**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

**Masoud GHAZAVIKHOURASGANI**
**115620013**

**SUPERVISOR: ASST. PROF. DR. Sema BAYRAKTAR TÜR**

**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 dereceverilmiştir. Bu değerlendirmelere göre bankalar için İç Kredi Derecelendirme (ICR) hesaplamış 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.

# TABLE OF CONTENTS

## LIST OF TABLES

# LIST OF APPENDICES

## LIST OF FIGURES

# 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 20$^{th}$ 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, & Yıldıran, 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.

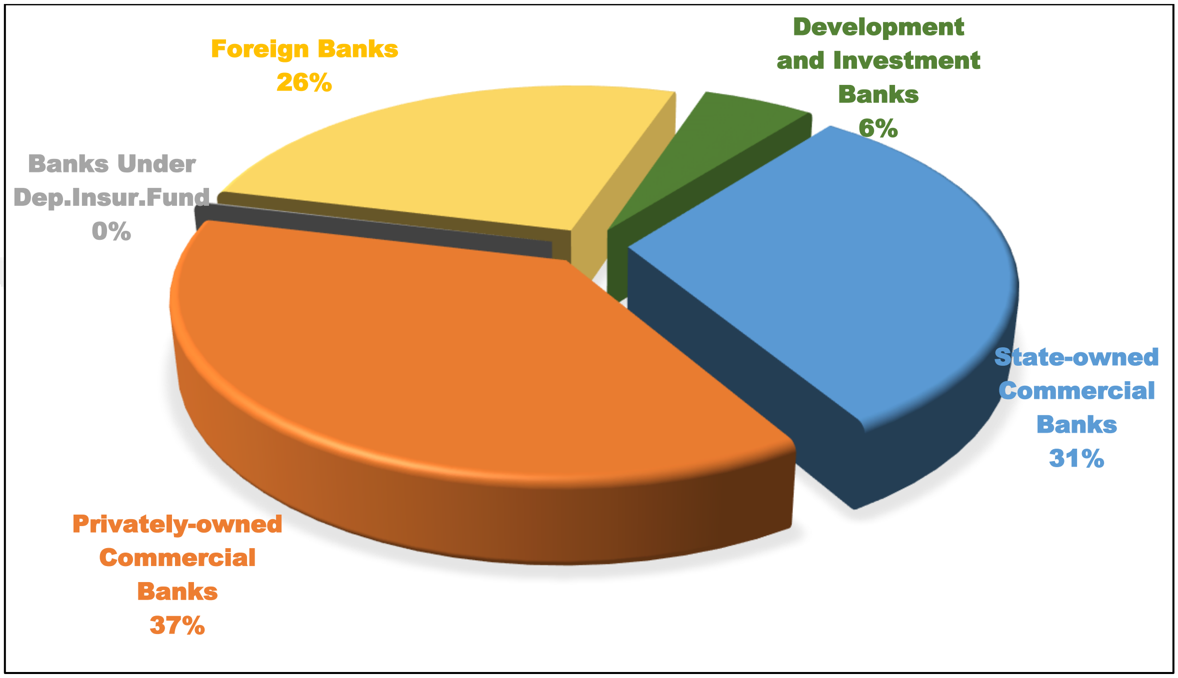



**Figure 1.Distribution of Total Assets by Group (%)**

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.

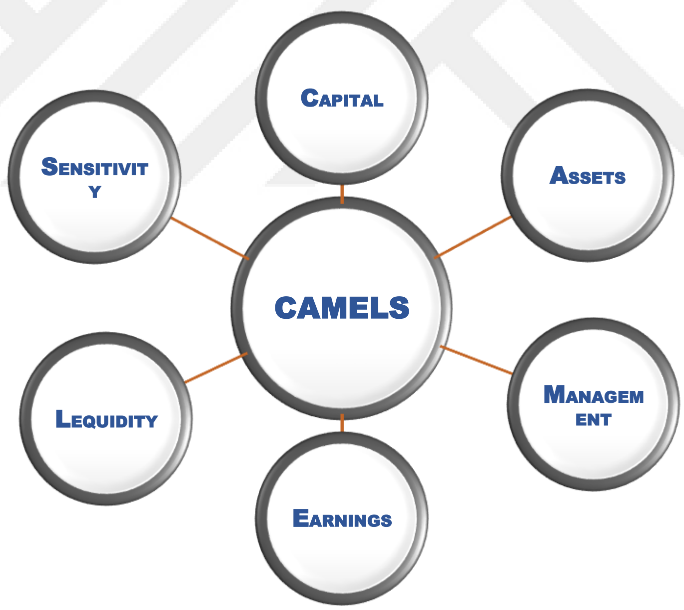



**Figure 2. CAMELS Categories**

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, Earing, 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 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 proposes 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 stablish 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.moodys.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 capacity 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 2005and 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.

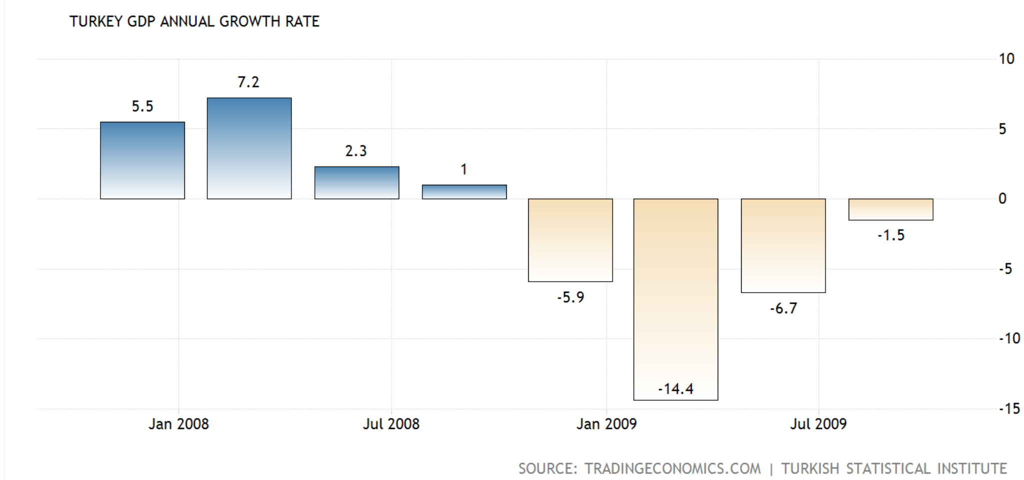



**Figure 3.Turkey GDP annual growth rate**


**Figure 4.Turkey Unemployment Rate**


**Figure 5.Turkey Current Account to GDP**


**Figure 6.Turkey Government Debt to GDP**

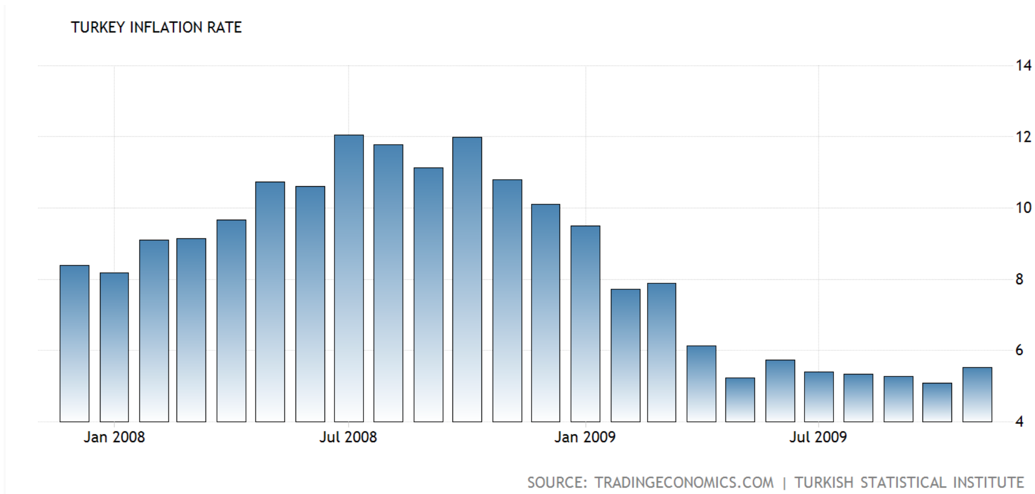



**Figure 7.Turkey Inflation Rate**

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 | Dec. 2008 | July 2009 | Sept. 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)

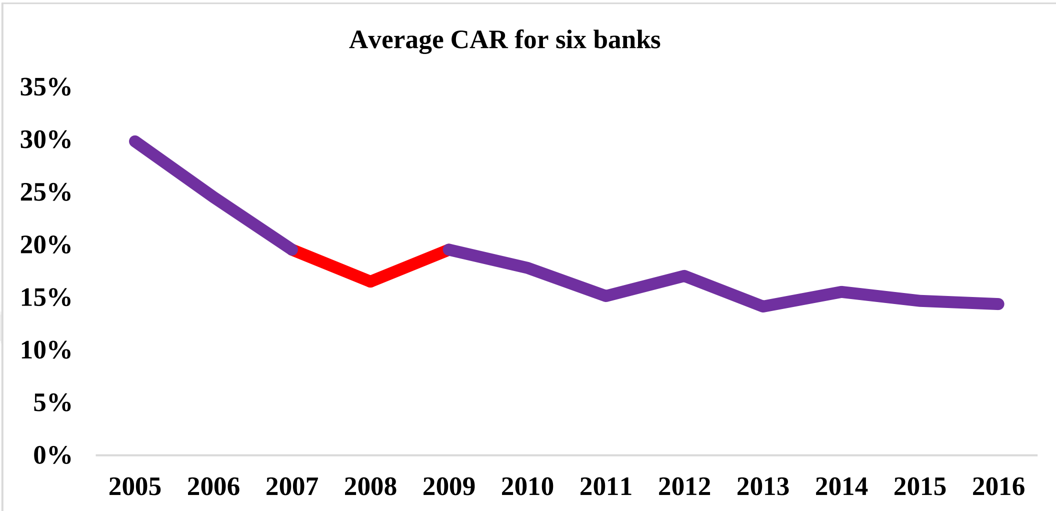



**Figure 8.Average CAR for Six Banks**

### 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 od 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 positon. 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.

$$Category's\ Index = \sum \mathrm{Wi} * Ri$$

**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. Earing Quality

It shows the quality of a bank's profitability and its capability to maintain quality and earn consistently. Table7. Illustrated the details of five ratios in Earing 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 | + |
| NIENIINII | Non-Interest Exp./ Net Interest Inc.+ Non-Interest Inc. | 0,15 | - |
| NIINIINII | 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 = Net Income/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 = Net Income/ 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.

$$Competetive\ Position = \frac{Total\ Assets\ of\ Bank\ A}{Total\ Assets\ of\ Baking\ Sector\ in\ Turkey}$$

**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 $\Delta$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%** | | 0,0 | | | | | | | | | | | |
| **Qualitative Factors** | **30%** | | 0,0 | | | | | | | | | | | |
| **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.)

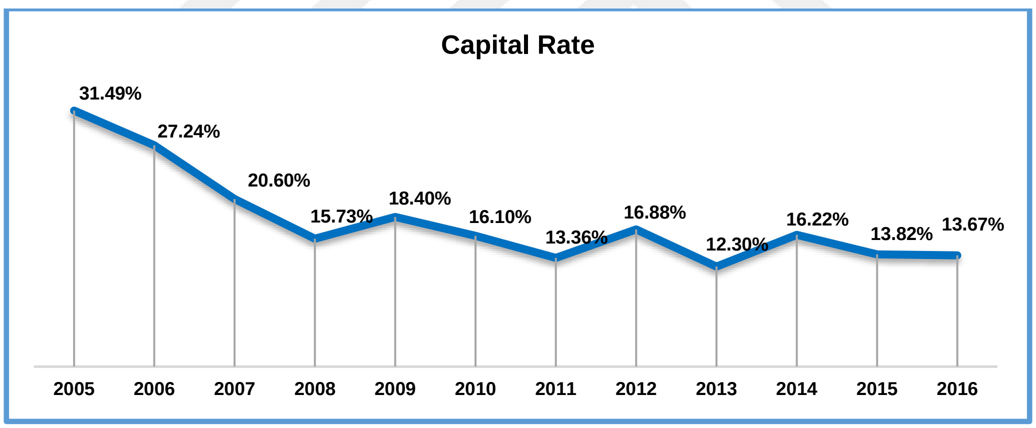



**Figure 9. Capital rate of Ziraat Bank during 2005-2016**

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.)

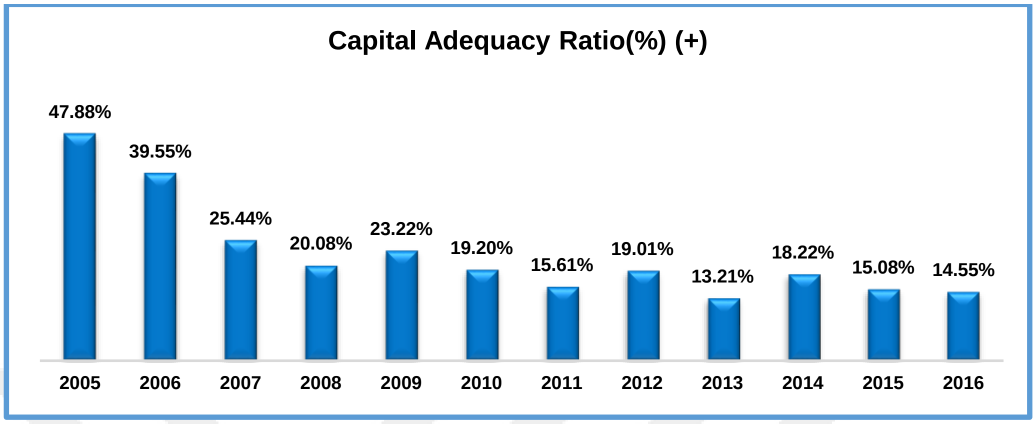



**Figure 10.Capital Adequacy Ratio of Ziraat Bank during 2005-2016**

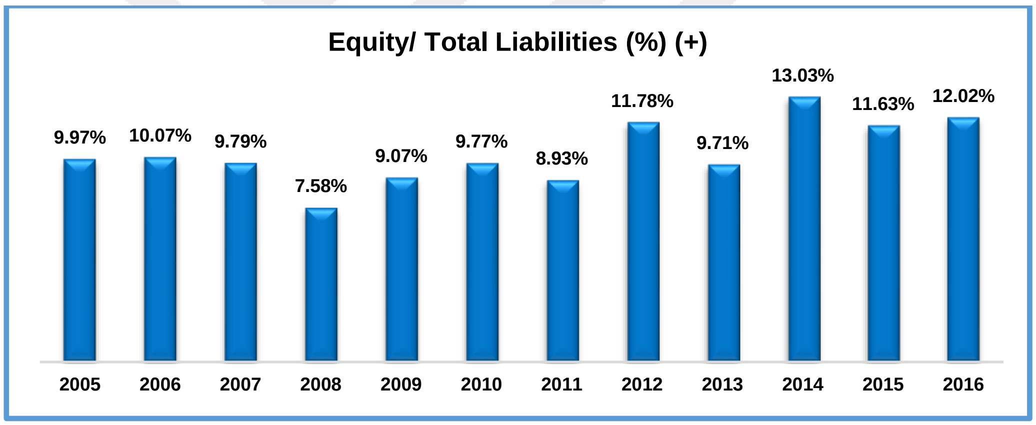



**Figure 11. Equity to Total Liabilities of Ziraat Bank during 2005-2016**

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

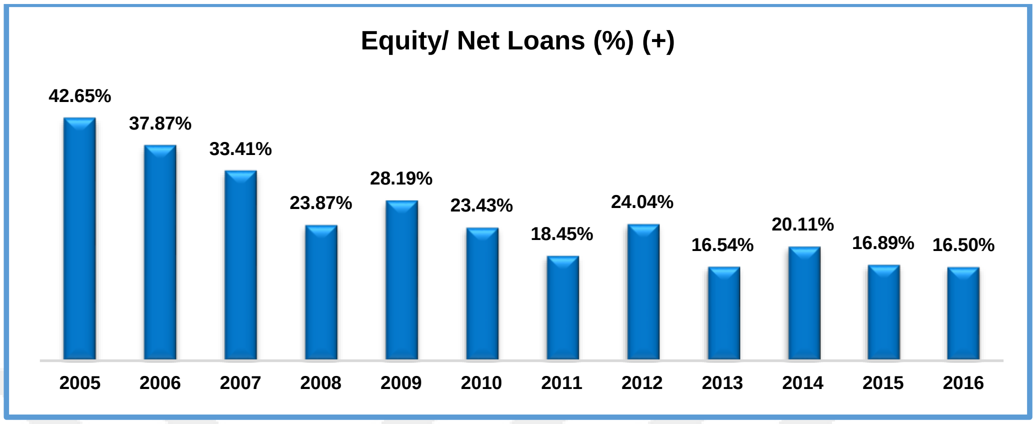



**Figure 12. Equity to Net Loans of Ziraat Bank during 2005-2016**

“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.)

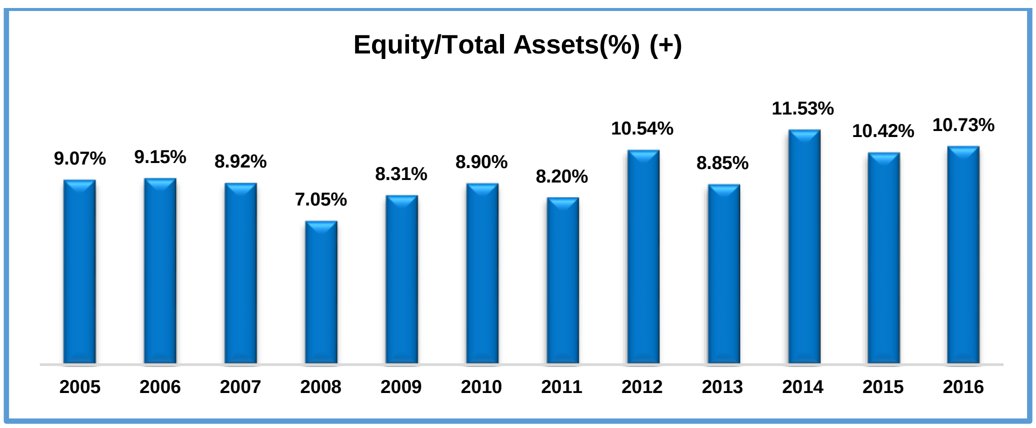



**Figure 13. Equity to Total Assets of Ziraat Bank during 2005-2016**

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

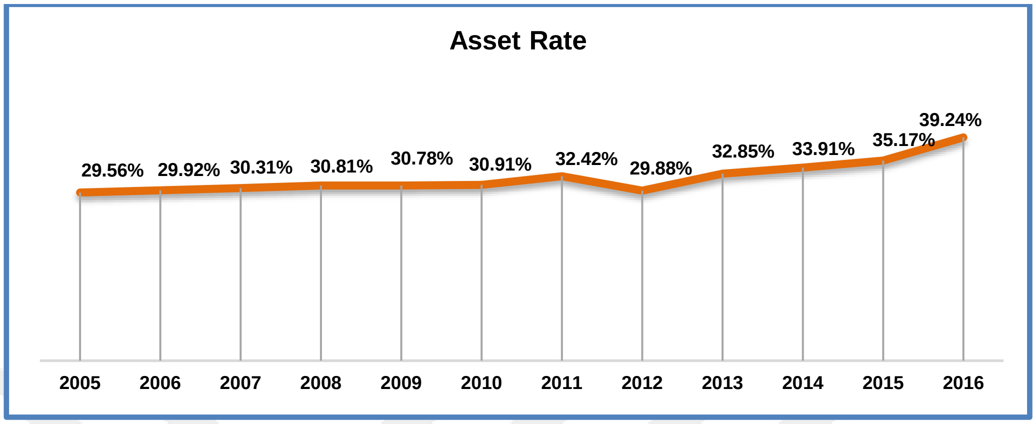



**Figure 14. Asset Quality rate of Ziraat Bank during 2005-2016**

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.)

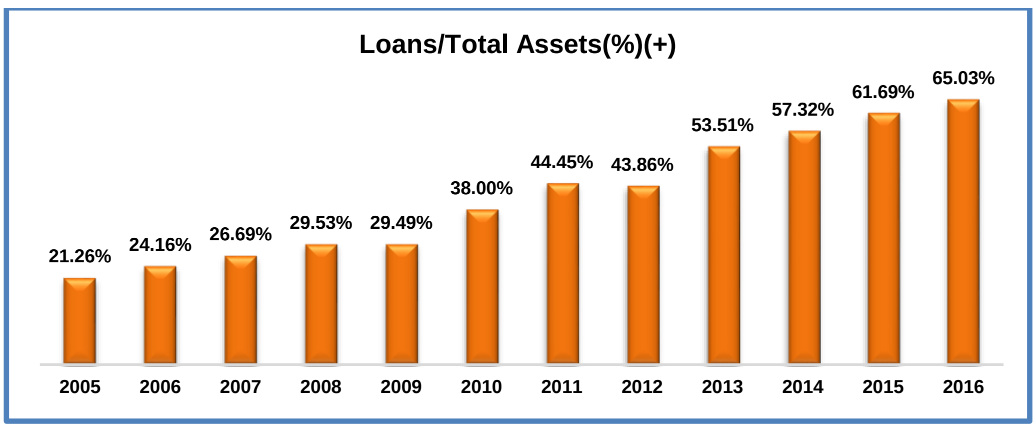



**Figure 15. Loans to total Assets of Ziraat Bank during 2005-2016**

"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%.

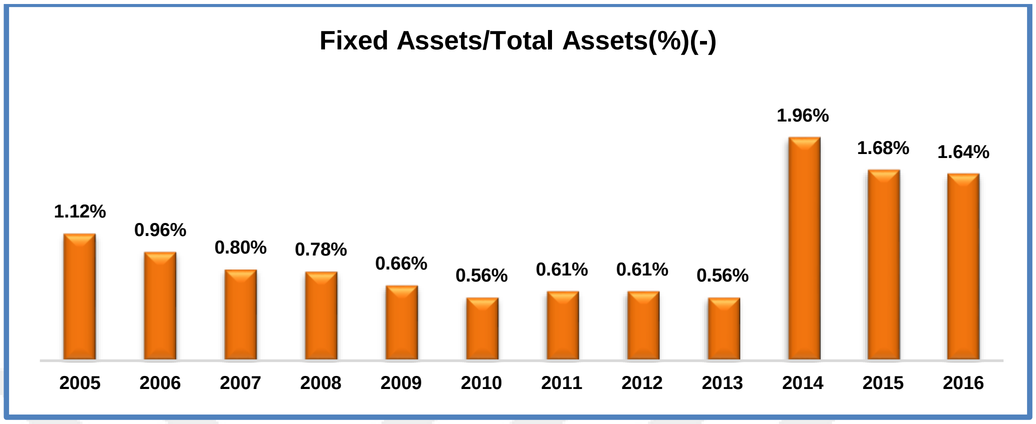



**Figure 16. Fixed Assets to Total Assets of Ziraat Bank during 2005-2016**

"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.

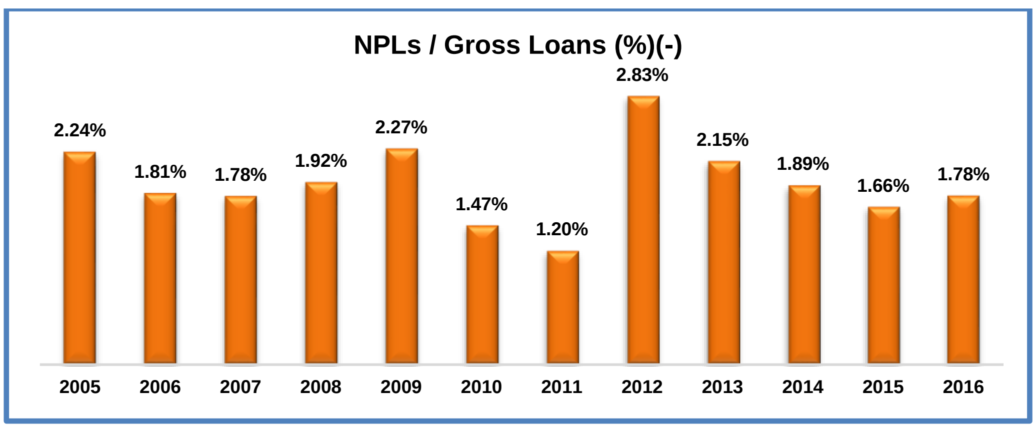



**Figure 17. NPL to Gross Loans of Ziraat Bank during 2005-2016**

"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.)

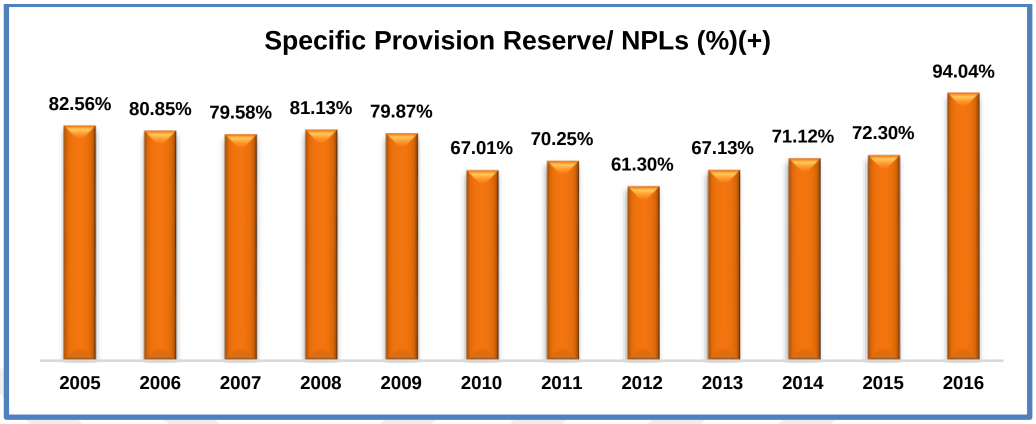


**Figure 18. Specific Provision Reserve to NPL of Ziraat Bank during 2005-2016**

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

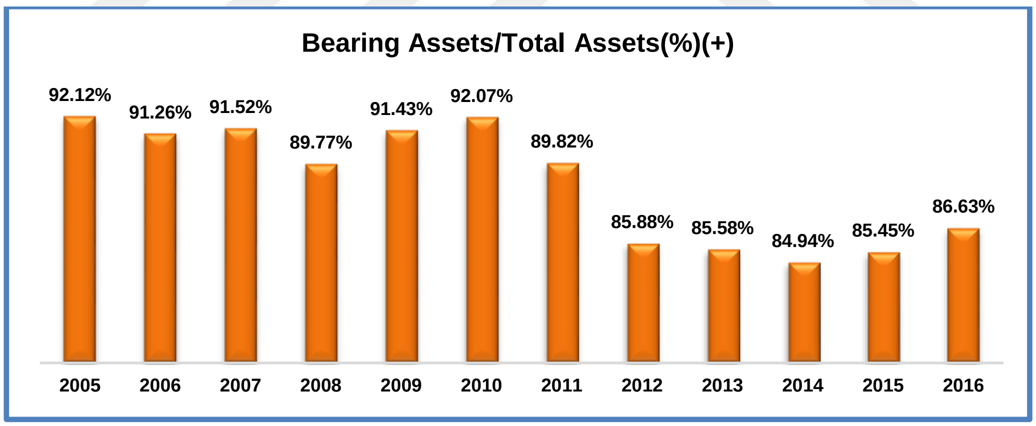


**Figure 19. Bearing Assets to Total Assets of Ziraat Bank during 2005-2016**

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%.

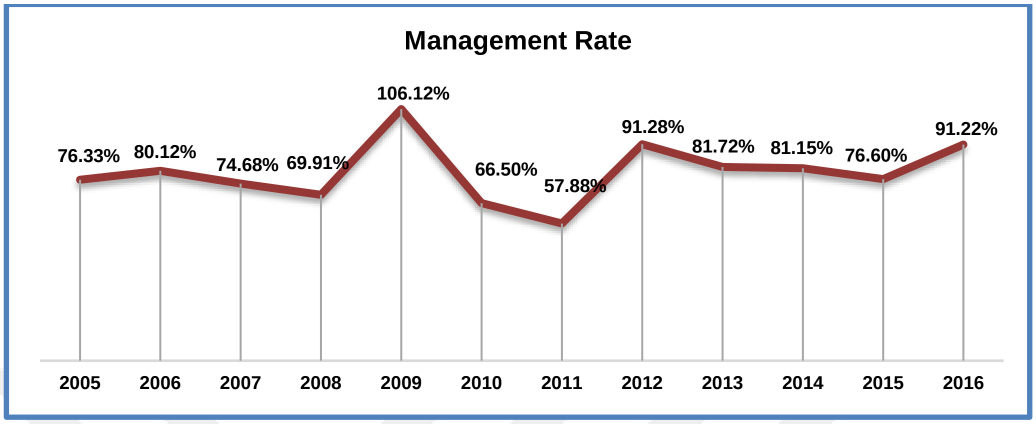



**Figure 20. Management Rate of Ziraat Bank during 2005-2016**

"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.)

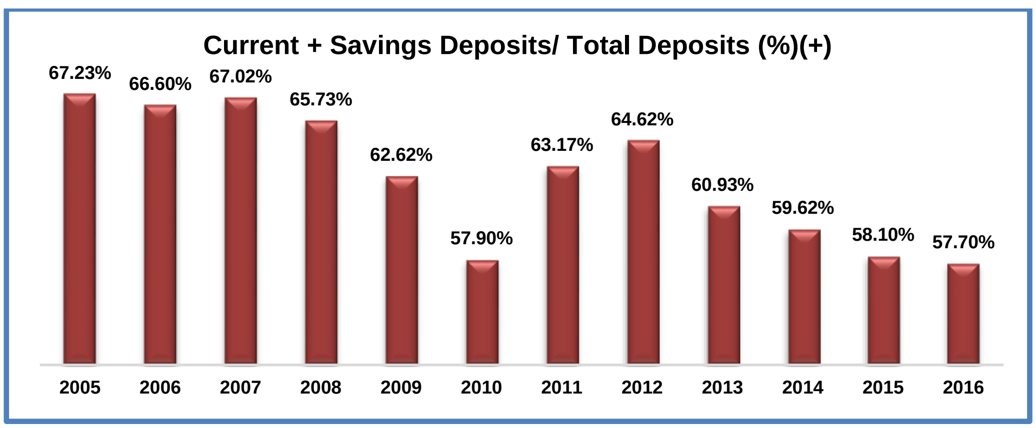



**Figure 21. Current plus Saving Deposits to Total Deposits of Ziraat Bank during 2005-2016**

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.)

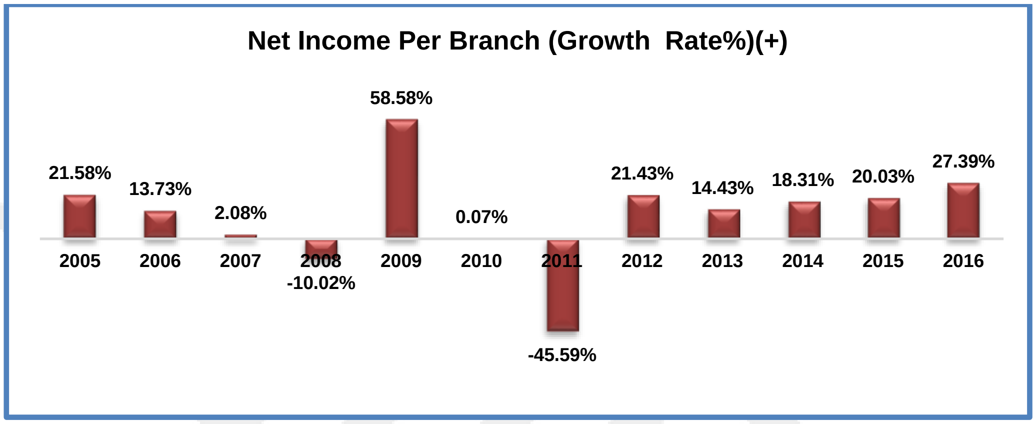


**Figure 22. Net Income per Branch (Growth Rate) of Ziraat Bank during 2005-2016**

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

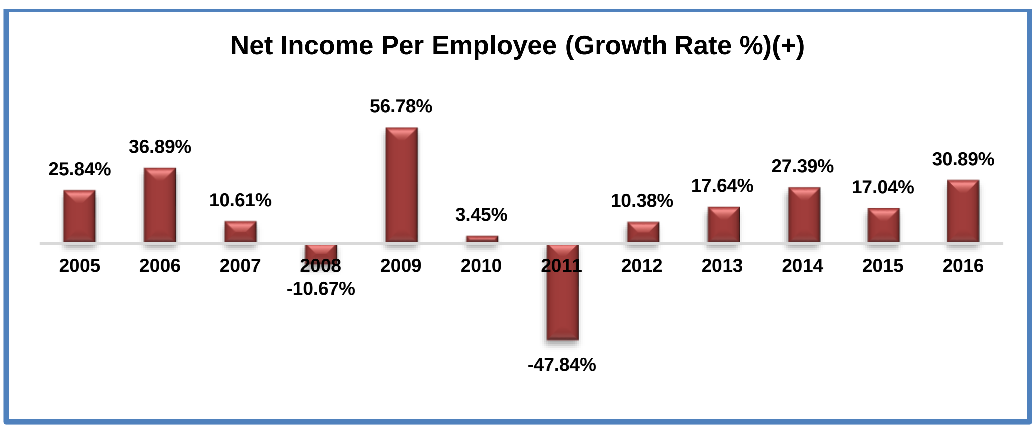


**Figure 23. Net Income per Employee (Growth Rate) of Ziraat Bank during 2005-2016**

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

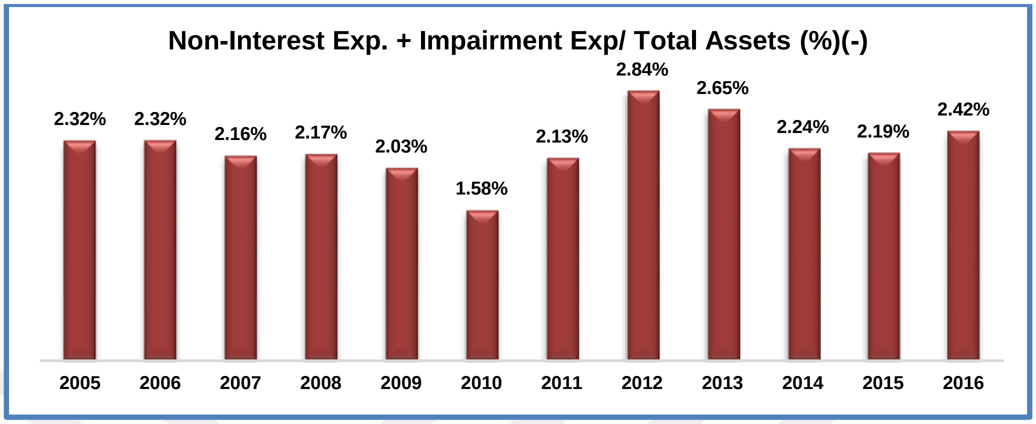



**Figure 24. Non-Interest Exp. Plus Impairment Exp. to Total Assets of Ziraat Bank during 2005-2016**

"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.)

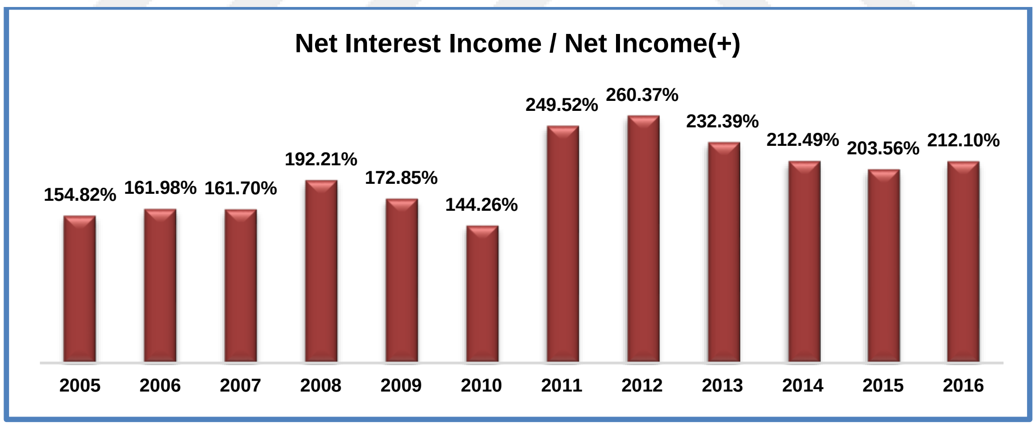



**Figure 25. Net Interest Income to Net Income of Ziraat Bank during 2005-2016**

"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).

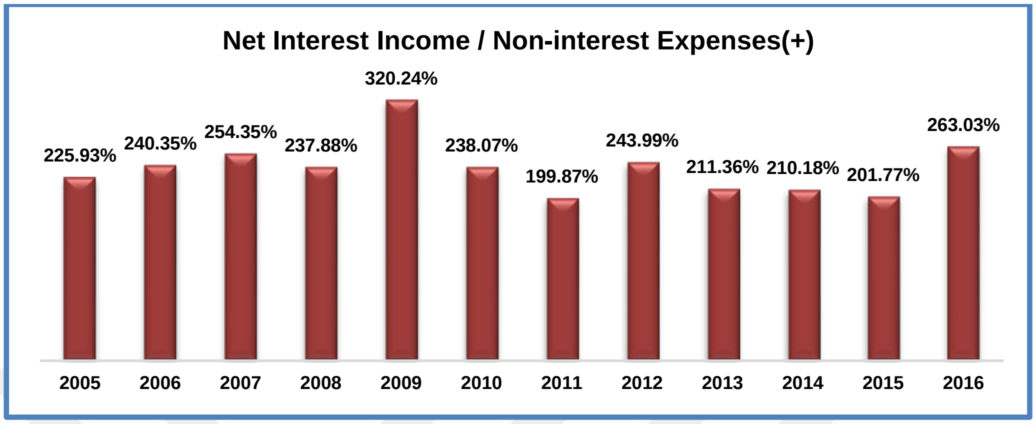



**Figure 26. Net Interest Income to Non-Interest Expenses of Ziraat Bank during 2005-2016**

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

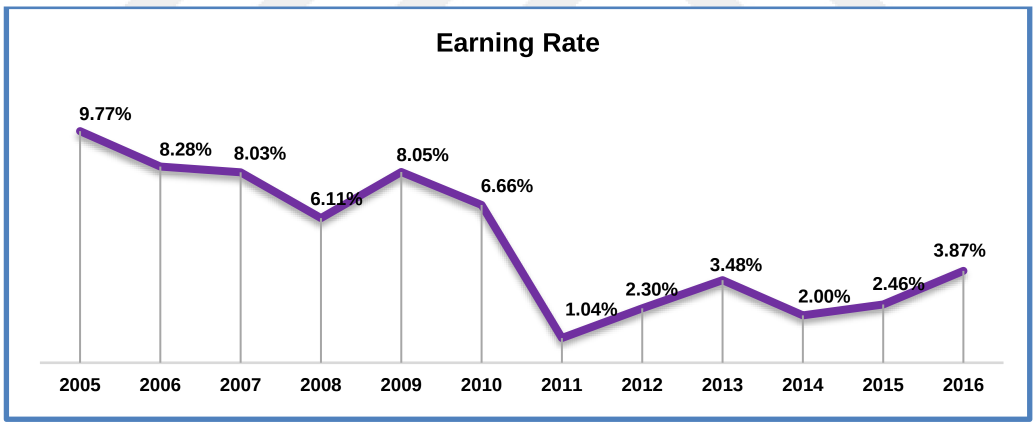



**Figure 27. Earning Rate of Ziraat Bank during 2005-2016**

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.)

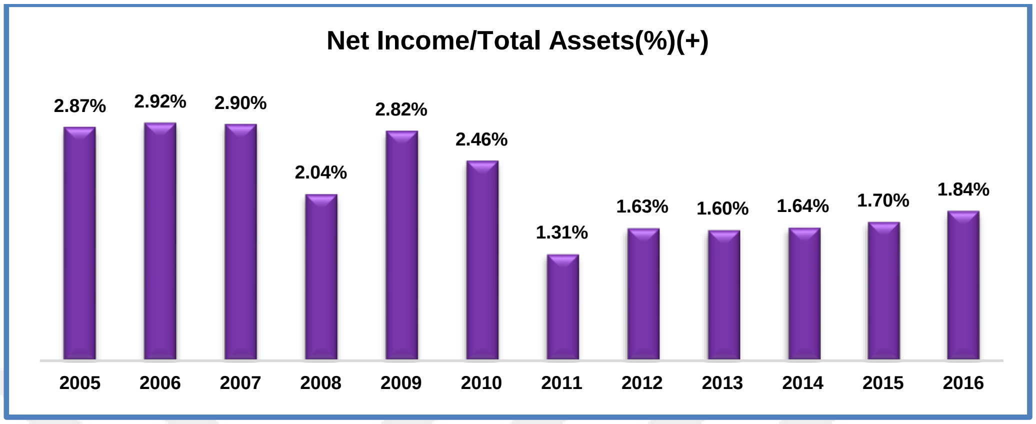



**Figure 28. Net Income to Total Assets of Ziraat Bank during 2005-2016**

“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.)

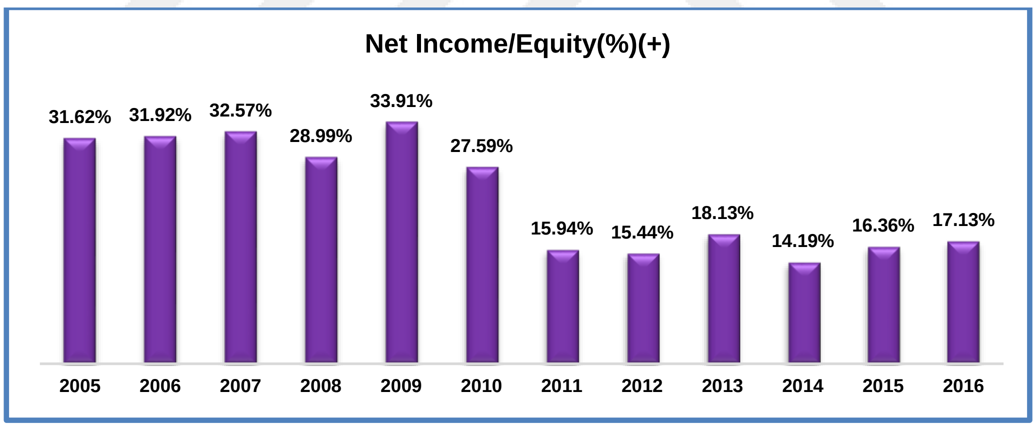



**Figure 29. Net Income to Equity of Ziraat Bank during 2005-2016**

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

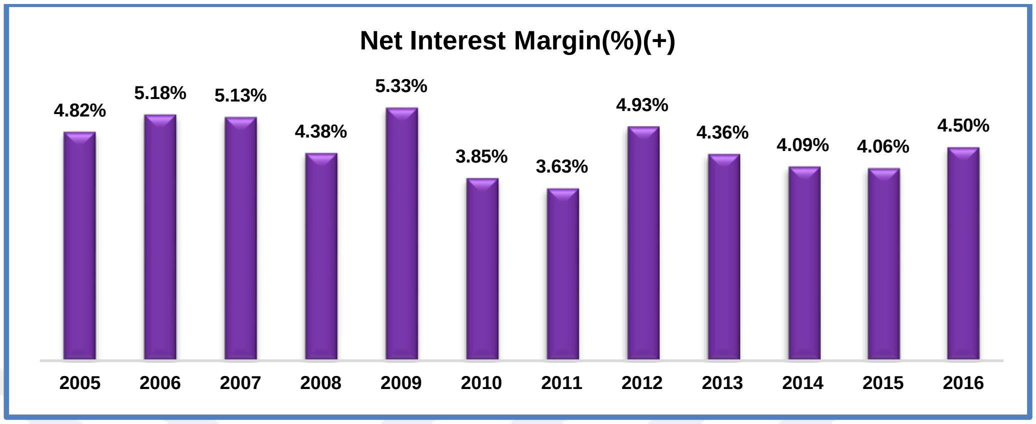



**Figure 30. Net Interest Margin of Ziraat Bank during 2005-2016**

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.)

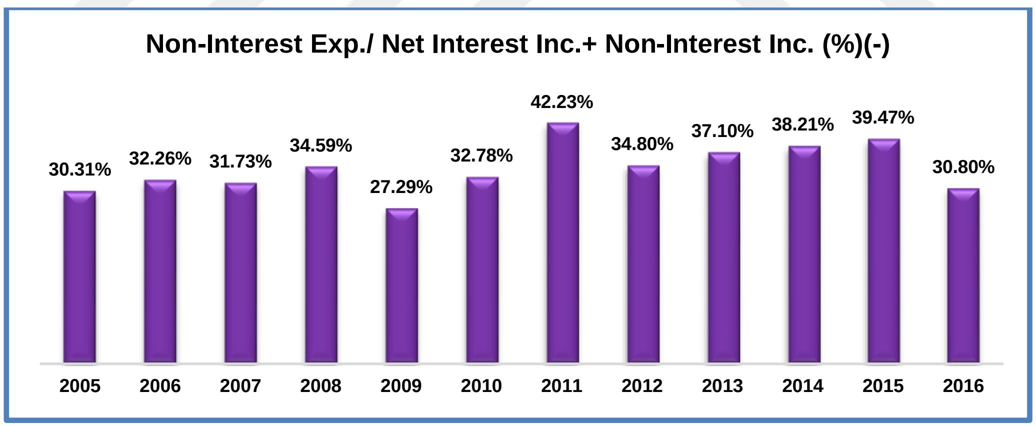



**Figure 31. Non-Interest Exp. to Net Interest Inc. plus Non-Interest Inc. of Ziraat Bank during 2005-2016**

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.)

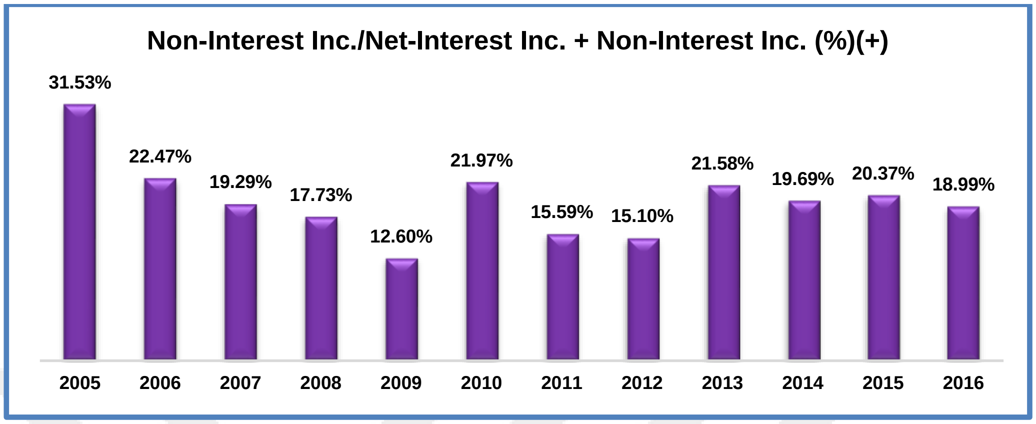



**Figure 32. Non-Interest Inc. to Net-Interest Inc. plus Non-Interest Inc. of Ziraat Bank during 2005-2016**

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.)

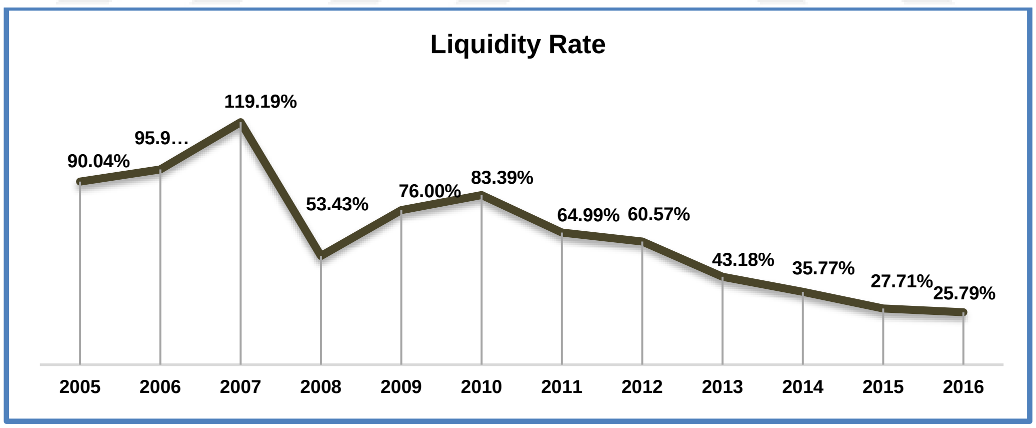
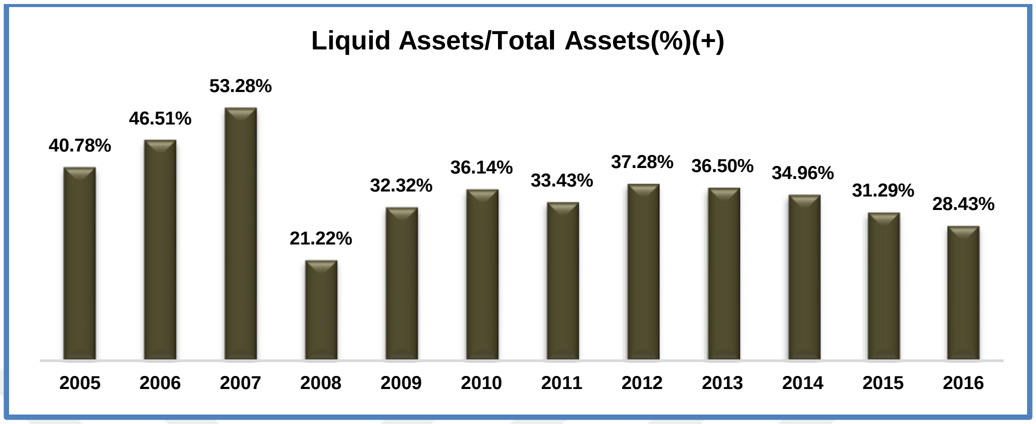



**Figure 33. Liquidity Rate of Ziraat Bank during 2005-2016**

“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.)




