financial markets Research Center

OWEN GRADUATE SCHOOL OF MANAGEMENT

VANDERBILT UNIVERSITY

SUMMER 1990

owen AT VANDERBILT

Martin S. Geisel, *dean*

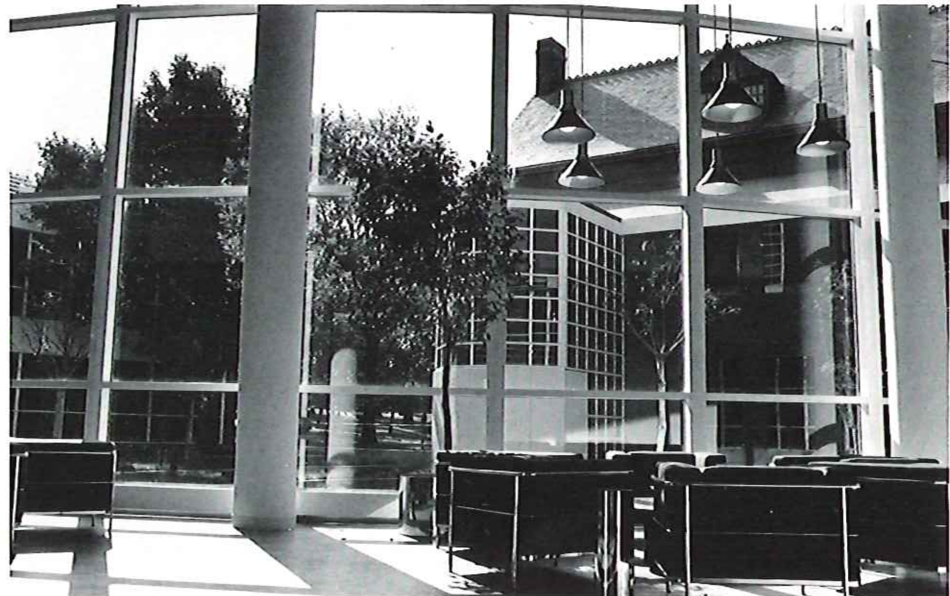
Hans R. Stoll, *director of the Financial Markets Research Center*

J. Dewey Daane, *senior advisor of the Financial Markets Research Center*

From the Dean . . . .

The Financial Markets Research Center and the Owen Graduate School of Management at Vanderbilt University continue to gain momentum and strength. The Center provides the focus for research in finance at the School and serves as a forum for interaction between academia, búsiness, and government on financial market issues and policies. This year's conference on Volatility and Market Structure was an excellent example of the Center's healthy relationship with the financial community.

The finance faculty of the Owen School is unquestionably one of the premier groups of researchers and teachers in the country. This fall the School welcomes Ronald W. Masulis, Valere Blair Potter Professor of Management, who comes to us from SMU in Dallas, and Clifford A. Ball, associate professor of finance and statistics, from the University of Michigan. Their expertise and talent will further enhance the Center's capabilities to produce research which promotes sound public policy and improves business practice. The Financial Markets Research Center embarks on its fourth year this fall and looks forward to an expanded role in addressing the challenges and responsibilities which face the financial community in the years ahead.



From the Director . . . .

Institutionalization, globalization, and automation continue to change U.S. financial markets. New financial instruments, new ways of trading, and new competitors appear daily and pose questions of appropriate business strategy and desirable regulatory policy. The Financial Markets Research Center contributes to a better understanding of developing financial markets by supporting fundamental and applied research. The Center maintains data bases, helps fund summer research projects, and arranges conferences and other means of interaction with the financial services industry.

The Center's research capability has been strengthened greatly by the addition of three new associates. David Scheffman joined the Owen faculty in the fall of 1989 as Justin Potter Professor of American Competitive Enterprise. Scheffman was director of the Bureau of Economics at the Federal Trade Commission and is an expert in industrial organization and regulatory policy. Joining the faculty in the summer of 1990 were Ronald Masulis and Clifford Ball. Masulis has written widely on corporate finance, financial institutions, and financial markets. His recent research includes analyses of the international transmission of volatility, of the new issues market, and of the behavior of bid-ask spreads. Clifford Ball is an expert in option pricing and will teach both statistics and finance.

During the past year, Center research associates have conducted studies in a variety of areas. Examples include: volatility in the foreign-exchange futures markets; volatility and market structure in the stock market; volatility on expiration days; the changing cross-sectional dispersion of equity returns, earnings announcements, and security returns; the pricing of new issues; and bid-ask spreads around new issues. Ph.D. dissertations are being completed on two topics: "Information Asymmetry, Price Changes, Trading Volume, and Bid-Ask Spreads: Two Essays"; and, "Risk Premia in the Forward and Futures Markets: An Empirical Investigation."

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 1989-90 academic year were:

Roger E. Brinner, group vice-president and chief economist, International and Energy Division, DRI/McGraw-Hill

J. Alfred Broaddus Jr., senior vice-president and director of research, Federal Reserve Bank of Richmond

Robert L. Clarke, comptroller of the U.S. Currency

William S. Cochran, CLU, Northwestern Mutual Life

Edward Crutchfield, chairman and chief executive officer, First Union Bancorporation

David Darst, vice-president, International Securities Sales, Goldman, Sachs & Co.; professor, Harvard University

Thomas H. Fitzgerald, investment advisor, T.H. Fitzgerald & Company

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

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

Taylor Henry, vice-president and chief financial officer, Shoneys, Inc.

