An Introduction to Trading in the Financial Markets

Global Markets, Risk, Compliance, and Regulation

R. "Tee" Williams

An In[illegible] to Trading in the Financial Markets

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Preface for the Set

The four books in the set are an exercise in reportage. Throughout my career, I have been primarily a consultant blessed with a wide array of projects for many different kinds of entities in Africa, Asia, Europe, and North America. I have not been a practitioner but rather a close observer synthesizing the views of many practitioners. Although these books describe trading and the technology that supports trading, I have never written an order ticket or line of computer code in anger.

The purpose of these books is to describe *what* individuals and entities in the trading markets do. Bob Simon of *60 Minutes* once famously asked two founders of the dot-com consulting firm Razorfish to describe what they did when they got to work each day and took off their coats. That is the purpose of these books: to examine what participants in the trading markets do each day when they take off their coats. These books do not attempt to prescribe what should occur or proscribe what should not.

The nature of the source material for these books is broad observation. In teaching professional development courses over nearly two decades, I have found that both those new to the markets and even those who have been market participants for years become experts in their specific area of activity; however, they lack the context to understand how their tasks fit into the overall industry. The goal of this set of books is to provide that context.

Most consulting projects in which I have participated have required interviews with people working in all phases of the trading markets about what they do and their views on how the markets work. Those views and opinions helped frame my understanding of the structure of the markets and the roles of its participants. I draw on those views, but I cannot begin to document all the exact sources.

I have isolated fun stories I have heard along the way, which I cannot attribute to a specific source, into boxes within the text. These boxes also include asides that are related to the subjects being discussed but that do not specifically fit into the flow.

The structure of the books presents information in a hierarchical form that puts entities, instruments, functions, technology, and processes into a framework. Categorizing information into hierarchies helps us understand the subject matter better and gives us a framework in which to view and understand new information. The frameworks also help us understand how parts relate to the whole. However, my experience as a consultant convinces me that while well-chosen frameworks can be helpful and appealing to those first coming to understand new subject matter, they also carry the risk that their perspective may mask other important information about the subjects being categorized. So for those who read these books and want to believe that the trading markets fit neatly into the frameworks presented here: "Yes," I said. "Isn't it pretty to think so."[1]

1 Ernest Hemingway. *The Sun Also Rises*, 1926, New York: Charles Scribner's Sons (Scribner).

FEATURES OF THE BOOKS

Figure FM.1 shows the books in this set with tabs on the side for each of the major sections in the book. The graphic is presented at the end of each major part of the books with enlarged tabs for the section just covered, with arrows pointing to the parts of other books and within the same book where other attributes of the same topic are addressed. I call this the "Moses Approach."[2]

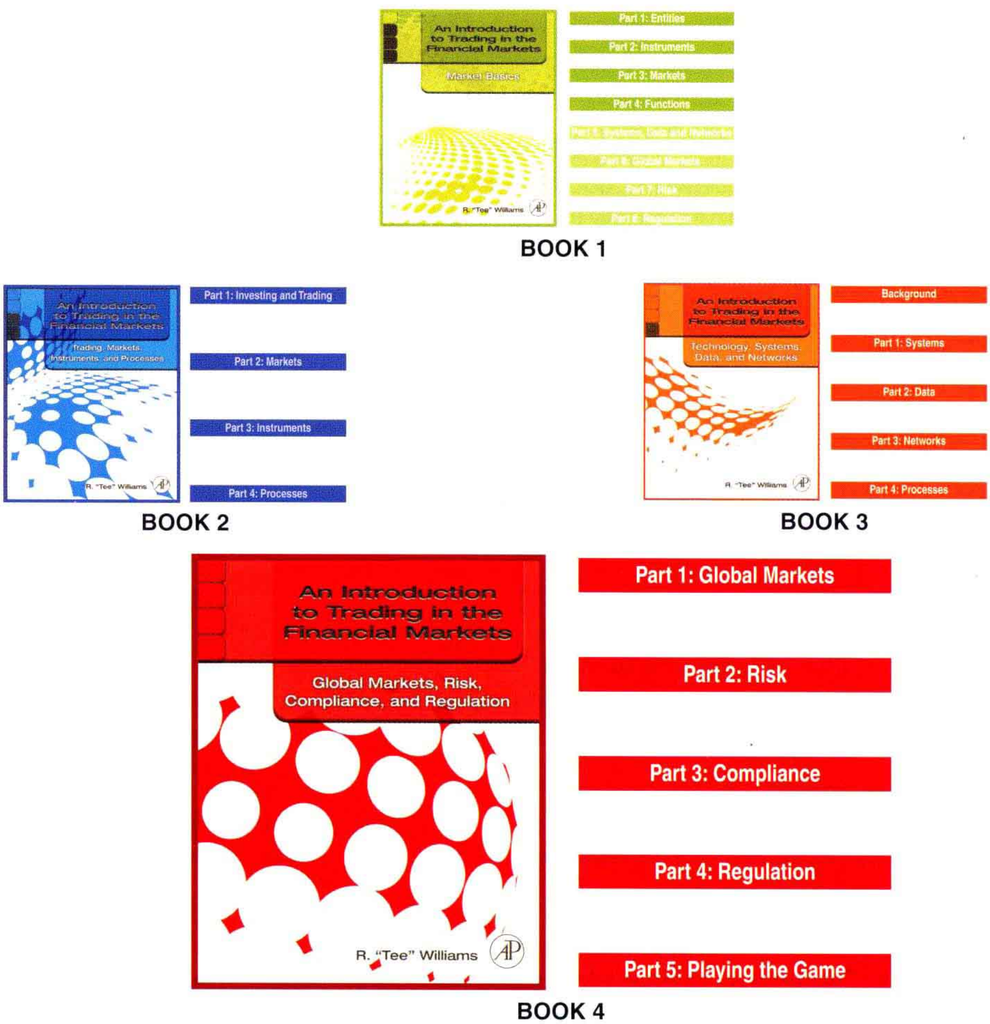

Figure FM.1 The ***books of this set*** are organized as a whole and concepts are distributed so that they build from book to book.

