COMMITTEE ON PAYMENT AND SETTLEMENT SYSTEMS
(CPSS)

TECHNICAL COMMITTEE OF THE INTERNATIONAL ORGANIZATION OF SECURITIES COMMISSIONS
(IOSCO)

Consultative Report
January 2001

RECOMMENDATIONS FOR SECURITIES SETTLEMENT SYSTEMS

Report of the
CPSS-IOSCO Joint Task Force on
Securities Settlement Systems

BANK FOR INTERNATIONAL SETTLEMENTS
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Foreword

A number of international initiatives are under way which aim to maintain 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 just produced the final version of the *Core Principles for Systemically Important Payment Systems* (BIS, 2001). Building on the previous work, the CPSS and IOSCO are now aiming to contribute further to this process by jointly developing recommendations for securities settlement systems, to improve the safety and efficiency of these systems.

In order to move this initiative forward, the CPSS and IOSCO created the Task Force on Securities Settlement Systems in December 1999. The Task Force comprises 28 central bankers and securities regulators from 18 countries and regions and from the European Union. In addition, at an early stage of its work 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. The Task Force has also reviewed private sector efforts in this area, notably the Group of Thirty's 1989 Standards, and has discussed the Task Force's work with private sector operators of and participants in securities settlement systems.

The present consultative report on the design, operation and oversight of securities settlement systems identifies, in 18 headline recommendations and accompanying explanatory texts, the minimum requirements that such systems should meet and the best practices that they should strive for. 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. The report also includes key questions pertaining to each of the recommendations as an important first step towards establishing a methodology for assessing the extent to which they have been implemented. The answers to these questions are intended to provide a basis for a narrative evaluation of whether the recommendations for securities settlement systems have been implemented.

The CPSS and IOSCO are now releasing the recommendations in this report for consultation, and are seeking public comments from all interested parties by 9 April 2001. We believe that wide participation in the planned public consultation process should make the report most fruitful and we therefore encourage any interested parties to submit their comments to the Task Force. The Task Force will review the comments and develop the final recommendations in due course.

The CPSS and IOSCO are grateful to the members of the Task Force and its Co-Chairmen, Mr. Patrick Parkinson of the Board of Governors of the Federal Reserve System and Mr. Giovanni Sabatini of the Commissione Nazionale per le Società e la Borsa, for their excellent work in preparing this consultative report in a timely manner. We are looking to them to take the lead in completing this important initiative.

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

David Brown, Chairman
Technical Committee, IOSCO

Note to readers

The consultation period will last until 9 April 2001 (inclusive). Interested parties are invited to comment on any aspect of the report. However, views and suggestions on the topics set out below are particularly welcome:

- Do the Recommendations adequately cover all the relevant topics? Please describe any issues which you feel have been missed and should be addressed in the report.
- Does the explanatory text for each Recommendation provide an adequate rationale for the Recommendation and elaborate its implications sufficiently clearly? Please indicate any areas which you think deserve further clarification.
- Do the key questions concerning each Recommendation in Section 5 of the report address the relevant issues in such a way as to enable an accurate assessment of whether the recommendations have been implemented?

Comments in English are invited by 9 April 2001 (inclusive) from all interested parties. They may be sent to:

Secretariat to the CPSS-IOSCO Joint Task Force on Securities Settlement Systems
Bank for International Settlements
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Fax: (+41 61) 280 9100
E-mail: cpss@bis.org (please mention “Joint Task Force Recommendations” in the subject line of the message)

We strongly recommend that you send comments by fax or e-mail first, to avoid possible delays in postal delivery; the Secretariat will send an acknowledgement immediately upon receipt. Please note that it may not be possible to give sufficient consideration to comments received after the deadline.

Table of contents

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 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 unquestionably have fostered very significant progress in many markets, both in industrialised countries and in emerging markets. Nonetheless, with the passage of more than a decade, some of the G30 standards no longer represent best practice. 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 sectors 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 (on 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 IOSCO created the Joint Task Force on Securities Settlement Systems. The Task Force is comprised of 28 central bankers

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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).

and securities regulators from 18 countries and regions and the European Union (Annex 1). The Task Force's mandate (Annex 2) 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 requirements that systems should meet and best practices that they should strive for. 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 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 decided to define 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 3, 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 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.

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 sought to draw 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 The Task Force decided not to develop a separate set of recommendations for the settlement of cross-border trades. As discussed in Annex 5, 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.

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[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.

[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.

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.

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, central counterparties, settlement banks or 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 Task Force's 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 clear methodology for assessing progress towards implementation by identifying key questions pertaining to each recommendation.

Exhibit 1
CPSS-IOSCO Task Force
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 assessed.

4. Central counterparties

The benefits and costs of a central counterparty should be assessed. Where such a mechanism is introduced, the central counterparty 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)

Securities settlement systems 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 on a DVP basis 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 participant defaults

Deferred 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. In any system in which a CSD extends credit or arranges securities loans to facilitate settlement, best practice is for the resulting credit exposures to be fully collateralised.

10. Cash settlement assets

Assets used to settle the cash leg of securities transactions between CSD members 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 a settlement bank.

