

The Effect of Commercial Bank Lending on the Economic Development of Turkey

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ABSTRACT

This thesis aims at highlighting the considerable contribution financial development has in terms of economic growth in Turkey from the year 1960 to 2016 with the use of annual time series data extracted from the World Bank Development Indicators (2018) and the Banks Association of Turkey (2018).

The results of the co-integration tests indicate that there is a long-run equilibrium relationship between domestic credit, total loans, liquid assets, average profitability and economic growth in Turkey. Furthermore, VECM portrays that there is a positive long-run relationship exists between domestic credit, average profitability, and GDP. Also a negative long-run relationship between total loans and GDP. On the other hand, the results of Granger causality show a causal relationship running from domestic credit to economic growth in Turkey but there is no indication of a causal trend of economic growth to credit. A bi-directional relationship is also captured between total loans and average profitability of the Turkish banks $LNTL \leftrightarrow LNPROFT$.

Keywords: Economic development; bank credit; Turkey.

ÖZ

Bu tez, Dünya Bankası Kalkınma Göstergelerinden (2018) ve Türkiye Bankalar Birliđinin (2018) alınan yıllık zaman serisi verilerinin kullanılmasıyla, finansal gelişimin Türkiye'de 1960- 2016 yılları arasında ekonomik büyümeye olan katkısını vurgulamayı amaçlamaktadır.

Eşbütünleşme testlerinin sonuçlarına göre, yurtiçi krediler, toplam krediler, likit varlıklar, ortalama kar ve Türkiye'deki ekonomik büyüme arasında uzun vadeli bir denge ilişkisinin olduğunu göstermektedir. Ayrıca, VECM (vektör hata düzeltme modeli) iç krediler, ortalama kâr ve GSYİH (gayri safi yurtiçi hasıla) arasında uzun vadeli pozitif bir ilişki olduğunu göstermektedir. Ayrıca toplam krediler ve GSYİH arasında uzun vadeli olumsuz bir ilişkide vardır. Öte yandan, Granger nedenselliğinin sonuçları ise, Türkiye'de iç krediden ekonomik büyümeye doğru nedensel bir ilişki olduğunu göstermektedir, ancak ekonomik büyümenin krediye nedensel bir eğilimde olduğuna dair bir gösterge bulunmamaktadır. Toplam krediler ile Türk bankalarının ortalama karlılığı (LN TL ↔ LNPROFT) arasında iki yönlü nedensellik ilişkisi bulunmaktadır.

Anahtar Kelimeler: Ekonomik kalkınma; banka kredisi; Türkiye.

DEDICATION

This thesis is dedicated to my parents Mr. Zuhair and Mrs. Halah for their endless support and encouragement through all walks of life

Thank you for your unconditional love

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller Test
AKP	Justice and Development Party
AIC	Akaike Information Criteria
ARDL	Autoregressive Distributed Lag
CLRM	Classical Linear Regression Model
DCPSB	Domestic Credit to Private Sector by Banks
ECM	Error Correction Mechanism
ECT	Error Correction Term
FPE	Final Prediction Error
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
HQ	Hannan - Quinn Information Criteria
IMF	International Monetary Fund
KPSS	Kwiatkowski – Phillips – Schmidt – Shin
LA	Liquid Assets
PP	Phillips – Perron Test
PROFT	Average Profitability
SC	Schwarz Information Criterion
TBB	The Banks Association of Turkey
TL	Total Loans and Receivables
VAR	Vector Autoregressive Model
VECM	Vector Error Correction Model
WDI	World Bank Indicator

Chapter 1

INTRODUCTION

A number of scholars have built different theories on the basis of economic development. The emergence of economic development as a concept was at the end of 1949 during the period of reform and reconstruction in the United States after World War II, and this subject is still of great importance in economic, political and social studies.

Banks play an important role in ensuring the prosperity of an economy through various ways such as stimulating investment projects, which in turn contributes to the achievement of economic development goals, financial balance, and revival of general economic activity. It is of great importance to note that when dealing with an economic development situation, factors such as financing issues arise the methods and tools used, in particular through the role that can be played by the sound management of banks, and the ability to change the circumstances and policies so that the necessary conditions can be adapted.

The Turkish government initiated a major reform in terms of its expenditure and it balanced its banking system transactions to achieve a stable economic development during the post-crisis period. Later on, global growth rates have gradually increased and the interest rate has dropped drastically, therefore these factors attracted local and foreign investors to request funding of project from Turkish local banks. (Çatik and

Karaçuka, 2012). Emphasis and importance should be given to financing in the banking sector because of its outstanding results on the economic growth of Turkey. Its consequences have therefore been reflected in many factors, such as increased employment and poverty reduction, where this relationship is of critical analytical importance and relatively large political issues. Bank credit and economic development have a causative relationship between them and vary in directions depending on the economic perspectives of the macroeconomic system (Demirguc-Kunt, and Levine, 2008).

Commercial banks can gain a worthwhile job in economic progress, as the demand for banking services is derived from the need for economic development which in turn will revive financial development (Robinson, 1952). Therefore, it can be argued that with the expansion of development limits, the need for a more sophisticated banking system and services is increasing, and this increases the volume of production and lead to economic development. However, considering the fact that high importance is given to the banking sector, also the fact that the main reliability of its role in financing the strategies that lead to the Turkish economic growth, it is necessary to identify the primary contribution of banks providing loans to various entities to offer assistance in economic growth. The banking sector in the world plays a unique role in terms of its ability to liaise between deficit units and abundance units. The sector is also the financial intermediary between individuals, institutional depositors, and the productive sectors "borrowers". Banks attract savings (deposits) and employ them in various economic sectors in the form of loans and investments in order to gain profit and increase the wealth of bank shareholders. The process of savings (deposits) in the form of loans or money creation (credit) is a standout amongst the most critical elements of commercial banks. The stability of banks depends on their ability to grant loans to

different investments as banks that do not grant loans lack stability and they do not possess a definite source for generating profit (Alkhazaleh, 2017).

Domestic credit to private sector by banks (DCPSB) is defined as the volume of loans and deposits that financial institutions and the private sector deal with as a percentage of GDP (Levine & Zervos, 1998). Credit can be characterized as the receipt of goods and services granted by banks in exchange for an assurance to pay the value of the amount received when the demand arises at a specific time in the future. Credit is based on the trust and honesty between the parties involved, and it requires a period of time between delivery time or lending and payment. Moreover, there is a process that ensures recovery to the bank in cases where a customer defaults in payment. In a more modern concept, credit is related to dealing with risk rather than avoiding it. This means that credit management should assess, identify and analyze risks associated with credit factors in order to minimize their risk, which will effectively guarantee sustainability and reduce credit default. Yurdakul (2004) examines the ability of manufacturers to pay their obligations to banks on the basis of their ability to increase their revenues and reduce their debts. The importance of credit lies in its fundamental role in economic activity. This is due to the fact that credit in general understanding is linked as a form of investment banking to the most important assets of the commercial bank which is the activity that guarantees most of the bank's income. Through this activity, banks can play role in a country's economy and lead to an increase in GDP. Several studies support the relationship between bank credit and economic growth. The importance of credit lies in its positive relationship with economic growth, thereby making it a source of growth for the country (Mamman & Hashim, 2014). Patrick (1966) points to a causal relationship that argues financial development and economic growth are causing each other. Also, Demetriades and Hussein (1996) support Patrick

(1966) and find out that there is a causal trend between financial development and economic growth. In contrast with the above the latter, Thierry, Jun, Eric, Yannick and Landry (2016) said a unidirectional relationship exists from domestic credit to private sector and using bank deposit as a proxy of bank credit to gross domestic product. Goldsmith (1969) focuses on the optimal allocation of funds as it invests in more efficient projects and it is furthermore associated with accelerated economic development. Zortuk and Çelik (2014) state that a long run relationship exists between the total credit and economic growth in Turkey from 1995-2010. On the other hand, there have been conflicting studies which state that a negative relationship between financial development and economic growth, such as the study of Nyasha and Odhiambo, (2017), Chang, (2002), and Ndlovu, (2013).

Bank credit has a very important role in the national economy. In Turkey, there has been a surplus of debt compared to limited deposits for a long period of time, and this lead to in imbalances and lack of good economic growth, as well as the heavy impact of the crises in 2001, as it increased the level of debt (Başçı, 2006).

The aim of this thesis is to investigate the relationship between economic growth and bank credit in Turkey after successive crises weakened the Turkish economy. Because of the limited number of studies associated with this field in Turkey, this research is of great importance as it assesses the role of credit and lending in the development of Turkey between 1960 and 2016 using data derived from the World Bank Development Indicators (WDI, 2018) and the Banks Association of Turkey (2018).

This thesis mentions the effect of some important variables such as total loans ratio. This reveals the total amount of outstanding loans and liquid assets ratio measured to

an extent to which an entity is able to meet its short-term obligations without any losses and average profitability ratio. There is also a reflection of the overall performance of a company and its ability to generate profit. However, the relationship between these variables has not been thoroughly investigated because previous studies focused solely on studying the relationship between two variables, and variables are financial development and economic growth.

Time series methodology is adapted to conduct this thesis. Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) and the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) unit root tests will be used to examine the variable stationarity of time series data. Consequently, the Vector Autoregressive (VAR) procedure is implemented to verify the dynamic multivariate time series, and to select the optimal lag length. The diagnostic tests are run in order to check for stability, heteroscedasticity, and autocorrelation. Furthermore, the Johansen co-integration test is used to verify the long run equilibrium relationship between bank credit and economic growth, also it serves the purpose of investigating both long-run and short-run connection. Vector error correction model (VECM) is employed to determine the speed of adjustment. Finally, the Granger causality test was carried out mentioned in order to check the causal relationship between domestic credit, total loans, liquid assets, average profitability, and economic growth.

