Summary

- One of the side effects of the COVID-19 pandemic has been a profound disruption of the normal pattern of investment risk and return.
- The characteristically negative correlation between volatility and return asserted itself with unprecedented suddenness and ferocity, upsetting completely the prevailing low volatility regime.
- The subsequent rally defied well established patterns as returns surged while volatility persisted. Equity markets typically struggle to sustain a rally when volatility is exceedingly high.
- The market history of the last two decades underscores the extraordinary nature of this period. By making use of the negative relationship between volatility and returns and the positive relationship between one month’s volatility and the next month’s, investors can manage portfolios dynamically to the volatility they are willing to tolerate. Such volatility targeting has resulted in a smoother performance pattern than conventional methods of targeting returns.

Perhaps as much as any other aspect of investors’ daily lives, financial markets today bear witness to a world turned upside down by the global COVID-19 pandemic. Volatility, a measure of fluctuation in financial asset prices, had behaved like a lamb early in the year, but reared its head in mid-February and continues to roar like a lion of unprecedented ferocity. The VIX Index, a measure of market-wide volatility based on the prices of S&P 500 30-day futures, was coasting along at rock-bottom levels between 9 and 16 after reports last December that the US and China reached a preliminary trade agreement. On 18 February, it ended the day at 14.38. In the following 19 trading days as news emerged that the coronavirus had spread worldwide, the VIX climbed to its highest level ever: 82.69 (Exhibit 1).

Exhibit 1
16 March—The Day Volatility Broke All Records

<table>
<thead>
<tr>
<th>Implied Volatility</th>
</tr>
</thead>
<tbody>
<tr>
<td>(VIX Index)</td>
</tr>
<tr>
<td>11/20/08 - 80.86</td>
</tr>
</tbody>
</table>

As of 24 March 2020
Source: Lazard, Bloomberg
Obviously, no one could or did anticipate a catastrophe of this dimension, but its very magnitude enables us to examine the impact volatility has on markets and how targeting volatility instead of a desired level of returns can help investors weather the inevitable bouts of market turbulence.

Quantifying a Sinking Feeling

Volatility measures the change in asset prices, either up or down. This statistical calculation serves as the standard proxy for the amount of risk investors are willing to tolerate to achieve a given return. Investors can track that tradeoff along the efficient frontier, which plots risk (i.e., mathematical volatility) along the X-axis and return along the Y-axis. Consider by way of example a basic investment portfolio consisting solely of stocks and bonds. As its allocation to stocks with their higher potential payoff increases, the portfolio’s expected return rises along the X-axis—and the risk taken to capture that return extends out along the Y-axis (Exhibit 2).

Exhibit 2
The Classic Efficient Frontier

<table>
<thead>
<tr>
<th>Return (%)</th>
<th>Volatility (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonds</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Equities</td>
<td>12</td>
</tr>
</tbody>
</table>

For the period January 1980 to February 2020
Equities = S&P 500 Index; Bonds = Barclays Capital US Aggregate Bond Index. This information is for illustrative purposes only. The performance quoted represents past performance. Past performance is not a reliable indicator of future results. The indices listed above are unmanaged and have no fees. It is not possible to invest in an index. Index performance does not represent the performance of any product managed by Lazard. Source: Bloomberg

The Long Term Masks Many Different Short Terms

That big picture obscures a multitude of widely varying little pictures. The efficient frontier is a moving target, constantly shifting. Looking at the efficient frontiers derived from the S&P 500 and the Barclays Aggregate decade by decade tells a very different story from the full period’s smooth upward slope (Exhibit 3).

Exhibit 3
The “Classic” Efficient Frontier Assumes Widely Different Forms on Closer Inspection

During the 1990s, indicated by the purple line, equities added almost 10% annualized return for a roughly 10% increase in volatility, whereas the blue line between 2000 and 2010, the decade of the “tech wreck” and the global financial crisis, drops down and to the right, showing that equities actually detracted almost 8% from annualized return for the 13% they added in volatility.

Like the efficient frontier, correlations among assets move around. Much of the time the correlation between the two core assets, stocks and bonds, moves in opposite directions. That negative correlation is what makes the efficient frontier efficient, damping down the volatility along its upward sloping curve. When stock prices fall, investors tend to retreat to the relative stability of bonds, raising their price. Conversely, as stocks rally, investors sell their bonds, forcing their prices lower, to load up on stocks. But markets don’t always work that way. Looking at market history, the correlation between US large cap stocks and Treasury debt, for instance, has ranged from -0.47 to as high as +0.64, where their moves pretty much synch up (Exhibit 4).
All of this brings us to our current situation. Over the past month, the crisis has distorted the classic efficient frontier, this time with unprecedented speed and severity. In January, the correlation between the S&P 500 stock index and the price of a 10-year US Treasury note fell to -0.70, seemingly an open invitation to add equity exposure to a diversified portfolio and stretch for return.

At the height of the crisis, before Fed action to ameliorate bond market liquidity, the correlation reversed itself, rising to +0.60.

The near-complete reversal reflected extreme volatility in both core asset classes, which rose by a factor of five in the S&P 500 and by a factor of three for bonds, the so-called safe-haven asset. Returns from the pure equity allocation lagged pure bond returns by 18% over the month while adding 23.5% to volatility (Exhibit 5).