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 central counterparties should be designed to fulfil public interest requirements and to promote the objectives of owners and users.

14. Access

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

18. Regulation and oversight

Securities settlement systems should be subject to regulation and oversight. The responsibilities and objectives of the securities regulator and the central bank with respect to SSSs should be clearly defined, and their roles and major policies should be publicly disclosed. They should have the ability and the resources to perform their responsibilities, including assessing and promoting implementation of these recommendations. They should cooperate with each other and with other relevant authorities.

2. Public policy objectives

2.1 In formulating its recommendations, the Task Force sought 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 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 fulfil the various functions in the operation of the SSS. The efficiency of such 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 3 and 4. 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 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.

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 (i) the laws, rules and procedures that support the holding, transfer, pledging and lending of securities and related payments; and (ii) 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 an SSS includes general laws, such as property and insolvency laws, as well as special laws 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. 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.

3.3 The laws, regulations, rules and procedures governing the operation of an SSS should be clearly stated, understandable, internally coherent and unambiguous. They should be public and accessible to system participants.

3.4 The legal framework for an SSS must be evaluated in the relevant jurisdictions. These include the jurisdiction in which the system and its direct participants are established, domiciled or have their principal office and any jurisdiction whose laws govern 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.

3.5 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. Cross-border systems face 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 which 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 and the relationships between system participants. System operators and participants also should be aware of applicable limitations on their ability to choose the law that will govern the system. 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 participants' non-system creditors. For example, an individual customer's 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 owing to the system or to the other system participants.

3.6 The legal framework should include principles that support appropriate contractual choices of law in the context of both domestic and cross-border operations. In many cases, where otherwise appropriate, the law chosen will be that of the location of the central counterparty or a CSD. Ordinarily, however, a relevant jurisdiction does not permit system operators and participants to

circumvent the fundamental public policy of that jurisdiction through a choice of law in the rules and contracts governing the system. For example, jurisdictions that require rights in securities to be recorded in a registry generally do not permit parties to override that law through a contractual choice of law. In any event, it would be desirable for courts in relevant jurisdictions to interpret their national laws, as far as possible, to uphold the contractual choice of law made by the system operators and direct participants to govern an SSS.

3.7 Each jurisdiction should seek to promote national laws and public policies that support the Task Force's recommendations for SSSs and related arrangements. Key aspects of the settlement process that the legal framework should support include: enforceability of transactions, protection of customer assets (particularly against insolvency of custodians), 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, liquidation of assets pledged or transferred as collateral, and protection of the interests of beneficial owners. 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. If the legal framework in a particular jurisdiction does not support the existing SSS or the implementation of the Task Force's recommendations, competent regulatory and supervisory authorities should seek appropriate 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.

3.8 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. When market participants execute trades on behalf of indirect market participants, 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, trade confirmation 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. In addition, speedy, accurate verification of trades is an important precondition for avoiding settlement failures, especially when the settlement cycle is relatively short. (See Recommendation 3 regarding the length of settlement cycles.)

3.9 Trade confirmation systems are increasingly becoming automated. Many markets already have in place systems for the automatic matching of trades between direct market participants. (In many markets, the use of electronic trading systems obviates the need to match the terms of trade.) Automated matching systems are also being proposed and implemented for trade confirmation between direct market participants and fund managers or custodians that act as agents for indirect market participants such as institutional investors, particularly in markets with high trade volumes or values or with significant cross-border activity. 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.

3.10 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 pre-settlement and settlement functions. 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 assessed.

3.11 Under a rolling settlement cycle, trades settle on a given number of days after trade date rather than at the end of an "account period," thereby limiting the number of outstanding trades and reducing aggregate market exposure. In 1989, the G30 recommended that final settlement of cash transactions should occur on T+3, that is, three business days after trade date. 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. Indeed, the G30 recognised that "to minimise counterparty risk and market exposure associated with securities transactions, same day settlement is the final goal."

3.12 The Task Force is recommending that T+3 settlement be retained 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. However, T+3 is often no longer regarded as best practice. In many markets, 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 market will depend upon factors such as transaction volume, price volatility and the financial strength of participants. The Task Force recommends that each market assess whether a shorter cycle 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 central counterparty (see Recommendation 4 below).

3.13 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 precipitous 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 in the time available. Consequently, replacement cost risk would not be reduced as much as anticipated and operational risk and liquidity risk could increase.

3.14 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 or failed trades could be marked to market and, if not resolved within a specified timeframe, closed out at market prices.

Recommendation 4: Central counterparties

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

3.15 The use of a central counterparty that interposes itself between the counterparties to securities trades is growing. By achieving netting of underlying trade obligations, the use of a central counterparty reduces both pre-settlement credit exposures (replacement cost exposures) and any settlement exposures (principal and liquidity exposures). Thus, it is another tool, in addition to shortening settlement cycles, for risk reduction. It is an especially effective tool 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 netting benefits, the growing demand for central counterparty 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.

