

Special Topics

IV.1 Banking Sector's Liquidity Position and Deposit Rates

Abstract

This study analyzes possible reasons behind the recent discrepancy between the TL deposit rates and the short-term market rates, which historically tracked one another closely. In this regard, the study tests the validity of the hypothesis that the TL deposit rates became more costly compared to alternative funding resources due to bank's liquidity positions. Accordingly, using econometric techniques, the study analyzes the relation of the deposit rates with the Liquidity Coverage Ratio (LCR) and Loan to Deposit Ratio (LDR) that represent the short-term and long-term liquidity positions of banks, respectively. The estimation results suggest that both indicators are statistically significant, while the long-term liquidity position indicator LTD is a more influential factor in explaining the recent deposit competition.

IV.1.1 Introduction

In pricing the TL deposit rates, the costs of alternative sources and accessibility of these sources are expected to play an important role. It can be argued that in countries with short maturities and limited alternative resources, the relationship between money market rates and deposit rates may be stronger. Taking into account the fact that the money market rates are under the control of the central banks, this suggestion means that the policy interest rate should play a decisive role on deposit rates. As a matter of fact, Binici, Kara and Özlü (2016) find that BIST overnight repo rates in particular play a key role in the pricing of deposits. In addition to the money markets, it is possible to say that the external debts increasing in the balance sheet of the banking sector constitute an alternative to deposits. Difficulties in accessing external debts or a rise in the costs of these resources are among the factors that can affect deposit rates.

Chart IV.1.1 shows the development of the TL deposit rates alongside the weighted average cost of the CBRT Funding (CBRT funding rate) and the BIST overnight repo rate. The TL deposit rates, which are highly correlated with short-term market rates historically, started to diverge from these interest rates since the last quarter of 2014 and tended to increase continuously until April 2016. In the same period, while the spread between the TL deposit rates and the CBRT funding rate increased steadily, the spread between the TL deposit rates and the BIST overnight repo rate became more pronounced (Chart IV.1.2 and Chart IV.1.3). The CBRT's decision to reduce marginal funding rates since March 2016 did not change this tendency and the decline in deposit rates after this period followed the fall in policy rates to a limited extent. Bank-based analysis also shows that the dynamics of deposit rates are effective for all bank groups.

As a result, it is observed that deposit rates have diverged from other short-term market rates, which historically displayed a close relationship with deposit rates, since the last quarter of 2014, and the recent decline in deposit rates followed the decrease in other short-term interest rates only to a limited extent. In this analysis, the possible reasons behind the relatively high course and downward rigidity in deposit rates, which also limits the effectiveness of the monetary policy, will be discussed both graphically and empirically.

IV.1.2 Factors Determining the Dynamics of Deposit Rates

The discrepancy between the TL deposit rates and other market rates implies that deposits have become more valuable than alternative sources since the last quarter of 2014. This may be due to the reduced access to alternative resources and/or that the characteristics which distinguish deposits from related sources have become more important during this period. In this period, the BIST rates materialized at the upper bound of the interest rate corridor in which the CBRT has committed to provide unlimited liquidity against collateral, and banks were not at the limit of free GDDS stock, thus it can be asserted that there were no constraints on access to money markets. However, since the conditions for accessing foreign funding, which can substitute for deposits, did not change significantly during this period, the probability that deposits become

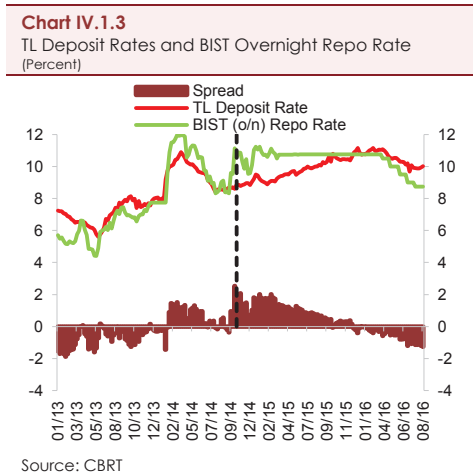
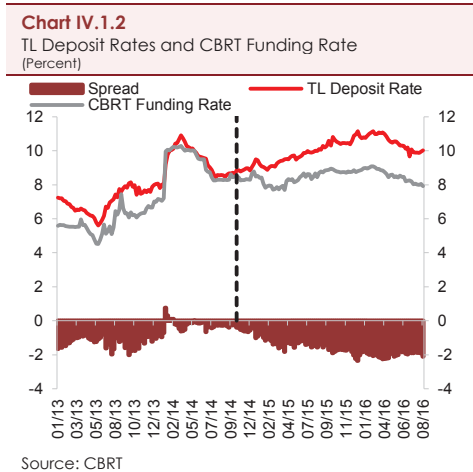
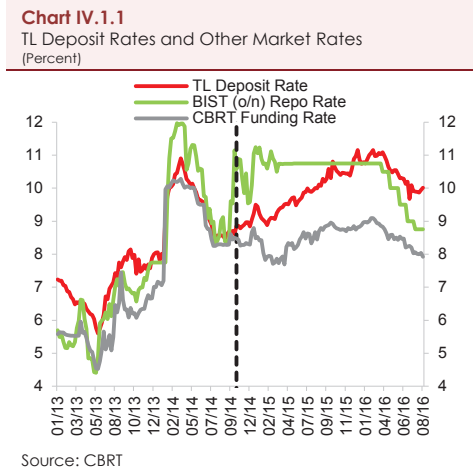
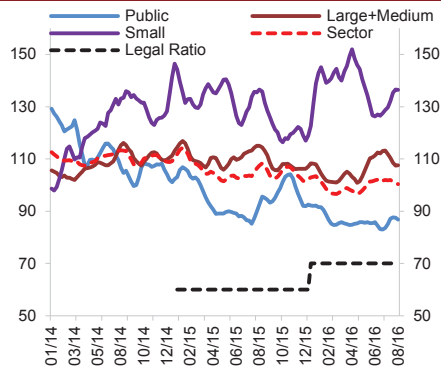


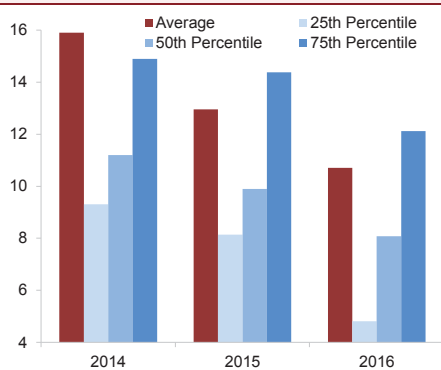
Chart IV.1.4
Liquidity Coverage Ratio*
(4-Week Moving Average, Percent)



* "Public": 3 public banks, "Big + Medium", the largest 9 banks according to asset sizes outside the public sector, "Small" the second largest 9 banks according to asset size outside the public sector, and "Sector" represent the all 21 banks.

Source: CBRT

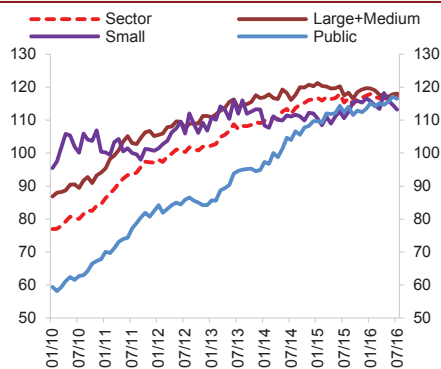
Chart IV.1.5
Quantiles for the Loan Capacity of Margins on Legal Ratio* (Percent)



* These quantiles show the ratio of the margins over the legal ratio to the current loan volumes of the banks in the 25th, 50th and 75th percentiles, from the smallest to the largest, respectively.

