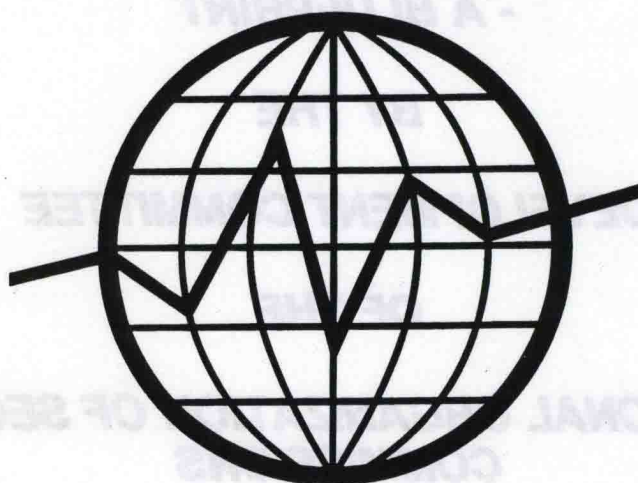


**CLEARING AND SETTLEMENT IN EMERGING MARKETS  
- A BLUEPRINT**



**INTERNATIONAL ORGANIZATION OF SECURITIES COMMISSIONS**

**OCTOBER 1992**

**CLEARING AND SETTLEMENT IN EMERGING MARKETS**

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**BY THE**

**DEVELOPMENT COMMITTEE**

**OF THE**

**INTERNATIONAL ORGANIZATION OF SECURITIES  
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While this document is aimed primarily at emerging markets, its audience should not be limited to that group. Many of the so-called "developed" markets can learn from the work and experience of the emerging markets in clearing and settlement; many of these developed markets established their clearing and settlement systems many years ago and are now suffering from inadequacies that were not well understood at the time and from inequities which have permeated their systems. Emerging markets often have the benefit of being able to start from almost nothing, allowing them to build a healthy system based on best practices. Indeed the ability to introduce and operate advanced systems of clearing and settlement has already been demonstrated by a few emerging markets.

Securities clearing and settlement is one of the essential elements of a financial system. However, as with other pillars of a market's infrastructure, the importance is, all too often, only noticed when the market begins to function poorly and not noticed when it is functioning properly. Clearing and Settlement in Emerging Markets - A Blueprint provides a framework and a starting point for the development of a safe and efficient clearing and settlement system.

It is especially important for an emerging market to have a good clearing and settlement system. An emerging market's ability to attract foreign investment through securities depends upon its ability to produce a safe and effective system of buying and selling securities. Moreover, participation in an emerging market by international investors is also tied to the market's ability to meet expectations of adequate quality in the clearing and settlement of transactions. To global markets are constantly demanding more from clearing and settlement systems. Markets that have developed safe and efficient systems must more actively than others. These without adequate clearing and settlement practices will tend to be bypassed by international investors.

The task of improving a market's clearing and settlement environment is a major challenge. It can be a long and arduous process that involves changing a market's business culture and routines. Achieving success requires a strong commitment from all market participants. The benefits, however, are considerable: reduced risk, improved efficiency, lower costs and participation with international investors can greatly enhance an emerging market's expansion and attractiveness to foreign investors. Moreover, the improvement of clearing and settlement practices is not a one-and-for-all operation. Rather, it is a continuing challenge as markets evolve, new problems arise, and technological advances shift.

The objective of Clearing and Settlement in Emerging Markets - A Blueprint is to assist those markets in which securities regulators and the industry have decided to rise to the challenge. The Blueprint discusses the relevant concepts and identifies the issues which must be addressed. It draws from the experience of those markets which pioneered the development of centralized systems and from emerging markets which recently made the transition to more efficient systems. Both the successes and failures are documented, so that a market may learn from past experience. Some markets may wish to call on outside assistance. In that context, the function of the Blueprint is to contribute an agenda for action and a check list for performance.



## **CLEARING AND SETTLEMENT IN EMERGING MARKETS - A BLUEPRINT**

### **FOREWORD**

Securities clearing and settlement is not an especially glamorous topic that would, on its own, attract a large amount of interest and study. The subject is necessarily technical. It is, however, a key element in the basic infrastructure of any securities market. The importance of clearing and settlement is demonstrated by the attention it has recently received from many international groups, most notably the Group of Thirty.

In the past, many capital markets took a reactive approach to securities clearing and settlement. The need for centralized, automated systems was addressed only after manual systems broke down. Today, the increasing integration of the global financial markets calls for a proactive approach in addressing the issues of clearing and settlement before they impair a market's ability to attract and retain investment. This document, Clearing and Settlement in Emerging Markets - A Blueprint was created to address this need and to facilitate a proactive strategy.

It is especially important for an emerging market to have a good clearing and settlement system. An emerging market's ability to mobilize domestic resources through securities depends upon its ability to produce a safe and effective means of buying and selling securities. Moreover, participation in an emerging market by international investors is also tied to the market's ability to meet expectations of adequate quality in the clearing and settlement of transactions. The global markets are constantly demanding more from clearing and settlement systems; markets that have developed safe and efficient systems attract more activity from outsiders. Those without adequate clearing and settlement practices will tend to be bypassed by international investors.

The task of improving a market's clearing and settlement environment is a major challenge. It can be a long and arduous process that involves changing a market's structure, culture, and traditions. Achieving success requires a strong commitment from all market participants. The benefits, however, are considerable: reduced risk, improved efficiency, lower costs and harmonization with international standards can greatly enhance an emerging market's capacities and attractiveness to foreign investors. Moreover, the improvement of clearing and settlement practices is not a once-and-for-all operation. Rather it is a continuing challenge as markets evolve, new problems arise, and technological horizons shift.

The objective of Clearing and Settlement in Emerging Markets - A Blueprint is to assist those markets in which securities regulators and the industry have decided to rise to the challenges. The Blueprint discusses the relevant concepts and identifies the issues which must be addressed. It draws from the experiences of those markets which pioneered the development of centralized systems and from emerging markets which recently made the transition to more efficient systems. Both the successes and failures are documented, so that a market may learn from past experiences. Some markets may wish to call on outside assistance. In that context, the function of the Blueprint is to contribute an agenda for action and a check-list for performance.



## ACKNOWLEDGEMENTS

This report was produced under the auspices of an IOSCO Development Committee Working Group on Clearing and Settlement by a Taskforce created specifically to develop a "blueprint" which could be used in conceptual thinking and operational decisions in the clearing and settlement area.

The author of the report is Mr. Gary Stephenson of The Canadian Depository for Securities (CDS), which had assumed overall responsibility for implementing this project.

His work was guided and supported by the other members of the Taskforce created in May, 1991, at an Istanbul meeting of the Development Committee. These were: Mrs. Mary Schapiro, Commissioner, U.S. Securities and Exchange Commission, Washington; Mr. Norman Wright, President, The Canadian Depository for Securities, Toronto; Mr. David Holland, Advisor, Group of Thirty, London; Mr. Gerrit de Marez Oyens, Co-Secretary General, Federation Internationale des Bourses de Valeurs, Paris; Mr. Robert Woldow, Executive Vice-President and General Counsel, National Securities Clearing Corporation, New York; Mr. Luis Barrueta, Chief, Planning and Organization Division, INDEVAL, Mexico City; and Mr. Anthony Ain, Senior Special Counsel, U.S. Securities and Exchange Commission, Washington.

Mr. Rudolf van der Bijl of the Capital Markets Department of the International Finance Corporation led the Taskforce effort and Messrs. Paul Guy and Jean-Pierre Cristel of the IOSCO Secretariat provided logistical and organizational support.

## Section 1: INTRODUCTION

### **1.1 Purpose of the Blueprint**

The IOSCO Clearing and Settlement Blueprint document has been created to assist emerging capital markets with the development of efficient and safe systems for the clearing and settlement of securities transactions. The Blueprint outlines the issues and suggests alternatives that have been successful in other markets. It is not an implementation guide.

Each capital market is different, having been developed under different economic conditions, customs, laws and institutional structures. This creates different requirements for clearing and settlement mechanisms. The Blueprint outlines the basic areas that need to be analyzed in the context of local market conditions. The alternative solutions provided by the Blueprint serve to enhance the reader's understanding of the issues and provide a head start in the search for the right solution that satisfies the specific needs of a given market.

Efficient clearing and settlement systems are essential to the sustained growth of a capital market. Although many of the larger capital markets have highly automated book-entry systems to process the settlement of securities transactions, many of the smaller markets continue to process settlements using physical deliveries of certificates and funds. The markets (both large and small) that continue to rely primarily on physical settlement mechanisms, do so at the cost of increased risks and inefficiencies. At low transaction volumes the need for more efficient systems is often not apparent. However, as volumes rise the inefficiencies and risks inherent in the physical settlement mechanisms become a limiting factor to growth. The flow of international investment into a market can be limited by inefficient clearing and settlement practices. International investors who are unfamiliar with local customs are not willing to bear the risks that are present in inefficient systems.

This Blueprint can serve as a reference document for those markets that are beginning the development or redevelopment of centralized clearing and settlement systems. In addition, markets that are in the midst of their improvement efforts may find the Blueprint useful. Most of these systems can be automated through the use of computer technology although some aspects will employ manual methods until the entire market can function in a completely automated environment.

Each market will have to develop its own solutions to the unique problems posed by its markets' needs. However, the experiences of the markets that have already modernized their clearing and settlement processes can be used to accelerate the pace of development in emerging markets.

The Group of Thirty (G30) recommendations on clearing and settlement play a prominent role in this Blueprint. The nine recommendations of the G30 are used in the Blueprint to frame the characteristics of an efficient clearing and settlement system. It may not be possible for any market, emerging or otherwise, to achieve all of the goals established by the G30 recommendations during the initial implementation of its systems. Many of the G30's goals will



be attainable without the need for interim steps.

## 1.2 Audience

The Blueprint is aimed at capital markets that continue, for the most part, to process the clearing and settlement of securities transactions using physical settlement methods as well as those markets that are redeveloping their systems. These markets have been termed "emerging markets" because their growth has brought them to the point where physical, or otherwise inefficient, settlement processes will begin to limit the market's continued expansion. These limitations may be due to physical constraints (ie. volumes) or from unacceptable levels of risk. The Blueprint has applications in countries that are just beginning to develop competitive securities markets as well as markets that are beginning to re-develop their clearing and settlement environments.

The specific audience of the Blueprint are the institutions and individuals who are likely to be the catalysts and architects of a new securities clearing and settlement environment. These include regulators, legislators, central bankers and other government authorities. Private sector market participants such as stock exchanges, issuers of debt and equity securities, bankers, registrars, transfer agents, investment dealers and investors complete the target audience.

Government institutions bring a unique perspective to the process of modernizing the clearing and settlement systems. First, their motivations are not profit oriented, and they can be a powerful force in overcoming some of the existing interests that can impede the process of change. Second, they bring a different perspective on risk reduction that is not available from the private sector.

Private sector market participants supply the knowledge and experience that is essential to the design of systems that will efficiently address the needs of their business. In many cases the private sector also supplies the funds necessary to develop new, and often expensive, computer systems.

The audience described above can encourage or impede the transition to an efficient clearing and settlement environment. The capital market as a whole will benefit from this transition, however the benefits are not usually distributed to individual participants in equal proportions. Some of the benefits, such as a reduction of risk, are difficult to quantify and demonstrate. The existence of inefficiency invariably means that some segments of the marketplace profit from this inefficiency at the expense of others. These segments will be reluctant to lose these profits.

Some of the market players will be adverse to changes in the manner in which securities clearing and settlement is achieved due to a real or perceived loss of market control or profit. Other market players will be quick to understand the benefits of the proposed changes. The audience for the Blueprint includes both.



Those with an existing interest in the processing of settlements must be part of the process of change. If they are not, they may become a serious impediment, causing costly delays and wasted opportunities. As part of the process, their concerns can be expressed and addressed in a constructive manner.

The audience for the Blueprint should include all individuals in the marketplace who can contribute to the resolution of the issues. Within a single organization varying opinions may exist regarding the perceived positive and negative impacts of changes. Individuals from each organization who can assess the changes with a view to the overall benefits of efficient clearing and settlement mechanisms are required to overcome the negative perceptions. Involvement and commitment from the highest levels in all affected organizations is essential to the success of the development process.

In summary, the audience for the Blueprint is any institution or individual who may be impacted, either positively or negatively, by changes to their market's clearing and settlement systems.

### **1.3 Scope and Organization of the Blueprint**

The IOSCO Blueprint will provide a capital market with the concepts that should be embodied in a clearing and settlement system that is efficient and reduces risk for all those associated with that market. It provides the questions to be asked but does not prescribe a single best answer. A single best answer does not exist. The best solution to a given issue will be determined by the customs, size and goals of the local market. The Blueprint does describe alternative solutions that have been employed by other markets with centralized clearing and settlement systems.

The document includes a discussion of both the non-technical policy issues that must be addressed and the technical design questions. It covers the clearing and settlement of both debt and equity securities. The clearing and settlement of Futures, Options and other derivative products are not included in the scope of this document.

The document is organized into three main segments; Introduction, Structural Design and Operational Design.

The Introduction includes an overall introduction to the Blueprint, a brief discussion of the incentives for developing a clearing and settlement system, and an Executive Summary of the Blueprint. The Structural Design segment consists of sections that deal with the basic strategic issues of establishing a securities clearing and settlement entity. This includes sections on ownership of the clearing and settlement entity(s), participation in its services, eligibility of securities, legal considerations and regulation. The Operational Design Segment contains sections that deal with the "technical" design issues of a centralized clearing and settlement system.



## 1.4 G30 Recommendations

The Group of Thirty (G30) recommendations on clearance and settlement of securities transactions play a large role in this document. The document is focused on the achievement of those recommendations. In that sense the G30 initiatives shape the content of the Blueprint. They provide the general principles that should be implicit in the design of an efficient and low risk clearing and settlement environment.

### *Recommendation #1: Trade Comparison on T+1*

"By 1990, all comparisons of trades between direct market participants (ie. brokers, dealers and other exchange members) should be accomplished by T+1."

### *Recommendation #2: Trade Comparison for Indirect Participants*

"Indirect market participants (such as institutional investors, or any trading counterparties which are not broker/dealers) should, by 1992, be members of a trade comparison system which achieves positive affirmation of trade details."

### *Recommendation #3: Central Depository*

"Each country should have an effective and fully developed central securities depository, organized and managed to encourage the broadest possible industry participation (directly and indirectly), in place by 1992."

### *Recommendation #4: Netting*

"Each country should study its market and participation to determine whether a trade netting system would be beneficial in terms of reducing risk and promoting efficiency. If a netting system would be appropriate, it should be implemented by 1992."

### *Recommendation #5: Delivery versus Payment*

"Delivery versus Payment (DVP) should be employed as the method for settling all securities transactions. A DVP system should be in place by 1992."

### *Recommendation #6: Same Day Funds*

"Payments associated with the settlement of securities transactions and the servicing of securities portfolios should be made consistent across all instruments and markets by adopting the 'same day' funds convention."

### *Recommendation #7: T+3 Rolling Settlement*

"A 'rolling settlement' system should be adopted by all markets. Final settlement should occur on T+3 by 1992".

### *Recommendation #8: Securities Lending*

"Securities lending and borrowing should be encouraged as a method of expediting the settlement of securities transactions. Existing regulatory and



taxation barriers that inhibit the practice of lending securities should be removed."

*Recommendation #9: Use of ISO Standards 7775 and 6166*

"Each country should adopt the standard for securities messages developed by the International Organization for Standardization (ISO 7775). In particular, countries should adopt the ISIN numbering system for securities issues as defined in the ISO standard 6166, at least for cross border transactions."

A separate section of the blueprint addresses the G30 recommendations specifically and provides an index to the Blueprint that is based on the nine recommendations. For example, if the reader wished to find the sections of the Blueprint that described the achievement of a particular recommendation, the G30 section will assist in this search.

### **1.5 Fundamental Objectives: Efficiencies and Risk Reduction**

Efficiency gains achieved from a book entry system can be substantial. Efficiency gains can be categorized into three main areas of improvement in clearing and settlement. These are increased accuracy through elimination of manual errors, lower costs and increased speed of processing through automation.

The exchange of certificates and cheques as a medium for settlement implies a wide variety of costs. These can be eliminated or reduced through efficiencies achieved by immobilization (or complete dematerialization) and book-entry transfers. Using physical settlement mechanisms, stock and debt certificates (script) must be vaulted, tracked, recorded, insured and physically moved from place to place. Each of these movements involves many manual processes and introduces the potential for error. Similarly, payment using physical cheques also involves many error prone procedures. In addition to these problems, the possibility for loss due to an error or theft is always present.

Many of these problems can be eliminated by removing the need for physical movements to settle each transaction. By immobilizing the securities and replacing the physical movements with electronic entries, costs can be reduced. In the United States it has been estimated that the cost of clearing and settling a trade using physical means is over \$30 US. By contrast the same transaction, settled via book entry, is estimated to cost less than \$3 US.

Other cost advantages can be gained from the investment in automated clearing and settlement systems. There is an absolute limit to the number of transactions that can be processed using physical means. At some point the addition of staff does not increase the capacity to process transactions. As this limit is approached, the costs of processing each additional transaction grows exponentially. With automated clearing and settlement systems, large increases in transaction volumes can be accommodated with little increase in cost. In addition, automated netting systems can absorb unusual peak demand without impacting the market's ability to function. This was demonstrated in several markets during the Oct 1987 period when



transaction volumes rose dramatically over a short period of time.

### **Risk Reduction**

The risks associated with clearing and settling securities transactions are usually categorized as: credit risk, liquidity risk and systemic risk. These risks can be reduced through the use of automated clearing and settlement systems.

#### ***Counterparty (Credit) Risk***

Credit risk is realized when a counterparty to a transaction fails to meet its obligations. For example, the seller of a security may experience credit risk if the buyer's payment is ultimately not made. The seller may or may not be able to recover their securities. The loss may range from a lost opportunity to a loss of the entire principal amount of the transaction.

Two of the G30 recommendations are focused on credit risk. Reducing the time between trade date and settlement date reduces the duration of exposure to credit risk and, therefore, the probability that a buyer will become insolvent before settlement date. This is the focus of the G30 recommendation for settlement to occur on Trade date plus 3 that reduces credit risk for the seller. In many payment systems, once a form of payment has been received by the seller, the possibility still exists that the payment will be returned. This is the focus of the G30 recommendation dealing with payment finality. The exchange of good security position for good funds is fundamental to a low risk clearing and settlement environment.

Book entry systems are a mechanism that allow for the reduction of credit risk. As transaction volumes rise it becomes more and more difficult to physically move the paper fast enough, which forces the settlement periods to expand. Book entry systems (along with good payment systems) allow the settlement periods to be reduced to the recommended T+3. As the time frames are reduced, so are credit risks.

#### ***Liquidity Risk***

Liquidity risk is similar to credit risk but usually arises from a temporary inability to make payments or complete settlement. The operational difficulties associated with physical settlement is one source of liquidity risk. For example, markets with physical settlement mechanisms often become "illiquid" later in the business day, due simply to the difficulty in completing physical deliveries late in the day. A book entry system can provide a remedy by making the settlement task less dependant on the time of day. Netting of transactions can also address liquidity risks by reducing the size of payments required to complete settlement of a day's transactions.

#### ***Systemic Risk***

Systemic risk is often referred to as the "domino" effect. The Bank for International Settlements (BIS) definition of Systemic risk is " the risk that the collapse or insolvency of one market

participant will be transmitted to another participant." Systemic risk can be reduced by a centralized system through two mechanisms. First, these systems can reduce the credit and liquidity risks that might precipitate problems for any one participant. This reduces the risk that these problems might be transmitted to others. Second, a centralized system creates opportunities to install risk containment mechanisms that can absorb systemic risks before they have an impact on other participants.

The creation of a centralized system can create a new kind of systemic risk due to the concentration of business through a single entity. For example, a new kind of systemic risk is created through the use of computers which might fail and cause an entire market to be idle for some period of time. Extensive disaster recovery procedures and backups are required to address this risk.

Another risk issue to be addressed is the re-allocation of risks amongst participants through the introduction of a centralized system. The development of these systems will always focus attention on risks. Market participants are often unaware of all the risks they encounter in their current environment. When the new system is being developed these risks become clearly defined and the allocation of risks amongst owners and participants of the new systems becomes a topic of intense debate.

An impact of risk that is not often apparent is the costs to the market created when international investors avoid the market due to excessive clearing and settlement risks.



## Section 2: EXECUTIVE SUMMARY

### **2.1 Ownership Models**

Ownership of the Clearing and Settlement organizations is distinct from participation in those services. The "Owners" control the important policy decisions that define the characteristics of the clearing and settlement services at their inception. Participants must work within the framework established by the owners.

Local market conditions and the relative importance of the various market participants is an important ownership consideration. Market players with both large and small market influence cannot be ignored when determining the ownership structure. Some markets establish separate organizations to deal with the clearing and settlement aspects. This necessitates close cooperation between the two organizations and sophisticated linkages between the services they provide.

### **2.2 Participation Models**

One of the key success factors in establishing efficient centralized clearing and settlement organizations is to achieve a "critical mass" of participation. Participation must be built up over time as the market becomes accustomed to the new clearing and settlement services. In the final analysis the Participation policy is more important than the ownership structure of the clearing and settlement organization. Ownership is, however, an important factor that will determine the Participation policies.

Participation standards are employed to screen potential users of the clearing and settlement services. At one extreme is a policy of open participation that allows any and all applicants access to the clearing and settlement mechanisms. At the other end of the spectrum is a policy that employs significant barriers to participation. Artificial barriers to participation, or impediments that are created simply to protect existing interests, must be avoided.

### **2.3 Eligibility of Securities**

The Blueprint deals with clearing and settlement issues for equity and debt securities. Derivative products are excluded. Clearing of equity transactions is often easier to achieve especially when the market has a centralized stock exchange that performs some transactions processing. Debt securities (including "money market" securities) are often traded in the over-the counter (OTC) market. The value of debt securities (especially government debt) may be much higher than the value of equity securities. These large values make it more imperative that these securities be included in a centralized clearing and settlement system. Relatively complex processing of entitlements for equities increases the costs of developing depository systems for those securities.



## **2.4 Legal Agreements**

Legislative support is required for the efforts of a clearing and settlement organization. Both the organization itself and clearing and settlement concepts it employs must be recognized in legislation. Many new and complex legal issues will need to be addressed in the development phases of a clearing and settlement organization. These include; the legal implications of netting, novation, effectiveness of settlement, immobilization and dematerialization of securities, fungibility, authentication of certificates, beneficial ownership issues, security interests, payment certainty and liability.

## **2.5 Regulatory Framework**

A regulatory framework to oversee the operations of the clearing and settlement organization will need to be defined. If more than one regulatory body is involved in regulating the organization and its participants, close cooperation between them will be essential. Regulators interests may be broadly categorised into the areas of efficiency, risk and public policy. The clearing and settlement organizations will be required to make regular reports to the regulator(s) and may be required to submit to special audits and examinations. Regulators will be empowered to issue compliance orders which the clearing and settlement organization must satisfy. In certain jurisdictions the clearing and/or settlement organization may be a Self Regulatory Organization (SRO).

## **2.6 Clearing Systems**

Clearing is the process of reporting, matching, correcting, and staging securities transactions for settlement. Trades are the most common form of transaction. Others include funds and securities loans. In the equity markets, the source of trade data is usually a stock exchange. Trades executed in the OTC markets must also be input to the clearing process.

Once transactions have been agreed to by both parties, these transactions will be ready for settlement. Prior to settlement the transactions may be netted using a Continuous Net Settlement process (CNS). After CNS, the net positions are settled by making entries in the depository records. Using Trade-for-Trade settlement, no netting of transactions occurs and settlement is processed for each individual transaction. Delivery versus Payment (DVP) is an important characteristic of efficient settlement systems. The goal of DVP is to achieve a simultaneous exchange of securities and payment. High quality of payments must be received by the clearing and settlement organization. Certainty, finality and irrevocability are characteristics of high quality payments.

The processing of loans (both funds and securities) is a part of an efficient clearing and settlement organization. Funds loans are typically used to finance the inventory of an investor



and is usually a normal part of the clearing and settlement process. A funds loan is a transaction that exchanges funds for collateral in the form of multiple securities.

Securities lending involves borrowing one security in exchange for collateral that may be either funds or securities. Unlike funds loans, security loans are necessary when the normal clearing and settlement process breaks down. Securities lending can be used to decrease the number of failed settlements caused by insufficient security positions. One of the G30 recommendations advocates limited use of securities lending to reduce the number of failed transactions. The clearing and settlement organization may provide a centralized, automatic lending facility that matches positions available for loan with participants who require the securities to complete a settlement. More commonly, security loans are negotiated independently between participants. There are many complex legal, regulatory and tax issues associated with securities lending.

## **2.7 Depository Systems**

A centralized securities depository, interfaced with a clearing system, is the foundation for efficient securities clearing and settlement systems. Participants' security certificates are deposited to the depository and a book entry is made for the participants in the depository's accounts. These accounts record the "owners" of the securities and replace the ownership rights that were previously demonstrated through possession of a certificate.

Once the depository receives certificates it will either hold them in physical form in its own vaults (immobilized) or cancel them all together (dematerialized). The physical custody of securities can be a major part of the depository's work. Processing deposits and withdrawals of certificates as well as maintaining safe custody of the certificates can require large commitments of premises and staff.

The processing of entitlements for securities held by the depository can be the most complex task for clearing and settlement organizations. The large variety and complexity of events makes entitlements processing a difficult application to automate. The insertion of the depository between the issuer/agents and the beneficial owners of securities requires a compensating mechanism in the depository framework. This maintains the communication between shareholders and issuers/agents.

## **2.8 Supporting Infrastructure**

Several ancillary services will be required to support the clearing and settlement functions. One of these is a system of identifying participants within the system. A method of coding participant identification is usually adopted. Participants may assume various roles within the services and these must be defined within the system. Service options that may be provided to participants must also be recorded.

A system for identifying securities must be adopted by the clearing and settlement organization as well as its participants. Since this system provides a key interface between the clearing and settlement organization and its participants, the choice of systems must be carefully considered and analyzed. Once chosen, security identification systems are difficult to change. The ISIN standard for securities identification is recommended.

## **2.9 Information Access**

Clearing and settlement systems contain a wealth of information about the securities markets and the participants. Information that was not previously available becomes obtainable because of the centralization and automation of clearing and settlement activity. Access to information contained within these systems is important for management of the clearing and settlement services, participant's management of their transactions and for regulatory review. Confidentiality of information is imperative. The centralization of transactions data within a clearing and settlement system can make information more accessible than was previously possible. Potential participants may be reluctant to participate if they are not assured their information will be treated with complete confidentiality.

## **2.10 Risk Monitoring and Control**

Risks in the clearing and settlement of securities transactions must be identified, monitored and managed. Recovery mechanisms include insurance, participants' funds, credit rings and credit guarantees. The clearing and settlement organization usually develops these mechanisms to become a conduit for the risk it receives from participants. These risks are channelled back to the participants.

New risks are created by the centralization of securities clearing and settlement into a single organization. After an initial period of implementation the capital markets are unable to function without the services of the clearing and settlement organization. Rigorous disaster recovery procedures are necessary to guard against the failure of these services for a prolonged period of time.

## **2.11 G30 Recommendations**

The G30 recommendations provide guidelines for the development of efficient securities clearing and settlement systems. The Blueprint describes the issues and obstacles that must be overcome to achieve the G30 goals.



## A. STRUCTURAL DESIGN

### Section 3: OWNERSHIP MODELS

Ownership of the clearing and settlement entity(s) is distinct from the participation in the use of that entity's services. Participation may be very broad even though ownership is in the hands of a relatively few institutions. Ownership, or control of the clearing and settlement organizations one of the most important factor in the development of these organizations.

"Owners" will control many of the important policy decisions that essentially determine the orientation, and structure of the clearing and settlement mechanisms. These decisions include the design of computer systems, risk containment/allocation mechanisms, access to services and cost of services.

There are many different ownership models employed by the capital markets with highly developed clearing and settlement systems. Each has its advantages and disadvantages, with no one model being obviously better than another. Local market conditions play a large role in determining ownership. The relative market shares of various institutions and the regulatory framework already in place are two of these conditions.

#### **3.1 Ownership Issues**

The clearing and settlement functions can be considered separate from each other both from a functional perspective and from an ownership perspective. "Clearing" typically involves processing the details of transactions. For example, trade reporting, matching, confirmation, reconciliation and sorting the trades for netting are "clearing" functions. The "Settlement" function involves the exchange of securities and funds between the two parties to a transaction. One of the first ownership issues to be addressed is whether a single entity will be created to facilitate both clearing and settlement, or whether separate organizations will address each function individually.

##### *Clearing and Settlement Organizations*

The processing of Trades has traditionally been the business of stock exchanges. It is no surprise that stock exchanges are often "owners" of at least the clearing portion of clearing and settlement structures, if not the whole clearing and settlement organization.

The safekeeping of securities and the movement of securities and funds has traditionally been the business of banks, trust companies and "custodians." These types of organizations may own the "Depository" company to perform the settlement function. Obviously when the clearing and settlement parts are separately owned there must be an almost seamless link between the two. To simplify these linkages some markets have adopted a single-company model to perform both the clearing and settlement tasks.



The determination of whether ownership of the two functions should be separate or combined is a difficult decision. The answer often lies in satisfying the concerns and existing interests of those who will be effected by the new arrangements.

#### *Market Expertise*

Market and business knowledge are required to develop efficient clearing and settlement systems. This expertise can be provided by the owners if the owners are in the securities business. As "owners" and users they will have an interest in ensuring that the developed systems meet their business needs. Experts from the owner group may be seconded to the clearing and settlement company(s) or they may act in a consultative role. Experts in trade processing, funds payments, certificate handling, entitlements processing and computer systems are required.

#### *Market Share/Control*

Various groups within a capital market often exert varying degrees of control over segments of that market. For example, one group (Investment Dealers) may control much of the trading activity while another ("Custodians") provides safekeeping and custody services. Both are essential elements of the existing marketplace and both will be required in the new environment. In other markets, for example in Germany and Switzerland, the "Investment Dealer" and "Custodian" functions are performed within one organization.

#### *Existing Interests*

One of the most difficult and politically sensitive issues to address in the ownership structure is the existing interests of the various market participants. The participants in an existing market structure have some existing interests in maintaining the status quo. A change to the existing structure will always re-allocate the costs, benefits and risks amongst the participants in different proportions. The nature and degree of this re-allocation can be influenced through the design of the systems, and especially through the charges levied for use of the clearing and settlement services. Many participants will resist changes that effect their existing interests. Inefficiency is a source of profit for some participants of the securities clearing and settlement business. At the very least these participants will attempt to have these interests designed into the new arrangements, whether or not this contributes to the efficiency of the systems.

It is important for those with existing interests to be a part of, or at least be represented in, the ownership structure. If left outside, the impediments they can create will be sufficient to stop or slow the transition to a more efficient environment. Within the owner group, a process of negotiation can identify and address these interests. For example, a decrease in revenue for one part of a market participant may be compensated for by cost reductions and/or new revenue opportunities created by the new environment.

One example of an existing interest that may be adversely affected is the Stock Transfer business. A Transfer Agent (or Registrar) earns revenue every time "ownership" is transferred



through the physical movement of certificates. If most of these ownership transfers are replaced by book entries in a computer system, the number of transfers on the Registrars' books will be drastically reduced with a corresponding reduction in revenues. The Registrars therefore have an interest in maintaining the status quo.

