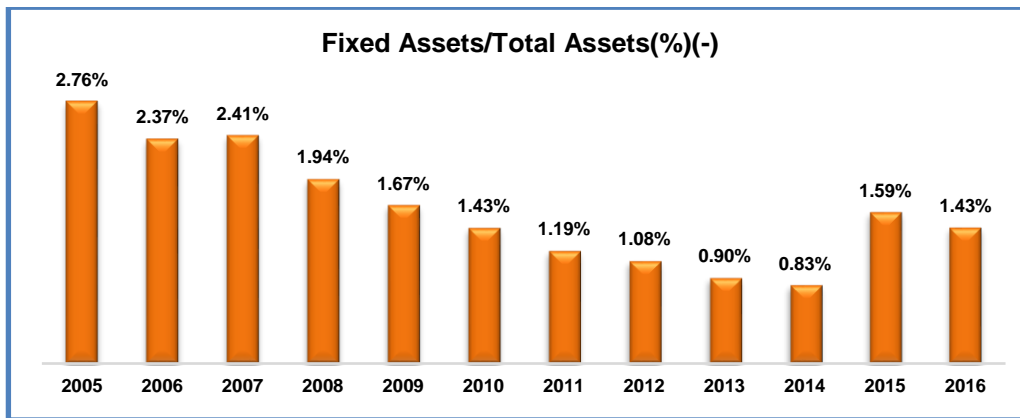


Figure 86. Fixed Assets to Total Assets of İsbank during 2005-2016

“NPLs over gross loans ratio” was stable between 2011 and 2016. It was between 1.53% and 5.42%.

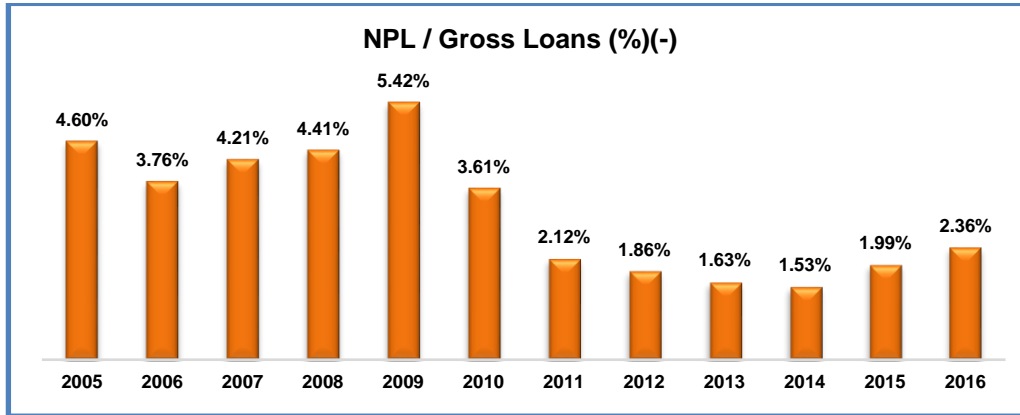


Figure 87. NPL to Gross Loans of İşbank during 2005-2016

“Specific provision reserve over NPLs ratio” was in the same level from 2005 to 2011 at 100%. In 2012 it has dropped to 78.95% and continued in a stable way. It has ended in 2016 at 77.48%.

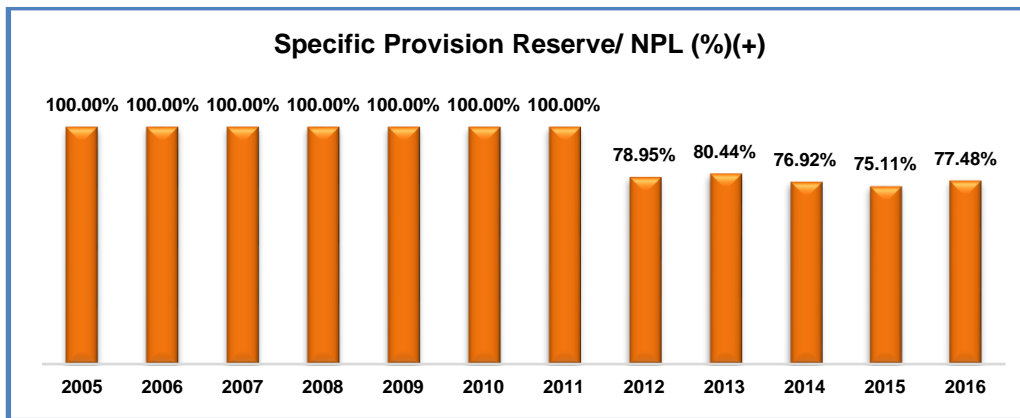


Figure 88. Specific Provision Reserve to NPL of İşbank during 2005-2016

“Bearing assets over total assets ratio” was between 84.73% and 90.58% during 12 years.

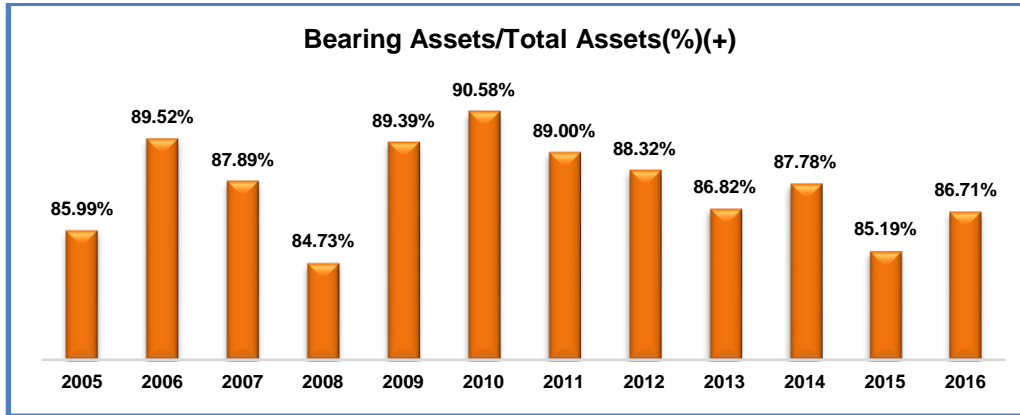


Figure 89. Bearing Assets to Total Assets of İşbank during 2005-2016

Management rate was between 47.51% and 88.67% during 12 years.

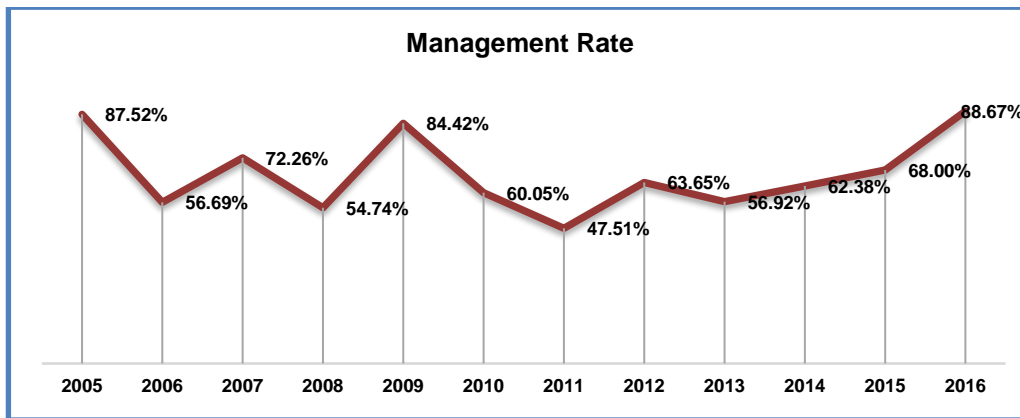


Figure 90. Management Rate of İşbank during 2005-2016

“Current deposits plus savings deposits over total deposits ratio” was between 43.29% and 56.24%. In 2005 and 2006 this ratio was 43.29% and 44.12% respectively. From 2007 to 2016 it was between 50.26% and 56.24%.

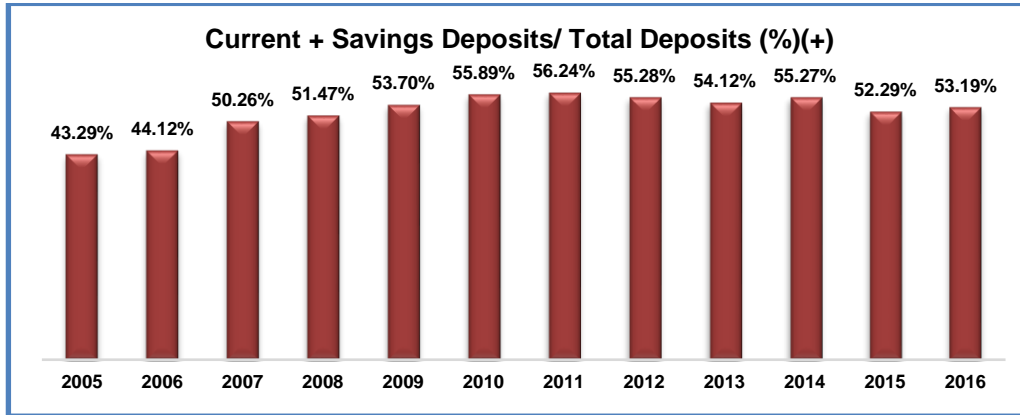


Figure 91. Current plus Saving Deposits to Total Deposits of İşbank during 2005-2016

Growth rate for net income per branch was between -19.84% and 78.10% during twelve years.

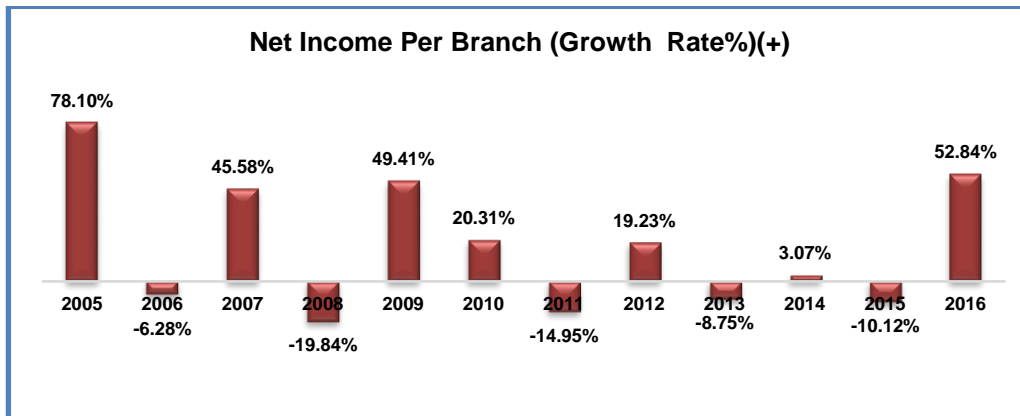


Figure 92. Net Income per Branch (Growth Rate) of İşbank during 2005-2016

Growth rate for net income per employee was between -17.71% and 71.62%.

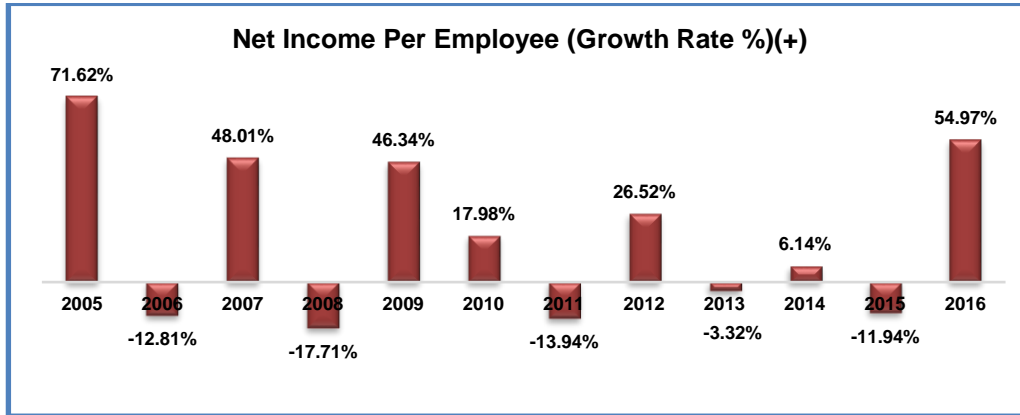


Figure 93. Net Income per Employee (Growth Rate) of İşbank during 2005-2016

“Non-interest expenses plus impairment expenses over total assets ratio” in 2005 was 4.56%. From 2006 to 2009 it was between 3.68% and 4.40%. From 2010 to 2016 this ratio was around 3%.

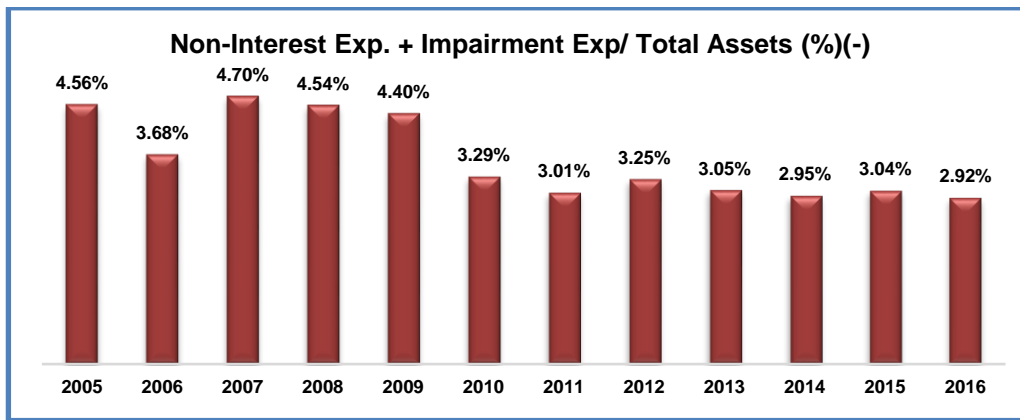


Figure 94. Non-Interest Exp. Plus Impairment Exp. to Total Assets of İşbank during 2005-2016

“Net interest income over net income ratio” was between 153.64% and 291.48%.

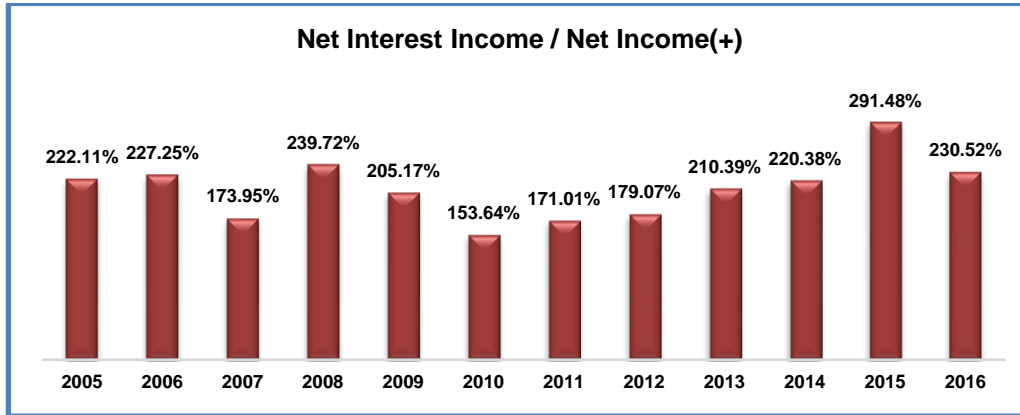


Figure 95. Net Interest Income to Net Income of İsbank during 2005-2016

“Net interest income over non-interest expenses ratio” was between 128.33%(2008) and 180.63%(2009).

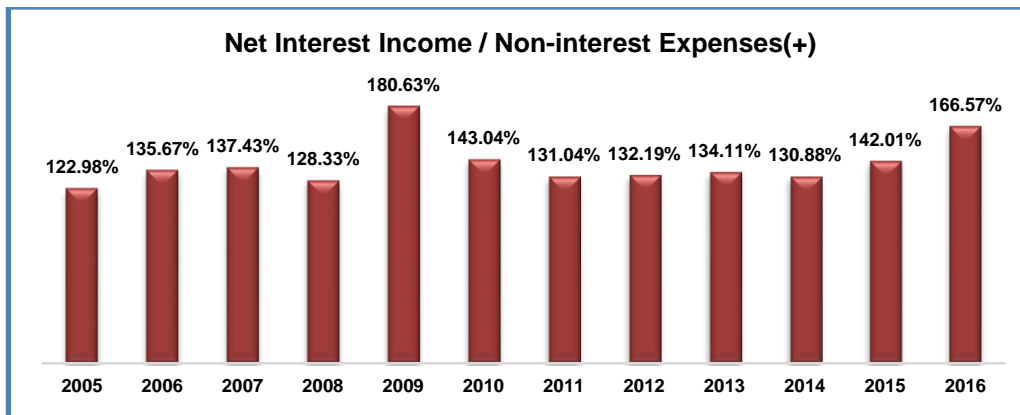


Figure 96. Net Interest Income to Non-Interest Expenses of İsbank during 2005-2016

Earning rate was between -0.42% and 7.33%. From 2005(4.78%) to 2009 (6.57%) this ratio has fluctuated. From 2009 (6.57%) to 2015(-0.42%) it gradually decreased. From 2015 to 2016 it went up from 0% to 2%.

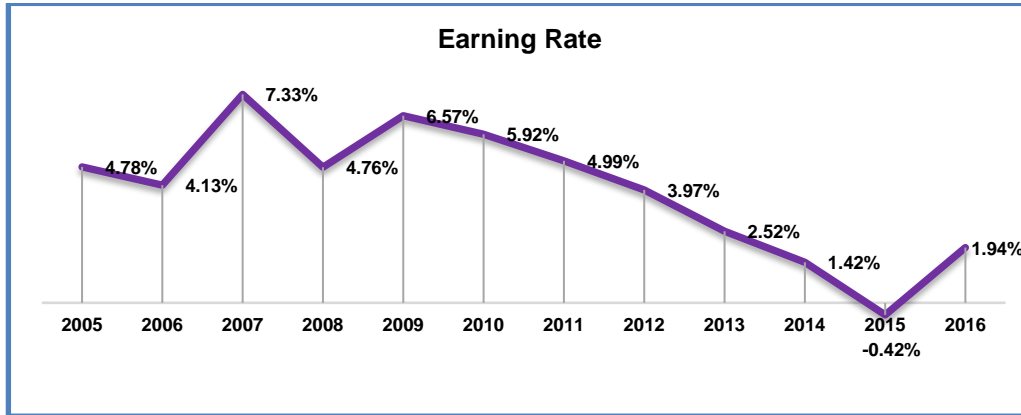


Figure 97. Earning Rate of İşbank during 2005-2016

“Net income over total assets ratio” was between 1.12% and 2.26%.

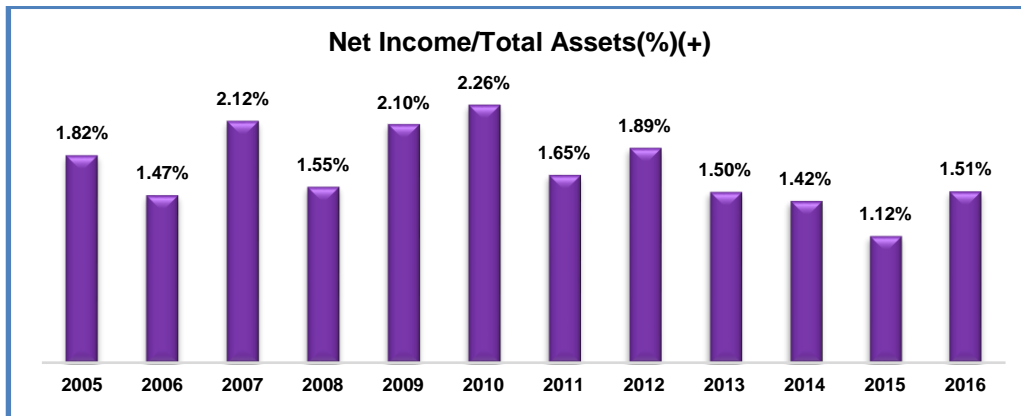


Figure 98. Net Income to Total Assets of İşbank during 2005-2016

“Net income over equity ratio” was in the highest level at 17.58% in 2009. Its lowest level was in 2015 at 9.62%.

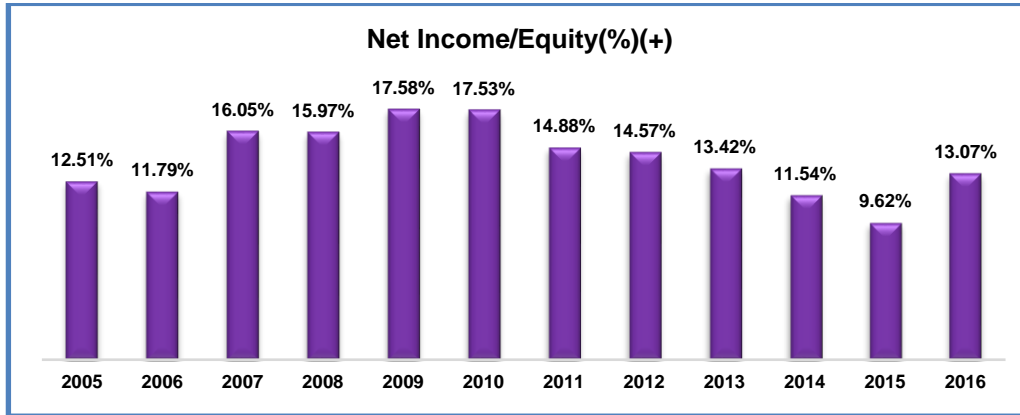


Figure 99. Net Income to Equity of İşbank during 2005-2016

Net interest margin was between 3.17% and 4.81%.

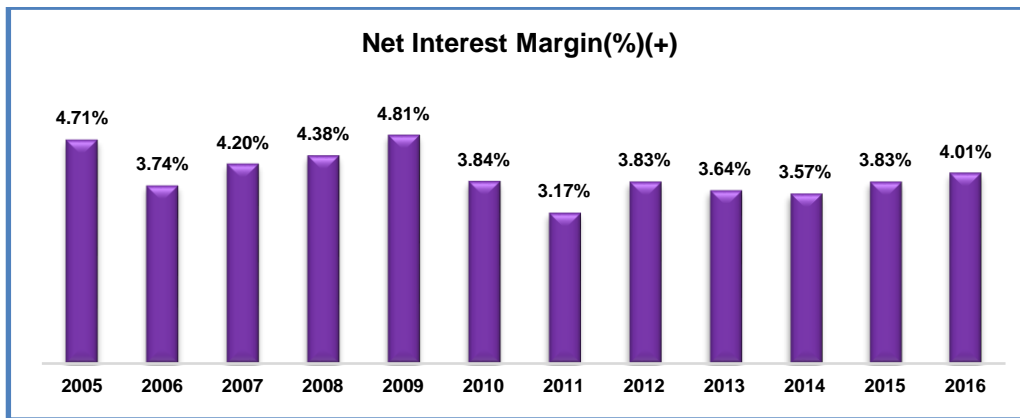


Figure 100. Net Interest Margin of İşbank during 2005-2016

“Non-interest expense over net interest income plus non-interest income ratio” was between 33.99% (2009) and 51.99% (2015).

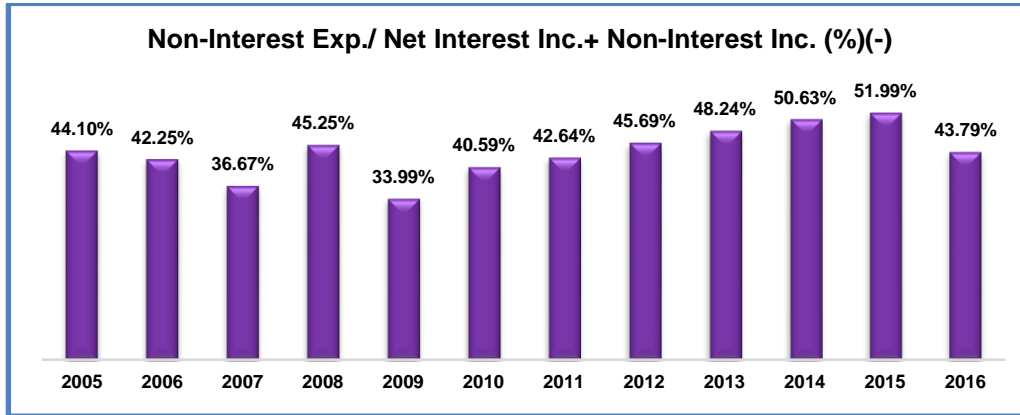


Figure 101. Non-Interest Inc. to Net-Interest Inc. plus Non-Interest Inc. of İşbank during 2005-2016

“Non-interest income over net-interest income plus non-interest income ratio” was 45.77% in 2005. It went up to 49.61% in 2007. From 2011 to 2016 it dropped from 44.12% to 27.06%.

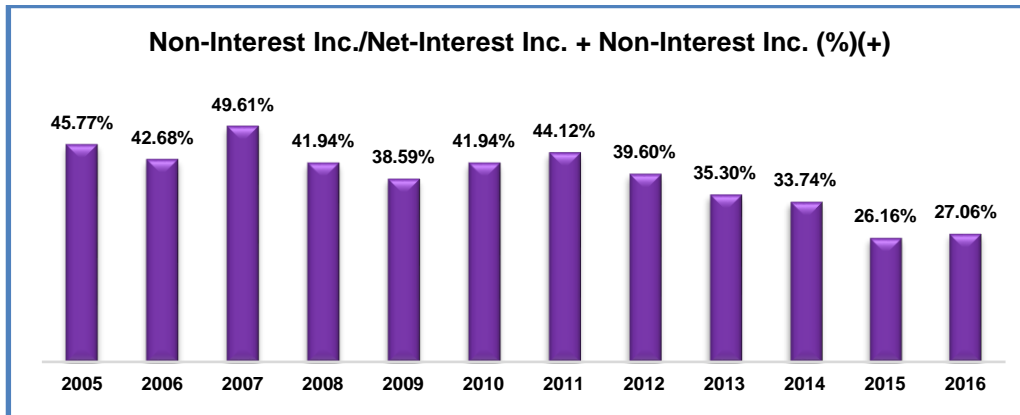


Figure 102. Liquidity Rate of İşbank during 2005-2016

Liquidity rate during this twelve year gradually dropped from 95.49% (2005) to 17.55 % (2016).

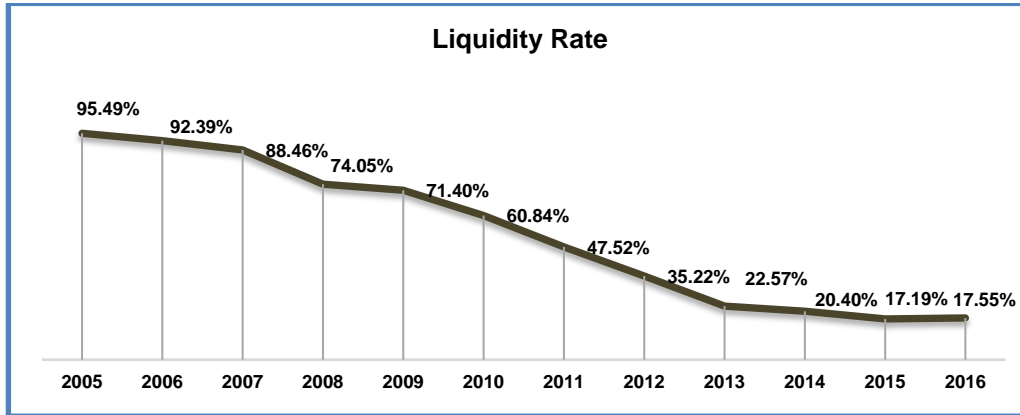


Figure 103. Liquidity Rate of İşbank during 2005-2016

“Liquid assets over total assets ratio” gradually decreased from 52% in 2005 to 25.67% in 2016.

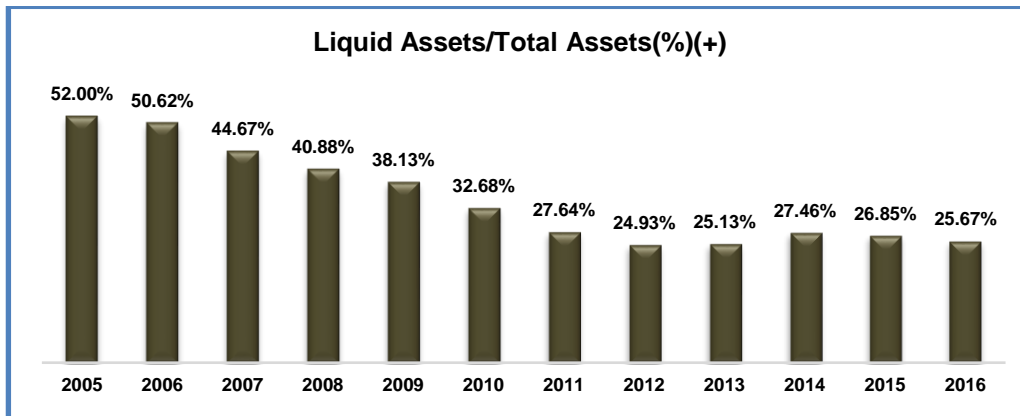


Figure 104. Liquid Assets to Total Assets of İşbank during 2005-2016

“Liquid assets over total foreign liabilities ratio” from year 2005 (304.49%) sharply dropped to 2016 (70.83%).

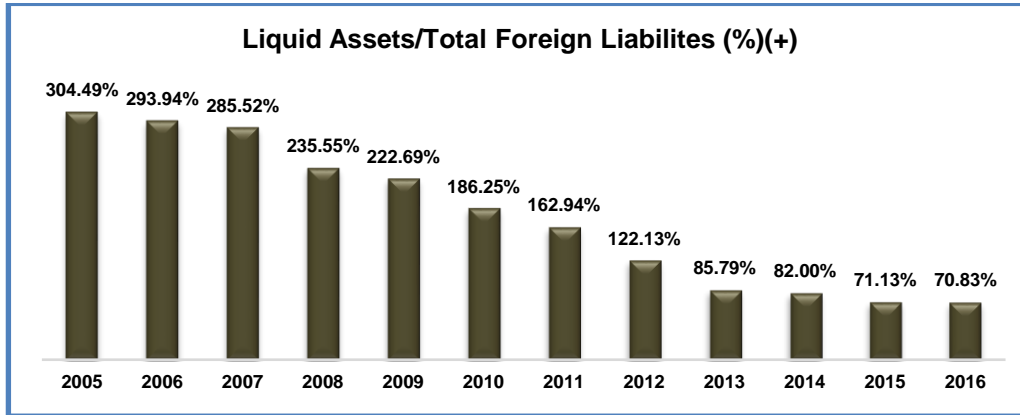


Figure 105. Liquid Assets to Total Foreign Assets of İşbank during 2005-2016

“Gross loans over deposit ratio” gradually increased from 65.91% in 2005 to 122.41% in 2016.

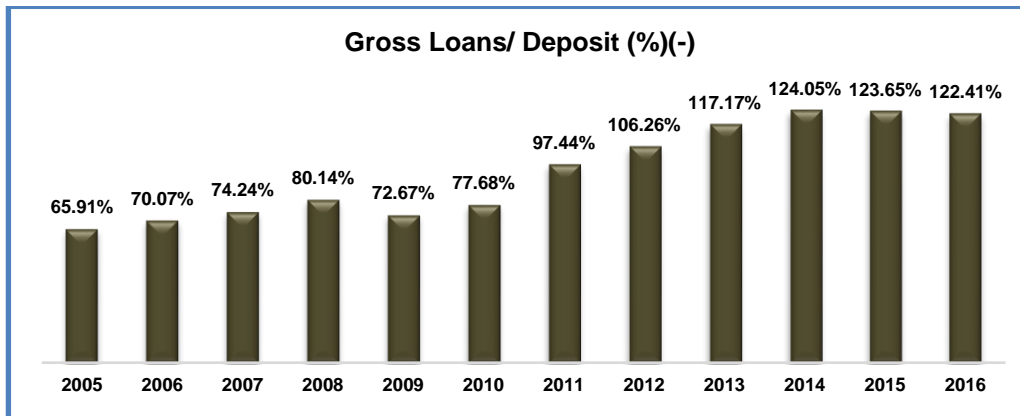


Figure 106. Gross Loans to Deposit of İşbank during 2005-2016

“Customer deposits over total funding ratio” was almost stable between 67.81% in 2005 to 66.49% in 2016.

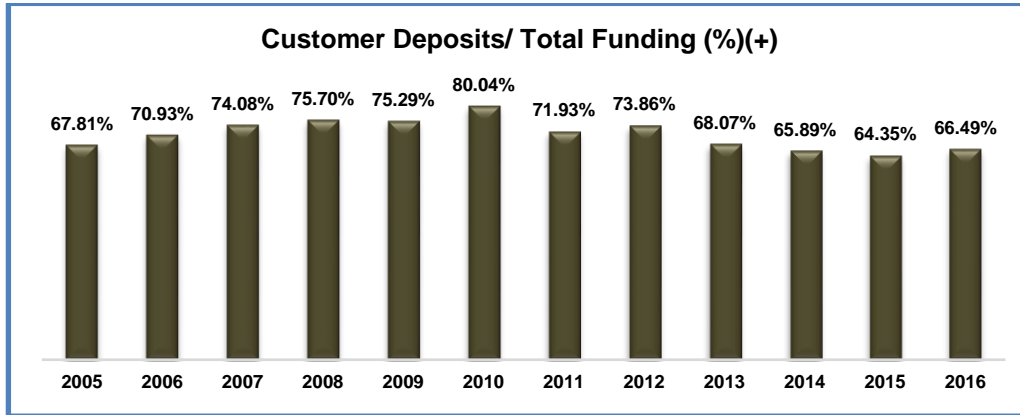


Figure 107. Customer Deposits to Total Funding of İşbank during 2005-2016

Sensitivity rate gradually increased from 20.94% in 2005 to 26.98% in 2016.

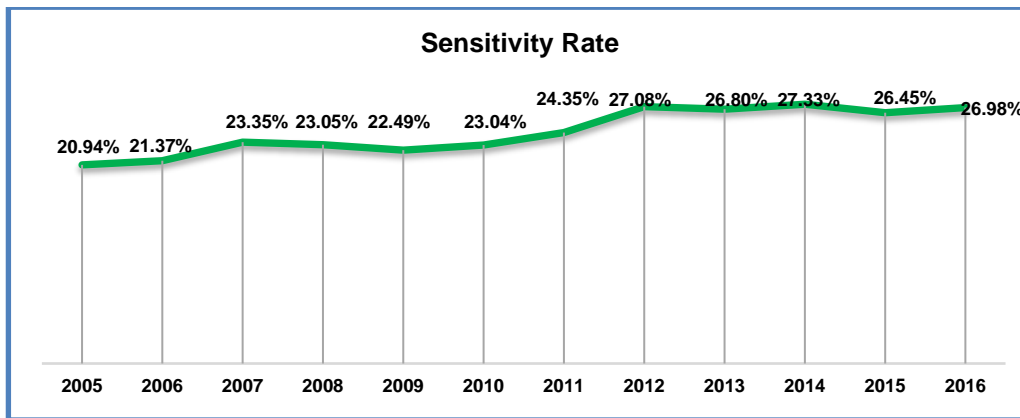


Figure 108. Sensitivity Rate of İşbank during 2005-2016

“Securities portfolio over total assets ratio” was between 19.65% and 42.54% during twelve years.

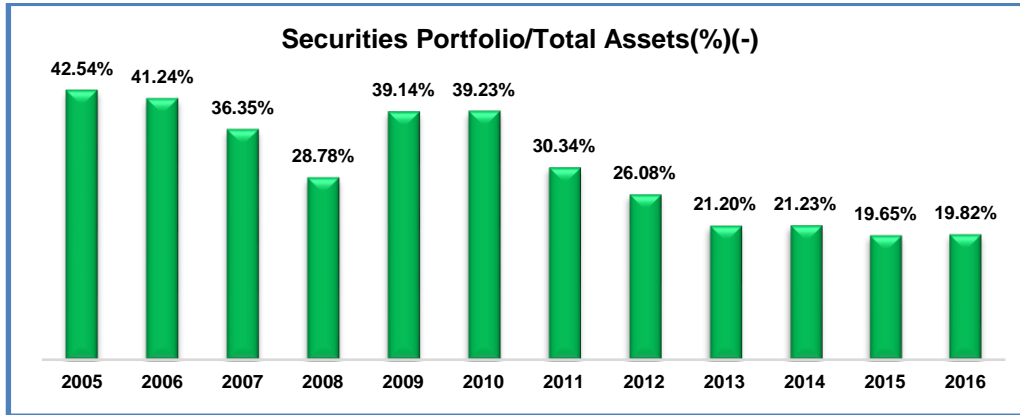


Figure 109. Securities Portfolio to Total Assets of İsbank during 2005-2016

“Bearing assets over costly liabilities ratio” from 106.95% in 2005 gradually increased to 109.26% in 2007. Then in 2008 it dropped to 100.68%. In 2009 it increased to 108.37% and it continued to increased to 111.38% in 2010. From 2011 to 2016 it fluctuated between 107.73% and 105.12%.

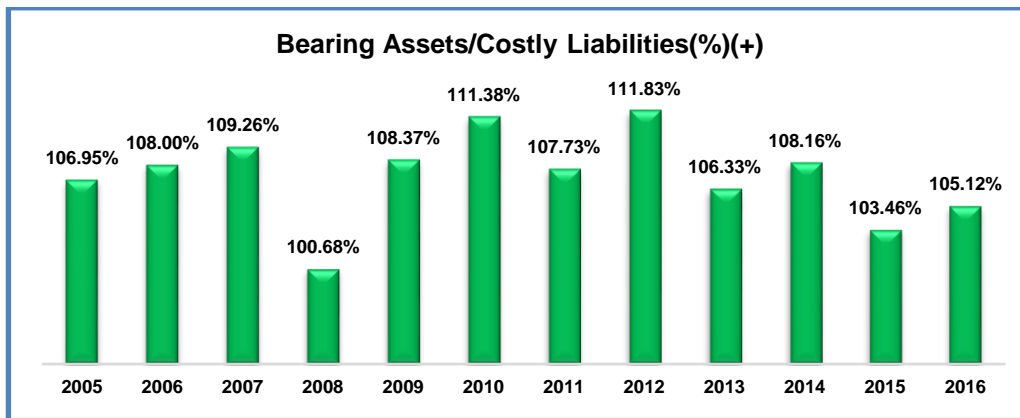


Figure 110. Bearing Assets to Costly Liabilities of İsbank during 2005-2016

“Net interest income over total assets ratio” was between 2.82% and 4.30% for all years.

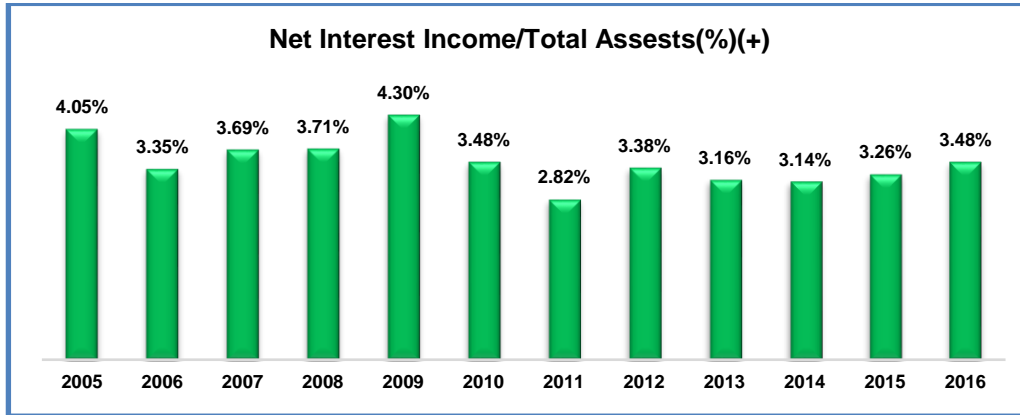


Figure 111. Net Interest Income to Total Assets of İşbank during 2005-2016

6.4.3. CAMELS rating for İşbank

Overall rates for İşbank gradually dropped from 47% in 2005 to 26% in 2016.

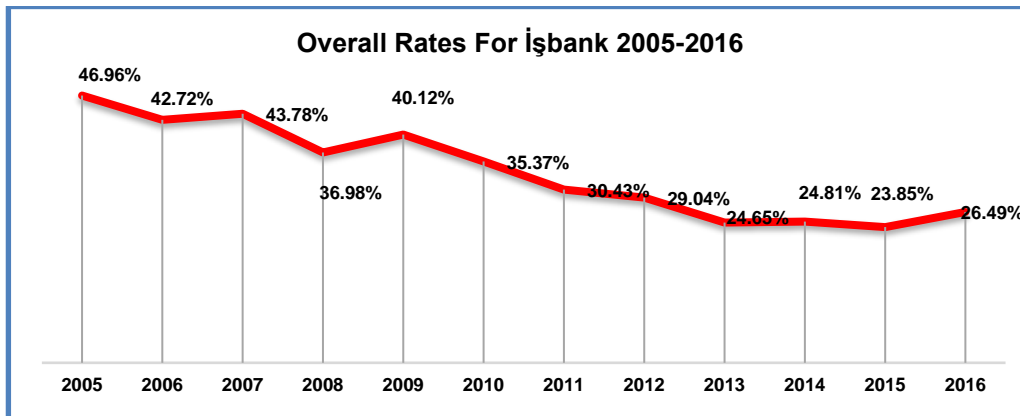


Figure 112. CAMELS Overall Rates for İşbank during 2005-2016

In the table below CAMELS performance index for İşbank has been illustrated. Year 2005 has been selected as the base year. As this index shows it drops gradually from 2005 to 2016.

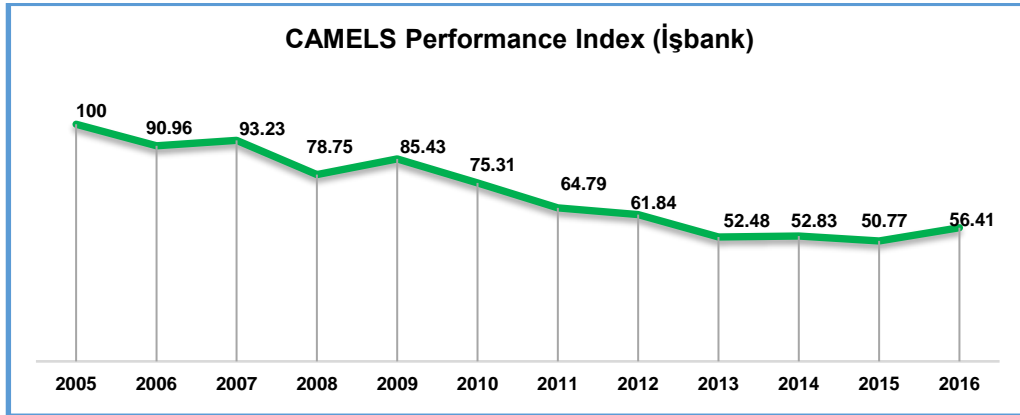


Figure 113. CAMELS Performance Index for İşbank during 2005-2016

In table below all the CAMELS ratios of İşbank for year 2016 have been calculated. The Management category has a score of 89% which is the highest rate of CAMELS model. Earnings category has the lowest score with 2%.

Short Name	No.	Weight	Ratios	2016
C				
		<i>Overall Weight</i>	<i>Capital</i>	
C		0,20		
CAR	1	0,40	Capital Adequacy Ratio(%) (+)	15%
ETL	2	0,20	Equity/ Total Liabilities (%) (+)	13%
ENL	3	0,20	Equity/ Net Loans (%) (+)	18%
ETA	4	0,20	Equity/Total Assets(%) (+)	12%
Capital Rate				15%
<hr/>				
		<i>Overall Weight</i>	<i>Asset</i>	
A		0,20		
LTA	5	0,20	Loans/Total Assets(%) (+)	66%
FATA	6	0,20	Fixed Assets/Total Assets(%) (-)	1%
NPLGL	7	0,30	NPL / Gross Loans (%) (-)	2%
SPRNPL	8	0,15	Specific Provision Reserve/ NPL (%) (+)	77%
BATA	9	0,15	Bearing Assets/Total Assets(%) (+)	87%
Asset Rate				37%
<hr/>				
		<i>Overall Weight</i>	<i>Management</i>	
M		0,10		
CSDTD	10	0,15	Current + Savings Deposits/ Total Deposits (%) (+)	53%
NIPB	11	0,20	Net Income Per Branch (Growth Rate%) (+)	53%
NIPE	12	0,20	Net Income Per Employee (Growth Rate %) (+)	55%
NIEIETA	13	0,15	Non-Interest Exp. + Impairment Exp/ Total Assets (%) (-)	3%
NIINI	14	0,15	Net Interest Income / Net Income (+)	231%
NINIE	15	0,15	Net Interest Income / Non-interest Expenses (+)	167%
Management Rate				89%
<hr/>				
		<i>Overall Weight</i>	<i>Earnings</i>	
E		0,15		
ROA	16	0,25	Net Income/Total Assets(%) (+)	2%
RDE	17	0,25	Net Income/Equity(%) (+)	13%
NIM	18	0,20	Net Interest Margin(%) (+)	4%
NIENIINI	19	0,15	Non-Interest Exp./ Net Interest Inc.+ Non-Interest Inc. (%) (-)	44%
NIINIINI	20	0,15	Non-Interest Inc./Net-Interest Inc. + Non-Interest Inc. (%) (+)	27%
Earning Rate				2%
<hr/>				
		<i>Overall Weight</i>	<i>Liquidity</i>	
L		0,25		
LATA	21	0,30	Liquid Assets/Total Assets(%) (+)	26%
LATFL	22	0,25	Liquid Assets/Total Foreign Liabilities (%) (+)	71%
GLD	23	0,20	Gross Loans/ Deposit (%) (-)	122%
CDTF	24	0,25	Customer Deposits/ Total Funding (%) (+)	66%
Liquidity Rate				18%
<hr/>				
		<i>Overall Weight</i>	<i>Sensitivity</i>	
S		0,10		
SPTA	25	0,30	Securities Portfolio/Total Assets(%) (-)	20%
BACL	26	0,30	Bearing Assets/Costly Liabilities(%) (+)	105%
NICTA	27	0,40	Net Interest Income/Total Assets(%) (+)	3%
Sensitivity Rate				27%
<hr/>				
Overall Rates For İşbank 2005-2016				26%

Table 13. CAMELS Rating for İşbank 2016 (Numbers are rounded)

6.5 AKBANK

6.5.1. Brief History

Akbank was founded as a privately-owned commercial bank in Adana on January 30, 1948. Established originally with the core objective to provide funding to local cotton growers, the Bank opened its first branch in the Sirkeci district of Istanbul on July 14, 1950. In 1954, after relocating its Head Office to Istanbul, the Bank rapidly expanded its branch network and had automated all banking operations by 1963.

Floated to the public in 1990, Akbank shares began trading on international markets and as an American Depository Receipt (ADR) after its secondary public offering in 1998.

Akbank's core business is banking activities, consisting of consumer banking, commercial banking, SME banking, corporate banking, private banking, foreign currency exchange, money markets and securities trading (Treasury transactions), and international banking services. In addition to traditional banking activities, the bank also carries out insurance agency operations through its branches on behalf of Ak Insurance and AvivaSA Pensions and Life Insurance.

With more than 900 branches and 14,000 employees, Akbank operates from its Head Office in Istanbul and 23 regional directorates across Turkey. In addition to providing services through branches, its traditional delivery channel, Akbank also serves customers through the Akbank Direkt Internet Branches, Akbank Direkt Mobile, the Call Center, 4,150 ATMs and more than 420,000 POS terminals as well as other high-tech channels.

Akbank conducts overseas operations through subsidiaries in Germany (Akbank AG) and Dubai (Akbank Dubai Limited) as well as a branch in Malta. The Bank's other subsidiaries, AkInvestment, AKAsset Management and Aklease, provide non-banking financial services alongside capital markets and investment services.

With an assessed brand value of over USD 2.5 billion, Akbank was named the “Most Valuable Banking Brand in Turkey,” for four years in a row, by Brand Finance report of “Brand Finance Banking 500.” Akbank was selected the “Most Valuable Brand in Turkey” once again by Brand Finance in 2015, becoming the first bank to hold this distinction in Turkey.

51.1% of Akbank’s shares are listed on the Istanbul Stock Exchange. The Bank’s Level 1 ADRs are traded on the OTCQX in the United States. Akbank’s market capitalization stood at USD 9.2 billion as of December 31, 2015. (Official Website of Akbank) (The Banks Association of Turkey)

6.5.2. Trend Analysis of Main Ratios under CAMELS Model for Akbank during 12 Years

Capital rate as the first category of CAMELS model approximately had a stable trend from 2005 (19.44%) to 2016 (14.32%).

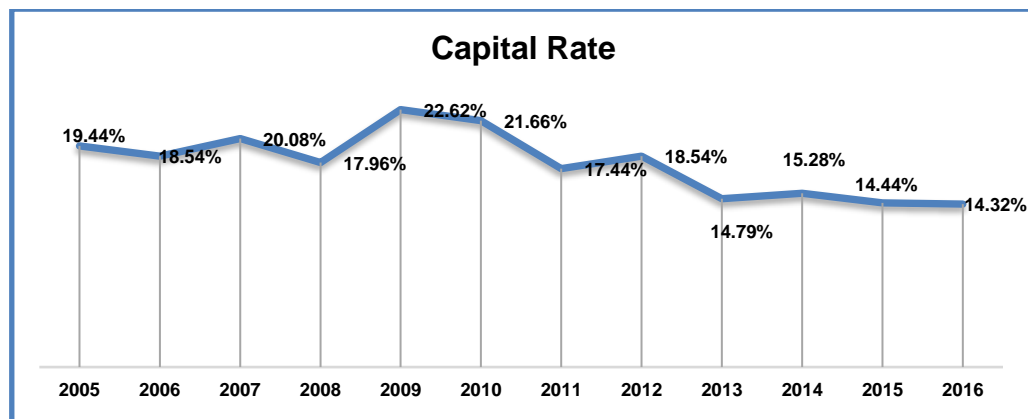


Figure 114. Capital rate of Akbank during 2005-2016

Capital adequacy ratio (CAR) was between 14.30% and 22.50% from 2005 to 2016.

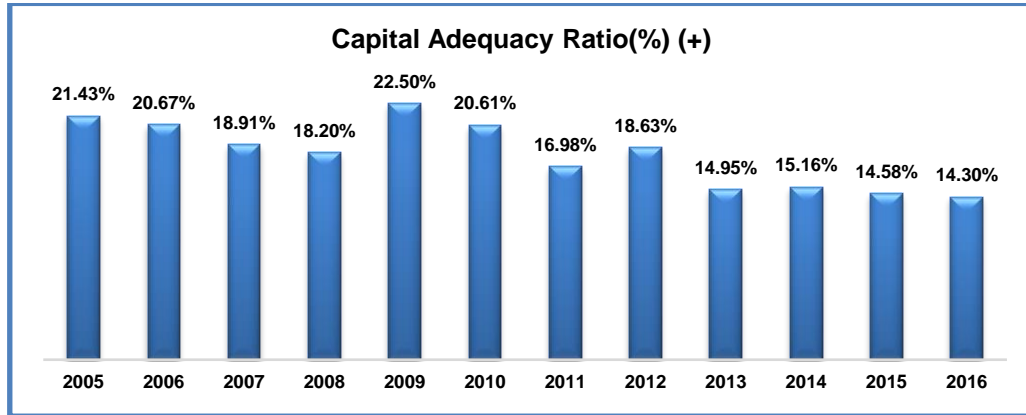


Figure 115. Capital Adequacy Ratio of Akbank during 2005-2016

“Equity over total liabilities ratio” was between 12.75% and 18.40% from 2005 to 2016.

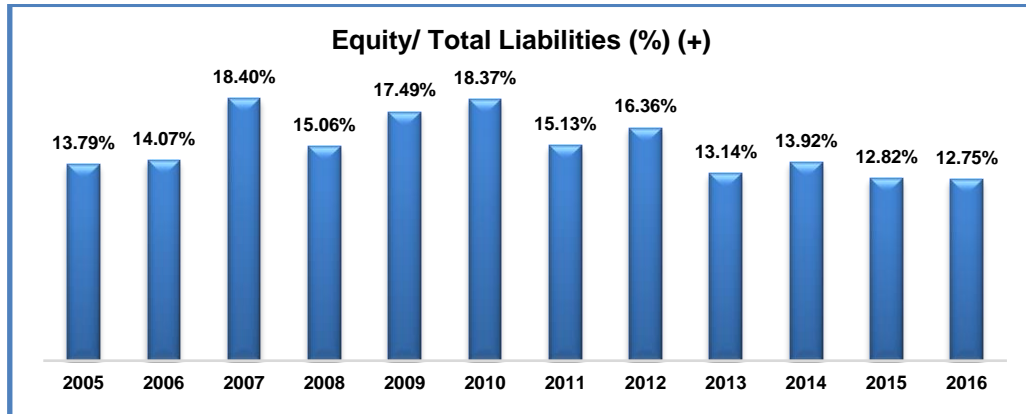


Figure 116. Equity to Total Liabilities of Akbank during 2005-2016

“Equity over net loans ratio” was in the highest level stands at 35.73% in 2009. In the lowest level it is 19.28% in 2013.

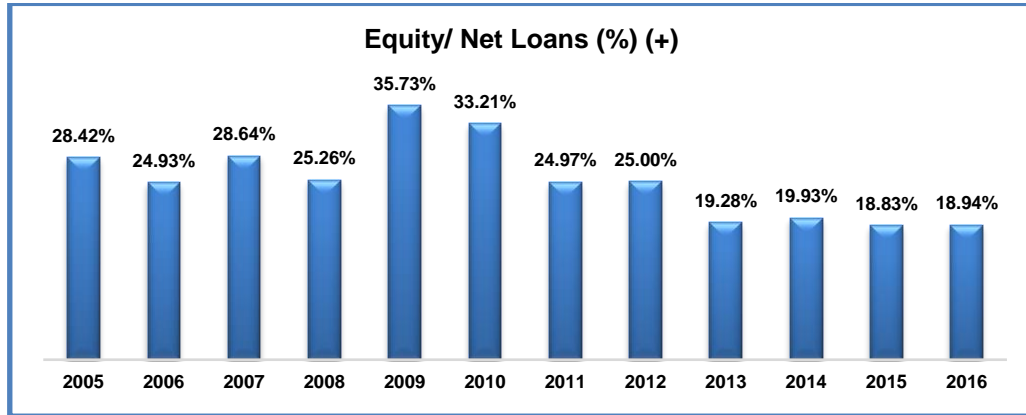


Figure 117. Equity to Net Loans of Akbank during 2005-2016

“Equity over total assets ratio” was between 11.31% and 15.54% during 12 years.

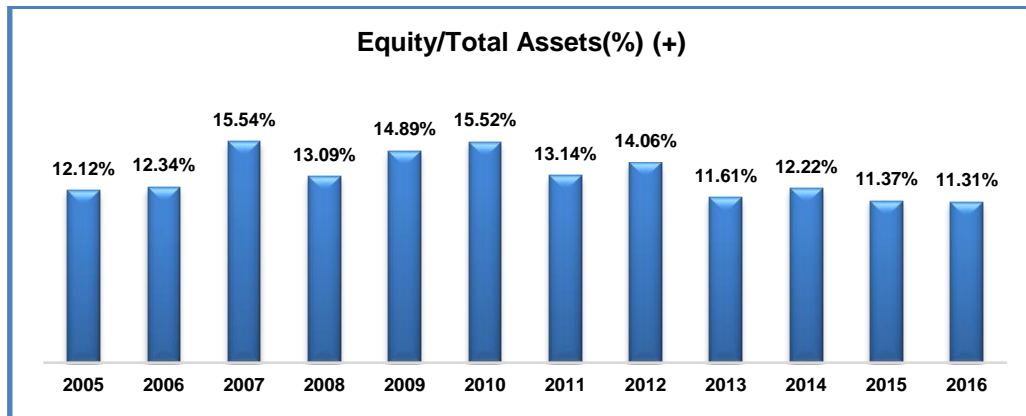


Figure 118. Equity to Total Assets of Akbank during 2005-2016

Asset rate from 2005 (36.22%) to 2007(38.97%) has increased. It has dropped from 2007 (38.97%) to 2009 (35.87%). From 2009 to 2013 it was between 35.87% and 39.02%. From 2013 to 2016 it was around 39%.

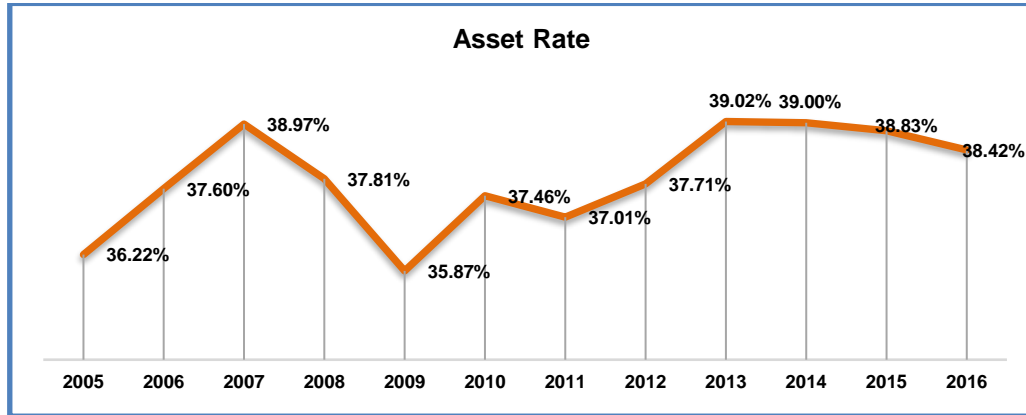


Figure 119. Asset Quality rate of Akbank during 2005-2016

“Loans over total assets ratio” was between 42.64% and 59.71% from 2005 to 2016. From 2013 to 2016 it was around 60%.

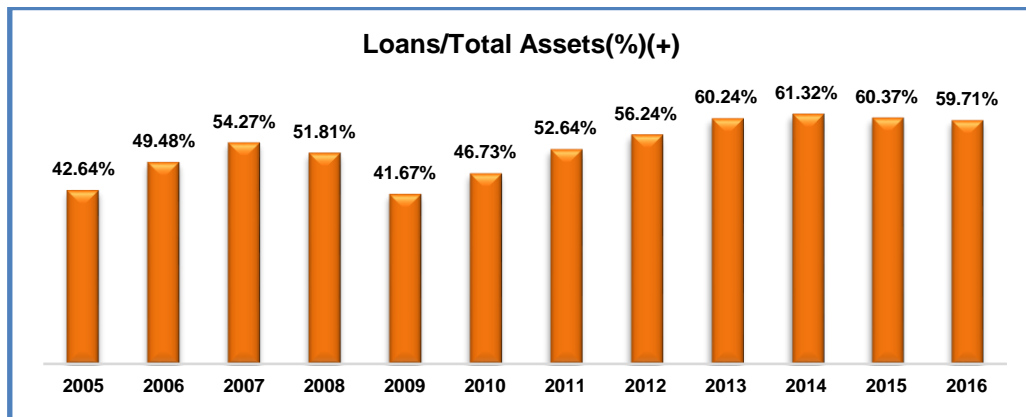


Figure 120. Loans to total Assets of Akbank during 2005-2016

“Fixed assets over total assets ratio” gradually decreased from 2005 to 2016 and it was between 0.34% and 1.26%.

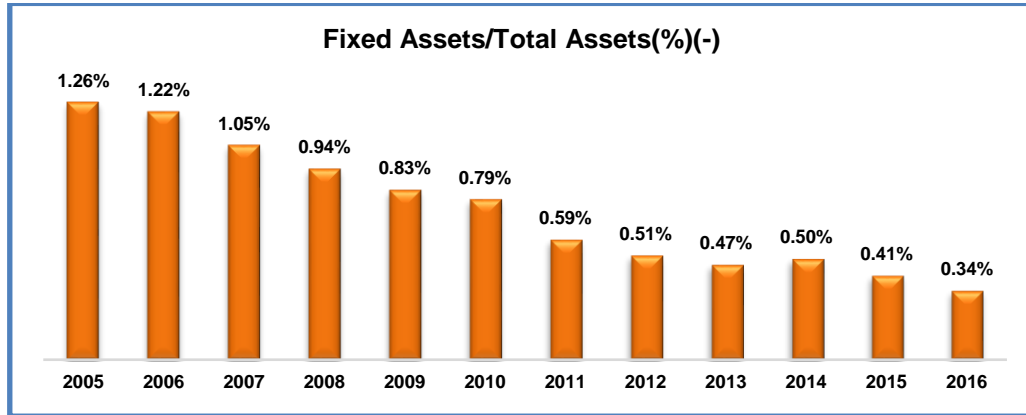


Figure 121. Fixed Assets to Total Assets of Akbank during 2005-2016

“NPLs over gross loans ratio” in highest level stands at 4.30% in 2009. In other years it was between 1.26% and 2.65%.

