

Reserve Option Mechanism from Monetary Policy Instruments Being Implemented in Turkey

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Abstract: *Short-term capital volatility is of particular importance for countries that has current account deficit. The volatiles short-term capital flows that contribute to finance the current account deficit caused financial fragilities. Developing countries, together with the increase in risk appetite after all the world under the influence of global financial crisis beginning in the US in the last months of 2008, faced with speculative capital movements. In this context, CBRT began looking for a new monetary policy tools to take control of volatile capital flows, to increase the economy's strength, to external financial shocks and to respond quickly to this shocks in solving these problems, CBRT has built two own policy tools. They are the Interest Rate Corridor and Reserve Option Mechanism (ROM). In this study, present monetary policy instruments are introduced, reserve requirements application and ROM are examined in detail and their place and importance and effects are discussed.*

Keywords: Central Bank of the Republic of Turkey (CBRT), Reserve Requirements, Reserve Option Mechanism (ROM), The Interest Rate Corridor

JEL Classification: E4, E44

1. Introduction

The developing countries encountered speculative capital movements with the increase in risk appetite following the global financial crisis which commenced in the USA during the last months of 2008 and affected the whole world. The short-term capital mobility is of particular importance for countries with current account deficits. The volatility in short-term capital movements that contribute to the financing of the current account deficit causes financial fragility.

Under the Law No. 1211 on the Central Bank of the Republic of Turkey (CBRT), which was enacted in 2001, among the duties and authorities of the bank (art. 4), "to take regulatory measures to ensure stability in the financial system and to take regulatory measures regarding money and foreign exchange markets" was mentioned. The extreme volatility in capital mobility has led CBRT, whose main objective is price stability, to consider financial stability as an ancillary target.

In this regard, CBRT commenced to seek new monetary policy tools in order to control volatile capital movements, in order to increase the resilience of the economy against external financial shocks and to react quickly to these shocks. CBRT has built two policy instruments of its own to solve these problems. These are the Interest Rate Corridor and the Reserve Option Mechanism (ROM).

2. Literature

Alper, K. et al. (2012), compared in his studies the Reserve Option Mechanism (ROM) which was introduced and its expected functioning and its possible effects with alternative instruments were discussed. In the aforementioned study, it was foreseen that this new tool

would be utilized as a useful mechanism for macroeconomic and financial stability purposes, and it was stated that since it is a new tool, it should be tested and assessed against various shocks over time.

Oduncu, A. et al. (2013) studied, by using the GARCH model, the effect of ROM on exchange rate volatility which was investigated, and it was found that ROM had a reducing effect on exchange rate volatility in the analyzed period (15.10.2010-15.10.2012). Moreover, Değerli and Fendoğlu (2013) point out in their study that ROM reduces the risk of large exchange rate fluctuations due to sudden and sharp movements in capital movements, and that the USD/TL exchange rate is lower in volatility, skewness and being pressurized compared to other currencies.

Küçüksaraç and Özel (2012) analyzed, within the scope of the Reserve Option Mechanism (ROM), which CBRT has been actively using recently, the possibility of holding foreign currency and gold for Turkish lira required reserves has been considered and the reserve option coefficient values, which leave this opportunity indifferent with other funding costs, that have been examined. In this study, the costs of basic fund resources that can be utilized to set Turkish lira required reserves were computed, it was examined which fund resources banks were more optimal for, and it was concluded that it was optimal for banks to use the opportunity to maintain Turkish lira required reserves in foreign currency/gold, which they would keep in CBRT, under the current data.

Moreover, when the coefficient values that make CBRT's ability to hold foreign currency and gold for Turkish lira required reserves indifferent to other funding costs, the critical coefficient values were mainly observed to be connected and depending on the foreign currency and gold fundraising costs, the Libor interest rate, the Turkish lira

swap interest rate and the foreign currency reserve requirement ratio. In the study of Aslaner et al. (2014), in which the use of ROM was examined, it was investigated whether ROM works as an automatic stabilizer.

Based on the results of the study, the most important determinant of ROM usage is the ratio of banks' Turkish lira funding cost to FX funding cost. Based on the findings of the study, the overnight market rates and CBRT average funding rate determine the Turkish lira funding cost. Moreover, it has been observed that the FX liquidity constraint is not an explanatory variable for the use of ROM for banks. It was pointed out that these findings limit the automatic stabilizer feature of ROM. Moreover, Aslaner et al. suggested that by paying interest on required reserves, the sensitivity of the cost of the provision to the central bank policy rate could be reduced and thus the automatic stabilizer feature of ROM could be strengthened.

The study by Serel and Özkurt (2014) examined CBRT's policy tools other than traditional monetary policy tools for crises. As a result of the study, it has been determined that these instruments, which are considered as interest rate corridor, reserve requirement ratios and ROM, are successful. Moreover, it was concluded that ROM implementation reduced the volatility in TL and provided financial stability. However, since the effect of these instruments can be clearly understood in the long term, it has been emphasized that a longer period must pass while evaluating the effects of policies.

According to the study of Aysan et al. (2014), it was concluded that while the interest rate corridor policy limited the fluctuations in the foreign exchange supply, ROM prevented the fluctuations in the exchange rates.