If left completely outside the ownership structure, the Registrars may not cooperate with the new clearing and settlement entity and will not provide the services it requires. As part of the ownership structure, the Registrars may be able to effect decisions that would compensate, at least partially, for its reduced revenues. For example, the Registrars may realize a new revenue source by providing safekeeping services for the securities "immobilized" within a new centralized depository.

### *Conflicts of Interest*

Including those with existing interests in the ownership group can prove to be a double edged sword. On the one hand their input can be useful and necessary. On the other hand, their inclusion may lead to unresolved disputes amongst the owners. In addition, the objectives of the clearing and settlement organization will not always be identical as those of some of the owners. The negotiations that take place with existing interest groups cannot be allowed to compromise the basic objectives of the clearing and settlement organizations. These goals should be clearly articulated and accepted at the start of the development initiative. Where an impasse is reached, a mechanism to break the impasse must be designed into the ownership structure.

### *Funding*

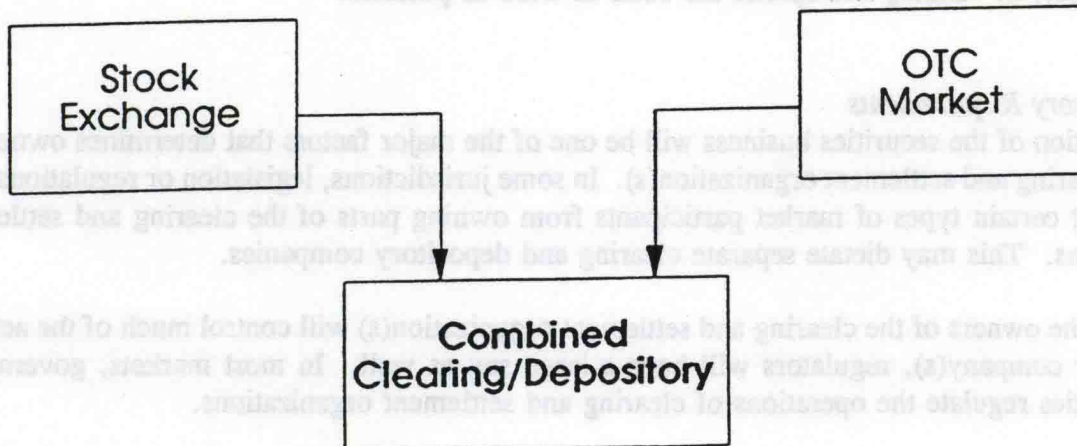
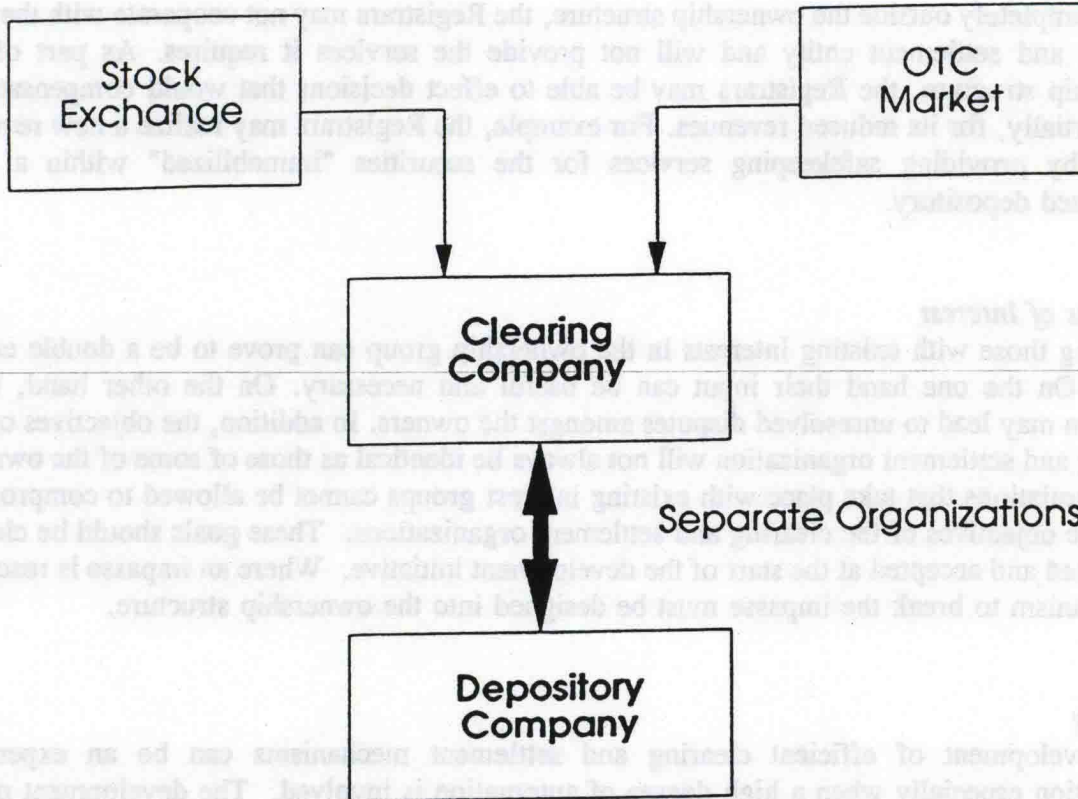
The development of efficient clearing and settlement mechanisms can be an expensive proposition especially when a high degree of automation is involved. The development phase is typically long and may last from five to ten years before the full benefits are realized. The owners must be prepared to provide the development and operational funding. Especially during the transition phase to automated systems, the cost savings may lag the development expenditures. This is particularly true when both physical and book entry settlement systems operate in parallel for some period of time. Obviously a broad owner base will increase the availability of funding and spread the costs as wide as possible.

### *Regulatory Requirements*

Regulation of the securities business will be one of the major factors that determines ownership of a clearing and settlement organization(s). In some jurisdictions, legislation or regulations may prohibit certain types of market participants from owning parts of the clearing and settlement functions. This may dictate separate clearing and depository companies.

While the owners of the clearing and settlement organization(s) will control much of the activity of their company(s), regulators will have a large say as well. In most markets, government authorities regulate the operations of clearing and settlement organizations.

# 1. Ownership Structures





### 3.2 State Sponsorship

Ownership of the clearing and settlement company by the state may take many forms. The state may create a new company or clearing and settlement may be mandated to an existing government agency such as a central bank. In these situations the state will have "ownership" or control of the clearing and settlement functions.

Ownership of the clearing and settlement functions by the government is common amongst the larger capital markets for the processing of transactions in government debt securities. Often a country's central bank will operate such a system. This is the case in the United Kingdom (Bank of England) and to a lesser extent the United States (Federal Reserve). State ownership of the clearing and settlement mechanisms for equity transactions is less common in the developed markets. The government in Mexico initiated the development of the clearing and settlement organizations (INDEVAL) but later turned it over to the private sector.

Central Banks are uniquely placed to perform the clearing and settlement functions for government securities. There are two main advantages of central bank involvement. First, as issuing agents of government securities, central banks are easily able to immobilize or even dematerialize the issuance of these securities into their own "depository." Second, central banks usually control a country's payment system and are therefore able to implement a true Delivery versus Payment (DVP) system with payment finality for use in their own systems for government debt. These are some of the main goals of the G30 recommendations.

State sponsorship as other advantages. The existing interests of some of the private sector participants can combine to paralyse the development of the clearing and settlement company(s). Agencies of the state do not have the same interests and, as "owners", can often overcome these obstacles.

The development and operation of a clearing and settlement entity can be a long term and expensive endeavour. The private sector is sometimes not able to focus the necessary resources (both financial and otherwise) for a project that has many intangible benefits (such as risk reduction) for a long period of time. State agencies often can deliver the required resources for sustained periods.

The transition to centralized clearing and settlement must be coordinated with changes to the legislation and regulations that govern the securities market. Since the state controls the agenda and pace of these changes, state "ownership" of the clearing and settlement company(s) can help to facilitate the transition in these areas. Obviously the co-ordination of changes will be simpler and easier to accomplish if regulation is achieved through a single agency rather through multiple levels of government.

As mentioned above, the interests of the state in clearing and settlement are not identical to those of the private sector. Some government agencies and bureaucrats will have their own existing interests in maintaining the status quo and may create different obstacles to change. Government

bodies are usually interested in risk reduction and public policy whereas the private sector will focus on cost reduction and profit. Governments will not have all of the expertise required to develop efficient clearing and settlement systems. In addition, government bureaucracies can be very slow to make changes, especially in the areas of legislation and regulation.

### **3.3 Multi-sector Ownership**

In Canada, The Canadian Depository for Securities (CDS) performs both the clearing and settlement functions for equity and debt securities. CDS is owned in equal amounts by the three major securities industry sectors in Canada, these being Investment Dealers, Commercial Banks and Trust companies. This ensures that the interests of all segments of the market are represented in the decisions and directions of the clearing and settlement company. The disadvantage of this arrangement is that it is sometimes difficult to reconcile the different interests of each sector.

### **3.4 Stock Exchange Ownership**

Stock Exchanges have traditionally fostered the development of clearing and settlement company(s) as a means to process transactions negotiated on their exchange. In many markets this has led to ownership of at least the clearing company by the local stock exchange. In other models, such as the one employed by Brazil (Sao Paulo and Rio de Janeiro) the stock exchanges operate both the clearing and settlement functions.

### **3.5 Other Models**

Any combination of the above mentioned ownership structures may be the best alternative for a given market. The eventual ownership mix will depend to a large extent on the relative strengths in the market of the various participants and their ability to work together. The participation of governments, as owners or part owners, may depend on whether or not the private sector can effectively work together to create an efficient clearing and settlement structure. One of the most recent examples of an effective process appears to be the Mexican example using government sponsorship in the initial stages with a plan to privatize the on-going operation at a later point in time.



## Section 4: PARTICIPATION MODELS

To achieve the greatest efficiencies, direct participation in the services of the clearing and settlement company(s) should be as broad as possible. Efficiencies expand rapidly as each new participant is added. If a significant portion of the market does not participate, those who do will be burdened with the need to constantly deposit and withdraw securities to and from the central depository to deal with non-participants. If the number of nonparticipants is significant the need to maintain staff and processes to deal with these organizations through physical means will eliminate many of the expected benefits from centralized clearing and settlement.

Non-participants may indirectly access the services of the clearing and settlement organizations. Although participation on this "two-tiered" basis can create many issues it is employed with varying degrees of success in many markets. Indirect participation that is forced upon some market players by artificial barriers will create issues with regulators and public policy makers. In addition, efficiency is not maximized by forcing potential participants, who would otherwise access the clearing and settlement services directly, to create an indirect interface with a market competitor.

Open participation has the potential to increase efficiency but may also increase risk. In an uncentralized environment many of the risk protection mechanisms for individual market players derive from a "know your client" rule. Each market player assumes the risk, on an individual basis, of dealing with each other market player. Risk protection is obtained by not dealing with organizations that are deemed to be "too risky." In a centralized clearing and settlement system much of this individual choice is lost, since all participants share in many of the risks from centralization. To compensate, centralized clearing and settlement organizations establish participation standards.

### **4.1 Participation Standards**

Participation standards are important risk control mechanisms. These standards ensure that certain minimum requirements are maintained by all those using the services of the clearing and settlement company. These standards usually include a minimum capital requirement that acts as a measure of the financial strength of the participants. Only potential participants with adequate capital are allowed to directly utilize the services of the clearing and settlement company. Other participation standards sometimes include approval from the appropriate regulatory bodies to participate and other financial standards such as liquidity requirements.

### **4.2 Barriers to Participation**

Direct participation is another controversial topic when creating a clearing and settlement organization. Eventually, access to the services of such an organization becomes necessary to



compete in the securities market. Since direct participants can obtain a competitive advantage by keeping out potential participants, there can be an incentive to establish participation standards for the purpose of creating artificial barriers to the services of the clearing and settlement company. It is sometimes difficult to distinguish standards that are proposed for valid reasons of risk protection from those that are invented for the purpose of creating artificial barriers. Indirect participation may be offered to those who are prevented from participating directly, but this too can be controversial. Direct participants, using their control of the clearing and settlement mechanisms, may extract many of the cost and other benefits away from indirect participants.

The existing interests of some participants may be reflected in proposals for participation standards. In a market using physical clearing and settlement there are large fixed costs of doing business. These include the need for vaults, large staffs and physical premises. This prevents many smaller market players from dealing directly in the market. Their business is directed through a larger clearing agent who profit from this arrangement.

When automated book entry systems are introduced many of the large fixed costs are eliminated. Some of the smaller players will find it possible to deal directly in the market without the need for an agent. Some market players who stand to lose revenue have an incentive to replace the large fixed cost barrier with a participation standard that serves the same purpose. For example a large "participation fee" for the privilege of access to the clearing and settlement services may replace the large fixed costs and maintain the economic barriers to direct access by smaller players. These may include individual investors and smaller brokers who use the services of a clearing agent because of the high fixed cost barriers to dealing directly in a physical settlement environment.

Other barriers to participation may limit access to services for certain types of institutions. For example, participation may be limited to only commercial banks and securities brokers. Other types of institutions may be prohibited from directly using the services of the clearing and settlement company. The justification for this prohibition may be valid, or it may be an artificial barrier created to protect existing interests. Artificial barriers may be disguised as a risk reduction measure.

Legislative barriers to participation could be a problem for some types of potential participants. For example, older legislation would not have contemplated computerized, book entry systems for the clearing and settlement of securities transactions. In addition, there may be multiple jurisdictions that need to coordinate legislative amendments. Certain types of market participants may be required, by law or regulation, to maintain their own certificate holdings, making the use of a central depository impossible. Direct participation in central depositories by Insurance companies has been prohibited by existing legislation in many markets. Modifications to this legislation and/or the regulations created by the legislation will be necessary to achieve the greatest possible participation.



### 4.3 Critical Mass of Participation

The new clearing and settlement company's services can be successful even without all of a market's players as participants. There will always be some potential participants who choose not to directly utilize the services of the clearing and settlement agencies. These organizations may continue to process transactions using physical means (if this option is not prohibited by legislation or regulation) or by using the agency services of a direct participant. However, a critical mass of participation must be achieved. This critical mass will depend on the volumes of the market, the distribution of activity across the market players and the market control exerted by various types of institutions. Obviously most of the "large players," those who account for most of the market activity, must be participants.

It is important that a critical mass of participants, from each important sector of the market, be achieved. Potential participants include:

- Investment Dealers/Brokers
- Commercial Banks
- Insurance Companies
- Trusts
- Governments and Central Banks
- Institutional Investors (Pension Funds etc)

### 4.4 Development of Participation

Participation in the services of the clearing and settlement company must be encouraged and promoted. The process of development of these services is a long one and participation will be built gradually. Vigorous promotion of the services, and in some cases, mandatory use of the clearing and settlement services through regulation are required. Many potential participants will take a "wait and see" approach to participation. At the start only a few players may participate. The participation base must be built steadily as the benefits are proven. Development of participation will involve marketing the services and benefits of the centralized clearing and settlement approach to potential participants, issuers, clients and government bodies.

### 4.5 Open Participation

Open and direct access to the services of the clearing and settlement company is sometimes mandated by public policy makers. Securities regulators are concerned with creating a "level playing field" in the access to clearing and settlement services. Open, or relatively open, direct participation is one of the ways this level playing field is achieved. On the other hand, different participants bring different amounts of risk to the clearing and settlement company. To maintain the level playing field the riskier participants should compensate for the increased risk they generate. Defining the "risky" participants precisely is impossible. Smaller participants may



be more likely to fail but the size of their default is likely to be relatively small. The probability of a large participant failing is likely to be small but the size of their default could be relatively large. The analysis involves balancing the probability of a participant's failure and the potential impact. Open and direct participation is the preferred policy if risk issues can be dealt with through other means. With an open participation policy, those who choose to participate indirectly, do so voluntarily, not because this was their only option.

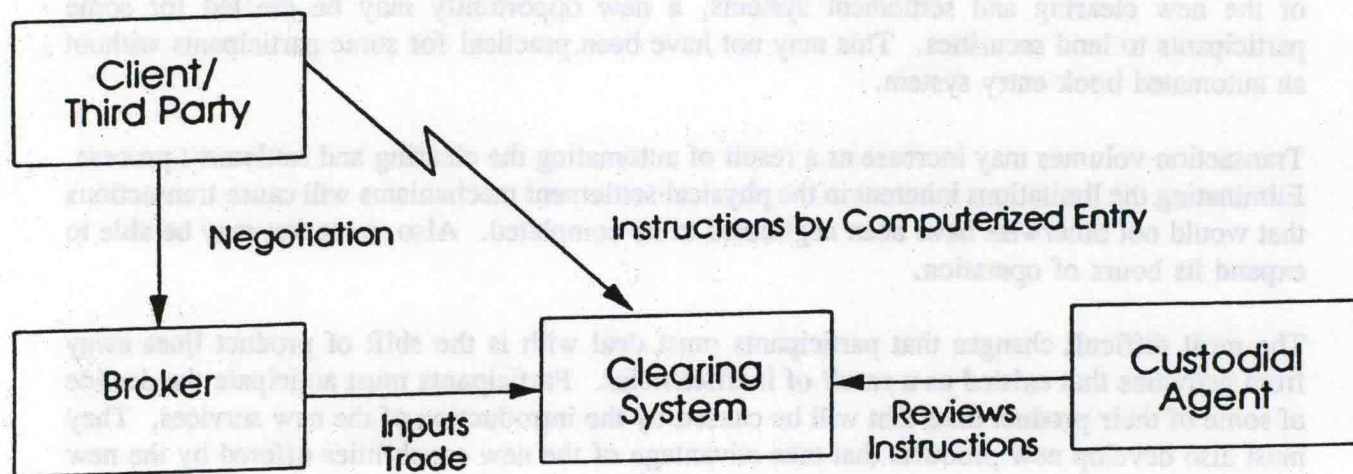
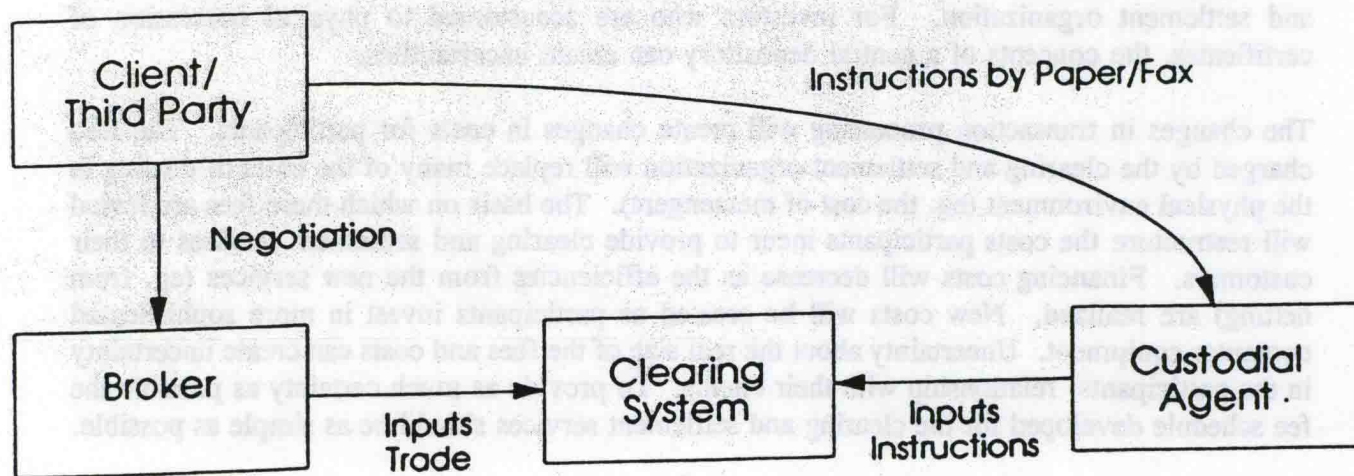
#### **4.6 Limited Participation**

Limiting participation to financially sound and well managed organizations is necessary to partially compensate for the risks created by centralizing the clearing and settlement functions. The disadvantage of limiting participation is that it decreases some of the potential efficiency gains. The methods and criteria used to limit participation should be as objective as possible and not based on a desire to maintain the competitive advantages of some market players. It should be recognized that risk cannot be totally eliminated from the clearing and settlement process. Limitations on participation to reduce risks must be balanced against the efficiency gains that are possible through more open participation. The limitations must also not be so tight that a critical mass of participants cannot be developed. Other methods of risk control are available that could be used in conjunction with a policy of more open participation (see the Risk monitoring and Controls section). Whenever possible, it is preferable to use extra risk management strategies and risk compensating mechanisms than to resort to Limited Participation.

#### **4.7 Third Party Access**

Capital markets have both direct and indirect market players. The manner in which market players are categorized as either direct or indirect participants is a major issue. The indirect players include clients of the direct players who often generate most of the transactions in the market. Clients are sometimes referred to as a "Third Party" because they are related to both the buyer and seller. For example, a client may ask securities broker A to sell it some securities and to deliver those securities to the client's settlement agent, bank B. The client must give settlement instructions to bank B. These instructions are an important part of the clearing and settlement process since without them the transaction cannot be completed. Communication of these instructions may be done within the services of the clearing company or completely outside of those services. If Third parties are to communicate instructions through the services of the clearing company they must "participate" in at least some of those services. This may involve a special form of participation that is limited to communicating settlement instructions. For this and other reasons there may be different categories of participants. Each category would have an associated set of privileges and responsibilities. One of these categories would deal with a Third Party's access to the clearing and settlement services.

## 2. Participation: Third Party Access





#### 4.8 Business Impacts of Participation

All participants of the clearing and settlement services will experience extensive changes to their operations. These changes may be categorised as market impacts and operational impacts.

Initially, participants and their clients may be reluctant to fully utilize the services of the clearing and settlement organization. For investors who are accustomed to physical possession of certificates, the concepts of a central depository can create uncertainties.

The changes in transaction processing will create changes in costs for participants. The fees charged by the clearing and settlement organization will replace many of the costs of dealing in the physical environment (eg. the cost of messengers). The basis on which these fees are levied will restructure the costs participants incur to provide clearing and settlement services to their customers. Financing costs will decrease as the efficiencies from the new services (eg. from netting) are realized. New costs will be created as participants invest in more sophisticated computer equipment. Uncertainty about the real size of the fees and costs can create uncertainty in the participants' relationship with their clients. To provide as much certainty as possible the fee schedule developed for the clearing and settlement services should be as simple as possible.

##### *Market Impacts*

The securities market itself will experience some change as a result of introducing the new clearing and settlement mechanisms. Eliminating the large fixed costs will give small, efficient companies the opportunity to gain market share. Revenue streams that were derived from the inefficiencies of the physical environment will be drastically reduced, if not totally eliminated. Depending on the capabilities of the clearing and settlement systems that are installed, new opportunities may be created. For example, if securities lending is incorporated in the design of the new clearing and settlement systems, a new opportunity may be created for some participants to lend securities. This may not have been practical for some participants without an automated book entry system.

Transaction volumes may increase as a result of automating the clearing and settlement process. Eliminating the limitations inherent in the physical settlement mechanisms will cause transactions that would not otherwise have been negotiated to be completed. Also, a market may be able to expand its hours of operation.

The most difficult changes that participants must deal with is the shift of product lines away from activities that existed as a result of inefficiencies. Participants must anticipate the decline of some of their product lines that will be caused by the introduction of the new services. They must also develop new products that take advantage of the new capabilities offered by the new systems.

Participants who adjust to these changes in the market will find themselves benefitting from the changes.



**Operational Impacts**

The operational changes required of participants are significant. Markets that have automated clearing and settlement systems have found that staff levels have decreased, but the characteristics of the staff have changed. Automated clearing and settlement systems require staff that are better educated and capable of dealing with complex computer technologies.

The pace of business will increase as automation allows settlement time frames to collapse. Technology can assist in dealing with shortened time frames but participants must also adapt their own processes and systems to the faster pace.

Credit requirements may decrease as a result of netting transactions. This may be partially offset by a new requirement to deliver letters of credit or collateral to the clearing and settlement company as part of its risk protection mechanisms.

Issuers, registrars, transfer agents and entitlements paying agents will be required to adjust their procedures and processes to deal with the new clearing and settlement mechanisms.

Other eligibility considerations include the ease with which a security can be immobilized into a central depository (or even de-mobilized). Certain securities may be difficult to immobilize from a legal perspective. For example, certain securities may have ownership restrictions (contingent shares) that make them difficult to immobilize under one holder name. The custody arrangements that are envisaged for the immobilized securities may affect the choice of eligibility.

Securities that can be registered in a "nominee name" or the depository are much easier and cheaper to hold than securities that are available only in bearer form. The costs using bearer certificates in terms of endorsing and issuance can be prohibitive. One technique used to simplify the task of endorsing registered securities is the use of "lampo" certificates where one (or a few) large depository certificates represent the entire value of the depository's holdings of a given security. The custody arrangement may dictate that only securities capable of being registered in the depository's nominee name may be eligible for the new clearing and settlement system.

The choice for a depository to adopt a strategy of de-centralization or immobilization is a difficult one. De-centralization (issuance of certificates) is the ultimate goal but it can be difficult to achieve all at once. Several legal hurdles may need to be overcome as well as a significant change in investor attitudes. Immobilization can provide many of the sought after benefits without the need to address all at once the obstacles to complete de-centralization. In addition, once immobilization has been achieved, the registrar's task of gathering together large numbers of certificates to be de-mobilized is already complete.

## Section 5: ELIGIBILITY OF SECURITIES

The clearing and settlement company must determine the securities that will be eligible for processing by its services. There are many factors to be considered when determining eligibility. In addition, the pace of conversion from the physical environment to the centralized one must be carefully planned. Not all securities can be immobilized or de-materialized at once. It can take several years to immobilize or dematerialize all of a market's securities.

The reasons for developing centralized clearing and settlement systems are to promote efficiency and reduce risk. To obtain the most benefit from the system that is developed, securities that are prominent in the market should be targeted. These may be securities that account for a large number of transactions and/or a large proportion of the value of business. At the same time the complexities of dealing with certain types of securities may require a level of sophistication, in terms of system design, that is best left for later development phases. For example, the entitlements that must be processed for equity securities are much more complex than those associated with most debt securities. For this reason it may be simpler to make debt securities eligible before equities. On the other hand if equities are the primary security in the market, the entitlement complexities may have to be dealt with at the outset.

Other eligibility considerations include the ease with which a security can be immobilized into a central depository (or even de-materialized). Certain securities may be difficult to immobilize from a legal perspective. For example, certain securities may have ownership restrictions (constrained shares) that make them difficult to immobilize under one nominee name. The custody arrangements that are envisaged for the immobilized securities may effect the choice of eligibility.

Securities that can be registered in a "nominee name" of the depository are much easier and cheaper to hold than securities that are available only in bearer form. The costs using bearer certificates in terms of safekeeping and insurance can be prohibitive. One technique used to simplify the task of safekeeping registered securities is the use of "Jumbo" certificates where one (or a few) large denomination certificates represent the entire value of the depository's holdings of a given security. The custody arrangements may dictate that only securities capable of being registered in the depository's nominee name may be eligible for the new clearing and settlement system.

The choice for a depository to adopt a strategy of de-materialization or immobilization is a difficult one. De-materialization (elimination of certificates) is the ultimate goal but it can be difficult to achieve all at once. Several legal hurdles may need to be overcome as well as a significant change in investor attitudes. Immobilization can provide many of the sought after benefits without the need to address, all at once, the obstacles to complete de-materialization. In addition, once immobilization has been achieved, the logistical task of gathering together large numbers of certificates to be de-materialized is already complete.



## 5.1 Debt Market Clearing and Settlement

Debt securities usually have an advantage over equities in that the entitlements for a debt security are usually trivial to process when compared to some of the complex events that can occur to an equity. Entitlement processing is a complex and expensive part of the development of clearing and settlement systems. For equity securities there can be a large number corporate actions (proxy, mergers etc) that need to be addressed. For debt securities usually only simple interest and redemptions need to be considered; although more complex debt entitlements will be required in later phases.

The value of debt securities transactions depends on the particular market in question. The use of the debt market or equity market to provide financing is determined by local market conditions. One of the motivations in many markets for putting in place effective clearing and settlement systems, is to enhance the use of the equity markets for raising capital. In some markets the average value of a debt transaction far exceeds the average value of an equity transaction. The number of transactions, value exchanged and complexity of processing all need to be considered.

Government debt often makes up a large proportion of the debt securities in a particular market. This may be an advantage, especially if the government is supportive of the development of the clearing and settlement systems. The concentration of eligible securities from one issuer, such as the government, can simplify the development of issuance, entitlements and safe-custody arrangements. However, care must be taken to ensure the systems that are developed retain a wider application to equities and private sector debt.

"Money Market" instruments form a sub-segment of the debt markets. Money Market securities are usually characterized by short terms to maturity and short settlement periods (usually same day settlement is required). Clearing and settlement systems for same day settlement usually require more sophisticated systems that utilize a larger amount of "real-time" processing.

## 5.2 Equity Market Clearing and Settlement

Equity securities have complex entitlement processing to be considered before they can be made eligible for centralized clearing and settlement systems. On the other hand, transactions in equities often have an existing centralized reporting source in the form of a stock exchange. Information that is already available in a stock exchange can be used to drive the clearing mechanisms. This provides an advantage over debt securities that are usually traded in an uncentralized, over-the-counter market.



### 5.3 Other Instruments

The scope of this document is directed at the processing of debt and equity transactions. However, other types of securities will inevitably be considered for eligibility in the centralized clearing and settlement services. These may include options, futures, stripped securities, and other derivative products. Once debt and equity securities are made eligible for the clearing and settlement services, pressure will mount to make derivatives of these securities eligible. Eligibility of these instruments will usually depend on the safe-custody arrangements and entitlement processing that can be developed for these securities. In many cases these securities can be made eligible for the clearing and settlement services with little or no changes. Where this is the case their eligibility should be pursued in conjunction with the market's equity and debt securities.

## Section 6: LEGAL AGREEMENTS

### **6.1 Legislative Requirements**

The legislation that governs securities transactions must allow for the concepts involved in centralized clearing and settlement. In a market without centralized systems, existing laws and regulations may not be capable of dealing with the new relationships and methods of clearing and settling securities transactions. For example, settlement through book entry transfer using computers may not be legally possible within the framework of existing legislation. In many countries, legislation for securities markets was developed prior to the invention of computers and centralized depositories.

There likely to be are two main areas of legislation that require amendment. The first is recognition of the clearing and settlement agencies in the legislation and regulations governing securities markets. The second is to provide legal support to the practices that will be employed by those entities in performing centralized clearing and settlement.

The process of amending legislation in most countries may be quite lengthy. Many of the new concepts will appear to be radical to some lawmakers who are unfamiliar with the securities market and the problems the new systems are intended to address.

Jurisdictional problems with various level(s) of government may complicate the amendment process. Many markets will have to coordinate changes to legislation and regulations with at least two levels of government. For example, one level of government's legislation may oversee the clearance of transactions while another level's laws apply to the settlement aspects of transactions.

It is incumbent upon those developing the clearing and settlement organizations and their regulators to ensure that appropriate legislation is in place to support their efforts. The development of modern clearing and settlement systems is an evolutionary process that requires the on-going support of legislators.

#### *Legislation for Clearing and Settlement Organizations*

The ability of the clearing and settlement companies to perform their functions must be recognized in the laws and regulations governing the market. The form of the clearing and/or settlement companies may use existing institutional definitions. For example, the settlement portion or depository may be conceived as a "Trust" under existing laws. Alternatively, the legislation may be amended to recognize new types of institutions that perform the functions of clearing and settlement. If possible, it is preferable to have legislation that acknowledges the unique roles of the clearing and settlement entities.



