THE LOW VOLATILITY EFFECT—PURSUING A SMOOTHER INVESTMENT EXPERIENCE

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Executive summary

The "low volatility effect" is a term used to describe the observation that stocks with lower price volatility have historically generated higher risk-adjusted returns than stocks with higher price volatility. Investing approaches that seek to exploit the low volatility effect gained prominence after the 2008 Global Financial Crisis as market participants sought a less volatile investment experience. This whitepaper examines the low volatility effect and explores some of the key principles of low volatility investing. We demonstrate why an allocation to low volatility strategies could be warranted, and how it should be used in client portfolios to reduce overall volatility and enhance risk-adjusted returns over the long term.

Background

The low volatility effect in investing was first researched by academics decades ago as an anomaly of conventional asset pricing theory. It was observed that stocks with lower price volatility have historically generated higher risk-adjusted returns than stocks with higher price volatility. Investing approaches that sought to exploit the low volatility effect gained prominence after the 2008 Global Financial Crisis as market participants sought a less volatile investment experience. By the end of 2019, assets under management in low volatility investment solutions had surged to over US$471 billion[1]. In the following pages, we illustrate some of the key principles of low volatility investing, demonstrating why an allocation to low volatility strategies could be warranted, and how it should be used in client portfolios.

The potential benefits of low volatility strategies

Low volatility strategies offer a defensive investment approach. They can lower a portfolio's sensitivity to movements in the overall stock market (beta), thereby reducing its overall volatility and enhancing risk-adjusted returns over the long term. Two separate studies by Blitz, van Vliet, and Baltussen in 2007[2] and 2019[3], found strong empirical evidence that stocks with low historical volatility tend to have higher risk-adjusted returns over the long run. This was possibly due to investors often overpaying for high-volatility stocks, as well as to certain behavioural biases of private investors. The smoother return profile generated by an allocation to low volatility equities could help investors achieve their long-term goals while preserving capital during market drawdowns. In addition, low volatility strategies typically demonstrate a lower correlation with broad-based equity strategies, increasing their diversification potential when added to such portfolios, regardless of whether or not they skew growth, value, or core investment styles.

Low volatility investing—alive and well

Some investors have suggested that the low volatility factor has became a victim of its own success as more and more mutual funds, ETFs, and hedge funds pursue low volatility strategies, eroding any excess return potential[3]. In their 2019 paper, Blitz, Van Vliet and Baltussen observed there is little evidence to suggest that that the low volatility effect has been arbitraged away. Rather, their research found that more investors have become either neutrally positioned or have turned to higher volatility strategies[3].

Combining low volatility and dividend strategies

Combining a low volatility strategy with a dividend strategy can potentially improve the sustainability and visibility of a portfolio's cash flow stream. Dividend investing on its own can be tailored to various investment styles, such as dividend growth or high dividend-yield, depending on investor preferences. Dividend-paying stocks are often associated with quality as they are typically underpinned by shareholder-focused management teams, consistent profitability, and strong cash flows. Adding a dividend-yield component to a low volatility strategy adds a predictable income stream to a portfolio and can potentially enhance total returns, particularly during market drawdowns. In addition, low-volatility companies tend to be less likely to cut dividends, which happens more commonly with companies held by strategies aiming exclusively to maximize dividend yield. Combined, these two strategies can potentially provide investors with a yield premium to the broader market, lower overall portfolio volatility, and mitigate downside risk.

The difference between low volatility and minimum volatility

Investors seeking to reduce volatility in their portfolios often face the dilemma of whether to use low volatility or minimum volatility approaches. At first glance, these two approaches may seem quite similar, but they are, in fact, considerably different.

Low volatility portfolios exploit the belief that lower volatility stocks have a higher return potential over the long run. This is accomplished by constructing portfolios with stocks that demonstrate the lowest trailing volatility, as measured by standard deviation.[4] The result is a portfolio with greater exposure to the low volatility factor and typically fewer stock or sector constraints. Sector allocations are often skewed towards industries with historically lower volatility, such as defensive sectors like consumer staples, utilities, and real estate. Consequently, the portfolio's sector weightings will typically look very different than those of traditional market-capitalization weighted indices.

