



EUROPEAN CENTRAL BANK

# ASSESSMENT OF ACCESSION COUNTRIES' SECURITIES SETTLEMENT SYSTEMS

JANUARY 2004

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**AGAINST THE  
STANDARDS  
FOR THE USE OF  
EU SECURITIES  
SETTLEMENT  
SYSTEMS IN  
EUROSYSTEM  
CREDIT  
OPERATIONS**



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## AGAINST THE STANDARDS FOR THE USE OF EU SECURITIES SETTLEMENT SYSTEMS IN EUROSYSTEM CREDIT OPERATIONS

In 2004 all ECB publications will feature a motif taken from the €100 banknote.

<sup>1</sup> Throughout this document, the term "accession countries" refers to the national central banks of the ten acceding countries (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia and Slovakia), plus the two national central banks of the accession countries (Bulgaria and Romania).

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*As at November 2003.*

ISBN 92-9181-483-0 (print)  
ISBN 92-9181-484-9 (online)

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# EXECUTIVE SUMMARY

## EXECUTIVE SUMMARY

Assessment  
of accession countries'  
securities  
settlement systems

1. In September 2002, the Governing Council of the ECB decided that the ECB should assist accession country central banks (ACCBs) in carrying out a self-assessment of their securities clearing and settlement systems against the “Standards for the Use of EU Securities Settlement Systems in ESCB Credit Operations” (“the Standards”).<sup>1</sup> By carrying out an assessment against these Standards, it would be possible to detect and address the current drawbacks of the securities infrastructure early enough to ensure that the market infrastructure in the accession countries is adequate for participation in Eurosystem credit operations.<sup>2</sup> This report has been prepared in cooperation with the national central banks of the accession countries and of the euro area, acting as first and second assessors respectively.
2. It should be stressed that this assessment is not a formal assessment concluding whether a given securities settlement system (SSS) is eligible for Eurosystem credit operations or not. Before any SSS in the accession countries can be used for collateralising Eurosystem credit operations, such a formal assessment will still have to be carried out.
3. The detailed analysis and evaluation performed with this assessment has revealed that the securities settlement infrastructure in the accession countries is, albeit to a variable degree, comparable to the state of affairs in the EU countries when their systems were first assessed back in 1998. In general, the securities infrastructure in many accession countries may already be deemed relatively adequate, and most systems could become fully compliant with the standards in the near future upon implementation of the recommendations, which have been bilaterally communicated to each SSS.
4. With regard to Standards 2 to 9, the results of the assessment show that almost<sup>3</sup> all the 21 SSSs that have been assessed could be considered eligible for use in Eurosystem

monetary policy and intraday credit operations under certain operational conditions, as specified in Annex 6. Concerning Standard 1, in the absence of lawyers from the accession countries within the ECB’s Legal Services department and the Eurosystem, it was difficult to confirm definitively the legal soundness of the assessed SSSs. Most SSSs in the accession countries – with a few notable exceptions – have DVP settlement facilities in central bank money that can be used to settle central bank credit operations. In the majority of SSSs, custody risk is appropriately dealt with. Currently, most accession country (AC) SSSs that provide settlement guarantees up to a certain limit do not contribute to any guarantee funds with their own capital, nor do they act as principals in securities lending and borrowing transactions. Therefore, they are not exposed to any credit risk. Seven of the AC SSSs achieve intraday finality of settlement in real time, one SSS accomplishes real DVP settlement in multiple batches, three systems enable intraday free delivery of securities, while seven SSSs work on a pre-deposit basis. Several SSSs which currently could only be used on a pre-deposit basis plan to introduce settlement facilities that allow securities to be retransferred with finality several times on the same day.

1 In November 1997, the EMI established nine Standards which securities settlement systems (SSSs) seeking to qualify for Eurosystem monetary policy and intraday credit operations have to comply with. They were published in January 1998, and are available on the ECB’s website.

2 Throughout this report, the term “Eurosystem credit operations” refers to Eurosystem monetary policy and intraday credit operations, as well as intraday credit operations in euro conducted by NCBs in those Member States that have not yet adopted the euro.

3 In Cyprus, the government securities used for central bank credit operations are in the process of being dematerialised and the registers transferred from the Central Bank of Cyprus to the CDCR. Pending the completion of the project, which is foreseen for April 2004, the CDCR would be deemed eligible for Eurosystem credit operations on a pre-deposit basis combined with free delivery of securities.

5. At the moment only a few systems maintain links with other SSSs. In fact, the access rules of some SSSs currently do not permit the participation of foreign SSSs. Even though all systems are subject to some type of regulation and control, not all of them are necessarily subject to oversight by a financial market authority or a central bank. Most SSSs have responded to the G10-IOSCO disclosure framework, but do not have an established updating procedure in place. At present, no AC SSS complies with Standard 8 (TARGET operating hours and opening days), although this is simply the result of the fact that SSSs are expected to meet the current needs of their national markets, not TARGET requirements. All SSSs, however, have expressed a firm commitment to adjust their operating hours as soon as their home country connects to TARGET. The level of operational reliability varies greatly across countries and there is room for improvement. This report contains a recommendation to all SSSs assessed, requesting that they carefully monitor and consider the current discussions in the Eurosystem regarding business continuity planning in order to further improve the operational reliability of their systems.
6. In general, it should be noted that the sophistication of the securities settlement infrastructure varies significantly across different accession countries. In most accession countries, the securities clearing and settlement infrastructure has largely been developed over the past decade. Within this limited time scope, some accession countries have not sufficiently developed their securities infrastructure owing to a lack of resources, and a low volume of securities traffic that hampered the recovery of initial investment costs. A number of other countries, however, seem to have taken advantage of the fact that their infrastructures had to be built from scratch, and as such were not hindered by an unfavourable legacy in terms of the past arrangements. The relevant authorities in most countries have displayed an admirable level of motivation and commitment in bringing their infrastructure into line with internationally recognised and advocated level of advancement.
7. It needs to be stressed that the main purpose of the present exercise is to assist ACCBs in discovering the parts of their securities settlement arrangements that still need to be addressed to facilitate the smooth functioning of Eurosystem credit operations. In particular, this assessment includes a list of recommendations that will have to be implemented for these SSSs to become fully eligible for use in Eurosystem credit operations. However, the implementation of many of the recommendations may require substantial investments at a time when the future of the EU securities settlement infrastructure is not yet clearly outlined. The relevant authorities in the countries concerned should pay due attention to this when formulating strategic alternatives for the future. In this regard, it would be helpful for accession countries to monitor carefully the ongoing consolidation process in the EU infrastructure. In several cases, market-driven solutions could assist in transferring business to other EU securities infrastructures.
8. It still needs to be determined whether these SSSs are eligible for use in Eurosystem credit operations. This is particularly stressed in respect of Standard 1, where in the current circumstances it is difficult to confirm definitively the legal soundness of the assessed SSSs. This preliminary report flags legal issues that are unclear or may raise issues of legal soundness, and represents an important staging post on the way to confirming full legal compliance, which will then act as the baseline for all further legal assessment.
9. After receiving the outcome of the assessment, the SSSs in the accession

countries<sup>4</sup> will have six months to react, during which time they should provide a development plan detailing how the recommendations could be met, containing a timetable for their implementation and – if appropriate – the adequate measures that will be taken in the meantime to mitigate any risks until the plan has been fully implemented. Monitoring of the implementation of recommendations will be done jointly by the ECB and the ACCBs, with the latter bearing primary responsibility for this.

<sup>4</sup> It should be noted that, owing to the fact that Bulgaria and Romania will not join the European Union as from May 2004, the work required as a follow-up to this report mainly focuses on the ten acceding countries rather than on the accession countries as a whole (i.e. including Bulgaria and Romania).



## I INTRODUCTION

### I.1 OBJECTIVE OF THE ASSESSMENT

In September 2002, the Governing Council of the ECB decided that the ECB should assist accession country central banks (ACCBs) in carrying out a self-assessment of their securities clearing and settlement systems against the “Standards for the Use of EU Securities Settlement Systems in ESCB Credit Operations” (“the Standards”).<sup>5</sup> By assessing the securities infrastructure in the accession countries against the standards, current drawbacks could be detected and addressed early enough to ensure that the market infrastructure in the accession countries is adequate for Economic and Monetary Union.

It is important to highlight the purpose and the timing of the assessment, as well as the need for SSSs to comply with the Standards. The Standards create the necessary framework for mitigating risks related to the settlement of credit operations and the safekeeping of collateral during these operations. As all Eurosystem credit operations (including intraday credit for payment system purposes) have to be collateralised, SSSs in accession countries will even before joining EMU have to be compliant with the Standards when their central banks choose to connect to TARGET. This could happen as early as 2004, following the Governing Council’s decision that the ACCBs would have the possibility – but not the obligation – to connect to TARGET as from their joining the European Union.

It is equally important to note that the central bank’s assessment takes the perspective of a user of SSSs and is independent of any oversight activities that may be carried out by other authorities. Compliance with the Standards is a prerequisite for SSSs to be used in collateralised credit operations, be it for intraday credits when connected to TARGET, or more widely to all central bank credit operations when participating in EMU.

It should also be pointed out that in the EU framework, an assessment exercise is periodically carried out with all eligible SSSs, in particular to check that the assessed SSSs continue to comply with the Standards and that SSSs keep to their commitments to implement changes. Such regular assessments will also be necessary with regard to the AC SSSs.

### I.2 SCOPE OF THE ASSESSMENT

The choice of the SSSs that have been assessed is related to the scope of eligible assets to be considered. As soon as an accession country joins the EU and connects to TARGET, the assets potentially available for euro intraday credit operations must at least comply with the present Eurosystem Tier 1 eligibility criteria (i.e. in addition to government debt instruments, all other debt instruments meeting Tier 1 criteria must be on the list), with the exception of the criteria on the location and the currency of denomination (which can be the local currency). However, it is up to each particular ACCB to decide if only part of the potentially eligible collateral should be available to TARGET participants in its country (for instance, it is possible to limit eligibility to government debt instruments for the initial period). Consequently, where there are different SSSs for different types of securities, some ACCBs have decided not to assess all of their SSSs, but have instead made a selection.

As soon as accession countries join EMU, however, the entire Eurosystem collateral framework immediately applies to them. The current framework is composed of two tiers of assets. No distinction is made between the two tiers with regard to the quality of the assets and their eligibility for the various types of Eurosystem credit operations. Therefore, the

<sup>5</sup> In November 1997, the EMI established nine Standards which securities settlement systems (SSSs) seeking to qualify for Eurosystem monetary policy and intraday credit operations have to comply with. They were published in January 1998, and are available on the ECB’s website.

