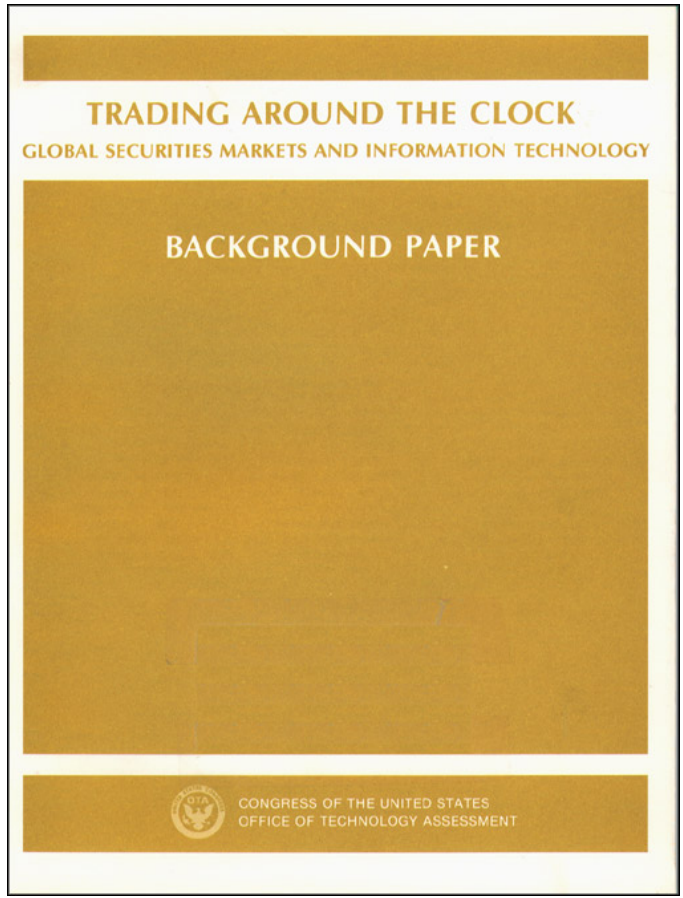
Trading Around the Clock: Global Securities Markets and Information Technology

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Foreword

The world's stock exchanges evolved from centuries-old markets of money lenders, currency traders, and commodity dealers. La Bourse, the Paris stock exchange, dates back to 1183. Amsterdam's Effectenbeurs was formed around the trading of shares in the Dutch East India Company in 1602. The London Stock Exchange was organized in the 17th century.

Stock exchanges in the United States, while latecomers, have a unique and colorful history of their own, characteristic of our young nation. Wall Street, a narrow thoroughfare in lower New York City, has become the symbol of U.S. enterprise, initiative, and prosperity. . . but also of greed and chicanery. It was there that securities were first traded about 1725, along with the auction of commodities such as tobacco, wheat, and even slaves. The New York Stock Exchange, the first established in the United States, was chartered in 1792. Modern computer and information technologies now support market-makers and brokers, and runners and ticker tapes have given way to computer screens.

International telecommunications systems now link markets around the world with instantaneous communications. Technology is rapidly turning the stock exchanges into a seamless global market, open 24 hours a day. This situation presents both opportunities for the Nation and problems that Congress needs to understand.

This background paper assesses the effects of information technology on securities markets and the current status of global securities trading. It compares securities markets and clearing and settlement mechanisms in Japan, the United Kingdom, and the rest of Europe with those in the United States. Finally it identities emerging questions about international markets and national regulatory regimes.

Trading Around the Clock precedes the forthcoming OTA report on domestic securities markets and information technology, ***Electronic Bulls and Bears,*** both requested by the Committee on Energy and Commerce and the Committee on Government Operations of the House of Representatives.

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JOHN H. GIBBONS
u Director

Securities Markets and Information Technologies Advisory Panel

Paul F. Glaser, ***Chairman***
President, Quotron Systems, Inc.

John Bachman
Managing Partner
Edward D. Jones& Co.

John C. Baldwin
Director
Utah Department of Business Regulation

Allan Bretzer
Vice President
Midwest Stock Exchange

William Brodsky
President and Chief Executive Officer
Chicago Mercantile Exchange

Eric Clemens
Professor
Wharton School
University of Pennsylvania

James B. Cloonan
President
American Association of Individual Investors

Jack A. Conlon, Jr.
Executive Vice President
NIKKO Securities Co., Inc.

Janine Craane
Financial Consultant
Merrill Lynch, Pierce, Fenner & Smith, Inc.

Gene L. Finn
Chief Economist and Vice President
National Association of Securities Dealers

Richard Grasso
President and Chief Operating Officer
New York Stock Exchange

William Haraf
Vice President
Citicorp

Robert E. Litan
Senior Fellow and Director of Center for Economic Progress and Employment
Brookings Institution

James Martin
Executive Vice President
Teachers Insurance Annuity Association
College Retirement Equities Fund

Martin Mayer
Journalist

Robert McEwen
President
Conference of Consumer Organizations

Charles McQuade
President
Securities Industry Automation Corp.

Susan Phillips
Vice President
University of Iowa

Peter Schwartz
President
Global Business Network

Howard Sherman
Department of Economics
University of California, Riverside

Robert Shiller
Cowles Foundation
Yale University

Hans R. Stoll
Director
Financial Markets Research Center
Owen Graduate School of Management
Vanderbilt University

Alan Strudler
Research Scholar
Institute for Philosophy and Public Policy
University of Maryland, College Park

NOTE: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the advisory panel members. The panel does not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibitity for the report and the accuracy of its contents.

Trading Around the Clock: Global Securities Markets and Information Technology
OTA Project Staff

John Andelin, ***Assistant Director, OTA***
Science, Information, and Natural Resources Division

James W. Curlin, ***Program Manager***
Communication and Information Technologies Program

Project Staff

Vary T. Coates, ***Project Director***

Charles K. Wilk, ***Senior Analyst***

Danamichele Brennen, ***Inhouse Contractor***

Steven Spear, ***Research Assistant***

Mark Anstine, ***Research Assistant***

Administrative Staff

Liz Emanuel, Office ***Administrator***

Karolyn St. Clair, ***Secretary***

JoAnne Price, ***Secretary***

Workshop Participants

Clearing & Settlement

Andrea Corcoran
Commodities Futures Trading Commission

Dennis Dutterer
Chicago Board of Trade Clearing Corp.

Dennis Earle
Bankers Trust Co.

Roberta Green
Federal Reserve Bank of New York

John Hiatt
Options Clearing Corp.

Jonathon Kalman
Securities and Exchange Commission

Gerard P. Lynch
Morgan Stanley Co., Inc.

John W. McPartland
Chicago Mercantile Exchange

Junius Peake
The Peake/Ryerson Consulting Group, Inc.

Michael Reddy
Merrill Lynch World

Robert Woldow
National Securities Clearing Corp.

Technology in Securities Markets

Richard Breunich
Merrill Lynch & Co., Inc.

Ron Dale
Midwest Stock Exchange

Patricia Hillman
Bank of Boston

George Kenney
American Stock Exchange

Robert M. Mark
Manufacturers Hanover Trust Co.

Harold McIntyre
Citibank Financial Institutions Group

John Parady
Pacific Stock Exchange

Junius Peake
The Peake/Ryerson Consulting Group, Inc.

Joe Rhyne
Quotron Systems, Inc.

Donald D. Serpico
Chicago Mercantile Exchange

Casimir Skrzypczak
NYNEX Corp.

Donald Solodar
New York Stock Exchange

Shyam Sunder
Carnegie-Mellon University

Richard Van Slyke
Polytechnic University, New York

R.T. Williams
R. Shriver Associates, Inc.

Scenarios on International Securities Trading

Peter Bennett
International Stock Exchange

Eric Clemens
University of Pennsylvania

James Cochrane
New York Stock Exchange

Roberta Green
Federal Reserve Bank of New York

David Hale
Kemper Financial Services

Martin Mayer
Journalist

Todd Petzel
Chicago Mercantile Exchange

Peter Schwartz
Global Business Network

Michael Wailer-Bridge
International Stock Exchange

Manning Warren III
University of Alabama School of Law

NOTE: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the workshop participants. The workshop participants do not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents.

Reviewers and Contributors

Alden Adkins
Securities and Exchange Commission

Anthony Ain
Securities and Exchange Commission

David Aylwood
National Strategies, Inc.
(for Reuters, International)

Brandon Becker
Securities and Exchange Commission

John Behof
Federal Reserve Bank of Chicago

Peter Bennett
International Stock Exchange

Mary Ann Callahan
International Securities Clearing Corp.

James Cochrane
New York Stock Exchange

Andrea Corcoran
Commodity Futures Trading Commission

Richard J. Cowles
Consultant

John P. Davidson III
Chicago Mercantile Exchange

Harry Day
New York Stock Exchange

Dennis A. Dutterer
Chicago Board of Trade Clearing Corp.

Dennis Earle
Bankers Trust Co.

Susan Ervin
Commodity Futures Trading Commission

Giulia Fitzpatrick
Bankers Trust Co.

Jane F. Fried
Bankers Trust Co.

Gary Ginter
Chicago Research & Trading Group, Ltd.

Roberta Green
Federal Reserve Bank of New York

John Hiatt
Options Clearing Corp.

Dan Hochvert
NYNEX Corp.

Brian Hunter
American Bankers Association

Jonathan Kalman
Securities and Exchange Commission

Peter Karpen
First Boston Corp.

Richard Ketchum
Securities and Exchange Commission

Thomas Ketchum
EuroClear, Brussels

Olaf E. Kraulis
The Toronto Stock Exchange

Wayne Lutheringshausen
Options Clearing Corp.

Gerard P. Lynch
Morgan Stanley & Co., Inc.

Robert M. Mark
Manufacturers Hanover Trust Co.

Harold McIntyre
Citibank Financial Institutions Group

John W. McPartland
Chicago Mercantile Exchange

Morris Mendelson
University of Pennsylvania

Thierry Noyelle
Columbia University

G.W. Palmer
AT&T Bell Laboratories

Junius Peake
The Peake/Ryerson Consulting Group, Inc.

Joseph Rosen
Rosen, Kupperman Associates

Thomas Russo
Cadwalader, Taft, Wickersham

Anthony Saunders
New York University

Martha Scanlan
Federal Reserve
Board of Governors

Jeffrey M. Schaefer
Securities Industry Association

Robert Schwartz
New York University

Joel Seligman
University of Michigan
School of Law

Donald D. Serpico
Chicago Mercantile Exchange

Yuji Shibuya
Nomura Research Institute

Roxanne Taylor
Quotron Systems, Inc.

Paula Tossini
Futures Industry Institute

Christian Trudeau
Montreal Exchange

Richard Van Slyke
New York Polytechnic University

Manning Warren III
University of Alabama School of Law

Robert Woldow
National Securities Clearing Corp.

NOTE: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the reviewers and contributors. The reviewers and contributors do not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents.

Contractors

Robert G. Angel
Digital Equipment Corp.

Eric Clemens
University of Pennsylvania

Robert de Contreras
International Business Machines Corp.

Dennis Earle
Bankers Trust Co.

Frances Grace
Editor

Peter Karpen
First Boston Corp.

Don McNees
Peat Marwick, Main& Co.

Junius Peake
The Peake/Ryerson Consulting Group, Inc.

Monica Roman
Trading Technology, Inc.

Peter Schwartz
Global Business Network

Charles M. Seeger III
Chicago Mercantile Exchange

Marming G. Warren III
University of Alabama School of Law

NOTE: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the contractors. The contractors do not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents.

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Chapter 1

The Evolution of a Global Securities Market

As national economies are linked together by the exchange of goods and services and by public and private communications networks, global securities markets develop. American securities markets, among the world's best in liquidity, efficiency, and fairness, should stand out in this expanded arena, provided they do not fall behind in technological and financial innovation. But securities trading on a global scale brings with it new risks, as well as beckoning opportunities. American investors and American regulators and policymakers are seeking to understand these risks and appraise the demands that they will place on markets, market participants, and their regulators.

This background paper describes the forces encouraging the development of international securities markets, the obstacles that must be overcome, and the major sources of unnecessary risk. It provides some estimates of the present extent of cross-border trading, and describes the largest and most active organized markets-our competitors in providing securities-related services—in Japan, the United Kingdom, and the rest of the European Community. It also describes the important clearing, settlement, and payment mechanisms that support major markets. Finally, it outlines the questions to be faced as the span of securities trading stretches beyond the scope of national regulatory regimes.

This background paper prepares the way for a forthcoming OTA report, ***Electronic Bulls and Bears: Securities Markets and Information Technology,*** which will probe policy issues arising from the impacts of communications and computer technology on traditional market structures and practices, and their ability to meet the demands implied by global securities trading.

INFORMATION TECHNOLOGY FOR GLOBAL MARKETS

Global telecommunications shrink distances and time differences, tie together national economies, and thus encourage the growth of securities trading across national boundaries. The rapidly increasing capacity and declining cost of communications and computer systems make these trends sure to continue. The emergence of multinational corporations with presence throughout the world is also hastening the globalization of securities markets. The needs of large institutional investors for cross-national investments to diversify or to hedge their portfolios is another strong driver.

The technology for global trading is basically in place, in the form of public and private communications networks, the specialized computer-communications systems used for market data dissemination, and—just poised for take-off—automated systems for 'round-the-globe, 'round-the-clock trading. The integration of the world economy means that multinational enterprises and their products and services become known to investors throughout the world, reducing the information barriers that have in the past inhibited international securities trading. Significant obstacles remain, because international standards and effective international regulatory protections are not yet developed.

The growth in demand for international market news and market data (quotations, last sale prices, volume), together with the effects of the digitizing of data, has led to brisk competition among information services vendors, and to a turbulent restructuring of that industry. Electronic trading systems being developed both by information vendors and by forward-looking exchanges could become the international exchanges of the future. At present, they are essentially unregulated. These changes are forcing two issues into new prominence:

. Who owns digitized data at various stages of its processing and dissemination, who can enforce ownership rights, what constitutes ''value added,'' and how should digitized data be priced?

- Should proprietary trading systems be regulated as organized markets (like exchanges), and if so, by whom?

It is by no means certain that U.S. markets will remain in the forefront of the movement toward 'round-the-clock global securities trading. While U.S. futures exchanges and our over-the-counter market are acting aggressively to put worldwide electronic networks in place, the U.S. stock exchanges have been slower to act. Meanwhile, securities exchanges in many countries are moving toward highly automated markets.

The lack of international standards will be increasingly important; for example, standards that apply to international financial services, especially securities trading, need attention urgently. Government involvement in standards-setting appears to be essential if new sources of operational risk are to be minimized.

THE MEANING OF GLOBALIZATION

Foreign currency exchange and markets for government debt securities have long been international. To the extent that there is still argument about the future of global securities trading, it focuses on how quickly 24-hour trading will emerge, and to what degree it will extend to corporate equities. A two-tier market system could develop, with international electronic trading of the shares of 500 to 1,000 multinational corporations, and domestic (country of domicile) trading on traditional exchanges and over-the-counter markets of most other corporate securities. Or—although this is less likely—traditional exchange-based, face-to-face markets could lose out entirely to the competition of electronic systems.

There is growing evidence, especially since the October 1987 market break and the October 1989 break, that securities markets around the world are linked. They tend to move in parallel in response to economic and financial news, and to react sharply to stress in other markets. Although there has been relatively little response in other markets to sharp declines in Tokyo Stock Exchange prices in early 1990, the anxious attention of market observers around the world attests to the general recognition that this stability may be precarious.

"Globalization of equity securities trading" is a term that covers a variety of related growth trends. It includes the cross-listing of securities in several countries, cross-national portfolio diversification and hedging, holding membership (generally through affiliates) in another country's exchanges, legal or contractual ties between exchanges, electronic systems for 24-hour trading, "passing the book," the development of cross-national stock index derivative products, and related phenomena such as multinational primary offerings of stock and international mutual funds. All of these are now growing, although at different rates.

There are nevertheless major obstacles, such as legal, regulatory, and cultural differences between nations and markets. Some of these differences impose serious risks on investors, market organizations, and other financial institutions. These new or aggravated risks are often poorly understood by individual investors and perhaps by professional investment managers.

In the worst case, the failure of major market participants (e.g., securities firms or banks) with heavy commitments in several countries could have gravely detrimental results for national financial and payment systems and possibly for entire economies.

COMPETITORS IN WORLD SECURITIES TRADING

Our rivals as centers of international securities trading today are Japan and the United Kingdom. The potential integration of a European securities market, with the European Community's 1992 Initiative, will bean important factor in future competition. Other nations are or may become niche competitors.

The Tokyo Stock Exchange (TSE) vies with the United States as the world's largest securi-

ties market in terms of capitalization and trading volume. It has the advantage of a strong economy with many multinational corporations, a concentration of capital that may exceed domestic investment opportunities, a large retail customer base, and supportive government policy. It is not as ''international' as London's markets nor as accessible to foreign investors as either London or New York, because of regulatory, institutional, linguistic, and cultural barriers. Transaction costs and listing costs are relatively high.

London's International Stock Exchange (ISE) is also among the four or five largest markets (usually following the TSE, the New York Stock Exchange, the Osaka Stock Exchange, and NASDAQ, the U.S. over-the-counter market); and it is the most international major market, with nearly a quarter of its listings and a quarter of its transactions involving foreign issues. However, in the aftermath of deregulation and automation—the 'Big Bang' of 1986-and the market crash in 1987, the ISE has serious problems, including the growth of off-market trading that threatens to cause market fragmentation. Spreads and commissions, two components of transaction costs, are very low; but settlement costs are disproportionately high. Strenuous efforts are underway to solve these problems.

Other European markets, especially the German exchanges, the Paris bourse, and the Swiss exchanges, are making vigorous efforts to increase their volume, automate their activities, and modernize their regulatory regimes. The European Community intends to achieve regulatory harmonization and an integrated, strong "European trading arena" in services by 1992, including eventually an integrated European securities market. This is a goal rather than an achievement, and there are many obstacles, but substantial progress has already been made.

CLEARING AND SETTLEMENT

The most critical problems for international securities trading, but also the most concerted efforts at problem resolution, are in the area of clearing and settlement. Clearing and settlement systems for financial instruments differ greatly within and across countries, in procedures, in timing of settlement, in the institutions involved, and in the degree, nature, and locus of risks. These differences in countries' systems are important because: 1) systems traditionally used for domestic trading are now being called upon to accommodate international participants; 2) the integrity and efficiency of a nation's clearing, settlement, and payment system are important to its internal financial and economic stability and its ability to compete with other nations; 3) the failure of a foreign clearing entity could affect a U.S. clearinghouse through the financial failure of a common clearing member; and 4) the growing number of U.S. investors in foreign markets may be unaware that risk levels in some foreign markets can be much higher than those in our domestic markets.

To improve efficiency and reduce risks, the world's clearing and settlement systems must be coordinated with each other in a number of ways. Both the private sector and regulators in the United States and other countries have begun to take, or are considering, actions to accomplish the needed improvements. A number of international studies are in general agreement on the types of improvements needed. These studies have been done by the European Economic Commission, the Federation International des Bourses de Valeurs (FIVB), the Group of Thirty, the International Society of Securities Administrators, and Bankers Trust Co. (the last as contractor to OTA). One of the shared conclusions of these studies is that the world's major clearing and settlement systems should be "harmonized" in selected ways in order to strengthen them and prepare for the emerging global trading environment.

The private sector in the United States, with encouragement from regulators, is making impressive progress in paving the way for needed improvements, but many are complex, time-consuming, and costly. In some areas legislation is likely to be needed, e.g., to make it possible

to eliminate all, or most, physical certificates for securities and to align holidays observed by banks and financial markets. In other cases, U.S. regulators will need to take action.

In many cases, U.S. and foreign government cooperation will be needed to effect change. Six major concerns need to be addressed: risks associated with default; risks associated with the payment process; information sharing; progress in technology development; standardization; and shortening the time to settlement using same-day funds. The attention to date by various organizations to international clearing, settlement, and payment systems has been helpful, but these efforts are unlikely to provide needed continuity, and have not addressed all financial products, such as derivative products (e.g., stock-index futures and options). Because of the diversity, complexity, and universality of issues likely to continue to arise over the next decade, a single international body should be considered to facilitate world cooperation in addressing these issues.

COMPETITION AND REGULATION

Many complex problems and unnecessary risks arise from differences between nations in regulations and in regulatory objectives, and from the lack of international machinery for monitoring, surveillance, and governing of global markets. Significant risks associated with international securities markets are related to substantial differences among nations and markets in:

- prudential regulation (i.e., investor protection rules, such as disclosure requirements or safeguards against market manipulation or fraud);
- s capital requirements, accounting practices, and other factors relating to the financial integrity of market professionals and intermediaries, brokers, dealers, and traders; and
- margining systems, clearing and settlement mechanisms, and payment systems, especially important because they may involve systemic risks to financial institutions that are involved in the markets of several countries.

There are also important differences in the activities permitted to certain market participants (e.g., separation between banking and securities activities, or separation of broker/dealer functions).

Differences among nations in regulation of securities markets are a factor both in risks and in competition among markets. There are sharp disagreements about the effects of market regulation on competition among markets for customers. Some market participants stress that regulatory costs add to transaction costs, and oppose most regulation on the grounds that it could drive securities trading (both domestic and international) to overseas, less regulated markets. This concern could lead to ‘regulatory arbitrage, ’ or a movement to reduce regulatory supervision of markets to the level of that in the least regulated competitive market.

However, there are two broad categories of market regulation: access regulation, and prudential regulation. In most countries, there has been a movement toward access deregulation in the last few years; i.e., reducing the barriers to broad participation (including foreign participation) in organized markets or exchanges, and this has encouraged internationalization. In some countries, there has at the same time been a movement toward strengthening prudential regulation, or rules aimed at protecting investors against unrecognized risk or against market fraud, abuse, and manipulation. This is sometimes called "re-regulation, " and it is also often done for the purpose of attracting investors, especially international investors. (Neither movement has been obvious in the United States, which already had better investor protection laws than many countries, and few if any barriers to foreign participation.)

The problems of enforcing national regulations are complicated by the difficulty of investigating and correcting abuses that origi-

nate overseas or involve participants outside of the country's borders. In the United States, legislation is being considered that strengthens the powers of U.S. regulatory agencies to cooperate with foreign regulators. Cooperative efforts are complicated by laws in some countries that restrict the disclosure of financial data, i.e., privacy and secrecy laws.

Free market proponents argue that regulatory differences between nations are best resolved by deregulation in all nations, letting market forces and competition decide which risks are acceptable to investors. But in most markets and in most countries, there is a movement toward seeking "harmonization" of regulations and cooperative enforcement of standards of fairness and honesty. Many industry groups and international associations in the private sector, as well as regulatory authorities in the major market countries, are participating in these efforts.

However, at the policy setting level and at the negotiating level there are substantial disagreements about what "harmonization" should mean. Even among regulatory agencies in the United States, there appear to be significant differences in the approach to harmonization of regulations. There are several different approaches loosely designated as 'commonality' (universal regulations); "comparability" (acceptance of substantially equivalent rules); "national treatment" (each country subjecting domestic and foreign institutions to the same rules within its borders); and ''mutual recognition" (a country allows foreign institutions to operate within its borders under the rules of their countries of origin). The last two of these approaches actually do not require, or constitute, harmonization.

There are several movements underway involving either governmental bodies or private sector associations, or both, to achieve greater harmonization. Stronger initiatives by U.S. governmental agencies may be needed to encourage such efforts, or to assert U.S. leadership on behalf of such efforts, in order both to protect U.S. investors and institutions and to enhance our competitive position vis-a-vis global securities trading.

THREE SCENARIOS FOR GLOBALIZATION

These trends suggest several scenarios for possible regulatory responses to the globalization of securities markets. The scenarios outlined below are intended merely to focus discussion on the implications of international securities trading, and are not suggested as fully developed strategies or policies.

The present political, economic, and regulatory environment for international securities trading consists largely of informal or contractual institutional arrangements and bilateral agreements between national regulatory authorities. The future regulatory framework for world markets could be a continuation and extension of these evolutionary developments; or strikingly different frameworks might develop. They could come about as a result of severe market breaks and disruptive economic and political events, or as a result of initiatives shared by private and public financial institutions and regulatory authorities around the world.

Many forces, acting together at many levels, could influence such developments. At the level of the global economy, the process of continuing economic development is driven by such forces as the impacts of major economic imbalances, national economic and finance policies, trade patterns, inflation rates and interest rates. It will also be shaped by political events-e. g., change in Eastern Europe, the unification of Germany, and the European Community's 1992 Initiative. At another level, the evolution of financial markets will be shaped by the course of technological and product innovation and the behavior patterns of key players—multinational and translational business enterprises, securities underwriters, institutional investors, securities firms, exchanges, banks, clearing organizations, information services vendors, and national regulatory authorities.

The pattern of technological innovation is an important factor in the behavior of securities markets. Innovation in technology and in financial instruments could contribute to sustained liquidity and expansion; but it is also possible that innovation could outpace the capability of market participants to comprehend and control its effects, or could merely be a drain on resources and attention without contributing to economic utility. Accelerating obsolescence of information technology could diminish the return on investment, eventually discouraging innovation. Financial product innovation can draw new investment into securities markets or drive out some traditional investors. Some financial innovations (e.g., stock-index futures) have certainly dramatically increased the linkages between different kinds of capital markets, with secondary impacts that are not yet well-understood and are the subject of much controversy, especially in the United States and Japan. [These forces are discussed in a forthcoming OTA report, ***Electronic Bulls and Bears: Securities Markets and Information Technology.]***

Peter Schwartz, of Global Business Network, ties together the economic, political, and market possibilities into five models of international securities trading: These are:

- Fragmenting Markets-Conflicts of interest, political friction, and protectionism inhibit the process of integration of financial markets. Costly and unreliable technology adds to the burdens on market participants. Key players see no value in creating an international framework for regulation of securities trading.
- Regional Markets-Integration occurs at the regional level as part of a protectionist world of trading blocs, with diminished interbloc trading, and possibly with new capital controls.
- Integrating Markets-Multinational trading blocs develop, but are not an impediment to global integration. They provide useful models for complex multilateral economic regimes. Agreements on general principles are a step along the path toward broader multilateral regulatory regimes. The OECD is the model of a regional organization in which the political capability for agreeing on very complex issues can be developed.
- Stratified Markets—A two-tiered market develops, with the off-market, large bloc institutional investors constituting a global marketplace and an array of smaller domestic retail markets.
- Global Markets-New technology, the global economy, and the commercial strategies of financial companies and their customers and suppliers, drive the evolution of global financial markets. They develop within a regime of bilateral cooperative agreements, but the world is moving toward a 24-hour trading day operating mainly in commercial networks outside of recognized markets and their regulators. This is, like the Eurobond market today, an arena for professionals.

Although many others could be fashioned by varying one's assumptions, three possible scenarios for international securities regulation are outlined below. The first assumes a gradual and orderly transition from the present. If international securities trading expands through gradual evolution and there are no major economic or political disruptions or global market crashes, this is a highly likely scenario; it appears to be the probable one for global securities markets. But reason and goodwill can be defeated by "accidents of history. " Disruptions have often been the triggers of change, sometimes undesirable change and sometimes change for the better.

The second and third scenarios acknowledge the possibility of drastic disruption and discontinuity. Either of these scenarios could develop if changes in the marketplace outrun the market's ability to adjust, regulate, or even comprehend its implications. Either might result from a major market disruption, as large or larger than the break of October 1987. Such a disruption might be set off, for example, by a sharp decline in the Japanese market, the after-effects of the

bankruptcy of one or two major U.S. securities fins, or changes in currency value related to unification of Germany or other events in Eastern Europe or the Soviet Union, or the Japanese real estate market. While a market break might begin as an internally caused ‘‘accident, it is more likely to result from an economic environment of weak profits and price volatility. Continuing economic imbalances, widening recession, and the inflationary boom that would likely follow could set the stage for one or the other of these scenarios.

Scenario 1: A Cooperative Framework

A series of efforts, already underway in 1990, leads to the slow development of an effective international regulatory structure.

- There continues to be a stable, “fairly prosperous economy. The industrialized world enjoys slow but steady and unbroken growth, low inflation, and unemployment of less than 6 percent. Interest rates follow a somewhat higher path trailing the slow decline in the U.S. fiscal deficit. International imbalances slowly unwind, currency volatility diminishes as a result, and there are no major shocks or disruptions.
- As capital investment in new technology increases, and productivity improves, the stage is set for higher growth and accelerating investment, placing great demand on international capital markets. A continuing bull market supports a climate of sustained financial innovation. Today’s multidomestic markets with limited international activity move toward ever more international flows.
- The true global marketplace begins to develop in the off-market trading arena used by large institutional investor/professionals. As the structure of markets gradually becomes ever more stratified, and the systemic risks associated with them become more apparent, the pressure for some regulatory response mounts.
- Economic integration begins at a regional level and moves toward the global level in the first decade of the new century. Cooperation is embodied in the development of the international information systems and the regulatory agreements required to foster increasing integration. Emerging regional blocs are the vehicles for greater global cooperation rather than sources of conflict.
- The integration of the European Community leads to a closely linked European Market centered in London. Many of the issues resolved in that process became the basis for wider international agreements (e.g., prospectus standards).
- A major step in the process is the continuing development, following the path earlier taken by the Cooke Committee,[1] of the International Organization of Securities Commissions (IOSCO) technical committee as an effective, permanent organ for setting the agenda for agreements and preparatory steps. The Group of Thirty provides continuing encouragement and support. A high degree of collaboration ensues between private-sector financial leaders and regulatory authorities in the major market countries.
- During the 1990s a new regulatory framework gradually emerges out of the slow accumulation of bilateral agreements, or Memoranda of Understanding (MOUs). This is a very modest regulatory regime, with limited overt organization.
- Through the collaborative actions of these several bodies a schedule of agreements emerges focusing initially on the risks associated with settlement and common

[1]In the 1970s a large number of foreign multinational banks situated in London shared several serious concerns: over disparities in accounting standards, over who would act as lender of last resort if one of these branches failed, etc. The Bank of England proposed the establishment of an international Standing Committee of regulators, established in 1974 [now called the Cooke Committee after its chairman, Peter Cooke]. The Standing Committee developed the Basle Concordat, a set of international principles for handling a banking crisis. The concept here is that the technical committee of IOSCO (already established and working) or a similar permanent committee of anotherinternational organization might quasi-formally assume many of the coordinating functions of an international regulatory body.

conditions for capital adequacy. The issues of futures markets and questions of multiple listings and multinational share offerings are slowly resolved. Common accounting standards take even longer.

Scenario 2: *An International Regulatory Regime*

- The average growth rate might be slightly lower or slightly higher than in the cooperative framework scenario, but economic variables swing widely. Exchange rates, interest rates, and inflation rates interact in a period of flux driven by unmanaged imbalances and cascading shocks.
- Some event—a severe earthquake in New York or Tokyo, a financial scandal in London's Eurobond market-triggers a general crisis in already stressed securities markets.
- The major market disruption creates the political will to establish an institutional regulatory regime at the international level, although none of today's international financial institutions, such as the World Bank, the IMF, or the Bank of International Settlements, or IOSCO, provide a completely adequate model.
- Galvanized by necessity, nations act rapidly and effectively to set up a new institution and enforce its decisions. U.S. Government and private sector representatives play a leading role in the negotiations.
- The U.S. Congress articulates a forceful policy of support for the new institution; at its instructions, the regulatory agency begins a rigorous assessment of markets-related laws, regulations, procedures, and policies to identify necessary changes and adaptations.
- The economic volatility does not inhibit technology-based investment, but actually accelerates change as the downswings facilitate the write-off of obsolete capital and the upswings support new investment—Schumpeter's model of "creative destruction.' A volatile early 1990s leads to higher growth and increasing integration of the global marketplace.

Scenario 3: Conflict and Disintegration

- A break occurs, as a result of a fundamental currency reevaluation crisis, that is severe enough to seriously erode confidence.
- Market discontinuity and economic downturn lead to increasing friction rather than cooperation. Slower recovery and a bear market result as there are vicious cycles of mounting damage.
- Market growth slows dramatically or reverses, and becomes more volatile. There is widespread loss of confidence. Lack of resources and motivation are almost insurmountable barriers to innovation.
- Efforts for international regulatory cooperation wither quickly.

IMPLICATIONS OF THE SCENARIOS

Effective response to a major securities market break will in the future require international as well as domestic actions. The central issue may be how to prevent a liquidity crisis from becoming a solvency crisis. This requires a better understanding than we have now of how large a market break could occur, how and why it might happen, and how to restore confidence afterward. In some markets, there may also be unexamined risks of overstraining key systems (e.g., clearing and settlement) in a roaring bull market. These uncertainties are probably as poorly understood as the risk of a major market break.

International securities markets may be moving toward a structure that is efficient, stable, and adequately well-regulated. This outcome is likely if there are no cataclysmic changes from today's situation, either generated internally (by behavior of the participants, or by failure of basic market structures) or generated by macroeconomic events outside of the markets. As internationalization continues, it will be important to deal with the perils of "regulatory arbitrage' if competition tempts participants to

move trades to the cheapest, least regulated markets.

It is increasingly likely that there will be a stratified or two-tier market structure. This could mean a divergence of interests between the large, wholesale, institutional, global transaction market and the domestic, retail market. What have been considered off-market activities (nonorganized, negotiated trading on proprietary systems, perhaps unregulated) may come to dominate global equity markets for the securities of at least 500 to 1,000 translational or global companies in the future.

The central problem will become one of systemic risk. Will there be a lender of last resort? Will the real risks devolve onto commercial banking systems, and national payment systems? How can volatility in the global market be kept from cascading onto domestic markets, where the consequences might be greater? How can the global economy be protected from excessive risk from the unregulated international securities market?

It is clear that the U.S. Congress will necessarily have a critical role to play with regard to the globalization of securities trading. At a minimum, Congress will be called on for oversight and guidance of U.S. regulatory bodies and executive agencies—the Securities and Exchange Commission, the Commodity Futures Trading Commission, the Federal Reserve Bank Board of Governors, and the Department of the Treasury, all of whom will be involved in framing the position of the United States in the evolution of an oversight, supervisory, or regulatory regime for international securities trading. It is not clear that these authorities now hold a common view of the interests of the United States with regard to either: a) the kinds of aggressive actions and innovation needed to compete in offering services and products to investors around the world, or b) the degree of risk inherent in international trading and the desirability of working with other nations to develop a stronger regulatory regime to reduce these risks.

In this critical situation, it may be necessary for the U.S. Congress to articulate a clear statement of the national interest for the guidance of regulators, as it did in 1934 with the Securities Exchange Act, and in 1975, with the Securities Exchange Act Amendments.

Chapter 2
Information Technology for Global Markets

Four forces have caused international securities trading to increase:

- *advances* in information technology-telecommunications and computers;
- the development of a global economy with multinational corporations needing both international communications and international sources of capital;
- the emergence of huge institutional investment funds needing cross-national diversification;
- regulatory changes, especially access deregulation that opened stock exchanges to foreign membership in many countries.

The technology for international securities trading is in place, and its capabilities will continue to increase. The emerging global communications infrastructure has evolved at three levels: 1) public and private communication networks using cable, microwave, and satellite transmission; 2) communications technology used by providers of market information services; and 3) specialized electronic securities trading systems.

THE EMERGING GLOBAL DATA COMMUNICATIONS INFRASTRUCTURE

International securities trading requires a system for efficient, rapid, and secure transmission of market data, transactions messages, and payment instructions. The infrastructure to do this has developed rapidly over the last 25 years and is continuing its turbulent development. Four technological trends contributed to this development:

- expanding computer capability and declining costs;
- digitization of data, and the resulting convergence of computer and telecommunications technologies;
- satellite communications development; and
- fiber optics development.

Improved computer performance and declining costs have resulted from improvements in basic computer technology, very large-scale integration (VLSI) technology[2] materials (e.g., use of gallium arsenide in production of chips), and computer architectures and software.[3] In 1960, it cost about $75 to do 1 million computer operations; in 1980 it cost 0.1 cent. By 1997 computer costs are expected to decrease still further. Computers make it possible to use telephone systems to transmit, store, and distribute electronically encoded information; they also control the switches that route information through a network.

"Digitizing' is the translation of information from traditional analog forms such as pictures, speech, or written/printed characters, into discrete binary-coded electronic signals for processing, storage, or transmittal. This makes possible the fusion of telecommunication and information-processing technologies. It allows man-to-machine communication not possible with a conventional telephone, and has prompted the carriers to build multi-media communications systems by combining facsimile, data, and video with voice transmittal capability.[4] Since the 1970s, AT&T, MCI, Sprint, and other communications carriers around the world have been upgrading their existing networks to high-capacity digital lines.

Fiber-optics Provides broad bandwidths that allow the transmission of high-speed video images as well as the capacity to move large volumes of data. Development of broadband integrated services digital networks (B-ISDN) can eventually provide efficient broadband interconnection for all communication services-transmitting voice, data, video, and text. ISDN is still in the early commercialization stage.

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[1]This section draws heavily on an earlier OTA report, U.S Congress, Office of Technology Assessment, *Critical connections: Communication for the Future,* OTA-CIT-407 *(Washington* DC: U.S. Government Printing Office, January 1990), especially ch. 3, "New Technologies and Changing Interdependencies in the Communication Infrastructure."

[2]VLSI allows the placement of over 100 logical operations on a single integrated circuit chip, a capability that has been doubling about every 18 months.

[3]U.S. Congress, OTA, op. cit., footnote 1, p. 46.

[4]U.S. Congress, OTA, op. cit., footnote 1. See also, Toshio Kosuge, "Telecommunications," in Peter Robinson, Karl P. Sauvant, and Vishwas P. Govitrikar (eds.), *Electronic Highways for World Trade* (Boulder, CO: Westview Press, 1990), pp. 223-238.

These developments shape all parts of the communications infrastructure: 1) switching or networking technology; 2) transmission technology; and 3) terminal technology.[5] Switching technology consists of computer hardware and software for routing messages and establishing a communication channel, and thus provides the "intelligent" part of the network. Manual switches and electronic analog switches are being replaced with digital switches. Some superfast packet switches[6] can now transmit hundreds of thousands of packets per second; by the late 1990s, with optical switching, even greater speeds will be practical. Software development will determine the rate of further improvements in cost/performance ratios.

With more powerful microprocessors, faster computing speeds, and larger memories it is now possible to put control functions for the network not only in the central switch, but also at. nodes throughout the system. This software-driven and software-defined communication infrastructure--"the intelligent network' 'encourages the introduction of new value-added services using modular software.

Keeping pace with advances in switching technology are advances in transmission technologies: optical fiber or coaxial cable and radio or broadcast technology, which includes satellite, microwave, and for local use, cellular broadcast communications. Customers usually do not know or care how the message was transmitted, but differences in these technologies result in major differences in the type of electronic signals that can be transmitted, the quality of transmission, the range of frequencies that can be used, the speed of transmission, the confidentiality and security of the transmission, and the cost.[7]

Terminal equipment is that found at the customer end of the network, usually telephones or computer terminals. Many of these terminals now contain information-processing capability.

Advances in global communications infrastructure technologies will probably accelerate. Nevertheless, there is some danger that network interdependence may slow innovation, because once users have invested in equipment conforming to a particular standard, they will be reluctant to purchase equipment that is incompatible even if it is otherwise superior.[8]

Public and Private Global Networks

Telecommunication services are provided in many countries by state-owned monopolies, that typically use INTELSAT and regional satellite and cable facilities to transmit international communications. In the United States, telecommunications have traditionally been provided by government-regulated private-sector fins. The United Kingdom, Japan, Hong Kong, and other countries are moving toward private or private-government systems.[9] A user in one country who wants to connect with an online database in another country most often does so with a modem (a device that allows digital signals from a computer to be transmitted over analog telephone lines), through a long-distance telephone connection. Telephone companies in different countries pass calls along through interconnections across different technologies-a message often travels through microwave, satellite, and cable transmission facilities.

Public telephone systems have encouraged the development of computer networks. A computer network is a collection of computers-whether minicomputers, mainframes, or supercomputers—that communicate with each other using common protocols, over transmission links that can be cable, satellite, or ordinary telephone lines. The networks may be local area networks (LANs) or long-distance networks (wide area networks, or WANs). They allow any computer in the network to access and use computer programs or data stored on any other network computer.

In the United States, the unbundling of some communication services and the divestiture of AT&T have encouraged business users to assemble their own networks. Deregulatory changes encourage the

[5]Kosuge, op. cit., footnote 4.

[6]Packet-switching systems divide user messages into many short blocks or packets that can be routed independently through numerous geographically distributed switching nodes.

[7]Greza Feketekuty, *'International Network Competition in Telecommunications, " in Robinson et al., op. cit., footnote 4, pp. 257-287.

[8]U.S. Congress, O'IA, op. cit., footnote 1, p. 43.

[9]R. Brian Woodrow, "Trade in Telecommunications and Data Services: A 'Constitutional' Analysis," in Robinson et al., op. cit., footnote 4, pp. 15-42.

unbundling of services by allowing users to separately purchase communication services or functions that were formerly available only as a single unit (the kind of end-to-end service once offered by the AT&T Bell System). Unbundling has encouraged the development of value-added services, and may be carried further by the development of "open network architecture" (ONA), which allows service providers to buy elemental network functions and reconfigure them to meet their particular needs. True ONA requires further advances in software development, and it may in the end not be acceptable to all users because it transfers to them the problems of network planning and management.[10]

A striking feature of modern global telecommunications is the development of private networks to serve the needs of individual translational enterprises. Once data are digital, corporate networks allow translational corporations to perform corporate functions in any country. Many large financial institutions like Citibank, American Express, Salomon Brothers, major stock exchanges, and other kinds of multinational corporations such as IBM, Digital Equipment Corp., Unisys, General Motors, and Britain's Imperial Chemical Industries, have developed their own networks, using satellite capacity and transmission lines leased from communication companies. IBM, for example, has "a global communications network that ties together its installations in 145 countries. There are also privately owned data networks that serve many corporations, such as Telenet Communications.

Digital data and the declining costs of telecommunications have resulted in a proliferation of information services providers, and in the development of closed user-group networks—i.e., SWIFT,[11] and Reuters Limited, the international news service.

Global networks are "making previously untradable services tradable." In the past, vendors could offer such services in the foreign market only through foreign affiliates.[12] Data services, which make use of international telecommunication circuits, are offered in many countries on a competitive and unregulated basis. International data services have normally used established monopoly transmission arrangements, but alternative distribution possibilities are opening up; for example, domestic satellite providers in one country may sell cross-border capacity or specialized services in bordering countries.

These developments are strongly resisted by the government-controlled public telephone and telegraph authorities (PTTs) in European and Third World countries. In some countries there are restrictive laws governing the use of communications technologies and systems to protect the state monopoly. Such legal, regulatory, and political barriers will be serious problems for some time, although there are strong indications that these barriers are breaking down because communication is essential to competition in today's world economy. Foreign competition tempts corporations to move their activities to other countries, where business conditions are more favorable.

Systems for the Transmission of Financial News and Market Data[13]

Communications between exchanges, over-the-counter markets, and clearing organizations in different countries, as well as communications between investors and their brokers in one country and markets in other countries, are for the most part handled through the same communication modes used by other business enterprises-i.e., leased transmission lines. A portion of these communications are handled by specialized information services vendors. The rapid, broad dissemination of market data is an essential element in making securities markets both efficient and fair. It is largely accomplished today by information services vendors using a variety of public communication modes.

Advances in technology and restructuring of its costs are having a profound effect on the structure of the information services industry. They may induce vendors to move into more specialized, value-added services. It is possible that systems being developed by the vendors for their own competitive reasons

[10]U.S. Congress, OTA, op. cit., footnote 1.

[11]SWIFT stands for Society for Worldwide Interbank Financial Telecommunications; it is a system allowing banks and other financial institutions, including brokerage fins, to exchange payment instruction or clearing messages.

[12]Karl P. Sauvant, "Services and Data Services: Introduction, " in Robinson et al., op. cit., footnote 4, pp. 3-15.

[13]This section draws on a contractor report prepared fo, OTA by Monica Roman, "Financial Information Services Vendors," August 1989.

could become the real international exchanges of tomorrow, as markets become more global, and computer-based trading and telecommunications become strategic advantages. Vendors are ahead of exchanges in preparing to field global electronic trading systems. However, vendors will have to work out interfaces with clearing and settlement and other systems (see ch. 5).

As early as 1850 there was a market for international financial information services; Paul Julius Reuter began using carrier pigeons to fly stock market quotations between Brussels and Aachen, Germany. The opening of the first underwater telegraph cable in 1851, connecting Dover and Calais, allowed Reuter to start delivering market data and financial news from London to Continental Europe. Because of high start-up and low marginal costs, vendors could be more efficient than user firms in information gathering (as is still true today, for the most part). The company Reuter founded, Reuters Holdings PLC, is now one of five companies that dominate the market for securities and futures market data (prices and quotations). The other four are Quotron Systems Inc., Automatic Data Processing Inc. (ADP), Telerate Inc., and Knight-Ridder Inc.[14] These five companies have approximately 400,000 terminals worldwide.[15]

The market for financial information can be divided into three broad categories: 1) general financial news,2) quotes and sale prices for exchange-traded instruments, and 3) quotes and prices for over-the-counter instruments. (The latter two are different markets because the sources of data are different, and because of differences in trading practices and trading technology.) Financial information vendors either gather general financial news themselves or select and carry reports from leading news organizations. Quotes (bids and offers), last-sale prices, and volume information-including those for most stocks, all commodity and financial futures, and all options-are generated by markets and sold to vendors. In foreign exchange (forex) and fixed-income (bond) markets, where there are no centralized marketplaces, price information is contributed by banks and securities firms to vendors.

Dow Jones & Co., Inc., is the leading provider of financial news in the United States, but Reuters has an edge over Dow Jones in financial news that affects forex and freed-income prices because of Reuters' vast international communications network. Other providers of on-line financial news include Knight-Ridder, Associated Press, McGraw-Hill Inc., Financial News Network, and Market News Service.

Quotron Systems has long dominated the market for U.S. stock market data, but ADP is a strong competitor. Outside the United States, the leader is Reuters (based in the United Kingdom), which recently entered the U.S. market for stock prices. In the past, Reuters supplied market data and news for foreign exchange, money market instruments and commodities in the United States, but not for equities. The internationalization of the securities markets has prompted foreign vendors such as Reuters and Telekurs of Switzerland to enter the U.S. market. The relative ease of acquiring and distributing price information for exchange-traded instruments has also attracted new competitors, including PC Quote Inc., and ILX Systems, a new venture backed by International Thomson Organization.

At the same time, U.S. companies such as Quotron and ADP have been expanding their operations overseas. The growing interrelationship among the equities, futures, freed-income, and foreign exchange markets has also led to diversification among vendors who traditionally specialized in one market. Telerate Inc., which holds a near monopoly in the market for U.S. Government securities prices, has entered the equities market through its recent acquisition of CMQ Communications Inc., the leading provider of stock quotes in Canada.

The relative ease with which any vendor can obtain data from the leading North American stock markets and many of their foreign counterparts has changed the market for centralized market trade data into a commodity market, in the sense of relatively undifferentiated bulk goods, competing in terms of price. It has increased the competition among vendors so much that in order to maintain their profit

[14]Quotron is now owned by Citicorp; Telerate is now owned by Dow Jones & Co., Inc., long Telerate's majority shareholder.

