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**MACROPRUDENTIAL POLICIES OF CENTRAL BANK
OF REPUBLIC OF TURKEY**

Master's Thesis

ALPER ÖZHAN

İSTANBUL, 2018

**THE REPUBLIC OF TURKEY
BAHCESEHIR UNIVERSITY**

**SOCIAL SCIENCES INSTITUTE
CAPITAL MARKETS AND FINANCE**

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ABSTRACT

MACROPRUDENTIAL POLICIES OF CENTRAL BANK OF REPUBLIC OF TURKEY
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Capital Markets and Finance

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The global crisis in 2008-2009 signified the need to provide financial stability along price stability. Accordingly, the Central Bank of the Republic of Turkey (CBRT) started to implement its new policy mix since late 2010 in which they emphasize financial stability as a policy goal. But there is no consensus definition what is the “financial stability” and under what condition we can say there is “financial instability”. It has to be clearly defined and communicated, to provide a better understanding and to facilitate cooperation among CBRT and other actors of economy. In this research we tried to address the definition of financial stability and the need of financial stability as a policy goal.

CBRT developed and introduced new policy tools to contribute to financial stability although their effectiveness is still a debate. Reserve Option Mechanism and Asymmetric Interest Rate Corridor are investigated in this paper. We tried to clarify the logic behind them, evaluated their effectiveness and reached some mixed results.

Keywords: CBRT, monetary policy, macro prudential

ÖZET

TCMB TARAFINDAN UYGULUNAN MAKRO İHTİYATİ POLİTİKALAR

Alper ÖZHAN

Sermaye Piyasaları ve Finans

Tez Danışmanı: Prof. Dr. Necip Çakır

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2008-2009 yılında yaşanan küresel kriz, fiyat istikrarının yanında finansal istikrarı sağlamanın da önemini vurgulamıştır. Bu kapsamda Türkiye Cumhuriyet Merkez Bankası'nda finansal istikrarı vurguladığı yeni politika araçlarını uygulamaya koymuştur. Ancak finansal istikrarın ve finansal istikarsızlık kavramlarının ne olduğu, hangi koşullarda finansal istikrarın sağlanmış sayılacağı konusunda literatürde bir fikir birliği bulunmamaktadır. Bu kavramların açık ve net bir şekilde tanımlanması ve ekonomik aktörlere bildirilmesi, kavramların bu aktörler tarafından anlaşılması ve bu politikaların Türkiye Cumhuriyet Merkez Bankası tarafından uygulanması noktasında işbirliğini sağlaması açısından önem arz etmektedir. Bu çalışmada finansal stabilite kavramının tanımı ve neden bir politika amacı olarak ihtiyaç duyulduğu konusu irdelenmiştir.

Finansal istikrarın sağlanması amacıyla Türkiye Cumhuriyet Merkez Bankası tarafından yeni ve sıradışı politika araçları geliştirilmiş ve uygulamaya konmuş olmakla birlikte bu araçların etkinliği hala tartışma konusu olmaya devam etmektedir. Bu çalışmada söz konusu araçlardan Rezerv Opsiyon mekanizması ve Asimetrik Faiz Koridoru incelenmiştir. Bu politika araçlarının etkinliği değerlendirilmiş olup, etkinlikleri konusunda karışık sonuçlara ulaşılmıştır.

Anahtar Kelimeler: CBRT, monetary policy, macro prudential

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ABBREVIATIONS

CBRT: Central Bank of Republic of Turkey

FED: Federal Reserve System

ECB: European Central Bank

EUR: Euro

USD: United States Dollar

TL: Turkish lira

IMF: International Monetary Fund

QE: Quantitative Easing Program

GDP: Gross Domestic Product

GFC: Global Financial Crisis of 2008

IT: Inflation Targeting

FX: Foreign Exchange

MRO: Main Refinancing Operations

ROM: Reserve Option Mechanism

ROC: Reserve Option Coefficient

RR: Reserve Requirements

GSE: Government Sponsored Enterprises

1. INTRODUCTION AND ECONOMIC OUTLOOK

What happened with the emerging markets, including Turkey after 2008 global financial crisis and QE programs introduced by US Federal Reserve and other central banks as response to the crisis is key to understand the logic behind the policies introduced by CBRT and other emerging market central banks, since they experienced roughly the same pattern of capital inflows and outflows throughout this period.

Financial crisis of 2008 led U.S. Federal Reserve and other central banks to take some extraordinary and unprecedented policy actions to restore the economy of their countries. U.S. Federal Reserve started the quantitative easing programs and provided massive amounts of dollar liquidity in the aftermath of the crisis which had several impacts not only on U.S. economy, but also on the World economy as a whole. Since the yields of U.S. treasuries was almost down to negative territories, emerging markets experienced massive capital flows in search of higher yields, which boosted the total credit in these countries. High capital flow in seek of higher yields for relatively short terms has the potential to flow back and according to many economists this sudden reversal has the potential to bring instability to those economies.

As a first response to the deep recession and rising unemployment rates, many central banks did what was expected and cut the rates to almost zero but it did not help. As the economy was irresponsive to rates, many central banks started non-standard policies. As expected, The Federal Reserve was the first and most decisive, as they took some distinct and extra-ordinary measures in different phases of the crisis. In the period beginning in September 2008, which is named as QE-1, the primary aim of measures were to restore the health of financial markets and focused mainly on banks to improve their liquidity conditions and on massive asset purchases of GSE (Government Sponsored Enterprises such as Fannie Mae and Freddie Mac) debt, U.S. government agency debt (such as Ginnie Mae), mortgage-backed securities and U.S. treasury securities. The second wave of operations by the Federal Reserve commenced in the October 2010 which is known as QE-2 and concentrated particularly on purchases of US Treasury securities, to lower

yields, but smaller than QE-1 in terms of scale. In September 2011, the Federal Reserve started “Operation Twist”, in which they sold the short term treasury bills to buy long term treasury notes in order to lower long term yields and boost investments. It is followed by the introduction of a third round of quantitative easing, started in September 2012, focusing on the purchase of toxic assets, particularly 40 Billion USD of subprime mortgage securities.

These measures had created massive amount of global liquidity, and opportunities for investment and profit was limited in developed economies, thus caused the massive acceleration of capital flows to emerging market economies from 2009 to 2013. This liquidity flow is considered to be the primary cause of appreciation pressures on emerging market currencies, a potential threat for financial distortions and asset price bubbles in these economies.

Before the global financial crisis, in 2007, capital inflows to emerging economies totaled to \$660 billion or 3.96 % of their total GDP. Naturally, during crisis, inflows turned into outflows peaking to \$221 billion in the last quarter of 2008. Between 2009 and 2014 inflows were robust, but the trend was reversed in 2015 as total outflow reached to 2.93 of total emerging market GDP.

Emerging economies experienced rapid upward pressure on their currencies and loss in competitiveness. Controversially, some economists claim that since these policies supports demand in developed economies, exports of emerging economies would be supported and offsetting the negative effects associated with appreciated currencies. But indeed the biggest potential treat lies in the potential sudden reversal of capital flows.

In this context, Dongchul Cho and Changyong Rhee (2013) found that;

Inflows to Asian economies were extremely volatile around the global financial crisis. QE seems to have significantly contributed to the improvement of the liquidity situation by encouraging the return of capital flows into Asia. Indeed, inflows rebounded nearly as sharply, returning to an average of 7.8 percent of GDP in 2010–2012. It is noticeable that the wild fluctuation of capital inflows around the GFC (Global Financial Crisis) was mainly driven by portfolio investment, while foreign direct investment (FDI) was robust. In particular, the economies with more open and developed capital markets experienced greater swings in portfolio investment. QE1 made significant contributions to the sharp rebound of capital inflows to the region after the global financial crisis.

