

IV. FINANCIAL INFRASTRUCTURE

Financial market infrastructures (FMI) play a critical role in the financial system and the economy in general. Financial market infrastructures, which ensure transaction, clearing and settlement are realized in the markets; improvement and strengthening of the markets also play a significant role in the maintenance of financial stability. In the current environment of intense interaction in international markets, improper functioning of financial market infrastructures causes spillover effects across markets and leads to significant risks in the global financial system. This effect may be more evident during periods of fluctuations in the markets. The recent financial crisis revealed the importance of efficient financial market infrastructures.

In recent years, maintenance of financial stability has become one of the leading objectives for central banks. Following the financial crisis that had impacts on all markets, the Committee for Payment and Settlement Systems (CPSS) operating under the aegis of the Bank for International Settlements (BIS), which our country became a member of in 2009, embarked on studies to render financial market infrastructures with systemic importance more resilient against shocks and have access to the resources of central banks.

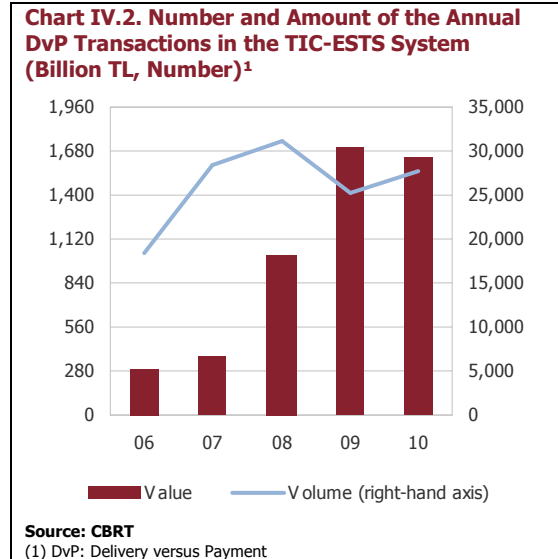
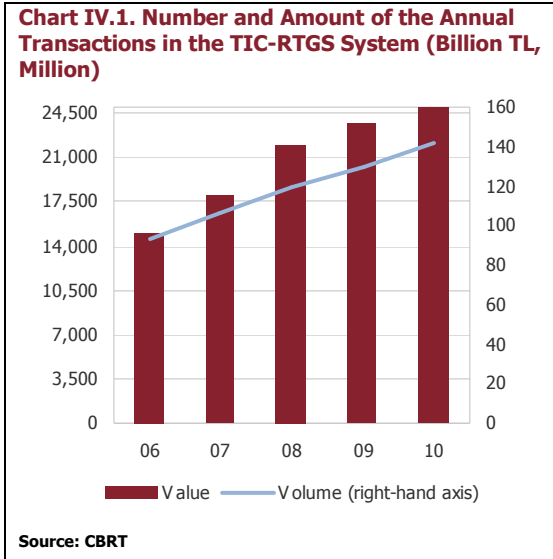
Moreover, as a result of studies carried out jointly by the CPSS and the International Organization of Securities Commissions (IOSCO) previously-set principles determined for financial market infrastructures were reviewed and new principles were set and announced to the public. The report encompassing the said principles is planned to be published before 2012 by the CPSS and the IOSCO. The aim of establishing advice in the form of regulatory rules for financial market infrastructures is to develop standards to encompass the experiences obtained in the recent crisis and monitor these infrastructures regarding their adherence to risk management standards through effective supervision and oversight. In this context, in the forthcoming period, central banks are expected to attach more importance to the improvement, regulation and oversight of financial market infrastructures.

This section presents recent developments in the basic systems establishing financial market infrastructures in our country. These systems comprise the electronic fund transfer system (TIC-RTGS), through which real-time settlement of interbank Turkish Lira transactions are realized; the Electronic Securities Transfer and Settlement System (TIC-ESTS), which facilitates the dematerialized and real-time transfer and settlement of securities in electronic form; the cheque clearing system that ensures the interbank settlement of cheques and the Takasbank (ISE Settlement and Custody Bank), where the card-based payment system is realized.

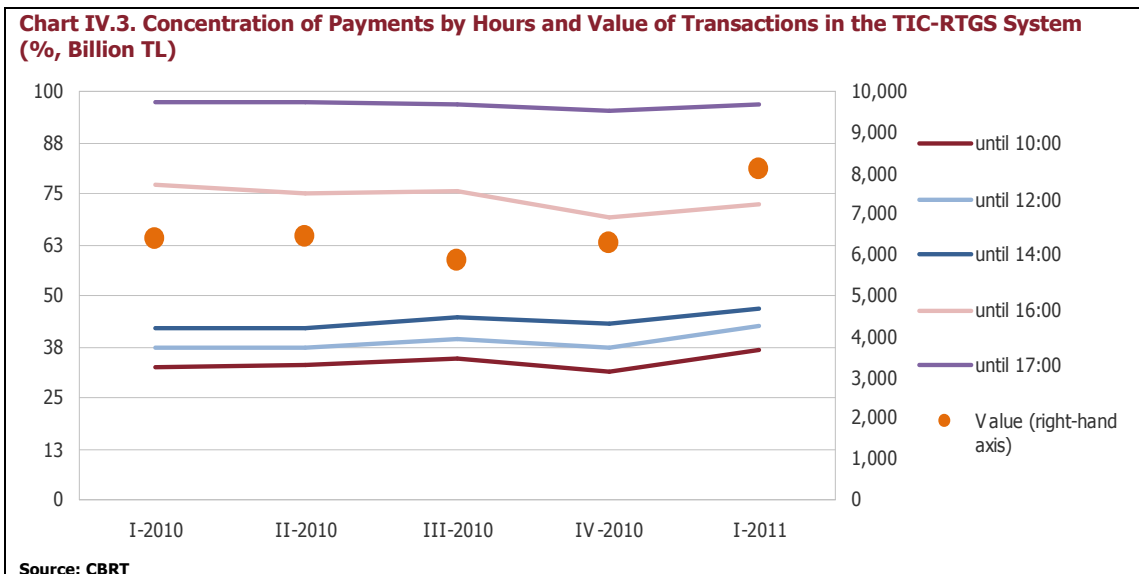
The CBRT is the sole owner and operator of the TIC-RTGS system. TIC-RTGS, operating under the principle of Real Time Gross Settlement-RTGS, is a systemically important electronic payment system realizing payments among banks in Turkish Lira and TIC-ESTS. It works in an integrated manner with the TIC-RTGS and provides the opportunity for participants to realize their transfer and settlement of securities with regard to the Delivery versus Payment (DvP) principle. The number of participants in the TIC-RTGS and TIC-ESTS systems became 48 by April 2011.