[15]In early 1989, 426,000 were reported, according to Eric Philo and Kenneth Ng, *Reuters Holdings PLC* (New York, NY: Goldman, Sachs & Co., February 1989), p. 5. There maybe some double counting here due to screens displaying more than one vendor's data, and there has probably been some contraction due to securities firms reducing their labor force.

margins and to generate as much revenue per terminal as possible, vendors are trying to add value to the product through new technology or some special feature. Third-party suppliers are now encouraged to offer historical information, research, analytics, and tailored news services through the terminals of financial information vendors such as Quotron, Reuters, and Bridge. The vendors typically keep for themselves 30 to 40 percent of the revenue generated by third-party products.[16]

The commodity or bulk nature of equities trade data has no parallel in the fried income and foreign exchange markets, which depend on data contributed by dealers, banks or other organizations. But the largest securities firms have announced plans (at the end of April 1990) for a joint venture to distribute government bond data 24 hours a day. This network would include all 844 primary bond dealers and four major interbroker dealers, who execute trades for all dealers,

Reuters created the market for real-time foreign exchange data in 1973, when it first put computer terminals on the desks of banks' traders and persuaded them to enter their rates into the system. Reuters does not pay banks for contributing their quotes to the service, but charges subscribers a flat monthly fee. While Reuters is the strongest in the forex market, Telerate is a competitive alternate service. This benefits forex traders by providing a back-up quotation system and by assuring competition for Reuters. It was difficult for Telerate to gain a place in forex until Reuters agreed to permit its subscribers to install "binco boxes" —bank in-house computers—that let them simultaneously update their rates on Reuters and Telerate. Without the binco boxes, Telerate's forex market coverage was often slightly behind because dealers posted their rates on Reuters first.[17]

The financial information business is still growing, and continues to attract aggressive competitors. This may eventually bring down prices for information services. In the meantime, both the integration of markets and technological change are creating upheaval and uncertainty among financial information vendors. As recently as 5 years ago, a dealer's desk would typically hold a Reuters terminal and perhaps one from Telerate. Because markets did not greatly affect one another, there was no need for most traders in one market to be watching other markets .18 The technology generally used was a dumb terminal connected to a vendor's host computer by dedicated telephone circuits. But as a number of niche services sprung up, traders ended up with more and more dedicated terminals on their desks. Many of these were later replaced with personal computers, to allow local storage and manipulation of price information. The video switch eliminated the clutter of terminals on traders' desks by allowing several screens to be controlled by a single keyboard, and became an important part of trading rooms in many countries.

Several other technological advances in the early and mid- 1980s also irrevocably changed the delivery of financial information. In addition to using dedicated telephone lines, vendors began exploring other alternatives, such as broadcasting data by FM sideband and satellite. In the United States, commodity market data vendors began in 1981 to use small, low-cost, receive-only satellite dishes which were particularly effective for one-way broadcast communications such as financial quotations. They are now used by vendors such as ADP, Dow Jones, Knight-Ridder, PC Quote, Reuters, and Telerate. Although dedicated interactive networks remain the primary delivery mechanism of financial information vendors, financial data accounts for about 63 percent of the approximately 114,000 data broadcasting satellite receiving sites in operation in 1989.[19]

It is often cheaper for securities firms to buy hardware off the shelf than it is for them to lease equipment from vendors. In addition, the securities firms want to be able to choose whether to use a dumb terminal, a PC, or a UNIX-based workstation, and they would like industry-standard hardware that can be integrated with the fins's other systems. In recognition of this, Reuters recently stopped manufacturing terminals and Quotron plans to sell off-the-

[16]Roman, op. cit., footnote 13.

[17]Other major reasons for Telerate's success in penetrating the foreign exchange market are said to include two foreign exchange brokers arranging for Telerate to carry their quotes, the availability of AP-Dow Jones foreign exchange news on Telerate, and the need for U.S. Merest rate data.

[18]However, fixed-income traders always have needed to follow the f$_{ore}$@ exchange markets since currency prices and interest rates are closely linked.

[19]Waters Information Services, "DataBroadcasting Marketplace," New York, NY, 1989.

shelf equipment. ADP is also moving to industry-standard hardware.

Vendors have begun to offer their data in digital, as well as analog form, to satisfy the demand for analytical tools. Receiving a stream of digital data (rather than a pictorial image on screen) gives users more flexibility in viewing, analyzing, and using data--e.g., the ability to create customized composite pages. This has created a dilemma for financial information vendors because neither exchanges or vendors are sure how best to price digital information.

This has become a highly controversial issue: who owns the data, who has access rights to it, who can reformat and resell it, and when does reformatting constitute value-added service? The fees paid by customers have in the past been based on the number of terminals or display devices authorized to receive information in analog form. Resolving the data-pricing issue will become more complicated and more difficult as international data services become even more fiercely competitive.

Electronic Trading Systems

The commodity nature of data and the diminished role of information vendors as systems providers are causing vendors to move toward offering transactional services, using automated execution systems, Citicorp and McGraw-Hill failed with the GEMCO electronic commodity trading system a few years ago. The World Energy Exchange and the International Futures Exchange of Bermuda (INTEX) both failed to convert open outcry traders to screen-based trading in the futures market. But these and other failed ventures in automated trading have not deterred Reuters, which in 1987 bought Instinct Corp., a registered broker/dealer offering an electronic securities trading system that began in the 1970s. Instinct is now executing trades of an average of 13 million shares a day (including both NYSE-listed and over-the-counter stocks), a volume still tiny by comparison with the approximately 273 million shares traded by the New York Stock Exchange and NASDAQ together on an average day. Reuters hopes, however, that exchanges will begin using Instinct or another Reuters-developed system during the hours when their trading floors are closed.

Reuters launched the Monitor Dealing Service in 1981 to allow forex traders to negotiate transactions over their terminals instead of telephones. This system has been successful, perhaps in part because of its built-in audit trail. In 1989, between 30 and 40 percent of the $640 billion traded each day in the interbank foreign exchange market took place on the Monitor Dealing Service.[20]

Telerate did not until recently offer forex dealers a transactional system such as Reuters' Monitor Dealing Service, but it has now launched a conversational, or on-line, dealing system through a joint venture with AT&T, known as The Trading Service. This service allows dealers to have multiple "conversations, " that is, talk to several dealers at once, unlike the Monitor Dealing Service.

Reuters is taking another step forward in automated trading with an enhanced version of the Monitor Dealing Service and a centralized order database facility. While the original Dealing Service facilitates one-on-one negotiation between two traders, Dealing 2000 will emulate an auction market where bids and offers from multiple parties are exposed. This is designed to replace "blind" brokers, who act as middlemen in foreign exchange trading. The system will display the aggregate size of all bids and offers at each price, but will not disclose the identities of the dealers participating.

Quotron has not moved as rapidly as Reuters, but reportedly has electronic execution facilities in development for both foreign exchange and fixed-income markets. It has been aggressively marketing Currency Trader, which allows corporate customers of Citicorp to automatically execute foreign exchange trades of $500,000 or less.

Whether the foreign exchange market will accept the automated trading Reuters is offering through Dealing 2000 is still uncertain, but the technology used in that system was adapted for GLOBEX, a futures trading system being jointly developed by the Chicago Mercantile Exchange (CME) and Reuters.

CME is one of two Chicago futures exchanges trying to develop systems for ' '24-hour trading,' or the execution of transactions at a geographical distance or outside of trading hours of local markets, CME and the Chicago Board of Trade (CBOT) first

[20]Bank of International Settlement's statistics.

separately and now jointly, are taking the calculated risk that their own automated system--if successful--may eventually put out of business their traditional form of market, the "open outcry" or pit auction system. They may recognize the likelihood that international markets will eventually be fully automated and free of the constraints of time and distance, and know that if they do not take the lead, others outside the industry will do so.

This has come about because foreign futures exchanges began to compete directly with U.S. futures exchanges. There are financial centers in Auckland, London, Paris, Frankfurt, Zurich, Hong Kong, Tokyo, Singapore, and Sydney which now operate futures and options exchanges as well as stock exchanges. Because they began to offer their own local versions of U.S. contracts, investment firms were able to offer these products to customers without regard to trading hours in the United States. This trend drove the threatened exchanges to consider accommodating 24-hour trading.[21]

The first attempts to meet this competition took the form of mutual offset agreements. such as the one between The Chicago Mercantile Exchange (CME) and the Singapore International Monetary Exchange (SIMEX) for Eurodollar and foreign currency contracts. "Offset' (in this context) means that one can open a position in one country and close it in another, and pay only one brokerage fee. CME/SIMEX was for a time one of the most successful of the many offset agreements attempted by exchanges, although only marginally so.

Another response was to lengthen trading hours; for example, CBOT began both an earlier opening (7:20 a.m.) and an evening session,

In September of 1987, the CME announced that it would develop-together with Reuters-an electronic futures and futures-options trading network, the Post (Pre) Market Trade System, later renamed GLOBEX for "global exchange. " CME members accepted the idea, with the assurance that GLOBEX was strictly an off-hours system, and in return for receiving a portion of the revenues generated by GLOBEX.[22] On June 20, 1988 in London, England. the CME and Reuters Holdings PLC reached an agreement to adapt the new Dealing 2000 transaction system for the purpose. The network will operate only after normal CME hours of trading and will link investors in North America, Asia and Europe.

GLOBEX, when it opens in mid-1990, will be an interactive data communications network linking individual user terminals with a central computer at Reuters. For entry of orders, trader terminals consisting of keyboard, monitor. and printer will be located in the offices clearing members and individual members (including overseas members) who are qualified and backed by a clearing member. (See ch. 5 for an explanation of the responsibility of clearing members.) Administrative terminals, in the offices of clearing members only. would also receive confirmations of all trades resulting from orders entered into associated trader terminals. The terminals will display the 10 best bid and 10 best offer prices, along with the quantity bid or offered; the last sale price, and other data.

Reuters will provide the computer hardware and software and also make available other Reuters services (e.g., news and cash market quotations) through GLOBEX terminals. The exchange will determine the instruments. and the rules and procedures for trading, and will provide clearing facilities. auditing, compliance, and market surveillance, Despite Reuters being a British company. the joint effort is largely seen as a globally strategic move for the preservation and enlargement of the U.S. position in commodities and financial futures trading, It may also be a harbinger of global .● floor-less* . trading in the future. It is significant, however. that Reuters has recognized the value of partnership with an organized and regulated marketplace, the futures exchange.

MATIF (the French financial futures exchange) has already agreed to use GLOBEX for after-hours trading, and exchanges in other countries are also

[21]Karen Pierog, "How Technology Is Tackling 24-hour Global Markets,'' *Futures*, June 1989, p. 68.

[22]The rights conferred by membership in CME, or "a seat,'' are to be divided into access to pit trading and access to trading through GLOBEX. Members will have the right to "lease" one of these rights; e.g., a pit trader can lease to someone else, presumably overseas. his access to GLOBEX, thus generating additional income. If GLOBEX (or other electronic trading systems) comes to dominate futures trading, the increase in value of their access to it will presumably compensate the pit members for this competition.

expected to participate, when various regulatory issues are worked out.[23]

In 1989 the CBOT unveiled plans for another off-hours global system, "AURORA." While the GLOBEX system is an automatic order matching system, AURORA attempts to emulate the traders in the pit with icons (symbols) that allow traders to select the counterparts to their trade. The CBOT claimed that AURORA will capture "all of the economic advantages of the auction market combined with the advantage of the ability to conduct trading from any location in the world."[24] One interesting feature of both AURORA and GLOBEX is that they adjust the timing of all bids and offers to equalize for distance; i.e., the speed with which they are posted depends on the transmission time for the most distant trader active at that time.

AURORA also tabulates bids and offers by contract month, reports who traded how much with whom, and keeps a running tabulation of his positions for the trader. It automatically sends matched trades through for clearing by the Board of Trade Clearing Corp. The system uses Tandem mainframe computers, Texas Instrument artificial intelligence components, and Apple computer graphics.

There were complaints from the financial futures community about the need to install two terminals, and in May 1990, immediately after the Japanese Ministry of Finance announced that it would permit Japanese firms to subscribe to GLOBEX, CME and CBOT announced they would merge the GLOBEX and AURORA development efforts. The details of this agreement are not yet negotiated. AURORA may survive as an optional user interface. The operation of GLOBEX may be delayed until mid-1991.

The London International Financial Futures Exchange developed an electronic trading system, Automated Pit Trading System or AFT, which like the AURORA system, emulates open-outcry trading. APT is now trading about 4,000 orders a day, but is growing, and LIFFE may soon list thinly traded contracts only on APTS. The system is used now to extend trading hours to cover the European trading day, but it is not a 24-hour system and will not be available outside the United Kingdom. LIFFE says that the cost of high-speed communications links for worldwide trading is prohibitively high.[25] However, this could change if the LIFFE system proves popular.

There are also automated trading systems at the Irish Futures and Options Exchange, the London Futures and Options Exchange, the New Zealand Futures and Options Exchange, the Sydney Futures Exchange, the Tokyo Grain Exchange, and the Tokyo International Financial Futures Exchange. These trading systems, like those in stock markets, were not designed for 24-hour trading, but possibly could be adapted. Some of them were specifically designed for trading after exchange-hours.

Reuters' success in recruiting exchanges to use its automated trading facilities is not limited to the futures market. The Chicago Board Options Exchange and the Cincinnati Stock Exchange have agreed to form a joint venture with Reuters and Instinct to create a worldwide system for entering, routing, and executing options listed on the CBOE and equities traded by the Cincinnati Stock Exchange, the only fully automated securities exchange in the United States.

The New York Stock Exchange recently announced its intention to study the feasibility of off-board 24-hour trading systems. The over-the-counter dealers represented by the National Association of Securities Dealers (NASD), plan to extend their automated quotation system, NASDAQ, to the United Kingdom, allowing NASD members both in the United Kingdom and in the United States to make markets in several hundred issues during normal U.K. trading hours, and to use NASDAQ services during the-se hours. If approved by the Securities and Exchange Commission, the system will be open from 4 a.m. to 4 p.m. eastern time *(9*

[23] At one point, it was thought that the Sydney Futures Exchange and the London International Financial Futures Exchange (LIFFE) had already signed agreements or were ready to do so. The agreements with LIFFE were reported to have broken down because of a demand by CME for "exclusivity," i.e., that LIFFE not join other systems and not list contracts that would compete with CME products. David Burton, Chairman of LIFFE, as quoted in "Unraveling a Technology Tangle," *Futures adoptions, special* supplement to *Euromoney*, July 1, 1989.

[24] "AURORA—EOS," promotional literature distributed by CBOT.

[25] "Europe Forges Ahead in the Technology Race," *Futures adoptions, Special* Supplement to *Euromoney*, July 1, 1989, p. 2.

a.m. to 9 p.m. London time).[26] NASD dealers will have a choice, on a security-by-security basis, of being a U.S. market-maker, a European market-maker, or an international market-maker, and their workstation capability will be defined accordingly. All NASDAQ market services except for its automated small order execution system (SOES) will be available internationally. NASDAQ already shares quotes with both the London and Singapore stock exchanges, for 700 and 35 cross-listed securities, respectively. Automatic intercontinental execution and trade confirmation will now be possible over the link.

NASD will also introduce, in 1990, an electronic system for global trading of unregistered (privately issued) foreign and domestic debt and equity securities. The PORTAL[27] system will allow users to dial up a special NASD host computer for both primary and secondary market trading; participants will also be able to use their NASDAQ workstation for secondary trading. All sales will be negotiated (investors will get quotations, last-sale price, and volume details on screen, in major currencies but will work with a dealer). PORTAL will lock in transactions and allow settlement by electronic book entry through the International Securities Clearing Corp. [See figure 2-l.]

TECHNOLOGICAL BARRIERS TO 24-HOUR TRADING

Technology risks, such as communications outages, are an important factor in 24-hour trading. Line outage and other contingency plans must be coordinated over several countries, different languages, staggered time zones and varying numbers of telephone companies. For example, to maintain a dedicated circuit from New York to Tokyo can involve from five to seven telecommunications companies. This makes contingency plans difficult to formulate. Global operations require competent and experienced management at all levels around the clock.

Although technology costs are declining relative to capabilities and services offered, at the same time development costs, operational costs, and maintenance costs of automation have risen. Automated systems rapidly become obsolete as new technologies develop; they require sophisticated management information systems and technical infrastructures, with high re-engineering costs. Regulatory rules often influence or even dictate technologies that must be used. These rules in many cases have had a positive impact on the industry. For example, The New York Stock Exchange's rule number 387 requires all member firms to confirm their trades with institutional clients through the Depository Trust Co.'s automated Institutional Delivery system or its equivalent to be eligible for the delivery v. payment function--i.e., to pay for securities only when actually received (by book entry) and not before. But other regulatory, legislative, and political processes inhibit automation, including disputes over regulatory jurisdiction and foreign legislation prohibiting dissemination of some data. Resistance to change, respect for tradition, and social customs—which may reflect deeply rooted institutional relationships, strong economic interests, or cherished values-also significantly impede automation in some foreign countries.

THE PROBLEM OF STANDARDS

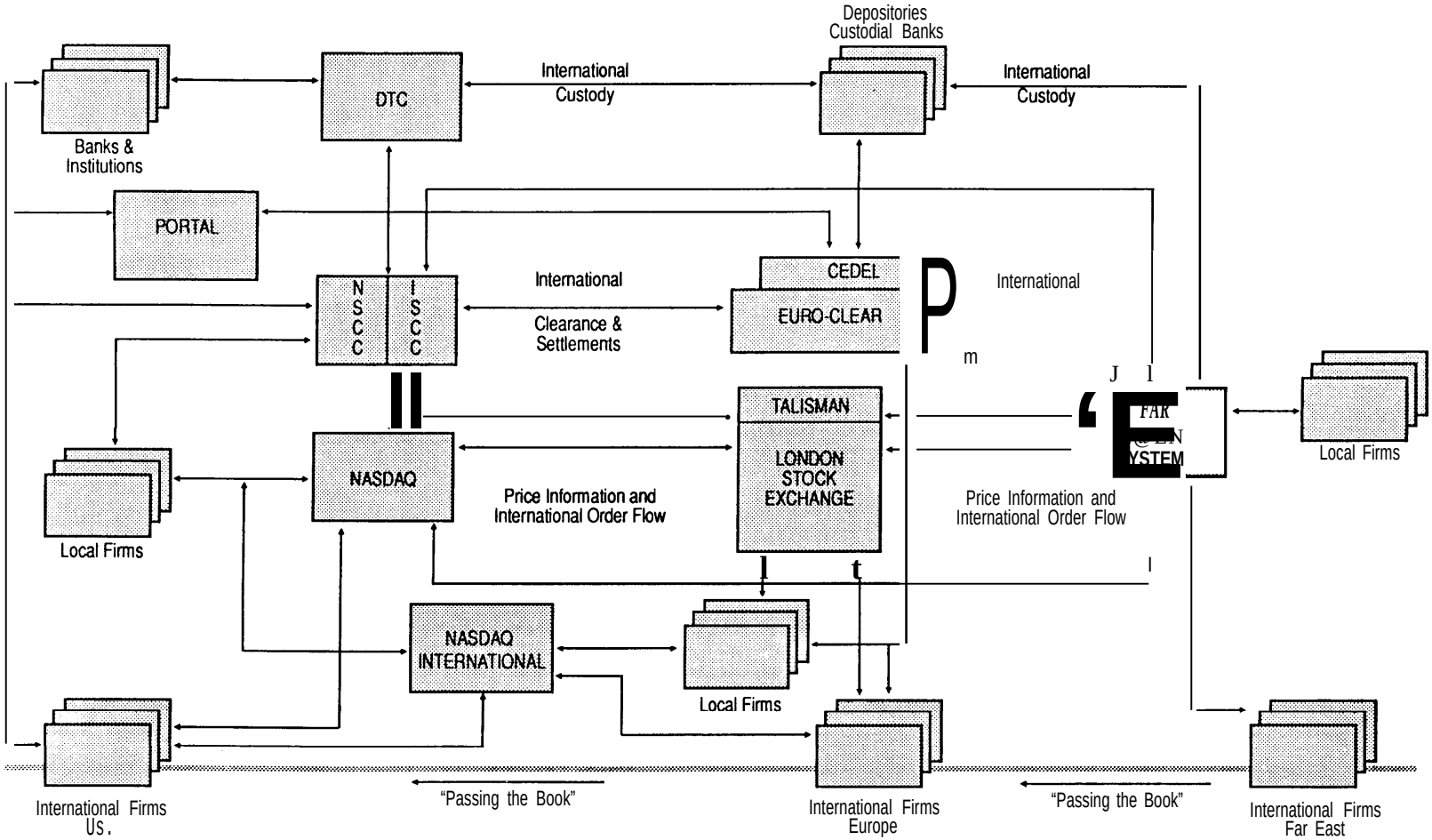
Electronic 24-hour/global trading has several problems yet to be solved. One is the issue of international regulation to control global market and credit risk and to coordinate post-trade procedures. Another is the lack of global data standards.[28] Two levels of standards are important, those that affect communication of data in general, and those that particularly affect securities trading. The needs for

[26] There will be two new kinds of market-makers on NASDAQ after this system opens—European-only market-makers from 4 a.m. to noon eastern time and international market-makers from 4 a.m. to 4 p.m., in addition to existing U. S.-only market-makers. Market-makers will make the choice on a security-by-security and terminal-by-ter——l basis. *NASD Executive Digest,* June 1989.

[27] PORTAL stands for Private Offerings, Resales, and Trading through Automated Linkages.

[28] Standards are general models, specifications or criteria for technology, designed to allow technological applications coming from different producers to be interoperable. Interoperability allows users to mix and match components of, for example, communication systems and also makes it easier for them to migrate to a new system, phasing out older equipment gradually. Standards may be set by custom or general consent, by market forces, or more formally by authority. In the United States, standards—when they exist-are set by industry, often through professional associations. Standards-setting in the United States is becoming more politicized, especially in communications standards, since the Bell System no longer sets standards de facto. See U.S. Congress, OTA, op. cit., footnote 1, pp. 297-299.

Figure 2-1--Overview of International Trading Through NASD



SOURCE: National Association of Securities Dealers.

global standards range from technical standards and common languages to bank holidays.[29]

International standards are becoming increasingly important for 24-hour trading; these problems are not new to the general demands of international commerce. The need for standards has arisen in many other fields, from railroad and air transportation to early telegraph, telephone, and most recently, computer-to-computer, facsimile, and digital voice communications. In each of these cases, countries developed their own systems, often independently of one another, often with little concern for future international standardization or harmonization with other countries' systems.

As needs for international commerce emerged, countries typically moved to develop a set of compatible international standards. This often led to establishing an international organization to facilitate or coordinate worldwide standards-making. Some of these, like the International Organization for Standards (ISO), became permanent. The same pattern of evolution is happening today in the financial securities field. A half dozen international bodies are currently studying some aspect of standards-setting for international trading or regulation of these markets.

Standards that affect the financial trading industry, including markets, clearinghouses, brokerage and banking industries, information service industry, etc., are established in many different forums. The U.S. subgroup of ISO and the American National Standards Institute set industrial standards for information processing and other technical subjects. The principal international bodies include ISO, which is the most influential; the Comite Consultatif International Telegraphique et Telephon (CCITT); and recently several new international bodies, composed of representatives of the private sector and governments, have also been formed. Standards developed by these organizations are formulated by consensus (75 percent of the IS0 body must approve a proposed standard prior to acceptance and promulgation). After a standard is formulated, its adoption by member firms is still voluntary.

Technology standards are critical in terms of "the weakest link. ' That is, if the technical performance or capacity of a market participant, or clearing member, is below those of the market or clearinghouse, then the benefit of the market's or clearinghouse's technology is compromised. There is no minimum standard required today for the technology a broker or futures commission merchant must have, either internationally or domestically, in order to offer its clients the best access to price information or to clearing services.

Developing compatible standards for trading financial instruments is as important to international commerce as having the same gauge railroad tracks in neighboring countries. The standards now being focused on by national and international bodies eventually will provide the infrastructure for large-scale global trading. Until then, obstacles, risks, and inefficiencies will remain in international trading.

Two types of standards[30] are important for both domestic and international trading of securities, and particularly for clearing, settlement, and payments systems. The first type is technical standards, the second includes standards governing details of the process by which trading takes place and the infrastructure that supports trading.

Technical standards would include those that apply to international communications in general—e.g., international digital network standards for worldwide voice, data, and graphics services. Historically, there have generally been two sets of communications standards, the CCITT standards of the International Telecommunications Union followed in most of the world, and U.S. standards that evolved more or less de facto through the dominance of the Bell System in the United States.[31] U.S.

[29] Differing bank holidays is a serious problem; because, when banks are closed securities transactions cannot be settled, and more importantly credit cannot be provided for market participants, to assure continued liquidity. Consider the consequences if the October 1987 market crash had occurred 1 week earlier, on Columbus Day. U.S. exchanges were open but U.S. banks were closed, and critically important credit would not have been available to bolster market liquidity.

[30] Although only two categories of standards are used here, other treatments might use four categories: process, risk assessment, infrastructure, and procedures. Some of the examples cited in this section do not lend themselves to the adoption of uniform standards, but rather needed improvements can be affected through harmonization. In some countries, for example, it is illegal to disclose or transmit overseas information concerning a person's financial position. As another example, there are also problems in assessing risks that stem from different accounting practices in various countries.

[31] Ithiel de Sola Pool, "Competition and Universal Service," in Harry Shooshan (cd.), *Disconnecting Bell, The Impact of the AT&T Divestiture (New York, NY:* Pergamon Press, 1984), p. 119.

equipment suppliers have increasingly had to adopt standards set internationally, in order to compete in world markets.[32] Two major sets of standards, for ISDN and for open systems interconnection, are currently being debated in various international meetings and consultations. With the planned integration of the European Community (EC) market in 1992 (ch. 4) there are even stronger reasons for U.S. industry to coordinate its standards with those of the rest of the world. The EC established a European Telecommunications Standards Institute in 1988 for standards development.[33] A continuing industry-wide effort is needed to coordinate U.S. standards with evolving global standards.

Some basic technical standards are essential for financial communications. One example is a universal standard for international communications message formats that facilitates instantaneous identification of the exact details of a trading., the nation and firm originating the trade, the number of shares or contracts being traded, the price, and the identity of the transactors.[34] Other examples include technical details of how screen-based trading should occur globally and the minimum level of technology to be used by all participants.

Procedural standards are even more important. They apply to operational aspects of trading, clearing, and settlement; e.g., such as the method for trade matching, number of days to settle a trade, use of a depository for holding equities, use of a recognized numbering system for identifying financial instruments and transactions, formats for data transmission, the method of payment, etc. Infrastructure standards refer to the method of regulation, mechanisms to protect the clearinghouse against the financial failure of a clearing member, existence of funds to protect customers of a failing broker or futures commission merchant, bankruptcy laws to adjudicate the disposition of customer assets if a broker fails, credit processes at banks, clearinghouse guarantees, etc.

These standards govern the specific dimensions of investor-protection regulation and fiscal responsibility. Prospectus standards (disclosure of information about a new issue), accounting standards, and ownership standards[35] are especially important in international trading.

Neither technical standardization nor harmonization of regulations will come easily, cheaply, or swiftly. Some markets will have to make costly changes, while others will need more modest changes. Even modest changes can prove very difficult and time-consuming to implement because of the complexity of effecting change in established procedures, and because any change can challenge vested interests.[36] Some changes may be implemented by the private sector alone, but others will require government assistance, in the form of changes to regulation or legislation.

Government involvement in standards-setting, in the United States, is controversial. There is a long history of resistance to it from within the government as well as by industry. But business firms have little experience, and in many cases little interest, in protracted international negotiations. At a minimum, encouragement, facilitation, and leadership from government will be needed. More active government participation in developing international standards related to securities trading will probably be critical, because other governments are deeply involved in the standards-making process.

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[32] U.S. Congress, OTA, op. cit., footnote 1, pp. 295-300. For example, computer vendors and telecommunication carriers had to adopt tie CCITT X.400 standard for electronic mail. Also, the Federal Communications Commission has tried to speed up the U.S. standards-setting process for high definition television because standards are being developed and adopted in other countries.

[33] This institute is financed by all of the European PTTs and major telecommunications suppliers.

[34] Today, each country has its own system for identifying trade data information, so there is little compatibility among these systems internationally. Recommendations have been made by the Group of Thirty to adoptISO standard 6166, which provides a uniform structure for the International Securities Identification Number, and standard 7775, which deals with the uniform structure of securities messages, i.e., the message types. However, no country has to date implemented either standard. Additional inter-depository/clearing system message standards are being developed.

[35] Countries differ as to the definition of a "share" and what rights are included—e.g., shareholder voting rights.

[36] This has been the experience of the U.S. Task Force of the Group of Thirty, attempting to b@ about change in clearing and settlement processes, as discussed inch. 5, according to OTA staff discussions with Gerard Lynch, a Managing Director at Morgan Stanley, Inc. and head of the U.S. Working Group of the Group of Thirty, December 1989.

Chapter 3
The Extent of International Securities Trading

Global trading of securities is rapidly developing.[1] The foreign exchange (currency) and government bond markets are already thoroughly internationalized. Most international securities trading now involves debt securities rather than equities. To what extent this globalization will also apply to corporate equities, and how quickly, is somewhat uncertain, but by most measures it is well underway. There is already growing cross-border trade in the shares of many giant multinational companies. Most exchanges have opened their membership to foreigners. Some exchanges are already offering derivative products (e.g., stock-index futures contracts) based on stocks that are listed and traded in the markets of a different nation.

Securities markets are already globally linked in still another sense. Because of the growing interdependence of national economies around the world, their securities markets tend to move in parallel, especially in times of stress.[2] This parallel movement was illustrated in the crash of October 19-20, 1987, and again on October 13, 1989, when markets around the world saw a sharp decline (figure 3-l). In the first 3 months of 1990, when the Japanese Nikkei Index lost about 25 percent of its value in a series of spasmodic declines, it was widely feared that other markets would also drop. This did not happen, apparently because there were specific domestic reasons for the Japanese market's behavior, but there were definite ripple effects in U.S. and European markets, and it is not yet certain that their relative immunity to Japan's problems will last.

The globalization of securities markets raises an important question for U.S. policymakers: What actions need be taken to assure the position of the United States as a world center for securities trading and other financial services? The claim is often made that U.S. markets are the best in the world in terms of liquidity, efficiency, and fairness, but they have increasingly strong competition. In 1980 the United States accounted for 55 percent of world stock market capitalization, but that stood at 35 percent in 1990, having dropped for a time to a low of 32 percent[3] (see figure 3-2). The Tokyo Stock Exchange was the world's largest from 1987 to 1989, but then fell back to 34 percent in 1990 as a result of large declines in market prices. Japan's first rank in 1987 to 1989 raised fears in some quarters that the United States is falling behind in global securities trading. Market capitalization alone is not a good measure of market strength, or of trading performance; it is affected by many other economic conditions.[4] But rightly or wrongly, the performance and vigor of securities markets is often taken as an indicator of the health of an economy, and thus has significant political implications.

Additional risk to U.S. investors is also a public policy concern. As the globalization of securities markets continues, Congress will need to address several questions:

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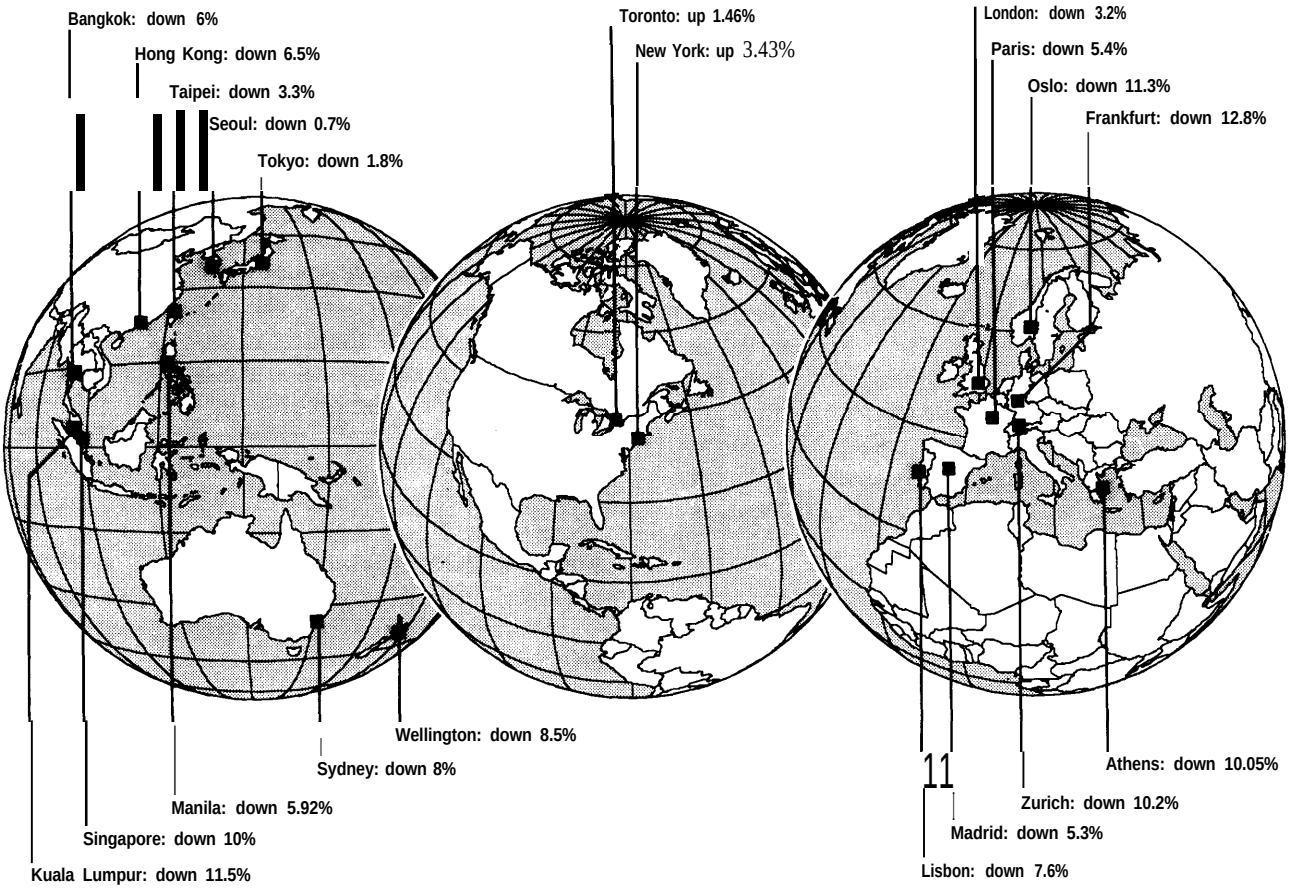
[1] This chapter draws on several *OTA* contractor reports, including: Eric K. Clemens, Principal Investigator, with Stephen P. Broad, Ravi Venkateswaran, and Bruce W. Weber, "Globalization of Securities Markets' (Philadelphia, PA: Wharton School, University of Pennsylvania, July 1989); Peter Schwartz, "Scenarios for Regulation of International Securities Trading" (San Francisco, CA: Global Business Network, Nov. 3, 1990); Manning Gilbert Warren III, "Securities Regulation in the European Communities" (Tuscaloosa, AL: University of Alabama Law School, August 1989); KPMG Peat Marwick, "The Competitive Position of Commercial Banks in the Global Securities Markets: An International Study," 1989.

[2] For example, in most markets equity prices rose from August 1982 until September 1987. During the 6-day trading period from the end of Oct. 9 through Oct. 19,1987 (Oct. 20 for Japan), the Dow Jones Industrial Average declined by 30 percent, the NASDAQ Composite Index by 18 percent, the ISE Financial Times 100 Index by 13 percent, and the Tokyo Stock Exchange Nikkei 225 Index by 17 percent. NASD Special Committee of the Regulatory Review Task Force, "Quality of Markets," p. 17. See also, Federal Reserve Bank of New York, "The International Transmission of Stock," GeorgeM. vonFurstenberg and Bang Nam Jeon, "International Stock Price Movements: Links and Messages," *Brookings Papers on Economic Activity, No.* 1 (Washington, DC: Brookings Institution, 1989), p. 165; and "Price Disruption in October 1987," and "InternationalLink ages Among Equities Markets," *Quarterly Review, vol. 13, No. 2, Summer 1988.*

[3] Total world capitalization was about $9.4 trillion. Japanese share of world capitalization rose from 17 percent in 1980 to 45 percent in 1989. Data supplied to OTA by International Finance Corp. and the New York Stock Exchange. Figures for the end of 1988 were even more striking: world total capitalization was $9 trillion, United States 30 percent, Japan 42 percent. The 1990 figure for Japan is from the *Financial Times, March* 1990, p. 40.

[4] In the 1980s the United States had a recession, and the value of the currency fell, which affected the rate of capitalization. Japanese markets expanded because of the success of Japanese industry, Japan's capital surplus, its high savings rate, and the Japanese Government's use of the stock market as an instrument of economic policy in privatizing government-owned industry and restructuring financial services. Three national companies have been privatized: Japan Tobacco, Japan National Railways, Nippon Telephone& Telegraph.

Figure 3-l—Evidence of the World's Markets on Oct. 13,1989



SOURCE: *Washington* Post, Oct.17, 1989.

- What additional risks to U.S. financial systems might result? How can unacceptable risks be avoided?
- Will U.S. investors be adequately protected in global investing?
- How can the United States encourage the development of worldwide cooperative or regulatory mechanisms for trading in international securities?

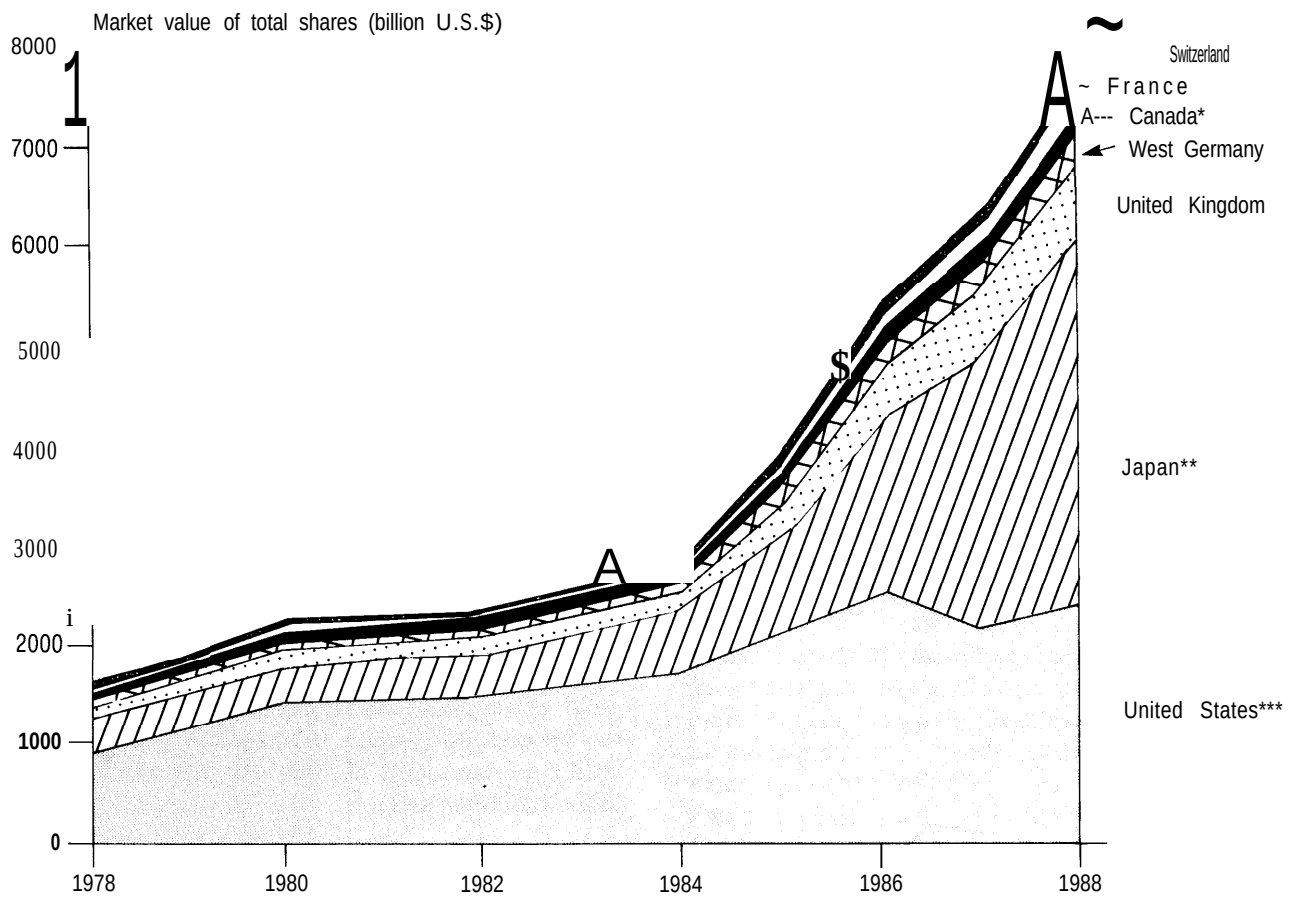
Alan Greenspan, Chairman of the Board of Governors of the Federal Reserve System, recently told a congressional committee that the delays and uncertainties of trade execution, clearing, and settlement across national boundaries are serious problems: "It is the float that creates systemic risk."[5] He called for harmonization of national regulations and standards to eliminate artificial reasons to favor one market over others.

These risks may grow worse as globalization continues. Grant L. Reuben, an international banking expert, warns, ". . . the enormous volume and speed of transactions and the cross-border integration and interdependence of institutions and markets have magnified both the impact and speed that a problem in one national market has on others."[6]

50A testimony on June 14, 1989, in Hearings on Internationalization of Securities Trading, before the Subcommittee on Securities, Senate *Committee* on Banking, Housing, and Urban Affairs. Systemic risk is a condition that threatens the stability of the national financial system or payments system; for example, the catastrophic failure of a major financial institution accompanied by cascading failures as the institutions on the opposite side of that institution's transactions in turn are unable to meet their obligations, causing their own creditors to be unable to pay still others, etc.

[6]Grant L. Reuben, Deputy Chairman of the Bank of Montreal, ''Implications of Globalization for Regulation and Safety,' remarks at the Financial Globalization Conference, Chicago, IL, Nov. 2, 1989.

Figure 3-2—Market Capitalization of World's Stock Markets



Toronto Stock **Exchange**
● **TSE** only
● ****NYSE**

SOURCE: Internationalization of the Securities Markets 1988. Federation of German Stock Exchanges Annual Report, 1988.

TRENDS DRIVING GLOBALIZATION

Institutional investors, and to a lesser degree individual investors, trade in the markets of more than one country in order to find higher rates of return at acceptable risk, to diversify their portfolios, or to take advantage of other hedging techniques. The forces encouraging the rapid expansion of international securities trading are:

. the declining costs of international communications;

- increasing world trade and interdependence among national economies;
- concentration of capital in countries with relatively limited opportunities for domestic investment, especially Japan;
- the necessity in some countries, especially the United States, of financing government debt (this led the United States, for example, to encourage foreign trade in Treasury bonds);
- the growth of large institutional funds such as mutual funds and private and government pension plans, with a need to diversify their investments and hedge their risks;

- the changes in regulation of financial services in many countries, opening their markets to foreign participants; and
- the increase in international public offerings, especially as a result of privatization of government-owned industries in several countries.

Communications

The growing availability of telecommunications and computers reinforces the effects of these trends. Not only is information technology necessary for global trading of securities; it stimulates all kinds of trade among nations, familiarizingg potential investors with many translational corporations and their products and services. This reduces one historical barrier to trading of corporate securities outside of their home market-the lack of knowledge about underlying values on the part of foreign investors.

Telecommunications brings increased access to economic, industrial, political, and social information, both through the public media and through specialized information services. This is not an unmixed benefit. The speed with which information is transmitted between markets can have an adverse effect, if it forces decisionmaking at apace too rapid for the exercise of discretion. Communication of trade data is, moreover, not sufficient for disclosure of risk in securities trading. Basic data on many European, Asian, and South American corporations are not available, and there is little trans-border financial research and analysis available to investors.

In the early morning of October 19, 1987, hours before the New York markets opened, U.S. portfolio managers who anticipated a sharp drop in value of equities tier the previous week's slide, began selling shares in London. One mutual fund was said to have unloaded $95 million of equities,[7] illustrating the ease with which both information and capital can flow across national boundaries.

Interdependence

World trade patterns in goods and services encourage world trade in securities. Not only do multinational corporations become familiar in many countries, but they need to raise capital in the local currency for plant, property, equipment, and daily operating expenses. International trading of corporate securities grew sharply in the 1970s and 1980s. After the 1987 market crash, there was a temporary reduction in international trading. Most agree that international trading incorporate equities is likely to be limited to stocks of "world class" corporations. There are already at least 500 corporations whose issues trade internationally.

It is possible that a two-tier market will develop, with trading in these securities conducted in one to three world markets, with participants passing their trading books from London to New York to Tokyo, while other securities are traded only in their local market or time zone. The implications of such a two-tier market are uncertain. Already European securities market planners and developers are debating whether there should be different systems, different procedures, and different rules for retail customers and international/professional traders.[8] In the United States, the Securities and Exchange Commission (SEC) has approved a new rule (144a, Apr. 19, 1990) that will allow institutional investors greater freedom in trading private placement securities by exempting many such securities from registration requirements if they are not available to individual investors.

Capital Imbalances

Another force driving the globalization of securities trading is that some countries have accumulated "excess capital' not matched by productive domestic investment opportunities. That money is available for investment through the securities markets of other countries. One example is Japan, with its high volume of exports. European investors also find that their domestic markets cannot meet their investment demands.[9]

International imbalances lead to a flow of capital across national boundaries that some economists view with concern. In the United States, the growing Federal deficit has been financed to a significant degree by foreign purchases of Treasury bonds.

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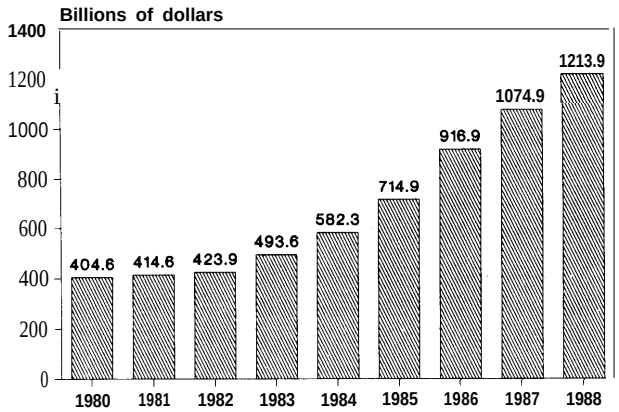
[7]Leo Melamed, "ThePainful Truth,'' *The InternationalEconomy,* July/August 1988, p. 59. Melamed Chairman of the Executive COmmittee of the Chicago Mercantile Exchange, This figure was put at $90 million in the Report of the Presidential Task Force on Market Mechanisms (The Brady Commission), January 1988, p. 30. Some OTA informants and advisors believe it was much larger.

[8]OTA discussions with officials of the International Stock Exchange in London, March 1990.

[9]Roy C. Smith, "International Stock Market Transactions," New *York' s Financial Markets: The Challenge of Globalization,* Thierry Noyelle *(cd.)* (Boulder, CO: Westview Press, 1989), p. 8.

There is concern that we have become dependent on an inflow of foreign capital that could be cut off, or could undergo sharp price increases (see figure 3-3). But U.S. policy with regard to international securities trading has been that the unimpeded flow of capital funds across national boundaries is basically advantageous both to countries requiring additional capital funds and those seeking markets for surplus capital funds.[10] Consequently the United States has placed few restrictions on foreign portfolio investment, and those are chiefly for information-gathering.[11] SEC disclosure rules, for example, apply to foreign as well as domestic issuers, and this is a problem for some companies whose home countries do not have similar requirements.