2. FINANCIAL STABILITY AS A POLICY GOAL

Before the 2008 global financial crisis, main targets of and primary policies developed by central banks was price stability or Inflation Targeting. For IT regimes financial stability is a secondary target or a supportive target for price stability, and sometimes almost overlooked. However, as the global crisis of 2008-2009 was considered to be started at financial markets and finally ruined the whole economy, it is proved that ignoring financial stability may bring big costs and lessons. Many central banks started to emphasize the financial stability and accordingly, the Central Bank of the Republic of Turkey (CBRT) introduced its new policy mix at November 2010. CBRT first introduced this approach at “Money and Exchange rate policy” document.

This new policy mix and its main targets introduced in a detailed working paper published by CBRT. “Many central banks using inflation targeting (IT) regimes responded to capital flow volatility by direct interventions in the foreign exchange market. However, empirical studies are not in favor of to show effectiveness of direct intervention and the issue is still open to debate. As a result, Central Bank of Republic of Turkey has adapted an alternative strategy. Since year-end 2010, the Central Bank of the Republic of Turkey (CBRT) has implemented a new policy strategy to address the problems associated by volatile capital flows. To cope with the problems with the volatile capital flows CBRT adopted a second goal, maintaining financial stability besides the inflation targeting. According to CBRT, use of alternative monetary policy instruments in this new regime has reduced the need for direct FX purchases or sales.

The new strategy adopted by the CBRT is a result of the need for responding the financial environment of the post crisis era, which has the potential to ruin the Turkish economy. Figure 2.1 examines the new and former approaches. The framework in use is distinct from the traditional inflation targeting regime respect to targets and tools. In this new regime maintaining price stability remains the primary target but financial stability is accepted as a supporting objective. Accepting financial stability as a target brings the need to develop new instruments. As a result, the CBRT has developed some new tools

in order to cope with macroeconomic and financial risk, in harmony with the price stability as the main goal.

Table 2.1: Monetary Policy Framework of CBRT

Monetary Policy Framework		
	Former Approach	New Approach
Objective	Price Stability	Price Stability Financial Stability
Instruments	Policy Rate	Cyclical Instruments (Policy Rate, Liquidity Management, Interest Rate Corridor)

Source: CBRT, 2013

The motive behind setting financial stability as a policy goal should be evaluated in the context of well-known “Minsky Moment”. Minsky’s financial instability theory suggests that every time the economy does well, it is the time that we should pay the most attention and worry about financial instability. The idea behind the theory can be summarized as “Stability leads to destabilization”. Traditional economic models based on equilibrium. Only an external shock, like a sudden rise in oil prices, can end this equilibrium. Minsky suggests the system or equilibrium itself can produce an instability, or to say “instability is inherent in the system”. Basic reason of this inherent instability lies in the risk taking behavior of individuals and the other actors of economy.

His theory suggests that banks and other borrowers have three distinct stages of borrowing. In the first stage, after a recent crisis, they are cautious and they only make loans to the borrowers, an amount which they can afford to pay both interest and the principal. As confidence rises they begin to make loans that the borrowers can only pay the interest and at the final stage, when the memories of crises is forgotten, which he labels as Ponzi finance, banks make loans that borrowers can afford to pay neither principal nor interest. This enormous risk appetite is fueled by rising asset prices, which boosts confidence. Economic agents start to behave as this prices increases are expected to continue forever. The Minsky Moment is the point when “The Ponzi scheme” crumbles

on the whole system. At some point asset prices stop rising and starts to decline, which lets the banks to realize that their loans are at risk and cannot be repaid at all. According to Minsky banks are profit making institutions which is an obvious motive to increase lending, even to the Ponzi levels.

Although their roles and responsibilities are far from being clear, many central banks have financial stability policy. Naturally, CBRT is not the first or the only central bank that adopted financial stability as a policy goal. In some countries, central banks adopted macro prudential policies to maintain financial stability. United States Federal Reserve has a macro prudential oversight council and council issues financial stability reports and regulates other institutions that have important roles in the financial system. Bank of England has a financial policy committee that directs the use of macro prudential tools. In Japan Financial Services Agency (FSA) is the primary body responsible for financial stability and since 2014 Bank of Japan and FSA has a task force to oversight the financial situation. It is common in these and the other countries such as New Zealand, Switzerland, Sweden etc. that central banks share the responsibility of oversighting and implementing the necessary measures to provide financial stability but they lack the authority to force this mandate. Nevertheless recent developments tell us that financial stability is going to become a primary target and will take a primary role in the mandates and tools used by central banks.

2.1 WHAT IS FINANCIAL STABILITY?

While CBRT emphasizes financial stability as a main goal, we would like to clear what is “financial stability” and what are the costs associated with financial instability. In the aftermath of 2008 crisis, every fluctuation tend to be named as a crisis or in other words financial instability, it is important to define the term properly, in order to develop policies to cope with it.

Despite it has been recognized as a covert central bank goal more than a hundred year, it has not been an emphasized and communicated as a primary goal until recently. Short-term economic stabilization was a primary focus during the 1960s and 1970s; and long monetary stability which can be defined as low and stable inflation, became the main central bank target of the 1990s. Financial stability has remained as a sub-target or a

component of the monetary stability. Although it is hand in hand with the other goals such as monetary stability and economic stability, financial stability can be considered as a separate goal.

John Chant, (2003, Essays on Financial Stability, Bank of Canada Publication) states that:

Financial instability refers to conditions in financial markets that harm, or threaten to harm, an economy's performance through their impact on the working of the financial system. It can arise from shocks that originate within the financial system being transmitted throughout that system, or from the transmission of shocks that originate elsewhere by way of the financial system. Such instability harms the working of the economy in various ways. It can impair the financial condition of non-financial units such as households, enterprises, and governments to the degree that the flow of finance to them becomes restricted. It can also disrupt the operations of particular financial institutions and markets so that they are less able to continue financing the rest of the economy.

“A financial system is in a range of stability whenever it is capable of facilitating the performance of an economy, and of dissipating financial imbalances that arise endogenously or as a result of significant adverse and unanticipated events.” (Schinasi, 2004)

Ferguson, (2002) gives a broader definition of financial instability:

A situation characterized by these three criteria: (1) some important set of financial asset prices seem to have diverged sharply from fundamentals; and/or (2) market functioning and credit availability, domestically and perhaps internationally, have been significantly distorted; with the result that (3) aggregate spending deviates (or is likely to deviate) significantly, either above or below, from the economy's ability to produce.

Despite existence of so many definitions has been made by economists, these fundamental questions still in debate; Are all movements of interest rates and prices signs of instability? What criteria distinguish instability from changes that characterize the normal working of a market economy? Clarifying the term is an important challenge for economists and central banks, because responses to economic cycles and fluctuations should be based on the definition of financial instability, particularly if you set financial stability as an objective. Nevertheless, Central Bank of Turkey should come up with a broader and detailed definition of financial stability to be more transparent and provide a better understanding about its targets.

2.2 FINANCIAL STABILITY AND CREDIT GROWTH

There are several studies linking financial instability to rapid credit growth which is believed in turn causes financial instability. For example, Philip R. Lane and Gian Maria Milesi-Ferretti (2011) have argued that the variation in the size of recessions during 2008-2009 was significantly related to the scale of domestic credit growth during the 2003-2008 period and the size of outstanding current account imbalances.” Lane and Milesi-Ferretti (2012) also showed that above-normal current account deficits during the pre-crisis period was significantly associated with major declines in domestic demand and sharp reversals in private capital flows over 2008-2010. Philip R. Lane and Peter McQuade (2013) concludes that “current account balance is a misleading indicator in understanding the relation between international capital flows and domestic credit growth, in view of the striking differences in the co-variation of domestic credit growth with net debt flows and net equity flows. Moreover, it is striking that net debt flows appears to be the relevant measure, with no apparent gain to splitting net debt flows between gross debt inflows and gross debt outflows.”

