

**Payment, clearing and  
settlement systems in  
Turkey**



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## List of abbreviations

BAT	Banks Association of Turkey
BKM	Interbank Card Centre
BRSA	Banking Regulation and Supervision Agency
BTOM	Interbank Clearing Houses Centre
CBRT	Central Bank of the Republic of Turkey
CMB	Capital Markets Board of Turkey
CRA	Central Registration Agency
CSD	central securities depository
DDNs	Domestic Debt Notes (government bonds and treasury bills)
DVP	delivery versus payment
FOP	free of payment
ISE	Istanbul Stock Exchange
KEOS	Public Electronic Payment System
OPYS	Joint POS Management System
POS	point of sale
RC	relay computer (front-end processor for connecting to TIC-RTGS and ESTS)
SDIF	Savings Deposits Insurance Fund
TCA	Turkish Competition Authority
TCS	Takasbank Clearing System
TETS	Takasbank Electronic Transfer System
TIC-ESTS	Turkish Interbank Clearing – Electronic Securities Transfer and Settlement System
TIC-RTGS	Turkish Interbank Clearing – Real-Time Gross Settlement System
TKBB	Participation Banks Association of Turkey
TRL	Turkish lira (national currency unit before 1 January 2005)
TRY	Turkish lira (national currency unit since 1 January 2005)
TurkDEX	Turkish Derivatives Exchange
Ykr	krus (sub-unit of the national currency, one 100th of the Turkish lira)



## Introduction

Structural reforms implemented since the Turkish crisis<sup>1</sup> in 2001 and the political stability achieved after 2002 have brought about a significant improvement in fundamental indicators. The major steps towards ensuring macroeconomic and financial stability have included central bank independence, the shift to a floating exchange rate regime and the establishment of a robust supervisory framework to reinforce the soundness of the financial system. Turkey has not only managed to maintain both price and financial stability but it has also avoided a lengthy recession. Unlike many of its peers, the Turkish financial sector maintained its resilience throughout the recent global financial crisis<sup>2</sup> and required no capital support from the public sector.

The Turkish payment, clearing and settlement framework consists of various electronic systems that cover large-value payments, stock exchange payments, cheque clearing and credit card payments. The Turkish real-time gross settlement (TIC-RTGS) system is owned, operated, regulated and overseen by the Central Bank of the Republic of Turkey (CBRT). It settles interbank payments in Turkish liras and is integrated with the electronic securities transfer and settlement systems (TIC-ESTS). The issuance, real-time transfer and settlement in book-entry form of government bonds and treasury bills (DDNs) and other securities issued by governmental organisations are performed by the TIC-ESTS. Istanbul Stock Exchange (ISE) trades are settled and cleared by the ISE Settlement and Custody Bank (Takasbank).<sup>3</sup> Takasbank is also the central counterparty clearing house (CCP) for derivatives transactions traded at the Turkish Derivatives Exchange (TurkDEX). The Central Registration Agency (CRA) is the central securities depository for dematerialised capital market instruments trading on ISE markets. Within the retail payment sector, the Interbank Card Centre (BKM) and Interbank Clearing Houses Centre (BTOM) are the systemically important payment systems. BKM carries out interbank clearing and settlement of card payments, whereas the BTOM handles cheque clearing.

The CBRT has a strong interest in promoting safety and improving efficiency in payment systems as part of its overall concern with financial stability and has played a leading role in the modernisation of payment services. TIC-RTGS has become an efficient funds transfer system and hence an indispensable component of the financial system.

## 1. Institutional aspects

### 1.1 The general institutional framework

#### 1.1.1 *Regulatory institutions*

In Turkey, there are three major regulators with respect to payment systems, and securities clearing and settlement systems:

- The CBRT is responsible for securing the objectives of price stability and financial system stability. It is also responsible for the operation, regulation and oversight of

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<sup>1</sup> The 2001 financial crisis was caused mainly by an exchange rate crisis that later evolved into a banking crisis.

<sup>2</sup> The new financial architecture is designed to protect financial and economic stability and bolster the economy against the type of external fluctuations seen in 2008–09.

<sup>3</sup> Takasbank is a non-deposit-taking sector-specific investment bank.

payment systems in Turkey. The details of the CBRT's role are described in Section 1.2.

- The Banking Regulation and Supervision Agency (BRSA), which was established under the Banks Law (Law No 4389 enacted in 1999; repealed by the Banking Law, Law No 5411 enacted in 2005), issues licences, and regulates and supervises all major financial institutions, including banks, financial holding companies, and leasing, factoring and consumer finance companies. The BRSA also ensures that independent external auditing firms and rating agencies offering services to financial institutions act in accordance with the principles and methods they set up.

The BRSA aims to safeguard the rights and benefits of depositors and to create the proper environment in which banks can operate with market discipline in a healthy, efficient and globally competitive manner, thus contributing to the achievement of long-run economic growth and national stability.

- The Capital Markets Board of Turkey (CMB) is the regulatory and supervisory authority in charge of securities markets in Turkey. Authorised by the Capital Markets Law (Law No 2499 enacted in 1981), the CMB is responsible for regulating and supervising securities markets and institutions, determining the operational principles of capital markets, and protecting the rights and interests of investors.

In this framework, the CMB regulates and supervises corporations offering securities to the public, securities market intermediaries, securities investment funds (mutual funds), investment companies (including real estate investment companies and venture capital investment companies), independent external auditing firms offering services to capital market institutions, stock exchanges and secondary markets in general, precious metal exchanges and derivatives exchanges, and other related institutions operating on the capital markets, such as ratings agencies, as well as clearing and depository institutions.

The regulation of capital market instruments, including futures and options, also falls under the CMB's regulatory scope. In this framework, it also assumes responsibility for introducing and developing new instruments.

Based on the overall objectives of ensuring the fair and orderly functioning of the markets and protecting the rights of investors, the major goal of the CMB is to take any necessary measures to foster the development of capital markets, hence contributing to the efficient allocation of financial resources while ensuring investor protection.

### **1.1.2 The legal framework for payment and settlement systems**

Although there are no laws dealing specifically with payment and settlement systems, a number of laws and secondary legislation have a bearing on payment-related activities and institutions:

- The Law on the Central Bank of the Republic of Turkey (CBRT Law) (Law No 1211 enacted in 1970; last amended by Law No 6111 enacted in 2011) regulates the operations of the CBRT, whose major functions and responsibilities derive from this law – inter alia the exclusive right to issue banknotes in Turkey. The law authorises the CBRT to establish payment, securities transfer and settlement systems, to enact regulations to ensure the uninterrupted operation and oversight of existing or future systems, and to determine the methods and instruments, including the electronic environment for payments.
- The Banking Law (Law No 5411 enacted in 2005; last amended by Law No 6111 enacted in 2011) regulates the business activities of all banks in Turkey, namely deposit banks, participation banks and development and investment banks, and

Turkish branches of foreign institutions. The law lays down rules and procedures governing the incorporation, management, transactions, transfer, merger, liquidation and supervision of banks, acceptance of deposits and participation funds, in order to protect the rights and interests of depositors. Its purpose is also to ensure the efficient functioning of the credit system by giving due consideration to confidence and stability in financial markets. All activities of financial holding companies, the Banks Association of Turkey (BAT), the Participation Banks Association of Turkey (TKBB), the Banking Regulation and Supervision Agency (BRSA) and the Savings Deposits Insurance Fund (SDIF) are also governed by the provisions of this law.

- Article 79 of the Banking Law makes it obligatory for all deposit, development and investment banks subject to this law to become a member of the BAT, and for all participation banks to become a member of the TKBB, within one month of receipt of their operating licence.
- The Capital Markets Law (Law No 2499 enacted in 1981; last amended by Law No 6111 enacted in 2011) regulates and controls the secure, transparent and stable functioning of the capital markets and protects the rights and interests of investors, for the purpose of ensuring efficient and widespread participation by the public in the development of the economy through investment of savings in the securities market. Capital market instruments and their public offering and sale, exchange markets and other markets organised pursuant to the law, capital market activities, capital market institutions and the CMB are subject to the provisions of the law. The law focuses on shares offered to the public and does not apply to the issuance of shares not offered to the public by joint stock corporations that are not publicly held.
- The Cheque Law (Law No 5941 enacted in 2009) governs all aspects of payment by cheque and provides the framework for issuance, acceptance and payment of cheques. Article 8 governs the establishment and functioning of the interbank clearing houses. Under the CBRT Law, the CBRT is responsible for their oversight and supervision. The rules and procedures of the BTOM are governed according to the regulations issued by the CBRT.
- The Bank Cards and Credit Cards Law (Law No 5464 enacted in 2006; last amended by Law No 6111 enacted in 2011) aims to ensure the efficient functioning of card-based payment systems by establishing rules and procedures governing the issuance, usage and clearing of bank and credit cards. The law also governs the issuance and revocation of operating licences, the obligations of card issuers, and the penalties and obligations of card bearers.
- The Public Finance and Debt Management Law (Law No 4749 enacted in 2002; last amended by Law No 6001 enacted in 2010) establishes rules and procedures for domestic and foreign public debt management. Article 6 paragraph 4 of the law authorises the Undersecretariat of the Treasury and the CBRT to regulate the issuance of government bonds and treasury bills in book-entry form. All securities transfers under this law are registered with the Electronic Securities Transfer and Settlement System (TIC-ESTS), which is the securities settlement system of the CBRT. The final settlement of the related payments is provided by the national real-time gross settlement system (TIC-RTGS).
- The Turkish Commercial Code (Law No 6102 enacted in 2011) defines in Articles 645–849 the form and usage of negotiable instruments, namely promissory notes, bills and cheques, which are used widely for commercial payments.
- The rules and procedures governing participation in TIC-RTGS and TIC-ESTS are governed by a special agreement between the CBRT and participating banks. The banks sign a participation contract with the CBRT agreeing to comply with the

provisions of the TIC-RTGS and the Operational Rules of the ESTS. These rules define the relationship between the CBRT and the participating banks and between the participants concerning the services provided by TIC-RTGS and TIC-ESTS. In particular, they specify the roles of the various parties involved in the system. The operational procedures, rights, obligations and a clause stipulating arbitration as a means of dispute resolution are also governed by these rules.

## **1.2 The role of the CBRT**

The CBRT was established in 1930 under the Central Bank Law (Law No 1715). In 1970, the *Law on the Central Bank of the Republic of Turkey (CBRT Law)* (Law No 1211) was enacted and considerable amendments were introduced in 2001.

Ensuring the smooth functioning of the payment, clearing and settlement systems is among the CBRT's fundamental duties as set out by the 2001 amendments. The CBRT is also involved in the payment, clearing and settlement systems in many different ways.

### **1.2.1 Payment systems oversight**

According to the CBRT Law, the CBRT is responsible for the oversight of payment systems in Turkey. The law stipulates the fundamental duties and powers of the central bank, including:

“... to regulate the volume and circulation of the Turkish lira, to establish payment, securities transfer and settlement systems, to enact regulations to ensure the uninterrupted operation and oversight of the existing or future systems, and to determine the methods and instruments, including the electronic environment for payments.”<sup>4</sup>

The CBRT has disclosed its major objectives and policies concerning payment systems to the public both on its website and in its publications.<sup>5</sup> As an oversight authority, the CBRT's primary focus is on systemic risk, and its oversight function is concentrated on the TIC-RTGS and BTOM (see Sections 3.2.1 and 3.3.2).

The CBRT conducts its oversight of the BTOM, which is a systemically important payment system, by monitoring, assessing, and fostering change.

With respect to TIC-RTGS, the CBRT uses various instruments in the performance of its oversight function: issuance of regulations, moral suasion vis-à-vis the participants, direct provision of payment services (as the owner and operator of the system) and application of sanctions (as described in the TIC-RTGS and ESTS Operational Rules).

In line with the development of the payment system oversight concept, the CBRT has recently made efforts to restructure and formalise its payment system oversight role.