This thesis constitutes 6 Chapters. In Chapter 1 a brief introduction is presented and then Chapter 2 is the literature review, which gives an overview of the previous studies. Chapter 3 discusses the historical background of the Turkish economy and its evolution over the years. In addition to the historical background, other factors identified in the thesis include credit, total loans, liquid assets, and average profitability

in the Turkish banking system. Chapter 4 covers the methodology and data definition, while Chapter 5 includes the part of the analysis and empirical results. Finally, Chapter 6 provides a clear conclusion and recommendation for competent authorities about the findings of the thesis.

Chapter 2

LITERATURE REVIEW

This part of the study highlights the empirical findings from previous studies and reviews existing literature where the importance of the role of bank credit activities and its direct relationship with economic growth is discussed. In the context of development, scholars focused on dealing with topics related to financing investments. The economies of countries in general, including developing countries in particular, have a problem with regards to funding. These countries seek to rebuild their national economic structures, as well as develop an appropriate strategy, which is the cornerstone of economic growth.

Investment projects are known to be the most tasking activities because they solely depend on the effectiveness of development strategies. These strategies are in accordance with large returns and low costs, as well as the study and analysis of the risks that may be seen as a hindrance, thus, financing is done in many ways. The ways financing is done include borrowing from various financial bodies such as commercial banks. For this reason, the focus of previous studies has been on the nature of the relationship between financial development and its impact on economic growth.

In the literature, there were many contradictions about the nature of the link between financial development and economic growth. Some academicians are interested in studying this causal relationship for several different countries using both time series

and panel data. On another hand, some take a different approach as their area of interest is centered around one country using time series methods (Kar and Pentecost, 2000). Hence, the first study about this relationship took place a century ago by Schumpeter (1911), where he stated that financial institutions are able to promote economic growth through financing different investment strategies as a result of the study in 80 countries between 1960 and 1989. Schumpeter (1911) also believes that the services of financial intermediaries between savings collection, project evaluation, risk management and facilitation of transactions are necessary in encouraging economic development. Therefore, Schumpeter (1911) agrees with Keynes in this aspect where the latter stressed that the absence of the role of financial intermediation will reduce the transfer of funds to investments, consequently, the rate of economic growth is negatively affected.

Furthermore, some studies revealed that financial development and economic growth have a bidirectional relationship as portrayed by Patrick (1966). One of Patrick's (1966) findings suggests that the link between financial development and economic growth is dynamic to an extent. Once the economy reaches the growth target, the strength of this correlation will gradually decline through time, and then the government needs more financial supplies. In addition, developing countries lack of demand for financial services and economic growth is closely related to demand for such services.

Goldsmith (1969) concluded that a positive relationship between financial development and economic growth was found in his study of 35 different countries between 1860 and 1963. McKinnon (1993), Shaw (1973), and Hermes and Nhung (2010) strongly advocate the liberalization of the financial system because of its crucial

importance in stimulating positive economic growth. These researches discovered a positive relationship between financial development despite the distribution of savings as it is useful in the utilization and allocation of available resources. Interest rates indirectly lead to economic growth considering the fact that productive assets as well as the demand to abrogate interest rate ceilings. Also, capital cannot be created if the role of saving is negative if we consider the aspect on which wealth can be invested.

Blinder and Stiglitz (1983) studied the impact of bank credit (represented by the reserves of commercial banks) on economic activity (measured by gross domestic product) from 1952-1981 with the use of multiple regressions. The study concluded that reserves have a positive effect on economic activity. Also, the study by Afonso and Aubyn (1999), aimed at demonstrating the effect of bank credit on economic activity in Portugal from 1997-1990. The research carried out using the self-regression model. The study discovered that bank credit has a positive effect on economic activity.

Many academicians considered the influence of proxy's type used in studies. Luintel and Khan (1999) support Patrick (1966) in their research which embodied 10 countries as samples. A bidirectional causality between financial development and economic growth was found using a vector autoregressive (VAR) model for data analysis in addition to co-integration testing. However, a new result of long-run economic relations as well as ways of testing new causation was discovered.

Kar and Pentecost (2000) examined the long-term integration between financial development and economic growth in Turkey with the use of 5 different measures. All the results lead to the fact that there is a mutual causal relationship between financial

development and economic growth, but the strength of causality direction varies depending on the proxy that applies.

Hofmann (2001) discussed the relationship between private banking credit and gross domestic products (GDP). The factors affecting credit and its impact on industrialized countries were examined with the use of panel data analysis on data from 16 industrialized countries from the year 1980 and 1995. Using the co-integrating VAR model, it was discovered that bank credit and economic growth have an effect on each other. The study of Levine, Loayza, and Beck (2002) aimed at discussing the impact of financial depth measured in terms of local bank credit and liquid assets on economic growth rate with the use of the dynamic model (GMM). The study concluded that there is a positive financial depth impact on the rate of economic growth.

Al-Yousef (2002) also conducted a study on 30 developing countries for both time series and panel data methods from 1970 to 1999. The study notes a two-way causal relationship for financial development and economic growth. Moreover, it is argued that depending on the type of proxies applied to financial expansion as well as applicable policies, different countries vary from the degree of financial development.

Furthermore, we have an aspect of literature that has shown a weak link between financial development and economic growth. In the study of Atindéhou, Gueyie, and Amenounve (2005) which dealt with West African countries, the empirical results indicate a unidirectional trend linking economic growth and financial development, thus the policies governing the country specified the relationship direction as well as the quality of the variable used. On the other hand, this relationship is not fully present in three of the West African countries.

Eita and Jordaan (2010) in their framework also developed a theoretical relationship as well by taking advantage of three different proxies. They suggest broad money to GDP as a first proxy, deposit liabilities to GDP as a second proxy and domestic credit to the private sector for bank credit to total GDP as the third proxy. It indicates that all measures of financial development have a positive effect on the economic growth in Botswana, in addition to the supply-leading growth hypothesis which supports that financial development induces growth.

There is also some support for the other views such as the study of Ndlovu (2013), which investigated the impact of the long-run relationship between economic growth and the development of Zimbabwe's financial system using Dickey-Fuller (ADF), Philips Perron (PP) stationarity tests and Granger causality test between 1980 and 2006 by applying three different financial measures. The results showed that Zimbabwe's financial development has a negative correlation with growth. It is further stated that each country has different specifications in terms of institutional policies and resource allocation. For instance, policies that govern developing countries are completely different from policies which govern developed countries. Subsequently, it is normal to discover that the relationship between funding and growth suggests different outcomes. Emerging financial markets are a mirror of a country's economic situation, subsequently, its ability to improve overall economic development leads to the fact that countries with a well-developed financial system grow at a higher pace (Hicks, 1969). Ndlovu (2013) points out that the negative factors that hinder the development of economic growth must be demonstrated and addressed through the evaluation and examination of the financial and investment system. Zimbabwe's financial market deals with traditional instruments that consequently will hinder economic growth and the effective role of modern tools in the development of the economy as explained

earlier. Chang's (2002) framework is also based on the same issue. The Granger causality test employs in the case of Mainland China, in addition to demand-following and supply-lending phenomenon using the VAR model between 1987 and 1999. It generally found out that financial development has not led to economic growth and vice versa (Chang, 2002).

There is a general consensus that credit activities contribute to economic development. In their study, Hasanov and Huseynov (2013) examine the empirical relationship between bank credit (bank credit peroxided by bank credits to non-oil tradable sector divided by producer price index) and economic growth in the case of the non-oil tradable sector. The study uses quarterly data ranging from 2000 to 2009. There is a strong support from time series analysis in the context of Azerbaijan to the existence of a positive long-run and short-run outcomes between bank credit and economic growth and it is conducted by Autoregressive distributed lag bounds test (ARDL), Granger causality and co-integration methods.

In the case of small economies, Fethi, Katircioğlu, and Caglar (2013) conducted empirical research on the role of the financial sector in North Cyprus which is a small island with a small economy in the period between 1977 and 2010. The empirical results indicate that investments in the financial and banking sectors are important drivers for real income growth in both short-run and long-run of the North Cyprus economy. The findings also reveal that the impact of human capital is stronger than the impact of physical capital for real income in the case of North Cyprus.

There are studies that contradict the fact that the increase in bank credit is directly proportional to economic growth. The experimental results of Cournède and Denk

(2015) show that higher levels of household and business credit slow down expansion rather than boost growth in the OECD and G20 countries. The unprecedented empirical methodology supports causation which exploits changes in financial regulation across countries and time as a source of exogenous variation in financial size. In the same way, a different effect may have certain underlying causes, for instance, in the research of Ductor and Grechyna (2015) covering 101 developed and developing countries between 1970 and 2010 with the use of panel data. The results concluded that the effect of financial development on growth becomes negative, if there is a rapid growth in private credit not accompanied by growth in real output. Where credit growth is related to the growth of real output in determining the relationship between financial development and economic growth.

Nyasha and Odhiambo (2017) investigated the relationship between economic growth and stock market where a negative relationship was discovered. It is argued generalizations with regards to the progress of financial development occurs after the growth of the economy because this relationship depends on the proxies used in the test as well as the analysis process. It also it also takes into account the nature of a country's economy as well as the factors used in the test.

There is clearly no consensus on the real direction of the relationship between financial growth and economic growth. Opinions vary in terms of causal relationships, for example, a unidirectional relationship as seen in the research of (Atindéhou, Gueyie, and Amenounve, 2005) and (Al-Awad and Harb, 2005). On the other hand, other works of literature supported a bidirectional relationship in their study, like (Al-Yousef, 2002) and (Patrick, 1966). Moreover, another slice of the literature argues that

there is no relationship between financial growth and economic growth, such as the study of (Chang, 2002) and (Ndlovu, 2013).

Chapter 3

A BRIEF OVERVIEW ON THE TURKISH ECONOMY

3.1 The Republic of Turkey

The Turkish Republic was established on October 29, 1923, by Mustafa Kemal Atatürk, where it remained under his rule until 1938. During his reign, he made a number of changes that contributed to the development of modern Turkey. He initiated the secular system, followed the Western customs as an imitation of Europe, and also changed Turkish writing from Arabic to Latin. Turkey has a strategic location in the region because it is located on two continents. The largest part is located on the Asian continent, while the smallest part is located on the European continent. Turkey is bordered by Syria, Iraq, the Mediterranean Sea to the south, Georgia, the Black Sea to the north, Iran, Armenia from the east and Bulgaria, Aegean Sea, and Greece in the West. The capital of Turkey is Ankara and it is the second largest city after Istanbul (Encyclopaedia Britannica, 2019).

