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FINANCIAL MARKETS RESEARCH CENTER

1992

Conference on World Trading Markets

Automation, high-speed communication, electronic markets, and the increased sophistication of investors are dramatically changing financial markets and are reducing the effective distance among widely separated world trading markets. The study of market microstructure, heretofore restricted primarily to U.S. markets, is expanding rapidly to foreign markets. This reflects the development of foreign markets and the increased academic and policy interest in the functioning of financial markets. In 1992 as a major U.S. financial institution, the New York Stock Exchange, celebrates its 200th anniversary, attention in the U.S. is focused increasingly on the challenges from foreign markets. Rapid economic development in Europe and the Far East has put equity markets in these regions on a more equal footing with U.S. markets. At the same time, new futures and options markets have been established in most of the major foreign financial centers. U.S. financial firms have expanded into these markets at the same time that foreign firms expanded into U.S. markets. While equities trading continues to occur primarily in companies' home countries, cross-border trading of common stocks is likely to increase in the coming years. Similarly, futures and options contracts, while different from contracts offered by U.S markets, will attract increased interest from U.S. investors. These developing prospects require us to study the nature and functioning of foreign trading markets.

On April 9-10, 1992, the Financial Markets Research Center sponsored a conference on World Trading Markets with the help of a special grant from the New York Stock Exchange. The purpose of the conference was to air academic research on

the structure and functioning of foreign trading markets. The conference brought together Center sponsors, policy makers, Owen School faculty, and academics from various parts of the world. Selected papers presented at the conference appear in the December, 1992 issue of the *Journal of Financial Services Research* under the title, "Microstructure of World Trading Markets."

The conference began on Thursday morning, April 9, with a session on the design of trading systems and price discovery, chaired by **Todd Petzel**, Chief Economist of the Chicago Mercantile Exchange. **Roger Huang**, of the Owen School at Vanderbilt, presented a paper, "The Design of Trading Systems: Lessons from Abroad," written with Hans Stoll. The lessons are based on an examination of trading in Toronto, London, Paris and Tokyo.

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From the Director

Hans R. Stoll

The last year has been a productive one for the Center and its associated faculty, which number some 14 individuals. The Center continues to stimulate research in financial markets by maintaining data bases, providing computer programming assistance, funding faculty research, and sponsoring workshops and conferences.

The Center's spring conference focused on international trading markets and, with the help of a grant from the NYSE, brought together academics and practitioners from around the world. The conference is described in this newsletter, and papers from the conference appear in a special issue of the *Journal of Financial Services Research*.

Papers by center faculty published in the last year, detailed later in this newsletter under "Reprints," include works on the volatility of financial markets, on corporate finance issues, on the structure of equity markets in the United States and in other countries, and on other topics. Working papers, also listed later, cover similar topics as well as topics such as exchange rate behavior, bond price dynamics, dividend capture trading, the term structure of interest rates, the stock price effects of cable television deregulation, the pattern of equity offerings over the business cycle, the measurement of equity trading costs, and the behavior and prediction of stock quotes and transaction prices in the very short run. New research now under way includes projects on margin policy and volatility in the oil futures market, on energy shocks and stock prices, on the quality of dealer and auction markets, the stochastic volatility of stock markets, and on other topics.

Much of the extensive research output of center faculty has been stimulated, enlightened, and motivated by real world concerns of practitioners who are center members or have participated in center conferences. The aim of the Center is to carry out soundly based research which contributes to our understanding of the workings of financial markets.

In addition to their research activities, center faculty are traveling to give papers at other universities and at conferences in the United States and abroad. International contacts of center faculty include close working relationships with finance faculty in Britain, Germany, and France. Some of these contacts have included student exchange programs, such as the exchange program with the University of Karlsruhe in Germany. Center faculty are also recognized as outstanding teachers in the classroom. In the past year, Cliff Ball was a finalist in the voting for the best teacher and Ball, Roger Huang, and Craig Lewis received teaching excellence awards.

Guest Speakers

An important aspect of the education of MBA students and the faculty at the Owen School is the opportunity to listen to and question senior executives from financial industries. Outside speakers are sponsored directly by the Financial Markets Research Center, the Owen Lecture Series, or the Finance Association, or are invited as an integral part of courses such as Monetary and Fiscal Policy and Financial Institutions. Guest speakers during the 1991-92 academic year were:

Stephen H. Axilrod, vice-chairman, Nikko Securities International

Roger E. Brinner, group vice-president and executive research director, DRI/McGraw Hill

William H. Donaldson, chairman and chief executive officer, New York Stock Exchange

Robert P. Forrestal, president, Federal Reserve Bank of Atlanta

Thomas Frist, chief executive officer, Hospital Corporation of America

William H. Donaldson, chairman and chief executive officer of the New York Stock Exchange, speaking on challenges in today's financial markets.

Claudio Gonzales, chief executive officer de Mexico, Kimberly Clarke

Margaret L. Greene, senior vice-president, Foreign Department, Federal Reserve Bank of New York

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Guest Speakers

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John Hall, chief executive officer, Ashland Oil Company

Keith B. Hall, vice president and chief financial officer, Carrier Corporation, a division of United Technologies

Thomas M. Hoenig, president, Federal Reserve Bank of Kansas City

William Johnston, specialist, New York Stock Exchange

David M. Jones, executive vice-president and chief economist, Aubrey G. Lanston and Company, Inc., New York

Sidney L. Jones, Assistant Secretary of the Treasury for Economic Policy

Silas Keehn, president, Federal Reserve Bank of Chicago

Charles Knight, chief executive officer, Emerson Electric Company

Donald L. Kohn, director, Division of Monetary Affairs, Board of Governors of the Federal Reserve System

Irina Kravchenko, economist and former researcher, Soviet Ministry of Finance

Eugene A. Leonard, president, Corporation for Financial Risk Management, St. Louis

Hugh McColl Jr., chairman and chief executive officer, NationsBank

Ann-Marie Muelendyke, manager, Open Market Analysis Division, Federal Reserve Bank of New York

Robert O'Connell, chief financial officer, General Motors Corp.

Scott Pardee, chairman, Yamaichi International, America

Rudolph G. Penner, senior fellow, The Urban Institute; former director, Congressional Budget Office

James D. Robinson III, chairman and chief executive officer, American Express Company

Joel Stern, managing partner, Stern Stewart & Company

Mark Zurack, Goldman, Sachs & Company

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In the second paper of the first session, "Price Discovery in Automated Trading Systems," **Ian Domowitz** examined the extent to which price discovery in world trading markets is automated. He noted that 76 percent of automated trading systems for futures and options have come on line after 1987, and most of these new markets are located in Europe or the Pacific rim. Automated trading of stocks, mostly confined to North America, has a longer history, but rapid automation of equity trading is occurring, particularly abroad. Domowitz's paper proposes seven levels of automated price discovery and classifies 46 automated trade executions systems. He notes that automated trade execution gives rise to new regulatory issues. The first session concluded with a commentary by **Ruben Lee** of Oxford University, who discussed the papers and spoke on the impact of automation.

Todd Petzel introduces the session on the design of trading systems and price discovery.

