

## Efficiency and safety of securities settlement systems

### *Introduction*

Securities trading plays a crucial role in the mechanism of the Icelandic economy. Important financial and proprietary interests are invariably associated with securities trading. While general discussion of securities trading often relates to ownership of specific limited liability companies, equity price trends and interest rates, a much lower profile has been given to questions of the infrastructure or systemic elements of securities trading. In a modern financial system, securities trading is as a rule based on the relatively complex interaction of systemic handling functions which combine to form the trading settlement process. Such systems are known as securities settlement systems.

The importance of a safe and efficient securities settlement system for Iceland's economy and financial system is beyond question. In order to promote discussion and policy formulation in this field, it is necessary to realise the fundamental principles on which the Icelandic securities settlement system is based.

This article discusses the settlement of securities transactions. It outlines the nature and structure of securities settlement systems, their significance for the financial system and the need for work to maintain their safety and efficiency. The article discusses international initiatives on the development of securities settlement systems and design of standards for their safety. The Icelandic securities settlement system will also be described and its evolution discussed.

### *The settlement process*

The concept of a securities settlement system is generally defined in a wide sense to embrace the full set of institutional arrangements in the settlement process, i.e. confirmation of terms for securities trading, clearance/clearing of transactions and determination of rights and obligations, settlement and custody/safekeeping of securities.

In a narrower sense, settlement is defined as the completion and finalisation of a transaction through final transfer of securities and funds (payment) between buyer and seller.

The interaction of these elements is illustrated in more detail in Figure 1.

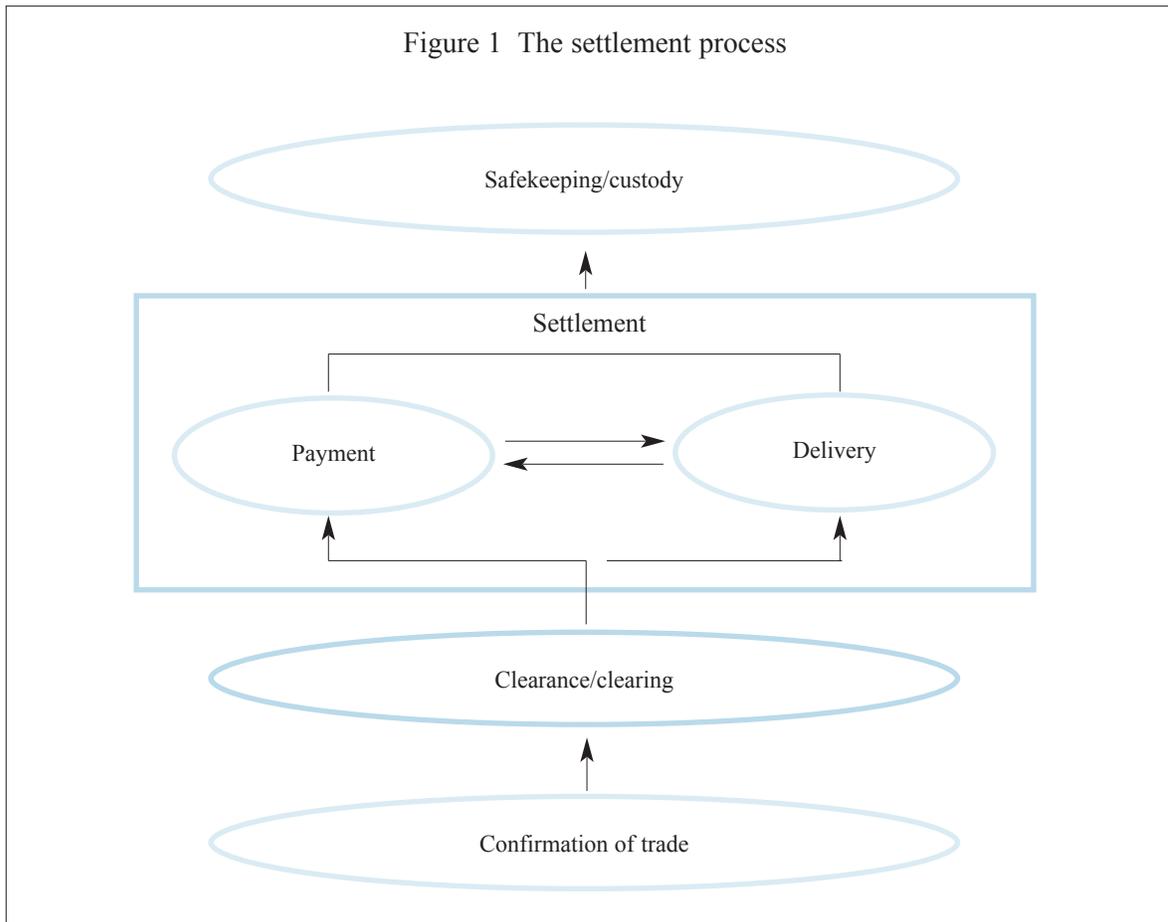
### *The institutional arrangements for securities settlement systems*

Several institutions may be involved in the process of securities settlement. Most markets have established central securities depositories (CSDs) which dematerialise physical securities and transfer ownership by means of book entries to electronic accounting systems. However, other institutions often perform additional critical functions in the settlement process. Confirmation of trade is usually carried out by a stock exchange rather than by the CSD. In some markets, a central counterparty (CCP) interposes itself between buyers and sellers. The CCP thus becomes the buyer to every seller and the seller to every buyer. Accounts at the respective central bank or at one or more private commercial banks are used for settlements and transfers of funds. Funds may nevertheless be transferred through internal accounts at the CSD. Securities can be held at accounts at the CSD or through a custodian. The custodian may hold the securities of its customer through a subcustodian.<sup>2</sup>

1. The author is acting director at the Central Bank of Iceland's Financial Stability Department.

2. CSPP/IOSCO Recommendations for Securities Settlement Systems, pp. 2 and 37-38.

Figure 1 The settlement process



*Risks inherent in securities settlement, and their sources*

An understanding and analysis of the types and sources of risk that arise in completing the various steps involved in the settlement process is a prerequisite for promoting the safety of securities settlement systems. Effective control by settlement system operators and participants over each of these types of risks is vital for ensuring its safety and reliability.

