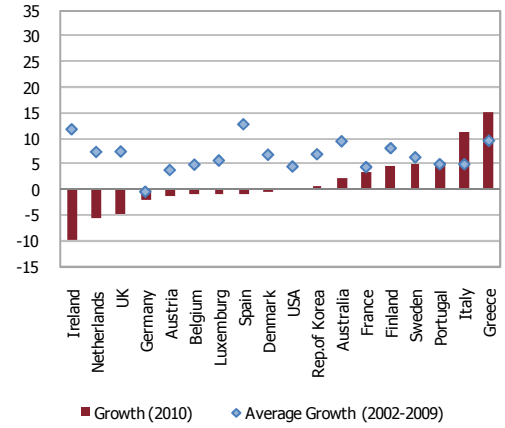
V. SPECIAL TOPICS

V.1. Limiting Volatility in Credit Market

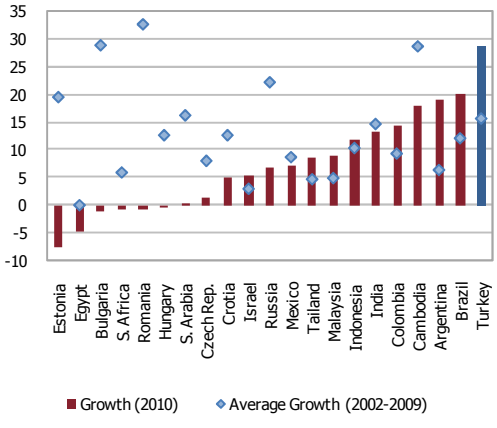
A rapid process of credit contraction was experienced parallel to the economic crisis; however, the macro measures taken and the loose monetary policies implemented triggered the start of a rebound in the credit markets. The said rebound varied among countries. Surging capital flows and external financing facilities coupled with robust domestic demand and the base effect led to rapid credit expansion especially in emerging countries. In fact, in 2010 many advanced economies experienced a credit growth below long-term averages; while emerging economies performed well to approach or transcend the levels of long-term averages. Credit growth in the selected advanced economies has been 1.2 percent in real terms on average, which rose by 7.3 percent in emerging economies in 2010 (Chart V.1.1 and Chart V.1.2).

Chart V.1.1. Real Credit Growth Rate of Some Advanced Economies (%)[1]



Source: IMF-IFS
(1) Credits mean the sum extended to the private sector by deposit banks.

Chart V.1.2. Real Credit Growth Rate of Some Emerging Economies (%)



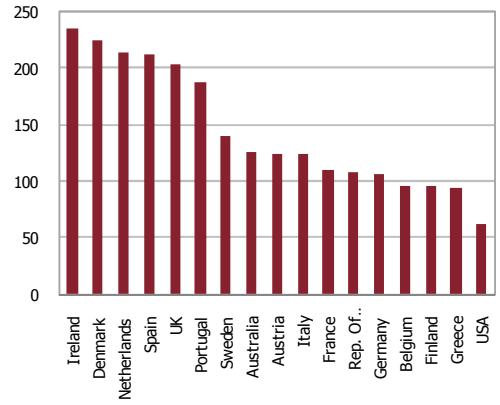
Source: IMF-IFS

The rapid credit growth may create some negative effects on the macro economy and financial stability. Rising capital movements due to ample liquidity lead credits to be financed with short term funds and also increase banks' reliance on such funds. Moreover, intense competition may lead to an increased risk of deterioration in credit portfolio quality, thereby also increasing the vulnerability of financial stability. Meanwhile, excessive credit growth may lead to an increase in asset prices through domestic demand; an increase in inflationist pressures due to overheating and a deterioration in the current account balance. As a matter of fact, many studies reveal that excessive credit growth is an important factor underlying financial crises especially in emerging economies (Kaminsky and Reinhart, 1999).

Credit growth is not undesirable as long as it is commensurate with country dynamics. However, great deviations from long-term averages have negative effects on the economy in general and on financial markets. In fact, studies show that fluctuations in credit volume end up in crises (Bordo, 2001). In this context, social and economic costs of credit cycles due to domestic and international developments as well as structural factors in credit markets can be relatively high.

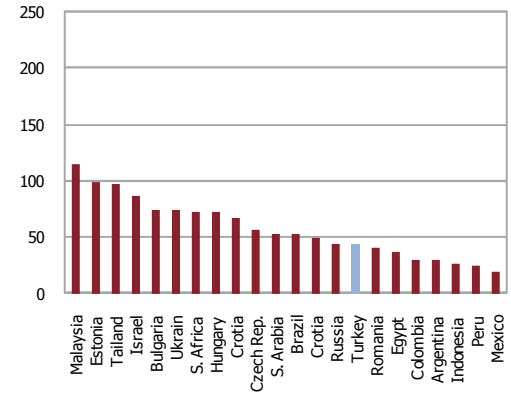
Financial markets get more intensely affected by internal and external shocks than the GDP and developments in these markets propagate through the credit channel to the economy as a whole. However, boom and bust cycles in the credit volume are more frequent and severe than those in the GDP. The depth of the financial system is a determinant on the effect of these shocks on the economy. The depth of credit markets in emerging economies is lower than that in advanced economies. In fact, the ratio of credits to GDP was 144.8 percent on average in selected advanced economies, while it was 57.2 percent on average in selected emerging economies (Chart V.1.3 and Chart V.1.4).

Chart V.1.3. Loan/GDP Ratio of Some Advanced Economies (%, 2010) [1]



Source: IMF-IFS
2009 data for some countries.

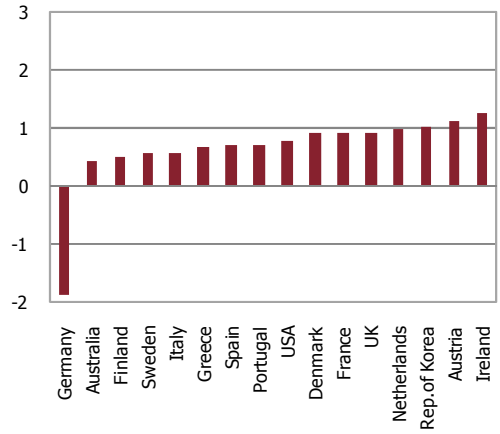
Chart V.1.4. Loan/GDP Ratio of Some Emerging Economies (%, 2010)[1]



Source: IMF-IFS
2009 data for some countries.

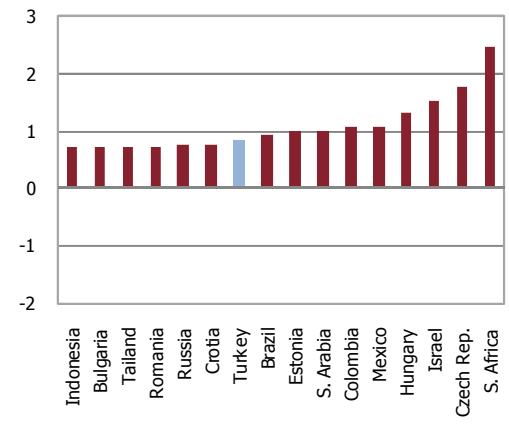
The lower depth in emerging economies' credit markets compared to that in advanced economies leads the credit markets of these countries to react more against internal and external shocks and have a higher variance of credit growth (Chart V.1.5 and Chart V.1.6).

Chart V.1.5. Variance of Real Credit Growth Rate of Some Advanced Economies [1]



Source: IMF-IFS
(1) Variance of real credit growth rate is calculated by dividing the standard deviations of the countries' real credit growth rates between the 2002-2010 period to the average growth rate in the said period.

Chart V.1.6. Variance of Real Credit Growth Rate of Some Emerging Economies [1]



Source: IMF-IFS
(1) Variance of real credit growth rate is calculated by dividing the standard deviations of the countries' real credit growth rates between the 2002-2010 period to the average growth rate in the said period.

Besides the monetary policy, micro prudential tools can also be resorted in order to curb expansion-contraction movements in the credit volume. In fact, the studies undertaken so far indicate that the monetary policy (Bean et. al., 2010) and micro prudential tools cannot be solely effective in constraining credit cycles. In this scope, measures such as countercyclical buffer capital, dynamic

provisioning, liquidity management and required reserves ratios that tighten credit standards in periods of economic expansion and ease them in contraction periods can be more effective.

Central banks monitor the economy from a macro perspective, so they target long-term stability by keeping the credit growth rate that increases vulnerability at more reasonable levels. In this context, central banks aim to alleviate the effects of financial cycles through macro instruments. To this end, countries opt for institutional changes to implement the said measures that are called macro prudential tools. For example, the Financial Stability Oversight Committee (FSOC), the European Systemic Risk Board (ESRB) and the Financial Policy Committee (FPC) were established in the USA, the EU and the United Kingdom, respectively. In a study conducted by the IMF, it is deducted that in the absence of macro prudential tools, monetary policies need to respond more strongly than normal to avert cyclical movements in credit markets (IMF 2009).

Consideration of the damage to stem from fluctuations in the credit volume, implementation of macro prudential tools to contain this and the establishment of the institutional framework to secure this situation is quite important.

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V.2. Stress Testing Methodology[7]

In financial stability analysis, measurement and assessment of the vulnerabilities in the system against shocks is of great importance. In this context, in addition to the stress tests shared with the public since the first volume of the Report, in this exercise, credit, market, contagion and income risk are evaluated under some macroeconomic scenarios to identify the banks' level of financial fragility.

This work, which links banks' financial data with macroeconomic shocks under some scenarios, aims to test the resilience of the banking sector. The dynamic nature of the exercise provides a more realistic insight into banking sector vulnerabilities than sensitivity analysis or static stress test exercise.[8]

In this new stress testing framework, using the 2010 year end data, two macroeconomic scenarios for 2011-12 are employed; one is the base case and the other is a hypothetical adverse scenario which assumes the sudden stop of capital inflows. The exercise is based on a "top-down" approach for 49 banks, where the impact of macroeconomic shocks on banks' financial statements are covered; thereby the potential risks that the sector is subject to are analyzed for a two-year horizon.

The scenario driven figures for GDP, inflation, interest rate, exchange rate and unemployment are used as input to the econometric models, and in this way, housing prices, nonperforming loans and credit growth are estimated. Thus, credit and market risk are calculated using the financial statement data under each of the scenarios.

Table V.2.1. Variables used in econometric models

Credit Growth Model		Nonperforming Loan (NPL) Model		Housing Price Model
Corporate	**Household**	**Corporate**	**Household**	
Lag of annual loan growth	Lag of annual loan growth	Lag of annual NPL growth	Lag of annual NPL growth	Lag of housing price index
Nominal GDP annual growth	Annual change in currency basket	Lag of annual GDP growth	Lag of annual GDP growth	Housing loans interest rates
		Quarterly change in currency basket	Lag of annual unemployment rate	

While measuring market risk the impact of interest rate and exchange rate shocks are applied. Banks' trading portfolio securities are revalued based on the change in interest rates, and the resulting loss is categorized under interest rate risk. The yield curve is assumed to shift in a parallel fashion within this analysis. The exchange rate shock is calculated as the product of the change in the exchange rate and the banks' net-open foreign exchange position.