ACCBs must be prepared to accept all potential Tier 1 and Tier 2 assets without restrictions. In this context, it will also be important to monitor and take into account the work which is currently being conducted with regard to the evolution of the Eurosystem's collateral framework.

Another factor complicating the assessment has been the question of work in progress with regard to the underlying legislative framework or the SSS infrastructure itself. Where relevant, the assessment therefore clearly indicates which aspects of the system or legislation are in the process of being implemented or drafted, together with the applicable implementation time frame. If the implementation is expected to be completed before participation in TARGET, but in any case no later than EMU, then the changes have also been considered to lie within the scope of the assessment, especially if they are conducive to eventual compliance.

Finally, it is important to note that this assessment is limited to SSSs and therefore does not cover any cross-border link arrangements that may exist. The assessment of links will be a separate exercise and will follow in due course.

## 2 COMPLIANCE OF SSSs WITH THE STANDARDS

The objective of this chapter is to present a transverse analysis of the overall fulfilment of each Standard by all SSSs and to describe typical arrangements or procedures used in meeting the Standards. This approach should also help increase understanding of the Standards by offering different possible interpretations for each of them.

### 2.1 STANDARD 1: LEGAL SOUNDNESS

*All securities settlement systems (SSSs) and the links between such systems must have a sound legal basis, ensuring that the settlement of payment and securities transfers is final and*

*must provide for adequate protection for the rights of the NCBs and the ECB in respect of securities held in their account in such systems.*

Owing to the current lack of accession country lawyers at the Eurosystem's disposal, it proved difficult to independently verify the conclusions arrived at in the legal report. It was not always possible to receive the relevant documentation in English or to organise a translation. Furthermore, in any case only a legal expert qualified in the relevant jurisdiction can make a final verification as to the veracity of many of the laws and regulations considered and as to the interaction of such laws and other components of the legal framework in producing the precise effects required by the Eurosystem. Thus it should be recognised that these conclusions are to a large degree dependent on ACCB legal advice; this report therefore represents a snapshot of ongoing legal work which is being coordinated by accession country lawyers as they join the ECB's Legal Services.

Five legal aspects in particular were considered. The first was the legal nature of the owner's entitlement to rights in respect of securities held by the system. The legal frameworks of the ACs vary in this respect. To be compliant with Standard 1, the beneficiary's entitlement to its rights in securities must be of a proprietary nature, i.e. enforceable not only between the parties (*inter partes*) but also against any third party (*erga omnes*). Almost all assessed systems are indirect holding systems, where rights to securities exist in dematerialised or immobilised form as book-entries on an electronic system. Some also fulfil a notary function. In some cases there is a degree of legal uncertainty as to which entity or entry would, for example in the event of a failed reconciliation, provide final legal evidence of ownership.

A beneficiary's rights should not be affected if the system becomes insolvent. In many cases the operator of the system is the central bank, and thus the risk of the system's insolvency is

negligible. Specific legislation is in force to counter such risk in several cases. In the remaining cases, this scenario is not always adequately addressed, although protection of the beneficiary should be inherent where the rights are proprietary in nature and the relevant identification/segregation procedures are followed. A beneficiary's rights should also not be affected if a third party becomes insolvent. This may be dealt with in the agreement between client and participant and/or through identification/segregation procedures. It is important that a participant does not own its client's (the beneficiary's) rights, particularly in the case of a foreign beneficiary. Sometimes a procedure for identifying the beneficiary within the system exists, although in several cases the legal framework supporting this or other practices, such as recognition of nominee or omnibus accounts, does not always provide legal certainty. In one case, under general insolvency law the beneficiary would receive only 70% of the realised value of an asset.

The practical enforcement of a beneficiary's proprietary rights, for example in the event of insolvency of the system or a third party, is also important. While the general efficacy of the overall legal system, for example with respect to procedural and litigation matters, is clearly of great importance, the assessment concentrated more on any necessary practice supporting entitlement to rights, such as whether this is conditional on identification or segregation procedures (i.e. of the system's assets from those of the participants, and of one participant's assets from another's).

The second legal aspect investigated was the identification of the rights, obligations and liabilities of each party. These must be clearly and adequately formulated, for example in general law or through a contractual agreement. In many cases the systems do not have an independent legal existence. In many cases specific laws set out the rights and liabilities of the parties. In the majority of cases, the system, at least in theory, is entirely liable; however, further clarification may be necessary as to

whether this would cover reconciliation errors or regarding the extent of any force majeure exception. Where it was difficult to draw precise clear parameters, further legal work should be undertaken. In cases where rights, obligations and liabilities are determined at least in part by the rules of the system, the legal nature of such rules was examined, particularly with respect to their enforceability against participants, and to establish whether such rules legally applied to the system itself.

The effects of the default of a third party must also be identified and considered. Of particular concern is the risk of loss in the event of error, negligence or fraud on the part of the system or any of its employees. The Eurosystem wishes to identify the rights that participants have in this respect, the obligations on the system to prevent such losses occurring, and the legal basis and extent of their liabilities should losses occur, as well as the means available to the system for covering such losses. Losses can be mitigated by, for example, loss-sharing agreements, discretionary funds and insurance. For central bank systems, no insurance is taken out. For other systems where insurance does exist, it was not possible to scrutinise the documentation to establish the extent of its cover and its limits. Although this question was not investigated in the context of the legal assessment, another factor in assessing risk in this context is the level of assets held by the SSS, together with, if relevant, its underwriting by institutions of the state.

The third legal aspect investigated was settlement finality, which must be legally ensured. In the Eurosystem, this has been achieved by the adoption and national implementation of the EU's Settlement Finality Directive (SFD).<sup>6</sup> Pending implementation of the SFD, this was not the case in at least three accession countries. In one case finality is

<sup>6</sup> Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on Settlement Finality in Payment and Securities Settlement Systems, OJ L 166, 11.6.1998, p. 45.

ensured only to the extent that it is guaranteed by the operator. Given the possible amendments that could derive from the SFD's Article 12 process, together with the transposition of the more recent Collateral Directive<sup>7</sup>, the area of finality is very much a moving target which will require ongoing legal review.

Of immediate interest is finality in the context of intraday credit for TARGET. The legal framework for finality under the TARGET Guideline<sup>8</sup> predates the SFD and includes its own definition of finality. The TARGET Guideline also contains an inter-NCB guarantee whereby each NCB agrees to cover losses sustained by any other NCB, within limits, owing to any national provision that prevents finality in TARGET. Although this framework may become redundant in light of the SFD, for example in the context of setting up the legal framework for TARGET2, for the time being it is envisaged that in becoming parties to the TARGET Agreement ACCBs will also become parties to the inter-NCB guarantee.

A subsidiary legal issue is the question of how and when systems should be formally designated and notified to the Commission. In general, how systems are designated is a matter of national implementation of Article 10(1) of the SFD. In any case, designated systems must be notified to the Commission, which can now be done by placing the designated system on the Commission's website, accompanied by a warning that the notification does not become effective until 1 May 2004.

In any case there must be legal protection against the possibility of a successful retroactive challenge of a completed transfer of securities in the system owing to a so-called "zero-hour rule" or other similar insolvency-related provision. Some ACs have a zero-hour or similar rule, although in some cases, transposition of the SFD has successfully eliminated the relevant risks connected to the retroactive effect of such rules in respect of designated systems.

Both the settlement and payment legs of transfers were considered in the assessment. Several systems are not, or not fully, delivery versus payment (DVP), and the time lag between delivery and payment is a particular legal issue when delivery and/or registration has occurred but payment might be delayed until several days later. Further legal uncertainty may arise with regard to who performs the final registration and in what way, i.e. the question of legal evidential proof. Additionally, in some cases it may be possible for transactions entered into the system to be unwound on the trading day if both sending and receiving parties give their approval.

The fourth aspect considered was netting. When used, netting methods must be legally enforceable. Netting is not generally used and most applicable laws do not recognise it; when it is used, there is usually a legal framework provided, although this is not always the case. While the absence of a legal framework may cause legal uncertainty, transposition of the SFD should adequately deal with many of the issues regarding the legal recognition of netting. In one case there are different netting methods for cash and securities claims and obligations, and the circumstances in which the different methods may be used are not clearly defined. In another case, netting is proposed, which makes it necessary to put in place an adequate legal framework to support this.

Finally, it was considered whether rights to securities might in some way be encumbered before or while being transferred, and whether this would affect the title of the new recipient. Generally this is a matter of good faith acquisition, which is dealt with in general law, to the effect that there is protection against acquiring encumbrances in this way provided the buyer/recipient had no knowledge of this, or

7 Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on Financial Collateral Arrangements, OJ L 168, 27.6.2002, p. 43.

8 Guideline ECB/2001/NP3 on a Trans-European Automated Real-time Gross settlement Express Transfer system (as amended).

no knowledge could be imputed to the buyer/recipient. In several cases further legal work is necessary to confirm what, if any, procedures would need to be followed to ensure that rights are received and no notice of an encumbrance can be construed. Fraud is also an issue in some countries, whereby titles could subsequently be challenged, underlining the importance of the liability issues addressed above. In some countries, broader legal consideration of this question is still necessary, particularly in the light of ongoing changes, for example, to the collateral system.

## 2.2 STANDARD 2: SETTLEMENT IN CENTRAL BANK MONEY

*SSSs must use central bank money for the delivery versus payment (DVP) settlement of ESCB credit operations.*

The requirement to use central bank money as the settlement asset for central bank credit operations is designed to avoid the risk of settlement bank failure. It is important to point out that the use of central bank money in this case means settling through an account held at the central bank. In particular in the case of central banks using a pledge pooling system, the SSS is typically used on a free-of-payment basis, while the cash part is settled independently and directly in central bank accounts. This is also the case for some central banks using repo techniques with pre-deposited securities.

DVP facilities aim at eliminating the principal risk for both market participants and central banks. Therefore, central banks must clearly identify when finality has been achieved in a particular SSS to make sure that credit is only granted once the securities have been pledged or delivered with finality. Reciprocally, collateral will only be returned once the credit has been repaid with finality. It is important to note that DVP does not necessarily imply that the process of transferring securities and cash is simultaneous.<sup>9</sup> It is also possible to block

securities until the credit has been released. The key aspect behind achieving DVP is that while one of the two legs of the transaction is being settled, the other leg is blocked in a way which is irrevocable and enforceable in any circumstances. This allows the SSS participants, including the central bank, to be fully protected against principal risk.