In the studies of Tuna, Öner S. and Öner H. which were published in 2015, the cost advantage that ROM will provide to the banking sector in case of optimal use was investigated.

In the study by Kurum and Oktar (2019) the effects of the reserve option mechanism applied in Turkey on the exchange rate were examined. As a result of this study, using Engle-Granger Cointegration and Toda-Yamamoto Causality analysis, it was concluded that the reserve option mechanism has significant effects on the exchange rate.

As it can be seen, since it is a new application that has been put into practice since 2011, the studies on this subject are not very diverse, but are generally within the body of CBRT. Although there is a study that talks about the use of ROM and its automatic balancing feature, the effect of ROM on other variables (exchange rate, interest, bank profits, etc.) has not been examined. It is aimed to contribute to the shallow literature since it is a new application and the central bank did not share the data before. In this study, the functioning, place, importance and effects of ROM were examined together with the results of previous studies.

Required Reserves Policy And Reserve Options Mechanism

The financial intermediaries are obliged to retain a certain percentage of their domestic and foreign currency financial/financial assets (meet aluat and similar liabilities) in the central bank as required reserves. This reserve ratio is referred to as the required reserve ratio. With the Reserve Option Mechanism (ROM), which was put into effect after 2011 in our country, it was possible to keep the required reserves in local currency, also in foreign currency or gold. In this section, the reserve requirement policy and ROM, which emerged from the reserve requirement mechanism as a financial engineering work, will be introduced in all aspects, and the calculation of ROM and the financial calculations in ROM mechanism will be discussed. Moreover, the effects of ROM and its results until today will be analyzed.

Allocation of required reserve in local currency

The first option that banks can use in the setting of Turkish lira required reserves is the setting of reserves directly in local currency (Turkish lira). Although the banks can borrow from the central bank and other financial institutions during the reserve requirement period, funding costs differ according to their liquidity needs, funding source and maturity structure. In the money market, there are many instruments by which banks can provide Turkish lira funding. Among these, CBRT's quantity auction, the upper band of the interest rate corridor, the one-month repo auction, ISE Overnight Repo-Reverse Repo Market and the ISE Interbank Repo-Reverse Repo Market are the most traded and actively utilized funding instruments. In this section, the costs of funds obtained from these markets will be examined.

In the event that banks provide funds from CBRT, they will not pay any provision for these funds and only pay interest. In other words, their total cost is the interest they pay on the funds they obtain. Another way for banks to find funds is to borrow short-term from other financial institutions in the ISE Repo-Reverse Repo Market. However, unlike the first case, the banks will encounter reserve requirements for these funds if they obtain funds from non-bank financial institutions. If banks provide (interbank) funds among themselves in the ISE Repo-Reverse Repo Market, there is no reserve requirement obligation. (Küçüksaraç and Özel, 2012) Therefore, the costs of funds obtained from this market vary. For the funds obtained from CBRT and the funds obtained from the ISE Interbank Repo-Reverse Repo Market, where there is no reserve requirement obligation for the funds provided, the cost is only the interest payment to be made for these funds. Another important factor regarding the cost of funding is maturity differences. In order to simplify our calculations here, when the cost of funds in TL is adjusted to have a compound maturity of two weeks, the maturity difference will disappear. Thus, the cost of a bank that has a T0 TL reserve requirement facility by borrowing with an instrument that does not have a provision obligation is as follows:

$$\text{Total Cost} = T_0 r_{TL} \frac{t}{365} \quad 1$$

The interest (r_{TL}) will vary according to the market and the opportunity from which the bank borrows. Moreover, if the bank obtains funds with an instrument with a reserve requirement, it will have to borrow more and its total cost will be as follows:

$$\text{Total Cost} = \frac{T_0}{(1-ZK_{TL})} r_{TL} \frac{t}{365} \quad 1$$

Allocation of required reserve with foreign resources

In this section, the cost of setting TL required reserves in gold and foreign currency under ROM will be analyzed mathematically. The total cost will be revealed by presenting the steps to be taken by a bank liable to set TL required reserves in the amount of T₀.

1-) Borrowing at r cost for gold/currency resource to meet the reserve requirement

In the setting of the obligation, it is debited in gold at r_g cost or x/(1-ZK_y) in dollars at r_d cost.

r: Banks' gold and foreign currency borrowing cost

r_g: Banks' gold-denominated borrowing cost

r_d: Banks' US dollar denominated borrowing cost =LIBOR+spread (p)

2-) Payment of foreign currency provision for funds obtained

Required reserve for foreign funds will be paid at the rate of ZK_y for gold/currency obtained by borrowing. After the foreign currency reserve requirement is paid, x liquid dollars or grams of gold will remain.

3-) Executing forward agreement to avoid risks

The bank has borrowed by avoiding the exchange rate risk or the gold price risk through,

x/(1-ZK_y) then a forward contract for gold/currency will be concluded.

4-) Bank's depositing reserve requirement for T₀

The bank will deposit x dollars or grams of gold as T₀ TL required reserve..