[7] This work is an application of the methodology developed by Petr Jakubik, an economist at the European Central Bank, under the Component Two of the EU funded Euro sytem program "Strengthening Macro and Micro-Prudential Supervision in EU Candidates and Potential Candidates". In addition to providing the above-mentioned methodology, he provided technical support during this process.

[8] The dynamic feature of the employed framework is in line with the recently published methodology by the IMF- "Schmieder, Ch., Puhr, C., Hasan, M. (2011): Next Generation Balance Sheet Stress Testing, IMF Working Paper 11/83" (**http://www.imf.org/external/pubs/ft/wp/2011/wp1183.pdf**).

As for the credit risk, which is traditionally the key risk for banks, household loans and corporate loans are considered separately so that the parameters are estimated for each of them while linking them with the macroeconomic scenarios. Expected loan loss (EL) is calculated as a product of exposure at default (EAD), probability of default (PD) and loss given default (LGD), (*EL =* EAD **PD*LGD).*

EAD is estimated by using the credit growth model, whereas PD estimates are calculated by using the econometric model which links the NPL growth rates with the macroeconomic variables. In order to obtain PDs from NPLs the following formula is employed:

$$NPL_{t+1} = NPL_t + PD_t * PL_t - r*NPL_t \quad (1)$$

In this formula PL_t corresponds to performing loans *(Loans-NPL)*, *r* represents the average write-off (or sell-out) rate, which is assumed to be 0.33[9] considering its relatively stable nature over the past few years. NPLs which are estimated via the abovementioned satellite models are ultimately converted to PD using the above mentioned equation (1). Finally, LGD is estimated using the housing price model which relies on the fact that the real estate usually serves as collateral, hence housing prices[10] are able to be a good proxy for the collateral values.

In order to account also for unexpected losses the Basel II Formula, which considers the change in risk weighted assets (RWA) is employed. In this way, the change in RWAs and the de/re-leveraging effect are included in the analyses for the projected horizon.

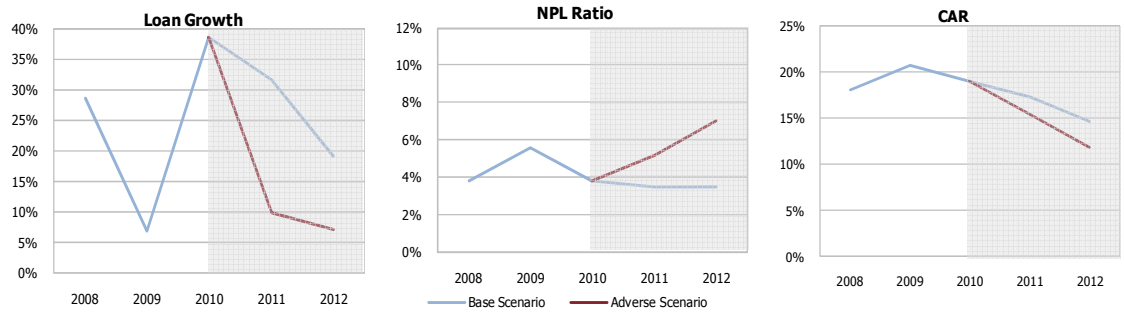
After credit and market risk calculation, the available net income is used to cover these losses. If the income is not sufficient to fully absorb the losses emerging from the considered scenario, it is deducted from bank capital. Net interest income is computed as a sum of net interest income and non-interest income. To reach the net income, the non-interest income is projected as an average over the last three years. The interest sensitivity gap between assets and liabilities for different maturities is used to project the net-interest income. After losses have been deducted from bank capital, a mapping of capital ratios into the probability of default of the respective bank is used to cover the interbank contagion risk. By deducting the resulting losses from capital of the affected banks the post-contagion capital adequacy ratios are computed.[11]

Moreover, policy reactions are not taken into account and, no additional capital is assumed within the 2-year horizon.

Within the general framework which is described above, shocks are applied to the Turkish banking sector. In 2012, while under the base case, the sector's CAR falls to 14.6 percent mostly due to the credit growth; under the adverse scenario, remaining above the legal limit, the sector's CAR declines to 9.2 (Chart V.2.1).

[9] It implies that banks on average keep their nonperforming loans on their balance sheets for 3 years before they write them off or sell them out.
[10] For housing prices, Garanti REİDİN index is used.
[11] In this analysis, "maximum entropy principle" is assumed. For details, see: *Upper C. and Worms A. (2004), "Estimating Bilateral Exposures in the German Interbank Market: Is there a Danger of Contagion?", European Economic Review, 8, 827-49.09/02.*[12] For a detailed analysis of the development of non-core funding resources for the USA, Korea and this trend, see Shin (2010).

Chart V.2.1. Scenario Outputs for the Banking Sector-CAR, NPL Ratio and Loan Growth



Source: CBRT calculations

All in all, under considered assumptions and adverse macroeconomic scenario resulting from sudden capital outflows cause significant deterioration in sector's loans, NPL ratio, and capital adequacy. However, due to the sector's current high assets quality and adequate capital buffer, the CAR remains above the legal limit of 8 percent even under this very severe adverse scenario.

Stress testing is an evolving discipline. Thus, central banks always tend to update and improve their stress testing framework taking into account the changing conjuncture and country-specific conditions. Accordingly, the Central Bank of the Republic of Turkey closely follows, adapts and develops new approaches and uses the stress testing tool actively in financial stability analyses.

V.3. Non-core Liabilities as a Systemic Risk Indicator

The liquidity glut that emerged due to the quantitative easing policies by advanced economies following the global crisis led to an increase in capital inflows towards emerging economies, which resulted in substantial credit growth.

The view that capital flows increase risks in the financial system thus, they need to be subject to stricter legal regulations has frequently been voiced in recent times. This approach defines banks as *passive* intermediaries that transform these types of funds into loans so as to meet the current credit demand. Suggesting an alternative approach for the examination of the structure of banks' liabilities, Shin (2010) asserts that banks play an *active* role in the formation of financial bubbles. According to this approach, during credit booms, banks, which opt for relatively volatile funding resources with higher potential to generate liquidity risk in the future, increase the vulnerability of the banking sector against systemic risks. Thus, classification of banks' liabilities regarding their potential to generate liquidity risk provides an important indicator regarding the strength of the financial system. In this context, the table below demonstrates the classification of core and non-core balance sheet liability items (Table V.3.1).

Table V.3.1. Classification of Core and Non-Core Balance Sheet Liabilities

	Core Liability	**Intermediate**	**Non-core Liability**
	Household	**non-financial corporate**	**Financial Institutions**
Liquid	Demand deposit Short term savings deposit (up to 1 month)	Demand deposit Short term commercial deposit (up to 3 months)	Demand deposit at banks Funds from repo Short-term payables to banks
Partially Liquid	Medium term savings deposit (1 month-1 year)	Medium and long term institutional commercial deposit	Time deposit Medium and long-term payables to banks
Non-Liquid	Long-term savings deposit (1 year and longer)		Issued securities Other borrowings from banks

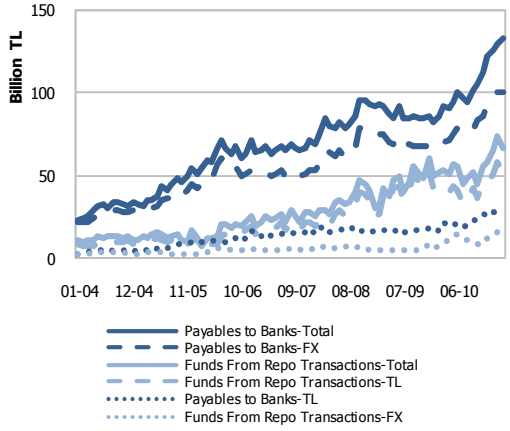
Core funding resources consist of resident households' demand and time deposits. These funding resources, which are more reliable for banks, follow a relatively smooth growth trend, in line with the growth level of household wealth. However, during credit booms, when credit growth is larger than that of deposits, banks resort to alternative funding resources as well. As also stated above, a prevalent outcome of this trend is the increase in funding from foreign banks. These funds aggravate the fragility as they have a more sensitive structure against the fluctuations in global markets. Another important phenomenon is the rising borrowings from domestic banks. These two funding resources make up a vast part of the non-core funding resources of banks and exhibit a more volatile nature compared to core liabilities.

Changes in borrowings from the domestic banks item have an asymmetric effect over the financial cycle. In relatively stable times of markets, interbank borrowings are considered to be important indicators of confidence in financial markets. However, in a period of crisis, banks can lower the borrowing limits among themselves, which may result in an abrupt liquidity squeeze.

Another important characteristic of non-core liabilities is their procyclical behavior over business cycles. Credit booms, which mostly coincide with economic expansions, are accompanied by increases

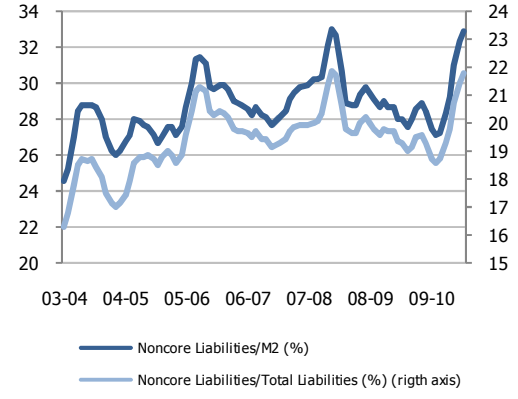
in non-core funding resources[12]. The Dodd-Frank Law, which encompasses elements to reduce macroprudential risks in the US financial system in the post-crisis period also leads to higher taxation of financial institutions with relatively more non-core liabilities[13]. Besides their income-raising quality as for the fiscal policy, Shin (2011) suggests such a tax on non-core liabilities also works as a prudential tool in dampening the procyclicality of the financial system, especially for emerging economies. External funds, which are effective in credit growth to a great extent, stand out especially in the borrowings from the foreign banks item among the liability items of banks (Chart V.3.1). The ratio of non-core liabilities to M2 and to total foreign resources for Turkey is illustrated in Chart V.3.2. The rise in the said ratio halted during the crisis in 2008; but assumed a trend of fast rebound following 2010. An analysis of sub-items indicates that repo transactions are mostly made of TL-denominated ones and those made with the CBRT; while the borrowings from banks item that consists of a vast part of non-core liabilities are made of borrowings from foreign banks.

Chart V.3.1. Non-core Funding Resources [1]



Source: BRSA –CBRT.
1) Quasi-capital debts and security issuances are not included. Foreign currency and Turkish lira differentiation largely reflects the difference between domestic and external concepts.