A major source of risk is credit risk, i.e. the possibility that a counterparty to a trade will fail to settle its obligations when they are due or at any time thereafter. Another key risk is liquidity risk, i.e. the possibility that a counterparty will not settle its obligations when due, but later than expected. Other important types of risk are legal risk, risk of a settlement bank's failure, operational risk and custody risk.

The different risks in securities settlement systems are defined in Box 1.

*Securities settlement systems and financial stability*

The safety and reliability of securities settlement systems are critical for the functioning of securities markets and payment systems. Risks and weaknesses in such systems can be a source of systemic disturbances to financial markets as well as to payment systems and other settlement systems. Operational or financial disruptions occurring within a systematically important user of a settlement system or within an institution that carries out important functions in a settlement process can create liquidity and credit risk to other participants and spill over to the payment system being used in the settlement process.

Reliable securities settlement and post-trade custody arrangements are also critical in order to protect

### Box 1 Risks in securities settlement systems

*Credit risk:* The risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter.

*Custody risk:* The risk of loss on securities in safe-keeping (custody) as a result of the custodian's insolvency, negligence, misuse of assets or fraud.

*Legal risk:* The risk that a party will suffer a loss because laws or regulations do not support the rules of the securities settlement system, the performance of related settlement arrangements, or the property rights and other interests held through the settlement system. Legal risk also arises if the application of laws and regulations is unclear.

*Liquidity risk:* The risk that a counterparty will not settle an obligation for full value when due, but on some unspecified date thereafter.

*Operational risk:* The risk that deficiencies in information systems or internal controls, human errors or management failures will result in unexpected losses.

*Pre-settlement risk:* The risk that a counterparty to a transaction for completion at a future date will default before final settlement. The resulting exposure is the cost of replacing the original transaction at current market prices and is also known as replacement cost risk.

*Principal risk:* The risk that the seller of a security delivers a security but does not receive payment or that the buyer of a security makes payment but does not receive delivery. In such an event, the full principal value of the securities or funds transferred is at risk.

*Settlement risk:* A general term used to designate the risk that settlement in a transfer system will not take place as expected. The risk may comprise both credit and liquidity risk.

*Systemic risk:* The risk that the inability of one institution to meet its obligations when due will cause other institutions to be unable to meet their obligations when due. Such a failure may cause significant liquidity or credit problems and, as a result, might threaten the stability of or confidence in markets.

Source: CPSS/IOSCO Recommendations, pp 46-49.

investors' assets from claims by creditors of intermediaries and other entities performing different functions in the settlement process. Moreover, confidence in the safety of settlement processes is critical for market liquidity in financial markets.

Another important concern is the efficiency of securities settlement systems. Lack of efficiency in them ultimately leads to higher costs for issuers of securities and lower return on investment.

Safe and efficient securities settlement systems therefore contribute to efficient and secure financial systems and financial stability.

#### *Initiatives for promoting safety and efficiency of securities settlement systems*

Several initiatives at the international level have been undertaken in recent years in order to promote financial stability by strengthening the financial infrastructure. The International Organization of Securities Commissions (IOSCO) comprises securities regulators from more than one hundred jurisdic-

tions which have resolved to cooperate on promoting high standards of regulation in order to maintain efficient and sound domestic and international securities markets. The Technical Committee of IOSCO has been actively engaged in securities settlements issues and published a number of reports in the field.

The Committee on Payment and Settlement Systems (CPSS) serves as a forum for the central banks of the G10 countries to monitor and analyse developments in payment and settlement arrangements and to consider related policy issues. Non-G10 central banks are increasingly involved in the Committee's work. In 2001 the CPSS issued the Core Principles for Systemically Important Payment Systems.<sup>3</sup> The Central Bank of Iceland has used these principles as a basis for developing payment systems in Iceland.<sup>4</sup> The Committee has undertaken

3. Bank for International Settlements, CPSS: Core Principles for Systemically Important Payment Systems, January 2001.

4. Tómas Örn Kristinsson, pp. 58-63.

an active work programme concerning arrangements for the settlement of securities transactions.

Building on the previous work, the CPSS and the Technical Committee of IOSCO have cooperated with the aim of improving the efficiency and reliability of securities settlement systems. In December 1999 the CPSS and IOSCO created a Task Force on Securities Settlement Systems in order to move this initiative forward. The Task Force comprises 28 central bankers and securities regulators from 18 countries and regions within the European Union. The Task Force has cooperated with other central bankers and securities regulators who together represented about 30 countries, as well as representatives from the International Monetary Fund and the World Bank. The Task Force has also cooperated with private sector operators of and participants in securities settlement systems.

The Task Force's brief was to devise working procedures for securities settlement systems which reduce risk, contribute to global financial stability, boost efficiency and promote the security of investors. It was considered that the best way to achieve these aims would be to establish references for the design, operation and overseeing of securities settlement systems.<sup>5</sup>

#### *International recommendations by the CPSS/IOSCO for securities settlement systems*

Oversight of securities settlement systems by central banks requires the development of internationally recognised standards for their safety and efficiency. Some of the important issues that must be addressed are the legal framework, regulation, risk management, efficiency, governance, access, transparency and oversight. The settlement of cross-border trade increases the complexity of some of these issues, such as legal issues, custody risks, finality and oversight. The CPSS and the IOSCO have played a critical role in the development of standards addressing these issues.