### *Legislation for Clearing and Settlement Practices*

Mere recognition of the clearing and settlement entities in the laws and regulations of a market is not sufficient for the introduction of centralized systems. Legislative and regulatory support for the concepts that will be employed must also be created. For example, Bankruptcy laws, ownership rights, creditors rights and financing laws may require amendment to take account of the new practices of the clearing and settlement organizations. Many of these concepts are discussed below in the section on Key Legal Issues. Some of these include the immobilization or dematerialization of securities, the ability to legally transfer securities using book entries and the use of netting.

Changes to the legislation and regulations that govern securities clearance and settlement inevitably involves an examination of the public policy issues surrounding the securities markets. As previously mentioned, there will be extensive changes in the methods of doing business as a result of the introduction of centralized clearing and settlement. These changes will modify the relationships amongst market players and the risks faced by each. While risk will decrease overall, a shifting of risks will also occur. Public policy makers will wish to examine these changes with respect to the "overall public good."

## **6.2 Key Legal Issues**

Several legal issues need to be addressed when establishing centralized clearing and settlement mechanisms. Some of these issues will exist regardless of the technical solutions that are implemented. Other issues will derive directly from the technical aspects of the systems that are installed. In any case it is important not to completely separate the resolution of legal issues from the technical development of the clearing and settlement mechanisms. While there will be pure legal issues to address, most cannot be separated from the chosen business and technical solutions. The legal infrastructure must support the business objectives of clearing and settlement while the business and technical design of systems must conform to legal constraints.

The following discussion does not enumerate all of the legal issues that will need to be analyzed and addressed. It attempts to highlight some of the major legal issues in the development of clearing and settlement systems.

### *Netting*

The use of netting in the settlement of transactions produces great efficiencies at high transaction volumes. For example, netting allows participants to complete transaction volumes that are higher than what could be achieved without a netting arrangement. Netting can be defined as a process of reducing multiple obligations with various counterparties to fewer or a single obligation. It can be very useful in providing efficiencies in the settlement of transactions but it raises some fundamental legal questions. There are several forms of netting (see section 8) each of which raises unique legal concerns. In each form of netting the major issue is the altering of relationships between the counterparties of a transaction.

For example, using the CNS process (Continuous Net Settlement), all of a participant's obligations with various counterparties are replaced with a single obligation with the clearing company. This replacement changes the legal relationships between the counterparties and introduces the clearing company into the completion of transactions. This fundamental change must be thoroughly described and defined in the legal agreements covering the use of the clearing company's services.

### *Novation*

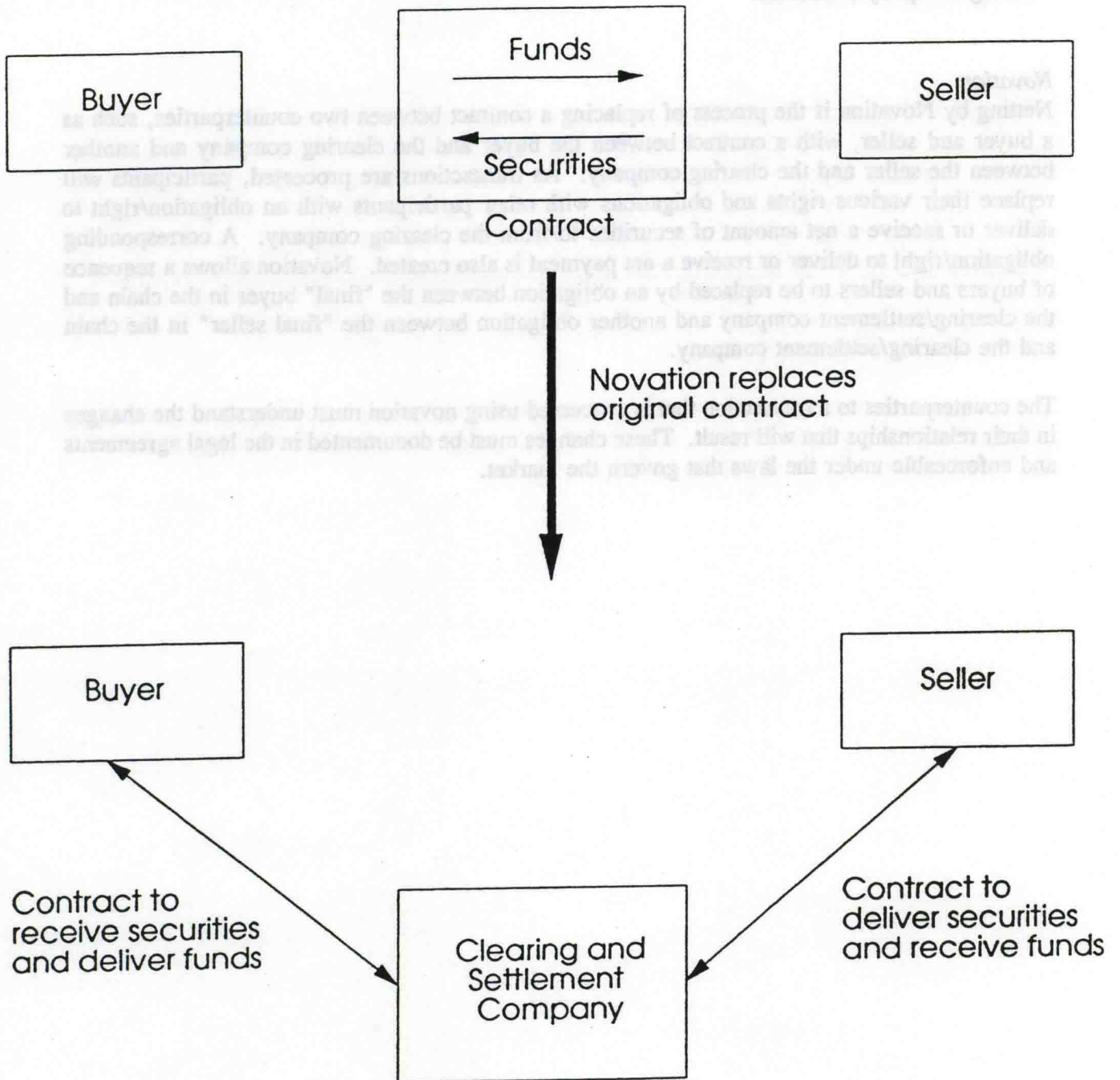
Netting by Novation is the process of replacing a contract between two counterparties, such as a buyer and seller, with a contract between the buyer and the clearing company and another between the seller and the clearing company. As transactions are processed, participants will replace their various rights and obligations with other participants with an obligation/right to deliver or receive a net amount of securities to/from the clearing company. A corresponding obligation/right to deliver or receive a net payment is also created. Novation allows a sequence of buyers and sellers to be replaced by an obligation between the "final" buyer in the chain and the clearing/settlement company and another obligation between the "final seller" in the chain and the clearing/settlement company.

The counterparties to a transaction that is processed using novation must understand the changes in their relationships that will result. These changes must be documented in the legal agreements and enforceable under the laws that govern the market.





### 3. Legal: Novation



### *Effectiveness of Settlement*

Participants who use the services of the clearing and settlement companies need to be assured of the "quality" of the settlements and the ownership rights this creates within the new system. In short they want the payments they receive for securities delivered to be final, and they want the securities they receive in exchange for payment to be final.

Settlement uncertainty is not beneficial to an efficient clearing and settlement system. Participants must be assured that settlements within the new system are as good as settlements, if not substantially better, than their existing arrangements. International investors, who are unfamiliar with local practice, are especially concerned with this aspect of the rules governing settlement.

To ensure the settlements within a book entry system are legally effective requires a combination of legislative support and legal rules that define precisely when settlement occurs. The ease with which "settled" transactions can be "unwound" is a controversial topic. While the goal of any clearing and settlement system should be to avoid the need to unwind or reverse transactions, this is sometimes a feature of the mechanisms that address payment default situations. Whether or not transaction unwinding is possible, the precise timing and events that cause irrevocable settlement to occur must be clearly defined in the legal agreements.

### *Dematerialization*

One step beyond immobilization is the elimination of certificates altogether (dematerialization). Most of the efficiencies are attained by immobilization but dematerialization can eliminate many problems associated with clearing and settlement systems. For example, processes for safekeeping, depositing and withdrawing certificates can be eliminated if securities are dematerialized. Most markets with centralized clearing and settlement operate with immobilization. France, Denmark and Australia are examples where the dematerialization of the securities markets was achieved, through legislation, over a number years.

### *Immobilization*

Book entry transfer of securities and funds is a key element of efficient settlement systems. The ability to affect book entry transfers is created through the immobilization of securities into a central depository. Immobilization involves participants depositing their physical holdings of certificates in exchange for a book entry on the records of the depository.

Once immobilized, entries in the records of the depository, rather than physical deliveries, are used to trigger settlement. Immobilization in a depository often involves the use of a "nominee name." All of the securities deposited are registered to the name of the nominee. This can create issues since the use of a nominee places one more intermediary between the issuer/registrar/paying agent and the beneficial owner of the immobilized securities. The rights of the participants (and clients of the participants) over the immobilized securities; such as the right to receive entitlements and the right to withdraw physical certificates, need to be carefully



defined in legal agreements.

### *Fungibility*

The concept of fungibility is fundamental to book entry systems. Securities that are deposited into a depository are said to be part of a "fungible mass". Certificates that are deposited are merged with the certificates of the same security that were deposited by other participants. These certificates are often cancelled and replaced with certificates that have been registered into a nominee name of the depository. Participants lose the right to obtain the exact certificates they deposit. They do have the right to obtain certificates equal to their book entry holdings of a security through a withdrawal from the depository.

Fungibility can create problems if the scrutiny of incoming certificates is not thorough. Certificates that were accepted for deposit by the depository may later be found to have been "invalid" (eg. lost, stolen or restricted in some way). Once in the depository the particular certificates that were deposited may no longer exist, having been cancelled and exchanged for other certificates. Participants who withdraw certificates are not entitled to the same certificates they deposited.

### *Ownership Rights*

Demonstrating proof of ownership can be an obstacle to dematerialization and even immobilization. In many markets existing legislation requires possession of a certificate to demonstrate ownership. This legislation must be amended to recognize the use of book entries in a depository as proof of ownership.

### *Authentication of Certificates*

Certificates that are deposited into a book entry system must be "authenticated" before a book entry position can be given to the depositing participant. The goal of authentication is to ensure that the certificates are in fact valid and without restrictions. For example, if a participant deposited certificates that were found to have been stolen, the transfer agent or registrar of the certificates could refuse to re-register the certificates into the depository's nominee name. If the depository has already granted the participant a book entry position, the depository may find itself with fewer certificates than the book entry positions they are supposed to represent.

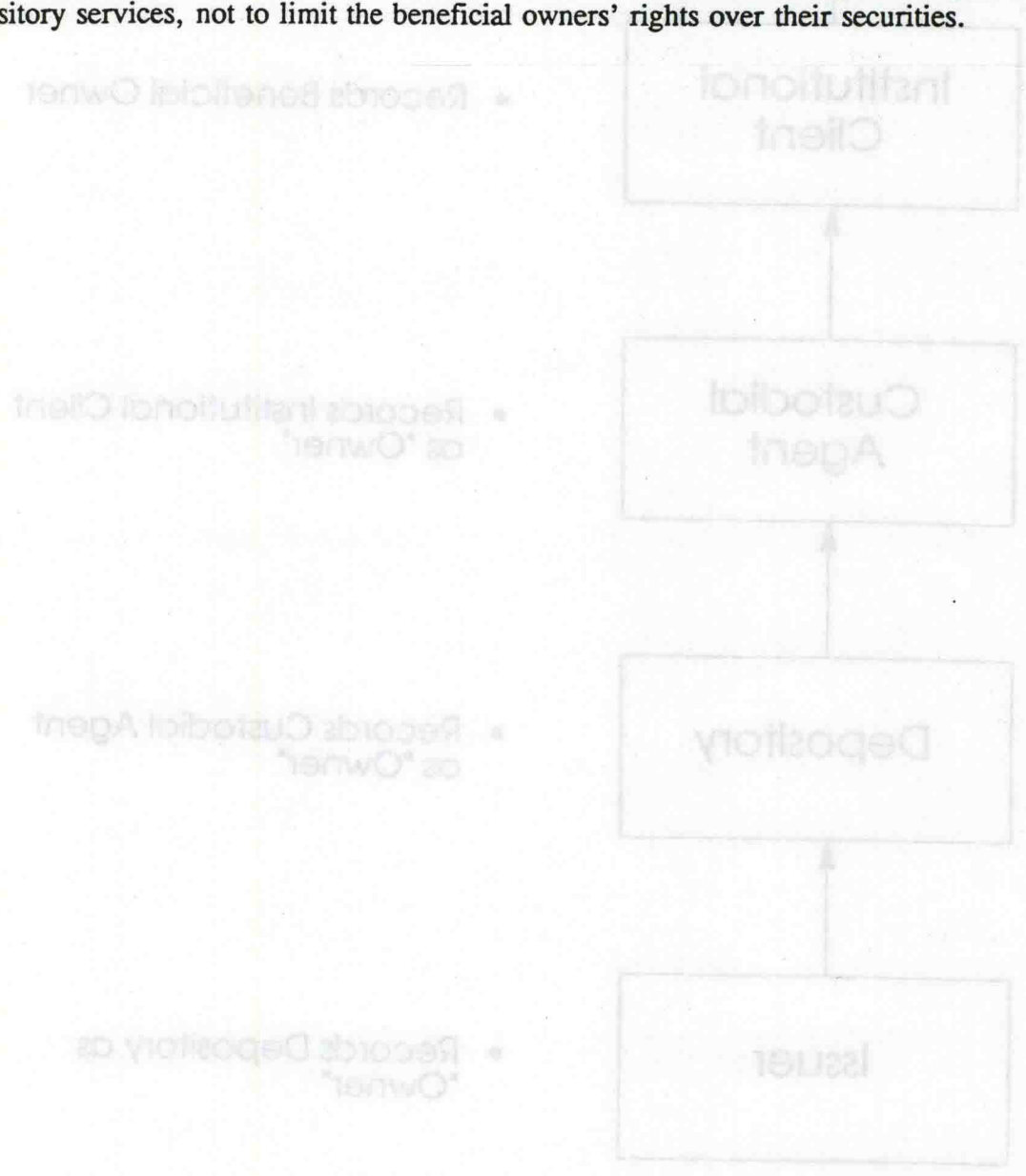
The liability concerns surrounding the deposit of certificates need to be carefully considered. The methods and legal framework surrounding the transfer of certificates may not provide an absolute assurance of authentication. In this case the depository will have to minimize the possibility of "invalid" certificates finding their way into the fungible mass through the use of standards and procedures. At the same time, the legal agreements will need to address the liabilities that will be created if these procedures are not perfect. Participants who withdraw certificates from the depository don't need to verify the authenticity of the certificates they receive if the verification done at the time of a deposit is thorough.

# Legal: Beneficial Ownership

## *Beneficial Ownership*

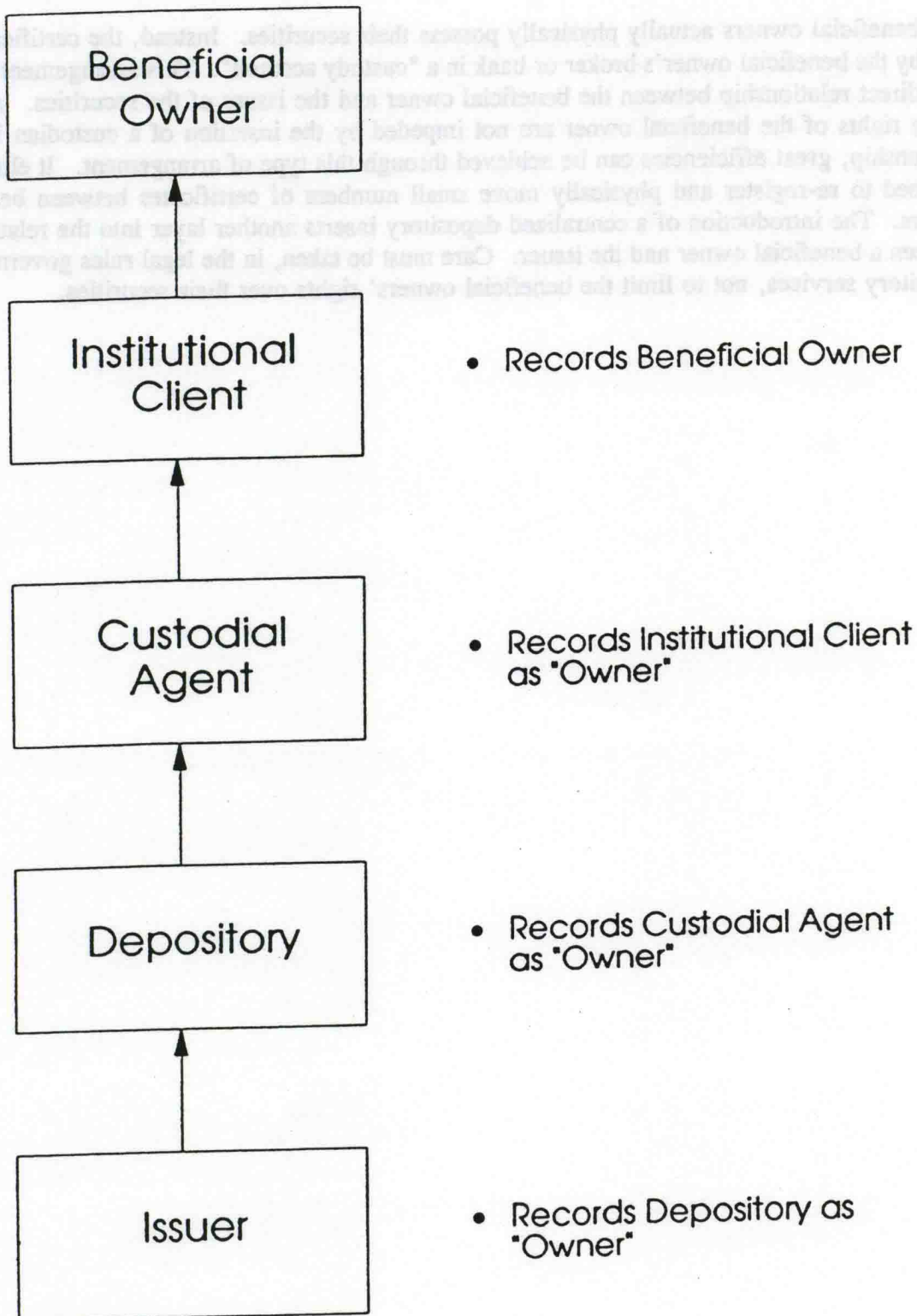
The "beneficial owner" of a security is the person or company who truly owns the instrument and who is entitled to all of the rights of ownership such as to receive dividends, interest etc.

Few beneficial owners actually physically possess their securities. Instead, the certificates are held by the beneficial owner's broker or bank in a "custody account". This arrangement creates an indirect relationship between the beneficial owner and the issuer of the securities. As long as the rights of the beneficial owner are not impeded by the insertion of a custodian into the relationship, great efficiencies can be achieved through this type of arrangement. It eliminates the need to re-register and physically move small numbers of certificates between beneficial owners. The introduction of a centralized depository inserts another layer into the relationship between a beneficial owner and the issuer. Care must be taken, in the legal rules governing the depository services, not to limit the beneficial owners' rights over their securities.





## 4. Legal: Beneficial Ownership



### *Security Interests*

Related to the issue of the effectiveness of settlement is the question of interests or claims over the securities being delivered and received through book entry transfers. One of the ways in which clearing and settlement companies protect themselves from the risk of a payment default is to claim an interest in some of the securities held by participants. Immobilization of the securities makes this a practical possibility since the depository has at least physical access to a participant's holdings. In certain limited circumstances it may be desirable to give the clearing and settlement companies the legal right to use the securities. For example, if a participant refuses to pay amounts it owes, some of its securities may be used to collateralize the obligation.

Some participants may also wish to obtain a security interest in other participant's securities in the depository. Again, the immobilization of the securities into a central (and neutral) depository creates the practical possibility of obtaining these securities. For example, lenders of credit that were previously unsecured may seize the opportunity to have this credit secured with the borrower's holdings in the depository.

It is not useful to rely on the security interest mechanism to address risk concerns for too many situations. The more claims or interests that are placed on the securities, the more complex and indeterminate becomes the effectiveness of settlement.

### *Payment Certainty*

Payment certainty is a cornerstone of efficient and low risk clearing and settlement systems. There are certain legal issues that need to be addressed in order that payment certainty can be achieved. The quality of the clearing and settlement arrangements are useless if the quality of payments to the clearing and settlement company are uncertain.

Centralized clearing and settlement services are "zero-sum games." If good payments are not received by the clearing and settlement company, it cannot make good payments to participants. Ensuring that final and irrevocable payment is made between the participants and the clearing company is not entirely within the control of the clearing and settlement organizations. To a large extent, the characteristics of the country's payment system will determine the certainty and finality of the payments received.

Where true irrevocable payment is not possible, there are steps that can be taken by the clearing and settlement organizations to achieve at least a close facsimile to certain and irrevocable payment. The number of situations where a payment might be returned should be limited to extremely unlikely events such as the insolvency of a major financial institution. The institutions from whom payment instruments will be accepted can be restricted to those that are the most secure.

The timing and method of payments can be determined by the clearing and settlement organizations. Timing can be an important factor. Payments due to the clearing and settlement company can be required before securities are released or payments from the clearing and settlement company



are made available to participants. Also, sanctions against those participants who fail to make the proper payments can be designed into the legal agreements or rules.

Payment certainty is an essential characteristic of a low risk clearing and settlement environment and is necessary for a Delivery versus Payment system; that is one of the G30 recommendations.

### *Liability Issues*

The activities of the clearing and settlement organizations will inevitably involve exposure to liabilities. These may result from, among other causes, the failure to detect invalid securities that have been deposited, the failure of a participant to make good payment or through errors of both a human and computer nature. Clearing and Settlement organizations usually try to distribute all of the liabilities to which they are subject back to their participants. This is accomplished through the legal agreements.

Clearing and settlement companies usually obtain a variety of insurance coverage to deal with these potential liabilities. Other mechanisms are also used to apportion these liabilities to the participants. For example, Participant's funds (or guarantee funds) and credit rings are common methods of transferring liability to participants. A credit ring is used to collect a proportional amount of funds from each participant to cover a shortfall in funds that is caused, for example, by the payment default of another participant. All of these mechanisms must be documented in the legal agreements that document the clearing and settlement services.

### **6.3 Service Agreements**

Clearing and settlement organizations may offer a number of distinct services. Legal agreements are necessary to define the rules that govern the use of these services.

All participants may not subscribe to all of the services offered by the clearing and settlement companies. Moreover, all participants may not be eligible to use all services. For these reasons, the legal agreements should be divided into logical portions that coincide with the services offered. In this way the legal rules to which a participant must conform are only those which pertain to the services they intend to use.

In broad terms the structure of the agreements can be broken down into five main categories. What follows is a brief description of each section. The order in which they appear here is not intended to suggest the order in which they should appear in the actual agreements.

One segment of the Legal Agreements is a Definitions section. This defines both the terms used in the agreements and the legal concepts employed by the clearing and settlement systems. For example, the use of CNS (Continuous Net Settlement) would be specified and described in the Definitions section.

A description of the service(s) is required to establish an overall perspective. This Descriptive section may be quite brief but it should cover all of the major features of the service(s) that are to be covered by the legal agreements.

A section that defines the various relationships that will occur within the clearing and settlement process is necessary. This includes; the relationships between participants; between participants and the clearing and settlement organizations; between participants, the clearing and settlement companies and the regulators; between the clearing organization and the settlement organization (if they are separate). In addition there may be defined relationships between participants, the clearing and settlement organizations and non-participants. Issuers of securities, registrars, transfer agents, paying agents and clients of participants are examples of non-participants that may have relationships defined in the legal documentation.

Another section describes the rights and obligations of the participants and the clearing and settlement organizations. For example, participants may have the right to withdraw certificates from the depository under certain conditions. Participants have an obligation to pay the clearing and settlement company amounts that are owed as a result of settlements completed.

Finally the agreements require a section that deals with the various risk control mechanisms that are developed with the clearing and settlement systems. This would include the use of credit guarantees, Participant's funds, credit rings and other mechanisms to deal with liabilities that might face the clearing and settlement companies.

The process of negotiating legal agreements for a centralized clearing and settlement environment is a difficult and lengthy task. The parties to the negotiations will include potential participants as well as regulators. Many of the concepts that are employed in centralized clearing and settlement will have little or no legal precedent. New terms will need to be defined and understood. New concepts will need to be invented and documented in legal terms. The legal documentation will be regarded as the definitive and detailed statement of complex policy decisions. Many "last minute" problems will develop while negotiating the agreements as the negotiating parties try to enshrine their positions in the legal agreements.



## Section 7: REGULATORY FRAMEWORK

Regulations and regulators that support and encourage centralized clearing and settlement systems are invaluable to the development process. Many of the existing regulations that govern a securities market will require modernization to meet the new concepts of centralized systems. Without the support of the market's regulator(s), very little progress can be made towards the development of modern, efficient systems.

A clearing and settlement organization's relationship with its regulators can be both cooperative and adversarial. Both the regulators and the regulated have much to gain from centralizing the clearing and settlement process. The regulated market has the potential to become more efficient and less risky which is beneficial to all. On the other hand, regulators have a responsibility to ensure that public policy decisions are not compromised by the introduction of centralized systems. This responsibility can lead to conflicts with some of the proposals put forth by the clearing and settlement organizations.

### **7.1 Regulatory Interests**

Regulators of securities markets have many areas of interest with respect to centralized clearing and settlement systems. These interests can be broadly categorized as; Efficiency, Risk and Public Policy. Regulators want safe and efficient systems that can promote and sustain market growth. They will want to analyze and assess the impact on risks to the various market participants from the introduction of the new systems. Finally, the regulators of securities markets will use the introduction of new systems to further the maintenance and implementation of public policy decisions. For example, lower costs due to the introduction of efficient systems may expand the number of market participants who can directly access the market. This may or may not be complimentary to a public policy initiative regarding competition and access in the capital markets.

#### *Efficiency*

Most regulators of securities markets have a mandate to promote the growth and well being of their capital markets. Efficient clearing and settlement of securities transactions are essential to this goal. It is therefore not surprising that these regulators are often among the strongest supporters of efficient systems. Around the world, there is a wide spectrum of regulatory involvement in the transition to more efficient systems. Regulators should adopt a proactive approach in the development of new systems.

#### *Risk Issues*

Regulators of the securities market will be interested not only in risk reductions but also in the proportional shifting of risk amongst participants. In addition, the regulators must carefully



balance the risks assumed by a clearing and settlement organization with the risks to that organization's participants.

Risks in the clearing and settlement of securities transactions cannot be precisely quantified. Careful research and analysis of the risks can be supplied to the regulators by the clearing and settlement organizations and the participants. This will help to identify and estimate the risks. Once risks have been identified and mechanisms designed to deal with them, regulators will consider the overall impact on the market of implementing the proposed systems. The regulators will often recommend improvements in the risk control mechanisms which must be incorporated into the design of the systems. It is therefore imperative that regulators be a part of the conception of the clearing and settlement initiatives. If their opportunity to make recommendations is left to later stages of development the ability to retrofit their suggestions becomes very difficult and costly, if not impossible.

### *Public Policy*

Regulators, who are charged with carrying out a government's public policy decisions, will want these initiatives incorporated into any new clearing and settlement developments. They may attempt to use the development or re-development efforts to achieve some of their public policy goals. As with some private sector organizations, securities market regulators may have existing interests in current clearing and settlement practices and may be reluctant to certain changes. Regulators will support a move towards more efficient systems since this assists their efforts to improve the capital markets. Examples of public policy interests that may be affected by clearing and settlement systems include access to the capital markets by domestic and foreign participants; competition within the domestic market; competitiveness in the global economy; foreign investment policies; allocation of clearing and settlement risks and protection of investors.

## **7.2 Regulatory Relationships**

The vast majority of securities market regulators derive their authority from a national government. In most of these cases regulation of stock exchanges, banks security brokers and dealers is the responsibility of the "Finance" or "Treasury" branch of the national government. One notable exception is New Zealand where regulation of the market is the responsibility of the Justice department. The central bank in a country will usually have either direct or an indirect responsibility for regulating at least portions of the capital market.

In other markets (Canada, the United States and Switzerland for example) more than one level of government is involved in regulating the various sectors of the market. In Switzerland regulation of stock exchanges is the responsibility of the Canton in which the stock exchange is located. Swiss banks, on the other hand are regulated by a Banking Commission of the Federal government.



### *Jurisdictions*

Many securities markets have more than one regulatory body overseeing different aspects of the market's operation. Where there is clearly only one regulator, the task of defining the regulatory relationship is relatively straight forward. Where multiple regulators exist, the relationships can be complex. Regulators should agree amongst themselves on which of them is going to oversee the various parts of the clearing and settlement mechanisms. The clearing and settlement organizations should understand the regulatory network that is ultimately devised to deal with their activities.

The regulators of the potential participants of the clearing and settlement services may not be the same as the regulators of the clearing and settlement organizations themselves. In this case the participants' regulators will require input into both the design of the clearing and settlement mechanisms and the content of the supporting legal agreements.

Regulation of the clearing and/or settlement organizations may be determined by existing relationships or a new framework may be established. If the two functions are performed by separate entities they may have separate regulators. If one organization performs the clearing and settlement function, a single authority (or group of cooperating authorities) may have the accountability for regulating the combined operation.

### *Regulation of Clearing Activity*

Tradition and existing practice often plays a large role in the determination of who regulates a clearing organization. In markets where the clearing function has developed as part of a stock exchange (or its subsidiary) regulation of clearing is often seen as part of regulation of the stock exchange. In many markets stock exchanges are considered Self Regulatory Organizations (SRO) who enforce their own rules and regulations on their members. In this scenario regulation of the clearing entity is achieved through the stock exchange. This relationship as an advantage in that both the clearing function and its participants are subject to a single regulatory authority.

In markets where the stock exchange and clearing organization are separate, each may have its own regulator. This creates a need for close cooperation amongst the regulators since the clearing company and its participants will be subject to different regulations. Since the interests of the clearing company and its participants are not exactly the same, the potential exists for contradictory regulatory decisions. For example, the regulator of a clearing company may insist it allocate all risk to its participants. The participants' regulator, quite naturally, may not accept this state of affairs.

### *Regulation of Settlement (Depository) Activity*

As with clearing organizations, regulation of settlement organizations or depositories may be determined by existing regulatory relationships. If the settlement organization is controlled by banks, the banks' regulator is the likely candidate to regulate the settlement company. Since



many types of market participants will have their securities on deposit with a central depository, many different regulators will have an interest in its operations. Again, cooperation amongst these regulators is essential. The simplest form of relationship is one in which clearing, settlement and the participants of these services are regulated by a single authority.

### *Regulation of Participants*

Participants who use the services of the clearing and settlement organizations will have their own regulatory authorities. As previously discussed, these may or may not be the same regulators of the clearing and settlement organizations. In any case, each participant will need to seek approval from their regulator to utilize the clearing and settlement services. The participants' regulators will need to have an intimate knowledge of the rules governing the operation of these services. The way in which clearing and settlement risks are allocated to participants will be of prime concern.