Turkey's population rose to more than 80,810,525 million in 2017, according to the Turkish Statistical Institute (TURKSTAT, 2018), and it has a land area of 783.562 km². A large percentage of the population is Muslim, and the official language of the country is Turkish. Turkey is famous for textiles, cars, electrical appliances, foodstuffs, chemicals, and leather. The country's mineral wealth is lead, coal, iron, copper, and vineyards. Turkey is also internationally renowned for the cultivation of tea, olives, tobacco, citrus, barley, and hazelnuts.

The Turkish Lira is the official currency of Turkey and is symbolized by (TRY). Between 2002 and 2012, the country has had a strong performance in terms of economic growth. GDP witnessed remarkable growth and was \$ 1.57 trillion in 2012 and GDP growth was 11.11% as it consequently continued to increase to \$ 2.61 trillion in 2016 and the growth rate was 3.18% (TURKSTAT, 2018).

3.2 Turkish Economy

Nowadays, the International Monetary Fund defines the Turkish economy as an emerging market economy and it is the 16th largest country around the world in terms of gross domestic product and it ranks sixth in the European economy (IMF, 2018). From the year 1950 to 1980, the Turkish economy depended on imports, subsequently, in 1980 and thereafter, the policy changed from replacing imports to export growth thus opening up free trade in goods, services and transactions in financial markets (Yucel, 2009). In addition, during that time a major change occurred in the Turkish economy, and this meant Turkey belonged to one of the economies that underwent many structural reform programs under the terms and conditions of the World Bank, where the devaluation of the Turkish lira and strict control of the supply of cash and credit took place. There have been tremendous reforms initiated to adjust the tax system and promote foreign investment.

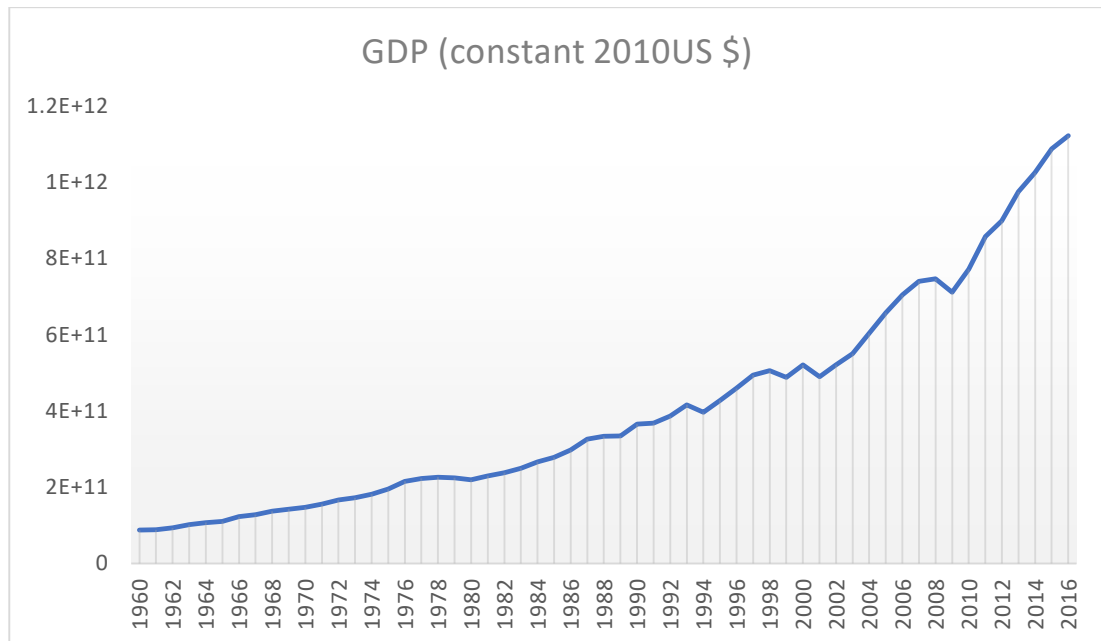


Figure 3.1: Gross Domestic Product (constant 2010) (1960-2016)
Source: World Bank (2018)

As seen in Figure 3.1, the sharp fluctuation of Turkey's GDP from year to year is an indication of economic instability, wherein 1979 and 1980 it fell by 1.5% and 1.3%, respectively. Between 1981 and 1985 the economy recovered strongly and real GDP grew 3% per year. Despite economic problems and crises, at the beginning of 1999 Turkey began a series of economic reforms with support from the International Monetary Fund (IMF). These reforms continued until 2000, with a rise in GDP by 6.5% which ended in a deep crisis in 2001 (Atici and Gursay, 2011). GDP fell by 9.5% in 2001, and this led to higher unemployment rates and lower national income as well. The devaluation of the local currency was more than 40 % against the dollar, inflation has increased significantly, as well as interest rate. The economic collapse of 2001 was proof of Turkey's political and economic problems for years as a result of its full dependence on foreign investment and this collapse highlighted Turkey's recent unstable political situation.

Turkey experienced an economic downturn between 1992 and 2002. As a result, external debt increased significantly, per capita income fell, the phenomenon of unequal distribution of wealth remained widespread, immense public distrust in the 2001 economic reform program, and continued high-interest rates hampered any serious economic reform (Mustafalhabab, 2017).

At the end of 2002, successive economic reforms and programs initiated by the IMF began. In addition after the Justice and Development Party (AKP) came to power, where Mr. Erdoğan has attracted more foreign investors to Turkey, and by the reduction of interest rates, it opens the way for investment projects, therefore, encourage investors to borrow without fear. Also, many governmental policies have been removed and an external reserve has been provided. Consequently, the rate of growth increases by 6.2%. The active manufacturing federations led to an increase in the volume of industrial exports after Turkey has long lived in the export of agricultural raw materials. After these successive reforms, growth rates began to increase, growing by 9% in 2004 and 7.4% in 2005, reaching 12.7% in 2008. In general, the most important aim of restructuring the economic system is to achieve economic diversification in various forms. Turkey has lived its best economic growth since 1950 between 2002 and 2007 with a growth rate of 7% (TURKSTAT, 2018).

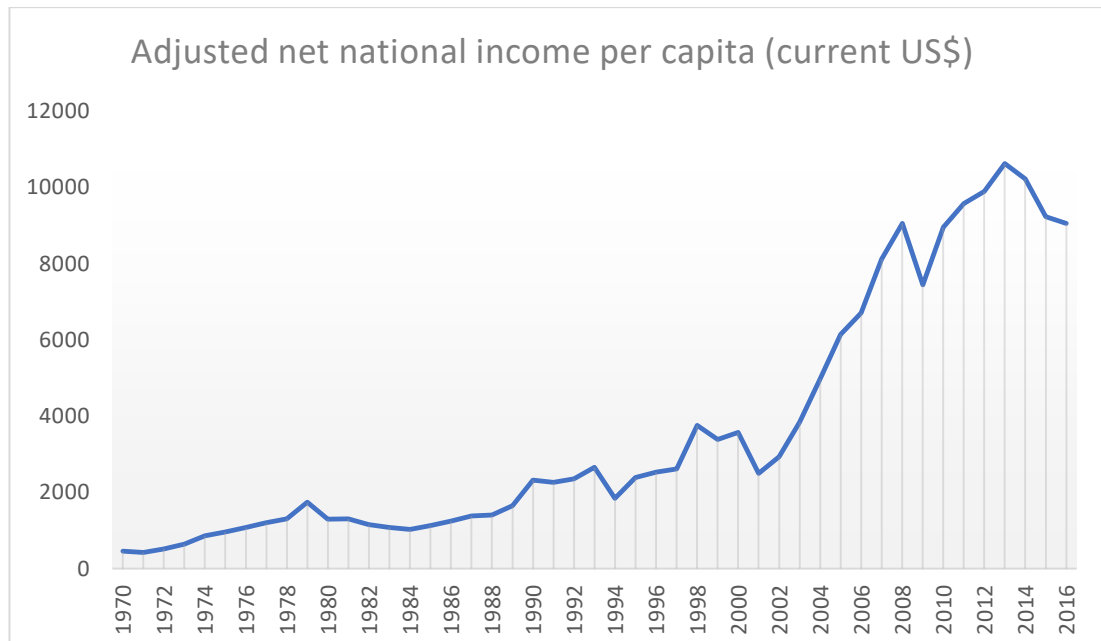


Figure 3.2: Adjusted net national income per capita (current US\$) (1970-2016)
Source: World Bank (2018)

The per capita income in 2011 was about \$10,000, up from \$ 3,000 in 2002. The AKP was aiming to reach \$ 12,859 in 2015 to become one of the countries with the highest per capita income (Figure 3.3).

3.3 Financial Crises of 2008 and the Turkish Economy

Although the banking sector was affected by local financial crises in 1994, 1999, and 2001, the Turkish government took structural steps and legal procedures to reform the financial and banking system. These steps lead to Turkey's economic recovery in the last decade after the 2001 crisis. This is reflected in the various economic indicators of falling inflation and unemployment and increase economic growth rates, which is clear in Table 3.1.

In 2008, the global economic crisis did not significantly impact the Turkish economy compared with the strong impact of previous crises. Nevertheless, the crisis has revealed the fragility of the Turkish system based on the basis of liberal capitalism,

which was characterized by a liquidity crisis that led to the collapse and bankruptcy of many banks. The situation ended with the fall in stock prices and the decline of stock indices and the collapse of many of them. The GDP performance has been considerably affected, where the growth rate was only 0.8% after reaching 6% in previous years. Subsequently, the Turkish economy was able to eliminate the 2008 financial crises negative effects shortly after 2009, where the GDP reaches 8.5% in 2010 (World Bank, 2018).