Chart V.3.2. Non-core Funding Resources [1]



Source: BRSA –CBRT.
1) Ratios are displayed in 3-month moving averages. Total external resources item expresses the total of liabilities item other than equities.

The calculation of this ratio for Turkey poses a notable element of fragility. This is because the average share of non-core funding resources within foreign resources is around 20 percent, while that of total deposits is around 70 percent, although it has currently risen for the financial system[14]; the ratio of credits to deposits signals that credits are still mostly funded by deposits (Chart III.19); and measures to extend the maturities of liabilities have been put into effect (Box III.1).

Consequently, while funding of the banking sector still relies on core resources; the recent rise in the ratio of non-core liabilities to M2, which shows a pro-cyclical pattern, should be closely monitored within the context of macroprudential policies.

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[12] For a detailed analysis of the development of non-core funding resources for the USA, Korea and this trend, see Shin (2010).
[13] The Law also suggests a study of identification regarding core and non-core liabilities.
[14] Average ratio of deposits within total liabilities is around 60 percent.

V.4. Transfer of the Activities of the Central Bank Risk Center to the Banks Association of Turkey

In many countries, systems are established to compile and disseminate risk data with a view to determining the risks assumed by credit agencies; providing inspection and surveillance and securing smooth operation of the credit system. Risk data are collected solely by public authorities in some countries; whereas they are followed only by private credit rating agencies in some. Meanwhile, many countries have adopted a mix model employing both the public and private institutions. For example, Belgium, France and Indonesia are some of the countries with only public credit registration centers; while the USA, Canada, Holland, the United Kingdom, Switzerland and Poland are those with only private credit bureaus; and Germany, Austria, Bulgaria, Italy, Spain, Portugal, Malaysia, Argentina, Brazil and Mexico are countries with mixed structures. Public credit bureaus may diversify with regard to their purposes of establishment. While these data are considered as a part of banking inspection and surveillance in some countries, currently, monitoring of the history of borrowing come to the forefront as the most significant function.

Historical Development of the CBRT Risk Center

As stipulated in the Repealed Article 44 of Central Bank Law No:1211, the aim of the Risk Center is to ensure the customers or loan applicants of banks and financial institutions continuously see the updated total amount of credits over the financial system as a whole and assist them in their credit decisions.

The CBRT Risk Center was established in 1951 at the İstanbul Branch and started offering services to the branches of banks in that district. As the number of branches of the CBRT increased in the country, the Center was moved to the Ankara Branch and its catchment area was widened to include bank branches in the rediscount areas. Currently, the CBRT Risk Center provides services all over Turkey.

Parallel to the deepening of our financial system and improvements in financial institutions, the number of participants in the system increased over time. Although the participants of the Risk Center were initially only banks, as of June 2000 factoring and financial leasing companies; as of February 2005 consumer financing companies; and as of October 2007 asset management companies were included in the system.

The way notification to the Risk Center is done has also evolved parallel to improvements in the tools of communication. Information on the banks' credit limits and risk, which were sent to the Risk Center in written form until 1989, were transmitted via tapes, diskettes and cartridges until the first half of 1998; and started to be sent via the electronic data transfer system as of the second half of 1998.

The types and contents of data transmitted to the Risk Center has increased over time and -in order of occurrence - credit limit and risk information, protested bills, identification data of retail loan

defaulters and lastly information on bad cheques in line with Law No. 5941 have been centralized at the Risk Center and started to be shared with participants.

Currently, the Risk Center has 177 participants consisting of 48 banks, 11 consumer-financing companies, 6 asset management companies, 36 financial leasing companies, 75 factoring companies and Credit Guarantee Fund Inc. Besides, two institutions that provide information resources, namely the Savings Deposit Insurance Fund and Capital Markets Board.

Data collected at the Risk Center comprises not only of data that is considered by lenders in their decisions; but they are also actively used in macroeconomic assessments and analyses; in the decision-making processes of policy-makers and in informing the public. In this context, important data - such as the sectoral and geographical distribution of credits; developments in the number of credit defaulters as well as protested bills by periods; the number of bad cheques - are shared with the public as they are gathered.

Removal of the Risk Center from the CBRT and the Transfer of its Activities to the Banks Association of Turkey

As the financial sector improved and deepened, and transactions gradually became more complicated, more sophisticated methods to assess the creditworthiness of borrowers have begun to be used. Therefore, so as to apply different prices according to the risk levels of companies for loan extension via the Risk Center, diversification of the data base regarding the information required for banks to get a better assessment of the companies; fostering the infrastructure of the Risk Center in this context; and the execution of studies to instantly meet the sector's needs through updated information were needed.

Under the scope of Basel Committee on Banking Supervision exercises, it has recently become important for banks to develop their own internal control mechanisms to estimate the risks of the banking sector and to alleviate the possible unfavorable effects. On the other hand, enhancement of inspection and surveillance of the banking system and implementation of the required stress tests to detect the fragility of the sector, foresight of risks and development of policies are needed.

Moreover, in order to facilitate the financing of trade and enhance its efficiency, the need to share the information collected at the Risk Center by third persons concerned, other than financial institutions has emerged.

Needs have changed parallel to developments in the Turkish financial sector. Given that the surveillance duty of the CBRT has ended and the activities of the Risk Center are not included in the basic tasks of central banks, these activities are to be undertaken by an institution other than the CBRT, as is the case with some other countries. Thus, considering that approximately 88 percent of the financial system consists of banks, it was assessed that the activities of the Risk Center can be implemented by the Banks Association of Turkey, which is a professional organization with the status of a public institution founded as per Banking Law No.5411.

Under this scope, according to Law No.6111, which was accepted by the Turkish Grand National Assembly on 13 February 2011 and enforced by being published in Official Gazette no 27857

(Repeated issue) on 25 February 2011, the Risk Center was established at the Banks Association of Turkey and the provisions regarding the Risk Center stipulated in Article No. 1211 of the CBRT Law were annulled.

In the transition period until the fulfillment of arrangements regarding the transfer of the activities of the Risk Center, it was decided that these would to be undertaken by our Bank as per repealed Article 44 of Law No 1211.

The amendments introduced to the Risk Center by the said Law are summarized below;

i. All rules and procedures regarding the establishment, activities and functioning of the Risk Center; formation, gathering and decision-taking of the Risk Center management; the scope, style and contents and dissemination of the received information; the scope, content and pricing of information to be shared besides setting the contribution fee shall be arranged by a regulation for which the assent of the BRSA and the CBRT will be sought.

ii. Under the current arrangement, participants of the Risk Center are explicitly specified in the Law as credit agencies, development and investment banks and other financial organizations; whereas in the new arrangement, they are stated as credit agencies and financial institutions that will be considered eligible by the BRSA.

iii. The Risk Center shall be directed by a management of 9 members with a 3-year term of office; and one member within this management shall be appointed by the BRSA and the CBRT from among their staff.

iv. In line with the establishment purposes of the Risk Center, demands for information from legal entities of private law, public institutions and organizations and vocational organizations of public body quality and superior institutions thereof are by arrangement as per the assent of the BRSA. On condition that persons who have information about them held at the Risk Center give their consent for the disclosure of this information, the sharing of risk information with agreed parties has become possible. Rules and procedures regarding the dissemination of information with this person's consent shall be laid down by a regulation to be formulated with the assent of the BRSA and the CBRT. Within this scope, real and legal persons will be able to receive risk information on condition that their liabilities against retail sales companies, electricity, water, natural gas and telecommunications institutions are collected by the Risk Center; and their clients give consent to the Risk Center in response.

v. The Risk Center can be inspected by the BRSA, when needed.

vi. The Risk Center shall perform all kinds of exchange of information as per Article 73 of the Banking Law according to contracts made through companies established by at least five banks.

vii. Information stored in the Risk Center shall be received by the BRSA and the CBRT in the requested format and content and shall continue to be used in assessments and analyses.

The Risk Center is required to receive information from participants following the formulation of the regulations regarding the establishment of the Risk Center and dissemination of the information

upon consent within 1 year at the latest and the publication of these regulations in the Official Gazette.

Following the completion of the technical infrastructure of the Risk Center at the Turkish Banks Association, information on credit limits and risk, protested bills and bad cheques besides all data relating to bad retail loans held at the CBRT shall be transmitted to the Risk Center of the Banks Association of Turkey; and activities of the Risk Center at the CBRT shall be terminated.

V.5. Interest-free Banking at a Glance

Although the intellectual foundations of interest-free banking were previously laid, the notion of interest-free banking became institutionalized parallel to the establishment of the Islamic Development Bank in 1975, which aims to finance development projects in Islamic countries in accordance with Islamic rules. The sector grew so fast in subsequent years in line with the participation of many private banks and has currently reached an asset size of USD 1 trillion and a global potential of USD 4 trillion[15].

The Muslim population has reached 1.6 billion. Their demand for financial instruments that comply with Islam has been influential on such a high-rated growth in interest-free banking and the finance sector. Basic principles that these institutions should consider to meet the demand can be summarized as: (i) bewaring of interest based transactions, (ii) bewaring of excessive uncertainty and risky transactions, (iii) not financing the sectors prohibited by Islam[16].

In the context of these basic principles, leading loan/fund lending methods developed by non-interest financial institutions are **murabaha,** which is a type of sales; **mudaraba,** which is basically an investment partnership; **musharakah,** which is sharing of profits-losses; **ijarah,** the corresponding term for financial leasing in conventional banking; and **salam,** which is a method by which parties agree in the purchase-sales of a commodity at a future date at a certain price that is paid completely at the time of the agreement.

Interest-free banking institutions differ in their exclusive credit/fund lending methods besides fund collection methods. Some of these are **current accounts** of any currency, in the form of demand deposits with no returns like dividends; **participation accounts,** which can be defined as time deposit accounts of non-interest banks and **sukuk** certificates, which are defined as "non-interest bills" due to the prohibition of obtaining and giving interest by Islamic rules.

Interest-free banking institutions can issue *sukuk*s of different types relying on the assets they build up with the above-listed different methods. In general, the financial institution transfers an asset it owns in order to issue sukuk to a company it establishes. Then the company finances the asset through the income it obtains from sukuks it issues relying on this asset. The company that issues sukuk after the financial institution leases the asset it transfers and finances the periodical payments of sukuk certificate through the rent it obtains. When the *Sukuk* certificate is due, the financial institution takes the asset back, pays the certificate-holders capitals with this money and finalizes the transaction. Besides being interest-free, *sukuk* differs from bills as it also consists of the ownership of the asset, which is the subject to the certificate.

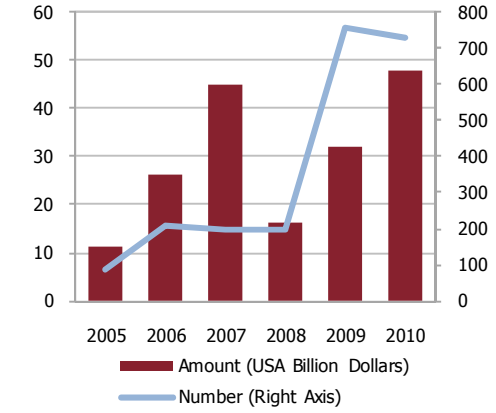
The fulfillment of transactions in interest-free banking in close relation with the real economy, aversion to high risk and uncertainty, the direction of funds to areas that mostly generate production and employment enables interest-free banking to play a role in supporting financial stability.