In order to see the net money flow of the above-mentioned transactions, the transactions are turned into a table and presented in Table 1:

Table 1. Setting of Required Reserves with Foreign Currency/Gold-denominated Foreign Resources

Transactions	Currency	Initial Snapshot	Instant Finish
Borrowing for a resource in gold / foreign currency to meet the mandatory provision	TL		
	Dollar	$\frac{1}{(1 - ZK_y)}$	$- \left[1 + (LIBOR + p) \frac{t}{365} \right] \frac{x}{(1 - ZK_y)}$
	Gold	$\frac{1}{(1 - ZK_y)}$	$- \left[1 + r_g \frac{t}{365} \right] \frac{x}{(1 - ZK_y)}$
Payment of foreign currency for the funds received	TL		
	Dollar	$-\frac{x * ZK_y}{(1 - ZK_y)}$	$+\frac{x * ZK_y}{(1 - ZK_y)}$
	Gold	$-\frac{x * ZK_y}{(1 - ZK_y)}$	$+\frac{x * ZK_y}{(1 - ZK_y)}$
TL Compulsory provision facility	TL		
	Dollar	-x	+x
	Gold	-x	+x
NET MONEY FLOW	TL	0	
	Dollar	0	$- \left[\frac{x}{(1 - ZK_y)} (LIBOR + p) \frac{t}{365} \right]$
	Gold	0	$-\frac{x}{(1 - ZK_y)} r_g \frac{t}{365}$

Source:(Küçükşarac & Özel, 2012)

As it can be seen, the cost that the bank will bear to deposit T₀ TL required reserves will only be the Turkish lira

equivalent of the forward rate of the interest it will pay for its gold/dollar debt:

$$\text{Total Cost} = \left[\frac{x}{(1-ZK_y)} r \frac{t}{365} \right] F_0 \quad 2$$

In the above equation, r denotes the banks' gold or foreign currency borrowing cost, and F0 represents the forward price (currency or gold price) to be made at time t=0

Comparison of setting provision with domestic and foreign resources

When comparing the costs of setting a provision with domestic and foreign resources, it is necessary to determine the reserve option coefficients that will leave the two fund sources indifferent to each other in order to answer the question of which one will be optimal. For this reason, the cost of the two fund sources is equalized to each other and the ROC value that leaves the two fund sources indifferent to each other is found.

The comparison of domestic currency and foreign exchange resources

When comparing the costs of setting local currency and foreign currency reserves, the costs of the two funding sources will be equalized to determine the reserve option coefficients that will leave the two funding sources indifferent to each other.

While raising funds in local currency, the issue of resources with or without reserve requirements comes to the fore. First of all, let's compute the indifferent coefficient between TL-denominated funds that do not have reserve requirements and foreign currency facilities:

$$T_0 r_{TL} = \left[\frac{x}{(1-ZK_y)} (\text{LIBOR} + p) \frac{t}{365} \right] F_D \quad 3$$

In the above equation, instead of FD, which represents the forward rate, be inserting $\frac{T_0(1+\text{swap}_{TL} \frac{t}{365})}{(1+\text{LIBOR} \frac{t}{365})}$ expression, when x is left alone, the value of x (ROC) is found being indifferent between domestic resources and foreign exchange opportunity:

$$x = \frac{(1-ZK_y)(1+\text{LIBOR} \frac{t}{365}) r_{TL}}{(\text{LIBOR}+p)(1+\text{swap}_{TL} \frac{t}{365})} \quad 4$$

In this equation, if the policy rate, overnight borrowing rate, one-month repo rate and the interest rates in the ISE Interbank Repo-Reverse Repo Market are substituted for rTL in this equation, the indifferent value x between these resources and the foreign exchange facility will be found.

In the previous section, we mentioned that the required reserve obligation arises when banks obtain funds from non-bank financial institutions in the ISE Overnight Repo-Reverse Repo Market. ROC, which is indifferent between the funds provided by banks from non-bank financial institutions with reserve requirements and the foreign exchange facility, is as follows:

$$x = \frac{(1-ZK_y)(1+\text{LIBOR} \frac{t}{365}) r_{IMKB}}{(1-ZK_{TL})(\text{LIBOR}+p)(1+\text{swap}_{TL} \frac{t}{365})} \quad 5$$

Comparison of domestic currency and gold opportunity resources

When comparing the costs of setting local currency and gold-denominated provisions, the cost of the two fund sources is equalized and the reserve option coefficients that will leave the two fund sources indifferent to each other are determined. However, it is necessary to pay attention to whether the borrowed resource has a required reserve obligation for TL-denominated provisions.

When we equate the costs between a TL fund without reserve requirements and a gold facility, we have the following equation:

$$T_0 r_{TL} = \left[\frac{x}{(1-ZK_y)} (r_g) \frac{t}{365} \right] F_G \quad 6$$

In the above equation, by replacing FG, which represents the forward gold price, by inserting $\frac{T_0(1+\text{swap}_{TL} \frac{t}{365})}{(1+\text{swap}_{g} \frac{t}{365})}$ expression, when x is left alone, the indifferent value of x (ROC) between local currency and gold possibility can be found:

$$x = \frac{(1-ZK_y)(1+\text{swap}_{g} \frac{t}{365}) r_{TL}}{r_g(1+\text{swap}_{TL} \frac{t}{365})} \quad 7$$

In this equation, if the overnight borrowing interest, policy rate, one-month repo rate and the interest rates in the ISE Interbank Repo-Reverse Repo Market are substituted for rTL, the indifferent value x between these resources and the foreign exchange facility will be found.

