IV. FINANCIAL INFRASTRUCTURE

As confirmed by the recent developments in global markets, an efficient and secure financial structure, which complies with international standards, and which is composed of large-value and retail payment systems, securities settlement systems, central counterparties, and security custodians, contributes significantly to the sustainability of financial stability.

The Committee on Payment and Settlement Systems (CPSS) under the Bank for International Settlements (BIS), taking into consideration the contribution of financial market infrastructures to financial stability, carry out studies for the development of systemically-important systems constituting the financial infrastructure, to make them resilient against shocks and to ensure their access to central bank resources. Within this framework, central banks are expected to take a more effective role in developing, regulating and monitoring financial market infrastructures in the upcoming period.

This section presents the recent developments in the Turkish Interbank Clearing-Real Time Gross Settlement System (TIC-RTGS), through which real-time settlement of Turkish Lira transactions are realized; the Turkish Interbank Clearing-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 enables clearing of cheques on accounts among banks and the card based payment system.

IV.1. Turkish Interbank Clearing Real Time Gross Settlement System (TIC-RTGS) and Electronic Securities Transfer and Settlement System (TIC-ESTS)

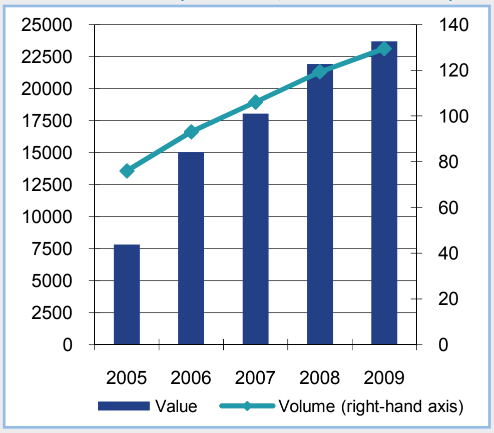
The CBRT is the sole owner and operator of the TIC-RTGS, which is a systemically important electronic payment system realizing payments among banks in Turkish Lira and TIC-ESTS, which works in an integrated manner with the TIC-RTGS and provides the opportunity for participants to realize their transfer and settlement of securities with regard to the Delivery versus Payment (DvP) principle.

TIC-RTGS and TIC-ESTS have forty-eight participants which are all banks operating in Turkey according to the Banking Act.

The transaction value of the TIC-RTGS rose by 8.1 percent in 2009 compared to the previous year and reached TL 23,704 billion. The number of TIC-RGTS transactions performed in 2009 increased by 8.5 percent compared to the previous year, reaching a total of 129 million (Chart IV.1).

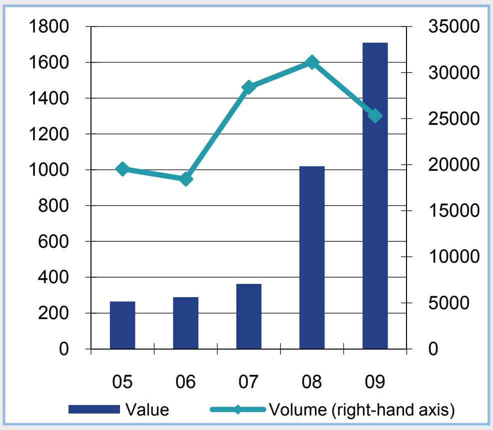
Despite the decline in the number of DvP transactions in 2009, the value of transactions increased significantly. In the reporting period, the number of DvP transactions through TIC-ESTS decreased by 18.7 percent to become 25.3 thousand and the value of transactions increased by 67.6 percent to reach TL 1,710 billion (Chart IV.2).

Chart IV.1.
Annual Volume and Value of Transactions within TIC-RTGS (Billion TL, Volume-Million)



Source: CBRT

Chart IV.2.
Annual Volume and Value of DvP[1] Transactions within TIC-ESTS (Billion TL, Volume-Million)



Source: CBRT
(1) DvP: Delivery versus Payment

Predictability of the distribution of payments within the day contributes to the efficiency of liquidity management and decreases the liquidity risk. The concentration of payments continues to display intensity between 08:00-10:00 in the morning and 14:00-17:30 in the afternoon (Table IV.I).