At the moment, almost all AC SSSs – with a few notable exceptions – have DVP settlement facilities in central bank money that can be used to settle central bank credit operations.

One exception is the Central Depository and Central Registry (CDCR) in Cyprus, which regularly settles securities transactions in commercial bank money. The CDCR does not currently have DVP settlement facilities in central bank money, as there are no procedures for the transfer of securities that do not originate from trading on the Cyprus Stock Exchange (CSE). Settlement procedures that could also be used for central bank credit operations are currently in the process of being designed, including, inter alia, the transfer of the cash settlement of all CSE transactions to the central bank, a change for which agreement has been reached between the Central Bank of Cyprus and the CSE. When this is completed, all CSE transactions will be settled in central bank money. Pending the establishment of such procedures, the CDCR would become eligible for Eurosystem credit operations on a pre-deposit basis combined with free delivery of securities.

Another exception is the Malta Stock Exchange (MSE) SSS in Malta, which does not currently have DVP settlement facilities. However, since the collateralisation procedure in place for credit operations is based on the pre-deposit of securities (thus avoiding principal risk), the fact that the MSE-SSS does not have regular DVP

<sup>9</sup> For more details on the three types of DVP models, see Committee on Payment and Settlement Systems (CPSS) Publication No. 6, Delivery versus payment in securities settlement systems, Bank for International Settlements (BIS), September 1992.

arrangements may not be problematic in terms of central bank credit operations.

A further peculiarity refers to the Foreign Exchange Bills Settlement System (FEBSS) in Slovenia. Indeed, a commercial bank is used for settlement when Banka Slovenije (BS) issues foreign exchange bills. More specifically, when a counterparty subscribes to a BS foreign exchange bill, it must first make payment to the BS account at one of two major foreign commercial banks, and then the BS issues the securities. As a result, BS is exposed to the risk of settlement bank failure. This problem will disappear when Slovenia joins EMU because, by adopting the Eurosystem operational framework, Banka Slovenije will no longer be allowed to issue foreign exchange bills. However, for a certain time period (after connecting to TARGET, but before adopting the euro), BS is exposed to the risk of settlement bank failure.

Finally, it should be noted that neither the Bratislava Stock Exchange (BSSE) nor the Securities Centre of Slovakia (SC) is a fully-fledged SSS. Indeed, the clearing of transactions with securities other than BS bills and Treasury bills takes place at the BSSE, which calculates settlement instructions and settles the cash leg using a commercial bank settlement account in the national payment system (Slovak Interbank Payment System), and sends securities delivery instructions to the SC to settle the securities leg. In other words, the BSSE functions as a pure clearing engine in charge of calculating settlement obligations, while the SC acts as a pure registrar with no cash settlement facilities. As a result, these systems do not have any direct cash settlement facilities.

### 2.3 STANDARD 3: NO UNDUE CUSTODY RISK

*To limit custody risk as much as possible, SSSs must have a unique and direct relationship with the issuer or a direct link with an SSS which has this relationship. Where use is made of a*

*depository, the SSS which has a direct link with the depository of the global or individual certificates shall be regarded as having a direct and unique relationship with the issuer, provided that there are adequate safeguards against custody risk. Links must have reconciliation procedures for balances at least once a day. All EU SSSs should permit direct access appropriately to all other EU SSSs which meet these standards and other relevant requirements.*

An SSS must have in place adequate safeguards against custody risk to ensure that the securities of participants are protected, particularly against the claims of their creditors. One way of doing this is by segregating securities in the accounts at the SSS, as explained in Standard 1. Other safeguards which could usefully be applied are double accounting and internal auditing. While such safeguards are very helpful, they are not strictly required by the Standard.

To mitigate custody risk when using SSSs, the Eurosystem also advocates either a unique and direct relationship with the issuer or a direct link with an SSS that has this relationship. This means that the custody chain of accounts between the issuer and the ESCB must be as direct as possible, i.e. with only the SSS as an intermediate account. Where registrars exist and are used, two principal problems may arise if the SSS and the registrar are not the same entity. First, there could be a delay in reaching finality if the latter is only reached at the level of the registrar. Second, the integrity of the issue may not be guaranteed, i.e. the SSS may not possess sufficient information on the amount of outstanding securities in circulation to guarantee that there are no more securities in circulation than those booked in its account.

Some SSSs do not act as depositories, but use separate institutions as registrars (VNS, BSE-SSS, NSCSD, BSSE). In Latvia, the VNS is not a central securities depository, but maintains a free-of-payment link with the Latvian Central Depository SSS, LCD-DENOS, which has a

direct and unique relationship with all issuers. Latvijas Banka (LB) is a direct participant in the LCD with an omnibus account that mirrors the positions in the VNS. In other words, the balance of the omnibus account is always equal to the balance of all securities accounts held in the VNS. Owing to the effectiveness of the reconciliation procedures in place and to the real-time operation of the link between LCD-DENOS and the VNS, adequate measures are in place to prevent participants in the VNS (including LB) from being exposed to custody risk. In Romania, both the Bucharest Stock Exchange (BSE) SSS and the National Company for Clearing, Settlement and Depository (NSCSD) make use of registrars as well. While in the case of the BSE-SSS, the final transfer of ownership occurs simultaneously on the accounts in the BSE-SSS and the two registrars it uses, there is currently a time gap between settlement at the NSCSD and registration of the transfer of ownership on the accounts of the registrars it uses. Thus, participants in the NSCSD are exposed to custody risk. However, proposed new legislation in Romania is expected to remedy this situation. Finally, the BSSE in Slovakia functions as a pure clearing engine and performs no settlement activities at all, so that participants are not exposed to custody risk.

In addition, Standard 3 requests that SSSs should grant direct access to all other EU SSSs that meet the Standards and other relevant requirements. Indeed, with a growing number of cross-border transactions as a result of the accession and integration process, the establishment of links will be increasingly important in the future. It should also be noted that upon accession to the EU, all AC SSSs must also grant access to foreign participants. At the moment, only a few AC SSSs have established links with foreign SSSs (ECSD, KELER, LCD-DENOS, CSDL). Indeed, the access rules of many other SSSs do not allow the participation of foreign SSSs (BNBG-SSS, CDCR, SKD, MSE-SSS, CRBS-SKARBNET, GSSS, BSE-SSS, NSCSD, NBS-CR, FEBSS).

#### 2.4 STANDARD 4: REGULATION AND/OR CONTROL BY COMPETENT AUTHORITIES

*An SSS or a linkage between SSSs that is not subject to regulation and/or control by the competent authorities must not be used by NCBs.*

There is a need to ensure the financial strength and management skills of SSSs, as well as the existence of appropriate risk management activities. The regulatory framework covering these aspects varies across countries, depending on the type of SSS, its activities, and a range of institutional factors. The application of this Standard is mainly intended to ensure that NCBs do not make use of SSSs that are neither regulated nor controlled.

Although all AC SSSs are subject to some form of regulation, their depository, clearing and settlement functions are not necessarily subject to adequate oversight by an independent and specialised body such as a financial authority or the central bank in its capacity as overseer of payment and securities settlement systems. Under the current wording of the Standard, SSSs are not formally required to be subject to formal oversight. However, oversight is of particular importance from a central bank perspective as it affects financial stability. Indeed, oversight can be defined as a public policy activity intended to promote the safety and efficiency of securities settlement systems and in particular to reduce systemic risks. In this respect, it is helpful to take note of Recommendation 18 of the CPSS-IOSCO Recommendations on Securities Settlement Systems, which states that “Securities settlement systems should be subject to transparent and effective regulation and oversight. Central banks and securities regulators should co-operate with each other and with other relevant authorities.” The explanatory notes to Recommendation 18 further clarify that the division of responsibilities for the regulation and oversight of securities settlement systems among public authorities varies from country to country.

The Standard requires clarity as to the nature of the relevant legal provisions as to which authorities are responsible for regulating the systems as a whole, as well as for supervising the individual systems. It should also be clear how these activities are performed and what objectives are pursued. It is thus also important that the tools available to the relevant regulatory and oversight authorities are clear and effective. In the context of this Standard, self-regulation is not sufficient to fulfil the requirement of adequate regulation and control.

An overview of the regulatory framework for the AC SSSs (including the oversight role of central banks) is provided in Annex 1. The main results can be summarised as follows. Most SSSs that are managed by central banks are subject to internal and external auditing (BNBG-SSS, SKD, VNS, CRBS-SKARBNET, GSSS, NBS-CR, FEBSS). However, only the following are subject to oversight: BNBG-SSS, SKD, VNS, CRBS-SKARBNET and NBS-CR.

Turning to the SSSs that are not operated by the central banks themselves, some are regulated and overseen by financial market authorities and/or the relevant central banks (CDAD, CDCR, KELER, LCD-DENOS, CSDL, MSE-SSS, KDPW, SC, BSSE, KDD), while others are currently not subject to oversight (ECSD, BSE-SSS, NSCSD). With regard to the special arrangements of Eesti Pank (EP) with the international central securities depositories (ICSDs) in the context of Estonia's currency board regime, it should be noticed that EP is currently not associated in the oversight of Euroclear Bank and Clearstream Banking Luxembourg, and thus relies on the oversight activities of the relevant authorities in charge of the oversight of the ICSDs. EP has not established a framework for the exchange of relevant information with these oversight authorities.

## 2.5 STANDARD 5: TRANSPARENCY OF RISKS AND CONDITIONS FOR PARTICIPATION IN A SYSTEM

*SSS operators must provide the NCBs with an insight into the potential risks of the settlement of securities (e.g. they must provide timely, orderly and reliable information about the potential risks resulting from participation in the system). Access and exit criteria for participation in the SSS must be objective and public. In this respect, the SSSs' full response to the G10-IOSCO disclosure framework for SSSs must be readily available.*

Central banks must be aware of any risks they might be exposed to as participants in the system, which requires an adequate level of transparency. In addition, the regulator and overseer should have the necessary arrangements in place to receive relevant information regarding any change in the risk framework, figures on turnover, failed transactions, etc.

