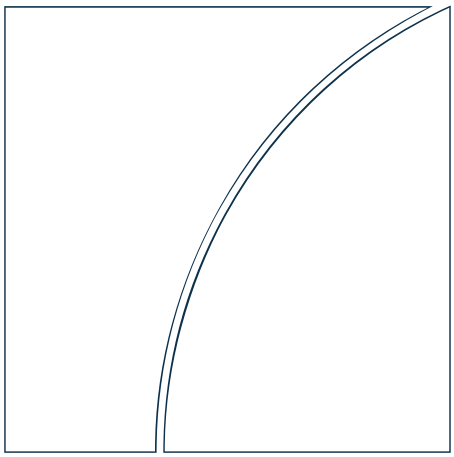
Committee on Payment and Settlement Systems

Technical Committee of the International Organization of Securities Commissions



Recommendations for securities settlement systems

November 2001

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Foreword

Several international initiatives completed in the past few years have the goal of maintaining financial stability by strengthening the financial infrastructure. The International Organization of Securities Commissions (IOSCO) has developed the *Objectives and Principles of Securities Regulation* (IOSCO, 1998) and the Committee on Payment and Settlement Systems (CPSS) of the central banks of the Group of Ten countries has produced the *Core Principles for Systemically Important Payment Systems* (BIS, 2001). Building on the previous work, the CPSS and the Technical Committee of IOSCO aim to contribute further to this process by jointly issuing these *Recommendations for Securities Settlement Systems*.

The recommendations were developed by the Task Force on Securities Settlement Systems that the CPSS and the Technical Committee of IOSCO created in December 1999. The Task Force comprises 28 central bankers and securities regulators from 18 countries and regions and from the European Union. The Task Force's work has benefited greatly from input from other central bankers and securities regulators and from operators of, and participants in, securities settlement systems. In January 2000 the Task Force received input from central bankers and securities regulators who together represented about 30 countries, as well as from representatives of the International Monetary Fund and the World Bank. In January 2001 the CPSS and the Technical Committee of IOSCO released a version of this report for public comment. Nearly 90 comments were received, and the commenters included a wide variety of interested parties, mostly from Europe, but also from Asia, Africa and the Americas. As a result of these comments, several recommendations have been changed significantly and a new recommendation on cross-border links between settlement systems has been added.

The 19 recommendations and accompanying explanatory texts identify minimum standards that securities settlement systems (SSSs) should meet. The recommendations are designed to cover systems for all types of securities, for securities issued in both industrialised and developing countries, and for domestic as well as cross-border trades.

National authorities responsible for the regulation and oversight of SSSs 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 CPSS and the Technical Committee of IOSCO have directed the Task Force to complete development of the assessment methodology in 2002.

The CPSS and the Technical Committee of IOSCO are grateful to the members of the Task Force and its Co-Chairmen, Patrick Parkinson of the Board of Governors of the Federal Reserve System, Giovanni Sabatini of the Commissione Nazionale per le Società e la Borsa Italy (until May 2001) and Shane Tregillis of the Australian Securities and Investments Commission (from June 2001), for their excellent work in completing this report in a timely manner.

Tommaso Padoa-Schioppa, Chairman
Committee on Payment and Settlement Systems

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1. Introduction

1.1 Securities settlement systems (SSSs) are a critical component of the infrastructure of global financial markets. In recent years, trading and settlement volumes have soared, as securities markets have become an increasingly important channel for intermediating flows of funds between borrowers and lenders and as investors have managed their securities portfolios more actively, in part because of declining transaction costs. Volumes of cross-border trades and settlements have grown especially rapidly, reflecting the increasing integration of global markets.

1.2 Weaknesses in SSSs can be a source of systemic disturbances to securities markets and to other payment and settlement systems. A financial or operational problem at any of the institutions that perform critical functions in the settlement process or at a major user of an SSS could result in significant liquidity pressures or credit losses for other participants. Any disruption of securities settlements has the potential to spill over to any payment systems used by the SSS or any payment systems that use the SSS to transfer collateral. In the securities markets themselves, market liquidity is critically dependent on confidence in the safety and reliability of the settlement arrangements; traders will be reluctant to trade if they have significant doubts as to whether the trade will in fact settle.

1.3 The potential for international standards to promote improvements in the safety and efficiency of SSSs was clearly demonstrated by the impact of the Group of Thirty's 1989 standards.[1] Although the G30's recommendations have not been fully implemented in all markets, they have unquestionably fostered very significant progress in many markets, both in industrialised countries and in emerging markets. Nonetheless, with the passage of more than a decade it has become apparent that some of the G30 standards are in need of updating. Moreover, they do not address some issues that subsequent experience has demonstrated to be quite important, such as the legal foundations of settlement arrangements, transparency, access, governance, and regulation and oversight. (The latter issues are becoming even more important with the trend towards consolidation of settlement systems, notably in Europe.) While various private sector groups (notably the International Securities Services Association (ISSA) and the Fédération Internationale des Bourses de Valeurs (FIBV)) have made suggestions for updating the G30 recommendations,[2] the 1989 recommendations remain the only standards that have achieved widespread support and official endorsement.

1.4 Within the public sector, the relevant international standard-setting bodies are the Committee on Payment and Settlement Systems (CPSS) of the central banks of the Group of Ten countries and the International Organization of Securities Commissions (IOSCO). Discussions between the CPSS and IOSCO's Technical Committee resulted in agreement that cooperative development of new recommendations for SSSs by securities regulators and central banks would facilitate further progress in making such arrangements safer and more efficient. Such an effort was seen as part of the broader efforts by the Financial Stability Forum (in which both the CPSS and IOSCO are represented) to strengthen financial systems by ensuring that gaps in international standards are identified and filled.

1.5 To move this initiative forward, in December 1999 the CPSS and the Technical Committee of IOSCO created the Task Force on Securities Settlement Systems. The Task Force is comprised of 28 central bankers and securities regulators from 18 countries and regions and the European Union (Annex 1). The Task Force's mandate called for it to promote the implementation by SSSs of measures that can enhance international financial stability, reduce risks, increase efficiency and provide adequate safeguards for investors by developing recommendations for the design, operation and oversight of such systems. The recommendations were to identify minimum standards that systems should meet. They were to cover the settlement of both domestic and cross-border trades through individual settlement systems and links between those systems.

1.6 Based largely on input received at a consultative meeting at the Bank for International Settlements (BIS) in January 2000,[3] the Task Force concluded that the recommendations should be

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[1] Group of Thirty, *Clearance and Settlement Systems in the World's Securities Markets* (Group of Thirty, 1989).

[2] See International Securities Services Association, *Recommendations 2000* (ISSA, 2000) and Fédération Internationale des Bourses de Valeurs, *Clearing and Settlement Best Practices* (FIBV, 1996).

[3] The consultative meeting was attended by 30 central bankers and 25 securities regulators (together representing about 30 countries) and by representatives of the International Monetary Fund and the World Bank.

designed to cover SSSs for all securities, including equities and corporate and government bonds and money market instruments, and securities issued in industrialised and developing countries.

1.7 The Task Force defined an SSS broadly to include the full set of institutional arrangements for confirmation, clearance and settlement of securities trades and safekeeping of securities. As described in Annex 2, quite a few institutions may be involved in this process. In recent years, most markets have established central securities depositories (CSDs) that immobilise physical securities or dematerialise them and transfer ownership by means of book entries to electronic accounting systems. Even when a market has a CSD, however, other institutions often perform functions that are critical to the settlement of securities trades. The confirmation of trade details is often performed by a stock exchange or trade association or by counterparties bilaterally, rather than by the CSD. In some markets, a central counterparty (CCP) interposes itself between buyers and sellers, becoming, in effect, the buyer to every seller and the seller to every buyer. Although funds may be transferred through internal accounts at the CSD, in many cases accounts at the central bank or at one or more private commercial banks are used. Finally, not all buyers and sellers of securities hold accounts at the CSD; instead, they may hold their securities and settle their trades through a custodian, and the custodian may, in turn, hold its customers' securities through a subcustodian. In some markets in which intermediaries and investors hold their securities at a very small number of custodians, those custodians may settle transactions between clients through book-entry transfers on their own books rather than on the books of the CSD.

1.8 Based on a review of existing standards and on discussions at the consultative meeting, the Task Force developed a list of specific topics and issues to be addressed by its recommendations. The list included the legal framework for securities settlements, risk management, access, governance, efficiency, transparency, and regulation and oversight. For those issues that the G30 addressed (primarily the risk management issues), the Task Force used the G30 recommendations as a starting point. For the other topics, the Task Force drew on prior work by the CPSS and IOSCO, especially the work on core principles for systemically important payment systems and for securities regulation, and by ISSA and the FIBV.[4]

1.9 As discussed in Annex 4, settlements of cross-border trades tend to increase the importance and complexity of certain issues, including legal issues, custody risks in tiered securities holding systems and the timing of finality in cross-system settlements. Cross-border settlement arrangements also pose special challenges for regulation and oversight. Nonetheless, the Task Force concluded that it could best address those issues in the discussions of the relevant recommendations for SSSs generally, rather than in separate recommendations. The one exception is a recommendation addressing the risks in cross-border links between CSDs.

1.10 Because of the diversity of institutional arrangements internationally, the recommendations must focus on the functions to be performed, not on the institutions that may perform them. While some of the recommendations are relevant primarily to CSDs, others are relevant to stock exchanges, trade associations and other operators of trade confirmation systems, CCPs, settlement banks or custodians. As noted above, the distinctions between the functions of CSDs and custodians have become blurred in some markets where custodians settle trades between clients on their own books. In such markets some of the recommendations addressed to CSDs may need to be applied to such custodians. Many are also relevant to the broker-dealers, banks, investment managers and investors who use the services provided by the above-mentioned institutions. Securities regulators, central banks and, in some cases, banking supervisors will need to work together to determine the appropriate scope of application of the recommendations and to develop an action plan for implementation. When key intermediaries are located in other jurisdictions, the cooperation of authorities in all of the relevant jurisdictions will be essential.

1.11 The recommendations are set out in Exhibit 1. The remainder of this paper provides the rationale for and elaborates on those recommendations. Section 2 briefly discusses the public policy objectives underlying the recommendations. Section 3 explains the reasoning behind and develops in greater detail each of the recommendations set out in Exhibit 1. Section 4 discusses implementation of the recommendations. Section 5 takes a first step towards development of a comprehensive

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[4] See CPSS, *Core Principles for Systemically Important Payment Systems* (BIS, 2001), IOSCO, *Objectives and Principles of Securities Regulation* (IOSCO, 1998), and the references cited in footnote 2.

methodology for assessing progress towards implementation by identifying key questions pertaining to each recommendation. As noted in the Foreword, the CPSS and the Technical Committee of IOSCO have directed the Task Force to complete work on a comprehensive assessment methodology in 2002.

Exhibit 1
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.

2. Public policy objectives

2.1 The recommendations are intended to promote implementation of measures that enhance the safety and efficiency of SSSs and reduce systemic risk. Safe and reliable settlement systems are essential not only for the stability of the securities markets they serve, but often also to payment systems, which may be used by an SSS or may themselves use an SSS to transfer collateral. The safety of securities settlement arrangements and post-trade custody arrangements is also critical to the goal of protecting the assets of investors from claims by the creditors of intermediaries and other entities that perform the various functions in the operation of the SSS. The efficiency of SSS arrangements is another important concern. Inefficiencies will ultimately be reflected in higher costs to issuers of securities and lower returns to investors, which in turn will impede capital formation.

2.2 Ensuring safe and reliable settlement systems requires an understanding of the various steps involved, the types of risk that arise in completing those steps and the sources of that risk. These issues are discussed in detail in Annexes 2 and 3. In brief, a key source of risk is the possibility that a counterparty to a trade will fail to settle its obligations when due or at any time thereafter (credit risk) or will settle its obligations later than expected (liquidity risk). The nature of the credit risk differs, depending on whether a participant defaults before any transfer of securities or funds (pre-settlement risk) or once final transfer of securities or funds has begun but not been completed (settlement risk). Other important types of risk are the risk of a settlement bank's failure, operational risk, custody risk and legal risk. An SSS will be safe and reliable only if each of these types of risk is effectively controlled by the institutions that operate the system and their participants.

2.3 The implementation of safe and reliable SSSs unavoidably entails significant resource costs. In making choices about the design and operation of settlement systems, it is essential that unnecessary costs be avoided and that trade-offs between risk reduction (beyond certain minimum requirements for stability) and costs be weighed carefully. As noted above, efficient settlement systems contribute to well functioning financial markets, which is a public policy objective in its own right. Moreover, costly but relatively riskless settlement arrangements may encourage market participants to utilise comparatively cheaper but perhaps riskier (less safe and reliable) settlement mechanisms, resulting in higher overall systemic risks.

2.4 Competition can be an important mechanism for promoting efficiency. Where competition may be difficult to maintain because of economies of scale or scope in securities settlement, the recommendations emphasise other mechanisms for ensuring fairness and efficiency, such as appropriate governance arrangements and regulation and oversight.

3. Recommendations

Recommendation 1: Legal framework

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

3.1 The reliable and predictable operation of an SSS depends on (1) the laws, rules and procedures that support the holding, transfer, pledging and lending of securities and related payments; and (2) how these laws, rules and procedures work in practice, that is, whether system operators, participants and their customers can enforce their rights. If the legal framework is inadequate or its application uncertain, it can give rise to credit or liquidity risks for system participants and their customers or to systemic risks for financial markets as a whole.

3.2 The legal framework for securities settlements, SSSs and the holding of securities in SSSs varies from jurisdiction to jurisdiction and reflects the organisation of a jurisdiction's entire legal system. The legal framework for SSSs includes general laws, such as property and insolvency laws, and may include laws specifically related to the operation of the system. In some jurisdictions, the general laws governing property rights and insolvency may not apply to, or may contain special provisions related to, the settlement of securities transactions. Laws applicable to securities settlements may also be augmented by regulations or other administrative acts. Other important aspects of the legal framework are the rules and procedures of the various parts of the system, many of which represent contracts between the operators and the participants. This legal framework defines the relationships, rights and interests of the operators, the participants and their customers and the manner in which and time at which rights and obligations arise through the operation of the system.

3.3 As a general matter, the laws, regulations, rules and procedures, and contractual provisions governing the operation of SSSs should be clearly stated, understandable, internally coherent and unambiguous. They also should be public and accessible to system participants.

3.4 Key aspects of the settlement process that the legal framework should support include: enforceability of transactions, protection of customer assets (particularly against loss upon the insolvency of a custodian), immobilisation or dematerialisation of securities, netting arrangements, securities lending (including repurchase agreements and other economically equivalent transactions), finality of settlement, arrangements for achieving delivery versus payment, default rules, and liquidation of assets pledged or transferred as collateral.

