Holiday dinners are often portrayed as picturesque scenes, but beneath this outer facade of familial bliss, an inner tension may not be too far away and could be triggered by the most seemingly innocent comment. Although not usually mentioned around a family’s dining room table, we often hear people use the term “volatility” in connection with financial markets and its associated impact on the performance of their portfolios but we wonder if many people truly understand what the word actually means. Volatility is commonly defined as a tendency to change quickly and unpredictably as well as a tendency to erupt in violence or anger.¹ Certainly, financial markets can turn violent at times and lead to a multitude of emotions amongst investors, including anger, fear and frustration. Any definition of volatility, however, depends upon the eye of the beholder which clearly can be subjective. Industry experts prefer to use data points to define volatility, such as standard deviation (see Appendix) which is often employed to quantify volatility or risk.

What are volatility’s challenges?

First, volatility is itself volatile. Second, it is hard to predict. And third, it is hard to estimate how long volatility will be present. In financial terms, volatility is the byproduct of some event occurring and impacting markets. Its causes are varied and can range from political (Brexit, U.S. elections) to policy (rising interest rates, new tax cuts), from economic (GDP, inflation) to geopolitical (oil shortages in the Middle East, terrorist attacks, among others). From these inputs, the net result is how investors feel during a given moment in time. It boils down to a simple question: Does a particular event make an investor more nervous (or conversely, confident) about his or her investments?

A popular measure of volatility

It would be impractical for investors to memorize a complicated formula (such as shown in Exhibit A in the Appendix) and then consider how its results are spread across a bell curve. Hence, most people associate higher volatility with a negative connotation and lower volatility with a positive one, given the stock market’s often negative behavior against volatility. Equity market rallies generally coincide with periods of low volatility, however, when stock valuations fall, volatility typically spikes. The CBOE Volatility Index (VIX), a representation of the market’s implied volatility expectations for the next 30 days, is one measure of volatility that many people typically reference.² One of the VIX’s primary attractions is its simplicity. Retail investors often interpret a high VIX value with a market sell off, while not necessarily understanding the complexity of the underlying calculation.

Key highlights

- Volatility is elevated and likely to remain so for the near term.
- Buying an index such as the S&P 500 Index means you are buying everything in it, including potentially very volatile companies.
- S&P 500 volatility largely mirrors its 50th least volatile stock, meaning that the remaining 450 constituents can actually be more volatile than the overall Index.
- Even in times of higher volatility, the relative attractiveness of the S&P 500 in terms of its apparently muted volatility may be hiding inherently riskier issuers.
- Staying on a disciplined investment path coupled with an experienced perspective can help investors to weather the inevitable storms.

¹ Source: Merriam-Webster Dictionary.
² The CBOE Volatility Index (or VIX) measures the stock market’s expectation of volatility implied by S&P 500 Index options, calculated and published by the Chicago Board Options Exchange (CBOE).
Upon closer examination ...

Analyzing the individual stocks in the S&P 500 Index shows that there is a wide dispersion in both behavior and volatility across the various issuers within the Index. This is not surprising when buying an index diversified across stocks and sectors since many of the idiosyncratic drivers of returns are different for each company, e.g., interest rates, macro factors, oil prices, etc. An index in aggregate can have much lower volatility than most of its constituents as some stocks will have low, zero or negative correlations³ to one another and, as a result, can effectively cancel each other out. Hence, when purchasing an index, an investor enjoys the benefits of diversification by owning very different companies. The Index itself, however, contains stocks that can be quite volatile. Exhibit 1 shows the S&P 500’s volatility compared to the 50th most risky stock and the least risky stock within the Index. Looking at the chart, it quickly becomes apparent that the S&P’s volatility is closer to the 50th least volatile underlying stock, meaning that 450 or so of the Index’s constituents are more volatile than the Index itself. This again illustrates that there are diversification and risk-reduction benefits to owning an index, yet the index itself is composed of more volatile components. Still waters truly run deep.

Exhibit 1: Beneath still waters, volatility lurks

The S&P 500 has roughly the same volatility as its 50th least risky stock but what about the other 450 stocks?

Future price swings

Measures of volatility, like most financial statistics, are based on historical data. Volatility measured over shorter periods of time is more sensitive to more recent price moves since every data point contributes equally to the calculation. Essentially, fewer data points means more recent and higher volatility events have more of an impact than they would during longer periods with more observations. Up until early 2018, volatility had been so low that shorter-term volatility (30 days) and longer-term volatility (over 120 and 180 days) converged, as shown in Exhibit 2. Compounding this effect was that there had not been recent instances that caused short-term volatility to increase. When the S&P 500 fell in late January/early February 2018 and lost -10.1%, shorter-term volatility jumped quickly, pulling up the longer-term indicators along the way.⁴ Since then, both short- and long-term volatility have been moving higher from levels seen only three plus years ago. To our eyes, the market is changing and perhaps quickly.

