Owen @ Vanderbilt

FINANCIAL MARKETS

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FINANCIAL MARKETS RESEARCH CENTER • 2001

Conference on
Market Quality

What is a good market? How does one measure market quality? How is the quality of markets affected by recent technological and regulatory changes? These questions and many related issues were the theme of the 14th annual conference of the Financial Markets Research Center held at Vanderbilt University on April 19-20. The conference was supported by a special grant from the New York Stock Exchange. The Thursday sessions took place in the outstanding new facilities provided by Center member Caterpillar Financial Services. The Friday morning sessions took place in the Owen School.

Bill Cristie, Dean of the Owen School, welcomes participants

Users of securities markets have always been concerned with the quality of markets, but they have not always been able to do much more than complain. Nowadays, they have alternatives. Traditional markets like the New York Stock Exchange (NYSE) and Nasdaq still dominate, but Electronic Communication Networks (ECNs) are rapidly increasing market share. Regional exchanges are seeking new ways of attracting order flow. Market-making firms are consolidating and establishing a presence in all market centers, seeking to become the one-stop shopping place for order execution. As a consequence, brokers have a choice of which market or market maker to use for trading services. If performance of one market center or one market maker is judged to be poor, the broker can switch its order flow to another market. Similarly, institutional trading desks can switch their trades to the venue that best meets their needs.

The Securities and Exchange Commission (SEC), in rules implemented in mid 2001, has required markets to provide detailed disclosure of their execution quality, and it has required brokers to disclose how orders are routed and whether any payment for order flow is received. One issue is whether alternative indicators of market quality adequately describe markets and to what extent best execution obligations require brokers to send orders to the market with the best quality measures. Are there unmeasured characteristics that are relevant? A second issue is how market structure and market rules affect quality of markets and its measurement. For example, decimalization has narrowed quoted spreads but with a concomitant decrease in depth. Quality may have improved, but measures are required for depth as well as execution price. A third issue is how markets should be linked to allow routing of orders to the best market. Furthermore, should orders be routed to the best market overall or to the market that is best on a trade-by-trade basis? The conference provided an opportunity to discuss these and related issues in detail.

Hans Stoll, Director of the Financial Markets Research Center, led off the conference by discussing alternative measures of market quality. He also reported on current research with **Christoph Schenzler**, Research Associate at the Owen School, showing that quoted spreads on Nasdaq have declined significantly since 1993, but that effective spreads have declined less and now frequently exceed quoted spreads. **Mark Ready**, Associate Professor of Finance at the University of Wisconsin, reported on a study of execution costs on Nasdaq and the NYSE that was completed during his recent eight-month service as Chief Economist of the SEC. The measures used in the SEC study – effective spread and realized spread – are to be compiled by all market centers under the new SEC rule. Ready concluded that, except for the largest Nasdaq stocks, execution quality appeared better on the NYSE auction market than the Nasdaq dealer market.

After a break, a panel chaired by **Rich Lindsey**, Senior Managing Director of Bear Stearns and former Director of Market Regulation at the SEC, discussed market structure, market quality, and trading costs. **Mike Edleson**, Chief Economist of the Nasdaq Stock Market, commented on the Ready study and on the implications of decimalization.

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FROM THE DIRECTOR

An important goal of the Financial Markets Research Center is to provide a forum for discussion of critical issues facing the financial markets. That goal was aptly met by this year's conference on market quality. The conference, described in more detail elsewhere in this newsletter, brought together academics, regulators, and industry leaders to discuss the quality of equities and options markets. Not surprisingly, participants did not always agree where markets were heading, but bringing together leaders from different segments of the industry – from retail order flow providers, from market making firms, from traditional exchanges, and from new electronic markets, along with academics and regulators – made for some lively and informative discussion. The Center also supports research on financial markets and maintains data bases needed in studying financial markets.

Hans R. Stoll

Center faculty, drawn from the fields of finance, accounting, and economics, currently number 17. Among these are several new faculty who are joining the Owen School and the Center this year. Nick Bollen joins us from the University of Utah, where he taught since receiving his PhD from Duke four years ago. He specializes in empirical analyses of financial markets and has published papers on option markets and mutual fund performance. Charu Raheja joins us after receiving her PhD degree from New York University. Her dissertation work focused on the factors explaining the composition of boards of directors. Gordon Hanka joins us as a two-year visitor from Penn State University, where he has taught for the last six years. He has published papers in the areas of corporate finance and the IPO market.

The Center, founded in 1987, is now entering its 15th year of operation. The continued success of the Center depends in large part on the support received from the Center's members, which are listed elsewhere in this newsletter. I would like to thank them not only for their financial support but also for stimulating our thinking about important issues to be studied. Several new members have recently joined the Center. They are Matlock Capital, Susquehanna Partners, Archipelago, and Bear Stearns and Company.

Welcome and thanks!

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 examines participants in financial markets, such as brokers, exchanges, and financial intermediaries, businesses needing financing, and 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.
3. Supports research by faculty members and Ph.D. students at Vanderbilt.
4. Maintains data bases.
5. Funds research projects.
6. 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.
Archipelago, LLC
Bear, Stearns & Company, Inc.
Caterpillar Financial Services
Chicago Board Options Exchange
Eclipse Capital Management, Inc.
*Hull Group, LLC
*Interactive Brokers Group
*Matlock Capital, LLC
Merrill Lynch & Company, Inc.
*The Nasdaq Stock Market, Inc.
*New York Stock Exchange, Inc.
Susquehanna Partners, GP
Thales Fund Management, LLC

*Indicates a lead member.

Market Quality *(continued)*

He noted that the philosophy of Nasdaq was to have an open architecture with access for all traders linked through the Nasdaq system. The second panelist, **Matt Gelber**, Vice President for Order Routing at Fidelity, noted that the order routing group at Fidelity is totally independent and makes its order routing decision based on detailed data collected from each market center. For retail orders, price relative to the quote at order entry time and speed are important. For institutional orders, execution is measured by the VWAP (volume weighted average price) relative to the expected price. The third panelist, **George Sofianos**, Vice President at Goldman Sachs, discussed the need for different bid-ask spreads for different sizes. He noted that brokers add value because of their ability to access non-displayed liquidity, and he distinguished between the dealer spread and the limit order spread.

Annette Nazareth with Hans Stoll prior to her talk.

After a lunch break, **Annette Nazareth**, Director of Market Regulation at the SEC, spoke on several issues before the SEC. She commented on the importance of the recent execution quality disclosure rules to give investors the information necessary to make informed decisions on order routing. She discussed how market data on quotes and prices should be collected and disseminated and noted that a blue ribbon SEC committee was at work on this issue. She spoke about changes in the option markets in the wake of the 1999 shift to multiple trading and noted the need for option market linkages.