2 You may remember from the Bible that God took Moses up on the mountain and, in addition to giving him the Ten Commandments, showed Moses the Promised Land. This seems to be a good approach to organizing information. If you expect people to wander in the wilderness of your prose, you at least owe them a glimpse of where they are going.

In addition to words and graphics, the four books use color to present information, as shown in Figure FM.2. Throughout, the following color scheme represents the entities as well as functions, processes, systems, data, and networks associated with them.

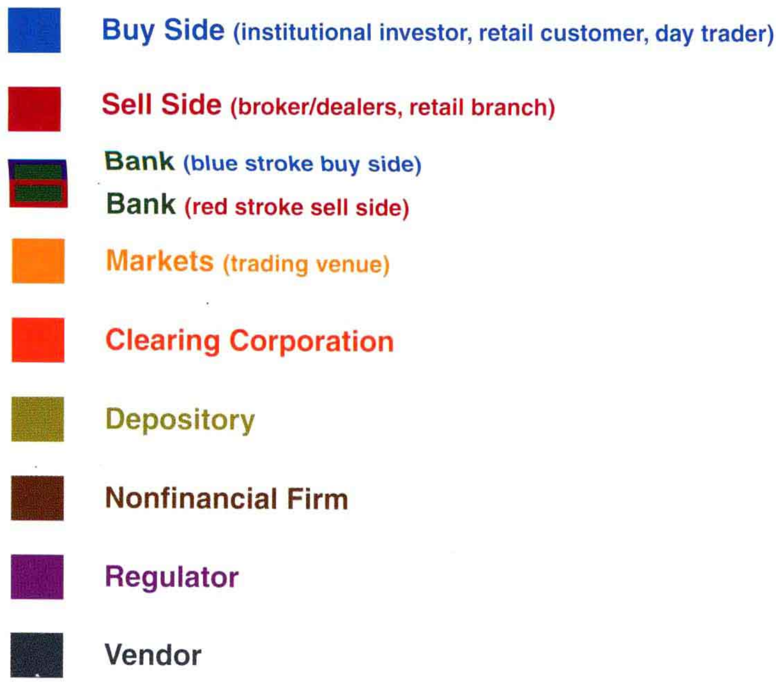

Figure FM.2 ***Color in these books*** identifies entities that are central to the trading markets, and also identifies the functions and processes that are associated with those entities.

A frustration of writing about the trading markets is the wealth of colorful and descriptive terms that permeate the markets. These terms are helpful in describing what happens in markets or where people work, but there is no accepted source that defines terms in everyday usage with precision. Good examples of this problem are the meaning and spellings of the terms "front office," "middle office," and "backoffice."[3] Similarly I use "indices" to mean a collection of individual instances of a single index. (For example closing *indices*—that is, values—of the Dow Jones Industrial Average on January 2, 3, and 4.) I use "indexes" to mean a collection of different copyrighted information products measuring market performance (e.g., the Dow Jones, FTSE, and DAX *indexes*).

I have elected to define the terms, as I understand them, within the books. The first instance of words appear in ***bold italics***, which relate to definitions in the Glossary at the end of each one. The books use more hyphenated adjectives than

3 I separate "front" and "middle" from "office" and combine "backoffice." I believe that "backoffice" is a widely used term throughout the economy, whereas "front office" and more particularly "middle office" are nonce terms that may not migrate into common usage beyond the trading markets.

normal usage would require. I believe it is important to remove all doubt that the term "market-data systems" refers to systems for handling market data, not data systems used by a market.

The books in this set contain a large number of graphics. The goal of them is to provide more than decoration. For many people, graphics help them understand the concepts described in the text. Most of them illustrate process flows, relationships, or characteristics of market behavior. There is neither tabular data nor URLs from websites here. Both are likely to be too dated by the time the books are shipped from the publisher to you to provide any real value.

The graphics (and text) build from book to book. For example, in Part 1 of Book 1 the graphic in Figure FM.3 describing institutional investors appears. It shows