Table IV.1. Concentration of Payments within TIC-RTGS by Hours (%)

	08:00-10:00	10:00-12:00	12:00-14:00	14:00-16:00	16:00-17:30
I-2008	28	3	2	24	43
II-2008	26	4	3	25	42
III-2008	28	4	4	28	36
IV-2008	30	5	5	32	28
I-2009	32	4	4	35	25
II-2009	32	5	7	33	23
III-2009	35	4	5	36	20
IV-2009	34	6	7	34	19
I-2010	32	5	5	35	23

Source: CBRT

Since there are no upper and lower limits for the value of transactions in the TIC-RTGS, which is the sole interbank clearing-real time gross settlement system in Turkey, the number of annual TIC-RTGS transactions is higher than that of many European countries. As of 2009, the ratio of transactions in small amounts (below TL 3,000) to the total number of transactions via TIC-RTGS was 78 percent.

Although the ratio of the value of TIC-RTGS transactions to the GDP is lower than the same ratio in the European countries, it exhibits an increasing pattern as a result of the development of financial markets and the increasing number of such transactions over the years. The value of TIC-RTGS transactions, which was 21.4 times the GDP in 2007, reached 22.7 times the GDP in 2008 and continued to rise in 2009, reaching 24.7 times (Table IV.2).

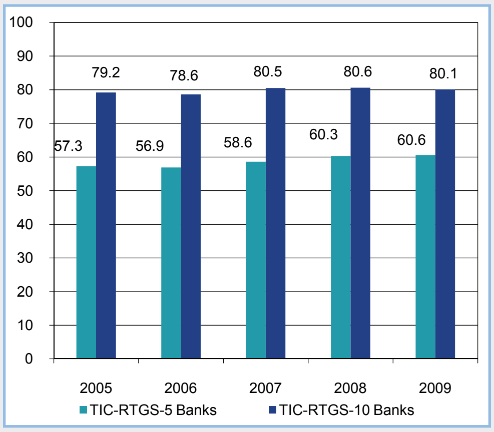
Table IV.2.
Real Time Gross Settlement Systems (RTGS) Country Comparison

	2004	2005	2006	2007	2008
Belgium (ELLIPS)					
Transaction Volume (Million)	1.8	1.8	1.7	2.0	2.8
Transaction Value (Billion USD)	18,233	21,448	24,373	36,453	39,683
Transaction Value/GDP	50.6	57.2	61.1	79.5	78.7
France (TARGET 2-BDF))					
Transaction Volume (Million)	4.0	4.3	4.6	4.9	6.7
Transaction Value (Billion USD)	134,697	151,425	169,587	198,527	149,131
Transaction Value/GDP	65.3	70.6	74.8	76.7	52.3
Holland (TOP)					
Transaction Volume (Million)	5.0	4.7	4.8	7.3	9.3
Transaction Value (Billion USD)	36,878	38,126	40,146	53,434	86,153
Transaction Value/GDP	60.5	59.8	59.3	68.9	98.8
Germany (RTGS-Plus)					
Transaction Volume (Million)	34.1	35.8	37.9	47.5	41.6
Transaction Value (Billion USD)	157,005	172,023	189,140	317,934	323,884
Transaction Value/GDP	57.2	61.7	64.9	95.9	88.9
Switzerland (SIC)					
Transaction Volume (Million)	209.1	256.4	317.1	356.8	371.6
Transaction Value (Billion USD)	33,814	32,845	35,867	43,570	53,595
Transaction Value/GDP	92.9	88.5	91.4	100.3	107.1
TARGET					
Transaction Volume (Million)	69.0	76.3	83.4	99.1	89.0
Transaction Value (Billion USD)	558,091	613,615	676,718	913,585	894,013
CLS					
Transaction Volume (Million)	32.6	47.9	61.5	90.3	134.4
Transaction Value (Billion USD)	379,506	545,838	714,320	940,621	1,015
Turkey (EFT)					
Transaction Volume (Million)	58,7	76,4	93,1	106,1	119,3
Transaction Value (Billion USD)	3,986	5,806	10,528	13,886	16,827
Transaction Value/GDP	10,2	12,1	20,0	21,4	22,7

Source: BIS, CBRT

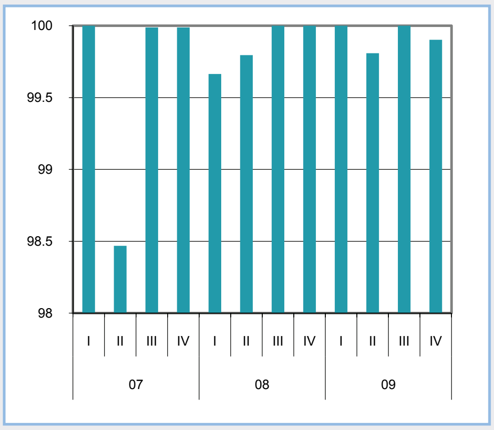
In 2009, the share of top five banks in terms of the number of transactions through TIC-RTGS, increased year-on-year from 60.3 percent to 60.6 percent, whereas that of the top ten banks declined year-on-year from 80.6 percent to 80.1 percent (Chart IV.3).