**m 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.)

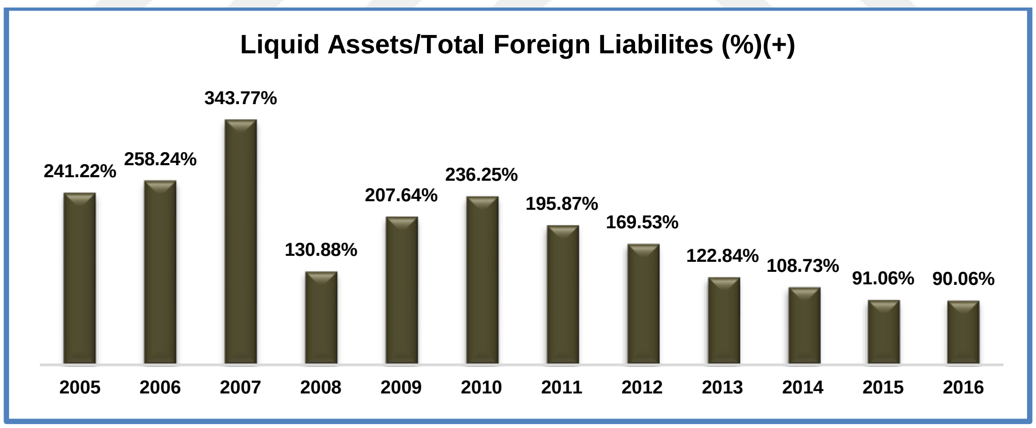



**Figure 35. Liquid Assets to Total Foreign Assets of Ziraat Bank during 2005-2016**

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

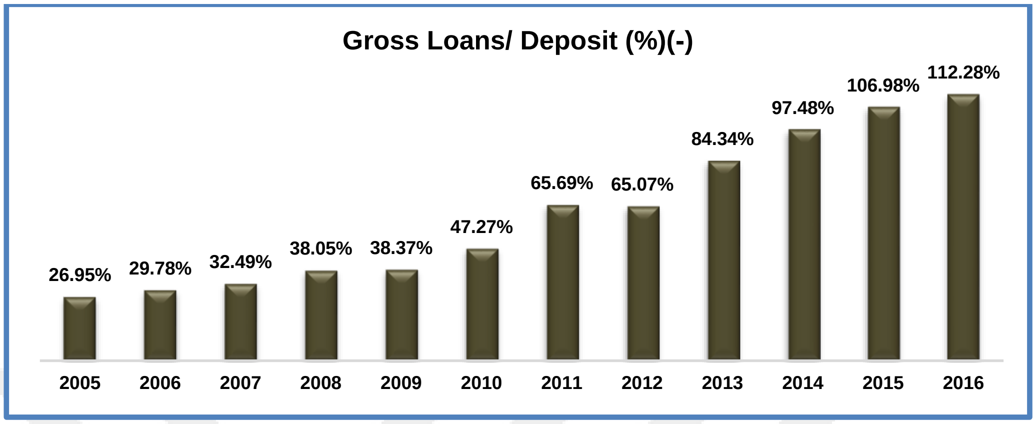



**Figure 36. Gross Loans to Deposit of Ziraat Bank during 2005-2016**

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

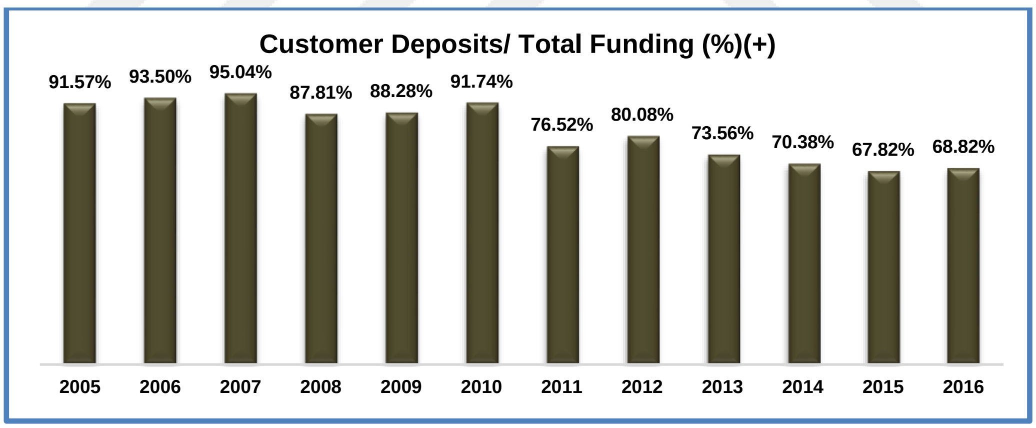



**Figure 37. Customer Deposits to Total Funding of Ziraat Bank during 2005-2016**

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.)

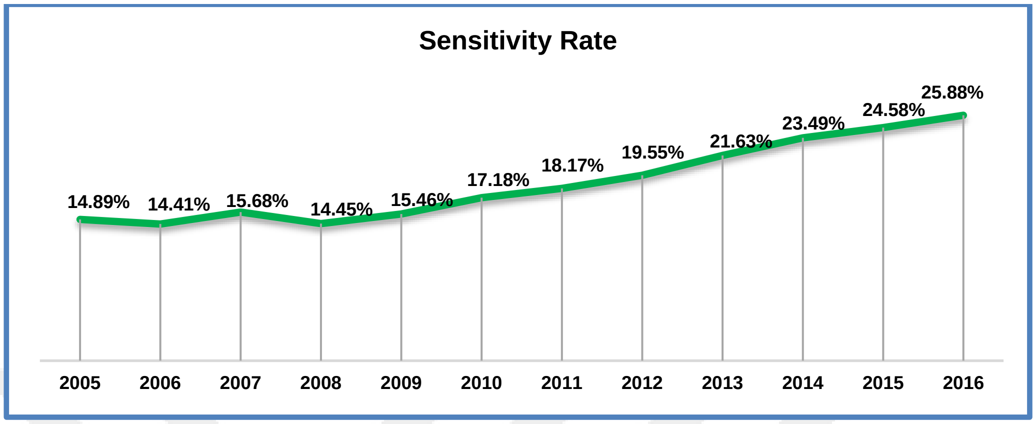



**Figure 38. Sensitivity Rate of Ziraat Bank during 2005-2016**

“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.)

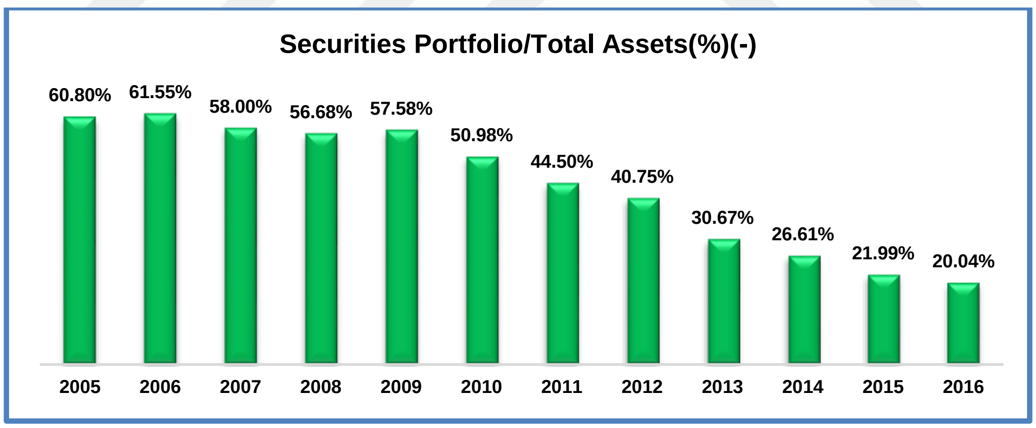



**Figure 39. Securities Portfolio to Total Assets of Ziraat Bank during 2005-2016**

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

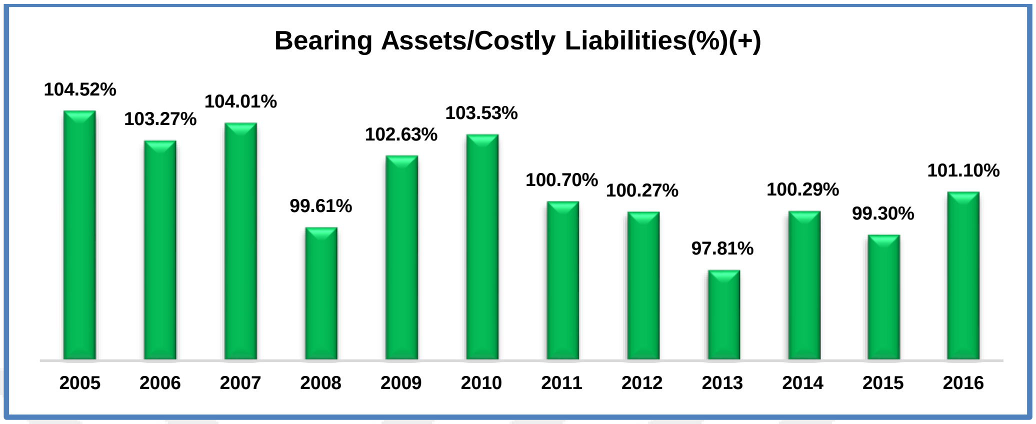



**Figure 40. Bearing Assets to Costly Liabilities of Ziraat Bank during 2005-2016**

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

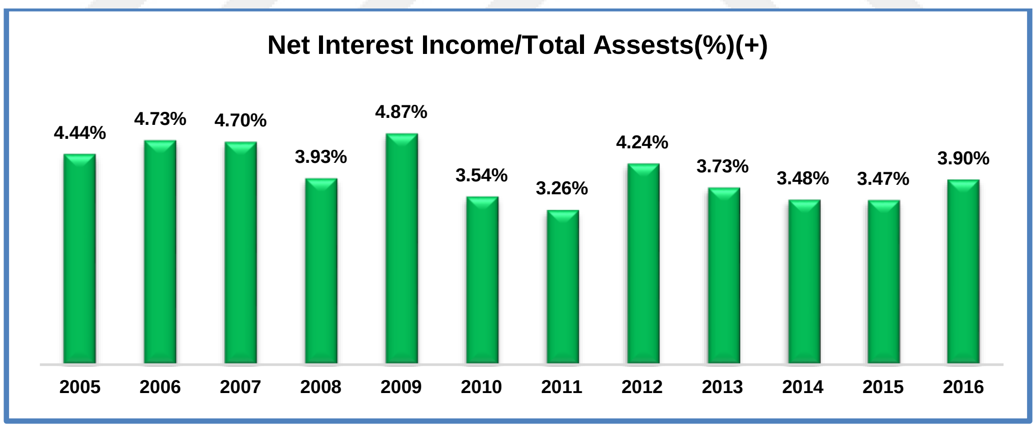



**Figure 41. Net Interest Income to Total Assets of Ziraat Bank during 2005-2016**

### 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.)

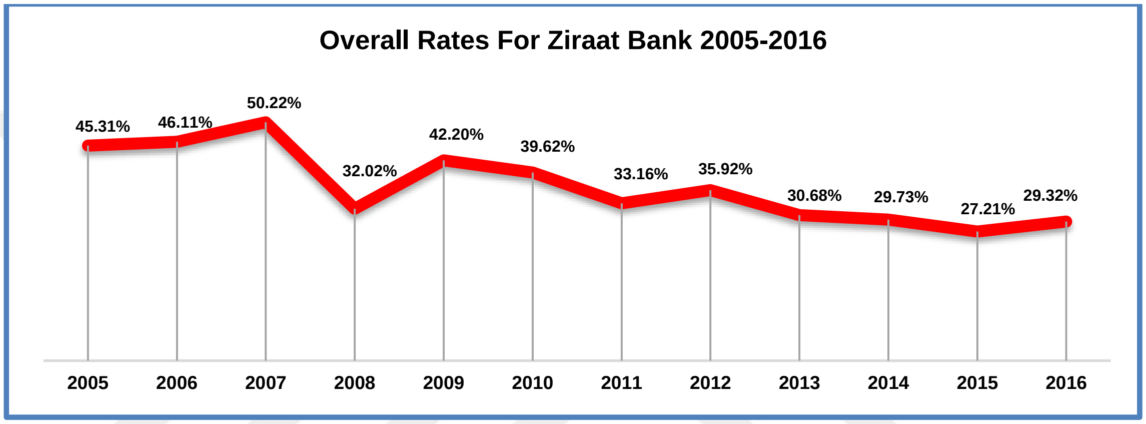


**Figure 42. CAMELS Overall Rates for Ziraat Bank during 2005-2016**

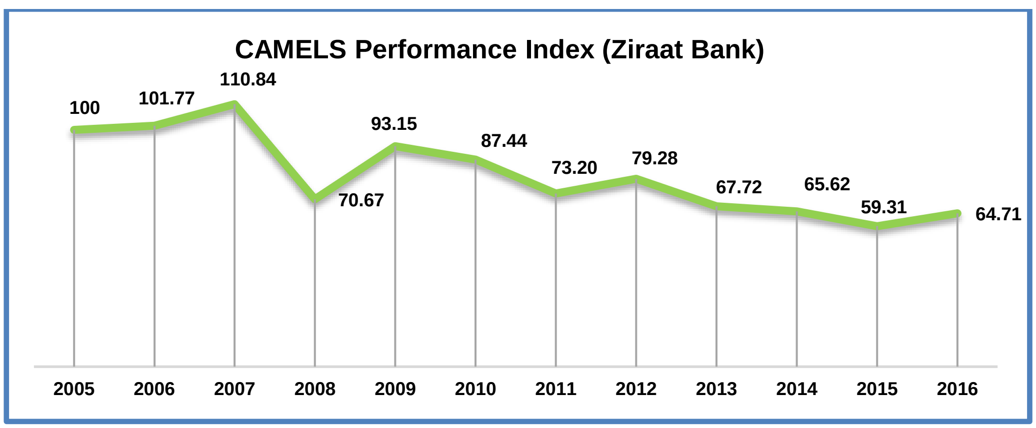


**Figure 43. CAMELS Performance Index for Ziraat Bank during 2005-2016**

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 | | Overall Weight | Capital | | |
| C | | 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% |
| Capital Rate | | | | | 14% |
| A | | Overall Weight | Asset | | |
| A | | 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% |
| Asset Rate | | | | | 39% |
| M | | Overall Weight | Management | | |
| M | | 0,10 | | | |
| CSDTD | 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% |
| NIEIETA | 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% |
| Management Rate | | | | | 91% |
| E | | Overall Weight | Earnings | | |
| E | | 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% |
| NIENIINII | 19 | 0,15 | Non-Interest Exp./ Net Interest Inc.+ Non-Interest Inc. (%)(-) | - | 31% |
| NIINIINII | 20 | 0,15 | Non-Interest Inc./Net-Interest Inc. + Non-Interest Inc. (%)(+) | + | 19% |
| Earning Rate | | | | | 4% |
| L | | Overall Weight | Liquidity | | |
| L | | 0,25 | | | |
| LATA | 21 | 0,30 | Liquid Assets/Total Assets(%)(+) | + | 28% |
| LATFL | 22 | 0,25 | Liquid Assets/Total Foreign Liabilites (%)(+) | + | 90% |
| GLD | 23 | 0,20 | Gross Loans/ Deposit (%)(-) | - | 112% |
| CDTF | 24 | 0,25 | Customer Deposits/ Total Funding (%)(+) | + | 69% |
| Liquidity Rate | | | | | 26% |
| S | | Overall Weight | Sensitivity | | |
| S | | 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 Assests(%)(+) | + | 4% |
| Sensitivity Rate | | | | | 26% |
| Overall Rates For Ziraat Bank 2005-2016 | | | | | 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.)

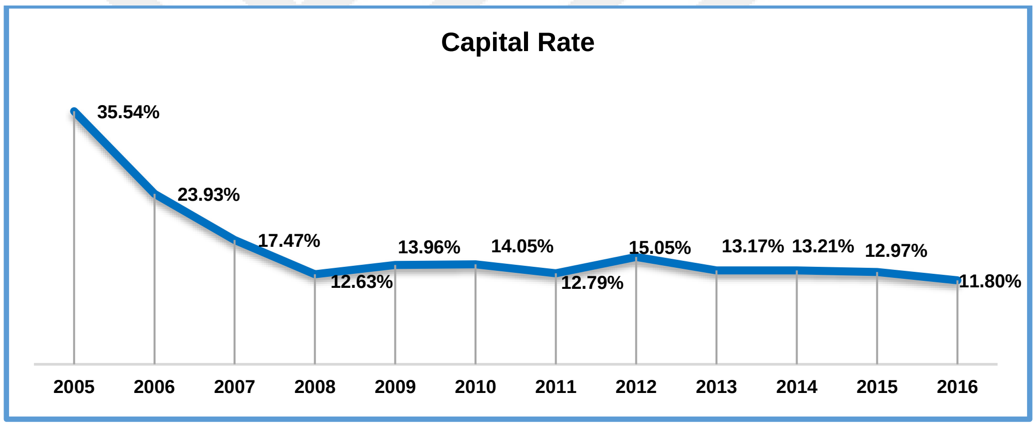



**Figure 44. Capital for Halkbank during 2005-2016**

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

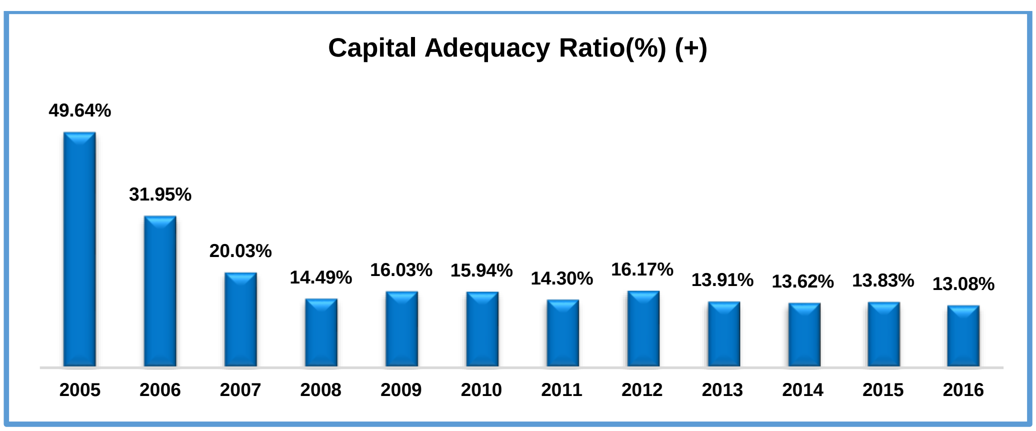



**Figure 45. Capital Adequacy Ratio for Halkbank during 2005-2016**

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

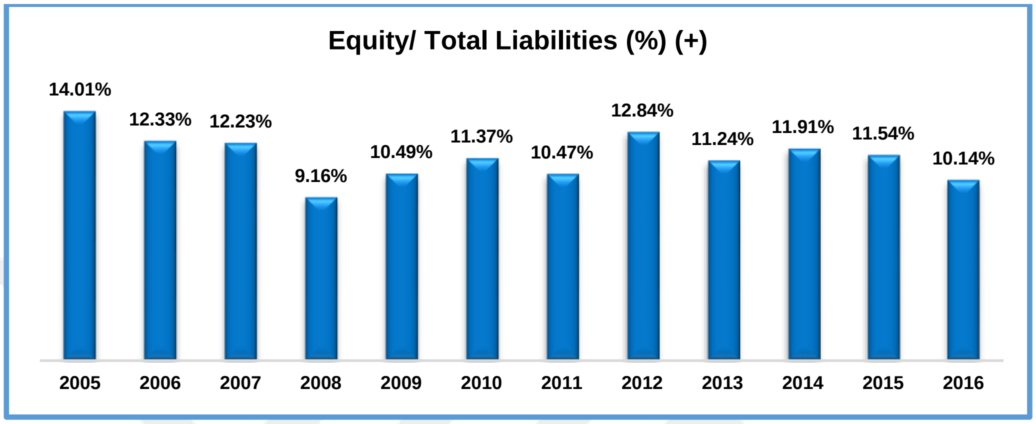



**Figure 46. Equity to Total Liabilities for Halkbank during 2005-2016**

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

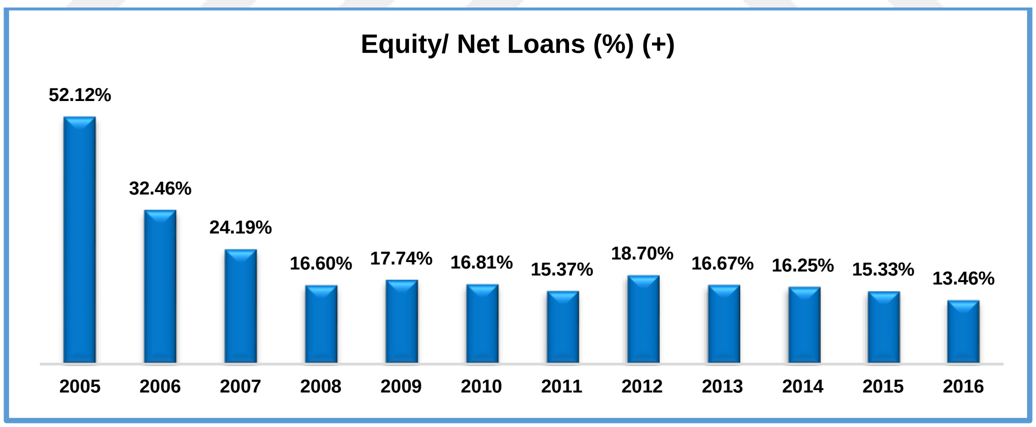



**Figure 47. Equity to net loans for Halkbank during 2005-2016**

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

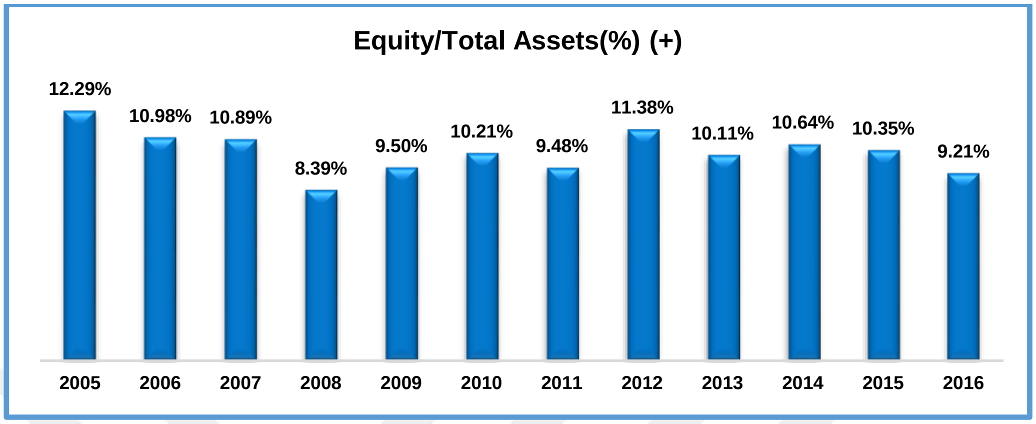



**Figure 48. Equity to Total Assets for Halkbank during 2005-2016**

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%.

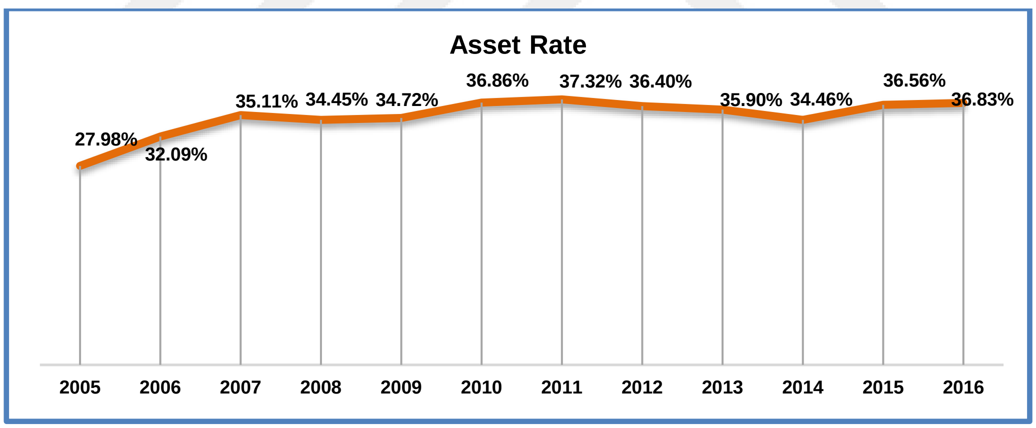



**Figure 49. Asset rate for Halkbank during 2005-2016**

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

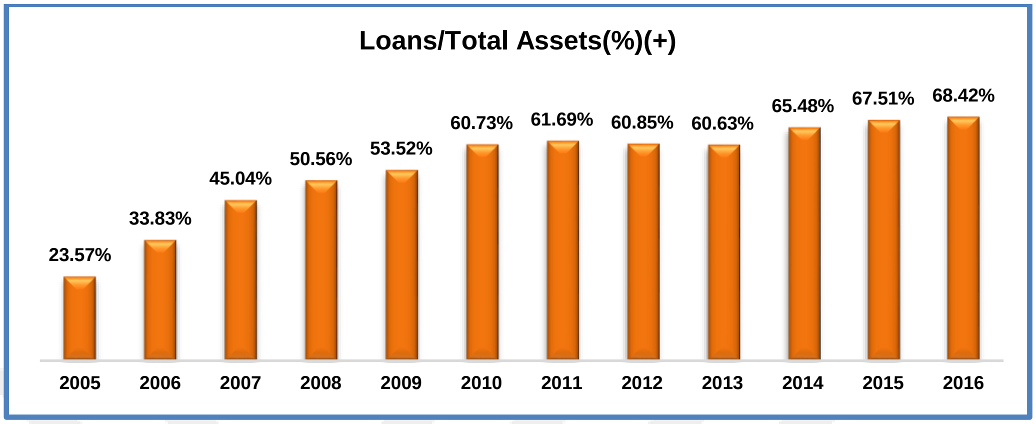



**Figure 50. Loans to Total Assets for Halkbank during 2005-2016**

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

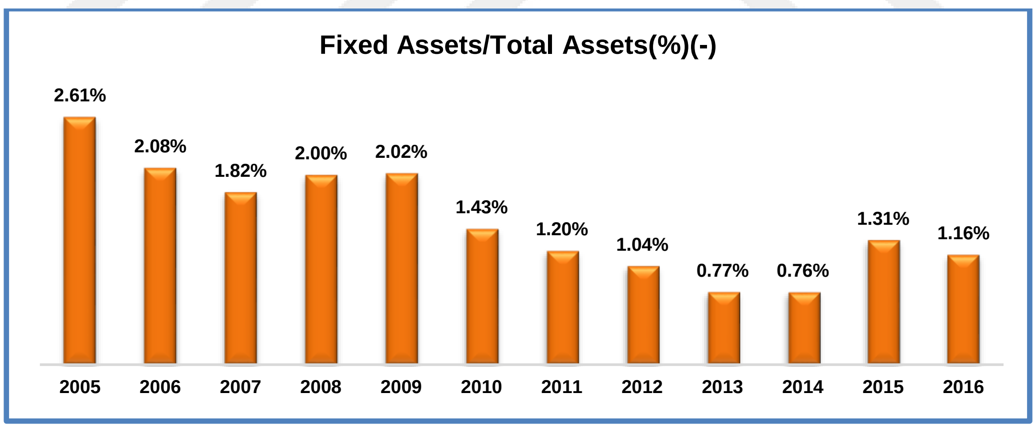



**Figure 51. Fixed Assets to Total Assets for Halkbank during 2005-2016**

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

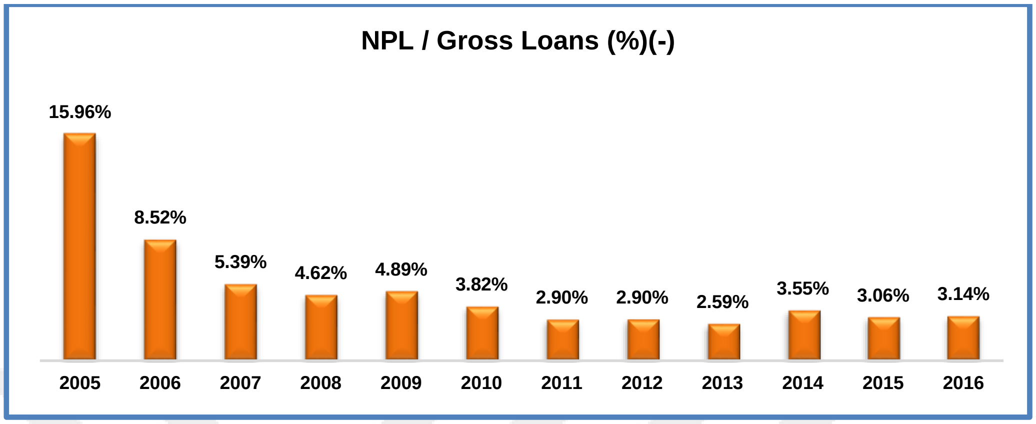



**Figure 52. NPL to Gross Loans for Halbank during 2005-2016**

"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.

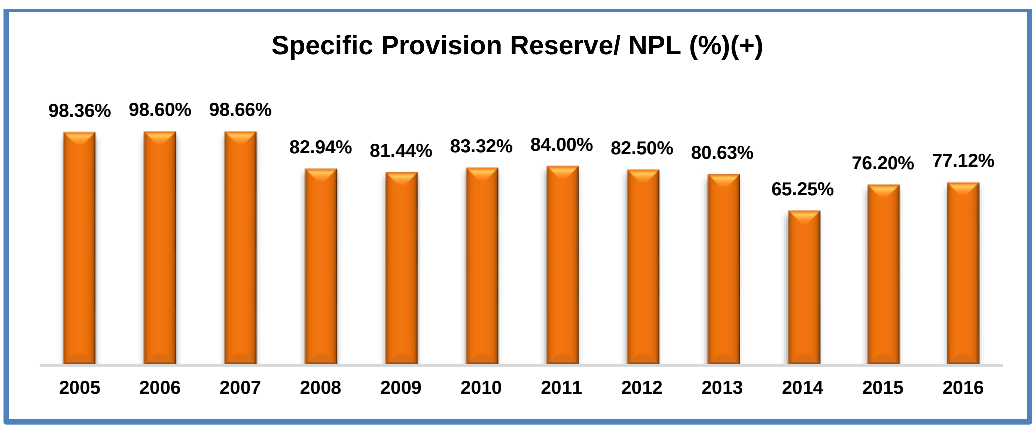



**Figure 53. Specific provision reserve to NPL for Halkbank during 2005-2016**

"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%.

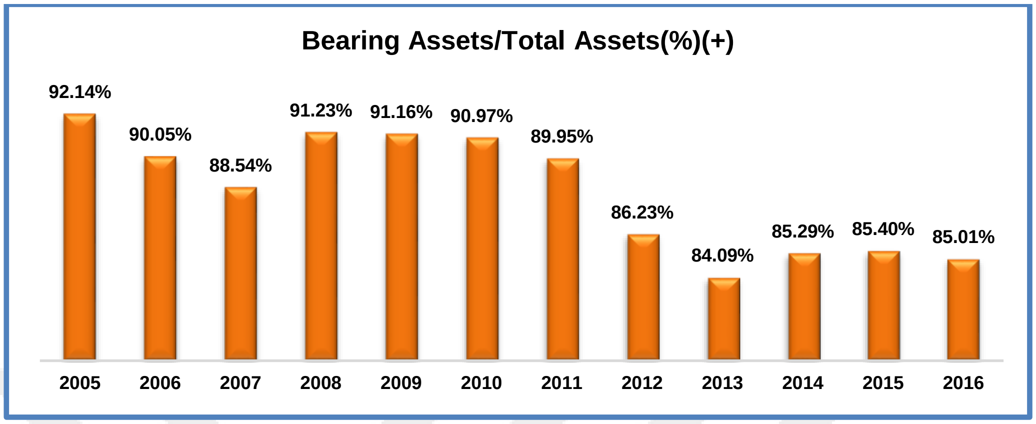



**Figure 54. Bearing Assets to Total Assets for Halkbank during 2005-2016**

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

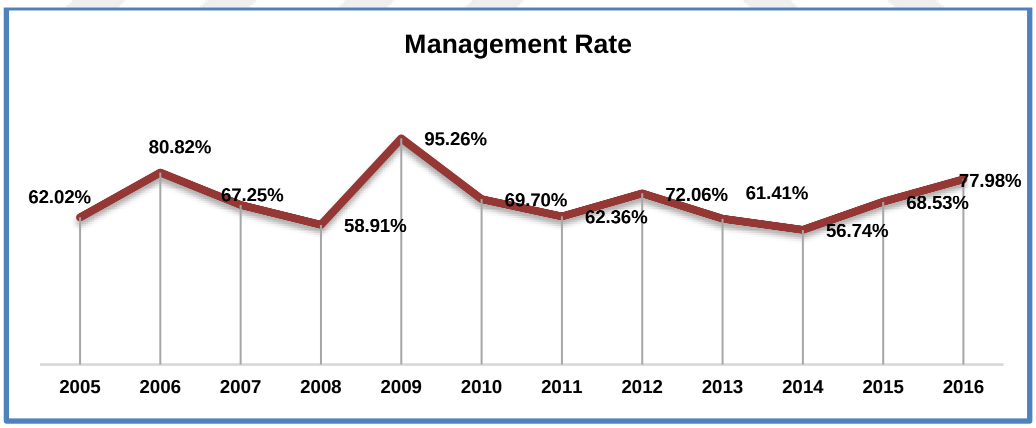



**Figure 55. Management rate for Halkbank during 2005-2016**

“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.

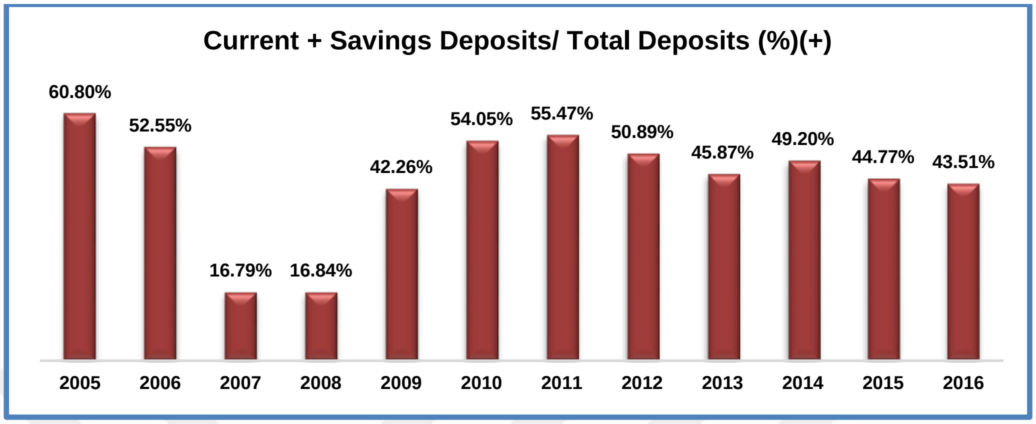



**Figure 56. Current plus Savings Deposits for Halkbank during 2005-2016**

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%.

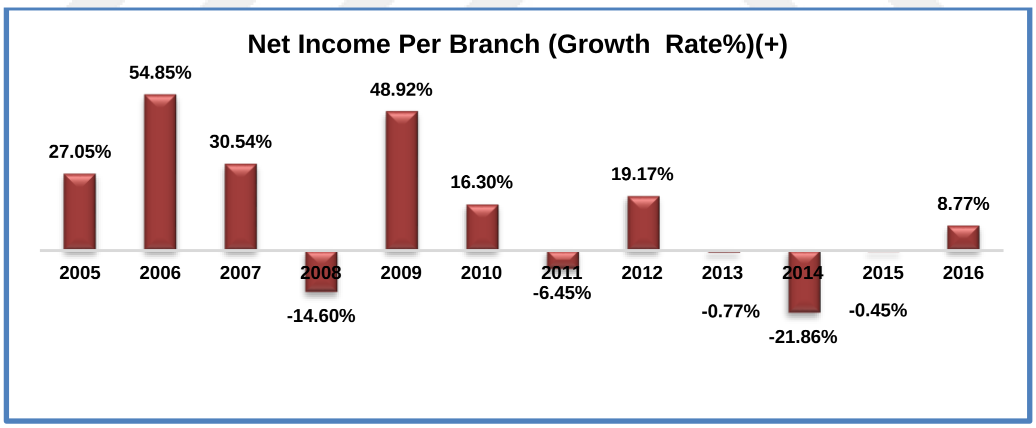



**Figure 57. Net Income per Branch for Halkbank during 2005-2016**

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.

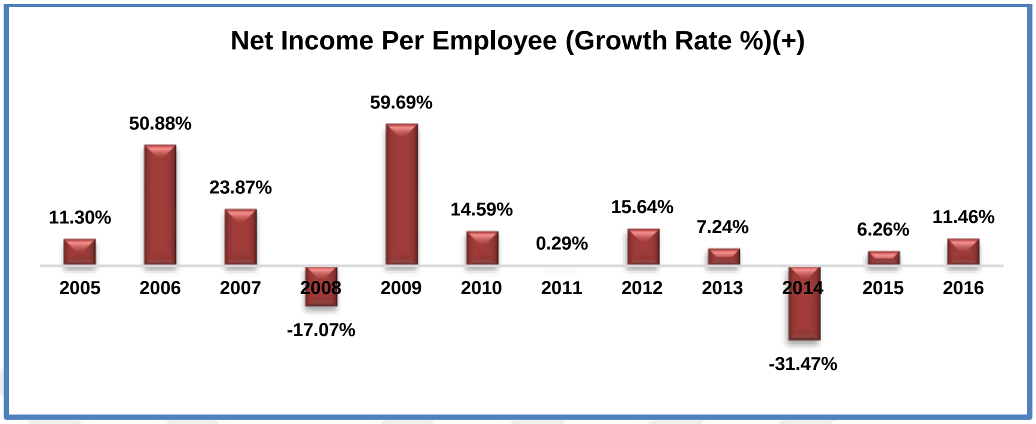



**Figure 58. Net Income per Employee for Halkbank during 2005-2016**

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

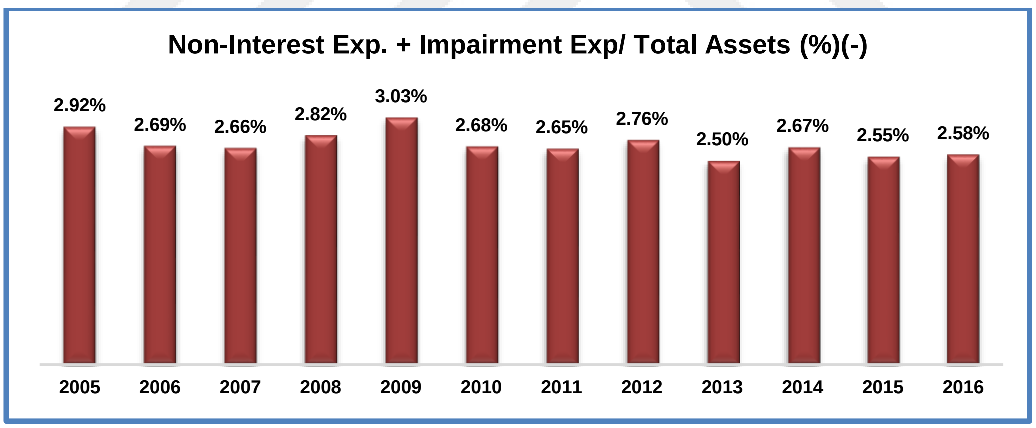



**Figure 59. Non-Interest Expenses plus Impairment Expenses to Total Assets for Halkbank during 2005-2016**

"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.

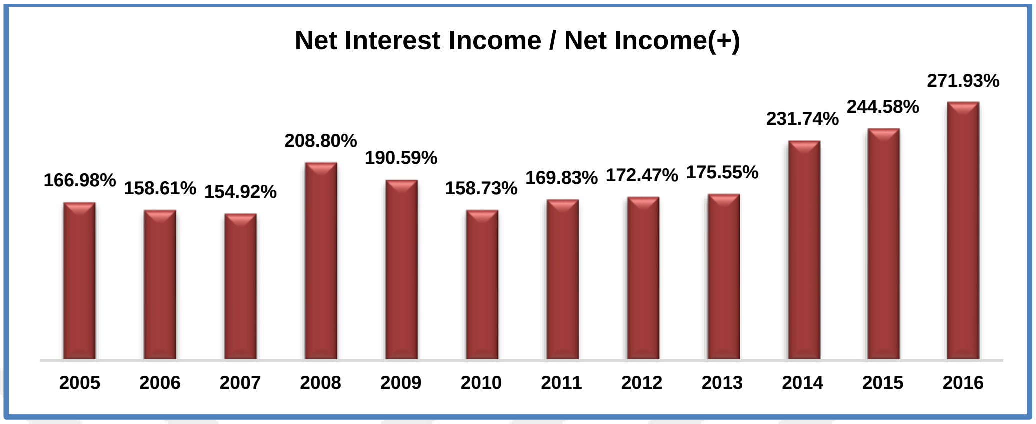



**Figure 60. Net Interest Income to Net Income for Halkbank during 2005-2016**

"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%.

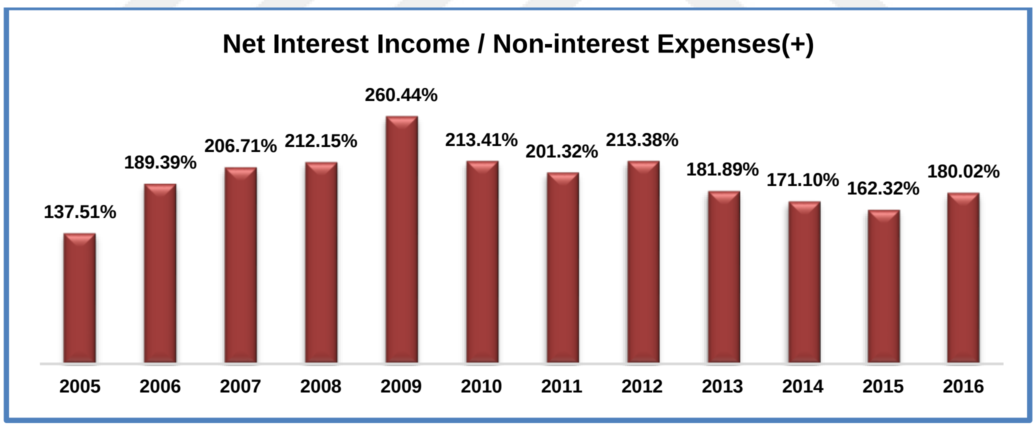



**Figure 61. Net Interest Income to Non Interest Expenses for Halkbank during 2005-2016**

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.

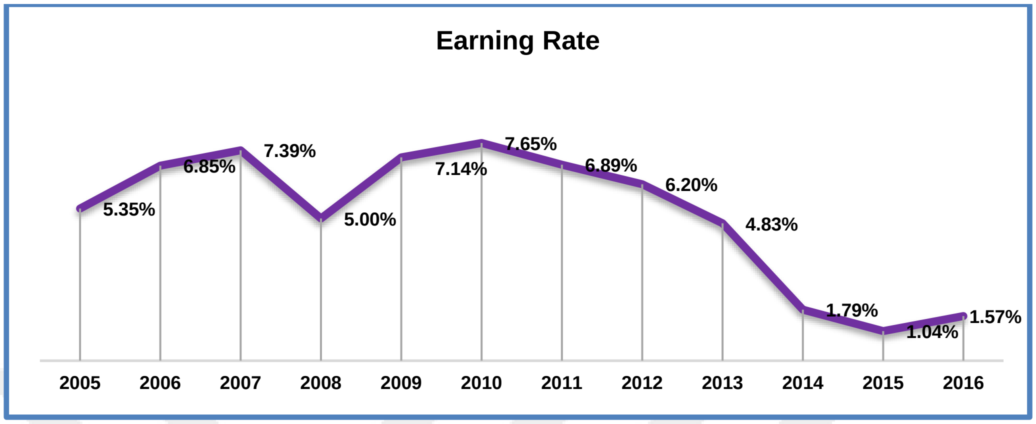



**Figure 62. Earning rate for Halkbank during 2005-2016**

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

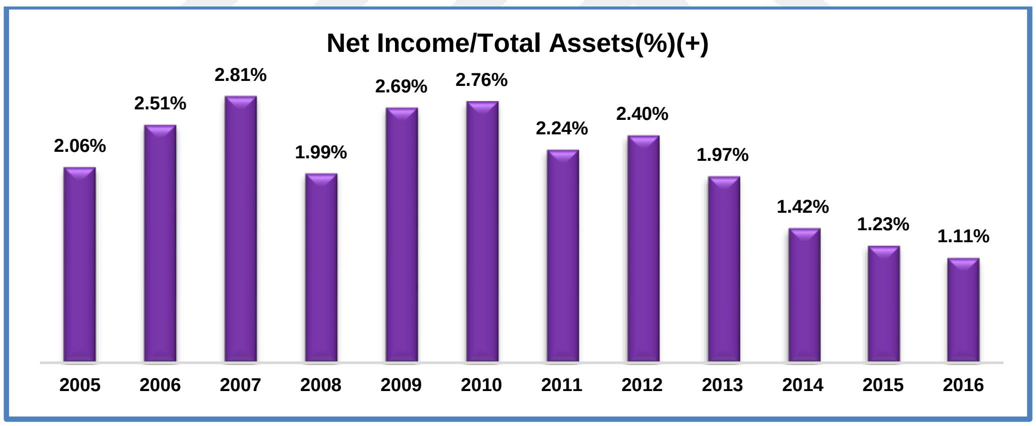



**Figure 63. Net Income to Total Assets for Halkbank During 2005-2016**

“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%.

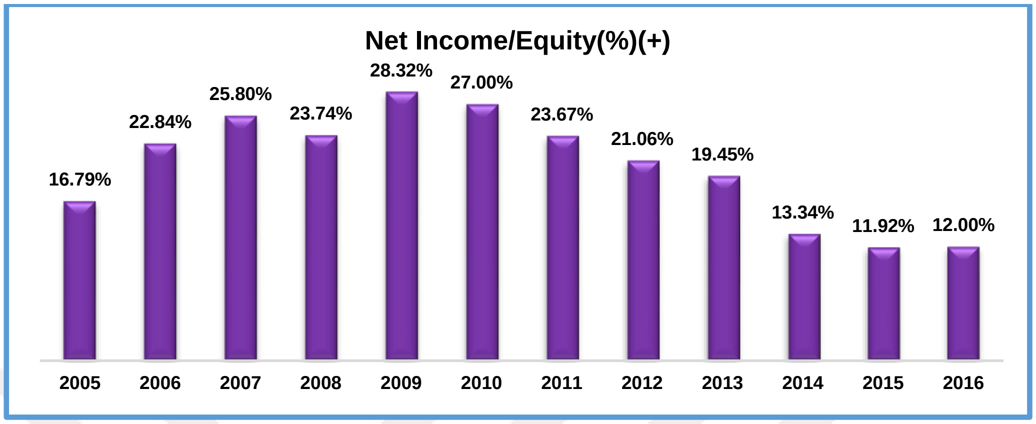



**Figure 64. Net Income to Equity for Halkbank during 2005-2016**

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%.