In November 2001, the CPSS and the Technical Committee of IOSCO published their final report on Recommendations for Securities Settlement Systems. The objective of the report is to promote the

implementation by securities settlement systems of measures that can reduce risks, increase efficiency and provide adequate safeguards for investors by developing recommendations for the design, operation and oversight of such systems. The recommendations cover both individual systems and the cross-border linkages between systems, but, given the diversity of institutional arrangements internationally, the focus is on the functions to be performed and not individual systems. As with the Core Principles for Systemically Important Payment Systems, this project contributes to the international efforts to address vulnerabilities in the international financial system.

The report sets out 19 recommendations and accompanying explanatory texts identifying minimum standards that securities settlement systems should meet. The recommendations are designed to cover settlement systems for all types of securities, *i.a.* equities, corporate and government bonds and money market instruments, for securities issued in both industrialised and developing countries, and for domestic as well as cross-border trades.

The recommendations are relevant to institutions and bodies involved in securities settlement systems, but to varying extents. The main institutes covered by the recommendations are CSDs, central banks, stock exchanges, CCPs, custodians, broker-dealers and investors. Central banks, securities regulators and banking supervisors need to collaborate to determine an action plan for implementation. The 19 recommendations are listed in Box 2.

#### *Assessment methodology*

National authorities responsible for the regulation and oversight of securities settlement systems are expected to assess whether markets in their jurisdiction have implemented the recommendations and to develop action plans for implementation where necessary. As an important first step towards establishing a comprehensive methodology for assessing implementation, the report includes key questions pertaining to each of the recommendations, answers to which would form the basis for assessments.

The report will be supplemented by an assessment methodology, which is expected to be finalised in 2002. The IMF and the World Bank are participating in the preparation of this methodology, which is

---

5. CSPP/IOSCO Recommendations, p. 1.

## Box 2 CPSS-IOSCO Technical Committee Recommendations for Securities Settlement Systems

### *Legal risk*

#### 1. Legal framework

Securities settlement systems should have a well founded, clear and transparent legal basis in the relevant jurisdictions.

### *Pre-settlement risk*

#### 2. Trade confirmation

Confirmation of trades between direct market participants should occur as soon as possible after trade execution, but no later than trade date (T+0). Where confirmation of trades by indirect market participants (such as institutional investors) is required, it should occur as soon as possible after trade execution, preferably on T+0, but no later than T+1.

#### 3. Settlement cycles

Rolling settlement should be adopted in all securities markets. Final settlement should occur no later than T+3. The benefits and costs of a settlement cycle shorter than T+3 should be evaluated.

#### 4. Central counterparties (CCPs)

The benefits and costs of a CCP should be evaluated. Where such a mechanism is introduced, the CCP should rigorously control the risks it assumes.

#### 5. Securities lending

Securities lending and borrowing (or repurchase agreements and other economically equivalent transactions) should be encouraged as a method for expediting the settlement of securities transactions. Barriers that inhibit the practice of lending securities for this purpose should be removed.

### *Settlement risk*

#### 6. Central securities depositories (CSDs)

Securities should be immobilised or dematerialised and transferred by book entry in CSDs to the greatest extent possible.

#### 7. Delivery versus payment (DVP)

CSDs should eliminate principal risk by linking securities transfers to funds transfers in a way that achieves delivery versus payment.

#### 8. Timing of settlement finality

Final settlement should occur no later than the end of the settlement day. Intraday or real-time finality should be provided where necessary to reduce risks.

#### 9. CSD risk controls to address participants' failures to settle

CSDs that extend intraday credit to participants, including CSDs that operate net settlement systems, should institute risk controls that, at a minimum, ensure timely settlement in the event that the participant with the largest payment obligation is unable to settle. The most reliable set of controls is a combination of collateral requirements and limits.

#### 10. Cash settlement assets

Assets used to settle the ultimate payment obligations arising from securities transactions should carry little or no credit or liquidity risk. If central bank money is not used, steps must be taken to protect CSD members from potential losses and liquidity pressures arising from the failure of the cash settlement agent whose assets are used for that purpose.

### *Operational risk*

#### 11. Operational reliability

Sources of operational risk arising in the clearing and settlement process should be identified and minimised through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Contingency plans and backup facilities should be established to allow for timely recovery of operations and completion of the settlement process.

### *Custody risk*

#### 12. Protection of customers' securities

Entities holding securities in custody should employ accounting practices and safekeeping procedures that fully protect customers' securities. It is essential that customers' securities be protected against the claims of a custodian's creditors.

#### Other issues

##### 13. Governance

Governance arrangements for CSDs and CCPs should be designed to fulfil public interest requirements and to promote the objectives of owners and users.

##### 14. Access

CSDs and CCPs should have objective and publicly disclosed criteria for participation that permit fair and open access.

##### 15. Efficiency

While maintaining safe and secure operations, securities settlement systems should be cost-effective in meeting the requirements of users.

##### 16. Communication procedures and standards

Securities settlement systems should use or accommodate the relevant international communication procedures and standards in order to facilitate efficient settlement of cross-border transactions.

##### 17. Transparency

CSDs and CCPs should provide market participants with sufficient information for them to identify and evaluate accurately the risks and costs associated with using the CSD or CCP services.

##### 18. Regulation and oversight

Securities settlement systems should be subject to transparent and effective regulation and oversight. Central banks and securities regulators should cooperate with each other and with other relevant authorities.

##### 19. Risks in cross-border links

CSDs that establish links to settle cross-border trades should design and operate such links to reduce effectively the risks associated with cross-border settlements.