Source: CBRT

Chart IV.1.6
Public-Private and Scale-Based LDR Developments* (Percent)



* "Public": 3 public banks, "Big + Medium", the largest 9 banks according to asset sizes outside the public sector, "Small" the second largest 9 banks according to asset size outside the public sector, and "Sector" represent the all 21 banks.

Source: CBRT

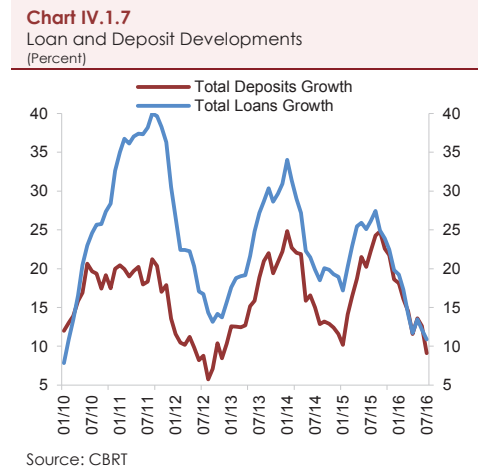
more important within the framework of the characteristics that distinguish deposits from other sources of funds has increased.

The main factors that make deposits more advantageous compared to other sources of funds are: i) they do not require collateral, ii) they are relatively stable sources of funds. Unlike deposits, borrowing from money markets takes place against collateral and therefore it adversely affects the liquidity position of banks. The fact that deposits are more stable funding sources makes them more valuable with respect to banks' structural or longer-term liquidity positions. At times of stress, banks may have difficulty in rolling over their external funding sources, which are considered as non-core liabilities. Banks, which are highly dependent on non-core funding, bear the risk of facing short-term liquidity position problems in the long term even if they have strong short-term liquidity positions.

In this regard, we examine the relationship between banks' short-term liquidity positions and their dependence on non-core liabilities, and TL deposit rates. As an indicator of banks' short-term liquidity positions, we use the Liquidity Coverage Ratio (LCR) that is monitored by the BRSA and limited by regulations. We observe that the average LCRs for sectors and bank groups did not significantly deteriorate over the last three years and the latest data indicate that they exceeded legal limits by a significant margin (Chart IV.1.4). This significant margin above the legal ratios reduces the likelihood that such rates will have a restrictive effect on the banks. To give a concrete example of the strength of the short-term liquidity position, if the banks prefer to convert their excess liquidity to loans by drawing their current rates to the legal limits, the loan capacity of the margin will be quite high (Chart IV.1.5). Hence, banks' margins with very high loan capacity weaken the possibility that LCR acts as the main reason underlying the tendency of banks toward deposits.

To represent banks' dependence on non-core liabilities, the Loan to Deposit Ratio (LDR) was used. The reason for choosing the LDR ratio among other alternative indicators is that banks prefer to use this ratio to emphasize the stability of funding sources in the presentations that they make to investors. This ratio, which was on a steady rise until the end of 2014, has been relatively flat since the

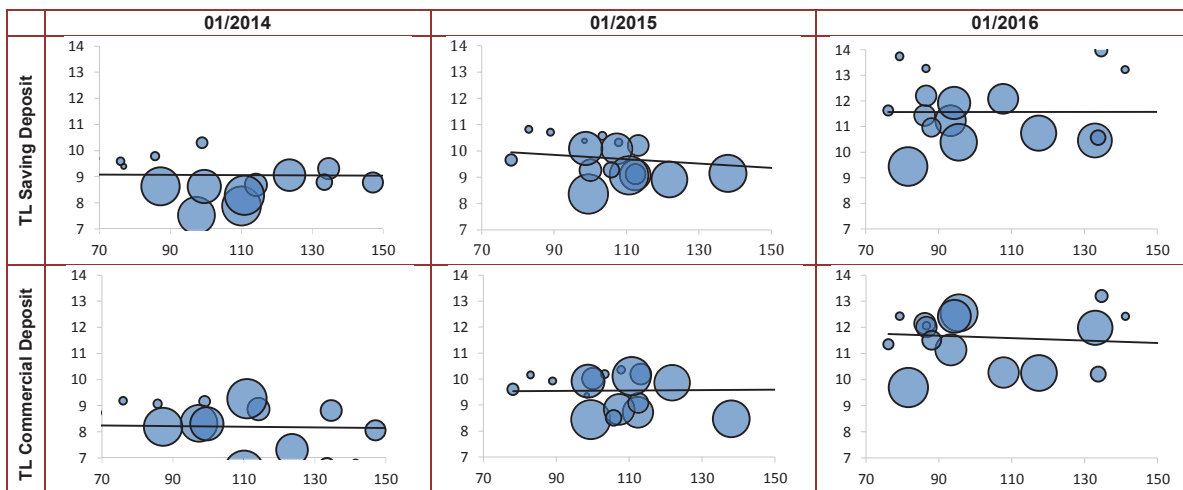
beginning of the period of deposit competition (Chart IV.1.6). This is thought to be a consequence of macroeconomic developments, independent of bank preferences, as well as being a consequence of banks setting limits for themselves. Therefore, there is a possibility that banks may place an internal limitation on this ratio as a result of their own internal evaluations, or the importance attributed by investors that provide resources to the banks. If the stable course in the LDR during the last one-year period is the consequence of an internal restriction that banks intend to strictly obey, the deposit base will be a determinant on the loan growth rates in the upcoming period and more clearly the lending and deposits will grow at the same pace (Chart IV.1.7). This finding confirms the necessity of the steps taken to achieve higher saving rates in our country.



IV.1.3 Liquidity Positions and Deposit Rates

The relationship between short-term and long-term liquidity indicators of banks and deposit rates in the light of the previous section can be examined through simple graphs. In this respect, Figures IV.1.8 and IV.1.9 show the relationships between the TL deposit rates and liquidity positions of banks, LCR and LDR. No meaningful relationship is observed between LCR and deposit interest rates in 2014, when there was no deposit competition, and there is no indication that this relationship has become stronger recently (Chart IV.1.8).

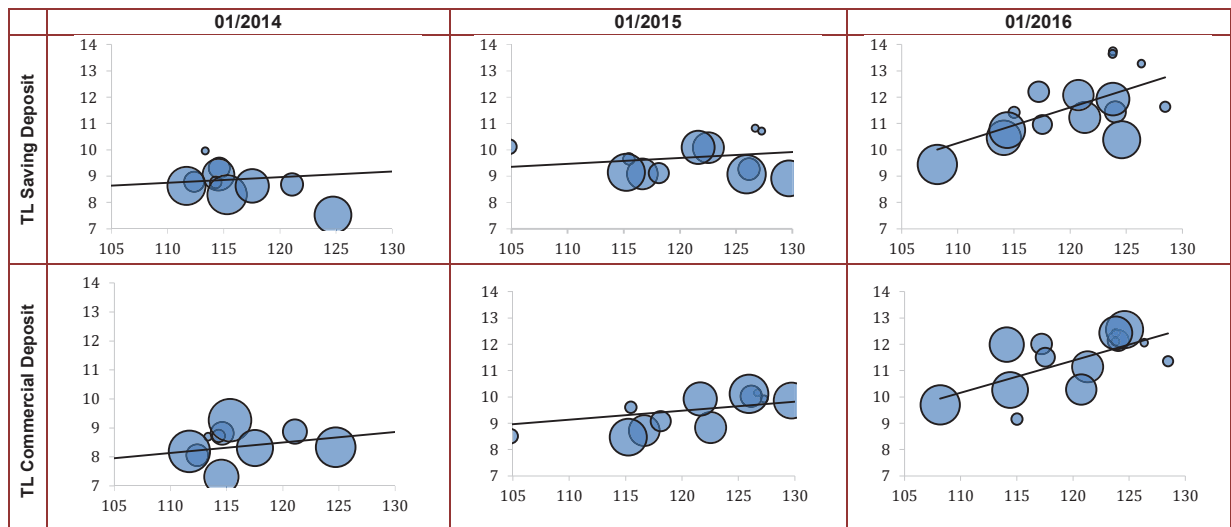
Chart IV.1.8
Deposit Rates & LCR & Assets Size*



* On x-axis of the charts, there are banks' LCR values and on the y-axis, there are TL saving deposit rates. The balloon sizes represent the banks' assets sizes.
Source: CBRT

Chart IV.1.9 shows the relationship between LDR and the TL deposit rates. In 2014, when there was no deposit competition, there was a very weak relationship between the related variables, and this relationship is apparently strengthened in the recent period. Incidentally, it seems likely that banks recently converged in their internal limits of LDR and therefore started aggressive pricing on deposit rates in order to expand their deposit base or at least maintain their existing deposit base.