3.5 The effective operation of an SSS requires that its internal rules and procedures be enforceable with a high degree of certainty. The rules and contracts related to the operation of the SSS should be enforceable in the event of the insolvency of a system participant, whether the participant is located in the jurisdiction whose laws govern the SSS or in another jurisdiction. The effective operation of an SSS also requires that the SSS have a high degree of certainty regarding its rights and interests in the securities and other assets held in the system, including its rights to use collateral, to transfer property interests, and to make and to receive payments, notwithstanding the bankruptcy or insolvency of an individual system participant or of one of its customers in another jurisdiction. The claims of the SSS or the system participants against collateral posted by a participant with the SSS should in all events have priority over the claims of such participant's non-system creditors. For example, non-system creditors should be able to enforce their claims against collateral posted in the system only after the satisfaction out of the collateral of all claims arising within the system. In some jurisdictions, this may cause collateral to be held by an SSS in the form of securities (eg government bonds) instead of in cash. Lastly, direct system participants, intervening intermediaries, and their respective customers should have a high degree of certainty regarding the rights and interests they hold through the system, notwithstanding the insolvency of a user, a participant or a component of an SSS such as a CSD, CCP or settlement bank.

3.6 The legal framework for an SSS must be evaluated in the relevant jurisdictions. These include the jurisdiction(s) in which the system and its direct participants are established, domiciled or have their principal office and any jurisdiction whose laws affect the operation of the system as a result of a contractual choice of law. Relevant jurisdictions may also include a jurisdiction in which a security handled by the SSS is issued, jurisdictions in which an intermediary, its customer or the customer's bank is established, domiciled or has its principal office, or a jurisdiction whose laws govern a contract between these parties.

3.7 Where a system crosses borders through linkages or remote participants, the rules governing the system should clearly indicate the law that is intended to apply to each aspect of the settlement process. The operators of cross-border systems must address conflict of laws issues when there is a difference in the substantive laws of the jurisdictions that have a potential interest in the system. In such circumstances, each jurisdiction's conflict of laws rules specify the criteria that determine the law applicable to the system. System operators and participants should be aware of conflict of laws issues when structuring the rules of a system and in choosing the law that governs the system. System operators and participants should also be aware of applicable constraints on their ability to choose the law that will govern the system. A relevant jurisdiction ordinarily does not permit system operators and participants to circumvent the fundamental public policy of that jurisdiction by contract. For example, jurisdictions that require that title to securities be recorded in a domestic registry generally do not permit parties to override that law through a contractual choice of law. Subject to such constraints, the legal framework should support appropriate contractual choices of law in the context of both domestic and cross-border operations. In many cases, the law chosen with respect to the operation of an SSS will be that of the location of a CCP or a CSD.

3.8 A harmonisation or convergence of laws would obviate conflict of laws issues that currently impede the cross-border operation of SSSs. Therefore, countries should voluntarily seek to harmonise or bring about a convergence of laws governing SSSs, the contracts between SSSs and direct system participants, and the contracts between direct system participants, other intervening intermediaries and their respective customers. In this connection, the deliberations of the Hague Conference on Private International Law relating to the promulgation of a Convention on the Law Applicable to Proprietary Rights in Indirectly Held Securities are encouraged.

3.9 The legal framework, including requirements relating to contractual choices of law, should give great weight to the public interest in the effective operation of SSSs and to the public necessity for legal certainty in the irreversibility of securities settlements. Each jurisdiction should seek to promote national laws and public policies that support the CPSS-IOSCO Technical Committee recommendations for SSSs and related arrangements. If the legal framework in a particular jurisdiction does not support the existing SSSs or the implementation of these recommendations, the appropriate regulatory and supervisory authorities should seek legislative reform.

Recommendation 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.

3.10 The first step in settling a securities trade is to ensure that the buyer and the seller agree on the terms of the transaction, a process referred to as trade confirmation. Often a broker-dealer or member of an exchange (a direct market participant) acts as an intermediary in executing trades on behalf of others (indirect market participants). In such circumstances, trade confirmation often occurs on two separate tracks: confirmation of the terms of the trade between direct participants and confirmation (sometimes termed "affirmation") of the intended terms between each direct participant and the indirect participant for whom the direct participant is acting. (Generally, indirect market participants for whom confirmations are required include institutional investors and cross-border clients.) On both tracks, agreement of trade details should occur as soon as possible so that errors and discrepancies can be discovered early in the settlement process. Early detection should help to avoid errors in recording trades, which could result in inaccurate books and records, increased and mismanaged market risk and credit risk, and increased costs. While this process is occurring, the back offices of the direct market participants, indirect market participants and custodians that act as agents for the indirect market participants need to prepare settlement instructions, which should be matched prior to the settlement date. Speedy, accurate verification of trades and matching settlement instructions is an essential precondition for avoiding settlement failures, especially when the settlement cycle is relatively short. (See Recommendation 3 regarding the length of settlement cycles.)

3.11 Trade confirmation systems are increasingly becoming automated. Many markets already have in place systems for the automatic comparison of trades between direct market participants. (In many markets, the use of electronic trading systems obviates the need for direct market participants to match the terms of the trade.) Automated matching systems are also being proposed and implemented for trade confirmation between direct market participants and indirect market participants

and for the matching of settlement instructions. Automation improves processing times by eliminating the requirement to send information back and forth manually between parties and by avoiding the errors inherent in manual processing.

3.12 At its most sophisticated, automation allows manual intervention to be eliminated from post-trade processing through the implementation of straight through processing (STP), that is, procedures that require trade data to be entered only once and then use those same data for all post-trade requirements related to settlement. Many practitioners believe that market-wide achievement of STP is essential, both for maintaining high settlement rates as volumes increase and for ensuring timely settlement of cross-border trades, particularly if reductions in settlement cycles are to be achieved. STP systems may use a common message format or use a translation facility that either converts different message formats into a common format or translates between different formats. Several initiatives aim to achieve STP. These initiatives should be encouraged, and direct and indirect market participants should achieve the degree of internal automation necessary to take full advantage of whatever solutions emerge.

Recommendation 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.

3.13 Under a rolling settlement cycle, trades settle a given number of days after the trade date rather than at the end of an "account period", thereby limiting the number of outstanding trades and reducing aggregate market exposure. The longer the period from trade execution to settlement, the greater the risk that one of the parties may become insolvent or default on the trade, the larger the number of unsettled trades, and the greater the opportunity for the prices of the securities to move away from the contract prices, thereby increasing the risk that non-defaulting parties will incur a loss when replacing the unsettled contracts. In 1989, the G30 recommended that final settlement of cash transactions should occur on T+3, that is, three business days after the trade date. However, the G30 recognised that "to minimise counterparty risk and market exposure associated with securities transactions, same day settlement is the final goal".

3.14 This recommendation retains T+3 settlement as a minimum standard. Markets that have not yet achieved a T+3 settlement cycle should identify impediments to achieving T+3 and actively pursue the removal of those impediments. Many markets already are settling at a shorter interval than T+3. For example, many government securities already settle on T+1 or even T+0, and some equity markets are currently considering a T+1 settlement cycle. The standard judged appropriate for a type of security or market will depend upon factors such as transaction volume, price volatility and the extent of cross-border trading in the instrument. Each securities market should evaluate whether a cycle shorter than T+3 is appropriate, given the risk reduction benefits that could be achieved, the costs that would be incurred and the availability of alternative means of limiting pre-settlement risk, such as trade netting through a CCP (see Recommendation 4 below). Depending on these factors, some markets may conclude that different types of securities should have different settlement cycles.

3.15 Reducing the cycle is neither costless nor without certain risks. This is especially true for markets with significant cross-border activity because differences in time zones and national holidays, and the frequent involvement of multiple intermediaries, make timely trade confirmation more difficult. In most markets, a move to T+1 (perhaps even to T+2) would require a substantial reconfiguration of the trade settlement process and an upgrade of existing systems. For markets with a significant share of cross-border trades, substantial system improvements may be essential for shortening settlement cycles. Without such investments, a move to a shorter cycle could generate increased settlement fails, with a higher proportion of participants unable to agree and exchange settlement data or to acquire the necessary resources for settlement in the time available. Consequently, replacement cost risk would not be reduced as much as anticipated and operational risk and liquidity risk could increase.

3.16 Regardless of the settlement cycle, the frequency and duration of settlement failures should be monitored closely. In some markets, the benefits of T+3 settlement are not being fully realised because the rate of settlement on the contractual date falls significantly short of 100%. In such circumstances, the risk implications of the fail rates should be analysed and actions identified that could reduce the rates or mitigate the associated risks. For example, monetary penalties for failing to settle could be imposed contractually or by market authorities; alternatively, failed trades could be marked to market and, if not resolved within a specified timeframe, closed out at market prices.

Recommendation 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.

3.17 A central counterparty (CCP) interposes itself between trade counterparties, becoming the buyer to every seller and the seller to every buyer. Thus, from the point of view of market participants the credit risk of the CCP is substituted for the credit risk of the other participants. (In some markets many of the benefits of a CCP are achieved by establishing an entity that indemnifies market participants against losses from counterparty defaults without actually acting as CCP.) If a CCP manages its risks effectively, its probability of default may be less than that of all or most of the market participants. Moreover, a CCP often bilaterally nets its obligations vis-à-vis its participants, which achieves multilateral netting of each participant's obligations vis-à-vis all of the other participants. This can reduce substantially the potential losses in the event of the default of a participant, both on trades that have not reached settlement (replacement cost exposures) and on trades in the process of settlement (principal exposures). In addition, netting reduces the number and value of deliveries and payments needed to settle a given set of trades, thereby reducing liquidity risks and transaction costs.

3.18 Introduction of a CCP is another tool, in addition to shortening settlement cycles, for reducing counterparty credit risks. It is especially effective for reducing risks vis-à-vis active market participants, who often buy and sell the same security for settlement on the same date. In addition to these risk reduction benefits, the growing demand for CCP arrangements in part reflects the increasing use of anonymous electronic trading systems, where orders are matched according to the rules of the system and participants cannot always manage their credit risks bilaterally through their choice of counterparty.

3.19 Nevertheless, a CCP will not be appropriate in all markets. Establishing a CCP is not without costs. In particular, establishing the kind of robust risk management system that a CCP must have (see discussion below) generally requires significant initial investments and ongoing expenses. Thus, individual markets should assess carefully the balance of the benefits and costs of a CCP. This balance will depend on factors such as the volume and value of transactions, trading patterns among counterparties, and the opportunity costs associated with settlement liquidity. A growing number of markets have determined that the benefits of implementing a CCP outweigh the costs.

3.20 If a CCP is established, it is important that it have sound risk management because the CCP assumes responsibility for risk management and reallocates risk among its participants through its policies and procedures. As a result, if a CCP does not perform risk management well, the CCP could increase risk to market participants. The ability of the system as a whole to withstand the default of individual participants depends crucially on the risk management procedures of the CCP and its access to resources to absorb financial losses. The failure of a CCP would almost certainly have serious systemic consequences, especially where multiple markets are served by one CCP. Consequently, a CCP's ability to monitor and control the credit, liquidity, legal and operational risks it incurs and to absorb losses is essential to the sound functioning of the markets it serves. A CCP must be able to withstand severe shocks, including defaults by one or more of its participants, and its financial support arrangements should be evaluated in this context. Furthermore, there must be a sound and transparent legal basis for the netting arrangements, whether by novation or otherwise. For example, netting must be enforceable against the participants in bankruptcy. Without such legal underpinnings, net obligations may be challenged in judicial or administrative insolvency proceedings. If these challenges are successful, the CCP or the original counterparty may face additional settlement exposure. The CCP must also be operationally sound and must ensure that its participants have the incentive and the ability to manage the risks they assume.

3.21 CCPs adopt a variety of means to control risk. The precise means reflects the market served and the nature of the risks incurred. Access criteria are essential (see Recommendation 14 on access). The CCP's exposures should be collateralised. Most CCPs require members to deposit collateral to cover potential market movements on open positions or unsettled transactions. Positions are also generally marked to market one or more times daily, with the CCP taking additional cash or collateral to cover any changes in the net value of the open positions of participants since the previous valuation and settlement. During volatile periods, CCPs may collect additional collateral to minimise further their exposure. CCPs should also have rules specifying clearly how defaults will be handled and how losses will be shared in the event that a defaulting firm's collateral fails to cover its exposure. For example, CCPs may require their members to contribute to default clearing funds, typically composed of cash or high-quality, liquid securities and calculated using a formula based on the

volume of the participant's settlement activity. Those funds are often augmented through insurance or other financial support. Liquidity demands are usually met by some combination of clearing fund assets and firmly committed bank credit lines. Rules and procedures for handling defaults should be transparent to enable members and other market participants to assess the risks they assume because of their membership in and use of a CCP.

3.22 CCPs are currently developing global risk management standards that draw on their common experience and expertise. In February 2001, senior executives of the European Association of Central Counterparty Clearing Houses (EACH) developed risk management standards for their organisations. Subsequently, CCP-12, a group that includes CCPs from Asia and the Americas as well as Europe, has been working to revise the EACH standards and broaden their acceptance among CCPs.[5] Once CCP-12's work is finalised, national authorities should consider using it as a starting point when evaluating the risk management procedures of a CCP.

Recommendation 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.

3.23 Mature and liquid securities lending markets (including markets for repurchase agreements and other economically equivalent transactions) generally improve the functioning of securities markets by allowing sellers ready access to securities needed to settle transactions where those securities are not held in inventory, by offering an efficient means of financing securities portfolios, and by supporting participants' trading strategies.[6] The existence of liquid markets for securities lending reduces the risks of failed settlements because market participants with an obligation to deliver securities that they have failed to receive and do not hold in inventory can borrow these securities and complete delivery. Securities lending markets also enable market participants to cover transactions that have already failed, thereby curing the failure sooner. In cross-border transactions, particularly back-to-back transactions, it is often more efficient and cost-effective for a market participant to borrow a security for the delivery than to deal with the risk and costs associated with a settlement failure.

3.24 Liquid securities lending markets are therefore to be encouraged, subject to appropriate limits on their use for purposes prohibited by regulation or law. For example, borrowing to support short sales is illegal in some circumstances in some markets. Even in jurisdictions that restrict securities lending because of other public policy concerns, authorities should consider permitting lending to reduce settlement failures. Impediments to the development and functioning of securities lending markets should, as far as possible, be removed. In many markets, the processing of securities lending transactions involves manually intensive procedures. In the absence of robust and automated procedures, errors and operational risks increase, and it may be difficult to achieve timely settlement of securities lending transactions, which often need to settle on a shorter cycle than regular trades. The scope for improvement in the processing of cross-border borrowing and lending transactions is particularly large. Some CSDs seek to overcome these impediments by providing centralised lending facilities; others offer services intended to support the bilateral lending market. The needs of individual markets will differ, and market participants and CSDs should evaluate the usefulness of the different types of facilities.

3.25 Other impediments might arise from tax or accounting policies, from legal restrictions on lending, from an inadequate legal underpinning for securities lending or from ambiguities about the treatment of such transactions in a bankruptcy. One of the most significant barriers to development

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[5] The CCP-12 is composed of the following entities: (1) the Australian Stock Exchange; (2) the Brazilian Clearing and Depository Corporation; (3) Eurex Clearing; (4) the Chicago Mercantile Exchange; (5) Clearnet; (6) Hong Kong Exchanges and Clearing Limited; (7) the London Clearing House; (8) S D Indeval, SA de C V; (9) Singapore Exchange Limited; (10) The Canadian Depository for Securities Limited; (11) The Depository Trust & Clearing Corporation; (12) The Options Clearing Corporation; and (13) the Tokyo Stock Exchange.