3.16 But use of a central counterparty concentrates risk, which is reallocated among its participants through its policies and risk management procedures. The ability of the system as a whole to withstand the default of individual participants depends crucially on the risk management procedures of the central counterparty and its access to resources to absorb financial losses. The failure of a central counterparty would almost certainly have serious systemic consequences, especially where multiple markets are served by one central counterparty. Consequently, a central counterparty'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 central counterparty must be able to withstand severe dislocations, including defaults by one or more of its participants. Furthermore, there must be a sound and transparent legal basis for the netting and financial support arrangements. For example, the netting must be enforceable against the participants in bankruptcy and it must be clear when and under what conditions the central counterparty interposes itself between its participants. The central counterparty must also be operationally sound and must ensure that its participants have the incentive and the ability to manage the risks they assume.

3.17 Central counterparties adopt a variety of means to control risk. The precise means used needs to reflect the market served and the nature of the risks incurred in consequence. Access criteria are essential (see Recommendation 14 on access). The central counterparty's exposures should be collateralised. Best practice involves the requirement that members 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, the central counterparty 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. Some central counterparties mark to market on an intraday basis during volatile periods to minimise their exposure still further. Central counterparties should also have rules clearly specifying 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, central counterparties 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 sources of 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 use of a central counterparty.

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.

3.18 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.[5] 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. Intraday finality is crucial for these operations. 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.

3.19 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. For jurisdictions that have not implemented securities borrowing and lending, the CSD might consider implementing a programme for the purpose of reducing settlement failures as a first step.

3.20 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 settle on a shorter cycle than regular trades. The scope for improvement in the processing of cross-border borrowing and lending transactions is large. Some CSDs seek to overcome these impediments by providing centralised lending

[5] 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).

facilities; others offer tripartite services intended to support the bilateral lending market. The needs of each market will differ, and market participants and CSDs should evaluate the usefulness of such facilities.

3.21 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 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.

3.22 While securities lending may be a useful tool, it presents risk to both the borrower and the lender. The loaned securities 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. A mark-to-market facility may in some markets most efficiently be provided centrally by the CSD or by a central counterparty, but this need not be the case.

Recommendation 6: Central securities depositories (CSDs)

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

3.23 The immobilisation or dematerialisation of securities and their transfer by book entry within a CSD significantly reduces the 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.

3.24 The immobilisation or dematerialisation of securities 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. Cross-border links between CSDs can extend the benefits of immobilisation or dematerialisation within a CSD to cross-border trades and to domestic trades

executed outside the country in which the securities are issued. The use of a CSD also improves the transparency and legal robustness of custody and transfer arrangements. A CSD allows participants to identify more easily the time at which final settlement has occurred. If a CSD is also the registrar, it can eliminate any delay between settlement and registration.

3.25 Securities should be immobilised or dematerialised in CSDs to the greatest extent possible. In practice, it may not be possible to immobilise or dematerialise all securities within CSDs. For example, in some countries an attempt to force all retail investors to give up possession of certificates may encounter insurmountable opposition. However, it is not necessary to achieve complete immobilisation to realise the benefits of CSDs. What is essential is that the most active market participants immobilise their holdings and that those less active investors that insist on holding certificates bear the marginal costs of their decisions.

3.26 Within a national market, different CSDs may serve different market segments, for example equities and government bonds. While CSDs have traditionally been associated with national markets, and hence with particular countries, CSDs in certain geographical areas, notably Europe, are undergoing a process of cross-border consolidation, either through mergers, creation of operational links or outsourcing of operations. Although in the short run this process could prove costly and could entail greater legal and operational risks, in the long run it is expected to reduce costs to investors and to reduce risks overall, especially on cross-border trades.

Recommendation 7: Delivery versus payment (DVP)

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

3.27 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 an SSS participant could result in systemic disruptions. Systemic disruptions are still possible because the failure of a participant could produce substantial liquidity pressures and replacement costs.

3.28 DVP can be achieved in several ways.[6] Three different "models" can be differentiated according to whether the securities and/or funds transfers are settled on a gross (trade by trade) basis or on a net basis. Further distinctions can be drawn in terms of the timing of the finality of transfers, whether in real time, (ie throughout the day), intraday (ie at multiple times during the day), only at the end of the day, or possibly on the next day (but see Recommendation 8). 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.

3.29 DVP eliminates principal risk between direct participants in an SSS. However, settlement arrangements are typically tiered, with only a subset of market participants and intermediaries having direct access to the SSS. Achievement of DVP for direct participants in the SSS does not eliminate principal risk exposures between direct participants and their customers. Nonetheless, it is a necessary step toward controlling those exposures effectively. (See Recommendation 12 regarding the protection of customers' securities.)

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

Recommendation 8: Timing of settlement finality

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

3.30 The completion of final transfers by the end of the day should be considered a minimum requirement. Deferral of settlement to the next business day can substantially increase the potential for participant defaults to create systemic disturbances, in part because the relevant authorities tend to close insolvent institutions between business days. However, even end-of-day net settlements may entail significant liquidity risks, unless risk controls to address participant defaults are highly robust. (See Recommendation 9.)