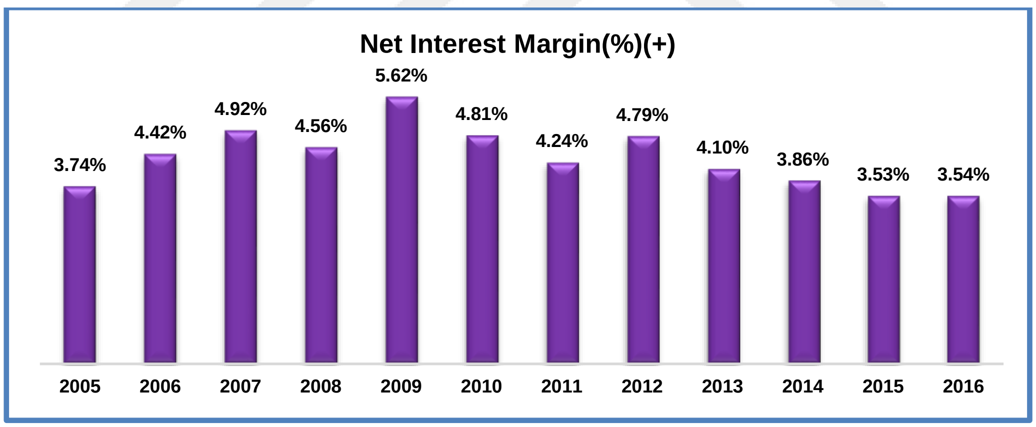



**Figure 65. Net Interest Margin for Halkbank during 2005-2016**

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

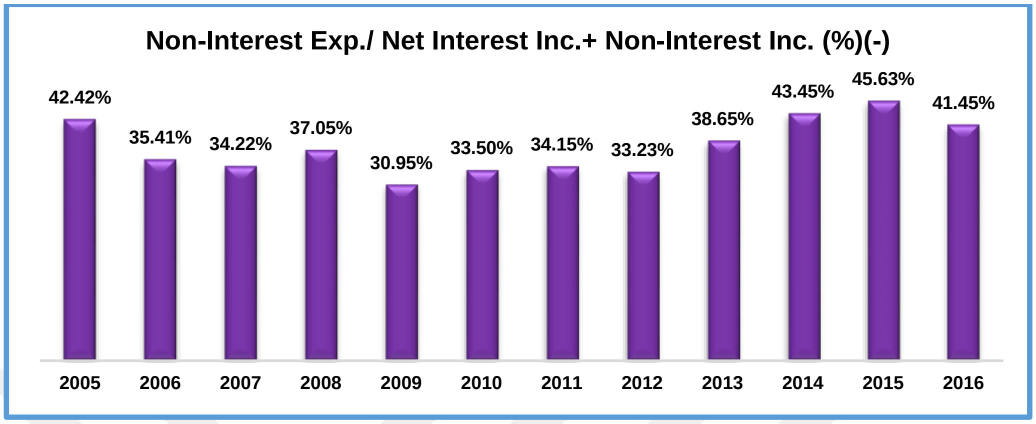



**Figure 66. Non-Interest Exp. to Net Interest Inc. plus Non-Interest Inc. for Halkbank during 2005-2016**

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

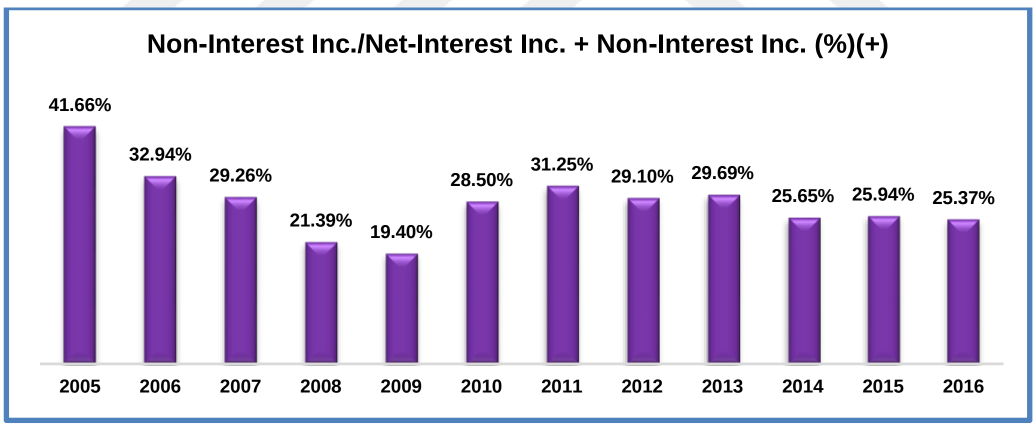



**Figure 67. Non-Interest Inc. to Net-Interest Inc. plus Non-Interest Inc. for Halkbank during 2005-2016**

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.

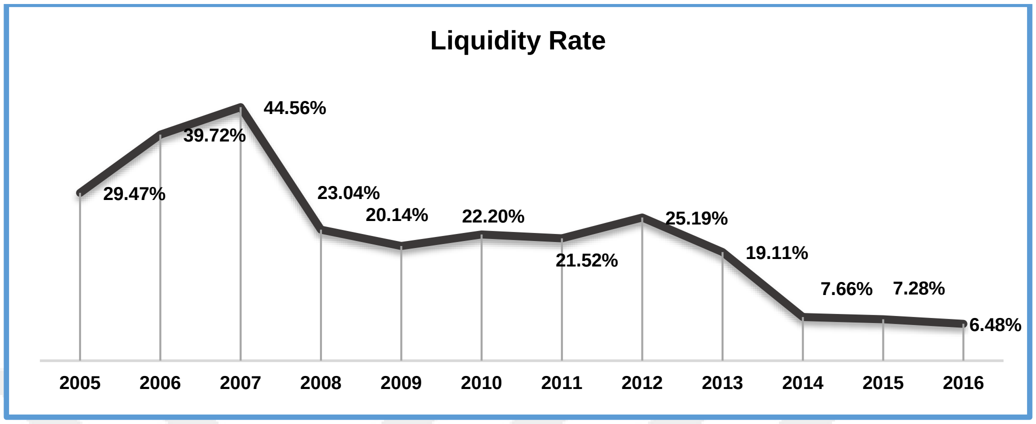



**Figure 68. Liquidity Rate for for Halkbank during 2005-2016**

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

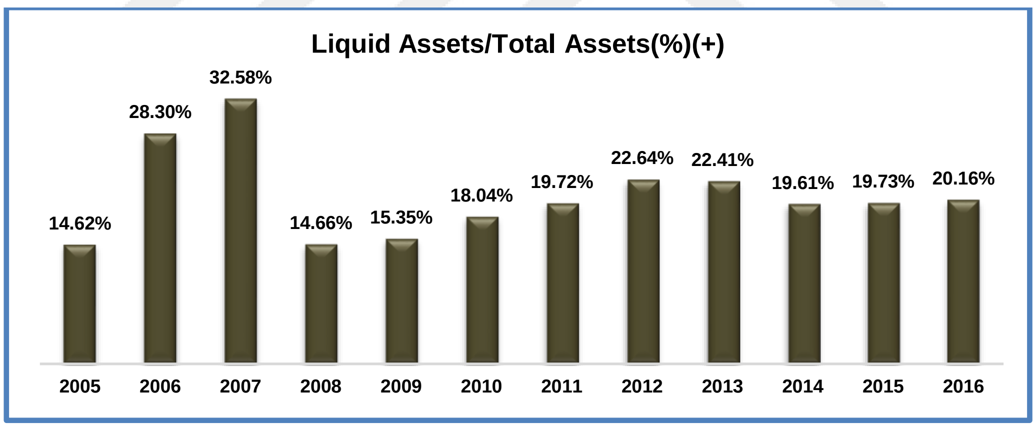



**Figure 69. Liquid Assets to Total Assets for Halkbank during 2005-2016**

“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.

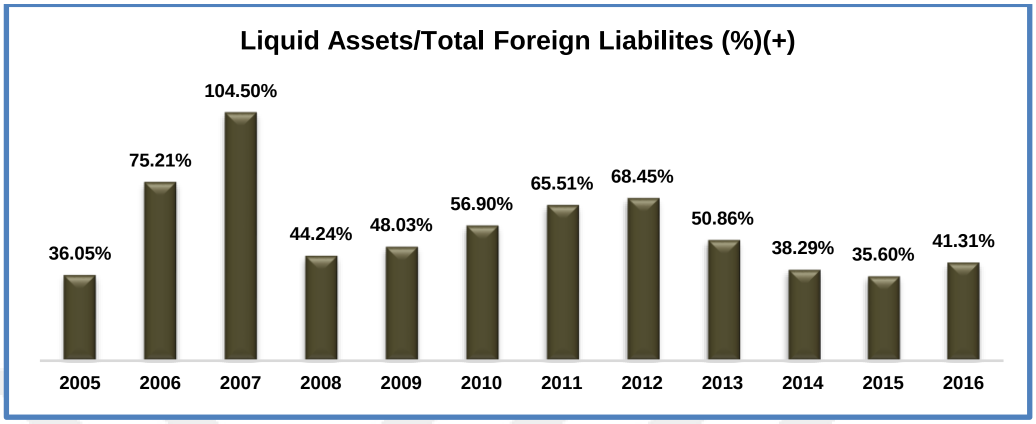



**Figure 70. Liquid Assets to Total Foreign Liabilities for Halkbank during 2005-2016**

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

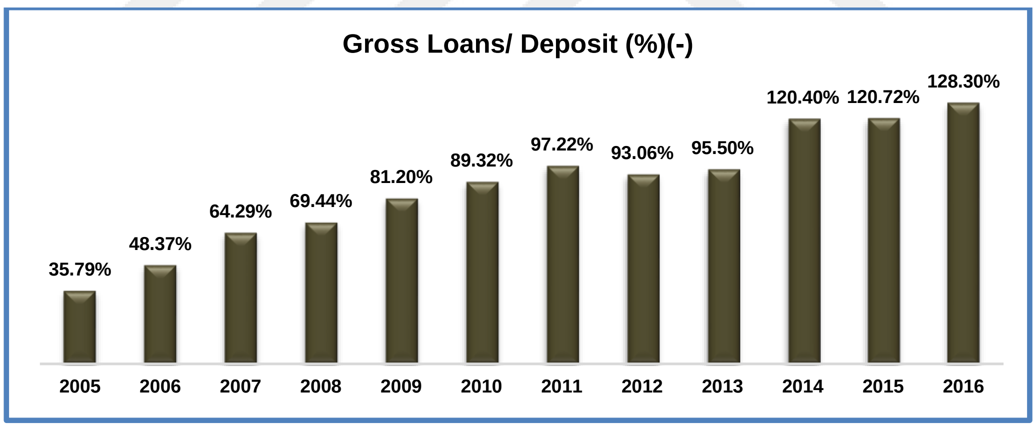



**Figure 71. Gross Loans to Deposit for Halkbank during 2005-2016**

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

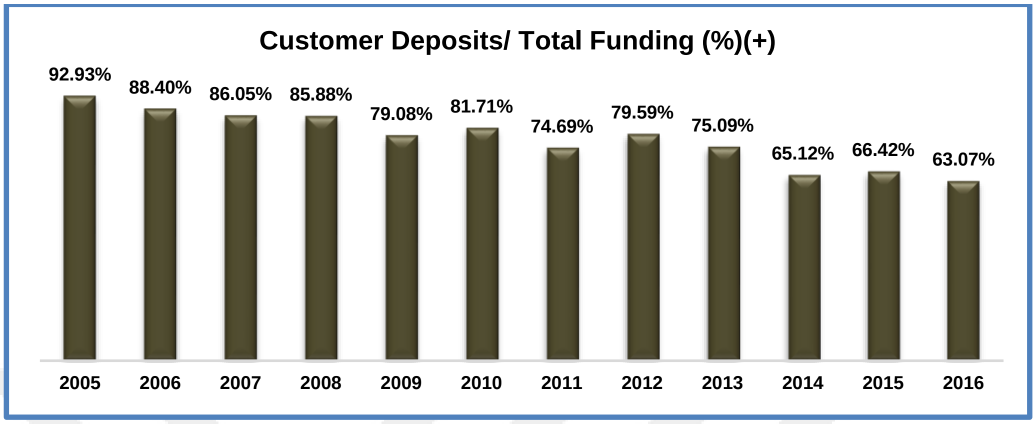



**Figure 72. Customer Deposits to Total Funding for Halkbank during 2005-2016**

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

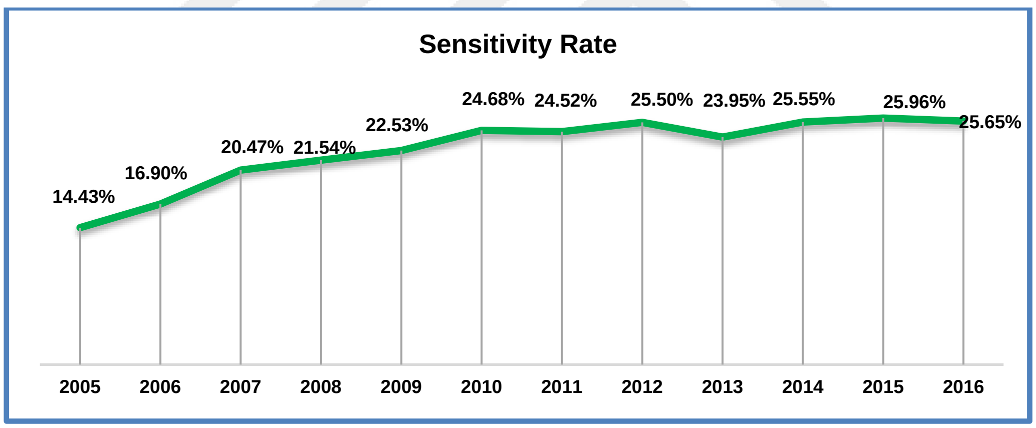



**Figure 73. Sensitivity Rate for Halkbank during 2005-2016**

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

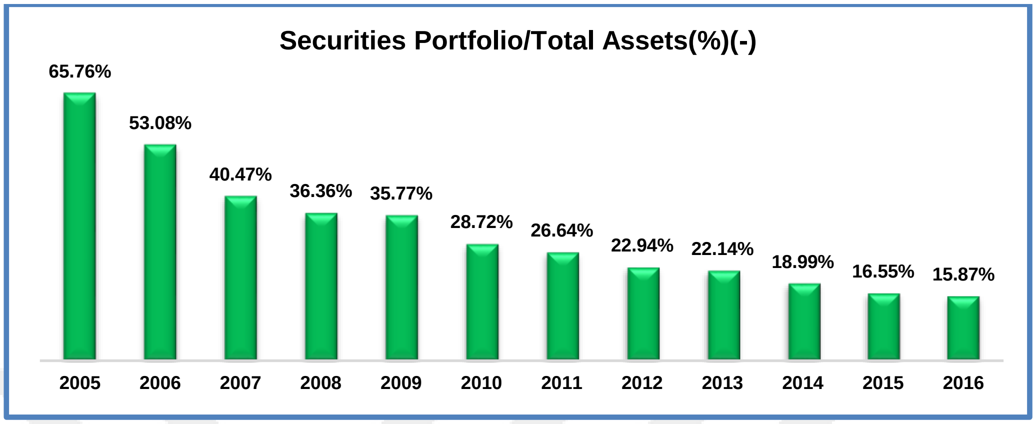



**Figure 74. Securities Portfolio to Total Assets for Halkbank during 2005-2016**

"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.

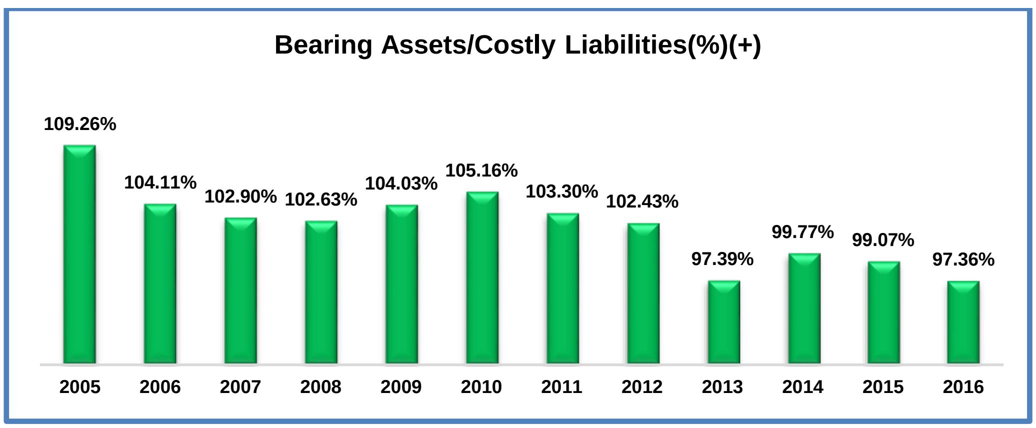



**Figure 75. Bearing Assets to Costly Liabilities for Halkbank during 2005-2016**

"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%.

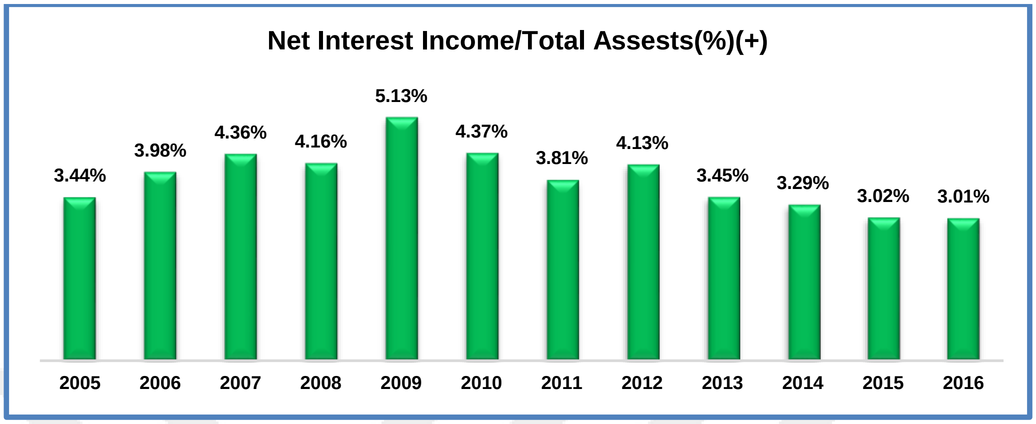



**Figure 76. Net Interest Income to Total Assets for Halkbank during 2005-2016**

### 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%).

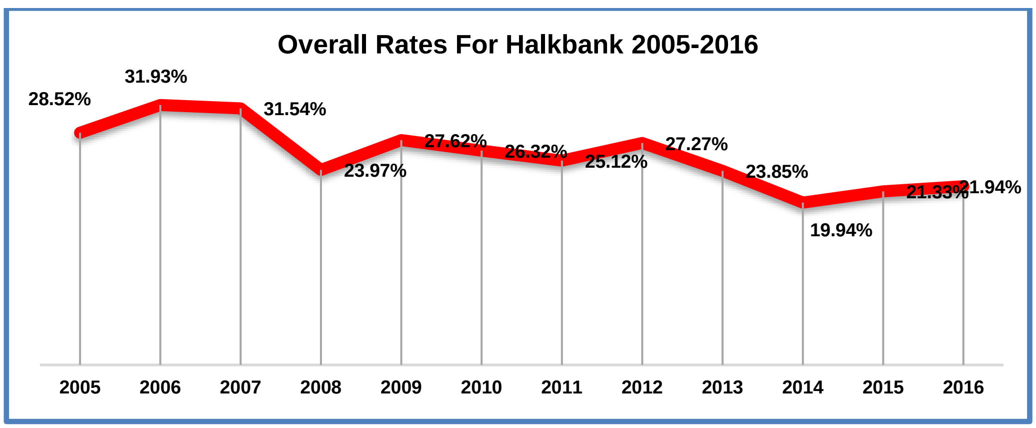



**Figure 77. CAMELS Overall Rates for Halkbank during 2005-2016**

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.

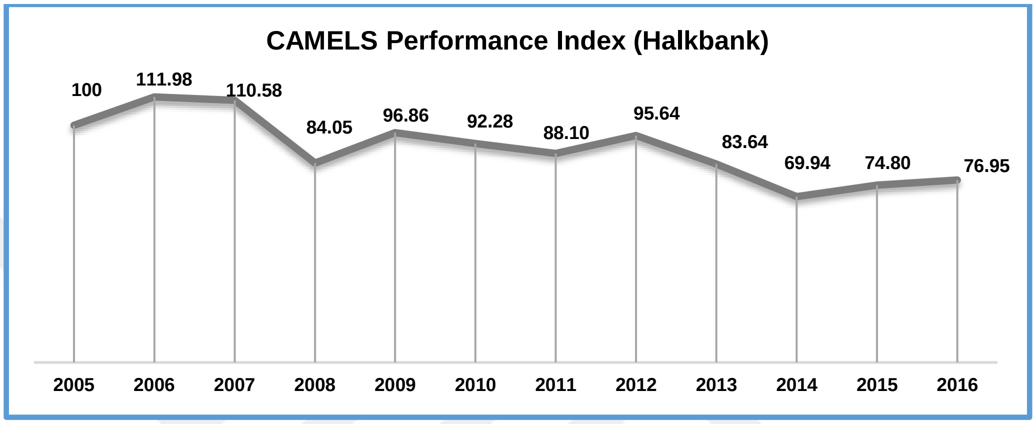



**Figure 78. CAMELS Performance Index for Halkbank during 2005-2016**

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* | | | |
| CSDTD | 10 | 0,15 | Current + Savings Deposits/ Total Deposits (%)(+) | + | 44% |
| NIPB | 11 | 0,20 | Net Income Per Branch (Growth Rate%)(+) | + | 9% |
| NIPE | 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% |
| NIENIINII | 19 | 0,15 | Non-Interest Exp./ Net Interest Inc.+ Non-Interest Inc. (%)(-) | - | 41% |
| NIINIINII | 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 Liabilites (%)(+) | + | 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 Assests(%)(+) | + | 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 Ataturk’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.

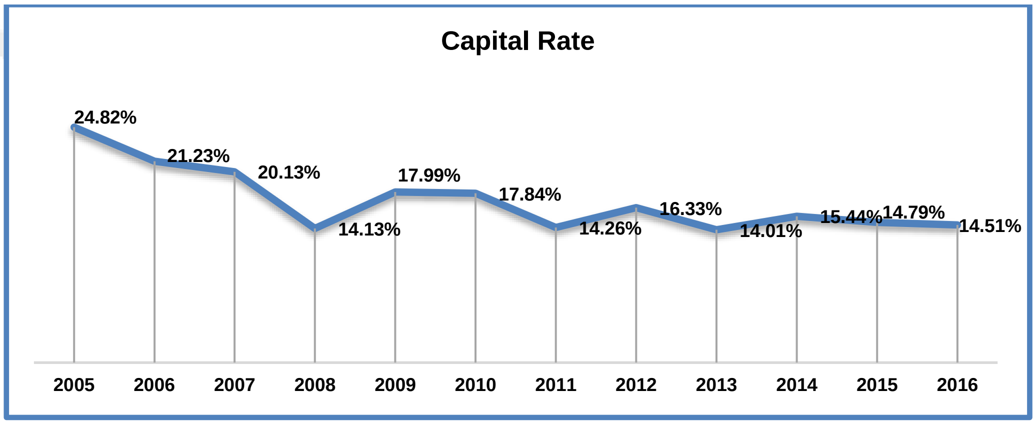



**Figure 79. Capital rate of İşbank during 2005-2016**

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

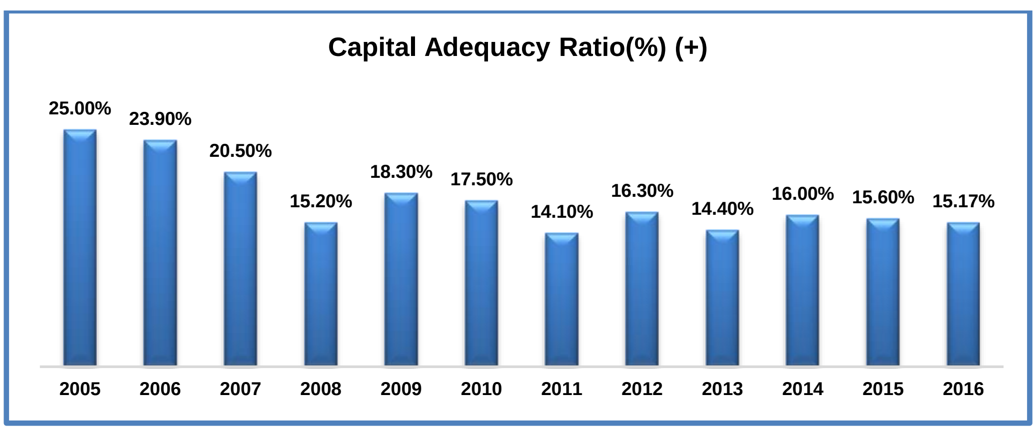



**Figure 80. Capital Adequacy Ratio of İşbank during 2005-2016**

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

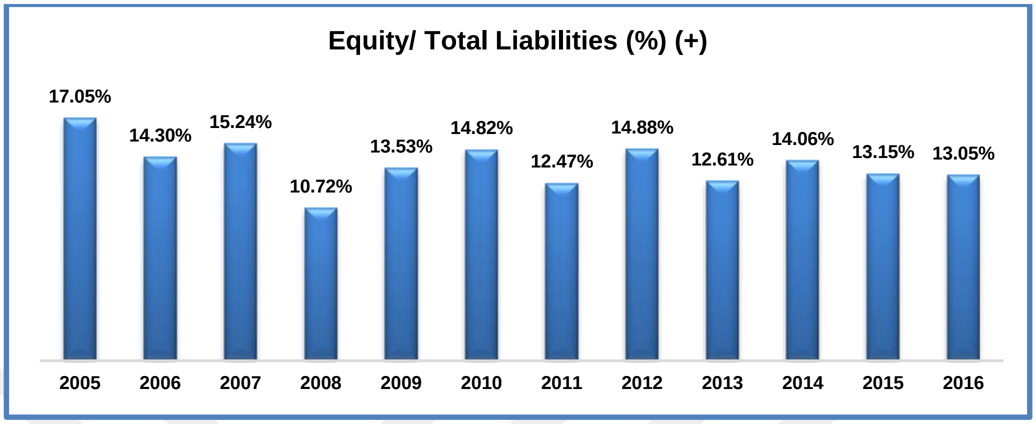



**Figure 81. Equity to Total Liabilities of İşbank during 2005-2016**

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

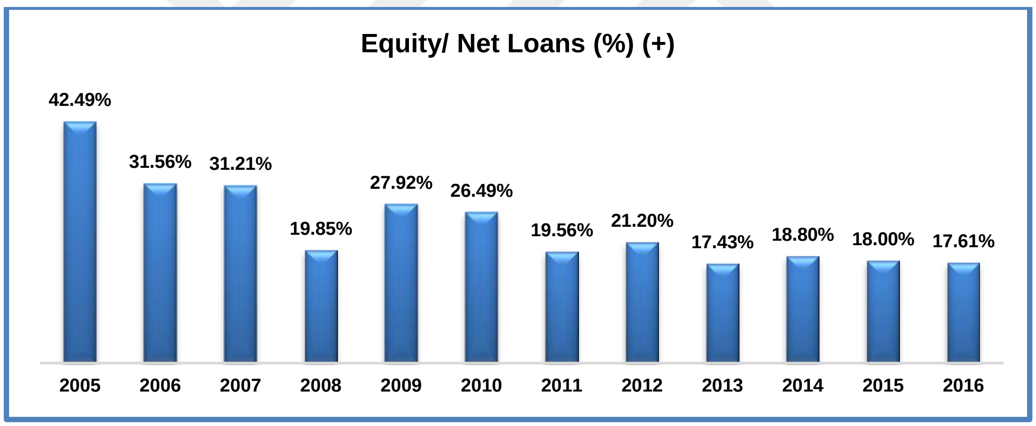



**Figure 82. Equity to Net Loans of İşbank during 2005-2016**

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

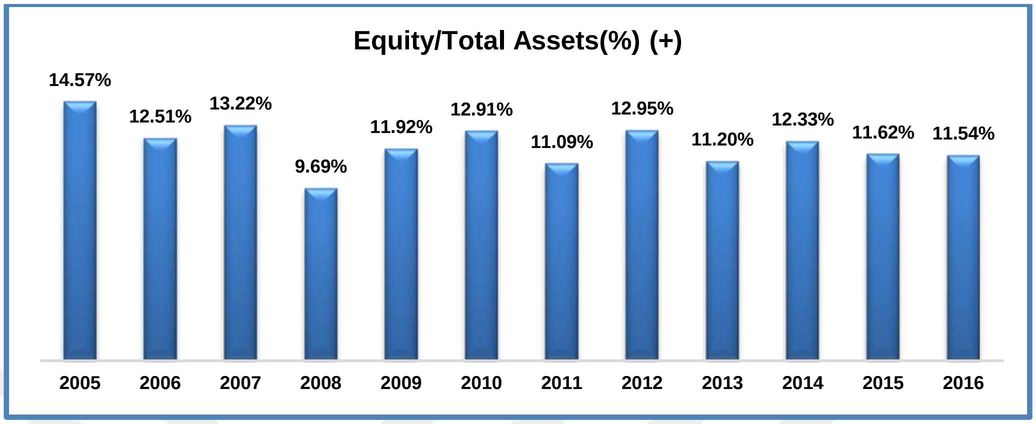



**Figure 83. Equity to Total Assets of İşbank during 2005-2016**

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

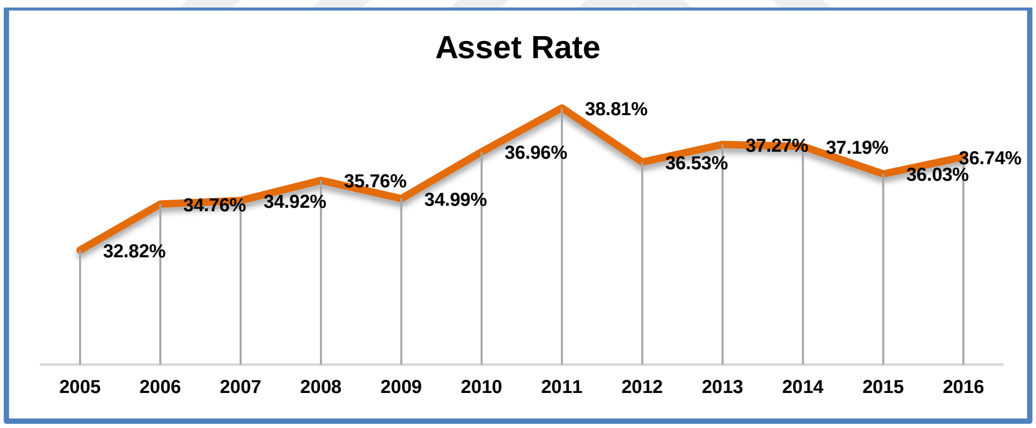



**Figure 84. Asset Quality rate of İşbank during 2005-2016**

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

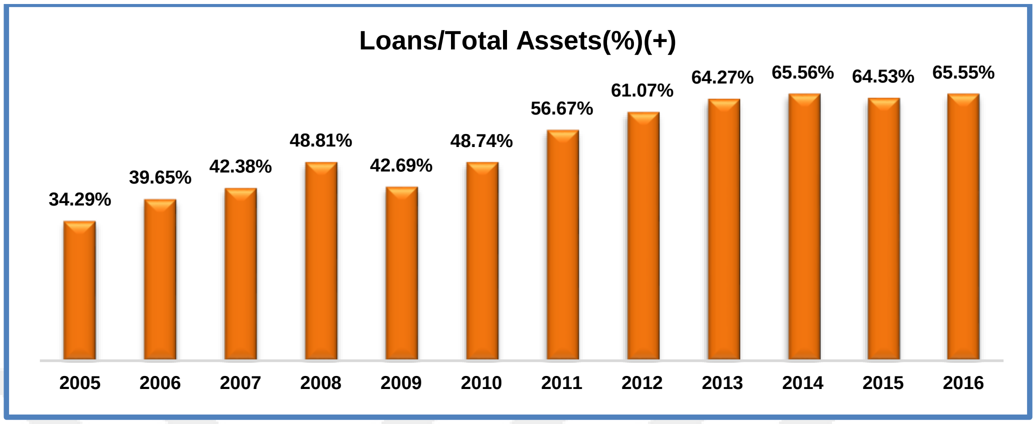



**Figure 85. Loans to total Assets of İşbank during 2005-2016**

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

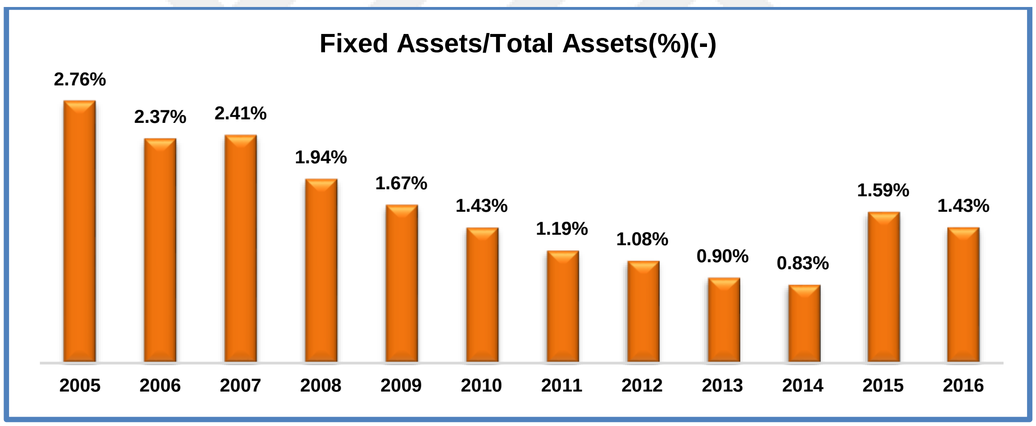



**Figure 86. Fixed Assets to Total Assets of İşbank during 2005-2016**

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

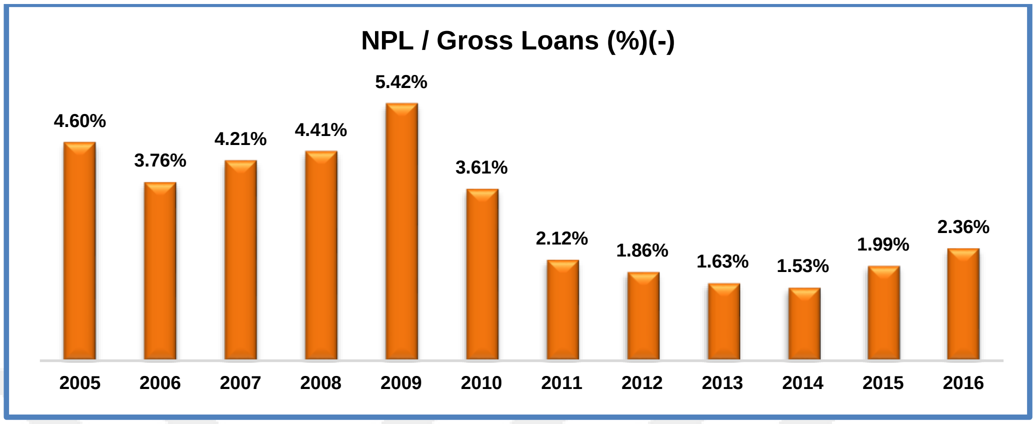



**Figure 87. NPL to Gross Loans of İşbank during 2005-2016**

"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%.

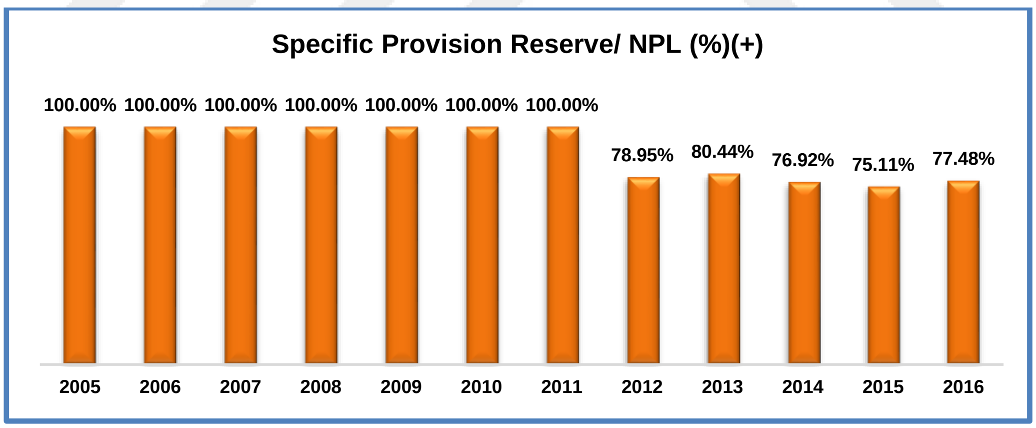



**Figure 88. Specific Provision Reserve to NPL of İşbank during 2005-2016**

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

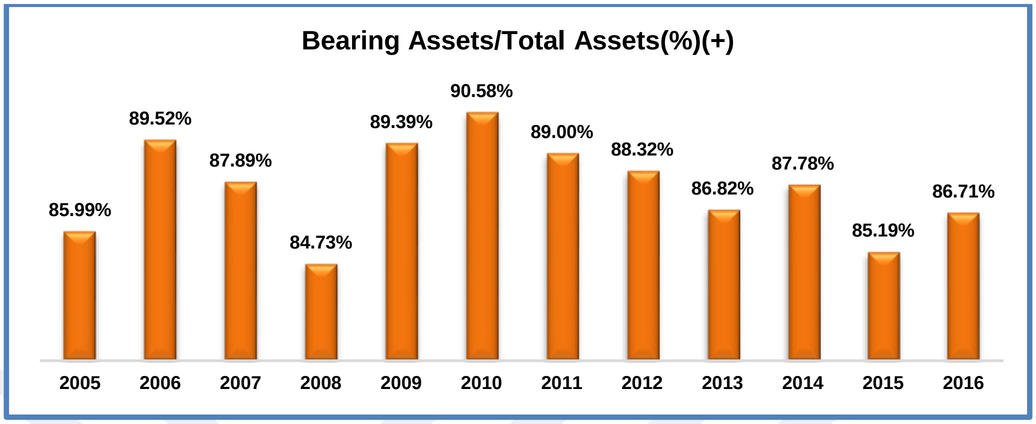



**Figure 89. Bearing Assets to Total Assets of İşbank during 2005-2016**

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

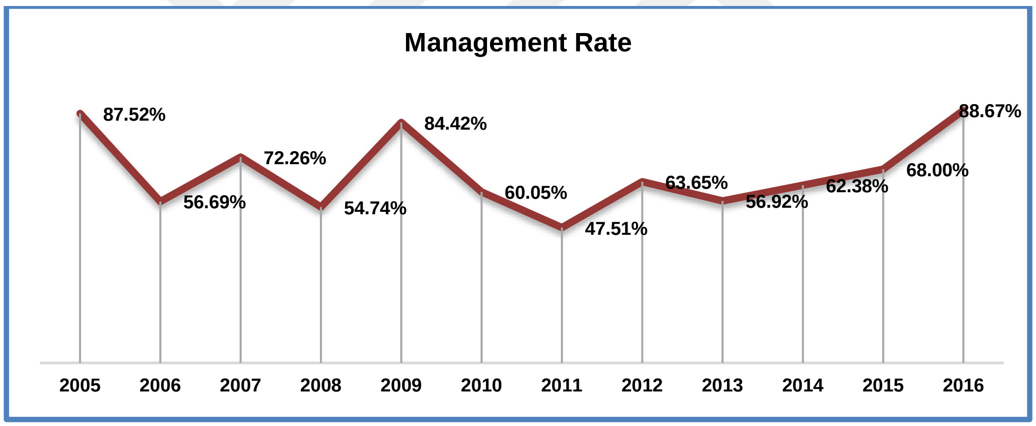



**Figure 90. Management Rate of İşbank during 2005-2016**

“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%.

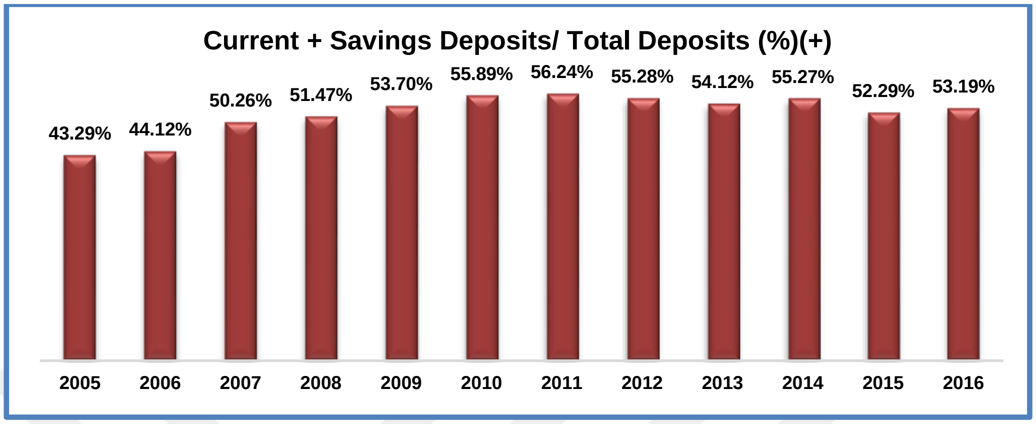



**Figure 91. Current plus Saving Deposits to Total Deposits of İşbank during 2005-2016**

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

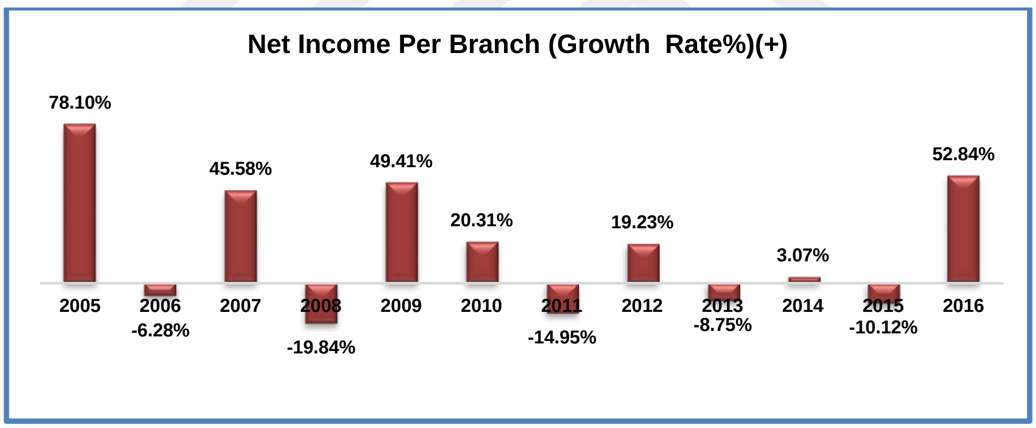



**Figure 92. Net Income per Branch (Growth Rate) of İşbank during 2005-2016**

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

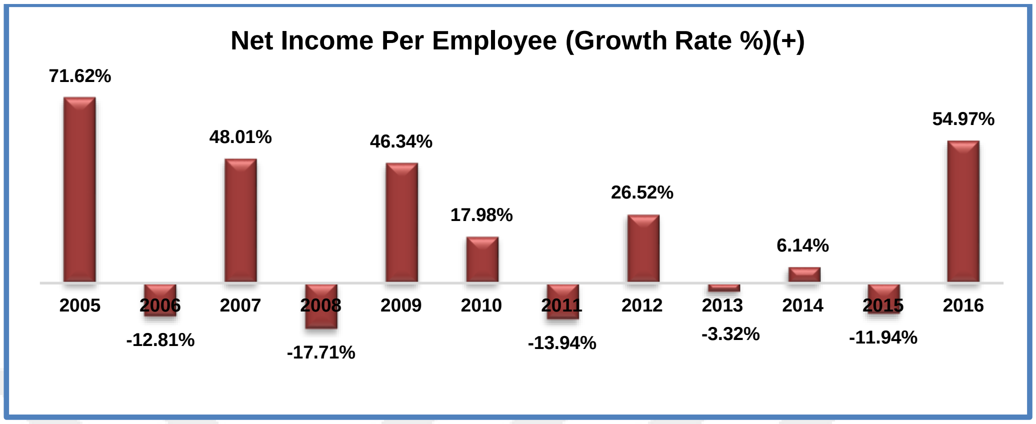



**Figure 93. Net Income per Employee (Growth Rate) of İşbank during 2005-2016**

"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%.

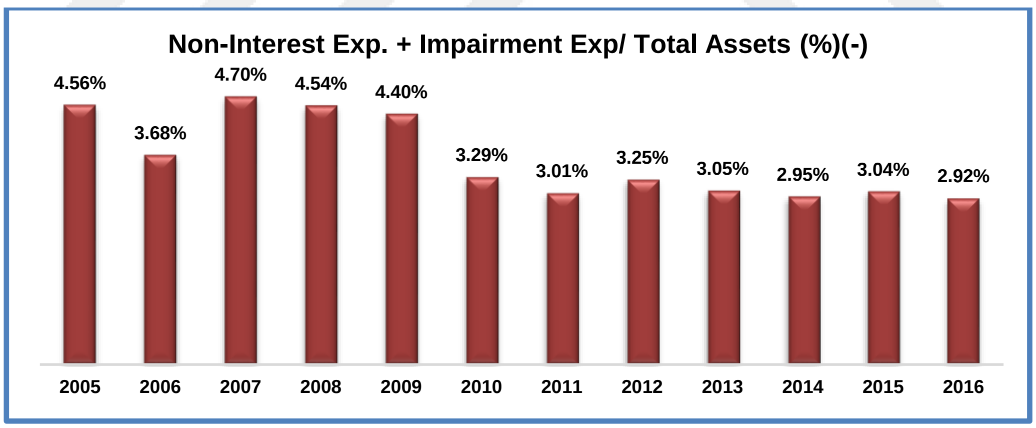



**Figure 94. Non-Interest Exp. Plus Impairment Exp. to Total Assets of İşbank during 2005-2016**

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

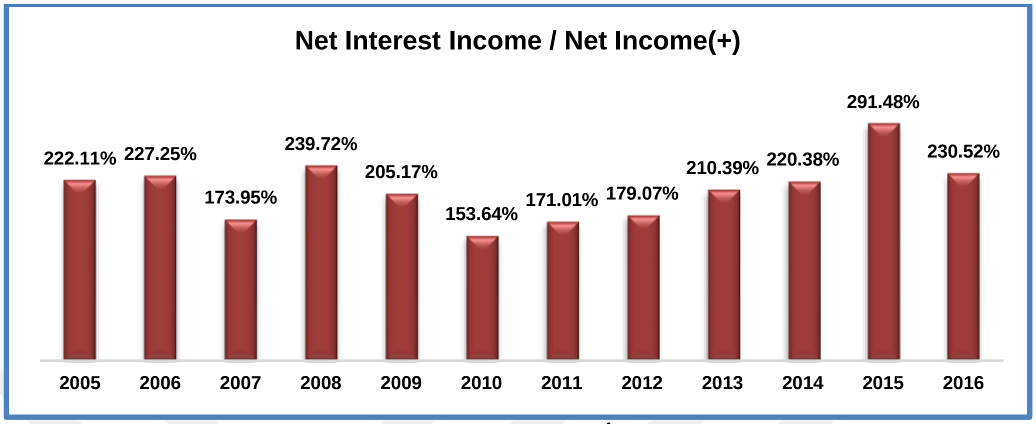



**Figure 95. Net Interest Income to Net Income of İşbank during 2005-2016**

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

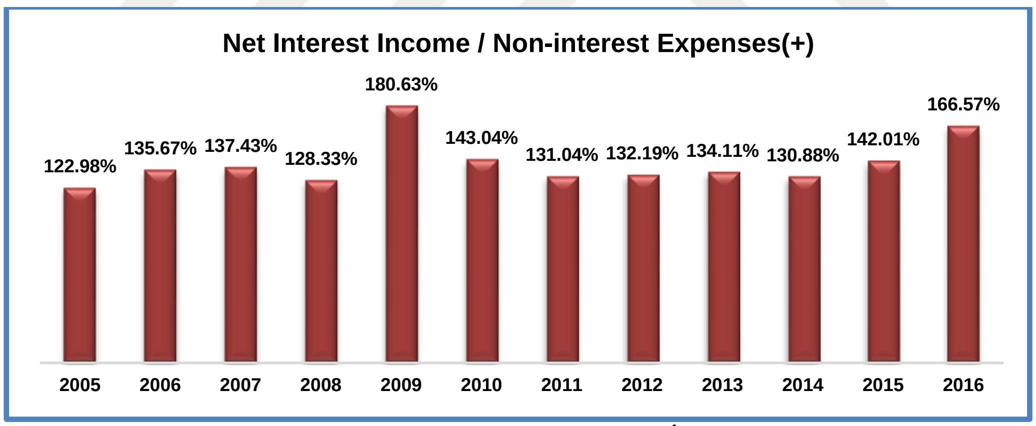



**Figure 96. Net Interest Income to Non-Interest Expenses of İşbank during 2005-2016**

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%.

