CONSUMER CREDITS AND THE EFFICIENCY OF MONETARY POLICY IN TURKEY

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I hereby declare that all information in this thesis has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work; otherwise I accept all legal responsibility.

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ABSTRACT

CONSUMER CREDITS AND THE EFFICIENCY OF MONETARY POLICY IN TURKEY

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The main aim of this study is to understand how the growth of consumer credit has changed the effect of monetary policy on household consumption in Turkey. For this purpose, the hypothesis that the growth of consumer credit has weakened the ability of monetary policy to affect household consumption behavior has been examined with a variety of empirical evidence. Firstly, the argument that the consumer credit to smooth consumption makes monetary policy less effective in Turkey has been tested. The empirical results showed that after the growth in consumer credit volume, consumption behaves consistently with the permanent income hypothesis. Household behavior is less sensitive to short-run changes in monetary policy because they can access credit more easily and smooth their consumption. Secondly, the argument that households are less liquidity constrained with credit cards and so, monetary policies have no effect on consumption behavior in Turkey has been tested. According to traditional view of banking credit channel; consumers using credit card are in a liquidity constraint so, they more sensitive to the interest rates and also to the monetary shocks. However, the empirical results shows the opposite of the traditional view. Consumers are not only in a liquidity constraint but also they use credit cards as an instrument to stabilize monetary policy shocks.

Keywords: Consumer credits, Credit cards, Consumption smoothing, Permanent Income

ÖZET

TÜRKİYE'DE TÜKETİCİ KREDİLERİ VE PARA POLİTİKASININ ETKİNLİĞİ

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Bu çalışmanın temel amacı; Türkiye'de tüketici kredilerindeki büyümenin, para politikasının hanehalkı tüketimi üzerindeki etkisini nasıl değiştirdiğini anlamaktır. Bu amaç doğrultusunda; tüketici kredilerindeki büyümenin bir sonucu olarak para politikasının hanehalkı tüketici davranışlarını etkileme kabiliyetinin azaldığı hipotezi çeşitli ampirik kanıtlar eşliğinde incelenmiştir. İlk olarak, Türkiye'de tüketici kredilerinin tüketim düzleştirmesi yoluyla para politikasının etkinliğini azalttığı iddiası test edilmiştir. Ampirik sonuçlara göre; tüketici kredilerindeki büyüme sonrası tüketim davranışı sürekli gelir hipoteziyle tutarlılık göstermektedir. Hanehalkları kredilere eskisine göre çok daha kolay ulaşabildiği ve tüketim düzleştirmesi yaptıkları için para politikasındaki kısa dönemli değişimlere çok daha az duyarlıdırlar. İkinci olarak, Türkiye'de kredi kartı kullanan hanehalklarının daha az likidite kısıtı içinde oldukları ve dolayısıyla para politikasının tüketici davranışları üzerinde bir etkisi olmadığı iddiası test edilmiştir. Banka kredi kanalının geleneksel görüşüne göre; tüketici kredisi kullanan tüketiciler likidite kısıtı içinde olup faiz oranlarına ve parasal şoklara karşı çok daha duyarlıdırlar. Buna karşın ampirik sonuçlar geleneksel görüşün tam tersini ortaya koymaktadır. Kredi kartı kullanan tüketiciler likidite kısıtı içinde olmadıkları gibi, kredi kartlarını para politikası şoklarına karşı bir dengeleme aracı olarak kullanmaktadırlar.

Anahtar kelimeler: Tüketici kredileri, Kredi kartları, Tüketim düzleştirmesi, Sürekli gelir

To My Family...

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller
BIS	The Bank for International Settlements
BRSA	Banking Regulation and Supervision Agency
CBRT	Central Bank of the Republic of Turkey
CCB	Credit Card Balance
CCL	Credit Card Liquidity
CPSS	The Committee on Payment and Settlement Systems
EU	European Union
GDP	Gross Domestic Product
HLT	Harvey-Leybourne-Taylor
ICC	Interbank Card Center
PP	Phillips-Perron
PPI	Producer Price Index
PRC	People's Republic of China
SME	Small and Medium Sized Enterprises
USA	United States of America
VAR	Vector Autoregression

CHAPTER 1

INTRODUCTION

The main aim of this dissertation is to understand how the growth of consumer credit has changed the effect of monetary policy on household consumption in Turkey. I show with a variety of empirical evidence that the growth of consumer credit has weakened the ability of monetary policy to affect household consumption behavior.

In fact, ability of monetary policy to affect household consumption is described in the "household balance effects channel" in literature. Household balance effects channel is one of the varieties of the monetary transmission mechanisms. Monetary transmission mechanisms explain how monetary policy affect national product via what kinds of variables. For a successful application, policy makers need to know how monetary policy affect economy by following which transmission channel. Therefore, monetary transmission mechanisms may be a good starting point for this dissertation. In chapter 2, monetary transmission mechanisms have been introduced in general terms and phases gone through in 2008 after global finance crisis and banking crisis in Turkey in 2001 encountered by monetary transmission mechanisms have been researched.

In literature, transmission mechanisms of monetary policy has been classified in various types. While some of those are talking about portfolio arrangements, wealth effects and credit, others have classified those differently as quantity theory channel. Taylor (2000) has classified different theories of monetary transmission mechanisms' into two main categories; interest rate and exchange rate channels as monetary view and credit channel as an alternative to monetary view. However, in Chapter 2, channels of monetary transmission mechanism listed as interest rate channel, exchange rate channel, stock channel, credit channel and expectations channel. It is not possible to separate channels of

monetary transmission channel from each other clearly. The channels affect and complete each other in general.

Interest rate channel is the best known mechanism in the monetary transmission literature. A change that monetary authority will do in short term interest rates affect investment approach of companies and durable consumption products of household expenses by affecting direct capital use cost. In the literature of monetary policy, this interaction process is stated with interest rate channel of monetary transmission concept.

However, increasing of externality of economies and using of flexible exchange rate systems commonly have increased the importance of exchange rate channel in monetary transmission mechanism recently. Exchange rate channel states the change in real production from the effect of monetary policy on exchange rates because of reflecting net export (Horvath and Maino, 2006). Strength of exchange rate channel depends on sensibility of exchange rate to monetary shocks and openness level of economy. As openness level of country is high so exchange rate channel is effective in monetary transmission mechanism. There are two main transmissions of exchange rate on theoretical process. These are the transmission of exchange rate on net exports and the transmission of exchange rate on balance sheet.

Monetarists put emphasis on other relative asset or stock prices and economic effects of real wealth about monetary transmission in general. In literature, this effect is defined as stock prices channel. Accordingly, there are two channels involving stock prices in monetary transmission mechanism. These are stock prices channel and wealth effect. In the process of asset prices, the effect of monetary policy on investments is defined with q theory of Tobin and the effect on consumption is defined with life cycle theory of Modigliani.

Some economists supposed that monetary transmission mechanism which explains changes in monetary policy affect economic activities by changes in money supply, interest rates or asset prices is insufficient (Bernanke and Gertler, 1995). As a result of this, Bernanke (1983) has stated that finance corporations have effect on economy and roles of banks in transmission mechanism has been attracted attention. This approach is defined as the credit channel of monetary transmission channel in the literature.

Credit channel approach focuses on lack of information, operation costs and credit sizes. Credit channel emphasis on the effects of lack of knowledge between fund supply and demand providers on transmission mechanism. Market failure is explained by adverse selection and asymmetric knowledge concepts in this approach. Rise in operability of credit channel after 2011 crisis in Turkish economy has been observed. In the past, because of high budget deficits and real interest rates, banking sector imposed restriction and it did not give long term credit and reasonable interest rate to especially small and middle scale businesses. However, structural reforms after crisis, banks returned financial mediation activities instead of finance of government expenses because of the reasons which are low interest rates in developed countries, the increasing liquidity and fall of real interest rate. Therefore, total demand and inflation which banks have used depending on changes in policy interest rates begins to be affected.

It has been claimed that credit channel of monetary transmission mechanism includes two mechanisms which define analysis of relationship between changes in monetary policy and the growth of external sources premium (Fountas and Papagapitos, 2001). In other words monetary policy has an effect on real economic activities in two ways. First of all, the credit channel which affects bank credit supply given to dependent companies; second, balance channel which lead to change in real production by affecting balances of debtors.

One of the variety in the credit channel of monetary transmission mechanisms is the household balance effects channel. Examining and providing evidences about the functioning of this channel is the subject of this dissertation. Although most of the credit channel literature is focused on expenses by companies, this channel takes consumption expenses made by households and especially durable consumption goods into consideration.

The decline in bank credits resulted from monetary contraction leads to a fall in durable goods bought by consumer who cannot apply other credit resources. Similarly, increases in interest rates lead balance of household to deteriorate. Another way to see how balance channel affect consumers is to take liquidity effect on durable consumption goods and household expenses into consideration. Balance channel in approach of liquidity effect works via the effects of consumers on expense request rather than lending request of lenders. Because of asymmetric information regarding credit qualities, these are durable consumption goods and the assets which are not household liquid (Mishkin, 1996).

The last channel of monetary transmission mechanisms discussed in Chapter 2 is the expectation channel. According to expectation channel, all variables whose have periodical results and determined rewardingly have been affected from expectations of economic units against shocks that may happen in the future. In this case expectation channel can be considered as periodical type of interest rate channel, asset price channel and credit channel. In case of that it has been announced monetary power embarked on monetary application which is not supported by in current period, market expectation will be adapted, the change taken place as result of financial markets lead to change in production and inflation at the end.

Monetary transmission mechanism channels affect various variables in different speeds and densities. For this reason, when researching effect of monetary policies on real sector, the giving answers of that the effects of transmission channels are same or not in all economies or which features of economies determine transmission mechanism channel function and relative importance (Loayza and Hebbel, 2002). The components that determine efficiencies of monetary transmission mechanisms is the last part of Chapter 2.

In Chapter 3, credit channel will be investigated in more detail which is one of the transmission mechanisms discussed in the Chapter 2. First of all, asymmetric information subject is handled because of its role in the monetary transmission mechanism of credit channel, determinant problems which appears depending upon asymmetric information of credit market. Adverse selection and moral hazard as two different kind of asymmetric information is also discussed in Chapter 3. Credit rationing and credit crunch topics will be in this Chapter because of the close relationship with the credit channel.

Asymmetric information concept is a case of economic units interact with each other that one side have more information than the other side. In the case of the information has become asymmetric, the side which has more information have the edge over unfairly. For instance, when buyer doesn't know about the quality of the product as much as the seller, it refers an asymmetric information between the parties.

Asymmetric information in credit markets results from that borrower who demand fun mostly has more information than potential debt provides about investment that fund will be provided and it may appear before performing an operation (ex-ante asymmetric information) and after performing an operation (ex-post asymmetric information). Before

credit provided, asymmetric information appears when credit institution could not distinguish between borrowers have high and low risk in the case of ability of repayment of credit. (Claus and Smith, 1999). In credit markets, before performing a procedure when asymmetric information comes into question causes an adverse selection problem, after performing a procedure it causes a moral hazard problem.

Adverse selection appears only when too risky borrowers remain in credit market due to rise of interest rate. Return that lender corporations expect primarily depend on the possibility of repayment of credit. Therefore, for banks and other lender corporations it is highly important determine among credit demanders who have high probability of repayment. It is quite difficult for bank to distinguish good quality borrowers among credit demanders and to be able to do this several screening tool usage is needed. The observed problems in the American mortgage market have the most distinct features of the adverse selection problems.

Moral hazard in credit markets comes out before signing credit contract between the ones who offer credit and demand credit, symmetric information has transformed into asymmetric information because borrowers did not use credits within the compass of condition stated in the agreement and this situation could not have been observed by creditors.

Asymmetric information problem leads to credit rationing behavior of banks. Credit rationing is defined that the party who demand credit supply in credit market does not give credit as much as demanding, gives less or would not like to give credit as much as requested, and as credit rationing in credit market (Homa and Jaffee, 1971). Credit rationing, is to decrease excessive demand if excessive credit demand is in question in credit markets to provide profit maximization of credit demanders in order to keep interest rates of credit in specific level by creating shrink in credit amounts (Jaffee and Russell, 1976).

The last topic of Chapter 3 is the credit crunch. Credit crunch is defined as a great regression in credit supply. When experiencing credit crunch, the relationship between credits and interest rate changes. Credit crunch emerged in two different ways. First of all is the decreasing of credit supply on determined interest rates. Second is allocating credit.

In Chapter 4, the development of consumer credits in Turkey as per years and their current state will be presented. The results obtained will provide a foundation for the analyses to be performed in the following chapters.

Consumer credits may be specified as a type of credit that the real persons may use in order meet all their necessities beyond commercial purpose. Consumer credits may get different names as being re-arranged -by the institutions making credit available- in accordance with the requirements of the individual or as per the intended use. The most widespread ones are housing credits, auto credits and personal credits. Besides these, the credits used for financing of education, marriage or any other requirement.

The decrease in interest rates and the financial stability environment in economy that occurred in Turkey following the crisis of 2000-2001 had caused the increase of consumer credits that had been made available along with the effect of positive atmosphere in global markets. The increase of consumption and spending tendency of household had also supported the development in subject, and the share of consumer credits among total credits had showed an increase.

The housing credits had reached to about 114 billion TRY by the end of 2014. The share of housing credits among consumer credits is at the level of about 40 percent. The auto credits had been 6 billion TRY in 2014. The share of auto credits among consumer credits is only 2 percent in 2014. The personal and other credits had increased to 147 billion TRY in 2014. The personal credits and other credits is the credit type having the highest share among consumer credits and it is about 55 percent in 2014.

Chapter 4 also provide information about credit cards in Turkey. Even if consumer credits actually seems as a type of consumer credits, the credit cards are showing features different from consumer credits either by their usage volume or by the options they provide. In Turkey, either the number of credit cards or the usage volumes of credit cards are showing a continuous increase by years. The numeral dimension it had reached is taking the personal credit cards to a significant position in the banking and credit system of Turkey.

As per the data of ICC, the number of credit cards had significantly increased in years and it has reached about 57 million units in 2014. The amount of personal credit card transaction had increased to 72 billion TRY in 2014. Personal credit card transaction is forming 30 percent of the total consumer credits in 2014.

Another topic discussed in Chapter 4 is the evidences of consumer credit expansion in Turkey. The ratio of consumer credit volume to national income is being deemed as an indicator of consumer credit expansion. The ratio of consumer credits to GDP in 2014 is about 14 percent. The ratio of credit card transaction volume to GDP also shows increase in years in Turkey. While the ratio of transaction volume of credit cards to GDP was about 22 percent in 2009, that rate had been 27 percent in 2014. BRSA (2012) in order to measure whether the credit volume is following a course except the expected trend, had performed an analysis. According to this analysis, BRSA has found no significant credit expansion occurs in total credits. In spite of this, it is being seen that consumer credits had significantly expanded in years 2002, 2006 and 2011. Similarly, a significant expansion is being observed in credit card transaction volumes in years 2004 and 2012.

We can more clearly assess the increase observed in consumer credits by comparing it with the increase in commercial credits. While the annual real increase in commercial credits had been 17.1%, that rate had been 26.6% in consumer credits between 2009 and 2014. The growth rate in consumer credits had been realized higher than the growth rate in commercial credits in many of the years in the same period.

In Chapter 5, the hypothesis that consumer credit to smooth consumption makes monetary policy less effective in Turkey will be examined. According to the hypothesis, after the growth in consumer credit volume, consumption behaves consistently with the permanent income hypothesis.

Hypothesis in this Chapter will be tested by Ludvigson's (1999) model over the years 1995 through 2014 for total credits and for credit cards. For subsample, between years 2006 and 2014, total consumer credit cannot forecast the consumption growth. Likewise, for subsample, between years 2004 and 2014, credit cards cannot forecast the consumption growth too. In this Chapter results of structural break tests for consumer credit will also be reported. The methods of Harvey, Leybourne and Taylor (2006) has been used for the structural break. The test indicates that structural breaks occurred in 2006 for total consumer credits and in 2004 for credit cards.

According to the permanent income hypothesis, consumption depends only on permanent income. Consumers distribute their consumption based on the marginal rate of substitution between consumption today and consumption tomorrow. Consumers will only adjust its

consumption based on how the current income affects the permanent income. If the consumer expects the high income today will be matched by a low income tomorrow, then consumption today will not change. Conversely, if the rise in income today represents a new permanent level of income, then consumption will increase.

The contribution of Hall (1978) in this Chapter was to formalize the stochastic implications of the permanent income hypothesis. If consumers maximize expected future utility, the conditional expectation of marginal utility is only a function of the current level of consumption. Marginal utility follows a random walk, which implies that consumption does as well. The optimizing consumer uses all available information each period about current and future earnings to determine the current level of consumption. If the consumer fails to adjust consumption immediately, then the adjustment will take place later, implying the consumer is responding to old news. This runs counter to the assumption that the consumers react immediately to an expected change in income (Carroll, 2001).

The results in Chapter 5 are consistent with hypothesis, where the growth in consumer credit is associated with a decline in the lending channel of the monetary policy transmission mechanism. When households have an easier time obtaining credit they can smooth consumption during recessions, periods of financial distress, or during periods of contractionary monetary policy. In other words, consumer behavior is able to come closer to the conception of the permanent income hypothesis. As Hall (1978) argues, aggregate demand policy that only has an effect on transitory income will have little to no effect on consumption when households are able to borrow in anticipation of the change in income. The results here suggest consumers are able to do this more in line with Hall's expectation. Factors such as liquidity constraints (liquidity constraints are defined as a quantity constrain and reveals when a borrower does not receive a certain amount of credit) are less important in Turkey. In this view, households can access credit more easily and smooth consumption. So, household behavior is less sensitive to short-run changes in monetary policy than in previous years.

The main aim of Chapter 6 to show that households are less liquidity constrained with credit cards and so, monetary policies have no effect on consumption behavior in Turkey from 2002 through 2014 by using the unused portion of credit card lines data. According to traditional view of banking credit channel, consumers using credit card are more sensitive to the interest rates and also to the monetary shocks. However, the empirical

results in this chapter show the opposite of the traditional view. Consumers are not only in a liquidity constraint but also they use credit cards as a shield to offset monetary policy shocks. According to the findings in this chapter we can say that, monetary policies which purposes to slow the credit card borrowing has a minor effect on consumption behavior.

In recent studies, credit cards can sign the liquidity constrained borrowers. However; the empirical study in this chapter shows that the increasing interest rate has no effect on accessing credits for households. So, the policies of the central bank are not constrained the borrowers to obtain credits. In the sample period between 2002 and 2014, credit card usage has increased and this situation has made the households more liquid and conducted them to consumption smoothing. If we look at this idea from the perspective of monetary policy; if Central Bank apply a contractionary monetary policy, credit card liquidity increases consistent with consumption smoothing. However, if Central Bank apply an expansionary monetary policy, credit card borrowing will also increase.

In Chapter 6, the impulse response functions of credit card balances and credit card liquidity to a change in monetary policy have been also estimated. The response of the credit liquidity to both contractionary and expansionary policy has been tested. We aim to test the two hypotheses by estimating the impulse response functions of credit card balances and credit card liquidity.

First; credit card borrowing households are more sensitive to a change in monetary policy and so, the monetary policy of the Central Bank in Turkey is more efficient for at least on consumers. This hypothesis strongly defends by Bernanke and Gilchrist (1995) and Bernanke, Gertler and Gilchrist (1996). According to them, after the contractionary policy of Central Bank, the accessing to credit cards and also consumption spending decreases. So, the contractionary policy of the Central Bank spreads to the overall economy by the transmission mechanism of balance sheet as discussed in Chapter 1.

Second; credit card borrowing households are less sensitive to a change in monetary policy and so, monetary policy of Central Bank in Turkey is less efficient for at least on consumers. According to this hypothesis, credit cards provide consumers liquidity. After the contractionary policy of Central Bank, consumers can access credit card liquidity easily and credit card borrowing increases. So, consumption will not decline, after the contractionary policy of Central Bank.

The impulse response functions are calculated from a five variable system. As a typical approach for calculating impulse response functions from this system, a vector autoregression (VAR) model has been used. Unit root, Cointegration, Granger causality and Geweke decomposition tests have also presented in this Chapter.

The impulse response functions provide new evidence about the effects of monetary policy. Contractionary monetary policy appears to be delayed by the increase in credit card borrowing and credit card liquidity, while expansionary monetary policy has a stimulative effect on credit card markets. However, the latter does not appear to translate into a stimulative effect for consumption.

The impulse response functions for credit card balances and credit card liquidity in response to a contractionary policy shock suggest that the propagation of monetary policy through household balances sheets is inhibited by the use of credit cards. Credit card borrowing provides a means to keep consumption constant in a contractionary policy environment. However, the response of credit card liquidity indicates that credit card markets provide households with liquidity even when economic conditions might otherwise be worsening. Hence, these factors make the transmission mechanism less effective. Finally, Chapter 7 wraps up with concluding remarks.

CHAPTER 2

MONETARY POLICY AND MONETARY TRANSMISSION MECHANISMS

2.1. Introduction

Economics policies basically consist of total of fiscal and monetary policies. Fiscal policy states formalizing revenue collection and spending methods to make employment and development of governments. Monetary states decisions that made central banks to reach aims like price stability and financial stability by using various materials.

Before 1970s, monetary policy that uses other policies as supporting components to reach sustainable growth and full employment aims has reached a structure which its main aim is to provide price stability after high inflation process that began with oil shock experienced in 1970s. In addition, it has emerged as a requirement that to what extent and how affect economy in this term via policies applied by central policies to provide their aims. In this context, in order to identify how it affect economic activity and inflation and determine active political tool, studies that reveal process of monetary transmission mechanism beginning from 1980s has accelerated.

In classical meaning, monetary transmission mechanism that shows that to affect total demand of monetary variables, with output gap and inflation to what extent and with which channels, has transformed into more comprehensive structure involving different influence areas like expectation and exchange rate channel, credit growth based on traditional interest rates. However, so many factors like financial systems structure and deepness, the role of public on economy, index of openness of economies make monetary transmission mechanism vary from country to country and changes that occurred in economic structure

globally and locally lead also monetary transmission mechanism become different. (CBRT, 2013).

In this section, monetary transmission mechanisms have been introduced in general terms and phases gone through in 2008 after global finance crisis and banking crisis in Turkey in 2001 encountered by monetary transmission mechanisms have been researched.

2.2. Monetary Transmission Mechanism

Monetary transmission mechanisms explain how monetary policy affect national product via what kinds of variables. For a successful application, policy makers need to know how monetary policy affect economy by following which transmission channel.

According to Hubbard (1994), new developments in financial markets and liberalization studies incapacitated available monetary transmission mechanism, it had been required to consider the effect of monetary policies on economy in different angles. Especially after financial liberalization, the increase of relationship between finance and real sector led traditional transmission mechanisms to explain economical circuit insufficiently.

For this reason, credit channel involving asymmetric information flow and financial intermediary has claimed. Therefore, economists who are supporter of traditional view defined as monetary view have supported that the effect of monetary policy on real economy has been provided via the change by monetary policy in capital cost, the ones who claim that the function of credit is more on real economy have said that this effect was made by financial intermediaries.

In literature, influence channel of monetary policy has been classified in various types. While some of those are talking about portfolio arrangements, wealth effects and credit presence, others have classified those differently as amount theory channel (directly mechanism), interest rate effect and expectations. Another classification consists of traditional interest rates channels, other active prices channel and credit channel. Taylor (2000) has classified different theories of monetary transmission mechanisms' into two main categories; two credit view that consists of interest rate and exchange rate channels as monetary view and credit view an alternative to monetary view.

2.3. Keynesian and Monetarist Views

Before go analyzing the channels of monetary transmission mechanism, we need to state two main views related to working mechanism of monetary transmission mechanism in literature.

2.3.1. The Keynesian View

With economic crisis stated as Great Depression in 1930s, the view which the effect of fiscal policies on economic activity in economic view is more effective that monetary policies have gained importance. This approach developed under the leadership of John Maynard Keynes has been approved by policy makers and has succeeded to prevent inflation and unemployment issues until 1970s. According to Keynesian view, the most important tool of monetary policy is interest rates. Monetary policy applications will be effective on demand if it affects interest rates (CBRT, 2013).

Keynes, who attaches great importance to the substitution relationship between monetary and the other financial actives, in other words though that the alternative of money is financial actives has claimed that expanded money warned active intakes if money stock is increased and decreased interests, when interests decline, preferences develop in direction of money attitude. Thus, the change in money amount affect actives kept in portfolio, for this reason the Money kept changes. On the other hand, the relationship between consumption and investment expenditures do not seem stronger.

According to Keynes, the success of monetary policy depends on the interest rate flexibility and interest rate of investment demand is high. In the contrary case, that interest flexibility of monetary demand is high and interest flexibility of investment is low will limit the effect of monetary policy on real sector.

Substitution effect in portfolio choosing model of Keynes attaches importance to "Money-interest rate investment" relationship. Keynes has defended that interest rate will show awareness to the change Money supply except "liquidity trap" location and this will affect investments. In addition to this, he has claimed that interest flexibility of investments is low, in other words marginal efficiency of investments is quite vertical and he suggested

that the sensitivity of investments to interest can only be against long term interest rates that do not much more change.

2.3.2. Monetarist View

A group of economists most notably Milton Friedman called monetarists in the 1960s have claimed that it is insufficient to explain effects of monetary policy on total demand with only the relationship between interest rates and investment expenditures and monetary policy affects total demand with so many channels except interest rates of monetary policy. In addition to this, unlike the Keynesian view, they have suggested that there is a weak relationship between nominal interest rates and investments expenditures, borrowing and investments decisions have been made by reviewing real interest rates instead of nominal (CBRT, 2013).

In the monetarist approach, money is considered different from other financial actives and it has been specified that it is more important. In this regard, it has been claimed that financial intermediaries which create Money are more important that other intermediary establishments. This privilege of Money is related to real balance effect even relative price change and adaptation processes resulted from these changes. According to this process, if it is as a matter of increase in the money supply, it has been predicted that money stock will increase in proportion to other local and foreign asset stock and its marginal benefit will change in proportion to these other assets, bank reserves will reevaluate their approaches to equalize benefits of other assets; and it has been stated that it will include those changes to vary so many relative prices (Meltzer, 1995).

At the end of a change in money supply, in this approach which there will be significant changes in relative prices in addition to interest rates, it can also change as a result of monetary policy applies in other type of expenditures except investments. Wealth and substitution effects created with withdrawing monetary policy from balance affect demand composition, portfolio composition and amount and composition of production. In short, unlike views about process of transmission mechanism of Keynesians, even if money supply changes do not affect finance sector via interest rate, have an effect on real sector via relative price changes, in other words it has been emphasized that there is a direct relationship between money supply and income (Cargill, 1990).

2.4. The Channels of Monetary Transmission Mechanism

In this section, the subjects which consist of the channels of monetary transmission mechanism listed as interest rate channel, exchange rate channel, stock channel, credit channel and expectations channel will be examined. It is not possible to separate channels of monetary transmission channel from each other clearly, it has been approved that the channels affect and complete each other in general.

2.4.1. Interest Rate Channel

A change that monetary authority will do in short term interest rates affect investment approach of companies and durable consumption products of household expenses by affecting direct capital use cost. In the literature of monetary policy, this interaction process is stated with interest channel of monetary transmission concept. Interest channel is affecting total demand process or interest rates which is the change in monetary policy decisions. Interest channel defines an effect of a change in interest rate (Horngren, 1995).

In interest channel based on Keynesian view, relationship between monetary policy and real economy is established on interest rate. Money authorities control directly official interest rates. Thus, it determines interest rates of monetary markets. Changes in Money supply lead real interest rates to change. In case central bank extend money supply, economic departments use additional available money in bill exchange. Depending on this, on hand bill exchange increases, on the other hand interest rates decrease.

A monetary policy involving extending low real interest rates affects total expenditure in different ways. Lower interest rates mean lower capital cost for significant investment decisions in particular. In addition, consumption expenditures increase because lower interest rates support current consumption instead of next consumption. This situation is called substitution effect. Substitution effect predicts that decrease in real interest rates lead to decrease in savings and increase in consumption expenditures because of monetary policy change. In the same way, interest rates affect disposable income via interest incomes and payments. The direction and growth of income effect depend on net active position of companies and household.

Income effect changes according to position of consumers. If consumers are in the debtor positions, the decline in interest rates lead to increase cash flow and increase consumption expenditures. On the contrary, if consumers are in the debtor position, decline in interest rates decreases wealth of consumers. In case central bank follow an expansionary monetary policy, real interest rate which is the cost of capital decreases. At the end of this, making new investment decisions by companies lead total demand in other words real output to increase. Increasing of interests has influence not only on companies but also individuals on investment and consumption expenditures. With decreasing of applicable net income, high interest rates lead investments to be less attractive and decrease profitability of companies. Decrease in investment and consumption expenditures lead to restriction in production amount (Mishkin, 2001).

For processing of interest channel, monetary base of central should be controlled, there must be sticky prices, and short term interest rates must change long term interest rates. That's to say, if interest rate decreased under expansionary monetary policy application, there must be an invisible increase in expenditures. The change in short term interest rate forms the beginning point of interest rate channel. So transmission with interest rate channel begins with the change in short term interest rate and this change lead to reflect on middle and long term interest rate via supply and demand mechanisms in financial markets.

The change in short term interest rate made by monetary authorities under the prediction of prices rigidity affect long term real interest rate. An expansionary money policy applied under new prices rigidity prediction decreases short term real interest rates. The decline in short term real interest rate leads to long term real interest rate under expectation theories. Consequently, this situation causes potential real effects in economy.

Central Bank has affected nominal interest rates and because prices cannot have adapted to new balance simultaneously, real interest rates have changed. In other words, there is a prediction which is price rigidity against monetary shocks. There are studies that ascribe the decisions related to price arrangements as inflation rate significantly. When compared to more stable economies, it has been claimed that prices and salaries in countries with high inflation are regulated faster and inflation expectations have significant role to determine prices. Some economists have claimed that interest rate is insufficient to explain effects of monetary policies on expenditures.

According to economist who defend interest rate channel, the change in money supply affects economy, but there is no significant reason of sources of this change in money supply so active side of bank balances have been ignored. In this case, because interest rate channel is only interested in passive dimension of bank balances, it is not interested in the change taken place in credits after change in bank reserves. If there is decrease in credit amount of banks, it is considered to provide from alternative finance sources. For this reason, it is predicted that there is no special place of bank credits in economy and substitution among finance sources is complete (Kashyap et al., 1994).

In the scope of aiming inflation after 2011 banking crisis, as a reaction to that CBRT give up the aims of inflation, it enabled to change interest rates and manage the expectations of inflation. In this scope, inflation and real interest rates have been decreased at reasonable level, bond between real interest rates and expenditures decisions have been gotten strong by beginning to decide depending on the changes in interest rates of economic departments. Output gap of these interest rates of policy change has elevated its effectiveness on inflation, it has increased sensibility inflation dynamics to policy interest rate by empowering efficiency of interest rate in the scope of traditional transmission mechanism.

In the period which Turkey economy experienced depolarization, the control of CBRT had decreased on monetary growths and the effect of interest rate had decreased because the decisions of production and pricing depend on exchange rate. In addition to this, empowering of banking sector in successful disinflation process experienced after 2011 crisis, that composition of public debt stock reached healthier structure and increasing trust of Turkish lira had decreased depolarization significantly, thus effectiveness of interest rate had increased. On the other hand, there is an influence of becoming transition from short term interest rate to long term evident as well (CBRT, 2013).

2.4.2. Exchange Rate Channel

Exchange rate channel states the change in real production from the effect of monetary policy on exchange rates because of reflecting net export (Horvarth and Maino, 2006). Central banks try to protect the value of domestic currency because of so many reasons. Especially changes in exchange rates in economy with negligible deficits have also a great effect on inflation.

Depressionist process leads to an increase in inflation as a result of high importation and increased exportation need. Consequently, government and policy makers follow exchange rates more and this created pressure that central bank apply different policies (Mishkin (2001). Channel volume of exchange rate depends on sensibility of exchange rate to monetary shocks, openness level of economy and exchange rates of net exports. Exchange rate channel can process in openness economy that flexible exchange rate regime has dominated. As openness level of country is high so exchange rate channel is effective in monetary transmission mechanism.

Increasing of externality of economies and using of flexible exchange rate system commonly have increase importance exchange rate in monetary transmission mechanism. In so many emerging countries, because bono, share and real estate markets have not developed sufficiently, exchange rate appeared as a most important asset affected from monetary markets. The effect of this channel has been seen especially in export trade, price flexibility, in the environments that provide input supply for this export industries indirectly. For this reason, a different effect is expected on industries which are sensible to foreign competition.

In the period after 2001 in Turkish economy, significant changes had been observed in function of exchange rate within scope of traditional transmission mechanism. As in the other emerging economies, exchange rate movements lead to destabilizing effect with the reasons like depolarization, imbalance between income and expense of government, banking processing unhealthy and financial fragility with finance sector before 2001 in Turkey. That unsuccessful stability programs applied after economic crisis experienced in the past depend on fixed exchange rate regime leads powerful indexing behavior in addition to inflation expectations of exchange rates expectations to be principal indicator. In this period which floating rate regime has not been applied, exchange rate transitivity has actualized in high levels not only as growth and but also speed. In the period which floating rate regime has continued to apply and inflation aiming regime begins to apply, it has been identified that exchange rates have been taken into consideration less more while making pricing of economic departments and the transition effect from exchange rates to prices has decreased in terms of both growth and duration.

In the scope of traditional monetary transmission mechanism, it has been thought that local appreciation of currency leads economy to limit via the effect on foreign trade. In addition

to this, in Turkey economy, in the periods which Turkish lira gained value, economy had entered into development process, recession had been experienced in situation which Turkish lira lost value. In the periods, high capital inflows have been experienced, appreciation of Turkish lira currency increases net value of companies who have debits in foreign currency and separate this debit for investments and production. In addition, because of high weights of import inputs in production process, companies can produce same goods with lower prices in these periods, on the other hand the increase in purchase power cerates the increasing effect on home demand. All these factors lead economic activity to accelerate depending on increase in Turkish lira.

There are two main transmissions of exchange rate on theoretical process. These are the transmission of exchange rate on net exports and the transmission of exchange rate on balance sheet.

2.4.2.1. Transmission of Exchange Rate on Net Exports

Exchange rate channel consist of interest rate effect under flexible exchange rate and complete capital mobility as well. In other words, there is a close relationship between exchange rate and interest rate (Mishkin, 2001). Because expansionary money policy application leads local interest rate to decrease, it affect exchange rates and deposits stated in domestic currency become less charming than deposits stated in foreign currency. The increasing of demand against foreign asset lead domestic currency to decrease. The domestic monetary depreciation makes the goods produced in domestic cheaper than foreign goods. The effect of this is positive on export and the net increasing export lead output to increase.

2.4.2.2. Transmission of Exchange Rate on Balance Sheet

The other important effect of waves of exchange rate on total demand actualize with affecting balances of companies which are financial or not. The other significant effect of waves in exchange rate on total demand is taken place with affecting debts of the companies which are financial foreign currency or not, as seen in so many rising market economies. If the debts of household and companies consist of foreign money, an expansionary monetary policy that will lead to loss in value of national currency will increase debt obligation.

If foreign money asset is not created against currency of debits, because the value of assets do not increase as domestic type of currency, a fall in net value of company will be seen and the deterioration seen in balance will lead to a fall in credits by increasing “adverse selection and moral hazard” problems.

The shrink in credits will decrease investments and thus economic activity will shrink (Kamin et al., 1998). The effect of exchange rate to balances is defined via bank balances in addition to company balances. That household and companies could not pay their debts because of rise in exchange rate, makes banks collect debts difficult and deteriorate balances structures of banks. Therefore, lending capacity of banks will fall and investments, total expenses and income level will decrease because of liquid squeeze.

