Information Technology and Market Structure

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The minitrack on Information Technology and Market Structure appears for the second time at HICSS-31. The mini-track continues to examine the impacts of information technology on trading institutions, and on outcomes in markets. Of particular interest is understanding how a market's technostructure — that is, the computer-based support for the pricing and exchange of assets or products in an industry — can redefine the roles of intermediaries, alter the need for physical proximity among transactors, and cause fundamental change in the prices and outcomes achieved in the market. In particular, the transformation of financial markets is occurring rapidly, in large part because financial markets have no physical product for distribution, and numerous mechanisms are available for providing information and executing transactions.

The mini-track will feature papers concerning market structure under changing technological conditions. The first paper in the mini-track is "Restructuring Institutional Block Trading: An Overview of the OptiMark System" by Eric K. Clemons of the Wharton School and Bruce W. Weber of NYU. The paper is a case study examining an next-generation trading system, OptiMark, in which trader submit not ordinary buy and sell orders, but profiles that resemble supply and demand curves. The system will soon become operational as part of the Pacific Exchange (PCX), and could create an entirely new way of trading large blocks of stocks.

The second paper, "The Ecology of an Order-Driven Market" is co-authored by three finance academics, Puneet Handa and Ashish Tiwari of the University of Iowa, and Robert A. Schwartz, Baruch College of the City University of New York. The authors construct a theoretical model of order placement in an "order book" market system (similar to that used on the Paris Bourse), and analyze the optimal decision rules for traders. The results indicate that traders that trade immediately will pay an implicit fee (via slightly less advantageous trading prices) to their counterparties, who supply immediacy to the market by placing limit orders. In equilibrium, limit order placers will be fairly compensated for their risks, and an "ecological balance" of immediacy-demanders and immediacy-suppliers will exist. Data from the Paris Bourse CAC market are shown to be consistent with the model's predictions.

In the third paper, "An Experimental Auction to Allocate Congested I.T. Resources: The Case of the University of Pennsylvania Modem Pool", Frank J. Klausz of A.T. Kearney & Co., and David C. Croson, and Rachel T.A. Croson, of the Wharton School, University of Pennsylvania examine a practical application of market principles and second-degree price discrimination to the allocation of scarce "connect-time" available for a set of university modem ports. They propose a mechanism in which users would bid with scarce "points" their value of connecting to the modem pool when it is congested (i.e., more users desiring log-ons than available connections). The results indicate that more efficient allocations are possible when connected users pay amounts that reflect the costs of the congestion that they cause.

The fourth paper, "The Formal and Systematic Specification of Market Structures and Trading Services" by Martin Reck of the University of St. Gallen proposes a specification language for designing market trading systems and detailing their functionality. The method makes explicit and formal the operations of the market and the trading rules imposed. Use of the language in trading system development integrates strategic considerations in market structure definition with technical factors in trading system specification and program design. A result should be better market designs and more flexible information systems for trading.

The topics listed below continue to be of great interest for the mini-track:
- Effectiveness of new markets and the impacts on organizations participating in the markets
- Globalization of financial markets and increasing cross-border competition
- Alternatives to current market structures in many industries, e.g., on-line auctions that are being conducted successfully over the internet
- The future roles of intermediaries; e.g., broker-dealers in the financial markets