In the previous part, we mentioned that the required reserve obligation arises when banks obtain funds from non-bank financial institutions in ISE Overnight Repo-Reverse Repo Market. ROC, which is indifferent between the funds provided by banks from non-bank financial institutions that have reserve requirements and the foreign exchange facility, is as follows:

$$x = \frac{(1-ZK_y)(1+\text{swap}_{g} \frac{t}{365}) r_{IMKB}}{(1-ZK_{TL}) r_g(1+\text{swap}_{TL} \frac{t}{365})} \quad 8$$

Reserve Option Mechanism

The Reserve Option Mechanism (ROM) is a financial engineering application that allows banks to set a certain percentage of their Turkish lira (TL) required reserves in foreign currency (FX) and gold. The extent to which this opportunity can be utilized is determined by the reserve option tranches (ROD).

The coefficients which determine the FX or gold equivalent that can be set per unit TL required reserve are defined as the reserve option coefficient (ROC) (Alper K. et al. 2012) (Central Bank of the Republic of Turkey, 2012, p. 2). A new dimension has been added to the monetary policy in the world, by providing banks with the opportunity to allocate reserves with a highly convertible

currency such as the US dollar, in addition to the domestic currency, and gold, a commodity whose acceptance is indisputable worldwide. ROM, a financial engineering product designed by CBRT, is a monetary policy tool unique to CBRT.

Factors which determine ROM usage rate and threshold ROC

With this implementation, we encounter a flexible reserve requirement application, as banks can deposit a limited portion of the required reserves to be deposited in Turkish lira in gold or foreign currency. Thus, the liquidity management of banks gains flexibility and the bank's Turkish Lira liquidity increases. When using this facility, banks will decide according to the amount of foreign currency and gold provided or to be provided by the banks and the relative costs of Turkish Lira, foreign currency and gold resources. Institutions liable to set required reserves will use the opportunity provided by ROM according to the relative cost of foreign exchange/gold and TL resources.

For a financial institution that is required to hold reserve requirements, the threshold ROC can be expressed as the ratio of the cost of TL resources to the cost of FX resources. For instance, if the cost of TL resources is 6 percent, and the cost of foreign resources including the expected exchange rate change is 3 percent, the threshold is ROC 2. In this case, they are expected to take advantage of this opportunity up to the point where ROC of the relevant financial institution is equal to 2. Threshold ROC can be expressed mathematically as follows:

$$ROK^E = \frac{R^D}{\frac{E_{t+1}}{E_t} * R^f}$$

Based on the above equation, the factors determining the threshold ROC value (ROCE) are the cost of local currency (Rd), the cost of borrowing in local currency (Rf), the exchange rate at the beginning of the t setting period (Et) and the expected exchange rate at the end of the setting period (E(t+1)). Accordingly, the threshold for a bank operating in Turkey that will benefit from the opportunity to set reserve requirements in foreign currency for its TL liabilities is ROC, the cost (Rd) to be incurred in case of setting the required reserve with TL resources, and in TL as of the end of the period if FX resources are utilized. It is the ratio of the expected cost to be incurred as $(\frac{E_{t+1}}{E_t} * R^f)$ to each other. Of course, in this equation, which is simply presented here, it currently includes other cost elements such as required reserves, as well as the relative domestic and foreign currency borrowing costs of banks in the current situation. (Alper, K. et al. 2012, p. 4)

When we consider the currency forward contracts of the banks, the threshold ROC value comparing the foreign currency and Turkish lira costs is as follows in its simplest form:

$$ROK^E \sim \frac{(1-ZK_y)r_{TL}}{(1-ZK_{TL})r_D} \quad 10$$

ZKy and ZKTL, which are included in the calculation of ROC, represent foreign currency and domestic currency (TL) required reserve ratios, respectively, and rTL and rd represent TL and US dollar interest rates. Therefore, under the assumption that reserve requirements are fixed in the short run, the main determinant of changes in the threshold ROC is the relative level of domestic and foreign currency interest rates. If the threshold ROC is greater than ROC determined by CBRT, banks will generally prefer to use the facility by taking advantage of this cost advantage. In other words, theoretically, the most important variable affecting banks' ROM utilization rate is expected to be the difference between banks' threshold ROCs and ROCs determined by CBRT. (Arslaner, O. et al. 2014).