[15] BMB Islamic, Global Islamic Finance Report 2010
[16] TKBB, "Principles of Interest-Free Banking and Participation Banking" http://www.tkbb.org.tr/download/faizsiz_bankacilik_onyilmaz.pdf

Nevertheless, due to their operating principles, non-interest financial institutions are faced with greater limitations in meeting their liquidity requirements compared to conventional banks. There are many financial instruments in the conventional banking system, which banks can employ in liquidity management with the contribution of an advanced interbank market. Interbank markets provide banks with great flexibility in the arrangement of short-term cash flows. In addition, secondary markets where financial instruments are traded are noteworthy facilities regarding liquidity management.

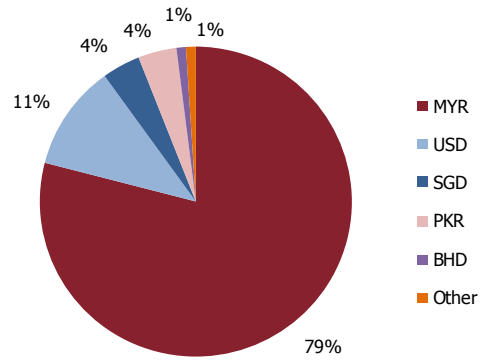
As all the conventional liquidity management facilities like the interbank market, secondary market instruments and the rediscount window of central banks as lenders of last resort are based on interest, they cannot be employed by Islamic banks. In order to solve this problem, the use of sukuks defined as "non-interest bills" has become widespread. *Sukuk* issue decreased on a global scale due to the economic contraction in the crisis period; but retrieved pre-crisis levels in 2010. In addition to the rise in total amount, the remarkable increase in quantity is an indicator of the increasing popularity of sukuk markets (Chart V.5.1). In fact, in many countries including Turkey, the first *sukuk* issue was made in 2010; and the same was planned by many other countries for the year 2011[17]. If the distribution of issues in global sukuk markets is analyzed in units of currencies, South East Asia (especially the Malaysian Ringgit) stands out as a dominant region (Chart V.5.2).

Chart V.5.1. The Number and Amount of Sukuk Issued



Source: IFIS

Chart V.5.2. Currency Unit of the Sukuk Issued (2010)



Source: IFIS

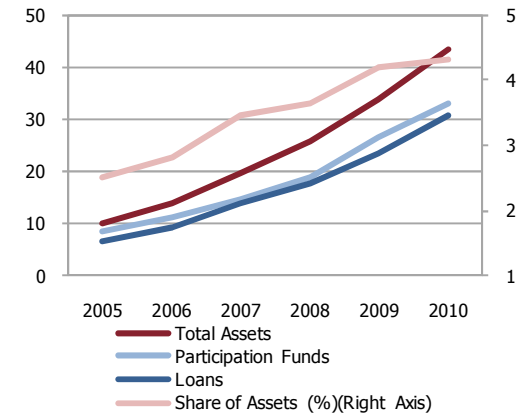
These developments in the international sukuk market proliferate liquidity management opportunities, while some international mechanisms intended for handling the problem are being formulated simultaneously. In this framework, the International Islamic Liquidity Management Corporation– IILM- was established, of which the Central Bank of the Republic of Turkey is one of the founders. The objective of the initiative in question is to establish an international asset pool with Sharī`ah-compliant revenues and to regularly issue high-rated, simple, internationally-recognized sukuk that can be traded on secondary markets and intended to meet the liquidity needs of interest-free banking institutions in member countries. The initiative, which was started on 25 October 2010, is still in progress and the main benefits expected from the initiative are: facilitating liquidity management of interest-free banks, facilitating the development and integration of interest-free

[17] IFIS, Global Sukuk Market H2-2010 Report

interbank markets and establishing a risk-free indicator for effective pricing of other products by regularly issuing sukuk. Moreover, the IILM will possibly facilitate the liquidity management of institutions offering Islamic financing services in case of a squeeze and thus counterbalance the said institutions' competitive power against conventional banks. The striking point regarding the working principle of the IILM is that assets are transferred to the IILM via central banks. The reason for that can be explained as an effort to safeguard the quality of assets and lease payments (in case of leaseback). The IILM has not reached a consensus on another method for drawing assets from the assets pool. All kinds of financial and non-financial assets that are compliant with Islamic rules will be accepted in this pool of assets and instruments issued will have a credit rating of AAA, be in a form that is easily comprehended and accepted, be issued regularly in small volumes, be globally recognized, convertible and will have different maturities**.**

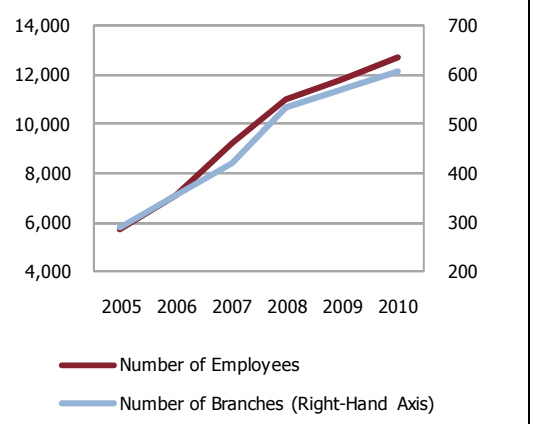
Parallel to the growth of interest-free banking on a global scale, the institutions which first started to operate in Turkey in 1986 under the name of "special finance institutions", were described as "participation banks" in the Banks Act No: 5411 in 2005; and participation funds have grown by 295 percent, while credits have grown by 376 percent since 2005. While the assets of participation banks accounted for 2.5 percent of the entire sector in 2005, this ratio reached 4.3 percent in 2010. Again, in the same period, the assets of other banks grew by 149 percent, while those of participation banks grew by 335 percent (Chart V.5.3). A growth similar to the one in the balance sheet items of participation banks was also observed in the number of branches and staff of the said banks (Chart V.5.4).

Chart V.5.3. Growth of Assets, Loans and Deposits of Participation Banks (Billion TL)



Source: CBRT

Chart V.5.4. Growth in the Number of Branches and Staff of Participation Banks



Source: CBRT

A major breakthrough in the interest-free banking sector in Turkey was the Capital Markets Board's "Communiqué on the Principles Regarding Ijara Certificates and Asset Lease Companies" of April 1, 2010. The ijara certificates enable private sector companies to provide financing using the assets that they own or they are assigned by leasing, via an asset lease company by employing the "assign-lease-to be assigned" method. At the onset, the asset management company finances the assets that are assigned to it via the ijara certificates that it will issue. The periodic payments of the said certificates are made out of the returns from the said lease transferred by the bank. At the end of

the lease term, the returns from the said assets that are assigned back to the bank are paid to ijara certificate holders in proportion to their shares, and thus the ijara certificates are redeemed. The arrangement regarding this interest-free instrument also called the ijara sukuk, soon generated impacts and the Turkish banks have become players in the sukuk market with the first sukuk issued in the participation-banking sector in 2010. Taking into account the significant amount of capital looking for a safe investment environment due to the unrest in the Middle East, sukuk issues in Turkey are expected to continue and grow further in the upcoming period.

The revenue-indexed bonds (RIB) issued by the Undersecretariat of Treasury also assume a prominent role in the liquidity management of interest-free banking. These bonds can be utilized by participation banks, as they are interest-free and indexed to revenue shares that are generated by State Owned Enterprises and transferred to the budget. It was announced that revenue shares for 2011 will be the base for the maximum return to be paid by the coupons of the bond and the revenue projection provided in the Budget Law is TL 332.9 million[18].

[18] Undersecretariat of Treasury http://www.hazine.gov.tr/doc/GES/Ges_brosur.pdf

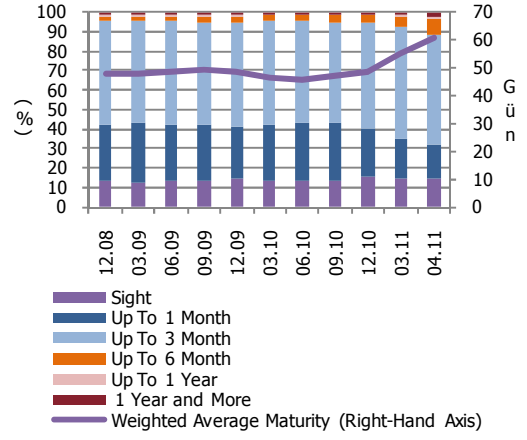
V.6. The Maturity Structure of Deposits

The primary funding source of the banking sector is deposits/participation funds. Banks' deposits/participation funds subject to required reserves, which were TL 617 billion in March 2011, account for 60 percent of total funds. The maturity of deposits/participation funds, which is generally up to three months, is shorter than those of loans and securities that comprise the biggest share in assets. The maturity mismatch exposes the sector to liquidity and interest rate risk and increases the vulnerability of the banking system. The Turkish lira required reserve ratio has been differentiated according to the maturity structure of deposits/participation funds with a view to extending the maturity of resources of the banking system, mitigating maturity mismatch and underpinning financial stability. Within this framework, higher required reserve ratios have been introduced for short-term deposits/participation funds and thus, the margins between short and long-term deposits have been widened.

Similarly, FX required reserve ratio has been differentiated according to the maturity of FX deposits/participation funds and other liabilities, and both Turkish lira and FX required reserve ratios have been raised for short term liabilities.

The average maturity of deposits/participation funds has started to be extended following these developments. While the share of deposits/participation funds up to 1-month maturity decreased, the share of deposits/participation funds with a maturity of 3-months and longer displayed a rise. The weighted average maturities of Turkish lira and FX deposits/participation funds, which were 48.2 and 67.3 days at the end of 2010, reached 61.1 and 73.3 days in April 2011 (Chart V.6.1 and Chart V.6.2).

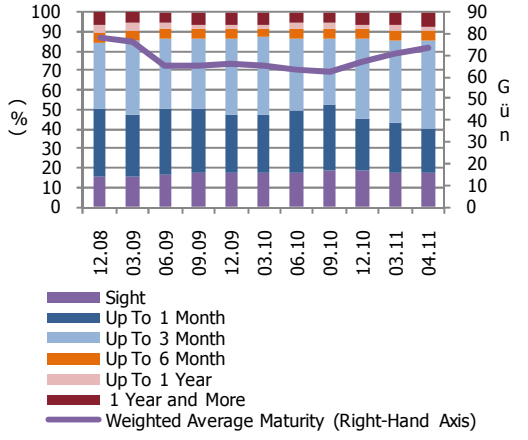
Chart V.6.1. Breakdown of Turkish lira Deposits/Participation Accounts by Maturities [1]



Source: CBRT

(1) The average maturity for deposits with a maturity up to 1 month, 1-3 months, 3-6 months and up to 1 year and longer have been assumed to be 15 days, 60 days, 135 days and 360 days, respectively.