Warren Langley, partner at Hull Trading Company, chaired Thursday morning's second session in which continental European trading markets were examined. Continental European trading markets, like the New York Stock Exchange (NYSE), tend to be continuous auction markets. In such markets, bid-ask quotes are placed either by professional dealers or by public limit

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Conference

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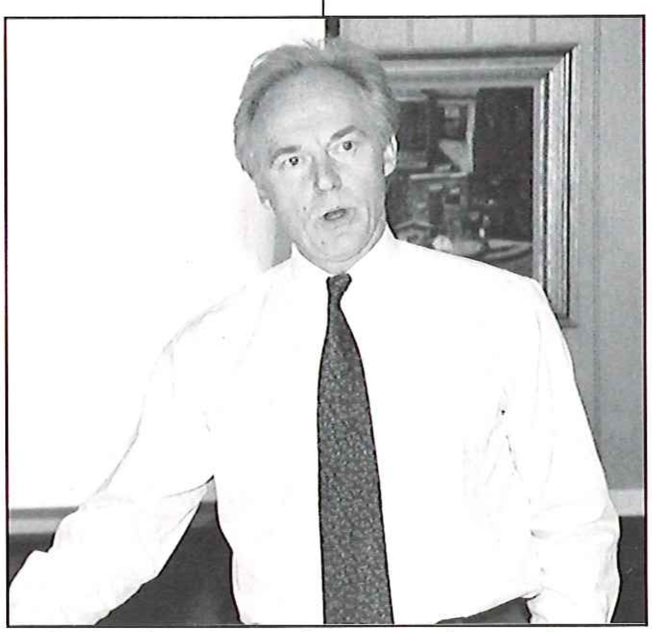
orders, whereas, in dealer markets, like London's SEAQ system or the United States NASDAQ system, bid-ask quotes are made only by dealers. In a paper, "The Market Spread, Limit Orders and Options," **Henk Berkman**, of Erasmus University, analyzes the

Hartmut Schmidt discusses bid-ask spreads on German and British trading systems.

factors determining the bid-ask spread of stock options traded on the European Options Exchange in Amsterdam, which is a continuous auction market. He shows that greater participation by limit orders narrows the spread. He speculates that the narrowing of the spread is due to the slowness of limit orders to be adjusted as underlying market prices change.

Markets differ in their clearing and settlement procedures, and **Michel Crouhy**, of Groupe HEC in Paris, presented the results of his paper, "The Settlement Effect in the French Bourse," written with Dan Galai, showing that such differences can have important effects on the short-run behavior of returns. While trading of equities on the French Bourse has been automated since 1986, settlement of actively traded stocks still occurs at month-end. This institutional feature allows buyers of stock to postpone payment and delays the speed with which sellers receive their funds. Crouhy and Galai show that stock prices fully adjust for this settlement feature, with the effect that returns are abnormally high between the last day of one settlement month and the first day of the next settlement month.



Michel Crouhy explains settlement procedures on the Paris Bourse.

Germany has been a laggard in modernizing and automating its trading markets. While clearing and settlement have always been very efficient, the process of trading has only recently undergone modernization. **Hartmut Schmidt**, of the University of Hamburg, discussed the current state of German trading systems and presented the findings of a paper, "Automated German Equity Trading: Bid-Ask Spreads on Competing Systems," written with Peter Iversen. The paper examines bid-ask spreads in two competing German equity trading systems: MATIS (Makler-Tele-Informations-System) and IBIS (Inter-Banken-Informations-System). The paper also contrasts spreads in these systems to spreads for German stocks traded on the London Stock Exchange's SEAQ International System. While the most recent version of IBIS, labeled IBIS II, a system supported by the German banks, appears to be gaining ground with respect to MATIS, a system developed by the German maklers (specialists), Schmidt and Iversen find that spreads on the IBIS system are higher than those on the MATIS system. They conclude their paper with attempts to explain these differences in spreads.

Thursday's third session, chaired by **James Bradford**, Senior Partner at J.C. Bradford and Company, convened after lunch to hear presenta-

Bob Shiller contrasts investor expectations in the U.S. and Japan.

tions on the London market. **Anthony Neuberger**, of the London Business School, provided insight into developments on the London Stock Exchange. His paper, "An Empirical Examination of Market Maker Profits on the London Stock Exchange," constructs a comprehensive and empirically tractable model of dealers. It incorporates three important factors affecting a dealer's pricing strategy: (1) the order processing costs, such as wages and computer costs, that a dealer incurs, (2) the risk associated with holding inventory, and (3) the effect on dealers of trading with investors that are better informed than the dealer. The model is tested using data on all transactions in 14 British companies traded on the London Stock Exchange in the period September 1987 to February 1988. The data indicate whether market makers as a group are buyers or sellers of the security. The paper demonstrates that market-maker profits are much smaller than those implied by the bid-ask spread.

In the second presentation of the third session, **Ronald Masulis**, of the Owen School, discussed findings of a paper, "Price Change and Trading Volume Dynamics on the London Stock Exchange," written with Victor Ng. The paper provides a detailed analysis of the relation between return variability (within days and across days) and volume on the London Stock Exchange.

Thursday concluded with a panel discussion on "Policy Toward World Trading Markets," which was followed by a reception and dinner. The panel discussion, chaired by **Robert Davis**, Senior Vice President of the New York Mercantile Exchange, was attended by conference participants and students. **James Shapiro**, Chief Economist of the New York Stock Exchange, discussed two issues of concern to the exchange — the fragmentation of trading in NYSE listed stocks and the inability of the NYSE to list major foreign companies. Under Securities and Exchange Commission (SEC) rules, all listed companies must prepare financial statements according to U.S. GAAP (generally accepted accounting principles), but most foreign companies find this difficult to do. The NYSE proposes that major foreign companies be exempt from quantitative translation of their financial statements according to GAAP, but that a qualitative reconciliation of major differences be provided. **Brandon Becker**, Deputy Director of the Division of Market Regulation at the SEC, spoke on appropriate regulatory policy when world markets become ever more tightly linked by automation and high-speed communications. He pointed to the important role of market transparency in mitigating possible adverse effects of market fragmentation while making possible the benefits of increased competition among different market centers. He also discussed efforts at international harmonization of regulatory policy, pointing to accomplishments in the areas of

Jim Shapiro wonders if a way can be found to list more foreign stocks on the New York Exchange.

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insider trading and capital standards, and noting difficulties with respect to harmonization of futures and stock market regulation.

The growth of off-board futures trading and the response of organized exchanges was discussed by **Rick Kilcollin**, Chief Operating Officer of the Chicago Mercantile Exchange. He noted that off-exchange trading occurs after hours, concentrates on limited products, and is able to avoid various regulations (such as position limits) while benefiting from the price discovery provided by exchange trading of related instruments. The exchange's response has included the development of after-hours trading through Globex and the expansion of products. Exchanges are also able to reap revenues from the sale of price information, something that offsets in part the free riding by off-exchange markets on the price discovery by exchanges.

Developments in option trading were discussed by **Duke Chapman**, Chairman of the Chicago Board Options Exchange. He noted the changes in option markets after the crash of 1987, and he spoke on the development of a trading link among the five SEC regulated option exchanges.

The conference concluded with two sessions on Friday morning. The first, chaired by **Duke Chapman**, dealt with Japanese markets. **Kiyoshi Kato**, of the University of Utah and Nanzan University, Japan, presented a paper, "Are Japanese Convertible Bonds Correctly Priced? Some Preliminary Evidence from the Tokyo Stock Exchange," written with Yoshio Iihara. The paper provides empirical evidence on the pricing of convertible bonds. **Robert Shiller**, of Yale University, presented survey evidence of U.S. and Japanese investor expectations of stock prices in the U.S. and Japan in the period 1989 to 1991 when the Japanese stock market declined dramatically. Among other things, the evidence, contained in a paper, "Expanding the Scope of Expectations Data Collection: U.S. versus Japanese Stock Markets," written with Fumiko Kon-ya and Yoshiro Tsutsui, indicates that, in mid-1989 before the Japanese market decline, U.S. investors were pessimistic about the Japanese market while Japanese investors were optimistic. Shiller argued for increased research with expectations data. The session on Japanese markets concluded with a presentation by **Yoshinori Shimizu**, of Hitotsubashi University, Japan, on current developments in Japanese financial markets. Professor Shimizu discussed recent changes in the regulation of futures and options markets and presented evidence of the changing financial condition of banks and other financial intermediaries.

The conference's final session, chaired by **Kevin James**, of the Securities and Exchange Commission, dealt with emerging markets. The problems of emerging markets are dramatically different from those of established trading markets. **Bulent Gultekin**, of the Wharton School, spoke on the broader problems facing countries seeking to establish financial markets. Drawing on a paper, "The Role of Securities Markets in the Financial Liberalization Process: Evaluation of Policies and Performance of the Turkish Experience in the 1980s," written with Guven Sak, he noted that government plays an important role in establishing the legal, regulatory, and accounting framework for financial markets and financial institutions and that without such a government role the development of financial markets may be misguided. In considering the experience of Turkey in the 1980's, he pointed out the need for properly developed money and bond markets as well as a banking system prior to the development of a stock market.

