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**THE IMPACT OF BANK LOANS ON TURKEY'S ECONOMIC GROWTH**

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**The Impact of Bank Loans on Turkey's Economic Growth**  
**Banka Kredilerinin Turkiyenin Ekonomik Buyumesine Etkileri**

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## **ABBREVIATIONS LIST**

ABD: Amerika Birleşik Devletleri

BDDK: Bankacılık Devlet Denetleme Kurumu

C.: Cilt

Çev.: Çeviren

DEÜ: Dokuz Eylül Üniversitesi

FAO: Birleşmiş Milletler Gıda ve Tarım Örgütü

GSYİH: Gayrisafi Yurt İçi Hasıla

İBBF: İktisadi ve İdari Bilimler Fakültesi

KMÜ: Karamanoğlu Mehmetbey Üniversitesi

s.: Sayfa

S.: Sayı

SBB: Strateji ve Bütçe Başkanlığı

TBB: Türkiye Bankalar Birliği

T.C.: Türkiye Cumhuriyeti

TCMB: Türkiye Cumhuriyeti Merkez Bankası

TKKB: Türkiye Katılım Bankaları Birliği

TL: Türk Lirası

TÜHİS:

TÜSİAD: Türk Sanayicileri ve İş adamları Derneği

USD: Amerikan Doları

Vd.: Ve diğerleri

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## ÖZET

Dunya genelinde; ulkelerin ekonomik buyume oranlari her zaman ulke ekonomilerini izlemeye en onemli verilerden biri olmustur.

Ozellikle Turkiye gibi 'Gelişmekte olan ülkeler' sinifinda yer alan ülkeler için buyume oranı ekonomi çevrelerinin ilk baktığı unsurlardan biridir. Gelişmiş ülkelere nazaran gelişmekte olan ülkelerin büyümelerini pek çok rasyo daha kuvvetli bir biçimde olumlu veya olumsuz yönde etkilemektedir.

Dis ticaret hacmi, jeopolitik konum, doğal kaynak zenginliği vb. pek çok veri gelişmekte olan ülkelerin büyümesine katkı sağlamakta veya engel olabilmektedir. Turkiye ekonomisinin düşük tasarruf oranı (Tasarruflar/GSYH= %15), enerjide dışa bağımlılığı, sanayi sektöründe faaliyet gösteren şirketlerin sermayelerinin sınırlı olması, Turkiye'nin ekonomisinde yabancı kaynak ve banka kredilerinin eğiliminin belirleyici olmasına neden olmaktadır. Bu çalışmada 2003 ve 2017 yılları arasında Turkiye ekonomisindeki büyümeyi, Banka kredi hacmindeki seyir ile ilişkisi irdelenecektir.

## **ABSTRACT**

Across the world, the economic growth rates of countries have always been one of the most important data in monitoring the economies of countries.

Especially for countries in the ‘developing countries’ class, such as Turkey, the growth rate is one of the first elements that economic circles look at. Many factors affect the growth of developing countries in a more positive or negative way than developed countries.

Foreign trade volume, geopolitical position, natural resource wealth, etc. a lot of data can contribute or hinder the growth of developing countries. Turkey's economy-low savings rate (Savings / GDP= 15%), dependence on foreign energy, to be limited capital of their companies that operate in the industrial sector in Turkey's economy is determining the trend of foreign resources and bank loans. In this study, the growth in the Turkish economy between 2003 and 2017 will be examined and its relationship with the trend in total bank loans volume.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1. Banking Sector in Turkey**

When banks are considered, it is seen that they keep customer information on the cards during the first years. Transferring the information on these cards to computers stands out as the first step in the utilization of technology. After this, telephone banking services have started through online communication. In time, telephone banking practices have improved, and it became a channel where banking transactions are also offered to clients. In the last stage, it is seen that internet banking has emerged which is a more advanced and effective version of online banking (Önder, 1999: 54).

Turkey is known to have a long-standing banking tradition that is dating back to the 19th century. In recent years, the banking sector played a leading role in the Turkish-finance sector and lead important developments by contributing to structural changes towards the financial liberalization of Turkey's economy (Eğilmez, 2009).

When the development of the Turkish economy in the banking sector is considered, it is seen that the state plays a dominant and leading role in the structuring of the financial system. After the declaration of the Republic, the establishment of a national banking sector, establishment of banks with public capital, and establishment of foreign banks and private banks lead the formation of the Turkish banking sector (Güngör, 2009).

Turkey implemented structural changes in its entire financial system, including the banking sector, during the 1980s. For instance, removing the restrictions on interest rates and exchange rates played an important role in the rapid implementation of these

structural changes. These structural changes, that can be evaluated as reform, has led to the development and growth of the banking sector and the financial system (Akyüz, 2007).

Developments in the 1990s in Turkey caused a significant deterioration in the financial structure of the banking sector. Banks have operated in a very high-risk environment for a long time. The need for public sector borrowing and financing of the budget, which increased rapidly in this period accelerated the process of using resources through public banks (Çakar, 2000).

The banking sector has been exposed to a very serious risk in the 2000s and restructuring of the banking sector has made resolving the financial structure problems of banks inevitable. For this purpose, radical changes were made in the Banking Law and a new approach has been introduced to the regulation and supervision of banks' activities (Özince, 2007). In parallel with restructuring and efforts to integrate with international markets, Turkish banks made important changes both in their corporate structures and in the quality of service and product they offer. Thus the banking sector is one of the sectors prepared for compliance with the EU with regulations carried out in Turkey's economy (Kaya, 2002).

Turkish Banking Sector has been a sector where the strong banks will remain in the market and banks with weak financial structures are withdrawn from the market and mergers, acquisitions, privatizations, and acquisitions will be intense in the future (Akgüç, 1989).

## 1.2. Place of the Turkish Banking Sector in the Turkey's Economy

The banking sector has the largest share in the Turkish financial system. The total asset size of the banking sector was calculated as 910 billion TL as of the 9th month of 2010. When the share of the banking sector in the system is analyzed, it should be considered that the total financial sector size is 1.150 billion TL (BRSA, 2010).

Turkey has a bank-based financial system. It is important that banks be strong, robust, and durable in ensuring financial stability. Financial stability is provided on the mentioned foundations. Therefore, the 2001 crisis was more severe than other crises and the weak structure of banks in the 2000s is the underlying cause (Türker, 2015: 38).

**Table 1.1. Basic Sizes of the Turkish Banking Sector**

	<b>30 September 2017</b>	<b>31 December 2017</b>	<b>30 September 2018</b>	<b>Annual Change</b>
<b>Loan</b>	1994	2098	2588	% 29.8
<b>Tangible Assest</b>	376	402	490	% 30.3
<b>Deposit</b>	1635	1711	2137	% 30.7
<b>Equity</b>	345	359	408	% 18.3
<b>Net Profit for the Period</b>	37	49	41	% 11.1
<b>Total Assets</b>	3054	3258	4210	% 37.9

Source: BDDK

### **1.3. Effect of the Banking Crisis on Turkey's Economy**

The banking crisis is not a sudden financial crisis. This is based on a certain process. The prevalence of the loaning behavior of risky projects of banks comes to the fore within these stages. The expansion of the loan volume in this way raises financial asset prices and greatly expands the financial system in nominal terms. The explosion of the financial bubbles has reversed this process and while the prices of financial assets, in general, are falling, the share of banks' assets in total loans has increased significantly. This situation caused the lockout of payment systems at the national level and the emergence of banking crises. Banking crises have also caused money crises (Aydın, 2008).

Since it accelerates the flow of capital abroad, it also causes the trust in financial institutions such as banks to disappear. In this case, there is the existence of a weak banking system and a lack of trust in the banking system. Also, the failure of banks over time provides an opportunity for banks with weak capitals to expand their funds. As a result, a decrease in banking loans is inevitable. Also, narrowing in bank loans is reducing the capital of other segments and as a result, this reduces the investments and consumption of firms and households (Altıntaş, 2004: 39).

When the effects of the 2008 financial crisis on the Turkish economy and banking sector are considered, we see Table 1.1. The effects of the 2008 financial crisis started in 2008 with a GDP growth of 0.7%, became more prevalent in 2009 and began to fade out in 2010. In 2009, the sectors where the contraction in the economy is felt the most are an industry with -7.2% and services with -4.9%. Although the unemployment rates rose to 14% in 2008 and 2009, it dropped to 11% in 2010 which was the pre-crisis level. In this process, inflation started to decline since 2009 with the narrowing effect of the financial crisis on demand and the effect of the fall in global commodity prices. The budget balance also started to deteriorate since 2009 due to the crisis. The current account balance started to decline since 2009 with the effect of the global financial crisis. ISE market value had

an effective decline in this process by staying under the influence of the second half of 2008, when the global financial crisis was felt most in the financial markets, and then entered the recovery process. The 2008 financial crisis significantly affected Turkey's economy, especially in 2009 and it has entered a rapid recovery process since 2010 (Kibritçi. et al., 2012: 5).

In this process, the crisis affecting the real economy more than the financial sector in Turkey affected capacity utilization rates in the manufacturing industry. The decrease in capacity utilization rates, which is an effective resource used in real economic developments, shows the decrease in production and industrial production index which accelerated in October 2008 and the manufacturing industry capacity utilization rate that hit the base in January 2009 has seen its lowest levels from 1991 to the end of 2009. The 2008 financial crisis which its impact on Turkey's economy reached its maximum level in 2009 showed itself with the decrease in the growth rate of the total assets of the financial sector; the improvement in the size of financial assets together with the year 2010, when the impact of the global crisis began to decline and as of September 2011, the total asset size of the financial sector has increased compared to September 2010 and it was realized as 1.56 TL in September 2011. While the banking sector continues to have the largest share in the financial sector, growth continues through out the financial sector mergers in this process (BRSA, 2011: 17). While the profitability of the banking sector, which has the most effective share among the financial sector tools decreased in 2008 compared to 2007, banking sector profitability increase was over 50% and financial sector profitability increased by 40.6% in 2009. While this profitability emerging in the financial sector derives from the profitability of the banking sector, the banking sector's profitability results from the increase in the net interest margin in the process (Artar and Sarıdoğan, 2012: 7).

In the second half of 2007, the global crisis that started from the USA and spread to Europe and Asia in the following period, expanding its scope of influence, entered a new phase with the bankruptcy of Lehman Brothers, one of the leading investment banks of the USA in September 2008. The situation that initially emerged as a liquidity problem

in borrowing markets between financial institutions has become a problem of distrust of financial institutions in time. The crisis has started to affect developing countries as of the second half of 2008 (CBT, 2008: 48). In this process, the banking sector in Turkey, which is a developing country, maintained its profitability with the Banking Sector Restructuring Program launched in May 2001 to permanently solve the problems of the banking sector after the 2001 crisis and the lack of high-risk toxic products, which are the main factors in the emergence of the 2008 crisis had a protective effect in Turkish banking sector (Selçuk, 2010: 23). An important part of the banks' resources was made up of deposits of residents in Turkey and two-thirds of these deposits were made of TL (Bakkal and Alkan, 2011: 113).

It is seen that the Turkish economy experienced a 3% shrinkage in the last quarter of 2018. In the first quarter of 2019, a new shrinkage of 2.6% was experienced. Although this may seem like a recession, high unemployment and inflation data bring up the slumpflation. Focus on features, measures, and outcomes related to the 2018 crisis sheds light on the subject. Analyzing the economic changes in 2018 helps to explain the situation more clearly.

**Table 1.2. Economic Indicators in Late 2017 and Early 2019**

	Unit	2017	2018	31.05.2019	Explanation	Status
Per Capita	USD	10.537	9.346	8.507	Foreword Forecast	-
Growth	%	7.4	2.6	-2.6		-
Unemployment	%	10.4	13.5	14.7	February 2019	-
Inflation	%	11.92	20.30	19.50	April 2019	-
Indicator Interest	%	13.4	19.7	25.78		-
USD/TL	%	3.78	5.29	5.89		--
Deposits/Total	%	46.2	48.8	53.0		-

Budget Balanced/GDP	%	-1.5	-2.0	-3.5	Foreword Forecast	-
Current Balanced/GDP	%	-5.5	-3.5	0	Foreword Forecast	+
Economic Confidence Index	%	95.3	96.3	77.5		-
Consumer Confidence Index	%	65.1	69.5	55.3		-

Source: Eğılmez, Mahfi, Türkiye Krizde mi?, 2019, <http://www.mahfiegilmez.com/2019/05/turkiye-krizde-mi.html>, 27.13.2020.

In the light of Table 1.2; it is determined that per capita income has decreased from 2017 to 2019. The growth rate, which was 7.4% in 2017, dropped to 2.6% in 2018 and -2.6% in 2019, the unemployment data which was 10.4% in 2017, increased to 13.5% in 2018 and 14.7% in 2019; inflation rates which was 11.92% in 2017, decreased to 20.30% in 2018 and to 19.50% in 2019; indicator interest rates which was 13.4% in 2017, increased to 19.7% in 2018 and to 25.78% in 2019; USD/TL rate which was 3.78% in 2017, increased to 5.29% in 2018 and 5.89% in 2019; FX Deposit/Total which was 46.2% in 2017, increased to 48.8% in 2018 and to 53% in 2019; budget balance and GDP ratio which was -1,5% in 2017, decreased to -2.0% in 2018 and -3.5% in 2019; current balance and GDP ratio which was -5.5% in 2017, increased to -3.5% in 2018 and 0% in 2019; economic confidence index which was 95.3% in 2017, decreased to 96.3% in 2018 and 77.5% in 2019; consumer confidence index which was 65.1% in 2017, decreased to 69.5% in 2018 and 55.3% in 2019.

By examining the course of bank loans in Turkey from the past to present, it seems possible to shape bank loan types and locations of these loans in Turkey's economy around their effects on the growth of the economy.

The importance of our study is to investigate the importance of bank loans for a developing country like Turkey and what kind of roles they have on economic growth.

Within the limitations of our research, we analyzed the assaying the effects on the growth of bank loans and Turkey's economy in the light of current data on the years 2009-2019. The data before 2009 are examined briefly only in order to have an idea about the structure related to previous periods.

When the content of our research is examined, you can see that bank types and how the banking crisis has an impact on Turkey's economy are mentioned after briefly focusing on banks, banking sector, and bank loans. Features related to Turkey's economy, and economic development and growth are analyzed around the data especially based on 2009-2019; structural problems of the Turkish banking sector are analyzed and the effects on bank loans to Turkey's economy are examined. In this study, reflections of consumer loans, vehicle loans, mortgage loans, and other loans on Turkey's economy and their solutions suggestions are discussed.

