Owen @ Vanderbilt

FINANCIAL MARKETS

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FINANCIAL MARKETS RESEARCH CENTER • 2000

Conference on

Financial Markets, Information Technology and Electronic Commerce

The Financial Markets Research Center conference, held on April 13th and 14th, focused on the theme, "Financial Markets, Information Technology and Electronic Commerce." In his introductory remarks, Hans Stoll, director of the FMRC, identified a few specific questions that reflect the reshaping of financial markets in the wake of new technology: How will on-line trading by retail investors affect the markets? What will be the future structure of exchanges and trading centers? Will floor trading survive in competition with electronic markets? How should regulators deal with market fragmentation? What is the appropriate organizational structure of exchanges to adapt to new technology? Will self regulation be effective in exchanges that are for-profit corporations, rather than mutual organizations?

The conference was sponsored by the Financial Markets Research Center, and by a generous grant from the New York Stock Exchange.

Tom Ho, President of Thomas Ho Company, chaired the first session, "The Online Environment." The first speaker, **Tom Novak**, Associate Professor of Marketing at the Owen School, discussed his research (with Donna Hoffman and Marcos Peralta) on the subject of building consumer trust in on-line environments. Novak stressed that customers are willing to buy over the internet only if they trust the seller's technology and integrity. The customer must be confident that the transaction is secure, and that the seller will not give or sell information about the customer to other businesses. **Peter Wysocki**, Assistant Professor of Accounting at the University of Michigan, discussed his study of "Cheap Talk on the Web." He finds that stock message board activity is consistent with both positive investor behavior, such as searching for and interpreting information, as well as with problematic behavior, such as hyping stocks.

SEC Commissioner Laura Unger discusses issues raised by on-line trading.

Jack Lavery, Global Macro Consultant, Merrill Lynch, chair of the second session, "Online Trading," commented on the importance of technology in the current business expansion. The first speaker of the session, **Dana Rudolph**, Vice-President, Merrill Lynch, described Merrill's on-line trading strategy and the changing role of the financial advisor. **Terry Odean**, Assistant Professor of Finance at the University of California at Davis presented the results of a study (with Brad Barber) of full-service brokerage customers who changed to on-line accounts. Investors that switched to online accounts traded more frequently and suffered deteriorating performance. Possible explanations for this result include: overconfidence; the ease of placing an order, which eliminates a friction to hasty action; and incomplete awareness of all transaction costs.

After a lunch break, the group reconvened to hear **Laura Unger**, Commissioner of the Securities and

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FROM THE DIRECTOR

The FMRC continues its work in supporting financial markets research and in providing a forum for interaction among academic scholars, business leaders, and regulators of financial markets. This year's conference, "Financial Markets, Information Technology and Electronic Commerce," described elsewhere in this newsletter, attracted a broad range of experts to discuss the uses of technology in financial markets and its impact on business practice and regulatory policy. Faculty from Owen's e-commerce and finance areas participated in the conference along with Center members, other academics, regulators, and other business leaders.

Hans R. Stoll

Faculty affiliated with the Center continue their research on a wide range of issues. Market microstructure continues as a focus of research. Other areas of research include earnings management, analysts earnings forecasts, risk management and derivatives, IPO markets, measurement of economic value added, and other topics.

The Center supports research by maintaining data bases and providing programming support. Research Associate Christoph Schenzler, who heads this effort, has designed and implemented web access to standard data bases such as Compustat and CRSP, and he has created a summary market microstructure data set from the TAQ data. More information on these data is available on the Center web site, http://mba.vanderbilt.edu/fmrc/. At present, the web interface is restricted to Owen faculty and students, but the Center is interested in cooperating with other universities in making the data interface more broadly available.

Center faculty will undergo some important transitions. Roger Huang, Associate Director of the Center, is leaving to become Kenneth R. Meyer Professor of Global Investment Management and finance department chair at Notre Dame's business school. We thank Roger for his many contributions to the Center and the Owen School. Tarun Chordia is leaving to take a position at Emory University. Joining the center faculty is Anchada Charoenrook. She has completed her PhD at the University of Michigan on the topic of the role of capital structure in asset pricing. Also affiliated with the Center for the coming year will be Thomas S. Y. Ho. Professor Ho, one of the world's leading experts in fixed income analysis and risk management, will be Brownlee O. Currey Visiting Professor of Finance. Center faculty member, Bill Christie, Professor of Finance and Associate Dean, known for his influential research on the Nasdaq Stock Market and a master teacher, has taken on a new challenge. Bill was named Dean of the Owen School effective July 15, 2000. With Bill's boundless energy he is now a triple threat – great teacher, great scholar and great administrator. Best wishes, Bill! ■

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. ■

Owen @ Vanderbilt

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Hans R. Stoll, Director
J. Dewey Daane, Senior Advisor

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:

Aeltus Investment Management, Inc.
Caterpillar Financial Services
Chicago Board Options Exchange
Chicago Mercantile Exchange
Eclipse Capital Management, Inc.
*Hull Group
Merrill Lynch & Company, Inc.
The Nasdaq Stock Market, Inc.
*New York Stock Exchange, Inc.
Shayne and Company, LLC
*State Street Global Advisors
Thales Fund Management, LLC
Timber Hill Inc.

* Indicates current lead member.

Financial Markets, Information Technology and Electronic Commerce *(continued)*

Exchange Commission, discuss a host of significant issues facing the SEC: How will the "suitability" obligation be met in an on-line environment? How can the definition of 'best execution' be expanded to take speed and certainty of execution into account, in addition to best price? How accurate are prices when much of the order flow is not included in determining market price but is internalized? How will the abolition of Rule 390 and the growth of ECNs (Electronic Communications Networks) affect market fragmentation? **Brandon Becker**, a partner at Wilmer Cutler Pickering, presented a lively commentary on these and other issues. He noted that individual "fortress" markets were undesirable and that markets should be linked. He listed a number of issues that regulators must deal with, including the relation between the SEC and CFTC (Commodities Futures Trading Commission), access to foreign electronic markets, achieving best execution in options markets, and transparency in the debt markets.

Tom Bond, Thomas Peterffy and Blair Hull debate the implications of technology.

Rick Kilcollin, chair of the panel on "Technology and Option Markets," predicted that electronic option trading is inevitable. **Tom Bond**, Vice Chairman, Chicago Board Options Exchange, discussed the information overload in options markets resulting from the need to update quotes on each of the many contracts on a given underlying security, all of which react to the same information at the same time. Decimalization and multiple-market listing of options magnify this problem. He noted that the success of Eurex in capturing the German Bund futures market from the Liffe raises questions about the value of floor trading in relation to screen-based trading systems. **Blair Hull**, Chairman of the Hull Group, noted that the option markets have grown more slowly than equity markets, due in part to slow execution, poor transparency, and the uneven playing field, in which market makers have a privileged position. He suggests that the options exchanges can address these problems by embracing technology and by giving investors and market makers the same privileges and responsibilities. **Thomas Peterffy**, Chairman, TimberHill Inc., discussed incentives for posting firm quotes in dealer markets. He noted that the obvious incentive for posting quotes is that trades will go to the party who has posted the best quote. That incentive is destroyed when time priority is relaxed, thus allowing anyone in a market to match the best quote and take the trade. In the global electronic market, it will be a challenge to insure that customers around the world have access to the best quotes, and to insure that orders are routed to the dealer posting the best quote, so that the motive for posting quotes remains compelling.

George Sofianos suggests alternatives to a CLOB.

The final session of the day, "Technology and Equity Markets," was chaired by **Peter Layton**, Hull Group. The first speaker of the session, **Mike Edleson**, Senior Vice President and Chief Economist, NASD, discussed the competition between Nasdaq and ECNs for order flow, which has forced Nasdaq dealers to become more efficient. As an example of the efficiency gains resulting from this competition, he noted that the average cost of a trade on Selectnet, a NASD broker-dealer, has declined from $5.00 to 10 cents. **George Sofianos**, Vice President, New York Stock Exchange, suggested that a central limit-order book (CLOB) might not be the best approach to ensuring competition and connectivity among markets. He proposed an alternative solution: a full disclosure market, with standardized reporting across trading venues, which would allow comparison of execution costs and speed. He also discussed his research on whether floor trading adds anything of value that electronic markets do not offer. He found that the NYSE has gained market share in block trades (over 10,000 shares) in recent years, suggesting that exchange trading offers an incremental benefit in the execution of large trades.

Mike Edleson discusses the competition introduced by ECNs.

Discussion continued over cocktails and dinner at the Loew's Vanderbilt Hotel, which provided a relaxing close to the first day of the conference.