Chart IV.3.
Concentration of Transactions in TIC-RTGS (%)[1]



Source: CBRT
(1) CBRT transactions are excluded.

Chart IV.4.
Availability Ratios of TIC-RTGS -ESTS (%)



Source: CBRT

The TIC-RTGS system continues to demonstrate high availability. The availability ratio, which indicates the continuity of the payment system and which is the ratio of the time span that participants can access the system to total working hours, was 99.85 percent on average in 2009 (Chart IV.4).

Box 18.
Committee on Payment and Settlement Systems (CPSS)

Committee on Payment and Settlement Systems (CPSS) together with Basel Committee on Banking Supervision, the Committee on the Global Financial System, the Markets Committee and the Irving Fisher Committee on Central Statistics is one of the committees that has its own secretariat within Bank for International Settlements (BIS) and an important level of autonomy to decide about its agenda and activities. CPSS commences its studies at the request of governors of the Global Economy Meeting or at its own discretion and reports directly to the governors.

CPSS serves as a forum for central banks to follow up developments in domestic and cross-border payment and settlement systems. CPSS also prepares Redbooks in close cooperation with countries providing wide assessments of their payment systems in order to strengthen the payment systems infrastructure all over the world. Redbooks for Turkey are published in years 2000 and 2007. Additionally, CPSS published reports on large-value payment systems, securities settlement systems, settlement mechanisms for foreign exchange transactions, the clearing of derivative products, retail payment instruments, and electronic money. Moreover, CPSS has set up standards such as Core Principles for Systemically Important Systems, CPSS/IOSCO Recommendations for Securities Settlement Systems and Central Counterparties.

Committee was first established by G-10 countries as Experts Group on Payment Systems in 1980. G 10 countries set up an ad hoc Committee on Interbank Netting Schemes and then they established the Committee on Payment and Settlement Systems, as a follow-up to the work of the Committee on Interbank Netting Schemes. The CPSS continued its work as one of the permanent committees reporting to the G10 Governors of the central banks. The CPSS, previously consisting of the National Bank of Belgium, Bank of Canada, European Central Bank, Bank of France, Deutsche Bundesbank, Hong Kong Monetary Authority, Bank of Italy, Bank of Japan, Netherlands Bank, Monetary Authority of Singapore, Sveriges Riksbank, Swiss National Bank, Bank of England, Federal Reserve Bank of USA, has recently added Reserve Bank of Australia, Central Bank of Brazil, the People's Bank of China, Reserve Bank of India, Bank of Mexico, Central Bank of the Russian Federation, Saudi Arabian Monetary Agency, South African Reserve, Bank of Korea as new members by invitation.

The Central Bank of the Republic of Turkey (CBRT) has become a member of CPSS in November 2009. The departments of the CBRT has been playing important role in the CPSS/ IOSCO review of the standards for Financial Market Infrastructures through participating in CPSS sub groups of Margin and Collateral, Liquidity Risk, Transparency and Data Access, Operational Risk and Governance.

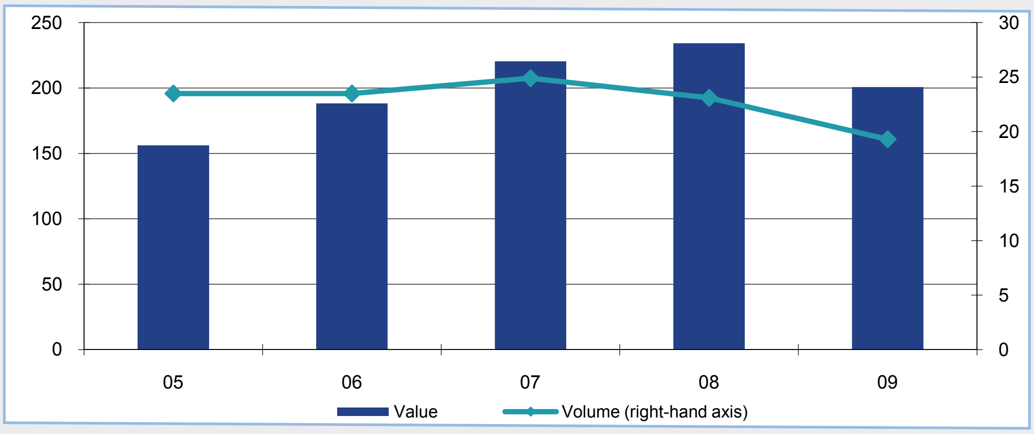
(1) Belguim, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, England, USA