The transaction value of the TIC-RTGS system increased by 5.2 percent to TL 24,938 billion in 2010 compared to the previous year. The number of transactions performed in 2010 in the TIC-RTGS system climbed by 9.9 percent to 142 million (Chart IV.1).

The value of DvP transactions through TIC-ESTS in 2010 decreased by 3.8 percent to TL 1,646 billion, while the number of transactions increased by 9.6 percent to 27.7 thousand (Chart IV.2). The said period witnessed an increase in the number and a decline in the value of DvP transactions unlike the previous year.



Predictability of the distribution of payments within the day contributes to the efficiency of liquidity management and decreases liquidity risk. In the fourth quarter of 2010, 31 percent, 69 percent and 95 percent of intra-day payments realized within the TIC-RTGS system were completed by 10:00, 16:00 and 17:00, respectively. While the total of transactions in the system became TL 6,260 billion in the last quarter of 2010, the said amount reached TL 8,088 billion in the first quarter of 2011 (Chart IV.3). In the first quarter of 2011, 37 percent, 26 percent and 27 percent of the payments within the TIC-RTGS system were made between 08:00-10:00, 14:00-16:00 and 16:00-17:30, respectively.



Since there are no upper and lower limits for the value of transactions in the TIC-RTGS system, the number of annual transactions is higher than that of many European countries. As of 2010, the ratio of transactions in small amounts (below TL 3,000) to the total number of transactions via TIC-RTGS was 76 percent.

A comparison of countries as of 2010 indicates that the ratio of the value of TIC-RTGS transactions to GDP is lower than the same ratio in other countries examined. The value of TIC-RTGS transactions on an annual basis, which was 22.7 times the GDP in 2008, reached 24.7 times the GDP in 2009, and realized as 22.5 times of the GDP in 2010 (Table IV.1)

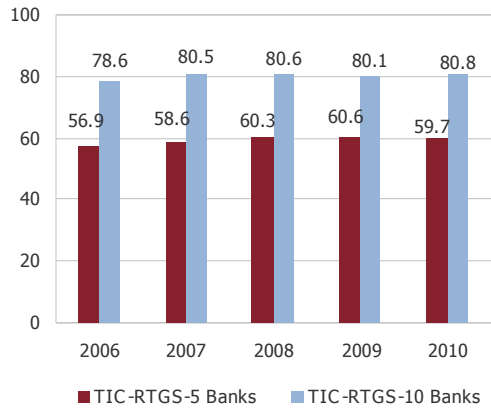
Table IV.1. Real Time Gross Settlement System (RTGS) Country Comparison

	2005	2006	2007	2008	2009
Belgium (TARGET2-BE)					
Transaction Volume (million)	1.8	1.7	2.0	2.8	2.0
Transaction Value (billion USD)	21,448	24,373	36,453	39,683	28,980
Transaction Value/GDP	57.0	61.1	79.5	78.6	61.4
France (TARGET 2-BDF)					
Transaction Volume (million)	4.3	4.6	4.9	6.7	7.6
Transaction Value (billion USD)	151,425	169,587	198,527	149,131	130,406
Transaction Value/GDP	70.6	74.8	76.6	52.3	49.1
Holland (TARGET2-NL)					
Transaction Volume (million)	4.7	4.8	7.3	9.3	9.4
Transaction Value (billion USD)	38,126	40,146	53,434	86,153	88,834
Transaction Value/GDP	59.8	59.2	68.3	98.8	111.7
Germany (TARGET2-BBk)					
Transaction Volume (million)	35.8	37.9	47.5	41.6	44.7
Transaction Value (billion USD)	172,023	189,140	317,934	323,884	238,260
Transaction Value/GDP	61.8	64.8	95.5	89.2	71.5
Switzerland (SIC)					
Transaction Volume (million)	256	317	357	372	382
Transaction Value (billion USD)	32,845	35,867	43,570	53,595	52,355
Transaction Value/GDP	88.5	91.4	100.3	107.1	106.0
TARGET					
Transaction Volume (million)	76.3	83.4	99.1	89.0	87.6
Transaction Value (billion USD)	613,695	676,806	923,700	894,126	738,488
CLS					
Transaction Volume (million)	47.9	61.5	90.3	134.4	150.1
Transaction Value (billion USD)	545,838	714,320	940,621	1,039,230	890,470
Turkey (EFT)					
Transaction Volume (million)	76.7	93.1	106.1	119.3	129.5
Transaction Value (billion USD)	5,806	10,528	13,886	16,827	15,251
Transaction Value/GDP	12.1	20.0	21.4	22.7	24.7