2.4.3. Stock Channel

Monetarists put emphasis on other relative asset prices and economic effects of real wealth about monetary transmission in general. Accordingly, there are two channels involving asset prices in monetary transmission mechanism. These are stock prices channel and wealth effect. In the process of asset prices, the effect of monetary policy on investments is defined with q theory of Tobin and the effect on consumption is defined with life cycle theory of Modigliani.

2.4.3.1. Stock Prices Channel

q theory of Tobin is a mechanism which creates effect on value of assets via monetary policy. q is defined the department of market values of companies to capital cost. The rise of this value states that market values of companies are high according to spare capital. In this case, the companies can determine high value on equipment cost and fixture which will buy with income by exporting. Therefore, because companies will buy more investment goods with less stock, investment expenses will increase.

When it is assumed that Central Bank applied an expansionary monetary policy, the increasing money supply lead consumption to increase. There are stock expenses in the increasing consumption expenses. In addition, the decreasing of interest rate because of the increasing money supply will decrease demand for deposits, it makes stocks more valuable against deposits. Therefore, the increasing of stocks of individual and increasing of stock

against deposits makes increase demand for stocks. Stocks will increase because of the increasing demand. The rise in stock prices lead companies increase in value. In this case, it can be considered that financial wealth of companies has increased.

Companies whose wealth increased, the consumptions of them increase. The increasing consumption invigorates economy and increases production. Consequently, it can be said that expansionary monetary policy has increased production by creating positive effect real economy via financial asset channel (Mishkin, 2001).

2.4.3.2. Wealth Channel

An alternative channel of monetary transmission mechanisms includes the change in consumption expenses as a result of that share prices affect wealth level. Modigliani in his "lifecycle model" in 1975, stated that consumer will change consumption expenses depending on lifecycle income. So human capital has shown as components that affect real capital and financial wealth consumption. A great amount of financial wealth is the shares stock market. The rise in stock market activities increases financial wealth value and lifecycle income of consumers. Lifecycle income rise lead expenses of investments to increase within scope of accelerating consumption expenses by elevating in economy.

q theory and wealth effect of Tobin can be adapted to assets like house and real properties except stock. For example, because rise in housing prices increase prices of these assets in proportion to replacement cost, q value for residence will increase and leads to an increase in housing production. Similarly, housing and real properties are a part of wealth, the rises in the prices of these assets will increase value of wealth and so increases consumption expenses. In this case, a monetary expansion that lead to housing and real property prices will also lead to a rise in total demand via q theory of Tobin and wealth effect (Mishkin, 1996).

Pigou and real balance effect have an effect on total expenses. Pigou effect is the effect on consumption expenses that taken place in real wealth as result of fall in prices; in case of that prices and fees are flexible, it claims that it can be provided full employment in economy. Accordingly, in case general level decreased with decreasing of monetary fees in economy, real value of savings made previously will increase and for this reason

individuals will increase their demand to consumption goods which their fees fall by disposing less.

2.4.4. Credit Channel

Monetary transmission mechanism that explains changes in monetary policy affect economic activities with what ways, while it was like that changes in money supply and interest rates affected amounts of investments and consumption, excessive mobility in economy makes this view insufficient by economists (Bernanke and Gertler, 1995). As a result of this, Bernanke (1983) has stated that finance corporations have effect on economy and roles of banks in transmission mechanism has been attracted attention.

Credit channel approach focuses on lack of information, operation costs and credit sizes. Market distortions gained importance with meeting expenses decisions with internal and external resource finance. Credit view emphasis on the effects of lack of knowledge between fund supply and demand providers on transmission mechanism. Market distortions explained with adverse selection and asymmetric concepts add a special role to financial intermediary in general, in the process of reaching information and evaluating information in private sector; it enables monetary power independently of monetary growths like interest and credit to affect total demand in order to change credit-security portfolio composition of bank balances with these changes.

Rise in operability of credit channel after 2011 crisis in Turkish economy has been observed. In the past, because of high budget deficits and real interest rates, banking sector imposed restriction and it did not give long term credit and reasonable interest rate to especially small and middle scale businesses. In this period, banking did mainly function as intermediary mission to finance expenses of governments. Structural reforms after crisis, banks returned financial mediation activities instead of finance of government expenses because of the reasons which are low interest rates in developed countries, the increasing liquidity and fall of real interest rate. Therefore, total demand and inflation which banks have used depending on changes in policy interest rates begins to be affected (CBRT, 2013).

It has been claimed that credit channel of monetary transmission mechanism includes two mechanisms which define analysis of relationship between changes in monetary policy and

the growth of external sources premium (Fountas ve Papagapitos, 2001). In other words monetary policy has an effect on real economic activities in two ways. First of all, the credit channel which affects bank credit supply given to dependent companies; second, balance channel which lead to change in real production by affecting balances of debtors.

2.4.4.1. Bank Credit Channel

Banks have special roles not only basic mediation role between the ones who need fund and fund surplus and also the effect on the policy decisions of central banks and expenses decisions of households (Dale and Haldane, 1993) .If bank credits and deposits have same features likewise other borrowing and saving instruments, there would be no income difference between those instruments. In such world that there are replacements of all instruments, banks will play a passive role and monetary transmission would function completely independent of behaviors of banks.

However, in real world, other debiting and saving instruments cannot replace banks credits and deposits. This situation is because banks decreased asymmetric information problem in credit market. Asymmetric information problem between borrower and lender makes block credit market function effectively like so many markets. In this environment banks play a special role to function effectively by decreasing these kinds of specializations regarding observing and evaluation.

If a company would like to become indebted by exporting bono, before investors buy bonds of these companies, they will want to be informed regarding reliability of company and profitability of investments. If borrower company is big and known, the information who lender would like to know is either accessible by public or need very low cost. However, same situation is valid for households and small companies. It is difficult to assess credibility and provide information about borrowers and leads significant cost. Therefore, debiting interest rate which borrowers have to endure will increase.

However, that banks are specialized corporations regarding observation and evaluating makes costs of these information decrease significantly. Therefore, banks credits for households and bank credits can be gained more convenient conditions than alternative debiting resources (Dale and Haldane, 1993).

For bank credit channel work effectively, finance bonds of companies and bank credits should not been full replacement goods. Under these circumstances, in case of decrease in bank credit supply, it will not be possible to meet needs by exporting finance bono at the same conditions with finance credits.

Another condition for the efficiency is to affect policies applied by central bank. In case central bank decreases money supply, it should not have been possible to react the change in reserves by using other finance types. According to another condition, it should not have been possible of full price arrangements that removed effect of changes of monetary policy.

As long as conditions above are provided, expansionary monetary policies increase bank deposits, reserves and credit supply of banks. The increasing of credit supply makes companies increase their investments by using more credits and consequently lead investment and consumption expenses to increase. As a result, total production rate of economy increase (Mishkin, 1996).

On the other hand, as result of contractionary monetary policies, fall of credit amounts of banks lead to credit rationing phenomenon. Credit rationing is some of the ones who apply credit applications to take credit, not to find credit in case even if others approve to give high interest rate (Stiglitz ve Weiss, 1981)

The reason of this situation is like that; when credit interest rates rise, because it carries less risks, it will make investments for the projects that which incomes are lower, secure borrowers will give up to take credit. The borrowers who make investments to less risky projects continue credit demands, even they approve to pay higher interest rates to get credit. That the possibility of repayment of credits given to risky projects is high makes more profitable comparing decreasing credit supply with increasing interest rate (Walsh, 1998).

Credit rationings affect small borrowers because information cost about themselves are high in particular. The conducted researches have revealed that how external finance cost which monetary contractionary has been experienced for small companies has increased. In the economies which nonbank finance opportunities are especially limited, credit rationing effect works by empowering traditional interest effect of monetary rate (Kamin et al., 1998).

On the other hand, that banks cannot change their asset compositions or this type of change is very high cost may lead to competitive pressure decreasing effect in market of bank credit. In case monetary policy is limited, because banks create high cost, they may not replace bank credits with bills even if it has more income. In such environment, because credit market is isolated and sticky bank credit rates can be discussed. In this situation bank credit channel work in the decreasing effect of monetary policy to real economy (Dale and Haldane, 1993). The researchers conducted oriented to process of bank credit channel concentrate on two subjects in general. First of all, that some borrowers are dependent on banks and the effect of change in the request of giving credit of banks on investments and expenses behaviors of these borrowers. Second is that, the change monetary policy affect bank credits directly or not (Morris and Sellon, 1995).

2.4.4.1.1. Dependency to Banks

The view that some borrowers are dependent on banks in terms of finance emerge from asymmetric information models that works to explain credit market problems. In general, opportunities of borrowing of small and large companies are different. Finance opportunities of large companies are very expansionary in terms of capital markets and monetary markets. Borrowing opportunities of small companies from capital markets are very less. Because other costs taken place in case of information activity regarding small companies and go bankrupt, it is very high in terms of lender.

That information and credit observation opportunities of banks are higher that other intermediary corporations enable debt to small companies with low interest rates. Therefore, small companies depend on bank credits. In addition, there is no full replacement of bank credits. Because households cannot get fund directly from monetary market and is dependent on banks for foreign finance. This situation, in case of decreasing of credit supply, it empowers possible damage to small and household (Morris and Sellon, 1995). The finding gained from empiric studies of Gertler and Gilchrist (1995) have supported this idea. On the other hand, Oliner and Rudebusch (1996) has precipitated that the dependency to companies has increased by developing and increasing credit opportunities and capital markets, the importance of bank credit channel has lost over time and the effects on real economy has decreased.

2.4.4.1.2. Changes in Monetary Policy

Some of studies conducted to evaluate the effects of monetary policies on bank credits have researched how affect portfolios banks, some of them focused on change in interest rates and credit durations. In the study of Romer and Romer (1993), it has been shown that decrease in bank credit volume as a result of monetary shrink has shown inconsistency with the decrease seen real economic activity, the results which shrink in monetary policy have decreased bank credit supplies and slow economic activity could not be gained.

Gertler and Gilchist (1995) has identified that because small companies could not find the required resources for their stock and business capitals, they stopped production activities immediately, large companies continued production by meeting these needs with internal resources and they concluded that this situation has slowed monetary shrink on production and extended effect duration. Kasyap and Stein (2000), as a result of monetary policy applications, credit behaviors of bank change, bank deposits decrease at the end of contractionary monetary policies of small banks whose balance is less liquid and for this reason they had to decrease their credits significantly.

On the other hand, in studies conducted regarding durations of bank credits and interest rates, credit rationing or credit supporting results have not emerged (Morris and Sellon, 1995). In credit markets, another development which changes effects of monetary policy is the proliferation of credit commitment. This situation can increase affecting process of economic via bank credit channel of monetary policy changes.

2.4.4.2. Balance Channel

Balance channel resulted from asymmetric information problem in credit markets is based on financial situation of foreign finance premium of borrower. That value of liquid asset of companies and that high value of other assets accepted warrant means that adverse selection probability decrease and in case of actualizing this probability, it means that loss of debtor is limited.

In this situation, it has been expected that the one who want to be indebted finds credit more easily and the foreign finance premium is lower. In addition, that equity capitals determined by company owners are low lead to have tendency to make investments for less

risky projects and increase moral problems. Finding credit for the company which wants to be indebted in this case will be difficult and it has been stated that foreign finance premium is higher.

Increases and decreases in foreign finance premium make expand and impoverish the effects of changes of monetary policy on economy by affecting investments and expenses decisions of companies (Mishkin, 1996). Exposure in balance of borrowers has two effects on the brink of direct and indirect. The directing effect of contractionary monetary policies that weakens balances of borrowers is like that. So many companies finance stocks and work capitals into more short term debt. The increasing of interest rates weakens cash flow and financial situations by increasing interest costs of these companies.

In addition, increasing of interest rates makes assets prices and warrants values of companies decrease and thus leads foreign finance premium to increase. On the other hand, contractionary monetary policies affect cash situations and assets values of companies indirectly. For example, contractionary monetary policies decreasing sales of companies by increasing expenses of their customers. The companies which their earning decreases cannot be adapted to fix and semi fixed costs in short term. This situation leads profitability of companies, net values and credibility to fall (Bernanke and Gertler, 1995)

According to Bernanke and Gertler (1995) effect of changes to companies vary from the growth of this company as well. Unexpected decline in cash flows lead balances of small and middle companies to weaken, deteriorate financial indicators, fall values of assets that will show as warrant and not to show sufficient warrant for the needed credits. This situation affects credit opportunities and interests rates of companies directly. On the other hand, in case there is unexpected weak in cash flow of companies whose borrowing resources much more and which are open to public, they use their own fund or increase short term debiting.

Although they have face with higher interest rates and low income, at least they can continue employment level. Therefore, a negative shock affect credit opportunities and conditions (like interest rates) of small companies more that large companies. The other effect of balance channel will be on general prices of monetary policies. That debt contracts of companies are generally made fixed nominal interest leads real responsibilities

of companies to decrease and real values of assets to be fixed by increasing general level prices of expansionary monetary policies.

Therefore, net real values of company have increased. This situation makes companies increase float a credit ability by decreasing adverse selection and moral threat problems, it leads to increase in investment expenses and total production. While balance effect has focused on expense decisions of companies much more, Bernanke and Gertler (1995) have claimed that balance effect is effective in terms of household and durable consumption expenses. As a matter of fact, the increasing of interest rates via contractionary monetary policies will lead household and durable consumer goods expenses to decrease by affecting cash flows of households except companies negatively (Mishkin, 1996). In addition, bank balances channel can also affect via cash flow channel and unexpected price level channel. Therefore, balance channel can be examined under three topics which are cash flow channel, unexpected price level channel and household balance channel:

2.4.4.2.1. Cash Flow Channel

Hard monetary policy can decrease net cash flow and insured values indirectly. If we think a company that makes production for consumers in low-income group, if contractionary monetary policy decreases expenses on these customers, company profits decrease because various fixed and fixed-like costs of company cannot be arranged in shorter. The rises that emerged obliterates net value and credibility of company over time (Bernanke and Gertler, 1995).

Expansionary monetary policy affects cash flow of companies positively by decreasing interest rates. This situation provided recovery in balances of companies and blocked asymmetric information problems to appear. In this context, credit volume has increased and investments or national income has increased.

The important component in this transmission mechanism is that the interests that affect cash flow of companies is nominal interest rates. Therefore, this interest rate mechanism is different from traditional interest rate channel that shows effect of real interest rate on investments. In addition, in this transmission channel, short term interest rates have a significant role. Because the interest payments which are effective on cash flow of

company are interest rates paid for short term not interest rates paid for long term credits (Mishkin, 1996).

2.4.4.2.2. Unexpected Price Level Channel

Another mechanism of balance channel is “unexpected price level channel” that shows the effect of monetary policy on general prices level. Debt payments are fixed with contracts nominally. The unexpected rises in prices general level decrease responsibilities of company at the same period. However, real value of assets of company may not fall. Expansionary monetary policy leads to unexpected rise in prices general level. Therefore, decreasing of adverse selection and moral threat issues increase real net value. As a result, an increase takes place in investments expenses and output (Mishkin, 1996)).

2.4.4.2.3. Household Balance Effects Channel

Although credit most of channel literature is focused on expenses by companies, credit channel view takes consumption expenses made for home expenses and especially durable consumption goods into consideration equally.

The decline in bank credits resulted from monetary shrink leads to a fall in durable goods bought by consumer who cannot apply other credit resources and household take. Similarly, increases in interest rates lead balance of household to deteriorate. Another way to see how balance channel affect consumers is to take liquidity effect on durable consumption goods and household expenses into consideration. Balance channel in approach of liquidity effect works via the effects of consumers on expense request rather than lending request of lenders. Because of asymmetric information regarding credit qualities, these are durable consumption goods and the assets which are not household liquid (Mishkin, 1996).

If consumers need to monetize these goods at the end of possible bad shock, because these assets will be sold below real value, they may face a great loss. On the contrary, if consumers had kept their financial assets, they could sell their financial assets on the value on market and increase cash amounts. Therefore, if consumers expect to find themselves in a financial trouble quite likely, while they keep durable consumption goods which are not liquid and households in less amount, they will keep liquid financial assets more.

Balance of consumer has a significant effect in the prediction which household experience trouble in financial crisis period. Specifically, if it has a great amount of financial assets in proportion to debts of consumers, the prediction of financial trouble probability will be low. In this case, consumers approached willingly in purchase of consumption goods and household. When share prices increase, while the value of financial assets rises, durable consumption goods expenses increase. Because consumers take more security position and experiencing financial trouble decrease (Mishkin, 1996).

The increased monetary supply at the end of expansionary monetary policy increase share prices. The increasing of financial assets makes consumers to take more security positions. At the end of this, durable consumption expenses increase. That durable consumption goods and household are illiquid assets is the basic reason that monetary shrink that decreases cash flow for consumers and increases interests reveal decrease in durable consumption goods and household expenses. The declines that decrease requests of having household and durable consumption of consumption have increase possible financial congestion. For this reason, because consumers have decreased durable consumption goods and household expenses, total demand falls (Mishkin, 1996).

2.4.5. Expectation Channel

According to expectation channel, all variables whose have inter-periodical results and determined rewardingly have been affected from expectations of economic units against shocks that may happen in the future and how monetary power react these shocks.

In this case expectation channel can be considered as inter-periodical type of interest channel, asset price channel and credit channel. In case of that it has been announced monetary power embarked on monetary application which is not supported by in current period, market expectation will be adapted, the change taken place as result of financial markets lead to change in production and inflation at the end.

The requested effect of policies stated that will be carried on in the future will be depend on monetary power security (Loayza ve Hebbel, 2002). Monetary policy change affect expectations related to future of economy and the trust to economy. The change in perceptions of economic agents directed at future, affect fees, employment level, sale and profit margins as well. However, it is difficult to predict effect dimension.

Increasing of interest rates can be envisioned that monetary power considered growth in economy more than expected. This situation can create significant recovery in reliability and expectations of economic growth oriented to future. On the other hand, the rise in interest rates can be envisioned as a signal to slow economic growth for the purpose of reach the inflation target of monetary power. In this case, there may be a decrease in expectations and reliability oriented-future of economy.

The effect of monetary activities depends on predicting or not by financial markets. Unexpected changes of monetary policy will relative strong effect. The control of monetary powers on monetary conditions depend on affecting financial especially inflation expectations ability. The changes in credibility can change final real and nominal effects of monetary policy. On the other hand, the uncertainties about payments of debts agreements are very important reason. For example, as a result of contractionary monetary policy, the increasing uncertainty in recession makes good and harm credit risks distinguish from each other. For this reason, the increasing uncertainty renders information in financial markets more asymmetric and significant rises will take place in adverse selection and moral issues. This situation prevents credits and thus leads to a fall in economic activities.

In the economy which uncertainty exists, asymmetric information problem consolidated and moral threat and moral risk issues which restrict economic activities and credit volume become evident (De Bondt, 1998). The increasing uncertainty including financial system makes fund providers choose between investments opportunities and measure credit risk. While fund providers were trying to exceed asymmetric information distribution, the increasing of uncertainty leads saving amount that will direct at investment and to slow economic activity.

There are so many reasons that increase uncertainty. Those consist of failure of financial corporation in financial sector or Non-Sector Corporation, economic respond like recession, politic instabilities experienced in emerging countries and uncertainty regarding situation of government policies in the future (Mishkin, 1998).

Inflation target applied after 2001 in Turkish economy have a great importance that monetary policy can manage expectations via both politic tools and communication. Reliability of aims announced previously presents a reference value to economic units. Chronic and high inflation experience in the past and applied unsuccessful stability

programs damages reliability of aims in the period and restricted efficiency of monetary policies. In addition to this, that expectation is sensitive to developments lead to another barrier for monetary policy. However, with implicit inflation targeting, beginning to understand by public opinion increased processing of expectation channel.

2.5. Indicators of Monetary Transmission Mechanism

Monetary transmission mechanism channels affect various variables in different speeds and densities. For this reason, when researching effect of monetary policies on real sector, the giving answers of that the effects of transmission channels are same or not in all economies or which features of economies determine transmission mechanism channel function and relative importance (Loayza and Hebbel, 2002).

According to Kamin et al. (1998), two factors are important when evaluating that how much monetary policy affect real economy to what extent. First of all, the effects of tools controlled by directly central banks like short term and legal refunds on credit and deposits interests, asset prices and exchange rates variables. This is determined by structure of financial system as a relationship.

The second factor is the relationship between the situations of companies and household and expenses decisions. Because, liquidity situations of households are indicator for change in market prices to total demand effect. The components that determine efficiencies of monetary transmission mechanisms as follows:

2.5.1. Direct Interventions

Direct interventions of governments to financial markets have actualize by controlling interest rates or creating limits for financial market prices, putting limits for bank credits and providing credit opportunities to selected regions. With financial liberation process, direct controls of governments on credits lost its importance, application like open market to manipulate monetary policy in undirected tools gained importance. Therefore, application areas which the variables of credit ceilings in 1980s and reserves ratio is active gave its place to open market operations mainly (Kamin et al., 1998).

2.5.2. Price Elasticity

In an economy, a monetary shock shows its effect in all nominal monetary and credit sizes such as assets prices, exchange rates, factor and goods prices evenly and at the same time. Total demand increases, but total supply does not change. Under these circumstances, the effect of all transmission channels to prices will be similar. Therefore, it is not significant to determine relative importance of different transmission channel in this type of economy (Loayza and Hebbel, 2002).

However, prices in real world are sometimes determined by government and private sector in state of monopoly, this situation leads price rigidity to take place. Therefore, in real world which prices rigidities exist, relative importance, speed and density of different transmission channels have changed and the effect on real economy differentiates.

2.5.3. Competition in Financial System

The important thing in monetary transmission process is sensibility to changes in short term interest rates affected by central banks directly rate that affects the decisions of borrower and saver. The structure of financial system affects this sensibility rate directly. The structure of financial system is shaped by many factors which are the presence of alternative finance resource, deepness of finance markets, and competition in banking sector and efficiency of legal system. That credit and deposit interest rates reacted to changes in monetary market interest rates fast and strongly, makes efficiency level of monetary policy to real economy increase by accelerating transmission process.

The main indicator of credit and deposits interest rates in sensibility level is competition level in banking sector. That there are so many banks in banking sectors and they are in competitive area provides changes in funding costs to affect credit and deposits faster. On the contrary, that there are less banks in the market may lead oligopolistic pricing to take place. This situation leads the sensitivity of credit and deposits interest rates to monetary policy interest rates changes to be slow and asymmetric.

In addition to this, that share of public banks or banks-supported public which their profit motive is low in banking sector have decreased this sensitivity. The presence of alternative nonbank fund resources and over the counter markets, accessibility of households and

companies to these resources affect the sensibility of credit and profits interest to changes of monetary policy changes. The presence of domestic capital markets empowers the transmission of monetary policy shocks. Advanced and competitive capital markets are usually more sensitive and reacts changes of monetary policy faster. Therefore, advanced capital markets are a factor which increases sensibility of banks to monetary policies (Kamin et al., 1998).

Financial system structure determines which transmission channel is active. That financial consists of a couple banks which have monopoly power leads interest rate channel to be weak, that financial asset variety is low will lead asset prices channel not to function. In addition to this, credit channel is active in thin financial markets which there are moral and adverse selection problems. In addition, in the economies which is not advanced financially, because international trade and capital movements are under control of government, exchange rate channel is also not effective. However, when financial system develops, deeps and becomes varied, interest rate and exchange rate channels will work more effectively (Loayza and Hebbel, 2002).

In the country whose financial system is advanced and their alternative credit opportunities are a lot, credit channel of transmission mechanism is less effective. Therefore, the effect of monetary policy changes in these countries to production and inflation via credit channel are expected limited. In the countries which banking system is weak and dependency of companies to banks is high, credit channel is stronger. Because in this type of countries, decreasing of deposits as a result of monetary policy reduces balances of banks whose sources are limited except deposits and lead to fall in credit supplies. That companies cannot find alternative source to capital markets affect expenditures and investments significantly.

2.5.4. Structure of Banking System

The financial situation of banking system is a significant factor that determines bank credits supply and cost. Risk-weighted capital efficiency ratio button may lead to limit credit supplies by increasing credit interest of banks and slowing credit conditions. Therefore, if financial situation of banks is weak in periods that monetary policy has been restricted, credit supply will decrease such an extent. In case of that capital efficiency rate of bank is high, even if in case of experiencing declines in asset costs, capital efficiency

will be provided and this situation will not lead to restriction in credit supply because of concerns to provide capital efficiency rate (Kamin et al., 1998).

2.5.5. Exchange Rate Regime

Theoretically, in case of that there is no capital controls, it has been determined according to replacement rate between exchange rate regime and local-foreign financial assets. The effect of monetary policy actualizes in two ways on floating rate regime applied economies. At first, monetary transmission works with traditional bank rate and liquidity effect because money supply is exteriorly controlled by central bank.

Second one, monetary policy affects the total demand and prices through exchange rate. In this interaction, elevation of replacement between local and foreign resources causes high reaction of exchange rate on the change of interest and greater effect of monetary policy on the real sector (Kamin et al., 1998). In the fixed exchange rate regime, in circumstances of local and foreign resources replacements, monetary policy changes is balanced with capital movements and monetary conditions do not change. In circumstances of low elevation between local and foreign resources, money power can change domestic interest rate independently of foreign interest rates (Kamin et al., 1998).

2.5.6. Financial Position of Debtors

The effect of monetary policy on households and borrowing and expenditure behaviors of companies takes shape according to their financial conditions. Households and companies which some of them have strong and some of have weak financial position, reduces foresee ability of the effect of monetary policy (Kamin et al., 1998).

The impact of monetary policy on total demand is less when economies that have underdeveloped financial intermediation and that household and firms generally financed their investment and expenditure with domestic funding. After economies getting developed, the increase in resources provided by financial intermediaries' causes to finance larger proportion of investment and expenditures by bank credits and the increase of sensitivity of total demand to monetary policy changes. Likewise, economies that have underdeveloped financial intermediation, savings of households and firms generally is collected in the banking system, investment rate to personal assets is very low.

In this economies, the effects of monetary policies are very low via prices of resources. When financial markets develop, it has been expected that asset portfolio variety of companies and households and sensibility to monetary policies increases. The structure of sector which companies are in is determinant in exposure level of investment and expenditures of these companies from monetary policy. That finance need is very high and there is no finance resource except banks leads construction sector to be sensitive to interest rates. For the same reason, the sectors which need high stable capital investment or business capital are dependent on bank credits and it is very sensitive to bank interest rate changes (Kamin et al., 1998).

CHAPTER 3

MONETARY TRANSMISSION MECHANISM: CREDIT CHANNEL

3.1. Introduction

In this Chapter credit channel will be investigated in more detail which is one of the transmission mechanisms discussed in the previous part. First of all, asymmetric information subject is handled because of its role in the monetary transmission mechanism of credit channel, determinant problems which appears depending upon asymmetric information of credit market. Adverse selection and moral hazard as two different kind of asymmetric information will be discussed in this part. Credit rationing and credit crunch topics will be in this part because of the close interest to the credit channel.

3.2. Asymmetric Information Problem

Asymmetric information concept is a case of economic units interact with each other that one side have more information than the other side. In the case of the information has become asymmetric, the side which has more information have the edge over unfairly. For instance, when buyer doesn't know about the quality of the product as much as the seller, it refers an asymmetric information between the parties.

Funds are allocated to the most productive areas in a financial system in the valid conditions of perfect competitions. But in real life financial system has more complicated and different process in perfect competition conditions. For instance, in real life participants in the financial market don't have full information in the perfect competition market but they have asymmetric information. Asymmetric information and its related problems has a great impact on the process of financial markets. In practice, all the

measures that are recommended is intended to solve asymmetric information problem in markets.

However, it is impossible to remove this problem totally. Asymmetric information and related problems which originates from lack of information between parties' contract, have influence to process of financial market. Financial markets are obliged to care of these kind of information problems in addition to basic financial intermediation. Information problems that affect as a whole complicated structure of financial system and its function, both form financial corporations and contract and generate significant macro results through transmission channel of monetary policy to economy.

As a result, that the party that has gained more information at the end of asymmetric information between economic units facing with economic activities has performed a set of behaviors in favor of just in favor or against opposite part, block operation to make effectively.

Asymmetric information that show up in the markets cause troubles in the process of markets in subject by leading to two basic problems as expressed adverse selection and moral hazard. Adverse selection is an asymmetric problem that shows up before having a contraction between two parties and it originates from hidden information. Hidden information is a thing that one of the parties' side know about itself or quality of product that sells and so the other side want to learn but cannot. Moral hazard is an asymmetric information problem that occurs after parties have contracted and originates from hidden information. In case hidden problem is an activity in economic activity that cannot be observed by the other.

The most known ones of studies which are premise about the view that it leads to troubles in markets which asymmetric information has taken place and for this reason these markets cannot be stabilized or resources distribution cannot be done effectively even if it is stable belongs to Arrow (1963, 1968) and Akerlof (1970). Arrow in his study described moral hazard problem shows up as an asymmetric information originated. Moral threat emerges when one party of two parties engaged in activity that will affect both parties at the ends of one party dependent on each other but this part cannot balance those activities.

In credit markets, asymmetric problems occur due to corporations apply for credit supply and individuals apply for credit or due to lack of information between corporations. Individuals generally apply for credit to ensure financing to their investment project when they demand for consumption purposed credit. It is highly important for corporations apply for credit supply to supply credit to borrowers in the process of repayment credit that they are not going to be in trouble. To be able to make right choice depending upon obtaining correctly and completely confirmation of some information about properties of borrowers. In that point, it is obvious that borrowers have information superiority because ones who apply for credit have exact and correct information about themselves. But for both sides apply for credit there exist both honest and dishonest borrowers.

This circumstance blocks transfer of information symmetrically between market participants. Because there are unreliable borrowers in the market and in order to get credit, because positive qualifications are more important, those borrowers treat honestly and openly about their own qualifications and specifications of their projects against the corporation which credit demand is requested by them. In this circumstances, occurrence of asymmetric information between borrower and lender causes various problems and unwanted situations for the market.

Asymmetric information in credit market results from that borrower who demand fun mostly has more information than potential debt provides about investment that fund will be provided and it may appear before performing an operation (ex-ante asymmetric information) and after performing an operation (ex-post asymmetric information). Before credit provided, asymmetric information appears when credit institution could not distinguish between borrowers have high and low risk in the case of ability of repayment of credit. (Claus and Smith, 1999).

Money lender corporations, before the credit rationing try to obtain information about qualitative-quantitative traits of credit demanders toward their presentation of financial reports. However, due to these reports don’t always give an exact information about borrower it is not easy to make definite judgment about borrower. Asymmetric information that appear after credit supply has stated that lender use credit or not within the compass of projects that funds provided, actualize or not project, provide recycle or not and so the situation which net income obtained from project could not be observed after credit contract is made.

Lender only has knowledge about situations that have determinant effect on repayment of credits when maturity has expired. In credit markets, before performing a procedure when asymmetric information comes into question causes an adverse selection problem, after performing a procedure it causes a moral hazard problem.

3.2.1. Adverse Selection

Adverse selection, appears only when too risky borrowers remain in credit market due to rise of interest rate. Return that lender corporations expect primarily depend on the possibility of repayment of credit. Therefore, for banks and the other lender corporations it is highly important determine among credit demanders who have high probability of repayment. It is quite difficult for bank to distinguish good quality borrowers among credit demanders and to be able to do this several screening tool usage is needed.

The screening tool of interest rate may be used for person or corporation are willing to pay for the credit they apply. Borrowers consider low probability of repayment of credit they take are willing to high interest rate for credits. In that case, ones will be high risk carrying borrowers even they are willing to pay high interest rates for repayment of credits. Thus, when rate of interest rises, the number of risky borrowers will increase in the average and causes profit erosion of banks. (Stiglitz and Weis, 1981).

Under the assumption there are two types of borrowers with high and low risk, if lenders be able to distinguish what kind of borrowers are applying for credit, they will be able to obligate borrowers from interest rate carrying their risk proportionally and be able obtain returns from total credit supply they expect. (Walsh, 2003).

However, lenders obligate the both types of borrowers on a single interest rate reflects an average risk because they are unable to distinguish between borrowers. Credibility with same interest rate of borrowers whose dangerousness is different from each other in credit market as in second hand car market makes the borrowers who risky and their repayment opportunity is low exclude the borrowers who are riskless and their repayments are high and occur adverse selection.

The observed problems in the American mortgage market have the most distinct features of the adverse selection problems. First, people are given housing credit who have low payment capacity and were asked to indicate their incomes to apply for credit but was not

asked to prove it. As a result of this, financial institutions which are suffering from repayment of credits go through a crisis and mortgage funds meet a loss in the market have been followed each other. Then, financial institutions haves lost confidence in each other and reduce the credit supply. All these, have led to an increase in the number of people who want low quality credits and to make adverse selections in the market.

3.2.2. Moral Hazard

Moral hazard in credit markets comes out before signing credit contract between the ones who offer credit and demand credit, symmetric information has transformed into asymmetric information because borrowers did not use credits within the compass of condition stated in the agreement and this situation could not have been observed by creditors (Kutlar and Sarikaya, 2003). Because creditor states the situation that borrowers of activities cannot be observed, moral hazard issue called hidden action, when examining in terms of lender, the borrower who use credit by engaging immoral activities has increased the risk of non-credit repayment significant and so endangers the income expected from credit of lender (Müslümov and Aras, 2004).

The borrower who gets credit can use in the investments that its income and risk are specific known by borrower, especially in the periods which interest rates are high, he/she can use in investments that failure risk is high to increase its earning. As a result of that risk undertaken by lender and borrower is different about investment which credits has been transferred, that borrowers have directed investments which their risk and income are high in order to maximize their own profits leads to moral hazard.

Because borrower will gain higher income at the end of that investment is successful, it will be one-sided profitable, in the con, because this investment will be financed via debt, whole debt or significant part of it will be undertaken by lender. As a result, the loss of lender in this case will generally be like non-repayment (Kutlar and Sarıkaya, 2003).

The reason which forced debtor to use the credit in the situation which lender would not like to be used is that the responsibility against Lender Corporation is specific and income varies from type of investment. If investment resulted in successful situation, the income which borrower will get is the rest part left on principal and interest and shows increase depending on rise in income from investment.

Profit of creditor is the credit interest determined independently of success of investment previously. For this reason, when expected profit of borrower is the increasing function of the risk carried by investment. Therefore, when borrower is disposed to take risk, creditor is disposed to manipulate the credits of him to riskless investments. However, because of presence of moral risk, creditor will not know where the funds of him transferred and he/she will try to overcome making conditions of credit heavy and/or request addition mortgages.

Banks have borrower sign credit contract to handle with moral hazard issue. Credit contracts laid a burden on debtors and encourage them to make efforts in order to provide credit payments under proper conditions. Banks must control use of credit to guarantee debtor to pay when due within the compass of purpose. If banks could not control use of credit under condition after credit contract are made, moral issue emerges. Because debtors may turn toward risky investments to maximize their earning. When investment project is failed, banks will undertake costs (loss) that will take place partially or completely. Even if banks get guarantee for credit in case of failure of project, meet a loss. As a result, to prevent moral hazard issue, they applied to credit rationing.

3.3. Credit Rationing

It is defined that the party who demand credit supply in credit market does not give credit as much as demanding, gives less or would not like to give credit as much as requested, and as credit rationing in credit market. Credit rationing, is to decrease excessive demand if excessive credit demand is in question in credit markets to provide profit maximization of credit demanders in order to keep interest rates of credit in specific level by creating shrink in credit amounts (Jaffee and Russell, 1976).

If demand exceeds supply, then price (interest rate) will rise. Until balance is provided at the same interest rate, supply will increase or demand will decrease. If price (interest) function as sliding demand and supply in market, allocation will not be. But there is credit rationing in market and balance is the allocating balance (Stiglitz and Weiss, 1981). According to Russell (1976), a set of factors that makes credit market different increase interest and allocation has taken place because of asymmetric information. The reasons of when applying allocation in adverse selection is that credit portfolio become risky and the

reason for applying allocation in moral hazards is that investors make a thought which can increase incentives in applying risky projects.