3.31 Even if the risks of participant defaults are controlled effectively, end-of-day net settlement may not meet critical needs of users of the settlement system. 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 for the smooth functioning of the payment system that this collateral be transferable with real-time or intraday finality. 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. It is also essential for central counterparties that rely on intraday margin calls to mitigate risks vis-à-vis their members.

3.32 Furthermore, 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. Systemic risks could arise if the CSD allows provisional transfers of securities to other CSDs. In such circumstances, an unwind of those provisional transfers could transmit any disturbances from the default of a CSD participant 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.

3.33 To address these risks, intraday or real-time settlement of securities transactions on a DVP basis 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. (In general, they tend to arise more frequently for bonds and other debt instruments than for equities.) 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.

Recommendation 9: CSD risk controls to address participant defaults

Deferred 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. In any system in which a CSD extends credit or arranges securities loans to facilitate settlement, best practice is for the resulting credit exposures to be fully collateralised.

3.34 A deferred net settlement system is 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. When a deferred net settlement system is used, a failure of a participant to settle its payment obligations could result in significant liquidity pressures on other CSD participants.

In many such systems, a failure to settle would result in an unwind, that is, the deletion of some or all of the provisional securities and funds transfers involving the participant that failed to settle and the recalculation of the settlement obligations of the non-defaulting participants. An unwind would have the effect of imposing liquidity pressures (and any replacement costs) on the non-defaulting participants that had delivered securities to, or received securities from, the defaulting participant. If all provisional transfers involving the defaulting participant 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 non-defaulting participants could be confronted with shortfalls of funds or securities that would be extremely difficult to cover. Should one or more non-defaulting participants be unable to cover the shortfalls and default in turn, the system would almost surely fail to settle on a timely basis, and it is likely that both the securities markets and the payment system would be disrupted.

3.35 Consequently, in deferred net systems the CSD must impose risk controls to limit the potential for defaults to generate systemic disruption. At a minimum, the controls should enable the system to complete settlement following the failure of the participant with the single largest payment obligation. Participant defaults 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 defaults.

3.36 The CSD can use a variety of risk controls to address participant defaults. The optimal controls depend on several factors, including the systemic importance of the settlement system, the volume and value of settlements, the number and quality of participants and the effect of the controls on the efficiency of the system. To reduce the likelihood of default, membership in the system should be limited to entities that meet financial standards, including capital requirements. On the securities side, a CSD may arrange securities loans to participants to facilitate timely settlement, but debit balances should be prohibited. On the funds side, the most reliable approach to ensuring timely completion of settlement is to limit each participant's debit position in funds and to prohibit provisional transfers of securities that would create a debit position in excess of this limit. The limits could then be set at amounts that could be covered by the CSD or by non-defaulting participants, taking into account their respective responsibilities under the system's default rules and their liquidity resources. As an alternative (or in addition), collateral requirements could be applied to funds debit positions, and provisional transfers that would create a debit balance in excess of available collateral values could be prohibited. If this approach is taken, the CSD should apply haircuts to collateral values that reflect the price volatility of the collateral and should ensure that legally binding arrangements are in place to allow it to be sold or pledged promptly.

3.37 Although this recommendation focuses primarily on deferred net settlement systems, the potential for participant defaults also needs to be addressed by any CSD that assumes credit and liquidity exposures to its participants, regardless of whether settlement is deferred or not. For example, CSDs that operate internal payment systems and settle on a gross basis may extend credit to their participants to facilitate timely settlement and, in particular, to avoid gridlock. Whenever a CSD arranges securities loans to participants to facilitate timely settlement and guarantees that the securities are returned when due, the CSD needs to manage the resulting credit and liquidity exposures effectively. Best practice is for such exposures to be fully collateralised, with only limited exceptions for highly creditworthy participants, such as central banks or supranational organisations. This is especially important if a CSD offers cash accounts

to its participants and operates an internal payments system for settling the cash leg of securities trades.

Recommendation 10: Cash settlement assets

Assets used to settle the cash leg of securities transactions between CSD members 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 a settlement bank.

3.38 Arrangements for the settlement of payment obligations associated with securities transactions vary across SSSs. The settlement of the cash leg of the transactions can be effected through transfers on the books of a central bank, a CSD organised as a limited purpose bank, or one or more commercial banks. When multiple settlement banks are involved, any resulting interbank obligations between these commercial settlement banks are settled 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.[7]

3.39 Whatever the arrangement, 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. Where there is a single settlement bank, the impact on CSD members would be particularly severe because exposures to that entity would be large, involuntary and difficult for members to control. However, this risk to CSD members is eliminated in a single currency system if central bank money is used because the settlement bank is the central bank of issue.

3.40 Use of the central bank of issue as the single settlement bank may not, however, always be practicable. Even in a single-currency system, some (in some cases many) CSD members, central counterparties and other CSDs may not have access to accounts with the central bank of issue. Or the central bank payment system may not meet a system's need for finality during its hours of operation. In a multicurrency system, the use of central banks of issue can be especially complex. 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 multicurrency system.