Central banks typically have several channels through which they receive information on potential risks resulting from their participation in an SSS, depending on their relation to the SSS operator. The central banks probably have the strongest insight into potential risks when they act as operators of the system (BNBG-SSS, SKD, VNS, CRBS-SKARBNET, GSSS, NBS-CR, FEBSS). This is also true, although to a lesser extent, when the central bank is a major shareholder of the SSS operator and/or has a representative on the Board of Directors (CDAD, KELER, CSDL, KDPW, KDD). The central banks of most countries also have access to information via their supervisory power or oversight responsibilities over the SSS operator (in Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland and Slovenia). However, oversight responsibilities still need to be developed in a couple of countries (namely Romania and Slovakia).

As a way of achieving transparency, the Standard requires the SSSs to answer and publish the BIS (CPSS-IOSCO) Disclosure



Framework on their websites (and that of the BIS) on a regular basis. Some SSSs have not yet responded to the G10-IOSCO Disclosure Framework (CDCR, SKD, ECSD, MSE-SSS, GSSS, NBS-CR, SC, BSSE, FEBSS) or have no procedures that foresee regular updates of the answers provided (CDAD, KELER, CSDL, CRBS-SKARBNET, KDD).

## 2.6 STANDARD 6: RISK MANAGEMENT PROCEDURES

*SSSs must adopt risk management measures as appropriate to the individual system, in order to cope with the effects of a default of participants. SSSs must be structured and operate in such a way as to avoid, or if not possible, to minimise any conflict of interest possibly arising from their other operations.*

Thanks to the use of DVP procedures by SSSs, participants are not exposed to principal risk. However, participants can be exposed to liquidity risks in case of delays or an unwinding resulting from a defaulted participant's transaction. This is particularly relevant in most DVP model 2 and 3 systems that are based on netting procedures (ECSD, KELER, LCD-DENOS, CSDL, KDPW, BSE-SSS, NSCSD, BSSE). To minimise settlement failure and to limit the possibility of such unwinding with its systemic implications, these SSSs have established risk management controls by providing services mainly aimed at guaranteeing the settlement of transactions if a participant defaults. In other words, the SSS acts as the "settlement facilitator" by providing settlement guarantees for both the cash leg and the securities leg of a transaction. This may take the form of securities lending and borrowing facilities, or of guarantee funds which are used in case a participant defaults. Another way of providing settlement guarantees is by means of central counterparty clearing services. A central counterparty (CCP) is an entity that interposes itself between two counterparties, acting as the buyer to every seller and the seller to every buyer. From a legal perspective, the

interposition of the CCP as a buyer to the seller and as a seller to the buyer results in the creation of two new contracts which replace the original single contract ("novation"). Alternatively, a CCP may work on the basis of an "open offer", whereby the CCP enters directly into contractual relationships with the seller and the buyer.

The findings of the assessment show that currently most AC SSSs that provide settlement guarantees do not contribute to any guarantee funds with their own capital, nor do they act as principals in securities lending and borrowing transactions (CDAD, ECSD, CSDL, BSE-SSS, NSCSD, BSSE, KDD). Therefore, they are not exposed to any credit risk.

However, one SSS (KELER) acts as a CCP for spot market transactions on the BSE and derivatives transactions on the BSE and BCE. KELER does not automatically become the buyer/seller for the respective original counterparties in securities trades. However, in case of non-performance of a participant – either on the cash or on the securities side – KELER generates two new contracts and becomes the buyer to the seller and the seller to the buyer. The new contracts may not necessarily reflect directly the original trade because KELER encourages partial performance and would only deliver the outstanding amount of cash or securities. To the extent that KELER acts as a CCP, it provides some form of settlement guarantee and thus has a relatively high degree of risk exposure. Another SSS (LCD-DENOS) acts as principal in a securities lending and borrowing programme, although it plans to terminate its principal status in the second half of 2003. Yet another SSS (KDPW) may, in extreme cases when the assets collected as margins and the assets of the settlement guarantee fund turn out to be insufficient, decide to use some of its own funds to close the position (only for settlement of derivatives). In other words, it may grant credit to participants if it wishes to do so.

The exposure to (credit) risk is typically larger for real CCPs than for SSSs that provide settlement guarantees. While a CCP is the legal counterparty in every trade, thus assuming full credit risk, the effective risk exposure of SSSs offering settlement guarantees depends on the degree to which they contribute to settlement guarantee funds with their own capital, and on whether they act as principals or agents in securities lending and borrowing transactions.

From a financial stability point of view, the extent to which an SSS effectively assumes credit risk is crucial. Indeed, if an SSS is exposed to credit risk, the functioning of its custody and settlement activities could be affected by disturbances relating to its settlement facilitator services. Ultimately, the SSS itself could default, with harsh systemic implications for financial markets. Therefore, for the sake of financial stability, an SSS ought as far as possible to be designed as a service provider free of credit risk. The most effective way to ensure a credit risk-free environment is the establishment of distinct legal entities to manage the risk of securities clearing and securities settlement. The idea is to create a legal structure which prevents any spillover of risks from the entity providing CCP services to the entity providing SSS services. This may also take the form of a holding structure with the CCP and SSS as affiliates, provided that the SSS's own capital remains unaffected if the CCP defaults.

An alternative solution for SSSs could be to provide settlement guarantees without taking credit risks. The settlement of the securities leg could be guaranteed by securities lending and borrowing facilities where the SSS acts purely as an agent, not as the principal. The settlement of the cash leg could be guaranteed by using the assets of a settlement guarantee fund to which the SSS itself, however, does not contribute. In general, it is crucial that the SSS does not use its own capital to provide settlement guarantees.

The results of the assessment against Standard 6 are summarised in Annex 2.

## 2.7 STANDARD 7: INTRADAY FINALITY OF SETTLEMENT

*SSSs must provide facilities to settle certain ESCB operations (those involving intraday and overnight credit) with intraday finality (i.e. settlement that cannot be reversed or unwound). SSSs must not expose NCBs to other sources of settlement risk when they are settling operations with counterparties in an SSS and/or via linked arrangements. SSSs used for the settlement of central bank transactions shall have facilities in place by 2002 to allow the option of intraday DVP settlement in central bank money. This may take the form of real-time gross settlement, or a series of batch processes with intraday finality.*

It is important to note that DVP and intraday finality are two distinct and independent concepts. While the meaning and importance of DVP has already been addressed under Standard 2, the additional element introduced by this Standard is intraday finality. Intraday facilities allow securities to be retransferred with finality in the same SSS during TARGET operating hours, i.e. the same securities can be settled with intraday finality several times on the same day. Such facilities are crucial from a central bank perspective, as in some cases Eurosystem credit operations may have to be settled within a very short period of time. There are several ways of achieving intraday finality. This may take the form of real DVP settlement, either through an RTGS or a multiple batch system with gross settlement (model 1), or a multiple batch system with net cash settlement (models 2 and 3). The most sophisticated solution is the use of RTGS systems. Indeed, the main difference between the various systems refers to the timing when finality is achieved. In an RTGS system, finality occurs in real time, whereas in batch systems finality is reached at the end of the settlement cycle. Therefore, the level of intraday finality reached depends on the number of batches processed during the day and the time lag between consecutive batches. In general, it is the responsibility of each central bank to consider

whether the frequency of batches is enough to ensure the smooth functioning of TARGET.

In the absence of real DVP settlement facilities, intraday finality can also be achieved by means of *free delivery of securities*. In this case, the SSSs can only settle securities with intraday finality. Once the securities leg of the transaction has been settled in an irrevocable and legally binding way, the central bank can release credit. If there are no DVP settlement facilities available and it is not possible to settle securities with intraday finality either, securities would have to be *pre-deposited* before credit can be released. If the SSS has no intraday settlement facilities at all, collateral must be pre-deposited the day before the counterparty wishes to receive credit. If the SSS has intraday settlement facilities only until a certain point in time, collateral must be pre-deposited before that point in time. In this context, it is important to note again that in the case of central banks using pooling systems, SSSs are typically used on a free-of-payment basis, while the cash part is settled independently and directly in central bank accounts. In other words, the pre-depositing and free delivery of securities are naturally implied by pooling systems.

In the case of free delivery and pre-depositing of securities, the central bank is not exposed to principal risk. As a result, in the absence of DVP facilities, the SSS can be eligible for central bank credit operations either on a free delivery basis or by pre-depositing securities. Against this background, four different forms of achieving intraday finality may be distinguished:

- (i) DVP settlement on a real-time basis;
- (ii) DVP settlement with multiple batch processing;
- (iii) Free delivery of securities (i.e. there are no DVP settlement facilities available, and it is only possible to settle securities with intraday finality);

- (iv) Pre-depositing securities (i.e. there are no DVP settlement facilities available, and nor is it possible to settle securities with intraday finality).

Annex 3 summarises the forms of intraday finality that are in place in the AC SSSs. Quite a few AC SSSs already have real-time settlement facilities (SKD, KELER, VNS, LCD-DENOS, CRBS-SKARBNET, KDPW, KDD), while one SSS (BNBG-SSS) accomplishes real DVP by means of multiple batches. In those cases where there are no real DVP facilities in place, some SSSs provide facilities that allow for the free delivery of securities (CDAD, ECSD, FEBSS), while the remaining systems work on a pre-deposit basis (CDCR, MSE, GSSS, BSE SSS, NSCSD, NBS-CR, BSSE). As a result, substantial work needs to be undertaken in these countries to permit settlement with intraday finality. Indeed, as Annex 3 indicates, many SSSs which are currently only used on a pre-deposit basis plan to introduce settlement facilities that allow securities to be retransferred with finality several times on the same day. It should be noted, however, that the introduction of such facilities is a costly exercise. From an economic and commercial point of view, it could therefore be a viable alternative for some marketplaces to consider closing down their SSS infrastructure and instead make use of other SSSs in the EU.

## 2.8 STANDARD 8: OPERATING HOURS AND DAYS

*Operating hours and opening days of SSSs must be in compliance with NCBS' requirements for the TARGET system and for the cross-border use of eligible securities included in the tier one and two lists.*

SSSs must be open on TARGET operating days, in particular to allow the cross-border use of collateral. In addition, SSSs must be open during TARGET operating hours from 07:00 to 18:00 CET. It should be noted, however, that for an SSS to be fully compliant with Standard 8, it is not sufficient to have the same operating

hours as TARGET. Indeed, to fulfil this key issue, if a counterparty is using collateral on a cross-border basis, it must be in a position to access the collateral at any time. To fulfil this key requirement, the operating rules of the SSSs can specify different cut-off times: the customer transactions' cut-off is usually in the middle of the afternoon, whereas that of interbank and NCB transactions is usually close to 18:00. It should also be possible to have extended operating hours beyond these cut-off times when necessary under exceptional circumstances (including procedures relating to recourse to the marginal lending facility in repo countries). The cut-off time should be understood as the last moment at which a participant can enter an instruction for same-day settlement.