The conference next turned to ECNs, new electronic systems developed since the 1997 Order Handling Rules. The session was chaired by **Rick Kilcollin**, the head of Kilcollin Financial LLC and former CEO of the Chicago Mercantile Exchange. **Terry Hendershott**, Assistant Professor of Finance at the University of Rochester, presented the results of a paper, "Electronic Communications Networks and Market Quality," written with Tim McCormick and Michael Barclay. ECNs account for 30% of volume in high volume Nasdaq stocks and tend to have realized spreads somewhat lower than market makers. **Joe Lombard**, Executive Vice President of Archipelago and former counsel to Arthur Levitt, spoke on the development of ECNs, noting the difference between those that were cul-de-sacs and those that were webs.

The final session on Thursday, chaired by **Jim Cochrane**, Senior Vice President of the New York Stock Exchange, dealt with decimalization and depth. **Bob Wood**, Professor at the University of Memphis, in papers written with Sugato Chakarvarty and Stephen Harris, reported on the effects of decimalization on the NYSE and on Nasdaq. The effects are as predicted – spreads and depth have fallen dramatically, trade sizes are smaller, and runs of price changes in the same direction are longer. **Bob Jennings**, visiting professor at the NYSE, (with co-authors Jeff Bacidore and Rob Battalio) recommended a revised measure of price improvement that takes account of depth improvement. Depth improvement will become increasingly relevant when tick sizes and spreads are small. **Ingrid Werner**, Associate Professor of Finance at Ohio State University, commented on the papers. The conference adjourned for the day for liquidity provision and dinner.

Day two of the conference focused on the option markets. More so than equity markets, option markets have undergone tremendous change and dislocation in the last two years. In August of 1999 option exchanges, under pressure from the SEC and Department of Justice, began to compete in trading options. Prior to that time most options were listed on only one exchange. Competition has taken a variety of forms: Exchanges reduced fees on customer orders, and market makers began to pay for order flow. But with decimalization, spreads on options will be squeezed, making payment for order flow more difficult in the future. The SEC has adopted rules for firm quotes, option linkage, and trade through disclosure, intended to promote best execution across option markets. The first session of day two was chaired by **Peter Layton**, Managing Director of Goldman Sachs responsible for trading operations at the Hull Group, a firm purchased by Goldman Sachs in 1999. **Frank Hatheway**, Assistant Professor of Finance at Penn State, spoke on execution costs in listed option markets, research conducted with Oliver Hansch. He emphasized the difficulty of interpreting options data, which arises from different reporting conventions in different markets, the lack of a disseminated National Best Bid or Offer (NBBO), and the frequency of fast markets in which quotes become indicative. **Rob Battalio**, Associate Professor of Finance at Notre Dame, analyzed the relation among the four traditional option exchanges and the new electronic International Securities Exchange. Order flow has shifted across the exchanges, which implies that there is competition, yet competition has not led to efficient markets. Option markets have frequent locked and crossed markets and frequent trade-throughs. **Eric Noll**, Associate Director of Susquehanna Partners, made a number of points on the quality of option markets. He argued that the designated primary market-maker (DPM), not the exchange, is the provider of best execution. He commented on the difficulties that the academics in the prior session experienced with the quality of the options data, noting that exchange data is not

Rick Kilcollin, Jim Cochrane, Rich Lindsey, and Rebecca Lindsey review the day's discussions.

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Market Quality *(continued)*

readily available even to exchange members. Order flow providers do not have the data to fully evaluate the quality of executions. He noted that order routing can connect exchanges but that quotes on another exchange are often not honored or honored with delay. (Some firms cancel orders if not executed within 10 seconds, but they are being charged for canceling.)

The formal conference proceedings ended with a panel of three industry leaders, chaired by **Hans Stoll**. **David Krell**, President of the International Securities Exchange (ISE), a new electronic exchange for options that began trading options on May 26, 2000, spoke on structure and function of the ISE. He noted that the ISE, along with multiple listing, has been a catalyst for change. The ISE is a combined dealer/auction market where liquidity is supplied by Primary Market Makers and by Competitive Market Makers. The ISE is an open system in the sense that orders may be placed by customers or by professional traders. **Phil DeFeo**, Chairman and CEO of the Pacific Exchange, reviewed developments in option markets and their impact on the option exchanges. He noted the difficulties of being entrepreneurial in the highly regulated environment of securities markets. He noted that multiple listing of options has had a number of effects. It empowered order flow providers who have been able to negotiate payment for order flow. At the same time, exchange fees for customers have been reduced to zero to be replaced by fees on market makers. Large market making firms have grown in importance, and small market makers are being forced out. He discussed the purpose of an exchange in this environment. He noted that the Pacific Exchange was building a screen based options trading system while at the same time maintaining its floor based system. The Exchange expects to demutualize to streamline its management and align the interests of its owners with the Exchange. **John Damgard**, President of the Futures Industry Association, concluded the panel with a discussion of the dramatic changes in the futures industry. He noted that, as a political matter, the new regulatory framework for futures was made possible because Congress was concerned about the shrinking market share of US futures markets relative to foreign markets. He also discussed the importance of an appointment of the Chairman of the Securities and Exchange Commission and of the Commodity Futures Trading Commission. No forward movement can take place on single stock futures and other matters until these posts are filled. The session, like those before it, concluded with lively discussion from the floor. ■

Eric Noll stresses the role of market makers in market quality.

John Damgard, Phil DeFeo, and David Krell discuss developments in futures and options markets.

Dewey Daane Invitational Tennis Tournament

Jim Klingler, playing for the first time in the tournament, was awarded the well-deserved first prize contents of the Daane Cup. Second prize went to Joe Blackburn, who, by unanimous decision of the judges, was denied the second prize contents of the Cup on the grounds he had not attended any sessions of the conference. The second prize went to the next finisher who had attended the conference, Hans Heidle. ■

Top finishers, Joe Blackburn, Jim Klinger, and Hans Heidle, with Dewey Daane

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 invests in several sectors including energy, technology, healthcare, retail, and financial services and is one of the largest student-run investment funds in the country. Financial performance is measured against a benchmark of comparable risk and asset size. The Fund constantly strives to 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 2000-2001 the following researchers presented work on finance topics:

Anup Agrawal, *University of Alabama*: CEO Succession: Insiders versus Outsiders

Navneet Arora, *University of North Carolina*: Explicit and Implicit Incentives in a Delegated Portfolio Management: Theory and Evidence

Nick Bollen, University of Utah: Does the Market Timing Ability of Mutual Fund Managers Persist?