*Source: CPSS/IOSCO Recommendations, pp 4-6*

intended as a tool for their Financial Sector Assessment Programmes (FSAPs) as well as for self-assessments by national authorities. As far as Iceland is concerned, the Central Bank will prepare an assessment of whether the Icelandic securities settlement system implements the recommendations. Work on the assessment is expected to commence in 2003.

#### *EU institutional work on securities settlement systems*

Efficient and secure payment and settlement systems are crucial to the homogeneity and effectiveness of the EU internal market. EU institutions have therefore promoted developments in this area. Some success has been achieved in harmonising rules for payment intermediation and payment systems in Europe.<sup>6</sup> In some respects the tasks concerning securities settlement systems are similar in character to those of payment systems, although the former are inherently more complex than the latter. In particular, the European Commission and the European Central Bank have been engaged in development work on these issues. In developing securities settlement systems, EU institutions aim in particular to strengthen

the integration and functionality of European financial markets, reduce the costs and inefficiencies associated with securities settlements between member countries and enhance the international competitiveness of European exchanges. Nonetheless, harmonisation work on securities settlement systems is still at an early stage. In terms of legislation, the main output so far has been the approval of Directive 2002/47/EC of the European Parliament and of the Council of June 6 2002 on financial collateral arrangements. This directive is expected to be incorporated into Protocol IX of the EEA Agreement.

The Lamfalussy Report, published in February 2001,<sup>7</sup> identified more efficient arrangements for securities settlements as a prerequisite for the successful harmonisation of European securities markets.<sup>8</sup> Arrangements for cross-border settlements were then addressed in the Giovannini Report, published in November 2001.<sup>9</sup> This report states that the widely divergent arrangements for securities settlements between individual Member States makes them complex, costly, time-consuming and risky. It

6. Hallgrímur Ásgeirsson: Payment intermediation in the European Economic Area, pp. 71-80.

7. Lamfalussy Report: Final Report of the Committee of Wise Men on the Regulation of European Securities Markets, February 2001.

8. Lamfalussy Report, pp. 16-17.

9. The Giovannini Group: Cross-Border Clearing and Settlement Arrangements in the European Union, November 2001.

pinpoints 15 barriers to efficient cross-border clearing and settlement. The barriers are categorised into three headings of national differences in technical requirements/market practice (10), national differences in tax procedures (2) and issues relating to legal certainty (3). It discusses the propriety of these obstacles being tackled by the private or public sector. Concerning the first heading, it is felt to be preferable for market participants to find ways to increase the possibility of interoperability within individual countries, which would not be as time-consuming as aiming for total integration of settlement systems. As far as the other two categories are concerned, EU governments are urged to harmonise their tax and securities procedures.

In May 2002 the Commission issued a Communication to the Council and the European Parliament on policy issues for securities settlement in the European Union.<sup>10</sup> It specifies two main objectives to strive towards in order to strengthen the development of an efficient securities settlement system in Europe: Firstly, obstacles to cross-border securities trading should be dismantled, and secondly, market participants should be facilitated in setting up more efficient systems for settling and clearing their cross-border securities trading. For the first time, the Commission describes its overall policy towards this issue in the Communication, and puts forward possible ways to establish more efficient arrangements for cross-border settlements. Instead of specifying the type of settlement system that needs to be instituted in Europe, the Communication discusses ways to create the fundamentals for enabling market participants to devise the most economical solution. It examines approaches towards abolishing the obstacles pinpointed in the Giovannini Report and the most competent parties for doing so. Furthermore, it points out the possible need for a harmonised definition of securities settlements in order to level the playing field for settlement operators in EU countries. Accordingly, the Communication requests the opinion of the appropriate parties regarding the need to set basic rules in this field.

In October 2001 the Governing Council of the European Central Bank and the Committee of European Securities Regulators (CESR) decided to begin cooperation on joint interests with respect to securities settlement systems. A working group was appointed comprising representatives of the ECB and the 15 EU National Central Banks, as well as representatives from the CESR.<sup>11</sup> The aim is to establish standards and/or recommendations for securities settlement systems and for central counterparties at European level, based on the recommendations of the CPSS and IOSCO technical committee.

#### *The role of the Central Bank of Iceland*

In most countries central banks promote the development of safe and efficient securities settlement systems as well as payment systems. One of the Central Bank of Iceland's mandatory roles is to promote an efficient and safe financial system, including payment systems domestically and with foreign countries.<sup>12</sup> Securities settlement comes under the ambit of the legal definition of the role of the Central Bank regarding financial stability and payment systems. The Icelandic securities settlement system is of critical importance for the Icelandic securities market, the financial system and financial stability. When it trades in securities the Central Bank also uses the settlement system, which as such therefore serves as an important tool in monetary policy implementation. Timely responses may be needed to sudden incidents concerning monetary policy, which will test the reliability of the securities settlement system.

The Central Bank of Iceland, therefore, has a vital role to play in contributing to the development of safe and efficient securities settlement in Iceland. Having set its objectives regarding this role, the Central Bank implements its objectives mainly through policy-making, oversight of the system on the basis of international standards, regulation of the system and through facilitation of market initiatives (catalyst role). Furthermore, the Central Bank plays a major institutional role in the settlement process, *i.e.* of payment orders for securities trading.