Annex 4 provides an overview of the current situation as far as the operating hours are concerned. Currently, no AC SSS complies with Standard 8, which can simply be explained by the fact that SSSs are expected to meet the current needs of their national markets rather than TARGET requirements. All SSSs, however, have expressed a firm commitment to adjust their operating hours as soon as their home country connects to TARGET.<sup>10</sup> In many cases, this will mean that operating hours will have to be extended. Indeed, there are at least two reasons why it is crucial for an SSS to have long operating hours:<sup>11</sup>

- In case of short operating hours, counterparties will be forced to pre-deposit securities. However, the use of pre-deposited securities creates opportunity costs for counterparties.
- Long operating hours on the part of SSSs are crucial for end-of-day procedures. It is important that the ESCB can promptly mobilise collateral, especially when collateralised lending from the central bank is required at the end of the day. If the ESCB were to rely only on pre-deposited collateral, this could introduce some

constraints on collateralised credit to be granted at the end of the day.

As with the TARGET operating days, this issue only becomes relevant when the SSS's home country joins TARGET and EMU. The existing operating calendar has only one exception to full harmonisation, which originates from the difference between Orthodox and Catholic Christian Easter holidays, when Greece remains open while the rest of the euro area is closed.

To assess compliance with the Standard, the procedures and techniques for providing collateral for central bank credit operations are also taken into account. Indeed, for countries using pooling systems, delivery can easily take place late in the day (as it is a free-of-payment delivery), while for repo countries (using earmarked collateral), settlement might be more demanding and difficult to implement (as it is on a DVP basis). To the extent that SSSs are currently used for central bank credit operations, Annex 4 provides an overview of the procedures and techniques used for the provision of collateral.

Depending on the operating hours, the availability of settlement facilities with intraday finality, and the procedures and technique used for collateralisation, it is possible to conclude to what extent the requirement of intraday settlement is fulfilled, and how the SSS can be used if a counterparty wishes to receive central bank credit during the day. Only a few SSSs can be used without restriction (SKD, EP-ICSDs, LCD-DENOS on a DVP basis, or CDAD, SC and BSSE on a free delivery basis). Most SSSs, however, can only be used by pre-depositing securities the day before (CDCR, MSE, GSSS, BSE-SSS, NSCSD, NBS-CR) or before a certain point during the day for same-day

<sup>10</sup> It is important to note that this change in operating hours should happen well in advance (i.e. well before connection to TARGET takes place), so that counterparties can adjust to the new operating hours.

<sup>11</sup> In the case of pooling systems, the need for long operating hours is less evident to the extent that excess collateral is available in a pool.

settlement (BNBG SSS, ECSD, KELER, VNS, CSDL, CRBS-SKARBNET, KDPW, FEBSS, KDD).

## **2.9 STANDARD 9: OPERATIONAL RELIABILITY OF TECHNICAL SYSTEMS AND AVAILABILITY OF ADEQUATE BACKUP FACILITIES**

*All SSSs must ensure the operational reliability of technical systems and the availability of backup facilities capable of completing daily processing requirements.*

Operational risk refers to the risk of unexpected losses as a result of deficiencies in systems and controls, human error or management failure, thereby affecting an SSS's ability to complete settlement. Possible operational failures include errors or delays in processing, system outages, insufficient capacity, or fraud committed by staff. Following the events of 11 September 2001, issues relating to operational reliability and business continuity have very much gained in importance and are high on the agenda of the Eurosystem. Indeed, the ongoing discussions of the Eurosystem in this field are likely to have an impact on TARGET recovery standards and the requirements for SSSs. Therefore, this report contains a recommendation to all SSSs assessed requesting that they carefully monitor and consider the current discussions in the Eurosystem regarding business continuity planning to further improve the operational reliability of their systems.

Assessing SSSs against Standard 9 proved rather complex as, in some cases, it required the examination of many pieces of very detailed documentation. The assessment focused on whether SSSs had an emergency plan, adequate backup facilities, and disaster recovery facilities. Moreover, it was checked whether SSSs are able to recover within a maximum of four hours. Annex 5 provides an overview of the main findings.

Many SSSs (BNBG-SSS, CDAD, SKD, EP-ICSDs, ECSD, KELER, VNS, LCD-DENOS,

CSDL, MSE, CRBS-SKARBNET, KDPW, NSCSD, SC, FEBSS, KDD) have emergency plans, while some other SSSs are currently in the process of establishing formal emergency plans (GSSS, BSE SSS, NBS-CR, BSSE). In terms of backup and disaster recovery facilities, the assessment established that most SSSs have such facilities in place (BNBG-SSS, CDAD, SKD, ECSD, VNS, LCD-DENOS, CSDL, MSE, CRBS-SKARBNET, KDPW, SC, FEBSS, KDD). However, some other SSSs have backup facilities, but lack a remote disaster recovery site (CDCR, KELER, NBS-CR, BSSE), while other SSSs currently have no such facilities at all (GSSS, BSE-SSS, NSCS), but are in a process of establishing adequate ones. Of those SSS which have backup and disaster recovery facilities in place, only some currently comply with the requirement of being able to recover within four hours (BNBG-SSS, CDAD, SKD, VNS, CSDL, FEBSS, KDD). Considering that one of these systems (CSDL) possibly does not have sufficient operational capacity to cope with peaks, these findings highlight the fact that some SSSs still need to undertake extra work to improve their operational reliability.

## ANNEX I

# REGULATORY FRAMEWORK FOR SECURITIES SETTLEMENT SYSTEMS

### ANNEX I

Regulatory  
framework for  
securities  
settlement systems

SSS (country)	Legal status	Authority responsible for regulation and/or control	Features of the regulatory framework
BNBG-SSS (Bulgaria)	Owned and operated by the Bulgarian National Bank (not a distinct legal entity)	Bulgarian National Bank, Ministry of Finance	The BNBG-SSS is subject to control by the Debts Directorate of the Ministry of Finance, and the Government Guaranteed Debts Depository Directorate of the Fiscal Services Department at the Bulgarian National Bank (BNB). Regulation no. 15 (Control on Transactions in Book-entry Government Securities) specifies applicable procedures of the control exercised by the competent authorities. In addition, the BNBG-SSS is subject to control by the Internal Audit Department at the BNB. Audits are performed at least once a year and ensure the proper functioning of the system in accordance with relevant regulations. As part of the BNB, the BNBG-SSS is also audited by the National Accounts Office and a specialised external audit company. Regulations that govern its operations are issued by the BNB and the Ministry of Finance. The BNBG-SSS is subject to oversight by a separate Payment Systems Oversight Division established within the BNB, which is not involved in operations, but is instead in charge of the analysis and assessment of systems, rules and regulations.
CDAD (Bulgaria)	Public limited company (owned by the Ministry of Finance, the BNB, commercial banks, and investment intermediaries)	Ministry of Finance, BNB, Financial Supervision Commission	The CDAD is subject to regulation and control by the Financial Supervision Commission, the BNB and the Ministry of Finance. In addition, the CDAD is subject to oversight by a separate Payment Systems Oversight Division established within the BNB, which is not involved in operations, but is instead in charge of the analysis and assessment of systems, rules and regulations.
CDCR (Cyprus)	Owned and operated by the Cyprus Stock Exchange (which is a public legal entity)	Cyprus Securities and Exchange Commission (CSEC) (also the Central Bank of Cyprus by means of a signed Memorandum of Understanding (MoU) with the CSEC)	The CDCR, as part of the Cyprus Stock Exchange (CSE), is subject to supervision by the CSEC. The Central Bank of Cyprus has signed an MoU with the CSEC, and it will be given additional authority regarding oversight of the system as the Settlement Finality in Payment Systems and Securities Settlement Systems Law enters into force in 2004. The CDCR is subject to audit by the Internal Audit Department of the CSEC, and to audit by both private sector auditors and the Office of the Auditor General of the Republic.
SKD (Czech Republic)	Owned and operated by Česká národní banka (no distinct legal entity)	Česká národní banka (partially also the Securities Commission)	The SKD is subject to internal audit by Česká národní banka (CNB) and to external audit as a part of CNB. CNB has a shared oversight competence over the SKD together with the Securities Commission (the latter, however, does not oversee CNB's activities concerning securities issuance and settlement).

SSS (country)	Legal status	Authority responsible for regulation and/or control	Features of the regulatory framework
EP-ICSDs (Estonia)	Bilateral arrangements on the standard terms and conditions between Eesti Pank and an ICSD (Euroclear Bank or Clearstream Banking Luxembourg), and between a credit institution and an ICSD	The ICSDs are regulated and controlled by relevant national authorities of Belgium and Luxembourg (the Belgian Banking and Finance Commission, Banque nationale de Belgique, Commission de Surveillance du Secteur Financier, and Banque centrale du Luxembourg). Eesti Pank (EP) is responsible for the regulation of the procedures for securities purchase transactions between EP and credit institutions, and the regulation and control of the Estonian RTGS system.	Eesti Pank (EP) is not involved in the oversight of ICSDs in any way. Nor is there any scheme for the exchange of information. The procedure for securities transactions between EP and credit institutions was established by EP Governor Decree No. 15 of 29 December 2000.
ECSD (Estonia)	Public limited company; a subsidiary 100% owned by the Tallinn Stock Exchange (which was strategically acquired by the HEX Group in 2002)	Financial Supervision Authority (autonomous agency under the administration of EP), Ministry of Finance	The ECSD is regulated by the Act on the Central Register of Securities and additional decrees of the Government and the Ministry of Finance. The competence of the Financial Supervision Authority is defined in the Financial Supervision Authority Act, the Credit Institutions Act, the Insurance Activities Act, the Investment Funds Act, the Securities Market Act, the Act on the Estonian Central Register of Securities Act and regulations established on the basis of these acts. The Ministry of Finance checks certain areas, such as the price list or insurance contract of the registrar. The oversight role of EP has not yet been established.
KELER (Hungary)	Joint stock company (50% owned by the Magyar Nemzeti Bank, 25% by the Budapest Stock Exchange, and 25% by the Budapest Commodity Exchange)	Hungarian Financial Supervision Authority (HFSA, supervision), Magyar Nemzeti Bank (MNB, oversight); legislation is drafted by the Ministry of Finance in close cooperation with MNB and the HFSA	KELER is subject to prudential supervision by the HFSA. As of 1 January 2004, KELER will be transformed into a specialised credit institution and subject to banking supervision. By provisions in the Capital Market Act, MNB is entrusted with oversight responsibilities with regard to securities clearing and settlement systems (in particular, regulation, efficiency, risk management and operational reliability). In 2000, the HFSA and MNB signed an MoU for cooperation designed to ensure the smooth functioning of the Hungarian securities clearing and settlement systems.