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

Silas Keehn, president, Federal Reserve Bank of Chicago

Kenneth Leibler, president and chief operating officer, American Stock Exchange

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

David E. Lindsey, deputy director, Division of Monetary Affairs, Board of Governors of the Federal Reserve System

John H. Makin, director, Fiscal Policy Studies American Enterprise Institute

John B. McCoy, chairman and chief executive officer, Banc One Corporation

John F. McGillicuddy, chairman and chief executive officer, Manufacturers Hanover

William Melton, vice-president and senior economist, IDS/American Express, Inc.

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

Cynthia Warrick, senior vice-president, Manufacturers Hanover

Edwin H. Yeo III, counselor to the president, Federal Reserve Bank of New York

John McGillicuddy receiving Owen Finance Association Executive of the Year Award from Eric Noll, president of the Owen School Finance Association.

Finance Student Activities

Owen School Finance Association

Throughout the 1989-90 academic year, the Owen Finance Association continued to expand on its mission of being a bridge between the Owen School and the working finance community. In addition to its annual trip to major financial institutions in New York, the Association made an informative visit to the major financial institutions and exchanges in Chicago. This year marked the establishment of the Owen Finance Association Executive of the Year Award. The first recipient of this award was John F. McGillicuddy, chairman and chief executive officer of Manufacturers Hanover. The Association continued its role in attracting luncheon speakers for the student body and serving as a resource for first-year students looking for summer internships. Finally, the Association continued to work closely with the Owen School faculty, especially by participating and assisting in several conferences and faculty seminars.

Max Adler Student Investment Fund

The Max Adler Student Investment Fund, established by the generous donation of the Adler family, was created to be a student-lead and student-managed fund of money. These monies are invested by the students to learn first-hand the workings of financial markets. The fund currently has a value of about $40,000. Investment decisions and other policy matters are made by a six-member board of directors which oversees the Fund. MASIF offers a unique opportunity for interested students to apply fundamental principles of finance and economics learned in the classroom to a real-world environment.

Goals of the Center

The Financial Markets Research Center at Vanderbilt University fosters scholarly research to improve the understanding of developments in financial markets, financial instruments, and financial institutions. The Center aims to examine these developments from the perspective of participants in financial markets (brokers, exchanges, and financial intermediaries), from the perspective of businesses needing financing, and from the perspective of appropriate regulatory policy. The specific objectives of the Center are:

1. To provide a mechanism for interaction between representatives of the financial community, researchers in financial markets, and the faculty at Vanderbilt.

2. To identify critical research issues in financial markets and to provide a focus for such research.

3. To support research by faculty members and Ph.D. students at Vanderbilt by maintaining data bases and funding research projects.

4. To guide, review, and disseminate research about financial markets.

Conference on Volatility and Market Structure

In April of 1990, the Financial Markets Research Center sponsored a conference on "Volatility and Market Structure" that brought together researchers from academia, industry, and government.

The Thursday morning session focused on research carried out by Center associates. Assistant Professor **Craig Lewis** of Vanderbilt presented a paper on "Stock Market Volatility and the Information Content of Stock Index Options," written with Theodore Day of the University of North Carolina. Their research uses a GARCH framework and examines the extent to which historical volatility and volatility implied from index options are able to predict subsequent market volatility.

Assistant Professor **Paul Laux** of the University of Texas presented a paper on "Asymmetric Information, Trade Sizes, and Dealer Pricing: Theory and Empirical Evidence." The paper is an outgrowth of its author's dissertation completed at Vanderbilt. Laux's study shows that, in some stocks, informed traders optimally follow a randomized trade-size strategy in which the trade-size mix is indistinguishable from that of liquidity traders. For such stocks, one cannot show an effect of trade size on bid-ask spreads. On the other hand, in certain other stocks, it is not optimal for informed traders to disguise themselves in this manner. For these stocks, trade sizes are related to bid-ask spreads. Empirical evidence supports the model.

Jim Cochrane discussing issues facing the securities industry.

Professor **Hans Stoll** of Vanderbilt presented the paper, "Expiration Day Effects: What Has Changed," written with Bob Whaley of Duke University. This study examines the price volatility of individual stocks on stock index futures expiration days during the period 1985 through 1989. Expiration days are compared to non-expiration days, index stocks are compared to non-index stocks, and quarterly expirations are compared to non-quarterly expirations. Stoll and Whaley conclude that "The expiration day controversy is 'much ado about (nearly) nothing.'"

Steve Manaster presenting CFTC views on the jurisdiction question.

Assistant Professor **Bill Christie** of Vanderbilt presented a paper, "The Behavior and Prediction of Dispersion in Equity Returns," written with Roger Huang of Vanderbilt. Their work takes a new approach to analyzing volatility by examining the cross-sectional variability of stock returns through time. The study examines how cross-sectional variability changes as a function of the level of stock prices, the size of firms, and other factors.

The Thursday afternoon session continued the theme of volatility and market structure but included presentations by researchers not affiliated with the Center. **George Sofianos**, senior research economist of the New York Stock Exchange, presented the results of a study, "Program Trading and Intraday Volatility," carried out with Larry Harris of the University of Southern California and the New York Stock Exchange and James Shapiro of the NYSE. The study analyzes the minute-by-minute behavior of stock prices and futures prices around the time of program trades. The researchers conclude that stock price changes tend to lead program trades just slightly. This finding suggests that program trading is as much the result of price changes as the cause.

