# CAPITAL MARKETS: MARKET MICROSTRUCTURE eJOURNAL

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## CAPITAL MARKETS: MARKET MICROSTRUCTURE eJOURNAL

### "An Analysis of Extreme Price Shocks and Illiquidity Among Systematic Trend Followers"


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We construct an agent-based model to study the interplay between extreme price shocks and illiquidity in the presence of systematic traders known as trend followers. The agent-based approach is particularly attractive in modeling commodity markets because the approach allows for the explicit modeling of production, capacities, and storage constraints. Our study begins by using the price stream from a market simulation involving human participants and studies the behavior of various trend-following strategies, assuming initially that their participation will not impact the market.

We notice an incremental deterioration in strategy performance as and when strategies deviate further and further from the theoretical strategy of lookback straddles (Fung and Hsieh 2001), due to the negative impacts of transaction cost and imperfect execution. Next, the trend followers are allowed to participate in the market, trading against "uninformed" computer traders making randomized bids and offers. We notice that market prices begin to break down as the percentage of trend followers in the market reaches 80%. In addition, in a market dominated by "smart traders", it becomes increasingly difficult for any of them to generate profits using what is supposed to be a "long gamma" strategy. After all, trading is a zero-sum game: It is not feasible for any "long gamma" trader to generate a consistent profit unless someone else is willing to be on the other side of his/her trades. In any such market dominated by "smart traders" with low liquidity and extreme price instability, one proposed solution (as proposed earlier by the U.S. Commodity Futures Trading Commission) is to control position size limits, by either decreasing them (in the original proposal) or increasing them (for completeness in our analysis). Based on our simulation results, we have found no evidence supporting that such a solution will be effective; in fact, doing so will only lead to erratic price behavior as well as a variety of practical issues when imposing such changes to position size limits. An alternative proposal is to intervene in the market direct/indirectly, such as by using a market maker to inject/reduce liquidity. Our simulation results show evidence that injecting and reducing liquidity by the market maker can both be effective. However, a market maker can accumulate a large negative P&L by buying in a one-sided, falling market in which it is the only bidder, or vice versa. Therefore, in practice, no market maker may volunteer to participate in any such "market rescue" efforts unless governments are willing to underwrite some of its large potential losses. In short, direct/indirect intervention by controlling liquidity is not a panacea, and there are practical limits to its effectiveness.

### "The Effects of the Integration of the Euronext Stock Market on Financial Reporting Quality and Liquidity of Listed Companies"

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*Emory Law and Economics Research Paper No. 10-62*

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In this paper we investigate the effects on financial reporting quality and liquidity of the merger of stock exchanges, and of firms' voluntary commitment to enhanced financial reporting and disclosure quality. The setting in which we investigate these issues is the formation in 2000 and 2002 of Euronext from the Amsterdam, Brussels, Paris, and Lisbon stock exchanges. We believe that our results have implications for the more recent merger of Euronext into NYSE Euronext.

The four predecessor exchanges to Euronext were subject to varying reporting, disclosure, corporate governance, and trading regulations. We briefly describe these regulatory regimes, and the Common and Jurisdiction-specific regulation that followed the merger. Subsequent to the merger, Euronext offered traded firms the option of voluntarily joining two sections of Euronext, named NextPrime and NextEconomy. To become listed on these two segments, firms signed Commitment Agreements, binding them to the use of (a) quarterly reporting; (b) financial reports prepared in accordance with IFRS; (c) English language in financial reports and news releases; (d) fully

functioning websites; and (e) enhanced corporate governance practices. If the named segments were a credible mechanism to commit to enhanced investor relations, we expect firms voluntarily committing themselves to this enhanced level of financial reporting and disclosure increased their accounting quality and generated more liquidity in the market for their equity securities than firms that were not eligible or did not choose to become part of NextPrime and NextEconomy. Alternatively, if Euronext's lack of enforcement ability and incentive made the segmentation of the exchange ineffective, we expect changes in accounting quality and liquidity to be a function of the regulation and investor clientele of the predecessor exchanges.

We find that although the mean size of segment and non-segment firms was similar, the largest firms on Euronext did not choose to be listed on the named segments. Prior to the merger, segment firms had lower accounting quality and value relevance of earnings than non-segment firms, but subsequent to joining the named segments their accounting quality and value relevance of earnings increased by much more than the changes for nonsegment firms, resulting in higher quality earnings for the segment firms than the non-segment firms subsequent to the merger. In addition, proxies for liquidity show significant increases for the segment firms but not for the non-segment firms. We find weaker and inconsistent changes in accounting quality and liquidity for samples based on the predecessor exchanges.

These results suggest that stock exchange mergers may have positive effects on firms' financial reporting by making listed firms available to a broader investor clientele. In addition, by segmenting their listing categories, merged stock exchanges can offer listed firms a credible way to bond to enhanced financial reporting quality and transparency.

## "The Time Fractals"

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Ralph N. Elliott wrote the wave principle in 1938. In 1975 Benoit B. Mandelbrot coined the term fractal and in 1982 published his ideas in "The Fractal Geometry of Nature." The book brought fractals into the mainstream of professional and popular mathematics. In February 1999, Benoit Mandelbrot submitted an article to Scientific American called "A Multifractal Walk down Wall Street." In the article, he discussed how fractal geometry can be used to model the stock market curves. The enclosed research reworks the Mandelbrot Multifractal from a time cycle rather than trend perspective to prove that time fractal is more proportionate than the price fractal and is the real law of nature, which drives everything in nature. The case is validated by illustrating power law curves in time cycle periodicities. Power law is seen across nature and in diverse social trends. The power law in prices is a subject of extended study, but there has been no research attempt made to prove power law in time cycle periodicities. Testing cycle periodicity needs large historical data. Long term time series are difficult to obtain and many emerging markets have seen stock market trading activity only start a decade back. The continued prosperity after 1980's was a reason why time fractals did not get researchers attention, unlike price fractal which was actively studied and researched. The fact that what we can see is what we can relate too more also made researchers focus more on price than time, which is less visible. Cycles are not conventionally believed to be patterns. Patterns are understood either conventionally or as Elliott wave fractals. Even few Elliott wave practitioners have admitted the limitation of the Elliott Wave structure as being more sharp on form than on time. These were few reasons why time time fractals remained unproven. This study further connects its

findings with the existing research on various economic cycles finally extending the proof to a long – short intermarket strategy on an asset pair.

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