

# Computerized Global Trading

## 24/6 *A roller coaster ride ahead?*

BY HARALD MALMGREN AND MARK STYS

**T**he “flash crash” on May 6 last year generated growing anxiety among investors that the accelerating speed of computerized stock trading was threatening to spiral out of control. As the weeks wore on, it became evident that the computerized operations of high frequency trading firms (HFTs) had taken a dominant role in equity markets—accounting for roughly 60 percent of daily trading, although at times surging to upwards of 80 percent. It also became evident that a multiplicity of alternative trading platforms, the continuously accelerating speed of orders, and the complexity of algorithm-driven trades had overwhelmed the capability of the Securities and Exchange Commission to monitor markets. Eventually the SEC and Commodity Futures Trading Commission collaborated, and appointed a group of experts to study what had taken place on May 6 and make recommendations about how to prevent future market breakdowns. Focusing solely on U.S. equity trading, the experts reported on February 18, 2011, and made fourteen useful recommendations, but were unable to fully explain the May 6 events.

The SEC did initiate various remedial measures, including circuit breakers and narrower bid/ask spreads. Confronted with growing complexity of trading across thirteen exchanges with differing time limits for execution, and substantial trading in at least forty dark pools, the SEC concluded that it could no longer provide adequate market oversight without requiring all traders to “tag” their transactions. For this purpose, the SEC initiated a “Consolidated Audit Trail” that would permit the SEC to track all trades. Public hearings

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brought to light that although the volume of trading by HFTs had eclipsed the traditional role of market makers, HFTs did not have the same obligations to remain active throughout the trading day. While HFTs provided a larger share of market volume, they were free to withdraw trading whenever they wished, potentially siphoning off massive liquidity whenever they turned off their algorithms. Regulators did discuss whether HFTs might be required to behave as “market makers,” but without agreement.

Hearings also revealed the widespread practice of issuing thousands of “flash orders” (execute or cancel, with duration of millionths of a second) to probe for price differentials among exchanges, other trading platforms, and dark pools. Some SEC officials considered subjecting such orders to minimum duration of at least several seconds to limit opportunity for “false” signals. Exchanges, suffering from thinning market volume, provide rebates according to the volume of orders executed on their platforms. It became evident that HFTs could profit from “churning” large volumes of buy and sell transactions that effectively neutralized each other while creating an illusion of increased market activity. Some officials discussed the idea of banning rebates, but this was vigorously opposed by HFTs.

In parallel with U.S. efforts to adapt regulations to the changing nature of computerized trading, regulators across the Atlantic were also struggling with their own ideas for controlling rapidly growing HFTs in EU markets. Not sur-

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prisingly, the emergence of fast-moving, agile traders who are able to elude the watchful eyes of European market overseers is causing much anxiety in the European Union where comprehensive, omniscient regulation is continuously sought as a means of ensuring “orderly markets.”

In both the United States and European Union, proposals were considered that HFTs and other computerized trading entities be required to make their algorithms available for inspection by regulators. London regulators observed that none of the appropriate authorities were competent to review and approve the nearly limitless, continuously evolving algorithms that are utilized. For the time being, it would appear that European officials have become reconciled to asking for more comprehensive reporting, essentially with the same objective as that of the SEC’s new Consolidated Audit Trail.

While these U.S. and European regulatory reviews have been ambling along at a stately pace, HFTs have been rapidly expanding globally to encompass many other markets. Facing thin volumes and growing competition from off-exchange trading, stock exchanges around the world have sought ways to increase volume and liquidity. HFTs have introduced themselves as the means by which the exchanges can achieve both. In response, many exchanges have offered co-location opportunities for HFTs to set up trading in proximity to the exchange, and in some cases



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exchanges have set up high-speed platforms (such as the Arrowhead platform at the Tokyo Stock Exchange or a new multi-asset trading platform in Singapore) in which HFTs can operate. HFTs are now spreading rapidly into additional markets, including Hong Kong, Johannesburg, Moscow, Mexico City, and Sao Paulo.

HFTs initially focused on trading in equities and equity futures. Previously, their primary means of achieving profits was through acceleration of speed of trading and enabling much larger volume, which in turn provided substantial savings in transaction costs. Under HFT, there has been intense competition among computerized traders to use speed as a means of generating profits. HFTs now publicly discuss their competition with each other in what they describe as a “race to zero.” What this means is faster and faster speeds, from trading in milliseconds (thousandths of a second) a couple of years ago to trading in microseconds (millionths of a second) now, and for cutting edge traders, pursuit of trading in picoseconds (one trillionth of a second). By itself, such speed permits computers to gather information on sales of key stocks or ETFs that are already under way and move ahead of them to “front run” trades. At the highest levels of speed it becomes impossible to identify what constitutes “front running.”