Source: BIS, CBRT

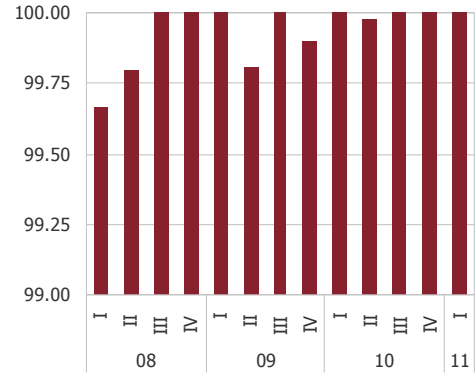
In 2010, the share of the top five banks in terms of the number of transactions through TIC-RTGS, decreased year-on-year from 60.6 percent to 59.7 percent, whereas that of the top ten banks increased year-on-year from 80.1 percent to 80.8 percent (Chart IV.4).

The TIC-RTGS system continues to demonstrate high availability. The availability ratio, which indicates the continuity of the payment system and is the ratio of the time span that participants can access the system to total working hours, was 99.98 percent on average in 2010 (Chart IV.5).

Chart IV.4. Concentration Ratio in the TIC-RTGS System (%)¹

Source: CBRT

(1) CBRT transactions are excluded.

Chart IV.5. Accessibility Ratio within the TIC-RTGS-ESTS System (%)

Source: CBRT

The analysis of the number and value of transactions within the TIC-RTGS system in daily averages indicate that in 2010, the average number and value of transactions on a daily basis was 569 thousand and TL 99.8 billion, respectively (Table IV.2).

Table IV.2. Number and Value of Transactions and Daily Averages within the TIC-RTGS System

	Number of Operational Day	Number	Value (million TL)	Daily Average Number	Daily Average Value (million TL)
01.10	20	10,095,978	2,127,511	504,799	106,376
02.10	20	10,563,102	2,018,774	528,155	100,939
03.10	23	12,422,376	2,237,144	540,103	97,267
04.10	21	11,727,404	2,297,176	558,448	109,389
05.10	20	11,687,220	2,044,941	584,361	102,247
06.10	22	12,078,374	2,105,077	549,017	95,685
07.10	22	12,026,682	2,048,366	546,667	93,108
08.10	21	11,844,742	1,875,604	564,035	89,314
09.10	20	11,709,209	1,922,821	585,460	96,141
10.10	20	11,670,480	1,926,574	583,524	96,329
11.10	18	12,060,974	1,939,169	670,054	107,732
12.10	23	14,336,536	2,394,584	623,328	104,112
Total	250	142,223,077	24,937,741	-	-
Average	-	-	-	568,892	99,751

Source: CBRT

Box IV.1. Developments in IBAN Application

IBAN, an international bank account number generated according to a nationwide standard length and structure, which will replace current bank account numbers, will allow money transfers to reach their beneficiaries fast and accurately by defining customer bank account numbers on an international scale. Communique on The International Bank Account Number No.2008/6 from the CBRT was published in the Official Gazette No. 27020, dated October 10, 2008 amended by Communique Amending Communique on The International Bank Account Number No.2009/10 was published in the Official Gazette No. 27437, dated December 19, 2009.

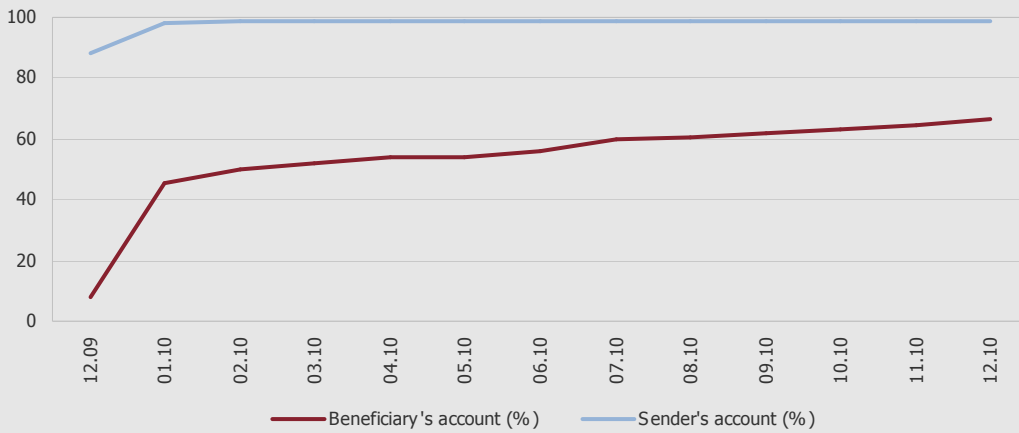
According to this Communique;

- The term "written", concerning the property of the declaration that is required to be given to the bank in case the customer who wants to make the money transfer does not know the IBAN of the beneficiary, has been removed from the text of the Communique. This means that the declaration is required to be given in accordance with the property of the transaction. In order to fulfill his liability to confirm, the declaration is required to be recorded by banks.
- The use of IBAN is not mandatory for banks and other financial institutions until 1.1.2012 when transferring money through their accounts in banks in Turkey.