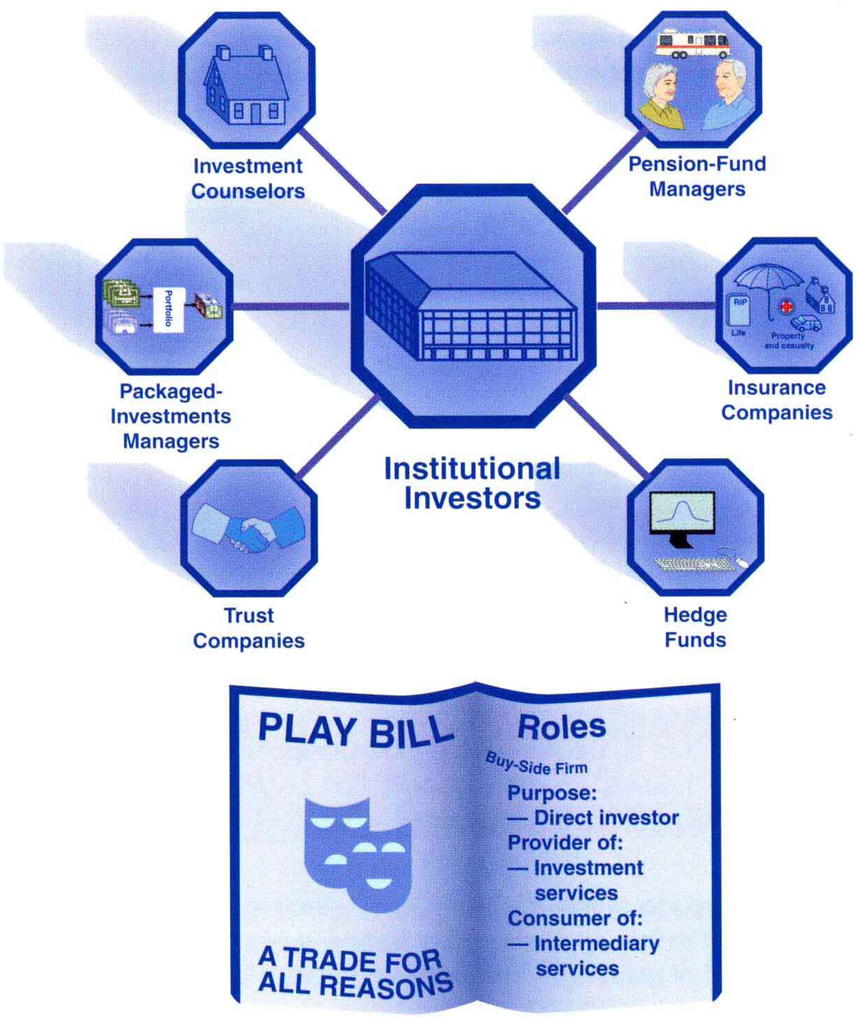

Figure FM.3 ***Institutional investors*** are introduced as important buy-side entities in Figure 1.1.3[4] of Book 1.

4 The figure numbers indicate that this is the third figure of the first category (buy side) of the first part (entities). All figure numbers follow this pattern.

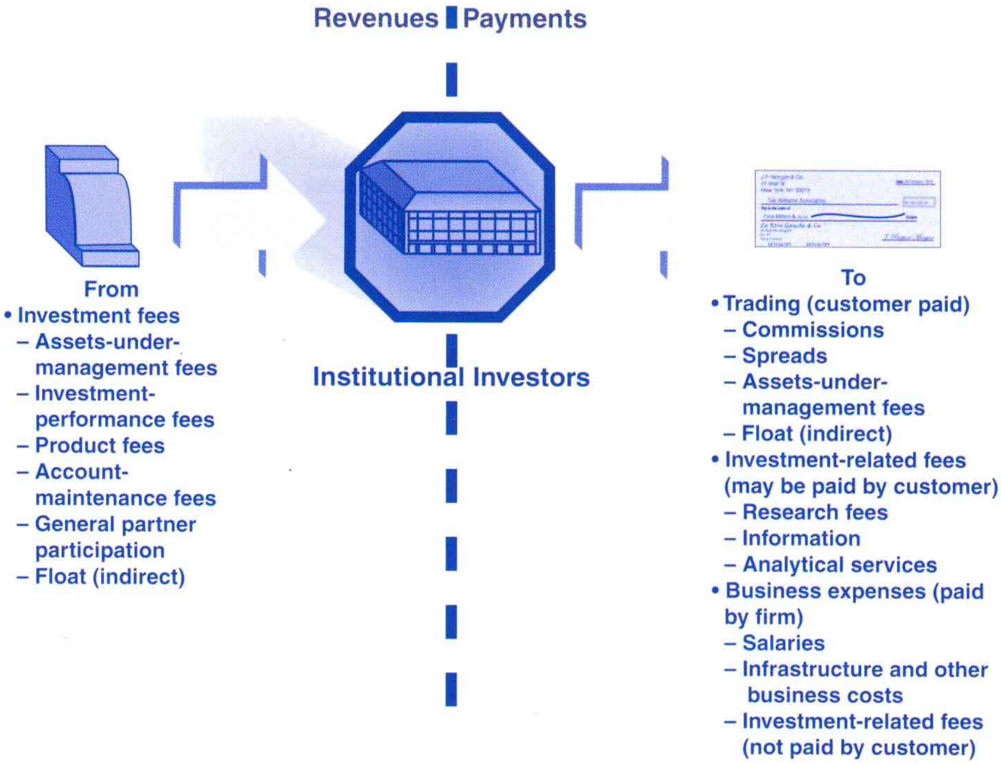

Figure FM.4 ***Institutional investor business models***—revenues and expenses—are illustrated in Book 1, Figure 1.1.3.7.

the customers, the suppliers, and the products and services for institutional investors. (Subsequent sections describe types of institutional investors based on how they are regulated or the service they perform.)

At the end of each entity subsection, the entity's core business model and what services it purchases from vendors and other providers are explained (see Figure FM.4).

Part 4 of Book 1 describes the functions performed by buy-side traders who work in institutional-investor firms (see Figure FM.5). The figure illustrates which tasks the buy-side trader performs (i.e., which functions), who the buy-side trader serves, which external entities interact with the buy-side trader, and which other functions provide services to the buy-side trader.

Book 2, Part 4, describes the secondary market trading process. The second step in the trading process describes the initial role that the buy-side trader plays in trading.