James Brickley, *University of Rochester*: Incentives in Non-Profit Organizations: Evidence from Hospitals

Paul Chaney, *Vanderbilt University*: Pricing of Initial Audit Engagements among Privately Held Clients

Joseph Chen, *Stanford University*: Asymmetric Correlations of Equity Portfolios

Shijun Cheng, *University of Pittsburgh*: The Relation between R&D Expenditures and CEO Compensation

Hazem Daouk, *Indiana University*: The World Price of Insider Trading

Ryan Davies, *Queens College*: Registered Trader Participation during the Toronto Stock Exchange's Pre-Opening Session

Julia D'Souza, *Cornell University*: Voluntary Disclosure in a Multi-Audience Setting: An Empirical Investigation

Martin Evans, *Georgetown University*: FX Trading and Exchange Rate Dynamics

Mara Faccio, *Università Cattolica del Sacro Cuore*: Debt and Corporate Governance

Amar Gande, *Vanderbilt University*: Can Ownership Restrictions Enhance Security Value? The Case of Resurgent India Bonds

Andreas Gintschel, *University of Rochester*: Transaction Costs and Price Discovery in Dual Shares

Tom Ho, *Vanderbilt University*: Binomial Interest Rate Model

Lori Holder-Webb, *University of Texas*: Do Restructurings Improve Operating Performance?

Harrison Hong, *Stanford University*: Breadth of Ownership and Returns

Kewei Hou, *University of Chicago*: Information Diffusion and Asymmetric Cross-Autocorrelations in Stock Returns

Rana Kiefer, *London Business School*: Wealth Transfers during Distressed Equity Issues

Laurie Krigman, *University of Arizona*: On the Timing and Execution of Open Market Repurchases

Craig Lewis, *Vanderbilt University*: Busted IPOs and Windows of Misopportunity

Inessa Love, *Columbia University*: Financial Development and Financing Constraints: International Evidence from the Structural Investment Model

Øyvind Norli, *University of Toronto*: Leverage, Liquidity and Long-Run IPO Returns

Manju Puri, *Stanford University*: Venture Capital and the Professionalization of Start-ups

Charu Raheja, *New York University*: The Interaction of Insiders and Outsiders in Monitoring: A Theory of Corporate Boards

Sundaresh Ramnath, *Rice University*: Investor and Analyst Reactions to Earnings Announcements of Competing Firms: An Empirical Analysis

Pierre Ruiz, *HEC*: Domestic and Global Factors in Individual Stock Returns

Aamer Sheikh, *University of Georgia*: The Effect of Ratcheting Performance Standards on CEO Compensation

Mikhael Shor, *Rutgers University*: An Experiment on Learning with Limited Information and Learning to Respond: The Use of Heuristics in Dynamic Games

George Tauchen, *Duke University*: Alternative Models for Stock Price Dynamics

Karin S. Thorburn, *Dartmouth College*: Toe Holds and Fire-Sales in Bankruptcy Auctions ■

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 2000-2001 academic year were:

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

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

Frank C. Carlucci, Chairman, *The Carlyle Group* (former Secretary of Defense, National Security Advisor, Director of CIA, and U.S. Ambassador)

Roger W. Ferguson, Jr., Vice Chairman, *Board of Governors of the Federal Reserve System*

William Hoagland, Majority Staff Director, *Senate Budget Committee*

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

David Jones, Chairman, *Aubrey Lanston & Co.*

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

David A. Lereah, Senior Vice President and Chief Economist, National Association of Realtors

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

Martin Mauro, Manager of Financial Economics, *Merrill Lynch & Co., Inc.*

Scott Pardee, Alan Holmes Chair of Monetary Economics, *Middlebury College* (former Chairman, *Yamaichi Securities US*)

Rudolph G. Penner, *The Urban Institute*, (former Managing Director, *Barents Group KPMG*, and Director, *Congressional Budget Office*)

Deborah A. Perelmuter, Senior Vice President, *Federal Reserve Bank of New York*

Gary H. Stern, President, *Federal Reserve Bank of Minneapolis*

Tadashi Uhira, Chief Representative, Washington DC Office, *Bank of Japan*

Paul A. Volcker, (former Chairman, *Wolfenson & Co.* and former Chairman, *Board of Governors of the Federal Reserve System*) ■

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.

Professor Ball teaches courses in risk management, stochastic processes, investments, and statistical analysis. His paper, "Stochastic Correlation Across International Stock Markets" (with Walter Torous), was published in the *Journal of Empirical Finance.* His paper, "True Spreads and Equilibrium Prices" (with Tarun Chordia), has been accepted for publication in the *Journal of Finance.* Ball serves as referee for numerous research journals and is an associate editor of the *Journal of Empirical Finance.*

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.

Professor Chaney's paper, "Audit Pricing in Private and Public Firms" (with Debra Jeter and Lakshmanan Shivakumar), was accepted for presentation at the American Accounting Association's annual meeting in August, and was accepted for presentation at the Asian Pacific Conference on International Accounting Issues held in Rio de Janeiro in October. Professor Chaney and Professor Jeter's Advanced Accounting textbook was translated into Chinese and is available in China.

ANCHADA CHAROENROOK, Assistant Professor (finance). M.S. (financial engineering), Ph.D (finance), Michigan 2000. M.S., Ph.D. (electrical engineering).

Current research interests include empirical testing of asset pricing models, theoretical asset pricing, risk management, corporate finance theory as applied to security pricing, and problems in economic modeling.

Professor Charoenrook teaches courses in securities and portfolios and fixed-income securities. She recently gave a talk on derivative use of firms to 600 professionals and academics at the Stock Exchange of Thailand.

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

Conducts research in the area of market microstructure. His current research is concerned with the role of market closures on trading costs and pricing efficiency. He is also examining the role of finer price increments on investor welfare.

Christie remains a member of the NASD Economic Advisory Board, and serves as Associate Editor for the *Review of Financial Studies,* co-editor of the *Journal of Financial Intermediation,* and an academic director of the Financial Management Association. He was also recently appointed as a member of the Business Accreditation Committee for the AACSB International.

Christie continues to be active in his research and teaching. His paper, "Nasdaq Trading Halts: The Impact of Market Mechanisms on Prices, Trading Activity, and Execution Costs" (with Shane Corwin and Jeffrey Harris), was recently accepted for publication in the *Journal of Finance.* He served as a session chair at the Nasdaq-Notre Dame conference on market microstructure that was held in September 2000. He also served on the dissertation committee of Hans Heidle, who is now an assistant professor at Notre Dame. Christie received the Executive MBA Outstanding Teacher award at graduation in May of 2001 and was a finalist for the James A. Webb Jr. Award for excellence in teaching, which is awarded by the graduating MBA students. Christie will continue to teach the core finance class in the Executive MBA program and a class in the new Law and Business program titled "The law and finance of equity markets," jointly with Professor Bob Thompson of the Law School at Vanderbilt.