IV.2. Cheque Clearing System

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 year-end 2009, out of 40 banks that participated in interbank cheque clearing operations, 6 were engaged only in cheque clearing with physical presentation, whereas the remaining 34 were also engaged in cheque clearing without physical presentation.

Chart IV.5.
Volume and Value of Cheques Transacted in ICH (Billion TL, Volume-Million)

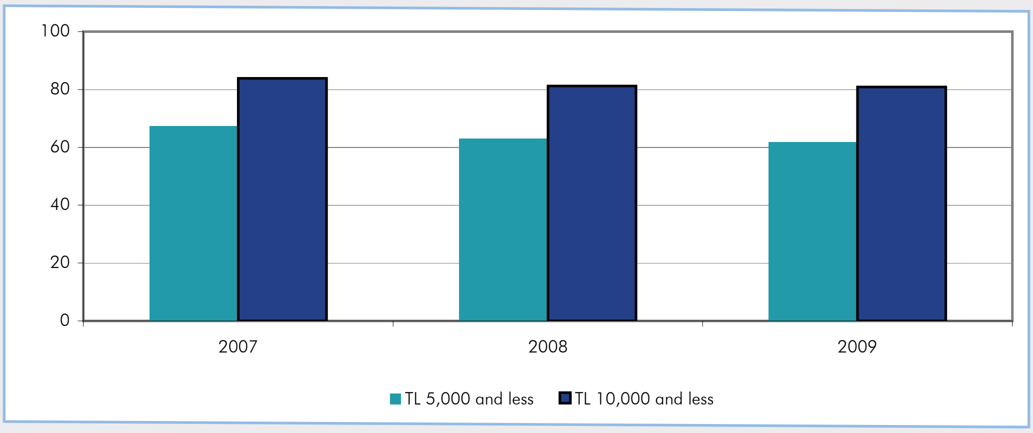


Source: CBRT

The number of cheques, which were subject to the cheque clearing process in ICH, decreased by 16.6 percent compared to 2008, amounting to 19.3 million in 2009. In the given period, the value of cheques processed decreased by 14.3 percent and became TL 200.8 billion (Chart IV.5).

Among the cheques presented to the ICH, the ratio of those below TL 5,000 hovered at around 60 percent, whereas the ratio of the cheques that remained below TL 10,000 reached around 80 percent over the years. These ratios indicate that the cheque, which is mostly used by Small and Medium-Sized Enterprises (SME) and by tradesmen, who occupy an important place in Turkish trade, served largely as a means for payment of small amounts (Chart IV.6).

Chart IV.6.
Share of Cheques Processed in the Card Clearing System, amounting less than TL 5.000 and TL 10.000 within Total Cheques (%)



Source: CBRT

In the cheque clearing system, the debit and credit positions of participants are determined by multilateral netting following the finalization of the provision operations.

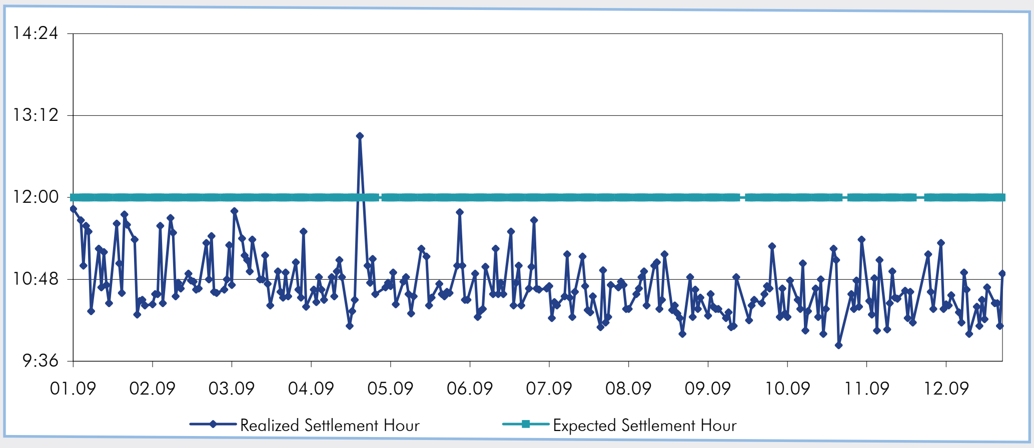
Table IV.3. Cheque Clearing System-Netting Ratio