Conversely, minimum volatility solutions aim to achieve the lowest possible variance within certain portfolio constraints.[5] These portfolios have more rigid stock and sector constraints, and they can look a lot closer to traditional market-capitalization weighted indices than their low volatility counterparts. This type of optimization involves a somewhat opaque process, and the inclusion of multiple constraints can lead to unintended outcomes for investors.

In comparing these two approaches, it is important to assess how each strategy has performed over time. U.S. indices offer good tools for conducting such an assessment due to their long history. Chart 1 shows that low volatility has outperformed minimum volatility, with greater downside protection, and higher risk-adjusted returns (as measured by the Sharpe Ratio) since June 1, 1993 (earliest return date).

Chart 1: Index Performance Since Inception of Low Volatility Index

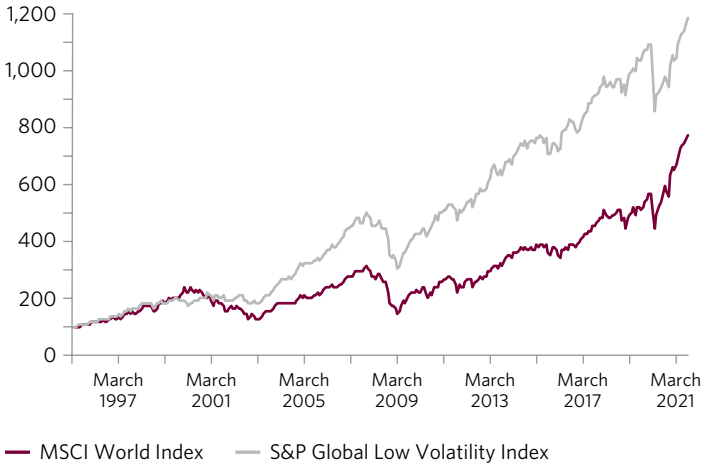
Index	Return (%)	Std. Dev. (%)	Sharpe Ratio	Down Capture Ratio
S&P 500 Low Volatility Index	10.67	11.05	0.71	44.31
MSCI USA Minimum Volatility Index	9.65	10.64	0.61	66.56

Source: June 1, 1993 to July 31, 2021. The information was prepared by CIBC Asset Management Inc. using the following third-party service providers' data: Morningstar Direct as at August 31, 2021. The S&P Global Low Volatility Index is a product of S&P Dow Jones Indices LLC or its affiliates ("SPDJI") and TSX Inc., and has been licensed for use by CIBC Asset Management.

Low volatility portfolios have outperformed by mitigating drawdowns

The return profiles of low volatility portfolios can vary significantly based on the overall market environment. This is illustrated in charts 2 and 3 below, which compare the S&P Global Low Volatility Index with the MSCI World Index.

Chart 2: Index Growth from Inception of the S&P Global Low Volatility Index



Source: April 1, 1995 to August 31, 2021. The information was prepared by CIBC Asset Management Inc. using the following third-party service providers' data: Morningstar Direct as at August 31, 2021. The S&P Global Low Volatility Index is a product of S&P Dow Jones Indices LLC or its affiliates ("SPDJI") and TSX Inc., and has been licensed for use by CIBC Asset Management. The Bloomberg Global Aggregate Bond Index is a product of Bloomberg L.P., and has been licensed for use by CIBC Asset Management.

Chart 3: From Inception of the S&P Global Low Volatility Index

Index	Return (%)	Std. Dev. (%)	Sharpe Ratio	Up Capture Ratio	Down Capture Ratio
S&P Global Low Volatility Index	9.37	9.04	0.64	66.35	37.55
MSCI World Index	7.64	12.07	0.39	100	100

Source: April 1, 1995 to August 31, 2021. The information was prepared by CIBC Asset Management Inc. using the following third-party service providers' data: Morningstar Direct as at August 31, 2021. The S&P Global Low Volatility Index is a product of S&P Dow Jones Indices LLC or its affiliates ("SPDJI") and TSX Inc., and has been licensed for use by CIBC Asset Management.

While low volatility strategies can significantly underperform in up-markets, they can also meaningfully outperform in down markets. One of the common misconceptions associated with low volatility portfolios is that because they tend to underperform in up-markets, they add little value to portfolios. From a risk-adjusted performance perspective, however, low volatility portfolios significantly outperform over the long run. It is therefore important for investors to remember that low volatility strategies can enhance their return profile and provide a smoother overall investment experience despite underperforming in up-markets.