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.

Last July, Professor Cohen, Director of the Vanderbilt Center for Environmental Management Studies, hosted a conference in Nashville, co-sponsored by the World Resources Institute, for business school professors who teach and conduct research on environmental issues. In September, he presented a paper, "Why Do Firms Pollute (and Reduce) Toxic Emissions?" at a conference on Management Strategy and the Business Environment at the Wharton School. In October, Cohen presented his paper, "The Economics of Crime and Punishment," at a Symposium on Federal Sentencing Policy for Economic Crimes and New Technology Offenses, sponsored by the United States Sentencing Commission at George Mason University Law School, and he presented the paper, "Measuring the Public's Willingness-to-Pay to Reduce Crime," at the American Society of Criminology Annual Meetings in San Francisco in November.

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. 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, April and May he attended NFA board of directors and finance committee meetings in Chicago 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 37th annual conference on Bank Structure and Competition, and in June he participated in the Federal Reserve Bank of Boston's 44th annual economic conference on Seismic Shifts: The Economic Impact of Demographic Change 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.

Professor Froeb and Vanderbilt Arts and Sciences math faculty members, Philip Crooke and Steven Tschantz, received a Dell STAR (Strategic Technology and Research) grant to update their award-winning Mathserv software (http://math.vanderbilt.edu/mathserv/). They are also training economists at the Swedish Competition Authority to use their merger simulation software. The training exercises will go into the second edition of Crooke's book, Mathematics and Mathematica for Economists (Blackwell, 1997).

AMAR GANDE, Assistant Professor (finance). M.B.A., IIMC 1988, Ph.D., NYU 1997.

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

In November 2000, Professor Gande discussed a paper, "The Role of Economic Fundamentals, Web Traffic, and Supply and Demand in the Pricing of U.S. Internet Stocks," at the Fourth Maryland Finance Symposium at the University of Maryland. In December, he was invited to serve on the program committee of the 2001 Financial Management Association (FMA) annual meetings and helped in putting together two sessions for the upcoming annual meetings in Toronto. In January 2001, he discussed a paper, "Does Diversification Cause the Diversification Discount?" at the American Finance Association (AFA) meetings in New Orleans. In April, he presented a paper, "The Role of Incentives in the Prevention of Financial Crises in Emerging Economies" (with Kose John and Lemma Senbet), at the University of Kansas. During the summer of 2001, Professor Gande worked with coauthors at Owen on three different projects that examine global security offerings, analyst coverage of foreign companies, and the upgrading/downgrading of sovereign bonds by rating agencies.

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Faculty Activities *(continued)*

Professor Gande was awarded the prestigious James A. Webb Jr. Award for excellence in teaching at the Owen commencement ceremony in May.

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 has been invited to serve on the Editorial Advisory and Review Board of *The Accounting Review* for another year. She participated in the 2000 Corporate Accounting Policy Seminar in New Orleans in September, and in October 2000 she taught financial accounting in the Executive International MBA Program for the Vlerick School of Management in Ghent, Belgium. Jeter presented a paper, "Audit Pricing in Private and Public Firms" (with Paul Chaney and L. Shivakumar), at the London School of Business in May 2001. This paper has been accepted for presentation at the annual American Accounting Association conference in Atlanta in August, where she will also be moderating a session. Professor Jeter presented "The Information Content of Restructuring Charges: A Contextual Analysis" (with Paul Chaney and Chris Hogan) in June 2001 at the Hawaii Business Conference.

Jeter's paper, "The Effects of Accounting Choice on Analysts' Forecast Errors in Extractive Industries," appeared in the *Oil, Gas & Energy Quarterly*, Vol. 49:3, March 2001. In addition, she completed two textbooks: *Advanced Accounting* (with Paul Chaney), Wiley & Sons, Inc., published in 2001; and *Managerial Cost Accounting: Planning and Control* (with Germain Boer, Charles Pineno, and Lamont Steedle) forthcoming, South-Western Publishing Company, 2001.

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

Research interests include corporate financial policy, equity analyst behavior, futures, and options. Current research topics include herding by equity analysts and the long-run performance of firms adopting economic profit plans, 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.

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. His paper, "Busted IPOs and Windows of Misopportunity," received the Nasdaq best paper award at the June 2001 Western Finance Association meetings.

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 Global Depositary Receipts (GDR) market for stock, speed of stock price reactions to security offerings, long term stock price performance following common stock offerings, the relation of trading activity and stock price volatility on the London Stock Exchange, the impact of firm organizational structure on operating and financial decisions, and the impacts of converting mutual organizations to stock ownership. Masulis teaches mergers and acquisitions, venture capital, and asset pricing.

Professor Masulis presented "The Speed of Price Adjustment to Stock Offering Announcements: A NYSE/AMEX and Nasdaq Comparison" (with L. Shivakumar) at Dartmouth, the University of Colorado, Texas A&M and SMU.

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

Professor Parsley's research interests are in the fields of international finance and macroeconomics. He has concentrated on the macroeconomics of exchange rates, prices, and the relationship between the two. His current research is directed in five main areas: (1) purchasing power parity and whether convergence toward purchasing power parity is affected by the monetary regime, (2) the importance of deviations from the law of one price in determining real exchange rate movements, (3) the economics of political borders, (4) the relation between aggregate inflation and the variability of relative prices, and (5) how exchange rates affect cross-border pricing.

This spring, Professor Parsley (with Owen School colleagues Bruce Barry and Gary Scudder) led the International Management Seminar class on a study of business conditions in Ireland - the so-called Celtic Tiger. Students in the group wrote market entry analyses for several U.S. based companies. He also continued as a Research Fellow of the Hong Kong Institute of Monetary Research, where he visited early this summer and conducted studies on exchange rate stabilization and economic integration.

Parsley has had two papers accepted during the past year. "Explaining the Border Effect: The Role of Exchange Rate Variability, Shipping Costs, and Geography" (with Shang-Jin Wei) is forthcoming in the *Journal of International Economics*, and "Official Exchange Rate Arrangements and Real Exchange Rate Behavior" (with Helen Popper) is forthcoming in the *Journal of Money Credit and Banking*.

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 participated in the board meeting of the American Finance Association in New Orleans, January 4 - 7, 2001, and he spoke at the memorial service for Merton Miller. In January, he was elected to a three-year term as a public governor of the Pacific Exchange. In February, Stoll participated in the NYSE conference on Global Equity Markets in Transition, held in Hawaii. In March, he lectured on market microstructure at the University of Krems, Austria. Also in March, he spoke on the subject of securities market structure at a conference on Law and Business at the Vanderbilt Law School. In April, he spoke on the measurement of market quality at the spring conference of the Financial Markets Research Center. At a meeting held at Park City, Utah, in July, Stoll led deliberations of the Financial Economists Roundtable on the topic of Securities Market Structure.