Chart IV.1.9
Deposit Rates & LDR & Assets Size*



* On x-axis of the charts, there are banks' LDR values and on the y-axis, there are TL saving deposit rates. The balloon sizes represent the banks' assets sizes. 5 banks with the highest and lowest LDR ratios have been excluded.

Source: CBRT

On the other hand, in order to make more reliable conclusions about the relation between banks' liquidity positions and deposit rates, it is thought that an empirical analysis should be done in addition to graphical analysis. In this respect, the relationship between these variables is analyzed through the panel data analysis method in the next section.

IV.1.4 Data Setup and Methodology

We use fixed effects for our analysis employing weekly data of 21 deposit banks, which have significant weight in the sector for the period January 2013-August 2016.¹ We examine how the liquidity ratios of the banks in that period are effective on the TL deposit rates, and the lagged values of the explanatory variables are included in the regression in order to solve the possible endogeneity

¹ The banks' asset size covers 89.2 percent of the total asset size of the banking sector as of August 2016. Therefore, the representative power of the sample set is quite high.

problem. The following model was used to analyze the effects of the development of banks' liquidity ratios on the TL deposit rates:

$$r_{i,t} = \beta_0 + \beta_1(LDR)_{i,t-3} + \beta_2(LCR)_{i,t-3} + \beta_3(Interest)_t + \beta_4(Interest)_{t-1} + Bank'_{i,t-1}\delta + \gamma_i + \theta_t + \varepsilon_{i,t}$$

$r_{i,t}$, is bank i's deposit rates at time t, $(LDR)_{i,t-3}$ is bank i's LDR value at time t-3, $(LCR)_{i,t-3}$ is bank i's LCR value at time t-3, $(Interest)_t$ is the BIST overnight repo rate or the CBRT funding rate at time t, $(Interest)_{t-1}$ is the BIST overnight repo rate or the CBRT funding rate at time t-1, γ_i is bank i's fixed effects, θ_t represents fixed effects at time t. The model also includes dummy variables for certain ratios at some levels and their interactions with the liquidity ratios mentioned above, in the sense that certain levels in banks' liquidity positions may have an impact on deposit pricing behavior.

IV.1.5 Empirical Findings

In all the regressions listed in Table IV.1.1, LCR and LDR are the main variables, while the first four regressions include savings deposits and the other regressions include commercial deposits. Unlike the first regression, the second regression also includes bank-specific variables. In the third and fourth regressions, the deposits are divided into two groups: small and large. The results indicate that LDR has a positive and significant effect at 1 percent level on all deposit rates irrespective of type and amount. According to the second and sixth regressions where the bank-specific variables were controlled, the banks with higher LDR applied higher interest rates to the TL deposits and an increase by 10 basis points in the LDR leads to an increase by 18 basis points in saving and commercial deposit rates. LCR has a significant effect only on commercial deposits of small amounts at the 10 percent level. Consistent with the related literature, it is observed that the BIST overnight repo rate has a positive effect on deposit rates and it is the main determinant of deposit rates. The results also indicate that banks with relatively slow growth rate, relatively high NPL ratios, and relatively weak sources of equity have higher deposit rates.¹

¹ Consistent with the results in the related literature, it is observed that bank's opportunities to increase lending may lead to an increase in deposit rates in order to attract new deposits and fund the new loans (Jayaratne and Morgan, 2000; Gatev and Strahan, 2006). Acharya and Mora (2015) present evidence that banks that faced a liquidity shortage (their lending commitments exceeded their deposits) during the Global Financial Crisis increased deposit rates in order to attract more deposits.

Table IV.1.1

Estimation Results

Dependent Variable:	Deposit Rates							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Independent Variables	Saving	Saving	Saving of Small Amount	Saving of Large Amount	Commercial	Commercial	Commercial of Small Amount	Commercial of Large Amount
LDR _{t-3}	0.018*** (0.003)	0.018*** (0.004)	0.016*** (0.003)	0.025*** (0.004)	0.020*** (0.004)	0.018*** (0.004)	0.024*** (0.003)	0.015*** (0.005)
LCR _{t-3}	0.001 (0.001)	0.000 (0.001)	0.001 (0.001)	0.000 (0.001)	-0.001* (0.001)	-0.001* (0.001)	-0.001* (0.001)	-0.001 (0.001)
Interest _t	0.401*** (0.022)	0.395*** (0.023)	0.349*** (0.022)	0.577*** (0.028)	0.511*** (0.025)	0.509*** (0.026)	0.386*** (0.022)	0.537*** (0.028)
Interest _{t-1}	0.384*** (0.022)	0.368*** (0.023)	0.364*** (0.022)	0.398*** (0.029)	0.395*** (0.026)	0.395*** (0.027)	0.334*** (0.022)	0.399*** (0.029)
Bank-Specific Variables								
Assets _{t-1}		-0.227*** (0.047)	-0.232*** (0.046)	-0.226*** (0.058)		-0.152*** (0.049)	-0.103** (0.042)	-0.140** (0.054)
NPL _{t-1}		0.415*** (0.035)	0.366*** (0.034)	0.543*** (0.040)		0.390*** (0.035)	0.362*** (0.031)	0.389*** (0.037)
Capital/Assets _{t-1}		-0.190*** (0.023)	-0.172*** (0.023)	-0.284*** (0.030)		-0.231*** (0.026)	-0.119*** (0.020)	-0.231*** (0.028)
Profit/Assets _{t-1}		-0.020 (0.037)	-0.016 (0.036)	-0.020 (0.049)		-0.063* (0.038)	0.007 (0.030)	-0.041 (0.040)
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	2.128	2.128	2.128	1.994	2.204	2.204	2.204	2.099
R ²	0.715	0.744	0.768	0.484	0.618	0.635	0.705	0.626

***, **, * indicate statistical significance at 1 percent, 5 percent and 10 percent, respectively. Values in parentheses refer to robust standard errors.

In addition to these results, it is estimated that certain levels of LCR and LDR for banks may also be of critical importance. For this purpose, 110 and 120 percent for LDR and 80 and 100 percent for LCR, are determined as critical levels and the banks are classified according to these levels. Although the LDR is found to be effective on deposit pricing in Table IV.1.1, it is not valid for banks whose LDR is below 110 percent, and LDR is effective in banks' deposit pricing behavior with a LDR of between 110 and 120 percent and over 120 percent (Table IV.1.2). Therefore, the results suggest that the LDR has a significant effect on the TL deposit rates and this impact is stronger when the LDR is above 110 percent. According to the results in Table IV.1.1, while the explanatory power of LCRs on deposit rates is limited, it is observed that this ratio is effective in deposit pricing for banks with LCR between 80 and 100 percent and LCR below 80 percent.