Table 3.1: Some Economic Indicators

Years	GDP growth (annual %)	Unemploye nt (%)	Inflation (annual %)	Interest rate (%)
1993	7.7	9.0	66.1	64.6
1994	-4.7	8.6	106.3	87.8
1995	7.9	7.6	88.1	76.0
1996	7.4	6.6	80.3	80.8
1997	7.6	6.8	85.7	79.5
1998	2.3	6.9	84.6	80.1
1999	-3.4	7.7	64.9	78.4
2000	6.6	6.5	54.9	47.2
2001	-6.0	8.4	54.4	74.7
2002	6.4	10.4	45.0	50.5
2003	5.6	10.5	25.3	37.7
2004	9.6	10.8	10.6	24.3
2005	9.0	10.6	10.1	20.4
2006	7.1	8.7	9.6	21.6
2007	5.0	8.9	8.8	22.6
2008	0.8	9.7	10.4	22.9
2009	-4.7	12.6	6.3	17.6
2010	8.5	10.7	8.6	15.3
2011	11.1	8.8	6.5	14.2

3.4 Inflation in Turkey

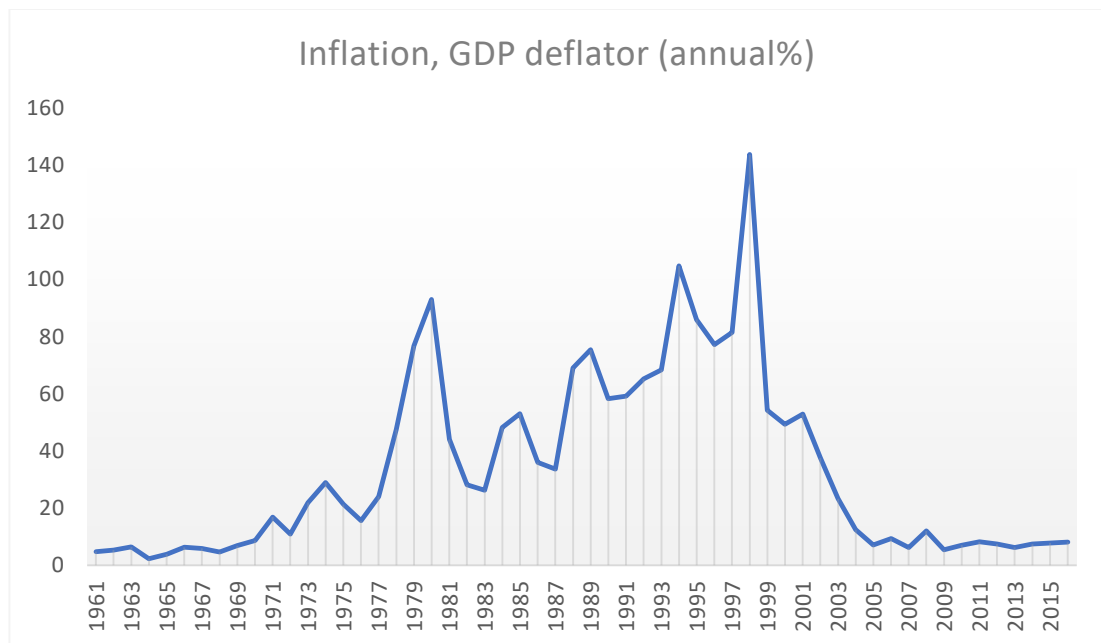


Figure 3.3: Inflation, GDP deflator (annual %) (1961-2015)
Source: World Bank (2018)

Among the fiscal policies developed during the period of economic reform was the reduction of inflation rates. The government managed to achieve an inflation rate of 2.4% between 2007 and 2014, while it was about 29.7% in 2002. This achievement was as a result of several measures, including lifting zeros from the Turkish lira. However, in 2008 the global financial crisis hindered the continued growth of GDP; therefore, this led to higher inflation level where it achieved 10.44% but declined again in 2009 and 2010 until it reached 10.45% in 2011 as it can be observed from Figure 3.3. However, inflation reduces to 6.16% in 2012, so it reached the least level since 1968, but it rose again by 7.67% and 11.29% in 2015, 2016 (World Bank 2018).

3.5 Financial Development in Turkey

The Turkish economy was unstable and characterized by high inflation and fluctuating growth rates between 1960 and 2009, which in turn affected the efficiency of the bank

system. Turkey is considered to be among the least developed countries alongside Argentina, Brazil, Mexico, South Africa, and others in that period. Denizer, Dinc, and Tarimcilar (2007) assess whether liberalization policies have increased the efficiency of Turkish banks. The study revealed that the liberalization did not provide the expected results, as the efficiency levels did not increase after the introduction of this policy, but the editing programs were followed by a significant decline in efficiency due to the macroeconomic instability of Turkey in general and specifically in the financial sector. This means that the availability of a range of conditions: macroeconomic stability, the quality of financial and legal institutions and security and political conditions, lead to the success of financial liberalization.

After the crisis of 2001, progress in the macroeconomic environment that has taken place, as well as the achievements of structural reforms in addition to the process of accession to the European Union. All these clearly demonstrated the capacity of the Turkish economy and the banking systems, methods of strengthening the financial system. These methods have been initiated through better regulation and supervision of implementation and reforms after they began to overcome the crisis in Turkey in 2001 (Acemoglu & Ucer, 2015). The strength of the Turkish banking system began to emerge during this period, as many signs of the development of the financing system emerged from capital adequacy, availability of assets, high profitability, liquidity management efficiency and reliance on the stability of the financing deposits of the Turkish banking sector against the global crisis. The Turkish economy has already recovered from the effects of the global credit crunch, where production returned to the pre-crisis level, while at the same time the unemployment rate fell significantly in addition to fixed inflation rates (Macovei, 2009).

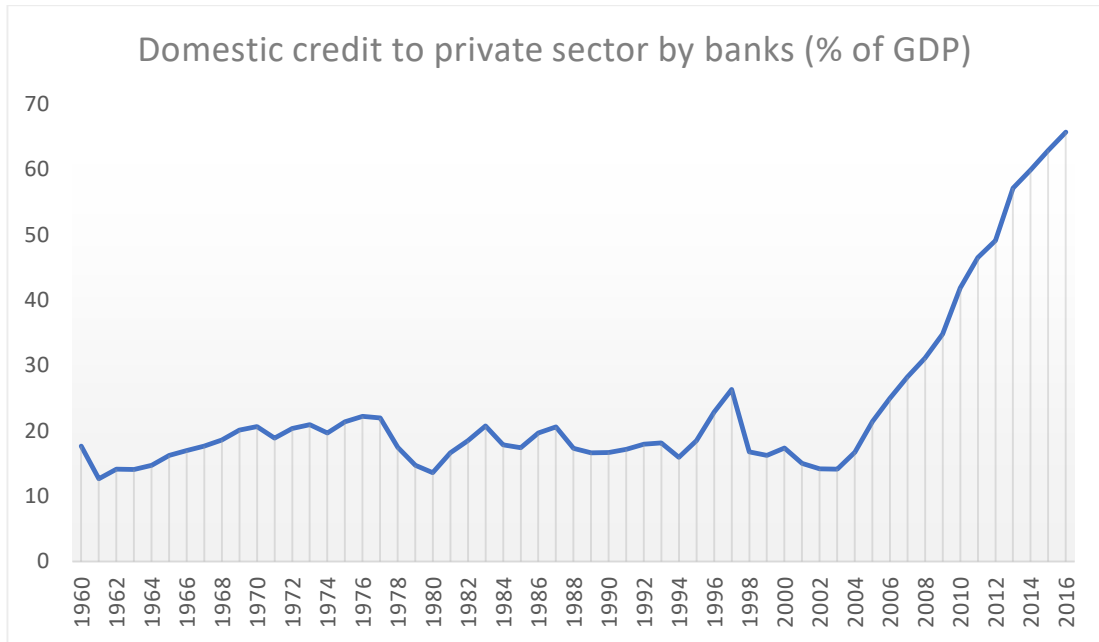


Figure 3.4: Domestic Credit to Private Sector by Banks (1960-2016)
Source: World Bank (2018)

Figure 3.4 portrays that domestic credit to private sector fluctuated significantly between 1960 and 2004 and the average credit was about 18%. However, in 2005 significant development began with 21% as it reaches 66% in 2016 (World Bank, 2018). This emphasizes the effective role of the Justice and Development Party (AKP) as of 2002. The party raised the standards of economic and social life for low- and middle-income earners and reduces inflation by 30% to 4%. Also, the value of the Turkish lira against the price of gold and foreign currencies was raised, and the amount of investment attracted to Turkey amounted to 20 billion dollars annually, while the rate of foreign investment in Turkey from 1950 to 2002 was only 50 billion dollars (World Bank, 2018).