Chart V.6.2. Breakdown of FX Deposits/Participation Accounts by Maturities [1]

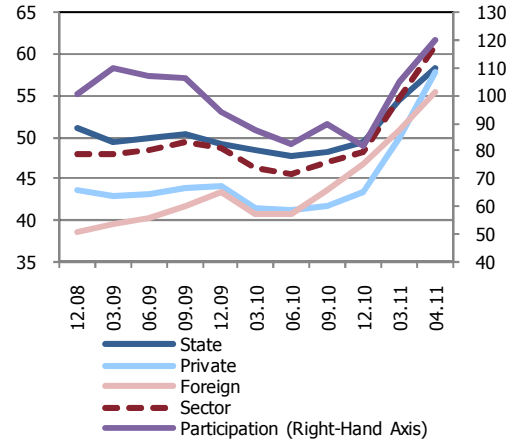


Source: CBRT

(1) The average maturity for deposits with a maturity up to 1 month, 1-3 months, 3-6 months and up to 1 year and longer have been assumed to be 15 days, 60 days, 135 days and 360 days, respectively.

All bank groups contributed to the extension of the weighted average maturity of Turkish lira deposits/participation funds in the banking sector. The weighted average maturity of FX deposits/participation funds was extended too, albeit not as much as Turkish lira deposits/participation funds (Chart V.6.3 and Chart V.6.4).

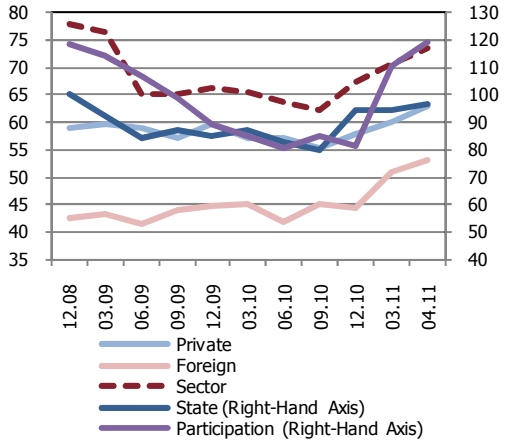
Chart V.6.3. Weighted Average Maturity of Turkish lira Deposits/Participation Accounts[1]



Source: CBRT

(1) The average maturity for deposits with a maturity up to 1 month, 1-3 months, 3-6 months and up to 1 year and longer are assumed to be 15 days, 60 days, 135 days and 360 days, respectively.

Chart V.6.4. Weighted Average Maturity of FX Deposits/Participation Accounts [1]



Source: CBRT

(1) The average maturity for deposits with a maturity up to 1 month, 1-3 months, 3-6 months and up to 1 year and longer have been assumed to be 15 days, 60 days, 135 days and 360 days, respectively.

V.7. Bond and Bills Issued by the Banking Sector

With the Banking Regulation and Supervision Agency's Resolution No: 3875 dated 30.09.2010 that was promulgated in Official Gazette No: 27717 dated 02.10.2010, deposit banks, which were formerly allowed to issue bills and bonds abroad only, were allowed to issue bills and bonds in the domestic market as well. As per the Resolution, banks shall issue TL-denominated bills and bonds - regardless of if they are offered to the public - according to the principles and procedures determined below.

a) The capital adequacy ratio of the issuer Bank shall not be under 12% as of the date of application,

b) In issues which will be in the form of public offerings, especially small investors shall be informed in detail and in writing that the amount borrowed via the issue is not covered by the Saving Deposit Insurance Fund with the aim of avoiding any misunderstanding that the money invested is within the scope of insurance like saving deposits or participation funds,

c) Prior to the issue, the Bank shall present to the Agency a report including the benefit and cost analysis, the impact of the issue on the Bank's financial structure, detailed evaluations concerning risks which may emanate from the issue taking into account the possible stress conditions as well as the code of practice to be followed to measure, monitor and control these risks,

d) The issuer Bank shall not have contradicted the corporate management provisions and protective provisions stipulated in Banking Law No: 5411 prior to the issuance, or in case of contradiction, the contradiction detected shall have been corrected,

e) The nominal limit concerning the issuances, which will be carried out directly in the capacity of the borrower Bank, shall be calculated according to the formulae described below, and the development and investment banks shall be exempted from this limit,

ASCIL= MIN (MAX (0,5* Equities;0,25*Savings Deposit);Equities)

Issue Limit = MIN (ASCIL*(1- (TAB/TAS)*5 +MAX (0;(MIN(0,2;CAR)-0,12))*2); Equities)

ASCIL: Amount Subject to the Calculation of Issue Limit

Equities: The amount of equities of the bank stated in the latest non-consolidated year-end or interim financial reports as of the date of application.

Savings Deposit: Total amount of savings deposit accounts or participation fund accounts of real persons to be calculated according to information contained in the latest non-consolidated year-end or interim financial reports as of the date of application.

TAB: Total assets of the bank that is announced in the latest non-consolidated year-end or interim financial reports as of the date of application.

TAS: Total assets of the sector announced by the Agency as of the date the total assets of the bank are taken into account.

CAR: Capital adequacy ratio (%) stated in the latest non-consolidated year-end or interim financial reports as of the date of application.

f) Securities to be issued within the scope of subordinated debt as well as mortgage and asset covered bonds shall be excluded from the issue limit,

g) The nominal amount of issues, which were made earlier by banks and which are still in circulation, shall be considered as a discount item while calculating the new issue limit.

Deposit banks have issued bills and bonds with a nominal value of TL 6.8 billion in the domestic market since the Resolution was enacted and the weighted average maturity of the issues was 252 days. Applications of the banks to issue new domestic bills and bonds with a nominal value of TL 9.7 billion have been registered by the Capital Markets Board (CMB); the banks shall issue these bills and bonds within one year at the latest upon registration. There are also other applications with a nominal value of TL 1.9 billion to be waiting for the registration of CMB (Table V.7.1).

Meanwhile, the nominal value of bills and bonds issued by banks abroad reached USD 3.3 billion and the weighted average maturity of these issuances is 6 years. Bonds with a nominal value of USD 3.2 billion have been registered by the CMB but they have not yet been issued. Applications to issue bills with a nominal value of USD 1 billion have also been made to the CMB for registry (Table V.7.1).

Table V.7.1. Developments Regarding Bill and Bond Issues of Deposit Banks

Nominal Amount	Domestic (Million TL)	Abroad (Million USD)
Bills and bonds that are registered by CMB and issued by deposit banks	6,800	3,300
Bills and bonds that are registered by CMB but not yet issued	9,700	3,200
Bills and bonds that are applied to CMB for registration	1,900	1,000
TOTAL	**18,400**	**7,500**

Source: CMB, PDP (Public Disclosure Platform)

According to the balance sheet data announced on May 26, 2011, deposit banks issued bills and bonds worth approximately TL 6.8 billion in the domestic market and approximately USD 5.1 billion abroad; meanwhile, development and investment banks issued TL 443 million-worth of bills and bonds; and thus the share of bills and bonds issued by the banking sector in total liabilities became 1 percent. These issuances are believed to facilitate diversification of the resource structure of the banking sector, extend maturities and mitigate maturity mismatch via the availability of resources with longer maturities. It is expected that bills and bonds issues will further increase, however, in light of available data, their share in total liabilities is expected to remain around 5 percent due to issue limits.

V.8. The Institutional Framework Regarding Macroprudential Policies

The concept of financial stability, which is an important prerequisite for both macroeconomic stability and price stability, has been at the top of the agenda recently. Failure to accurately understand the risks, especially those stemming from complex financial instruments and supervisory authorities' negligence of the relationship between the financial sector and other sectors during the crisis led to a rapid accumulation of systemic risk in financial markets. Meanwhile, the crisis revealed that the microprudential approach focusing on the position of financial institutions and disregarding the cross-sectoral relations was not adequate on its own and in this context macroprudential policies have come into prominence, as well. Upon the global consensus on the necessity to act proactively against risks in the system, macroprudential policies will inevitably become more significant in the upcoming period.

The primary objective of macroprudential policies, which are complementary to microprudential ones, is to prevent or restrain the negative effects of systemic risk on the financial system and the economy. Actually, macroprudential policies contain two pillars: "counter-cyclical policies" and "curbing contagion effects". The aim of counter-cyclical policies is to make the excessiveness driven by pro-cyclicality more controllable. Curbing the contagion effects means preventing the spread of any problem that has emerged in a specific sector or firm to the whole system by implementing active policies. Unlike the former one, the objective of the second pillar is to restrain the effects of any crisis and prevent it from turning into a systemic one.

Within this framework, it can be asserted that macroprudential policies have two dimensions: the objective of the "time dimension" is to detect prospective risks in the system and to prevent these risks from accumulating throughout the system over time. Accordingly, the objective of counter-cyclical macroprudential policies is not ensuring their implementation at a specific time, but ensuring that risks are monitored continuously and protecting the whole system from such risks in time for as long as possible. The objective of the second dimension, the "cross-sectoral dimension", is to detect the impact of any risk at a given time and to prevent the risk from pervading the whole system. The policy implemented here necessitates taking measures commensurate with the risk that emerges and revising the policy once the risk has been dissipated.

While designing macroprudential policy tools, the objective (such as suppressing excessive credit growth or reducing indebtedness ratios in the system) should be clearly defined. Once the objective is clearly defined, the policy instruments that can be employed to achieve the objective should be specified and the impacts of these instruments on the sector and the economy should be set.

The point that deserves highlighting here is that macroprudential policies are not substitutes for macroeconomic policies, but complementary to them. Moreover, there is no "one size fits all" solution for the implementation framework and institutional structure of these policies. The specific economic, political and institutional structure of each country should be taken into account to be able to draw the best structure for that country. Accordingly, determining the primary objective of macroprudential

policies and the instruments to be employed are thought to be important for designing the institutional structure. Besides, Determining a communication strategy and accountability principles as well as measuring and evaluating the effectiveness of policies are other important issues regarding the design of macroprudential policies.

Clearly, there are some challenges in terms of institutional structure and coordination. Firstly, the financial sector is a very dynamic one. The macroprudential polices necessitate continuous monitoring of a wide set of data, determining the systemically important institutions and following new products. Moreover, the policies demand that authorities develop a flexible response to risks.

As financial stability has regional and global reverberations, while implementing macroprudential policies country-specific conditions shall be taken into account without ignoring the international framework. Therefore, an effective international coordination is crucial in this process.