## **CHAPTER TWO**

### **REFLECTIONS OF THE BANK LOANS FOR TURKEY’S ECONOMY**

#### **2.1. Brief Information About Banking**

Today, banking sector, which has an important place in economic, financial and commercial relations; the economic units that choose the activities to meet all kinds of needs of businesses in this field as their main field of activity with private and public individuals and involving capital, money, risk and loan issues and performing these transactions (Eyüpgiller, 1988). It is not possible to express banks with a single yet full definition. This is because banks deal with a wide variety of topics and engaged in some of these issues but there are also other service businesses that are not covered by the banks. For example, when banks are defined as lending institutions; they can perform transactions of different sectors by lending insurance companies, businesses dealing with stock, bond placements, and even their capital (Aktepe, 2010).

##### **2.1.1. Identification of Bank and Bank Loans**

When we define banks in terms of savings, then banks such as Industrial Development Bank, Industrial Investment Bank, and Central Bank will not be accepted as banks and private savings unions will be considered as banks, which prevents a clear definition. On the other hand, when we define banks as institutions that supply money, banks other than central and commercial banks would not be defined as banks (Birdal, 2009: 7). Although it is difficult to describe bank operations, it is seen that various definitions can be made by considering the main fields of activity of the banks. With the most advanced definition, banks are organizations that accept deposits and aim to use this deposit in various loan transactions in the most efficient way (Aras and Öztürk, 2009). Banks are an economic unit that performs and regulates all kinds of transactions related to money, loan, and

capital, and engaged in activities to meet all kinds of needs of private or public companies and businesses in this field (Büyükdeniz, 2003).

In other words, banks are institutions that accept deposits, whose purpose is to use this deposit in various loan transactions in the most efficient way. Banks collect deposits, lend loans, and also support the implementation of monetary and loan policies and act as intermediaries. Banks that support industrial organizations participate, protects the securities of individuals in rental safes, participates in stock market activities, supports and directs the development of the country, and offers many product services such as loan cards and automatic payments that will facilitate the lives of real people (Akyüz, 2007). It is possible to express the services provided by banks in the form of services of businesses that trade over money and see them as businesses that receive the capital with little interest and transmit it with more interest (Güney, 2007: 1294).

For the first time in the Turkish Banking system, a bank definition was made in the Banks Law No. 5411, and it is stated that banks' deposits consist of investment and development banks and participation banks. According to the mentioned law, deposit banks are the organizations that operate to accept deposits and grant loans to their own account (Aras and Öztürk, 2009). Other than accepting deposits or participation funds, it is possible to state that the branches of overseas development and investment bank organizations in Turkey are operating based on lending (Polat, 2005).

### **2.1.2. Types of Bank Loans**

Today, when the banks are analyzed in terms of diversity, it is possible to classify banks according to many criteria. Banks are evaluated in three different categories as banks according to their capital, banks according to their capital origins and banks according to their activities (Özkan and Erdener, 2010).

### **2.1.2.1. Loans by Capital**

It is possible to divide banks into two as public and private sector banks according to the majority of capital belongs to the state or private sector (Güney, 2007).

**Public Banks:** These are the types of banks in which the majority shares of the state are held, directly or indirectly. T.C. Ziraat Bankası, Halk Bankası, İller Bankası, Turkish Development Bank, Vakıfbank can be considered in this group (Akın, 1986: 122).

**Private Banks:** Banks that are owned by private entrepreneurs directly or indirectly belong to this group. T.C İş Bankası, Akbank, HSBC, Garanti Bankası, Denizbank, Yapı Kredi Bankası can be considered in this group (Akgüç, 1989: 567).

### **2.1.2.2. Loans by Capital Origins**

When banks are examined in detail according to their capital origins; banks in Turkey are divided into two as banks with domestic capital and banks with foreign capital. For example, banks such as Akbank, Halkbank, and İş Bank have domestic capital, banks such as HSBC, Citibank, Eurobank have foreign capital (Çakar, 2000).

### **2.1.2.3. Loans by Activities**

When banks are analyzed according to their fields of activity; it is possible to examine them in five headings in detail as Central Banks, Commercial Banks, Investment Banks, Development Banks, and Participation Banks (Güney, 2007).

Central Banks: Duties of the central bank are to issue banknotes, to serve as a government teller, to advise the state on financial and economic matters, to maintain money reserves of commercial banks. They can be defined as banks that protect financial instruments within the country's international dimension, performing the last lending duty, performing the clearing, liquidation, and remittance of banks, and equipped with roles such as regulating and controlling loans (Polat, 2005).

Commercial Banks: Duties of commercial banks are to accept deposits, engage in wholesale and retail banking activities in the field of trade and finance of production.

Investment Banks: Duties of investment banks are to use bonds or loans obtained from domestic and international financial institutions in financing long-term investments of industrial companies and provide consultancy services to industrial enterprises on various subjects (Özince, 2007).

Development Banks: These banks are established in order to meet the financing needs of the regions and sectors in priority.

Participation Banks: These banks are financial institutions that provide similar services to commercial banks that have adopted the application of interest-free banking.

## **2.2. Economic Growth and Development**

Economic growth is defined as numerically measurable real increases that generally occurs in a country's real gross domestic product in annual terms and production capacity (<https://muratyayinlari.com/storage/catalogs/0761325001520842884.pdf>).

This phenomenon, which is generally measured by the GNP of the countries indicates an increase in some economic indicators (Sarıaslan, 2004: 215). Economic growth occurs when the volume of goods and services produced in an economy expands. The growth concept refers to the increase in production and income in a certain period both in developed countries and developing countries. It is also calculated by the gross domestic product (GDP) ratio (Özel, 2012: 64).

The growth is affected by changes in real national income. Income is ensured in the economy by buying and selling goods and services. Growth in the economy is achieved by increasing total income and total output. Economic growth is also calculated when national income is calculated. Factors affecting economic growth are calculated numerically (Şimşek and Kadılar, 2010: 117).

Economic growth has some determinants. These are (Köksal, 2016: 18);

- Accumulation in the capital,
- Increase in population and labor force,
- Ensuring macroeconomic stability,
- Ensuring technological development.

When the definitions of development concept are in question, as the concept of development does not refer to economic development or activity, it is seen that social changes in society do not mean a general process. This is because countries and communities are always in a process of change. Moreover, followings are included in this process (Oakley and Garford, 1985);

- Distribution of resources,
- Production techniques,
- Corporate structure
- Social values
- People's attitudes and behaviors are changing and developing in a certain direction.
- Also, people's traditions and efforts are not static.

- These are constantly evolving and reshaping in different forms. Therefore, development is very closely related to positive interventions to influence the social change process. The development concept comes to the fore as a dynamic concept that proposes to change by moving from the current situation or previous location.

It can be seen that the most important purpose of development is to ensure human well-being and to reach the maximum capacity of human beings. For instance (Çelik, 2006);

- Developed and developing country leaders,
- Civil society organizations,
- Development experts,
- International aid agencies agree that four basic objectives must be achieved to achieve the broader objective described above. Briefly, these are;
  - ✓ A healthy and developing economy experiencing structural change,
  - ✓ An economy that ensures a widespread and balanced distribution of acquirements,
  - ✓ A political system and effective leadership that guarantees human rights and freedom,
  - ✓ An economic policy that considers the protection of the environment. This new and versatile approach for the development concept actually emerged as a result of the experience of the last 5-6 decades.

### **2.3. Indicators for Turkey's Economy**

When the economic indicators of Turkey's economy are analyzed; data on foreign debt, employment, inflation, foreign trade volume, current account balance, and investments are examined.

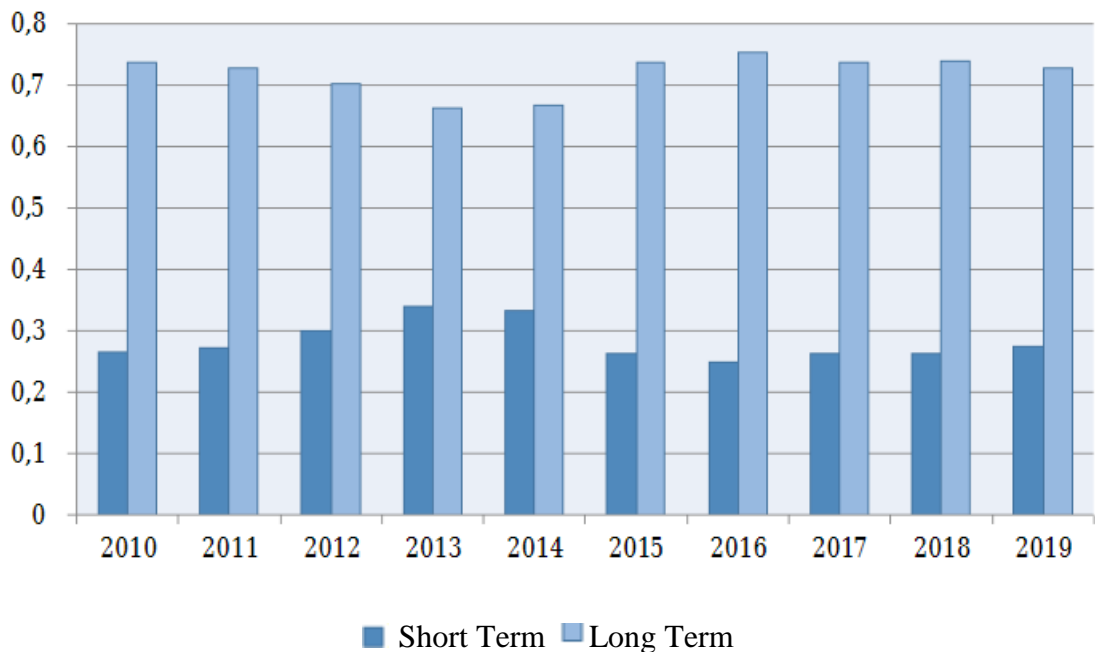
### 2.3.1. External Debt Data

The characteristics of foreign debt crises are as follows (Çalışkan, 2003):

- The difficulty in repayment of foreign debts appears as a temporary process.
- Although the country can repay its debts, it may want to avoid its obligations.

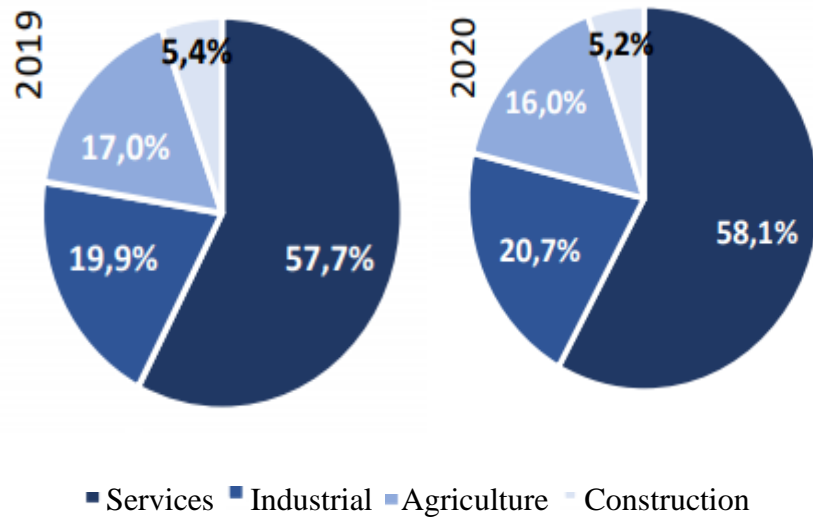
Also:

- ✓ The country allocates scarce resources to areas such as investment and production,
  - ✓ It can suspend repayments by enduring the sanction of this,
  - ✓ This situation can be evaluated as the allocation and preference of scarce resources to priority areas.
- The start of the foreign debt crisis as a process begins with the declaration by the debtor country.
  - While the liquidity crisis that started in a country may cause significant losses to the financial system globally, only the loanors of a country experiencing the foreign debt crisis are affected by this situation.



**Graph 2.1:** Short-Term and Long-Term Debt in Turkey (% Total External Debt Stock)  
(Şanlı, 2019: 131).

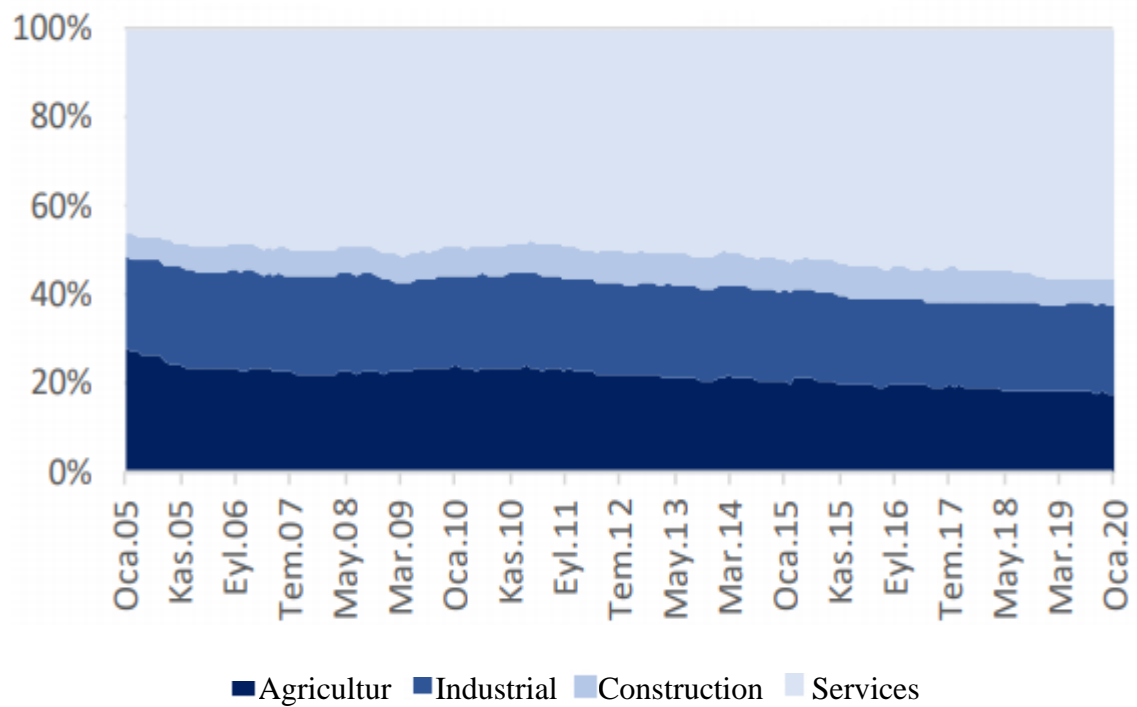
### 2.3.2. Employment Data



**Grafic 2.2:** Employment Data (BMD, 2020: 1)

When employment data is analyzed within the scope of Chart 2.2;

- The service sector, which was 57.7% in 2019, increased to 58.1% in 2020,
- The industrial sector, which was 19.9% in 2019, increased to 20.7% in 2020,
- Agriculture sector, which was 17.0% in 2019, decreased to 16.0% in 2020,
- The construction sector, which was 5.4% in 2019, decreased to 5.2% in 2020.