The clearing and settlement organizations must establish direct lines of communication with the participants' regulators. This is to ensure a flow of quality information to these authorities. Indirect communication through the participants can lead to confusion over the details of the clearing and settlement services and their potential impact to the participants.

## **7.3 Regulatory Requirements**

### *Legislation*

Regulators derive their authority from legislation that governs the capital markets. Existing legislation may be inadequate to permit regulators to oversee the activities of clearing and settlement organizations. Ideally, the clearing and settlement organization would have a single regulator, empowered by legislation, to regulate its activities.

### *Standards*

Regulators of clearing and settlement organizations require a framework that permits them to monitor and, if possible, predict and prevent potential problems associated with securities clearance and settlement. To achieve this end regulators should be empowered to develop and enforce various standards applicable to the clearing and settlement companies. For example, financial practices such as minimum capital and liquidity standards are often part of these requirements.

There are two distinct aspects to regulation of clearing and settlement organizations that are just beginning to develop or re-develop a market's clearing and settlement apparatus. In a case where new systems or processes are being introduced, the regulator must be educated about the details of the new approach. Once regulatory approval is obtained for new services, an ongoing relationship with the regulator is developed to allow the regulator to monitor the clearing and settlement operations. Submission of new services for regulatory approval may require proposal,



response and counter proposals with the regulators. Oversight activities for ongoing services is characterized by formal reporting mechanisms that occur on a fixed timetable.

#### *Approval of New Services*

When the clearing or settlement organizations develop new services, the introduction of these services ordinarily must first be sanctioned by the appropriate regulatory authorities. To make their decision, the regulators will require detailed information on the proposed service and will need to be educated about its purpose and operation. Typically regulators will want to analyze potential risks, risk control mechanisms, transaction volumes, payment default scenarios and participation rules for the new service. In addition, legal analysis and opinions with respect to the operation of the new service may be required. Once this information has been received and reviewed by the regulators, their decision is usually rendered within a pre-determined period of time. The regulators may simply approve or disapprove the new service proposal. More likely, the regulators will request modifications to certain aspects of the new service.

#### *Ongoing Regulation*

The operation of clearing and settlement services should be subject to periodic reviews by the regulators. These reviews could be accomplished through a combination of regular reports to the regulators, periodic examinations and special audits.

### **7.4 Regulatory Reporting**

Most securities clearing and settlement operations make regular reports to their regulators. These reports will usually follow a pre-determined format and contain information that has been agreed to by the regulators and the clearing and settlement company. These reports may contain both statistical and narrative sections. Statistical reporting may include aggregate transaction volumes during the previous reporting period, the individual size of transactions (ie. largest, average), payment values, the size of any guarantee funds and values on deposit. In addition to these regular reports, regulators may request special statistical information on an ad hoc basis.

The narrative section of a regulatory report may involve the disclosure of any problems or special situations that were encountered by the clearing and/or settlement organizations. For example, if certificates had been lost by the depository, an explanation of the circumstances may be required in the next regular report. In addition, any difficulties with an audit (or resignation of an auditor) and the circumstances of this situation might be reported to the regulators.

#### *Examinations*

Securities clearing and settlement companies are usually required to submit to examinations and audits by the regulatory authority. These examinations are used to ensure that any standards

established by the regulators are being adhered to by the clearing and settlement company as well as their participants. In addition, a special examination may be ordered by the regulators in certain circumstances.

### *Confidentiality*

Securities clearing and settlement organizations, by virtue of their function, are in possession of statistical information about the activities of the various participants. The centralized aspect of many clearing and settlement operations and the high degree of computerized record keeping make this a unique source of statistical information related to the capital markets. This market intelligence must be kept confidential by the employees of the clearing and settlement organization. At times the regulators of the clearing and settlement organization and/or the regulators of the participants may request information about the activities of a specific participant. The participant in question may or may not be informed of the request, depending on the instructions of the regulators. Under some circumstances aggregate data about the market may be made publicly available by the clearing and settlement organization. The circumstances and form of the data should be predefined and subject to disclosure guidelines.

## **7.5 Regulatory Compliance**

Regulatory rules and standards of conduct for clearing and settlement organizations must be maintained at all times. If the regulators believe a rule or standard has been breached by the clearing or settlement organization, a compliance order to enforce the rules/standards may be issued. These orders may impose limits on the services offered by the clearing and settlement company or its participants. For example, regulators may issue a compliance order to limit the use or activity in a new service for a "pilot" period. Once the pilot programme is complete and the results are analyzed, the limits may be removed or new limits established. The authority to issue these orders and penalties for non-compliance are usually contained in the legislation that empowers the regulators.

In addition to compliance orders the regulators may issue orders to "cease and desist" from specific activities or practices. These orders compel the clearing and settlement organizations from beginning or continuing certain activities. These orders may also be issued to participants of the clearing and settlement services.



## B. OPERATIONAL DESIGN

### Section 8: CLEARING

#### 8.1 Trade

##### 8.1.0 Overview

This section focuses on the requirements of a clearing organization to develop an efficient environment for post-trade processing up to confirmation of details by both parties. It will examine trade reporting methods and strategies, highlighting the inherent advantages and disadvantages of each. This section will briefly examine trade correction and trade reconciliation processing.

##### 8.1.1 Trade Reporting

A clearing organization acts as the intermediary in the processing of trade information. Typically, this trade information is generated by many different sources. The task of the clearing organization is to organize trade data in a manner that allows for efficient processing of the transactions.

Reporting of trade details to the clearing organization is the first step in the settlement of those trades. Reporting of the trade is the first legal acknowledgement that a transaction between the two parties exists. The complex processes involved in the settlement of a trade make it imperative for trade information to be communicated to the clearing organization as soon as possible after a deal has been completed. The G30 recommendation is for trades to be reported as "locked-in" trades by no later than T+1. The sooner trades are reported, the sooner the clearing organization can begin its functions. Timely trade reporting is essential to the achievement of many of the G30 recommendations.

##### *Trade Reporting Discipline*

Trades in securities that are eligible for settlement through the clearing organization must be reported in a timely manner. Many jurisdictions have adopted a "Mandatory Trade Reporting Rule" to ensure the clearing organization is informed of trades as soon as possible.

Since a clearing organization usually processes only a subset of a given market's trades, a method of separating eligible trades from those that are not handled by the clearing organization must be in place. The clearing organization may perform this "filtering" process or the Exchanges/Market Participants may pre-screen their trades and report only eligible trades to the clearing organization.

### *Trade Reporting Methods*

Depending on the level of sophistication of both the clearing organization and its participants' systems, trade details may be communicated in a semi-automated or totally automated fashion. A manual reporting method may be used if automation is completely impossible.

In a manual environment, participants usually record the details of their trades on forms provided by the clearing organization. The standardization imposed by the forms enforces consistency of reporting. The forms are then delivered to the clearing organization for processing. Even in a totally automated environment, the manual-forms method is usually required as a back-up measure.

In a semi-automated environment, participants may record their trade details on forms that are used for data entry into a computer at the Clearing organization. Alternatively, the participants may deliver to the Clearing organization tapes or diskettes with recorded trade details. In a totally automated environment, participants' computers transmit trade details directly to the Clearing organization.

### *Trade Reporting Details*

The details of a trade reported to the Clearing organization must be sufficient to describe the basic characteristics of the trade. These include:

- a) WHO are the parties to the trade; the buyer and the seller as well as the identification of a client or third party to the trade.
- b) WHAT security has been traded and the quantity? The security must be identified using some standard identification that is known to all participants of the Clearing organization.
- c) WHERE the trade took place is often an important item that determines some of the trades processing characteristics. This information may be a geographic location or market identification such as an "Exchange Trade" or "Over-the-Counter" Trade. Clearing organizations that process transactions for more than one stock exchange may also need to track the exchange that originated the transaction.
- d) WHEN the trade was negotiated (Trade Date) and when it is to be settled (Settlement Date) are critical items. The most critical is the Settlement Date. It may be possible for the Clearing organization to assign this date based on the reported Trade date. For example the Clearing organization may assign a Settlement date of Trade Date plus 3 days (T + 3).
- e) WHY the trade was done? Trades are often executed for different reasons, thus the type of trade is usually reported. Different types of trades may have different clearing and settlement characteristics.
- f) HOW the trade is to be settled is sometimes determined by the choice of the reporting parties.



Different methods for settlement may be available, thus it is important to identify the chosen method for each trade.

The G30 recommendations specify the use of the ISO standard for Trade Reporting messages. Listed below are some of the common data elements of a Trade reported to Clearing organization.

- Buyer Identification
- Seller Identification
- Client/Third Party Identification
- Security Identification
- Amount of the Security
- Amount of Funds
- Currency of Funds
- Trade Type
- Settlement Options
- Trade Date
- Settlement Date
- Price
- Interest/Dividend Amounts
- Yield
- Gross/Net Amount

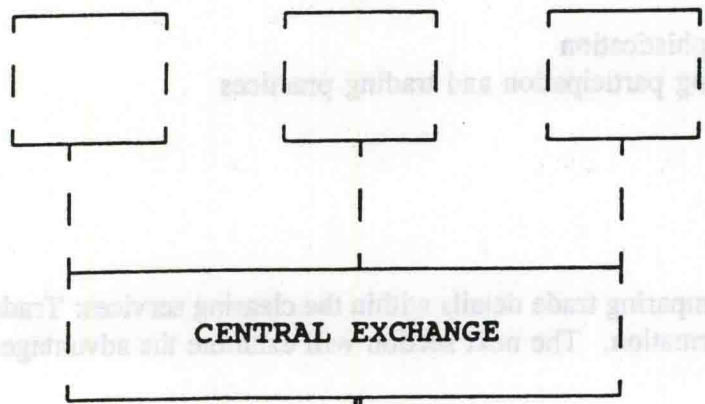
### 8.1.2 Trade Reporting Sources

Trades in Equity and Debt securities are often contracted through various means. If a central exchange exists for the negotiation of trades, it is usually the primary source of Trade information for the Clearing organization. Trades that are done "over-the-counter" (OTC) must also be collected by the Clearing organization. Interfaces between the Exchange and the Clearing organization as well as between the participants in the over-the-counter market and the Clearing organization are essential. In the case where an Exchange exists, the details of trades completed on the Exchange can be reported by the Exchange to the Clearing organization. In the over-the-counter market, the Clearing organization must deal directly with the principals to a trade.

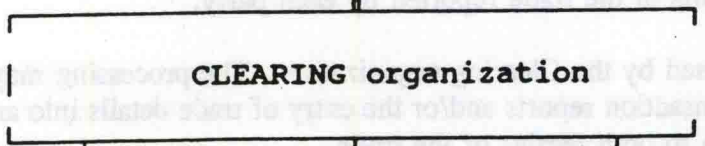
5. TRADE REPORTING: SOURCES

The Central Clearing organization provides the focal point for trade reporting and settlement for all market participants. Specific concerns must be addressed for markets with multiple trading exchanges. In order for the Clearing organization to establish and maintain consistent trade reporting practices, it may be essential that regional and national clearing organizations are provided. Areas of concern may include:

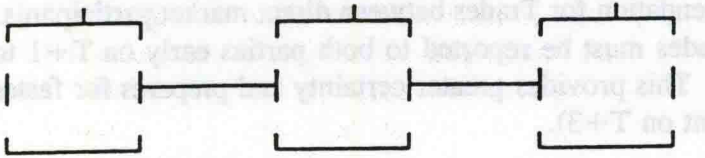
- differing settlement practices
- time-zone differences
- varying exchange by-laws regarding reporting practices
- varying levels of technological sophistication



**COMPLETED TRADE DETAILS**



**COMPLETED TRADE DETAILS**



**OVER-THE-COUNTER MARKET PARTICIPANTS**

The primary advantage of adopting the T+1 primary comparison of trade details and flows provides to the clearing organization is the processing stream. However, the strategy mandates a duplication of effort by market participants in that both parties to a trade must report it to the Clearing organization.

In the United States, reporting by both the buyer and seller is subject to an automated matching system, which compares the price, number of shares or bonds, security number and other details. The resultant matched trade becomes a binding contract due for settlement.

Swedish incorporates a Manual Trade Comparison System. Parties to a trade exchange 'copy



The Central Clearing organization provides the focal point for trade reporting and processing for all market participants. Specific concern must be addressed for markets with multiple stock exchanges. In order for the Clearing organization to establish and maintain consistent trade reporting practices, it may be essential that regional market nuances created by multiple exchanges are considered. Areas of concern may include:

- varying levels of technological sophistication
- varying exchange by-laws regarding participation and trading practices
- time-zone differences
- differing settlement practices

### *Trade Reporting Strategies*

There are basically two strategies for comparing trade details within the clearing services: Trade Comparison (Matching) and Trade Affirmation. The next section will examine the advantages and disadvantages of each method.

#### **8.1.3 Trade Comparison**

The Trade Comparison strategy, often referred to as Trade Matching, requires both parties to a trade, the buyer and seller, to report the trade details to the Clearing organization. The Clearing organization compares the details of the trade reported by each party.

Trades that "match" in detail are processed by the Clearing organization. The processing may include the compilation of hard-copy transaction reports and/or the entry of trade details into an on-line terminal network for distribution to both parties of the trade.

The trade comparison and distribution of matched Trade information must be completed by the end of T + 1 to satisfy the G-30 recommendation for Trades between direct market participants. Errors and problems with unmatched trades must be reported to both parties early on T+1 to allow them time to correct the mistakes. This provides greater certainty and prepares for faster trade settlement processing (ie. settlement on T+3).

The primary advantage of adopting the Trade Comparison strategy is that it supports the earliest possible comparison of trade details and allows problems to be identified much earlier in the processing stream. However, the strategy mandates a duplication of effort by market participants in that both parties to a trade must report it to the Clearing organization.

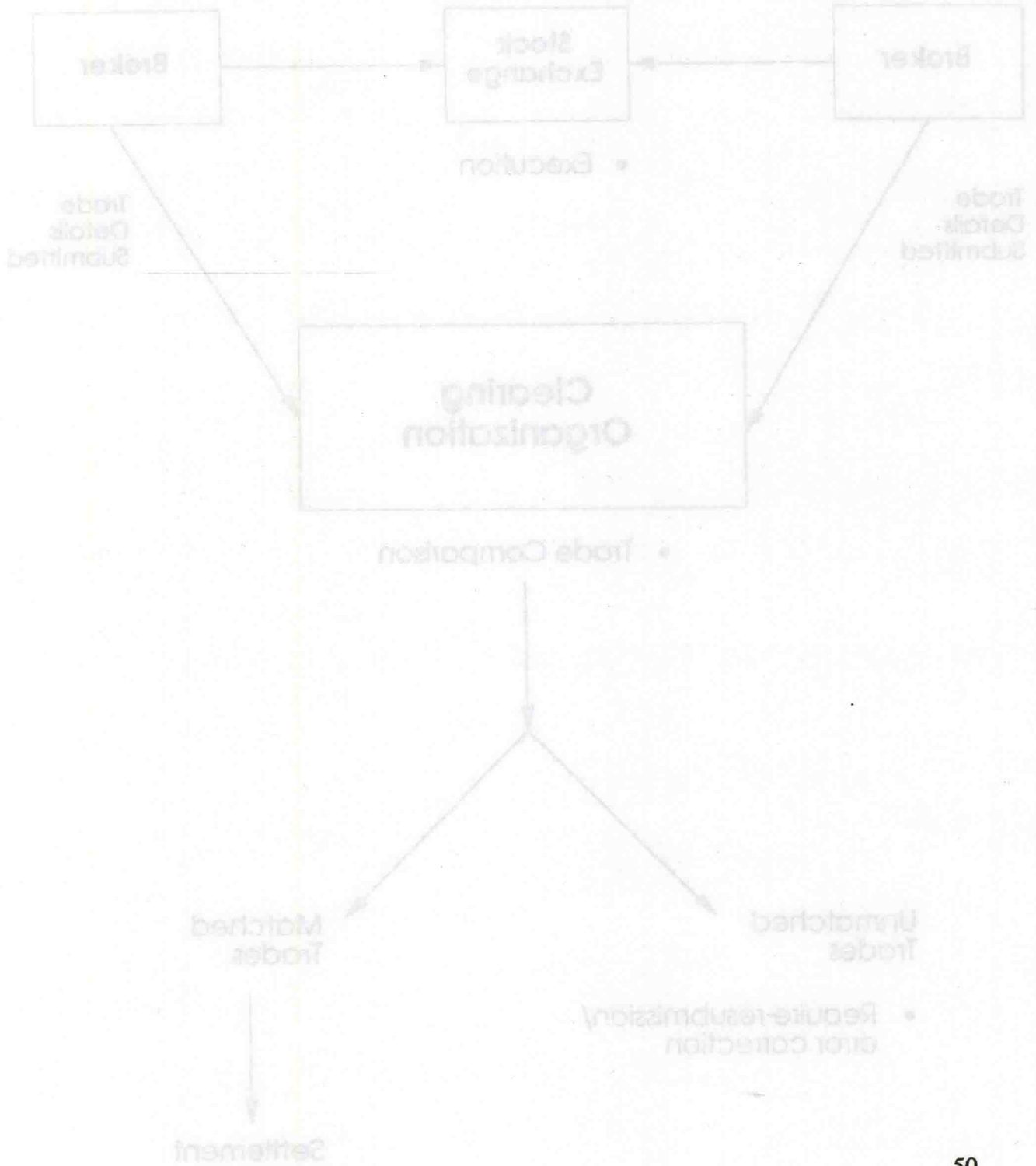
In the United States, reporting by both the buyer and seller is subject to an automated matching system, which compares the price, number of shares or bonds, security number and other details. The resultant matched trade becomes a binding contract due for settlement.

Sweden incorporates a Manual Trade Comparison System. Parties to a trade exchange "reply

# Exchange

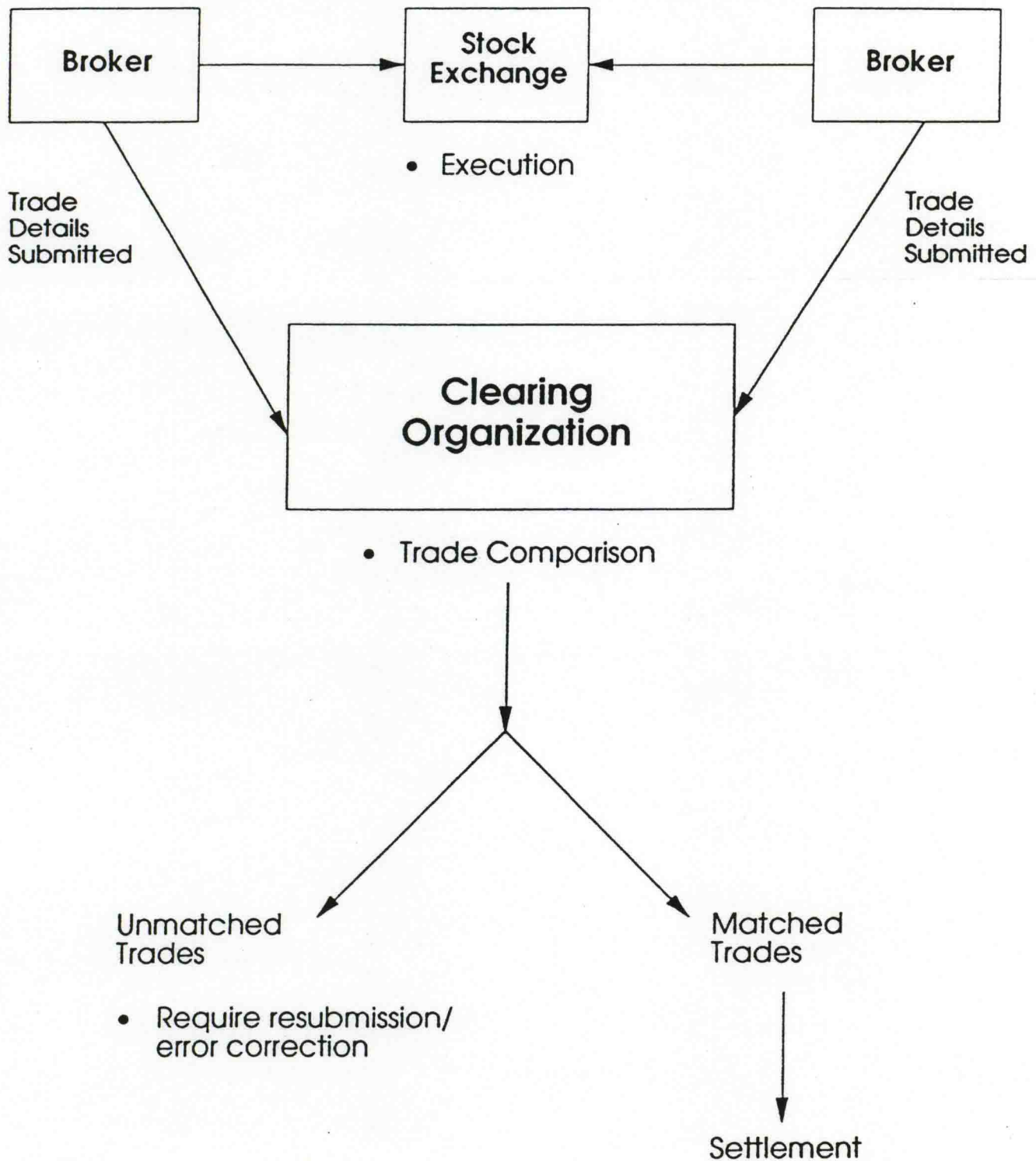
notes" which are manually routed between the trade parties to verify information such as; the counter party, security, buy/sell, price, volume and settlement day.

All markets employing a Trade Comparison strategy must have a defined process for "Unmatched" trades. This will be discussed in section 8.1.6 Trade Corrections.





## 6. Exchange Trade Reporting



#### 8.1.4 Trade Affirmation

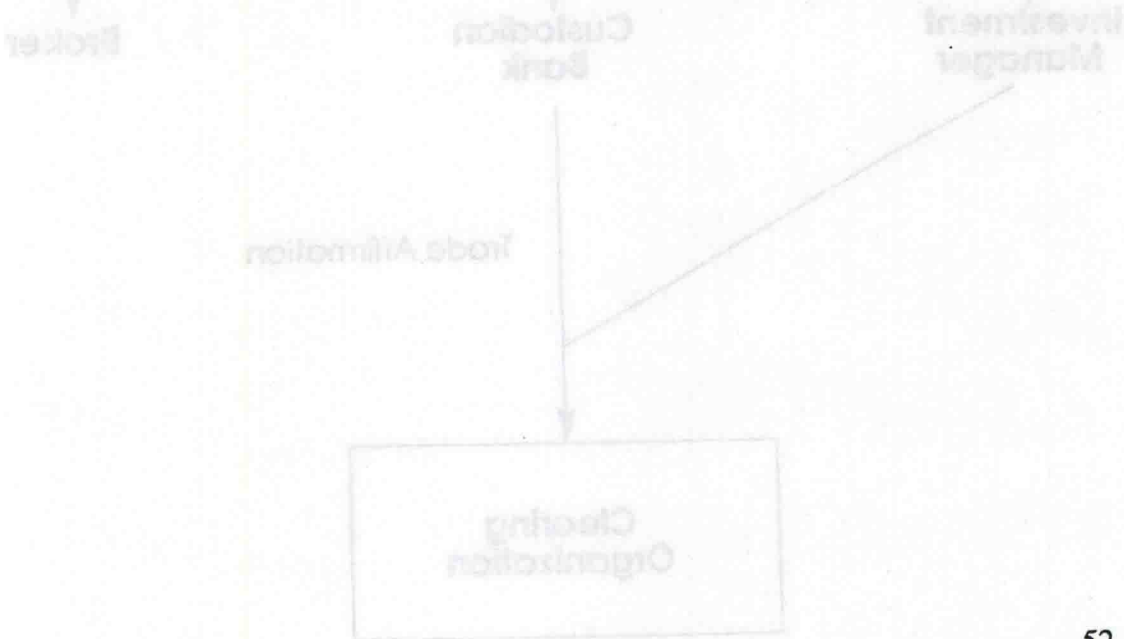
The Trade Affirmation Strategy requires only one of the two parties to a trade report the details to the Clearing organization. The other party will later affirm the details. A reporting convention must be adopted to determine which party should report the trade i.e. the buyer or seller.

The Trade Affirmation Strategy is commonly incorporated for institutional trading. The advantages include the alleviation of dual reporting which dictates duplication of effort. A disadvantage of this strategy is that it requires more to achieve verification of the trade details by the non-reporting party to the trade.

Trade details reported to the Clearing organization by one party of the trade are processed to provide hard-copy transaction reports and/or an on-line terminal network interface. The non-reporting party will compare trade details provided by the Clearing organization to their internal trade contracts. Transactions that match will be affirmed by the non-reporting party. The instruction to affirm a trade may be provided in several forms, dependant on the technological sophistication of the trading parties and the Clearing organization. The affirmation advice may be provided in several formats, such as:

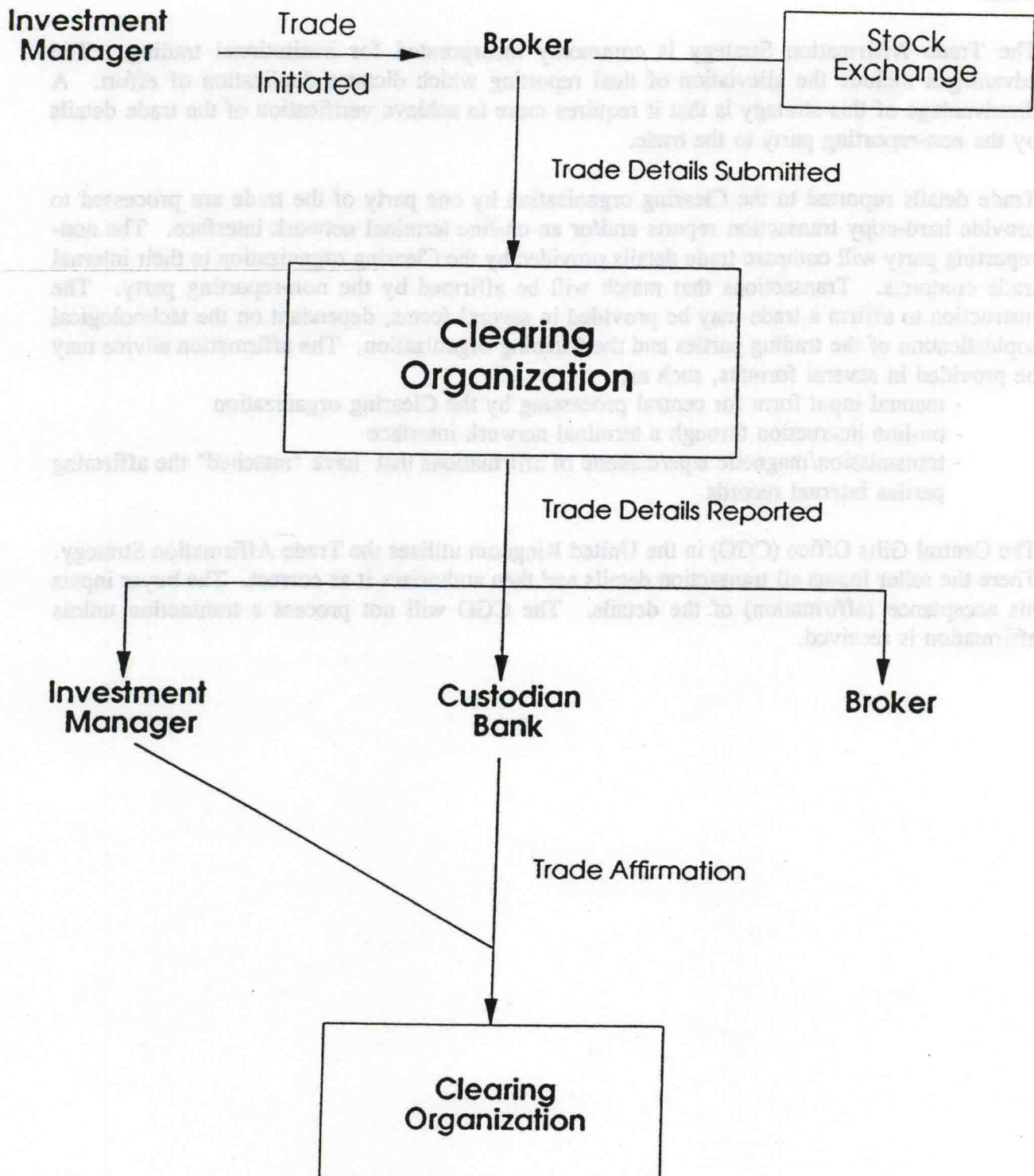
- manual input form for central processing by the Clearing organization
- on-line instruction through a terminal network interface
- transmission/magnetic tape/diskette of affirmations that have "matched" the affirming parties internal records

The Central Gilts Office (CGO) in the United Kingdom utilizes the Trade Affirmation Strategy. There the seller inputs all transaction details and then authorizes it as correct. The buyer inputs his acceptance (affirmation) of the details. The CGO will not process a transaction unless affirmation is received.





## 7. Institutional Trade Reporting



### **8.1.5 Non-Participant Involvement**

The efficiency of the Clearing organization can be greatly enhanced with respect to timely trade detail agreement, if provisions are taken to incorporate information flow to and from third parties to a trade.

An institutional trade is initiated by the third party to be delivered and paid for by a broker and settlement agent institution on behalf of the third party.

Typically, an institutional trade is reported by the executing broker into the Clearing organization and follows the process detailed in section 8.1.4 Trade Affirmation. However, the Settlement Agent institution must receive contractual verification from the third party before trade affirmation is provided.

The Clearing organization could provide access to third parties for trades conducted on its behalf. This access could be in the form of hard-copy transaction reports, on-line terminal network interfaces or batch transmissions. The third party should have trade details available by T + 1 and be capable of providing direct affirmation to the Clearing organization or instructing the Settlement Agent institution to perform the affirmation on their behalf.

A Clearing organization may encounter resistance from Settlement Agent institutions in providing trade information access directly to third parties. Settlement Agent institutions may have internal trade information access mechanisms for their third party clients and may view the obligation of third party involvement as their own. Greater efficiency may be gained, dependant upon emerging market conditions, if the Clearing organization assumed the centralized processing responsibility. The third parties to a trade must be linked to a trade comparison/affirmation system to satisfy the G-30 recommendations.

### **8.1.6 Trade Corrections**

The Clearing organization must establish a methodology for processing error corrections to trade details prior to confirmation. Errors in trade data are one of the major impediments to timely trade settlement. Corrections must be completed before the end of T+1 to comply with the G30 recommendations. One strategy for dealing with errors is to simply report all errors to the parties involved, delete the transaction in error and require re-submission of a new transaction.

Another strategy is for trades that are unmatched are reported to both parties for correction. The Clearing organization would be unable to determine validity of the trade submissions and would, therefore, either request resubmission or maintain the unmatched trade in the system to provide the parties an opportunity to modify details. The Clearing organization must mandate that error corrections to unmatched trades be subject to mutual agreement for the trade to be deemed a confirmed obligation.



### 8.1.7 Trade Reconciliation

The Clearing organization can contribute to greater efficiencies amongst its participants by providing a mechanism to verify participants' trade reporting records to that of the Clearing organization. The trade reconciliation process is of particular importance for market participants' whose trades are reported to the Clearing organization by the Stock Exchange(s). The participant could provide a transmission of their trading records to be compared to the Stock Exchange information. The Clearing organization could provide an exception or out-of-balance report which alerts the participant to transactions which require immediate attention. Trade Reconciliation, performed systematically by the Clearing organization, enhances the accuracy and efficiency trade reporting and affirmation processing.