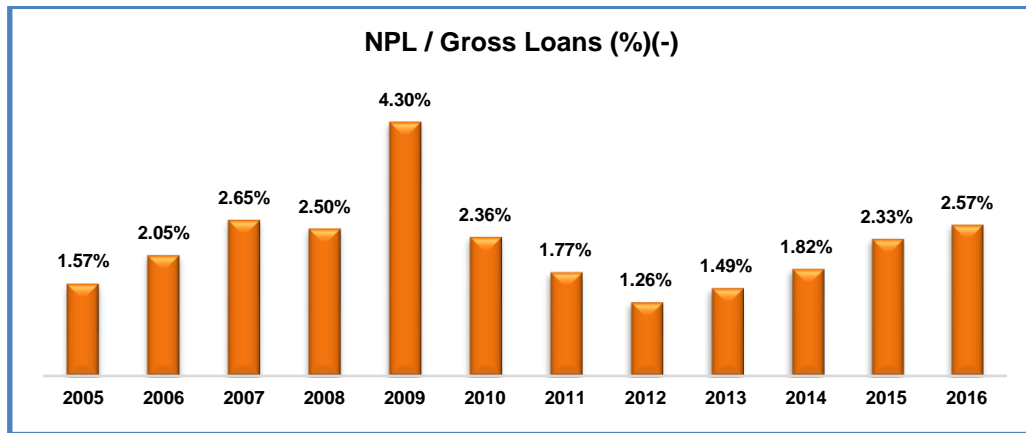


Figure 122. NPL to Gross Loans of Akbank during 2005-2016

“Specific provision reserve over NPLs ratio” from 2005 to 2010 was 100% and in 2011 it dropped to 92.65% in 2011.

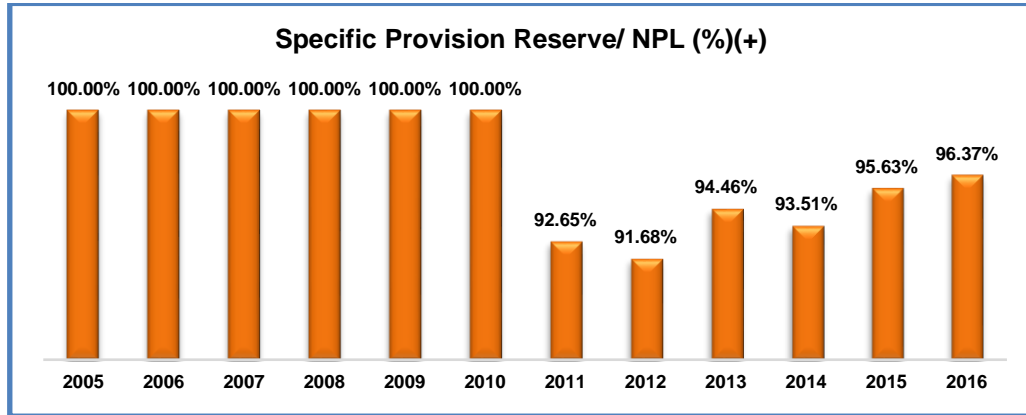


Figure 123. Specific Provision Reserve to NPL of Akbank during 2005-2016

“Bearing assets over total assets ratio” was between 85% and 94%.

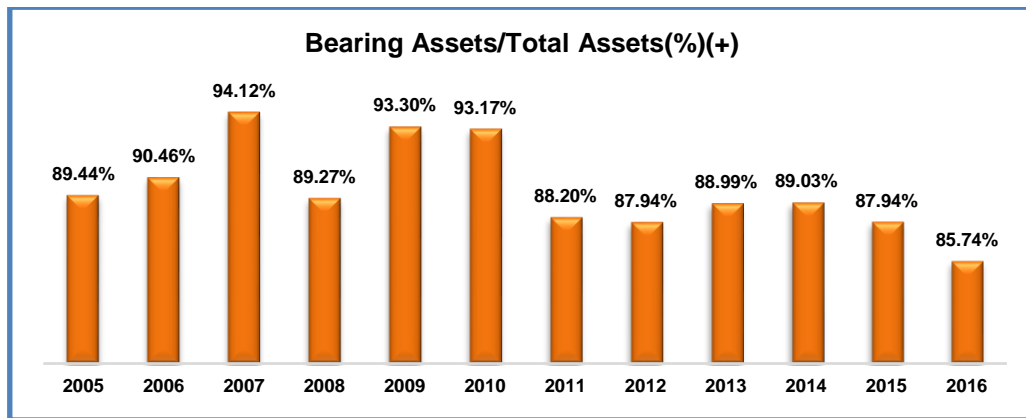


Figure 124. Bearing Assets to Total Assets of Akbank during 2005-2016

Management rate fluctuated between 50.23% and 88.73% during 12 years.

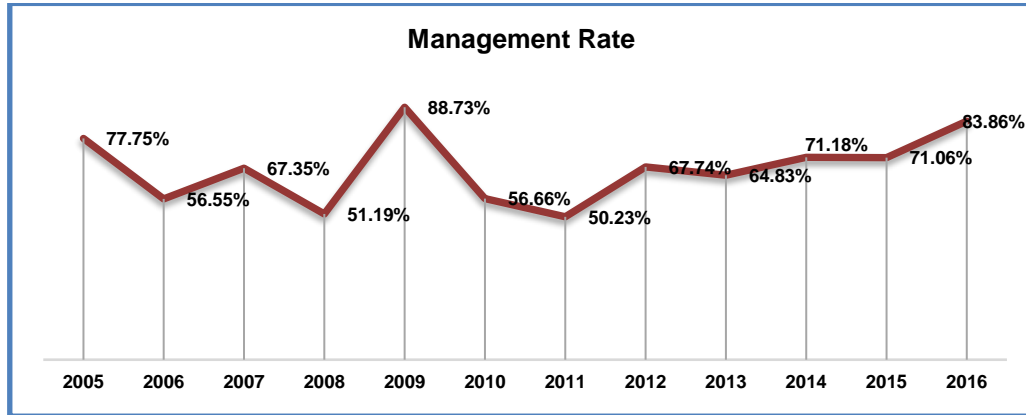


Figure 125. Management Rate of Akbank during 2005-2016

“Current deposits plus savings deposits over total deposits ratio” was between 46.08% and 55.41% during twelve years.

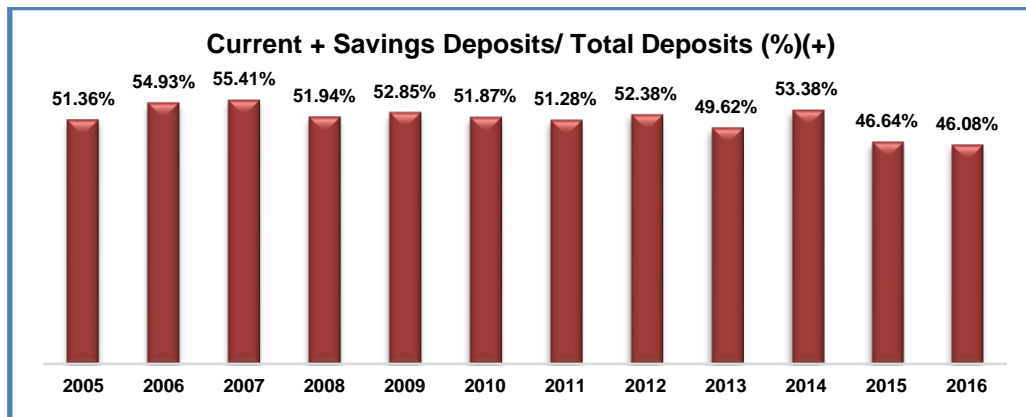


Figure 126. Current plus Saving Deposits to Total Deposits of Akbank during 2005-2016

Growth rate of net income per branch fluctuated between -29.50% and 62.18% during 12 years.

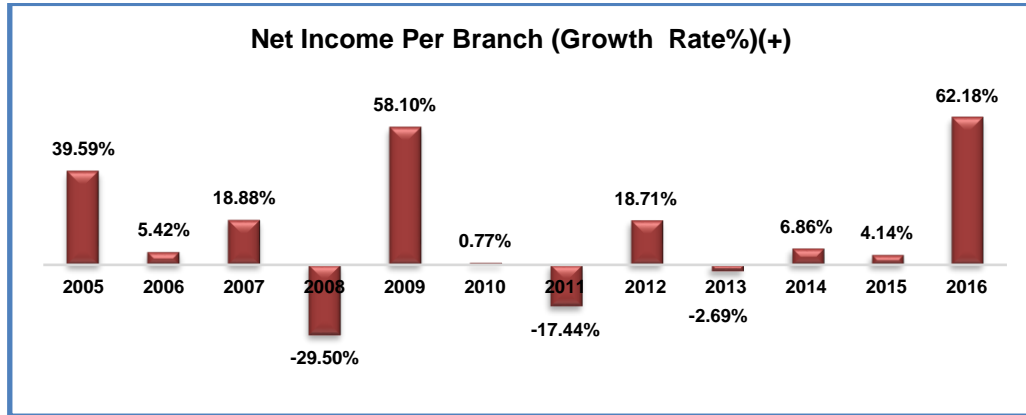


Figure 127. Net Income per Branch (Growth Rate) of Akbank during 2005-2016

Growth rate of net income per employee was between -23.65% and 64.41%.

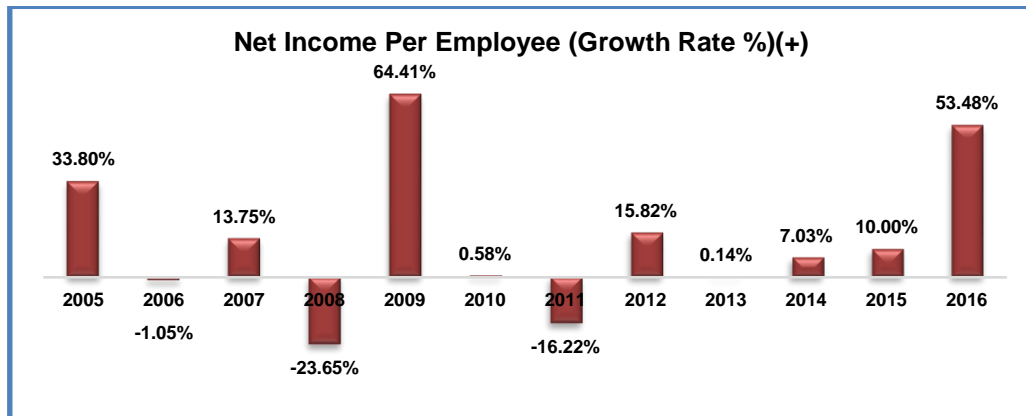


Figure 128. Net Income per Employee (Growth Rate) of Akbank during 2005-2016

“Non-interest expenses plus impairment expenses over total assets ratio” was between 2.31% and 3.89% during twelve years.

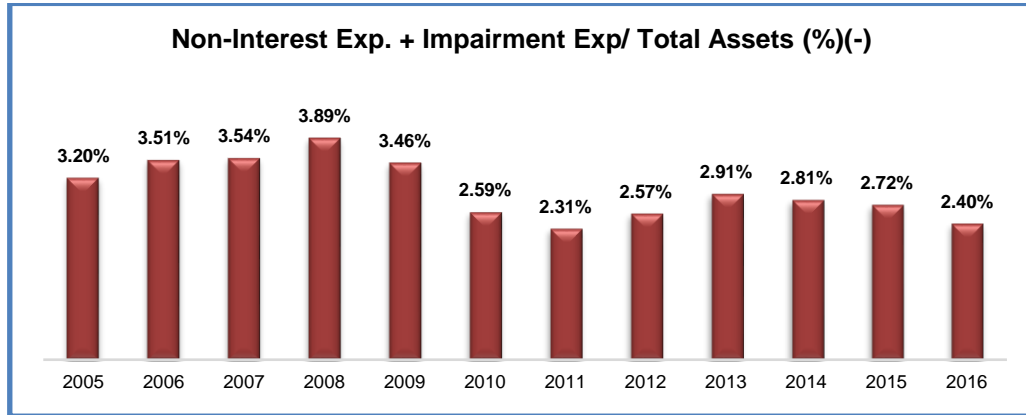


Figure 129. Non-Interest Exp. Plus Impairment Exp. to Total Assets of Akbank during 2005-2016

The Below ratio was between 149.72% and 240.24% during 12 years.

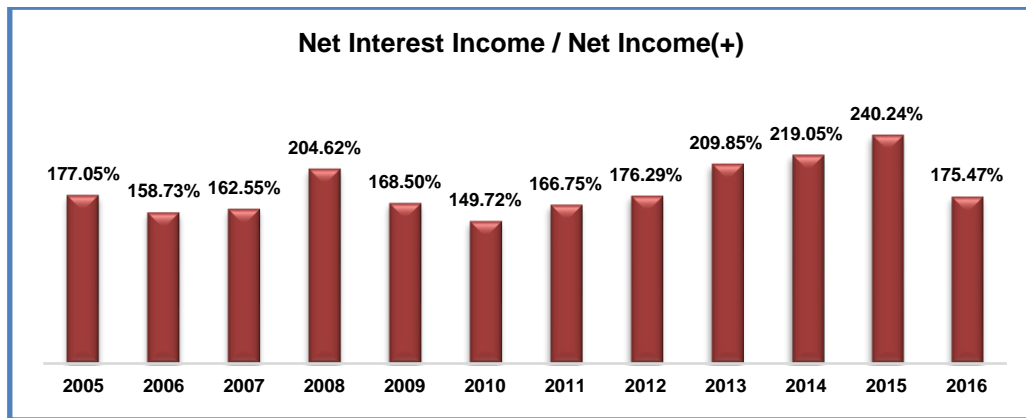


Figure 130. Net Interest Income to Net Income of Akbank during 2005-2016

“Net Interest Income over non-interest Expenses ratio” was between 159.46% and 210.32% during twelve years.

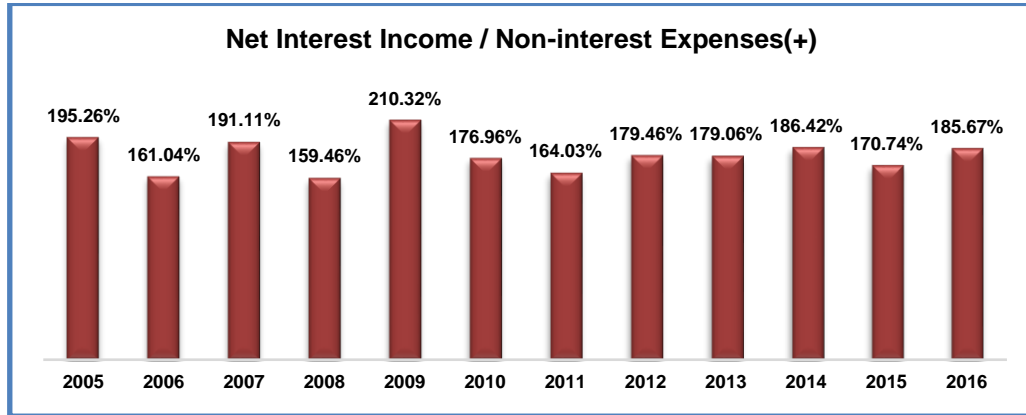


Figure 131. Net Interest Income to Non-Interest Expenses of Akbank during 2005-2016

Earning rate from 3.92% in 2013 dropped to 2.08% in 2015. It went up to 4.75% in 2016.

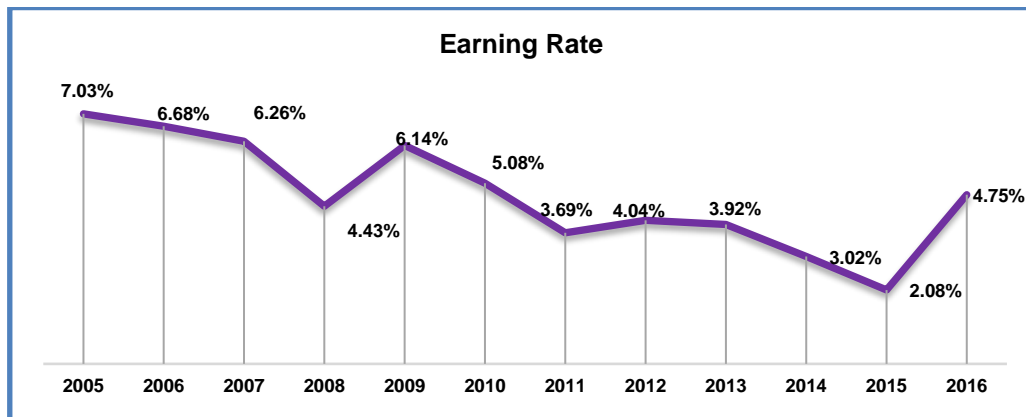


Figure 132. Earning Rate of Akbank during 2005-2016

Figure 133. shows “Net income over Total Assets ratio” was between 1.28% and 2.92% during 12 years.

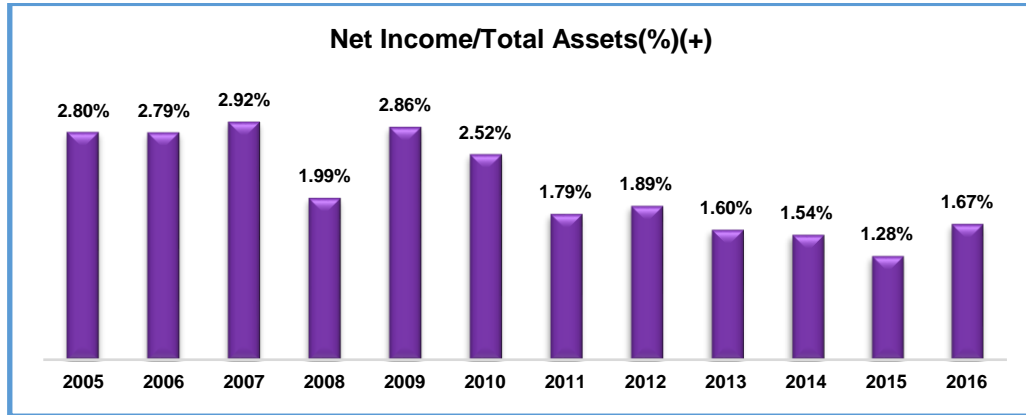


Figure 133. Net Income to Total Assets of Akbank during 2005-2016

“Net income over equity ratio” was between 11.22% and 23.07% during 12 years. It was at the highest level in 2005 (23.07%).

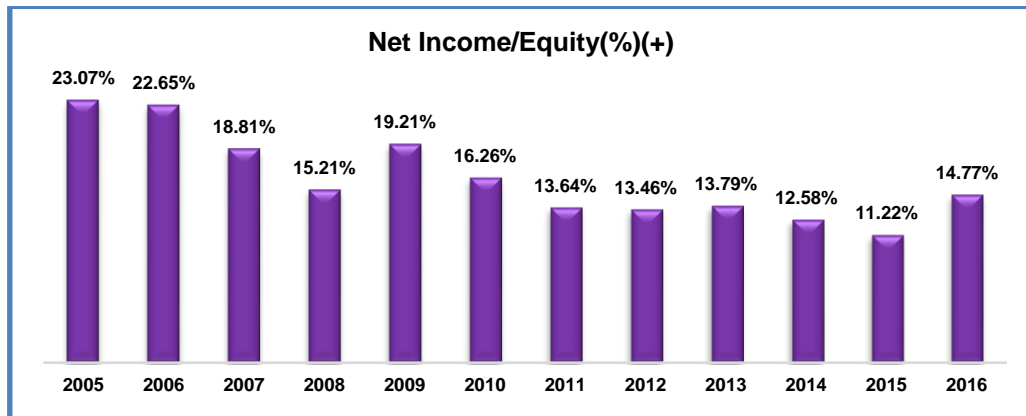


Figure 134. Net Income to Equity of Akbank during 2005-2016

“Net interest margin ratio” was between 3.39% and 5.54% during 12 years.

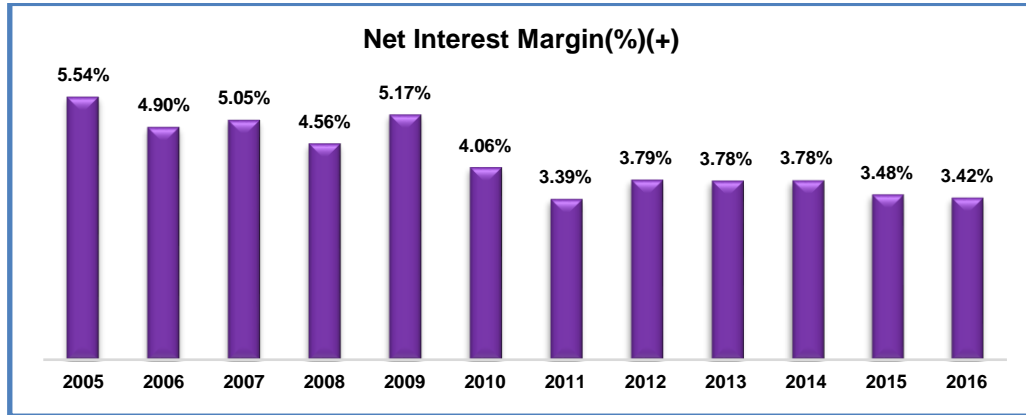


Figure 135. Net Interest Margin of Akbank during 2005-2016

The ratio in below was between 33.11% and 41.23% during 12 years.

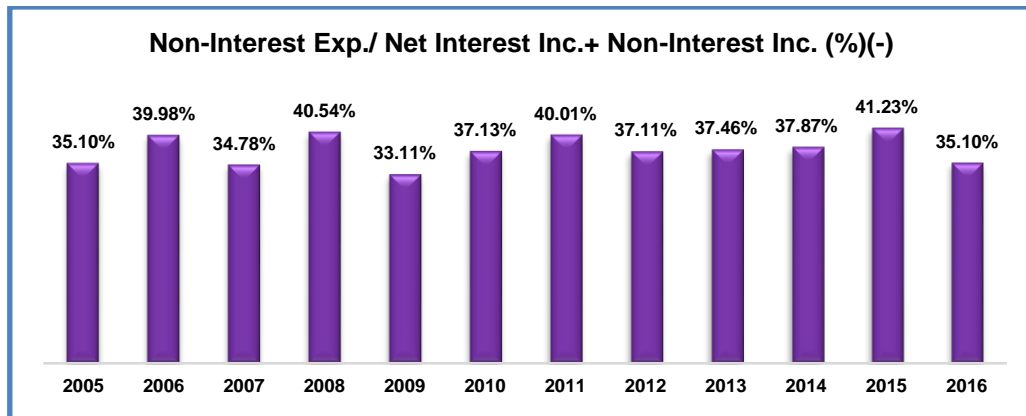


Figure 136. Non-Interest Exp. to Net Interest Inc. plus Non-Interest Inc. of Akbank during 2005-2016

The below ratio was between 29.40% and 35.61% during 12 years.

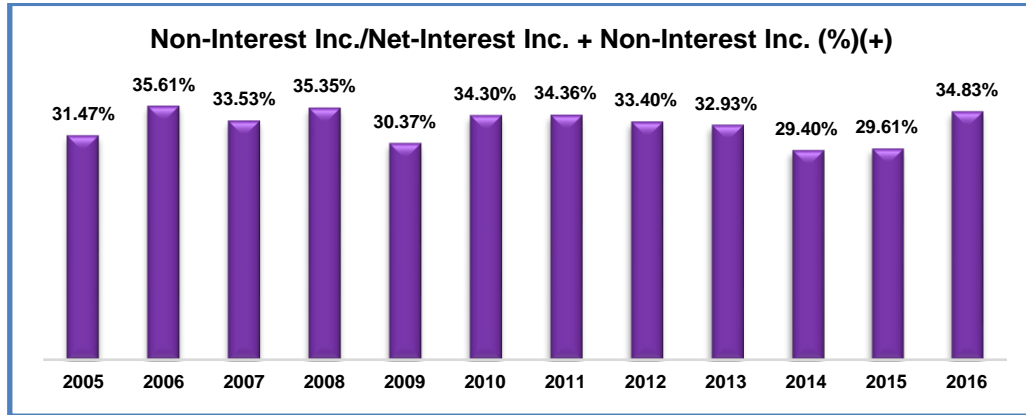


Figure 137. Non-Interest Inc. to Net-Interest Inc. plus Non-Interest Inc. of Akbank during 2005-2016

Liquidity rate fluctuated between 63.35% and 60.01% from 2005 to 2009. In 2010 it increased to 65.57%. From 2010 to 2014 it gradually drops from 65.57% to 18.36%. In 2015 and 2016 it goes up to around 20.51% and 20.53% respectively.

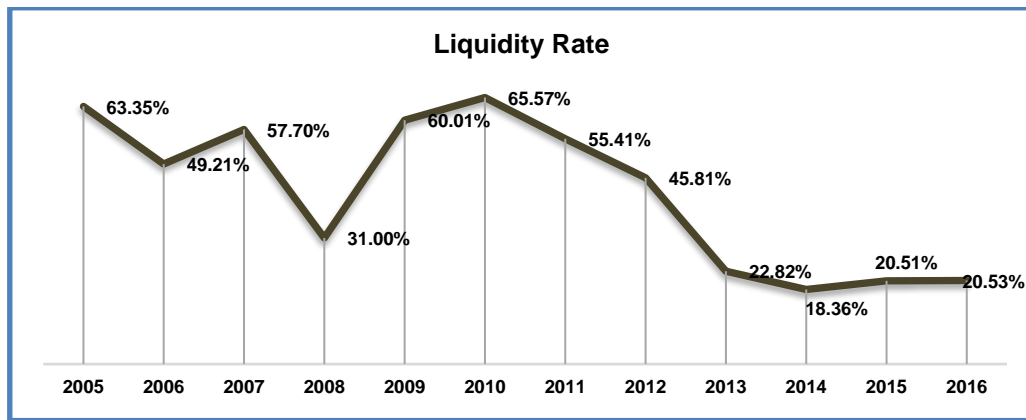


Figure 138. Liquidity Rate of Akbank during 2005-2016

“Liquid assets over total assets ratio” was between 21.10% and 44.27% during twelve years.

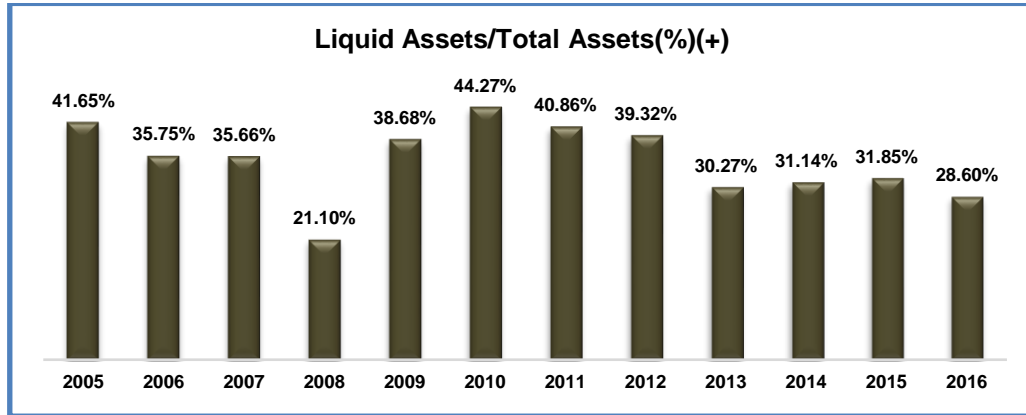


Figure 139. Liquid Assets to Total Assets of Akbank during 2005-2016

“Liquid assets over total foreign liabilities ratio” was between 68.64% and 216.66% during 12 years. In 2010 it was in the highest level at 216.66% and it was in the lowest level in 2016 at 68.64%.

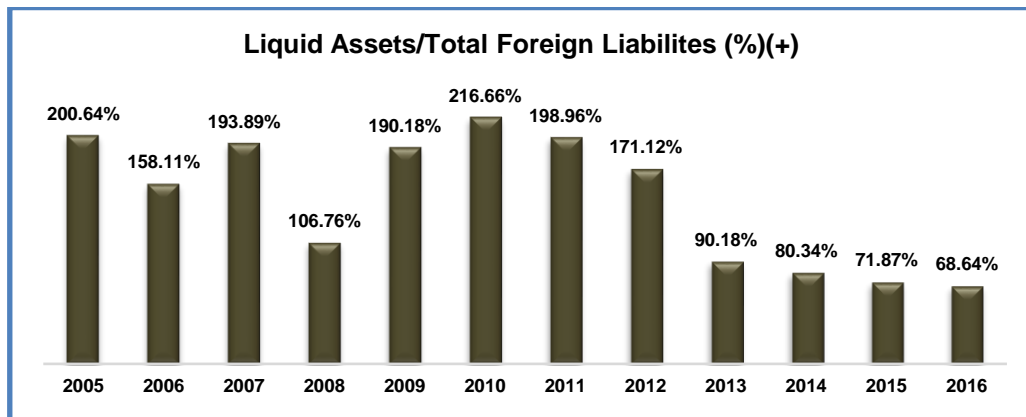


Figure 140. Liquid Assets to Total Foreign Assets of Akbank during 2005-2016

“Gross loans over deposit ratio” was between 78.16% and 127.99% during 12 years.

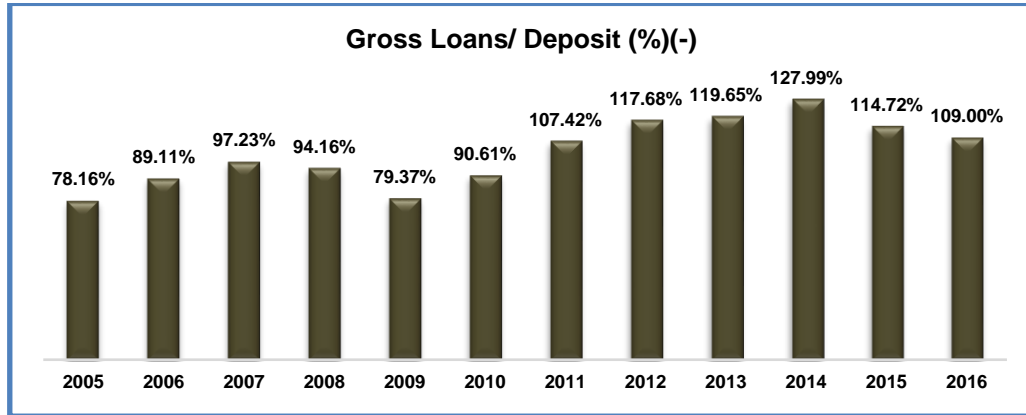


Figure 141. Gross Loans to Deposit of Akbank during 2005-2016

“Customer deposits over total funding ratio” was between 58.10% and 71.88% during 12 years.

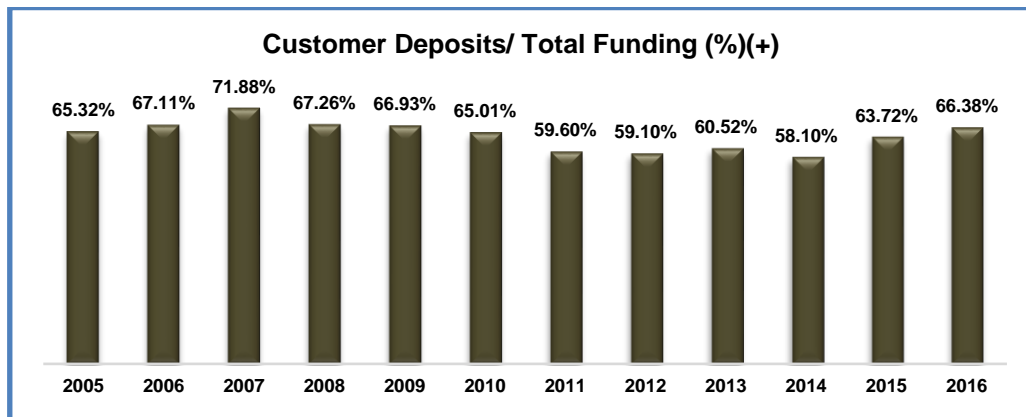


Figure 142. Customer Deposits to Total Funding of Akbank during 2005-2016

Sensitivity rate in 2005 was 20.73% and it gradually increased to 25.95% in 2007. From 2007 (25.95%) to 2009 (21.57%) it gradually dropped. From 2009 to 2016 it gradually increased from 21.57% to 25.78%.

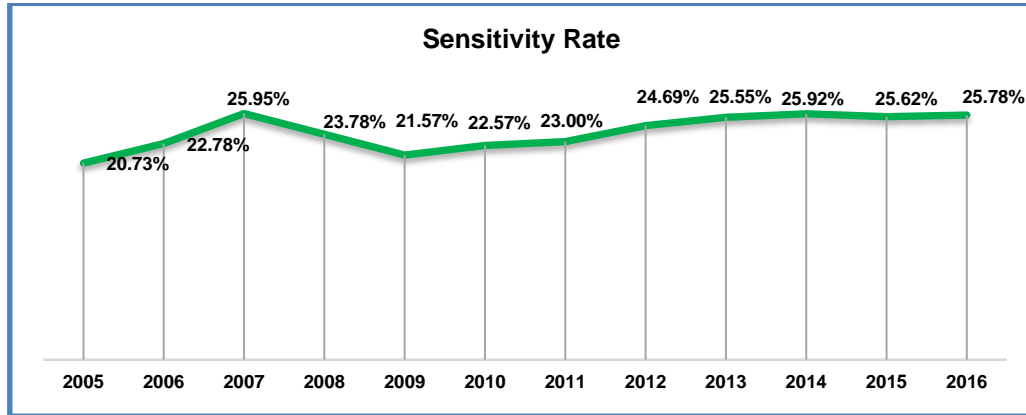


Figure 143. Sensitivity Rate of Akbank during 2005-2016

“Securities portfolio over total assets ratio” from 2005 (42.91%) to 2008 (32.59%) gradually decreased. This ratio from 2008 (32.59%) to 2009 (48.35%) increased by 48.35%. From 2009 (48.35%) to 2016 it gradually dropped to 19.20%.

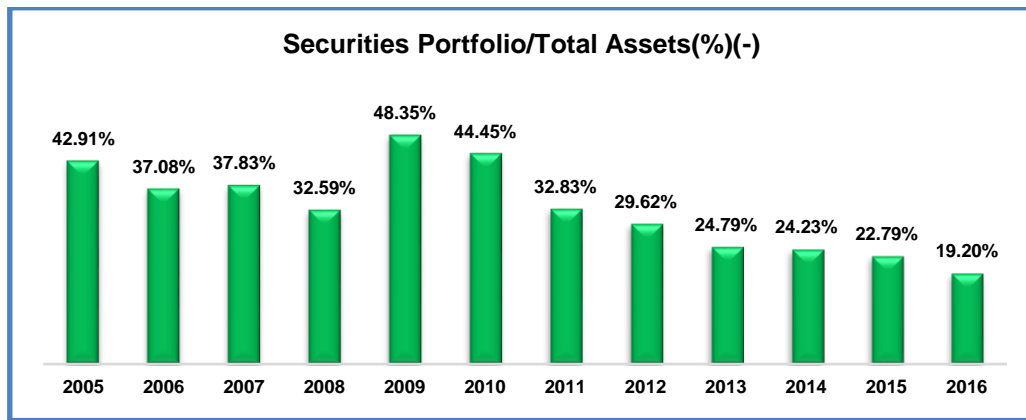


Figure 144. Securities Portfolio to Total Assets of Akbank during 2005-2016

“Bearing assets over costly liabilities ratio” fluctuated between 101.22% and 118% during twelve years.

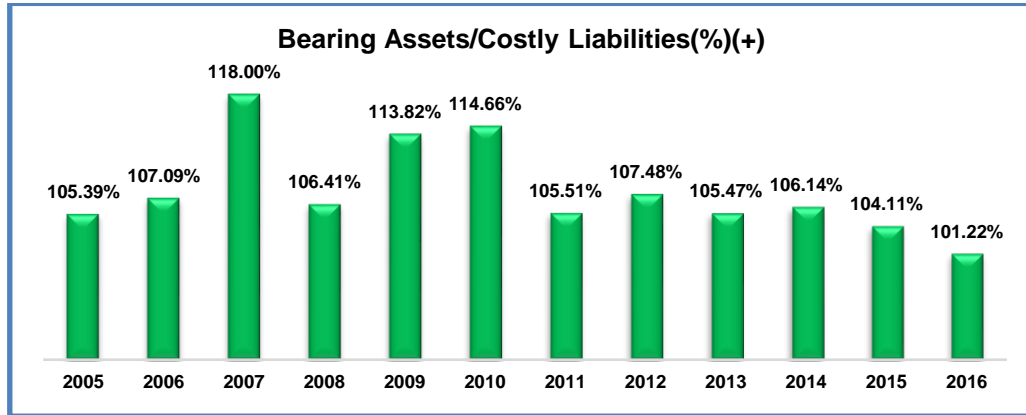


Figure 145. Bearing Assets to Costly Liabilities of Akbank during 2005-2016

“Net interest income over total assets ratio” was between 2.93% and 4.95% during twelve years.

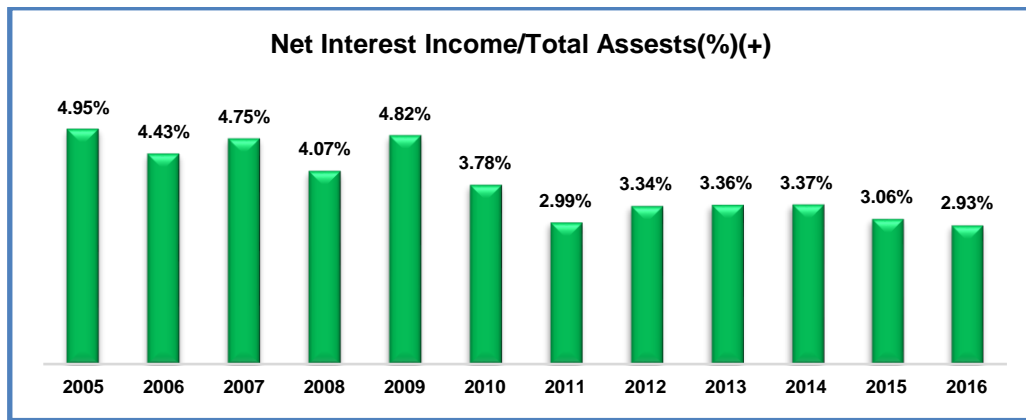


Figure 146. Net Interest Income to Total Assets of Akbank during 2005-2016

6.5.3. CAMELS rating for Akbank

Overall rates for Akbank was between 26.09% and 38.65% during twelve years and also CAMELS performance index shows the same trend for index. Year 2008 (71.47) shows the lowest level while year 2009 (102.06) shows the highest level.

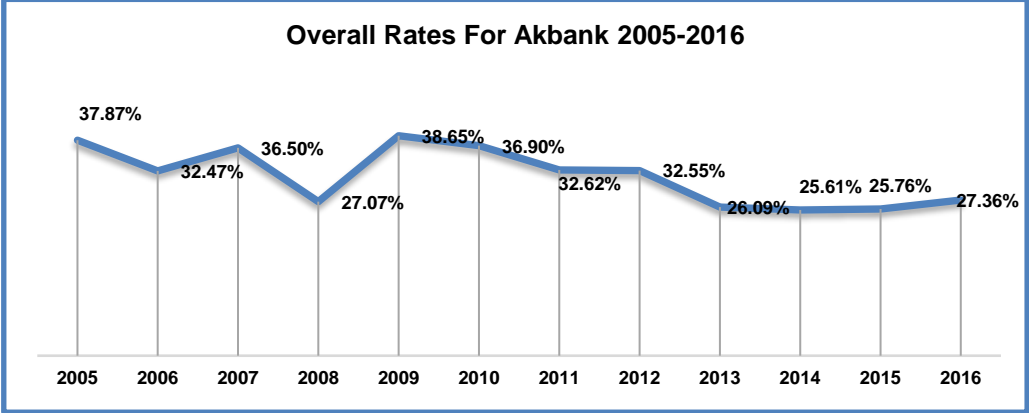


Figure 147. CAMELS Overall Rates for Akbank during 2005-2016

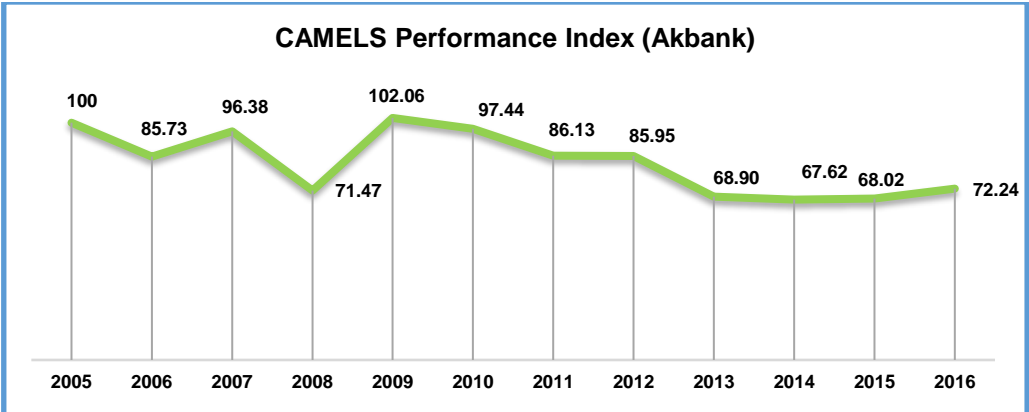


Figure 148. CAMELS Performance Index for Akbank during 2005-2016

Short Name	No.	Weight	Ratios	2016
C				
		<i>Overall Weight</i>	<i>Capital</i>	
C		0,20		
CAR	1	0,40	Capital Adequacy Ratio(%) (+)	14%
ETL	2	0,20	Equity/ Total Liabilities (%) (+)	13%
ENL	3	0,20	Equity/ Net Loans (%) (+)	19%
ETA	4	0,20	Equity/Total Assets(%) (+)	11%
Capital Rate				14%
A				
		<i>Overall Weight</i>	<i>Asset</i>	
A		0,20		
LTA	5	0,20	Loans/Total Assets(%) (+)	60%
FATA	6	0,20	Fixed Assets/Total Assets(%) (-)	0%
NPLGL	7	0,30	NPL / Gross Loans (%) (-)	3%
SPRNPL	8	0,15	Specific Provision Reserve/ NPL (%) (+)	96%
BATA	9	0,15	Bearing Assets/Total Assets(%) (+)	86%
Asset Rate				38%
M				
		<i>Overall Weight</i>	<i>Management</i>	
M		0,10		
CSDTD	10	0,15	Current + Savings Deposits/ Total Deposits (%) (+)	46%
NIPB	11	0,20	Net Income Per Branch (Growth Rate) (%) (+)	62%
NIPE	12	0,20	Net Income Per Employee (Growth Rate) (%) (+)	53%
NIEIETA	13	0,15	Non-Interest Exp. + Impairment Exp/ Total Assets (%) (-)	2%
NIINI	14	0,15	Net Interest Income / Net Income (+)	175%
NINIE	15	0,15	Net Interest Income / Non-interest Expenses (+)	186%
Management Rate				84%
E				
		<i>Overall Weight</i>	<i>Earnings</i>	
E		0,15		
ROA	16	0,25	Net Income/Total Assets(%) (+)	2%
ROE	17	0,25	Net Income/Equity(%) (+)	15%
NIM	18	0,20	Net Interest Margin(%) (+)	3%
NIENINII	19	0,15	Non-Interest Exp./ Net Interest Inc.+ Non-Interest Inc. (%) (-)	35%
NIINIINII	20	0,15	Non-Interest Inc./Net-Interest Inc. + Non-Interest Inc. (%) (+)	35%
Earning Rate				5%
L				
		<i>Overall Weight</i>	<i>Liquidity</i>	
L		0,25		
LATA	21	0,30	Liquid Assets/Total Assets(%) (+)	29%
LATFL	22	0,25	Liquid Assets/Total Foreign Liabilities (%) (+)	69%
GLD	23	0,20	Gross Loans/ Deposit (%) (-)	109%
CDTF	24	0,25	Customer Deposits/ Total Funding (%) (+)	66%
Liquidity Rate				21%
S				
		<i>Overall Weight</i>	<i>Sensitivity</i>	
S		0,10		
SPTA	25	0,30	Securities Portfolio/Total Assets(%) (-)	19%
BACL	26	0,30	Bearing Assets/Costly Liabilities(%) (+)	101%
NICTA	27	0,40	Net Interest Income/Total Assets(%) (+)	3%
Sensitivity Rate				26%
Overall Rates For Akbank 2005-2016				27%

Table 14. CAMELS Rating for Akbank 2016 (Numbers are rounded)

6.6 GARANTI BANK

6.6.1. Brief History

Established in 1946, Garanti Bank is Turkey's second largest private bank with consolidated assets of US\$ 106 billion. It operates in corporate, commercial, SME, private, retail, investment banking and payment systems. Garanti is an integrated financial services group with its eight subsidiaries offering services in pension and life insurance, leasing, factoring, brokerage and asset management besides the international subsidiaries in the Netherlands, Russia and Romania. Garanti has an extensive distribution with 1,001 branches, more than 4,003 ATMs. (Official Website of Garanti Bank) (The Banks Association of Turkey)

6.6.2. Trend Analysis of Main Ratios under CAMELS Model for Garanti Bank during 12 Years

Capital rate category as the first category of CAMELS model for Garanti Bank shows that capital rate was between 12.96% and 19.25%. In year 2005 it was 14.98%. It was almost stable.

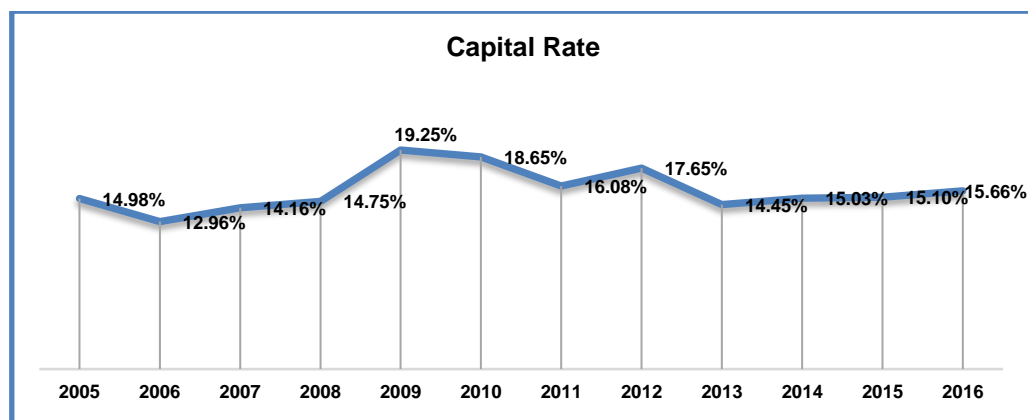


Figure 149. Capital rate of Garanti Bank during 2005-2016

“Capital adequacy ratio (CAR)” in the highest level stands at 21.20% in 2009. This ratio was between 14.10% and 21.20%.

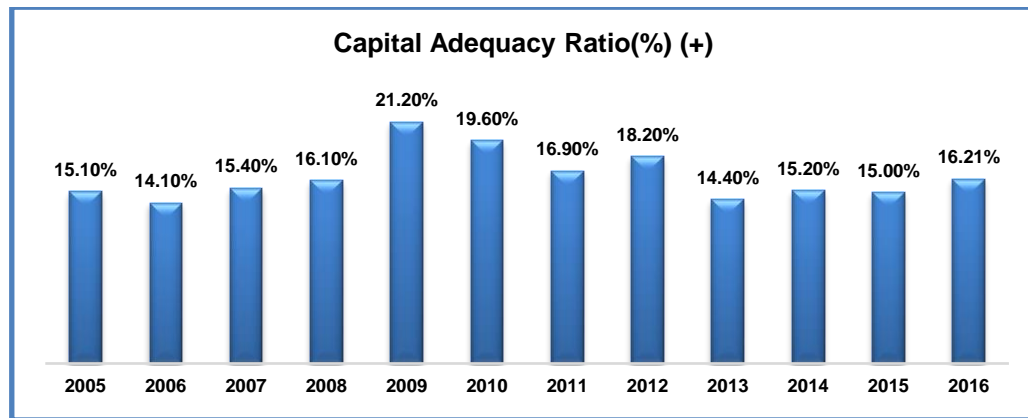


Figure 150. Capital Adequacy Ratio of Garanti Bank during 2005-2016

“Equity over total liabilities ratio” was between 10.24% and 15.34% during twelve years.

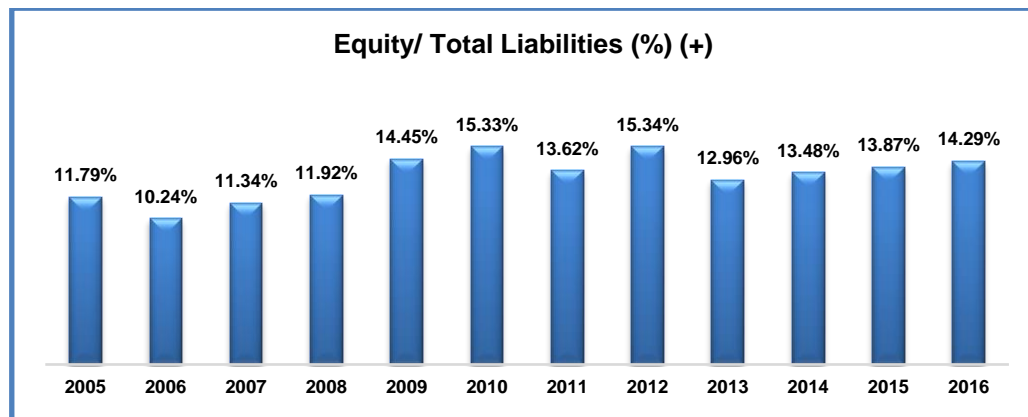


Figure 151. Equity to Total Liabilities of Garanti Bank during 2005-2016

“Equity over net loans ratio” in 2006 (17.08%) was in the lowest level. It was in the highest level in 2009 (26.77%).

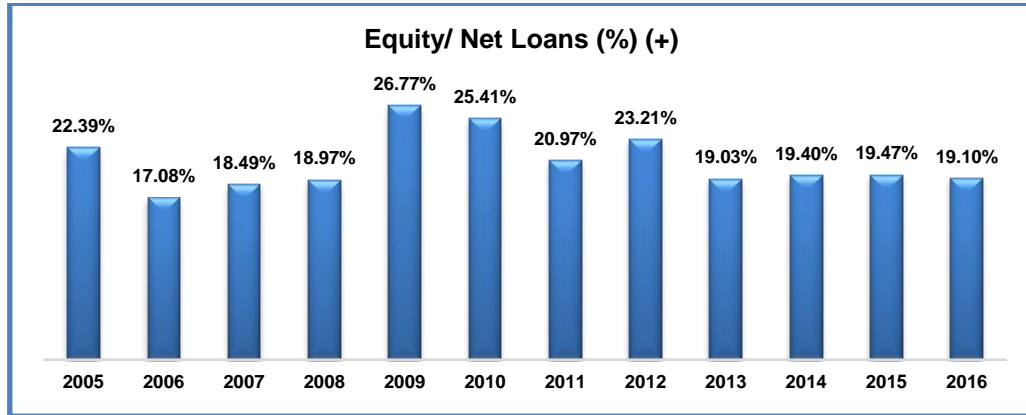


Figure 152. Equity to Net Loans of Garanti Bank during 2005-2016

“Equity to total assets ratio” was between 9.29% and 13.30% during twelve years.

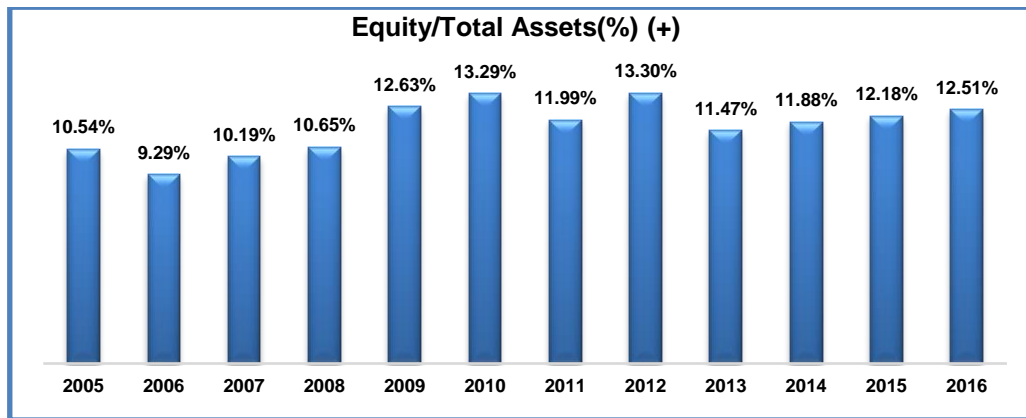


Figure 153. Equity to Total Assets of Garanti Bank during 2005-2016

Asset category is the second category of CAMELS model. Asset rate gradually increased from 29.95% (2005) to 37.36% (2016).

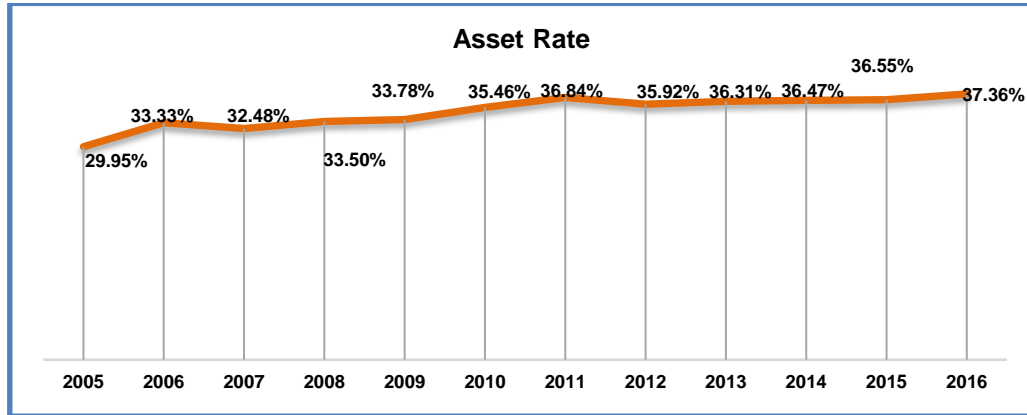


Figure 154. Asset Quality rate of Garanti Bank during 2005-2016

“Loans over total assets ratio” was from 47.10% (2005) to 65.47% (2016).

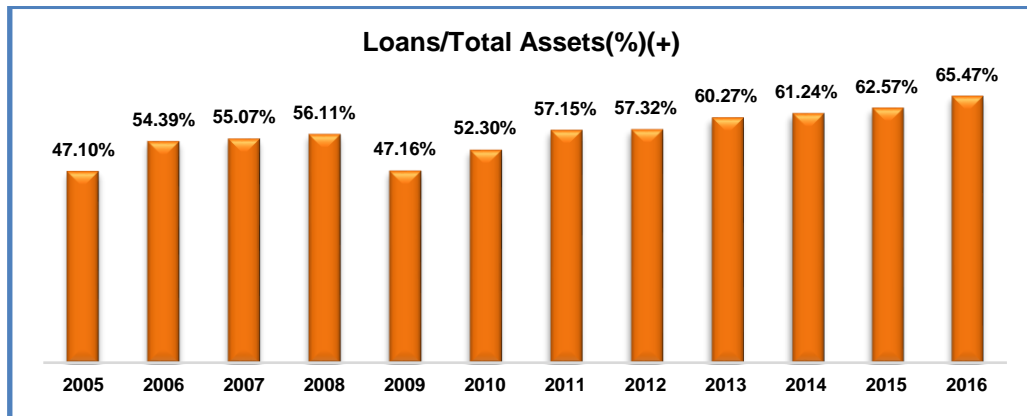


Figure 155. Loans to total Assets of Garanti Bank during 2005-2016

“Fixed assets over total assets ratio” was in the highest level in 2005 (3.75%) and it was at lowest level in 0.77% in 2014.

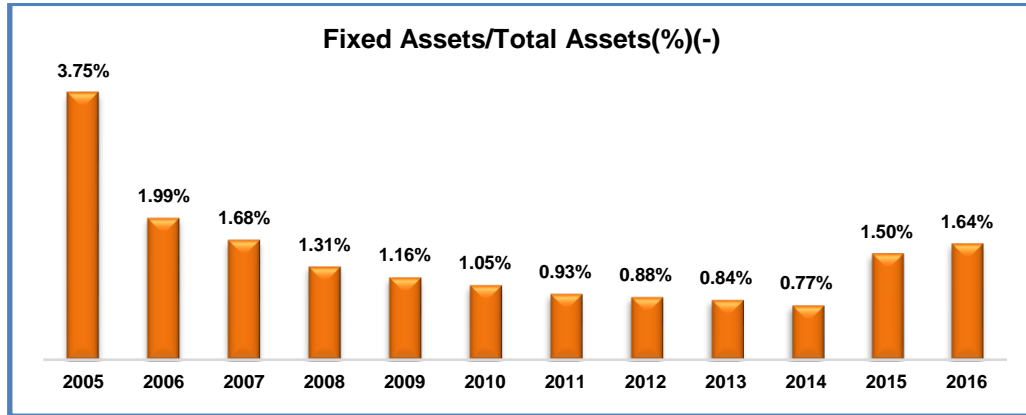


Figure 156. Fixed Assets to Total Assets of Garanti Bank during 2005-2016

“NPLs over gross loans ratio” was between 1.80% and 4.30% during twelve years.

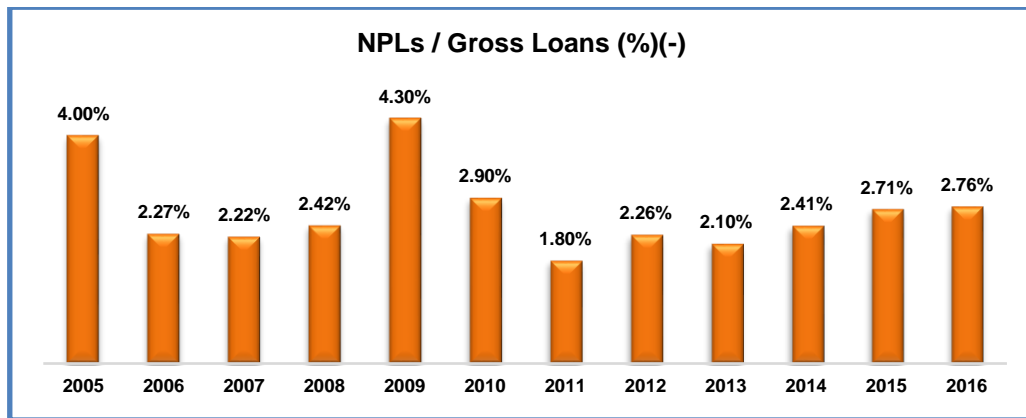


Figure 157. NPL to Gross Loans of Garanti Bank during 2005-2016

“Specific provision reserve over NPLs ratio” was between 63.69% and 81.87%. From 2009 to 2016 this ratio was stable and it was between 80.93% and 81.87%.

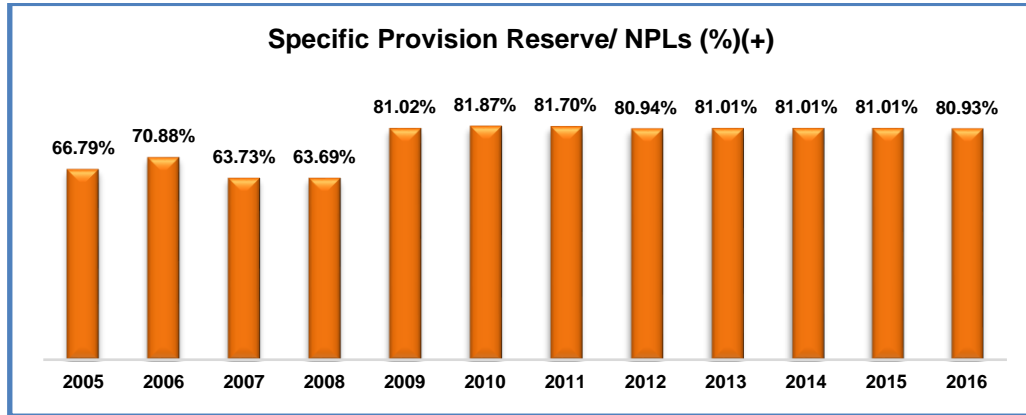


Figure 158. Specific Provision Reserve to NPL of Garanti Bank during 2005-2016

Last ratio in asset category is bearing assets over total assets. This ratio from year 2007 (86.07%) surged to 91.39% in year 2008. Between 2008 to 2011 it stands between 91.39% and 92.55%. After 2011(92.55%) it dropped to 87.77% in 2012. It ended at 88.54% in 2016.