Table IV.1.2

Estimation Results

Dependent Variable:	Deposit Rates					
	(1)	(2)	(3)	(4)	(5)	(6)
Independent Variables	Saving	Saving of Small Amount	Saving of Large Amount	Commercial	Commercial of Small Amount	Commercial of Large Amount
LDR*D110 _{t-3}	-0.012 (0.007)	-0.012 (0.007)	-0.005 (0.009)	0.012 (0.008)	-0.012 (0.007)	-0.005 (0.009)
LDR*D110-120 _{t-3}	0.012* (0.006)	0.010* (0.006)	0.025*** (0.008)	0.035*** (0.008)	0.010* (0.006)	0.025*** (0.008)
LDR-D120 _{t-3}	0.023*** (0.004)	0.021*** (0.004)	0.029*** (0.005)	0.016*** (0.005)	0.021*** (0.004)	0.029*** (0.005)
LDR*D110-120	3.529*** (0.898)	3.291*** (0.859)	3.473*** (1.084)	0.044 (1.115)	3.291*** (0.859)	3.473*** (1.084)
LDR*D120	1.340* (0.805)	1.326* (0.754)	0.656 (1.065)	-2.261** (1.095)	1.326* (0.754)	0.656 (1.065)
LCR*D80 _{t-3}	-0.008*** (0.003)	-0.009*** (0.002)	-0.006* (0.003)	-0.005* (0.003)	-0.009*** (0.002)	-0.006* (0.003)
LCR*D80-100 _{t-3}	-0.005*** (0.002)	-0.004** (0.002)	-0.008*** (0.002)	-0.004*** (0.002)	-0.004** (0.002)	-0.008*** (0.002)
LCR*D100 _{t-3}	0.002 (0.001)	0.003 (0.001)	0.002 (0.001)	0.001 (0.001)	0.003 (0.001)	0.002 (0.001)
LCR*D80-100	1.445*** (0.228)	1.470*** (0.220)	1.406*** (0.298)	1.058*** (0.255)	1.470*** (0.220)	1.406*** (0.298)
LCR*D100	0.882*** (0.191)	0.771*** (0.192)	1.193*** (0.216)	0.752*** (0.184)	0.771*** (0.192)	1.193*** (0.216)
Bank Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Bank-Specific Variables	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	2,128	2,128	1,994	2,204	2,128	1,994
R ²	0.759	0.782	0.510	0.646	0.782	0.510

***, **, * indicate statistical significance at 1 percent, 5 percent and 10 percent, respectively. Values in parentheses refer to robust standard errors. D80, D80-100, D100, D110, D110-120 and D120 are dummy variables that represent the banks' relevant liquidity indicator with lower than 80 percent, 80-100 percent, higher than 100 percent, lower than 110 percent, 110-120 percent and higher than 120 percent, respectively.

IV.1.6 Conclusion

This study analyzes the possible reasons behind recent discrepancy between the TL deposit rates and the short-term market rates, which historically displayed a close relationship, since the last quarter of 2014. In this period, it is considered that the conditions of access to alternative sources of deposits did not change significantly. Moreover, the main factors that make deposits more advantageous compared to other sources of funds such as not requiring collateral and being relatively stable sources of funds have gained importance within the banks' liquidity positions. Therefore, it is considered that developments in liquidity positions of banks have played an important role in the dynamics of TL deposit rates. In addition, the developments in LCR and LDR representing the short and long-term liquidity positions of the banks, respectively, have been elaborated and their effects on the bank's deposit pricing behavior have been analyzed by means of econometric methods.

The results show that the LDR is an important factor in explaining the recent deposit competition, especially for the banks

whose LDR value is higher than the 110 percent level. Besides, it has been found that LCR, which is a short-term liquidity measure, has more limited effects than LDR on deposit rates, and this effect is more evident in the banks whose LCRs are below the 100 percent level. It is foreseen that the effect of LCR on deposit rates may be strengthened somewhat by raising the legal limit to 100 percent in 2019.

References

Acharya, V. and M. Nada, 2015, A Crisis of Banks as Liquidity Providers, *Journal of Finance*, 70(1):1-43.

Binici, M., H. Kara and P. Özlü, 2016, Unconventional Interest Rate Corridor and the Monetary Transmission: Evidence from Turkey, CBRT Working Papers No. 16/08.

Gatev, E. and E.S. Philip, 2006, Banks' advantage in hedging liquidity risk: Theory and evidence from the commercial paper market, *Journal of Finance*, 61(2): 867-892.

Jayaratne, J. and P.M. Donald, 2000, Capital market frictions and deposit constraints at banks, *Journal of Money, Credit and Banking*, 32(1): 74-92.

IV.2 The Effect of the CBRT Interest Rates Cuts on the TL Commercial Loan Interest Rates

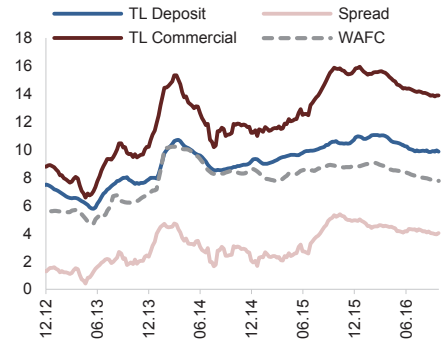
Gradual cuts in the Central Bank overnight lending rate since March 2016 have been reflected in the TL loan rates by varying magnitudes according to loan types. Although the TL commercial loan rates move coherent with policy rate cuts, it is crucial to analyze the interaction for various firm scales in order to examine which company size benefited more from favorable funding rates. For this purpose, the distribution of the TL commercial loans and number of companies according to interest rate buckets are examined by firm scale.

IV.2.1 Developments in Funding Costs and Commercial Loan Rates

Loan growth has shown a significant slowdown since the second half of 2015. FX adjusted annual total loan growth, which stood at around 24 percent at the end of 2013, declined to 9 percent by October 2016. This loss of momentum began at the end of 2013 for retail loans particularly owing to the macroprudential measures while slowdown in commercial loans became apparent after the first half of 2015 (See Chart III.1.1). Bank Loans Tendency Survey indicates that in addition to the tightening of loan standards, weakening in the demand-side has also been effective in this development (See Chart III.1.8 and Chart III.1.9). According to survey results, decreasing funding needs especially for fixed investments and mergers&acquisitions for commercial loans, and consumer confidence and housing market prospects for consumer loans have been effective in the weakness of loan demand. On the other hand, according to the survey, credit supply continues to maintain a tight outlook since the second half of 2015, while the weakness in credit demand came to an end since the second half of 2016.

The cuts in the CBRT overnight lending rate, which started in March 2016, reached 250 basis points as of October 2016. In this period, the TL commercial loan rates decreased by 168 basis points and the TL deposit costs decreased by 118 basis points, thus loan-deposit interest rate spread narrowed slightly (Chart IV.2.1). However, decline in loan interest rates differs on the basis of firm

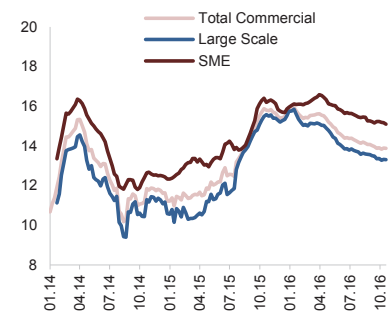
Chart IV.2.1
TL Commercial Loan, Deposit Rates and WAFC
(4-Week Moving Average, Percent)



Note: Excluding corporate overdraft account and corporate credit cards. Moreover, zero interest loans are excluded from commercial loan interest rates starting from July 2015.

Source: CBRT (Latest Data: 21.10.16)

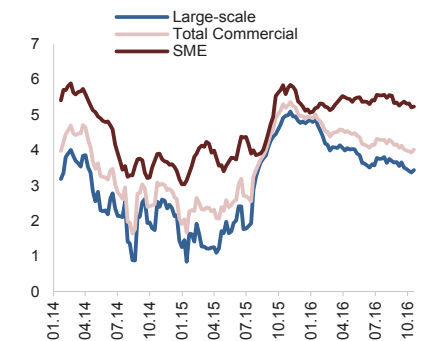
Chart IV.2.2
TL Commercial Loan Rates based on Firm Scale¹
(4-Week Moving Average, Percent)



1) Excludes corporate overdraft account and corporate credit cards for all firm scale loans. Moreover, zero interest loans are excluded from commercial loan interest rates starting from July 2015.