Stoll continues his service on the editorial boards of nine academic finance journals. His recent publications include "Market Fragmentation," in the *Financial Analysts Journal*; "Exchange Rates and Firms' Liquidity: Evidence from ADRs" (with Roger Huang), forthcoming in the *Journal of International Money and Finance*; and "Tick Size, Bid-Ask Spreads and Market Structure" (with Roger Huang), forthcoming in the *Journal of Financial and Quantitative Analysis*.

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

Before his retirement from Owen in January 1998, Professor Weingartner taught courses in negotiation, case studies in finance, financial decision making, and real estate finance. His research over the years focused on the premise that specialty is the financial strategy of organizations - particularly entrepreneurial ventures. He has written extensively on the uses of mathematical models in financial decision making and approaches to capital budgeting and has consulted for major financial institutions and other organizations. Professor Weingartner is a past president of The Institute of Management Sciences and is associate editor of *Management Science*. He has authored *Mathematical Programming and the Analysis of Capital Budgeting Problems* as well as numerous articles. ■

Faculty Research Papers

Current working papers completed or revised since January 1, 2000 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.

94-52 "Estimation of First Order Autoregressive/Unit Root Models with Rounding," by ***Clifford A. Ball****. (January 2000)*

Time series observations are often rounded but are commonly estimated as if no rounding were present. In this paper we study first order autoregressive models subject to rounding and implement maximum likelihood estimation under these conditions. We also assess the adequacy of simple adjustments, based on Shephard's corrections, to estimators that are calculated ignoring rounding. The limiting distribution of autocorrelation statistics is documented when the underlying time series is subject to unit roots and rounding. We apply these methods to estimate the volatility of stock prices based on intra-day quotes. In this case frequent observations are recorded irregularly subject to bid-ask spreads.

96-20 "Margin Adequacy and Standards: An Analysis of the Crude Oil Futures Market," by Theodore E. Day and ***Craig M. Lewis****. (July 2001)*

This paper proposes two value-based standards for setting initial margin requirements on futures positions. Our approach recognizes 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.

96-45 "The Information Content of Restructuring Charges: A Contextual Analysis," ***Paul K. Chaney****, Chris E. Hogan and* ***Debra C. Jeter****. (November 2000)*

Restructuring charges have appeared in financial statements with increasing frequency in recent years. Whether such charges provide information or simply allow managers to manipulate future earnings numbers has attracted the attention of a number of users of accounting information. The Press has also questioned these charges, raising such issues as whether growth trends in reported earnings are misleading for companies taking large charges and whether investors will "believe" future reported earnings or anticipate additional subsequent charges (WSJ 1/30/96; WSJ 7/6/98). Prior empirical studies addressing the stock market reaction to the announcement of asset write-offs and/or restructuring charges (Francis et al. 1996; Elliott and Hanna 1996; Kross et al. 1996; Brickley and VanDrunen 1990; Elliott and Shaw 1988) have provided mixed results; i.e. sometimes positive, sometimes negative. Our study suggests the importance of considering the nature of the restructuring charge and the context in which it is observed in interpreting the market's response. These findings support recent pronouncements of the FASB and the SEC requiring greater detail about such charges in the annual report.

97-01 "Industry Conditions, Growth Opportunities, and Market Reactions to Convertible Debt Financing Decisions," by ***Craig M. Lewis****, R. Rogalski, and J. Seward. (forthcoming in Journal of Banking and Finance)*

Firms that issue convertible debt seem to have high debt- and equity-related costs of external finance. Existing theories of convertible debt finance differ primarily in their identification of the specific causes of the debt- and equity-related costs of external finance. To assess the theoretical issuance motives separately, we propose a simple framework that characterizes how issuers should design convertible debt to efficiently mitigate specific debt- and equity-related costs of external finance. We provide evidence from 536 security offer announcements that supports the hypotheses that convertible debt can be designed to mitigate different combinations of debt- and equity related costs of external finance and that share price reactions depend on the security design decisions. The results also illustrate that the relations between firm value, financial leverage, investment opportunities, and the rate of future growth are more complex among convertible debt issuers than situations where firms issue standard financial securities.

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.

97-21 "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.

97-30 "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 Performance of Firms That Issue Convertible Debt: An Empirical Analysis of Operating Characteristics and Analyst Forecasts," by ***Craig M. Lewis****, Richard J. Rogalski, and James K. Seward. (forthcoming in Journal of Corporate Finance)*

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. (forthcoming in Journal of Financial Economics)*

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****. (February 2001)*

Since the last decade, 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 and its evolution over time. Based on an extensive data set of emerging market ADRs listed on NYSE, AMEX and NASDAQ between 1991 and 1998, I find that first-time ADR issues 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. In fact, such a decrease in underpricing is not offset by a similar increase in the underwriter spreads as more ADR issues from the same country are brought to the market. I rationalize this finding in a theoretical framework where investors in the ADR market learn about the country-specific component of the after-market price through sequential issues of ADRs from the same country. Implications for the price impact of new ADR listings on the seasoned ADR issues from the same country are also discussed.

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****. (forthcoming in Journal of Financial and Quantitative Analysis)*

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****. (July 2001)*

Proponents of compensation plans based on economic profits, defined as net operating profits after tax less the cost of all capital used to generate those 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 65 firms adopting economic profit plans between 1983 and 1995 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****. (October 2000)*

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.

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*99-11 "Second-Price Auctions with Power-Related Distributions," by **Luke Froeb**, Steven Tschantz, and Phillip Crooke. (February 21, 2001)*

We analyze a class of parametric second-price auction models where asymmetry is modeled by allowing bidders to take different numbers of draws from the same distribution. We compute the closed-form distribution of price and construct likelihood and method-of-moments estimators to recover the underlying value distribution from observed prices. We derive a Herfindahl-like formula that predicts merger effects and find that merger effects depend on the shares of the merging bidders, the variance, and the "shape" of the distribution. We generalize the model by allowing bidders to mix over power-related distributions. The dominant strategy equilibrium implies that an auction among bidders who mix over distributions can be expressed as a mixture of auctions. This implies that an auction among bidders with potentially correlated values can be expressed as a mixture over independent power-related auctions.

*99-12 "True Spreads and Equilibrium Prices," by **Clifford Ball** and Tarun Chordia. (forthcoming in Journal of Finance)*

Stocks and other financial assets are traded at prices that lie on a fixed grid determined by the minimum tick size. 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. Using Monte Carlo Markov Chain methods, this paper estimates the equilibrium prices and true spreads. For large stocks, most of the quoted spread is attributable to the rounding of prices and the adverse selection component is small. The true spread and the adverse selection component are greater for mid-sized stocks.

