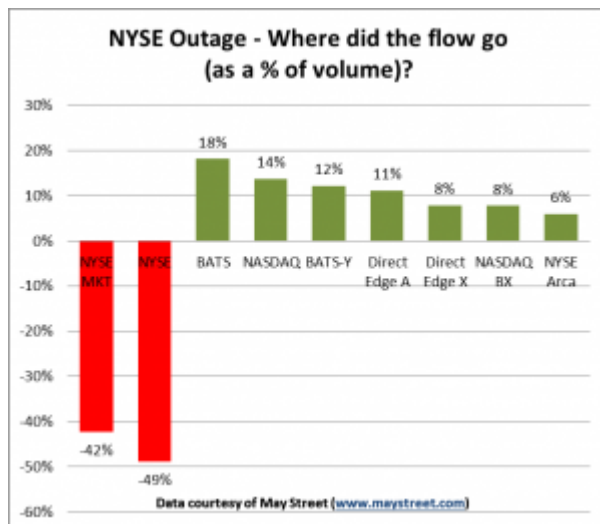


Beyond Rubbernecking: US Equity Volumes Orderly Rebalance During NYSE Outage

July 14, 2015

The extended discussion surrounding the NYSE outage from last Wednesday seems your typical case of rubbernecking. Maybe it's wishful thinking that this event will fit neatly with the Flash Boys script, painting the US equity markets in disarray due to fragmentation and e-trading. But looking at data related to that trading day, it feels like a different story is emerging; one less likely to sell papers but important to the maturation of US equity market structure.

Exchange rates



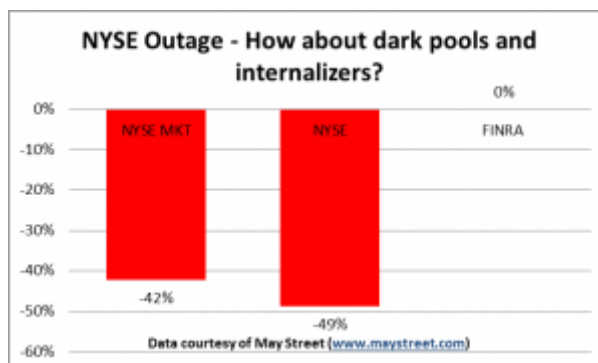
To get a sense of where NYSE's order flow was reallocated, we compared July 8th volumes to the average trading volumes from both the day before and after the NYSE outage (July 7th and 9th).

As a percentage of flow, the majority of NYSE shares that didn't trade on the Big Board appear to have been spread across the other major US Exchanges. BATS was the biggest pro rata winner, with an 18% increase on July 8th. The NASDAQ (14%) likely gained the most in terms of total shares since its daily market share jumped from 16% to 18% whereas BATS popped from 7% to 8%.

A few general assumptions could be made from these stats, although little is clear. It's possible that BATS is slightly favored over NASDAQ as the next best venue to execute NYSE-listed symbols. BATS technology is known to be fast and stable. Also, since it's not a listing Exchange, market participants who feared contagion due to some greater, malicious act (remember United was having system issues this day too) may have transferred flow to the BATS and Direct Edge exchanges as a hedge.

In terms of the major exchanges, NYSE ARCA gained the least overflow. This could simply be driven by routing configurations already in place. Another possibility is that a handful of brokers blocked routing to the venue out of precaution since it is the third equity exchange in the NYSE family.