Source: CBRT (Latest Data: 21.10.16)

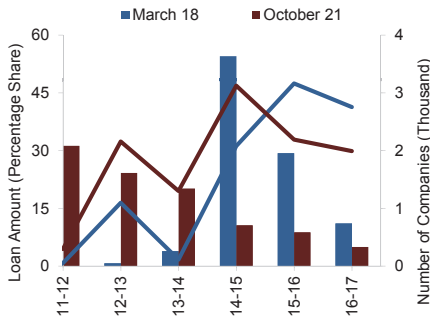
Chart IV.2.3
Spread Between TL Commercial Loan and TL Deposit Rate¹
(4-Week Moving Average, Percent)



1) Excludes corporate overdraft account and corporate credit cards for all firm scale loans. Moreover, zero interest loans are excluded from commercial loan interest rates starting from July 2015.

Source: CBRT (Latest Data: 21.10.16)

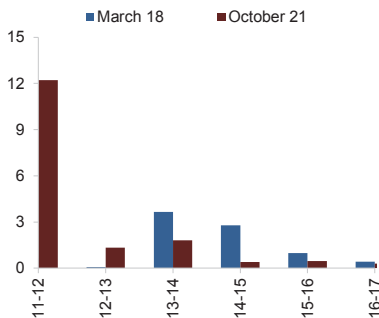
Chart IV.2.4
TL Large Scale Commercial Loan Usage by Interest Brackets¹⁾



1) Data for the largest 10 banks in the sector according to the assets size is used. Excluding overdraft accounts and credit cards. Column values are shown on the left axis, and line values are shown on the right axis. The percentage share of the loan amount represents the share within the 11-17% interest bracket.

Source: CBRT

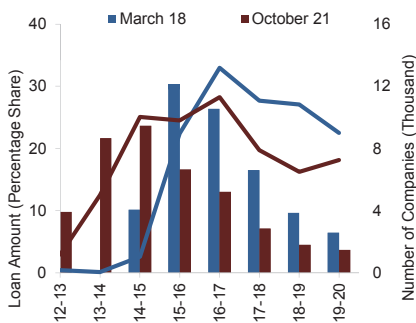
Chart IV.2.5
Average Loan Amount Per Large Scale Companies by Interest Brackets¹⁾ (Million TL)



1) Data for the largest 10 banks in the sector according to the assets size is used. Excluding overdraft accounts and credit cards.

Source: CBRT

Chart IV.2.6
TL SME Loan Usage by Interest Brackets¹⁾



1) Data for largest 10 banks in the sector according to the assets size is used. Excluding overdraft accounts and credit cards. Column values are shown on the left axis, and line values are shown on the right axis. The percentage share of the loan amount represents the share within the 12-20% interest rate band.

Source: CBRT

scale. Considering MPC meeting dates in March and October 2016, it is observed that large corporate loan interest rates decreased by 180 basis points while the decline was 130 basis points for SME loans (Chart IV.2.2). The fall in SME loan-deposit spread was quite limited whereas it was stronger for large-scale firm loan – deposit spread (Chart IV.2.3). Factors regarding SME credit risk outlook was possibly effective in this differentiation.

IV.2.2 The Effects of the TL Commercial Loan Interest Rate Changes on Loan Amount and the Number of Corporate Borrowers by Interest Rate Brackets

In order to examine the effects of declining CBRT's marginal funding rate on loan volume and number of corporate borrowers by company size, TL commercial loan interest rates were analyzed by interest segments. The segments were determined considering large scale firms' loans concentrated in the 11-17 percent interest band and SME loans concentrated in 12-20 percent band. Before the March MPC meeting in which policy interest rate cuts started, large scale companies' TL loan disbursements was concentrated in the 14-15percent band in the third week of March 2016 while it was intensified in the 11-13 percent interest rate band for October 21, 2016. During this period, TL interest rate band for large scale firms' with the highest concentration decreased to 14-15 percent from 15-16 percent band (Chart IV.2.4). In addition, the amount of loans per company in the same period increased significantly for the 11-12 percent interest rate band (Chart IV.2.5).

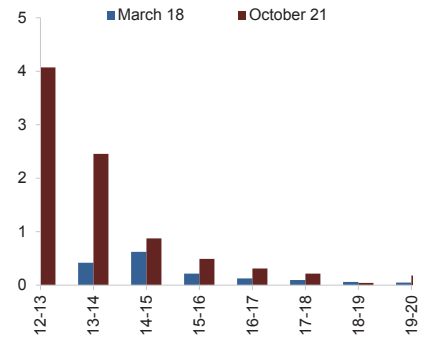
On the other hand, while TL SME loan extension was concentrated in the 15-16 percent interest rate band in the third week of March, the 13-15 percent band gained momentum in the third week of October. Therefore, the interest rate band where large corporate loans intensified declined by 3 percentage points. Meanwhile, the deceleration in the intensified bracket for SME loans declined by 2 percentage points from 16-17 to 14-17 percent interest rate segment (Chart IV.2.6). Similar to large scale firms, amount of SME loans per company also rose in the same period and concentrated on lower interest rates. However, high volume loan usage by limited number of firms at low interest rates was effective in this particular development (Chart IV.2.7).

IV.2.3 The Sampling Effect on TL Commercial Loan Interest Rate Changes

Change in the sample of companies should also be considered while assessing reflections of marginal funding rate cuts on TL commercial loan rates. In this study, January 1 and March 23, 2016, which is the period prior to policy interest rate cut was considered as the reference period. The weighted average interest rate of the loans originated after March 23, 2016 and those originated in the reference period are analyzed. In order to analyze the sample effect, TL commercial loan interest reductions were calculated by providing companies in the sample to be the same under different scenarios (Figure IV.2.1). Then for these scenarios TL commercial loan interest rate reductions are compared. With this method, it is aimed to separate the effect of firm specific factors for TL commercial interest rates especially for companies which are not included in the reference period.

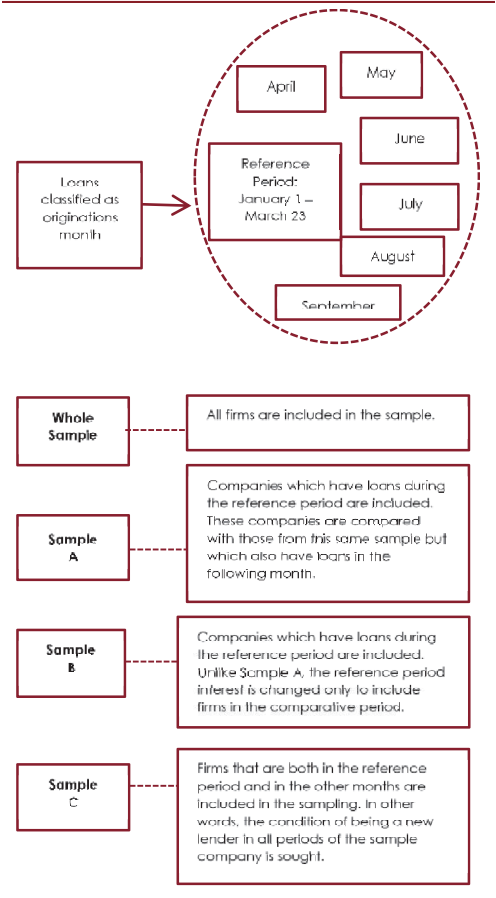
For the whole sample, it is observed that the weighted average interest rate of the loans originated in September decreased by 140 basis points compared to the reference period. In Sample A, funding cost for companies that borrow in the reference period and in the remaining months was compared to analyze the effect of changing sample. However, all of the companies using credit in the reference period may not be represented in the following months. For instance, companies borrowing both in April and in the reference period may differ from companies that used loan both in May and in the reference period. Thus, in Sample A, firms that borrow after March 23, 2016 is considered as a subset of the reference period for each month, and these subsets tended to be different from each other. Under this constraint, in case of Sample A, the decline in interest rate was 151 basis points in September compared to the reference period. Even though number of observations reduces by about 35 percent for Sample A compared to the entire sample, it substantially impedes the misinterpretation risk for deteriorating interest rates due to changing borrower sample.