---

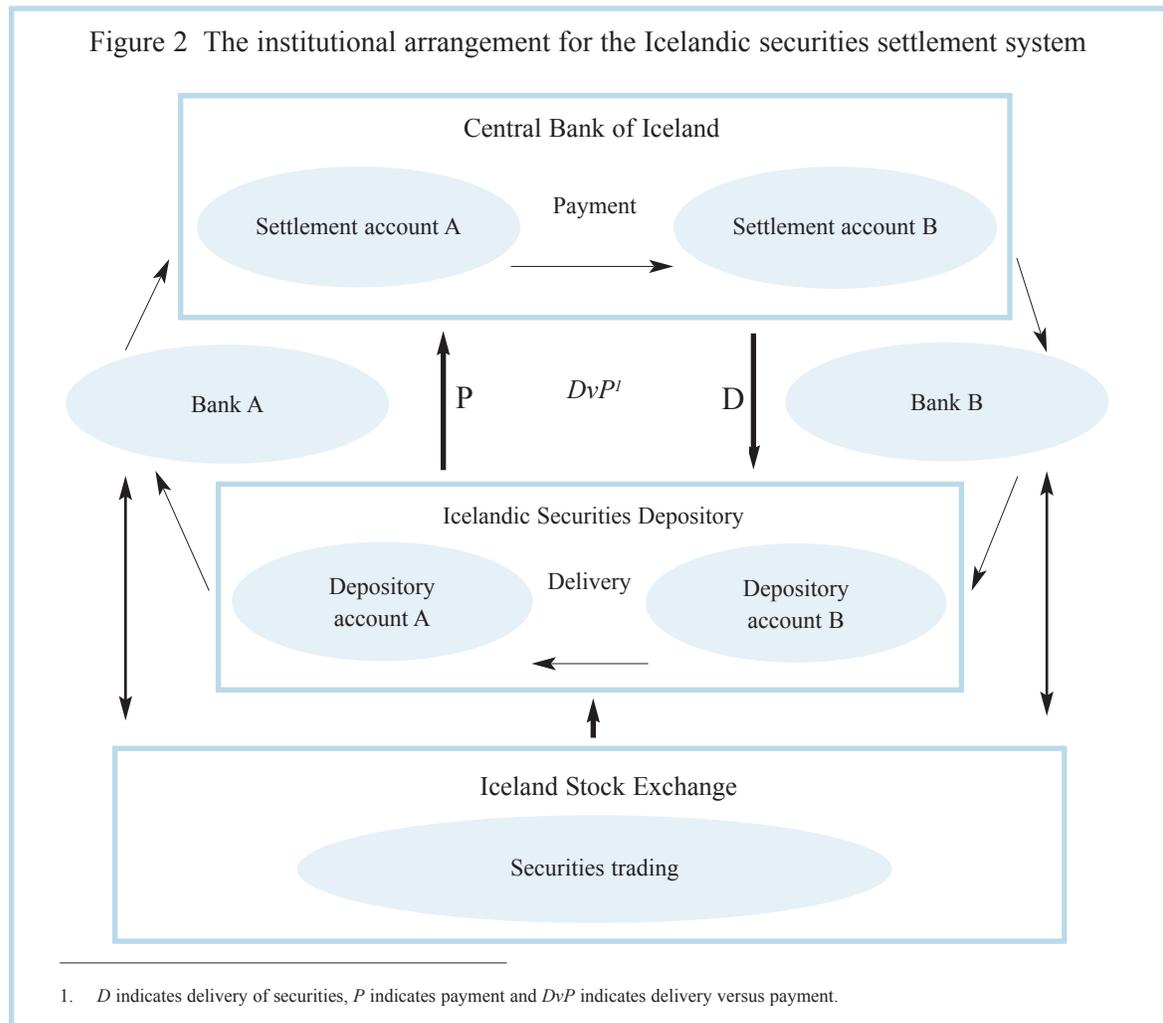
10. Communication from the Commission to the Council and the European Parliament. Clearing and settlement in the European Union – Main policy issues and future challenges, May 28 2002, COM (2002) 257.

---

11. Iceland's Financial Supervisory Authority is a member of CESR and takes part in the work of its task force.

12. Cf. Article 4 of the Central Bank Act no. 36/2001.

Figure 2 The institutional arrangement for the Icelandic securities settlement system



#### The Icelandic securities settlement system

The Icelandic securities settlement system is operated on the basis of a written agreement, signed on May 25, 2000, by the Central Bank, the Icelandic Securities Depository Ltd. and the Iceland Stock Exchange Ltd. The main legal provisions concerning securities settlement are to be found in the Act no. 34/1998 on Activities of Stock Exchanges and Regulated OTC Markets, the Act no. 131/1997 on Electronic Registration of Title to Securities, the Act no. 90/1999 on the Security of Transfer Orders in Payment Systems and the Central Bank Act No. 36/2001. Several Regulations concerning securities settlement have been adopted on the basis of these legal Acts.<sup>13</sup>

The Icelandic securities settlement system includes all institutional arrangements for confirmation, clearance and settlement of securities trades and safekeeping of securities. Securities settlement includes the final transfer of securities (delivery) and funds (payment) between the buyer and the seller. In the Icelandic system the different components are divided between the three institutions in the following manner: (a) the Stock Exchange confirms the terms of securities trades (confirmation); (b) the Securities Depository calculates the mutual obligations of market participants for the exchange of secu-

13. See in particular Regulation no. 397/2000 on Electronic Registration of Title to Securities in a Depository System.

rities and money (clearance) and carries out the final transfer of securities (delivery); (c) the Central Bank executes the final transfer of funds (payment) mainly through its RTGS system based on payment orders calculated by the Securities Depository; (d) the Depository handles custody/safekeeping of the securities. Figure 2 explains the institutional arrangement for the Icelandic securities settlement system.

The settlement is only based on domestic trades and is only available in the Icelandic currency, *i.e.* the króna. Thus the Icelandic settlements system is generally speaking a closed one, *i.e.* its functionality is limited to the domestic financial system. Delivery of securities and payment take place on the banking day following the trade (T+1). The settlement cycle is thus shorter than the common practice in foreign settlement systems. Also, it is assumed that delivery should not take place unless payment has been carried out (delivery versus payment, DvP).