Today's most rapidly developing economies are situated on the Pacific rim. Like Japan before them, these economies - Hong Kong, Korea, Malaysia, Singapore, Taiwan, and Thailand - have grown dramatically, and they boast some of the strongest emerging equity markets. In the last presentation of the conference, **S. Ghon Rhee**, of the University of Rhode Island, discussed the structure and functioning of these new markets. His paper, "The Microstructure of Asian Equity Markets," written with Rosita Chang, and Roy Ageloff, provides an overview of the size, trading costs and regulatory environment of the equity markets of these countries.

Daane Cup Emptied

The Dewey Daane Invitational Tennis Tournament, held in conjunction with the Center's annual meeting and conference, drew a broad range of entries, in no short measure due to interest in the contents of the Cup, which were provided by Dewey Daane, the host and major-domo of the tournament. Winners of the tournament, run as a round-robin doubles tournament, were Mark Baranski, an Owen School Ph.D. student, and Todd Petzel, Chief Economist of the Chicago Mercantile Exchange. Each took his bottle of first class French champagne and, according to reliable reports, emptied the contents at an appropriate occasion with a suitable partner. Congratulations to the winners!

Finance Student Activities

Owen School Finance Association

The goal of the Finance Association is to enhance Owen students' knowledge of current topics in finance as well as provide a link to the financial community. These goals were furthered during the 1991-92 academic year in a variety of ways. During the fall semester, the Association sponsored trips to New York and Chicago to give interested students a chance to learn directly from business persons at several major financial institutions and exchanges.

Hugh McColl Jr., chairman and chief executive officer of NationsBank receiving the award as finance executive of the year from John Hawkins, president of the Owen School Finance Association.

Also, during the year the Association hosted several speakers who discussed such topics as the future of the NYSE specialist system and the development of derivative securities. As has become customary, the year was capped off with the presentation of the Owen Finance Association Executive of the Year Award. This year Hugh McColl, chief executive officer of NationsBank, was selected as the award recipient.

Max Adler Student Investment Fund

The primary purpose of the Max Adler Student Investment Club is the active management of the fund created by the generous gift of Mrs. Mimi Adler in memory of her late husband, the founder of Spencer Gifts. Students gain practical experience in selecting investments and in actively managing a portfolio. This practical experience is supplemented by club sponsored investment contests and speakers from the investment community who discuss current topics and trends in the industry. For the calendar year 1991, the club beat the S&P 500 Index by 2,860 basis points.

Research Workshops

Workshops conducted at the Owen School throughout the year provide a forum for the exchange and testing of new ideas in areas of current research. During 1991-92 the following researchers presented work on finance topics:

Cliff Ball, Owen School: "Empirical Analysis of the European Monetary System"

Stephen Brown, NYU: "Survivorship Bias in Performance Studies"

K.C. Chan, Ohio State: "Are Corporate Insiders Good Contrarians?"

David Chapman, University of Rochester: "Real Bond Yields and Aggregate Activity"

Robert Gertner, University of Chicago: "Bankruptcy and the Allocation of Control"

Roger Huang, Owen School: "Market Microstructure and Stock Return Predictions"

S.P. Kothari, University of Rochester: "Problems in Measuring Contrarian Portfolio Performance"

Andy Lo, MIT: "An Ordered Probit Analysis of Transaction Stock Prices"

Ron Masulis, Owen School: "Stock Return Dynamics over Intra-day Trading and Nontrading Periods in the London Stock Market"

Bernt Oedegaard, CMU: "Empirical Tests of Changes in Autocorrelation of Stock Returns"

Maureen O'Hara, Cornell: "Market Statistics and Technical Analysis: The Role of Volume"

David Parsley, Owen School: "Insignificant and Inconsequential Hysteresis: The Case of U.S. Bilateral Trade"

Roberta Romano, Yale: "A Guide to Takeovers: Theory, Evidence and Regulation"

Lemma Senbet, University of Maryland: "Corporate Limited Liability and the Design of Corporate Taxation"

Subra Subrahmanyam, Columbia: "Intra-day Risk Premia in a Continuous Market"

Ken Sutrick, Murray State: "Estimation of Price Volatility and Equilibria of Futures under Limit Moves"

Siegfried Trautmann, University of Mainz: "Valuation of Warrants: Theory and Empirical Tests for Warrants Written on German Stocks"

Goals of the Center

The Financial Markets Research Center at Vanderbilt University fosters scholarly research in financial markets, financial instruments, and financial institutions. Research of the Center may focus on participants in financial markets, such as brokers, exchanges, and financial intermediaries, on businesses needing financing, and on appropriate regulatory policy. The Center

1. Provides a mechanism for interaction between representatives of the financial community, researchers in financial markets, and the faculty at Vanderbilt.
2. Identifies critical research issues in financial markets and provides a focus for such research.
3. Supports research by faculty members and Ph.D. students at Vanderbilt by maintaining data bases and funding research projects.
4. Guides and disseminates research about financial markets.

Funding

The Center is funded by its members and by outside research grants. Funds are used to maintain financial markets data bases and to support the Center's research projects. Members sit on the advisory board, participate in all activities of the Center, receive research reports, and give advice on the activities and research direction of the Center. Research grants for specific projects are sought from various research sponsors including foundations, government agencies, trade organizations, and corporations.

Current Center members are:

Bankers Trust Company
J. C. Bradford & Company
The Chicago Board Options Exchange
The Chicago Mercantile Exchange
Hull Trading Company
The National Association of Securities Dealers
The New York Mercantile Exchange
The New York Stock Exchange, Inc.
Refco Group, Ltd.
Timber Hill Incorporated

Current Activities of Center Faculty

CLIFFORD BALL, associate professor (finance and statistics). M.Sc., Ph.D., mathematics (New Mexico, 1980).

Conducts research in options, bond, and futures pricing and statistical applications to finance. Current research topics: pricing interest-rate contingent claims; EMS currency options; statistical estimation of diffusion processes employed in financial modeling. Prior to joining the Owen School in 1990, Ball was a faculty member at the University of Michigan Business School and the London Business School. He also has served as a consultant with the investment firm of Shearson, Lehman & Hutton. Ball teaches finance and statistics and was a finalist for the James A. Webb award for excellence in teaching.

During the year, Ball presented a paper, "Mean Reversion Tests with Reflecting Barriers: An Application of European Monetary System Exchange Rates," at the Western Finance Association meetings in San Francisco and discussed a panel of papers on the stochastic volatility of security prices at the American Statistical Association meetings in Boston. His paper, "A Jump Diffusion Model for the European Monetary System," (co-authored with Antonio Roma) is forthcoming in the *Journal of International Money and Finance*. He also served as a referee for numerous research journals.

PAUL CHANEY, associate professor (accounting). M.B.A., Ph.D. (Indiana, 1983), C.P.A., C.M.A.

Conducts research on the economic consequences and capital-market effects of accounting information.

His paper, "The Impact of New Product Introductions on Stockholder Wealth and Market Structure," (with Timothy Devinney and Russell Winer) was published in the October 1991 issue of the *Journal of Business*. A second paper, "The Effect of Size on the Magnitude of Long-Window Earnings Response Coefficients," (with Debra Jeter) was published in the Spring 1992 issue of *Contemporary Accounting Research*. A third paper, "Goodwill: A Global Perspective," (with Jeter) appeared in *Controllers Quarterly*, number 3, 1990.

WILLIAM CHRISTIE, assistant professor (finance). M.B.A., Ph.D. (Chicago, 1989).

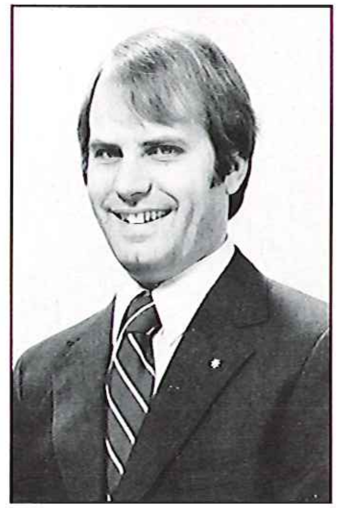
Joined the Owen faculty in 1989. Prior to his doctoral studies, Christie worked as a financial analyst at Hewlett Packard (Canada) Limited and the Ford Motor Company of Canada. Current research interests include the relation between dividend policy and expected returns, testing for the presence of herd behavior in equity returns, measuring the competitiveness of market makers in a dealer market, and studying the market microstructure differences for securities moving between dealer and specialist markets.