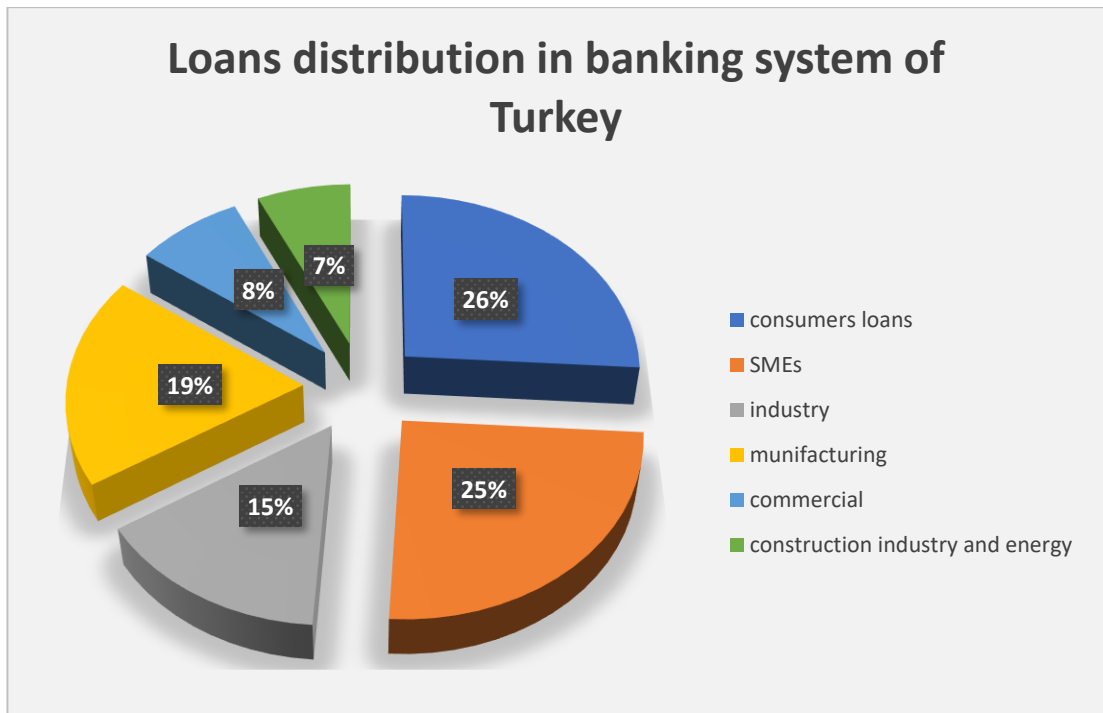


Figure 3.5: Loans distribution in the banking system of Turkey (December 2016)
 Source: The Banks Association of Turkey (TBB)

With reference to Figure 3.5, it is clear that 50% of the Turkish banking system loans are distributed into large-scale companies and project financing. The loans are divided into the following sectors, industry, manufacturing, commercial, construction and energy. Also 25% for small and medium enterprises (SMEs) 25% is the distribution of personal and household loans (TBB, 2016).

Chapter 4

DATA AND METHODOLOGY

4.1 Data

The data was used to investigate the impact of banking sector financing activities on the growth of the Turkish economy. The data covered the period 1960 to 2016. The annual reports on GDP growth and Domestic credit to private sector by banks (DCPSB) were obtained from the World Bank Development Indicators (WDI) (2018), and the other variables were derived from the Banks Association of Turkey (2018). Time series analysis was used to carry out the investigation in the thesis in order to match the nature of the data.

4.2 Description of Variables

Five variables are used in this thesis, and all of the variables are at their natural logarithms form in order to estimate the growth effects of regressors on dependent variables (Katircioglu, 2010).

4.2.1 GDP Growth Rate

The dependent variable is measured by economic growth and it is represented by gross domestic product (GDP) based on 2010 constant US\$ prices. GDP is an economic indicator and it measures the total monetary value of the local currency of the state for all final economic goods and services produced in a country over a specific period of time. Therefore, it is considered to be the best way to measure the economic performance of countries (Schumpeter, 1911). Gross domestic product (GDP) is not an indicator of social welfare or of total wealth, nor does it contain intermediate goods

and services to avoid double counting because they already include the value of finished products (Landerfeld, Seskin & Fraumeni 2008: 195).

4.2.2 Domestic Credit to Private Sector

The ratio of domestic credit to private sector by banks as a percentage of GDP (DCPSB) refers to the financial resources available to the private sector, such as loans, non-capital securities purchases, trade credits and other accounts receivable, which is transferred to the private sector to be employed in diversified investments, leading to an increase in GDP and macroeconomic development which form the basis for a claim for payment. For some countries, such claims include credit to public institutions (The World Bank, 2018).

Credit to the private sector increases productivity more than credit granted to the public sector (Akinboade, 1998). Some researchers also suggest that the proxy of domestic credit to private sector has the best impact on the growth rather than the other indicators (Demetriades and Hussein, 1996) and (Oluitan, 2012).

4.2.3 Loans to Total Assets Ratio

The ratio of loans to total assets is the first and most comprehensive measurement. It measures the ratio of total outstanding loans to assets, so the higher the ratio, the greater the financial risk and the lower financial flexibility due to the lower reserve and liquidity. The trend of total debt to total assets should also be assessed over time and will help assess whether the financial risk profile of the company is improving or deteriorating.

4.2.4 Liquid Assets to Total Assets Ratio

Liquidity measures the extent to which an entity is able to meet its short-term obligations as they mature using its liquid assets and business assets without any losses (BCBS, 2008). The higher the ratio, the greater the ability of the company to meet the

risk of repayment of sudden liabilities without the need to liquidate any fixed assets or obtain new borrowing. On the other hand, the extraordinary increase in liquidity resulting from the excessive increase in the monetary item, indicating that the company did not use its liquidity appropriately, and its profitability has decreased as a result (BCBS, 2008).

4.2.5 Profitability Ratio

The profitability ratios reflect the overall performance of the company and its ability to generate profits, and profits are the measure of the effectiveness of the company's investment, operational and financing policies and the decisions made in these policies. Moreover, it measures the efficiency of management in optimizing the exploitation of resources for profit. Profitability is a key objective and it is essential to the survival and sustainability of the company's business, and it is a goal that shareholders are looking forward to (CFI, 2018).

4.3 Methodology

A large number of previous studies show the existence of a linear relationship between credit or financial development and economic growth. Some used time series data, while others used panel data. For this thesis, time series analysis is chosen to investigate the movement of the data over a specific time trend. Also, it will be used in order to understand the relationship and the role of other factors like domestic credit, total loan, liquid assets, and average profitability. This thesis used E-views software, to investigate the effect of independent variables on the economic development in Turkey. Furthermore, four different types of analysis were conducted in this thesis, starting with Augmented Dickey-Fuller (ADF), Philips-Perron (PP) and Kwiatkowski-Phillips-Shmidt-Shin (KPSS) as representatives of the unit root test so as to test the data stationarity. Secondly, the Vector Autoregressive (VAR) model has been used for

analyzing the dynamic multivariate time series, and to investigate the lag length structure of the equation. Thirdly, Johansen's test investigates the existence of a long-run equilibrium relationship between the variables. Also Vector Error Correction Model (VECM) is used in order to capture both long-run as well as the short-run relationships. Lastly, the causality relationship was investigated and it is analyzing the direction of causation among the variables with the use of the Granger causality test. In addition, some important tests that support the accuracy of the results are mentioned and they include heteroscedasticity, autocorrelation, and stability.

4.3.1 Unit Root Tests

In order to apply the co-integration test and verify the long run relationship among the variables, the series must be stationary and this translates to the mean and variance being constant over time (Gujarati, 2010). Therefore, it is important to examine the performance of the unit root test, which supports our study to conduct and exhibit the stationarity of the given data (Pesaran, 2007), otherwise, if the series is non-stationary (have a stochastic trend) it will result in a spurious regression. Thus, ADF test (Augmented Dickey-Fuller) was employed with more complex models, the PP test (Phillips Perron) is based on the ADF test and can be used as an ADF alternative test (Dickey and Fuller 1979; Phillips and Perron 1988). The null hypothesis for unit root tests is there is unit root, thus, the series becomes stationary after taking the first difference and it becomes integrated order (1). In this case, the null hypothesis is rejected which means there is no unit root and the coefficient is different from zero (Maddala & Wu, 1999). On the other hand, the KPSS test is contrary to ADF and PP. The alternative hypothesis suggests the existence of the root of the unit, while the null hypothesis suggests that there is no unit root. The regression used in ADF and PP tests represented in its most general form as:

$$\Delta y_t = \alpha_0 + \lambda y_{t-1} + \alpha_2 t + \sum_{i=2}^p \beta_j \Delta y_{t-i-1} + \varepsilon_t \quad (1)$$

Where α refers to the constant, and t denotes the time trend.

4.3.2 Vector Autoregressive Model (VAR)

VAR test is applied to capture the interdependent linear relationship between multiple time series. The evaluation of macroeconomic models using VAR is one of the most important statistical tools proposed by Sims (1980) for the first time. Clements and Mizon (1991) suggest that VAR makes it easy to evaluate the model for its appropriate characteristics to test dynamic specifications and exogenous explanatory variables. Sims and Watson (1990) argued that the VAR model gives spurious results if the study has a small sample size. In this area, we check the stability of the time series and resolve whether there is any heteroscedasticity or autocorrelation problem. The VAR basic equation is as following;

$$y_t = B_0 + B_1 y_{t-1} + B_2 y_{t-2} + \dots + B_k y_{t-k} + \varepsilon_t \quad (2)$$

4.3.3 Co-integration Test

The concepts of Johansen and Juselius (1990), Engle and Granger (1987) have provided a great discovery that helps us to understand the long-term equilibrium between a number of variables by estimating the co-integration among the arrangement of the regressors. The Johansen (1995), test investigates the co-integration for more than two variables, which is more powerful for large samples than Engle and Granger (1987), which tests one single integration. Moreover, in co-integration vectors, the same order of integration is required I (1), so as to assess a long-run association. The following VAR model is expressing the Johansen procedure:

$$X_t = \Pi_1 X_{t-1} + \dots + \Pi_k X_{t-k} + \mu + e_t \quad (\text{for } t = 1 \dots \dots T) \quad (3)$$

In addition, trace statistics and eigenvalue examine the different hypothesis, where trace value give better results in the case of co-integration because it is more

comprehensive than the eigenvalue (Chenug and Lai 1993). Thus, the trace value should be more than the critical value to identify the number of co-integration. The trace statistics (λ trace) could be estimated as follows;

$$\lambda_{\text{trace}} = -T \sum \text{Ln}(1 - \lambda_i), i = r + 1, \dots, n - 1 \quad (4)$$

And the null hypothesis represents as following;

$$H_0: V=0 \quad H_1: V \geq 1$$

$$H_0: V \leq 1 \quad H_1: V \geq 2$$

$$H_0: V \leq 2 \quad H_1: V \geq 3$$

The null hypothesis is that there is no cointegrating vector. If it is rejected, the alternative hypothesis (i.e. $v \leq 1, \dots, v \leq n$) are to be tested after then. If $v=0$ cannot be rejected, this suggests no co-integrating relationship between regressors and the dependent variable.