As panic took hold, volatility reverberated across every asset class, including those less correlated to stocks and bonds in calmer times. Exhibit 6 tracks the daily index returns for the month-long period beginning 24 February of three different stock market indices. Exhibit 6 covers the period from 24 February to 24 March 2020.
markets, government bonds, and a range of commodities and alternatives—15 different asset classes in all. During the period, the US stock market fell from a record high achieved on 21 February into a bear market just 15 days later—a retreat that took 191 days during the global financial crisis in 2008-2009. In the next five days, as the possibility of a bear market gathered steam, 11 of the asset classes finished the day in the red. Then, as the stock market’s retreat became a rout on 9 March and the seven trading days following, two-thirds or more of the asset classes posted daily losses. On two of the days they all went negative. Even blessed with 20/20 foresight, an investor wouldn’t have found shelter.

The Fire That Burns Returns Can Also Fuel Them

No one could have predicted several months ago that much of the global economy would have to shut down at roughly the same time, wreaking havoc in all corners of the financial markets—let alone that an ill-timed price war among the world’s top oil producing nations would compound the damage. However, now that the pandemic and oil price war have reintroduced volatility, it should comfort investors that at least the volatility itself is somewhat predictable.

Over extended periods, the prior month’s volatility has tended to correlate somewhat well (0.38 out of a possible 1.00) with the succeeding month’s, so investors can reassure themselves with some certainty that the present direction of volatility is likely to persist. Index returns, on the other hand, have no predictive value in the subsequent month.

A second characteristic, highlighted in particularly dramatic fashion in the market’s recent behavior, enhances volatility’s predictive power: Stock volatility, as measured by the VIX Index, correlates negatively to index returns. When volatility falls, stock prices tend to rise, and when volatility rises, stock prices tend to fall (Exhibit 7).

The correlation has a certain theoretical elegance to it. When a company’s stock price declines, absolutely and relative to the debt on its balance sheet, the company becomes ipso facto more leveraged, and the additional leverage makes its equity more volatile.

In any event, since volatility has proven over time to have a reasonable amount of predictability while return has none whatsoever, it may make more sense for investors to construct a portfolio based on the y-axis of the efficient frontier—the axis of volatility and the potential for loss in portfolio value—rather than the x-axis of the return they’re aiming to attain.

In either a high- or low-volatility regime, a static asset allocation stands to gain less from an orientation toward either greater prudence or more daring than an active allocation that can accommodate the market’s shifting tempos. Over the long run, across the length of several volatility regimes, an active allocation has the potential to build more consistent and better returns. Making use of the two relevant correlations—positive in the case of month-to-month volatility and negative between volatility and returns—investors can target the level of volatility they are willing to tolerate along a normally functioning efficient frontier. As prices rise and declining volatility looks likely to persist, they can add to their equity allocation while maintaining a more or less constant level of risk. Conversely, as prices fall and rising volatility looks likely to persist, they can reduce their equity allocation and keep the portfolio’s risk in a range they can tolerate.

For the period January 1990 to October 2015, daily returns
The performance quoted represents past performance. Past performance is not a guarantee of future results. This is not intended to represent any product or strategy managed by Lazard. It is not possible to invest directly in an index.
Source: Bloomberg
Staying on Course through This Volatility Storm

The market upheavals arising from the pandemic makes the case for dynamic volatility targeting more forcefully than any historical analysis. A few months ago, a strategy with a 10% volatility target would have allocated 90% of a portfolio’s weight to equities. To maintain that target today, it would somehow have to cut the equity allocation to 15%.

Indeed, the sudden onset of the current volatility has also made clear the necessity of maintaining “portfolio preservers” in good repair. When daily movements of hundreds or even thousands of basis points are the norm, and protection commands a large and growing premium, it pays to have hedges in place and cash on hand. The frequent and seismic swings in market sentiment demand close attention to cross-asset correlations as well. That in turn calls for ongoing and detailed analysis of factor correlations, especially between traditional and alternative assets. The alternative assets, which may seem to offer a diversifying hedge in more placid times, can in many cases accelerate volatility under pressure.

Unfortunately, no one can yet predict when we will again see some semblance of normalcy in the markets, which does point to a third important, albeit non-mathematical, correlation: the correlation between volatility and uncertainty. Bouts of volatility tend to cluster together in time, with one large swing followed by more large swings, and smaller moves by more small moves. This makes intuitive sense. Dramatic changes provoke emotional reactions, while more placid environments encourage a more measured approach. This tendency could be an artifact of human psychology. People can get used to seeing negative headlines, so the bar for what provokes a dramatic negative reaction naturally gets higher. And just as events outside the markets provoke volatility, they can also calm it. Something like the coronavirus can evoke catastrophic volatility, which will reverberate, and something like a tax cut or a stimulus package has the potential to check rising volatility and bring it down as the real economy responds.

As a path to containment and cure and economic revival becomes more defined, volatility will in all likelihood decline for reasons more closely tied to a changing economic outlook than to investor psychology. But for now, volatility targeting prescribes a nimble and straightforward strategy. We believe portfolios should stay liquid, ready, and able to move tactically among hedges, if necessary, to cash.

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The MSCI Emerging Markets Index is a free-float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets. The MSCI Emerging Markets Index consists of 26 emerging markets country indices: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Qatar, Russia, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey, and United Arab Emirates. The index is unmanaged and has no fees. One cannot invest directly in an index.

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