His paper, "Dividend Yield and Expected Returns: The Zero-Dividend Puzzle," was published in the *Journal of Financial Economics* and was presented at the 1990 European Finance Association meetings in Athens, Greece. He presented the paper, "Equity Return Dispersions," (co-authored with Roger Huang) at the 1991 Western Finance Association meetings at Jackson Hole, Wyoming, and "The Changing Functional Relation between Stock Returns and Dividend Yields" (with Huang) at the 1992 Southwestern Finance Association meetings.

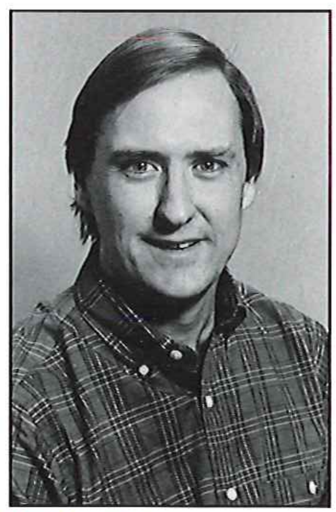
MARK A. COHEN, associate professor (economics). M.A., Ph.D. (Carnegie-Mellon, 1985).

Conducts research on government regulation, law and economics, white-collar and corporate crime. Before joining the faculty at the Owen School, Cohen was senior economist with the U.S. Sentencing Commission and earlier worked for the Federal Trade Commission, the U.S. Environmental Protection Agency, the U.S. Department of Treasury, and the U.S. Senate Banking Committee. Cohen's writing has appeared in such publications as the *Journal of Law and Economics* and the *Yale Journal on Regulation*.

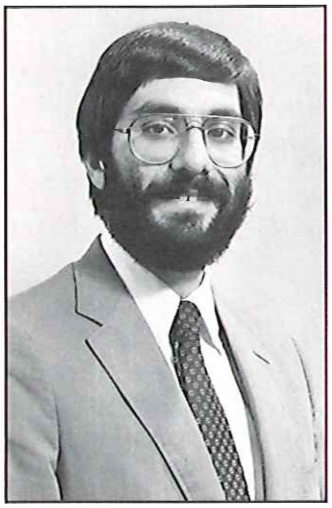
Clifford Ball



Paul Chaney



William Christie



Mark Cohen

J. Dewey Daane

Roger Huang

Current Activities. . .

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Cohen's recent research has focused on white collar and corporate crime and the role of the judicial branch in enforcing government regulation of business. He has served as a consultant to the U.S. Sentencing Commission to analyze current sentencing practice and draft proposed guidelines for the sentencing of firms convicted of corporate crime. During the past year, Cohen presented several papers on corporate crime at conferences and workshops including: a conference held by the Cato Institute in Washington, D.C., on the new corporate sentencing guidelines; Stanford University Law School's Law and Economics Seminar; a symposium on international comparisons of corporate criminal liability at the Academy of Management Meetings; and a presentation to the U.S. Sentencing Commission's Advisory Working Group on Environmental Sanctions.

J. DEWEY DAANE, The Frank K. Houston Professor of Finance, Emeritus; senior advisor, Financial Markets Research Center. M.P.A., D.P.A. (Harvard, 1949).

Conducts research on monetary economics and international finance. Daane is a former member of the Board of Governors of the Federal Reserve System and is currently a public director and member of the finance committee of the National Futures Association. He is also a former public director of the Chicago Board of Trade. Daane served for many years as chairman of the Money Market Committee and vice-chairman of the Trust Board of the Sovran Bank/Central South in Nashville.

During the past year Daane participated in the 28th Annual Conference on Banking Structure and Regulation sponsored by the Federal Reserve Bank of Chicago, the Annual Meeting of the Bretton Woods Committee in Washington, D.C., the 16th annual economic symposium on public issues sponsored by the Federal Reserve Bank of Kansas City in Jackson Hole, Wyoming, and the Annual Meetings of the International Monetary Fund and World Bank in Washington, D.C.

He is scheduled to teach seminars in Monetary Policy in Theory and Practice and Current Problems in Economic Policy at Middlebury College in Vermont this fall and is currently engaged in writing a history of Equitable Securities Corporation, Nashville, Tennessee.

ROGER D. HUANG, professor (finance). M.A., Ph.D. (Pennsylvania, 1980).

Current research examines trading costs across exchanges, fixed income volatility, short-run predictability of stock prices, relation between stock returns and dividend yields, maturity premiums in U.S. treasury markets, and relation between oil and financial markets. Huang was one of six Owen faculty members to receive a Teaching Excellence Award this summer.

Huang attended several conferences during the spring and summer of 1992. In February, he attended the Academy of Business Administration National Conference held at Las Vegas where the paper, "Intertemporal and Cross-Sectional Asset Return Variability," (co-authored with William Christie) was presented. In March he presented "Market Microstructure and Stock Return Predictions" (co-authored with Hans R. Stoll) at the USC/UCLA/NYSE Conference on Market Microstructure. He was the associate program chair for the 1992 Western Finance Association annual meetings held in San Francisco in June, where he also chaired the session, "Production and Asset Returns."

During the same time period, three of Huang's papers were published: "Transformed Securities and Alternative Factor Structures" (with Hoje Jo) in the *Journal of Finance*, "Information and Volatility in the FX Markets" (with Campbell R. Harvey) in *Finanzmarkt und Portfolio Management*, and "Intertemporal and Cross-Sectional Asset Return Variability" (with William G. Christie) in *Proceedings of the Academy of Business Administration*. Another paper, "The Design of Trading Systems: Lessons from Abroad," (with Hans R. Stoll) is forthcoming in *Financial Analysts Journal*.

CRAIG M. LEWIS, assistant professor (finance). M.S., Ph.D. (Wisconsin, 1986), C.P.A.

Conducts research on corporate financial policy, accounting earnings management, futures, and options. Current research topics include the time series behavior of volatility, margin policy, market responsiveness to earnings announcements, and earnings management. Lewis was one of six Owen faculty members to receive a Teaching Excellence Award this summer.

Published papers by Lewis include the information content of implied volatilities from stock index options, multiperiod corporate financial policy choices, the valuation of convertible debt, and recapitalization as a takeover defense. His paper, "Are Debt and Leases Substitutes?" (with James S. Schallheim), is forthcoming in *The Journal of Financial and Quantitative Analysis*.

During the past year, Lewis's paper, "Stock Market Volatility and the Information Content of Stock Index Options," (with Theodore E. Day) was presented at the University of Pennsylvania - Wharton School. Lewis discussed papers in the Western Finance Association conference in San Francisco. He also served as a referee for numerous research journals and was on the program committees for the Western Finance Association and the Financial Management Association.

RONALD W. MASULIS, The Valere Blair Potter Professor of Management. M.B.A., Ph.D. (Chicago, 1978).

Conducts research in the fields of corporate finance, financial institutions, capital markets, and most recently, international finance. He recently authored a book titled *The Debt-Equity Choice* (Ballinger, 1988) that surveys current developments in the area of capital structure.

Prior to joining the Owen School in 1990, Masulis was the James M. Collins Professor of Finance and executive director of the Center for the Study of Financial Institutions and Markets at Southern Methodist University. He also taught for many years at UCLA and worked as a financial economist at the Securities and Exchange Commission, the Federal Home Loan Bank Board, and the Federal Savings and Loan Insurance Corporation. Masulis currently serves on the board of directors of the American Finance Association and the Western Finance Association, and he is associate editor of several finance journals.