**Graph 2.3:** Distribution of Employment by Sector (BMD, 2020: 3)

Chart 2.3 represents the distribution of employment by sector. Accordingly;

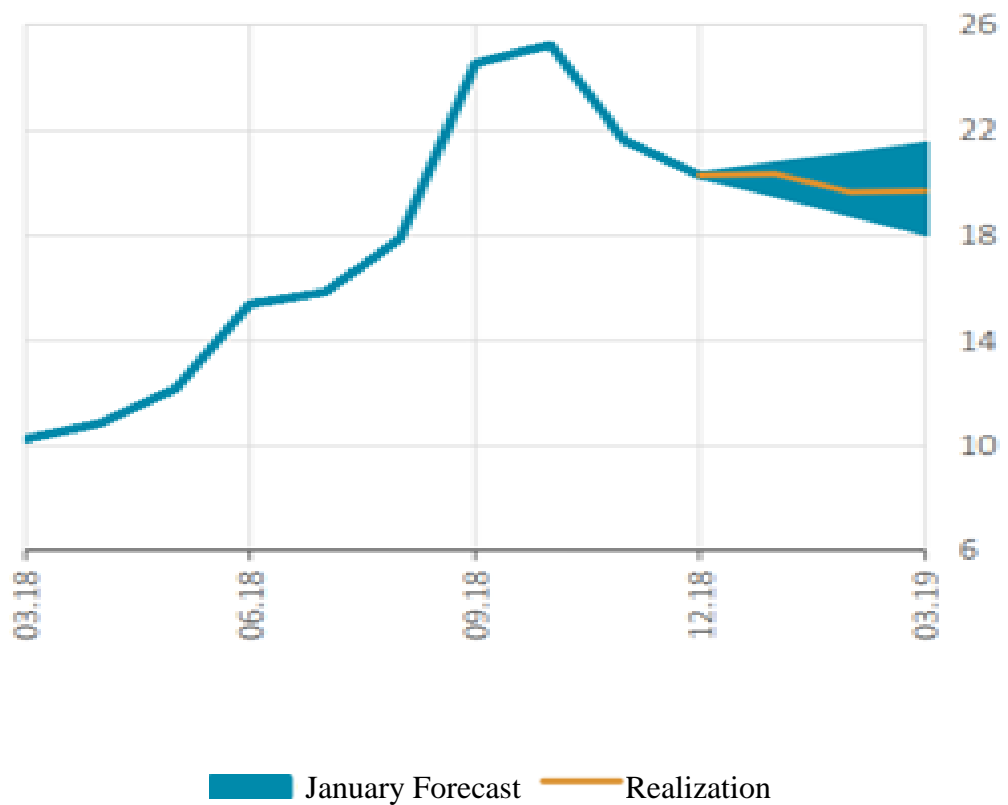
- Agriculture sector experiences a decline from January 2005 to January 2020,
- Industrial sector experiences a decline from January 2005 to January 2020,
- Construction sector experiences a decline from January 2005 to January 2020,
- Service sector employment is at the highest level.

### 2.3.3. Inflation Data

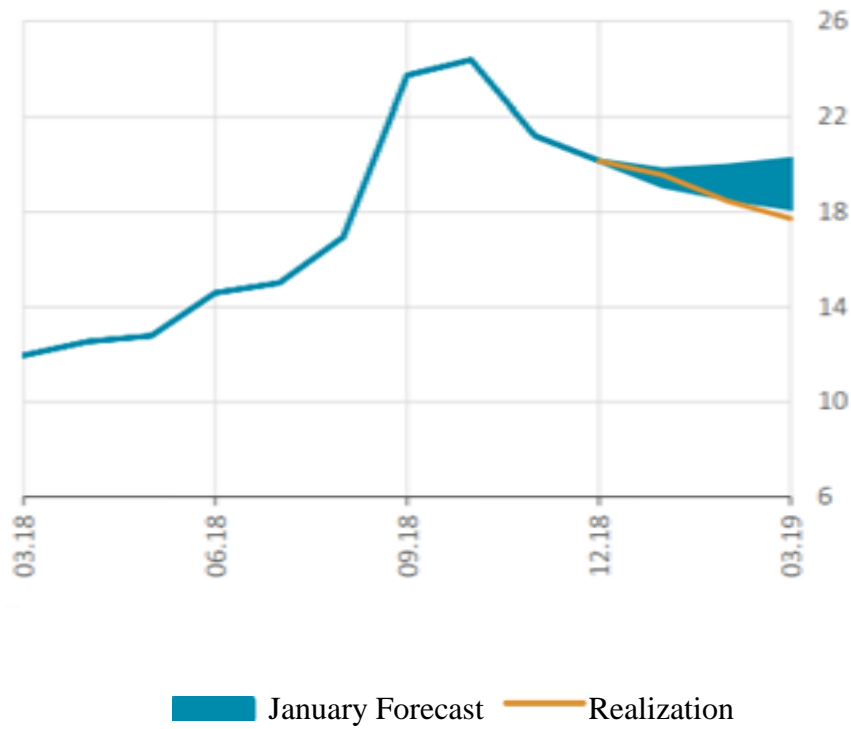
Loan volume increases as a result of excessively expansionary monetary and fiscal policies. This causes an increase in the amount of debt and speculative increases in terms of real estate investments. Inflation is rising as a result of expansionary policies. Some precautions should be taken to prevent rising inflation. When some of these are listed (Turgut, 2006: 41);

- Improving external balance,
- Strict fiscal policies are required to fix asset prices.

As a result of this, difficulties in repaying debt, slowing down economic activities, and not using the loans effectively and healthily occur.



**Graph 2.4:** January 2019 Consumer Inflation Forecast and Realizations



**Graph 2.5:** Unprocessed Food, Energy, Alcohol-Tobacco and Gold January 2019 Forecasts for Non-Inflation (B Index) and Realizations

#### 2.3.4. Foreign Trade Volume

When Turkey's foreign trade volume data from 2010 to 2019 is examined; import and export rates, foreign trade balance and foreign trade volume data will be mentioned (Table 2.1).

**Table 2.1: Turkey's Foreign Trade Performance Period 2010-2019**

Year	Export (Billion Dollars)	Imports (Billion Dollars)	Foreign Trade Balance	Foreign Trade Volume
2010	113.9	185.5	-71.7	299.4

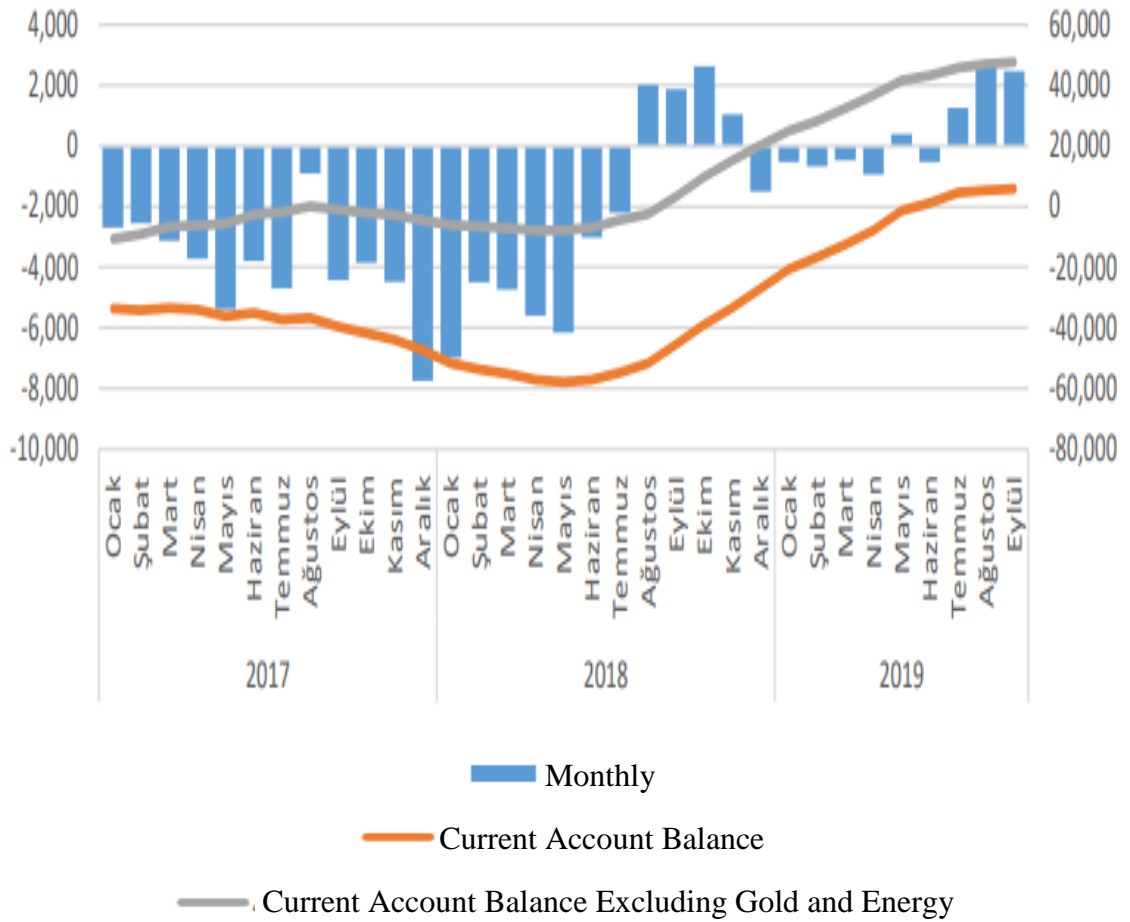
<b>2011</b>	134.9	240.8	-105.9	375.7
<b>2012</b>	157.5	236.5	-84.1	389.0
<b>2013</b>	151.8	251.7	-99.9	403.5
<b>2014</b>	157.6	242.2	-84.6	399.8
<b>2015</b>	143.8	207.2	-63.4	351.1
<b>2016</b>	142.5	198.6	-56.1	341.1
<b>2017</b>	157.0	233.8	-76.8	390.8
<b>2018</b>	167.9	223.0	-55.1	391.0
<b>2019</b>	42.2	49.0	-6.8	91.3

Source: Özden, A. ve Ersan, Ö., Türkiye'nin Dış Ticaret Performansı, A&T Bank, 2019.

### 2.3.5. Current Balance

It is defined as the sum of goods, income balance, service, and current transfers in the balance of payments (Togan and Berument, 2011: 4). It is known that the current account balance consists of three basic balances. These are (Öz, 2007: 4);

- The difference between imports and exports of goods and services i.e., the balance related to goods and services,
- When the balance of foreign investment income is analyzed; the difference between profits transferred abroad and interest totals from investments made on behalf of the country and profit from direct abroad investments and interests obtained as a result of portfolio investments,
- The differences between transfers are classified as current transfers balance.



**Graph 2.6: Current Account Balance (SBB, 2019: 9)**

When Graph 2.6 is examined, current balance data for 2017-2018 and 2019 can be seen. It can be seen that the current account balance declines from 2017 to 2018 and has gained momentum towards the end of 2019.

### 2.3.6. Investments

The investment refers to obtaining the necessary funds for the enterprise to maximize the company value of an enterprise and the capital that its partners provided for the enterprise and investing in productive assets by using these funds effectively for business purposes.

**Table 2.2: Sectoral Distribution of Fixed Capital Investment (1)**

	2017			2018 (2)			2019 (3)		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
<b>Agriculture</b>	8.9	0.9	2.1	8.4	0.9	2.0	7.5	0.8	1.5
<b>Mining</b>	1.0	1.7	1.6	1.8	1.7	1.7	1.8	1.6	1.6
<b>Production</b>	0.5	22.6	19.4	0.7	22.8	19.5	0.6	22.0	19.9
<b>Energy</b>	3.7	1.3	1.6	3.9	1.2	1.6	6.7	1.2	1.7
<b>Transport</b>	35.9	32.0	32.6	34.8	31.9	32.3	33.0	31.9	32.0
<b>Tourism</b>	0.5	1.8	1.6	0.4	2.0	1.8	0.3	3.6	3.2
<b>Mortgage</b>	1.3	32.5	28.0	1.4	32.1	27.6	1.6	31.7	28.8
<b>Education</b>	10.8	2.0	3.3	11.1	2.1	3.4	10.5	2.0	2.9
<b>Health</b>	5.3	2.6	3.0	6.4	2.6	3.2	4.9	2.6	2.8
<b>Other Services</b>	32.1	2.6	6.9	32.1	2.7	6.9	33.1	2.6	5.6
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Strateji ve Bütçe Başkanlığı

(1) Investment Labor is Included in the Central Government Budget

(2) Realization Forecast

(3) Program

## 2.4. Banking Crisis and Turkey Effects on the Economy

The banking crisis is not a sudden financial crisis like other crises. This is based on a certain process. It also occurs in stages. These stages are (Aydın, 2008);

- Widespread behavior of banks' risky projects,
- The expansion of the loan volume in this way has increased the financial system in excess of nominally by raising financial asset prices.
- The explosion of the financial bubbles formed reversed this process and while the prices of financial assets, in general, decreased in the economy, the share of banks' assets in total loans increased significantly.
- This led to the lockout of payment systems at the national level and the emergence of banking crises.

As it is known, the banking crisis accelerates the outflow of capital. Some developments are taking place as a result of this situation, which caused the loss of trust in financial institutions, especially banks. If we need to provide examples that address these (Altıntaş, 2004: 39);

- Lack of trust in the banking system,
- The poor banking system,
- Banks' failure over time,
- Banks with poor capital are also given the opportunity to expand their funds,
- As a result, a decrease in banking loans is inevitable.
- Also, contraction in bank loans decreases the capital of other segments.
- As a result of all this, it reduces the investments and consumption of firms and households.