³ Correlation is a statistical measure that indicates the extent to which two or more variables fluctuate together. A positive correlation indicates the extent to which those variables increase or decrease in parallel; a negative correlation indicates the extent to which one variable increases as the other decreases.

⁴ Source: Bloomberg. This represents the period from 1/26/18 – 2/8/18.
Exhibit 3 compares the volatility of the S&P 500 to the average of the Index’s underlying stock volatility and reinforces the idea that S&P 500 constituents typically demonstrate significantly more volatility than the Index itself. In fact, since January 2015, the average of all stocks in the S&P 500 was more than twice as volatile as the Index itself (X multiplied by 2.02).⁵ The S&P 500, on average, had a standard deviation of 12.25% over this same period compared with 24.69% for the average of all stocks each month.

Can volatility be a good thing?
Volatility essentially relates to price movements, which can be both positive and negative. Simply put, stock prices go up and down. For reasons not entirely clear, many people seem to think of volatility as being inherently bad and instinctively associate the word with market selloffs, potentially due to the media’s disposition to referring to the VIX seemingly during periods of market stress. The VIX and S&P 500 are typically negatively correlated to each other, so during periods when the S&P 500 tends to sell off, the VIX rises, which helps cement the financial generalization.

Exhibit 3: Average S&P 500 stock significantly more volatile than the Index
S&P 500 volatility and percentile rank vs. constituent stocks (1/1/15-11/30/18)

<table>
<thead>
<tr>
<th>Date</th>
<th>S&amp;P 500 volatility</th>
<th>Average stock volatility</th>
<th>% rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/30/2015</td>
<td>10.88</td>
<td>18.79</td>
<td>3</td>
</tr>
<tr>
<td>12/31/2015</td>
<td>16.32</td>
<td>25.78</td>
<td>7</td>
</tr>
<tr>
<td>6/30/2016</td>
<td>17.18</td>
<td>27.96</td>
<td>19</td>
</tr>
<tr>
<td>12/30/2016</td>
<td>7.59</td>
<td>21.76</td>
<td>1</td>
</tr>
<tr>
<td>6/30/2017</td>
<td>6.81</td>
<td>19.23</td>
<td>2</td>
</tr>
<tr>
<td>12/29/2017</td>
<td>6.30</td>
<td>20.12</td>
<td>1</td>
</tr>
<tr>
<td>6/29/2018</td>
<td>9.90</td>
<td>22.56</td>
<td>2</td>
</tr>
<tr>
<td>11/30/2018</td>
<td>21.36</td>
<td>35.13</td>
<td>16</td>
</tr>
</tbody>
</table>

Source: Bloomberg, 11/30/18. For the above analysis, a percentile rank of 1 means the S&P 500 would be in the most risky 1% (roughly five stocks) of the companies, while a rank of 100 means it would be in the least risky 1% of companies (again, about five stocks). Average stock volatility represents the mathematical average of all index constituents as of the respective dates.

Exhibit 2: Until 4Q18, volatility was low
Short- and longer-term volatility (1/1/15-11/30/18)

Source: Bloomberg, 11/30/18. The 30-day, 120-day and 180-day volatilities are annualized calculations.

⁵ Source: Bloomberg, 11/30/18. The calculation is based on comparing the 30-day (annualized) volatility for the average stock each month and then comparing against the average of the monthly S&P 500 volatility.
Exhibit 4: The stock market gives and the stock market takes
(S&P 500 monthly performance divided by volatility)

Perhaps counterintuitive to some investors, markets can still rally in the face of extreme volatility, although we would mention that a worst-case scenario can occur when, simultaneously, volatility rises and markets sell off. Exhibit 4 shows the monthly risk-adjusted returns of the S&P 500 over the last three years or so. A number of +0.5 (-0.5) means the Index was up (down) and risk was twice the return. During the months when the Index was negative, the risk-adjusted performance was approximately -0.2 compared to periods when the Index outperformed, often reaching a level of +0.5 or higher. Over this sample period, the S&P 500 was positive more frequently than negative (35 months versus 12) and risk-adjusted performance was often quite strong. This past October was sharply lower than other negative months, with the Index returning -6.84%, producing a volatility of 20.37%, representing a significant selloff with high volatility.