This past April, Masulis was a discussant at a conference sponsored by the Federal Reserve Bank of Atlanta, and he presented his paper, "Price Change and Trading Volume Dynamics on the London Stock Exchange," (with Victor Ng) at the Financial Markets Research Center conference. He presented another paper, "Measuring the Impacts of Dividend Capture Trading: A Market Microstructure Analysis," (with Hyuk Choe) at the European Institute of Business Administration in Fontainebleau, France. In June, this paper was presented at the Western Finance Association Meetings in San Francisco, where Masulis also chaired a session on "The Trading Process: Evidence." A long term study of why rights offers died out as a means for large firms to sell stock, "Adverse Selection and the Rights Offer Paradox," (with Espen Eckbo) is forthcoming in the *Journal of Financial Economics*.

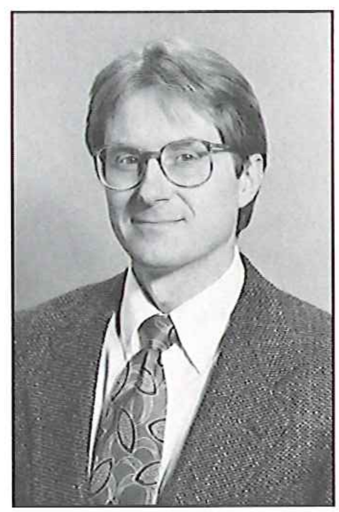
DAVID C. PARSLEY, assistant professor (economics). A.M. (Indiana, 1979), Ph.D. (California, Berkeley, 1990).

Joined the Owen faculty in 1990 after completing his Ph.D. at the University of California at Berkeley. Prior to his doctoral studies, he worked as a research associate at the Federal Reserve Bank of San Francisco. He conducts research on the effects of exchange rates on price levels, the persistence of the U.S. trade deficit, the effects of money supply announcements, and the rigidity of US prices.

Parsley presented a paper, "Exchange Rate Pass-Through: Evidence from Aggregate Japanese Exports," at the Central European University in Prague, Czechoslovakia in March. In July, he

Craig Lewis

Ronald Masulis



David Parsley

Robin Prager

David Scheffman

Theodore Sternberg

Current Activities. . .

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presented "The Rigidity of Prices Reconsidered" at the Western Economics Association International meetings in San Francisco. At those meetings he also chaired two sessions, "Managing Third World Debt" and "Open Economy Macroeconomics," and was a discussant in another session on exchange rate volatility. He will present papers at the Southern Economics meetings in Washington, DC, in November and at the American Economics meetings in Anaheim in January.

ROBIN A. PRAGER, assistant professor (economics). A.B. (Harvard, 1978), Ph.D. (MIT, 1987).

Conducts research on industrial organization and government regulation of industry. Prager has published papers on regulatory issues relating to the electric utility, cable television, and railroad industries. Her paper, "The Effects of Horizontal Mergers on Competition: The Case of the Northern Securities Company," appeared in the Spring 1992 issue of *The Rand Journal of Economics*. Another paper, "The Effects of Deregulating Cable Television: Evidence from the Financial Markets," which is forthcoming in the *Journal of Regulatory Economics*, was presented at the 1991 Telecommunicators Policy Research Conference and at the University of Southern California. Ongoing research concerning cable television deregulation has been presented at the 1992 Econometric Society Winter Meetings and the 1992 Western Economic Association Meetings. Prager will also present her own research and discuss some papers at the 1992 Telecommunications Policy Research conference this fall.

Prager spent the 1990-91 academic year as a visiting faculty member at the Boston University School of Management and the 1991-92 academic year as a visiting faculty member at MIT's Sloan School of Management.

DAVID T. SCHEFFMAN, The Justin Potter Professor of American Competitive Enterprise. B.A. (Minnesota, 1967), Ph.D. (M.I.T., 1971).

Conducts research on strategic management, regulation, antitrust, and industrial organization. Current research topics: mergers in the electric power industry, antitrust policy with respect to mergers, distribution channels, and input exchange agreements. Scheffman has a number of research papers and a book being published, including: "The Application of Raising Rivals' Costs Theory to Antitrust," in the *Antitrust Bulletin*; "Buyers' Strategies, Entry Barriers, and Competition" (with P. Spiller), in *Economic Inquiry*; and *Strategy, Structure and Antitrust in the Carbonated Soft Drink Industry* (with T. Muris and P. Spiller), a book being published by Quorum Books.

Scheffman gave several presentations during the past year to academics and groups from the business and legal communities on antitrust policy, regulation, and mergers in the electric power industry.

THEODORE STERNBERG, assistant professor (finance). M.A. (Hebrew University, Israel, 1988), Ph.D. (California, Berkeley, 1989).

Conducts research on banking and real estate. Following up on his earlier studies of bidding in FDIC auctions for failed banks and their real estate holdings, Sternberg has now turned to the problem of explaining the timing of FDIC "resolutions" of failed banks. The time a failed bank spends in the FDIC's hands, prior to its return to private ownership and control, is widely seen as an important determinant of the cost of "bailing out" that bank. Hence the importance of understanding the timing of the whole process.

Sternberg's most recent projects focus on two real estate problems. One of these is a study of the causes and effects of the length of time a house is considered "for sale," or its "time on the market." The other is a study of the duration of vacancy for rental dwellings. The vacancy rate has long been thought to be a driving force behind changes in rent and price, but empirically this effect has been hard to identify. By studying vacancy duration, Sternberg hopes to explain the more fundamental forces that drive the vacancy rate.

HANS R. STOLL, The Anne Marie and Thomas B. Walker Professor of Finance; and director, Financial Markets Research Center. M.B.A., Ph.D. (Chicago, 1966).

His current research topics include the short-run prediction of stock returns, the measurement of transactions costs, the transmission of oil price shocks to other financial markets, and the efficiency of dealer versus auction markets.

During the past year, Stoll presented the paper, "Market Microstructure and Stock Return Predictions," (co-authored with Roger Huang) at Northwestern University, Boston College, the Winter Finance Conference at the University of Utah, the University of Notre Dame, the University of Michigan, Harvard University, and Dartmouth College. Stoll also spoke at the Futures and Options Expo '91 held on October 16 to 18 in Chicago, Illinois, on the topic of "Trading On and Off Exchanges." A version of this talk appears in the *Institutional Investor Derivatives Forum* of November, 1991. On November 1, Stoll participated in the second annual meeting of the Shadow Securities and Exchange Commission held in Washington, DC, as one of the five shadow commissioners.

On June 24th, Stoll assumed the presidency of the Western Finance Association. Stoll was president-elect and program chairman for the 1992 meetings held June 21-24 in San Francisco. He will be president through the 1993 meetings to be held outside Vancouver, British Columbia. In August of 1992, Stoll participated in a conference on the Operation and Regulation of Financial Intermediaries in Financial Markets held at the Stockholm School of Economics in Stockholm, Sweden. He provided the summing up of the conference. Also in August, Stoll and Huang presented their paper, "Market Microstructure and Stock Return Predictions," at the European Finance Association meetings in Lisbon, Portugal.

Stoll's book, *Futures and Options: Theory and Applications*, (written with Bob Whaley) was published by South-Western in the spring of 1992. The book is intended for advanced under-graduate and graduate courses in futures and options. Other publications include " Major World Equity Markets: Current Structure and Prospects for Change" (with Roger Huang), which appeared in the *Monograph Series in Finance and Economics* during the fall of 1991, and "Principles of Trading Market Structure," which appeared in the *Journal of Financial Services Research*. The paper, "The Design of Trading Systems: Lessons from Abroad," (with Roger Huang) is forthcoming in the *Financial Analysts Journal*. Stoll is editor of a special issue of the *Journal of Financial Services Research* on the topic of "Microstructure of World Trading Markets," which contains papers presented at the April 1992 meeting of the Financial Markets Research Center. He is co-editing, with Ron Masulis, a special issue of *Financial Management* on the topic "Market Microstructure and Corporate Finance."

H. MARTIN WEINGARTNER, The Brownlee O. Currey Professor of Finance. M.S., Ph.D. (Carnegie Mellon, 1962).

Weingartner taught previously at Chicago, MIT, and Rochester. He is a past president of The Institute of Management Sciences and is associate editor of *Management Science*. His publications include *Mathematical Programming and the Analysis of Capital Budgeting Problems* and numerous articles.

