

# Understanding sources and impacts of market volatility

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## Executive summary

- While often discussed as a generic concept, “market volatility” is usually a specific response to a particular risk or concern.
- Geopolitical events, economic shocks, policy uncertainty, asset bubbles, and market structural or technical factors are among the many distinct drivers of volatility.
- Some types of volatility may be anticipated, but most are difficult to predict. Moreover, volatile periods differ in their severity and duration.
- Understanding what drives volatility may help investors better assess and mitigate the potential impact of turbulent markets on their portfolios.
- Historically, markets have proved resilient over time—underscoring the importance of diversification, staying invested, and maintaining a long-term perspective to weather volatility.

## Introduction

While often discussed as a generic concept, “market volatility” is usually a specific response to a particular risk or concern. In part, this is why volatile periods tend to differ in their severity and duration. Some can be extreme and long-lasting, as in the 2007-2009 Great Recession and global financial crisis, or smaller in scope and shorter-lived, as with the “taper tantrum” that ensued in 2013 when the Federal Reserve discussed the possibility of scaling back its quantitative easing (QE) asset purchases.

Figure 1. Potential sources of market volatility

SOURCE	EXAMPLES
Geopolitical	<ul style="list-style-type: none"> <li>• Brexit</li> <li>• Terrorist attacks (9/11, Paris, Brussels)</li> <li>• Syrian refugee crisis</li> <li>• Regional threats (North Korea, Russia/Ukraine)</li> </ul>
Economic	<ul style="list-style-type: none"> <li>• China’s economic slowdown</li> <li>• Great Recession</li> <li>• Rising interest rates</li> </ul>
Asset bubbles	<ul style="list-style-type: none"> <li>• Tech stocks</li> <li>• Housing</li> <li>• High-yield bonds</li> </ul>
Market structural or technical factors	<ul style="list-style-type: none"> <li>• Reduced liquidity in bond markets</li> <li>• Hedge fund “short selling”</li> </ul>

In this paper, we consider various sources of market volatility and the extent to which investors may be able to anticipate or mitigate their impact. Figure 1 categorizes some common drivers of volatility, with specific examples in each category. This is not intended as a comprehensive list, and there is no guarantee that future instances of volatility will be similar in scope or outcome. Nonetheless, the five examples that we highlight in the following pages—Brexit, China’s economic slowdown, rising interest rates, the tech bubble, and reduced liquidity in bond markets—provide a useful framework for understanding how volatile periods can originate and unfold.

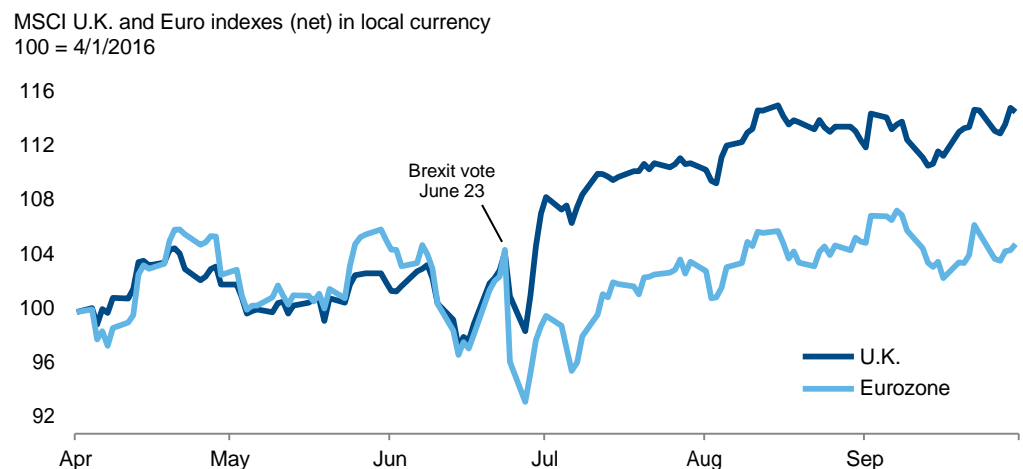
### Example 1: Geopolitical

#### The Brexit vote

Geopolitical risks—including wars, terrorist attacks, and jarring election results—can be difficult to predict. A notable example was the June 2016 Brexit referendum, in which the U.K. shocked global markets by voting to leave the European Union (EU). While a “yes” vote on the long-planned proposal was always a possibility, financial markets largely discounted that outcome for months. In the days leading up to the vote, however, equity markets turned increasingly volatile as public opinion polls tightened and momentum fluctuated between the “yes” and “no” factions. On the very eve of the vote, however, markets were once again sanguine. This complacency only magnified the widespread negative reaction once the results were known.