Effective from 1.1.2010, it is mandatory to use the beneficiary's and sender's IBAN for money transfers made to an account and postdated orders through the TIC-RTGS system. The IBAN usage ratio for the beneficiary's account was 7.7 percent in December 2009, realized as 45.5 percent in January 2010 and reached 66.6 percent in December 2010 (Chart 1). After ceasing the declaration application, as customers will be required to use the beneficiary's IBAN, the IBAN usage ratio for the beneficiary's account will gradually increase.

Moreover, the IBAN usage ratio for the sender's account was 88.5 percent in December 2009, realized as 98.2 percent in January 2010 and reached 98.7 percent in December 2010 (Chart 1). Although using IBAN for the sender's account is mandatory, because of making money transfers that are not associated with an account, this ratio is unable to reach 100 percent.

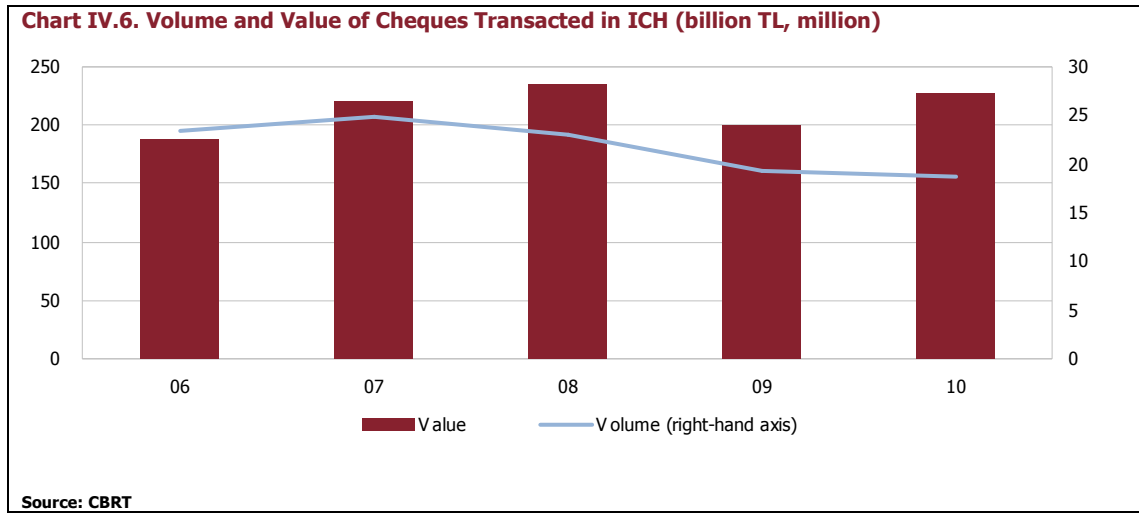
Chart 1. IBAN Usage Ratio in TIC-RTGS System (%)



Source: CBRT

Cheque clearing operations, which play an important role in payment systems, are carried out by the Interbank Clearing Houses Center (ICH) under the oversight of the CBRT. As of end of the year 2010 out of 41 banks that participated in interbank cheque clearing operations, 5 were engaged only in cheque clearing with physical presentation, whereas the remaining 36 were also engaged in cheque clearing without physical presentation.

In 2010, the number of cheques, which were subject to the cheque clearing process in ICH, decreased by 3.3 percent and became 18.7 million compared to 2009. In the given period, the value of cheques processed increased by 13.6 percent and became TL 228 billion (Chart IV.6).



Analyzing the distribution of Cheques, especially used by Small and Medium-Sized Enterprises (SME) and by tradesmen, which assume an important place in Turkish trade, it is seen that cheques below TL 5,000 are presented intensively. Whereas the ratios of cheques presented to ICH below TL 5,000 and TL 10,000 were 61.8 and 80.9 respectively in 2009, these ratios became 57.3 and 78.0 in 2010. An analysis of trends of the last four years indicates that the decline in the number of cheques below TL 5,000.- presented to the ICH became higher than that in the total number of cheques. While the number of cheques below TL 5,000 decreased by 37.7 percent in the 2007-2010 period, the total number of cheques went down by 27 percent in the same period. The said decline in the number of low amount cheques is attributed chiefly to the increase in the use of credit cards, and internet banking besides TIC-RTGS. (Table IV. 3).

Table IV.3. Distribution of the Number of Cheques Subject to Clearing According to Tranches

		TL 2.000 and below	TL 2.001-5.000	TL 5.001-10.000	TL 10.001-50.000	TL 50.001 and above
2007	TOTAL	9,671,489	8,532,482	4,503,740	3,871,612	501,052
	Cumulative Sum	9,671,489	18,203,971	22,707,711	26,579,323	27,080,375
	%	35.71	31.51	16.63	14.30	1.85
	Cumulative %	35.71	67.22	83.85	98.15	100.00
2008	TOTAL	7,768,109	8,354,979	4,672,376	4,205,297	610,256
	Cumulative Sum	7,768,109	16,123,088	20,795,464	25,000,761	25,611,017
	%	30.33	32.62	18.24	16.42	2.38
	Cumulative %	30.33	62.95	81.20	97.62	100.00
2009	TOTAL	5,976,435	7,349,054	4,119,649	3,609,740	516,811
	Cumulative Sum	5,976,435	13,325,489	17,445,138	21,054,878	21,571,689
	%	27.70	34.07	19.10	16.73	2.40
	Cumulative %	27.70	61.77	80.87	97.60	100.00
2010	TOTAL	4,514,432	6,820,043	4,096,030	3,747,536	609,976
	Cumulative Sum	4,514,432	11,334,475	15,430,505	19,178,041	19,788,017
	%	22.81	34.47	20.70	18.94	3.08
	Cumulative %	22.81	57.28	77.98	96.92	100.00

Source: ICH

*Fractional cheque amounts, matching to the upper limit of the value tranches, are not included.