In May, Weingartner participated in the meetings of the Council of Scientific Society Presidents in Washington, DC, which included a breakfast with members of Congress. He presented his paper, "How to Settle an Estate," (co-authored with Bezalel Gavish) at the Helsinki meeting of EURO-TIMS at which time he also chaired a session. The paper is forthcoming in *Management Science*. During the past year, Weingartner was appointed to the Board of Arbitrators by the American Arbitration Association and hopes to be involved in commercial arbitration at some future time.

Hans Stoll

H. Martin Weingartner

1991-92 Working Papers

"Equity Trading Costs in the Large and in the Small," by Hans R. Stoll. Working Paper No. 91-01.

Equity trading costs — commissions and market impact cost — are calculated "in the large" from revenue of securities firms in the years 1980 to 1989 and compared with estimates of equity trading costs "in the small" from institutional trading data and from markets data.

"The Geography of FDIC Failed Bank Auctions," by Theodore Sternberg. Working Paper No. 91-03.

The distance between winners of the FDIC's 1988 auctions for failed banks and the banks they won in those auctions tend to be smaller than the distances between losing bidders and their targets. This relation appears very robust, as it is visible in many cross-sections of the data. Moreover, the probability of winning an auction, as estimated by maximum likelihood in a hypergeometric model, decreases with a bidder's distance from its target.

"Exchange Rate Pass-Through: Evidence from Aggregate Japanese Exports," by David C. Parsley. Working Paper No. 91-04.

This paper presents evidence that aggregate exchange rate pass-through declined for Japanese exports during the 1980's. The analysis investigates pass-through at a sectoral level and asks whether a general decline occurred across all industry sectors, or whether there were particular sectors responsible for the aggregate decline. Pass-through is found to vary widely across the six sectors considered, but no evidence of a decline in any individual sector is found. The conclusion is that a decline in aggregate pass-through may be the result of a shifting commodity composition of trade in which those sectors having lower aggregate pass-through account for a growing proportion of Japanese exports.

"Pricing in Foreign Markets: An Examination of Exchange Rate Pass-Through at the Commodity Level," by David C. Parsley. Working Paper No. 91-05.

This paper develops a microeconomic foundation of pricing in foreign markets. Of particular interest is the response of price to exchange rate changes (pass-through) and the circumstances under which pass-through might change. At a theoretical level, the paper demonstrates how pass-through is a function not only of the usual list of determinants, but also of the expected future course of these determinants. The empirical results, derived from disaggregated data on export prices and quantities of five Japanese products exported to the U.S., support the model's conclusion that pass-through can vary widely across products. The paper develops and utilizes an error correction methodology in all estimations. The conclusion is that little support is found in this dataset for a hysteresis interpretation of recent findings of changes in pass-through.

"A Branching Model for Bond Price Dynamics and Contingent Claim Pricing," by Clifford A. Ball. Working Paper No. 91-07.

Financial claims that depend on future levels of interest rates are increasing in importance. Examples include: Eurodollar Futures contracts, futures options written on long treasury bonds, variable rate loans, variable-rate mortgage contracts, and their derivative securities. This paper puts forward a branching model for bond price dynamics and develops a discrete time scheme for pricing the corresponding derivative assets. A Markov Chain structure is employed and the required numerical procedure is outlined. The model can estimate, under certain circumstances, the bond option model introduced by Cox, Ingersoll, and Ross (1985).

"Information Trading and Fixed Income Volatility," by Campbell R. Harvey and Roger D. Huang. Working Paper No. 91-10.

We study the intraday and interday volatility patterns in the Eurodollar and Treasury bill futures markets using transaction data from the Chicago Mercantile Exchange and the London International Financial Futures Exchange. Volatility in the Eurodollar futures contracts is concentrated at the same time on both the exchanges and coincides with U.S. macroeconomic news released between 7:30am and 8:30am Central Time. We show that this concentration of volatility is distinct from volatility induced by trading procedures at the opening by examining the opening market volatilities on different exchanges and at different opening times. We also find evidence of increased volatility due to private information trading between 10:30am and 11:30am Central Time when the Federal Reserve Bank implements its policies through open market operations.

"The Changing Functional Relation between Stock Returns and Dividend Yields," by William G. Christie and Roger D. Huang. Working Paper No. 91-11.

A tax-based hypothesis asserts that firms with higher dividend yields must offer higher before-tax expected risk-adjusted returns. An alternative tax-neutrality hypothesis implies that expected returns are unrelated to dividend yields. This paper examines the implications of the competing hypotheses by estimating the shape of the yield-return function and by comparing the observed patterns through time. The non-parametric kernel estimation procedure used in this paper does not impose a linear structure on the yield-return relation but permits arbitrary functional forms. The results identify a rich variety of nonlinear cross-sectional yield-return patterns. Our inability to identify a persistent positive relation between expected returns and anticipated dividend yields provides evidence incompatible with the tax-based hypothesis.

"An Analysis of Nonlinearities in Term Premiums and Forward Rates," by Roger D. Huang and Charles S.Y. Lin. Working Paper No. 91-12.

Term structure models of Cox, Ingersoll, and Ross (1985) imply a linear relation between conditionally expected term premiums on Treasury securities and forward interest rates. Some alternative models of the term structure, however, imply a nonlinear specification. This paper provides a nonparametric study that permits both linear and non linear associations. The analysis uncovers evidence of expected term premiums and their sensitivities to forward premiums that vary over time. The results also indicate that shifts in term structures of expected term premiums cannot be attributed to functional form misspecifications. An evaluation of the out-of-sample forecasting performance shows the predictive ability of the nonparametric representation to be poor relative to a linear model. Moreover, the linear specification is surprisingly robust within-sample and cannot be rejected in favor of the nonlinear alternative.

"Measuring the Impacts of Dividend Capture Trading: A Market Microstructure Analysis," by Hyuk Choe and Ronald W. Masulis. Working Paper No. 91-13.

This study examines transactions data around cash dividend distributions by NYSE and AMEX listed common stocks for several separate tax regimes associated with years 1985, 1986 and 1988. Evidence is uncovered of abnormally large and frequent purchase orders preceding the ex-date and abnormally large and frequent sell orders on the ex-date. Shifts in specialists' bid-ask quotes and spreads are also found. The results are insensitive to measurement based on hourly sampling or transaction by transaction sampling. A significant increase in dividend capture activity is found in the 1988 period. Biases in returns calculated from transaction prices as well as returns based on cum- and ex-date closing prices are documented.

"An Empirical Analysis of Earnings Management: Evidence from Initial Public Offerings," by Paul K. Chaney and Craig M. Lewis. Working Paper No. 91-15.

For a sample of 489 firms that made initial public offerings of equity between 1975 and 1984, we find a positive association between a proxy for earnings management and firm performance. Our findings are robust to alternative specifications of the earnings management and after controlling for size, leverage, profitability, age, write-offs, firms with large negative earnings, and industry effects.

"The Effects of Deregulating Cable Television: Evidence from the Financial Markets," by Robin A. Prager. Working Paper No. 91-20. (Forthcoming in *Journal of Regulatory Economics*.

This paper uses financial market data to study the effects of deregulation on the market power of U.S. cable television system operators. The results suggest that although deregulation has enhanced the market power of these firms, the effect was not anticipated at the time when the deregulatory legislation was passed. Two possible explanations for the unexpected increase in market power are offered.

"The Design of Trading Systems: Lessons from Abroad," by Roger D. Huang and Hans R. Stoll. Working Paper No. 91-22. (Forthcoming in *Financial Analysts Journal*.)

This paper outlines some of the lessons learned from abroad for the design of future trading systems. The recent developments in the equity markets of London, Paris, Toronto, and Tokyo are driven by ever-increasing competitive pressures from overseas and at home. To meet these challenges, continuous, automated, and highly transparent trading systems are recommended. The international experience also highlights the need to be aware of the limitations of automation, to facilitate limit orders, and to provide special provisions for large and small trades.

"Common Stock Offerings Across the Business Cycle: Theory and Evidence," by Hyuk Choe, Ronald W. Masulis, and Vikram Nanda. Working Paper No. 91-24.