According to Krugman, obligations created by financial intermediaries, either explicit or implicitly guaranteed by the government, leads to moral problems. Besides this (Krugman, 1998):

- Widespread behavior of banks' risky projects,

- The expansion of the loan volume in this way has increased the financial system in excess of nominally by raising financial asset prices.
- The explosion of the financial bubbles formed reversed this process and while the prices of financial assets, in general, decreased in the economy, the share of banks' assets in total loans increased significantly.
- This led to the lockout of payment systems at the national level and the emergence of banking crises.

Banking crises spread through a powerful mechanism called a systemic crisis. After experiencing such a crisis, countries have to face the shortcomings of the banking system. At this point, some banking measures must be taken. For instance, efforts are made to make banking systems stronger with the restructuring by identifying the deficiencies in the system. This restructuring results in capitalizing some banks and keeping them in the industry or recommending some banks with the system (Erdoğan and Bülent, 2006: 61).

#### **2.4.1. Structural Problems of the Turkish Banking Sector**

In Turkey's economy, the banking system is one of the sectors ready for harmonization with the European Union with international competitive structure and regulations. Structural changes introduced in the 1980s when the market economy was introduced has helped the development and growth of the banking and financial sector. However, developments in the 1990s led to a significant deterioration in the financial system of the banking system; and banks operated in a very high-risk environment.

##### **2.4.1.1. Insufficient Audit**

Bank audit is primarily concerned with the regulation of banks to operate, use their resources and liquidation, and to assess whether they are acting in accordance with the restrictions to meet their obligations and keep their financial structures strong. Besides this, the determination and analysis of the banks' assets, receivables, equity, debts,

interests, and balances between profit and loss accounts and all other factors affecting the financial structure are among this audit process system (Delikanlı, 1998: 1).

#### **2.4.1.2. Economic Instability**

Another problem that adversely affects the banking sector in times of economic instability and chronic inflation is problematic loans increase (Parasız, 2009: 126). Especially the increasing interest burden has a limiting effect on the collection of bank receivables and as unpaid receivables reduce the fluidity of bank resources, it also leads to an increase in resource cost. Economic stability to be achieved by reducing inflation will help banks to get rid of the frozen bank loans and decreases in the burden of overdue receivables reflected on the sourcing cost. In such cases, strengthening its non-performing loans in terms of collateral is required, i.e., it is necessary to take necessary precautions in order to avoid risks. In a country's economy that cannot achieve macroeconomic stability, the banking sector will experience problems. On the contrast, i.e., it will always pose a risk for macroeconomic stability in problems in the banking sector (Keskin et al., Kasım 2009: 29).

#### **2.4.1.3. Technological Developments**

Banks were affected by the intense competition environment with the impact of the financial liberalization movements in the 1980s, and they entered the race to provide more qualified services in line with their customers' needs and demands (Korkmaz and Gövdeli, 2005: 243). In this way, banks are restructuring in parallel with the developments in information technologies, takes measures to reduce costs, and thus try to create projects to expand their customer base and increase their marketing activities by using the technological infrastructure in their best (Işkın, 2012: 51).

At the point where technological developments bring the banking system; you can find banks that have no branches, operate only over the internet, and other alternative distribution channels. While technological developments are also revealing new channels, on the other hand, it also increases the function of old channels. Banks' targets to provide low-cost, continuous, widespread, and effective services have brought alternative distribution channels to the agenda with developing information technologies. While innovations in information technologies improve the performance of banks in their routine operations, they also allowed them to communicate directly and more easily with their customers. Rapid progress in the technology sector, especially with the 2001 crisis, forced banks to invest in technology; while increasing the sales of bank products before 2001 depended on the customer willingness and quality products; the use of advanced technology has become important for the banking sector, which has faced industrialized and complex customer potential after 2001. Turkish banks that want to increase customer quality and potential; responded to this situation by taking advantage of advances in technology. Alternative banking products were offered by the banking sector, which provides services 24/7, to achieve this goal and showed themselves in the banking sector through direct channels such as telephone, internet, mobile branches, face to face communication, ATM and mails (Retail and Business Banking Product Development Department ADC Unit, Research Bulletin, 2013: 2).

Although an effective step has been taken for banking sector applications, which are renewing with increasing technological possibilities, it has been difficult for the banking infrastructure to be fully formed and the unstable environment of the economy to keep pace with the technological developments in the banking sector since there is no regular work together with state bodies in the implementation and institutionalization of relevant financial techniques and products (Yıldırım and Kasım 2004: 7).

#### **2.4.1.4. Competition Insufficiency**

There was no competitive market structure in the financial liberalization process in the banking sector. The legal regulations regarding market entry and exit conditions have a problematic feature rather than solving the problem, preventing the formation of this structuring. Therefore, the concentration rate in the banking sector has not changed much over the years (Çolak, 2001: 19).

#### **2.4.1.5. High Resources Costs**

The most effective source of funding for commercial banks is the deposits they collect. Despite the developments in the supply of non-deposit funds, deposits still remain important among the resources of the sector and interest rates applied to deposits is related to inflation rates. With the introduction of the free interest system as of July 1, 1980, the interest rates started to run in line with inflation and the cost of the relevant deposits increased significantly as a result of the development in favor of deposits. Although this development is a natural consequence of the reality of the free market economy, the resource cost has also increased through the obligation to reserve total disponibility and deposit reserve and the Savings Deposit Insurance Fund premiums.

Another factor that affects the margin between interest cost and loan interest rate is the indirect taxation deposit reserve requirements and disponibility. Since these items significantly reduce the placeable resources of banks, they are factors that increase loan interest rates. In fact, reserve requirements and disponibility obligation act as monetary policy instruments to ensure stability and security in the money markets. In today's conditions, where deposit insurance is available and the interbank market plays an important role in meeting the short-term cash needs of banks, the required reserve, and disponibility rates are the results of the increasing fund requirement of the public rather than regulatory.

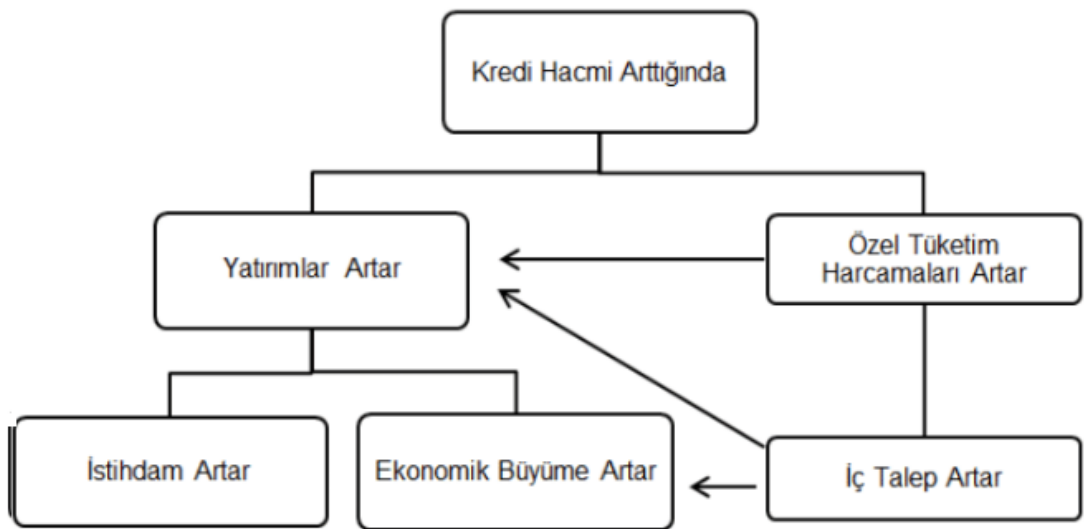
#### 2.4.1.6. Equity Shortage

The part of a balance sheet after deducting the liabilities from the total assets gives the equity. The bank's resistance to market risks will be higher in line with how much stronger the equity consisting of paid-in capital, reserves, undistributed profit and a value increase of assets be (Toprak and Demir, 2001: 3).

Total equity in the banking sector, the capital adequacy ratio that is formed by dividing the total assets in the sector, shows the ratio of banks' equity to total assets; while higher rates show that the equity is growing and the asset quality is improving, low rates reveals the insufficiency of own resources.

#### 2.5. Impacts on Turkey Economy of Bank Loans

At the point of analyzing the effects of bank loans on Turkey's economy the ones that came to the agenda as a result of the increase in loan volume are given through Figure 2.1.



**Figure 2.1:** Channels of Loan Volume Increase to the Economy (Göçer, 2015: 68)

When Figure 2.1 is analyzed, investments increase with the increase in loan volume, and thus, employment and economic growth increases. Also, there is an increase in private consumption expenditures, which increases domestic demand. Again, domestic demand also has an impact on increasing economic growth and investments.

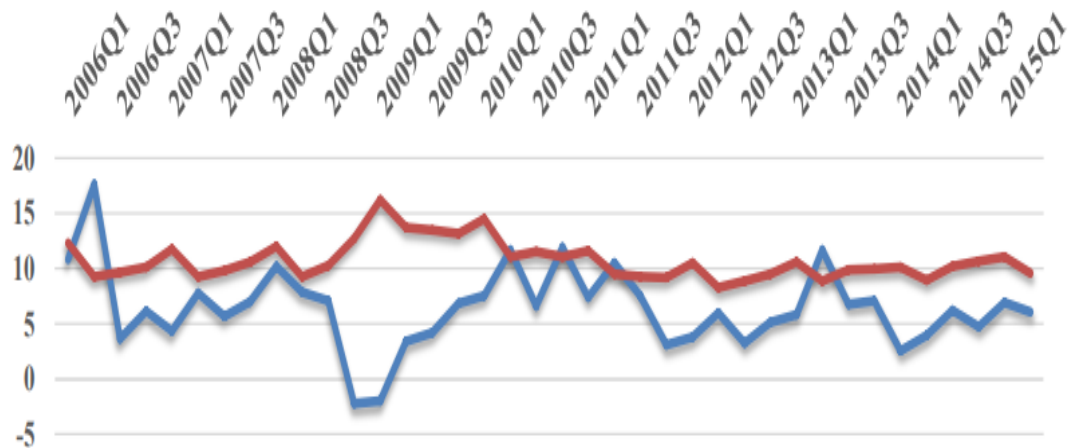
### 2.5.1. Effects on Loan Volume

There are two basic factors for the Bank's loan channel to function properly. These are (Kashyap et al., 1993: 82);

- The first one is the lack of full substitution between securities and bank loans,
- The second one can be summarized as the absence of full substitution between non-bank sources and bank loans.

### 2.5.2. Effects of Unemployment Rates

We can check Graph 2.7 when we want to analyze the relationship between loan volume and the unemployment rate in Turkey. Here, the relationship and change between the two data from 2006 to 2015 are analyzed.



— Change in Loan Volume — Unemployment Rate

**Graph 2.7:** Change in Loan Volume and Unemployment Rate (Karaçayır ve Karaçayır, 2016: 14)

### 2.5.3. Effects on Economic Growth Data

When the relationship between loan usage and economic growth is analyzed, one of the first studies in Turkey was conducted in 2002. According to this study, which is based on 1988-2001 and divided into 3-month periods, the percentage change in growth rate, and real loans were used. A positive relationship was found in the analysis of variance; however, no causality relationship was found between loans and growth. It is more logical to examine the relationship between bank loans and economic growth in the long term. The realization of projects related to investments necessitates the use of funds at appropriate terms and costs. Providing long-term and high-return investments are realized through the liquidity of financial markets. Thus, markets attract savers in the long term. It is very important to know the course of the relationship between the financial system and growth. Increasing the growth potential with various policies is in question if the financial system has a relationship towards growth (Güven, 2002).

### 2.6. Loans and Effects of Data in Turkish Banking

There are 4 basic factors of loan in banking. These are (Öker, 2007: 8);

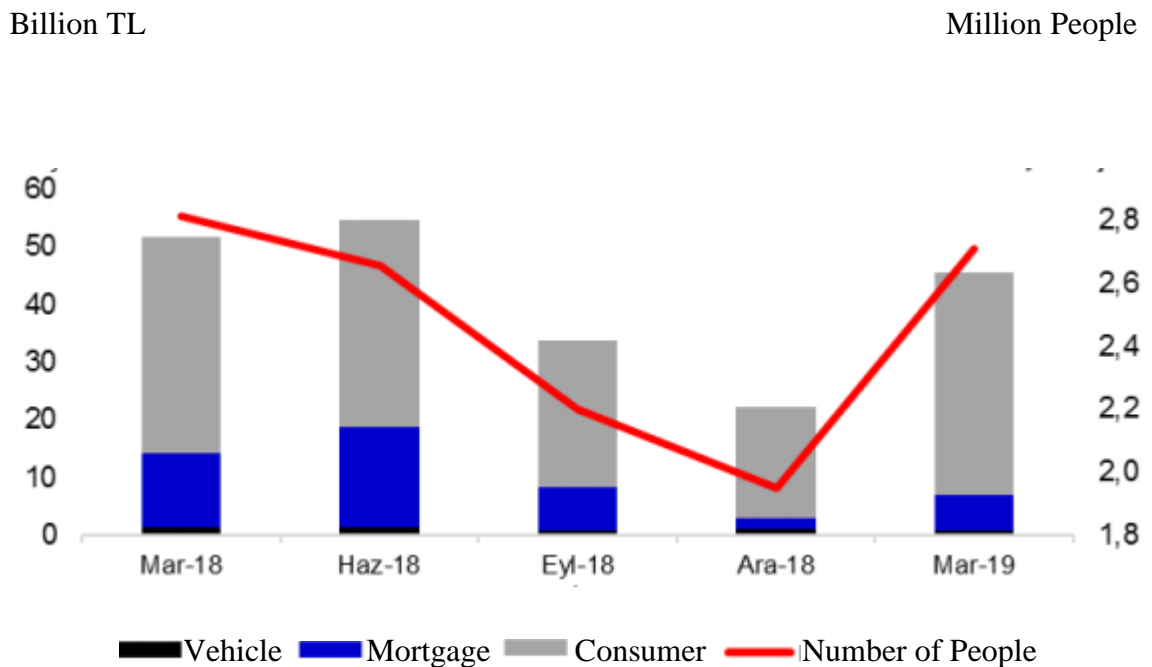
- Time Factor: Time, i.e. maturity factor in the loan has great importance. The prolonged maturity increases uncertainty, which creates an effect that increases loan risk.
- Trust Factor: The credibility factor comes to the fore with the credibility of the lender on the bank side. This credibility has a major impact on the bank's lending in cash or non-cash loans.