Mendoza and Terrones identified 27 credit booms in industrial countries and 22 emerging economies during the 1960-2006 period and they found:

The buildup phase of these credit booms is associated with economic expansions, rising equity and housing prices, real currency appreciation, and widening external deficits, followed by the opposite dynamics in the downswing of the credit booms. Despite the similarities in the characteristics of credit booms across industrial and emerging economies, there are also three major differences: (1) Fluctuations in macroeconomic aggregates and micro-level indicators during credit booms are larger, more persistent, and asymmetric in the emerging economies, (2) not all credit booms leads to crisis, but many of the recent emerging markets crises were associated with credit booms; (3) credit booms in emerging economies tend to be preceded by large capital inflows and not by domestic financial reforms or total factor productivity gains, while credit booms in industrial countries tend to be preceded by high total factor productivity or financial reforms.

Although limiting credit growth is considered to be essential to provide financial stability there are some limitations for these approaches to determine an optimal level for the credit growth. First of all it is very hard to determine an optimal credit growth rate without considering country specific variables. Second, even if you define the variables accurately, it should be a dynamic approach rather than constant as the globalization

makes the economic variables more complex and more dynamic. Third, term structure of the total credit is as important as total credit stock.

2.3 CBRT'S POLICY FOR CREDIT GROWTH

In this perspective CBRT's decision to manage capital inflows and to discipline credit growth is an important and accurate decision to provide financial stability. For measuring credit growth CBRT focuses on credit growth to GDP ratio as a leading indicator of financial instability. The credit-to-GDP gap has received attention from academics and practitioners. Some have agreed on its usefulness as an indicator of financial problems, but others have been more critical about its properties. Borio and Lowe listed criticisms of the credit-to-GDP gap gathered on three main lines: (i) the credit gap is not a good guide for setting the buffer because it can lead to decisions that conflict with the countercyclical capital buffer objective; (ii) the credit gap is not the best early warning for banking crises, especially in the case of emerging market economies; and (iii) the credit gap has measurement problems. Edge and Meisenzahl (2011) argue that credit to GDP ratio has some difficulties due to potential measurement problems. They suggest two types of measurement problems. First, GDP measurements are subject to revision and the second is about with the difficulties of determining the gap between current GDP and the trend.

Borio and Lowe (2002) studied 40 crises spread over 27 of the 34 countries, with 16 such episodes occurring in industrial countries and 24 in emerging market economies. They state that:

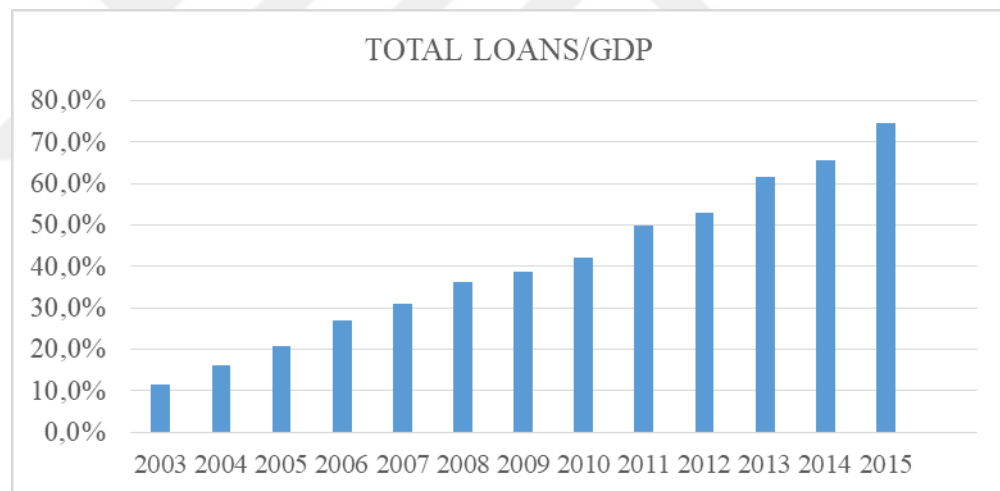
For industrial countries, the best composite indicator combines the credit with the equity price gap. For emerging market countries, the best composite indicator combines the credit gap with either the asset price or the exchange rate gap. In this case, at a three-year horizon, 75 percent of crises are successfully predicted, with one wrong classification in every 13. (The credit-to-GDP gap ("credit gap") is defined as the difference between the credit-to-GDP ratio and its long-term trend.) They argue that the credit-to-GDP gap is on average (across many countries and several decades) the best single indicator in this context, including for emerging market economies.

As it is clear that rapid credit growth causes financial instability, an important question has to be asked: What is the optimal level of credit growth and how it can be measured? Kara, Küçük, Tiryaki and Yüksel (2013) analyze historical data in order to determine

some benchmark values for Turkey’s credit growth. Particularly, they take Turkey’s current credit-to-GDP ratio (55 percent) as a reference point, and compare the data with the other countries that experienced similar credit development periods. They found that countries experience roughly stable net borrowing-to-income ratios after this point. Based on the experience of global crisis, and considering Turkey’s above average current account deficit, the CBRT has judged that a growth around 7.5 percent would be a reasonable and prudent reference for Turkey. This ratio can be determined as annual credit growth of 15 percent in the short term, based on the expectation of about 10 percent nominal income growth.

At this context total loan for the Turkish banking sector to gross domestic product of Turkey, corresponding ratios from 2003 to 2015 is given below.

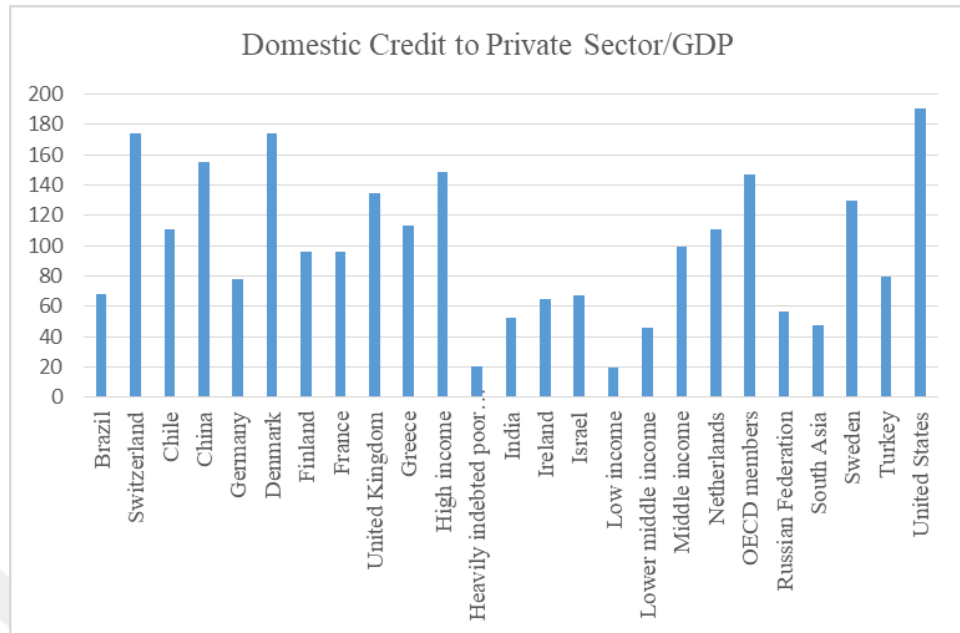
Figure 2.1: Total Loans to GDP for Turkey



Source: Worldbank, 2016

Current private sector debt to gross domestic product ratios for selected countries and average levels between income groups given below for the year end 2015. As it can be seen from the graph, total private sector debt to gross domestic product ratio increases with the level of income. It is notable that Turkey with the level of 80 percent is still below the middle income group which is 99 percent at the same year.