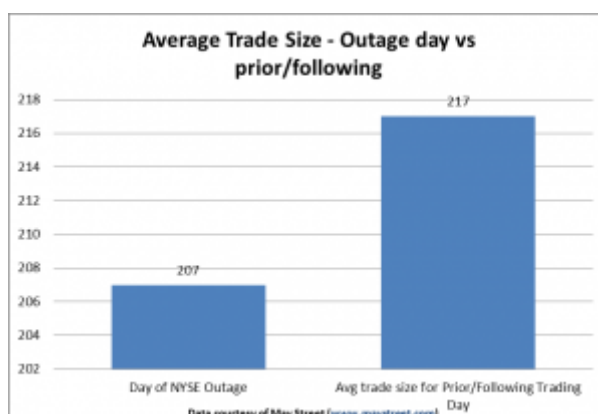
Follow the Light

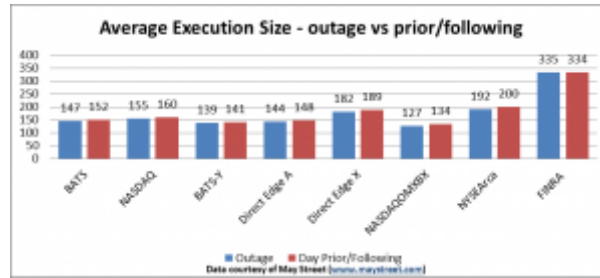


Compared to the major Exchanges, volume printed on FINRA was flat on the day of the outage. This is a clear sign that brokers' routing technology is configured to reroute order flow to like venues. With the NYSE out of commission, orders were not suddenly shifted to non-display venues nor were they farmed out to wholesalers/market makers. It was an apples-to-apples transference, and heavily scrutinized dark pools essentially played no part in the July 8th events.

Getting Your Fill

Other than exchange flow rebalancing, other stats from the day look rather normal. For instance, the average execution size across venues was generally inline. For the day of the outage, fill sizes slipped slightly to 207 shares per trade. For the prior and following trading days, the average was 5% larger at 217 shares per trade. This small dip may be attributed to more order flow dispersion in light of the event and slightly less efficiency in order routing.

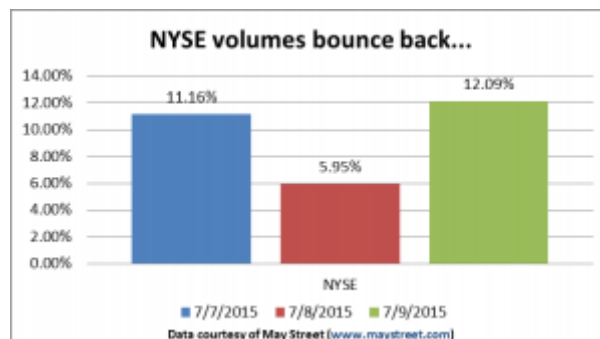




Big Board Bounce

NYSE rapid recovery supports the argument that markets are resilient. The day following the outage, NYSE volumes bounced back with their overall market share for the day slightly *higher* than prior to the event. This is yet another positive sign that the marketplace is prepared not only to adjust when venues are in distress, but also to revert back when issues are resolved.

From a best execution perspective, brokers certainly need to protect their customers' interests in abnormal market conditions, but ultimately their obligation is to route to venues that provide quality liquidity. A four hour outage does not change that obligation in a material way.



The portability of flow

A lot has been written about the number of trading venues available in US equities today. Many believe there are too many places to execute an order. Putting that argument to the side for a minute, one of the positive

byproducts of so many options is that routing technology has been designed to reallocate order flow dynamically as system issues occur.

In essence, liquidity in the US equity market is now portable. This lowers the risk of an isolated system failure having impact on the entire market. Granted, issues with industry utilities like the SIP (as we saw during the NASDAQ Flash Freeze in August 2013) create massive disruptions in trading, but no individual venue, even the largest US stock exchange, is likely to shut down trading today.

“Close” Call

Certainly, any time a major exchange has an extended outage, we want to know why and what can be done to prevent the same issue again. Reg SCI rules are written to address system integrity and will likely reduce the frequency and severity of outages but not eliminate them completely.

In the case of the NYSE, this incident did generate one important talking point. Many market participants (e.g. mutual funds) generate NAVs from primary exchange closing price auctions. Wednesday’s event highlights the need for all listing exchanges to have alternative means of generating a proper closing price when system issues occur. In this case, the NYSE was up for the open and close. If this issue perpetuated into the close, then price discovery related to the closing price would have impacted.

www.greenwich.com | ContactUs@greenwich.com

Coalition Greenwich, a division of CRISIL, an S&P Global Company, is a leading global provider of strategic benchmarking, analytics and insights to the financial services industry.