- Risk Factor: Banks conduct various researches in order to minimize the risk factor. An example of this is that the loan is not paid on time or there are problems with the collateral.
- Income Factor: The bank profits from the income it generates and thus increases its assets. It obtains this from interest and commission income.

In this part of our study, data in Turkish banking, effects of loans; consumer loans, vehicle loans, mortgage loans, loans to other sectors will be analyzed. Besides, the reflection of granted loans to Turkey's economy will also be taken into consideration.

### 2.6.1. Consumer and Mortgage Loans and Reflections

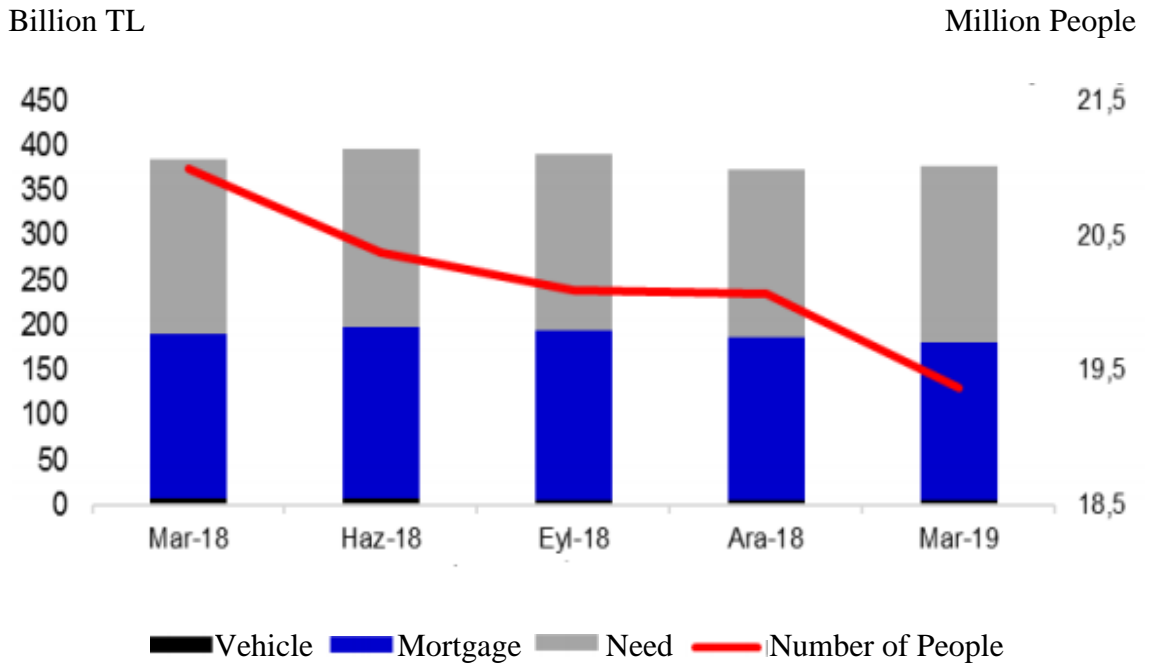
When consumer loans are examined according to 2018-2019 data, it is observed that 2.7 million people used 45 billion TL of consumer and mortgage loans. The number of people using loans decreased by 4%, while the number of loans decreased by 12% when compared to 2018.



**Graph 2.8:** Amount of Loans Used of Number of Persons (Seasonal) (TBB, 2019)

According to Graph 2.8, it is observed that 9.5 million people used 156 billion TL of loans in the first quarter of 2019.

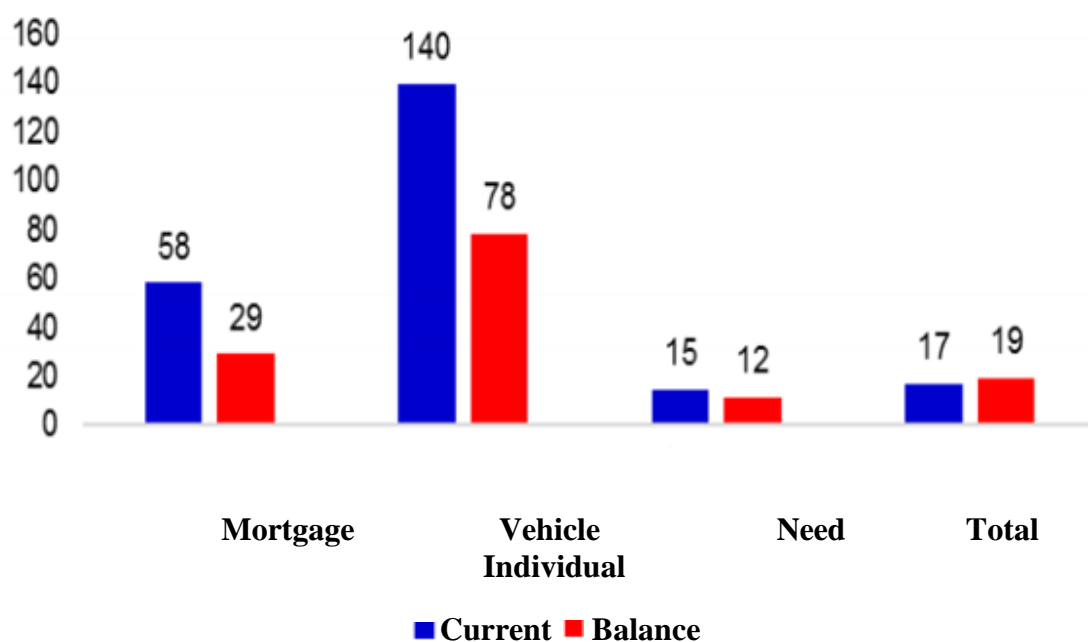
Consumer and mortgage loans amounting to TL 377 billion were granted in January-March 2019. 19 million 373 thousand people benefited from these loans. There is an 8% decrease in the total number of people compared to the previous year. There is also a 3% decrease compared to the quarter of last year. The balance decreased by 2% compared to the previous year and 1% compared to the quarter of the previous year.



**Graph 2.9:** Amount of Loans Used of Number of Persons (Balance) (TBB, 2019)

### 2.6.2. Vehicle Loans and Reflections

When the reflections of vehicle loans are analyzed, Graph 2.10 comes to the fore. Here, the analysis of 2019 data is in question.



**Graph 2.10:** Average Consumer Loans Per Capita and Mortgage by Goods and Services Groups Loans (TBB, 2019)

According to Graph 2.10, TL 17 billion personal loans were used in January-March 2019 period. Mortgage of TL 140 million, consumer loan of TL 15 million, and vehicle loan of TL 58 million were used.

According to the balance data of the January-March 2019 period, a personal loan of TL 19 billion was used. Mortgage of TL 78 million, consumer loan of TL 12 million, and vehicle loan of TL 29 million were used.

### 2.6.3. Repercussions of loan given to Turkey's Economy

Turkey has a bank-based financial system. It is important that banks be strong, robust, and durable in ensuring financial stability. Financial stability is provided on the

mentioned foundations. Therefore, the 2001 crisis was more severe than other crises and the weak structure of banks in the 2000s is the underlying cause (Türker, 2015: 38).

It is seen that million TL in GDP decreased from December 2017 to March 2018, increased in June and September 2018, decreased again in December and March 2019, and increased in June 2019. It is observed that the annual change in GDP decreased from 7.3% in 2017 to 1.5% in 2019. When the banking sector data are analyzed, it is observed that (Köylüoğlu, 2019);

- Total assets decreased only in December 2018,
- Total loans decreased only in December 2018,
- Total deposits decreased only in December 2018.

**Turkey’s GDP, Totals Assets of Turkish Banking Sector and Deposits/GDP Between 2003-2017**

<b>YEAR</b>	<b>GDP (Thousand TL)</b>	<b>Total Assets of Banks/GDP(%)</b>	<b>Deposits/GDP(%)</b>
2003	468,015,146	54.9	15.4
2004	577,023,497	54.8	18.5
2005	673,702,943	61.2	23.6
2006	789,227,555	63.9	28.8
2007	880,460,879	65.7	32.9
2008	994,782,858	74.3	38.6
2009	999,191,848	79.9	38.1
2010	1,160,013,978	82.9	43.9
2011	1,394,477,166	83.2	47.6
2012	1,569,672,115	82.7	49.0
2013	1,809,713,087	90.4	56.1
2014	2,044,465,876	92.4	59.2
2015	2,338,647,494	95.6	62.4
2016	2,608,525,749	99.5	65.8
2017	3,104,906,706	99.7	66.7
Source: Banks Association of Turkey (TBB)			

## CHAPTER THREE

### LITERATURE REVIEW

#### 3.1. Studies in Literature about Financial Development and Economic Growth

There are several studies examined in the literature about the relationship between financial growth and Economic Growth. Some of these are scoping several countries with their economical relations and development average, some of them examines about geographical relationship and similarities about the countries.

In the literature there are some studies also examining Turkey's GDP Growth and financial development level.

The studies, scopes, methodologies and results are listed in the table 3.1.

Table 3.1.

Author	Scope	Period	Methodology	Results:
Saarenheimo (1995)	Finland	1987-1990	VAR	No relationship between bank loans and economic growth
Luintel ve Khan (1999)	10 Countries	1973-2013	VAR	Both Supply Leading Hypothesis and Demand Following Hypothesis results are determined.
Al-Yousif (2002)	30 Developing Countries	1970-1999	Granger Causality and panel analysis	Both Supply Leading Hypothesis and Demand Following Hypothesis results are determined.
Beck and Levine (2004)	40 Countries	1976-1998	Panel Data Analysis	Supply Leading Hypothesis results are determined.

Dritsakis and Adamopouios-2004	Greece	1960-2001	VAR	Supply Leading Hypothesis results are determined.
Shan (2005)	10 OECD Countries and China	1985-1998	VAR	Supply Leading Hypothesis results are determined.
Shan and Jianhong-2006	China	1978-2001	VAR	Both Supply Leading Hypothesis and Demand Following Hypothesis results are determined.
Caporale etc (2009)-2007	10 EU Member Countries	1994-2007	Panel Data Analysis	Supply Leading Hypothesis results are determined.
Akimov etc (2009)	27 Countries	1984-2004	Panel Data Analysis	Supply Leading Hypothesis results are determined.
Uddin etc.. (2013)	Kenya	1971-2011	ARDL	Supply Leading Hypothesis results are determined.
Venâncio (2013)	19 Countries	1980-2011 ve 2000-	Panel Data Analysis	For the most of the countires, negative relation determined between bank loans and economic growth
Venâncio (2013) Tang and Tan (2014)	Malasia	2011 1972- 2009	Panel Data Analysis Granger Causality Test	For the most of the countires, negative relation determined between bank loans and economic growth Supply Leading Hypothesis results are determined.
Chettri and Raju (2014)	India	1996-2011	VAR	Supply Leading Hypothesis results are determined.
Menyah etc. (2014)	21 Africa Countries	1965-2008	Panel Causality Analysis	Supply Leading Hypothesis results are determined.
Sağlam and Sönmez-2017	10 EU Member Countries	2001-2014	Panel Data Analysis	Supply Leading Hypothesis results are determined.

The studies about Turkey's financial development level and economic growth, methodologies and results are listed in the table 3.2.

Table 3.2.

<b>Author</b>	<b>Period</b>	<b>Methodology</b>	<b>Results:</b>
Kar and Pentecos-2000	1963-1995	VAR and Granger Causality	Both Supply Leading Hypothesis and Demand Following Hypothesis results are determined.
Çetintaş and Barışık (2003)	1989-2000	Granger Causality Test	Supply Leading Hypothesis results are determined.
Onur (2005)	1980-2003		
Aslan and Küçükaksoy -2006	1970-2004	Granger Causality Test	Supply Leading Hypothesis results are determined.
Yılmaz etc (2006)	1960-2001	Granger Causality Test	Demand Following Hypothesis results are determined.
Acaravcı etc (2007)	1986-2006	VAR	Supply Leading Hypothesis results are determined.
Öztürk (2008)	1975-2004	VAR	No direct relationship determined between bank loans and Turkey's economic growth
Yücel (2009)	1989-2007	Granger Causality Test	Supply Leading Hypothesis results are determined.
Altıntaş and Ayriçay (2010)	1987-2007	ARDL Test	Supply Leading Hypothesis results are determined.
Ceylan and Durkaya -2010	1998-2008	Granger Causality Test	Demand Following Hypothesis results are determined.

Özcan and Ari (2011)	1998-2009	VAR	Demand Following Hypothesis results are determined.
Karahan and Yılgör	1980-2010	VAR	Both Supply Leading Hypothesis and Demand Following Hypothesis results are determined.
-2011			
Mercan and	1992-2011	ARDL Test	Supply Leading Hypothesis results are determined.
Peker			
-2013			
Tuna and Bektaş (2013)	1998-2012	Granger Causality Test	N
Kaya etc. (2013)	1998-2009	Regression	Supply Leading Hypothesis results are determined.
Aydın etc. (2014)	1988-2012	Toda Yamamoto	
Zortuk and	1995-2010	Gregory-Hansen Test	Loans and economic growth indicators are equally integrated.
Çelik (2014)			
Kar etc. (2014)	1989-2007	Granger Causality Test	Demand Following Hypothesis results are determined.
Ak etc.	1989-2011	Toda Yamamoto	Demand Following Hypothesis results are determined.
-2016			
Çeştepe and Yıldırım (2016)	1986-2015	Toda Yamamoto	Both Supply Leading Hypothesis and Demand Following Hypothesis results are determined.
Türkoğlu (2016)	1960-2013	Granger Causality Test	Both Supply Leading Hypothesis and Demand Following Hypothesis results are determined.
Pehlivan etc.	2002-2015	Granger Causality Test	Both Supply Leading Hypothesis and Demand Following
-2017			

		Hypothesis results are determined.
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## CHAPTER 4

### RESEARCH AND METHODOLOGY

#### 4.1. Purpose of the Research

In this study, the effect of Bank loans of Turkish banking sector cover the years between 2003 and 2017 using by some econometrical methods.

#### 4.2 The Scope and Data Set of Research

In this study, which tests the effect of the loan volume of the Turkish deposit banking sector on economic growth, quarterly data covering the period 2003: Q1 and 2017: Q3 are used.

In most of the studies examined during the literature, the relationship between the increase in credit volume and economic growth has been studied by using annual data.