Ken Lehn, chief economist of the Securities and Exchange Commission, analyzed methods for limiting unjustified stock price volatility. First, he noted that reductions in the demand for liquidity could reduce volatility by limiting the need to sell assets to acquire cash. For example, cross margining, which reduces the need for cash, could reduce the demand for liquidity. Second, he noted that the supply of liquidity could be increased by measures such as basket trading and increased market-making capacity.

Most of Lehn's analysis focused on a third solution, the imposition of circuit breakers. Circuit breakers limit credit risk and facilitate price discovery by providing a "time out" during which trading imbalances could be publicized and new prices properly discovered. He noted, however, that circuit breakers also have some drawbacks. First, the market loses liquidity while the circuit breaker is in effect. Second, the circuit breaker may have a "gravitational effect" in which prices move toward the circuit breaker and cause a trading halt when one might

Conference . . .

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not otherwise arise.

Vanderbilt Associate Professor **Roger Huang** presented a paper on "Volatility in the Foreign Exchange Market During Trading and Non-Trading Intervals" (written jointly with Campbell Harvey of Duke University). The paper shows that volatility during trading intervals does not exceed volatility during non-trading periods as much as is the case for U.S. stocks. This result makes sense because U.S. stocks are traded actively only when U.S. markets are open, whereas currency trading occurs somewhere in the world even if the U.S. market for a currency is closed.

The formal proceedings on Thursday ended with a public panel discussion on "Regulatory Issues in the Financial Markets." Panel members were: **Kenneth Lehn,** chief economist of the Securities and Exchange Commission; **James L. Cochrane,** senior vice-president and chief economist of the New York Stock Exchange; **Steven Manaster,** chief economist of the Commodity Futures Trading Commission; and **T.E. "Rick" Kilcollin,** executive vice-president and chief operating officer of the Chicago Mercantile Exchange. Much of the panel's discussion focused on the jurisdictional dispute between the SEC and CFTC. Lehn discussed the SEC's concerns for the present regulatory system. First, he noted that the "exclusivity clause" in the Commodity Futures Trading Act limits competition because it gives the CFTC exclusive jurisdiction over products that have any futurity in them. As a result, the recently introduced index participation certificates of the Philadelphia Stock Exchange and the American Stock Exchange have been disallowed by court order. One resolution to the jurisdiction problem would be the elimination of the exclusivity clause. Second, Lehn noted that market stability may require setting uniform margins

Rick Kilcollin explaining futures margins

across different markets. Third, the SEC's position is that the enforcement of laws against front-running and other manipulative practices requires one regulator of all the markets. And fourth, the SEC holds that clearance and settlement systems must be coordinated across the markets.

Manaster and Kilcollin responded to some of Lehn's arguments. Manaster noted that the CFTC is willing to give up exclusivity over financial instruments that have "partial" futurity. Both Manaster and Kilcollin agreed that "harmonized" regulation of margins was not necessary and could not be easily defined. Kilcollin maintained that stock-index futures margins have not been too low and have provided protection for brokers and customers. He noted that the futures industry has had fewer failures of firms than has the stock industry. Moreover, both Manaster and Kilcollin cited the lack of evidence that high margins reduce volatility. Both argued that the enforcement of rules can continue to be carried out by cooperation between the SEC and CFTC without merging the two agencies.

Jim Cochrane presented ten issues facing the securities markets today which must be dealt with. These were the following: (1) **Abusive trading practices.** Unfair practices, such as front-running, are a great concern to the public and to NYSE's blue ribbon panel. (2) **Broker integrity.** The public is concerned that the stock market game is rigged. (3) **Off-hours trading.** The main effect of off-hours trading is not the extension of the trading day but rather the modernization and automation of trading procedures used in the off hours, for example, on GLOBEX. (4) **Rule 144a.** The rule allows sophisticated investors, such as major institutions, to buy and sell unregistered securities, including securities of foreign issuers. The rule creates a market that is separate from existing securities markets and, thus, generates a segmentation that is new to U.S. financial markets. (5) **Payment for order flow.** Certain off-exchange dealers agree to pay brokers rebates in return for order flow. (6) **Soft dollars.** It is estimated that 40 percent of the order flow is based on soft dollars. Soft dollars are the portion of the commission which is returned to the customer in the form of research services. (7) **Low broker profitability in equity securities.** The low profitability, particularly in London and Japan, may reduce the liquidity of markets. (8) **Corporate governance.** What should be the role of pension funds and other institutional investors in the management of corporations? (9) **Surge capacity.** How much extra capacity should the New York Stock Exchange install, and who should pay for it? (10) **Capital adequacy.** What level of capital should be supplied to markets, and who should supply it?

Ken Lehn answering questions about circuit breakers

Thursday concluded with a reception and dinner and remarks from **Duke Chapman,** chairman of the Chicago Board Options Exchange. Chapman, who had flown in from Japan, spoke on "Securities Markets: Now and Then."

The Friday morning session consisted of three panels. The first panel on equity

markets was chaired by **Jimmy Bradford**, senior partner of J.C. Bradford & Company. This panel covered three main topics. **Hans Stoll** summarized the results of his paper with Bob Whaley, "Market Structure and Volatility." Their study analyzes the volatility of prices around the opening on the New York Stock Exchange. **Jim Cochrane** discussed the researchable issues in the area of equities. **Gene Finn**, chief economist of the NASD, discussed automation in the NASD market. He described PORTAL, the new automated trading system for "144a securities," and the automated bulletin board for trading non-NASDAQ stocks.