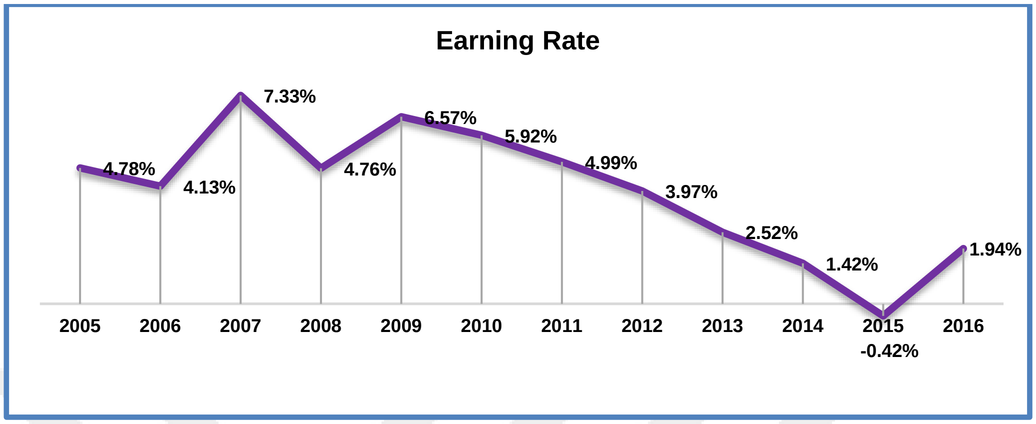



**Figure 97. Earning Rate of İşbank during 2005-2016**

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

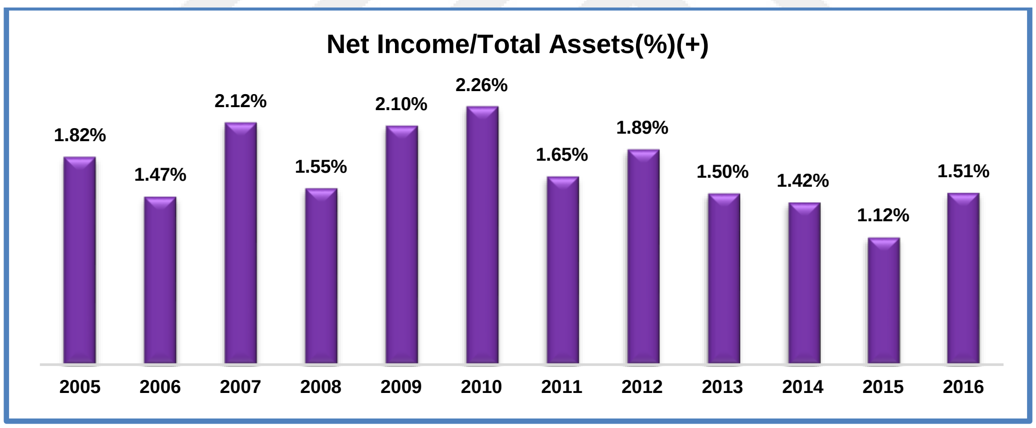



**Figure 98. Net Income to Total Assets of İşbank during 2005-2016**

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

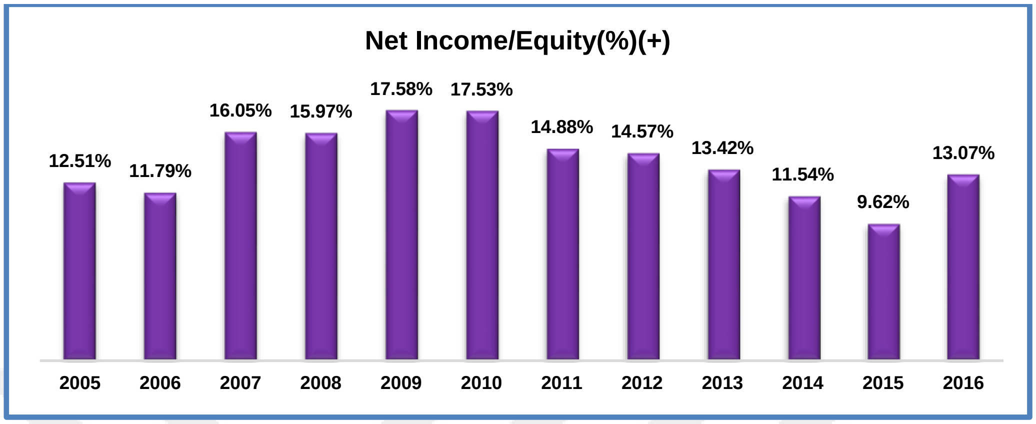



**Figure 99. Net Income to Equity of İşbank during 2005-2016**

Net interest margin was between 3.17% and 4.81%.

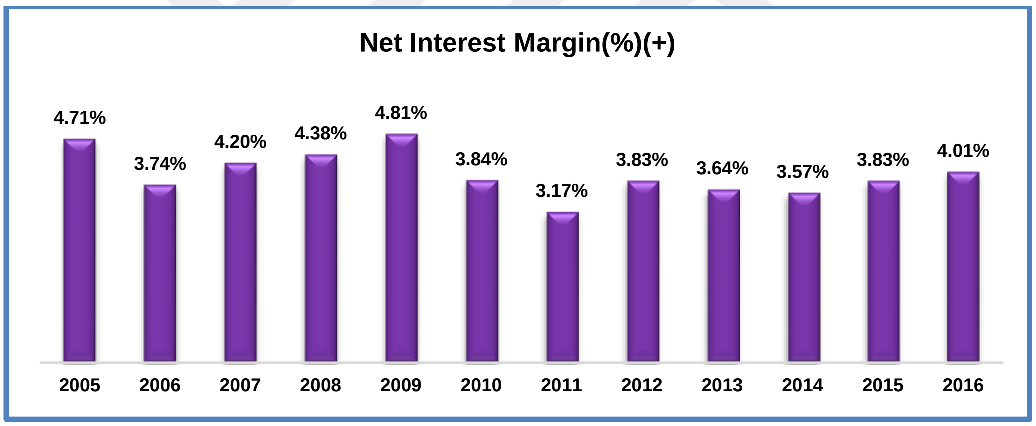



**Figure 100. Net Interest Margin of İşbank during 2005-2016**

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

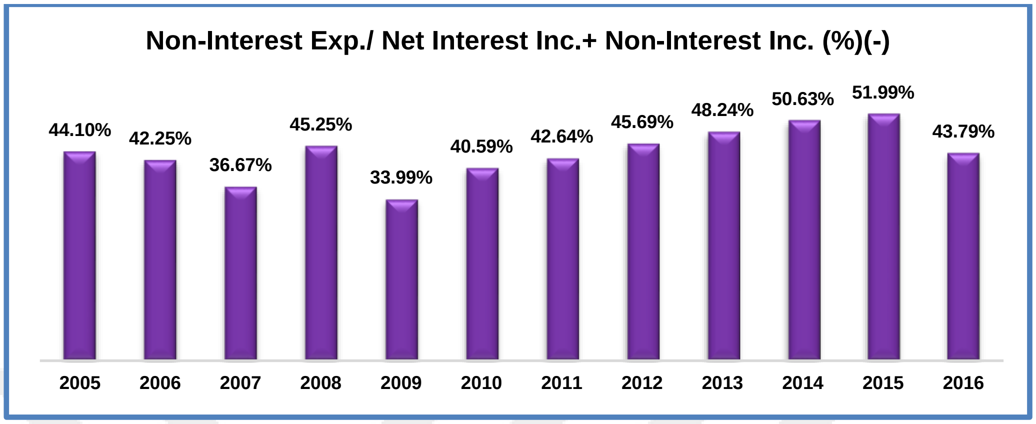



**Figure 101. Non-Interest Inc. to Net-Interest Inc. plus Non-Interest Inc. of İşbank during 2005-2016**

"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%.

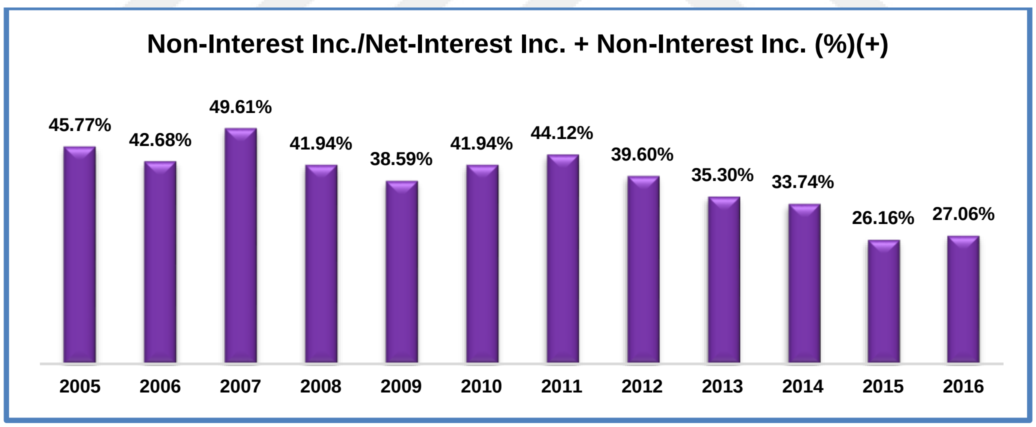



**Figure 102. Liquidity Rate of İşbank during 2005-2016**

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

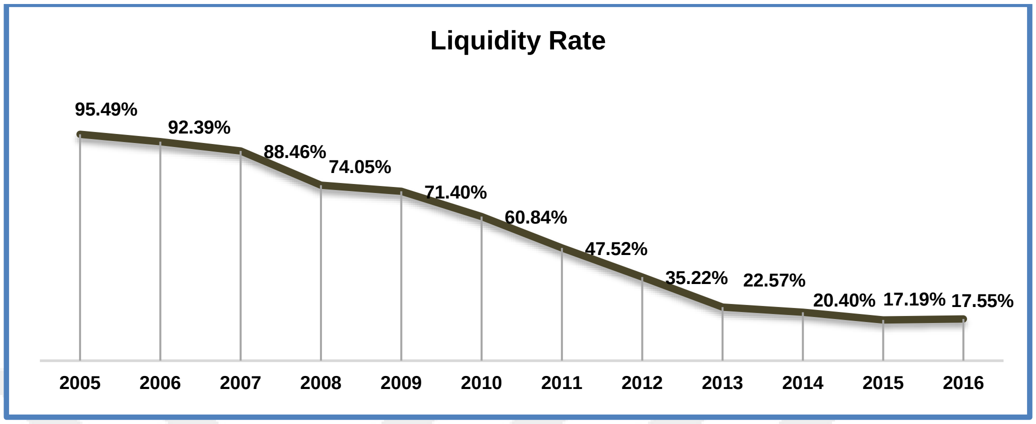



**Figure 103. Liquidity Rate of İşbank during 2005-2016**

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

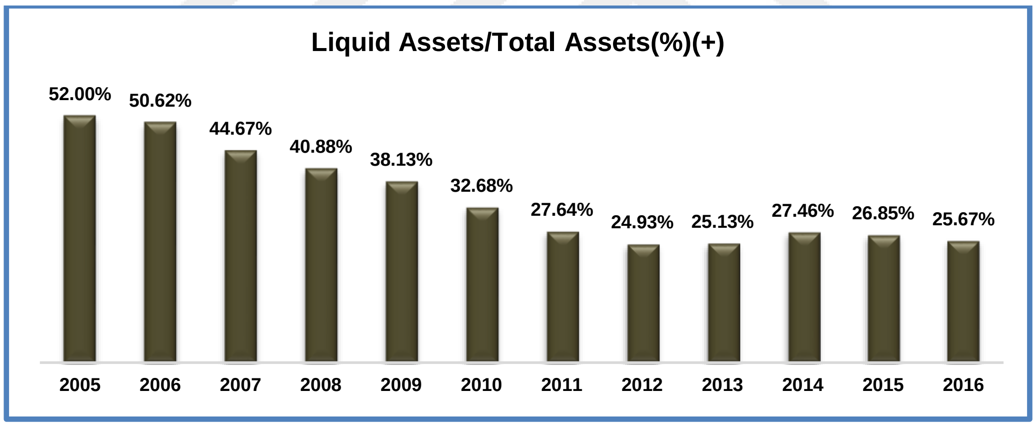



**Figure 104. Liquid Assets to Total Assets of İşbank during 2005-2016**

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

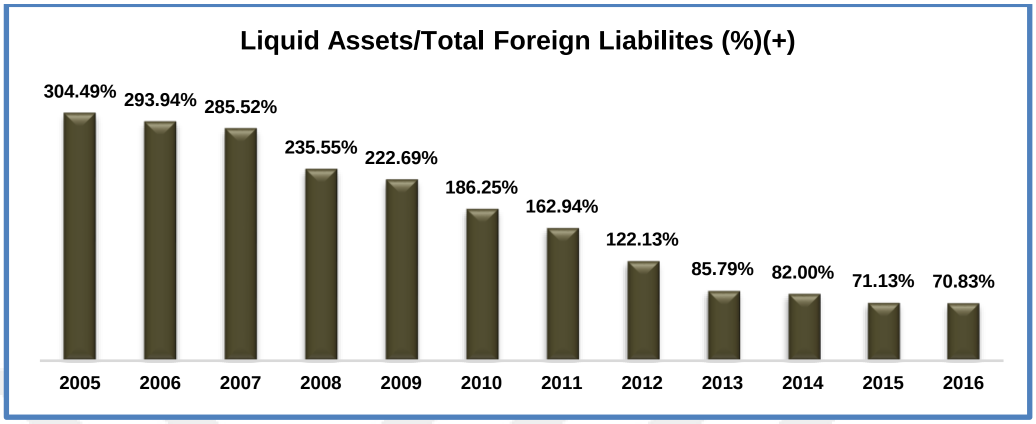



**Figure 105. Liquid Assets to Total Foreign Assets of İşbank during 2005-2016**

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

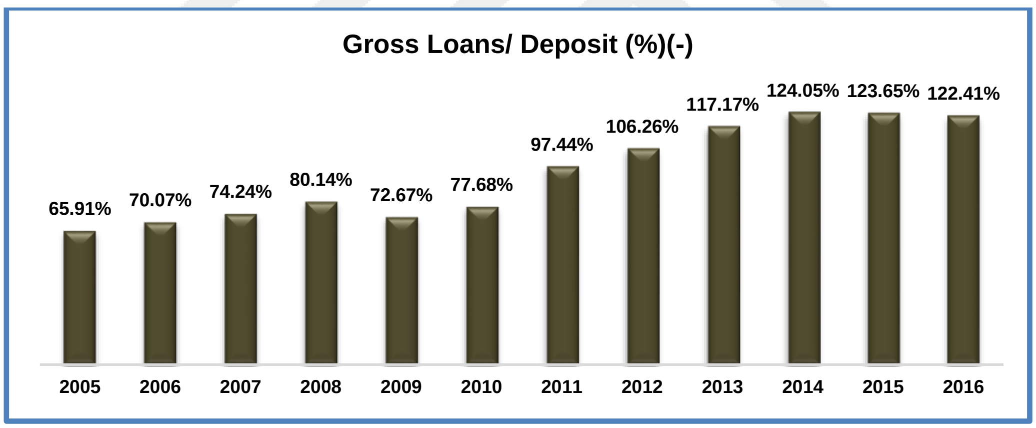



**Figure 106. Gross Loans to Deposit of İşbank during 2005-2016**

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

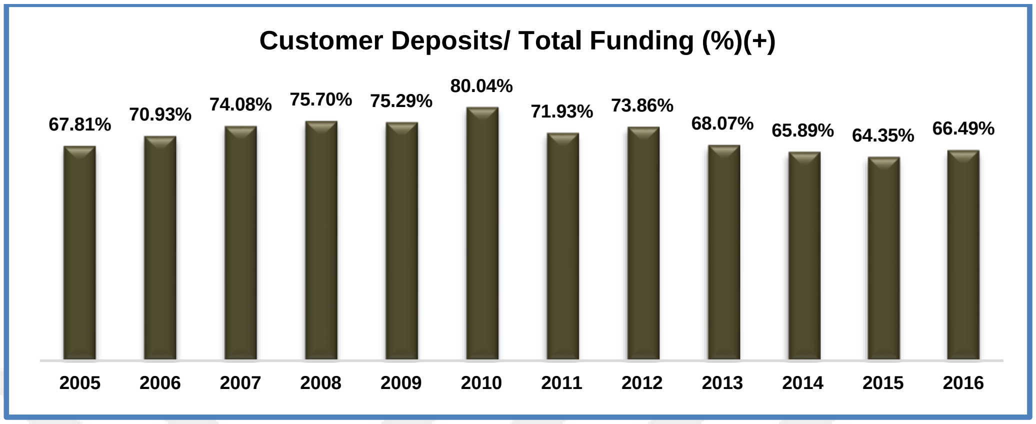



**Figure 107. Customer Deposits to Total Funding of İşbank during 2005-2016**

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

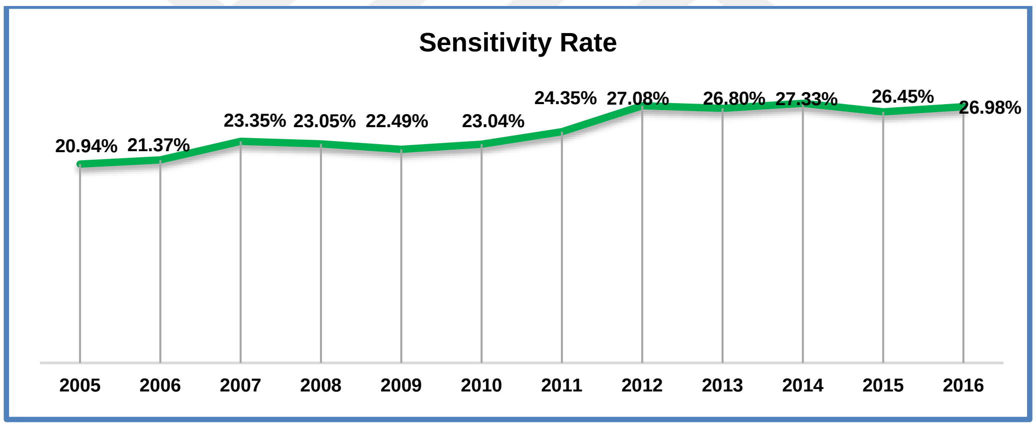



**Figure 108. Sensitivity Rate of İşbank during 2005-2016**

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

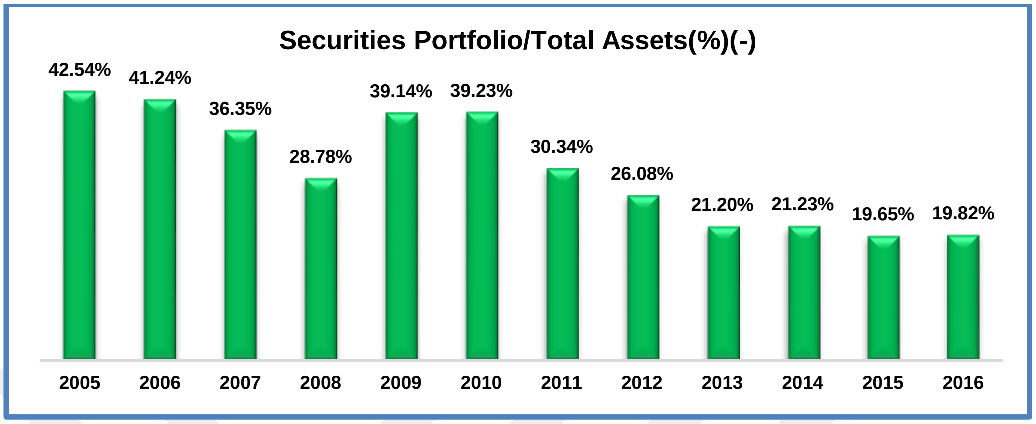



**Figure 109. Securities Portfolio to Total Assets of İşbank during 2005-2016**

"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%.

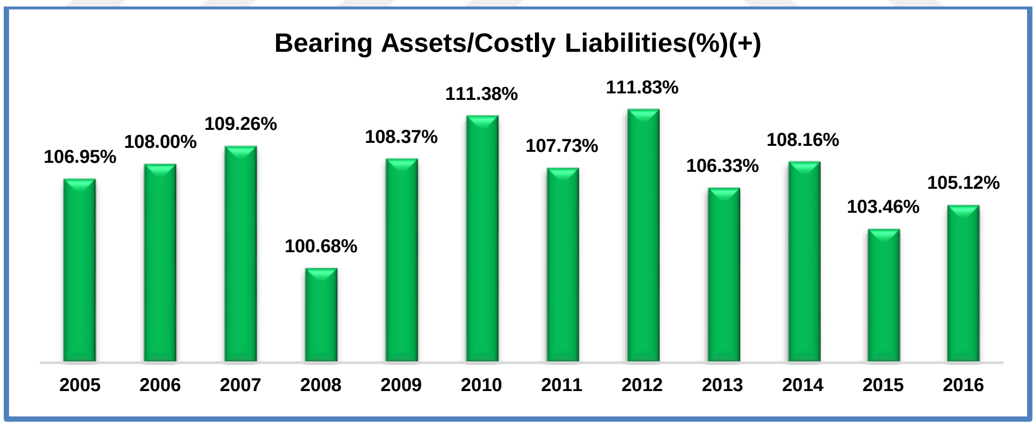



**Figure 110. Bearing Assets to Costly Liabilities of İşbank during 2005-2016**

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

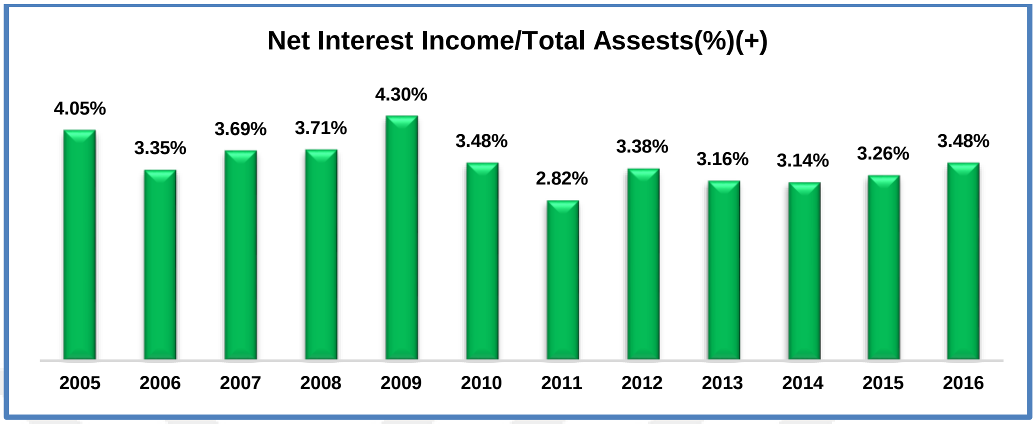



**Figure 111. Net Interest Income to Total Assets of İşbank during 2005-2016**

### 6.4.3. CAMELS rating for İşbank

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

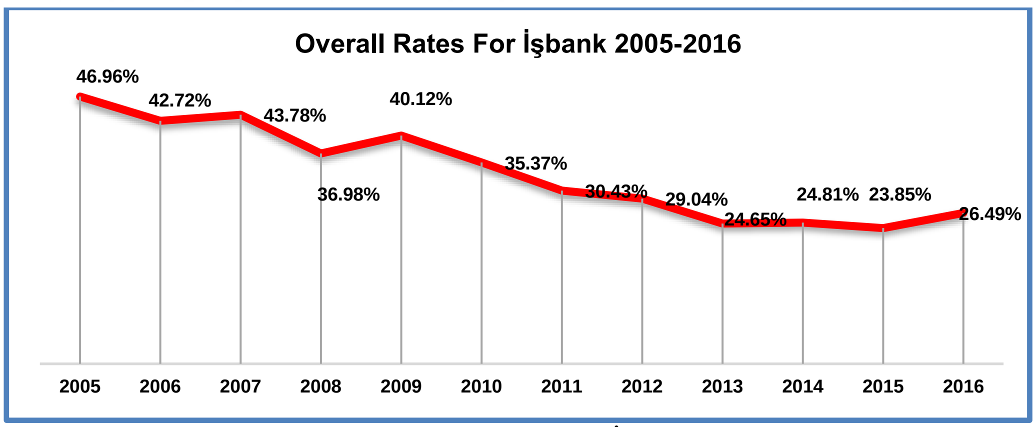



**Figure 112. CAMELS Overall Rates for İşbank during 2005-2016**

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.

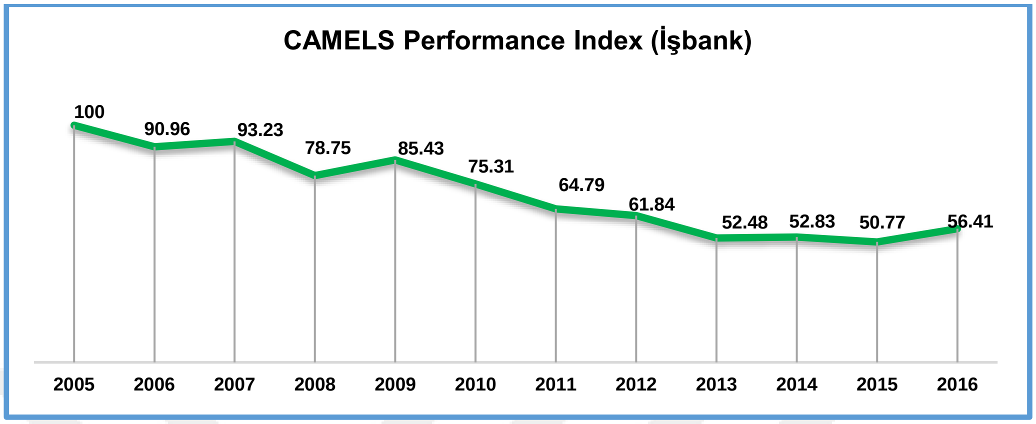



**Figure 113. CAMELS Performance Index for İşbank during 2005-2016**

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 | | Overall Weight | Capital | |
| 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% |
| A | | Overall Weight | Asset | |
| 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% |
| M | | Overall Weight | Management | |
| 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% |
| E | | Overall Weight | Earnings | |
| E | | 0,15 | | |
| ROA | 16 | 0,25 | Net Income/Total Assets(%)(+) | 2% |
| ROE | 17 | 0,25 | Net Income/Equity(%)(+) | 13% |
| NIM | 18 | 0,20 | Net Interest Margin(%)(+) | 4% |
| NIENIINII | 19 | 0,15 | Non-Interest Exp./ Net Interest Inc.+ Non-Interest Inc. (%)(-) | 44% |
| NIINIINII | 20 | 0,15 | Non-Interest Inc./Net-Interest Inc. + Non-Interest Inc. (%)(+) | 27% |
| Earning Rate | | | | 2% |
| L | | Overall Weight | Liquidity | |
| L | | 0,25 | | |
| LATA | 21 | 0,30 | Liquid Assets/Total Assets(%)(+) | 26% |
| LATFL | 22 | 0,25 | Liquid Assets/Total Foreign Liabilites (%)(+) | 71% |
| GLD | 23 | 0,20 | Gross Loans/ Deposit (%)(-) | 122% |
| CDTF | 24 | 0,25 | Customer Deposits/ Total Funding (%)(+) | 66% |
| Liquidity Rate | | | | 18% |
| S | | Overall Weight | Sensitivity | |
| 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 Assests(%)(+) | 3% |
| Sensitivity Rate | | | | 27% |
| Overall Rates For Isbank 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%).

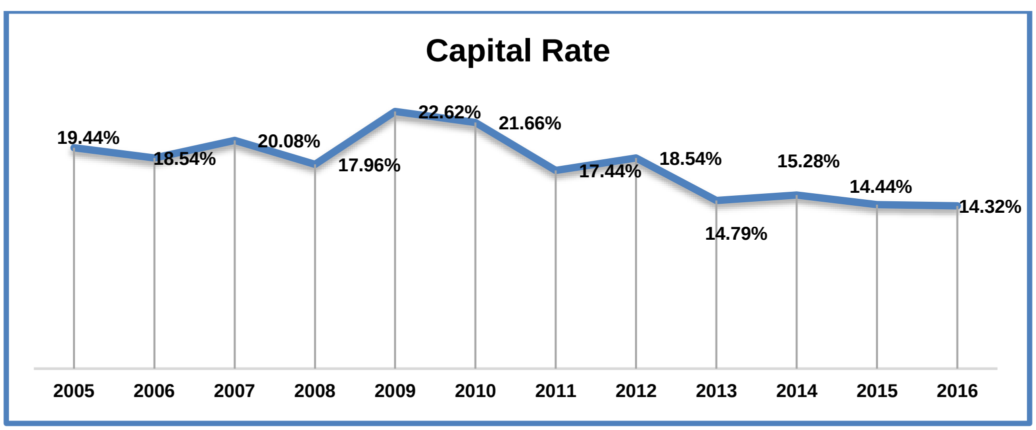



**Figure 114. Capital rate of Akbank during 2005-2016**

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

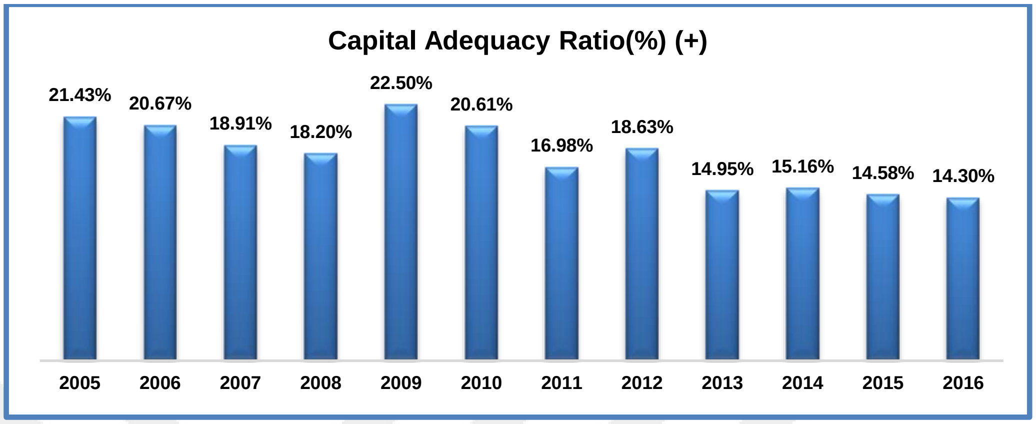



**Figure 115. Capital Adequacy Ratio of Akbank during 2005-2016**

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

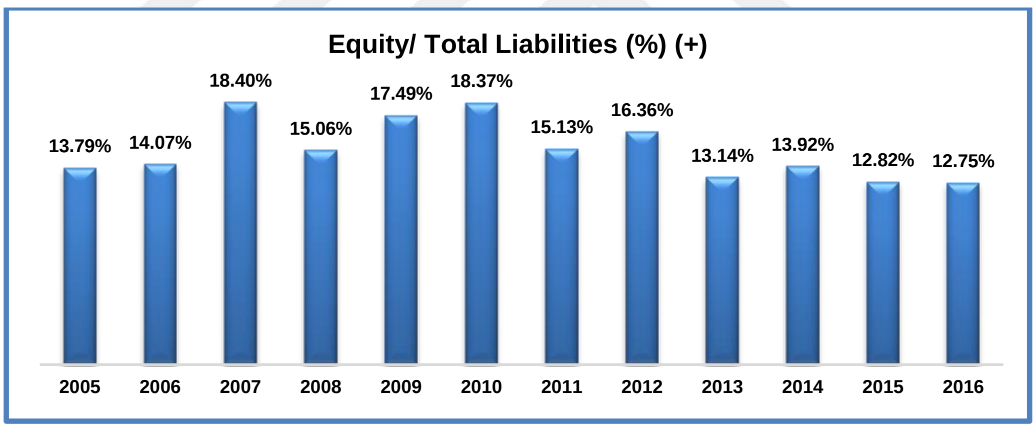



**Figure 116. Equity to Total Liabilities of Akbank during 2005-2016**

"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.

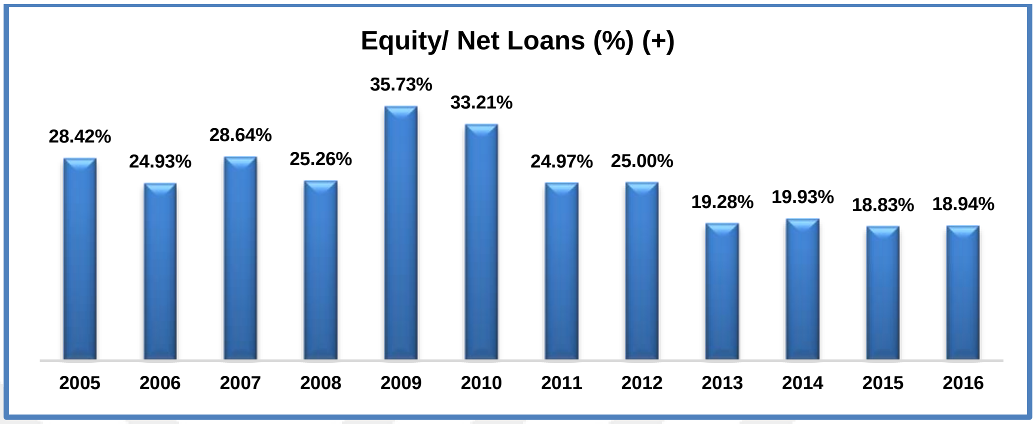



**Figure 117. Equity to Net Loans of Akbank during 2005-2016**

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

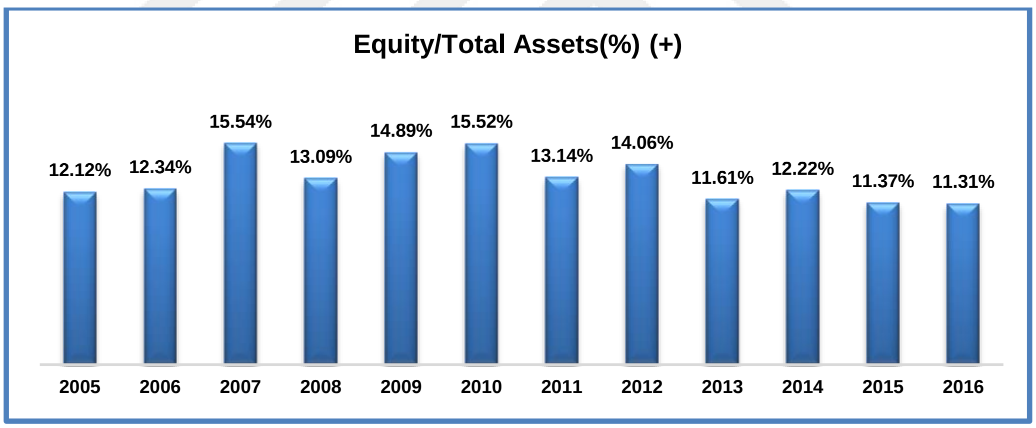



**Figure 118. Equity to Total Assets of Akbank during 2005-2016**

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%.

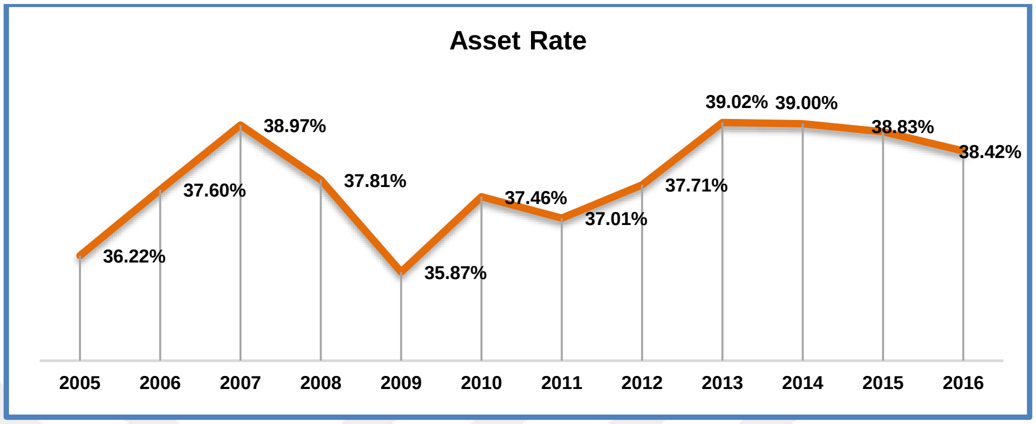



**Figure 119. Asset Quality rate of Akbank during 2005-2016**

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

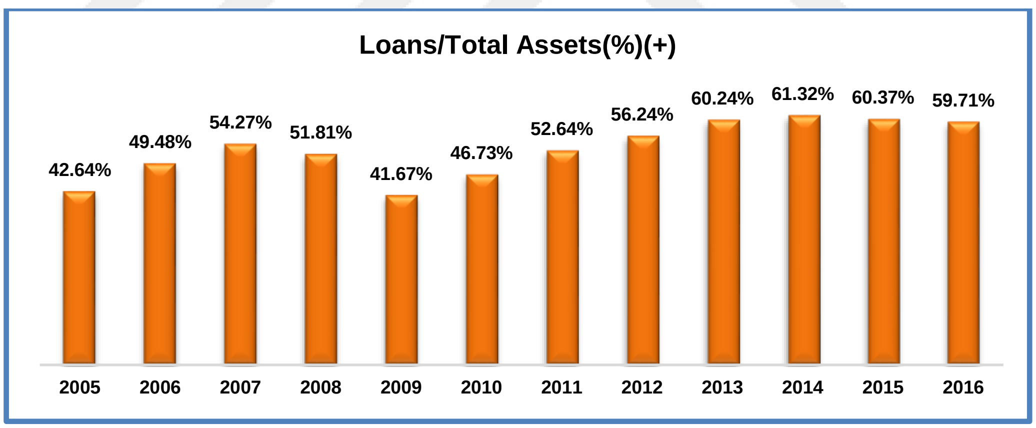



**Figure 120. Loans to total Assets of Akbank during 2005-2016**

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

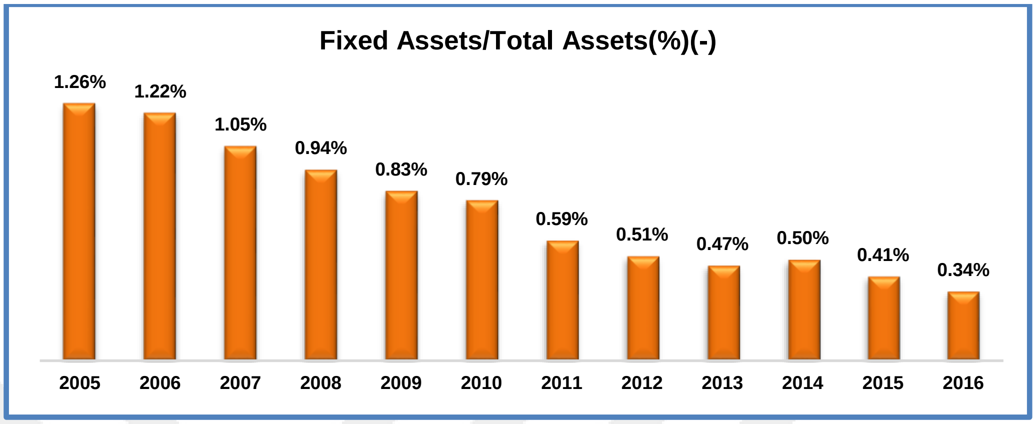



**Figure 121. Fixed Assets to Total Assets of Akbank during 2005-2016**

"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%.