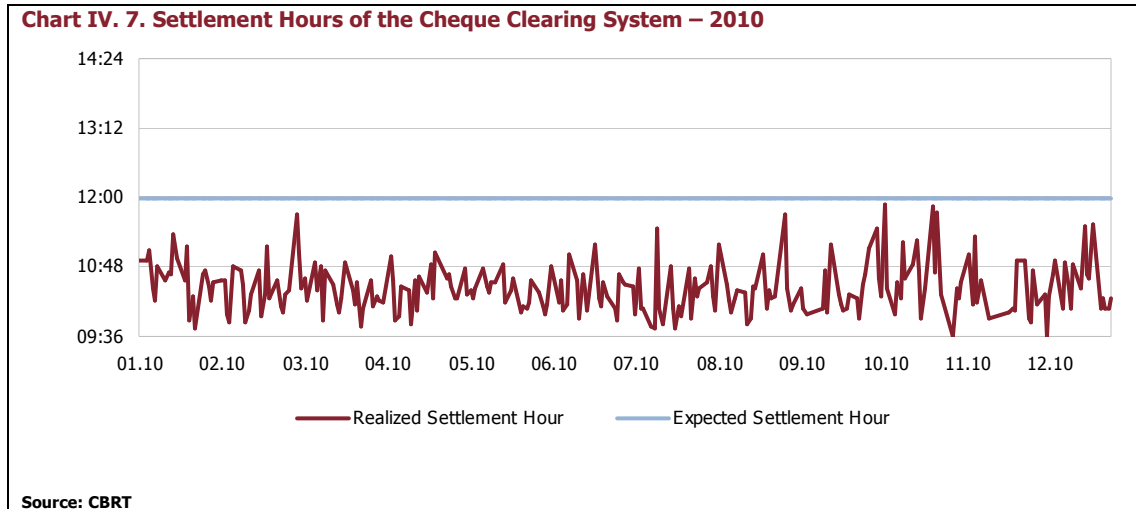
Since the cheque clearing system operates according to the multilateral netting method, the liquidity requirement of participants arising from their cheque transactions is decreasing. In the cheque clearing system, the debit and credit positions of participants are determined by multilateral netting following the finalization of the provision operations. In 2010, the netting ratio of transactions realized through the cheque clearing system increased to 83.1 percent and the liquidity requirement decreased by TL 189.4 billion compared to the previous year (Table IV.4).

Table IV.4. Cheque Clearing System-Netting Ratio

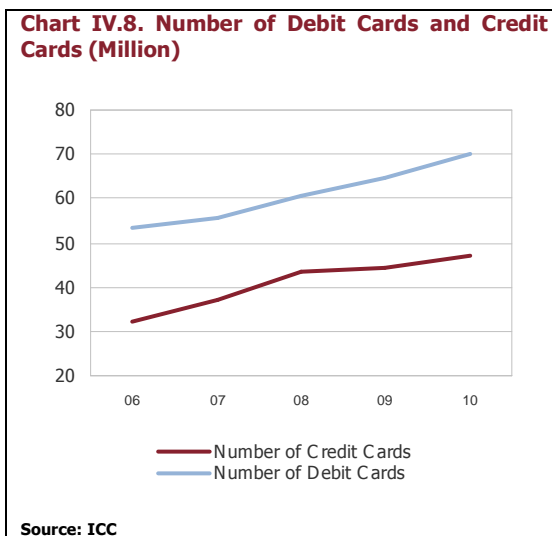
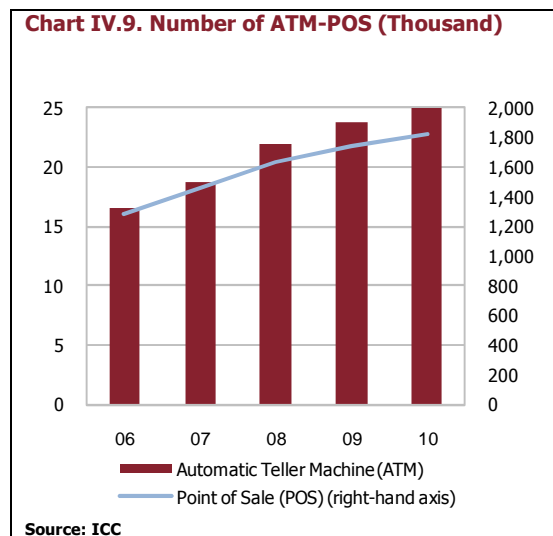
	2006	2007	2008	2009	2010
Netting Ratio (%)	74.8	77.8	79.3	80.4	83.1
Transaction volume (billion TL)	188.3	220.5	234.3	200.8	228.0
Liquidity Saving (billion TL)	140.8	171.6	185.8	161.4	189.4