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

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 "Explaining the Border Effect: The Role of Exchange Rate Variability, Shipping Costs, and Geography?" by **David C. Parsley** and Shang-Jin Wei. (forthcoming in Journal of International Economics)*

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 show that a simple average of good-level real exchange rates tracks the nominal exchange rate well, suggesting strong evidence of sticky prices.

Focusing on dispersion in prices between city-pairs, we find that 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 turn next to economic explanations for this so-called border effect and to its dynamics. Distance, unit-shipping costs, and exchange rate variability, collectively explain a substantial portion of the observed international market segmentation. Relative wage variability, on the other hand, has little independent impact on segmentation.

*99-26 "Can Ownership Restrictions Enhance Security Value? An Examination of Emerging Market Debt," by **Amar Gande** and Manju Puri. (March 2001)*

This paper examines the role of ownership restrictions in raising capital from niche clienteles. Extant literature suggests that limiting availability of securities to only certain classes of investors constricts demand, and hence decreases prices. We argue that ownership restrictions can have positive implications for prices when viewed in the overall context of security design. We present a model and provide empirical evidence through an in-depth analysis of a quasi-experiment: an actual event of capital raising by an emerging market company with ownership restrictions, namely $4.2 billion of Resurgent India Bonds offered by India's largest bank, State Bank of India exclusively to Indians living abroad at approximately 150 basis points below comparable benchmarks. This is an intriguing issue because it raises the question, how can an emerging market issuer with junk bond ratings obtain such yields? The main reason for a higher valuation is that the investor clientele has a broader relationship with the issuer, they value the underlying collateral more, and are also important for the ongoing activities of the issuer. Restricting the ownership to a homogenous class of investors also lowers the renegotiation costs and serves as a precommitment to ensuring an efficient ex-post renegotiation in the potential default states, resulting in a lower ex-ante offering yield (and a higher offer price). Our results suggest that firms with niche clienteles can benefit from designing securities with ownership restrictions, by offering new securities exclusively to investors who value them the most.

*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. (August 2000)*

We study the impact of news-related Nasdaq trading halts on prices, transaction costs and trading activity. Consistent with previous research from other markets, we find that the post-halt period is associated with unusually high volatility, share volume, and number of trades that are slow to decay. This evidence suggests that market participants respond to trading halts in a manner that is independent of market structure. However, inside quoted spreads more than double after halts and return to normal levels within 20 to 30 minutes. We also show that a longer pre-opening quotation period and the availability of off-exchange trading reduce uncertainty significantly. These results suggest that the reopening mechanism following Nasdaq halts may be inefficient relative to the morning open on Nasdaq and the call auction procedures used on the NYSE.

*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**. (November 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, relatively little research has examined that issue to date. The evidence presented indicates that firms chose adoption strategies for the two standards jointly. 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.

*00-08 "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 2001)*

We examine the role of the incentives of the decision-makers in corporations and banks in the recent financial crises. In particular, we study how an implicit or explicit public bailout aggravates incentives for risk shifting and over-investment in the local economy, which could ultimately result in a distorted economic performance and financial instability. We suggest incentive-based mechanisms toward the prevention of financial crises rather than an ex-post resolution of these crises. We show that the presence of risky debt in the capital structure acts as a double-edged sword as it exacerbates the risk-shifting incentives but mitigates over-investment incentives. In addition, we show that currency risk associated with the foreign-currency denominated debt leads to aggravated risk-shifting, which when undertaken in coordination by many firms can magnify into a contagion. We propose mechanisms to prevent a financial crisis that alter the structure of the after-tax cash flows to residual claimants in the corporate and banking sectors. When banks act as "relationship monitor" to the corporations, then an appropriately designed taxation of the banks is able to induce the socially optimal investment by the corporate sector. We also explore the role of corporate governance and debt relief on the incentive problems mentioned above. Issues of implementation of the proposed mechanisms are also explored.

*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.

*00-14 "How Much Information Is Required to Accurately Predict Merger Effects?" by **Luke Froeb** and Steven Tschantz. (July 11, 2000)*

This paper poses the question "how much information is required to accurately predict merger effects?" To answer it, we develop a homotopy method for tracing a continuous path from the observed pre-merger equilibrium to the unobserved post-merger equilibrium. The path is defined by a sequence of "partial" mergers. We present a methodology for extrapolating along this homotopy path and, by considering information only at the observed pre-merger equilibrium, we identify parameters that determine merger effects. We show that the path is almost linear in price, which gives us a basis for arguing that the linear extrapolation is likely to give good estimates of post-merger prices, or equivalently, that information on demand first and second derivatives is enough, in most cases, to accurately predict merger effects. We present a closed-form merger predictor from which confidence intervals can be computed.

*00-17" Criminal Law as an Instrument of Environmental Policy," by **Mark A. Cohen**. (forthcoming Chapter in Law and Economics of the Environment, Anthony Heyes, ed. Edward Elgar Publishers)*

*00-19 "Managing the Risk of an Insurer Using Market Valuation Methods," by **Thomas S.Y. Ho**. (forthcoming in Securities Analyst Journal of Japan)*

To manage risk and profitability, insurers should implement a new approach. This new approach has two major aspects: (1) use forward looking financial modeling to capture the fair valuation (market valuation) of assets and liabilities, (2) incorporate the valuation into an asset and liability management process such that all phases of the process are consistent to maximizing shareholders' value.

To date, there are many asset and liability management methodologies that may not be consistent with each other. Further, the financial reporting may be backward looking. Insurers, therefore, cannot effectively manage the risk, and the present reporting system does not provide them the incentives to anticipate risks. While this paper focuses on discussing the risks of an insurer, the approach can be applied to other financial institutions.

*00-21 "A Closed-Form Binomial Interest Rate Model," by **Thomas S.Y. Ho**. (September 2000)*

This paper proposes a closed form binomial interest rate model. The model extends the Ho-Lee model to incorporate the term structure of volatility. The model exhibits a mean reversion process. It is a market model that takes the Black volatility as given. The paper also derives the drift of the forward rate process, as proposed by Heath, Jarrow and Morton. Given the model computational efficiency, the model can be used for Asian options with optimal early exercise option valuation.

*00-22 "Busted IPOs and Windows of Misopportunity," by Lynn Foster-Johnson, **Craig M. Lewis**, and James K. Seward. (July 2000)*

After the first day of public trading, the long run return performance of initial public offerings ('IPOs') is poor relative to a sample of matching firms. We provide evidence from a large sample of

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IPOs during 1988-1995 in support of the theory that failure rates are inefficiently priced during the going public process. During the sample period, all of the poor long run performance of IPO firms is accounted for by a relatively small number of issuers subsequently delisted for reasons related to poor operating performance ('busted' IPOs). Investment banks establish offer prices at a level that fails to compensate investors for the likelihood and costs of financial distress. Investors are insufficiently pessimistic about the business prospects of some IPOs, and apparently purchase shares assuming all new issues will survive.