4.3.4 Vector Error Correction Model (VECM)

The Vector Error Correction (VECM) model is utilized in this thesis in order to provide verification of a long-term as well as the short-term relationship between the factors. With a view to reach the stability and to get the more reliable model and better predictions, the speed of adjustment is used to fill the disequilibrium gap affected by the last period of the long run estimation and the coefficient should be negative (Katircioglu, 2010) while the probability value should be statistically significant. So the long-term and short-term interaction can be expressed as follows:

$$\Delta \ln GDP_t = \beta_0 + \sum_{i=1}^n \beta_1 \Delta \ln GDP_{t-1} + \sum_{i=0}^n \beta_2 \Delta \ln CREDIT_{t-j} + \sum_{i=0}^n \beta_3 \Delta \ln TL_{t-j} + \sum_{i=0}^n \beta_4 \Delta \ln LA_{t-j} + \sum_{i=0}^n \beta_5 \Delta \ln PROFIT_{t-j} + \beta_6 \varepsilon_{t-1} + u_t \quad (5)$$

Where Δ is related to the change in the dependent and independent variables such as GDP, DCPSB, TL, LA and PROFIT, β represent the speed of adjustment, while u_t represents the residual.

4.3.5 Granger Causality Test

The following step is to identify the variables causal trends (Granger, 1969, Sims, 1972). It can either be a bidirectional or unidirectional relationship. A bidirectional causality exists when two different variables cause each other, but a unidirectional relationship runs from one variable to another without any feedback. It can be shown that if one variable is able to predict the estimation of another variable, unlike the test of co-integration which focuses more on the strength of long-term relationships as well as short-term. Engle and Granger (1987) show that one of the directions of Granger causality must exist in the case of two series are integrated of order I (1). There is no Granger causality is the null hypothesis, so if the null hypothesis can be rejected, then a causality relationship between the factors can be recognized. Standard economic equations of Ganger's methods for VECM are as follows:

$$\Delta \ln Y_t = \alpha_0 + \sum_{i=0}^n \beta_1 \Delta \ln Y_{t-1} + \sum_{i=0}^n \beta_2 \Delta \ln X_{t-1} + \theta_i \text{ECT}_{t-1} + \varepsilon_t \quad (6)$$

$$\Delta \ln X_t = \alpha_0 + \sum_{i=0}^n \beta_3 \Delta \ln X_{t-1} + \sum_{i=0}^n \beta_4 \Delta \ln Y_{t-1} + \theta_i \text{ECT}_{t-1} + \varepsilon_t \quad (7)$$

As seen in both equation (6) and (7), Y and X are the variables under consideration, while θ_i are the coefficients of ECT_{t-1} which describe the error correction term, Δ Indicates first difference operator of the variables. Equation (6) suggests that the dependent variable Y Granger causes X which is the independent variable if θ_i is significantly different from zero $\theta_i \neq 0$ and equation (7) similarly show dependent variable X Granger causes the independent variable Y if θ_i is significantly different from zero $\theta_i \neq 0$. T-test used to test the significance of the error correction coefficient otherwise, F-statistics utilized to test the null hypothesis of β_2, β_4

4.4 Model Specification

This thesis equation model is written as follows;

$$\text{GDP} = f(\text{DCPSB}, \text{TL}, \text{LA}, \text{PROFT}) \quad (8)$$

When the functional relationships in equations (1) transformed into the mathematical form using the logarithm form to capture the growth impact (Katircioglu, 2010):

$$\ln GDP_t = \alpha + \beta_1 \ln DCPSB_t + \beta_2 \ln TL_t + \beta_3 \ln LA_t + \beta_4 \ln PROFT_t + \varepsilon_t \quad (9)$$

GDP = Gross Domestic Product 2010 constant US\$ prices

DCPSB = Domestic Credit to Private Sector by Banks (% Of GDP)

TL = Total Loans and Receivables on Total Assets

LA = Liquid Assets on Total Assets

PROFT = Average Profitability

α = the constant coefficient which is the intercept of the equation

β_1 = the slop of the equation

ε_t = is the error term

Chapter 5

EMPIRICAL RESULTS

5.1 Unit Root Test

As a primary step in this thesis, the time series unit root test must be applied in order to check whether all variables are stationary or not. Stationarity process suggests that the series mean, variance and covariance are constant over time. The tests have done lay emphasis on three models, and they are Augmented Dickey-fuller (ADF), Phillips Perron (PP) and Kwiatkowski-Phillips-Shmidt-Shin (KPSS). All the series were tested using the level form as well as the first difference.

Test interpretation:

H0: There is a unit root for the series.

H1: There is no unit root for the series. The series are stationary.

Final results of the test of unit root clarify that the null hypothesis (H0) is rejected at all levels of alpha (α) (1%, 5%, and 10%) therefore, the series does not have a unit root.

Table 5.1: ADF, PP and KPSS Tests for Unit Root

Statistics (Level)	LNGDP	lag	LNDCPSB	lag	LNTL	lag	LNLA	lag	LNPROFT	lag
τT (ADF)	-2.722	(0)	-0.778	(0)	-1.086	(0)	-1.628	(0)	-2.586	(0)
$\tau\mu$ (ADF)	-0.408	(0)	0.475	(0)	-1.301	(0)	-1.596	(0)	-2.208	(0)
τ (ADF)	8.831	(0)	1.400	(0)	0.298	(0)	0.148	(0)	-1.547	(0)
τT (PP)	-2.722	(0)	-0.972	(2)	-1.322	(2)	-1.628	(0)	-2.628	(1)
$\tau\mu$ (PP)	-0.408	(2)	0.366	(3)	-1.595	(3)	-1.674	(1)	-2.023	(4)
τ (PP)	8.848	(2)	1.278	(2)	0.262	(2)	0.153	(3)	-1.327	(7)
τT (KPSS)	0.121***	(5)	0.175**	(5)	0.140***	(5)	0.146**	(5)	0.187**	(5)
$\tau\mu$ (KPSS)	0.927*	(6)	0.547**	(5)	0.206	(5)	0.697**	(6)	0.541**	(5)
Statistics (First Difference)	LNGDP	lag	LNDCPSB	lag	LNTL	lag	LNLA	lag	LNPROFT	lag
τT (ADF)	-7.264*	(0)	-6.543*	(0)	-6.805*	(0)	-6.511*	(0)	-8.096*	(1)
$\tau\mu$ (ADF)	-7.317*	(0)	-6.525*	(0)	-6.832*	(0)	-6.514*	(0)	-8.053*	(1)
τ (ADF)	-2.253*	(1)	-6.269*	(0)	-6.857*	(0)	-6.570*	(0)	-8.125*	(1)
τT (PP)	-7.265*	(2)	-6.538*	(6)	-6.808*	(1)	-6.453*	(4)	-12.09*	(22)
$\tau\mu$ (PP)	-7.317*	(2)	-6.527*	(5)	-6.848*	(2)	-6.459*	(4)	-9.652*	(17)
τ (PP)	-3.701*	(4)	-6.269*	(3)	-6.874*	(2)	-6.527*	(3)	-9.585*	(16)
τT (KPSS)	0.057	(2)	0.085	(4)	0.097	(1)	0.086	(4)	0.160**	(23)
$\tau\mu$ (KPSS)	0.063	(2)	0.318	(2)	0.174	(2)	0.142	(3)	0.155	(21)

Note: LNGDP represents constant 2010 gross domestic product; LNDCPSB represents domestic credit to private sector by banks (% of GDP); LNTL is the Total Loans and Receivables over total assets; LNLA represents liquid assets over total assets; LNPROFT represents average profitability. All of the Series are logarithmic. τT stands for the most general model with an intercept and trend; $\tau\mu$ constitutes the model without trend and with an intercept; τ is the one without intercept and without trend. Numbers in parentheses stands for the lag lengths. *, ** and *** represent the rejection of the null hypothesis at alpha 1 percent, 5 percent, and 10 percent levels respectively. This test was performed using E-VIEWS 7.0 software.

As shown in table 5.1, ADF and PP tests are running, taking into account three deterministic models, which they are (trend and intercept), (intercept without trend) and lastly none (without trend an intercept). Stationarity is not detected at level for all variables, thus, the null hypothesis is failed to be rejected because the probability is higher than the critical value of (1%, 5%, and 10%). However, after differencing non-stationary variables, the time series become stationary for all variables. In addition, the use of the KPSS test which is the reverse of ADF and PP tests, shows that all the variables are not stationary at level (H_0), therefore, after taking the first difference we fail to reject the null hypothesis of KPSS, so it confirms that the series is stationary.

5.2 Vector Autoregressive Model (VAR)

5.2.1 Test of Lag Length Selection

In order to estimate the VAR model, the optimal lag length criteria must be determined in the time series first. The Schwarz criterion (SC) is the most restrictive lag specification. Furthermore, samples that do not have a large number of observations based on the Akaike Information Criteria (AIC) and the Final Prediction Error (FPE), are considered as the best criteria lead to this situation (Liew, 2004). With regard to Table 5.2, the criteria for Akaike, Schwarz, and Hannan-Quinn suggest the same number of lag length which is lag (1).

Table 5.2: Lags Length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-11.03657	NA	1.26e-06	0.605154	0.791030	0.676633
1	277.5761	511.879*	6.06e-11*	-9.342496*	-8.22724*	-8.91362*
2	295.4909	28.39323	8.12e-11	-9.075129	-7.030486	-8.288858
3	317.3792	30.56107	9.76e-11	-8.957707	-5.983682	-7.814040
4	337.6354	24.46029	1.33e-10	-8.778695	-4.875287	-7.277632

Note: *indicates the chosen lag by the criterion.