In this study;

Datas are;

- Turkey's GDP,
- Total Bank Loans of deposit banks of Turkey,
- Public Banks Loan Volume,
- Private Banks Loan Volume
- Foreign Trade Volume/ Turkey's GDP
- Gross Investment Expenditures/ Turkey's GDP

Datas are obtained from;

Banks Association of Turkey (TBB),

Turkish Banking Regulation and Supervision Agency (BDDK)

Turkish Statistical Institute (TUIK)

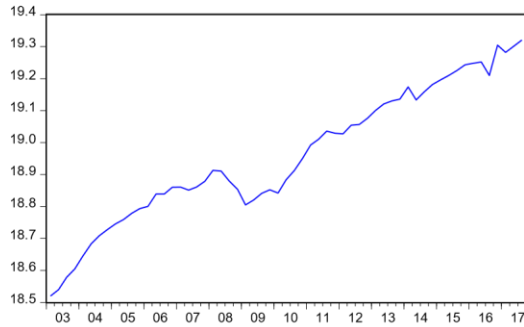
Central Bank of Turkey (TCMB)

“The GDP” is for all the countries is accepted as the most important indicator for the economic growth, “Total loan volume of deposit banks”, “Loan volume of public and private deposit banks”, Total investmens/GDP series are deflated by consumer price index rate and (Sum of import and export)/ GDP by the years to obtain the net values and by using censusx12 method the values are seasonality effects are disabled. After all, logarithms are calculated for all the series.

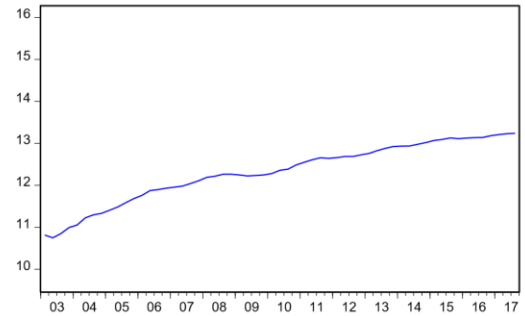
The variables are determined as  $lgdp$ ,  $lsector$ ,  $lpublic$ ,  $lprivate$ ,  $ltrade$ ,  $linvestment$  in the model.

## 4.3 Empirical Results

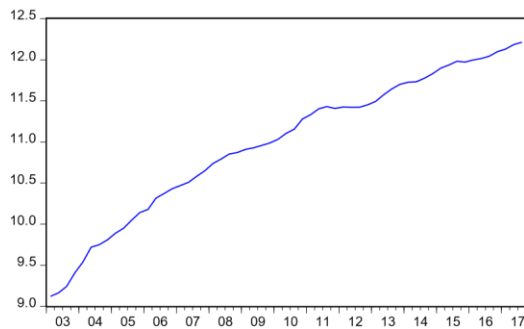
### Charts of the Variables



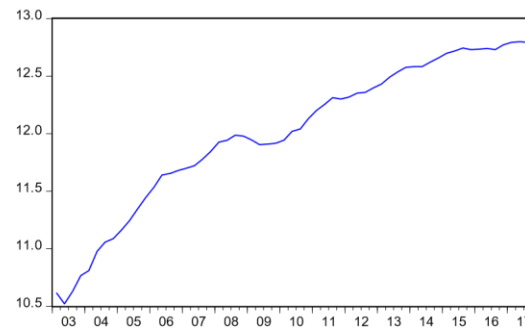
GDP



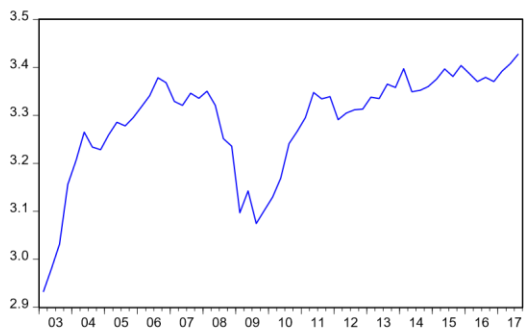
TOTAL BANK LOANS VOLUME



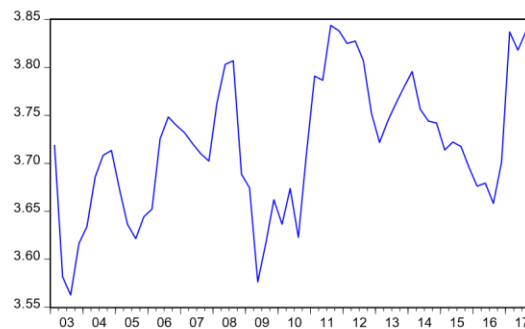
PUBLIC BANKS LOANS VOLUME



PRIVATE BANKS LOANS VOLUME



GROSS INVESTMENTS



FOREIGN TRADE VOLUME

These charts shows the difference beyond the scope years and they have increase trend showing they have similar trends between them.

This situation is also confirmed with the regression analysis done by these variables. Determining the stationarity levels of the series in time series is necessary to prevent misleading regression problems.

In order to prevent this situation it is better to apply Dickey Fuller and Phillips-Perron tests to the variables.

#### 4.4 DF Test Results:

Dickey Fuller test results shown below as table 4.1.

Table 4.1.

Variables	Value			Difference		
	Unstable, Trendless	Constant	Constant, Trend	Unstable, Trendless	Constant	Constant, Trend
lgdp	4.452	-1.280	-2.553	-3.274 *	-7.955*	-7.959*
lsector	3.625*	-4.119*	-3.307***	-1.623***	-5.437*	-6.739*
lpublic	2.250**	-4.309*	-2.582	-1.615	-3.112**	-6.966*
lprivate	3.413*	-4.104*	-3.085	-3.726*	-5.528*	-6.796*
linvestment	0.687	-3.631*	-3.991**	-3.612*	-3.683*	-3.718**
ltrade	0.295	-2.258	-2.898	-7.235*	-7.228*	-7.134*

\*, \*\*, \*\*\* defines statistically significance %1, %5 ve %10 importance level respectively.

#### 4.5 PP Test Results:

Philips Perron test results shown below as table 4.2.

Table 4.2.

Variables	Value			Difference		
	Unstable, Trendless	Constant	Constant, Trend	Unstable, Trendless	Constant	Constant, Trend
Lgdp	4.222	-1.266	-2.671	-6.396*	-7.952*	-7.957*
lsector	4.918	-3.708*	-1.829	-3.298*	-5.621*	-6.741*
lpublic	5.968	-4.789*	-3.243***	-2.826*	-5.772*	-7.014*
lprivate	4.206	-3.306**	-1.614	-3.893*	-5.791*	-6.798*
linvestment	1.096	-4.487*	-4.978*	-16.839*	-17.209*	-17.698*
ltrade	0.269	-2.258	-3.148	-7.235*	-7.232*	-7.138*

\*, \*\*, \*\*\* defines statistically significance %1, %5 ve %10 importance level respectively.

As the series appears to be stable in different levels;

ARLD Model Test developed by Pesaran (2001) is preferred because:

- It is appropriate to evaluate the relationship between the series and to make long-term and short-term predictions.
- The relationship between different level of integrated variables can be examined
- The model can be applied to small sampling variables

**Total Loan Model Equation:**

$$\Delta l g d p = \beta 0 + \sum_{i=1}^m \beta 1 \Delta l g d p_{t-i} + \sum_{i=0}^m \beta 2 \Delta l s e c t o r_{t-i} + \sum_{i=0}^m \beta 3 \Delta l i n v e s t m e n t_{t-i} + \sum_{i=0}^m \beta 4 \Delta l t r a d e_{t-i} + \beta 5 l g d p_{t-1} + \beta 6 l s e c t o r_{t-1} + \beta 7 l i n v e s t m e n t_{t-1} + \beta 8 l t r a d e_{t-1} + e_t \quad (1)$$

**Public and Private Banking Loan Model Equation:**

$$\Delta l g d p = \alpha 0 + \sum_{i=1}^m \alpha 1 \Delta l g d p_{t-i} + \sum_{i=0}^m \alpha 2 \Delta l p u b l i c_{t-i} + \sum_{i=0}^m \alpha 3 \Delta l p r i v a t e_{t-i} + \sum_{i=0}^m \alpha 4 \Delta l i n v e s t m e n t_{t-i} + \sum_{i=0}^m \alpha 5 \Delta l t r a d e_{t-i} + \alpha 6 l g d p_{t-1} + \alpha 7 l p u b l i c_{t-1} + \alpha 8 l p r i v a t e_{t-1} + \alpha 9 l i n v e s t m e n t_{t-1} + \alpha 10 l t r a d e_{t-1} + e_t \quad (2)$$

Total Loans (Sector) and public-private bank loans are evaluated with the boundary tests and the results are shown in the table:

Model	k	F Calculated	Lower Bound	Upper Bound
1	3	10.660	5.18	6.37
2	4	13.321	4.41	5.73

For the Model 1 it can be seen that F Value is 10.660 and Model 2 F Value is 13.321. These values are more than upper bound value so it can be stated that for both models the series are co-integrated.

This situation leads long-term and short-term predictions.

### Granger Causality Test Results:

**Table 4.3.**

Variables	Observations	F-Value	Probability
H0: lsector, is not lgdp s Granger causality.	43	0.924	0.402
H0: lgdp, is not lsector s Granger causality.	43	1.632	0.043
H0: : lpublic, is not lgdp s Granger causality.	43	1.157	0.323
H0: lgdp, is not lpublic s Granger causality.	43	0.587	0.043
H0: lprivate, is not lgdp s Granger causality.	43	0.943	0.397
H0: lgdp, is not lgdp s Granger causality.	43	1.895	0.032

From these table it can be assumed that,

Granger Causality Test which as .....%5 margin of error and the probabily values founded is bigger than % 5, it can be assumed that total loans, public bank loans and private bank loans has causality effect on Turkey's GDP.

This situation determines that the increase of loans volume causes economic growth.

This results supports Supply Leading Hypothesis.

**Empirical Results for Long-Term and Short Term Analysis for the Model 1 Equation**

$$(\Delta l g d p = \beta 0 + \sum_{i=1}^m \beta 1 \Delta l g d p_{t-i} + \sum_{i=0}^m \beta 2 \Delta l s e c t o r_{t-i} + \sum_{i=0}^m \beta 3 \Delta l i n v e s t m e n t_{t-i} + \sum_{i=0}^m \beta 4 \Delta l t r a d e_{t-i} + \beta 5 l g d p_{t-1} + \beta 6 l s e c t o r_{t-1} + \beta 7 l i n v e s t m e n t_{t-1} + \beta 8 t r a d e_{t-1} + e_t )$$

The co-integration results determined between series, long-term and short-term models can be designed.

General predictions for Model 1 is listed the table 4.4. below.

Table 4.4.

<b>Variables</b>	<b>Coefficient</b>	<b>Standard Deviation</b>	<b>t-test</b>	<b>Probability</b>
lgdp(-1)	-0.816339	0.202579	-4.029740	0.0010*
lgdp(-2)	-0.853387	0.208376	-4.095424	0.0008*
lgdp(-3)	-0.600603	0.144753	-4.149153	0.0008*
lgdp(-4)	-0.492952	0.183795	-2.682076	0.0164**
lgdp(-5)	-0.248567	0.169460	-1.466816	0.1618
lgdp(-6)	-0.547025	0.152283	-3.592155	0.0024**
lsector	-0.108547	0.099931	-1.086221	0.2935
lsector(-1)	0.119726	0.146820	0.815462	0.4268
lsector(-2)	-0.243069	0.120228	-2.021732	0.0603***
lsector(-3)	0.267099	0.118011	2.263337	0.0379**
lsector(-4)	-0.256571	0.109243	-2.348621	0.0320**
lsector(-5)	0.298324	0.103634	2.878642	0.0109**
lsector(-6)	-0.350551	0.087420	-4.009978	0.0010*

lsector(-7)	0.188365	0.102594	1.836027	0.0850***
lsector(-8)	-0.184480	0.077186	-2.390075	0.0295**
linvestment	0.285013	0.066305	4.298501	0.0006*
linvestment(-1)	0.638995	0.120039	5.323233	0.0001*
linvestment(-2)	0.499615	0.147800	3.380352	0.0038*
linvestment(-3)	0.308270	0.095765	3.219030	0.0054*
linvestment(-4)	0.288816	0.092305	3.128916	0.0065*
linvestment(-5)	0.008109	0.100347	0.080813	0.9366
linvestment(-6)	0.295232	0.092816	3.180848	0.0058*
linvestment(-7)	-0.037566	0.084354	-0.445342	0.6620
linvestment(-8)	0.252458	0.084264	2.996035	0.0085*
ltrade	0.123396	0.054242	2.274928	0.0370**
ltrade(-1)	0.018536	0.077960	0.237759	0.8151
ltrade(-2)	-0.050785	0.069334	-0.732472	0.4745
ltrade(-3)	-0.059987	0.070210	-0.854385	0.4055
ltrade(-4)	0.072563	0.068715	1.055996	0.3067
ltrade(-5)	-0.005939	0.071723	-0.082806	0.9350
ltrade(-6)	0.362284	0.072638	4.987545	0.0001*
ltrade(-7)	-0.216983	0.092367	-2.349125	0.0320**
ltrade(-8)	0.172392	0.071837	2.399762	0.0289**
C	78.12593	12.08411	6.465181	0.0000*
@TREND	0.054719	0.008529	6.415653	0.0000*
<b>Tests</b>				
R-squared	0.999500	X2BGAB(1)	3.491231(0.0814)	
Adjusted R-squared	0.998436	X2BGAB(2)	2.662952 (0.1047)	
F- Statistics	940.0064	X <sup>2</sup> WDV	1.306321 (0.2896)	
Durbin-Watson	2.562358	X <sup>2</sup> JBN	0.266679 (0.8751)	

### Model for Total Loans Volume:

$$lgdp_t = \lambda_0 + \lambda_1 lgdp_t + \lambda_2 lsector_t + \lambda_3 linvestment_t + \lambda_4 ltrade_t + e_t \quad (3)$$

ARDL Long Term Coefficients for Model 1

Table 4.5.