[6] For a thorough discussion of securities lending and repurchase agreements, see Technical Committee of IOSCO and CPSS, *Securities Lending Transactions: Market Development and Implications* (BIS, 1999); Committee on the Global Financial System, *Implications of Repo Markets for Central Banks* (BIS, 1999).

may be related to taxation of securities lending transactions. A tax authority's granting of tax neutrality to the underlying transaction and the elimination of certain transaction taxes have served to increase activity in several jurisdictions. Accounting standards also have an influence on the securities lending market, particularly with respect to whether, and under what conditions, collateral must be reflected on the balance sheet. Authorities in some jurisdictions restrict the types or amounts of securities that may be loaned, the types of counterparties that may lend securities, or the permissible types of collateral. Uncertainty about the legal status of transactions, for example their treatment in insolvency situations, also inhibits development of a securities lending market. The legal and regulatory structure must be clear so that all parties involved understand their rights and obligations.

3.26 While securities lending may be a useful tool, it presents risk to both the borrower and the lender. The securities lent or the collateral may not be returned when needed, because of counterparty default, operational failure or legal challenge, for example. Those securities would then need to be acquired in the market, perhaps at a cost. Counterparties to securities loans should employ appropriate risk management policies, including conducting credit evaluations, collateralising exposures, marking exposures and collateral to market daily, and employing master legal agreements.

Recommendation 6: Central securities depositories (CSDs)

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

3.27 There are several different ways for beneficial owners to hold securities. In some jurisdictions, physical securities circulate and beneficial owners may keep securities in their possession, although beneficial owners typically employ a custodian to hold them to reduce risks and safekeeping costs. The costs and risks associated with owning and trading securities may be reduced considerably through immobilisation of physical securities, which involves concentrating the location of physical securities in a depository (or CSD). To promote immobilisation of all certificates of a particular issue, a jurisdiction could encourage the issuance of a global note, which represents the whole issue. A further step away from circulating physical securities is full dematerialisation of a securities issue. In this approach, there is no global note issued, as the rights and obligations stem from book entries in an electronic register.

3.28 In addition to differences in physical arrangements for holding securities, there are important differences in the legal arrangements. Holding systems may be categorised generally as direct or indirect (see Annex 2). Each type of system has advantages and disadvantages and either type of system can be designed in a manner that complies with these Recommendations. In jurisdictions that operate a direct holding system but in which the CSD is not the official registrar of the issuer, a transfer of securities in the CSD should result automatically in the transfer of legal title to the securities in the official register of the issuer.

3.29 The immobilisation or dematerialisation of securities and their transfer by book entry within a CSD significantly reduces the total costs associated with securities settlements and custody. By centralising the operations associated with custody and transfer within a single entity, costs can be reduced through economies of scale. In addition, efficiency gains can be achieved through increased automation, which reduces the errors and delays inherent in manual processing. By reducing costs and improving the speed and efficiency of settlement, book entry settlement also supports the development of securities lending markets, including markets for repurchase agreements and other economically equivalent transactions. These activities, in turn, enhance the liquidity of securities markets and facilitate the use of securities collateral to manage counterparty risks, thereby increasing the efficiency of trading and settlement. Effective governance (see Recommendation 13) is necessary, however, to ensure that these benefits are not lost as a result of monopolistic behaviour by the CSD.

3.30 The immobilisation or dematerialisation of securities also reduces or eliminates certain risks, for example destruction or theft of certificates. The transfer of securities by book entry is a precondition for the shortening of the settlement cycle for securities trades, which reduces replacement cost risks. Book entry transfer also facilitates delivery versus payment, thereby eliminating principal risks.

3.31 Thus, for both safety and efficiency reasons, securities should be immobilised or dematerialised in CSDs to the greatest extent possible. In practice, retail investors may not be prepared to give up their certificates. However, it is not necessary to achieve complete immobilisation to realise the benefits of CSDs. It may be sufficient that the most active market participants immobilise

their holdings. Less active investors that insist on holding certificates should bear the costs of their decisions.

Recommendation 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.

3.32 The settlement of securities transactions on a DVP basis ensures that principal risk is eliminated, that is, there is no risk that securities could be delivered but payment not received, or vice versa. DVP procedures reduce, but do not eliminate, the risk that the failure of a CSD participant could result in systemic disruptions. Systemic disruptions are still possible because the failure of a participant could produce substantial liquidity pressures or high replacement costs. Achievement of DVP by the CSD also enables the CSD's participants to offer their customers DVP.

3.33 DVP can be achieved in several ways.[7] Three different "models" can be differentiated. They vary according to whether the securities and/or funds transfers are settled on a gross (trade by trade) basis or on a net basis, and in terms of the timing of the finality of transfers. Finality may be in real time (ie throughout the day), intraday (ie at multiple times during the day), or only at the end of the day. Whichever approach is taken, what is essential is that the technical, legal and contractual framework ensures that each transfer of securities is final if and only if the corresponding transfer of funds is final. DVP can and should be achieved for issuance and redemption of securities as well as for transactions in secondary markets.

3.34 Strictly speaking, DVP does not require simultaneous final transfers of funds and securities. Often when a CSD does not itself provide cash accounts for settlements, it first blocks the underlying securities in the account of the seller or his custodian. It then requests transfer of funds from the buyer to the seller in the settlement bank. The securities are delivered to the buyer or his custodian if and only if the CSD receives confirmation of settlement of the cash leg from the settlement bank. In such arrangements blocked securities must not be subject to a claim by a third party (by other creditors, tax authorities or even the CSD itself), because this would give rise to principal risk.

3.35 If a CSD achieves DVP, it enables local agents to offer DVP to their customers in other jurisdictions. Cross-border links between CSDs (see Recommendation 19) can be designed to permit DVP settlement of cross-border trades between participants in the linked CSDs.

Recommendation 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.

3.36 The timing of settlement finality should be defined clearly to all the participants for both free of payment transfers and delivery versus payment transfers. The completion of final transfers by the end of the day is essential. Deferral of settlement to the next business day can substantially increase the potential for participant failures to settle to create systemic disturbances, in part because the authorities tend to close insolvent institutions between business days. However, end-of-day net settlements may entail significant liquidity risks, unless risk controls to address participant defaults are highly robust. (See Recommendation 9.)

3.37 Even if the risks of participant failures to settle are controlled effectively, end-of-day net settlement may entail risks to participants that can and should be reduced by providing intraday (or even real-time) finality. For example, intraday or real-time finality is sometimes necessary for: monetary policy or payments operations; settlement of back-to-back transactions or intraday margin calls by CCPs; or safe and efficient cross-border links between CSDs.

3.38 Central banks' monetary policy operations must often be settled at a designated time within the day. Also, when a payment system requires credit extensions to be collateralised, it may be crucial

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[7] See CPSS, *Delivery Versus Payment in Securities Settlement Systems* (BIS, 1992).

for the smooth functioning of the payment system that this collateral be transferable with real-time or intraday finality.

3.39 Intraday or real-time finality may also be essential to active trading parties, for example those conducting back-to-back transactions in securities, including the financing of securities through repurchase agreements and similar transactions; for such active counterparties, end-of-day notification of fails would create significant liquidity risk. Intraday finality is also essential for CCPs that rely on intraday margin calls to mitigate risks vis-à-vis their members.

3.40 Finally, in the absence of intraday or real-time settlement, a CSD's links to other CSDs (for example, links to foreign CSDs to facilitate settlements of cross-border trades) may pose systemic risks unless additional risk controls are imposed that may impair the efficiency of the links. In particular, systemic risks could arise if one CSD allows provisional transfers of securities to the other CSDs. In such circumstances, an unwind of those provisional transfers could transmit any disturbances from a failure to settle at the CSD making the provisional transfer to the linked CSDs. To guard against this, either the CSD would need to prohibit such provisional transfers, or the linked CSDs would need to prohibit their retransfer prior to their becoming final. But such risk controls may impose significant opportunity costs on users of the link, especially on active trading parties who engage in back-to-back transactions.

3.41 For these purposes, intraday or real-time settlement of securities transactions is being demanded in a growing number of markets. However, these risks and the resulting demands for intraday finality are not equally pressing in all markets. Where such demands are not pressing, an end-of-day net settlement system with robust risk controls (Recommendation 9) may offer the best combination of safety and efficiency. Whatever approach is adopted, it is critical that the CSD make clear to its participants the timing of finality. Furthermore, the CSD should prohibit the unilateral revocation of unsettled transfer instructions late in the settlement day, so as to avoid the liquidity risks that such actions can create.

Recommendation 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.

3.42 Where they are permitted to do so, CSDs often extend intraday credit to participants (either as principal or as agent for other participants) to facilitate timely settlements and, in particular, to avoid gridlock. In a gross settlement system, where credit extensions occur, they are usually extended by the CSD as principal and take the form of intraday loans or repurchase agreements. In net settlement systems these credit extensions are usually in effect extended by the CSD as agent for other participants and take the form of net debit positions in funds, which are settled only at one or more discrete, prespecified times during the processing day. (See the discussion in 3.44 of the implication of unwinds of provisional transfers in net settlement systems.)

3.43 Whenever a CSD extends credit to participants, it creates the risk that participants will be unable to settle their obligations. Such failures to settle can impose credit losses and liquidity pressures on the CSD or on its other participants. If those losses and liquidity pressures exceed the financial resources of those expected to bear them, further failures to settle would result and the system as a whole may fail to achieve timely settlement. If so, both the securities markets the CSD serves and payment systems may be disrupted.

3.44 While the failure of a large participant to settle may create such disruptions in any settlement system, the potential is especially large in net settlement systems that attempt to address such settlement failures by unwinding transfers involving that participant, that is, by deleting some or all of the provisional securities and funds transfers involving that participant and then recalculating the settlement obligations of the other participants. An unwind has the effect of imposing liquidity pressures (and any replacement costs) on the participants that had delivered securities to, or received securities from, the participant that failed to settle. If all such transfers must be deleted and if the unwinding occurs at a time when money markets and securities lending markets are illiquid (for example, at or near the end of the day), the remaining participants could be confronted with shortfalls of funds or securities that would be extremely difficult to cover.

3.45 Consequently, CSDs that extend credit to participants must impose risk controls to limit the potential for failures to settle to generate systemic disruption. At a minimum, the controls should enable the system to complete settlement following a failure to settle by the participant with the single largest payment obligation. Such failures may not occur in isolation, however, and systems should, wherever possible, be able to survive additional failures. In determining the precise level of comfort to target, each system will need to balance carefully the additional costs to participants of greater certainty of settlement against the probability and potential impact of multiple settlement failures. To achieve the chosen comfort level the CSD can use a variety of risk controls. The appropriate choice of controls depends on several factors, including the systemic importance of the settlement system, the volume and value of settlements, and the effect of the controls on the efficiency of the system.

3.46 The most reliable approach to controlling potential losses and liquidity pressures from participants' failures to settle is a combination of collateral requirements and limits. To control potential credit exposures in this approach, any credit extensions on the funds or securities sides are fully collateralised. To ensure that credit exposures are, in fact, fully collateralised, the CSD applies haircuts to collateral values that reflect the price volatility of the collateral. Also as part of this approach, legally binding arrangements are in place to allow collateral to be sold or pledged promptly. In addition, to control potential liquidity pressures, limits are imposed on credit extensions. On the securities side, a CSD sometimes arranges securities loans to participants to facilitate timely settlement, but debit balances are prohibited. (No CSD should permit overdrafts or debit balances in securities.) On the funds side, the size of its credit extension to each participant (the participant's debit position in a net settlement system or the size of its intraday borrowing in a gross settlement system) is limited. The limits are then set at amounts that could be covered by the CSD or by other participants, taking into account their respective responsibilities under the system's default rules and their liquidity resources. If a central bank grants credit in its own currency to CSD participants, such credit extension need not be limited because its liquidity resources are unlimited. The central bank may nonetheless choose to contain its risks vis-à-vis participants by setting limits.

Recommendation 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.

3.47 Arrangements for the settlement of payment obligations associated with securities transactions vary across market participants and CSDs. In some cases a market participant has a direct relationship with the CSD and with the cash settlement agent where the ultimate cash settlement occurs. In other cases a market participant has a direct relationship with the CSD but has no direct relationship with the cash settlement agent.[8] Instead the market participant uses one of several settlement banks to settle its payment obligations.[9] The settlement banks ultimately settle the cash leg by transferring balances held with the cash settlement agent. These transfers are made through an interbank payment system, typically a central bank payment system. The use of a payment system for this purpose would generally make it systemically important. Therefore, the payment system used for such interbank transfers should adhere to the Core Principles for Systemically Important Payment Systems.[10]

3.48 Whatever the payments arrangement, the failure of the settlement agent whose assets are used to settle the ultimate payment obligations could disrupt settlement and result in significant losses and liquidity pressures to CSD members. Furthermore, these risks are involuntary and difficult for CSD members to control. Consequently, there is a strong public interest in containing the potential systemic risks by using a cash settlement asset that carries little or no credit or liquidity risk.

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[8] Some market participants may not have a direct relationship with the CSD or with the cash settlement agent.

[9] In some instances, a settlement institution may not be organised as a bank. The term "bank" in this discussion refers broadly to any institution providing such services, regardless of whether or not it is organised as a bank.

[10] See CPSS, *Core Principles for Systemically Important Payment Systems* (BIS, 2001).

3.49 In a single currency system, some CSDs use the central bank of issue as cash settlement agent, which eliminates the risk of its failure. Use of the central bank of issue as the single settlement agent may not, however, always be practicable. Even in a single currency system, some (in some cases many) CSD members, CCPs and linked CSDs may not have access to accounts with the central bank of issue.[11] In a multicurrency system, the use of central banks of issue can be especially difficult. Even if remote access to central bank accounts by CSD members is possible, the hours of operation of the relevant central banks' payment systems may not overlap with those of the CSD settling in their currencies.

3.50 When a private bank is used as the cash settlement agent, steps must be taken to protect CSD members from potential losses and liquidity pressures that would arise from its failure. One widely employed way of providing the necessary protection is for the CSD to organise itself as a limited purpose bank and become the settlement agent by offering cash accounts to its members. To limit the risk of default, the functions of the limited purpose bank must be clearly defined and the CSD should: institute reliable controls on its credit exposures to members (see Recommendation 9); be strongly capitalised or supported by effective loss-sharing mechanisms or reliable third-party credit support arrangements; and strictly limit any non-settlement activities and associated risks.

3.51 Even if the risk of failure of the cash settlement agent is eliminated or limited effectively, where some (perhaps many) CSD members do not have a direct relationship with the cash settlement agent and instead use one of several settlement banks, failure of one of these settlement banks may also give rise to systemic disturbances. In such circumstances, the fewer the settlement banks, the greater the proportion of payments that will be effected through transfers of balances at these banks rather than transfers of balances at the settlement agent. Thus, it is important that settlement banks are properly regulated institutions with the legal and technical capacity to provide an effective service. If use of only a few settlement banks produces a significant concentration of exposures, those exposures should be monitored and the financial condition of the settlement banks evaluated, either by the operator of the CSD or by regulators and overseers.

3.52 Finally, whatever the payments arrangements, market participants should be able to retransfer the proceeds of securities settlements as soon as possible, at a minimum on the same day, and ideally intraday, so as to limit their liquidity risk and any credit risks associated with the assets used.