Chart IV.2.7
Average Loan Amount Per SME by Interest Brackets¹
(Million TL)



1) Data for largest 10 banks in the sector according to the assets size is used. Excluding overdraft accounts and credit cards.
Source: CBRT

Figure IV.2.1
Sample Explanations



In sample B, the interest rates of the two periods are compared based on the companies that have borrowed in both the reference period and the month in which interest rates decline. In sample B, it is ensured that the firms that used credit in the month when the interest rate reductions are realized, and the firms that used credit in the reference period are the same firms. Therefore, the companies in the reference period can change according to the companies that have used credit in the following months. If sample B is used, the interest rate drop in September is 142 basis points relative to the reference period. However, it can be misleading to compare the interest rate differentials among the loans opened in months other than the reference period because the sample changes in sample B. For this reason, in the sample C, credit interest rates of firms that have used credits in all other months including the reference period have been examined. In this case, the decrease in interest rate in September is 165 basis points relative to the reference period. As a result, the sample effect in the commercial loan interest rate change shows that companies that use loan with higher interest rates in the following months without using any loan in the reference period have limited interest rate decrease (Table IV.2.1). On the other hand, interest rate declines are seen to be higher when the analysis focuses on firms that used credit in the reference period of 2016 and all other months.

Table IV.2.1
Sample Effect on TL Commercial Loan Rates

	Whole Sample	Sample A	Sample B	Sample C
23 March-31 March	0.03	-0.03	0.17	0.02
April	-0.31	-0.32	-0.20	-0.34
May	-0.54	-0.51	-0.39	-0.48
June	-1.00	-1.05	-0.97	-1.11
July	-1.20	-1.24	-1.10	-1.19
August	-1.23	-1.32	-1.21	-1.34
September	-1.40	-1.51	-1.42	-1.65
<i>Number of Observations</i>	2,025,976	1,316,342	1,316,342	495,531
<i>Loan Amount (Billion TL)</i>	429	361	361	230

1) Overdraft accounts, retail credit cards and zero-interest loans are excluded. Loan interest rates represent simple interest rates. The figures in the table represent the interest rate differentials relative to the reference period.
2) The number of observations indicates the number of loan accounts, and if a firm uses multiple loans, each loan is included in the number of observations.

IV.2.4 The Scale Effect on TL Commercial Loan Interest Rate Changes

The effect of decrease in the CBRT's marginal funding rate on TL commercial credit interest rates may vary depending on loan size. For this study, it is assumed that loan amounts used by firms should be related to the firm size. In this regard, based on the data of sample A, interest rate developments are examined according to loan size breakdown. Accordingly, for January-September 2016 analysis period, it is observed that total decrease of 250 basis points in CBRT marginal funding rate had a reflection of 170 basis points and 45 basis points in the weighted average commercial loan interest rates for loans amounted between 10 to 50 million TL and less than 100 thousand TL respectively. 206 basis points interest rate decrease for loans more than 50 million TL may be affected by limited number of firms borrowed with low funding cost since number of observations for this amount breakdown is low. Since the concentration is high in the 1-10 million TL range in terms of loan size, banking sector TL commercial loan interest rate decrease is close to the decrease in interest rates for this amount bracket. On the other hand, considering the fact that about 75 percent of the companies that use loan amounting to 100 thousand TL or less, the decrease in CBRT's marginal funding rate had an important effect on the loans used by a small number of large firms (Table IV.2.2).

Table IV.2.2
TL Loan Amount Effect on Commercial Loan Rates

	50 million and over	10-50 million	1-10 million	500 bin-1 million	100-500 thousand	Under100 thousand	Number of Observations	Loan Amount (billion TL)
1 January-23 March (a)	13.39	14.15	14.69	14.75	15.28	16.07	833,992	155
23 March-31 March	13.50	14.15	14.89	15.26	15.87	16.82	81,870	28.6
April	12.91	13.40	14.46	14.75	15.48	16.64	199,697	49.5
May	12.72	13.49	14.15	14.35	15.19	16.30	217,465	53.2
June	12.39	12.83	13.66	13.72	14.81	16.03	238,829	67.8
July	12.15	12.91	13.66	13.94	14.68	15.87	168,640	49.7
August	11.81	12.65	13.47	13.63	14.57	15.74	211,068	54.2
September (b)	11.33	12.45	13.41	13.84	14.57	15.61	198,773	58.2
Interest Rate Differential (b-a)	-2.06	-1.70	-1.28	-0.91	-0.71	-0.45		
Number of Observations	945	5,024	59,970	71,780	488,745	1,523,870	2,150,334	
Loan Amount (billion TL)	94.9	96.6	135	45.9	95.2	48.7		516.3

1) Overdraft accounts, retail credit cards and zero-interest loans are excluded. Loan interest rates represent simple interest rates.

IV.2.5 Conclusion

The effect of CBRT's marginal funding rate cuts on banking sector TL commercial loan rates has been examined by company sample, interest rate and loan amount breakdown. According to the results of this study, the magnitude of decline in interest rates differs on the basis of firm size. In this regard, a limited number of large-scale firms are more likely to benefit more from policy rate cuts while the discounts are reflected less to SME loans. This development demonstrates that banks take into consideration credit risk developments and they assume a more cautious stance for credits extended to SMEs.

IV.3 Contribution of Advanced Credit Reporting System to Financial Inclusion and Financial Stability

Summary

Financial inclusion (FI) means that individuals and businesses have access to affordable financial services and products that meet their needs in a continuous and sustainable way. When the concept is assessed generally, appropriate access to financial services and products also includes financial consumer protection and financial literacy. According to World Bank's "FI Global Findex" database, two billion adults worldwide do not have any access to financial services. In high-income countries, the rate of access to financial services within the adult population is very high while the rate in developing countries is about 40 percent. Accordingly, establishment of an effective credit database is considered prerequisite for enhancing financial inclusion. Therefore, it is expected that improved credit reporting, especially in developing countries, spread the financial inclusion and contribute financial stability by applying different methodologies, expanding the database and increasing its quality.

IV.3.1 Credit Reporting System and Financial Inclusion

Although, financial inclusion has many dimensions ranging from financial literacy, electronic payment systems to financial sophistication, so this study will be addressing the topic of how efficient credit reporting will contribute to financial inclusion. On the other hand, the focus will be on the document "**General Principles of Credit Reporting**" published by World Bank International Committee on Credit Reporting (ICCR) in 2011 and other studies will also be considered.

IV.3.2 Credit Reporting and its Standards

Credit reporting means, in general terms, providing and assessing information by expert institutions in their area about the identity, debt, credit and derivatives of individuals/companies, institutions and organizations for decision makers, lenders and borrowers in a systematic and historical structure, within the framework of a certain law. Expert institutions for this business are performed by risk centers, credit bureaus and other credit reporting

agencies according to the financial structure of the country. In Turkey, the Risk Center, which was established within the Central Bank of the Republic of Turkey (CBRT), functioned smoothly between 1951 and 2013 and later carried out the activities of that center in 2013 by reform to the Banks Association of Turkey Risk Center (BAT-RC). It was aimed that this reform focuses on the core functions of the Central Bank and so on that risk center operations would be carried out by an expert organization in this regard.