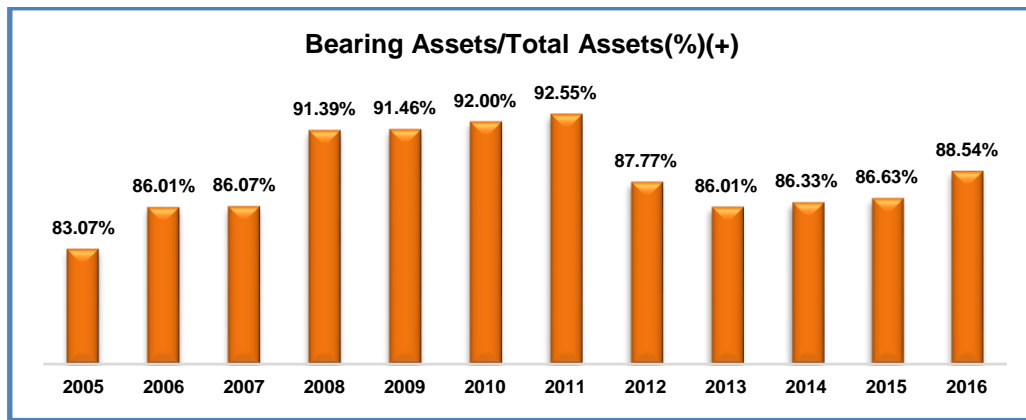


Figure 159. Bearing Assets to Total Assets of Garanti Bank during 2005-2016

Management category is the third category of CAMELS model. This ratio was between 38.41% and 87.11%. Except year 2008 (38.41%) as the trend shows, this ratio was in a stable mood from 2010 (54.32%) to 2016 (87.11%).

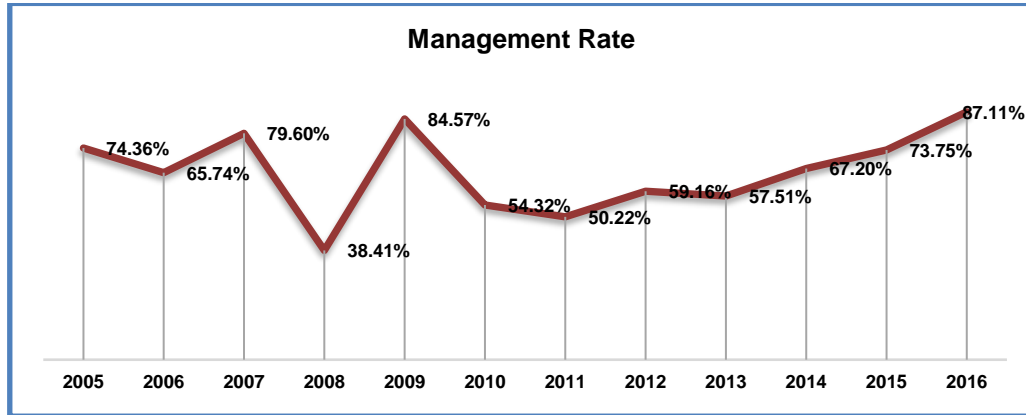


Figure 160. Management Rate of Garanti Bank during 2005-2016

“Current deposits plus saving deposits over total deposits ratio” was in a stable range from 2005 (49.44%) to 2016 (50.93%).

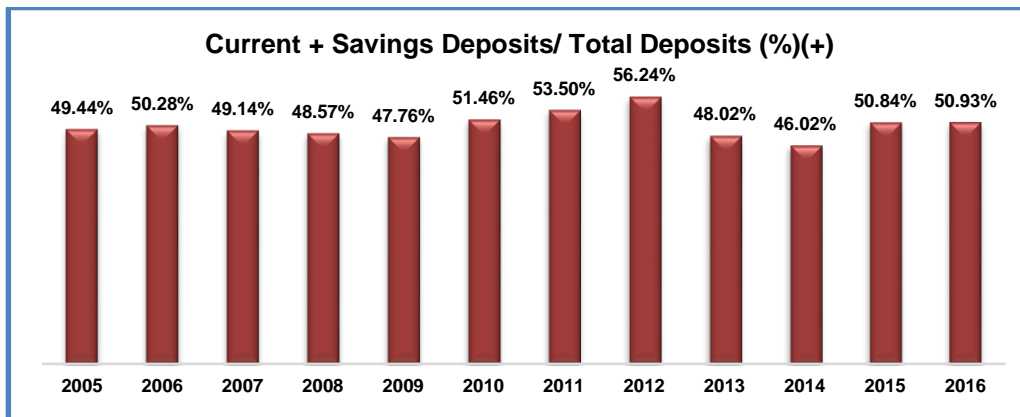


Figure 161. Current plus Saving Deposits to Total Deposits of Garanti Bank during 2005-2016

Growth rate of net income per branch was between -38.77% and 78.83% during twelve years.

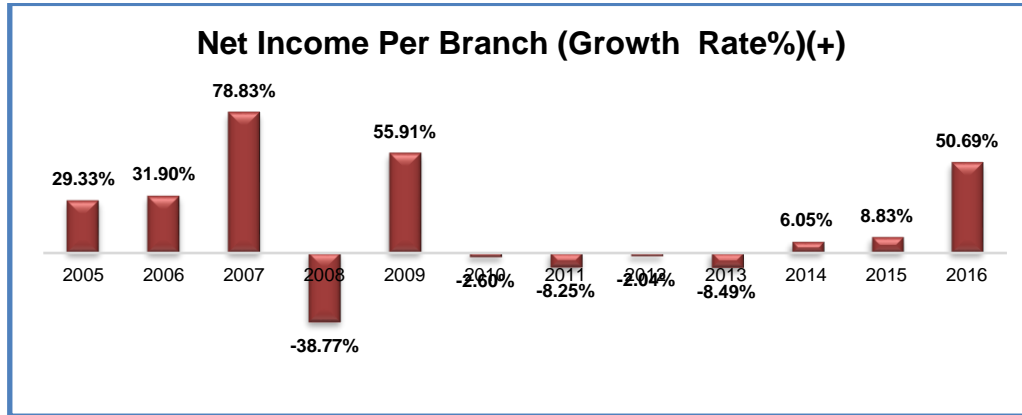


Figure 162. Net Income per Branch (Growth Rate) of Garanti Bank during 2005-2016

Growth rate of net income per employee was between -32.88% and 78.56% during twelve years.

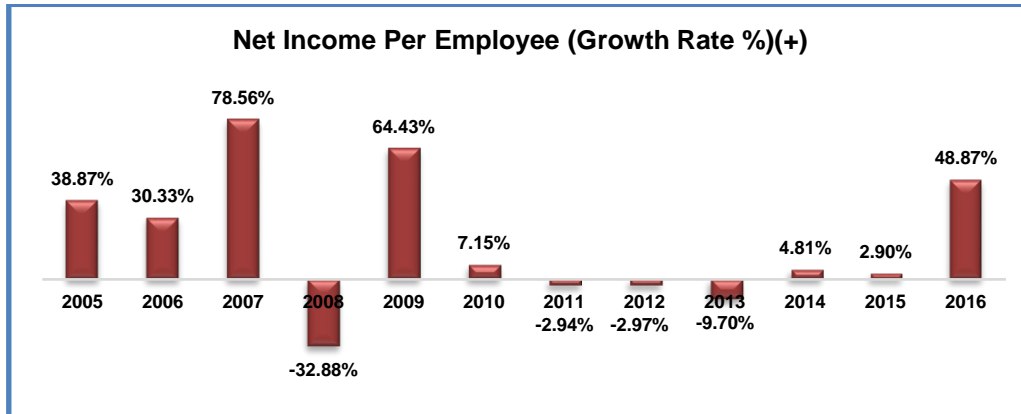


Figure 163. Net Income per Employee (Growth Rate) of Garanti Bank during 2005-2016

“Non-interest expenses plus impairment expenses over total assets ratio” mostly was around 3% from 2010 to 2016. In year 2005 it was at the highest level at 4.82%.

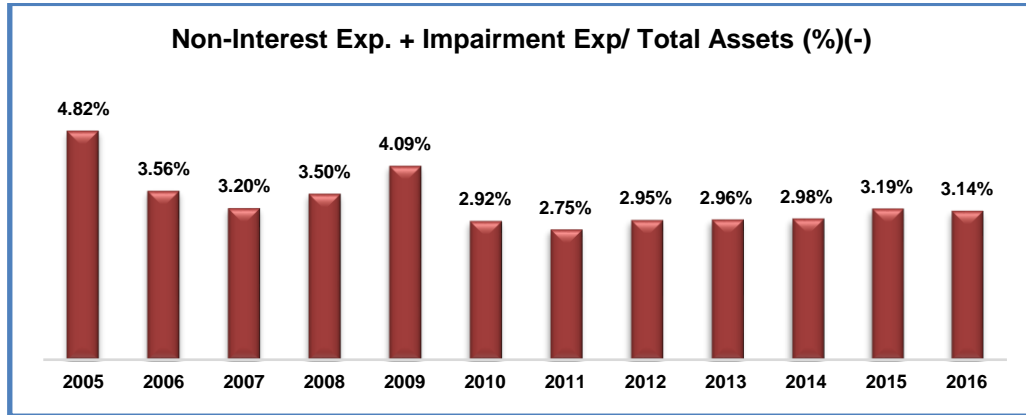


Figure 164. Non-Interest Exp. Plus Impairment Exp. to Total Assets of Garanti Bank during 2005-2016

“Net interest income over net income ratio” was in the highest level in 2015 (271.28%).

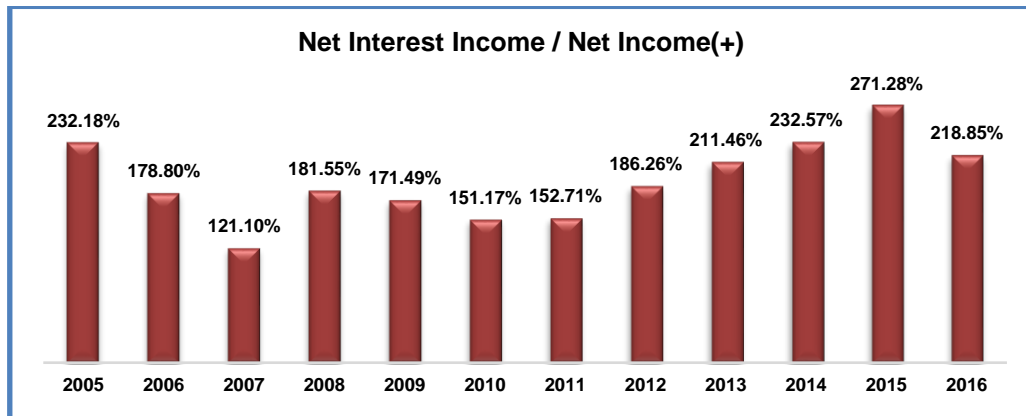


Figure 165. Net Interest Income to Net Income of Garanti Bank during 2005-2016

“Net interest income over non-interest expenses ratio” stands at the highest level in 2009 (188.19%).

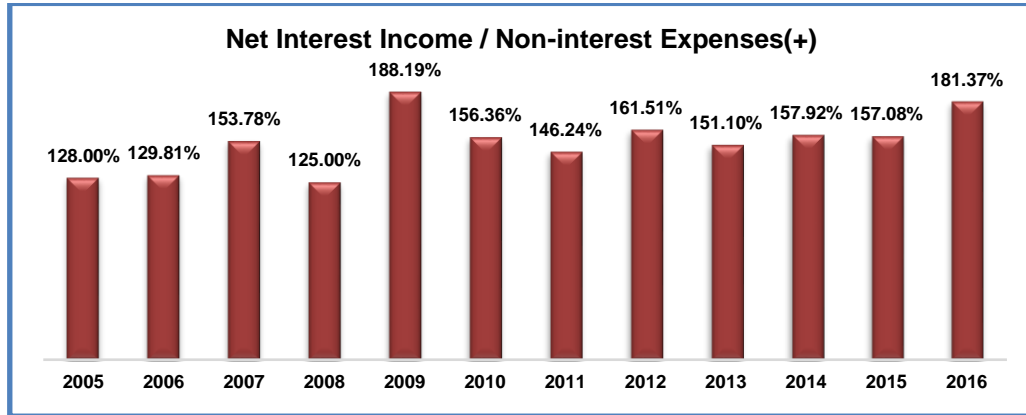


Figure 166. Net Interest Income to Non-Interest Expenses of Garanti Bank during 2005-2016

Earning rate in year 2007 was in the highest level at 11.16%. In 2015 it was at the lowest level at 0.03%.

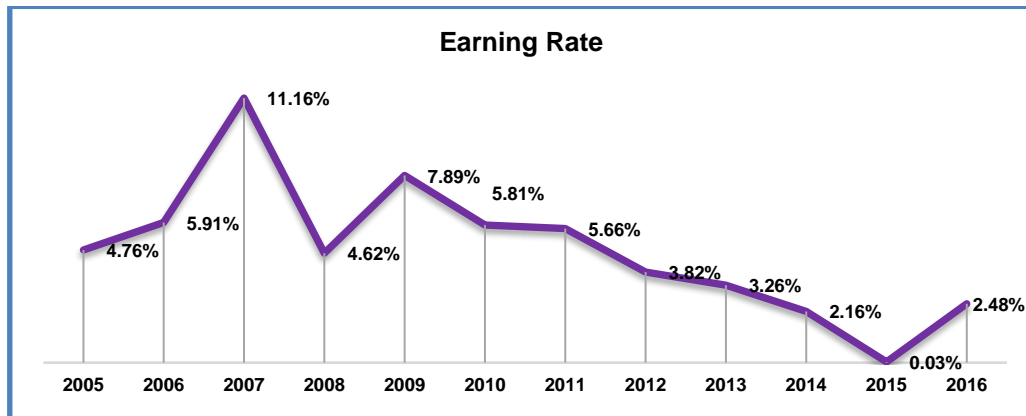


Figure 167. Earning Rate of Garanti Bank during 2005-2016

“Net income over total assets ratio” was between 1.34% and 3.43% during twelve years.

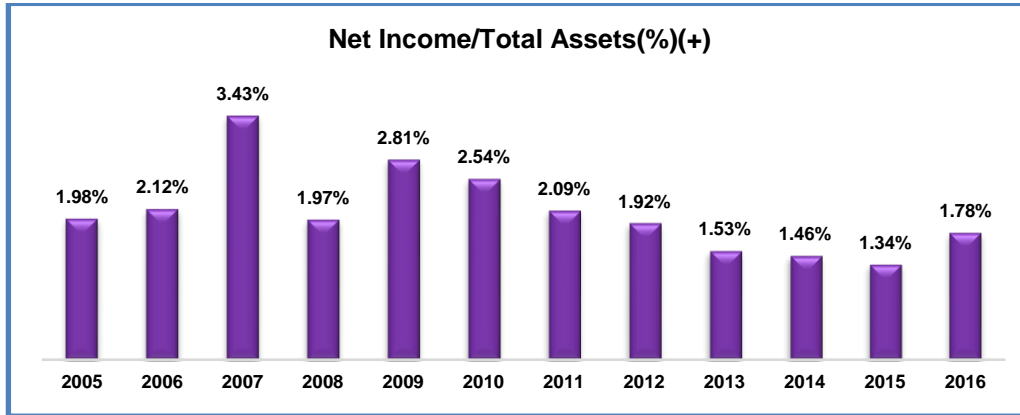


Figure 168. Net Income to Total Assets of Garanti Bank during 2005-2016

“Net income over equity ratio” was in the highest level in 2007 (33.64%) while in year 2015 it was in the lowest level at 11%.

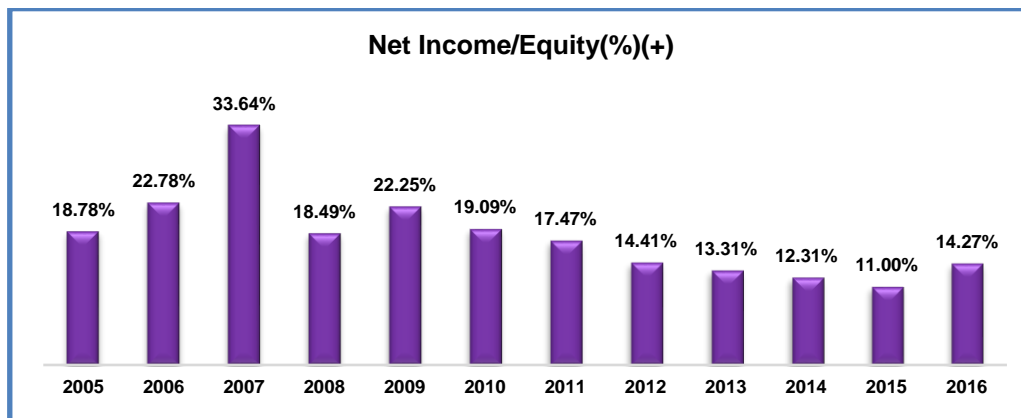


Figure 169. Net Income to Equity of Garanti Bank during 2005-2016

“Net interest margin ratio” was between 3.45% and 5.53% during twelve years.

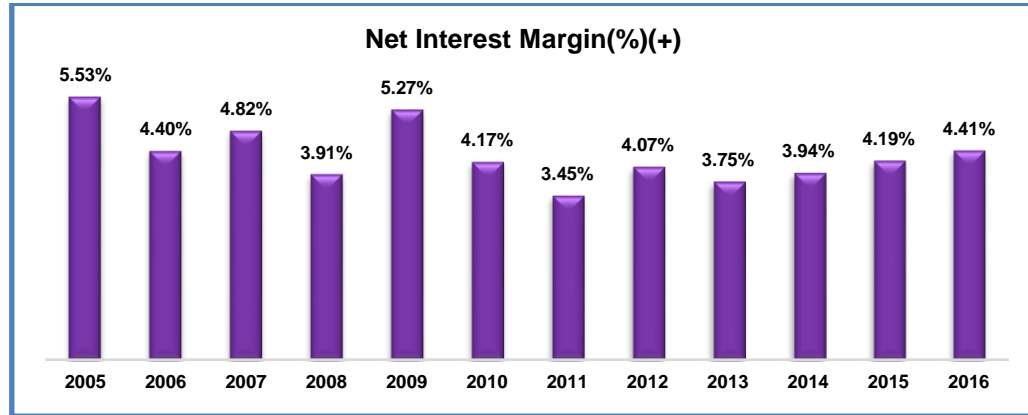


Figure 170. Net Interest Margin of Garanti Bank during 2005-2016

“Non-interest expenses over net interest income plus non-interest income ratio” was between 33.36% and 48.99% during twelve years.

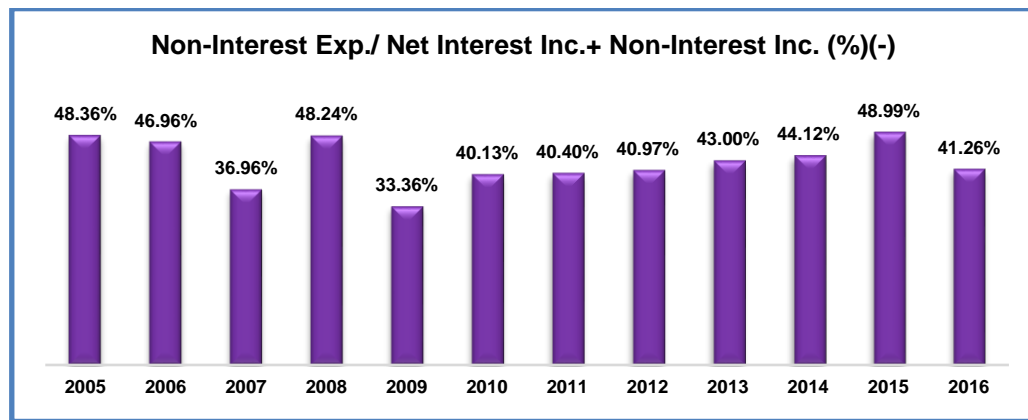


Figure 171. Non-Interest Exp. to Net Interest Inc. plus Non-Interest Inc. of Garanti Bank during 2005-2016

“Non-interest income over net-interest income plus non-interest income ratio” was in the highest level in 2011 (40.92%). In the lowest level it was at 23.05% in 2015.

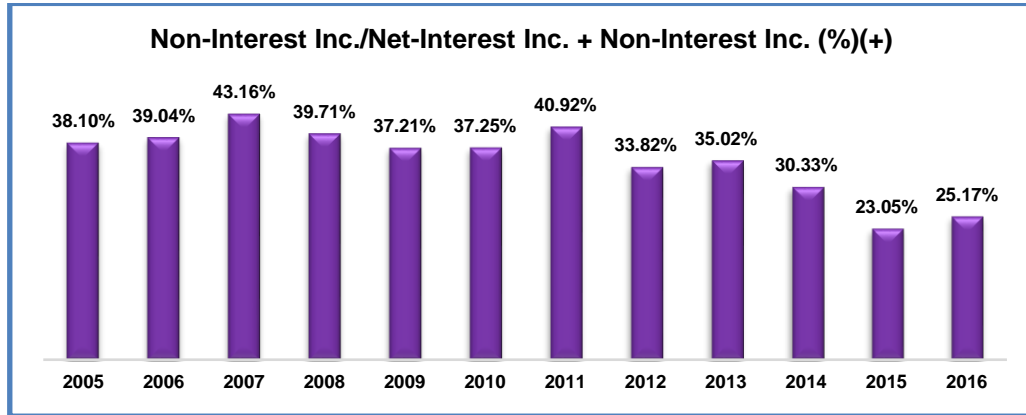


Figure 172. Non-Interest Inc. to Net-Interest Inc. plus Non-Interest Inc. of Garanti Bank during 2005-2016

Liquidity rate fluctuated a lot during twelve years between 11.15% and 69.82%.

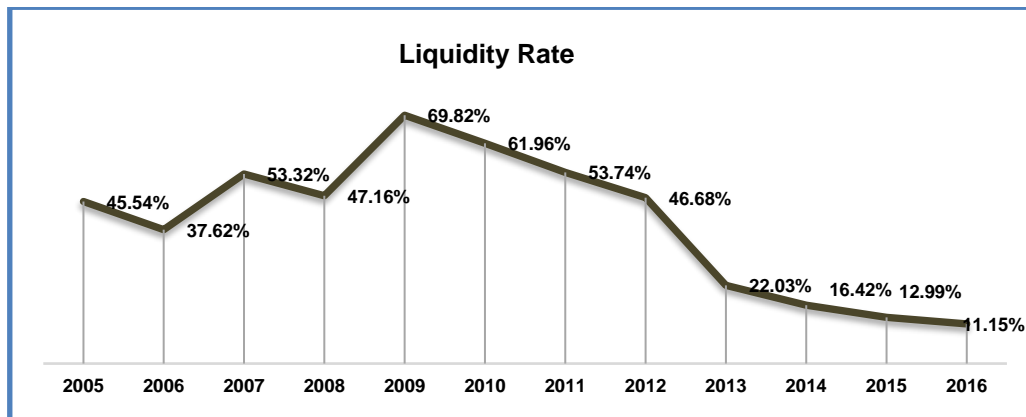


Figure 173. Liquidity Rate of Garanti Bank during 2005-2016

“Liquid assets over total assets ratio” was between 19.84% and 42% during twelve years.

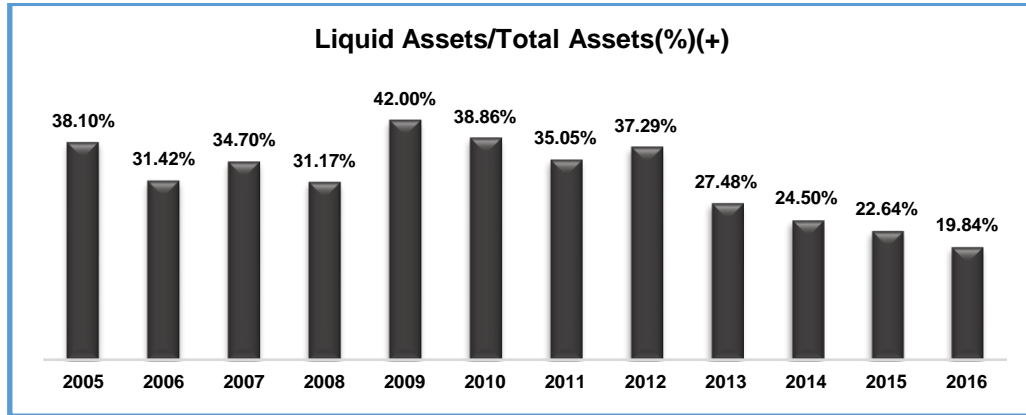


Figure 174. Liquid Assets to Total Assets of Garanti Bank during 2005-2016

“Liquid assets over total foreign liabilities ratio” in the best situation was at 228.48% in 2009.

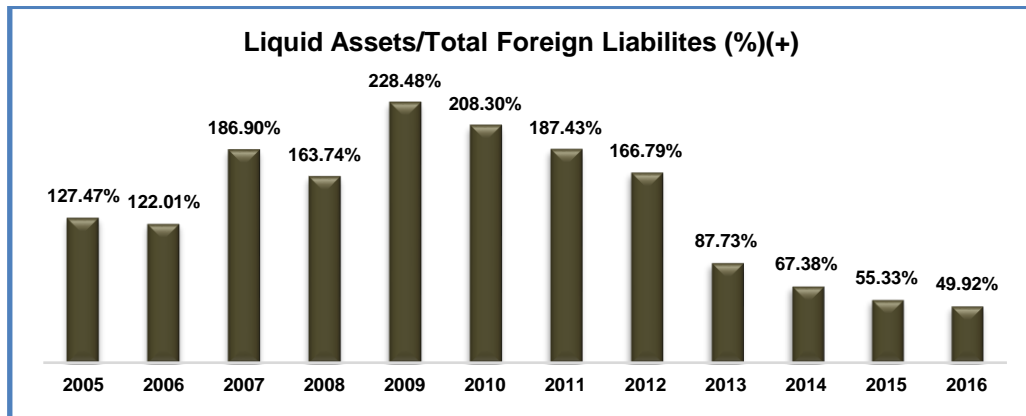


Figure 175. Liquid Assets to Total Foreign Assets of Garanti Bank during 2005-2016

“Gross loans over deposit ratio” was in the highest level at 121.46% in 2016 which due to negative relation of this ratio it has the highest negative effect during twelve years.

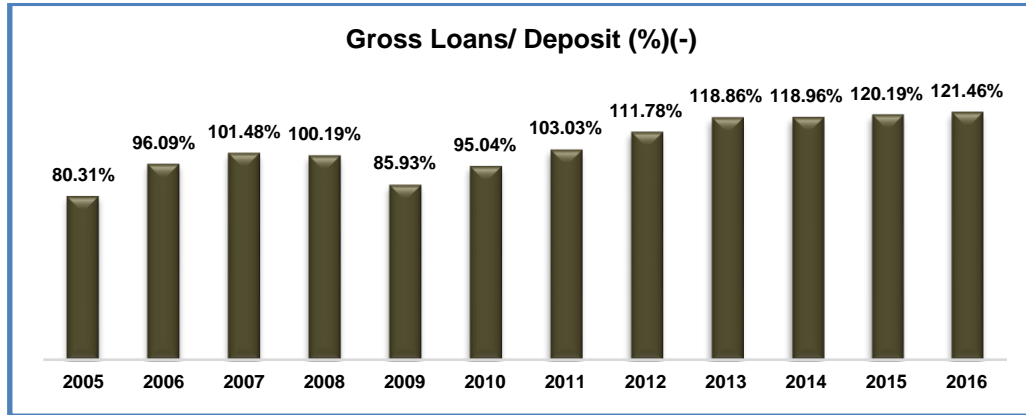


Figure 176. Gross Loans to Deposit of Garanti Bank during 2005-2016

“Customer deposit over total funding ratio” was in the lowest level at 62.51% in 2013 and it was in the highest level at 73.22% in 2005.

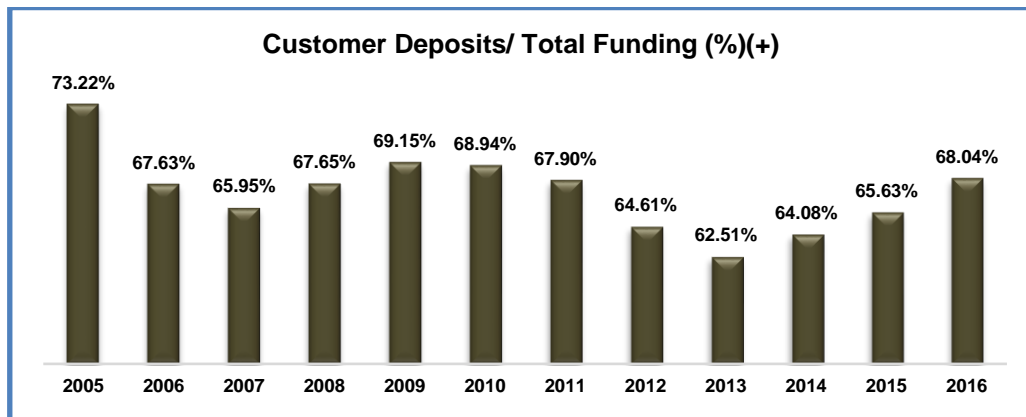


Figure 177. Customer Deposits to Total Funding of Garanti Bank during 2005-2016

Sensitivity rate gradually increased from 21.77% to 29% from 2005 to 2016.

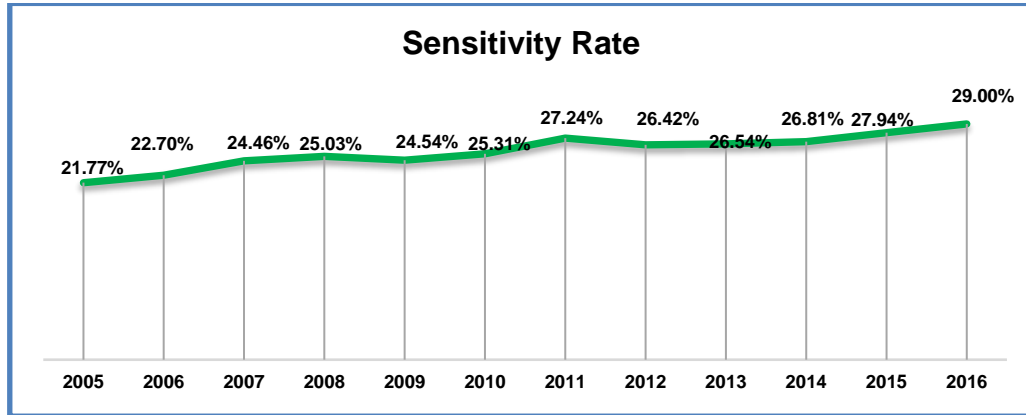


Figure 178. Sensitivity Rate of Garanti Bank during 2005-2016

“Securities portfolio over total assets ratio” except year 2009 (34.91%) and 2010 (32.67%) gradually decreased to 17.20%.

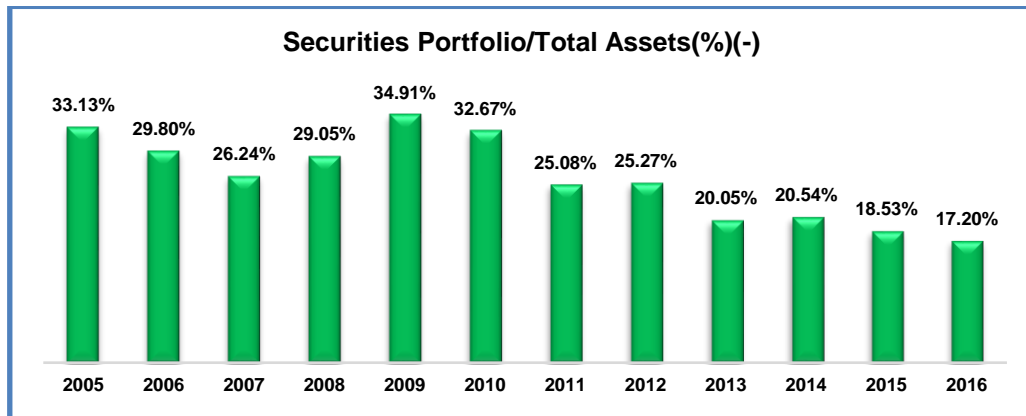


Figure 179. Securities Portfolio to Total Assets of Garanti Bank during 2005-2016

“Bearing assets over costly liabilities ratio” for all 12 years was near to 100% or more. In the highest level it was 111.92% in year 2010.

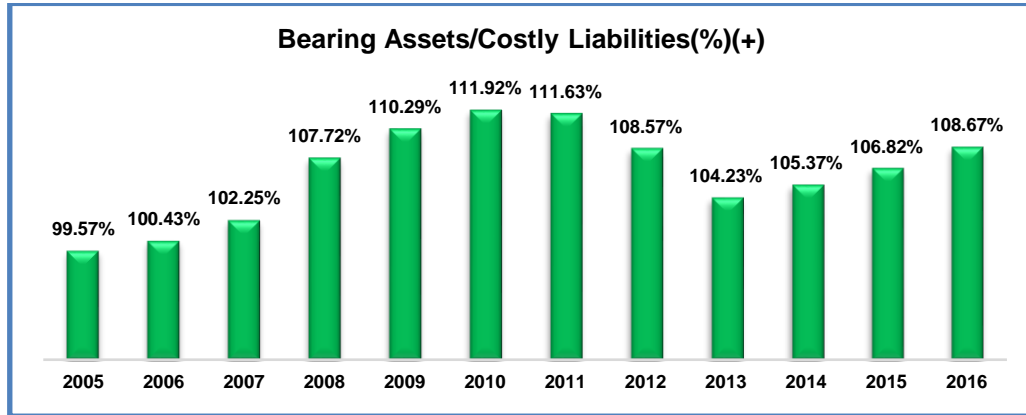


Figure 180. Bearing Assets to Costly Liabilities of Garanti Bank during 2005-2016

“Net interest income over total assets ratio” was between 3.20% and 4.82% during twelve years.

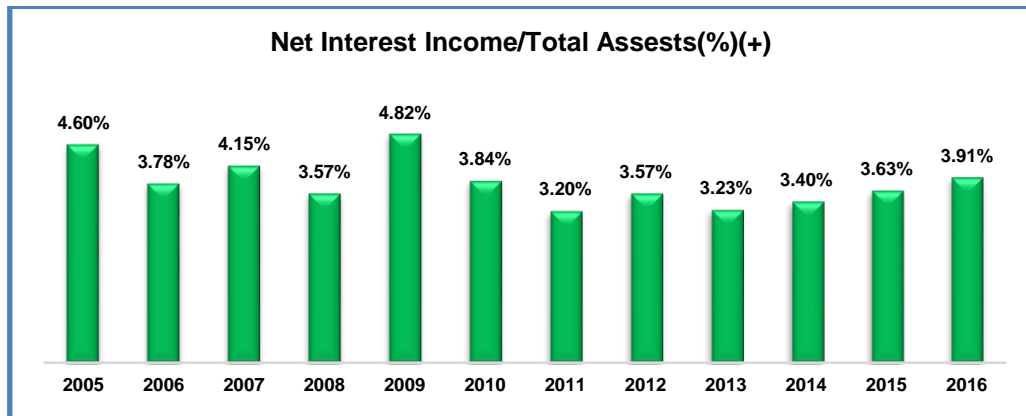


Figure 181. Net Interest Income to Total Assets of Garanti Bank during 2005-2016

6.6.3. CAMELS rating for Garanti Bank

Overall rates for Garanti Bank has been illustrated as graph below:

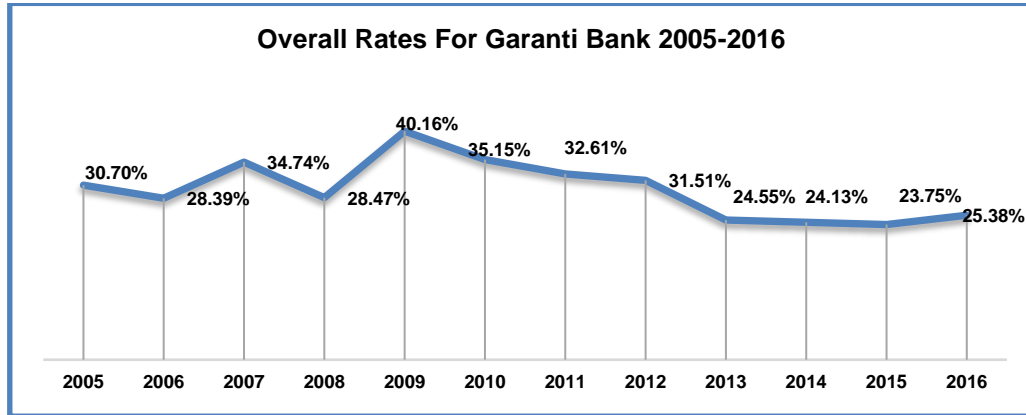


Figure 182. CAMELS Overall Rates for Garanti Bank during 2005-2016

CAMELS performance index in graph below shows that by considering overall rate of 2005 as base year, all other years' overall rates have been compared with this year.

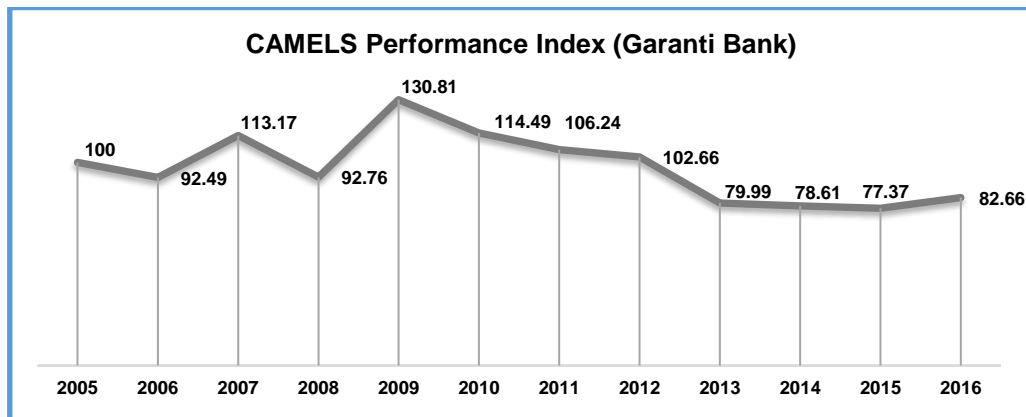


Figure 183. CAMELS Performance Index for Garanti Bank during 2005-2016

As the table below shows Management category has the highest rate at 87%. Earnings has the lowest rate with 2%. Overall rate for Garanti Bank is 25%.

Short Name	No.	Weight	Ratios	Relationship	2016
C					
		Overall Weight	Capital		
			0,20		
CAR	1	0,40	Capital Adequacy Ratio(%) (+)	+	16%
ETL	2	0,20	Equity/ Total Liabilities (%) (+)	+	14%
ENL	3	0,20	Equity/ Net Loans (%) (+)	+	19%
ETA	4	0,20	Equity/Total Assets(%) (+)	+	13%
Capital Rate					16%
A					
		Overall Weight	Asset		
			0,20		
LTA	5	0,20	Loans/Total Assets(%) (+)	+	65%
FATA	6	0,20	Fixed Assets/Total Assets(%) (-)	-	2%
NPLGL	7	0,30	NPL / Gross Loans (%) (-)	-	3%
SPRNPL	8	0,15	Specific Provision Reserve/ NPL (%) (+)	+	81%
BATA	9	0,15	Bearing Assets/Total Assets(%) (+)	+	89%
Asset Rate					37%
M					
		Overall Weight	Management		
			0,10		
CSDTD	10	0,15	Current + Savings Deposits/ Total Deposits (%) (+)	+	51%
NIPB	11	0,20	Net Income Per Branch (Growth Rate%) (+)	+	51%
NIPE	12	0,20	Net Income Per Employee (Growth Rate%) (+)	+	49%
NIEIETA	13	0,15	Non-Interest Exp. + Impairment Exp/ Total Assets (%) (-)	-	3%
NIINI	14	0,15	Net Interest Income / Net Income (+)	+	219%
NINIE	15	0,15	Net Interest Income / Non-interest Expenses (+)	+	181%
Management Rate					87%
E					
		Overall Weight	Earnings		
			0,15		
ROA	16	0,25	Net Income/Total Assets(%) (+)	+	2%
ROE	17	0,25	Net Income/Equity(%) (+)	+	14%
NIM	18	0,20	Net Interest Margin(%) (+)	+	4%
NIENIINI	19	0,15	Non-Interest Exp./ Net Interest Inc.+ Non-Interest Inc. (%) (-)	-	41%
NIINIINI	20	0,15	Non-Interest Inc./Net-Interest Inc. + Non-Interest Inc. (%) (+)	+	25%
Earning Rate					2%
L					
		Overall Weight	Liquidity		
			0,25		
LATA	21	0,30	Liquid Assets/Total Assets(%) (+)	+	20%
LATFL	22	0,25	Liquid Assets/Total Foreign Liabilities (%) (+)	+	50%
GLD	23	0,20	Gross Loans/ Deposit (%) (-)	-	121%
CDTF	24	0,25	Customer Deposits/ Total Funding (%) (+)	+	68%
Liquidity Rate					11%
S					
		Overall Weight	Sensitivity		
			0,10		
SPTA	25	0,30	Securities Portfolio/Total Assets(%) (-)	-	17%
BACL	26	0,30	Bearing Assets/Costly Liabilities(%) (+)	+	109%
NICTA	27	0,40	Net Interest Income/Total Assets(%) (+)	+	4%
Sensitivity Rate					29%

Overall Rates For Garanti Bank 2005-2016

25%

Table 15. CAMELS Rating for Garanti Bank 2016 (Numbers are rounded)

6.7. ŞEKERBANK

6.7.1. Brief History

Şekerbank was founded under the name of “Pancar Kooperatifleri Bankası A.Ş.” in Eskişehir on October 12, 1953 in Anatolia with small savings of hundreds of thousands of cooperative members of beet farmers for the purpose of financing agriculture and the sugar industry.

The Bank received the name of Şekerbank when it moved to Ankara in the year 1956. The General Management of Şekerbank, the shares of which was offered to public in 1997 partially, moved to Istanbul in the year 2004.

It operates in the fields of enterprise and agricultural banking, commercial/SME banking, corporate banking and retail banking.

Şekerbank has 300 branches, 11 regional directorates across Turkey (3 in Istanbul, 8 in Anatolia) and 1 foreign representative; and most of its branches in 71 cities and 98 off-center districts have been serving in the same place, the same locality for almost half a century. Şeker Yatırım, Şeker Factoring, Şeker Leasing, Şekerbank Kıbrıs Ltd. and Şeker Finans are some of the affiliates of Şekerbank. Şekerbank, is accepted to be a bank it assigning the large part of its total loan portfolio to farmers, craftsmen, enterprises and corporate firms. (Official Website of Şekerbank) (The Banks Association of Turkey)

6.7.2. Trend Analysis of Main Ratios under CAMELS Model for Şekerbank during 12 Years

The Capital rate category is the first category in CAMELS model. Capital rate gradually dropped from 19.64% to 12.63% during 12 years.

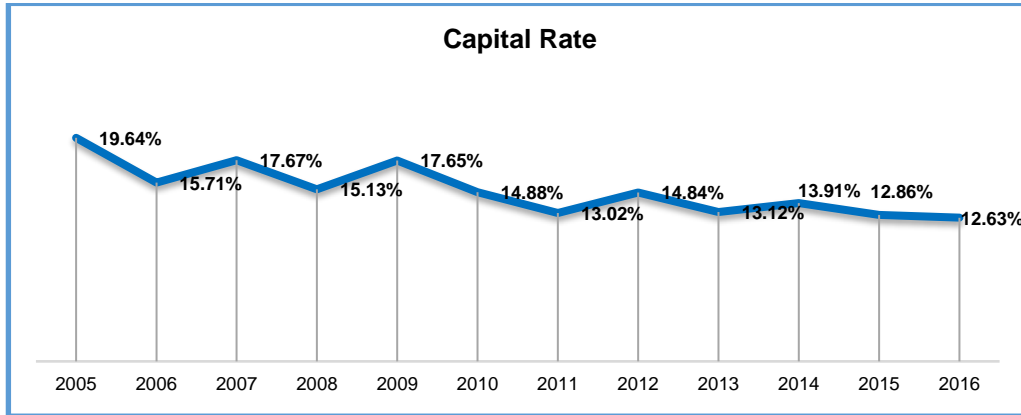


Figure 184. Capital rate of Şekerbank during 2005-2016

“Capital Adequacy Ratio” was in the highest level in 2005 (20.23%) and it was in the lowest level in year 2016 (13.11%).

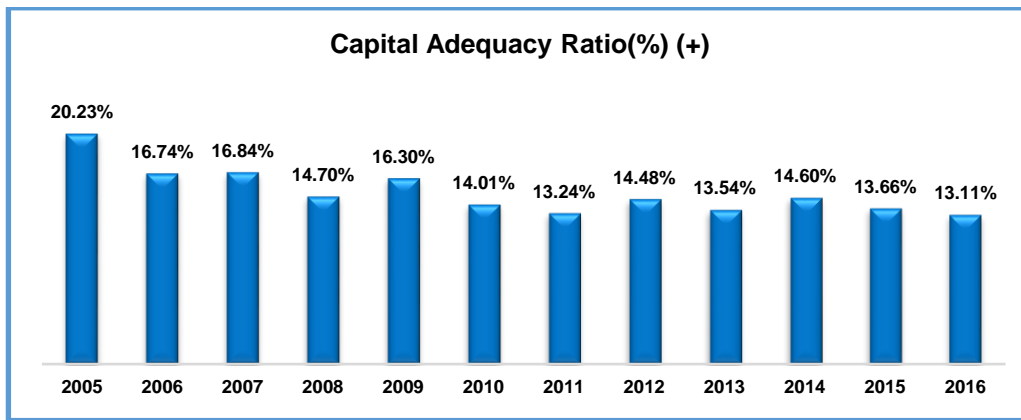


Figure 185. Capital Adequacy Ratio of Şekerbank during 2005-2016

“Equity to total liabilities ratio” was in the highest level in year 2007 (16.56%) and it was in the lowest level in 2011 (11.30%).

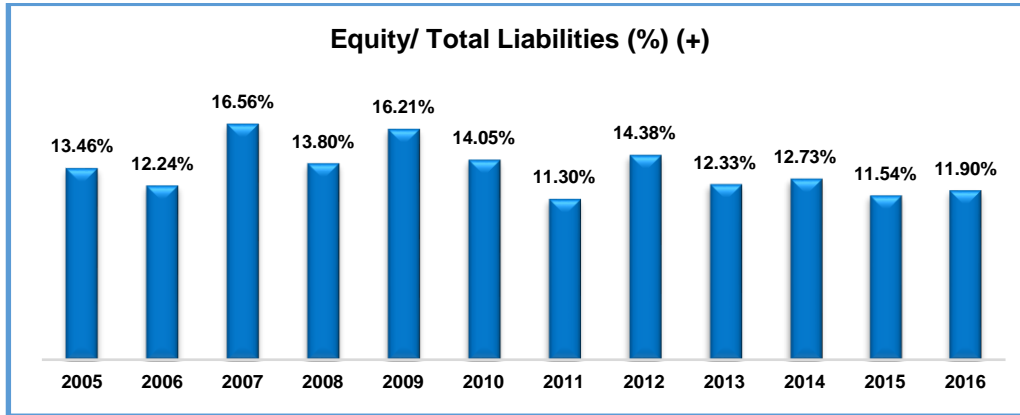


Figure 186. Equity to Total Liabilities of Şekerbank during 2005-2016

“Equity to net loans ratio” was in the highest level in 2005 (32.42%) and in lowest level in 2016 (14.39%).

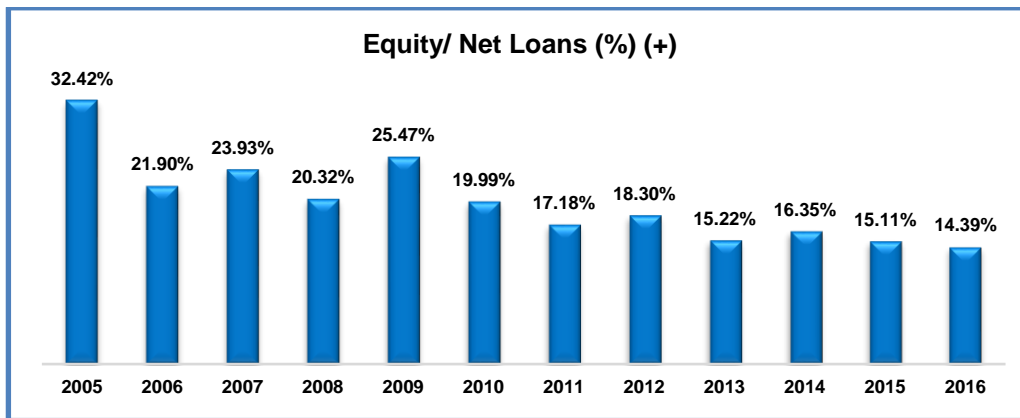


Figure 187. Equity to Net Loans of Şekerbank during 2005-2016

“Equity to total assets ratio” was between 10.15% and 14.20% from 2005 to 2016.

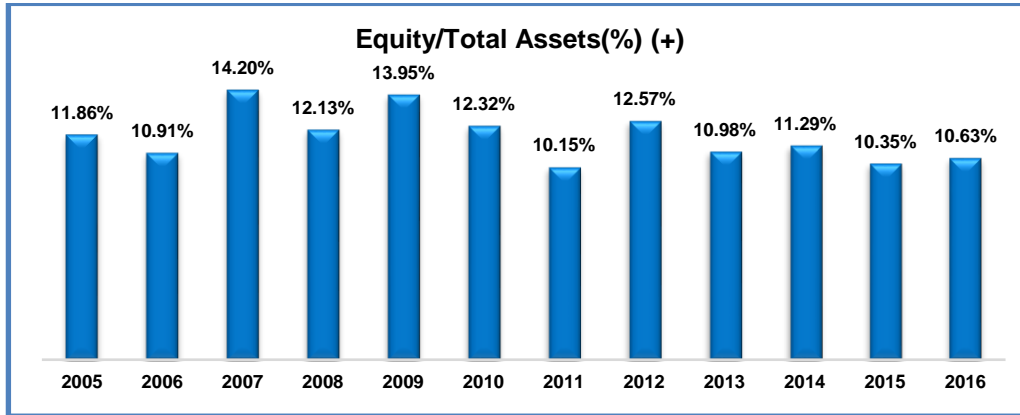


Figure 188. Equity to Total Assets of Şekerbank during 2005-2016

The Asset rate category is the second category of the CAMELS model which was in an almost stable range from 2012 (33.87%) to 2016 (31.97%).

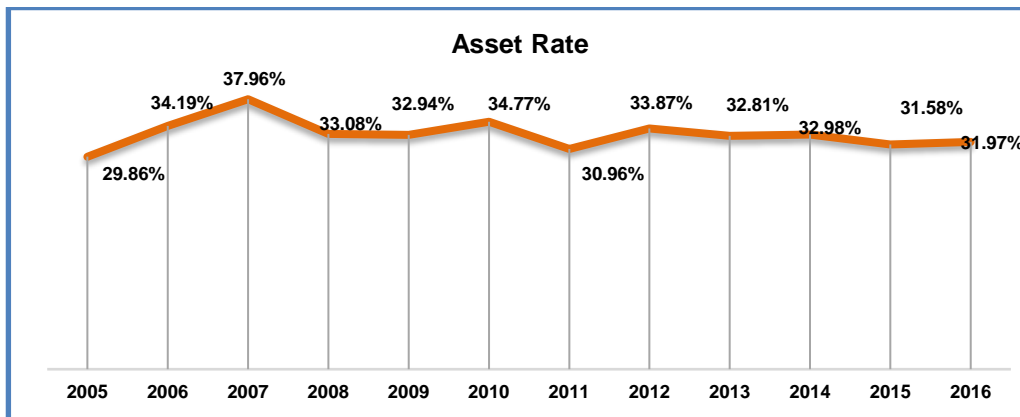


Figure 189. Asset Quality rate of Şekerbank during 2005-2016

“Loans over total assets ratio” has the best performance in 2016 (73.92%) and it was in the lowest level in 2005 (36.58%)

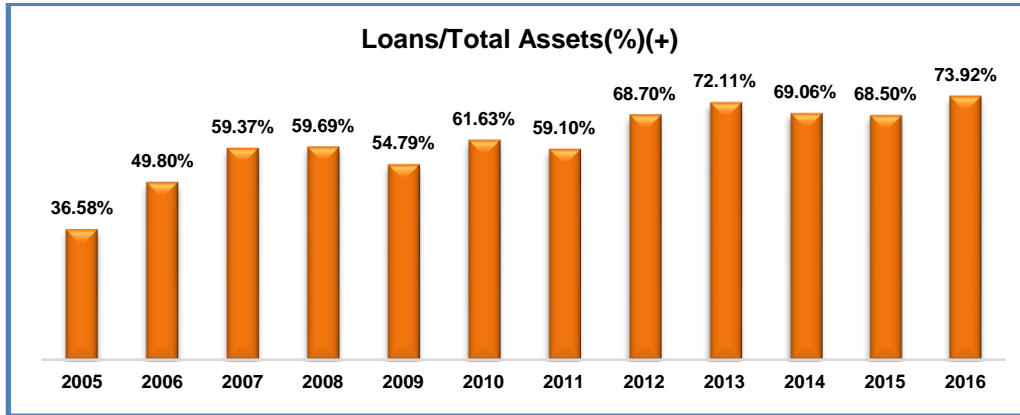


Figure 190. Loans to total Assets of Şekerbank during 2005-2016

“Fixed assets to total assets ratio” during twelve years was between 2.05% and 4.44%.

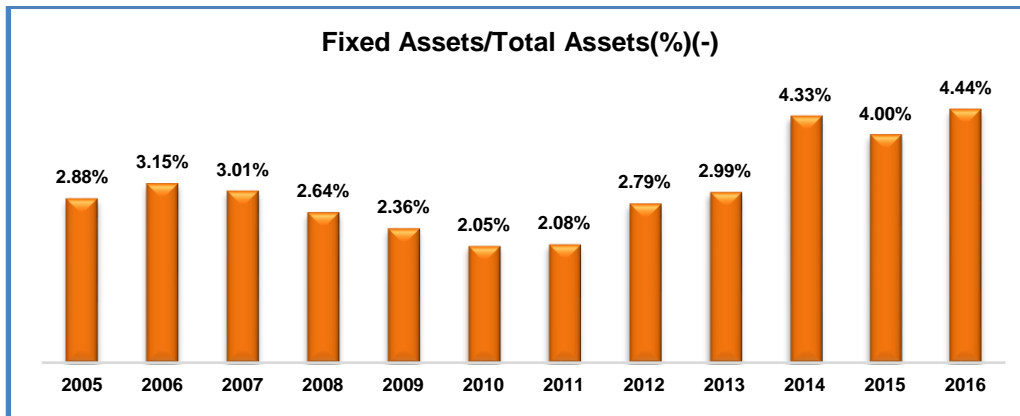


Figure 191. Fixed Assets to Total Assets of Şekerbank during 2005-2016

“NPLs to gross loans ratio” in 2005 was 15.75% and in 2006 it was 10.96%. After 2006 this ratio was between 3.91% and 7.57% (2009).

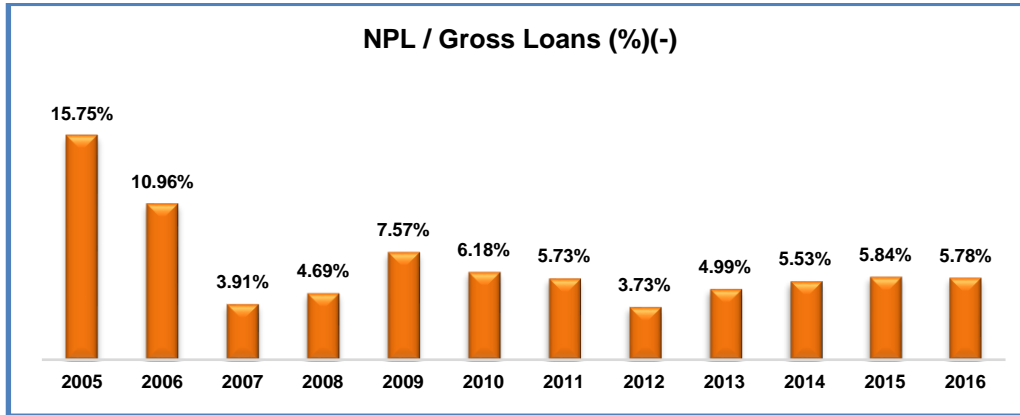


Figure 192. NPL to Gross Loans of Şekerbank during 2005-2016

“Specific provision reserve to NPLs ratio” for three subsequent years from 2005 to 2007 was 100%. It was in the lowest in 2016 (45.91%).

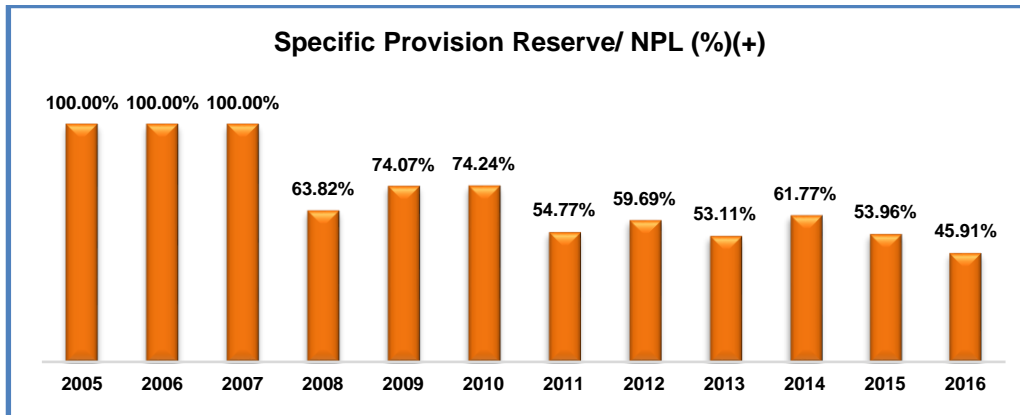


Figure 193. Specific Provision Reserve to NPL of Şekerbank during 2005-2016

“Bearing assets to total assets ratio” was in the highest level in 2009 (90.76%) and it was in the lowest level in 2015 (82.26%).

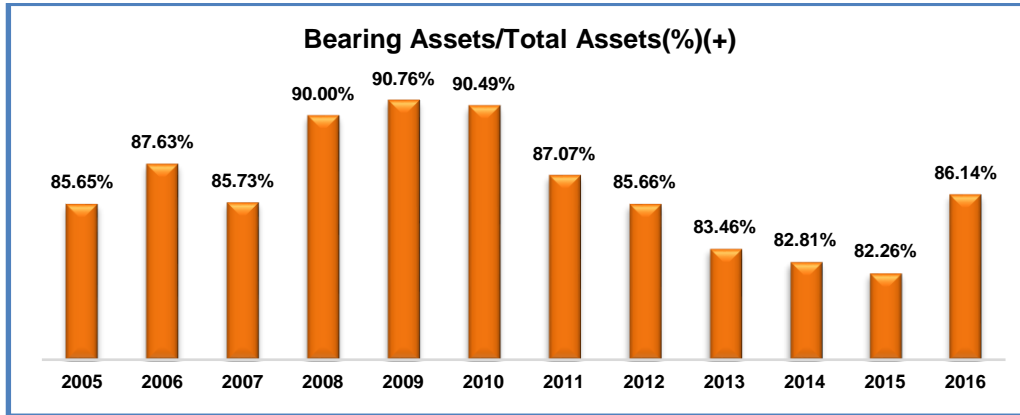


Figure 194. Bearing Assets to Total Assets of Şekerbank during 2005-2016

Management rate is the third category of CAMELS model. In the lowest level it was 72.33% in 2013 and in year 2016 it achieves the highest level (169.98%).

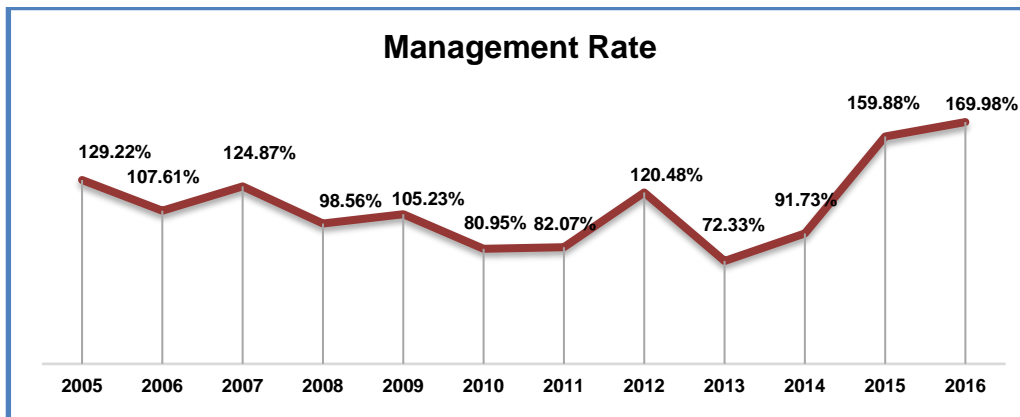


Figure 195. Management Rate of Şekerbank during 2005-2016

“Current deposits and saving deposits over total deposits ratio” was in highest level in 2005(59.25%) and the lowest level was in 2013 (50.12%).