Source: CBRT

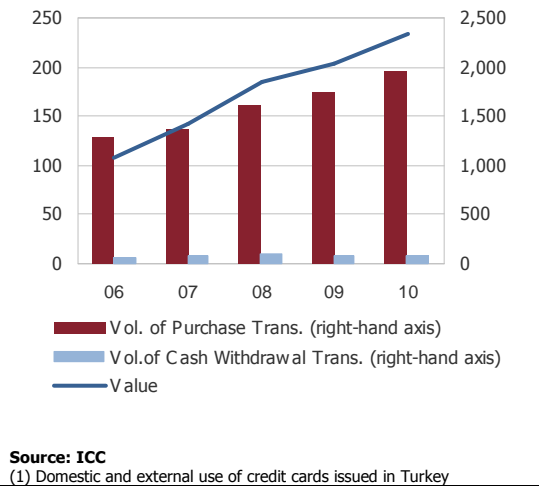
In the cheque clearing system, in order to finalize settlement, all banks that become debtors as a result of netting have to fulfill their obligations no later than 12:00 on the following business day. In 2009, delays in the cheque clearing system occurred once, and the total duration of delays amounted to 54 minutes. On the other hand, in 2010 no delays in the cheque clearing system occurred. (Chart IV.7). While the average settlement time in the cheque clearing system was 10:41 a.m. in 2009, favorable developments were observed in the system and the time of settlement became 10:25 a.m. in 2010.

Chart IV. 7. Settlement Hours of the Cheque Clearing System – 2010

Currently, the use of debit and credit cards, which are widely preferred for payments, is becoming more widespread thanks to the adaptation of technological improvements in the payments system. The Interbank Card Center (ICC) was established in 1990 as a legal entity with the partnership of 13 banks in order to ensure interbank authorization, clearing and settlement and troubleshooting as well as carrying out strategic studies and improving rules and standards across the country regarding debit and credit cards in our country. Currently, the ICC has 10 partners and 27 members. ICC-member banks clearing and settlement transactions are carried out by the ICC. Debts arising from netting in the ICC are settled at the CBRT.

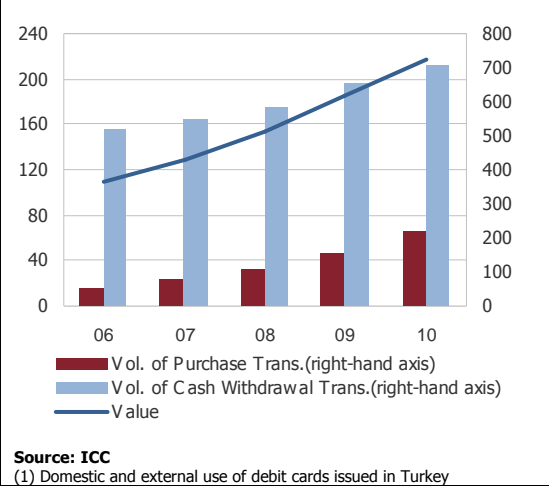
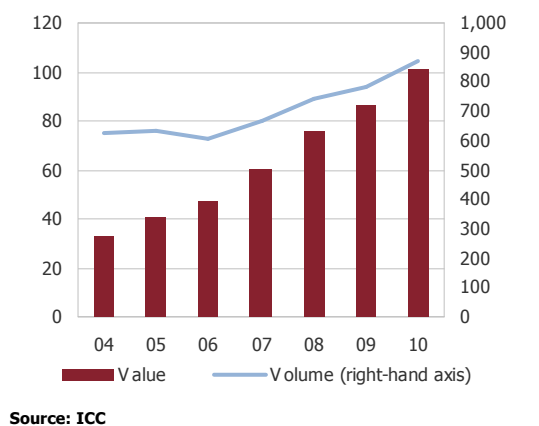
Chart IV.8. Number of Debit Cards and Credit Cards (Million)**Chart IV.9. Number of ATM-POS (Thousand)**

Developments in debit and credit cards, which are two leading non-cash means of payment, indicate that the use of these cards is becoming more widespread. The rate of increase in credit cards decelerated and the number of credit cards increased by 2.3 percent in 2009 compared to the previous years and became 5.8, reaching 47 million in 2010. In the same period, the number of debit cards continued to increase and reached 69.9 million with a rise of 8.1 percent (Chart IV.8). Due to widespread use of debit and credit cards in Turkey, the numbers of point of sale (POS) devices and automated teller machines (ATM) have also increased. In 2010, the number of POS devices rose by 4.9 percent to 1.8 million and the number of ATMs increased by 16.2 percent to 27.6 thousand (Chart IV.9).

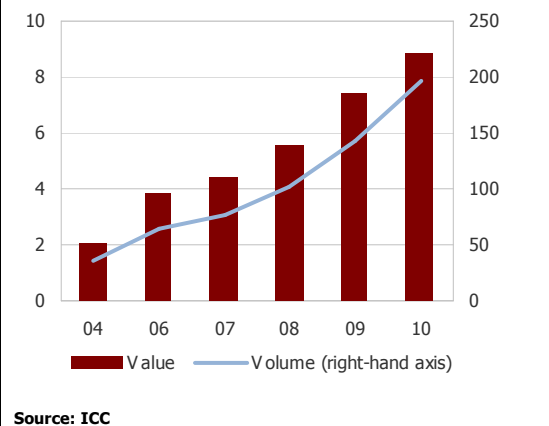
Chart IV.10. Volume and Value of Credit Card Transactions (billion TL, million)

In 2010, the volume of credit card transactions rose by 10.7 percent while the value of credit card transactions increased by 15.5 percent compared to 2009 reaching 2.0 billion and TL 234.3 billion, respectively. The share of purchasing transactions within total credit card transactions in 2010 was 95.7 percent in volume and 91.4 percent in value (Chart IV.10).