SSS (country)	Legal status	Authority responsible for regulation and/or control	Features of the regulatory framework
LB-VNS (Latvia)	Owned and operated by Latvijas Banka (no distinct legal entity)	Latvijas Banka	The VNS is subject to internal control by the Internal Audit Department of Latvijas Banka (LB). An internal audit is performed at least once a year, while an annual external audit of LB, including the VNS, is performed by an international audit company. The VNS is not subject to control by other authorities. The provisions approved by the Executive Board make LB responsible for the oversight of the VNS.
LCD-DENOS (Latvia)	Public limited company – 100% owned by the Riga Stock Exchange (which was strategically acquired by the HEX Group in 2002)	Financial and Capital Market Commission (supervision), LB (oversight)	The LCD is subject to regulation and control by the Financial and Capital Market Commission (FCMC), internal audit by the HEX Group, as well as external audit. The recently concluded MoU between LB and the FCMC makes LB responsible for oversight of the LCD.
CSDL (Lithuania)	Public company owned by Lietuvos bankas (main shareholder), the Ministry of Finance and the National Stock Exchange of Lithuania	Lithuanian Securities Commission (supervision), Lietuvos bankas (oversight)	The CSDL is subject to supervision by the Lithuanian Securities Commission. According to the recently adopted Law on Settlement Finality in Payment and Securities Settlement Systems and amendments to the Law on Lietuvos bankas (Lb), Lb is entrusted with legal oversight responsibilities over the SSSs, which are governed by the law of the Republic of Lithuania (including the CSDL).
MSE (Malta)	SSS (CSD and Clearing and Settlement of Securities – CSS) are functions within the Malta Stock Exchange (which is owned by the Government of Malta)	Malta Financial Services Authority, Central Bank of Malta/Bank Centrali ta' Malta (CBM)	Currently, the CSD and CSS functions within the Malta Stock Exchange (MSE) are not addressed in specific regulations, but are instead a part of the MSE by-laws. The system is subject to internal audit and external audit (covering financial and procedural aspects) by the MSE. The CBM is legally entrusted with overseeing and regulating payment and securities settlement systems under Section 36 of the Central Bank of Malta Act, and to issue directives in this respect. The MoU between the Malta Financial Services Authority and the CBM has now been finalised.
CRBS-SKARBNET (Poland)	The CRBS is a register for Treasury bills, while SKARBNET is the book-entry settlement system for Treasury bills. Both are owned by Narodowy Bank Polski (NBP).	Involved in regulation: the Polish Parliament, Ministry of Finance, NBP; involved in control: the Internal Audit Department of NBP and the Supreme Chamber of Control	CRBS-SKARBNET is subject to internal control by NBP and external control by the Supreme Chamber of Control. Oversight is carried out by NBP.



SSS (country)	Legal status	Authority responsible for regulation and/or control	Features of the regulatory framework
KDPW (Poland)	Joint stock company owned in equal parts by the State Treasury, the Warsaw Stock Exchange and NBP.	Involved in regulation: the Polish Parliament, KDPW Supervisory Board, the Polish Securities and Exchange Commission, KDPW Management Board, KDPW Shareholders Assembly, NBP Management Board (banking account agreement); involved in control: the Supreme Chamber of Control, the Polish Securities and Exchange Commission, KDPW Internal Audit Department	The KDPW is subject to the Law on Public Trading in Securities, the KDPW Statute, the KDPW Rules, Detailed Rules of Operation, the KDPW Registration Procedures, and the Banking Account Agreement (between NBP and KDPW). The KDPW is subject to external control performed by the Supreme Chamber of Control and the Polish Securities and Exchange Commission. The KDPW is also subject to internal audit. Oversight is carried out by the Polish Securities and Exchange Commission.
GSSS (Romania)	Owned and operated by the National Bank of Romania (not a distinct legal entity).	Ministry of Public Finance, National Bank of Romania, National Securities Commission, Court of Accounts	The GSSS is subject to internal and external audit of operational reliability, and to external financial audit by the Court of Accounts. The oversight role of the National Bank of Romania (NBR) is currently not established, however, it will be established by the proposed amendments to the Banking Law.
BSE-SSS (Romania)	SSS is a function within the Bucharest Stock Exchange (which is a non-profit public institution with no shareholders)	National Securities Commission; NBR (for the interbank settlement of the cash leg of BSE transactions)	The BSE-SSS is subject to internal and external audit of the BSE. The oversight role of the NBR has not yet been established.
NSCSD (Romania)	Non-profit joint stock company that is owned by Romanian financial organisations that participate in the securities markets	National Securities Commission, NBR (for the interbank settlement of the cash leg of BSE transactions)	The NSCSD is subject to supervision by the National Securities Commission and by the NBR (for the interbank settlement of the cash leg of BSE transactions). It is also subject to internal and external audit. The oversight role of the NBR has not yet been established.
NBS-CR (Slovakia)	Owned and operated by Národná banka Slovenska (no distinct legal entity)	Národná banka Slovenska	The NBS-CR is subject to semi-annual internal audit by Národná banka Slovenska (NBS), controlling the accuracy of securities settlement. NBS also acts as overseer.

SSS (country)	Legal status	Authority responsible for regulation and/or control	Features of the regulatory framework
SC (Slovakia)	Established by the Ministry of Finance as a joint stock company 100% owned by the state	Financial Market Authority, Ministry of Finance	The Securities Centre is regulated by the Financial Market Authority and the Ministry of Finance, and controlled by the Financial Market Authority, in accordance with Act No. 96/2002 Coll. On the Supervision of the Financial Markets. The oversight role of NBS has been established.
BSSE (Slovakia)	A function of the Bratislava Stock Exchange, which is a public limited company with private banks as the main shareholders	Financial Market Authority, Ministry of Finance	The BSSE is regulated by the Financial Market Authority. The BSSE is overseen by both the Financial Market Authority and NBS.
FEBSS (Slovenia)	Owned and operated by Banka Slovenije (no distinct legal entity)	Banka Slovenije	FEBSS is subject to internal and external audit by Banka Slovenije (BS). The oversight role of BS has not yet been established.
KDD (Slovenia)	Public limited company (its main shareholders are the members of KDD – credit institutions and broking companies)	Securities Market Agency (regulation and supervision), BS (regulation and supervision as the RTGS system operator; also oversight), Ministry of Finance (tax auditing), external auditors	The most relevant legislation comprises the Securities Market Act 1 and the Dematerialised Securities Act, as well as the rules and regulations that must be approved by the Securities Market Agency. BS has established an oversight role over the KDD. The existing MoU between the Securities Market Agency (supervisor) and BS (overseer) is currently in the process of being amended.

## ANNEX 2

### RISK CONTROL MEASURES IN AC SECURITIES SETTLEMENT SYSTEMS

SSS (country)	DVP model	Risk control measures
<b>BNBG-SSS</b> (Bulgaria)	DVP model 1	No securities overdrafts permitted. No securities or funds lending facilities.
<b>CDAD</b> (Bulgaria)	DVP model 2	Guarantee fund in place for Bulgarian Stock Exchange transactions. No securities lending services.
<b>CDCR</b> (Cyprus)	DVP model 1 for large-value transactions (CYP 30,000 and above); DVP model 2 for small-value transactions (below CYP 30,000)	Availability of securities is checked prior to the conclusion of a transaction. No securities overdrafts permitted. Guarantee fund (consisting of contributions from all members based on their everyday transactions) and the joint compensation fund (consisting of a pre-defined amount of money which each member is obliged to provide). Sell-out procedures. No securities lending services.
<b>SKD</b> (Czech Republic)	DVP model 1 on a real-time basis	Collateralised intraday credit provided by CNB to commercial banks. No securities overdrafts permitted. No centralised securities lending facility. Collateral requirements for participant banks. Additional risk management measures will be created when the Act on Business on Capital Market implementing the SFD enters into force (foreseen for 1 May 2004).
<b>EP-ICSDs</b> (Estonia)	DVP model 1	EP credits a credit institution's account with EP in cash countervalue only after the securities have been delivered to the EP's securities account with the ICSD.
<b>ECSD</b> (Estonia)	DVP model 3 for Tallinn Stock Exchange (TSE) trades, DVP model 2 for OTC trades, free delivery	Replacement of the seller with the member of the exchange that mediated the transaction, postponement of the settlement date for the stock exchange trades, buy-in or sell-out procedures, the TSE guarantee fund deposited with EP. The ECSD does not guarantee the settlement of any OTC trade. There are no securities lending services.
<b>KELER</b> (Hungary)	DVP model 1 based on real-time settlement in central bank money is in place. However, MNB currently extends credit against pre-deposited collateral. DVP model 3 is used for stock exchange spot market transactions. All other securities transactions are settled on a DVP model 1 principle.	KELER acts as a CCP for the spot market transaction on the BSE and the derivatives transactions on BSE and BCE. A three-level guarantee system is in place, consisting of individual collateral (fixed contributions, margins), collective guarantee funds and KELER's own capital. There is an automated securities lending system combined with buy-in procedures. Credit facility is granted against liquid securities posted as collateral (in the form of repos).
<b>VNS</b> (Latvia)	DVP model 1 based on real-time settlement	Full collateralisation of all LB credit operations. Securities overdrafts not permitted. No securities lending service.
<b>LCD-DENOS</b> (Latvia)	DVP model 3 is used for Riga Stock Exchange (RSE) trades and DVP model 1 on a real-time basis is used for OTC trades.	The guarantee fund covers possible cash defaults in the settlement of stock exchange transactions. The LCD acts as principal in the Securities Lending and Borrowing Programme (in practice, however, all securities lending and borrowing transactions currently take place only among market participants).