	2005	2006	2007	2008	2009
Netting Ratio (%)	71.96	74.79	77.82	79.31	80.40
Transaction Volume (Billion TL)	156.2	188.3	220.5	234.3	200.8
Liquidity Saving Ratio (Billion TL)	112.4	140.8	171.6	185.8	161.4

Source: CBRT

Since the cheque clearing system operates according to the multilateral netting method, the liquidity requirement of participants arising from their cheque transactions is decreasing. The netting ratio of transactions realized through the cheque clearing system increased compared to the previous year and reached 80.40 percent in 2009 (Table IV.3).

Chart IV.7.
Settlement Hours of Cheque Clearing System– 2009



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 2008, settlement in the cheque clearing system was delayed two times, for a total of 220 minutes, as participants performed their obligations later than the due time. On the other hand, in 2009, delays in the cheque clearing system occurred once, and the total duration of delays amounted to 54 minutes (Chart IV.7). While the average settlement time in the cheque clearing system was 11:18 a.m. in 2008, it was 10:41 a.m. in 2009; and favorable developments were observed in the system regarding both the number of delays and the average time of settlement.

Box 19.
Check Act of 2009, No: 5941

"The Law on the Protection of Check Bearers and the Governance of Check Payments" of 1985, criticized for years, has been repealed by the Check Act of 2009 which was published in the Official Gazette of 12/20/2009 No: 27438. Main objectives of the new Check Act are to ensure the reliability of checks as a payment instrument, to protect check bearers, to get underground economy under supervisory control, and to align the penalty provisions about bad checks with the Turkish Criminal Code No: 5237. Moreover, some new regulations related to printing and drawing of checks took place in the new Act.

The new Act requires banks to be prudent and careful; and to investigate their customers to whom they will open check accounts and give check books. These provisions ensure banks to select their customers carefully and to promote public confidence in checks as a payment instrument.

In terms of the fight against underground economy, the new Law includes provisions like opening separate accounts for bearer check accounts and sending information about those account holders to the Presidency of Revenue Administration to get bearer checks under control.

Regarding the check types, the new Act brings the obligation of printing the checks for merchants and non-merchants and bearer checks in a way that allows to distinguish them from each other in terms of their styles. According to the new Act, checks can be issued by Banks and printing principals of check books are determined by the Central Bank of the Republic of Turkey. The Communique No: 2010/2 of the Central Bank of the Republic of Turkey which includes provisions regarding the printing principals of check books was published in the Official Gazette of 01/20/2010 No: 27468.

The amount that the drawee bank should legally pay to the bearer (holder) of the bad checks is determined as TL 600 in the Law. This amount will be redetermined by the Central Bank of the Republic of Turkey every year. A very crucial change related to this issue is that banks will not be able to transact this amount as bounced anymore.

According to the new Law, there will be a legal fine instead of a penalty of imprisonment about the persons who caused the check to be transacted as bounced. There are also a number of penalties for the bank officials who disobey the provisions of the Law.

In addition, the new Law requires the banks to give the new check books to their customers and to annihilate the old check books they own until 7/1/2010. On the other hand, the provisions in the Law No: 3167 will continue to be implemented for the old check books given to the customers by banks.