Historically, exchanges had seen their own role as protecting investors by ensuring that transactions were conducted fairly and consistent with laws and regulations designed to restrain market manipulation. Since 2007, exchanges have been experiencing declining volume and intensified competition with other off-exchange trading platforms. Many exchanges have therefore come to see HFTs as a source of revitalization as they provide an increase in transactions and volumes

by “getting between” buyers and sellers of securities. Regulators had in the past viewed exchanges as “partners” in limiting market abuses, but now exchanges seem more attentive to ramping up volume and transactions to improve revenues. One consequence is that the interests of the exchanges are realigning, possibly giving exchanges less attention to protecting investors and greater attention to satisfying interests of HFTs and the revenue they create.

While regulators have remained focused on domestic trading, markets are continuing to evolve, as HFT enterprises spread out across exchanges and national borders. As HFTs seek to extend their trading networks, they find increasing competition with one another. Shaving costs by tiny fractions creates new advantages in spreading computerized trading beyond equities to encompass trading in commodities, currencies, futures, and derivatives. Globalized HFT for bonds and related derivatives is also being actively explored.

HFT enterprises are now building mechanisms that permit trading across multiple asset classes on continuously functioning networks that operate twenty-four hours a day almost every day. Currency trading, running at more than \$4 trillion a day, operates continuously throughout the week, except for a Saturday break. The largest HFTs are engaged in an effort to enable trading 24/6 for virtually all tradable assets, absorbing currency trading into this far larger framework, without regard to limits posed by national borders and national regulations. In a 24/6 trading framework, a large order by an institution or hedge fund can be executed on multiple platforms under multiple jurisdictions, and “booked” in geographically distributed entities spread across a twenty-four-hour trading spectrum.

At this time, within a multiplicity of trading platforms and national regulatory jurisdictions, the risks of multi-asset flash crashes are significant. Leverage and price spreads within equity markets are different from leverage and price spreads in commodities; trading in derivatives is even more leveraged. Trading among differently leveraged assets with a view to exploiting arbitrage opportunities is likely to grow, and the degree of underlying risk will also grow. Systemic risks are likely to multiply.

In parallel with this profound technological shift, exchanges have also been trying to address falling revenues by consolidation. Numerous examples have appeared in recent months—the London Stock Exchange attempt to buy the Toronto Stock Exchange; the Deutsche Bourse’s intention to acquire NYSE Euronext, countered by a domestic counteroffer; a failed

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attempt by the Singapore Exchange to acquire the primary Australian exchange. A wave of market consolidation and globalization in trading will likely continue. However, such consolidations will not halt the emergence of alternative trading platforms and their spread across the world.

Ironically, regulatory efforts in the United States and Europe to move leveraged trading away from systemically important financial institutions is moving such trading away from the jurisdiction of regulators to the “no-man’s land” trading of cross-border, cross-asset class trading enabled by HFTs. Thus, virtually all national regulatory responses to HFTs are already obsolete. The next phase for regulators could be to seek common, multilaterally managed regulations. This, however, would be extremely difficult and would take years to work out.

For the past decade, trading has become more globalized by increased efforts of all investors, including institutional investors and hedge funds, to diversify their portfolios geographically and across virtually all tradable assets. Risk management has been pursued through risk

diversification. Through diversification, many asset classes have become highly correlated as capital spreads to any and all relatively higher yielding assets. But when returns on differing asset classes move together, risk becomes elevated, not diminished. While we anticipate that asset class correlations may return to more normal levels in the future, we think that the transition from present close correlations to a more normal distribution of risk will not be smooth.

Our previous *TIE* article, “The Marginalizing of the Individual Investor,” outlined the ways in which HFTs shift market focus away from underlying asset value to market direction and momentum. In the present context of high correlations of most tradable assets in globally integrated markets, a shift from “risk on” to “risk off” and a commensurate flight to safety and quality could take place at speeds never before experienced during market corrections. As HFTs accelerate repricing and redeployment of assets, moving from “risk on” to “risk off” would likely resemble a roller coaster ride that would continue to leave individual investors marginalized and at risk of falling off. ◆