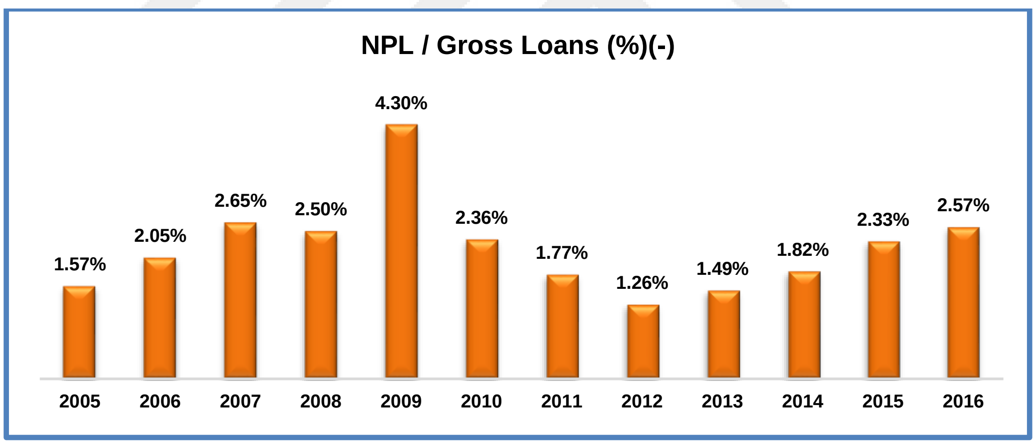



**Figure 122. NPL to Gross Loans of Akbank during 2005-2016**

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

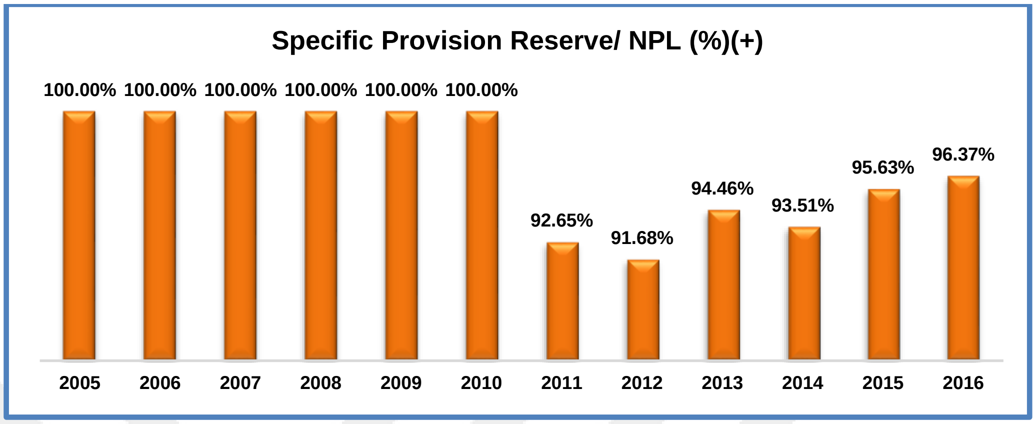



**Figure 123. Specific Provision Reserve to NPL of Akbank during 2005-2016**

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

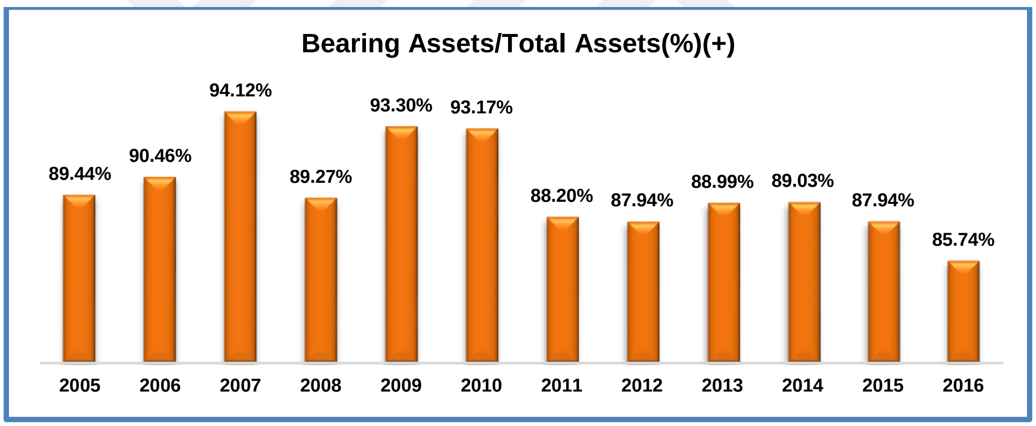



**Figure 124. Bearing Assets to Total Assets of Akbank during 2005-2016**

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

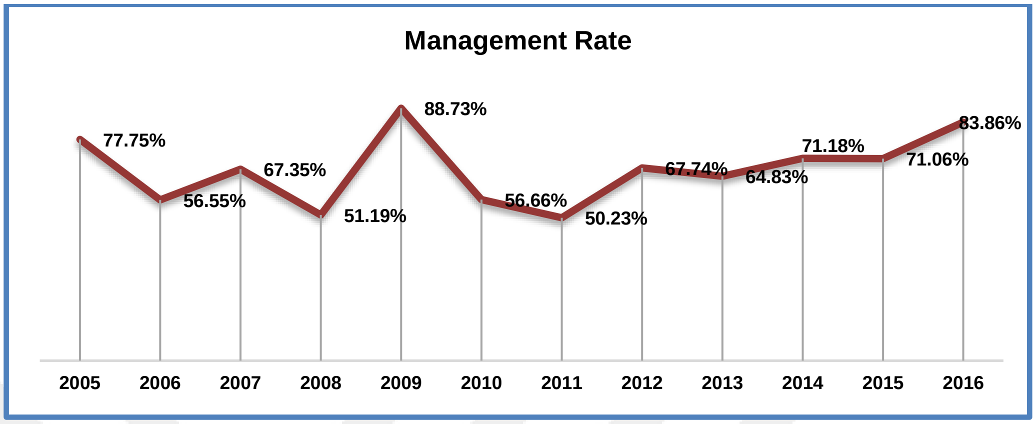



**Figure 125. Management Rate of Akbank during 2005-2016**

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

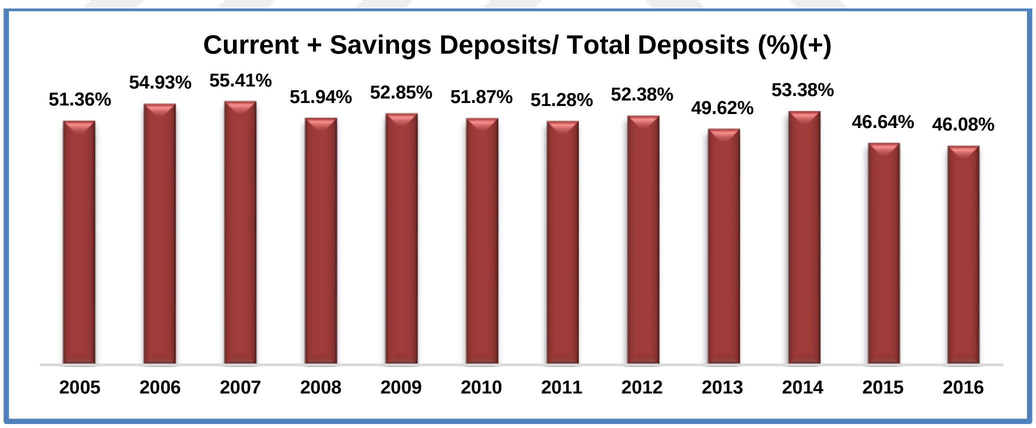



**Figure 126. Current plus Saving Deposits to Total Deposits of Akbank during 2005-2016**

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

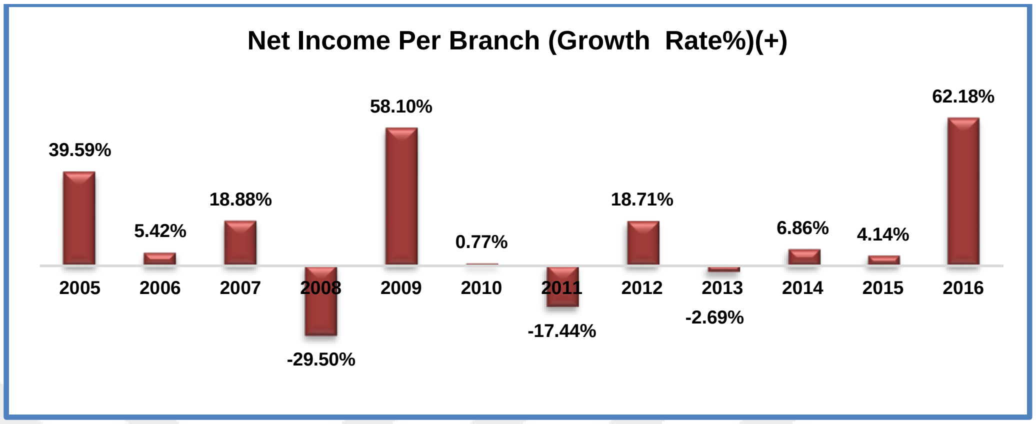



**Figure 127. Net Income per Branch (Growth Rate) of Akbank during 2005-2016**

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

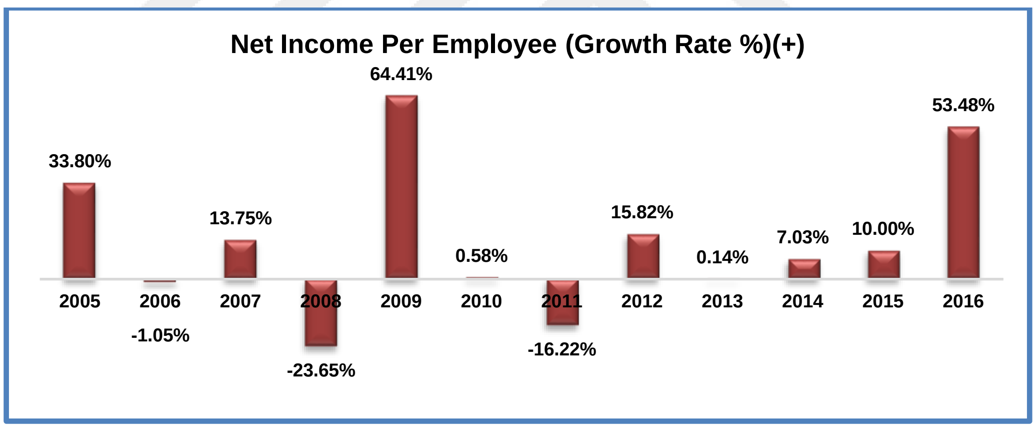



**Figure 128. Net Income per Employee (Growth Rate) of Akbank during 2005-2016**

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

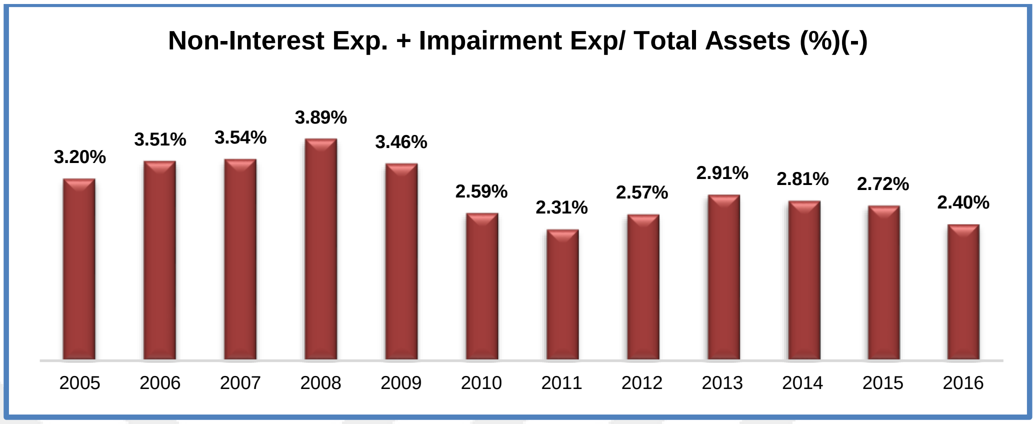



**Figure 129. Non-Interest Exp. Plus Impairment Exp. to Total Assets of Akbank during 2005-2016**

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

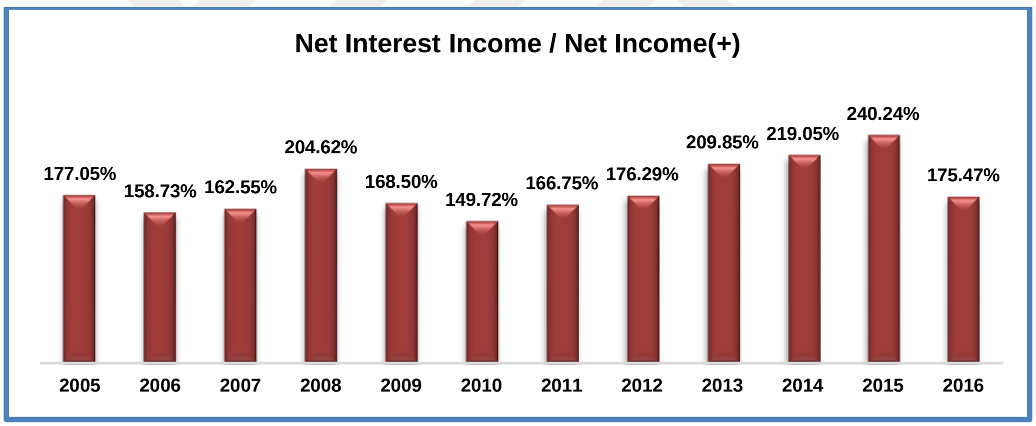



**Figure 130. Net Interest Income to Net Income of Akbank during 2005-2016**

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

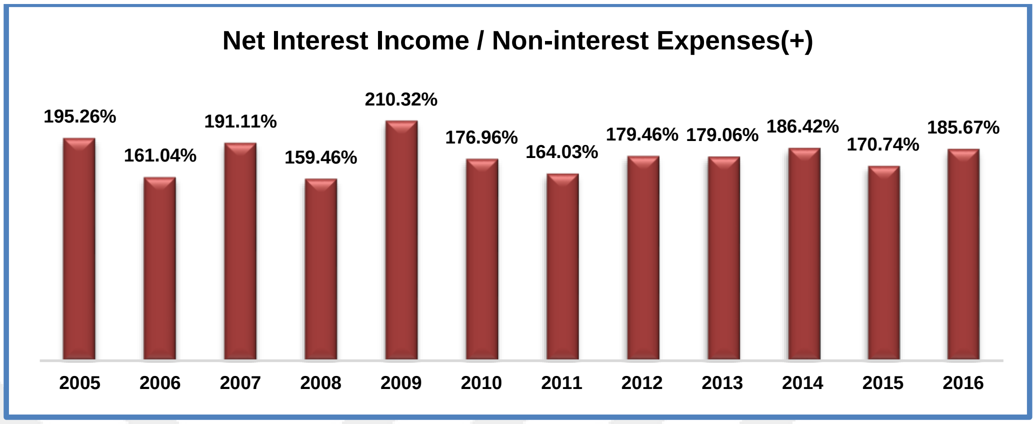



**Figure 131. Net Interest Income to Non-Interest Expenses of Akbank during 2005-2016**

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

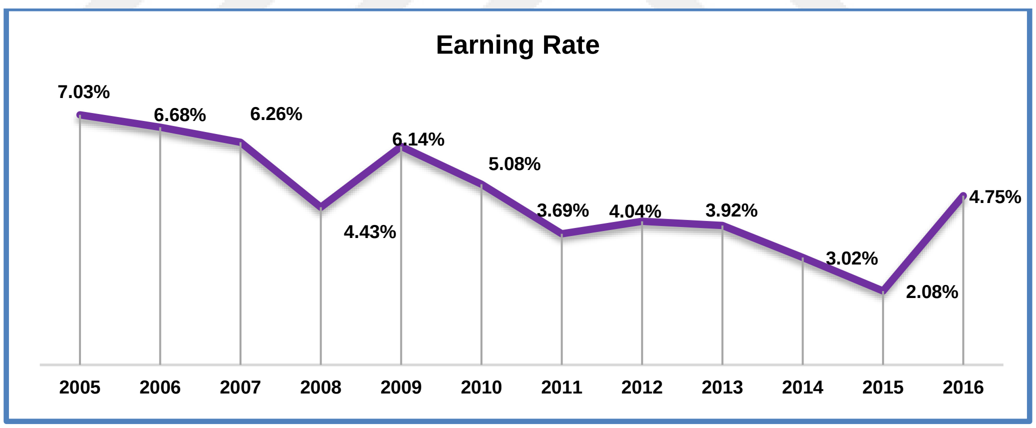



**Figure 132. Earning Rate of Akbank during 2005-2016**

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

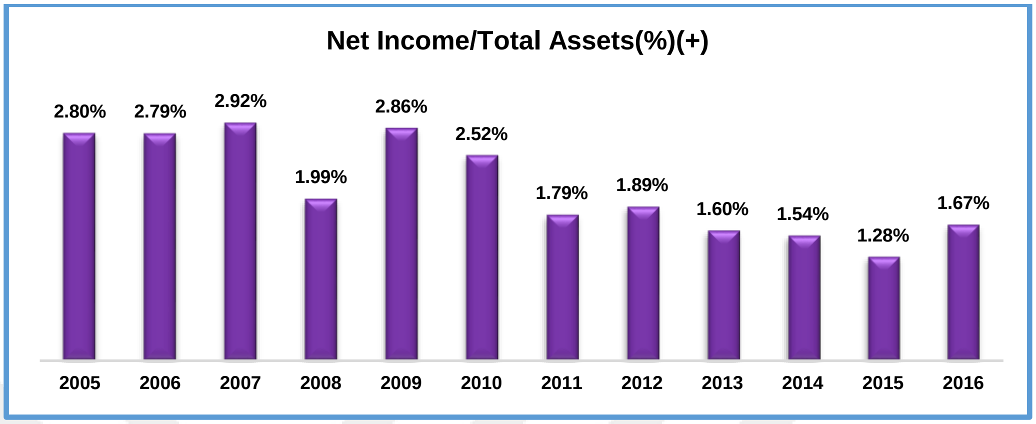



**Figure 133. Net Income to Total Assets of Akbank during 2005-2016**

"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%).

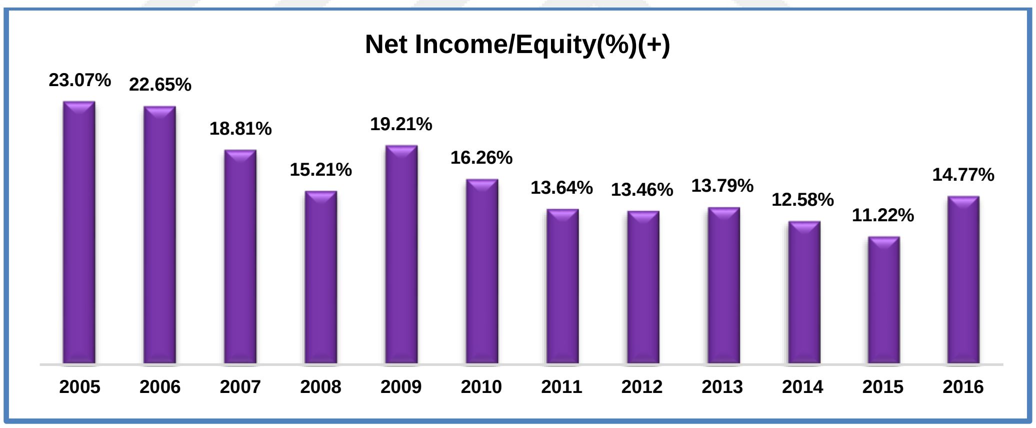



**Figure 134. Net Income to Equity of Akbank during 2005-2016**

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

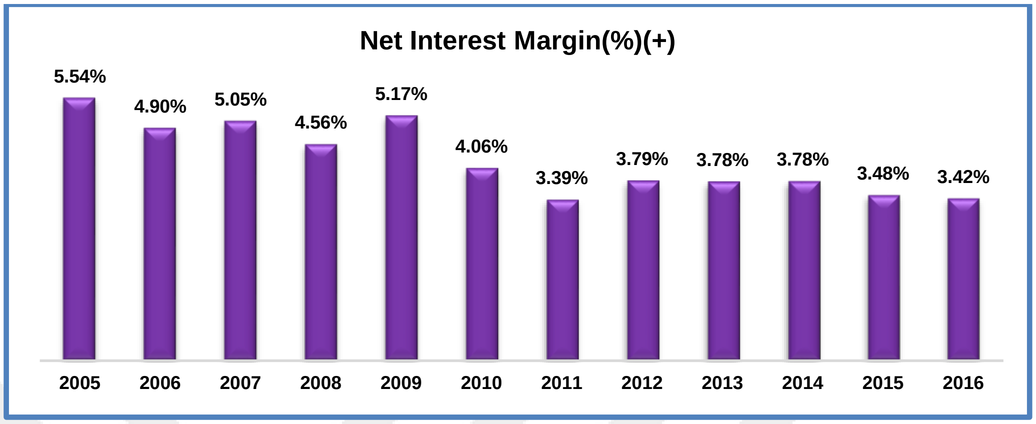



**Figure 135. Net Interest Margin of Akbank during 2005-2016**

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

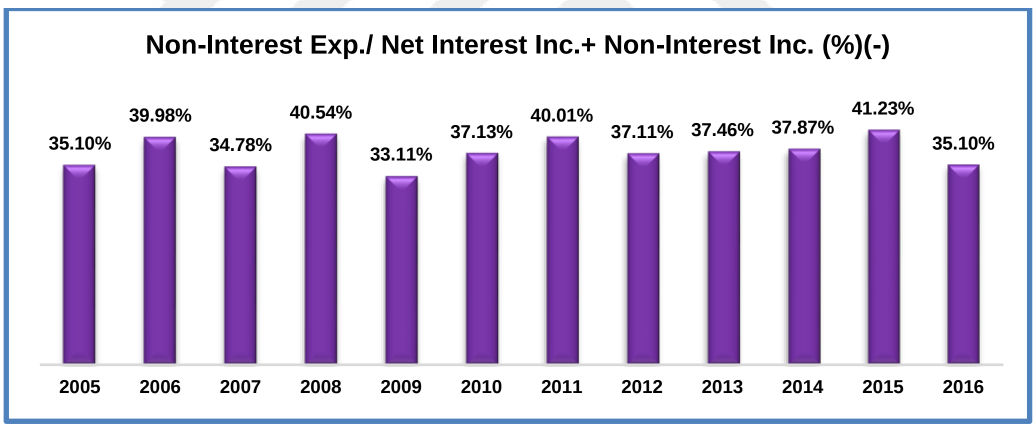



**Figure 136. Non-Interest Exp. to Net Interest Inc. plus Non-Interest Inc. of Akbank during 2005-2016**

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

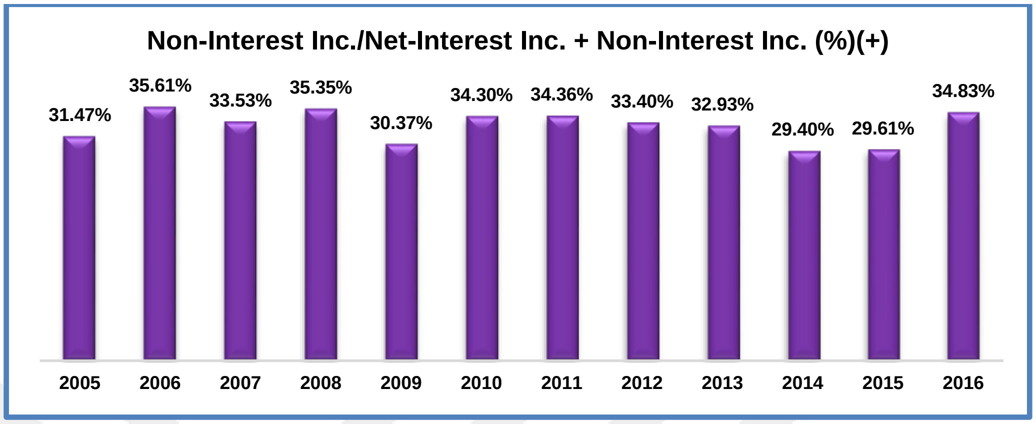



**Figure 137. Non-Interest Inc. to Net-Interest Inc. plus Non-Interest Inc. of Akbank during 2005-2016**

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.

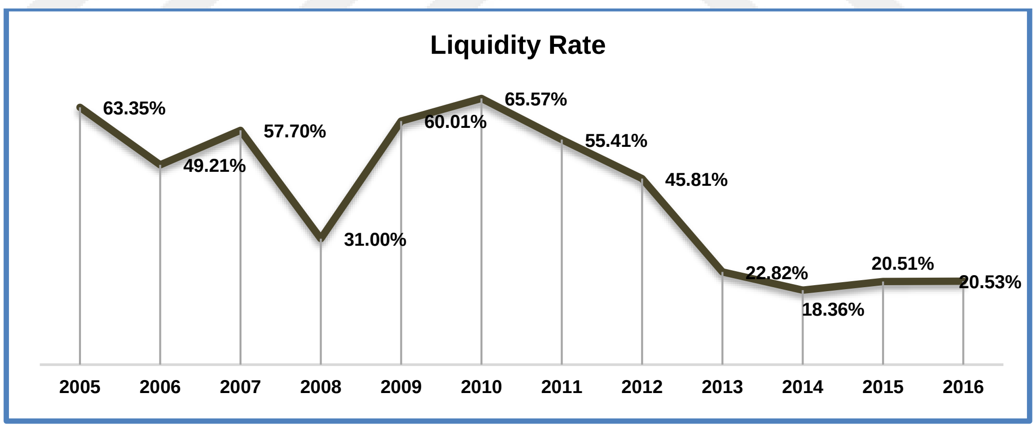



**Figure 138. Liquidity Rate of Akbank during 2005-2016**

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

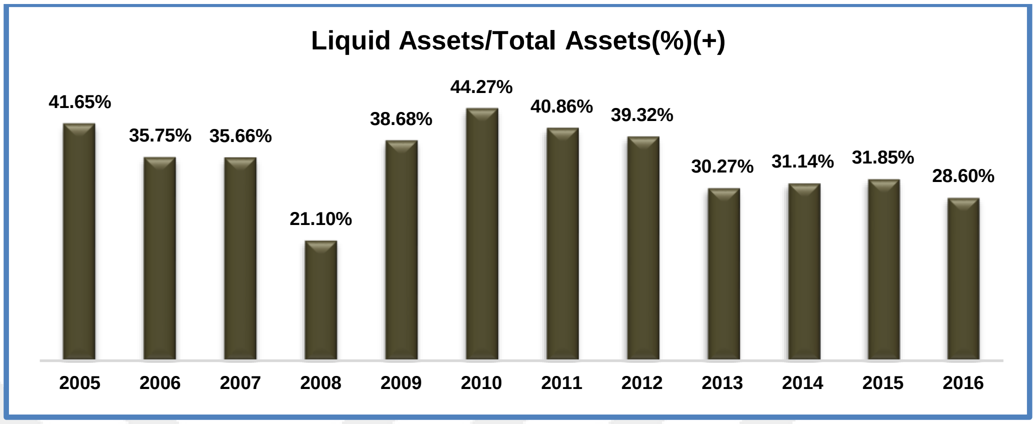



**Figure 139. Liquid Assets to Total Assets of Akbank during 2005-2016**

“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%.

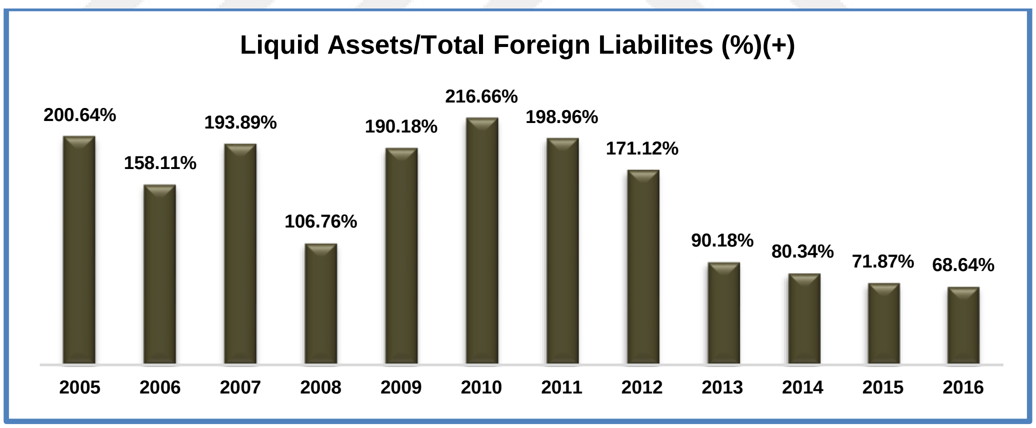



**Figure 140. Liquid Assets to Total Foreign Assets of Akbank during 2005-2016**

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

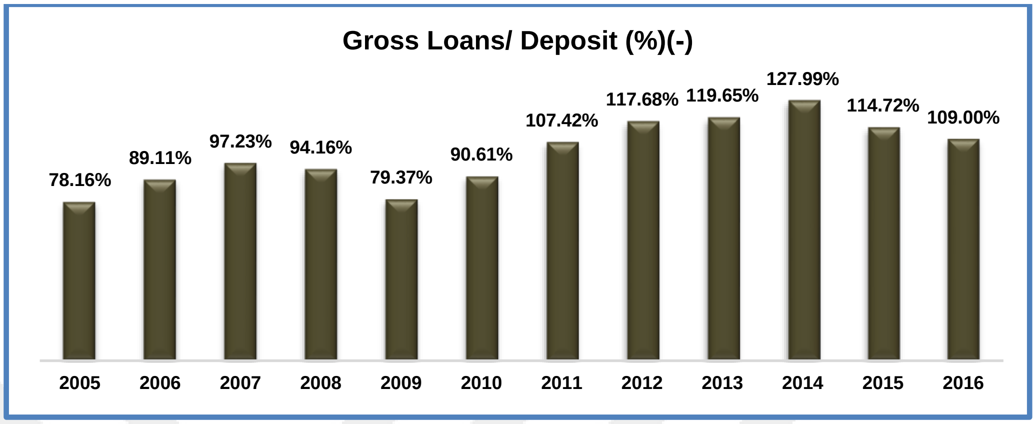



**Figure 141. Gross Loans to Deposit of Akbank during 2005-2016**

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

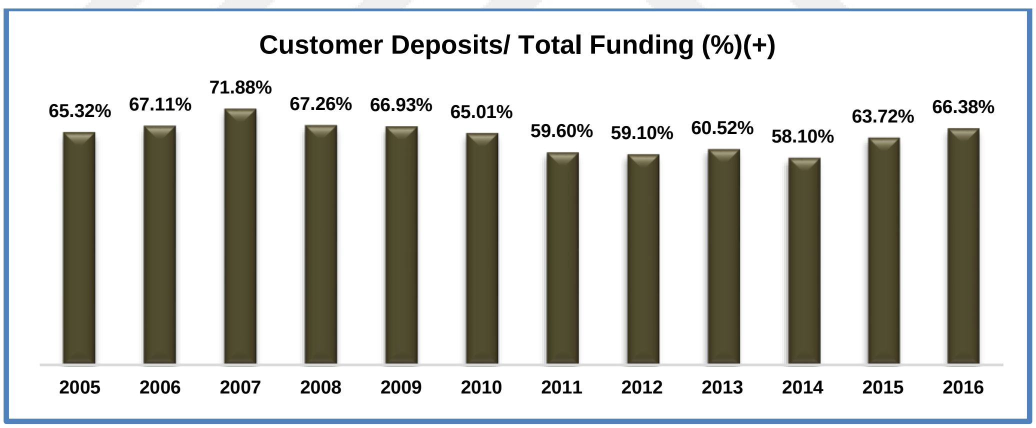



**Figure 142. Customer Deposits to Total Funding of Akbank during 2005-2016**

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%.

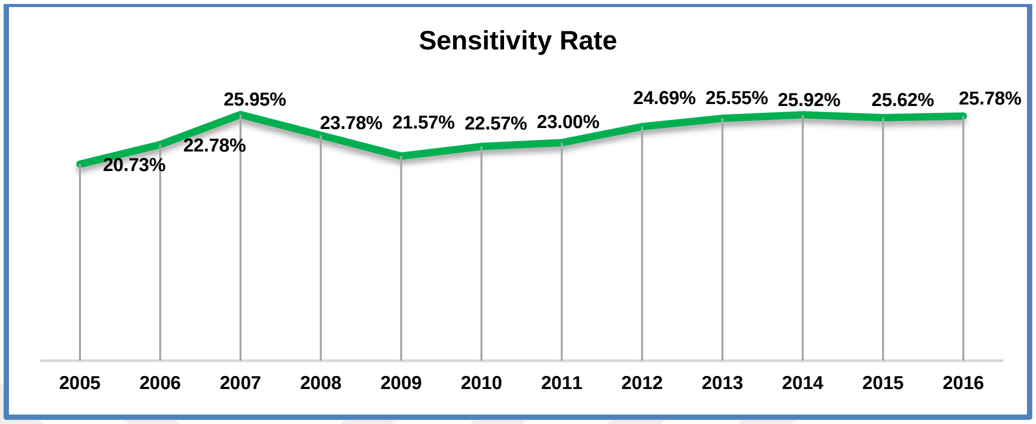



**Figure 143. Sensitivity Rate of Akbank during 2005-2016**

“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%.

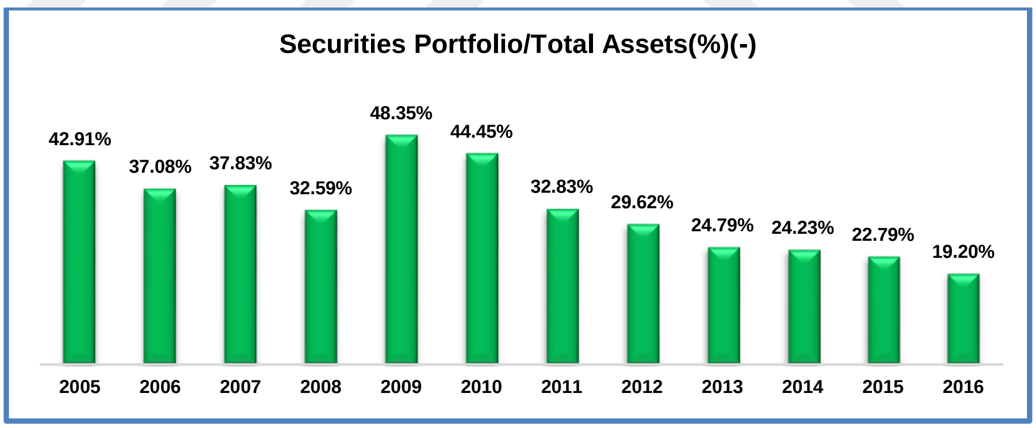



**Figure 144. Securities Portfolio to Total Assets of Akbank during 2005-2016**

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

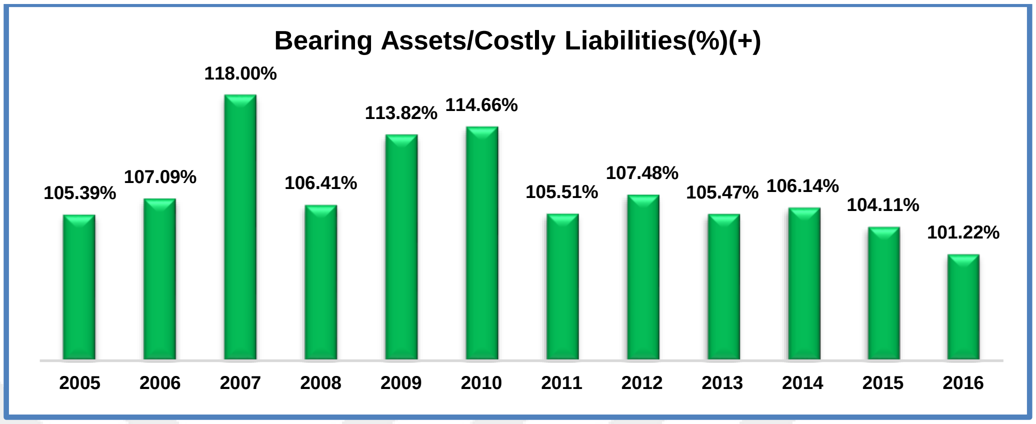



**Figure 145. Bearing Assets to Costly Liabilities of Akbank during 2005-2016**

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

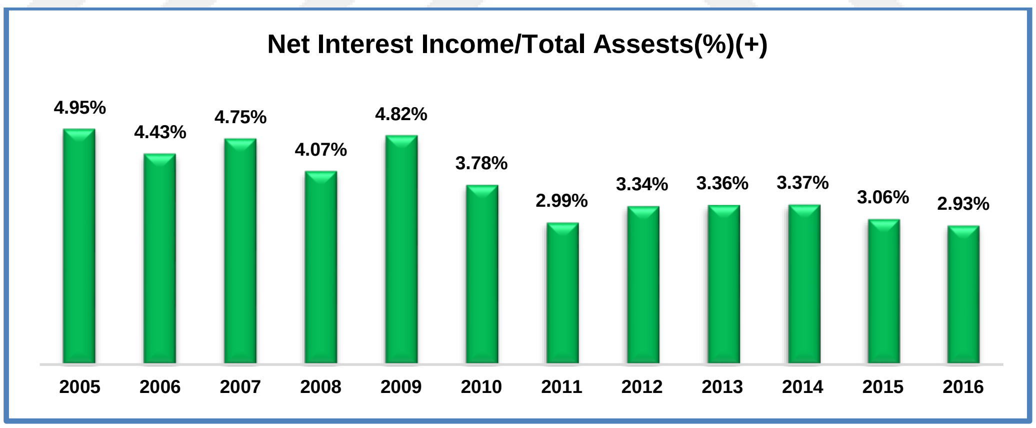



**Figure 146. Net Interest Income to Total Assets of Akbank during 2005-2016**

### 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.

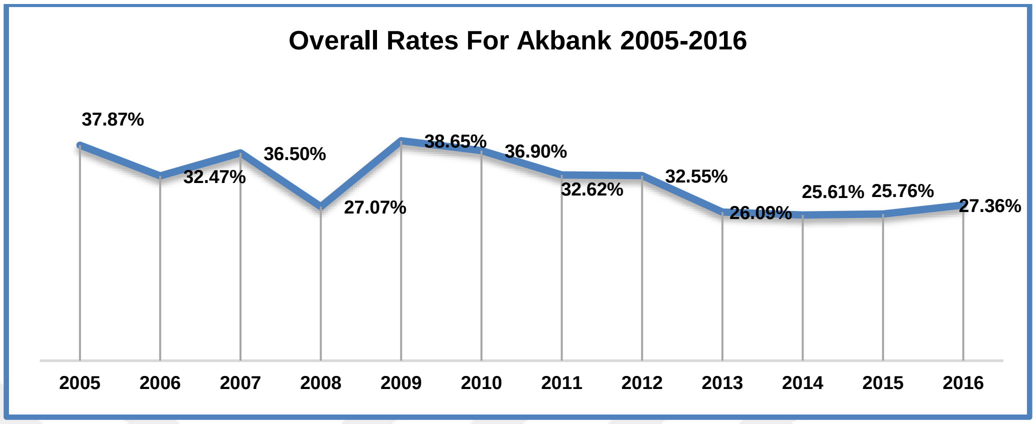



**Figure 147. CAMELS Overall Rates for Akbank during 2005-2016**

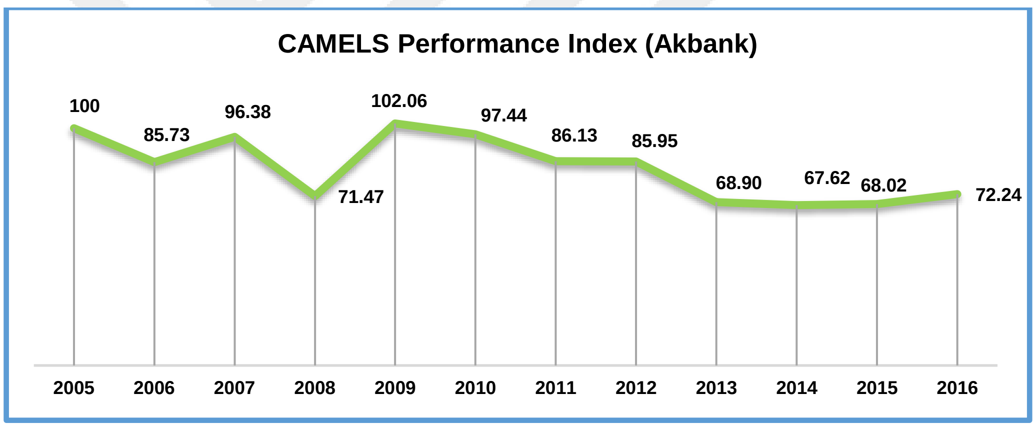



**Figure 148. CAMELS Performance Index for Akbank during 2005-2016**

| Short Name | No. | Weight | Ratios | 2016 |
|---|---|---|---|---|
| C | | Overall Weight | Capital | |
| 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 | | Overall Weight | Asset | |
| 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 | | Overall Weight | Management | |
| 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 | | Overall Weight | Earnings | |
| 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% |
| NIENIINII | 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 | | Overall Weight | Liquidity | |
| L | | 0,25 | | |
| LATA | 21 | 0,30 | Liquid Assets/Total Assets(%)(+) | 29% |
| LATFL | 22 | 0,25 | Liquid Assets/Total Foreign Liabilites (%)(+) | 69% |
| GLD | 23 | 0,20 | Gross Loans/ Deposit (%)(-) | 109% |
| CDTF | 24 | 0,25 | Customer Deposits/ Total Funding (%)(+) | 66% |
| Liquidity Rate | | | | 21% |
| S | | Overall Weight | Sensitivity | |
| 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.

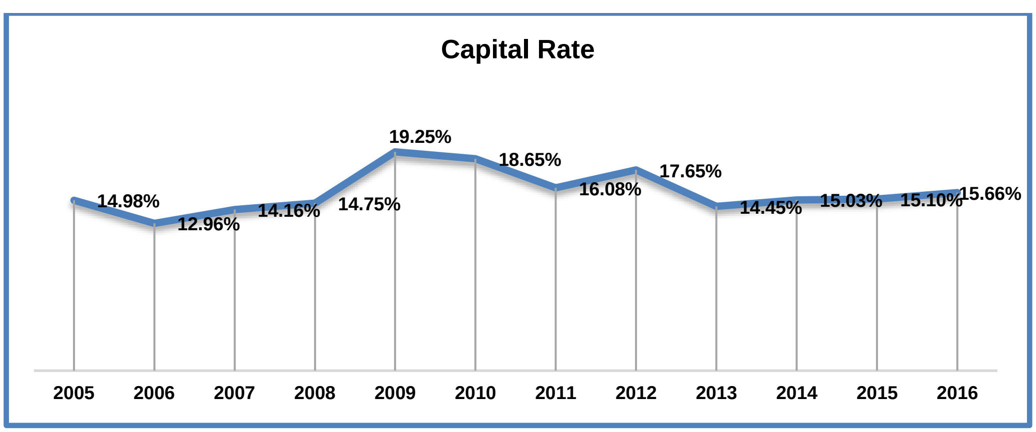



**Figure 149. Capital rate of Garanti Bank during 2005-2016**

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

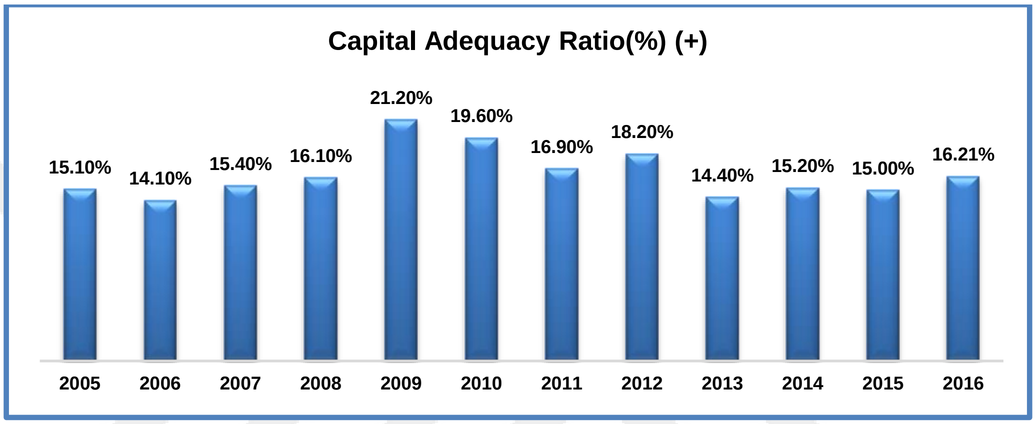



**Figure 150. Capital Adequacy Ratio of Garanti Bank during 2005-2016**

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

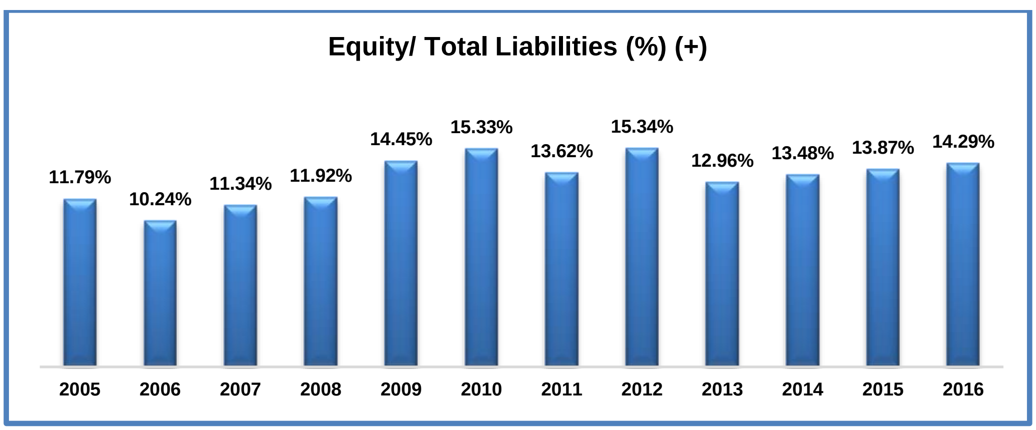



**Figure 151. Equity to Total Liabilities of Garanti Bank during 2005-2016**

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

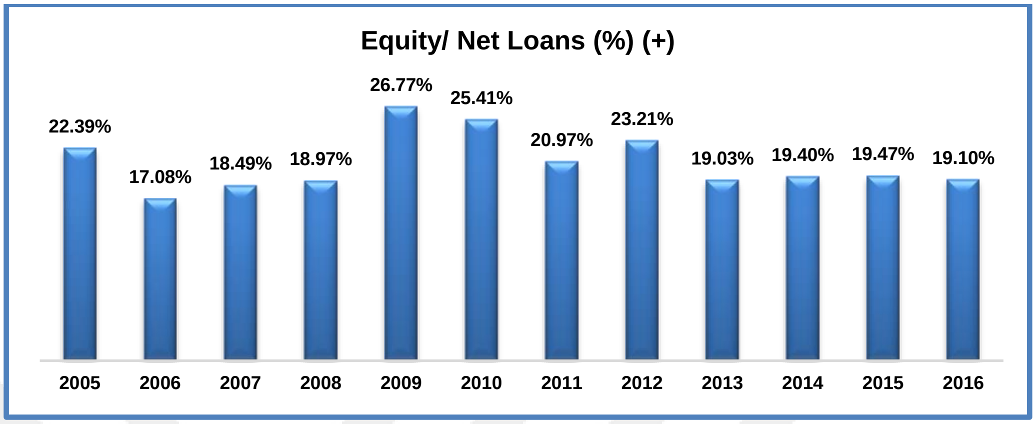



**Figure 152. Equity to Net Loans of Garanti Bank during 2005-2016**

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

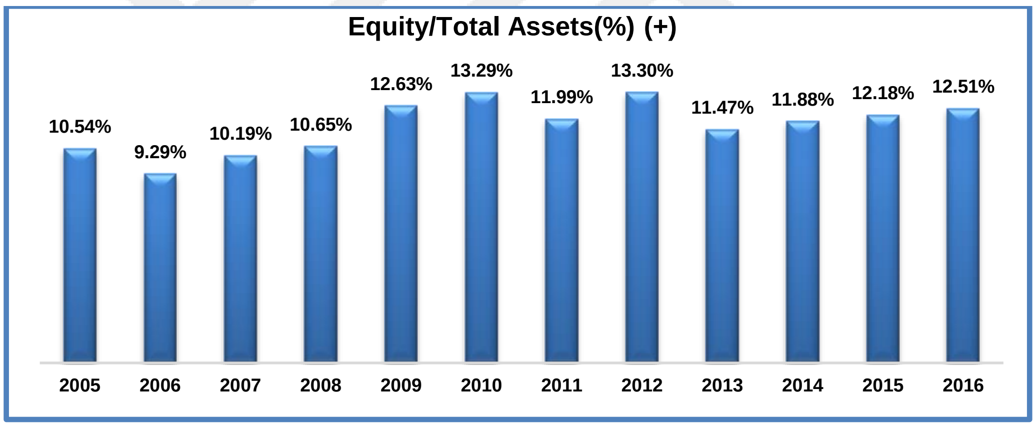



**Figure 153. Equity to Total Assets of Garanti Bank during 2005-2016**

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

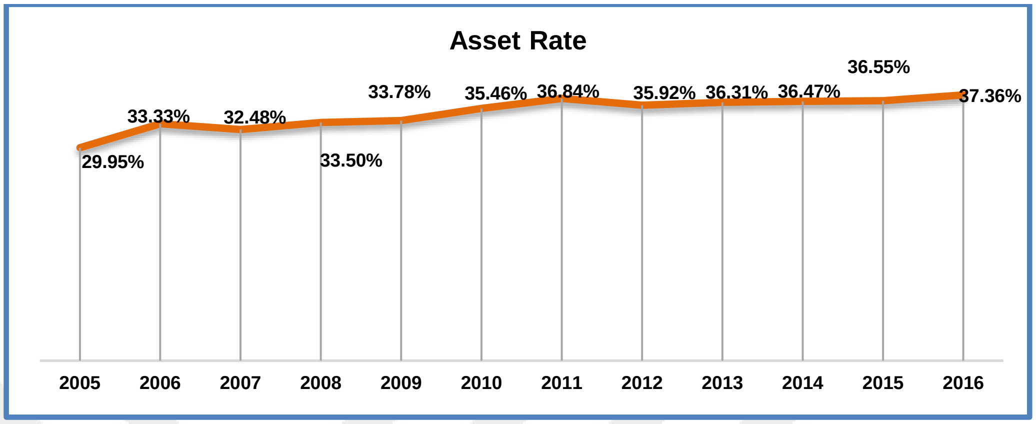



**Figure 154. Asset Quality rate of Garanti Bank during 2005-2016**

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

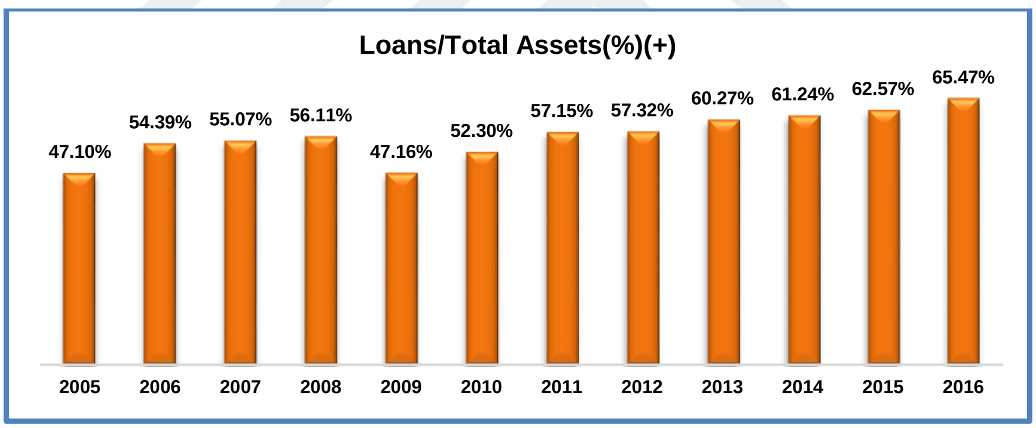



**Figure 155. Loans to total Assets of Garanti Bank during 2005-2016**

"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.

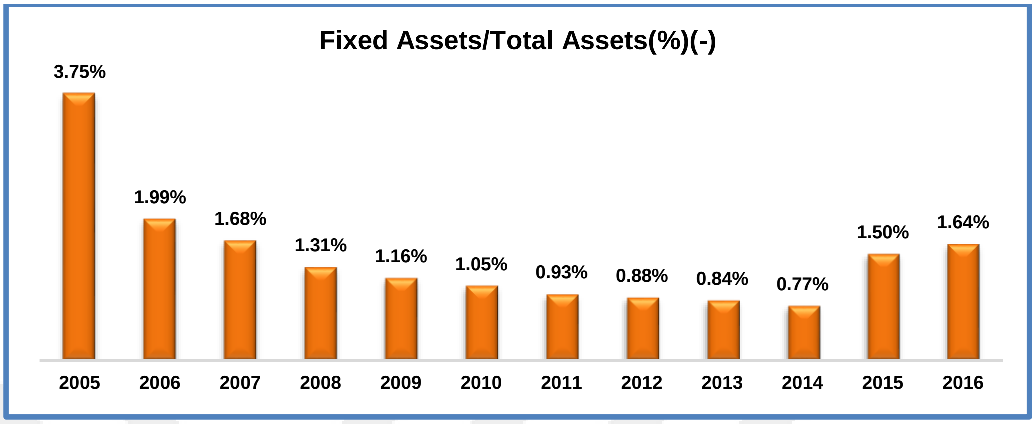



**Figure 156. Fixed Assets to Total Assets of Garanti Bank during 2005-2016**

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

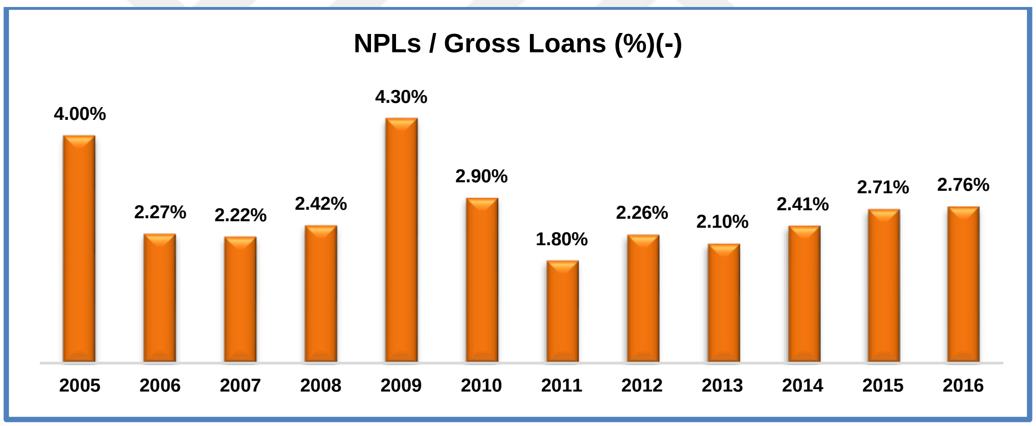



**Figure 157. NPL to Gross Loans of Garanti Bank during 2005-2016**

"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%.

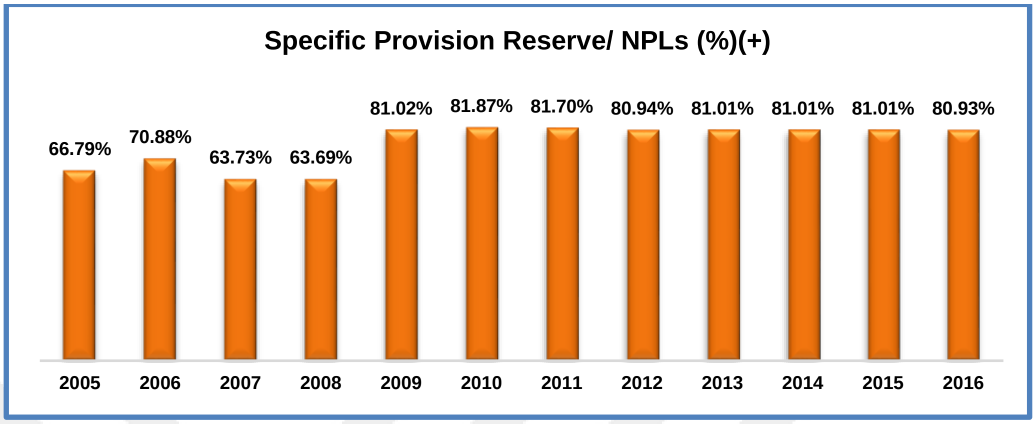



**Figure 158. Specific Provision Reserve to NPL of Garanti Bank during 2005-2016**

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.

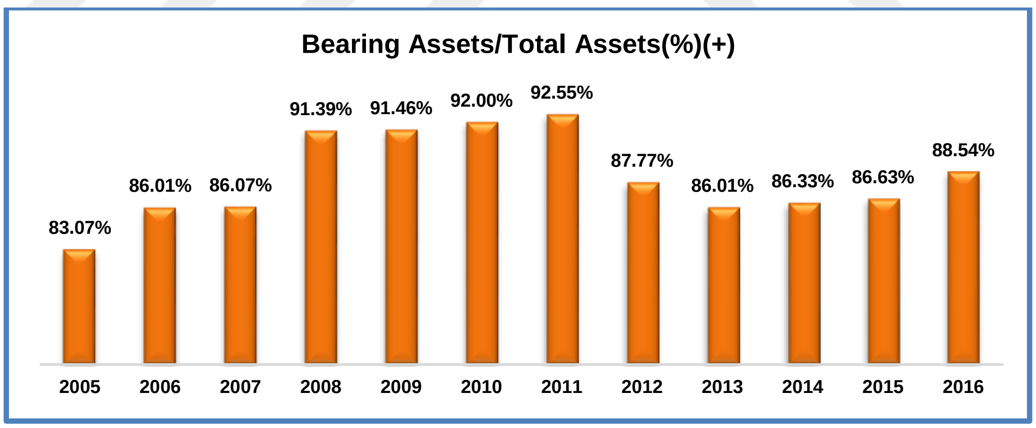



**Figure 159. Bearing Assets to Total Assets of Garanti Bank during 2005-2016**

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%).