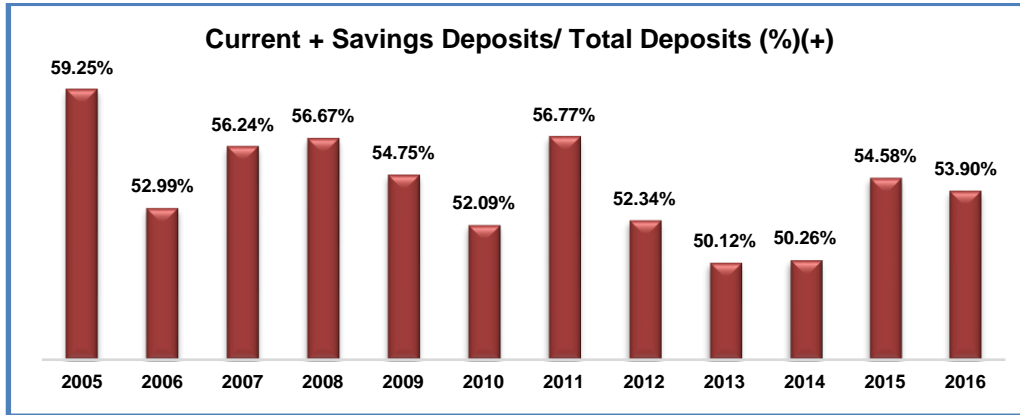


Figure 196. Current plus Saving Deposits to Total Deposits of Şekerbank during 2005-2016

Growth rate for net income per branch was volatile during twelve years. The lowest level was in 2005 which had a -59.64% growth rate. In the highest level it was 110.13% in 2007.

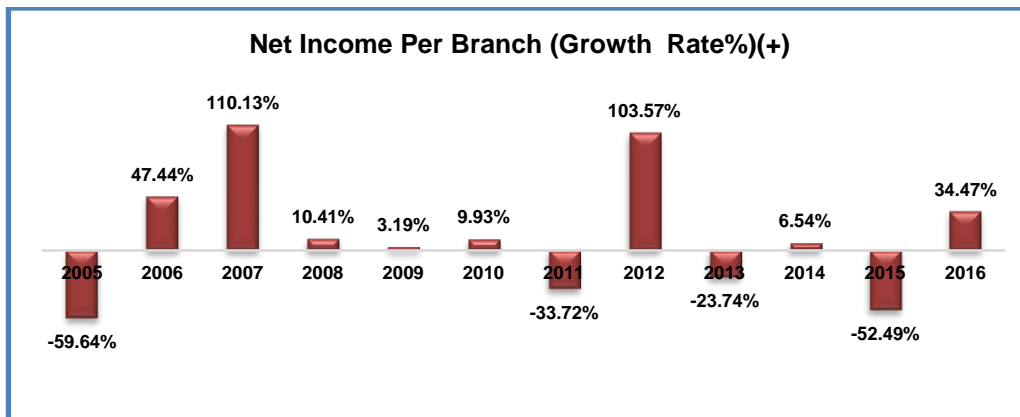


Figure 197. Net Income per Branch (Growth Rate) of Şekerbank during 2005-2016

Growth rate for net income per employee fluctuated a lot from 2005(-59.28%) to 2016 (37.74%).

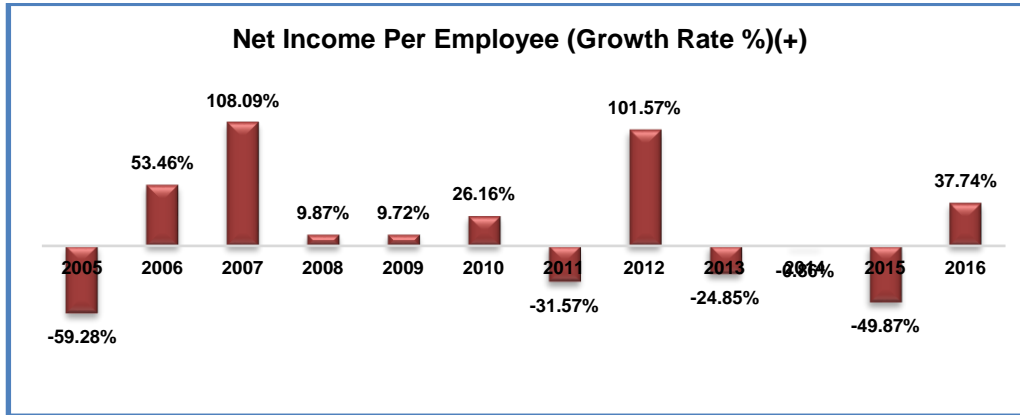


Figure 198. Net Income per Employee (Growth Rate) of Şekerbank during 2005-2016

“Non-interest expenses plus impairment expenses to total assets ratio” gradually decreased from 12.99% in 2005 to 5.94% in 2016.

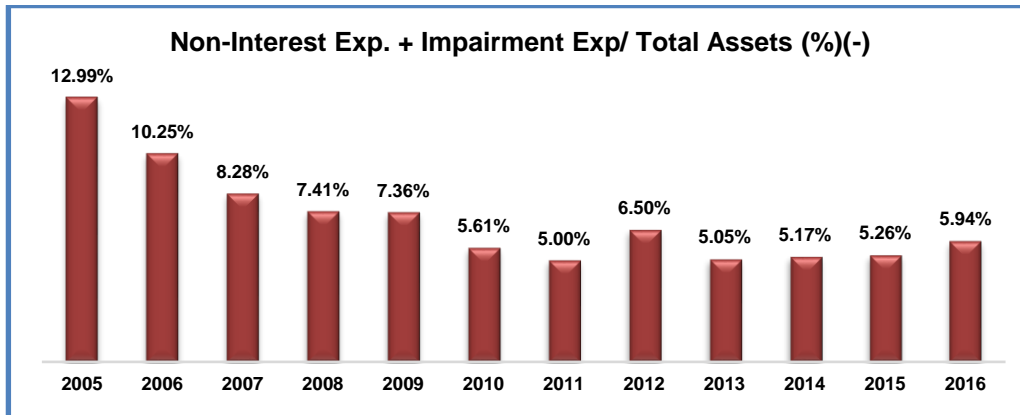


Figure 199. Non-Interest Exp. Plus Impairment Exp. to Total Assets of Şekerbank during 2005-2016

“Net interest income to net income ratio” in 2005 was 860.42%, in 2015 was 1029.12% and in 2016 was 866.65%. This ratio during 2006 and 2014 was between range of 330.43% and 478.97%.

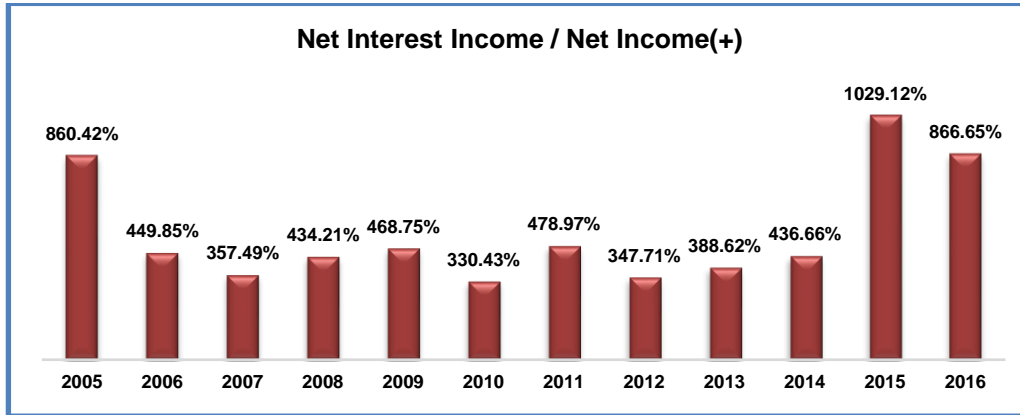


Figure 200. Net Interest Income to Net Income of Şekerbank during 2005-2016

“Net interest income to non-interest expenses ratio” was between range of 90.29% and 168.19% during twelve years.

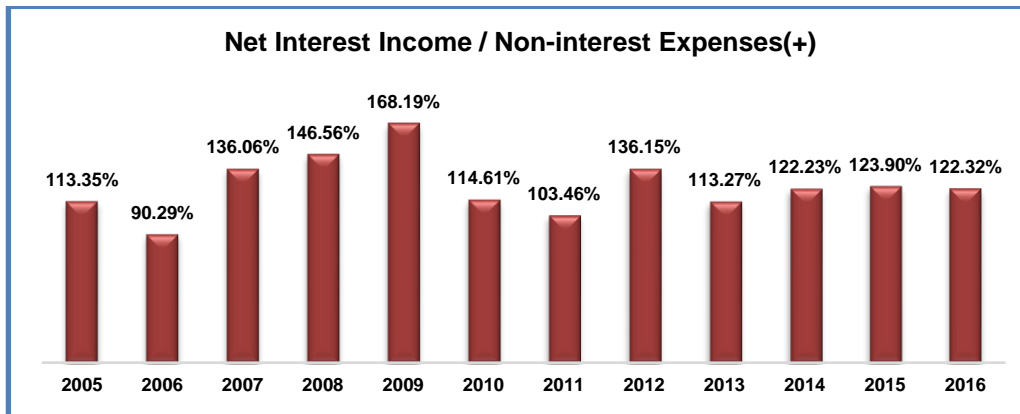


Figure 201. Net Interest Income to Non-Interest Expenses of Şekerbank during 2005-2016

The fourth category of CAMELS model is Earnings. Earning rate was negative in 2011,2013,2014,2015 and 2016 by -0.89%, -0.18%, -0.65% , -3.74% and -1.59% respectively.

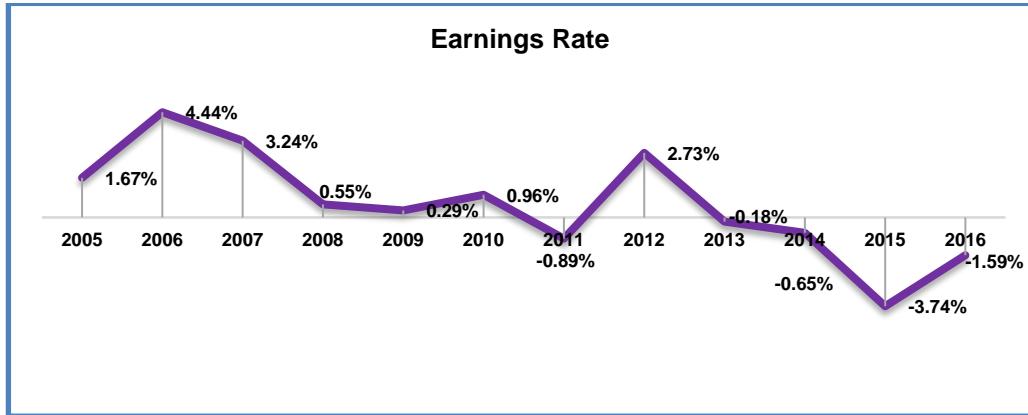


Figure 202. Earning Rate of Şekerbank during 2005-2016

“Net income to total assets ratio” was between range of 0.42% (2015) and 2.02% (2007).

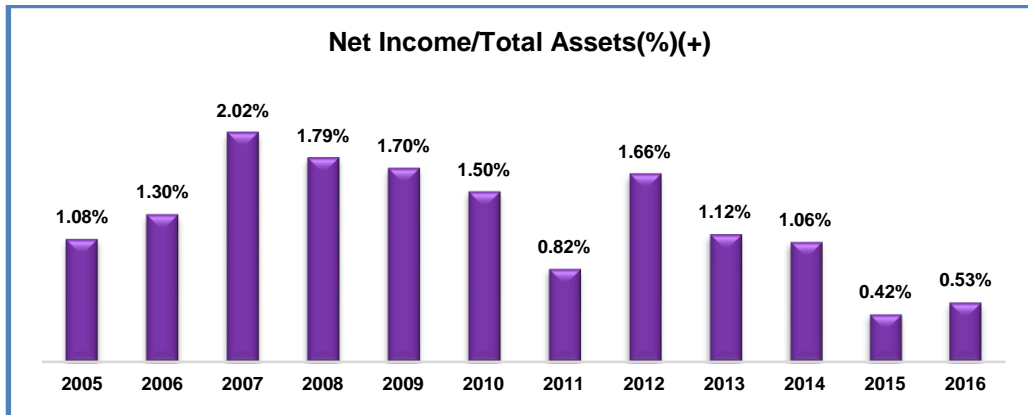


Figure 203. Net Income to Total Assets of Şekerbank during 2005-2016

“Net income to equity ratio” was between 4.06% (2015) and 14.80% (2008) during twelve years.

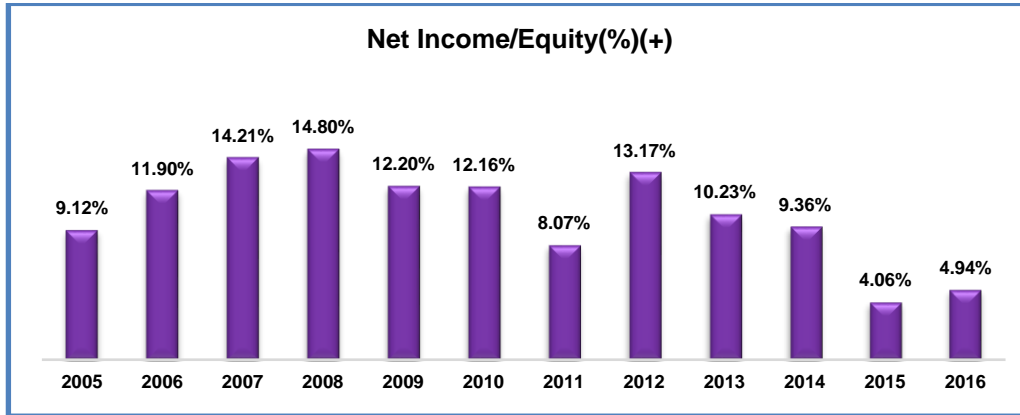


Figure 204. Net Income to Equity of Şekerbank during 2005-2016

“Net interest margin” was between 4.51%(2011) and 10.87% (2005) from 2005 to 2016.

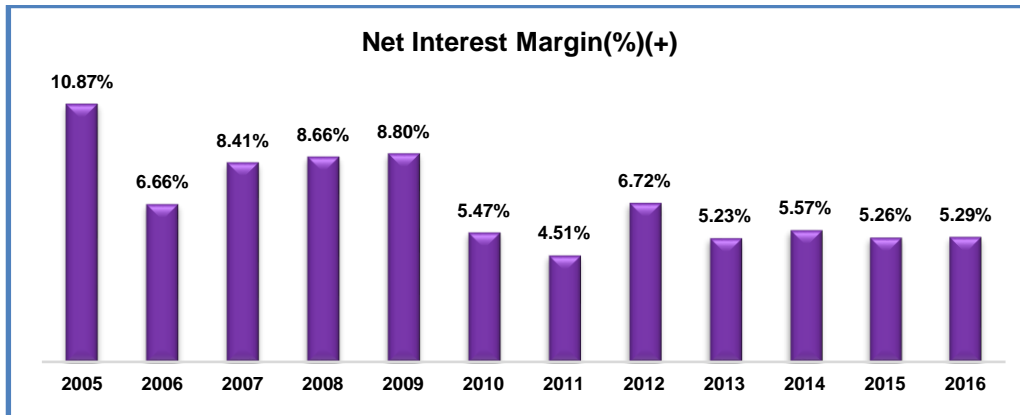


Figure 205. Net Interest Margin of Şekerbank during 2005-2016

“Non-interest expenses over net interest income plus non interest income ratio” was between 48.90% (2012) and 62.32% (2011).

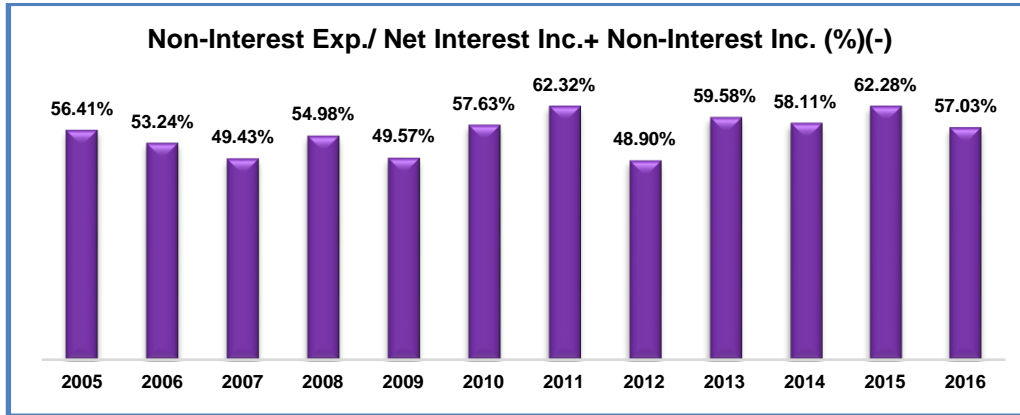


Figure 206. Non-Interest Exp. to Net Interest Inc. plus Non-Interest Inc. of Şekerbank during 2005-2016

“Non interest income over net interest income plus non-interest income ratio” was between 16.62% (2009) and 51.93% (2006).

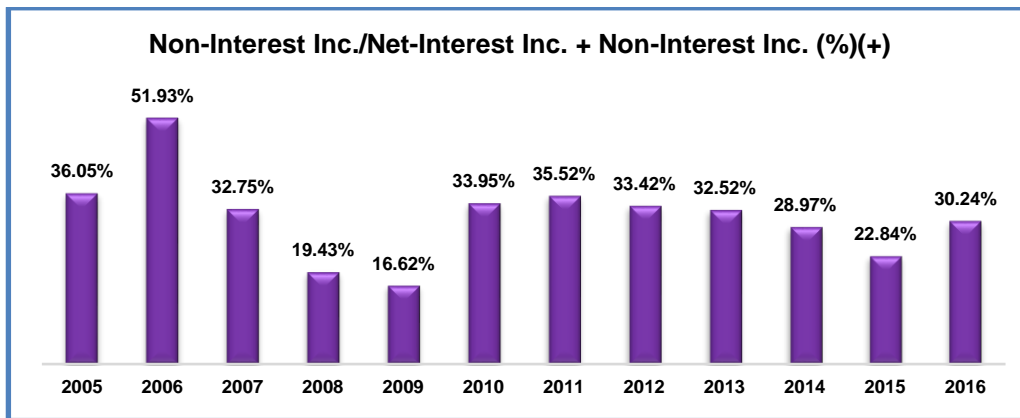


Figure 207. Non-Interest Inc. to Net-Interest Inc. plus Non-Interest Inc. of Şekerbank during 2005-2016

The Liquidity is the fifth category of CAMELS model. Liquidity rate dropped from 26.90% in 2005 to -3% in 2015. From 2015 to 2016 it increased from -3% to 0.14%.

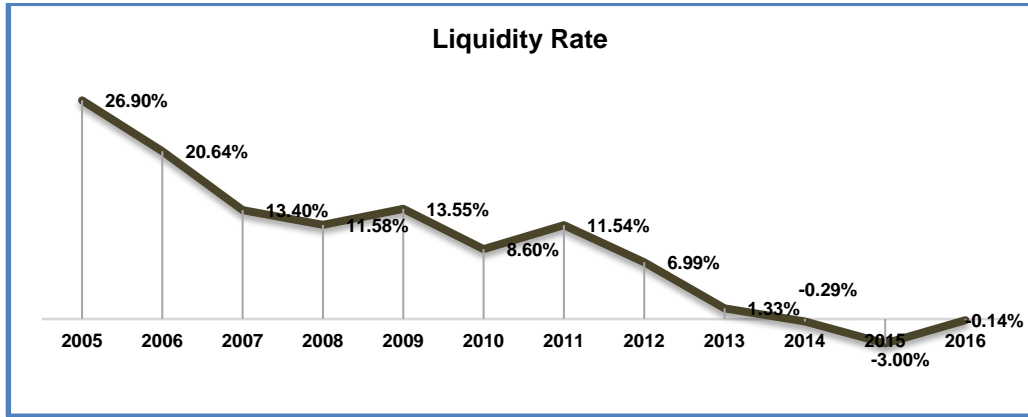


Figure 208. Liquidity Rate of Şekerbank during 2005-2016

“Liquid assets to total assets ratio” moves between range of 12.47% (2016) and 38.95% (2005) from 2005 and 2016.

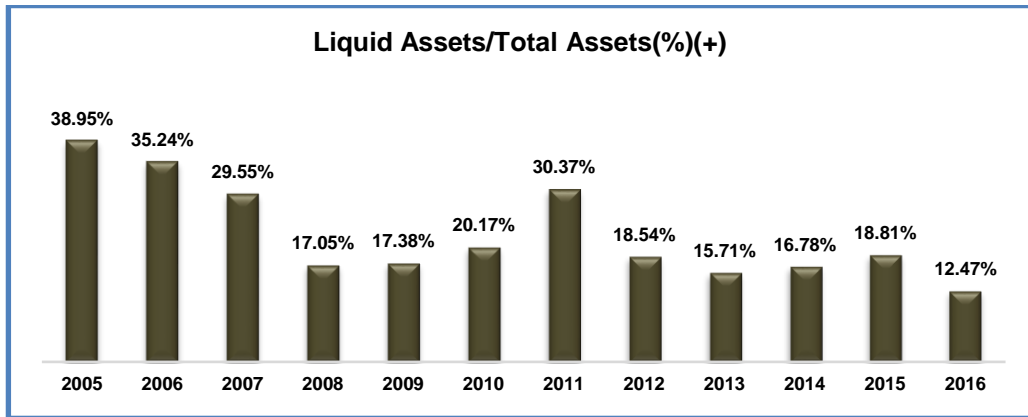


Figure 209. Liquid Assets to Total Assets of Şekerbank during 2005-2016

“Liquid assets to total foreign liabilities ratio” was in the lowest level in 2016 (2.63%) and it was in the highest level in 2011(15.94%).

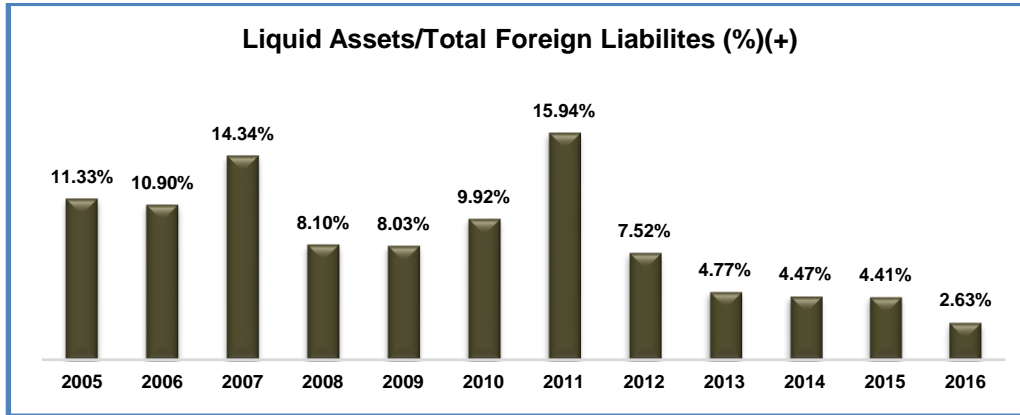


Figure 210. Liquid Assets to Total Foreign Assets of Şekerbank during 2005-2016

“Gross loans to deposits ratio” was 55.62% in 2005 which was in the lowest level and in moves up to 128.80% in 2015. From 2015 to 2016 this ratio dropped by 7.57% from 128.80% to 119.05%.

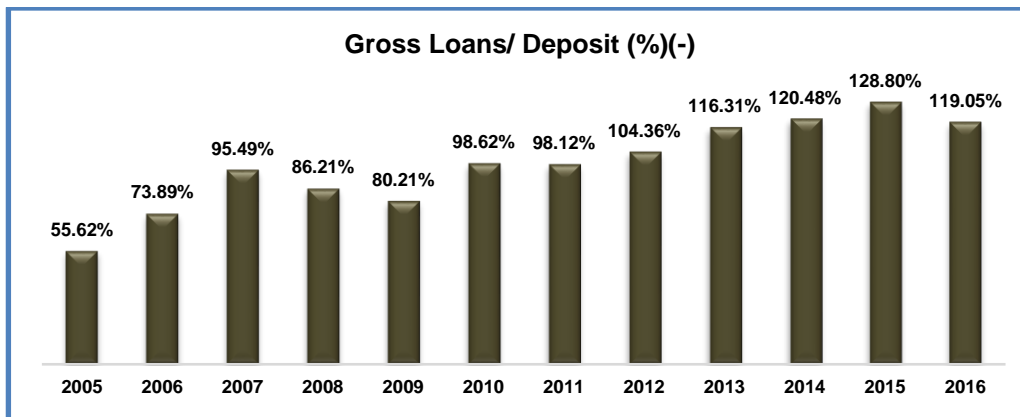


Figure 211. Gross Loans to Deposit of Şekerbank during 2005-2016

“Customer deposits to total funding ratio” was in the highest level in 2005 (94.03%). It was in the lowest level in 2015 (64.07%). From 2015 to 2016 it increased from 64.07% to 77.06%.

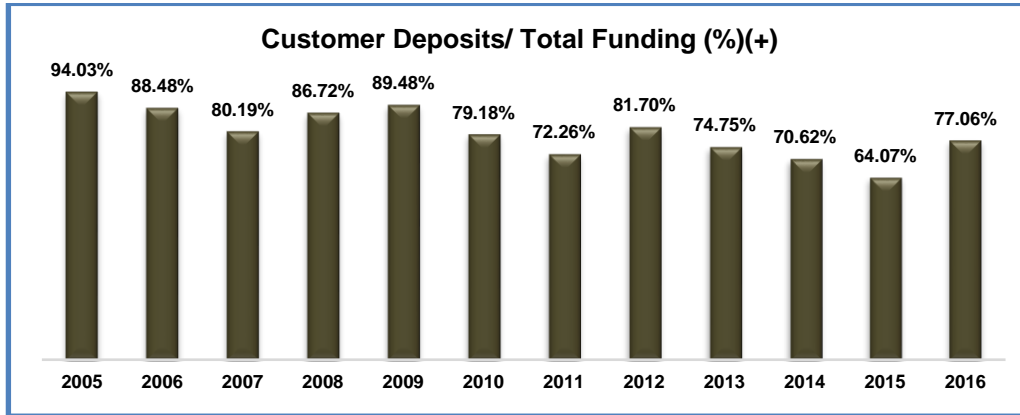


Figure 212. Customer Deposits to Total Funding of Şekerbank during 2005-2016

Sensitivity category is the last category of CAMELS model. Sensitivity rate trend started from 21.71% in 2005 to 28.72% in 2016.

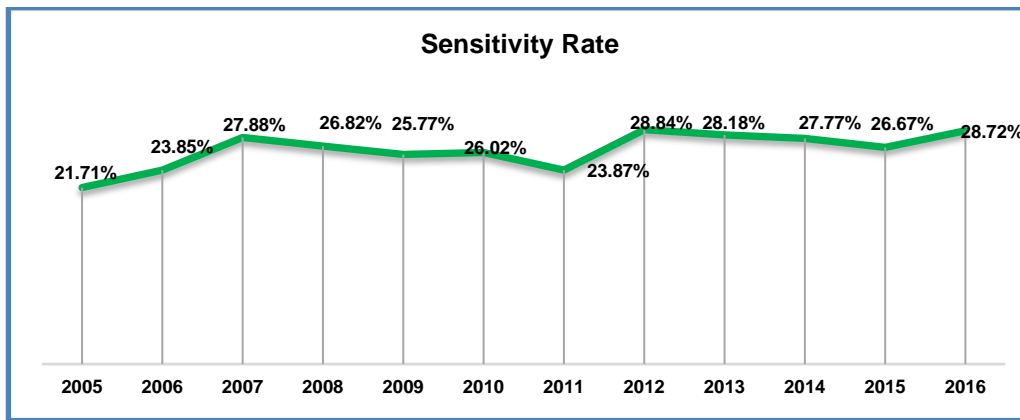


Figure 213. Sensitivity Rate of Şekerbank during 2005-2016

“Securities portfolio to total assets ratio” significantly dropped from 43.21% in 2005 to 11.09% in 2016. It was in the lowest level in 2013 (9.86%).

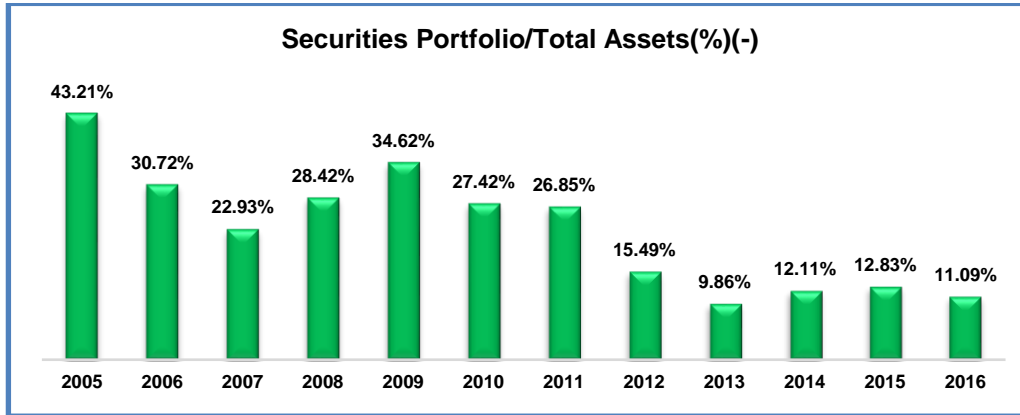


Figure 214. Securities Portfolio to Total Assets of Şekerbank during 2005-2016

“Bearing assets over costly liabilities ratio” fluctuated between 95.96% (2015) and 109.89% (2009) during twelve years. In 2013 it dropped to 97.97% from 103.95% in 2012.

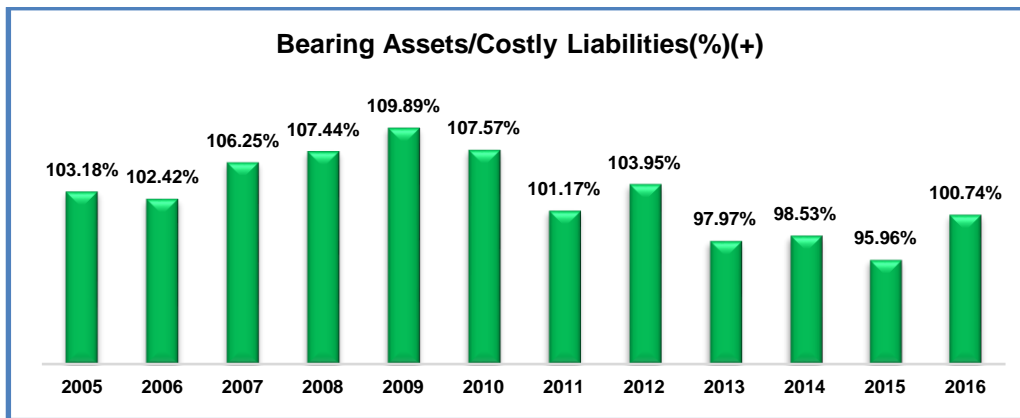


Figure 215. Bearing Assets to Costly Liabilities of Şekerbank during 2005-2016

“Net interest income to total assets ratio” was between 3.93% (2011) and 9.31% (2005). In year 2005 it stands at the highest level ,9.31%. The lowest was in 2011, less than 3.93%.

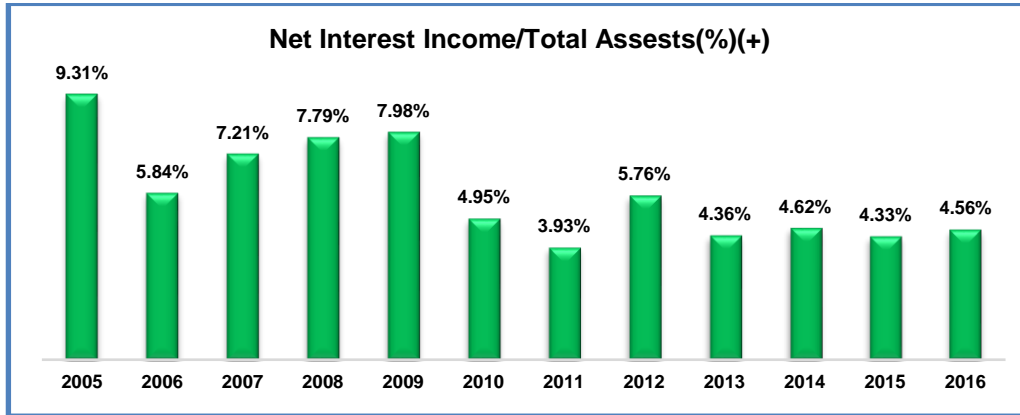


Figure 216. Net Interest Income to Total Assets of Şekerbank during 2005-2016

6.7.3. CAMELS rating for Şekerbank

Şekerbank at best condition had a overall rate of 31.97% in 2005 which was the highest level during twelve years and it ended in year 2016 at 28.51%. During these twelve years, overall rate had fluctuated between 29.54% (2013) and 31.97% (2005). Overall rate was equal to 19.54% in 2013 as the lowest level for the sample period.

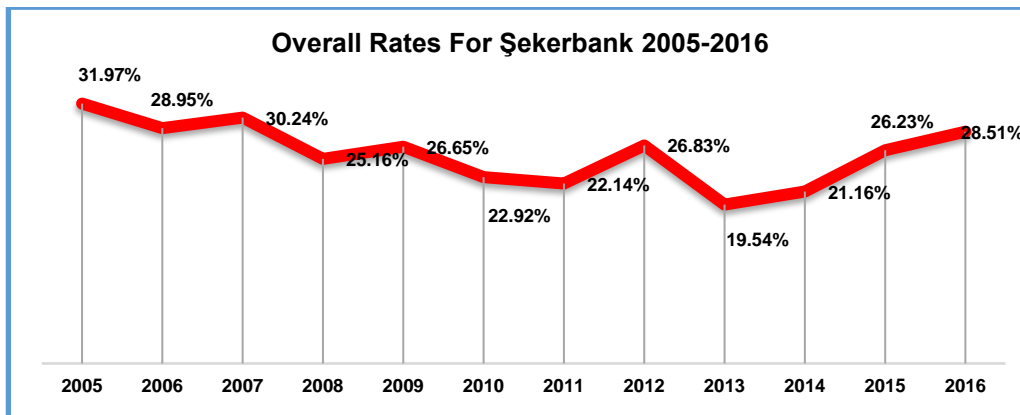


Figure 217. CAMELS Overall Rates for Şekerbank during 2005-2016

As the figure 218. shows CAMELS in form of index. It indicates that year 2005 index was at the highest level.

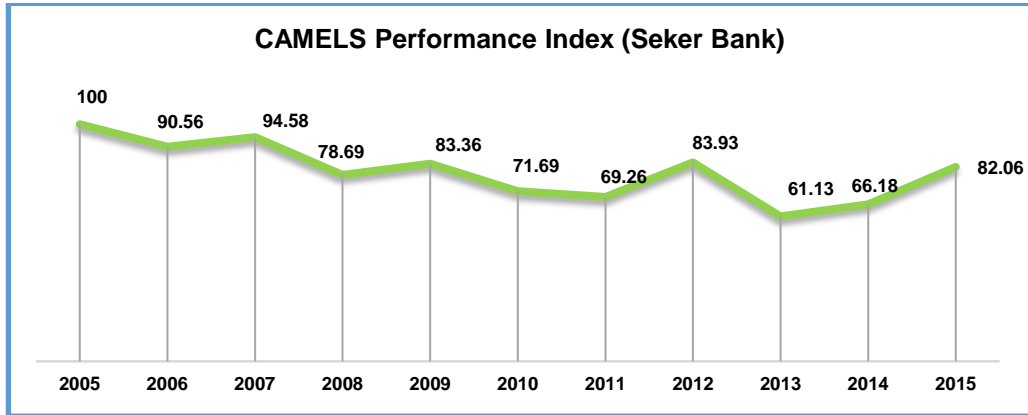


Figure 218. CAMELS Performance Index for Şekerbank during 2005-2016

In table below shows all ratios for Şekerbank in year 2016. The Management category has the highest rate which is 170% despite the Earnings that has the lowest and negative rate which is -2%.

Short Name	No.	Weight	Ratios	Relationship	2016
C					
		<i>Overall Weight</i>	<i>Capital</i>		
		0,20			
CAR	1	0,40	Capital Adequacy Ratio(%) (+)	+	13%
ETL	2	0,20	Equity/ Total Liabilities (%) (+)	+	12%
ENL	3	0,20	Equity/ Net Loans (%) (+)	+	14%
ETA	4	0,20	Equity/Total Assets (%) (+)	+	11%
Capital Rate					13%
A					
		<i>Overall Weight</i>	<i>Asset</i>		
		0,20			
LTA	5	0,20	Loans/Total Assets(%) (+)	+	74%
FATA	6	0,20	Fixed Assets/Total Assets(%) (-)	-	4%
NPLGL	7	0,30	NPL / Gross Loans (%) (-)	-	6%
SPRNPL	8	0,15	Specific Provision Reserve/ NPL (%) (+)	+	46%
BATA	9	0,15	Bearing Assets/Total Assets(%) (+)	+	86%
Asset Rate					32%
M					
		<i>Overall Weight</i>	<i>Management</i>		
		0,10			
CSDTD	10	0,15	Current + Savings Deposits/ Total Deposits (%) (+)	+	54%
NIPB	11	0,20	Net Income Per Branch (Growth Rate) (%) (+)	+	34%
NIPE	12	0,20	Net Income Per Employee (Growth Rate) (%) (+)	+	38%
NIEIETA	13	0,15	Non-Interest Exp. + Impairment Exp/ Total Assets (%) (-)	-	6%
NIINI	14	0,15	Net Interest Income / Net Income (+)	+	867%
NINIE	15	0,15	Net Interest Income / Non-interest Expenses (+)	+	122%
Management Rate					170%
E					
		<i>Overall Weight</i>	<i>Earnings</i>		
		0,15			
ROA	16	0,25	Net Income/Total Assets(%) (+)	+	1%
ROE	17	0,25	Net Income/Equity(%) (+)	+	5%
NIM	18	0,20	Net Interest Margin(%) (+)	+	5%
NIENIINI	19	0,15	Non-Interest Exp./ Net Interest Inc. + Non-Interest Inc. (%) (-)	-	57%
NIINIINI	20	0,15	Non-Interest Inc./Net-Interest Inc. + Non-Interest Inc. (%) (+)	+	30%
Earning Rate					-2%
L					
		<i>Overall Weight</i>	<i>Liquidity</i>		
		0,25			
LATA	21	0,30	Liquid Assets/Total Assets(%) (+)	+	12%
LATFL	22	0,25	Liquid Assets/Total Foreign Liabilities (%) (+)	+	3%
GLD	23	0,20	Gross Loans/ Deposit (%) (-)	-	119%
CDTF	24	0,25	Customer Deposits/ Total Funding (%) (+)	+	77%
Liquidity Rate					0%
S					
		<i>Overall Weight</i>	<i>Sensitivity</i>		
		0,10			
SPTA	25	0,30	Securities Portfolio/Total Assets(%) (-)	-	11%
BACL	26	0,30	Bearing Assets/Costly Liabilities(%) (+)	+	101%
NICTA	27	0,40	Net Interest Income/Total Assets(%) (+)	+	5%
Sensitivity Rate					29%

Overall Rates For Şekerbank 2005-2016

29%

Table 16. CAMELS Rating for Şekerbank 2016 (Numbers are rounded)

6.8. SUMMARY FOR RATIOS RELATED TO BANKS UNDER STUDY (2016)

Before focusing on 2016, it is worth mentioning that while reviewing the the trend of overall rating reached by CAMELS model we witness a typical phenomenon of deterioration of the rate for all the banks during the Global Crisis of 2007-08. If we drill down to find the specific ratios which have caused such a deterioration, we will see that all individual ratios affecting the overall rate have adverse influence.

More recently (2013-2016), however, the banking sector appears to have experienced some dampening events which show themselves in downward trend of the Financial ratios and CAMELS rating as well. Actually during recent years global liquidity conditions tightened, federal interest rate in The U.S. was perceived to rise and even in practice it rose several times resulting in appreciation USD against many currencies including TRY, together with rising political and geopolitical risks, and an uptick in domestic deposit rates and bond yields all together they played a dampening role in Turkish economy in a way that even Real GDP growth was moderate while it was beforehand also below the long run economic growth and banks situations somehow moderated. Almost one-third of bank credit and over two-fifths of deposits are denominated in foreign currency, and when national currency depreciate it affect negatively the financial market specifically the money market in Turkey for instance we witness that Deposit growth slowed down to keep up with credit growth in recent years which reasonably has a pushing effect on rising the loan-to-deposit ratio further above the 100% threshold. The ratio of non-performing loans also edged up, since in such situations normally many households and businesses may run into financial difficulties due to the rise of particularly foreign-currency debt-servicing costs.

In these circumstances, banking sector profits rise was smaller than the past. Return-on-equity(ROE) went slightly down as well as Return-on-assets (ROA) fell below which is not enough to encourage the recapitalization in banks in order to leverage a more expanded balance sheet and create financing opportunities for companies and

households. Although still these ratios are high by industry standards, the average standard capital-adequacy ratio has fallen but remains comfortably above the 12% as the necessary threshold of the BRSA. Reduced earnings logically result in narrowing interest-rate margins, lowering returns on securities, rising cost of hedging the FOREX borrowing and raising provision requirements due to weakening credit quality by lower economic growth. (Economist Intelligence Unit, 2016)

For all six banks CAMELS model has been calculated. As for Capital category, banks are prioritized as follows: Garanti Bank, İşbank, Ziraat Bank, Akbank, Şekerbank and Halkbank with rate of 16%, 15%, 14%, 14%, 13% and 12% respectively.

As far as the Asset category is concerned, the priority order for the banks under study is according to the following list: Ziraat Bank (39%), Akbank (38%), Halkbank (37%), İşbank (37%), Garanti Bank (37%), Şekerbank (32%).

For the Management category, Şekerbank stands first with 170%, the other banks are listed respectively as follows: Ziraat Bank (91%), İşbank (89%), Garanti Bank (87%), Akbank (84%), Halkbank (78%).

When we take into consideration the Earnings category the priority order will be disclosed as follows: Akbank (5%), Ziraat Bank (4%), Halkbank, İşbank and Garanti Bank has 2% and Şekerbank is -2%.

As for the Liquidity category, the highest rank belongs to: Ziraat Bank (26%) and rest is as follows Akbank (21%), İşbank (18%), Garanti Bank (11%), Halkbank (6%) and Şekerbank (0%).

In case of the Sensitivity category our set of banks shows the following priority order: Garanti Bank and Şekerbank with 29%, İşbank (27%), Ziraat Bank, Halkbank and Akbank with same rank are 26%.

The Overall rate for banks shows that Ziraat Bank and Şekerbank are at top with rate of 29%, following them Akbank is 27%, İşbank is 26%, Garanti Bank is 25% and Halkbank is 22%.

The overall rating for the banks illustrate that they have negligible difference in terms of rating. In other words, all of them remain in a similar range. It means that the chosen

banks have similar financial structure and have tried to keep themselves in the boundaries of prudential rules and standards defined by BRSA. Besides it also indicates that supervision of BRSA has proved satisfactorily efficient and effective.

COMPARATIVE RATIOS RELATED TO BANKS UNDER STUDY (2016)									
No.	Weight	Ratios	Relation ship	Ziraat Bank	Halk Bank	İş Bank	Ak Bank	Garanti Bank	Şekerbank
Overall Weight		Capital		14%	12%	15%	14%	16%	13%
0,20									
1	0,40	Capital Adequacy Ratio(%) (+)	+	15%	13%	15%	14%	16%	13%
2	0,20	Equity/ Total Liabilities (%) (+)	+	12%	10%	13%	13%	14%	12%
3	0,20	Equity/ Net Loans (%) (+)	+	16%	13%	18%	19%	19%	14%
4	0,20	Equity/Total Assets(%) (+)	+	11%	9%	12%	11%	13%	11%
Overall Weight		Asset		39%	37%	37%	38%	37%	32%
0,20									
5	0,20	Loans/Total Assets(%) (+)	+	65%	68%	66%	60%	65%	74%
6	0,20	Fixed Assets/Total Assets(%) (-)	-	2%	1%	1%	0%	2%	4%
7	0,30	NPL / Gross Loans (%) (-)	-	2%	3%	2%	3%	3%	6%
8	0,15	Specific Provision Reserve/ NPL (%) (+)	+	94%	77%	77%	96%	81%	46%
9	0,15	Bearing Assets/Total Assets(%) (+)	+	87%	85%	87%	86%	89%	86%
Overall Weight		Management		91%	78%	89%	84%	87%	170%
0,10									
10	0,15	Current + Savings Deposits/ Total Deposits (%) (+)	+	58%	44%	53%	46%	51%	54%
11	0,20	Net Income Per Branch (Growth Rate%) (+)	+	27%	9%	53%	62%	51%	34%
12	0,20	Net Income Per Employee (Growth Rate %) (+)	+	31%	11%	55%	53%	49%	38%
13	0,15	Non-Interest Exp. + Impairment Exp/ Total Assets (%) (-)	-	2%	3%	3%	2%	3%	6%
14	0,15	Net Interest Income / Net Income (+)	+	212%	272%	231%	175%	219%	867%
15	0,15	Net Interest Income / Non-interest Expenses (+)	+	263%	180%	167%	186%	181%	122%
Overall Weight		Earnings		4%	2%	2%	5%	2%	-2%
0,15									
16	0,25	Net Income/Total Assets(%) (+)	+	2%	1%	2%	2%	2%	1%
17	0,25	Net Income/Equity(%) (+)	+	17%	12%	13%	15%	14%	5%
18	0,20	Net Interest Margin(%) (+)	+	5%	4%	4%	3%	4%	5%
19	0,15	Non-Interest Exp./ Net Interest Inc.+ Non-Interest Inc. (%) (-)	-	31%	41%	44%	35%	41%	57%
20	0,15	Non-Interest Inc./Net-Interest Inc. + Non-Interest Inc. (%) (+)	+	19%	25%	27%	35%	25%	30%
Overall Weight		Liquidity		26%	6%	18%	21%	11%	0%
0,25									
21	0,30	Liquid Assets/Total Assets(%) (+)	+	28%	20%	26%	29%	20%	12%
22	0,25	Liquid Assets/Total Foreign Liabilities (%) (+)	+	90%	41%	71%	69%	50%	3%
23	0,20	Gross Loans/ Deposit (%) (-)	-	112%	128%	122%	109%	121%	119%
24	0,25	Customer Deposits/ Total Funding (%) (+)	+	69%	63%	66%	66%	68%	77%
Overall Weight		Sensitivity		26%	26%	27%	26%	29%	29%
0,10									
25	0,30	Securities Portfolio/Total Assets(%) (-)	-	20%	16%	20%	19%	17%	11%
26	0,30	Bearing Assets/Costly Liabilities(%) (+)	+	101%	97%	105%	101%	109%	101%
27	0,40	Net Interest Income/Total Assets(%) (+)	+	4%	3%	3%	3%	4%	5%
OVERALL RATES FOR ALL BANKS 2005-2016				29%	22%	26%	27%	25%	29%

Table 17. Comparative Ratios Related to Banks Under Study (2016)

CHAPTER 7

EMPRICAL RESULTS FOR STRESS TESTING (ST)

7.1. INTRODUCTION:

Stress testing is a tool for risk management. Banks use it as part of their internal risk management. It alarms the management to take necessary measures in order to avoid unexpected implications. It indicates the extent of the needed capital to absorb losses if certain shocks happen. Of course, a bank may take other actions to avoid increasing levels of risk. It is a forward-looking assessments of risk.

7.2. BASEL II AND ST

According to Principles for sound stress testing practices and supervision, BIS, may 2009 *“Pillar 1 (minimum capital requirements) of the Basel II framework requires banks using the Internal Models Approach to determine market risk capital to have in place a rigorous programme of stress testing. Basel II also requires that banks subject their credit portfolios to stress tests. The financial crisis has highlighted weaknesses in stress testing practices employed prior to the start of the crisis in four broad areas: (i) use of stress testing and integration in risk governance; (ii) stress testing methodologies; (iii) scenario selection; and (iv) stress testing of specific risks and products.”*

7.3. INTERNAL CREDIT RATING (ICR) AND STRESS TEST (ST) COMPONENTS

In this part of the thesis Internal credit rating has been calculated for the banks and sensitivity and scenario analysis have been conducted. Internal credit rating (ICR) has been divided into two parts; one Quantitative Assessment and the other one is Qualitative Assessment. In Quantitative Assessment, some selected ratios in different categories are used. These categories are Earnings, Capital Adequacy, Liquidity, Asset quality and Management.

Earnings Ratios consists of return on assets(ROA), return on equity (ROE), Cost to Income, Net Interest Margin, Non Interest Income to Total Income.

Capital Adequacy ratios consists of total equity to total assets, total loan to total assets, capital adequacy ratio (CAR), total capital to total loans.

Liquidity consists of Loans to customer deposits, loans to total funding, liquid assets to total assets, customer deposits to total deposits.

Asset quality consists of non performing loan (NPL) to total loans, provisions to NPL (Coverage ratio), Provisions to operating income and loan diversification.

Management ratios consists of profit after tax to number of employees and profit after tax to number of branches.

Qualitative Assessments includes competitive position, audit report and ownership.

After finding ICR for a bank stress testing will be implemented to our analysis.

Stress testing has been applied in two ways. One Sensitivity analysis and the other one Scenario analysis.

7.4. INTERNAL CREDIT RATE RISK FOR ZIRAAT BANK – DECEMBER 2016

In quantitative assessment section, ratios have been calculated and they have been given a score based on the ranges.

Portfolio diversification has calculated according to HHI (Herfindahl-Hirschman Index). This index is a measurement of calculating market concentration of portfolio. For example, the portfolio diversification of Ziraat Bank includes agriculture (2.41%), manufacturing (15.16%), construction (6.60%), services (25.38%) and others (50.45%). Agriculture has a 2.41% of the whole portfolio, by squaring it we come up with 6. For the rest of sectors squares have been calculated and then summed up to 3,468. Portfolio diversification could be between 0 and 10,000. It has three classes as mentioned in chapter 5. Between 0 and 3,300 is low diversified, between 3,300 and 6,600 is moderate concentration and between 6,600 and 10,000 it is high concentration. So in case of Ziraat Bank *it is moderate concentration*.

Portfolio diversification in asset quality category shows that based on HH Index, as far as Ziraat Bank is concerned, the Portfolio diversification is estimated to be moderate. It has been calculated according to the details mentioned the below table:

Portfolio Diversification	Risk Profile by Sector (Thousand TRY)	Percentage	Squares
Agriculture	10,258,762	2.41%	6
Manufacturing	64,415,082	15.16%	230
Construction	28,061,164	6.60%	44
Services	107,866,084	25.38%	644
Other	214,405,725	50.45%	2,545
Total	425,006,817	100%	3,468

Table 18. Portfolio Diversification of Ziraat Bank in Year 2016

In qualitative assessment section, competitive position shows Ziraat Bank is market leader because it is in the range of highest quartile ($10.95\% \leq x \leq 13.78\%$).

Competitive position is equal to total assets of Ziraat Bank over total assets of Turkish banking system (Numbers are in Million)

$$\text{Ziraat Bank's Competitive Position} = \frac{357,761}{2,595,348} = 13.78\%$$

Audit report is clean. Auditor has qualified the financial statements of Ziraat Bank on the basis of free provision amounting to TRY 945 Million. Management has taken this decision in line with the conservatism principle considering the circumstances that may arise from any changes in the economy or market conditions. Since additional provision cannot be considered a weak point from the vintage point of prudential rules and practices therefore in the framework of qualitative analysis we can assume the financial statements of the said bank as of the balance sheet date is "clean".

Ziraat Bank is a State-owned bank which is not listed in the Borsa İstanbul (BIST) so in the qualitative assessment it has been selected "State-unlisted

		1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	Ratio	Score	Score after Adjustment	
Quantitative Assessment	70%														
Earnings	30%	Standard						Watchfull	Sub-Standard	Doubtful	NPL		Dec-16		
Return on Assets (ROA)	25%	+ 1,5	1,4	1,2	1,1	0,9	0,8	0,6	0,4	0,2	0,0	1,84	1	1	
Return on Equity (ROE)	25%	+ 5,0	4,6	4,2	3,8	3,3	2,9	2,5	1,8	1,0	0,3	17,13	1	1	
Cost of Income	30%	- 55,0	58,3	61,7	65,0	68,3	71,7	75,0	83,3	91,7	100,0	71,87	7	7	
Net Interest Margin	10%	+ 3,0	2,8	2,5	2,3	2,0	1,8	1,5	1,0	0,5	0,0	4,56	1	1	
Non Interest Income of total Income	10%	+ 50,0	44,2	38,3	32,5	26,7	20,8	15,0	10,0	5,0	0,0	17,45	7	7	
													3,4	3,4	
Capital Adequacy	20%														
Total Equity of total Assets	30%	+ 10,0	9,2	8,3	7,5	6,7	5,8	5,0	3,3	1,7	0,0	10,73	1	1	
Total Loan of total Assets	20%	+ 90,0	86,7	83,3	80,0	76,7	73,3	70,0	46,7	23,3	0,0	65,03	8	8	
CAR	30%	+ 15,0	14,3	13,7	13,0	12,3	11,7	11,0	7,3	3,7	0,0	14,55	2	2	
Total Capital of total Loans	20%	+ 11,0	10,3	9,7	9,0	8,3	7,7	7,0	4,7	2,3	0,0	2,19	10	10	
													4,5	4,5	
Liquidity	20%														
Loan of Customer Deposit	35%	- 75,0	78,3	81,7	85,0	88,3	91,7	95,0	130,0	165,0	200,0	104,32	8	8	
Loan of total Funding	25%	- 65,0	68,3	71,7	75,0	78,3	81,7	85,0	93,3	101,7	110,0	94,63	9	6,3	
Liquid Assets of total Assets	20%	+ 40,0	36,7	33,3	30,0	26,7	23,3	20,0	13,3	6,7	0,0	28,90	5	5	
Customer Deposit of total Deposit	20%	+ 40,0	35,8	31,7	27,5	23,3	19,2	15,0	10,0	5,0	0,0	90,72	1	1	
													6,25	5,575	
Asset Quality	25%														
NPL of total Loans	25%	- 4,0	4,7	5,3	6,0	6,7	7,3	8,0	12,0	16,0	20,0	1,81	1	1	
Provisions of NPL (Coverage Ratio)	30%	+ 95,0	90,0	85,0	80,0	70,0	60,0	50,0	40,0	30,0	20,0	94,04	2	2	
Provisions of Operating Income	25%	- 20,0	23,3	26,7	30,0	33,3	36,7	40,0	60,0	80,0	100,0	11,41	1	1	
Portfolio Diversification	20%	Low Concentration			Moderate Concentration			High Concentration			Moderate Concentration	5	5		
													2,1	2,1	
Management	5%														
PAT/No Employee (Million TL)	50%	+ 0,40	0,35	0,30	0,25	0,20	0,15	0,10	0,07	0,04	0,01	0,26	4	4	
PAT/No Branches (Million TL)	50%	+ 6,00	5,50	5,00	4,50	4,00	3,50	3,00	2,10	1,20	0,30	3,68	6	6	
													5	5	
Qualitative Assessment	30%														
Competitive Position	30%	Market Leader		High Market Share		Average Market Share		Low Market Share		Market Leader		Market Leader	1	1	
Audit Report	40%	Clean			Observations			Qualified			Clean	1	1		
Ownership	30%	State Listed		State Un-Listed		Pvt Listed		Pvt Un-Listed		State Un-Listed		State Un-Listed	4	4	
Quantitative Factors	70%														
Qualitative Factors	30%													3,24	
Rate														3,24	

Table 19. Internal Credit Rate Risk before Simulation for Ziraat Bank – December 2016

7.4.1. Sensitivity Analysis for Ziraat Bank:

Before inserting shocks to the model and reviewing the related simulation, it is better to take into consideration the amounts related to the profit after tax, Total assets (Liabilities and shareholder's equity), Equity and Internal Credit Rating(ICR) for year ended 2016. The related amounts are as follow respectively: profit after tax: TL6,576,420 thousand, Total assets: TL357,761,365 thousand, Equity: TL38,382,438 thousand and ICR :3.24. Now we are ready to run the sensitivity test to see what is going to happen to the amounts related to every item mentioned above.

Table20. indicates minor shocks for Ziraat Bank in 2016. In sensitivity analysis shocks are implemented for single variable change. In this circumstances, 5% rise in NPL reduces profit after tax (PAT) by 2,46% from TL6,576,420 thousand to TL6,414,598.53 thousand, total assets are reduced by 0,05% from TL357,761,365 thousand to TL 357,599,543.53 thousand, Equity reduces by 0.42% from TL38,382,438 thousand to TL38,220,616.53 thousand and ICR remains unchanged at 3.24.

1% rise in lending rate increases PAT by 27.15% from TL6,576,420 thousand to TL 8,361,852.95 thousand, total assets increases by 0,50% from TL357,761,365 thousand to TL 359,546,797.95 thousand, equity rises by 4.65% from TL 38,382,438 thousand to TL 40,167,870.95 thousand and ICR decreases by 5.51% from 3.24 to 3.06.

1% drop in lending rate decreases profit after tax by 27.15% from TL 6,576,420 thousand to TL 4,790,987.05 thousand, total assets decreases by 0.50% from TL 357,761,365 thousand to TL 355,975,932.05 thousand, equity reduces by 4.65% from TL38,382,438 thousand to TL 36,597,005.05 thousand and ICR goes up by 7.35% from 3.24 to 3.48.

1% decrease in borrowing rate reduces profit after tax by 26.03% from TL 6,576,420 thousand to TL 4,864,851.47 thousand, total assets reduces by 0.48% from TL 357,761,365 thousand to TL 356,049,796.47 thousand, equity reduces by 4.46% from

TL38,382,438 thousand to TL 36,597,005.05 thousand and ICR goes up by 5.73% from 3.24 to 3.42.

By 1% decline in net trading income, profit after tax decreases by 5.44% from TL 6,576,420 thousand to TL 6,218,771.75 thousand, total assets decrease by 0.10% from TL 357,761,365 thousand to TL 357,403,716.75 thousand and equity decreases by 0.93% from TL38,382,438 thousand TL 38,024,789.75 thousand. ICR goes up by 1.08% from 3.24 to 3.27.

Table21. describes moderate shocks for each variable. Rising in NPL by 10% reduces profit after tax by 4.92% from TL 6,576,420 thousand to TL 6,252,777.05 thousand, total assets decreases by 0.09% from TL 357,761,365 thousand to TL 357,437,722.05 thousand, equity drops by 0.84% from TL 38,382,438 thousand to 38,058,795.05 and ICR with no changes remains at 3.24.

2% rise in lending rate increases profit after tax by 54.30% from TL 6,576,420 thousand to TL 10,147,285.90 thousand, total assets increases by 1.00% from TL 357,761,365 thousand to TL 361,332,230.90 thousand, equity increases by 9.30% from TL 38,382,438 thousand to TL 41,953,303.90 thousand and with these changes ICR get a better score by 9.62% from 3.24 to 2.93.

2% decline in lending rate decreases profit after tax by 54.30% from TL 6,576,420 thousand to TL 3,005,554.10 thousand, total assets decreases by 1.00% from TL 357,761,365 thousand to TL 354,190,499.10 thousand, equity declines by 9.30% from TL 38,382,438 thousand to TL 34,811,572.10 thousand and ICR goes up by 16.54% from 3.24 to 3.77.

2% increase in borrowing rate decreases profit after tax by 52.05% from TL 6,576,420 thousand to TL 3,153,282.94 thousand, total assets decreases by 0.96% from TL 357,761,365 thousand to TL 354,338,227.94 thousand, equity declines by 8.92% from TL 38,382,438 thousand to TL 34,959,300.94 thousand and ICR goes up by 17.19% from 3.24 to 3.79.

2% decline in net trading income decreases profit after tax by 10.88% from TL 6,576,420 thousand to TL5,861,123.50 thousand, total assets falls by 0.20% from TL

357,761,365 thousand to TL 357,046,068.50 thousand, equity decreases by 1.86% from TL 38,382,438 thousand to TL 37,667,141.50 thousand and ICR goes up by 1.08% from 3.24 to 3.27.

Table22. shows the highest level of shocks, major shocks, for four variables that have been chosen for this study. It examines these variables separately. In this part it has been assumed that 20% rises in NPL decreases profit after taxes by 9.84% from TL 6,576,420 thousand to TL 5,929,134.11 thousand, total assets decline 0.18% from TL 357,761,365 thousand to TL 357,114,079.11 thousand, equity drops by 1.69% from TL 38,382,438 thousand to TL 37,735,152.11 thousand and ICR goes up by 1.08% from 3.24 to 3.27.

3% rise in lending rate increases profit after tax by 81.45% from TL 6,576,420 thousand to TL 11,932,718.84 thousand, total assets increase by 1.50% from TL 357,761,365 thousand to TL 363,117,663.84 thousand and equity rise by 13.96% from TL 38,382,438 thousand to TL 43,738,736.84 thousand. ICR comes down by 12.11% from 3.24 to 2.85.