A panel on options markets, chaired by **Duke Chapman**, discussed the recent SEC rule change that permits the multiple trading of options on different markets. As part of that rule change the SEC asked that a linkage among the options markets be constructed. The panel focused on the desirability of such a linkage and the form it should take. **Harold Mulherin**, economist at the Securities and Exchange Commission, viewed this issue from the perspective of property rights. He suggested that exchanges might be given property rights to trade certain securities. Such property rights could be sold or traded with other exchanges. In this system, the individual exchanges would determine the nature of the link. The danger of a mandated link is that exchanges would not have the incentive to create innovations and improvements in market structure, because the cost of such improvements could not be captured if exchanges were linked to other exchanges. **Joe Levin**, vice president for Research and Planning at the Chicago Board Options Exchange, expressed the Exchange's concern about market fragmentation that may result from multiple trading of options and from other rules affecting securities markets. He noted that ITS, the intermarket trading system in the stock market, does not work very well. Finding a superior, yet cost effective, system for linking options markets was a critical problem in Levin's view. **Blair Hull** of Hull Trading discussed some of the difficulties in implementing fully automated trading systems, but argued automation must, and will, come.

Finally, the panel on futures consisted of three papers examining the dual trading question. **Steve Manaster** presented the CFTC's study of dual trading. CFTC concluded that dual trading is not necessary to provide liquidity in futures markets. **Todd Petzel**, chief economist of the Chicago Mercantile Exchange, and Professor **Robert E. Whaley** of Duke University presented separate analyses of the top-step rule of the Chicago Mercantile Exchange. The top-step rule prohibits dual trading for individuals standing on the top-step of the S&P 500 pit. The rule was intended to reduce sharply the amount of dual trading in that pit. Petzel argued that that rule had little effect on the liquidity in the market, whereas Whaley argued the rule adversely affected liquidity. Petzel concluded that restrictions on dual trading in liquid markets would have no adverse effect, but Whaley argued that such restrictions are undesirable.

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 1989-90 the following researchers presented work on finance topics:

Clifford Ball, University of Michigan: "A Branching Model for Bond Price Dynamics and Contingent Claim Pricing"

Ernst Berndt, MIT: "Economic Capacity Utilization and Productivity Measurement for Multiproduct Firms with Multiple Quasi-Fixed Inputs"

David Brown, University of Florida: "The Mode of Acquisition in Takeovers: Taxes and Asymmetric Information"

Paul Chaney and Craig Lewis, Vanderbilt University: "Accounting Income Shifting and Signalling"

William Christie, Vanderbilt University: "The Critical Role of Zero-Dividend Firms in the Empirical Relation between Expected Returns and Anticipated Dividend Yields"

Ron Giammarino, University of British Columbia: "Asymmetric Information and the Medium of Exchange in Takeovers: Theory and Tests"

Campbell Harvey, Duke University: "The Variations of Economic Risk Premiums"

Roger Huang, Vanderbilt University: "The Behavior and Prediction of Dispersion in Equity Returns"

Pete Kyle, University of California, Berkeley: "Noise Trading and Takeovers"

Wesley Magat, Duke University: "Pricing Environmental Health Risks: Survey Aspects of Risk-Risk and Risk-Dollar Trade-Offs for Chronic Bronchitis"

Catherine Mann, Federal Reserve Board of Governors: "Determinants of Japanese Direct Investment in U.S. Manufacturing Industries"

Eduardo Schwartz, UCLA: "Prepayment, Default, and the Valuation of Mortgage Pass-Through Securities"

William Schwert, University of Rochester: "Alternative Models for Conditional Stock Volatility"

Theodore Sternberg, Vanderbilt University: "IPO Signaling: New Approaches and Tests"

Anjan Thakor, Indiana University: "Information and Investment: Shareholder Preferences for 'Early Winners' vs. 'Late Bloomers'"

Andy Turner, Frank Russell Company: "Investment Management of Pension Funds"

Robert Vishny, University of Chicago: "The Aftermath of Hostile Takeovers"

Current Activities
of Center Affiliates

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.

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

Conducts research on the economic consequences and capital-markets effects of accounting information. He has published works on deferred taxes, debt defeasance, and the incentive effects of government loan guarantees. Current research topics: income smoothing, variance investigation, the price effects of new product introductions, and earnings association coefficients.

Chaney presented papers at Duke University and the University of Hamburg and at meetings of the Southeast and Midwest American Accounting Association during the past year.

SUNG K. CHOI, assistant professor (accounting). M.P.A. (Texas, 1978), Ph.D. (Iowa, 1985), C.P.A. (Korea).

Conducts research on the capital-market impacts of the production and

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dissemination of accounting information. Current research topics: differential earnings response coefficient of pooling versus purchase methods of business combination, differential information transfer of small versus large firms, and capital market impacts of audit qualifications.

During the past year, Choi presented his paper on "Agency Conflicts and Target's Abnormal Returns" at the University of Iowa.

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

Joined the Owen faculty in 1989 after completing his Ph.D. at the University of Chicago. Prior to his doctoral studies, he worked as a financial analyst at Hewlett Packard (Canada) Limited and the Ford Motor Company of Canada. Current research topics: the role of dividend expectations in setting security prices, the wealth effects of dividend omissions relative to reductions, and the relation between expected returns and equity dispersions (joint work with Roger Huang).

During the previous year, Christie presented his research work on dividend yields and expected returns at ten universities, including Columbia, Emory, Queen's, SMU, UBC, UNC, USC, Texas (at Austin), Iowa, Ohio State, and Vanderbilt.