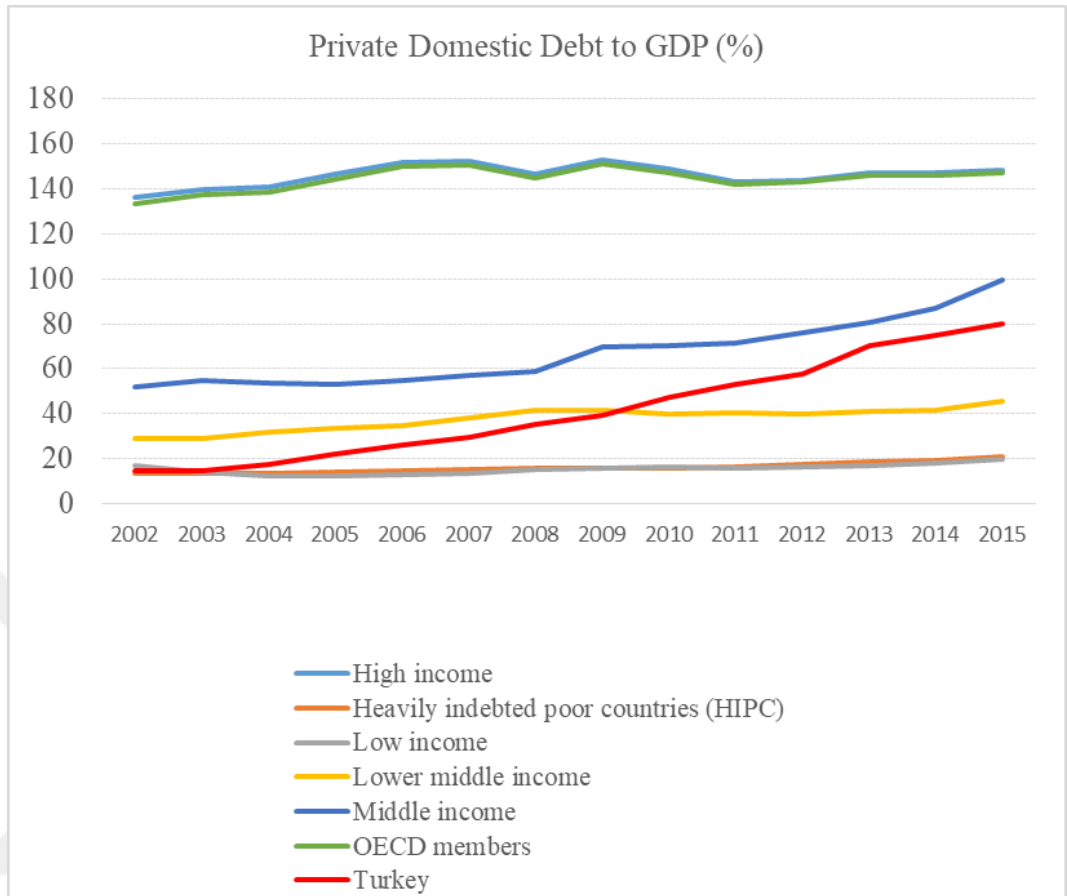
Figure 2.2: Domestic Credit to Private Sector to GDP for Turkey



Source: Worldbank,2016

Graph given below is the private domestic debt to GDP between 2002 and 2015 for income groups determined by Worldbank. Given the high levels of public debt prior to IMF Stand-by program, Turkey was well below the middle income group and close to low income and heavily indebted poor countries. By the end of 2015 current level of debt for Turkey converged to middle income countries but still below that group by a significant proportion. It is also noteworthy that middle income group has experienced an increasing level of private domestic debt since 2008 financial crisis to 2015.

Figure 2.3: Private Domestic Debt to GDP for Turkey and Income Groups



Source: Worldbank

1. UNORTHODOX POLICIES OF CENTRAL BANK OF TURKEY

2008 global financial crisis led central banks of developed countries to implement quantitative easing policies which had the potential to create instability for the emerging economies like Turkey. This enormous instability led the emerging economies' central banks to search for more flexible and effective policy tools to balance the capital flows in a timely and swift manner in order to provide financial stability or at least limit the instability experienced by the economy.

In 2010 CBRT designed and introduced a mix of policy tool to influence the credit and foreign exchange channels separately, in order to provide price and financial stability. In the context of this policy framework, CBRT started to use liquidity management, interest rate corridor between overnight borrowing and lending rate and reserve requirements accordingly.

This section discuss this so called unorthodox tools brought by Central Bank of Turkey, the logic behind them and evaluate the effectiveness given the targets set by CBRT.

3.1 ASSYMETRIC INTEREST RATE CORRIDOR

3.1.1 What are Corridor Systems

Primary target of central banks while implementing monetary policies is modifying the yield curve by using communication on current and future policies and aims. Central banks use standing facilities to control the desired level and volatility of short-term interest rates. Standing means it as a facility to access funds at a rate determined by central banks on a standing basis or to say on a concurrent basis. The main function of the facility is to give the Banks the opportunity to park their excess funds (the funds that has no demand in the interbank market) and to provide liquidity at a discount or an advance facility. In the discount method, commercial bank sells short-term treasuries to the central bank, and collects nominal value of the paper at a discount rate, which is determined by

the central bank according to discount rate. The other one is the lombard loan, at which the commercial banks receives credit by posting a collateral.

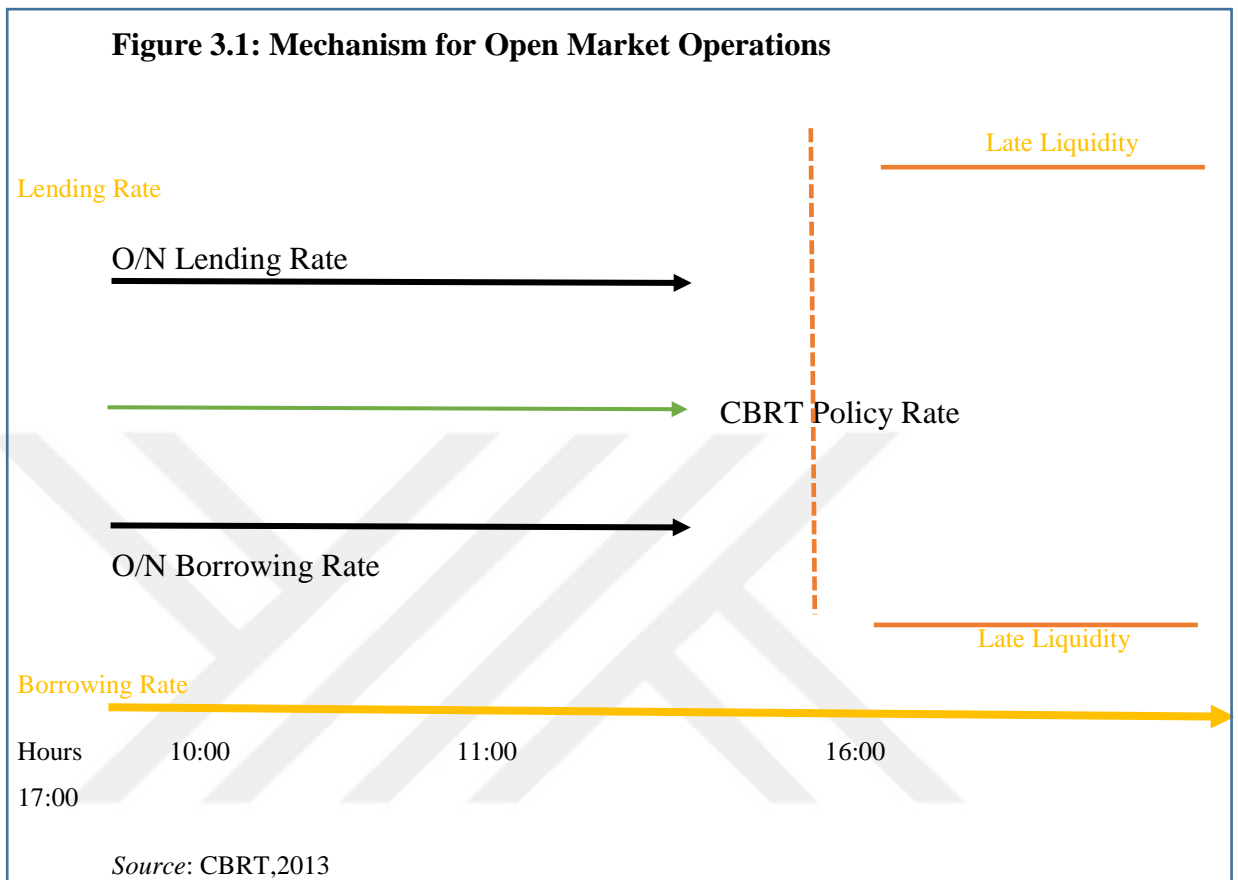
The central bank determines a target policy rate according to the target level of inflation and growth. The central bank supplies some level of reserves to the banking system, which are controlled through open market operations. The corridor system has to set boundaries around the policy rate, which are called “the upper bound” and “the lower bound”. The upper bound, at which the central bank is ready to supply funding against a collateral during the day at a rate more than the policy rate. The lower bound determines the rate at which the central bank provides a depositing facility for the banks with the excess fund at a rate lower than the policy rate. Typically this corridor is symmetric around the overnight funding rate. Despite the fact that corridor approach is widely and commonly used by central banks to control short term interest rate in the money market, there is not a consensus as to how wide the spread between the borrowing and the depositing facilities should be, or in another words the width of the corridor. The width is generally determined taking the factor into consideration. First, it should not be so wide that it creates undesired volatility in the money market and second it should not be so narrow that it leads to take the role of interbank market.