On Friday, **Kevin Ershov**, Managing Director, Thales Fund Management, introduced the first session, "Electronic Networks." **Amit Basu**, Professor of Telecommunications and Electronic Commerce at the Owen School, discussed his

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(continued)

work on the architecture of e-commerce (with Steve Muylle). Whereas in the past, technology has been applied to traditional business processes and products, in the future, he noted, technology will shape processes and products. He commented that customized information content and new commerce-support functions may generate surprising new businesses and business models. He cited the example of search engines, which provide a customized information service, and which have a business model that has redefined our ideas about what is given away. **Jeff Smith**, Economist, Nasdaq Economic Research, reported on his study of preferencing among dealers on the Nasdaq. He explained that Nasdaq dealers try to internalize as many customer trades as possible, and that dealers trade with each other in order to adjust their inventory. Smith studied trades on SelectNet, an interdealer trade system. While preferencing is possible, Smith found that 93% of the orders in SelectNet are sent to the dealer with the best quote. The closing speaker in this session, **Roger Huang**, Professor of Finance at the Owen School, discussed his study of price discovery by ECNs and Nasdaq dealers. He finds that the quotes posted by ECNs and Nasdaq dealers appear to move in reaction to the same information, providing some reassurance that trading fragmentation does not interfere with price connectivity. He also finds that ECN quotes tend to be more informative than Nasdaq dealer quotes for 8 of the 10 most actively traded Nasdaq stocks. **Jim Klingler**, Senior Vice President, Eclipse Capital Management, introduced the topic of the final conference session, "Developments in the Futures Market." **John Damgard**, President, Futures Industry Association, underscored the necessity for the US futures exchanges and regulators to move quickly, to prevent futures markets from moving out of the US. He noted the CFTC recognizes this problem and has proposed that the futures exchanges be guided by a set of core principals, based on customer protection, rather than by detailed rules, so that regulation is less of an impediment to innovation. **Dick McDonald**, Economist, Chicago Mercantile Exchange, spoke in some detail about the ambiguous jurisdictions of the CFTC, SEC, and Treasury Department. He mentioned the demutualization of the Merc, as one of the many reforms that are intended to make the Merc more agile in its competition with other exchanges in the US and abroad. ■

Jim Klingler comments on futures markets issues.

Dewey Daane Invitational Tennis Tournament

The Dewey Daane Invitational Tennis Tournament, steeped in tradition second only to Wimbledon, took place Friday afternoon. After fierce competition, Bob Vraciu and Hans Heidle emerged as the first and second place finishers, respectively. ■

The combatants before battle.

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. The Owen Finance Association hosts speakers from the finance industry and presents workshops on interviews and resumes. The Association also coordinates recruiting and informational trips to New York's Wall Street.

The Association continues to provide career counseling and internship advice for Owen's first year class. Currently, total membership exceeds one hundred students.

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. The Fund, which invests in small-cap stocks in several sectors including energy, technology, healthcare, retail, and financial services, has enjoyed a phenomenal 62.71% gain over last year, beating all but the red-hot Nasdaq index.

Financial performance is measured against a benchmark of comparable risk and asset size. MASIF has outpaced the Russell 2000 in four of the last five years. In 1999, the margin was over 43%. MASIF topped $200,000 in net assets this year, and the board looks forward to maintaining its position as one of the largest student-run investment funds in the country.

The Fund strives to constantly balance its primary goals of maintaining solid returns on investment and creating a learning environment for students of all experience levels. For more information, see http://mba.vanderbilt.edu/maxadler/main/. ■

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 1999-2000 the following researchers presented work on finance topics:

Anil Arya, *Ohio State University*: "Project Assignment Rights and Incentives for Eliciting Ideas"

Doron Avramov, *Wharton School*: "Stock-Return Predictability and Model Uncertainty"

Geert Bekaert, *Stanford University*: "Stock and bond Pricing in an Affine Economy"

Peter Bossaerts, *California Institute of Technology*: "IPO Post-Issue Markets: Questionable Predilections but Diligent Learners?

Anchada Charoenrook, *University of Michigan*: "The Role of Capital Structure in Tests of Asset-Pricing Models: Theory and Empirical Evidence"

Mikhail Chernov, *Pennsylvania State University*: "A Case of Empirical Reverse Engineering: Estimation of the Pricing Kernel"

Tarun Chordia, *Vanderbilt University*: "Momentum and the Business Cycle"

Kent Daniel, *Northwestern University*: "Covariance Risk, Mispricing, and the Cross Section of Security Returns"

Richard Green, *Carnegie Mellon University*: "The Personal-Tax Advantages"

Peter Hecht, *University of Chicago*: "The Cross Section of Expected Firm (not Equity) Returns"

Narasimhan Jegadeesh, *University of Illinois*: "Profitability of Momentum Strategies: An Evaluation of Alternative Explanations"

Arun Khanna, *Purdue University*: "Corporate Structure, Bank Financing and Behavior of Inventories: Empirical Evidence from an Emerging Market"

Robert Korajczyk, *Northwestern University*: "The Determinants of Equity Illiquidity"

Karl Lins, *University of North Carolina*: "Equity Ownership and Firm Value in Emerging Markets"

Marc Lipson, *University of Georgia*: "Order Flow and Liquidity around NYSE Trading Halts"

Michelle Lowry, *University of Rochester/University of South Carolina*: "Determinants of IPO Volume"

Tom McInish, *University of Memphis*: "Competition for Order Flow: New Malaysian Rules End Unlisted Trading in Singapore"

Jun Qian, *Wharton School*: "Option-Like Contracts for Innovation and Production"

Jeff Russell, *University of Chicago*: "Beyond Merton's Utopia: Effects of non-normality and dependence on the precision of variance estimates using high-frequency financial data"

Robert Stambaugh, *Wharton School*: "Evaluating and Investing in Equity Mutual Funds"

Allan Timmerman, *University of California*, San Diego: "Duration Dependence in Stock Prices: An Analysis of Bull and Bear Markets"

Peter Tufano, *Harvard University*: "Analyzing the Ouverture du Capital at France Télécom"

Robert Whitelaw, *New York University*: "Risk and Return: Some New Evidence" ■

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 1999-2000 academic year were:

James Beard, President, *Caterpillar Financial and Vice President, Caterpillar Inc.*

Alton Brann, CEO, *Unova Inc.*

Roger E. Brinner, Managing Director and Chief Economist, *The Parthenon Group*

J. Alfred Broaddus, Jr., President, *Federal Reserve Bank of Richmond*

Bob Crants, General Partner, *DC Investment Partners*

Gary Dean, Equity Analyst, *J.C. Bradford & Co.*

Townes Duncan, President, *Solidus LLC*

Robert Eisenbeis, Vice President and Director of Research, *Federal Reserve Bank of Atlanta*

Peter R. Fisher, Executive Vice President, *Federal Reserve Bank of New York*

Edmund Fitzgerald, former CEO and Chairman, *Nortel Networks*

Edward M. Gramlich, Member, *Board of Governors of the Federal Reserve System*

Jay Hoffman, General Partner, *Coleman, Swenson, Hoffman, Booth*

Karen H. Johnson, Director, Division of International Finance, *Board of Governors of the Federal Reserve System*

David Kloeppel, M&A Associate, *Deutsche Bank*

Phil Krebs, *Equitable Securities, Sun Trust*

Jack W. Lavery, Global Macro Consultant, *Merrill Lynch*

David A. Lereah, Chief Economist and Vice President, *Mortgage Bankers Association of America*

John Lipsky, Chief Economist and Director of Research, *The Chase Manhattan Bank*

Tom Madden, Senior Vice President and Chief Financial Officer, *Meritor Automotive*

R. Brad Martin, Chairman and CEO, *Saks Incorporated*

James F. McCreary, Senior Vice President, *Wachovia*

Robert D. McTeer, Jr., President, *Federal Reserve Bank of Dallas*

Lawrence H. Meyer, Member, *Board of Governors of the Federal Reserve System*

Cathy E. Minehan, President, *Federal Reserve Bank of Boston*

Billy Oehmig, Principal, *The Sterling Group*

Allen Sinai, Chief Global Economist, President and CEO, *Primark Decision Economics, Inc.*

Jack Tyrrell, *Richland Ventures* ■

Current Activities of Center Faculty

CLIFFORD BALL, Associate Professor (finance and statistics). M.Sc. (Nottingham 1975), Ph.D., mathematics (New Mexico 1980).

Current research interests include equities, bonds, options, and futures contracts; empirical testing of financial models; stochastic processes and statistical applications to finance; the European monetary system; capital requirements, risk management and value-at-risk. Ball teaches finance and statistics.