<b>Variables</b>	<b>Coefficient</b>	<b>Standard Deviation</b>	<b>F-Test</b>	<b>Probability</b>
lsector	-0.059	0.007	-8.446	0.0000*
linvestment	0.557	0.007	81.701	0.0000*
ltrade	0.091	0.012	7.533	0.0000*

**The results can be listed from these calculations:**

- Table 25 contains long-term coefficients calculated based on the estimated results of the long-term ARDL Model (6, 8, 8, 8).
- The long-term coefficients of the independent variables sum to 1 the sum of the dependent variable was calculated by dividing the difference from the coefficients (Johnston and Dinardo, 1997: 245) long-term coefficient estimates of the values of the variables found to be statistically significant findings were shown in Table 25.
- Given these values, it is seen that the volume of loans of deposit banks has a negative impact on economic growth over a long period of time. The fact that the coefficient of the variable share of fixed capital investments in GDP has a positive sign is expected, but it is also a sign that this variable supports economic growth. In addition, commercial openness also has a positive impact on economic growth. According to the model, while other variables are constant in the long term, deposit banks will reduce GDP by 0.06% of the 1% increase in total loan volume, and GDP by 1% increase in fixed capital investments
- It was determined that it would increase by 0.56 % and that a 1% increase in the commercial openness rate would increase GDP by 0.09 %

**Short term relationship for the equation 1**

After obtaining the long-term coefficients of the ARDL model, a short-term estimate can also be made. Differences in delays of dependent and independent variables found in Equation 1 ( $\Delta$ ) will show how much the dependent variable is affected in the short term due to the difference of each delay in dependent and independent variables

(fancy and Bekmez, 2010). In order to perform short-term relationship analysis between variables, the following error correction model has been estimated to take into account the above-mentioned level relationship.

**Equation 4: Short Tem Model for Bank Loans**

$$\Delta l g d p = \beta 0 + \sum_{i=0}^m \beta 1 \Delta l g d p_{t-i} + \sum_{i=0}^m \beta 2 i \Delta l s e c t o r_{t-i} + \sum_{i=0}^m \beta 3 i \Delta l i n v e s t m e n t_{t-i} + \sum_{i=0}^m \beta 4 i \Delta l t r a d e_{t-i} + \beta 5 E C T_{t-1} + e_t \quad (4)$$

In the model, the term ECTt - 1 is an error correction term; it shows a period delay of a series of error terms obtained from a long-term relationship. The coefficient of the variable in question indicates how much of the short-term deviations will improve after one period. A negative sign of the ECTt-1 coefficient means that in the short term, deviations that will occur between the series will approach the long-term equilibrium value, while a positive one means that the series will move away from the long-term equilibrium value.

**Error Correction Results For Short Term**

Table 4.6.

Variables	Coefficient	Standard Deviation	T-Value	Probability
C	78.126	10.974	7.119	0.000*
@TREND	0.055	0.008	7.110	0.000*
D(lgdp(-1))	2.743	0.502	5.463	0.000*
D(lgdp(-2))	1.889	0.365	5.169	0.000*
D(lgdp(-3))	1.289	0.289	4.464	0.000*
D(lgdp(-4))	0.796	0.192	4.139	0.001*
D(lgdp(-5))	0.547	0.138	3.967	0.001*
D(lsector)	-0.109	0.080	-1.365	0.191
D(lsector(-1))	0.281	0.090	3.132	0.006*
D(lsector(-2))	0.038	0.071	0.535	0.600
D(lsector(-3))	0.305	0.072	4.236	0.001*
D(lsector(-4))	0.048	0.073	0.664	0.516
D(lsector(-5))	0.347	0.062	5.612	0.000*
D(lsector(-6))	-0.004	0.064	-0.061	0.952
D(lsector(-7))	0.184	0.062	2.995	0.009*
D(linvestment)	0.285	0.049	5.765	0.000*
D(linvestment(-1))	-1.615	0.304	-5.316	0.000*

D(linvestment(-2))	-1.115	0.213	-5.224	0.000*
D(linvestment(-3))	-0.807	0.171	-4.725	0.000*
D(linvestment(-4))	-0.518	0.138	-3.760	0.002*
D(linvestment(-5))	-0.510	0.088	-5.795	0.000*
D(linvestment(-6))	-0.215	0.076	-2.815	0.012**
D(linvestment(-7))	-0.252	0.073	-3.457	0.003*
D(ltrade)	0.123	0.045	2.717	0.015**
D(ltrade(-1))	-0.274	0.054	-5.047	0.000*
D(ltrade(-2))	-0.324	0.063	-5.129	0.000*
D(ltrade(-3))	-0.384	0.070	-5.466	0.000*
D(ltrade(-4))	-0.312	0.068	-4.584	0.000*
D(ltrade(-5))	-0.318	0.062	-5.104	0.000*
D(ltrade(-6))	0.045	0.061	0.735	0.473
D(ltrade(-7))	-0.172	0.057	-3.020	0.008*
CointEq(-1)	-4.559	0.641	-7.116	0.000*
<b>Tests</b>				
R-squared	0.973787			
Adjusted R-squared	0.931019			
F- Value	22.76888 (0.000000)			
Durbin-Watson	2.562358			

\*, \*\*, \*\*\* defines statistically significance %1, %5 ve %10 importance level respectively.

Results reflecting short-term relationships are shown in Table 4.7.

The coefficient of the error correction term is statistically significant and negative as expected. The coefficient of the bet term (-4.56) is greater than one in absolute value. In this case, according to Narayan and Smyth (2006), the model will variously converge to the level of long-term equilibrium. After all, the model's error correction term works. In other words, the deviations that occur in the short period between the series that move together in the long period disappear, and the series again converge to the equilibrium value in the long period. According to this approach, it can be argued that any shock or unexpected effect that will be encountered in the short term will be corrected by 4.56% each year in the long term and the balance will be reached. The Wald test was applied to the model because it had a large number of coefficients in terms of periods of variables and the coefficients in question showed different results from each other. The zero hypothesis is that there is no causation from credit volume variables towards economic growth.

The results are shown in Table 4.8

Table 4. 8

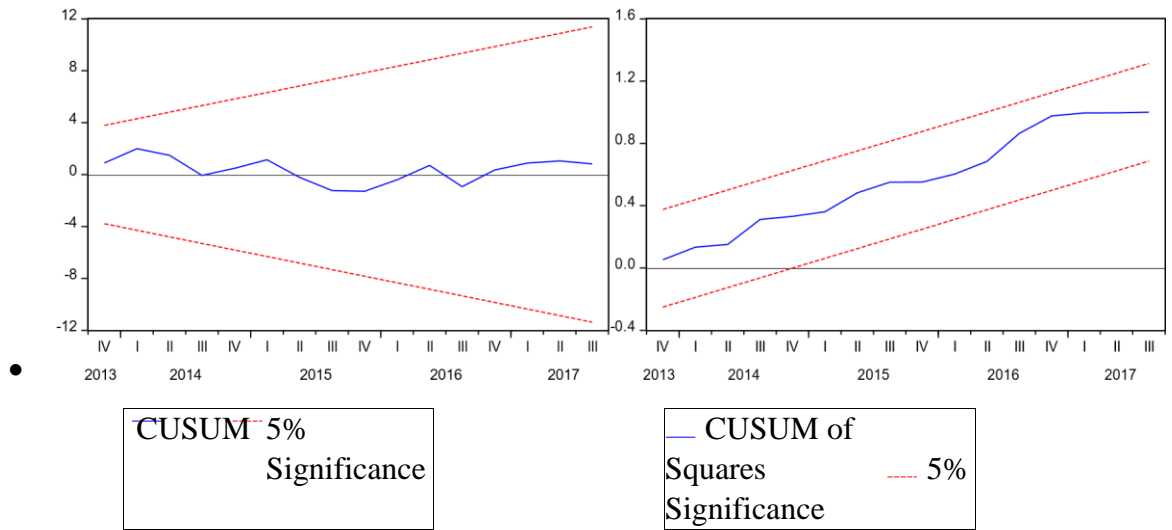
<b>Variables</b>	<b>Coefficient</b>	<b>F-Test</b>	<b>Probability</b>
lsector	1.090	4.937	0.003*
ltrade	-1.616	9.118	0.000*
linvestment	-4.748	14.877	0.000*

Considering the values shown in Table 4.8, which includes the findings of short-term coherent predictions, it was concluded that the 1% change in the loan volume of deposit banks would lead to a 1.09% increase in the GDP selected as an indicator of economic growth, which was statistically significant.

Ratio of total trade and fixed capital investments added to the model as a control variable to GDP

the effect of its variables on GDP was statistically significant and it was concluded that 1% changes in the said variables would cause 1.62% and 4.75% changes in the opposite direction, respectively.

- Graph 4.2. CUSUM ve CUSUMSQ for the number 1 ARDL



- In the long-term ARDL model, the coefficients of the variables obtained are within critical limits at the 5% significance level, and their long-term coefficients are stable. In the second stage, estimates of the balance (2), which examines the division of public and private banks and the volume of loans of deposit banks, are included.
- \* Empirical results of Ardl model Short-and long-term analysis
- \* Long-term and short-term models can be established due to the conclusion that there is co-integration between the series belonging to Equation 2. General forecast results determined by the ardl method of the model are seen.

- Tablo 4.9. : for the equation 2 ARDL estimation test results

Variables	Coefficient	Stdev	t-statistics	Probability
lgdp(-1)	-1.387	0.245	-5.651	0.000*
lgdp(-2)	-1.691	0.336	-5.028	0.001*
lgdp(-3)	-1.423	0.256	-5.570	0.000*
lgdp(-4)	-1.308	0.337	-3.888	0.003*
lgdp(-5)	-0.701	0.234	-2.993	0.014**
lgdp(-6)	-1.185	0.299	-3.964	0.003*
lgdp(-7)	-1.031	0.295	-3.490	0.006*
lgdp(-8)	-0.611	0.255	-2.394	0.038**
lpublic	0.249	0.170	1.462	0.174
lpublic(-1)	-0.351	0.199	-1.764	0.108
lpublic(-2)	-0.415	0.147	-2.818	0.018**
lpublic(-3)	-0.114	0.149	-0.769	0.460
Variables	Coefficient	Stdev	t-statistics	Probability

lpublic(-4)	0.223	0.232	0.962	0.359
lpublic(-5)	-0.492	0.192	-2.559	0.028**
lprivate	-0.192	0.176	-1.086	0.303
lprivate(-1)	0.432	0.282	1.535	0.156
lprivate(-2)	-0.219	0.211	-1.040	0.323
lprivate(-3)	0.546	0.245	2.230	0.050**
lprivate(-4)	-0.297	0.298	-0.996	0.343
lprivate(-5)	0.711	0.281	2.526	0.030**
lprivate(-6)	-0.424	0.133	-3.180	0.010*
lprivate(-7)	0.333	0.152	2.194	0.053***
lprivate(-8)	-0.306	0.127	-2.421	0.036**
linvestment	0.139	0.133	1.038	0.324
linvestment(-1)	0.919	0.225	4.084	0.002*
linvestment(-2)	0.796	0.191	4.172	0.002*
linvestment(-3)	0.748	0.145	5.143	0.000*
linvestment(-4)	0.676	0.165	4.090	0.002*
linvestment(-5)	0.296	0.147	2.009	0.072***
linvestment(-6)	0.500	0.129	3.868	0.003*
linvestment(-7)	0.496	0.156	3.180	0.010*
linvestment(-8)	0.452	0.149	3.034	0.013**
ltrade	0.001	0.061	0.013	0.990
ltrade(-1)	0.214	0.106	2.023	0.071***
ltrade(-2)	0.056	0.085	0.655	0.527
ltrade(-3)	-0.215	0.102	-2.102	0.062***
ltrade(-4)	-0.180	0.103	-1.749	0.111
ltrade(-5)	-0.066	0.098	-0.676	0.515
ltrade(-6)	0.390	0.081	4.803	0.001*
C	177.453	32.385	5.480	0.000*
@TREND	0.127	0.024	5.332	0.000*
<b>Diagnostic Tests</b>				
R-squared	0.999705	X2BGAB(1)	1.970521 (0.1939)	
Adjusted R-squared	0.998527	X2BGAB(2)	2.488190 (0.1445)	
F-Statistics	848.3102	X <sup>2</sup> WDV	0.744858 (0.7579)	
Durbin-Watson	2.552076	X <sup>2</sup> JBN	0.870994 (0.6469)	

- Note: the optimal delay lengths for the ardl boundary test approach are determined by the Akaike information criterion (AIC). \*, \*\*, \*\*\* are statistically significant at the importance level of 1%, 5% and 10%, respectively. X2BGAB(1), X2BGAB (2), X2WDV, X2JBN are the statistics of the Breusch – Godfrey first and second degree sequential dependency, White variables and Jarque – Berra normality test, respectively.
- \* The values in parentheses show P probability values, and these statistics are acceptable in the model.
- \* Depending on the calculated model, long-term Coefficients, sign and significance of variables can be achieved. Estimating the level of the model will yield long-term correlations.
- \* Equation 5: long-term model for public and private bank loans
- •  $l_{gdp} = \epsilon_0 + \epsilon_2 l_{gdp,t} + \epsilon_1 l_{public,t} + \epsilon_3 l_{private,t} + \epsilon_4 l_{investment,t} + \epsilon_5 l_{trade,t} + \epsilon_t(5)$
- Table 4.10.

<b>Variables</b>	<b>Coefficient</b>	<b>Stdev</b>	<b>t-statistics</b>	<b>Probability</b>
lpublic	-0.087	0.015	-5.963	0.000*
lprivate	0.057	0.020	2.873	0.017**
linvestment	0.486	0.013	38.672	0.000*
ltrade	0.019	0.015	1.279	0.230

Note:\*, \*\* are statistically significant at the importance level of 1% and 5%, respectively.