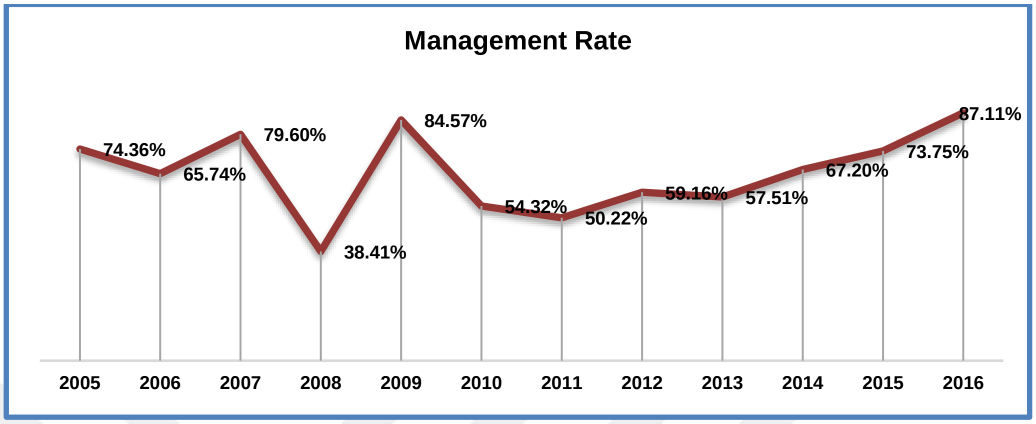



**Figure 160. Management Rate of Garanti Bank during 2005-2016**

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

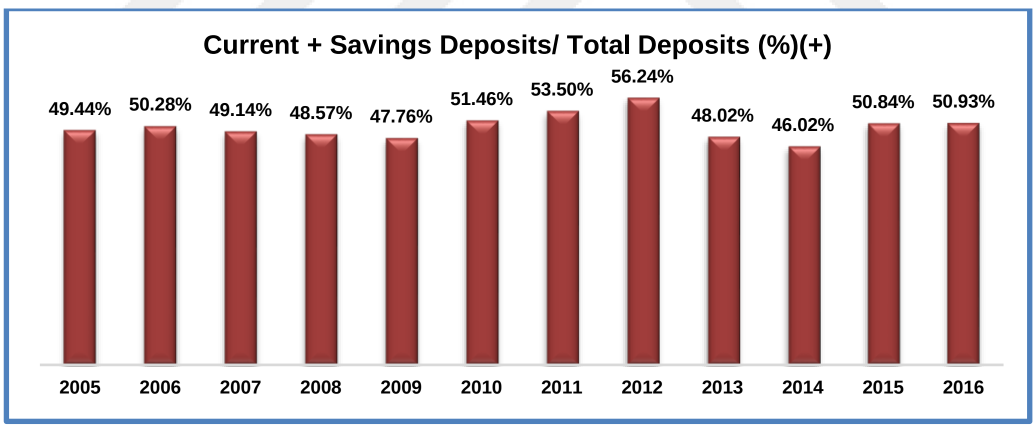



**Figure 161. Current plus Saving Deposits to Total Deposits of Garanti Bank during 2005-2016**

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

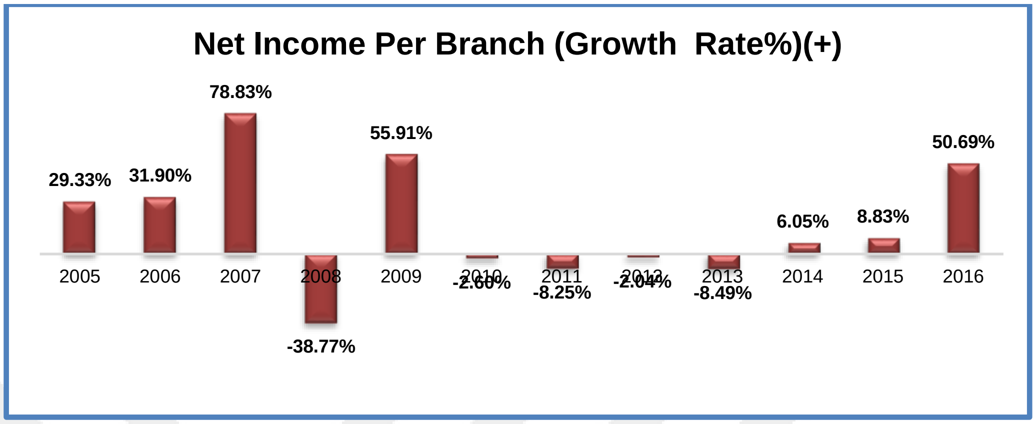



**Figure 162. Net Income per Branch (Growth Rate) of Garanti Bank during 2005-2016**

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

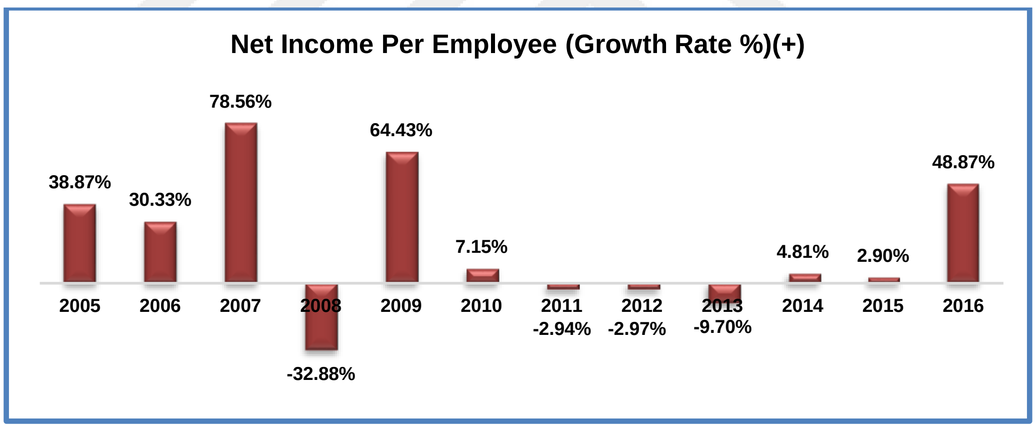



**Figure 163. Net Income per Employee (Growth Rate) of Garanti Bank during 2005-2016**

"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%.

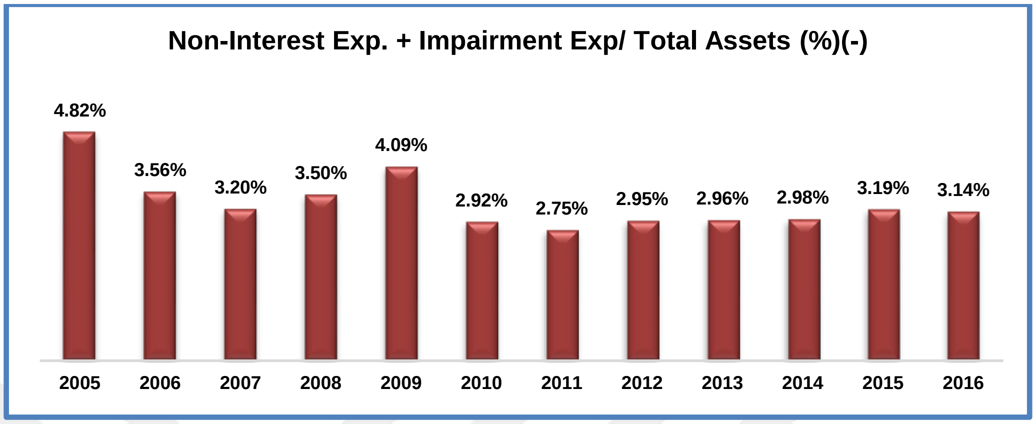



**Figure 164. Non-Interest Exp. Plus Impairment Exp. to Total Assets of Garanti Bank during 2005-2016**

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

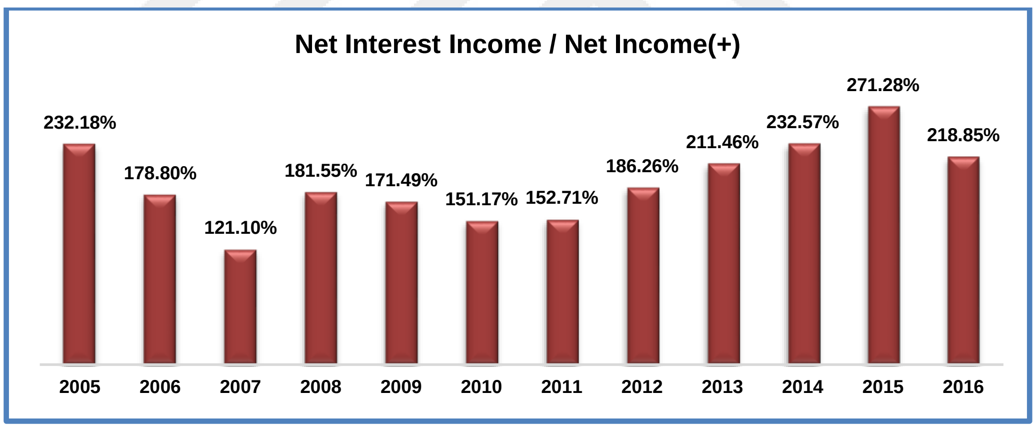



**Figure 165. Net Interest Income to Net Income of Garanti Bank during 2005-2016**

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

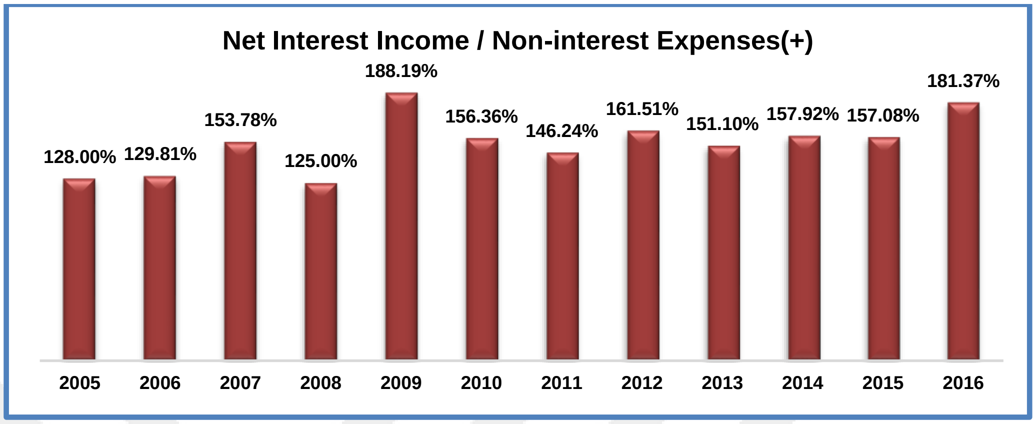



**Figure 166. Net Interest Income to Non-Interest Expenses of Garanti Bank during 2005-2016**

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

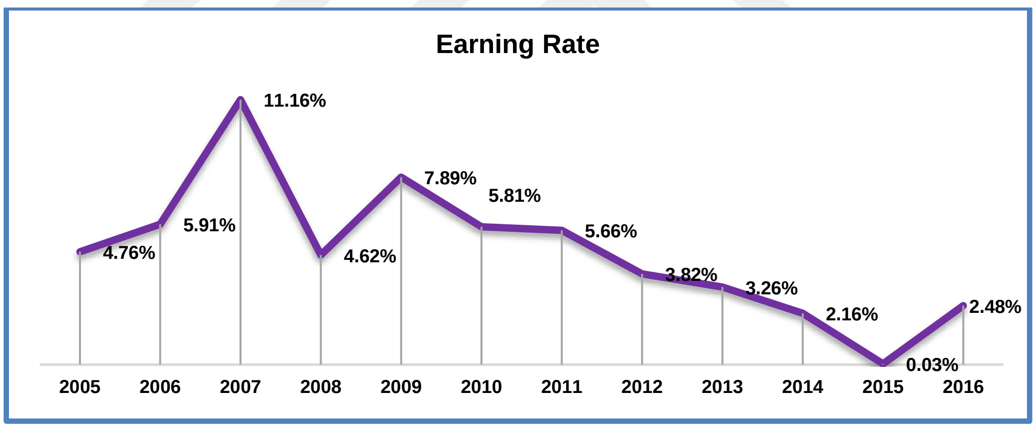



**Figure 167. Earning Rate of Garanti Bank during 2005-2016**

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

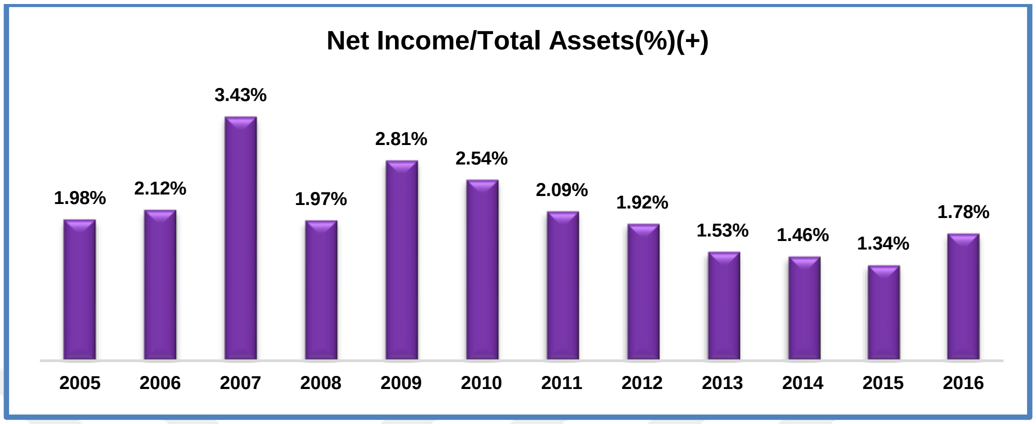



**Figure 168. Net Income to Total Assets of Garanti Bank during 2005-2016**

"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%.

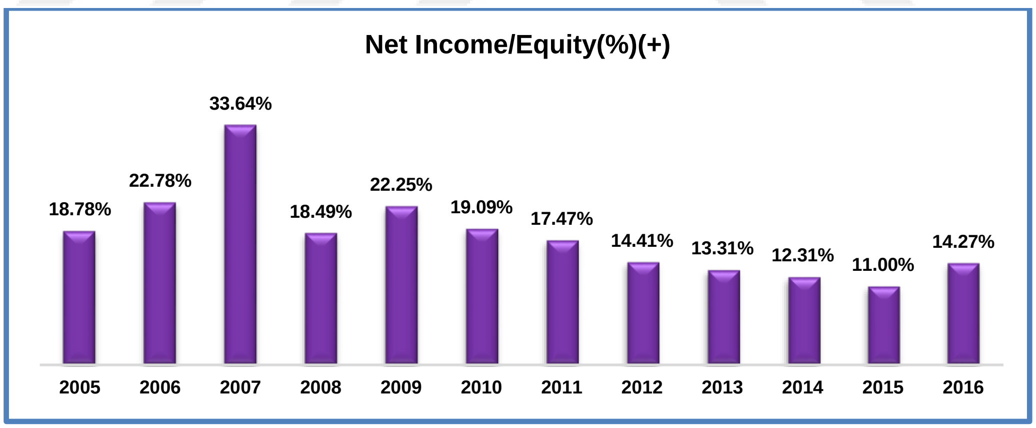



**Figure 169. Net Income to Equity of Garanti Bank during 2005-2016**

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

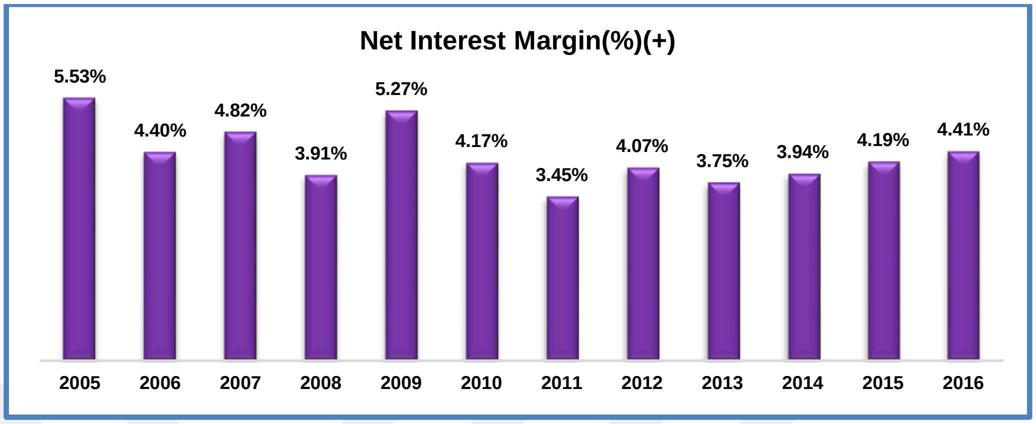



**Figure 170. Net Interest Margin of Garanti Bank during 2005-2016**

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

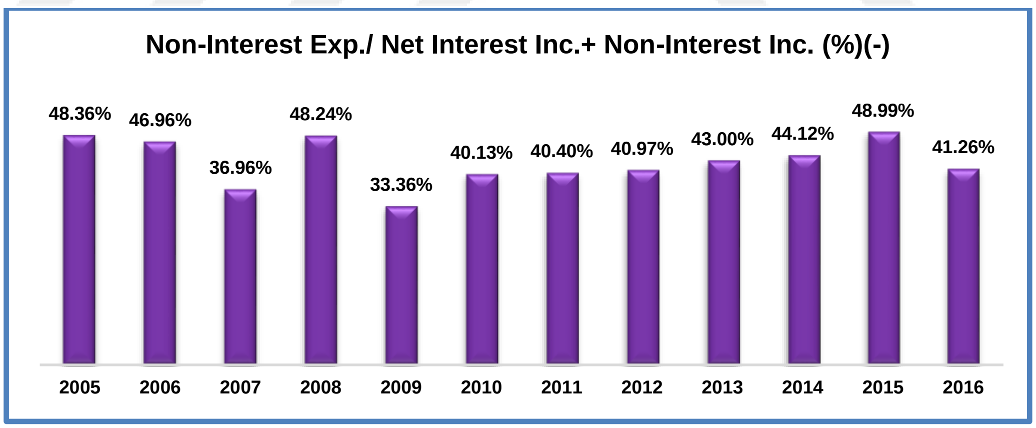



**Figure 171. Non-Interest Exp. to Net Interest Inc. plus Non-Interest Inc. of Garanti Bank during 2005-2016**

“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.

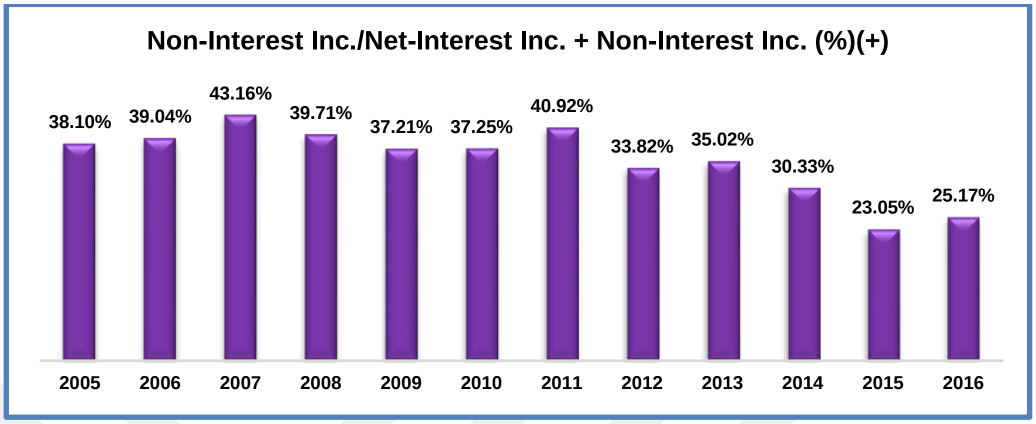



**Figure 172. Non-Interest Inc. to Net-Interest Inc. plus Non-Interest Inc. of Garanti Bank during 2005-2016**

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

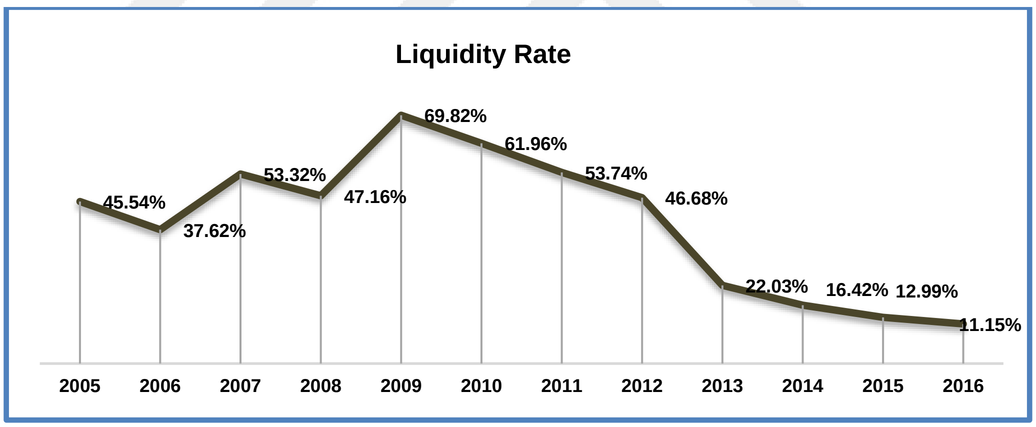



**Figure 173. Liquidity Rate of Garanti Bank during 2005-2016**

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

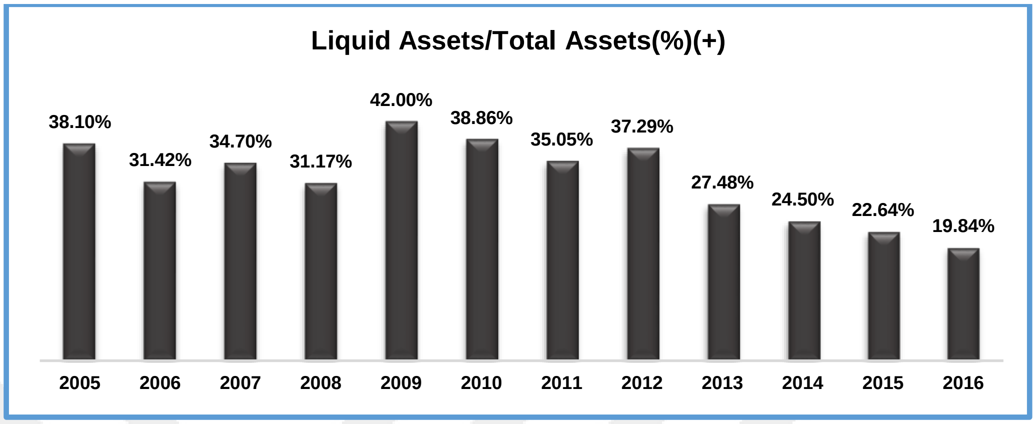



**Figure 174. Liquid Assets to Total Assets of Garanti Bank during 2005-2016**

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

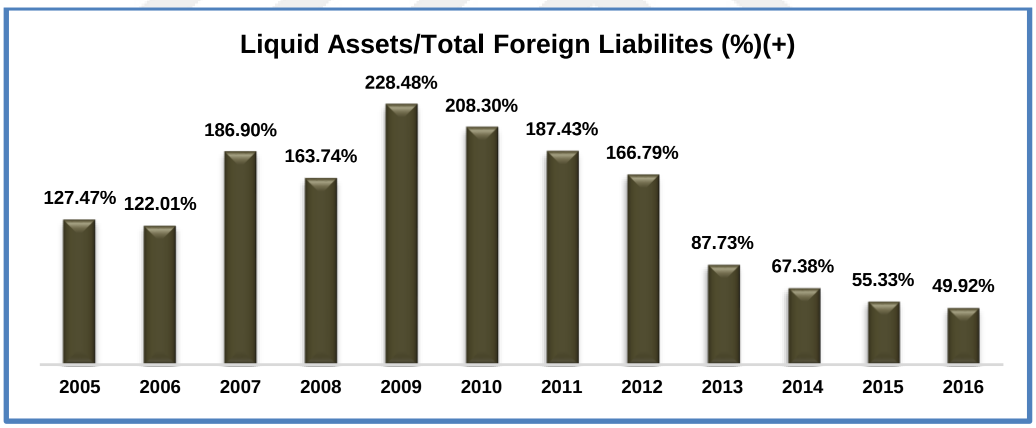



**Figure 175. Liquid Assets to Total Foreign Assets of Garanti Bank during 2005-2016**

“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.

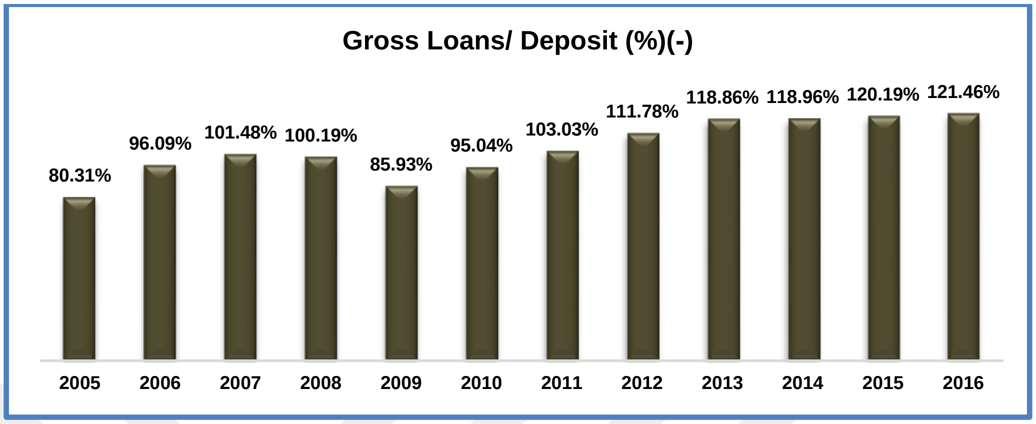



**Figure 176. Gross Loans to Deposit of Garanti Bank during 2005-2016**

“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.

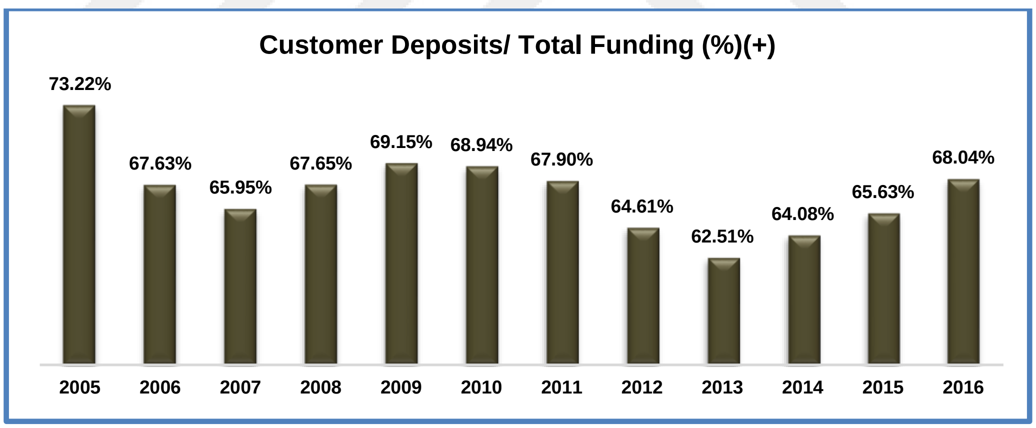



**Figure 177. Customer Deposits to Total Funding of Garanti Bank during 2005-2016**

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

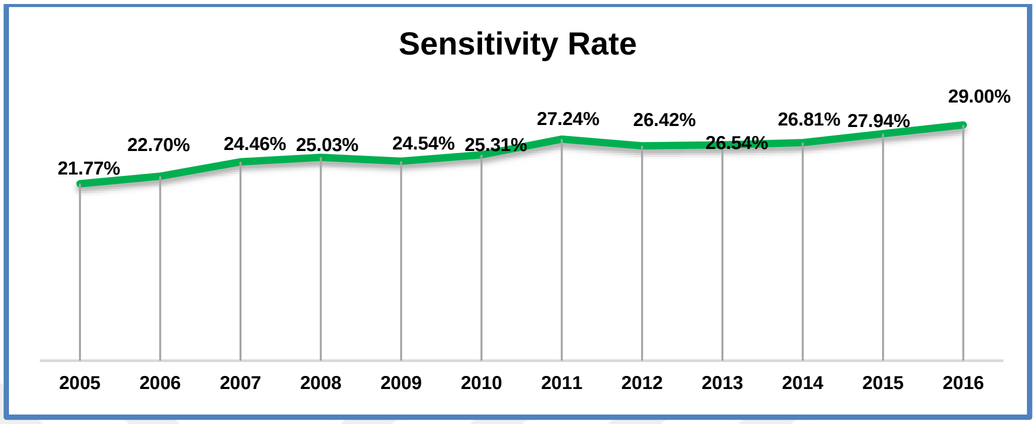



**Figure 178. Sensitivity Rate of Garanti Bank during 2005-2016**

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

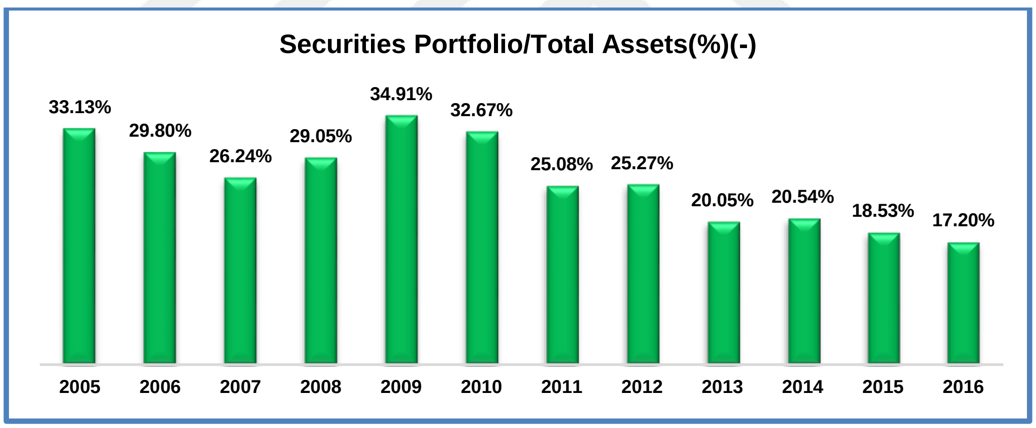



**Figure 179. Securities Portfolio to Total Assets of Garanti Bank during 2005-2016**

"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.

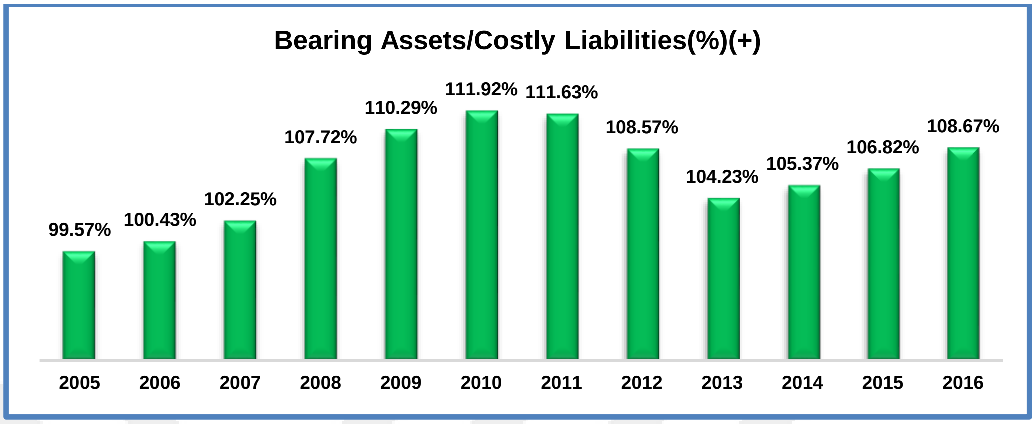



**Figure 180. Bearing Assets to Costly Liabilities of Garanti Bank during 2005-2016**

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

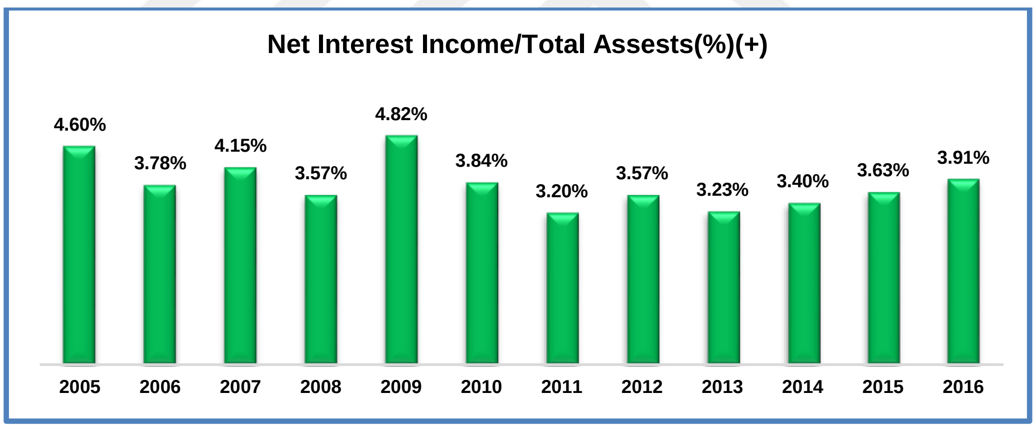



**Figure 181. Net Interest Income to Total Assets of Garanti Bank during 2005-2016**

### 6.6.3. CAMELS rating for Garanti Bank

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

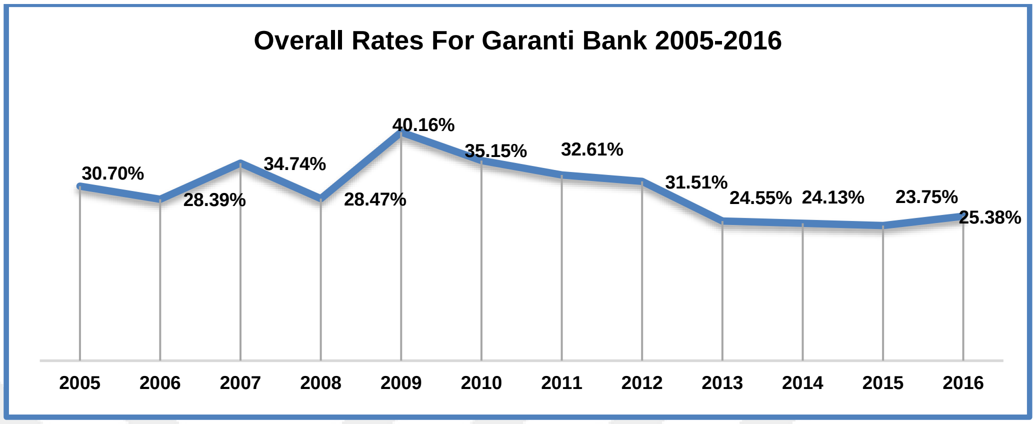



**Figure 182. CAMELS Overall Rates for Garanti Bank during 2005-2016**

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.

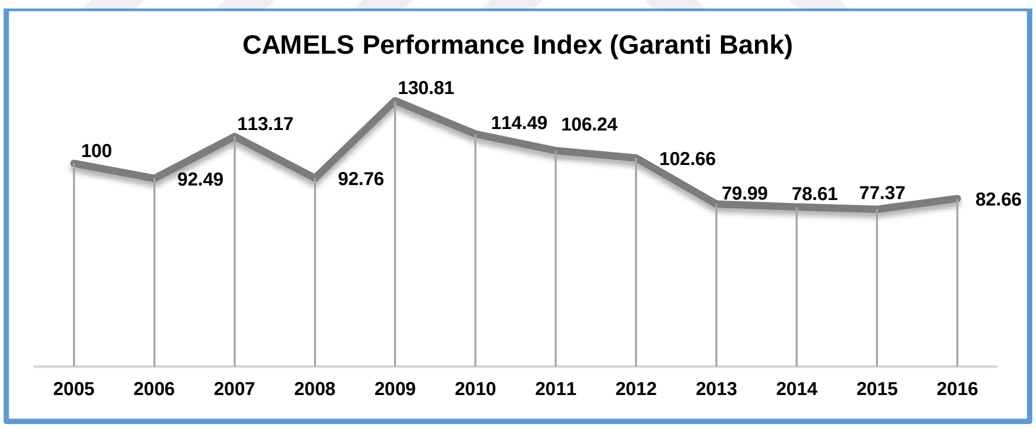



**Figure 183. CAMELS Performance Index for Garanti Bank during 2005-2016**

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* | | |
| *C* | | *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* | | |
| *A* | | *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* | | |
| *M* | | *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* | | |
| *E* | | *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% |
| NIENIINII | 19 | 0,15 | Non-Interest Exp./ Net Interest Inc.+ Non-Interest Inc. (%)(-) | - | 41% |
| NIINIINII | 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 Liabilites (%)(+) | + | 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* | | |
| *S* | | *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 Assests(%)(+) | + | 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.

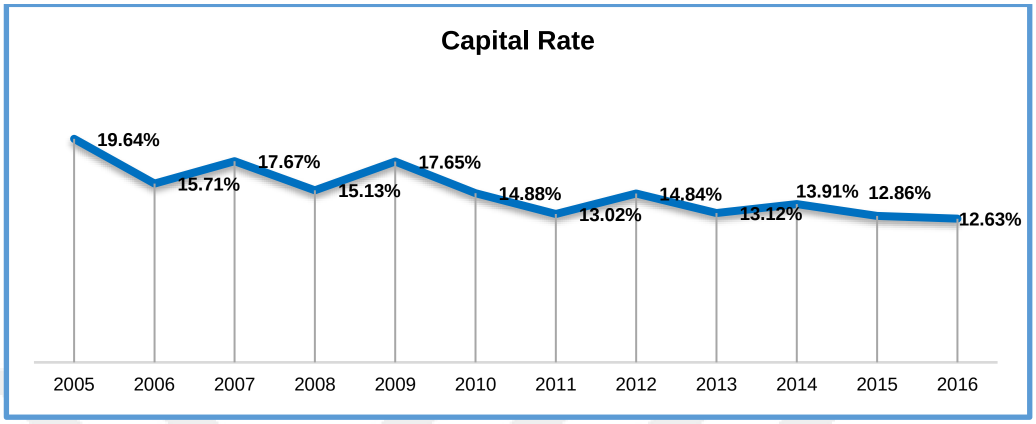



**Figure 184. Capital rate of Şekerbank during 2005-2016**

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

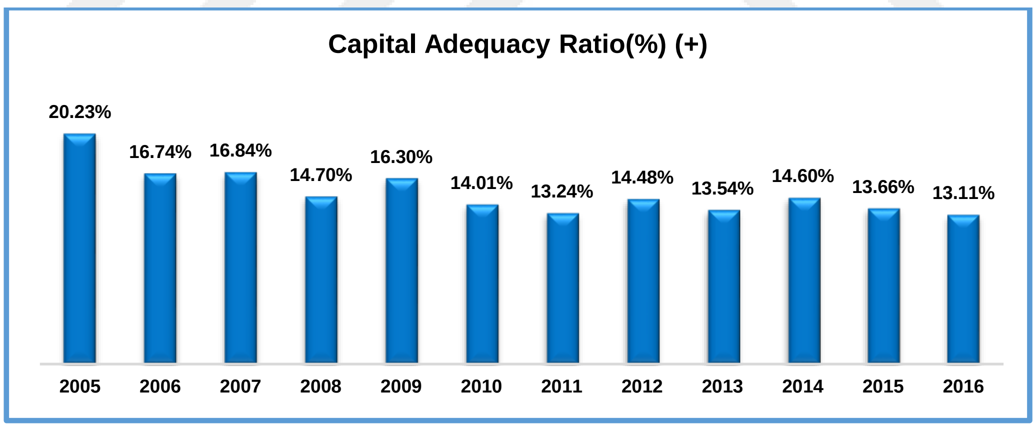



**Figure 185. Capital Adequacy Ratio of Şekerbank during 2005-2016**

"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%).

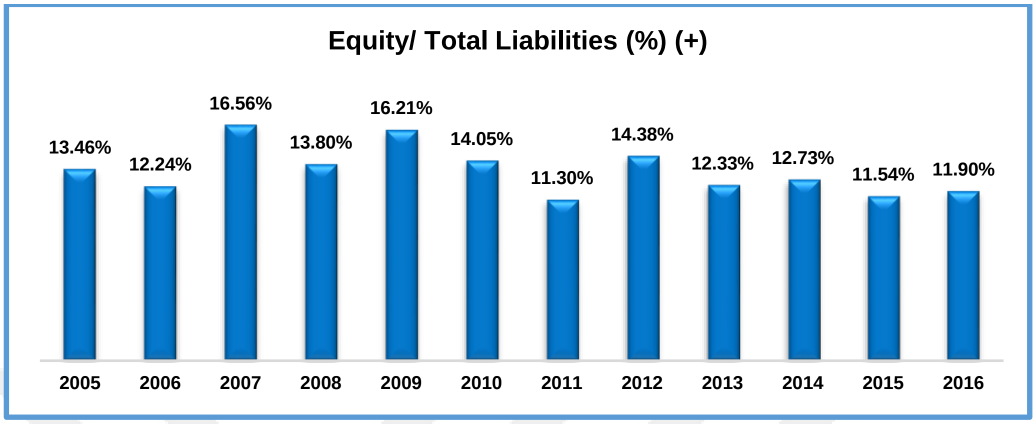



**Figure 186. Equity to Total Liabilities of Şekerbank during 2005-2016**

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

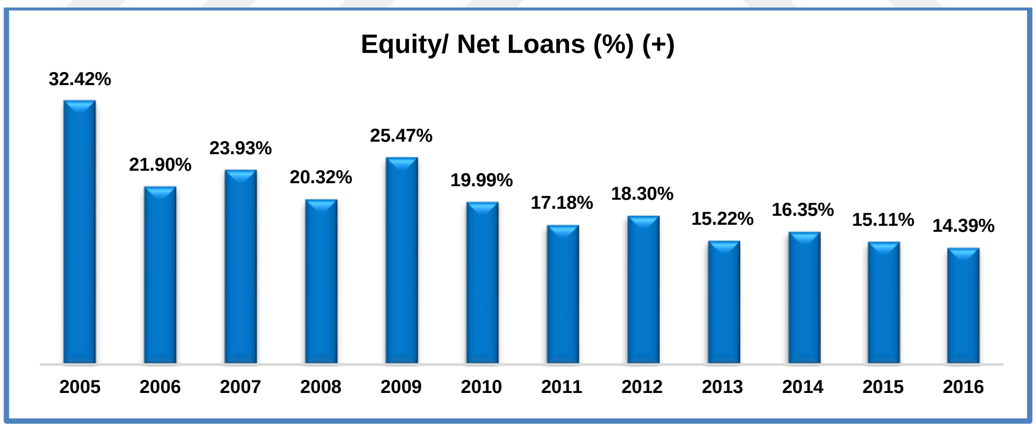



**Figure 187.Equity to Net Loans of Şekerbank during 2005-2016**

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

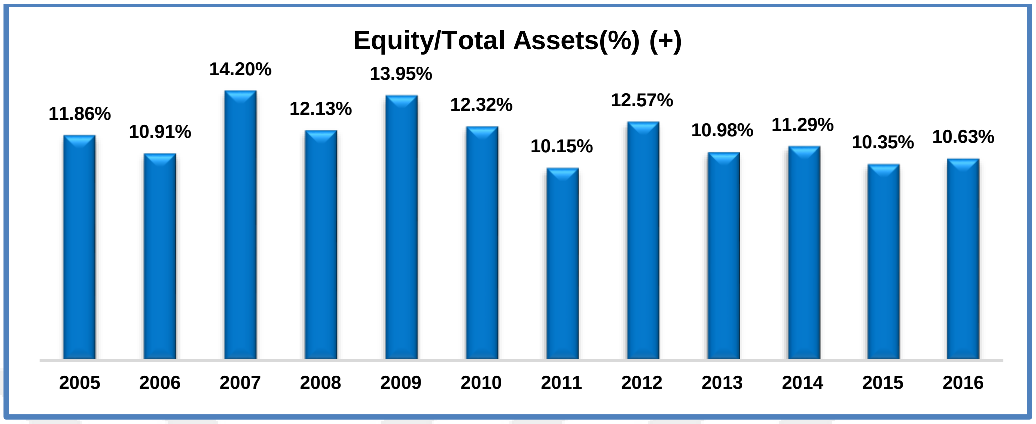



**Figure 188. Equity to Total Assets of Şekerbank during 2005-2016**

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%).

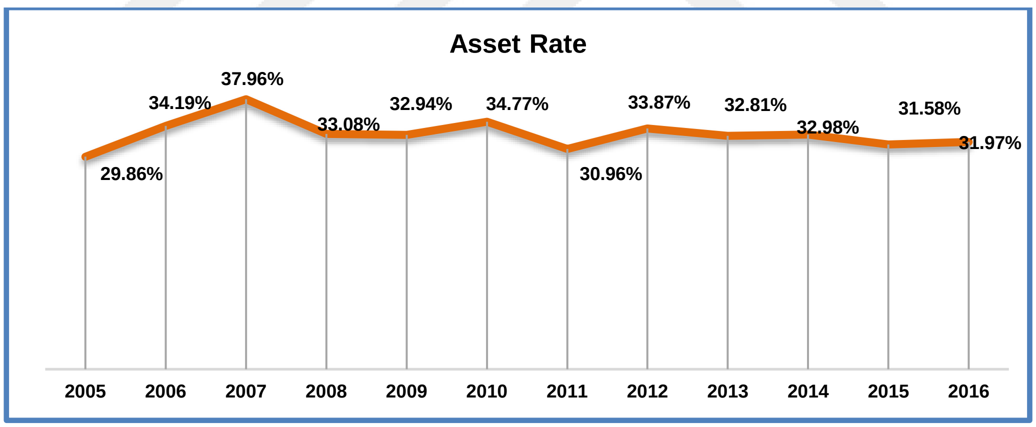



**Figure 189. Asset Quality rate of Şekerbank during 2005-2016**

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

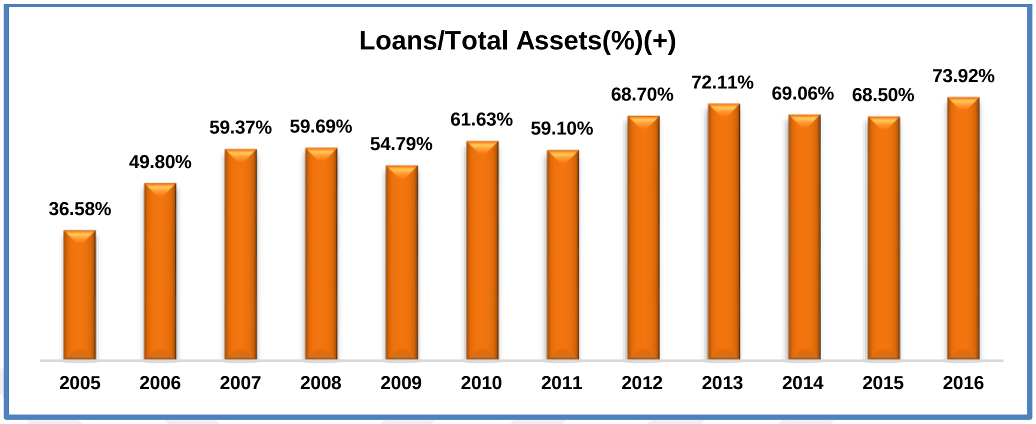



**Figure 190. Loans to total Assets of Şekerbank during 2005-2016**

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

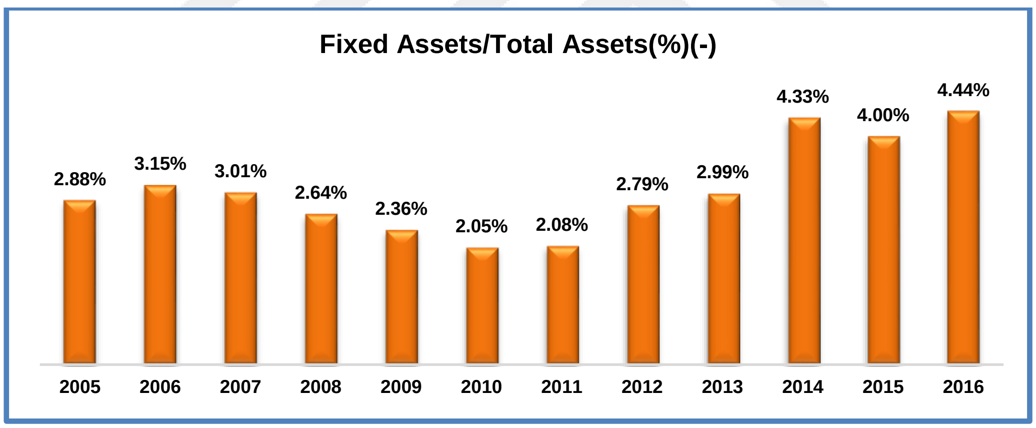



**Figure 191. Fixed Assets to Total Assets of Şekerbank during 2005-2016**

"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).