Professor Ball presented a paper on stochastic correlation at the *Journal of Empirical Finance* conference on risk management in Portugal in November 1999. Ball discussed a paper on interest rate dynamics at the Western Finance Association meetings in Idaho in June 2000. His paper, "The Stochastic Volatility of Short-Term Interest Rates: Some International Evidence" (with Walter Torous), was published in the *Journal of Finance* in December 1999. Ball serves as a referee for numerous research journals.

AMY BONKOSKI, Assistant Professor (finance). B.S. finance, B.A economics (Penn State), Ph.D. (Pittsburgh 1997). Research interests include corporate finance, governance, and investment banking.

Prior to beginning her doctoral studies, Professor Bonkoski worked for a personal financial planning firm. Her dissertation focused on the influence of ownership structure, compensation policies, and board of directors on the characteristics of firm-underwriter contracts in initial public offerings.

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

Research interests include the quality of earnings, earnings management, and audit pricing. Currently he is working on a paper examining how auditors price private and public firms.

Professor Chaney was asked by the Department of Finance of the Metropolitan Government of Nashville to serve on an evaluation committee to rate and rank external contracts received from venders to recover funds from overpayments and duplicate payments made by Metro. In addition, Chaney continues to serve as the Director of Manuscripts for the Nashville Chapter of the Institute of Management Accountants. During the past year, he completed the writing of an advanced accounting textbook (with Debra Jeter) for Wiley and Sons publishing. This textbook includes topics such as accounting for mergers and acquisitions, international accounting, and government accounting.

TARUN CHORDIA, Assistant Professor (finance). M.B.A. (Tulane 1987), Ph.D. (UCLA 1993).

Research interests include financial institutions, asset pricing, and market microstructure. Chordia teaches securities and portfolios, fixed income markets, and financial institutions classes.

Professor Chordia's research is grounded both in theory and empirics and spans a diverse area of financial economics. His research on asset pricing hypothesizes that even though market participants are rational, markets are inefficient and much of the inefficiency can be explained by trading frictions. His work on the tick size was the first to suggest that, due to the tick size, orders may not flow to the least cost providers of market making services. This is particularly relevant given the recent decisions by the NYSE and the NASDAQ to reduce their tick sizes, and move to decimal stock trading.

Prior to his doctoral studies, Chordia worked for Citibank, Bombay as a relationship and credit manager in the Financial Institutions Group.

WILLIAM G. CHRISTIE, Dean of the Owen Graduate School of Management, Professor (finance). M.B.A., Ph.D. (Chicago, 1980, 1989).

Conducts research in both corporate finance and market microstructure. His current research focuses on the role of trading halts on Nasdaq and their impact on trading costs, the impact of moving to 16th price increments for Nasdaq issues, and the long run performance of seasoned equity following rights offerings.

During the past year, Professor Christie was appointed to the Economic Advisory Board of the National Association of Securities Dealers (NASD) which meets semi-annually in either Washington D.C. or New York City. He was also elected as an academic director of the Financial Management Association. He continues to serve as an associate editor of the *Review of Financial Studies*, and recently assumed the responsibilities as a co-editor of the *Journal of Financial Intermediation*. In addition, he serves on the Strategic Planning Committee for Vanderbilt University as the University heads into its next capital campaign.

Christie participated as a panelist at the Securities Industry Association conference in Palm Springs in October 1999, served as a discussant at the NYSE conference on Market Microstructure that was held in Phoenix in December, and participated as a panelist at the Electronic Call Market conference sponsored by Baruch College in May 2000. His paper, "Et tu, Brute?: The Role and Impact of Trading Halts In the Nasdaq Stock Market" (with Shane Corwin and Jeffrey Harris), was presented at the spring meeting of the National Bureau of Economic Research Conference on Market Microstructure. Christie also presented this paper at the annual meetings of the Western Finance Association that were held at Sun Valley, Idaho, in June.

Christie continues to teach in the executive M.B.A. program in addition to the Equities Markets course in the day M.B.A. curriculum. He was among the finalists for the James A. Webb Jr. Award for Excellence in Teaching in 1999 and was ranked as the only "4 star" faculty in the 1998 Business Week survey. He was promoted to the rank of Professor of Management effective September 2000, and was Associate Dean for Faculty Development. He was named Dean of the Owen Graduate School of Management effective on July 15, 2000.

MARK A. COHEN, Associate Professor (economics & strategy); Director of the Vanderbilt Center for Environmental Management Studies. M.A., Ph.D. (Carnegie-Mellon 1985).

Research interests include government regulation, law and economics, white-collar and corporate crime, and environmental management.

Professor Cohen traveled to New York to receive an award on behalf of Owen for being in the "top tier" of business schools offering courses in environmental management. The World Resources Institute and the Aspen Institute presented the award. He also traveled to Laguna Beach, California, in October, where he was a panel member at an Environmental Protection Agency workshop on "Capital Markets and Environmental Performance." His research on the relationship between environmental and financial performance was a featured topic of discussion during the conference. In November, he attended the American Society of Criminology meetings in Toronto and chaired a panel on the economics of drug markets. In December, Cohen traveled to Washington, DC to speak at a Conference on Guns and Crime, sponsored by the American Enterprise Institute. This conference brought together economists, criminologists, and other leading scholars who study guns and crime.

The Vanderbilt Center for Environmental Management Studies, of which Cohen is director, hosted a two-day workshop for corporate environmental managers on "Corporate Environmental Reporting: The State of the Art and Beyond" in January 2000. In May, Cohen traveled back to Washington to chair the annual meeting of the American Statistical Association's committee on Law and Justice. The Committee, which he chairs, advises government agencies on statistical methods, sampling issues, and survey design in conducting research on law and justice issues.

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).

Research interests include monetary economics and international finance. He is currently engaged in contributing to a history of Equitable Securities Corporation, Nashville, Tennessee. During the spring semester, as part of his Seminar on Monetary and Fiscal Policy, Daane arranged for many of the guest speakers listed elsewhere in this newsletter.

Dr. Daane continues to serve on the Board of Directors of the National Futures Association. In February, March, April and May, he attended NFA board of directors and finance committee meetings in Chicago, Boca Raton, and New York. In April, he participated in the annual Financial Markets Research Center conference held at Vanderbilt. In May, Daane participated in the Federal Reserve Bank of Chicago's 36th annual conference on Banking Structure and Competition and in June, the Federal Reserve Bank of Boston's 43rd annual economic conference on Building on Infrastructure for Financial Stability held in Chatham, MA.

LUKE M. FROEB, Associate Professor (economics & strategy). Ph.D. (Wisconsin 1983).

Research interests include industrial organization, econometrics, mergers, and antitrust policy. Professor Froeb's experience as an antitrust "cop" has many business applications that he teaches to his introductory management classes. He is also the editor of the award winning web site, Antitrust Policy at www.antitrust.org.

In October 1999, Professor Froeb gave a seminar in Toulouse, France, at an international conference on The Econometrics of Price and Product Market Competition, and in November he gave a similar seminar at the University of Iowa. At both, he presented his work on simulating merger effects in auction markets. In Toulouse, he urged his European colleagues to become involved in European Union antitrust policy formation which currently lacks formal economic input. In January, Froeb gave two seminars at the American Economic Association meetings in Boston on merger simulation and estimating demand curves. He is editing a volume on computational approaches to simulating oligopoly behavior.

Professor Froeb was invited to present "Homotopy Methods for Merger Analysis" in June at the Mergers and Competition Mergers and Competition CEPR/IUI Workshop in Stockholm. He was also invited to Brussels where he gave a talk on Merger Enforcement in the United States to DG4, the European Commission's antitrust enforcement agency.

AMAR GANDE, Assistant Professor (finance). M.B.A. (IIMC 1988), Ph.D. (NYU 1997). Research interests include international finance, corporate

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Faculty Activities *(continued)*

finance, and investment banking. Professor Gande teaches courses in International Financial Markets & Instruments, International Corporate Finance, and Corporate Value Management.

Professor Gande presented his paper, "The Role of Incentives in the Prevention of Financial Crises in Emerging Economies" (with Kose John and Lemma Senbet), at the Sixth Biennial Symposium on Crisis Events in Financial Intermediation and Securities Markets at Indiana University, Bloomington, in February 2000. In April, he presented his paper, "Raising Capital with Ownership Restrictions: The Case of Resurgent India Bonds" (with Manju Puri), at the Sixth Annual International Finance Conference in Atlanta. This paper was also introduced as a new case study in the International Corporate Finance course this year and has been well received by the students. His paper, "Bank Entry, Competition, and the Market for Corporate Securities Underwriting" (with Manju Puri and Anthony Saunders) that was published in the *Journal of Financial Economics* in November 1999, received the Fama-DFA best paper award being the first prize winner in the Capital Markets and Asset Pricing category among the papers published in the Journal of Financial Economics during 1999.