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

Conducts research on government regulation, law and economics, white-collar and corporate crime, and the economics of information. 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*.

Cohen recently served as a consultant to the U.S. Sentencing Commission to analyze current sentencing practice and drafting proposed guidelines for the sentencing of firms convicted of corporate crime. Two articles by Cohen on corporate crime and punishment were published in the *American Criminal Law Review*. Cohen also was appointed to a three-year term on the American Statistical Association's Committee on Law and Justice Statistics and was commissioned by the National Research Council of the National Academy of Sciences to conduct a study on the costs and consequences of crime in the U.S.

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 chairman of the Money Market Committee and vice-chairman of the Trust Board of the Sovran Bank/Central South in Nashville. He is also a public director of the National Futures Association.

WILLIAM W. DAMON, professor (economics and finance); chairman of the Department of Economics, College of Arts and Sciences. M.B.A., Ph.D. (Cornell, 1970).

Conducts research on corporate finance and operations research. Current research topic: modeling the financing needs of small firms.

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

Current research topics include volatility in currency futures, stock return dispersions, tests of intertemporal asset pricing, term structure of interest rates, and foreign exchange speculation.

Published papers by Huang include works on the relations between financial assets and purchasing power, the intertemporal pricing of bonds and foreign exchange rates, financial market reactions to budget deficits, excess volatility in foreign exchange markets, and price volatility during hyperinflations.

During the past year, Huang presented papers at the European Finance Association meeting in Stockholm, at the University of Florida, and at the Western Finance Association meeting in Santa Barbara.

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

Conducts research on the optimal corporate financial structure, the equilibrium pricing of financial claims under taxation, and stock-index futures and options. Current research topics: implied volatilities in stock-index option prices and their ability to explain the time-series behavior of market volatility, the pricing of convertible debt in complex capital structures, and the size and allocation of merger gains implied in the prices of stock options.

Lewis participated in the conference of the American Finance Association in New York and a conference on "Issues in Macro and Financial Economics" at the Federal Reserve Bank of Atlanta. In January, he presented a paper at the University of Utah. In April, he presented a paper at the "Statistical Models for Financial Volatility" conference of the University of California, San Diego.

RONALD W. MASULIS, The Valere Blair Potter Professor of Manage-

Funding

The Center is funded by members of the Center and by outside research grants. Funds are used to cover the direct operating costs of the Center and to support the Center's research projects. Members 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 that serve on the Advisory Board are: Bankers Trust Company; J. C. Bradford & Company; The Chicago Mercantile Exchange; The Chicago Board Options Exchange; Hull Trading Company; The National Association of Securities Dealers, Inc., The New York Stock Exchange, Inc.; Refco Group, Ltd.; and Timber Hill Incorporated.

ment. 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, adjunct professor of economics, and executive director of the Center for the Study of Financial Institutions and Markets at Southern Methodist University. He also taught for many years in the Graduate School of Management at UCLA and worked as a financial economist with several U.S. government agencies, including 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 on the executive committee of the Western Finance Association. He is associate editor of the *Journal of Financial and Quantitative Analysis* and the *Journal of Financial Intermediation*. He is a former associate editor of the *Journal of Financial Economics*, the *Journal of Finance*, and the *Review of Financial Studies*. He also has served as a referee for numerous other journals and is a grant reviewer for the National Science Foundation and the Research Council of Canada.

KNUT ANTON MORK, associate professor (economics). M.A. (Norwegian School of Economics and Business Administration, 1974), Ph.D. (M.I.T., 1977).

Conducts research on household behavior regarding consumption and saving, the quality of preliminary economic data, the macroeconomic effects of oil-price increases and decreases, and other topics in macroeconomics and energy economics. He recently finished the manuscript for his new textbook in macroeconomics for management students.

Last year, Mork presented a paper at a macroeconomics research conference in Cambridge, Massachusetts, sponsored by the National Bureau of Economic Research. Later, he presented views on recent trends in the U.S. economy to representatives of the Norwegian Shipowners Association. He made a week-long trip to Brussels and Frankfurt with a group of students taking a special-topics course on the European Community. While visiting the German Bundesbank, this group managed to get an inside perspective on the negotiations for the monetary union between East and West Germany. The next step in Mork's international endeavors will take him away from the Owen School as he has accepted a senior research position with the Centre for Applied Research in Oslo.

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. She presented a research paper entitled "The Effects of Horizontal Mergers on Competition: The Case of the Northern Securities Company" to the Western Economic Association in San Diego, California, in June of 1990.

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

Prior to joining the Owen School faculty in 1989, Scheffman served as director of the Bureau of Economics, Federal Trade Commission. He also taught at MIT, Boston College, and the University of Western Ontario. His teaching areas include economics, business policy and strategy, business and government.

During the past year, Scheffman presented papers at the American Bar Association meetings in Hawaii (with Mark Cohen), at the Industrial Organization Society meetings in Atlanta, at the Antitrust Section meetings of the American Bar Association in Washington, and at the Law and Economics seminar program at Harvard. Research underway includes a study that examines the reasons Pepsi and Coke have been acquiring independent bottlers and documents the effects of those acquisitions on the efficiency and competitiveness of the carbonated soft-drink industry.