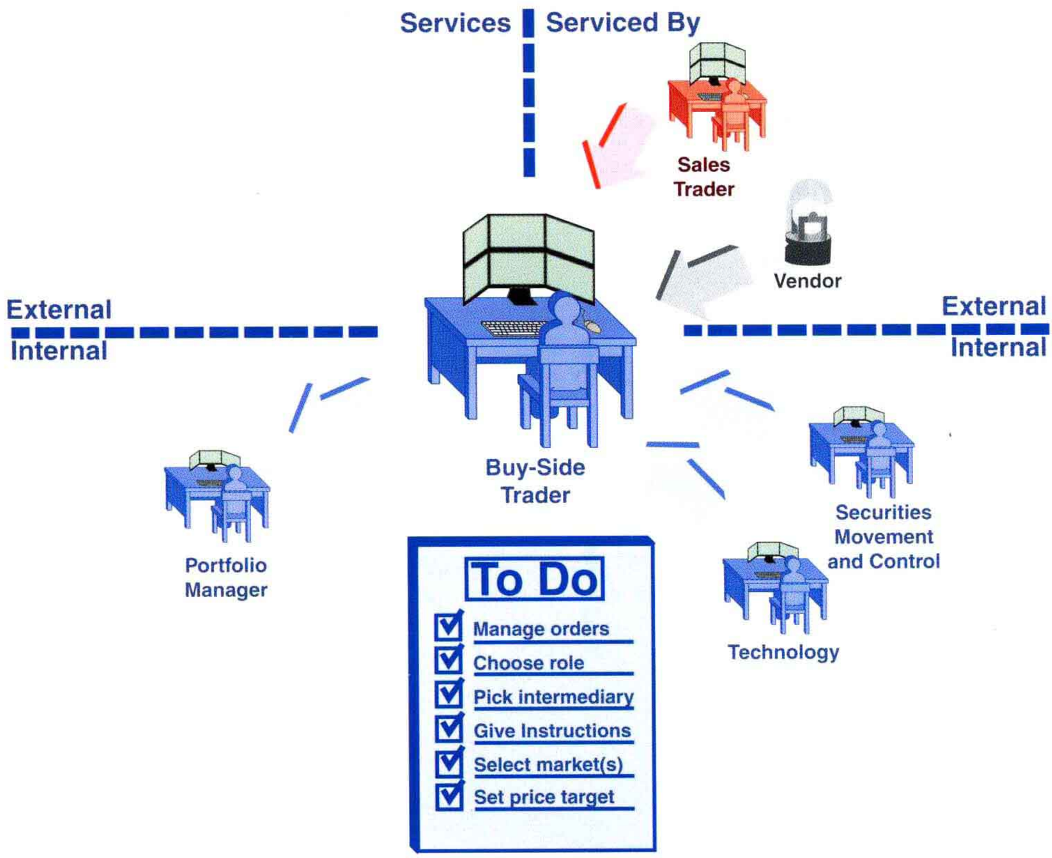

Figure FM.5 ***Buy-side traders*** manage trade execution within institutional investors and their functions are detailed in Figure 4.2.2.1.2 of Book 1.

Figure FM.6 presents the inputs to and outputs from the buy-side trading process as well as the primary focus of the buy-side trader and the decisions that the person must confront. Subsequent graphics in that section examine some of the decisions and alternatives in more detail.

Book 3 returns to the buy-side trader to understand the role of technology in the process. Figure 4.2.2 in Book 3 (Figure FM.7, see page viii) shows the systems and data that support buy-side trading. (Networks tend to link functions and are not assigned to any specific function. Therefore networks are considered based on the functions they link.) This figure reappears as Figure 5.2.3 in Part 5, later in this book, when we introduce the technology supporting our example.

The text identifies applications supplied by both internal and external sources that support order management. The buy-side trader generates information that is input directly to internal systems and indirectly to external systems. Finally, networks both within the firm and from markets and vendors provide linkages that facilitate the entire process. Subsidiary figures highlight the specific types of systems, data, and networks that are input to and output from buy-side trading.