00-23 "Risk Changes Around Convertible Debt Offerings," by ***Craig M. Lewis****, Richard J. Rogalski, and James K. Seward. (forthcoming in Journal of Corporate Finance)*

Firms issuing convertible debt experience poor long-run stock price and operating performance. We examine the possibility that this poor performance may be caused by an unexpected increase in the cost of capital. Our finding that the cost of capital decreases following a convertible debt offer is inconsistent with this interpretation. We also provide evidence that idiosyncratic and total risk increases and that these increases are not related to corresponding changes in the issuer's industry. The results are consistent with an interpretation that idiosyncratic risk affects investment decisions following convertible debt offers, which in turn adversely impacts future operating performance. Our empirical evidence reinforces the notion suggested in earlier studies that the efficient investment decisions predicted by theory are not achieved by the actual design and issuance of convertible debt securities in practice.

01-04 "Inflation and Relative Price Dispersion in Equity Markets and in Goods and Services Markets," by ***David C. Parsley*** *and Helen A. Popper. (February 2001)*

We examine the link between inflation and the variability of relative prices in U.S. equity markets and in U.S. goods and services markets. We find strong, comparable links in both sets of markets. This finding represents a puzzle since conventional wisdom - derived from menu cost or imperfect information models - is not compelling in equity markets. We next examine whether we can attribute the results to small sample baises. We do find an important but generally overlooked bias that is present in many existing studies. However, the bias is too small to explain our own findings, and the puzzle remains.

01-05 "Accounting for Real Exchange rate Changes in East Asia," by ***David C. Parsley****. (May 2000)*

This study measures the proportion of real exchange rate movements that can be accounted for by movements in the relative price of non-traded goods among twenty-one bilateral Asian-Pacific real exchange rates. Following Engel (1999), the decomposition is done at all possible horizons that the data allow - from one month up to 25 years. Evidence presented here is consistent with that from U.S. dollar based real exchange rates from high-income countries. In particular, relative prices of non-traded goods appear to account for virtually none of the mean squared error of East Asian real exchange rates. This pattern holds (mostly) across fixed and flexible regimes, and is unaffected by the cross-sectional variation in either income level, or the degree of openness present among these Pacific-Rim economies. However, movements in the relative price of non-traded goods do appear to account for a substantial portion of the drift in one-third of the bilateral real exchange rates studied.

01-06 "The Costs of Underwritten Common Stock Offerings: A Study of Foreign Issues on US Exchanges," by ***Ronald W. Masulis****. (July 15, 2001)*

Flotation costs of GDR stock offers in the US over the 1990-2000 period are examined. Underwriter spreads and offer price discounts and their determinants are studied, including the effect of prior private placements of stock. Underwriter spreads are influenced by risk measures, economies of scale, issuer size and location, underwriter competition, stock liquidity and seasoning. Offer price discounts are influenced by scale economies, return volatility, issuer size and location, market conditions and seasoning. Prior Rule 144A private placements of stock can marginally lower underwriter spreads and offer price discounts, but in neither case is the result statistically significant. We also perform a matched sample analysis to more carefully assess the importance of prior Rule 144A private placement activity. Using this approach, we do find a statistically significant reduction in spreads for firms with prior 144A private placements, but it is not large in magnitude.

01-07 "The Role of Capital Structure in Tests of Asset-Pricing Models," by ***Anchada Charoenrook****. (February 2001)*

In a multifactor model of expected equity return of a levered firm, the equity beta equals firm beta multiplied by the elasticity of equity price with respect to firm value. This elasticity is, in general, increasing in leverage and it is time varying due to time variation in leverage ratio (the capital structure effect). This paper examines, theoretically and empirically, the hypothesis that the capital structure effect causes of the following empirical regularities reported in existing literature: (1) the cross-sectional relation between size, book-to-market, and average equity return and (2) reversal in long-horizon and momentum in medium-horizon equity returns. The capital structure effect is measured and distinguished from other existing explanations mainly by comparing tests of equity and firm returns of the same set of firms. We find that firm returns are not related to size or book-to-market; 50% of the explanatory power of size and 0% of the explanatory power of book-to-market for average equity returns are due to the capital structure effect. Moreover, the capital structure effect explains away reversal in long-horizon equity returns, and it explains 40% of momentum in medium-horizon equity returns.

01-08 "Corporate Structure, Bank Financing and Inventory Investments: Empirical Evidence from an Emerging Market," by ***Arun Khanna****. (February 20, 2001)*

This study examines the inventory investments of two sets of Indian manufacturing firms: independent and group firms during 1996-97, a time period of robust economic growth and simultaneously an inward shift in the supply of bank loans instituted by the Reserve Bank of India. When internal liquidity and bank debt are examined, independent firms are constrained in terms of their liquidity flows, while group firms are not. When alternative sources of short-term debt are examined, surprisingly group firms that are not issuers of short-term arm's length debt (non-issuers) are not constrained in their inventory investments, while group firms that issue short-term arm's length debt (issuers) are constrained in terms of their stocks of liquid assets. Internal capital market loans extended by issuer group firms are a significant constraint on their inventory investments. These findings are consistent with internal capital markets among group firms mitigating liquidity constraints of non-issuer group firms but at the expense of constraining a sub-set of group issuer firms that act as financial intermediaries for firms within their group. Issuer group firms that increase their bank debt during 1996-97 are able to mitigate or eliminate their constraints on inventory investments; independent issuer firms are liquidity constrained and eliminate their liquidity constraints by relying on alternative sources of short-term debt. Independent non-issuer firms, which do not have recourse to internal capital markets, are constrained in their inventory investments by their limited access to inter-corporate loans market. Both independent and group are not liquidity constrained during 1995-96. Independent firms are liquidity constrained in 1997-98 but group firms are not. Both sets of firms during 1996-97 are significantly liquidity constrained in terms of their capital expenditures. These findings are consistent with the bank loans supply cut imposed by regulatory fiat having the adverse economic effect of imposing liquidity constraints during 1996-97, these liquidity constraints are more binding on independent firms across various components of inventories as compared to group firms.