3.1.2 Asymmetric Corridor System

CBRT claims that asymmetric interest rate corridor is first introduced by them and in use since 2010, in order to increase the flexibility of monetary policy. The benefits and possible implementation was discussed by Gabriel Perez Quiros and Hugo Rodriguez Mendizabal, 2010. They suggest that the corridor can be used in an asymmetric manner to implement monetary policies. Valimaki, T. (2003) also suggests that “central bank can affect the amount of excess reserves and the volatility of the overnight interbank repo rate by using the elements of the corridor, including asymmetric aspects, as an independent signaling tool”. Goodhart, C. (2009) also points out that these tools should be further investigated, because it may be a waste of a good instrument.

CBRT, states that “the system provides the ability to make timely responses to external finance or risk sentiment shocks through active management of daily open market

operations.” In order to understand how the mechanism works, a simple figure is shown to demonstrate how the mechanism works throughout the day.



CBRT’s asymmetric facility uses the width of the corridor as an active instrument: The CBRT can adjust the width of the interest rate corridor (possibly in an asymmetric way) when necessary. In this structure, they claim that “corridor not only facilitates a faster and more flexible reaction to volatility in short-term capital movements, but also can be used as an effective instrument to tame the excess credit growth.”

While implementing monetary policy, CBRT takes into account not only the spread between upper bounds and lower bounds, but also the relative spread in relation to policy rate. When the capital flows into the country are inwards or outwards, the corridor spread may be widened or narrowed accordingly. The CBRT can control the amount of supply in the short-term money market by taking intraday liquidity actions, allowing the overnight repo rate to move within the corridor, by taking into account the capital flows and global risk sentiment. Their primary target is reducing the need of direct FX

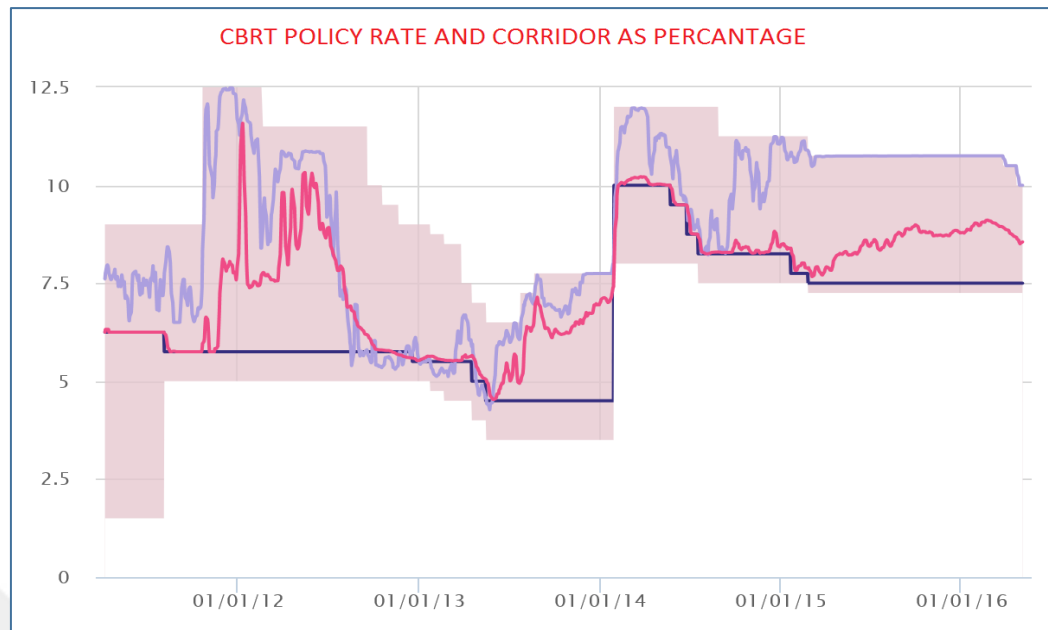
interventions and reducing the impact of fast capital flows on Exchange rate. Corridor is also used to create short term interest rate volatility during strong capital inflow periods, in order to discourage short-term capital flows while not harming long-term investments.

Even though the FED was not adopted a corridor system officially, in October 2008 they started to pay interest for the excess funds, 75 basis points less than the policy rate, which is the lower bound of the corridor. Given that FED was applying upper bound already, it is not wrong to say that they adopted the corridor system at that date. Main idea behind it stated in the policy document was to expand the balance sheet in order to provide liquidity to ensure financial stability. During the following months corridor was cut down between 0 to 25 basis points.

The European Central Bank reduced the width of its corridor from 200 to 100 basis points on 08.10.2008. As the upper bound of the corridor came down, the usage of the deposit facility became much cheaper than the interbank market for the banks with excess liquidity. Hence, the Euro system undertook a primary role as an intermediary for money market transactions, and fills the gap of dysfunctional money market. The Governing Council announced on 18 December 2008 that, “from 21 January 2009, the corridor formed by the corridor to be widened again to 200 basis points, parallel to the desire to avoid crowding out money market activity any more than necessary. After the corridor re-widened at late January, the degree of intermediation by the Euro system started to decline. This could be a sign that the wider corridor left more room for the matching of demand and supply in the money market, even in an environment of persisting high credit risk.”

While ECB's and FED'S response was like as given above paragraphs, CBRT's response in terms of one week repo rate, corridor rate and BIST Interbank overnight repo rates has given below since 2011.

Figure 3.2: CBRT Policy Rate and Corridor as Percentage



O/N Lending Interest Rate One-Week Repo Rate O/N Borrowing Interest Rate

BIST Overnight Repo Rates (5-Day Moving Average) CBRT Average Fund Rate (5-Day Moving Average)

Source: CBRT,2016

In 2013 CBRT introduced another motive to use asymmetric corridor; loan-deposit rate spreads of commercial banks. CBRT claims that loan-deposit rate spreads are an important indicator of the loaning standards of banks. Higher the loan-deposit rate spread lower the risk appetite of banks and tighter the loaning standards. In the context of economic booms, as the risk appetite rises and competition among banks becomes stronger, loan-deposit rate spread decreases. As a result, volatility of credit cycle increases and brings more economic instability. (Bernanke et al, 1996; Gilchrist and Zakrajsek, 2011)

On 18 August 2015, CBRT published a road map for policies to be implemented as the monetary policies applied during and after global financial crisis was normalizing worldwide. This includes reducing the width of the corridor and the interest rate corridor will be made more symmetric around the one-week repo interest rate. CBRT keeps lowering the upper bound of corridor to remove the asymmetry.