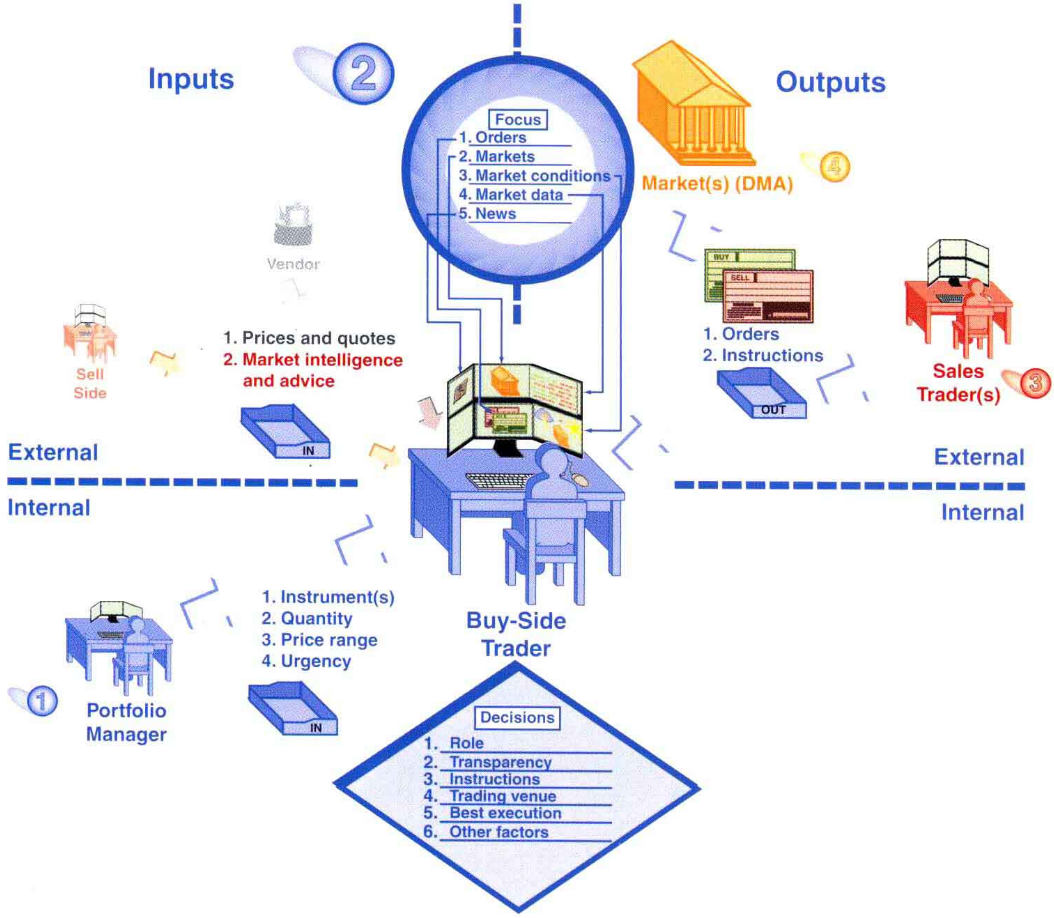

Figure FM.6 ***Buy-side trading*** is defined further as part of the trading process shown in Figure 4.2.1.2 in Part 4 of Book 2.

Finally, Book 4, Part 5, presents a hypothetical example that describes how a fictitious British investment management firm with a global presence manages an order across multiple markets with time, customer, and market pressures.

Here, David Anderson,[5] a London-based buy-side trader for TIM Ltd., is tasked with coordinating the sale of a very large order (100,000 shares) of In-the-Ether Networks (ticker symbol: ITEN) B.V., a Dutch network company with equities that are actively traded globally on the exchanges, ECNs, and MTFs in Amsterdam, Frankfurt, Hong Kong, London, New York, and Singapore.[6]

5 All the names in the "Playing the Game" part are fictitious. However, I do know three different David Andersons, all of whom are Brits and work in some portion of the trading markets. These three gentlemen are the inspiration for the name. However, none of the David Andersons that I know are buy-side traders.

6 As we explain in Part 5, some of the details of our example have changed from what we anticipated when we began writing this set of books. Thus, some of the description presented in the Preface to the Set section in earlier books has changed here, as well as in the actual example in Part 5.