In the international arena, institutions such as the IMF, BIS and FSB are carrying out important studies about institutional structure to implement the macroprudential policies. In line with this, it has recently been observed that some changes have occurred in the existing institutional structures of some countries for monitoring systemic risks and implementing macroprudential policies. Some of these countries are analyzed in detail below:

United States of America (USA)

In the USA, macroprudential arrangements were substantially re-regulated with the "Dodd-Frank Wall Street Reform and Consumer Protection Act". The Act established the Financial Stability Oversight Council – FSOC. The FSOC is composed of ten voting members (The Secretary of the Treasury, who serves as the Chairperson of the FSOC, the Chairman of the Board of Governors of the Federal Reserve System, the Comptroller of the Currency, the Director of the Consumer Financial Protection Bureau, the Chairman of the Securities and Exchange Commission, the Chairperson of the Federal Deposit Insurance Corporation-FDIC, the Chairperson of the Commodity Futures Trading Commission, the Director of the Federal Housing Finance Agency, the Chairman of the National Credit Union Administration Board, and an independent member with insurance expertise that is appointed by the President and confirmed by the Senate for a six-year term) and 5 non-voting members. While the Act underscores the importance of macroprudential arrangements, the details pertaining to implementation is entrusted to the regulatory authorities.

The FSOC, which was established with a view to addressing the need to evaluate all the structural vulnerabilities and shocks that the financial system is exposed to with a holistic approach, undertakes communication and cooperation mechanisms between oversight and supervisory authorities concerned. Thus, the mandate gaps regarding financial stability, which were also stated in the FSAP Report of the USA, have tried to be addressed as well.

The law furnished the Council with the following duties and powers:

- Facilitate Regulatory Coordination
- Facilitate Information Sharing and Collection
- Designate Nonbank Financial Companies for Consolidated Supervision

• Designate Systemic Financial Market Utilities and Systemic Payment, Clearing, or Settlement Activities

• Recommend Stricter Standards

• Break Up Firms that Pose a "Grave Threat" to Financial Stability

• Recommend Congress close specific gaps in regulation.

The Act also established an authority -the Consumer Financial Protection Bureau- to regulate and supervise all consumer financial products within the Federal Reserve System with an aim of protecting the rights of consumers more effectively. The Bureau is vested with the power to set and enforce rules regarding these financial products. Formerly, a federal authority for insurance supervision did not exist and the Office of National Insurance established within the Treasury will monitor all aspects of the insurance sector.

Lastly, the Act abrogates the Office of Thrift Supervision and all of its duties and powers are transferred to FDIC and the OCC. The primary objective of this rearrangement is to remedy the multipartite structure of the supervision.

United Kingdom

The tripartite regulatory system composed of the Financial Services Authority – FSA, the Bank of England - BoE and the Treasury was accused of being multipartite and a source of confusion of power. In July 2010, a proposal was made to the public to transfer the duties and powers of the FSA to the BoE; to establish a separate authority to protect the rights of consumers and investors and hence to have only one authority responsible for the implementation of macroprudential policies in the system. The revised draft amendment was issued on February 2011. The plan proposed by the Government has led to three major changes:

• A strong Financial Policy Committee -FPC- responsible for macroprudential policies and regulation and identifying risks across the financial system has been established within the BoE.

• An operationally independent Prudential Regulation Authority- PRA, which is responsible for microprudential supervision, has been established as a subsidiary of the BoE and the duties and powers of the FSA are transferred to the PRA.

• A separate supervisory authority focusing on the rights of consumers and investors – Financial Conduct Authority – FCA has been established.

The FPC, which has the ultimate responsibility for macroprudential policies, has authority over the PRA and FCA as well. Within this framework, the FPC not only has the power to recommend these two authorities, but it can also instruct the supervisory authorities to carry out the necessary arrangements. Moreover, the FPC can recommend all authorities and institutions concerned besides these two authorities and can warn the public about issues concerning financial stability when it deems necessary.

European Union (EU)

The new supervisory structure in Europe was initiated by the "Larosiére High Level Group Report" in February 2009; and the resolution on new financial structure, which was adopted by the European Parliament on September 22, 2010, was promulgated in the Official Journal of the European Union on December 15, 2010. Thus, the European Systemic Risk Board (ESRB) and the European System of Financial Supervisors (ESFS) were officially established on January 1, 2011.

The ESRB shall asses systemic risks to financial stability as a whole, issue early warnings pertaining to these systemic risks and recommend enforcements when necessary. A new body called the European Systemic Risk Board (ESRB) has been set up under the auspices of the ECB, but totally independent from the ECB, to monitor macro risks and as a platform for concerned parties to voice their demands. Moreover, as the ESRB comprises heads of the European supervisory authorities responsible for micro policies, it was planned to ensure harmonization of micro and macro policies. The objective of the new structure is to be able to identify macro risks within the complex and interdependent structure of the financial system and to supervise the financial institutions in Europe under a comprehensive and common structure.

The ESRB is legally responsible for identifying and evaluating any systemic risk in the financial system within the EU. The ESRB can demand data from any authorities or institutions for the sake of monitoring systemic risk. When such systemic risks are deemed important, the ESRB issues warnings for the concerned authorities and institutions and can share them with the public if necessary. The ESRB also issues recommendations for remedial action in response to the risks identified and oversees how much of the remedial action recommended has been carried out. The newly established coordination with other European supervisory authorities brought about by the system is expected to introduce a new method that will put systemic risk measurement on a more methodological track and a risk dashboard will be introduced.

With the Regulation adopted by the European Parliament on September 22, 2010 and took effect as of January 1, 2011, the European system of financial supervision was restructured. Accordingly, the supervisory authority unions such as the Committee of European Banking Supervisors - CEBS and the Committee of European Insurance and Occupational Pensions Supervisors - CEIOPS composed of the supervisory authorities of the EU countries, have been legally accepted as the European supervisory authorities and restructured. While ESFS is charged with the oversight of financial institutions, the three supervisory authorities to be established – the European Banking Authority – EBA, the European Insurance and Occupational Pensions Authority -EIOPA, and the European Securities and Markets Authority - ESMA will be collaborating with the European Supervisory Authority – ESAs and interconnect the national financial supervisory authorities.

Besides these authorities, a common platform for all three authorities, the Joint Committee of the European Supervisory Authorities has been set up to facilitate broader cooperation between them. The Joint Committee has committed itself to carry out the tasks listed below:

- To draw up special rules for national authorities and financial institutions,
- To develop technical standards, guidelines and recommendations,

- To monitor how rules are being enforced by national supervisory authorities,
- To take action in emergencies, including the banning of certain products,
- To mediate and settle disputes between national supervisors.

The European Supervisory Authorities, established within the framework of the new structure, will be working in close relation with the national authorities and help to mitigate the discrepancies between countries on regulatory and supervisory issues.

Malaysia

The Central Bank of Malaysia Act of 2009 vests very broad powers to the Bank regarding financial stability and macroprudential policies. The Bank has the power to request any kind of data or information regarding financial stability from the government or from regulatory/supervisory authorities or any institutions that it deems necessary.

"The Financial Stability Executive Committee", which is established within the Bank, may consider, accept or reject the proposal (regarding issues such as liquidity assistance, subsidiaries or branches, shares or other capital instruments, assets and liabilities etc.) in respect of a real person or financial institution at the meeting. The Bank is obliged to act in line with the Committee's decision.

The Central Bank of Malaysia is responsible for the prudent regulation of the financial authorities that it is responsible for. Whether or not they are included within the scope of the Bank's supervision/oversight limits, the Bank is authorized to collaborate with and coordinate national and international authorities in the face of risks threatening financial stability and take or have authorities take the necessary measures to restore financial stability with a macro point of view. The Central Bank Act authorizes the Bank to take the necessary measures against risks that could jeopardize financial stability and undertake macroprudential oversight.

Moreover, the Bank can cooperate and make agreements with other supervisory authorities and can recommend them for the sake of financial stability.

Indonesia

The Financial System Stability Forum (FSSF) is a venue for coordination, cooperation and information exchange among the authorities responsible for safeguarding financial system stability in Indonesia. The FSSF, which was established on 30 December 2005 with a Joint Decree of the Minister of Finance, the Governor of Bank Indonesia (BI) and Chair of the Board of Commissioners of the Indonesia Deposit Insurance Corporation, has a crucial role, particularly in addressing systemic risk that can only be resolved through joint policies and decisions followed by coordinated and effective actions.

The three key functions of the FSSF are:

1. To discuss the various issues in the financial system with potential systemic impact, as advised by the financial institution supervisory authority;

2. To coordinate and exchange information for the synchronization of laws and regulations concerning the banking system, non-bank financial institutions and the capital markets;
3. To coordinate the implementation or preparation of specific initiatives in the financial sector.

Mexico

The Council of Stability of the Financial System was established in July 2010 with a Presidential decree. The aim of the Council is to create a formal avenue to boost coordination and information exchange between the financial authorities and to enable quick and accurate identification of risks to the financial system. The Council is chaired by the Minister of Finance and comprises the Bank of Mexico, the Secretary of Finance and Public Credit, the National Banking and Shares Commission, the National Commission of Insurance and Finance, the National Commission for the Retirement Savings System and the Institute for the Protection of Bank Savings. While decisions are expected to be taken by consensus, in the event of policy disagreements within the Council, a majority vote would resolve the controversies. Although each financial authority is responsible for the implementation of the policies comprised within the scope of its legal mandate, in case of disagreement with the Council, it cannot be forced into action if that would conflict with the institution's own mandate. As part of the communication strategy, the council issues an annual report on the state of financial system and its activities.

Belgium

The supervisory framework of Belgium was changed on July 2010 and a two-pillar model which the supervision of financial system has been conducted separately by the National Bank of Belgium and the Financial Services and Markets Authority - FSMA was established.

In this new model, the National Bank of Belgium is responsible for safeguarding macro and micro stability, while the FSMA is responsible for ensuring that market operations are carried out impartially and transparently and market players treat their customers in a fair, honest and professional manner.

Within the framework of the new institutional framework, compliance with the prudential rules and codes of conduct are supervised separately and micro and macroprudential supervision are integrated thoroughly. The Central Bank, which currently monitors macroeconomic developments, is responsible for the risk-based supervision of authorities within the financial system, while the FSMA is responsible for conduct-of-business regulations, supervision of financial markets and financial products and education of financial players.

Other Countries

An analysis of institutional frameworks in other countries reveals that there are mainly four structures. In the "Institutional Approach", of which China, Mexico and Hong Kong are examples, the legal status of the firm (bank, insurance company, etc.) and the type of commercial activity it is engaged determine the authority that will supervise the firm. In the "Functional Approach", for which France, Italy and Spain can be presented as examples, the type of commercial activity of the firm is important and there is a separate regulatory authority for each type of commercial activity. In the

"Integrated Approach", for which Germany is an example, the risk-based supervision and conduct-of-business regulation for all financial services are carried out by a single authority. Lastly, in the "Twin Peaks Approach", for which Australia, Canada and Holland can be presented as examples, there are at least two regulatory authorities focusing on risk-based supervision and conduct-of-business regulation.