Figure 2. U.K. and Eurozone stocks recovered quickly after Brexit vote

The post-Brexit selloff proved fleeting, but investors shouldn’t be surprised to see market volatility recur as the withdrawal process unfolds.



Sources: MSCI, TIAA Investments.

U.K. and Eurozone stocks fell sharply, as did equity markets in the U.S. and elsewhere, while politicians, economists, and analysts warned of dire economic consequences. But the post-Brexit market selloff, while steep, proved fleeting. Investors who reflexively sold into the downturn out of fear and uncertainty missed an opportunity to participate in the market’s rebound (see Figure 2). Throughout the third quarter, U.K. stocks in particular climbed above their pre-Brexit levels, buoyed in part by surprisingly favorable business sentiment and other data.

It's important to recognize that the short-lived market drop immediately following the June vote wasn't necessarily the end of Brexit-related turbulence. In cases of geopolitically-driven volatility, there are often lingering concerns as to whether the issues causing short-term market declines have been resolved, or whether the turmoil will be part of a recurring pattern. (Think of the "Grexit" fears fueled by the drawn-out Greek debt crisis.) Details of the U.K.'s actual withdrawal from the EU are still being negotiated, and the long-term fallout remains uncertain. Thus, investors shouldn't be surprised to see more bouts of market volatility as the implementation of Brexit unfolds over time.

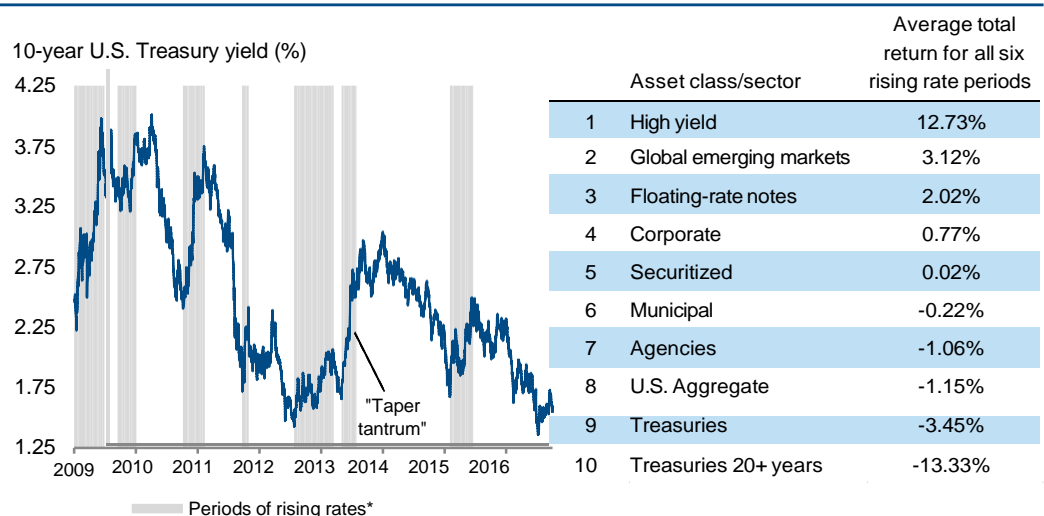
## Example 2: Economic

### Rising interest rates

The inverse relationship between interest rates and bond prices is well established. Amid the growing potential for a Fed rate hike in December and the recent moderate rise in the bellwether 10-year U.S. Treasury yield, a transition to a rising rate environment appears to be taking shape. Against this backdrop, bond markets may become more volatile. It's true that fixed-income losses due to rising interest rates present a risk, yet history suggests that corresponding market fears may be disproportionate to the severity and lasting impact of the losses actually incurred.

How worried should investors be about the prospect of rising rates? We can look to history to see how fixed-income markets have performed in prior periods when rates were climbing, recognizing that the past may provide useful context but is not a predictor of future outcomes, as economic and market cycle conditions are never identical. With that caveat, we identified six periods since 2009 in which the 10-year U.S. Treasury yield rose by at least 60 basis points (0.60%). In each period, Treasury securities realized negative returns, in some cases approaching double-digit losses.

Figure 3. When interest rates go up, not all bond prices go down



Diversified, actively managed fixed-income strategies may be best positioned to withstand the potential volatility associated with rising rates.