One of the most significant factors determining the relative costs that banks will take into account while using the facility provided under ROM is CBRT and market funding rates. "Therefore, as the volatility in interest rates will be high within the framework of a policy in which the wide interest rate corridor is actively utilized, the movement of short-term Turkish lira interest rates in the use of ROM may be more decisive than other variables such as the cost of foreign currency funding. In such an environment, it will be difficult to observe the automatic balancing feature of ROM" (CBRT, 2013, p. 95)

In addition to the cost-related factors, there are other factors that affect ROM utilization rate of banks. The fact that FX/gold is needed in any case in order to use the opportunity brought by ROM means that FX or gold liquidity conditions are effective in the usage rate of banks. As a matter of fact, in case of insufficient access to resources, although using the reserve option facility is advantageous on paper, ROM utilization rate may be lower than expected. Therefore, the conditions of banks regarding foreign resources are a variable which may contribute to the explanation of the movements in ROM utilization rate. (The Central Bank of the Republic of Turkey, 2013, November)

Another matter that is expected to affect the use of ROM is the changes in the exchange rate and the exchange rate expectations. The use of ROM does not require a net foreign exchange position. Therefore, theoretically, the exchange rate is not expected to have any effect on the breakeven ROC calculation. However, in practice, changes in the exchange rate may affect ROM utilization rate of some banks through the valuation channel. For instance, since the depreciation or anticipation of the Turkish lira will increase the Turkish lira value of the currencies held under ROM, it may increase ROM utilization rate for banks that use ROM at a low rate due to access to foreign currency liquidity. (Arslaner, O. et al. 2014)

Many variables which explain the behavior of banks such as global risk perceptions, direct capital flows, other assets in which foreign currency funds are assessed, and the appetite for lending can be added to the factors that determine the use of ROM mentioned above. Because banks will compute opportunity costs by comparing them with other financial instruments while benefiting from ROM.

Progress of ROM to date

Limiting the adverse effects of excessive volatility in capital movements on macroeconomic and financial stability, supplying banks' Turkish lira liquidity needs at a lower cost and in a more permanent way, using them in a timely, controlled and effective manner by supporting foreign exchange reserves, and in an idle state called kept under the pillow. ROM was put into practice as a monetary policy instrument in September 2011 with the aim of bringing pending/kept gold into the economy. Thanks to ROM, which is the output of a financial engineering, it has enabled banks to maintain a certain part of Turkish lira required reserves in foreign currency (Turkish Republic Central Bank, November, 2012, p. 61). The said facility was gradually increased and its scope was expanded with the opportunity to hold Turkish lira required reserves in gold, and the foreign currency option, which was initially accepted in Euro, was simplified being converted to dollars. (Central Bank of Republic of Turkey, 2014)

By ROM, it is envisaged to reduce the adverse effects of fluctuations in capital flows on exchange rates and financial markets, to strengthen CBRT's foreign exchange reserves and to support banks' foreign exchange liquidity (Oduncu, A. et al. 2013). ROM is considered to be a flexible and market-friendly, beneficial mechanism in terms of increasing CBRT's reserves with low sterilization costs and reducing the rollover risk of banks (Central Bank of Turkey Republic, 2013, November, p. 96).

It has been observed that the contraction and increased volatility in the global economy experienced in 2012 increased the use of ROM and in the following period, banks met their TL required reserves by holding more foreign currency. At the end of 2011, when ROM entered into force, the amount of foreign exchange set in TL was around 10 billion dollars; Likewise, 11 billion dollars of the 19 billion dollars gold reserve at the end of 2012 consists of gold held under ROM (See Figure 1 and Figure 2). According to the November 2012 Financial Stability Report, in the said period, banks utilized the facility of lower cost TL required reserves provided to banks with ROM, at a high and stable rate, and 12 of 37 banks benefiting from the FX facility utilized the facility in the last 55-60 percentile. Also, in this period, 7 of the 21 banks that benefited from holding gold for TL provision liability utilized the entire last 25-30 tranches (See Figure 1 and Figure 2). As of the setting date of May 24, 2013, the utilization rate of the FX facility in the sector was 82.6 percent, and the usage rate of the gold facility was 80.6 percent. (Central Bank of the Republic of Turkey, 2013, May)

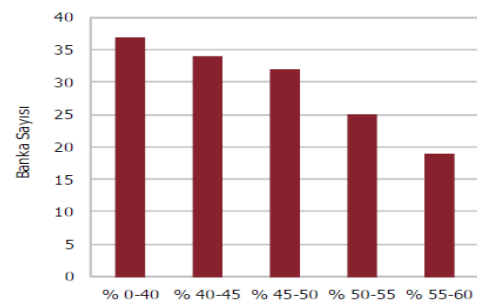


Figure 1. Use of Banks' Foreign Exchange Facility According to Reserve Option Tranches