Figure 3-3-Foreign Holdings of U.S. Financial Assets



SOURCE: Goldman Sachs *Portfolio Strategies,* December 1988.

Financing National Debt

Foreign investment in the United States was essential to economic development in our first hundred years. In the middle of the 19th century foreigners held about half of Federal and State debt and a quarter of municipal debt. During the next six decades foreigners invested heavily in such burgeoning American industries as steel and railroads. Only during World War I did the United States cease being a debtor nation for a few decades as European nations liquidated U.S. holdings to raise money for the war.[12]

Further growth of the U.S. deficit and uncertainty about the stability of the dollar could inhibit foreign investment. It has probably caused some shift in Japanese equity investments from the United States to Canada, Europe, and Australia.[13] In 1980, 41 percent of foreign activity in U.S. securities was in corporate equities, but this has fallen steadily, to 9 percent in the first half of 1989, as U.S. Government debt became the focus of foreign investment; the proportion of foreign activity in Treasury bonds rose ***from 53*** to ***87*** percent.[14]

Institutional Investors

The growth of institutional investment funds such as pension funds and insurance funds, especially in the United States, is a major force encouraging international securities trading.[15] Public and private pension plans represent large concentrations of funds that must be invested, and many institutional investment managers want to diversify fund holdings outside of their own country to protect against

[10] Julius W. Allen, "Capital Market Changes in the United Kingdom, Japan, West Germany, and Singapore, A Brief Survey," Congressional Research Service Report 88-49-E, Jan. 14, 1988, p. 2.

[11] There are some limitations on direct foreign investment in specific industries such as energy, maritime, communications, and banking. The International Investment Survey Act of 1976 (22 U.S.C. 3101 et. seq.) mandated a study of the extent of foreign investment to be performed every 5 years, and the Domestic and Foreign Investment Improved Disclosure Act (part of the Foreign Corrupt Practices Act of 1977, Public Law 95-213) required anyone acquiring 5 percent of the equity securities of an SEC-registered company to disclose citizenship and residence. Michael Seitzinger, *Foreign Investment in the United States: Major Federal Restrictions,* Congressional Research Service Report 88-164 A, Feb. 23, 1988.

[12] Ibid. In 1988, total foreign direct investment in U.S. plants and machinery was $326.9 billion, compared to U.S. direct overseas investment of $308 billion. But the U.S. investment is older; its current value is probably much higher. Some experts say that the returns on foreign investment here are significantly lower than returns on U.S. investment overseas. See, for example, Stephen Kindel, "Return of the Native," *Financial World,* Jan. 9, 1990, p. 20.

[13] The U.S. share of these Japanese institutional investments dropped from 55 percent in 1986 to 51 percent in 1987, according to Yasuhiko Ueyama, "Japanese Insurance Companies: Our Strategy for Investing in America," *The International Economy,* July/August 1988, pp. 64-65. Mr. Ueyama is president of Sumitomo Life Insurance Co. These figures were confirmed by the International Securities Clearing Corp. in 1990, but more recent figures are not available.

[14] Securities Industry Association, "Foreign Activity Report," Jan. 25, 1989, p. 5 and update by telephone, November 1989. Foreign activity in corporate bonds dropped from 5.3 to 2.6 percent during the period 1980-88.

[15] The dominance of institutional traders differs to some extent by country. In Europe, the largest holders of equities are big institutions, and large banks usually handle investments for individual investors in a discretionary mode. In Japan, 69 percent of equities are held by corporations or institutions, but these tend not to be traded. Individuals do about 42 percent of the securities trading.

both potentially adverse currency fluctuations and domestic economic recessions.[16] The value of cross-border portfolio investments by U.S. private-sector pension plans grew from $21 billion in 1980 to $225 billion by the end of 1988.[17]

Some doubts about the value of this diversification as a kind of transnational hedging have emerged because of the way markets behaved in October 1987. As described in *The Economist:*

> . . . the world's 23 largest stock markets fell together during the October crash; and . . . most of them tracked each other closely for months. The correlations between stock markets during and after the crash were uncanny and unprecedented.[18]

This lessens the protection against risk to be achieved by international diversification. The correlation in market behavior is to some extent inevitable, given the interactions between interest rates and currencies, although precipitous drops in Tokyo stock prices in the first quarter of 1990 had only slight immediate effect on other markets. Because of the swift flow of information and the ease of shifting investments from one market to another, a precipitous decline in one marketplace could at any time alarm investors in other marketplaces and cause them to react. But international diversification also has other benefits, and is likely to remain attractive to institutional investors.

Regulation and Deregulation

Deregulation in the United Kingdom, Japan, and France has also encouraged international trading by increasing the access of foreigners to those national markets and their securities firms. This kind of deregulation may be called "access deregulation." There has been a general worldwide trend toward access deregulation, and at the same time a worldwide trend toward increased prudential regulation (sometimes misleadingly called "re-regulation"), aimed at stronger investor protection. London's dramatic access deregulation in 1986, called "Big Bang,' stimulated other European exchanges to improve their quotation and settlement systems, broaden exchange membership, and lengthen trading days.

Privatization

Another force encouraging the cross-national holding of equities has been the privatization in the United Kingdom and Japan of-very large industries that had been owned by the state. More stock had to be offered for sale than could be absorbed by investors in a single country, so there have been many stock issues that are offered in several countries at the same time, with each country's allotment, or "tranche," consisting of millions of shares.

OBSTACLES TO INTERNATIONAL SECURITIES TRADING

Although there are strong forces encouraging globalization, there are also many obstacles:[19]

- lack of liquidity in smaller markets;
- government policies or regulations designed to exclude foreign participants from national markets;
- other legal barriers such as exchange controls, discriminatory taxes, and deposit requirements;
- differences at the interface of banking and securities activities;
- difference in clearing, settlement, and payment systems;
- nongovernmental but officially condoned practices (in effect, non-tariff trade barriers) which exclude foreign interests, such as restrictions on membership in exchanges;

[16] From 1985 to 1987, U.S. pension plans increased their foreign equity holdings by $19 billion, while their holdings of U.S. equities decreased by $47 billion. Smith, op. cit., footnote 9. At the end of 1988, U.S. private-sector pension funds had $52,5 billion in foreign investment. United Kingdom private pension plan investment overseas was $69 billion at the end of 1988, Japanese private pension plan investment overseas was $33 billion. Foreign private-sector pension plans had approximately $62.4 billion in portfolio investments in the United States at the end of 1988, and this hadgrownto $67.7 billion by June 1989. (Information provided by Intersec Research Corp., November 1989.)

[17] Figures for 1980 and 1987 from SEC Staff Report to U.S. Senate Committee on Banking, Housing, and Urban Affairs and U.S. House Of Representatives Committee on Energy and Commerce, "Internationalization of Securities Markets," 1987, p. 88; 1988 figure provided by Intersec Research Corp. to OTA, November 1989.

[18] By one set of measurements, the correlation between the 23 biggest stockmarkets, which was 0.222 for more than 5 years before the crash, was 0.755 at the time of the-crash and has since then remained about 50 percent higher than the pre-crash figure. "Why Stockmarkets Move Together," *The Economist, Mar.* 11, 1989, p. 77.

[19] "International Trade in Services: Securities," summary of a report by the OECD Committee on Financial Markets, in OECD, *Financial Market Trends, May 1987,* pp. 15-43.

- differences as to accounting practices, regulatory structures, capital adequacy requirements, and investor protection standards;
- differences in corporate organization; and
- other social, cultural, or behavioral barriers.

The risks imposed by these difficulties, and particularly by the lack of standardized or harmonized methods of trading, clearing, settling, and making payment are serious. Many international trades fail to settle on time, often because as many as 12 financial institutions maybe intermediaries to a single securities transaction.[20] (See ch. 5.)

Laws and regulations in some countries forbid various kinds of participation in securities markets by foreigners. Tax laws may also inhibit foreign activities or reduce their profitability. Activities that are permissible in one country are illegal in others.

Less formal but pervasive social and cultural differences are also important. Outsiders may not be able to operate efficiently because of ignorance of language or culture or lack of necessary professional contacts. They may find it hard to recruit and manage indigenous staff. Access to bank loans may be difficult. In Japan, for example, long-established, interlocking, and stable relationships between domestic companies and banks put foreign firms at a competitive disadvantage.

One important difference between national securities markets is the extent to which banks are allowed to participate. In the United States, the Glass-Steagall Act of 1933 separated banking and securities-related activities. Japan's Article 65 is modeled after the Glass-Steagall Act. Until recently, Canada also placed legal barriers between banks and most securities markets activities. Most other countries have 'universal banking," meaning that banks can do underwriting and otherwise participate fully in securities markets, and banks are often the dominant participants in those markets. The general international trend has been toward more homogeneous regulatory treatment of financial institutions within countries.[21] This is true even in the United States, as Federal regulatory authorities--the Comptroller-General (Department of the Treasury) and the Federal Reserve Board-have gradually relaxed the interpretation of the Glass-Steagall Act to allow banks and bank-holding companies to edge into some securities-related activities.

HOW "GLOBALIZED" ARE SECURITIES MARKETS?

Several kinds of activities are subsumed in "market globalization,' a term that is often loosely used. They are:

- cross-listing stocks and bonds issued in Country A on the exchanges of Country B;
- investors of one country buying and selling foreign stocks in foreign markets, through foreign brokers;
- opening a country's stock markets to foreign brokers and dealers who serve both foreigners and nationals;
- legal or contractual ties between exchanges in different countries;
- "passing the book" or 24-hour trading, i.e., shifting the control of trading to colleagues in other countries and time zones;
- multinational offerings of stock;
- international mutual funds; and
- cross-national stock index derivative instruments.

Cross-listing of Stock

A simple form of internationalization of markets is listing stocks issued in Country A on exchanges in Country B. The value of cross-border offerings of bonds, including foreign and Eurobonds, grew from $38 billion in 1980 to $238 billion in 1988. The value of cross-border offerings of equity-related securities grew from $200 million in 1983 to $20.3 billion in 1987.[22]

London's International Stock Exchange (ISE) is the most "internationalized" of the world's big exchanges, with 23 percent of the companies whose stock is listed on the ISE being foreign companies. The Tokyo and New York Stock Exchanges, which are larger markets, have far fewer foreign companies listed (table 3-l); in 1989, the NYSE listed 82

[20] Junius W. Peake, "A Case for Standards in International Financial Markets-Jan. 1, 2000," a discussion paper prepared for the XII Annual Meeting of the International Organization of Securities Commissions, Sept. 1-4, 1987, Rio de Janeiro, Brazil.

[21] KPMG Peat Marwick, "The Competitive Position of Commercial Banks in the Global Securities Markets: An International Study," contractor report prepared for the Office of Technology Assessment January 1990.

[22] SIA, op. cit., footnote 14, pp. 58-59.

Table 3-l-Comparison of Major Markets

	Tokyo Stock Exchange	New York Stock Exchange	NASDAQ	London Stock Exchange (ISE)
Annual average trading volume [$ billion]	$2,234	&1 ,356	$ 347	$ 361
No. of listed companies, 1988	1,683	1,681	4,451	2,580
—Domestic	1,571	1,604	4,179	1,993
—Foreign	112	77	272	587
% Foreign	6.7%	4.6%	6.1%	22.7%

SOURCE: Office of Technology Assessment, 1990.

foreign stocks or ADRs[23]--3.7 percent of its listings. In the frost quarter of 1990, this rose to 93 listings, and their trading accounted for 5.8 percent of total share volume.[24] NASDAQ includes 196 foreign issues and 96 ADRs, 5.7 percent of listings.

Several smaller markets, particularly in Europe, are more "international" Of stocks listed on the The Netherlands exchange, 56 percent are non--domestic; Germany, 49 percent; Switzerland, 42 percent; and France, 32 percent.

Most stocks are still traded only in their country of origin. But London's SEAQ International regularly quotes 750 foreign equities, with continuous quotes in about 350 of them, resulting in trades valued at about £ 1 billion daily, compared to £ 1.4 billion in domestic equity trades and £ 10 billion in bonds.[25] In Tokyo about 120 foreign issues are traded, generally less than 2 percent of total volume, but recently this has risen to about 7 percent. ***Euromoney*** magazine reported in mid-1988 that there were 487 stocks with an active and liquid market in at least one trading center outside of its home Country.[26] The home country, for 60 percent of these stocks, was either the United States, Japan, the United Kingdom, Australia, or Canada.

Obtaining a listing on the Tokyo Stock Exchange (TSE) has become an important element in the global strategy of many export-oriented U.S. companies. Corporations are attracted by the large amount of capital available for investment and by the belief that Japanese investors are more interested in long-term growth and less concerned with very short-term performance than are U.S. investors. Some multinational corporations also reason that listing in Japan improves their corporate image in that country, helping them to attract a Japanese work force. Obtaining a listing on the TSE is, however, complicated and costly.

In the United States, foreign firms who want to list their securities on a U.S. exchange or NASDAQ may register them with the Securities and Exchange Commission (SEC), thereby subjecting themselves to our reporting provisions.[27] The SEC has, as noted, recently approved a rule exempting from reporting requirements companies offering private issues only to large institutional investors.[28]

International Portfolios

Another measure of internationalization is cross-national portfolio investment, the degree to which Country A's investors buy stocks issued in Country B. For all countries, investment in non-domestic securities was $250 billion in 1984 and $1,281 billion in 1987, a fivefold increase in 3 years (table 3-2). This strong growth in cross-national investment inequities was reversed temporarily in 1988 as an aftermath of the 1987 crash. New foreign

[23]Non-U.S. corporations wishing to have their equities securities traded in the United States can choose to have them traded as actual shares or as AmericanDepository Receipts (ADRs). An ADR is a receipt issued by a U.S. b@ conversable into a specified number of shares deposited in the issuing corporation's country of domicile. An ADR may be freely traded in the ADR market, related to but distinct from the market in the actual shares. Should a U.S. holder wish to obtain the shares, the ADR is presented to the U.S. depository bank for cancellation and reregistration before the original shares can be delivered to the holder. Price information on an ADR is in U.S. dollars and maybe easier to get than the price of underlying shares; purchasers of ADRs pay domestic rather than foreign trading commissions.

[24]Information supplied by the NYSE Washington office, Apr. 2, 1990.

[25]SEAQ International statistics.

[26]*Euromoney*, May 1988.

[27]But not t. some other rules, such as those governing shareholder proxy votes. Registering is optional unless the foreign issuer has mOre than 300 record shareholders in the United States, more than $3 million in total assets, and is engaged in business affecting interstate commerce.

[28]Rule 144A, approved Apr. 19, 1990.

Table 3-2—Total Cross-National Investment

Year	Total (billions of dollars)	Change
1984	$250	–
1985	$400	+60%
1986	$750	+88%
1987	$1281	+71%
1988	$1031	-19.5%

SOURCE: Securities Industries Association. Global Equity Analysis Reports.

investment in Japanese, American, British, Canadian, and West German equities in 1988 dropped much more than did domestic trading in those stocks.[29] In the highly internationalized London market, foreign trading in U.K. equities dropped nearly 30 percent, while all trading in U.K. equities dropped less than 5 percent.[30] Only Japanese investors made more overseas equity trades in 1988 than in 1987. Although reduced, the 1988 cross-border equities trading was still above that of 1986 and over three times the amount in 1984.

In 1950, foreign investors held a little more than 2 percent of U.S. securities; in mid-1988 it was nearly 12 percent.[31] Foreign investors hold nearly 22 percent of U.S. Treasuries (however, the holdings of corporate bonds increased faster than holdings of Treasuries). Foreign investors held about 6 percent of U.S. equities in mid-1988.

The large growth of foreign portfolio investment in the United States could be risky in a way that direct investment is not. Multinational firms monitor their currency exposure and stand ready to make massive shifts in response to changing conditions. Factories or farmlands will not be moved outside of the country, but foreign capital can be withdrawn in a matter of minutes or hours.[32] This could amplify a market decline, turning it into a rout. [See box 3-A.] In February 1990, as the Tokyo Stock Market went into a several-day decline for the frost time in years, this concern was voiced by a number of financial experts.

Box 3-A—Exogenous Events and U.S. Markets

U.S. markets could be thoroughly shaken by seemingly unrelated events in far-away places. Noting that some seismologists are predicting possibly devastating earthquakes in the vicinity of Tokyo, Tokai Bank generated the following scenario:

> . . . Tokai Bank has estimated the damage that would be caused to financial markets if there were a repeat of the 1923 earthquake, a 7.8 on the Richter scale, that reduced Tokyo to rubble and left 142,000 people dead. The bank's conclusion is that America's stock and bond markets would be reduced to rubble too.
>
> . . . (W)ith one-third of Tokyo's reclaimed land liquefying into mud, reconstruction would cost Y119 trillion ($847 billion). Japanese institutions would have to sell investments in America, sending stock and bond prices tumbling and interest rates soaring worldwide. Side-effects would be global stagflation and a worsening of the Third-World debt problem.
>
> The hypothetical earthquake that the bank sent rumbling through its computer model knocked 4.8 percent off Japan's gross national product for the current calendar year, causing the world economy to shrink 0.3 percentage points in 1989. The economic effects would go on reverberating for years . . . .

SOURCE: *The Economist,* July 15,1989, p. 7. (Condensed)

On the other hand, a strong case can be made that foreign capital, especially Japanese capital,. has acted effectively to stabilize American financial markets in recent years. David Hale, an international economist, says,

> In 1987 and 1988, the Bank of Japan purchased over $55 billion of U.S. securities in order to stabilize the dollar. The Ministry of Finance often used moral jawboning to prevent Japanese institu-

[29] Foreign individuals and institutions made purchases and sales of $288.3 billion in all U.S. securities markets in the firat 9 months of 1988, which was down 19.8 percent from the firat 9 months of 1987. AU transactions in foreign equities made on U.S. markets were also down in the same three quarters by 24.3 percent, to $107.3 billion.

[30] Securities Industries Association, *Global Equity Analysis Report*, vol. IV, No. 5, July 7, 1989. Japanese investors' net purchases Of foreign securities in 1980 was $4 billion; in 1988 it was $87 billion, and in the first 7 months of 1989 it was already $55.3 billion.

[31] Jeffrey M. Schaefer and David G. Strongin, "Why All the Fuss About Foreign Investment," *Challenge*, May-June 1989, pp. 31-35. Figures are baaed on Federal Reserve Flow of Funds, U.S. Treasury.

[32] One commentator alleges thatJapanesefund managers "triggered the crash" (in 1987) by dumping U.S. Treasuri"es 5 days earlier, causing a collapse in bond prices and a resulting rise in interest rates thaled to widespread selling of equities. R._ Murphey, "Power Without Purpose: The Crisis of Japan's Global Financial Dominance," *Harvard Business Review,* March-April 1989. But this report is not widely accepted.

tional investors, from dumping dollar securities during periods of exchange rate uncertainty.[33]

Richard Koo of the Nomura Research Institute told the Joint Economic Committee of Congress,

> During 1986 and 1987 . . . when the dollar and financial markets around the world came precariously close to total collapse, Japanese authorities tried to keep investors in dollars by telling them how much good the U.S. had done for Japan after the war, and how important it was for Japan to stay with the dollar to prevent the total collapse of the world financial system.[34]

Opening National Exchanges

Cross-country exchange membership and brokerage is another form of internationalization. Many countries have opened their exchanges for membership by foreign firms within the last 5 years, or have allowed foreign firms to buy or buy into their domestic securities houses for the first time. For example, the first 6 foreign members were allowed to join the Tokyo Stock Exchange in February 1986, and in 1988 16 more seats were made available to non-Japanese firms.[35] Other foreign firms probably want seats, even though membership costs are high. There are at least 47 foreign securities houses with branches in Japan; most were reported to be losing money in 1988-89. Four large Japanese firms trade overseas (Nomura, Daiwa, Nikko, and Yamaichi), and are reported to have invested $350 million in building up their American businesses. These are very large fins, so their international business accounted for only 1 percent of their pre-tax profits in 1987-88, down from 5 percent the previous year.[36]

Many American stockbrokers sought to operate in London's markets after the 1986 deregulation. Merrill Lynch, the first U.S. firm with an affiliate on the London Exchange and among the frost to apply for a primary dealership in government bonds, spent many millions of dollars in London on computers, staff, and anew headquarters. Merrill Lynch became the second largest Eurobond underwriter, and by 1987 it had a staff of 1,600 in London.[37] Other major U.S. securities firms and banks also made major efforts to build business in London. But after the October 1987 crash, they sharply reduced their London staff. All foreign brokerage houses in London were reported to be losing money in 1988 and 1989. The unprofitability of such foreign ventures causes some observers to doubt that international securities trading will grow as much, or as rapidly, as enthusiasts had predicted. But a more likely outcome is that as international trade increases, a few very large securities firms will eventually dominate the field.

Passing the Book

Twenty-four-hour trading is what many think of as "globalization." This occurs when a firm has facilities in locations around the world, and passes its "book" (i.e., control of its active trading) between those locations across time zones, in order to trade some instrument such as U.S. Treasury bonds around the clock.[38] (See figure 3-4.) Most 24-hour trading now is in foreign exchange and bullion, not equities.

There is some skepticism as to how prevalent 24-hour trading in equities will become. One study called 24-hour trading a myth, and said,

> Many of those who profess to trade for 24-hours acknowledge that they do so to maintain a "global" profile, not because 24-hour trading is a prime goal in itself.[39]

Other skeptics, attuned to the traditional, face-to-face form of trading prevalent in New York and Chicago, say that trading is an intensely personal activity and traders will neither be able to stay awake 24 hours or to let someone else trade for them. This

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[33]David D. Hale, "The Japanese Ministry of Finance and Dollar Diplomacy During the Late 1980' s," July 1989 manuscript, provided to OTA by the author, who is a senior vice president of Kemper Financial Services, Inc.

[34]Testimony on Oct. 17, 1988.

[35]Six went t. American firms, 4 t. British firms, and 2 each to French, West German, and Swiss firms. Motohiro Ikeda, "Foreign Securities Firms," *The Japan Economic Journal, Summer 1988, p. 39.*

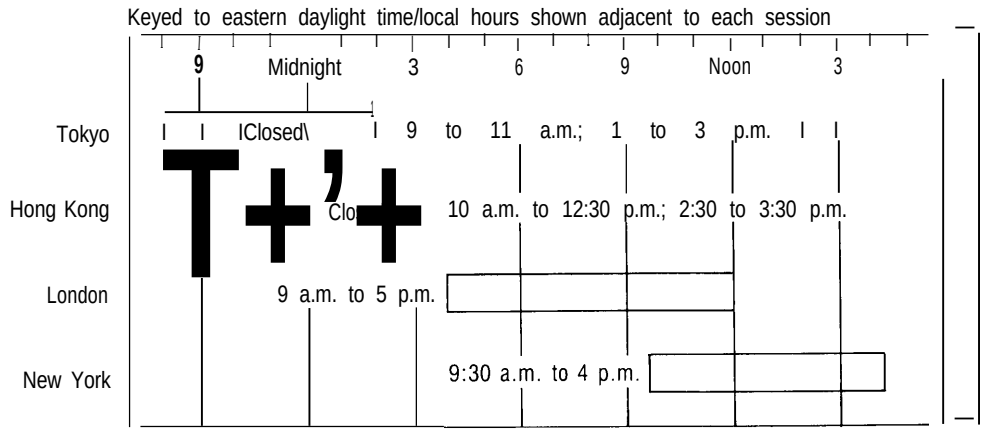
[36]This is an informed journalist's estimate; see "Can Japan's Securities Firms Keep the Flag Flying?" The *Economist*, Dec. 3,1988, pp. 85-86. OTA was unable to obtain this information from the Japanese firms.

[37]Craig Forman, "Merrill Scales Down London Ambitions," *The Wall Street Journal,* June 15, 1988, p. 20.

[38]Foreign exchange has long been a 24-hour market. About $350 billion in foreign currency transactions take place every @, compared to about $5 billion daily on the NYSE. S. HanSell, "The Computer That Ate Chicago, " *Institutional Investor,* February 1989, pp. 181-188.

[39]*Global Capital Markets*, a KPMG report (Amsterdam: KPMG International Office, peat Marwick McLintock Publications, 1988), p. 16.

Figure 3-4-Trading Around the World and Nearly Around the Clock



SOURCE: Office of Technology Assessment.

will probably not be a major barrier if 24-hour trading turns out to be profitable.

Richard D. Ketchum, Director of the SEC's Division of Market Regulation, claims that for most equities there will not be sufficient 24-hour order flow to encourage profitable risk-taking by market makers. This is different, he points out, from foreign currency and government bond markets "where ownership of the underlying assets have truly spread worldwide and relevant news regarding those markets occurs around the clock and around the globe."[40] This projection too depends on continuation of present conditions of ownership and information flow that tend to concentrate liquidity primarily in one home market. These conditions may already be changing.

U.S. broker-dealers may be likely to try 24-hour trading because they already have a large investment in information technology. Salomon Brothers opened a 24-hour desk in New York when the Chicago Board of Trade began evening trading in May 1988. Their business in futures and options is covered from New York during the hours that the U.S. or Tokyo markets are open, and from London when the London International Financial Futures Exchange (LIFFE) is open.

The most extensive, vigorous, and competitive 24-hour trading (except for currency) may eventually be in futures contracts.[41] The Nikkei index is traded on the SIMEX exchange in Singapore, as well as Osaka, and is approved for trading on the Chicago Mercantile Exchange (CME). LIFFE trades Japan's government bond futures and the Chicago Board of Trade (CBOT) announced (Nov. 21, 1988) that they would also do so. When CBOT expected that TSE was about to begin trading a T-bond futures contract in competition with CBOT's contract, the Chicago exchange responded by beginning to trade during evening hours, 6 to 9:30 p.m. c.s.t., Sunday through Thursday. Four months later, the Philadelphia Exchange began operating from 7 to 11 p.m. e.s.t., Sunday through Thursday and from 4:30 to 8 a.m. e.s.t., Monday through Friday, to accommodate traders in London and Tokyo. Thus, competition among exchanges, or the fear of it, is stimulating 24-hour trading.

The New York Stock Exchange may find it difficult to extend its trading hours because of its labor-intensive trading system.[42] It will be hard to find a second shift of specialists, at least until 24-hour trading has become a highly developed activity-and then it would probably be too late to

[40]Statement by Richard G. Ketchum, "Challenges Facing the Securities Industry," at a meeting June 16, 1989, sponsored by *Business Week* and Securities *Week,* manuscript provided to OTA by the author. The statement represents the personal views of the author, not a statement of SEC policy.

[41]Katsuyuki Nakagawachi, "Financial Futures: Round-the-Clock Trading Expected to Spread in Tokyo," *Tokyo FinancialMarkets,* a Special Survey of *The Japan Economic Journal, Summer* 1988.

[42]The NYSE uses a specialist, or designated market-maker, system and trades must go through the specialist post (with some exceptions) when the floor is open for trading. *Floor* trading is supported by automated order routing systems and other forms of automation. See OTA's forthcoming report on information technology and domestic securities markets.

capture this market. Under the pressure of rapid development of international trading, however, the NYSE has recently announced "plans to explore off-hours trading." According to James Cochrane, the Exchange chief economist:

> By working with industry participants and exchange customers to assess current off-hours activity, trading procedures, and market needs, the NYSE is developing a strategic approach to emerging global markets. What roles extended hours, available technologies, and key market participants will play in these strategies have not yet been announced by the Exchange.[43]

Product Links Between Markets

Non-American exchanges are copying innovative instruments developed by the U.S. exchanges. The chairman of CBOT has complained that "[CBOT] contracts are being Xeroxed overseas. "[44] There are many new derivative products (futures and options) markets in Europe, Scandinavia, and Japan, at least 36 in all outside the United States. Chicago markets did more than three-quarters of the world's futures trading only 5 years ago. This was down to 60 percent in mid-1989, and the TSE's yen government bond futures contract is now the world's most heavily traded. The rapid spread of derivative products markets in competition with U.S. futures and options markets has stimulated a greater willingness at the CME and the CBOT to try technology as a way to compete in the international arena.

The French MATIF, opened in 1986, is now the third largest futures exchange in the world. The fourth largest is the London International Financial Futures Exchange (LIFFE), which is trading, among other non-sterling products, a futures contract on 10-year German Government bonds. A contract on the same German lo-year bonds will be traded by the West German Deutsche Terminborse, which opened in January 1990 as a fully computerized exchange, operating through monitor screens connected to a central computer.[45]

The European Options Exchange in Amsterdam was the first in Europe, and has many international links. MONEP is the French options exchange. The London Traded Options Market (LTOM) trades options on equities and a stock index. There are others in Stockholm, Zurich, and Denmark; options markets are planned in Finland, Norway, and Ireland. Trading in options began in Japan in June, 1989, at the Osaka Stock Exchange, with a contract based on the Nikkei 225 index, but there was already a large volume of off-market (private) options trading.

The U.S. Commodity Futures Trading Commission (CFTC) and the SEC have both approved the CME's plan to trade a futures contract based on Morgan Stanley Capital International's index, representing a basket of 1011 stocks issued in 18 countries. The Coffee, Sugar & Cocoa Exchange is now trading a futures contract based on its International Market Index (50 foreign stocks primarily available only outside the United States), and AMEX is trading an options contract also based on that index.

Whether these index futures or option contracts will succeed remains to be seen. There may not be enough buyers and sellers to assure liquidity. On the other hand, institutional investors may use them to provide "an international component" to hedge portfolios, or for other trading strategies such as asset allocation. Some institutions are prevented by local law or by their charters from investing abroad, but would be able to use these U.S. futures contracts.

Multinational Initial Offerings

Initial stock offerings on a multinational basis also encourage international trading. Many countries do not have enough depth in their capital markets to accommodate large new equity offerings. France, for example, was faced in 1986 with privatizing companies worth about $30 billion, at a time when the total value of listings on the Paris bourse was only about $80 billion.[46] Very large issues of stocks may be underwritten in several countries at the same time. Multinational offerings are often underwritten as different tranches with separate underwriters. They are increasing as corporations seek to diversify their stockholder base, to increase the recognition of their products and

[43] Letter to OTA, Aug. 14, 1989.

[44] Jagannath Dubashi, "Futures and Options," *Financial World,* Aug. 23, 1988, pp. 27-29.

[45] Information provided to OTA by Metallgesellschaft Corp., New York, NY, Nov. *23, 1989.*

[46] Group of Thirty, "Symposium Background Paper: The Globalization of Equity Markets," London, Sept. 15-16,1986.

services in a broader market, to fund foreign employee benefits schemes, to facilitate foreign acquisitions, or to defend against take-overs.

International Mutual Funds

These are an alternative to active portfolio trading and let investors hedge against changes in one country's economic conditions without the disadvantages of trading in a foreign country with insufficient information. Some European countries, especially Luxembourg, have tried to get American investment companies to offer U.S. mutual funds in Europe, but legal and tax differences make it difficult for U.S. mutual funds to operate in Europe.[47]

International mutual funds managed by U.S. investment companies for American investors became popular in the early 1980s as the dollar weakened (as foreign currencies appreciated against the dollar, the net asset value of funds denominated in those foreign currencies increased). While returns for many international mutual funds have been superior to most U.S. funds over the last 5 years, some investors in international mutual funds were, however, reported to be disappointed as it became clear that diversification does not necessarily avoid cyclical risk (for example, the recession of 1982 and the crash of 1987 were worldwide).[48] The funds are also highly vulnerable to currency fluctuations. Third World country funds are relatively thinly traded; large infusions of money, from a pension fund, for example, can swing the market violently, and under stress it can be difficult to get out of the market because there are too few potential buyers.

The number of international mutual funds nevertheless continues to grow. The Investment Company Institute says there are 75 international funds (two-thirds of their portfolio from outside the United States) and 80 global funds (some U.S. securities).

RISKS INHERENT IN GLOBALIZATION OF SECURITIES MARKETS

If all of the legal, regulatory, and social barriers to globalization of securities trading are overcome, important systemic risks remain. In times of crisis, the failure of major intermediaries could "impose unacceptable external costs on the entire financial and payments system and ultimately on the entire economy. ' '[49] There is a strong trend toward concentration and consolidation of securities firms, so that the failure of any major intermediary will be likely to have wider consequences than in the past, especially when such intermediaries deal in many markets or in many nations. There was no cascade of failures when Drexel Burnham Lambert went bankrupt, but this is little assurance that it could not happen in the future.

Several kinds of risks are inherent in securities trading and are likely to be affected by an increase in translational securities activities. They include credit risks, position risks, transaction risks, and systemic risks.[50]

Credit risk (also called counterpart risk) is the possibility that one party to a transaction may not deliver, or that a borrower may not repay a loan, or that an intermediary in a transaction (e.g., a payment bank or a clearinghouse) may fail. This risk is much the same in domestic and international trades, but it may be made worse by internationalization because it is harder to make judgments about the reliability of counterparties, the quality of assets, or the degree of protection afforded by disclosure rules. Credit risk is increased as participants trade in several domestic and foreign markets, where regulatory standards and safeguards may vary widely. (See ch. 4.) On the other hand, greater opportunities to divers@ activities may help to reduce total credit risk. Many countries are now acting to improve their clearing, settlement, and payment mechanisms, and in some cases the sharing of information (see ch. 5), and this should moderate the increased credit risk.

[47] Definitions of mutual funds are somewhat different, as are requirements for accounting procedures and for disclosures, and for the times when capital gains must be paid out.

[48] Kenneth Jessell and Jeff Madura, "International Funds: What Factors Affect Their Returna," *AAIA Journal*, May 1988, p. 9.

[49] Organization for Economic Cooperation and Development, "Arrangements for the Regulation and Supervision of Securities Markets in OECD Countries," *Financial Market Trends 41*, November *1988*, p. 36.

[50] See remarks made by Grant L. Reuben, Deputy Chairman of the Bank of Montreal, at a F'inancial Globalization Conference in Chicago, Nov. 2, 1989; the address was entitled "Implications of Globalization for Regulation."

Position risk is that which threatens entire institutions with sudden failure: insufficient assets to meet the demands of depositors, borrowers, investors, or creditors. This could be associated with: 1) a drying up of liquidity (when assets exist but cannot be reclaimed and redirected), 2) significant change in the value of securities being held for trading or other uses, or 3) adverse changes in foreign exchange rates or interest rates. International trading can reduce position risk by offering a greater choice of markets, more opportunities to hedge, and a greater variety of trading strategies. On the other hand, globalization of markets tempts traders to trade in environments where they do not understand all of the dangers and may lack buffers such as back-up lines of credit.

Operational risk is the danger that comes from breakdowns in telecommunications, computer systems, established institutional procedures and structures (including market-making mechanisms), and other "mechanical" aspects of securities trading. Technology provides powerful capabilities for getting things done, and for guarding against the human risks of error, inattention, incompetence, misfeasance, and malfeasance. But technology entails its own risks of breakdown and misuse, which almost certainly increase with internationalization. Technologically sophisticated systems have failed in all countries, including the United States, for example, telephone networks, electric power distribution systems, and air traffic control systems. The ability 'to develop and maintain technological systems is not the same in all countries. Technological backups may be inadequate or untested, or may fail for the same reasons that the primary system fails. In late 1989 and early 1990, for example, a severe drought in the Philippines caused a shortage of hydroelectric power, causing blackouts and making it impossible to depend on electric systems in the financial Sector.[51]

In addition, dependency on technological systems increases the vulnerability when the system fails, because manual skills, interpersonal relationships, and alternative means of operating have often been forgotten or lost. In global trading, some of these alternative and backup procedures have never been developed. At the same time, expectations of speed and efficiency have increased because of technology, and so the impact of breakdown maybe greater.

There is a further risk of unknown dimensions that comes with internationalization--sy stemic risk. That is the extent to which securities market credit, position, or transaction risk could threaten the basic financial industries, the payment system, or the economic performance of nations. On this question there are many opinions but little useful evidence. There are two complementary approaches to reducing risk: 1) private sector efforts to improve and strengthen both technological systems and institutional interfaces, and 2) governmental efforts to improve and harmonize regulatory safeguards. Many countries are now revising their regulatory frameworks. According to the Organization of Economic Cooperative Development:

> There is increasing awareness that securities market activities involve risks that are comparable to the systemic risks inherent in banking, and that accordingly, the basic question arises as to what extent existing regulatory and supervisory arrangements are adequate to deal with current market realities.[52]

These efforts are discussed in chapter 6 of this report.

[51] According to Mary Ann Callahan, Vice President for International Development International Securities Clearing Corp., May 1990.

[52] OECD, op. cit., footnote 49, p. 31.

Chapter 4
America% Competitors in Global Securities Trading

In the competition for leadership in global securities trading, America's chief competitors at present are Japan and the United Kingdom.[1] The European Community is making a strong effort to integrate and strengthen the securities markets of its member nations (which include the United Kingdom) into a trading arena that can compete on equal terms with the United States and Japan. There is much skepticism, even among proponents, that this can be achieved in the near future, but the EC countries, as well as other nations such as Canada, Australia, Singapore, and Hong Kong are, or could become, niche competitors.

Institutional investors have the incentive, the information access, and the technological infrastructure to trade across national boundaries. In making the decision to do so, they balance several factors: price, liquidity, cost (including regulatory costs), and safety (i.e., transparency and fairness). Some markets with high investment returns are limited or risky.

The conventional wisdom about market liquidity has been that the trading for a specific security will always concentrate in one marketplace. With technology making possible nearly instantaneous comparison and arbitrage of prices (eventually on a 24-hour basis), that rule may not forever hold true. There could be more than one liquid market, or the active market for a stock may migrate from one country to another or from one time zone to another.

The serious constraints on international trading at present are the lack of essential protective regulations or enforcement in some countries (see chs. 3 and 6), and clearing and settlement risks (see ch. 5). As these barriers are reduced, competition to serve international investors will increase. In this competitive arena, the United States' position may depend ultimately on the advantages it can get from information technology and from prudential regulation that assures transparency and fairness.

JAPAN

The Tokyo Stock Exchange (TSE) was the world's largest market in value of investments from 1987 to early 1990. It had been a bull market for 7 years, growing from $370 billion in 1980 to $2,803 billion in 1987, interrupted only briefly by the October 1987 crash. In February 1990, its prices began a steep, spasmodic decline. This had little immediate effect on other major markets, but some experts worry that if the Japanese market should really crash, its investors might be forced to pull their money out of other markets to cover the losses, causing the crash to spread around the world.

The TSE traces its institutional history back to 1878, but it was organized in its present form during the United States occupation of Japan, and stock trading began in April 1949. There are several exchanges in Japan, but the TSE handles about 86 percent of transactions by volume and by value. The Osaka Exchange accounts for roughly 10 percent, the Nagoya for about 4 percent, and others less than 1 percent together.[2] The TSE is described in its own literature as a quasi-government organization, and "a place for domestic and foreign investors to invest their assets . . . [and] by making it easy for enterprises or the nation to raise capital, it also makes an important contribution to economic development. "

Traditionally Japanese corporations depended heavily on debt financing (typically less than 20 percent of corporate capital has been equity); and most of that came from banks rather than from securities markets.[3] But large Japanese firms now raise over 60 percent of their funds in the capital market.[4]

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[1]This chapter draws on several OTA contractor reports, including: Eric K. Clemons, Principal Investigator, with Stephen P. Broad, Ravi Venkateswaran, and Bruce W. Weber, "Globalization of Securities Markets (Philadelphia, PA: Wharton School, University of Pennsylvania, July 1989); Peter Schwartz, "Scenarios for Regulation of International Securities Trading" (San Francisco, CA: Global Business Network, Nov. 3, 1990); Manning Gilbert Warren III, "Securities Regulation in the European Communities" (Tuscaloosa, AL: University of Alabama Law School, August 1989).

[2]Tokyo Stock Exchange, 1989 *Fact Book,* p. 17.

[3]*The* GT *Guide to World Equity Markets 1988* (London: Euromony Publications, 1988).

[4]Statement by Masahiko Kadotani, of the Ministry of Finance, at the 14th Annual Conference of IOSCO, in Venice, Sept. 18-21, 1989.

Recent Trends

TSE began trading foreign stocks in December 1973, with six listed foreign stocks.[5] In 1985 the number began to rise dramatically, and reached 120 by early 1990.[6] The average daily turnover of foreign stocks is about 790,000 shares compared to over 1 billion total daily volume.[7]

Japan's primary market for government bonds was virtually closed to foreigners until 1986. When there was a new government bond issue, Japanese banks, securities firms, and life insurance companies would form an underwriting syndicate and divide up the issue among themselves for distribution.[8] Foreign banks and securities firms were not members of the syndicate but were occasionally allotted a small part of the issue. In 1989, Japan moved to a partial auction system for selling 10-year bonds.

The number of foreign member-firms on the TSE has increased slowly, to 22 in 1989. After the stock market crash in 1987, the 45 foreign securities firms in Tokyo began to reduce their staffs. In the year ending September, 1988, 39 of the 45 foreign firms in Tokyo had net losses, but during the next year, they were by most accounts doing well.[9] They account for only about 5 to 7 percent of trading volume, possibly because they lack good retail channels (the active sector of the market is trading by individual investors).

The TSE still has fixed commissions (except for large trades, for which commissions have recently been unregulated). Traders try to turn over as many shares as possible, as often as possible, to capture gains, because the ratio of dividends to prices is very low.[10] Both domestic and foreign traders concentrate on the relatively few Japanese institutional investors seeking short-term profits. This usually means buying and selling Japanese securities, because information about them is most quickly available. Foreign investors for the last 5 years have been net sellers, and their share of trading has fallen from 10 to 2 percent.

How the Market Works

Trading at the TSE takes place as a continuous order-driven market, where buy and sell orders interact directly. There are no official market-makers, no specialists, and no affirmative obligation to make markets. All securities must be traded through an authorized securities dealer. The Big Four securities houses: Nomura, Daiwa, Nikko, and Yamaichi, together account for about 40 percent of the trading, for their own accounts and for customers (in 1960, the same four firms accounted for 70 Percent) .11

In Japan, institutions and corporations hold the majority of stocks, but tend not to trade them. Individuals do most of the trading. Ownership of shares of companies listed on the eight exchanges in Japan in 1988 was as follows:[12]

	Percent
Banks and other financial institutions	44.6
Business corporations	24.9
Individuals	23.6
Foreigners	3.6
Securities firms	2.5
Investment trusts	2.4
Government/local government	0.8

There are two kinds of exchange members-regular and Saitori. Regular securities company

[5]Tokyo Stock Exchange, *1989 Fact Book,* p. 19.

[6]Data supplied by Mr. Yuji Shibuya of the Nomura Research Institute, Tokyo, Fax 81-2-277-8498, Nov. 15, 1989, updated courtesy Of the International Securities Clearing Corp., May 1990.

[7]Tokyo Stock Exchange, 1989 *Fact Book.*

[8]Ko Sakai, "GovernmentBondM arket: More Liberalization Measures Urged To Raise Foreign Share," *The Japan Economic Journal*, Summer 1988, p. 28.

[9]*The Wall Street Journal, reported* on Aug. 16, 1989, that Salomon Brothers, Merrill Lynch, Goldman Sachs, and Morgan Stanley Japan Ltd. are doing well in Japan, but "on the whole, foreign losers vastly outnumber the winners. (Marcus W. Brauchli, "U.S. Brokerage Firms Operating in Japan Have Mixed Results," p. 1. See also "Gaijin, Gaijin, Gone," *The Economist,* Jan. 14,1989, p. 69. In 1990, most new reports say that American securities firms in Tokyo are making money. *(Financial Times* Special Section on Japanese Markets, III-ix, Mar. 15, 1990.)

[10]Shuzo Nakeshiima, "The Outline of the Current Situation and the Problems of Investor Protection in Japan," presented at the NASAA Conference in Washington, DC, Apr. 26, 1990.

[11]Rex Brown, "Medium-Sized Firms Prosper Through Their Banking Links," *Financial Times*, Special Section on Japanese Markets, Mar. 15,1990, HI-vi.

[12]These figures are from the TSE *Fact* Book *1989*, p. 92, which does not explain why they add to 102.4 percent. It is likely that "investment trusts, 2.4 percent" overlaps with the figures for banks and other financial institutions, Foreign ownership peaked in 1984, at 6.3 percent.

members, like broker/dealers in the United States, receive orders from customers or trade for their own account. They execute trades through four Saitori members, who match buyers and sellers. Saitori members are not analogous to U.S. market-makers since they can neither trade for their own account nor accept orders from public investors. They record a match of buy and sell orders but do not become a counterpart to a trade.

In executing large block orders (300,000 shares or more), a regular member can act as both seller and buyer. However, in active stocks the proportion of block trades was only 6.5 percent in 1988,[13] because institutions tend not to trade as much as individuals.

TSE trades only listed securities, and a decision by the Exchange to list a security must be approved by the Minister of Finance. Listed foreign stocks and bonds may be denominated in either yen or foreign currency but exchange settlement is chiefly denominated in yen. Japanese stocks often trade at much higher price-earnings ratios than American stocks, averaging 65: 1 as compared to 12: 1 at the New York Stock Exchange (NYSE), in part because earnings are not consolidated due to corporate cross-listing and in part because of differences in accounting practices.

Most of the stocks are traded only on the Computer-Assisted Order Routing and Execution System (CORES). Exchange member companies have on-line terminals in their main offices to send in orders and receive verification. In the TSE Computer-Assisted Trading Room Saitori clerks monitor the computers, which automatically match orders on their "Book Display Device" or display screens. When a transaction is completed, the notice is sent to a Trade Report Output Device in the office of the firm that placed the orders, and recorded on the Saitori members' Trade Report Printers.

There are three kinds of stocks:

. First Section issues, the most actively traded stocks (1,169 in 1989), of which only the 150 most "blue-chip' trade on the stock exchange floor, while the rest trade on CORES;

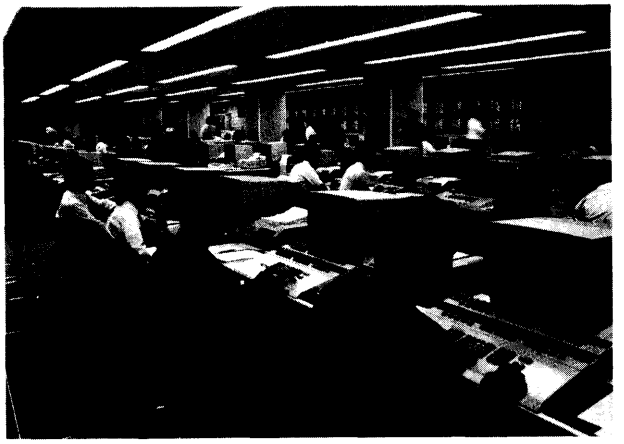


Photo credit: Courtesy of Tokyo Stock Exchanges

Tokyo Stock **Exchange computer-assisted trading room**

. Second Section stocks (434 listed), all trade on CORES; and
• Foreign Division listings (120),also trade on **CORES.**

Of the 1,723 listed issues in 1989,1,573 are traded only electronically. However the other 150 issues, which trade on the floor, represent about 78 percent of all trading volume by shares.[14] Stock Price display boards immediately display the price information. The layout of the Exchange floor is much like that of the NYSE, but the hand signals used by the traders are more like those used at the Chicago futures exchange.

Only First Section stocks can be traded on margin. The customer deposits guarantee money at a prescribed rate with the securities company, and can also use securities as collateral (they are given a special "loan value"). The customer pays interest until he returns the money borrowed from the securities company. For individual investors, about 39 percent of transactions were margined in 1988, an 8 percent increase in that year. The use of margins had been declining since 1982, although the value of margined transactions had continued to rise (as much as 39 percent in 1988).[15]

A market information system conveys quote and price information to the offices of the securities

[13]Tokyo Stock Exchange, *Fact Book 1989,* p. 16.