3% decline in lending rate decreases profit after tax by 81.45% from TL 6,576,420 thousand to TL1,220,121.16 thousand, total assets decreases by 1.50% drop from TL 357,761,365 thousand to TL 352,405,066.16 thousand and equity declines by 13.96% from TL 38,382,438 thousand to TL 33,026,139.16 thousand. ICR goes up by 33.41% from 3.24 to 4.32.

If borrowing rate goes up 3% profit after tax drops by 78.08% from TL 6,576,420 thousand to TL1,441,714.42 thousand, total assets goes down by 1.44% from TL 357,761,365 thousand to TL352,626,659.42 thousand and equity goes down by 13.38% from TL 38,382,438 thousand to TL33,247,732.42 thousand. ICR rise by 29.19% from 3.24 to 4.18.

3% decline in net trading income decreases by 16.32% from TL 6,576,420 thousand to TL5,503,475.25 thousand, Total assets drop by 0.30% from TL 357,761,365 thousand to TL356,688,420.25 thousand and equity drops by 2.80% from TL 38,382,438 thousand to TL37,309,493.25 thousand. ICR goes up by 1.08% from 3.24 to 3.27.

Sensitivity Analysis for Dec. 2016 - Ziraat Bank (Thousand TL)

Minor Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	5%	6.576.420	6.414.598,53	357.761.365	357.599.543,53	38.382.438	38.220.616,53	3,24	3,24
Lending Rate Rise	1%		8.361.852,95		359.546.797,95		40.167.870,95		3,06
Lending Rate Decline	1%		4.790.987,05		355.975.932,05		36.597.005,05		3,48
Borrowing Rate Rise	1%		4.864.851,47		356.049.796,47		36.670.869,47		3,42
Net Trading Income Decline	1%		6.218.771,75		357.403.716,75		38.024.789,75		3,27

Table 20. Sensitivity Analysis Minor Shock for Ziraat Bank

Moderate Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	10%	6.576.420	6.252.777,05	357.761.365	357.437.722,05	38.382.438	38.058.795,05	3,24	3,24
Lending Rate Rise	2%		10.147.285,90		361.332.230,90		41.953.303,90		2,93
Lending Rate Decline	2%		3.005.554,10		354.190.499,10		34.811.572,10		3,77
Borrowing Rate Rise	2%		3.153.282,94		354.338.227,94		34.959.300,94		3,79
Net Trading Income Decline	2%		5.861.123,50		357.046.068,50		37.667.141,50		3,27

Table 21. Sensitivity Analysis Moderate Shock for Ziraat Bank

Major Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	20%	6.576.420	5.929.134,11	357.761.365	357.114.079,11	38.382.438	37.735.152,11	3,24	3,27
Lending Rate Rise	3%		11.932.718,84		363.117.663,84		43.738.736,84		2,85
Lending Rate Decline	3%		1.220.121,16		352.405.066,16		33.026.139,16		4,32
Borrowing Rate Rise	3%		1.441.714,42		352.626.659,42		33.247.732,42		4,18
Net Trading Income Decline	3%		5.503.475,25		356.688.420,25		37.309.493,25		3,27

Table 22. Sensitivity Analysis Major Shock for Ziraat Bank

7.4.1.2 Scenario Analysis for Ziraat Bank:

Table 23. indicates all three levels of shocks for Ziraat Bank. Minor, Moderate and Major shocks. In all three shocks, three variables change simultaneously.

In minor shock, NPLs rise by 5%, Borrowing interest rate rise by 1% and Trading income declines by 1%. In this case profit after tax drops by 33.92% from TL6,576,420 thousand to TL 4,345,381.75 thousand, total assets decline by 0.62% from TL35,7761,365 thousand to TL355,530,326.75 thousand and equity drops by 5.81% from TL38,382,438 thousand to TL36,151,399.75 thousand. ICR goes up by 7.35% from 3.24 to 3.48.

In moderate shock, NPLs rise by 10%, Borrowing interest rate rise by 2% and Net trading income declines by 2%. In this scenario profit after tax decreases by 67.85% from TL6,576,420 thousand to TL2,114,343.49 thousand, total assets decrease by 1.25% from TL357,761,365 thousand to TL353,299,288.49 thousand. Equity drops by 11.63% from TL38,382,438 thousand to TL33,920,361.49 thousand. ICR increases by 21.52% from 3.24 to 3.93.

In major shock, NPLs rise by 20%, Borrowing interest rate rise by 3% and Net trading income declines by 3%. In this worst scenario, profit after tax decreases by 104.24% and turn to loss after tax from TL 6,576,420 thousand to TL -278,516.23 thousand, total assets drop by 1.92% from TL 357,761,365 thousand to TL350.906.428,77 thousand and equity decrease by -17.86% from TL38,382,438 thousand to TL 31,527,501.77 thousand. ICR goes up by 45.63% from 2.50 to 4.71.

Scenario Analysis for Dec. 2016 - Ziraat Bank (Thousand TL)

Multiple Shocks	Level of Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity)before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
<u>Minor Shock</u> NPLs Rise, Borrowing Interest Rate Rise, Net Trading Income Decline	5%,1%,1%	6.576.420	4,345,381.75	357,761,365.00	355,530,326.75	38,382,438	36,151,399.75	3.24	3.48
<u>Moderate Shock</u> NPLs Rise, Borrowing Interest Rate Rise, Net Trading Income Decline	10%,2%,2%		2,114,343.49		353,299,288.49		33,920,361.49		3.93
<u>Major Shock</u> NPLs Rise, Borrowing Interest Rate Rise, Net Trading Income Decline	20%,3%,3%		-278,516.23		350,906,428.77		31,527,501.77		4.71

Table 23. Scenario Analysis Minor, Moderate and Major Shock for Ziraat Bank

7.5. INTERNAL CREDIT RATE RISK FOR HALKBANK – DECEMBER 2016

In quantitative assessment section ratios have been calculated and they have given a score based on table ranges that has been given.

Portfolio diversification in asset quality category shows that based on HHI it is moderated concentration. It has been calculated as the below table indicates (Amounts expressed in thousand TRY): In Halkbank total portfolio has an amount of 266,320,176 thousand TRY.

Portfolio Diversification	Risk Profile by Sector (Thousand TRY)	Percentage	Squares
Agriculture	829,322	0.31%	0
Manufacturing	55,893,527	20.99%	440
Construction	12,077,597	4.53%	21
Services	70,235,305	26.37%	696
Other	127,284,425	47.79%	2,284
Total	266,320,176	100%	3,441

Table 24. Portfolio Diversification of Halkbank in Year 2016

In qualitative assessment section, competitive position shows Halkbank is average market share because it is in the range of 4.92% \leq x $<$ 9.68%.

Competitive position is equal to total assets of Halkbank over total assets of Turkish banking system (Numbers are in Million)

$$\text{Halkbank's Competitive Position} = \frac{231,441}{2,595,348} = 8.92\%$$

Audit report is clean. As auditor's opinion express that the unconsolidated financial statements presents fairly.

Halkbank is a State-owned bank which is listed in the Borsa İstanbul (BIST) so in the qualitative assessment it has been selected "State-listed".

		1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	Score after Adjustment		
Quantitative Assessment	70%													
Earnings	30%	Standard										Dec-16		
Return on Assets (ROA)	25%	+ 1,5	1,4	1,2	1,1	0,9	0,8	0,6	0,4	0,2	0,0	1,11	4	4
Return on Equity (ROE)	25%	+ 5,0	4,6	4,2	3,8	3,3	2,9	2,5	1,8	1,0	0,3	12,00	1	1
Cost of Income	30%	- 55,0	58,3	61,7	65,0	68,3	71,7	75,0	83,3	91,7	100,0	83,63	9	9
Net Interest Margin	10%	+ 3,0	2,8	2,5	2,3	2,0	1,8	1,5	1,0	0,5	0,0	3,59	1	1
Non Interest Income / Total Income	10%	+ 50,0	44,2	38,3	32,5	26,7	20,8	15,0	10,0	5,0	0,0	16,30	7	7
Capital Adequacy	20%												4,8	4,75
Total Equity / Total Assets	30%	+ 10,0	9,2	8,3	7,5	6,7	5,8	5,0	3,3	1,7	0,0	9,21	2	2
Total Loan / Total Assets	20%	+ 90,0	86,7	83,3	80,0	76,7	73,3	70,0	46,7	23,3	0,0	68,42	8	8
CAR	30%	+ 15,0	14,3	13,7	13,0	12,3	11,7	11,0	7,3	3,7	0,0	13,08	4	4
Total Capital / Total Loans	20%	+ 11,0	10,3	9,7	9,0	8,3	7,7	7,0	4,7	2,3	0,0	0,79	10	10
Liquidity	20%												5,4	5,4
Loan / Customer Deposit	35%	- 75,0	78,3	81,7	85,0	88,3	91,7	95,0	130,0	165,0	200,0	105,38	8	8
Loan / Total Funding	25%	- 65,0	68,3	71,7	75,0	78,3	81,7	85,0	93,3	101,7	110,0	93,57	9	6,3
Liquid Assets / Total Assets	20%	+ 40,0	36,7	33,3	30,0	26,7	23,3	20,0	13,3	6,7	0,0	20,34	7	7
Customer Deposit / Total Deposit	20%	+ 40,0	35,8	31,7	27,5	23,3	19,2	15,0	10,0	5,0	0,0	88,79	1	1
Asset Quality	25%												6,7	5,975
NPL / Total Loans	25%	- 4,0	4,7	5,3	6,0	6,7	7,3	8,0	12,0	16,0	20,0	3,25	1	1
Provisions / NPL (Coverage Ratio)	30%	+ 95,0	90,0	85,0	80,0	70,0	60,0	50,0	40,0	30,0	20,0	77,12	5	5
Provisions / Operating Income	25%	- 20,0	23,3	26,7	30,0	33,3	36,7	40,0	60,0	80,0	100,0	11,25	1	1
Portfolio Diversification	20%	Low Concentration			Moderate Concentration			High Concentration			Moderate Concentration	5	5	
Management	5%												3	3
PAT / No Employee (Million USD)	50%	+ 0,40	0,35	0,30	0,25	0,20	0,15	0,10	0,07	0,04	0,01	0,15	6	6
PAT / No Branches (Million USD)	50%	+ 6,00	5,50	5,00	4,50	4,00	3,50	3,00	2,10	1,20	0,30	2,65	8	8
Qualitative Assessment	30%												7	7
Competitive Position	30%	Market Leader High Market Share Average Market Share Low Market Share									Average Market Share	7	7	
Audit Report	40%	Clean			Observations			Qualified			Clean	1	1	
Ownership	30%	State Listed		State Un-Listed		Pvt Listed		Pvt Un-Listed		State Listed	1	1		
Quantitative Factors	70%													
Qualitative Factors	30%												4,20	
Rate													4,20	

Table 25. Internal Credit Rate Risk before Simulation for Halkbank – December 2016

7.5.1 Sensitivity Analysis and Scenario Analysis for Halkbank:

Before inserting shocks to the model and reviewing the related simulation, it is better to take into consideration the amounts related to the profit after tax, Total assets (Liabilities and shareholder's equity), Equity and Internal Credit Rating(ICR) for year ended 2016. The related amounts are as follow respectively: profit after tax: TL2,558,265 thousand, Total assets: TL 231,440,818 thousand, Equity: TL 21,316,946 thousand and ICR: 4.20. Now we are ready to run the sensitivity test to see what is going to happen to the amounts related to every item mentioned above.

7.5.1.1 Sensitivity Analysis for Halkbank:

Table26. indicates minor shocks for Halkbank in 2016. In sensitivity analysis shocks are implemented for single variable change. In this circumstances, 5% rise in NPL reduces profit after tax by 7.67% from TL2,558,265 thousand to TL2,362,091.71thousand, total assets reduce by 0,08% from TL231,440,818 thousand to TL 231,244,644.71thousand, Equity reduces by 0.92% from TL21,316,946 thousand to TL21,120,772.71 thousand and ICR goes up by 2.67% from 4.20 to 4.31.

1% rise in lending rate increases PAT by 47.25% from TL 2,558,265 thousand to TL 3,766,996.33 thousand, total assets increases by 0.52% from TL 231,440,818 thousand to TL 232,649,549.33thousand, equity rises by 5.67% from TL21,316,946 thousand to TL 22,525,677.33thousand and ICR goes down by 6.50% from 4.20 to 3.93.

1% drop in lending rate decreases profit after tax by 47.25% from TL 2,558,265 thousand to TL 1,349,533.67 thousand, total assets decreases by 0.52% from TL231,440,818 to TL 230,232,086.67 thousand, equity reduces by 5.67% from TL 21,316,946 thousand to TL20,108,214.67 thousand and ICR goes up by 8.42% from 4.20 to 4.55.

1% rise in borrowing rate reduces profit after tax by 44.83% from TL 2,558,265 thousand to TL 1,411,296.70 thousand, total assets reduces by 0.50% from TL 231,440,818 thousand to TL 230,293,849.70 thousand, equity reduces by 5.38% from TL 21,316,946 thousand to TL 20,169,977.70 thousand and ICR goes up by 7.67% from 4.20 to 4.52.

By 1% decline in net trading income profit after tax decreases by 8.49% from TL 2,558,265 thousand to TL 2,341,057.44 thousand, total assets decrease by 0.09% from TL 231,440,818 thousand to TL 231,223,610.44 thousand and equity decreases by -1.02% from TL 21,316,946 thousand to TL 21,099,738.44 thousand respectively. ICR goes up by 2.67% from 4.20 to 4.31.

Table 27. describes moderate shocks for each variable. Rising in NPL by 10% reduces profit after tax by 15.34% from TL 2,558,265 thousand to TL 2,165,918.42 thousand, total assets decrease by 0.17% from TL 231,440,818 thousand to TL 231,048,471.42 thousand. Equity drops by 1.84% from TL 21,316,946 thousand to TL 20,924,599.42 thousand. ICR goes up by 2.08% from 4.20 to 4.29.

2% rise in lending rate increases profit after tax by 94.50% from TL 2,558,265 thousand to TL 4,975,727.65 thousand, total assets drop by 1.04% from TL 231,440,818 thousand to TL 233,858,280.65 thousand, equity decreases by 11.34% from TL 21,316,946 thousand to TL 23,734,408.65 thousand and with these changes ICR drops by 10.67% and get a better score of 4.20 to 3.75.

2% decline in lending rate decreases profit after tax by 94.50% from TL 2,558,265 thousand to TL 140,802.35 thousand, total assets decreases by 1.04% from TL 231,440,818 thousand to TL 229,023,355.35 thousand, equity declines by 11.34% from TL 21,316,946 thousand to TL 18,899,483.35 thousand and ICR goes up by 27.92% from 4.20 to 5.37.

2% increase in borrowing rate decreases profit after tax drops by 89.67% from TL 2,558,265 thousand to TL 264,328.39 thousand, total assets decreases by 0.99% from TL 231,440,818 thousand to TL 229,146,881.39 thousand, equity decreases by 10.76%

from TL 21,316,946 thousand to TL 19,023,009.39 thousand. ICR goes up by 26.67% from 4.20 to 5.32.

2% decline in net trading income decreases profit after tax declines by 16.98% from TL2,558,265 thousand to TL 2,123,849.89 thousand, total assets drop by 0.19% from TL 231,440,818 thousand to TL 231,006,402.89 thousand, equity goes down by 2.04% from TL 21,316,946 thousand to TL 20,882,530.89 thousand. ICR goes up by 2.67% from 4.20 to 4.31.

Table28. shows the highest level of shocks, major shocks, for four variables that have been chosen for this study. It examines these variables separately. In this part it has been assumed that 20% rises in NPL decreases profit after tax by 30.67% from TL 2,558,265 thousand to TL 1,773,571.84 thousand, total assets decrease by 0,34% from TL 231,440,818 thousand to TL230,656,124.84 thousand, equity drops by 3.68% from TL 21,316,946 thousand to TL 20,532,252.84 thousand. ICR goes up by 3.75% from 4.20 to 4.36.

3% rise in lending rate increases profit after tax by 141.74% from TL 2,558,265 thousand to TL 6,184,458.98 thousand, total assets increase by 1.57% from TL 231,440,818 thousand to TL 235,067,011.98 thousand, equity rise by 17.01% from TL 21,316,946 thousand to TL 24,943,139.98 thousand. ICR goes down by 15.33% from 4.20 to 3.56.

3% decline in lending rate decreases profit after tax by 141.74% from TL2,558,265 thousand to TL -1,067,928.98 thousand, total assets drop by 1.57% from TL 231,440,818 thousand to TL 227,814,624.02 thousand, equity goes down by 17.01% from TL 21,316,946 thousand to TL 17,690,752.02 thousand, ICR goes up by 28.92% from 4.20 to 5.41.

3% decline in borrowing rate decreases profit after tax falls by 134.50% from TL2,558,265 thousand to TL -882,639.91 thousand, total assets fall by 1.49% from TL 231,440,818 thousand to TL 227,999,913.09 thousand, equity drops by 16.14% from

TL21,316,946 thousand to TL 17,876,041.09 thousand, ICR goes up by 29.42% from 4.20 to 5.44.

3% decline in net trading income decreases profit after tax by 25.47% from TL 2,558,265 thousand to TL1,906,642.33 thousand, total assets decrease by 0.28% from TL 231,440,818 thousand to TL 230,789,195.33 thousand, equity drops by 3.06% from TL 21,316,946 thousand to TL 20,665,323.33 thousand. ICR goes up by 4.33% from 4.20 to 4.38.

Sensitivity Analysis for Dec. 2016 - Halkbank (Thousand TL)

Minor Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	5%	2,558,265	2,362,091.71	231,440,818	231,244,644.71	21,316,946	21,120,772.71	4.20	4.31
Lending Rate Rise	1%		3,766,996.33		232,649,549.33		22,525,677.33		3.93
Lending Rate Decline	1%		1,349,533.67		230,232,086.67		20,108,214.67		4.55
Borrowing Rate Rise	1%		1,411,296.70		230,293,849.70		20,169,977.70		4.52
Net Trading Income Decline	1%		2,341,057.44		231,223,610.44		21,099,738.44		4.31

Table 26. Sensitivity Analysis Minor Shock for Halkbank

Moderate Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	10%	2,558.265	2.165.918,42	231.440.818	231.048.471,42	21.316.946	20.924.599,42	4,20	4,29
Lending Rate Rise	2%		4.975.727,65		233.858.280,65		23.734.408,65		3,75
Lending Rate Decline	2%		140.802,35		229.023.355,35		18.899.483,35		5,37
Borrowing Rate Rise	2%		264.328,39		229.146.881,39		19.023.009,39		5,32
Net Trading Income Decline	2%		2.123.849,89		231.006.402,89		20.882.530,89		4,31

Table 27. Sensitivity Analysis Moderate Shock for Halkbank

Major Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	20%	2,558.265	1.773.571,84	231.440.818	230.656.124,84	21.316.946	20.532.252,84	4,20	4,36
Lending Rate Rise	3%		6.184.458,98		235.067.011,98		24.943.139,98		3,56
Lending Rate Decline	3%		-1.067.928,98		227.814.624,02		17.690.752,02		5,41
Borrowing Rate Rise	3%		-882.639,91		227.999.913,09		17.876.041,09		5,44
Net Trading Income Decline	3%		1.906.642,33		230.789.195,33		20.665.323,33		4,38

Table 28. Sensitivity Analysis Major Shock for Halkbank

7.5.1.2 Scenario Analysis for Halkbank:

Table 29. indicates all three levels of shocks for Halkbank. Minor, Moderate and Major shocks. In all three shocks three variables change simultaneously.

In minor shock, NPLs rise by 5%, Borrowing interest rate rise by 1% and Trading income declines by 1%. In this case profit after tax drops by 60.99% from TL2,558,265 thousand to TL 997,915.85 thousand, total assets decline by 0.67% from TL231,440,818.00 thousand to TL229,880,468.85 thousand and equity drops by 7.32% from TL21,316,946 thousand to TL19,756,596.85 thousand. ICR goes up by 11.25% from 4.20 to 4.67.

In moderate shock, NPLs rise by 10%, Borrowing interest rate rise by 2% and Net trading income declines by 2%. In this scenario profit after tax decreases by 121.98% from TL2,558,265 thousand to TL -562,433.30 thousand, total assets decrease by 1.35% from TL231,440,818.00 thousand to TL228,320,119.70 thousand. Equity drops by -14.64% from TL21,316,946 thousand to TL18,196,247.70 thousand. ICR increases by 27.33% from 4.20 to 5.35.

In major shock, NPLs rise by 20%, Borrowing interest rate rise by 3% and Net trading income declines by 3%. In this worst scenario, profit after tax decreases by 190.65% and turn it to loss from 2,558,265 to -2,318,955.75, total assets drop by 2.11% from TL 231,440,818.00 thousand to TL226,563,597.25 thousand and equity decreases by 22.88% from TL21,316,946 thousand to TL 16,439,725.25 thousand. ICR drops by 29.83% from 4.20 to 5.45.

Scenario Analysis for Dec. 2016 – Halkbank (Thousand TL)

Multiple Shocks	Level of Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities & Shareholder's Equity)before Simulation	Total Assets(Liabilities & Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
<u>Minor Shock</u> NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline	5%,1%,1 %	2,558,265	997,915.85	231,440,818.00	229,880,468.85	21,316,946	19,756,596.85	4.20	4.67
<u>Moderate Shock</u> NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline	10%,2%,2 %		-562,433.30		228,320,119.70		18,196,247.70		5.35
<u>Major Shock</u> NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline	20%,3%,3 %		- 2,318,955.75		226,563,597.25		16,439,725.25		5.45

Table 29. Scenario Analysis Minor, Moderate and Major Shock for Halkbank

7.6. INTERNAL CREDIT RATE RISK FOR İŞBANK – DECEMBER 2016

In quantitative assessment section ratios have been calculated and they have given a score based on table ranges that has been given.

Portfolio diversification in asset quality category shows that based on HHI it is High concentration. It has been calculated as the below table indicates (Amounts expressed in thousand TRY): In İşbank total portfolio has an amount of 348,898,707 thousand TRY.

Portfolio Diversification	Risk Profile by Sector (Thousand TRY)	Percentage	Squares
Agriculture	2,461,660	0.71%	0
Manufacturing	70,222,381	20.13%	405
Construction	24,510,913	7.03%	49
Services	138,308,412	39.64%	1,571
Other	113,395,341	32.50%	1,056
Total	348,898,707	100%	3,083

Table 30. Portfolio Diversification of İşbank in Year 2016

In qualitative assessment section, competitive position shows İşbank is average market share because it is in the range of $10,95\% \leq x \leq 13,78\%$.

Competitive position is equal to total assets of İşbank over total assets of Turkish banking system (Numbers are in Million)

$$\text{Halk bank's Competitive Position} = \frac{231,441}{2,595,348} = 8.92\%$$

Audit report is clean. As auditor's opinion express that the unconsolidated financial statements presents fairly.

İşbank is a privately owned bank which is listed in the Borsa İstanbul (BIST) so in the qualitative assessment it has been selected as "Pvt-listed".

		1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	Score	Score After Adjustment	
Quantitative Assessment	70%													
Earnings	30%	Standard						Watchful	Sub-Standard	Doubtful	NPL	Dec-16		
Return on Assets (ROA)	25%	+ 1,5	1,4	1,2	1,1	0,9	0,8	0,6	0,4	0,2	0,0	1,51	1	1
Return on Equity (ROE)	25%	+ 5,0	4,6	4,2	3,8	3,3	2,9	2,5	1,8	1,0	0,3	13,07	1	1
Cost of Income	30%	- 55,0	58,3	61,7	65,0	68,3	71,7	75,0	83,3	91,7	100,0	76,25	8	8
Net Interest Margin	10%	+ 3,0	2,8	2,5	2,3	2,0	1,8	1,5	1,0	0,5	0,0	4,17	1	1
Non Interest Income / Total Income	10%	+ 50,0	44,2	38,3	32,5	26,7	20,8	15,0	10,0	5,0	0,0	25,93	6	6
												3,6	3,6	
Capital Adequacy	20%													
Total Equity / Total Assets	30%	+ 10,0	9,2	8,3	7,5	6,7	5,8	5,0	3,3	1,7	0,0	11,54	1	1
Total Loan / Total Assets	20%	+ 90,0	86,7	83,3	80,0	76,7	73,3	70,0	46,7	23,3	0,0	65,55	8	8
CAR	30%	+ 15,0	14,3	13,7	13,0	12,3	11,7	11,0	7,3	3,7	0,0	15,17	1	1
Total Capital / Total Loans	20%	+ 11,0	10,3	9,7	9,0	8,3	7,7	7,0	4,7	2,3	0,0	2,20	10	10
												4,2	4,2	
Liquidity	20%													
Loan / Customer Deposit	35%	- 75,0	78,3	81,7	85,0	88,3	91,7	95,0	130,0	165,0	200,0	115,17	8	8
Loan / Total Funding	25%	- 65,0	68,3	71,7	75,0	78,3	81,7	85,0	93,3	101,7	110,0	95,82	9	6,3
Liquid Assets / Total Assets	20%	+ 40,0	36,7	33,3	30,0	26,7	23,3	20,0	13,3	6,7	0,0	26,50	6	6
Customer Deposit / Total Deposit	20%	+ 40,0	35,8	31,7	27,5	23,3	19,2	15,0	10,0	5,0	0,0	83,20	1	1
												6,45	5,775	
Asset Quality	25%													
NPL / Total Loans	25%	- 4,0	4,7	5,3	6,0	6,7	7,3	8,0	12,0	16,0	20,0	2,42	1	1
Provisions / NPL (Coverage Ratio)	30%	+ 95,0	90,0	85,0	80,0	70,0	60,0	50,0	40,0	30,0	20,0	77,48	5	5
Provisions / Operating Income	25%	- 20,0	23,3	26,7	30,0	33,3	36,7	40,0	60,0	80,0	100,0	10,12	1	1
Portfolio Diversification	20%	Low Concentration			Moderate Concentration			High Concentration			High Concentration	10	10	
												4	4	
Management	5%													
PAT / No Employee (Million TL)	50%	+ 0,40	0,35	0,30	0,25	0,20	0,15	0,10	0,07	0,04	0,01	0,19	6	6
PAT / No Branches (Million TL)	50%	+ 6,00	5,50	5,00	4,50	4,00	3,50	3,00	2,10	1,20	0,30	3,42	7	7
												6,5	6,5	
Qualitative Assessment	30%													
Competitive Position	30%	Market Leader				High Market Share		Average Market Share		Low Market Share		Market Leader	1	1
Audit Report	40%	Clean			Observations			Qualified			Clean	1	1	
Ownership	30%	State Listed		State Un-Listed		Pvt Listed		Pvt Un-Listed		Pvt Listed	7	7		
Quantitative Factors	70%													
Qualitative Factors	30%													
												4,4		
												2,8	3,92	
Rate												3,92		

Table 31. Internal Credit Rate Risk before Simulation for İşbank – December 2016

7.6.1. Sensitivity Analysis and Scenario Analysis for İşbank:

Before inserting shocks to the model and reviewing the related simulation, it is better to take into consideration the amounts related to the profit after tax, Total assets (Liabilities and shareholder's equity), Equity and Internal Credit Rating(ICR) for year ended 2016. The related amounts are as follow respectively: profit after tax: TL4,701,206 thousand, Total assets: TL 311,625,913 thousand, Equity: TL 35,960,981 thousand and ICR: 3.92. now we are ready to run the sensitivity test to see what is going to happen to the amounts related to every item mentioned above.

7.6.1.1 Sensitivity Analysis for İşbank:

Table32. indicates minor shocks for İşbank in 2016. In sensitivity analysis shocks are implemented for single variable change. In this circumstances, 5% rise in NPL reduces profit after tax by 4.30% from 4,701,206 to TL 4,499,213.37 thousand, total assets reduce by 0.06% TL311,625,913 thousand to TL 311,423,920.37 thousand, Equity reduces by 0.56% from TL 35,960,981 thousand to TL 35,758,988.37 thousand and ICR goes up by 1.34% from 3.92 to 3.97.

1% rise in lending rate increases profit after tax by 35.50% from TL 4,701,206 thousand to TL 6,370,117.64 thousand, total assets increase by 0,54% from TL311,625,913 thousand to TL 313,294,824.64 thousand, equity rises by 4.64% from TL 35,960,981 thousand to TL 37,629,892.64 thousand and ICR get improved by 6.16% from 3.92 to 3.68.

1% drop in lending rate decreases profit after tax by 35.50% from TL4,701,206 thousand to TL 3,032,294.36 thousand, total assets decrease by 0.54% TL311,625,913 thousand to TL 309,957,001.36 thousand, equity reduces by 4.64% from TL35,960,981 thousand to TL 34,292,069.36 thousand and ICR goes up by 6.25% from 3.92 to 4.17.

1% rise in borrowing rate reduces profit after tax by -30.82% from TL 4,701,206 thousand to TL 3,252,062.14 thousand, total assets reduce by 0.47% from TL 311,625,913 thousand to TL 310,176,769.14 thousand, equity reduces by 4.03% from TL35,960,981 thousand to TL 34,511,837.14 thousand and ICR goes up by 6.25% from 3.92 to 4.17.

By 1% decline in net trading income profit after tax drops by 7.02% from TL4,701,206 thousand to TL4,371,154.15 thousand, total assets drop by 0.11% from TL311,625,913 thousand to TL311,295,861.15 thousand and equity decreases by 0.92% from TL35,960,981 thousand to TL35,630,929.15 thousand. ICR goes up by 1.34% from 3.92 to 3.97.

Table33. describes moderate shocks for each variable. Rising in NPL by 10% reduces profit after tax by 8.59% from TL4,701,206 thousand to TL 4,297,220.74 thousand, total assets drop by 0.13% from TL311,625,913 thousand to TL311,221,927.74 thousand, equity decreases by 1.12% from TL35,960,981 thousand to TL35,556,995.74 thousand. ICR goes up by 1.34% from 3.92 to 3.97.

2% rise in lending rate increases profit after tax by 71.00% from TL4,701,206 thousand to TL8,039,029.28 thousand, total assets increase by 1.07% from TL 311,625,913 thousand to TL 314,963,736.28 thousand, equity increases by 9.28% from TL 35,960,981 thousand to TL39,298,804.28 thousand. ICR goes down by 9.11% from 3.92 to 3.56.

2% decline in lending rate decreases profit after tax by 71.00% from TL 4,701,206 thousand to TL 1,363,382.72 thousand, total assets decrease by 1.07% from TL 311,625,913 thousand to TL 308,288,089.72 thousand, equity declines by 9.28% from TL35,960,981 thousand to TL 32,623,157.72 thousand and ICR goes up by 17.41% from 3.92 to 4.60.

2% increase in borrowing rate decreases profit after tax by -61.65% from TL 4,701,206 thousand to TL 1,802,918.29 thousand, total assets decrease by 0.93% from TL 311,625,913 thousand to TL 308,727,625.29 thousand, equity declines by 8.06% from TL 35,960,981 thousand to TL 33,062,693.29 thousand and ICR goes up by 13.30% from 3.92 to 4.44.

2% decline in net trading income decreases profit after tax by 14.04% from TL 4,701,206 thousand to TL 4,041,102.30 thousand, total assets fall by 0.21% from TL 311,625,913 thousand to TL 310,965,809.30 thousand, equity decreases by 1.84% from TL 35,960,981 thousand to TL 35,300,877.30 thousand and ICR goes up by 3.13% from 3.92 to 4.04.

Table 34. shows the highest level of shocks, major shocks, for four variables that have been chosen for this study. It examines these variables separately. In this part it has been assumed that 20% rises in NPL decreases profit after taxes by 17.19% from TL 4,701,206 thousand to TL 3,893,235.47 thousand, total assets decline by 0.26% from TL 311,625,913 thousand to TL 310,817,942.47 thousand, equity drops by 2.25% from TL 35,960,981 thousand to TL 35,153,010.47 thousand and ICR goes up by 3.13% from 3.92 to 4.04.

3% rise in lending rate increases profit after tax by 106.50% from TL 4,701,206 thousand to TL 9,707,940.92 thousand, total assets increase by 1.61% from TL 311,625,913 thousand to TL 316,632,647.92 thousand and equity rise by 13.92% from TL 35,960,981 thousand to TL 40,967,715.92 thousand. ICR comes down by 33.13% from 3.92 to 3.47.

3% decline in lending rate decreases profit after tax drop by 106.50% from TL 4,701,206 thousand to TL -305,528.92 thousand, total assets change by 1.61% drop from TL 311,625,913 thousand to TL 306,619,178.08 thousand and equity declines by 13.92% from TL 35,960,981 thousand to TL 30,954,246.08 thousand. ICR goes up by 33.13% from 3.92 to 5.22.

If borrowing rate goes up 3% profit after tax drops by 92.47% from TL 4,701,206 thousand to TL353,774.43 thousand, total assets goes down by 1.40% from TL 311,625,913 thousand to TL307,278,481.43 thousand and equity goes down by 12.09% from TL 35,960,981 thousand to TL31,613,549.43 thousand. ICR rise by 31.79% from 3.92 to 5.17.

3% decline in net trading income decreases by 21.06% from TL 4,701,206 thousand to TL3,711,050.46 thousand, Total assets drop by 0.32% from TL 311,625,913 thousand to TL 310,635,757.46 thousand and equity drops by 2.75% from TL 35,960,981 thousand to TL 34,970,825.46 thousand. ICR goes up 4.91% from 3.92 to 4.11.

Sensitivity Analysis for Dec. 2016 – İşbank (Thousand TL)

Minor Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	5%	4.701.206	4.499.213,37	311.625.913	311.423.920,37	35.960.981	35.758.988,37	3,92	3,97
Lending Rate Rise	1%		6.370.117,64		313.294.824,64		37.629.892,64		3,68
Lending Rate Decline	1%		3.032.294,36		309.957.001,36		34.292.069,36		4,17
Borrowing Rate Rise	1%		3.252.062,14		310.176.769,14		34.511.837,14		4,17
Net Trading Income Decline	1%		4.371.154,15		311.295.861,15		35.630.929,15		3,97

Table 32. Sensitivity Analysis Minor Shock for İşbank

Moderate Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	10%	4.701.206	4.297.220,74	311.625.913	311.221.927,74	35.960.981	35.556.995,74	3,92	3,97
Lending Rate Rise	2%		8.039.029,28		314.963.736,28		39.298.804,28		3,56
Lending Rate Decline	2%		1.363.382,72		308.288.089,72		32.623.157,72		4,60
Borrowing Rate Rise	2%		1.802.918,29		308.727.625,29		33.062.693,29		4,44
Net Trading Income Decline	2%		4.041.102,30		310.965.809,30		35.300.877,30		4,04

Table 33. Sensitivity Analysis Moderate Shock for İşbank

Major Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	20%	4.701.206	3.893.235,47	311.625.913	310.817.942,47	35.960.981	35.153.010,47	3,92	4,04
Lending Rate Rise	3%		9.707.940,92		316.632.647,92		40.967.715,92		3,47
Lending Rate Decline	3%		-305.528,92		306.619.178,08		30.954.246,08		5,22
Borrowing Rate Rise	3%		353.774,43		307.278.481,43		31.613.549,43		5,17
Net Trading Income Decline	3%		3.711.050,46		310.635.757,46		34.970.825,46		4,11

Table 34. Sensitivity Analysis Major Shock for İşbank

7.6.1.2. Scenario Analysis for İşbank:

Table35. indicates all three levels of shocks for İşbank. Minor, Moderate and Major shocks. In all three shocks three variables change simultaneously.

In minor shock, NPLs rise by 5%, Borrowing interest rate rise by 1% and Trading income declines by 1%. In this case profit after tax drops by 42.14% from TL 4,701,206 thousand to TL 2,720,017.66 thousand, total assets decline by 0.64% from TL 311,625,913 thousand to TL 309,644,724.66 thousand and equity drops by 5.51% from TL 35,960,981 thousand to TL 33,979,792.66 thousand. ICR goes up by 9.64% from 3.92 to 4.30.

In moderate shock, NPLs rise by 10%, Borrowing interest rate rise by 2% and Net trading income declines by 2%. In this scenario profit after tax decreases by 84.28% from TL 4,701,206 thousand to TL 738,829.33 thousand, total assets decrease by 1.27% from TL 311,625,913 thousand to TL 307,663,536.33 thousand. Equity drops by 11.02% from TL 35,960,981 thousand to TL 31,998,604.33 thousand. ICR increases by 25.36% from 3.92 to 4.91.

In major shock, NPLs rise by 20%, Borrowing interest rate rise by 3% and Net trading income declines by 3%. In this worst scenario, profit after tax decreases by 130.72% from TL 4,701,206 thousand to -1,444,351.64 and turn to loss after tax, total assets drop by 1,97% from TL 311,625,913 thousand to TL 305,480,355.36 thousand and equity decreases by 17.09 from TL 35,960,981 thousand to TL 29,815,423.36 thousand. ICR goes up by 34.20% from 3.92 to 5.26.

Scenario Analysis for Dec. 2016 - İşbank (Thousand TL)

Multiple Shocks	Level of Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities & Shareholder's Equity) before Simulation	Total Assets(Liabilities & Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
<u>Minor Shock</u> NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline	5%,1%,1%	4.701.206	2.720.017,66	311.625.913	309.644.724,66	35.960.981	33.979.792,66	3,92	4,30
<u>Moderate Shock</u> NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline	10%,2%,2%		738.829,33		307.663.536,33		31.998.604,33		4,91
<u>Major Shock</u> NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline	20%,3%,3%		-1.444.351,64		305.480.355,36		29.815.423,36		5,26

Table 35. Scenario Analysis Minor, Moderate and Major Shock for İşbank

7.7. INTERNAL CREDIT RATE RISK FOR AKBANK – DECEMBER 2016

In quantitative assessment section ratios have been calculated and they have given a score based on table ranges that has been given.

Portfolio diversification in asset quality category shows that based on HHI it is High concentration. It has been calculated as the below table indicates (Amounts expressed in thousand TRY): In Akbank total portfolio has an amount of 331,025,082 thousand TRY.

Portfolio Diversification	Risk Profile by Sector (Thousand TRY)	Percentage	Squares
Agriculture	300.805	0.09%	0
Manufacturing	46,312,141	13.99%	196
Construction	22,053,076	6.66%	44
Services	126,600,070	38.24%	1,463
Other	135,758,990	41.01%	1,682
Total	331,025,082	100%	3,385

Table 36. Portfolio Diversification of Akbank in Year 2016

In qualitative assessment section, competitive position shows Akbank is High market share because it is in the range of $9.68\% \leq x < 10.95\%$

Competitive position is equal to total assets of Akbank over total assets of Turkish banking system (Numbers are in Million)

$$\text{Akbank's Competitive Position} = \frac{271,017}{2,595,348} = 10.44\%$$

Audit report is clean. Auditor has qualified the financial statements of Akbank based on the basis of general reserve for possible risks amounting to TRY 200 Million which is carried forward from 2014 by the bank management for possible results of circumstances which may arise from possible changes in economy. Management has taken this decision in line with the conservatism principle considering the circumstances that may arise from any changes in the economy or market conditions. Since additional provision cannot be considered a weak point from the vintage point of

prudential rules and practices therefore in the framework of qualitative analysis we can assume the financial statements of the said bank as of the balance sheet date is "clean". Akbank is a privately owned bank which is listed in the Borsa İstanbul (BIST) so in the qualitative assessment it has been selected as "Pvt-listed

		1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	Ratio	Score	Score After Adjustment				
Quantitative Assessment	70%																	
Earnings	30%	Standard										Watchfull	Sub-Standard	Doubtful	NPL	Dec-16		
Return on Assets (ROA)	25%	+ 1,5	1,4	1,2	1,1	0,9	0,8	0,6	0,4	0,2	0,0	1,67	1	1				
Return on Equity (ROE)	25%	+ 5,0	4,6	4,2	3,8	3,3	2,9	2,5	1,8	1,0	0,3	14,77	1	1				
Cost of Income	30%	- 55,0	58,3	61,7	65,0	68,3	71,7	75,0	83,3	91,7	100,0	78,26	8	8				
Net Interest Margin	10%	+ 3,0	2,8	2,5	2,3	2,0	1,8	1,5	1,0	0,5	0,0	3,45	1	1				
Non Interest Income / Total Income	10%	+ 50,0	44,2	38,3	32,5	26,7	20,8	15,0	10,0	5,0	0,0	23,14	6	6				
													3,6	3,6				
Capital Adequacy	20%																	
Total Equity / Total Assets	30%	+ 10,0	9,2	8,3	7,5	6,7	5,8	5,0	3,3	1,7	0,0	11,31	1	1				
Total Loan / Total Assets	20%	+ 90,0	86,7	83,3	80,0	76,7	73,3	70,0	46,7	23,3	0,0	59,71	8	8				
CAR	30%	+ 15,0	14,3	13,7	13,0	12,3	11,7	11,0	7,3	3,7	0,0	14,30	3	3				
Total Capital / Total Loans	20%	+ 11,0	10,3	9,7	9,0	8,3	7,7	7,0	4,7	2,3	0,0	2,47	9	9				
													4,6	4,6				
Liquidity	20%																	
Loan / Customer Deposit	35%	- 75,0	78,3	81,7	85,0	88,3	91,7	95,0	130,0	165,0	200,0	101,86	8	8				
Loan / Total Funding	25%	- 65,0	68,3	71,7	75,0	78,3	81,7	85,0	93,3	101,7	110,0	85,65	8	5,6				
Liquid Assets / Total Assets	20%	+ 40,0	36,7	33,3	30,0	26,7	23,3	20,0	13,3	6,7	0,0	31,45	4	4				
Customer Deposit / Total Deposit	20%	+ 40,0	35,8	31,7	27,5	23,3	19,2	15,0	10,0	5,0	0,0	84,09	1	1				
													5,8	5,2				
Asset Quality	25%																	
NPL / Total Loans	25%	- 4,0	4,7	5,3	6,0	6,7	7,3	8,0	12,0	16,0	20,0	2,64	1	1				
Provisions / NPL (Coverage Ratio)	30%	+ 95,0	90,0	85,0	80,0	70,0	60,0	50,0	40,0	30,0	20,0	96,37	1	1				
Provisions / Operating Income	25%	- 20,0	23,3	26,7	30,0	33,3	36,7	40,0	60,0	80,0	100,0	10,58	1	1				
Portfolio Diversification	20%	Low Concentration			Moderate Concentration			High Concentration				Moderate Concentration	5	5				
													1,8	1,8				
Management	5%																	
PAT / No Employee (Million USD)	50%	+ 0,40	0,35	0,30	0,25	0,20	0,15	0,10	0,07	0,04	0,01	0,33	3	3				
PAT / No Branches (Million USD)	50%	+ 6,00	5,50	5,00	4,50	4,00	3,50	3,00	2,10	1,20	0,30	5,38	3	3				
													3	3				
Qualitative Assessment	30%																	
Competitive Position	30%	Market Leader			High Market Share			Average Market Share			Low Market Share	High Market Share	4	4				
Audit Report	40%	Clean			Observations			Qualified				Clean	1	1				
Ownership	30%	State Listed			State Un-Listed			Pvt Listed		Pvt Un-Listed		Pvt Listed	7	7				
Quantitative Factors	70%																	
Qualitative Factors	30%																	
														3,66				
Rate																		
														3,66				

Table 37. Internal Credit Rate Risk Before Simulation for Akbank – December 2016

7.7.1. Sensitivity Analysis and Scenario Analysis for Akbank:

Before inserting shocks to the model and reviewing the related simulation, it is better to take into consideration the amounts related to the profit after tax, Total assets (Liabilities and shareholder's equity), Equity and Internal Credit Rating(ICR) for year ended 2016. The related amounts are as follow respectively: profit after tax: TL4,528,712 thousand, Total assets: TL 271,016,470 thousand, Equity: TL 30,654,582 thousand and ICR: 3.66. now we are ready to run the sensitivity test to see what is going to happen to the amounts related to every item mentioned above.

7.7.1.1. Sensitivity Analysis for Akbank:

Table38. indicates minor shocks for Akbank in 2016. In sensitivity analysis shocks are implemented for single variable change. In this circumstances, 5% rise in NPL reduces profit after tax by 3.74% from TL 4,528,712 thousand to TL 4,359,122.62 thousand, total assets reduce by 0.06% from TL271,016,470 thousand to TL 270,846,880.62 thousand, Equity reduces by 0.55% from TL 30,654,582 thousand to TL 30,484,992.62 thousand and ICR remains unchanged at 3.66.

1% rise in lending rate increases profit after tax by 28.40% from TL 4,528,712 thousand to TL 5,815,005.21 thousand, total assets increase by 0.47% from TL271,016,470 thousand to TL 272,302,763.21 thousand, equity rises by 4.20% from TL 30,654,582 thousand to TL 31,940,875.21 thousand and ICR goes down by -3.69% from 3.66 to 3.53.

1% drop in lending rate decreases profit after tax by 28.40% from TL4,528,712 thousand to TL 3,242,418.79 thousand, total assets decrease by 0.47% TL271,016,470

thousand to TL 269,730,176.79 thousand, equity reduces by 4.20% from TL30,654,582 thousand to TL 29,368,288.79 thousand and ICR goes up by 6.62% from 3.66 to 7.50%. 1% rise in borrowing rate reduces profit after tax by 27.89% from TL 4,528,712 thousand to TL 3,265,864.68 thousand, total assets reduce by 0.47% from TL 271,016,470 thousand to TL 269,753,622.68 thousand, equity reduces by 4.12% from TL30,654,582 thousand to TL 29,391,734.68 thousand and ICR goes up by 7.50% from 3.66 to 3.93.

By 1% decline in net trading income profit after tax drops by 5.99% from TL4,528,712 thousand to TL4,257,569.72 thousand, total assets drop by 0.10% from TL271,016,470 thousand to TL270,745,327.72 thousand and equity decreases by 0.88% from TL30,654,582 thousand to TL30,383,439.72 thousand. ICR remains unchanged at 3.66.

Table39. describes moderate shocks for each variable. Rising in NPL by 10% reduces profit after tax by -7,49% from TL4.528.712 thousand to TL 4.189.533,25 thousand, total assets drop by 0,13% from TL271.016.470 thousand to TL270.677.291,25 thousand, equity decreases by 1,11% from TL 30.654.582 thousand to TL30.315.403,25 thousand. ICR goes up by 0,42% from 3.66 to 3.68.

2% rise in lending rate increases profit after tax by 56.81% from TL4,528,712 thousand to TL7,101,298.42 thousand, total assets increase by 0.95% from TL271,016,470 thousand to TL 273,589,056.42 thousand, equity increases by 8.39% from TL 30,654,582 thousand to TL33,227,168.42 thousand. ICR goes down by -7.13% from 3,66 to 3,40.

2% decline in lending rate decreases profit after tax by 56.81% from TL 4,528,712 thousand to TL 1,956,125.58 thousand, total assets decrease by 0.95% from TL 271,016,470 thousand to TL 268,443,883.58 thousand, equity declines by 8.39% from TL30,654,582 thousand to TL 28,081,995.58 thousand and ICR goes up by 18.59% from 3.66 to 4.34.

2% increase in borrowing rate decreases profit after tax by 55.77% from TL 4,528,712 thousand to TL 2,003,017.36 thousand, total assets decrease by 0.93% from TL

271,016,470 thousand to TL 268,490,775.36 thousand, equity declines by 8.24% from TL 30,654,582 thousand to TL 28,128,887.36 thousand and ICR goes up by 19.17% from 3.66 to 4.36.

2% decline in net trading income decreases profit after tax by 11.97% from TL 4,528,712 thousand to TL3,986,427.44 thousand, total assets fall by 0.20% from TL 271,016,470 thousand to TL270,474,185.44 thousand, equity decreases by 1.77% from TL30,654,582 thousand to TL 30,112,297.44 thousand and ICR goes up by 2.34% from 3.66 to 3.75.

Table40. shows the highest level of shocks, major shocks, for four variables that have been chosen for this study. It examines these variables separately. In this part it has been assumed that 20% rises in NPL decreases profit after taxes by 14.98% from TL 4,528,712 thousand to TL 3,850,354.49 thousand, total assets decline by 0.25% from TL 271,016,470 thousand to TL 270,338,112.49 thousand, equity drops by 2.21% from TL 30,654,582 thousand to TL 29,976,224.49 thousand and ICR goes up by 2.34% from 3.66 to 3.75.

3% rise in lending rate increases profit after tax by 85.21% from TL 4,528,712 thousand to TL 8,387,591.64 thousand, total assets increase by 1.42% from TL 271,016,470 thousand to TL 274,875,349.64 thousand and equity rise by 12.59% from TL 30,654,582 thousand to TL 34,513,461.64 thousand. ICR comes down by -8.85% from 3.66 to 3.34.

3% decline in lending rate decreases profit after tax by 85.21%from TL 4,528,712 thousand to TL 669,832.36 thousand, total assets change by 1.42% drop from TL 271,016,470 thousand to TL 267,157,590.36 thousand and equity declines by 12.59% from TL 30,654,582 thousand to TL26,795,702.36 thousand. ICR goes up by 35.14% from 3.66 to 4.95.

If borrowing rate goes up 3% profit after tax drops by 83.66%from TL 4,528,712 thousand to TL 740,170.04 thousand, total assets goes down by 1.40% from TL 271,016,470 thousand to TL 267,227,928.04 thousand and equity goes down by

12.36% from TL 30,654,582 thousand to TL 26,866,040.04 thousand. ICR rise by 34.28% from 3.66 to 4.91.

3% decline in net trading income decreases by 17.96% from TL 4,528,712 thousand to TL 3,715,285.16 thousand, Total assets drop by 0.30% from TL 271,016,470 thousand to TL 270,203,043.16 thousand and equity drops by 2.65% from TL 30,654,582 thousand to TL 29,841,155.16 thousand. ICR goes up 2.81% from 3.66 to 3.76.

Sensitivity Analysis for Dec. 2016 - Akbank (Thousand TL)

Minor Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities & Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	5%	4.528.712	4.359.122,62	271.016.470	270.846.880,62	30.654.582	30.484.992,62	3,66	3,66
Lending Rate Rise	1%		5.815.005,21		272.302.763,21		31.940.875,21		3,53
Lending Rate Decline	1%		3.242.418,79		269.730.176,79		29.368.288,79		3,93
Borrowing Rate Rise	1%		3.265.864,68		269.753.622,68		29.391.734,68		3,93
Net Trading Income Decline	1%		4.257.569,72		270.745.327,72		30.383.439,72		3,66

Table 38. Sensitivity Analysis Minor Shock for Akbank

Moderate Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity)after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	10%	4.528.712	4.189.533,25	271.016.470	270.677.291,25	30.654.582	30.315.403,25	3,66	3,68
Lending Rate Rise	2%		7.101.298,42		273.589.056,42		33.227.168,42		3,40
Lending Rate Decline	2%		1.956.125,58		268.443.883,58		28.081.995,58		4,34
Borrowing Rate Rise	2%		2.003.017,36		268.490.775,36		28.128.887,36		4,36
Net Trading Income Decline	2%		3.986.427,44		270.474.185,44		30.112.297,44		3,75

Table 39. Sensitivity Analysis Moderate Shock for Akbank

Major Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities & Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	20%	4,528,712	3,850,354.49	271,016,470	270,338,112.49	30,654,582	29,976,224.49	3,66	3,75
Lending Rate Rise	3%		8,387,591.64		274,875,349.64		34,513,461.64		3,34
Lending Rate Decline	3%		669,832.36		267,157,590.36		26,795,702.36		4,95
Borrowing Rate Rise	3%		740,170.04		267,227,928.04		26,866,040.04		4,91
Net Trading Income Decline	3%		3,715,285.16		270,203,043.16		29,841,155.16		3,76

Table 40. Sensitivity Analysis Major Shock for Akbank

7.7.1.2 Scenario Analysis for Akbank:

Table 7.2.4 indicates all three levels of shocks for Akbank. Minor, Moderate and Major shocks. In all three shocks three variables change simultaneously.

In minor shock, NPLs rise by 5%, Borrowing interest rate rise by 1% and Trading income declines by 1%. In this case profit after tax drops by 37.62% from TL 4,528,712 thousand to TL 2,825,133.02 thousand, total assets decline by 0.63% from TL 271,016,470.00 thousand to TL 269,312,891.02 thousand and equity drops by 5.56% from TL 30,654,582 thousand to TL 28,951,003.02 thousand. ICR goes up by 10.85% from 3.66 to 4.06.

In moderate shock, NPLs rise by 10%, Borrowing interest rate rise by 2% and Net trading income declines by 2%. In this scenario profit after tax decreases by 75.23% from TL 4,528,712 thousand to TL 1,121,554.05 thousand, total assets decrease by 1.26% from TL 271,016,470.00 thousand to TL 267,609,312.05 thousand. Equity drops by 11.11% from TL 30,654,582 thousand to TL 27,247,424.05 thousand. ICR increases by 25.86% from 3.66 to 4.61.

In major shock, NPLs rise by 20%, Borrowing interest rate rise by 3% and Net trading income declines by 3%. In this worst scenario, profit after tax decreases by 116.60% from TL 4,528,712 thousand to -751,614.30 and turn to loss after tax, total assets drop by 1.95% from TL 271,016,470.00 thousand to TL 265,736,143.70 thousand and equity decreases by 17.23% from TL 30,654,582 thousand to TL 25,374,255.70 thousand. ICR drops by 41.64% from 3.66 to 5.18.

Scenario Analysis for Dec. 2016 – Akbank (Thousand TL)

Multiple Shocks	Level of Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities & Shareholder's Equity)before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
<u>Minor Shock</u> NPLs Rise, Borrowing Interest Rate Rise, Net Trading Income Decline	5%,1%,1%	4,528,712	2,825,133.02	271,016,470.00	269,312,891.02	30,654,582	28,951,003.02	3.66	4.06
<u>Moderate Shock</u> NPLs Rise, Borrowing Interest Rate Rise, Net Trading Income Decline	10%,2%,2%		1,121,554.05		267,609,312.05		27,247,424.05		4.61
<u>Major Shock</u> NPLs Rise, Borrowing Interest Rate Rise, Net Trading Income Decline	20%,3%,3%		-751,614.30		265,736,143.70		25,374,255.70		5.18

Table 41. Scenario Analysis Minor, Moderate and Major Shock for Akbank

7.8. INTERNAL CREDIT RATE RISK FOR GARANTI BANK – DECEMBER 2016

In quantitative assessment section ratios have been calculated and they have given a score based on table ranges that has been given.

Portfolio diversification in asset quality category shows that based on HHI it is High concentration. It has been calculated as the below table indicates (Amounts expressed in thousand TRY): In Garanti Bank total portfolio has an amount of 348,898,707 thousand TRY.

Portfolio Diversification	Risk Profile by Sector (Thousand TRY)	Percentage	Squares
Agriculture	1,428,818	0.42%	0
Manufacturing	62,824,955	18.57%	345
Construction	11,282,027	3.33%	11
Services	118,866,315	35.13%	1,234
Other	143,969,121	42.55%	1,810
Total	338,371,236	100%	3,400

Table 42. Portfolio Diversification of Garanti Bank in Year 2016

In qualitative assessment section, competitive position shows Garanti Bank is average market share because it is in the range of 9.68% \leq x<10.95%.

Competitive position is equal to total assets of Garanti Bank over total assets of Turkish banking system (Numbers are in Million)

$$\text{Garanti Bank's Competitive Position} = \frac{284,155}{2,595,348} = 10.95\%$$

Audit report is clean. Subsequent to the reversal of TL 30,000 thousands in the current period the accompanying unconsolidated financial statements include a general reserve amounting to TL 300,000 thousands as of the balance sheet date, provided by the bank management in the prior periods in line with the conservatism principle considering

the circumstances which may arise from any changes in the economy or market conditions.

Garanti Bank is a privately owned bank which is listed in the Borsa İstanbul (BIST) so in the qualitative assessment it has been selected as “Pvt-listed.

		1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	Score	Score after Adjustment	
Quantitative Assessment	70%													
Earnings	30%	Standard							Watch full	Sub-Standa	Doubtful	NPL		Dec-16
Return on Assets (ROA)	25%	+ 1,5	1,4	1,2	1,1	0,9	0,8	0,6	0,4	0,2	0,0	1,78	1	1
Return on Equity (ROE)	25%	+ 5,0	4,6	4,2	3,8	3,3	2,9	2,5	1,8	1,0	0,3	14,27	1	1
Cost of Income	30%	- 55,0	58,3	61,7	65,0	68,3	71,7	75,0	83,3	91,7	100,0	74,70	7	7
Net Interest Margin	10%	+ 3,0	2,8	2,5	2,3	2,0	1,8	1,5	1,0	0,5	0,0	4,52	1	1
Non Interest Income / Total Income	10%	+ 50,0	44,2	38,3	32,5	26,7	20,8	15,0	10,0	5,0	0,0	29,40	5	5
Capital Adequacy	20%													
Total Equity / Total Assets	30%	+ 10,0	9,2	8,3	7,5	6,7	5,8	5,0	3,3	1,7	0,0	12,51	1	1
Total Loan / Total Assets	20%	+ 90,0	86,7	83,3	80,0	76,7	73,3	70,0	46,7	23,3	0,0	65,47	8	8
CAR	30%	+ 15,0	14,3	13,7	13,0	12,3	11,7	11,0	7,3	3,7	0,0	16,21	1	1
Total Capital / Total Loans	20%	+ 11,0	10,3	9,7	9,0	8,3	7,7	7,0	4,7	2,3	0,0	2,26	10	10
Liquidity	20%													
Loan / Customer Deposit	35%	- 75,0	78,3	81,7	85,0	88,3	91,7	95,0	130,0	165,0	200,0	115,39	8	8
Loan / Total Funding	25%	- 65,0	68,3	71,7	75,0	78,3	81,7	85,0	93,3	101,7	110,0	92,32	8	5,6
Liquid Assets / Total Assets	20%	+ 40,0	36,7	33,3	30,0	26,7	23,3	20,0	13,3	6,7	0,0	21,07	7	7
Customer Deposit / Total Deposit	20%	+ 40,0	35,8	31,7	27,5	23,3	19,2	15,0	10,0	5,0	0,0	80,01	1	1
Asset Quality	25%													
NPL / Total Loans	25%	- 4,0	4,7	5,3	6,0	6,7	7,3	8,0	12,0	16,0	20,0	2,83	1	1
Provisions / NPL (Coverage Ratio)	30%	+ 95,0	90,0	85,0	80,0	70,0	60,0	50,0	40,0	30,0	20,0	80,93	4	4
Provisions / Operating Income	25%	- 20,0	23,3	26,7	30,0	33,3	36,7	40,0	60,0	80,0	100,0	11,23	1	1
Portfolio Diversification	20%	Low Concentration			Moderate Concentration			High Concentration			Moderate Concentration	5	5	
Management	5%													
PAT / No Employee (Million USD)	50%	+ 0,40	0,35	0,30	0,25	0,20	0,15	0,10	0,07	0,04	0,01	0,26	4	4
PAT / No Branches (Million USD)	50%	+ 6,00	5,50	5,00	4,50	4,00	3,50	3,00	2,10	1,20	0,30	5,24	3	3
Qualitative Assessment	30%													
Competitive Position	30%	Market Leader				High Market Share		Average Market Share		Low Market Share		Market Leader	1	1
Audit Report	40%	Clean			Observations			Qualified			Clean	1	1	
Ownership	30%	State Listed		State Un-Listed		Pvt Listed		Pvt Un-Listed		Pvt Listed	7	7		
Quantitative Factors	70%													
Qualitative Factors	30%													
Rate													3,51	

Table 43. Internal Credit Rate Risk before Simulation for Garanti Bank – December 2016

7.8.1. Sensitivity Analysis and Scenario Analysis for Garanti Bank:

Before inserting shocks to the model and reviewing the related simulation, it is better to take into consideration the amounts related to the profit after tax, Total assets (Liabilities and shareholder's equity), Equity and Internal Credit Rating(ICR) for year ended 2016. The related amounts are as follow respectively: profit after tax: TL5,070,549 thousand, Total assets: TL284,155,400 thousand, Equity: TL 35,539,080 thousand and ICR: 3.51. now we are ready to run the sensitivity test to see what is going to happen to the amounts related to every item mentioned above.

7.8.1.1. Sensitivity Analysis for Garanti Bank:

Table7.1.1 indicates minor shocks for Garanti Bank in 2016. In sensitivity analysis shocks are implemented for single variable change. In this circumstances, 5% rise in NPL reduces profit after tax by 4.12% from TL 5,070,549 thousand to TL 4,861,599.32 thousand, total assets reduce by 0.07% from TL 284,155,400 thousand to TL 283,946,450.32 thousand, Equity reduces by 0.59% from TL 35,539,080 thousand to TL 35,330,130.32 thousand and ICR goes up by 2.30% from 3.51 to 3.59.

1% rise in lending rate increases profit after tax by 29.08% from TL 5,070,549 thousand to TL 6,545,094.17 thousand, total assets increase by 0.52% from TL 284,155,400 thousand to TL 285,629,945.17 thousand, equity rises by 4.15% from TL 35,539,080 thousand to TL 37,013,625.17 thousand and ICR goes down by 3.29% from 3.51 to 3.39.

1% drop in lending rate decreases profit after tax by 29.08% from TL 5,070,549 thousand to TL 3,596,003.83 thousand, total assets decrease by 0.52% TL271,016,470 thousand to TL 282,680,854.83 thousand, equity reduces by -4.15% from TL

284,155,400 thousand to TL 34,064,534.83 thousand and ICR goes up by 7.29% from 3.51 to 3.76.