SSS (country)	DVP model	Risk control measures
<b>CSDL</b> (Lithuania)	DVP model 1 and DVP model 3 (which is only used for settling National Stock Exchange of Lithuania central market transactions concluded at the opening auction)	Before settlement is effected, recalculation of settlement positions is possible based upon the availability of sufficient funds or securities, while settlement of the excluded positions is postponed to the following day or cancelled. A guarantee fund and buy-in procedures are in place. There is no securities lending service.
<b>MSE</b> (Malta)	Currently, no DVP settlement has been set up, but there are plans to introduce this by the end of 2003	No securities overdrafts are permitted. Collateral or guarantees must be provided by members. A commercial bank credit line is available.
<b>CRBS-SKARBNET</b> (Poland)	DVP model 1	No settlement guarantee fund. Currently, no securities lending system (but this is planned to be introduced in the second quarter of 2003). Measures to prevent, or cope with the effects of, a member default: access criteria, overnight and intraday credit, matching of transactions, DVP procedures (gross settlement).
<b>KDPW</b> (Poland)	DVP model 1 or DVP model 2 for Treasury bonds and NBP bonds (opt to participant); DVP model 2 for all other transactions	Risk management tools include a settlement guarantee fund on the basis of a loss-sharing agreement, access criteria and a risk monitoring system, margins (for derivatives), buy-in and sell-out procedures and an automated securities lending system.
<b>GSSS</b> (Romania)	DVP model 1	No specific risk management measures, except for special procedures in case of bankruptcy and trading limits assigned to every authorised dealer. It is envisaged that the new electronic GSSS will have a lending module capable of guaranteeing the delivery of securities; this is expected to reduce the number of failed transactions.
<b>BSE-SSS</b> (Romania)	DVP model 2	Each member firm is given a trading limit according to its capital adequacy; commercial credit line; guarantee fund; loss-sharing agreement; buy-in procedures; NBR guarantee schemes.
<b>NSCSD</b> (Romania)	DVP model 2	A guarantee fund (comprising participants' mandatory and optional contributions), surveillance of the participants' financial capability, organisational requirements for the participants, securities lending facilities, buy-in and sell-out procedures, specific administrative sanctions, NBR guarantee schemes.
<b>NBS-CR</b> (Slovakia)	DVP model 1	There are no specific risk management measures. The availability of securities is checked prior to the conclusion of a transaction. No securities lending services exist.
<b>SC</b> (Slovakia)	n/a	A risk fund is in place.
<b>BSSE</b> (Slovakia)	DVP model 2	A guarantee fund composed of members' contributions (collateral) is in place for cash failure. Securities for delivery are blocked in the SC upon the BSSE's instruction. No securities lending service exists.

SSS (country)	DVP model	Risk control measures
<b>FEBS</b> (Slovenia)	DVP model 1	DVP model 1 settlement does not occur simultaneously: the interest of BS is prioritised, thereby eliminating credit risk. Other risks are mitigated by membership being limited to Slovene commercial banks that are subject to supervision by BS. There is no securities lending service.
<b>KDD</b> (Slovenia)	DVP model 2 for organised market trades and DVP model 1 based on real-time settlement for OTC trades	No unwinding is possible. In case of organised market trades, two principal tools against cash failure are the liquidity reserve fund (comprising members' contributions in cash pending daily settlement balances on S-1) and a guarantee fund (annual fixed and monthly variable members' contributions in cash, updated monthly, or more frequently in extraordinary circumstances). Ultimately, the guarantee fund is in effect an implicit loss-sharing agreement among all members. Buy-in procedures are in place to guarantee settlement of the securities leg. There is no organised securities lending service – lending occurs on a bilateral basis.

## ANNEX 3

# INTRADAY FINALITY IN AC SECURITIES SETTLEMENT SYSTEMS

### ANNEX 3

Intraday  
finality in AC  
securities  
settlement systems

SSS (country)	Form of intraday finality	Planned follow-up work
<b>BNBG-SSS</b> (Bulgaria)	DVP model 1 with multiple batch processing	
<b>CDAD</b> (Bulgaria)	Free delivery	
<b>CDCR</b> (Cyprus)	Pre-deposit of securities	The CSE and the CBC are in the process of determining the necessary changes in order to implement intraday settlement finality, at least for central bank credit operations.
<b>SKD</b> (Czech Republic)	DVP model 1 based on real-time settlement	
<b>EP-ICSDs</b> (Estonia)	Free delivery	
<b>ECSD</b> (Estonia)	Free delivery; OTC trades (DVP model 2) if instructions input by 12:45 CET+1	
<b>KELER</b> (Hungary)	DVP model 1 based on real-time settlement. Currently, MNB extends credit against pre-deposited collateral.	
<b>VNS</b> (Latvia)	DVP model 1 based on real-time settlement	Plans to prolong operating hours to 17:00 CET+1 in 2004. A new SSS was launched in September 2003.
<b>LCD-DENOS</b> (Latvia)	DVP model 1 based on real-time settlement	
<b>CSDL</b> (Lithuania)	Pre-deposit of securities	New SSS to be launched by early 2004 (real-time settlement is under development).
<b>MSE</b> (Malta)	Pre-deposit of securities	No plans to introduce settlement facilities with intraday finality.
<b>CRBS-SKARBNET</b> (Poland)	DVP model 1 based on real-time settlement	
<b>KDPW</b> (Poland)	DVP model 1 based on real-time settlement and DVP model 2 with multiple batch processing	Plans to introduce another settlement session at 18:30 CET to settle T-bonds transactions for collateralisation of intraday credit operations.
<b>GSSS</b> (Romania)	Pre-deposit of securities	The introduction of a new SSS that will provide for DVP model 1 system based on real-time settlement is scheduled for the second half of 2004.
<b>BSE-SSS</b> (Romania)	Pre-deposit of securities	Implementation of an RTGS system in Romania, scheduled for the second half of 2004, will provide for settlement on a DVP model 1 and model 2 basis, and will allow for settlement with intraday finality.
<b>NSCSD</b> (Romania)	Pre-deposit of securities	Implementation of an RTGS system in Romania, scheduled for the second half of 2004, will allow for settlement with intraday finality.

SSS (country)	Form of intraday finality	Planned follow-up work
<b>NBS-CR</b> (Slovakia)	Pre-deposit of securities	Plans exist to introduce a DVP model 1 system based on real-time settlement by the end of 2004.
<b>SC</b> (Slovakia)	Free delivery	Plans exist to transform the SC into a fully-fledged SSS, which may also affect settlement procedures.
<b>BSSE</b> (Slovakia)	Pre-deposit of securities	After the SC has been transformed into a fully-fledged SSS, the BSSE will no longer be used for central bank credit operations.
<b>FEBS</b> (Slovenia)	Free delivery	
<b>KDD</b> (Slovenia)	DVP model 1 based on real-time settlement	

## ANNEX 4

# OPERATING HOURS OF AC SECURITIES SETTLEMENT SYSTEMS

### ANNEX 4

Operating hours of AC securities settlement systems

SSS (country)	Operating hours	Fulfilment of intraday requirements	Provision of collateral	
			technique	procedure
<b>BNBG-SSS</b> (Bulgaria)	Operating hours are 08:30-17:00 CET+1. DVP model 1 settlement occurs in four batches with cut-off times at 09:00, 11:00, 13:00 and 15:00. Each batch processing cycle takes approximately 30 minutes. Instructions must be input by 15:00 CET+1. Operating hours may be extended in case of emergency.	<b>Only with pre-deposited securities after 15:00 CET+1</b>	Pledge (special) or repo	Earmarking
<b>CDAD</b> (Bulgaria)	Operating hours are 09:00-18:00 CET+1. Instructions for special pledge transactions or FOP delivery can be submitted during operating hours. Operating hours may be extended in case of emergency.	<b>Only with pre-deposited securities after 18:00 CET+1</b>	Pledge (special) or repo	Earmarking
<b>CDCR</b> (Cyprus)	Operating hours are 07:30-14:30 and 15:00 – 18:00 daily, and the trading timetable is 10:10-13:00 CET+1. There are no facilities for settling operations with intraday finality. Instructions for FOP transfers must be introduced by 17:00 CET+1 on S-1. Operating hours may be extended in case of emergency.	<b>Only with pre-deposited securities</b>	Repo (as main refinancing instrument), pledge (marginal lending facility)	Earmarking
<b>SKD</b> (Czech Republic)	Operating hours are from 08:30 to 18:00 CET. Transactions are settled according to the DVP model 1 on a real-time basis. DVP instructions for day T must be input by 15:45 – the end of the operating hours of the CERTIS system. After 16:00, FOP instructions for day T or DVP and FOP instructions for day T+1 and next can be input. Operating hours may be extended in case of emergency.	<b>Yes</b>	Repo (for liquidity-absorbing monetary policy operations) and pledge (for intraday credit)	Earmarking
<b>EP-ICSDs</b> (Estonia)	EP has agreed to purchase securities on each banking day from 09:00 until 16:00 CET+1. Credit institutions can transfer securities by FOP delivery within the Euroclear Bank from 05:00 until 18:30 CET+1 and within Clearstream Banking Luxembourg from 09:00 until 17:00 CET+1. Cash transfers may be executed via RTGS from 08:00 until 18:00 CET+1. The entire transaction may thus be executed within T+0.	<b>Yes</b>	Repo (reserves management operations)	Earmarking



SSS (country)	Operating hours	Fulfilment of intraday requirements	Provision of collateral	
			technique	procedure
<b>ECSD</b> (Estonia)	Operating hours are from 08:30 to 17:00 CET+1. Intraday finality is achieved for FOP transactions. OTC DVP transactions may be settled with intraday finality if instructions are received by 12:45 CET+1. Operating hours may be extended in case of emergency.	<b>Only on a free delivery basis after 12:45 CET+1. Only with pre-deposited securities after 17:00 CET+1.</b>	-	-
<b>KELER</b> (Hungary)	Operating hours are from 08:00 to 18:00 CET. Transactions can be settled with intraday finality between 08:00 and 16:00 CET. Instructions must be input by 16:00. Operating hours may be extended in case of emergency.	<b>Only with pre-deposited securities after 16:00 CET</b>	Pledge	Pooling
<b>VNS</b> (Latvia)	Operating hours are from 08:30 to 16:00 CET+1. Transactions are settled according to the DVP model 1 on a real-time basis. Securities transfer orders must be submitted by 15:30. Instructions must be input by 16:00. Operating hours may be extended in case of emergency.	<b>Only with pre-deposited securities after 16:00 CET+1</b>	Repo (for open market operations), pledge (for automatic overnight credit, intraday credit, Lombard loans, and foreign exchange operations)	Pooling (for intraday credit limit operations), earmarking (for all remaining operations)
<b>LCD-DENOS</b> (Latvia)	Operating hours are from 09:00 to 18:00 CET+1. Intraday finality for the OTC transactions is achieved in real time. Instructions must be input by 18:00. Operating hours may be extended in case of emergency.	<b>Only with pre-deposited securities after 18:00 CET+1</b>	-	-
<b>CSDL</b> (Lithuania)	Operating hours are 08:00 to 17:00 CET+1. Transactions achieve finality at 15:00. Instructions must be input by 11:00 on S (in exceptional cases by 14:20). In case of emergency, the operating hours may be extended for up to one hour.	<b>Only with pre-deposited securities after 14:20 CET+1</b>	Repo (for open market operations), pledge (for overnight credit)	Earmarking
<b>MSE</b> (Malta)	Operating hours are 09:30 to 11:15 CET. Pre-delivery of collateral to be used for credit operations may occur between 08:00 and 16:00. Instructions must be input by 16:00. In case of emergency, operating hours may be extended.	<b>Only with pre-deposited securities</b>	Repo (for liquidity-injecting open market operations), pledge (for standby marginal lending facility)	Earmarking (for repo), pooling (for pledge)