Account operators serve as intermediaries in the registration of title to electronic security certificates in the Securities Depository. The following institutions have the right to act as intermediaries in registration in the Depository: the Central Bank, the National Debt Management Agency, commercial banks and savings banks, enterprises providing securities services and lending institutions other than commercial banks and savings banks.

Trading of securities takes place at the Stock Exchange between 10:00 and 16:00 on normal banking days. Information on confirmed trading of classes of securities on behalf of account operators is sent from the Stock Exchange to the Securities Depository. The Depository sends the transactions to

the account operators who add to it information about the accounts through which the settlement shall be carried out. After the Stock Exchange has been closed for trading for the day and the final trades by the account operators have been confirmed, the Depository sends unnetted payment orders to the RB (the Banks' Data Centre) platform. The payment orders are received by RB at 18:15. At 9:00 the following day (*i.e.* on T+1) the Central Bank executes the payment orders that the Depository sent the day before. Settlement is made on a gross basis either in the retail payment system of Fjölgreiðslumidlun hf. (FGM).<sup>14</sup> or in its RTGS system, depending on the amount of the transaction. At the same time, the Depository executes the delivery of securities. The process is further explained in Figure 3.

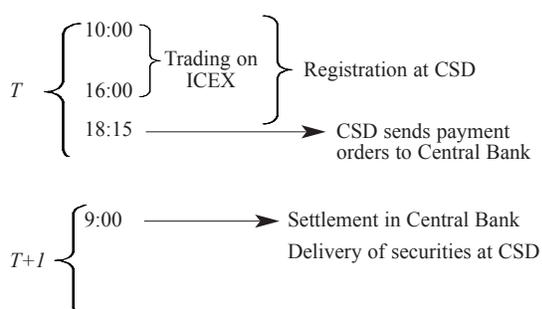
#### *Future development of the Icelandic settlement system*

The Icelandic securities settlement system can be considered modern, reliable and efficient in most respects. No major shocks have occurred in the system. It has served the Icelandic securities market well and earned the necessary confidence of investors and market participants. Its advantages include T+1 settlements and delivery versus payment (DvP).

In its Financial Stability Assessment for Iceland from April 2001, published in June the same year, the IMF stated that the Icelandic securities settlement probably fulfilled the (then pending) CPSS/IOSCO recommendations. It pointed out, however, that off-exchange trading did not fulfil DvP conditions and recommended that this should be changed. Furthermore, it was proposed that the Central Bank should be authorised to issue official rules and regulations on payment and securities settlement systems, and that securities settlements should be made through its RTGS system.<sup>15</sup>

Article 15 of Act no. 131/1997 on Electronic Registration of Title to Securities provides that a consultative committee shall be appointed representing

Figure 3 Timings in the settlement process



14. Fjölgreiðslumidlun hf. is owned by Búnadarbanki Íslands hf., Greiðslumidlun hf., Íslandsbanki hf., Landsbanki Íslands hf., Kreditkort hf., Samband íslenskra sparisjóða and the Central Bank of Iceland.

15. IMF: Iceland: Financial Stability Assessment, pp. 59 and 64.

central securities depositories, the Iceland Stock Exchange and the Central Bank of Iceland. The representative of the Central Bank serves as chairman of the committee. The purpose of the consultative committee is to discuss the relationship between these institutions in connection with securities settlement. Recent committee discussions have addressed ways to enhance even further the security and functionality of the system. However, no specific assessment has yet been made of whether the Icelandic securities settlement system fulfils the CPSS/IOSCO recommendations. The issues which have been discussed with regard to system development include the following:

- a) It would be preferable to define the nature and framework of the settlement system in more detail than is done in the abovementioned agreement from 2000. The role and responsibility of institutions involved in system operations and the users of its services need to be clarified.
  - b) Rules governing the settlement system need to be clarified. One possible option is for the Central Bank to use its authorisation in the new Central Bank legislation to adopt general, official rules for the system.<sup>16</sup>
  - c) Risk management and settlement guarantees need to be introduced for the system. The Central Bank has recently been engaged in setting requirements for credit institutions to put forward collateral for settlement of payment obligations within negotiated ceilings in the systems.<sup>17</sup> Such collateral must be in the form of either securities or funds (reserves) deposited in a dedicated, blocked account.<sup>18</sup> In addition to these guarantees, credit institutions are expected to introduce liquidity management in order to counter specific fluctuations in their payment exposures in the systems. The idea has been raised that the Central Bank could facilitate such liquidity management by authorising credit institutions to freely utilise funds from general reserve accounts during the operational time of the RTGS system, and by
- d) Preferably, the Central Bank should check at an earlier stage of the settlement process whether all the prerequisites for final settlement are in place, and inform the credit institutions if this is not the case.
  - e) It would be desirable to speed up the transmission of payment orders from the Securities Depository to RB and the Central Bank. By notifying account operators of their positions as a result of the securities transactions, the Central Bank could make it easier for them to respond if payment amounts exceed those authorised in the system. Account operators could then tap the market for liquidity on the same day that the securities transaction takes place, in preparation for the settlement the following morning.
  - f) Separate netting of payment orders received from the Depository would greatly facilitate the Central Bank's oversight role, as well as the processing of settlement orders.
  - g) Access by credit institutions to the interbank market and overnight loans until the processing of payment orders had been completed would enhance system security and efficiency.
  - h) The settlement system assumes compliance with the DvP principle, according to which a link exists between securities transfers and funds transfers that ensures that delivery occurs if, and only if, payment occurs. Full conformity with this condition would be achieved by stepping up the exchange of information between the Central Bank and the Depository, whereby the latter would receive specific confirmation that the prerequisites for delivery of the securities had been met.
  - i) Payment orders are now settled in both the FGM retail netting system and the Central Bank's RTGS system. All payment orders below 25 million ISK currently go through the netting system and are deemed to have reached it when the system has verifiably sent notification of their receipt to the participant sending the order. Thus the system assumes intraday finality. However, settlements are made at 17:00, or some 8 hours

16. See Art. 38, cf. Art. 4, Central Bank Act no. 36/2001.

17. Hallgrímur Ásgeirsson: The development of payment systems and settlement systems. *Monetary Bulletin*, 2001/4, pp. 78-81.