\*Defined as periods in which the 10-year U.S. Treasury yield climbed 60 basis points (0.60%) or more. Fixed-income asset class/sector returns are based on respective Bloomberg Barclays indexes. Securitized = mortgage-backed securities, commercial mortgage-backed securities, and asset-backed securities.

Sources: Haver Analytics, TIAA Investments, Barclays.

Further analysis, however, shows that other segments of the fixed-income market reacted in different ways. Figure 3 charts the path of the 10-year Treasury yield from 2009 through September 30, 2016, and ranks the performance of various fixed-income categories based on the average of their returns in the six rising rate periods identified. In general, performance for investment-grade and high-yield corporate bonds, floating-rate notes, and emerging-market debt generated positive results, handily outperforming Treasuries. The lesson for investors: strategies that offer diversified, actively managed exposure to a range of fixed-income securities may be best positioned to withstand the potential volatility associated with rising rates.

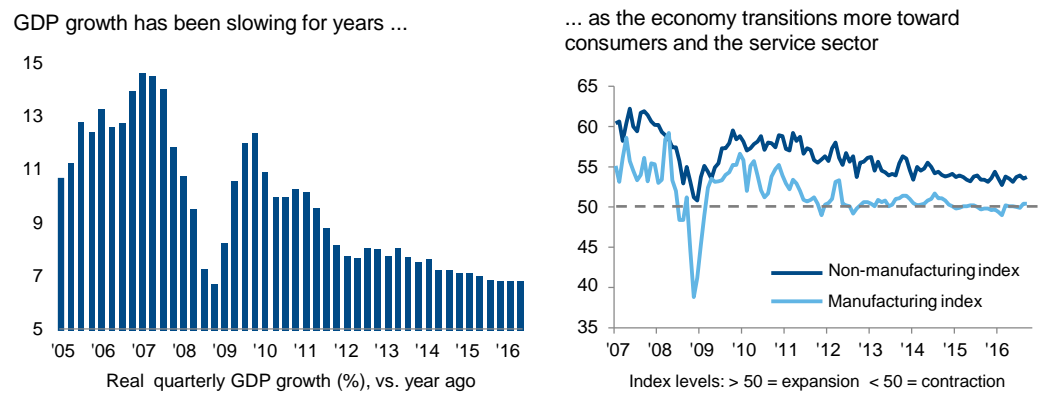
### Example 3: Economic

#### China's slowing economy

A key driver of global market volatility over the past few years has been fear of a “hard landing” for China's economy. This economic uncertainty has been manifest in different ways at different times—not just in slower overall growth, but also in weak trade data, evidence of an overheated property market, declining stock prices, and slumping demand for oil and other commodities. Because China is the world's second-largest economy, these and other factors can have a significant impact on global growth prospects and financial-market performance.

Figure 4. Investors often worry about China's economic health

Unless China makes major changes in how it manages and reports on its economy, periodic volatility from this source will remain an inevitable part of the global landscape.



Sources: Haver Analytics, China National Bureau of Statistics, China Federation of Logistics & Purchasing.

A dramatic example is the sharp and unexpected devaluation of the yuan, China's currency, in the summer of 2015 and again in early 2016. Chinese equities plunged in the wake of those moves, with European and U.S. stock indexes following suit. Markets fretted that the yuan's engineered depreciation was a sign that the government was trying to spark a currency war to boost exports, thus implying an economy that was in worse shape than commonly believed.

As shown in Figure 4, Chinese GDP growth has been decelerating for some time. The broader dynamic in play is that China's economy is undergoing a long-term transition from being largely manufacturing-based and export-driven to being more domestically focused, with greater dependence on the service sector and consumer spending. A transformation of this magnitude is bound to be accompanied by potentially worrisome data and patches of volatility.

The uncertainty is magnified, however, by a lack of transparency in Chinese economic data and inconsistent government policy—factors over which investors have no control. Barring a significant shift in how China manages and reports on its economy, periodic volatility from this source may remain an inevitable part of the global investment landscape.

