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Is HFT the culprit?

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Is HFT the culprit?

The Japanese equity market experienced a bout of extreme volatility from May 23, when the Nikkei 225 plunged 1,143 points. It had previously been in a near-parabolic uptrend fueled by growing expectations that Abenomics, the second Abe Cabinet's economic policy, will prove successful.

Some have blamed the volatility on high-frequency trading (HFT), which has gained widespread prevalence in recent years. These HFT critics include finance minister Taro Aso, who also serves as financial services minister, making him Japan's top financial markets regulator. Mr. Aso said, "When trading is done by machines in the form of HFT, the market shoots upward when it starts to rally and plummets once the rally reverses. Markets do not behave like that when humans are in control" (Reuters, May 28).

HFT involves repeatedly buying and selling stocks at high frequencies of up to several hundred trades per second. To do so, high-frequency traders develop computer systems that instantaneously determine the timing and size of equity buy and sell orders based on changes in market price quotes, order depth, and other such variables. High-frequency traders typically utilize co-location services that allow them to install their order-routing servers in the same building as the stock exchange's host server. Most high-frequency traders are either prop (proprietary trading) firms that arbitrage short-duration changes in price quotes or securities brokerages that use HFT to execute large orders for institutional investors that wish to avoid market impacts. Some hedge funds and other investment funds also use HFT to capture short term trading profits.

The argument that HFT causes extreme market volatility is based on the view that HFT, when used by hedge funds in conjunction with automated trend-following strategies, skews price action in one direction. Some funds indeed utilize algorithms that generate sell orders when stock prices turn downward. On the other hand, the prop firms that call themselves market makers presumably use algorithms that generate buy orders when price quotes fall and sell orders when price quotes rise. Moreover, when brokerages use HFT, they are unlikely to drive down prices by progressively lowering their sell orders' limit prices. Not all high-frequency traders use the same algorithms. The view that HFT has a unidirectional market impact is dubious.

In the unwelcome event of an equity market crash, a "villain" hunt inevitably ensues. During the post-bubble equity market downturn from 1990, equity index futures trading was blamed for allegedly exacerbating declines in the cash equity market, resulting in stricter regulation of futures trading. In 1991, investment flows into IPO stocks were blamed for increased selling in the equity market. In response, IPOs were completely halted for six months and the number of IPOs was subsequently restricted to regulate supply and demand. In 2002, short-selling was blamed for declines in prices of banks' shareholdings. Regulations were consequently tightened to restrict short-selling. Short-selling was again demonized amid the post-Lehman financial crisis 2008, leading to "emergency" short-selling restrictions that still remain in effect.

In most such cases, the identified villain is a relatively new product or trading strategy with which ordinary investors are largely unfamiliar, such as derivatives like equity index futures, which were brand new back in 1990, or short-selling, which is seen as a trading technique used predominantly by hedge funds. In the latest case, HFT did not make its advent in the Japanese market until after the Tokyo Stock Exchange launched its new Arrowhead equity trading system in January 2010.

One episode that (putatively) strengthens the case against HFT is the US flash crash of May 2010, when the Dow Jones Industrial Average plunged 573 points (5.49%) within five minutes before rebounding 543 points by 90 seconds later. This anomalous price action resulted in severe market chaos, with over 20,000 trades canceled by stock exchanges. Given that the flash crash occurred in a market where HFT is prevalent, HFT was suspected of somehow playing a role in its occurrence.

A subsequent SEC investigation revealed that HFT did in fact play a role as the flash crash unfolded. However, the mechanism involved was not as simple as the market being driven down by a deluge of HFT sell orders. The catalyst that first triggered the market's nosedive was a mutual fund's large order to sell equity index futures. The order was ineptly placed and it sparked a decline in futures prices. High-frequency traders initially fulfilled the function of absorbing the selling with buy orders, but they soon started selling futures to liquidate long positions. Meanwhile, in the cash market, many high-frequency traders program their computers to temporarily cease trading whenever price movements in excess of a certain magnitude occur in connection with their orders. When such traders stopped trading, liquidity suddenly evaporated. Stock prices fell precipitously.

So far, no one has claimed that the Japanese equity market's recent plunge coincided with illiquidity caused by a temporary halt in HFT order flow. On the contrary, trading volume remained heavy every day. The market's volatility was likely nothing more than stock prices fluctuating sharply on heavy volume as the balance of market power shifted back and forth between investors that expect stocks to continue to rise and investors that believe stocks have temporarily peaked following a steep recovery rally in which the Nikkei 225 gained over 60% in six months.

Financial and capital market innovations generally tend to be difficult for the masses to understand. Innovations such as credit default swaps (CDS) and other derivatives, algorithmic trading, including HFT, and securitization, which was cited as a cause of the 2008 financial crisis, all fulfill important economic functions, but they tend to be misunderstood and criticized based on misconceptions.

Fortunately, Mr. Aso, whose above-quoted comment can be characterized as demonization of HFT, is not advocating immediate restrictions on HFT. The era of high-speed trading has barely begun in the Japanese equity market. The functions fulfilled by HFT, including whether it contributes to increased price volatility, need to be verified through further data collection. I fervently hope we avoid another round of demonization, where regulatory authorities perturbed by market volatility shortsightedly impose stricter regulations.

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