It was understood that the micro approach, which focused on individual situations of financial institutions and ignored cross-sectoral relations, fell short of meeting the needs alone and macroprudential policies have come to the fore; and it has become accepted worldwide that authorities should act more proactively in the face of risks. In this context, the macroprudential policy framework should be handled with care, taking into account both the institutional structure and policy implementations. It should be borne in mind that macroprudential policies shall not be designed to replace macroeconomic policies, but to complement them.

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V.9. The Impact of Global Liquidity Ratios on Central Bank Operations

I. Global Liquidity Ratios

With the lessons learned from the global financial crisis, the Basel Committee developed global liquidity ratios for banks and issued a document titled the International Framework for Liquidity Risk Measurement, Standards and Monitoring[19] in December 2010. The objective of the ratios introduced in the document is to reinforce the harmonization and resilience of liquidity risk supervision on a global scale. Two global liquidity ratios have been developed.

A. Liquidity Coverage Ratio-LCR

According to the first ratio -the Liquidity Coverage Ratio-, banks are required to maintain unencumbered, high quality liquid assets to meet their liquidity needs for a 30-day time horizon under an acute liquidity stress scenario. Accordingly, the ratio of stock of high- quality liquid assets to net cash outflows over a 30-day time period shall be 100 percent or greater.

$$\frac{\text{Stock of high-quality liquid assets}}{\text{Total net cash outflows over the next 30 calendar days}} \geq \%100$$

The numerator of the ratio is calculated by multiplying the value of assets defined as liquid assets by certain haircuts. Basically, liquid assets are comprised of cash, central bank reserves, marketable high quality securities representing claims on or claims guaranteed by sovereigns, central banks, non-central government public sector entities, high quality non-financial corporate bonds and covered bonds.

In the denominator, cash inflows stemming from on-balance sheet and off-balance sheet transactions due in 30 days are multiplied by certain factors while cash outflows stemming from on-balance sheet and off-balance sheet transactions due in 30 days are multiplied by run-off factors. Net cash outflows are calculated by subtracting the sum achieved by multiplying cash inflows by the factors, from the amount achieved by multiplying cash outflows by the run-off factors.

B. Net Stable Funding Ratio-NSFR

Besides the liquidity coverage ratio, a second ratio, the NSFR, has been developed to limit structural liquidity mismatches and keep core funding above a certain level. According to this ratio, a bank's available amount of stable funding to the required amount of stable funding shall be greater than 100 percent.

$$\frac{\text{Available amount of stable funding}}{\text{Required amount of stable funding}} > \%100$$

[19] "International Framework for Liquidity Risk Measurement, Standards and Monitoring", BIS, 2010.

Available stable funding (ASF) is defined as the total amount of a bank's capital; preferred stock with maturity of equal to or greater than one year, liabilities with effective maturities of one year or greater; a certain portion of non-maturity retail deposits and retail deposits with residual maturities of less than one year and a certain portion of non-maturity wholesale funding and wholesale funds with residual maturities of less than one year provided by non-financial corporate customers, sovereigns, central banks, public sector entities and multilateral development banks.

The required amount of stable funding is calculated by classifying assets from the most liquid to the least liquid and multiplying them by certain factors. For example, while the value of government bonds are multiplied by 5 percent factor the value of fixed assets are multiplied by 100 percent factor. Therefore, less funding is required for government bonds while more funding is required for fixed assets. While calculating the Required Amount of Stable Funding, the required amount of stable funding that could arise from off-balance sheet transactions is also included in the total amount.

The Committee decided that informative reporting for the LCR and NSFR shall be started by January 1, 2012 and LCR and NSFR will be introduced as minimum standards as of January 1, 2015 and January 1, 2018, respectively.

II. Liquidity Ratios Implemented in Turkey

In Turkey, the "Regulation on Measurement and Evaluation of Liquidity Adequacy of Banks" took effect in June 2007. As per the Regulation, banks are subject to Total Liquidity Adequacy Ratios and Foreign Currency Liquidity Adequacy Ratios. Ratios are calculated for one week and one month maturity brackets. According to the one week maturity bracket ratio, the weekly arithmetic average of the ratio of the sum of assets taken as stock irrespective of maturity and cash inflows due in one week to the sum of liabilities taken as stock irrespective of maturity and cash outflows due in one week calculated for each working day shall not be smaller than 100 percent. The weekly arithmetic average of the FX liquidity ratio, which is calculated in the same manner, shall not be smaller than 80 percent.

$$\frac{\text{Assets taken as stock irrespective of maturity + Cash inflows due in one week}}{\text{Liabilities taken as stock irrespective of maturity + Cash outflows due in one week}} \geq \%100$$

$$\frac{\text{FX assets taken as stock irrespective of maturity + FX cash inflows due in one week}}{\text{FX liabilities taken as stock irrespective of maturity + FX cash outflows due in one week}} \geq \%80$$

According to the one month maturity bracket liquidity ratio, the ratio of the sum of assets taken as stock irrespective of maturity and cash inflows due in one month to the sum of liabilities taken as stock irrespective of maturity and cash outflows due in one month shall not be smaller than 100 percent and the FX liquidity ratio calculated by using the same method shall not be smaller than 80 percent.

$$\frac{\text{Assets taken as stock irrespective of maturity + Cash inflows due in one month}}{\text{Liabilities taken as stock irrespective of maturity + Cash outflows due in one month}} \geq \%100$$

$$\frac{\text{FX assets taken as stock irrespective of maturity + FX cash inflows due in one month}}{\text{FX liabilities taken as stock irrespective of maturity + FX cash outflows due in one month}} \geq \%80$$

For both maturity brackets, the numerators of ratios are calculated by multiplying assets taken as stock irrespective of maturity and cash inflows by certain factors while denominators are calculated by multiplying liabilities taken as stock irrespective of maturity and cash outflows by certain run-off factors.

With an amendment[20] to the "Regulation on Measurement and Evaluation of Liquidity Adequacy of Banks" in December 2009, a new liquidity ratio that banks are obliged to meet called "liquidity adequacy ratio for assets and liabilities calculated over stock values" was introduced. Basically, this ratio is the ratio of the sum of banks' most liquid assets to the sum of deposits, due to banks and the CBRT and loans extended to the bank excluding subordinated loans and the arithmetic average of this ratio during the 14-day period covering (matching) the period of establishment of required reserves, shall not be smaller than 7 percent.

When liquidity ratios in Turkey are compared to global ones, it is observed that basically, the LCR is very much alike the weekly and monthly liquidity ratios in Turkey and we do not have a liquidity ratio similar to the NSFR. Moreover, the compulsory FX liquidity ratios in Turkey are only presented as a monitoring ratio in the "International Framework for Liquidity Risk Measurement, Standards and Monitoring".

III. The Prospective Impacts of Global Liquidity Ratios on Central Bank Operations

As our banks are already subject to national liquidity ratios, it is expected that they will not have too much difficulty in adapting to the LCR. Although, a ratio similar to the NSFR does not exist in Turkey, taking into account the fact that Turkish banks are basically engaged in retail banking and have strong capital structures, they are not expected to have much difficulty meeting the NSFR. Meanwhile, as the direction and intensity of the impact of global liquidity ratios on central bank operations will vary according to the country, structure of financial markets and the central bank's policy framework, the impacts of global liquidity ratios on operations of central banks generally and of The Central Bank of Turkey specifically, are discussed below.

A. Impact on Banks' Reserves at Central Banks

According to the LCR, central bank reserves, to the extent that they can be drawn down in times of stress, are also included in banks' liquid assets. This could encourage banks obliged to meet

[20] Published in the Official Gazette no. 26333 dated November 1, 2006.

liquidity ratios to maintain more reserves at central banks. The severity of this tendency would depend on how binding the liquidity regulations are the opportunity cost of maintaining reserves at the central bank and the availability of assets that could be used as collateral.

In the liquidity ratios implemented in Turkey, while the banks' free non-maturity deposits at the CBRT are listed among assets taken as stock irrespective of maturity, their free time deposits are taken into account according to days to maturity. Moreover, 30 percent of the blocked amount of required reserves is listed among assets taken as stock irrespective of maturity. The LCR makes no distinction between non-maturity and time deposits regarding central bank reserves and banks' reserves at the central bank are eligible as high quality liquid assets to the extent that they can be drawn down in times of liquidity stress. Thus, should the LCR be implemented in Turkey, the portion of banks' reserves at the central bank that will be taken into account in this ratio will have to be decided by the CBRT and BRSA (Banking Regulation and Supervision Agency).

No significant change is expected to occur in the Turkish banks' tendency to maintain reserves at the Central Bank of Turkey. According to the current liquidity regulation in Turkey, the free non-maturity account is already accepted as a liquid asset; therefore LCR implementation is not expected to stimulate a rise in this item. Although the total amount of free time accounts of banks at the CBRT is currently very low, this amount could increase if the CBRT holds time deposit buying auctions.

B. Impact on the Quality of Collateral that Banks Pledge at the Central Bank

With a global point of view, it is observed that for their operations, some central banks accept a broader set of assets than is listed in the high quality liquid assets definition in the LCR. For instance, corporate bonds with low credit ratings or some loans can be accepted as collateral. When the LCR starts to be implemented, banks might start using in their transactions with central banks assets that are not listed among high quality liquid assets in the LCR but accepted by central banks as collateral. Thus, a bigger portion of liquid assets will be unencumbered and meeting the LCR will become easier. This may in return push up credit and liquidity risk in central bank balance sheets depending on the content of the set of assets that the central bank accepts as collateral. In LCR, the run-off rate for secured funding transactions backed by assets that are not eligible for the stock of highly liquid assets is 100 percent. However, if the counterparty to this transaction is a domestic sovereign, domestic central bank or domestic public sector entity than the run-off rate falls down to 25 percent. For instance, in a repo transaction if a bank pledges as collateral an asset that is not listed among the high quality liquid assets in the LCR and if the counterparty is a bank, zero percent of the repo is assumed to roll-over on the due date; however if the counterparty is a central bank, then 75 percent of the repo is assumed to roll-over. This approach in the LCR is also expected to enhance the banks' tendency to pledge assets that are not listed among high quality liquid assets in the LCR in their transactions with the central bank.

In their transactions at the Interbank Money Market within the CBRT and Open Market Operations, banks can pledge as collateral FX deposits, banknote deposit accounts that they have opened at the CBRT's Ankara and/or İstanbul branches, bills and bonds issued by foreign governments and treasuries - the maturity structures and peculiarities of which are accepted by the

Central Bank, Central Bank liquidity bills, GDDSs (TL, FX and FX-indexed) and Eurobonds issued by the Treasury. Moreover, currently, open market operations except for the issue and early redemption of liquidity bills are carried out only against GDDS. As the assets accepted as collateral by the CBRT overlaps with those listed as high quality liquid assets in the LCR, there will be no deterioration in the quality of collateral that banks pledge at the CBRT after the introduction of the LCR in Turkey and therefore no risk will be borne by the CBRT.