Source: CBRT, november,2012, s.62

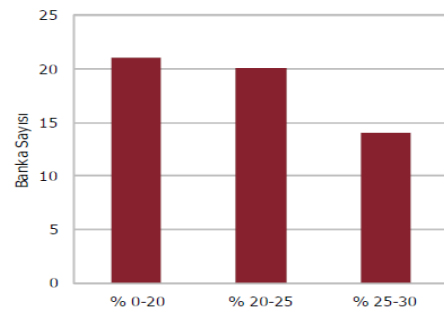


Figure 0. Uses of Gold Opportunity by Banks' Reserve Option Tranches

Source: CBRT, november,2012, s.62

Oduncu, A. et al. (2013) examined the period of 10/2010-10/2012 in their study, in which the effect of ROM on exchange rate volatility was investigated for the first time, and found that ROM had an obvious effect on reducing exchange rate volatility. By way of changing ROC, the adverse impact of volatility in capital movements on financial stability is tried to be eliminated. By means of ROM, CBRT's need for intervention in the market for foreign exchange buying/selling is reduced. Moreover, the effective implementation of ROM gradually reduced the need for the interest rate corridor policy, which is utilized against volatility in exchange rates and capital flows. Experiences in 2011 and 2012 pointed out that the interest corridor can also be considered as a tool for loan supply and loan growth. (Central Bank of the Republic of Turkey, 2013, May)

Arslaner et al., (2014, p13) mentioned in their study examining the period from the setting of ROM to September 2013, that CBRT's liquidity policy and the increase in short-term funding rates increased the use of ROM. Yet these observations do not mean that ROM is useless. As a matter of fact, as a result of their studies, the potential of ROM to play a stabilizing role in its interaction with credit behavior and liquidity adequacy is emphasized. The fact that the shock experienced in the said period reflected a repricing rather than a weakening in the external financing conditions of the banks also cautioned the stabilizing effect of ROM to not be felt. Because, the foreign debt rollover ratios of the banks in the relevant period are quite high (Arslaner et al., 2014, p.13).

During the second and third quarters of 2014, the advantage of using ROM continued as TL costs remained relatively high compared to FX costs. Within the scope of

the facility provided by ROM, the amount of foreign exchange reserves held by the banks at CBRT has approached 120 billion TL (Central Bank of the Republic of Turkey, 2014, November). In the year 2015, the foreign exchange and gold reserves set under ROM decreased due to the increase in the exchange rate. In the May 2016 Financial Report, it was emphasized that the total of gold and foreign exchange assets held in CBRT under ROM is at a level that can meet the foreign debt payments of banks in the next year.

In November 2017, the Central Bank decreased the upper limit of ROM FX facility rate from 60% to 55% against the fluctuations in the foreign exchange markets, and aimed to increase the foreign exchange liquidity in the market by reducing the intervals in all tranches by 5 points. At the end of 2017, the use of FX ROM facility was 75.5%, while the use of gold facility was 90.9%. Moreover, a 5% tranche has been added to ROM tranche in order to bring savings in gold to the economy. (CBRT 2017)

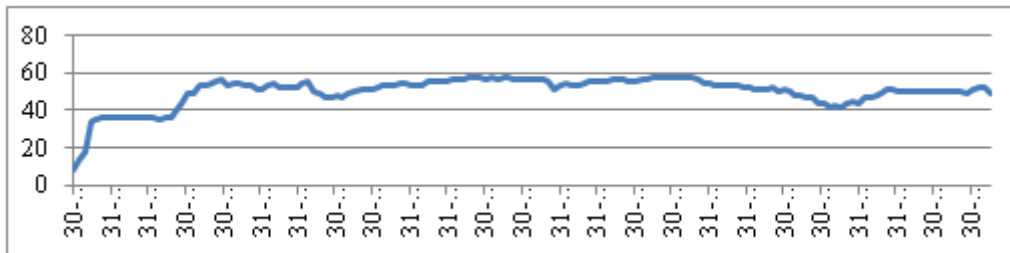


Figure 3. ROM Using Rates by Facility Dates

Source: CBRT

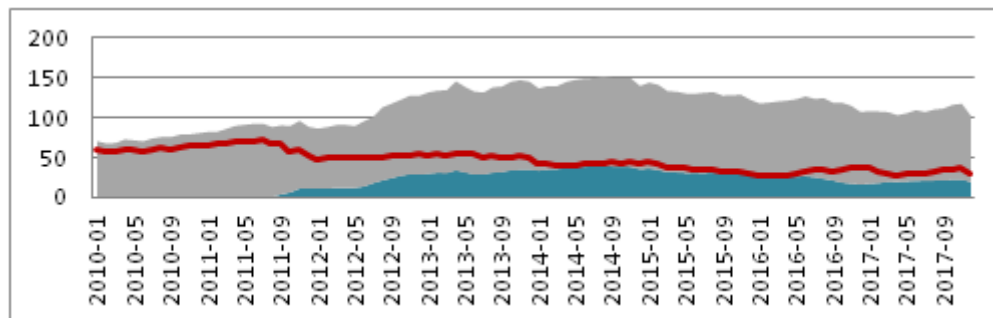


Figure 4. CBRT FX Reserves (Billion Dollars)

Source: CBRT

In the year 2018, most of the banks and financing companies continue to use ROM facilities actively. Considering the end of 2018; FX facility utilization rate was 92.5 percent, gold facility utilization rate was 92.1 percent, and scrap gold facility utilization rate was 48.1 percent (CBRT 2018 p.26). As of the end of 2018, USD 8.6 billion in foreign currency and USD 8.7 billion in gold were set under ROM for Turkish lira liabilities. For FX liabilities, USD 34.8 billion in foreign exchange and USD 0.7 billion in gold were maintained (CBRT 2018 p.27).