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

Conducts research on initial public offerings, corporation finance, and bankruptcy reorganization. Sternberg presented a paper at the University of Illinois that focuses on the high returns on initial public offerings and examines the validity of the so-called "winner's curse" theory for these returns. One of his other works in progress concerns the effects of the FDIC's policy for auctioning off failed banks and thrift institutions and asks: What light can the economic theory of auctions cast on this policy, and how good are the prices the FDIC is obtaining?

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).

Conducts research on the structure of securities markets and the pricing of options and futures. Current research topics: bid-ask spreads, structure of financial markets, and dynamics of stock-index futures prices.

Stoll was elected a director of the American Finance Association in December, 1989. He also serves as a director of the Western Finance Association and the Financial Management Association. During the past year, Stoll has been serving on the Advisory Panel for the Office of Technology Assessment of the U.S. Congress for a project on "Securities Markets and Information Technology."

Stoll's paper with Robert E. Whaley, "Program Trading and Individual Stock Returns: Ingredients of the Triple Witching Brew," was published in the *Journal of Business* in January, 1990. In March, he presented a paper (with Whaley) on "Expiration Day Effects: What Has Changed?" at the 10th American Stock Exchange Colloquium in New York City. During the past year, Stoll spoke on the subject of program trading and stock market volatility to the

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Rotary Club, the Nashville Forum, the Institutional Investor Conference in Los Angeles, and other organizations. He also was interviewed frequently by the press in regard to the program trading controversy.

In March, Stoll spoke on the principles of trading market structure at the MATIF Conference on "Options and Futures 1990" in Paris. In June, he talked on the same subject again in Paris at a conference on "European Equity Markets: Computerization and Integration," co-sponsored by the New York Stock Exchange and INSEAD.

Last spring he presented another Stoll-Whaley paper on "Market Structure and Volatility" at Cornell University, Ohio State, and the Federal Reserve Board. That paper has been published in the *Review of Financial Studies*. In May, he spoke at a conference on "International Competitiveness in Financial Services" in Washington, D.C.

In late June, Stoll chaired a session on Market Microstructure at the Western Finance Association meetings in Santa Barbara. During July, he was a visiting professor at the University of British Columbia.

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. Current research topic: the title insurance industry.

Faculty Research Papers

Working papers completed since January 1989 are listed below. Individual copies may be obtained by writing Mrs. Pat Scott, Owen Graduate School of Management, Vanderbilt University, Nashville, TN 37203.

1989-90 Working Papers

"Debt, Leasing, and Taxes Under Uncertainty," by Craig M. Lewis and James S. Schallheim. Working Paper No. 89-01.

Lease valuation models often begin with the assumption that leases and debt are substitutes. Within a model of optimal capital structure, this paper demonstrates the proposition that debt and leases can be substitutes or complements. Thus, the leasing decision becomes part of the optimal capital structure decision for firms with potentially transferrable nondebt tax shields. Finally, we have illustrated the proposition with numerical simulations.

"Macroeconomic Responses to Oil Price Increases and Decreases in Six OECD Countries," by Knut Anton Mork and Hans Terje Mysen. Working Paper No. 89-02.

Correlations between oil-price movements and GNP/GDP fluctuations are investigated for the United States, Canada, West Germany, Japan, the United Kingdom, and Norway. The GNP/GDP responses to price increases and decreases are allowed to be asymmetric. Univariate correlations as well as partial correlations within a reduced-form macroeconomic model are considered. The clearest correlations are found for the United States, which also shows evidence of asymmetric responses.

"A Role for Recapitalization in Corporate Control Contests," by Craig M. Lewis. Working Paper No. 89-04.

The purpose of this paper is to examine the role that corporate financial policy plays in determining the equilibrium allocation of takeover gains in corporate control contests. The model provides a theoretical justification for capital structure changes prior to the completion of a takeover, and shows how recapitalization can be used as a strategic device to alter the effective price a bidding firm must pay to acquire a target firm. The positive role that emerges for recapitalization can be viewed as a rationale for "defensive" takeover strategies of this type.

"Accounting Income Shifting and Signalling," by Paul K. Chaney and Craig M. Lewis. Working Paper No. 89-10.

The objective of this paper is to rationalize the existence of income shifting policies by managers with asymmetric information. In a world with two firms, a high-value and a low-value firm, the high-value firm has incentives to smooth income to reduce the variability of reported income, and the low-value firm has an incentive to increase the variability of reported earnings. Because firm type is unobservable and market prices are determined in a pooling equilibrium, the manager of the high-value firm chooses to smooth income to signal higher mean earnings, thereby increasing his investors' aggregate share of market value. On the other hand, the manager of the low-value firm attempts to increase the probability that the low-value firm is mistaken for the high-value firm by increasing the noise in the earnings signal (reverse-smoothing). Thus, in our model, the demand for income shifting policies is endogenous. In addition, the resulting equilibrium provides a nondissipative signal that can achieve a perfect information solution.

"An Empirical Investigation of Factors Affecting the Earning Association Coefficient," by Paul K. Chaney and Debra C. Jeter. Working Paper No. 89-12.

This paper examines firm-specific characteristics which influence the association between unexpected earnings and security returns. Cross-sectional variation in the coefficient which maps unexpected earnings into security returns, measured over an annual (or longer) window, is explored via the two techniques of subset analysis and indicator variable analysis. Those factors found to influence the association include firm size, leverage, and level of profitability. Specifically, the evidence reveals that the association between reported earnings and security returns is

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stronger for large firms, firms with relatively high levels of profitability, and firms with low debt-to-equity ratios. No evidence is found to support a systematic effect from risk or earnings volatility. In addition, the findings are contrasted with evidence from other studies which focus on a short event window around the earnings announcement date.