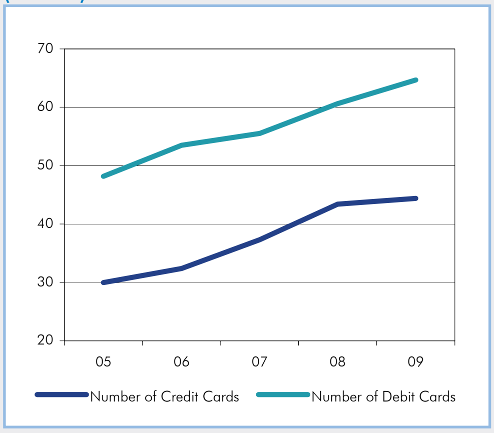
IV.3. Developments in the System of Card Payments

Pursuant to the Law on Bank Cards and Credit Cards No. 5464 that took effect in 2006, the institutions which perform clearing and settlement transactions regarding card based systems are subject to the permission of the Banking Regulation and Supervision Agency. As required by the Law, the clearing and settlement activities for the payables and receivables arising from the use of cards will be carried out between the card issuing organizations within the framework of written agreements to be signed by and between them or through companies to be promoted and founded by at least five card-issuing organizations. The principles and procedures of the activities of, and the conditions of membership in, and the supervision and audit of these companies will be dealt with in a regulation to be issued by the Board in due consultation with the Turkish Central Bank.

The Interbank Card Center (ICC) was established in 1990 as a legal entity with the partnership of 13 banks in order to ensure clearing and settlement of debit and credit cards. It currently has 28 members.

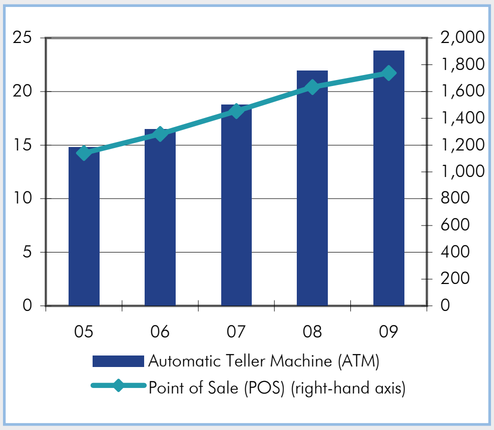
ICC-member banks' clearing and settlement transactions are carried out by the ICC. Debts arising from netting in the ICC are settled at the CBRT.

Chart IV.8.
Number of Debit Cards and Credit Cards (Million)



Source: ICC

Chart IV.9.
Number of ATM-POS (Thousand)

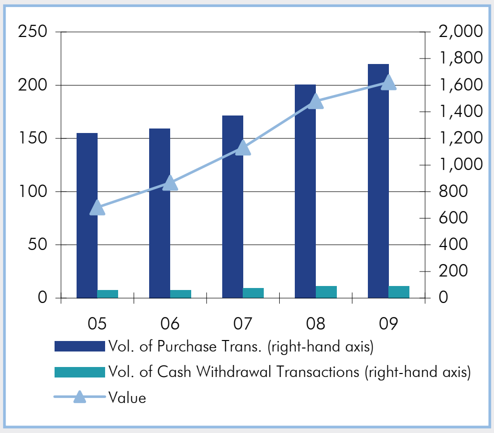


Source: ICC

Developments in debit and credit cards, which are two leading non-cash payment instruments, reveal that the usage of these cards continues to spread. The number of credit cards, which was 43.4 million in 2008, increased by 2.3 percent to become 44.4 million in 2009. The rate of increase in credit cards decreased significantly year-on-year in 2009. In the meantime, the number of debit cards continued to rise and became 64.7 million with an increase of 6.8 percent (Chart IV.8).

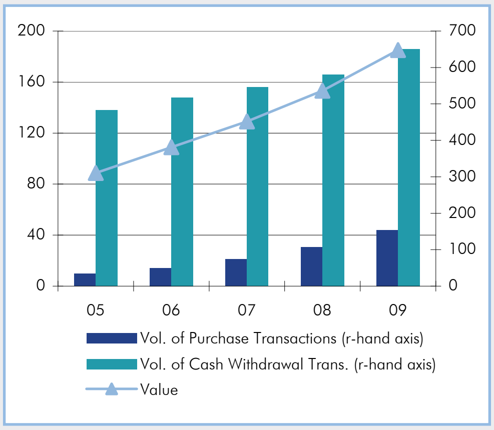
Due to widespread use of debit and credit cards in Turkey, the numbers of point of sale (POS) devices and automated teller machines (ATM) have increased. In 2009 the number of POS devices rose by 6.5 percent reaching 1.7 million and the number of ATMs increased by 8.3 percent reaching 23.8 thousand. Furthermore, Turkey started the interoperable ATM practice on October 1, 2009, with the participation of 26 banks and became the first country implementing the project in Europe. With this system, debit cardholders are able to withdraw money from and perform balance inquiries at all ATMs (Chart IV.9).