1% rise in borrowing rate reduces profit after tax by 25.20% from TL 5,070,549 thousand to TL 3,792,690.70 thousand, total assets reduce by 0.45% from TL 284,155,400 thousand to TL 282,877,541.70 thousand, equity reduces by 3.60% from TL 35,539,080 thousand to TL 34,261,221.70 thousand and ICR goes up by 7.29% from 3.51 to 3.76.

By 1% decline in net trading income profit after tax drops by -6.11% from TL 5,070,549 thousand to TL 4,760,645.05 thousand, total assets drop by 0.11% from TL 284,155,400 thousand to TL 283,845,496.05 thousand and equity decreases by 0.87% from TL 35,539,080 thousand to TL 35,229,176.05 thousand. ICR goes up by 1.00% from 3.51 to 3.54.

Table 7.1.2 describes moderate shocks for each variable. Rising in NPL by 10% reduces profit after tax by 8.24% from TL 5,070,549 thousand to TL 4,652,649.65 thousand, total assets drop by 0.15% from TL 284,155,400 thousand to TL 283,737,500.65 thousand, equity decreases by 1.18% from TL 35,539,080 thousand to TL 35,121,180.65 thousand. ICR goes up by 2.79% from 3.51 to 3.61.

2% rise in lending rate increases profit after tax by 58.16% from TL 5,070,549 thousand to TL 8,019,639.34 thousand, total assets increase by 1.04% from TL 284,155,400 thousand to TL 287,104,490.34 thousand, equity increases by 8.30% from TL 35,539,080 thousand to TL 38,488,170.34 thousand. ICR goes down by -6.09% from 3.51 to 3.29.

2% decline in lending rate decreases profit after tax by 58.16% from TL 5,070,549 thousand to TL 2,121,458.66 thousand, total assets decrease by 1.04% from TL 284,155,400 thousand to TL 281,206,309.66 thousand, equity declines by 8.30% from TL 35,539,080 thousand to TL 32,589,989.66 thousand and ICR goes up by 15.07% from 3.51 to 4.04.

2% increase in borrowing rate decreases profit after tax by 50.40% from TL 5,070,549 thousand to TL 2,514,832.39 thousand, total assets decrease by 0.90% from TL 284,155,400 thousand to TL 281,599,683.39 thousand, equity declines by 7.19% from TL 35,539,080 thousand to TL 32,983,363.39 thousand and ICR goes up by 15.67% from 3.51 to 4.06.

2% decline in net trading income decreases profit after tax by 12.22% from TL 5,070,549 thousand to TL 4,450,741.09 thousand, total assets fall by 0.22% from TL 284,155,400 thousand to TL 283,535,592.09 thousand, equity decreases by 1.74% from TL 35,539,080 thousand to TL 34,919,272.09 thousand and ICR goes up 1.00% from 3.51 to 3.54.

Table 7.1.3 shows the highest level of shocks, major shocks, for four variables that have been chosen for this study. It examines these variables separately. In this part it has been assumed that 20% rises in NPL decreases profit after taxes by 16.48% from TL 5,070,549 thousand to TL 4,234,750.29 thousand, total assets decline by 0.29% from TL 284,155,400 thousand to 283,319,601.29 thousand, equity drops by 2.35% from TL 35,539,080 thousand to TL 34,703,281.29 thousand and ICR goes up by 4.79% from 3.51 to 3.68.

3% rise in lending rate increases profit after tax by 87.24% from TL 5,070,549 thousand to TL 9,494,184.52 thousand, total assets increase by 1.56% from TL 284,155,400 thousand to TL 288,579,035.52 thousand and equity rise by 12.45% from TL 35,539,080 thousand to TL 39,962,715.52 thousand. ICR comes down by 7.88% from 3.51 to 3.23.

3% decline in lending rate decreases profit after tax by 87.24% from TL 5,070,549 thousand to TL 646,913.48 thousand, total assets change by 1.56% drop from TL 284,155,400 thousand to TL 279,731,764.48 thousand and equity declines by 12.45% from TL 35,539,080 thousand to TL 31,115,444.48 thousand. ICR goes up by 37.52% from 3.51 to 4.82.

If borrowing rate goes up 3% profit after tax drops by 75.60% from TL 5,070,549 thousand to TL 1,236,974.09 thousand, total assets goes down by 1.35% from TL

284,155,400 thousand to TL 280,321,825.09 thousand and equity goes down by 10.79% from TL 35,539,080 thousand to TL 31,705,505.09 thousand. ICR rise by 28.44% from 3.51 to 4.50.

3% decline in net trading income decreases by 18.34% from TL 5,070,549 thousand to TL 4,140,837.14 thousand, Total assets drop by 0.33% from TL 284,155,400 thousand to TL 283,225,688.14 thousand and equity drops by 2.62% from TL 35,539,080 thousand to TL 34,609,368.14 thousand. ICR goes up by 2.99% from 3.51 to 3.61.

Sensitivity Analysis for Dec. 2016 - Garanti Bank (Thousand TL)

Minor Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	5%	5,070,549	4,861,599.32	284,155,400	283,946,450.32	35,539,080	35,330,130.32	3.51	3.59
Lending Rate Rise	1%		6,545,094.17		285,629,945.17		37,013,625.17		3.39
Lending Rate Decline	1%		3,596,003.83		282,680,854.83		34,064,534.83		3.76
Borrowing Rate Rise	1%		3,792,690.70		282,877,541.70		34,261,221.70		3.76
Net Trading Income Decline	1%		4,760,645.05		283,845,496.05		35,229,176.05		3.54

Table 44. Sensitivity Analysis Minor Shock for Garanti Bank

Moderate Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity)after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	10%	5,070,549	4,652,649.65	284,155,400	283,737,500.65	35,539,080	35,121,180.65	3.51	3.61
Lending Rate Rise	2%		8,019,639.34		287,104,490.34		38,488,170.34		3.29
Lending Rate Decline	2%		2,121,458.66		281,206,309.66		32,589,989.66		4.04
Borrowing Rate Rise	2%		2,514,832.39		281,599,683.39		32,983,363.39		4.06
Net Trading Income Decline	2%		4,450,741.09		283,535,592.09		34,919,272.09		3.54

Table 45. Sensitivity Analysis Moderate Shock for Garanti Bank

Major Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	20%	5,070,549	4,234,750.29	284,155,400	283,319,601.29	35,539,080	34,703,281.29	3.51	3.68
Lending Rate Rise	3%		9,494,184.52		288,579,035.52		39,962,715.52		3.23
Lending Rate Decline	3%		646,913.48		279,731,764.48		31,115,444.48		4.82
Borrowing Rate Rise	3%		1,236,974.09		280,321,825.09		31,705,505.09		4.50
Net Trading Income Decline	3%		4,140,837.14		283,225,688.14		34,609,368.14		3.61

Table 46. Sensitivity Analysis Moderate Shock for Garanti Bank

7.8.1.2. Scenario Analysis for Garanti Bank:

Before inserting shocks to the model and reviewing the related simulation, it is better to take into consideration the amounts related to the profit after tax, Total assets (Liabilities and shareholder's equity), Equity and Internal Credit Rating(ICR) for year ended 2016. The related amounts are as follow respectively: profit after tax: TL5,070,549 thousand, Total assets: TL284,155,400 thousand, Equity: TL 35,539,080 thousand and ICR: 3.51. now we are ready to run the sensitivity test to see what is going to happen to the amounts related to every item mentioned above.

In moderate shock, NPLs rise by 10%, Borrowing interest rate rise by 2% and Net trading income declines by 2%. In this scenario profit after tax decreases by 70.87% from TL 5,070,549 thousand to TL 1,477,125.13 thousand, total assets decrease by 1,26% from TL 284,155,400.00 thousand to TL 280561976,13 thousand. Equity drops by 10.11% from TL 35,539,080 thousand to TL 31,945,656.13 thousand. ICR increases by 21.16% from 3.51 to 4.25.

In major shock, NPLs rise by 20%, Borrowing interest rate rise by 3% and Net trading income declines by 3%. In this worst scenario, profit after tax decreases by 110.42% from TL 5,070,549 thousand to -528,536.48 and turn to loss after tax, total assets drop by 1.97% from TL 284,155,400.00 thousand to TL 278,556,314.52 thousand and equity decreases by 15.75% from TL 35,539,080 thousand to TL 29,939,994.52 thousand. ICR drops by 41.42% from 3.51 to 4.96.

Scenario Analysis for Dec. 2016 – Garanti Bank (Thousand TL)

Multiple Shocks	Level of Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity)before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
<u>Minor Shock</u> NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline	5%,1%,1%	5,070,549	3,273,837.07	284,155,400.00	282,358,688.07	35,539,080	33,742,368.07	3.51	3.83
<u>Moderate Shock</u> NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline	10%,2%,2%		1,477,125.13		280,561,976.13		31,945,656.13		4.25
<u>Major Shock</u> NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline	20%,3%,3%		-528,536.48		278,556,314.52		29,939,994.52		4.96

Table 47. Scenario Analysis Minor, Moderate and Major Shock for Garanti Bank

7.9. INTERNAL CREDIT RATE RISK FOR ŞEKERBANK – DECEMBER 2016

In quantitative assessment section ratios have been calculated and they have given a score based on table ranges that has been given.

Portfolio diversification in asset quality category shows that based on HHI it is High concentration. It has been calculated as the below table indicates (Amounts expressed in thousand TRY): In Şekerbank total portfolio has an amount of 26,800,893 thousand TRY.

Portfolio Diversification	Risk Profile by Sector (Thousand TRY)	Percentage	Squares
Agriculture	2,491,597	9.30%	86
Manufacturing	3,507,128	13.09%	171
Construction	3,606,015	13.45%	181
Services	13.033.490	48.63%	2,365
Other	4,162,663	15.53%	241
Total	26,800,893	100%	3,045

Table 48. Portfolio Diversification of Şekerbank in Year 2016

In qualitative assessment section, competitive position shows Şekerbank is High market share because it is in the range of $0.92\% \leq x < 4.92\%$.

Competitive position is equal to total assets of Şekerbank over total assets of Turkish banking system (Numbers are in Million)

$$\text{Şekerbank's Competitive Position} = \frac{23,819}{2,595,348} = 0.92\%$$

Audit report is clean. In auditor's opinion the unconsolidated financial statements present fairly.

Akbank is a privately owned bank which is listed in the Borsa İstanbul (BIST) so in the qualitative assessment it has been selected as "Pvt-listed."

		1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	Ratio	Score	Score after Adjustment	
Quantitative Assessment	70%														
Earnings	30%	Standard						Watch full	Sub-Standa	Doubtful	NPL		Dec-16		
Return on Assets (ROA)	25%	+ 1,5	1,4	1,2	1,1	0,9	0,8	0,6	0,4	0,2	0,0	0,53	8	8	
Return on Equity (ROE)	25%	+ 5,0	4,6	4,2	3,8	3,3	2,9	2,5	1,8	1,0	0,3	4,94	2	2	
Cost of Income	30%	- 55,0	58,3	61,7	65,0	68,3	71,7	75,0	83,3	91,7	100,0	92,10	10	10	
Net Interest Margin	10%	+ 3,0	2,8	2,5	2,3	2,0	1,8	1,5	1,0	0,5	0,0	5,33	1	1	
Non Interest Income / Total Income	10%	+ 50,0	44,2	38,3	32,5	26,7	20,8	15,0	10,0	5,0	0,0	22,83	6	6	
													6,2	6,2	
Capital Adequacy	20%														
Total Equity / Total Assets	30%	+ 10,0	9,2	8,3	7,5	6,7	5,8	5,0	3,3	1,7	0,0	10,63	1	1	
Total Loan / Total Assets	20%	+ 90,0	86,7	83,3	80,0	76,7	73,3	70,0	46,7	23,3	0,0	73,92	6	6	
CAR	30%	+ 15,0	14,3	13,7	13,0	12,3	11,7	11,0	7,3	3,7	0,0	13,11	4	4	
Total Capital / Total Loans	20%	+ 11,0	10,3	9,7	9,0	8,3	7,7	7,0	4,7	2,3	0,0	6,58	8	8	
													4,3	4,3	
Liquidity	20%														
Loan / Customer Deposit	35%	- 75,0	78,3	81,7	85,0	88,3	91,7	95,0	130,0	165,0	200,0	109,11	8	8	
Loan / Total Funding	25%	- 65,0	68,3	71,7	75,0	78,3	81,7	85,0	93,3	101,7	110,0	94,73	9	6,3	
Liquid Assets / Total Assets	20%	+ 40,0	36,7	33,3	30,0	26,7	23,3	20,0	13,3	6,7	0,0	13,36	8	8	
Customer Deposit / Total Deposit	20%	+ 40,0	35,8	31,7	27,5	23,3	19,2	15,0	10,0	5,0	0,0	86,82	1	1	
													6,85	6,175	
Asset Quality	25%														
NPL / Total Loans	25%	- 4,0	4,7	5,3	6,0	6,7	7,3	8,0	12,0	16,0	20,0	6,13	5	5	
Provisions / NPL (Coverage Ratio)	30%	+ 95,0	90,0	85,0	80,0	70,0	60,0	50,0	40,0	30,0	20,0	45,91	8	8	
Provisions / Operating Income	25%	- 20,0	23,3	26,7	30,0	33,3	36,7	40,0	60,0	80,0	100,0	18,49	1	1	
Portfolio Diversification	20%	Low Concentration			Moderate Concentration			High Concentration			High Concentration	10	10		
													5,9	5,9	
Management	5%														
PAT / No Employee (Million TL)	50%	+ 0,40	0,35	0,30	0,25	0,20	0,15	0,10	0,07	0,04	0,01	0,03	10	10	
PAT / No Branches (Million TL)	50%	+ 6,00	5,50	5,00	4,50	4,00	3,50	3,00	2,10	1,20	0,30	0,46	10	10	
													10	10	
Qualitative Assessment	30%														
Competitive Position	30%	Market Leader			High Market Share			Average Market Share			Low Market Share		Low Market Share	10	10
Audit Report	40%	Clean			Observations			Qualified				Clean	1	1	
Ownership	30%	State Listed			State Un-Listed			Pvt Listed		Pvt Un-Listed		Pvt Listed	7	7	
Quantitative Factors	70%														
Qualitative Factors	30%													5,80	
Rate														5,80	

Table 49. Internal Credit Rate Risk before Simulation for Şekerbank – December 2016

7.9.1. Sensitivity Analysis and Scenario Analysis for Şekerbank:

Before inserting shocks to the model and reviewing the related simulation, it is better to take into consideration the amounts related to the profit after tax, Total assets (Liabilities and shareholder's equity), Equity and Internal Credit Rating(ICR) for year ended 2016. The related amounts are as follow respectively: profit after tax: TL125.194 thousand, Total assets: TL23.818.856 thousand, Equity: TL2.532.793 thousand and ICR: 5.80. Now we are ready to run the sensitivity test to see what is going to happen to the amounts related to every item mentioned above.

7.9.1.1. Sensitivity Analysis for Şekerbank:

Table50. indicates minor shocks for Şekerbank in 2016. In sensitivity analysis shocks are implemented for single variable change. In this circumstances, 5% rise in NPL reduces profit after tax by 38.65% from TL 125,194 thousand to TL 76,811.27 thousand, total assets reduce by 0.20% from TL 23,818,856 thousand to TL 23,770,473.27 thousand, Equity reduces by 1.91% from TL 2,532,793 thousand to TL 2,484,410.27 thousand and ICR goes up by 5.28% from 4.98 to 6.11.

1% rise in lending rate increases profit after tax by 126.10% from TL 125,194 thousand to TL 283,068.39 thousand, total assets increase by 0.66% from TL 23,818,856 thousand to TL 23,976,730.39 thousand, equity rises by 6.23% from TL 2,532,793 thousand to TL 2,690,667.39 thousand and ICR goes down by 6.21% from 5.80 to 5.44.

1% drop in lending rate decreases profit after tax drops by 126,10% from TL 125.194 thousand to loss of TL -32.680,39 thousand, total assets decrease by 0,66% TL 23.818.856 thousand to TL23.660.981,61 thousand, equity reduces by 6,23% from TL

2.532.793 thousand to TL 2.484.410,27 thousand and ICR goes up by 9,53% from 5.80 to 6.35.

1% rise in borrowing rate reduces profit after tax by 115,58% from TL 125.194 thousand to loss of TL -19.501,45 thousand, total assets reduce by 0,61% from TL 23.818.856 thousand to TL 23.674.160,55 thousand, equity reduces by 5,71% from TL 2.532.793 thousand to TL 2.388.097,55 thousand and ICR goes up by 9,53% from 5.80 to 6.35.

By 1% decline in net trading income profit after tax drops by 30,87% from TL 125.194 thousand to TL 86.541,97 thousand, total assets drop by 0,16% from TL 23.818.856 thousand to TL 23.780.203,97 thousand and equity decreases by 1,53% from TL 2.532.793 thousand to TL 2.494.140,97 thousand. ICR increases by 4,10% from 5.80 to 6.04.

Table51. describes moderate shocks for each variable. Rising in NPL by 10% reduces profit after tax by 77,29% from TL 125.194 thousand to TL 28.428,54 thousand, total assets drop by 0,41% from TL 23.818.856 thousand to TL 23.722.090,54 thousand, equity decreases by 3,82% from TL 2.532.793 thousand to TL 2.436.027,54 thousand. ICR goes up by 9,65% from 5.80 to 6.36.

2% rise in lending rate increases profit after tax by 252,21% from TL 125.194 thousand to TL 440.942,78 thousand, total assets increase by 1,33% from TL 23.818.856 thousand to TL 24.134.604,78 thousand, equity increases by 12,47% from TL 2.532.793 thousand to TL 2.848.541,78 thousand. ICR goes down by -10,14% from 5.80 to 5.21.

2% decline in lending rate decreases profit after tax by 252,21% from TL 125.194 thousand to loss of TL -190.554,78 thousand, total assets decrease by 1,33% from TL 23.818.856 thousand to TL 23.503.107,22 thousand, equity declines by 12,47% from TL 2.532.793 thousand to TL 2.217.044,22 thousand and ICR goes up by 11,01% from 5.80 to 6.44.

2% increase in borrowing rate decreases profit after tax by 231,15% from TL 125.194 thousand to TL 164.196,91 thousand, total assets decrease by 1,21% from TL 23.818.856 thousand to TL 23.529.465,09 thousand, equity declines by 11,43% from TL 2.532.793 thousand to TL 2.243.402,09 thousand and ICR goes up by 10,62% from 5.80 to 6.44.

2% decline in net trading income decreases profit after tax by 61,75% from TL 125.194 thousand to TL 47.889,94 thousand, total assets fall by 0,32% from TL 23.818.856 thousand to TL 23.741.551,94 thousand, equity decreases by 3,05% from TL 2.532.793 thousand to TL 2.455.488,94 thousand and ICR goes up by 6,82% from 5.80 to 6.20.

Table52. shows the highest level of shocks, major shocks, for four variables that have been chosen for this study. It examines these variables separately. In this part it has been assumed that 20% rises in NPL decreases profit after taxes by 154,58% from TL 125.194 thousand to loss of TL -68.336,92 thousand, total assets decline by 0,81% from TL 23.818.856 thousand to 23.625.325,08 thousand, equity drops by 7,64% from TL 2.532.793 thousand to TL 2.339.262,08 thousand and ICR goes up by 12,79% from 5.80 to 6.54.

3% rise in lending rate increases profit after tax by 378,31% from TL 125.194 thousand to TL 598.817,17 thousand, total assets increase by 1,99% from TL 23.818.856 thousand to TL 24.292.479,17 thousand and equity rise by 18,70% from TL 2.532.793 thousand to TL 3.006.416,17 thousand. ICR comes down by -10,74% from 5.80 to 5.18.

3% decline in lending rate decreases profit after tax by 378,31% from TL 125.194 thousand to loss of TL -348.429,17 thousand, total assets change by 1,99% drop from TL 23.818.856 thousand to TL 23.345.232,83 thousand and equity declines by 18,70% from TL 2.532.793 thousand to TL 2.059.169,83 thousand. ICR goes up by 12,46% from 4,98 to 6.52.

If borrowing rate goes up 3% profit after tax drops by 346,73% from TL 125.194 thousand to loss of TL -308.892,36 thousand, total assets goes down by 1,82% from

TL 23.818.856 thousand to TL 23.384.769,64 thousand and equity goes down by 17,14% from TL 2.532.793 thousand to TL 2.098.706,64 thousand. ICR rise by 11,70% from 5.80 to 6.48.

3% decline in net trading income decreases by 92,62% from TL 125.194 thousand to TL 9.237,90 thousand, Total assets drop by 0,49% from TL 23.818.856 thousand to TL 23.702.899,90 thousand and equity drops by 4,58% from TL 2.532.793 thousand to TL 2.416.836,90 thousand. ICR goes up 9,53% from 5.80 to 6.35.

Sensitivity Analysis for Dec. 2016 – Şekerbank (Thousand TL)

Minor Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	5%	125.194	76.811,27	23.818.856	23.770.473,27	2.532.793	2.484.410,27	5,80	6,11
Lending Rate Rise	1%		283.068,39		23.976.730,39		2.690.667,39		5,44
Lending Rate Decline	1%		-32.680,39		23.660.981,61		2.374.918,61		6,35
Borrowing Rate Rise	1%		-19.501,45		23.674.160,55		2.388.097,55		6,35
Net Trading Income Decline	1%		86.541,97		23.780.203,97		2.494.140,97		6,04

Table 50. Sensitivity Analysis Minor Shock for Şekerbank

Moderate Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	10%	125.194	28.428,54	23.818.856	23.722.090,54	2.532.793	2.436.027,54	5,80	6,36
Lending Rate Rise	2%		440.942,78		24.134.604,78		2.848.541,78		5,21
Lending Rate Decline	2%		-190.554,78		23.503.107,22		2.217.044,22		6,44
Borrowing Rate Rise	2%		-164.196,91		23.529.465,09		2.243.402,09		6,42
Net Trading Income Decline	2%		47.889,94		23.741.551,94		2.455.488,94		6,20

Table 51. Sensitivity Analysis Moderate Shock for Şekerbank

Major Shock	Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities& Shareholder's Equity) before Simulation	Total Assets(Liabilities& Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
NPL Rise	20%	125.194	-68.336,92	23.818.856	23.625.325,08	2.532.793	2.339.262,08	5,80	6,54
Lending Rate Rise	3%		598.817,17		24.292.479,17		3.006.416,17		5,18
Lending Rate Decline	3%		-348.429,17		23.345.232,83		2.059.169,83		6,52
Borrowing Rate Rise	3%		-308.892,36		23.384.769,64		2.098.706,64		6,48
Net Trading Income Decline	3%		9.237,90		23.702.899,90		2.416.836,90		6,35

Table 52. Sensitivity Analysis Major Shock for Şekerbank

7.9.1.2. Scenario Analysis for Şekerbank:

Table53. indicates all three levels of shocks for Şekerbank. Minor, Moderate and Major shocks. In all three shocks three variables change simultaneously.

In minor shock, NPLs rise by 5%, Borrowing interest rate rise by 1% and Trading income declines by 1%. In this case profit after tax drops by 185,10% from TL 125.194 thousand to TL -106.536,22 thousand, total assets decline by 0,97% from TL 23.818.856,00 thousand to TL 23.587.125,78 thousand and equity drops by 9,15% from TL 2.532.793 thousand to TL 2.301.062,78 thousand. ICR goes up by 11,01% from 5.80 to 6.44.

In moderate shock, NPLs rise by 10%, Borrowing interest rate rise by 2% and Net trading income declines by 2%. In this scenario profit after tax decreases by 370,19% from TL 125.194 thousand to loss of TL -338.266,43 thousand, total assets decrease by 1,95% from TL 23.818.856,00 thousand to TL 23.355.395,57 thousand. Equity drops by 18,30% from TL 2.532.793 thousand to TL 2.069.332,57 thousand. ICR increases by 12,85% from 5.80 to 6.55.

In major shock, NPLs rise by 20%, Borrowing interest rate rise by 3% and Net trading income declines by 3%. In this worst scenario, profit after tax decreases by 593,94% from TL 125.194 thousand to loss of -618.379,38, total assets drop by 3,12% from TL 23.818.856,00 thousand to TL 23.075.282,62 thousand and equity decreases by 29,36% from TL 2.532.793 thousand to TL 1.789.219,62 thousand. ICR drops by 15,45% from 5.80 to 6.70.

Scenario Analysis for Dec. 2016 - Şekerbank (Thousand TL)

Multiple Shocks	Level of Shock	PAT before Simulation	PAT after Simulation	Total Assets(Liabilities & Shareholder's Equity)before Simulation	Total Assets(Liabilities & Shareholder's Equity) after Simulation	Equity before Simulation	Equity after Simulation	Pre ST ICR	Post ST ICR
<u>Minor Shock</u> NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline	5%,1%, 1%	125.194	-106.536,22	23.818.856,00	23.587.125,78	2.532.793	2.301.062,78	5,80	6,44
<u>Moderate Shock</u> NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline	10%,2 %,2%		-338.266,43		23.355.395,57		2.069.332,57		6,55
<u>Major Shock</u> NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline	20%,3 %,3%		-618.379,38		23.075.282,62		1.789.219,62		6,70

Table 53. Scenario Analysis Minor, Moderate and Major Shock for Şekerbank

7.10. SUMMARY

Two methods for stress testing have been implemented to see the conditions of the six Turkish banks. One method is to choose a single variable and apply it to the model and the rest of the variables are constant. This method is called “Sensitivity Analysis”. In this study different variables have been used which are Rise in NPLs, Rise in Lending Rate, Decline in Lending Rate, Rise in Borrowing Rate, Decline in Net Trading Income. As it is obvious, rise in lending rate is a positive shock and the rest of shocks have been considered as negative shocks.

Another method is a way to implement more than one variable to the model. This method is called “Scenario Analysis”. It has three level of shocks which are Minor Shock, Moderate Shock and Major Shock. In my study, Minor shock means 5% rise in NPLs, 1% rise in borrowing interest rate and 1% decline in net trading income. Moderate shock means 10% rise in NPLs, 2% rise in borrowing interest rate and 2% decline in net trading income. Major shock means 20% rise in NPLs, 3% rise in borrowing interest rate and 3% decline in net trading income.

Internal credit rating is a score between 1 and 10. 1 is the best score and 10 is the worst score which shows that a bank has defaulted.

ICR for banks can be classified as Standard, Watchful, Sub-standard, Doubtful and NPL which they have been represented in numeric terms as follows:

$1 \leq \text{ICR} < 7$ means it has a Standard score.

$7 \leq \text{ICR} < 8$ means it has a watchful score.

$8 \leq \text{ICR} < 9$ means it has a doubtful score.

$9 \leq \text{ICR} \leq 10$ means it has a NPL score.

Comparative Stress Testing

In this section ICR before simulation has been compared with ICR after simulation. ICR after simulation has been compared in all level of shocks simultaneously.

According to analysis before any simulation Ziraat Bank has the best Internal credit rating (ICR) with score of 3.24 following it Garanti Bank, Akbank, İşbank, Halkbank scored as 3.51, 3.66, 3.92, 4.20 respectively. Şekerbank in this sample study performed as the worst bank with score of 5.80.

7.10.1. Sensitivity Analysis

7.10.1.1. NPLs shocks: Minor (5%), Moderate (10%) and Major (20%)

For all levels of shock in NPL, ICR of Ziraat Bank has not changed and remains at 3.24 except for 20% increase in NPLs it goes up to 3.27.

Garanti Bank's ICR increase gradually as NPLs shock goes up. For Minor, Moderate and Major shocks are 3.59, 3.61, 3.68.

Akbank's ICR for Minor shock remains unchanged at 3.97. By 10% and 20% shocks it changes to 3.68 and 3.75 respectively.

İşbank by changing NPLs by 5% or 10% remains unchanged at 3.27. It goes up to 4.04 by 20% increase in NPLs.

For Halkbank in all three levels of shocks ICR changes. 5% rise it increases NPLs to 4.31, By 10% rise in NPLs it decreases to 4.29. By 20% increase in NPLs it goes up to 4.36. Despite increasing in NPL shocks from 5% shock to 10% shock, ICR improves by 0.87%. That is because of Loans to Total Funding ratio. In the case of 5% shock has been implemented it is 93.42% so falls into range of score 9. While by 10% NPL shock Loans to total funding ratio becomes 93.27% and it falls into range of score 8 so in the result Halkbank get a bit better score in case of 10% shock rather than in case of 5%.

When all shocks for Şekerbank are implemented as 5% ,10% and 20% rise, ICR goes up gradually to 6.11, 6.36 and 6.54 respectively.

Name of Bank	ICR Before Simulation	NPLs rise 5%	NPLs rise 10%	NPLs rise 20%
Ziraat Bank	3,24	3,24	3,24	3,27
Garanti Bank	3,51	3,59	3,61	3,68
Akbank	3,66	3,66	3,68	3,75
İşbank	3,92	3,97	3,97	4,04
Halkbank	4,20	4,31	4,29	4,36
Şekerbank	5,80	6,11	6,36	6,54

Table 54. Internal Credit Rating after NPLs Rise

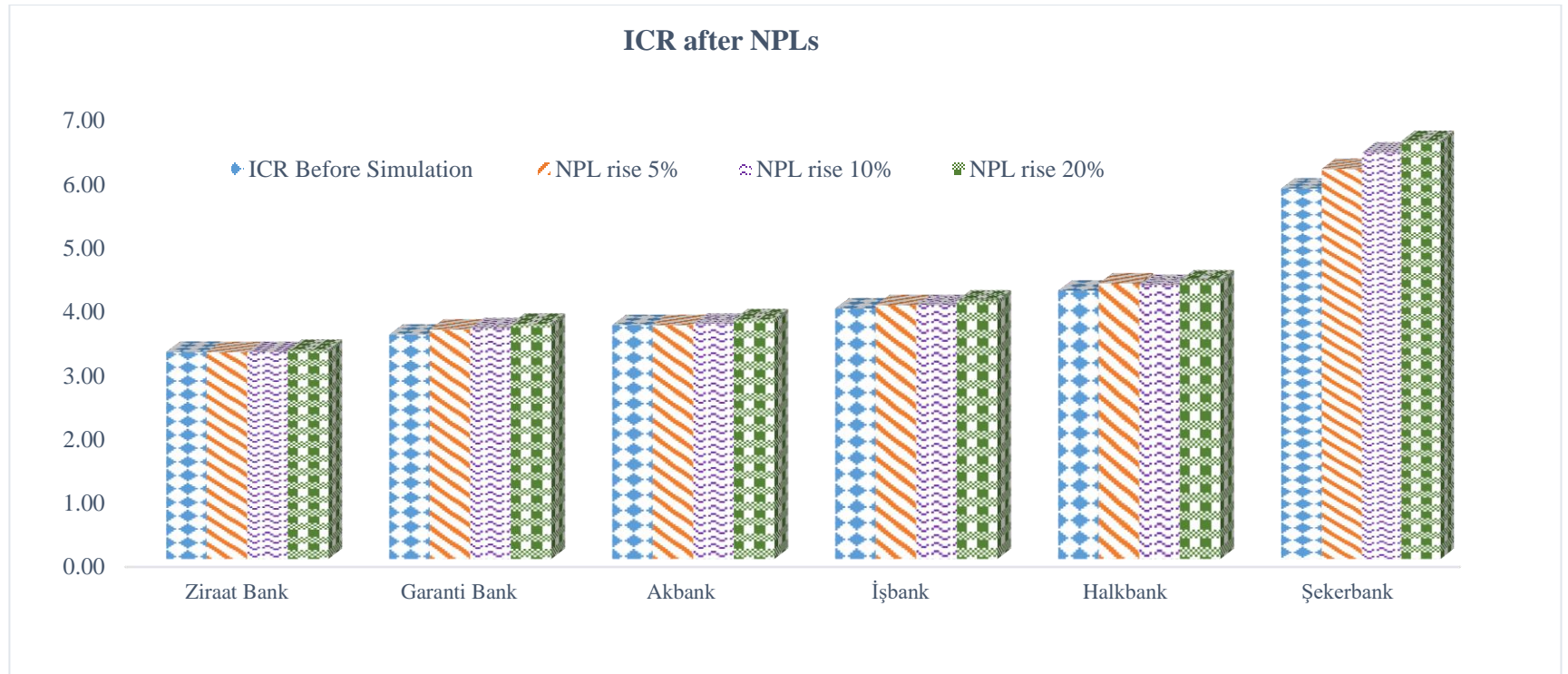


Figure 219. Internal Credit Rating after Rise in NPLs

7.10.1.2. Lending Rate Rise: Minor (1%), Moderate (2%) and Major (3%)

Considering increase in lending rate as a positive shock, it will decrease the ICR by going up to 1%,2% and 3%.

By increasing in lending rate by 1%,2% and 3%, ICR for Ziraat Bank declines to 3.06, 2.93 and 2.85.

ICR for Garanti Bank by 1% increase in lending rate drops to 3.39, 2% rise in lending rate drops ICR to 3.29 and 3% rise in lending rate drops it to 3.23.

ICR for Akbank by 1% increase in lending rate makes ICR to go down from 3.66 to 3.53. 2% and 3% rise in lending rate drops ICR to 3.40 and 3.34 respectively.

ICR for İşbank by 1% increase in lending rate goes down from 3.92 to 3.68. By 2% and 3% rise in lending rate ICR goes down to 3.56 and 3.47 respectively.

ICR for Halkbank by 1% rise in lending rate goes down from 4.20 to 3.93. By 2% and 3% rise in lending rate drop from 3.75 and 3.56.

ICR for Şekerbank by 1% increase in lending rate goes down from 5.80 to 5.44. By 2% and 3% increase in lending rate ICR goes down to 5.21 and 5.18 respectively.

Name of Bank	ICR Before Simulation	Lending rate rise 1%	Lending rate rise 2%	Lending rate rise 3%
Ziraat Bank	3,24	3,06	2,93	2,85
Garanti Bank	3,51	3,39	3,29	3,23
Akbank	3,66	3,53	3,40	3,34
İşbank	3,92	3,68	3,56	3,47
Halkbank	4,20	3,93	3,75	3,56
Şekerbank	5,80	5,44	5,21	5,18

Table 55. Internal Credit Rating after Rise in Lending Rate



Figure 220. Internal Credit Rating after Rise in Lending Rate

7.10.1.3. Lending Rate Decline: Minor (1%), Moderate (2%) and Major (3%)

Decline in lending rate is a negative shock that decreases the ICR of the bank.

By decreasing in lending rate by 1%, 2% and 3%, ICR for Ziraat Bank from 3.24 goes up to 3.48, 3.77 and 4.32.

ICR for Garanti Bank by 1% decline in lending rate goes up from 3.51 to 3.76, 2% rise in lending rate rise ICR to 4.04 and 3% rise in lending rate rise it to 4.82.

ICR for Akbank by 1% decrease in lending rate makes ICR to goes up from 3.66 to 3.93. 2% and 3% rise in lending rate increases ICR to 4.34 and 4.95. respectively.

ICR for İşbank by 1% decrease in lending rate goes up from 3.92 to 4.17. By 2% and 3% decline in lending rate ICR goes up to 4.60 and 5.22 respectively.

ICR for Halkbank by 1% decline in lending rate goes up from 4.20 to 4.55. By 2% and 3% rise in lending rate goes up to 5.37 and 5.41 respectively.

ICR for Şekerbank by 1% decline in lending rate goes up from 5.80 to 6.35. By 2% and 3% increase in lending rate ICR goes up to 6.44 and 6.52 respectively.

Name of Bank	ICR Before Simulation	Lending Rate Decline 1%	Lending Rate Decline 2%	Lending Rate Decline 3%
Ziraat Bank	3,24	3,48	3,77	4,32
Garanti Bank	3,51	3,76	4,04	4,82
Akbank	3,66	3,93	4,34	4,95
İşbank	3,92	4,17	4,60	5,22
Halkbank	4,20	4,55	5,37	5,41
Şekerbank	5,80	6,35	6,44	6,52

Table 56. Internal Credit Rating after Decline in Lending Rate

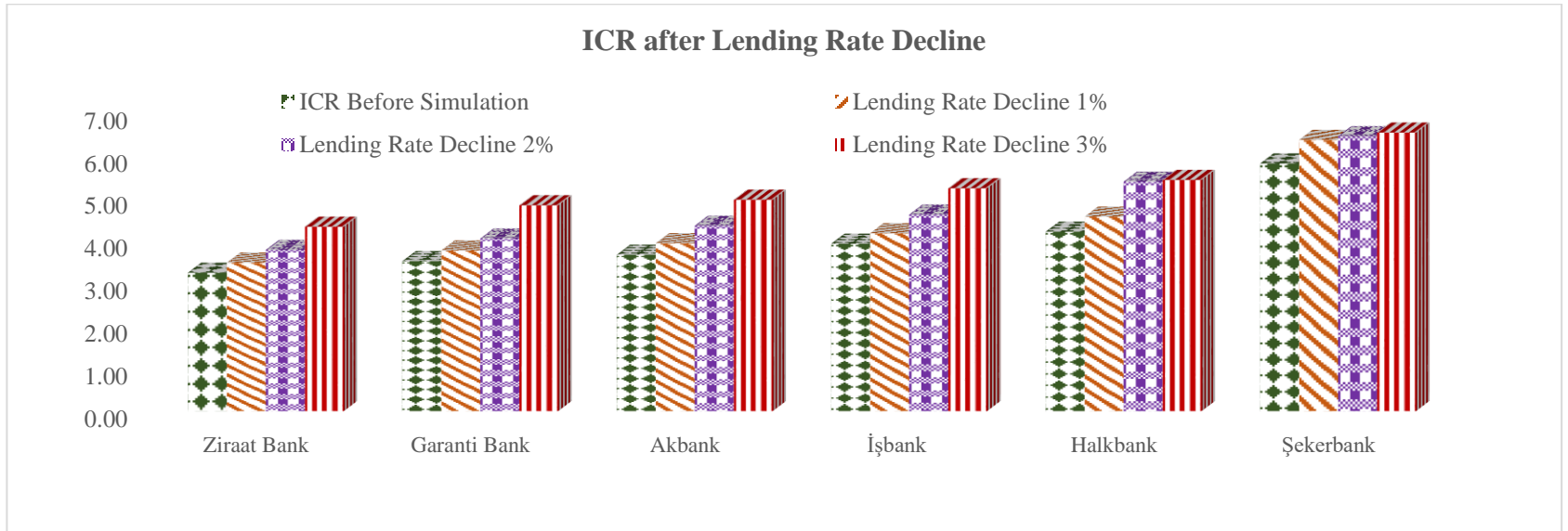


Figure 221. Internal Credit Rating after Decline in Lending Rate

7.10.1.4. Borrowing Rate Rise: Minor (1%), Moderate (2%) and Major (3%)

Rise in Borrowing rate is a negative shock that decreases the ICR of the bank.

By decreasing in lending rate by 1%,2% and 3%, ICR for Ziraat Bank from 3.24 goes up to 3.42, 3.79 and 4.18.

ICR for Garanti Bank by 1% decline in lending rate goes up from 3.51 to 3.76, 2% rise in lending rate rise ICR to 4.04 and 3% rise in lending rate rise it to 4.82.

ICR for Akbank by 1% decrease in lending rate makes ICR to goes up from 3.66 to 3.93. 2% and 3% rise in lending rate increases ICR to 4.36 and 4.91. respectively.

ICR for İşbank by 1% increase in borrowing rate goes up from 3.92 to 4.17. By 2% and 3% rise in borrowing rate ICR goes up to 4.44 and 5.17 respectively.

ICR for Halkbank by 1% increase in borrowing rate goes up from 4.20 to 4.52. By 2% and 3% rise in lending rate goes up to 5.32 and 5.44 respectively.

ICR for Şekerbank by 1% increase in borrowing rate goes up from 5.80 to 6.35. By 2% and 3% increase in lending rate ICR goes up to 6.42 and 6.48 respective

Name of Bank	ICR Before Simulation	Borrowing Rate Rise 1%	Borrowing Rate Rise 2%	Borrowing Rate Rise 3%
Ziraat Bank	3,24	3,42	3,79	4,18
Garanti Bank	3,51	3,76	4,06	4,50
Akbank	3,66	3,93	4,36	4,91
İşbank	3,92	4,17	4,44	5,17
Halkbank	4,20	4,52	5,32	5,44
Şekerbank	5,80	6,35	6,42	6,48

Table 57. Internal Credit Rating after Rise in Borrowing Rate

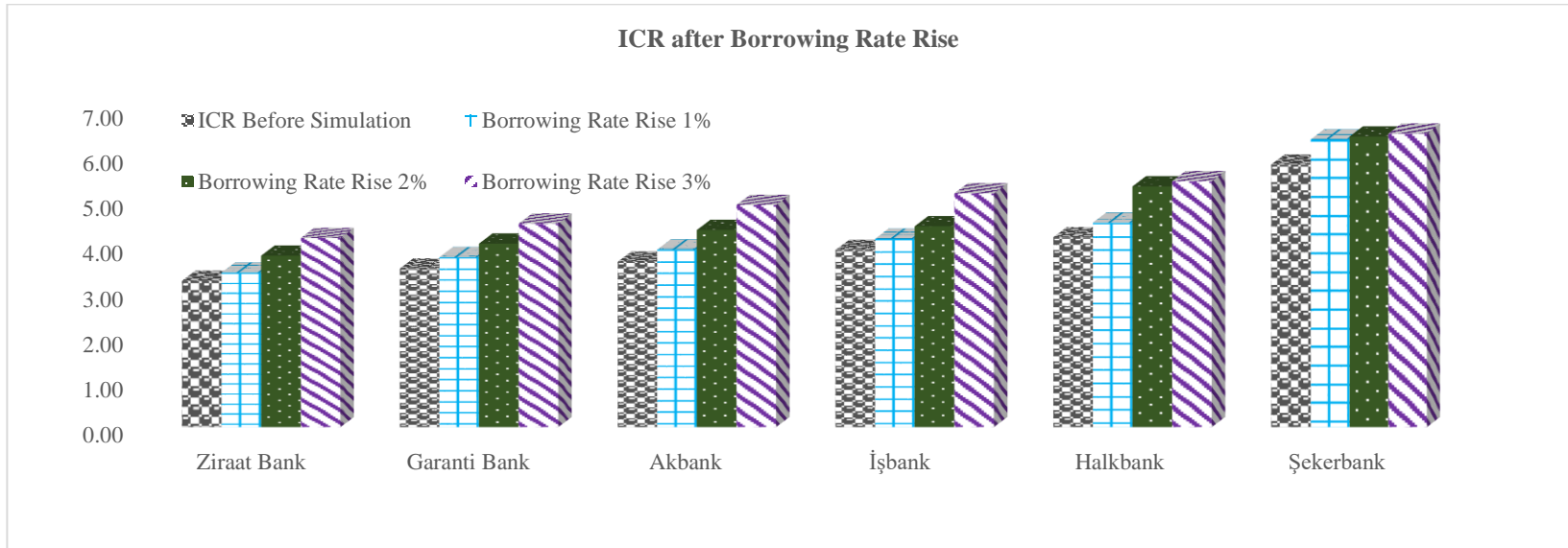


Figure 222. Internal Credit Rating after Rise in Borrowing Rate

7.10.1.5. Net Trading Income Decline: Minor (1%), Moderate (2%) and Major (3%)

Decline in net trading income rate is a negative shock that decreases the ICR of the bank.

By decreasing in net trading income rate by 1%,2% and 3%, ICR for Ziraat Bank from 3.24 goes up to 3.27 for all three level of shocks.

ICR for Garanti Bank by 1% decline in net trading income rate goes up from 3.51 to 3.54 and by 2% decline in net trading income ICR goes up to 3.54. Both 1% and 2% have the same changes. 3% decline in net trading income decreases ICR to 3.61.

If ICR for Akbank decreases by 1% in net trading income remains unchanged at 3.66. 2% and 3% decline in net trading income increases ICR to 3.75 and 3.76 respectively.

ICR for İşbank by 1% decrease in net trading income goes up from 3.92 to 3.97. By 2% and 3% decline in net trading income ICR goes up to 4.04 and 4.11 respectively.

ICR for Halkbank by 1% decline in net trading income goes up from 4.20 to 4.31. By 2% and 3% decline in net trading income goes up to 4.31 and 4.38 respectively.

ICR for Şekerbank by 1% decline in net trading income goes up from 5.80 to 6.04. By 2% and 3% increase in net trading income ICR goes up to 6.20 and 6.35 respectively

Name of Bank	ICR Before Simulation	Net Trading Income Decline 1%	Net Trading Income Decline 2%	Net Trading Income Decline 3%
Ziraat Bank	3,24	3,27	3,27	3,27
Garanti Bank	3,51	3,54	3,54	3,61
Akbank	3,66	3,66	3,75	3,76
İşbank	3,92	3,97	4,04	4,11
Halkbank	4,20	4,31	4,31	4,38
Şekerbank	5,80	6,04	6,20	6,35

Table 58. Internal Credit Rating after Decline in Net Trading Income

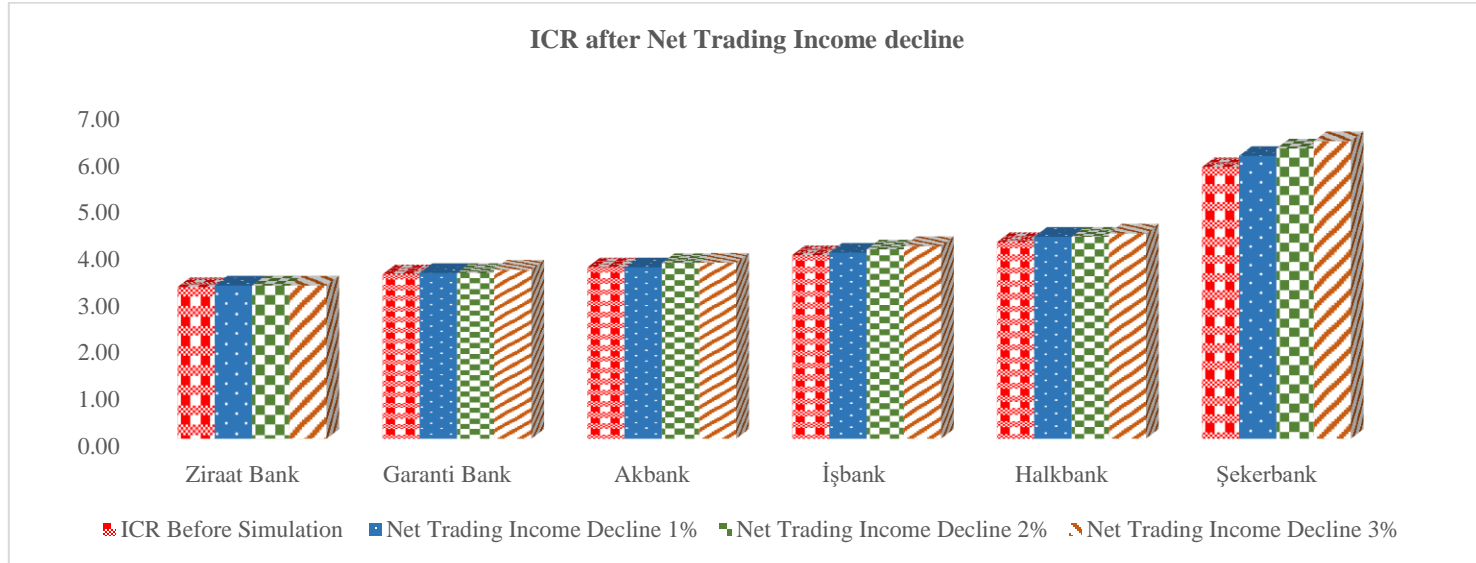


Figure 223. Internal Credit Rating after Decline in Net Trading Income

7.10.2. Comprehensive Scenario Analysis

Before running the simulation Ziraat Bank has the best Internal credit rating with score of 3.24. Following it Garanti Bank, Akbank, İşbank, Halkbank, Şekerbank have the score of 3.51, 3.66, 3.92, 4.20, 5.80 respectively. After implementing all level of shocks, although their ICR deteriorate in proportionate with the level of shock, however banks are going to maintain the same order of scores.

		Scenario Analysis ICR After Simulation		
Name of Bank	ICR Before Simulation	Minor Shock:NPLs Rise 5%, Borrowing Interest Rate Rise 1%, Net Trading Income Decline 1%	Moderate Shock:NPLs Rise 10%, Borrowing Interest Rate Rise 2%, Net Trading Income Decline 2%	Major Shock:NPLs Rise 20%, Borrowing Interest Rate Rise 3%, Net Trading Income Decline 3%
Ziraat Bank	3,24	3,48	3,93	4,71
Garanti Bank	3,51	3,83	4,25	4,96
Akbank	3,66	4,06	4,61	5,18
İşbank	3,92	4,30	4,91	5,26
Halkbank	4,20	4,67	5,35	5,45
Şekerbank	5,80	6,44	6,55	6,70

Table 59. Internal Credit Rating After Scenario Analysis Simulation

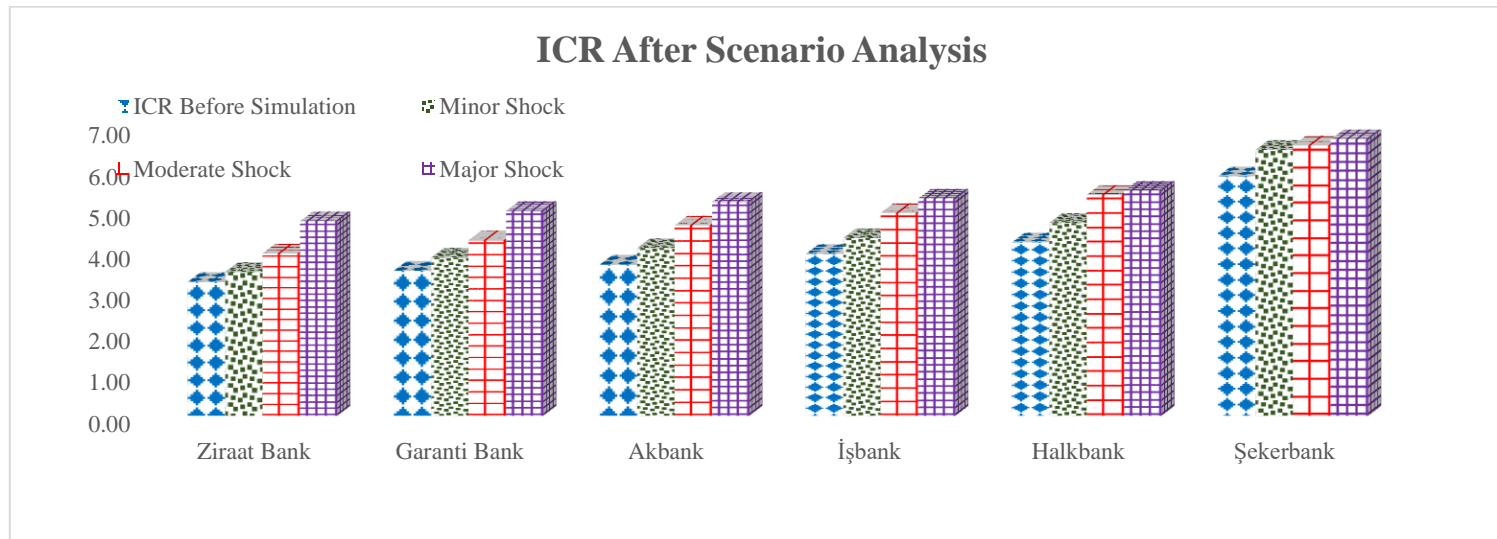


Figure 224. Internal Credit Rating Scenario Analysis Simulation

As the graph below shows Şekerbank's ICR encompasses all the other bank's ICR which shows that this bank was the last bank in all circumstances as before simulation, Minor shock, Moderate shock and Major shock.

As the inner square illustrate Ziraat Bank stands at the first rank in all level of shock and also has the lowest before simulation ICR (3.24)

Scenario Analysis Shocks for All Banks

- Ziraat Bank
- Halkbank
- işbank
- Akbank
- Garanti Bank
- Şekerbank

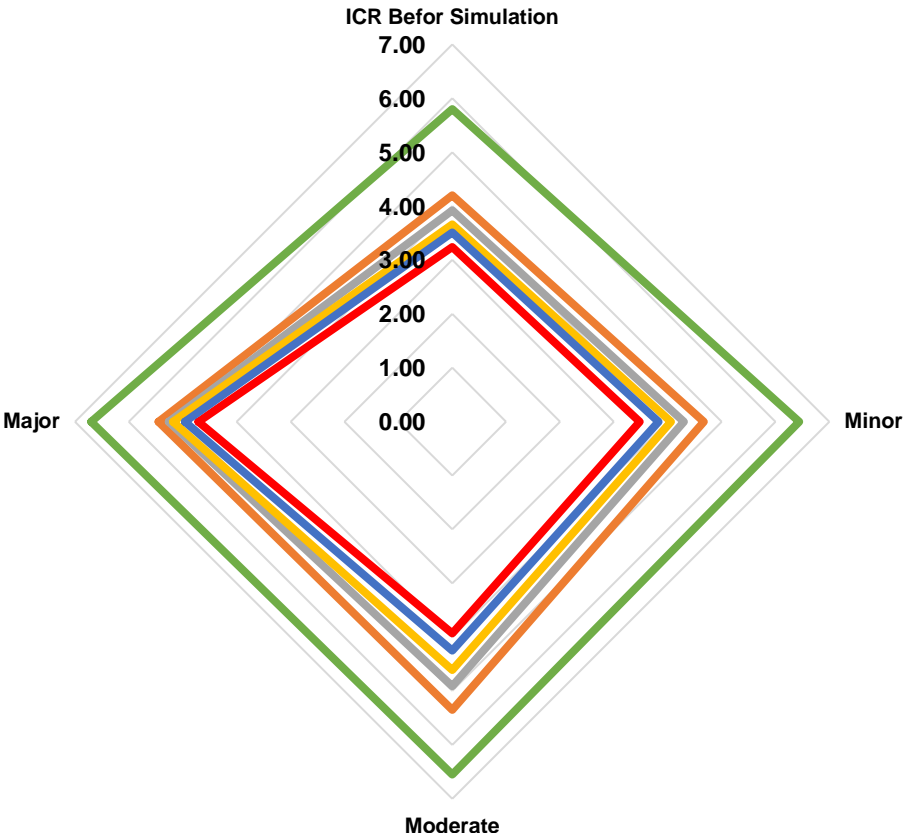


Figure 225. Scenario Analysis After All level Shocks

7.10.3. Evaluation of efficiency for a credit rating system

So far we have devised a credit rating system by which a typical bank evaluates the credit worthiness of any eventual bank as counterparty. the most important issue is to understand to what extent such a credit rating system is reliable. If the outcomes of custom-made credit rating system (CRS) is highly divergent from the ratings provided by international rating agencies, therefore one may conclude reasonably that there are some flaws or short comings in defining necessary and accurate parameters concerning the said CRS. having said so I have here by introduced the ratings prepared by international rating agencies for respective banks for 2016 and compared them with the output of my own CRS. As it is shown in the below table happily we witness a significant convergence among the ratings prepared by international rating agencies from one hand and mine on the other hand. What we can precisely conclude is that the priority rank for 2016 does not change considerably according to my devised CRS, Ziraat Bank stands first with a rate of 3.24 And Garanti Bank is the second in row with a rate of 3.51 while Şekerbank is the last one in the rate ranking based on my ICR. Based on my CAMELS model Ziraat Bank and Şekerbank have the highest rate with rate of 29%. Halkbank stands at the last row of this model ranking with rate of 22%. The same ranking for our selected banks has been provided by S&P, Moody's, Fitch and JCR Eurasia.

S&P has ranked two of banks in our sample. Garanti Bank with higher rate (BB+) and İşbank with lower rate (BB).

Moody's ranting ranked banks from the best to worst respectively as follows: Garanti Bank (Aa1), Akbank (Ba1), İşbank (Ba1), Halkbank(Ba1), Ziraat Bank (Ba2) and Şekerbank (B1).

Fitch ranting ranked banks from the best to worst respectively as follows: Garanti Bank (AAA), Halkbank(BBB), Ziraat Bank (BBB-), İşbank (BBB-), Akbank (BB+) and Şekerbank (BB-).

JCR Eurasia rating shows that Ziraat Bank (A), Garanti Bank (A) has the same and highest rate, Şekerbank (BBB) has the second rank place and Halkbank (BBB-) has the last place according to the rates of this rating agencies.

Evaluation of Efficiency for a Credit Rating System						
Bank	S&P	Moody's	Fitch	JCR Eurasia	CAMELS Rate	ICR
Ziraat Bank	-	Ba2	BBB-	A	29%	3,24
Garanti Bank	BB+	Aa1	AAA	A	25%	3,51
Akbank	-	Ba1	BB+	-	27%	3,66
İşbank	BB	Ba1	BBB-	-	26%	3,92
Halkbank	-	Ba1	BBB	BBB-	22%	4,20
Şekerbank	-	B1	BB-	BBB	29%	5,80

Table 60. Evaluation of Efficiency for a Credit Rating System

CHAPTER 8

CONCLUSION

The main role of a rating agency is to determine the probability of default for a company or an instrument issuable by a company. In fact, these rates are the risk managements and rating agencies tools and play an important role in this regard. Rating is a function which comprises of two main domains namely “Credit Scoring” and “Credit Rating”. My focus is on Credit Rating, not Credit Scoring. For this purpose, first, I have devised a rating system with a numeric range starting from 0 and ending to 100 by using all components of CAMELS ratios while the evaluation factors are as: Capital, Assets, Management, Earnings, Liquidity, Sensitivity. Second approach is stress testing. Stress testing is evaluating the impact of large, expected as well as unexpected shocks on a bank’s capital. Stress testing should be part governance and risk management culture of the bank. Last approach is ICR which gives a rank to each bank which is based on quantitative and qualitative assessment. According to these assessments we have calculated Internal Credit Rating (ICR) for banks. “Quantitative assessment” is based on some weighted selected ratios and “Qualitative assessment” is based on some qualitative measurements such as Competitive Position, Audit Report and Ownership while CAMELS rating consists of six categories which are Capital, Asset, Management, Earnings, Liquidity, Sensitivity. Each category contains of some “selected” ratios which has its own weight.

There are many researches conducted related to CAMELS ratios. However, some specific aspects distinguish the current study from the literature; time period which covers the span of 2005-2016, particular composition of Turkish banks namely Ziraat Bank and Halkbank which are state owned, Akbank, İşbank and Şekerbank which are private and Garanti Bank which is a foreign one. Having three parallel methods namely: CAMELS, ST and ICR, presenting comparative analysis for all the designated banks

and finally probing the credibility of provided rating results in this research with the findings of worldwide well known rating agencies consists of the peculiar parts of the study.

Banks in today's world play an important role in maintaining the stability and financing different sectors of the economy in every nation. Therefore, the health and soundness of banks is very crucial to ensure smooth and robust economic development of any country.

Bank for International Settlement (BIS), has tried to compile and codify some supervisory regulations in different areas and put them at the disposal of countries to avoid from trial and error approaches. Three sets of these collections are related to the activities of financial institutions in money market. They are known as Basel I, Basel II and Basel III guidelines. In guidelines of Basel I, announced in 1988, two key issues were emphasized: capital adequacy ratio and assets classification. These guidelines were imperfect from international banking aspect. Hence, Basel II included methods of hedging different risks. According to the recommendations of Basel II, rating agencies also came to the fore front and took a considerable role in the financial industry. Basel II is based on three "Pillars": Minimum Capital Requirements, Supervisory Review and Market Discipline. Subsequently, emergence of 2008 global crisis proved that the prudential rules devised by Basel committee needs to be revised and reinforced. Based on the revision, more emphasis has been given to the specific risks related to individual banks and also the weights assigned to different categories of the assets went under serious amendments. According to Basel provisions banks were required not only to establish internal rating system but also they were strongly urged to have themselves rated by external independent rating agencies. That is why International credit rating companies flourished and developed their activities. They rate a debtor's ability to pay back its debt. The big three credit rating companies are controlling 95% of rating business. Moody's investors service and Standards and Poor's(S&P) together control 80% of the global market and Fitch Ratings controls a further 15%.

Credit Rating's importance has grown in the course of time due to the following factors: Increasing level and incidences of defaults in the course of time, Growth of IT, Globalization of financial markets, Increasing role of capital and money markets, Privatization, Securitization of debt.

Advantages of rating for the investors are as follows: Safety of investment, Recognition of risk and return, Freedom of choices, easy understanding of investment proposals, providing a possibility and basis for continuous monitoring.

Advantages of Credit Rating (CR) for the issuer are as follows: Easy to raise resources, reduced cost of borrowing, building up image, facilitating growth, recognition to unknown companies.

Emergence of a global crisis in 2007 triggered the Basel Committee to bring a new version of its prudential guidelines named as Basel III. They tried to reinforce the rules to prevent new crisis in the future. It is very much suitable in the essay to take a look at the causes and the manner of evolving of this global crisis. Besides, since the focus in over empirical work is on Turkish banks the spillover effects and ramifications of the said global crisis on Turkish economy and banking system was reviewed in Chapter 4, as well.