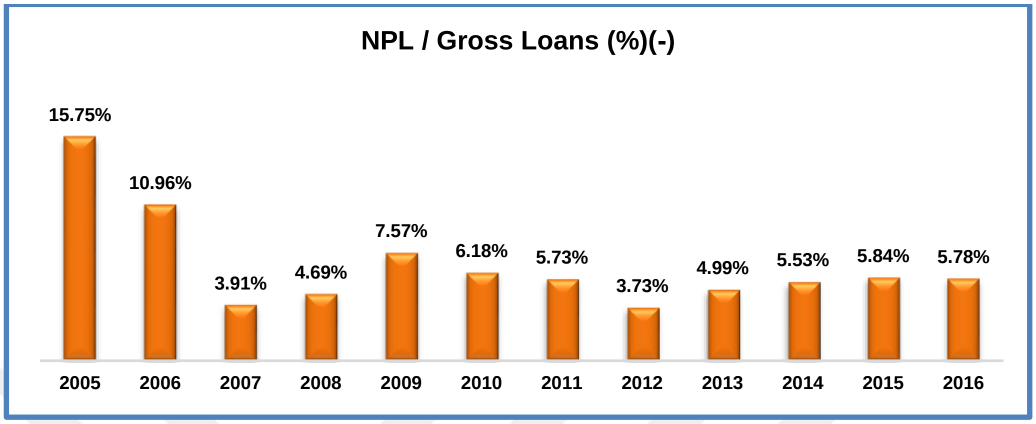



**Figure 192. NPL to Gross Loans of Şekerbank during 2005-2016**

"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%).

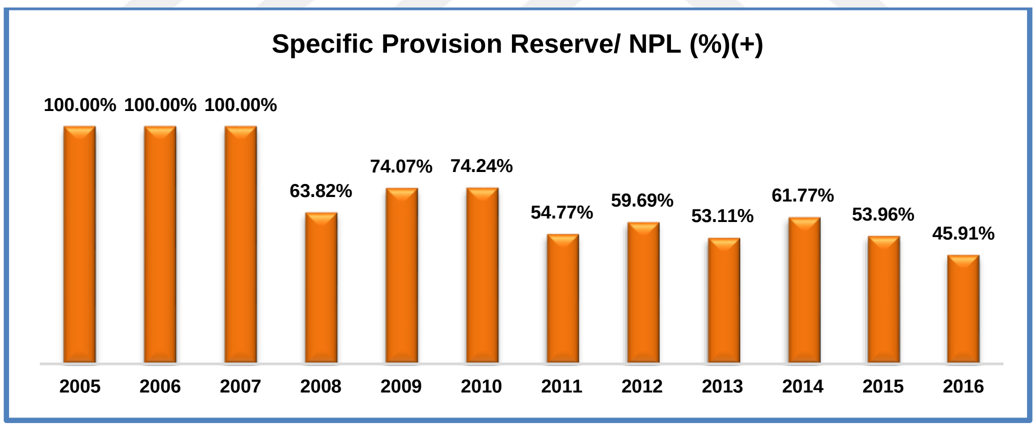



**Figure 193. Specific Provision Reserve to NPL of Şekerbank during 2005-2016**

"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%).

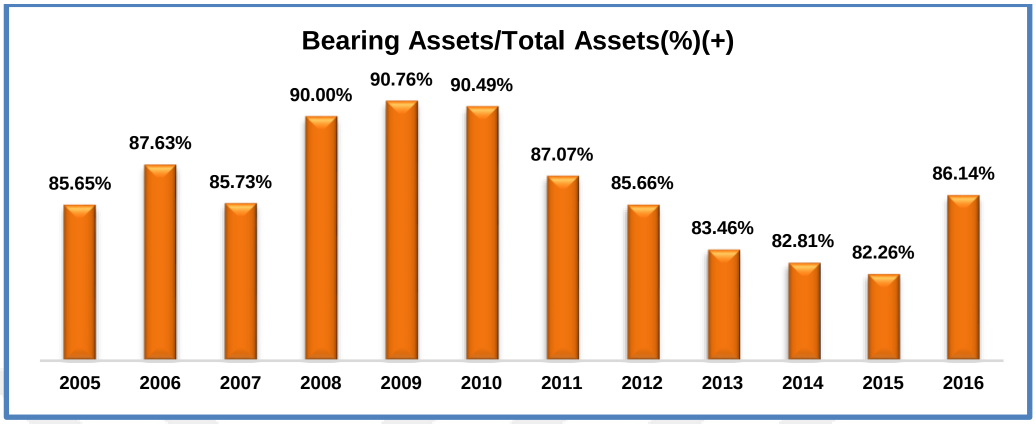



**Figure 194. Bearing Assets to Total Assets of Şekerbank during 2005-2016**

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%).

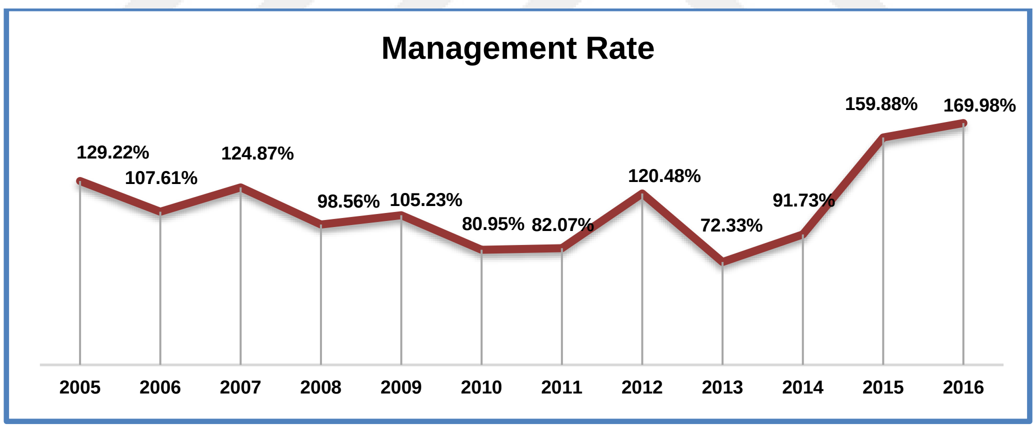



**Figure 195. Management Rate of Şekerbank during 2005-2016**

"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%).

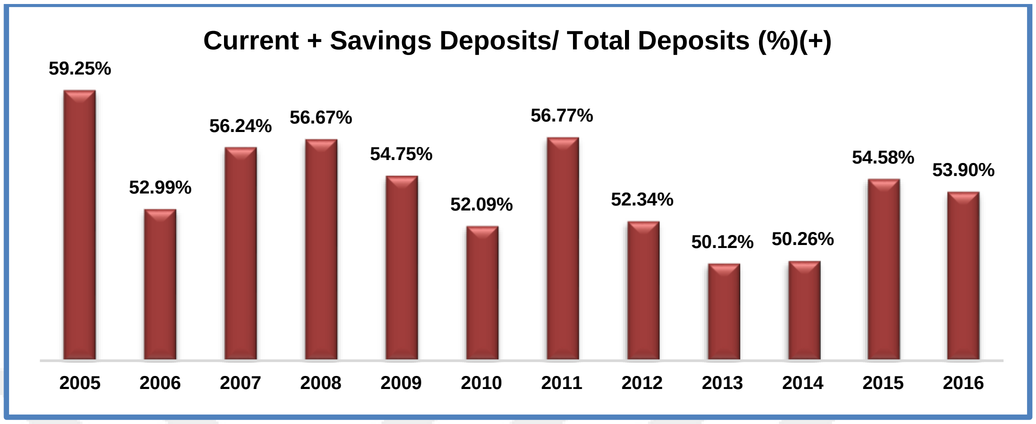



**Figure 196. Current plus Saving Deposits to Total Deposits of Şekerbank during 2005-2016**

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.

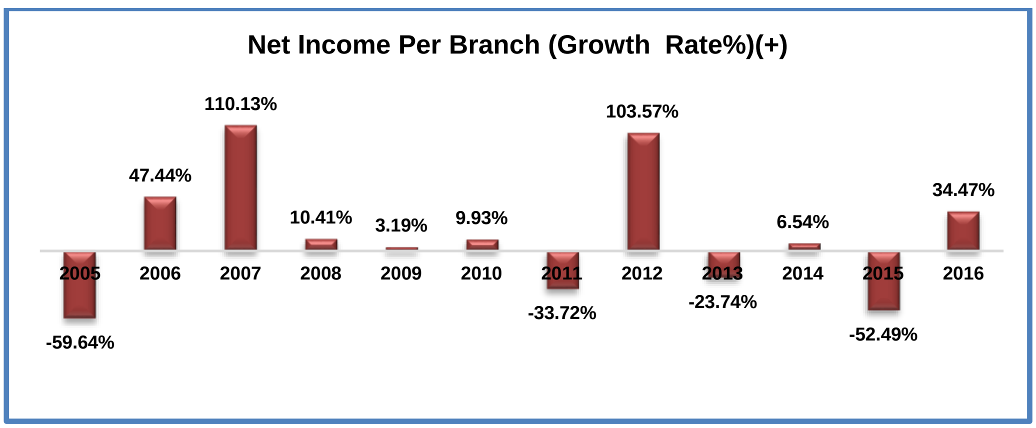



**Figure 197. Net Income per Branch (Growth Rate) of Şekerbank during 2005-2016**

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

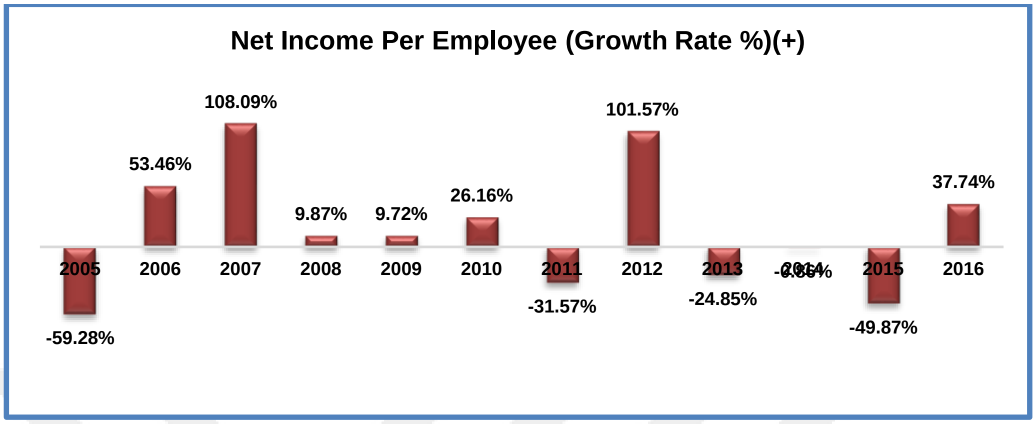



**Figure 198. Net Income per Employee (Growth Rate) of Şekerbank during 2005-2016**

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

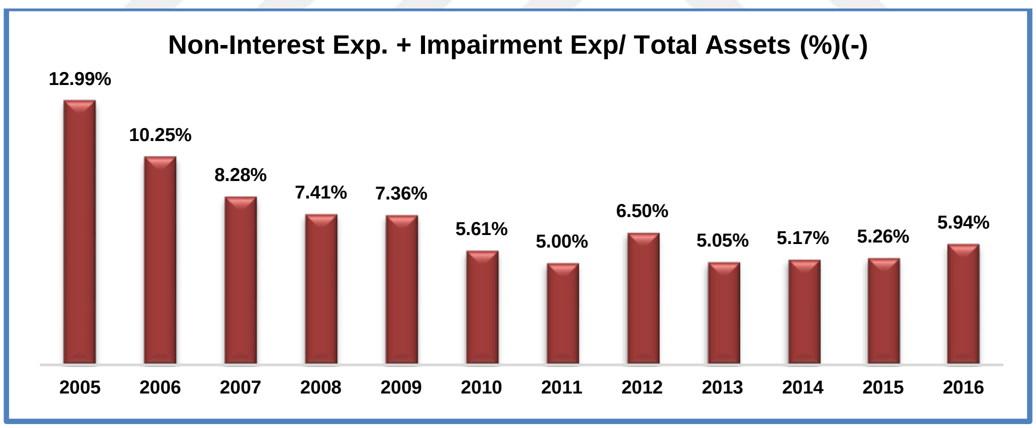



**Figure 199. Non-Interest Exp. Plus Impairment Exp. to Total Assets of Şekerbank during 2005-2016**

"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%.

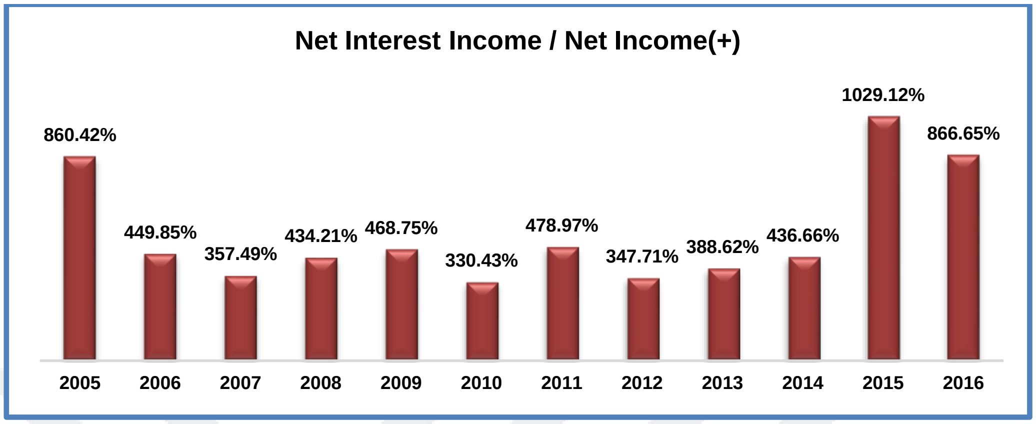



**Figure 200. Net Interest Income to Net Income of Şekerbank during 2005-2016**

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

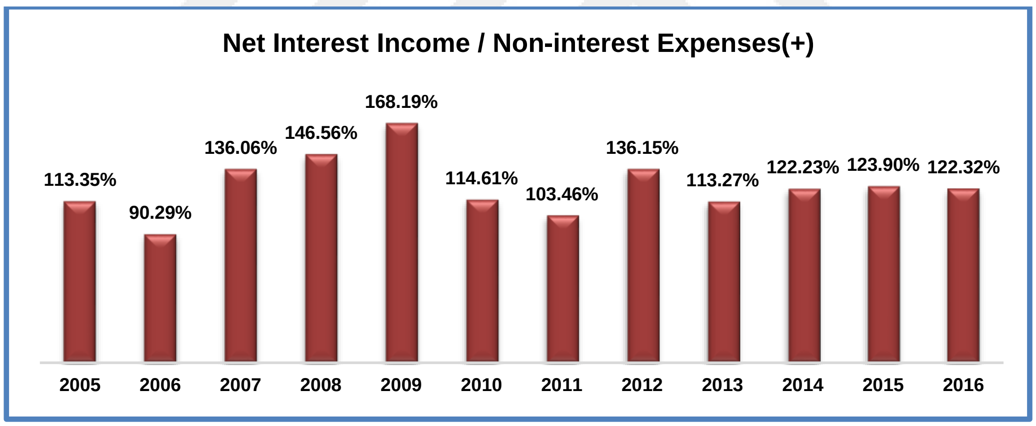



**Figure 201. Net Interest Income to Non-Interest Expenses of Şekerbank during 2005-2016**

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

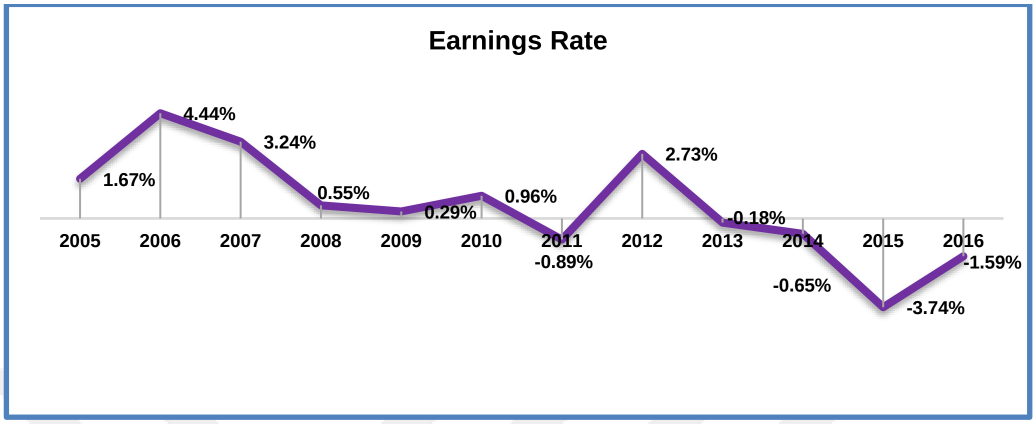



**Figure 202. Earning Rate of Şekerbank during 2005-2016**

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

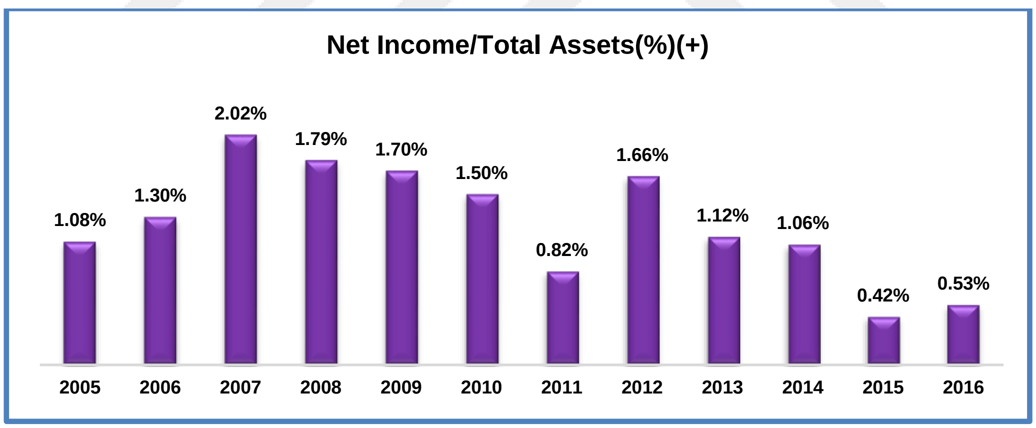



**Figure 203. Net Income to Total Assets of Şekerbank during 2005-2016**

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

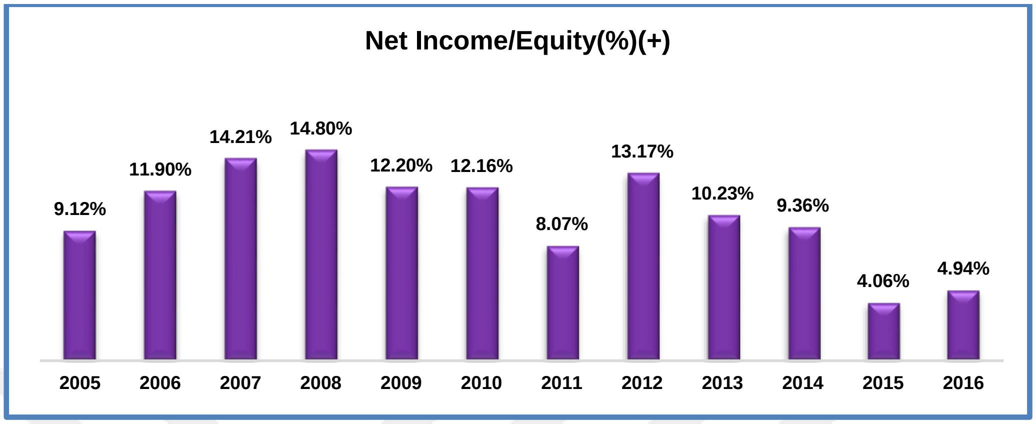



**Figure 204. Net Income to Equity of Şekerbank during 2005-2016**

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

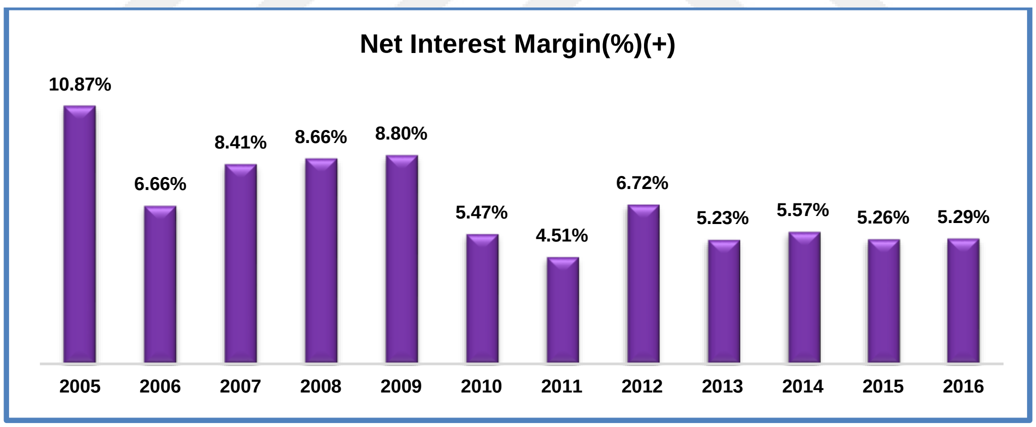



**Figure 205. Net Interest Margin of Şekerbank during 2005-2016**

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

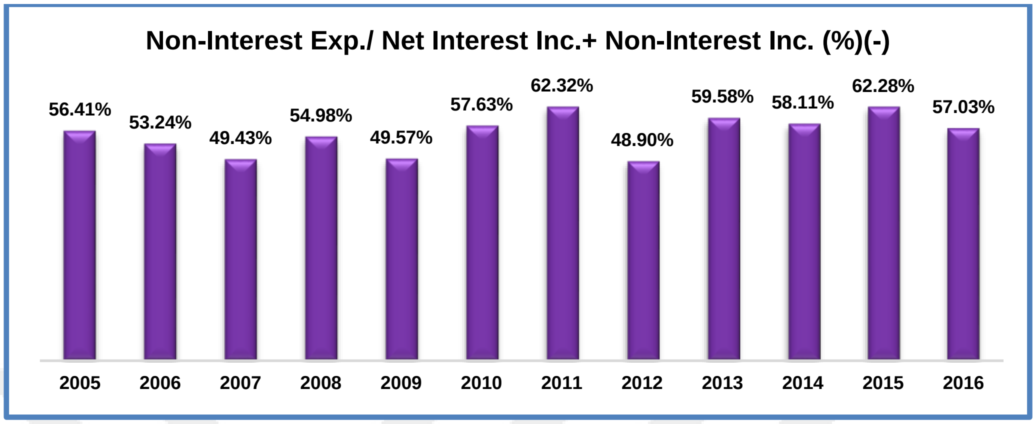



**Figure 206. Non-Interest Exp. to Net Interest Inc. plus Non-Interest Inc. of Şekerbank during 2005-2016**

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

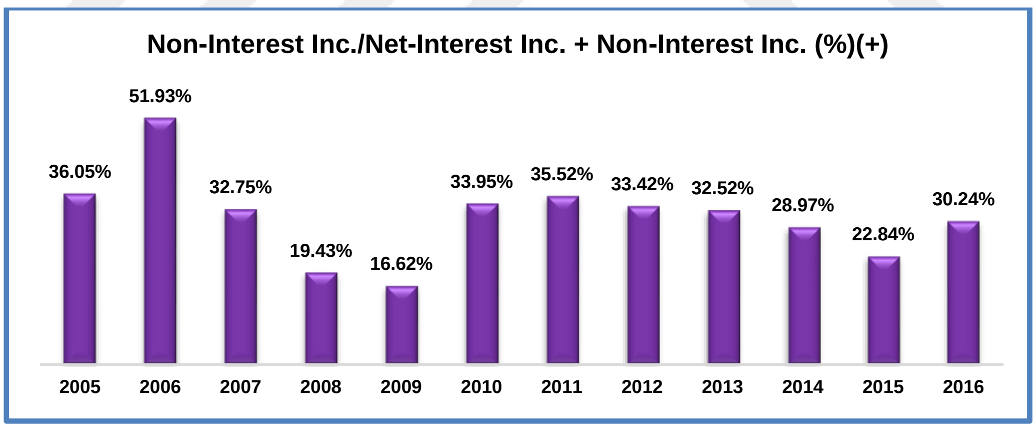



**Figure 207. Non-Interest Inc. to Net-Interest Inc. plus Non-Interest Inc. of Şekerbank during 2005-2016**

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%.

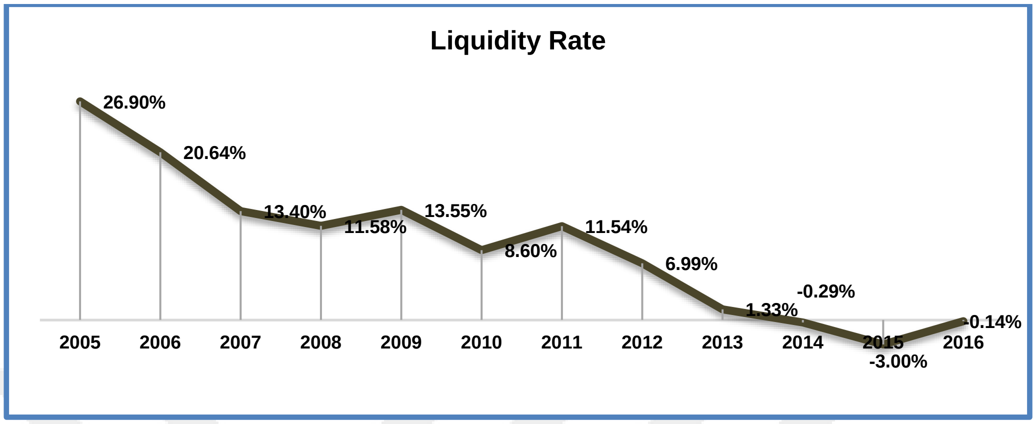



**Figure 208. Liquidity Rate of Şekerbank during 2005-2016**

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

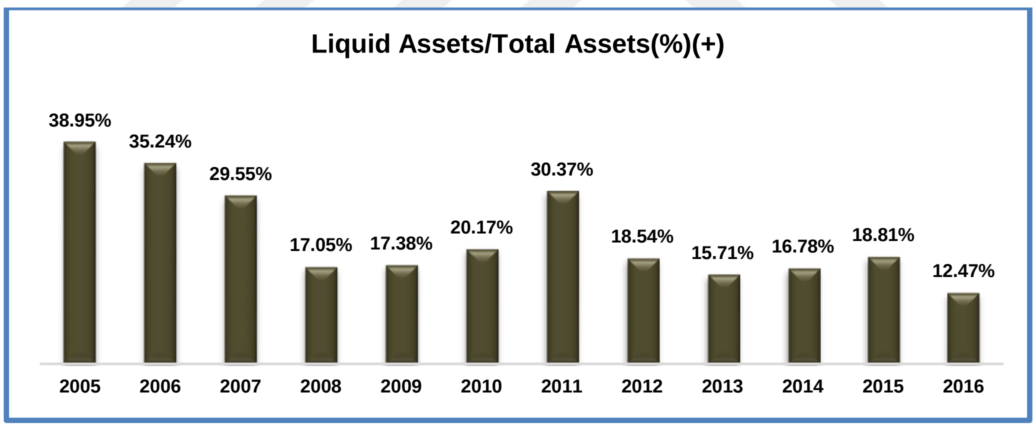



**Figure 209. Liquid Assets to Total Assets of Şekerbank during 2005-2016**

“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%).

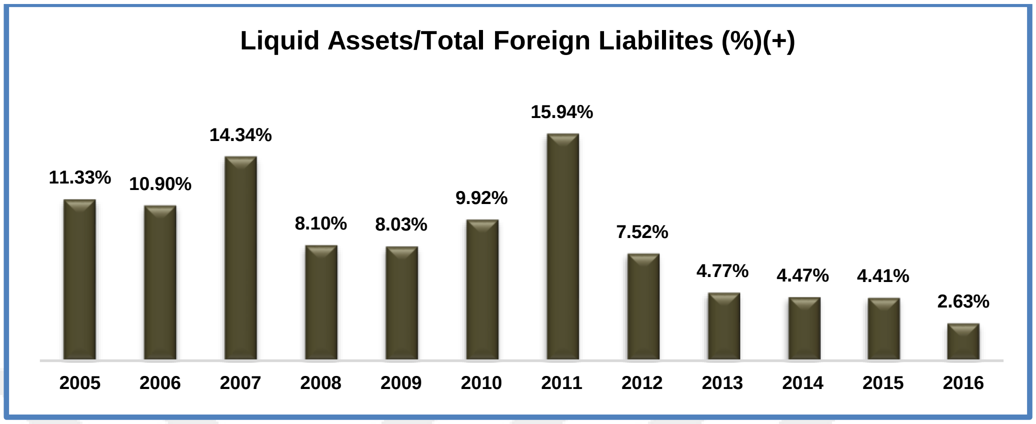



**Figure 210. Liquid Assets to Total Foreign Assets of Şekerbank during 2005-2016**

"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%.

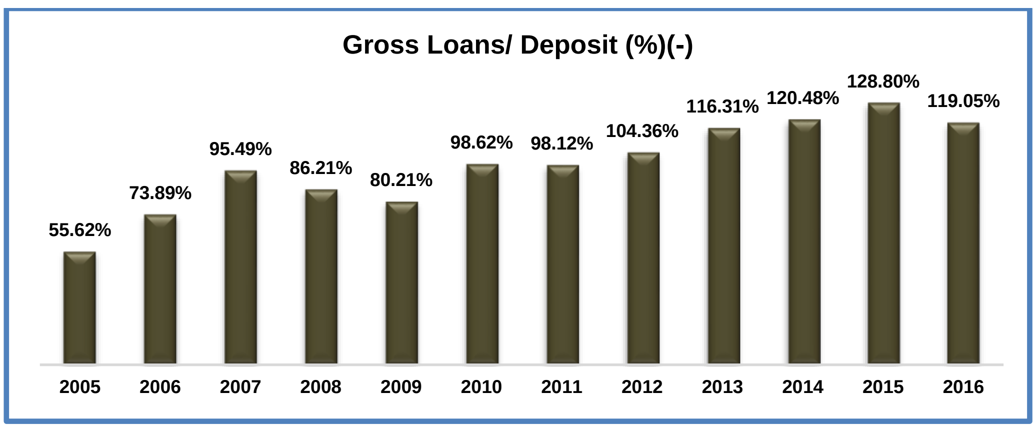



**Figure 211. Gross Loans to Deposit of Şekerbank during 2005-2016**

"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%.

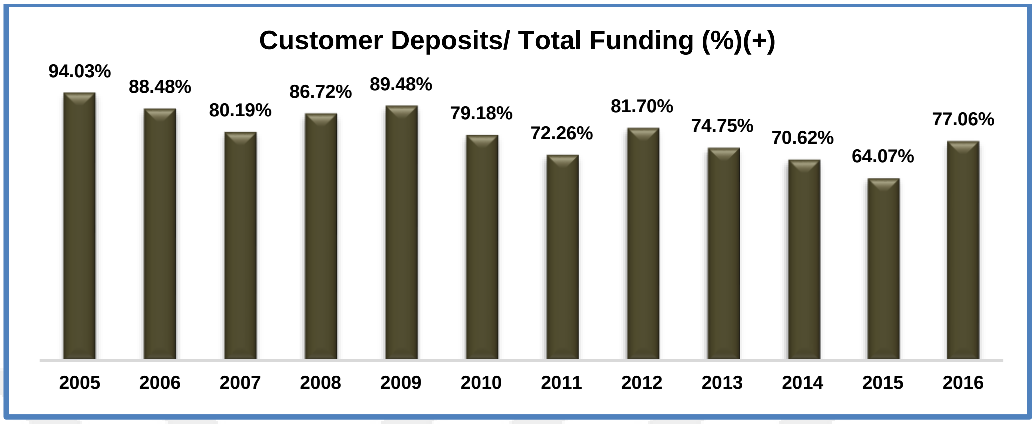



**Figure 212. Customer Deposits to Total Funding of Şekerbank during 2005-2016**

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

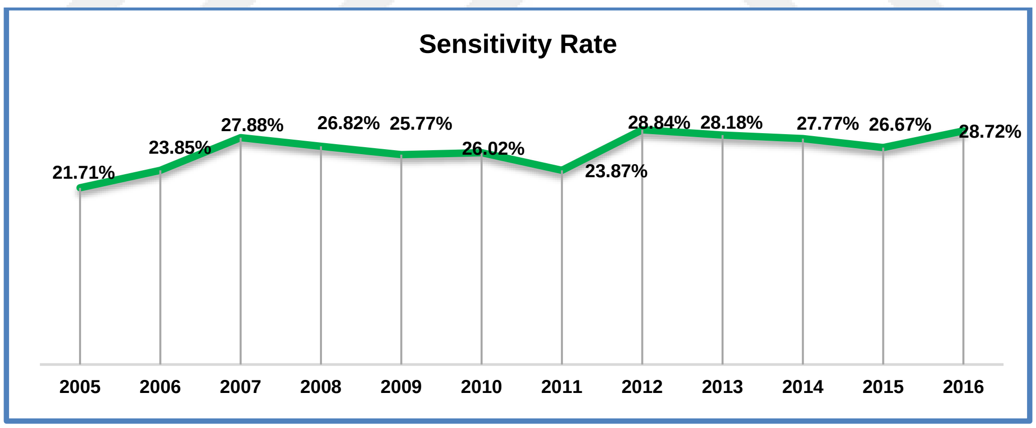



**Figure 213. Sensitivity Rate of Şekerbank during 2005-2016**

"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%).

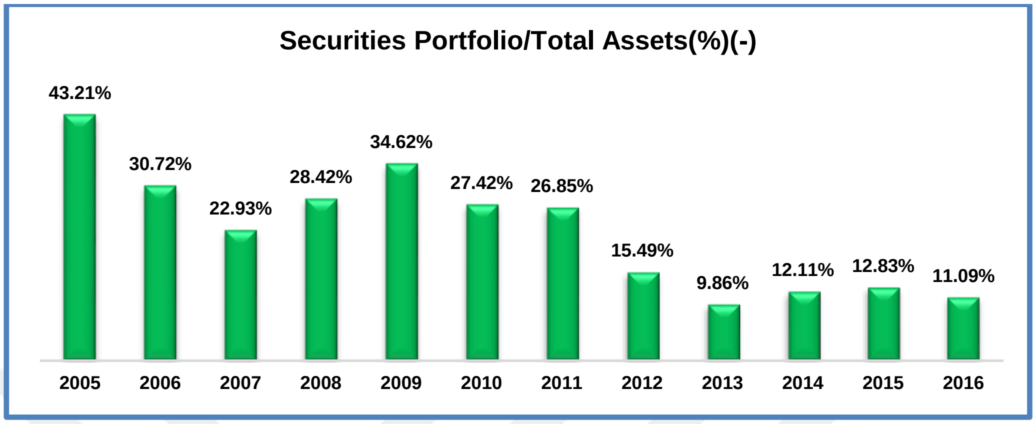



**Figure 214. Securities Portfolio to Total Assets of Şekerbank during 2005-2016**

"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.

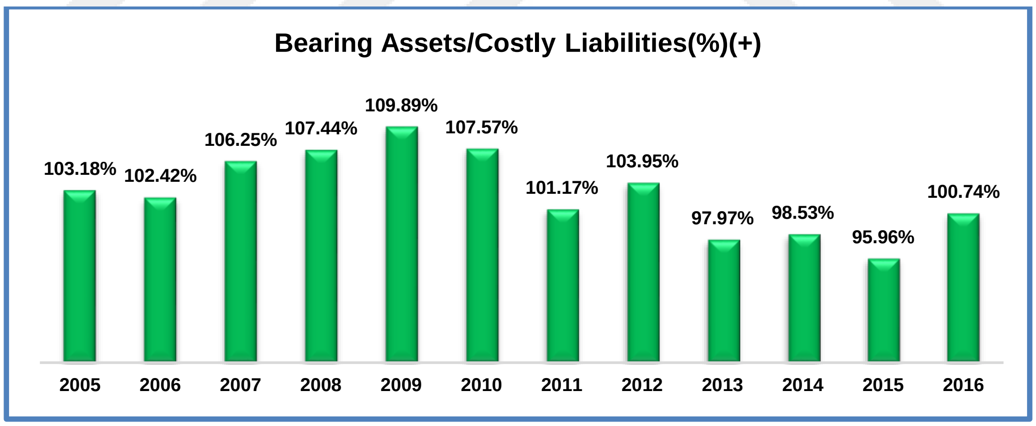



**Figure 215. Bearing Assets to Costly Liabilities of Şekerbank during 2005-2016**

"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%.

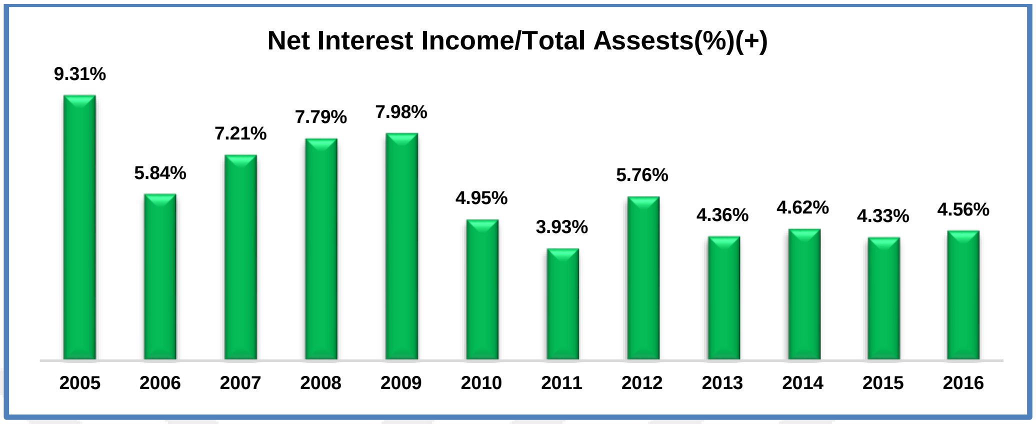



**Figure 216. Net Interest Income to Total Assets of Şekerbank during 2005-2016**

### 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.

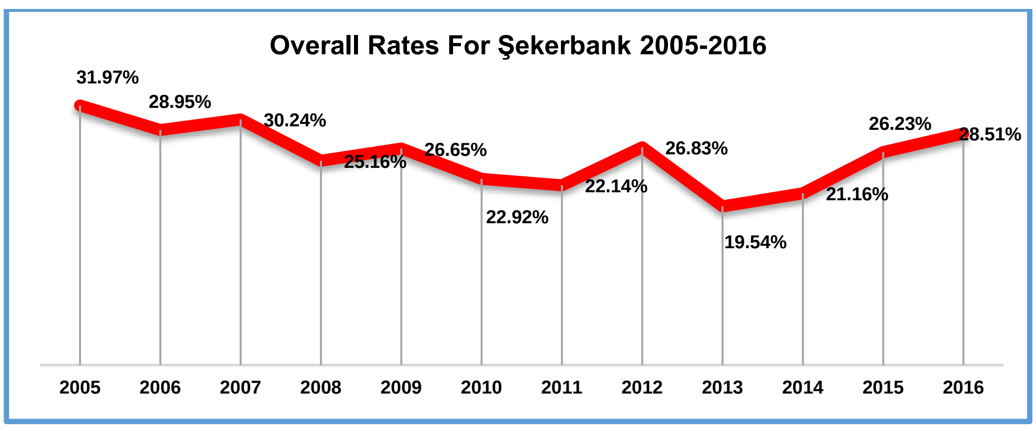



**Figure 217. CAMELS Overall Rates for Şekerbank during 2005-2016**

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

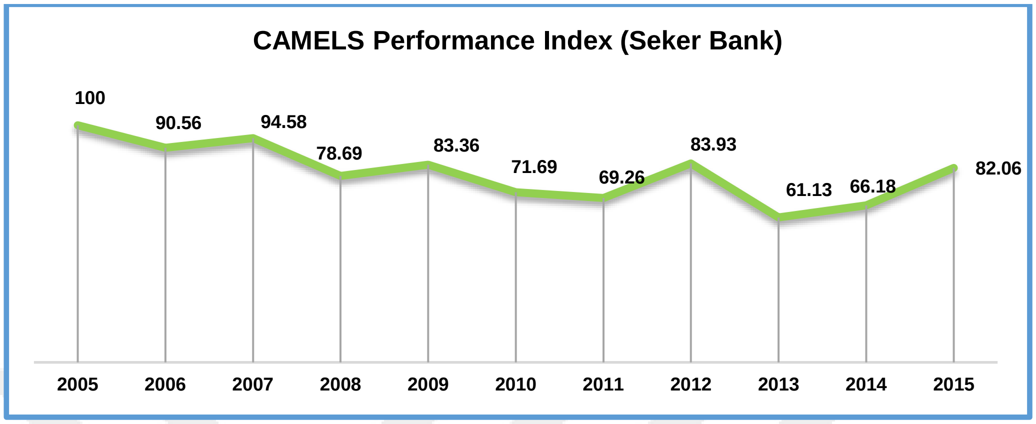



**Figure 218. CAMELS Performance Index for Şekerbank during 2005-2016**

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 | | Overall Weight | Capital | | |
| C | | 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 | | Overall Weight | Asset | | |
| A | | 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 | | Overall Weight | Management | | |
| M | | 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 | | Overall Weight | Earnings | | |
| E | | 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% |
| NIENIINII | 19 | 0,15 | Non-Interest Exp./ Net Interest Inc.+ Non-Interest Inc. (%)(-) | - | 57% |
| NIINIINII | 20 | 0,15 | Non-Interest Inc./Net-Interest Inc. + Non-Interest Inc. (%)(+) | + | 30% |
| Earning Rate | | | | | -2% |
| L | | Overall Weight | Liquidity | | |
| L | | 0,25 | | | |
| LATA | 21 | 0,30 | Liquid Assets/Total Assets(%)(+) | + | 12% |
| LATFL | 22 | 0,25 | Liquid Assets/Total Foreign Liabilites (%)(+) | + | 3% |
| GLD | 23 | 0,20 | Gross Loans/ Deposit (%)(-) | - | 119% |
| CDTF | 24 | 0,25 | Customer Deposits/ Total Funding (%)(+) | + | 77% |
| Liquidity Rate | | | | | 0% |
| S | | Overall Weight | Sensitivity | | |
| S | | 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 Assests(%)(+) | + | 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 Liabilites (%)(+) | + | 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 Assessts(%)(+) | + | 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%<= x <=13.78%).

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

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

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 / 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 / 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 / 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 / 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 / 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 / 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 / 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 / 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 / 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 / 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 / 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 / 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 | 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 | 4 | 4 |
| **Quantitative Factors** | **70%** | | 3,8 | | | | | | | | | | | | |
| **Qualitative Factors** | **30%** | | 1,9 | | | | | | | | | | | | 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:

Table23. 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 |
|---|---|---|---|---|---|---|---|---|---|
| Minor Shock<br><br>NPLs Rise, Borrowing Interest Rate Rise, Net Trading Income Decline | 5%,1%,1% | | 4,345,381.75 | | 355,530,326.75 | | 36,151,399.75 | | 3.48 |
| Moderate Shock<br><br>NPLs Rise, Borrowing Interest Rate Rise, Net Trading Income Decline | 10%,2%,2% | 6.576.420 | 2,114,343.49 | 357,761,365.00 | 353,299,288.49 | 38,382,438 | 33,920,361.49 | 3.24 | 3.93 |
| Major Shock<br><br>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%<=x<9.68%.

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

$$Halkbank's\ Competitive\ Position = \frac{231{,}441}{2{,}595{,}348} = 8.92\%$$

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 | Score after Adjustment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Quantitative Assessment** | **70%** | | | | | | | | | | | | | | |
| | | | Standard | | | | | | Watch full | Sub-Stand ard | Doubtf ul | NPL | Dec-16 | | |
| **Earnings** | **30%** | | | | | | | | | | | | | | |
| 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 / 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 |
| | | | | | | | | | | | | | | 4,8 | 4,75 |
| **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 | 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 |
| | | | | | | | | | | | | | | 5,4 | 5,4 |
| **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 | 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 |
| | | | | | | | | | | | | | | 6,7 | 5,975 |
| **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 | 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 |
| | | | | | | | | | | | | | | 3 | 3 |
| **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 | 0,15 | 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 |
| | | | | | | | | | | | | | | 7 | 7 |
| **Qualitative Assessment** | **30%** | | | | | | | | | | | | | | |
| 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%** | | | | | | 4,8 | | | | | | | | |
| **Qualitative Factors** | **30%** | | | | | | 2,8 | | | | | | | | 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 TL21,316,946 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 TL2,558,265 thousand to TL2,341,057.44 thousand, total assets decrease by 0.09% from TL231,440,818 thousand to TL231,223,610.44 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.

Table27. describes moderate shocks for each variable. Rising in NPL by 10% reduces profit after tax by 15.34% from TL2,558,265 thousand to TL2,165,918.42 thousand, total assets decrease by 0.17% from TL 231,440,818 thousand to TL231,048,471.42 thousand. Equity drops by 1.84% from TL 21,316,946 thousand to TL20,924,599.42 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 TL231,440,818 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:

Table29. 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 |
|---|---|---|---|---|---|---|---|---|---|
| Minor Shock<br>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 |
| Moderate Shock<br>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 |
| Major Shock<br>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%<= x <=13,78%.

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

$$Halk\ bank's\ Competitive\ Position = \frac{231{,}441}{2{,}595{,}348} = 8.92\%$$

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 | | | | | | 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 | 1,51 | 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 / 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 | 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%** | | | | | | 4,4 | | | | | | | | |
| **Qualitative Factors** | **30%** | | | | | | 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 TL4,041,102.30 thousand, total assets fall by 0.21% from TL 311,625,913 thousand to TL310,965,809.30 thousand, equity decreases by 1.84% from TL35,960,981 thousand to TL 35,300,877.30 thousand and ICR goes up by 3.13% from 3.92 to 4.04.

Table34. 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 TL30,954,246.08 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 Mınor Shock for Işbank**

| 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 Işbank**

| 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 Işbank**

#### 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 35,960,981thousand 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 |
|---|---|---|---|---|---|---|---|---|---|
| Minor Shock NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline | 5%,1%,1% | | 2.720.017,66 | | 309.644.724,66 | | 33.979.792,66 | | 4,30 |
| Moderate Shock NPLs Rise, Borrowing Interest Rate Decline, Net Trading Income Decline | 10%,2%,2 % | 4.701.206 | 738.829,33 | 311.625.913 | 307.663.536,33 | 35.960.981 | 31.998.604,33 | 3,92 | 4,91 |
| Major Shock 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 Işbank**

### 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%<=x<10.95%

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

$$Akbank's\ Competitive\ Position = \frac{271{,}017}{2{,}595{,}348} = 10.44\%$$

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 / 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%** | | | | | | 3,6 | | | | | | | | |
| **Qualitative Factors** | **30%** | | | | | | 3,7 | | | | | | | | 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:

Table7.2.4 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 |
|---|---|---|---|---|---|---|---|---|---|
| Minor Shock<br>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 |
| Moderate Shock<br>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 |
| Major Shock<br>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%<=x<10.95%.

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

$$Garanti\ Bank's\ Competitive\ Position = \frac{284,155}{2,595,348} = 10.95\%$$

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 / 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 |
| | | | | | | | | | | | | | | 3,2 | 3,2 |
| **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 | 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 |
| | | | | | | | | | | | | | | 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 | 115,39 | 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 |
| | | | | | | | | | | | | | | 6,4 | 5,8 |
| **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 | | | | oderate Concentration | 5 | 5 |
| | | | | | | | | | | | | | | 2,7 | 2,7 |
| **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 |
| | | | | | | | | | | | | | | 3,5 | 3,5 |
| **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%** | | 3,8 | | | | | | | | | | | | |
| **Qualitative Factors** | **30%** | | 2,8 | | | | | | | | | | | | 3,51 |
| **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.

Table7.1.2 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.

Table7.1.3 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 TL31,115,444.48 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 |
|---|---|---|---|---|---|---|---|---|---|
| Minor Shock 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 |
| Moderate Shock 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 |
| Major Shock 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%<=x<4.92%.

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

$$Şekerbank's\ Competitive\ Position = \frac{23,819}{2,595,348} = 0.92\%$$

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 / 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%** | | | | | | 5,9 | | | | | | | | |
| **Qualitative Factors** | **30%** | | | | | | 5,5 | | | | | | | | 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 TL23.818.856 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 |
|---|---|---|---|---|---|---|---|---|---|
| Minor Shock<br>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 |
| Moderate Shock<br>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 |
| Major Shock<br>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:

$1 \leq ICR < 7$ means it has a Standard score.

$7 \leq ICR < 8$ means it has a watchful score.

$8 \leq ICR < 9$ means it has a doubtful score.