### **1.2.2 Provision of payment and settlement services**

The CBRT is the owner, operator and overseer of TIC-RTGS, the real-time gross settlement system which works in an integrated manner with the electronic securities transfer and settlement system, TIC-ESTS. Stock exchange payments, cheque clearing and credit card

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<sup>4</sup> The CBRT Law permits the CBRT to determine the appropriate tools and procedures for payments, to continuously monitor system compliance with the Core Principles for Systemically Important Payment Systems (Core Principles for SIPS) in order to prevent the systemic risks that can arise from payment systems, to monitor developments that can affect the effectiveness and reliability of the systems and to coordinate its work with other supervisory authorities and system participants.

<sup>5</sup> [www.tcmb.gov.tr](http://www.tcmb.gov.tr).

payments as well as other large-value interbank payments are settled in TIC-RTGS. All payments in the BTOM and BKM are settled in the settlement accounts at the CBRT.

Takasbank has giro and TIC-RTGS accounts at the CBRT. Payments in connection with securities transactions between Takasbank members are settled net in the Takasbank accounts. The banks' net claims are directly transferred from their Takasbank giro account to their TIC-RTGS account.

Accounts do not bear interest, and are used for funds transfers between the account holders, including settlement of obligations arising from interbank clearing systems. Banks hold giro accounts, reserve requirement accounts and TIC-RTGS accounts. Giro accounts are used mainly for cash withdrawal. The funds maintained in giro accounts are usually a small portion of the total bank funds deposited with the CBRT. A separate account, the TIC-RTGS account, is used for payments routed through TIC-RTGS. Although banks' reserve requirement accounts are separate from their settlement accounts, the balance of the former is transferred to the latter at the beginning of each day for settlement purposes.

In addition to the services mentioned above, the Treasury, exchange offices, public entities (state-owned economic enterprises and ministries) and international organisations (IMF, World Bank, Asian Development Bank) hold accounts with the CBRT.

#### *1.2.2.1 The central bank's provision of (standing and emergency) credit and liquidity facilities*

In order to meet temporary liquidity shortages and hence to mitigate liquidity risk in TIC-RTGS, the CBRT provides banks with an intraday liquidity facility between 09:00 and 15:00 (since July 1999) and a late liquidity window facility between 16:00 and 17:00 (since July 2002), both of which are fully collateralised.

Further, subparagraph (c) of paragraph (I) of Article 40 of the CBRT Law authorises the CBRT to extend credits to banks that are the subject of uncertainty and lack of confidence in the event of accelerated withdrawals and uncertainty and lack of confidence in the banking system, in the amount necessary to cover the withdrawal of funds, the conditions of which shall be determined by the Bank. Within this framework, the CBRT provides fully collateralised liquidity support credit (emergency credit) to banks that are illiquid but solvent and are experiencing uncertainty and concerns regarding soundness, in the case of increased concerns about the safety and soundness of the banking system and an accelerated run on deposits.

Taking into consideration the provision of these facilities to financial market infrastructures, only the banking-licensed ISE Settlement and Custody Bank (Takasbank) can obtain these facilities within their borrowing limits as determined by the CBRT.<sup>6</sup>

#### *1.2.2.2 The role of the CBRT as banker for the government*

According to a provision in subparagraph (a) of paragraph (III) of Article 4 of the CBRT Law, the CBRT is the government's financial and economic advisor, fiscal agent and treasurer. In this respect, the CBRT has the following duties:

- Acts as financial and economic consultative body of the government.
- Acts as fiscal agent for the government in the international financial and economic relations of the state.

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<sup>6</sup> According to a provision of the interbank money market implementation rules, the CBRT has established certain borrowing limits for each bank in the interbank money market operating in the CBRT. As it has a banking licence and participates in TIC-RTGS, Takasbank has a set limit, determined by the CBRT, on its use of interbank money market facilities.

- Carries out the financial servicing of all types of domestic borrowing notes in the primary market on behalf of the Treasury.
- Executes collections and disbursements of the state and all Treasury operations both within the country and abroad, as well as domestic and foreign money transfers and remittances of all types.

### **1.2.3 Cooperation with other institutions**

Cooperation between the CBRT and other authorities is based on mutual understanding. For example, the CBRT has cooperated with the CMB on the project for safekeeping of customer securities under the customer's name in the Central Registry Agency (see Sections 1.3.4 and 4.3.3).

In order to perform public payments in a more efficient and effective manner and promote better cash planning and management, the CBRT has cooperated closely with the Ministry of Finance and the Undersecretariat of the Treasury on the public electronic payment system project (KEOS) for improved public payments processing. This cooperation has continued through the implementation of KEOS all over Turkey.

According to the CBRT Law, the CBRT is entitled to receive financial information from all financial institutions, including the BRSA. Moreover, in August 2000, the CBRT, the Undersecretariat of the Treasury and the BRSA signed a memorandum of understanding on information-sharing in the financial sector.

## **1.3 The role of other private and public sector bodies**

### **1.3.1 Financial intermediaries**

As of December 2010, the financial sector in Turkey comprised 49 banks, 35 financial leasing companies, 76 factoring companies, 11 consumer finance companies, six asset management companies, 57 insurance companies, of which 14 were individual pension companies (140 pension funds), along with 485 mutual funds, 103 intermediary institutions, 31 securities investment trusts, 18 real estate investment trusts, two venture capital trusts and 28 portfolio management companies.

#### *1.3.1.1 Financial intermediaries providing payment services*

##### *1.3.1.1.1 Banks*

Banks in Turkey are established as joint stock companies and are subject to the provisions of the Banking Law. In line with the criteria set forth in this law, a bank established abroad may also operate in Turkey by opening a branch. There is no distinction between foreign and Turkish banks in terms of the regulatory and supervisory framework.

Banks in Turkey are grouped into deposit banks, investment and development banks, and participation banks.<sup>7</sup> Most banks have largely computerised their operations. Internet banking services are offered by all commercial banks.<sup>8</sup>

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<sup>7</sup> As of December 2010, there were 32 deposit banks (three public, 11 private, one SDIF-controlled bank and 17 foreign banks), 13 development and investment banks (three public, six private and four foreign banks), and four participation banks. The total number of branches of all banks, including participation banks, was 10,072 and the total number of personnel was 191,207 as of December 2010.

<sup>8</sup> These services include a variety of technology-intensive applications such as online credit transfers, online investment accounts, and trading of government bonds, mutual funds and equities. Many banks offer customers a real-time funds transfer service through TIC-RTGS.

All types of deposit banks – private, public or foreign – perform traditional banking operations such as deposit-taking, payment services, foreign exchange operations and marketing of securities and other financial products. However, deposit banks are not allowed to provide financial leasing activities. Deposit banks, with a nationwide branch network, provide most of the payment services. Sight deposits are mostly used for funds transfers. Banks offer cheque and card facilities for account holders. Deposit banks are members of the national RTGS system, TIC-RTGS and interbank clearing houses (BTOM).

The development and investment banks carry out all banking operations apart from taking deposits. They provide investment advisory services and consultancy on transfer and merger issues, financial restructuring and efficient management practices in commercial enterprises. They also grant credits from their own funds and other funds under their management and they offer cheque accounts and participate in the BTOM clearing.

Participation banks operate pursuant to the Banking Law No 5411. Similar to deposit banks, they can collect deposits in Turkish liras (TRY) and foreign currency. However, they operate on profit- and loss-sharing principles in raising funds. In allocating funds they operate on a trade (murabaha<sup>9</sup>), leasing and profit-loss partnership basis. In other words, they neither pay interest on deposits nor demand it from customers they lend to.

Participation banks provide payment services and cheque and card facilities, and participate in clearing and settlement in the same way as other banks. In contrast to deposit banks, participation banks are allowed to engage in leasing activities along with development and investment banks. Currently, there are four participation banks in Turkey and their share in the total financial system is around 5%.

#### *1.3.1.1.2 The Post Office*

The Post Office (the General Directorate of Posts, which in terms of organisation is structured under the Ministry of Transportation) plays a significant role in providing payment and remittance services to customers all over Turkey. At the end of 2010, there were 3,732 Post Office branches that handled remittances. The Post Office offers cheque accounts and money order services. The money order facility can be used for remitting money all over the country and beneficiaries are not required to have an account with the Post Office.<sup>10</sup> In addition to these services, Post Office branches can issue domestic traveller's cheques, change foreign currency and receive postal money orders from abroad.

#### **1.3.2 Istanbul Stock Exchange (ISE)**

The ISE, which started operations in 1986, is the only securities exchange in Turkey. It is a public institution regulated by the CMB. Government bonds, treasury bills, CBRT liquidity bills, capital market instruments, share income certificates and international securities are traded on the ISE.

The bonds and bills market is the only organised, fully automated market for both outright purchases and sales and repurchase/reverse repurchase transactions with fixed income securities. The purpose is to provide an environment for the secondary market trading of debt securities comprising government bonds, treasury bills, corporate bonds and bonds issued by the Privatisation Administration and central bank liquidity bills. Treasury bills and

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<sup>9</sup> Murabaha is a contract sale between the bank and its client for the sale of goods at a price which includes a profit margin agreed by both parties. As a financing technique, it involves the purchase of goods by the bank as requested by its client. The goods are sold to the client with a mark-up. Repayment, usually in instalments, is specified in the contract (for further details, see <http://www.tkbb.org.tr/en>).

<sup>10</sup> In 2010, 37.3 million domestic money orders worth TRY 51.1 billion were processed by the Post Office.

government bonds are the most actively traded instruments. The bonds and bills market was established in June 1991, while repurchase/reverse repurchase transactions began in February 1993.

### **1.3.3 ISE Settlement and Custody Bank, Inc (Takasbank)**

Takasbank clears and settles ISE trades and acts as the clearing house for the Turkish Derivatives Exchange (TurkDEX). It is also the official custodian for investment and private pension funds and the national numbering agency for securities issued in Turkey.<sup>11</sup>

Takasbank was originally set up in 1988 as a department of the ISE, with responsibility for settlement and custody. In 1991 it became an independent organisation and in 1996 it was converted into a bank. As a specialised sector-specific non-deposit-taking investment bank, Takasbank provides ISE members with both cash and non-cash credit mechanisms that support settlement completion. Accordingly, Takasbank operates both a securities lending market and a money market as well as providing cash credit to capital market participants.

Takasbank's banking services are regulated by the BRSA and the CBRT, and its clearing and settlement functions by the CMB and ISE.

Takasbank settles securities trades in all ISE markets. The ISE clears and settles ISE trades using multilateral netting. Net obligations are legally binding, but Takasbank does not guarantee settlement. As a result of the DVP principle applied, its members do not take delivery of their receivables unless they fulfil their obligations. In case of partial fulfilment of the obligation, a proportional payment or a transfer from the receivable due is made to the member.

Takasbank also provides custody services for private pension fund participation certificates. It also carries out custody, settlement and other related operations for pension fund transactions in capital markets.

Takasbank has a correspondent relationship with Euroclear Bank. In this capacity and through its SWIFT membership, as well as via nostro accounts held with Euroclear Bank, Takasbank provides international settlement and custody services for foreign securities such as eurobonds, foreign bonds, depository receipts and warrants. As of the end of 2010, some 83 institutions receive international securities correspondent services from Takasbank.

### **1.3.4 Central Registry Agency**

The Central Registry Agency (CRA) is the central securities depository for dematerialised capital market instruments in Turkey. The CRA is a private company established in 2001 as a legal entity under the provisions of the Capital Markets Law and is regulated by the CMB. The CRA keeps electronic records on issuers, intermediary institutions and owners of rights. The CMB determines which capital market instruments the CRA issues in its electronic book-keeping system on a beneficial owner basis. The rights affixed to those securities are also determined by the CMB. The Central Dematerialised System was put into operation in November 2005. The CRA took over central securities depository functions for equities on completion of the dematerialisation system. All equities are registered as dematerialised shares in the Central Dematerialised System. Clients' safekeeping accounts were transferred from Takasbank to the CRA and book-entry records were automatically registered by the CRA in line with the dematerialisation process and recorded at the beneficial owner level. Takasbank currently has a 65% stake in the share capital of the CRA. Takasbank will

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<sup>11</sup> Takasbank is the national numbering agency authorised by the CMB to allocate ISIN and CFI codes to securities and other financial instruments issued in Turkey.

maintain its functions as the clearing and settlement institution for the ISE, providing the omnibus account with the CRA for securities settlement purposes. As the CRA and Takasbank systems will be interlinked in real time, securities for which transfer orders are entered in the system will be instantaneously reflected in the CRA. Real-time gross DVP member-to-member<sup>12</sup> settlement will continue to be executed via Takasbank.