In the setting period of the obligation date of 25 December 2020, the utilization rate of FX facility under ROM was 96.9 percent; gold facility utilization rate is 90.5 percent; the scrap gold facility utilization rate was 72 percent. In the setting period for the liability date of 25 December 2020, USD 4 billion in foreign currency and USD 4.6 billion in gold were maintained within the scope of ROM for Turkish lira liabilities. For FX liabilities, USD 54.8 billion in foreign currency and USD 6.3 billion in gold were maintained (CBRT 2020 p.29).

In the setting period regarding the obligation date of 27 December 2019, the utilization rate of FX facility under the Reserve Option Mechanism (ROM) was 98.2 percent; gold facility utilization rate is 95.5 percent; the scrap gold facility utilization rate was 81.8 percent. During the setting period for the liability date of 27 December 2019, USD 2.8 billion in foreign currency and USD 4.9 billion in gold were maintained within the scope of ROM for Turkish lira liabilities. For FX liabilities, USD 51.7 billion in foreign exchange and USD 2.0 billion in gold were maintained (CBRT 2019 p.26).

The involving of gold in ROM contributed to the increase in gross gold reserves as a forerunner in the entry of gold, which is kept under the pillow, into the financial system. (Figure 5) Considering the period of 2011-2019, the balancing mechanism of the monetary policy, which was created by the removal of the under-the-bed gold studies, which was commenced with ROM and supported by the interest rate corridor system, under the name of simplification of the corridor system, continued unilaterally. (Gökçe, 2019)

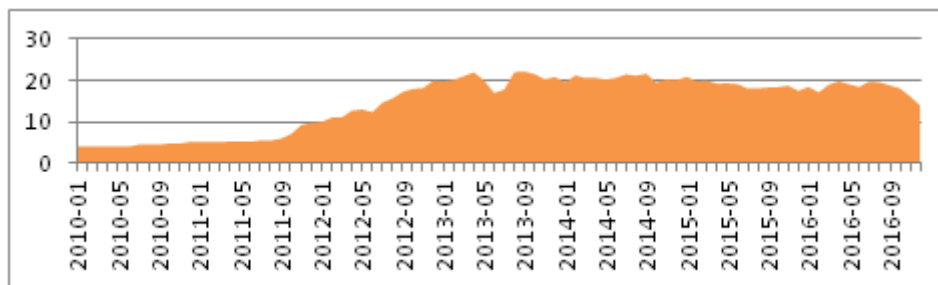


Figure 5. CBRT Gross Gold Reserve (Billion Dollars)

Source: CBRT

Table 0. September 2011-2012 Change in Assets-Liabilities

	TL (Million TL)	YP (Million USD Dollar)		TL (Million TL)	YP (Million USD Dollar)
Receivables from the central bank	-53,1	0,0	Funds from repo transactions	-32,8	4,2
Reserve requirement	-0,1	31,7	Deposit	34,9	15,0
Receivables from banks	3,1	-3,1	Payables to banks	3,4	7,2
Loans	89,8	6,1	Securities issued	10,0	4,1
Reverse repo	8,9	0,0	Reserves	6,8	0,1
Securities	-1,5	-4,0	Other	-0,7	3,3
Other	5,0	-0,3	Equity	24,1	1,4
Total Assets	52,1	30,4	Total liabilities	45,8	35,3

Source: BRSA, CBRT

Along with ROM implementation, there have been significant changes in the composition of the balance sheet items of the banks. As a natural consequence of the possibility of keeping TL required reserves in foreign currency and gold, the amount of TL held in CBRT free accounts for required reserve liabilities decreased in TL during the period of September 2011-September 2012, while required reserves held in foreign currency blocked accounts increased. As it can be seen in Table 2, after the first year of ROM implementation, TL-denominated receivables from CBRT decreased by 53.1 billion TL, while the FX-denominated required reserves account increased by 31.7 billion USD. Due to the decrease in the amount of TL held at CBRT as required reserves, borrowings from CBRT via repo and the Turkish lira liquidity deficit in the market decreased. When we look at the liabilities side of the balance sheet, TL-denominated funds obtained from repo transactions decreased by TL 32.8 billion, contributing to the reduction of dependency on repo transactions. This decrease also contributed to the net interest income by reducing the TL interest costs of banks (Central Bank of the Republic of Turkey, November, 2012).

When we refer to Table 2, it is seen that some of the amounts set in foreign currency and gold for required reserves are financed by liquid assets, while a significant portion is financed by foreign currency debts. Because, foreign currency receivables account from banks, which mainly consists of banks' foreign correspondent holdings, decreased by USD 3.1 billion, and foreign currency securities account decreased by USD 4 billion, while foreign currency liabilities increased by USD 35.3 billion. Against the USD 35.3 billion FX resource inflow, the increase in FX loans was limited and only increased by USD 6.1 billion. This situation can be interpreted as the fact that most of the foreign currency borrowings are

utilized in the setting of required reserves and this situation limits the growth of foreign currency loans. Moreover, with the banks benefiting from the foreign exchange facility under ROM, the TL borrowing swap transactions made by the banks for their TL liquidity needs decreased.