Analysis of debit card transactions reveals that the volume of debit card transactions rose by 15.2 percent reaching 926.7 million; while the value of debit card transactions went up by 17.3 percent reaching TL 217.1 billion. The use of debit cards for cash withdrawal became 76.2 percent in volume and 96.4 percent in value. Yet, the use of debit cards for purchases remained at 23.8 percent in volume and 3.6 percent in value. Meanwhile, in recent years, the use of debit cards for purchases has displayed an increase, which is attributable to campaigns encouraging the use of debit cards to replace cash (Chart IV.11).

Chart IV.11. Volume and Value of Debit Card Transactions (billion TL, million)¹**Chart IV.12. Volume and Value of Credit Cards Processed in the Card Clearing System (billion TL, million)**

The volume of transactions subject to the credit card clearing process that rose by 5.0 percent in 2009, increased by 11.8 percent to 872.9 million in 2010. Meanwhile, the rate of increase in the value of transactions, which slowed down to become 13.7 percent in 2009, went up to 17.2 percent reaching TL 101.4 billion in 2010 (Chart IV.12). According to ICC data, the volume of transactions, which were subject to the clearing process of debit cards rose by 36.9 percent to 196.4

Chart IV.13. Volume and Value of Debit Cards Processed in the Card Clearing System (billion TL, million)

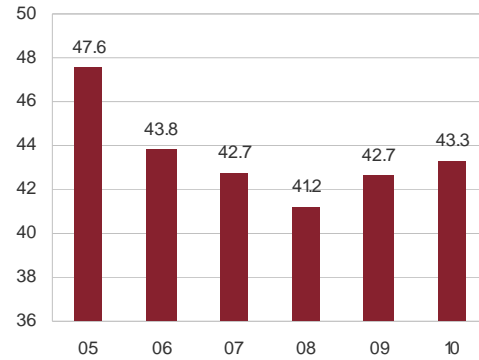
million; while the value of transactions increased by 20.3 percent to TL 8.9 billion in 2010. The recent significant increase in the volume and value of transactions was mainly driven by the common use of ATMs, effective as of October 1, 2009, which allowed cardholders to withdraw money from the ATM of any bank (Chart IV.13).

Table IV.5. Card Clearing and Settlement System / Netting Ratio (%)

	2006	2007	2008	2009	2010
Credit Card Clearance and Settlement					
Netting Ratio (%)	81.7	78.3	76.5	78.1	77.4
Transaction volume (TL billions)	48	60	76	87	101
Liquidity Saving (TL billions)	39	47	58	68	78
Debit Card Clearance and Settlement					
Netting Ratio (%)	60.8	64.0	61.9	65.1	76.6
Transaction volume (billion TL)	3.9	4.5	5.6	7.4	8.9
Liquidity Saving (billion TL)	2.4	2.9	3.6	4.8	6.8

Source: ICC

Chart IV.14. Ratio of Value of Credit Card Transactions Subject to Clearing Process to Total Value of Credit Card Transactions (%)



Source: ICC

As is the case with the cheque clearing system, the card clearing system also operates according to the multilateral netting method and therefore reduces the liquidity requirements of participants arising from card transactions. The netting ratio of credit card transactions realized through the system was 77.4 percent and the liquidity requirement relating to credit card transactions decreased by TL 78 billion in 2010. This same ratio was 76.6 percent for debit card transactions and TL 6.8 billion of liquidity savings was obtained (Table IV.5).

The decline in the ratio of the value of credit card transactions subject to clearing to total transactions for credit cards is mainly attributable to the tendency to use credit cards via POS and ATM devices of issuer banks as a result of the increase in the number of POS and ATM devices over the years and the promotions introduced. In 2009 and 2010, as the rate of increase in the value of credit card transactions subject to clearing was higher than the rate of increase in the total value of credit card transactions compared to the previous period, the ratio of the value of credit card transactions subject to clearing to total transactions for credit cards displayed a slight increase and reached 43.3 percent in 2010 (Chart IV.14).

The Istanbul Stock Exchange (ISE) Clearing and Custody Bank Inc. was established in 1988 within the ISE in order to provide settlement and custody of transactions. It became an independent company in 1992 and was transformed into a sector bank in 1996 under the name of Takasbank (ISE Settlement and Custody Bank Inc.). The functions of the Takasbank, which was established as an investment bank with the partnership of the ISE and its members, can be classified as follows:

- Clearing and settlement of transactions realized in the ISE,
- Acting as the central counterparty within the Turkish Derivatives Exchange,