### **1.3.5 Banks Association of Turkey**

The Banks Association of Turkey (BAT) was founded in 1958 under Article 57 of the Banks Law (Law No 7129 enacted in 1958). Its duties and powers have been revised in the new Banking Law (Law No 5411 enacted in 2005). The BAT is a legal entity with the status of a public institution, and it is the representative body for all banks operating in Turkey with the exception of the participation banks (see Section 1.3.1.1.1).

All deposit, investment and development banks operating in Turkey are legally obliged to become members of the BAT. Each bank is represented in the Association by its chairperson, managing director or general manager.

The BAT is responsible for:

- ensuring the development of the banking profession;
- ensuring that banks function in a prudent and well disciplined manner as required by the BAT itself and the banking profession in order to meet the needs of the national economy;
- adopting and implementing all measures necessary for the prevention of unfair competition among banks;
- determining the principles and conditions to be respected by banks, based on approval by the BRSA; and
- ensuring cooperation among banks for joint projects, in collaboration with the BRSA.

The BAT monitors implementation of the decisions taken pursuant to the applicable legislation and measures required by the BRSA. The organisational structure of the Association consists of the General Assembly, the Board of Directors, the Secretariat General and the Auditors. The BAT carries out its activities through several structural and functional groups.

### **1.3.6 Participation Banks Association of Turkey**

The Participation Banks Association of Turkey (TKBB) was founded in 2005 under Articles 79–81 of the Banking Law (Law No 5411). The TKBB is an institutional association, similar to the BAT, and its members are participation banks (see Section 1.3.1.1.1). The status of the TKBB was defined by the Participation Banks Association Decree of the Council of Ministers (No 2006/10018). The Association comprises the General Assembly, the Board of Directors, Auditors and the Secretariat General.

The main objective of the Association is to defend the rights and interests of participation banks within the framework of the free market economy and full competition principles and banking system regulations; to carry out studies and research for the enhancement and

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<sup>12</sup> Takasbank manages the DVP system. There are two different DVP settlement mechanisms. One is near-simultaneous net settlement (for all on-exchange transactions) and the other is gross settlement (for broker-to-custodian transactions after netting). All DVP settlements are executed on netted transactions.

healthy functioning of the banking system; and to promote legislation that maintains a competitive marketplace while avoiding unfair competition.

## **2. Payment media used by non-banks**

### **2.1 Cash payments**

Cash is the dominant retail payment medium in Turkey, although in recent years there has been a growing tendency to use alternative payment methods. No exact figures are available for cash payments. As of March 2011, total banknotes and coins in circulation amounted to TRY 52.1 billion. The share of cash in M1 (51.2% in 2011) illustrates the dominance of cash payments in Turkey. Cash withdrawals are made mainly from bank branches or cash dispensers. Banks encourage the use of ATMs for cash withdrawals, and their usage is increasing.

The use of cash to pay wages, salaries and pensions is declining as credit transfers account for an increasing proportion of such payments.

The CBRT is the sole issuing authority for banknotes with the status of legal tender. As of 1 January 2005, six zeros were removed from the Turkish lira (TRL) and the currency was renamed the new Turkish lira (TRY).<sup>13</sup> The sub-unit, which is one 100th of a Turkish lira, is called the *kurus* (Ykr). Banknotes are issued in denominations of TRY 5, 10, 20, 50, 100 and 200. The TRY 50 note has the largest share of the currency in circulation.

Coins are issued by the Undersecretariat of the Treasury in six denominations: one, five, 10, 25 and 50 *kurus* (Ykr) and one Turkish lira.

TRL banknotes and coins were withdrawn from circulation at the beginning of 2006. However, as of 1 January 2006, they became convertible into TRY at the CBRT and T.C. Ziraat Bank, which is the biggest public bank, for a period of 10 years for banknotes and one year for coins.

### **2.2 Non-cash payments**

#### **2.2.1 Non-cash payment instruments**

##### *2.2.1.1 Cheques*

The Turkish Commercial Code and the Cheque Law govern all aspects of cheque payments and provide the framework for issuance, acceptance and payment of cheques. Banks provide a cheque account facility to their customers in accordance with the Cheque Law. The drawer bank pays the cheques directly or through clearing houses. Cheques are free of collection charges for both the drawer and the payee. However, if a cheque is paid by a branch other than the branch where the account is maintained, an authorisation charge is usually levied.

Traveller's cheques are issued by banks and are not accepted for interbank clearing. Banks collect traveller's cheques and send them directly to the branch of the paying bank for payment.

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<sup>13</sup> The word "new" was dropped from the name of the currency at the end of a transition period determined by the Council of Ministers.

The number of cheques that were subject to a clearing house process in the Interbank Clearing Houses Centre (BTOM)<sup>14</sup> decreased by 20.5% between 2006 and 2010 (in 2010 18.7 million cheques were used). The value of cheques processed increased by 21.1% and reached TRY 228 billion (USD 146.1 billion).

#### 2.2.1.2 *Postal cheques*

The Post Office provides postal cheque account facilities to any firm or individual. No interest is paid on these accounts, nor are commission charges levied. Postal cheque accounts are used mostly by public institutions for collecting various types of tax and by companies for receiving payment instalments.

More than 1,432,000 postal cheque accounts were maintained in 2009, up by 106.9% from 2006. Some 15.4 million postal cheques were processed for a total value of TRY 37.8 billion, an increase of 51% over 2006.

#### 2.2.1.3 *Promissory notes*

Promissory notes are commonly used in the small and medium-sized business sector by firms that lack access to bank credit or the capital markets. Such notes are defined in the Turkish Commercial Code and do not contain any bank information. A valid promissory note must be signed by both counterparties and should indicate the amount due and the value date. The beneficiary may obtain funds before the value date by presenting the promissory note to a bank for discount.

Usage of promissory notes has fallen over time while that of alternative payment and credit instruments such as credit cards and cheques has increased.

#### 2.2.1.4 *Credit transfers*

Credit transfers are an increasingly popular means of transferring funds between customers. To make such transfers, customers are required to maintain sight deposits, which carry a low interest rate.

There are two categories of credit transfer: (i) credits to other account holders with any bank; and (ii) credits to non-account holders. The first is an ordinary credit transfer operation between two accounts. The account holder gives a written transfer order, which is carried out if there are enough funds in the account. The second category of credit transfer enables funds to be sent to a beneficiary who does not maintain an account with any bank. In this case, the customer making the payment specifies the name of the beneficiary, the address and the bank/branch where the payment is to be made. When the transfer reaches the counterparty bank/branch, the beneficiary is notified of the remittance and can withdraw the money from that branch.

All interbank credit transfers are processed electronically. Most branches receive credit transfer instructions from customers in written form and these are sent electronically to the final destination. Most banks also provide a credit transfer facility via ATMs, the internet and telephone.

Bank customers can issue standing orders for regular payments that are executed automatically on specified dates. The Post Office also provides credit transfer facilities to its account holders.

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<sup>14</sup> To facilitate electronic processing, cheques are coded with MICR (magnetic ink character recognition) code in E13B format.

In 2010, 180.1 million credit transfers were executed.<sup>15</sup> This represents a 50.5% increase since 2006. Some 142.8 million credit transfers were processed via TIC-RTGS and 37.3 million via the Post Office.

### 2.2.1.5 Payment cards

#### 2.2.1.5.1 Credit cards

Credit cards offer a cashless payment medium combined with a revolving credit and cash advance facility. In recent years, many banks have also introduced a facility for the interest-free instalment repayment of credit card debt. Such features have made credit cards very popular and their numbers are steadily rising. Cardholders are charged an annual subscription fee while merchants pay a commission to the acquirer.

Credit cards were first introduced in 1968, but their growth began in the early 1990s. In the last decade, the number of credit cards provided to customers by banks and financial institutions has risen strongly. By the end of 2009, the total number of credit cards issued in Turkey reached 44.4 million, an increase of 37% since the end of 2006. In 2009, the total number of transactions inside and outside Turkey on cards issued in Turkey was 1.85 billion, for a total value of TRY 202.8 billion.

In March 2006, Turkey became the third country in Europe to launch the chip and PIN method (PIN entry and offline PIN validation for chip credit card purchases). The chip and PIN is a new payment method that mitigates the risk of credit card fraud by preventing counterfeit and the abuse of lost or stolen cards.

The Interbank Card Centre (BKM) ran a campaign to raise PIN security awareness among card users in 2009. End-2009 figures show that 98% of point-of-sale (POS) terminals and 98.5% of credit cards in the market are compliant with the Europay, MasterCard and Visa (EMV) standard. BKM has recently prepared local regulations for cash withdrawal with credit cards at the point of sale.

#### 2.2.1.5.2 Debit cards

Debit cards are typically used to withdraw cash and to send remittances by debiting the holder's account via an ATM. Since 1994, it has also been possible to use them for retail purchases direct from the current account via POS terminals. To create awareness of debit card use at the point of sale, BKM launched an advertising campaign beginning in October 2004, with the aim of broadening the use of debit cards and convincing cardholders to use debit cards instead of cash when shopping. As a result, the total volume and value of such purchases increased by about 140% over a two-year period, reaching 154 million transactions with a total value of TRY 4.93 billion in 2009. These promotional efforts by BKM are continuing.

At the end of 2009, the total number of debit cards was 64.7 million. At end-2009, 1,714,996 POS terminals that accept debit cards were available at 1,132,059 merchant outlets, including department stores, supermarkets, petrol stations, and numerous retailers in sectors such as clothing and luxury goods, food, electronics, drugs and sanitary products, furniture, car rentals, etc.

The latest development in debit card services allows consumers to withdraw cash at selected retail stores through POS terminals. This "cash-point" service, which was introduced by a major bank in January 2006, resembles a cash-back transaction, but does not require the

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<sup>15</sup> Interbank transfers only; data on intrabank transfers are not available. The Post Office figure covers only domestic transfers. For postal cheque transactions by the Post Office, see Section 2.2.1.2.

consumer to make a purchase at the retail store in question. The service is free of charge and, as of June 2006, was available at 217 cash points.

Furthermore, in March 2006, BKM prepared the infrastructure and the local regulations that allow all applicant member banks to provide a cash withdrawal service on a debit card purchase transaction (“cash-back”) at the point of sale.

Since the completion of the BKM-managed ATM Sharing Project in 2009, it has been possible to use any debit card in any ATM for cash withdrawal and account balance inquiry transactions.

#### *2.2.1.5.3 Prepaid cards*

The most frequently used prepaid cards are disposable phone cards issued by Turkish Telekom for making calls from public telephones, reloadable cellular phone cards issued by GSM operators, reloadable payment cards for road tolls, and reloadable public transport tickets issued by municipalities.

The municipalities of some cities, including Istanbul and Izmir, provide reloadable tokens and cards for travel on public transport and for paying utility bills.

In 2009, banks stepped up their efforts to implement prepaid card programmes. In addition to gift cards, Turkish banks have started to issue contactless prepaid cards with additional features such as personal identification, public transport payment functions, etc.

#### *2.2.1.6 Other access channels for banking and payments*

##### *2.2.1.6.1 Telephone banking*

Since the introduction of telephone banking in 1991, the range of phone banking services has increased. Besides being able to transfer funds and make account balance enquiries over the telephone, bank customers can also pay bills or credit card balances, trade mutual funds or stocks, and set up time deposits.

##### *2.2.1.6.2 Internet banking*

The growth and spread of internet banking services has been unexpectedly strong, reflecting a high degree of public acceptance. First introduced in 1997, internet banking is now provided by all deposit-taking banks, allowing consumers to make account balance enquiries, transfer funds (including transfers to third-party accounts with other banks), trade mutual funds or stocks, apply for loans, pay credit card balances or bills, and trade or transfer foreign exchange. In addition, other services, such as operations related to insurance and pension funds, are increasingly available via internet banking.