## 8.2 Netting and Settlement

### Overview

The use of the term "settlement" in this section of the Blueprint is used to describe the exchange of securities and funds. These exchanges may take place in book entry form or using physical exchanges of certificates and funds. This section does not deal with the actual mechanics of these exchanges as these are discussed in more detail in the "Depository" section. The use of the term "netting" is used here to mean the organization of trades for settlement. Under this definition netting is an accounting process that sorts and combines transactions for eventual settlement.

The use of netting to process the settlement of securities transactions can provide great efficiencies and risk reductions. While there are many different forms of netting, the most common forms seek to reduce several transactions down to a single or relatively few replacement "transactions". The impact of netting on risk can be difficult to assess since the effect of netting is to combine the risks of various participants and transactions into a homogeneous relationship with the clearing and settlement organizations. The total risk experienced by the market should be decreased through netting. New risks may be created and various participants may experience proportionally more or less risk than they did without netting.

The end result of a netting process is to reduce many transactions to relatively few deliveries of securities and funds. To complete the settlement process requires the delivery of (net) security and fund positions. These deliveries can be made in either a book-entry environment or using physical deliveries of the net positions.

### 8.2.1 Multi-lateral Netting

Most clearing organizations employ a concept known as "Multi-lateral netting by novation and substitution." This netting involves replacing a participant's many transactions done with many other participants by relatively few "transactions" done with the clearing company. "Buy"



transactions are offset by "sell" transactions to arrive a net position owed to or from the clearing company. One of the key elements of multi-lateral netting by novation is that the connections in the transaction between individual participants are erased.

In a physical settlement environment each party to a transaction exposes the other party to a certain amount of risk. In a multi-lateral netting environment each participant faces the risk of dealing with the clearing company, not individual participants. Depending on the risk control mechanisms adopted by the clearing company, participants may not experience any risk from other participants, only the risk that the clearing company will not be able to meet its obligations.

Bi-lateral netting may also be employed; although it is less effective than multi-lateral netting. Bi-lateral netting involves reducing the transactions between two participants to a few or a single obligation.

### **8.2.2 Netting Schemes**

There are basically two types of netting schemes that are employed by securities clearing and settlement organizations. These are Trade-for-Trade and Continuous Net Settlement (CNS). While Trade-for-Trade processing is not, strictly speaking, a "netting" process, it is discussed in this section as a settlement technique that employs the use of running net balances. Both schemes are quite common and both are employed by many clearing companies to service different parts of their market.

Trade-for-Trade systems are characterized by the individual consideration of each transaction. CNS installations do not consider each transaction individually. Instead, all transactions, in a given security, are netted together to determine a single owing or owed position. Canada, Hong Kong, Mexico, Singapore and the United States are examples of markets that employ CNS mechanisms for processing trades executed on stock exchanges. Each has variations in the details of their CNS processing, especially in the methods of dealing with participants who fail to deliver their net owing CNS security positions.

### **8.2.3 Trade-for-Trade Processing**

Trade-for-Trade systems are the simplest form of netting arrangement. Individual transactions are considered for settlement in isolation of other transactions. In book entry systems settlement is accomplished through the movement of book entries in the accounts of the depository. Before these entries are applied to the participants in a transaction a verification edit ("settlement check") is performed. This ensures the seller has sufficient securities in its depository account. Insufficient security position will result in the "failure" of the transaction to settle. Several attempts to settle a given transaction may be needed, since success in settlement will be affected by the settlement of other transactions. Depending on the system, a similar settlement check



may be performed to check the buyer's "funds" position.

Running net positions in securities (and funds) are maintained as each transaction settles. The seller's security position is decreased by the amount of the sale and their funds position is increased by the selling price. Corresponding entries are made to the buyer's accounts. As each transaction is settled, the running net security and funds positions for each participant are updated.

#### *Advantages*

Trade for Trade processing is relatively simple to develop and is well suited to the repetitive processing capabilities of computerized systems. Since each Transaction is processed independently of others, the system need only apply its settlement criteria repetitively until all transactions are settled or until no further settlements are possible. For example, the system considers the settlement of transaction #1, 2, 3 ... and so on. When all available transactions have been considered, the process is repeated. Transaction x may not have settled during the first "pass" due to insufficient security positions. However, the settlement of a transaction further down in the queue may create the conditions for the settlement of transaction x. On the "second pass", transaction x will settle. The process is repeated until no settlements are made.

In addition to being simple to develop, Trade-for-Trade systems require relatively simple risk containment mechanisms. The ability to perform a "settlement check" on each transaction ensures that participants are always kept within established parameters. For example, transactions can be left "unsettled" if sufficient security position does not exist in the seller's book position. Similar credit limits can be placed on the funds amounts that can be owed to the clearing company by any particular participant.

The use of transaction "unwinding" is also a common risk control mechanism that is possible with Trade-for-Trade systems. Since each transaction maintains its distinct identity, each transaction can be identified and dealt with on an individual basis. For example, if a participant fails to make its net payment to the clearing company, some of the participant's "buy" transactions can be reversed to reduce the amount owed to the clearing company. The sellers in these reversed transactions receive back their security positions; however they lose the funds they expected to receive (or have received) from the reversed transactions. This can create serious liquidity problems for affected sellers if they do not have sufficient time to react. Because of this the use of trade unwinding should be avoided as much as possible.

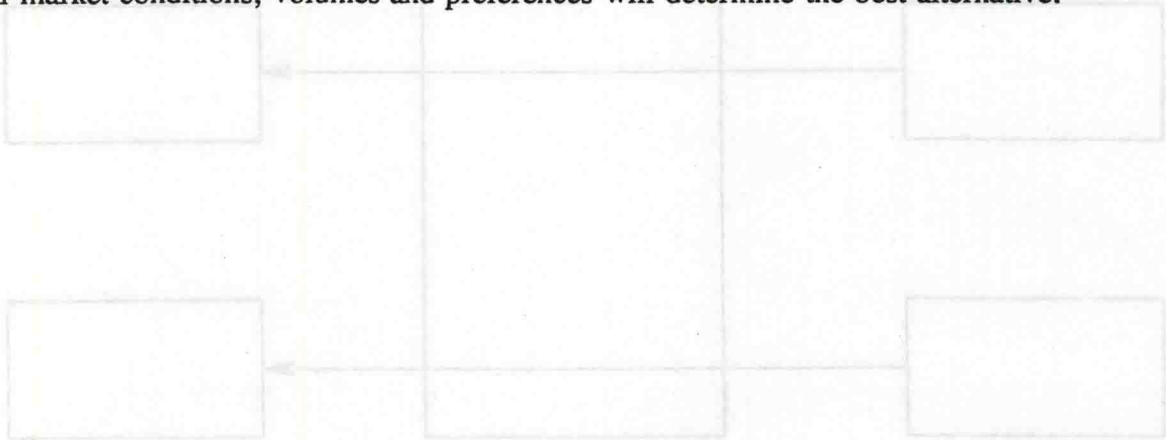
#### *Disadvantages*

While Trade-for-Trade processing is simple to develop it can be costly to run. The repetitive processing, inherent in this type of system, requires more computer power than do CNS systems. As transactions volumes increase, a corresponding increase in computer equipment must be made. The system must have sufficient processing capacity to satisfy the expected peak volumes, even though these peaks may occur infrequently.

The percentage of transactions settled using a Trade-for-Trade process is not as high as that which is possible with CNS. Trade-for-Trade systems do not typically allow "partial" settlements. For example, a transaction for 100 securities will fail if only 99 securities are available in the seller's depository account. Careful sequencing of transactions by participants is necessary to optimize the number of settlements.

"Gridlock" is another potential problem with Trade-for-Trade systems. Since each transaction is processed separately, dependencies on other transactions are difficult to factor into the settlement process. This can create situations where a series of transactions do not settle because of the failure of a single transaction. One example of this is the so called "transaction chain." This can occur when Participant A sells to Participant B who sells to Participant C who sells back to Participant A. "A" expects to receive the securities from "C." In fact "A" is waiting for its own securities. If no other security positions are available, none of these transactions will be completed using Trade for Trade settlement techniques.

Trade for Trade processing and Continuous Net Settlement are at opposite ends of a whole spectrum of processing possibilities. No one method has obvious advantages over another, and local market conditions, volumes and preferences will determine the best alternative.

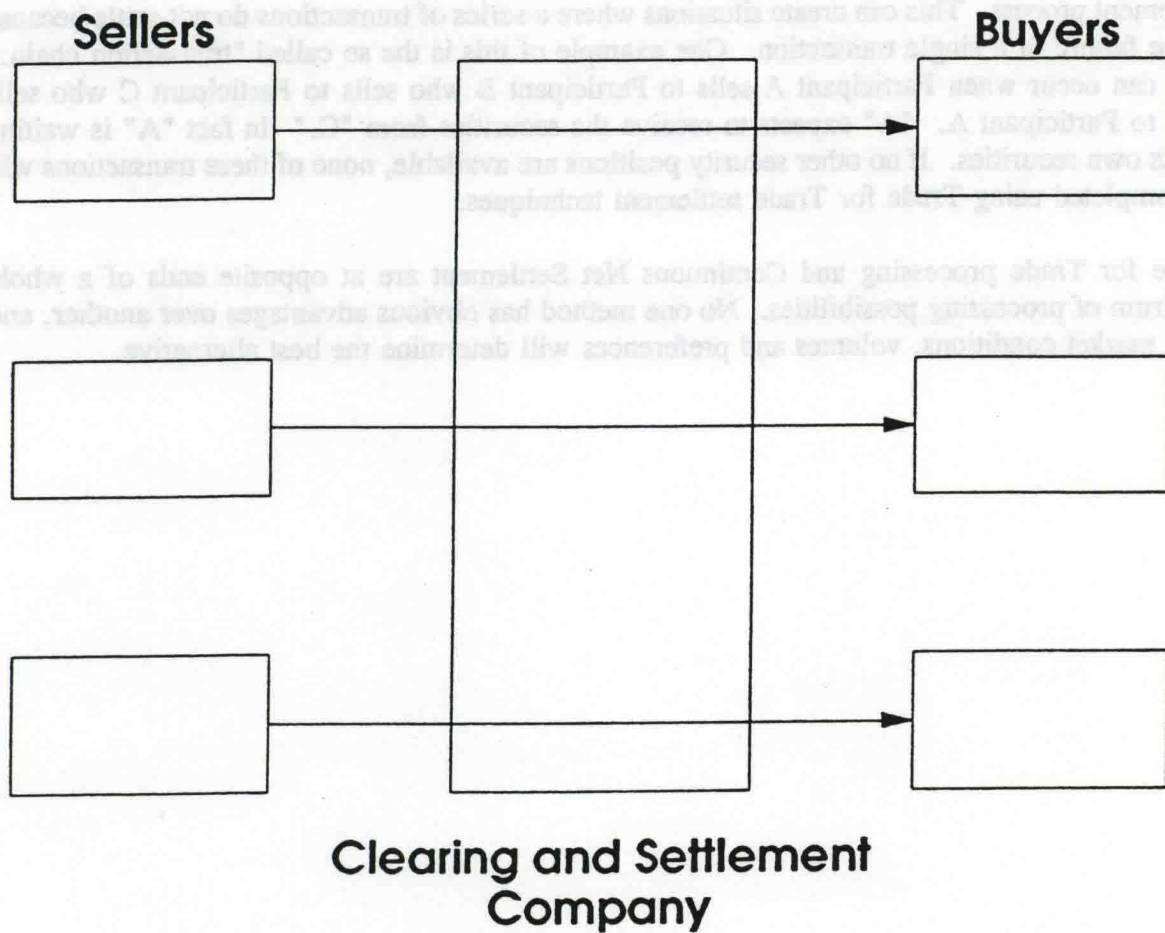


Clearing and Settlement  
Company

Individual transactions retain their identity while passing through the Clearing and Settlement Services.



## 8. Trade for Trade Settlement



- Individual transactions retain their identity while passing through the Clearing and Settlement Services.

#### 8.2.4 Continuous Net Settlement (CNS)

Continuous Net Settlement (CNS) systems differ from Trade-for-Trade systems in that a netting process is applied to the transactions before any entries are made to complete settlement. In CNS, all of a participant's transactions in a given security are combined together. The result is a single obligation to deliver securities to the clearing company (if the sum of the sells exceeds the sum of the buys) or a right to receive securities from the clearing company (if the sum of the buys exceeds the sum of the sells). A net funds position owing to or from the clearing company is also calculated. The rights and obligations between participants are replaced with rights and obligations to and from the clearing company through the process of novation.

CNS systems are also not difficult to develop for computerized systems, however some of the associated risk control mechanisms can be complex. The heart of the CNS process is an algorithm to calculate the sum of a participant's purchases of a given security and the sum of the sales of the same security. The total sales are subtracted from the total purchases to arrive at a net figure. If the purchases exceed the sales, a "net-to-receive" position is recorded. If sales exceed purchases, a "net-to-deliver" position is recorded. For example if a participant had 10 purchase transactions totalling 10 securities and 15 sale transactions totalling 15 securities, the 25 transactions would result in a single CNS obligation to deliver 5 (15 minus 10) securities to the clearing company. The funds to be received and delivered from these buys and sells are also calculated and recorded. This process is repeated for each security in which the participant conducted business.

At the end of the CNS process each participant will have recorded either an obligation to deliver a quantity of a security to the clearing company or a right to receive an amount of securities from the clearing company. All of the obligations to deliver securities to the clearing company are matched by other participants' rights to receive securities from the clearing company (a "zero sum game"). Similarly, the net funds to be delivered by participants are identically matched to the funds to be received by other participants.

Once the net positions to deliver and receive (both security and funds) are calculated, the actual process of settlement can occur. Participant's with net to deliver security positions have their accounts at the depository decreased. If insufficient position exists, the amount that does exist is taken and an "outstanding-to-deliver" position is recorded against the participant's account. All securities received by this process are allocated to the accounts of participants in a net-to-receive position. If sufficient securities were unavailable to settle all net-to-receive positions, partial allocations will be made and "outstanding-to-receive" positions are recorded.

The treatment of the outstanding to deliver and receive positions vary from system to system. Some systems insist on participants satisfying outstanding security delivery obligations very quickly. Fines and penalties are used to encourage this, and a forced buy-in is made where appropriate. Other systems simply net the outstanding positions with the transactions processed in the next CNS cycle.



There are many risk implications associated with CNS processing such as mechanisms to secure outstanding positions that may exist overnight. The market risk from price changes on outstanding to deliver/receive positions must be addressed.

#### *Advantages*

CNS systems are extremely efficient at processing high transaction volumes. The concept and algorithms are such that large volume increases do not require large increases in computer processing capacity. Unlike Trade-for-Trade systems, peak volumes can be processed with little or no additional computer capacity.

Another advantage of CNS systems is the high percentage of settlements that result from the netting together of purchases and sales. Partial settlements are inherent in CNS processing, and therefore a larger percentage of transactions can be completely or partially settled. For example, a sale transaction for 100 securities would have 99% of that transaction satisfied when the seller is possession of only 99 securities.

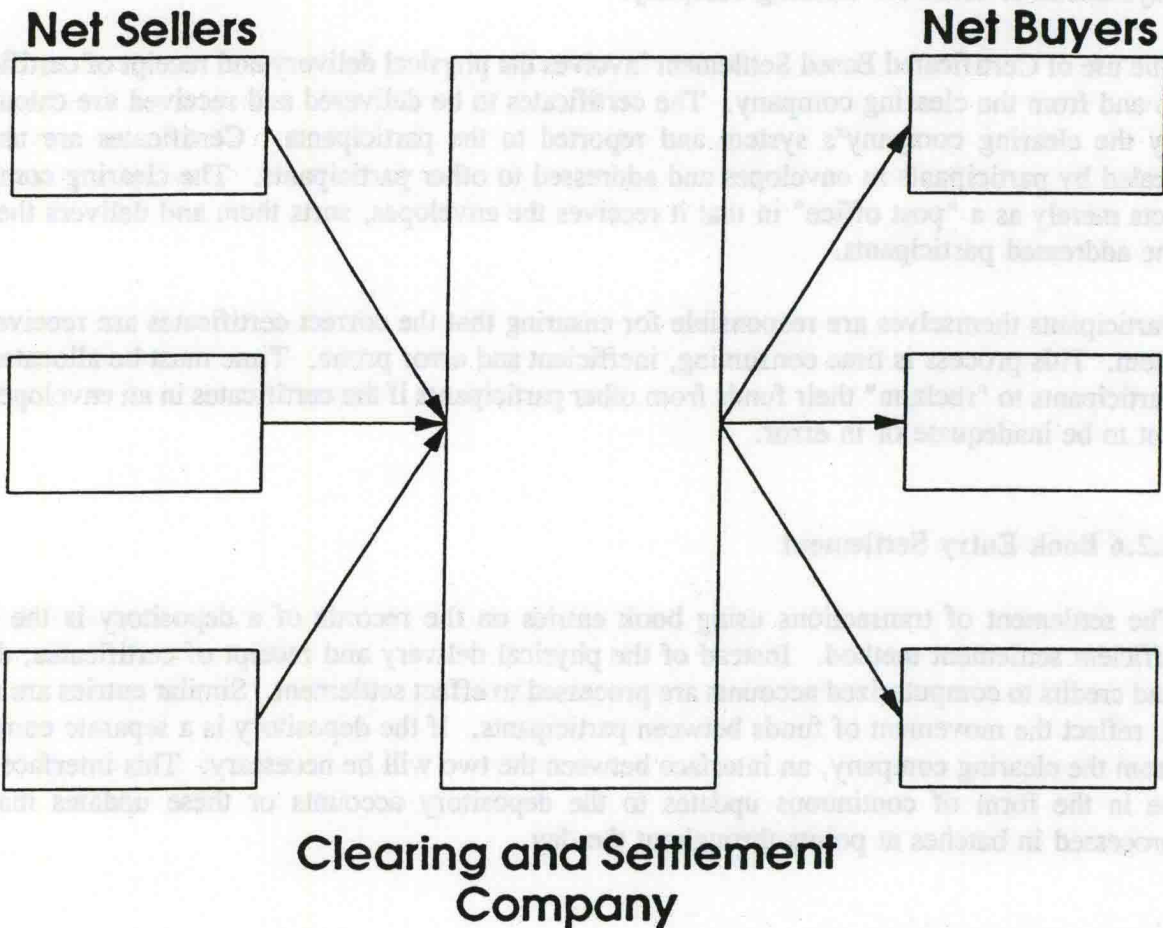
"Gridlock" is also not as large a problem for CNS systems. The "transaction chain" example described in the Trade-for-Trade section would not occur with CNS processing. Instead, the CNS process would determine that the net position of each participant ("A", "B" and "C") was zero. Each participant would simply deliver or receive its netted funds positions to/from the clearing company.

#### *Disadvantages*

The disadvantages of CNS processing derive from the insertion of clearing company into the middle of all transactions. The buyer and seller in the original transaction lose their identity after CNS processing. This creates the need for some complex risk control mechanisms to deal with the failure of participants to deliver either funds or securities. Trade unwinding is not usually possible since "the other side" of the transaction can not be identified after CNS processing. If outstanding positions are allowed to remain unfulfilled for extended periods of time, fluctuations in market prices can increase the risk to the clearing company of a participant default.

CNS processing sometimes does not lend itself well to processing transactions in securities with fixed minimum certificate denominations. This is common in debt securities where certificates are obtainable only in fixed denominations. Even in book entry systems it may be necessary to ensure that participants never obtain a book entry position that cannot be represented by physical certificates. In certificated based settlement systems, it is imperative that only settlements in multiples of the minimum denomination be allowed. The partial settlements that occur with CNS processing can create positions that are not multiples of the minimum denomination.

## 9. Continuous Net Settlement





### **8.2.5 Certificated Based Settlement**

The actual settlement of a securities transaction, i.e. the delivery of securities against payment, can be achieved through the physical delivery of certificates to the clearing company. Certificated Based Settlement (CBS) is not an efficient method of achieving settlement, especially where the possibility of using book entries exist. However, it is sometimes necessary to use CBS when book entries are not feasible due to either legal, technical or operational constraints. The use of CBS should be viewed as a last resort to be considered only when book entry settlement is totally impossible. Funds amounts can still be netted and reduced to a single payment to or from the clearing company.

The use of Certificated Based Settlement involves the physical delivery and receipt of certificates to and from the clearing company. The certificates to be delivered and received are calculated by the clearing company's system and reported to the participants. Certificates are usually sealed by participants in envelopes and addressed to other participants. The clearing company acts merely as a "post office" in that it receives the envelopes, sorts them and delivers them to the addressed participants.

Participants themselves are responsible for ensuring that the correct certificates are received by them. This process is time consuming, inefficient and error prone. Time must be allocated for participants to "reclaim" their funds from other participants if the certificates in an envelope turn out to be inadequate or in error.

### **8.2.6 Book Entry Settlement**

The settlement of transactions using book entries on the records of a depository is the most efficient settlement method. Instead of the physical delivery and receipt of certificates, debits and credits to computerized accounts are processed to effect settlement. Similar entries are made to reflect the movement of funds between participants. If the depository is a separate company from the clearing company, an interface between the two will be necessary. This interface may be in the form of continuous updates to the depository accounts or these updates may be processed in batches at points throughout the day.

#### *Trade for Trade Settlement*

Book entry settlement using the Trade-for-Trade process is straight forward. As each transaction satisfies the settlement criteria, a debit or credit is processed to securities and funds accounts. The "funds account" may or may not be resident in the depository company. It may be a nominal funds account held in the depository, or it may in fact be an account with the central bank or other institution capable of processing payments (see Payments sections). This process maintains a running net balance of securities and funds. Each subsequent transaction is faced with the balances in the accounts that were left as a result of previous settlements. After all Trade-for-Trade processing is completed, participants make and receive net funds payments

to/from the clearing company.

#### ***CNS Settlement***

Settlement using the results of the CNS process is more complex than Trade-for-Trade settlement. After the net-to-deliver and receive positions are calculated, an attempt is made to apply these amounts to the depository accounts. If sufficient position exists in the accounts of participants with net to deliver CNS positions, the entries are made to debit their accounts. If the participant has insufficient position to fulfil the entire CNS position, a debit is processed for whatever securities are available. An account held by the clearing company is credited with these positions. An algorithm must then be applied to allocate the securities in the clearing company's account to the accounts of participants in a net to receive CNS position. Since the possibility exists that not enough securities will be available to satisfy all of net to receive positions, the allocation formula must determine which participants receive the available securities. Common algorithms include satisfying first, the participant with the longest outstanding position or allocating securities to the participant with the largest outstanding position.

Funds due to and from the clearing company from CNS settlement processing are also processed through a clearing company account. Participants in a net to deliver funds position make a single payment to the clearing company. Participants in a net to receive funds position receive payment from the clearing company.

#### **8.2.7 Delivery versus Payment**

The concept of delivery versus payment (DVP) is an important feature of safe, efficient settlement systems and is the focus of one of the G30 recommendations. The "delivery" part of the concept refers to the delivery of securities from a seller to a buyer. The "payment" part refers to the delivery of funds from the buyer to the seller. The goal is to achieve these two component parts of a transaction at the same instant in time. If one delivery is made before the other, one of the transaction's counterparties will be exposed to a risk of the failure of the other party to complete their delivery. If the clearing company is placed in the middle of settlements, as it is in systems with novation, the clearing company will be exposed to this risk.

The goal of DVP is, therefore, to achieve a simultaneous exchange of securities and payment. To achieve true delivery versus payment, two aspects of the transaction must be considered. The first is the ability of the settlement mechanism to move securities and funds positions at the same time. The second aspect to consider is the quality of the "payment" or funds positions that are exchanged.

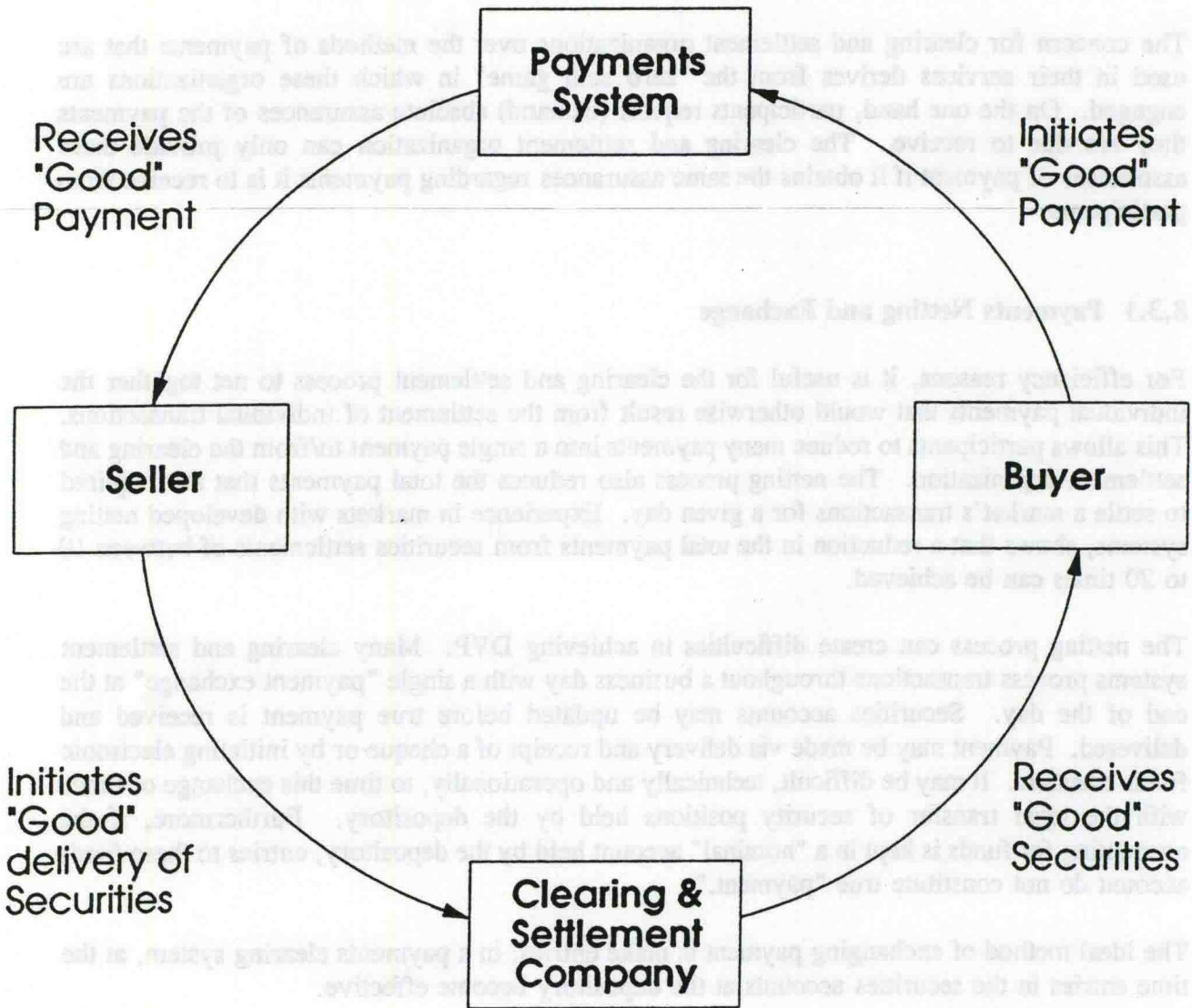
Depositories usually encounter little difficulty in exchanging security positions between participants. Since the depository controls the securities and the participants records, it is free to apply debits and credits to these accounts as necessary.



Neither clearing nor depository companies control a market's payment system. This makes it more difficult to control precisely the timing and quality of the exchange of payments. Both the clearing and settlement organizations and their participants may have access to a payments system that is capable of processing the required exchange of funds. The goal is to cause "good" payment to be made in the payments system when the settlement of security positions is also made "good" in the depository. Depending on the interfaces between the clearing and settlement organizations and the payment system, this may or may not be possible.

Depending on the characteristics of the market's Payment System, the clearing and settlement organization may have various options for the achievement of DVP. In the end it may be necessary for the clearing and settlement organizations and their participants to compensate for their lack of control over the quality of payments exchanged with other mechanisms to mitigate the risks caused by a lack of a true DVP environment. This should be viewed as an interim solution that will suffice until changes to the Payment System can be implemented.

# 10. Delivery vs. Payment





### **8.3 Payment**

The quality payments between a clearing and settlement organization and its participants is crucial to an efficient and low-risk environment. Again, this is the focus of one of the G30 recommendations. The criteria that needs to be applied to these payments is that they should be "certain", "final" and "irrevocable." In some markets, the payments system is incapable of providing these types of payment in a manner that can support a Delivery versus Payment environment. Clearing and settlement organizations must obtain the highest quality payments that are available and compensate for the deficiencies with other measures.

The concern for clearing and settlement organizations over the methods of payments that are used in their services derives from the "zero sum game" in which these organizations are engaged. On the one hand, participants request (demand) absolute assurances of the payments they are due to receive. The clearing and settlement organization can only provide these assurances of payment if it obtains the same assurances regarding payments it is to receive from participants.

#### **8.3.1 Payments Netting and Exchange**

For efficiency reasons, it is useful for the clearing and settlement process to net together the individual payments that would otherwise result from the settlement of individual transactions. This allows participants to reduce many payments into a single payment to/from the clearing and settlement organization. The netting process also reduces the total payments that are required to settle a market's transactions for a given day. Experience in markets with developed netting systems, shows that a reduction in the total payments from securities settlements of between 10 to 20 times can be achieved.

The netting process can create difficulties in achieving DVP. Many clearing and settlement systems process transactions throughout a business day with a single "payment exchange" at the end of the day. Securities accounts may be updated before true payment is received and delivered. Payment may be made via delivery and receipt of a cheque or by initiating electronic funds transfers. It may be difficult, technically and operationally, to time this exchange of funds with the legal transfer of security positions held by the depository. Furthermore, if the accounting for funds is kept in a "nominal" account held by the depository, entries to these funds account do not constitute true "payment."

The ideal method of exchanging payment is make entries, in a payments clearing system, at the time entries in the securities accounts at the depository become effective.

#### **8.3.2 Payments Clearing**

Various methods of exchanging payments between the clearing and settlement organization and

their participants are available. Cheques and electronic funds transfers (EFT) are the most common. EFT has the advantage of being capable of fast processing while cheques require time to physically deliver and process.

The clearing and settlement of payments employs many of the same concepts utilized in the securities markets and face many of the same problems. Central banks often perform the function of "clearing and settlement" organizations for payments and offer a "payments clearing system" for this purpose. Banks and other financial institutions may also offer a form of payments system. Securities clearing and settlement organizations need to access these systems to clear payments they receive and deliver from/to participants. The more integrated the clearing and settlement organization is into the payments system, the better the quality of payments that it will be able to obtain.

Many payments systems will offer both "same day" and "next day" clearing of payments. Same day clearing of payments is always preferable since eliminates risks and offers the greatest possibilities for DVP. Of all of the G30 recommendations dealing with securities clearing and settlement; the achievement of a true delivery versus payment system is easily the most difficult to accomplish.

#### **8.3.4 Payment Quality**

The quality of the payments received and delivered by a clearing and settlement organization is largely outside their control. It is important however, for the organization to understand exactly the quality of the payments they accept and the potential problems that might be encountered with the clearing of these payments. The quality of payments is determined by the certainty of the payment, the finality of the payment, and the irrevocability of the payment.