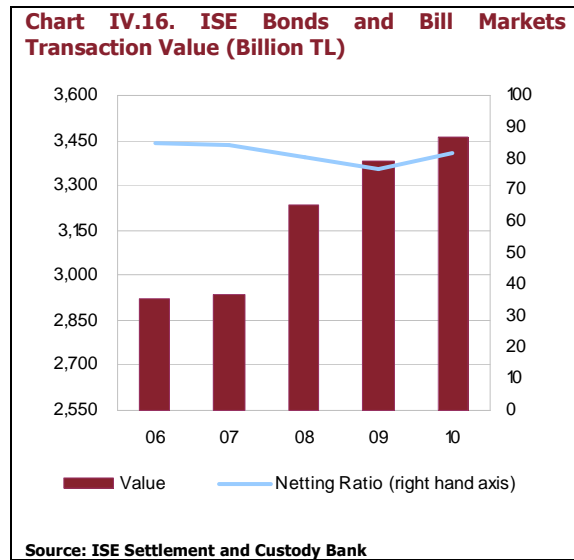
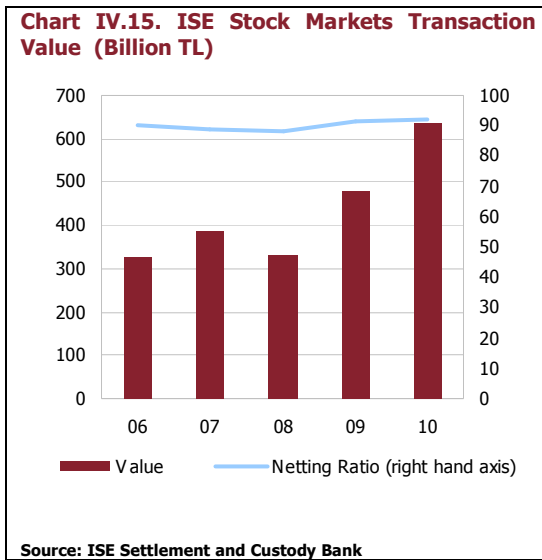
- Acting as the custodian of pension funds,
- Numbering securities issued in Turkey.

While the Takasbank directly participates in the TIC-RTGS and TIC-ESTS; however, brokerage houses have indirect access to TIC-RTGS and TIC-ESTS over Takasbank via Takasbank Electronic Transfer System (TETS). TETS encompasses securities and cash accounts at the ISE Settlement and Custody Bank besides all the transactions that can be performed within the ISE Settlement and Custody Bank.

The clearing and settlement of securities traded in all markets of the ISE is undertaken by the Takasbank. The clearing of transactions in the ISE is done according to the multilateral netting principle. Although the net liabilities are binding for parties, the Takasbank does not guarantee settlement. The Takasbank, which operates by the delivery versus payment principle, transfers securities upon the fulfillment of liabilities by participants.

Transactions of TL 635.08 billion were realized in the ISE Stock Market in 2010. Due to the fading effects of the global crisis coupled with the increasing demand towards emerging economies in stock markets, transaction volume in stock markets rose by 44.1 percent and 32.5 percent in 2009 and 2010, respectively (Chart IV.15).

Transactions of TL 3,458.47 billion were realized in the ISE Bonds and Bills Markets Outright Purchase and Sales Market and Repo-Reverse Repo Market. In 2009 and 2010, transaction volume in the ISE Bonds and Bills Markets rose by 4.6 percent and 2.2 percent, respectively (Chart IV.16).



In 2010, within the Takasbank system, a payment of TL 50.1 billion was made through multilateral netting in the ISE Stock Market transactions. By 2010, the netting ratio regarding ISE Stock Markets became 92.1 percent and liquidity savings of TL 585 billion was made through multilateral netting (Table IV.6).

Meanwhile, in the ISE Bonds and Bills Markets Outright Purchase and Sales Market and the Repo-Reverse Repo Market, TL 635.5 billion was realized through multilateral

netting. The netting ratio became 81.6 percent, providing the system with liquidity savings of TL 2,823 billion (Table IV.6).

Table IV.6. Netting Ratio regarding the Clearing of the Securities Traded at the ISE

Stock Markets					
	2006	2007	2008	2009	2010
Netting Ratio (%)	90.3	88.8	88.4	91.7	92.1
Transaction volume (Billion TL)	325.70	388.21	332.68	479.48	635.08
Liquidity Saving (Billion TL)	294.10	344.90	294.22	439.64	585.00
Bonds and Bills Outright Purchase and Sales Market and Repo-Reverse Repo Market					
	2006	2007	2008	2009	2010
Netting Ratio (%)	85.0	84.1	80.3	76.6	81.6
Transaction Volume (Billion TL)	2,919.90	2,934.88	3,236.01	3,383.50	3,458.47
Liquidity Saving (Billion TL)	2,482.00	2,467.28	2,598.76	2,592.67	2,822.96

Source: Takasbank

The clearing and indemnification transactions of the Turkish Derivatives Exchange (TURKDEX) are carried out by the TURKDEX Clearing House within the ISE Settlement and Custody Bank, which was established in February 2005. The Takasbank functions as the central counterparty for TURKDEX. The clearing of contracts, the trading of which is undertaken within the markets at TURKDEX, besides transactions like inclusion into accounts, valuation, management and follow-up of collaterals which are included in the duties of the clearing house are carried out by the Takasbank in accordance with the respective legislation.

Table IV.7. Information on the accounts of the Members of TURKDEX at the Takasbank

	Number of TURKDEX Members	Number of Accounts Opened at the ISE Settlement and Custody Bank system	Increase in Number of Accounts (%)
2006	60	11,150	
2007	79	25,160	125.7
2008	86	41,241	63.9
2009	84	56,702	37.5
2010	92	64,151	13.1

Source: Takasbank

Institutions operating at the TURKDEX also become members of the ICH. Intermediaries, banks and agencies with the authority to trade derivatives are able to operate at TURKDEX. The number of TURKDEX members reached 92 by end-2010. The number of accounts opened by TURKDEX members became 64,151 by end-2010. The number of accounts opened increased by six times between the 2006-2010 period (Table IV.7).