### Example 4: Asset bubbles

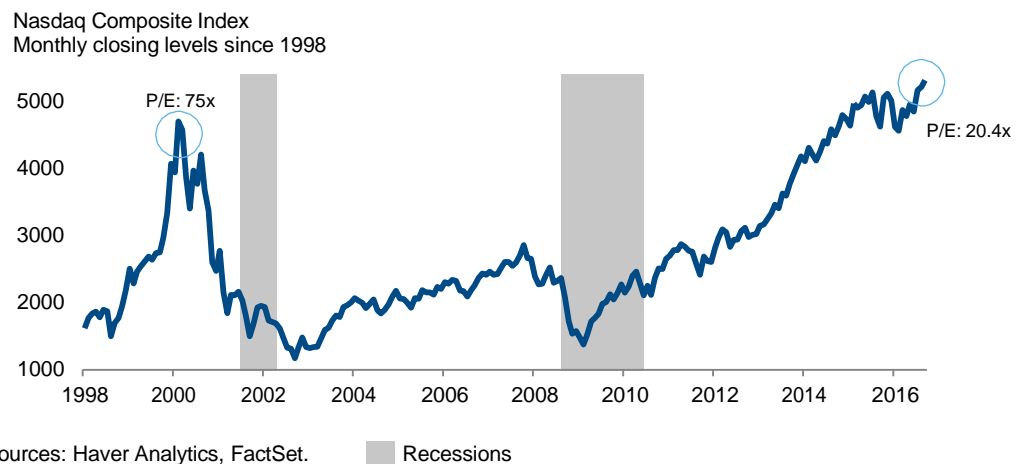
#### The rise and fall of technology stocks

During the late 1990s, it took less than two years for the tech-heavy Nasdaq Composite Index to surge 256% before the bottom fell out of the market in March 2000. The collapse of technology stocks is a textbook example of an asset bubble whose bursting roiled markets at the time and colored investor perceptions for years afterward.

This has become a timely topic of late. The Nasdaq hit successive new highs in the third quarter of 2016, prompting concerns that tech stock valuations may be in or nearing bubble territory again. How can we assess whether to take these concerns seriously? A closer look at the differences between “then” and “now” may help.

Figure 5. Tech stock valuations are far lower relative to earnings than in 2000

Analyzing valuations relative to earnings may help investors avoid getting caught in asset-bubble volatility.



The dot-com bubble is often associated with the “irrational exuberance” that former Fed Chair Alan Greenspan cautioned against in the 1990s, though he made that comment two years before the Nasdaq began its meteoric climb. It may be more accurate to say that the bubble reflected the market’s inability to forecast company revenues and earnings in the early days of the Internet and related emerging technologies. Indeed, the tech market included many start-ups that had not yet generated earnings, leaving the market with no reliable way to assess future value. As a result, large portions of the tech sector’s lofty valuations were based on forecast revenues for markets that didn’t yet exist.

Currently, valuations on the Nasdaq are much lower than they were in 2000, when the price-to-earnings (P/E) ratio hovered around 75x forward earnings. Moreover, unlike the rapid rise in tech stocks between 1998 and 2000, it took 13 years for the index to climb from its post-bubble low to

levels surpassing its 2000 peak (see Figure 5). Lastly, the technology sector has evolved markedly since then. It's more diverse, mature, and representative of companies with real revenues, profits, and business models—which many bubble-era start-ups lacked even as their stock prices soared. Today, established online retailers, social networking sites that generate billions in ad revenue, and cloud-based services join traditional hardware and software companies in demonstrating the viability of the sector.

These factors suggest the recent outperformance of technology stocks doesn't constitute another bubble, and that near-term volatility in the sector may be isolated to certain industries and individual companies. That said, some broader volatility is possible if tech stock prices continue to rise and market participants begin to question whether the increases are fully justified by fundamentals. In our view, analyzing valuations relative to earnings is a basic tenet of sound, prudent investing. Such analysis can help investors differentiate between overvalued companies on the one hand and potentially attractive opportunities on the other.