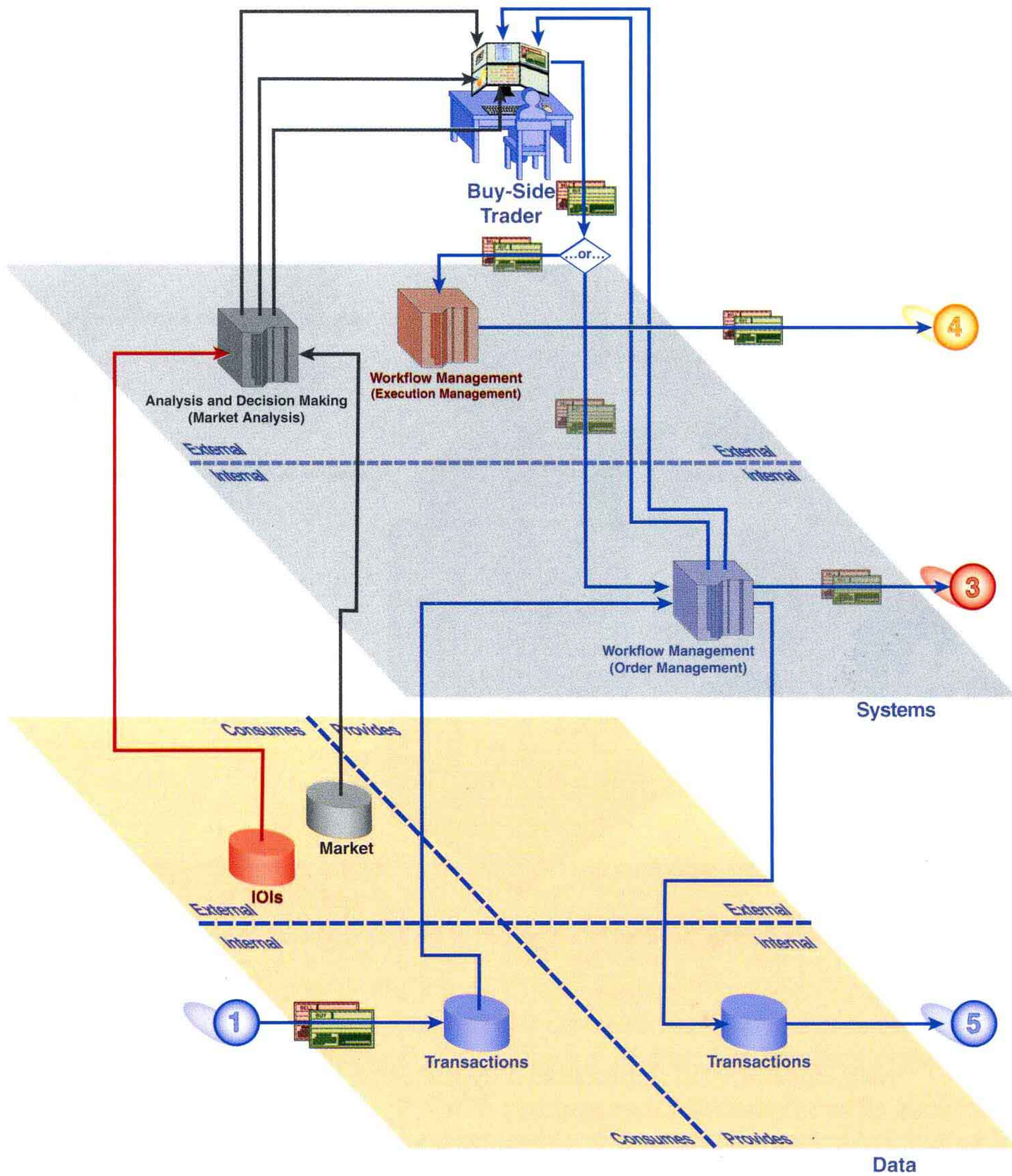

Figure FM.7 ***Buy-side trading*** requires systems, data, and networks and produces data as shown in Figure 4.2.2 of Book 3.[7]

The graphic in Figure FM.8 shows how the order is received along with instructions for its execution. As the process proceeds, the text describes how the order is then divided among global offices, electronic systems, and intermediaries to be executed through a continuing global process over two elapsed London days.

7 In earlier books in this set, we used forecasts of the exact graphic and figure numbers. Since these have changed with the publication of successive books, the later books present the actual figure and figure numbers.

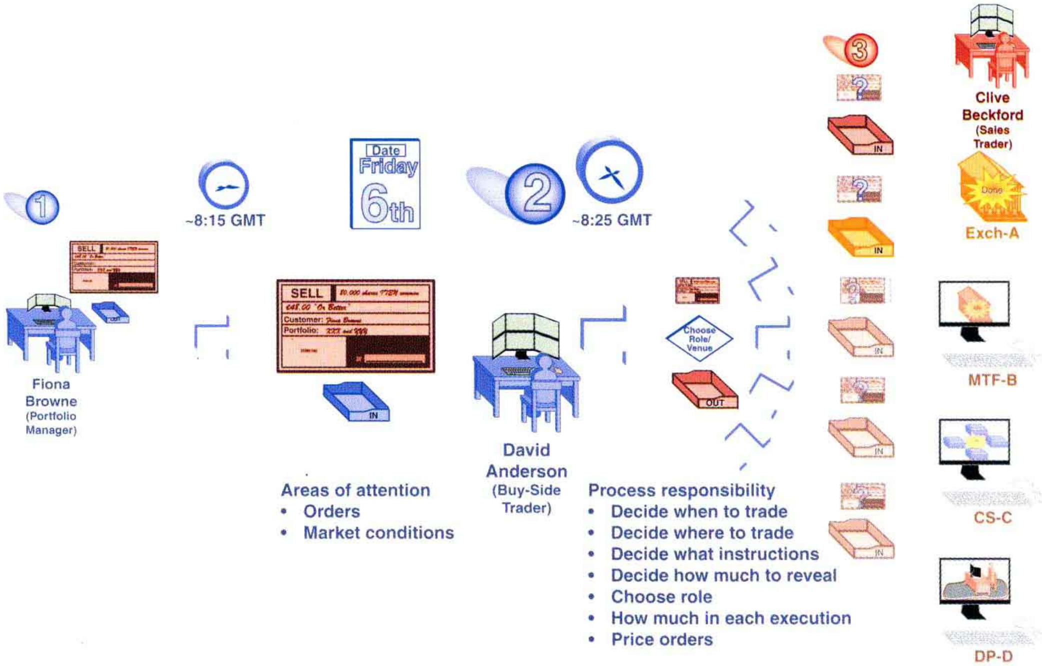

Figure FM.8 ***Buy-side trading*** is finally illustrated through a hypothetical example bringing together the decision process, technology, and interactions in Figure 5.2.4 of this book.

The text also describes the settlement process following the trade. A large trade in multiple markets strains systems data and communications that were created when national markets were insular and did not interact. Subsequent graphics show how the process described in the narrative unfolds.

Similar linkages among the graphics in this set of books occur in describing instruments and markets. As noted previously, a Glossary is included at the end of each book in the set. For convenience, there is a Visual Glossary of the graphical metaphors and elements used in the images for each of the books.

ACKNOWLEDGMENTS

This project began as an attempt to write a history of the markets beginning in the 1960s. There are a number of individuals who held important positions in the trading markets during and after the "backoffice crisis" in the late 1960s who helped me understand the markets early in my career. I thought that a book about them and the work they did to hold the markets together and then reshape those markets would be interesting.

There are several good books describing how Felix Rohatyn, Sandy Weill, and many others worked to bail out firms that were in trouble, but they do not describe the activities that occurred in the backoffice in the midst of the crisis. That book on history did not happen, but these books are my attempt to "pay forward" all the help I received from many different people. The descriptions of the markets in these books are built on the foundation of the knowledge that these people unselfishly imparted. I hope these books will in turn help those entering the markets.