18. See Art. 9 of Rules no. 388/2002 on Minimum Reserves.

after the shares are delivered to the settlement system. It is important, therefore, to cease handling payment orders in FGM's netting system and perform all settlements through the RTGS system, irrespective of amount. Payment orders relating to securities trading would need to be handled separately from other payment orders.

- j) Individual elements in the settlement process need to be timetabled precisely.
- k) The Central Bank's overseeing of the system needs to be evolved in cooperation with the Depository, RB and Financial Supervisory Authority.
- l) A contingency plan for the system needs to be developed.
- m) The deadline for finality of payment orders in the system and their legal effect need to be specified precisely, cf. Act no. 90/1999 on the Security of Transfer Orders in Payment Systems.
- n) The payment system must be notified to the EFTA Surveillance Authority (ESA) in conformity with Art. 10 of Directive 98/26/EC of the European Parliament and of the Council of the European Union of May 19 1998, on settlement finality in payment and securities settlement systems,<sup>19</sup> cf. also Art. 3 of Act no. 90/1999.

#### *Settlement of domestic, treasury-guaranteed bonds*

In October 2001 the Icelandic Minister of Finance appointed a committee to examine arrangements for custodianship and settlement of domestic, treasury-guaranteed bonds and present proposals for easier access by foreign parties to the domestic bond market. The committee's tasks included an examination of the following points: Firstly, to analyse the needs of foreign parties when purchasing treasury securities and securities issued by the Housing Financing Fund, including their requirements for custodianship, registration and settlement. Secondly, to examine the possibility of linking the Central Securities Depository with depositories in other countries. Thirdly, to examine the possibility of registering Icelandic treasury-guaranteed bonds in depositories in other countries.

---

19. OJ L 166, 11.16.1998, p. 45.

In its findings delivered in April 2002, the committee identified the need to establish a relationship with a foreign custodian and settlement bank in order to facilitate domestic market participants in selling domestic bonds to foreign investors and thereby expanding the investor group for them. Such a relationship would need to fulfil their requirements on both the custodian and settlement side. These needs will best be met by an arrangement with Clearstream or Euroclear. In this respect, the committee proposed the following options:

The former option would be an indirect agency agreement. Clearstream has set up this kind of network in 43 countries and the approach is familiar to all foreign investors. In Iceland, the main shortcomings of the agency system would be the small number of players in the domestic bond market, posing a risk that the agent, who would probably be from their ranks, could acquire insider information on business between foreign operators in Iceland and other financial institutions. Were this option to be chosen, the agent's impartiality would need to be secured by some means, e.g. with assistance from the Central Bank or the Depository. Clearstream's interest in taking part in such an arrangement would also need to be examined.

The latter option would involve registering the total issue of specific bond categories in the Euroclear system. The Icelandic Central Securities Depository would then maintain a cumulative account of all trading in that class of securities by domestic parties. Under this arrangement, all trading between domestic parties would remain unchanged. Foreign investors would trade with domestic market participants through the Euroclear system. Nonetheless, it would open a number of legal questions, particularly relating to registration in the Euroclear system, proprietary rules, settlement and terms of the classes of securities in question.

The committee proposes delegating the Depository and National Debt Management Agency, in collaboration with the Central Bank and Iceland Stock Exchange, to examine these two options and assess the cost of implementing them.<sup>20</sup> This work began in November 2002.

---

20. *Skipan vörslu- og uppgjörsmála* (committee report), pp. 13-14.

### *Settlement in foreign currencies*

Under Act no. 62/2002 amending Act no. 2/1995 on Limited Liability Companies, and under Act no. 67/2002 amending Act no. 138/1994 on Private Limited Liability Companies, these two types of company may record their capital stock in a foreign currency, on fulfilment of conditions which are specified further. Certain limited liability companies already plan to take advantage of this authorisation. Subsequently, questions have arisen about settlement of payment for equities that may be registered in foreign currencies.

These legal amendments could affect the structure and infrastructure of the Icelandic securities settlement system. Possibly this effect was underestimated to some degree when the two laws were passed. The current settlement system must be considered inadequate for fulfilling the requirements that may accompany the new laws. Total adaptation of the system to these amendments would mean that settlements could be made in Iceland in different currencies, which could presumably be risky, time-consuming and costly.

The change in the law has spurred some discussion of whether there are grounds for modifying the Icelandic settlement system to enable settlements to be made in foreign currencies. Another view is that participation by foreign parties in Iceland's financial markets could be opened up by developing a multi-currency settlement system and bringing it into line with the typical settlement cycle abroad, *i.e.* on the third day after trading (T+3).

One point of discussion has been whether settlement of payments should be introduced at the Central Bank, denominated in euros and US dollars at T+3 in a separate system for foreign currencies, while retaining the present arrangement for domestic currency settlements unchanged. For meeting payment settlements, credit institutions would be required to deposit a specific minimum amount of foreign currency in an account as collateral for settlements, based on each respective institution's turnover within the system. They would also need to take collective responsibility for defaults on the part of each participant. A ceiling would be set on the position of each participant in the system. In other respects the credit institutions would have scope to tap domestic and overseas foreign exchange markets in order to

settle positions on the third day after trading (T+3). Finality would be based on the end of the settlement.