$9 \leq ICR \leq 10$ 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 rage 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**

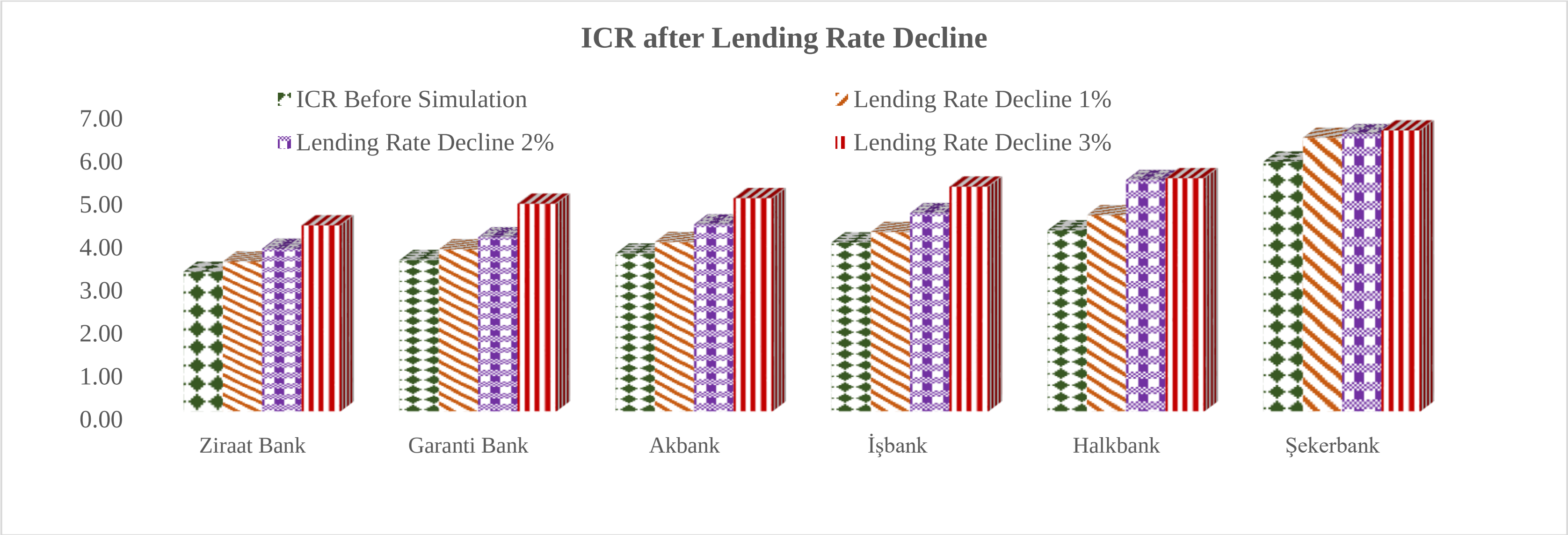



**Figure 221. Internal Credit Rating after Decline in Lending Rate**

**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**

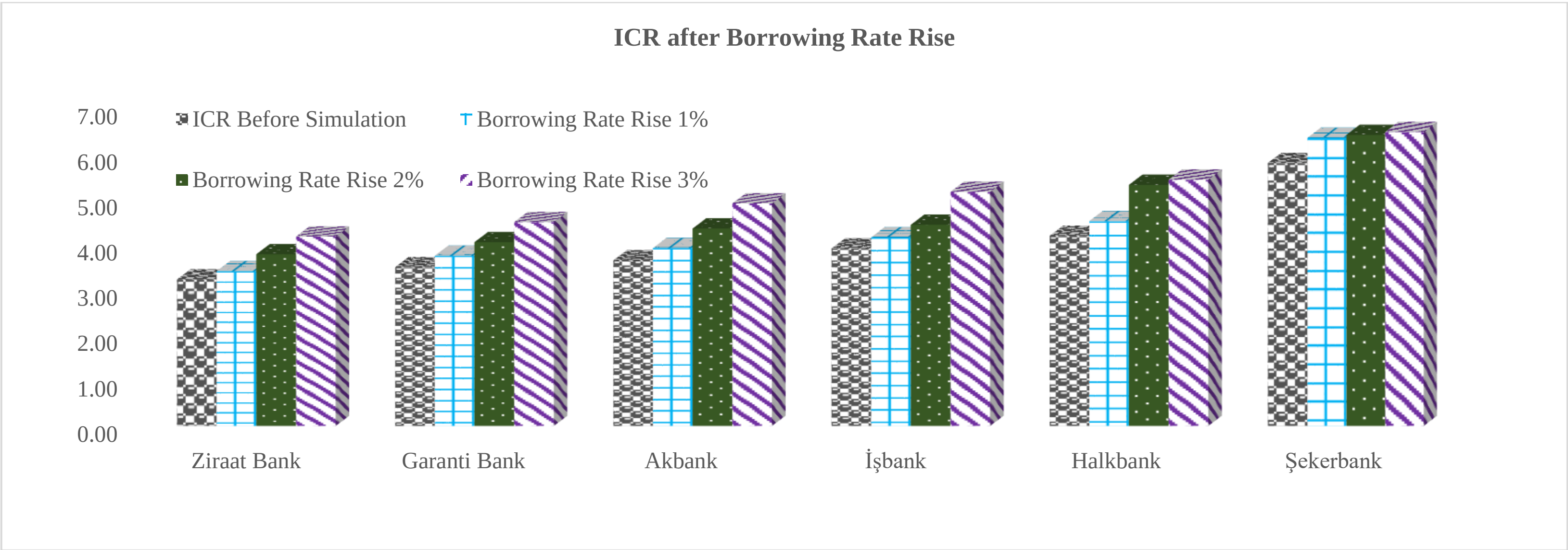



**Figure 222. Internal Credit Rating after Rise in Borrowing Rate**

#### 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**

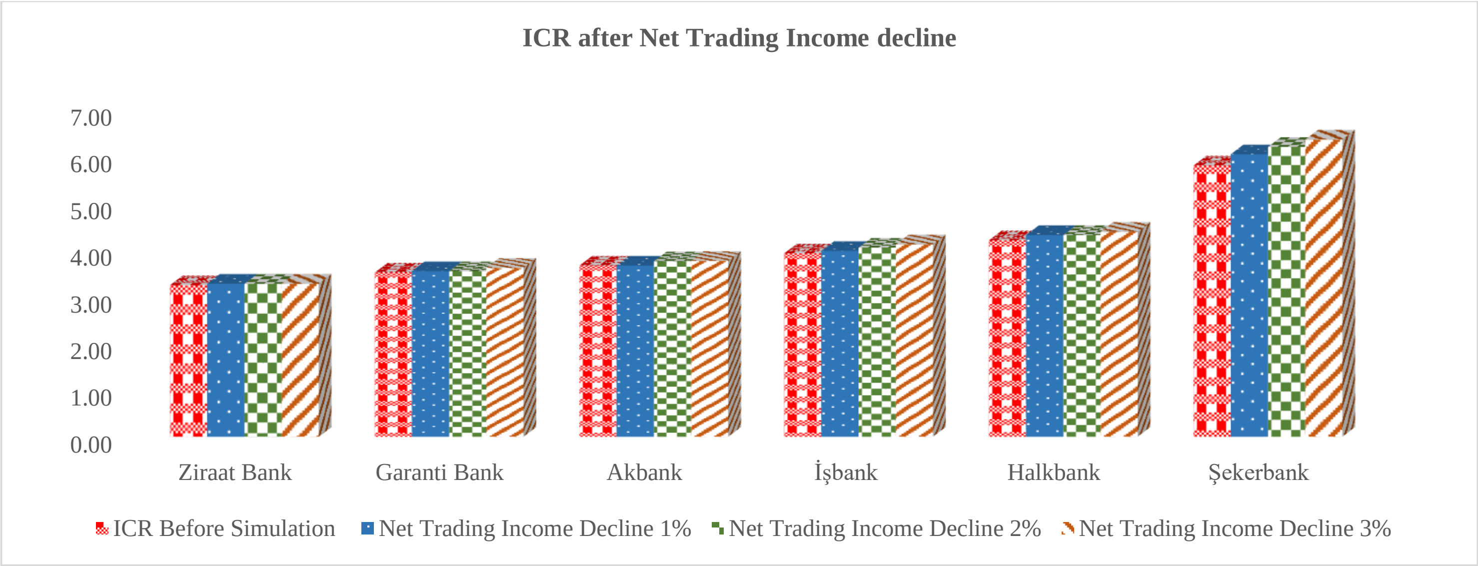



**Figure 223. Internal Credit Rating after Decline in Net Trading Income**

### 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**

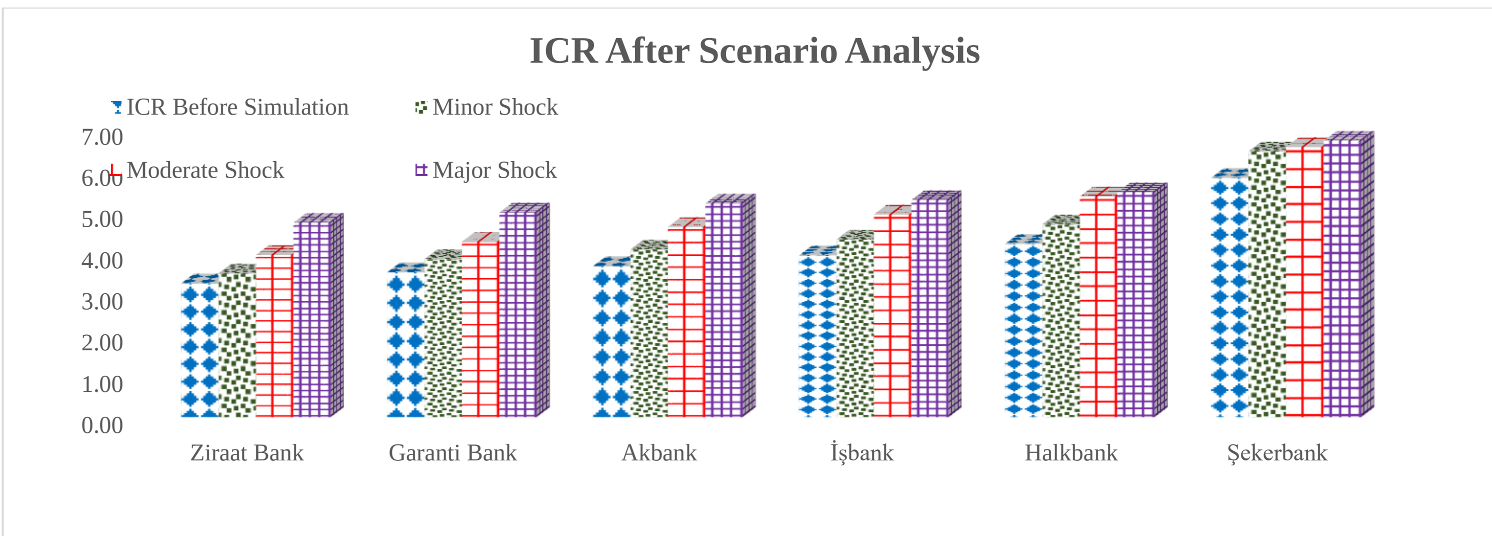



**Figure 224. Internal Credit Rating Scenario Analysis Simulation**

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)

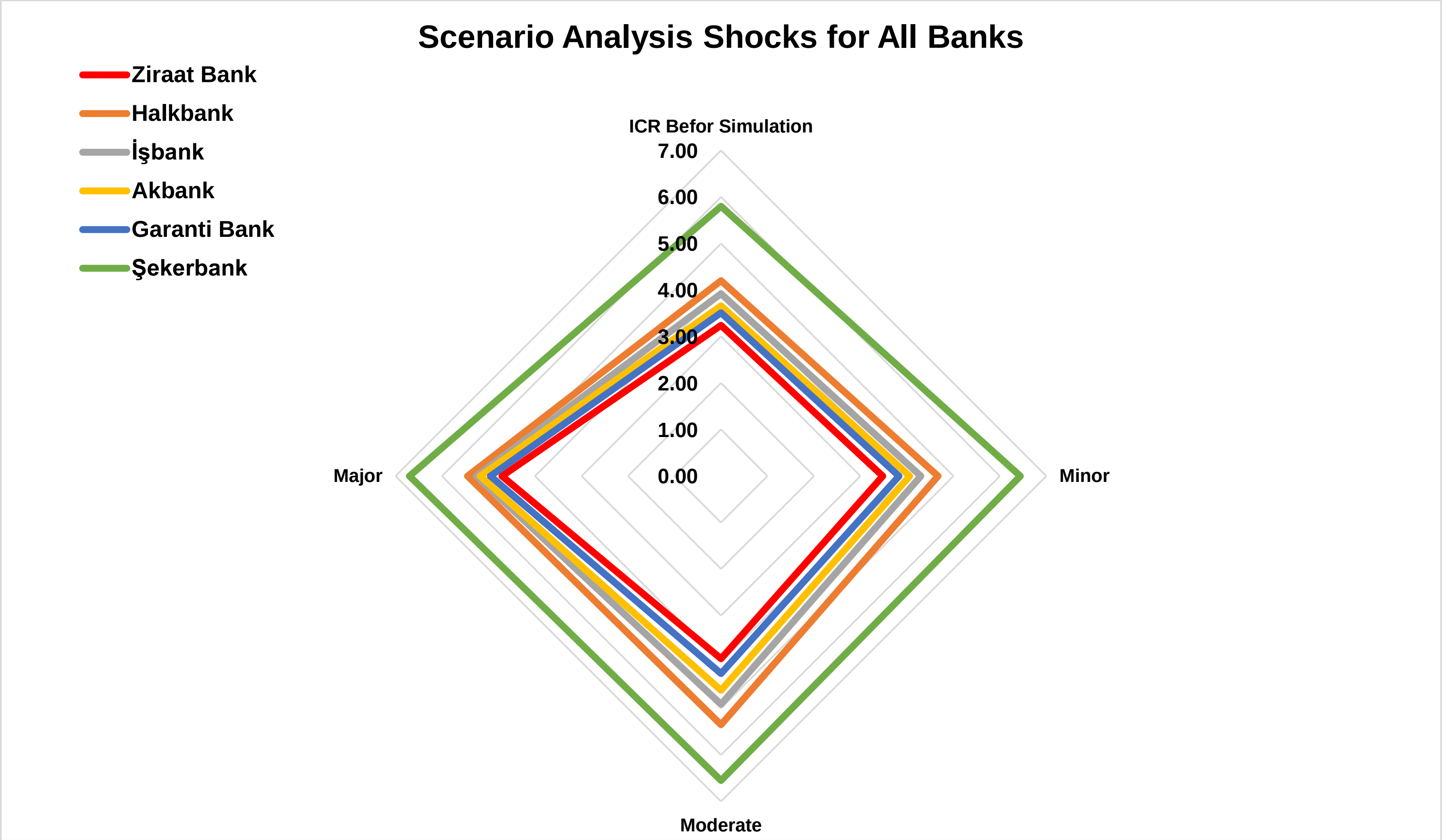



**Figure 225. Scenario Analysis After All level Shocks**

### 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≤ICR<7 means it has a Standard score. 7≤ICR<8 means it has a watchful score. 8≤ICR<9 means it has a doubtful score. 9≤ICR≤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 rage 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 extend 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 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.

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 an 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 Gananti 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 Between6 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.

## REFERENCES

Çinko, M., & Avcı, E. (2008). “CAMELS Derecelendirme Sistemi ve Türk Ticari Bankacılık Sektöründe Başarısızlık Tahmini.”. *Bankacılık ve Finansal Piyasalar Dergisi , 2* (2), 25-49.

Özatay, F., Sak, G., Garber, P., & Ghosh, A. (2002). Banking Sector Fragility and Turkey's The 2000-2001 Financial Crisis. *Brookings Trade Forum* , 121-172.

Öztorul, G. (2011). *Performance Evaluation of Banks and Banking Groups: Turkey Case.* Master Thesis, Middle East Technical University, The Graduate School ofSocial Sciences.

*Akbank Website*. (n.d.). Retrieved from Akbank: http://www.akbank.com/en-us/investor-relations/Pages/Financials.aspx

Akin, G., Aysan, A., & Yildiran, L. (2008, December). Transformation of the Turkish Financial Sector in the Aftermath of the 2001 Crisis. Bogazici University, Department of Economics, Bogazici University, Center for Economics and Econometrics.

Akyüz, Y., & Boratav, K. (2003). The making of the Turkish financial crisis. *World Development , 31* (9), 1549–1566.

Altan, M., Yusufazari, H., & Bedük, A. (2014). Performance Analysis of Banks in Turkey Using CAMEL Approach. *14th International Academic Conference.* Malta.

*Banking Regulation and Supervision Agency*. (n.d.). Retrieved from http://www.bddk.org.tr/

Brinke, K. (2013, September 04). The Turkish 2000-01 Banking Crisis. *Rabo Research- Economic Research* .

Cantor, R. (2001). Moody's investors service response to the consultative paper issued by the Basel Committee on Bank Supervision "A new capital adequacy framework". *Journal of Banking & Finance , 25* (1), 171-185.

Cantor, R., & Packer, F. (1994). The Credit Rating Industry.

Cantor, R., & Packer, F. (1994). The Credit Rating Industry. *Quarterly Review*, 1-26.

*Capital Markets Board of Turkey*. (n.d.). Retrieved from http://www.spk.gov.tr/indexcont.aspx?action=showpage&menuid=6&pid=10&subid=1

Christopoulos, A., Mylonakis, J., & Diktapanidis, P. (2011). Could Lehman Brothers' Collapse Be Anticipated? An Examination Using CAMELS Rating System. *International Business Research , 4* (2).

Cole, R. A., & Gunther, J. W. (1995). A CAMEL Rating's Shelf Life. *Federal Reserve Bank of Dallas Financial Industry Studies* , 13-20.

*Credit Rating Agency*. (n.d.). Retrieved from https://en.wikipedia.org/wiki/Credit_rating_agency

*Economist Intelligence Unit*. (2016, February 17). Retrieved from Economist Intelligence Unit: http://www.eiu.com/industry/article/603951444/downturn-catches-up-with-turkeys-banks/2016-02-17

*Fitch Ratings*. (n.d.). Retrieved from https://www.fitchratings.com/site/definitions

*Garanti Bank Website*. (n.d.). Retrieved from Garanti Bank: https://www.garanti.com.tr/en/our_company/investor_relations.page

Grier, W. A. (2007). *Credit Analysis of Financial Institutions* (2nd ed.). Euromoney Institutional Investor PLC.

*Halkbank Website*. (n.d.). Retrieved from Halkbak: https://www.halkbank.com.tr/en/international-banking/83/financial-reports?AspxAutoDetectCookieSupport=1

Hull, J. C. *Risk Management and Financial Institutions* (Forth ed.).

*İşbank Webiste*. (n.d.). Retrieved from İşbank: https://www.isbank.com.tr/EN/about-isbank/investor-relations/publications-and-results/financial-statements/Pages/financial-statements.aspx

Isanzu, J. N. (2016). Analysis Using CAMEL Model: Evidence from Large Commercial Banks in Tanzania. *International Journal of Research in Commerce and Management* .

Ishaq, A., Karim, A., Ahmed, S., & Zaheer, A. (2016). Evaluating Performance of Commercial Banks in Pakistan: "An Application of Camel Model". *Journal of Business & Financial Affairs , 5* (1).

Jalili, S. (2014). *Bank Performance Evaluation in Emerging Market The Case of Turkey and Brazil* . Master of Science in Banking and Finance Thesis, Eastern Mediterranean University, Institute of Graduate Studies and Research, Gazimağusa, North Cyprus.

Karapinar, A., & Dogan, I. (2015). "An Analysis on the Performance of the Participation Banks in Turkey". *Accounting and Finance Research , 4* (2).

Kaya, Y. T. (2001). Türk Bankacılık Sektöründe CAMELS Analizi . *Bankacılık Düzenleme ve Denetleme Kurumu, MSPD ÇalıGşma Raporları, No: 2001/6* .

*Moody's*. (n.d.). Retrieved from https://www.moodys.com/Pages/atc.aspx

Muraleedharan, D. (2014). *Modern Banking, Theory and Practice* (2 ed.).

Nigudkar, A. (n.d.). *Financewalk*. Retrieved from https://www.financewalk.com/credit-rating-agencies-sites/

*Nonperforming Loan - NPL*. (n.d.). Retrieved from https://www.investopedia.com/terms/n/nonperformingloan.asp

Pakistan, B. S. (2012, May). *Guidelines on Stress Testing.* Retrieved from http://www.sbp.org.pk/bsd/2005/C5_StressTesting_Guidelines.pdf

Rashmi, S. (2012). Applicability of CAMELS Rating for Supervisory Regulation of the Indian Banking System. *Vishwakarma Business Review , II* (2), 14-20.

Rostami, M. (2015, November). CAMELS' Analysis in Banking Industry . *Article in Global Journal of Engineering Science and Research Management* .

Rostami, M. (2015, November). CAMELS' Analysis in Banking Industry. *Article in Grobal Journal of Engineering Science and Research Managment* .

Rostami-Charati, A., Shahgholian, K., & Momeni, H.-A. (2013). Designing Credit Rating Model for Legal Clients of Commercial Banks through Utilizing WARD and with Fuzzy TOPSIS Approach . *International Research Journal of Applied and Basic Sciences , 5(3)*, 385-398.

Rozzani, N. &. (2013). Camels and performance evaluation of banks in Malaysia: conventional versus Islamic. J Islamic Financ Bus Res,2(1). 36-45.

Rozzani, N., & Rahman, R. (2013). "Camels and Performance Evaluation of Banks in Malaysia: Conventional Versus Islamic". *Journal of Islamic Finance and Business Research , 2* (1), 36-45.

Sansal, B. (n.d.). *All About Turkey*. Retrieved from http://www.allaboutturkey.com/

Schneider, S., Schröck, G., Koch, S., & Schneider, R. (2017, April). Basel "IV": What's next for banks? Implications of intermediate results of new regulatory rules for European banks. *Mckinsey & company, Global Risk Practice* .

Settlements, B. f. (2009, May 20). *Principles for sound stress testing practices and supervision.* Retrieved from https://www.bis.org/publ/bcbs155.htm

Sinkey, J. F. (1992). *Commercial bank financial management* (4 ed.).

*Şekerbank Website*. (n.d.). Retrieved from Şekerbank: http://www.sekerbank.com/en/investorrelations/statements

*The Banks Association of Turkey*. (n.d.). Retrieved from https://www.tbb.org.tr

*The Royal Bank of Scotland plc*. (n.d.). Retrieved from The Royal Bank of Scotland plc, Istanbul Branch, Under Liquidation: http://www.rbs.com/countries/turkey/en_gb/home.html

*Trading Econimics*. (n.d.). Retrieved from Trading Econimics: https://tradingeconomics.com/

Treacy, W. F., & Carey, M. (2000). Credit Risk Rating Systems at Large US Banks. *Journal of Banking & Finance 24* , 167±201.

Vilén, M. (2010). *Predicting Failures of Large U.S. Commercial Banks*. Master Thesis, Aalto University, Department of Economics.

Xuezhen, W. (2008). Credit Scoring Model Validation. *Faculty of Science, Korteweg-de Vries Institute for Mathematics* .

Zekavat, M. (2008). Credit Risk Management (On the basis of modeling, identifying and measuring).

*Ziraat Bank Website*. (n.d.). Retrieved from Ziraat Bank: http://www.ziraat.com.tr/en/InvestorRelations/Financials/Pages/AuditReportAndFinancialStatements.aspx

# APPENDICES

## Ziraat Bank Income Statement (.000 TRY)
## FY 2005 – FY 2016

| | Other Information | FY2004 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Branches | 1.146 | 1.137 | 1.137 | 1.247 | 1.258 | 1.305 | 1.379 | 1.434 | 1.490 | 1.636 | 1.682 | 1.786 | 1.786 |
| 2 | Employees | 21.172 | 20.295 | 16.862 | 17.067 | 17.343 | 18.198 | 18.602 | 20.181 | 23.069 | 24.639 | 23.525 | 25.618 | 24.932 |

| | Ziraat Bankası<br>Income Statement - Unconsolidated<br>Amounts in Thousand | FY2004 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL |
| **1** | **Total Interest Income** | | **7.924.274** | **9.435.928** | **11.329.459** | **13.368.109** | **14.202.443** | **12.391.498** | **13.706.442** | **14.810.669** | **14.369.841** | **18.165.007** | **22.050.495** | **27.290.689** |
| | *YoY Change* | | | *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** | | **5.065.701** | **6.034.422** | **7.527.730** | **9.265.832** | **8.133.667** | **7.035.839** | **8.464.864** | **7.909.759** | **6.631.043** | **9.558.161** | **11.541.569** | **13.342.418** |
| | *YoY Change* | | | *19%* | *25%* | *23%* | *-12%* | *-13%* | *20%* | *-7%* | *-16%* | *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** | | **2.858.573** | **3.401.506** | **3.801.729** | **4.102.277** | **6.068.776** | **5.355.659** | **5.241.578** | **6.900.910** | **7.738.798** | **8.606.846** | **10.508.926** | **13.948.271** |
| | *YoY Change* | | | *19%* | *12%* | *8%* | *48%* | *-12%* | *-2%* | *32%* | *12%* | *11%* | *22%* | *33%* |
| **4** | **Total Non-Interest Operating Income** | | **1.316.229** | **985.638** | **908.389** | **883.781** | **875.202** | **1.507.866** | **968.362** | **1.227.368** | **2.129.575** | **2.110.045** | **2.687.493** | **3.268.733** |
| | *YoY Change* | | | *-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 | 1.642.848 |
| 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** | | **1.265.241** | **1.415.221** | **1.494.689** | **1.724.530** | **1.895.059** | **2.249.660** | **2.622.439** | **2.828.340** | **3.661.367** | **4.094.964** | **5.208.242** | **5.302.999** |
| | *YoY Change* | | | *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** | | **2.909.561** | **2.971.923** | **3.215.429** | **3.261.528** | **5.048.919** | **4.613.865** | **3.587.501** | **5.299.938** | **6.207.006** | **6.621.927** | **7.988.177** | **11.914.005** |
| | *YoY Change* | | | *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 | 1.155.110 | 702.561 | 539.692 | 1.094.717 |
| **9** | **Operating Profit** | | **2.682.337** | **2.720.292** | **2.963.060** | **2.715.500** | **4.416.735** | **4.469.360** | **2.779.504** | **3.504.725** | **4.378.523** | **5.178.733** | **6.567.623** | **8.569.135** |
| | *YoY Change* | | | *1%* | *9%* | *-8%* | *63%* | *1%* | *-38%* | *26%* | *25%* | *18%* | *27%* | *30%* |
| 10 | Non-recurring Income | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 11 | Non-recurring Expenses | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 12 | Other Non-operating Expenses | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| **13** | **Pre-tax Profit** | | **2.682.337** | **2.720.292** | **2.963.060** | **2.715.500** | **4.416.735** | **4.469.360** | **2.779.504** | **3.504.725** | **4.378.523** | **5.178.733** | **6.567.623** | **8.569.135** |
| | *YoY Change* | | | *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** | **1.530.665** | **1.846.412** | **2.100.002** | **2.351.091** | **2.134.259** | **3.510.955** | **3.712.602** | **2.100.674** | **2.650.428** | **3.330.074** | **4.050.509** | **5.162.470** | **6.576.420** |
| | *YoY Change* | | | *14%* | *12%* | *-9%* | *65%* | *6%* | *-43%* | *26%* | *26%* | *22%* | *27%* | *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 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
| | Amounts in Thousand | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL |
| | *Exchange Rate* | | | | | | | | | | | | |
| A | ASSETS | | | | | | | | | | | | |
| **1** | **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* |
| 2 | 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 |
| **3** | **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 |
| 4 | 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 |
| **5** | **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%* |
| 6 | 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 |
| 7 | 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 |
| 8 | 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 |
| **9** | **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%* |
| **10** | **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<br>Balance Sheet Unconsolidated | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Amounts in Thousand | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL |
| B | LIABILITIES | | | | | | | | | | | | |
| **13** | **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 |
| 14 | 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 |
| **15** | **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%* |
| **16** | **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 |
| 17 | Derivative Financial Instruments | 0 | 0 | 812 | 4.019 | 286 | 5.599 | 39.821 | 55.548 | 54.664 | 395.584 | 292.271 | 643.628 |
| **18** | **Total Interest Bearing Liabilties** | **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%* |
| 19 | 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 |
| 20 | 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 |
| 21 | 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 |
| **22** | **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%* | *32%* | *18%* | *21%* | *7%* | *-1%* | *30%* | *16%* | *24%* | *18%* |
| C | EQUITY | | | | | | | | | | | | |
| 23 | 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 | 5.100.000 |
| | *YoY Change* | | *0%* | *0* | *0* | *0* | *0%* | *0%* | *0%* | *0* | *0%* | *100%* | *2%* |
| 24 | 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 |
| 25 | 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 |
| 26 | 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 |
| **27** | **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%* |
| **28** | **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 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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<br>Income Statement Unconsolidated<br>Amounts in Thousand | FY 2005<br>TL | FY 2006<br>TL | FY 2007<br>TL | FY 2008<br>TL | FY 2009<br>TL | FY 2010<br>TL | FY 2011<br>TL | FY 2012<br>TL | FY 2013<br>TL | FY 2014<br>TL | FY 2015<br>TL | FY 2016<br>TL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **Total Interest Income** | **3.717.406** | **4.564.212** | **5.708.181** | **6.792.931** | **6.816.704** | **6.350.615** | **7.278.660** | **8.990.983** | **9.204.643** | **11.451.133** | **13.656.908** | **16.953.999** |
| | *YoY Change* | | *23%* | *25%* | *19%* | *0%* | *-7%* | *15%* | *24%* | *2%* | *24%* | *19%* | *24%* |
| 1,1 | Interest Income on 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 on 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** | **4.666.693** | **3.707.996** | **3.159.601** | **3.805.417** | **4.514.906** | **4.375.645** | **6.339.584** | **7.994.102** | **9.997.281** |
| | *YoY Change* | | *14%* | *24%* | *18%* | *-21%* | *-15%* | *20%* | *19%* | *-3%* | *45%* | *26%* | *25%* |
| 2,1 | Interest Expense on 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 on 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 | 94.239 | 103.143 | 87.827 |
| 3 | **Net Interest Income** | **924.748** | **1.369.569** | **1.752.253** | **2.126.238** | **3.108.708** | **3.191.014** | **3.473.243** | **4.476.077** | **4.828.998** | **5.111.549** | **5.662.806** | **6.956.718** |
| | *YoY Change* | | *48%* | *28%* | *21%* | *46%* | *3%* | *9%* | *29%* | *8%* | *6%* | *11%* | *23%* |
| 4 | **Total Non-Interest Operating Income** | **660.419** | **672.662** | **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) on 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) on 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) on Foreign Currency | 200.299 | (179.857) | 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 | 930.006 | 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 | 642.982 | 424.266 | 865.106 | 685.338 | 1.050.957 | 840.390 |
| 5 | **Total Non-Interest Expenses** | **672.471** | **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** | **912.696** | **1.319.073** | **1.629.479** | **1.702.675** | **2.663.332** | **2.967.719** | **3.326.680** | **4.215.755** | **4.213.634** | **3.888.023** | **4.157.521** | **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 | 498.892 | 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

| | | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Halkbank Balance Sheet Unconsolidated | | | | | | | | | | | | |
| | Amounts in Thousand | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL |
| | *Exchange Rate* | | | | | | | | | | | | |
| 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%* | *49%* | *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 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B | LIABILITIES | | | | | | | | | | | | |
| 13 | **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 |
| 14 | 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 |
| 15 | **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%* |
| 16 | **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 |
| 17 | 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 |
| 18 | **Total Interest Bearing Liabilties** | **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%* |
| 19 | 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 |
| 20 | 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 |
| 21 | 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 |
| 22 | **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* | | | *17%* | *31%* | *17%* | *19%* | *26%* | *16%* | *31%* | *10%* | *21%* | *25%* |
| C | EQUITY | | | | | | | | | | | | |
| 23 | 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%* |
| 24 | 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 |
| 25 | 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 |
| 26 | 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 |
| 27 | **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%* |
| 28 | **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 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |

| | Isbank<br>Income Statement - Unconsolidated<br>Amounts in Thousand | FY 2005<br>TL | FY 2006<br>TL | FY 2007<br>TL | FY 2008<br>TL | FY 2009<br>TL | FY 2010<br>TL | FY 2011<br>TL | FY 2012<br>TL | FY 2013<br>TL | FY 2014<br>TL | FY 2015<br>TL | FY 2016<br>TL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **Total Interest Income** | **5.400.610** | **7.575.211** | **9.134.079** | **10.596.147** | **10.200.437** | **9.797.839** | **10.898.384** | **13.390.415** | **13.460.682** | **16.085.908** | **19.200.361** | **22.327.585** |
| | *YoY Change* | | *40%* | *21%* | *16%* | *-4%* | *-4%* | *11%* | *23%* | *1%* | *20%* | *19%* | *16%* |
| | 1,1 Interest Income on 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 on 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** | **5.054.495** | **6.173.858** | **6.977.852** | **5.332.949** | **5.215.964** | **6.336.584** | **7.462.498** | **6.805.252** | **8.631.691** | **10.214.805** | **11.490.304** |
| | *YoY Change* | | *79%* | *22%* | *13%* | *-24%* | *-2%* | *21%* | *18%* | *-9%* | *27%* | *18%* | *12%* |
| | 2,1 Interest Expense on 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 on 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** | **2.581.673** | **2.520.716** | **2.960.221** | **3.618.295** | **4.867.488** | **4.581.875** | **4.561.800** | **5.927.917** | **6.655.430** | **7.454.217** | **8.985.556** | **10.837.281** |
| | *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** | **4.020.266** |
| | *YoY Change* | | *-14%* | *55%* | *-10%* | *17%* | *8%* | *9%* | *8%* | *-7%* | *5%* | *-16%* | *26%* |
| | 4,1 Net Gains/(Losses) on 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) on 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) on Foreign Currency | 34.908 | (134.155) | (119.346) | 934.581 | (356.319) | (308.734) | (141.677) | 455.965 | 317.009 | 630.228 | (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 | 1.938.494 | 1.866.816 | 1.589.847 | 1.488.454 | 1.606.794 | 1.663.528 | 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** | **4.484.306** | **4.962.519** | **5.695.413** | **6.327.389** | **6.506.124** |
| | *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** | **5.232.090** | **4.688.301** | **4.682.073** | **5.330.075** | **5.323.717** | **5.554.242** | **5.841.877** | **8.351.423** |
| | *YoY Change* | | *-5%* | *47%* | *-8%* | *53%* | *-10%* | *0%* | *14%* | *0%* | *4%* | *5%* | *43%* |
| 7 | Loan Impairment Charge | 295.180 | 387.710 | 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** | **4.120.953** | **3.856.699** | **4.231.068** | **3.783.697** | **5.753.782** |
| | *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** | **4.120.953** | **3.856.699** | **4.231.068** | **3.783.697** | **5.753.782** |
| | *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** | **4.701.206** |
| | *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

| | | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Isbank** | | | | | | | | | | | | |
| | **Balance Sheet Unconsolidated** | | | | | | | | | | | | |
| | **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

| | | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Isbank | | | | | | | | | | | | |
| | Balance Sheet Unconsolidated | | | | | | | | | | | | |
| | 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 Liabilties** | **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* | | | *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%* | *-11%* | *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 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Branches | 660 | 683 | 716 | 868 | 878 | 913 | 927 | 962 | 986 | 991 | 902 | 841 |
| 2 | Employees | 11.186 | 12.333 | 13.513 | 15.127 | 14.714 | 15.330 | 15.339 | 16.315 | 16.249 | 16.305 | 14.050 | 13.843 |

| | Akbank<br>Income Statement – Unconsolidated<br>Amounts in Thousand | FY 2005<br>TL | FY 2006<br>TL | FY 2007<br>TL | FY 2008<br>TL | FY 2009<br>TL | FY 2010<br>TL | FY 2011<br>TL | FY 2012<br>TL | FY 2013<br>TL | FY 2014<br>TL | FY 2015<br>TL | FY 2016<br>TL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **Total Interest Income** | **5.306.708** | **5.586.848** | **8.481.572** | **9.700.358** | **9.155.217** | **8.635.705** | **9.101.405** | **11.289.479** | **11.422.042** | **14.093.863** | **15.104.804** | **18.018.311** |
| | *YoY Change* | | *24%* | *29%* | *14%* | *-6%* | *-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 | 1.345 | 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** | **4.046.821** | **5.239.865** | **6.212.528** | **4.561.834** | **4.358.889** | **5.108.510** | **6.089.132** | **5.248.205** | **7.172.591** | **7.909.944** | **10.071.770** |
| | *YoY Change* | | *49%* | *29%* | *19%* | *-27%* | *-4%* | *17%* | *19%* | *-14%* | *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** | **2.596.917** | **2.540.027** | **3.241.707** | **3.487.830** | **4.593.383** | **4.276.816** | **3.992.895** | **5.200.347** | **6.173.837** | **6.921.272** | **7.194.860** | **7.946.541** |
| | *YoY Change* | | *-2%* | *28%* | *8%* | *32%* | *-7%* | *-7%* | *30%* | *19%* | *12%* | *4%* | *10%* |
| 4 | **Total Non-Interest Operating Income** | **1.192.524** | **1.404.695** | **1.635.294** | **1.907.492** | **2.003.182** | **2.232.814** | **2.090.560** | **2.607.983** | **3.031.867** | **2.882.675** | **3.026.242** | **4.246.870** |
| | *YoY Change* | | *18%* | *16%* | *17%* | *5%* | *11%* | *-6%* | *25%* | *16%* | *-5%* | *5%* | *40%* |
| | 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 | (299.006) |
| | 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** | **1.330.004** | **1.577.279** | **1.696.287** | **2.187.262** | **2.183.998** | **2.416.825** | **2.434.173** | **2.897.702** | **3.448.001** | **3.712.664** | **4.213.815** | **4.279.941** |
| | *YoY Change* | | *19%* | *8%* | *29%* | *0%* | *11%* | *1%* | *19%* | *19%* | *8%* | *13%* | *2%* |
| | 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** | **2.459.437** | **2.367.443** | **3.180.714** | **3.208.060** | **4.412.567** | **4.092.805** | **3.649.282** | **4.910.628** | **5.757.703** | **6.091.283** | **6.007.287** | **7.913.470** |
| | *YoY Change* | | *-4%* | *34%* | *1%* | *38%* | *-7%* | *-11%* | *35%* | *17%* | *6%* | *-1%* | *32%* |
| 7 | Loan Impairment Charge | 299.879 | 374.457 | 625.131 | 998.574 | 993.679 | 348.175 | 302.011 | 657.062 | 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** | **2.111.502** | **1.936.562** | **2.461.122** | **2.059.957** | **3.295.639** | **3.574.030** | **3.001.207** | **3.803.069** | **3.853.607** | **4.037.966** | **3.827.671** | **5.697.550** |
| | *YoY Change* | | *-8%* | *27%* | *-16%* | *60%* | *8%* | *-16%* | *27%* | *1%* | *5%* | *-5%* | *49%* |
| 10 | Non-recurring Income | | | | | | | | | | | | |
| 11 | Non-recurring Expenses | | | | | | | | | | | | |
| 12 | Other Non-operating Expenses | | | | | | | | | | | | |
| 13 | **Pre-tax Profit** | **2.111.502** | **1.936.562** | **2.461.122** | **2.059.957** | **3.295.639** | **3.574.030** | **3.001.207** | **3.803.069** | **3.853.607** | **4.037.966** | **3.827.671** | **5.697.550** |
| | *YoY Change* | | *-8%* | *27%* | *-16%* | *60%* | *8%* | *-16%* | *27%* | *1%* | *5%* | *-5%* | *49%* |
| 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** | **1.466.792** | **1.600.192** | **1.994.294** | **1.704.553** | **2.725.982** | **2.856.529** | **2.394.527** | **2.949.862** | **2.942.042** | **3.159.678** | **2.994.848** | **4.528.712** |
| | *YoY Change* | | *9%* | *25%* | *-15%* | *60%* | *5%* | *-16%* | *23%* | *0%* | *7%* | *-5%* | *51%* |

**Annex 10. Akbank Income Statement from 2005 to 2016**

# Akbank Balance sheet (.000 TRY)
# Assets
# FY 2005 – FY 2016

| | | Akbank<br>Balance Sheet – Unconsolidated | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Amounts in Thousand** | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL |
| | | *Exchange Rate* | | | | | | | | | | | | |
| 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<br>Balance Sheet Unconsolidated<br>Amounts in Thousand | FY 2005<br>TL | FY 2006<br>TL | FY 2007<br>TL | FY 2008<br>TL | FY 2009<br>TL | FY 2010<br>TL | FY 2011<br>TL | FY 2012<br>TL | FY 2013<br>TL | FY 2014<br>TL | FY 2015<br>TL | FY 2016<br>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 Liabilties** | **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%* | *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<br>Income Statement – Unconsolidated | | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Amounts in Thousand | | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL | TL |
| 1 | **Total Interest Income** | | **3.467.476** | **5.063.150** | **7.216.606** | **9.378.392** | **10.441.368** | **9.499.876** | **10.483.529** | **12.670.471** | **12.741.425** | **15.085.537** | **17.420.007** | **20.915.217** |
| | *YoY Change* | | | *46%* | *43%* | *30%* | *11%* | *-9%* | *10%* | *21%* | *1%* | *18%* | *15%* | *20%* |
| | 1,1 Interest Income on 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 on 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** | **3.161.344** | **4.412.503** | **6.200.432** | **5.361.386** | **4.745.136** | **5.794.581** | **6.951.539** | **6.385.794** | **7.642.849** | **8.178.674** | **9.818.275** |
| | *YoY Change* | | | *76%* | *40%* | *41%* | *-14%* | *-11%* | *22%* | *20%* | *-8%* | *20%* | *7%* | *20%* |
| | 2,1 Interest Expense on 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 on 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** | **3.177.960** | **5.079.982** | **4.754.740** | **4.688.948** | **5.718.932** | **6.355.631** | **7.442.688** | **9.241.333** | **11.096.942** |
| | *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** | **2.129.068** | **2.092.864** | **3.010.801** | **2.822.740** | **3.247.923** | **2.923.094** | **3.425.473** | **3.239.522** | **2.768.724** | **3.731.626** |
| | *YoY Change* | | | *18%* | *75%* | *-2%* | *44%* | *-6%* | *15%* | *-10%* | *17%* | *-5%* | *-15%* | *35%* |
| | 4,1 Net Gains/(Losses) on 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) on 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) on 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** | **4.206.165** | **4.713.014** | **5.883.301** | **6.118.538** |
| | *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** | **3.109.760** | **2.728.434** | **5.391.342** | **4.536.650** | **4.730.546** | **5.101.125** | **5.574.939** | **5.969.196** | **6.126.756** | **8.710.030** |
| | *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** | **2.161.988** | **3.778.528** | **3.952.353** | **3.908.149** | **3.923.290** | **3.951.115** | **4.162.463** | **3.908.562** | **5.895.166** |
| | *YoY Change* | | | *40%* | *109%* | *-22%* | *75%* | *5%* | *-1%* | *0%* | *1%* | *5%* | *-6%* | *51%* |
| 10 | Non-recurring Income | | | | | | | | | | | | 400.315 | 398.272 |
| 11 | Non-recurring Expenses | | | | | | | | | | | | | |
| 12 | Other Non-operating Expenses | | | | | | | | | | | | | |
| 13 | **Pre-tax Profit** | | **950.509** | **1.329.363** | **2.772.116** | **2.161.988** | **3.778.528** | **3.952.353** | **3.908.149** | **3.923.290** | **3.951.115** | **4.162.463** | **4.308.877** | **6.293.438** |
| | *YoY Change* | | | *40%* | *109%* | *-22%* | *75%* | *5%* | *-1%* | *0%* | *1%* | *5%* | *4%* | *46%* |
| 14 | Tax expense | | 229.223 | 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** | **450.549** | **721.286** | **1.063.663** | **2.315.616** | **1.750.488** | **2.962.241** | **3.145.233** | **3.070.575** | **3.070.325** | **3.005.560** | **3.200.248** | **3.406.507** | **5.070.549** |
| | *YoY Change* | | | *47%* | *118%* | *-24%* | *69%* | *6%* | *-2%* | *0%* | *-2%* | *6%* | *6%* | *49%* |

Annex 13. Garanti Bank Income Statement from 2005 to 2016

# Garanti Bank Balance sheet (.000 TRY)
# Assets
# FY 2005 – FY 2016

| | Garanti Bank<br>Balance Sheet - Unconsolidated | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **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<br>Balance Sheet Unconsolidated<br>Amounts in Thousand | FY 2005<br>TL | FY 2006<br>TL | FY 2007<br>TL | FY 2008<br>TL | FY 2009<br>TL | FY 2010<br>TL | FY 2011<br>TL | FY 2012<br>TL | FY 2013<br>TL | FY 2014<br>TL | FY 2015<br>TL | FY 2016<br>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 Liabilties** | **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 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Branches | 203 | 209 | 235 | 250 | 256 | 260 | 272 | 272 | 312 | 312 | 301 | 273 |
| 2 | Employees | 3.405 | 3.368 | 3.824 | 4.088 | 3.937 | 3.484 | 3.530 | 3.565 | 4.150 | 4.460 | 4.078 | 3.611 |

| | Şekerbank<br>Income Statement Unconsolidated<br>Amounts in Thousands | FY 2005<br>TL | FY 2006<br>TL | FY 2007<br>TL | FY 2008<br>TL | FY 2009<br>TL | FY 2010<br>TL | FY 2011<br>TL | FY 2012<br>TL | FY 2013<br>TL | FY 2014<br>TL | FY 2015<br>TL | FY 2016<br>TL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **Total Interest Income** | **536.968** | **502.857** | **914.782** | **1.321.601** | **1.259.328** | **1.079.653** | **1.369.965** | **1.731.225** | **1.575.623** | **2.099.702** | **2.283.308** | **2.504.986** |
| | *YoY Change* | | *-6%* | *82%* | *44%* | *-5%* | *-14%* | *27%* | *26%* | *-9%* | *33%* | *9%* | *10%* |
| 1,1 | Interest Income on 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 on 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** | **242.215** | **268.929** | **475.569** | **695.010** | **544.534** | **517.107** | **804.564** | **895.669** | **758.685** | **1.121.722** | **1.226.923** | **1.419.990** |
| | *YoY Change* | | *11%* | *77%* | *46%* | *-22%* | *-5%* | *56%* | *11%* | *-15%* | *48%* | *9%* | *16%* |
| 2,1 | Interest Expense on 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 on 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** | **294.753** | **233.928** | **439.213** | **626.591** | **714.794** | **562.546** | **565.401** | **835.556** | **816.938** | **977.980** | **1.056.385** | **1.084.996** |
| | *YoY Change* | | *-21%* | *88%* | *43%* | *14%* | *-21%* | *1%* | *48%* | *-2%* | *20%* | *8%* | *3%* |
| 4 | **Total Non-Interest Operating Income** | **166.187** | **252.746** | **213.860** | **151.080** | **142.457** | **289.174** | **311.515** | **419.447** | **393.623** | **398.934** | **312.614** | **470.362** |
| | *YoY Change* | | *52%* | *-15%* | *-29%* | *-6%* | *103%* | *8%* | *35%* | *-6%* | *1%* | *-22%* | *50%* |
| 4,1 | Net Gains/(Losses) on 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) on 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) on 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** | **260.029** | **259.088** | **322.800** | **427.546** | **424.981** | **490.827** | **546.499** | **613.721** | **721.239** | **800.096** | **852.622** | **887.003** |
| | *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** | **200.911** | **227.586** | **330.273** | **350.125** | **432.270** | **360.893** | **330.417** | **641.282** | **489.322** | **576.818** | **516.377** | **668.355** |
| | *YoY Change* | | *13%* | *45%* | *6%* | *23%* | *-17%* | *-8%* | *94%* | *-24%* | *18%* | *-10%* | *29%* |
| 7 | Loan Impairment Charge | 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** | **49.475** | **76.047** | **148.911** | **181.744** | **198.557** | **214.111** | **157.556** | **310.685** | **264.339** | **280.701** | **85.246** | **139.615** |
| | *YoY Change* | | *54%* | *96%* | *22%* | *9%* | *8%* | *-26%* | *97%* | *-15%* | *6%* | *-70%* | *64%* |
| 10 | Non-recurring Income | | | | | | | | | | | | |
| 11 | Non-recurring Expenses | | | | | | | | | | | | |
| 12 | Other Non-operating Expenses | | | | | | | | | | | | |
| 13 | **Pre-tax Profit** | **49.475** | **76.047** | **148.911** | **181.744** | **198.557** | **214.111** | **157.556** | **310.685** | **264.339** | **280.701** | **85.246** | **139.615** |
| | *YoY Change* | | *54%* | *96%* | *22%* | *9%* | *8%* | *-26%* | *97%* | *-15%* | *6%* | *-70%* | *64%* |
| 14 | Tax expense | 15.218 | 24.046 | 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** | **34.257** | **52.001** | **122.861** | **144.307** | **152.488** | **170.247** | **118.044** | **240.302** | **210.216** | **223.969** | **102.649** | **125.194** |
| | *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 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 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<br>Balance Sheet - Unconsolidated | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 Liabilties** | **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%* | *28%* | *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**