"Stock Market Structure and Volatility," by Hans R. Stoll and Robert E. Whaley. Working Paper No. 89-14.

The procedure for opening stocks on the New York Stock Exchange appears to affect price volatility. An analytical framework for assessing the magnitude of the structurally induced volatility is presented. For NYSE common stocks during the period 1982-1986, the ratio of the variance of open-to-open returns to close-to-close returns is shown to be consistently greater than one. The greater volatility at the open is not attributable to the way in which public information is released but does appear to be attributable to private information revealed in trading and to temporary price deviations induced by the specialist and other traders. The implied cost of immediacy at the open is significantly higher than at the close. Other empirical evidence documents the volume of trading at the open, the time delays between the exchange opening and the first transaction in a stock, the difference in daytime volatility versus overnight volatility, and the extent to which volatility is related to trading volume.

"The Effects of Horizontal Mergers on Competition: The Case of the Northern Securities Company," by Robin A. Prager. Working Paper No. 89-17.

Several recent papers have studied the competitive effects of horizontal mergers by examining rival firms' stock price reactions to the merger announcement and subsequent antitrust challenge. These papers have consistently failed to find any evidence of anticompetitive effects. This paper considers two alternative explanations for the previous findings and sheds some new light on the issue by presenting a case study of the merger which resulted in the formation of the Northern Securities Company in 1901.

"Margins on Stock Index Futures Contracts," by Hans Stoll. Working Paper No. 89-21.

In the absence of the stock market crash of 1987, detailed federal margin setting would undoubtedly have been dismantled by now on the basis of the Fed's 1984 study and the predominant research evidence; but the crash revived interest in "doing something." Volatility such as that experienced in October of 1987 will not be altered by regulating initial margin requirements. The fact is that margins in futures markets are not too low; they are set at prudent levels. Detailed margin setting by government agencies is not needed since the incentive of exchanges and individual brokers is to establish prudent margins that protect against default and safeguard the financial system. Federal margin setting is not needed to provide consistency of margins and would be unlikely to achieve it. Consistency of margins can be achieved naturally by the desire of brokers to be protected against different levels of risk, different market environments, and different customer characteristics.

"Inter and Intraday Volatility in the Foreign Currency Futures Market," by Campbell R. Harvey and Roger D. Huang. Working Paper No. 89-26.

Recent studies have uncovered several empirical regularities in the returns, volumes, and variances of common stocks. In this study a new database of transaction prices for foreign currency futures is used to document the behavior of exchange trading versus non-exchange trading and the volatilities of intraday and interday returns. Hourly variances during exchange trading periods are 6.5 times larger than the hourly variances over the weekend. This sharply contrasts with the factor of 71.8 reported by French and Roll (1986) for common stock. The evidence also documents inverse, U-shaped configurations for intraday volatility and U-shaped patterns for interday volatility. These empirical results are broadly consistent with the predictions of the new theories of market micro-structure.

"External Reporting and Capital Asset Prices," by Sung K. Choi and Jerry Salamon. Working Paper No. 89-27.

This paper presents a formal analysis of the role of external reporting in the context of a capital-asset pricing model. The analysis (1) provides a theoretical basis for understanding security price changes coincident with changes in accounting methods, even if no coincident changes occur in the firms' production/investment decisions; (2) yields testable predictions regarding why the relation between unexpected price changes and unexpected earnings differs across firms and/or over time; (3) explains why one firm's disclosure affects the prices of other nondisclosing firms; and (4) extends previous theoretical work on the anticipatory effects of financial disclosure in a multi-period, capital-asset pricing model.

"Agency Conflicts and Target Abnormal Returns: An Empirical Test," by Sung K. Choi, Joshua Livnat, and Paul Zarowin. Working Paper No. 89-28.

This study examines empirically the agency-theoretic prediction that, other things being equal, the more intensive the agency conflicts inherent in firms that are targets of takeovers, the higher the increases in their share prices caused by takeover announcements. Following the theory and evidence of managerial economics, the study measures the intensity of the agency conflicts by classifying the target firms into two groups; those in which managers have a substantial control (manager-controlled firms), and those in which managers do not have a substantial control (owner-controlled firms). The results reveal that targets' abnormal returns around takeover announcements are significantly higher for manager-controlled firms than for owner-controlled firms. These results are obtained even after controlling for other factors that may influence targets' abnormal returns around takeover announcements, such as firm size, the form of acquisition (tender offer versus merger), the method of payment (cash versus stock), and the amount of acquisition information available prior to the public announcements of takeovers.

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Research . . .

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"Dividend Yield and Expected Returns: The Zero-Dividend Puzzle," by William G. Christie. Working Paper No. 90-03.

Previous research on the relation between dividend and equity returns documents a U-shaped pattern arising from the positive CAPM-adjusted excess return of zero-dividend firms. In contrast, this paper reports that zero-dividend firms earn an average excess return of -0.41% per month relative to firms of similar size. This figure represents a natural extension of the linear pattern observed across firms with positive dividend yields. Despite the apparent conformity of these results to the predictions of after-tax asset pricing models, the negative size-adjusted excess returns cannot be driven solely by tax effects. These excess returns, which are concentrated only in the initial zero-dividend years and approach -1% per month, are attributed to possible dividend expectation effects rather than taxes.

"Equity Return Dispersions: Their Behavior and Relation to Business Conditions," by William G. Christie and Roger D. Huang. Working Paper No. 90-04.