In a real sense, these people and many more than I can list are the true footnotes and references for these books. My earliest teachers included

- Junius "Jay" Peake, University of Northern Colorado, R. Shriver Associates, Pershing and Company, and Shields and Company. (Jay was my first and is still my most influential teacher.)
- Morris Mendelson, The Wharton School of the University of Pennsylvania. (Morris offered Jay and me entre into the academic community, and Jay chose to stay. He and Jay wrote many papers together on market structure and automation, and they allowed me to help with some. Jay and I miss Morris very much.)
- Ray Holland, Triad Securities, A.G. Becker. (For more than 30 years, Ray has been a continuing source of information and advice about the mechanics of the backoffice processes required by the markets.)
- Dick Shriver, R. Shriver Associates. (Dick, my first boss, introduced me to consulting and many in the financial community including Jay. Dick remains a lifelong friend and mentor.)
- Don and Jack Weeden, Weeden & Company, and Fred Siesel, Weeden & Company and the NYSE. (Jay introduced me to Don, Jack, and Fred in the mid-1970s, and for a time we tried to foment a revolution in trading mechanics. Over the period since, they have been a source of information and insight that has helped me understand the way the markets operate.)

More recently, a number of others have provided important views on the workings of the trading process and supporting technology. Most of these people worked with me, or I worked for them on projects that form the basis for the books. These people include the following:

- Mike Atkin, Electronic Data Management (EDM) Council and Financial Information Services Division (FISD). (I have worked with Mike over the past 20 years first at the FISD and later at the EDM Council. Together, we have come to understand the processes required to manage data.)
- Dick Cowles, Telerate and Chicago Board Options Exchange (CBOE). (I met Dick at the CBOE, interviewed him at Telerate, and worked with him for USAID as we tried to establish an over-the-counter market in Poland. Along the way, we became friends.)
- Andrew Delaney, A-Team Group. (Andrew taught classes with Craig Shumate and me. Parts of these books related to infrastructure technology, news, and research rely on Andrew's insights.)
- Tom Demchak, Brian Faughnan, SIAC and NYSE Euronext. (Tom, Brian, and their staffs were liaisons on a project to establish a capacity planning methodology for the equity and options markets in the United States and then to understand the impact of the conversion from fractional units of trading to decimals. They explained the issues of managing huge volumes of data message traffic, functions of the technologies that underpin trading markets, and methods for mitigating message volumes in excess of economically manageable capacity.)
- Deb Greenberger, Skyler Technologies and Dow Jones Markets. (In an attempt to resuscitate the Dow Jones Telerate subsidiary, Deb and I visited and interviewed

customers in Asia, Europe, and North America to understand how they use data to manage their trading and related businesses.)

- Thomas Haley, NYSE (Tom was a coauthor of *The Creation and Distribution of Securities-Related Information in North America*, a description of the market-data industry that we worked on in 1984. That book presented an explanation of the processes in the market-data industry and was written by Tom with several other industry experts at the time on behalf of the FISD of the Information Industry Association [now known as the Software and Information Industry Association]. I met Tom and the others in the FISD when I served as editor for the book. Tom has been a friend and a constant source of information and advice on the market-data industry ever since.)
- Dan Gray, U.S. Securities and Exchange Commission; Lee Greenhouse, Greenhouse Associates and Citibank; Frank Hathaway, Nasdaq; Ron Jordan, NYSE; and George McCord, McCord Associates. (Dan, Lee, Frank, Ron, George, and I worked with their associates and people from SIAC to define and then specify a methodology for allocating market-data revenues for the different markets that trade NYSE- and Nasdaq-listed securities in the United States. The project caused us to examine the quoting behavior in the markets in great detail and to wrestle with issues such as locked and crossed markets.)
- Sarah Hayes and Kirsti Suutari, Thomson Reuters. (Sarah and Kirsti managed a project in which we visited many major financial centers globally to understand how people trade and the impact of those trading practices on information needs.)
- Alan Kay and Charlie Pyne, On Line Markets. (Alan and Charlie invited me to join them in a project to evaluate the meaning of the information business and how to use information as an entre to create trading venues.)
- Tom Knorring, CBOE; Joe Corrigan, Options Price Reporting Authority; and Tom Bendixen, Mark Grinbaum, and Jeff Soule, The International Securities Exchange. (Projects with and for these gentlemen formed the basis of my understanding of the mechanics and economics of the options markets.)
- Don Kittell, SIFMA, NYSE. (Don was the Securities Industry Association [now SIFMA] manager of a series of projects to forecast the impact of the conversion to decimal trading on message volumes. I was fortunate enough to work as a consultant with Don on those projects, where I learned much.)
- Brian McElligott, Kendall Vroman, and Brian's staff, CME Group. (The people at the CME took me to interview important constituencies in the futures markets to understand how they trade and use information.)
- Robert Morgen, consultant at SRI International. (Bob invited me to participate in numerous projects and we have worked together for more than two decades.)
- Peter Moss, Thomson Reuters, and John White, State Street Global Advisors. (Peter and John were forceful advocates for these books. They have also been sources of understanding about the issues facing vendors and market-data users.)
- Leonard Mayer, Mayer & Schweitzer. (Lenny attended one of the classes Craig Shumate and I taught on new trading systems. [He should have been teaching me.] He cofounded one of the premier Nasdaq wholesale firms and was gracious enough to help me understand the business of being a dealer.)