CHRIS E. HOGAN, Assistant Professor (accounting). M.B.A. (Ohio University 1990), Ph.D. (Ohio State University 1994), C.P.A.

Research interests include topics in auditing and financial accounting. Professor Hogan's current research includes projects related to compensation plans based on economic profits and auditor-client realignments in various settings. A study with Craig Lewis examines the compensation, ownership, and governance structures of firms adopting economic profit-based compensation plans and the long-run operating and market performance of these firms. One empirical auditing study with Karl Hackenbrack, from the University of Florida, examines whether investors' responses to earnings announcements following an auditor change are associated with the reason given for the change. A second study looks at auditor-client realignment from a supply-side perspective and examines auditor market efficiency.

ROGER D. HUANG, The Brownlee O. Currey Professor of Finance, M.A., Ph.D. (Pennsylvania 1980). Research interests include financial market structure and international finance. Current research focuses on trading activity in the interdealer broker market, electronic communication networks, minimum price variation in stocks, and information-based trading.

Professor Huang has two papers forthcoming, "Exchange Rates and Firm's Liquidity: Evidence From ADRs" (with Hans Stoll) in the *Journal of International Money and Finance* and "Do Market Makers Suffer from Splitting Headaches?" (with H. Martin Weingartner) in the *Journal of Financial Services Research.* Huang presented "Exchange Rates and Firm's Liquidity: Evidence From ADRs" at the University of Notre Dame on October 4, 1999. During December 1999, he served as a thesis opponent at Göteborg University, Göteborg, Sweden, where he also presented his paper on "Information-Based Trading in Dealer and Auction Markets: An Analysis of Exchange Listings." That paper was accepted for presentation at the January 2000 American Finance Association Conference in Boston, and his paper on "Price Discovery by ECNs and Nasdaq Market Makers" was presented at the Western Finance Association Conference in June. In April, Huang presented his paper on "Price Discovery by ECNs and Nasdaq Market Makers" at the New York Stock Exchange and at the Financial Markets Research Center Conference at Vanderbilt University. From January 20 to 28, 2000, he participated in the Executive MBA class trip to Hong Kong and Shenzhen, China. During the past year, Huang helped to select papers for presentation as a member of the 2000 12th Annual PACAP/FMA Review Committee and 2000 27th Annual European Finance Association Program Committee. Huang is also the recipient of the Year 2000 Executive MBA best teacher award.

DEBRA C. JETER, Associate Professor (accounting). M.B.A. (Murray State 1981), Ph.D. (Vanderbilt 1990).

Research interests include financial accounting and auditing, with specific interests in earnings management, components of earnings, the market for audit services, audit pricing, and audit opinions.

Professor Jeter's paper, "The Effect of Reporting Restructuring Charges on Analysts' Forecast Revisions and Errors" (with Paul Chaney and Chris Hogan) appeared as lead article in the June 1999 issue of the *Journal of Accounting and Economics.* Her paper, "Cross-Sectional Estimation of Abnormal Accruals Using Quarterly and Annual Data: Effectiveness in Detecting Event-Specific Earnings Management" (with L. Shivakumar), was published in *Accounting and Business Research* in the Fall of 1999. In March 2000, Jeter completed and published a textbook, Advanced Accounting (with Paul Chaney), for Wiley & Sons, Inc.

Jeter served on the Conference Paper Review Team for the second annual AAA Globalization Conference held in Cambridge, England, in July 2000 and also agreed to serve on a panel on state-of-the-art audit research at the Conference. She has agreed to teach in the Executive International MBA Program for the Vlerick School of Management in Ghent, Belgium, in October 2000.

Jeter has been featured or quoted in various periodicals in recent months with regard to research and current events, including the *Wall Street Journal, CFO Magazine, Financial Executive, Business Finance,* the *San Francisco Chronicle,* and the *Ft. Lauderdale Sun Sentinel.* She continues to serve on the editorial board of the *Accounting Review.*

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

Research interests include corporate financial policy, equity analyst behavior, accounting earnings informativeness, futures, and options. Current research topics include herding by equity analysts and the long-run performance of firms adopting economic profit plans, convertible debt policy, and earnings forecasting and management. Lewis has published papers on the topics of the information content of implied volatilities, volatility forecasting, multiperiod corporate financial policy choices, the valuation of convertible debt, recapitalization, and earnings management. Lewis teaches corporate finance, advanced derivatives, and quantitative portfolio management. He is a past winner of the best teacher awards voted by the Executive MBA and regular MBA programs and the Dean's Award for Teaching Excellence, and he is the 2000 recipient of the James Webb Award for Excellence in Teaching.

Professor Lewis presented the paper, "Following the Leader: A Study of Individual Analysts Earnings Forecasts" (with Rick Cooper and Ted Day), at the University of British Columbia in March. He also presented the paper, "The Long-Run Performance of Firms adopting Compensation Plans Based on Economic Profits: (with Chris Hogan), at Dartmouth College and Ohio State University in May. This paper was also recently featured in the *Wall Street Journal's* "Heard on The Street" column.

Lewis currently serves as associate editor of the *Journal of Corporate Finance* and the *Journal of Financial Research*, and he serves as a referee for a number of academic journals.

RONALD W. MASULIS, The Frank K. Houston Professor of Finance. M.B.A., Ph.D. (Chicago 1978).

Research interests include investment banking, corporate finance, financial institutions, market microstructure, and international finance. His research on capital structure changes and the security issuance process is widely referenced. His current research activities center on the ADR market, dealer spreads in the foreign exchange market, long term stock price performance following common stock offerings, the impact of organizational structure on financial leverage and the relation of trading activity and stock price volatility on the London Stock Exchange, the impact of security issuance activity on stock liquidity, and returns to investing in conversions of mutual thrifts to stock ownership. Masulis teaches primarily in the corporate finance area.

In the Fall of 1999, Professor Masulis was asked to accept another term as associate editor of the *Journal of Financial and Quantitative Analysis*. Masulis presented his paper, "The Speed of Price Adjustment to Stock Offering Announcements: A NYSE/AMEX and NASDAQ Comparison" (with L. Shivakumar), at Rutgers University, Newark, and the University of Connecticut in October and at the University of Colorado at Boulder and the Amos Tuck Graduate School of Business Administration at Dartmouth in April 2000. His paper, "Seasoned Public Offerings: Resolution of the 'New Issues Puzzle'" (with Espen Eckbo and Oyvind Norli), was published in the June issue of the *Journal of Financial Economics*. He was a discussant at the Western Finance Association annual meetings in June 2000.

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

Research interests are in the fields of international finance and macroeconomics. Current research studies the impact of the exchange rate regime on the strength of the purchasing power parity relationship.

During the past year, Professor Parsley was invited to Switzerland to present recent work at a conference focusing on lessons from intra-national economics for international economics. He was also invited to present his work (with Shang-Jin Wei) on the economic effects of political borders at the National Bureau of Economic Research's Summer Institute. He and two other Owen faculty members visited Spain to study management implications of European integration with students in the International Management Issues Seminar. Parsley has been appointed Research Fellow of the Hong Kong Institute of Monetary Research. His research in international monetary economics and finance concerns areas of strategic importance to the Institute.

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

Research interests include stock market structure, derivatives, and other aspects of financial markets.

Professor Stoll completed his one-year term as President of the American Finance Association by presiding over the association's annual meeting in Boston in January, 2000. His presidential address dealt with the topic, "Friction." The research paper underlying the address is in the August, 2000 issue of the *Journal of Finance*. He completed a three-year term as a member of the Economic Advisory Board of the NASD in December 1999. In January 2000, Stoll was named a public adviser to the board of the Pacific Stock Exchange.

Stoll's recent writings include "Exchange Rates and Firms' Liquidity: Evidence from ADRs" (with Roger Huang), forthcoming in the *Journal of International Money and Finance*, and "Market Fragmentation," a Financial Markets Research Center Policy Paper.

In June Stoll lectured on Market Microstructure at the University of Krems, Austria, and he spoke at the University of Frankfurt. In July, he was a keynote speaker at the Seventh Asia Pacific Finance Conference in Shanghai, China. ■

Faculty Research Papers

Current working papers completed or revised since January 1, 1999 are listed below. Individual copies may be obtained by writing Pat Scott, Owen Graduate School of Management, Vanderbilt University, Nashville, TN 37203 or calling 615-322-3671 or email pat.scott@owen.vanderbilt.edu. There is a charge of $10.00 per paper for non-members of the Center. Academics may request up to five papers free of charge.