3.41 In such cases, a private bank is sometimes used as the single settlement bank and 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 to offer cash accounts to its participants. To limit the risk of default, the functions of the limited purpose bank must be clearly defined and the CSD should: minimise any credit exposures it incurs (for example, by collateralising them fully); 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. To enable CSD members to control their exposures to the single settlement bank, they should be able to retransfer the proceeds of securities settlements as soon as possible, at a minimum on the same day, and ideally intraday.

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

3.42 Where payment services are provided to CSD members by several commercial settlement banks, a member is exposed to credit losses and liquidity pressures from failure of its settlement bank. This approach has the benefit of allowing competition in payment services, but it is important that CSD members should have a meaningful choice of settlement bank, and that settlement banks are properly regulated institutions with the legal and technical capacity to provide an effective service. The smaller the degree of competition in payment services and the greater the resulting concentration of members' exposures to the settlement banks, the greater the risk of systemic disturbances and the more important it is that adequate steps are taken to ensure that the settlement banks are financially sound. If there is 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.

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.

3.43 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 technology 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.

3.44 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 them; and from inadequate attention being paid to ensuring that procedures are understood and complied with.

3.45 Potential operational failures include errors or delays in 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.

3.46 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, central counterparty or major participant could have significant adverse effects throughout securities and other markets.

3.47 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, and persons not involved in the day-to-day operations should participate in the reviews. Information technology systems should also be subject to periodic audit.
3.48 All key systems should be secure (ie 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 in a timely manner with certainty. The system should be able to recover operations and data in a manner that does not disrupt settlement. 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 (eg telecommunications).

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.
3.49 Custody risk is the risk of a loss on securities held in custody occasioned by the custodian's (or subcustodian's) insolvency, negligence, misuse of assets, fraud, poor administration or inadequate record keeping.[8] Although custodians are predominantly commercial banks, central securities depositories (CSDs) also hold, administer and keep records of securities on behalf of their direct participants, and thus present custody risk.
3.50 A custodian should employ procedures ensuring that all customer assets are appropriately accounted for and kept safe. Customer securities must also be protected against the claims of the custodian's creditors, and client assets are typically given preferential treatment under insolvency law. (Nonetheless, client assets could be subject to liens by the custodian if, for example, the client has pledged them to secure some other obligation.) One way customer securities are protected in the event of the custodian's insolvency is through segregation. Even when customer securities are segregated, however, customers may be at risk if sufficient securities are not held to satisfy all customer claims and individual customers' securities are not readily identifiable in the custodian's accounting systems. Furthermore, customer securities must be protected against misappropriation or theft, which can be addressed by internal controls and by insurance or other compensation schemes.
3.51 When a custodian performs its responsibilities effectively, a successful legal claim on a customer's securities by a third-party creditor of the custodian or an outright loss of all or a part of a customer's holdings is unlikely. In addition, in the event of the custodian's insolvency, a customer is less likely to have its securities frozen or made unavailable, during which time the

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

customer could come under liquidity pressures, suffer price losses or fail to meet other obligations. Segregation is one device that facilitates movement of a customer's positions by a receiver to a solvent intermediary, thereby enabling solvent customers to manage their positions and preserving market liquidity. For these outcomes to be achieved, it is essential that the legal framework support segregation of customer assets or other arrangements or a prioritisation of claims in bankruptcy to protect customers' holdings, even upon the bankruptcy of the custodian.

3.52 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 a local custodian. To prevent unexpected losses, a global custodian should ensure that its local subcustodian also employs appropriate accounting, safekeeping and segregation procedures for customer securities. Likewise, when home country CSDs and ICSDs establish links, they should ensure that the local CSD protects their 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 beneficial owners are protected from legal actions brought about by the insolvency or the commission of fraud by any one of the custodians.

Recommendation 13: Governance

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

3.53 This recommendation focuses on CSDs and central counterparties, which sit at the heart of the settlement process. Many are sole providers of services to the markets they serve, and their performance is a critical determinant of the safety and efficiency of those markets. Therefore, their performance is a matter of public as well as private interest. In addition, there may be other providers of services (for example trade comparison or messaging services) whose performance is also critical to the functioning of some markets. The governance arrangements of any critical service providers should also be consistent with this recommendation.

3.54 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.

3.55 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 articulated, 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 reflect and consider in its deliberations all relevant interests.

3.56 Governance arrangements should aim to promote the objectives of users as well as owners and to ensure that the overarching public interest is served. The desire of owners to maximise profit may cause some central counterparties and some CSDs to fail to commit sufficient

resources and capabilities to risk management. The desire of owners to maximise profits may also conflict with users' need for an efficient, safe service obtained at minimum cost.

3.57 Governance arrangements should therefore seek to minimise the conflicts between the objectives of owners, users and other interested parties, and as far as possible to resolve any remaining conflicts. Conflicts are less likely to arise if the governance arrangements of the institution are able to take into account the broadest possible spectrum of interests. One way of achieving this is for the institution to be structured as a mutual organisation owned by its users and with public interests reflected, for example, through board representation. Other central counterparties and CSDs are structured as for-profit organisations. They avoid serious conflicts because their shareholders are also their users or because the users and other relevant groups are represented in the governance process. In the absence of these mechanisms, the public interest may be protected through regulation of the CSDs or central counterparty. CSDs may also be owned by public bodies such as central banks, which consider users' needs in decisions about operating the system. Regardless of the organisational form, a CSD or central counterparty should articulate the needs of the diverse interest groups that use the system and should accommodate them in a manner consistent with the public interest.