If it is based on asymmetric information in credit markets, making adverse selection need to apply high interest rates for credit demanders. The corporation which give credit will start to be selective to decrease risks of credit portfolios in order to limit increased credit demand, will begin to decrease credits to increase warrants and a set of regulations. When credit rationing is applied by banks, the purpose of banks can gain low risk project owners via a set of arrangements or by changing interest rates and due date. However, allocation is not made via price way in general but amount.

Credit rationing is being a measure applied by banks to remove negative effect on profit rates of adverse selection. According to Hodgman (1960), the reason that credit rationing is made to non-price components is that there are rigid interests rates based on oligopolistic structure in credit market.

Warrants is obligatory agreement provision to repay credit and charge credit risk to borrower partial. Warrants can also be used to distinguish debtors as allocation tool. However, even if increased warrant amounts increased profit of banks by making borrowers prefer less risker project, it cannot remove credit rationing completely (Bester, 1985). According to Stiglitz and Weiss (1981), even if credit borrowers have to show more warrants, they can apply to risky projects. Therefore, according to Stiglitz and Weiss (1992), the increased warrant obligation can decrease incomes of banks that demand credit

Even if credit rationing is not effective mechanism to solve information problem, it is a phenomenon that limits the risk undertaken by lender. The models mentioned in literature regarding information to credit rationing had been models which are Jaffee Russell models in 1976 and Stiglitz Weiss models in 1981. When there is asymmetric information is in question in credit market, Joseph Stiglitz and Andrew Weiss discussed how bank treatments are in 1981 in the conducted study.

3.4. Credit Crunch

Credit crunch is defined as a great regression in credit supply. When experiencing credit crunch, the relationship between credits and interest rate changes. Credit crunch emerged in two different ways. First of all is the decreasing of credit supply on determined interest rates. Second is allocating credit.

In second situation, credit availability has restricted. Because of low relationship between credit availability and interest rate, non-price credit rationing has been used. However, it is valid in the process of credit rationing. In credit crunch process which interest rates are not on the basis of credit rationing mechanism, credit rationing has been accepted as a reason of crunch. In other words, credit crunch can be defined via credit rationing. Bernanke (1983) have defined that credit crunch curve shifted to left when the qualification of secure real interest rate and potential borrower are stable. This situation defines expansionary rate decrease in credit supply.

Credit crunch is poor period that obtaining credit cannot be presented in proper conditions and created creditable fund for investments projects of credibility of credit demanders. In addition, regulatory pressures, excessive reactions and decreases in active values of banks lead to credit crunch.

According to Owens and Schreft (1995), credit crunch is the constant rise of non-price credit rationing. This rise symbolized credit decrease taken place independently of risk profile of borrowers. According to Kliesen and Tatom (1992), credit crunch is that growth in bank credits especially commercial credits slowed and regressed substantially. In some international studies, it has been stated that credit can be available before and after recession (Clair and Tucker, 1993; Kliesen and Tatom, 1992; Owens and Schreft, 1995). But, studies have been attributed to recession period. According to Bernanke et al. (1991), main reason of recession is credit crunch.

Creditability of borrowers in recession periods lower than normal recession period. For this reason, banks treat unwillingly to give credit and regress credit supply substantially. As a result, economic recessions have been experienced. On the basis of these explanations, it must be checked which situation is envisioned as credit crunch by markets. Because markets can consider any period as crunch. In particular, credit recession and credit crunch

periods has confused. Credit recession defines general decrease in credit growth because of demand or supply (or both). The change in credit demand can result from conjectural (change in economic activities) or structural (tax law etc.) reasons. Central banks affect expectations of lenders and borrowers via monetary policy. Therefore, it can manipulate credit supply and demand (Lamberte, 1999; Ding et al., 1998).

In credit crunch, there is no fund that will be taken on interest in black in excessive credit demand term. In addition, banks are unwilling to give credit in this its term. Because of direct borrowing fun flow has decreased and central bank forces banks to limit credit supply. Unwillingness of banks to supply credit prevents balance sheet drain. In addition, banks stop debtors reevaluate average credit quality. For those reasons, credit crunch is generally considered as supply phenomenon (Clair and Tucker, 1993).

On the other hand, Bernanke et al. (1991) ascribe the decrease in credit supply as both supply and demand factors. In other words, deteriorating balance sheets of debtors in crisis periods decreases credibility. Because of the fact that, credit demands decreased. In addition to this, because of credit losses, owner's equities of banks have limited and this lead banks to limit their credit supplies.

CHAPTER 4

CONSUMER CREDITS

4.1. Introduction

Consumer credits are a type of credit being made available by credit societies such as banking sector and financing companies. While the banks are directly financing production conventionally through investment credits or operating credits, the consumer credits are financing the consumption expenditures of the individuals.

In history, it had been observed that the indebtedness of household increases very much in some periods as per the liquidity condition in business cycle and economy. In the period of 1983 – 1989, the total liabilities of household had significantly surpassed the total income (Canner et al., 1995). Some researchers specify that the household uses credits by different motives. In this context, Zhu and Meeks (1994) specify that the household having an income below average uses personal credits for solving their budget problems beyond increasing their purchasing power. In this respect, it may be specified that the consumer credits are ones being used for the financing of expenditures devoted to consumption. Along with being like that, personal expenditures such as purchase of lodging and auto that are being supported by credits are being assessed within the scope of consumption.

4.2. Description of Consumer Credit

One of the economic decisions that the individuals make is what will be purchased and how it will be financed. When the individuals dream of a new automobile or a spacious house, they decide to borrow if they don't have money in hand (Kirchler et al., 2008). This borrowing may be procured from financial institutions as well as from other individuals. These borrowings, that the individuals procure from credit societies in order to finance their consumption demands, are being specified as consumer credits.

Consumer credits may be specified as a type of credit that the real persons may use in order meet all their necessities beyond commercial purpose. Consumer credits may get different names as being re-arranged -by the institutions making credit available- in accordance with the requirements of the individual or as per the intended use. In other words, consumer credits are divided to different types as per their intended use. The most widespread ones are housing credits, auto credits and personal credits.

4.3. Historical Development of Consumer Credit

The first arise of consumer credits had realized in 19th century, and the period that it became significantly widespread had been the beginning of 20th century. And transformation of consumer credits to a legal infrastructure extends to 1970s. The implementation of consumer credits –which started in 1970s in USA as being based on a legal infrastructure- had increasingly showed more development. The increase of consumer durables such as automobile and washing machine especially after 1920s had caused the activities of such institutions to expand. The banks following these developments had started to step in the field of consumer credits during the same dates.

In 1928, the opening of personal credit department by Citibank is being assessed as the first consumer credit implementation of the banks in history. The crisis of 1929 and subsequent World War II had arisen as an obstacle before the growth of consumer credits market. The movement -that had started in consumer credits after World War II- had started to be carefully monitored by the government of USA with concern of the possibility of causing inflation, and in 1949, Federal Reserve System had been the control mechanism on the consumer credits in USA. And as from the second half of twentieth century, the consumer credits had showed a rapid increase and had became one of the main elements of USA's economy.

And in Europe, the consumer credits had first appeared in 1938s in England, and they had started to become widespread after 1950. The British government had seen that the expenditures would significantly increase by consumer credits in accordance with the Keynesian policies it applies, and had supported the implementation. And then similar implementations had been observed in other significant European states such as France,

West Germany and Italy. The consumer credits are still constituting a significant part of the financing policies of European Union (EU) (Arslan and Karan, 2009).

The consumer credits may be defined as credits allocated by financing institutions in order to meet the consumption requirements of consumers. The consumer credits are a type of financing being used in funding the consumption expenditures of household.

4.4. Types of Consumer Credit

The consumer credits are basically divided to three groups. The credits being made available in order to meet the financing requirement of housing are being specified as housing credits. And mortgage credits which started to be implemented in Turkey by the mids of 2000 are included within the scope of housing credits. Mortgage credits had especially developed very much and commonly being used in USA. It had been better observed along with its implementation in Turkey that -despite not having a significant difference in between the housing credits and mortgage credits in respect of service provided to the consumer- the most significant specification of mortgage system is securitization of credits and dealing with them in secondary markets. And this is a condition that facilitates the financial institutions providing credit to find new funds. The recent global finance crisis experience -which had showed up in mortgage markets in USA- had shown that the control of risk is hard in mortgage system especially due to securitization of credits.

And the type of credit being made available in case of financing requirements in first and second hand auto purchases is known as auto credit. Besides these, the credits used for financing of education, marriage or any other requirement are being specified as personal credits.

4.5. Consumer Credits in Turkey

The decrease in interest rates and the financial stability environment in economy that occurred in Turkey following the crisis of 2000-2001 had caused the increase of consumer credits that had been made available along with the effect of positive atmosphere in global markets. The increase of consumption and spending tendency of household had also

supported the development in subject, and the share of consumer credits among total credits had showed an increase.

In this part of the study, the development of consumer credits in Turkey as per years and their current state will be presented. Within this scope, the consumer credits will be examined by subtypes as being housing credits, personal credits, auto credits, other credits and personal credit cards. The results obtained will provide a foundation for the analyses to be performed in the following sections.

4.6. Development of Consumer Credits in Turkey

The consumer credits had first been made available in Turkey in 1989. High deposit moneys accumulated in banks along with freeing interest rates on deposit in 1980s, requirement for product diversification incited by decreasing profit margins by the increasing competition conditions in banking and policy of banks to distribute the risk and spread it to base may be listed among the factors that had directed the banks to consumer credit.

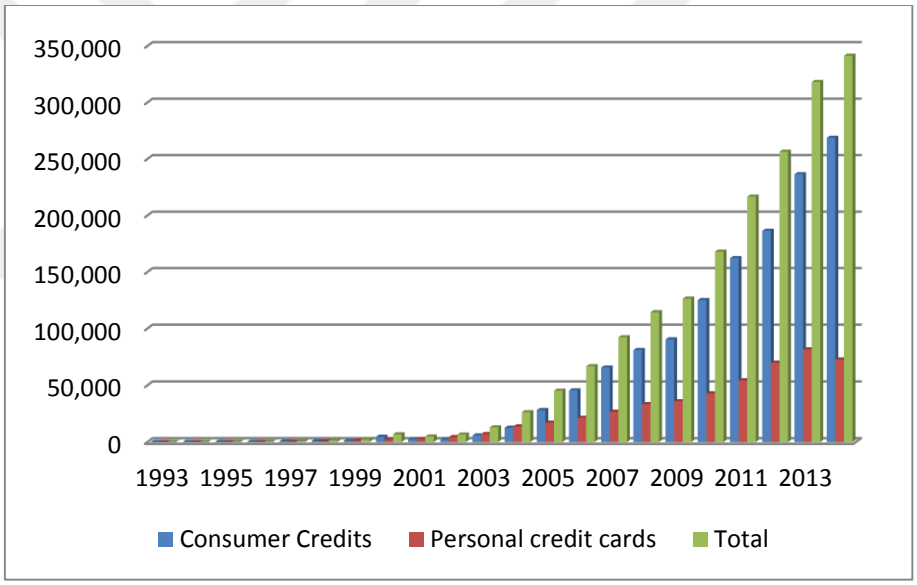
The banks, along with competition, had deemed the personal financing field –which had been previously financed by sellers through instruments such as notes- as an opportunity. Thus, the banking sector having very low customer population had directed to consumer credits whose development potential was high. Moreover, as the investment demands of the enterprises had decreased along with the increase of uncertainty and as the credits to be made available to companies opening to public had remained in hand along with the development of capital markets, the banks had directed their funds to consumer credits. And the high interest policy applied had directed the large enterprises to their own equities, and the consumers not having interest bargaining power had become more attractive for the banks instead of small enterprises with high risk.

On the other hand, as majority of the deposit money resources of banks arise from personal deposit money, the consumer credits had functioned as stabilizer in between the deposit money resource and the section using the funds. The lower amount of consumer credits compared to commercial credits is decreasing the risk of consumer credits, it is affecting the demand less in periods of recession, and it is facilitating conformity to changing

conditions. In respect of credit evaluation, the consumer credits are requiring less technical qualification, and their encashing is being easier (Arslan and Karan, 2009).

And in Turkey, decrease of cash purchase opportunity of goods and services along with the real decline of personal income under inflationary environment prior to crisis of 2001, stable growth that occurred in 2000s, increase of the value of assets that had been collateralized against credits, optimist atmosphere in economy (Başcı, 2006) and decreases in savings had been factors of increase of demand for consumer credits. When the change encountered by consumer credits and personal credit cards in between 2002-2014 is considered, it more clearly being observed that the consumer credits had showed an increase.

Figure 1. Consumer Credits and Personal Credit Cards (million TRY)

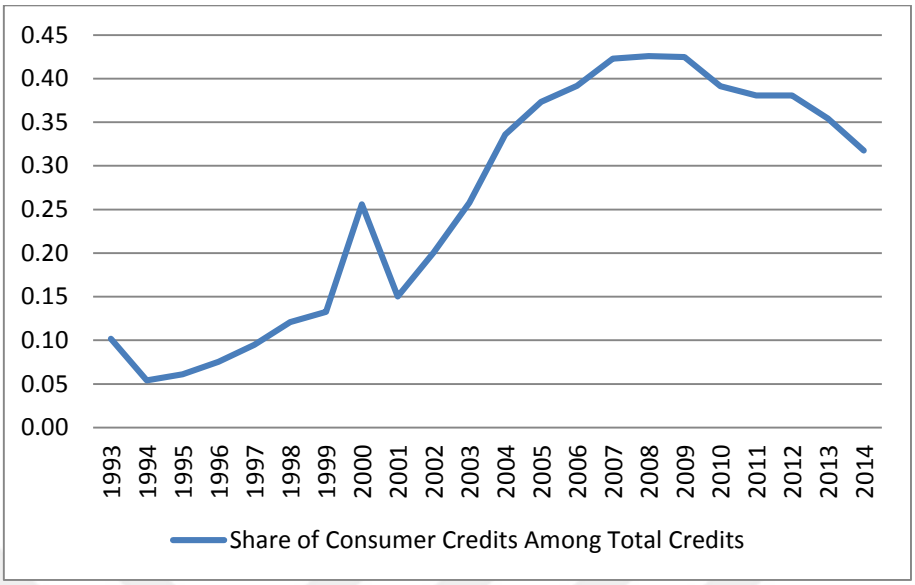


Source: CBRT

As per the Figure 1, while the consumer credits were at the level of 35 million TRY in 1993, that figure had increased to 28 billion TRY in 2005, and to 268 billion TRY in 2014. And while the amounts of personal credit cards were at the level of 5 million TRY in 1993, it had increased to 17 billion TRY in 2005, and to 72 billion TRY in 2014. On the other hand, significant increase had occurred in the number of credit card after year 2002.

As per the data of Interbank Card Center (ICC), the number of credit cards, being about 47 million units by the beginning of 2011, had increased to about 57 million units by the end of 2014. The rapid increase in consumer credits had caused the share of such credits among the total credits of banks to increase.

Figure 2. Share of Consumer Credits Among Total Credits (%)



Source: CBRT

As per the Figure 2, the share of consumer credits –which was at the level of 5% in 1993- among total credits had increased to 25% in 2004, and had always remained above 30% after that date.

4.7. Sub Items of Consumer Credits in Turkey

In this section, the transformation in Turkey of housing credits, auto credits, personal credits, other credits and personal credit cards –constituting the sub items of consumer credits-, and the numeral size of such credits will be examined.

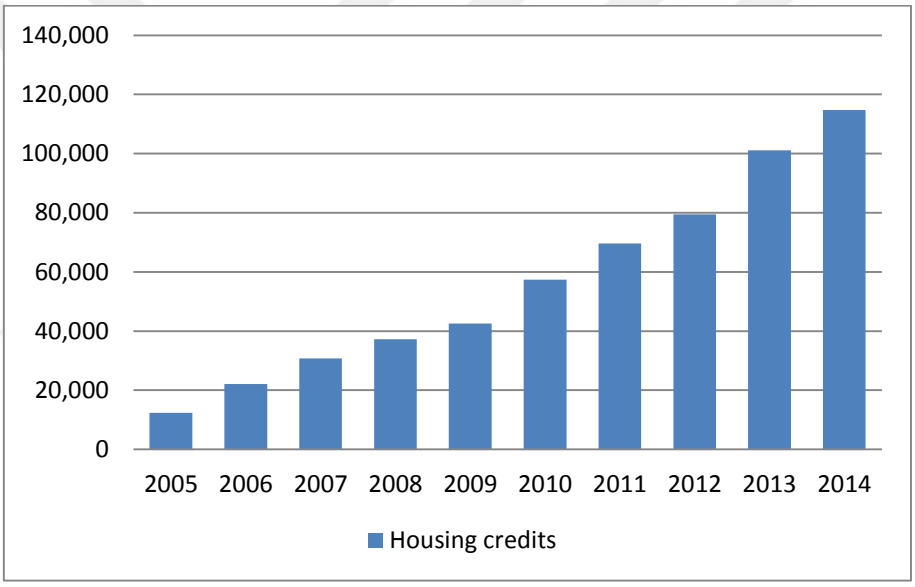
4.7.1. Housing Credits

The housing credits are credits being made available in order to finance the cash requirement of customers which they will encounter during housing and workplace purchases. The housing credits may either be used for purchasing a completed housing or workplace from any construction company, or they may be used for purchasing second hand housing and workplace. As in the auto credits, the funder institution in housing credits intends to guarantee the repayment of debt by putting a pledge on the housing or workplace in subject against the possibility of failure in repayment of credit.

The rapid increase in real estate prices in the recent twenty years had rapidly increased demand for housing and housing credits. Especially, the decrease of interest rates and increasing the term up to 30 years in housing credit had directed the household and investors to purchasing housing. And the rate of increase of housing credits –which had continuously showed an increase- had showed a decrease in 2007-2008. The Mortgage Crisis of USA and the arising global fluctuations have significant effect on the decline in rate of increase.

The housing credits had reached to about 114 billion TRY by the end of 2014. In Figure 3, the change of values of housing credits as per years has been shown.

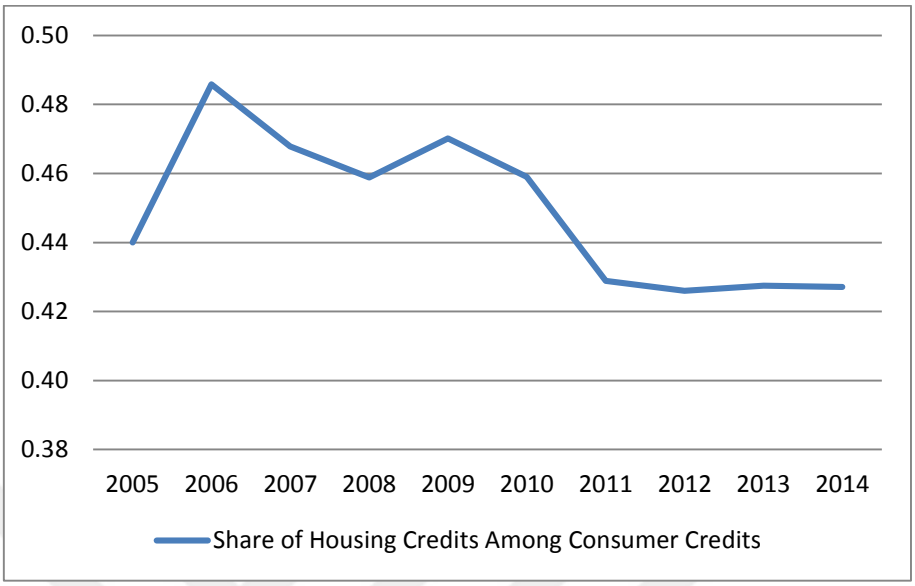
Figure 3. Development of Housing Credits within Years (million TRY)



Source: CBRT

As per Figure 3, the housing credits, being about 12 billion TRY in 2005, had increased to about 70 million TRY in 2011, and to about 114 million TRY in 2014. According to this, the housing credits had showed an increase of about ten times in the recent decade. In spite of this, as it will be seen from Figure 4, the share of housing credits among consumer credits had not changed much in between 2005-2014, and it had remained at the level of about 40%.

Figure 4. Share of Housing Credits Among Consumer Credits (%)



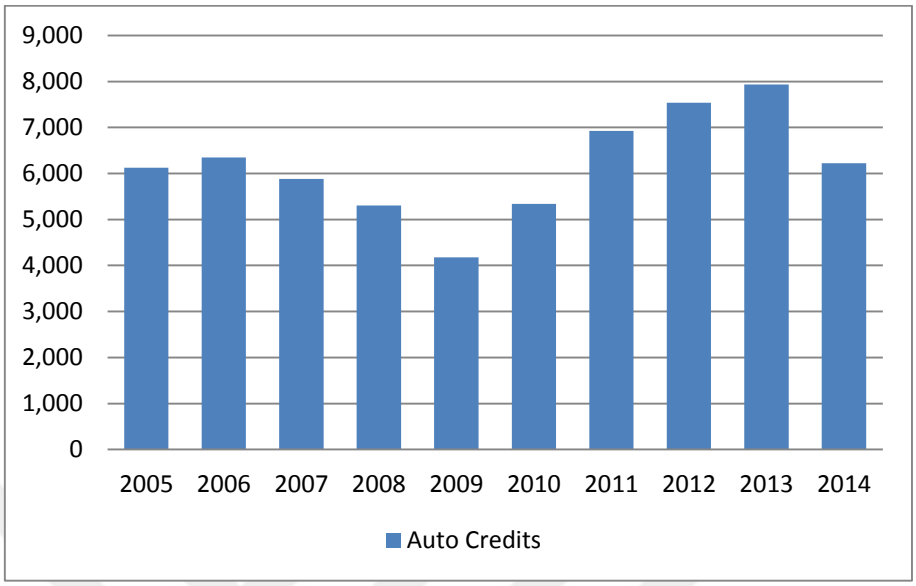
Source: CBRT

4.7.2. Auto Credits

The auto credits are credits being made available in order to finance the cash requirements of the customers that they will encounter during their purchases of automobile, motorcycle, cruiser, yacht, plane, caravan etc transportation autos. It is required to submit a document regarding for the purchase of which transportation auto the credit will be used. Likewise, auto pledge is a very significant issue in auto credits. The funder institution intends to guarantee the repayment of debt by putting a pledge on the transportation auto in subject against the possibility of failure in repayment of credit.

The decrease that occurred in bank interest rates after the crisis of 2000-2001, and increase of credit supply by the banks had increased the credit demands of household. In the increase in subject, the will of the household to actualize their suspended consumption demands also has a significant share. The development of auto credits in between 2005-2014 is being shown in Figure 5.

Figure 5. Development of Auto Credits within Years (million TRY)

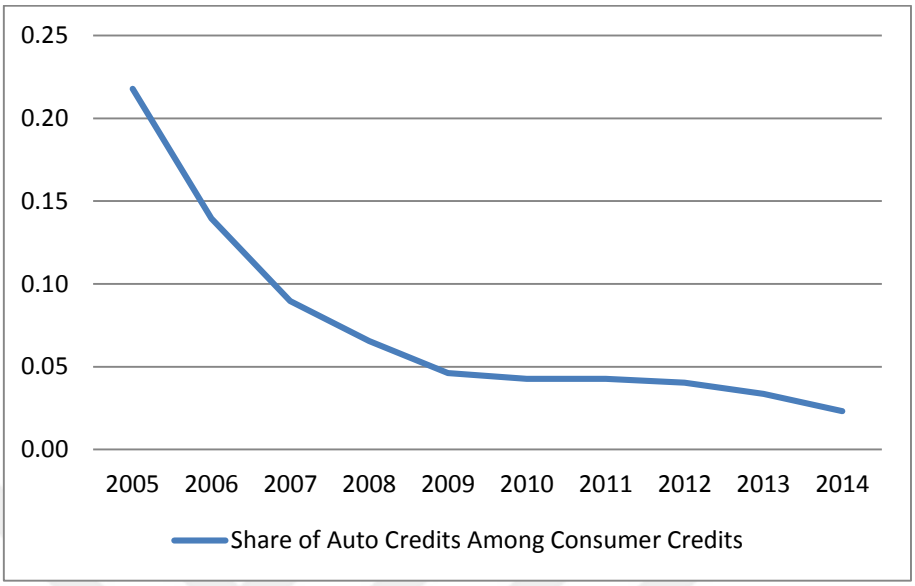


Source: CBRT

As seen from Figure 5, the auto credits -being about 6.128 million TRY in 2005- had been 6.925 million TRY in 2011, and 6.225 million TRY in 2014. In the period in between 2005-2014, the auto credits had followed a fluctuating course by the effect of global crises, and they had not showed a change in recent decade in respect of amount. Thus, the increase in auto credits had fell far behind the increase in other consumer credits.

While consumer credits had continuously increased in between 2005-2014, the share of auto credits among consumer credits had showed a decline. As per Figure 6, this rate -being at the level of 22% in 2005- had declined to 4% in 2011 and 2% in 2014. In the decline in subject, the orientation of consumers to credits with lower interest rate has significant share.

Figure 6. Share of Auto Credits Among Consumer Credits (%)



Source: CBRT

When the term structure in auto credits is considered, it is being seen that a significant part of the individual auto credits is middle and long termed, and a very small part of it is short termed by 2014. On the other hand, the credits being made available are being allocated with fixed rate. And thus, the sensitivity of auto credits to changes in interest rates is low.

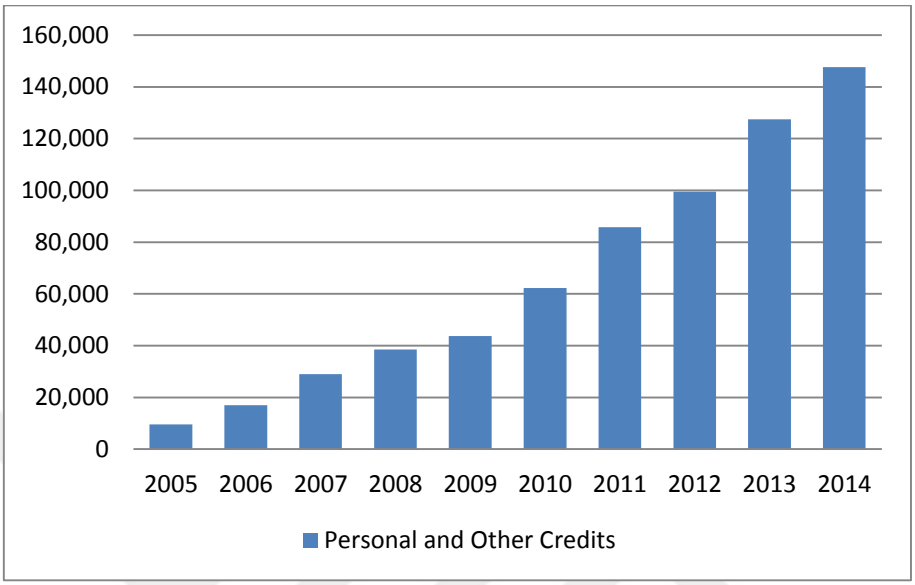
4.7.3. Personal Credits and Other Credits

The personal credits are credits being made available in order to finance the cash requirement of customers which they will encounter during goods and services purchases. It is not required to prove for what the credit will be used by submitting a document. The statement of the customer is sufficient on this issue. The payment of such credits is made to the customer himself in cash or on account. These credits may be made available with the purpose of financing all kinds of requirements of the consumers. But with the purpose of enabling ease in marketing, some of them are named as vacation credit, education credit etc. These credits are mostly credits being made available for durable goods, semi durable goods, marriage, education and health, and the credits in subject had showed an increase in years.

In fact, the personal credits –being 9.624 million TRY in 2005- had increased to 38.547 million TRY in 2008, to 85.709 million TRY in 2011, and to 147.651 million TRY in

2014. The values that personal credits and other credits got in between 2005-2014 are being shown in Figure 7.

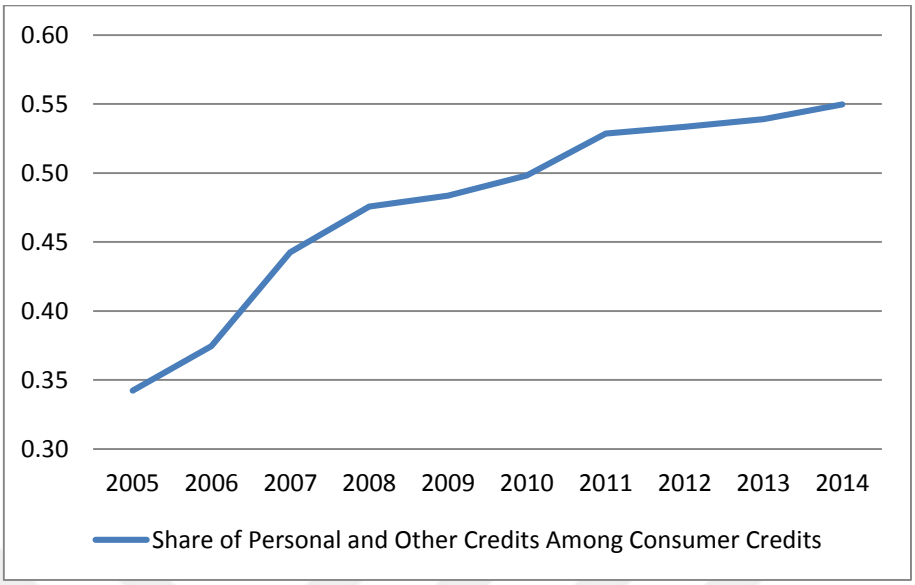
Figure 7. Development of Personal and Other Credits within Years (million TRY)



Source: CBRT

The trend of increase in personal credits had increased the share of personal credits and other credits among total credits. The personal credits and other credits is the credit type having the highest share among consumer credits, and the share of credit type in subject among total consumer credits is being shown in the following graph for years 2005-2014. As per Figure 8, this rate -being at the level of 34% in 2005- had increased to 53% in 2011, and to 55% in 2014.

Figure 8. Share of Personal and Other Credits Among Consumer Credits (%)



Source: CBRT

4.7.4. Personal Credit Cards

Even if consumer credits are generally being provided through personal customer representation provided by the banks, credit cards are also being used in the use of credits with low amount such as education and personal requirements compared to housing credits and auto credits. Even if it actually seems as a type of consumer credits, the credit cards are showing features different from consumer credits either by their usage volume or by the options they provide.

Credit card is a card with predetermined limit provided by banks or financial institutions – as maintaining the ownership- to their customers in order to be used for purchase of goods and services within the country and abroad at contracted workplaces and for cash withdrawal from cash payment units or automatic payment machines (Yılmaz, 2000). The card holder is availing the credit card in two ways by meeting the short term cash credit requirement as well as being freed of using cash in payments of goods and services. The credit card intends to decrease the use of cash and cheque in expenditures (Durukan et al., 2010).

In Turkey, credit card had first been issued with the name "Diners Club" in 1968. And then American Express had got into the market. In 1975, Mastercard, Eurocard and Access cards –as affiliated to Interbank group- had been launched to the market. And in 1981,

Visa credit card had started to be used in our country. In 1987, for the first time in Turkey, the credit card named Pamukbank Prestige Card had formed its own credit system by undertaking all the financing. And as from the beginning of 1990s, the cards issued by large credit card institutions in the world had started to be commonly used in recent years, and had replaced cash payments and other payment forms in our country as in the whole world (Durukan et al., 2005).

Before entering into force of Bank and Credit Cards Law with no 5464, the relations among institution issuing the card, member workplace and card holder had generally been carried out as per the provisions of Code of Obligations, Law Regarding the Protection of Consumers with no 4077, "Communiqué of Professional Classification Recommendation Regarding Credit Card Implementations" of 08.03.1990 with no 924 and "Communiqué Regarding Principles and Conditions that the Banks are Liable for in the Implementation of Consumer Credit" of 09.25.196 with no 998 which were issued by the Banks Association of Turkey (Kaya, 2009).

The development process of credit cards in Turkey is showing parallelism with European countries. But in west, first the implementation of consumer credit had started, and then credit card had been issued in order to ensure easy provision and use of consumer credits. And in Turkey, against the development in the west, first the credit cards had started to be used, and then consumer credit service (private banking) had started to be provided. There is no credit card which has license in Turkey and which can also be used in other countries. In Turkey, the banks are putting on the market the credit cards having validity in the world and using systems of institutions whose licenses are in other countries (Kaya, 2005).

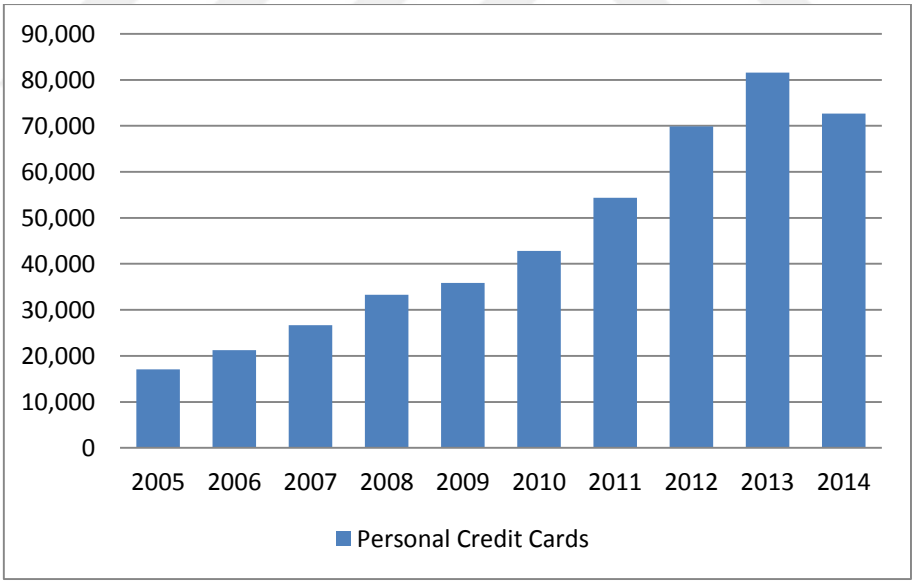
The credit cards had first been taken under the scope of Law with no 4822 regarding making amendment in Law Regarding Protection of Consumer with no 4077, and Law with no 4077. The regulatory provisions regarding credit cards had been subjected to article 10/a added to Law with no 4077, sub-paragraphs (a) (b) (h) and (ı) of second paragraph of article 10 by referral of the aforementioned article, and provisions of article 10 except paragraph 4. In article 10/A of Law with no 4077, the credits that turn to cash credit as the result of purchase of goods or service by credit card, or credits used by withdrawing cash by credit card had also been subjected to the provisions of article 10 of Law. In other words, in the referred law, the credit card contract had been subjected to the

provisions of consumer credit contract. Thus, there is no credit relationship in the implementation of credit card (Kaya, 2009).

In Turkey, either the number of credit cards or the usage volumes of credit cards are showing a continuous increase by years. The numeral dimension it had reached is taking the personal credit cards to a significant position in the banking and credit system of Turkey.

As per the data of ICC, the numbers of credit cards had significantly increased in years, and the number of credit cards –being about 20 million units by the end of 2003- had increased to 37 million units in 2007, to 51 million units in 2011, and to about 57 million units in 2014. And when the amounts of personal credit cards are considered, it is being observed that numeral size is continuously showing an increase in parallel to the increase in the number of cards. The change in subject is being shown in Figure 9 for years 2005-2014.