RB has been asked to assess the scope and cost of the technical adaptations that such a reform would involve. Were such a system to be developed, it would also be necessary to distinguish the types of risk that the change would entail for registration and delivery of securities. Such an arrangement for making securities settlements in foreign currencies is largely based on utilising as much of the existing system infrastructure as possible.

A change of this kind would obviously be both costly and time-consuming, as well as introducing new risks to the settlement system, in particular the new currencies and T+3 settlement period. Careful analysis must be made to identify the need for such a system, the cost of constructing it, the operational workload it would involve and the risks that would accompany it.

### *Conclusion*

The above discussion outlines the importance of a safe and efficient securities settlement system for the financial system and financial stability. It describes the process of settling payments for securities trading, the general institutional structure of such systems and the types of risk they involve. International cooperation on strengthening the safety and efficiency of securities payment systems has also been addressed. Particular attention has been paid to the CPSS/IOSCO recommendations. The structure of Iceland's own securities settlement system has been described, along with the institutions involved in it, settlement arrangements and matters under examination regarding its future development. The CPSS/IOSCO recommendations will be used as a basis for the Central Bank's study of the safety and efficiency of the Icelandic settlement system in connection with an international financial stability assessment for the country. Conceivably, some changes will need to be made to the system once the results of the assessment are known.

In most respects Iceland's securities settlement system must be considered modern, reliable and efficient. No major shocks have occurred in the system. It has served Iceland's securities market well and earned the necessary confidence of investors and market participants. Work must continue on develop-

ing the system with the aim of enhancing even further its efficiency and functionality for the securities market. Conceivable changes to the system must be

consistent with the essential requirement that its safety will in no way be impaired and that the most stringent demands made in this field will be fulfilled.

## References

Bank for International Settlements, CPSS: *Core Principles for Systematically Important Payment Systems*, January 2001.

Committee on Payment and Settlement Systems and Technical Committee of the International Organization of Securities Commissions: *Recommendations for Securities Settlement Systems*, November 2001, BIS.

European Commission: *Communication from the Commission to the Council and the European Parliament. Clearing and settlement in the European Union – Main policy issues and future challenges*, May 28 2002, COM (2002) 257.

Hallgrímur Ásgeirsson: The development of payment systems and settlement systems. *Monetary Bulletin* 2001/4, pp. 78-81.

International Monetary Fund: *Iceland: Financial Stability Assessment. IMF Country Report No. 01/85*, 10 April 2001 (official publication June 12, 2001).

Lamfalussy Report: *Final Report of the Committee of Wise Men on the Regulation of European Securities Markets*, February 2001.

Ministry of Finance committee report: *Skipan vörslu- og uppgjörsmála*, April 23 2002.

The Giovannini Group: *Cross-Border Clearing and Settlement Arrangements in the European Union*, November 2001.

Hallgrímur Ásgeirsson: Payment intermediation in the European Economic Area. *Monetary Bulletin* 2002/2, pp. 71-80.

Tómas Örn Kristinsson: *Greiðslukerfi – ný viðmið. Peningamál*, 2000/4, pp. 58-63.

### Internet references

Bank for International Settlements, CPSS: *Core Principles for Systematically Important Payment Systems*.  
<http://www.bis.org/publ/cpss34ep1.pdf>

Committee on Payment and Settlement Systems and Technical Committee of the International Organization of Securities Commissions: *Recommendations for Securities Settlement Systems*.

[http://www.iosco.org/docs-public-2000/2001-recommendations\\_securities\\_settlement\\_systems.html](http://www.iosco.org/docs-public-2000/2001-recommendations_securities_settlement_systems.html)

European Commission: *Communication from the Commission to the Council and the European Parliament. Clearing and settlement in the European Union – Main policy issues and future challenges*.  
[http://europa.eu.int/comm/internal\\_market/en/finances/mobil/clearing/com2002-257/com2002-257\\_en.pdf](http://europa.eu.int/comm/internal_market/en/finances/mobil/clearing/com2002-257/com2002-257_en.pdf)

The Giovannini Group: *Cross-Border Clearing and Settlement Arrangements in the European Union*.

[http://europa.eu.int/comm/economy\\_finance/publications/giovannini/clearing1101\\_en.pdf](http://europa.eu.int/comm/economy_finance/publications/giovannini/clearing1101_en.pdf)

Hallgrímur Ásgeirsson: *Payment intermediation in the European Economic Area*.

[http://www.sedlabanki.is/uploads/files/MB022\\_6.pdf](http://www.sedlabanki.is/uploads/files/MB022_6.pdf)

Hallgrímur Ásgeirsson: *The development of payment systems and settlement systems*.

[http://www.sedlabanki.is/uploads/files/MB014\\_8.pdf](http://www.sedlabanki.is/uploads/files/MB014_8.pdf)

International Monetary Fund: *Iceland: Financial Stability Assessment*.

<http://www.imf.org/external/pubs/ft/scr/2001/cr0185.pdf>

Lamfalussy Report: *Final Report of the Committee of Wise Men on the Regulation of European Securities Markets*.

[http://europa.eu.int/comm/internal\\_market/en/finances/general/lamfalussyen.pdf](http://europa.eu.int/comm/internal_market/en/finances/general/lamfalussyen.pdf)

Tómas Örn Kristinsson: *Greiðslukerfi – ný viðmið*.

[http://www.sedlabanki.is/uploads/files/pm004\\_7.pdf](http://www.sedlabanki.is/uploads/files/pm004_7.pdf)