Asset pricing models rely on the existence of common fluctuations among asset returns. This paper characterizes the degree covariation in equity returns by examining the monthly cross-sectional standard deviations of NYSE common stock returns (dispersions). Dispersions are found to be higher during economic contractions (especially during the Great Depression), move asymmetrically with large positive and negative market fluctuations, and vary directly with firm size. Stock dispersions also respond strongly to changes in business conditions with R-squares as high as 50 percent. These regressions indicate that stock dispersions are expected to be higher during poor economic conditions.

"Stock Market Volatility and the Information Content of Stock Index Options," by Theodore E. Day and Craig M. Lewis. Working Paper No. 90-09.

"Expiration-Day Effects: What Has Changed?" by Hans R. Stoll and Robert E. Whaley. Working Paper No. 90-11.

In June of 1987, the Chicago Mercantile Exchange, the New York Stock Exchange, and the New York Futures Exchange changed the settlement of their futures and option contracts on the S&P 500 and NYSE indexes from the close of trading to the open in an attempt to mitigate concern about occasional abnormal stock price movements in the "triple-witching hour." The futures and option contracts on the Major Market, S&P 100, and Value Line indexes continue to settle at the close. Using transaction-by-transaction price and volume data for individual NYSE stocks, this study analyzes the volatility and volume effects on quarterly and monthly (non-quarterly) expirations before and after June 1987. Comparisons are made to non-expiration days and to non-index stocks.

"Toward an Economic Theory of Judicial Discretion: The Case of Sentencing Criminal Antitrust Offenders," by Mark A. Cohen. Working Paper No. 90-20.

Judges have traditionally been viewed as being independent of the political Process. However, economic theory tells us that as rational expected utility maximizers, judges might care about personal goals, such as their prospects for promotion to a higher court. Although judges have had virtually complete discretion in deciding what sentences to impose, they are constrained by both political and legal realities. In particular, judges are constrained by a criminal justice system in which prosecutors and potential violators have considerable influence over the number and type of cases brought before the court. They are also constrained by the promotion process for filling new or vacant seats on higher courts. An examination of all federal antitrust offenders from 1955 to 1980 finds that promotion potential explains a significant portion of the variance in sentences. This finding suggests that, although judges do have significant discretion in their sentencing decisions, they also respond to incentives.

"An Empirical Analysis of Deferred Taxes by Industry: Magnitude, Growth, Variability, and Stock Market Effects," by Paul K. Chaney and Debra C. Jeter. Working Paper No. 90-21.

We demonstrate that deferred taxes differ by industry in their relative magnitude on the balance sheet, their growth over the years 1969-1985, and their variability over this time period. In addition, we show that the association between the deferred tax component of earnings and security returns is stronger for firms whose deferred tax items are less "predictably recurring" and for firms whose growth in deferred taxes on the balance sheet has been slower. These findings are consistent with a view that the market places little confidence in the deferred taxes which appear unlikely to "reverse out" in the foreseeable future and are thus unlikely to directly affect future cash flows.

For financial analysts and other groups using and analyzing financial statements, the results suggest that a portion of the deferred tax liability reported on the balance sheet might be better treated as equity, while a portion of the deferred tax expense included in net income should, perhaps, be disregarded (or added back) in computing profitability ratios. Our results lend some support for changing current reporting practices from comprehensive tax allocation (reporting only deferred items expected to reverse in the near future). Consequently, we believe that the relative merits of partial versus comprehensive tax allocation merit further consideration.

"The Effect of Deferred Taxes on Security Prices," by Paul K. Chaney and Debra C. Jeter. Working Paper No. 90-22.

The essential issues being addressed in this paper are: does the deferred tax component of earnings provide incremental information to shareholders beyond that which would be available if net income were computed without the deferred tax component; and if so, why? Two theories of deferred taxes are examined: a liability argument and a

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quality of earnings argument. The results suggest that the market is gleaning information about the quality of reported earnings, as evidenced in the magnitude of the earnings response coefficient, from the deferred tax component. In addition, some information may be obtained from that component about future tax payments.

"The Impact of the Undistributed Profits Tax of 1936-38 on the Initiation and Resumption of Cash Dividends," by William G. Christie. Working Paper No. 90-25.

"An Investigation of Market Microstructure Impacts on Event Study Returns," by Ronald C. Lease, Ronald W. Masulis, and John R. Page. Working Paper No. 90-27.

We investigate the importance of bid-ask spread induced biases on event date returns as exemplified by seasoned equity offerings by NYSE listed firms. We document significant negative return biases on the offering day which explain a large portion of the negative event date return documented in the literature. Buy/sell order flow imbalance is large around the offering and induces a relatively large spread bias. If buy/sell order imbalances are suspected, the researcher can use returns calculated from the midpoint of the closing bid and ask quotes, instead of returns calculated from closing transaction prices, to avoid this return bias.

"Speculation, Arbitrage, and the Message in Forward Exchange Rates," by Roger D. Huang. Working Paper No. 90-28.

Forward Exchange rate premiums frequently predict the opposite direction of subsequent spot exchange rate changes. This behavior is often attributed to time-varying risk premiums. This paper demonstrates that the evidence also can be the result of interest rate arbitrage. In addition, forward maturity spreads are shown to project the reverse of subsequent shorter-maturity forward exchange rate changes. However, forward maturity spreads correctly forecast the direction of future forward premiums. All the evidence is consistent with the joint presence of speculation and arbitrage.

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