3. Conclusion

The short-term capital mobility is of particular importance for countries with current account deficits. Because the volatility in short-term capital movements, which contributes to the financing of the current account deficit, causes financial fragility. This situation was felt more seriously with the increase of speculative movements with the global financial crisis that commenced at the end of 2008. In this process, CBRT also developed ROM, which is a financial engineering product, in order to control volatile capital movements by supporting foreign exchange and gold reserves, to increase the resilience of the economy against external financial shocks and to react quickly to these shocks. It is aimed to use this new tool as a useful mechanism for macroeconomic and financial stability purposes.

The studies have presented that ROM reduces the risk of large exchange rate fluctuations due to sudden and sharp movements in capital movements, and the USD/TL exchange rate is lower in volatility, skewness and being pressurized compared to other currencies. In addition to reducing exchange rate volatility, it also has an increasing effect on gross foreign exchange reserves. Moreover, considering the negative effects of exchange rate volatility on interest rates and investment positions, it is clear that ROM should be utilized more effectively to reduce exchange rate volatility. When it is seen that the increased gross foreign exchange reserves originate from the private

sector rather than CBRT, it will be understood that the increase in the gross reserves in favor of the private sector increases the resilience and efficiency of the financial system and leads to more effective use of reserves. When we consider that the volatility in capital movements negatively affects the balance sheet of the private sector and its foreign currency debt and receivables, the reserves held by the private sector and the optimal use of these reserves will contribute to financial stability as a whole.

ROM gives the central bank a mobility in reducing capital movements by increasing its foreign exchange reserves. Moreover, it contributes to the protection of portfolio flows and the financing quality of the current account deficit by reducing the need for short-term currency swap transactions. The possibility of sterilizing short-term capital movements with ROM is also related to other macroeconomic variables such as current account deficit and short-term debt burden. Because, although it is a successful policy tool in increasing the gross reserves, ROM also receives criticism due to the fact that the gross reserves are generally below the short-term debt burden. Yet here it should not be overlooked. Although ROM is a self-acting mechanism, it does not eliminate central bank intervention. Since it is a new instrument, its range of action will be clearly seen by testing it against various shocks over time.

An important feature of ROM is that it is an automatic stabilizer. In other words, the withdrawal of FX liquidity through ROM does not occur as a result of the discretionary decision of the central bank, however as a result of the banks' individual profit maximizing behaviors without intervention. Yet, there is one point that should be underlined here: ROM's full automatic stabilizing role is only possible if financial intermediaries do not fully utilize the FX/gold provisioning facility within ROM. This explains the reason for the high ROC applied to the upper tranches of ROD, which is closely related to banks' short-term borrowing facilities. In the first studies of ROM, the proposals to reduce the sensitivity of the cost of the provision to the central bank policy rate by paying interest on required reserves and to strengthen the automatic stabilizer feature of ROM in this way were accepted by the central bank in the following period. Although ROM is a self-acting mechanism, it cannot claim to eliminate or minimize the intervention of the central bank. Sudden external shocks and capital movements should be supported by other monetary policy tools.

Another important monetary policy tool that supports ROM in reducing exchange rate volatility is the interest rate corridor. While the interest rate corridor directly affects exchange rate volatility through portfolio behavior; ROM, on the other hand, is effective by changing the use and composition of the capital entering the market. Thus, in reducing the volatility created by capital flows on domestic markets, ROM partially reduces the need for the interest rate corridor and plays an auxiliary role in the interest rate corridor.

In ROM practice, TL/currency liquidity in the market is provided by changing the reserve option coefficients

(ROC) and reserve option segments (ROD). Keeping ROCs low encourages banks to take advantage of this option by affecting the demand for other funding sources. The addition of a new ROC tranche has an increasing effect on TL liquidity in the market. In terms of determining ROC coefficients, it is important to estimate the borrowing possibilities of banks from external sources and especially their costs. Because the main determinant of the amount of use of banks according to RODs is the cost of finding funds. The most important problem encountered by CBRT when determining RODs and ROCs is estimating this funding cost. One of the reasons for the difficulty here is the possibility of banks, especially in cooperation with foreign financial institutions, to borrow in foreign currency at low cost.

Depending on the foreign exchange costs, the banks' usage rates of the last tranches of ROD help the policy decision by way of giving a clue about the market situation and funding at CBRT. Because, in rapid capital movements, the changes to be implemented in CBRT's gold/currency reserves under ROM and accordingly the RODs are important. In order for ROM to function as an automatic stabilizer in both capital inflows and capital outflows, banks should not fully use the opportunity to hold Turkish Lira required reserves, foreign currency or gold. Thus, CBRT keeps ROC high in the upper segments. In addition, the reason for more intervention in initial bills is to provide more impact on foreign exchange liquidity.

In addition to cost-related factors, there are other factors that affect banks' use of ROM. Many variables clarifying the behavior of banks such as exchange rate changes, exchange rate expectations, global risk perceptions, direct capital flows, other assets in which foreign currency funds are utilized, lending appetite, FX/gold liquidity conditions can be added to the factors which determine the use of ROM.

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