[14]These figures were supplied by Nomura Research Institute, New York, NY, January 1990. The TSE *Fact Book 1989* lists comparable figures fOr 1988: of 1,802 listed stock (1,690 domestic, 112 foreign), 1,652 are traded on CORES and 150 on the floor.

[15]Tokyo Stock Exchange, *Fact Book 1989,* p. 24.

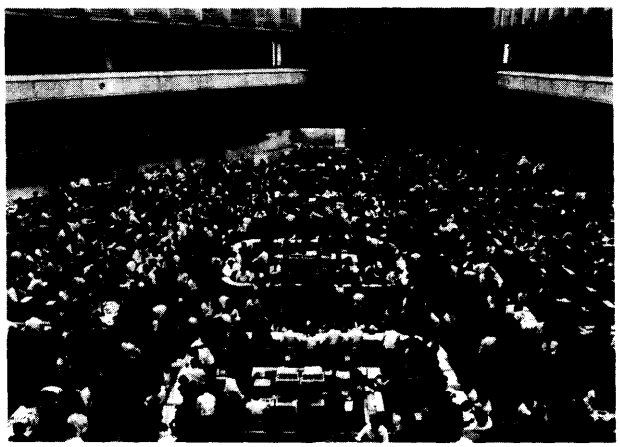


Photo *credit: Courtesy of Tokyo Stock Exchanges*

Tokyo Stock Exchange stock trading floor



Photo credit: Courtesy of Tokyo Stock Exchanges

Government Bond Block Trading Room

companies, the media, and information vendors as well as to the stock price display boards on the trading floor. However, no vendor is permitted to provide real-time digital price or quote streams to investors away from the floor.

The bond trading floor is much like the stock trading floor. Member companies place orders by telephone directly to Saitori members in a special government bond block trading room. However, most bond trading is over the counter, including large block trading in government bonds and yen-denominated foreign bonds.

Since there are no market-makers or specialists in the TSE, the function of keeping an orderly market is handled in other ways.[16] When there is a major order imbalance in a listed stock, the Exchange posts a "special bid quote" or a "special asked quote" that is better than the last sale price. This can be renewed or modified every 5 minutes until it elicits enough orders to reestablish some equilibrium. Another way of controlling ups and downs is the daily price limit (which is imposed on the basis not of a percentage change in price but an absolute yen limit). Listed stocks cannot be traded at a price that exceeds the limit of price fluctuation from the closing price of the previous day (the permitted fluctuation is proportional to the price level, i.e., a high-priced stock can fluctuate more than one selling at a much lower price.) Finally, there are temporary trading halts when the market becomes too volatile.

Derivative Products Markets

In 1985 the Tokyo Exchange started anew market for long-term Japanese government bond futures. Trading is conducted largely by computer. In *3 years, this* has become one of the major financial futures markets of the world. Access to futures trading is open not only to regular member firms, but also to non-member securities companies and banks.

In June 1987, the Osaka Securities Exchange began trading on stock average futures, using a bundle of 50 blue-chip stocks traded in Osaka. Trading in cash-settled TOPIX futures at the Tokyo Exchange and the Nikkei 225 futures at the Osaka both began on September 3, 1988.[17] This was described as an opportunity "to offset general market risk, gain financial protection, maintain profitability, invest in the market as a whole, and arbitrage between futures and cash markets. ' A representative of the Ministry of Finance, Sadaaki Hirasawa, said that government policy would encourage the development of futures markets with "high priority for protecting the position of investors and other market participants."[18]

[16] Ibid., p. 12.

[17] The Nikkei Average Share Price Index is similar to the Dow Jones, and is built on the prices of 225 First Section stocks. The principal difficulty with this index is that it is not weighted and the Tokyo stock price index (TOPIX) was developed in 1969 to remedy this-it is the weighted average of all First Section stocks.

[18] Sadaaki Hirasawa, "Catching Up-Fast," *Look Japan,* July 1988, p. 10.

But on December 8,1988, the Nikkei 225 first fell nearly 200 points in the first 15 minutes of TSE trading and then jumped 300 points in the final 30 minutes. Program trading led by U.S. firms was blamed. On the day before, there was an unprecedented volume of trading in stocks, as traders took advantage of price differences between stocks and stock-index futures on the first contract expiration date for contracts.

A month later (Jan. 13, 1989) the president of the exchange said publicly that the exchange might move to restrict arbitrage trading between stocks and stock-index futures because arbitrage by foreigners might induce "excessive volatility and confusion.' '[19] Before Japan's second witching hour, March 7, 1989, there was worry that a sell-off could drop the Nikkei by as many as 1,000 points. Accordingly, the exchange followed the example of the Chicago Mercantile Exchange and changed the rules so that the settlement price for TOPIX futures is based on the opening stock prices the day after expiration. The Exchange also changed stock margins from 30 to 40 percent.[20]In December 1989, two New York firms—Salomon Brothers and Morgan Stanley-who had publicly announced that they would cease program trading in the United States, were reported to be actively program trading in Tokyo, arbitraging between the two stock indexes, the Nikkei and TOPIX.[21] The vice-chairman of Salomon Brothers, Stanley Shopkorn, was quoted[22] as saying,

> The Japanese have an ability to monitor and make sure the market works in a more orderly fashion. They don't have the fears that U.S. investors have regarding index arbitrage.

But on February 26, 1990, after the Tokyo market dropped by 11.5 percent in a week, program trading was again blamed for the break. The Tokyo Stock Exchange imposed restrictions on computerized program trading between the futures and cash markets, and the Ministry of Finance was reported to have called in large institutional investors and leading brokers to discuss the market situation.[23] After further declines in the market, U.S. firms were asked in early March to restrict their program trading.[24]

It is thought that program trading in Japan is mostly done by U.S. fins. To do program trading, brokers need to sell huge blocks of stocks, which may depress the prices of those stocks. In Japan, companies may identify which broker was selling the stock and punish them by withholding underwriting or other business from that company. The U.S. firms say, however, that much of their program trading is on behalf of large Japanese insurance companies and trust banks.[25] In the midst of the renewed controversy about program trading, in March 1990, Nomura Securities Co. (the largest securities firm in the world) announced that it would begin program trading, and had hired an experienced American securities expert to oversee their new activity .26

Futures and options trading, nevertheless, is growing rapidly.27 Three index options contracts began trading in mid-1989. The volume of trading in the most popular of these, the option on the Nikkei-225, has grown to about 65,000 contracts per day.

Over-the-Counter Market

About 250 companies are listed on Japan's over-the-counter market; to be listed requires that an average 2,000 shares are sold per month.[28]This

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[19]Quoted in "Tokyo Exchange May Act To Curb Arbitrage Trades,' *Wall Street Journal,* Jan. 13, 1989p. C 14,

[20]"By Bell, Book, and Candle,." *The Economist, Mar. 4,* 1989.

[21]"U.S. Firms Using Program Trading Make Tokyo Stock MarketJump," *Wall Street Journal,* Dec. 9, 1989, p. C 1.

[22]Sarah Bartlett, "~@ Arbitrage for U.S. Finns, " New *York Times,* Dec.19, 1989, p. D 5.

[23]Michiyo Nakamota and Stefan Wagstyl, "Tokyo Curbs Arbitrage Trading," *Financial Times*, Feb. 27, 1990, p. 1.

[24]Marcus Brauchli and Masayoshi Kanabayashi, "U.S. Brokers Asked in Japan To Curb Program Trading, *Wall Street Journal, Mar. 9, 1990.*

[25]Ibid.

[26]Michael R. Sesit and Craig Torres, "Nomura To Plunge Into Program Trading on Global Scale, Challenging U.S. Lead," *The Asian Wall Street Journal Weekly, Mar.* 19, 1990, p. 27.

[27]Trading in the N&K225 and TOPIX futures contracts, added together, is now higher than trading in the U.S. Standard & poor 500 index futures (according to Andrew Freeman, "Japanese Contracts Could Overtake U.S. Equivalents, " in the special section of Japanese markets, *Financial Times, Mar. 9,* 1990) but such comparison can be misleading. Because of differences in U.S. and Japanese margining systems, it is customary to sell and repurchase more frequently, to capture profits.

[28]*Asset International*, Nov. 20, 1989, p. 9.

market grew at a rate much slower than expected until mid-1989, but thereafter became more active. The Japan Securities Dealers Association has developed anew electronic quotations system modeled on the NASDAQ (National Associates of Securities Dealers Automated Quotation) system in the United States; it will be called JASDAQ.

The over-the-counter market was the locus of the "Recruit-Cosmos" influence-peddling scandal, in which senior government officials, including the finance minister, made large profits by buying a company's stock just before, and selling it just after, it was approved for over-the-counter sale. The Japan Securities Dealers Association, which is the self-regulatory organization for the over-the-counter market, has now proposed new, tighter, regulation to prevent this kind of insider trading.

Clearing and Settlement

All clearing and settlement for stocks is handled by the Japan Securities Clearing Corp. (JSCC), a subsidiary of the TSE, and is usually done on the third business day after the trade. The failed-trade rate is less than 1 percent. Recently, high volumes of trading are pushing this system to its limits, and a "back office" (after-the-trade paperwork) crisis is threatened. (See ***Appendix A: Clearing and Settlement,*** for a detailed description.)

There is a book-entry clearing system; however, JSCC is technically required to return the deposited share certificates to the owners once a year and whenever a shareholder requests it. This is a major burden on the institutions and the market. Discussions on how to improve the system have gone on for many years. A Central Depository and Clearing of Securities Law was enacted in 1984, but the new Depository Center that it sought to create is not yet operating; it may begin in late 1991. Settlement costs in Japan are very high compared to other markets.

For foreign stocks, clearing and settlement is through full book-entry transfer at the JSCC, which has cooperative agreements with overseas public clearing organizations, securities depositories, and commercial banks that keep the underlying foreign shares in the home country.

Market Regulation[29]

The TSE is a non-profit corporation, self-regulating but under the close supervision of the Ministry of Finance. Many changes have been made in the regulatory and tax structure since 1987. Exchange members themselves proposed new rules to curb stock manipulation, to make initial public offerings more competitive, and to dismantle procedures that allow stock to be transferred to selected people at advantageous prices (as in the recent Recruit-Cosmos scandal).

TSE publications prominently emphasize a determination to guarantee the public interest and protect investors, and they tie this to "the principle of auction,' which is defined as time and price priority.[30] Rules say that financial statements and any other company news that may influence the prices of securities must be "disclosed accurately, promptly, and impartially, at the appropriate moment without delay." Nevertheless the Japanese markets are far from transparent. The Ministry of Finance announced in January 1989 that it would tighten stock-ownership disclosure rules, making them similar to U.S. and British regulations.[31]

Although insider trading has always been against the rules, neither violations nor reprimands were made public, and most market participants reportedly did not consider them a serious violation of either law or ethics. In early 1989 Japan for the first time provided criminal penalties for insider trading. Japan's Securities Exchange Act of 1948 has many investor protection clauses patterned after those in U.S. laws, but according to a leading Japanese critic of the markets, the laws ''have not been satisfactorily enforced."[32] Shuzo Nakashima, of the Hijiribashi Law Firm, identifies two reasons for this: 1) because of cross-holding of shares among corporations, the interests of other shareholders can be "ignored and neglected most of the time' and 2)

[29]Sources: "Regulations of the Tokyo Stock Exchange," 1986; "Constitution of the Tokyo Stock Exchange," 1986; "Listing Regulations of the Tokyo Stock Exchange," 1984; "A Listing Guide for Foreign Companies," no date; all supplied by the Tokyo Stock Exchange.

[30]That is, the lowest-priced offer and the highest-priced bid has first priority, and if two are placed at the same price, priority is given to that received first.

[31]Marcus W. Brauchli, ''Japanese Regulators Seeking To Tighten Rules on Stock-Ownership Disclosure, "Asian *Wall StreetJournal,* Jan. *23,1989, p. 18,*

[32]Nakashima, *op. cit.,* footnote 10.

enforcement is neglected because the regulating authority (the Securities Bureau of the Ministry of Finance) is chiefly concerned with the growth of the Japan securities industry and its brokerage firms. Mr. Nakashima lists as major problems insider trading, price manipulations, churning, and fraud by securities advisers.

Japan, like the United States, legally separates banking from securities markets, the Glass-Steagall Act having been the model for Japan's Article 65, adopted during the American Occupation. As in the United States, this separation has been made less effective by a combination of deregulation and technology. The largest banks are demanding universal banking (i.e., permission for banks to engage in all kinds of financial activity, including securities trading) while the securities firms want to preserve the separation. The Ministry of Finance is reported to be considering a compromise in which banks could set up brokerage subsidiaries and securities firms could open bank subsidiaries.[33]

This issue has been complicated by the impending introduction of GLOBEX (discussed in ch. 2), the electronic trading system being introduced by the Chicago Mercantile Exchange and Reuters. Japanese banks began planning to put GLOBEX terminals in their offices for trading interest rates and currency futures, and later stock index futures and options. But the banks were for a time discouraged by the Ministry of Finance; but on May 21,1990, the Ministry of Finance approved the use of GLOBEX terminals.

Tokyo as a World Center for Securities Trading

Japan is often mentioned as America's top competitor in securities trading, primarily because the Tokyo Stock Exchange rivals the NYSE as the world's largest market. It is not, however, as intimationalized as London, nor as accessible to foreign traders or investors as either New York or London. Language, culture, and high startup costs are all significant barriers.

Most of Tokyo's trading is concentrated in a few major issues; the 30 most active stocks account for about 46 percent of volume by transactions and 39 percent by value. No one is allowed to deliver real-time digital price data by electronic systems to investors. Frequent trading halts may alarm some foreign investors who are not accustomed to circuit-breakers. There is a trading tax in Japan, of 0.30 percent of the value of the transaction. Commissions, particularly for retail customers, are high compared to other markets, and the paper-based settlement system, which does not centralize settlement between brokers and custodians, is expensive for institutional traders. Investor protection is weak. So long as Japan's economy is strong, however, its securities markets will continue to be strong competition for those in the United States.

THE UNITED KINGDOM

London is the other major competitor to New York stock markets and Chicago futures markets in world trading. The International Stock Exchange of the United Kingdom and the Republic of Ireland (ISE, or informally, the London Stock Exchange)[34] is the most "internationalized' of the major markets, with 1,987 domestic and 707 foreign listings (23 percent). It trades listed bonds and equities, unlisted securities, and options.[35] The ISE is now struggling to adjust to changes brought about by deregulation, automation, and the crash of 1987, but it has many advantages as a center for global trading. Foreign shares account for about a quarter of all transactions at the ISE.

The ISE is among the world's largest stock markets by capitalization, but usually ranks after Tokyo, New York, NASDAQ, and Osaka. The average number of ''bargains' (trades) per day increased by 42 percent from 1983 to 1988, but the average number of shares traded increased by 192 percent (to 408.5 million), reflecting an increase in the number of large blocks.

London is also the home of the 7-year-old London International Financial Futures Exchange (LIFFE)

33 ''Japanese Financial Deregulation: Into the Doldrums,'' *The Economist*, May 20,1989, p. 87.

34 Separate exchanges *in* eight cities—London, Belfast, Birmingham, Bristol, Dublin, Glascow, Liverpool, and Manchester-were merged in 1973. The London Stock Exchange was renamed the International Stock Exchange in 1986. Spicer & Oppenheimer, ***Stock Markets Around the World*** *(New* York, NY: John Wiley& Sons, 1988); pp. 207 ff.

35 The Unlisted Securities Market handles issues of companies that are not listed because they wish to raise smaller sums of money than listing requires, wish to release a smaller percentage of total equities, or have too short a trading record. There is an over-the-counter market for equity and corporate bonds.

and the center of the Eurobond market, although neither is part of the ISE.[36] The Eurobond market is an over-the-counter market operated by banks and stockbrokers. Its investors are principally institutions, and Japanese firms have come to dominate Eurobond underwriting.

Most major American and Japanese securities firms are members of the ISE, but none has succeeded in capturing a significant market share in U.K. securities. American firms have done well in marketing advisory services, banking services, and in mergers and acquisitions.

In October 1986, the British Government deregulated the securities market, an event known as "Big Bang." Fixed minimum commission rates were abolished. Mandated separation of brokering and dealing functions ("single capacity") was also abolished; firms could now operate as both brokers and dealers, trading for customers and for themselves. Big Bang opened up the markets. British banks were allowed for the first time to become full-service financial institutions; they can underwrite securities and can own brokerage houses. Restrictions on foreign membership ended. Foreign banks can now own up to 100 percent of British brokerage fins. Most of the leading firms in the ISE are now corporations, many owned by international banks and finance houses. Before deregulation, they were all partnerships and the London Stock Exchange was much like a gentlemen's club.

The change in market structure was profound; the Council of the International Stock Exchange says:

> Indeed it was thought that these changes in working practice were so great that it would not be possible to implement them in a staged manner but they would all have to be implemented in a "big bang. "[37]

The ISE Planning Committee "had been worried that insufficient market-making capacity would come forward,' but instead 'the degree of oversubscription was awesome. "[38] The rigorous competition among them contributed to serious adjustment problems. Nevertheless, business volumes increased significantly after Big Bang, by some 85 percent for customer business and an equal proportion through ''inter-market-maker dealings.

How the Market Works

ISE modeled its new electronic trading support system-Stock Exchange Automated Quotations (SEAQ)--after the National Association of Securities Dealers Automated Quotations system (NASDAQ) in the United States, deliberately rejecting the specialist system in favor of competing market-makers. Quotations are displayed on the computer network, and transactions can take place either by telephone or on the floor. In fact, the floor was quickly abandoned,[39] and all trading takes place by telephone. The distinction between exchange and over-the-counter trading effectively disappeared. The ISE's competing market-makers are required to try to make continuous markets in the stocks in which they deal from 9 a.m. to 5 p.m., but they do not have the affirmative obligation to trade their inventory that NYSE specialists have.

After deregulation, commissions paid by institutional investors dropped to about 0.2 percent of transaction value, or moved to a "net price, free of commission" basis.[40] In spite of the halving of commissions, ***The Financial Times*** reported in October 1987 that London stock exchange firms had earned much higher income over the year ''as a result of the upsurge in turnover during the past year, particularly from small investors. "[41]

Immediately after Big Bang, market-maker firms spent millions on computer systems. Big Bang led to rapid expansion (the number of market-makers on ISE grew from 5 to 31). Competition was intense. After the 1987 crash, the drop in trading volume put

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[36]Settlement and custody for Eurobonds are directed by the Association of International Bond Dealers (AIBD) and processed either by Euroclear, in Brussels, or Cedel in Luxembourg.

[37]''Review of the Central Market in U.K. Equities,' A Consultative Document from the Council of the International Stock Exchange [hereafter cited as "Council of the ISE"], May 1989.

[38]Ibid., p. 6.

[39]It is empty most of the time. Observers report that on Oct. 19.20,1987, when the New York exchange floor and Chicago pits were bedlam, the London floor was eerily empty. All action was "upstairs" in the members' offices and trading rooms.

[40]There is a value-added tax of 15 percent on commissions, a transfer stamp of 0.5 percent on purchases, and a levy of £0.80 on trades of over £1000 to finance the regulatory framework. It was announced in March 1990, that the transfer stamp duty will be eliminated when a new computerized registration system, described later in this chapter, is completed.

[41]Clive Wolman, ''SE Firms Stock Up on Earnings," *Financial Times,* Oct. *27, 1988, p.* 14.

the London securities industry into a period of severe cost-cutting and budget-tightening. By March 1989, it was reported that British brokerage houses had lost $2 billion since Big Bang, and had eliminated thousands of jobs.[42]

There have been continuing problems for ISE. A year after the crash, there was evidence that an increasing amount of business **was** being done off-exchange using market prices available on SEAQ. The Council of the ISE concluded that 'the threat of fragmentation was very real."[43] SEAQ required traders to post on its computer display their bids and offers and the quantity of shares for which they are prepared to deal at that price. For this "transparency" big market-makers paid a price. Smaller, competing market-makers could "dump" stocks on them or raid their inventories, thus conveniently closing out their own positions at the end of each trading day.[44] When two large market-maker firms announced that they were reducing the size of deals that they would guarantee to transact at their SEAQ-quoted prices, the ISE dropped its "inter-market-maker obligation," the requirement that market-making firms deal with one another at the quoted prices.[45] A second change in the roles allowed reporting of large trades to be delayed until the following day, so that traders can buy and sell large blocks of securities without immediately moving the market price.

The rationale for these "temporary" changes was that they would lead to market-makers displaying more realistic sizes on SEAQ. While there might be an immediate reduction in inter-market-maker business and large block trades, it was hoped that some firms would provide more competitive prices in large trades in the knowledge that they could sell off large blocks through retail outlets and their positions would not be jeopardized by having to deal with their competitors at these favorable prices.

Subsequent analysis of response to the changes indicates that there has been an increase in the proportion of deals done "at the touch" (i.e., at the best bid/offer on SEAQ) and no significant decline in intra-market liquidity, but also no immediate increase in large trades on the exchange--the trend to off-market trading had not reversed.

The rule changes made the market less "transparent,' and decreased the flow of information. Last-trade prices for large blocks are not at once available. This made it difficult to provide efficient indexes for purposes of pricing derivative products.[46] It tended to create a ''two-tier' market by encouraging market-makers to reserve their best prices for large clients, buying or selling large size blocks at negotiated prices. SEAQ was therefore less reliable at reflecting true market prices. In fact, however institutions often continued to deal among themselves and stay away from the exchange altogether.

Although some critics blame the "automation" of the market (meaning the demise of its trading floor activity) for its problems, others appear to fault the exchange for poorly conceived, poorly planned, and poorly integrated systems. For example, a recent editorial in *The Economist* said,

> Punished by the inertia brought on by internal dissent, the exchange has never truly found its place in the decartelized world that followed the City of London's Big Bang in October 1986. . . . Member firms have lost hundreds of millions of pounds in the fierce competition to trade British equities. The efficiency of this screen-driven money-loser has highlighted, in turn, the awful inefficiency of London's paper-pushing settlement system-as well as the mish-mash of technical systems that makeup the market's creaky infrastructure.[47]

The editorial identified two problems with the ISE related to technology: a) the difficulty of using the same system to serve both small private clients and large institutional investors, and b) the separation of domestic and international markets with separate rules and trading systems.

42Most American Banks had bought British firms lost money, Chase Manhattan bank ended its equity operation in London in January 1989 with a $40 million loss. Security Pacific Corp. and Citicorp also lost money.

43Council of ISE, op. cit., footnote 38, p. 7.

44In the United States, NASD found it desirableble to prohibit the use of NASDAQ' small-order execution system by professional traders, who would "pick off' market-makers' displayed quotes before the market-makers could react to news or rumors affecting the value of stock.

45Under the older market-makers had to trade with clients, agency brokers, and others market-makers at the**price they had listed** on SEAQ. Under the new rule market-makers must trade at that price with clients and agency brokers, but not with other market-makers.

46The index usually used to indicate the performance of the ISE, is the Financial Times/Stock Exchange 100 Share Index, or FTSE.

47"Tower or Indecision," The ***Economist,*** Feb. 24, 1990.

An editorial in the ***Financial Times,*** on the other hand, suggested that the exchange's central divisions and services should be "unbundled' and broken apart, made to "stand on their own feet."[48] The editorial said,

> Nor, given the exchange's current maze of electronic services, many of them in urgent need of overhaul, is it clear why member firms should want to be tied to the exchange by the sort of electronic umbilical cord envisaged by the Elwes group [an ISE policy committee that is described below].

In other words, there appears to be a general disquiet and dissatisfaction with the ISE, but little consensus on the nature, the causes, or the treatment of the problem. There is a continuing debate about the structure of the exchange. Some members advise better integration of ISE's domestic and international trading (now handled by separate divisions at the exchange). Others take an opposite approach, arguing that there should be different procedures, different technology, and different rules for professional/international trades and for retail/domestic trades, possibly even a return to the trading floor for the latter—an institutionalized two-tier market. A third school believes that ISE's major problem is simpler—cut-throat competition among its now 25 market-makers-and can be solved only when some of them are shaken out.

By early 1990, the exchange was considering reverting to its old rules, restoring the obligations of market-makers for firm bids and offers, dealing with all customers at displayed quotes, and reporting large trades' prices immediately. These changes were recommended by an internal policy subcommittee called the Elwes group. The Elwes Report asserted its conclusion that:

> . . .within the developing European and International environment, whilst *SEAQ* and the Competing Market Maker System, with telephone negotiation, will remain pre-eminent as a means of transacting large securities business, there will be a growing acceptance of automatic execution systems for small business as well as greater demand for efficient limit minding and execution facilities especially for the less liquid securities.[49]

The report said the role of the exchange was shrinking, as trading migrated away from the exchange to off-board trading, creating the danger of fragmentation of the central market. The committee emphasized the importance of encouraging retail clients, and its continued belief that a quote-driven system, rather than an order-driven system[50] "should be the mechanism for trading EK equities.' There were four primary recommendations:

- the introduction of a central limit order facility;
- mandatory preferencing of orders, requiring brokers to direct their orders over telephone or proprietary dealing systems to market-makers displaying the best price (rather than one not displaying the best price, but willing to trade at the best price);
- an "order exposure" rule for agency crosses and matching principals, requiring their orders to be exposed to a market-maker and take account of existing limit orders,
- requiring market-makers to meet a minimum quote size, with larger trades published as to size immediately and as to price 90 minutes later.

The preferencing recommendation was aimed at the problem that unless a market-maker is assured of a reward (increased order flow) for making the best bid/offer, there is no incentive to make competitive prices and narrow the price spread, especially if by so doing he allows his competitors to "hit" him at that price. The price-discovery function of the market is threatened, and the central market may become irrelevant. The report recommended that the old rules obligating market-makers to make firm prices in size for brokers dealing as principals be reinstated. The committee also called for efforts to improve cost-effectiveness (especially improvement of the settlement system).

Following the release of the Elwes Report, the ISE began restructuring, by eliminating 80 percent of its committees and eliminating 350 jobs, with further

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48"Future of the Stock Market" [Lead editiorial], London's Financial Times, Mar. 2, 1990,p. 18.

[49]Its chairman was Nigel Elwes of Warburg Securities. The Report of the Special Committee on Market Development "Review of the Central Market in UK Equities," March 1990.

50 In the United States, the National Association of Securities Dealers' Automated Quotation system (NASDAQ), used by over-the-counter dealers, is a quote-driven system. The New York Stock Exchange uses "order-driven" systems, meaning that the customer bids and offers, rather than dealers' quotes, are the basis of matching buyers and sellers to determine a going price.

reductions expected. The exchange was to be reorganized into three divisions, each of which will have its own managing director, management board, and responsibility for its own computer systems and rule-making. The three divisions will be: 1) a primary markets division to carry out regulatory responsibilities and provide services for corporate issuers, 2) a trading markets division to manage secondary trading, and 3) a settlements division. The exchange said that the restructuring was to ''bring focus to its disparate operations and introduce a more commercial environment for its managers. ''[51] The chief executive of the exchange emphasized in interviews that an immediate task would be the "rationalizing" and "re-engineering" of the many large computer systems serving the various trading markets.

In spite of its problems, SEAQ was given credit for strong performance on October 16, 1989, when European markets fell sharply following the 7 percent drop in the U.S. stock market the previous Friday.[52] The ISE index value dropped 9 percent but regained most of that before the end of the day. SEAQ continued to quote real-time prices throughout the slide and thereby drew trades from the French bourse, which closed, and Frankfort, where the market fell 13 percent.

Clearing and Settlement

Equities and corporate bonds are traded in 2-week **"account periods."** All trades done in a given **account period are** scheduled for settlement on the sixth business day after the end of the account period. Thus settlement may be as late as 16 business days or 21 calendar days after the trade. Clearing and settlement costs are high. ***(See AppendixA: Clearing and Settlement,*** for **a** detailed description.)

Settlement between brokers and market-makers is through a central clearing service, TALISMAN, owned by the ISE and linked to company registrars. Individual investors, but not institutions, must settle with their broker whether or not the broker has satisfied his part of the settlement. For government securities, there is a computerized book-entry transfer system, operated by the Bank of England, and settlement is normally on the next business day.

Market Regulation

The Financial Services Act of 1986 is now the basis of Britain's securities markets regulation. The ISE is a registered investment exchange, whose members must belong to a self-regulatory organization such as The Securities Association (TSA), which also oversees the Eurobond market and corporate finance activities. Both the ISE and TSA come under The Securities and Investment Board, which authorizes exchanges and self-regulatory organizations, and is itself overseen by the British Government Department of Trade and Industry. The ISE and TSA share responsibilities for investor protection.

Big Bang represented access deregulation, but not prudential deregulation. The United Kingdom has more investor protection and related regulation than other European countries.[53] Because of the European Community's 1992 Directives, aimed at harmonization of regulation, there may be pressure to relax these regulations. The British securities industry reportedly shares a consensus that the 1986 Financial Services Act and the resulting level of prudential regulation is too burdensome and could detract from London's competitiveness.[54]

The London International Financial Futures Exchange (LIFFE)

LIFFE is not part of the ISE,[55] but its presence adds strength to London's position in securities trading, as does the presence of the Eurobond Market. LIFFE was organized in 1982. It trades futures contracts on interest rates, currency rates,

51 As reported by Richard Waters, "London SE Sharke-up Cuts 350 Jobs, Most Committees," in the Financial Times, Mar. 22, p. 1.

52During and after the 1987 crash there were criticisms of ISE performance as there were of other national exchanges. The Exchange rejected proposals breakers be instituted. There were complaints that some market-makers did not answer their telephones to avoid having to deal; but later evaluation indicated that much of this could be blamed on lack of telephone line capacity. The Council of ISE reports that: "Institutions in general acknowledged they had been able to divest in some lines of stock with market makers whose motivation in entering into bargains could only have been loyalty to their customers and their duty under the rules of the exchange.. . [T]he market makers were net buyers of securities to the value of L.250 million . . ." Council of ISE, op. cit., footnote 38, p. 7.

53Sir David Scholey, "Deregulated Competition or Competitive Deregulation?" ***Institutional Investor,*** April 1989, PP. 12-13.

54Based on interviews conducted by E. Clemens and others for OTA, op. cit., footnote 1.

55On Apr. 4, 1990 there was an announcement in London that LIFFE and the London Traded Option Market which is part of ISE, would merge; the form of this merger is not yet clear.

and on the stock index. It also trades American-style options contracts.[56]

In its promotional literature, LIFFE stresses the advantages of its position between the Far East and North America, when ". . the gap between the end of trading in the Far East and the start of trading in Chicago can be as much as six hours."[57] LIFFE is developing an electronic trading system, Automated Pit Trading System or APT, that emulates open-outcry trading, and is similar to the AURORA system developed by the Chicago Board of Trade (see ch. 2). APT is intended to extend trading hours to cover the European trading day, but it will not be a 24-hour system and will not be available outside the United Kingdom (LIFFE says that the cost of high-speed communications links is prohibitively high) .58

London as a World Center for Securities Trading

London has a long tradition as an international financial center, and is now the most internationalized of the major securities markets. The liquidity and depth on the ISE are generally good. Very large positions are routinely moved at the 'touch price," or the best buy or sell quote on SEAQ. Until rule changes in February 1989 (allowing traders to delay reporting deals over £ 100,000) transparency was considered to be excellent (market-makers had argued that there was too much transparency). It is now less transparent, but the 1989 rule changes may be reversed. Market surveillance is considered to be good.

Spreads and commissions have been driven down by competition and are now very low; however, settlement costs are disproportionately high. For 8 years there have been plans to end the use of share certificates by developing a computerized share register—''Transfer and Automated Registration of Uncertified Stock,' or TAURUS. It was delayed by "Big Bang" and the post-1987 decline, and the ISE's efforts to complete the design have been criticized as too costly by registrars and banks (many of whom have vested interests in the paper-based system, since it provides them with fees).

Since the introduction of SEAQ International, as much as 25 percent of the total turnover in French and German stocks on a given day has involved at least one counterpart in London. After Sweden, in 1986, imposed a trading tax of 1 percent on both sides of a trade, trading volume in shares of 10 Swedish companies rose temporarily in London, to 5 times the volume on the Stockholm bourse.[59] Now 15 firms make market in the& Swedish shares on SEAQ International.

Nevertheless, the ISE has serious problems. The competition between London's markets and those on the continent is strong. How this competition will develop in the context of the European Community's 1992 initiative is uncertain.

THE EUROPEAN COMMUNITY MARKETS

Europe has 39 stock exchanges, as well as some uncentralized or over-the-counter markets and informal, off-exchange trading networks. European stock markets, apart from London's, are not now strong competitors to the major market countries. However, one of the major objectives of the Commission of the European Community (EC) is to create and strengthen a European securities trading arena. Significant progress has been made in harmonizing securities laws and regulations--i.e., making them similar and more compatible with the goal of achieving effective harmonization by 1992.

There are proposals to establish a European equities exchange network on which a "Single European List" of shares of 300 large European and foreign corporations would be traded, through an intermarket trading system, like the Intermarket Trading System (ITS) in the United States. On the other hand, Andrew Hugh Smith, chairman of the ISE, has proposed that SEAQ-International be the

56 There are two kinds of opions. Conventional or "traditional" options, sometimes called European-style options, can be written on any listed security, are for a period of 3 months, are traded over the counter, are not transferable, and must be exercised on a specific day. "Traded options" or American-style options are available on specific securities, for 3,6, and 9 months, and may be cashed by sale. Both kinds of options can be written in both the United States and Europe. LIFFE options are American-style options and include options on futures. See *LIFFE: An Introduction*, published by LIFFE.

[57]Ibid.

[58]''Europe Forges Ahead in the Technology Race," *Futures and Options, Special* Supplement to *Euromoney*, July 1, 1989, p. 24.

[59]''Taking Stock Home," *The Economist, May 28,1988,* p. 102.

international marketplace, under a' 'joint initiative' of the ISE and the German Federation of Stock Exchanges, based in Frankfort. The Federation of European Community Stock Exchanges is planning "le PIPE," a network to distribute market data from and among 12 EC member countries. This could, in time, develop into a trading system.

The EC has a consumer potential that is 1.5 times that of the United States and 3 times that of Japan, but the EC countries do not have a strong tradition of individual investment in securities. Their exchanges are, however, already ''international. " A number of them have recently been deregulated to give broadened access to their markets, and some have begun ambitious programs of automation. The EC must therefore be considered a potential competitor in global securities trading.

Of the 12 EC countries, the United Kingdom, already discussed, has about 35 percent of total market capitalization, West Germany has about 13 percent, and France nearly 12 percent. West Germany began, in 1989, a screen-based system (IBIS) for displaying market data on major stocks at eight West German exchanges. The Paris bourse is making significant investments in technology in an effort to strengthen and expand its market share.[60] It has, in the past 6 years, created four new markets, for: 1) issues of small companies (the Second Marche), 2) futures contracts (MATIF), 3) options (MONEP), and 4) money market funds (Inter-SVT). France has also restructured the stock exchange for broader capitalization, re-privatized its government-controlled banking system, and lifted all foreign exchange controls.

Other European markets are also being strengthened and are undergoing technological and regulatory changes. Individual ownership of securities is not widespread in Europe.[61] Even in the United Kingdom, which has the most well-developed securities markets, less than 3 percent of households owned corporate shares in 1980 compared to about 19 percent the United States,[62] although this increased in the 1980s because of privatization of some British nationalized industries. Probably for this reason, there were no strong customer protection regulations in Europe; most European countries did not mandate full disclosure, prohibit insider trading, or have securities regulatory agencies. With the privatization of state-owned enterprises in several countries, bringing with it national policies for encouraging stock ownership, prudential securities regulation began to emerge. No comprehensive national securities laws were enacted until recently, under prodding by the Commission of the EC and following several widely reported stock market abuses.

The EC'S 1992 Initiative

The Commission of the EC recognized from its beginning in 1957 that there should be special benefits from the integration of financial services markets, due to the "unique pivotal role played by financial services in catalyzing the economy as a whole."[63] But there was little progress for nearly 30 years. In 1985 the Commission of the EC issued a White Paper, *"Completing the Internal Market,"*[64] an ambitious legislative proposal to achieve a single market by the end of 1992. The White Paper proposed 300 directives aimed at regulatory harmonization among the member states.[65] In 1986,279 White Paper proposals (and a Dec. 31, 1992, deadline for implementation) were incorporated in an Amendment to the Treaty of Rome, entitled the Single European Act. This strengthened the legal framework for development of a common market.

In these directives the EC did not seek to establish identical regulatory regimes, but instead prescribed basic essential principles with a requirement of

[60] Discussion with Paris bourse officials, Apr. 2, 1990.

[61] B. de Caires, *GT Guide* to *World Equity Markets 1988,* 101; *Euromoney Public,* 1988, p.113.

[62] ''Into the Provinces," *The Economist, Nov. 12, 1988,* p. 131; also SEC, "Internationalization of Securities Markets," Staff Report to U.S. Senate Committee on Banking, Housing, and Urban Affairs and House of Representatives Committee on Energy and Commerce, 1987.

[63] Cecchini, *The European Challenge 1992: The Benefits of a Single Market,* 1988, p. *37.*

[64] *Completing the Internal Market:* white paper from the Commission to the European Council, COM (85) 310 final, June 14.1985.

[65] Under the Treaty of Rome, "directives" proposed by the 17-person Commission (2 representatives each from the 5 largest countries and 1 representative each from 7 smaller member states) and unanimously accepted by the EC Council of Members, must be implemented by national legislation within each member state within a prescribed period of time. The directives are binding in terms of result but national legislatures have some discretion as to ''choice of forma and methods.'' Thieffry, Van Doorn, and Lowe, "The Single European Market: A Practitioner's Guide to 1992," 12 *B.C. Int'l & Comp. L. Rev., 1989,* pp. 357, 360. The Single European Act of 1986 amended the Treaty to substitute ''qualified majority" for the requirement of unanimity in approval of directives by the Council.

mutual recognition. This appears to have made acceptance of the proposed directives much easier. About half of the 279 directives issued have been approved by the EC Council of Ministers, meaning that they are now mandatory. Some of these directives directly create supranational securities law; others are company law directives that provide the foundation and complement the securities regulations. Directives adopted or proposed in the field of securities regulation include the Stock Exchange Directives enacted prior to the Single European Act of 1986, and more diverse proposals dealing with mutual funds, prospectuses, investment services, and insider trading (box 4-A.) The last three reflect a change in the EC's approach from seeking commonality to seeking reciprocity. All of these directives rest on the foundation of full disclosure and equivalent protection built by the company law directives.

EC's company law and securities law directives seek to create a global common market for securities trading by establishing regulatory harmony and a higher level of prudential regulation to make European exchanges more attractive to foreign and domestic investors. Regulatory harmony should provide European investors with greater opportunities for portfolio diversification. Increased prudential regulation-safeguards against investor abuse and more comprehensive disclosure obligations—should promote public confidence in both primary and secondary securities markets and should also result in development of a European database on publicly held corporations. This will facilitate wider knowledge of European companies among investors, analysts, and advisers around the world, and could result in stronger demand for EC company securities.[66] It is also hoped that greater liquidity in the securities markets will promote the use of securities to fired acquisitions of other businesses; and that this will result in economies of scale. Finally, increased prudential regulation should make it easier for EC corporate issues to satisfy the regulations of stricter national authorities (e.g., the United States) and thus expand the opportunities for EC companies to raise capital outside of Europe, reducing the cost of capital.

There may also be substantial benefits for non-EC fins, including those from the United States. They will be confronted with stronger competition from European firms expanding to pan-European operations, but the directives should also result in a more level playing field for U.S. firms, because the European companies will be subjected to more stringent prudential regulations (and thus some costs they have not incurred in the past). U.S. firms, having met more stringent U.S. regulations, will have no serious difficulties or additional costs in complying with EC requirements.

It appeared for a time that the benefits of the newly integrated single market would be denied to non-EC fins. Under Article 58 of the Treaty of Rome,[67] all firms organized within an EC state are considered "nationals" and accorded regulatory parity, presumably without regard to the origin of their capital. This would apply to EC-incorporated subsidiaries of U.S. firms (although not to branches of U.S. firms). However, the reciprocity and mutual recognition provisions of some of the EC securities law directives, especially the proposed Investment Services Directive (see box 4-A), seemed to contradict Article 50's ban on discrimination. The EC ''White Paper" also reflected a Commission policy that concessions should be extracted from non-member states in exchange for the benefits,[68] and this was reiterated in the Cecchini Report, which said:

> In return, EC governments will have the right to expect appropriate responses from the community's economic partners abroad, notably the U.S. and Japan. If the fruits of the European home market are to be shared internationally, there must also be a fair share-out of the burdens of global economic responsibility, with market opening measures extended internationally on a firm basis of reciprocity.[69]

This caused non-EC firms to fear that they would not have access to the "single market" and would be at a disadvantage relative to EC firms. The proposed Investment Services Directive, for example, could

[66] Cecchini, op. cit., footnote 64, p.%.

[67] ''Companies or firms formed in accordance with the law of a member state and having their registered office, central administration, or principle place of business within the Community shall.. . be treated in the same way as national persons who are nationals of member states."

[68] *Completing the Internal Market, White Paper from the Commission* to *the European Council*, COM (85) 310 final; *pm.* 19, the only reference to non-member states, says: "Moreover, the commercial identity of the community must be considered so that our trading partners will not be given the benefit of a wider market without themselves making similar concessions."

[69] Cecchini, op. cit., footnote 64, pp. XIX-XX.

Box 4-A—EC Securities Law Directives

The Admission Directive (No. 79/279), adopted in 1979, is intended to facilitate greater interpenetration of member states' securities markets, thereby contributing to establishment of a European Capital market. Together with two other directivesl, it is intended "to establish. . . a coordinated information policy on securities." The directive assumes agreements with non-member states to recognize listing particulars, but the non-member states' laws must give equivalent protection to investors, and the non-member state must also provide reciprocity to the EC member-states. For the United States (and Canada) which have significantly more comprehensive disclosure requirements, it is unlikely that reciprocal accords can be negotiated in the foreseeable future.

The directive provides ***minimum*** requirements for listing, to construct a regulatory floor for equivalent protection for investors throughout Europe. It contemplates a "subsequent closer alignment of rules," which might be accomplished either by further directives strengthening the requirements, or by requiring mutual recognition which would effectively lower them (any exchange, as a political and economic matter, would be unable to impose stricter requirements on domestic firms than on firms from other member states).

The ***Listing Particulars Directive (No. 80/390),*** adopted in 1980 and sometimes called the Information Directive, requires extensive disclosure to the general public (some member states had required disclosure only to regulatory or self-regulatory bodies). It requires an information sheet with common disclosure standards and a prescribed format, so that for the first time investors and analysts can make comparisons easily on a multinational basis. This directive influenced the SEC in its development of U.S. disclosure forms for foreign issuers.[2]

In 1987, the EC Council of Ministers amended the Listing Particulars Directive to include a mutual recognition directive (once approved in a member state, listing particulars must be recognized by other member states, and no additional information may be required). This means that a state with more stringent disclosure requirements is in the position of imposing more disclosure and greater costs on its domestic issuers than foreign issuers must meet. Almost surely this will mean lowering disclosure requirements to the existing lowest common denominator.

The Interim Reports Directive (Mp... 82/121) adopted in 1982, requires issuers of equity securities listed on member-state exchanges to publish certain financial reports at six month intervals. It is intended for investor protection.

The Public Offer Prospectus Directive (No.89/298), adopted in 1989 after 10 years of controversy, protects investors by requiring risk-related information from corporations in the form of a prospectus. There are regimes for both listed and unlisted securities but because the directive was adopted after lengthy negotiations it is riddled with exemptions that reduce its scope: exemptions for private placements, certain *small offerings,* minimum purchase offerings, exchange offers, employee offerings, eurobonds, and euroequities. Eurosecurities were exempted because the industry repeatedly threatened to trade elsewhere. The disclosure requirements are not as strict as those in the United States. The directive does however embody the principle that investors throughout the EC should be protected, and should be provided equivalent protection.

The directive does not require member states to give mutual recognition to issuers from non-member states even if they comply with its disclosure requirements. It authorizes negotiations based on reciprocity (mutual recognition and substantial equivalence of regulatory regimes). Since companies in the United States and Canada will have met higher domestic requirements, they would like to be allowed merely to file a notice of their home country prospectuses, but reciprocity for EC members with lower disclosure requirements will be a sticking point.

The Mutual Funds Directive (No. 85/611), adopted in 1985 but amended in 1988, is intended to establish equivalent protection for investors in collective investment funds throughout the EC and to promote the circulation of these securities throughout the Community on "a level playing field. " The provisions relate to authorization, supervision, structure, activities, and"disclosure obligations. Once a mutual fired is authorized by

[1] **Listing Particulars,** D&&e **No. 80/390,** and Interim *Reports,* **Directive No. 82/121.**

[2] **SEC Release No. 34-16351 (Nov.** 29, **1979); R. Pierce, "The Regulation of the Issuanc** eand Trading of Securities **in the** United States **and the** European Economic Community: A **Comparison,"** 3 ***J. Comp. Corp. L. & Sec. Reg.*** 129, 132-22 (1981).

Continued on *next page*

Box 4-A—EC Securities Law Directives--Continued

one member state under these provisions it may be marketed in all other member states with the home state generally responsible for supervision and control.

The directive does not apply to the closed-end type funds. The fund must offer collective investment in transferable securities, of capital raised from the public, operating on the principle of risk spreading; and its units must be repurchased or redeemed at the holder's request out of the fund's assets, directly or indirectly. According to industry spokesmen in the United States, this directive could serve as the basis for international agreements beyond [EC] boundaries," facilitating the internationalization of mutual funds.[3]

The ***Proposed Investment Services Directive,*** newly proposed by the Commission in 1988, would establish mutual recognition of member states' authorization and supervision of investment firms. This would mean a single license for investment firms acting as brokerage agent, dealer, market-maker, portfolio managers, underwriter, or investment advisor anywhere in the EC. [Because banks and other credit institutions in the EC also provide investment services, a proposed Second Banking Directive contains similar provisions.] The home state must determine, before authorization, that the firm has sufficient financial resources to conduct the services that are to be provided; that the managers are of good reputation and experience; that the controlling shareholders of the firm are suitable; and that the firm submits a suitable business plan.

The directive requires member states each to promulgate prudential rules requiring investment firms to maintain sound administrative and accounting procedures and internal controls; to segregate investors' assets from the firm's own accounts; to participate in a general compensation fund to protect investors against the firm's default or bankruptcy; to provide regular information to the home state supervisory authority; to maintain adequate records; and to be organized in a way that minimizes conflicts of interest among the firm and its clients. Under the directive as it now stands, investment firms will continue to be regulated under the capital requirements and general business rules of the home member state, although EC directives in these two areas maybe developed later. A state's authority to regulate local activities of investment firms from other member states is largely removed by this directive,[4] but cooperation between home state and host state in preventing abusive practices is required by the directive.

Again, the most controversial aspect of this proposed directive is the issue of reciprocity. Investment firms (and their subsidiaries) from non-member states cannot enjoy the benefits of the directive's "single license" unless the fro's home state provides reciprocal treatment to all EC investment firms. However, there is a grandfather clause, and foreign firms may rush to incorporate as EC subsidiaries before the adoption and effective date of the directive. The related proposal for a Second Banking Directive modified the strict reciprocity requirement to require only "national treatment" (regulatory parity with domestic firms), and it is possible that this proposed Investment Services directive will also be so amended.