##### *Certainty of Payment*

Clearing and settlement organizations must ensure, as much as is practical, that participants who owe funds will in fact make these payments. A degree of certainty that this will occur can be achieved by limiting the potential size of payments that might be owed. Clearing and settlement systems can have these limitations designed into the settlement process. Participants might be expected to obtain "payment guarantees" from a financial institution as a condition of participation. Finally, the overall participation standards established for the clearing and settlement services should ensure that participants maintain sources of liquidity to make unlikely the possibility that a payment will not be received.

##### *Finality of Payment*

The form of payment received by the clearing and settlement company is important in the consideration of its quality. For example, the receipt of a cheque is not necessarily a "final" form of payment. Depending on the characteristics of the payments clearing system, it may be



very easy or very difficult to stop payment on a cheque delivered to the clearing and settlement company. Similar procedures may be available to stop processing of an electronic funds transfer. The clearing and settlement organization must ensure, as much as possible, that the payments it receives cannot be interrupted during the payments clearing process. This may involve stipulating certain forms payment that are difficult or impossible to interrupt.

### *Irrevocability*

Once payment items have been received and cleared through the payments system the possibility still exists, in many payment systems, that a payment may be subsequently reversed. This may be due to the insolvency of the institution on whom the payment was drawn. Again, the choice of payment method may limit the possibility of this occurrence. Also, limiting the institutions on whom acceptable payments may be drawn can decrease the chances that a payment will be revoked.

### *Compensating Mechanisms*

A market's payment system may not be capable of providing the clearing and settlement organizations with certain, final and irrevocable payments. Deficiencies in the quality of payments will need to be compensated for, to greater or lesser degrees by mechanisms installed by the clearing and settlement organization. An alternate liquidity source is an example of such a mechanism. In the event of a payment default, this source can be utilized to cover, in the short term, the missing payment.

## **8.4 Lending**

This section focuses on the need of a Clearing organization to develop an efficient environment in support of the lending requirements of its market participants. It will examine funds and security loans, specifically detailing the processing of loan reporting, affirmation and reconciliation.

### **8.4.1 Funds Loans**

Funds lending involves the lending of cash for acceptable collateral securities. In general, funds loans are required to satisfy intra-day, overnight or call loan financing of the borrower. The funds are typically utilized to finance inventory positions of the borrower. Borrowers are typically non-financial organizations; lenders are typically financial institutions. Generally, acceptable securities for collateral consist of government debt instruments and some high quality corporate paper.

The funds loan may have an indefinite duration and be subject to several substitutions from either party to the loan. The Clearing organization must accommodate the requirements of

same-day processing.

#### 8.4.2 Security Loans

Securities lending involves the lending of securities on a fully collateralized basis, generating a specified return for the lender. In general, a securities lending market is created by the need to address:

- delivery fails
- short sales
- option/arbitrage positions

Lending to prevent or address failed trades is the focus of one of the G30 recommendations. Securities lending should be viewed as a tool to use when things go wrong, not as a normal part of the clearing and settlement process. Participants whose transactions would otherwise fail due to a lack of security position may borrow the securities to complete their obligations. In some markets, the clearing and settlement organization may automatically arrange a loan of securities to complete a participant's securities settlement obligations. Close regulatory supervision is required to ensure that securities lending is not a facility that is abused for speculative purposes.

The lending market is comprised of broker-to-broker and institution-to-broker transactions. Institutions may lend their own portfolios and/or under contractual agreement, lend client securities held in custody or trust. The client benefits as the lending arrangement serves to increase the rate of return on their holdings. Fees received on securities loans are split between the lending institution and the client.

Acceptable collateral provided by the borrower is usually in the form of:

- government securities
- quality-rated corporate paper
- letters of credit
- cash

Loans in which cash is provided as collateral provide an opportunity for interest earned on a temporary cash investment. The interest proceeds are partially rebated to the borrower, with the remainder divided between the client and institution.

Regulatory and tax implications vary on the treatment of proceeds from security lending operations and may affect the economic viability of such programs. For example, in the United Kingdom, under certain circumstances involving cash collateral, tax may be applicable to the gross proceeds from a loan rather than the net gain. The lender would be subject to a taxable gain on the gross return on the cash investment prior to any rebate payment to the borrower.

Regulatory considerations include the treatment of ownership rights on collateral securities, therefore, creating a potential tax implication with the treatment of manufactured dividends.



Although security lending is a vital component contributing to market efficiency in more developed markets, some markets do not participate in securities lending. For example, Thailand has no securities lending service and short-selling is prohibited by their regulations. In Spain, securities lending is limited in scope, applying only to satisfy margin selling. One risk of a total prohibition on securities lending is that the practice might develop outside of the clearing and settlement organization, and therefore outside of the regulatory framework established to promote efficiency and risk reduction.

### 8.4.3 Loan Reporting

The Clearing organization's requirement for loan reporting is similar to trade processing. This section will deal specifically with the nuances inherent in loan reporting.

A securities/funds loan is usually established with an undefined duration which may be terminated on short notice by either party to the loan. Collateral provided by the borrower will be subject to margin assessment over the duration of the loan. It is therefore necessary that the Clearing organization support a reporting mechanism for:

- the original loan transaction
- subsequent modifications of collateral
  - substitutions
  - margin calls/returns
  - repayment

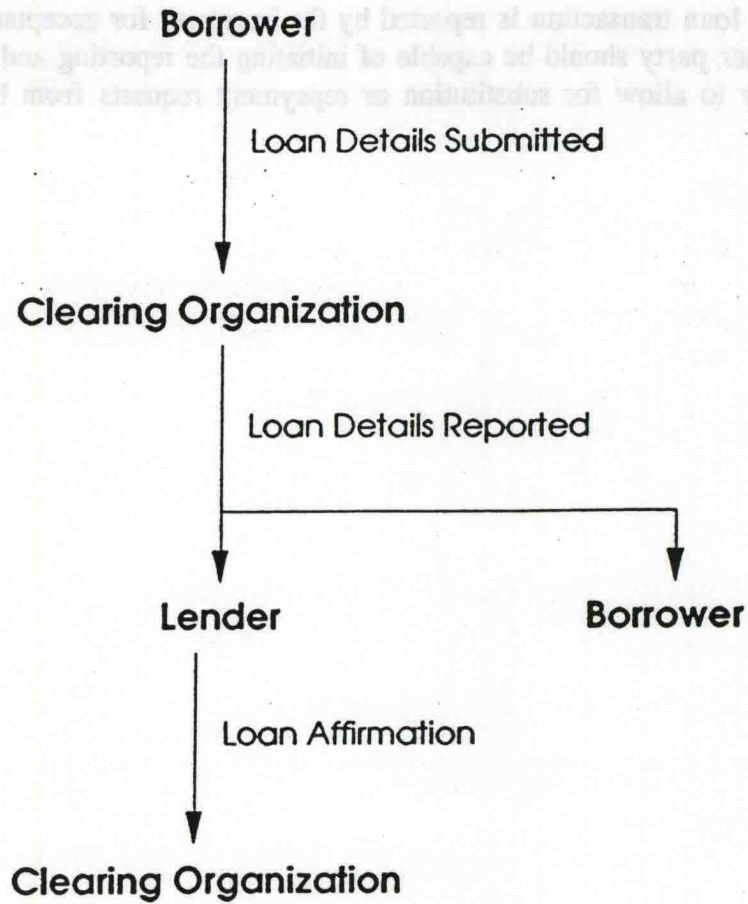
The reporting strategy supports reporting/affirmation processing, with the borrower usually initiating the original transaction input.

The Clearing organization processing should entail the linkage of the two components of a loan transaction between a borrower and lender:

- Borrowed securities or funds
- Collateral provided

This would support the ability of a borrower and a lender to process lending activity on a homogeneous mass basis between firms or client basis.

# 11. Funds/Security Loan Reporting





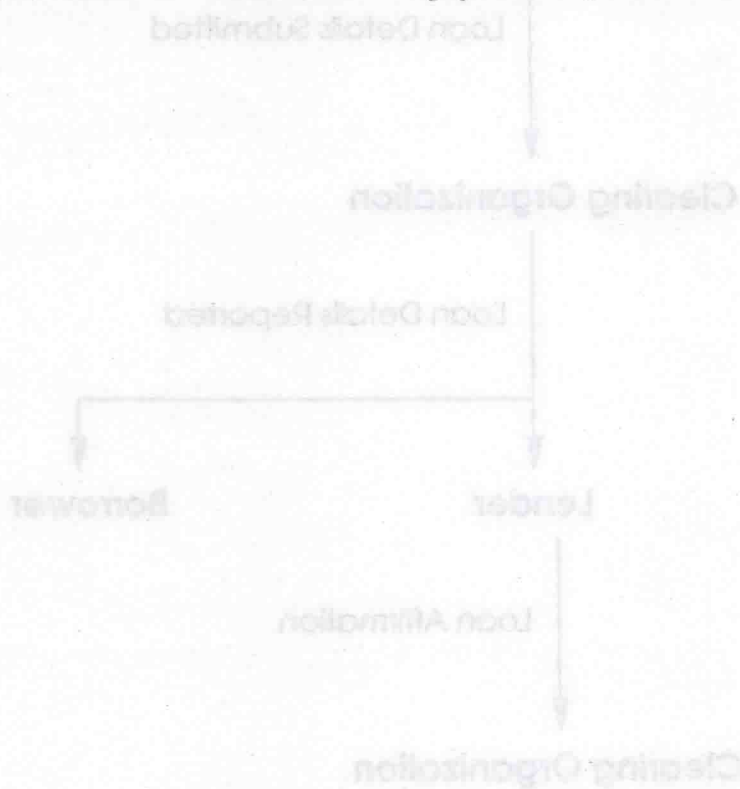
# Security/Funds Reporting

## 8.4.4 Loan Affirmation

The Clearing organization's requirement for loan affirmation is similar to trade processing. This section will deal specifically with the nuances inherent in Loan Affirmation.

Security/Funds loans are primarily same day settlement, thus they require the clearing organization to make provision for an ability to achieve reporting, affirmation and settlement same-day.

The original loan transaction is reported by the borrower for acceptance or affirmation by the lender. Either party should be capable of initiating the reporting and fulfilling the affirmation role in order to allow for substitution or repayment requests from both the borrower or the lender.



## Section 9: DEPOSITORY

Dematerialization of certificates into a centralized depository is the best solution for dealing with the vast quantities of physical certificates. Complete elimination of certificates offers the most benefits but it can be difficult to achieve. Often immobilization is the more feasible alternative.

### **9.1 Dematerialization**

De-materialization represents the ultimate efficiency in the evolution of security issuance and processing. De-materialization is achieved when the need for issuance of a certificate is removed. Regulatory and/or legislative barriers remain in existence in several markets preventing the movement to full de-materialization. The processing of a de-materialized issue is completely book-entry; certificates are not available.

A refinement in investor attitude may be a sizeable hurdle to overcome in achieving dematerialization. In addition, opposition to dematerialization can be expected from many quarters. Many of the efficiencies for participants are achieved by immobilization. Dematerialization increases efficiency and decreases costs mainly for the depository. Costly vaulting and certificate processing systems and procedures can be eliminated.

### **9.2 Immobilization**

A primary goal of a centralized Depository Organization should be immobilization of physical security certificates. Immobilization should be viewed as the optimum alternative, given that physical certificates remain in existence.

The Depository Organization must actively and aggressively pursue a program to maximize security eligibility and participation within the market it serves. The efficiencies gained by centralized safekeeping ledger management and settlement of book-entry positions should provide incentive for all market positions for all market participants to move towards achievement of this goal.

In an emerging market, immobilization may initially be attained by accepting for deposit all outstanding certificates of eligible issues. The greater the participation within the Depository and Clearing Organization(s), the less demand there will be for physical certificates withdrawn from or remaining outside the system.

Issuers are now moving towards a global certificate basis, where the Depository Organization or external sub-custodian holds a single certificate representing the entire issue. The issue is processed as book-entry only. This greatly assists the effort required for immobilization.



## **9.3 Custodial**

### **9.3.0 Overview**

The following section examines the primary issues involved in establishing a centralized Depository Organization, as it relates to Custodial services. The Blueprint details concerns involved in safekeeping/vaulting, deposit and withdrawal processing and registrar interfaces.

### **9.3.1 Bearer and Registered Certificates**

In most markets, securities exist in both bearer and registered format. Bearer securities are negotiable and transferable upon delivery. Physical or book-entry possession of a bearer security is all that is required to affect a change in ownership. The substantial risk inherent in bearer securities must be considered in determining eligibility for a Central Depository Organization. If deemed appropriate as eligible securities, the Depository Organization must minimize the risks by adopting stringent immobilization procedures. The potential risks could be large, especially if the market conditions dictates the need for substantial certificate movement. In Mexico, for example, bearer securities have been prohibited since 1984, all securities are required to be in registered format.

Registration of securities is achieved through the services of a registrar or transfer agent, acting on behalf of the issuer company. The registrar is responsible for ensuring all requirements for a valid transfer of ownership are satisfied. These may include proper endorsement, signature guarantees and payment of any applicable transfer fee.

Registration can be in the name of the beneficial owner or a nominee. The Depository Organization may establish a nominee registration and have all securities lodged with the depository re-registered into the nominee name. In this manner, the securities registered on the books of the registrar will reflect the bulk holdings of the Depository Organization. The Depository Organization will maintain book-entry records to properly allocate security holdings to the participants. This information can be shared with the issuer and/or registrar for the purposes of efficient entitlement processing (to be discussed in section 9.5 Entitlement Processing).

Registration in the Depository Organization nominee name will reduce the volume of registrar involvement in certificate cancellation and re-registration. Registrar concerns regarding an eroding business opportunity must be addressed by the Depository Organization.

### **9.3.2 Safekeeping and Vaulting of Certificates**

The Depository Organization provides for safekeeping of those eligible securities deemed eligible on behalf of its participants. The deposited securities will be registered into the Depository



Organization's nominee name and vaulted by issue. The vaulting may reside within the premises of the Depository Organization or may be contracted out with an approved financial institution.

The use of "Jumbo" certificates can greatly reduce the cost and effort required to safekeep immobilized securities. A single or a few large denomination certificates are used to represent the value of a security on deposit with the depository. With most depositories a few Jumbos are used to represent the bulk of the value on deposit while a quantity of smaller denominations are maintained as a "working" supply to satisfy requests for withdrawal of physical certificates.

The Depository Organization provides centralized safekeeping and through market immobilization, effectively reduces the aggregate risk which was previously fragmented amongst the participant organizations.

### 9.3.3 Inventory Management

The Depository Organization is responsible for the effective Management of the certificate security inventory on behalf of its participants. The physical security holding, by issue in nominee registration, provide the balancing offset for the cumulative book-entry positions for all participants. In this manner, participants may deliver and/or receive book-entry security positions while the physical inventory remains immobilized.

Management of the inventory is be an arduous task even in an immobilized environment. Physical security movement resultant from participant deposit/withdrawal and entitlement processing necessitates the need for an internal certificate tracking system. Dematerialization resolves these problems.

The Depository Organization's internal certificate tracking system must record certificate numbers and number of shares of each issue. The tracking will represent cancellation of certificates upon submission to the registrar and input for new certificates issued by the registrar for depository safekeeping.

An efficient inventory management system will allow the Depository Organization to rationalize share requirements for working supply inventory and bulk inventory. The working supply is that which is required to accommodate normal volume of participant withdrawal requests. Holdings over and above working supply can be subject to bulk inventory processing. Bulk inventory is comprised of certificates, representing a large number of shares of each issue, which are further immobilized since movement is not normally required.

The Depository Organization requires an infra structure to support the Synchronization of the certificate inventory management system to that of the physical inventory. This usually means a daily reconciliation between the physical inventory and the aggregate of book positions. A physical count of certificates may be required on a periodic basis (i.e. annually).



### 9.3.4 Depositing Certificates

The Depository Organization must establish procedures for its participants to deposit physical securities to receive a book-entry position. The concerns which must be addressed from a processing perspective include registrar requirements, custodial arrangements and Depository Organization standards. The security must be deemed eligible for the depository, subject to criteria discussed in section 5 of this report.

Registrar requirements, in addition to ensuring that proper documentation to effect transfer is made available, include joint-agreement with the Depository Organization that may insist on close proximity of registrars to ensure the physical movements required to process deposits is as time-efficient as possible.

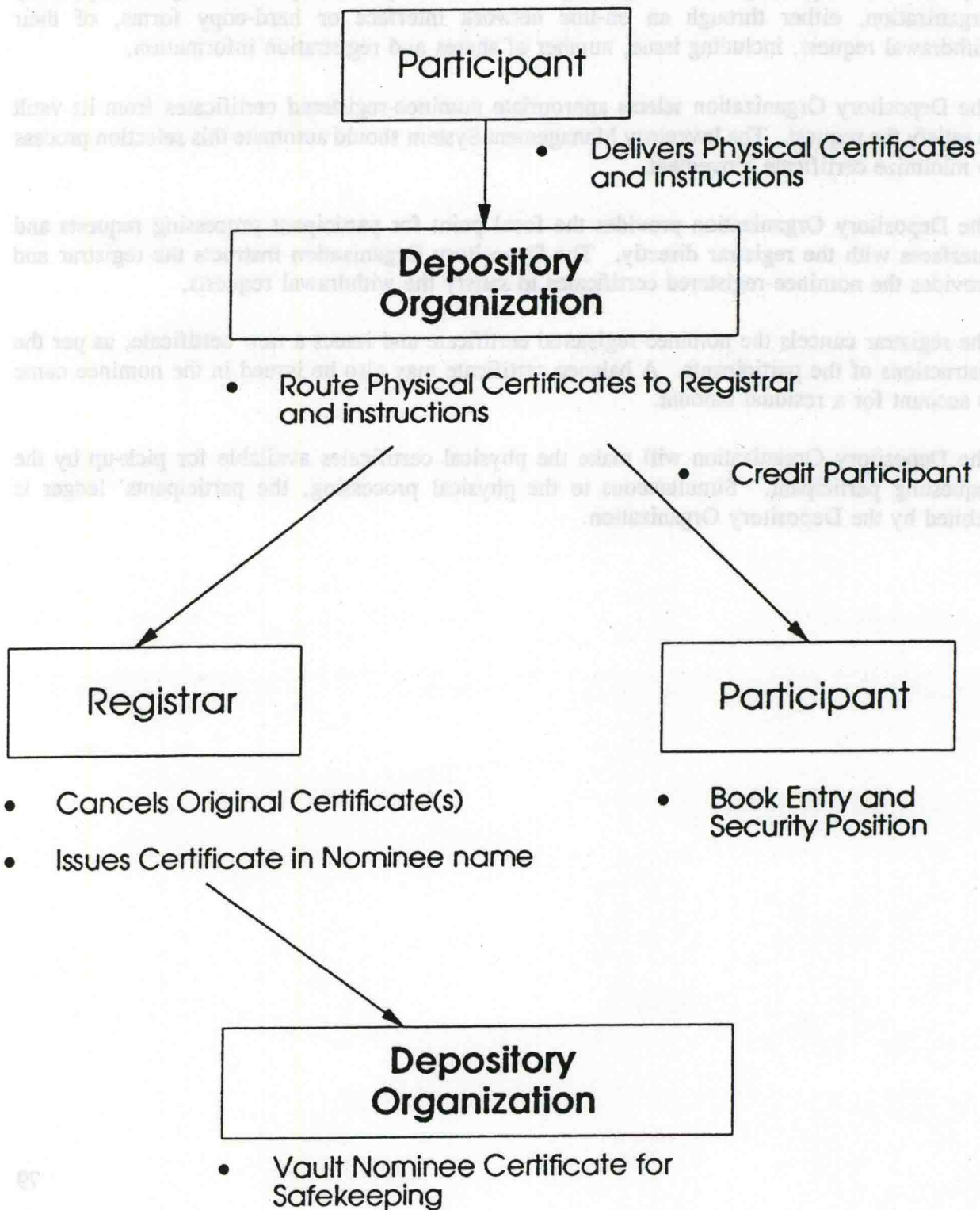
The Depository Organization may establish external sub-custodians for eligible issues. These arrangements would be subject to stringent standards for risk control, processing requirements and reconciliation of ledger. If the same organization acts as both registrar and sub-custodian, the physical movement of certificates is minimized from the Depository Organization's perspective. This can also serve to provide increased efficiency in processing time-frames.

The Depository Organization may decide to act as the custodian for all physical holdings, registered in their nominee name, that represent book-entry positions for participants.

The Depository Organization must establish standards for processing deposits in reference to information flow, certificate movement and processing time frames. The Depository Organization provides the focal point for deposits of all eligible securities for all participants. The Depository Organization forwards physical certificates to the registrar for re-registration into their nominee name. The Nominee certificates are picked up and vaulted for safekeeping. Simultaneous with the physical processing, the Depository Organization credits the depository participants account with offsetting book-entry position.

Procedures and rules must be established to reverse any deposit rejected by the registrar or Depository Organization. The risk of crediting the participant with a book position before final confirmation from the registrar must be dealt with in the legal rules/procedures and risk control mechanisms.

## 12. Security Deposit Processing





### 9.3.5 Withdrawing Certificates

The Depository Organization must establish procedural standards for processing withdrawal requests from its participants. The participant initiates the process by instructing the Depository Organization, either through an on-line network interface or hard-copy forms, of their withdrawal request, including issue, number of shares and registration information.

The Depository Organization selects appropriate nominee-registered certificates from its vault to satisfy the request. The Inventory Management System should automate this selection process to minimize certificate movement.

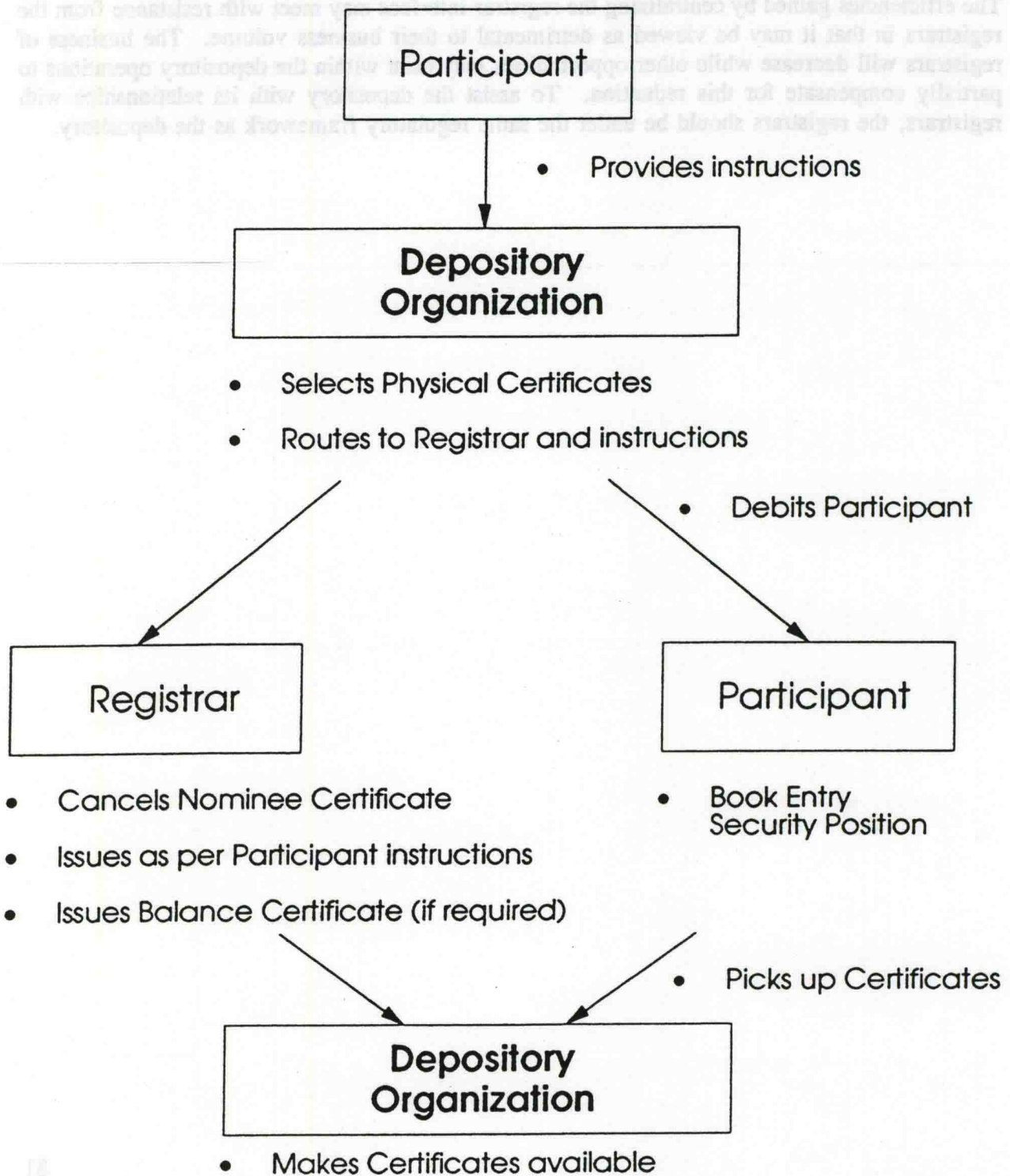
The Depository Organization provides the focal point for participant processing requests and interfaces with the registrar directly. The Depository Organization instructs the registrar and provides the nominee-registered certificates to satisfy the withdrawal requests.

The registrar cancels the nominee-registered certificate and issues a new certificate, as per the instructions of the participants. A balance certificate may also be issued in the nominee name to account for a residual amount.

The Depository Organization will make the physical certificates available for pick-up by the requesting participant. Simultaneous to the physical processing, the participants' ledger is debited by the Depository Organization.



### 13. Security Withdrawal Processing

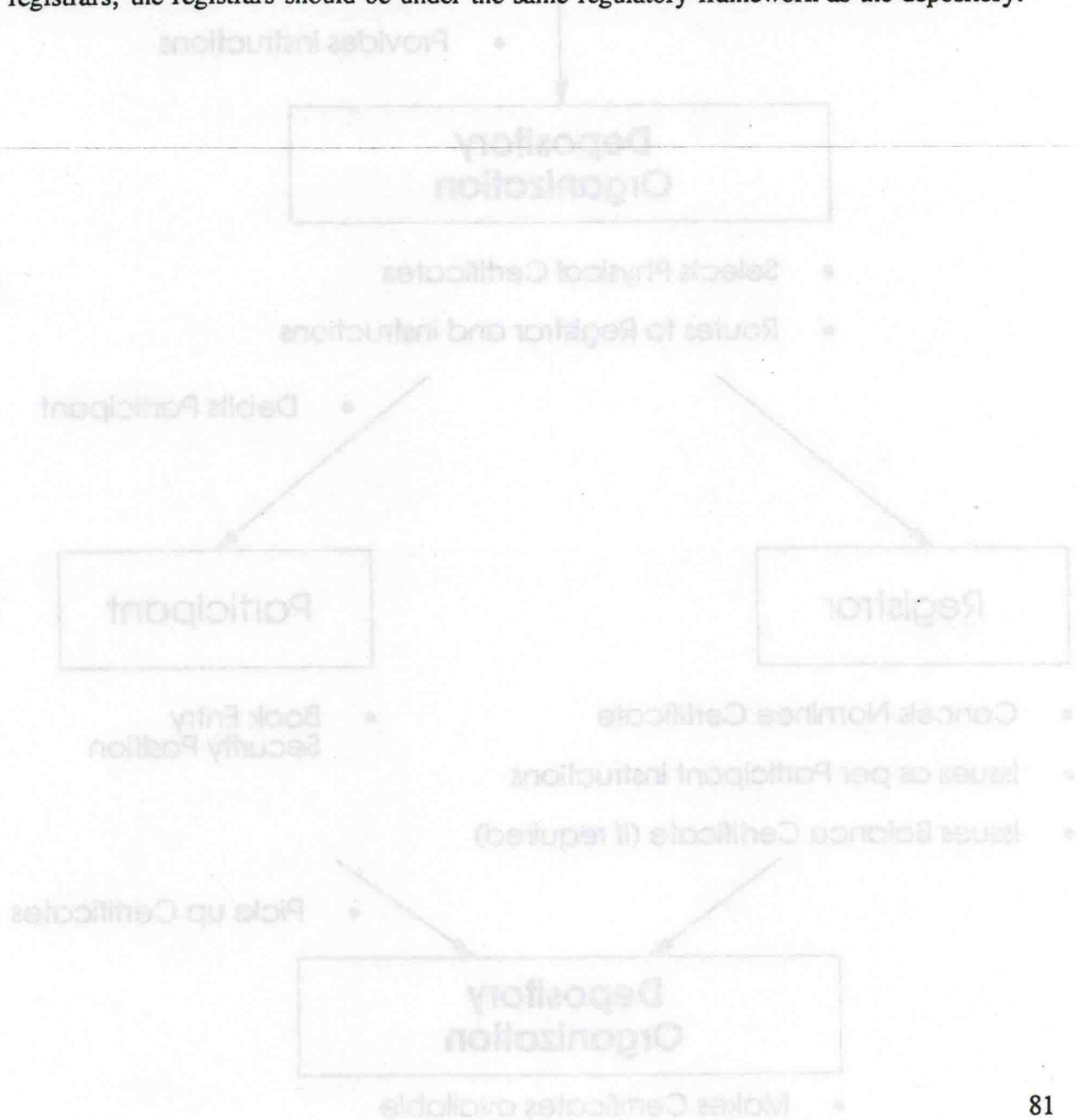




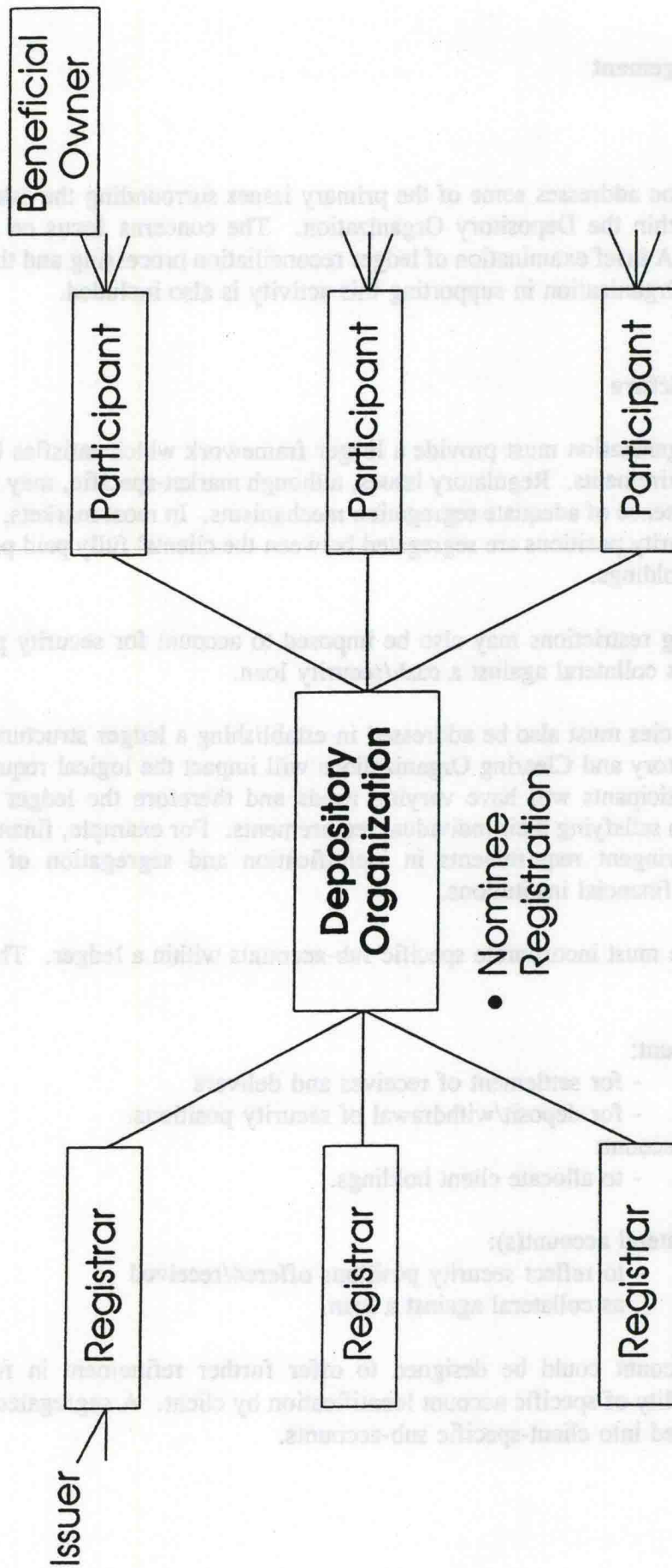
### 9.3.6 Interfacing with Registrars

The Depository Organization provides the centralized interface with the registrars for all participants. The Depository Organization will represent all participants for deposit and withdrawal processing as well as for entitlements collection and distribution.