Capital preservation is a core tenet of low volatility strategies and one of the primary reasons they outperform over the long term. To illustrate this, let's consider a hypothetical example. If an investor with $1,000 were to lose 25% in year 1 and then gain 25% in year 2, their overall return would be approximately -6.25%. However, if that same investor were to lose 10% in year 1 and gain 10% in year 2, their overall return would be approximately -1.00%. Not only does this provide the investor with a smoother ride, but also better long-term absolute and risk-adjusted returns through avoiding significant drawdowns that can be very difficult to overcome. We believe this aspect of low volatility strategies will better serve investors over time.

Comparing global factors: low volatility significantly outperforms

For decades, investors have targeted certain quantifiable characteristics or "factors" in an attempt to generate long-term investment returns in excess of benchmarks. Common factors include low volatility, quality, size, momentum, growth, and value. Investment approaches that target the low volatility factor have been clear winners for risk-adjusted outperformance and downside protection when compared to other common factors. Using global factor indices since January 1, 2000, Charts 4 and 5 below illustrate that the low volatility factor generated the highest risk-adjusted return, even though this timeframe experienced one of the longest equity bull markets on record. Global low volatility registered a down-capture ratio of 36% compared with all other factors whose down-capture ratios ranged from 83% to 106%. This is remarkable considering the significant market dislocations experienced during this timeframe, including the Tech Bubble, the Global Financial crisis, and the COVID-19 downturn. This relative outperformance over the last 21 years suggests that incorporating a low volatility strategy into a portfolio could help to reduce the portfolio's overall volatility, providing investors with a smoother investment experience.

Chart 4: Sharpe Ratio

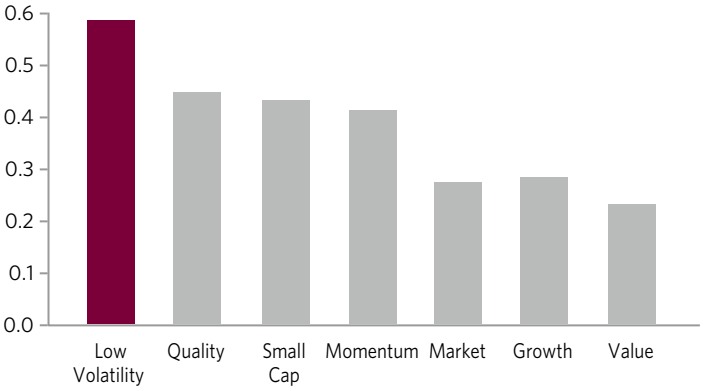
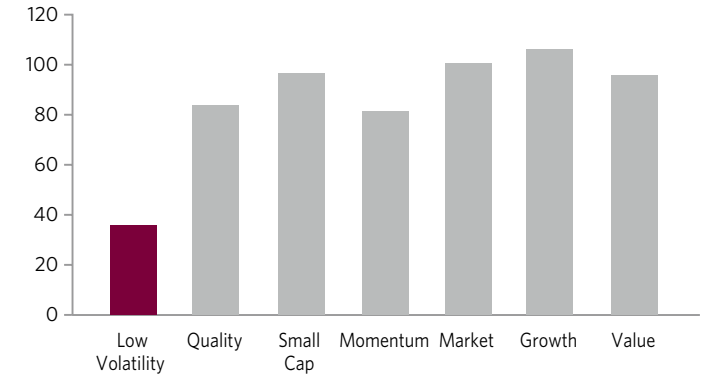


Chart 5: Down-Capture (%)



Source: January 1, 2000 to August 31, 2021. Morningstar Direct 2021. The information in Charts 4 and 5 was prepared by CIBC Asset Management Inc. using the following third-party service providers' data: Morningstar Direct as at August 31, 2021. Proxies for indices are as follows: Low Volatility: S&P Global Low Vol Index, Quality: MSCI World Quality Index, Small: MSCI World Small Cap Index, Momentum: MSCI World Momentum Index, Market: MSCI World Index, Growth: MSCI World Growth Index, Value: MSCI World Value Index. The S&P Global Low Volatility Index is a product of S&P Dow Jones Indices LLC or its affiliates ("SPDJI") and TSX Inc., and has been licensed for use by CIBC Asset Management.