01-09 "Earning Management and Mean Reversion in Corporate Profitability and Earnings," by Huseyin Gulen and ***Arun Khanna****. (March 13, 2001)*

In a recent study, Fama and French (2000) document significant mean reversion in corporate profitability and earnings. However, their findings about the level of mean reversion may be over- or understated because they do not control for a common accounting practice: earnings management. This paper measures the degree of mean reversion in profitability after adjusting corporate earnings for alternative earnings management proxies. We find that failing to account for earnings management underestimates the degree of mean reversion in both profitability and earnings. After adjusting for earnings management, we document significantly higher levels of mean reversion than documented by Fama and French. Moreover, once we account for earnings management, mean reversion is symmetric. That is, profitability reverts to its mean at the same rate regardless of its relative position to its long run mean. This is in contrast to Fama and French's finding that profitability reverts faster when it is below its mean than when it is above its mean. Our results provide further evidence that mean reversion in profitability is due to competitive forces in the economy rather than just earnings management practices.

01-11 "Price Impacts of Options Volume," by Christian Schlag and ***Hans Stoll****. (May 29, 2001)*

The Price impacts of signed option volume are investigated with transactions data for options and futures on the DAX index. The evidence suggests that options traders are noise traders and that price discovery is more likely occurring in the futures market than in the options markets. Options trading has temporary liquidity effects.

01-12 "Exchange Rate Pass-Through in a Small Open Economy: Panel Evidence from Hong Kong," by ***David C. Parsley****. (June 2001)*

This paper presents estimates of exchange rate pass-through derived from a panel of very disaggregated import unit-values to Hong Kong. The estimation approach builds on that utilized by Knetter (1989, 1993) to study export pricing and pricing to market. The three-dimensional data set examined comprises Hong Kong's top eight floating exchange rate trading partners, and twenty-one of the top 5-digit SITC imports since 1992. Pass-through estimates for Hong Kong imply relatively faster import price adjustment than is typically found for larger, less open economies. These estimates are robust to a number of sensitivity tests. Finally these results confirm, from a different perspective, findings by Parsley (2001) that deviations from the law of one price play a relatively smaller role in real exchange rate movements for Hong Kong, than for other East Asian countries.

01-13 "Limiting Currency Volatility to Stimulate Goods Market Integration: A Price Based Approach," by ***David C. Parsley*** *and Shang-Jin Wei. (June 19, 2001)*

This paper empirically studies the effect of instrumental and institutional stabilization of the exchange rate on the integration of goods markets. An instrumental stabilization of the exchange rate is accomplished through intervention in the foreign exchange market. An institutional stabilization is an adoption a currency board or a common currency. In contrast to the literature that employs data on the volume of trade, an important novelty of this paper is the use of a 3-dimensional panel of prices of 95 very disaggregated goods (e.g., light bulbs) in 83 cities from around the world from 1990 to 2000. We find that goods market integration is increasing over time and is inversely related to distance, exchange rate variability , and tariff barriers. In addition, the impact of an institutional stabilization of the exchange rate provides a stimulation to goods market integration that goes far beyond an instrumental stabilization. According to our estimates, the effect of the euro (over 1999-2000) is an order of magnitude bigger than merely reducing exchange rate volatility from the sample average to zero. However, relative to the U.S. benchmark, Europe can go still further towards an integrated goods market.

01-14 "The Effect of Merger Synergies on Consumers of Differentiated Products," by, ***Luke Froeb****, Steven Tschantz, and Gregory Werden. (June 20, 2001)*

Defending a challenged merger on the basis of synergies requires an analysis of the likely pass through to consumers of associated marginal cost reductions. This paper explores the nature and extent of that pass though with differentiated consumer products. Pass-through rates are shown to depend on demand curvature and idiosyncratic properties of particular demand functions. The marginal cost reductions necessary to fully compensate for the price-increasing effects of a merger, however, do not depend on these things. This implies a close relationship between pass-through rates and the price effects of mergers absent synergies and indicates that pass through should not be addressed as a discrete issue in merger cases. Finally, the paper examines ways in which the degree of competition can affect the three pass through effects; contrary to persistent contentions, greater competition easily may result in less pass through.

01-15 "Pass-Through Rates and the Price Effects of Mergers," by ***Luke Froeb****, Steven Tschantz, and Gregory Werden. (June 25, 2001)*

We investigate the relationship between the price effects of mergers in Bertrand oligopoly and the rates at which merger synergies are passed through to consumers in the form of lower prices. Our main conclusion is that pass-through rates and price effects are closely related. In particular, when a merger would cause large price increases absent synergies, the pass-through rate is high. This close relationship implies that pass-through and price effects should not be addressed independently in any phase of a merger investigation. We show that in a leading merger case, the low estimated pass-through rate and the relatively large predicted merger effect most likely were inconsistent.

01-16 "Market Microstructure," by ***Hans R. Stoll****. (July 3, 2001)*

The field of market microstructure deals with the costs of providing transaction services and with the impact of such costs on the short run behavior of securities prices. Costs are reflected in the bid-ask spread (and related measures) and commissions. The focus of this chapter is on the determinants of the spread rather than on commissions. After an introduction to markets, traders and the trading process, we review the theory of the bid-ask spread in section II and examine the implications of the spread for the short run behavior of prices in section III. In section IV, the empirical evidence on the magnitude and nature of trading costs is summarized, and inferences are drawn about the importance of various sources of the spread. Price impacts of trading are considered in section V. Issues in the design of a trading market, such as the functioning of call versus continuous markets and of dealer versus auction markets, are examined in section VI. Even casual observers of markets have undoubtedly noted the surprising pace at which new trading markets are being established even as others merge. Section VII briefly surveys recent developments in U.S securities markets and considers the forces leading to centralization of trading in a single market versus the forces leading to multiple markets. Most of this chapter deals with the microstructure of equites markets. In section VIII, the microstructure of other markets is considered. Section IX provides a brief discussion of the implications of microstructure for asset pricing.

01-18 "Pricing in International Markets: A 'Small Country' Benchmark," by ***David C. Parsley****. (May 2001)*

This study examines exchange rate pass-through in a 'small-country' context. The study uses a panel of disaggregated exports from Hong Kong to its major flexible exchange rate destinations since 1992. Most existing evidence on pass-through is taken from G7 countries and finds that export prices (in the importing currency) respond less than fully to exchange rate changes. The notable exception is for exports from the United States. Existing evidence suggests that exporters from the U.S. apparently do not mitigate export prices in response to exchange rates, while other countries' exporters routinely pass-through less than 100% of exchange rate changes. This study provides a benchmark by which to interpret the puzzling behavior of U.S. export prices.

Empirically, Hong Kong's export price behavior overwhelmingly supports the competitive paradigm. In only a few cases is there evidence of less than complete pass-through by Hong Kong's exporters. The panel data set also allows an additional question to be addressed. In particular, there is no evidence of differences in pass-through across export destinations. Thus, by inference, near complete pass-through by U.S. exporters suggests similar competitive behavior. ■

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