95-30 "Do Market Makers Suffer from Splitting Headaches?" by ***Roger D. Huang and H. Martin Weingartner****. (forthcoming in Journal of Financial Services Research)*

Studies of transactions surrounding stock split ex-dates often conclude that splitting firms either experience a decline or an improvement in their stock's liquidity based on independent measures of trading costs and trading activity. In contrast, our evidence suggests that splits from outside into what is often deemed to be the "optimal" stock price range of $10.00 to $39.99 are "non-events" for market makers: the spread-setting behavior of the market does not change after a split. Our analysis accounts for the interdependencies between bid-ask spreads and market microstructure effects, and distinguishes between optimal and all other splitting firms.

96-20 "Margin Adequacy and Standards: An Analysis of the Crude Oil Futures Market," by ***Theodore E. Day and Craig M. Lewis****. (June 1999)*

This paper proposes two value-based standards for setting initial margin requirements on futures positions. Our approach is based on the fact that the distributions of the payoffs to futures traders and the potential losses to the futures clearinghouse can be described in terms of the payoffs to barrier options with appropriately defined strike prices and knockout boundaries. Based on this observation, we argue that initial margin requirements are adequate if the initial margin that must be posted is either (1) equal to the ex ante value of the payoffs to the futures position or (2) sufficient to reduce the value of the potential losses absorbed by the futures clearinghouse to zero. Using a numerical valuation approach that incorporates the stochastic volatility of the futures market, we examine the adequacy of margin requirements in the crude oil futures market. Our results suggest that on average the initial margin requirements set by the New York Mercantile Exchange have been in excess of the minimum margins required under our option-based standards for adequacy.

97-01 "Industry Conditions, Growth Opportunities, and Market Reactions to Convertible Debt Financing Decisions," by **Craig M. Lewis**, ***R. Rogalski, and J. Seward****. (June 1999)*

We analyze the security design and valuation effects of 536 convertible debt security offers to assess how issuers balance the debt- and equity-related costs of external finance. Because convertible debt can be structured to mitigate several different corporate financing problems, an empirical examination of average valuation effects is likely to be uninformative. To assess these issuance motives separately, we develop a framework that characterizes how convertible debt should be designed to most effectively mitigate the debt- and equity-related costs of external finance. The primary empirical findings are that convertible debt is used to accomplish multiple purposes and that share price reactions depend on the security design. The results also clarify how operating and financial performance characteristics within industries influence the decision to issue convertible debt.

97-02 "Mergers Among Asymmetric Bidders: A Logit Second-Price Auction Model," by ***Luke Froeb, Steven Tschantz, and Philip Crooke****. (May 11, 1999)*

In this paper, we derive estimators of, and closed-form (non integral) expressions for, the distribution of bids in an extreme value, asymmetric, second-price, private-values auction. In equilibrium, prices (winning bids) and shares (winning probabilities) have a simple monotonic relationship--higher-value firms win more frequently and at better prices than lower-value firms. Since the extreme value distribution is closed under the maximum function, the value of the merged coalition also has an extreme value distribution and thus lies on the same price/share curve. Consequently, merger price effects can be computed as a movement along the price/share curve, from the average pre merger share to the post merger aggregate share. The parameter determining how much winning prices change is the standard deviation of the extreme value component. Merger efficiency claims can be benchmarked against the marginal cost reductions necessary to offset merger price effects.

97-04 "Exchange Rates and Firms' Liquidity: Evidence from ADRs," by ***Roger D. Huang and Hans R. Stoll****. (forthcoming in Journal of International Money and Finance)*

Exchange rate changes can, in principle, affect a firm's value by affecting the firm's earnings or its cost of funds. Existing studies using monthly data over long sample periods find little or no impact of changes in exchange rates on a firm's valuation. We examine a different potential path for exchange rate effects, namely, the effect of exchange rate variability on a stock's liquidity. Using transactions data, we examine the microstructure characteristics of United Kingdom and Mexican ADRs around two major exchange rate crises – the pound sterling withdrawal from the European Exchange Rate Mechanism in September 1992 and the Mexican devaluation of December 1994. We conclude that these events of exchange rate turbulence had little or no effect on the trading costs of ADRs in the United States. The results suggest that the impact of exchange rate volatility on market liquidity is not a conduit by which stock values are affected.

97-11 "Mergers, Cartels, Set-Asides and Bidding Preferences in Asymmetric Oral Auctions," by ***Lance Brannman and Luke M. Froeb****. (forthcoming in Review of Economics and Statistics)*

From Bidding data, we estimate the underlying value distribution for forest Service Timber. We find that bidder values decrease $2/mbf (thousand board feet) with each mile from the tract and that small firms (less than 500 employees) have values that are $72/mbf lower than large firms. The empirical value distribution is used to simulate various hypothetical scenarios designed to inform public policy. The most anticompetitive mergers raise price by less than three percent, and a four-percent decline in marginal costs through greater merger efficiencies is enough to offset a one-percent anticompetitive price increase. Eliminating the SBA Set-Aside program would raise timber revenues by 15 percent. A policy of granting bidding preferences to small and more distant bidders would raise revenue by about one-tenth of one percent.

*97-19 "Does the Market Value Environmental Performance?" by **Shameek Konar and Mark A. Cohen**. (forthcoming in Review of Economics and Statistics)*

Previous studies that attempt to relate environmental to financial performance have often led to conflicting results due to small samples and subjective environmental performance criteria. We report on a study that relates the market value of firms in the S&P 500 to objective measures of their environmental performance. After controlling for variables traditionally thought to explain firm level financial performance, we find that bad environmental performance has a significant negative effect on the intangible asset value of firms. The average "intangible liability" for firms in our sample is 360 million dollars - approximately 8.4% of the replacement value of tangible assets. We conclude that legally emitted toxic chemicals have a significant effect on the intangible asset value of publicly traded companies. A 10% reduction in emissions of toxic chemicals results in a $31 million increase in market value. The magnitude of these effects varies across industries, with larger losses accruing to the traditionally polluting industries.

*97-21 "The Speed of Price Adjustment to Stock Offering Announcements: A NYSE/AMEX-NASDAQ Comparison," by **Ronald W. Masulis and L. Shivakumar**. (April 18, 2000)*

This study uses transactions data to compare the speed of price adjustments to seasoned equity offering announcements by NYSE/AMEX and NASDAQ stocks. We find that NYSE/AMEX stocks react slower to equity offering announcements than NASDAQ stocks by as much as one hour. The faster NASDAQ response is surprising given that NASDAQ stocks have on average a smaller offering size, lower equity capitalization and less frequent trading activity than NYSE/AMEX stocks. Further analysis suggests that the faster price reaction of NASDAQ stocks is due to several differences in market structure across the two types of markets. We find evidence that all the following conditions contribute to more rapid NASDAQ stock price adjustment: greater risk-taking by NASDAQ dealers, more rapid electronic order execution on NASDAQ, a more potent information trading threat (SOES bandits) on NASDAQ, stale limit orders on the NYSE/AMEX and a less efficient price discovery mechanism at the open of the NYSE/AMEX.

*97-28 "Mergers in Sealed vs. Oral Auctions," by **Luke Froeb, Steven Tschantz, and Philip Crooke**. (forthcoming in International Journal of the Economics of Business)*

In this paper, we study mergers in oral or second-price auctions and compare them to mergers in sealed-bid or first-price auctions. We use an adaptation of the logit qualitative choice model to characterize the underlying bidder value distributions. In second-price auctions, this model has a closed-form relationship between winning bids (prices) and the probabilities of winning (shares), and this relationship gives rise to a Herfindahl-like formula that predicts merger effects. We compare mergers in second-price auctions to mergers in first-price auctions. Despite their differences, sealed-bid merger effects are predicted by the oral Herfindahl-like formula. The source of this curious similarity is not apparent.

*97-30 "Official Exchange Rate Arrangements and Real Exchange Rate Behavior," by **David C. Parsley and Helen A. Popper**. (forthcoming in Journal of Money, Credit and Banking)*

We study the behavior of real exchange rates under various official designations of exchange rate arrangements. Examining many currencies, we find important differences across the designations. Most notably, real exchange rate mean reversion is fastest when nominal exchange rates are officially pegged. We also find a large nonlinear effect: adjustment is fastest when the real exchange rate deviates greatly from its mean. This nonlinear effect is also most striking among officially pegged currencies. Finally, we find that nominal exchange rates, rather than prices, do most of the adjusting.