Recommendation 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.

3.53 Operational risk is the risk that deficiencies in information systems or internal controls, human errors or management failures will result in unexpected losses. As clearing and settlement systems become increasingly dependent on information systems, the reliability of these systems is a key element in operational risk. The importance of operational risk lies in its capacity to impede the effectiveness of measures adopted to address other risks in the settlement process and to cause participants to incur unforeseen losses, which, if sizeable, could have systemic risk implications.

3.54 Operational risk can arise from inadequate control of systems and processes; from inadequate management more generally (lack of expertise, poor supervision or training, inadequate resources); from inadequate identification or understanding of risks and the controls and procedures needed to limit and manage them; and from inadequate attention being paid to ensuring that procedures are understood and complied with.

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[11] This Recommendation is not intended to imply that all such CSD members should have access to accounts at the central bank. The criteria governing access to settlement accounts vary between central banks, but access is generally limited to institutions whose role or size justifies access to a risk-free settlement asset. Not all CSD members need access to central bank money; tiered banking arrangements, in which some CSD members settle their payment obligations through other members that have access to central bank accounts, may achieve an appropriate balance between safety and efficiency.

3.55 Potential operational failures include errors or delays in message handling, transaction processing, system deficiencies or interruption, fraudulent activities by staff and disclosure of confidential information. Errors or delays in transaction processing may result from miscommunication, incomplete or inaccurate information or documentation, failure to follow instructions or errors in transmitting information. These problems are particularly common in manual processes. The existence of physical securities, which may be defective, lost or stolen, also increases the chance of error and delay. While automation has allowed improvements in the speed and efficiency of the clearing and settlement process, it brings its own risks of system deficiencies, interruptions and computer crime. These may arise from factors such as inadequate security, capacity or resilience of backup systems.

3.56 Operational failures may lead to a variety of problems: late or failed settlements that impair the financial condition of participants; customer claims; legal liability and related costs; reputational and business loss; and compromises in other risk control systems that increase credit or market risks. A severe operational failure at a CSD, CCP, cash settlement agent or major participant could have significant adverse effects throughout securities and other markets.

3.57 To minimise operational risk, system operators should identify sources of operational risk, whether arising from the arrangements of the operator itself or from those of its participants, and establish clear policies and procedures to address those risks. There should be adequate management controls and sufficient (and sufficiently well qualified) personnel to ensure that procedures are implemented accordingly. Risks, operational policies and procedures, and systems should be reviewed periodically and after modifications to the system. Information systems should be subject to periodic independent audit, and external audits should be seriously considered.

3.58 All key systems should be secure (that is, have access controls, be equipped with adequate safeguards to prevent external intrusions, and provide audit trails), reliable, scalable and able to handle stress volume and have appropriate contingency plans to account for system interruption. Contingency plans should be rehearsed and capacity stress-tested. Ideally, backup systems should be immediately available. While it may be possible to recommence operations following a system disruption with some data loss, contingency plans should ensure that, as a minimum, the status of all transactions at the time of the disruption can be identified with certainty in a timely manner. The system should be able to recover operations and data in a manner that does not disrupt settlement. Increasingly, SSSs are dependent on electronic communications and need to ensure the integrity of messages through using reliable networks and procedures (such as cryptographic techniques) to transmit data accurately, promptly and without material interruption. Markets should strive to keep up with improvements in technologies and procedures even though the ability to contain operational risks may be limited by the infrastructure in the relevant market (for example, telecommunications). Core Principle VII of the Core Principles for Systemically Important Payment Systems provides more details on operational issues.[12]

3.59 Some clearing and settlement operations may be outsourced to third parties. In these circumstances, operational risk will reside with the outside service provider. System operators who outsource operations should ensure that those operations meet the same standards as if they were provided directly by the system operator.

Recommendation 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.

3.60 Custody risk is the risk of a loss on securities held in custody occasioned by a custodian's (or subcustodian's) insolvency, negligence, misuse of assets, fraud, poor administration, inadequate record keeping, or failure to protect a customer's interests in securities (including voting rights and entitlements).[13] Although custodians are predominantly commercial banks, CSDs also hold and

[12] See CPSS, *Core Principles for Systemically Important Payment Systems* (BIS 2001).

[13] For a thorough discussion of custody issues, see Technical Committee of IOSCO, *Client Asset Protection* (IOSCO, 1996).

administer securities on behalf of their direct participants, and thus present custody risk. (Direct participants in a CSD may hold securities both for their own account and on behalf of customers.)

3.61 A custodian should employ procedures ensuring that all customer assets are appropriately accounted for and kept safe whether it holds them directly or through a subcustodian. Because customer securities must also be protected against the claims of a custodian's creditors, a customer's claims against a custodian are typically given priority or are given preferential treatment under insolvency law. (Nonetheless, customer assets could be subject to liens in favour of the custodian if, for example, the customer has pledged them to secure an obligation to the custodian.) One way that a customer can be protected in the event of a custodian's insolvency is through segregation (identification) of customer securities on the books of the custodian (and of all subcustodians, and ultimately, the CSD). Even when customer securities are segregated from a custodian's own securities, customers may still be at risk of a loss if the custodian does not hold sufficient securities to satisfy all customer claims or if an individual customer's securities cannot be readily identified. Thus, entities that hold securities in custody (or maintain records of balances of securities) should reconcile their records regularly to keep them current and accurate. Other ways to safeguard or protect customers against misappropriation and theft include internal controls and insurance or other compensation schemes.

3.62 Ideally, a customer's securities are immune from claims made by third-party creditors of the custodian. Although the ideal is not realised in all circumstances, when the entities through which securities are held are performing their responsibilities effectively, the likelihood of a successful legal claim made on a customer's securities by a third-party creditor is minimised. In addition, in the event of a custodian's or subcustodian's insolvency, it should be highly improbable that a customer's securities could be frozen or made unavailable for an extended period of time. If that were to happen, the customer could come under liquidity pressures, suffer price losses or fail to meet its obligations. Segregation is a common device that facilitates the movement of a customer's positions by a receiver to a solvent custodian, thereby enabling customers to manage their positions and meet their settlement obligations. To bring these results about, it is essential that the legal framework support segregation of customer assets or other arrangements for prioritising claims in bankruptcy that serve to protect customers' holdings. It is also important for supervisory authorities to enforce effective segregation of customer assets by custodians.

3.63 Cross-border holdings of securities often involve several layers of intermediaries acting as custodians. For example, an institutional investor may hold its securities through a global custodian, which, in turn, holds securities in a subcustodian that is a member of the local CSD. Or a broker-dealer may hold its securities through its home country CSD or an international CSD, which, in turn, holds its securities through a cross-border link with the local CSD or through a local custodian. Mechanisms to protect customer assets may vary depending on the type of securities holding system instituted in a jurisdiction. Beneficial owners of securities should understand the extent of a custodian's responsibility for securities held through intermediate custodians.

3.64 To prevent unexpected losses, a global custodian should determine whether the legal framework in the jurisdiction of each of its local subcustodians has appropriate mechanisms to protect customer assets. Alternatively, a global custodian should keep its customers apprised of the custody risk arising from holding securities in a particular jurisdiction. Global custodians should also ascertain whether their local subcustodians employ appropriate accounting, safekeeping and segregation procedures for customer securities. Likewise, when home country CSDs and ICSDs establish links to other CSDs, they should ensure that those other CSDs protect customer securities adequately. With complex cross-border arrangements, it is imperative that sound practices and procedures be used by all entities in the chain of custodians so that the interests of beneficial owners are protected from legal actions relating to the insolvency of, or the commission of fraud by, any one of the custodians. Each jurisdiction should take the attributes of its securities holding system into account in judging whether its legal framework includes appropriate mechanisms to protect a custodian's customer against loss upon the insolvency of, or the commission of fraud by, a custodian.

Recommendation 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.

3.65 Governance arrangements encompass the relationships between management and owners and other interested parties, including users and authorities representing the public interest. The key components of governance include the ownership structure; the composition of the board; the reporting lines between management and board; and the processes that make management accountable for its performance, eg an audit committee or similar arrangement.

3.66 This recommendation focuses on CSDs and CCPs. These entities sit at the heart of the settlement process. Moreover, because their activities are subject to significant economies of scale, many are sole providers of services to the markets they serve. Therefore, their performance is a critical determinant of the safety and efficiency of those markets, which is a matter of public as well as private interest. Governance arrangements for these entities are extremely important because the economies of scale that characterise their activities impair the forces of competition that might otherwise be relied upon to ensure that they operate safely and efficiently. The same may be true of other providers of settlement services (for example trade comparison or messaging services), in which case their governance arrangements should also be consistent with this recommendation.

3.67 No single set of governance arrangements is appropriate for all institutions within the various securities markets and regulatory schemes. However, an effectively governed institution should meet certain basic requirements. Governance arrangements should be clearly specified, coherent, comprehensible and fully transparent. Objectives, those principally responsible for achieving them and the extent to which they have been met should be disclosed to owners, users and public authorities. Management should have the incentives and skills needed to achieve those objectives and should be fully accountable for its performance. Reporting lines between management and board should be clear and direct, and the board should contain suitable expertise and take account of all relevant interests. These basic requirements should be met regardless of the corporate structure of the institution, that is, whether it is a mutual or for-profit entity.

Recommendation 14: Access

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

3.68 Broad access to CSDs, CCPs and other providers of services critical to the clearance and settlement process (for example trade comparison or messaging services) encourages competition among users and promotes efficient, low-cost clearing and settlement. But participants must have sufficient technical, business and risk management expertise, necessary legal powers and adequate financial resources so that their activities do not generate unacceptable risk for the operator or for other users and their customers.

3.69 CSDs and CCPs therefore need to establish criteria that balance fairly the benefits of openness against the need to limit participation to those with the necessary expertise, powers and financial resources. The precise criteria are likely to vary according to the role the participant plays in the system. CCPs, which incur direct credit exposure to their members, tend to emphasise financial resource requirements. CSDs, particularly those in which members incur little or no liquidity and credit exposure to one another, tend to emphasise technical expertise and legal powers. Some CSDs and CCPs may establish more stringent criteria for members that act as custodian or clear for other members or for customers. Each operator must consider carefully the risks to which it and its users are exposed in determining appropriate access criteria.

3.70 Unnecessarily restrictive criteria can reduce efficiency and generate risk by concentrating activity and exposure within a small group of users. The more restrictive the criteria, the greater the importance of the operator assuring itself that its members can control the risks generated by their customers. To avoid discriminating against classes of users and introducing competitive distortions, criteria should be fair and objective. They should be clearly stated and publicly disclosed, so as to promote certainty and transparency. It may be possible to use as criteria indirect indicators of risk, such as whether an institution is supervised, but these indicators should be related clearly to the relevant risks the operator is managing. Some jurisdictions may find it useful for the authorities with responsibility for competition issues to have a role in reviewing access rules or for there to be an appeals procedure that is independent of the CSD or CCP if access is denied. CSDs and CCPs should have procedures facilitating the orderly exit of participants that no longer meet membership criteria, and those procedures should also be publicly disclosed.

3.71 Criteria that limit access on grounds other than risks to the CSD or CCP should be avoided. So, for example, restrictions on access for non-resident users are unlikely to be acceptable except where material doubts exist over whether system rules are enforceable against residents of other jurisdictions or where remote access would expose the operator or other users to unacceptable risks which cannot reasonably be mitigated. Restrictions on access for competitors and others providing comparable services is acceptable only if clearly justifiable on the same risk grounds. For example, to facilitate cross-border settlement, CSDs should, where consistent with law and public policy, grant access to foreign CSDs or foreign CCPs, provided the legal and other risks associated with such links can be controlled effectively (see Recommendation 19 on risks in cross-border links).

Recommendation 15: Efficiency

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

3.72 In assessing the efficiency of settlement systems, the needs of users and the costs imposed on them must be carefully balanced with the requirement that the system meet appropriate standards of safety and security. If systems are inefficient, financial activity may be distorted. However, the first priority of a securities settlement system is to assure domestic and foreign market participants that their trades will consistently settle on time, on the agreed terms of the transaction. If market participants view a settlement system as unsafe, they will not use it, regardless of the efficiency provided by the system.

3.73 Efficiency has several aspects, and it is difficult to assess the efficiency of a particular settlement system in any definitive manner. Accordingly, the focus of any assessment should largely be on whether the system operator or other relevant party has in place the mechanisms to review periodically the service levels, costs, pricing and operational reliability of the system.

3.74 Settlement systems should seek to meet the service requirements of system users in a cost-effective manner. This includes meeting the needs of its users, operating reliably and having adequate system capacity to handle both current and potential transaction volumes. When looking at the overall costs of settlement systems, it is important to include both the direct costs of operating any central facilities, such as costs to users, and indirect costs, such as liquidity costs.

3.75 The primary responsibility for promoting the efficiency and controlling the costs of a system lies with the designers, owners and operators. In some jurisdictions, regulatory authorities may have a responsibility to review the costs imposed on users, particularly where the system enjoys some form of monopoly over the service it provides. Antitrust and competition law principles may also be relevant. In the absence of a monopoly, market forces are likely to provide incentives to control costs.

3.76 Settlement systems may use a variety of mechanisms to improve efficiency. For example, immobilisation or dematerialisation of physical certificates enables securities transactions to be settled without the actual physical movement of securities. The book entry settlement of securities transactions increases the efficiency of the settlement system because it reduces manual errors, lowers costs and increases the speed of processing through automation.

3.77 Other examples of ways in which a cost-effective system may be achieved include: developing technical capabilities to meet operational service requirements of system users; where relevant, reducing the requirements for market participants to maintain multiple interfaces either by rationalisation of different securities systems or by the creation of consistent communication standards and system interface arrangements across different systems for market participants; and establishing communication procedures and standards that support straight through processing of transactions, wherever appropriate.

Recommendation 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.

3.78 The ability of all participants to communicate in a quick, reliable and accurate manner is central to achieving efficient domestic and cross-border securities transactions. Therefore, securities settlement systems should apply consistent communication procedures and standards relating to securities messages, securities identification processes and counterparty identification.

3.79 Increasingly, internationally recognised message and securities numbering procedures and standards are being utilised for cross-border transactions. These currently include the international numbering process (ISO 6166) and international message standard (ISO 15022). Not all securities settlement systems may wish to use these international procedures and standards for purely domestic securities transactions. However, securities settlement systems that want to play an active role in cross-border transactions will need to be able to process messages written according to these procedures and standards. This can be accomplished by developing systems for the efficient translation or conversion of these message procedures and standards into domestic equivalents and translating domestic acknowledgment and other messages and securities identification codes into the relevant international procedures and standards. Alternatively, SSSs may widen the scope of messages accepted and generated by the local system to include the generally accepted international procedures and standards.

3.80 Countries establishing or fundamentally reforming their securities settlement system should consider the benefits of adopting international procedures and standards from the outset in the design of their domestic systems.

Recommendation 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.

3.81 During the past decade there has been a growing appreciation of the contribution transparency can make to the stability and smooth functioning of financial markets. In general, financial markets operate most efficiently when participants have access to relevant information concerning the risks to which they are exposed and, therefore, can take actions to manage those risks. As a result, there has been a concerted effort to improve the public disclosures of major participants in the financial markets.