As of September 2010, the population of internet banking service customers stood at 6.4 million, an increase of 49% over 2007.

##### *2.2.1.6.3 Mobile phone-related payments*

Since 2000, bank customers have been able to conduct banking transactions on GSM-standard mobile phones. Initially available only on mobile phones with WAP-GPRS functionality, mobile banking was extended to all types of phones after about a year. Most types of retail banking transactions are now possible via mobile phone.

NFC (Near Field Communication) is a short-range wireless technology that enables mobile phones to make payments by equipping them with a contactless card. The number of NFC pilot projects started to increase during 2009. BKM has completed its NFC OTA (over-the-air) infrastructure and it has also introduced an NFC portal to provide users with information about NFC and upgrades.

## **2.2.2 Non-cash payment terminals**

### **2.2.2.1 ATMs and POS terminals<sup>16</sup>**

The first ATM service in Turkey started in December 1987. Since then, ATMs have continuously increased in number. At the end of 2009, a total of 23,800 ATMs were installed in Turkey, some 44% more than in 2006. ATMs allow consumers to check their current account balance, withdraw cash, initiate credit transfers, pay bills or credit card debts, access their investment accounts and initiate transactions. In addition, some banks have begun to operate advanced ATMs that allow consumers to deposit cash, which becomes instantly available in their current account. Some banks also allow withdrawals in foreign currencies through a limited number of ATMs, typically located in tourist areas.

BKM member banks have made significant investments in the payments infrastructure by installing POS terminals that authorise and record transactions at merchant outlets. At the end of 2009, there were 1.7 million POS terminals, an increase of 35.6% since 2006.

### **2.2.3 Recent developments**

From 2009, banks have embarked on an increasing number of contactless payment card and contactless POS projects. As NFC technology is based on contactless payment standards, this activity has led to a higher level of “NFC readiness” in Turkey.

The total number of contactless credit/debit cards rose from 705,000 in April 2009 to 1,820,000 by the end of the same year, while POS numbers increased from 9,063 to 17,827. By the end of 2009, the annual value of contactless transactions had reached TRY 26.5 million.

## **3. Payment systems (funds transfer systems)**

### **3.1 General overview**

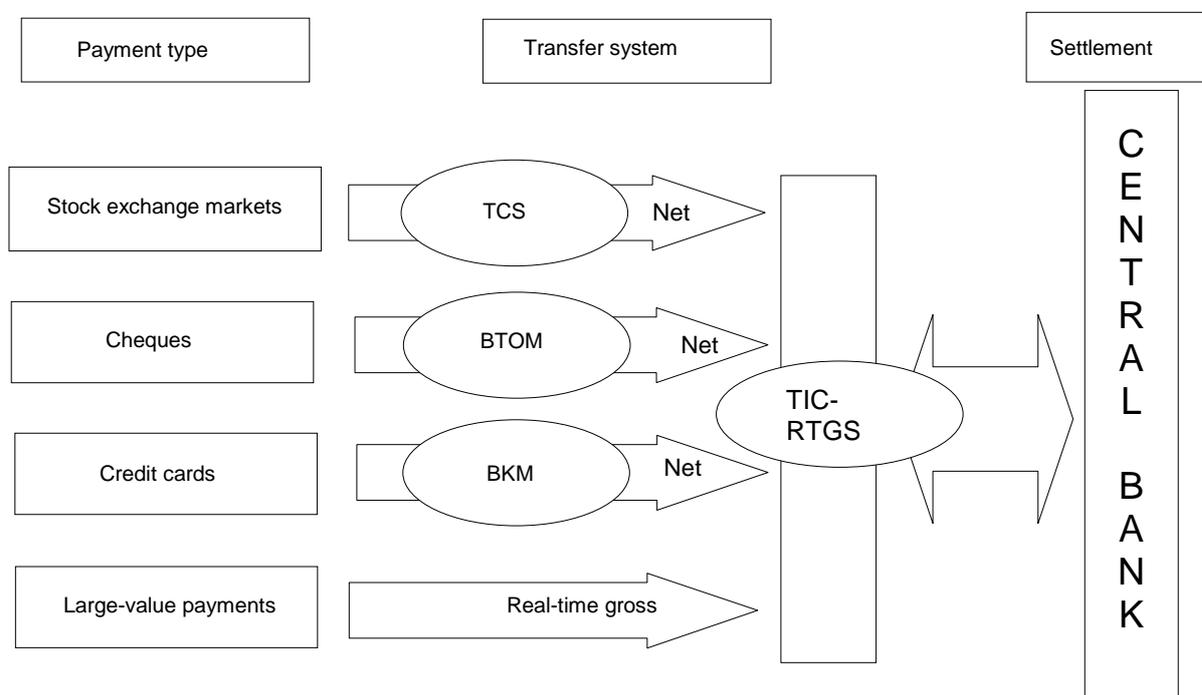
In Turkey, the major interbank payment systems are those related to stock exchange payments, cheque clearing and credit card payments, and other large-value interbank payments. These include:

- TCS: the Takasbank clearing system;
- BTOM: the system of the Interbank Clearing Houses Centre;
- BKM: the Interbank Card Centre system; and
- TIC-RTGS: the RTGS system of the CBRT.

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<sup>16</sup> As of end-2009, the GPS-defined locations of all ATMs operated by BKM members (in the whole of Turkey and the Turkish Republic of Northern Cyprus) are indicated on Google Maps and can be called up via a “closest ATM” application on internet or mobile phone.

Chart 1  
**Organisation of the Turkish interbank payment systems**



TIC-RTGS is a real-time gross settlement system, whereas the BTOM and BKM are deferred net settlement systems. Payment obligations resulting from stock exchange transactions are settled through the TCS.

All payments in the BTOM and BKM are finally settled in the books of the CBRT. A separate account, the TIC-RTGS account, is used for settlement of interbank payments processed by TIC-RTGS. The BTOM and BKM have settlement accounts at the CBRT. Banks monitor their liquidity position by reviewing the balances in all settlement accounts. As for the settlements in the TCS, the banks' net claims are directly transferred from their Takasbank giro account to their TIC-RTGS account.

## 3.2 Large-value payment systems

### 3.2.1 The real-time gross settlement system: TIC-RTGS

#### 3.2.1.1 Institutional framework

TIC-RTGS is Turkey's real-time gross settlement system. The system is owned, operated, regulated and overseen by the CBRT. TIC-RTGS was developed between October 1989 and March 1992 with live operations starting in April 1992.

Driven by the changing demands of the banking sector and developments both in the payment systems area and in technology, a project was started in 1997 to develop the second-generation system, which started live operations in April 2000.

The second-generation RTGS system introduced an emergency backup centre and many other new features, including a central queuing mechanism, funds management facilities, a direct debiting operation, phased closure of operations, and message bulking for low-value payments.

The scope of the second-generation project also covered the development of an electronic securities transfer and settlement system, TIC-ESTS, which went live in October 2000 (see Section 4.3.1).

TIC-RTGS and TIC-ESTS work in an integrated manner. Participant banks access them using a single interface, called SWITCH (a message-switching system). TIC-RTGS and TIC-ESTS are directly connected to SWITCH through a proprietary network (TICNET).

Owing to their integration and common interface, TIC-RTGS and TIC-ESTS are usually regarded as a single system, which is referred to as TIC-RTGS and ESTS.

The CBRT Law, as amended in April 2001, defines the central bank's duties and responsibilities with respect to payment systems. The law authorises the CBRT to establish payment systems, determine the procedures and conditions of payment methods and instruments, and draw up regulations for ensuring their smooth operation. The operational procedures, rights and obligations of the CBRT, as the system operator, and the participants in the system are governed by private agreements. These are supported by procedures and rules documented in the TIC-RTGS and TIC-ESTS Operational Rules, the TIC-RTGS and TIC-ESTS User Guide, the TIC-RTGS and TIC-ESTS Disaster Recovery Guide, and the relevant CBRT circulars.

### *3.2.1.2 Participation*

In accordance with the Banking Law, banks may participate in TIC-RTGS and TIC-ESTS. Participants must be established in Turkey and maintain giro accounts with the CBRT. It is not obligatory for all banks to participate in TIC-RTGS and ESTS. Banks that do not participate in the system may access it through one of the participant banks. At end-2010, there were 48 direct participants in TIC-RTGS and TIC-ESTS, including the CBRT.

For ISE members that are not direct participants in TIC-RTGS and TIC-ESTS (eg brokerage houses), Takasbank (see Section 1.3.3) has developed a proprietary system called TETS through which brokerage houses can access TIC-RTGS and TIC-ESTS for cash and securities (government bonds and T-bills) transfer purposes.

### *3.2.1.3 Types of transactions*

The TIC-RTGS system is used for interbank payments in Turkish liras relating to interbank operations (eg money market and securities settlement transactions), final settlements of cheque and credit card operations, and customer payments.

Since TIC-ESTS is integrated with TIC-RTGS, the settlement of the payment leg of all DVP operations is carried out in TIC-RTGS.

The system provides facilities for the exchange of payment-related information messages between participants.

### *3.2.1.4 Operation of the system*

TIC-RTGS is based on a V-shaped architecture, where the entire message is sent to the TIC-RTGS Centre by the remitting bank. A payment instruction embodied in the message is executed only if the remitting bank has sufficient covering funds in its TIC-RTGS account. A successful execution of the payment instruction will result in the transfer of the payment from the remitting to the receiving bank across their TIC-RTGS accounts. The message is then forwarded in real time to the receiving bank.

Payments that cannot be settled because of insufficient funds are placed in a centralised payments queue. The queuing algorithm is first-in-first-out (FIFO) within priorities. TIC-RTGS has a gridlock resolution algorithm for queued payments (see Section 3.2.1.7.2).

Settlement in TIC-RTGS is final and irrevocable. If an operational error occurs, the parties involved must resolve it bilaterally. Participants can check their TIC-RTGS accounts at any

time during the business day from their relay computers (see Section 3.2.1.5) and from the TIC-RTGS Centre. Participants may obtain a number of reports from their relay computers.

A typical business day lasts about 21 hours. The system opens at 08:00<sup>17</sup> on Monday and on days following official holidays. On every workday, the participants log on to the system by 09:00. The system closes at 17:30 and reopens after the end-of-day operations approximately at 20:30 on regular workdays.<sup>18</sup> It closes at 13:00 on half-workdays.<sup>19</sup>

During the end-of-day procedure, the balances of TIC-RTGS settlement accounts are transferred to the participants' CBRT accounts. The housekeeping process lasts around three hours, and at about 20:30 the system opens to receive messages with the next business value date. On Fridays and on the eve of official holidays, however, the system remains closed until 08:00 on the next business day. TIC-RTGS is closed during weekends and official holidays; hence, it operates 252 days a year on average.

### 3.2.1.5 Transaction processing environment

The TIC-RTGS system comprises a relay computer (RC) located on the participant's premises, a proprietary communication network (TICNET), and a central computer system.

Every participant, including the CBRT, must have an RC to participate in TIC-RTGS. The RC system, which provides all the functionality needed by the participant, is a standard hardware and software configuration managed by the CBRT. The RC provides the participant with secure message entry, message verification, account enquiry, archiving and backup facilities. The RC has a mirror copy of the central computer's reserve balances for each participant. This obviates the need for a query system on the central computer. The central bank's RC has some additional facilities. The participant's primary RC can be backed up online to a secondary RC in case of primary RC failure.

A participant's host computer can be integrated into TIC-RTGS through a connection to the RC. In this way, a host terminal at a bank branch can be used to generate payment messages. Currently, 90% of banks have host connections with TIC-RTGS. In case of a host computer failure, a bank can still send payments via its RC.

Backup facilities safeguard the TIC-RTGS Centre's computer system from breakdowns due to any single point of failure. The systems used for system development and maintenance are separate from the production system.

A secondary centre (emergency backup centre) has been set up to take over operations in a very short time in the event of complete site failure at the primary centre. Moreover, in case of an online connection failure, offline facilities are also available for RC-host computer and RC-Centre connections.