Figure 9. Development of Personal Credit Cards within Years (million TRY)

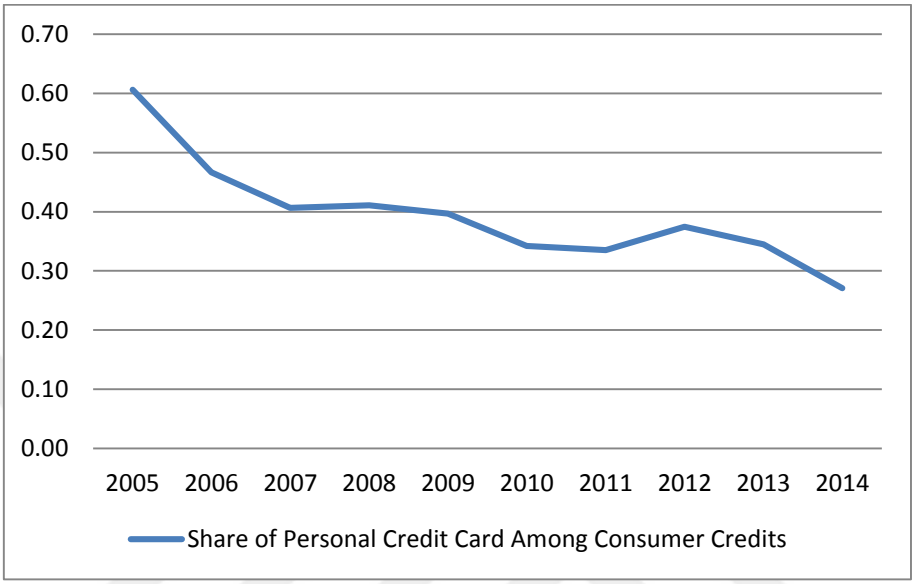


Source: CBRT

As seen from Figure 9, the amounts of personal credit cards had continuously increased in between 2005-2014. Number of personal credit cards –being 17.055 million TRY in 2005- had increased to 54.374 million TRY in 2011, and to 72.699 million TRY in 2014. Thus, the amounts of personal credit cards had showed an increase of about four time in between 2005-2014. While an increase had occurred in personal credit cards, the share of personal

credit cards among consumer credits had decreased by years. While personal credit cards were forming 60% of the total consumer credits in 2005, that rate had decreased to about 30% in 2014 (Figure 10).

Figure 10. Share of Personal Credit Card Among Consumer Credits (%)

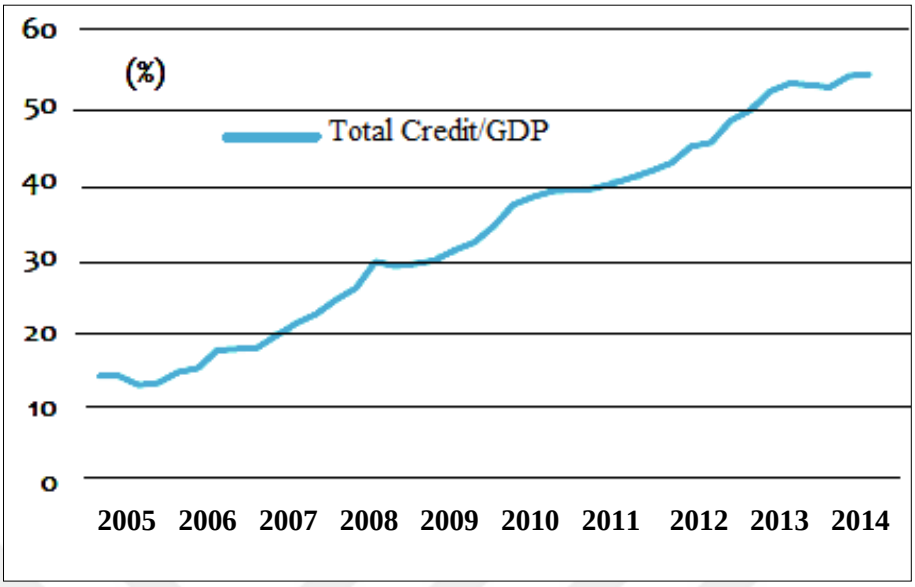


Source: CBRT

4.8. Expansion in Consumer Credits in Turkey

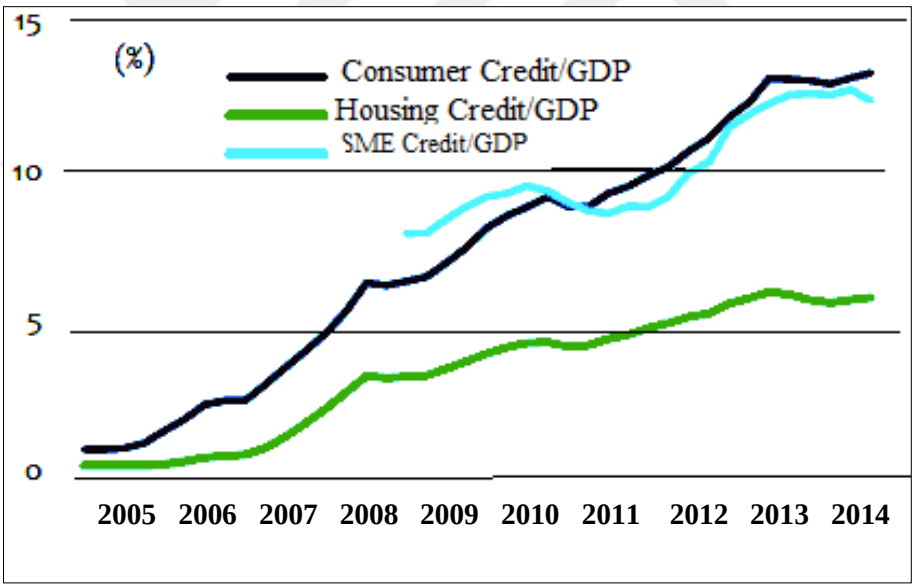
The ratio of credit volume to national income is being deemed as an indicator of both financial deepening and credit expansion. While the share of total credit volume within national income (GDP) was 14% by the end of 2005, it had reached to 54% by the third quarter of 2014. This trend of increase had continued despite the global crisis of 2008. Growth of credit proceeding simultaneously with financial stability and economic growth had gained the momentum in subject by the increase of real sector and consumer credits. The ratio of total credits to GDP in between 2005-2014 is being shown on Figure 11. Depending on the increase in total credits, a significant increase is being observed in the ratio of consumer credits and housing credits to GDP, and it is being shown on Figure 12.

Figure 11. Ratio of Total Credits to GDP (%)



Source: BRSA

Figure 12. Ratio of Consumer Credit, Housing Credit and SME Credit to GDP (%)

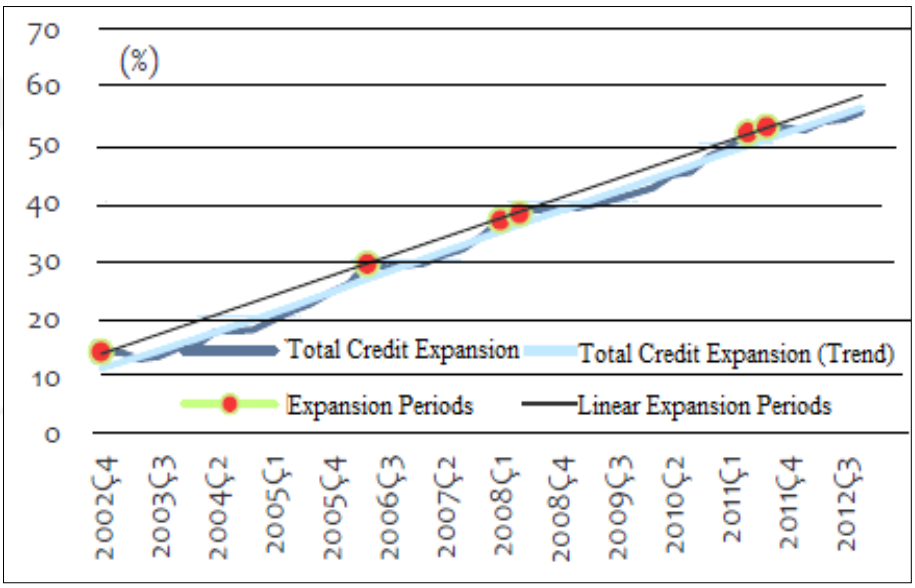


Source: BRSA

BRSA (2014), in order to measure whether the credit volume is following a course except the expected trend, had performed an analysis in which the disintegration of credit/GDP ratio from the trend value and the growth of the ratio in subject is assessed together by total credit volume and credit types. Within this frame, excessive growth of credits had been defined as divergence of credit/GDP by 1.5 standard deviation from the trend value, and as increase of that ratio by more than 10%. It is being deemed that credit expansion occurs when these two conditions take place together. Within this scope, in the examination

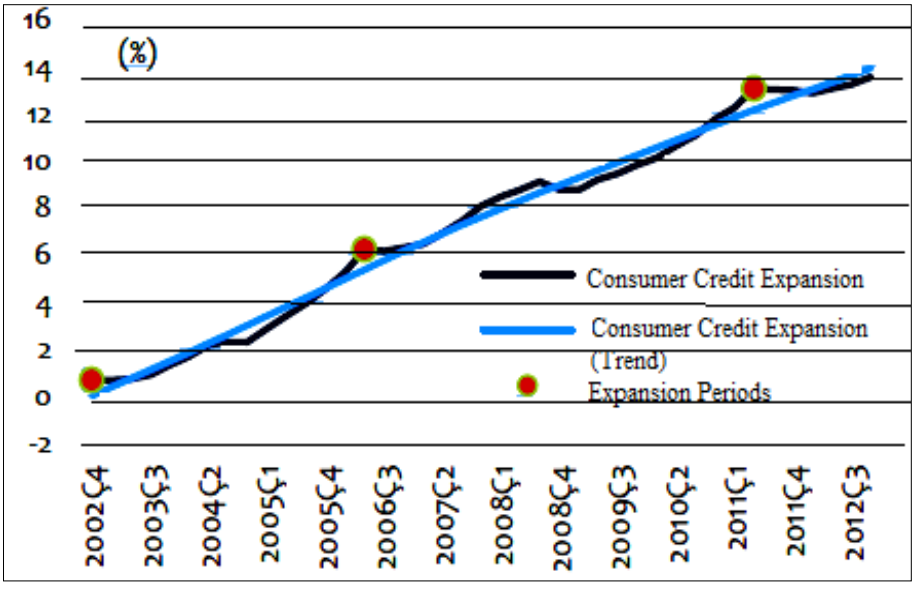
performed by using total credits, operating credits, consumer credits, housing credits, credit cards and SME credits, indicators of significant expansion exist in consumer credits and credit cards. In Figure 13, the dark blue lines are showing the credit/GDP ratio of the relevant item, light blue lines are showing the trend of relevant ratio, and red dots are showing the credit expansion periods conforming the description. As per Figure 13, it is being observed that no significant credit expansion occurs in total credits. In spite of this, as per Figure 14 it is being seen that consumer credits had significantly expanded in 2002, 2006 and 2011.

Figure 13. Expansion Periods of Total Credits (%)



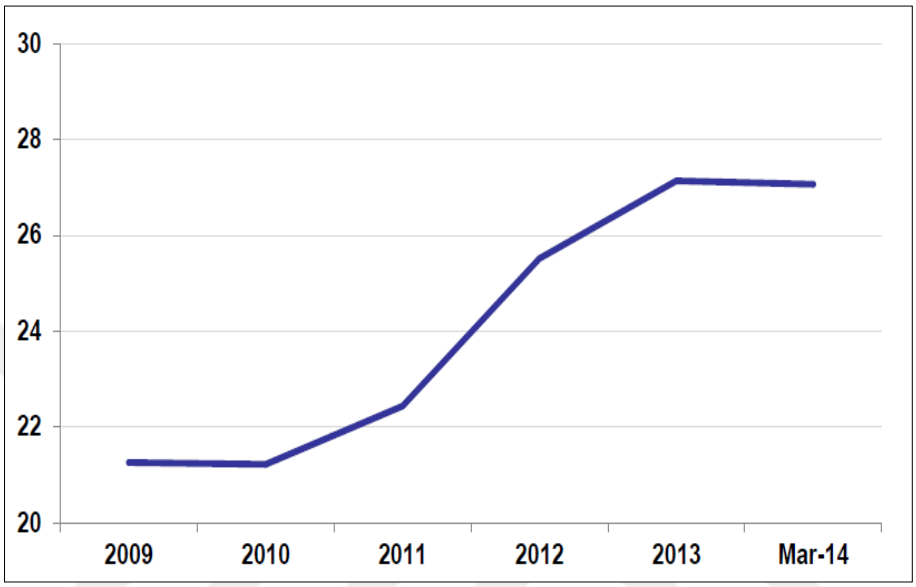
Source: BRSA

Figure 14. Expansion Periods of Consumer Credits (%)



Besides the net transaction volume made by personal credit cards, the ratio of transaction volume to GDP also shows increase in years in Turkey. As per Figure 15, while the ratio of transaction volume of credit cards to GDP was about 22% in 2009, that rate had been 27% in 2014.

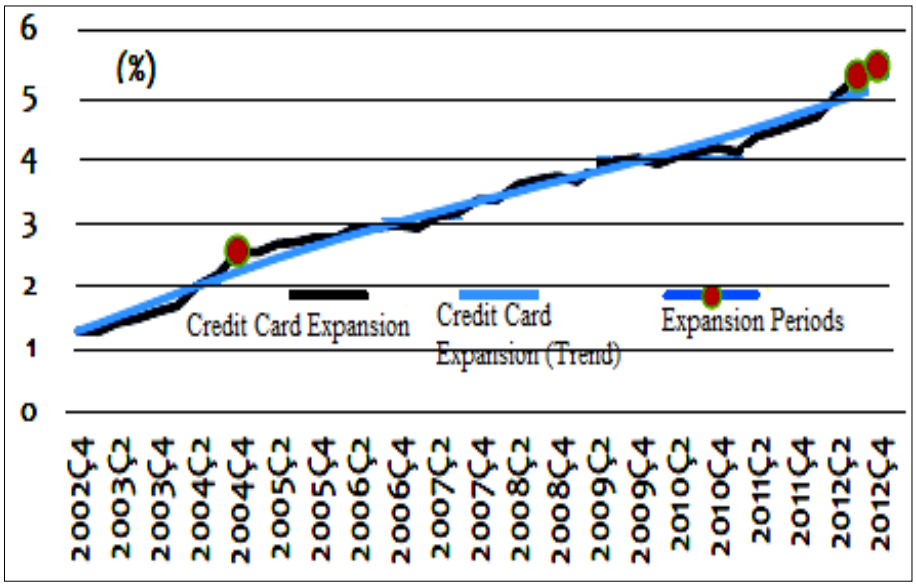
Figure 15. Ratio of Transaction Volume of Credit Cards to GDP (%)



Source: ICC

As per the expansion analysis of credit cards again performed by BRSA (2012) and seen in Figure 16, a significant expansion is being observed in credit card transaction volumes in years 2004 and 2012.

Figure 16. Expansion Periods of Transaction Volume of Credit Cards (%)



Source: BRSA

We can more clearly assess the increase observed in consumer credits after the crisis of 2001 by comparing it with the increase in commercial credits. While the annual real increase in commercial credits had been 17.1% in the period in subject, that rate had been 26.6% in consumer credits. As per Table 1, the growth rate in consumer credits had been realized higher than the growth rate in commercial credits in many of the years. The same condition is also valid for credits corrected as per PPI shown in Table 2.

Table 1. Annual Growth Rate as per Credit Types (%)

	2009	**2010**	**2011**	**2012**	**2013**	**2014**
Total	8	34	28	16	31	30
Personal	14	30	29	20	26	19
-Credit cards	13	17	26	31	23	12
-Housing	16	34	22	15	28	22
-Automobile	-16	22	26	9	6	-1
-Other	17	39	37	17	29	24
Commercial	5	36	28	14	34	36

Source: BRSA

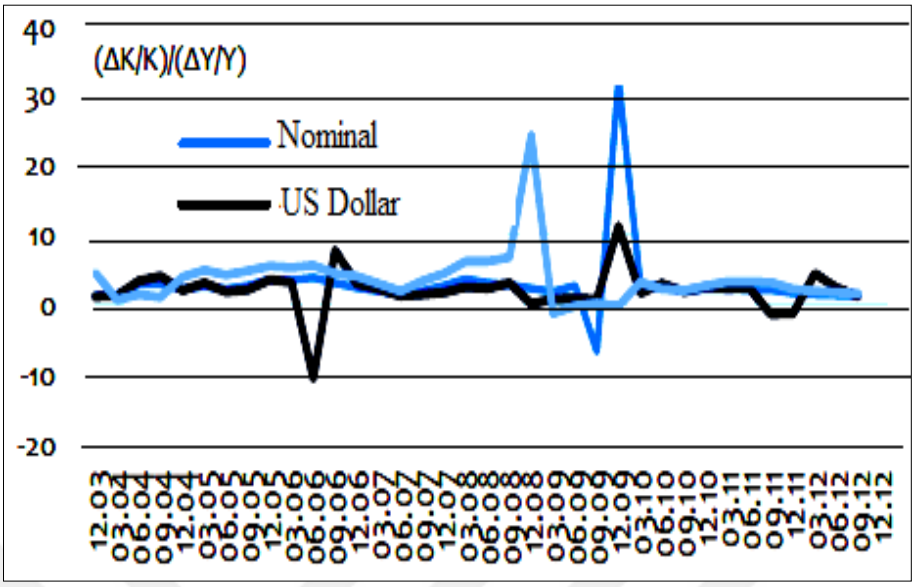
Table 2. Annual Growth Rate as per Credit Types corrected as per PPI (%)

	2009	**2010**	**2011**	**2012**	**2013**	**2014**
Total	2	23	13	13	23	16
Personal	7	20	13	17	18	6
-Credit cards	6	8	11	28	15	0
-Housing	10	24	8	13	20	9
-Automobile	-20	12	12	6	-1	-12
-Other	10	28	20	14	21	10
Commercial	-1	25	13	12	25	19

Source: BRSA

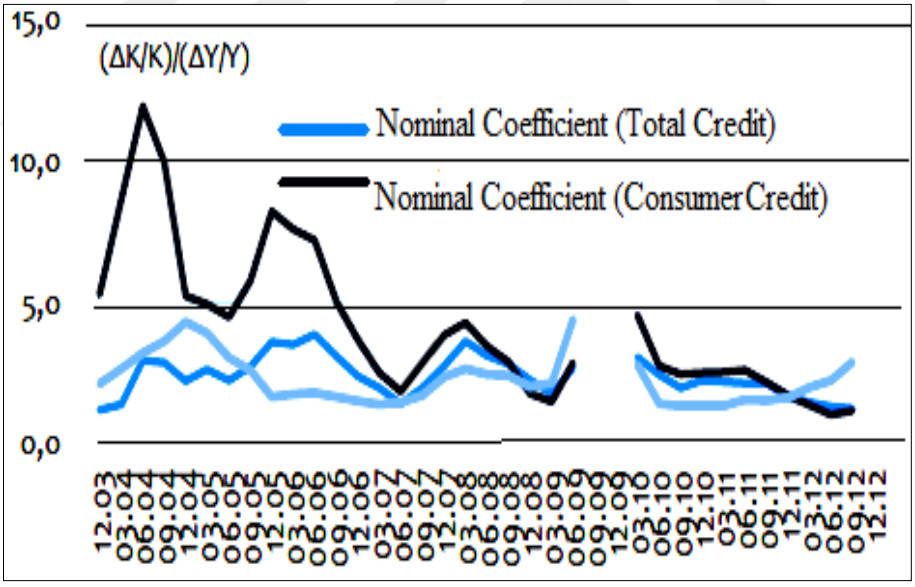
An additional approach based on credit (K) rate coefficient had also been used by BRSA (2012) as complementary to the above analysis. The coefficient in subject is being defined as the ratio of growth rate of credits to growth rate of national income (Y). In other words, the coefficient of rate is =[(ΔK/K)/(ΔY/Y)]. The calculations of this ratio as per nominal, real and real effective exchange rate are being presented in Figure 17 and Figure 18. As per Figure 18, the increase rate of consumer credits in recent years is following a higher course compared to increase rate of national income.

Figure 17. Credit Rate Coefficient for Total Credits (nominal and US dollar)



Source: BRSA

Figure 18. Credit Rate Coefficient for Total and Consumer Credits (nominal)



Source: BRSA

4.9. Consumer Credits and Banks in Turkey

The consumer credits, that had not showed sufficient development in years with high interest and low growth rate in which financial instability was dominant in Turkey, had followed an increasing trend after the crisis of 2001. The consumer credits market had became prominent as one of the most rapidly growing fields in banking sector through the

decrease of public borrowing requirements, increase and predictability of income per person, and decrease of borrowing costs of household.

As per Table 3, it is being observed that the consumer credit market have higher concentration compared to total credits and commercial credits. In other words, it is being observed that the top 10 banks of Turkey are making consumer credits available with a higher ratio compared to other banks. In spite of this, it is being observed that the share of small scaled banks within total consumer credits is low compared to other credit types.

As per Figure 19, the share of large scaled banks within consumer credit market is 75%, and the share of small scaled banks is 2%. It is being observed that the share of small scaled banks within total consumer credits is low compared to other credit types.

As per Figure 20, the dominance of deposit banks is continuing also in the consumer credits. 96.3% of the consumer credits had been made available by deposit banks in 2011. And the share of participation banks is lower compared to total credits and commercial credits with a level of 3.3%.

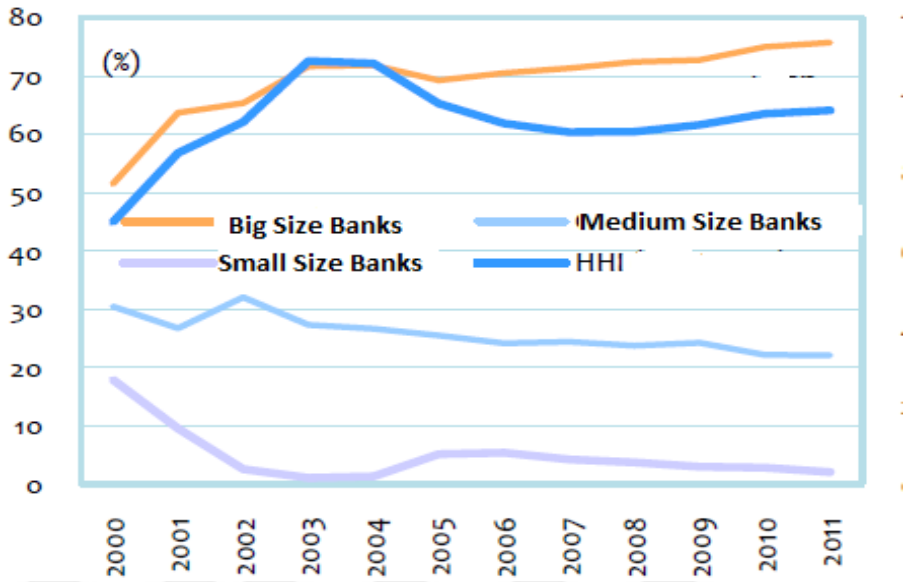
In Table 4, the consumer credits being made available in Turkey in fields except housing had been compared with the consumer credits being made available in banking sectors of other countries in fields except housing. As per the table, USA is ranking first in the order of size, and Canada and Germany are following it. By 2009, the average of 27 EU member states in other personal credits market is 68 billion Euros, and it is about 32 billion Euro in Turkey.

Table 3. Bank Concentration in Consumer Credits

Consumer Credits (%)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Top 5 Banks	49,0	57,0	59,6	68,3	66,7	63,1	60,6	59,6	58,9	58,1	59,4	59,5
Top 10 Banks	72,5	80,5	86,9	91,2	91,7	86,8	87,0	87,2	87,3	88,0	89,0	89,6
Distribution as per Scale												
Large Scaled	51,5	63,7	65,3	71,6	71,8	69,2	70,5	71,3	72,4	72,7	75,0	75,7
Medium Scaled	30,5	26,8	32,1	27,3	26,7	25,5	24,2	24,4	23,8	24,3	22,2	22,1
Small Scaled	18,0	9,6	2,6	1,1	1,4	5,2	5,4	4,3	3,8	3,0	2,9	2,1
Total	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Functional Distribution												
Deposit Banks	98,6	100,0	100,0	100,0	99,9	96,6	96,5	97,1	97,5	97,0	96,9	96,3
Development and Investment	1,4	0,0	0,0	0,0	0,1	0,0	0,1	0,3	0,3	0,3	0,3	0,5
Participation Banks	0,0	0,0	0,0	0,0	0,0	3,3	3,3	2,6	2,2	2,7	2,9	3,3
Total	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0

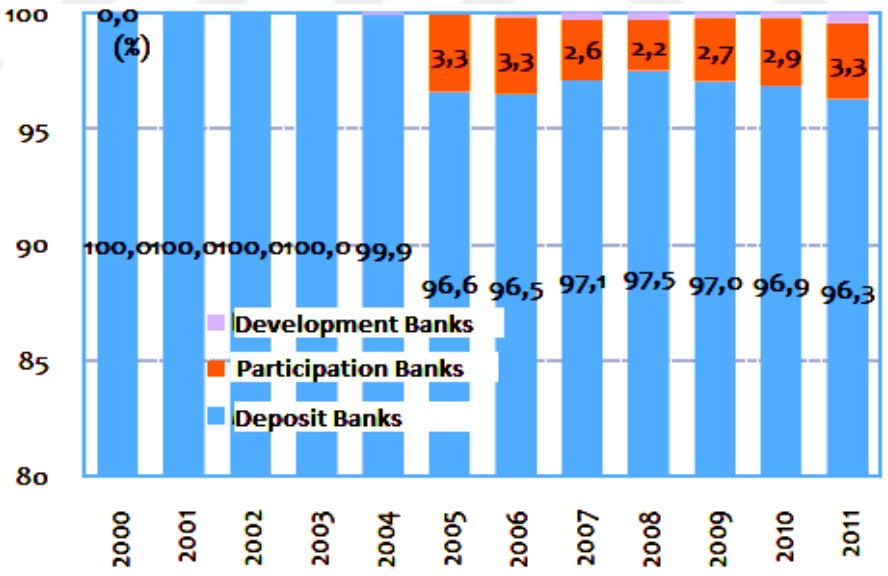
Source: BRSA

Figure 19. Concentration as per Scale in Consumer Credits



Source: BRSA

Figure 20. Concentration as per Function in Consumer Credits



Source: BRSA

Table 4. Consumer Credits Except Housing in the World (billion €)

Billion €	2003	2004	2005	2006	2007	2008	2009	Ratio to 2009 GDP (%)
USA	1.344	1.343	1.668	1.500	1.526	1.547	1.305	13,3
Canada	388	288	383	390	333	545	633	68,3
Germany	494	488	479	464	454	452	453	19,6
France	200	207	216	222	233	235	237	12,9
Spain	133	147	173	203	223	231	220	21,7
Italy	156	166	175	187	199	205	215	14,7
England	241	266	261	275	260	197	203	13,4
S. Korea	v.y.	v.y.	v.y.	v.y.	v.y.	162	183	31,7
Russia	v.y.	v.y.	v.y.	v.y.	v.y.	v.y.	157	18,4
Australia	v.y.	v.y.	89	93	113	118	130	20,3
S. Africa	v.y.	v.y.	v.y.	v.y.	v.y.	v.y.	129	65,1
Sweden	54	57	62	70	74	69	76	27
Austria	29	46	56	54	56	57	56	21,2
Poland	14	20	24	29	40	45	51	17,1
Netherlands	43	46	48	52	47	48	46	8,4
Denmark	28	30	34	39	47	48	45	20,9
Ireland	17	20	25	29	32	33	33	20,9
Turkey*	7	13	21	25	37	37	32	7,5
Greece	14	19	23	28	30	31	30	13,1
Portugal	19	20	21	24	27	28	28	17,3
Finland	17	19	21	23	24	26	27	16,3
Hungary	3	5	6	8	11	14	27	30,2
Belgium	24	25	27	28	28	29	25	7,6
Romania	v.y.	3	5	9	16	19	18	16,1
Argentina	5	6	9	10	11	13	13	6,1
Luxemburg	15	14	14	14	13	12	13	35,8
Czech Rep.	3	4	5	6	8	10	11	8,3
S. Cyprus GC	v.y.	v.y.	8	9	9	11	10	57,5
Bulgaria	v.y.	2	3	3	4	5	6	17,7
Slovakia	0	1	2	2	3	4	4	6,6
Slovenia	v.y.	3	3	3	4	4	4	11,9
Latvia	0	1	1	2	2	2	2	11
Lithuania	v.y.	1	1	2	2	3	2	7,7
Estonia	0	0	1	1	1	1	1	7,5
Malta	1	v.y.	1	1	1	1	1	18
EU27	1.506	1.607	1.690	1.784	1.850	1.821	1.834	16,1

Source: BRSA (*) The data of Turkey is the sum of credit cards, auto credits, personal credits and other credits (excluding housing credit).

Economic growth performance, increase of income of household, high requirement for quality housing, supply of housing being diversified and increasing by mass housing project and other special projects, relevant regulations and decrease in real interest rates had enabled the housing credit market to be one of the most rapidly growing banking activities in recent years. As per Table 5, it is being observed that housing credits market is a market that is concentrated at low level in respect of banks.

When the Figure 21 is examined as per scales, it is being observed that the small scaled banks have a trend of decrease in housing credits market, and about 97% of the total housing credits are being made available by large and medium scaled banks. In the housing credit market –where intense competition exists-, large scaled banks are increasing their shares in years.

When the Figure 22 is examined in functional aspect, the participation banks are continuing with growth trend and the deposit banks are leading by 93%. The share of participation banks -being 5.5% in 2010- had increased to 6.7% in 2011. And the rate in subject is close to zero for the development and investment banks.

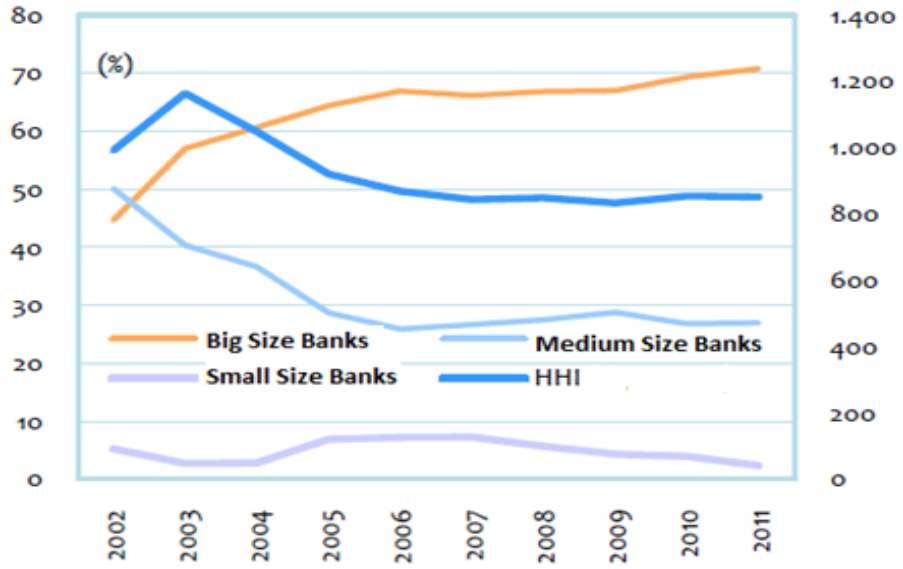
In Table 6, the housing credits in Turkey had been compared with the housing credits in the banking sectors of other countries. As it will be seen from the Table, the negative effects of the global crisis of 2008 had caused loosening of growth in housing credits in the whole world. While USA had ranked first in housing credits, England and Germany had followed it. Average housing credits volume in EU-27 is about 188 billion Euros in 2009. And the housing credits of Turkey by 2009 are about 28 billion Euros. While housing credits had a very small share in Turkish banking sector in the past year, it had been reached to 11% of the total credits by 2009 along with strong growth. The rate in subject is below 27% being the average of EU-27.

Table 5. Bank Concentration in Housing Credits

Housing Credits (%)	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Top 5 Banks	59,9	11,3	63,9	59,7	56,6	56,5	55,8	54,1	54,3	54,8
Top 10 Banks	88,2	27,4	91,9	85,8	86,5	85,2	84,5	84,8	86,3	86,8
Distribution as per Scale										
Large Scaled	44,7	57,0	60,6	64,4	66,9	66,1	66,8	66,9	69,3	70,7
Medium Scaled	50,1	40,3	36,6	28,7	25,9	26,6	27,5	28,8	26,8	26,9
Small Scaled	5,2	2,7	2,8	6,9	7,2	7,3	5,7	4,3	4,0	2,3
Total	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Functional Distribution										
Deposit Banks	100,0	100,0	100,0	95,2	94,4	95,0	95,5	94,8	94,5	93,3
Development and Investment	0,0	0,0	0,0	0,0	0,0	0,2	0,3	0,2	0,1	0,0
Participation Banks	0,0	0,0	0,0	4,8	5,6	4,8	4,2	5,0	5,5	6,7
Total	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0

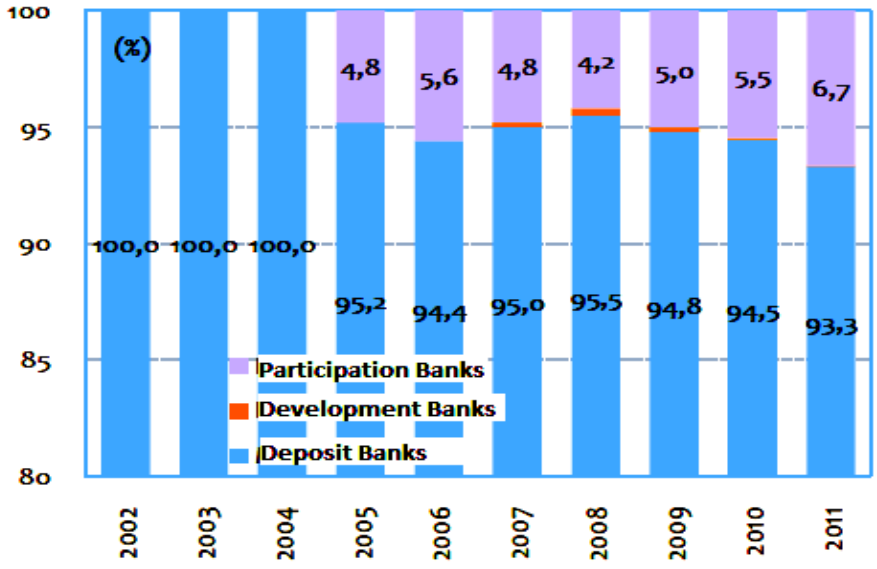
Source: BRSA

Figure 21. Concentration as per Scale in Housing Credits



Source: BRSA

Figure 22. Concentration as per Function in Housing Credits



Source: BRSA

Table 6. Housing Credits in the World (billion €)

Billion €	2003	2004	2005	2006	2007	2008	2009	Ratio to 2009 GDP (%)
USA	2.264	2.479	3.161	3.188	2.997	3.127	3.007	30,7
England	908	975	1.065	11.530	1.100	787	992	65,7
Germany	937	950	961	976	968	960	962	41,6
France	385	432	495	570	643	691	716	38,9
Spain	278	336	448	547	627	658	657	64,8
Australia	v.y.	v.y.	320	349	404	391	560	87,3
Netherlands	302	332	369	383	393	376	378	68,7
Canada	117	261	337	315	429	329	372	40,1
Italy	154	185	217	244	266	264	280	19,1
Denmark	154	169	194	216	237	253	267	124,2
Switzerland	v.y.	v.y.	v.y.	v.y.	v.y.	220	256	75,1
Sweden	84	98	107	126	134	128	152	53,9
S. Africa	v.y.	v.y.	v.y.	v.y.	v.y.	144	143	72,1
S. Korea	v.y.	v.y.	v.y.	v.y.	v.y.	125	142	24,6
Portugal	67	71	80	92	101	105	111	68,7
Ireland	55	74	95	111	124	115	110	69,7
Belgium	72	80	95	107	114	86	79	24,2
Austria	40	48	54	61	65	71	73	27,6
Finland	36	42	49	55	62	68	72	43,6
Greece	26	33	43	52	63	65	68	29,7
Poland	8	9	13	21	33	47	53	17,8
Turkey	0	1	8	13	19	18	21	4,9
Russia	v.y.	v.y.	v.y.	v.y.	v.y.	29	27	3,1
Czech Rep.	5	7	10	14	19	23	26	19,7
Luxemburg	8	9	11	12	15	16	17	46,8
Hungary	6	8	9	11	12	15	15	16,8
S. Cyprus GC	v.y.	v.y.	4	6	7	9	10	57,5
Slovakia	1	2	3	5	6	9	9	14,8
Latvia	1	1	3	5	7	7	7	38,5
Estonia	1	2	3	4	6	6	6	45,3
Lithuania	1	1	2	3	5	6	6	23,2
Romania	v.y.	0	1	2	4	5	6	5,4
Bulgaria	v.y.	1	1	2	3	4	4	11,8
Slovenia	1	1	1	2	3	3	4	11,9
Malta	1	1	2	2	2	2	2	36,1
Argentina	2	1	1	1	2	2	2	0,9
S. Arabia	1	1	2	1	1	1	2	0,6
EU27	3.531	3.865	4.326	4.774	5.006	4.781	5.084	44,7

Source: BRSA

The credit cards market, that constitutes 8% of total credits and 25% of personal credits by 2011, is continuing to be the most significant field for banking sector. It is being observed that the concentration in the market in subject is higher than other credit items. When the Table 7 is considered, the shares of the top 5 and top 10 banks are 71% and 93% respectively. When compared with other credit items, it is being observed that the shares in subject are high for credit cards.