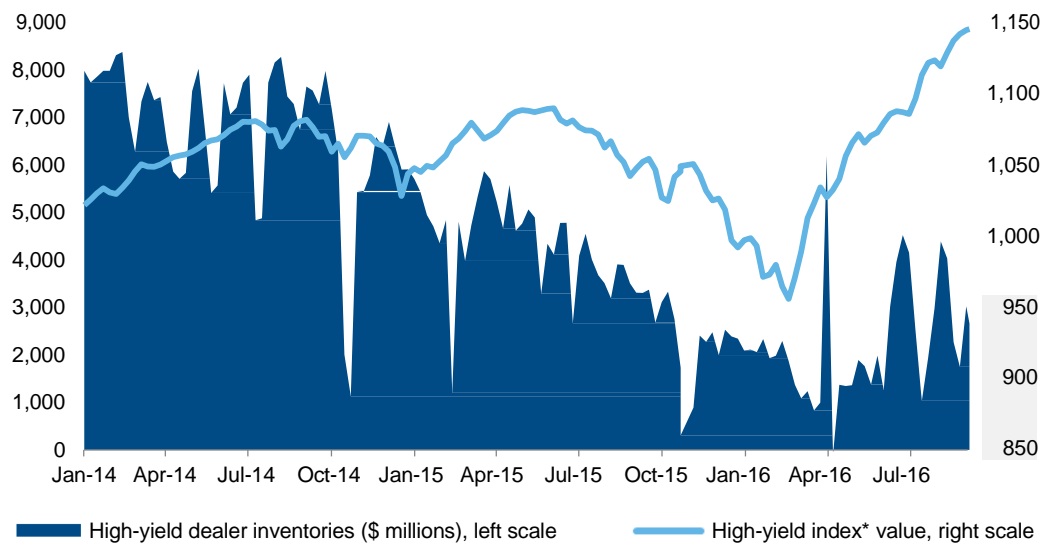
### Example 5: Market structural or technical factors

#### Reduced liquidity in bond markets

Sometimes volatility is caused or aggravated by factors other than external macro events or fundamental valuation concerns. These may include speculation, such as widespread “short selling” by hedge funds, which can skew supply and demand dynamics, as well as longer-term structural changes that affect how markets operate. An example of the latter is the reduction in bond market liquidity that became the subject of headlines and a source of concern for fixed-income investors in 2015.

Figure 6. High-yield dealer inventories vs. performance

Less-liquid conditions will likely persist, but long-term fundamental drivers of value should provide investors with the confidence to maintain exposure to fixed income.



\*Represents the BofA Merrill Lynch US High Yield Master II Index, which tracks the performance of U.S. dollar-denominated, below-investment-grade corporate debt publicly issued in the U.S. domestic market.

Source: New York Federal Reserve.

Despite the likely persistence of less-liquid market conditions and the related volatility that may occasionally result, long-term fundamental drivers of value in fixed income remain intact. This should provide investors with the confidence to maintain exposure to fixed-income securities, particularly as a prudent source of diversification. Moreover, structural changes such as reduced liquidity can create potential opportunities for some market participants. Well-resourced and experienced institutional investors, for example, may be able to earn excess returns by becoming providers of liquidity to other market participants who are willing to pay a premium to purchase or sell less-actively-traded securities.

### Conclusion

While all market volatility is a manifestation of real or perceived risks, its sources and impacts can vary widely. Likewise, the degree to which its effects on portfolios may be anticipated, temporary, or mitigated may depend on the specific source and circumstances of the volatility.

- Geopolitical events (e.g., terrorist attacks or election upsets) and economic policy actions with global implications (e.g., those taken by China) are often unpredictable. It can be very difficult to shield a portfolio completely from these sources of volatility. To an extent, the disruption they cause is an inevitable price that investors pay in exchange for long-term return potential.
- Economic changes such as a transition to a higher U.S. interest-rate environment can generally be anticipated based on the ready availability of data that would point to such a shift: accelerating GDP growth, robust labor markets, and rising inflation, among others. Through diversification and the use of actively managed strategies, fixed-income investors can seek to position their portfolios to weather a rise in rates, as history suggests the impact on various segments of the bond market are not uniform.
- Emerging asset bubbles may be anticipated by assessing valuation levels measured against both current fundamentals and historical norms. The dot-com and housing market bubbles demonstrated why investors should not get caught up in a short-term quest for outsized returns and instead use realistic long-term prospects for an asset class to guide prudent allocations to, and security selection within, that asset class. The importance of avoiding asset bubbles is underscored by how long it took prices of tech stocks and houses to recover from their respective collapses.
- Technical or structural market factors may have either short- or long-term effects. Speculative buying or selling of certain assets by hedge funds or other market participants can distort supply and demand, potentially aggravating price volatility. Barring a significant change in economic or market fundamentals, however, such volatile periods are often short-lived. Meanwhile, structural market changes, such as reduced liquidity in bond markets, may be more “permanent” but potentially less disruptive to investment performance over time as markets adapt and fundamental drivers of value are affirmed.

Ultimately, investor options for managing volatility range from specific portfolio positioning strategies (when causes of volatility are easier to anticipate) to “riding out” some of the most difficult market conditions (in cases of unexpected shocks beyond investor control). Historically, regardless of the source of volatility, markets have proved resilient over time. This suggests investors may be best served by diversifying, staying invested, and maintaining a long-term perspective.

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