- Long-term ARDL in Table 4.10. (8, 5, 8, 8, 6) long-term coefficients calculated based on the forecast results of the model are included. (Johnston and Dinardo, 1997: 245) long-term coefficient coefficient the sum of the sum of independent variables of dependent variable coefficient period 1 was calculated by dividing the difference coefficient from the estimates shown in Table 29 which is an indicator of trade openness on the findings of variablesdis the values of the variables were found to be statistically significant. Considering these coefficients, it is seen that the economic growth of the loan volume of public banks has a negative effect in the long term, and the loan volume of private banks has a positive effect on the ISE. The fact that the coefficients of the variable share of fixed capital investments in GDP have a positive sign can be interpreted as an expected situation, but also as a show that this variable supports a large share of GDP. In addition, commercial openness also has a positive effect on economic size. According to patterns, it was determined that a 1% increase in total loan volume of AIT to public banks will decrease GDP by 0.09%, a 1% increase in total loan volume of private banks will increase ISE GDP by 0.06%, similarly, a 1% increase in fixed capital investments will increase GDP by 0.49%, and a 1% increase in commercial openness rate, which is not statistically significant, will increase ISE GDP by 0.02%. After overhauling the long-term coefficients of the ARDL model, a short-term estimate can also be made.
- After overhauling the long-term coefficients of the ARDL model, a short-term estimate can also be made. The differences in the delays of independent and independent changes found in Equation 2 ( $\Delta$ ) will show how much Independent change is affected in the short term due to the difference of each delay in independent and independent variables (fancy and Bekmez, 2010). The following error Editing model has been estimated in connection with the straight-up relationship to perform the analysis of the short-term relationship between variables.
- \* Equation 6: short-term model for public and private bank loans
- $\Delta \text{lgdptt} = \alpha_0 + \text{lose} (m_i=1 \alpha_1 \Delta \text{lgdpt-I} + i_{\text{that M=0}} \alpha_2 i \Delta \text{publict-I} + i_{\text{that M=0}} \alpha_3 i \Delta \text{privateti} + \text{this } i_{\text{M=0}} \alpha_4 i \Delta \text{investmentt-I} + i_{\text{that M=0}} \alpha_5 i \Delta \text{tradet-I} + a_6 \text{ECTt-1} + e_t) \quad (6)$

Table 4.11 No 2 Error correction method results

<b>Variables</b>	<b>Coefficient</b>	<b>Standart deviation</b>	<b>t-sttistics</b>	<b>Probability</b>
C	177.453	18.368	9.661	0.000*
@TREND	0.127	0.013	9.646	0.000*
D(lgdp(-1))	7.949	0.934	8.507	0.000*
D(lgdp(-2))	6.259	0.753	8.317	0.000*
D(lgdp(-3))	4.836	0.621	7.790	0.000*
D(lgdp(-4))	3.527	0.485	7.269	0.000*
D(lgdp(-5))	2.827	0.390	7.250	0.000*
D(lgdp(-6))	1.642	0.240	6.835	0.000*
D(lgdp(-7))	0.611	0.152	4.035	0.002*
D(lpublic)	0.249	0.098	2.552	0.029**
D(lpublic(-1))	0.798	0.109	7.321	0.000*
D(lpublic(-2))	0.383	0.079	4.854	0.001*
D(lpublic(-3))	0.269	0.069	3.915	0.003*
D(lpublic(-4))	0.492	0.126	3.914	0.003*
D(lprivate)	-0.192	0.113	-1.698	0.120
D(lprivate(-1))	-0.344	0.088	-3.921	0.003*
D(lprivate(-2))	-0.563	0.111	-5.083	0.001*
D(lprivate(-3))	-0.017	0.092	-0.189	0.854
D(lprivate(-4))	-0.314	0.124	-2.530	0.030**
D(lprivate(-5))	0.397	0.081	4.873	0.001*
D(lprivate(-6))	-0.027	0.051	-0.524	0.612
D(lprivate(-7))	0.306	0.068	4.506	0.001*
D(linvestment)	0.139	0.064	2.157	0.056***
D(linvestment(-1))	-3.964	0.450	-8.810	0.000*
D(linvestment(-2))	-3.168	0.370	-8.571	0.000*
D(linvestment(-3))	-2.420	0.306	-7.908	0.000*
D(linvestment(-4))	-1.744	0.261	-6.668	0.000*
D(linvestment(-5))	-1.448	0.188	-7.702	0.000*
D(linvestment(-6))	-0.948	0.145	-6.540	0.000*
D(linvestment(-7))	-0.452	0.110	-4.106	0.002*
D(ltrade)	0.001	0.044	0.018	0.986
D(ltrade(-1))	0.016	0.042	0.370	0.719
D(ltrade(-2))	0.071	0.042	1.705	0.119
D(ltrade(-3))	-0.144	0.049	-2.909	0.016**
D(ltrade(-4))	-0.323	0.065	-4.954	0.001*
D(ltrade(-5))	-0.390	0.060	-6.445	0.000*
CointEq(-1)*	-10.336	1.070	-9.656	0.000
<b>Diagnostic Tests</b>				
R-squared	0.984566			

Adjusted R-squared	0.944879
F- statistics	224.4755 (0.000000)
Durbin-Watson	2.552076

- \* Note:\*, \*\*, \* \* \* are statistically significant at the importance level of 1%, 5% and 10%, respectively.
- \* Results reflecting short-term relationships are shown in Table 30. The Coefficients of the error correction term is statistically significant and, as expected, negative. Absolute value (-10.34) olarak birden büyüktür. Dolayısıyla model dalgalı olarak uzun dönem denge düzeyine yakınsayacaktır. After all, the model's error correction term works. According to this approach, it can be argued that any shock or unexpected effect that will be encountered in the short term will be corrected by 10.34% each year in the long term and the balance will be reached. The Wald test was applied to the model due to the fact that there were a large number of Coefficientsi in terms of periods of variables and that these Coefficientsi showed different results from each other. Results table 4.12. is also shown.
- Tablo 4.12. Short-term coefficients and Wald test results

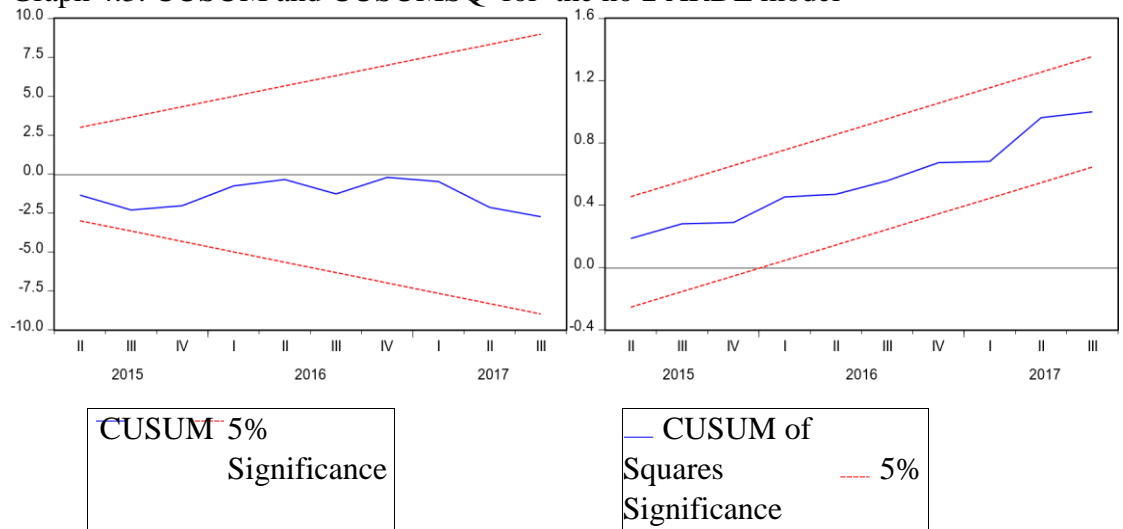
Table 4.12.

Variables	Coefficient	F-Testi	Probability
lpublic	2.190	2.973	0.067***
lprivate	-0.754	4.104	0.020**
linvestment	-14.005	12.282	0.000*
ltrade	-0.769	7.400	0.003*

- \* Note:\*, \*\*, \* \* \* are statistically significant at the importance level of 1%, 5% and 10%, respectively.
- \* The values of all variables shown in Table 31, which contained the findings of short-term coherent estimates, were statistically significant. Given these results, it is seen that the volume of loans belonging to state-owned banks affects economic growth positively in the short term and the volume of loans belonging to private banks negatively. As a control variable, it was found that fixed capital investments and variables found by taking the share of total trade in GDP, which are taken into account in the model, negatively affect economic growth. According to the model, it was concluded that a 1% increase in the loan volume of public banks in the short term will lead to a 2.19% increase in the GDP selected as an indicator of economic growth, and a 1% increase in the loan volume of private banks will lead to a 0.75% decrease in GDP. It was concluded that the 1% change in fixed capital investments and commercial openness variables would lead to changes of 14% and 0.77% in the opposite direction, respectively. In Figure 20, Brown et al. (1975) shows the CUSUM

and CUSUMQ test results proposed by the long-term model for testing the stability of Coeffectives.

- Graph 4.3. CUSUM and CUSUMSQ for the no 2 ARDL model



\* Graph 4.3. in the long-term ARDL model, the coefficients of the variables obtained are within critical limits at the 5% significance level, and their long-term coefficients are stable.

\* When evaluating the results obtained, it is seen that the results achieved in terms of the loan volume of state-owned banks are similar to the results in the first model in which the total loans of deposit banks were examined. Therefore, despite the small number of public banks, it can be concluded that they affect the sector due to their market-making role and the volume of loans they have.

• It can be said that the results of the short and long term results achieved in the study are parallel to the results of Apaydin (2018) that the short-term collaborators of the study on loan types are not compatible with their long-term collaborators. On the other hand, the long-term volume growth of the public banks in credit to exist an inverse relationship between La Porta (2002) and corner and Schnabel (2011) Applied Social and economic policies proposed by public ownership of banks and an adverse effect on economic growth in that period that is compatible with the thesis that may be observed. King and Levine (1993), Ghirmay (2005), McCaig and

\* Credit volume and economics of Stengos (2005) and Begeç (2015)

## CONCLUSION

When banks are considered, it is seen that they keep customer information on the cards during the first years. Transferring the information on these cards to computers stands out as the first step in the utilization of technology. After this, telephone banking services have started through online communication. In time, telephone banking practices have improved, and it became a channel where banking transactions are also offered to clients. In the last stage, it is seen that internet banking has emerged which is a more advanced and effective version of online banking (Önder, 1999: 54).

Turkey is known to have a long-standing banking tradition that is dating back to the 19th century. In recent years, the banking sector played a leading role in the Turkish-finance sector and lead important developments by contributing to structural changes towards the financial liberalization of Turkey's economy (Eğilmez, 2009).

When the development of the Turkish economy in the banking sector is considered, it is seen that the state plays a dominant and leading role in the structuring of the financial system. After the declaration of the Republic, the establishment of a national banking sector, establishment of banks with public capital, and establishment of foreign banks and private banks lead the formation of the Turkish banking sector (Güngör, 2009).

Turkey implemented structural changes in its entire financial system, including the banking sector, during the 1980s. For instance, removing the restrictions on interest rates and exchange rates played an important role in the rapid implementation of these structural changes. These structural changes, that can be evaluated as reform, has led to the development and growth of the banking sector and the financial system (Akyüz, 2007).

Developments in the 1990s in Turkey caused a significant deterioration in the financial structure of the banking sector. Banks have operated in a very high-risk environment for a long time. The need for public sector borrowing and financing of the budget, which

increased rapidly in this period accelerated the process of using resources through public banks (Çakar, 2000).

The banking sector has been exposed to a very serious risk in the 2000s and restructuring of the banking sector has made resolving the financial structure problems of banks inevitable. For this purpose, radical changes were made in the Banking Law and a new approach has been introduced to the regulation and supervision of banks' activities (Özince, 2007). In parallel with restructuring and efforts to integrate with international markets, Turkish banks made important changes both in their corporate structures and in the quality of service and product they offer. Thus the banking sector is one of the sectors prepared for compliance with the EU with regulations carried out in Turkey's economy (Kaya, 2002).

Turkish Banking Sector has been a sector where the strong banks will remain in the market and banks with weak financial structures are withdrawn from the market and mergers, acquisitions, privatizations, and acquisitions will be intense in the future (Akgüç, 1989).

In this study, the effect of the credit volume of deposit banks on economic growth was investigated by using the data of the Turkish economy for the period 2003:1-2017

This relationship has also been studied by separating public and private banks. In the study, natural logarithms ( $\ln$ sector,  $\ln$ public,  $\ln$ private), natural logarithms ( $\ln$ gdp) of GDP as an indicator of economic growth, the share of fixed capital investments in GDP ( $\ln$ investment) taken as a control variable, and the share of total trade in GDP ( $\ln$ trade) variables were used. After the first difference of the  $\ln$ gdp variable was obtained according to the unit root results of the ADF and PP test, it was concluded that the  $\ln$ sector,  $\ln$ public,  $\ln$ private,  $\ln$ investment variables were stationary at the level value.

Pesaran (2001) is used to investigate the co-integration relationship between series with the boundary test approach developed by and which does not require series to be stationary at the same level.

The relationship between the variables was examined by establishing two models in which the total loan volume of deposit banks and the loan volume of public and private banks were evaluated.

According to the results of the boundary test for both models, long-and short-term models were estimated by the ARDL method as a result of the existence of a co-integration relationship between the series.

Accordingly, a 1% increase in the total loan volume of deposit banks for the long term reduces economic growth by 0.06%. It was found that a 1% increase in fixed capital investments added to the model as a control variable and other variables in the commercial openness ratio will increase GDP by 0.56% and 0.09%, respectively.

It was determined that a 1% change in the loan volume of deposit banks in the short term would lead to a 1.09% increase in the GYSH selected as an indicator of economic growth, and this was statistically significant.

As an estimate, evaluating the separation of public and private banks, it was determined that a 1% increase in the total loan volume of public banks will reduce economic growth by 0.09%, a 1% increase in the total loan volume of private banks will increase GDP by 0.06%, while a 1% increase in fixed capital investments added to the model as a control variable and other variables in the commercial openness ratio will increase GDP by 0.06% and 0.49%, respectively. Of these variables, only the variable related to commercial openness was not statistically significant.

It was concluded that a 1% change in the volume of loans belonging to public banks would lead to a 2.19% increase in GDP chosen as an indicator of economic growth, and a 1% increase in the volume of loans belonging to private banks would lead to a 0.75% decrease in GDP, which was statistically significant.

It can be explained by the fact that loans issued by private banks negatively affect growth in the short term, but positively affect growth in the long term, increased imports for investment have a narrowing effect on GDP in the short term, and an increase in production when investments occur in the long term has a positive effect on growth. As can be seen from many studies, the impact of credit volume on economic growth increases through the transfer of credit to investments that will trigger growth the most. Therefore, increasing loan volume does not guarantee that these loans are used in efficient ways.

Also in this study the relationship between credit volumes and growth was examined by evaluating the capital structures of banks in Turkey. The results show that public banks in Turkey have a strong impact on the economy by acting in a leading way and market-maker role to the sector, and that loans given by public and private banks have different effects on growth.

In subsequent studies should examine that the loans given by public and private banks can be divided according to the types of loans and studied to determine the types of loans that will give positive results in terms of economic growth.

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