SSS (country)	Operating hours	Fulfilment of intraday requirements	Provision of collateral	
			technique	procedure
<b>CRBS - SKARBNET</b> (Poland)	Instructions related to secondary market transactions may be input between 08:00 and 15:00 CET. Instructions related to intraday and overnight credit operations may be input between 08:00 and 17:00. Finality is achieved in real time. Operating hours may be extended in case of emergency.	<b>Only with pre-deposited securities after 17:00 CET</b>	Pledge, repo, transfer of title	Earmarking
<b>KDPW</b> (Poland)	Operating hours are 06:00 to 21:00 CET. Intraday finality is achieved after every settlement batch (07:30, 10:30, 13:00, 15:30, and 17:00). The RTGS system operates from 08:00 to 15:45. Before 08:00 and after 15:45, only FOP settlement is possible. Instructions must be input between 06:00 and 21:00.	<b>Only on a free delivery basis after 15:45 CET</b>	Pledge, repo, transfer of title	Earmarking
<b>GSSS</b> (Romania)	Operating hours are 09:00 to 18:00 CET+1. Instructions must be input by 15:00. There are no facilities in place for settlement with intraday finality.	<b>Only with pre-deposited securities</b>	Pledge (for collateralised credit and marginal lending facilities), repo	Earmarking
<b>BSE-SSS</b> (Romania)	Operating hours are 08:30 to 17:30 CET+1. Operating hours may be extended in case of emergency. Finality of settlement of transactions with government bonds is achieved end-of-day at 16:30. Instructions must be input between 10:00 and 14:30 in case of equities, and between 11:00 and 13:00 in case of bonds. There are no facilities in place for settlement with intraday finality.	<b>Only with pre-deposited securities</b>	-	-
<b>NSCSD</b> (Romania)	Operating hours are 06:00 to 15:00 CET+1. Instructions must be input by 15:00. No facilities are in place for settlement with intraday finality. Operating hours may be extended in case of emergency.	<b>Only with pre-deposited securities</b>	-	-
<b>NBS-CR</b> (Slovakia)	Operating hours are 07:30 to 13:30 CET. Instructions must be input by 13:30. Operating hours may be extended in case of emergency. There are no facilities in place for settlement with intraday finality.	<b>Only with pre-deposited securities</b>	Repo	Earmarking

SSS (country)	Operating hours	Fulfilment of intraday requirements	Provision of collateral	
			technique	procedure
<b>SC</b> (Slovakia)	Operating hours are 08:00 to 19:00 CET. Instructions must be input by 19:00. Operating hours may be extended in case of emergency.	<b>Only on a free delivery basis</b>	Repo	Earmarking
<b>BSSE</b> (Slovakia)	The securities leg can be settled between 08:00 and 19:00 CET, and payment instructions can be sent to NBS until 11:30. Instructions must be input by 19:00. In case of emergency, the operating hours may be extended by 2-3 hours.	<b>Only on a free delivery basis</b>	Pledge, suspension of disposal rights	Earmarking
<b>FEBS</b> (Slovenia)	Operating hours are 07:30 to 16:30 CET. Instructions must be input by 15:00. Operating hours may be extended in case of emergency.	<b>Only on a free delivery basis. Only with pre-deposited securities after 15:00 CET.</b>	Pledge	Earmarking
<b>KDD</b> (Slovenia)	Operating hours are 07:00 to 17:30 CET. Intraday finality can be achieved in real time between 07:30 and 15:30 for OTC DVP transactions, and between 07:00 and 16:00 for OTC FOP transactions. Instructions must be input by 15:30 for OTC DVP and by 16:00 for FOP settlement. Operating hours may be extended in case of emergency.	<b>Only on a free delivery basis after 15:30 CET. Only with pre-deposited securities after 16:00 CET.</b>	Pledge	Earmarking

## ANNEX 5

# OPERATIONAL RELIABILITY AND AVAILABILITY OF BACKUP FACILITIES IN AC SECURITIES SETTLEMENT SYSTEMS

### ANNEX 5

Operational reliability and availability of backup facilities in AC securities settlement systems

SSS (Country)	Operational Reliability
<b>BNBG SSS</b> (Bulgaria)	The BNBG-SSS has an emergency plan, backup facilities and disaster recovery facilities in place with a recovery time of two hours.
<b>CDAD</b> (Bulgaria)	The CDAD has an emergency plan, backup facilities and disaster recovery facilities in place with a recovery time ranging between one and 12 hours.
<b>CDCR</b> (Cyprus)	Implementation of the disaster recovery facilities (together with an emergency plan) is scheduled for the end of 2003.
<b>SKD</b> (Czech Republic)	The SKD has an emergency plan, backup facilities and a disaster recovery site in place with a specified recovery time between two and four hours.
<b>EP-ICSDs</b> (Estonia)	The ICSDs have an emergency plan, backup facilities and disaster recovery facilities in place. Estonia's RTGS system has an emergency plan and backup facilities in place with a recovery time ranging from one minute (automatic switching) to four hours (complete recovery of the RTGS system and continuation with backup server). A disaster recovery facility is under development.
<b>ECSD</b> (Estonia)	The ECSD has an emergency plan and backup facilities in place with a recovery time ranging from five minutes to six days. A disaster recovery facility is currently under development, and is scheduled to be completed by the end of 2003.
<b>KELER</b> (Hungary)	KELER currently has onsite backup facilities. An emergency plan was tested and implemented in the third quarter of 2003, while a remote disaster recovery facility is under development with the aim of implementing it in the second half of 2004.
<b>VNS</b> (Latvia)	The VNS has an emergency plan, backup facilities and disaster recovery facilities in place with a recovery time of one hour.
<b>LCD-DENOS</b> (Latvia)	The LCD has an emergency plan, backup facilities and a disaster recovery facility in place with a recovery time ranging between two and eight hours.
<b>CSDL</b> (Lithuania)	The CSDL has an emergency plan and a remote disaster recovery facility in place with a recovery time of four hours. Additional processing capacity and backup facilities are planned to be implemented in the second half of 2003.
<b>MSE</b> (Malta)	The MSE has an emergency plan, backup facilities and disaster recovery facilities in place with a recovery time of four to six hours.
<b>CRBS-SKARBNET</b> (Poland)	CRBS-SKARBNET has an emergency plan, backup facilities and disaster recovery facilities in place with no specified recovery time.
<b>KDPW</b> (Poland)	The KDPW has an emergency plan, backup facilities and disaster recovery facilities in place with a specified recovery time of three to six hours.
<b>GSSS</b> (Romania)	Currently, only limited operational reliability is provided for. Plans are under way to establish backup and disaster recovery facilities in the new electronic GSSS (to be implemented by the end of 2004).
<b>BSE-SSS</b> (Romania)	Insufficient information was provided on operational reliability. No backup and disaster recovery facilities are in place.
<b>NSCSD</b> (Romania)	The NSCSD has an emergency plan. No backup and disaster recovery facilities are in place.
<b>NBS-CR</b> (Slovakia)	The NBS-CR has some backup facilities. A formal emergency plan and disaster recovery facilities are in the process of being established.
<b>SC</b> (Slovakia)	The SC has an emergency plan, backup facilities and disaster recovery facilities in place with a recovery time of up to 24 hours. Insufficient information was provided on operational reliability.
<b>BSSE</b> (Slovakia)	The BSSE has some backup facilities, but lacks a formal emergency plan and disaster recovery facilities. Insufficient information was provided on operational reliability.
<b>FEBS</b> (Slovenia)	The FEBS has an emergency plan, backup facilities and disaster recovery facilities in place with a recovery time of up to four hours.
<b>KDD</b> (Slovenia)	The KDD has an emergency plan, backup facilities and disaster recovery facilities in place with a recovery time of four hours.

## ANNEX 6

### OPERATIONAL CONDITIONS FOR THE USE OF ELIGIBLE SSSs

Country	SSS	Operational conditions for eligibility
Bulgaria	BNBG-SSS	DVP until 15:00 CET+1, then with pre-deposited securities
	CDAD	Free delivery basis
Cyprus	CDCR	With pre-deposited securities delivered on an FOP basis
Czech Republic	SKD	DVP basis
Estonia	EP-ICSDs	Free delivery basis
	ECSD	DVP until 12:45 CET+1; on a free delivery basis until 17:00 CET+1, then with pre-deposited securities
Hungary	KELER	DVP until 16:00 CET, then with pre-deposited securities
Latvia	VNS	DVP until 16:00 CET+1, then with pre-deposited securities
	LCD-DENOS	DVP until 18:00 CET+1, then with pre-deposited securities
Lithuania	CSDL	DVP until 14:20 CET+1, then with pre-deposited securities
Malta	MSE	With pre-deposited securities
Poland	CRBS-SKARBNET	DVP until 17:00 CET, then with pre-deposited securities
	KDPW	DVP until 15:45 CET, then on a free delivery basis
Romania	GSSS	With pre-deposited securities
	BSE-SSS	With pre-deposited securities
	NSCSD	With pre-deposited securities
Slovakia	NBS-CR	With pre-deposited securities
	SC	Free delivery basis
	BSSE	Free delivery basis
Slovenia	FEBSS	On a free delivery basis until 15:00 CET, then with pre-deposited securities
	KDD	DVP until 15:30 CET. Free delivery basis until 16:00 CET, then with pre-deposited securities