The efficiencies gained by centralizing the registrar interface may meet with resistance from the registrars in that it may be viewed as detrimental to their business volume. The business of registrars will decrease while other opportunities may exist within the depository operations to partially compensate for this reduction. To assist the depository with its relationships with registrars, the registrars should be under the same regulatory framework as the depository.



## 14. Security Registration





## 9.4 Ledger Management

### 9.4.0 Overview

The following section addresses some of the primary issues surrounding the establishment of a ledger structure within the Depository Organization. The concerns focus on regulatory and operational issues. A brief examination of ledger reconciliation processing and the requirements of the Depository Organization in supporting this activity is also included.

### 9.4.1 Ledger Structure

The Depository Organization must provide a ledger framework which satisfies both regulatory and operational requirements. Regulatory issues, although market-specific, may focus primarily on ensuring the existence of adequate segregation mechanisms. In most markets, it is imperative that book-entry security positions are segregated between the clients' fully paid positions and the participants' own holdings.

Regulatory reporting restrictions may also be imposed to account for security positions which have been lodged as collateral against a cash/security loan.

Operational efficiencies must also be addressed in establishing a ledger structure. The linkage between the Depository and Clearing Organizations will impact the logical requirements of the interface. The participants will have varying needs and therefore the ledger structure must provide flexibility in satisfying their individual requirements. For example, financial institutions may have more stringent requirements in identification and segregation of specific client portfolios than non-financial institutions.

The ledger structure must incorporate specific sub-accounts within a ledger. The sub-accounts should include:

general account:

- for settlement of receives and delivers
- for deposit/withdrawal of security positions.

segregated account:

- to allocate client holdings.

pledged/collateral account(s):

- to reflect security positions offered/received as collateral against a loan.

The Segregated Account could be designed to offer further refinement in functionality by providing the capability of specific account identification by client. A segregated account could be further sub-divided into client-specific sub-accounts.

Participants must provide instructions to the Depository Organization, in some manner, to ensure their ledger is appropriately managed. Instructions regarding segregation requirements, deposit/withdrawal activity, settlement instructions of loans/trades must be managed and verified by the participant.

#### **9.4.2 Ledger Reconciliation**

The Depository Organization must provide for ledger reconciliation by participant to ensure integrity in the ledger records. Procedural standards should be established to reflect the responsibilities of both the Depository Organization and the participants in verification and reconciliation of ledger holdings.

The Depository Organization can support the reconciliation process by providing an audit trail for all security movements. The audit trail could take the form of hard-copy activity reports and/or electronic capturing of data to be transmitted to each participant for its own internal processing.

Ledger reconciliation could be achieved by the Depository Organization providing, on a regular basis, records of ledger holdings by participant, either by hard copy report or electronic transmission. The verification and reconciliation would be performed by the participant who therefore would be required to report any out-of-balance positions to the Depository Organization for ratification.

The Depository Organization could further refine the process by accepting from each participant, in a electronic transmission, its own security holding records. The participant records could be systematically matched to the Depository records, generating an out-of-balance report. In this manner, efficiencies are gained in that management effort is addressed specifically to the out-of-balance security positions.

The Depository Organization, in establishing standards, can determine the frequency requirement in supporting ledger reconciliation processing.

### **9.5 Entitlement Processing**

#### **9.5.0 Overview**

The following section examines issues involved in entitlement processing through the Depository Organization. It details concerns regarding beneficial ownership, shareholder communication and various entitlement processes such as capital changes and reorganizations.



### **9.5.1 Beneficial Ownership**

The Depository Organization holds the physical certificate inventory, in nominee registration, which is represented by book-entry positions on behalf of participants. The Depository Organization's Nominee registration name appears on the registrars book as a shareholder for the total number of shares lodged with the depository. The depository's system records the ownership, by participants, of the total position recorded under the depository's nominee name.

The Depository Organization's Nominee registration introduces an additional level of involvement between the issuer/registrar and the beneficial owner. The Depository Nominee registration represents the total share holding for all participants. The participants book-position may be comprised of several beneficial owners. It is therefore a primary responsibility of the Depository Organization to ensure that shareholder communication to the beneficial owner is not negatively impacted and preferably provides an enhancement to overall communications.

### **9.5.2 Issuer/Shareholder Communications**

The Depository Organization interfaces with both the issuer and/or registrar and the participants who hold a book-entry position. It should proceduralize a method of directly communicating with the issuer and/or registrar to provide information regarding share positions by participant. This information should be simultaneously communicated to each holding participant to ensure accuracy.

The Depository Organization may incorporate the use of an "Omnibus proxy", common to the United States and Canada, where the rights of share ownership are assigned to the participant holders. The issuer and or registrar and participants will in turn assign rights to the beneficial owners that comprise each participants position. In this manner, the Depository Organization removes itself from the communication process beyond identification and assignment of rights beyond the participant level.

### **9.5.3 Capital Changes and Reorganizations**

The Depository Organization must provide for the communication of requirements and processing of capital changes and reorganizations. These events include tenders, mergers, exchanges and distributions.

Mandatory actions simplify the process for the Depository Organization in that the entire security holding is subject to uniform processing. The role of the Depository organization is to communicate the information regarding the action to all participants in advance of actual processing. The communication may be in the form of hard-copy reports and/or on-line network interfaces with participants.

Voluntary actions increase the processing complexity for the Depository Organization in that participant options necessitate varying processing streams. Processing time-frames required by the Depository Organization become increasingly important. Instructions received by the Depository Organization from each holding participant must be tabulated and physical inventory identified and routed to the registrar. For actions where market price movements influence participant's option decision, the Depository Organization will be subject to rapid turn around requirements.

The Depository Organization should automate the receipt of participant instructions, preferably through an on-line network interface with both participants and issuers/registrars. Efficiencies are gained by minimizing both hard copy instructions and physical certificates.

#### **9.5.4 Entitlement Payments**

The Depository Organization fulfils an important role in timely payment of entitlement funds to its participants. Participants will look to the depository for their entitlements and blame the depository when they are not received. The depository must ensure it collects payment from the entitlements paying agent as soon as the payment becomes due. The quality of entitlement payments is as important as the payments in the settlement of transactions. Unless the depository receives "good" funds, it cannot pass these payments on to its participants.

The nominee registration of the physical certificate inventory causes entitlement funds paid to the Depository Organization for distribution to holding participants. The depository calculates individual participant's entitlement amount using the book entry records and the details of the entitlement event.

The Depository Organization should communicate entitlement event information to all participants in advance of record-date. The communication may be in the form of hard-copy reports or an on-line network interfaces. The Depository Organization will provide detailed information to each participant regarding the following:

- Issue
- Rate of Payment - Funds Type
- Record Date
- Payment Date
- Record Date Position.

The Depository Organization may automate the entitlement claiming process implicated by settlement action between Record and Payable date, or the Books Closed period. This may take the form of generating "dividend" claims between participants for settlement completed during the books closed period.

The Depository Organization must mandate the receipt of timely entitlement payment to ensure



the utmost efficiency is offered to participants. This will require a cooperative relationship between paying agents, issuers and the Depository Organization. Legislative amendments and/or legal agreements may also be required to govern the payment of entitlements to the depository.

The Depository Organization must be updated and physical inventory identified and turned to the registrars. For actions which require prompt movement of securities, the Depository Organization will be subject to rapid turn around requirements.

The Depository Organization should ensure the receipt of participant instructions, primarily through an on-line network interface with both participants and issuers/registrars. Efficiencies are gained by minimizing both hard copy instructions and physical certificates.

#### 9.2.4 Entitlement Payments

The Depository Organization holds an important role in timely payment of entitlements made to its participants. Participants will look to the depository for their entitlements and blame the depository when they are not received. The depository must ensure it collects payment from the entitlement paying agent as soon as the payment becomes due. The quality of entitlement payment is as important as the amount of payment. Unless the depository receives "good" funds, it cannot pass these payments on to its participants.

The accurate registration of the physical certificate inventory causes entitlement funds paid to the Depository Organization for distribution to holding participants. The depository calculates individual participant's entitlement amount using the book entry records and the details of the certificate event.

The Depository Organization should communicate entitlement event information to all participants in advance of month-end. The communication may be in the form of hard-copy reports or an on-line network interface. The Depository Organization will provide detailed information to each participant regarding the following:

- Issue
- Rate of Payment - Funds Type
- Record Date
- Payment Date
- Record Date Position

The Depository Organization may automate the entitlement claiming process implemented by settlement action between Record and Payable date, or the books closed period. This may take the form of generating "dividend" claims between participants for settlement completed during the books closed period.

The Depository Organization must mandate the receipt of timely entitlement payment to ensure

## Section 10: SUPPORTING INFRASTRUCTURE

### **10.1 Participant Identification**

Clearing and settlement systems require a means of identifying the participants whose transactions will be processed. Automated systems require a coding system that can uniquely identify participants and direct transactions, communications and reports to the appropriate company. The chosen method of identification should be flexible enough to meet the needs of all participants, both present and future. It should be expandable to satisfy the needs of expanded participation.

Indirect participants and other clients of direct participants may also require an identification system. For example, a mutual client of two participants may be uniquely identified on a transaction.

Participants of the clearing and settlement services will have to adapt their own internal systems (both automated and manual) to the new identification standard. Once a standard is decided, it can be changed only at great expense because of the consequences this will have for all participants.

#### **10.1.1 Participant Roles**

Participants may perform various roles and function within the Clearing/Depository Organization framework. The involvement may be a derivative of regulatory or operational considerations, or it may be the result of the negotiations/debates that determined the participation policy.

Participants may be categorized according to function. For example, there may be different participant categories for issuers, lenders, borrowers, traders, credit providers and entitlement paying agents. Within the clearing and settlement system, different participants may have access to different functions and be subject to different legal rules. Many participants may or may not participate in all of the clearing and settlement organizations services.

#### **10.1.2 Participant Options**

The Clearing/Depository Organization should develop provisions for participant service options. The vast array of participant organizations potentially interfacing with the Clearing/Depository Organization prohibit uniformity in service utilization. Within core services, participants require a service selection in order to satisfy specific industry/firm needs.

Service options are commonly offered for reports and communication to and from the clearing and settlement organization. The content and timing of reports may vary from participant to



participant. A variety of options for communicating with the clearing and settlement organization are available. These include the use of paper forms, computer tapes and disks and direct computer to computer transmissions.

## **10.2 Securities Identification**

Similar to the requirement to develop an identification scheme for participants, a method of distinguishing securities must be incorporated into the clearing and settlement systems. The ISO standard for securities identification is the International Securities Identification Number (ISIN).

### **10.2.1 ISIN Standard**

The ISIN numbering standard provides a common securities identification system that can be used for both domestic and international transactions. The ISIN standard preserves, as much as possible, a domestic numbering system that each market may have already developed and applied. As with participant identification, a numbering standard for securities must be adopted by all participants into their own systems. Once chosen, the securities identification system is very difficult to change, due to the widespread usage this system will have developed in the participants' own systems.

The ISIN is comprised of a 2 character country code prefix which identifies the country of the issuer (for debt securities the country of the agency issuing the ISIN is used). This country code is affixed to a nine character issue code that is used by the market for domestic transactions. A "check digit" is added to the end of the country code/issue code combination and is used for verification purposes.

Each ISIN uniquely identifies an issue. The characteristics that distinguish issues are; Issuer, type of security, currency, maturity date and interest rate (for debt securities), and class of issue.

### **10.2.2 Securities Details**

One of the most difficult services for the clearing and settlement organization to provide to its participants is accurate information about the securities it processes. Entitlement information, such as record dates, payment dates and re-organization events are especially difficult to collect and communicate. The details associated with a given security must be sufficient to uniquely identify it to the participants.

In addition to the information that distinguishes different securities from one another, other information must be collected and made available to participants. This information might include entitlement events, prices and restrictions. The depository will require this information to support its entitlement processing. Participants will have many of their own uses for this

information.

### **10.3: Customer Service**

The Clearing/Depository Organization assumes responsibility of participant support to develop interactive efficiencies. Participants will require an unusually large amount of support during the initial stages of operation while the unfamiliar concepts of centralized clearing and settlement are being assimilated.

Frustration and confusion with the clearing and settlement organization's services, due to a lack of explanation and support, can undermine the most well designed systems. The amount of support given to participants during the crucial start-up phases can never be too much. The development of participation and the pace of eligibility expansion are directly related to the amount of support that is provided to participants and potential participants. Two areas of service need to be addressed; Operational and Consultative Support.

#### **10.3.1 Operational Support**

The Clearing/Depository Organization needs to provide continual operational support to its participants to ensure efficient interaction. Operational support may take the form of immediate assistance in resolution of participant concerns and information requests. This may be accomplished through establishment of a communication program to inform participants of new developments and/or personal account management support.

On-going support of participants in the resolution of problems is required to develop confidence in the new clearing and settlement mechanisms. No system or mechanism is perfect, nor will it exactly meet the needs of all participants. Participants will require assistance from the clearing and settlement organization to translate their daily problems into practical actions within the clearing and settlement systems.

Training is an important component of the clearing and settlement organization's customer service programme. New participants will require training on the clearing and settlement services and functions. On-going training must also be provided for existing participants to accommodate staff turnover. User documentation and training material provide the basis for this exercise.

#### **10.3.2 Consultative Support**

The Clearing/Depository Organization will assume responsibility of ensuring that participants are effectively utilizing all services provided. This can be tracked using MIS reports designed into the systems. The responsibility is both to individual participants and to the overall



performance of the market served. New clearing and settlement services that forecast and respond to the needs of an evolving capital market can be developed only through consultations with market participants.

Participants will require the advice and cooperation of the clearing and settlement organization when developing new securities products and services. New securities are developed all the time and new methods of clearing and settling transactions in these new instruments will need to be developed.

### 16.3.1 Operational Support

The Clearing/Depository Organization needs to provide continued operational support to its participants to ensure efficient operations. Operational support may take the form of immediate assistance in resolution of participant concerns and information requests. This may be accomplished through establishment of a communication program to inform participants of new developments and/or personal account management support.

On-going support of participants in the resolution of problems is required to develop confidence in the new clearing and settlement mechanism. No system or mechanism is perfect, nor will it exactly meet the needs of all participants. Participants will require assistance from the clearing and settlement organization to translate their daily problems into practical actions within the clearing and settlement system.

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## Section 11: INFORMATION ACCESS

Centralized clearing and settlement systems create opportunities to collect information that was previously unavailable. For obvious reasons, automated systems are especially suited to provide information about the clearing and settlement process to participants, regulators and the organization itself. This information is used by the clearing and settlement organization to manage its services; by participants to manage their transaction activity; and by regulators to monitor the market.

### **11.1 Management Information**

#### **11.1.0 Overview**

From a Management Information System (MIS) perspective, statistics and other data about the clearing and settlement process are used in the management of the component parts of the services. Participants require MIS information about their own activity. The clearing and settlement organization needs information about the services as a whole, as do regulators of the market.

#### **11.1.1 Participant Requirements**

Participants need to manage their use of the clearing and settlement services for cost and other efficiency reasons. For example, there may be opportunities to reduce the fees paid to the clearing and settlement organization by modifying the way in which the services are used. This, in turn, will reduce the clearing and settlement organization's need for processing capacity.

Participants should receive a detailed invoice that describes their use of the services. The invoice provides statistics on the number of transactions, inquiries, reports, and other services used. Since pricing is often used as a mechanism to encourage and discourage certain behaviours, it is important for participants to understand the activities they are using and the costs these generate.

#### **11.1.2 Internal Requirements**

The clearing and settlement organization has a need for management information to operate its services efficiently. It needs to know which services are being under-utilized so that investigation can determine if modifications would increase usage. It needs to know the services which attract high usage to forecast future resource requirements.

One of the characteristics of clearing and settlement systems is the widely varying transaction



volumes they must be capable of processing. Peak volumes can be many times the average and are unpredictable. Good information on the usage of services can help to plan capacity requirements. This will avoid a situation where the clearing and settlement organization becomes one of the bottlenecks it was originally created to alleviate.

### **11.1.3 Regulatory Requirements**

Regulators and other government bodies will seize upon the opportunity to access the wealth of data available from clearing and settlement organizations. In physical settlement environments, the widely dispersed nature of activity makes the task of gathering accurate information almost impossible. Centralization allows for easy access to data that can be useful to the regulators' market surveillance. Information about the market as a whole and about individual participants will be required by the regulatory authorities. Both regular reporting and ad hoc request capabilities will be required.

## **11.2 Inquiries and Reports**

### **11.2.0 Overview**

Inquiries and reports that detail the processing of transactions within the clearing and settlement systems assist participants in the management of their activity. Accurate information about the status of transactions must be available on a timely basis to efficiently process transactions.

#### **11.2.1 Types of Inquiries/Reports**

Queries by participants into the activity within a clearing and settlement organization can be broadly divided into inquiries into their security (and perhaps funds) positions and inquiries into the status of their transactions. Some information will be required on an immediate basis while other needs can be satisfied through less urgent means.

##### **11.2.1 Immediate Information Needs**

Participants will require immediate access to at least some of the information that describes their clearing and settlement activity. Depending on the characteristics of the clearing and settlement services immediate access to information on payment obligations and securities holdings may be required. Since the timeframes for satisfying payment obligations are typically short, the need for immediate access to timely payment information is necessary. Similarly, inquiries into security positions held within the depository may require immediate access capabilities. This may require the use of on-line inquiries using computer terminals linked to the clearing and settlement systems. Other methods of immediate access may involve the use of transmissions

between participants' systems and the clearing and settlement organizations computers.

### 11.2.2 Other Inquiries and Reports

Access to information regarding the status of transactions generally requires less immediate inquiry capabilities. "Batch" processing systems change transactions status only at discrete intervals through-out the day. Transaction reports are therefore required only when a status might change during the batch run. Systems that employ more real time processing may require more readily available information regarding transaction status. Multi-day settlement periods also allow time to use infrequent reporting mechanisms to provide transaction status updates. In general, reporting on the following aspects of clearing and settlement is required;

- a) Book entry security holdings as well as changes to these positions.
- b) Transaction details and status (ie. matched, unsettled, settled).
- c) Audit reports that trace a participant's activity.

The clearing and settlement organizations that are developed to address a market's needs must perform their key activities with respect to risk. They must

a) IDENTIFY and clearly document the risks that are present in both the current

mechanisms as well as the new systems.

b) MANAGE the risks that the clearing and settlement organizations will be exposed

to in the new system.

c) DEVELOP risk control mechanisms that can absorb the shock of a problem when

risk management fails to prevent that problem.

Identification of risks is the key. If the risks of clearing and settlement are clearly and convincingly documented, the need for mechanisms to reduce these risks is much easier to demonstrate.

### 12.1 Types of Risk

The major types of risk inherent in the clearing and settlement of securities transactions were described in the Introduction section of this Blueprint. These are: Counterparty (Credit) Risk, the risk that a counterparty will fail to meet its obligations; Liquidity Risk, the risk that a counterparty will be temporarily unable to fulfil its obligations when they are due; Systemic Risk, the risk that difficulties experienced by one market participant will be transmitted to other market participants and through them to the financial community at large. There are a number of other risks associated with clearing and settlement of securities transactions such as the Operational risk associated with processing all of market's transactions through a single system that could be disabled.



## Section 12: RISK MONITORING AND MANAGEMENT

Reduction of risk in the clearing and settlement of securities transactions is one of the principle reasons for developing automated, book entry systems. As the number and value of transactions grow, so do the risks that are present in the processing of these transactions. Making matters worse, the increase in risk is not merely in proportion to the increase in activity. In a physical clearing and settlement environment risks generally increase at a faster rate than the rise in transaction volumes and values.

An increase in risk is often the consequence of increased activity. For example, an increase in transaction volumes may be accommodated, within a physical settlement regime, only by allowing the risks to transaction counterparties to increase. The purpose of this Blueprint is to describe the characteristics of a clearing and settlement mechanism that does not require risks to increase in order to handle its market's (growing) volume of transactions.

The clearing and settlement organizations that are developed to address a market's needs must perform three key activities with respect to risk. They must

- a) IDENTIFY and clearly document the risks that are present in both the current mechanisms as well as the new systems.
- b) MANAGE the risks that the clearing and settlement organizations will be exposed to in the new systems.
- c) DEVELOP risk control mechanisms that can absorb the shock of a problem when risk management fails to prevent that problem.

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In addition to the risks described above, there are other risks such as the potential loss or theft of certificates. Each time certificates must be moved, the potential for loss/theft is present. This risk can be eliminated through dematerialization. If this is not feasible in the short or medium term, immobilization of the certificates into a centralized depository can eliminate most of the movements and therefore most of the risk.

### *Cost of Risk*

One of the problems in proving the benefits available from efficient clearing and settlement systems is the difficulty in articulating the costs associated with risk. Risk is not something that is easy to quantify. The use of "risk reduction" as a benefit that partially offsets an often large expenditure on new systems can be a difficult to demonstrate. Participants in a capital market are usually unaware of all of the risks to which they are exposed from their current clearing and settlement practices. This makes the task of demonstrating benefit from reducing these risks all the more challenging.

Establishing the costs, in money terms, of risk is usually attempted using "what if" analysis. For example, how much would the other market participants lose if a major player were to become insolvent? How much will it cost the rest of the market if a market player experiences liquidity problems and can't meet its payment obligations, even for a single day? These types of examples can be useful in demonstrating the potential costs of leaving known risks unaddressed.

More powerful illustrations of the costs of risk can be achieved using actual examples from the recent past. If a market participant had recently failed, an analysis of this event could be used to identify and quantify the costs associated with risk of clearing and settling transactions with the failed participant.

Many markets experience an indirect cost from clearing and settlement risks that is even more difficult to quantify than the examples given above. This is the cost of avoidance of the market by international investors due to what they perceive to be unacceptable risks in the clearing and settlement of their transactions. The clearing and settlement organizations may be able to document cases where international investors decided not to participate in the market due, at least in part, to risks from inefficient clearing and settlement practices.

Documenting the costs due to risk is a major ingredient in the recipe for more efficient clearing and settlement systems. It is however, only half the solution. Once convinced of the costs of risk in the current mechanisms, potential participants and regulators must still be persuaded that the new systems will do a better job of lowering these costs.

## **12.2 Liability Considerations**

The business of clearing and settlement organizations places them in a position of being exposed



to risks. For example, through the Novation process (see Legal section) the clearing and settlement company is inserted, legally, between the buyer and seller of securities. Securities and funds flow through the clearing and settlement company. The Credit, Liquidity and Systemic risks also flow through the clearing and settlement company.

The legal contracts that govern the clearing and settlement services will clearly specify the rights and obligations of all interested parties. The nature of the services offered will determine the potential liabilities encountered by the clearing and settlement organizations. This may range from no liability at all to complete responsibility for the good delivery of securities and funds in all circumstances. Some of the potential liabilities of a clearing and settlement organization are listed below. Clearing and settlement organizations are often organized as conduits for the transactions they process. They do not typically have, within their own structure, the capital or other financial resources to undertake all of the liabilities they may be required to face. They, therefore, require methods of either distributing the liability or gaining access to the necessary resources. Some of these methods are described in the Risk Controls section.

#### *Liability for Transaction Settlement*

Clearing and settlement organizations provide varying levels of certainty when it comes to guaranteeing the actual settlement of a transaction. For example, settlement may be guaranteed by the clearing and settlement company as soon as a transaction is "locked in" or agreed to by both parties to a transaction. In this situation, the clearing and settlement company is liable to both parties to complete the transaction (i.e. deliver good security position to the buyer and good funds to the seller) regardless of the ability of either party to fulfil their obligations. For example, if the clearing and settlement organization does not receive funds from the buyer (due perhaps to an insolvency) it must still pay the seller. If the clearing and settlement organization chooses to undertake this liability, it must pre-arrange the mechanisms and resources necessary to fulfil the obligations that result from this decision.

In CNS processing, the potential default of a participant with an outstanding to deliver position for securities or funds creates settlement risk. This may mean forcing closure of the position through lending or a buy-in. Other alternatives include taking "netting difference payments" from participants with outstanding positions to protect against a default and market price fluctuations. Using the netting difference payments the depository can complete settlement.

At the other extreme, a clearing and settlement organization may provide no settlement guarantee at all. While this addresses the liability issue for the clearing and settlement organization, it provides little certainty for the participants of its services. Participants must rely entirely on a "know your counterparty" rule to control the risk of non-settlement of a transaction. Most clearing and settlement organizations provide some form of assured settlement. There may be limitations on this guarantee such that only in the most extreme cases will the guarantee not be applicable.



### *Liability for Deposited Certificates*

The depository function of a clearing and settlement organization must deal with the deposit and conversion of certificates into book based positions. Whether the strategy is to dematerialize or simply immobilize, this conversion process must be performed at least once.

Once deposited, the certificates are either cancelled in favour of an entry for the depository on the books of the register or new certificates are issued in the name of the depositor. Depending on the laws that govern the issuance and re-registration of securities, the registrar may have the ability to revoke the transfer to the depository. At some point the depository will give a book entry position in its records to the depositing participant. The point at which this entry is made and the extent to which it is possible for a registrar to revoke its transfer will determine the potential liability of the depository for the value of the deposited certificates. Obviously when a problem develops the first action is against the depositing participant. However, the depository must prepare for a situation where a problem with certificates is discovered only after the depositing participant has ceased to use the services of the depository.

It may not be possible for the depository to be absolutely sure it has "good title" to securities transferred to its name. Legislation may be able to provide this absolute assurance, but the applicable law may also preclude this. In any event the depository should not credit a depositing participant with a book entry position until it is virtually guaranteed that it has received good title to the deposited securities. An event that signals this point must be identified, such as the depository receiving certificates that are registered in its name (i.e. "holder in due course"). A mechanism must be developed for the depository to cover any residual liability for deposited certificates.

### *Liability for Lost or Stolen Certificates*

Immobilization of certificates into a central depository will drastically reduce the risk of certificates being lost or stolen. It does not eliminate the possibility of loss all together. Only complete dematerialization eliminates this risk. In an immobilized environment once a depository has accepted a participant's certificates for deposit it credits the participant's account with a book entry position. The sum of these book entries for all participants is represented by the depository's physical holdings of certificates. If a certificate is lost or stolen, the depository will be liable to replace it to maintain the balance between physical holdings and book positions.

### *Liability for Entitlement Payments*

If certificates are registered in the (nominee) name of the depository, it will receive entitlement payments for payment to the holders of book positions. Entitlement processing, even in a centralized depository, is complex and error prone. The depository may incur liabilities if it receives payment from the paying agent but fails to pass on these entitlements to the appropriate participants. For example, if the depository receives a dividend on Monday but fails to pass this on to its participants until Tuesday, it may be liable to its participants for their loss of the use of those funds for one day. Similarly, if the depository pays its participants on Monday but for



some reason doesn't itself receive payment until Tuesday, it may be liable to cover the amount overnight.

### *Liability for Employee Errors and Omissions*

The operation of a clearing and settlement organization may involve many manual processes. Manual processing creates the certainty that errors will be made. These errors could create a liability for the clearing and settlement organization. For the most part this sort of liability is covered by "errors and omissions" insurance.

Automation of manual tasks is not necessarily the solution. Contrary to popular theory, computers do make mistakes and only sometimes because they were programmed to make them. Automation, if not implemented in a measured and careful manner can actually increase a clearing and settlement organizations liability from errors. The slow pace of manual methods and with proper procedures, human errors can be detected before a problem is compounded. Computers work so quickly there is often little or no time to correct a computer error.

### *Liability for System Availability*

Over time the market will come to depend completely on the services of the clearing and settlement services. The "old way" of clearing and settlement may not be available as a back up mechanism in the event the clearing and settlement systems are disabled. This leads to a strict requirement for backup systems and redundant processing capabilities. These measures can be costly but are essential to maintain confidence in the clearing and settlement services.

## **12.3 Risk Monitoring Mechanisms**

### **12.3.0 Overview**

The ability to identify and monitor risks on an on-going basis is crucial for a clearing and settlement organization. The first strategy is to avoid, as much as possible, situations that create unacceptable levels of risk for the clearing and settlement organization and its participants. To avoid these situations, the risks must be well defined apparent to the risk monitors so that preventative action can be taken. Risk monitoring usually takes two forms; monitoring the stability and financial health of participants, and monitoring the participants' activity within the clearing and settlement services.

#### **12.3.1 Participation Standards**

The stability and financial health of participants in the clearing and settlement services is an important indication of potential trouble. Clearing and settlement organizations establish standards for participation such as minimum capital requirements as a first line of defence

against risk. These standards ensure at least a minimum capacity within an individual participant to withstand financial problems. Without this ability to withstand shocks, the clearing and settlement organization and/or its participants will be subject to unacceptable risks transmitted from other, less solid, participants. Since clearing and settlement systems create a certain amount of risk sharing participation standards should be established to control the amount of risk they must share.

Participation standards must be monitored on a periodic basis and enforced with sanctions and, in extreme cases, suspension from the clearing and settlement services. To monitor the adherence to standards, the clearing and settlement organization must have access to audited financial statements and some of the data provided by participants to their regulators. A review of this data should be made at least quarterly. Participants who have previously failed to maintain certain standards or who are close to falling below a standard would be subject more frequent reviews.

### **12.3.2 Monitoring Participant Activity**

Different types of participants may be subject to different limitations in their use of the clearing and settlement services. For example, the maximum amount that can be owed to the clearing and settlement organization may vary from participant to participant. Participants with a larger capital base and greater access to liquidity may be allowed larger net payment obligations than smaller firms. The activity of participants within the clearing services must be monitored to ensure these limits are not exceeded. Other participant activity such as values on deposit with the depository, number of transactions and value of transactions may also be employed to develop a risk profile for each participant. The activity of participants who show signs of instability will be monitored more closely and more frequently. Automated systems are ideal for monitoring participant activity, since all of the required data is present in computerized form which is suitable for regular and ad hoc reporting.

Both the clearing and settlement organizations and their regulators will be responsible for monitoring participant activity. Regulators may specify pre-established limits for participants which the clearing and settlement organization must then monitor.