The ***Insider Trading Directive.*** First proposed in 1987, revised in 1988, and adopted by the Council of Ministers on June 19, 1989 (ratification not yet complete), this directive seeks to provide equivalent protection against insider trading for all EC investors. When it was first proposed in 1987 only three member states (Denmark, France, United Kingdom) had criminal penalties for insider trading. In the United States, securities regulators have not rigorously or officially defined insider information,[5] but this directive defines it as:

> . . . information which is unknown to the public of a specific nature and relating to one or more issuers of transferable securities, or to one or more transferable securities, which, if it were published, would be likely to have a material effect on the price of the transferable security or transferable securities in question,[6]

This directive is almost certain to be approved[7]; at present only Belgium, Ireland, Italy, and West Germany have yet to enact insider trading legislation. However, some observers fear that judges may still treat insider trading as "a gentlemanly misunderstanding rather than a crime."[8]

3"EC Directive o„ Mutual Funds May Serve as Basis for Global Agreement, ICI Says," *20* Sec. *Reg. &L. Rep.* (BNA) 1922 (Dec. 2, 1988).

4Each state retains limited power to restrict investment firms' conduct when necessary for "the public good," a concept based on Articles 36 and 56 of the Treaty of Rome.

5See *Symposium: Defining Insider Trading, 39 Ala. L. Rev. 337-558 (1988).*

6COM *(88) 549, O.J. Eur.Comm.* (No.C *277)* 13 (Oct.27,1988).

7Nelson, "EC Members Near */@oral* in United *p@" Wall St. Journal*, June 19,1989, p. c 9.

8"Insider Trading in Europe: A Daft Draft," *The Economist,* May 20,1989, p. 86.

deny a single EC license to EC-incorporated subsidiaries of U.S. fins; they would not be entitled to home-country control, i.e., authorization and supervision by the member-state in which they are incorporated unless equivalent treatment is granted by the United States. Because of differences in the scope and structure of the U.S. regulatory system, this equivalent recognition is politically unlikely. After strong protests, an amendment to the directive is being considered which would use the principle of national treatment rather than reciprocity.

It is less likely that the same change will be made in the reciprocity and mutual recognition provisions of other directives, including those dealing with Admission, Listing Particulars, and Public Offer Prospectuses (see box 4-A). The U.S. requirements regarding stock exchange listings and public offerings, administered by the SEC, are significantly stricter than EC requirements. They are not interchangeable with EC requirements and cannot be waived by the SEC to accommodate EC issuers, even though SEC has considerable regulatory flexibility, and has stated that it would favor recognition of the disclosure documents of foreign issuers if their home state provided reciprocal treatment and the disclosures were based on substantially equivalent standards.[70]

The basic problem is that the regulatory regime envisioned in EC securities laws directives, adopted and proposed, provides less protection for investors than is mandated in the United States. They include many exceptions and exclusions which greatly reduce the scope and effectiveness of the directives. For example, the Eurosecurities market-the largest European securities market-is exempted from the Public Offer Prospectus, although a number of problems have arisen with regard to interest and currency swaps, distribution methods, and disclosure.[71] In some areas there are as yet no EC directives. Among the number of regulatory areas not yet addressed are: rules of fair practice or essential standards to govern the conduct of EC investment firms; real-time publication of quotations, prices, and trading volume to assure market transparency. Participants in European securities markets will continue to be confronted by 12 sets of conflicting laws (or absence of law) dealing with essential areas of regulation in areas not covered by EC directives.

As yet, EC has no institutional mechanism for coordination and enforcement of the new regulatory system it is creating. Little has been done to harmonize enforcement. The directives provide for cooperation among authorities, but is likely that in some member states there is strong enforcement and in others, almost none.

There are two striking points to note about the EC 1992 initiatives in securities trading. First, EC has managed both to improve prudential regulation and to increase regulatory harmony-two goals that might have been assumed to be contradictory. Second, it may demonstrate that regulatory harmony can be achieved at least on a regional level. This suggests that harmony could also be achieved among the other OECD states, if the United States plays a strong role in promoting this goal.

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[70] "SEC Policy Statement on Regulation of International Securities Markets," SEC Rel. No. 33-6807, Nov. 14, 1988.

[71] See P. Stonham, *Global Stock Market Reforms*, 1988, pp. 126-147. The rapid growth of swaps and options has led to less review of credit risk and failure to obtain collateral and a number of defaults have resulted. Prof. Manning Warren, III, op. cit., footnote 1, makes the point that despite assertions to the contrary the Eurosecurities market is to a large extent a retail market, and Euroequity offerings especially have large potential for abuse because of "gaping hopes in member state regulations," unregulated sales pitches and timing pressures.

Chapter 5
International Clearing and Settlement: What Happens After the Trade

"Clearing and settlement" is the processing of transactions on stock, futures, and options markets.[1] It is what happens after the trade. "Clearing" confirms the identity and quantity of the financial instrument or contract being bought and sold, the transaction price and date, and the identity of the buyer and seller. It also sometimes includes the netting of trades, or the offsetting of buy orders and sell orders. "Settlement" is the fulfillment, by the parties to the transaction, of the obligations of the trade; in equities and bond trades, "settlement" means payment to the seller and delivery of the stock certificate or transferring its ownership to the buyer. Settlement in futures and options takes on different meanings according to the type of contract.

Trades are processed differently depending on the type of financial instrument being traded, the market or exchange on which it is traded, and the institutions involved in the processing of the trade (i.e., an exchange, a clearinghouse, a depository, or some combination).[2] The clearing and settlement mechanisms and institutions in the United States, the United Kingdom, and Japan are described in the appendix. The differences in countries' clearing and settlement are important because clearing and settlement systems used for domestic trading are now being called onto accommodate international participants. The integrity and efficiency of a nation's clearing and settlement systems are important to both its internal financial and economic stability and its ability to compete with other nations.

Many markets have 'clearinghouses' that handle both the clearing process and some of the settlement process. This is the most common system in the United States for exchange-traded financial products. Many markets, including the U.S. markets, have "depositories," that hold stocks and bonds for safekeeping on behalf of their owners.

Where clearinghouses do not exist (e.g., in some European markets), depositories may take on functions of clearinghouses. Depositories may transfer ownership of stocks and bonds by ''book entry" (a computer entry in the depository's record books) instead of physical delivery of certificates to the buyer,[3] which saves time and money. There are also markets in which exchanges perform some of the clearing and settlement functions (e.g., London's International Stock Exchange), and markets in which neither clearinghouses nor depositories exist (e.g., until very recently, foreign exchange, or "forex," markets).

THE GOALS OF CLEARING AND SETTLEMENT

Differences in the clearing and settlement process among countries are often linked to historical, economic, and cultural factors in their laws and customs. These differences can expose international investors to extra risk in some instances. Perceptions of the purposes of the clearing and settlement process vary widely among countries. In the United States and Canada, where public policy supports broad public access to the markets, the reduction of risk, through the clearinghouse as an intermediary, is a major goal of clearing and settlement. These policies are reflected in a hierarchy of protections for the clearinghouse, including minimum capital requirements for clearinghouse members.

In many other counties, risk reduction is imposed before trading takes place, by controls on who is allowed to participate, or by the participants 'knowing their trading partners,' and, in equities, by reducing the time allowed to settle a transition. In these markets, clearinghouse guarantee funds are

[1] In preparing this chapter, OTA has relied heavily on a contractor report by Bankers Trust Co., "Study of International Clearing and Settlement," vols. I-V, October 1989, to which scores of institutions and individuals around the world contributed expert papers and/or served on the Bankers Trust advisory panel. This report is hereafter referred to as "Bankers Trust report." OTA has also used the discussions of an expert workshop held at OTA on Aug. 22, 1989.

[2] In the United States, equities markets clearinghouses reduce risks by netting payments, among their other precautions to reduce clearinghouse risk. These precautions are disparate among nations. Futures markets worldwide are becoming more similar in terms of guarantees for trades.

[3] Derivative instruments such as futures and options also change ownership or contractual rights via book entry.

generally small or nonexistent,[4] and settlement is seen merely as a delivery function, rather than as a mechanism for risk reduction.

These different views of the purpose of clearing and settlement have become significant as more investors begin trading in markets other than their domestic markets. U.S. investors, accustomed to domestic markets where safeguards are in place, may assume that the clearing and settlement of their trades in a foreign market has risks comparable to those in the United States, where there are guarantees provided by clearing and settlement organizations.

The chief aims of clearing and settlement in the United States and some other countries are efficiency and safety. The faster and more accurately a trade can be processed, the sooner the same capital can be reinvested, and at less cost and risk to investors. Therefore, as markets become global, one could expect that investment capital will flow toward markets that are most attractive on a risk-return basis, and that also have efficient and reliable clearing and settlement systems.

The soundness of clearing and settlement systems in one nation can also impact other nations. The failure of a clearing member at a foreign clearinghouse could affect a U.S. clearinghouse through the impact on a common clearing member. To reduce the risk of such an occurrence, different countries' clearing and settlement systems must be coordinated with each other, for example, by sharing risk information and harmonizing trade settlement dates. Both the private sector and Federal regulators have begun to take steps in this direction. It is doubtful that the private sector can achieve the needed changes without national governments taking a prominent and concerted role.

HOW CLEARING AND SETTLEMENT WORKS

Many kinds of organizations are involved in clearing and settlement. Their functions vary from market to market, and not all of these organizations exist in every country. For instance, clearinghouses play a key role in the United States and some Asian markets; but in many European markets, depositories are more important.

A key role of a clearinghouse is to assist in the comparison of trades and sometimes, as in the United States, also to remove counterpart risk from the settlement process. Clearinghouses can provide the buyer with a guarantee that he will receive the securities--or other interest-he purchased, and provide the seller with a guarantee that the payment will be received.[5]

In the United States, the clearinghouse has a number of working relationships, or interfaces, with other institutions (figure 5-l). A trade in the United States (as well as in Japan, Canada, and some other countries) cannot settle through the central systems until it has been matched, i.e., buyers' and sellers' records of the trade are compared and reconciled. A clearinghouse has an interface with a market in which trades are executed and from which the clearinghouse receives information on the trades.[6] The clearinghouse may receive previously "locked-in' ' trades (trades which have already been matched), or it may match the trades itself.

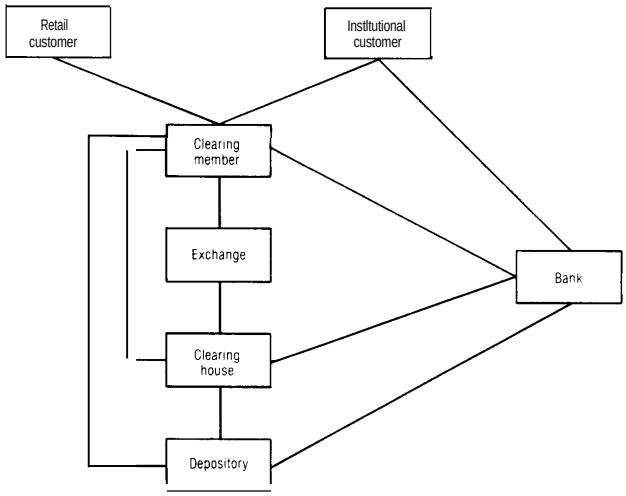
A second interface is with its clearing members, i.e., the member firms of an exchange or market. A clearing member delivers trade information to the clearinghouse and may hold positions both for itself (proprietary positions) and on behalf of its customers. Other traders in a market, who are not clearing members, must clear their trades through a member of a clearinghouse for that market. A clearinghouse controls the risks of the clearing and settlement process through its relationships with its clearing members. For example, it may have minimum capital requirements for clearing members, use margins or mark-to-market procedures, and require that its clearing members place collateral in a guarantee fund as protection against default by other clearing members. In the event of the failure of a clearing member, the clearinghouse may also have the ability to assess all other clearing members. It may also provide its clearing members with a trade-matching service and notify members about the way a trade is to be settled (the settlement date,

[4] Bankers Trust study, op. cit., footnote 1, p. 142.

[5] Forty-one percent of the respondents to a question in an international survey conducted as part of the Bankers Trust study stated that the risk that a counterpart to a trade may default, i.e., not pay for or deliver securities, is one of the three most significant risks in settlement domestically. Bankers Trust study, op. cit., footnote 1, vol. 1, p. 239. Despite such fears, such defaults seldom occur.

[6] The clearing entity could alternatively receive information about a trade directly from two market participants.

Figure 5-1-interfaces Among Clearing Participants



SOURCE: Office of Technology Assessment, 1990.

and the way payment and delivery or transfer of ownership will be accomplished).

A third interface is with clearing and credit banks. The clearinghouse and the banks work together in the payment and collection process, since clearinghouses today do not have direct access to the payment system, e.g., FedWire in the United States. The banks also provide credit to clearing members.

In the securities markets-but not typically in futures and options markets-there is often a fourth interface with the depository. The depository records and arranges the legal transfer of ownership of securities, and holds securities for safekeeping. The clearinghouse instructs the depository on how the transaction is to be settled. The depository may act as an agent, on behalf of the clearinghouse, to receive funds to settle the transaction.

In addition to the relationships between clearinghouses, markets, depositories, and banks, these organizations also have relationships with each other. Clearing members of a designated market deal with the banks to settle with the clearinghouse and to obtain credit. There is an important relationship between the banks and the depository. When a bank acts in a custodial role, e.g., delivering securities and receiving payments in behalf of its customers, instructions on payment and title transfer are sent to the bank by the customer. The depository, in turn, as an accounting system for immobilized or dematerialized instruments, and/or as a central vault for the physical instruments themselves, interfaces with the banks as custodian. It may also, as custodian, have an interface with the banks for payment.[7]

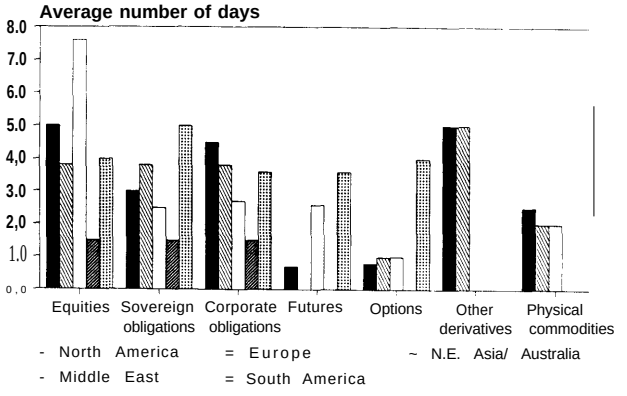
RISKS FROM DIFFERENCES IN CLEARING AND SETTLEMENT MECHANISMS

These differences-the use of guarantee funds, the time allowed to settle a trade, etc.—in countries' clearing and settlement systems are a major constraint on global trading and may impose risks on traders and investors. Defaults in a national clearing and settlement process can propagate through other national systems, since multinational financial institutions may be active in several national markets. Collapse of a major settlement system could endanger financial systems in both its own and other countries.

Even in day-to-day operations, differences in clearing and settlement systems and in their performances constrain some kinds of trading. For example, in Japan, settlement in equities and bonds is normally on the third day after a trade (T+3) and in the United States it is normally on the fifth day (T+5). An investor trading General Motors (GM) stock on both the New York Stock Exchange (NYSE) and the Tokyo Stock Exchange (TSE) would have trouble perfectly arbitraging his holdings. If the investor were to buy GM shares on the NYSE and simultaneously sell them on the TSE, because the U.S. settlement period is 2 days longer, the GM shares would be delayed by 2 business days for the Japanese settlement. If the investor were to buy GM stock on the TSE and sell GM stock that same day on the NYSE, the shares could be available for the NYSE settlement because that is 2 days later than Tokyo's. The Japan Securities Clearing Corp. (JSCC)--through its link with International Securities Clearing Corp. (ISCC) in the United States—holds the U.S. shares at The Depository Trust Co. (DTC); therefore instead of physical movement of certificates there simply would be a book entry delivery at DTC. The average number of days for settlement of various financial instruments in different countries differs widely (figure 5-2). The number

[7]Four depositories in the United States now have links to the Federal Reserve System. These are The Depository Trust Co., the Midwest Securities Trust Co., the Participants Trust Co, and the Philadelphia Depository Trust Co.

Figure 5-2-Settlement Date: T+?



SOURCE: Bankers Trust Co., "Study of International Clearing and Settlement," OTA contractor report, October 1989,

of days for settlement varies widely among countries in each geographical region. As a result, harmonized clearing and settlement is needed.

Trading in European markets, unlike in the United States, mostly does not rely only on stock exchanges.[8] In Japan, there is as yet no central depository, but there is a clearing and custody system at TSE. Many European countries have depositories, but their functions vary from country to country, and are often different from U.S. depositories.

There are three principal models for clearing and settlement in the world's major stock markets. The first model has no centralized depository or independent clearinghouse beyond the stock exchange. The exchanges usually perform as many of the clearing and settlement functions as are feasible. These include trade matching, confirmation, and some type of settlement facility-usually a central location where market participants can deliver and receive securities and payments. The equities market in the United Kingdom is an example.

The second model of clearing and settlement is one in which there is a central depository structure, with trade matching and confirmation services provided by the exchanges. Once trades have been matched and confirmed, the trade data are sent to the depository for settlement. There are variations on this model with differing degrees of settlement services provided by the depository. The depository may offer book-entry transfer of ownership of immobilized securities, with limited provisions for varying payment methods. Or the depository may provide book-entry transfer of dematerialized securities and the ability, through direct links to local payment systems, to simultaneously and irrevocably transfer funds for each settlement. An example is West Germany and its Deutscher Kassenverein (KV) depository system.[9]

The third model has not only a stock market and a central depository, but also a clearinghouse that stands between the stock market and depository to reduce risk. The stock market, along with the clearinghouse, provides trade matching and confirmation services. A trade is confirmed by the market participants and is then passed to the clearinghouse, which substitutes itself as the counterpart to each trade. This gives a degree of financial assurance to the markets since the clearinghouse will honor the obligations of a clearing member if necessary. The clearinghouse then passes the trade information to the depository for delivery versus payment[10] on the settlement date. An example is the United States equities market.

In most European equities markets,[11] there are no central clearing organizations that assume the role of counterpart to every trade or provide other kinds of mechanisms to ensure the financial integrity of all market participants in the clearing and settlement phase. Where there is no third-party guarantee mechanism for trade settlement, market participants are forced to choose their counterparties based on their own credit assessment.

But when a market ceases to be a closed structure with only a select group of participants who know

[8]In most cases, the majority of trades are among banks, and occur off the exchange. In these off-exchange trades, bankers or brokers interface with the depository, bypassing the exchange, except possibly for reporting trades,

[9]Hans-Joachim Hoessrich and Heinz-Klaus Ruetzel, "Clearance and Settlement in Germany," expert paper contributed to OTA contractor report by Bankers Trust Co., op. cit., footnote 1.

[10]"Delivery versus payment" (DVP) and "receive versus payment" are terms which mean that the buyer and the seller each satisfy their settlement obligations (to pay and deliver) on the same day. A closely related term is "true DVP," which means that the buyer and the seller simultaneously make good on their settlement obligations. An example of true DVP would be a trade settled through a depository, in which the depository simultaneously transferred the funds and the ownership of the traded financial instrument.

[11]With the exception of the Paris Bourse.

each other, the market must implement some standardized processes which can offer a guarantee of financial integrity. When a national market encourages international participation, it must try to ensure the continuing financial integrity of the market. The current focus in Europe on the standardization or harmonization of clearing, settlement, and depository systems is in preparation for the common market in 1992. (See ch. 4.) The movement toward increased coordination of clearing and settlement systems is, however, worldwide, stemming from recognition of the increasing internationalization of securities trading.

EFFORTS TO REDUCE THE DIFFERENCES

Improvement of clearing and settlement for global or cross-border trading in equities is being addressed by the Group of Thirty, an independent, non-profit organization of businesspersons, bankers, and representatives of financial institutions from 30 developed nations. The Group of Thirty addresses multinational financial and economic issues, including Third World debt. The Group's recommendations for the world's securities markets are aimed at "maxhizing the efficiency and reducing the cost of clearance and settlement," and thereby reducing risk. They set target timetables of 1990 for some objectives and 1992 for others. In a report released in 1989,[12] the Group concluded that:

> While the development of a single global clearing facility was not practical, agreement on a set of practices and standards that could be embraced by each of the many markets that makeup the world's securities system was highly desirable, . . . and (reached) agreement that the present standards were not acceptable.

Their recommendations are:

1. By 1990, all comparisons of trades between direct market participants (i.e., brokers, dealers, and other exchange members) should be compared within 1 day after a trade is executed, or "T+l."[13]
2. Indirect market participants-institutional investors, or any trading counterparties which are not broker/dealers-should be members of a trade comparison system which achieves positive affirmation of trade details.
3. Each country should have an effective and fully developed central securities depository, organized and managed to encourage the broadest possible industry participation.[14]
4. Each country should study its market volumes and participation to determine whether a trade netting system would be beneficial in terms of reducing risk and promoting efficiency.
5. Delivery versus payment should be the method for settling all securities transactions.
6. 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" convention.[15] (No date has been set for achieving this objective.)
7. A "rolling settlement" system[16] should be adopted by all markets. Final settlement should occur on T+3 by 1992. As an interim target, final settlement should occur on T+5 by 1990 at the latest, except where it hinders the achievement of T+3 by 1992.
8. Securities lending and borrowing should be encouraged as a method of expediting the

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[12] Group of Thirty, *Clearance and Settlement Systems in the World's Securities Markets (New York & London: March 1989), p.1.*

[13] In the United States, where there is increasing use of automated trading systems in the stock exchanges and OTC markets, data required for comparison and automatic submission to the clearing system is automatically recorded, Such systems now process two-thirds of NYSE transaction volume; a large proportion of AMEX volume; and one-third of OTC equity volume. These transactions are pre-matched and reported directly to the clearing system, and have been reported on T+1 since the mid-1980s. Both the NYSE and AMEX have on-line trade correction facilities. The rules of the National Securities Clearing Corp. require that all trade data not already locked in by the automated trading systems must be reported by both trading counterparties by 2 a.m. on T+1.

[14] The principal function of a central securities depository is to immobilize or dematerialize securities. This function permits the processing of transactions in "book entry" form, which is the basis for achieving efficient and low risk settlement of transactions by transferring ownership from one account to another by a simple debit or credit on the booka of the depository.

[15] Some markets use "same day" funds (the payment is final on the same day), while others use "next day" funds for settlement. Adoption of a single method will improve the efficiency of the accounting and payment systems, set the stage for subsequent full automation, and facilitate other improvements such as finality of payment, irrevocability, and bank guarantees.

[16] In a rolling settlement system, trades settle on all business days of the week, which limits the number of outstanding (unsettled) trades and reduces market exposure to risk. The goal for the long team is same-day settlement.

settlement of securities transactions.[17] Existing regulatory and taxation barriers that inhibit the practice of lending securities should be removed in 1990.

9. Each country should adopt the technical standard for securities messages developed by the International organization for Standardization (ISO Standards 7775 and 6166).[18]

Table 5-1 compares nine of the Group of Thirty recommendations with the present status of clearing and settlement procedures in 21 countries, including the United States. Major changes will be required by many countries in order to meet these recommendations by 1992.[19] In the United States, which is well-positioned relative to other countries, automated systems will facilitate trade matching on the trade date and settlement of all trades within 3 days. But, in the United States, there are non-technological barriers to fully achieving the accelerated trade and settlement objectives, some of which have been acted on recently. For example:

- More stocks must be immobilized in book entry form; this means that retail customers may have to abandon their pattern of receiving certificates of ownership for their stock shares.
- The pattern of mailing personal checks to pay for stock purchases will have to change to a more rapid payment method such as electronic bank-to-bank transfer of guaranteed funds.
- The Federal Reserve System's Regulation T, which addresses margin-regulations for broker/dealers, has just been modified. Since the maximum allowable time for clearing and settlement of trades in the United States is different from those of many other countries, some flexibility is needed in tying the customer's time period for payment to the foreign settlement date. In March 1990, Regulation T was modified to allow the maximum time for payment to agree with the foreign settlement period, provided that period does not exceed the current U.S. 35-day maximum allowable period for settling cash (delivery against payment) transactions.[20]
- Changes also have been made in the margining of foreign securities in U.S. accounts with foreign currency-denominated cash and securities.[21]

Implementation plans for the Group's recommendations were initiated or considered by its members' governments beginning in the spring of 1989. The U.S. Working Committee of the Group of Thirty met in May 1989 with representatives from exchanges, the National Association of Securities Dealers (NASD), clearing corporations, transfer and depository firms, banks, regulators, and others, to begin discussing the recommendations. The U.S. Advisory, Steering, and Working Committees reconvened a meeting on March 1, 1990 to discuss progress on the recommendations on same-day funds and shortening the time to settlement. These and other issues are being accommodated by the Federal Reserve Board (FRB). David Ruder, then SEC Chairman, noted at the 1989 meeting that the Group's recommendations are consistent with published policy objectives of the Securities and Exchange Commission.[22] He also listed other areas that require attention, such as capital adequacy standards for market participants, information sharing among clearing entities, and the interaction of derivative

[17] Securities lending and borrowing has become an effective tool used by market participants to satisfy their obligation to deliver or pay a trading counterpart. In its absence, a failure to deliver can have the consequence of creating a series of additional failed transactions as one party's failure to receive becomes the cause of its failure to deliver on its obligations.

[18] The ISO is a worldwide standards-making body. ISO standard 7775 applies to Securities Message Types; standard 6166 applies to International Securities Identification Number. Currently, no worldwide securities numbering system is in use. Countries each use their own unique numbering system for identification, rendering them impractical for cross-border transactions.

[19] The Group of Thirty met in London in mid-March, 1990, to discuss worldwide progress toward implementing its nine recommendations. See Clearance and Settlement Systems Status Reports: Spring 1990, Group of Thirty, New York and London, which covers the progress of 17 countries. While the obstacles facing each nation and the efforts required of each to comply with the recommendations are disparate, there was general acceptance of the recommendations.

[20] See 55 Fed. Reg. 11158, Mar. 27, 1990. This 35-day period is separate from the 5-day and 3-day settlement periods discussed elsewhere. It refers to the maximum allowable time period for settlement in the event of unavoidable delay, e.g., a payment lost in the m@ and it does not apply to reasons such as a customer being unable or unwilling to make payment or deliver securities.

[21] Ibid.

[22] Policy Statement of the U.S. Securities and Exchange Commissio,, "Regulation of the International Securities Markets," November 1988 and Release No. 33-6807, Nov. 14, 1988; Fed. Reg. 46963, Nov. 21, 1988.

Table 5-l--Group of Thirty: Current Status of International Settlement Recommendations-Equities

Recommendation No. / Country	1 Institutional Comparison on T+1	2 Central Comparison System	3 Securities Depository	4 Securities Netting	5 DVP	6 Rolling Settlement on T+5	7 Same-Day Funds	8 ISO/ISIM	9 Securities Lending
Australia	Yes	No	No	No	Yes	Open	No	No	Yes
Austria	Yes	No	Yes	No	No	Weekly	Yes	No	No
Belgium	No	No	Yes	No	Yes	Fortnightly	Yes	No	Yes
Canada	Yes	Yes	Yes	Yes	Yes	T+5	Yes	No	Yes
Denmark	Yes	No	No	No	Yes	T+3	Yes	No	Yes
Finland	Yes	No	No	No	Yes	T+5	No	No	No
France	Yes	No	Yes	No	No	Monthly	Yes	No	Yes
Germany	Yes	No	Yes	No	Yes	T+2	Yes	No	No
Hong Kong	Yes	No	No	No	Yes	T+1	No	No	Limited
Italy	Yes	No	Yes	No	Yes	Monthly	Yes	No	Limited
Japan	Yes	No	No	Yes	Yes	T+3	No	No	Yes
Korea	No	No	Yes	No	Yes	T+2	No	No	No
Netherlands	Yes	No	Yes	Yes	Yes	T+5	No	No	Yes
Norway	Yes	No	No	No	Yes	T+6	Yes	No	No
Singapore	Yes	No	No	No	Yes	T+5	No	No	Yes
Spain	Yes	No	No	No	No	Weekly	No	No	Limited
Sweden	Yes	No	Yes	No	Yes	T+5	No	No	Yes
Switzerland	Yes	No	Yes	No	Yes	T+3	Yes	No	Yes
Thailand	Yes	No	Yes	Yes	Yes	T+4	Yes	No	No
United Kingdom	Yes	Yes	No	Yes	No	Fortnightiy	No	No	Limited
United States	Yes	Yes	Yes	Yes	Yes	T+5	No	No	Yes

SOURCE: Updated from A *Comparative View: The Group of Thirty's Recommendations and the Current U.S. National Clearance and Settlement System,* (New York City,NY:MorganStanley& Co.,June 1989),

markets.[23] Officials of U.S. regulatory agencies are supportive of the U.S. Committee's efforts.[24]

The Group of Thirty is not alone in exploring many of these issues; other international groups have attempted to develop consensus on some of the issues in clearing, settlement, and payment systems. These organizations include the Federation Internationale des Bourses de Valeurs (FIBV),[25] the Bank for International Settlement (BIS),[26] the International Society of Securities Administrators (ISSA),[27] the European Community (EC),[28] and the International Organization of Securities Commissioners (IOSCO).[29] Their activities reflect a growing international concern for making the world's markets more stable and compatible, and for reducing avoidable risk.

The FIBV Task Force includes representatives from the Tokyo Stock Exchange, the International Stock Exchange, the VP (Denmark's depository system), the Amsterdam Stock Exchange, the ISCC in the United States, Euroclear, CEDEL, the Group of Thirty, SICOVAM, ISSA, and IOSCO. The FIBV Task Force met in December 1989 to discuss how countries might proceed, and again in March 1990 to

[23]David S. Ruder, "Remarks on the Group of Thirty Report on International Clearance and Settlement," May 15, 1989.

[24]Comments by G. Corrigan, President of the Federal Reserve Bank of New York and Commissioner Mary Shapiro, SEC, at the March 1990 meeting of the U.S. Committee.

[25]The FIBV study "Improving International Settlement," June 1989, focused on the settlement of cross-national border trading. This report endorses the recommendations of the EEC and Group of Thirty reports and also makes additional recommendations.

[26]The BIS's Group of Experts on payment Systems, Committee on Interbank Netting Systems is working on a study of multilateral netting schemes.

[27]For information, see ISSA Handbook on Clearing and Settlement in the world's markets, updated regularly. An edition covering 28 countries and the Euromarkets was published in May 1990.

[28]The EEC's "Study on Improvements in the settlement of Cross-Border Securities Transactions in the European Community,' focused on the need for centralized depositones.

[29]Gerritt de Marez Oyens, "Clearing and Settlement," report to the 14th Annual Conference of IOSCO, Venice, September 1989; the adoption of a resolution in 1986 that promotes investor protection through surveillance and mutual enforcement assistance; and the establishment of a technical committee to review major problems in international securities transactions and working groups to address specific topics, such as offerrings of securities on an international basis and multiple listings, the problems with existing memoranda of understanding among markets, and international clearing and settlement. IOSCO has been studying issues related to capital adequacy for non-bank securities firms and is exploring ideas for risk-based capital adequacy standards.

continue its efforts. The FIBV Task Force[30] has agreed to the following steps:

- promote the development of links between national markets;
- assist one another by exchanging plans and procedures for implementation (a Practice which has already begun);
- standardize communications message formats, terminology, and legal agreements;[31] and
- assist each other in understanding the ramifications of their individual decisions on international trading.[32]

The Commission of the EC commissioned a report[33] with recommendations that to date have not gained wide support among EC countries. It is unlikely that the EC will adopt the report's recommendations soon, but will await the results of other international efforts. The report's recommendations focused on the need for central depositories in Europe, not on clearinghouses; therefore, many of the recommendations do not apply to the United States.

ISSA, whose officers are directors of six major international banks, produces handbooks on clearing and settlement in world markets to promote progress in securities administration. Key issues in clearing and settlement were identified in an ISSA conference in 1989.[34]

Among other efforts to improve elements of the clearing and settlement process are:

. The Committee on Banking Regulations and Supervisory Practices of the Bank for International Settlements has designated a working group on traded securities, which is currently exploring issues including the risk-based capital standard and explicit treatment of position risk for banks.
- The SEC and U.K. regulators have entered into a bilateral agreement under which the U.K. regulators will waive their capital adequacy requirements with respect to particular U.S. broker/dealers that have branches in the United Kingdom, if the SEC provides certain information to their U.K. counterparts.[35] The SEC is exploring bilateral agreements on the subject of sharing information for enforcement purposes and, through IOSCO, is looking into the feasibility of multilateral agreements toward this end.

Although several of these groups have some members in common, each of the efforts is proceeding independently,[36] and there are several points of agreement among the most prominent groups (table 5-2). These proposals and efforts are a starting point for improvement, but some of these will require action by the national governments.[37]

The reforms suggested by the Group of Thirty and other organizations are being taken seriously in the United States. Several recent reforms have been made in the U.S. equities markets, many of which predate the recommendations of the Group of Thirty. These include:[38]

. Trade Processing
  —The NYSE in 1988, began developing an on-line trade reconciliation system which

[30]Information on the FIBV Task Force is based on a December 1989, interview with Mary Ann Callahan, ISCC, who attended the last Task Force meeting.

[31]As in many other areas where international harmonization or standardization is in its infancy, there area surprisingly large number of specialized terms used in different ways for comparable functions by various countries, a situation which hinders cross-national border trading.

[32]As an example of the latter, the Hong Kong Stock Exchange has already decided to implement a 2-day settlement period. Such a short period will pose problems for settlement of cross-national border trades.

[33]Jorg-Roland Kessler, 'Study on Improvements in the Settlement of Cross-Border Securities Transactions in the European Economic Community,'' 1989.

[34]ISSA Symposium, "Glob~ Securities Investments: Processing Issues and Solutions, ' Switzerland, May 1989.

[35]Under this agreement, the SEC will notify U.K. regulators if it becomes aware that a particular broker-dealer's financial or operational condition is impaired, and U.K. regulators will provide reciprocal services.

[36]The fact that some of the same people, including regulators, participate in a number of these groups provides a measure of coordination internationally,

[37]See, for example, Group of Thirty, "u.S. Working Group Report on Compressing the Settlement Period,'' Nov. 22, 1989; and Bankers Trust Co., op. cit., footnote 1, p. 206.

[38]For an evaluation of progress on implementing the recommendations of the president's Working Group on Financial Markets relating to clearing and settlement, see U.S. Congress, General Accounting Office, *Clearance and Settlement Reform: The Stock, Options, and Futures Markets Are Still at Risk,* GAO/GGD-90-33 (Gaithersburg, MD: April 1990).

Table 5-2—Recommendations From Major International Studies

Aspect of operation	Report ISSA	EEC	G-30	FIBV
Two-sided trade matching	—	—	Yes	Yes
One-sided trade comparison	—	—	Yes	Yes
National central securities depository [a]	Yes	Yes	Yes	Yes
Evaluate securities netting	Yes[b]	Yes[c]	Yes	Yes
Delivery versus payment	Yes	Yes	Yes	Yes
Rolling settlement	Yes	Yes	Yes	Yes
Same-day funds	Yes[d]	Yes[e]	Yes	Yes
Use of ISO standards for message formatting	Yes	Yes	Yes	Yes
Lending for settlement	Yes[f]	Yes	Yes	Yes
Cross-border Central Securities Depositories should be linked	Yes	Yes	—	Yes
Securities should be immobilized in country of issuer	Yes	Yes	—	Yes

aDepositories for securities are already widely used in the United StateS.
bIncluded as part of the risk reduction/resolution recommendation in the report.
cIncluded as part of the risk reduction/resolution recommendation in this
dincluded as a subset of the dellvery versus payment recommendation of this report.
eIncluded as part of the currency accounting recommendation of this report.
fIncluded as part of the risk reduction/resolution recommendation in this report.

SOURCE: Bankers Trust Co. adapted from Federation International des Bourses de Valeurs (FIBV) document.

has evolved into its current Overnight Comparison System.

—The National Securities Clearing Corp. (NSCC) implemented earlier input and output time frames to facilitate trade matching on the day after the trade (T+l).

—The NSCC is participating as part of the Group of Thirty, U.S. Working Committee, in the evaluation of ways to shorten the timetable for settling equities trades to T+3 (from the current T+5).

—The NASD has implemented a Trade Acceptance Reconciliation System (TARS) for same day or next day automated reconciliation of unmatched trades and is currently phasing in its Automated Confirmation Transaction (ACT) system for same day comparison of all trades not already locked in through automated execution systems.

• Risk Management

—Information sharing of the financial positions of participants' who are active in multiple markets is being worked on by the Securities Clearing Group (SCG), which represents U.S. clearing organizations serving equity and equity options markets. This group is working to develop a system for sharing settlement, margin, and clearing fired at-risk exposure information about joint members.[39] An earlier, continuing effort in the futures industry (the BOTCC's system) to share pay-collect information is being expanded to include options issued by the Options Clearing Corp. (OCC). (There is still some concern by the OCC about the confidentiality and perishability of data, and unintentional competitive advantage.) In the United States, the trend is toward interfacing existing centralized risk information systems for derivative markets with the emerging centralized risk information system for equities markets.

—The NSCC has proposed to the SEC changes in its criteria for assessing risk-based contributions to guarantee funds from clearinghouse members, and to make earlier calls for additional contributions. Due to a recent change, now only 70 percent of an NSCC clearing member's collateral may be in the form of letters of credit. In addition, the NSCC's Board of Directors has approved, and NSCC has obtained, a bank line of credit of $200 million.[40]

—The SEC proposed an increase in capital adequacy requirements of full-service broker/dealers from the present $100,000 to $250,000 to be phased-in by January 1994.[41]

—The OCC initiated an intra-day margin call procedure directly to the clearing member's clearing bank, in contrast with the earlier procedure of contacting the member and allowing 1 hour for payment.

—The OCC has increased the initial net capital requirement upon application for clearing member status from $150,000 to $1 million.

[39]As of May 1990, the SCG was proceeding with its own system. OTA staff discussion with Robert Woldow, Executive Vice President and General Counsel, NSCC, May 9, 1990.

[40]Data from Robert Woldow, Executive Vice President and General Counsel, NSCC, March 1990.

41 SEC Release No. 34-27249, "Proposed Rulemaking on Broker-Dealer Net Capital Requirements," S28-89, Sept. 15, 1989.

UNRESOLVED PROBLEMS

In futures markets differences exist both domestically and internationally. There is some commonality, however, for financial safeguards in U.S. domestic futures markets. These safeguards include: original margins for clearing members based on trades carried for their customers and their proprietary accounts; daily and intra-day marking-to-market and calling of variation margins; initial and maintenance margins for customers; clearinghouses serving as guarantors of trades; posting deposits by clearing members, which are callable by the clearinghouse; systems for monitoring the risk positions of both clearing members and customers; and large trader reporting.

Clearinghouses have tended to structure themselves as fortresses, able to contain significant damage to their systems from internal causes with a hierarchy of safeguards or "firebreaks." Assumptions underlying the adequacy of firebreaks are increasingly less valid because of the growing linkages between futures, equities, and options markets; these linkages have become international.[42]

Exogenous forces could prove overwhelming, e.g., either a general crisis in the financial markets, or a failure of one or more large banks or broker/dealers for reasons unrelated to the financial markets themselves. In such a case the ability of a clearinghouse to assess its members, after it exhausted all of its margin and guarantee funds, would be ineffective.[43]

Some key questions for market regulators are:

. whether the financial standards at individual markets and clearinghouses within their jurisdictions are satisfactory;
- what improvements are needed, in cooperation with other regulators, to strengthen the contribution of their markets toward improving the overall financial integrity of the national financial system; and
- what improvements are needed, in cooperation with authorities in other countries, to strengthen the financial integrity of futures, options, and equities markets internationally, and to contribute to an overall strengthening of the international financial system.

There is also the question of how to supervise groups that invest in a variety of financial instruments and markets internationally. Current systems are not able to achieve this, although they make some efforts to provide a picture of the overall financial risk of such participants.

Concerns about whether or not futures margins levels in the United States are set appropriately have been addressed by the President's Working Group on Financial Markets, which concluded that they are set in a prudential manner and recommended no changes in margin-setting systems.[44,45] Nevertheless, Federal Reserve Board Chairman Alan Greenspan noted his concern that futures margins that are set too low tend to be raised during periods of market turmoil, reducing liquidity when it is most needed.[%]

Shortening the interval between trade execution and the collection of margins could be a benefit, by reducing the exposure of clearing members before the clearinghouse's payment guarantee is effected, and the exposure of the clearinghouse in the interval between the provision of the guarantee and collection of margin payment.

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[42] Michael Hewitt, Senior Adviser, Finance and Industry Department, Bank of England, "Financial Integrity of Futures Markets," presented at the Futures and Options Market Regulators Symposium in Burgenstock, Switzerland, September 1989.

[43] Roger Rutz, Chief Executive Officer, BOTCC, believes that in a general financial market crisis scenario, there could be a complete economic collapse, or the FRB, as lender of last resort and provider of liquidity to the financial system, will act to stabilize market conditions. In the second scenario, the FRB would probably rescue a large bank and the government might have no choice but to do the same for a large non-bank broker-dealer. Expert paper contributed to OTA contractor study by Bankers Trust Co, op. cit., footnote 1.

Although the recent experience in the liquidation of Drexel, Burnham, Lambert casts doubt on the concept of a firm being too large for the government to allow to fail, and provides credibility to some alternative criteria for a government rescue action, such as the broader impact of such a failure.

[44] Interim Report of the President's Working Group on Financial Markets, May 1988, p. 5: ".. current minimum margin requirements provide an adequate level of protection to the financial system. . ." More recently, however, the Administration appears to have taken a different view, namely, that futures margins are set too low, and that a single Federal agency should have day-to-day oversight "to harmonize margins between futures and stocks to protect the public." Testimony of Robert R. Glauber, UnderSecretary of the Treasury for Finance, before the Senate Committee on Agriculture, Nutrition, and Forestry, May 8, 1990.

*There is also the view that higher initial margins with less frequent reviews might be safer than today's lower margins and more frequent reviews. Hewitt, op. cit., footnote 41.

[46] Oral testimony of Alan Greenspan, Chairman, Federal Reserve Board, before the Senate Committee on Banking, Housing and Urban Affairs, Mar. 29, 1990. He said: "I was shocked" about the margin setting behavior in the futures markets in October 1989.

There are advantages for firms that are members of several exchanges in having their positions at each exchange confirmed, registered, and guaranteed at the same time. Simultaneous transfers of funds could be made by their settlement banks in payment of margins. The advantages would be far greater (but achievement more difficult), ,if settlements were synchronized between financial futures and options markets. The synchronization of settlement timetables across time zones is theoretically possible once settlement periods of less than a full day are achieved.

Is a member-owned clearinghouse that is backed by the assets of its owners safer than an independent clearinghouse, such as London's International Commodities Clearing House, that is owned and backed by strongly financed shareholders, i.e., banks? This depends on whether the guarantee is more robust if backed by a special reserve fund, the assets of its member-owners, external credit lines, guarantees or insurance arrangements, or by a combination of these.[47] This also depends on the liquidity of the assets involved.

Large risk exposures to single customers have been a source of financial problems in futures markets in some countries (but not in the United States). In the United States, the Commodity Futures Trading Commission (CFTC) has had a large-trader reporting process since before the October 1987 market break. Similar information-sharing procedures are needed to monitor exposure in international futures markets.

POLICY ISSUES

Six areas of major concerns need to be addressed:

- risks associated with default;
- . risks associated with the payment process;
- . information sharing;
- . technology;
- . standardization and harmonization;
- shortening the time to settlement and providing same-day funds.

Risks Associated With Default

Investors need to be made aware of the differences in the amount of protection provided by various foreign markets. For example, there are no international standards for guarantees (by clearing organizations, banks, and others)--either for the protection of investors or to prevent the collapse of financial institutions.

In the United States, the Securities Investor Protection Corp. (SIPC)[48] provides a level of protection to market users in equities, bonds, and equity-related options markets. The protections afforded by exchanges and clearinghouses in futures markets to market users vary and are extended mainly to clearing members of the exchange's clearinghouse.[49] Insurance can never completely cover all losses. Some failures in securities markets are resolved in the United States through bankruptcy proceedings under the Federal Bankruptcy Code. The Bankruptcy Code relies largely on State laws to determine rights to property. These may include State commercial law that often relies on the Uniform Commercial Code (UCC).[50] The UCC is being reexamined to reflect the realities of today's marketplace, especially where it applies to third-parties holding securities. Laws dealing with bank liquidation also need to be updated and made more consistent with other bankruptcy laws.[51] In nonregulated markets, such as foreign exchange, there is little investor protection.

The SIPC in the United States, the Canadian National Contingency Fund, or the United Kingdom's Securities Investment Board contingency fund are possible models for international markets

[47] In the United States, after the 1987 crash the size of guarantee funds was increased and greater cash deposits were required in place of bank letters of credit, and the size of letters of credit outstanding with futures clearinghouses from any single bank was limited.

[48] SIPC insures an investor's accounts up to $500,000 for securities and cash against certain types of loss, e.g., the default of a broker. This includes a maximum of $100,000 in cash per account. Securities Investor Protection Act, 1970.

[49] It should be noted that customers' losses stemming from Futures Coremission Merchants' insolvencies have been rare. Insolvency losses from 1938 to 1985 amounted to less than $10 million. National Futures Association study *Customer Account Protection*, Nov. 20, 1986, p. 13. The basic protection is the statutory requirement that 100 percent of customer funds be segregated. Commodities Exchange Act, sec. 4d(2). Also, customers have first priority in commodity brokers insolvencies under the Federal Bankruptcy Code and CFTC bankruptcy regulations.

[50] The UCC is accepted on a State-by-State basis and amendments to it would still leave open the possibility of non-uniform treatment by the various States. The American Bar Association has a current project that is seeking improvements to this area.

[51] In earlier times, customers were inclined t. keep possession of their securities certificates. More recently, many buyers of securities tend to leave their certificates on deposit with third-parties, e.g., banks, brokers, depositories.

which do not now have any protection for investors. Canada uses private insurance, while the United States and the United Kingdom use government guarantees. These are topics that warrant the attention of governments and the private sector.

Risks Associated With the Payment Process

There have been recent innovations in the way payments are made for transactions. Increased volume of trading has heightened the stress on payments systems. Issues that have arisen concerning payment risk include: delayed or inadequate bank credit, timetables for finality of settlement, and netting procedures. Problems may arise with 24-hour trading systems, for example, margin calls when banks are closed.

Bank officials need to be more familiar with the processes and risks of clearing and settlement to make better and more expedient credit decisions, particularly in times of severe market volatility. At such times, the lack of adequate information on which to base credit decisions may force some banks to restrict credit earlier than necessary.[52] This could exacerbate a downward market spiral. Knowledge about the riskiness of various financial instruments and trading techniques are important for lenders. Educational efforts of this kind are receiving some attention by the private sector, but more is probably needed.

The timetable for finality of settlement is a problem. Some payment systems, such as the FRB's FedWire, offer immediate finality of settlement; other payment systems offer "end of the day" finality of settlement,[53] and others are on later timetables.[54] The shorter the time to finality of payment, the less is the clearinghouse risk. Timetables for finality of payment of settlement vary within the United States and internationally.[55] The private sector and the regulators must harmonize disparate systems, at a minimum to provide same-day finality of payment.

Netting of payments reduces the stress on payment systems by requiring market participants to pay (and receive) only the difference between the amounts each owes and is owed by others. This increases liquidity for market participants and reduces the risk that a market participant will default on either payment or delivery of securities. There is consensus among experts that legally binding netting should be expanded, for payments and for securities delivery obligations. This issue must be addressed internationally by the private sector and regulatory authorities.