Recommendation 14: Access

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

3.58 Broad access to CSDs, central counterparties 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.

3.59 CSDs and central counterparties therefore need to establish criteria that balance the benefits of broad access against the need to limit participation to those with the necessary expertise, powers and financial resources. Central counterparties, 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 central counterparties 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.

3.60 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 improve certainty and transparency. CSDs and central counterparties should have procedures facilitating the orderly exit of participants that no longer meet membership criteria, and those procedures should also be publicly disclosed.

3.61 Criteria that limit access on other grounds should be avoided. So, for example, discrimination against non-resident users is unlikely to be acceptable except where doubts exist over their legal powers or where remote access would expose the operator or other users to

unacceptable risks. Discrimination against competitors and others providing comparable services is only acceptable if clearly justifiable on risk grounds. For example, to facilitate cross-border settlement, CSDs should, where consistent with law and public policy, grant access to foreign CSDs, provided the legal and other risks associated with such links can be effectively controlled.

Recommendation 15: Efficiency

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

3.62 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, at 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.

3.63 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.

3.64 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 other indirect costs, such as liquidity costs.

3.65 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.

3.66 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.

3.67 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 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.

3.68 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.

3.69 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 acknowledgement 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.

3.70 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 central counterparties should provide market participants with sufficient information for them to accurately identify and evaluate the risks and costs associated with using the CSD or central counterparty services.

3.71 During the past 10 years, there has been a growing appreciation of transparency's contribution 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.

3.72 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 central counterparties 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. Completion of the

CPSS/IOSCO Disclosure Framework, for example, would be one way to provide market participants with the kind of information they need.[9]

3.73 Relevant information should be accessible to market participants, for example through the internet. Information should be current and available in formats (eg language) that meet the needs of users.

Recommendation 18: Regulation and oversight

Securities settlement systems should be subject to regulation and oversight. The responsibilities and objectives of the securities regulator and the central bank with respect to SSSs should be clearly defined, and their roles and major policies should be publicly disclosed. They should have the ability and the resources to perform their responsibilities, including assessing and promoting implementation of these recommendations. They should cooperate with each other and with other relevant authorities.

3.74 Securities regulators (including, in this context, banking supervisors where they have similar responsibilities and regulatory authority with respect to CSDs) 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 between public authorities varies from country to country depending on the legal and institutional framework.

3.75 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 and oversight is needed to ensure that designers, owners and operators fulfil their responsibilities. Where the central bank itself operates a securities settlement system, it should ensure that its system observes the recommendations.

3.76 The objectives and responsibilities as well as roles and major policies of the securities regulator and the central bank need to be 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.

3.77 The securities regulator and the central bank should have the ability to carry out regulation and oversight responsibilities effectively. Regulatory and oversight activities should have a sound basis, which may be a statute-based or a non-statute-based approach, depending on a country's legal and institutional framework. The securities regulator and the central bank should have proper 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.

3.78 Mutual 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. In the case of a securities settlement system that clears and settles securities traded in multiple jurisdictions, the relevant authorities of those jurisdictions should cooperate and make adequate arrangements so that their respective concerns and responsibilities are satisfied while avoiding subjecting an SSS to duplicate requirements.

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[9] CPSS and IOSCO, *Disclosure Framework for Securities Settlement Systems* (BIS, 1997).

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 As a first step, the authorities responsible for regulation and oversight need to decide the appropriate scope of application of the recommendations and identify the private sector entities that need to be involved in implementation. Then, in consultation with each other and the relevant private sector entities, including, at a minimum, designers, owners and operators of CSDs and central counterparties, they should perform an initial assessment of each SSS's compliance with the recommendations. On the basis of this 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.

4.3 Experience with efforts to implement other international standards highlights the importance of developing a clear and specific assessment methodology, ideally in the form of a questionnaire.[10] As an important first step towards such a methodology, the next section identifies key questions pertaining to each of the Task Force's 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.

[10] 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 and rules governing securities settlement arrangements and related pre-settlement and securities lending arrangements (including repurchase agreements and other economically equivalent transactions) readily accessible to system participants and the public?

2. Does the legal framework support:

(a) the enforceability of transactions?

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

(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?

(j) the protection of the interests of beneficial owners?

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, central counterparty or other central entity? What is the process for confirming such trades (for example, does the system use a predetermined set of elements to confirm trades)? Does the system permit straight-through processing?

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? Does the system permit straight-through processing?
4. What percentage of trades between direct 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?