### **12.3.3 Risk Analysis**

Collecting data on clearing and settlement participants as well as their activity is the first step in performing a risk analysis. Employees of the clearing and settlement organization who are trained risk analysts combine the available information to create a risk profile for each participant. Based on this profile, certain restrictions or limitations may be placed on a participant's use of services. The participant may be required to compensate for the risk it brings to the clearing and settlement collective through, for example, contributions to guarantee funds or by providing collateral.



The risk created by each participant is the product of the potential size of the problem they might create (e.g. their potential payment default amount) and the probability of the participant's failure. Larger participants might create greater problems if they failed to meet their obligations, but the probability of their failure may be very small.

Participant standards must be monitored on a periodic basis and adjusted with standards and in extreme cases, suspension from the clearing and settlement services. To monitor the adherence to standards, the clearing and settlement organization must have access to audited financial statements and some of the data provided by participants to their regulator. A review of this data should be made at least quarterly. Participants who have previously failed to maintain certain standards or who are close to failing below a standard would be subject more frequent reviews.

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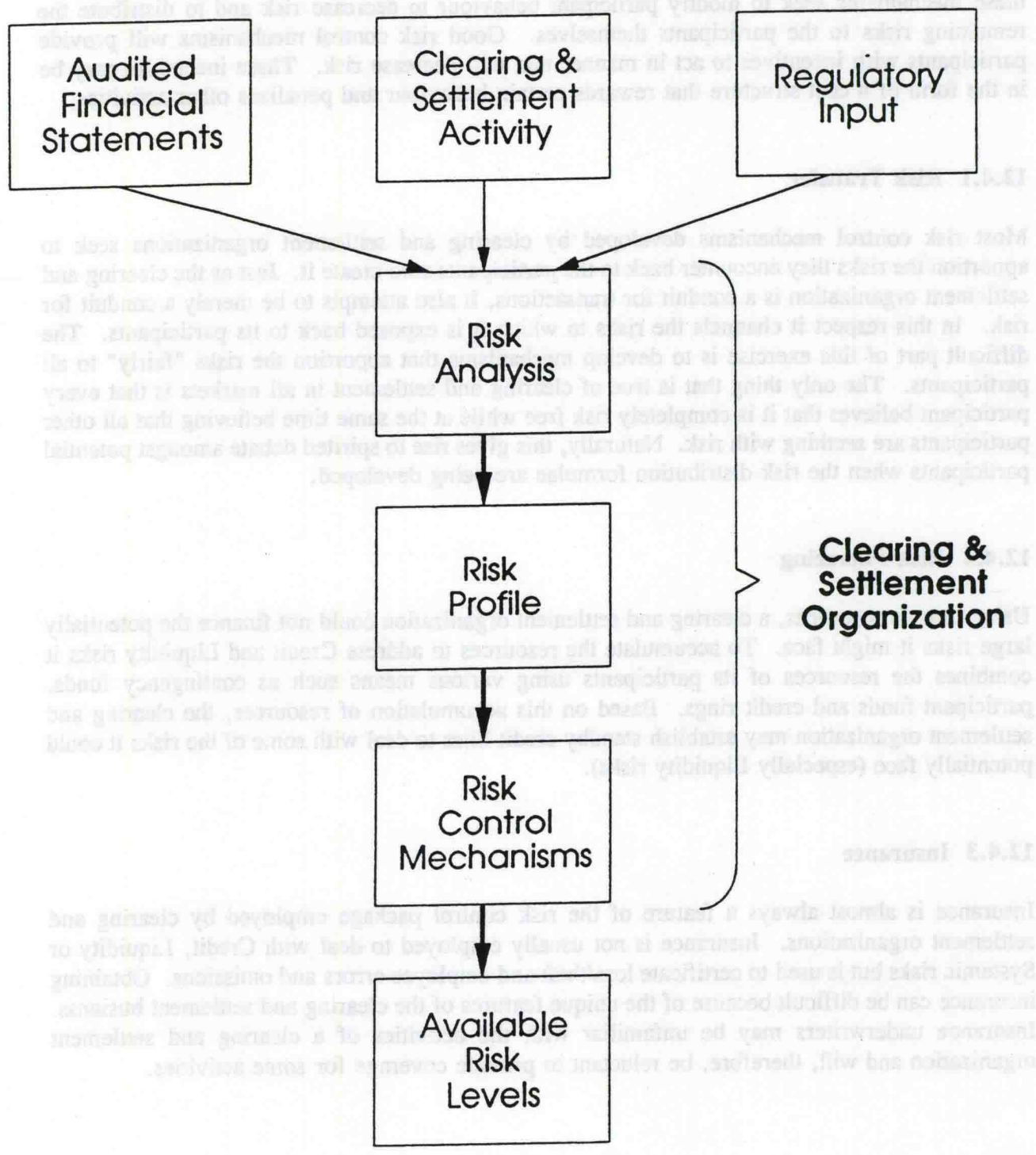
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# 15. Risk Monitoring and Control





## **12.4 Risk Management**

### **12.4.0 Overview**

Clearing and settlement organizations develop various mechanisms to control and reduce the risks created by their involvement in the processing of securities transactions. For the most part, these mechanisms seek to modify participant behaviour to decrease risk and to distribute the remaining risks to the participants themselves. Good risk control mechanisms will provide participants with incentives to act in manner that will decrease risk. These incentives may be in the form of a cost structure that rewards certain behaviour and penalizes other activities.

#### **12.4.1 Risk Transfer**

Most risk control mechanisms developed by clearing and settlement organizations seek to apportion the risks they encounter back to the participants who create it. Just as the clearing and settlement organization is a conduit for transactions, it also attempts to be merely a conduit for risk. In this respect it channels the risks to which it is exposed back to its participants. The difficult part of this exercise is to develop mechanisms that apportion the risks "fairly" to all participants. The only thing that is true of clearing and settlement in all markets is that every participant believes that it is completely risk free while at the same time believing that all other participants are seething with risk. Naturally, this gives rise to spirited debate amongst potential participants when the risk distribution formulae are being developed.

#### **12.4.2 Risk Financing**

Using its own resources, a clearing and settlement organization could not finance the potentially large risks it might face. To accumulate the resources to address Credit and Liquidity risks it combines the resources of its participants using various means such as contingency funds, participant funds and credit rings. Based on this accumulation of resources, the clearing and settlement organization may establish standby credit lines to deal with some of the risks it could potentially face (especially Liquidity risks).

#### **12.4.3 Insurance**

Insurance is almost always a feature of the risk control package employed by clearing and settlement organizations. Insurance is not usually employed to deal with Credit, Liquidity or Systemic risks but is used to certificate loss/theft and employee errors and omissions. Obtaining insurance can be difficult because of the unique features of the clearing and settlement business. Insurance underwriters may be unfamiliar with the activities of a clearing and settlement organization and will, therefore, be reluctant to provide coverage for some activities.

#### 12.4.4 Transaction Unwinding

Clearing and settlement organizations sometimes resort to "transaction unwinding" to deal with Credit risk from defaulting participants who fail to make good their payment obligations. Transaction unwinding is not a recommended form of risk control since it can create Systemic risks that are unpredictable. It is, however a feature of many clearing and settlement systems. While this technique achieves the goal of eliminating risk from the clearing and settlement organization, it does so at an unacceptable cost in terms of Systemic risk.

"Unwinding" involves reversing transactions that were "settled" on a provisional basis until the payment obligation of the defaulting participant is reduced to an acceptable level or eliminated all together. In this way the payment default and Credit risk are eliminated. Security position is returned from the buyer to the seller while funds are returned to buyer from the seller. The seller now faces a situation where expected funds are no longer available. This may require the unwinding of some of that participant's transactions which in turn may create difficulties for its counterparties that require unwinding.

Unwinding does have one advantage over other forms of risk control. It provides an incentive to participants to be careful in their dealings with other participants. Unwinding does not imply risk sharing. Each participant bears the full consequences of the risk it helps create by dealing with risky participants. Each participant, therefore, has an incentive to carefully assess the risks of dealing with each counterparty. This should have the effect of decreasing risk overall.

#### 12.4.5 Contingency Funds

Contingency funds that are made up of cash contributions from participants can be used to absorb small amounts of Credit and Liquidity risks. The fund should be large enough to be of practical use and contributions should be based on the risk each participant creates. In practice, it is very difficult to precisely quantify the risk created by each participant, and most contingency fund contributions are based solely on the volume of settlement activity by each participant. Larger participants with larger settlement volumes contribute more to the fund than smaller participants, even though this may not be representative of the actual risks each participant generates.

#### 12.4.6 Participants' Funds

Participants' Funds (or Guarantee funds) are common risk control mechanisms employed by clearing and settlement organizations. A Participant fund is a pool of cash, securities, letters of credit and other promissory notes that is created to deal with the potentially large Credit and Liquidity Risks that can be created by the payment default of a participant. The purpose of the fund is to provide the clearing and settlement organization with the resources to pay out on its



obligations even when a participant fails to make good on its payment obligation. The fund absorbs the amount of default, and thereby addresses the Liquidity risk of a participant payment default. The contents of the fund are usually pledged as collateral to a source of liquidity (such as a bank or syndicate of banks) who provides the necessary funds to the clearing and settlement organization. This standby liquidity is arranged by the clearing and settlement organization, often at great expense. This expense is passed on to the participants.

As with contingency funds, the difficult part of establishing a participant fund is in determining the size of the fund and basis on which the contributions to the fund will be calculated. The fund should be large enough to cover the largest potential payment default. Although transaction volumes are not the best measure of risk, they are usually the basis for participant fund contributions. For example, each participant could contribute a percentage of their settlements to the fund. If the fund is made up of income producing securities, the costs to participants can be kept relatively modest.

The form of contributions must be carefully monitored by the clearing and settlement organization. Securities and letters of credit that are backed by participants may be eligible for the fund. A high concentration of either from any single institution will render the fund useless if that participant defaults.

#### 12.4.7 Credit Rings

A credit ring is a group of participants who agree to make good the payment obligations of a member of the ring, should that member default on its obligation to the clearing and settlement organization. Membership in a credit ring is really a promise to pay on the part of each member. The value of the credit ring is therefore based on the strength of its members. Credit rings are often combined with participants' funds to form a "collateralized credit ring." Using a Credit ring, the risk faced by the clearing and settlement organization is from the group as a whole, instead of the higher risk levels that it would experience from individual members.

Credit rings have some disadvantages since participants who deal with its members do not have to consider the risk of dealing with individual members. This can lead to behaviour that is riskier than a situation where the risk of dealing with an individual participant is a factor.

Credit rings can be difficult to establish and maintain. Participants who bring the least amount of risk to the ring will be reluctant to accept as members, participants who generate more risk. This will tend to generate credit rings of low risk participants. From the perspective of the clearing and settlement organization, a credit ring of low risk participants is of little use since the risk of its individual members was low to begin with. To be useful as risk control measure, a credit ring must contain members of varying risk levels. Mechanisms and rules within the credit ring may compensate the lower risk members for the protection they provide for the higher risk members.



#### **12.4.8 Collateralization**

Clearing and settlement organizations may use a participant's own securities to collateralize its payment obligation. These securities may be "frozen" until good payment (preferably certain and irrevocable) has been received by the clearing and settlement organization. The securities that are frozen are usually the ones whose acquisition by the participant created the payment obligation.

#### **12.4.9 Debit Rings**

A debit ring is similar to a credit ring except it is usually employed to address the risk from a loss of securities. If the depository loses certificates from whatever cause, an imbalance will exist between the physical holdings of securities and the book entry positions held by participants. To correct this, the depository must either increase its physical holdings or decrease the participants' book entry holdings. The depository may be able to increase its physical holdings through insurance. If this is not possible it may be necessary to decrease, overall, the book entry positions of participants. To achieve this, each participant's book entry holdings of the security in question is decreased by a pro rata share. The participants whose security positions are decreased are said to be part of a "debit ring."

#### **12.4.10 Credit Guarantees**

Some participants may be required by the clearing and settlement organization to provide credit guarantees as a condition of participation. This participant's settlement activity would be limited to the extent of the guarantees. The risk of the institution who provides the guarantee is substituted for the risk of the participant. Using this mechanism, the clearing and settlement organization can increase its risk protection by accepting risk only from the most secure institutions within its participant group.

#### **12.4.11 Mark to Market Payments**

So called "Mark-to-Market" payments are also employed by many clearing and settlement organizations to control risks associated with market price fluctuations. A participant who has a future settlement delivery may be required to make payments to the clearing and settlement company when the market price of the securities increases. This ensures that, if necessary, the clearing and settlement organization has the resources to obtain and deliver the securities to the buyer if the seller fails before settlement date. A similar payment is made by the buyer when the market price falls. The payments are equal to the difference in the contracted price of the transaction and the current market price.



## **12.5 Disaster Recovery**

### **12.5.0 Overview**

The introduction of centralized and automated clearing and settlement systems can introduce a new type of Systemic risk. The concentration of activity within one organization makes the market extremely vulnerable to a shut down of that organization. Furthermore, an extensive reliance on computers places the market at risk of a technical failure. After automated systems are in use for a reasonable length of time, participants will lose their ability to function without the services of the clearing and settlement systems. A failure of these systems usually means a complete stoppage of clearing and settlement activity.

A plan and procedures must be developed by the clearing and settlement organization that deals with a disaster that prevents the use of their services for some period of time. The risk of losing the capacity to clear and settle transactions, even for a single day, is addressed through a variety of back-up and recovery strategies.

#### **12.5.1 Systems Recovery Options**

A discussion of the full spectrum of recovery strategies for computer failure is beyond the scope of this Blueprint. This section will deal with the requirements that need to be addressed and briefly discuss some of the available options.

The first requirement is the ability to retain data. For example, the book entry holdings of participants cannot be "lost" due to a technical failure. Depending on the characteristics of the clearing and settlement systems, a schedule will be determined to produce back-up copies of all relevant data. The most recent updates to participants' accounts may be lost, but re-application of transactions to the latest available back-up could restore the accounts to their state at the time of the failure. This is more difficult to achieve in systems that employ real time processing.

The second requirement is to restore the clearing and settlement systems to operation as soon as possible. It is not necessary to restore all functions at once; the most important part of the systems could be restored first, with restoration of functions of lesser importance left to a later time. In any case, the clearing and settlement systems should not be unavailable for more than a complete business day. These requirements may necessitate an investment in redundant systems and backup capabilities. This may range from a complete duplication of computer hardware to a sharing of backup capabilities with other companies who face similar requirements.

### 12.5.2 Operational Recovery

Once automated systems are recovered from a failure, a backlog of processing will be waiting to be put through the clearing and settlement systems. Depending on the extent to which the clearing and settlement organizations employ manual processes, it may require additional staff to handle the workload. In addition, special procedures may be required to streamline the manual processing during the recovery phase.

### 12.5.3 Participant Impacts

A disaster that affects only the clearing and settlement organization will impact all participants. Participants must prepare for this situation as much as the clearing and settlement organization does. During a failure of the clearing and settlement systems, transactions will continue to be negotiated. A backlog of transactions awaiting settlement will be created. The extent of this backlog will depend on the period of time during which the clearing and settlement systems are unavailable; the settlement period for securities transactions and the participants' ability to cope with the backlog. Shorter settlement periods will create greater pressures to recover the systems quickly and to eliminate the backlog of transactions as soon as possible.

The possibility of a disaster at a participant's site is less troublesome since this does not shut down the markets generally. However the inability of a large participant to interface with the clearing and settlement systems can create risks for its counterparties who expected settlement on a specified date. Systemic risk such as this can be addressed with relatively simple back-up strategies. For example, a participant who feeds information to the clearing and settlement systems via computer could manually input instructions during a computer failure. An alternate site at the clearing and settlement organization could be made available to a participant who has encountered a problem with its own premises.



## Section 13: G30 RECOMMENDATIONS

### 13.1 Overview

This document has used the G30 recommendations for securities clearing and settlement to shape the suggested design of clearing and settlement organizations and their systems. These recommendations have been widely accepted as setting standards for all securities markets for the reduction of risks and improvements in efficiency. Using the recommendations as a guide, the Blueprint has sought to identify the issues and obstacles that must be addressed. Reference to the nine G30 recommendations has been made where applicable throughout the document. The purpose of this section is to direct the reader to the sections of the Blueprint that are related to each recommendation.

#### *Recommendation #1: Trade Comparison on T+1*

"By 1990, all comparisons of trades between direct market participants (ie. brokers, dealers and other exchange members) should be accomplished by T+1."

To achieve timely comparison of trade data, good trade reporting systems are essential (see Clearing 8.1.1, 8.1.2 and 8.1.3). Identification of errors in trade reporting and correction of these errors by T+1 is essential to achieving certainty of settlement. The extent of direct participation in the clearing services is also important (see Participation 4.3). The more market players who are not direct participants in the clearing services, the greater the number of trades that cannot be directly compared and the greater difficulty in performing trade comparisons by Trade date plus one.

#### *Recommendation #2: Trade Comparison for Indirect Participants*

"Indirect market participants (such as institutional investors, or any trading counterparties which are not broker/dealers) should, by 1992, be members of a trade comparison system which achieves positive affirmation of trade details."

Transactions that involve non-participants in the clearing services must achieve Trade comparison indirectly. This may mean using the services of a participant or using a service provided by the clearing company for use by non-participants (see Participation 4.7). "Indirect" participants include clients of participants as well as principal market traders who do not (or cannot) have direct access to the clearing services. In many markets these organizations often originate the vast majority of transactions. It is therefore imperative that an ability to match their trades be designed into the clearing mechanism (see Clearing 8.1.4, 8.1.5).

#### *Recommendation #3: Central Depository*

"Each country should have an effective and fully developed central securities depository, organized and managed to encourage the broadest possible industry participation (directly and indirectly), in place by 1992."



Immobilization or dematerialization of securities into a central depository is one of the tools used to achieve many of the efficiency and risk reduction benefits from clearing and settlement systems (see Introduction 1.5 and 1.6 and Depository 9.1 and 9.2). Elimination of certificates and (most) physical payments is essential to many of the concepts described in this document. Again participation, either directly or indirectly, is the key (see Participation 4.3) to the success of the depository. High participation levels means low movements in and out of the depository.

*Recommendation #4: Netting*

"Each country should study its market and participation to determine whether a trade netting system would be beneficial in terms of reducing risk and promoting efficiency. If a netting system would be appropriate, it should be implemented by 1992."

Netting of transactions is an efficient method of processing large volumes of transactions. Continuous Net Settlement (CNS) systems are a common form of netting employed by many markets (see Clearing 8.2.4). Markets that do not expect to have large transaction volumes in the future may choose to use a Trade for Trade settlement system (see Clearing 8.2.3). Legal issues associated with the CNS process can also mandate the use of a Trade for Trade system (see Legal 6.2).

*Recommendation #5: Delivery versus Payment*

"Delivery versus Payment (DVP) should be employed as the method for settling all securities transactions. A DVP system should be in place by 1992."

The concept of Delivery versus Payment (DVP) protects both sides to a transaction from the failure of a counterparty to fulfil its obligations. To achieve DVP, the simultaneous exchange of "good" security and "good" funds positions (see Clearing 8.2.7). The ability to exchange security positions is within the control of the depository. The exchange of "good" payments is more difficult to achieve (see Legal 6.2 and Clearing 6.3). An interface to a payments system is usually required, and the clearing and settlement organization may have to develop mechanisms to compensate for deficiencies within that system. These compensating mechanisms should be viewed as interim arrangements. Changes to payments system may be stimulated by the development of the clearing and settlement system.

*Recommendation #6: Same Day Funds*

"Payments associated with the settlement of securities transactions and the servicing of securities portfolios should be made consistent across all instruments and markets by adopting the 'same day' funds convention."

Payments made in the settlement of securities transactions are only as good as the rules that govern the system of clearing those payments. The use of same day funds is recommended to avoid the risk inherent in the exchange of securities for next day funds. The ease with which payment items may be returned increases the settlement risk and uncertainty for the holders of these instruments (see Risk 12.3). Sellers may deliver "good" securities to a buyer in exchange



for what they believed was payment, only to discover the payment is returned at a later time. "Irrevocability" of payment is an important quality (see Clearing 8.3.3).

*Recommendation #7: T+3 Rolling Settlement*

"A "rolling settlement" system should be adopted by all markets. Final settlement should occur on T+3 by 1992."

This is really two recommendations; one to have a rolling rather than a fixed settlement period; the second is to have settlement occur on T+3. To achieve a rolling settlement three days after Trade date (T+3) requires a sequence of efficient processing. Trade reporting must occur as soon as possible after the transaction is negotiated. Both parties to the trade must indicate their acceptance of the trade, as reported, to the clearing company shortly thereafter. (see Clearing 8.1). Corrections may be necessary to achieve an "affirmed" trade before the settlement date. A third party to the trade must also indicate its acceptance. All of these processes support the settlement of the transaction on T+3. Settlement on T+3, and shorter settlement periods, reduce the risk of default by one of the counterparties (see Introduction 1.6).

*Recommendation #8: Securities Lending*

"Securities lending and borrowing should be encouraged as a method of expediting the settlement of securities transactions. Existing regulatory and taxation barriers that inhibit the practice of lending securities should be removed."

The use of securities lending can increase the number of transactions that settle by channelling available securities to from "long" participants to those who are "short" (see Clearing 8.2). Securities loans may be negotiated on an individual basis between lenders and borrowers. Alternatively, the clearing and settlement organization may offer a centralized lending facility to automatically arrange loans for those participants who require securities to complete settlement (see Clearing 8.4). Securities lending, although beneficial from a settlement perspective, can be a complex and risky process that requires the resolution of many difficult issues (see Legal 6.2) and regulatory monitoring.

*Recommendation #9: Use of ISO Standards 7775 and 6166*

"Each country should adopt the standard for securities messages developed by the International Organization for Standardization (ISO 7775). In particular, countries should adopt the ISIN numbering system for securities issues as defined in the ISO standard 6166, at least for cross border transactions."

Many markets utilize their own securities message formats that were developed over many years. These formats were designed in each market to service the particular needs of that market. As the global economy becomes more integrated, capital markets that cannot communicate with other capital markets will be at a disadvantage when trying to attract international investors. Adoption of the ISO standards, especially the ISIN format for securities identification, will ease the task of creating inter-depository linkages for the settlement of cross border securities transactions (see Infrastructure 10.2).

## 13.2 Achievement of the Recommendations

### *Inertia*

Achievement of the nine G30 recommendations will not guarantee a market efficient clearing and settlement mechanisms. The recommendations highlight some of the main features that efficient systems should possess. It may be difficult for markets with existing clearing and settlement traditions and practices to quickly overcome the inertia of existing practices. Markets with no centralized clearing and settlement may find it easier to make the leap to a "G30 environment" without the need for interim steps along the way. Where possible, interim steps should be avoided. They tend to create an inertia of their own that extends the time required to achieve the recommended state. Commitment by the market participants and regulators is the key to overcoming the inertia of existing practices.

### *Benefits*

The key to achieving the recommendations is a clear demonstration of the benefits that will accrue to the market as a whole. For each recommendation, the expected benefits to the market as a whole, and to individual participants can be defined and described. Once consensus is reached on the benefits, the task of implementing the recommendations becomes a matter of choosing from a number of available "technical" solutions.



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**Section 15: GLOSSARY OF TERMS**

The attached glossary has been adopted from the G30 recommendations for clearing and settlement.



## GLOSSARY

### **Affirmation**

When used in the context of a comparison or matching system, affirmation refers to the counterparty's agreement with the terms of the trade as communicated.

### **Arbitrage**

The process of buying and selling similar securities in different markets to take advantage of price differences.

### **Bargain/Trade**

A transaction between two counterparties.

### **Bearer (Bond)**

A certificate (bond) issued in bearer form. Not registered in the name of any investor. Generally, anyone possessing such a certificate is considered to be the owner of the security.

### **Beneficial Owner**

The actual owner of the securities, as opposed to the broker or the custodian in whose name the shares may be registered.

### **Bilateral Netting**

A netting system in which all trades executed on the same day in the same security between the same counterparties are grouped and netted to one final delivery versus payment.

### **Book Entry System**

An accounting system which facilitates the change of ownership of securities electronically. Securities move between parties without the need for the movement of physical documents.

## **Buying In**

The action taken by a broker failing to receive delivery of securities from a counterparty on settlement date to purchase these securities in the open market.

## **Central Securities Depository (CSD)**

A facility for holding securities, either in certificated or uncertificated (dematerialised) form, to enable book entry transfer of securities. In addition to safekeeping, a CSD may incorporate comparison and/or clearance functions.

## **Certificate**

Paper form of the shares (or bonds), representing ownership of a company (or its debt).

## **Certified Cheque**

A cheque which is guaranteed by a bank.

## **Checking**

A process by which details of a bargain or trade are compared by the two counterparties (Also known as Comparison and/or Matching).

## **Clearance**

The process of determining accountability for the exchange of money and securities between counterparties to a trade; clearance creates statements of obligation for securities and/or funds due.

## **Comparison (Matching)**

The process by which details of a bargain or trade are matched between counterparties.

## **Comparison System**

A comparison system restates the terms of a trade as entered by one or more parties, depending on the type of system. With some systems, if all parties to a trade submit identical terms, the trade is then automatically sent to clearance. In other systems, trade data is returned to one or more parties for confirmation.



### **Confirmation**

The process by which a market participant notifies his clients of the details of a trade.

### **Continuous Net Settlement**

A system whereby all trades in a given security are continuously pooled by issue to arrive at the smallest number of (net) deliveries at the end of a given period. The term continuous means that once trades are reduced during a trading period to a net receive or deliver position, any net unsettled (failed) position is carried over and offset against the next day's trades.

### **Corporate Debt Securities**

Bonds or commercial paper issued by private corporations.

### **Counterparty**

One party to a trade. A trade can take place between two or more counterparties. Usually one party to a trade refers to its trading partners as counterparties.

### **Cross Border Trading**

Trading which takes place between persons or entities from different countries.

### **CSD**

Abbreviation for Central Securities Depository.

### **CUSIP**

The Committee on Uniform Securities Identification Procedures, the body which established a consistent securities numbering system in the United States. CUSIP is now used to identify the actual number used and issued by the system, as in "CUSIP number."

**Default**

As used in this document, when one or another party to a trade fails to consummate the terms of its agreement.

**Delivery Versus Payment (DVP)**

The simultaneous exchange of securities (the deliver side) and cash value (payment) to settle a transaction. (Also called Cash On Delivery.)

**Dematerialisation**

The elimination of physical certificates or documents of title which represent ownership of securities so that securities exist only as computer records.

**Derivative Instruments or Derivative Securities**

Securities which are based on other underlying securities, for example, options or futures.

**Dividend**

Payment of a share of company profits to a shareholder.

**Direct Market Participant**

A broker or broker/dealer; also any member of an exchange.

**DVP**

Abbreviation of Deliver Versus Payment.

**Electronic Funds Transfer (EFT)**

The transfer or movement of funds by electronic means.

**Failed Transaction**

A securities transaction that fails to settle on time; i.e., the securities and cash are not exchanged as agreed on the settlement date.

**Final Settlement**

The completion of a transaction when delivery of all components to a trade has been accomplished.



### **Finality Of Payment**

The certainty that funds presented have cleared and are credited to the appropriate account.

### **Immobilisation**

The storage of securities certificates in a vault in order to eliminate physical movement of certificates/documents in transfers of ownership.

### **Indirect Market Participant**

Non-broker/dealers, such as institutional investors, who are active investors/traders.

### **Institutional Investors**

Also sometimes called professional investors, these indirect market participants include banks, mutual funds, pension funds and other entities which participate in the market only on behalf of the members/participants of their particular organisation.

### **Interest Payment**

Periodic payment of interest due on a debt instrument (bond).

### **ISIN (International Securities Identification Number)**

A coding system developed by the ISO for identifying securities. ISINs are designed to create one unique number for any security, on a worldwide basis.

### **ISO (International Organisation for Standardisation)**

The international federation of standardisation bodies for various industries which seeks to set common international standards in a variety of fields.

### **Locked In Trades**

Matched trades which are guaranteed to settle as initially entered on trade date.

### **Long Position**

Refers to an investor's account, in which he has more shares of a specific security than he needs to meet his settlement obligations.

### **Mark-To-Market**

The practice of daily re-pricing of securities against an open settlement position. In general, whenever a party owes securities to another (counterparty), the practice of pricing those securities periodically so as to have a current value of the exposure to the delivering party.

### **Matching (Comparison)**

Another term for comparison (or checking), a matching system compares trades and ensures that both sides of the trade correspond.

### **Multilateral Netting**

A netting system in which all trades in the same security are grouped to a final long or short position for each participant. In this type of netting, the trading counterparty may change.

### **Netting**

A process whereby securities transactions are pooled and buys and sells are offset with each other, resulting in one final long or short position for each participant.

### **Nominee Name**

A name registered on a certificate which indicates that the registered shareholder (usually a clearing organisation, bank custodian, or dealer) is holding securities on behalf of the beneficial owner. The nominee acts as agent for the beneficial owner, who may not be able to maintain an account at a depository or clearing corporation.

### **One-sided Comparison**

A comparison system in which only one party to a trade inputs trade data.

### **On-line**

Directly linked to a computer system.



### **Payments System**

The system used to achieve settlement of the cash (funds) side of a securities transaction.

### **Post Settlement Functions**

Administrative functions connected with safe keeping securities, such as dividend payments; stock dividend, warrant, and bonus share processing; notification of warrants, rights and tender offers; and other corporate actions.

### **Real Time**

A term which refers to computer system data output in an immediate time frame, in other words, instantly available without any delay for information processing.

### **Receive Versus Payment (RVP)**

The simultaneous exchange of securities for cash value. The inverse of Deliver Versus Payment, this term refers to settlement from the buyer's point of view.

### **Redemption**

Partial or full return of the debt or shares of a company. For example, some bonds may be "redeemable" at par value on or after a specific date.

### **Registration**

The listing of ownership of securities on the records of the issuing company. This task is usually performed by an official registrar/transfer agent.

### **Reorganisations**

Generally, any event where the equity, debt, or capital structure of a company is changed. (Stock Events or Stock Situation in the U.K.).

### **Rights Issues**

Rights to buy additional securities in an issue.

### **Rolling Settlement**

A continuous settlement schedule, so that all trades settle within the same time frame - whether it be three days, five days, or any specific number of days after trade date, settlements occur on all business days.

### **Safe Custody (Custody)**

The safekeeping of securities in a bank or in a depository, in which the bank/depository assumes responsibility for the securities on deposit.

### **Same Day Funds**

Refers to the availability of funds on the same day as they are deposited. (Also called immediately available funds).

### **Security Code**

Term used to describe one or another numbering system used to identify securities. (i.e. CUSIP, SEDOL)

### **Securities Lending**

The loan of securities to cover settlement obligations of investors.

### **SEDOL**

Literally, the Stock Exchange Daily Official List, a securities numbering system assigned by the International Stock Exchange in London. The numbering sequence includes a country code for all securities (domestic and foreign) traded on the ISE.

### **Settlement**

The completion of a transaction, wherein securities and corresponding funds are delivered and credited to the appropriate accounts.

### **Short Selling**

A process wherein a market participant sells a security he does not own.



### **Short Position**

Refers to an investor's account, in which he has fewer shares of a specific security than he needs to meet his settlement obligations.

### **Sovereign Debt Securities**

Bonds issues by the government of a country.

### **Trade Date**

The date on which a trade/bargain is executed (made).

### **Trade Guarantees**

Guarantees in place in a market which ensure that all compared or netted trades will be settled as compared regardless of a counterparty default.

### **Trade-for-Trade Settlement**

A settlement system wherein each trade is settled as executed between counterparties.

### **Transfer**

The change of ownership of securities.

### **Two-sided Comparison**

A comparison system wherein trade data is entered by both parties to a trade.