

Special Report High Frequency Meltdown

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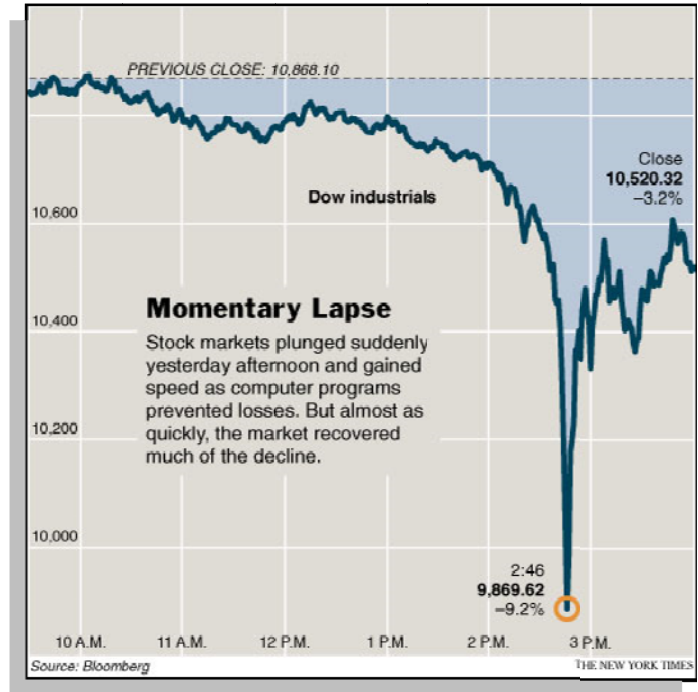
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On the afternoon of May 6th, the Dow Jones Industrial Average experienced an intra-day loss of nearly 1,000 points, or 9.2%, effectively wiping away \$1 trillion worth of equity market capitalization. A number of hypotheses are surfacing, from a “fat finger trade” to a breakdown in the trading models employed by algorithmic traders. We are learning that there was not a sole cause for the selloff, but rather a confluence of events that amplified selling pressure.

While the events of May 6th seem highly anomalous, it is important to recognize that global equity markets were already under severe pressure that day as a result of uncertainty in Europe. In particular, the FTSE 100 (UK) was down 1.5%, the Nikkei 225 (Japan) off by 3.2% and the CAC 40 (France) fell by 2.2%. Even prior to Thursday, markets in the US were pushing lower through the first half of the week. That brings us to Thursday. It was clear from the open that sellers outnumbered buyers on extremely high volume and, by 2pm, the DJIA was down roughly 1.5% and on track to record its highest volume day in over one year.

Around 2:40 pm, the markets began to unravel in one of the most rapid and spectacular freefalls ever witnessed. As quickly as the selloff started, it came to an abrupt end and the markets gradually pushed towards levels experienced earlier in the day. What truly happened in those 15 minutes remains unknown, but we can draw a number of conclusions based on first-hand knowledge and prior research into the subject.



DJIA: 10 Largest Intraday Moves (Points)			DJIA: 10 Largest Intraday Moves (%): 1980 -		
Date	Intraday High Low Spread (Points)		Date	Intraday High Low Spread (%)	
10/10/08	1215.42		10/19/87	29.01	
10/13/08	1039.49		10/20/87	27.92	
5/6/10	1010.14		10/10/08	15.64	
10/9/08	999.5		10/13/08	12.28	
10/28/08	958.72		11/13/08	11.96	
11/13/08	950.67		10/28/08	11.76	
10/16/08	897.47		10/9/08	11.73	
10/14/08	874.22		10/16/08	10.98	
9/29/08	872.86		5/6/10	10.23	
4/4/00	848.52		11/20/08	10.18	

Source: Bespoke Investment Group (note: numbers in the graph reference intraday peak to trough moves and not open to trough as we alluded to in the opening paragraph).



Initial reports that evening indicated that a trader from a large institution with an apparently grotesquely misshapen index finger mistakenly hit a 'b' instead of an 'm' to initiate a billion share sell order. The Securities and Exchange Commission was unable to confirm the validity of that report and the blame subsequently turned to a previously unnoticed but increasingly important segment of the market – high frequency trading (HFT).