It is well known that in expansionary phases of the business cycle, larger numbers of firms issue common stock and the proportion of external financing accounted for by equity is substantially higher. We show that this phenomenon is consistent with firms selling seasoned equity in periods with more promising investment opportunities having to face relatively lower adverse selection effects, as do issuers with smaller scale offers or those with less uncertainty about assets in place. Thus, the proportion of external financing accounted for by equity issues is predicted to be greater in periods with low adverse selection effects and firm announcements of equity issues are predicted to convey less adverse information about equity values in such periods. Empirically, we find evidence that is generally

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consistent with these predictions. The adverse selection effects as measured by the negative price reactions to seasoned common stock offering announcements are signifantly lower in expansionary periods. Also, these announcement effects are less adverse for issuers with smaller offerings and less uncertainty about assets in place.

"Market Microstructure and Stock Return Predictions," by Roger D. Huang and Hans R. Stoll. Working Paper No. 91-26.

An econometric model of quote revisions and stock price changes that incorporate the various characteristics of the market microstructure is developed. The model is used to discern the relative importance of different microstructure effects and to test restrictions imposed on the model by microstructure theory. The model is able to predict five minute quote revisions and transaction returns on the basis of microstructure variables and lagged stock index futures returns.

"Stock Return Dynamics over Intraday Trading and Nontrading Periods in the London Stock Market," by Ronald W. Masulis and Victor K. Ng. Working Paper No. 91-28.

This study extends the empirical studies of French-Roll (1986) and Barclay-Litzenberger-Warner (1990) by introducing a dynamic framework for examining the causes of stock price volatility. The framework allows shocks originating in trading and nontrading periods to have differing impacts and persistence on future volatility. Using intra-day nontrading period and trading period stock return data from the London stock exchange, we find evidence that nontrading period shocks are less persistence than trading period stocks on trading period volatility and the conditional distribution of nontrading period return is much more fat tailed than the conditional distribution of trading period return. We also find evidence that bad news causes more volatility than good news in the trading periods, but not in the nontrading periods, which might explain why corporations tend to release bad news in nontrading periods. Our results are most consistent with the hypothesis that stock price volatility is related to the trading activities of informed investors. Our analysis also reveals evidence inconsistent with the Amihud-Mendelson conjecture that the observed higher volatility of open-to-open returns relative to close-to-close returns in the U.S. is due to a call auction at the exchange open.

"Adverse Selection and The Rights Offer Paradox," by B. Espen Eckbo and Ronald W. Masulis. Working Paper No. 91-30. (Forthcoming in *Journal of Financial Economics*.)

We develop an analytical framework to explain firms' choice of equity flotation method and the near disappearance of rights offers by U.S. exchange-listed firms. The choice between uninsured rights, rights with standby underwriting, and firm commitment underwriting depends on information asymmetries, shareholder characteristics, and direct flotation costs. Underwriter certification and current shareholder takeup are viewed as substitute mechanisms for minimizing wealth transfers between shareholders and outside investors. Uninsured rights create severe adverse selection effects when shareholder takeup is low. Implications for stock price behavior around issue announcements, shareholder subscription precommitments, and relative issue frequencies are supported by large-sample evidence.

"Insignificant and Inconsequential Hysteresis: The Case of U.S. Bilateral Trade," by David Parsley and Shang-Jin Wei. Working Paper No. 91-36.

This paper casts doubt on the validity of the hysteresis hypothesis as an explanation of the persistent US trade deficits in the 1980s. We propose two tests to investigate two different implications of the hysteresis. The first implication is that cumulative changes in exchange rates, in addition to current exchange rate levels, are important determinants of trade flows. The second implication is that foreign exporting firm's perceptions of exchange rate volatility will affect their decisions to enter or exit the market. We find little support for either aspect of the hysteresis hypothesis.

"The New Corporate Sentencing Guidelines: The Beginning or the End of the Controversy?" by Mark A. Cohen. Working Paper No. 91-55. (Forthcoming in *Corporate Sentencing: The Guidelines Take Hold.*)

"Competition Value and Reserve Prices in FDIC Real Estate Auctions," by George Gau, Daniel Quan, and Theodore Sternberg. Working Paper No. 91-57.

Using a sample of 110 sealed bid auctions, we study the FDIC's effort to resell into the private sector real estate assets inherited from failed banks. We focus on the following issues: Why did most properties go unsold? Is the FDIC properly using the device of reserve prices; is it wise to keep bidders unaware of the reserve price, and why are some auctions "absolute"? What is the evidence that reserve prices adjusted ex post in light of bids received? How much surplus did winners appropriate?

"Who are the Innovators and What Do They Gain?" by Paul K. Chaney and Timothy M. Devinney. Working Paper No. 91-58.

"Unit Root Tests with Reflecting

Barriers: Application to European Monetary System Exchange Rates," by Clifford A. Ball and Antonio Roma. Working Paper No. 91-61.

"A Jump Diffusion Model for the European Monetary System," by Clifford A. Ball and Antonio Roma. Working Paper No. 91-62.

Currently, exchange rates involving the US $ are freely-floating and empirical evidence suggests no mean-reverting behavior. In contrast, this paper examines the bilateral exchange rates of currencies party to the European Monetary System's (EMS) exchange rate mechanism. These exchange rates are limited by direct central bank intervention to lie within predesignated barriers. However, occasionally these barriers are shifted resulting in jumps in the rates. We model these exchange rates by a bivariate jump-diffusion process which incorporates the movement of the central parity and the deviation of the exchange rate from its central parity. We posit mean-reverting behavior which is subsequently tested empirically. The presence of barriers and consequent reflection pose significant statistical difficulties for the empirical work. On the theoretical side, we also propose an option model for pricing derivative assets such as currency options.

"Estimation of a Diffusion Process for Spot Rates," by Clifford A. Ball and Walter N. Torous. Working Paper No. 91-64.

Recently, Cox, Ingersoll, and Ross (CIR) proposed a parametric class of mean reverting square-root diffusion processes to model spot real interest rates in the development of a full equilibrium term structure model. Due to the complexity of the associated transition densities, little work has been attempted on the estimation of the parameters of this diffusion. There is considerable interest, however, in testing the term structure model. Discrete observations from this process may be approximated as realizations from an autoregressive process with variance proportional to level. The resultant parameter estimation problem is a straightforward application of generalized least squares (GLS) techniques. the full maximum likelihood estimation of parameters involves modified Bessel functions and requires excessive programming. We also estimate the CIR model by Generalized Method of Moments (GMM) for comparison purposes. In addition, we examine two factor models for bond price dynamics and estimate a simpler model induced by discrete time approximations. This line of research was pioneered by Brennan and Schwartz (1979,1981). The two factor models may be estimated by maximum likelihood and seemingly unrelated (multivariate) regression (SURE).

"Following the Pied Piper: An Empirical Analysis of Herd Behavior in Equity Returns," by William G. Christie and Roger D. Huang. Working Paper No. 91-69.

This paper empirically assesses the impact of herd behavior on equity returns. The measure we use to capture herd behavior is dispersions, defined as the cross-sectional standard deviation of equity returns. Using this measure, we are unable to detect the presence of herd behavior when the analysis is restricted to periods when herds are most likely to form. When we do not prespecify the conditions under which herds would form, the intertemporal variation in dispersions is predictable using variables suggested by rational asset pricing models. These results alleviate our concerns that irrational herd behavior drives prices away from equilibrium.

"Data Frequency and the Number of Factors in Stock Returns," by Roger D. Huang and Hoje Jo. Working Paper No. 91-70.

An active research topic in Arbitrage Pricing Theory literature is the determination of the number of factors that explains stock returns. This paper examines the null hypothesis that the number of factors is the same for daily, weekly, monthly, and quarterly returns. The empirical results are consistent with the null once daily returns are adjusted for nonsynchronous trading. The evidence also identifies only one or two factors.

"Derivatives: Exchange Traded versus Off-exchange," by Hans R. Stoll. A Financial Markets Research Center Policy Paper. No. 91-72.

"Debate over the Organization of the Stock Market: Competition or Fragmentation?" by Hans R. Stoll. A Financial Markets Research Center Policy Paper. No. 92-01.