*98-09 "The Long-Run Performance of Firms That Issue Convertible Debt: An Empirical Analysis of Operating Characteristics, Analyst Forecasts, and Risk Effects," by **Craig M. Lewis, Richard J. Rogalski, and James K. Seward**. (January 1999)*

Many firms issue hybrid securities such as convertible debt instead of standard securities like straight debt or common equity. Theoretical arguments suggest that firms face high debt- and equity-related external financing costs, and that convertible debt minimizes the sum of these financing costs for some issuers. Moreover, theory suggests that an appropriately designed convertible security provides efficient investment incentives. We show, however, that firms perform poorly following the issuance of convertible debt. Our empirical evidence suggests that the efficient investment decisions predicted by theory are not achieved by the actual design and issuance of convertible debt securities in practice. We suggest an alternative interpretation of convertible debt offers in which investors ration the participation of some issuers in the seasoned equity market.

*98-10 "Following the Leader: A Study of Individual Analysts Earnings Forecasts," by **Craig M. Lewis, Rick A. Cooper, and Theodore E. Day**. (March 1999)*

This paper develops and tests procedures for identifying lead analysts based on the timeliness of analyst forecast revisions, the trading levels associated with these revisions, and forecast accuracy. Our framework provides an objective assessment of analyst quality that differs from the standard approach that uses survey evidence to rate analysts. Using a sample of equity analysts, we find that lead analysts identified by our procedures have more price impact than follower analysts. Evidence also is presented that suggests analysts use recent stock price trends to help them modify forecast revisions, regardless of whether the analyst is a leader or a follower. Finally, we find that our ranking procedures based on timeliness, trading volume, and accuracy are consistent. That is, if analysts are selected as timeliness leaders, they also tend to be volume and accuracy leaders.

*98-15 "Raising International Capital through ADRs: Evidence from Emerging Markets," by **Amar Gande**. (June 2000)*

In the last five years, significant amounts of international capital were raised through ADRs by foreign firms, many of whom were first-time issuers from emerging markets. However, little is understood about the extent of underpricing of ADRs, its evolution over time and the stock-price reactions associated with the issuance of ADRs. In this paper, I model the information asymmetries about first-time ADR issuers both in the ADR market and in the home market of the issuers. Investors in the ADR market learn about the evolution of a country characteristic through sequential issues of ADRs from the same country. The commitment to adhere to the stringent SEC disclosure requirements for ADR issuers conveys favorable information about the issuing firm to investors in the home market. I derive testable implications for the underpricing of ADR issues, its dynamics over time and the announcement effects associated with first-time ADR issues on the underlying stock in the home market. My main empirical results are based on an extensive data set of ADRs listed

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on NYSE, AMEX and NASDAQ between 1991 and 1995. I find that first-time ADR issues from emerging markets are underpriced relative to the after-market traded price, and that later ADR issues from a country are less underpriced relative to earlier issues from the same country. Further, such ADR issues elicit a positive announcement effect on the underlying stock prices in the home market. Overall, the empirical results are consistent with the implications of the theoretical framework developed in this paper.

98-16 "Price Impact of Listings of New ADRs on Other ADRs: Evidence from Emerging Markets," by ***Amar Gande*** *(June 2000)*

The number of issuers accessing the ADR market has registered a sharp increase in the past few years. Although there is some evidence on the listing effects of new ADRs on the underlying home stock prices, little is known about the listing effects of new ADRs on other ADRs from the same country, both in the ADR market and in the home market and whether the findings are consistent with the negative post-listing performance of ADRs. My main empirical results are based on an extensive data set of ADRs listed on NYSE, AMEX and NASDAQ between 1991 and 1995. I find that listings of new ADRs from emerging markets are associated with a decline in prices of other existing ADRs from the same country. While the price decline occurs in both the US and home markets, the decline is higher in the US market. These results are consistent with a Diversification with Wealth Constraints hypothesis. That is, if the wealth allocation to ADRs from the same country were at a stable level and investors shift wealth from other existing ADRs to new ADRs from the same country to diversify their portfolios. Overall, the results are also consistent with the negative post-listing performance of ADRs documented in the literature.

99-03 "Information-Based Trading in Dealer and Auction Markets: An Analysis of Exchange Listings," by ***Hans G. Heidle*** *and* ***Roger D. Huang.*** *(March 22, 2000)*

Auction markets are often touted as better trading mechanisms for unmasking informed traders than dealer markets. Our analysis of firms that transfer to an alternative exchange structure suggests that traders are more anonymous in a competing dealer market than in an auction environment. Our evidence also shows that when firms move to a new market structure, the changes in the risk of trading with an informed trader are associated with the changes in the bid-ask spread. Moreover, the changes in the bid-ask spread are more pronounced for firms with higher probability of transacting with an informed trader prior to the relocation. Our results provide evidence of differences in bid-ask spreads between dealer and auction markets that are induced by differences in market structure.

99-05 "Tick Size, Bid-Ask Spreads and Market Structure," by ***Roger D. Huang*** *and* ***Hans R. Stoll.*** *(March 13, 2000)*

We propose a link between market structure and the resulting market characteristics – tick size, bid-ask spreads, quote clustering, and market depth. We analyze transactions data of stocks traded on the London Stock Exchange, a dealer market, and also traded as ADRs on the New York Stock Exchange, an auction market. We conclude that market characteristics are endogenous to the market structure. The London dealer market does not have a mandated tick size, and it exhibits higher spreads, higher quote clustering, and higher market depth than the NYSE auction market. Clustering of trade prices is similar in London and New York.

99-08 "The Long-Run Performance of Firms Adopting Compensation Plans Based on Economic Profits," by ***Chris Hogan*** *and* ***Craig Lewis.*** *(November 1999)*

Proponents of compensation plans based on economic profits argue that these plans control for deficiencies in stock-based or earnings-based bonus plans and thereby better align managers' and shareholders' interests. We examine whether compensation plans based on economic profits do in fact produce better investment decisions. We use a sample of 51 firms adopting economic profit plans between 1986 and 1994 to examine compensation, ownership, and governance structures, and long-run operating and stock price performance. While we document significant improvements in operating performance subsequent to adoption of the compensation plans, a sample of nonadopting matched firms shows similar significant improvements. There is no significant difference in the stock price performance of the two groups in the four-year period following an adoption. We conclude that economic profit plans are no better than traditional plans that provide a blend of earnings-based bonuses and stock-based compensation in terms of their ability to create shareholder wealth.

99-09 "Informed Trading Activity and Stock Price Volatility: Evidence from the London Stock Exchange," by ***Roger D. Huang*** *and* ***Ronald W. Masulis.*** *(April 26, 1999)*

This study examines the relation between stock price volatility and trading activity on the London Stock Exchange. The analysis is based on transactions data for individual stocks comprising the FTSE 100 index. Similar to the daily volatility evidence documented for Nasdaq stocks, when daytime stock price volatility in the London market is regressed against both the number of trades and average trade size, only the number of trades is statistically significant. However, when hourly trades are separated into size categories, both the number of small trades and their average size significantly impact price volatility. When we further split the small trade category into relatively smaller and larger trades, we find that only for larger trades, close to the maximum guaranteed depth of existing quotes, are there significant positive impacts on stock price volatility from both the trade frequency and average trade size. For relatively smaller trades, neither trade activity variable is significant. Our evidence shows that while London stocks appear to have a price-volatility relation similar to that found for Nasdaq, the London results are also consistent with strategic models of informed trading, which subject uninformed traders and dealers to costly adverse selection effects.

99-11 "Second-Price Auctions with Power-Related Distributions: Predicting Merger Effects," by ***Luke Froeb, Steven Tschantz,*** *and* ***Phillip Crooke.*** *(February 15, 1999)*

By constraining bidders to draw values from a class of power-related value distributions, we are able to derive closed-form expressions for the distribution of winning bids in a second-price, private-values asymmetric auction. We use the expressions to construct estimators of the bidders' value distributions and to construct predictors of merger effects. This paper generalizes the closed-form expressions from the logit auction model to the broader class of power-related distributions considered by Waehrer and Perry (1997). We find that predicted merger effects are dependent on the curvature of the relationship between winning bids and winning probabilities, which is related to the post merger change in variance of the merged firms' value distribution.

99-12 "True Spreads and Equilibrium Prices," by ***Clifford Ball and Tarun Chordia.*** *(April 25, 2000)*

Stocks and other financial assets are traded at prices that lie on a fixed grid determined by the minimum tick size permitted in the market. Consequently, observed prices and quoted spreads do not correspond to the equilibrium prices and true spreads that would exist in a market with no minimum tick size. This paper models the equilibrium movements of two latent variables: equilibrium price and spread by a bivariate autoregressive process with correlated errors and some key structural variables. We estimate the parameters governing their movements using transaction prices and information on quoted bid-ask spreads. Due to the econometric complexities created by the rounding to a discrete grid we use Monte Carlo Markov Chain methods to implement the parameter estimation. The empirical analysis is performed on a selection of large, heavily-traded U.S. stocks before and after the reduction of the minimum tick size in June 1997. The results indicate that most of the quoted spread is attributable to the rounding of prices and the adverse selection component is small.