C. Impact on Banks' Long-term Funding Demand

It is expected that banks in some countries will be inclined to extend the maturity of wholesale funds when the LCR starts to be implemented. In tandem with this, banks may try to extend maturity of central bank funding and thus raise borrowing interest rates for long-term funding facilities.

Currently, in Turkey, the CBRT funds the banking system via 1-week fixed rate repo auctions. As is known, the maturity of liquidity facilities provided to the banking system is determined by the CBRT in line with the monetary policy targets and as a component of the liquidity management strategy. Accordingly, implementation of the LCR in Turkey will not have consequences such as banks' raising interest rates of long-term funding facilities to be able to have access to longer term central bank funds. Meanwhile, as there is already a liquidity regulation similar to the LCR in Turkey, no significant rise is expected to occur in the banks' demand for long-term central bank funding after the LCR takes effect.

D. Impact on Banks' Demand for Central Bank Funds

The NSFR gives priority to retail funding rather than wholesale funding. In the NFSR, the available stable funding factor of retail funds is higher than that of wholesale funds. This could lead to competition between banks to collect deposits that could in turn induce volatility in deposits that were relatively more stable prior to the competition. In return, this could end up in a rise in banks' demand for central bank funding facilities for their liquidity needs stemming from a run on deposits.

Retail deposits constitute an important component of Turkish banks' funds and banks are primarily engaged in retail banking. Although they have short maturities, deposits are generally rolled-over and therefore they do not pose a major liquidity risk for the banks and are regarded as stable funding. Therefore, the NFSR's approach to changing business models in favor of retail banking is not expected to significantly impact the volatility of deposits in the Turkish banking system that is highly engaged in retail banking and induce a significant rise in the demand for central bank funds to cover the liquidity shortage stemming from volatility in deposits.

E. Impact on the Banks' FX Liquidity

As stated in part II, the LCR is not expected to be met for each currency. While the LCR will be met in a single common currency, in order to prevent major liquidity shortages in significant currencies, the LCR by significant currencies is envisaged as a monitoring ratio in the global liquidity standards document. However the monitoring ratio does not have a minimum and it is stated in the document that the supervisory authorities can set minimum monitoring ratios according to the convertibility of currencies.

Currently, FX liquidity ratios are implemented in Turkey. When global liquidity ratios are implemented, FX liquidity ratios will no longer be obligatory for banks in Turkey and minimum monitoring ratios may be determined for foreign exchange liquidity at the supervisory authorities' discretion. Taking into account the fact that FX transactions of Turkish banks are currently sizeable, removing the FX liquidity ratio obligation could cause banks to act imprudently in FX liquidity management despite the existence of an observation ratio. However, the FX liquidity ratio might remain compulsory at national discretion.

In global liquidity ratios, the high quality liquid asset definition is based on the credit rating of the asset. If the government debt securities which are issued by countries other than the country that the bank assumes risk or the bank's home country, corporate bonds or covered bonds, have high credit ratings, they are listed among high quality liquid assets and otherwise they are not accepted as high quality liquid assets.

As the credit ratings of developing countries are generally lower than those of developed countries, it might be that the above-mentioned case will lead to a decline in the demand for government securities of developing countries like Turkey. Meanwhile, if international banks reduce credits to be able to meet liquidity ratios, there could be a decline in external funding facilities for Turkish banks that in turn could lead to funding problems in Turkish banks. Decline in both demand for government debt securities and external funding facilities may affect the amount of capital flows to Turkey.

F. Impact on Central Banks' Monetary Policy Transmission Mechanisms

Global liquidity ratios are expected to encourage banks to extend their funding maturities and at the same time shorten the maturities of their assets. This could end up in a rise in the cost of long-term funds compared to short-term funds, which would drive the Money market yield curve steeper and lead to a general rise in the cost of funding in the economy. Moreover, a change in the slope of the yield curve might be interpreted by the central banks as a change in the banks' inflation and monetary policy expectations and thus affect the direction of monetary policy.

In Turkey, there is already a liquidity regulation similar to the LCR, therefore, no significant change is expected to occur in the cost of short and long-term funds and the yield curve is not expected to get steeper after the LCR is put into practice.

Global liquidity ratios encourage banks to allocate funds to more liquid assets compared to loans. This could lead to a decline in the credit portfolios of banks and reduce the effectiveness of the credit channel of central banks' monetary policies in some countries.

In the current liquidity regulation of Turkey, a significant part of loans are not regarded as liquid assets. In Turkey, liquidity ratios were put into practice in June 2007 and an analysis of the post-June 2007 period reveals that the share of credits on the balance sheet has not decreased but increased. In Turkey, banks' assets are mostly composed of government debt securities and credits. Government debt securities are listed among liquid assets. Banks determine their credit portfolios according to their profit targets, risk appetite and availability of external funding. After the liquidity ratios started to be implemented in Turkey, credits displayed a rise as the banks already had adequate

liquid assets and extending loans in the mentioned period was profitable for them. As we already have a similar liquidity regulation, the impact of global liquidity ratios on Turkish banks' credits and liquid assets is expected to be limited. Meanwhile, should the public borrowing requirement decrease in the upcoming period, banks would in turn have to decrease the government debt securities in their portfolios and the impact of the LCR on the credit channel would be more pronounced.

IV. Conclusion

In the upcoming period, global liquidity ratios will be reviewed with respect to various aspects and some changes can be made in the ratios at the end of this process. To reiterate once more, global liquidity ratios, as they are, are not expected to make a significant impact on CBRT operations as Turkish banks are already subject to national liquidity ratios and due to the monetary policy implementation of the CBRT. Still, the prospective impact of global liquidity ratios on Turkish banks' FX liquidity should be closely monitored.

V.10 Central Counterparties (CCPs)

A central counterparty can be defined as a financial institution guaranteeing the clearance of financial instruments traded in one or more than one market by assuming the role of a buyer against a seller and a seller against a buyer. Thus, in a clearing operation, which is the final stage of selling or buying transactions, the other counterparty of a seller or buyer is the central counterparty.

The reason why the central counterparty concept first developed in the derivatives market is that the counterparty risk in these markets is higher than that in spot markets and moreover, counterparty risk management is harder to achieve in derivatives markets due to the long clearing process. While transactions in spot markets are concluded in a few days, transactions in derivatives markets are concluded in a period stipulated in the contract.

The importance of central counterparties with a financial infrastructure has increased recently. One of the heated issues debated during the last financial crisis was the structure and functioning of over-the-counter (OTC) derivatives markets. The adversities witnessed in housing loans after the last crisis that first started in the housing market in the USA not only distressed those with credit debts but also the banks that had extended these loans, the investors that had purchased the securitized housing loans as well as the insurance companies that insured these products. Especially the non-transparent structure of over-the-counter (OTC) markets has drawn attention and necessitated a re-arrangement of over-the-counter (OTC) markets.

International regulatory authorities such as the FSA, the IOSCO and the BIS concluded that the systemic risk in over-the-counter (OTC) markets could be taken under control via central counterparties and central counterparties could be used as an intermediary for managing the risk in over-the-counter (OTC) markets and achieving transparency in markets. In the leaders' statement issued following the G-20 Summit in Pittsburgh in September 2009, it was stated that "All standardized over-the-counter derivative contracts should be traded in exchanges or electronic trading platforms, where appropriate, and cleared by the central counterparties by end-2012 at the latest".

The joint guide of the IOSCO and CPSS on the recommendations on principles regarding the clearing of counterparties has been revised to be implemented in the over-the-counter (OTC) derivatives market. The Report outlines 11 recommendations to be applied to central counterparties in over-the-counter (OTC) derivatives markets. These recommendations are as follows:

1. Legal risk,
2. Participation requirements,
3. Measurement and management of credit exposures,
4. Margin Requirements,
5. Financial resources,
6. Default procedures,
7. Operational risk,
8. Efficiency,
9. Governance,

10. Transparency,
11. Regulation and Oversight.

The recommendations basically provide guidance for achieving strong financial structures for central counterparties and monitoring any prospective risks stemming from positions of participants by employing several control mechanisms. The relation between central banks and central counterparties constitute an important agenda item of international institutions.

I. Central Counterparties' Access to Central Bank Resources/Funding Facilities

After the global financial crisis in 2008, over-the-counter (OTC) derivatives markets, which were identified as a systemic risk factor, were decided to be re-regulated and at the Pittsburg Summit, the G-20 leaders decided that these markets should be reorganized. The challenge of keeping records of over-the-counter (OTC) derivatives products and managing the counterparty risk necessitated a review of the state of counterparties. Debates are still going on about the access to central bank funding facilities by central counterparties, which is regarded as a source of systemic risk.

Central counterparties are identified as systemically-important payment institutions among financial market infrastructures (FMIs). Systemically-important FMIs run by central banks or the corporate sector are security settlement systems or large-value payment systems. Central Bank services provided for central counterparties that are listed among FMIs run by the corporate sector are payments and settlements accounts, collateral management systems, intraday and overnight liquidity facilities and emergency liquidity facilities. Although central banks provide various liquidity facilities for FMIs such as central counterparties; these facilities are not standard central bank policies.

The effective and uninterrupted operation of payments systems and the reduction of settlement risk are listed among a central bank's priority duties. Thus, with respect to achieving financial stability, while access to payment accounts lowers the risk of settlement bank risk, access to liquidity facilities lowers the counterparty risk by ensuring settlement of payments. The central counterparties are expected to meet their regular liquidity needs by using private sector instruments and resort to central bank facilities only under extraordinary conditions. Nonetheless, utilization of central bank facilities either at normal times or under extraordinary conditions would lead to moral hazard risk. In case of moral hazard, the central counterparties would tend to bear more risk.

The liquidity needs of central counterparties are different from those of other financial institutions and their liquidity needs may vary depending on the asset transaction type. Normally, the liquidity need of a central counterparty is limited to day-time, however in case of an operational problem at the custodian bank or a bankruptcy of a participant, a major and permanent liquidity need may arise. For central counterparties operating in more than one country, in case of bankruptcy of a participant, liquidity shortage in more than one currency unit would arise.

Standards should be set for central counterparties' access to liquidity and the provision of liquidity against collateral is being discussed. It is possible for central counterparties that bear certain risks to have direct or indirect access to liquidity. Nonetheless, the idea of accessibility to direct liquidity between central banks only in case of emergency has more supporters.

A consensus has not yet been reached on the scope of the liquidity to be provided for the central counterparties, the method of oversight, cross-border liquidity support and the policy impacts of such support. While providing liquidity support for central counterparties calls for a compromise between achieving financial stability and moral hazard, some novelties in standard monetary policies would become necessary once such supports started to be provided by central banks. Financial facilities to be provided for FMIs are crucial for achieving financial stability. Taking into account their systemic risk-generation impacts of central counterparties, the liquidity support to be provided for these institutions could prevent crises and the worsening of an existing crisis. Nonetheless, the scope and operational framework of monetary policy as well as the moral hazard issue are hot debates with respect to the implementation of liquidity support.

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