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High-frequency trading

Rise of the machines

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Algorithmic trading causes concern among investors and regulators

THE arrest of a former Goldman Sachs employee in July for allegedly stealing the firm's proprietary computer codes thrust the arcane world of high-frequency trading (HFT) into the spotlight. The glare of attention is intensifying. High-frequency traders are essential providers of liquidity—accounting for roughly 50% of trading volume on the New York Stock Exchange—and can claim to have squashed bid-ask spreads. But many claim HFT comes at the price of gouging other investors.

The basic idea of HFT is to use clever algorithms and super-fast computers to detect and exploit market movements. To avoid signalling their intentions to the market, institutional investors trade large orders in small blocks—often in lots of 100 to 500 shares—and within specified price ranges. High-frequency traders attempt to uncover how much an investor is willing to pay (or sell for) by sending out a stream of probing quotes that are swiftly cancelled until they elicit a response. The traders then buy or short the targeted stock ahead of the investor, offering it to them a fraction of a second later for a tiny profit.

Another popular HFT strategy is to collect rebates that exchanges offer to liquidity providers. High-frequency traders will quickly outbid investors before immediately selling the shares to the investor at the slightly higher purchase price, collecting a rebate of one-quarter of a cent on both trades. Other tactics include piggybacking on sharp price movements to increase volatility, which increases the value of options held by traders. The speeds are mind-boggling. High-frequency traders may execute 1,000 trades per second; exchanges can process trades in less than 500 microseconds (or millionths of a second).

Asymmetric information is nothing new. Even its critics concede that most HFT is perfectly legal. But some of the advantages that accrue to high-frequency traders look unfair. Flash orders, a type of order displayed on certain exchanges for less than 500 microseconds, expose information that is only valuable to those with the fastest computers. By locating their servers at exchanges or in adjacent data centres traders can maximise speed. "It appears exchanges are conspiring with a privileged group of high-frequency traders in a massive fraud," says Whitney Tilson, a fund manager. Requiring orders to be posted for at least a second would nullify the value of flash orders and of probing the market.

A group that accounts for nearly 50% of a market also introduces systemic risk. Lime Brokerage, a technology provider, has raised the prospect of a rogue algorithm going awry. Many believe that last year's extreme market volatility was heightened by high-frequency traders. According to Nassim Nicholas Taleb, an author and investor, HFT "magnifies changes and ultimately makes the system weaker".

The market can correct some of these problems. Institutions are developing their own algorithms to confuse high-frequency traders. Bigger investors are moving to "dark pools", electronic trading venues that conceal an order's size and origin. The London Stock Exchange announced in July that it was abolishing liquidity rebates. Regulators are also rolling up their sleeves. On July 24th Charles Schumer, a Democratic senator, urged the Securities and Exchange Commission to ban flash orders. As trading moves from milliseconds to microseconds to nanoseconds, everyone is learning to act more quickly.

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