3.1.3 Evaluating Asymmetric Corridor System

What about the success of this alternative and unconventional policy tool? Hence the most dominant determinant of the credit growth is the loan interest rates we have to understand the impact of the corridor rates on the loan rates.

CBRT focuses particularly on loan rates to test significance of asymmetric corridor policy. They found that relationship between corridor rates and loan rates are stronger in the tightening periods than the monetary easing periods in the short-term. When CBRT rises corridor rates banks responds to these rises faster and adjust their loan and deposit rates swiftly. But when CBRT lowers rates reaction is slower and they enjoy the expanding net interest margin for some time.

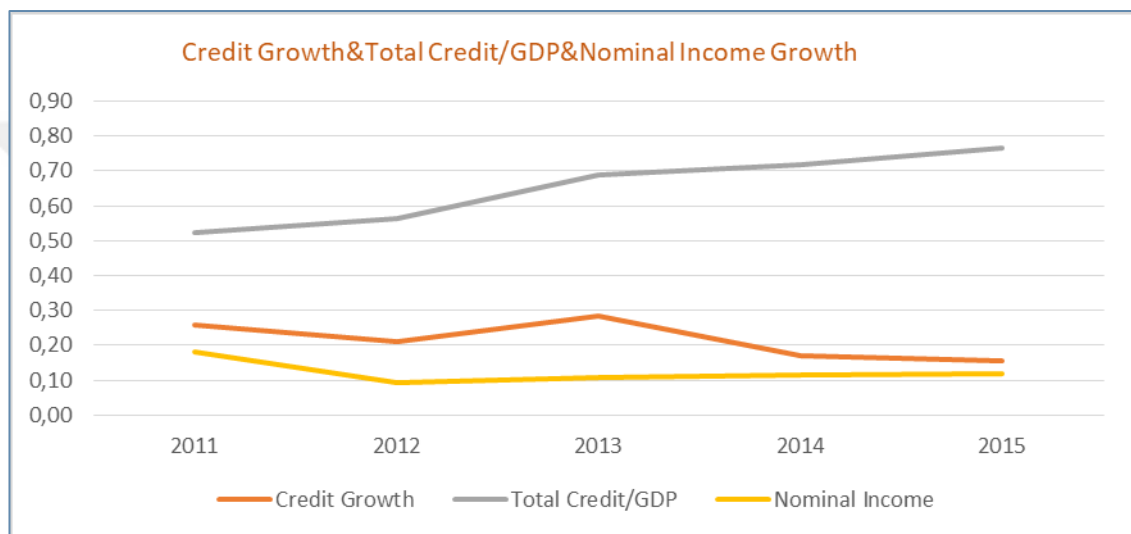
CBRT finds that BIST interbank over-night repo rate has a more significant impact on loan rates than the CBRT average funding rate. In other words interbank repo rate which is a strong reference to non CBRT funding rates is more explanatory than the CBRT average funding rate, particularly for short term, for loan rates offered by banks to public. So for the credit channel, market rates are more important for loan rates. According to econometric model, BIST over-night repo rates is the dominant determinant of the commercial loan rates, yet CBRT average funding rate has a limited impact. BIST interbank rates represent the marginal funding costs for financial institutions. They also found that pricing for the commercial loans is determined by supply rather than demand and expectations and risk perceptions of the financial institutions has a role on the pricing as well. (CBRT-2016) For consumer credits besides BIST interbank rates, consumer confidence and unemployment rates have also some significant impact on the consumer credit interest rates. This is also related to degree of risk perception of financial institutions.

A. Oduncu et al studied the impact of the introduction of new monetary policy framework on the credit growth volatility for total, business and consumer loans respectively. They found that “there is a decrease in the credit growth volatility after the introduction of new monetary policy framework.”

So given this information what is the average credit growth in Turkey during that period?

As it is very hard to measure the total effect of the new policy tools since too many variables determine the credit growth, we can focus on results to estimate the effectiveness. Graph given below shows the yearly total credit growth and total credit/GDP ratio for the 2011-2015 period.

Figure 3.3: Credit Growth, Total Credit to GDP, Nominal Income Growth



Source: Worldbank,2017

As seen in the graph above total credit (excluding non-performing loans) growth exceeds the 15 percent target for all the given years (21 percent for 2012, 28 percent for 2013, 17 percent for 2014 and only 15 percent at 2015). At 2015, Total Credit / GDP ratio climbs to 77 percent from 2011 level of 55 percent, which is a very steep climb that took place only in five years. So this policy tool either unsuccessful or insufficient alone to limit credit growth at the desired level. Some supplementary tools should be provided.

3.2 RESERVE OPTION MECHANISM

Another instrument introduced by CBRT is Reserve Option Mechanism, which aims to smooth exchange rate volatility and contribute to financial stability goal by managing capital flows. In 2011, Banks were allowed to hold reserve requirements of Turkish Lira liabilities in terms of foreign Exchange and gold up to ten percent level.

The ROM (Reserve Option Mechanism) is defined by CBRT; as “a mechanism that allows banks to hold a certain proportion of their Turkish lira (TL) reserve requirements in foreign exchange and/or gold. The system based on the volunteers not a forced rule. The amount of foreign exchange or gold that can be held instead of every unit of Turkish lira is named as the reserve option coefficient (ROC). For instance, if the ROC is 2, banks must hold 2 liras worth of foreign exchange or gold per 1 TL reserve requirement if they wish to utilize the ROM facility.”

A simple example was introduced by CBRT to show the principles of the mechanism. Assume that banks should hold 100 TL of reserve requirements in total for their TL denominated liabilities. Let us assume that the ROM allows the banks to hold up to 90 percent of their TL reserve requirements in FX and that the ROC is set to 1. Let us further assume that the USD/TL exchange rate is 1.8. In this case, if the bank prefers to use the facility fully in USD, it has to hold the 90-TL equivalent of USD, which is $90/1.8 = 50$ USD. If this is the case, banks will hold 50 USD (90 TL) plus 10 TL, to fulfill their 100 TL of total reserve requirements. If the ROC is set at 2 instead of 1, the banks will have to hold the 2-TL equivalent of FX per 1 TL. In this case, if the banks wish to utilize the facility fully, they will hold the $90*2$, i.e. 180-TL, equivalent of FX for their 90 TL reserve requirements, which will be $180/1.8=100$ USD.

In this mechanism Banks do not have to and may not always fully utilize reserve options. The degree of their usage ratio depends on the relative cost of Turkish lira funding and foreign exchange funding. For example, in the case of a ROC equal to 1, the banks will use the ROM fully if FX borrowing is less costly than TL borrowing, if there is no quantity constraint for foreign exchange denominated borrowing. Each bank’s break-even ROC will depend on the relative funding cost. Efficiency of the ROC system depends on the

assumption that Banks will behave to maximize their profits and respond to mechanism as designated.

During strong capital inflows periods, typically FX borrowing is cheaper compared to TL borrowing costs and/or easier to reach FX borrowing in terms of quantity. When FX borrowing costs decline the breakeven point for ROC mechanism will increase, and this will lead the Banks to hold more FX as reserve requirement as a consequence of profit maximization. As a result more FX will be withdrawn from the market and more TL will be in the market which will ease the appreciation pressure on TL and decrease the FX denomination lending in the market. CBRT thinks that it will be less costly compared to direct FX purchases by the CBRT as long as the ROC is greater than 1.