3.82 The need for transparency applies to the entities that form the clearing, settlement and custodial infrastructure of the securities markets. Informed market participants are better able to evaluate the costs and risks to which they are exposed as a result of participation in the system. They can then impose strong and effective discipline on operators of that infrastructure, encouraging them to pursue objectives that are consistent with those of owners and users and with any public policy concerns. CSDs and CCPs should therefore provide market participants with a full and clear understanding of their rights and obligations, the rules, regulations and laws governing the system, their governance procedures, any risks arising either to participants or the operator, and any steps taken to mitigate those risks. Relevant information should be accessible to market participants, for example through the internet. Information should be current, accurate and available in formats (eg language) that meet the needs of users.

3.83 Completion of the CPSS/IOSCO Disclosure Framework or completion and disclosure of the answers to the key questions (see Section 5) would be ways to provide market participants with the information they need about the risks of CSD or CCP services. If a CSD or CCP publicly discloses the answers to the key questions, it need not complete the CPSS/IOSCO Disclosure Framework. The key questions address all of the major topics covered by the Disclosure Framework. Whatever approach is taken, it is critical that the disclosures are complete and accurate. Any assessment of implementation of this recommendation should include a review of the accuracy and completeness of any disclosures.

Recommendation 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.

3.84 Securities regulators (including, in this context, banking supervisors where they have similar responsibilities and regulatory authority with respect to CSDs and CCPs) and central banks share the common objective of promoting the implementation of measures that enhance the safety and efficiency of securities settlement systems. The division of responsibilities for regulation and oversight of securities settlement systems among public authorities varies from country to country depending on the legal and institutional framework.

3.85 While the primary responsibility for ensuring the system's observance of the recommendations lies with the designers, owners and operators of securities settlement systems, regulation, oversight or both are needed to ensure that designers, owners and operators fulfil their responsibilities. Where the central bank itself operates a CSD, it should ensure that its system implements the recommendations.

3.86 The objectives and responsibilities as well as roles and major policies of the securities regulator and the central bank should be clearly defined and publicly disclosed, so that designers, owners, operators and participants of securities settlement systems are able to operate in a predictable environment and to act in a manner that is consistent with those policies.

3.87 The securities regulator and the central bank should have the ability and the resources to carry out regulation and oversight responsibilities effectively. Regulatory and oversight activities should have a sound basis, which may or may not be based on statute, depending on a country's legal and institutional framework. The securities regulator and the central bank should have adequate resources to carry out their regulatory and oversight functions, such as gathering information on securities settlement systems, assessing the operation and design of the systems, and taking action to promote systems' observance of the recommendations.[14]

3.88 Cooperation between the securities regulator and the central bank as well as their cooperation with other relevant authorities is important in achieving their respective policy goals. Issues raised by the operation of cross-border systems should be addressed in a way that delivers regulation/oversight consistent with each relevant authority's responsibilities and avoids unnecessary cost. Regulators/overseers can consider a variety of approaches including 1) information-sharing arrangements; 2) coordination of regulatory/oversight responsibilities for specific matters; and 3) other cooperation arrangements.[15] The approach selected may vary, depending on such issues as the law and regulatory approach in each jurisdiction. Option 2) might entail a cooperative agreement for the allocation of regulatory/oversight responsibility in line with the recommendation in the 1990 Lamfalussy Report.

Recommendation 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.

3.89 The various channels through which cross-border securities transactions may be effected and the sources of related risks are described in Annex 4. Settlement of cross-border securities transactions typically is more complicated and potentially involves more risk than domestic transactions. Cross-border transactions are usually settled through a local agent, often acting as a subcustodian on behalf of a global custodian, but a CSD can make alternative arrangements available to its participants by establishing links with other CSDs.

3.90 CSDs may perform different sets of functions including the provision of depository, credit, securities lending, collateral management, custodian and settlement services. Links also may provide these functions, and the choice of functions determines the design of the link, as do the structure of the CSDs themselves and the legal framework applicable in the respective jurisdictions. For example, to settle cross-border trades between their participants, one or both of the linked CSDs become a participant in the other CSD. Such links permit participants in either CSD to settle trades in securities

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[14] Public disclosure of the roles and major policies of the securities regulator and the central bank would be consistent with the International Monetary Fund's Code of Good Practices on Transparency in Monetary and Financial Policies (IMF, September 1999).

[15] Where a securities settlement system provides services in more than one jurisdiction, consultation and cooperation among relevant regulators/overseers will be essential to avoid duplicative (or conflicting) requirements, regulatory/oversight gaps and unnecessary costs. Within the context of the requirements of individual national laws and a firm foundation for the sharing of information, this process could include an allocation of regulatory/oversight roles to satisfy the responsibilities and objectives of each relevant authority. See the *Report of the Committee on Interbank Netting Schemes of the Central Banks of the Group of Ten Countries* (BIS, November 1990) (known as the Lamfalussy Report), pages 53-6. See *also Principles for the Oversight of Screen-based Trading Systems for Derivative Products – Review and Additions* (Technical Committee of IOSCO, October 2000).

from multiple jurisdictions through a single gateway operated by its domestic CSD or by an international CSD. Links also can facilitate data transmission and information exchange about securities holdings. Furthermore, by expanding the range of collateral that can be held in an account with a single CSD, links can reduce costs to participants of meeting various collateral requirements. Finally, links can reduce the number of intermediaries involved in cross-border settlements, which tends to reduce legal, operational and custody risks.

3.91 However, CSDs need to design links carefully to ensure that risks are, in fact, reduced. Because linked CSDs are located in different jurisdictions, they must address legal and operational complexities that are more challenging than those confronted in their domestic operations. If a link is not properly designed, settling transactions across the link could subject participants to new or exacerbated risks relative to the risks to which the participant would be subject if it settled its transactions through alternative channels, such as a global custodian or local agent. Links may present legal risks relating to a coordination of the rules of and the laws governing the linked systems, including laws and rules relating to netting and the finality of transfers, and potential conflicts of laws. Links may also present additional operational risks due to inefficiencies associated with the operation of the link. These inefficiencies may arise because of variations in the operating hours of the linked systems or out of the need to block securities that are earmarked for use in the consummation of transactions to be settled across a link. Lastly, settlement links may create significant credit and liquidity interdependencies between systems, particularly if one of the systems experiences an operational problem or if one of the systems permits provisional transfers of funds or securities that may be unwound. An operational failure or default in one system may precipitate settlement failures or defaults in the linked system and expose participants in the linked system (even participants who did not transact across the link) to losses.

3.92 A CSD should evaluate the financial integrity and operational reliability of any CSD with which it intends to establish a link. Any credit extensions between CSDs should be fully secured by securities, letters of credit or other high-quality collateral and should be subject to limits. Liquidity management arrangements should be implemented to address operational inefficiencies and potential defaults. Notwithstanding operational and legal difficulties, DVP should be achieved and, to eliminate the danger of unwinds, provisional transfers across the link should be prohibited or, at a minimum, their retransfer should be prohibited, until the first transfer is final. Links between CSDs should be designed so that the operation of the link in accordance with the rules of each CSD and the terms of any associated contracts between the CSDs and the CSDs and their participants will be supported by the legal framework in each jurisdiction in which the linked CSDs operate. Each jurisdiction should assess the extent to which its legal framework supports the proper operation of links between CSDs. To the extent jurisdictions permit CSDs operating there to establish a link, the legal frameworks of both jurisdictions should support the operation of the link in accordance with these recommendations. The laws applicable to the linked CSDs, their participants and the various steps and mechanisms in the operation of the link should be clear and transparent and should protect participants and their customers in case of the insolvency of one of the linked CSDs or one of their direct participants. Any choice of applicable law should be enforceable in the jurisdiction of each linked CSD and be documented and transparent to all participants. Issues associated with the protection of customer securities should also be addressed in the design and operation of cross-border links, particularly the need to reconcile holdings to determine that they are accurate and current (see Recommendation 12). Reconciliation is particularly important when more than two CSDs are involved (that is, the securities are kept by one CSD or custodian while the seller and the buyer participate in two other CSDs).

4. Implementation of recommendations

4.1 If these recommendations are to result in significant improvements in the safety and efficiency of SSSs, there needs to be a concerted effort to implement them. Primary responsibility for ensuring compliance with the recommendations lies with the designers, owners and operators of SSSs, which most often are private sector entities. Nonetheless, as part of their responsibility for regulation and oversight, central banks, securities regulators and, where relevant, banking supervisors should assess and promote implementation of the recommendations by SSSs.

4.2 Experience with efforts to implement other international standards highlights the importance of developing a clear and specific methodology for assessing whether the standards have been implemented, ideally in the form of a questionnaire.[16] The CPSS and the Technical Committee of IOSCO have directed the Task Force to complete development of a comprehensive assessment methodology by the end of 2002. As an important first step towards such a methodology, the next section identifies key questions pertaining to each of the recommendations. The answers to these questions are intended to provide a basis for a narrative evaluation of whether the recommendations for SSSs have been implemented. Given the complexity of SSSs and the diversity of institutional arrangements, an assessment of observance should evaluate the substance or quality of observance rather than adopt a simple "ticks and crosses" approach.

4.3 As noted in Recommendation 18, as part of their responsibilities for oversight and regulation, the appropriate national authorities should assess whether markets in their jurisdiction have implemented the recommendations. On the basis of their initial assessment, they should develop an action plan for implementation that should identify what specific steps need to be taken, by whom, and according to what timetable. Subsequent assessments of observance should be undertaken to gauge what has been achieved on completion of the action plan.

4.4 Following completion of the initial self-assessment by the appropriate national authorities, the CPSS and the Technical Committee of IOSCO see value in an external assessment of implementation. The CPSS sees the international financial institutions (IFIs, ie the International Monetary Fund and the World Bank) as having primary responsibility for external assessment, as part of their Financial Sector Assessment Program (FSAP). The Technical Committee of IOSCO believes that the CPSS and IOSCO should bear primary responsibility for external assessments, by organising peer reviews or at least by having a CPSS or IOSCO representative participate in the IFI assessments. These issues will be revisited by the Task Force and the CPSS and the Technical Committee of IOSCO in the course of the work on a comprehensive assessment methodology.

[16] See FSF, *Issues Paper of the Task Force on Implementation of Standards* (FSF, 2000).

5. Assessment of implementation: key questions

Recommendation 1: Legal framework

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

1. Are the laws, regulations, rules and contractual provisions of the jurisdiction and of the system governing securities settlement arrangements and related pre-settlement and securities lending arrangements (including repurchase agreements and other economically equivalent transactions) public and readily accessible to system participants?

2. Does the legal framework support:

(a) the enforceability of transactions?

(b) the protection of customer assets (particularly against insolvency of custodians and intermediaries)?

(c) the immobilisation or dematerialisation of securities and the transfer of securities by book entry?

(d) netting arrangements?

(e) securities lending?

(f) the finality of settlement?

(g) arrangements for achieving delivery versus payment?

(h) rules addressing the consequences of a participant's default?

(i) the liquidation of assets pledged or transferred as collateral to support participants' obligations?

3. Are the rules of the system enforceable notwithstanding the bankruptcy of a participant?

4. Does applicable law support appropriate choice of law provisions in contracts executed between the system operator(s), direct system participants and indirect system participants to permit operation of the securities settlement system (and related arrangements) in accordance with the system's rules?

5. Are jurisdictions other than the jurisdiction in which the system is established relevant for determining the adequacy of the legal framework? How has this been determined? Has the legal framework been evaluated for the other relevant jurisdictions?

6. Has a court in your jurisdiction ever failed to enforce a contract concluded through an SSS? If so, what contract and for what reasons?

Recommendation 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.

1. Are trades between direct market participants confirmed through a system provided by a stock exchange, trade organisation, CCP or other central entity? What is the process for confirming such trades?

2. What percentage of trades between direct market participants is submitted to a trade confirmation system on trade date (T+0)? How soon after submission are problems communicated to the appropriate parties?

3. Is there a trade confirmation system in place that is capable of comparing trade information between direct and indirect market participants by T+1? Is use of the system mandatory? For what types of indirect market participants? Is the information flow between direct and indirect market

participants bilateral or do both parties submit their respective information to a central matching or comparison entity?

4. What percentage of trades between indirect market participants is confirmed on trade date? By the contractual settlement date? Of those trades involving indirect market participants for which confirmation is required, what percentage is confirmed by T+0, by T+1, by the contractual settlement date?

5. What are the primary reasons for trades between direct market participants and between direct and indirect market participants not confirming successfully? What percentage of unconfirmed trades is resolved prior to the settlement date? How are unconfirmed trades dealt with?

6. What is the process for matching settlement instructions? How is matching of settlement instructions linked with trade confirmation?

7. Do the systems for confirmation of trades (by both direct and indirect participants) and matching of settlement instructions support straight through processing? How broadly are the systems used, and for what types of participants?

Recommendation 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.

1. Do trades settle on a "rolling" basis or on an "account period" basis? If on a rolling basis, how many business days after the trade date? If on an account basis, what is the length of the account period?

2. If settlement is on an account period basis or on a rolling basis at T+3 or longer, have the benefits and costs of a shorter settlement cycle been evaluated? By whom? Has the evaluation been documented? What was the conclusion? Did the conclusion differ depending on the type of security?

3. What percentage of trades (by number and value) fails to settle on the contractual date? What is the average duration of fails (by number and value)? What are the primary sources of fails?

4. Do market practices, regulations or SSS rules provide incentives for counterparties to settle their obligations on the contractual date? What forms do these incentives take, for example are penalties assessed for failing to settle?

5. What steps, if any, are taken to mitigate the risks of fails? Are fails required to be marked to market? Are open positions required to be closed out at market prices if the duration of the fail exceeds a specified number of business days? What entity or entities establish, monitor and enforce these requirements?

Recommendation 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.

1. Has a CCP mechanism (or an indemnification arrangement) been introduced? If so, what types of securities and market participants are covered? When does the CCP interpose itself between its participants to assume the role of guarantor to each trade?

2. If no such mechanism has been introduced, have the benefits and costs of such a mechanism been evaluated? By whom? Has the assessment been documented? What was the conclusion?

3. Does the CCP impose financial and operational standards for participation?

4. How does the CCP manage its credit risk vis-à-vis participants? Does it require participants to collateralise their exposures? How often are requirements recomputed and collateral collected?

5. What are the financial resources of the CCP? How does the CCP assess the adequacy of the size and liquidity of its financial resources? Does it require participants to contribute to a clearing or guarantee fund? Does the CCP have legally enforceable interests in or claims on the assets in the fund? Does the CCP have transparent and enforceable loss allocation rules?

6. How does the CCP manage its liquidity risk? Does the CCP have in place agreements permitting it to borrow against collateral?

7. Has a participant ever defaulted? If so, how did the CCP handle the default? In the past year, has the CCP experienced an operational failure that resulted in a delay in completing settlement?

Recommendation 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.

1. Are there markets for securities lending (or repurchase agreements and other economically equivalent transactions)? If any, how active are they? How wide is the range of securities and participants involved in the markets?

2. Are the markets for securities lending (or repurchase agreements and other economically equivalent transactions) clearly supported by law, regulation, tax and accounting systems?