Information Sharing

In most kinds of financial transactions, a lender (e.g., a bank) will have access to information about the past creditworthiness and the current financial risks of a potential borrower. However, there is no central source of risk information for financial markets participants in spite of the large amounts of money often involved. Some organizations in the clearing and settlement industry have arrangements among themselves for sharing risk information about market participants either formally or informally. Such arrangements are limited in scope, and creditors are at a disadvantage because increasingly market participants trade on more than one exchange, in more than one market, and in the markets of more than one country.[56 57]

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[52] The Clearing Organizations and Banking Roundtable is addressing methods to assure that clearing members have adequate credit during times of market turmoil. Them are currently concerns for the privacy and confidentiality of clearing members tbat hinder the attractiveness of the concept of a single center for complete information on all members' positions in all markets. This organization was started by the CME and BOTCC to begin a dialog among futures and equity-related clearing organizations, their Federal regulators, and clearing banks.

[53] Immediate finality of settlement is available only in the United States (through FedWire) andin Switzerland. The CHIPS system in the United States, the CHAPS system in the United Kingdom, and the SAGITTAIRE system in France are examples of payment systems which offer end-of-day finality of settlement.

[54] See Bankers Trust report, op. cit., footnote 1, vol. 1, p.149.

[55] Respondents t. a survey conducted by Bankers Trust Co. identified the use of "same-day funds" and "using electronic funds transfer instead Of checks" as the major improvements that they would like to see in the way that payment systems work in clearing and settlement. In answer to another question on what changes or improvements respondents would like to see in the clearing and/or settlement process, the two most frequent responses were "standardization of settlement times internationally" and "centralized depositories in other countries."

[56] About 39 percent of the North American respondents to the survey conducted by Bankers Trust stated that they trade in markets in more than One country. Bankers Trust study, op. cit., footnote 1, vol. 1, p. 235.

[57] While U.S. clearinghouses operate in single markets, 20 percent of their member firms trade in more than one market. General Accounting Office, op. cit., footnote 37, p. 4.

There is a general consensus that risk information should be shared,[58] but there is fear that risk information might give an advantage to potential competitors. Increased automation could facilitate information sharing. This could lead to the development of a common format for reporting and distributing risk information, and standards for the timely delivery of risk information. Standards also are needed for evaluation of different risks in different markets: for example, a given dollar amount of financial obligations in one market may not equal the risk of a like financial obligation in another market.

Bilateral links for sharing information have been developing among clearinghouses, depositories, and regulators in various countries; these have set the stage for more global sharing of risk information. However, there are often legal restrictions on the flow of information across national borders.[59] It is an issue that requires government and private sector attention if it is to be resolved satisfactorily.

Inadequate Technology[60]

Technology may or may not have a significant impact on clearing and settlement at low trading volume; but during high volume, technology is often a key to efficient clearing and settlement. Most of the U.S. clearing and settlement system is technologically advanced, although there are some areas needing improvement. However, the clearing and settlement industry worldwide (including many brokerage firms and banks) are operating at an inadequate level of technology to meet the increasing demands of the markets.

Cultural, legal, regulatory and economic factors sometimes work as barriers to increasing the level of automation. For example, some countries prohibit the transfer of equity ownership through electronic book entries. Others restrict the importation of automation and communication equipment and require domestic sources. These are areas where it will be necessary for governments as well as the private sector to make decisions about appropriate actions.

While clearinghouses have made significant strides in upgrading technological levels, the benefits of these upgrades can be diluted if all clearing members are not sufficiently advanced technologically to respond to new requirements of the clearinghouse for which the technology was intended. In some cases, the weakest technological link may limit the responsiveness of the system during operational stress, particularly under high-volume conditions. These are areas where, inmost countries, the private sector will have to take the initiative to bring about needed changes.

Standardization and Harmonization

Uniform codes of operation, or standards, for both the process[61] and the infrastructure[62] of clearing and settlement would make it easier to link the world's clearinghouses and depositories. There is strong motivation by regulators, the Self-Regulatory Organizations (SROs), and the private sector, for standardization to meet the demands resulting from globalization of world markets. But progress in this area is likely to be slow because of the complexity of effecting change. The United States (with respect to equities and options markets) and a few other countries have standardized their domestic systems both in the process and the infrastructure, although there are notable differences among them.

Operating hours and daily schedules for banks and financial markets are not uniform, either domestically nor internationally. Banks, including the cen-

[58]The Bankers Trust survey of international clearinghouses and exchanges received 18 out of 20 responses favoring the sharing of risk position information "as useful or absolutely essential" among clearing and settlement organizations for the purpose of reducing clearing members' exposure risks. Bankers Trust study, op. cit., footnote 1, vol. 1, p. 231.

[59]As examples, Belgium and Switzerland have strict privacy laws which restrict the sharing of a client's information, such as trade details, with third parties. IBM, "Study of Clearance and Settlement for the U.S. Congress—OTA," Aug. 1, 1989, pp. 7, 39. This report is incorporated in the OTA contractor report, Bankers Trust Co., op. cit., footnote 1.

[60]This section is based on "IBM Study of Clearance and Settlement for the U.S. Congress-01%' Aug. 1, 1989, Ibid. The IBM study is based on opinions of participating experts from the world's major exchanges and clearing organizations.

[61]"Process" refers to operational functions including trade matching, the number of days to clear a trade, number of days to settle a trade, the use of a depository for holding equities and keeping records of ownership, the use of a recognized numbering system for identifying financial instruments, formats for data transmission, and the method of payment.

[62]"Infrastructure" refers to all of the many nonoperational features necessary to make the clearing and settlement process work in a consistent and stable manner. These include the method of regulation, mechanisms to protect the clearinghouse against the financial failure of a clearing member, a reserve of funda to protect customers of a failing broker or futures commission merchant, bankruptcy laws to adjudicate the disposition of customer assets if a broker fails, credit processes at banks, clearinghouse trade guarantees, capital adequacy guidelines, and bilateral tax treaties among nations.

tral bank, maybe closed even if financial markets are open.[63] This disparity becomes increasingly important as market participants invest in more than one country. The FRB, SEC, CFTC, and the Treasury Department must first face this issue in the United States.

Many investors in the world's equity markets deal with global custodians for clearing and settlement.[64] Therefore, no matter how significant the improvements in the clearing and settlement process, the gains in efficiency can be diluted unless parallel improvements are made by global custodians.[65] Currently, there are no standards that define a global custodian,[66] yet these are important to achieving smooth-working global markets. This needs to be addressed at the international level by both private sector and government regulators.

Markets around the world compete to be agents for capital transfer, and have made innovations to improve their competitive positions. Before and after the October 1987 crash, the private and public sector have taken steps to reduce systemic market risks. These risk-reduction efforts include increased co-operation among the world's regulatory bodies. But efforts to improve clearing and settlement systems-domestically and particularly in some foreign countries-likely will fall short unless change occurs in: 1) process, and 2) the infrastructure. Many gaps in the infrastructure (methods of regulation, taxation, customer protection) exist, but have not yet received adequate attention.

Effective reforms in clearing and settlement will have to be undertaken on an international scale. The private and public sectors in the United States can act as leaders in the evolution of improvements in the domestic clearing and settlement industry, but they face serious constraints in achieving worldwide improvements unless their efforts coincide with those of other countries. Both private sector and government actions are required.

Shortening the Time to Settlement and Providing Same-Day Funds

The need for standardization, or harmonization, of clearing and settlement is manifest by the various international standards-setting efforts already underway.[67] One example of the need for standardization is shown by the differences among countries in the number of days to settle a trade for different financial instruments. This is a case in which the private sector likely will require the support of national governments to establish minimum standards for harmonizing international clearing and settlement. The United States, for example, must shorten the settlement period for equities. This most likely would require immobilization of securities in a depository, and the public would also benefit from a change to same-day funds.[68]

The elimination of physical delivery of certificates is the key to automating the clearance and settlement systems. This has been achieved legislatively in France, where certificates are dematerialized (i.e., paper certificates are eliminated and computer-based records are substituted), and in Germany, Switzerland, Euroclear, and CEDEL (the international clearing and settlement firm) by using nominee custodians to centrally transfer ownership by book-entry. The United Kingdom has established a depository nominee (SEPON) for the book-entry transfer of ownership between market-makers. The system will be extended to other exchange members and some institutional investors,' and the United Kingdom has plans to implement a book-entry transfer approach for all transactions. Japan and Hong Kong have enacted legislation that requires automated book-entry clearance and settlement systems.

The U.S. Working Committee of the Group of Thirty concluded that the greatest deterrent to achieving shorter settlement at the retail level, or the "customer-side," is the physical delivery of certifi-

[63] This issue, for the United States, was raised at the Feb. 8, 1990 meeting of the Banking and Clearinghouse Roundtable, where members agreed to hold further discussions. The problem is far more complicated internationally and far *from* being resolved.

64A global custodian is a bank that holds securities and other financial instruments in multiple markets on behalf of international investors.

[65] For more on this subject, see Bankers Tmst Co., op. cit., footnote 1, vol. 1, p. 174.

[66] The International Society of Securities Administrators may begin to develop standards for global custodians in 1990.

[67] Bankers Trust, in its survey of clearing and settlement participants worldwide, asked the question: Which Critical clearing and settlement problems should the U.S. Congress address, if any... ? The three most frequent responses for attention by Congress were: support standardization efforts for global trading; support immobilization of securities; support increasing the standardization of the clearing and settlement process. It should be pointed out that a significant number of U.S. respondents did not want increased congressional involvement in issues affecting the clearing and settlement industry.

[68] IBM study, op. cit., footnote 58, pp. 20,22.

cates (which some retail investors insist on) and reliance on the postal system to accomplish this.@ The retail customer must pay his broker on or before the settlement date. Each side requires the delivery to the broker of either "good funds" or certificates in a timely fashion. There is no easy way to accomplish these "deliveries" today, without substantial changes for the retail investor or added expense for investors who wish to hold a certificate.

The Group of Thirty's recommendation for a change from next-day funds to same-day funds (SDF) for the settlement of securities transactions has no deadline for implementation, but some expect it to be in place in the United States during the 1990s.[70] The adoption of SDF should contribute to risk reduction and would add uniformity and simplicity across all instruments and markets.

However, the U.S. Working Committee, while recommending the eventual adoption of same-day funds for the United States, recognizes the need for assessing a number of complex issues associated with its adoption. There are substantive technical issues and the requirement for significant behavioral changes that warrant study before the changeover. Today's automated payment systems, for example, are considered to be not yet sufficiently developed or ''user-tiendly' to be viable alternatives to the postal system.

A second issue is that although most major futures clearing corporations in the United States settle in same-day funds, there are important exceptions, e.g., NSCC and the six regional equities clearing corporations and depositories. Further work is needed to examine how these systems would have to be altered to accommodate an SDF environment.[71]

A third issue concerns implementing guidelines issued by the Federal Reserve System to mitigate systemic risk that could be caused by a failure of a private payment system (i.e., a clearing agency) participant to settle its obligations.[72] The guidelines are seen as difficult to apply within NSCC and DTC for the clearing of corporate securities and municipal bonds, and therefore will require additional study .73

Ongoing efforts by the U.S. private sector have been laudable. Yet, some of the issues raised by shortening the time to settlement and same-day funds, among others, will require continued assistance from regulatory bodies and, in some cases, the U.S. Congress, since they are not within the ability of the private sector to resolve.

IS AN INTERNATIONAL REGULATORY BODY NEEDED?

Although the private sector is already dealing with many issues, government assistance is likely to be needed, for example, to effect changes in laws, such as those needed for the immobilization of securities certificates.[74] The several private sector studies do not fully address all financial instruments, e.g., derivative products, that must also be addressed to accommodate the linked markets of today, nor do these studies address all of the process and infrastructure areas that must be examined. The private sector alone cannot implement the recommended changes fully since consensus will be required among market participants, regulators, and national governments.[75]

Some of the organizations' efforts aimed at harmonization have been peripheral to their primary missions, or one-time activities. The efforts of U.S. regulatory agencies, that seek incremental improvements through bilateral agreements, although sustained, are slow. Pressures for harmonization are growing, and piecemeal efforts to address these global needs may be inadequate. In other fields of international interaction, such as telecommunica-

[69] Group of Thirty, op. cit., footnote36.

[70] Memorandum from The DTC to the Group of Thirty, U.S. Working Committee, Jan. 4, 1990.

[71] Ibid.

[72] Federal Reserve System, Docket No. R-(X565, "Policy Statement on Private Delivery-Against-Payment Systems," RIN 7100-AA76, June 16, 1989.

[73] Group of Thirty, U.S. Working Committee Report on Same Day Funds Convention, February IWO.

[74] See, Group of 'III@, op. cit., footnote 36, pp. 6-10.

[75] The Group of Thirty has found that building consensus is essential to making progress in harmonizing international @s@ standards and procedures both in the United States and in other countries. Yet there are indications that important issues, such as the dematerialization of securities certificates, may be difficult to change in the United States in the near term. Some Americans also fear that the recommended reforms, if adopted internationally, could make other markets more competitive with U.S. markets, weakening our competitive advantage. In spite of such concerns, the Group of Thirty is making considerable progress, as of late 1989, according to Gerard Lynch, Managing Director, Morgan Stanley, who has played a leading role in developing consensus among U.S. participants. Discussions with OTA staff, December 1989.

tions and air and sea transportation, international decisionmaking and standardization, or harmonization, have long been recognized as essential. International consensus and standardization are critical to making global trading practices uniformly acceptable. This suggests to some people a need for an international body to facilitate the process.

Others argue against such action, because other countries may resent the United States trying to change their markets, and fear that this resentment would generate resistance to U.S. proposals. Nations have different objectives for clearing and settlement and contrasting views on the best approaches to accomplishing them; some view the protection of investors as paramount (as a number of countries, including the United States, have historically done), while other nations have as their primary objective greater market share. Some people suggest that the United States might be disadvantaged if it were to focus too narrowly on issues such as safety and soundness while other countries focus on gaining market share.

Perhaps one of the greatest problems in achieving a safer global clearing, settlement, and payment system is parochialism.[76]

The alternative to developing or adapting an international standing body to focus on major issues is continued reliance on informal or bilateral agreements—the present approach. These approaches warrant close examination by the U.S. Congress.

At any rate, since the financial markets are private markets which involve the public interest, the role of the Federal Government will have to be played out in concert with suitable private-sector institutions to achieve public policy goals. Many issues need international attention, including:

- legal issues in cross-border trading,
- information sharing across markets and across national borders,
- the minimum level of technology to be used by various participants with regard to clearing and settlement,
- international regulation of markets,
- the critical interface between international markets and banks,
- means of protecting clearinghouses from externally caused major disruptions,
- minimum financial standards for clearinghouses (i.e., capital and guarantees),
- standards for global custodians, and
- surveillance and enforcement.

The ability of the United States to unilaterally develop new standards and procedures for international clearing and settlement is limited. As the need to develop a broad consensus on these issues in international forums increases, U.S. regulators must become more knowledgeable about other countries' regulations, practices, customs, and laws, and more proactive in seeking accommodations. Federal regulators will need a shared, consistent view of the minimum standards for clearing, settlement, and payment systems on an international basis.

This subject is discussed in a forthcoming OTA report, ***Electronic Bulls and Bears; Securities Markets and Information Technology,*** along with complications associated with U.S. regulatory responsibilities divided among the Securities and Exchange Commission, the Commodity Futures Trading Commission, the Treasury Department, and the Federal Reserve System.

[76] As one observer put it: " . . that under the guise of safeguarding the system and making it more effective and efficient, the evolution of the regulatory system internationally will continue to be distorted in order to advance narrow nationalistic and protectionist purposes. To the extent that this occurs, less progress will be made in advancing the primary objectives of regulation—safety and soundness, competition, integrity and consistency. In addition, the international system will fall short of its potential to facilitate economic growth and development.'' @anti.,.Reuba~DepıChairman of the Bank of Montreal, "Implications of Globalization for Regulation and Safety," a talk at the November 1989, Financial Globalization Conference in Chicago.

Chapter 6
The Regulation of Global Securities Trading

Global trading in securities runs into complex problems and unnecessary risks because of the differences among national regulatory policies and structures. There is no international mechanism for regulating transborder activities, nor any way for a nation to enforce its own regulations beyond its sovereign reach, except insofar as there are cooperative agreements between nations.[1] The risks, discussed in chapters 3 and 5, include both unrecognized risk for investors who make decisions based on unrealistic expectations of fairness or institutional integrity, and wider systemic risks that might result, for example, from the failure of a major firm with heavy commitments in several countries. At best, there are many complex problems that result merely from differences among nations in market structures and procedures, in the relationships between securities markets and the banking system, and especially in the regulations that govern these activities.

COMPETITION AND REGULATION

Many market participants in many countries argue that these differences in regulatory regimes are best resolved through deregulation in those countries with the more regulated markets. Advocates of 'free markets," generally opposed to regulation, use the threat of international competition to counter any consideration of regulatory action. They are quick to argue that additional U.S. regulation or taxation, or even the maintenance of existing levels of regulation, will "drive the markets overseas." This argument may or may not be correct, but it is initially suspect because for many of those who make it, it is obviously self-serving. The argument should therefore be closely examined.

Free market advocates assume that trading will inexorably shift to the least regulated market because it is the least expensive to use, or the "most efficient." Regulation can significantly add to the cost of doing business. Mandated costs appear to have caused trading to shift at some times in the past. For example, the Eurobond market developed in London after a U.S. "interest equalization" tax in 1964 discouraged the issuance of debt in the United States by foreign borrowers. A significant amount of trading in German government bonds is said to have moved to London to avoid tax in Germany. However, many examples of movement off-shore offered by free market advocates cannot confidently be attributed to a single simple cause.

The concept of the pull of less regulated markets is probably too simple for several reasons. First, active markets have some natural protections. There is a strong tendency for securities to trade in the most liquid market, nearly always in the country of origin. Attempts by a second exchange to compete for volume trading in an existing heavily traded product nearly always fail. As noted several times in this report, this situation may change, especially when the product is offered in a different time zone. But for trading to shift to another place, the attracting market would have to begin with ample depth, i.e., enough participants at all times to provide liquidity to those wishing to trade.

The more dubious assumption is that the least regulated market is necessarily the most efficient market, or the most attractive market to investors. It seems likely that some degree of regulation is desired or even demanded by participants for their own protection. Beyond this is the question of how much systemic risk modern industrial nations are prepared to assume as the price of participation in world financial markets. Policy concerning financial institutions and markets has been, in nearly all countries and at all times, "protectionist," because of the concern of national governments about monetary control, savings, capital formation, and financial systems. The policy issues related to globalization of securities trading center on how much less or how much more protectionist financial regulatory policy should be in response to techno-

[1]GATT has in the past covered goods, not services. Service industries are included for the first time in the most current round of GATT negotiations, but once a general agreement is reached on trade practices in the international services sector, it will still have to be translated into specific agreements for different types of services.

logical change and the increasing global mobility of capital.[2]

TWO KINDS OF REGULATION

It is important to recognize that there are two quite different kinds of securities markets regulation.[3] The first, which can be called access regulation, is aimed at protecting domestic markets and their participants from outsiders; i.e., restricting access to the market to maintain the privileges and benefits of "membership in the club." In recent years major market nations have reduced these barriers; this has been a primary thrust of deregulation in the United Kingdom and France, for example, and even in Japan greater access has been opened for foreigners, although more slowly.[4]

The second kind of regulation may be called "prudential regulation" and is aimed at assuring investors of fair and equal treatment, by regulating trading practices, abolishing fixed commissions, making sure that investors are informed about risks, and requiring the availability of information about prices, fees, commissions, and factors influencing prices. Most governments consider it in the public interest to maintain markets that are fair and have the confidence of the public. However, some countries put much greater emphasis than others do, on assuring investors of fair and equal treatment. In the United States, broad participation in securities markets and stock ownership has been valued as a way of democratizing the economy, and investor protection is emphasized. In some countries, there have never been many "small investors" or household investors, and most market participants are large institutions, assumed to be able to look after themselves.

The exposure of stock market fraud over the last 3 years in several countries-the United States, Japan, France, West Germany, and Canada-has given rise to demands for new or more seriously enforced prudential regulation or deregulation.[5] West Germany, Belgium, Spain, Italy, and Ireland have passed or are considering new laws forbidding insider trading or providing stiffer penalties. In Japan, insider training was against the law, but until recently it was not considered a serious offense. When detected, offenders might be reprimanded, but usually not publicly.[6] A stricter law has been passed since the scandals last year, but enforcement is weak.

In the United States, some people who favor deregulation have suggested that investor protections should now be relaxed because institutional investors, guided by professional money managers, need less protection than the traditional small investor. On the other side, some say that more regulation may be needed to protect the growing number of participants in mutual and pension funds against abuse and mismanagement by fiduciary agents; and some suggest that deregulation in the United States has begun to threaten essential investor protections, by subtly shifting to emphasize not the "small investor" but the "informed investor," implying a philosophy of "caveat emptor," or let the buyer beware.[7]

Prudential regulation of markets still differs widely from country to country.[8] Regulatory agencies in some countries approve nearly any new trading products, such as index futures contracts, that are proposed by the financial community; other

[2] This formulation borrows from a formulation by David D. Hale, Kemper Financial Services Inc., in "How European Economic Integration and Japanese Capital Power Will Produce Managed Trade in American Financial Services During the 1990' s," an address to the Athens College Alumni Association Fourth International Economic Conference, 1989. However, Mr. Hale is not responsible for the permutations of his question used in this chapter.

[3] Much of the material in this section draws on Manning Gilbert Warren III, "SecuritiesRegulation in the European Communities,' a contractor report to the Office of Technology Assessment, Aug. 1, 1989.

[4] There are no barriers to foreign membershi'p on U.S. exchanges other than the requirement that members have an office in the United States. In 1977 the NYSE further broadened access to trading by providing for (in addition to the traditional purchase of a "seat") leasing of seats, electronic access membershi'ps, and a few physical access memberships with limited participation on the trading floor without other attributes of membership. The National Association of Securities Dealers has never had barriers to foreign membership. Information provided by the NYSE and NASD.

[5] For a brief summary of insider trading rules prior to recent changes see Andrew N. Grass, Jr., "Internationalization of the Securities Trading Markets," *Houston Journal of International Law, vol. 9, No.* 1, Autumn 1986, pp. 44-49.

[6] Arturo Weiner and Edward Knight, "The Stock Market in Japan: An Overview and Analysis," Congressional ResearchService ReportforCongress, Mar. 15, 1988.

[7] OTA workshop on "The Small Investor," May 1, 1990.

[8] This section draws heavily on "Arrangements for the Regulation and Supervision of Securities Markets in OECD Countries," in OECD: *Financial Market Trends 41,* November 1988. Most of the summary statements below apply therefore to OECD countries, which includes all major markets.

countries are more restrictive, on the grounds that some forms of trading are basically speculative and may lead to excessive volatility or undermine confidence in the financial system. Some major market countries heavily regulate securities underwriters and investment advisers; others require only that there be disclosure of basic information..

Countries also differ in the degree to which competition among financial institutions is restricted--e.g., whether banks can engage in securities underwriting and related activities. Several countries have recently removed regulatory barriers that formerly separated banks, thrifts, securities houses, and other financial companies. In other countries, chiefly the United States and Japan, there are still some legal restrictions that may affect the participation of banks in international securities activities.

These differences result in part from historical circumstance-the way in which national banking and payment systems evolved, and when and under what conditions the existence and importance of securities markets were first recognized. In part, they result from differing perspectives on the distinction between private and public sectors (i.e., how capitalistic or how socialistic an economy is). A third factor is the constitutional structure of the government: in federal systems regulatory responsibility may belong either to provincial or central government, or be dispersed.

BANKING AND SECURITIES MARKETS[9]

In most countries, banks are major participants in securities markets and securities-related activities. In the United States and Japan, the policy has been to protect the banking system from security market risks. Banking and securities activities are separated. People making bank deposits are assumed to be trying to safeguard their assets, and are thus given more protection; their deposits are guaranteed up to a certain limit by government insurance, and the types of liabilities that banks may incur are limited. Those investing in securities knowingly and by choice assume risks, in return for the opportunity to profit; they are nevertheless protected to the extent of seriously enforced laws against fraud and manipulation, requirements that the investors' risk be disclosed to them, and insurance protection against the failure of a securities firm. Separation of banking and securities activities tends to result in large independent securities houses such as those in the United States, Canada, and Japan. OECD analysts conclude that in such systems there may be greater acceptance of innovative products than there is in universal banking countries.[10]

A universal bank system is more common; countries with universal banking (which include Austria, Denmark, Finland, West Germany, Luxembourg, The Netherlands, Norway, Sweden, and Switzerland) allow banks to engage in the full range of financial activities.[11] These countries assume that the risk of financial failure in any one activity is reduced by the bank engaging in a broad range of activities-a form of diversification.

A third system allows either banks or brokers to receive customer orders for securities transactions, but requires the trading to take place through independent intermediaries. The activity of dealing for a proprietary account is separated from the activity of trading as an agent for customers. This may constrain the range of services that stockbrokers offer. This system is used in Belgium, France, Greece, Ireland, Italy, Portugal, and Spain.

These differences in the securities-related powers of banks result at the international level in the issue of national treatment v. reciprocity .12 "National treatment' means that a country applies the same set of requirements and regulations to both domestic institutions and foreign institutions operating within its boundaries. In most regards this should provide a "level playing field' and promote competition. But in the United States, where national laws

[9]Material in this section is drawn in part from OECD, op. cit., footnote 8. See also OECD, "International Trade in Services: Securities," *Financial Market Trends 37,* May 1987; and OECD, *International Trade in Services: Banking* (Paris, *1988);* Bank for International Settlements, ***RecentInnovations in International Banking,*** April 1986; and ***Banking and Payment Services,*** materials for an International Symposium sponsored by the Board of Governors of the Federal Reserve System, Washington DC, May 1989.

[10]OECD, **op. cit.,** footnote 8, pp. 19-20.

[11]In West Germany and Austria anyone engaging insecurities trading must obtain a banking license. In the other countries, some financial firms which do not accept deposits maybe licensed to engage in securities activities without banking licenses.

[12]See OECD, *International Trade i„Services:* **Banking, pp. 15-20. See also An&w T. Hook and M. Alberto Alvarez, ''Competition From Foreign Banks," Chapter** 10 of Federal Reserve Bank of New York, NY, ***Recent Trends in Commercial Bank Profitability,*** A Staff Study, September 1986.

separate banking and securities activities, the banks of universal-banking countries are prevented from engaging insecurities-related activities because they are officially banks. European countries whose banks are officially excluded in this way could in theory demand "reciprocity," or access to U.S. markets as a condition for allowing U.S. institutions to participate in their markets. The official U.S. position[13] is that:

> The United States considers reciprocity in financial services to be inconsistent with the internationally accepted principles of national treatment and non-discrimination . . . The national treatment approach used by the U.S. Government in financial services seeks to ensure that foreign firms in the United States and U.S. firms in foreign countries are given "equality of competitive opportunity" with domestic firms.

The European Community has as one goal of its "1992 initiative" the establishment of a single European market in banking and securities activities. The 1992 Initiative originally included a policy of reciprocity, which has recently been modified.

REGULATORY INSTITUTIONS[14]

The institutional structures for regulating securities markets differ widely. In universal banking countries, one regulatory or supervisory agency may cover all financial activities[15]; in the United States, securities markets, futures markets, bond markets, and banks have different regulators. In some countries, primary supervision over securities trading is generally carried out by self-regulatory bodies, such as stock exchanges, under the oversight of a regulatory agency. This is the case in the United States, and it is also the case in Finland, West Germany, and Switzerland, where securities and banking supervisory functions are not separated. In countries with a federal structure, primary responsibility for supervising markets may be assigned either to the national government, as it is in the United States, or to provincial or state governments, as it is in Australia, Canada, and West Germany. In the United States and the United Kingdom, any entity offering securities or investment services to the public is regulated, but in some countries such as Italy and Switzerland, some parties-e. g., over-the-counter dealers-are not covered.

Other differences relate to collective investments such as mutual funds; there are different prudential requirements about corporate structure, fees, and management compensation. The United States has rigorous prudential requirements; many European countries are just beginning to develop tougher requirements after major losses by investors. There have been some efforts to harmonize standards. The European Community has just adopted common standards for mutual funds its member countries.

The differences in accounting practices and standards, and in capital adequacy requirements for various kinds of financial institutions and market participants are very important and very difficult to resolve. Some of these differences were discussed in chapter 5, on clearing and settlement.

ENFORCEMENT OF SECURITIES REGULATIONS

As securities trading is further globalized, regulators responsible for investor protection face the difficulty of supervising activities that flow through electronic systems and networks across national boundaries. Currently, the U.S. market regulatory agencies (the SEC and the CFTC) have limited authority to assist foreign authorities with investigations of violations of foreign laws from a U.S. location. When a foreign government needs U.S. assistance with market investigations, it must ask for a court order to compel testimony or evidence. But it is often undesirable to have a public hearing while an undercover investigation is in progress. A bill now before Congress, the International Securities Enforcement Act (H.R. 1396), would strengthen SEC authority for cooperative enforcement by increasing its ability to punish brokers, dealers, and investment advisors for overseas violations, giving the agency greater discretion over the release of information, and allowing the agency to accept reimbursement from foreign securities authorities for costs of investigations that SEC would conduct for them.

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[13] An issue paper from the U.S. Department of the Treasury entitled "EC Single Market: Banking and Securities" provided by the International Trade Administration, U.S. Department of Commerce, Aug. 1, 1989.

[14] Much of the material in this section, not otherwise cited, is drawn from OECD, op. cit., footnote 8.

[15] This includes: Austria, Belgium, Denmark, Finland, West Germany, Luxembourg, Norway, Portugal, Sweden, and Switzerland.

In cases where U.S. markets are abused or manipulated from overseas, the SEC's investigative power is limited when the evidence is located elsewhere. When the SEC seeks help from a foreign government, it must make a formal request under the terms of the Hague Convention or exert pressure on U.S. branches of overseas financial institutions. The SEC has been required to go through long negotiations or court proceedings to obtain information about transactions through foreign banks or securities houses. As Charles Cox, a former SEC commissioner, explained:

> All nations with securities markets may face the dilemma of deciding whether to protect their markets from foreign-based fraud, or to live with markets where some participants can defraud others with impunity. . . . The acceptable alternative is to develop ways of sharing surveillance and investigative information, and to formalize these arrangements in bilateral or multilateral understandings.[16]

Formal agreements have not been completely effective. In spite of the Hague Evidence Convention some nations refuse to disclose information, and the legal mechanism of letters rogatory have been inadequate for gathering evidence for litigation.[17] While the United States accepts the idea of government access to financial data for the purpose of enforcing securities laws, some nations view this as a violation of confidentiality and may have secrecy or blocking statutes that forbid the release of such information.[18] Secrecy laws recognize confidentiality as a fundamental right and forbid any disclosure of a customer's financial information, including business records and accounts, without personal permission. Blocking laws protect national rather than individual interests, and are intended to prevent the disclosure of information by citizens as parties to foreign litigation, or to prevent any foreign government from conducting investigations and imposing its policies within their borders, as an invasion of sovereignty.[19]

In 1985, the SEC proposed the idea of "a waiver by conduct," meaning that anyone who traded in U.S. markets would be held legally to have waived the right to prevent the SEC from investigating. But the concept was widely viewed as politically unacceptable because it infringed on the sovereignty of foreign governments and created tension with friendly nations.

To encourage cooperation from other nations, the SEC is seeking legislation to authorize it to issue subpoenas and take dispositions in this country on behalf of foreign securities regulators or law enforcers.[20] It also wants the power to bar from U.S. securities markets people who have been convicted in foreign courts of certain financial abuses. This, however, raises questions of legal rights or justice, because foreign governments may lack safeguards which are considered essential in the United States for those accused of crimes, or may have very different standards of proof.

HARMONIZATION

Many people argue that a worldwide securities regulatory body is needed, but others believe that a broadly multinational institution with strong authority is not feasible, at least at present. They look to a less drastic solution: "harmonizing" regulation by reducing the differences (or the effect of differences) in national regulatory regimes.

Harmonization is the process of reducing regulatory disparities among mutually accessible markets, through the development of common or mutually compatible regulatory regimes, standards, and practices.[21] Advocates hope that harmonization would lessen the threat of "regulatory arbitrage," or allowing competition among national securities markets to force prudential regulation down to the lowest common denominator. Critics fear that harmonization could raise the threat of "regulatory imperialism" in which less regulated markets are

[16] Charles Cox, "Transactions: Blocking the Success of Market Links," *Maryland Journal of International Labor and Trade, vol.* 11, 1987, p. 215.

[17] *Ibid.*, p. 217.

[18] Brandon Becker and Thomas Etter (Securities and Exchange Commission), "International Clearance and Settlement," *16 Brooklyn J. 271,292-293, 1988.*

[19] An SEC investigation of suspicious trades originating in foreign countries indicated that some U.S. and foreign investors avoid SEC surveillance by executing transactions through financial institutions in countries with secrecy and blocking laws. "Problems With the SEC's Enforcement of U.S. Securities Laws in Cases Involving Suspicious Trades Originating Abroad," House Report 100-1065, Oct. 6, 1988.

[20] H.R. 13%, The International Securities Enforcement Act, now before the Senate.

[21] Warren, op. cit., footnote 3. See also Miller, "Regulating Financial Services in the Unite dKingdom-AnAmerican Perspective," 44 *Business Law* 323, 1989; and Bernard, "The United Kingdom Financial Services Act 1985: A New Regulatory Framework," 21 *International Law 3431987.*

forced to become more regulated. Pessimists fear that the effort to achieve harmonization may itself become a form of regulatory arbitrage.

The term "harmonization" itself has in this way become controversial, and because it is controversial it has become difficult to define. Different stakeholders, or interest groups, tend to define the term in ways that imply different objectives as well as different approaches. It is necessary to recognize, at least, that harmonization allows for two approaches. The first, "commonality," means the development of uniform international rules, such as uniform disclosure requirements, enforced in all countries. The second, sometimes called "reciprocity" or "comparability,' calls only for substantially equivalent minimum standards.

The North American Securities Administrators Association (NASAA) recently urged the creation of global minimum standards of investor protection; this is a commonality approach to harmonization. The International Organization of Securities Commissions (IOSCO)[22] is attempting to develop disclosure requirements for multi-jurisdictional securities offerings. IOSCO is also working with the International Accounting Standards Committee to develop common accounting rules and standards. Other international securities organizations working toward commonality, or universal standards, are listed in box 6-A.

The SEC and Canadian provincial regulatory authorities have proposed reciprocal recognition of prospectuses in connection with certain types of offerings from specific kinds of issuers; the requirements for these perspectuses, although not identical in the several jurisdictions, show 'substantial equivalence." This is the comparability approach. The approach of the European Community, in attempting to harmonize securities market regulation among its members, has shifted pragmatically from commonality to comparability.

"Substantially equivalent rules" could be sought on a global basis either gradually through a multinational forum or program, or through a series of informal arrangements. Informal arrangements in the past have not been very effective. The International Association of Securities Commissions has an organized program for exchange of information, but the meetings have had little impact.[23] Bilateral agreements through non-binding memoranda of understanding (MOUs) have been somewhat more successful. They provide flexibility for regulators to work out techniques of securities enforcement in a reamer consistent with domestic law, taking account of differing legal systems and culture rather than demanding complete uniformity. They may reduce the need for case-by-case negotiation that can deplete regulatory resources and cause nearly endless delays, but they are a clumsy solution; each country could find itself with many MOUs that are different from one another. The SEC has MOUs with Canada, the United Kingdom, and Switzerland. The CFTC is party to MOUs with the United Kingdom and has arrangements with Australia, Canada, and Singapore for sharing information from monitoring and surveillance activities.

The risk with a policy of reciprocity with substantial equivalence is that countries with the most stringent regulations will be led to interpret "substantial equivalence' too broadly. They may begin to interpret their own rules more loosely and enforce them more slackly, in order to attract or retain foreign investment in the face of competition from countries with less prudential regulation. Then domestic firms will demand regulatory parity in order to compete with foreign fins, and this becomes a form of prudential deregulation through leveling downward--i.e., another form of regulatory arbitrage.

Many market participants and many regulators, although eager to engage in international trading of securities and derivative products, are critical of the objective of harmonization. For example, in the United States, CommissionerAlbrecht, of the CFTC, recently told a public meeting that:[24]

> Unfortunately, harmonization is a word that those of us at the Commodity Futures Trading Commission, as well as many in the futures industry, have come to view with a great deal of suspicion. . . . At

[22] IOSCO includes securities regulators from more than 40 countries.

[23] Becker and Etter, op. cit., footnote 18; see Note (Needham), "Insider Trading Liability," 16 *Brooklyn J. 357,381-385, 1988.*

[24] William P. Albrecht, "Harmonizing International Regulation of Futures and Options Markets," a Speech to the Conference on Futures and Options Markets in the 1990's—Innovation, Regulation and Jurisdiction, co-sponsored by the Commodity Futures Trading Commission and the Futures Industry Institute, Washington DC, May 2, 1990.

Box 6-A--International Organizations Related to Coordination of Securities Regulation

The International Organization of Securities Commissions (IOSCO)

Membership: Securities Regulators *from* about 40 countries. (SEC is the principle U.S. representative with CFTC as an associate member.)

Aims: Coordination, exchange of information, mutual assistance related to standards and surveillance.

Mechanism: **Technical** committee and working groups on multinational equity offerings, accounting and auditing standards, capital requirements and financial 'data, enforcement information exchange, off-market trading, clearing and settlement, futures markets.

Federation Internationale Des Bourses de Valeurs (FIBV)

Membership: 33 stock exchanges.

Aims: To facilitate exchange of information. Recently concentrating on clearing and settlement, disclosure requirements, listing procedures.

Mechanism: voluntary information exchange.

Group of Thirty

Also called The Consultative Group on Economic and Monetary Affairs.

Membership: 30 individuals from world-class banks, multinational corporations, government agencies, and academia.

Aims: To increase policymakers understanding of international economic and financial issues and explore the international effects of public and private decisions.

Mechanism: Ad hoc committees.

Organization for Economic Cooperation and Development (OECD)

Membership: 24 developed nations. Representation by ambassadors and at selected meetings by cabinet-level officials.

Aims: Encouragement of economic growth, expansion of world trade. Looks at securities coordination in terms of international flow of travel.

Mechanism: Permanent research staff, participation of ministers with authority over securities and other financial institutions.

International Councils of Securities Dealers and Self-Regulatory Associations

Membership: Formed in 1988, membership includes four SROs (Canada, Japan, the United Kingdom, the United States) and three Securities Dealers Associations (Canada, Japan, the United States).

Aims: To aid and encourage the sound growth of the international securities markets by promoting and encouraging harmonization in the procedures and effective regulation of those markets, thereby facilitating international securities transactions and by promoting mutual understanding and the sharing of information among the members.

the international level, some calls for harmonization should also be viewed with suspicion.

Commissioner Albrecht called on governments to recognize the importance of relying on market forces, saying "Competition is the best harmonizer, the best regulator of market forces." Commissioner Albrecht said that with regard to cross-national trading, "the CFTC favors a policy combining national treatment with mutual recognition,' and he defined the two terms as follows: national treatment requires authorities in each country to treat operations of foreign firms as they would those carried out by domestic firms; mutual recognition means that a country would allow foreign entities to operate within its jurisdiction as long as they complied with the regulations of their country of origin and "as long as the rules of the firm's country of origin are comparable to our own. ' However, the CFTC participates in international discussions and negotiations related to harmonization.

The SEC has indicated a somewhat different approach, saying that an effective regulatory struc-

[25]Ibid.

ture for an international securities market must include:

- efficient structures for quotation, price, and volume information dissemination, order routing, order execution, clearance, settlement, and payment, as well as strong capital adequacy standards;
- sound disclosure systems, including accounting principles, auditing standards, etc.; and
- fair and honest markets, through investor protection legislation, surveillance, and enforcement cooperation.[26]

At the end of 1989, the SEC signaled its intention of encouraging international cooperation in regulatory affairs by creating an Office of International Affairs that will report directly to the chairman of the Commission. The office is to set up information-sharing agreements with other countries and direct cooperative enforcement efforts. The CFTC also actively participates in many international regulatory cooperative activities.

Many countries are now reviewing their regulatory frameworks in response to the internationalization of markets. According to OECD:

> There is increasing awareness that securities market activities involve risks that are comparable to the systemic risks inherent in banking, and that, accordingly, the basic question arises as to what extent existing regulatory and supervisory arrangements are adequate to deal with current market realities.[27]

The EC's 1992 initiative (see ch. 4) provides an example of how harmonization could be achieved among major market nations, given sufficient incentive and leadership. If successful, the EC initiative may stimulate further action toward broad multinational cooperation. The 1992 directives are aims, not yet achievements, but enough has been done toward integrating European markets to make it likely that the EC will become a significant factor in international securities trading.

AMERICAN LEADERSHIP

It seems reasonable to conclude that the United States now has, in the aggregate, the largest and most liquid securities market and futures market in the world, and possibly the most efficient, innovative, and fair markets in the world—although there are certainly challenges on several of these fronts. Assuming that Congress believes that it is in the public interest to maintain this position, what must be done to assure our competitive position, while safeguarding the interests of U.S. investors, financial institutions, and most importantly, the public at large?

A number of international cooperative efforts are underway to achieve harmonization of regulation. The problem for policymakers is how to be sure that the United States encourages this movement and provides leadership for it, without becoming a victim of "regulatory arbitrage" in which countries with much lower levels of prudential regulation set the norms. This calls for coherent and consistent policy positions that American negotiators can present and defend.

One need is to prevent the erosion of the framework of prudential regulation that Congress has erected since 1934, as an unintended byproduct of the effort to achieve harmonization. The second need is to clarify and reassert congressional guidance over the evolutionary development of securities markets as they face the challenge of global trading. There may be differences between the two U.S. regulatory agencies in their approaches to international regulatory harmonization that could confuse and hamper American leadership in defining a desirable regime for global securities trading. A statement of policy similar to that underlying the Securities Act Amendments of 1975 maybe needed.

This implies something of a dilemma for U.S. policymakers. A general trend toward deregulation and non-intervention has been apparent in the United States as well as in other countries, during the 1980s. On the other hand, the United States sees many of the advantages of its chief competitor, Japan, as resting on the close relationship between financial institutions, industry, and government, so that Japanese investment banks operate in a market guided and insured by the government. There is legitimate concern that unnecessary regulation might interfere with the ability of exchanges, over-the-

[26] "Regulation of International Securities Markets," Policy Statement of the United States Securities and Exchange Commission, Washington DC, November 1988.

[27] OECD, Op. cit., footnote 8, p. 31.

counter markets, and financial information systems developers to experiment and innovate. There is fear that excessive regulation might make markets less efficient and drive trading to overseas exchanges. There are also encouraging signs that some U.S. markets are prepared to take a lead in developing the technology and institutional mechanisms for global trading; in this regard the futures markets are far ahead of the stock exchanges.

Large institutional investors want greater transaction speed, mobility, and opportunities for diversification, and there are already strong indications that they will seek more freedom from the clock than the traditional exchange trading hours and floor mechanisms can accommodate. U.S. stock exchanges are so far slow to show any interest in adopting automated trading systems that bypass or compete with traditional dealer intermediaries or that operate around the clock.[28] U.S. regulators may need to actively encourage market officials to take a long-term view of market development, and U.S. regulators themselves may have to be encouraged to do so by the U.S. Congress.

[28] A forthcoming OTA report, *Electronic Bulls and Bears—Securities Markets and Information Technology,* discusses these issues.

Appendix

Clearing and Settlement in Major Market Countries[1]

Clearing and Settlement in the United States

Three clearinghouses and three depositories serve the Nation's 7 stock exchanges, NASDAQ, and other over-the-counter dealers; 9 clearinghouses serve the 14 futures exchanges; and 1 clearinghouse serves all the equities options markets.[2] The major clearing members, who also clear for non-clearing members of a clearinghouse, tend to be highly automated for lower costs and greater operating efficiency. For safety purposes, U.S. clearinghouses also tend to be financially structured such that a failing clearing member can be isolated quickly and its problems resolved without a ripple effect.

While arrangements between clearinghouses and their clearing firms vary, the general goal is that the clearinghouse maintain adequate resources and commitments to assure settlement if a clearing firm or its non-clearing firm customer defaults. These include capital requirements for members, claims on items in process, if any, as well as claims on the defaulting member's remaining assets on deposit with the clearinghouse (e.g., cash, letters of credit, Treasuries, or securities posted as collateral for margin). The clearinghouse also has claims on other assets of the failed clearing member. The clearinghouse's guarantee fired is another resource. Finally, the clearinghouse can make assessments against other clearing member firms. This succession of fallbacks is a buffer against shocks ranging from sudden large drops in the prices of securities and futures to defaults by members. As a result, there have been few cases of a failure of a clearing member in the United States, and no instances of a failure of a clearinghouse.[3]

Equities Clearing Organizations

The National Securities Clearing Corp.--NSCC processes 95 percent of all equities trades in the United States. It is jointly owned by the principal equities markets: the New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and National Association of Securities Dealers (NASD). It serves 1,800 brokers, dealers, banks, and other financial institutions, through about 400 direct participants.

NSCCsS clearance and settlement process normally requires five business days. Trade information is received either in the form of locked-in trades already matched by the computer systems of the exchange or market; or, as buy and sell data reported by market participants. The latter still must be compared and buy and sell orders matched. Locked-in trades are entered directly in the NSCC computer system on the same day as the trade. This sharply reduces the need for the matching of buy and sell orders at the clearinghouse level. On a typical day, about 75 percent of the trades on the NYSE are locked-in (a smaller proportion by dollar value).[4] Figures A-1 and A-2 illustrate the steps in the NSCC's clearing and settlement of retail and institutional customers' trades, respectively.

Securities which are held for NSCC members by The Depository Trust Co. (DTC), and whose ownership can therefore be transferred within DTC via its computer book-entry system, are also eligible for settlement through the Continuous Net Settlement (CNS) computer system. This includes the preponderance of trades settled through the NSCC. NSCC becomes the counterpart to each trade; it guarantees that the settlement obligations of the trade will be met—both the obligation to deliver securities and the obligation to make payment. For locked-in trades, NSCC's guarantee takes effect at midnight on the day (T+l) that the counterparties to the trade have been notified that the trades matched.

Trades that do not match begin a reconciliation process that is being shortened and by the end of 1990 will occur on the day following the trade (T+l). Those that remain unmatched by T+3 are returned to their originating marketplace for face-to-face negotiation. With the increasing number of trades locked-in at the marketplaces, and with the availability of on-line reconciliation systems at these marketplaces, the need for this process is being eliminated.