In credit cards market, the credit risk -incurred by the banks due to not collecting the cost of product and any assurance within the credit process- being higher when compared with credit items is causing the consumers to get service by higher costs from this market. In addition, the credit card market has a significant place among channels of access to customers by the banks due to magnitude of customer number. This condition is increasing the competition in the market in subject. Thus, it may be expected for the concentration in the market in subject to decrease.

When considered as per scale groups in Figure 23, it is being observed that the decrease trend in recent years in the market share of large scaled banks –in favor of the medium scaled banks- had ended. The share of large and medium scaled banks in the total credit card market is at the level of 98%. As per Figure 24, the dominance of deposit banks is continuing in the structure of credit card market at functional dimension. And then follows the participation banks.

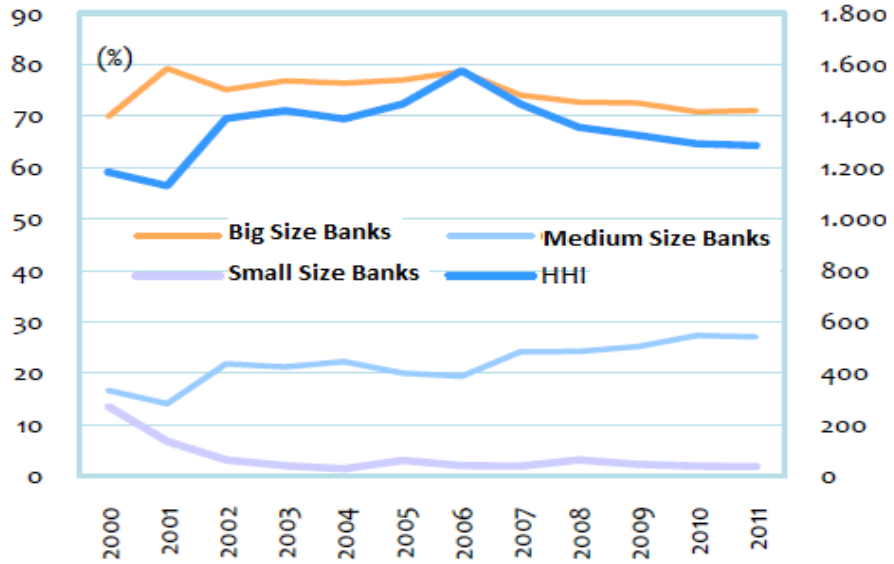
In Table 8, the transaction volume of credit cards in Turkey had been compared with the transaction volume of credit cards in other countries. As per the Table, it is being seen that USA ranks first with a share of 39.1% regarding transaction volume of credit cards by 2010. While China and England are following USA, the share of Turkey in that period had realized at the level of 1.6% as in the previous year.

Table 7. Bank Concentration in Credit Cards

Credit Card (%)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Top 5 Banks	63,0	66,6	71,5	75,0	75,6	77,6	80,7	78,5	77,3	72,5	70,8	71,1
Top 10 Banks	83,6	87,6	90,2	91,8	93,7	93,6	94,8	93,2	92,6	92,5	92,7	93,3
Distribution as per Scale												
Large Scaled	69,8	79,3	75,1	76,8	76,4	77,0	78,6	74,1	72,7	72,5	70,8	71,1
Medium Scaled	16,6	14,0	21,8	21,2	22,2	20,0	19,4	24,1	24,2	25,2	27,3	27,1
Small Scaled	13,6	6,7	3,1	2,0	1,4	3,0	2,0	1,9	3,1	2,3	1,9	1,9
Total	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Functional Distribution												
Deposit Banks	100,0	100,0	100,0	100,0	100,0	98,8	98,6	98,4	98,1	98,1	98,1	98,0
Participation Banks	0,0	0,0	0,0	0,0	0,0	1,2	1,4	1,6	1,9	1,9	1,9	2,0
Total	100	100	100	100	100	100	100	100	100	100	100	100

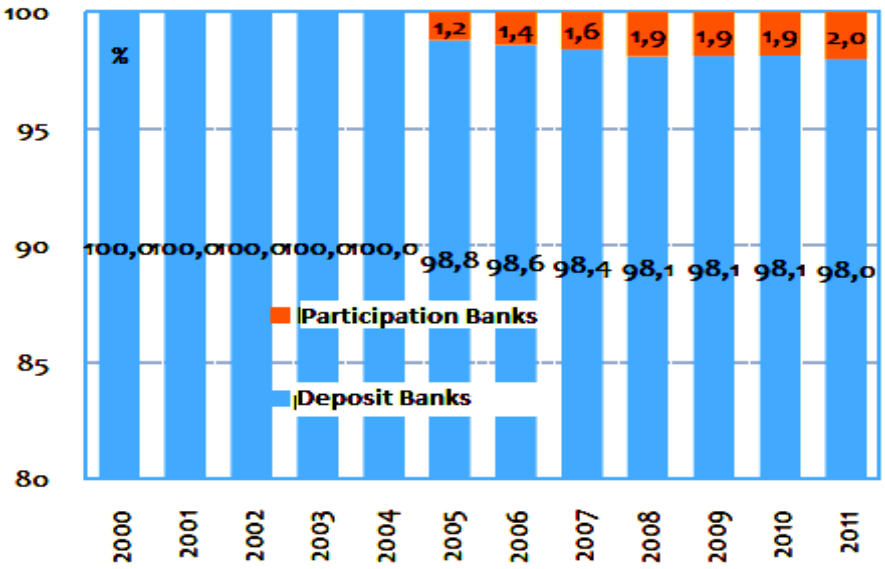
Source: BRSA

Figure 23. Concentration as per Scale in Credit Cards



Source: BRSA

Figure 24. Concentration as per Function in Credit Cards



Source: BRSA

Table 8. Credit Card Transaction Volumes in the World (billion €)

Billion $	2006	2007	2008	2009	2010
USA	2.968,70	3.287,80	3.490,60	3.385,90	3.695,80
P.R.C.	241,6	406,3	576,9	1.004,90	1.540,60
England	631,9	758,6	748	657,8	702,7
France	354,8	425	485,5	472,3	480,5
Canada	336,8	392,2	432,8	403	468
S. Korea	305	362,2	357,6	329,9	401,2
Australia	191,3	237,6	268,7	269,7	336,8
Brazil	100,6	140	181,5	193,7	285,2
India	76,1	123,2	161,4	195	264,1
Germany	204,7	196,3	221,2	216,8	224
Italy	150,1	176,4	170,8	163,3	158,7
Turkey	70,1	100,2	131	121,7	148
S. Arabia	82,7	92,8	114,8	124,7	144,1
Netherlands	93,7	110,2	127,5	121,9	123,7
Sweden	73,7	90,7	105,2	93	109,8
Switzerland	55,9	63,3	74,5	75,5	81,9
Belgium	56,4	66,7	77	76,1	77,7
Russia	14,7	25,6	46,9	39,7	61,8
R.of S. Africa	43,4	55,7	281	228	
Mexico	34,6	42	47,8	43,1	53
Singapore	20,9	26,7	32,6	33,3	40,7
Japan	305,7	335,8	417,7	4.109	3.933
Total	6.370,00	7.459,70	8.270,10	8.064,70	9.453,80

Source: BIS CPSS

CHAPTER 5

CONSUMPTION SMOOTHING AND THE CONSUMER BEHAVIOR

5.1. Introduction

In this chapter, the hypothesis that "consumer credit to smooth consumption makes monetary policy less effective in Turkey" will be examined. According to the hypothesis, after the growth in consumer credit volume, consumption behaves consistently with the permanent income hypothesis. Ludvigson (1999) showed that consumer credit can forecast consumption using the Permanent Income Hypothesis for United States. Also, Baccheta and Gerlach (1997) show Hypothesis is valid for other countries. However, Hall (1978) says no other variable other than lagged consumption predicts current consumption and transitory change in income has no effect on consumption. He showed that consumption follows a random walk. Cambell and Mankiw (1989), Hayashi (1982, 1985), Chah, Ramey and Starr (1995) have found statistical evidence against the Hall (1978) and showed that lagged income have an important power for current consumption because of the liquidity constraints (Zeldes (1989), Jappelli (1990), Cambell and Mankiw (1989) and Carroll (2001)).

Liquidity constraints means that dependence on credit makes consumers more sensitive to economic fluctuations. Inability of households to get credit during recessions facilitates the transmission of monetary policy. Therefore, if structural change has made consumer credit distribution more efficient, then the consumption behavior will be in line with Hall's (1978) argument.

Hypothesis in this chapter will be tested by Ludvigson's (1999) model over the years 1995 through 2014 for total credits and for credit cards. For subsample, between years 2006 and 2014, total consumer credit cannot forecast the consumption growth. Likewise, For subsample, between years 2004 and 2014, credit cards cannot forecast the consumption

growth. In this section results of structural break tests for consumer credit will also be reported. The methods of Harvey, Leybourne and Taylor (2006) has been used for the structural break. Test indicate that structural breaks occurred in 2006 for total consumer credits and in 2004 for credit cards.

5.2. The Permanent Income Hypothesis

Hall (1978) showed marginal utility and consumption follows a random walk. The amount of consumption today represents predictable changes in income. Only past consumption can predict the behavior of consumption. Short-run income changes cannot affect consumption. Consumption can be changed by the policies affect permanent income. However; Flavin (1981,1985), Hayashi (1982,1985), Cambell and Mankiw (1989), Bacchetta and Gerlach (1997), Ludvigson (1999) show that past income and consumer credit can predict consumption behavior. According to these studies, consumption behaves in a different way from the permanent income hypothesis.

5.2.1. Description of Permanent Income Hypothesis

According to permanent income hypothesis, consumption depends only on permanent income. Consumers distribute their consumption based on the marginal rate of substitution between consumption today and consumption tomorrow. Consumers will only adjust its consumption based on how the current income affects the permanent income. If the consumer expects the high income today will be matched by a low income tomorrow, then consumption today will not change. Conversely, if the rise in income today represents a new permanent level of income, then consumption will increase.

Permanent income is determined by attributes, education, and occupation of the households (Friedman (1957)). On the other hand, transitory income consists of cyclical changes in income. If income is above what the household recognize to be normal, consumption will then depend on two factors:

1) Consumption will increase to the degree that the increase in realized income is a change in permanent income,

2) Consumption will increase by the proportion that the household typically consumes out of permanent income.

If the consumers knows current prices, interest rates, and its future income then the above two factors are all that matter for consumption. Friedman (1957) states that, "Let us consider first the behavior of a consumer unit under conditions of complete certainty. It knows for certain, we suppose, that it will receive a definite sum in each of a definite number of time periods; it knows the prices that will prevail for consumer goods in each period and the rate of interest at which it can borrow or lend. Under these conditions there are only two motives for spending on consumption less or more than it receives in any time period. The first is to "straighten out" the stream of expenditures by appropriate timing of borrowing and lending, the unit can keep its expenditures relatively stable even though its receipts vary widely from time period to time period. The second is to earn interest on loans, if the interest rate is positive, or to receive payment for borrowing, if the interest rate is negative. How it will behave under the influence of these motives depends, of course, on its tastes." However, Friedman (1957) states the views above under the assumption of consumers who have perfect information about their future income. If there is an uncertainty about future income, some effects will be revealed on consumption behavior.

Uncertainty provides a reason why a household may fail to smooth consumption. Friedman (1957) recognized that a household cannot know with certainty its future income. The estimate of permanent income, therefore, will be based on the household's expectation over some short horizon. Friedman chooses a horizon of three years over which households make an estimate of permanent income. As a result households may not be able to smooth consumption (Mayer, 1972).

For example, one implication of uncertainty is borrowing constraints. Uncertainty about future income makes it difficult for the household to borrow against future income (Carrol, 2001, Mayer,1972). If a household receives news that permanent income will increase in the future, consumption should increase before the income is received. However, if the household cannot borrow, consumption cannot increase. Consumption will increase only when the household receives the income the next period.

5.2.2. Hall's Euler Equation Test

The contribution of Hall (1978)'s chapter was to formalize the stochastic implications of the permanent income hypothesis. If consumers maximize expected future utility, the conditional expectation of marginal utility is only a function of the current level of consumption. Marginal utility follows a random walk, which implies that consumption does as well (assuming that marginal utility is a linear function of consumption). The optimizing consumer uses all available information each period about current and future earnings to determine the current level of consumption. If the consumer fails to adjust consumption immediately, then the adjustment will take place later, implying the consumer is responding to old news. This runs counter to the assumption that the consumer react immediately to an expected change in income (Carroll, 2001). All available information important is realized in the current level of consumption.

If consumption behaves contrary to the predictions of the permanent income hypothesis this does not necessarily disconfirm the hypothesis (Hall, 1978). If the lag structure of income growth— say, six lags of income growth— is a reasonable measure of permanent income then finding significant coefficients on lagged income is not necessarily inconsistent with the Life Cycle-Permanent Income hypothesis. Though Hall (1978) finds weak evidence that recent income levels and lagged stock prices predict current consumption, he reasons that this m ay be explained by consumption taking time to adjust to changes in perm anent income. If stock prices are correlated with changes in perm anent income, then the predictive power of the stock price is picking this up. Overall, Hall concludes that there is little reason to doubt the validity of the permanent income hypothesis.

Hall concludes with a suggestion for policy makers, "With respect to the analysis of stabilization policy, the findings of this chapter go no further than supporting the view that policy affects consumption only as much as it affects perm anent income. In the analysis of policies that are known to leave permanent income unchanged, consumption may be treated as exogenous. Further, only new information about taxes and other policy instruments can affect perm anent income. Beyond these general propositions, the policy analyst must answer the difficult question of the effect of a given policy on permanent income in order to predict its effect on consumption. Regression of current consumption on

current and past values of income are of no value whatsoever in answering this question (p. 986)."

However, research following Hall (1978) show that fluctuations in current income may affect consumption and consumption is very precision to current income. For example, the permanent income hypothesis can be expressed by the equation (1),

$$\Delta C_t = \varepsilon_t \tag{1}$$

where current consumption is the optimal forecast of consumption in the next period and ε_t is the forecast error. If the residuals, ε_t, shows some predictable behavior over time, then the equation is misspecified. Moreover, Flavin (1981) and Hayashi (1982) show that consumption displays "excess sensitivity" to current income. When they regressed consumption growth on income, they have seen that lagged consumption is not the only forecaster of current consumption.

Hall and Mishkin (1982) test this possibility using panel data and find that a portion of consumers show excess sensitivity to current income. This is true for about 20 percent of consumers. However, the authors argue this fraction is not enough to overturn Hall's (1978) original implications for policy—that unless aggregate demand policy affects permanent income, then policy is unlikely to affect aggregate consumption in the short-run.

Cambell and Mankiw (1989) argue that a portion of consumers follow a "rule-of-thumb" while the remaining portion abide by the permanent income hypothesis. However, for Cambell and Mankiw (1989), the portion not abiding by the hypothesis is much higher than indicated by Hall and Mankiw (1982), where a rule of thumb applies to approximately half of all consumers. The rule-of-thumb consumer is "extremely reluctant to substitute consumption intertemporally in response to interest rate changes" (Cambell and Mankiw (1989, pl85).

Similar to Cambell and Mankiw (1989) other studies have sought specific reasons for the failure of the permanent income hypothesis, emphasizing the importance of borrowing constraints in explaining the empirical evidence against the permanent income hypothesis. Though Hall (1978) does not fail to recognize that borrowing constraints or some other market frictions may prevent consumers from maximizing intertemporal utility, as he reiterates in Hall and Mankiw (1982). However, his conclusion is that these factors are not

consequential enough to impugn the permanent income hypothesis. That statement, however, has not slowed further research.

5.2.3. Liquidity Constraints

The possibility that liquidity constraints explain part of the failure of the permanent income hypothesis has inspired two related types of studies. The first estimates the significance of consumer credit as a predictor of consumption— that consumption is excessively sensitive to credit growth— much as previous papers emphasized the significance of income in predicting consumption. Ludvigson (1999) undertakes this task with data on the United States, while Bacchetta and Gerlach (1997) do so with international data. Both studies find a significant role for consumer credit in predicting consumption behavior. The second type of study, motivated by the failure of the permanent income hypothesis, focuses more on estimating the presence of liquidity constraints. Such papers include Chah, Ramey and Starr (1995), Shea (1995), Gross and Souleles (2002), Zinman (2003), as well as earlier papers by Flavin (1985), Hayashi (1985), and Zeldes (1989).

Ludvigson (1999) shows that consumer credit growth is a significant predictor of consumption growth, independent of income growth. She finds that "forecastable, or ex ante, consumer credit growth has a significant influence on consumption that is independent of the variation in predictable income growth "(1999, p434). That consumption in the current period responds to a known change in consumer credit indicates that consumers are unable to smooth consumption. She estimates consumption growth where the null hypothesis is that consumption growth should only be explained other variables. Ludvigson finds that predictable credit growth is a significant determinant of consumption growth, independent of income growth. She notes, "the tests . . . show that consumption grow this correlated with not just predictable income growth (as has been extensively documented), but also with predictable consumer credit growth. T he result is striking because is does not represent a simple contemporaneous correlation between credit and spending" (Ludvigson (1999, p.442).

Ludvigson (1999) motivates the empirical result with a model in which a consumer maximizes lifetime utility subject to a time-varying borrowing constraint. The borrowing constraint is modeled to vary over time where the upper limit is stochastic and dependent on current income of the individual, as well as on general economic conditions.

In the model, when lifetime resources of are sufficiently low, a household spends all of current income and borrows up to a current credit limit after accounting for interest and principle owed on current debt holdings. In this situation, spending is completely determined by the time-varying credit constraint. However, when resources are high, spending is not determined by the credit limit as consumers can borrow and repay debt to smooth consumption. An important implication of the model is that even when unconstrained, households still respond to a change in their credit limit, since lifetime resources are a function of the borrowing ceiling or limit.

The effect on consumption from a change in the credit constraint comes from two channels. One, the credit constraint affects consumption through its affect on current resources. Two, the credit constraint also affects consumption through general economic conditions, where an economy-wide shock can change the constraint independent of income. So, "even when consumers are unconstrained, today's economic condition affects current consumption because it affects the likelihood of being constrained tomorrow " (Ludvigson, 1999, p.440).

Bacchetta and Gerlach (1997) examine data for five countries (the US, Japan, Canada, Britain, and France) testing for the "excess sensitivity" of consumption to consumer credit and mortgage credit. The bulk of their evidence is in support of Ludvigson (1999), that consumer credit is a significant predictor of consumption. The authors confirm this is the case for the United States and show this is also the case for the other countries. In most countries, consumer credit dominates income as predictor of consumption.

Motivated by the type of policy concerns commented on by Hall (1978), Bacchetta and Gerlach (1997) note that, "In central bank circles, in contrast, it is frequently taken for granted that the behavior of consumption is critically influenced by the availability and cost of credit, and that consumption plays an important role in the transmission mechanism " (p.208). In a final rejoinder to Hall (1978) Bacchetta and Gerlach (1997) conclude, "Our results lead us to believe that this view (Hall's) is incorrect, and that monetary policy could exert powerful effects on consumption by affecting credit" (p. 235).

Consistent with the message of these two papers are studies that document the existence of liquidity constraints. Both Flavin (1981, 1985) and Hayashi (1982, 1985) test specifically

for the liquidity constraints. The former argues that the presence of liquidity constraints helps explain the excess sensitivity of consumption to current income, while the latter focuses on the cross-sectional differences between households and finds evidence suggestive of the presence of borrowing constraints on a portion of the sample. Specifically, the constrained household consumes less than desired.

Chah, Ramey and Starr (1995) offer a similar conclusion, documenting that that the forward looking-rational consumer espoused by Hall (1978) is limited in its ability to smooth consumption, saying "Consumers are forward looking, but the horizon over which they can smooth consumption is limited by capital market imperfections. The excess sensitivity of consumption to predictable changes in income is attributable to liquidity constraint" (1995, p285). The empirical evidence is supported by narrative evidence as well. Jappelli (1990) finds that approximately 20 percent of families in the 1982 Survey of Consumer Finances are "liquidity-constrained".

Though empirically evident, the existence of liquidity constraints may only be of marginal significance for the behavior of consumption. Hayashi (1985) qualifies his finding by noting decline in consumption he documents is small. Also, Zeldes (1989) finds that liquidity constraints are most important for younger households, which may not affect aggregate consumption to a significant degree (which is tangentially consistent with Jappelli (1990), who concludes that current income, wealth and age are the most important determinants of the probability that consumer is denied a loan).

However, others disagree. Cox and Jappelli (1993) argue that even if the "effect of liquidity constraints on consumption is small . . . the effect on household balance sheets could conceivably be much larger. Credit constraints could affect leveraged purchases of durables and housing" (p.l98). Cox and Jappelli (1993) conclude that constrained households would increase debt by 75 percent given they became unconstrained. Also, Mayfield (1989) shows that constrained households consume fewer durable goods relative to nondurable goods than do unconstrained agents.

Some dissent entirely from the emphasis on liquidity constraints. Runkle (1990) offers an alternative view that liquidity constraints cannot explain the excess sensitivity of consumption and, in fact, his evidence is supportive of the perm anent income hypothesis contrary to the evidence so far discussed. Shea (1995) also offers counter evidence to the

liquidity constraint school of thought, finding explanation for the excess sensitivity of consumption in "loss-aversion" behavior of consumers rather than borrowing constraints or even myopic behavior (see also Altonji and Siow (1987) for additional support of the permanent income hypothesis). A recent chapter by Zinman (2003) uses credit cards to assess the relevance of liquidity constraints in the time period considered in the above studies. Zinman's (2003) conclusion is more tempered than the outright dissidents, presenting evidence that is supportive of the existence of liquidity constraints but not conclusive.

Updating the debate, Gross and Souleles (2002) provide evidence that households may still be liquidity-constrained. Using panel data on credit card data for the years 1995 to 1998 they conclude based on the response of individual credit card accounts that households still appear to be liquidity-constrained. That is, the card holder is unable to borrow at desired levels, so when the limit of the credit card is increased they quickly respond by running up the balance. Their findings have economic implications as well, as about 20 percent aggregate consumption is done with credit cards and about two thirds of households in the United States have at least one credit card, while over half of the households are paying interest on the balance (Gross and Souleles, 2002). In recent studies, Brady (2006, 2011) uses a wide data from 1953 to 2004 and he finds that consumers are not in a liquidity constrained manner.

Overall, the research on the behavior of consumption following Hall's (1978) formulation provides something of a mixed bag. On the one hand, Hall (1978)'s formulation is arguably consistent with the data if one considers that households are slowly adjusting to changes in permanent income, thus explaining any apparent excess sensitivity of consumption. Others, however, reject the permanent income hypothesis, at least for a portion of consumers. This implies that policies that influence income only temporarily may yet have an effect on consumption, a la the motivations for Ludvigson (1999) and Bachetta and Gerlach (1997). However, despite the findings of those researchers, the possible policy implications may already be moot. The section that follows considers whether the conclusions of Ludvigson (1999), Bachetta and Gerlach (1997) and Brady (2006, 2011) still hold.

5.3. Econometric Methodology

This section follows the empirical strategy of Ludvigson (1999) by estimating a consumption growth equation of the form (2),

$$\Delta c_t = \alpha + \beta E_{t-1}\Delta y_t + \gamma E_{t-1}\Delta r_t + \delta E_{t-1}\Delta d_t + e_t \quad (2)$$

The variables in the equation represents the followings;

c = consumption
y = income,
r = real interest rate,
d = credit growth,
E = expectations operator
et = error term

All data in the equation is quarterly. Real disposable income for income variable has been used. Consumption expenditures represents the sum of nondurable consumption expenditures and consumption service expenditures. For the interest rate, average of the three month treasury bills has been used. Total consumer credit are used for d.

We will test whether total consumption can be explained by consumer credits in Turkey between 1995 and 2014. If liquidity constraints have been relaxed, then the data is more likely to be consistent with the permanent income hypothesis, and predictable consumer credit growth should not be a significant explanator of consumption growth.

We estimate separately for two sample divisions. The first sample estimates from 1995 to 2006 and the second sample estimates from 2006 to 2014 for total credits. In chapter four, as figure 14 displayed that there is a significant expansion in total consumer credits in 2006. For the credit card data, the first sample estimates from 1995 to 2004 and the second sample estimates from 2004 to 2014. In chapter four, as figure 16 displayed that there is a significant expansion in consumer credits in 2004.

5.4. Findings

Equation (2) is estimated using two-stage least squares, with the period t-3 lags and beyond of the variables used as instruments. This strategy is followed for a number of reasons. First, since consumption and income are jointly determined, ordinary least squares is inappropriate and instrumental variable estimation is necessary. For Ludvigon's (1999) equation, since the period *t*-1 expected values of income growth and the other variables are not observable, it is necessary to find variables to use in their place. The period *t* variables are inappropriate instruments since under the null that the permanent income hypothesis is true these variables are correlated with the error term Second, due to serial correlation associated with time averaged quarterly data, the actual t-1 values of the regressors are also inappropriate. Therefore, the instrument list includes the t-3 through t-4 lags of consumption growth, income growth, credit growth credit, and the interest rate . All variables are in expressed in logarithms except for the interest rate, which is in percent.

Tables 9-14 below display the results for equation above. Each table reports the estimated coefficients, F test and robust standard errors in parentheses. In first three tables, total credit growth has been used as an explanatory variable. In the last three tables, credit card growth has been used as an explanatory variable. In each table, column one contains only income growth as a regressor; column two adds the real interest rate; and column three adds total credit growth or credit card growth.

For the table 9, in column one expected income growth is a significant predictor of consumption growth at the one percent level in each model. While in column two, the real interest rate is not a significant predictor of consumption growth. Column three reveals that expected credit growth is a significant predictor of consumption growth at the one percent level. Including credit growth lowers the coefficient estimate on income growth from 0.95 in column one to 0.79 in column three.

Table 9. Estimation of Consumption from 1995 to 2006 (Using Total Consumer Credits)

Constant	0.231*** (8.17)	0.232*** (8.16)	0.086*** (3.19)
Real Disposable Income	0.954*** (54.80)	0.914*** (2.92)	0.794*** (3.68)
Real Interest Rate	-	-0.001 (-1.02)	-0.005 (-1.05)
Total Consumer Credits	-	-	0.165*** (7.18)
R^2	0.266	0.267	0.376
F	13.650	8.989	747.556

*Note: Robust standard errors in parentheses. *, ** and *** represent significance at 10%, 5% and 1%, respectively.*

Table 10 shows that extending the sample through 2014 changes the significance of credit growth as a predictor. Income growth is still a significant predictor of consumption growth. Predictable credit growth is significant at ten percent level.

Table 10. Estimation of Consumption from 1995 to 2014 (Using Total Consumer Credits)

Constant	0.259*** (8.24)	0.005* (1.91)	0.005* (1.77)
Real Disposable Income	0.181*** (3.23)	1.701*** (3.06)	1.691*** (3.14)
Real Interest Rate	-	-0.004 (-0.79)	0.002 (0.78)
Total Consumer Credits	-	-	0.005* (1.91)
R^2	0.944	0.995	0.997
F	0.322	3297.5	4309.9

*Note: Robust standard errors in parentheses. *, ** and *** represent significance at 10%, 5% and 1%, respectively.*

Table 11 is very different from the 1995-2006 sample. Firstly, expected income growth is not a significant predictor of consumption growth for each model. This is consistent with the permanent income hypothesis, where expected income growth should not be a significant predictor of consumption growth. Secondly, The estimate for expected credit growth is not statistically significant and so, this is consistent with the consumption smoothing behavior of consumers.

Table 11.Estimation of Consumption from 2006 to 2014 (Using Total Consumer Credits)

Constant	0.047*** (4.30)	0.002 (0.08)	0.005 (0.21)
Real Disposable Income	0.028 (-0.56)	0.020 (0.44)	0.336 (0.33)
Real Interest Rate	-	-0.004 (-0.74)	0.002 (0.78)
Total Consumer Credits	-	-	0.020 (0.44)
R^2	0.994	0.996	0.995
F	4309.9	8595.585	11412.05

*Note: Robust standard errors in parentheses. *, ** and *** represent significance at 10%, 5% and 1%, respectively.*

Estimation of consumption using credit card gives similar results. For table 12, in column one expected income growth is a significant predictor of consumption growth at the one percent level in model one, at the five percent level in model two and at the ten percent level in model three. While in column two, the real interest rate is not a significant predictor of consumption growth. Column three reveals that expected credit card growth is a significant predictor of consumption growth at the five percent level. Including credit growth lowers the coefficient estimate on income growth from 0.72 in column one to 0.075 in column three.

Table 12. Estimation of Consumption from 1995 to 2004 (Using Credit Cards)

Constant	0,131 (0,02)***	0,094 (0,02)***	0,068 (0,03)**
Real Disposable Income	0,722 (0,06)***	0,053 (0,02)**	0,075 (0,04)*
Real Interest Rate	-	-0,505 (0,43)	-0,434 (0,69)
Credit Cards	-	-	0,820 (0,35)**
R^2	0.221	0.293	0.298
F	21.650	10.989	43.941

*Note: Robust standard errors in parentheses. *, ** and *** represent significance at 10%, 5% and 1%, respectively.*

Table 13 shows that extending the sample through 2014 changes the significance of credit card growth as a predictor. Income growth is still a significant predictor of consumption growth. However credit card growth is not a significant predictor of consumption.

Table 13. Estimation of Consumption from 1995 to 2014 (Using Credit Cards)

Constant	0,110 (0,025)***	0,106 (0,021)***	0,095 (0,016)***
Real Disposable Income	0,073 (0,029)**	0,067 (0,023)***	0,055 (0,023)**
Real Interest Rate	-	-0,103 (0,114)	-0,042 (0,177)
Credit Cards	-	-	0,023 (0,015)
R^2	0.911	0.944	0.998
F	0.157	5691.5	7425.9

*Note: Robust standard errors in parentheses. *, ** and *** represent significance at 10%, 5% and 1%, respectively.*

Table 14 is very different from the 1995-2004 credit card sample. Firstly, expected income growth is a significant predictor of consumption growth for the first model only. However, it is not a significant predictor of consumption growth for the second and third models. This is consistent with the permanent income hypothesis, where expected income growth should not be a significant predictor of consumption growth. Secondly, The estimate for expected credit card growth is not statistically significant and so, this is consistent with the consumption smoothing behavior of consumers.

Table 14. Estimation of Consumption from 2004 to 2014 (Using Credit Cards)

Constant	0,048 (0,034)	0,058 (0,030)*	0,057 (0,028)*
Real Disposable Income	0,121 (0,062)*	0,023 (0,015)	0,048 (0,034)
Real Interest Rate	-	-0,154 (0,105)	-0,114 (0,098)
Credit Cards	-	-	-0,434 (0,696)
R^2	0.990	0.993	0.996
F	7721.95	9965.441	15619.11

*Note: Robust standard errors in parentheses. *, ** and *** represent significance at 10%, 5% and 1%, respectively.*

5.5. Comments

As a result, For the 2006 to 2014 sample, neither expected credit growth nor income growth are statistically significant predictors of consumption growth. These results are consistent with the conception of the permanent income hypothesis, where neither variable should help predict the behavior of consumption. This result is also true when the credit card growth considered for the 2004 to 2014 sample. However, the invalidity of permanent income hypothesis can only be argued in pre-2006 sample for total consumer credit growth and pre-2004 sample for credit card growth. So, the case for rejecting the permanent income hypothesis is weaker than when using data for earlier decades. While statistical rejection of the permanent income hypothesis has been motivated by the existence of liquidity constraints.

Moreover, these results are consistent with hypothesis, where the growth in consumer credit is associated with a decline in the lending channel of the monetary policy transmission mechanism. When households have an easier time obtaining credit they can smooth consumption during recessions, periods of financial distress, or during periods of contractionary monetary policy. In other words, consumer behavior is able to come closer to the conception of the permanent income hypothesis. As Hall (1978) argues, aggregate demand policy that only has an effect on transitory income will have little to no effect on consumption when households are able to borrow in anticipation of the change in income. The results here suggest consumers are able to do this more in line with Hall's expectation.

5.6. Identifying Structural Break

In the previous econometric model, we accepted that there is a structural break in 2006 for total consumer credits and in 2004 for credit cards. However, we do not provide an evidence about these structural break points. In this part, we will consider a question: Is there a break in the trends of consumer credits and credit cards and if there is a break, when is it occur?

Let p_t denote the natural logarithm of the quarterly consumer credit (or credit card) at time *t.* We consider the following model which allows for a change in the slope of the data.

$$p_t = \mu + \theta_t + \gamma DT_t + u_t \qquad t = 1,2,\dots,T \tag{3}$$

where,

$$DT_t = \begin{cases} t - T_b & if\ t > T_b \\ 0 & if\ t \leq T_b \end{cases}$$

and T_b is the break date, μ is the intercept, θ is the average consumer credit volume before the break, and γ is the change in the average consumer credit volume after the break. The error process $\{u_t\}$ satisfies:

$$u_t = \alpha u_{t-1} + \varepsilon_t \qquad t = 2,3,\dots,T \qquad u_1 = \varepsilon_1$$
$$\varepsilon_t = d(L)e_t \qquad d(L) = \sum_{i=0}^{\infty} d_i L^i \qquad \sum_{i=0}^{\infty} i\ |d_i| < 0 \qquad d(1)^2 > 0 \tag{4}$$

where e_t is is a martingale difference sequence with $E(e_t|e_{t-1}, e_{t-2}, \dots) = 0$, $E(e_t^2|e_{t-1}, e_{t-2}, \dots) = 1, sup_t E(e_t^4) < \infty$ and L is the lag operator. The error process $\{u_t\}$ is stationary, I(0), if $|\alpha| < 1$, while it is non stationary, I(1), if $\alpha = 1$.

Any change in the consumer credit volume requires that γ is non-zero. Our interest focuses on testing the null hypothesis of no structural break, $H_0: \gamma = 0$, versus the alternative that breaks are present, $H_A: \gamma \neq 0$. To test the hypothesis about γ, we use new structural break tests proposed by Harvey, Leybourne and Taylor (2006) (HLT) which are based on OLS estimates and are robust to strong serial correlation and a unit root in the errors. Additionally, no prior knowledge about whether the errors are I(0) or I(1) is required. This is substantially useful in empirical applications.