- Lance Riley, SRI Consulting. (Lance was my first boss at SRI Consulting, and together we worked on many projects and interviewed countless people over 20 years. I miss Lance greatly.)
- Richard Rosenblatt and Joe Gawronski, Rosenblatt Securities. (Dick and Joe have been kind enough to take me along as they were trading on the floor of the NYSE. They have also shared their insights on the workings of the markets that they write in an ongoing series of white papers for their customers.)
- Craig Shumate, The Morris Group. (I met and worked with Craig at my first job at R. Shriver Associates, and we have worked together constantly since. He brought me into the business of professional training. It is Craig who pioneered the concept of the eight steps in the trading process and "Playing the Game" as a way to draw together all the aspects of trading in a single process description.)
- Herbie Skeete, Mondovisione and Thomson Reuters. (I met Herbie in London at least 20 years ago, and I try to see him every time I am in London or when he comes to the States. He is a wealth of information on market data and knows a huge number of people. Herbie introduced me to Elsevier and is responsible for my writing these books.)
- Dominique Tanner, SIX Telekurs. (Dominique carefully read the example in Part 5 to route out any errors of fact.)
- Al Thomson, Instinet; Lynch, Jones and Ryan; and AutEx. (Al and I have been collaborators and friends from my earliest work in the trading markets. He set up a great many of the interviews and provided insights that underlie the knowledge presented in these books.)
- Wayne Wagner, The Plexus Group (JPMorgan). (Wayne invited me into a project for the Department of Labor on the meaning of "best execution" in the early 1990s. He patiently explained how many different buy-side motivations resulted in very different expectations from trades.)

I am not able to remember and therefore thank all those that I have interviewed and the many others who worked at the firms for which I consulted for more than 35 years. (By my best estimate, I have averaged several hundred interviews each year since 1974. Therefore, the total number of interviews and thus people to whom I am indebted numbers in the thousands.) Rather than name a few and forget many, I would simply like to mention them all.

A special thank you to Dominique Tanner who worked with me to make the example in Part 5 more realistic. This book is dedicated to them—most particularly to Deb Greenberger, Sarah Hayes, Bob Morgen, and Kirsti Suutari, with whom I explored the global markets. This entire set of books is dedicated to Jay Peake who introduced me to the markets and taught me much of what I know.

Preface

This book is the fourth in a series of books that address the ***trading markets***. We use the term "trading markets" because that is the most general term we can find for the portion of the financial markets that is sometimes imprecisely referred to as the ***securities markets***. These distinctions were explained in Book 1, *An Introduction to Trading in the Financial Markets: Market Basics,* and Book 2, *An Introduction to Trading in the Financial Markets: Trading, Markets, Instruments, and Processes,* when we described ***instruments***.

Basically securities are, however, a subset of instruments. Thus, the term "securities markets" excludes a number of instruments that trade in liquid marketplaces. Here, we examine the broader group of all traded instruments. In this book we focus on the global markets, risk, compliance, and regulation. We then end this book and the set with an extended example of a trade that takes place over time in multiple global ***trading venues***, attempting to cope with issues such as technology and regulation in the process.

The purpose of this book is not to describe the intricacies of each individual ***exchange***, ***multilateral trading facility***, or other trading venue. Nor is this a book explaining regulations, the specifics of risk management, or compliance. The purpose of this book is to provide a broad perspective on these topics and the issues associated with them. If you are interested in these topics in more detail, you can find some resources in the References section at the end of the book.

Before addressing the major topics of the final book in the set, we pause to consider the future. We started the set by considering the history of the trading markets. For much of the more than 400 years of active trading in the markets, the structure of the markets remained relatively static.

During the past four decades, the pace of change has accelerated by four primary forces that we introduce. The pace has become frenetic and promises to leave the markets dramatically different. There are many different ways to describe the future, but we have chosen to examine four different scenarios representing alternatives based on whether the markets continue to ***fragment*** and whether the ***sell side*** continues to be the dominant part of the market or whether the ***buy side*** will become more important. Finally, we look at possible changes in the market for ***illiquid instruments***.

We begin our investigation by examining the global markets. To this point in the set, we have examined markets in the abstract, but each local or regional market is a part in a complex interlocking global structure where trading occurs nearly continuously and participants interact. The active global marketplace has evolved over the past four decades.

Following World War II, most national markets were independent, and even within countries like France, Germany, and the United States, individual cities had historically important exchange markets. Much of the importance of individual exchanges has diminished in the aftermath of a series of regulatory changes beginning in the United States in the 1970s and spreading to Europe in the following decade.

Risk and the means of mitigating the impact of risky events are our next focus of attention. In Book 2 we introduced the idea of risk as a measure of variability in the returns on an instrument or portfolio. In this book we extend that concept to include events that periodically convulse the markets and sometimes threaten the survival of entities and the health of national economies and even the global market. These events are often unanticipated, although much effort is spent in trying to predict these incidents to the extent possible and in developing ways to minimize their impact whether they are anticipated or not. We examine the types and causes of risk and techniques to mitigate it.

Most aspects of the trading markets depend on participants abiding by a variety of rules and procedures imposed by customers, internal policies, markets, support entities, and regulators. Compliance is both the process of abiding by these requirements and the functional oversight role that ensures no obligations are ignored or forgotten.

After we examine the compliance within the markets, we consider the way the markets themselves are regulated. We do not attempt to chronicle the regulation in any specific market or any particular country except to the extent that specific regulations have had a global effect on the structure of the trading markets. Our primary focus is on the major areas of regulation and the methods of implementation.

In the final part, we return to the trading process introduced briefly in the Overview of Book 1 and expanded on at the end of Book 2 so as to describe the process in detail. In Book 3, *An Introduction to Trading in the Financial Markets: Technology—Systems, Data, and Networks,* we added to this by describing the importance of technology in the process. The final section of this book presents an extended, hypothetical example designed to show, through a single narrative, the confluence of all the elements we have described in the set of books.

This book presents the remaining topics needed by someone who wants a detailed overview of the trading markets. Its content integrates the information presented in the other three books. Figure FM.9 compares the content with the information from Books 1, 2, and 3. We will return to this map at the end of each section to relate the content just presented to major sections throughout the other books.