Low volatility strategies can complement traditional portfolio strategies

Despite the relative outperformance of the low volatility factor on a risk-adjusted basis over the last 21 years, many investors have been reluctant to incorporate low volatility strategies into more traditional portfolios. This integration can provide a sound strategy, as the two approaches can be complementary, considering their varied return profiles and tendency to outperform at different times. This is illustrated in Charts 6 and 7, in which the first two bars in each set represent the returns of the MSCI World Index and the S&P Global Low Volatility Index, respectively, while the third bar represents a 75%/25% blend of the two indices, and the fourth bar represents a 50%/50% blend of the two indices. What emerges from this chart is that increased exposure to the S&P Global Low Volatility Index increases return and lowers standard deviation, resulting in higher risk-adjusted returns and lower down-capture over the time periods illustrated.

Chart 6: Returns (%)

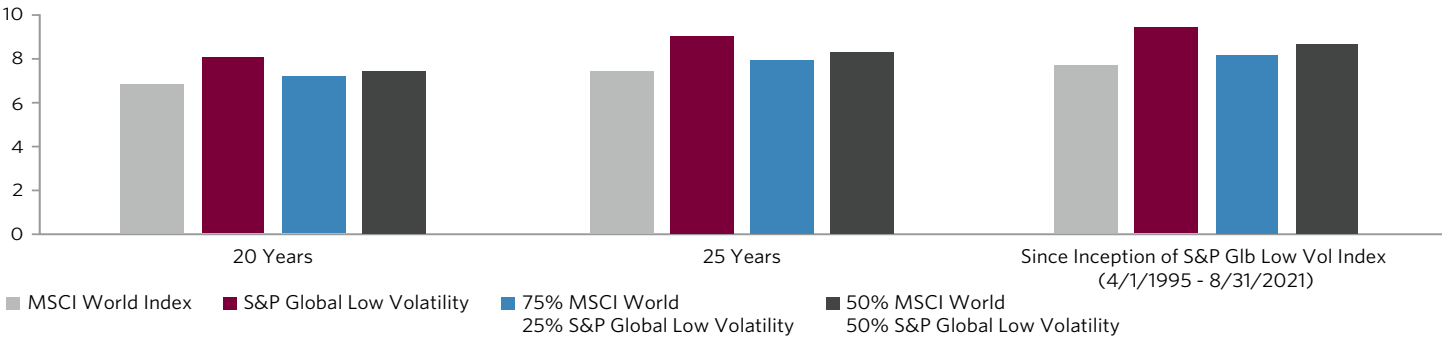


Chart 7: From Inception of the S&P Global Low Volatility Index

Index	Return (%)	Std. Dev. (%)	Sharpe Ratio	Up Capture Ratio	Down Capture Ratio
MSCI World Index	7.64	12.07	0.48	100.00	100.00
S&P Global Low Volatility Index	9.37	9.04	0.83	67.22	37.75
75% MSCI World Index 25% S&P Global Low Volatility Index	8.13	10.87	0.58	91.91	84.31
50% MSCI World Index 50% S&P Global Low Volatility Index	8.58	9.92	0.68	83.75	68.70

Source: April 1, 1995 to August 31, 2021. The information was prepared by CIBC Asset Management Inc. using the following third-party service providers' data: Morningstar Direct as at August 31, 2021. The S&P Global Low Volatility Index is a product of S&P Dow Jones Indices LLC or its affiliates ("SPDJI") and TSX Inc., and has been licensed for use by CIBC Asset Management.

Applying this analysis to more traditional portfolio allocations yields a very similar result. Chart 8 shows three different portfolio scenarios.