3. How is the transfer of a loaned security executed? Does the transfer of the loaned security typically occur over accounts held at a central securities depository (CSD) or over accounts held with custodians?

4. What is the convention for the settlement of a securities lending transaction (T+0, T+1, etc)? Does the CSD or CCP facilitate securities lending? If so, do they perform any of the following services: (1) act as principal or agent in securities lending; (2) provide trade matching or comparison services for securities lending transactions; (3) provide guarantees or indemnification to counterparties in securities lending transactions?

5. What risk management procedures are used to monitor and/or limit risks stemming from securities lending activity (eg DVP, mark-to-market valuation of securities and collateral, daily margining, monitoring of counterparties)?

Recommendation 6: Central securities depositories (CSDs)

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

1. Are securities issued on a dematerialised basis or as a physical certificate? If the latter, are they immobilised in a CSD to facilitate settlement? What percentage of securities issued domestically is either immobilised or dematerialised, and what is the trend? Is the transfer of securities carried out by book entry or does it require any form of physical delivery?

2. What laws govern the book entry issuance, custody and transfer of securities? Do beneficial owners of securities have a direct property interest in identifiable securities or a claim against a pool of fungible securities? What ownership rights does an entry in the CSD confer? Is there an underlying register, and if so what is the legal status of a register entry? Is there a lag between settlement and registration and what are the implications of the time lag for finality? If the CSD is not the official registrar, does the transfer of securities in the CSD result automatically in the transfer of securities in the official register?

3. Is the issuance of securities centralised in a single CSD? If there are several CSDs, what are the criteria followed to determine which securities are issued in which CSD? Might a security be issued into, or held in, more than one CSD?

4. How does the CSD ensure that the amount of securities recorded in the accounts of its participants on its book at any time equals the total amount of securities immobilised or dematerialised in its system?

Recommendation 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.

1. Does the technical, legal and contractual framework ensure that delivery of securities takes place if, and only if, payment is received? If so, how? What proportion of trades are settled on a DVP basis?

2. What "model" of DVP is followed? Are securities transfers settled on a gross or net basis? Are funds transfers settled on a gross or net basis?

3. Is the CSD linked to other CSDs within the jurisdiction? Do any of the links permit transfers of securities against payment? If so, how is DVP achieved? Are there any links to CSDs in other jurisdiction? Do the links permit transfers of securities against payment? If so, how is DVP achieved? If not, what alternative arrangements are in place?

4. How are principal risk exposures between direct participants in the SSS and their customers controlled?

Recommendation 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.

1. Does the CSD permit final settlement of securities transfers on a DVP basis by the end of the settlement day? Is the timing of settlement finality clearly defined for transactions within the CSD and for transactions over a link to another CSD?

2. Does the CSD permit final settlement of DVP transfers on a continuous basis throughout the day or at certain designated times during the day? If the latter, at what times do transfers become final?

3. Is there a need for intraday or real-time finality to reduce risks? Do central banks use the SSS in monetary policy operations or to collateralise intraday credit extensions in a payment system? Do active trading parties or CCPs have a need for intraday or real-time finality to manage their risks effectively? Is there a need for intraday or real-time finality to facilitate settlement through links to other CSDs?

4. Does the CSD receive provisional transfers of securities from any other CSDs? If so, does it prohibit retransfer of these securities until they become final? If not, what would be the consequences of an unwind of such provisional transfers for the CSD's participants?

Recommendation 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.

1. Does the CSD extend intraday credit to participants? Are the credit extensions explicit (usually in a gross settlement system) or implicit (in a net settlement system)?

2. If the system is a net settlement system, would a failure of a participant to settle result in the reversal of transfers involving the defaulting participant and the recalculation of obligations of non-defaulting participants? Would all of the transfers involving the defaulting participant need to be reversed? When would the non-defaulting participants be informed of their recalculated obligations? When would they be required to meet the recalculated obligations?

3. What risk controls are in place to limit the likelihood of participants' inability to settle and the losses and liquidity pressures in such settlement failures?

4. Does the CSD ensure that timely settlement can be completed in the event of an inability to settle by the participant with the single largest obligation? If so, how?

5. Are the credit exposures of the CSD fully collateralised? If not, to what extent and to which participants does the CSD extend uncollateralised credit? Does the CSD have the capacity to value (ie mark to market) the securities posted as collateral and apply haircuts? Are limits imposed on credit extensions by the CSD?

6. Does the CSD permit debit balances in securities?

7. Has any CSD participant been unable to settle any obligations to the CSD? How did the CSD handle the default?

Recommendation 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.

1. How is the settlement of the cash leg of securities transfers effected? Is the settlement effected through transfers on the books of a central bank, a CSD organised as a limited purpose bank, or one or more financial institutions?

2. If a single bank is used, is it the central bank that issues the currency? Is the CSD itself organised as a limited purpose bank? If the central bank is not used, what steps are taken to protect CSD members from failure of the settlement institution?

3. If multiple settlement institutions can be used in principle, how many are used in practice? Who determines which institutions can be used as settlement institutions? What are the criteria? How concentrated are payment flows? Which institution is used by the highest percentage of CSD members? On an average day, what percentage of total payments is credited to accounts at that institution? What is the financial condition of that institution (for example, its capital ratios and its credit ratings)?

4. How quickly can CSD members retransfer the proceeds of settlement?

5. If multiple settlement institutions are used, are the resulting obligations between settlement institutions settled through a payment system that adheres to the Core Principles for Systemically Important Payment Systems?

6. If the system is a multicurrency system, how are non-domestic funds transfers effected?

Recommendation 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.

1. Does the system operator have a process to identify and manage its operational risks?

2. Does the system operator have internal control policies and procedures, including security measures, designed to limit operational risk? How are they enforced?

3. Does the system operator have contingency plans and backup facilities for the failure of key systems and are these rehearsed/tested? How long does it take to recover operations through backup systems? Do the procedures provide for preservation of all transaction data? How does the system operator ensure the integrity of messages?

4. How many times during the last year has a key system failed? How long did it take to resume processing? How much transaction data, if any, was lost?

5. Does the system operator have capacity plans for key systems and are key systems stress-tested periodically?

6. Are the matters above approved and reviewed regularly by senior management, including review by persons not responsible for the relevant operations? Are periodic external audits of the IT

(information technology) system conducted? Is there an independent internal audit function and does it review operational risk controls?

7. Does the system impose minimum operational or performance standards on third parties (for example, communications providers)? If the system operator has outsourced its operations to other entities, what measures are taken to ensure that outsourced operations meet the same standards as if they were provided directly by the system operator?

Recommendation 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.

1. What arrangements are used to protect customers' securities from theft, loss or misuse and to ensure that they will not become subject to claims of the custodian's creditors (for example, is segregation used)? Are those arrangements based upon specific laws and regulations? In the event of the custodian's insolvency, do those arrangements enable a customer's positions to be moved by a receiver to a solvent intermediary?

2. Are the entities holding securities in custody subject to mandatory internal or external audit, or both, to determine if there are sufficient securities to satisfy customer claims? On how many occasions during the past year have investors suffered losses as a result of their custodian? How large were the losses? What were the causes of such losses?

3. How often do the entities holding securities in custody reconcile their records?

4. Are the entities holding securities in custody subject to prudential supervision or regulation? Do audits or regulatory reviews examine the procedures and internal controls used in the safekeeping of securities?

5. What responsibilities does national law or regulation place on a custodian to determine the adequacy of the accounting and safekeeping practices used by its subcustodians? What responsibilities does national law or regulation place on a CSD to determine the adequacy of the accounting and safekeeping practices used by CSDs or ICSDs to which it is linked?

Recommendation 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.

1. How is the composition of the board determined? What steps are taken to ensure that board members have the necessary skills, and represent or take into account in their deliberations the full range of shareholder and user interests as well as the public interest?

2. What steps are taken to ensure that management has the incentives and skills needed to achieve the system's objectives and is accountable for its performance?

3. Are the system's public interest, financial and other objectives clearly articulated? What are they? Do the objectives reflect the needs of users as well as owners? How is the public interest taken into account?

4. Are the system's public interest, financial and other objectives publicly stated? How are major decisions communicated to owners and users? What information is publicly available regarding the system, its ownership and its board and management structure, and the process by which board members are appointed, major decisions taken and management made accountable?

Recommendation 14: Access

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

1. What rules determine who may access the system? Are they clearly disclosed to all potential applicants? Can restrictions on access to the system be justified in terms of the need to limit risks to the system operator or to other users?

2. Are the same rules applied regardless of the identity, type and location of the applicant? If not, what variations apply and why?

3. What steps are taken to confirm whether an applicant satisfies the relevant access rules? Initially? On an ongoing basis?

4. Under what conditions can participants terminate their membership? What arrangements does the system have in place to facilitate the exit of members who no longer meet the participation requirements? How quickly could any such exit take effect? How would the system ensure that any exit was as orderly as possible?

5. Are participants which do not satisfy access rules nevertheless able to access the system indirectly? What information does the system operator receive regarding their activities and the risk controls applied to them?

Recommendation 15: Efficiency

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

1. Does the system have sufficient capacity to meet existing operating demands and anticipated peak volumes without maintaining unnecessary levels of excess capacity? Does the system operator have in place procedures to periodically review its capacity levels against projected demand?

2. Does the system operator have in place procedures to benchmark its costs and charges against other systems and, if so, does this show whether the costs are higher or lower than those of comparable systems? Does the system operator have in place procedures to periodically review its pricing levels against its costs of operation?

3. Does the system give participants the mechanisms and management information to enable them to manage their liquidity effectively?

4. Does the system operator have in place procedures to determine whether participants are satisfied with the service levels they receive (for example, by regularly surveying its users and/or benchmarking its service levels against those of similar systems)?

5. Does the system operator have in place procedures to review system and technical interface issues with users and assess the costs to users of different system configurations?

Recommendation 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.

1. Does the securities settlement system use international communication procedures or standards or is it able to easily convert domestic procedures and standards into the relevant international communication procedures and standards for cross-border securities transactions?

Recommendation 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.

1. Do entities that provide the clearing, settlement and custodial infrastructure of securities markets make clear disclosures to market participants about their rules, regulations, relevant laws, governance procedures, risks, steps taken to mitigate risks, and the rights and obligations of participants?

2. How is this information made available? In what language or languages? In what form? Is it available on the internet? Has the system completed the questionnaire set out in the CPSS/IOSCO disclosure framework? Have the authorities responsible for regulation and oversight publicly disclosed their answers to the key questions regarding implementation of the recommendations?

3. What steps are taken to ensure that the disclosures are complete and accurate? Are there periodical reviews to ensure they remain current?

Recommendation 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.

1. How is the system regulated/overseen?

2. Are the objectives and responsibilities of the securities regulator, central bank and, where relevant, banking supervisor clearly defined with respect to securities settlement systems? Are their roles and major policies disclosed publicly? Are they written in plain language so that they can be fully understood by designers, operators and participants of securities settlement systems, and other relevant parties?

3. What is the regulatory and oversight framework based on? Is it a statute-based approach where specific tasks, responsibilities and powers are assigned to specific public authorities? Or a non-statute-based approach? If the latter, should consideration be given to establishing a new regulatory and oversight framework based on statute? Do the securities regulator and the central bank have experienced staff, proper resources and funding to carry out regulatory and oversight functions effectively?

4. Have the authorities assessed the extent to which securities settlement systems observe the recommendations? Has the assessment been documented? What were the conclusions?

5. Is there a framework for cooperation between the securities regulator and the central bank, such as for the exchange of information and views on securities settlement systems? Is there such a framework for cooperation with relevant authorities both within and outside the country?

Recommendation 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.

1. Has a CSD in your jurisdiction established a link with one or more non-domestic CSDs? What functions are provided by the CSDs in connection with the operation of the link?

2. Was a risk analysis of the design of the link undertaken?

3. How does the design of the link address each of the recommendations? How are systems, capacity or other operational issues addressed by the design of the link?

4. Have the respective rules and procedures of the linked CSDs regarding the operation of the link been published and made available to system participants and the public generally?

5. Identify the design features or other mechanisms by which the operation of the link reduces or eliminates the credit and liquidity risks associated with cross-border settlements identified in these recommendations.

6. How have any credit and liquidity interdependencies between the linked CSDs been addressed?

7. Does the link permit provisional transfers of securities across the link? If so, is the retransfer of these securities prohibited until the first transfer is final?

8. Has each relevant local regulatory authority evaluated and assessed the legal framework governing the link? Is there a framework for cooperation among relevant local authorities? What steps were taken to assure enforceability of rules of the link and conclusion of linked transactions with finality in each linked jurisdiction?

9. Do the legal frameworks applicable in the jurisdictions of the linked CSDs support the design of the link?

Annex 1:
Members of the
CPSS-IOSCO Task Force on Securities Settlement Systems

Co-Chairmen

Board of Governors of the Federal Reserve System	Patrick Parkinson
Australian Securities and Investments Commission	Shane Tregillis
Commissione Nazionale per le Società e la Borsa, Italy	Giovanni Sabatini (until May 2001)

Members

National Bank of Belgium	Johan Pissens
Comissão de Valores Mobiliários, Brazil	Fabio Menkes Elizabeth Garbayo (until January 2001)
The People's Bank of China	Li Yongqing
Czech National Bank	Tomáš Hládek
European Central Bank	Daniela Russo
Commission des Opérations de Bourse, France	Bénédicte Doumayrou
Bank of France	Yvon Lucas
Deutsche Bundesbank	Roland Neuschwander
Securities and Futures Commission, Hong Kong	Gerald Greiner
Reserve Bank of India	Usha Thorat
Securities and Exchange Board of India	Pratip Kar
Commissione Nazionale per le Società e la Borsa, Italy	Salvatore Lo Giudice
Bank of Japan	Shuhei Aoki
Financial Services Agency, Japan	Kotaro Nagasaki
Securities Commission, Malaysia	Ranjit Ajit Singh
Comisión Nacional Bancaria y de Valores, Mexico	Paola Bortoluz
Bank of Mexico	Francisco Solis
Securities Board of the Netherlands	Henk Bruggeman Hans Wolters (until May 2001)
Saudi Arabian Monetary Agency	Abdullah Al Suweilmy
Comisión Nacional del Mercado de Valores, Spain	José Manuel Portero Bujalance
Bank of England	John Trundle Alastair Wilson (until January 2001)
United States Securities and Exchange Commission	Larry Bergmann
US Commodity Futures Trading Commission	Andrea Corcoran

Board of Governors of the Federal Reserve System	Patricia White
Federal Reserve Bank of New York	Lawrence Radecki

Secretariat

Bank for International Settlements	Tomoyuki Shimoda Masayuki Mizuno (until January 2001)

Benoît Bourtembourg (National Bank of Belgium), Stella Leung (Securities and Futures Commission, Hong Kong), Shri Venkatappa (Reserve Bank of India), Tetsuya Sakamoto (Bank of Japan), Shareena Mohd Sheriff (Securities Commission, Malaysia), Jeffrey Mooney, Jennifer Lucier (US Securities and Exchange Commission) and Terry Hart (US Commodity Futures Trading Commission) also made significant contributions to the Task Force's work.