Since the end of 2014 through November 2018, and despite many investors preferring to use the S&P 500 as their default benchmark, 12 of 47 months produced negative risk-adjusted performance. Over this same time frame, while the S&P 500 rallied 45%, those down months were particularly painful for investors. During the October 2018 selloff, the S&P 500 fell 6.8% and the Index’s 30-day standard deviation at the end of the month was nearly 3½ times (x3.45) the level at the end of the previous month. Many stocks within this Index also saw large spikes in their individual volatility.⁶

At the end of November 2018, 57% of the companies in the S&P 500 had annualized 30-day volatilities that were greater than or equal to 30% (see Exhibit 5), which is significantly high volatility. The distribution of the averages for all months since January 2015 confirms that the market has been in a lower volatility mode. The sudden increase in volatility that we experienced in October and November has skewed the distribution of underlying stock volatility towards higher risk buckets.

Exhibit 5: Volatility is currently elevated
(Distribution of S&P 500 companies’ volatility—current and three-year average)

Source: Bloomberg, 30-day (annualized) volatility, 11/30/18. The average is calculated for the period 1/1/15-11/30/18.

⁶ Source: Bloomberg.
Exhibit 6 illustrates four recent occasions that the number of S&P 500 companies experienced more than a 30% increase in volatility. In each case, around half or more of the index’s constituents demonstrated a significant level of price movement.

Exhibit 6: Volatility can be episodic
(Number of S&P 500 stocks with more than 30% volatility)

Source: Bloomberg, 11/30/18.

Summing it up

Given the market instability already witnessed during 2018, combined with the rise in U.S. interest rates, trade tensions and a certain level of uncertainty in the remaining years of the Trump presidency, it feels like the likelihood of sporadic (and quite possibly persistent) increases in volatility has risen. Active management is a critical consideration, especially during periods of volatility, which may more clearly separate the good (outperformers), the bad (closet indexers) and the ugly (underperformers). Portfolio managers with experience in their respective asset classes offer key perspectives and can dynamically adjust their portfolios to the changing economic landscape. In addition, it is important for investors to understand how volatility is calculated and the risk profiles of the actual stocks they own within a given index. As we have demonstrated, these stocks can be highly volatile, potentially making them an investor’s best friend as well as their worst enemy. Much like the calmness surrounding a family dinner around the holidays, unwelcome surprises can sometimes appear at the most unlikeliest of times.

Important disclosures

These views represent the opinions of the Director of Multi-Asset Portfolio Management, who is employed by Foresters Investment Management Company, Inc., and are not intended as investment advice or to predict or depict the performance of any investment. These views are as of the close of business on December 11, 2018 based on the information available at the time and are subject to change at any time based on market or other conditions. We disclaim any responsibility to update such views.

All investing involves risk, including possible loss of principal. Equities are subject to market risk (the risk that the entire stock market will decline because of an event such as deterioration in the economy or a rise in interest rates), as well as special risks associated with investing in certain types of stocks, such as small-cap, global and international stocks. International investing may be volatile and involve additional expenses and special risks including currency fluctuations, foreign taxes and geopolitical risks. Emerging and developing markets may be especially volatile. Fixed income investing includes interest rate risk and credit risk. Interest rate risk is the risk that bonds will decrease in value as interest rates rise. As a general rule, longer-term bonds fluctuate more than shorter-term bonds in reaction to changes in interest rates. Credit risk is the risk that bonds will decline in value as the result of a decline in the credit rating of the bonds or the economy as a whole, or that the issuer will be unable to pay interest and/or principal when due. There are also special risks associated with investing in certain types of bonds, including liquidity risk and prepayment and extension risk, or investing in high yield (junk) bonds. There are additional risks associated with the use of derivatives. Past performance does not guarantee future results.

The Standard & Poor's 500 Index (S&P 500) is a capitalization-weighted index of 500 stocks representing all major industries. For calculations purposes in this paper, dividends were reinvested on a total return basis for the S&P 500.

The Dow Jones Industrial Average (DJIA) is a price-weighted average of 30 significant stocks traded on the New York Stock Exchange (NYSE) and the NASDAQ.

Investors cannot invest directly in an index. Indexes are unmanaged and do not reflect the performance of any particular security. First Investors Funds are managed by Foresters Investment Management Company, Inc. and distributed by Foresters Financial Services, Inc.; each is a wholly owned subsidiary of Foresters Financial Holding Company, Inc. (FFHC).

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Appendix

Exhibit A: Definition of standard deviation

Where \( \sigma \) = standard deviation; \( N \) = number of instances; \( x \) = data point; \( \mu \) = average.

\[
\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^{N} (x_i - \mu)^2}
\]

Values that are further from the mean have a higher dispersion and more variable. In statistical terms, 68% of a data set’s values are within 1 standard deviation (a sigma) of the mean.

Exhibit B: What a normal distribution looks like

If a given portfolio is generating an average return of 10% and the standard deviation associated with the investment is 3%, then the math implies that 68% of observations can vary from 7% (10%-3%) to 13% (10%+3%).

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