Chart 8: From Inception of the S&P Global Low Volatility Index

Index	Return (%)	Std. Dev. (%)	Sharpe Ratio	Up Capture Ratio	Down Capture Ratio
50% MSCI World Index 50% Bloomberg Global Aggregate Bond Index	6.21	7.08	0.62	55.27	41.32
50% MSCI World Index 25% Bloomberg Global Aggregate Bond Index 25% S&P Global Low Volatility Index	7.43	8.22	0.68	69.55	54.89
25% MSCI World Index 50% Bloomberg Global Aggregate Bond Index 25% S&P Global Low Volatility Index	6.59	6.66	0.71	47.05	25.82

Source: April 1, 1995 to August 31, 2021. The information was prepared by CIBC Asset Management Inc. using the following third-party service providers' data: Morningstar Direct as at August 31, 2021. The S&P Global Low Volatility Index is a product of S&P Dow Jones Indices LLC or its affiliates ("SPDJI") and TSX Inc., and has been licensed for use by CIBC Asset Management. The Bloomberg Global Aggregate Bond Index is a product of Bloomberg L.P., and has been licensed for use by CIBC Asset Management.

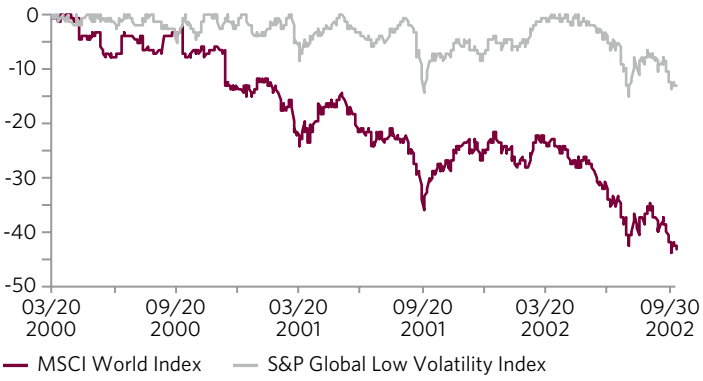
Whether an investor funds the low volatility sleeve of their portfolio from their fixed income or equity allocation, the portfolio's overall Sharpe ratio increases. This clearly suggests that a portfolio can benefit by incorporating both broad-based and low volatility exposures rather than simply one or the other.

Low volatility has protected in significant market dislocations

Market corrections can be unpredictable, unfold rapidly, and occur in widely different market environments. Since the turn of the century, markets have experienced many periods of strong performance, including the longest bull market on record. However, they have also been many drawdowns, including three notable corrections: the Tech Bubble, the Global Financial Crisis, and the COVID-19 Economic Shutdown.

The bursting of the Tech Bubble may now seem like ancient history, but valuable lessons can still be drawn from it. The period was characterized by what some have called "irrational exuberance" as valuations of technology and telecom stocks rose to unsustainable levels, eventually precipitating a 43.4% drop in the equity market, as illustrated in Charts 9 and 10. Low volatility strategies protected investors during this period with a maximum drawdown of only 14.5%. The significance of such a low relative drawdown should not be understated. As previously mentioned, when investors experience large drawdowns, it becomes increasingly difficult to recover to break-even levels.

Chart 9: Tech Bubble Drawdown



Source: March 20, 2000 to September 30, 2002.

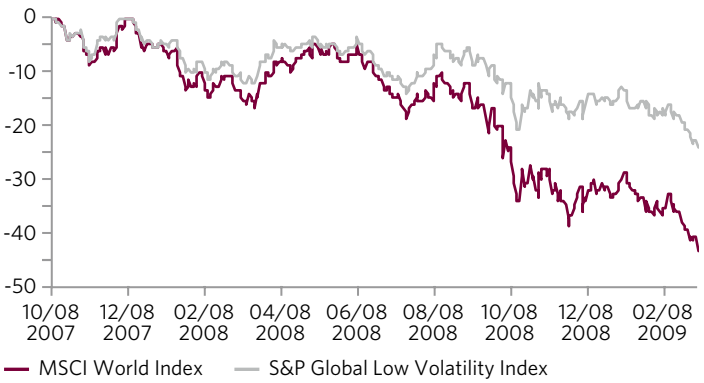
Chart 10: Tech Bubble Statistics

Index	Return (%)	Std. Dev. (%)	Max Draw. (%)	Max Draw. # of Periods	Max Draw. Peak Date	Max Draw. Valley Date
MSCI World Index	-17.62	20.99	-43.42	890	04/18 2000	09/24 2002
S&P Global Low Volatility Index	3.49	13.08	-14.47	76	05/9 2002	07/23 2002

Source: March 20, 2000 to September 30, 2002, the information in Charts 9 and 10 was prepared by CIBC Asset Management Inc. using the following third-party service providers' data: Morningstar Direct as at August 31, 2021. The S&P Global Low Volatility Index is a product of S&P Dow Jones Indices LLC or its affiliates ("SPDJI") and TSX Inc., and has been licensed for use by CIBC Asset Management.