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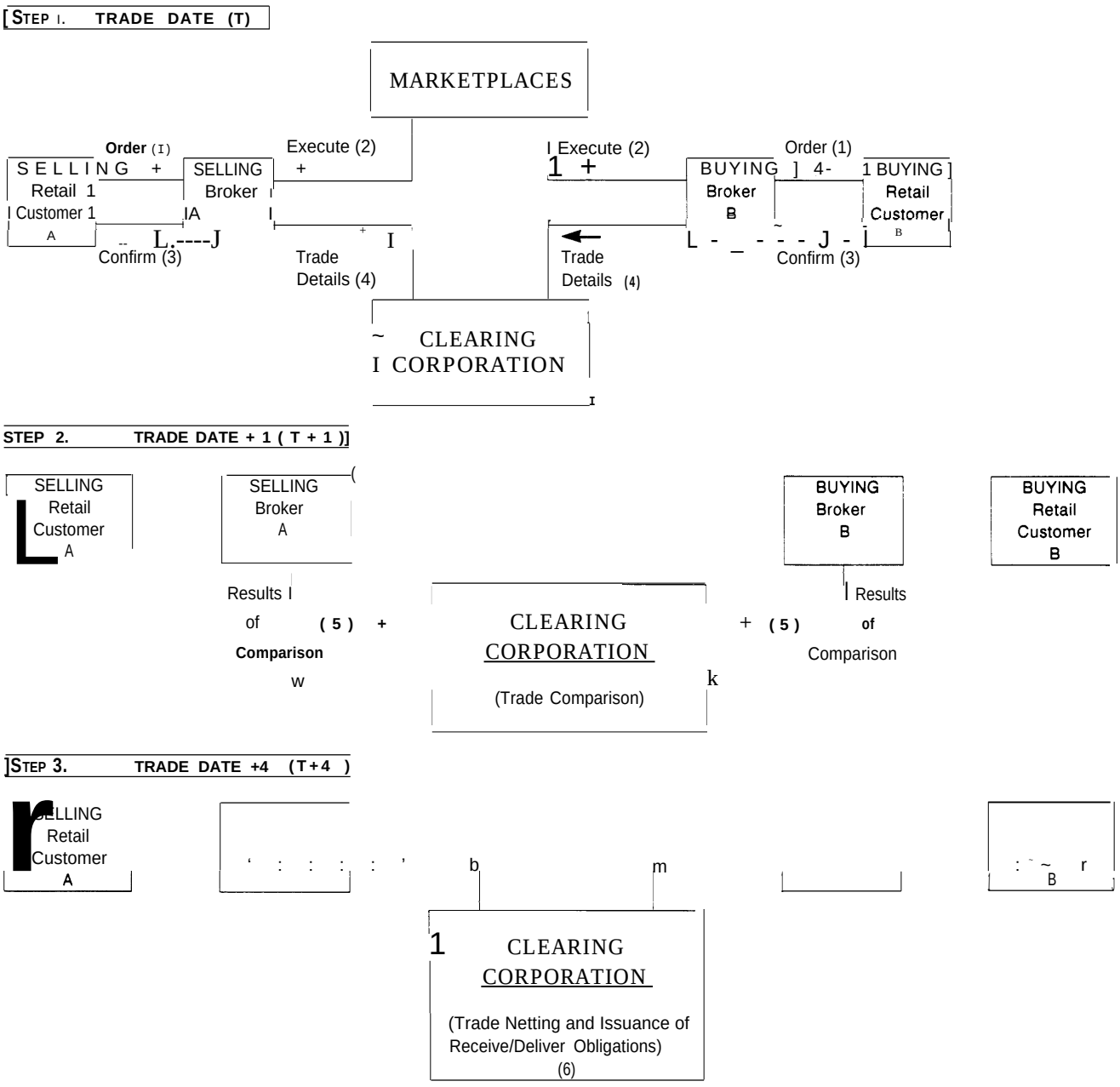
[1] In preparing this appendix, OTA has relied heavily on a contractor report by Bankers Trust Co., "Study of International Clearing and Settlement" vols. I-V, contractor report prepared for the Office of Technology Assessment, October 1989, to which many dozens of institutions and individuals around the world contributed expert papers and/or served on the Bankers Trust advisory panel. OTA has also used the discussions of an expert workshop held at OTA on Aug. 22, 1989.

[2] For information on the clearing and settlement of U.S. Treasury and government agency securities, mortgage-backed securities, and municipal securities, see Bankers Trust Report, op. cit., footnote 1.

[3] One expert notes that the only situation he can envision in which the the National Securities Clearing Corp. (which clears the vast majority of equities trades in the United States) could fail, would require a major external triggering event, such as the collapse of one or more major U.S. banks causing the failure of one or more NSCC clearing banks or major clearing members. (Robert Woldow, NSCC, at a meeting of experta on clearing and settlement, OTA, Aug. 22, 1989.) The events of October 1987 in the United States-when the payment system began to become clogged-were perceived as potentially disastrous.

[4] Since August 1989, the NSCC began comparing trades that are not locked-in during the early morning hours of T+1.

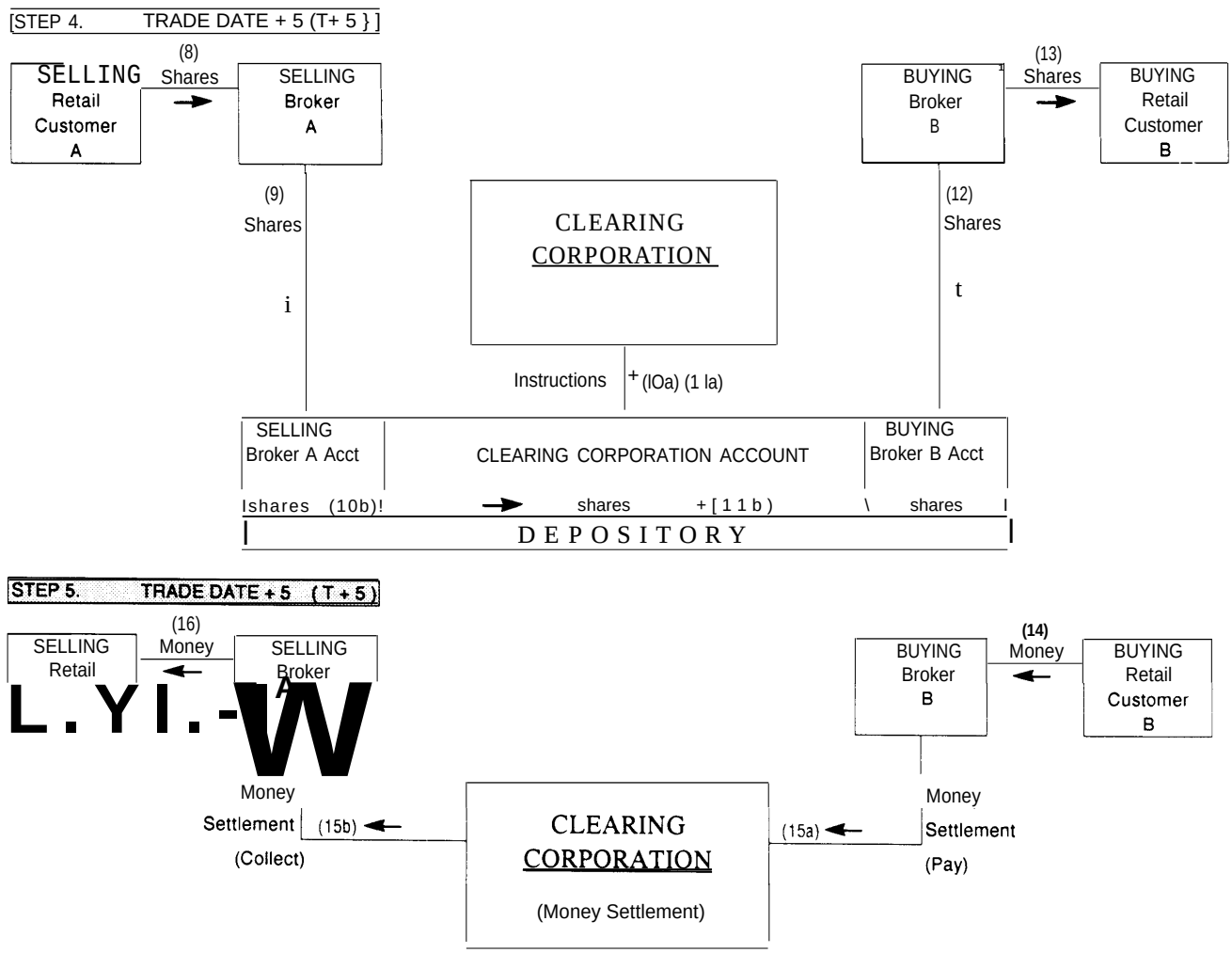
Figure A-l-Clearance and Settlement of Retail Customer Trades



(1) Retail Customers give orders to buy and sell stock to their respective Brokers,
(2) Brokers execute Retail Customers orders in the Marketplaces.
(3) Brokers confirm back to their respective Retail Customers that the trades were executed.
(4) Brokers submit details of trades executed in the Marketplaces to the Clearing Corporation.
(5) Clearing Corporation generates reports back to the Brokers indicating the results of comparison.
(6) Clearing Corporation nets the trades.
(7) Clearing Corporation issues projection reports indicating net receive/deliver obligations to the buying and selling Brokers,

SOURCE: NSCC, 1990.

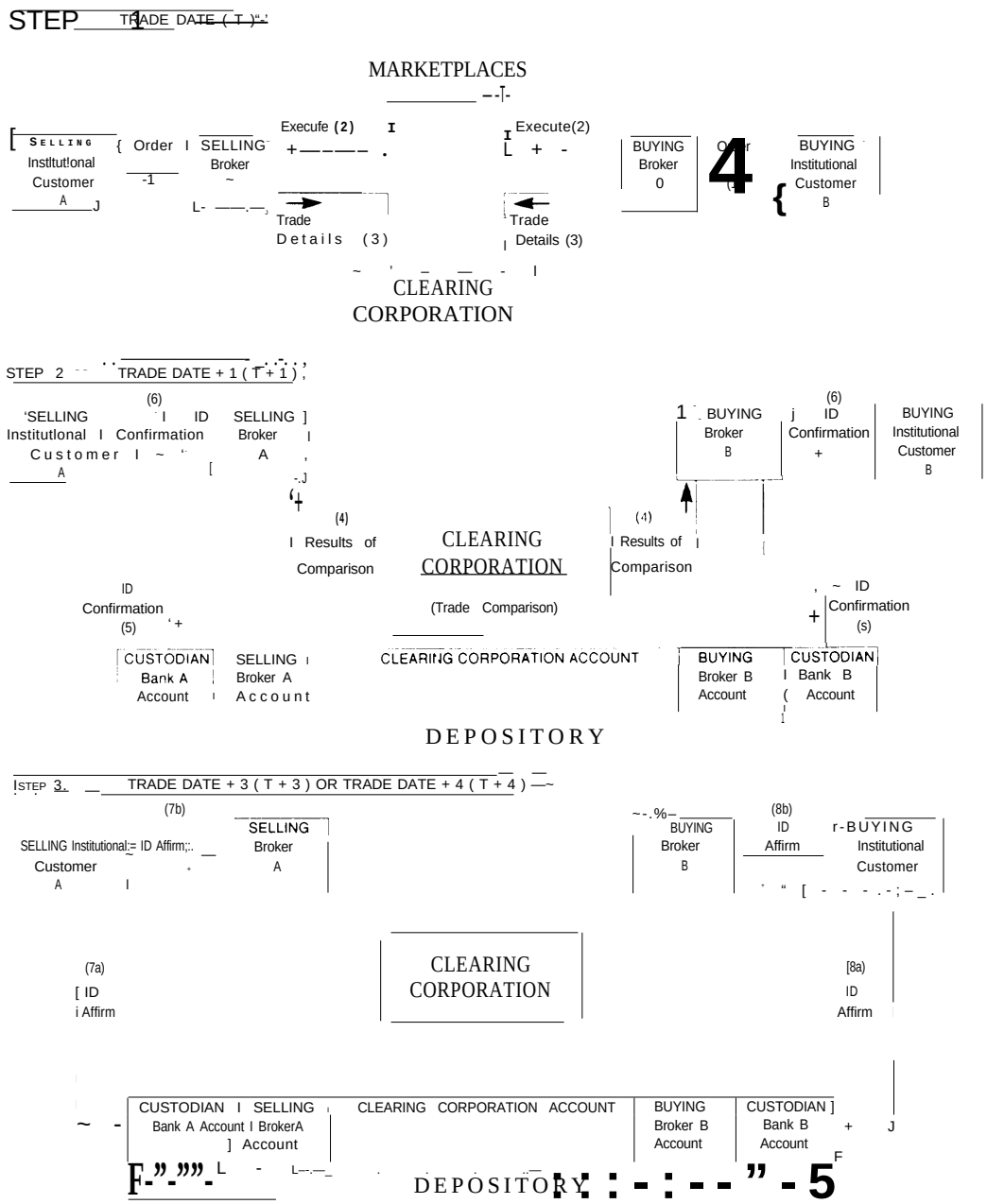
Figure A-l-Clearance and Settlement of Retail Customer Trades-Continued



(8) Selling Retail Customer A gives shares to selling Broker A to satisfy delivery obligation.
(9) Selling Broker A deposits selling Customer A's shares in its account at the Depository.
(lOa) Clearing Corporation instructs Depository to debit selling Broker A's account and credit Clearing Corporation's account with the shares;
(lOb) Depository debits selling Broker A's account with the shares and credits Clearing Corporation's account.
(1 la) Clearing Corporation instructs Depository to debit Clearing Corporation's account and credit buying Broker B's account with the shares;
(1 lb) Depository debits the Clearing Corporation's account with the shares and credits buying Broker B's account.
(12) Buying Broker B requests withdrawal of shares from its account at the Depository In order to deliver to Retail Customer B,
(13) Buying Broker B delivers the shares to its buying Retail Customer B.
(14) Buying Retail Customer B pays buying Broker B for shares received.
(15a) Clearing Corporation advises buying Broker B of net pay amount for shares received;
Buying Broker B delivers a check to Clearing Corporation for the requested amount,
(15b) Clearing Corporation advises selling Broker A of net collect amount for shares delivered;
Clearing Corporation issues check to selling Broker A for the specified amount.
(16) Selling Broker A pays selling Retail Customer A for shares delivered.

SOURCE: NSCC, 1990.

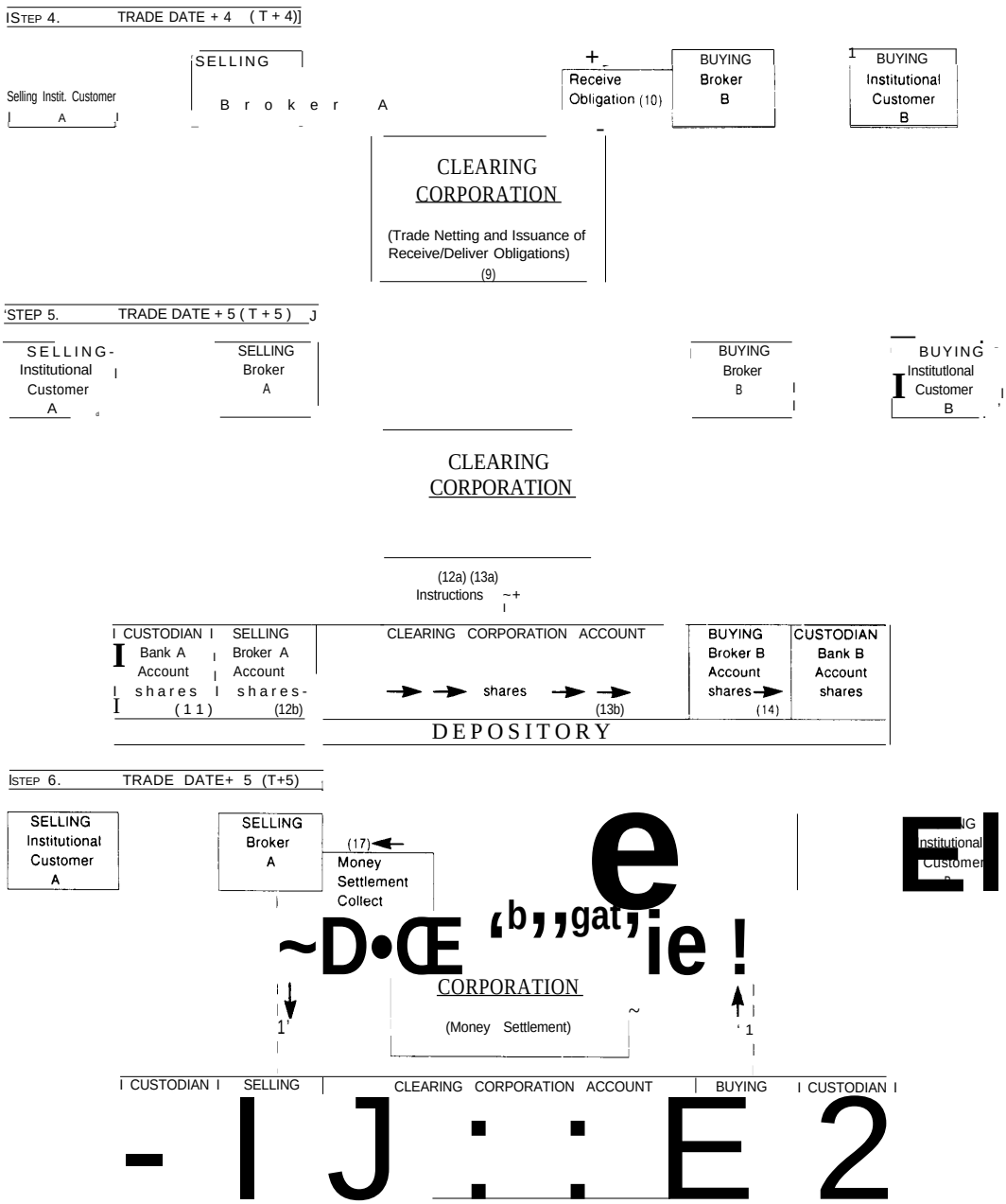
Figure A-2-Clearance and Settlement of Institutional Customer Trades



(1) Institutional Customers give orders to buy and sell stock to their respective Brokers
(2) Brokers execute Institutional Customers orders In the Marketplaces
(3) Brokers submit details of trades executed m the Marketplaces to the Clearing Corporation
(4) Clearing Corporation generates reports back to the Brokers indicatlng the results of comparison
(5) Brokers send ID confirmation to the Custodian Banks of their Customers
(6) Brokers send ID confirmation to their respective Institutional Customers
(7a) Selling Institutional Customer A sends ID affirmation to Custodian Bank A to deliver securities on settlement day (T+5) to Its' Broker (A)
(7b) Selling Institutional Customer A sends 1D affirmatlon to selling Broker A indicating that Custodian Bank A WIII deliver the securities to it on settlement day
(8a) Buying Institutional Customer B sends ID affirmation to Custodian Bank B, notifylng it to receive securities on settlement day from its' Broker (B)
(8b) Buying Institutional Customer B sends ID affirmation to Broker B, instructing it to deliver securities to its' Custodian Bank (B) on settlement day

SOURCE: NSCC, 1990.

Figure A-2-Clearance and Settlement of Institutional Customer Trades-Continued



(9) Clearlng Corporation nets the trades
(10) Clearing Corporation issues projection reports Indlcatlng net receive/delwer obligations to the buying and selling Brokers.
(11) Custodian Bank A instructs Depository to transfer shares from its account to selling Broker A's account, Depository debits Custodian Bank A's account and credits selling Broker A's account with the shares
(1 2a) Clearing Corporation Instructs Depository 10 debit selling Broker A's account and credit its' account,
(12b) Depository debits selling Broker A's account and credits Clearing Corporation's account with the shares
(13a) clearing corporation instructs Depository to debit Shares from its account and credit shares to buying Broker B's account,
(13b) Depository debits Clearing Corporation's account with the shares and credits buying Broker B's account
(14) Buying Broker B instructs Depository to transfer shares from its account to Custodian Bank B's account, Depository debits Broker B's account and credits Custodian Bank B's account with the shares
(15) Custodian Bank B pays buying Broker B for shares received
(16) Monies from Custodian Bank B to Broker B are used by Broker B to meet Its settlement obligation to the Clearlng Corporation
(17) Clearlng Corporation receives rnonies from Broker B and pays to Broker A
(18) Monies from Clearlng Corporation to Broker A are used by Broker A to meet Its payment obligatlon to Custodian Bank A

SOURCE: NSCC, 1990.

Using the CNS system, the NSCC calculates each day a net long or short securities position for each CNS-eligible security that was traded by the clearing member on that day. The number of settlement transactions and the gross amount of the clearing member's obligation either to deliver securities or to make payment is adjusted by the amount of any securities or payments that it would receive as a result of other trades of the same security. This type of calculation process is known as netting. It reduces the total number of securities to be delivered or received, and the number and size of aggregate cash payments. As a result of this process of offsetting obligations, the NSCC estimates that movement of about five-sixths of the total daily transactional volume of owed securities and cash payments otherwise required on the settlement date is eliminated. Netting may indirectly increase market liquidity by reducing the gross amount of funds necessary to meet settlement obligations. After netting through CNS, the NSCC then informs the DTC of the net amount that each counterpart owes in securities on the settlement date, T+5. The DTC, using its book entry system, records the transfer of ownership by debiting the securities account of the delivering counterpart and crediting the account of the receiving counterparty.[6] Payment on the settlement date is in the form of a certified check, payable to the NSCC. When settlement cannot be made on 'the settlement date-e. g., when the securities are not available in the participant's DTC account-these obligations remain in the CNS system and are carried forward and netted with the next day's obligations.

Securities that are not eligible for the CNS system may be settled either through balance order accounting or on a trade-for-trade basis. These other forms of settlement comprise a very small percentage of trades settled through NSCC.

In 1989, the fail rate-the percentage of trades which do not settle on the settlement date-in trades cleared through CNS was 8.13 percent of the total net dollar value of cash and securities due on the settlement date. Since the NSCC takes the counterpart position and guarantees the settlement of all CNS-matched trades, NSCC is exposed to various credit, market, and non-market risks.[7] The ways in which clearinghouses protect themselves against such risks are critically important.

NSCC protects against credit risk, first of all, by retaining a lien over securities which the receiving participant has not paid for. For trades not settled by T+5, NSCC uses a mark-to-market procedure to limit its market risk until settlement does occur. Market risk is kept to l-day's market movement by adjusting members' settlement obligations to current market prices. Members pay or are paid at settlement based on the current value of their open positions on and after T+5, rather than their value when they made the trade. In the interim, until the position settles, members pay or receive the net difference in market price movement. NSCC's guarantee fund for CNS takes account of potentially adverse movements on trades which have not settled before T+5. It is based on the total size of all positions open. These include those pending (before settlement); trades settling on T+5; and trades for which T+5 has passed and settlement has not occurred. In addition, a percentage of the market value of securities for next-day (T+l) delivery must be deposited in order to protect the NSCC in the event the member defaults. This calculation is done daily for all members and can be collected more frequently than the monthly norm. All NSCC clearing members are required to contribute to the guarantee fund. NSCC's total funds on deposit, not including lines of credit, totaled over $400 million in 1989 and 1990.

The NSCC also maintains a full compliance-monitoring system to ensure its continuing ability to judge the creditworthiness of its participants.[8] It shares risk information with other SEC-registered clearinghouses, both through the SEC's Monitoring Coordination Group and the Securities Clearing Group. NSCC and a number of futures clearinghouses are now discussing proposals for increasing the sharing of risk information; e.g., data on market participants' holdings on various exchanges.

The NSCC is linked to its clearing members by means of the Securities Industry Automation Corp. (SIAC), which operates NSCC's technology base. Most participants now have direct computer links; only about 1 percent of the full-service members continue to report trades via computer tape.

All payments to NSCC are on a net basis; i.e., the NSCC calculates each clearing member's total credit and

[5]This appendix discusses interdealer and institutional (street-side) settlement only. Concerning depository functions, a broker can make settlement with his institutional customer through DTC's ID program. A description of customer (retail) settlement is provided by the Securities and Exchange Commission in vol. II of the OTA contractor report: Bankers Trust, op. cit., footnote 1.

[6]Stock held by DTC is in nominee name and appears on the books of the transfer agent of the issuing company. In a typical -reaction, the transfer agent would not be involvedin the change of ownership. The change in ownership between the parties to the transaction would occur solely on the books of DTC. If, however, a broker or his customer wishes to have the shares registered in his own name, he instructsDTC to send the appropriate quantities of stock, currently in street name, to the transfer agent, who would then send the reregistered shares directly to the broker.

[7]Credit risk refers to the possibility that a participant might not pay for or deliversecurities. Market risk refers to the price changes of the security. Non-market risks include loss of data, human error, systems failure, or any breakdown caused by any factor other than creditor market factors.

[8]NSCC's STARS system monitors projected settlement exposures from the time trades are matched until they are ultimately settled. NSCC also employs a series of exception reporting mechanisms to detect security concentration, settlement pattern changes, and security price changes.

debit positions and nets to a single figure that is either owed to NSCC or is owed by NSCC. Payment to NSCC is by certified check. Funds are concentrated in one central clearing bank. If a certified check is not received on the settlement date, then payment via FedWire is required the next morning. NSCC pays selling members with regular bank checks, but intends to move towards the increased use of electronic payments as one way to improve the settlement process.

The International Securities Clearing Corp.—ISCC is a subsidiary of the NSCC and is an SEC-registered clearinghouse. It was founded in 1985 to assist in clearing and settlement and to provide custody services for securities traded among American brokers and banks and their counterparties across national borders. It has links with clearinghouses and depositories in foreign markets,[9] including:

- the International Stock Exchange (ISE), in London;
- the Centrale de Livraison de Valeurs Mobilieres (CEDEL), in Luxembourg;
- 20 depositories and custodians in Europe and Asia, indirectly linked by means of a conduit provided by CEDEL;
- the Japan Securities Clearing Corp. (JSCC), the Tokyo Stock Exchange's clearing and custody organization;
- the Central Depository subsidiary of the Stock Exchange of Singapore; and
- the Canadian Depository for Securities (CDS), in Toronto, linked through NSCC.

ISCC also serves as the clearing system for the NASD's PORTAL market for foreign private placements exempt from SEC registration by virtue of Rule 144A. (See ch. 3.)

Futures Clearing Organizations[10]

The Board of Trade Clearing Corp.—The Chicago Board of Trade (CBOT), which handles the greatest volume of futures contracts trades in the United States, has its own separately incorporated clearinghouse, the Board of Trade Clearing Corp. (BOTCC). With approximately 139 clearing members, the BOTCC is by far the largest clearing organization serving the futures markets.

The Chicago Mercantile Exchange (CME) is the largest U.S. futures exchange when measured by another yardstick, the average total value of open futures and options on futures contracts. CME has a Clearinghouse Division. This system and other U.S. futures clearinghouses, are similar (although not identical) to that at the BOTCC.[11]

BOTCC has an on-line trade entry/trade capture system that allows it to receive over 75 percent of its trade information through on-line terminals (with the user keying in data). The remaining 25 percent of trade information is reported by means of computer-to-computer transmissions. In addition, members of the BOTCC that are also members of the CME may use the BOTCC's on-line trade entry/trade capture technology to send trade information to the CME. About 20 percent of the CME's trade information arrives at the CME clearinghouse through the BOTCC trade entry/trade capture technology.

Once a trade has been captured, BOTCC employs a two-sided matching system in which both the buy and sell sides of a trade are submitted to the trade comparison system for matching. This capability provides the benefits of comparisons on the day of the trade, and a match by broker and by counterbroker as well as a match within the clearinghouse. This is the standard for futures markets in the United States, except for the New York Mercantile Exchange (NYMEX), which uses a one-sided trade matching system, in which "sell' information is put into the system and the clearing member with the "buy" information must confirm the data at a later time.

BOTCC's guarantee to clearing members that the settlement obligations of the trade will be met begins at the moment a trade has been matched and registered. At that time, typically about 1 hour after the final trade submission, the clearinghouse becomes counterpart and guarantor to every trade.

In all U.S. futures markets, both buyer and seller make a good faith deposit to the clearing member firm; this is "original margin."[12] The amount required per contract is determined by the exchange, and is due from both parties to the trade on the morning of the day after the trade (T+l). Most clearing members maintain substantial excess original margin deposits in their clearing account at the BOTCC. The amount of margin a clearing member owes is calculated by the clearinghouse based on the value of his open contracts and an assessment of the amount of risk those contracts involve. The BOTCC uses its risk assessment computer system SAFE [Simulated Analysis

[9]The ISCC is also discussing the possibility of setting up another link, with the Societe Interprofessiormelle pour la Compensation des Valeurs Mobilieres (SICOVAM), the French central depository, and with Societe des Bourses Francais, the broker clearing system at the Paris Bourse.

[10]Much of the information in this section is based on Roger D. Rutz, 'Clearance, Payment, and Settlement Systems, in the Futures, Options, and Stock Markets," Feb. 24, 1989, a contributed paper in the OTA contractor report: Bankers Trust, op. cit., foomote 1.

[11]For details on the clearing and settlement processes at the other U.S. futures clearinghouses, see OTA contractor report by Bankers Trust, Op. Cit., foomote 1.

[12]This @@MI margin deposit is a performance bond to protect the financial integrity of the clearinghouse in the event that the clearing firm is unable to meet a margin call or to make or take delivery. Original margin refers to deposit of funds in the form of cash, government securities, or letters of credit. There are two levels of margin: the first is from the customer to the firm; the second is from the firm to the clearinghouse.

of Financial Exposure] to evaluate clearing member firms' credit, and uses the CME's SPAN to determine the amount of margin owed.[13]

There are two methods of calculating original margin: gross margining and net margining. Gross margining requires a clearing member to post original margin on all the long and short positions in these accounts; they cannot be used to offset each other in case of a deficiency. By contrast, with net margining the margin owed by each clearing member is calculated on the difference between all the long and short positions, calculated separately for proprietary accounts and customer accounts. The BOTCC figures original margin on a net basis, as do most U.S. futures clearinghouses; the exceptions are the CME Clearinghouse Division and NYMEX, which figure original margin on a gross basis.

The BOTCC's trade-matching process, from the time it guarantees settlement obligations to the posting of original margin by clearing members, may take 7 hours.[14] During this timelag, the BOTCC carries the full risk. Clearing members demand that trades become guaranteed as quickly as possible, since this is the point at which counterpart risk should be eliminated.

Besides original margin, futures clearinghouses also calculate and collect variation margin.[15] The amount reflects the changes in the value of a clearing member's open contracts. Variation margin may be collected daily, or more often. The BOTCC routinely issues one morning call and supplemental intra-day variation margin calls (usually around 2 p.m. c.s.t.).[16] One purpose of routine intra-day variation margin calls (and payments to clearing members with profitable trades) is to reduce the magnitude of the following morning margin call, which is always made at 6:40 a.m. c.s.t. on the day following the trade date ('I'+ 1). As a result of this system, the BOTCC typically collects (and pays out) by about 2:30 p.m. c.s.t. on the date of the trade between 60 and 95 percent of the final settlement calls that would otherwise have been made at 6:40 a.m. c.s.t. on the following day. This reduces the clearinghouse's risk because the shorter the period of time between trade execution and settlement, the more certain it is that a clearing member will be able to meet its obligations. In general, the more frequently a clearinghouse settles (marks to market) trades each day, and requires its clearing members to post margin, the greater is the financial integrity of the clearing system.

Lines of Defense—In the futures markets, the maximum potential default liability represents at most only one business day's market movement. This is the first line of defense for the clearinghouse. The BOTCC segregates and nets proprietary and customer open positions of each clearing member across commodity futures and options contracts to calculate the amount of both the original and variation margin of each clearing member. The BOTCC's SAFE system calculates each clearing firm's potential exposure to an adverse move in prices.

Margin deposits are the second most important line of defense in protecting the clearinghouse from a default by a clearing firm which could affect other clearing members. The Commodity Futures Trading Commission (CFTC) requires that all clearing members maintain two bank accounts for settlement and two safekeeping accounts for original margin. One set of bank and safekeeping accounts is for original and variation margin for customer positions, while the other set is for original and variation margin for proprietary and non-customer (affiliated firm) positions.[17]

Another line of defense for the clearinghouse is its net capital requirements for clearing members. In addition, all U.S. futures clearinghouses share certain types of "risk information''--data on amounts paid and collected by clearing members in the form of both original and variation margin, reflecting their overall exposure, and amounts paid by clearinghouses to clearing members, representing reductions in the amount of risk faced by a clearing member.

Still another line of defense in protecting the clearinghouse from default by a clearing firm is its authority to issue a' 'super' margin call if the BOTCC determines that a customer or proprietary position represents a clear and immediate danger (i.e., a particular market condition could cause a substantial amount of a clearing firm's capital to be depleted because of customer defaults). The clearing member would then be required to deposit the additional "super" margin (in the form of cash, U.S. Treasury securities, or letters of credit) within one hour of receiving the call. Finally, the segregation of customer funds, clearing member net capital requirements, and

[13]The CME has its own risk management computer system-SPAN (Standard Portfolio Analysis of Risk)--for determining the amount of margin. The futures industry (with the exception of the Intermarket Clearing Corp. (ICC), which uses the system known as TIMS) is moving towards adopting SPAN as the standard for calculating margin.

[14]Payment of margin must be in same-day funds—e.g., those provided by the Federal Reserve's Fed* electronic payment system.

[15]Variation margins are the cash flow required to mark positions to market. They flow through the clearing organization to the clearing member on the other side of the trade,

[16]Of the U.S. futures clearinghouses, the CME Clearinghouse Division, the COMEX Clearing Association, and the Coffee, Sugar and Cocoa Clearing Corp. also issue routine daily intra-day variation margin calls. The others have the capability of doing soon an as-needed basis; e.g., in times of severe market volatility.

[17]The segregation of customer and proprietary funds is a requirement of Section 4d(2) the Commodity Exchange Act.

ongoing financial surveillance, each contribute to bolstering the integrity of these markets.

If, despite margin calls, a clearing member nevertheless defaults on the settlement obligations of the trade, the clearinghouse has several protections against liability for the default. The clearinghouse may liquidate the clearing member's positions and original margin, sell his exchange membership, use his contributions to the clearinghouse guarantee fired, use the clearinghouse guarantee fund and its committed lines of credit, assess all clearing members, where permissible, and finally, use the clearinghouse's capital.

All U.S. futures clearinghouses have funds available to protect themselves against default by their members; these are primarily made up of mandatory contributions from clearing members.[18] They fluctuate in size. Most U.S. futures clearinghouses, but not the BOTCC[19] or Kansas City Board of Trade Clearing Corp., also have the power to assess their members, if the amount of a clearing member default cannot be covered by capital funds and the guarantee fund.

The BOTCC uses four settlement banks, all based in Chicago. The BOTCC's morning payment process (6:40 a.m. c.s.t.) precedes the opening of the FedWire system and hence requires the settlement bank to extend credit on behalf of some clearing members. At times, this credit extension may not be fully collateralized, and thus is a risk for those settlement banks.

Clearing members must maintain accounts at settlement banks for the payment of original and variation margin, including final settlement payment. When the clearinghouse determines the amount of margin owed, the clearinghouse notifies the clearing member's bank of this amount. The bank then examines the clearing member's assets (cash, government securities, lines of credit), gathers incoming payments from the clearing member (via FedWire, if it is available at the time the bank is making the decision), and makes a commitment to the clearinghouse as to whether it will honor the margin call by forwarding the funds to the clearinghouse.

If the clearing member does not have sufficient assets to meet its margin obligations, the bank's decision is whether to extend credit to the clearing member. When a settlement bank decides that it cannot meet the financial obligations of a market participant, the participant will ask his credit banks for credit. This process generally works well, but it depends on two assumptions: first, that the market participant will be able to reach the account officers at the credit banks within the permitted time; and second, that the credit banks (which do not always coordinate a market participant's various lines of credit) will not extend more credit than a clearing member is worth. Generally, these assumptions are sound, as firms usually have a predetermined credit line. But, if a firm is having difficulty, if the firm's needs come during a period of market stress, a settlement bank may decide not to honor a margin call, and this could result in the clearinghouse liquidating the clearing member's customer positions, after attempting to transfer these positions to another clearing member.[20]

Clearinghouses, in respect to intra-day margin payments batch process trades rather than processing each trade as it is executed. Thus, a clearinghouse may not be able to eliminate their risk instantaneously by shifting it to clearing members. One reason the clearinghouses are forced to do batch processing is that the banking system moves too slowly to accommodate any other method. For instance, Chicago banks generally use paper-based processes to move money among clearing members.

The working interface between the clearinghouses and the banks survived with difficulty under immense strain in October 1987.[21] In further improving this interface, there are cost-benefit trade-offs. The existence of a Clearing Organization and Banking Roundtable that provides settlement bankers, clearing organizations, and regulators with a forum for regular discussion of these tradeoff issues, is some evidence that the system is moving towards a more secure, less volatile, but still competitive, state.

Options Clearing Organizations

The Options Clearing Corp,--OCC is the common entity serving all securities options exchanges in the United States[22] The OCC clears and settles options trades for the Chicago Board Options Exchange (CBOE); the American Stock Exchange (AMEX); the Philadelphia Stock Exchange (PHLX); the New York Stock Exchange

[18] The BOTCC does not have a guarantee, or clearing fund, but does require clearing members to purchase its capital stock when they are admitted to membership, which is similar to a guarantee or clearing fund. The relative number of shares of stock that a BOTCC clearing member must purchase is adjusted semi-annually to reflect its open positions and trading volume. Other futures clearinghouses have guarantee funds based on capital, trading volume, or open positions. Rutz, op. cit., footnote 10, pp. 23-27.

[19] In mid-1989, the BOTCC estimated as $325 million the total value of its available trust fund, lines of credit, and clearinghouse capital.

[20] For additional information, see Andrea M. Corcoran and Susan C. Ervin, "Maintenance of Market Strategies in Futures Broker Insolvencies: Futures Position Transfers From Troubled Firms," *Washington and Lee Law Review* 44:849, *1987,* pp. 849-915.

[21] There is disagreement among participants themselves as to whether these systems "survived with difficulty," "barely managed," or performed otherwise. Nevertheless, many improvements have been, and are, being implemented to strengthen the clearing and settlement process.

[22] The OCC clears all exchange-traded securities options. For details on clearing and settlement of options on futures contracts, see Bankers Trust Co., op. cit., footnote 1.

(NYSE); the Pacific Stock Exchange (PSE); and the National Association of Securities Dealers (NASD).

Unlike the clearinghouses already discussed, the OCC does not do trade comparison, since it receives locked-in data on compared trades from each of the exchanges. The exchanges have chosen to keep their own trade-matching systems as a means of competitive differentiation. The data on matched trades is sent to the OCC by computer on the day of the trade. The OCC then must calculate the amounts of money that are owed and due the next day (T+l) by the buyer and the seller. In the case of the buyer, the entire amount of money owed to the OCC is called the "premium obligation," or "premium," and is paid in cash. The premium, while paid to the OCC, is passed on to the writer of the option. To the buyer of the option, the premium is the amount he pays to lock in the possibility of an advantageous movement in the price of the underlying security. To the writer of the option, the premium is the maximum amount of profit he can expect. If the market moves against the writer, the premium might, at best, offset only a small portion of the option writer's losses.

The writer of the option always owes margin to the OCC each day that the option contract is in effect but has not been exercised by the holder. This margin[23] is similar to the margin owed by the buyer or seller of a futures contract, essentially 'good faith' money which serves as an assurance to the OCC that the writer of the option has the financial ability to meet the potential obligations of the option that he has sold. The amount of margin owed reflects changes in the market price of the option as well as a portion of the total amount that he would have to pay if the option were exercised.

On the day after the trade (T+l), the OCC notifies the buyer of the amount of cash premium which is owed; at the same time, the writer of the option is notified by the OCC of the amount of margin that is owed Both amounts are due on T+l. On the next day (T+2), and each day thereafter until expiration, exercise, or closeout[24] of the option contract, the OCC calculates and then collects margin from the writer of the option.

Margin thus reflects the adjusted daily value of the option writer's open positions (the total amount of money which he could be forced to pay if the options he sold were to be exercised by the holders). The OCC marks to market (determines the adjusted value and liability of each member's open positions) at the end of each trading session. If the options contract loses value, the OCC reduces the amount of margin required. When the holder of an option contract decides to exercise it and actually buy or sell the underlying product of the option, the person who originally sold the option is not necessarily the same person that OCC will require to fulfill its terms. Instead, the OCC randomly assigns a clearing member to honor the delivery or purchase obligations of the option, from the pool of all clearing members who sold options with identical contract terms.

For example, when an IBM option is exercised, the OCC assigns a clearing member with a short position and then sends delivery instructions to an equities clearinghouse such as the NSCC, which incorporates instructions to deliver or receive into its Continuous Net Settlement (CNS) system. Any obligations not netted out through normal CNS procedures are settled by instructions to a depository (e.g., the DTC). Delivery of the IBM stock is then made by transferring it from the seller's account into the buyer's account at the depository, subject to the CNS system.[25]

When a foreign currency option is exercised, the foreign currency underlying the option contract is delivered to the OCC's cash account at a designated overseas bank, and then transferred to the account of the market participant who is buying the foreign currency. The designated foreign exchange delivery bank may be any bank designated by the parties involved in the transaction, not necessarily one of the OCC's settlement banks.

The OCC provides its clearing members with a guarantee on the morning of the day following the trade (T+l), after the buyer of the option has paid the premium obligation,[26] The OCC guarantee protects the holder of an option against the possibility that the option writer might default on the payment or delivery obligations of the option.

Lines of Defense—The OCC's first line of defense against the potential for clearing member default is its continuing monitoring of the creditworthiness of its clearing members. The options exchanges have limits on the aggregate amount of open positions that any one market participant may carry at any one time. These are net limits-i. e., the market participant's short positions are offset by his long positions. The clearing members'

[23]For margin payments, the OCC accepts cash and collateral including: bank letters of credit, U.S. Treasury obligations, the actual equities underlying particular option contracts, and various other stocks. Additionally, margin obligations can be reduced through corresponding long positions in other options which have the effect of reducing net exposure.

[24]The "closeout" is when a writer or holder of an option contract enters into another option contract, creating an offsetting position.

[25]When NSCC incorporates delivery instructions into its CNS system, NSCC rather than OCC assumes responsibility for, and guarantees, deliveries and payments.

[26]OCC has filed a rule change with the SEC, currently pending approval, which would provide OCC clearing members with an unconditional guarantee on the morning of T+1.

positions are monitored daily by the exchanges in respect to these position limits.

The Securities and Exchange Commission (SEC), the exchanges, and the OCC also monitor market participants in respect to capital adequacy and other financial requirements. The OCC is a part of the information-sharing arrangement among all seven SEC-registered clearing entities, as well as a participant in the pay-collect risk information system operated by BOTCC.[27] The OCC uses a monitoring system to quantify the potential risk of each clearing member under different market scenarios, including large price movements. The system evaluates the risk in participant's stock, options, and futures positions.

The OCC's second line of defense against clearing member default is the margin that the clearing members have on deposit. If this is insufficient to cover the default, the OCC can turn to its guarantee fund, made up of cash and government securities.[28] In the event of a default by a clearing member, after closing out the defaulting clearing member's positions, the OCC follows five steps to cover any residual liability from a default:

- First, any margin that the defaulting clearing member has on deposit with the OCC is applied towards the liability of the default.
- Second, if that amount is insufficient, the OCC takes the defaulting clearing member's contribution to the guarantee fund and applies it towards the liability of the default.
- Third, if that amount is still insufficient, the OCC may use its guarantee fund to cover-whatever portion of the liability is outstanding.[29]
- Fourth, if that still isn't enough to cover the full liability, the OCC has the right to assess its members for the remaining amount of the liability.[30]
- Finally, the OCC, like the NSCC and futures clearing organizations, may also take legal action as a creditor to recover any sums that are owed by the defaulting clearing member. The amount that can be recovered in this way is limited by bankruptcy law.

At the end of each trading day, the OCC has an overnight processing cycle during which it calculates the net amount which each member either owes or is owed. The net figure reflects, among other things: a) the cash premium obligation due on each new long position; and b) the margin due for each new short position. The OCC then sends payment instructions to the settlement bank The netting is done on a multilateral basis; i.e., the status of all of a clearing member's holdings in the options market is taken into consideration in arriving at the daily net payment obligation to the OCC.

The OCC has two different methods for calculating margin-one for options on equities and another for all other types of options (foreign currency, government securities, or stock indexes). In both cases, the margin required from the writer of an option is equal to the current market price of the option, plus a cushion to cover the risk of a change in the current market price. But for all non-equity options, as well as all options and futures contracts cleared by the Intermarket Clearing Corp., the OCC uses the Theoretical Intermarket Margin System (TIMS). TIMS evaluates each clearing member's overall risk profile and then sets the total margin owed. The OCC was the first clearing organization in derivative markets to change from a fixed or flat rate of margining (per contract) to highly sophisticated computational methods. Rules have been submitted to the SEC to expand the use of TIMS to include setting the margin on equity options.

The CFTC and the SEC have approved applications from the OCC and the CME to allow cross-margining of stock index options, futures, and options on futures for proprietary trading accounts of clearing members. Cross-margining between the CME and OCC started in October 1989.[31] OCC also offers cross-margining through an agreement with its affiliate, the Intermarket Clearing Corp. (ICC). The ICC clears trades for the New York Futures Exchange, the Philadelphia Board of Trade, Amex Commodities Corp., and the Pacific Futures Exchange; therefore, OCC members can use their holdings on those exchanges to offset the status of their open positions at the OCC.

The extent to which OCC and ICC offer cross-margining is however limited. The CFTC, concerned about safety, market stability, and liquidity, has not

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[27]Robert Woldow, "Clearance and Settlement in the U.S. Securities Markets," February 1989, expert paper contributed to OTA's contractor report, Bankers Trust Co. report, op. cit., footnote 1.

[28]The total amount required in the guaranteed fund is recalculated monthly. As of December 1989, the guarantee, or clearing fund, plus a 100 percent minimal additional assessment for which OCC clearing members are unconditionally liable, was about $450 million. The amount of the fund varies in proportion to the amount of clearing members' liability. It is always equal to 7 percent of the average daily aggregate margin requirements of all clearing members in the previous month. Each clearing member must contribute an amount equal to his pro-rata share of outstanding contracts in the previous month.

[29]The OCC has recently amended its rules to include using its own retained earnings at the discretion of its Board of Directors.

[30]Not all U.S. clearinghouses, however, have these assessment powers. See Bankers Trust Co., op. cit., footnote 1, vol. 1, p. 137.

[31]See John Hiatt and James M. Kustusch, "Clearance and Settlement of Derivative Financial Instruments," April 1989; and John P. Behof, "Issue Summary: Intermarket Cross-Margins, for Futures and Options," The Federal Reserve Bank of Chicago, May 1989. Both are expert papers included in the OTA contractor report by Bankers Trust Co., op. cit., footnote 1.

approved expansion of cross-margining beyond proprietary accounts of major market-makers.[32]

The OCC has approximately 190 clearing members. The clearing member brokerage firms transact business for their proprietary accounts, other brokers who are not clearing members, and institutional and retail customers. The link between OCC and its clearing members is automated: OCC requires that all members submit post-trade information through OCC's on-line Clearing Management and Control System (C/MACS).[33]

The OCC allows its members to choose from a selection of designated settlement banks. There are currently 16, but the OCC is flexible and may designate a member's primary banking institution (concentration bank) as an approved settlement bank. The OCC maintains accounts at each of these settlement banks, and instructs the banks on each trading day as to the debits and credits that are to be made to the OCC's accounts and those of the clearing members.

There are controversial proposals to institute futures-style margining for options, which seem to have support recently. These are discussed in a forthcoming OTA report on domestic securities markets.

Clearing and Settlement in the United Kingdom[34]

The International Stock Exchange

The International Stock Exchange of the United Kingdom and the Republic of Ireland Limited (ISE) in London, also operates exchanges in Belfast, Birmingham, Dublin, Glasgow, and Manchester/Leeds. It trades U.K. equities, gilt-edged securities,[35] and other fixed-income instruments, international equities, and options. The average daily trading volume from January to September 1988 was 31,213 trades. (See ch. 3 for a detailed description.)

The ISE settlement system is undergoing a transition. Today it is still primarily paper-based, but there are plans for an electronic depository to eliminate the need for certificates by permitting paperless transfer of title. This system, TAURUS, is scheduled to be introduced in phases beginning in 1991 and to be fully operational in 1993.

The clearing and settlement process is managed by the ISE for all of its member firms. It is a two-part process consisting of a trade-matching system (called the Checking System) and a computerized settlement system, TALISMAN (Transfer Accounting and Lodgement for Investors, Stock Management for Principals), introduced in 1979. TALISMAN settles securities trades between ISE members, including centralized routing of the securities to the registrars for transfer of title.