The HLT statistic is formed as the weighted average of t-statistics appropriate for I(0) and I(1) errors. When the true break date T_b is known and the u_t is I(0) with $\propto = 0$ in equation (2), then the standard t-statistic, denoted by $t_0(T_b)$, can be used to test the null hypothesis $H_0: \gamma = 0$ in (1). On the other hand, if the u_t is I(1), then the optimal t-statistic should be based on the first differences of the data. First differencing equation (3) yields equation (4), which is the equation for consumer credits.

$$\Delta p_t = \theta + \gamma DU_t + \Delta u_t \qquad t = 2,3,\dots,T \tag{5}$$

where,

$$DU_t = \begin{cases} 1 & if\ t > T_b \\ 0 & if\ t \leq T_b \end{cases}$$

and the optimal t-statistic, denoted by $t_1(T_b)$, tests the null hypothesis $H_0: \gamma = 0$ in (5). When it is not known whether the errors are I(0) or I(1), it is not clear whether to work with the levels or the first differences in the data. The HLT statistic is based on the weighted average of the t-statistics from the regression in levels and the regression in first differences. The weight function $\delta(\,)$, which is given by

$$\delta(S_0(T_b), S_1(T_b)) = exp\,[-\{500 S_0(T_b) S_1(T_b)\}^{\,2}] \tag{6}$$

converges to unity when u_t is I(0) and to zero when u_t is I(1). The $S_0(T_b)$ and $S_1(T_b)$ are the stationary test statistics of Kwiatkowski et al. (1992) calculated from the OLS residuals of equations (3) and (5), respectively. For a given possible break date, T_b, the HLT statistic is defined as

$$t_\delta = \{\delta(S_0(T_b), S_1(T_b)) \times |t_0(T_b)|\} + \{[1 - \delta(S_0(T_b), S_1(T_b))] \times |t_1(T_b)|\} \tag{7}$$

where $|t_0(T_b)|$ and $|t_1(T_b)|$ are the absolute values of the t-statistics associated with testing the null hypothesis $H_0: \gamma = 0$ in equations (1) and (3) respectively, with the implicit non parametric long run variance constructed using the Barlett kernel with bandwidth $M = [4(T \div 100)^{1/4}]$. The t_δ statistic will collapse to $t_0(T_b)$ when u_t is I(0), and to $|t_1(T_b)|$ when u_t is I(1). The asymptotic distribution of the t_δ statistic is standard normal.

For an unknown break date, HLT follow Andrew's (1993) approach and take the maximal value of the t-statistics from equations (3) and (5),

$$\begin{aligned} t_0^* &= \sup_{T_b \in \omega^*} |t_0(T_b)| \\ t_1^* &= \sup_{T_b \in \omega^*} |t_1(T_b)| \end{aligned} \tag{8}$$

calculated over the set of all possible breakpoints, $\omega^* = \{T^*, T^* + 1, \dots, T - T^*\}$ where $T^* = (0.1)T$. Therefore, breakpoints near the end of the sample are not considered, a technique known as trimming. The breakpoint estimators of T_b are those associated with

the largest t-statistics and are given by $\hat{T}_b = argsup_{T_b \in \omega^*} |t_0(T_b)|$ and $\hat{T}_b = argsup_{T_b \in \omega^*} |t_1(T_b)|$. For an unknown break date, the HLT statistic is defined as;

$$t_\delta = \{\delta\big(S_0(\hat{T}_b), S_1(\hat{T}_b)\big) \times t_0^*\} + \varphi\{[1 - \delta\big(S_0(\hat{T}_b), S_1(\hat{T}_b)\big)] \times t_1^*\} \quad (9)$$

where φ is a constant chosen such that for a given significance level, the critical value of the test is the same irrespective of whether u_t is I(0) or I(1). In contrast to the known breakpoint case, the asymptotic distribution of t_δ , with T_b unknown, is nonstandard and the critical values with the associated constants are reported in HLT.

The estimated break date is obtained by taking the weighted average of the breakpoint estimates $\hat{T}_b$ and $\tilde{T}_b$, i.e.

$$\delta\big(S_0(\hat{T}_b), S_1(\hat{T}_b)\big) \times \hat{T}_b + [1 - \delta\big(S_0(\hat{T}_b), S_1(\hat{T}_b)\big)] \times \hat{T}_b\} \quad (10)$$

We use both known and unknown trend break date models for both total consumer credits and credit cards. The former considers 2006 for total consumer credits and 2004 for credit cards as a possible break dates because as will be remembered in chapter four, BRSA reports accept the 2006 and 2004 as break dates for total consumer credits and credit cards respectively. However, we have no idea about the quarters.

The empirical results are presented in Table 15 for both known and unknown break dates. The results provide substantial evidence that total consumer credit growth rate changed in 2006 Q1 and credit card growth rate changed in 2004 Q1 in Turkey. The t-statistic rejects the null hypothesis of no break for total consumer credits and credit cards at the 1 percent level for known break date. However; according to unknown break date, the t-statistic rejects the null hypothesis of no break for total consumer credits and credit cards at the 10 and 5 percent levels respectively. So, 2006 Q1 and 2004 Q1 dates are selected for total consumer credits and credit cards respectively because of the high significance levels in the econometric model.

Table 15. Empirical Results of the HLT Test

	Known Break Date	Unknown Break Date	
	$t_\delta(T_b = 2006\ Q1)$	t_δ	T_b
Total Consumer Credit	2.812***	2.247*	2003 Q3
	Known Break Date	Unknown Break Date	
	$t_\delta(T_b = 2004\ Q1)$	t_δ	T_b
Credit Card	5.012***	2.821**	2004 Q4

*Note: The test statistics with***, **, * reject the null of no break at the 1, 5 and 10 percent level, respectively.*

Using the estimated break dates, the OLS estimates of θ and γ are reported in Table 16 for total consumer credits and credit cards. The results show that both of them experienced a positive change in the slope, implying higher growth rates in consumer credits. Additionally, the results in Table can be used to show that the annual total consumer credit growth rate was 25 percent before 2006 Q1 and it increased to 34 percent after 2006 Q1. Similarly, the annual credit card growth rate was 20 percent before 2004 Q1 and it increased to 27 percent after 2004 Q1. $((1.01856)^{12} - 1 = 0.25,\ (1.01856 + 0.00651)^{12} - 1 = 0.34, (1.01532)^{12} - 1 = 0.20,\ (1.01532 + 0.00532)^{12} - 1 = 0.27)$

Table 16. Estimated Parameters of the HLT Test

	T_b	μ	θ	γ
Total Consumer Credit	2006 Q1	10.63012	0.01856	0.00651
Credit Card	2004 Q1	10.45117	0.01532	0.00532

Note: T_b is the break date, μ is the intercept, θ is the average monthly inflation rate before the break, and γ is the change in the average monthly inflation rate after the break.

5.7. Conclusion

This chapter has provided evidence that the behavior of consumption accords with the predictions of the permanent income hypothesis. This was shown to be the case once data between 1995-2014 is appended to the debt-augmented consumption equation of Ludvigson (1999). While Ludvigson (1999) and previous studies emphasized the empirical failure of the permanent income hypothesis, the results of this chapter are consistent with

the interpretation that factors such as liquidity constraints—that once helped explained the empirical deviation from the theory— are less important. In this view, households can access credit more easily and smooth consumption. So, household behavior is less sensitive to short-run changes in monetary policy than in previous decades.

Of course, this is not last word on the matter. While Ludvigson (1999) and Bacchetta and Gerlach (1997) emphasize the importance of the consumer credit in predicting consumer behavior. Their results are based on data from the early 1990s and before for USA.. However, Gross and Souleles (2002) provide a more up dated study of liquidity constraints and the implications for the permanent income hypothesis. Using panel data on credit card accounts over 1995 to 1998, they argue the data is consistent with the interpretation that households use credit cards because they are liquidity-constrained in credit markets. Their study implies that the short-run behavior of consumer credit and liquidity constraints are still important in explaining the behavior of consumption, and this, as argued by Bacchetta and Gerlach (1997), has important implications for aggregate demand policy.

Therefore, if Gross and Souleles (2002) results are indicative of the continued importance of borrowing constraints, sounding the death knell on monetary policy's ability to affect aggregate consumption may be premature. In this view, the rising levels of consumer debt associated with credit cards make household balance sheets more sensitive to rising interest rates, and households will reduce consumption more in response to contractionary monetary policy than they would have before.

CHAPTER 6

CREDIT CARDS AND LIQUIDITY CONSTRAINTS

6.1. Introduction

Rising interest rates can put the households in a liquidity-constrained manner. However, this can be an idea stucked in the past, Gross and Souleles (2002) says that liquidity constraints are still important because the large part of the consumer credits consist the credit cards. So, households using credit cards are sensitive to increases in the interest rates. When the central bank increases interest rates, the households using credit cards decrease their consumption much more. Actually, the share of the credit cards in total consumer credits is approximately is 30 percent in Turkey. So, the households in Turkey can be still in a liquidity constrained situation (see Figure 10).

According to an another idea, households using credit card can smooth their consumption. Because the credit card borrowing has increased too much since 2002 in Turkey and all the consumers and the liquidity constrained households can reach the credit cards easily now. So, the consumption smoothing can be a strong argument for the households nowadays if we compared to twenty years ago. Despite high interest rates, credit cards allow for borrowing with low transaction costs, circum venting liquidity constraints (Brito and Hartley, 1995). So, the change in interest rates may not be an effect on households.

In recent studies, credit cards can sign the liquidity constrained borrowers. However; the empirical study in this chapter shows that the increasing interest rate has no effect on accessing credits for households. So, the policies of the central bank are not constrained the borrowers to obtain credits. In the sample period between 2002 and 2014, credit card usage has increased and this situation has made the households more liquid and conducted them to consumption smoothing. If we look at this idea from the perspective of monetary policy; if Central Bank apply a contractionary monetary policy, credit card liquidity increases

consistent with consumption smoothing. However, if Central Bank apply an expansionary monetary policy, credit card borrowing will also increase.

In this chapter, the impulse response functions of credit card balances and credit card liquidity to a change in monetary policy have been estimated. The response of the credit liquidity to both contractionary and expansionary policy has been tested. The quarterly data of commercial banks between 2002 and 2014 has been used. The data has been obtained from the BRSA statistics. The unused portion of credit card lines has been used as the credit card liquidity.

The main aim of this chapter to show that households are less liquidity constrained with credit cards and so, monetary policies have no effect on consumption behavior in Turkey from 2002 through 2014 by using the unused portion of credit card lines data. According to traditional view of banking credit channel, consumers using credit card are more sensitive to the interest rates and also to the monetary shocks. However, the empirical results in this chapter shows the opposite of the traditional view. Consumers are not only in a liquidity constraint but also they use credit cards as a shield to offset monetary policy shocks. According to the findings in this chapter we can say that, monetary policies which purposes to slow the credit card borrowing has a minor effect on consumption behavior.

Liquidity constraints are defined as a quantity constrain and reveals when a borrower does not receive a certain amount of credit. According to Zeldes (1989), low-income consumers are more affected than high-income consumers from the liquidity constraints. Jappelli (1990) says that the liguidity constraint is significant for the consumers with low living conditions. There are some other studies which argues liquidity constraints is valid for at least a portion of consumers such as Mayfield (1988); Cox and Jappelli (1993), Jappelli, Pischke and Souleles (1998).

6.2. Econometric Methodology

We aim to test the two hypothesis by calculating the impulse response functions of credit card balances and credit card liquidity. First; credit card borrowing households are more sensitive to a change in monetary policy and so, monetary policy of Central Bank in Turkey is more efficient for at least on consumers. This hypothesis strongly defends by

Bernanke and Gilchrist (1995) and Bernanke, Gertler and Gilchrist (1996). According to them, after the contractionary policy of Central Bank, the accessing to credit cards and also consumption spending decreases. So, the contractionary policy of the Central Bank spreads to the overall economy by the transmission mechanism of balance sheet as discussed in Chapter one. Second; credit card borrowing households are less sensitive to a change in monetary policy and so, monetary policy of Central Bank in Turkey is less efficient for at least on consumers. According to this hypothesis, credit cards provide consumers liquidity. After the contractionary policy of Central Bank, consumers can access credit card liquidity easily and credit card borrowing increases. So, consumption will not decline, after the contractionary policy of Central Bank. The second hypothesis strongly defends by Brady (2006, 2011) for USA.

The impulse response functions of credit card balances and credit card liquidity to a change in monetary policy have been estimated. The response of the credit liquidity to both contractionary and expansionary policy shocks has been tested. The quarterly data of commercial banks between 2002 and 2014 has been used. The data has been obtained from the BRSA statistics. Data set includes the balances on credit card borrowing and the portion of credit card lines that used. So, we can find the unused portion of credit card lines easily from data. The unused portion of credit card lines has been used as the credit card liquidity.

6.3. Credit Card Liquidity

In this study, credit card liquidity is defined as the unused portion of credit card lines. Unused portion of credit card lines can be used whenever he wants by the credit card holder. The unused portion of the credit card line is not fixed. It can be change if consumer request a higher limit from bank or bank increases the limit. If Central Bank enforces a contractionary monetary policy, then credit cards offer liquidity immediately (Brady, 2011). To test this hypothesis, we will measure the response of credit card liquidity to monetary policy by using impulse response functions.

6.4. Estimating The Impulse Response Functions

The impulse response functions are calculated from a five variable system of consumption (C), disposable income (DI), credit card liquidity (CCL), credit card balance (CCB) and interest rate (IR). A typical approach to calculating impulse response functions from this system is to estimate the variables in a vector autoregression (VAR). All variables are quarterly. Real disposable income for disposable income variable has been used. Consumption expenditures represents the sum of nondurable consumption expenditures and consumption service expenditures. For the interest rate, average of the three month treasury bills has been used.

6.4.1. VAR Model

The traditional use of time-series analysis was to forecast the time path of a variable. Uncovering the dynamic path of a series improves forecasts since the predictable components of the series can be extrapolated into the future. The growing interest in economic dynamics has given new emphasis to time-series econometrics with a developed methodology to decompose a series into a trend, seasonal, cyclical, and an irregular component.

Univariate models are particularly useful for forecasting since they enable the prediction of a series based solely on its own current and past realizations. Techniques such as "intervention analysis" and "transfer function analysis" generalize the univariate methodology by allowing the time path of the "dependent" variable to be influenced by the time path of an "independent" or "exogenous" variable. If it is known that there is no feedback, intervention and transform function analysis can be very effective tools for forecasting and hypothesis testing. However, in practice it is not always known if the time path of a series designated to be the "independent" variable has been unaffected by the time path of the so-called "dependent" variable. In this case an alternative, nonstructural approach to modeling the relationship between several variables is required.

The Vector Autoregression (VAR) arose, as an alternative to a style of macroeconomic modeling that seemed not to produce useful forecasts in a period of rapid economic change. VAR is commonly used for forecasting systems of interrelated time series and for analyzing the dynamic impact of random disturbances on the system of variables. The

VAR approach sidesteps the need for structural modeling by modeling every endogenous variable in the system as a function of the lagged values of all the endogenous variables in the system. The most basic form of a VAR treats all variables symmetrically without making reference to the issue of dependence versus independence.

The mathematical form of a VAR is:

$$Y_t = A_1 Y_{t-1} + \cdots A_P Y_{t-p} + BX_t + e_t \quad (11)$$

Where Y, is a K vector of endogenous variables, X_t is a d vector of exogenous variables, A_1 ... A_P and B are matrices of coefficients to be estimated, and e, is a vector of innovations that may be contemporaneously correlated with each other but are uncorrelated with their own lagged values and uncorrelated with all of the right-hand side variables.

A VAR model is thought to provide a straightforward method of producing forecasts that do not constrain how their variables affect one another. Unquestionably, a VAR will be over parameterized in that many of these coefficient estimates can be properly excluded from the model. However, the goal is to find the important interrelationships among the variables. Improperly imposing zero restrictions may waste important information. Moreover, the regressors are likely to be highly collinear, so that t tests on individual coefficients may not be reliable guides for paring down the model. In practice, the size of a VAR model is limited by the fact that each variable including lags appears in each equation yet estimation requires sufficient degrees of freedom. The result is that the number of variables and the lag lengths must be restricted.

To set up and to use a VAR, firstly the data transforms to such a form that a VAR can be fitted to it. And secondly, value of lag length and dimension of Y_t and X_t chooses compatible with the size of data set available.

6.4.2. Unit Root Test

A popular test of stationarity is known as the Unit Root Test. To illustrate the use, the following is considered:

$$Y_t = Y_{t-1} + e_t \quad (12)$$

where e_t is the stochastic error term that follows the classical assumptions, namely it has zero mean, constant variance σ^2, and is non-autocorrelated. Such an error term is also known as a white noise error term. The process is to take this first-order, or AR(l) and regress the value of Y at time t on its value at time t-1. Now if the coefficient of is Y_{t-1}in fact equal to 1 there is a unit root problem, i.e. a nonstationarity situation. Therefore, if the regression,

$$Y_t = pY_{t-1} + e_t \tag{13}$$

is carried out and the result is that p = 1, then the stochastic variable Y**,** has a unit root. In time series econometrics, a time series that has a unit root is known as a random walk time series, indicating the variance of Y**,** increases steadily with time and goes on to infinity. If the absolute value o f p is greater than one, the series if explosive. Y_t is a stationary series if -1 < p < 1. Therefore, the hypothesis of a stationary series can be evaluated by testing whether the absolute value of p is strictly less than one.

In its simplest form, the regression for equation above is estimated and the estimated p coefficient is divided by its standard error to compute the Augmented Dickey-Fuller (ADF) T statistic. If the computed absolute value of the T statistic exceeds the ADF absolute critical T values, then the hypothesis that the given time series is stationary is accepted. If, on the other hand, it is less than the critical value, the time series is nonstationary.

A major limitation of the ADF test is that it rests on the assumption that the error terms are independently and identically distributed. This assumption does not hold in many cases (see Akoena, 1996). The Phillips-Perron (PP) test relaxes the ADF assumptions of independence and homogeneity by allowing the error term to be weakly dependent and heterogeneously distributed. Thus, it has an advantage of being robust to a wide variety of combinations of serial correlation and time-dependent heteroskedasticity. Furthermore, as argued in Chiarini (1998), the results based on the ADF are likely to be questionable. The reason being that for the ADF, the "appropriate lag-length" is unknown and a "comprehensive simulation study has not been done on the significant levels" - if one includes too many lags, the consequence will be a reduction in the power of the test, while including too few lags may seriously distort the test. This problem is compounded by the fact that different lag-lengths can often produce different results concerning the presence of

a unit root in the series. The outcome of the PP test concerning the presence of a unit root is independent of the lag-length used. This is because the PP test modifies the test statistic of Dickey-Fuller non-parametrically to account for the autocorrelation present in the DF equation.

With these explanations, the first step in estimating the model was to determine the existence of stationarity in the data sets. The ADF and PP tests was conducted on data. The stationarity test was satisfied for a model with trend. The data was transformed into log levels. The results from the tests are displayed in table.

According to ADF unit root test results in Table 17; CCB, CCL, consumption, disposable income and interest rate variables are not stationary in the level. However, they became stationary when the first difference of the variables taken. So, integration degree is I(1).

Table 17. ADF Unit Root Test Results

Variables		ADF T Statistics (Level)		ADF T Statistics (1st Difference)	
		W/out Trend	With Trend	W/out Trend	With Trend
CCB		-0.812(2)	-2.214(3)**	-10.564(2)***	-10.566(3)***
CCL		-0.121(4)	-0.451(3)	-8.117(3)***	-8.474(4)***
C		-1.332(4)	-0.698(4)	-3.126(3)	-7.112(4)***
DI		-2.921 (2)	-1.320(1)	-5.085(2)***	-8.754(1)***
IR		-1.542(4)	-1.542(3)	-11.986(8)***	-14.848(10)***
Critical Value	1%	-3.985	-2.552	-3.952	-2.586
	5%	-3.432	-1.923	-3.411	-1.893
	10%	-3.128	-1.594	-3.132	-1.621

*Note: The values in parentheses indicate the lag length according to Modified Akaike's Information Criterion. Maximum lag length is 12. *** significant at 1% level, ** significant at 5% level, * significant at 10% level.*

To support the ADF tests, PP test was also conducted on data. The result from the PP test are displayed in Table 18. Likewise, CCB, CCL, consumption, disposable income and interest rate variables are not stationary in the level according to PP test. However, they became stationary when the first difference of the variables taken. So, integration degree is I(1).

Table 18. PP Unit Root Test Results

Variables		PP T Statistics (Level)		PP T Statistics (1st Difference)	
		W/out Trend	With Trend	W/out Trend	With Trend
CCB		-0.334(3)	-2.495(2)**	-12.055(3)***	-11.353(5)***
CCL		-0.412(5)	-0.126(2)	-9.332(3)***	-8.013(2)***
C		-2.045(4)	-1.232(7)	-3.501(2)**	-10.036(2)***
DI		-3.214 (1)	-1.593(3)*	-8.184(5)***	-13.569(4)***
IR		-1.087(5)	-1.697(6)**	-13.712(11)***	-13.225(9)***
Critical Value	1%	-3.982	-2.550	-3.953	-2.586
	5%	-3.427	-1.923	-3.411	-1.893
	10%	-3.125	-1.591	-3.134	-1.624

*Note: The values in parentheses indicate the lag length. Maximum lag length is determined by Newey-West Bandwidth Criteria. ***significant at 1% level, ** significant at 5% level, * significant at 10% level.*

6.4.3. Cointegration Test

The concept of cointegration was first introduced by Granger (1981). A time series is called I(0), if it is stationary, or integrated of order zero; if a series needs differencing d times to become I(0), it is called integrated of order d, denoted X_t~I(0). We are particularly interested in the random walk process which is I(1) . If x~I(l), as discussed in previous section, the variance of x goes to infinity**.** According to Engle and Granger (1987) "The theoretical infinite variance for an I(1) series comes completely from the contribution of the low frequencies, or long run part of the series. Thus an I(1) series is rather smooth, having dominant long swings, compared to an I(0) series. Because of the relative sizes of the variances, it is always true that the sum of an I(0) and an I(1) will be I(1)." If X_t and Y_t are both I(1), in general the linear combination,

$$Z_t = X_t + \propto Y_t \tag{14}$$

will also be I(1) . However, in some special cases , Z_t could be I(0) . In this situation, X_t and Y_t are called cointegrated, in the sense that X_t and Y_t share a common non-stationary trend, so they move together and do not drift too far apart. Granger interprets

this as long run equilibrium, Z_t being the stationary deviations from the equilibrium (called equilibrium errors), and the constant $\propto$ is called cointegrating parameter.

The concept of cointegration is very important for a VAR specification, since as Engle and Granger (1987) show, if the variables of a vector x are cointegrated, the appropriate model is an error correction model, rather than a VAR in first differences. Thus before specifying a VAR model, we need to test for cointegration.

Engle and Yoo (1987) suggest to use the following test procedures and provide the critical values for cointegration test. The test consists of two steps. The first step fits the regression

$$Y_t = a_0 + a_1 X_t + Z_t \tag{15}$$

where Z_t is the residual or the equilibrium error. At the second step, we use the Dickey-Fuller test and the Augmented DF test to see if the estimated Z_t is a unit root process. If Z_t has a unit root, we cannot say that X_t and Y_t are cointegrated. Table 19 reports the cointegration test results. Almost all pair of variables can pass the augmented tests. The equation for the cointegration is;

$$(1 - L)u_t = \rho u_{t-1} + \sum_{i=1}^{\rho} \delta(1 - L)u_{t-i} \tag{16}$$

The null in t-tests is ρ =0. If the null cannot be rejected, then variables being tested are not cointegreted. Critical values are from Engle and Yoo (1987).

Table 19. Cointegraion Test Results

Variables	p	DF(t)	p	ADF(t)
IR and CCB	0	-2.81**	4	-3.04*
IR and CCL	0	-1.85***	4	-2.62**
IR and C	0	-3.03*	4	-3.05*
DI and C	0	-2.42**	4	-2.75**
DI and CCB	0	-1.12***	4	-1.33***
DI and CCL	0	-3.01*	4	-2.54**
C and CCB	0	-3.73*	4	-1.86***
C and CCL	0	-1.96***	4	-1.21***

*Note: ***significant at 1% level, ** significant at 5% level, * significant at 10% level.*

6.4.4. Granger Causality

The first stage of the analysis is to estimate the unconstrained VAR. VAR models are used to test for causality in the sense of Granger (1969). According to Stokes (1991), a series X_{1t} is said to Granger cause a series X_{2t} if, and only if, a model that predicts X_{2t} as a function of only its past has a greater sum of squares of the error term than a model that predicts X_{2t} as a function of its own past and the past ofX_{1t}. We estimate the reduced form VAR equation by equation in an OLS regression of the form;

$$X_t = \sum_{1}^{4} \alpha_{1i} IR_{t-i} + \sum_{1}^{4} \alpha_{2i} C_{t-i} \sum_{1}^{4} \alpha_{3i} DI_{t-i} \sum_{1}^{4} \alpha_{4i} CCB_{t-i} + \sum_{1}^{4} \alpha_{5i} CCL_{t-i} + \varepsilon_t \quad (17)$$

where X_t is IR_t or C_t or DI_t or CCB_t or CCL_t. In order to test for Granger Causality we use an F statistic to see if $\alpha_{1i}, \alpha_{2i}, \alpha_{3i}\, \alpha_{4i}$ and α_{5i} for i=l...q, are jointly significantly different from zero.

Cooley and LeRoy (1985) give a explanation about what we can learn from a Granger-causality test. They say: "Strict exogeneity does indeed imply Granger non-causality, so that failure of a Granger or Sims test is evidence against strict exogeneity... But the converse is not true: acceptance of Granger noncausality does not imply (although it is consistent with) strict exogeneity..."

Table 20 reports the results of Granger causality tests. According to Table, IR Granger causes C, CCB and CCL. CCB end CLL Granger causes C. DI Granger causes CCB and CLL.

Table 20. Granger Causality Test Results

X	H_0: $\alpha_{1i} = 0$	$\alpha_{2i} = 0$	$\alpha_{3i} = 0$	$\alpha_{4i} = 0$	$\alpha_{5i} = 0$
IR	-	0.33 (0.96)	0.03 (1.42)	0.04 (1.65)	5.42 (0.81)
C	1.56 (0.23)	-	2.36(0.07)	4.60(0.03)	3.90 (0.08)
DI	0.44 (0.83)	0.61 (0.93)	-	0.03 (1.27)	0.50(0.74)
CCB	2.06 (0.11)	1.42 (0.12)	2.93(0.03)	-	1.53 (0.02)
CCL	2.28(0.08)	1.57 (0.23)	1.08 (0.39)	2.75(0.04)	-

Note: F-ratio for null hypothesis. Significance level in brackets. A significant F-ratio is the evidence of Granger-causality.

6.4.5. The Geweke Test

Since this study is particularly interested in the causality relationship between credit cards (balance and liquidity) and IR, I also use the Geweke test, or the method of Frequency Decomposition of a VAR model, to analyze the relationship of credit cards and IR. Geweke (1982) shows that the linear dependence of X_t and Y_t, $F_{x,y}$ is the sum of linear feedback from X to Y, $F_{x\to y}$, linear feedback from Y to X, $F_{y\to x}$. These measures can be further decomposed into the frequency domain to provide additional insight into the dynamic structure implicit in the VAR model because we might define "short run" to mean high frequency and "long run" to mean low frequency (Stokes, 1991).

Table 21 reports the results of the Geweke frequency decomposition, which come from a regression of CCB on IR with six lags, where variables are in first differences. The first block of the tables reports the overall result, the second and third blocks decompose the feedback from IR to CCB and from CCB to IR in the frequency domain. In the table, the "Estimate" columns report the estimate from the raw data, the "Adjusted Estimate" columns report the estimate from a bootstrap with 100 replications. Here the idea is to "draw samples of data having asymptotic distribution equal to the original data and calculate the frequency measures." (Stokes, 1991) The "25%" and "75%" columns report 25% and 75% confidence intervals for these measures, also from the bootstrap with 100 replications.

As shown in Table 21, adjusted causality measures show that the effect of IR on CCB is 24.6%, and the effect of CCB on IR is only 0.9%. That means that the causality is running from IR to CCB. This is consistent with the economic theory and the granger causality test results. The decompositions of these measures in the frequency domain show that most the effect of IR on CCB peaks at period 9. This finding is interesting, it is consistent with the finding from the impulse response functions discussed below.

Table 21. Geweke Frequency Decomposition for CCB and IR

	Estimate	**Adjusted Estimate**	**25.0%**	**75.0%**
F(IR to CCB)	0.172 (18.2%)	0.188 (24.6%)	0.157	0.301
F(CCB to IR)	0.007 (0.8%)	0.001 (0.9%)	0.001	0.001
F(IR to CCB)				
Period	**Estimate**	**Adjusted Estimate**	**25.0%**	**75.0%**
1	0.177 (16.4%)	0.323 (27.3%)	0.121	0.502
2	0.197 (18.0%)	0.380 (40.1%)	0.133	0.542
3	0.215 (19.4%)	0.431 (44.3%)	0.184	0.614
4	0.011 (0.3%)	0.000 (0.0%)	0.000	0.000
5	0.065 (6.3%)	0.031 (8.1%)	0.021	0.078
6	0.197 (18.1%)	0.235 (29.2%)	0.118	0.324
7	0.146 (14.6%)	0.152 (18.4%)	0.052	0.205
8	0.216 (20.5%)	0.221 (25.9%)	0.136	0.304
9	0.362 (32.1%)	0.522 (52.3%)	0.302	0.725
10	0.036 (3.6%)	0.031 (5.2%)	0.015	0.033
11	0.017 (1.5%)	0.010 (1.0%)	0.000	0.003
F(CCB to IR)				
Period	**Estimate**	**Adjusted Estimate**	**25.0%**	**75.0%**
1	0.002 (2%)	0.001 (0%)	0.000	0.001
2	0.003 (2%)	0.001 (0%)	0.000	0.001
3	0.003 (4%)	0.000 (0%)	0.000	0.001
4	0.001 (0%)	0.000 (0%)	0.000	0.000
5	0.002 (1%)	0.000 (0%)	0.001	0.000
6	0.007 (0%)	0.001 (1%)	0.001	0.001
7	0.014 (0%)	0.002 (3%)	0.001	0.002
8	0.014 (0%)	0.002 (2%)	0.001	0.004
9	0.012 (0%)	0.002 (2%)	0.001	0.002
10	0.012 (0%)	0.001 (1%)	0.001	0.002
11	0.010 (0%)	0.001 (1%)	0.000	0.002

Note: 100 replications

As shown in Table 22, adjusted causality measures show that the effect of IR on CCL is 19.5%, and the effect of CCB on IR is only 1.9%. That means that the causality is running from IR to CCL. This is consistent with the economic theory and the granger causality test results. The decompositions of these measures in the frequency domain show that most the effect of IR on CCL peaks at period 9.

Table 22. Geweke Frequency Decomposition for CCL and IR

	Estimate	**Adjusted Estimate**	**25.0%**	**75.0%**
F(IR to CCL)	0.142 (16.1%)	0.163 (19.5%)	0.071	0.233
F(CCL to IR)	0.08 (1,7%)	0.02 (1.9%)	0.000	0.002
F(IR to CCL)				
Period	**Estimate**	**Adjusted Estimate**	**25.0%**	**75.0%**
1	0.042 (4.3%)	0.051 (5.2%)	0.004	0.068
2	0.063 (5.7%)	0.078 (6.6%)	0.022	0.094
3	0.095 (8.5%)	0.103 (10.0%)	0.045	0.156
4	0.297 (30.2%)	0.315 (35.9%)	0.158	0.402
5	0.152 (23.1%)	0.165 (28.1%)	0.064	0.248
6	0.256 (29.9%)	0.342 (35.5%)	0.096	0.521
7	0.179 (20.6%)	0.199 (25.0%)	0.121	0.308
8	0.166 (24.1%)	0.185 (26.4%)	0.085	0.256
9	0.278 (31.1%)	0.320 (35.1%)	0.178	0.453
10	0.022 (5.4%)	0.028 (6.9%)	0.010	0.045
11	0.012 (1.2%)	0.015 (1.3%)	0.001	0.012
Period	**Estimate**	**Adjusted Estimate**	**25.0%**	**75.0%**
F(CCL to IR)				
1	0.002 (4%)	0.000 (1%)	0.000	0.000
2	0.002 (4%)	0.000 (1%)	0.000	0.000
3	0.002 (5%)	0.000 (1%)	0.000	0.001
4	0.001 (1%)	0.000 (0%)	0.000	0.000
5	0.001 (3%)	0.000 (0%)	0.000	0.000
6	0.005 (0%)	0.003 (2%)	0.000	0.002
7	0.012 (0%)	0.006 (5%)	0.001	0.005
8	0.015 (0%)	0.007 (4%)	0.001	0.006
9	0.012 (0%)	0.006 (4%)	0.001	0.005
10	0.012 (2%)	0.006 (3%)	0.000	0.005
11	0.006 (0%)	0.003 (2%)	0.000	0.002

Note: 100 replications

6.4.6. The Impulse Response Functions

To use vector autoregressions for policy analysis, it should be understood that policy involves the addition of a known innovation shock to the model. A VAR model is driven by shocks and the intention is to trace out the reaction of the system to a random shock. Since the individual coefficients in the estimated models are often difficult to interpret the technique is to estimate the so-called impulse response function. An impulse response function traces out the effect of a one standard deviation shock to one of the innovations on

current and future values of the endogenous variables. A shock to the i-th variable directly affects the i-th variable, and is also transmitted to all of the endogenous variables through the dynamic structure of the VAR. In a simple bivariate system:

$$Y_t = a_{11}Y_{t-1} + a_{12}Z_{t-1} + eY_t$$
$$Y_t = a_{21}Y_{t-1} + a_{22}Z_{t-1} + eZ_t \quad (18)$$

A change in eY_t, will immediately change the value of current Y. It will also change all future values of Y and Z since lagged Y appears in both equations. The structure of the system incommercials feedback since Y_t and Z_t are allowed to affect each other. If the innovations, eY_t, and eZ_t, are uncorrelated, interpretation of the impulse response is straightforward. eY_t is the innovation for Y and Z. The innovations are, however, usually correlated so they have a common component, which cannot be associated with a specific variable. A somewhat arbitrary but common method of dealing with this issue is to attribute all of the effect of any common component to the variable that comes first in the VAR system.

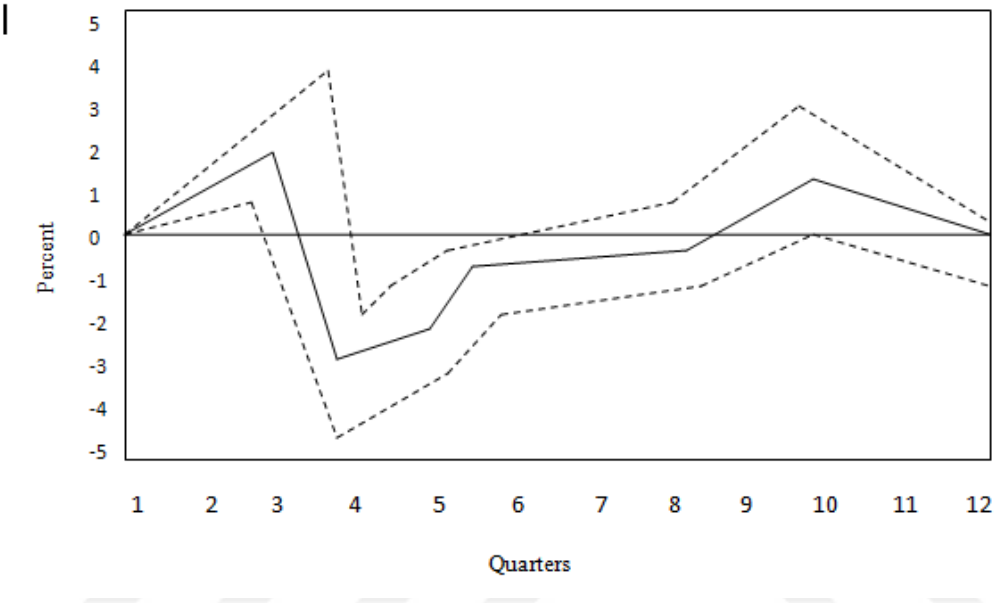
This method is known as an "unrestricted" VAR, and any ordering of the variables can be used. To limit the ordering, the direction of causation between variables in the system can be established based on causality tests. In this "structured" VAR, following the causality tests the variables in the system are ordered so that an error term in any equation will only affect error terms below it in the ranking. In general, each equation of the VAR system will include the current values of the dependent variable from each previous equation in the ordering, along with lagged values of all variables and current innovations in the dependent variable.