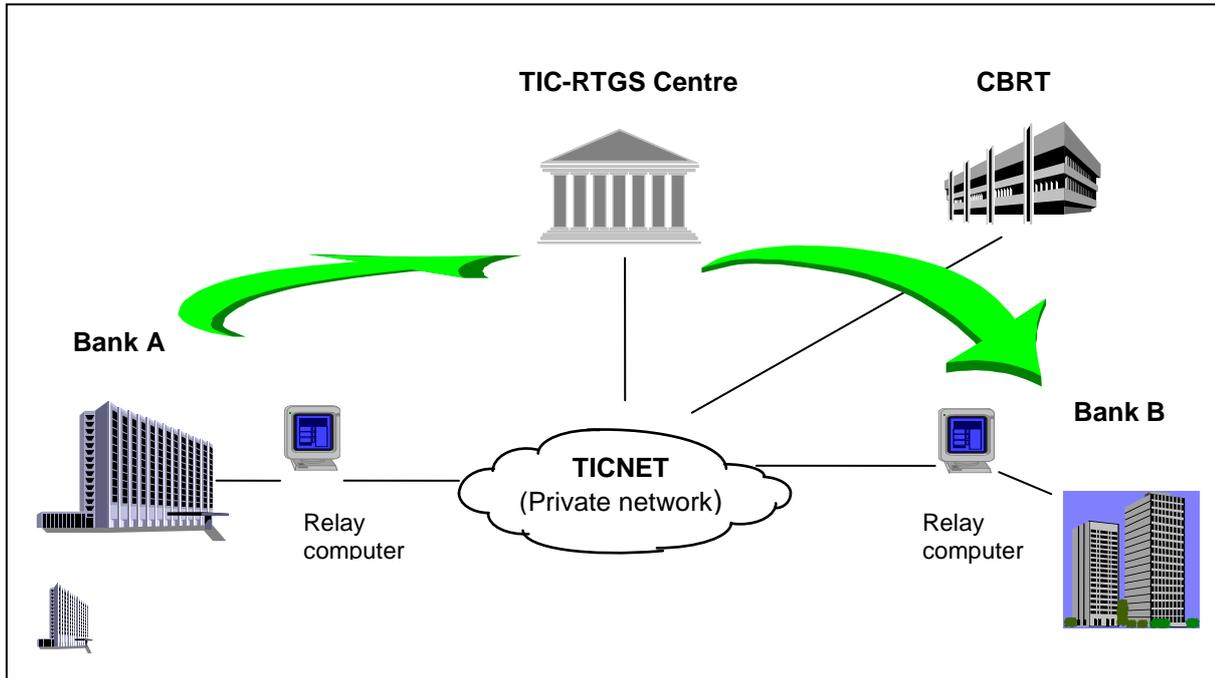
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<sup>17</sup> Turkey's time zone is CET+1.

<sup>18</sup> Except for Fridays.

<sup>19</sup> For the National Day (29 October) and two religious holidays (Bairams), the preceding day is officially a half-workday.

Chart 2  
TIC-RTGS system configuration



RCs are connected to the TIC-RTGS Centre via the private TCP/IP network TICNET. Participants access TICNET nodes through leased telecommunication lines. TICNET is operated by the CBRT, and the participants share its operating costs. Participants' leased lines are backed up by ISDN and G.SHDSL lines.

A high degree of security is provided in TIC-RTGS. Multilevel security controls have been implemented to ensure the integrity, authenticity and confidentiality of transactions. Data transfers between RCs and TIC-RTGS are secured by data encryption.

### 3.2.1.6 Settlement procedures

All messages received at the TIC-RTGS Centre are processed immediately, either by being settled, should the sender have sufficient funds for the payment, or otherwise by being queued. Settlement is final and irrevocable.

TIC-RTGS accounts are used for settlement. Settlement is in central bank money. Initial values for these accounts are transferred from participants' reserve requirement accounts at the CBRT at the beginning of each business day. A bank can request a transfer of funds from its free (giro) account at any time during the business day. At the end of the day, the balances in the TIC-RTGS accounts are transferred back to the participants' reserve requirement accounts at the CBRT.

Funds are made available to the recipient bank immediately after settlement in the TIC-RTGS account. The TIC-RTGS and ESTS Operational Rules recommend that customer accounts be credited the same day.

In order to help settle as many payments as possible, the gridlock resolution algorithm (see Section 3.2.1.7.2) is manually run before the end of the day. Moreover, all funds reservations (see Section 3.2.1.7.2) are released upon the End-of-Day Announcement, a message issued by the TIC-RTGS Centre five minutes before system closure. Any payments that remain

unsettled are cancelled and participants are informed via notification messages at the end-of-day procedure.

### 3.2.1.7 Risk management in TIC-RTGS

#### 3.2.1.7.1 Credit risk

In TIC-RTGS, payment instructions are executed only if there are sufficient funds in the participant's TIC-RTGS account. There is thus no credit risk arising from any payments accepted in the system. Recipients are notified after the payments are settled. The central bank's intraday liquidity provisions for system participants are fully collateralised.

#### 3.2.1.7.2 Liquidity risk

To meet temporary liquidity shortages and hence mitigate liquidity risk in TIC-RTGS, the CBRT provides banks with an intraday liquidity facility between 09:00 and 15:00 (since July 1999) and a late liquidity window facility between 16:00 and 16:30 (since July 2002), both of which are collateralised. The latter facility is provided to banks between 16:00 and 17:15 on the last working days of the required reserve maintenance periods.

The intraday liquidity facility is provided to banks within their borrowing limits. The banks pay no interest on this facility, but a commission of 0.0048% is levied on the principal amount of each transaction. The facility must be repaid by the end of the day or the bank's collateral is liquidated and its intraday liquidity is converted into a penalty-bearing overnight credit.

As a lender of last resort, the CBRT also provides the late liquidity window facility to banks. Under this facility, banks can lend money to the CBRT at the central bank's borrowing rate and borrow from the CBRT at the central bank's lending rate without any limit, provided that they have full collateralisation.

A range of marketable and liquid assets is accepted as collateral, to which the CBRT applies haircuts according to each asset type's historical price volatility and liquidity. Collateral holdings are blocked on a transaction basis, marked to market, and monitored via a centralised system. Market participants are not able to access this system directly.

Apart from these facilities, participants may use the funds reservation facility to plan their payments. Funds reservations can be managed through two mechanisms:

- Participants may reserve funds for the settlement of high-priority payments (priority reservations).
- Participants may reserve funds for a specific payment anticipated later the same day (earmark).

As a third facility to manage liquidity risk, TIC-RTGS has a centralised payment queue facility. Payments are released from the queue within each priority on a first-in-first-out (FIFO) basis. Participants have full real-time control over their payment queue. They can query their queue, change the priority and order of queued payments, and cancel a payment with the approval of the TIC-RTGS and TIC-ESTS Operation Centre. They can also query the total amount of queued incoming payments.

Moreover, the system has a gridlock resolution facility that allows payment settlements from two or more queues simultaneously without altering predetermined payment priorities, even though the payments cannot be settled separately. The facility, which is transparent to participants, may be used manually or automatically (in preset periods).

#### 3.2.1.7.3 Operational risk

In order to minimise the operational risk of TIC-RTGS, every component of the system has a backup.

A remote emergency backup centre began operating in 2000. The disaster centre was developed to take over operations in about 10 minutes in the event of a complete site failure at the primary centre. In such a case, participants' connections are automatically routed to the backup centre, which takes over the operation without any data loss or duplication.

Moreover, the business continuity arrangements for TIC-RTGS are well documented in the Disaster Recovery Guide and are available for implementation. The guide describes the operational facilities to be used in the event of a failure in any component of the system, defines decision and notification procedures for handling abnormal situations, and includes sample forms for information dissemination as well as contact information for the teams that will take charge in case of a problem. The guide also details the measures that participants should take to mitigate operational risks.

As part of the CBRT Contingency Plan, the emergency backup centre and the TIC-RTGS Disaster Recovery Guide are tested twice a year against different crisis scenarios.

### 3.2.1.8 Pricing

There is no entrance fee or annual fee for TIC-RTGS and ESTS participants. The CBRT charges transaction fees in order to recover the long-term operational costs and the investment costs of setting up the system. Fees are based on the value of the transaction and charged to the remitting participant.

In addition to transaction fees, there are communication network-related expenses that are shared equally by all participants. The BAT coordinates maintenance and expense-sharing for the RCs and network support.

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#### TIC-RTGS and ESTS pricing structure, 2010<sup>1</sup>

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Up to TRY 8,000 (USD 5,128)	TRY 0.20 (USD 0.13)
TRY 8,000–612,000 (USD 5,128–392,308)	0.000025 × payment amount
Over TRY 612,000 (USD 392,308)	TRY 15.30 (USD 9.81)
Information message fee	TRY 0.20 (USD 0.13)

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<sup>1</sup> The USD exchange rate at end-2010 was TRY 1.56.

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## 3.3 Retail payment systems

### 3.3.1 Interbank Card Centre (BKM)

#### 3.3.1.1 Institutional framework

The Interbank Card Centre (BKM), established in 1990 by 13 public and private Turkish banks, performs interbank authorisations, and clearing and settlement transactions within the card payment sector; seeks solutions for common issues, conducts nationwide strategic studies on card payment topics, and contributes to establishing and improving domestic rules and standards.

BKM's main fields of activity are:

- to develop procedures to be applied among banks implementing credit card and debit card systems;
- to pursue standardisation and establish domestic rules on card payment practices throughout Turkey;
- to carry out interbank clearing and settlement transactions, and to establish relations with foreign organisations; and, if necessary,
- to represent its members with such organisations and to seek more secure, faster and more cost-effective ways of carrying out card-related banking transactions.

### 3.3.1.2 *Participation*

As of December 2010, BKM had 27 members (10 shareholders) and four service providers. Membership is open to banks and to members of the Visa or MasterCard payment schemes.

### 3.3.1.3 *Types of transactions*

The BKM system started operations in 1993, with a view to helping banks to make efficient use of infrastructure and resources, typically by sharing networks and ATMs. The system's services include credit card POS authorisation, credit card ATM cash advances, manual cash advances, quasi-cash advances, ATM debit card cash withdrawals, ATM debit card balance enquiries, POS debit card purchases, ATM PIN management, ATM debit card service fee enquiries, and Visa/MasterCard/Amex routing.

### 3.3.1.4 *Operation of the system and settlement procedures*

BKM is the service provider for all activities related to the processing of credit card and debit card payments. It clears and settles all domestic credit card payments and settles debit card payments between banks. It also establishes the legal and administrative infrastructure, sets technological standards, issues a national combined warning bulletin, operates the BKM system, and provides training and security services for its members.

BKM has a separate settlement account with the CBRT under a special agreement. This account is used exclusively for credit and debit card settlement. BKM advises the banks and the CBRT of each bank's net debit or credit position. Banks with a debit position send instructions to the CBRT for payment out of their giro accounts. After these accounts have been debited, the payments are credited to the creditor banks. The CBRT has no responsibility for credit and debit card clearing other than providing settlement services. All debits and credits in the settlement account are booked on the basis of the details supplied by BKM.

### 3.3.1.5 *Risk management*

BKM has an enterprise risk management system. This system aims to define, measure, monitor and control the risks arising from BKM activities, risks that could harm the risk assessment process of BKM member banks and the risks related to the clearing and accounting transactions of debts and receivables generated by card usage. In this context, the risk management system aims to establish policies and implementation procedures, and to monitor and, when necessary change the Centre's activities.

#### 3.3.1.5.1 *Liquidity risk*

BKM has no responsibility for the risks related to the clearing and accounting of transactions between its members. If a member does not meet its clearing obligations on time, BKM's liability is limited to the proportional distribution of available resources to the creditor members and reporting to the respective parties.

### 3.3.1.5.2 Operational risk

As BKM's services are critical to Turkey's card payment sector, every system in its IT infrastructure has a backup.

A business continuity centre began operating in 1995 at a backup site located in Izmir.<sup>20</sup> The backup centre can take over the operations within a few seconds of a complete site failure at the primary centre. In such a case, all member connections are automatically routed to the backup centre, which takes over operations without any data loss or duplication.