During weak capital inflow periods, FX borrowing costs are more, compared to TL funding costs and/or harder to reach FX borrowing in terms of quantity. When FX borrowing costs rises, the breakeven point for ROC mechanism will decrease, and this will lead the Banks to hold less FX as reserve requirement as a consequence of profit maximization. As a result more FX will be releases to the market and less TL will be in the market which will ease the depreciation pressure on TL and ease the credit tightening conditions.

Reserve option mechanism is considered to be more efficient than direct foreign Exchange operations as the following example given by CBRT. (Working paper, 2011, Kara et al).

Different effects under different scenarios of Reserve Option Coefficient and current situation is given at the following table to show the projected and desired effects.

Table 3.1: Reserve Option Mechanism

a)Base Scenario		b)Sterilized Intervention	
Assets	Liabilities	Assets	Liabilities
Loans +100	Due to Foreign Banks +100	Loans +50	Due to Foreign Banks +100
			Due to CB (Repo) -50
c)ROC=1		c)ROC=2	
Assets	Liabilities	Assets	Liabilities
Loans +50	Due to Foreign Banks +100	Loans +0	Due to Foreign Banks +100
TL RR (ROM) +50	Due to CB (Repo) -50	TL RR (ROM) +100	Due to CB (Repo) -50
Due From CB -50		Due From CB -50	

Source: CBRT, 2013

Base case shown at the “a” section of the table shows the money supply in case of no response of CBRT. In this case all amount of capital inflow converted into FX denominated loan by Banks. Hence, Turkish Lira will gain in value since fx supply increases as the whole supply remains in the market. Typical response of a central bank to this scenario is direct intervention and its results given at the right top of the table. In this case central bank buys half of the foreign exchange and sterilizes the appreciation pressure on the domestic currency. “However this does not mean that credit growth is also tamed, because the Banks’ demand for domestic currency liquidity decreases as their liquidity positions improve, the situation may encourage expanding their loan portfolio.” (Camilo E. Tovar, Mercedes Garcia-Escribano, and Mercedes Vera Martin, 2012)

The effects of using ROM become clearer as the reserve option coefficient set greater than 1, since they have to hold more FX than the domestic currency. By increasing ROC, CBRT claims that they withdraw more FX from the market. Effects of ROC=1 and ROC=2 shown at the lower side of the table. In brief, CBRT claims that ROM has the potential to be more effective than the direct interventions. Besides the results of the ROM

also ends up more efficient in terms of resource utilization since the system is based on voluntary optimization operations applied by the commercial banks.

3.2.1 Direct Intervention vs. ROM Mechanism

There are some debates on the effects of direct intervention. Disyatat and Galati (2004) argue that “intervention may be a useful tool that only smooths the short-run exchange rate fluctuations arising from temporary shocks”. Domaç and Mendoza (2004), studying the experiences of Mexico and Turkey, conclude that while interventions by direct sales of foreign exchange is effective, purchases are not. Another empirical research on experience in Turkey done by Akıncı et al. (2005), concludes that “only large and isolated purchase interventions were effective in reducing exchange rate volatility.” Özlü (2006), working on the effects of direct intervention on the risk premium under two different exchange rate regimes for Turkey, concludes that “neither sale nor purchases of US dollars had any effect on the size of the risk premium for the TL/USD exchange rate under either managed or free-float regimes.”

Despite the given researches above; Adler and Tovar (2011) studied impacts of direct interventions on appreciation pressure in Latin America countries and came up with some conflicting results. They conclude that there is a strong effect of intervention on the degree of appreciation. It appears that the degree of easiness for capital flow and relative value of domestic currency (particularly if it is already appreciated substantially) have impact on the effects of intervention. They also conclude that this explains why direct intervention has different results in different countries.

In conclusion, effectiveness of direct interventions depends on country and situation specific factors, which are hard to quantify and far from being conclusive.

3.2.2 Evaluating Effectiveness of ROM Mechanism

Since it is an unprecedented practice there are only a few researches on the effectiveness of ROM facility. Traditionally required reserves are being used by many central banks as

a policy tool and since reserve option mechanism is a modified version of this tool there are many researches about the use of required reserves as a monetary policy tool. Although reserve requirements use as a liquidity tool and credit policy instrument is common, their use with a macro prudential perspective is relatively new. The active management of banks' RRs can serve different macro prudential purposes.

Tover et al 2012, states about reserve requirements that;

First, they can be used for managing the credit cycle in a broad view. RRs can serve as a flexible substitute for other macro prudential tools targets reducing credit growth. For example, they are an alternative to more distortive quantitative restrictions such as credit ceilings.

Second, RRs on foreign or domestic banks' borrowing can help contain systemic risks by improving the funding structure of the banking system.

Third, they can serve as a tool for credit allocation to ease liquidity pressures.

Fourth, RRs can play a useful complementary tool for capital requirements in countries where the valuation of assets is highly uncertain—because of a lack of liquid secondary markets, for example—as the true measurement of capital also becomes less certain.

Finally, they can substitute some of the effects of monetary policy to achieve macro prudential goals.

Montoro and Moreno (2011) examined reserve requirement as a macro prudential tool in Latin American emerging economies by using data through 2003 to 2011. In particular, they assess the effectiveness of reserve requirements to limit credit growth issued to private sector, and its interactions with other policy tools. They state that “The recent experience of three Latin American economies suggests that adjustments in reserve requirements may have helped to stabilize interbank rates and influence market rates in a way that moderated capital flows. They may also have helped to smooth credit growth during the expansionary and contractionary phases of the economic and financial cycle.”

However; there are trade-offs in the use of reserve requirements, which can give rise to distortions in the financial system that increase the cost of credit and reduce financial intermediation.

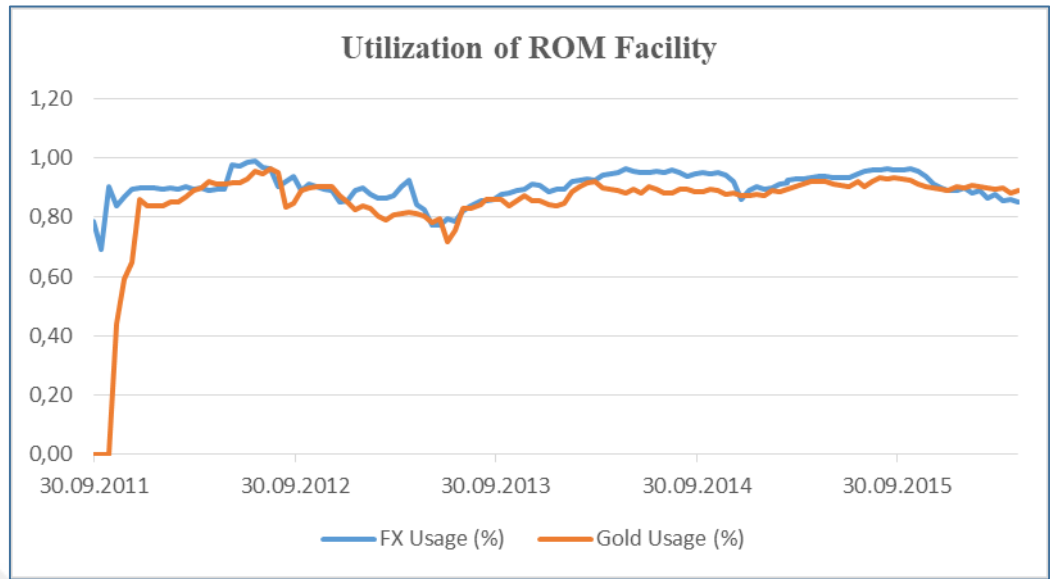
As we said before there are little research on reserve option mechanism being used by Central Bank of Turkey. Miniane et al (2013, IMF) proposed some critics on the mechanism and they are noteworthy.

First of all this mechanism is a little complex and hard to be communicated, understood and accepted by banking sector.