6.4.6.1. Response of Credit Card to a Contractionary Monetary Policy

Figure 25 shows the response of credit card balances to the contractionary monetary shock. After the shock balances increase two percent and stay positive for three quarters and then, stay negative for five quarters. The first response for three quarters is not compatible with the traditional view about liquidity constraints which defended by Bernanke and Blinder (1992), Gertler and Gilchrist (1994), Ludvigson (1998). According to these studies; after an contractionary monetary policy, consumer credits decline immediately. However; in this

case, credit card balances increase with the contractionary shock, and then only decline after three quarters. Briefly; one two three quarters, consumers or banks increases their credit card balances, then from three to two quarters, consumers use credit cards to offset contractionary monetary policy.

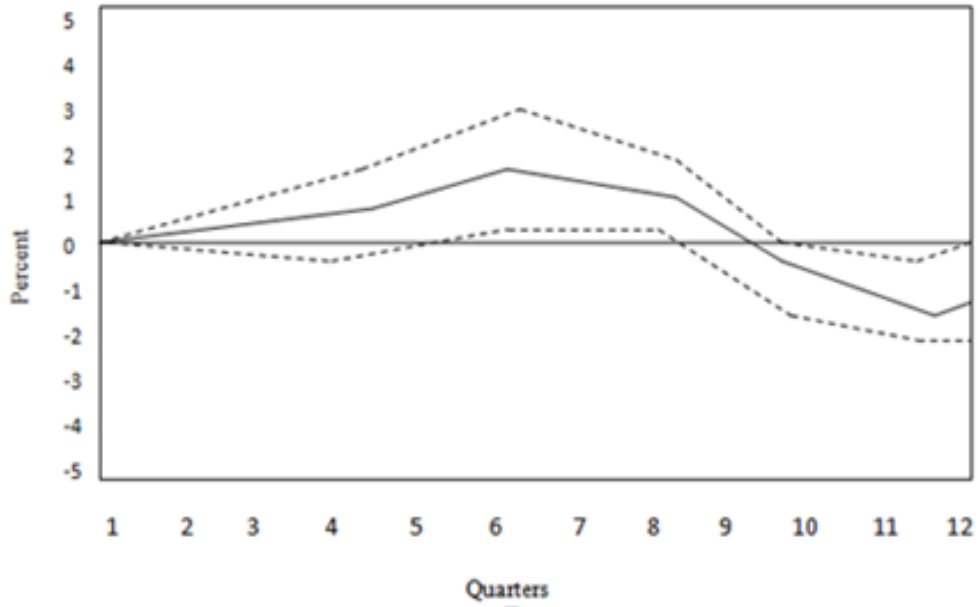
Figure 25. Impulse Response of Credit Card Balances to a Contractionary Monetary Policy



Note: The impulse response function is statistically significant at the five percent level.

Figure 26 shows the response of credit card liquidity to the contractionary monetary shock. After the shock balances increase two percent and stay positive for nine quarters and then, stay negative for three quarters. If we compare the figures the initial increase in credit card balances is matched by an increase in liquidity. Even after balances decline, liquidity stays positive for a long time. Consumer using credit cards remain liquid after the contractionary policy shock.

Figure 26. Impulse Response of Credit Card Liquidity to a Contractionary Monetary Policy



Note: The impulse response function is statistically significant at the five percent level.

The figures above show that both credit card balances and credit card liquidity increase after a contractionary monetary policy. This is a contrasting situation to the traditional view of credit channel. Because, when in the contractionary policy environment households increase credit card borrowing. They prefer to do so through higher limits or by obtaining more cards. So, initially credit card balances increase and then credit card liquidity remain positive for a long time.

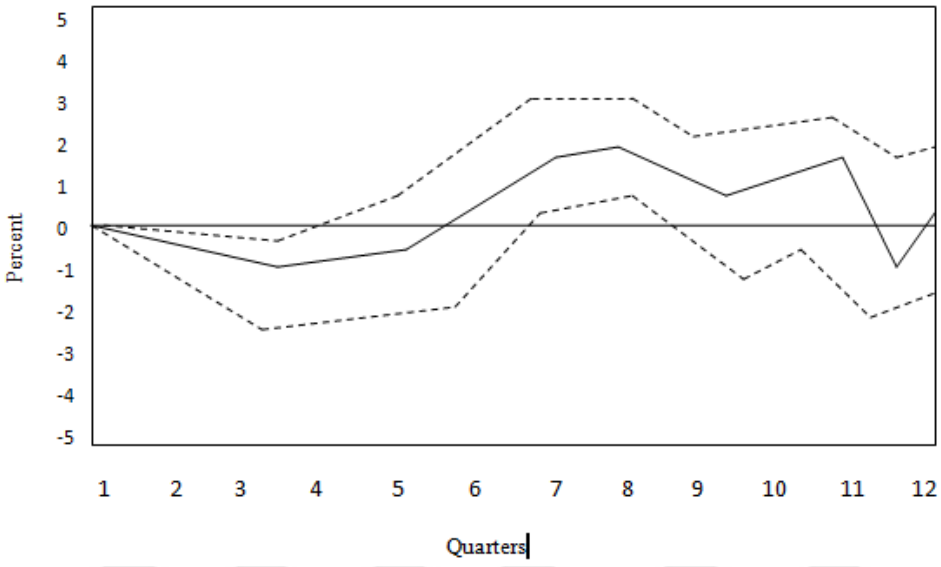
6.4.6.2. Response of Credit Card to an Expansionary Monetary Policy

Figure 27 shows the response of credit card balances and credit card liquidity to the expansionary monetary shock. After the shock balances decrease one percent and stay negative for six quarters and then, turns to positive. Similarly, After the shock credit card liquidity decrease 0.5 percent and stay negative for seven quarters and then, turns to positive.

According to traditional view of credit channel, expansionary monetary policy makes credit conditions become more favorable to borrowers, and so credit card borrowing increases. However the impulse response functions show that this is not the case. After an

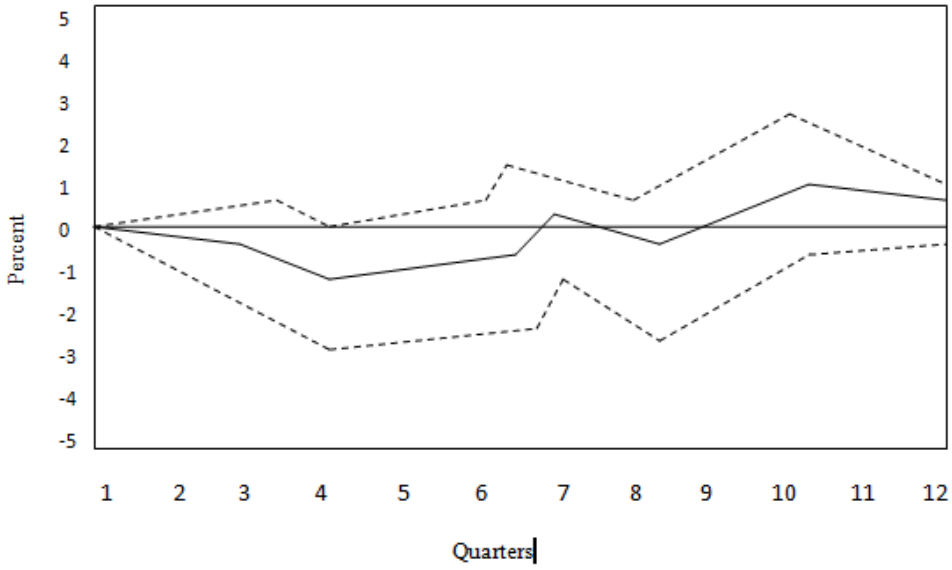
expansionary monetary policy, households may prefer to take the advantage of decreasing interest rates. So, households may choose to substitute away from high interest credit card debt and into consumer credits such as housing credits.

Figure 27. Impulse Response of Credit Card Balances to an Expansionary Monetary Policy



Note: The impulse response function is statistically significant at the five percent level.

Figure 28. Impulse Response of Credit Card Liquidity to an Expansionary Monetary Policy



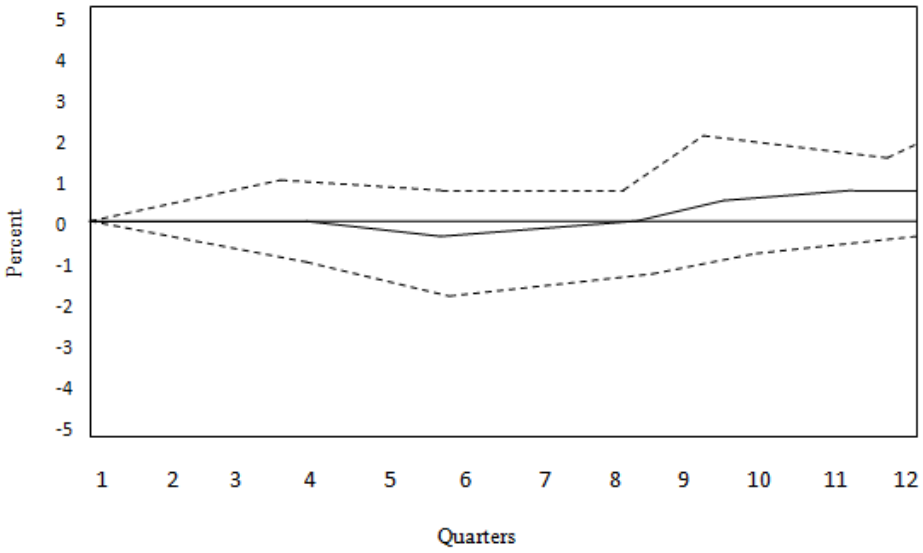
Note: The impulse response function is statistically significant at the five percent level.

6.4.6.3. Response of Consumption to the Monetary Policy

Figure 29 and 30 show the impulse response functions of consumption to a contractionary and expansionary policy shock, respectively. The impulse response functions in both figures are more tempered relative to those calculated for the credit card balances and liquidity. After a contractionary policy shock, initially there is no response for four quarters. After that, consumption decreases 0.2 percent by the six quarter. This response of consumption is consistent with the other studies examining the effects of contractionary monetary policies on consumption. However, in this case the response of consumption to a contractionary monetary policy is more strict. So, we can say that consumption behavior of households are less sensitive to a contractionary monetary policy. If we look at the Figure 29; after a contractionary monetary policy credit card balances and credit card liquidity increases. That increase makes less sensitive households to a contractionary monetary policy.

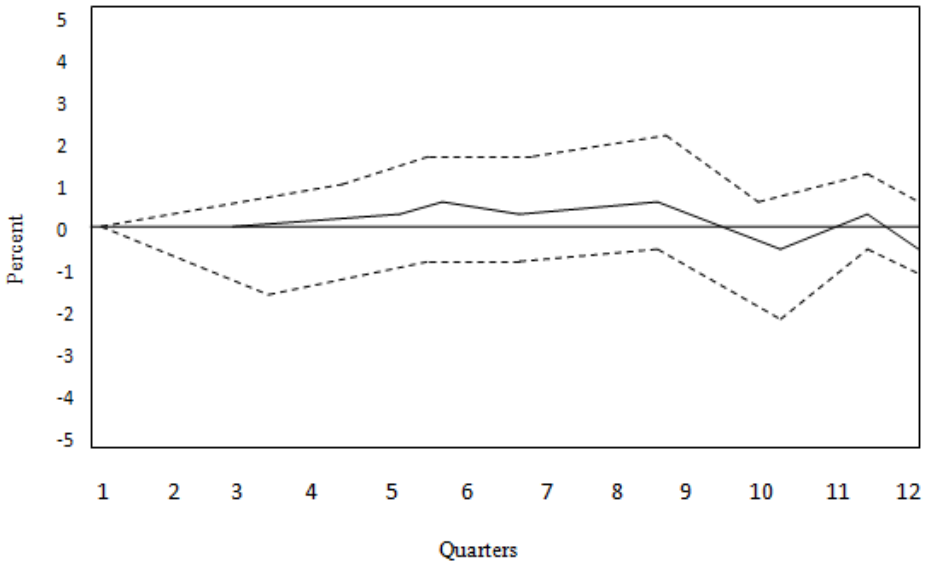
If we look at the Figure 30; after a expansionary policy shock, initially there is no response for three quarters. After that, consumption decreases 0.2 percent by the five quarter. This response of consumption is consistent with the other studies examining the effects of expansionary monetary policies on consumption. However, in this case the response of consumption to a expansionary monetary policy is more strict too. So, we can say that consumption behavior of households are less sensitive to an expansionary monetary policy. The decrease in credit card balance and liquidity reduces the effect of expansionary monetary policy on consumer behavior.

Figure 29. Impulse Response of Consumption to a Contractionary Monetary Policy



Note: The impulse response function is statistically significant at the five percent level.

Figure 30. Impulse Response of Consumption to an Expansionary Monetary Policy



Note: The impulse response function is statistically significant at the five percent level.

6.5. Conclusion

The impulse response functions provide a new evidence about the effects of monetary policy. Contractionary monetary policy appears to be delayed by the increase in credit card borrowing and credit card liquidity, while expansionary monetary policy has a stimulative effect on credit card markets. However, the latter does not appear to translate into a stimulative effect for consumption.

The impulse response functions for credit card balances and credit card liquidity in response to a contractionary policy shock suggest that the propagation of monetary policy through household balances sheets is inhibited by the use of credit cards. Credit card borrowing provides a means to keep consumption constant in a contractionary policy environment. However, the response of credit card liquidity indicates that credit card markets provide households with liquidity even when economic conditions might otherwise be worsening. Hence, these factors make the transmission mechanism less effective.

Households are less liquidity-constrained than before the proliferation of credit cards. The response of credit card liquidity in response to contractionary monetary policy is consistent with that interpretation. Also, the impulse response functions of credit card balances and liquidity calculated for an expansionary shock are consistent with that interpretation. Credit card borrowing increases following an expansionary monetary policy shock. This indicates that credit cards are not simply used as a marginal source of credit when they are constrained in accessing other sources. Instead, the credit card data documented here is consistent with more liquid credit markets, meaning liquidity constraints are less important for households and are less important in the propagation of monetary policy.

CHAPTER 7

CONCLUSION

In this dissertation, I have tried to determine how the growth of consumer credit has changed the effect of monetary policy on household consumption in Turkey. I show with a variety of empirical evidence that the growth of consumer credit has weakened the ability of monetary policy to affect household consumption behavior. The growth of consumer credit makes it more difficult for monetary policy to affect aggregate demand.

In fact, ability of monetary policy to affect household consumption is described in the "household balance effects channel" in literature. Household balance effects channel is one of the varieties of the monetary transmission mechanisms. Examining and providing evidences about the functioning of this channel is the subject of this dissertation. Although most of the literature is focused on expenses by companies, this channel takes consumption expenses made by households and especially durable consumption goods into consideration. According to the hypothesis in this dissertation, the growth of consumer credit deactivates the household balance effects channel.

Consumer credits may be specified as a type of credit that the real persons may use in order meet all their necessities beyond commercial purpose. The decrease in interest rates and the financial stability environment in economy that occurred in Turkey following the crisis of 2000-2001 had caused the increase of consumer credits that had been made available along with the effect of positive atmosphere in global markets. The increase of consumption and spending tendency of household had also supported the development in subject, and the consumer credits have showed an increase in Turkey.

In this dissertation, firstly, the consumer credits have been examined by subtypes as being housing credits, personal credits, auto credits, other credits and personal credit cards. The housing credits had reached to about 114 billion TRY by the end of 2014. The share of housing credits among consumer credits is at the level of about 40 percent. The auto credits

had been 6 billion TRY in 2014. The share of auto credits among consumer credits is only 2 percent in 2014. The personal and other credits had increased to 147 billion TRY in 2014. The personal credits and other credits is the credit type having the highest share among consumer credits and it is about 55 percent in 2014. The number of credit cards had significantly increased in years and it has reached about 57 million units in 2014. The amount of personal credit card transaction had increased to 72 billion TRY in 2014. Personal credit card transaction is forming 30 percent of the total consumer credits in 2014. These results obtained have provided a foundation for the empirical analysis.

Secondly, I proved that consumer credit to smooth consumption makes monetary policy less effective in Turkey. So, after the growth in consumer credit volume, consumption behaves consistently with the permanent income hypothesis. Permanent income hypothesis argues that consumption depends only on permanent income.

According to the model results, for the 2006 to 2014 sample, neither expected credit growth nor income growth are statistically significant predictors of consumption growth. These results are consistent with the conception of the permanent income hypothesis, where neither variable should help predict the behavior of consumption. This result is also true when the credit card growth considered for the 2004 to 2014 sample. However, the invalidity of permanent income hypothesis can only be argued in pre-2006 sample for total consumer credit growth and pre-2004 sample for credit card growth. So, the case for rejecting the permanent income hypothesis is weaker than when using data for earlier decades.

The results are consistent with hypothesis, where the growth in consumer credit is associated with a decline in the channel of the monetary policy transmission mechanism. When households have an easier time obtaining credit they can smooth consumption during periods of contractionary monetary policy. In other words, consumer behavior is able to come closer to the conception of the permanent income hypothesis.

Thirdly, I proved that households are less liquidity constrained with credit cards and so, monetary policies have no effect on consumption behavior in Turkey from 2002 through 2014. The impulse response functions of credit card balances and credit card liquidity to a change in monetary policy have been also estimated. The response of the credit liquidity to both contractionary and expansionary policy has been tested and proved that

contractionary monetary policy appears to be delayed by the increase in credit card borrowing and credit card liquidity, while expansionary monetary policy has a stimulative effect on credit card markets.

The impulse response functions for credit card balances and credit card liquidity in response to a contractionary policy shock suggest that the propagation of monetary policy through household balances sheets is inhibited by the use of credit cards. Credit card borrowing provides a means to keep consumption constant in a contractionary policy environment. However, the response of credit card liquidity indicates that credit card markets provide households with liquidity even when economic conditions might otherwise be worsening. Hence, these factors make the transmission mechanism less effective.

Today, in Turkey as in other countries, consumer credits and credit cards are more widely and readily available for almost all consumers. This situation allows households the ability to escape credit market constraints and smooth their consumption behavior. So, the Central Bank's power on effecting consumers behavior is very restricted and this fact should be considered by Central Banks while evaluating it's policies.

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APPENDIX A - TURKISH SUMMARY

Bu çalışmanın temel amacı; Türkiye'de tüketici kredilerindeki büyümenin, para politikasının hanehalkı tüketimi üzerindeki etkisini nasıl değiştirdiğini anlamaktır. Bu amaç doğrultusunda; tüketici kredilerindeki büyümenin bir sonucu olarak para politikasının hanehalkı tüketici davranışlarını etkileme kabiliyetinin azaldığı hipotezi çeşitli ampirik kanıtlar eşliğinde incelenmiştir.

Para politikasının hanehalkı tüketici davranışlarını etkileme kabiliyeti literatürde genellikle hanehalkı bilanço etkisi kanalı olarak ifade edilmektedir. Hanehalkı bilanço etkisi kanalı, parasal aktarım mekanizması kanallarının bir çeşididir. Parasal aktarım mekanizmaları, para politikasının milli hasılayı hangi değişkenler aracığıyla ve nasıl etkilediğini açıklar. Başarılı bir uygulama için politika yapıcılarının, para politikasının hangi aktarım kanallarını takip ederek ekonomiyi etkilediğini bilmeleri gerekmektedir. Dolayısıyla bu çalışmaya parasal aktarım mekanizmaları incelenerek başlanmıştır. Çalışmada parasal aktarım mekanizmaları genel hatlarıyla tanıtılmış ve parasal aktarım mekanizmalarının 2001 yılında Türkiye'de yaşanan bankacılık krizi ve 2008 yılındaki küresel finans krizi sonrası geçirdiği aşamalar incelenmiştir.

Literatürde, para politikasının etki kanalları çeşitli şekillerde sınıflandırılmaktadır. Bazıları portföy ayarlamaları, servet etkileri ve kredi varlığı etkilerinden bahsederken, bazıları miktar teorisi kanalı, faiz oranı etkileri ve bekleyişler gibi farklı bir sınıflandırma yapmaktadır. Bir başka sınıflandırma ise, geleneksel faiz oranları kanalları, diğer aktif fiyatları kanalı ve kredi kanalı şeklindedir (Aslan, 2009). Taylor (2000) ise çalışmasında, parasal aktarım mekanizmasının farklı teorilerini iki ana kategori içerisinde sınıflandırmıştır; faiz oranı ve döviz kuru kanallarından oluşan, para görüşü ve para görüşüne alternatif olarak ise kredi görüşü. Bu çalışmada ise parasal aktarım mekanizmaları; faiz kanalı, hisse senedi kanalı, kredi kanalı ve beklentiler kanalı olarak sınıflandırılmıştır. Buna karşın, parasal aktarım mekanizması kanallarını kesin çizgilerle birbirinden ayırmak mümkün olmamakta, kanalların birbirini etkilediği veya tamamladığı genel olarak kabul edilmektedir.

Literatürde en yaygın bilinen aktarım mekanizması faiz kanalıdır. Parasal otoritenin kısa vadeli faiz oranlarında yapacağı bir değişiklik, doğrudan sermaye kullanım maliyetini etkileyerek firmaların yatırım davranışını ve hane halkının dayanıklı tüketim malları harcamalarını etkiler. Para politikası literatüründe, söz konusu etkileşim süreci, parasal aktarımın faiz kanalı kavramı ile ifade edilir. Faiz kanalı, para politikası kararlarındaki bir değişikliğin faiz oranları ve dolayısıyla toplam talebi etkileme sürecidir.

Türkiye ekonomisinin yüksek dolarizasyon yaşadığı dönemde, TCMB'nin parasal büyüklükler üzerindeki kontrolü azalmış, üretim ve fiyatlama kararlarının döviz kuruna bağlı olması nedeniyle faiz kanalının etkisi zayıflamıştır. Bununla birlikte 2001 krizi sonrası yaşanan başarılı dezenflasyon sürecinde bankacılık sektörünün güçlenmesi, kamu borç stoku kompozisyonun daha sağlıklı bir yapıya kavuşması ve Türk lirasına duyulan güvenin artması dolarizasyonu büyük ölçüde azaltmış, böylelikle faiz kanalının etkililiği artmıştır. (TCMB, 2013).

Faiz kanalının bilinen yaygınlığına karşın; ekonomilerin artan ölçüde dışa açılması ve esnek döviz kuru sisteminin de yaygın olarak kullanılmaya başlanması, parasal aktarım mekanizmasında döviz kurunun önemini arttırmıştır. Döviz kuru kanalı, para politikasının döviz kurları üzerinde yarattığı etkinin net ihracata yansıması sonucu reel üretimde meydana gelen değişimi ifade etmektedir. Birçok gelişmekte olan ülkede bono, hisse senedi ve gayrimenkul piyasaları tam olarak gelişmediği için, döviz kuru, para politikalarından etkilenen en önemli varlık fiyatı olarak karşımıza çıkmaktadır. Bu kanalın etkisi öncelikle ihracat sanayinde, özellikle fiyat esnekliği yüksek piyasalarda; dolaylı olarak da bu ihracat sanayilerine girdi arzını sağlayan kesimler üzerinde görülmektedir. Bu nedenle, sadece yerli rekabete konu olan sanayiler karşısında dış rekabete duyarlı olan sanayiler üzerinde farklı bir etkinin ortaya çıkması beklenir.

Döviz kuru kanalının şiddeti döviz kurunun parasal şoklara duyarlılığına, ekonominin dışa açıklık derecesine ve net ihracatın döviz kuru değişimlerine duyarlılığına bağlıdır. Döviz kuru kanalı, esnek döviz kuru rejiminin hüküm sürdüğü dışa açık bir ekonomide işleyebilir. Ülkenin dışa açıklık derecesi ne kadar yüksek ise parasal aktarım mekanizmasında döviz kuru kanalı o ölçüde etkin olmaktadır.

Türkiye ekonomisinde 2001 yılı sonrası dönemde geleneksel aktarım mekanizması çerçevesinde döviz kuru kanalının işlerliğinde de önemli değişimler gözlemlenmiştir.

Diğer gelişmekte olan ekonomilerde olduğu gibi Türkiye'de de 2001 yılı öncesinde dolarizasyon, hükümetin gelir ve giderleri arasındaki dengesizlik, sağlıksız işleyen bankacılık ve finans sektörü ile finansal kırılganlık gibi nedenlerle döviz kuru hareketleri istikrarı bozucu etki yaratmıştır. Geçmişte yaşanan ekonomik krizlerin ardından uygulanan başarısız istikrar programlarının temel olarak sabit kur rejimine dayanması, güçlü endeksleme davranışının yanı sıra döviz kurlarının enflasyon beklentilerinin temel belirleyicisi olmasına neden olmuştur. Dalgalı kur rejiminin uygulanmadığı bu dönemde, döviz kuru geçişkenliği yalnızca büyüklük olarak değil hız olarak da oldukça yüksek seviyelerde gerçekleşmiştir. Dalgalı kur rejiminin uygulanmaya devam edildiği ve enflasyon hedeflemesi rejiminin uygulanmaya başlandığı dönemde, ekonomik birimlerin fiyatlama yaparken döviz kurlarını daha az dikkate almaya başladıkları ve kurlardan fiyatlara geçiş etkisinin hem büyüklük hem de süre bakımından azaldığı saptanmıştır.

Monetaristler ise parasal aktarım konusunda genelde diğer nispi varlık fiyatları ve reel servetin ekonomik etkileri üzerinde de durmaktadır. Buna göre, parasal aktarma mekanizmasında varlık fiyatlarını içeren iki kanal bulunmaktadır. Bunlar, hisse senetleri fiyatları kanalı ile servet etkisi kanalıdır. Varlık fiyatları kanalının işleyişinde; para politikasının yatırımlar üzerindeki etkisi Tobin'in q teorisiyle, tüketim üzerindeki etkisi ise Modigliani'nin yaşam döngüsü hipoteziyle açıklanmaktadır.

Tobin'in q teoremi, para politikası aracılığı ile varlıkların değeri üzerinde etki yaratan bir mekanizmadır. q, firmaların piyasa değerlerinin sermaye maliyetine bölümü olarak tanımlanmaktadır. Bu değerin yüksek çıkması firmaların piyasa değerlerinin yedek sermaye maliyetine göre yüksek olduğunu ifade eder. Bu durumda firmalar hisse senedi ihraç ederek elde ettikleri gelirle satın alacakları demirbaş ve donanım maliyetlerinin üzerinde yüksek fiyat belirleyebilirler. Böylece firmalar daha az hisse senedi ihracı ile daha fazla yatırım malları satın alacağından yatırım harcamaları artacaktır.

Modigliani ise 1975'de ortaya koyduğu yaşam döngüsü hipotezinde tüketicilerin tüketim harcamalarını hayat boyu gelire bağlı olarak değiştireceğini ifade etmiştir. Yani beşeri sermaye, reel sermaye ve finansal servet tüketimi etkileyen unsurlar olarak gösterilmiştir. Finansal servetin büyük bir bölümü borsadaki yatırımlardır. Borsa faaliyetlerindeki artış finansal servetin değerini ve tüketicilerin hayat boyu gelirini arttırmaktadır. Hayat boyu gelir artışı da ekonomide tüketim harcamalarını yükselterek hızlandıran prensibi kapsamında, yatırım harcamalarının artmasına neden olmaktadır.

Para politikasındaki değişimlerin ekonomik faaliyetleri hangi yollar ile etkilediğini açıklayan parasal aktarım mekanizması, önceleri sadece para arzı ve faiz oranlarındaki değişmelerin yatırım ve tüketim miktarlarını etkilediği şeklinde iken ekonomideki aşırı dalgalanmalar bu görüşü kimi ekonomistlerce yetersiz kılmıştır (Bernanke ve Gertler, 1995). Bunun sonucu olarak Bernanke (1983) finans kuruluşlarının ekonomi üzerinde reel etkileri olabileceği görüşünü ortaya koymuş ve devamında banka kredilerinin aktarım mekanizmasındaki rolü de önemli ölçüde dikkat çekmeye başlamıştır. Bu yaklaşım aktarım mekanizmaları literatüründe kredi kanalı olarak tanımlanmaktadır.

Kredi kanalı yaklaşımı; bilgi eksiklikleri, işlem maliyetleri gibi piyasa aksaklıkları ve kredi büyüklükleri üzerinde durmaktadır. Kredi yaklaşımında, fon arz ve talep edenler arasındaki bilgi aksaklıklarının aktarım mekanizması üzerindeki etkilerine vurgu yapılmaktadır. Ters seçim ve asimetrik bilgi kavramlarıyla açıklanan piyasa aksaklıkları kredi piyasasında genelde finansal aracılara, özelde ise bankalara, bilgiye ulaşma ve bilgiyi değerlendirme sürecinde özel bir rol yüklerken, para otoritesine de faiz ve kredi gibi parasal büyüklüklerden bağımsız olarak ve bu değişkenlerle beraber banka bilançolarının kredi-menkul kıymet portföy bileşimini değiştirmek suretiyle toplam talebi etkileme imkânı vermektedir.

Türkiye ekonomisinde 2001 krizi sonrasında kredi kanalının işlerliğinde de artış gözlemlenmiştir. Geçmişte, yüksek bütçe açıkları ve reel faiz oranları nedeniyle bankacılık sektörü kredi kısıtlamasına gitmekte, özellikle küçük ve orta ölçekli işletmelere makul faiz oranları ile uzun dönemli kredi vermemekteydi. Bu dönemde, bankacılık sektörü esas olarak hükümet harcamalarının finanse edilmesi için aracılık görevi görmekteydi. Kriz sonrasında yapısal reformlar, kamu harcamalarının kontrol altına alınarak sürdürülebilir büyümenin desteklenmesi, gelişmiş ülkelerdeki düşük faiz oranları nedenleriyle yükselen piyasa ekonomilerindeki likidite artışı ve reel faiz oranlarının düşmesi ile bankalar hükümet harcamalarının finansmanı yerine finansal aracılık faaliyetlerine geri dönmüşlerdir. Böylelikle, politika faiz oranlarındaki değişimlere bağlı olarak bankaların kullandırdıkları kredi miktarı ile toplam talep ve enflasyon etkilenmeye başlamıştır (TCMB, 2013).

Parasal aktarım mekanizmasının kredi kanalının, para politikasındaki değişimler ile dış kaynak priminin büyüklüğü arasındaki ilişkinin analizini ifade eden iki mekanizmayı içerdiği (Fountas ve Papagapitos, 2001); bir diğer deyişle para politikasının reel ekonomik

aktiviteler üzerinde iki açıdan etkili olduğu öne sürülmektedir. Birincisi, para politikasının bankaya bağımlı firmalara verilen banka kredi arzını etkilediği kanal olan banka kredileri kanalı; ikincisi ise, para politikasının borçlananların bilançosunu etkileyerek reel üretimde değişime sebep olduğu bilanço kanalıdır.

Banka kredileri kanalına göre; genişletici para politikaları, banka mevduatlarını ve rezervlerini, dolayısıyla bankaların kredi arzını artırır. Kredi arzının artması firmaların daha çok kredi kullanarak yatırımlarını artırmalarına, dolayısıyla toplam yatırım ve hatta tüketim harcamalarının artmasına sebep olur. Sonuçta, ekonominin toplam üretim seviyesi yükselir (Mishkin, 1996). Banka kredi kanalının işleyişine yönelik yapılan araştırmalar genelde iki konu üzerinde yoğunlaşmaktadır. Birincisi, bazı borçlanıcıların bankalara bağımlı olmaları ve bankaların kredi verme isteklerindeki değişmenin bu borçlanıcıların yatırım ve harcama davranışlarındaki etkileridir. İkincisi ise, para politikası değişmelerinin, banka kredilerini doğrudan etkileyip etkilememesidir (Morris, 1995).

Kredi piyasalarındaki asimetrik bilgi probleminden kaynaklanan bilanço kanalı ise, dış finans priminin borçlanıcının finansal durumuna bağlı olması temeline dayanır. Dış finans primindeki artış ve azalışlar da firmaların yatırım ve harcama kararlarını etkileyerek para politikası değişmelerinin ekonomiye etkisini genişletir (Mishkin, 1996).

Bernanke ve Gertler (1995)'e göre, para politikası değişmelerinin firmalara etkisi, firmaların büyüklüğüne göre de değişmektedir. Nakit akışlarındaki beklenmedik bir azalma küçük ve orta ölçekli firmaların bilançolarının zayıflamasına, finansal göstergelerinin bozulmasına, teminat olarak göstereceği varlıkların değerlerinin düşmesine ve ihtiyaç duyduğu krediler için yeterli teminat gösterememelerine yol açar. Bu durum, firmaların kredi imkanlarını ve ödeyecekleri faiz oranını doğrudan etkiler. Diğer yandan, borçlanma kaynakları daha fazla olan büyük ve halka açık firmalar, nakit akışlarında beklenmedik bir zayıflama halinde, ya kendi bünyelerindeki iç fonları kullanır ya da kısa dönem borçlanmalarını artırırlar. Bilanço kanalı; nakit akım kanalı, beklenmeyen fiyat düzeyi kanalı ve hanehalkı bilanço kanalı olarak üç ayrı başlık altında incelenebilir:

Nakit akım kanalına göre; sıkı para politikası, net nakit akışını ve teminat değerlerini dolaylı olarak azaltabilmektedir. Alt gelir grubundaki tüketiciler için üretim yapan bir imalat firması düşünürsek, daraltıcı para politikası bu müşteriler üzerinden harcamaları azaltırsa, şirketin çeşitli sabit ve sabit benzeri maliyetleri kısa dönemde ayarlanamadığı

için şirket gelirleri azalmaktadır. Ortaya çıkan finansal açıktaki artışlar, zamanla firmanın net değerini ve kredibilitesini aşındırmaktadır (Bernanke ve Gertler, 1995). Uygulanan genişletici para politikası ise, faiz oranlarını düşürerek firmaların nakit akışını olumlu yönde etkilemektedir. Bu durum firmaların bilançolarında iyileşme sağlarken, asimetrik bilgi problemlerinin ortaya çıkışını engellemektedir. Bu bağlamda kredi hacmi artmakta, yatırımlar ve dolayısıyla milli gelir yükselmektedir.

Bilanço kanalının bir diğer mekanizması, para politikasının fiyatlar genel seviyesi üzerindeki etkisini gösteren beklenmeyen fiyat düzeyi kanalıdır. Genişletici para politikası, fiyatlar genel seviyesinde beklenmeyen bir artışa yol açmaktadır. Böylece ters seçim ve ahlaki tehlike sorunlarının azalması firmanın reel net değerini yükseltmektedir. Sonuç olarak yatırım harcamaları ve toplam hasıla da artış meydana gelmektedir (Mishkin, 1996).