BKM's business continuity arrangements are documented in the Business Continuity and Recovery Guides and Procedures for the use of both BKM itself and its members. These describe the facilities to be used in the event of service disruptions, as well as the decision and notification procedures and contact lists for handling those situations. They also specify the measures BKM members should take to mitigate operational risks. In addition, BKM routes all its business through its backup centre for one day a year, making it the only company in the Turkish finance sector to carry out business continuity testing in the live environment.

### 3.3.1.5.3 Other risks

BKM also assesses its technical, financial and administrative risks in terms of their effects on its financial performance, its members and its reputation. Internal regulations and control mechanisms are formulated with a view to reducing the potential losses from such risks. All these risks are reviewed annually.

### 3.3.1.6 Major current and future projects

BKM has completed its NFC (Near Field Communication) OTA (over-the-air) infrastructure and introduced an NFC portal to provide users with information about NFC and upgrades. From 2009, banks have embarked on an increasing number of contactless payment card and contactless POS projects. As NFC technology is based on contactless payment standards, this activity has led to a higher level of "NFC readiness" in Turkey.

BKM's public transport-related activities continued in 2010. Negotiations are under way with municipalities and transport operators to increase and standardise the use of contactless cards as a payment method on public transport.

Work on a platform to allow e-payments to the government to be made through the card payment infrastructure has started; the platform is scheduled to go live in 2011.

Another BKM project aims to improve the security of e-commerce by allowing credit or debit cardholders to make payments without entering their card information into the merchant's website.

BKM has also started discussions with the customs authorities on a platform to allow customs duties to be made through POS devices; the system is due to go live in 2011.

Meanwhile, the Joint POS Management System (OPYS) has been developed to manage banks' POS field operations. The system included nine banks and four service companies as of the end of 2010.

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<sup>20</sup> The Izmir Business Availability Backup Centre (ISYM) operates in synchronisation with the Istanbul Centre.

### **3.3.2 Interbank Clearing Houses Centre (BTOM)**

#### *3.3.2.1 Institutional framework*

The Cheque Law defines the Interbank Clearing Houses Centre (BTOM) as a legal entity and empowers the CBRT to supervise and control the cheque clearing process nationwide. The Cheque Law and the CBRT's by-law on the BTOM govern the establishment and functioning of the interbank clearing houses, which operate as branches of the BTOM. The CBRT issues directives and regulates the functioning of all clearing houses.

The Executive Board of the BTOM consists of a representative from the CBRT as chairman and representatives from the 12 banks that are represented on the Executive Board of the BAT. The BTOM is administered by a committee that consists of the CBRT branch manager and three bank representatives. Its operating expenses are financed by member banks according to each bank's share in the total number of cheques processed over the year. Fixed expenditure on such items as acquisition of fixed assets, computer hardware or software is shared equally among member banks.

#### *3.3.2.2 Participation*

Only banks can be members of the BTOM. All banks that provide cheque account facilities are members of the BTOM. As of end-2010, the BTOM had a total of 41 members (the CBRT, 31 commercial banks, five development and investment banks and four participation banks).

#### *3.3.2.3 Types of transactions*

All cheque clearing transactions are carried out electronically in the BTOM. The BTOM only processes TRY cheques.

Legally, cheques must be physically presented to the clearing houses. However, to improve the efficiency of the clearing process and to avoid the risks associated with the physical delivery of cheques, a cheque truncation system was introduced in 1998. This allows cheques to be cleared without directly presenting them at the clearing house. This system is optional and currently used by 36 banks. Banks wishing to use this facility are required to sign a protocol which sets out the procedures and defines obligations in the event of any legal dispute that may arise due to the non-physical presentation of cheques.

In order to improve the efficiency of the clearing process, an electronic cheque clearing system has been in operation since September 2006.

#### *3.3.2.4 Operation of the system*

Cheques are cleared through the BTOM. Collecting banks transmit cheque information to the central computer of the clearing house around the clock. On the clearing day, information on cheques issued and received is transmitted by the banks up to 06:00. This information is stored in the central computer and sent to the drawee banks, where the cheque account is opened at 06:00. Although all member banks carry out cheque transactions electronically, five out of 41 banks also present cheques physically until 09:00 on the clearing day. Banks request provisions for cheques, and the provision results (bad cheque information) are sent to the BTOM up to 17:00 on the same day. The BTOM sends a list of daily cheque clearing results to the central bank's Ankara branch for final settlement.

In 2010, a total of 18.7 million cheques amounting to TRY 228 billion were processed through the BTOM.

#### *3.3.2.5 Settlement procedures*

The BTOM determines the net debit or credit positions for each bank on a multilateral basis. Banks are informed about the outcome by 17:00 each day immediately after the end of the provisioning time frame.

The CBRT maintains a separate settlement account for the BTOM at its Ankara branch. The final settlement of operations is carried out through this account. Debtor banks have to settle their daily clearing debt by payment from their giro deposits at the central bank's Ankara branch or via TIC-RTGS not later than 12:00 on the following business day. Once all debtor banks have paid their debts, the Ankara branch makes payments to creditor banks through TIC-RTGS; this finalises the official clearing and settlement day.

#### **3.3.2.6 Risk management in the BTOM**

The BTOM Regulations define the rules to be applied if a participant in the system fails to fulfil its obligations. If a liquidity problem arises, the CBRT is authorised to use all the participants' accounts at the CBRT. In addition, since the BTOM participants are banks and the CBRT provides a fully collateralised intraday liquidity facility to banks, BTOM participants may use this credit facility.

#### **3.3.2.7 Pricing**

The only fee is an entrance fee on joining the BTOM as a member.

## **4. Systems for post-trade processing, clearing and securities settlement**

### **4.1 General overview**

Takasbank is the CCP for derivatives transactions traded at the Turkish Derivatives Exchange (TurkDEX) (for Takasbank's other functions, see Section 4.3.2). There is no central counterparty in any other market. However, Takasbank is working on a project with the aim of becoming a CCP for the ISE markets.

There are two main systems for securities settlement and clearing. The CBRT securities settlement system (TIC-ESTS) fulfils the primary market settlement of Domestic Debt Notes (DDNs comprise government bonds and treasury bills), CBRT liquidity bills, over-the-counter transactions and CBRT open market transactions.

Secondary market operations are carried out mainly at the ISE, with ISE stock market trades being cleared and settled by Takasbank.

While the CBRT is the central securities depository for DDNs, the CRA performs the same function for dematerialised capital market instruments traded on ISE markets.

### **4.2 Central counterparties**

#### **4.2.1 ISE Settlement and Custody Bank (Takasbank)**

##### **4.2.1.1 Institutional framework**

Takasbank was authorised as the clearing house for TurkDEX in 2004.<sup>21</sup> As the central clearing house for all TurkDEX transactions, Takasbank conducts TurkDEX settlement transactions within the framework of central counterparty best practice, acting between counterparties whose contracts have been traded on TurkDEX. The financial responsibility of Takasbank is the amount of each party's settlement obligation. Takasbank's guarantee is

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<sup>21</sup> It was authorised by Resolution 48/1602 of the Capital Markets Board of 10 December 2004.

limited to the accounts opened at Takasbank and the contracts monitored in these accounts. Takasbank ensures financial adequacy and the reliability of derivatives markets through a guarantee fund<sup>22</sup> created from clearing members' contributions and default penalty fines as well as from operational coverage<sup>23</sup> for open cash and/or securities positions.

Takasbank performs the following functions:

- opening trading accounts at TurkDEX;
- managing transaction collateral and the guarantee fund;
- handling accrued interest for cash collateral;
- profit/loss payment;
- executing transfers subject to special conditions (give-up); and
- margin call and default procedures.

#### *4.2.1.2 Participation*

The Turkish Derivatives Exchange offers two types of membership: direct clearing membership and general clearing membership. In current practice, all exchange members must become direct clearing members.

#### *4.2.1.3 Account opening process*

Four types of accounts can be opened with Takasbank: customer, portfolio, market-maker and global accounts. No customer may open multiple personal accounts. Stock market pricing in bond trading and position monitoring are carried out on the basis of account transactions.

#### *4.2.1.4 Operation of the system*

The settlement of TurkDEX transactions is performed at 14:30 on T+1 with accounts updated daily. Any loss incurred as a result of a transaction on TurkDEX is charged directly to the cash collateral deposited in the related account on the same day, T+0. If the total collateral drops under the trade continuity maintenance margin at the end of the update process, a margin call is made electronically to the respective clearing member. If the cash collateral value becomes negative after a loss is deducted from the collateral account, a margin call is made to bring the value of the account up to the initial amount of cash collateral, even if the current collateral is above the maintenance collateral. The account receivables are distributed on the next business day (T+1). Profit receivables of accounts subject to margin call after an account update are blocked until the margin call is completed. Any member who fails to deposit the collateral due to the related sub-account by 14:30 on T+1 is deemed to be in default without any further notification.

Deposit or withdrawal of collateral, valuation as well as account updates and fulfilment of obligations are performed on a sub-account basis. In case of default, the collateral deposited with Takasbank and the guarantee fund is used.

Margin obligations are met either by cash payment or by closing the position at TurkDEX.

Settlement transactions, except contracts subject to physical delivery, are settled in cash.

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<sup>22</sup> The guarantee fund comprises the default fines paid by participants trading on TurkDEX as well as TurkDEX membership contributions.

<sup>23</sup> Operational coverage consists of the initial margin deposited as collateral on an account basis.

The fulfilment of cash settlement obligations of the contracts subject to physical delivery by the last trading day (including the last trading day) is carried out within the framework of general principles of settlement. Physical delivery obligations of contracts subject to physical delivery must be fulfilled before 16:30 on T+2.

Takasbank's Treasury Department accrues the best interest possible on TRY-denominated transaction collateral held in collateral accounts as well as on TRY-denominated guarantee fund contributions.

#### *4.2.1.5 Default procedures and risk management*

Settlement obligations must be fulfilled by 14:30 on T+1. Any member not fulfilling its obligations by this deadline is deemed to be in default.

If the margin call is not subsequently fulfilled on T+1 (between 14:30 and TIC-RTGS closing time), this is considered to be a first default. The member is charged default interest equal to the highest overnight weighted average interest rate in the ISE Repo-Reverse Repo Market or the CBRT Interbank Money Market.

If the default amount is repaid on T+1 after the TIC-RTGS closing time or remains outstanding on subsequent days, this is considered as a second default. In this case, default interest of three times the highest overnight weighted average interest rate in the ISE Repo-Reverse Repo Market or CBRT Interbank Money Market is applied.

TurkDEX has established a guarantee fund based on the contributions of all clearing members for the fulfilment of settlement obligations in default situations. The contribution amount is determined by the clearing house.

#### *4.2.1.6 Major current and future projects*

Takasbank is working with the ISE and TurkDEX on the development of an infrastructure that will provide settlement services to options contracts planned to be traded in a new derivatives market to be opened in 2011. Current practice is limited to futures contracts traded on TurkDEX.

### **4.3 Securities settlement systems (SSS) and clearing systems<sup>24</sup>**

#### **4.3.1 CBRT securities settlement system (TIC-ESTS)**

##### *4.3.1.1 Institutional framework*

As an agent of the Undersecretariat of the Treasury, the CBRT is responsible for issuing and settling DDNs (government bonds, T-bills) on behalf of the Treasury. In October 2000, the CBRT began operating the electronic securities transfer and settlement system, TIC-ESTS, for the issuance and settlement in book-entry form of DDNs and other securities issued by governmental organisations.

The TIC-ESTS system provides real-time transfer and settlement of securities. With the online real-time connection to TIC-RTGS, which handles the cash-leg settlement (see Section 3.2.1), settlement of the securities and associated funds is synchronised so that DVP1 is achieved. Settlement is irrevocable.

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<sup>24</sup> As Takasbank is also the clearing and settlement institution of the ISE, its two clearing roles will be described together in this section.

TIC-ESTS handles:

- primary market operations (issuance and sale of securities by the CBRT);
- secondary market operations (DVP sales between participants, transfers related to the settlement of ISE market transactions, repo and reverse repo operations);
- free transfers between the participants;
- transfers between the sub-accounts of a participant (repositioning operations);
- transfers between physical and book entry forms (rematerialisation/dematerialisation);
- redemption and coupon payment notifications; and
- online enquiry and periodic reporting facilities.