In 2011, "General Principles on Credit Reporting" was published for the first time in order to ensure the direction of the World Bank in parallel with the developments in the credit sector after the global crisis in the worldwide. These principles are;

- i) Determining the scope of data,
- ii) Evaluation and analysis of the data within the process
- iii) Good governance and risk management,
- iv) Establishing legal and regulatory environment,
- v) Providing cross border data flows.

These concepts are indicative rather than imperative in terms of establishing an effective credit reporting system. Effective credit reporting provides support for the spread of financial inclusion from one side to the other, particularly for the creation of accurate, effective, auditable, comprehensive and historical data, and for central banks to benefit from a broad set of data on monetary policy applications.

IV.3.3 Effect of Credit Reporting on Financial Inclusion

There are serious international studies on the mentioned topic (See CBRT Financial Stability Report Issue 14: Special Topic 4). The World Bank has been working on this issue since 2011 and has included the theme in its final report in 2016 "How Credit Reporting Contributes to Financial Inclusion". In its 2020 projection, the Financial Inclusion Center, a think-tank organization formed by many experts in its field, stated that consumer rights need to be at the forefront and there is need for reform regarding the issue of credit reporting. Furthermore, one of the important studies related to the issue was conducted by the Bank of International Settlements (BIS). In this study which was published in April 2016, positive developments in payment systems in Turkey were also mentioned.

IV.3.4 Contribution of Credit Reporting on Reaching Credit Facilities and Financial Inclusion

In the whole world, the issue of financial inclusion has begun to become a priority public policy. In particular, policies have been initiated to meet the needs of communities living in poor and unserved regions in developing and low-income countries. In this framework, it will be useful to emphasize about three main issues.

- 1) **Access to financial products and services.** Access to financial products and services by individuals, firms and government entities. These include, making payments, using credit, savings, investment, insurance products and services.
- 2) **Regular usage of those financial products and services.** Those products and services are strongly related to how valuable they are to the users for cash flow and budget balance.
- 3) **The overall quality of those financial products and services.** In parallel with consumer protection and financial capability issues, makes it possible for a user to benefit to a greater extent from using those products and services in his or her daily life.

The three key elements have been set as a common goal by the World Bank and other public and private institutions to achieve the 2020 goals of financial inclusion about reaching the two billion people with no financial access worldwide. In this framework, provision of credit access for micro and small enterprises (M&Ses) as well as for individuals may become possible with the foreground of the concept of "**sustainable financial inclusion**". The concept refers not only the purpose of the financial system is to extend the credit and debt but also to ensure the sustainability of borrowing according to its income and capacity level. Currently, as a result of insufficient institutions to gather those information, or the lack of information itself, there is inadequate information in the databases of countries for M&Ses. By including these companies in the database, it will be possible to implement policies that will provide access to credit as well as prudential borrowing.

In this context, ICCR reports also assess the contribution of credit reporting systems to the financial sector in terms of individuals with little or no information that are not represented in the database of credit evaluation companies, in particular, micro and small-scale enterprises.

IV.3.5 Evaluation of Credit Reporting through SME's

It will be useful to evaluate credit reporting in terms of SMEs, which are the cornerstone of the economy, for companies as well as individuals especially in developed countries. Credit reporting provides an important input to SME lenders in terms of the assessment process for the proper functioning of the credit mechanism. While big companies and individuals are presented in the database of credit reporting companies, this is not very common for SMEs. The credit data on SMEs should be accurate, reliable, timely and evaluable. However, establishing and monitoring this infrastructure is a cost element. The study of Beck, Demirguc, Kunt and Martinez Peria (2008) revealed the difference between developing countries and developed countries in terms of access to SME data. In this study, it was determined that banks need credit bureau data for SMEs in which 70 percent of the banks in developing countries are insufficiently provide SME data, while 44 percent of the banks in developed countries are in need of that SMEs data. In this regard, the ICCR working group recommends solution proposals for SME credit reporting under 10 headlines.

Table IV.3.1
Recommendations for SMEs for Credit Reporting Methodologies

- 1) Need to increase reporting of SME credit data .
- 2) Increase SME transparency, including through mandatory reporting of their financial information.
- 3) Co-responsibility of SMEs.
- 4) Cooperation of public sector agencies providing national ID services.
- 5) Public records agencies/public registers to enhance their contribution to credit reporting.
- 6) Governments to clarify the permissible uses of the information they collect through various means.
- 7) Better cooperation between commercial credit information companies and consumer credit bureaus, to improve credit reports on SMEs.
- 8) Authorities to oversee and provide leadership in improving credit reporting.
- 9) Improve comparability of credit data that is shared across border.
- 10) Improve availability of information (e.g. qualitative and quantitative) on the status of commercial credit reporting.

Source: World Bank ICCR

On the other hand, it will be beneficial to promote the addition of M&SEs as well as individuals to the effective credit reporting database to be created within the framework of the above principles. Given below, it is explained that how credit reporting does support and facilitate access to credit with newly added sub groups through financial inclusion. According to this:

1) By helping individuals and M&SEs build their “reputational collateral” via the accumulation of payment history data and other predictive data sets and making these data available to lenders, credit reporting systems may help lenders to expand markets to include unserved individuals and M&SEs. This market expansion, created by the data found in credit reporting systems, means many gain access to their first loan from sources other than informal lenders.

2) Financial inclusion also includes a “**quality component**”, which can be interpreted as improved terms and conditions, including interest rates. In this context, credit reporting can help lower-risk individuals and M&SEs that already have a formal loan in obtaining more affordable and flexible terms for subsequent loans.

3) By making access to credit sustainable over time. Usage of credit reporting data can be useful for avoiding over-indebtedness. Worldwide, over-indebtedness can lead to loan re-payment problems and eventually, depending on the severity of the failure, usually four years or more. Where lenders are successful in matching the loan product to the needs and abilities of the applicant the credit offered is sustainable over the term of the loan. New, positive payment history is reported to credit reporting system creating a virtuous cycle of lending, reporting and economic opportunity users.

4) By improving consumer and M&SE financial literacy. Giving individuals and M&SEs access to their credit reports and credit scores and providing them with essential information on how lenders commonly evaluate these data they are empowered with new knowledge leading to better credit management skills and understanding of how credit scores work, in particular.

After analyzing the general framework of the credit reporting, it would be useful to assess the impact of credit reporting and financial inclusion in Turkey.

IV.3.6 The Case of Turkey through Credit Reporting and Financial Inclusion

At the same time, the case of financial inclusion is a public policy in Turkey and monitored by Republic of Turkey Undersecretariat of Treasury, Banking Regulation and Supervision Agency (BRSA), Capital Markets Board and CBRT from different perspectives. These institutions, together in the Financial Stability Committee, are also evaluating this issue. On the other hand, organizations such as the "Small and Medium Sized Industry Development Organization" (KOSGEB) and private banks also contribute to this topic.

Regarding credit reporting system in Turkey, the primary data provider is the Banks Association of Turkey Risk Center (BAT-RC) and the Credit Bureau (KKB), which carries out services on behalf of it. After transferring the risk center activities from CBRT to the BAT-RC in June 2013, significant progress has been made in the field by increasing the products and activities on credit reporting.

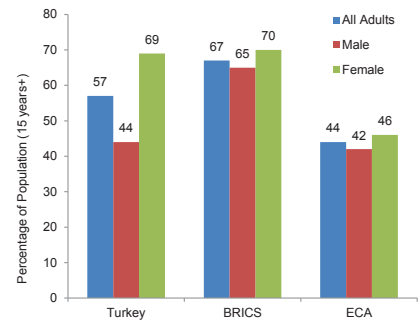
Currently, there are nearly 180 members of the risk center, including banks, financial institutions, credit insurance companies, Borsa Istanbul, The Central Union of Turkish Agricultural Credit Cooperatives. According to the law, the BRSA and the CBRT are each represented by one member in the nine member risk center management board and those two members have a right to request and receive the data they see appropriate. At the risk

center, the number of detailed reports produced for all member institutions, public authorities, individuals and companies reached 307 by the end of 2015. Those reports produced by the risk center is above the report volume of many developed country risk centers and credit bureaus. The number of information inquiries made by the member institutions from the risk center system surpassed 400 million inquiries per year and rose to the top in Europe.