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 assessed.
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 assessed? By whom? Has the evaluation been documented? What was the conclusion?
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

The benefits and costs of a central counterparty should be assessed. Where such a mechanism is introduced, the central counterparty should rigorously control the risks it assumes.
1. Has a central counterparty mechanism been introduced? If so, what types of securities and market participants are covered? When does the central counterparty 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 assessed? By whom? Has the assessment been documented? What was the conclusion?
3. Does the central counterparty impose financial and operational standards for participation?
4. How does the central counterparty manage its credit risk vis-à-vis participants? Does it require participants to pledge collateral or contribute to a clearing or guarantee fund? Are there liquidity requirements for this collateral or fund? How does the central counterparty assess the size and liquidity of its financial resources? Does the central counterparty have legally enforceable interests in or claims on the assets in the fund? Is the collateral "marked to market" daily? Does the central counterparty have transparent and enforceable loss allocation rules?
5. How does the central counterparty manage its liquidity risk? Does the central counterparty have in place agreements permitting it to borrow against collateral?
6. Has a participant ever defaulted? If so, how did the central counterparty handle the default? In the past year, has the central counterparty 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 central counterparty 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? 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?

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)

Securities settlement systems 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?

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? Do any of the links permit transfers of securities against payments? If so, how is DVP achieved?

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

Recommendation 8: Timing of settlement finality

Final settlement on a DVP basis 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?

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. Do users have a need for intraday or real-time finality? 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 central counterparties have a need for intraday or real-time finality to manage their risks effectively?

4. Is the CSD linked to other CSDs? Does the CSD receive provisional transfers of securities from any of the 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 participant defaults

Deferred 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.

In any system in which a CSD extends credit or arranges securities loans to facilitate settlement, best practice is for the resulting credit exposures to be fully collateralised.

1. Is the SSS a deferred net settlement system? If so, what would be the consequences of a failure of a participant to settle? Would it result in the deletion 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 deleted? When would the non-defaulting participants be informed of their recalculated obligations? When would they be required to meet the recalculated obligations?
2. What risk controls are in place to limit the likelihood of participants' defaults and the losses and liquidity pressures in the event of defaults?
3. 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?
4. Does the CSD permit debit balances in securities?
5. Regardless of whether the SSS is a deferred net settlement system, does the CSD assume credit and liquidity exposures to participants? How does the CSD manage those exposures? Are the exposures fully collateralised?
6. Has any CSD participant defaulted on any obligations to the CSD? How did the CSD handle the default?

Recommendation 10: Cash settlement assets

Assets used to settle the cash leg of securities transactions between CSD members 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 a settlement bank.

1. How are the settlements 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 commercial banks?
2. If a single bank is used, is it the central bank that issues the currency? If not, what steps are taken to protect CSD members from failure of the settlement bank? Is the CSD itself organised as a limited purpose bank? How quickly can CSD members retransfer the proceeds of settlements?
3. If multiple settlement banks can be used in principle, how many are used in practice? Who determines which banks can be used as settlement banks? What are the criteria? How concentrated are payment flows? Which bank is used by the highest percentage of CSD members? On an average day, what percentage of total payments is credited to accounts at that bank? What is the financial condition of that bank (for example, its capital ratios and its credit ratings)?
4. If multiple settlement banks are used, are the resulting interbank obligations settled through a payment system that adheres to the Core Principles for Systemically Important Payment Systems?
5. 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?
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 internal audit function and does it review operational risk controls?

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 cause(s) of such losses?
3. Are 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?
4. 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 central counterparties should be designed to fulfil public interest requirements and to promote the objectives of owners and users.

1. What is the ownership structure of the CSD or central counterparty? Are there limits on holdings or other rules determining what stakes may be held or who may hold them? How are different classes of user represented amongst owners?

2. 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?
3. 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?
4. 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?
5. 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 central counterparties 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 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?
3. Are the same rules applied regardless of the identity, type and location of the applicant? If not, what variations apply and why?
4. What steps are taken to confirm whether an applicant satisfies the relevant access rules? Initially? On an ongoing basis?
5. What arrangements are 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?

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 normal 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 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 central counterparties should provide market participants with sufficient information for them to accurately identify and evaluate the risks and costs associated with using the CSD or central counterparty 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? Has the system completed the questionnaire set out in the CPSS/IOSCO disclosure framework?
3. When were these disclosures last reviewed to ensure they remain current?

Recommendation 18: Regulation and oversight

Securities settlement systems should be subject to regulation and oversight. The responsibilities and objectives of the securities regulator and the central bank with respect to SSSs should be clearly defined, and their roles and major policies should be publicly disclosed. They should have the ability and the resources to perform their responsibilities, including assessing and promoting implementation of these recommendations. They should cooperate with each other and with other relevant authorities.

1. 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?
2. 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, is it worth considering 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?