Trade settlement in the U.K. equities market usually is scheduled for the sixth business day after the end of each 2-week dealing/trading period (also known as the account period); all trades done during the 2-week account period are scheduled to settle on the same day. Trading firms have the option of settling their trades on a schedule other than the account period, if this is agreed upon by the trading parties. This can occur any time after the second day following the trade (T+2), but this is rare.

At the end of the trading day, member firms enter the day's trade data into the ISE's Checking System either directly through a PC data transmission to the Exchange's computer, or by delivering a computer magnetic tape to the nearest Stock Exchange Centre. The Stock Exchange computer validates and compares all trades. Unmatched trades then have to be resolved, amended or canceled. For TALISMAN eligible securities,[36] the selling broker must obtain from its customer, or its own inventory, the actua1 share certificates and a signed TALISMAN Sold Transfer (TST) form, which authorizes the transfer of the security title from the current beneficial owner to SEPON (the ISE's nominee name) .37 The paperwork which includes the certificate, the TST, and a control document called the Sale Docket, after being properly signed, is then deposited at the nearest ISE TAMS MAN Centre.

ISE staff verify the documents and record the deposit on the computer. The security certificates and other documents must then be sent to the company registrar to

[32] Based on interview by OTA staff with senior CFTC officials, October 1989.

[33] Hiatt and Kustusch, op. cit., footnote 31.

[34] Much of the material in this section is based on an expestpaperwrittenby the ISE for the OTAcontractorreport: Bankers Trust CO., op. cit., footnote 1.

[35] Gilt-edged securities are debt instruments issued by the U.K. Government. These stocks pay a fixed, variable or index-linked rate Of interest, and are considered risk-free since their interest and capital are guaranteed by the government.

[36] Some other, non-TALISMAN settlements can also occur at the ISE through physical delivery and payment. Since the Checking System operates independently from TALISMAN, even securities which are not TALISMAN-eligible can be validated and matched by the Checking System. But after securities trades are matched, the ISE offers a central physical delivery area that allows such settlement among brokers to occur in one central place. The Stock Exchange's Central Stock Payment Department takes in securities from sellers and delivers them to the buyers. At the same time, it takes the payment from the buyer and gives it to the seller. This is a manual, labor-intensive process.

[37] A nominee is a person or company in whose name securities are held or graded, on behalf of another person or company who is the true owner. SEPON stands for Stock Exchange Pool Nominee. This is the ISE's limited liability nominee company in whose name TALIS W-eligible securities are held prior to settlement.

transfer the share registration from the customer's name into the name of SEPON. The ISE's broker/dealers and market-makers who maintain trading accounts within TALISMAN can, through this SEPON-nominee account, legally hold stock in uncertificated form. The recording into SEPON must occur before any stock exchange TALISMAN settlement can take place.

When broker/dealers and market-makers trade for their own accounts, or act as principals, TALISMAN effects a simple book-entry transfer of title without any need for transfer forms or certificates, Approximately 7,000 securities issues can be settled through TALISMAN, most of the securities registered in the United Kingdom and Ireland.

This clearing and settlement process does not apply to all of the financial instruments traded on the ISE. Options are cleared and matched by ISE, but are settled through the International Commodities Clearing House in London. U.K. Government gilt-edged stocks, also traded on the exchange, are validated and matched through the ISE's checking system, but settled through the Central Gilts Office.[38] Foreign equity trades are matched through an on-line comparison system called SEQUAL,[39] then settled by the broker independently of the ISE, in the security's home market.

The ISE does not take counterpart positions to trades. Market participants are not given a guarantee that the trade will settle, only that if securities are delivered, then either payment will follow, or the securities will be returned. The ISE's services traditionally have facilitated the post-trading processes for its members only. However, through the recent development of Institutional Net Settlement (INS), the ISE has begun to coordinate institutional customer settlements as well.

Payment on the settlement date may be through TALISMAN, outside TALISMAN, through cash settlement, or through the Central Gilts Office, depending on the type of security and the preference of the TALISMAN participants. "Through TALISMAN" means that the TALISMAN computer system keeps track of each member's payment obligations. These payments are netted each day so that each member need only make or receive one payment a day at the nearest TALISMAN Center. "Outside TALISMAN" means that trading parties maintain their own payment records and eitherpay the counterpart directly or deliver a check to the Stock Exchange's Central Stock Payment Department, to be passed on to the selling party. Cash settlement occurs when the trading parties agree to settle their trade on a different schedule from the official account period, the day after the trade for Gilts and on the second day after the trade for equities.

Generally, payments for stock exchange trades are made by check in British pounds, Irish pounds, or U.S. dollars. Approximately half of the brokers make sterling payments through CHAPS, London's interbank electronic payment system. The rest use London's Town Clearing bank checks.

The ISE still has a fragmented and largely paper-based settlement system. TALISMAN capability alone is inadequate to support a major financial center. There are plans to establish a paperless settlement system, called TAURUS, an electronic depository service, to enable members to keep their securities in dematerialized[40] form with book-entry transfer of title on settlement.[41]42 The ISE also plans to move towards a rolling settlement cycle to replace the existing 2-week trading account period with a further 6-day settlement period.[43] One issue that remains under discussion is how the ISE would be able to assure listed companies that they would still be able to quickly identify and communicate with their shareholders.

The International Commodities Clearing House (ICCH)

ICCH[44] is an independent clearinghouse which provides matching, clearing, settlement, delivery management, and trade guarantee services for five futures and options

[38] The Central Gilts Office is a service jointly developed and funded by the Bank of England and the ISE for the settlement of U.K. Government obligations.

[39] Also provided by the ISE, but different from the Checking system.

[40] Dematerialized certificates of ownership are those that no longer have paper certificates and exist only as computer entries.

[41] TAURUS will, in its initial stages, cover U.K. equities. The Central Gilts office already in operation is a fully dematerialized electronic depository for U.K. Government Issues or Gilts.

[42] Documentation is planned to be issued by September 1990 specifying TAURUS requirements, and enabling participants to begin their implementation work for the introduction of TAURUS. "The ISE Announces Detailed Plans for the Future of Settlement in the United Kingdom," ISE News Release, Mar. 9, 1990. These plans are described in "A Prospectus for Settlement in the 1990s," ISE, March 1990, and project a date of March 1991 for the completion of the infrastructure, which includes: the use of the Institutional Net Settlement service, and the phased replacement of magnetic tape and paper transfer systems; the phase-in of book entry transfer, i.e., dematerialization of certificates, between October 1991 and December 1993; and the introduction of an initial 5-day rolling settlement (to be shortened to 3 days later) and a full delivery v. payment system by October 1992These steps are projected to save over £200 over a 10-year period and are consistent with the Group of Thirty's recommendations.

[43] The term "rolling settlement" means that the settlement date is always the trade date plus a specific number of days. For example: T+3.

[44] Summary of expert paper by the ICCH for the Bankers Trust Report, "Study of International Clearing and Settlement," op. cit., footnote 1.

exchanges in London.[45] The ICCH also provides clearing and settlement services to exchanges in New Zealand, Australia, Hong Kong, Kuala Lumpur, and Paris. It provides electronic screen trading systems for three exchanges; the New Zealand Futures Exchange, the Irish Futures and Options Exchange, and the London FOX.

ICCH is organized into two divisions: the Recognized Clearing House, which handles the London-based operations; and the ICCH International Financial Markets, which is responsible for international operations and computer systems. The clearinghouse is owned by a group of six shareholder banks,[46] who are the ultimate guarantors of the clearinghouse's obligations. Ownership status has implications primarily in the case of default by a clearing member. In a clearinghouse owned and operated by one exchange, all of the clearing members are ultimately liable for the obligations of a member who fails to perform. In the case of an independent clearinghouse, such as ICCH, the ultimate liability of meeting a failed member's obligations rests with the shareholders, not with the clearing members. This raises the question of potential conflict of interest among shareholders, clearing members, and customers of clearing members.[47]

ICCH has approximately 200 clearing members in London who trade at the five exchanges. These members act as clearing agents for their own in-house trades, customers' transactions and non-clearing members trades. While trading is primarily by means of open outcry on exchange floors, once a trade is struck, both the buying and the selling party are required by the exchanges to enter the trade data into the exchange's computer matching system within a specified time. The exchange system matches the trade data and makes the matches available on-line to the floor brokers for confirmation. A matched and confirmed order is sent immediately by data transmission feeds to the ICCH's system for settlement.[48]

Trade data is processed by the clearinghouse on a continuous basis rather than in a batch cycle at the end of the day. Members can monitor their settlement positions through the management information system at any time during the day. At the end of a trading day, members can look at a terminal to see what their initial and variation margin calls will be on the following morning.

ICCH becomes the counterpart to every trade. ICCH further decreases risks to clearing members because it performs this function across multiple exchanges, netting members' positions out into a single margin and settlement figure. This process is called multilateral netting by novation. Usually the clearinghouse makes one margin call every day before the start of the day's trading, but in periods of high market volatility, it reserves the right to make more frequent intra-day variation margin calls. For example, on October 19, 1987, ICCH made four intra-day margin calls.

ICCH accepts approximately 30 banks as settlement banks, including some foreign banks' branches within the City of London. Each clearing member typically has at least two sterling-denominated accounts at his settlement bank; one for segregated funds (e.g., those of individual investors) and one for non-segregated funds (in-house, non-clearing members, and non-segregated customer funds). In addition, each member may hold foreign currency denominated accounts at the settlement bank to cover margin and settlement payments in Deutsche marks, yen and U.S. dollars. The clearinghouse also keeps accounts at each settlement bank, multiple accounts if different currencies are involved.

Every morning at 8 a.m., messengers deliver printouts to each clearing member's settlement bank detailing daily margin payments and credits. The banks have until 10 a.m. to credit or to debit the accounts of members. The banks use ICCH's "Protected Payment System," which functions in the same way as third party debit authority in the United States.[49] If a bank has any problems in meeting a margin call for a member, the bank must notify the clearing house by 10 a.m. One of the risks of the margin settlement is that banks do not have to commit payments to the clearinghouse on behalf of a member until after trading begins in the morning. The opening hours vary at each exchange, but the London International Financial Futures Exchange for instance, starts trading at 8:15 am. This could result in a member accumulating adverse trading positions before yesterday's margins have been committed to by the settlement banks. It could become a problem during periods of high-market volatility.

[45] They are the Baltic Futures Exchange (which trades contracts for cattle, pigs, soybean meal, potatoes, and freight Indexes); the International Petroleum Exchange (which trades contracts for gas oil, crude oil, heavy fuel oil, and leaded gasoline); the London Futures and Options Exchange (FOX) (which trades contracts in coffee, cocoa, and sugar); the London International Financial Futures Exchange (LIFFE) (which trades a range of contracts including currencies, interest rates, bonds and indexes); and the London Metal Exchange (which trades contracts for aluminum, lead, copper, nickel, zinc and silver).

[46] National Westminster, Barclays Bank, Lloyds Bank, Midland Bank, Royal Bank Of Scotland, and Standard Chartered Bank.

[47] In 1989, a clearing member default occurred on the New Z-rid Futures Exchange. Customers of the other clearing members were subjected to an invoicing-back procedure which, in some instances, created losses for them.

[48] With the exception of the agricultural exchanges (the Baltic Futures Exchange and FOX), each of the exchanges operates its own matching and confirmation systems. The agricultural exchanges depend on ICCH for both trade matching and confirmation.

[49] The clearinghouse can tell the settlement bank to move money from a member's account at the bank to the clearinghouse's account at the settlement bank without a new authorization from the member.

Since ICCH is a net margin clearinghouse, each morning it submits one number to the appropriate settlement bank for either payment or credit of non-segregated accounts and segregated accounts. Collateral, such as a letter of credit, can be pledged to the clearinghouse as a guarantee against trading on multiple exchanges. If the ICCH did not net margin requirements across these exchanges, this practice would increase settlement risk. As it is, the member has the benefit of incurring reduced payment risk and cost. ICCH accepts letters of credit (also known as bank guarantees), cash and U.K. Treasuries as collateral for margin payments. It is moving towards accepting U.K. Gilts and U.S. Treasury Notes as collateral but there are some legal issues that must be worked out; both of these instruments are held in decertified form in depositories and can therefore not be physically delivered as collateral to the clearinghouse. The possibility of pledging these securities on behalf of the clearing house is being investigated.

Clearing and Settlement in Japan

In many ways securities markets in Japan and the United States are similar, in other ways they are very different. Both countries have multiple equity exchanges, and in both, one or two of these exchanges handle most of the total trading volume in securities. In Japan, this is the Tokyo Stock Exchange.[50] However, Japan's over-the-counter market is minuscule compared to that in the United States. In contrast with the well-established national depository system in the United States, there is no national, central depository in Japan, but one is now being established.

In Japan, as in the United States, the clearing and settlement process varies according to the type of financial instrument traded (i.e., futures, equities, options).[51] To a greater extent in Japan, different financial instruments are traded on the same exchanges, and the clearing of both securities and derivative products are handled by the same organization, but the different instruments are cleared separately. In the United States, by contrast, equities, futures and options generally are traded on separate exchanges as well as processed by different clearinghouses.

The Japanese futures market adheres to the mark-to-market principle in requiring payment of margin, but payment is not due until the third day after the trade. Japan and the United States differ in the types of collateral which are acceptable as margin payments; Japanese clearing houses do not accept bank letters of credit as collateral, but they do accept listed securities. The reverse is true in the United States.[52]

In Japan, there are many unwritten rules or protocols that must be followed in the clearing and settlement process.[53] The Japanese Government, especially the Ministry of Finance (MOF), has a much stronger influence on the day-to-day management of the brokerage business than do regulatory agencies in the United States. But more importantly, the Japanese cultural emphasis on the importance of honor and conformity, concepts which relate to the reputation and behavior of companies and their employees, help to explain the punctual settlement practices in Japan. Trades do not fail in Japan, generally speaking, because it is dishonorable not to meet one's obligations. Further, those who do not meet their obligations risk being put out of business.[54]

Although there is not a widespread concern in Japan as to the possible volume-induced stress on the clearing and settlement system, Japan's financial services industry would like to see some improvements in it. Issues which are currently under discussion include:

. The reduction of physical movement of securities: in addition to Japan's setting up a central depository for securities, the Bank of Japan is creating an on-line depository for Japanese government bonds.[55]

~&x ch. 4 for detailed description of the Tokyo Stock Exchange.

[51]The options market in Japan had until recently been a private, off-exchange, large volume market. In June 1989, options on the Nikkei 225 index began trading on the Osaka Stock Exchange.

[52]In the United States, however, futures clearinghouses have begun to view letters of credit as a less desirable form of collateral. Securities (with the exception of U.S. Treasury obligations) are not accepted as collateral by U.S. futures clearinghouses. They are, however, accepted by the Options Clearing Corp., which handles the clearing forall exchange-traded options in the United States.

[53]For example, protocol dictates that delivering an institutional trade and collection of paymenbe done by prearrangement only.

[54]"If shares are not available fordelivery in Tokyo, a broker issues a letter of guaranty, essentially a promise to deliver later, to its clients. The client then pays the broker, with the knowledge that they own the stock and it will be delivered shortly. A safekeeping receipt is delivered on tradedate, with the shares following when available. The Japanese allow the use of letters ofguaranty with domestic counterparties, but acceptance for foreign participants varies from one custodian to the next." Quoted from Daiwa Securities America Inc., "Viewpoint: Perception and Opinions of a Non-United States Parented Firm Doing Business in the United States and World Securities Markets, " Summer 1989, p. 4, contributed paper in OTA contractor report, Bankers Trust Co., op. cit., footnote 1.

[55]Nomura Securities, "The Securities clearing and Settlement System in Japan," February 1989, contributed paper in OTA contractor report by Bankers Trust Co., op. cit., footnote 1; Toshitsugu Shimizu, "Settlement System of Tokyo Stock Exchange," Oct. 5, 1988, ibid.; interviews with Masayoshi Hamana and Toshitsuqu Shimizu of the Tokyo Stock Exchange, Mar. 8, 1989, Bankers Trust Co., op. cit. footnote 1; and IBM, "Study of Clearance and Settlement for the U.S. Congress-OTA," Aug. 1, 1989, also part of the OTA contractor report by Bankers Trust Co., op. cit., footnote 1.

. Same-day funds: except for Japanese government bonds, the settlement of all stock exchange trades in Japan is through checks, which do not clear until the next day. Some risk could be removed from the settlement process if payment were to be made in same day funds, via an electronic funds transfer system.[56]

The Japanese securities industry is also discussing ways to facilitate cross-national border trading for both Japanese investors and foreign investors. Some possible improvements include:

- ***Immobilization of securities in their home market:*** *the* Japanese securities industry supports this, as well as the creation of bilateral and possibly multilateral linkages among depositories and clearinghouses.[57]
- ***Elimination of Depository Receipts (DRs):*** the Tokyo Stock Exchange advocates this as part of immobilizing securities.[58]
- ***International harmonization of settlement times;*** as noted, equity settlement in Japan takes 3 days, and in the United States 5 days.

The Tokyo Stock Exchange (TSE)

Japan Securities Clearing Corp. (JSCC)—The TSE has a division known as the Clearing Administration Department, which is the planning and rule-making body for all matters concerning clearing and settlement.[59] It supervises the overall process, but the bulk of the day-to-day clearing and settlement process is entrusted to the Japan Securities Clearing Corp. (JSCC), a wholly owned subsidiary of the TSE. All of the approximately 120 members of the TSE are regular members of JSCC, so there are no exchange members who are not also clearing members. All must maintain a clearing office in Tokyo and a banking relationship with each of the 13 approved clearing banks.[60]

JSCC settles cash-market equity trades (both domestic and foreign), a variety of bond trades, and futures contracts (TOPIX)[61] and U.S. government bonds traded on the TSE. For equities trades, cash settlement and the transfer of shares from seller to buyer occurs on the same day (3 days after the trade date), but the payment and securities delivery processes are separate. JSCC is not involved in the payment process, which is handled by the TSE's Clearing Administration Department; JSCC takes care of the securities delivery. The transfer of title to securities is handled through JSCC's computer Book Entry Clearing System and through physical delivery of paper securities certificates.

Neither JSCC nor the Clearing Administration Department take the counterpart position to trades. Nor are any other formal guarantees made by either organization to assure that the payment and securities delivery obligations of settlement will be met.[62]

All equities are processed by JSCC's computerized Book Entry Clearing System and are settled in one of four ways:

1. ***"Regular way settlement":*** normally, on the 3rd day following the date of the trade; 99 percent of the TSE's stock transactions are settled in this way.
2. ***Cash transactions:*** settlement is on the day of the trade (T+O); however, if both parties agree, settlement can be on the day after the trade.
3. *Special agreement:* settlement is scheduled at the seller's option, for a specified day within 15 days of the trade date. This method is primarily used when the counterparties to the trade are geographically separated from each other by a considerable distance.
4. *When issued:* this method of settlement is used for purchases of securities which either have not yet been issued, or, for some other reason are not yet available for delivery to the buyer. Contracts for these types of securities trades are settled on the 4th business day after the trade. After the shares have been issued the stock exchange determines a date after which "when issued" transactions may no longer be performed.

Less than 1 percent of the transactions at the TSE end in a failure to deliver shares on settlement day. If, however, there is a default on either payment or delivery

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[56]See IBM, Aug. 1, 1989, op. cit., footnote 55.

[57]The Japan Securities Clearing Corp. (JSCC), which clears transactions for the Tokyo Stock Exchange (TSE), currently maintains linkages with depositories and/or clearing houses in nine countries. See interview with Masayoshi Hamana and paper by Toshitsugu Shimuzu, op. cit., footnote 55.

[58]Depository Receipts are domestic receipts for the shares of a foreign-based corporation which are on deposit in a bank vault, or a central depository, in that corporation's domestic market. A DR for a foreign stock can be purchased in a domestic market which does not list the underlying stock itself. Ibid.

[59]Stocks on the Tokyo Stock Exchange are traded by two different methods. The 150 most active stocks are traded manually on the trading floor. The TSE recently announced that it is developing an electronic order book for these 150 issues which may be in use in late 1990. All other domestic and foreign stocks are traded through CORES, the Computer-Assisted Order Routing and Execution System. See *Ch. 4: Americans Competitors in Securities Trading*. Also *see* Hamana *and* Shimizu, op. cit., footnote 55; and IBM report, op. cit., footnote 55.

[60]The TSE rotates among these banks on a month-to-month cycle.

[61]"TOPIX" are Tokyo Stock Price Index futures contracts, Japan's equivalent of the Standard and Poor's 500 index futures contracts onus. stocks.

[62]The TSE does provide for interest and penalties on those occasional trades that fail.

of securities, the TSE requires that the trade be cleared or canceled within four additional business days.[63]

For "regular way" settlement, procedures differ according to whether the trade was done on the floor or through the CORES (automated execution) system. For floor trades, specifics of the transaction are written on trade slips which are transmitted via optical character reader and computer terminals to the member firms which are counterpart to the trade. As for electronic trades, the trade data is automatically transmitted to the counterparties. Trade data is compiled overnight by computer and transmitted to the JSCC before the exchange re-opens the next morning. If either counterpart finds an error, corrections must be made by contacting the TSE by the afternoon of T+l.

Settlement is always on a net basis, in respect to both the payment and securities. Accordingly, by the morning T+2, JSCC advises the counterparties on their net settlement obligations. By 4 p.m. on T+2, each net seller firm advises JSCC as to how it intends to provide shares for settlement (i.e., book entry or physical delivery), and each buyer firm advises JSCC as to how it wants to receive the shares due to it. The seller delivers securities by means of either the JSCC's computer book entry system or through the physical delivery of certificates by mid-day on the third day following the trade. Payment is also made on T+3, but is by bank check (next day funds) rather than electronic funds transfer.

Since finality of settlement is thus delayed on the payment side, this settlement cannot be said to offer true delivery versus payment (simultaneous settlement of the delivery and payment obligations of a trade). On the morning of the fourth day following the trade, the payment obligation for settlement is netted into a single

Most TSE transactions do not involve physical delivery of certificates. In only 15 percent of all TSE transactions do both buyer and seller request that the actual certificates be part of the settlement. In 41 percent of TSE trades, both counterparties request settlement through JSCC's book entry system. The result is that book entry is used for either receipt or delivery of securities in about four-fifths of all transactions.[64]

Depository Functions-Although currently clearing and settlement is done in Japan without a central depository, this is expected to change in October 1991, in respect to domestic stocks. The central depository to be set up by financial services industry and the government regulatory agencies is to be called the Japan Securities Depository Center (JASDEC).[65] All the details have not yet been worked out, but the plan is for JASDEC's relationship with the JSCC to be similar to that between the National Securities Clearing Corp. (NSCC) and the Depository Trust Co. (DTC) in the United States. Alternative ways to streamline the custodial and depository aspects of clearing and settlement for foreign stocks are being discussed. JSCC has recommended that it increase the number of its linkages with foreign clearing houses and depositories.

Currently, JSCC's book entry clearing system transfers TSE-listed stocks directly between accounts, but a major problem is that this is done on the basis of stock exchange rules, not on the basis of law. In order for re-registration to occur before each record date, JSCC returns the deposited share certificates to the shareholders (it will also do so at any time its members request it). JASDEC's Central Securities Depository System will immobilize physical certificates, providing for book entry share transfer facilities, and tracking real ownership.[66] The securities that will be eligible for such processing are listed share certificates, OTC share certificates of the Japan Securities Dealers Association (which is developing a new electronic market, JASDAQ, modeled on NASDAQ), and warrants listed on stock exchanges. Participants in the central depository will be required to obtain written permission from their clients in order to immobilize share certificates, and then will be responsible for opening and maintaining deposit accounts for the client. Share certificates will be transferred to the name of the central depository and kept in joint custody. Every Japanese exchange and clearing house will open a share account at JASDEC. JASDEC will also handle book-entry deliveries of over-the-counter securities.

[63] If there is a default on the securities delivery, the seller may issue a "due bill" to the TSE (an IOU, actually a bank check for the money amount of the failed trade). The due bill is deposited with the TSE until the seller's obligation has been met. If the seller should default on the delivery, the TSE will turn the due bill over to the buyer. The due bill is a contractual agreement between the seller and the TSE, and is covered by exchange rules and regulations and defaulting sellers are subject to TSE penalties.

[64] Shimizu, op. cit., footnote 56.

[65] The "Law Concerning Central Depository and Book-Entry Deliveries for Share Certificates and Other Securities" which authorized the creation of JASDEC was passed in May 19S4. Development work on JASDEC began in December 1984; the target date for implementation is October 1991.

[66] In this way, the services provided at JASDEC will be similar to those provided by the TAURUS (Transfer and Automated Registration of Uncertified Stock) book-entry computer system used by the International Stock Exchange in London.

The Osaka Securities Exchange (OSE)[67]

OSE has 94 exchange members and an additional four non-member special participants, admitted in order to trade in futures contracts. Unlike the TSE, the OSE trades options as well as securities and futures. The options are based on the Nikkei 225 index; trading began in June, 1989.

Clearing and settlement of options contracts is handled by the OSE's own clearing department. All members of the OSE are also clearing members. The process at the OSE is similar to that at the TSE, with a few notable differences. First, all trade data comes in via trade slips and optical character recognition (OCR) reader the OSE does not yet have electronic trading, although it will begin sometime in 1990. Secondly, all equities are settled through physical delivery instead of by book-entry transfer of title. The OSE does, however, plan to make use of the JASDEC depository and custodial capabilities, when it opens, but will retain its own clearing department.

Special Features of Japan's Markets

Japanese Banks and Settlement-Japan does not now offer "delivery versus payment" service, because stock exchange payment is generally made through checks which do not clear until the next day. This poses a risk for the seller, since there is always the possibility that a check may bounce.

The exchanges decide which banks are clearing banks (TSE has 13 clearing banks, OSE has 8). Clearing members must maintain an account with each of those banks, but do not give their banks third-party debit authority (i.e., blanket authorization to debit a clearing member's account at the instruction of the clearinghouse). The exchanges receive payments from members and deposit them into an exchange account at one of the approved banks,[68] collecting all monies owed to it for that day before disbursing money from the same bank account to members who are net sellers. Both the TSE and the OSE set and annually review individual payment limits for each of their members; within these limits the member may present uncertified checks for settlement obligations.

Futures Contracts[69]--TOPIX and Japan and U.S. government bond futures contracts are traded on the Tokyo Stock Exchange. Osaka Securities Exchange Stock Futures (OSF50)[70] and Nikkei 225 futures contracts are traded on the Osaka exchange. Eurodollars, yen, and Euro-yen contracts are traded on the newly created Tokyo International Financial Futures Exchange (TIFFE). Trading for both the latter contracts has been computerized since it began, in October 1988. TOPIX futures contracts are traded through the TSE's CORES-F system.

Whereas open positions in the Nikkei 225 Stock Average are settled in cash on the last trading day of the contract, open positions on the last trading day of the OSF50 contracts are settled by physical delivery of shares of the 50 underlying stocks. The OSE's clearing department requires both the buyer and the seller of an OSF50 or Nikkei 225 futures contract to deposit as initial margin a minimum of 9 percent[71] of the sales/contract value (with a minimum of 6 million yen). One third of the initial margin payment must be paid in cash. After the first day of the contract, additional margin is owed depending on price fluctuations in the market, after daily marking to market. Additional margin is due when a loss due to adverse market price fluctuations exceeds 3 percent of the sales or total contract value.

TOPIX futures are settled in the months of March, June, September, and December. Customer margin requirements are similar to those at the OSE for OSF50 contracts, an initial margin of either 9 percent of the value of the transaction or 6 million yen. Members must also pay margin of 6 percent or more of the price of the contract.

Government bond futures are settled on the 20th of March, June, September and December. Banks and non-TSE member securities companies may use accounts at JSCC to clear Japanese Government futures contracts.

The TSE and the OSE accept as collateral to meet margin requirements for futures any of the following: cash, any securities listed on any Japanese exchange, stocks registered with the Japan Securities Dealers Association, or beneficiary certificates of the securities investment trusts. Bank letters of credit are not accepted as collateral. Payments are due from clearing members for the netted position of each type of futures contract. The Osaka Securities Exchange maintains a Settlement Fund and a Default Compensation Reserve Fund System which cover participants against the default of other exchange members. These funds are for the trading of all instruments on the Exchange, including futures contracts. The TSE also has a guarantee fund, which totals 5 billion yen.

[67] Information in this section is based on the IBM report, op. cit., footnote 56, on the response to questions posed to Mr. Yoshioka of the Osaka Stool Exchange by OTA contractor, Bankers Trust Co., op. cit., footnote 1, and an interview by OTA contractor, Bankers Trust Co., with Messrs. Yoshiharu Oritani, Eiji Hirano, and Iwao Kuroda, Bank of Japan, March 1989.

[68] The exchanges maintain accounts at each of the clearing banks, although only one is used at any one time. The exchanges rotate which of the clearing banks they use according to a defined schedule (i.e., the OSE rotates every 10 days; the TSE, once each month).

[69] Information supplied by the TSE and the OSE, in OTA contractor report by Bankers Trust Co., op. cit. footnote 1.

[70] The OSF50 is almost a dormant market.

[71] U.S. futures margins are generally 3 to 5 percent.

International Trading[72]***—The*** TSE currently lists 120 foreign stocks. JSCC advocates building and maintaining custodian relationships in the country where these securities were issued. Clearing and settlement communications can then be handled through business linkages (i.e., dedicated communication lines) between depositories and clearing houses. Trades in foreign securities listed on the TSE are cleared through JSCC's book entry system. They are held by JSCC in the issuer's home country, either through a link to that country's depository, or in a custody account through a bank in that home country. JSCC has linkages for this purpose with Australia, Canada, the Netherlands, Germany, France, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

Both the TSE and the JSCC feel that there are significant advantages to the book entry approach, combined with overseas custody linkages, because the efficiency of equity clearing is based on the ability of investors to fulfill the delivery obligation by either book-entry receive or delivery on the settlement date (T+3). Settlement of transactions on behalf of nonresidents is usually more complicated than settlement for domestic clients, because information must pass through a series of intermediaries. So, at least with linkages, it is easier for the nonresident to deposit securities locally in the home country, where most custody is. This eliminates a risk for the TSE-member broker, who remains obligated to settle on T+3, and otherwise might have difficulty receiving the physical shares from clients in time for settlement.

U.S. securities comprise 70 percent of the foreign securities traded on the TSE. The TSE has a special arrangement with the International Securities Clearing Corp. (ISCC) in the United States, through which U.S. shares traded in Japan are kept for JSCC by ISSC on deposit at The Depository Trust Co. (DTC) in New York City. In the same way, JSCC acts as a custodian for Japanese securities which are being traded on some exchanges outside Japan. Currently, it provides this service to depositories in the Netherlands and France and is discussing with ISCC the possibility of acting as a depository for Japanese stocks being traded by ISCC participants in the United States.

[72]Information in this section is based on a paper by Nomura Securities, in the OTA contractor report by Bankers Trust CO., op. cit., footnote 1.

Acronyms and Glossary

Acronyms

ACT —Automated Confirmation Transaction [System] (NASD)
ADP —Automatic Data Processing, Inc.
ADR —American Depository Receipt
AMEx —American Stock Exchange
BIS —Bank for International Settlement
BOTCC —Board of Trade Clearing Corp.
CBOE -Chicago Board Options Exchange
CBOT —Chicago Board of Trade
CCITT -Comite Consultatif International Telegraphique et Telephon (International Telecommunications Union)
CEA —Commodity Exchange Act
CEDEL —Centrale de Livraison de Valeurs Mobilieres
CFTC —Commodity Futures Trading Commission (U.S.)
CME -Chicago Mercantile Exchange
CNs -Continuous Net Settlement
DTC —Depository Trust Corp.
DVP -delivery-versus-payment
EC —European [Economic] Community
FIBv —Federation International des Bourses de Valeurs
FRB —Federal Reserve Board (U.S.)
FRs —Federal Reserve System
G-30 -Group of Thirty
GAO -General Accounting Office
GM -General Motors
ICC —Intermarket Clearing Corp.
ICCH —International Commodities Clearing House (U.K.)
INTEX —International Futures Exchange of Bermuda
IOSCO —International Organization of Securities Commissions
ISCC —International Securities Clearing Corp.
ISE —International Stock Exchange of the United Kingdom and the Republic of Ireland (in London)
IS0 -Organization for International Standards
ISSA —International Society of Securities Administrators
ITS —Intermarket Trading System
ITU —International Telecommunications Union
JASDEC —Japan Securities Depository Center (Japan)
JSCC —Japan Securities Clearing Corp.
KCBTCC —Kansas City Board of Trade Clearing Corp.
KV —Deutscher Kassenverein
LIFFE —London International Financial Futures Exchange
MATIF —Financial Futures Market (France)
MOF —Ministry of Finance (Japan)
MONEP —Paris Options Market (France)
MOU —Memoranda of Understanding
MSE —Midwest Stock Exchange
NASD —National Association of Securities Dealers
NASDAQ —NASD Automated Quotation system
Nikkei 225 —Nikkei 225 futures contracts (Japan)
NSCC —National Stock Clearing Corp.
NYMEX —New York Mercantile Exchange
NYSE —New York Stock Exchange
OCC -Options Clearing Corp. (U.S.)
OECD -Organization for Economic Cooperation and Development
ONA -Open network architecture (of computer systems)
OSE -Osaka Stock Exchange (Japan)
OSF50 -Osaka Securities Exchange Stock Futures (Japan)
OTC -Over-the-counter
PHLX —Philadelphia Stock Exchange
PSE —Pacific Stock Exchange
PTT —Postal, Telegraph, & Telephone [Authority]
S&P 500 —Standard & Poor 500 Stock Index
SCG —Securities Clearing Group
SDF —Same-Day Funds
SEAQ -Stock Exchange Automated Quotation system (London)
SEC —Securities and Exchange Commission (U.S.)
SEPON —The Stock Exchange POol Nominee (U.K.)
SIAC -Securities Industry Automation Corp.
SICOVAM -Societe Interprofessionnelle pour la Compensation des Valeurs Mobilieres
SIMEX -Singapore International Monetary Exchange
SIPA -Securities Investor Protection Act
SIPC -Securities Investor Protection Corp. (U. S.)
SPAN -Standard Portfolio Analysis of Risk
SRO —Self-Regulatory Organization
T+l —Trade Date Plus One Day
TALISMAN —Transfer Accounting and Lodgement for Investors, Stock Management for Principals (U.K.)
TARS —Trade Acceptance Reconciliation System (NASD)
TAURUS —Transfer and Automated Registration of Uncertified Stock (U.K.)

TIFFE —Tokyo International Financial Futures Exchange
TIMS —Theoretical Intermarket Margin System
TOPIX —Tokyo Stock Price Index Futures
TIMS —Theoretical Intermarket Margin System
TOPIX —Tokyo Stock Price Index Futures Contracts (Japan)
TSE —Tokyo Stock Exchange
UCC —Uniform Commercial Code (U. S.)

Glossary

Access Deregulation: Changes in national laws or regulations that open the counties markets, especially membership on exchanges, to foreign participation.

American Depository Receipt (ADR): A receipt signifying ownership of shares in a foreign corporation. Transactions are made in the ADR in lieu of transactions in the security, which is usually held by a trustee. *The* ADR is usually issued by a foreign branch of an American bank.

American-Style Option: A put or call option that can be exercised at any time before expiration; all listed options are of this kind, including those on European exchanges. See "Option" and "European-Style Option."

Amex: American Stock Exchange, in New York, the second largest U.S. stock exchange.

Analog Signals: Resemblance or correspondence; used to describe traditional forms of electronic information such as pictures, speech, or written and printed characters, as opposed to digitized information.

Arbitrage: The simultaneous or closely related purchase and sale of the same product or related products in order to take advantage of price differences between them (which are presumed to be unrealistic and temporary). Arbitrage often involves stock and either futures or options; it may involve a basket of stock and a stock-index futures contract.

AURORA: An electronic system for the international trading of futures contracts being developed by the Chicago Board of Trade; it is now to be merged with the GLOBEX system (see GLOBEX) but details have not been worked out.

Bear Market: A market with generally declining prices. See "Bull Market."

Block: A large number of shares of a single stock; usually defined as 10,000 shares or shares whose value is at least $200,000.

Bond: A debt security; a long-term promissory note evidencing corporate or government debt, which pays interest to the holder.

Book-Entry: An item in a depository's computer records that identifies, or is used to transfer, ownership of stocks or bonds.

Broker: A securities firm or individual that represents customers in transactions (i.e., trades as an agent). See "Dealer."

Bull Market: A rising market; that is, a market with generally rising prices. See "Bear Market."

Call: See "Option."

Capital Markets: Markets where debt and equity securities are traded. Includes private placement as well as organized markets and exchanges.

Capitalization (of an exchange): The total value of listed securities.

Cash Market: The market in which transactions are completed immediately and assets will be delivered in return for payment; as contrasted with a futures market. Cash markets include organized, self-regulated exchanges and over-the-counter markets for stock and commodities.

Churning: Excessive trading of securities or other products by a broker or floor trader, usually in order to generate commissions. A form of market abuse.

Clearing or Clearance: The processing of transactions in stock, futures, or options markets, in which the buyer's and seller's records of a transaction are matched, in preparation for settlement. Clearing includes confirming the identity and quantity of the security or contract being bought and sold, the transaction price, date, and identity of the buyer and seller. In some clearing organizations, it also includes the netting of trades.

Clearing Member: A securities firm that is a member of both an exchange and its clearing organization; a clearing member handles (for a fee) the clearing of transactions of other members of the exchange who are not clearing members, as well as its own clearances.

Clearing Organization: An organization that handles clearing and (sometimes) settlement; clearing organizations do not exist in some countries.

Closing **a** Position: Eliminating an investment from one's portfolio, either by selling it or (in futures and options trading) making an offsetting transaction—e.g., a purchase of a futures contract offsets the sale of a futures contract.

Counterparty: Either party (buyer or seller) to a transaction.

Custodian: A bank or other financial institution that keeps stock certificates and other assets for a customer (an individual, corporation, mutual fund, or pension fund).

Dealer: A securities firm or individual acting as principal (trading for a proprietary account) rather than as agent (trading on behalf of a customer). If a firm acts as

principal in some transactions and as agent in others, it is called a broker/dealer.

Debt Security: An instrument representing money borrowed, such as a bond, a bill, a note, or commercial paper. It specifies a fixed amount of money, a date or dates of maturity (repayment), and usually a fixed rate of interest or discount on the original purchase price.

Delivery v. Payment: A settlement term, meaning that delivery of a security requires payment at the same time; in effect, a cash-on-delivery transaction.

Dematerialized: Existing only in the form of electronic records, in lieu of a paper certificate (e.g., a dematerialized security).

Depository: Organizations that hold stocks and bonds for safekeeping, on behalf of their owners.

Derivative Products: Tradable futures and options contracts for which the pricing depends on (i.e., is derivative of) the price of a specified asset, such as a stock, a commodity, or the basket of stock represented in a stock index such as the Standard& Poor 500.

Digitization of data: The translation of data from traditional (analog) forms such as pictures or printed figures and text to binary-coded electronic signals.

Dow Jones, or Dow Jones Averages: Market indicators, issued by the Dow Jones & Co., to indicate changes in price of groups of stocks: for example, industrial, transportation, utility, and composite groups of stocks.

Efficient Market: A market in which the prices of securities immediately reflect all available information; for "free market" advocates, a market in which prices are relatively unloaded or "distorted" by transaction costs, taxes, regulatory costs, or other additions to fundamental stock value.

Equity Security: An instrument representing and conveying ownership interest in a corporation, i.e., stock.

Eurobond: A bond sold in a country other than the one in whose currency the bond is denominated; for example, a U.S. bond sold overseas.

Eurodollar: A U.S. dollar on deposit in a foreign bank; usually a European bank, possibly a foreign branch of a U.S. bank.

European-Style Option: An option that can be exercised only on its expiration date, rather than before that date. See "Option" and "American-Style Option."

Foreign Exchange: Foreign currency market; foreign currency is bought and sold for immediate or future delivery.

Forex: The informal market for foreign currency.

Fourth Market: Securities transactions made directly between institutions, without the intermediation of brokers or dealers.

Futures Contract: An agreement to buy or sell a commodity (including financial instruments) for delivery in the future, at a specified price. Each party to the contract is obligated either to fulfill the terms of the contract or to offset the contract by entering into an opposite transaction. The latter (the most commonly chosen alternative) can be done because the clearing organization becomes one counterpart to all transactions.

GLOBEX: An electronic system for international trading of futures contracts, developed by Reuters and the Chicago Mercantile Exchange, scheduled to become operational in 1990-91.

Group of Thirty: An independent, non-profit association of business persons, bankers,- and representatives of other financial institutions from 30 developed nations, who address major global financial topics at policy levels.

Hedge: Protecting one position by taking an offsetting position. Typically, one takes a position in a futures market opposite to a position in a cash market (a commodity or stock market) in order to minimize the risk of loss from an adverse price change. An institutional investor may use stock-index futures to hedge an indexed stock portfolio. Other means of hedging include selling short, buying a put option, or selling a call option.

Index: A market indicator that represents the average price of a specific basket or portfolio of stock.

Index arbitrage: The simultaneous purchase/sale of the basket of stock represented in an index (such as the Standard & Poor 500) and of the stock-index futures contract for that index in order to profit from temporary differences in their price.

Insider Trading: Trading a security on the basis of confidential or privileged information, to which one has access as an "insider" (e.g., as an officer, director, or attorney) of the corporation issuing the security. This is illegal in many countries, because it disadvantages other investors.

Instinct: A proprietary electronic securities trading system, owned by Reuters, that does about 13 million trades per day.

Institutional Investor: An institution with a large portfolio, such as a mutual fund, a public or private pension fund, a labor union, or an insurance company; the trading is usually the responsibility of a professional money manager.

Intermarket Trading System: An electronic network linking stock exchanges in the United States, allowing orders to be routed from one exchange to another exchange offering a better price.

Investment Banker: A firm that underwrites stock, advises other firms on how to raise capital, arranges acquisitions, etc. See "Underwriting."

Liquidity: The characteristic of a market (or of a listed security) with enough potential buyers and sellers to allow large transactions without a substantial change in the prevailing price.

Listed Security (also listed option, listed future): One that has been accepted for trading by an organized and regulated securities exchange. Unlisted securities are traded in the over-the-counter market.

Locked-In Trades: Transactions that are matched and confirmed by computer, usually at the place of the trade, before being sent to a clearing organization.

Long Position: Shares (or other instruments) owned by an investor or dealer.

Maintenance Margin Call: A call for additional funds to be put into a margin account because of an adverse market movement.

Margin: In securities markets, the amount that must be deposited with a broker by one buying securities-the broker extends credit for the remainder of the purchase. In the United States, minimum margin requirements are set by the Federal Reserve Board of Governors. In U.S. futures markets, both buyers and sellers put down initial margins, which are defined as performance bonds or good-faith deposits to assure that the trader will fulfil the contract. The minimum margin requirement is set by the clearing entity of the futures exchange. If the futures price moves adversely, the investor will be called on (daily or more often) to put up more money or collateral.

Marked-to-Market The daily or intra-daily adjustment of settlement obligations (in futures and options markets) to reflect current market prices. Marking-to-market determines the amount of margin that must be held, and is done by clearing organizations to limit their risk to one day's market movement.

Market-Maker: A dealer who makes firm bids and offers at which he will trade. In some markets (e.g., the U.S. over-the-counter market and the International Stock Exchange) there are competing market-makers; in others (e.g., the New York Stock Exchange) there is one designated market-maker for each stock, called a specialist.

Mutual Fund: A fund operated by an investment company that raises money from the public (by selling shares) and invests it in stocks, bonds, options, commodities, or money market securities.

Netting: The determination of the difference between one's total credit and total debt positions, which results in a single amount that a market participant either owes or is owed.

Offset: (1) In futures markets: to close out or cancel a position by taking an equal, opposite position-for example, one offsets purchase of a futures contract by selling a futures contract of the same kind. (2) In international trading, to open a position in one country and close it in another, under an agreement between the two exchanges.

Open Outcry: The method of trading on commodities (and futures) exchanges, where traders shout out their buy and sell offers.

Option: A contract conferring the right to buy (call) or to sell (put) a security at a designated price during a specified period.

Over-the-Counter: A market where stock transactions take place through dealers, but not on or through an exchange or centralized market.

Passing the Book: Transferring the responsibility for portfolio trading from one location to another in a different time zone, in order to trade for more hours of the day-the ultimate is "24 hour trading. "

Pit: The floor of a futures exchange, surrounded by tiered platforms on which traders stand to shout their bids and offers (see 'Open Outcry").

Position: An investor's or dealer's stake in a security or in a market. A long position equals the number of shares owned. A short position equals the number of shares owed.

Price-Earnings Ratio: The current market price of a stock divided by its earnings per share.

Private Placement: The distribution of securities, not listed on an exchange or organized over-the-counter market, to a small number of usually institutional investors. Such placements are exempt from many SEC and state registration requirements.

Program Trading: The simultaneous purchase (or sale) of a large, diversified portfolio of stocks, ordinarily using a computer to handle the complex order routing.

Prospectus: A description, e.g., of an issue of stock, giving essential information about the stock for the benefit of potential buyers; (in the United States) a summary of the registration statement filed with the SEC.

Prudential Regulation: Regulation aimed at assuring the fairness of a market, and protecting the investor from fraud, manipulation, or unrecognized risk.

Put: See "Option."

Rolling Settlement: An arrangement whereby trades can be settled on any business day, as opposed to one or more designated days for each trading period.

Same-Day Funds: Payment is final on the same day it is made (checks do not represent same-day funds, because it may take them several days to clear, during which the receiver of the check does not have access to the money).

SEAQ International: The automated trading support system used to facilitate translational trades at London's International Stock Exchange.

Seat: Membership on an exchange.

Secondary Market: The market in which stocks are traded after their initial issuance and placement. The exchanges and other markets discussed in this report are all secondary markets.

Security: An investment contract conveying participation in a common enterprise, in which there is expectation of profit resulting from the efforts of others; this includes stocks, bonds, and options, but not futures contracts.

Settlement: Payment to the seller and delivery of stock certificates (or other means of transferring ownership) for the buyer.

Short Position: The number of shares (or other instruments) owed by an investor or dealer; see 'short sale.

Short Sale: The sale of a security which is settled by delivery of borrowed securities (rather than securities owned by the seller). Generally, the seller expects to buy securities later, at a lower price, to cover the short sale.

Specialist: An exchange member who acts as designated market-maker on an exchange for one or more stocks; the specialist's functions are: 1) to assist other members on the floor find buyers or sellers with whom to trade, 2) to hold and execute limit orders (orders to buy or sell when the market reaches a certain price) for other brokers, 3) to buy for or sell from his own inventory when necessary to provide liquidity and to moderate or smooth out price jumps, and 4) through these and related means to maintain a fair and orderly market.

Standards: A criterion established by authority, custom, or general consent as a model or a measure of quality, quantity, form, size or some other parameter. In information technology, for example, general conformance to a standard makes possible interoperability or interconnectivity of systems.

Third Market: Trading exchange-listed securities over-the counter rather than on the exchange.

Treasuries: Bills, bonds, and notes issued by the U.S. Treasury.

Underwriting: The act of buying new issues of securities from issuing corporations, and reselling them. This is one of the activities of investment bankers, but it is usually carried out through the formation of an ad-hoc syndicate.

Universal Banking: The most common bank regulatory arrangement, whereby banks can engage in most financial activities, including securities underwriting and trading. In the United States and Japan, in contrast, banks are restricted from engaging in many securities-related activities, including underwriting.

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