In 2007, the United States suffered the worst financial crisis since the 1930s. The crisis spread swiftly from the U.S. to other countries and from financial markets to the real sectors. Some financial institutions failed. Some were bailed out by governments. Actually starting point was from the U.S. housing market. Between 2002 and 2005, interest rates were low, therefore, mortgage lending was boosted. It caused a bubble in house prices. Subprime mortgage lending (that are considered to be significantly riskier than average) increased considerably. Rising house prices would cover risk of default. Due to high prices, demand declined. Plus, borrowers found that they could no longer afford their mortgages. This led to foreclosures (supply increase of houses) which led to decline of house prices. Since many of the banks and other FIs had MBS in their

balance sheets and the prices of MBS went down due to the deterioration of their underlying assets namely mortgage loans. The crisis in real sector spread to financial markets. During the crisis, since governments were worrying about a systematic risk, they didn't allow for many large financial institutions to fail and intervened to bail them out.

Dodd-Frank Wall Street Reform and Consumer Protection Act was signed into law on July 21, 2010 according to which banks could trade in order to satisfy the needs of their clients and trade to hedge their positions, but they could not trade to take speculative positions. In other countries also similar provisions were taken into place.

Turkish economy and its banking sector proved to be relatively resilient against the global crisis of 2007. In order to understand the reasons behind this resilience, we need to review the successful restructuring plan which was taken into place following the crisis of 2001. Actually before to the Turkish crisis of 2001, the Turkish economy had serious weaknesses such as current account deficit financed by short-term capital inflows, fluctuation of economic growth rate, interest rates and exchange rate, large budget deficit financed by monetary expansion, weaknesses of banking regulations and supervision, large maturity mismatch between liabilities and assets of the bank, open positions. Adding to those, the political disputes over fraud in banks gave the impression that there were large problems in the banking sector. As a result, in around 2000, banks closed their interbank credit lines to vulnerable banks and foreign investors withdrew their funds which brought the banking crisis into a new sensible phase. Interbank rates increased sharply. Private Banks made large losses due to devaluation of national currency and their un-hedged foreign open positions. IMF assisted Turkey with almost USD 30bn in total. Structural reforms were taken into place by creating an independent watchdog for banks to reinforce the regulations and supervision and also banks undergone a vast restructuring. Afterwards, the economy vigorously recovered. These measures prepared the ground in a way that Turkish economy and its banking sector proved to be relatively resilient against the global crisis of 2007. Although they

have been affected but negative outcomes were limited because banking system had its own strength points and authorities also reacted promptly For instance Central Bank, among other things, resumed its activities as an intermediary in the FOREX deposit market (9 October 2008) and extended the lending maturity to 1 month from 1 week in this market and to 3 months from 1 month in TL interbank market (21 November 2008); It doubled its transaction limits to USD 10.8 billion (23 October 2008) ; it decreased reserve requirement ratio for FOREX liabilities to 9 percent from 11 percent (28 November 2008). BRSA, also required the banks to get permission for distribution of the 2008 earnings and let them to classify the securities as investment portfolio. Government also received an authorization from the Parliament to insure by itself all the deposits. Payment of the tax dues before 1 September 2008 was also decided to be deferred to December 2008 and with 18 installments.

As of September 2017, there are 46 banks that are working under Bank Regulation and Supervisory Agency of Turkey (BRSA-BDDK) with 10,659 branches in Turkey and 77 branches abroad.

The purpose of CAMELS rating is to determine a bank's overall condition and to identify its strengths and weaknesses in aspects of Financial, Operational and Managerial issues. CAMELS stands for Capital, Assets, Management, Earnings, Liquidity, and Sensitivity. In this study 27 ratios under 6 categories have been used to measure the performance of banks. Every ratio has a weight as every category also has a weight. One specific ratio has been multiplied by its own weight and as a result they have been summed up to give one number for each category. After all of the calculations there are 6 numbers for 6 categories. These 6 numbers have been multiplied by their own assigned weights which at the end results in one CAMELS number for each year. This number has been computed for 12 years (2005-2016).

Stress Test is a risk management tool to assess the vulnerability of counter parties to exceptional conditions. For a stress testing, normally two techniques are used namely Sensitivity Analysis and Scenario Analysis. Sensitivity Analysis examines impact of

change in a key variable while holding other variables constant under different levels of shock, namely Minor, Moderate and Major Shock. For Sensitivity Analysis five different variables with three levels of shocks have been assumed. They have variety impact on Income Statement and Balance Sheet. In case of Scenario Analysis three levels of shock have been used; rises in NPLs, rise in borrowing interest rate and decrease in net trading income have been taken into account. Then Internal Credit Rating (ICR) has been computed. ICR is relied upon two parts. One is Quantitative Assessment and the other one is Qualitative Assessment. Internal credit rating based on quantitative and qualitative assessments allocate a rate for a typical bank. ICR is a measurement for evaluating a bank's performance and give us a chance to compare banks based on this score. Internal credit rating (ICR) scale is between 1 to 10. 1 is the best score while 10 is the worst. Score 1 to 6 indicates that bank's situation is "Standard". 7,8 and 9 score mean "Watchful", "Sub-standard" and "Doubtful" respectively. Score 10 is the worst situation for a typical bank that went through a distressed situation. Score 10 shows that bank is in a serious financial difficulty.

8.1. CAMELS RESULTS

For all six banks, CAMELS model has been implemented. Table17. shows CAMELS Rating for 2016. As for Capital category, banks are prioritized as follows: Garanti Bank, İşbank, Ziraat Bank, Akbank, Şekerbank and Halkbank with rate of 16%, 15%, 14%,14%,13% and 12% respectively.

As far as the Asset category is concerned, the priority order for the banks under study is according to the following list: Ziraat Bank (39%), Akbank (38%), Halkbank (37%), İşbank (37%), Garanti Bank (37%), Şekerbank (32%).

For the Management category, Şekerbank stands first with 170%, the other banks are listed respectively as follows: Ziraat Bank (91%), İşbank (89%), Garanti Bank (87%), Akbank (84%), Halkbank (78%).

When we take into consideration the Earnings category the priority order will be disclosed as follows: Akbank (5%), Ziraat Bank (4%), Halkbank, İşbank and Garanti Bank has 2% and Şekerbank is -2%.

As for the Liquidity category, the highest rank belongs to: Ziraat Bank (26%) and rest is as follows Akbank (21%), İşbank (18%), Garanti Bank (11%), Halkbank (6%) and Şekerbank (0%).

In case of the Sensitivity category our set of banks shows the following priority order: Garanti Bank and Şekerbank with 29%, İşbank (27%), Ziraat Bank, Halkbank and Akbank with same rank are 26%.

The Overall rate for banks shows that Ziraat Bank and Şekerbank are at top with rate of 29%, following them Akbank is 27%, İşbank is 26%, Garanti Bank is 25% and Halkbank is 22%.

The overall rating for the banks illustrate that they have negligible difference in terms of rating. In other words, all of them remain in a similar range. It means that the chosen banks have similar financial structure and have tried to keep themselves in the boundaries of prudential rules and standards defined by BRSA. Besides it also indicates that supervision of BRSA has proved satisfactorily efficient and effective.

8.2. SENSITIVITY ANALYSIS AND ICR

Two methods for stress testing have been implemented. “Sensitivity Analysis” and “Scenario Analysis”. In my study for Scenario Analysis, Minor shock means 5% rise in NPLs, 1% rise in borrowing interest rate and 1% decline in net trading income. Moderate shock means 10% rise in NPLs, 2% rise in borrowing interest rate and 2% decline in net trading income. Major shock means 20% rise in NPLs, 3% rise in borrowing interest rate and 3% decline in net trading income.

Internal Credit Rating is a score between 1 and 10. 1 is the best score and 10 is the

worst score which shows that a bank has defaulted. ICR for banks can be classified as Standard, Watchful, Sub-standard, Doubtful and NPL which they have been represented in numeric terms as follows: $1 \leq \text{ICR} < 7$ means it has a Standard score. $7 \leq \text{ICR} < 8$ means it has a watchful score. $8 \leq \text{ICR} < 9$ means it has a doubtful score. $9 \leq \text{ICR} \leq 10$ means it has a NPL score.

According to analysis before any simulation Ziraat Bank has the best Internal Credit Rating(ICR) with score of 3.24 following it Garanti Bank, Akbank, İşbank, Halkbank scored as 3.51, 3.66, 3.92, 4.20 respectively. Şekerbank in this sample study performed as the worst bank with score of 5.80.

8.2.1. Sensitivity Analysis: NPLs shocks: Minor (5%), Moderate (10%) and Major (20%)

For all levels of shock in NPL, ICR of Ziraat Bank has not changed and remains at 3.24 except for 20% increase in NPLs it goes up to 3.27. Garanti Bank's ICR increase gradually as NPLs shock goes up. For Minor, Moderate and Major shocks are 3.59, 3.61, 3.68. Akbank's ICR for Minor shock remains unchanged at 3.97. By 10% and 20% shocks it changes to 3.68 and 3.75 respectively. İşbank by changing NPLs by 5% or 10% remains unchanged at 3.27. It goes up to 4.04 by 20% increase in NPLs. For Halkbank in all three levels of shocks ICR changes. 5% rise it increases NPLs to 4.31, By 10% rise in NPLs it increases to 4.29. By 20% increase in NPLs it goes up to 4.36. Despite increasing in NPL shocks from 5% shock to 10% shock, ICR improves by 0.87%. That is because of "Loans to Total Funding ratio". In the case of 5% shock has been implemented, it is 93.42% so falls into range of score 9 (Based on ICR Table). While by 10% NPL shock Loans to total funding ratio becomes 93.27% and it falls into range of score 8 (Lower the ratio means better score) so in the result Halkbank get a bit better score in case of 10% shock rather than in case of 5%. When all shocks for Şekerbank are implemented as 5%, 10% and 20% rise, ICR goes up gradually to 6.11, 6.36 and 6.54 respectively. In order to see in what extent change in NPL has affected

the ICR I have checked the growth rate of ICR before simulation compared to ICR after 20% rise in NPLs. This comparison indicates that Ziraat Bank incurred the least damage by this shock by 0.99% change in its ICR (from 3.24 to 3.27) while Şekerbank incurred the most adverse effect by 12.81% change in ICR (from 5.80 to 6.54).

8.2.2. Sensitivity Analysis: Lending Rate Rise: Minor (1%), Moderate (2%) and Major (3%)

By increasing lending rate at 1%, 2% and 3%, ICR for Ziraat Bank declines to 3.06, 2.93 and 2.85. ICR for Garanti Bank by 1% increase in lending rate drops to 3.39, 2% rise in lending rate drops ICR to 3.29 and 3% rise in lending rate drops it to 3.23. ICR for Akbank by 1% increase in lending rate makes ICR to go down from 3.66 to 3.53. 2% and 3% rise in lending rate drops ICR to 3.40 and 3.34 respectively. ICR for İşbank by 1% increase in lending rate goes down from 3.92 to 3.68. By 2% and 3% rise in lending rate ICR goes down to 3.56 and 3.47 respectively. ICR for Halkbank by 1% rise in lending rate goes down from 4.20 to 3.93. By 2% and 3% rise in lending rate drop from 3.75 and 3.56. ICR for Şekerbank by 1% increase in lending rate goes down from 5.80 to 5.44. By 2% and 3% increase in lending rate ICR goes down to 5.21 and 5.18 respectively. In order to see in what extend rise in Lending Rate has affected the ICR I have checked the growth rate of ICR before simulation compared to ICR after 3% rise in Lending Rate. This comparison indicates that Garanti Bank benefited the least by this shock by 7.98% change in its ICR (from 3.51 to 3.23) while Halkbank benefited the most by 15.33% change in ICR (from 4.20 to 3.56).

8.2.3. Sensitivity Analysis Lending Rate Decline: Minor (1%), Moderate (2%) and Major (3%)

By decreasing in lending rate by 1%, 2% and 3%, ICR for Ziraat Bank from 3.24 goes up to 3.48, 3.77 and 4.32. ICR for Garanti Bank by 1% decline in lending rate goes up from 3.51 to 3.76, 2% rise in lending rate rise ICR to 4.04 and 3% rise in lending rate rise it to 4.82. ICR for Akbank by 1% decrease in lending rate makes ICR to goes up from 3.66 to 3.93. 2% and 3% rise in lending rate increases ICR to 4.34 and 4.95.

respectively. ICR for İşbank by 1% decrease in lending rate goes up from 3.92 to 4.17. By 2% and 3% decline in lending rate ICR goes up to 4.60 and 5.22 respectively. ICR for Halkbank by 1% decline in lending rate goes up from 4.20 to 4.55. By 2% and 3% rise in lending rate goes up to 5.37 and 5.41 respectively. ICR for Şekerbank by 1% decline in lending rate goes up from 5.80 to 6.35. By 2% and 3% increase in lending rate ICR goes up to 6.44 and 6.52 respectively. In order to see in what extend decline in Lending Rate has affected the ICR I have checked the growth rate of ICR before simulation compared to ICR after 3% decline in Lending Rate. This comparison indicates that Şekerbank incurred the least damage by this shock by 12.48% change in its ICR (from 5.80 to 6.52) while Garanti Bank incurred the most adverse effect by 37.32% change in ICR (from 3.51 to 4.82).

8.2.4. Sensitivity Analysis: Borrowing Rate Rise: Minor (1%), Moderate (2%) and Major (3%)

By decreasing in lending rate by 1%,2% and 3%, ICR for Ziraat Bank from 3.24 goes up to 3.42, 3.79 and 4.18. ICR for Garanti bank by 1% decline in lending rate goes up from 3.51 to 3.76, 2% rise in lending rate rise ICR to 4.04 and 3% rise in lending rate rise it to 4.82. ICR for Akbank by 1% decrease in lending rate makes ICR to goes up from 3.66 to 3.93. 2% and 3% rise in lending rate increases ICR to 4.36 and 4.91. respectively. ICR for İşbank by 1% increase in borrowing rate goes up from 3.92 to 4.17. By 2% and 3% rise in borrowing rate ICR goes up to 4.44 and 5.17 respectively. ICR for Halkbank by 1% increase in borrowing rate goes up from 4.20 to 4.52. By 2% and 3% rise in lending rate goes up to 5.32 and 5.44 respectively. ICR for Şekerbank by 1% increase in borrowing rate goes up from 5.80 to 6.35. By 2% and 3% increase in lending rate ICR goes up to 6.42 and 6.48 respectively. In order to see in what extend rise in borrowing Rate has affected the ICR I have checked the growth rate of ICR before simulation compared to ICR after 3% rise in Borrowing Rate. This comparison indicates that Şekerbank incurred the least damage by this shock by 11.72% change in its ICR (from 5.80 to 6.48) while Akbank incurred the most adverse effect by 34.15%

change in ICR (from 3.66 to 4.91).

8.2.5. Sensitivity Analysis: Net Trading Income Decline: Minor (1%), Moderate (2%) and Major (3%)

By decreasing in net trading income rate by 1%, 2% and 3%, ICR for Ziraat Bank from 3.24 goes up to 3.27 for all three level of shocks. ICR for Garanti Bank by 1% decline in net trading income rate goes up from 3.51 to 3.54 and by 2% decline in net trading income ICR goes up to 3.54. Both 1% and 2% have the same changes. 3% decline in net trading income decreases ICR to 3.61. If ICR for Akbank decreases by 1% in net trading income remains unchanged at 3.66. 2% and 3% decline in net trading income increases ICR to 3.75 and 3.76 respectively. ICR for İşbank by 1% decrease in net trading income goes up from 3.92 to 3.97. By 2% and 3% decline in net trading income ICR goes up to 4.04 and 4.11 respectively. ICR for Halkbank by 1% decline in net trading income goes up from 4.20 to 4.31. By 2% and 3% decline in net trading income goes up to 4.31 and 4.38 respectively. ICR for Şekerbank by 1% decline in net trading income goes up from 5.80 to 6.04. By 2% and 3% increase in net trading income ICR goes up to 6.20 and 6.35 respectively. In order to see in what extend decline in Net Trading Income has affected the ICR I have checked the growth rate of ICR before simulation compared to ICR after 3% decline in Net Trading Income. This comparison indicates that Ziraat Bank incurred the least damage by this shock by 0.99% change in its ICR (from 3.24 to 3.27) while Şekerbank incurred the most adverse effect by 9.55% change in ICR (from 5.80 to 6.35).

Now a question may rise that which shock has the most significant effect on the banks the answer is not plain but with sort of explanation it will be clarified. The explanation is that not a single shock has exerted effects on the bank in a similar manner. For some banks a specific type of shock is significantly affecting the ICR, for some other banks another type of shock is playing the most considerable role. Let's drill down to get a clearer picture about the issue. The main determinant to affect the bank in worst manner

for four banks out of the six is “Decline in Lending Rate”. These four banks are as follows respectively: Garanti Bank (37.32% change in ICR following exerting the major shock of decline in Lending Rate), Akbank (35.25% change in ICR following exerting the intended major shock), Ziraat Bank (33.29% change in ICR following exerting the intended major shock) and finally, İşbank (33.13% change in ICR following exerting the intended major shock). As for Halkbank the main determinant to affect is rise in Borrowing Rate, that is, following exerting the major shock of rise in Borrowing Rate 3%, the ICR has deteriorated the most compared to other individual shocks and compared to other banks experiencing the same shock in borrowing rate. Following this shock, the ICR for Halkbank deteriorated by 29.42%. If we taking to account the last bank which is Şekerbank, the main determinant to affect is Rise in NPLs by 20%. In this case the ICR has deteriorated the most compared to other individual shocks and compared to other banks experiencing the same shock in NPLs Rise. Following this shock, the ICR for Şekerbank deteriorated by 12.81%. One may say how I reached the above mention conclusions. In order to get to the above findings, I calculated the change in ICR for every individual bank regarding every individual shock. Subsequently, I tried to find out which bank has been affected most by which type of shock. In order to reach this goal, for bank I chose the number assigned to the specific shock which has created the highest percentage change in ICR. The summary of results is presented in the following table:

Bank	Rise in NPLs by 20% (-)	Rise in Lending Rate by 3% (+)	Decline in Lending Rate by 3% (-)	Borrowing Rate Rise by 3% (-)	Net Trading income decline by 3% (-)	Maximum	Shock
Ziraat Bank	0,99%	12,19%	33,29%	29,07%	0,99%	33,29%	Decline in Lending Rate
Garanti Bank	4,84%	7,98%	37,32%	28,21%	2,85%	37,32%	Decline in Lending Rate
Akbank	2,46%	8,74%	35,25%	34,15%	2,73%	35,25%	Decline in Lending Rate
İşbank	3,12%	11,61%	33,13%	31,79%	4,91%	33,13%	Decline in Lending Rate
Halkbank	3,75%	15,33%	28,92%	29,42%	4,33%	29,42%	Rise in borrowing Rate
Şekerbank	12,81%	10,72%	12,48%	11,72%	9,55%	12,81%	Rise in NPLs

Table 61. Most Significant Determinant Affecting the ICR

8.3. Comprehensive Scenario Analysis

Before running the simulation Ziraat Bank has the best Internal credit rating with score of 3.24. Garanti Bank, Akbank, İşbank, Halkbank, Şekerbank are following in rank and have the score of 3.51, 3.66, 3.92, 4.20, 5.80 respectively. After implementing all levels of shock, although their ICR deteriorate in proportionate with the level of shock, however banks are going to maintain the same order of scores.

Scenario Analysis ICR After Simulation				
Name of Bank	ICR Before Simulation	Minor Shock:NPLs Rise 5%, Borrowing Interest Rate Rise 1%, Net Trading Income Decline 1%	Moderate Shock:NPLs Rise 10%, Borrowing Interest Rate Rise 2%, Net Trading Income Decline 2%	Major Shock:NPLs Rise 20%, Borrowing Interest Rate Rise 3%, Net Trading Income Decline 3%
Ziraat Bank	3,24	3,48	3,93	4,71
Garanti Bank	3,51	3,83	4,25	4,96
Akbank	3,66	4,06	4,61	5,18
İşbank	3,92	4,30	4,91	5,26
Halkbank	4,20	4,67	5,35	5,45
Şekerbank	5,80	6,44	6,55	6,70

Table 62. ICR after Simulation for Scenario Analysis (All Six Banks)

In order to see in what extend Major shock in Scenario Analysis (Major Shock: NPLs Rise 20%, Borrowing Interest Rate Rise 3%, Net Trading Income Decline 3%) has affected the ICR I have checked the growth rate of ICR before simulation compared to ICR after Major Shock. This comparison indicates that Şekerbank incurred the least damage by this shock by 15.52% change in its ICR (from 5.80 to 6.70) while Ziraat Bank incurred the most adverse effect by 45.37% change in ICR (from 3.24 to 4.71).

8.4. EVALUATION OF EFFICIENCY FOR A CREDIT RATING SYSTEM

So far we have devised a credit rating system by which a typical bank evaluates the credit worthiness of any eventual bank as counterparty. The most important issue is to understand to what extent such a credit rating system is reliable. If the outcomes of custom-made credit rating system (CRS) is highly divergent from the ratings provided by international rating agencies, therefore one may conclude reasonably that there are some flaws or short comings in defining necessary and accurate parameters concerning the said CRS or there are some problems with the ratings provided by rating agencies. Having said so I have here by introduced the ratings prepared by international rating agencies for respective banks for 2016 and compared them with the output of my own CRS. As it is shown in the below table happily we witness a significant convergence among the ratings prepared by international rating agencies from one hand and mine on the other hand. What we can precisely conclude is that the priority rank for 2016 does not change considerably according to my devised CRS, Ziraat Bank stands first with a rate of 3.24 And Garanti Bank is the second in row with a rate of 3.51 while Şekerbank is the last one in the rate ranking based on my ICR. Based on my CAMELS model Ziraat Bank and Şekerbank have the highest rate with rate of 29%. Halkbank stands at the last row of this model ranking with rate of 22%. The same ranking for our selected banks has been provided by S&P, Moody's, Fitch and JCR Eurasia. S&P has ranked two of banks in our sample. Garanti Bank with higher rate (BB+) and İşbank with lower rate (BB).

Moody's ranking ranked banks from the best to worst respectively as follows: Garanti Bank (Aa1), Akbank (Ba1), İşbank (Ba1), Halkbank(Ba1), Ziraat Bank (Ba2) and Şekerbank (B1).

Fitch ranking ranked banks from the best to worst respectively as follows: Garanti Bank (AAA), Halkbank(BBB), Ziraat Bank (BBB-), İşbank (BBB-), Akbank (BB+) and Şekerbank (BB-).

JCR Eurasia rating shows that Ziraat Bank (A), Garanti Bank (A) has the same and highest rate, Şekerbank (BBB) has the second rank place and Halkbank (BBB-) has the last place according to the rates of this rating agencies.

Since ICR includes "*Qualitative Analysis*" therefore for comparison between the results of International Agencies and this study's model it would be better to focus on ICR rather than CAMELS rating. Subsequently we compare here under our own calculated ICR with the results of International Rating Agencies for year 2016.

If we just take into account S&P evaluation, we see that in the view of S&P Garanti Bank is one notch better than İşbank. Now if we look at our own calculated ICR we see that the figure assigned to Garanti Bank is 3.51 while the figure assigned to İşbank is 3.92 which means rating of Garanti Bank is better than İşbank because it has a lower grade. Therefore, our calculated ICR is consistent with the rates assigned by S&P to Garanti Bank and İşbank.

Now, by taking into account the evaluation of JCR Eurasia. JCR Eurasia has assigned a similar rate to Ziraat Bank and Garanti Bank which is "A". Halkbank has received the rate of "BBB-" and at last Şekerbank has received a rate of BBB. Therefore, Ziraat Bank and Garanti Bank have higher rate than the other two. The same result stands with our own calculated ICR which means in our calculations Ziraat Bank and Garanti Bank have a higher rate (a smaller number) than Halkbank and Şekerbank. Of course if we just take into account Halkbank and Şekerbank from our point of view Halkbank (4.20) is better credit than Şekerbank (5.80) while JCR result is slightly different. It means from their point of view Halkbank is one notch worse than Şekerbank. At this point I would like to leave this difference of point of view to judgment of the reader.

Specifically, if we compare the rate of the Moody's for Sekerbank(B1) with its rate for Halkbank (Ba1). As far as Halkbank and Şekerbank are concerned Moody's and Fitch have given higher rates to Halkbank than Sekerbank which is consistent with our ICRs assigned to these banks.

If we consider evaluation of Moody's we see that Sekerbank is at last in rank. The same goes with our own calculated ICR, in which Şekerbank has received 5.80 which is the highest number indicating the lowest rate in our sample. Furthermore, from the view point of the Moody's Akbank, İşbank and Halkbank stands behind of Garanti Bank which is consistent with our own calculated ICR. Of course there is divergence between the result of Moody's and ours related to Ziraat Bank and Garanti Bank. According to Moody's Garanti Bank is a better credit than Ziraat Bank while in ours the results are inverse and I prefer to leave it to the judgment of reader. While I would like to emphasize that every model including ours needs to be tuned and adapted in the course of time by getting more inside information from the Financial Institutions under evaluations.

If we consider evaluation of Fitch we see that Sekerbank is at last in rank. The same goes with our own calculated ICR. In which Şekerbank has received 5.80 which is the highest number indicating the lowest rate in our sample. Normally, if a bank receives a rate of "BBB" or above it is said that it is in "Investment Grade". Having said that we see that Fitch almost has evaluated the banks (except two banks) under study in "Investment Grade" the same goes with of our own calculated ICRs, that is, in our own analysis ICR from 1 to 6 is in the "*Standard*" range. ICR Between 6 and 7 is "*Watchful*", ICR between 7 and 8 is "*Sub-standard*", ICR between 8 and 9 is "*Doubtful*" and ICR between 9 and 10 is "*NPL*".

Therefore, we see that ICRs calculated for all the banks in our sample stands in a same range (*Standard*) which is similar to the "Investment Grade".

Evaluation of Efficiency for a Credit Rating System						
Bank	S&P	Moody's	Fitch	JCR Eurasia	CAMELS Rate	ICR
Ziraat Bank	-	Ba2	BBB-	A	29%	3,24
Garanti Bank	BB+	Aa1	AAA	A	25%	3,51
Akbank	-	Ba1	BB+	-	27%	3,66
İşbank	BB	Ba1	BBB-	-	26%	3,92
Halkbank	-	Ba1	BBB	BBB-	22%	4,20
Şekerbank	-	B1	BB-	BBB	29%	5,80

Table 63. Evaluation of Efficiency for Credit Rating System

8.5. FURTHER RESEARCH

For the future research, researcher can complete the frame work of quantitative efforts by assuming the fact that Capital Adequacy Ratio (CAR) itself can also be changed as a result of implementation of whether an individual or series of shocks. If a typical bank changes its Assets positions to riskier assets the denominator of CAR goes up and as a result CAR itself goes down. For example, while NPLs go up what will happen to CAR because in the denominator of CAR Risks Weighted Assets (RWA) includes the exposures that a typical bank has allocated to each segment. By adding this element research becomes more comprehensive.

Another element that could be added to this model is “Sensitivity to Market”.

It can be implemented by adding some ratios. It can be expressed as currency risk. For instance, a typical Turkish bank borrows money from another bank in USD and based on that extends loans to its customer in TRY. Evidently in this case bank has an open position. We consider this risk for any foreign currency which is named as Single open position and at end we can calculate aggregate open position.

In another example, a typical bank can borrow money in Fixed interest rate and it may lend money in floating interest rate (EX. LIBOR+1%). It is an open position related to interest rate.

Also for the future research, one of the main things that can be done is to increase the number of banks that have been analyzed in this research. For example, Researcher can look at all state banks, all private banks, all participation banks or at least 30% of all private and public, compare them and make a conclusion about the performance of the different categories.

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APPENDICES

Ziraat Bank Income Statement (.000 TRY) FY 2005 – FY 2016

Other Information		FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
1	Branches	146	137	137	247	258	305	379	434	490	636	682	786	786
2	Employees	1.172	2.295	6.862	7.067	7.343	8.198	8.602	10.181	23.069	4.639	23.525	25.618	24.932

Ziraat Bankası Income Statement - Unconsolidated		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in Thousand		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
1	Total Interest Income	924.274	1.435.928	1.329.459	3.368.109	4.202.443	2.391.498	3.706.442	4.810.669	4.369.841	8.165.007	2.050.495	7.290.689
	<i>YoY Change</i>		19%	20%	18%	6%	-13%	11%	8%	-3%	26%	21%	24%
1.1	Interest Income on Customer Loans	1.736.737	2.091.766	3.225.798	4.516.919	5.640.173	5.776.757	7.392.119	8.665.298	9.508.502	12.754.847	16.676.949	21.512.183
1.2	Interest Income from Banks and Money Market	540.291	655.404	939.233	651.089	324.439	182.952	36.345	25.573	35.509	62.944	126.932	271.255
1.3	Interest Income on Securities	5.635.904	6.664.719	7.156.553	8.191.171	8.229.579	6.418.601	6.265.869	6.110.808	4.814.022	5.333.024	5.197.221	5.487.868
1.4	Other Interest Income	11.342	24.039	7.875	8.930	8.252	13.188	12.109	8.990	11.808	14.192	49.393	19.383
2	Total Interest Expense	665.701	1.034.422	952.730	2.265.832	1.133.667	7.035.839	4.464.864	909.759	6.631.043	5.558.161	1.541.569	3.342.418
	<i>YoY Change</i>		19%	25%	23%	-12%	-13%	20%	-7%	44%	21%	16%	
2.1	Interest Expense on Customer Deposits	4.990.237	5.896.395	7.392.015	8.705.878	7.330.206	6.554.119	7.348.651	6.299.506	5.600.944	7.512.243	8.668.465	9.911.323
2.2	Interest Expense on Borrowings	67.699	123.853	125.299	478.421	771.699	457.994	1.095.096	1.590.809	988.940	1.995.352	2.812.335	3.376.412
2.3	Other Interest Expense	7.765	14.174	10.416	81.533	31.762	23.726	21.117	19.444	41.159	50.566	60.769	54.683
3	Net Interest Income	858.573	401.506	801.729	1.102.277	2.068.776	355.659	5.241.578	900.910	7.738.798	6.606.846	1.508.926	3.948.271
	<i>YoY Change</i>		19%	12%	8%	48%	-12%	-2%	32%	12%	11%	22%	33%
4	Total Non-Interest Operating Income	316.229	85.638	98.389	83.781	75.202	507.866	68.362	227.368	129.575	110.045	687.493	268.733
	<i>YoY Change</i>		-25%	-8%	-3%	-1%	-36%	27%	74%	-1%	27%	22%	
4.1	Net Gains/(Losses) on Trading	185.705	104.123	71.894	(47.566)	16.148	22.348	93.140	64.555	69.946	71.482	76.423	30.488
4.2	Net Gains/(Losses) on Derivatives	79.912	762	70.217	(5.505)	948	111.554	291.574	(46.158)	407.438	(1.591.702)	(1.245.827)	(1.822.587)
4.3	Net Gains/(Losses) on Foreign Currency	0	0	0	0	44.356	(147.039)	(446.167)	(70.010)	(675.323)	1.450.260	1.003.865	1.604.262
4.4	Net Fees and Commissions	500.335	625.820	563.818	572.031	436.997	510.581	625.613	752.112	958.779	1.077.115	1.300.081	1.644.848
4.5	Other Operating Income	550.277	254.933	202.460	364.821	376.753	1.010.422	404.202	526.869	1.368.735	1.102.890	1.552.951	1.813.722
5	Total Non-Interest Expenses	265.241	415.221	494.689	1.724.530	895.059	2.249.660	622.439	828.340	661.367	4.094.964	5.208.242	5.302.999
	<i>YoY Change</i>		12%	6%	15%	10%	19%	17%	8%	29%	12%	27%	2%
5.1	Personnel Expenses	691.436	771.973	782.966	915.128	1.046.194	1.234.914	1.312.835	1.361.181	1.763.184	1.820.293	2.065.716	2.286.812
5.2	Other Operating Expenses	573.805	643.248	711.723	809.402	848.865	1.014.746	1.309.604	1.467.159	1.898.183	2.274.671	3.142.526	3.016.187
6	Pre-Impairment Operating Profit	909.561	971.923	215.429	3.261.528	2.048.919	613.865	587.501	299.938	207.006	6.621.927	988.177	1.914.005
	<i>YoY Change</i>		2%	8%	1%	55%	-9%	-22%	48%	17%	7%	21%	49%
7	Loan Impairment Charge	53.655	66.687	113.592	244.842	342.187	139.723	188.374	809.453	673.373	740.633	880.862	2.250.153
8	Securities and Other Credit Impairment Charges	173.569	184.944	138.777	301.186	289.997	4.782	619.623	985.760	1.155.103	702.561	539.692	1.094.717
9	Operating Profit	682.337	720.292	963.060	2.715.500	2.416.735	469.360	779.504	504.725	378.523	5.178.733	5.567.623	5.569.135
	<i>YoY Change</i>		1%	9%	-8%	63%	1%	-38%	26%	25%	18%	27%	30%
10	Non-recurring Income												
11	Non-recurring Expenses												
12	Other Non-operating Expenses												
13	Pre-tax Profit	682.337	720.292	963.060	2.715.500	2.416.735	469.360	779.504	504.725	378.523	5.178.733	5.567.623	5.569.135
	<i>YoY Change</i>		1%	9%	-8%	63%	1%	-38%	26%	25%	18%	27%	30%
14	Tax Expense	835.925	620.290	611.969	581.241	905.780	756.758	678.830	854.297	1.048.449	1.128.224	1.405.153	1.992.715
15	Profit/Loss from Discontinued Operations	0	0	0	0	0	0	0	0	0	0	0	0
16	Net Income	530.665	846.412	100.002	351.091	134.259	510.955	712.602	100.674	650.428	330.074	4.050.509	1.624.470
	<i>YoY Change</i>		14%	12%	-9%	-9%	65%	6%	-43%	26%	26%	22%	27%

Annex 1. Ziraat Bank Income Statement from 2005 to 2016

Ziraat Bank Balance sheet (.000 TRY)

Assets

FY 2005 – FY 2016

Ziraat Bankası													
Balance Sheet (Unconsolidated)													
	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	
Amounts in thousand	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	
Exchange Rate													
A	ASSETS												
10	Net Loans	13.691.314	17.371.401	21.604.134	30.836.194	36.724.567	57.443.453	71.429.975	71.426.479	111.047.973	141.914.662	186.812.851	232.643.535
	YoY Change		27%	24%	43%	19%	56%	24%	0%	55%	28%	32%	25%
1.1	Gross Loans	14.005.503	17.691.154	21.995.091	31.440.474	37.579.476	58.298.523	72.036.301	72.687.847	112.670.876	143.846.831	189.083.383	236.860.632
	YoY Change		26%	24%	43%	20%	55%	24%	1%	55%	28%	31%	25%
1.2	NPLs	314.189	319.753	390.957	604.280	854.909	855.070	863.041	2.057.553	2.417.441	2.716.920	3.140.524	4.217.097
	YoY Change		2%	22%	55%	41%	0%	1%	138%	17%	12%	16%	34%
1.3	Specific Provisions	259.402	258.528	311.131	490.236	682.834	572.967	606.326	1.261.368	1.622.903	1.932.169	2.270.532	3.965.648
	YoY Change		0%	20%	58%	39%	-16%	6%	108%	29%	19%	18%	75%
	Note: Net charge-offs included in above	0	0	0	0	0	0	0	0	0	0	0	0
20	Interbank Loans and Deposits with Banks	6.477.982	3.992.366	5.526.341	3.710.350	5.429.609	4.642.110	1.320.459	1.933.471	2.465.011	2.191.041	4.446.792	3.901.674
30	Investment Securities	39.154.958	44.256.948	46.950.415	59.181.085	71.701.968	77.053.758	71.498.522	66.370.604	63.657.577	65.897.360	66.598.431	71.710.561
	YoY Change		13%	6%	26%	21%	7%	-7%	-7%	-4%	4%	1%	8%
3.1	Held for Trading	1.009.748	2.534.684	760.925	661.469	493.199	210.118	56.428	13.650	15.310	14.166	16.615	17.404
3.2	Available for Sale	15.957.904	24.295.283	31.960.216	9.071.044	25.649.821	39.724.505	38.127.783	38.068.017	46.683.797	54.230.853	53.782.308	58.631.953
3.3	Held to Maturity	21.867.056	17.059.676	13.855.427	48.787.200	44.843.796	36.388.051	32.504.197	27.254.825	15.660.350	10.021.056	10.144.142	8.749.464
	Note: Govt. Securities included in above	38.764.201	43.811.166	46.485.076	56.664.938	69.366.027	75.904.915	70.290.395	64.953.545	61.844.915	63.657.645	63.221.269	66.440.138
3.4	Investments in Associates and Subsidiaries	320.250	367.305	373.847	661.372	715.152	731.084	810.114	1.034.112	1.298.120	1.631.285	2.655.366	4.311.740
40	Derivative Financial Instruments	0	0	898	2.110	1.045	29.471	77.168	132.567	438.627	296.576	928.284	1.667.387
50	Total Earning Assets	59.324.254	65.620.715	74.081.788	93.729.739	113.857.189	139.168.792	144.326.124	139.863.121	177.609.188	210.299.639	258.786.358	309.923.157
	YoY Change		11%	13%	27%	21%	22%	4%	-3%	27%	18%	23%	20%
60	Cash with Central Bank	3.827.448	5.157.362	5.640.830	9.375.597	9.174.262	10.265.064	14.272.374	20.713.331	26.602.413	30.148.983	36.535.963	39.167.097
70	Fixed Assets	719.932	688.937	650.044	818.885	824.238	840.987	982.380	997.405	1.154.604	4.856.869	5.082.244	5.877.236
80	Other Assets	529.871	436.756	569.649	488.275	672.843	884.865	1.100.264	1.293.900	2.163.749	2.294.820	2.443.761	2.793.875
90	Total Non-Earning Assets	5.077.251	6.283.055	6.860.523	10.682.757	10.671.343	11.990.916	16.355.018	23.004.636	29.920.766	37.300.672	44.061.968	47.838.208
	YoY Change		24%	9%	56%	0%	12%	36%	41%	30%	25%	18%	9%
100	Total Assets	64.401.505	71.903.770	80.942.311	104.412.496	124.528.532	151.159.708	160.681.142	162.867.757	207.529.954	247.600.311	302.848.326	357.761.365
	YoY Change		12%	13%	29%	19%	21%	6%	1%	27%	19%	22%	18%

Annex 2. Ziraat Bank Balance sheet (Assets) from 2005 to 2016

**Ziraat Bank Balance sheet (.000 TRY)
Liabilities and Equity
FY 2005 – FY 2016**

Ziraat Bankası													
Balance Sheet - Unconsolidated		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in Thousand		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
B	LIABILITIES												
130	Customer Deposits	51.969.194	59.413.175	67.692.142	82.628.706	97.933.105	123.322.608	109.661.209	111.709.790	133.585.034	147.571.376	176.742.134	210.958.984
	YoY Change		14%	14%	22%	19%	26%	-11%	2%	20%	10%	20%	19%
13.1	Current	11.372.898	11.553.986	11.218.667	11.937.005	15.354.196	18.931.953	19.813.389	21.693.006	28.680.623	31.628.782	40.292.719	53.136.377
13.2	Saving	23.564.400	28.016.460	34.148.436	42.372.725	45.967.705	52.474.047	49.464.395	50.494.068	52.716.280	56.352.034	62.393.890	68.580.830
13.3	Term	40.596.296	47.859.189	56.473.475	70.691.701	82.578.909	104.390.655	89.847.820	90.016.784	104.904.411	115.942.594	136.449.415	157.822.607
140	Deposits from Banks	162.904	239.727	557.625	1.254.729	596.362	2.473.864	3.405.473	7.256.514	8.150.112	5.683.872	9.727.301	12.059.950
150	Interbank Money Market Borrowings	502.719	967.955	196.265	7.267.869	9.144.070	5.003.477	25.788.170	11.162.474	24.570.850	31.781.076	43.085.776	47.211.961
	YoY Change		93%	-80%	3603%	26%	-45%	415%	-57%	120%	29%	36%	10%
160	Total Other Funds Borrowed	4.121.335	2.922.909	2.776.930	2.942.459	3.266.554	3.624.221	4.424.618	9.308.656	15.232.707	24.252.961	30.761.383	35.670.576
	YoY Change		-29%	-5%	6%	11%	11%	22%	110%	64%	59%	27%	16%
16.1	Funds Borrowed from Banks	8.486	14.639	7.636	28.357	21.163	98.763	553.482	3.072.439	8.559.329	14.607.707	19.542.648	22.816.736
16.2	Securities Issued	0	0	0	0	0	0	0	1.943.988	2.636.887	4.218.806	5.287.606	6.833.001
16.3	Subordinated Borrowings	0	0	0	0	0	0	0	0	0	0	0	0
16.4	Other Funding	4.112.849	2.908.270	2.769.294	2.914.102	3.245.391	3.525.458	3.871.136	4.292.229	4.036.491	5.426.448	5.931.129	6.020.839
170	Derivative Financial Instruments	0	0	812	4.019	286	5.599	39.821	55.548	54.664	395.584	292.271	643.628
180	Total Interest Bearing Liabilities	56.756.152	63.543.766	71.223.774	94.097.782	110.940.377	134.429.769	143.319.291	139.492.982	181.593.367	209.684.869	260.608.865	306.545.099
	YoY Change		12%	12%	32%	18%	21%	7%	-3%	30%	15%	24%	18%
190	Provisions	664.155	891.272	1.102.404	1.428.389	1.703.501	1.228.030	1.892.436	3.002.039	3.958.295	4.757.837	5.160.896	6.053.011
200	Bills Payable / Other Payables	507.198	374.658	391.863	482.910	527.626	713.707	887.856	1.157.770	1.353.869	1.747.892	2.320.869	2.481.213
210	Other Liabilities	634.008	514.671	1.006.168	1.042.179	1.002.901	1.330.117	1.404.306	2.047.476	2.257.744	2.869.549	3.211.427	4.299.604
220	Total Liabilities	58.561.513	65.324.367	73.724.209	97.051.260	114.174.405	137.701.623	147.503.889	145.700.267	189.163.275	219.060.147	271.302.057	319.378.927
	YoY Change		13%	13%	32%	18%	21%	7%	-1%	30%	16%	24%	18%
C	EQUITY												
230	Share Capital	2.221.978	2.221.978	2.500.000	2.500.000	2.500.000	2.500.000	2.500.000	2.500.000	2.500.000	2.500.000	5.000.000	5.000.000
	YoY Change		0%	0	0	0	0%	0%	0%	0	0%	100%	2%
240	Reserves	1.397.996	2.019.689	2.009.660	2.478.609	3.680.003	6.139.782	8.773.789	10.661.308	13.001.364	16.000.026	17.920.486	22.602.905
250	Revaluation Reserves	257.834	76.854	195.395	75.806	490.607	928.608	(374.369)	1.178.587	(641.945)	5.812.443	3.286.127	3.179.380
260	Retained Earnings	1.962.184	2.260.882	2.513.047	2.306.821	3.683.517	3.889.695	2.277.833	2.827.595	3.507.260	4.227.695	5.339.656	7.500.153
270	Total Equity	5.839.992	6.579.403	7.218.102	7.361.236	10.354.127	13.458.085	13.177.253	17.167.490	18.366.679	28.540.164	31.546.269	38.382.438
	YoY Change		13%	10%	2%	41%	30%	-2%	30%	7%	55%	11%	22%
280	Total Liabilities & Equity	64.401.505	71.903.770	80.942.311	104.412.496	124.528.532	151.159.708	160.681.142	162.867.757	207.529.954	247.600.311	302.848.326	357.761.365

Annex 3. Ziraat Bank Balance sheet (Liabilities and Equity) from 2005 to 2016

Halkbank Income Statement (.000 TRY) FY 2005 – FY 2016

Other Information		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
1	Branches	584	588	590	622	669	709	771	821	877	900	949	964
2	Employees	10.509	10.860	11.484	12.467	12.505	13.450	13.643	14.971	14.798	17.314	17.104	16.956

Halkbank Income Statement Unconsolidated		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in Thousand		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
1	Total Interest Income	3.717.406	3.564.212	3.708.181	3.792.931	3.816.704	3.350.615	3.278.660	3.990.983	3.204.643	3.145.133	3.656.908	3.953.999
	YoY Change		23%	25%	19%	0%	-7%	15%	24%	2%	24%	19%	24%
1.1	Interest Income from Customer Loans	987.878	1.512.779	2.650.197	3.773.463	4.226.042	4.256.255	5.245.901	6.730.541	7.134.261	8.780.904	11.257.727	14.256.133
1.2	Interest Income from Banks and Money Market	127.967	197.947	239.417	233.614	131.135	71.680	9.507	19.055	12.520	13.016	53.080	149.471
1.3	Interest Income from Securities	2.591.839	2.848.754	2.811.955	2.775.831	2.442.237	2.014.419	2.018.505	2.238.713	2.053.202	2.652.451	2.341.046	2.538.510
1.4	Other Interest Income	9.722	4.732	6.612	10.023	17.290	8.261	4.747	2.674	4.660	4.762	5.055	9.885
2	Total Interest Expense	2.792.658	3.194.643	3.955.928	3.666.693	3.707.996	3.159.601	3.805.417	3.514.906	3.375.645	3.539.584	3.794.102	3.997.281
	YoY Change		14%	24%	18%	-21%	-15%	20%	19%	-3%	45%	26%	25%
2.1	Interest Expense from Customer Deposits	2.570.722	3.064.520	3.696.455	4.333.826	3.212.254	2.772.055	3.172.192	4.084.300	3.839.052	5.196.523	6.386.395	8.180.926
2.2	Interest Expense from Borrowings	49.622	105.446	233.376	297.480	405.740	338.026	596.916	380.300	484.296	1.048.822	1.504.564	1.728.528
2.3	Other Interest Expense	172.314	24.677	26.097	35.387	90.002	49.520	36.309	50.306	52.297	94.339	103.143	87.827
3	Net Interest Income	924.748	3.369.569	1.752.253	1.126.238	1.108.708	1.191.014	3.473.243	3.476.077	3.828.998	3.111.549	3.662.806	3.956.718
	YoY Change		48%	28%	21%	46%	3%	9%	29%	8%	6%	11%	23%
4	Total Non-Interest Operating Income	560.419	572.662	724.919	578.673	748.283	1.271.975	1.578.688	1.837.334	2.039.555	1.763.887	1.983.342	2.365.484
	YoY Change		2%	8%	-20%	29%	70%	24%	16%	11%	-14%	12%	19%
4.1	Net Gains/(Losses) from Trading	23.577	(34.173)	(258.352)	356.941	135.063	221.661	96.048	385.274	322.837	298.939	31.322	19.237
4.2	Net Gains/(Losses) from Derivatives	0	0	0	0	(75.805)	(72.856)	156.098	(207.837)	470.853	(1.445.886)	150.160	16.624
4.3	Net Gains/(Losses) from Foreign Currency	200.299	(179.587)	216.415	(550.510)	(43.404)	(34.049)	(44.607)	377.207	(549.247)	1.202.952	(443.112)	113.885
4.4	Net Fees and Commissions	155.033	231.643	296.216	370.268	460.590	525.864	728.167	858.424	930.063	1.022.544	1.194.015	1.375.348
4.5	Other Operating Income	281.510	655.049	470.640	401.974	271.839	631.355	424.268	424.268	865.106	685.338	1.050.957	840.390
5	Total Non-Interest Expenses	572.471	723.158	847.693	1.002.236	1.193.659	1.495.270	1.725.251	2.097.656	2.654.919	2.987.413	3.488.627	3.864.329
	YoY Change		8%	17%	18%	19%	25%	15%	22%	27%	13%	17%	11%
5.1	Personnel Expenses	378.100	399.631	448.692	507.192	595.055	670.307	731.842	842.962	1.083.774	1.247.781	1.520.467	1.762.643
5.2	Other Operating Expenses	294.371	323.527	399.001	495.044	598.604	824.963	993.409	1.254.694	1.571.145	1.739.632	1.968.160	2.101.686
6	Pre-Impairment Operating Profit	12.696	3.119.073	1.629.479	1.702.675	2.663.332	2.967.719	3.326.680	2.115.755	2.113.634	3.888.023	3.157.521	5.457.873
	YoY Change		45%	24%	4%	56%	11%	12%	27%	0%	-8%	7%	31%
7	Loan Impairment Charge	94.437	129.990	130.659	243.122	434.354	316.369	211.056	382.808	435.996	876.459	844.497	1.133.276
8	Securities and Other Credit Impairment Charges	17.520	71.800	92.236	193.169	211.778	142.065	478.928	503.808	412.746	284.309	457.381	973.047
9	Operating Profit	800.739	1.117.283	1.406.584	1.266.384	2.017.200	2.509.285	2.636.696	3.329.139	3.364.892	2.727.255	2.855.643	3.351.550
	YoY Change		40%	26%	-10%	59%	24%	5%	26%	1%	-19%	5%	17%
10	Non-recurring Income												
11	Non-recurring Expenses												
12	Other Non-operating Expenses												
13	Pre-tax Profit	800.739	1.117.283	1.406.584	1.266.384	2.017.200	2.509.285	2.636.696	3.329.139	3.364.892	2.727.255	2.855.643	3.351.550
	YoY Change		40%	26%	-10%	59%	24%	5%	26%	1%	-19%	5%	17%
14	Tax Expense	246.915	253.785	275.545	248.069	386.109	498.829	591.562	733.928	614.049	521.487	540.330	793.285
15	Profit/Loss from Discontinued Operations	0	0	0	0	0	0	0	0	0	0	0	0
16	Net Income	553.824	863.498	1.131.039	1.018.315	1.631.091	2.010.393	2.045.134	2.595.211	2.750.843	2.205.768	2.315.313	2.558.265
	YoY Change		56%	31%	-10%	60%	23%	2%	27%	6%	-20%	5%	10%

Annex 4. Halkbank Income Statement from 2005 to 2016

Halkbank Balance sheet (.000 TRY)

Assets

FY 2005 – FY 2016

Halkbank Balance Sheet Unconsolidated		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in Thousand Exchange Rate		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
A ASSETS													
1	Net Loans	6.329.894	11.645.638	18.121.078	25.836.298	32.458.071	44.296.487	56.216.404	65.893.838	84.848.290	101.766.924	126.744.977	158.354.333
	YoY Change		84%	56%	43%	26%	36%	27%	17%	29%	20%	25%	25%
1.1	Gross Loans	7.531.809	12.730.600	19.153.820	27.087.660	34.125.983	46.054.240	57.618.141	67.510.476	86.658.617	104.180.947	129.772.862	163.494.415
	YoY Change		69%	50%	41%	26%	35%	25%	17%	28%	20%	25%	26%
1.2	NPLs	1.201.915	1.084.962	1.032.742	1.251.362	1.667.912	1.757.753	1.668.695	1.959.646	2.245.176	3.699.661	3.973.738	5.140.082
	YoY Change		-10%	-5%	21%	33%	5%	-5%	17%	15%	65%	7%	29%
1.3	Specific Provisions	1.182.220	1.069.783	1.018.853	1.037.849	1.358.428	1.464.530	1.401.737	1.616.638	1.810.327	2.414.023	3.027.885	3.964.045
	YoY Change		-10%	-5%	2%	31%	8%	-4%	15%	12%	33%	25%	31%
	Note: Net charge-offs included in above	0	0	0	0	0	0	0	0	0	0	0	0
2	Interbank Loans and Deposits with Banks	751.768	1.079.174	1.211.610	2.119.334	1.136.030	1.109.419	1.475.000	2.631.767	1.848.776	1.283.660	2.513.285	1.661.030
3	Investment Securities	17.660.417	18.272.622	16.284.670	18.579.039	21.693.645	20.946.199	24.273.673	24.841.002	30.985.683	29.513.785	31.068.385	36.722.688
	YoY Change		3%	-11%	14%	17%	-3%	16%	2%	25%	-5%	5%	18%
3.1	Held for Trading	1.837.529	752.392	473.395	35.583	55.859	89.359	128.199	104.777	163.533	155.570	269.341	430.098
3.2	Available for Sale	1.887.263	6.110.856	8.427.008	2.359.902	4.760.056	7.398.053	9.220.070	9.393.662	9.540.748	8.925.181	11.208.993	14.989.927
3.3	Held to Maturity	13.848.583	11.274.722	7.037.420	15.858.882	16.556.802	12.719.179	13.997.928	13.455.515	18.854.586	17.763.665	16.676.797	18.156.182
	Note: Govt. Securities included in above	1.068.011	1.053.360	15.926.690	18.242.177	4.782.123	7.438.420	9.239.446	9.402.230	1.683.830	2.420.731	27.741.116	33.107.692
3.4	Investments in Associates and Subsidiaries	87.042	134.652	346.847	324.672	320.928	739.608	927.476	1.887.048	2.426.816	2.669.369	2.913.254	3.146.481
4	Derivative Financial Instruments	0	1.209	6.777	79.182	0	0	0	0	0	0	0	0
5	Total Earning Assets	24.742.079	30.998.643	35.624.135	46.613.853	55.287.746	66.352.105	81.965.077	93.366.607	117.682.749	132.564.369	160.326.647	196.738.051
	YoY Change		25%	15%	31%	19%	20%	24%	14%	26%	13%	21%	23%
6	Cash with Central Bank	1.286.299	2.550.539	3.471.178	3.009.299	3.415.715	4.649.560	7.272.370	12.487.743	19.975.784	20.276.104	23.324.971	29.999.160
7	Fixed Assets	701.660	715.030	731.913	1.022.060	1.223.053	1.043.499	1.093.194	1.126.141	1.071.926	1.185.630	2.465.538	2.678.068
8	Other Assets	123.817	160.478	407.228	450.683	723.572	897.221	793.019	1.301.145	1.213.048	1.396.916	1.612.194	2.025.539
9	Total Non-Earning Assets	2.111.776	3.426.047	4.610.319	4.482.042	5.362.340	6.590.280	9.158.583	14.915.029	22.260.758	22.858.650	27.402.703	34.702.767
	YoY Change		62%	35%	-3%	20%	23%	39%	63%	46%	3%	20%	27%
10	Total Assets	26.853.855	34.424.690	40.234.454	51.095.895	60.650.086	72.942.385	91.123.660	108.281.636	139.943.507	155.423.019	187.729.350	231.440.818
	YoY Change		28%	17%	27%	19%	20%	25%	19%	29%	11%	21%	23%

Annex 5. Halkbank Balance sheet (Assets) from 2005 to 2016

Halkbank Balance sheet (.000 TRY) Liabilities and Equity FY 2005 – FY 2016

Halkbank Balance Sheet - Unconsolidated		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
B													
LIABILITIES													
130	Customer Deposits	21.044.637	26.318.747	29.792.362	39.008.394	42.027.969	51.558.186	59.266.480	72.548.801	90.739.004	86.526.887	107.496.407	127.431.375
	YoY Change		25%	13%	31%	8%	23%	15%	22%	25%	-5%	24%	19%
13.1	Current	2.517.751	2.431.756	3.325.421	3.888.494	603.282	7.503.925	10.193.796	12.197.072	15.109.579	16.138.660	17.205.890	21.008.125
13.2	Saving	10.277.768	11.398.179	1.676.626	2.680.628	17.156.078	20.362.013	22.680.551	24.721.733	26.516.508	26.432.222	30.919.892	34.433.606
13.3	Term	18.526.886	23.886.991	26.466.941	35.119.900	41.424.687	44.054.261	49.072.684	60.351.729	75.629.425	70.388.227	90.290.517	106.423.250
140	Deposits from Banks	68.647	869.217	1.048.549	1.262.720	1.921.734	3.223.828	6.980.454	7.425.100	10.017.193	17.181.467	14.649.558	22.831.464
150	Interbank Money Market Borrowings	40.067	671.525	1.702.825	2.390.444	5.761.728	3.155.055	4.904.532	381.230	771.416	8.412.756	8.410.266	17.847.063
	YoY Change		1576%	154%	40%	141%	-45%	55%	-92%	102%	991%	0%	112%
160	Total Other Funds Borrowed	1.492.217	1.875.810	1.979.364	2.737.353	3.347.319	5.119.619	8.132.076	10.749.660	19.268.381	20.571.505	31.130.604	33.741.654
	YoY Change		26%	6%	38%	22%	53%	59%	32%	79%	7%	51%	8%
16.1	Funds Borrowed from Banks	468.253	873.127	937.028	1.521.799	2.031.517	3.824.387	6.291.227	7.303.335	13.615.155	12.630.357	20.261.616	18.968.104
16.2	Securities Issued	0	0	0	0	0	0	495.615	2.038.438	4.164.684	6.171.857	8.905.289	12.433.742
16.3	Subordinated Borrowings	0	0	0	0	0	0	0	0	0	0	0	0
16.4	Other Funding	1.023.964	1.002.683	1.042.336	1.215.554	1.315.802	1.295.232	1.345.234	1.407.887	1.488.542	1.769.291	1.963.699	2.339.808
170	Derivative Financial Instruments	0	38.274	97.088	22.246	88.956	39.151	65.358	50.666	43.848	176.454	150.706	211.848
180	Total Interest Bearing Liabilities	22.645.568	29.773.573	34.620.188	45.421.157	53.147.706	63.095.839	79.348.900	91.155.457	120.839.842	132.869.069	161.837.541	202.063.404
	YoY Change		31%	16%	31%	17%	19%	26%	15%	33%	10%	22%	25%
190	Provisions	313.101	377.740	439.005	608.243	730.949	856.682	1.251.953	1.826.837	1.900.236	2.116.645	2.129.143	3.051.522
200	Bills Payable / Other Payables	205.236	275.522	357.884	442.336	535.414	743.001	1.130.338	1.204.657	1.625.443	2.024.647	2.318.678	2.700.775
210	Other Liabilities	390.741	218.010	434.303	335.332	476.470	802.183	752.473	1.771.730	1.432.213	1.876.736	2.019.645	2.308.171
220	Total Liabilities	23.554.646	30.644.845	35.851.380	46.807.068	54.890.539	65.497.705	82.483.664	95.958.681	125.797.734	138.887.097	168.305.007	210.123.872
	YoY Change		30%	17%	31%	17%	19%	26%	16%	31%	10%	21%	25%
C													
EQUITY													
230	Share Capital	1.150.000	1.250.000	1.250.000	1.250.000	1.250.000	1.250.000	1.250.000	1.250.000	1.250.000	1.250.000	1.250.000	1.250.000
	YoY Change		9%	0	0	0	0%	0%	0%	0	0%	0%	0%
240	Reserves	1.352.992	1.427.070	1.709.871	2.021.639	2.789.041	4.064.311	5.607.218	7.273.251	9.324.463	11.772.001	13.755.049	15.732.695
250	Revaluation Reserves	59.344	7.497	220.242	15.419	119.882	115.724	(266.778)	1.199.524	813.550	1.299.384	2.095.270	1.767.275
260	Retained Earnings	736.873	1.095.278	1.202.961	1.001.769	1.600.624	2.014.645	2.049.556	2.600.180	2.757.760	2.214.537	2.324.024	2.566.976
270	Total Equity	3.299.209	3.779.845	4.383.074	4.288.827	5.759.547	7.444.680	8.639.996	12.322.955	14.145.773	16.535.922	19.424.343	21.316.946
	YoY Change		15%	16%	-2%	34%	29%	16%	43%	15%	17%	17%	10%
280	Total Liabilities & Equity	26.853.855	34.424.690	40.234.454	51.095.895	60.650.086	72.942.385	91.123.660	108.281.636	139.943.507	155.423.019	187.729.350	231.440.818

Annex 6. Halkbank Balance sheet (Liabilities and Equity) from 2005 to 2016

İşbank Income Statement (.000 TRY)

FY 2005 – FY 2016

Other Information	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
1 Branches	875	891	939	1.039	1.093	1.142	1.201	1.250	1.309	1.358	1.377	1.374
2 Employees	17.111	18.729	19.414	20.924	22.473	23.944	24.887	24.411	24.129	24.308	25.157	24.756