Annex 2:
The process of clearance and settlement

1. The process of clearing and settling a securities trade includes several key steps: the ***confirmation*** of the terms of the trade by the direct market participants; the calculation of the obligations of the counterparties resulting from the confirmation process, known as ***clearance***; and the final transfer of securities (***delivery***) in exchange for final transfer of funds (***payment***) in order to ***settle*** the obligations. Each of these steps can typically be accomplished in one or more ways. In addition, other important activities may take place within or ancillary to each of these steps. Such activities include the confirmation of trade details between direct market participants and indirect market participants (institutional investors and foreign investors or their agents), the communication of settlement instructions to central securities depositories and to ***custodians*** that many investors employ to ***safekeep*** their securities, and the ***registration*** of the ownership of shares.

Confirmation of trade and settlement instructions

2. Once a trade is executed, the first step in the clearing and settlement process is to ensure that the counterparties to the trade (the buyer and the seller) agree on the terms, that is, the security involved, the price, the amount to be exchanged, the settlement date and the counterparty. This process of trade confirmation can take place in a variety of ways, and the trading mechanism itself often determines how it occurs. Thus, for example, an electronic trading system automatically produces a confirmed trade between the two counterparties. Other trades are confirmed by exchanges, clearing corporations, trade associations, etc, based on data submitted to them by the counterparties. In over-the-counter markets, counterparties must submit the terms of the trade to each other for verification by some mechanism, be it fax, SWIFT message, or perhaps some specialised electronic messaging and matching service. While this process is occurring, the back offices of the direct counterparties to the trade also issue settlement instructions, which central securities depositories typically require to match before they effect any settlements.

3. Because the counterparties to trades are often acting on behalf of others, an important ancillary part of the trade confirmation process is the transmission of trade information to these ultimate investors. In order for settlement to be completed, investors must confirm trade details and issue instructions for the proper positioning of funds and securities. It is true that the counterparties to the trade will typically be responsible for performance of the transaction, regardless of whether the investors they are acting for agree that they have correctly executed instructions. However, the process by which indirect market participants confirm the details of transactions (sometimes termed affirmation) and issue settlement instructions to their custodians is important because it provides an early indication of trades for which delivery may be problematic. Currently, the process by which indirect market participants ***confirm*** trades and issue settlement instructions can be complex, in part because information may need to be transmitted to the direct market participant about the allocation of trades among various accounts of the indirect participant. Additional complexity often arises in cross-border trades because multiple intermediaries and custodians may be involved. Efforts are under way to simplify and automate this process to reduce costs and improve the efficiency of the clearing and settlement process. Automation efforts, sometimes referred to as straight through processing, focus on developing systems that require data to be entered only once in the clearing and settlement process.

Clearance

4. After trades have been confirmed, the next step in the process is clearance, the computation of the obligations of the counterparties to make deliveries or to make payments on the settlement date. Clearance typically occurs in one of two ways. Many systems compute the obligations for every trade individually. That is, clearance occurs on a ***gross*** or trade for trade basis. In other systems, the obligations are subject to ***netting***. In some markets, a central counterparty (CCP) interposes itself between the counterparties to a securities trade, taking on each party's obligation in relation to the other. By achieving netting of the underlying trade obligations, the use of a CCP reduces credit risk (both replacement cost and principal risk) and liquidity risk for the trade counterparties. Netting arrangements are increasingly common in securities markets with high volumes of trades because properly designed netting produces very significant reductions in gross exposures in such markets.

Trade or obligation netting arrangements should be distinguished from settlement or payment netting arrangements, in which underlying obligations are not extinguished but funds or securities transfer instructions are settled on a net basis.

Settlement

5. Settlement of a securities trade involves the final transfer of the securities from the seller to the buyer and the final transfer of funds from the buyer to the seller. Historically, securities transfers involved the physical movement of certificates. However, in recent years, securities have increasingly been immobilised in a ***central securities depository*** (CSD), or the CSD has held the securities in dematerialised form. Immobilisation or dematerialisation enables securities transfers to occur through accounting entries on the books of the CSD. A CSD may also offer funds accounts and permit funds transfers on its own books as a means of payment for securities. Alternatively, these funds transfers may occur on the books of another institution, such as a central bank or commercial bank.

6. While many CSDs handle the securities for a single domestic market, others serve multiple markets. In some cases, this has been accomplished by links between domestic CSDs (achieved by each depository opening an account with the other and acting as custodian for their respective members); in some cases, CSDs have merged. ***International central securities depositories*** (ICSDs) have also been set up to provide custodial, clearing and settlement services for a wide range of debt and equity securities from multiple markets. ICSDs provide their services by linking directly or indirectly (through a local custodian) to domestic CSDs.

7. The processing of transfer instructions by a securities transfer system and a funds transfer system often involves several stages during which the rights and obligations of the buyer and the seller are significantly different. For example, often books may have been debited or credited, but the transfer is provisional, and one or more parties retain the right by law or agreement to rescind the transfer. If the transfer can be rescinded by the sender of the instruction, the transfer is said to be revocable. Even if the instruction is irrevocable, if a party such as the system operator or a liquidator can rescind the transfer, it is considered provisional. At the stage at which the transfer becomes final, that is, an irrevocable and unconditional transfer, the obligation is discharged. Final transfer of a security by the seller to the buyer constitutes ***delivery***, and final transfer of funds from the buyer to the seller constitutes ***payment***. When delivery and payment have occurred, the settlement process is complete.

8. Many settlement systems have associated ***registries*** in which ownership of securities is listed in the records of the issuer. Registrars typically assist issuers in communicating with securities owners about corporate actions, dividends, and so forth. In some markets, securities may be registered in the name of a broker-dealer or custodian rather than that of the ultimate investor. These types of arrangements are sometimes referred to as indirect holding systems. In other markets, the beneficial or ultimate owner is represented on the issuer's official records, which may be the records of the CSD, a transfer agent or the issuer itself. This is sometimes known as a direct holding system. The efficiency of the registration system has implications for the clearing and settlement process because it determines the ease and speed with which full legal title to securities can be transferred. Full legal title may not be obtained until ownership is listed in a registry, and thus finality in the settlement process may not be achieved until registration is complete.

Safekeeping or custody

9. An ongoing part of the securities settlement process after the final settlement of a trade is the ***safekeeping*** of securities. While securities are typically held in a CSD, many of the ultimate holders of securities are not direct members of these depositories. Rather, investors establish ***custody*** relationships with depository members, who provide safekeeping and administrative services related to the holding and transfer of the securities. Custodians keep records of securities holdings on behalf of investors, for example, and monitor the receipt of dividends and interest payments and corporate actions (for example share repurchases, mergers and acquisitions). As cross-border investment activities have grown, many investors have centralised the safekeeping of their securities at a single global custodian. This custodian is generally a member of numerous depositories around the world; in instances where it is not a direct member, it establishes a subcustodial relationship with such a member.

Annex 3:
Risks in securities clearing and settlement

1. Participants in securities settlement systems are confronted with a variety of risks that must be identified and understood if they are to be controlled effectively. There is the risk that participants will not settle obligations either when due or at any time thereafter (credit risk) or that participants will settle obligations late (liquidity risk). If a commercial bank is used for money settlements, its failure could create credit and liquidity risks for the system. Other risks potentially arise from the safekeeping and administration of securities on behalf of others (custody risk), from deficiencies in information systems or internal controls (operational risk), or from the failure of the legal system to support the rules and procedures of the settlement system (legal risk). If the failure of one participant renders other participants unable to meet their obligations, the settlement system might be a source of instability for financial markets more generally (systemic risk).

Credit risk

2. Credit risk is the risk of loss from default by a participant, typically as a consequence of its insolvency. Two types of credit risk are usefully distinguished: pre-settlement risk and settlement risk. Pre-settlement risk is also called replacement cost risk, that is, the risk of loss of unrealised gains on unsettled contracts with the defaulting participant. Settlement risk is sometimes termed principal risk, the risk of the loss of securities delivered or payments made to the defaulting participant prior to detection of the default. Settlement risk also involves liquidity risk that arises on the settlement date, as discussed below.

3. The risk of loss of unrealised gains is termed the replacement cost component of credit risk. A failure to perform on the part of one party to the transaction will leave the solvent counterparty with the need to replace, at current market prices, the original transaction. When the solvent counterparty replaces the original transaction at current prices, however, it will lose the gains that had occurred on the transaction in the interval between the time of the trade and the default. The unrealised gain, if any, on a transaction is determined by comparing the market price of the security at the time of default with the contract price; the seller of a security is exposed to a replacement cost loss if the market price is below the contract price, while the buyer of the security is exposed to such a loss if the market price is above the contract price. Because future securities price movements are uncertain at the time of the trade, both counterparties face replacement cost risk. The magnitude of replacement cost risk depends on the volatility of the security price and the amount of time that elapses between the trade date and the settlement date. The replacement cost component of credit risk can be reduced by compressing the time between trade execution and settlement. It may also be reduced by implementing legally binding trade netting systems.

4. Another form of credit risk arises in connection with contracts scheduled to settle on the date on which a counterparty default may occur. On such contracts, the non-defaulting counterparty may be exposed to principal risk, that is, the risk that the seller of a security could deliver but not receive payment or that the buyer could make payment but not receive delivery. If either of these events occurred, the entire principal value of the transaction would be at risk, hence the term principal risk. Both the buyer and the seller of a security may be exposed to principal risk. The buyer is at risk if it is possible to complete payment but not receive delivery, and the seller is at risk if it is possible to complete delivery but not receive payment. Principal risk can be eliminated through use of a delivery versus payment (DVP) mechanism. A DVP mechanism links a funds transfer (payment) system and a securities transfer (delivery) system to ensure delivery occurs if and only if payment occurs. Central counterparties (CCPs) are sometimes used to mitigate principal risk. Principal risk in securities settlements is analogous to what is termed cross-currency settlement risk (Herstatt risk) in foreign exchange settlements. Principal risk is of particular importance because it involves the full value of securities transferred, and in the event of default it may entail credit losses so sizeable as to create systemic problems.

Liquidity risk

5. Liquidity risk includes the risk that the seller of a security who does not receive payment when due may have to borrow or liquidate assets to complete other payments. It also includes the risk that the buyer of the security does not receive delivery when due and may have to borrow the security in order to complete its own delivery obligation. Thus, both parties to a securities trade are exposed to liquidity risk on the settlement date. The costs associated with liquidity risk depend on the liquidity of the markets in which the affected party must make its adjustments; the more liquid the markets, the less costly the adjustment.

6. Liquidity problems have the potential to create systemic problems, particularly if they occur at a time when securities prices are changing rapidly and failures to meet obligations when due are more likely to create concerns about solvency. In the absence of a strong linkage between delivery and payment, the emergence of systemic liquidity problems at such times is especially likely, as the fear of a loss of the full principal value of securities or funds could induce some participants to withhold deliveries and payments, which, in turn, may prevent other participants from meeting their obligations.

Risk of settlement bank failure

7. In addition to the risks associated with counterparties, participants in a securities settlement system may face the risk of a settlement bank failure. The failure of any bank that provides cash accounts to settle payment obligations for CSD members could disrupt settlement and result in significant losses and liquidity pressures for those members. The impact on CSD members would be particularly severe if all CSD members were required to use the same settlement bank. Thus, when use of a single settlement bank is required, it is usually the central bank of issue or a limited purpose bank with strong risk controls and access to sizeable financial resources. Alternatively, the risk of settlement bank failure may be controlled and diversified by allowing CSD members to choose among multiple private settlement banks. In this case, the settlement banks ultimately settle among themselves through a cash settlement agent, which typically is a central bank or limited purpose bank.

Custody risk

8. Risk may arise from the safekeeping and administration of securities and financial instruments on behalf of others. Users of custodial services face risk from the potential loss of securities in the event that the holder of the securities becomes insolvent, acts negligently or commits fraud. Even if there is no loss of the value of the securities held by the custodian or subcustodian, the ability of participants to transfer the securities might temporarily be impaired. Custody risk is particularly important for indirect participants in securities settlement systems whose securities are held in custody by direct participants, but CSDs also pose custody risk.

Operational risk

9. Operational risk is the risk of unexpected losses as a result of deficiencies in systems and controls, human error or management failure. It can reduce the effectiveness of other measures the settlement system takes to manage risk, for example by impairing the system's ability to complete settlement, perhaps creating liquidity pressures for itself or its participants, or by hampering the system's ability to monitor and manage its credit exposures. Possible operational failures include errors or delays in processing, system outages, insufficient capacity or fraud by staff.

Legal risk

10. Legal risk is 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. Loss and legal risk can also arise if the application of these laws and regulations is uncertain. For example, legal risk encompasses the risk a counterparty faces from an unexpected application of a law that renders contracts illegal or unenforceable. It also includes the risk of loss resulting from a delay in the recovery of funds or securities or a freezing of positions. In a cross-border context, the laws of more than one jurisdiction apply or can potentially apply to a transaction, conduct or relationship. Counterparties may face loss

resulting from the application of a different law than they had expected, or had specified in a contract, by a court in a relevant jurisdiction. Legal risk thus exacerbates other risks, such as market, credit or liquidity risk, relating to the integrity of transactions.

Systemic risk

11. Systemic risk is the risk that the inability of one institution to meet its obligations when due will cause other institutions to fail to meet their obligations when due. The possibility that the liquidity and credit problems precipitated by these failures to perform will disrupt financial markets and impair the functioning of payment and settlement systems is of particular concern. Securities settlement systems can create significant credit, liquidity and other risks for their participants. Payment systems and clearing systems for other financial instruments often depend critically on securities settlement systems because of their use of securities as collateral in their own risk management procedures. Market liquidity in securities markets is dependent on confidence in the safety and reliability of settlement systems because traders will be reluctant to deal if they doubt that the trade will settle. Thus it is important that the risks in securities settlement systems be appropriately managed in order that securities settlement systems are not a source of systemic disturbances to securities markets and other payment and settlement systems.

Annex 4:
Settlement of cross-border trades: channels and sources of risk

1. The settlement of a cross-border trade takes place in a country other than the country in which one or both trade counterparties are located. Often, settlement takes place in the country where the security is issued, but there are exceptions to this general pattern. For example, large volumes of trades of eurobonds and European government securities are currently settled in either Belgium or Luxembourg through the international central securities depositories (ICSDs), Euroclear and Clearstream. Cross-border consolidation of securities settlement systems could make settlements outside the country of issue increasingly common.

Settlement channels

2. There are five common channels through which the settlement of a cross-border trade could be effected, depending upon how the non-resident counterparty to the trade accesses the settlement system where the security is issued.[17] Use of these channels for cross-border settlements is not mutually exclusive. Active market participants may use one channel for certain types of securities or counterparties and another channel for other securities and counterparties.

3. *Direct membership*. In this channel, the non-resident counterparty establishes direct access to the settlement system in the country where the security is issued through membership in the relevant CSD. This channel may not be available to all non-resident counterparties, however, because some systems prohibit non-resident firms from becoming direct participants. Alternatively, local branches or subsidiaries of non-resident firms may be allowed to participate.

