

Market stress test: How ETFs fared in the volatility of February 2018

The asset management industry has undergone a number of significant shifts in the past decade on the heels of the 2008 Financial Crisis. One such shift has been the flow of assets into passively managed strategies, including exchange-traded funds (ETFs). More than \$1 trillion has been added to ETFs in the past 2.5 years alone.¹

This trend has left some market participants with a lingering question: Could the larger quantity of assets held in ETFs pose a risk to market stability?

Over the past decade, several major market events have offered opportunities to observe ETFs in stressed environments and gauge their risk to the market's stability. Two of the events led to new equity trading rules. February 2018 was the first market-wide move to put these new rules to the test—a test that demonstrated that ETFs performed as designed under notable volatility.

Market events since 2008

Two major market events—the 2008 Financial Crisis and the 2013 Taper Tantrum—showed the efficiency and reliability of the ETF structure. However, two other events exposed market structure shortcomings that were amplified in ETFs. These were the “Flash Crash” of May 5, 2010, and the “Mini Flash Crash” of August 24, 2015. The Mini Flash Crash took place after new exchange rules—most notably the Limit Up–Limit Down (LULD) single stock circuit breakers of 2013—had taken effect.

These new rules were meant to guard against unreasonably large price moves over extremely short intervals. But as we saw, market structure design flaws remained.

On August 24, 2015, Asian markets had a major sell-off, led by China, which was down 8.75%.² Leading into the U.S. equity

market open, U.S. equity index futures traded down 5% and entered a limit down halt.³ Given the abrupt overnight drop in global equities markets and the limit down situation in index futures, only 38% of S&P 500 stocks opened on the New York Stock Exchange by 9:35 a.m., rising to 86% by 9:45 a.m.³ But most ETFs opened for regular trading at 9:30 a.m., despite the lack of visibility into prices of underlying securities and a frozen U.S. equity futures market.

This confluence of circumstances temporarily hobbled the arbitrage function in ETFs and contributed to severe price volatility. A swath of domestic equity ETFs were impacted by the fragmentation of liquidity across trading venues and by the application of overly tight price collars during the reopening process.³

In the wake of these trading challenges, industry groups and regulators worked to refine LULD rules and implemented a series of LULD rule amendments in 2017 aimed at improving opening auction and post-halt reopening auction processes.⁴ In addition, the exchanges also adapted their opening mechanism, resulting in a reduction in the number of ETFs and other securities halted on volatile days.

Key takeaways

- In the volatile period of February 2 to February 8, 2018, ETFs behaved as intended, providing an effective risk transfer mechanism for both institutional and individual investors.
- An examination of trading volumes, net flows, and liquidity shows that ETFs performed in line with their underlying assets. In the case of U.S. equities, ETFs delivered more liquidity.
- Charles Schwab Investment Management expects continued equity market volatility in 2018. We also expect ETFs to continue performing as intended in a volatile market.
- If this recent bout of market volatility was a test of ETFs as a vehicle, our conclusion is that they passed the test.

Examining February 2–8 volatility

The five days from February 2 to February 8, 2018, delivered the largest volatility spike since August 2015 (Exhibit 1). From the market open on February 2 through the market close on February 8, the S&P 500 Index dropped more than 8.5% and entered a correction phase, down more than 10% from the high on January 26, 2018 (Exhibit 2).⁵

When we evaluate the behavior of the ETF structure during times of market stress and the potential risks this product structure could have on the broader capital markets, it's important to consider how well ETF prices remained tethered to their underlying assets, to what extent ETF trading directly impacted underlying assets or whether another factor contributed to the market disruption.

So how did the \$3 trillion+ U.S. ETF market perform? In short, ETFs behaved as they were designed to behave. An examination of trading volumes, net flows, bid-ask spreads, and relative price changes demonstrates that ETFs performed in line with their underlying assets.

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Marked increase in trading volumes

U.S. stock and ETF trading volumes soared during the February volatility spike. The “consolidated tape”—which tracks real-time data on trading volume and price for exchange-traded securities across all market venues—shows that the dollar value traded in the U.S. equity market jumped markedly above the 2017 daily average of \$270 billion (Exhibit 3). Average trading rose by more than 110% over the 2017 daily average.⁵

As equity market volumes rose, trading volumes for ETFs increased even more. On Wednesday, February 7, dollar value traded in U.S.-listed ETFs represented more than 35% of the consolidated tape (compared with an average of 26% in 2017).⁵

The rise in ETF turnover on both an absolute and relative basis to broad equities amid the significant market volatility implies investors and traders chose ETFs over single stocks. This choice was logical given the liquidity ETFs offered for adding or reducing market exposure amid the volatility.

Exhibit 1: Measuring volatility

The five days from February 2 to February 8, 2018, delivered the largest volatility spike since August 24, 2015.



Source: Bloomberg (as of 3/1/2018).

Exhibit 2: Tracking the price move

From the market open on February 2 through the market close on February 8, the S&P 500 Index dropped more than 8.5% and entered a correction phase, down more than 10% from the high on January 26, 2018.



Source: Bloomberg (as of 2/15/2018).

Exhibit 3: The rise in trading volume

U.S. stock and ETF trading volume soared during the February volatility spike.



Source: Bloomberg (as of 3/29/2018).

A majority of ETF trading flows were largely offset between buyers and sellers, and only a fraction of those transactions flowed through to the underlying securities.

Significant inflows and outflows

Flow data shows that 12 of the top 25 ETFs had net outflows of \$27 billion between February 2 and February 8. However, 12 ETFs added \$2.3 billion in net inflows during this period, while one had no net flows (Exhibit 4).