"Strategy and Transaction Costs: The Organization of Distribution in the Carbonated Soft Drink Industry," by Timothy J. Muris, David T. Scheffman and Pablo T. Spiller. Working Paper No. 92-02.

This article analyzes the ongoing transformation of the soft drink distribution of Coca-Cola and Pepsi-Cola from systems of independent bottlers to captive bottling subsidiaries. A transaction cost-based theory is developed to explain this structuring. It is postulated that changes in the external environment and the resulting changes in the strategies of Coca-Cola and Pepsi-Cola raised the costs of transacting between them and their independent bottlers. Two types of empirical tests are presented. One exploits the difference in the distribution of Coca-Cola and Pepsi-Cola in the fountain channel. The other consists of statistical analyses of the competitive effects of the move

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towards captive distribution. Both types of tests support the basic hypothesis.

"When the Government Goes After Free Cash Flow: The Undistributed Profits Tax of 1936-37 and Corporate Dividend Policy," by William G. Christie and Vikram Nanda. Working Paper No. 92-04.

In 1936-37, an Undistributed Profits Tax (UPT) was imposed on corporations by the U.S. Congress. This tax provides a unique opportunity to analyze issues related to the dividend clientele hypothesis and agency costs. Consistent with these hypotheses, the evidence indicates that firms with low Q ratio's (higher agency costs) and low payout ratio's (firms whose shares would be held by investors in high tax brackets) were more likely to have paid substantial taxes under this provision. These results are supported through regressions that model the growth in dividends between 1935 and 1936, controlling for other factors such as the growth in earnings and liquidity. These findings are also identified through logit regressions that predict the probability a particular firm will face the highest rates under the UPT.

"Are Dividend Omissions Truly the Cruelest Cut of All?" by William G. Christie. Working Paper No. 92-05.

Signaling and agency cost explanations of dividend policy predict that omissions, which represent the most severe form of reduction, would trigger a larger average decline in equity value relative to reductions of less than 100%. This paper examines this hypothesis by comparing the announcement effects of dividend reductions and omissions. Firm-specific and economy-wide variables are used in a regression context to explain the variation in reduction announcement excess returns. The omission announcement excess returns are then predicted from the functional form of this regression. The results indicate that the excess returns for omissions are significantly smaller in magnitude than would be predicted from the reduction regressions. A partial explanation is offered using the under-investment characteristic of the Miller and Rock (1985) model.

"Principles of Inter-Market Regulation,"by Hans R. Stoll. A Financial Markets Research Center Policy Paper. No. 92-20.

"Statistical Measures of Market Power: Uses and Abuses," by David Scheffman. Working Paper No. 92-28.

The Purpose of this article is to provide a critical discussion of the growing use of statistical techniques to demonstrate the existence or absence of market power. The use of such techniques has been particularly prominent at the Federal Trade Commission (FTC) and Department of Justice (DOJ) in implementing the market power-based approach to market definition laid out in the Department of Justice Merger Guidelines (Merger Guidelines). This approach is increasingly used by plaintiffs in monopolization cases as a means to attempt to establish market power. This article will begin by discussing the use of statistical estimation to delineate markets under the Merger Guidelines, followed by some discussion of statistical estimation of market power in other contexts. The focus of this article is on product markets, although the analysis is easily modified to deal with geographic markets.

"Stock Price Distributions with Stochastic Volatility and Option Pricing: An Alternative Approach," by Clifford A. Ball and Antonio Roma. Working Paper No. 92-31.

A number of stochastic volatility option pricing models have been introduced recently. Numerical pricing methods have been proposed, for example, see Wiggins (1987), though risk neutral or Martingale approaches, which provide analytical representations, are more elegant and usually more efficient. For these latter techniques, the distribution of the average variance of the price process plays a pivotal role. Whenever its moments may be computed, they may be employed to generate power series expansion approximations to the option prices as discussed by Hull and White (1987) for a simple volatility model. Alternatively, the whole moment generating function may be used to generate the security price density by Fourier inversion methods. Stein and Stein (1991) develop this approach. However, they adopt a more plausible but unnecessarily complex model for volatility. We correct some errors in earlier work and introduce a plausible model for stochastic volatility which is mathematically tractable and allows both power series and Fourier inversion approaches to option pricing. This enables a measured assessment of the benefits of the simpler power series approach. We also carefully examine possible biases introduced by the stochastic volatility option pricing models and discuss the qualitative differences between Black-Scholes and stochastic volatility option prices.

1991-92 Reprints

"Acquiring Firm Characteristics and the Medium of Exchange," by Paul K. Chaney (with L.Lavota and K.Philipich), *Quarterly Journal of Business and Economics*, Autumn 1991.

"The Impact of New Product Introductions on Stockholder Wealth and Market Structure," by Paul K. Chaney (with Timothy Devinney and Russell Winer), *Journal of Business*, Vol.64, No.4, October 1991.

"The Effect of Size on the Magnitude of Long-Window Earnings Response Coefficients," by Paul K. Chaney (with Debra Jeter), *Contemporary Accounting Research*, Spring 1992.

"Intertemporal and Cross-Sectional Asset Return Variability," by William G. Christie and Roger D. Huang, *Contemporary Business Issues*, Proceedings of the 1992 Conference of the Academy of Business Administration, 1992.

"Explaining Judicial Behavior, or What's 'Unconstitutional' about the Sentencing Commission?" by Mark A. Cohen, *Journal of Law, Economics and Organization*, Vol.7, No.1, 1991.

"The Antitrust Sentencing Guidelines: Problems of Policy, Interpretation and Application," by Mark A. Cohen and David T. Scheffman, *Criminal Practice and U*, American Bar Association, Section of Antitrust and Business Regulation, No.21, July 1991.

"Major World Equity Markets: Current Structure and Prospects for Change," by Roger D. Huang and Hans R. Stoll, *Monograph Series in Finance and Economics*, Monograph 1991-3.

"Volatility in the Foreign Currency Futures Market," by Roger D. Huang (with Campbell R. Harvey) *Review of Financial Studies*, Vol.4, No.3, 1991.

"Information and Volatility in the FX Markets," by Roger D. Huang (with Campbell Harvey), *Finanzmarkt und Portfolio Management*, Vol.6, 1992.

"Transformed Securities and Alternative Factor Structures," by Roger D. Huang (with Hoje Jo), *Journal of Finance*, Vol.47, March 1992.

"Convertible Debt: Valuation and Conversion in Complex Capital Structures," by Craig M. Lewis, *Journal of Banking and Finance*, Vol.15, No.3, 1991.

"An Explanation for Recapitalization in Corporate Control Contests," by Craig M. Lewis, *Managerial and Decision Economics*, Vol.12, No.6, December 1991.

"The Effect of the 1987 Stock Crash on International Financial Integration," by Ronald W. Masulis (with Yasushi Hamao and Victor Ng), *Japanese Financial Market Research* ed. by W. Bailey, Y. Hamao, and W. Ziemba (North Holland), 1991.

"An Investigation of Market Microstructure Impacts on Event Study Returns," by Ronald W. Masulis (with Ronald Lease and John Page), *Journal of Finance*, Vol.46, September 1991.

"Repurchase Tender Offers and Earnings Information," by Ronald W. Masulis (with Larry Dann and David Mayers), *Journal of Accounting and Economics*, Vol.14, September 1991.

"The Effects of Horizontal Mergers on Competition: The Case of the Northern Securities Company," by Robin Prager, *The Rand Journal of Economics*, Spring 1992.

"Expiration-Day Effects: What Has Changed?" by Hans R. Stoll (with Robert E. Whaley), *Financial Analysts Journal*, January-February 1991.

"Trading On and Off Exchanges," by Hans R. Stoll, *Institutional Investor Derivatives Forum*, November 1991.

"Principles of Trading Market Structure," by Hans R. Stoll, *Journal of Financial Services Research*, Vol.6, 1992.

"Statistical Measures of Market Power: Uses and Abuses," by David Scheffman, *The Cutting Edge of Antitrust: Market Power*, Antitrust Section of the American Bar Association, 1991.

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