Chart IV.10.
Volume and Value of Credit Card Transactions (Billion TL, Million)



Source: ICC
(1) Domestic and external use of credit cards issued in Turkey

Chart IV.11.
Volume and Value of Debit Card Transactions (Billion TL, Million)

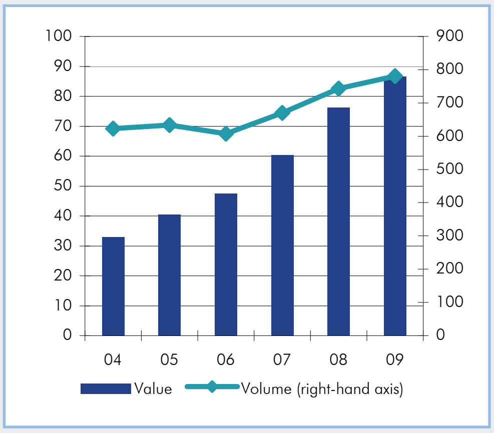


Source: ICC
(1) Domestic and external use of bank cards issued in Turkey

In 2009, the volume of credit card transactions rose by 8.8 percent while the value of credit card transactions increased by as much as 9.6 percent compared to 2008 and they reached 1.8 billion and TL 202.8 billion, respectively. The share of purchasing transactions within total credit card transactions in 2009 was 95.1 percent in volume and 90.4 percent in value (Chart IV.10).

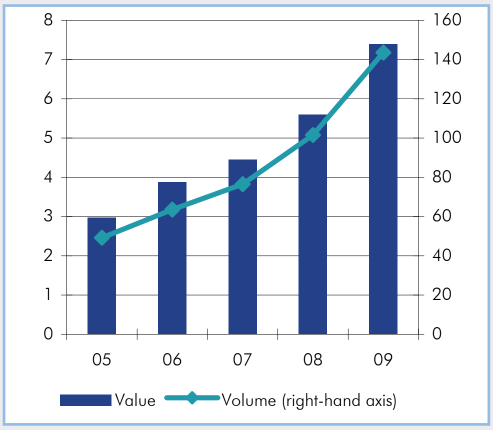
Analysis of debit card transactions reveals that the volume of debit card transactions rose by 17.0 percent reaching 804 million, whereas the value of debit card transactions went up by 20.8 percent reaching TL 185.1 billion. Use of debit cards for cash withdrawal became 80.9 percent in volume and 97.3 percent in value. Yet, the use of debit cards for purchases remained at 19.1 percent in volume and 2.7 percent in value. Meanwhile, over the last five years, the use of debit cards for cash withdrawal has increased by 34.8 percent in volume; whereas this ratio for purchases has risen by a significant margin of 355.8 percent (Chart IV.11).

Chart IV.12.
Volume and Value of Credit Cards processed in the Card Clearing System (Billion TL, Million)



Source: ICC

Chart IV.13.
Volume and Value of Debit Cards processed in the Card Clearing System (Billion TL, Million)



Source: ICC

In 2008, the volume of transactions, which were subject to the credit card clearing process, rose by 10.9 percent compared to the previous year; however, this rate of increase decreased to 5.0 percent and the volume of transactions became 780.6 million in 2009. Meanwhile, the rate of increase in the value of transactions, which was 26.1 percent in 2008 compared to the previous year, slowed down to become 13.7 percent and the total value of transactions stood at TL 86.6 billion in 2009(Chart IV.12).

According to ICC data, the volume of transactions which were subject to the clearing process of debit cards rose by 41.4 percent compared to the previous year and reached 143.5 million, while the value of transactions increased by 32.1 percent reaching TL 7.4 billion in 2009. The significant increase in the volume and value of transactions in 2009 was mainly driven by the common use of ATMs, effective as of October 1, 2009, which allowed cardholders to withdraw money from any ATM of any bank (Chart IV.13).