Second, even if the ROM helps to increase international reserves, ROM related foreign exchange reserves are not under control of the central bank and may not be in effect in case of financial distress. Banks may be unwilling to release or accumulate ROM related foreign exchange reserves because of the future expectations. In 2013 summer, although capital inflows were weakened release of FX liquidity via ROM was limited. This situation can be observed from the utilization of ROM facility given in figure 3.5.

Another and very important criticism is that while the ROM indeed helped to sterilize existing inflows, a question may be asked if it may have exacerbated them. With high domestic lending rates and low external funding rates, banks would maximize their yield by borrowing more from abroad and converting this FX into Turkish Lira via ROM facility, as the opposite effect desired by CBRT. (Remember CBRT'S aim was to decrease credit growth and managing the effects of capital inflows). Although it is not easy to prove this claim there are some evidence to think so. Banks have been using ROM facility since it is introduction almost to the fullest. Utilization of ROM facility through years 2011-2016 is shown at the graph given in next page.

Figure 3.4: Utilization of ROM Facility as Percentage



Source: CBRT, 2016

As you can see at the graph, since its introduction at 2011, Reserve Option facility shows stability and has been used almost to the fullest by Banks till 2016. This figure shows us that ROM did not functioned as a currency stabilizer during capital outflow period and did no good during sharp depreciation of Turkish Lira which can be observed graph given below.

Figure 3.5: Price of 1 USD + 1 EURO Basket



Source: CBRT, 2017

Above graph shows us 1 USD +1 EURO versus 1 Turkish Lira. There is an obvious and sharp depreciation after mid-2013, but ROM usage is roughly stable and Banks did not respond to currency shock in a way the CBRT desired.

Kara et al (2014) found that an increase in the short term interest rate makes using ROM more profitable for banks, since the cost of Turkish lira funding increases compared to FX borrowing. Therefore, the strategy to increase short term interest rates during capital outflows may dampen the automatic stabilizer feature of the mechanism, as it would encourage the banks to keep more portions of their reserve requirements in terms of foreign exchanges. Actually, banks' ROM utilization has increased during the post-“taper” period in 2013, in contrast to what is desired by CBRT.

CBRT suggests fixing the holding cost of Turkish Lira reserves to facilitate the automatic stabilizer feature of the ROM. For example paying partial interest on Turkish Lira denominated required reserves at a rate moves together with the short term market interest rate or CBRT average funding rate, would solve the problem of holding Turkish Lira to adjust the break-even point of ROM to facilitate the automatic stabilizer function. This problem arises from the assumption that “During weak capital inflow periods, FX borrowing costs are more, compared to TL funding costs and/or harder to reach FX borrowing in terms of quantity. When FX borrowing costs rise the breakeven point for ROC mechanism will decrease, and this will lead the Banks to hold less FX as reserve requirement as a consequence of profit maximization” as the CBRT suggested in 2011. It is obvious that even in the weak capital inflow periods Turkish lira funding costs are far more than the FX borrowing costs, because the fact that Turkish economy is considered to be riskier than the developed economies and risk reversal behavior becomes is more dominant than taking advantage of interest rate differences.

4. OTHER POLICY ACTIONS FOR FINANCIAL STABILITY

There are also other policy measures taken by BDDK (Turkish Banking Regulatory and Audit Institution) in order to provide financial stability which might and possibly have strong effect on CBRT targets. It should be kept in mind that these regulations have also strong effect particularly on private domestic credit growth. It is hard to isolate the effects of these regulations on the credit growth and the other possible effects through other channels like total consumption, foreign trade etc. Demir, 2015 concludes that consumer loans and credit card has an important effect on GDP of Turkish Economy both in the short run and the long run. In context, the measures are given below chronologically and it is easy to notice that these regulations took place during 2011-2014 period;

i-) On 01.01.2011 maximum amount of mortgage loan to be financed was limited with 75 percent of the value of underlying collateral.

ii-) On 31.12.2013 maximum term of consumer loans was limited with 36 months, automobile loans was limited with 75 percent of the value of underlying automobile and maximum term was limited with 48 months.

It is uncertain and there is not enough academic work about these policy measures and their effects on total consumer loans, but it should be keep in mind that it might have some effect.

Macro prudential tools are in use worldwide to cope with the imbalances associated with the capital flows some of them are examined in this section.

Loan to Value Ratio and Debt Service to Income ratios are tools in use by several central banks. Korea and Hong Kong uses debt service to income cap as an important macro prudential tool.

Capital Requirements, adjusted with the credit or business cycle, which rises with the credit growth and falls with the credit contraction (similar to credit to GDP ratio of Basel II framework).

Leverage Caps, used to limit asset growth by limiting total assets linking to total equity and Loan to Deposit Caps, limit banks assets in similar manner. It is introduced by Korea to limit foreign exchange denominated derivative positions. These positions were primarily used for hedging forward USD positions with carry trade positions in Korean Won.



5. CONCLUSION

Financial crisis of 2008 led U.S. Federal Reserve and other central banks to take some extraordinary and unprecedented policy actions to restore the economy of their countries. U.S. Federal Reserve started the quantitative easing programs and provided massive amounts of dollar liquidity in the aftermath of the crisis. This liquidity had several impacts not only on U.S. economy but also on the World economy as a whole. Emerging markets experienced massive capital flows in search of higher yields, which boosted the total credit in these countries. High capital flow in seek of higher yields for relatively short terms has the potential to flow back and according to many economists this sudden reversal has the potential to bring unstability to those economies.

The Central Bank of the Republic of Turkey (CBRT) took some measures and developed some tools to manage the possible effects of the inflows and preserve financial stability. At this point it is important to clarify what is financial stability and why we need it. A clear and detailed definition and “financial stability” would facilitate a clear understanding of the goals of this new policy mix and its goals. A clear and direct communication of these goals can help to facilitate accountability for CBRT, given the critics that it faced during recent financial distress. Even though “financial stability” as a goal is generally accepted and approved by general public and actors of the economy, Central Bank of Turkey should come up with a broader and detailed definition of financial stability to be more transparent and provide a better understanding about its targets.

CBRT emphasizes the role of credit growth and its effects on financial stability. CBRT’s decision to manage capital inflows and to discipline credit growth is an important and accurate decision to provide financial stability.

Another instrument introduced by CBRT is Reserve Option Mechanism, which aims to smooth exchange rate volatility and contribute to financial stability goal by managing capital flows.

The ROM (Reserve Option Mechanism) has some setbacks and may not be effective at all because of the following reasons,

First of all this mechanism is a little complex and hard to be communicated, understood and accepted by banking sector.

Secondly, even if the ROM helps to increase international reserves, ROM related fx reserves are not under control of the central bank and may not be in effect in case of financial distress. Banks may be unwilling to release or accumulate ROM related FX reserves because of the future expectations. In 2013 summer, although capital inflows were weakened release of FX liquidity via ROM was limited.

Another and very important criticism is that while the ROM indeed helped to sterilize existing inflows, a question may be asked if it may have exacerbated them. With high domestic lending rates and low external funding rates, banks would maximize their yield by borrowing more from abroad and converting this FX into Turkish Lira via ROM facility, as the opposite effect desired by CBRT.

There are also other policy measures taken by BDDK (Turkish Banking Regulatory and Audit Institution) in order to provide financial stability, particularly to limit credit growth, which might and possibly have strong effect on CBRT targets. It should be kept in mind that these regulations have also strong effect particularly on private domestic credit growth but their effect is hard to isolate.

To conclude, preserving financial stability becomes an important issue as the financial markets grow and their relative importance increases in the whole economy. Many central banks and decision authorities are giving more and more importance to financial stability and emphasizing the need to develop policies for financial stability. CBRT joined the club by developing the policies we discussed and recent trends shows us how this decision is right and timely, but tools in use to deal with it should be strengthened. Support from other institutions is required and the process should be managed in coordination.

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