In addition to traditional reporting systems, the risk center also contributes to financial literacy in terms of the ability of companies and individuals to see and manage their own risks by generating an individual indebtedness index, check report and a risk report. On the other hand, products such as complex credit scoring for banks have been produced in the last five years. In addition to this, the number of checks and risk reports produced by the system for users have exceeded 10 million annually.

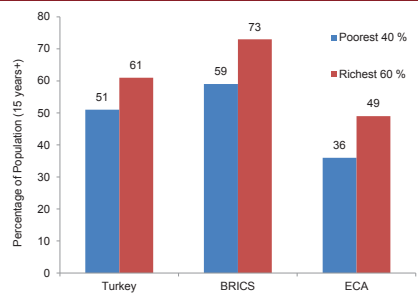
Although financial reporting system in Turkey is at the European Union standards and partly at a high level in some reports, the integration of individuals to the financial system and the use of the system are not at the same level. According to the World Bank's Global Findex data, while the account ownership among individuals ratio in Turkey is higher than the Europe and Central Asia (ECA) countries but it lags behind the ratio of BRICS countries. While the ratio of having a current account for a population aged 15 years and over in the total population was 57 percent, this ratio is 69 percent for males and 44 percent for females, indicating that the gap between the gender is quite high (Chart IV.3.1). When account ownership ratios are evaluated according to income, age and education level, Turkey is ahead of the ECA group countries but fall behind BRICS countries group. (Chart IV.3.2, IV.3.3 and IV.3.4)

Chart IV.3.1
Account Ownership among Individuals
(Overall and by Gender)



Note: BRICS (Brasil, Russia, India, China, South Africa)
ECA countries, Europe and Central Asia countries (30 countries)
Source: Global Findex 2014

Chart IV.3.2
Account Ownership among Individuals
(By Income Group)



Note: BRICS (Brasil, Russia, India, China, South Africa)
ECA countries, Europe and Central Asia countries (30 countries)
Source: Global Findex 2014

Chart IV.3.3
Account Ownership among Individuals
(By Age Group)

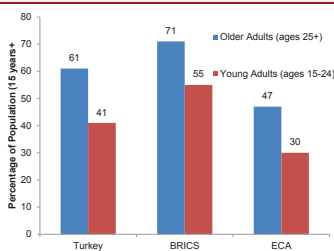
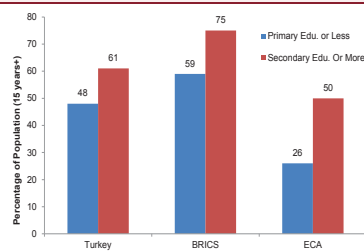


Chart IV.3.4
Account Ownership among Individuals
(By Level of Education)

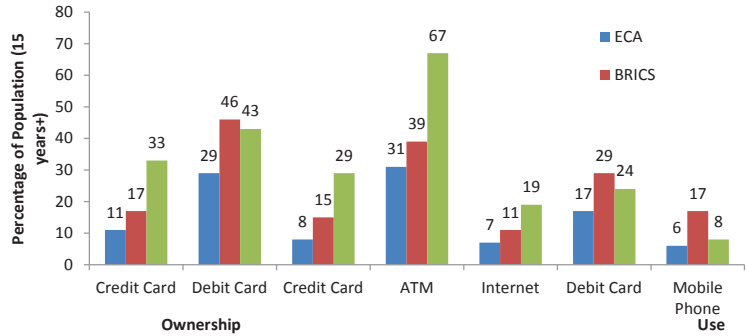


Note: BRICS (Brasil, Russia, India, China, South Africa)
ECA countries, Europe and Central Asia countries (30 countries)
Source: Global Findex 2014

According to the Global Findex survey, credit card and debit card ownership ratios in the population over the age of 15 are 33 percent and 43 percent, respectively (Chart IV.3.5). Accordingly, credit card ownership ratio is higher than other country groups. On the other hand, when the usage of transaction accounts by adults is examined, it is observed that credit card and ATM usage ratios are at the highest level among all other country groups with 29% and 67%, respectively. In the same chart, the ratio of payment by internet

is relatively high compared to other country groups and it is 19 percent. Payment by mobile phone is at a relatively low level of 8 percent.

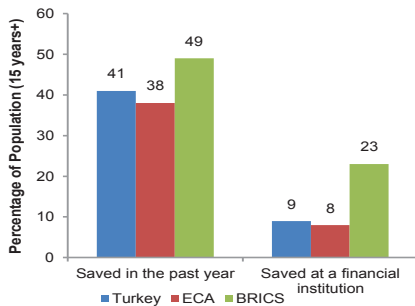
Chart IV.3.5
Use of Transactions Accounts by Adults



Source: Global Findex 2011 and 2014

Finally, as shown in Chart IV.3.6, survey estimates of savings behaviour adults a year ago indicated that about 41 percent of adults save on a financial institution, but others do not have a regular savings at a certain institution. On the other hand, only 9 per cent of the relevant population has been found to accumulate savings in a legal financial institution.

Chart IV.3.6
Savings Behaviour of Adults
(Percent)



Source: Global Findex 2014

In summary, although the financial reporting system in Turkey has made great progress in recent years, it is a fact that a considerable part of the population is still not included in the financial system and the credit reporting system in Turkey. Since the savings rates are low in Turkey, the integration into the financial system cannot be fully realized. On the other hand, the use of technology for payments is not at the desired level. In this context, it will be beneficial to expand the concept of credit reporting to include the granular data base within the scope of financial inclusion. As a result, to complete the credit reporting system as a whole, it is necessary to increase financial literacy, include more detailed SME data to credit reporting system, and improve public and private sector cooperation in this area.

References

- AFI Annual Report 2015, "Making Financial Services More Accessible to the World's Unbanked"
- Alliance for Financial Inclusion (2014), Global Trends and Lessons Learned from the AFI Network
- CPMI-World Bank Group (2015), Payment aspects of financial inclusion, Consultative report
- Demirguc-Kunt, Klapper ve Singer (2014), "The Global Findex Database 2014, Measuring Financial Inclusion around the World", WB Working Paper No, 7255
- Financial Stability Report, May 2012, Special Topic V.4. "Financial Trilogy: Financial Inclusion, Financial Education and Financial Consumer Protection" pg. 84- 89
- Global Partnership for Financial Inclusion, 2016, G20 Financial Inclusion Indicators
- Global Partnership for Financial Inclusion, 2013, G20 Financial Inclusion Indicators
- World Bank, September 2016, "Financial Sector Assessment Program, "Republic of Turkey, Background Note-Financial Inclusion"
- World Bank-International Committee on Credit Reporting, July 2016, Policy Brief on Credit Reporting and Financial Inclusion, Third draft.
- World Bank, 2015/2016, "The Little Databook on Financial Development"
- World Bank, 2015, "The Little Databook on Financial Inclusion"
- World Bank Group, 2014, National Financial Inclusion Coordination Structures: Country Examples
- World Bank Group, 2014, National Financial Inclusion Strategies
- World Bank, "Financial Inclusion Strategies, Reference Framework" (July 2012), 78761
- World Bank-International Committee on Credit Reporting, 2011, "General Principles for Credit Reporting"
- World Bank Doing Business: <http://www.doingbusiness.org/>
- World Bank Enterprise Surveys: <http://www.enterprisesurveys.org>
- World Bank Global Findex Database:
<http://www.worldbank.org/globalindex>