We specialize in providing unique, high-value and actionable information to help our clients improve their business performance.

Our suite of analytics and insights encompass all key performance metrics and drivers: market share, revenue performance, client relationship share and quality, operational excellence, return on equity, behavioral drivers, and industry evolution.

About CRISIL

CRISIL is a leading, agile and innovative global analytics company driven by its mission of making markets function better. It is majority owned by S&P Global Inc., a leading provider of transparent and independent ratings, benchmarks, analytics, and data to the capital and commodity markets worldwide.

CRISIL is India’s foremost provider of ratings, data, research, analytics, and solutions with a strong record of growth, culture of innovation, and global footprint.

It has delivered independent opinions, actionable insights and efficient solutions to over 100,000 customers through businesses that operate from India, the U.S., the U.K., Argentina, Poland, China, Hong Kong, and Singapore.

For more information, visit www.crisil.com

Disclaimer and Copyright

This Document is prepared by Crisil Coalition Greenwich, which is a part of Crisil Ltd, a company of S&P Global. All rights reserved. This Document may contain analysis of commercial data relating to revenues, productivity and headcount of financial services organisations (together with any other commercial information set out in the Document). The Document may also include statements, estimates and projections with respect to the anticipated future performance of certain companies and as to the market for those companies' products and services.

The Document does not constitute (or purport to constitute) an accurate or complete representation of past or future activities of the businesses or companies considered in it but rather is designed to only highlight the trends. This Document is not (and does not purport to be) a comprehensive Document on the financial state of any business or company. The Document represents the views of Crisil Coalition Greenwich as on the date of the Document and Crisil Coalition Greenwich has no obligation to update or change it in the light of new or additional information or changed circumstances after submission of the Document.

This Document is not (and does not purport to be) a credit assessment or investment advice and should not form basis of any lending, investment or credit decision. This Document does not constitute nor form part of an offer or invitation to subscribe for, underwrite or purchase securities in any company. Nor should this Document, or any part of it, form the basis to be relied upon in any way in connection with any contract relating to any securities. The Document is not an investment analysis or research and is not subject to regulatory or legal obligations on the production of, or content of, investment analysis or research.

The data contained in the Document is based upon a particular bank's scope, which reflects a bank's data submission, business structure, and sales revenue Reporting methodology. As a result, any data contained in the Document may not be directly comparable to data presented to another bank. For franchise benchmarking, Crisil Coalition Greenwich has implemented equal ranking logic on aggregate results i.e., when sales revenues are within 5% of at least one competitor ahead, a tie is shown and designated by = (where actual ranks are shown). Entity level data has no equal ranking logic implemented and therefore, on occasion, the differences between rank bands can be very close mathematically.

The data in this Document may reflect the views reported to Crisil Coalition Greenwich by the research participants. Interviewees may be asked about their use of and demand for financial products and services and about investment practices in relevant financial markets. Crisil Coalition Greenwich compiles the data received, conducts statistical analysis and reviews for presentation purposes to produce the final results.

THE DOCUMENT IS COMPILED FROM SOURCES CRISIL COALITION GREENWICH BELIEVES TO BE RELIABLE. CRISIL COALITION GREENWICH DISCLAIMS ALL REPRESENTATIONS OR WARRANTIES, EXPRESSED OR IMPLIED, WITH RESPECT TO THIS DOCUMENT, INCLUDING AS TO THE VALIDITY, ACCURACY, REASONABLENESS OR COMPLETENESS OF THE INFORMATION, STATEMENTS, ASSESSMENTS, ESTIMATES AND PROJECTIONS, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARISING OUT OF THE USE OF ALL OR ANY OF THIS DOCUMENT. CRISIL COALITION GREENWICH ACCEPTS NO LIABILITY WHATSOEVER FOR ANY DIRECT, INDIRECT OR CONSEQUENTIAL LOSS OR DAMAGE OF ANY KIND ARISING OUT OF THE USE OF ALL OR ANY OF THIS DOCUMENT.