The greatest outflows were in U.S. large-cap equities. International developed equities showed marked inflows. The largest moves occurred in four funds that saw outflows in excess of 1% of assets. Overall, the top 25 ETFs saw 1.2% of assets depart, most from the world's largest ETF, SPY.⁵

In this scenario of large inflows and outflows, we saw that ETFs successfully expanded or contracted with investor demand, without material dislocation between market price and net asset value.

Minimal impact on liquidity

ETF bid-ask spreads did widen marginally, but almost always less than the bid-ask increase in the ETFs' underlying assets. During the three most volatile days of February 2018, the 18 largest ETFs focused on the U.S. equity market saw intraday bid-ask spreads increase by no more than about 0.06% relative to their base line on February 1 (Exhibit 5). Meanwhile, bid-ask spreads on the underlying baskets that made up these same ETFs widened up to about 0.15% over the same time frame.⁶

So, although liquidity decreased slightly—as reflected in higher trading costs associated with wider spreads—ETFs were still more cost efficient than trading the underlying asset class directly. ETFs allowed buyers and sellers to meet and reposition market exposures, thus serving as an effective risk transfer mechanism for the market overall.

A critical reason for this is that turnover in these ETFs happened mainly in the secondary market without flowing through to the underlying securities. In the top five ETFs, net cash flows were between zero and 18% of total dollar value traded in these products between February 2 and February 8 (Exhibit 4).⁵ This important fact highlights that ETF trading flows were largely offset between buyers and sellers and that only a fraction of those transactions drove trades in the underlying assets.

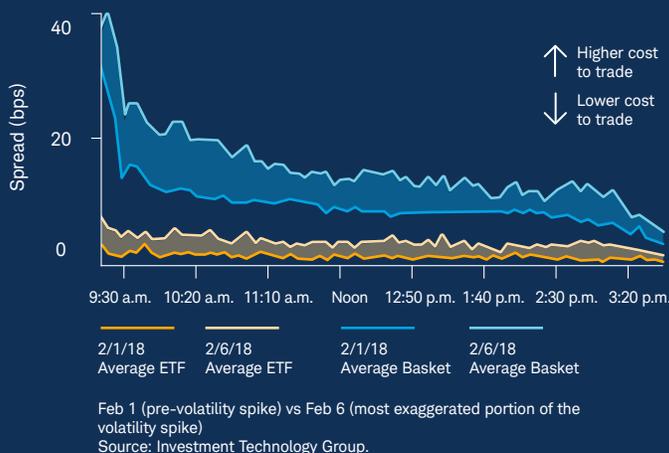
Exhibit 4: Flows for the top 25 ETFs

In the top 25 ETFs by AUM, net cash flows from February 2 to February 8 were largely offset by buyers and sellers.



Exhibit 5: Effect on bid-ask spreads

A look at the average spread of the top 18 U.S. equity ETFs versus the underlying basket shows marginal widening, but almost always less than the bid-ask increase in their underlying assets.



A note about inverse volatility ETNs*

Many investors assume that exchange-traded notes (ETNs) and ETFs are the same. This isn't the case. ETNs aren't ETFs and shouldn't be evaluated like ETFs.

Certain ETNs—inverse volatility ETNs—are designed to deliver positive returns when market volatility declines and negative returns when volatility rises. Importantly, these securities are designed to deliver on these performance objectives over a single-day period. So when volatility rose by more than 100% on February 6, these funds did what they were designed to do: They had negative returns near or at -100%. It's important to note that one niche ETF (SVXY) followed a similar strategy and also lost more than 90% of its value in one day.

ETFs aided the market during a time of volatility by functioning as an effective risk transfer mechanism.

Conclusions

ETFs are used by a wide variety of investors. Many investors use them as a long-term asset allocation tool to help create low-cost, diversified portfolios. Others use ETFs as tactical vehicles to add to or hedge various risk positions. For both long-term investors who stayed the course and institutional market participants who made risk adjustments, ETF flow and trading data suggest that both groups were well served during the February spike in volatility.

ETFs aided the market during a time of volatility by functioning as an effective risk transfer mechanism. The combination of a measurable increase in ETF trading volumes, disproportionately small corresponding net cash flows, and consistently tighter bid-ask spreads in large ETFs than in the underlying assets suggests that investors who used ETFs to reduce or add to market exposure benefitted from liquidity that was additive to the underlying asset markets.

It's clearly still early in a year that will likely be more volatile for risk assets than 2017, but if the first bout of market volatility in 2018 was a test of ETFs as an efficient investment vehicle and capital markets tool, we believe they passed this test.

*Inverse ETPs (exchange-traded products), including ETFs and exchange-traded notes (ETNs) seek to provide the opposite of the investment returns, also daily, of a given index or benchmark, either in whole or by multiples. Because of effects of compounding, aggressive techniques, and possible correlation errors, inverse ETPs may experience greater losses than one would ordinarily expect. Compounding can also cause a widening differential between the performances of an ETP and its underlying index or benchmark so that returns over periods longer than one day can differ in amount and direction from the target return of the same period. Consequently, these ETPs may experience losses even in situations where the underlying index or benchmark has performed as hoped. Aggressive investment techniques such as futures, forward contracts, swap agreements, derivatives, and options can increase ETP volatility and decrease performance. Investors holding these ETPs should therefore monitor their positions as frequently as daily.

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¹ ETFGI, as of 2/28/2018.

² Shanghai Shenzhen CSI 300 Index, as of 4/6/2018.

³ Division of Trading and Markets, U.S. SEC, as of 8/24/2015.

⁴ <http://www.luldplan.com/index.html>.

⁵ Bloomberg, as of April 11, 2017.

⁶ Investment Technology Group, as of 4/4/2018.

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