This once tiny corner of the market is now estimated to account for anywhere from 50% to 70% of all trading volume on a given day. Following the rise of electronic trading, human traders ceded trading shares to computer-driven trading systems, the precursor to HFT. In its simplest form, HFT is defined by intricately created algorithmic computer systems designed to trade miniscule price movements in fractions of a second. Algorithms act as intermediaries, providing liquidity to buyers and sellers while profiting from the bid/ask spread.

As an example, for a stock trading with a \$5.00 bid (order to buy) and \$5.10 ask (order to sell), HFT systems will create a more attractive spread, simultaneously offering a bid of \$5.02 and an ask of \$5.08 to capture a spread of 6 cents. Since these transactions are expected to occur within seconds, there is, theoretically, little risk. During the course of an average trading day, HFT systems will process tens, if not hundreds of thousands of trades, potentially making these systems extremely profitable.

Based on first-hand discussions between our research team and managers who engage in algorithmic trading, we understand that as the market rapidly declined, trading models tripped a number of built-in fail safe mechanisms and ceased trading. This created a rapid cascade that saw one system after another taken offline, effectively producing a liquidity vacuum. Within minutes, human traders who oversee the daily functioning of the programs intervened, recognized the dislocation and returned the systems to an operative state.

The problem was compounded by a number of other factors including the Liquidity Replenishment Points (LRP) detailed by many media outlets. When a stock experiences unusually volatile price swings, the New York Stock Exchange (NYSE) will slow automatic trading, allowing market makers to intervene and provide liquidity back into these securities. This rule only applies to the NYSE, and HFT systems are designed to recognize this fact and immediately shift trades to other exchanges. Therefore, a lack of liquidity was quickly exaggerated due to the number of limit orders left unfilled on the NYSE.

Retail and institutional investors likely added to the problem through the use of stop-loss trading mechanisms. In essence, many investors attach rules to specified holdings stating that if said holding declines by a certain amount, a sell order is initiated. For example, if an investor sets a stop-loss limit at 10% on a given holding, that position will be sold following a 10% price decline. However, this does not guarantee that an investor will be able to lock in at that price; rather it guarantees that an investor will lose at least 10%.

A number of stocks traded down so quickly on May 6th that by the time computer programs recognized the order to sell, 30% to 50% losses were realized. A reliance on these rules merely served to accelerate the selling pressure. Within 15 minutes, each of those stocks recovered to within 5% of their prior trading prices, so investors who held on through the volatility realized no loss, while those utilizing stop-loss rules faced massive drawdowns.

More disturbingly, last week's action brought to light a fact that many retail investors take for granted – liquidity is fickle. It is readily available when least needed and it can evaporate when most sought after.

While easy to blame HFT for the selloff, money managers offer salient reasons for the decision to suspend operation during periods of excess volatility. Remember that high frequency traders enter offsetting positions in order to mitigate market directionality. During periods of stress, it is common for some but not all trades to be cancelled, which occurred on May 6th. This leaves trading systems exposed to the market directionality that they seek to avoid.



Some suggested that a reinstatement of the uptick rule would have slowed the precipitous decline, but this was quickly rebuked by the SEC. The uptick rule, eliminated in 2007, stated that short selling of securities was only possible if done at a price above the preceding sale prices or if the last sale price was higher than the price prior. Considering that the recent bout of selling pressure occurred as a result of actual liquidation and not short selling, this rule would have accomplished little.

Legislators and regulators in Washington, DC were quick to target high frequency traders following the 15-minute market meltdown. Several proposals are under consideration to ensure that this does not occur again.

The most likely to gain support is individual stock circuit breakers. Presently, if the broad indices decline by 10%, 20% or 30% in a trading day, market trading will stop for a period of time. Those rules would now apply to individual companies. Unfortunately, this will be extremely complicated to enact due to the perpetuation of smaller exchanges. For any rule to be successful, each exchange must work together to provide consistency in order execution, otherwise traders can simply reroute orders to other exchanges, similar to what happened on May 6th.

Stock exchanges are designed to aid in price discovery and provide liquidity for the capital markets. Companies access these markets to raise equity or debt capital to invest in entrepreneurial, capitalistic endeavors. These endeavors lead to job creation and growth in the economy. If market participants grow to view the market as a rigged casino, then fewer will be willing to commit capital through this channel. That would serve to increase the cost of capital for companies and potentially dampen economic activity.



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