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

Annex 1

Members of the Joint Task Force on Securities Settlement Systems

Co-Chairmen

Board of Governors of the Federal Reserve System	Mr Patrick Parkinson
Commissione Nazionale per le Società e la Borsa, Italy	Mr Giovanni Sabatini

Members

Australian Securities and Investments Commission	Mr Shane Tregillis
National Bank of Belgium	Mr Johan Pissens
Comissão de Valores Mobiliários, Brazil	Ms Elizabeth Garbayo
The People's Bank of China	Mr Li Yongqing
Czech National Bank	Mr Tomáš Hládek
European Central Bank	Ms Daniela Russo
Commission des Opérations de Bourse, France	Ms Bénédicte Doumayrou
Bank of France	Mr Yvon Lucas
Deutsche Bundesbank	Mr Roland Neuschwander
Securities and Futures Commission, Hong Kong	Mr Gerald Greiner
Reserve Bank of India	Mrs Usha Thorat
Securities and Exchange Board of India	Mr Pratip Kar
Commissione Nazionale per le Società e la Borsa, Italy	Mr Salvatore Lo Giudice
Bank of Japan	Mr Shuhei Aoki
Financial Services Agency, Japan	Mr Kotaro Nagasaki
Securities Commission, Malaysia	Mr Ranjit Ajit Singh
Comisión Nacional Bancaria y de Valores, Mexico	Ms Paola Bortoluz
Bank of Mexico	Mr Francisco Solis
Securities Board of the Netherlands	Mr Hans Wolters
Saudi Arabian Monetary Agency	Mr Abdullah Al Suweilmy
Comisión Nacional del Mercado de Valores, Spain	Mr Rafael Sánchez
Bank of England	Mr Alastair Wilson
United States Securities and Exchange Commission	Mr Larry E. Bergmann
US Commodity Futures Trading Commission	Ms Andrea Corcoran
Federal Reserve Bank of New York	Mr Lawrence Radecki
Board of Governors of the Federal Reserve System	Ms Patricia White

Secretariat

Bank for International Settlements	Mr Masayuki Mizuno

Mr Benoît Bourtembourg (National Bank of Belgium), Ms Stella Leung (Securities and Futures Commission, Hong Kong), Mr Shri Venkatappa (Reserve Bank of India), Mr Tetsuya Sakamoto (Bank of Japan), Ms Judy Lam (Securities Commission, Malaysia), Mr Jeffrey Mooney (US

Securities and Exchange Commission) and Mr Terry Hart (US Commodity Futures Trading Commission) also made significant contributions to the Task Force's work.

Annex 2

Mandate of the
Joint CPSS/IOSCO Task Force on Securities Settlement Systems

The volume of cross-border securities transactions has been growing rapidly in many markets. As a result, market participants become more and more dependent on clearing and settlement facilities that are not located in their jurisdiction. Many trading systems are in a process of international integration or providing direct access on a cross-border basis to market participants. In addition, securities settlement systems are establishing cross-border links, combining operations and competing in new ways.

The objective of this project is to promote the implementation by securities settlement systems 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 will cover both individual systems and the links between systems.

The Task Force will develop recommendations for domestic settlement systems, identifying the minimum requirements that these systems should meet, and best practices that they should strive for, in order to limit risks to domestic and international financial stability, including recommendations addressing the additional issues raised by their cross-border settlement activity, such as cross-border linkages between settlement systems.

Although the main focus of the present work will be on securities settlement systems for the cash market, clearing for derivative products will be addressed where relevant.

The work of the Task Force will contribute to the Financial Stability Forum's efforts to address vulnerabilities in the international financial systems.

The project will take into account previous work by the CPSS, IOSCO and the European Monetary Institute/European Central Bank, and by private sector groups (eg the Group of Thirty).

Annex 3

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.

Trade confirmation

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 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, S.W.I.F.T. message, or perhaps some specialised electronic messaging and matching service.

3. Because the counterparties to trades are often acting on behalf of others, an important ancillary part of the trade confirmation process is also 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. To be sure, the counterparties to the trade will typically be responsible for performance on 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) 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 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 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 central counterparty 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 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**, or the depository has held the securities in dematerialised form. Immobilisation or dematerialisation enables securities transfers to occur through accounting entries on the books of the central depository. A central securities depository 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 central securities depositories handle the securities for a single domestic market, others serve multiple markets. In some cases, this has been accomplished by links between domestic securities depositories (achieved by each depository opening an account with the other and acting as custodian for their respective members); in some cases, depositories 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. These depositories provide their services by linking directly or indirectly (through a local custodian) to domestic securities depositories.

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 transfer 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. Securities may be registered in the name of a broker-dealer or custodian rather than that of the ultimate investor. 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 central securities depository, 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 4

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 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.

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 pose custody risk, too.

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 5

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.[11] 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.

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

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.

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, respectively. 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 conflicts of law. 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 providing the account is exposed to credit and liquidity risk if it permits overdrafts or debit balances; the system using the account is exposed to credit and liquidity risk.

Annex 6

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.

Central counterparty
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 central counterparties 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 central counterparty collateralise part of the exposure of related positions at the other central counterparty. In the event of default by a participant whose account is cross-margined, one central counterparty can use the positions and collateral in the cross-margined account at the other central counterparty 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.

Deferred 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.

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.
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 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 central counterparty, 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 close-out netting.

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 central counterparty, 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 his 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.

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 also is 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 systems
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 bank
The entity that maintains cash accounts used to settle payment obligations associated with securities transactions. The settlement bank may be either a commercial bank, the settlement system itself or a central bank.
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.
S.W.I.F.T.
S.W.I.F.T, 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.