99-15 "Simulating Merger Effects Among Capacity-Constrained Firms," by ***Luke Froeb, Steven Tschantz, and Philip Crooke.*** *(July 22, 1999)*

In this paper, we simulate the effects of mergers in an industry of firms facing capacity constraints. In equilibrium, each firm prices where marginal revenue equals marginal cost or, if the constraint is binding, where expected demand equals capacity. We develop an algorithm to compute Nash equilibrium. Capacity constraints on the merging firms attenuate merger effects, and capacity constraints on the non-merging firms amplify merger effects. In a retail industry where products are differentiated by location, we find that the former effect is bigger than the latter.

99-19 "Evidence Production in Adversarial vs. Inquisitorial Regimes," by ***Luke M. Froeb and Bruce H. Kobayashi.*** *(August 16, 1999)*

In the article, we model the tradeoff between adversarial and inquisitorial regimes of judicial decision-making. The advantage of the adversarial regime is the superior information of the parties while the advantage of an idealized inquisitorial regime is its neutrality. We model the tradeoff by characterizing the properties of costly estimators used by each regime. The adversarial regime uses an "extremal" estimator that is based on the difference between the most favorable pieces of evidence produced by each party. The inquisitorial regime uses the sample mean. We find that neither regime dominates the other.

99-20 "Can We Explain the Galactic Segmentation of International Markets?" by ***David C. Parsley and Shang-Jin Wei.*** *(May 2000)*

This paper exploits a three-dimensional panel data set of prices on 27 traded goods, over 88 quarters, across 96 cities in the U.S. and Japan. We present evidence that the distribution of intra-national real exchange rates is substantially less volatile, and on average closer to zero, than the comparable distribution for international relative prices. We also show that an equally-weighted average of good-level real exchange rates tracks the nominal exchange rate well, suggesting strong evidence of sticky prices.

We turn next to economic explanations for this so-called border effect and to its dynamics. Focusing on dispersion in prices between city-pairs, we confirm previous findings that crossing national borders adds significantly to price dispersion. Using our point estimates crossing the U.S.-Japan "Border" is equivalent to adding as much as 43,000 trillion miles to the cross-country volatility of relative prices. We examine several potential economic influences on the border effect. In our calculations, the estimated border effect declines substantially after controlling for the effects of distance, unit-shipping costs, and exchange rate variability. We find evidence of a declining trend in international market segmentation that remains even after controlling for unit-shaping costs and exchange rate variability. Finally, we also conclude that relative wage variability has little independent impact on the segmentation of international markets.

99-22 "Global Investing, Slicing the World Into Meaningful Pieces," by ***Rick A. Cooper and Craig M. Lewis.*** *(forthcoming in Advances in Financial Economics)*

This article shows that the active return distributions based on industry modeling are more stable than those based on country modeling. The superior stability of the active returns available to industry modeling comes from the fact that skewness in both the market capitalization and the number of names is much less pronounced across industries than across countries. We then examine the active return distribution in terms of a country vs. industry attribution analysis. We find that in recent years industry has explained more of the variation in stock active returns than has country. In addition, explanatory regressions of quarterly active returns against common factors seem to be as strong by industry as country over the entire sample, and stronger by industry when sub-samples are considered.

99-26 "Raising Capital with Ownership Restrictions: The Case of Resurgent India Bonds," by ***Amar Gande and Manju Puri.*** *(November 1999)*

A key result in the literature on international capital raising is that ownership restrictions, for example, relating to a firm's equity, are costly and raise its cost of capital. In contrast, we show that restricting ownership of securities to a homogenous segment of investors who value the securities higher than foreign investors can sometimes be beneficial in lowering (rather than raising) the cost of capital. A case in point is the recent $4.2 billion Resurgent India Bonds issue by the largest bank in India, State Bank of India. Two key features of these bonds were their yields, touted in the Indian financial press as being highly attractive, and that they were offered exclusively to Indians living abroad, known as Non-Resident Indians. We provide evidence of a substantial yield difference of approximately 150 basis points between the Resurgent India Bonds and comparable bonds of similar credit rating, even after we account for the effect of commissions and taxes, translating to a saving of $458 million over the five year maturity of the bonds. The main factors driving the higher valuation by the Non-Resident Indians is a lower ex-ante probability of default (based on State Bank of India's repayment history and that it may be "too big to fail") and a higher perceived collateral value of these bonds (since the Non-Resident Indians are able to utilize the collateral in the local currency better than foreign investors).

We provide an explanation for restricting the ownership of the Resurgent India Bonds in a simple model. We show that the issuing firm may benefit from restricting the offering to a relatively homogenous segment, such as the Non-Resident Indians, since the restriction serves as a precommitment to ensuring an efficient ex-post renegotiation in the default states, resulting in a lower ex-ante offering yield (and a higher offer price). Many other emerging market firms may also benefit from a similar niche strategy of offering new securities only to investors who value them the most.

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*00-01 "Trading Activity and Expected Stock Returns," by **Tarun Chordia, Avanidhar Subrahmanyam, and V. Ravi Anshuman.** (forthcoming in Journal of Financial Economics)*

Given the evidence that the level of liquidity affects asset returns, a reasonable hypothesis is that the second moment of liquidity should be positively related to asset returns, provided agents care about the risk associated with fluctuations in liquidity. Motivated by this observation, we analyze the relation between expected equity returns and the level as well as the volatility of trading activity (a proxy for liquidity). We document a result contrary to our initial hypothesis, namely, a negative and surprisingly strong cross-sectional relationship between stock returns and the variability of dollar trading volume and share turnover, after controlling for size, book-to-market, momentum, and the level of dollar volume or share turnover. This effect survives a number of robustness checks and is statistically and economically significant. Our analysis demonstrates the importance of trading activity-related variables in the cross-section of expected stock returns.

*00-02 "Price Discovery by ECNs and Nasdaq Market Makers," by **Roger D. Huang.** (March 29, 2000)*

This paper examines the discovery of an asset's full-information value by electronic communication networks (ECNs) and Nasdaq market makers. The results show that despite possible market fragmentation due to the addition of alternative trading venues, quotes submitted by ECNs and dealers have information content and quotes on the same asset reflect common information. The evidence also reveals that ECNs are important contributors to the price discovery process, being the dominant venue in eight of the ten most active stocks. Further analysis suggests that structural differences between ECNs and Nasdaq market makers have an impact on price discovery. Specifically, ECNs share of price discovery is enhanced by informed traders who are enticed by the ability to trade anonymously but is impeded by liquidity traders who are attracted by the possibility of lower trading costs.

*00-03 "Et tu, Brute?: The Role and Impact of Trading Halts in the Nasdaq Stock Market," by **William G. Christie, Shane Corwin, and Jeffrey H. Harris.** (November 12, 1999)*

This paper studies the impact of delayed openings and intraday trading halts for a sample of Nasdaq stocks. These halts, which stem from impending news, have a median duration of slightly less than one hour, and produce a median absolute return of 5.5%. The resumption of trading is accompanied by a dramatic increase in quote revisions, share volume and number of trades that are slow to decay. Inside quoted spreads more than double after the halt has been lifted. This widening of spreads dissipates quickly, and is virtually eliminated within 30 minutes. The increase in spreads is far greater than observed for NYSE stocks, suggesting that the NASD might consider a call market auction when trading resumes.

*00-04 "The Impact of Adopting Odd-Sixteenth Quotes on Trading Costs Among Nasdaq Issues," by **William G. Christie, Jeffrey H. Harris, and Eugene Kandel.** (December 8, 1999)*

This paper studies the impact of adopting odd-sixteenth quotes on stocks that are differentiated based on trading activity and whether they had been phased-in under the SEC Order Handling Rules. We find that among the most active issues, quoted and effective spreads declined dramatically, implying that a tick size of $0.125 prevented trading costs from seeking their competitive level. In contrast, less active issues, particularly those trading in a pure dealer market, realized very modest reductions in trading costs. Our results suggest that further tick size reductions may benefit a small fraction of issues, but may impose substantial costs through the potential loss of price priority for all issues.