On the issuance day, the securities are created in the books of TIC-ESTS in the CBRT sub-account. They are then transferred to the participants' accounts in the context of primary market operations. Transfers resulting from secondary market operations are also conducted in TIC-ESTS. In addition, TIC-ESTS permits conversion of physical securities to electronic form and vice versa. In other words, securities in TIC-ESTS can be delivered in paper form if investors so require. Similarly, paper certificates may be entered into the electronic system once the holder physically submits them to a CBRT branch. As the fiscal agent of the Treasury, the CBRT issues securities in TIC-ESTS and makes principal and interest payments on government bonds and treasury bills.

#### *4.3.1.2 Participation*

TIC-ESTS participants are also participants in TIC-RTGS (see Section 3.2.1.2). At end-2010, there were 48 participants in TIC-RTGS and TIC-ESTS, including the CBRT.

#### *4.3.1.3 Sub-accounts*

TIC-ESTS transfers securities between the securities sub-accounts of participants. There are three types of sub-accounts: free sub-accounts, customer securities sub-accounts and collateral sub-accounts. The holdings in a participant's free sub-accounts constitute the securities directly owned by that participant. The participants segregate customer securities that are in their custody into customer securities sub-accounts.

This segregation is compulsory only for securities subject to customer-based repurchase transactions. Input to and output from collateral sub-accounts are under the control of the CBRT, and securities held in the collateral sub-accounts determine the participant's limits in the CBRT markets. The intraday liquidity limit in the TIC-RTGS system is also determined by the holdings in one of these sub-accounts within the same borrowing limits.

#### *4.3.1.4 Operation of the system and DVP settlement*

The DVP settlement procedure is initiated at the request of the seller. The TIC-ESTS system blocks the securities that are subject to the sell request and informs the buyer. The buyer responds either with a buy request for the full amount or with several buy requests to purchase the securities in tranches. The sell and buy requests are matched in TIC-ESTS. For a valid buy request, TIC-ESTS forwards a payment request to TIC-RTGS, where the funds are settled. The payment requests for TIC-ESTS settlements are treated by TIC-RTGS as ordinary payment requests from the buyer. The securities are delivered in TIC-ESTS only if the associated funds are transferred into TIC-RTGS.

#### *4.3.1.5 Custody of DDNs in the name of customers*

The TIC-ESTS system keeps a record of the securities in the name of its participants rather than in the name of end customers. However, the system allows the banks to segregate their customers' securities from their own securities.

A project has been initiated to enable the safekeeping of DDNs in the name of customers in the CRA, as is done with other capital market instruments. When the project is completed, banks and other intermediaries will transfer the DDNs they keep in custody for their customers to the CRA, where they will be registered in customers' names. Other DDNs owned by banks will reside in TIC-ESTS, but the CRA will hold details of the total holdings in each security.

In order to achieve this goal, the CRA will become a participant in TIC-ESTS. Participants in TIC-ESTS will transfer DDNs to and from the CRA system as they are sold to or bought from their customers using the TIC-ESTS infrastructure. The CRA will keep the records in the name of the customer based on information from the banks and other intermediaries. After the integration, TIC-ESTS will continue to be the major settlement system for primary and secondary market operations as before.

At the end of 2010, the project was technically and operationally ready and waiting for the regulations to be completed.

#### *4.3.1.6 Pricing*

The cash leg of operations is charged according to the TIC-RTGS tariff (see Section 3.2.1.8). On the securities leg, each message is charged at the minimum fee of the tariff, which was TRY 0.20 in 2010. The only exception to this rule is for the cancellation of securities movements. Cancellation requests are charged at double the maximum tariff, which was TRY 29.00 in 2010.

### **4.3.2 ISE Settlement and Custody Bank (Takasbank)**

#### *4.3.2.1 Institutional framework*

Takasbank is the central settlement institution authorised by the ISE for the finalisation of cash and securities transfers relating to transactions made in current ISE markets (see Sections 1.3.2 and 1.3.3).

#### *4.3.2.2 Participation*

All CMB-certified securities intermediary institutions (brokerage houses and banks) can be members of the ISE, and ISE members are automatically entitled to be settlement members of Takasbank. The membership criteria of the ISE are stated in the relevant clauses of the Capital Markets Act and in the ISE rules and regulations.

#### *4.3.2.3 Types of transactions*

The TCS handles the clearing and settlement of both the security and the cash leg of ISE trades. Securities include stocks, exchange-traded funds, bonds and bills as well as repo transactions carried out on the ISE markets.

#### *4.3.2.4 Operation of the system*

Takasbank, as the clearing and settlement institution of the ISE, calculates and announces the net obligations of parties based on their operations in ISE markets. Net obligations are legally binding in Turkey but Takasbank does not guarantee settlement. In case of partial fulfilment of the obligation, a proportional amount of the receivable is transmitted to the buyer.

Clearing and settlement operations can be divided into two sections: government bonds and treasury bills; and stocks.

#### *4.3.2.4.1 Government bonds and treasury bills*

Clearing and settlement operations for ISE transactions in the bonds and bills market, outright purchases and sales market and repo and reverse repo market are carried out by Takasbank on a DVP3 basis. Accordingly, members do not take delivery of their receivables until they fulfil their obligations. In case of partial fulfilment of the obligation, a proportional amount of the receivable is transferred to the buyer. The settlement period for transactions is between T+0 and T+90 (value date is specified at the time of trade).

Settlement of trades in the primary market and the over-the-counter secondary market for government debt securities is realised via TIC-ESTS. Takasbank has a securities account with CBRT to facilitate the settlement of trading in government debt securities on the ISE.

In the bonds and bills market, the ISE acts as an intermediary that matches orders between the ISE bonds and bills market members. Following the execution of a trade, the ISE issues confirmations to both parties and sends an online copy to Takasbank. Information on executed trades is transferred to Takasbank in real time. Takasbank multilaterally nets all trades for each ISE member for each security traded and for cash. Net obligations, together with receivables due, are reported to the members electronically via Takasbank's proprietary system on the settlement day for bonds and bills.

Participants are required to provide settlement instructions to Takasbank before 16:30 on the settlement date through TIC-ESTS or through an account held with Takasbank. Securities are initially credited to Takasbank's account at the CBRT, and subsequently securities accounts of related parties are credited. The securities are then moved to the account of the buying party held with Takasbank. Although the deadline for settlement is 16:30, settlement is continuous throughout the processing day subject to availability of cash and securities. Only trades executed before 14:00 can be settled on the same day.

Participants are expected to fulfil their cash obligations by using their cash accounts with Takasbank by 16:30 for settlements in the bonds and bills market. Participants can transfer cash from their accounts held with Takasbank or from other accounts outside Takasbank using the CBRT's electronic funds transfer (TIC-RTGS) system or using same-day receivables from the ISE stock market or the Takasbank money market.

#### *4.3.2.4.2 Stocks*

Financial institutions operating in the ISE stock market are required to open custody accounts in the CRA (see Section 1.3.4) and fund settlement accounts in Takasbank, which clears and settles ISE-traded securities. Both the funds and securities legs of the ISE trades are settled in Takasbank. The settlement of securities and cash in the stock market is effected on T+2 and on a DVP3 basis by Takasbank.

At the end of each trading day, the ISE sends Takasbank details of all transactions that have been executed by brokerage houses during that day. On receiving these data, Takasbank multilaterally nets the settlement positions, indicates the obligations for each member in each security, and calculates their net cash positions.

The net securities settlement position on a client basis is transmitted to the CRA on the trade day (T+0). As a result, netting is made on a member basis and detailed on a client basis. Details of netting activity are made available to participants electronically on T+0, showing details of settlement amounts due. At the end of the day, the securities of the delivering clients are blocked automatically by the CRA for settlement purposes. The receipt instructions for the transfer of securities from the participant accounts to the client sub-accounts are generated within the CRA system.

On T+1, net settlement records that are checked by the CRA are made available to participants electronically. In case of a discrepancy, participants may apply to the ISE for amendment until 17:00 on T+1. The settlement records are updated according to the correct contract details.

On T+2, the securities of the delivering clients are transferred from the settlement blockage account to the settlement pool account of the participant within the CRA system. The transfer of securities from the participant settlement pool account to the Takasbank settlement pool account within the CRA system is executed by the CRA automatically. Securities are transferred to client sub-accounts by the CRA.

Members are entitled to take delivery of their receivables from settlement, prioritised according to the time when they fulfilled their obligations. If participants fulfil their obligations partially, they are entitled to a partial delivery of their receivables. Settlement can occur continuously between 09:00 and 16:00 during the processing day subject to the availability of cash and securities. These transfers occur simultaneously with the internal book-entry settlement of the netted securities positions, provided that the Takasbank settlement pool account is available.

Participants are expected to fulfil their cash obligations by using their cash accounts with Takasbank from 09:00 to 16:00 for ISE stock market settlements. Participants can transfer cash from their other accounts with Takasbank or other banks using the CBRT's electronic funds transfer (TIC-RTGS) system or same-day receivables from the ISE bonds and bills market or the Takasbank money market.

#### *4.3.2.5 Custody function*

Custody operations consist of custody and safekeeping services related to stocks, bonds, investment fund certificates and other capital market instruments, international settlement and safekeeping services provided to domestic institutions and domestic custody services provided to foreign institutions.

However, according to the Capital Markets Law and the regulations of the CMB, ISE-traded stocks were dematerialised in 2005 and the custody function for equities was transferred to the CRA. With dematerialisation, the accounts of brokerage houses with Takasbank, which holds stocks and investment fund certificates, were also transferred to the CRA including all customer sub-accounts, and all the activities in the accounts are now kept in dematerialised form in the CRA.

Besides holding dematerialised securities on behalf of the CRA, Takasbank also continues to collect the securities which are subject to dematerialisation, on behalf of the CRA.

The accounts of investment funds, investment trusts, private pension funds and exchange-traded funds continue to be kept by Takasbank in dematerialised form via book entry, and procedures relating to these accounts are executed by Takasbank in coordination with the CRA system.

Custody and safekeeping services related to debt instruments include safekeeping, transfer, physical delivery, and redemption and coupon payment services. Debt instruments are kept on the account of Takasbank held with the CBRT but the sub-balance records of debt instruments that belong to the brokerage houses are kept in Takasbank's systems.

Physical securities in customer accounts are kept in Takasbank's vaults, while dematerialised securities are kept in the sub-accounts of Takasbank accounts held with the CBRT, the CRA or similar institutions, depending on the type of security.

##### *4.3.2.5.1 Non-fungible custody*

Non-fungible custody is a safekeeping service in the name of the beneficial owner, who uses the custody service for securities that have identical denomination, rights and other

properties.<sup>25</sup> Under non-fungible custody, the securities will be returned to the beneficial owner on the same terms. Non-fungible custody services are open to stock exchange members as well as issuers and institutional investors.

Under non-fungible custody, securities need not be traded on a stock exchange. Settlement obligations cannot be fulfilled with securities held in non-fungible custody. The records of these securities cannot be kept in the details of sub-accounts of the beneficial owners.

#### *4.3.2.5.2 Private pension fund custody services*

Takasbank has undertaken the duty of custodian as stated in the Regulation on the Principles Relating to the Establishment and Activities of Pension Investment Funds.

Money market and capital market instruments within the scope of Takasbank's custody service are kept in Takasbank on behalf of private pension funds. For the safekeeping of other money market and capital market instruments, private pension companies can use custody services from another institution, with the approval of the CMB, provided that the company provides Takasbank with unrestricted access to information on the securities in question and their value.

#### *4.3.2.6 Risk management and default procedures*

##### **4.3.2.6.1 Government bonds and treasury bills**

ISE members must fulfil their obligations before the deadline (16:30 on the settlement day). If obligations are fulfilled after the deadline at 17:00, a default interest payment will be imposed of 25% of the prevailing market overnight interest rate (highest of the ISE Repo-Reverse Repo Market or the ISE Interbank Repo Market or the CBRT). If obligations are fulfilled after 17:00 but within the working hours of TIC-RTGS on the settlement date, default payment calculations are calculated on 50% of the prevailing market overnight interest rate (highest of the ISE Repo-Reverse Repo Market or the ISE Interbank Repo Market or the CBRT).