The Vector Autoregressive application was first accepted in the financial statements by Hamilton (1994). In the VAR model, variables are treated in the same way, whether endogenous or exogenous. In the case of two variables, one maximum co-integration is required to determine the relationship between variables. First of all, before interpreting the results of a VAR model, we must check whether the independent variable is significant to explain the dependent variable. As shown in Table 5.3, the corresponding probabilities for all selected variables are less than alpha 5 percent, so the particular variables are significant, so in such a case we can say that independent variables can explain dependent variables in short run.

Table 5.3: Results of the VAR model

Estimation Method: Least Square

Sample: 1961 2016

Included observations: 56

Total system (balanced) observations 280

Equation: $LNGDP = C(1)*LNGDP(-1) + C(2)*LNDCPSB(-1) + C(6)$

Equation: $LNDCPSB = C(8)*LNDCPSB(-1) + C(12)$

Equation: $LNTL = C(15)*LNTL(-1) + C(16)*LNLA(-1) + C(17)*LNPROFT(-1)$

Equation: $LNLA = C(19)*LNGDP(-1) + C(22)*LNLA(-1)$

Equation: $LNPROFT = C(25)*LNGDP(-1) + C(26)*LNDCPSB(-1) + C(27)*LNTL(-1) + C(29)*LNPROFT(-1) + C(30)$

	Coefficient	Std.Error	t.Statistics	Prob
C(1)	0.950056	0.026115	36.37960	0.0000
C(2)	0.080119	0.038828	2.063435	0.0401
C(6)	1.262826	0.609482	2.071968	0.0393
C(8)	0.816401	0.130397	6.260910	0.0000
C(12)	-3.386381	2.046828	-1.654453	0.0993
C(15)	0.859836	0.109323	7.865082	0.0000
C(16)	0.255776	0.090758	2.818229	0.0052
C(17)	-0.069997	0.030595	-2.287901	0.0230
C(19)	0.160593	0.069421	2.313329	0.0215
C(22)	0.643601	0.105125	6.122238	0.0000
C(25)	0.417427	0.185786	2.246813	0.0255
C(26)	-0.837169	0.276228	-3.030718	0.0027
C(27)	0.821041	0.338892	2.422722	0.0161
C(29)	0.624718	0.094840	6.587039	0.0000
C(30)	-12.22907	4.335936	-2.820400	0.0052

With reference to Table 5.4 we can interpret the results as follows:

If the LNDCPSB increases by 1 %, LNGDP will increase by 0.08%. A 1% increase in LNTL leads to a 0.18% decrease in LNLA but increase LNPROFT by 0.82%. A 1% increase in LNLA would result in a 0.05% increase in LNGDP, Finally, if LNPROFT increase by 1%, LNGDP would decrease by 0.004%, LNDCPSB will decrease by 0.04% and LNTL decrease by 0.07% in short run.

Table 5.4: Vector Autoregressive Model

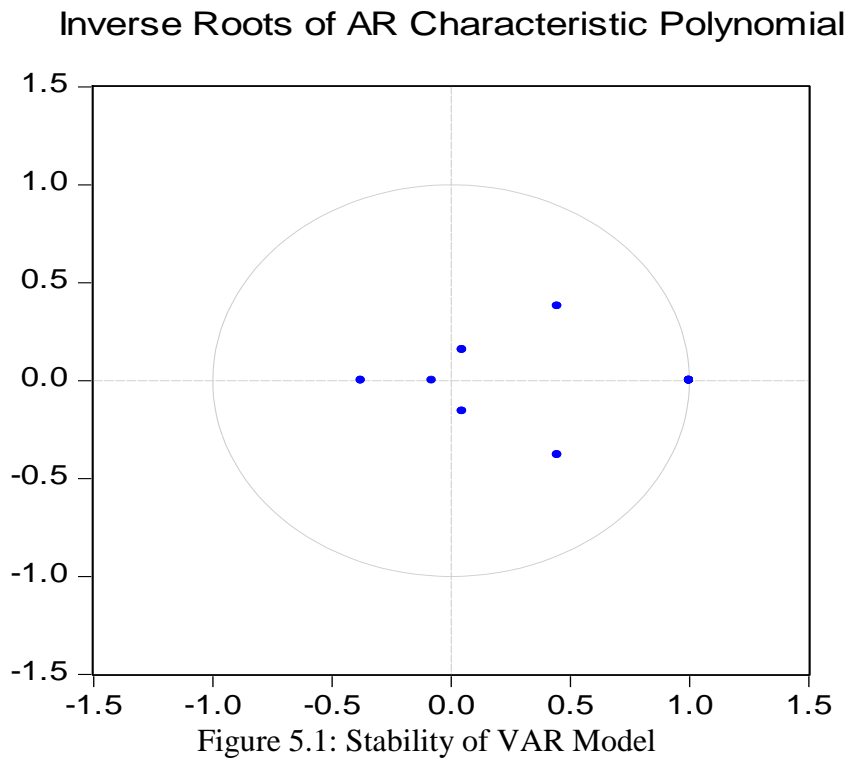
	LNGDP	LNDCPSB	LNTL	LNLA	LNPROFT
LNGDP(-1)	0.950056 (0.02612) [36.3796]	0.105941 (0.08770) [1.20796]	-0.090934 (0.05993) [-1.51726]	0.160593 (0.06942) [2.31333]	0.417427 (0.18579) [2.24681]
LNDCPSB (-1)	0.080119* (0.03883) [2.06343]	0.816401 (0.13040) [6.26091]	0.118497 (0.08911) [1.32980]	-0.122334 (0.10321) [-1.18523]	-0.837169 (0.27623) [-3.03072]
LNTL(-1)	-0.077743 (0.04764) [-1.63202]	0.233988 (0.15998) [1.46262]	0.859836 (0.10932) [7.86508]	-0.181545* (0.12663) [-143367]	0.821041* (0.33889) [2.42272]
LNLA(-1)	0.047042* (0.03955) [1.18952]	0.082587 (0.13281) [0.62184]	0.255776 (0.09076) [2.81823]	0.643601 (0.10513) [6.12224]	0.221643 (0.28134) [0.78781]
LNPROFT(-1)	-0.003552* (0.01333) [-0.26648]	-0.041315* (0.04477) [-0.92283]	-0.069997* (0.03059) [-2.28790]	-0.055509 (0.03544) [-1.56638]	0.624718 (0.09484) [6.58704]
C	1.262826 (0.60948) [2.07197]	-3.386381 (2.04683) [-1.65445]	1.745177 (1.39873) [1.24769]	-1.914674 (1.62016) [-1.18178]	-12.22907 (4.33594) [-2.82040]
R-squared	0.997317	0.911068	0.856367	0.893129	0.770445
Adj. R-squared	0.997048	0.902175	0.842004	0.882442	0.747490
Sum sq. resids	0.073677	0.830945	0.388041	0.520624	3.728854
S.E. equation	0.038387	0.128914	0.088096	0.102042	0.273088
F-statistic	3716.666	102.4454	59.62205	83.57118	33.56258
Log likelihood	106.2752	38.43466	59.75532	51.52567	-3.601536
Akaike AIC	-3.581256	-1.158381	-1.919833	-1.625917	0.342912
Schwarz SC	-3.364254	-0.941379	-1.702831	-1.408915	0.559914
Mean dependent	26.50850	3.051087	3.848261	3.461702	0.547041
S.D. dependent	0.706552	0.412169	0.221631	0.297613	0.543454

Note: * and ** indicates rejection of the null hypothesis at 1% and 5% respectively

5.2.2 Diagnostic Test

In this field also we are checking the serial correlation using the autocorrelation LM test as well as heteroscedasticity, in addition to stability test using the roots of characteristic polynomial.

5.2.2.1 Roots of Characteristic Polynomial (VAR stability graph)



VAR model stability can be validated using the AR roots graph, and based on the above Figure 5.1; all roots did not cross the circle line, therefore, the VAR model is dynamically stable for all. However, one of the roots rests completely on the circle line which is equal to 1, this can be ignored this one because all the other eigenvalues are less than one.

5.2.2.2 Autocorrelation LM Test

Table 5.5: Autocorrelation LM Test

Lags	LM-Stat	Prob
1	28.01379	0.3072
2	24.94425	0.4655

Note: * and ** indicates rejection of the null hypothesis at 1% and 5% respectively

With regards to table 5.5, the autocorrelation is tested for two lags due to annual data in this thesis. The null hypothesis assumes that the serial correlation does not exist for this test, whereas the alternative indicates a serial correlation. The probability value for lag 1 is 0.3072 and for lag 2 is 0.4655, so both are more than all levels of alpha 1%, 5%, and 10% so we fail to reject the null hypothesis, therefore, there is no serial correlation.

5.2.2.3 White Tests for Heteroscedasticity

Table 5.6: White Tests for Heteroscedasticity

Chi-sq	Df	Prob
202.9369	180	0.1159

Note: * and ** indicates rejection of the null hypothesis at 1% and 5% respectively

The heteroscedasticity concept is one of the classical linear regression model (CLRM) assumptions (Gujarati, 2010). Homoscedasticity indicates that the disturbances term has the same variation. On the other hand, heteroscedasticity violates homoscedasticity and assumes that when the value of the independent variable changes the variance of disturbances term changes as well. To verify the heteroscedasticity, we use the white test. There is no heteroscedasticity as the null hypothesis suggests, while the alternative

hypothesis indicates that there is heteroscedasticity. With reference to Table 5.6, the Probability value is 0.119, so it is not significant, and therefore we fail to reject the null hypothesis, there is no heteroscedasticity problem.

5.3 Co-integration Analysis

After applying the ADF, PP, and KPSS tests and the stationarity of the variables is captured, Johansen and Juselius's (1990) procedure of co-integration analysis conducted in this step in order to verify the long-term relationship between the variables. The common co-integration approach suggests that all the variables are stationary and are integrated of order I (1) (Katircioglu, 2009). However, although the variables move independently but closely together, they may merge in the long run and will solve the unit root problem (Katircioglu, 2009).