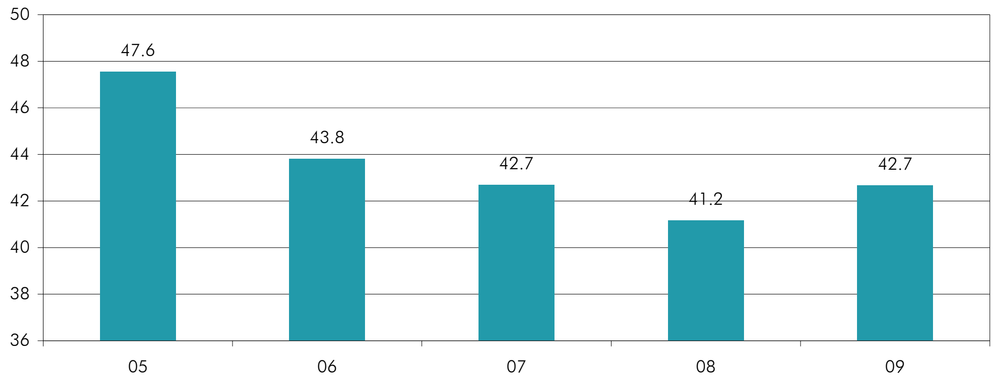
Table IV.4. Card Clearing and Settlement System – Netting Ratio (%)

	2005	2006	2007	2008	2009
Clearing and Settl. of Credit Cards					
Netting Ratio (%)	77.7	81.7	78.3	76.5	78.1
Transaction Volume (Billion TL)	41	48	60	76	87
Liquidity Saving (Billion TL)	32	39	47	58	68
Clearing and Settl. of Credit Cards					
Netting Ratio (%)	58.3	60.8	64.0	61.9	65.1
Transaction Volume (Billion TL)	3.0	3.9	4.5	5.6	7.4
Liquidity Saving (Billion TL)	1.7	2.4	2.9	3.6	4.8

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 78.1 percent and the liquidity requirement relating to credit card transactions decreased by TL 68 billion in 2009. This same ratio was 65.1 percent for debit card transactions and TL 4.8 billion of liquidity savings was obtained (Table IV.4).

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



Source: ICC

The ratio of the value of credit card transactions subject to clearing to total transactions for credit cards was 47.6 percent in 2005, whereas it fell to 41.2 percent in 2008. This decline was 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, 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 in 2009 (Chart IV.14).

Box 20.
Financial Market Infrastructures (FMI)

Financial Market Infrastructures (FMIs), such as large value payment systems, securities settlement systems and central counterparties, have a crucial role in conducting the clearing and settlement of critical transactions in the financial system Participants of these FMIs include banks, intermediatory institutions and other financial institutions.

The recent global turmoil in the financial markets increased the importance of financial stability. In this sense, safe and efficient payment and settlement systems became one of the important factors of the financial stability. As seen from the last crisis, providing accurate and on time settlement to their participants, FMIs have become an important resilience factor for the financial markets. On the other hand, FMIs are one of the main channels transmitting financial shocks both in domestic and international markets. Under normal conditions, reaching to FMIs from cross border countries increases the efficiency of the market, however it can cause important problems during crisis situations. The tendency of developing domestic FMIs towards international participations in recent years increased the risks transmitted through these channels.

Especially this situation has shown the need for the review of the risks and the development of the risk management mechanisms of FMIs. In this context, the following CPSS core principles come to the forefront;

- The system should have clearly defined procedures for the management of liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks,

- The system should provide prompt final settlement on the day of value, preferably during the day and at a minumum at the end of the day,

- A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation,

- Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no settlement risk.

Central bank's services to FMIs is another important issue discussed recently. Having an account at the central bank, using payment systems, facilitating collateral management services, intraday liquidity and overnight credit take place among these services. The ability to access central bank sources creates an important advantage for FMIs, especially in the sense of liquidity risk management. This facility helps to increase the financial strength and the resilience of these critically important institutions, and ensures financial system to function more robust and resilient against the crisis. Particularly, the elimination of counterparty risk is seen as an important gain since it prevents the crises to spread among the financial markets and institutions, and it contributes to the financial stability target of central banks.

Having taken the systemic importance of FMIs into account, CPSS started studies in order to support the strength of these institutions. In the context of CPSS's studies, the resilience of FMIs, their liquidity standards, and accession to the central bank services take place. Accordingly, preventive measures to increase the strength of the FMIs in performing their payment obligations in the case of the financial and operational problems in one or more participants of the FMI, in FMI itself or the whole financial system are discussed.

Another important issue regarding the assessment of the FMIs is to develop the recommendations for these institutions including the risks appeared during the last period and to supervise and oversee the alignment of the risk management of these institutions with respect to the risk management related standards. In this sense, CPSS and International Organization of Securities Commissions (IOSCO) have started to reassess their recommendations regarding FMIs with central banks and other regulatory authorities.