If the default is not made good on T+1 for bonds and bills, Takasbank notifies the ISE for a buy-in or sell-out, indicating the obligation due (cash or securities) and the detailed list of securities and cash receivables under pledge at Takasbank. The payment and securities obligations arising from the trade related to the buy-in or sell-out process are settled on the same day (T+1 for bonds and bills). If the value of the receivables under pledge is not sufficient to discharge the entire obligation, the member's collateral with the ISE is used to fulfil the rest of the obligation. Furthermore, the penalty payment is calculated as three times more than the prevailing market overnight interest rate applied throughout the failure period. This default penalty is executed for the first default case within a three-month period. For every additional default case within this period, the default penalty interest rate increases by 1 percentage point.

Members in a creditor position are eligible for a payment for unjust treatment with respect to the non-delivery or non-payment of cash or securities due to them. Payable on the value date, the payment is assessed at twice the overnight weighted average interest rate. For this payment to be made, the payment or delivery failure must not stem from problems occurring in the ISE, Takasbank or the CBRT system; the member in a creditor position with respect to cash/securities must have fulfilled its settlement obligations within the required settlement deadlines; and any written objection of the defaulting member must have been invalidated and default interest collected.

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<sup>25</sup> Non-fungible securities with the same corporate rights.

#### 4.3.2.6.2 Stocks

For equities settlement, the deadlines for the default procedure are:

- for securities, the deadline for the transfer from the members' settlement pool accounts to the Takasbank settlement pool account (T+2; 16:00); and
- for the cash side, the transfer deadline for cash from member accounts to Takasbank accounts (T+2; 16.00).

If obligations are fulfilled after 16:00 but still within the working hours of TIC-RTGS on the settlement date (T+2), default payment calculations are calculated on the prevailing market overnight interest rate (higher of the ISE Repo-Reverse Repo Market or the CBRT) by taking the weighted average of the market value of the stock realised in the ISE stock market's second session. If the failure persists into T+3, the penalty payment is levied at three times the prevailing market overnight interest rate and applied throughout the failure period.

Takasbank notifies the ISE for a buy-in or sell-out of settlement failures on the morning of T+3. The buy-in or sell-out process is executed at the ISE on a separate order book from the one used for normal transactions in the related equity. The payment and securities obligations arising from the trade related to the buy-in or sell-out process are settled on the same day (T+3) at the ISE. The contract details of the buy-in/sell-out process are sent to Takasbank's system and, after the settlement records are generated, they are sent on to the CRA. If the value of the receivables under pledge is insufficient to discharge the whole obligation, the member's collateral with the ISE is used to fulfil the rest of the obligation. Default payments are executed by Takasbank.

Securities obligations which are not fulfilled on T+2 are automatically settled through the CRA system on T+3. Cash obligations are settled via the Takasbank system. The receivables of members that were unable to take delivery on the settlement day are distributed on completion of the failed settlement transaction at the ISE. This operation is executed initially within the Takasbank system; a message is then sent to the CRA. After receiving this message, the CRA credits the receivables to the client's account.

The guarantee account is used in default cases when the liquidated collateral of the defaulting participant (after buy-in and sell-out at the ISE) does not cover the settlement obligation. The maximum compensation allowed is limited by the amount of the fund.

#### 4.3.2.6.3 Guarantee account

Takasbank operates guarantee accounts with the aim of avoiding settlement delays in transactions executed on the bonds and bills market and on the stock market. The guarantee accounts protect counterparties that are unable to collect receivables as a result of the other party's failure. The account for the stock market is funded from an initial payment from the ISE and fines levied on ISE members for late payments and delayed deliveries to settlement.

The bonds and bills guarantee account is also made up of an initial payment from the ISE and the fines collected from ISE members for late payments and delayed deliveries to settlement. This account is used at the end of the settlement day if any default occurs.

The stock guarantee account is currently managed by Takasbank, and is activated every day to provide the initial liquidity for the settlement process. At the end of the settlement process, if all parties have fulfilled their obligations, the account is released in full and remunerated on market terms via Takasbank's treasury department. Otherwise, it is used to cover the failure of the buyer vis-à-vis the seller. Coverage is limited to the balance of the account. In effect, the account is a temporary source of liquidity for the settlement process.

#### 4.3.2.7 Links to other systems

Takasbank, as a participant of TIC-RTGS and ESTS, provides ISE members with indirect access to the system through its own infrastructure. The Takasbank Electronic Transfer

System (TETS) enables securities intermediary companies, which are not eligible to become members of the national payment system as they do not have a banking licence, to transfer both cash and government bonds and bills in and out of the Takasbank system electronically and in real time. They also receive reports related to these transactions. Through TETS, securities intermediary companies can indirectly access TIC-RTGS and ESTS to transfer cash and government bonds and bills, participate in Treasury auctions, get auction results, provide collateral for bids, and make other payments quickly and cost-effectively.

The securities settlement operations are carried out via the Takasbank settlement pool account with the CRA. The CRA and Takasbank systems are fully interlinked in real time, so that securities transfers are instantaneously reflected in the CRA. Settlement is effected on the basis of information transferred from the ISE.

Custody accounts are held with the CRA; participants have a settlement pool account besides their own portfolio accounts and client sub-accounts. Cash accounts are on a participant basis and held with Takasbank.

#### *4.3.2.8 Pricing*

Takasbank charges neither an entrance fee nor an annual fee to its members. Settlement is also free of charge.

#### *4.3.2.9 Major current and future projects*

Takasbank plans to become a CCP for the ISE markets, with risk management systems to be based on SPAN software. The aim is to reduce clearing and settlement risks.

### **4.3.3 Central Registry Agency (CRA)**

#### *4.3.3.1 Institutional framework*

The CRA is governed by the Turkish Capital Markets Law and licensed by the CMB as the central registry and depository for dematerialised capital market instruments.

The CRA's shareholders are Takasbank (65%), the ISE (30%), the Association of Capital Market Intermediary Institutions of Turkey (5%), and the Istanbul Gold Exchange (0.1%) (see Section 1.3.4).

#### *4.3.3.2 Participation*

All participant groups are subject to the requirements set out in the CRA Participation Rules. The criteria for participation are set by the CRA subject to the authorisation of the CMB, which has the authority to designate the terms and conditions for application and eligibility for membership.

The Central Dematerialised System is a direct account holding system in which participant and investor accounts are segregated. All participants can become system users and enter book-entry records in the system on behalf of investors and on their own accounts.

The CRA offers depository services to issuers, brokerage houses, banks and derivatives broker companies. CRA membership is also open to authorised foreign institutions, including clearing institutions and central securities depositories (CSDs).

As of March 2011, the total number of participants in the Central Dematerialised System was 575, comprising banks (40), brokerage houses (99), issuers of equities (342), issuers of private sector debt instruments (16), issuers of both equities and private sector debt instruments (9), issuers of mutual funds (65), issuers of warrants (1), issuers of equities and warrants (1), derivatives broker companies (1), and Takasbank (1).

#### 4.3.3.3 *Types of transactions*

The CRA serves as the central depository for the following types of dematerialised security: equities, mutual fund certificates, exchange-traded funds, corporate debt securities and warrants. All transactions involving dematerialised capital market instruments are conducted by CRA participants on an investor account basis via the Central Dematerialised System.

#### 4.3.3.4 *Operation of the system*

Settlement of dematerialised securities is performed in book-entry form through the Central Dematerialised System. The ISE Settlement and Custody Bank (Takasbank) acts as the clearing house and cash settlement agent for on-exchange transactions with dematerialised financial instruments. Takasbank runs two different DVP systems involving the CRA: one is for on-exchange net settlements and the other is a DVP system that covers on-exchange gross settlement transfers. The CRA processes securities transfers for both these systems and for free-of-payment (FOP) settlements. Settlement occurs on a real-time basis and transactions become irrevocable once the securities and cash are transferred into participant accounts with the CRA and Takasbank respectively (see also Sections 4.3.2.4.1 and 4.3.2.4.2).

Settlement of on-exchange transactions is executed on a T+2 cycle with near-simultaneous net settlement of securities and cash (DVP3). Foreign institutional trades within custodian-type participant accounts settle on a gross settlement system (DVP1) and also through FOP transfers of securities. Exchange-traded corporate bonds and bills are settled on the trade day (T+0).

For all the securities held at the CRA, Takasbank is the clearing agent for the cash leg of transactions.

The DVP system's operating hours for securities and cash settlements are from 09:30 to 17:00. FOP transfers can be made between 08:45 and 18:30 (or 21:00 if confirmation of counterparty is requested). Securities and cash transfers become irrevocable at the point of settlement in the CRA system, at the latest by 17:00 each day.

#### 4.3.3.5 *Risk management*

The main means of addressing risk is through the adoption of DVP principles where settlement for on-exchange trades is on a near-simultaneous basis for securities and cash. In addition, the ISE undertakes the collection of collateral for on-exchange transactions and there is a settlement guarantee account for on-exchange equity transactions which is managed by Takasbank.

The participants' collateral with the ISE is used in case of a default that cannot be fully covered by either the participant's settlement receivables with the CRA (for Takasbank) or buy-ins/sell-outs at the ISE as per ISE regulations. As a last resort, the ISE guarantee account can be used.

The CRA provides only depository-related services such as securities transfers, corporate actions, legal transactions, reporting and investor services and does not hold any cash accounts in its system for participants or offer any credit and stock-lending services.

#### 4.3.3.6 *Links to other systems*

Since March 2011, the CRA has maintained a direct link to the Austrian central securities depository, CSD.Austria, managed by OeKB, for the settlement of foreign equities traded on the ISE (in addition to the direct link with Takasbank for settlement of equities, etc).

According to its regulations, the CRA designates the terms and conditions of opening and maintenance of accounts at the CRA by foreign CSDs, although no such accounts have been opened so far.

#### 4.3.3.7 *Major current and future projects*

The e-Governance portal, a major project now at the development stage, will improve communication through different platforms between companies, their shareholders and other investors, with a view to raising the level of corporate governance in Turkey.

Another major project, the Public Disclosure Platform–Central Dematerialised System Integration Project, will serve as the primary source of information in corporate actions notifications. Together with the CRA-Takasbank SWIFT Integration Project, the project represents the first step towards straight through processing for corporate actions operations.

As part of the Istanbul Financial Centre Project, Takasbank and the CRA are working on a new fund distribution platform for fund managers. The platform is expected to go live in 2011.

Dematerialised commodity certificates that will be traded on commodity exchanges will also be held at the CRA. The legal framework and operational infrastructure for this project are being jointly developed with other private and governmental institutions.

### 4.4 **Use of securities infrastructure by the CBRT**

The CBRT, which is responsible for issuing treasury bills and government bonds on behalf of the Undersecretariat of the Treasury, launched TIC-ESTS, an electronic securities transfer and settlement system, in 2000 (see Section 4.3.1). TIC-ESTS also provides an infrastructure for the market operations carried out by the CBRT as part of its monetary policy operations and for managing collateral.

#### 4.4.1 ***Open market operations***

To regulate the money supply and liquidity in the economy in the context of its monetary policy targets, the CBRT conducts open market operations against the Turkish lira, including the outright purchase and sale of government securities, repo and reverse repo transactions, issuance of liquidity bills, and lending and borrowing of Turkish lira deposits and DDNs.

The cash settlement of these transactions takes place in the banks' TIC-RTGS accounts. The securities settlement takes place in TIC-ESTS.

Open market operations can be performed in TIC-RTGS and TIC-ESTS or on the ISE.

#### 4.4.2 ***Securities lending and borrowing market in the CBRT***

The collateralised securities lending and borrowing market, in which the CBRT acts as a blind broker, was established in the CBRT in 2003. Only six benchmark securities, chosen by the Treasury, are eligible for lending/borrowing transactions in this market, and the transfer of loaned securities takes place through the accounts held in TIC-ESTS, as the custodian.

While primary dealers are allowed to borrow and lend, other banks can only lend securities in this market. Institutions and private investors can only lend, with banks as intermediaries.