Table 5.7: Johansen test for Co-integration

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistics	5 percent critical value	1 percent Critical value
None**	0.587658	106.1801	76.07	84.45
At most 1*	0.410980	57.45550	53.12	60.16
At most 2	0.276159	28.34425	34.91	41.07

*Note: * and ** indicates rejection of the null hypothesis at 1% and 5%*

The specification of the co-integration numbers determined by using eigenvalue and trace statistics tests. Trace statistics however, produce better results in the case of co-integration. The results in Table 5.7 show that the null hypothesis for the first case is 'there is no co-integration' because trace value 160.180 is greater than alpha 5% and 1% and is equal to 76.07 and 84.45 respectively. The null hypothesis is rejected and the alternative one there is co-integration. Otherwise, the second hypothesis states that

the numbers of co-integration are at most one. The null hypothesis is rejected for the second one because the trace 57.46 is greater than 5% of critical value 53.12. In conclusion, two co-integration vectors have been detected in this model, so there is a long-run connection between gross domestic product (GDP) and its independent variables, domestic credit to private sector (DCPSB), total loans, liquid assets, and average profitability in the case of Turkey.

5.4 Vector Error Correction Model (VECM)

After confirming the existence of a long-run vector relationship in the first stage, the following step is to estimate VECM for the long-term coefficient and its ECM as well as the short-term coefficient and it is ECT. The speed of adjustment should be tested using a short-run coefficient to fill the imbalance gap affected by exogenous shock.

First and foremost, in order to interpret the results of long-term in addition to short-term coefficient results, the speed of adjustment should be negative, significant and lies between 0 and 1. Table 5.8 shows that the ECT coefficient confirms the above requirements and is equal to 0.108. It can also be seen that short-run value of GDP converging at 10.8% speed of adjustment to its long-run equilibrium level each year with the contribution of DCPSB, TL, LA, and PROFT.

Table 5.8: Vector Error Correction Estimates.

Cointegrating Eq:	CointEq1
LNGDP(-1)	1.000000
LNDCPSB (-1)	-1.562688* (0.18082) [-8.64210]
LNTL(-1)	1.408009* (0.36316) [3.87707]
LNLA(-1)	-0.443391 (0.26431) [-1.67752]
LNPROFT(-1)	-0.248119* (0.11355) [-2.18504]
C	-26.04125 (1.69193) [-15.3914]
Error Correction:	D(LNGDP)
CointEq1	-0.108389 (0.01509) [-7.18251]
D(LNGDP(-1))	-0.368447 (0.16048) [-2.29592]
D(LNDCPSB(-1))	0.043373 (0.04634) [0.93589]
D(LNTL(-1))	0.163427* (0.07549) [2.16484]
D(LNLA(-1))	0.014066 (0.04647) [0.30266]
D(LNPROFT(-1))	0.012284 (0.01533) [0.80112]

R-squared	0.269133
Adj R-squared	0.194555
Sum sq resids	0.058747
S.E equation	0.034626
F-statistics	3.608734
Log likelihood	110.1090
Akaike AIC	-3.785784
Schwarz SC	-3.566802
Mean dependent	0.046242
S.D dependent	0.038581

Determinant resid covariance (dof adj.)	5.19E-11
Determinant resid covariance	2.92E-11
Log likelihood	276.9002
Akaike information criterion	-8.760008
Schwarz criterion	-7.446117

*Note: * indicates rejection of the null hypothesis at 1%*

According to table 5.8, after verifying the significance, it is discovered that when DCPSB increases by 1%, as a result, this initiates an increase of 1.56% in GDP in the long run. Also a 1% increase in total loans (TL), will decrease GDP by 1.41%. A 1% increase in PROFT will result in an increment of GDP by 0.25%. The coefficient of LA is not statistically significant, thus there is no long-run association between liquid assets and gross domestic product.

Based on the short-run coefficient, only the value of LNTL is statistically significant. A 1% increase in LNTL leads to an increase in GDP by 0.16%.

5.5 Granger Causality Test

The Granger causality test represents a causal relationship between dependent and independent variables in a time series. Furthermore, the Granger causality test is applied to determine the direction of causality between gross domestic product and domestic credit to private sector, total loans, liquid assets, and average profitability.

Table 5.9 Granger Causality Test under the Block Exogeneity Approach

Excluded	Chi-sq	df	Prob.
Dependent variable: LNGDP			
LNDCPSB	4.257762	1	0.0391*
LNTL	2.663477	1	0.1027
LNLA	1.414966	1	0.2342
LNPROFT	0.071009	1	0.7899
ALL	5.184145	4	0.2899
Dependent variable: LNDCPSB			
LNGDP	1.459177	1	0.2271
LNTL	2.139271	1	0.1436
LNLA	0.386686	1	0.5340
LNPROFT	0.851612	1	0.3561
ALL	5.863052	4	0.2096
Dependent variable: LNTL			
LNGDP	2.302090	1	0.1292
LNDCPSB	1.768372	1	0.1836
LNLA	7.942415	1	0.0048*
LNPROFT	5.234492	1	0.0221*
ALL	14.55131	4	0.0057
Dependent variable: LNLA			
LNGDP	5.351493	1	0.0207*
LNDCPSB	1.404781	1	0.2359
LNTL	2.055405	1	0.1517
LNPROFT	2.453545	1	0.1173
ALL	14.10153	4	0.0070
Dependent variable: LNPROFT			
LNDCPSB	5.048168	1	0.0247*
LNTL	9.185252	1	0.0024*
LNLA	5.869582	1	0.0154*
LNPROFT	0.620646	1	0.4308
ALL	16.45352	4	0.0025

Note: * indicates rejection of the null hypothesis at 1%

The null hypothesis is there is no Granger causality, and the alternative is there is causal relationship exist between variables. There is a causal link from domestic credit to private sector by banks (DCPSB) to economic growth with regards to table 5.9, results also reveal that causality is running from liquid assets to total loans, average profitability to total loans, from DCPSB to average profitability, and finally from total loans to average profitability. It is therefore defined as a unidirectional relationship. On the other hand, a single bidirectional relationship is captured, so there is a bidirectional relationship between total loan and average profitability of the Turkish banks $LNTL \leftrightarrow LNPROFT$.

Chapter 6

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This thesis reveals how local credit (proxies by domestic credit to private sector by banks) and other factors such as total loans and receivables, liquid assets, and average profitability affect Turkey's economic growth. Various studies have already been conducted on the impact of financial development on economic growth both theoretically and empirically for the case of Turkey and different other countries. However, with regards to Turkey, there are limited studies in this specific area that entails the use of time series data.

Credits play an important role in the national economy. They play an active role in increasing productive capacity and thus increasing production and employment rates by investing money borrowed in high yielding productive projects. Loans are the most important means for banks to invest their financial resources and not keep them rigid.

This thesis uses annual data from 1960 to 2016. Above all, the stationarity of the data has been tested using unit root methods, which propose that all variables are integrated order I (1). With the use of VAR model, 1 is selected as the optimal lag length. Also in this area, the data were checked for heteroscedasticity, autocorrelation and stability problems, it was established that there is none of them. The next step taken was to test for long-term equilibrium (co-integration) and it was discovered that there is a long-term association between financial development and economic development in

Turkey. Vector Error Correction Model was also applied in order to investigate both long-run and short-run relationship as well as the speed of adjustment. It found out that the short-run value of GDP is converging at a 10.8% speed of adjustment to its long-run equilibrium level each year after an exogenous shock is given to the short-run with the contribution of DCPSB, TL, LA, and PROFT. Consequently, the direction of causality is also evaluated in this thesis between the dependent and independent variables. The Granger causality result shows that there is a unidirectional relationship running from domestic credit to gross domestic product. This means that a change in domestic product precedes a change in GDP. However, any causality from total loans, liquid assets, and average profitability to GDP is not observed.

All the results of previous studies suggested that there is a causal relationship between financial development and economic growth. However, the strength of causality direction varies according to the proxy that is applied to financial development as well as methods of study and model specifications used. A possible explanation of the contradictory results can be due to a different period of time the studies were carried out.

6.2 Policy Recommendation

As the thesis reached an important conclusion that bank credit has a positive impact on economic growth in Turkey, there are some important recommendations, to further activate the banking sector and thus achieve the desired economic objective of economic development.

Turkey has faced a number of serious structural problems in its economy and resources, just like other developing countries in Asia and Latin America. Many of the crises followed the Turkish economy from the crisis of 1978, which was a result of the increase in imports to exports. This caused the imbalance of trade and the devaluation

of the Turkish lira, where inflation rose by a 100% and the government is no longer able to pay even the benefits of external debt. Foreign debt continued to increase. By the end of 1994, 50% of the total deposits had been converted into foreign currencies, so the exchange rate collapsed and the lira lost 76% of its value. After this period Turkey worked on many reforms with the help of the International Monetary Fund, but successive crises reduced the confidence of domestic and foreign investors. Subsequently, the liquidity crisis came in 1999, which weakened the local currency. In 2002, the Justice and Development Party (AKP) worked on real reform programs that led to political stability and Turkey enjoyed its best economic growth in that period, where investment, production, and consumption began to increase slowly. There has also been a marked change in imports and exports, along with a rise in the tourism sector's share of national income. With the emergence of the 2008 global crisis, the Turkish economy was not affected much, although many other developing and emerging countries were affected. The reforms and developments of the Turkish economy continued as the gross domestic product and per capita income rose, inflation and interest rates declined, and also there was a decline in the debt ratio. Furthermore, exports activities increased and the unemployment rate went down significantly, in addition to the support of many projects and investments.

Banking development systems are of great importance so as to suit the new conditions in the economy, by adjusting loan terms and conditions. Also emphasis is given to the distribution of banking facilities to sectors of relative importance in GDP to achieve balance while reducing the sectors that do not contribute in the economy. On the other hand, it is important to increase public awareness with regards necessity of savings and deposits with banks at attractive prices. This will enhance investment opportunities by offering available funds from increased customer deposits. This achieves growth

and economic stability, and thus access to surplus production which will in turn stimulate exports and reduces imports.

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