İşbank Income Statement (Unconsolidated)	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in Thousand TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
1 Total Interest Income	3.400.610	3.575.211	3.134.079	3.059.147	3.200.437	3.797.839	3.089.384	3.390.415	3.460.682	3.685.908	3.900.361	3.237.585
YoY Change		40%	21%	16%	-4%	-4%	11%	23%	1%	20%	19%	16%
1.1 Interest Income from Customer Loans	2.978.779	4.115.627	5.266.810	6.785.345	6.764.725	5.947.788	7.133.625	9.685.519	10.379.513	12.699.784	15.688.106	18.120.295
1.2 Interest Income from Banks and Money Market	176.922	376.980	546.720	584.753	361.142	154.183	17.638	12.691	8.357	20.991	81.998	249.050
1.3 Interest Income from Securities	2.127.842	2.961.990	3.221.552	3.175.427	3.017.404	3.667.042	3.721.515	3.650.118	3.031.035	3.346.141	3.410.608	3.940.171
1.4 Other Interest Income	117.067	120.614	98.997	50.622	57.166	28.826	25.606	42.087	41.777	18.992	19.649	18.069
2 Total Interest Expense	2.818.937	3.054.495	3.173.858	3.977.852	3.332.949	3.215.964	3.336.584	3.462.498	3.805.252	3.631.691	3.214.805	3.190.304
YoY Change		7%	22%	13%	-24%	-2%	21%	18%	-9%	27%	18%	12%
2.1 Interest Expense from Customer Deposits	2.226.340	3.994.558	4.668.531	5.501.616	4.567.578	4.258.690	4.977.232	5.469.527	4.854.411	5.681.369	6.378.023	7.572.608
2.2 Interest Expense from Borrowings	573.439	1.045.881	1.475.759	1.437.897	752.409	945.879	1.320.720	1.919.481	1.869.848	2.889.289	3.805.101	3.895.589
2.3 Other Interest Expense	19.158	14.056	29.568	38.339	12.962	11.395	38.632	73.490	80.993	61.033	31.681	22.107
3 Net Interest Income	581.673	520.716	960.221	818.295	867.488	581.875	752.800	927.917	655.430	1.054.217	685.556	1.047.281
YoY Change		-2%	17%	22%	35%	-6%	0%	30%	12%	12%	21%	21%
4 Total Non-Interest Operating Income	2.178.967	1.876.972	2.914.707	2.613.246	3.059.289	3.309.549	3.601.472	3.886.464	3.630.806	3.795.438	3.183.710	3.020.266
YoY Change		-14%	55%	-10%	17%	8%	9%	8%	-7%	5%	-16%	26%
4.1 Net Gains/Losses from Trading	214.183	198.025	545.510	(461.931)	424.298	514.410	115.987	617.560	155.651	442.569	339.454	195.238
4.2 Net Gains/Losses from Derivatives	0	0	0	0	340.394	(71.046)	331.763	(483.135)	(249.394)	(887.931)	(1.116.327)	(255.225)
4.3 Net Gains/Losses from Foreign Currency	34.908	(134.155)	(119.346)	934.581	(356.319)	(308.734)	(141.677)	455.965	630.228	317.009	(91.747)	(756.749)
4.4 Net Fees and Commissions	893.866	1.044.657	1.074.511	1.204.214	1.252.604	1.236.425	1.428.583	1.706.227	1.919.086	2.003.778	2.388.802	2.840.357
4.5 Other Operating Income	1.036.010	768.445	1.414.032	936.382	1.398.312	1.986.812	1.866.816	1.589.847	1.488.454	1.606.794	2.163.528	1.996.645
5 Total Non-Interest Expenses	2.099.301	1.857.939	2.154.043	2.819.538	2.694.687	3.203.123	3.481.199	3.484.306	3.962.519	3.695.413	3.327.389	3.506.124
YoY Change		-11%	16%	31%	-4%	19%	9%	29%	11%	15%	11%	3%
5.1 Personnel Expenses	818.547	936.890	1.085.006	1.251.804	1.404.808	1.625.420	1.819.222	1.821.151	2.275.548	2.456.179	2.587.865	2.957.560
5.2 Other Operating Expenses	1.280.754	921.049	1.069.037	1.567.734	1.289.879	1.577.703	1.661.977	2.663.155	2.686.971	3.239.234	3.739.524	3.548.564
6 Pre-Impairment Operating Profit	2.661.339	2.539.749	3.720.885	3.412.003	3.232.090	3.688.301	3.682.073	3.330.075	3.323.717	3.554.242	3.841.877	3.351.423
YoY Change		-5%	47%	-8%	53%	-10%	0%	14%	0%	4%	5%	43%
7 Loan Impairment Charge	295.180	387.110	581.896	1.054.196	1.471.079	769.520	597.457	601.096	833.562	914.617	1.415.417	1.994.179
8 Securities and Other Credit Impairment Charges	510.337	521.451	1.035.908	559.793	815.395	365.929	786.336	608.026	633.456	408.557	642.763	603.462
9 Operating Profit	1.855.822	1.630.588	2.103.081	1.798.014	2.945.616	3.552.852	3.298.280	3.120.953	3.856.699	3.231.068	3.783.697	3.753.782
YoY Change		-12%	29%	-15%	64%	21%	-7%	25%	-6%	10%	-11%	52%
10 Non-recurring Income												
11 Non-recurring Expenses												
12 Other Non-operating Expenses												
13 Pre-tax Profit	1.855.822	1.630.588	2.103.081	1.798.014	2.945.616	3.552.852	3.298.280	3.120.953	3.856.699	3.231.068	3.783.697	3.753.782
YoY Change		-12%	29%	-15%	64%	21%	-7%	25%	-6%	10%	-11%	52%
14 Tax Expense	693.496	521.370	401.274	288.606	573.209	570.642	630.793	810.646	693.334	848.626	701.006	1.052.576
15 Profit/Loss from Discontinued Operations	0	0	0	0	0	0	0	0	0	0	0	0
16 Net Income	1.162.327	1.109.218	1.701.807	1.509.408	2.372.407	2.982.210	2.667.487	3.310.307	3.163.365	3.382.442	3.082.691	2.701.206
YoY Change		-5%	53%	-11%	57%	26%	-11%	24%	-4%	7%	-9%	53%

Annex 7. İşbank Income Statement from 2005 to 2016

İşbank Balance sheet (.000 TRY)
Assets
FY 2005 – FY 2016

İşbank Balance Sheet (Unconsolidated)		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in thousand		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
Exchange Rate													
A ASSETS													
1	Net Loans	21.858.602	29.818.316	33.979.841	47.610.332	48.334.786	64.231.678	91.620.638	107.142.154	135.281.021	155.874.278	177.933.756	204.257.243
	YoY Change		36%	14%	40%	2%	33%	43%	17%	26%	15%	14%	15%
1.1	Gross Loans	22.912.037	30.982.531	35.473.886	49.805.825	51.102.982	66.639.166	93.604.558	108.741.037	137.081.166	157.736.069	180.640.309	209.201.598
	YoY Change		35%	14%	40%	3%	30%	40%	16%	26%	15%	15%	16%
1.2	NPLs	1.053.435	1.164.215	1.494.045	2.195.493	2.768.196	2.407.488	1.983.920	2.025.267	2.237.792	2.420.571	3.603.689	4.944.355
	YoY Change		11%	28%	47%	26%	-13%	-18%	2%	10%	8%	49%	37%
1.3	Specific Provisions	1.053.435	1.164.215	1.494.045	2.195.493	2.768.196	2.407.488	1.983.920	1.598.883	1.800.145	1.861.791	2.706.553	3.830.957
	YoY Change		11%	28%	47%	26%	-13%	-18%	-19%	13%	3%	45%	42%
	Note: Net charge-offs included in above	0	0	0	0	0	0	0	0	0	0	0	0
2	Interbank Loans and Deposits with Banks	5.830.346	6.453.663	6.954.291	6.788.148	8.432.564	3.185.118	2.297.477	1.434.846	1.527.610	1.393.221	1.517.501	2.229.080
3	Investment Securities	27.122.871	31.014.444	29.143.100	28.076.525	44.320.796	51.700.596	49.053.044	45.754.688	44.627.034	50.480.983	54.174.461	61.752.165
	YoY Change		14%	-6%	-4%	58%	17%	-5%	-7%	-2%	13%	7%	14%
3.1	Held for Trading	1.005.222	299.692	596.144	268.707	379.642	472.158	659.477	754.673	890.985	264.946	328.873	625.518
3.2	Available for Sale	21.042.329	26.019.745	21.774.803	21.250.457	25.980.621	31.360.414	28.652.848	26.346.903	28.347.830	39.289.961	40.860.360	45.326.910
3.3	Held to Maturity	318.926	0	1.955.393	3.461.854	12.929.454	13.603.985	13.465.702	10.953.158	7.627.448	1.301.104	3.591.631	5.357.340
	Note: Govt. Securities included in above	21.695.762	25.436.800	22.514.524	22.624.615	35.671.618	41.875.702	40.145.002	36.695.819	35.548.964	39.788.755	43.234.738	49.515.013
3.4	Investments in Associates and Subsidiaries	4.756.394	4.695.007	4.816.760	3.095.507	5.031.079	6.264.039	6.275.017	7.699.954	7.760.771	9.624.972	9.393.597	10.442.397
4	Derivative Financial Instruments	11.537	39.150	395.773	183.171	119.364	260.708	916.534	618.663	1.312.573	973.309	1.263.425	1.959.449
5	Total Earning Assets	54.823.356	67.325.573	70.473.005	82.658.176	101.207.510	119.378.100	143.887.693	154.950.351	182.748.238	208.721.791	234.889.143	270.197.937
	YoY Change		23%	5%	17%	22%	18%	21%	8%	18%	14%	13%	15%
6	Cash with Central Bank	6.278.642	5.596.106	7.090.810	11.836.821	8.759.973	8.522.625	13.736.905	15.955.846	23.027.535	24.606.706	31.652.525	32.426.628
7	Fixed Assets	1.762.104	1.781.180	1.928.905	1.896.146	1.889.265	1.885.840	1.919.637	1.893.878	1.894.245	1.962.151	4.393.208	4.464.283
8	Other Assets	890.688	501.899	688.197	1.160.779	1.366.556	2.009.929	2.124.269	2.644.375	2.830.019	2.481.327	4.782.708	4.537.065
9	Total Non-Earning Assets	8.931.434	7.879.185	9.707.912	14.893.746	12.015.794	12.418.394	17.780.811	20.494.099	27.751.799	29.050.184	40.828.441	41.427.976
	YoY Change		-12%	23%	53%	-19%	3%	43%	15%	35%	5%	41%	1%
10	Total Assets	63.754.790	75.204.758	80.180.917	97.551.922	113.223.304	131.796.494	161.668.504	175.444.450	210.500.037	237.771.975	275.717.584	311.625.913
	YoY Change		18%	7%	22%	16%	16%	23%	9%	20%	13%	16%	13%

Annex 8. İşbank Balance sheet (Assets) from 2005 to 2016

İşbank Balance sheet (.000 TRY)
Liabilities and Equity
FY 2005 – FY 2016

İşbank													
Balance Sheet - Unconsolidated		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in Thousand		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
B	LIABILITIES												
13	Customer Deposits	34.760.242	44.217.287	47.781.642	62.151.356	70.318.043	85.790.773	96.064.997	102.337.483	116.995.355	127.153.809	146.088.245	170.897.630
	YoY Change		27%	8%	30%	13%	22%	12%	7%	14%	9%	15%	17%
13.1	Current	6.661.273	7.561.051	7.791.251	8.671.908	11.060.636	14.196.425	18.365.072	20.702.544	25.325.583	28.772.876	33.808.588	40.872.840
13.2	Saving	8.385.214	11.947.100	16.225.819	23.318.254	26.699.306	33.755.741	35.658.502	35.872.765	37.988.404	41.498.748	42.580.288	50.020.438
13.3	Term	28.098.969	36.656.236	39.990.391	53.479.448	59.257.407	71.594.348	77.699.925	81.634.939	91.669.772	98.380.933	112.279.657	130.024.790
14	Deposits from Banks	2.461.581	2.182.068	751.503	1.387.829	1.859.020	2.469.384	2.248.137	3.045.951	3.979.410	6.397.382	7.714.181	6.462.346
15	Interbank Money Market Borrowings	5.693.195	5.364.253	5.802.558	7.006.556	10.983.878	10.158.890	19.461.070	13.519.099	20.916.278	17.696.116	20.089.147	20.592.835
	YoY Change		-6%	8%	21%	57%	-8%	92%	-31%	55%	-15%	14%	3%
16	Total Other Funds Borrowed	8.304.349	10.529.955	9.962.882	11.033.237	9.743.859	8.042.442	14.929.629	18.916.121	29.001.463	41.091.704	52.216.761	58.279.914
	YoY Change		27%	-5%	11%	-12%	-17%	86%	27%	53%	42%	27%	12%
16.1	Funds Borrowed from Banks	8.304.349	10.529.955	9.962.882	11.033.237	9.743.859	8.042.442	11.148.208	10.747.554	15.921.894	20.669.163	28.408.499	30.884.697
16.2	Securities Issued	0	0	0	0	0	0	3.781.421	6.364.116	10.095.426	17.153.757	19.761.129	22.465.201
16.3	Subordinated Borrowings	0	0	0	0	0	0	0	1.804.451	2.984.143	3.268.784	4.047.133	4.930.016
16.4	Other Funding	0	0	0	0	0	0	0	0	0	0	0	0
17	Derivative Financial Instruments	41.591	45.169	199.328	518.165	486.822	717.276	857.882	737.284	981.522	630.151	927.974	799.583
18	Total Interest Bearing Liabilities	51.260.958	62.338.732	64.497.913	82.097.143	93.391.622	107.178.765	133.561.715	138.555.938	171.874.028	192.969.162	227.036.308	257.032.308
	YoY Change		22%	3%	27%	14%	15%	25%	4%	24%	12%	18%	13%
19	Provisions	1.690.522	1.843.147	2.568.896	3.099.532	3.493.802	3.631.589	4.204.926	5.380.105	5.842.456	6.450.399	7.093.746	7.544.609
20	Bills Payable / Other Payables	923.279	1.229.612	1.554.042	1.661.790	1.955.547	2.553.160	3.340.955	3.674.259	4.337.257	5.508.091	6.850.381	8.602.506
21	Other Liabilities	592.101	383.109	956.204	1.244.446	888.805	1.419.176	2.639.544	5.115.103	4.867.179	3.533.256	2.702.159	2.485.509
22	Total Liabilities	54.466.860	65.794.600	69.577.055	88.102.911	99.729.776	114.782.690	143.747.140	152.725.405	186.920.920	208.460.908	243.682.594	275.664.932
	YoY Change		27%	6%	27%	13%	15%	25%	6%	22%	12%	17%	13%
C	EQUITY												
23	Share Capital	1.972.636	2.760.279	2.760.279	2.760.279	3.083.333	4.503.694	4.503.694	4.503.694	4.503.694	4.503.694	4.503.694	4.503.694
	YoY Change		40%	0	0	0	46%	0%	0%	0	0%	0%	0%
24	Reserves	3.814.984	3.792.460	4.823.761	5.801.473	6.711.449	6.985.994	9.243.035	11.173.765	13.899.668	16.445.763	19.095.179	21.415.987
25	Revaluation Reserves	1.997.815	1.366.380	1.318.015	(622.149)	1.324.956	2.515.214	1.480.456	3.704.587	1.985.698	4.952.476	5.317.187	5.280.410
26	Retained Earnings	1.502.495	1.491.039	1.701.807	1.509.408	2.373.790	3.008.902	2.694.179	3.336.999	3.190.057	3.409.134	3.118.930	4.760.890
27	Total Equity	9.287.930	9.410.158	10.603.862	9.449.011	13.493.528	17.013.804	17.921.364	22.719.045	23.579.117	29.311.067	32.034.990	35.960.981
	YoY Change		1%	13%	-13%	43%	26%	5%	27%	4%	24%	9%	12%
28	Total Liabilities & Equity	63.754.790	75.204.758	80.180.917	97.551.922	113.223.304	131.796.494	161.668.504	175.444.450	210.500.037	237.771.975	275.717.584	311.625.913

Annex 9. İşbank Balance sheet (Liabilities and Equity) from 2005 to 2016

Akbank Income Statement (.000 TRY) FY 2005 – FY 2016

Other Information		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
1	Branches	860	883	916	868	878	913	927	962	986	991	902	841
2	Employees	1.186	1.333	1.513	1.527	1.474	1.530	1.539	1.615	1.624	1.630	1.405	1.843

Akbank Income Statement (Unconsolidated)		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in thousand TL		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
1	Total Interest Income	3.306.708	3.586.848	3.481.572	3.700.358	3.155.217	3.635.705	3.101.405	3.289.479	3.422.042	3.093.863	3.104.804	3.018.311
	YoY Change		24%	29%	14%	-6%	5%	24%	1%	23%	7%	19%	
1.1	Interest Income on Customer Loans	2.766.210	3.930.016	5.205.880	6.033.285	4.859.444	4.093.105	5.062.567	7.190.129	8.101.052	10.303.447	11.991.681	14.537.886
1.2	Interest Income from Banks and Money Market	123.445	222.865	281.693	306.021	136.378	85.353	16.780	38.451	16.222	46.345	203.029	327.365
1.3	Interest Income on Securities	2.415.708	2.431.024	2.988.265	3.351.357	4.152.879	4.452.383	4.017.477	4.057.346	3.287.587	3.706.507	2.879.319	3.122.563
1.4	Other Interest Income	2.386	2.943	5.734	9.695	6.516	4.864	4.581	3.553	17.181	37.564	30.775	30.497
2	Total Interest Expense	2.709.791	2.046.821	2.239.865	2.212.528	2.561.834	2.358.889	2.108.510	2.089.132	2.248.205	2.172.591	2.909.944	2.071.770
	YoY Change		49%	29%	19%	-27%	17%	19%	17%	37%	10%	27%	
2.1	Interest Expense on Customer Deposits	2.106.677	3.177.288	3.938.945	4.829.917	3.538.634	3.529.259	3.924.421	4.707.016	3.938.904	5.316.381	5.979.397	7.877.903
2.2	Interest Expense on Borrowings	600.728	864.818	1.287.437	1.373.565	1.014.620	820.348	1.165.049	1.353.707	1.280.617	1.823.468	1.895.516	2.154.572
2.3	Other Interest Expense	2.386	4.715	13.483	9.046	8.580	9.282	19.040	28.409	28.684	32.742	35.031	39.295
3	Net Interest Income	596.917	540.027	2.41.707	487.830	593.383	276.816	992.895	200.347	173.837	921.272	194.860	946.541
	YoY Change		-2%	28%	8%	32%	-7%	30%	19%	12%	4%	10%	
4	Total Non-Interest Operating Income	192.524	404.695	1.635.294	1.907.492	2.003.182	2.232.814	2.090.560	2.607.983	3.031.867	3.882.675	3.026.242	2.466.870
	YoY Change		18%	16%	17%	5%	11%	-6%	25%	16%	-5%	5%	
4.1	Net Gains/(Losses) on Trading	188.805	147.021	(17.950)	(120.073)	250.912	425.802	431.464	1.254.249	643.047	707.037	211.903	156.720
4.2	Net Gains/(Losses) on Derivatives	0	0	0	0	(171.144)	(437.907)	(191.259)	(1.403.125)	803.271	(1.352.142)	(529.940)	1.089.735
4.3	Net Gains/(Losses) on Foreign Currency	73.782	(90.380)	167.249	164.793	75.345	45.033	(359.387)	548.977	(978.614)	534.382	372.849	(289.006)
4.4	Net Fees and Commissions	636.367	806.921	946.358	1.091.896	1.279.844	1.309.097	1.578.520	1.735.092	2.163.749	2.358.780	2.354.254	2.397.947
4.5	Other Operating Income	293.570	541.133	539.637	770.876	568.225	890.789	631.222	472.790	400.414	634.618	617.176	901.474
5	Total Non-Interest Expenses	330.004	377.279	1.696.287	1.872.262	2.183.998	2.416.825	2.434.173	2.897.702	3.448.001	3.712.664	3.213.815	2.799.941
	YoY Change		19%	8%	29%	0%	11%	1%	19%	19%	8%	13%	
5.1	Personnel Expenses	421.738	549.848	615.950	833.754	817.677	877.517	960.371	1.163.879	1.379.445	1.436.687	1.593.719	1.702.143
5.2	Other Operating Expenses	908.266	1.027.431	1.080.337	1.353.508	1.366.321	1.539.308	1.473.802	1.733.823	2.068.556	2.275.977	2.620.096	2.577.798
6	Pre-impairment Operating Profit	459.437	367.443	1.80.714	208.060	412.567	812.567	649.282	707.628	575.703	1.612.837	607.287	666.597
	YoY Change		-4%	34%	1%	38%	-7%	-11%	35%	17%	6%	-1%	
7	Loan Impairment Charge	299.879	374.457	625.131	998.574	993.679	348.175	302.011	657.026	1.066.526	1.520.251	1.757.858	1.790.722
8	Securities and Other Credit Impairment Charges	48.056	56.424	94.461	149.529	123.249	170.600	346.064	450.497	837.570	533.066	421.758	425.198
9	Operating Profit	111.502	936.562	1.112.222	1.059.957	295.639	3.574.030	1.001.207	803.069	853.607	1.037.966	827.671	697.550
	YoY Change		-8%	27%	-16%	60%	8%	-16%	27%	1%	5%	-5%	
10	Non-recurring Income												
11	Non-recurring Expenses												
12	Other Non-operating Expenses												
13	Pre-tax Profit	111.502	936.562	1.112.222	1.059.957	295.639	3.574.030	1.001.207	803.069	853.607	1.037.966	827.671	697.550
	YoY Change		-8%	27%	-16%	60%	8%	-16%	27%	1%	5%	-5%	
14	Tax Expense	644.710	336.370	466.828	355.404	569.657	717.501	606.680	853.207	911.565	878.288	832.823	1.168.838
15	Profit/Loss from Discontinued Operations	0	0	0	0	0	0	0	0	0	0	0	0
16	Net Income	466.792	600.192	645.394	704.553	725.982	856.529	394.527	949.862	942.042	159.678	994.848	528.712
	YoY Change		9%	25%	-15%	60%	5%	-16%	23%	0%	7%	-5%	

Annex 10. Akbank Income Statement from 2005 to 2016

Akbank Balance sheet (.000 TRY)
Assets
FY 2005 – FY 2016

Akbank Balance Sheet (Unconsolidated)		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in thousand Exchange Rate		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
A ASSETS													
1	Net Loans	22.365.734	28.336.941	37.015.783	44.374.104	39.718.242	52.895.532	70.306.073	87.656.316	110.675.620	125.977.984	141.763.483	161.827.908
	YoY Change		27%	31%	20%	-10%	33%	33%	25%	26%	14%	13%	14%
1.1	Gross Loans	22.722.887	28.930.512	38.023.283	45.512.813	41.502.762	54.175.065	71.475.762	88.678.807	112.259.452	128.156.813	144.989.493	166.095.099
	YoY Change		27%	31%	20%	-9%	31%	32%	24%	27%	14%	13%	15%
1.2	NPLs	357.153	593.571	1.007.500	1.138.709	1.784.520	1.279.533	1.262.539	1.115.341	1.676.682	2.330.155	3.373.323	4.267.191
	YoY Change		66%	70%	13%	57%	-28%	-1%	-12%	50%	39%	45%	26%
1.3	Specific Provisions	357.153	593.571	1.007.500	1.138.709	1.784.520	1.279.533	1.169.689	1.022.491	1.583.832	2.178.829	3.226.010	4.112.221
	YoY Change		66%	70%	13%	57%	-28%	-9%	-13%	55%	38%	48%	27%
	Note: net charge-offs included in above	0	0	0	0	0	0	0	0	0	0	0	0
2	Interbank Loans and Deposits with Banks	2.031.096	2.177.402	1.333.366	4.103.625	2.959.861	1.783.851	2.818.773	2.698.214	4.945.218	5.456.312	7.858.297	9.972.809
3	Investment Securities	22.506.548	21.234.172	25.801.177	27.910.768	46.080.985	50.308.055	43.846.139	46.164.246	45.540.398	49.787.793	53.514.226	52.030.010
	YoY Change		-6%	22%	8%	65%	9%	-13%	5%	-1%	9%	7%	-3%
3.1	Held for Trading	6.510.907	6.550.760	4.800.570	141.042	150.593	564.451	132.991	19.479	61.625	5.264	11.613	0
3.2	Available for Sale	15.033.891	13.757.051	20.228.333	6.285.609	29.169.134	42.221.334	37.871.954	41.920.643	32.441.788	38.071.471	41.459.707	32.523.464
3.3	Held to Maturity	486.493	0	0	20.560.583	15.839.572	6.626.229	4.823.377	3.637.257	12.153.241	10.799.905	10.688.242	17.976.682
	Note: Govt. Securities included in above	21.967.400	20.301.699	25.026.203	6.388.594	45.104.445	49.268.721	42.070.829	43.915.755	42.235.108	43.243.009	45.996.098	44.702.580
3.4	Investments in Associates and Subsidiaries	475.257	926.361	772.274	923.534	921.686	896.041	1.017.817	586.867	883.744	911.153	1.354.664	1.529.864
4	Derivative Financial Instruments	6.136	58.816	42.420	78.832	163.188	467.296	827.264	531.126	2.340.960	1.685.881	3.365.157	8.532.447
5	Total Earning Assets	46.909.514	51.807.331	64.192.746	76.467.329	88.922.276	105.454.734	117.798.249	137.049.902	163.502.196	182.907.970	206.501.163	232.363.174
	YoY Change		10%	24%	19%	16%	19%	12%	16%	19%	12%	13%	13%
6	Cash with Central Bank	4.779.499	4.542.767	2.762.434	7.683.806	4.740.059	6.095.981	13.876.426	16.662.841	18.223.112	20.440.041	25.473.423	35.012.272
7	Fixed Assets	663.372	697.514	718.801	803.636	795.055	891.384	788.019	799.285	857.385	1.018.482	969.938	917.545
8	Other Assets	97.414	224.978	530.769	700.243	852.073	740.515	1.089.139	1.341.510	1.154.629	1.084.127	1.864.464	2.723.479
9	Total Non-Earning Assets	5.540.285	5.465.259	4.012.004	9.187.685	6.387.187	7.727.880	15.753.584	18.803.636	20.235.126	22.542.650	28.307.825	38.653.296
	YoY Change		-1%	-27%	129%	-30%	21%	104%	19%	8%	11%	26%	37%
10	Total Assets	52.449.799	57.272.590	68.204.750	85.655.014	95.309.463	113.182.614	133.551.833	155.853.538	183.737.322	205.450.620	234.808.988	271.016.470
	YoY Change		9%	19%	26%	11%	19%	18%	17%	18%	12%	14%	15%

Annex 11. Akbank Balance sheet (Assets) from 2005 to 2016

Akbank Balance sheet (.000 TRY)
Liabilities and Equity
FY 2005 – FY 2016

Akbank Balance Sheet Unconsolidated		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in thousand		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
B	LIABILITIES												
13	Customer Deposits	29.073.411	32.466.646	39.104.641	48.333.862	52.290.543	59.788.631	66.539.147	75.359.024	93.823.840	100.133.319	126.383.276	152.379.829
	YoY Change		12%	20%	24%	8%	14%	11%	13%	25%	7%	26%	21%
13,1	Current	5.110.815	5.682.415	6.422.977	6.254.095	7.525.292	8.489.131	9.271.869	12.763.896	16.377.900	18.204.611	21.185.897	28.338.696
13,2	Saving	9.820.726	12.151.317	15.245.962	18.849.985	20.110.514	22.522.145	24.846.199	26.710.445	30.179.035	35.244.165	37.760.859	41.879.637
13,3	Term	23.962.596	26.784.231	32.681.664	42.079.767	44.765.251	51.299.500	57.267.278	62.595.128	77.445.940	81.928.708	105.197.379	124.041.133
14	Deposits from Banks	2.661.558	1.734.860	1.939.640	3.848.085	3.560.829	7.378.267	10.275.110	10.745.694	11.452.798	13.240.082	12.559.221	6.498.363
15	Interbank Money Market Borrowings	5.396.035	4.920.666	4.414.565	8.104.978	13.431.108	11.210.726	12.784.840	19.713.926	22.398.708	27.440.603	22.829.108	25.383.017
	YoY Change		-9%	-10%	84%	66%	-17%	14%	54%	14%	23%	-17%	11%
16	Total Other Funds Borrowed	7.334.032	9.209.469	8.854.501	11.298.774	8.152.332	12.897.594	21.274.072	20.502.982	26.170.196	30.504.569	34.979.405	40.684.430
	YoY Change		26%	-4%	28%	-28%	58%	65%	-4%	28%	17%	15%	16%
16,1	Funds Borrowed from Banks	7.329.873	9.209.469	8.854.501	11.298.774	8.152.332	10.375.333	16.770.155	14.038.299	18.117.277	20.988.726	23.713.338	30.066.936
16,2	Securities Issued	0	0	0	0	0	2.522.261	4.503.917	6.464.683	8.052.919	9.515.843	11.266.067	10.617.494
16,3	Subordinated Borrowings	4.159	0	0	0	0	0	0	0	0	0	0	0
16,4	Other Funding	0	0	0	0	0	0	0	0	0	0	0	0
17	Derivative Financial Instruments	43.969	46.192	87.024	273.734	693.666	699.932	770.626	1.192.287	1.181.607	1.013.938	1.604.402	4.612.453
18	Total Interest Bearing Liabilities	44.509.005	48.377.833	54.400.371	71.859.433	78.128.478	91.975.150	111.643.795	127.513.913	155.027.149	172.332.511	198.355.412	229.558.092
	YoY Change		9%	12%	32%	9%	18%	21%	14%	22%	11%	15%	16%
19	Provisions	301.056	361.831	496.066	651.766	729.947	821.705	1.077.174	1.473.265	2.252.948	2.642.832	3.165.726	3.516.125
20	Bills Payable/Other Payables	653.972	813.487	970.078	944.931	1.220.408	1.645.511	2.345.037	2.805.173	3.503.137	3.406.804	4.525.719	5.204.695
21	Other Liabilities	628.317	654.042	1.737.402	990.512	1.039.790	1.175.113	931.567	2.148.509	1.614.910	1.956.647	2.072.954	2.082.976
22	Total Liabilities	46.092.350	50.207.193	57.603.917	74.446.642	81.118.623	95.617.479	115.997.573	133.940.860	162.398.144	180.338.794	208.119.811	240.361.888
	YoY Change		15%	15%	29%	9%	18%	21%	15%	21%	11%	15%	15%
C	EQUITY												
23	Share Capital	1.800.005	2.200.000	4.700.000	4.700.000	4.700.000	5.700.000	5.700.000	5.700.000	5.700.000	5.700.000	5.700.000	5.700.000
	YoY Change		22%	1	0	0	21%	0%	0%	0%	0%	0%	0%
24	Reserves	2.818.815	3.395.294	3.710.663	4.976.421	6.311.140	7.510.912	9.752.634	11.728.566	14.106.483	16.576.414	19.115.466	21.495.735
25	Revaluation Reserves	271.837	(130.089)	195.876	(27.302)	809.856	1.789.523	(137.201)	1.723.030	(1.308.308)	(246.714)	(1.065.655)	(1.110.659)
26	Retained Earnings	1.466.792	1.600.192	1.994.294	1.559.253	2.369.844	2.564.700	2.238.827	2.761.082	2.841.003	3.082.126	2.939.366	4.569.506
27	Total Equity	6.357.449	7.065.397	10.600.833	11.208.372	14.190.840	17.565.135	17.554.260	21.912.678	21.339.178	25.111.826	26.689.177	30.654.582
	YoY Change		11%	50%	6%	27%	24%	0%	25%	-3%	18%	6%	15%
28	Total Liabilities & Equity	52.449.799	57.272.590	68.204.750	85.655.014	95.309.463	113.182.614	133.551.833	155.853.538	183.737.322	205.450.620	234.808.988	271.016.470

Annex 12. Akbank Balance sheet (Liabilities and Equity) from 2005 to 2016

Garanti Bank Income Statement (.000 TRY) FY 2005 – FY 2016

Garanti Bank Income Statement - Unconsolidated		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in Thousand		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
1	Total Interest Income	1,467,476	1,063,150	1,216,606	1,378,392	1,441,368	1,499,876	1,483,529	2,670,471	2,741,425	5,085,537	7,420,007	9,915,217
	YoY Change		46%	43%	30%	11%	-9%	10%	21%	1%	18%	15%	20%
1.1	Interest Income from Customer Loans	1,974,921	2,858,896	4,254,452	5,757,266	6,003,840	5,308,907	6,593,311	8,441,212	9,070,992	11,110,958	13,647,803	16,783,444
1.2	Interest Income from Banks and Money Market	115,480	242,429	454,908	486,935	371,637	315,148	239,700	224,271	149,535	145,466	141,163	333,506
1.3	Interest Income from Securities	1,326,950	1,691,873	2,214,573	2,955,527	3,917,937	3,742,070	3,542,346	3,879,817	3,408,445	3,687,727	3,457,696	3,577,267
1.4	Other Interest Income	50,125	269,952	292,673	178,664	147,954	133,751	108,172	125,171	112,453	141,386	173,345	221,000
2	Total Interest Expense	1,792,816	1,161,344	1,412,503	1,200,432	1,361,386	1,745,136	1,794,581	1,951,539	1,385,794	7,642,849	1,178,674	1,818,275
	YoY Change		76%	40%	41%	-14%	-11%	22%	20%	-8%	20%	7%	20%
2.1	Interest Expense from Customer Deposits	1,413,786	2,316,654	3,073,561	4,318,410	3,936,377	3,598,786	3,956,602	4,946,321	4,468,817	5,106,074	5,685,660	6,883,319
2.2	Interest Expense from Borrowings	372,036	840,757	1,331,250	1,872,669	1,421,159	1,140,585	1,826,823	1,993,753	1,890,925	2,525,057	2,473,409	2,907,907
2.3	Other Interest Expense	6,994	3,933	7,692	9,353	3,850	5,765	11,156	11,465	26,052	11,718	19,605	27,049
3	Net Interest Income	1,674,660	1,901,806	2,804,103	1,177,960	5,079,982	1,754,740	1,688,948	1,718,932	1,355,631	7,442,688	2,413,333	1,096,942
	YoY Change		14%	47%	13%	60%	-6%	-1%	22%	11%	17%	24%	20%
4	Total Non-Interest Operating Income	1,030,845	1,217,870	1,129,068	2,092,864	3,010,801	2,822,740	2,247,923	2,923,094	3,425,473	2,239,522	2,768,724	3,731,626
	YoY Change		18%	75%	-2%	44%	-6%	15%	-10%	17%	-5%	-15%	35%
4.1	Net Gains/(Losses) from Trading	(6,418)	24,875	(335,029)	529,426	361,107	202,344	317,089	548,795	192,563	(144,144)	514,559	290,027
4.2	Net Gains/(Losses) from Derivatives	0	0	0	0	379,039	123,967	353,190	(337,704)	(118,984)	(1,102,829)	(2,231,685)	(742,585)
4.3	Net Gains/(Losses) from Foreign Currency	122,879	(81,147)	199,125	(278,131)	140,552	37,614	(337,967)	403,338	223,363	1,052,806	641,508	(338,683)
4.4	Net Fees and Commissions	737,637	1,014,451	1,197,703	1,441,128	1,771,914	1,815,536	2,007,521	2,007,605	2,615,473	2,949,020	2,922,551	3,151,738
4.5	Other Operating Income	176,747	259,691	1,067,269	400,441	358,189	643,279	908,090	301,060	513,058	484,669	921,791	1,371,129
5	Total Non-Interest Expenses	1,308,339	1,465,052	1,823,411	2,542,390	2,699,441	3,040,830	3,206,325	3,540,901	3,206,165	7,113,014	1,883,301	1,118,538
	YoY Change		12%	24%	39%	6%	13%	5%	10%	19%	12%	25%	4%
5.1	Personnel Expenses	443,853	531,928	699,515	962,916	994,048	1,160,623	1,370,884	1,501,004	1,666,456	1,928,327	2,215,481	2,466,135
5.2	Other Operating Expenses	864,486	933,124	1,123,896	1,579,474	1,705,393	1,880,207	1,835,441	2,039,897	2,539,709	2,784,687	3,667,820	3,652,403
6	Pre-Impairment Operating Profit	1,397,166	1,654,624	1,109,760	2,728,434	3,391,342	3,536,650	3,730,546	3,101,125	5,574,939	5,969,196	1,126,756	1,710,030
	YoY Change		18%	88%	-12%	98%	-16%	4%	8%	9%	7%	3%	42%
7	Loan Impairment Charge	318,661	165,886	190,874	418,629	1,212,401	386,767	308,573	763,845	853,222	1,164,441	1,560,847	2,366,782
8	Securities and Other Credit Impairment Charges	127,996	159,375	146,770	147,817	400,413	197,530	513,824	413,990	770,602	642,292	657,347	448,082
9	Operating Profit	950,509	1,329,363	2,772,116	1,161,988	3,778,528	1,952,353	1,908,149	1,923,290	1,951,115	1,162,463	1,908,562	1,895,166
	YoY Change		40%	109%	-22%	75%	5%	-1%	0%	1%	5%	-6%	51%
10	Non-recurring Income											300,315	398,272
11	Non-recurring Expenses												
12	Other Non-operating Expenses												
13	Pre-tax Profit	950,509	1,329,363	2,772,116	1,161,988	3,778,528	1,952,353	1,908,149	1,923,290	1,951,115	1,162,463	1,908,877	1,293,438
	YoY Change		40%	109%	-22%	75%	5%	-1%	0%	1%	5%	4%	46%
14	Tax Expense	229,228	265,700	456,500	411,500	816,287	807,120	837,574	852,965	945,555	962,215	902,370	1,222,889
15	Profit/Loss from Discontinued Operations	0	0	0	0	0	0	0	0	0	0	0	0
16	Net Income	721,281	1,063,663	2,315,616	750,488	2,962,241	1,145,233	1,070,575	1,070,325	1,005,560	2,000,248	1,406,507	70,549
	YoY Change		47%	118%	-24%	69%	6%	-2%	0%	-2%	6%	6%	45%

Annex 13. Garanti Bank Income Statement from 2005 to 2016

Garanti Bank Balance sheet (.000 TRY)

Assets

FY 2005 – FY 2016

Garanti Bank		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Balance Sheet Unconsolidated		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
Amounts in Thousand		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
Exchange Rate													
A ASSETS													
1	Net Loans	17.155.797	27.350.490	37.217.886	49.907.407	49.732.695	64.827.310	83.813.302	91.824.492	118.671.399	134.057.798	159.139.923	186.048.228
	YoY Change		59%	36%	34%	0%	30%	29%	10%	29%	13%	19%	17%
1.1	Gross Loans	17.870.735	27.987.079	38.064.424	51.147.146	51.969.800	66.766.419	85.065.017	93.535.686	120.727.867	136.731.759	162.707.621	191.321.002
	YoY Change		57%	36%	34%	2%	28%	27%	10%	29%	13%	19%	18%
1.2	NPLs	714.938	636.589	846.538	1.239.739	2.237.105	1.939.109	1.532.087	2.114.073	2.538.430	3.300.829	4.404.025	5.272.774
	YoY Change		-11%	33%	46%	80%	-13%	-21%	38%	20%	30%	33%	20%
1.3	Specific Provisions	477.515	451.244	539.523	789.593	1.812.463	1.587.549	1.251.715	1.711.194	2.056.468	2.673.961	3.567.698	4.267.491
	YoY Change		-6%	20%	46%	130%	-12%	-21%	37%	20%	30%	33%	20%
	Note: net charge-offs included in above	0	0	0	0	0	0	0	0	0	0	0	0
2	Interbank Loans and Deposits with Banks	1.024.549	896.442	3.132.983	4.841.587	9.334.518	8.321.185	14.343.951	7.746.351	9.941.193	8.520.395	11.908.564	12.670.617
3	Investment Securities	12.069.203	14.986.275	17.731.214	25.832.973	36.816.084	40.502.589	36.780.444	40.481.566	39.484.970	44.958.338	47.123.788	48.878.758
	YoY Change		24%	18%	46%	43%	10%	-9%	10%	-2%	14%	5%	4%
3.1	Held for Trading	202.394	134.169	96.255	30.062	341.925	587.802	1.005.860	632.771	654.926	592.905	364.978	115.443
3.2	Available for Sale	8.749.449	9.627.930	13.086.190	17.345.781	28.095.033	32.336.210	28.799.644	35.874.779	21.630.082	20.051.986	20.519.801	19.912.569
3.3	Held to Maturity	2.475.574	4.618.847	3.943.765	7.617.297	7.346.161	5.893.931	4.786.530	1.364.383	13.984.435	21.014.502	21.755.812	23.640.184
	Note: Govt. Securities included in above	11.381.482	14.304.994	15.730.079	22.943.598	33.680.244	36.170.511	32.130.286	35.331.926	32.979.481	36.152.660	36.626.981	37.191.371
3.4	Investments in associates and Subsidiaries	641.786	605.329	605.004	839.833	1.032.965	1.684.646	2.188.410	2.609.633	3.215.527	3.298.945	4.483.197	5.210.562
4	Derivative financial Instruments	9.888	19.089	81.345	705.196	572.867	392.113	780.317	550.705	1.261.650	1.457.264	2.164.486	3.980.199
5	Total Earning Assets	30.259.437	43.252.296	58.163.428	81.287.163	96.456.164	114.043.197	135.718.014	140.603.114	169.359.212	188.993.795	220.336.761	251.577.802
	YoY Change		43%	34%	40%	19%	18%	19%	4%	20%	12%	17%	14%
6	Cash with Central Bank	4.103.895	5.276.872	7.227.867	5.531.574	6.865.973	7.510.032	8.261.151	16.112.682	22.528.098	25.072.652	25.151.523	23.785.134
7	Fixed Assets	1.366.733	1.000.600	1.137.808	1.166.000	1.223.742	1.299.369	1.365.370	1.412.877	1.657.102	1.675.898	3.802.474	4.648.844
8	Other Assets	695.397	757.145	1.049.379	956.123	916.175	1.110.834	1.297.906	2.063.818	3.351.796	3.176.159	5.051.828	4.143.620
9	Total Non-Earning Assets	6.166.025	7.034.617	9.415.054	7.653.697	9.005.890	9.920.235	10.924.427	19.589.377	27.536.996	29.924.709	34.005.825	32.577.598
	YoY Change		14%	34%	-19%	18%	10%	10%	79%	41%	9%	14%	-4%
10	Total Assets	36.425.462	50.286.913	67.578.482	88.940.860	105.462.054	123.963.432	146.642.441	160.192.491	196.896.208	218.918.504	254.342.586	284.155.400
	YoY Change		38%	34%	32%	19%	18%	18%	9%	23%	11%	16%	12%

Annex 14. Garanti Bank Balance sheet (Assets) from 2005 to 2016

**Garanti Bank Balance sheet (.000 TRY)
Liabilities and Equity
FY 2005 – FY 2016**

Garanti Bank Balance Sheet - Unconsolidated		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in Thousand		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
B	LIABILITIES												
13	Customer Deposits	22.253.159	29.124.762	37.510.551	51.048.732	60.478.962	70.250.109	82.559.434	83.677.818	101.571.690	114.941.674	135.378.353	157.513.051
	YoY Change		31%	29%	36%	18%	16%	18%	1%	21%	13%	18%	16%
13.1	Current	5.195.978	6.385.772	7.043.108	7.816.619	9.876.596	11.755.747	16.737.222	17.254.564	15.109.579	16.138.660	29.665.353	35.952.232
13.2	Saving	5.805.353	8.257.614	11.389.706	16.975.380	19.010.315	24.396.807	27.432.320	29.802.896	33.663.283	36.753.529	39.155.001	44.265.684
13.3	Term	17.057.181	22.738.990	30.467.443	43.232.113	50.602.366	58.494.362	65.822.212	66.423.254	86.462.111	98.803.014	105.713.000	121.560.819
14	Deposits from Banks	580.211	1.014.275	1.587.551	1.666.549	2.329.083	2.408.310	1.983.341	3.804.601	4.901.898	5.366.307	5.520.979	3.718.546
15	Interbank/Money/Market Borrowings	1.964.951	4.813.893	8.176.891	10.702.943	10.534.704	11.254.143	10.954.991	13.499.523	14.584.234	11.385.920	15.068.161	9.769.387
	YoY Change		145%	70%	31%	-2%	7%	-3%	23%	8%	-22%	32%	-35%
16	Total Other Funds Borrowed	5.560.155	7.890.405	9.155.044	11.625.084	13.881.832	17.518.038	25.309.156	27.657.021	40.005.973	45.816.423	47.796.358	56.723.247
	YoY Change		42%	16%	27%	19%	26%	44%	9%	45%	15%	4%	19%
16.1	Funds Borrowed from Banks	5.560.155	7.890.405	8.558.644	10.843.446	13.007.474	16.633.312	20.523.657	21.677.630	29.478.093	32.323.410	33.437.797	40.286.368
16.2	Securities Issued	0	0	0	0	0	0	3.704.097	5.862.140	10.380.389	13.352.247	14.198.769	16.436.879
16.3	Subordinated Borrowings	0	0	596.400	781.638	874.358	884.726	1.081.402	117.251	147.491	140.766	159.792	0
16.4	Other Funding	0	0	0	0	0	0	0	0	0	0	0	0
17	Derivative Financial Instruments	31.879	222.902	451.526	419.967	232.248	463.890	775.099	871.031	1.423.801	1.853.626	2.514.128	3.776.158
18	Total Interest Bearing Liabilities	30.390.355	43.066.237	56.881.563	75.463.275	87.456.829	101.894.490	121.582.021	129.509.994	162.487.596	179.363.950	206.277.979	231.500.389
	YoY Change		42%	32%	33%	16%	17%	19%	7%	25%	10%	15%	12%
19	Provisions	311.918	427.129	561.338	804.431	1.042.566	1.306.903	1.831.146	2.276.967	3.001.809	3.691.967	4.250.064	4.614.004
20	Bills Payable/Other Payables	1.043.474	1.371.568	1.886.303	1.973.088	2.364.528	2.942.930	3.557.336	4.588.270	5.634.329	6.817.168	8.347.820	9.105.231
21	Other Liabilities	839.006	751.686	1.366.159	1.230.992	1.282.444	1.344.593	2.095.119	2.508.009	3.187.490	3.044.545	4.485.668	3.396.696
22	Total Liabilities	32.584.753	45.616.620	60.695.363	79.471.786	92.146.367	107.488.916	129.065.622	138.883.240	174.311.224	192.917.630	223.361.531	248.616.320
	YoY Change			33%	31%	16%	17%	20%	8%	26%	11%	16%	11%
C	EQUITY												
23	Share Capital	2.100.000	2.100.000	2.100.000	4.211.880	4.211.880	4.211.880	4.211.880	4.211.880	4.211.880	4.211.880	4.211.880	4.211.880
	YoY Change		0%	0	1	0	0%	0%	0%	0	0%	0%	0%
24	Reserves	822.580	1.364.765	2.202.739	2.521.008	3.995.588	6.607.660	9.148.600	11.473.572	14.301.912	16.824.648	21.200.503	24.054.666
25	Revaluation Reserves	188.430	164.385	237.921	989.607	2.209.340	2.571.997	1.207.487	2.614.808	1.087.723	1.830.890	2.073.867	2.248.580
26	Retained Earnings	729.699	1.041.143	2.342.459	1.746.579	2.898.879	3.082.979	3.008.852	3.008.991	2.983.469	3.133.456	3.494.805	5.023.954
27	Total Equity	3.840.709	4.670.293	6.883.119	9.469.074	13.315.687	16.474.516	17.576.819	21.309.251	22.584.984	26.000.874	30.981.055	35.539.080
	YoY Change		22%	47%	38%	41%	24%	7%	21%	6%	15%	19%	15%
28	Total Liabilities & Equity	36.425.462	50.286.913	67.578.482	88.940.860	105.462.054	123.963.432	146.642.441	160.192.491	196.896.208	218.918.504	254.342.586	284.155.400

Annex 15. Garanti Bank Balance sheet (Liabilities and Equity) from 2005 to 2016

Şekerbank Income Statement (.000 TRY) FY 2005 – FY 2016

Other Information		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
1	Branches	0203	0209	0235	0250	0256	0260	0272	0272	0312	0312	0301	0273
2	Employees	03.405	03.368	03.824	04.088	03.937	03.484	03.530	03.565	04.150	04.460	04.078	03.611

Şekerbank Income Statement (Inconsolidated)		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in Thousands		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
1	Total Interest Income	036.968	002.857	014.782	0321.601	0259.328	01079.653	0369.965	0731.225	0575.623	0099.702	0283.308	0504.986
	YoY Change		-6%	82%	44%	-5%	-14%	27%	36%	-9%	33%	9%	10%
1.1	Interest Income from Customer Loans	348.573	323.026	693.756	954.802	905.651	830.699	1.031.083	1.442.664	1.431.970	1.880.497	2.035.110	2.221.040
1.2	Interest Income from Banks and Money Market	12.332	18.604	29.410	29.393	17.441	10.021	899	1.014	4.399	6.529	11.585	28.564
1.3	Interest Income from Securities	162.357	152.383	188.559	337.158	334.559	238.388	335.826	282.653	138.136	210.943	235.665	245.365
1.4	Other Interest Income	13.706	8.844	3.057	248	1.677	545	2.157	4.894	1.118	1.733	948	10.017
2	Total Interest Expense	042.215	068.929	075.569	085.010	044.534	0517.107	004.564	095.669	058.685	0121.722	0226.923	0419.990
	YoY Change		11%	7%	46%	-22%	-8%	5%	11%	-15%	48%	9%	16%
2.1	Interest Expense from Customer Deposits	197.892	238.986	418.126	554.238	463.559	415.036	587.025	671.568	600.204	860.101	899.019	1.041.414
2.2	Interest Expense from Borrowings	6.466	4.581	52.040	133.718	61.764	92.618	210.520	215.694	146.170	250.552	305.821	346.881
2.3	Other Interest Expense	37.857	25.362	5.403	7.054	19.211	9.453	7.019	8.407	12.311	11.069	22.083	31.695
3	Net Interest Income	094.753	033.928	039.213	026.591	014.794	062.546	065.401	035.556	016.938	077.980	056.385	0084.996
	YoY Change		-21%	88%	43%	-14%	-21%	1%	48%	-2%	20%	8%	3%
4	Total Non-Interest Operating Income	066.187	052.746	013.860	051.080	042.457	089.174	011.515	019.447	093.623	098.934	012.614	070.362
	YoY Change		52%	-15%	-29%	-6%	103%	8%	35%	-6%	1%	-22%	50%
4.1	Net Gains/(Losses) from Trading	(13.031)	10.547	(83.812)	(18.733)	36.756	97.795	6.516	28.795	8.542	45.834	10.376	27.911
4.2	Net Gains/(Losses) from Derivatives	0	0	0	0	(105.466)	(99.921)	(11.226)	(11.537)	135.857	(179.792)	(86.553)	(44.806)
4.3	Net Gains/(Losses) from Foreign Currency	25.140	(19.033)	78.499	(147.136)	(11.810)	49.414	8.327	7.498	(145.011)	99.827	(142.392)	(92.626)
4.4	Net Fees and Commissions	98.831	102.302	90.805	93.955	103.082	110.494	183.010	199.217	225.769	245.691	285.916	287.212
4.5	Other Operating Income	55.247	158.930	128.368	222.994	119.895	131.392	124.888	195.474	168.466	187.374	245.267	292.671
5	Total Non-Interest Expenses	060.029	059.088	027.546	024.981	090.827	046.499	013.721	021.239	008.096	052.622	087.003	
	YoY Change		0%	25%	32%	-1%	15%	11%	12%	18%	11%	7%	4%
5.1	Personnel Expenses	123.726	140.325	164.693	203.730	217.355	226.843	228.044	245.530	280.229	341.636	360.022	348.997
5.2	Other Operating Expenses	136.303	118.763	158.107	223.816	207.626	263.984	318.455	368.191	441.010	458.460	492.600	538.006
6	Pre-impairment Operating Profit	000.911	027.586	030.273	050.125	032.270	060.893	030.417	041.282	089.322	076.818	016.377	068.355
	YoY Change		13%	43%	6%	23%	-17%	-8%	94%	-24%	18%	-10%	29%
7	Loan Impairment Charges	123.641	82.541	122.918	97.740	187.404	97.056	140.965	256.984	197.564	250.464	346.716	492.998
8	Securities and Other Credit Impairment Charges	27.795	68.998	58.444	70.641	46.309	49.726	31.896	73.613	27.419	45.653	84.415	35.742
9	Operating Profit	09.475	06.047	048.911	081.744	098.557	014.111	057.556	010.685	064.339	080.701	05.246	039.615
	YoY Change		54%	96%	22%	9%	8%	-26%	97%	-15%	6%	-70%	64%
10	Non-recurring Income	0	0	0	0	0	0	0	0	0	0	0	0
11	Non-recurring Expenses	0	0	0	0	0	0	0	0	0	0	0	0
12	Other Non-operating Expenses	0	0	0	0	0	0	0	0	0	0	0	0
13	Pre-tax Profit	09.475	06.047	048.911	081.744	098.557	014.111	057.556	010.685	064.339	080.701	05.246	039.615
	YoY Change		54%	96%	22%	9%	8%	-26%	97%	-15%	6%	-70%	64%
14	Tax Expense	15.218	24.060	26.050	37.437	46.069	43.864	39.512	70.383	54.123	56.732	(17.403)	14.421
15	Profit/Loss from Discontinued Operations	0	0	0	0	0	0	0	0	0	0	0	0
16	Net Income	04.257	02.001	022.861	044.307	052.488	070.247	018.044	040.302	010.216	023.969	002.649	025.194
	YoY Change		52%	136%	17%	6%	12%	-31%	104%	-13%	7%	-54%	22%

Annex 16. Şekerbank Income Statement from 2005 to 2016

Şekerbank Balance sheet (.000 TRY)
Assets
FY 2005 – FY 2016

Şekerbank Balance Sheet (Unconsolidated)		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in thousands		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
A	ASSETS												
1	Net Loans	1.158.371	1.995.215	3.614.433	4.799.814	4.906.173	7.006.238	8.510.111	9.973.522	13.501.744	14.632.850	16.725.908	17.605.982
	YoY Change		72%	81%	33%	2%	43%	21%	17%	35%	8%	14%	5%
1.1	Gross Loans	1.374.963	2.240.813	3.761.702	5.035.787	5.308.257	7.467.975	8.786.075	10.200.753	13.869.189	15.150.590	17.270.594	18.685.100
	YoY Change		63%	68%	34%	5%	41%	18%	16%	36%	9%	14%	8%
1.2	NPLs	216.592	245.598	147.269	235.973	402.084	461.737	503.852	380.675	691.800	838.130	1.009.425	1.079.118
	YoY Change		13%	-40%	60%	70%	15%	9%	-24%	82%	21%	20%	7%
1.3	Specific Provisions	216.592	245.598	147.269	150.589	297.825	342.775	275.964	227.231	367.445	517.740	544.686	495.419
	YoY Change		13%	-40%	2%	98%	15%	-19%	-18%	62%	41%	5%	-9%
	Note: Net charge-offs included in above	0	0	0	0	0	0	0	0	0	0	0	0
2	Interbank Loans and Deposits with Banks	184.811	283.583	205.750	72.388	56.923	87.143	106.127	182.370	177.519	197.834	86.606	75.747
3	Investment Securities	1.368.305	1.230.699	1.395.785	2.285.492	3.100.354	3.117.388	3.866.734	2.249.382	1.847.131	2.564.956	3.132.890	2.642.067
	YoY Change		-10%	13%	64%	36%	1%	24%	-42%	-18%	39%	22%	-16%
3.1	Held for Trading	285.808	231.839	75.644	15.947	638.787	519.379	228.724	121.902	52.793	28.981	21.627	19.092
3.2	Available for Sale	782.252	821.572	1.166.036	819.088	1.029.360	1.512.689	2.879.916	1.024.844	465.709	1.055.934	1.723.768	1.412.165
3.3	Held to Maturity	239.593	117.521	82.675	1.398.881	1.368.180	988.089	659.278	991.769	1.216.770	1.364.849	1.268.303	1.061.618
	Note: Govt. Securities included in above	1.068.011	1.053.360	1.324.296	2.230.598	2.521.227	2.502.611	3.544.529	2.013.349	1.683.830	2.420.731	2.994.726	2.473.872
3.4	Investments in Associates and Subsidiaries	60.652	59.767	71.430	51.576	64.027	97.231	98.816	110.867	111.859	115.192	119.192	149.192
4	Derivative Financial Instruments	731	1.180	3.685	79.632	63.707	76.797	54.486	31.198	102.000	150.161	138.264	192.864
5	Total Earning Assets	2.712.218	3.510.677	5.219.653	7.237.326	8.127.157	10.287.566	12.537.458	12.436.472	15.628.394	17.545.801	20.083.668	20.516.660
	YoY Change		29%	49%	39%	12%	27%	22%	-1%	26%	12%	14%	2%
6	Cash with Central Bank	266.348	306.754	427.552	479.415	470.183	693.023	1.387.028	1.484.599	2.299.070	2.302.110	2.781.176	1.483.373
7	Fixed Assets	91.118	126.011	183.417	211.947	210.947	232.644	299.110	404.759	560.582	916.452	975.742	1.057.683
8	Other Assets	96.830	62.872	257.780	112.650	146.417	155.871	175.828	192.088	236.971	422.925	575.380	761.140
9	Total Non-Earning Assets	454.296	495.637	868.749	804.012	827.547	1.081.538	1.861.966	2.081.446	3.096.623	3.641.487	4.332.298	3.302.196
	YoY Change		9%	75%	-7%	3%	31%	72%	12%	49%	18%	19%	-24%
10	Total Assets	3.166.514	4.006.314	6.088.402	8.041.338	8.954.704	11.369.104	14.399.424	14.517.918	18.725.017	21.187.288	24.415.966	23.818.856
	YoY Change		27%	52%	32%	11%	27%	27%	1%	29%	13%	15%	-2%

Annex 17. Şekerbank Balance sheet (Assets) from 2005 to 2016

Şekerbank Balance sheet (.000 TRY)
Liabilities and Equity
FY 2005 – FY 2016

Şekerbank Balance Sheet (Unconsolidated)		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Amounts in Thousands		TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
B	LIABILITIES												
13	Customer Deposits	2.471.875	3.032.826	3.939.370	5.841.158	6.617.810	7.572.412	8.954.258	9.774.280	11.924.725	12.575.437	13.408.947	15.694.962
	YoY Change		23%	30%	48%	13%	14%	18%	9%	22%	5%	7%	17%
13.1	Current	521.635	495.176	538.787	629.682	809.498	1.035.041	1.318.474	1.259.082	1.480.699	1.555.126	1.683.540	2.011.447
13.2	Saving	942.828	1.111.993	1.676.626	2.680.628	2.813.562	2.909.721	3.764.822	3.856.657	4.495.533	4.765.302	5.634.637	6.447.492
13.3	Term	1.950.240	2.537.650	3.400.583	5.211.476	5.808.312	6.537.371	7.635.784	8.515.198	10.444.026	11.020.311	11.725.407	13.683.515
14	Deposits from Banks	12.055	14.083	215.696	90.413	22.171	126.252	124.191	363.626	714.514	963.171	1.458.686	441.319
15	Interbank Money Market Borrowings	57.906	269.553	166.644	59.632	292.931	1.164.129	1.600.173	33.965	858.553	1.440.582	2.012.699	531.388
	YoY Change		366%	-38%	-64%	391%	297%	37%	-98%	2428%	68%	40%	-74%
16	Total Other Funds Borrowed	85.193	107.436	496.016	636.411	340.756	587.612	1.698.556	1.775.932	2.407.896	2.730.290	3.908.391	3.439.392
	YoY Change		26%	362%	28%	-46%	72%	189%	5%	36%	13%	43%	-12%
16.1	Funds Borrowed from Banks	32.695	57.043	456.657	576.189	288.842	544.857	747.970	748.635	1.067.761	1.155.828	2.220.233	2.433.904
16.2	Securities Issued	0	0	0	0	0	0	907.182	953.017	924.783	1.137.037	1.189.806	990.647
16.3	Subordinated Borrowings	0	0	0	31.363	32.145	30.832	36.663	70.446	413.449	436.671	498.221	14.841
16.4	Other Funding	52.498	50.393	39.359	28.859	19.769	11.923	6.741	3.834	1.903	754	131	0
17	Derivative Financial Instruments	1.693	3.894	94.712	108.259	121.822	113.318	14.957	15.740	46.423	97.241	139.600	258.942
18	Total Interest Bearing Liabilities	2.628.722	3.427.792	4.912.438	6.735.873	7.395.490	9.563.723	12.392.135	11.963.543	15.952.111	17.806.721	20.928.323	20.366.003
	YoY Change		30%	43%	37%	10%	29%	30%	-3%	33%	12%	18%	-3%
19	Provisions	67.929	83.574	127.272	180.312	175.930	217.342	249.637	335.969	298.192	324.224	375.243	343.424
20	Bills Payable / Other Payables	12.373	18.403	26.296	43.591	64.749	98.492	172.982	207.424	203.656	372.442	337.325	379.388
21	Other Liabilities	81.921	39.594	157.607	106.291	69.145	89.050	122.533	186.241	215.610	292.088	248.133	197.248
22	Total Liabilities	2.790.945	3.569.363	5.223.613	7.066.067	7.705.314	9.968.607	12.937.287	12.693.177	16.669.569	18.795.475	21.889.024	21.286.063
	YoY Change			46%	35%	9%	29%	30%	-2%	31%	13%	16%	-3%
C	EQUITY												
23	Share Capital	125.000	125.000	405.177	405.177	505.270	750.000	1.000.000	1.000.000	1.000.000	1.091.450	1.159.278	1.159.278
	YoY Change		0%	2	0	0	48%	33%	0%	0	9%	6%	0%
24	Reserves	159.812	197.077	277.745	376.361	509.448	413.276	314.230	432.681	673.435	880.991	1.092.715	1.011.638
25	Revaluation Reserves	28.359	37.505	61.727	49.426	82.088	66.252	29.456	151.557	171.797	195.339	86.289	136.798
26	Retained Earnings	62.398	77.369	120.140	144.307	152.584	170.969	118.451	240.503	210.216	224.033	188.660	225.079
27	Total Equity	375.569	436.951	864.789	975.271	1.249.390	1.400.497	1.462.137	1.824.741	2.055.448	2.391.813	2.526.942	2.532.793
	YoY Change		16%	98%	13%	12%	12%	4%	25%	13%	16%	6%	0%
28	Total Liabilities & Equity	3.166.514	4.006.314	6.088.402	8.041.338	8.954.704	11.369.104	14.399.424	14.517.918	18.725.017	21.187.288	24.415.966	23.818.856

Annex 18. Şekerbank Balance sheet (Liabilities and Equity) from 2005 to 2016