4. *Local agent*. A common method of settling cross-border trades is to employ a local agent or custodian in the country of issue. This agent is a direct member of the CSD and can perform settlement and settlement-related services. For example, the agent may provide banking services such as funds transfers, overdraft facilities, foreign exchange transactions, and securities borrowing and lending. Custody services that would typically be offered include securities safekeeping, collection of interest and dividends, and processing of corporate actions. The precise mix of services that the non-resident counterparty obtains from the local agent is determined contractually.

5. *Global custodian*. A global custodian provides its customers with access to settlement and custody services in multiple markets through a network of subcustodians, both the global custodian's own branches and other local agents. The non-resident counterparty is thus able to employ a single communication link for providing settlement instructions and for receiving reports from local markets. The global custodian also typically offers accounting and credit services, including multicurrency banking and cash management services. Some global custodians provide their customers with daily conversion of all foreign currency denominated receipts and payments into the investor's home currency.

6. *International central securities depository*. The ICSDs, Euroclear and Clearstream, were originally created to provide settlement and custody services for eurobonds. The services offered have expanded, however, and the ICSDs now offer settlements in a wide range of securities and currencies. Settlements can occur in more than one way. The ICSDs have developed links to dozens of local CSDs that enable them to settle trades between their participants and counterparties in the local markets. In some cases, the ICSDs have agents in the local market that settle trades on behalf of the ICSDs' participants. When two participants in the ICSDs trade with each other, the ICSDs can settle these trades on their own books or via a "bridge" that links their two systems. Because the ICSDs have a critical mass of actively trading participants, a substantial portion of activity can be settled on their books.

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[17] These channels for settling cross-border trades are described more extensively in CPSS, *Cross-Border Securities Settlements* (BIS, 1995).

7. *Links between CSDs*. Links between CSDs offer another channel for settling cross-border trades between members of different CSDs. Links can take several different forms. Some are reciprocal, that is, participants in either system can settle trades in the other system. Other links permit settlements only in one direction. In some links, the respective CSDs become full participants in the other system. Other links allow only free-of-payment transfers.

Risks in cross-border settlements

8. Cross-border settlements may involve foreign exchange transactions that entail replacement cost and liquidity risks, but in many other respects the types of risks associated with cross-border settlements are the same as those that arise in domestic settlements. Nonetheless, the channels through which cross-border settlements are effected may alter the character of some of these risks. The greater use of custodians (local agents, global custodians, CSDs and ICSDs) in cross-border settlements and the multiple legal jurisdictions involved heighten custody and legal risk. Cross-border settlements more frequently occur outside the CSD in the country of issue, and thus are more often subject to rules other than those of the local CSD, entailing different risks for counterparties. Finally, cross-border settlements are sometimes effected through links between systems, which may expose participants in one system to weaknesses in the risk management procedures of another.

9. *Custody risk*. Whenever market participants hold securities indirectly they face custody risk. Custody risk is a part of domestic settlements, but the extent of use of custodians is much greater in cross-border settlements, and thus the custody risk tends to be greater. Several of the channels for settling cross-border trades - local agents, global custodians, ICSDs and CSD links - involve a custodian or a custodian and subcustodians. The tiering of holdings such as occurs with subcustodians not only exacerbates custody risk but also makes the magnitude of such risk more difficult to assess.

10. *Legal risk*. The most important legal issues that arise in cross-border settlements, but not in domestic settlements, relate to choice of law and conflict of laws. These concepts address the basic question of the law that governs the relationship between the parties to a securities transaction. By definition, cross-border settlements involve multiple legal jurisdictions. This complicates the analysis of legal risk. It may introduce new risks as system operators choose the law that will govern the system and the relationships between system participants, and it may introduce risks if such choices are not honoured by the courts in relevant jurisdictions.

11. *Settlements outside the local CSD*. When multiple counterparties use a single custodian, it is possible to settle trades on the books of the custodian rather than on the books of the CSD of issue. This can occur in the settlement of domestic trades where a local bank acts as custodian for many active market participants, but it is perhaps more common in the settlement of cross-border trades. The ICSDs settle large volumes of trades between their participants internally through debits and credits to accounts. Likewise, a purpose of CSD-to-CSD links is to allow the non-local CSD to settle trades between its participants in the non-local securities internally. When trades are settled in an intermediary other than the CSD of issue, those trades settle according to the rules of the intermediary, which may differ from the rules of the local CSD. As a result, risks may differ.

12. *Cross-system settlements*. Cross-system settlements are effected through links between securities settlement systems, both between pairs of CSDs and between CSDs and ICSDs. Such cross-system settlements often involve inefficiencies that derive from the need for the systems to exchange information on whether the two counterparties have the securities and funds (or access to credit) necessary to complete settlement. Operational difficulties may arise from variations in operating hours and time zones. Often, counterparties must pre-position or borrow securities and funds to ensure their ability to settle in a timely fashion, thereby increasing the liquidity needs of counterparties.

13. Special problems may arise if one or both of the securities settlement systems make provisional transfers of securities that are not final until money settlement is completed later in the day. If a system receiving a provisional transfer allows that security to be redelivered before money settlement is complete, an unwind of the provisional transfer could lead to unwinds and losses within its own system. The implications for those participating through a link will depend upon how the losses are allocated by the system receiving the provisional transfer.

14. Even if they are not vulnerable to unwinds from provisional transfers, links create operational dependencies between the systems. An operational problem in one system can result in failures to complete deliveries which, in turn, could affect the completion of settlement in a linked system. Credit

and liquidity dependencies are also created when one system provides another with a cash account. The system using the account is exposed to credit and liquidity risk on balances held in the account; the system providing the account is exposed to credit and liquidity risk if it permits overdrafts or debit balances in the account.

Annex 5: Glossary

back-to-back transaction	A pair of transactions that requires a counterparty to receive and redeliver the same securities on the same day. The transactions involved may be outright purchases and sales or collateral transactions (repurchase agreements or securities loans). For example, a securities dealer might buy and sell the same securities for the same settlement date in the course of making markets for customers or it might buy securities for inventory and finance the position through a repurchase agreement.
beneficial ownership/interest	Entitlement to receive some or all of the rights deriving from ownership of a security or financial instrument (eg income, voting rights, power to transfer). Beneficial ownership is usually distinguished from legal ownership of a security or financial instrument.
book entry system	An accounting system that permits the electronic transfer of securities without the movement of certificates.
cash settlement agent	The entity whose assets are used to settle the ultimate payment obligations arising from securities transfers within the CSD. Accounts with the cash settlement agent are held by settlement banks which act on their own behalf and may also offer payment services to participants that do not have accounts with the settlement agent.
central counterparty (CCP)	An entity that interposes itself between the counterparties to trades, acting as the buyer to every seller and the seller to every buyer.
central securities depository (CSD)	An institution for holding securities that enables securities transactions to be processed by means of book entries. Physical securities may be immobilised by the depository or securities may be dematerialised (so that they exist only as electronic records).
certificate	A document that evidences the ownership of, and the undertakings of the issuer of, a security or financial instrument.
choice of law	A contractual provision by which parties choose the law that will govern their contract or relationship. Choice of law may also refer to the question of what law should govern in the case of a conflict of laws. See conflict of laws.
clearance	The term “clearance” has two meanings in the securities markets. It may mean the process of calculating the mutual obligations of market participants, usually on a net basis, for the exchange of securities and money. It may also signify the process of transferring securities on the settlement date, and in this sense the term “clearing system” is sometimes used to refer to securities settlement systems.
collateral	An asset or third-party commitment that is accepted by the collateral taker to secure an obligation of the collateral provider vis-à-vis the collateral taker.
confirmation	The process in which the terms of a trade are verified either by market participants directly or by some central entity (typically the marketplace). When direct market participants execute trades on behalf of indirect market participants, trade confirmation often occurs on two separate tracks: verification (generally termed confirmation) of the terms of the trade between direct participants and verification (sometimes termed affirmation) of the intended terms between each direct participant and the indirect participant for whom the direct participant is acting.

conflict of laws	An inconsistency or difference in the laws of jurisdictions that have a potential interest in a transaction. Each jurisdiction's conflict of laws rules specify the criteria that determine the law applicable in such a case.
counterparty	A party to a trade.
credit risk	The risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter. Credit risk includes replacement cost risk and principal risk. It also includes the risk of settlement bank failure.
cross-border settlement	A settlement that takes place in a country other than the country in which one trade counterparty or both are located.
cross-border trade	A trade that requires cross-border settlement.
cross-margining agreement	An agreement between CCPs to consider positions and supporting collateral at their respective organisations as a portfolio for participants that are members of both organisations. Positions held in cross-margined accounts are subject to lower collateral requirements because the positions held at one CCP collateralise part of the exposure of related positions at the other CCP. In the event of default by a participant whose account is cross-margined, one CCP can use the positions and collateral in the cross-margined account at the other CCP to cover losses.
cross-system settlement	A settlement of a trade that is effected through a link between two separate securities settlement systems.
custodian	An entity, often a bank, that safekeeps securities for its customers and may provide various other services, including clearance and settlement, cash management, foreign exchange and securities lending.
custody	The safekeeping and administration of securities and other financial instruments on behalf of others.
custody risk	The risk of loss on securities in safekeeping (custody) as a result of the custodian's insolvency, negligence, misuse of assets, fraud, poor administration or inadequate record keeping.
delivery	Final transfer of a security or financial instrument.
delivery versus payment	A link between securities transfers and funds transfers that ensures that delivery occurs if, and only if, payment occurs.
dematerialisation	The elimination of physical certificates or documents of title that represent ownership of securities so that securities exist only as accounting records.
direct holding system	A holding system for securities in which the beneficial owner of securities (i) is reflected as the legal owner on the issuer's official register(s) (and, if the securities are required to be certificated, the securities are issued in the name of the owner) or (ii) is in possession of securities issued to bearer. The issuer, CSD, participants in the CSD, and third-party claimants are required to recognise the owner's rights and interests in the securities based on the record of the register or the owner's possession of the security.
direct market participant	A broker-dealer or member of an exchange that directly executes an order.

failed transaction	A securities transaction that does not settle on the contractual settlement date.
final settlement	The discharge of an obligation by a transfer of funds and a transfer of securities that have become irrevocable and unconditional.
global custodian	A custodian that provides its customers with custody services in respect of securities traded and settled not only in the country in which the custodian is located but also in numerous other countries throughout the world.
gross settlement system	A transfer system in which the settlement of funds or securities transfer instructions occurs individually (on an instruction by instruction basis).
immobilisation	Placement of physical certificates for securities and financial instruments in a central securities depository so that subsequent transfers can be made by book entry, that is, by debits from and credits to holders' accounts at the depository.
indirect holding system	A holding system for securities in which (i) a nominee is reflected as the legal owner of securities on the official register of the issuer and the beneficial owner (or the intermediary through which the latter holds the security) is reflected as the owner of the securities on the books of the nominee or (ii) bearer securities are deposited with an intermediary and the intermediary maintains an account reflecting the beneficial owner's rights and interests in the security. The beneficial owner's rights and interests in securities in an indirect holding system are transferred by accounting entries on the nominee's or relevant intermediary's books.
indirect market participant	A market participant that uses an intermediary for the execution of trades on its behalf. Generally, institutional investors and cross-border clients are indirect market participants.
international central securities depository (ICSD)	A central securities depository that settles trades in international securities and in various domestic securities, usually through direct or indirect (through local agents) links to local CSDs.
issuer	The entity that is obligated on a security or financial instrument.
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.
local agent	A custodian that provides custody services for securities traded and settled in the country in which it is located to trade counterparties and settlement intermediaries located in other countries (non-residents).
margin	Generally, the term for collateral used to secure an obligation, either realised or potential. In securities markets, the collateral deposited by a customer to secure a loan from a broker to purchase shares. In organisations with a CCP, the deposit of collateral to guarantee performance on an obligation or cover potential market movements on unsettled transactions is sometimes referred to as margin.
marking to market	The practice of revaluing securities and financial instruments using current market prices and requiring the counterparty with an as yet unrealised loss on the contract to transfer funds or securities equal to the value of the loss to the other counterparty.

master agreement	An agreement that sets forth the standard terms and conditions applicable to all or a defined subset of transactions that the parties may enter into from time to time, including the terms and conditions of closeout netting.
net settlement system	A settlement system in which final settlement of transfer instructions occurs on a net basis at one or more discrete, prespecified times during the processing day.
netting	An agreed offsetting of mutual obligations by trading partners or participants in a system, including the netting of trade obligations, for example through a CCP, and also agreements to settle securities or funds transfer instructions on a net basis.
nominee	A person or entity named by another to act on its behalf. A nominee is commonly used in a securities transaction to obtain registration and legal ownership of a security.
operational risk	The risk that deficiencies in information systems or internal controls, human errors or management failures will result in unexpected losses.
oversight	A public policy activity principally intended to promote the safety and efficiency of payment and securities settlement systems and in particular to reduce systemic risk.
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.
provisional transfer	A conditional transfer in which one or more parties retain the right by law or agreement to rescind the transfer.
real-time gross settlement	The continuous settlement of funds or securities transfers individually on an order by order basis as they are received.
registration	The listing of ownership of securities in the records of the issuer. This task is often performed by an official registrar/transfer agent.
repurchase agreement	A contract to sell and subsequently repurchase securities at a specified date and price.
revocable transfer	A transfer that a system operator or a system participant can rescind.
rolling settlement	A procedure in which settlement takes place a given number of business days after the date of the trade. This is in contrast to account period procedures in which the settlement of trades takes place only on a certain day, for example a certain day of the week or month, for all trades that occurred within the account period.
same day funds	Money balances that the recipient has the right to transfer or withdraw from an account on the day of receipt.
securities settlement system	The full set of institutional arrangements for confirmation, clearance and settlement of securities trades and safekeeping of securities.
segregation	A method of protecting client assets and positions by holding and designating them separately from those of the carrying firm or broker.
settlement	The completion of a transaction through final transfer of securities and funds between the buyer and the seller.
settlement agent	See cash settlement agent.

settlement bank	The entity that maintains accounts with the settlement agent in order to settle payment obligations arising from securities transfers, both on its own behalf and for other market participants.
settlement date	The date on which parties to a securities transaction agree that settlement is to take place. This intended settlement date is sometimes referred to as the contractual settlement date.
settlement interval	The amount of time that elapses between the trade date (T) and the settlement date. The settlement interval is typically measured relative to the trade date; for example, if settlement is to occur on the third business day following the date of the trade, the settlement interval is referred to as T+3.
settlement risk	A general term used to designate the risk that settlement in a transfer system will not take place as expected. This risk may comprise both credit and liquidity risk.
straight through processing	The completion of pre-settlement and settlement processes based on trade data that is manually entered only once into an automated system.
subcustodian	A custodian that holds securities on behalf of another custodian. A global custodian, for example, may hold securities through another custodian in a local market. The latter custodian is known as a subcustodian.
SWIFT	SWIFT, the Society for Worldwide Interbank Financial Telecommunications, provides a secure messaging service for interbank communication. Its services are extensively used in the foreign exchange, money and securities markets for confirmation and payment messages.
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.
unwind	A procedure followed in some clearing and settlement systems in which transfers of securities or funds are settled on a net basis, with the transfers provisional until all participants have discharged their settlement obligations. If a participant fails to settle, some or all of the provisional transfers involving that participant are deleted from the system, and the settlement obligations from the remaining participants are recalculated. This process of recalculating obligations is known as an unwind.