*00-05 "Joint Accounting Choices: An Examination of Firms' Adoption Strategies for SFAS No. 106 and SFAS No. 109," by **Michele Daly and Debra Jeter.** (January 2000)*

This paper investigates whether firms' adoption strategies for Statement of financial Accounting Standards No. 106, Employers' Accounting for Postretirement Benefits Other Than Pensions (SFAS No. 106) and Statement of Financial Accounting Standards No. 109 Accounting for Income Taxes (SFAS No. 109) were linked. While firms' choice of accounting methods involves consideration of other accounting choices, little research has examined that issue. The evidence presented indicates that firms chose adoption strategies for the two standards jointly. Factors with which adoption strategies are associated are examined. The evidence is consistent with adoption strategies being associated with incentives to smooth income and to reduce political costs. Insight is also provided into how managers view recurring versus non-recurring charges, and how they weigh the tradeoff between a large one-time (income decreasing) charge against smaller recurring charges.

*00-06 "Friction," by **Hans R. Stoll.** (forthcoming in Journal of Finance)*

The sources of trading friction are studied, and simple, robust empirical measures of friction are provided. Seven distinct measures of trading friction are computed from transactions data for 1706 NYSE/AMSE stocks and 2184 Nasdaq stocks. The measures provide insights into magnitude of trading costs, the importance of informational versus real frictions, and the role of market structure. The degree to which the various measures are associated with each other and with trading characteristics of stocks is examined.

*00-07 "Lost Profits from Patent Infringement: The Simulation Approach," by **Luke M. Froeb, James Langenfeld, and Gregory J. Werden.** (forthcoming in International Journal of the Economics of Business)*

A patent owner is entitled to recover any additional profits that would have been earned but for infringement. This paper suggests the use of an adaptation of merger simulation to assess lost profits in patent infringement cases. A model of the industry with infringement is calibrated to observed prices and quantities and estimated demand elasticities. Lost profits are then estimated by calculating a new equilibrium without the infringing product(s).

*00-08 "Initial Stock Returns of Mutual Thrifts Converting to Publicly Held Corporations," by **Ronald W. Masulis and Haluk Unal.** (May 2000)*

This study is the first to examine mutual thrift conversions over the extended 1983-1996 period, which represents a period in which most U.S. mutual thrifts made the transition to be publicly held corporations. The Unique aspects of the mutual thrift conversion process allow us to examine several motivations for conversions that involve the equity fund raising process. In particular, we document the pattern of initial returns to converting thrifts and explore the extent to which theses initial returns are predictable from information taken from the thrifts' regulatory accounting statements concerning their existing portfolio values along with estimates of their growth option values.

We find a structural shift in the relationship of stock initial returns and our explanatory variables around the passage of the Financial Institution Reform, Recovery and Enforcement Act (FIRREA). Prior to FIRREA, thrift conversion was primarily motivated by the need to further capitalize financially weak thrifts.

After FIRREA, strengthening a thrift's capitalization was not an important factor, but cashing in the mutual thrifts' equity appears to be a major motive for mutual thrift conversions. We uncover evidence that regulatory accounting valuation, adjusting for interest rate changes, is a useful explanatory variable in predicting post-conversion equity market valuation. We also find that managers' thrift share purchases as part of the conversion process are marginally informative to the market in valuing the thrift's post-conversion equity.

00-10 "The Role of Incentives in the Prevention of Financial Crises in Emerging Economies," by ***Amar Gande, Kose John and Lemma W. Senbet.*** *(March 15, 2000)*

We develop an agency-theoretic framework that brings together corporate finance (micro-finance) paradigms to bear upon a macro phenomenon, such as the recent financial crisis. Much of the literature debates on the predictors/determinants of a financial crisis and on the resolution of a crisis when it occurs. We take a different approach by focusing on the prevention of a financial crisis and specifically on the role of incentives in mitigating vulnerability of a local economy to a potential financial crisis. We show that the presence of an implicit or explicit public bailout is sufficient to induce private incentives for risk shifting and over-investment in the local economy. The presence of risky debt in the capital structure exacerbates the risk-shifting incentives and mitigates over-investment incentives. Foreign-currency-denominated debt and the possibility of local currency depreciation over the maturity of the debt, as has been the case in most emerging market countries in recent times, leads to aggravated risk-shifting which can magnify into a contagion from an exogenous currency shock. Consequently, we propose a prevention role through mechanisms that curb the risk shifting and over-investment incentives. We show that the risk-shifting incentives can be curbed through warrants held by an external agency, such as the IMF. These warrants have the desired features of pricing a potential bailout on a revenue neutral basis and enable the local country/companies to pay for a potential bailout from their profits in the good states of the world. Where the principal problem is over-investment, we suggest that the quality of corporate governance be improved and that excessive debt relief may be counter-productive due to the beneficial role of debt in curbing over-investment. Implementation issues are also discussed. Overall, we view that what appears to be a crisis in fundamentals may really be brought about by ill-designed incentives and financial systems.

00-11 "Market Fragmentation," [Policy Paper] by ***Hans R. Stoll.*** *(May 9, 2000)*

How serious is market fragmentation and how important is it for the SEC to impose a regulatory solution? Should the various competing markets be linked into one market? The short answer is that the extent of market fragmentation and its adverse effects are probably overstated, and the difficulties of directly linking downstairs markets are probably understated. Markets are linked by decisions of investors and brokers about where to route orders, and improvements in upstairs order routing systems are likely to be a more effective way to link markets than to build a new direct linkage mechanism.

00-12 "Audit Pricing in Private and Public Firms," by ***Paul Chaney, Debra Jeter, and L. Shivakumar.*** *(April 28, 2000)*

Using a sample of clients and auditors in the U.K. between 1989 and 1996, we provide a comparison of audit fees of private and public clients considering client size, auditor type, and auditor specialist. We present evidence of a significant premium for public over private clients after controlling for firm size and a significantly greater Big 5 premium for public over private firms after controlling for audit risk, audit complexity, and client size.

Our findings are generally similar between the private and public samples, with certain notable exceptions. In particular, for large private clients, there is evidence of a pricing premium for non-Big 5 auditors, consistent with an argument that Big 5 auditors are able to charge lower prices because of economies of scale. For large public clients, similar economies of scale would also permit lower pricing by Big 5 auditors, but the economies are likely offset by other factors either enabling or requiring Big 5 auditors to charge more. Possible factors include the demand for the Big 5 brand name by large public clients, which effectively conveys monopsony power to Big 5 auditors in that market, or the heightened risk of reputation and litigation losses in the event of an audit failure in the large public client market. Another feasible explanation is that Big 5 auditors may price audits of large private companies very competitively, in anticipation that these firms may soon go public.

00-13 "Market Liquidity and Trading Activity," by ***Tarun Chordia, Richard Roll, and Avanidhar Subrahmanyam.*** *(May 17, 2000)*

Traditionally, empirical studies of liquidity have focused on time spans of a year or less. This paper examines an eleven-year history of daily spreads, depths, and trading activity averaged over more than 1300 NYSE stocks. Candidate determinants of liquidity are described, measured, and used to uncover the following results: (a) the day-of-the-week, the equity market return, and recent market volatility exert the strongest detected influences on market-wide liquidity and trading activity; (b) short- and long-term interest rates influence trading activity; (c) long-term interest rates have a significant impact on depth; (d) very short-term rates influence bid-ask spreads and depth; (e) depth and trading activity increase shortly before major macroeconomic announcements.

00-14 "A Homotopy Method for Merger Analysis in Bertrand Industries," by ***Luke Froeb and Steven Tschantz.*** *(June 1, 2000)*

A homotopy method is given for tracing a continuous path from a pre-merger to a post-merger Nash equilibrium. Let r be the fraction of shares that is held by competing companies in their rival's stock. As r increases from zero (pre-merger) to one (post-merger), the merging firms internalize the price effects on each others profits. We identify parameters that determine merger effects. Contrary to current practice, which uses only first derivatives of demand (elasticities), accurate merger prediction also requires information on second derivatives. We show that the mapping from r to prices is almost linear. By considering mergers to monopoly, r gives us a metric of the competitiveness of an industry. This metric is used to investigate the use of pass-through rates. We find that both industry and firm-specific pass-through rates can rise or fall with the competitiveness of an industry. We also use this metric to model mergers in industries where behavior is "less-competitive" than Nash. We find that merger effects go to zero as the industry becomes less competitive. However, the relationship need not be monotonic.

00-15 "Stochastic Correlation Across International Stock Markets," by ***Clifford A. Ball and Walter N. Torous.*** *(May 30, 2000)*

This paper examines the correlation across a number of international stock market indices. As correlation is not observable, we assume it to be a latent variable whose dynamics must be estimated using data on observables. To do so, we use filtering methods to extract stochastic correlation from returns data. We find evidence that the estimated correlation structure is dynamically changing over time. We also investigate the link between stochastic correlation and volatility. In general, stochastic correlation tends to increase in response to higher volatility but the effect is by no means consistent. These results have important implications for portfolio theory as well as risk management. ■

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