Bernanke ve Gertler (1995), bilanço etkisinin hanehalklarının konut ve dayanıklı tüketim harcamaları yönünden de etkili olduğunu iddia etmişlerdir. Hanehalkı bilanço kanalı olarak da isimlendirilen bu mekanizmaya göre; daraltıcı para politikaları etkisiyle faiz oranlarının yükselmesi, firmalardan başka hanehalklarının da nakit akımlarını olumsuz yönde etkileyerek, konut ve dayanıklı tüketim malı harcamalarının azalmasına sebep olacaktır. Nitekim bu çalışma da asıl olarak hanehalkı bilanço kanalı ile ilgili olup, uygulanan para politikalarının hanehalkları tüketim davranışları üzerindeki etkinliğini konu almaktadır.

Çalışmada tartışma konusu yapılan son parasal aktarım mekanizması ise beklentiler kanalıdır. Beklentiler kanalına göre; tüm ekonomik değişkenler, iktisadi birimlerin ekonomide gelecekte var olabilecek şoklara karşı beklentilerinden ve para otoritesinin bu şoklara nasıl tepki vereceğinden etkilenmektedir. Bu durumda beklentiler kanalı; faiz oranı kanalı, varlık fiyatı kanalı ve kredi kanalının dönemler arası bir biçimi olarak da tanımlanabilir. Para otoritesinin gelecek dönem için, cari dönemdeki uygulamalarınca desteklenmeyen bir para politikası uygulamasına girişeceğinin duyurulması durumunda, piyasa beklentileri uyarlanacak, finansal piyasalarda ortaya çıkan değişim ise neticede üretim ve enflasyonda değişime yol açacaktır.

Türkiye ekonomisinde 2001 yılı sonrası uygulanan enflasyon hedeflemesi rejiminin başarısı açısından, para politikasının hem politika araçları hem de iletişim yoluyla beklentileri yönetebilmesi büyük önem taşımaktadır. Önceden duyurulan hedeflerin güvenilirliği, ekonomik birimlere kararlarında referans alabilecekleri bir değer

sunmaktadır. Geçmişteki kronik ve yüksek enflasyon tecrübesi ve uygulanan başarısız istikrar programları rejimin ilk uygulamaya konulduğu dönemde hedeflerin güvenilirliğine büyük zarar vermiş ve para politikasının etkinliğini kısıtlamıştır. Bunun yanı sıra beklentilerin maliye politikasındaki gelişmelere oldukça duyarlı olması para politikasının önündeki diğer bir engel olmuştur. Ancak 2002 yılında örtük enflasyon hedeflemesi uygulaması ile politika kararlarının kamuoyu tarafından anlaşılmaya başlanması, beklentiler kanalının işlerliğini artırmıştır.

Yukarıda kısaca açıklanan parasal aktarım mekanizması kanalları, farklı değişkenleri farklı hızlarda ve yoğunluklarda etkilerler. Bu sebeple, para politikalarının reel sektöre etkileri araştırılırken, aktarım kanallarının etkilerinin tüm ekonomilerde aynı olup olmadığı veya ekonomilerin hangi özelliklerinin aktarım mekanizması kanallarının çalışmasını ve göreli önemini belirlediği önemlidir. Literatürde doğrudan devlet müdahaleleri, fiyat esneklikleri, mali sistemdeki rekabet derecesi, bankacılık sisteminin yapısı, uygulanan sermaye ve kur rejimi ve borçlananların mali yapısı parasal aktarım mekanizması kanallarının bir ekonomideki göreli önemini açıklamakta kullanılmaktadır.

Yukarıda temel düzeyde açıklanan kredi kanalı tezin konusuyla ilgili yakın ilişkisinden dolayı daha ayrıntılı analize de tabi tutulmuştur. Bu kapsamda kredi kanalının parasal aktarım mekanizması içindeki rolünün, kredi piyasasında asimetrik bilgiye bağlı olarak ortaya çıkan problemlerin belirleyicisi olması nedeni ile asimetrik bilgi konusu ele alınmıştır. Ters seçim ve ahlaki tehlike olmak üzere iki farklı asimetrik bilgi çeşidi incelenmiştir. Kredi kanalıyla yakın ilgisinden ötürü, kredi tayınlaması ve kredi çöküşü konuları da yine ayrıntılı olarak araştırılmıştır.

Asimetrik bilgi kavramı birbirleri ile etkileşim içerisinde bulunan ekonomik birimlerden bir tarafın diğerine oranla daha fazla bilgiye sahip olması durumudur. İki taraf arasında bilginin asimetrik olması durumunda daha çok bilgiye sahip olan taraf haksız bir üstünlük kazanmaktadır. Kredi piyasalarında asimetrik bilgi sorunu ise kredi arzında bulunan kurumlar ile kredi talebinde bulunan bireyler ya da firmalar arasındaki bilgi eksikliklerinden kaynaklanmaktadır.

Piyasada dürüst olmayan borçlanıcıların yer alması ve kredinin alınabilmesi için olumlu niteliklerin daha önemli olması sebebi ile söz konusu borçlanıcıların kredi talebinde bulundukları kurumlara karşı kendi nitelikleri ile ilgili tamamen dürüst

davranmamaktadırlar. Böyle durumlarda borçlanıcı ve borç verenler arasında asimetrik bilginin oluşması beraberinde çeşitli sorunların yaşanmasına ve kredi kanalının etkin şekilde işleyememesine neden olmaktadır.

Asimetrik bilgi ortaya çıktığı piyasalarda ters seçim (adverse selection) ve ahlaki tehlike (moral hazard) olarak ifade edilen iki temel soruna yol açmaktadır. Ters seçim, faiz oranlarının yükselmesi nedeniyle kredi piyasasında sadece en riskli borç talep edenlerin kalması durumunda ortaya çıkmaktadır. Bu nedenle, bankalar için kredi talebinde bulunan müşteriler arasından alacağı krediyi geri ödeme olasılığı yüksek olanların belirlenmesi son derece önemlidir. Bankanın kredi talebinde bulunanlar arasından iyi kalite borçlanıcıları ayırt etmesi için çeşitli eleme araçlarının kullanılması gerekmektedir.

Amerikan piyasalarında gözlemlenen mortgage problemleri, ters seçim probleminin en belirgin özelliklerini taşımaktadır. Önce, ödeme kapasitesi düşük kişilere konut kredisi verilmiş ve konut satın almak için başvuruda bulunanlardan sadece gelirlerini belirtmeleri istenmiş ancak bunu kanıtlamaları istenmemiştir. Bunun sonucunda, kredilerin geri dönüsünde sıkıntı yasayan finans kuruluşları krize girmiş ve piyasalarda zarara uğrayan mortgage fonları birbirini izlemiştir. Ardından finans kuruluşları birbirlerine olan güvenini kaybetmiş ve kredi arzını düşürmüştür. Bütün bunlar, düşük kaliteli kredi isteyenlerin piyasada sayılarının artmasına ve kredi verenlerin de ters seçimlerde bulunmalarına neden olmuştur.

Kredi piyasalarında ahlaki tehlike sorunu kredi arz edenler ile kredi talep edenler arasında kredi sözleşmesi imzalanmadan önce simetrik olan bilginin, sözleşme yapıldıktan sonra kredi alanların aldıkları kredileri sözleşmede belirtilen koşullar dahilinde kullanmamaları ve bu durumun kredi verenler tarafından gözlenememesi sebebi ile asimetrik bilgiye dönüşmesi sonucu ortaya çıkmaktadır (Kutlar ve Sarıkaya, 2003).

Bankalar, ahlaki tehlike sorunuyla başa çıkabilmek için borçluya kredi sözleşmesi imzalatmaktadırlar. Kredi sözleşmeleri, uygun koşullar altında krediyi ödemelerini sağlamak için borçlulara sorumluk yüklemekte ve bu yönde gayret göstermeleri yönünde teşvik etmektedir. Bankaların, borçlunun sözleşme vadesinde ödeme yapmasını garantilemek için amaç dahilinde kredinin kullanılıp kullanılmadığını denetlemesi gerekmektedir. Eğer bankalar kredi sözleşmesi yapıldıktan sonra kredinin belirtilen

koşullarda kullanılıp kullanılmadığını gözlemleyemezse, ahlaki tehlike sorunu ortaya çıkmaktadır.

Bankaların verdikleri kredilerle finanse edilen yatırım projelerinin başarısız olması durumda, oluşacak maliyeti bankalar üstlenmektedir. Sonuç olarak, bankalar, ahlaki tehlike sorununa engel olmak için kredi tayınlamasına gitmektedirler. Kredi piyasasında kredi arzında bulunan tarafın, piyasada talep edilen kadar krediyi vermeyip daha az miktarlarda vermesine veya talep edilen miktar kadar kredi vermek istememesi, kredi piyasasında kredi tayınlaması olarak tanımlanmaktadır (Jaffee, 1971).

Ters seçim söz konusu olduğunda tayınlamaya gidilmesinin nedeni, kredi portföylerinin riskli hale gelmesi; ahlaki tehlike durumunda tayınlamaya gidilmesinin nedenini ise, yatırımcıların riskli projelere girmesinde teşviklerin artabileceği düşüncesi oluşturmaktadır. Kredi tayınlaması enformasyon problemlerini çözmede etkin bir mekanizma olmasa da borç veren tarafından alınan riski sınırlayan bir olgudur. Literatürde kredi tayınlamasına enformasyonla ilgili olarak değinen modeller, 1976'da Jaffee Russell ve 1981'de Stiglitz Weiss tarafından tanımlanmıştır.
Kredi çöküşü ise kredi arzındaki büyük bir gerileme olarak tanımlanmaktadır. Kredi çöküşü yaşandığı zaman, krediler ile faiz arasındaki ilişki değişmektedir. Kredi çöküşü, iki farklı biçimde ortaya çıkmaktadır. Birincisi, belirlenmiş faiz oranları üzerinden kredi arzının azalmasıdır. İkincisi ise, kredi tayınlamasına gidilmesidir.

Kredi çöküşünde, aşırı kredi talebinin olduğu dönemde cari faiz üzerinden ödünç alınacak fon bulunamamaktadır. Ayrıca, bu döneminde, bankalar kredi vermek için gönülsüz davranmaktadırlar. Çünkü doğrudan borçlanmaya yönelinmesi nedeniyle bankalara olan fon akışı azalmakta ve merkez bankası, bankaları kredi arzını sınırlandırmaları yönünde zorlamaktadır. Bu nedenle; kredi çöküşü, bir kredi arzı sorunu olarak ele alınmaktadır (Clair ve Tucker, 1993).

Buna karşın, Bernanke vd. (1991), kredi arzındaki azalmayı hem talep ve hem de arz faktörlerine bağlamaktadırlar. Kriz dönemlerinde borçluların bilanço yapılarının bozulması, kredibilitelerini azaltmaktadır. Dolayısıyla, kredi talepleri düşmektedir. Kredi kayıpları nedeniyle bankaların öz sermayesi daralmakta ve bu da, bankaların kredi arzını daraltmasına neden olmaktadır.

Çalışmanın bir sonraki bölümünde Türkiye'deki tüketici kredilerinin yıllar itibariyle gelişimi ve mevcut durumu ortaya konulmuştur. Bu kapsamda; konut, ihtiyaç, taşıt, diğer krediler ve bireysel kredi kartları olmak üzere alt türler itibariyle tüketici kredileri incelenmiştir. Ayrıca Türkiye'de tüketici kredilerindeki büyümenin analizi de yapılmıştır. Ulaşılan sonuçlar, daha sonraki bölümlerde yapılacak ampirik çalışmalara bir temel sağlamaktadır.

Tüketici kredileri, bankacılık sektörü ve finansman şirketleri gibi kredi kurumları tarafından kullandırılan bir kredi türüdür. Bankalar geleneksel olarak yatırım ya da isletme kredileri ile doğrudan üretimi finanse ederken, tüketici kredileri bireylerin tüketim harcamalarını finanse etmektedirler. Bu bağlamda tüketici kredileri tüketime yönelik harcamaların finansmanı için kullanılan krediler olduğu ifade edilebilir.

Tüketici kredilerinin ilk ortaya çıkısı 19. yüzyıla kadar gitmekle beraber asıl yaygınlaşması 20. yüzyılın baslarında gerçekleşmiştir. Tüketici kredilerinin yasal bir alt yapıya dönüşmesi ise 1970'lere kadar uzanmaktadır. ABD'de yasal bir alt yapıya dayanarak 1970'lerde başlayan tüketici kredisi uygulaması giderek daha fazla gelişme göstermiştir. Özellikle 1920'lerden sonra otomobil ve beyaz eşya gibi dayanıklı tüketim malı üretiminin artması bu tür kuruluşların faaliyetlerinin genişlemesine neden olmuştur. Bu gelişmeleri takip eden bankalar aynı tarihlerde tüketici kredisi alanına girmeye başlamışlardır. 20. Yüzyılın ikinci yarısından itibaren ise tüketici kredileri çok hızlı bir artış göstererek ABD ekonomisinin temel unsurlarından biri haline gelmiştir.

Avrupa'da ise tüketici kredileri ilk kez İngiltere'de 1938'lerde ortaya çıkmış ve 1950 yılından sonra yaygınlık kazanmaya başlamıştır. İngiltere hükümeti uyguladığı Keynesci politikalara uygun olarak tüketici kredileri ile harcamaların önemli derecede artacağını görmüş ve uygulamayı desteklemiştir. Benzer uygulamalar daha sonra Fransa, Batı Almanya ve İtalya gibi diğer önemli Avrupa ülkelerinde görülmüştür. Tüketici kredileri halen Avrupa Birliği'nin finansman politikalarının önemli bir parçasını oluşturmaktadır (Arslan ve Karan, 2009).

Tüketici kredileri Türkiye'de ise ilk kez 1989 yılında kullandırılmıştır. Bankaları tüketici kredisine yönelten etmenler arasında, 1980'li yıllarda mevduat faiz oranlarının serbest bırakılmasıyla bankalarda biriken yüksek mevduatlar, bankacılıkta artan rekabet

koşullarıyla düşen kâr marjlarının körüklediği ürün çeşitlendirme gereksinimi, bankaların riski dağıtma ve tabana yayma politikası sayılabilir.

Türkiye'de tüketici kredilerine olan talebin artmasında ise 2001 krizi öncesi kişisel gelirlerin enflasyonist ortamda reel olarak gerilemiş olmasıyla mal ve hizmetlerin peşin alım olanağının azalması, 2000'li yıllarda yaşanan istikrarlı büyüme, krediler karşısında teminat gösterilen varlıkların değerinin artması, ekonomide oluşan iyimser hava (Başçı, 2006) ve tasarruflarda görülen azalışlar etken olmuştur (Aydın, 1991).

Tüketici kredileri 1993 yılında 35 milyon TL seviyesindeyken, bu rakam 2005 yılında 28 milyar TL'ye, 2014 yılında ise 268 milyar TL'ye yükselmiştir. Bireysel kredi kartı tutarları da 1993'te 5 milyon TL seviyesindeyken , 2005 yılında 17 milyar TL'ye, 2014 yılında ise 72 milyar TL'ye yükselmiştir. Tüketici kredilerindeki hızlı artış, bu tür kredilerin bankaların toplam kredileri içerisindeki payının da artmasına neden olmuştur. 1993 yılında %5'ler seviyesinde olan tüketici kredilerinin toplam krediler içindeki payı, 2004 yılında %25'ler seviyesine yükselmiş, Bu tarihten sonra da hep %30'lardan yüksek seviyelerde kalmıştır.

Tüketici kredileri kendi içerisinde temelde üç gruba ayrılır. Konut finansmanı ihtiyacının giderilmesi için verilen krediler konut kredisi olarak ifade edilmektedir. Türkiye'de uygulanmaya 2000'li yılların ortalarında başlanan mortgage kredileri de konut kredileri kapsamında yer almaktadır. Birinci ve ikinci el taşıt alımlarında finansman ihtiyacı olması durumunda sunulan kredi türü ise taşıt kredisi olarak bilinir. Bunların dışında eğitim, evlilik ya da başka bir ihtiyacın finansmanı için kullanılan krediler ise ihtiyaç kredisi olarak ifade edilmektedir. Ayrıca kredi kartlarından yapılan taksitli alışverişler de tüketici kredileri içerisinde değerlendirilmektedir.

2005 yılında yaklaşık 12 milyar TL olan konut kredileri, 2011 yılında yaklaşık 70 milyon TL'ye ve 2014 yılında 114 milyon TL'ye yükselmiştir. Buna göre son on yılda konut kredileri yaklaşık on kat artış göstermiştir. Özellikle 2007-2008 yılları arasında konut kredilerindeki artış hızında yaşanan gerilemede ABD Mortgage Krizi'nin ve ortaya çıkan küresel dalgalanmaların önemli payı bulunmaktadır. Konut kredilerinin tüketici kredileri içerisindeki payı ise 2005-2014 yılları arasında çok değişmemiş ve yaklaşık %40 civarlarında kalmıştır.

2005 yılında yaklaşık 6.128 milyon TL olan taşıt kredileri, 2011 yılında 6.925 milyon TL, 2014 yılında ise 6.225 milyon TL olmuştur. 2005-2014 arası dönemde taşıt kredileri, yaşanan küresel krizlerin etkisiyle dalgalı bir seyir izlemiştir ve son on yıl içinde miktar olarak değişme göstermemiştir. Dolayısıyla, taşıt kredilerindeki artış, diğer tüketici kredilerindeki artışın oldukça gerisinde kalmıştır.

2005-2014 yılları arasında tüketici kredileri sürekli olarak artış göstermekle birlikte, taşıt kredilerinin tüketici kredileri içerisindeki payı da gerileme göstermiştir. 2005 yılında %22 seviyelerinde olan bu oran, 2011 yılında %4'e, 2014'de ise %2'ye gerilemiştir. Söz konusu gerilemede, tüketicilerin daha düşük faiz oranlı kredilere yönelmelerinin de önemli payı bulunmaktadır. Taşıt kredilerinde vade yapısına bakıldığında, 2014 yılı itibariyle ferdi taşıt kredilerin çok büyük bir kısmının orta ve uzun vadeli, çok küçük bir kısmının ise kısa vadeli olduğu görülmektedir. Diğer taraftan kullandırılan krediler sabit faizli olarak tahsis edilmektedir. Bu sebeple de taşıt kredilerinin faiz oranlarındaki değişmelere duyarlılığı düşüktür.

2005 yılında 9.624 milyon TL olan ihtiyaç kredileri, 2008 yılında 38.547 milyon TL'ye, 2011 yılında 85.709 milyon TL'ye, 2014 yılında ise 147.651 milyon TL'ye yükselmiştir. İhtiyaç kredilerindeki yükseliş trendi, ihtiyaç ve diğer kredilerin toplam krediler içerisindeki payını arttırmıştır. İhtiyaç ve diğer krediler, tüketici kredileri içerisinde en fazla paya sahip kredi türü olup, söz konusu kredi türünün toplam tüketici kredileri içerisindeki payı 2005 yılında %34 iken, bu oran 2011 yılında %53'e, 2014'de ise %55'e yükselmiştir.

Genel olarak tüketici kredileri bankalar tarafından verilen bireysel müşteri temsilciliği aracılığı ile sağlansa da, eğitim, ihtiyaç gibi miktarı konut ve araç kredilerine göre daha düşük olan kredilerin kullanımında kredi kartlarından da yararlanılmaktadır. Aslında tüketici kredilerinin bir türü gibi görünse de kredi kartları, tüketici kredilerinden farklı olarak gerek kullanım hacmi, gerekse sağladığı opsiyonlarla tüketici kredilerinden farklı özellikler göstermektedir.

Kredi kartı; mülkiyeti kendilerine ait olmak üzere banka yada finansal kuruluşların müşterilerine önceden belirlenen limitlerde, anlaşmalı işyerlerinden yurtiçi ve yurtdışında mal ve hizmet satın alma ile nakit ödeme birimleri veya otomatik ödeme makinelerinden nakit çekimlerde kullanılmak amacıyla verilen karttır (Yılmaz, 2000).

Kredi kartlarının Türkiye'deki gelişim süreci Avrupa ülkeleri ile paralellik göstermektedir. Fakat batıda önce tüketici kredisinin uygulaması başlamış, daha sonra tüketici kredilerinin kolay verilmesi ve kullanılmasını sağlamak üzere kredi kartları piyasaya çıkmıştır. Türkiye'de ise batıdaki gelişmenin tersine önce kredi kartları kullanılmaya başlanmış, daha sonra tüketici kredileri hizmeti verilmeye başlanmıştır.

Türkiye'de gerek kredi kartı sayıları gerekse kredi kartı kullanım hacimleri yıllar itibariyle sürekli olarak artış göstermektedir. Ulaştığı rakamsal boyut bireysel kredi kartlarını Türkiye'nin bankacılık ve kredi sisteminde önemli bir konuma getirmektedir. Bankalararası Kart Merkezi verilerine göre, kredi kartı sayıları yıllar itibariyle önemli artışlar göstermiş olup, 2003 yılı sonunda yaklaşık 20 milyon adet olan kredi kartı sayısı, 2007 yılında 37 milyon adede, 2011 yılında ise 51 milyon adede ve 2014 yılında yaklaşık 57 milyon adede yükselmiştir.

Bireysel kredi kartı tutarlarına bakıldığında ise, kart sayılarındaki artışa paralel şekilde rakamsal büyüklüğün de sürekli olarak artış gösterdiği görülmektedir. 2005 yılında 17.055 milyon TL olan bireysel kredi kartı rakamları 2011 yılında 54.374 milyon TL'ye, 2014 yılında ise 72.699 milyon TL'ye yükselmiştir. Dolayısıyla 2005-2014 yılları arası dönemde bireysel kredi kartı rakamları yaklaşık dört kat artış göstermiştir.

Bireysel kredi kartlarından yapılan net işlem hacmi yanında, işlem hacminin GSYH'a olan oranı da Türkiye'de yıllar içinde artış göstermektedir. Kredi kartlarından yapılan işlem hacminin GSYH'a oranı 2009 yılında yaklaşık %22 iken 2014 yılında bu oran %27'i geçmiş bulunmaktadır.

Türkiye'de finansal istikrarsızlığın baskın olduğu, yüksek faizli ve düşük büyüme hızlı yıllarda yeterince gelişim göstermeyen tüketici kredileri, 2001 krizinden sonra giderek artan bir trend izlemiştir. Kamu borçlanma gereksiniminin azalması, kişi başına düşen gelirin artması ve daha öngörülebilir bir hale gelmesi, hanehalkının borçlanma maliyetlerinin azalmasıyla, tüketici kredileri pazarı bankacılık sektöründe en hızlı büyüyen alanlardan birisi olarak öne çıkmıştır. 2001 krizinden sonra tüketici kredilerinde görülen artışı daha net olarak; kurumsal kredilerdeki artışla karşılaştırarak da değerlendirilebilinir. Söz konusu dönemde ticari kredilerde yıllık reel artış yüzde 17,1 iken, tüketici kredilerinde bu oran yüzde 26,6 olmuştur. Tüketici kredilerindeki büyüme hızı çoğu sene kurumsal kredilerdeki büyüme hızından daha yüksek olarak gerçekleşmiştir.

Türkiye'de tüketici kredileri piyasasının, toplam kredilere ve ticari kredilere göre yoğunlaşmasının daha yüksek olduğu görülmektedir. Başka bir ifadeyle, Türkiye'deki ilk 10 bankanın diğer bankalara oranla daha yüksek oranda tüketici kredisi kullandırdığı gözlemlenmektedir. Buna karşın, küçük ölçekli bankaların toplam tüketici kredileri içindeki payı, diğer kredi türlerine göre daha düşüktür. Ayrıca tüketici kredisi kullandırmada mevduat bankalarının baskınlığı da devam etmektedir.

Türkiye'de tüketici kredilerinin zaman içerisindeki gelişimi ve mevcut yapısına ilişkin bu bilgilerden sonra, tüketici kredisi kullanan hanehalklarının tüketim düzleştirmesi yapmaları ve bu durumun Türkiye'de Merkez Bankası'nın para politikalarını etkinsizleştirdiği argümanı inceleme konusu yapılmıştır. Argümana göre, tüketici kredilerindeki hızlı büyüme sonrası hanehalklarının tüketim davranışı literatürde "sürekli gelir hipotezi" olarak adlandırılan tüketim kalıbına uygun olarak gelişmiştir.

Ludvigson (1999), Amerika için yaptığı çalışmada tüketici kredilerinin tüketim için belirleyici olduğunu sürekli gelir hipotezini kullanarak göstermiştir. Baccheta ve Gerlach (1997) aynı şekilde diğer ülkeler için yaptıkları çalışmalarda da tüketici kredileri ile tüketim düzeyi arasında ilişki bulmuşlardır. Bu çalışmalara karşın, Hall (1978) bugünkü tüketimin belirleyicisinin geçmiş dönem tüketim düzeyleri olduğunu söyleyerek, tüketici kredisi kullanımı gibi gelir düzeyindeki geçici değişikliklerinin bugünkü tüketim düzeyi üzerinde herhangi bir etkisi olmadığını savunmuştur. Cambell ve Mankiw (1989), Hayashi (1982, 1985), Chah, Ramey ve Starr (1995) ise çalışmalarında bugünkü tüketim düzeyinin belirleyicisinin geçmiş dönem gelir düzeyleri olduğunu yaptıkları ampirik çalışmalarla kanıtlamaya çalışmışlardır.

Türkiye'de tüketici kredilerindeki büyüme sonrası hanehalklarının tüketim düzleştirmesi yapmaları ve tüketim davranışlarını sürekli gelir hipotezine uygun olarak yapılandırdıkları argümanını analiz etmek amacıyla Ludvigson (1999)'un modeli 1995-2014 arasındaki yıllar için test edilmiştir. Ayrıca hem toplam tüketici kredileri hem de kredi kartları için iki farklı alt örneklem grubu kullanılmıştır. Toplam tüketici kredileri için birinci alt örneklem 1995-2006 yılları arasını kapsarken, ikinci alt örneklem ise 2006-2014 yıllarını kapsamaktadır. Kredi kartları için ise birinci alt örneklem 1995-2004 yılları arasını kapsarken, ikinci alt örneklem ise 2004-2014 yıllarını kapsamaktadır.

Sonuç olarak, 2006-2014 yılları arasında tüketici kredilerindeki ve gelirdeki artışın tüketimdeki artışın anlamlı birer tahmin edicisi olmadıkları gösterilmiştir. Bu sonuç sürekli gelir hipoteziyle birebir uyumludur. Aynı sonuç kredi kartlarında 2004-2014 yılları arası için de geçerlidir. Kredi kartlarındaki artış hanehalkı tüketimindeki artışın anlamlı bir tahmin edicisi değildir. Buna karşın, sürekli gelir hipotezinin geçerli olmadığı sadece toplam tüketici kredileri için 2006 yılı öncesi dönemde ve kredi kartları için 2004 yılı öncesi dönemde savunulabilir. Bir başka ifadeyle Türkiye'de erken dönem verisiyle yapılan analizlerde sürekli gelir hipotezinin varsayımlarını reddetmek mümkün değildir.

Bu sonuçlar, tüketici kredilerindeki ve bireysel kredi kartlarındaki artışın parasal aktarım mekanizmalarından kredi kanalının etkinliğini azalttığı argümanını doğrular niteliktedir. Günümüzde tüketici kredilerine ve kredi kartlarına kolaylıkla ulaşabilen hanehalkları, ekonomik daralma, finansal krizler veya Merkez Bankası'nın uyguladığı sıkılaştırıcı para politikası dönemlerinde tüketimleri düzleştirmekte ve daralan finansal piyasalardan minimum düzeyde etkilenmektedirler. Bir başka ifadeyle, hanehalklarının tüketim davranışları sürekli gelir hipoteziyle uyumlu hale gelmektedir. Hall (1978)'un da iddia ettiği gibi borçlanan hanehalklarının sadece geçici gelirleri artmakta olup, sadece geçici geliri değiştiren toplam talep yönlü para politikalarının hanehalklarının tüketim davranışları üzerinde bir etkisi bulunmamaktadır. Dolayısıyla elde edilen sonuçlar Hall (1978)'un argümanlarını da destekleyici yöndedir.

Yukarıda açıklanan analizde, toplam krediler için 2006 yılının, kredi kartları için ise 2004 yılının yapısal kırılma tarihleri olarak belirlenmesinde Harvey, Leybourne ve Taylor (2006) modeli kullanılmıştır. Model kullanılarak hem önceden bilinen hem de bilinmeyen kırılma tarihleri için test yapılmıştır. Bilinen kırılma tarihleri için toplam kredilerde 2006 yılı birinci çeyrek ve kredi kartlarında 2004 yılı birinci çeyrek tarihleri seçilmiştir. Bu tarihlerin bilinen kırılma tarihleri olarak seçilmesinde Bankacılık Düzenleme ve Denetleme Kurumu'nun tüketici kredilerindeki yapısal kırılmayı analiz ettiği çalışma referans olarak alınmıştır.

Test sonucunda toplam kredilerde 2006 yılı birinci çeyrek ve kredi kartlarında 2004 yılı birinci çeyrek tarihleri için %1 anlamlılık düzeyinde kırılma olmadığı boş hipotezi reddedilmiştir. Buna karşın önceden bilinmeyen yapısal kırılma testi için model sonuçları toplam kredilerde 2003 yılı üçüncü çeyreğini kredi kartlarında ise 2004 dördüncü çeyreğini yapısal kırılma tarihleri olarak göstermiştir. Buna karşın bu tarihler sırasıyla %10 ve %5

anlamlılık düzeyinde kırılma olmadığı boş hipotezini reddetmektedir. Sonuç olarak daha yüksek anlamlılık düzeylerine sahip 2006 birinci çeyrek ve 2004 birinci çeyrek tarihleri sırasıyla toplam tüketici kredileri ve kredi kartları için yapısal kırılma tarihleri olarak seçilmişlerdir.

Tüketici kredileri ve kredi kartlarındaki büyümenin kredi kanalının çalışmasını ve Merkez Bankası'nın para politikalarını etkinsizleştirdiği argümanını reddeden bir kısım çalışmalarda ise tam tersi bir argüman savunulmaktadır. Bu argümana göre özellikle kredi kartı kullanan tüketicilerin parasal daralma dönemlerinde yükselen faizler nedeniyle likidite kısıtı içine düştükleri, bu nedenle kredi kartı kullanan tüketicilerin Merkez Bankası para politikalarına çok daha duyarlı oldukları ve dolayısıyla kredi kartlarının kredi kanalının çalışmasının etkinliğini arttırdığı ileri sürülmektedir.

Gross ve Souleles (2002), likidite kısıtı argümanının halen geçerli olduğunu, çünkü tüketici kredileri içindeki önemli bir payın değişken faizli bireysel kredi kartlarından oluştuğunu savunmaktadırlar. Buna göre, değişken faizli kredi kartı kullanan tüketiciler faizleri yükselten daraltıcı para politikalarına karşı daha duyarlı olmaktadır. Türkiye'de de yukarıda bahsedildiği üzere toplam tüketici kredileri içinde bireysel kredi kartlarının oranı yaklaşık %30 düzeyindedir. Bu nedenle Türkiye'de kredi kartı kullanan hanehalklarının da likidite kısıtı içinde olup olmadıkları bu çalışmada analiz edilmiştir.

Likidite kısıtı argümanına karşın, yukarıda da bahsedildiği üzere Türkiye'de 2004 yılından sonra kredi kartı kullanımında önemli bir büyüme gerçekleşmiştir. Günümüzde likidite kısıtı içindeki tüketiciler dahi yeni kredi kartları çıkarabilmekte veya mevcut kredi kartlarının limitini yükseltebilmektedirler. Daraltıcı para politikaları sonucu yükselen faizlere karşın kredi kartları tüketicilere düşük işlem maliyetli borç alma olanağı sunmakta olup, onların likite kısıtı içine düşmelerini engellemektedir. Dolayısıyla, Merkez Bankası'nın daraltıcı para politikalarının ve yükselen faizlerin hanehalklarının tüketim davranışları üzerinde herhangi bir etkisi olmayabilir.

Bu çalışmada yapılan ampirik analizler göstermektedir ki; Türkiye'de yükselen faizler hanehalklarının kredi kartlarına ulaşmasında bir engel teşkil etmemektedir. 2002-2014 yılları arasındaki veriler kullanılarak yapılan analizde kredi kartı kullanımın arttığı ve bu durumun hanehalklarını çok daha likit duruma getirdiği gözlemlenmiştir. Bir başka

ifadeyle, daraltıcı para politikası dönemlerinde tüketiciler yeni kredi kartı çıkarabilmekte veya kredi kartı limitleri yükselterek çok daha likit hale gelmektedirler.

Yukarıda açıklanan hususlar bu çalışmada para politikasındaki bir değişmeye karşılık kredi kartı bilançosu ve kredi kartı likiditesinin etki-tepki fonksiyonları kullanılarak tahmin edilmeye çalışılmıştır. Kredi kartı bilançosu ve likiditesinin tepkileri hem daraltıcı hem de genişletici para politikalarına karşı test edilmiştir. Kredi kartı likiditesi olarak kredi kartlarının toplam kullanılmayan limitleri tanımlanmıştır. Etki tepki fonksiyonlarının tahmininde beş değişkenli bir VAR modeli kullanılmıştır. Birim kök, eşbütünleşme, Granger nedensellik ve Geweke eşbütünleşme testleri çalışmada sunulmuşlardır.

Etki-tepki fonksiyonları Türkiye'de para politikasının etkinliği konusunda yeni kanıtlar sunmaktadır. Buna göre, daraltıcı para politikaları hanehalklarının yeni kredi kartları çıkarmaları ve mevcut kredi kartı limitlerini arttırmalarına neden olurken, aynı zamanda hanehalklarının likiditesi artmaktadır. Aynı şekilde, genişletici para politikalarının kredi kartı piyasasında genişletici bir etkisi mevcut olmasına karşın, bu etki hanehalklarının tüketim düzeyini çok fazla değiştirmemektedir.

Merkez Bankasının daraltıcı para politikası şoklarına karşı; kredi kartı bakiyesi ve likiditesinin gösterdiği tepkiler, para politikasının daraltıcı etkilerinin kredi kartlarının kullanımıyla kısıtlandığına işaret etmektedir. Bir başka ifadeyle, kredi kartlarının kullanımı daraltıcı politikaların hanehalkı tüketimi üzerindeki etkisini sınırlandırmaktadır. Kredi kartları daraltıcı politika dönemlerinde hanehalklarına her daim likidite sağlamaya devam etmektedir.

Günümüzde Dünyada olduğu gibi Türkiye'de de tüketici kredileri ve kredi kartları hemen her tüketici için kolaylıkla ulaşılabilen ve yaygın olarak kullanılan finansal araçlar haline gelmişlerdir. Bu durum hanehalklarını eskisine göre çok daha likit hale getirmiş ve onlara tüketimlerini düzleştirme imkanı sağlamıştır. Dolayısıyla, Merkez Bankaları'nın tüketici davranışlarını etkileme gücü büyük ölçüde sınırlandırılmıştır. Merkez Bankalarının gelecekteki politikalarını şekillendirirken bu durumu göz önüne almaları önem arz etmektedir.

APPENDIX B: CURRICULUM VITAE

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EDUCATION

Degree	Institution	Year of Graduation
MS	Turkish Military Academy, Department of Operations Research	2005
MS	Middle East Technical University, Department of Economics	2005
BS	Hacettepe University, Department of Economics	2001

PROFESSIONAL EXPERIENCE

Year	Place	Enrollment
2011- Present	Yıldırım Beyazıt University, Department of Economics	Research Assistant
2006-2011	Başkent University, Department of Economics	Research Assistant

PUBLICATIONS

Oğuz, F., Akkemik, K.A., Göksal, K. (2015). Toward a wider market definition in broadband: The case of Turkey. Utilities Policy, 37, 111-119

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