Another significant correction occurred in 2008. Known as the Global Financial Crisis, this correction was also driven by market forces. This time it was excessive leverage and concerns about high global debt levels that caused a sell-off. As so-called "too big to fail" financial institutions Lehman Brothers and Bear Stearns collapsed, panic spread through global equity markets, causing a 42.8% drawdown. Low volatility strategies were drawn down by only half this percentage during the period, once again showing their resiliency and potential to mitigate drawdowns.

Chart 11: Financial Crisis Drawdown



Source: October 8, 2007 to March 2, 2009. The information was prepared by CIBC Asset Management Inc. using the following third-party service providers' data: Morningstar Direct as at August 31, 2021. The S&P Global Low Volatility Index is a product of S&P Dow Jones Indices LLC or its affiliates ("SPDJI") and TSX Inc., and has been licensed for use by CIBC Asset Management. The Bloomberg Global Aggregate Bond Index is a product of Bloomberg L.P., and has been licensed for use by CIBC Asset Management.

Chart 12: Financial Crisis Statistics

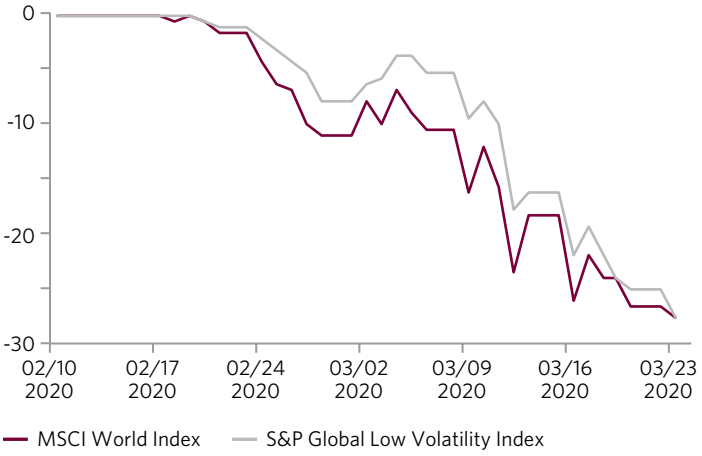
Index	Return (%)	Std. Dev. (%)	Max Draw. (%)	Max Draw. # of Periods	Max Draw. Peak Date	Max Draw. Valley Date
MSCI World Index	-32.17	31.28	-42.84	448	12/11 2007	09/02 2009
S&P Global Low Volatility Index	-16.08	22.14	-23.86	448	12/11 2007	09/02 2009

Source: the information was prepared by CIBC Asset Management Inc. using the following third-party service providers' data: Morningstar Direct as at August 31, 2021. The S&P Global Low Volatility Index is a product of S&P Dow Jones Indices LLC or its affiliates ("SPDJI") and TSX Inc., and has been licensed for use by CIBC Asset Management.

The most recent sell-off was caused by the COVID-19 shutdown in March of 2020. Low volatility strategies turned in mixed performance. As shown in Charts 13 and 14, the S&P Global Low Volatility Index only slightly outperformed. One reason why low volatility performed nearly in-line with the broad-based benchmark was the nature of the crisis. The COVID-19 sell-off was not driven by excessive equity valuations or debt levels, government shutdowns or tightening monetary policy, which have all been typical catalysts for prior drawdowns. The COVID-19 sell-off was the result of a globally coordinated economic shutdown orchestrated by governments and policymakers to slow a global pandemic.

Government mandates shut people out of most traditional places of business and entertainment. Investments commonly associated with low volatility and yield, such as real estate, felt the effects of the shutdown immediately, while technology companies gained. We consider this an unusual or "Black Swan" situation. As mentioned above, Blitz, van Vliet and Baltussen have demonstrated that the low volatility factor has not been arbitraged away and remains a potentially lucrative strategy for investors. We believe that low volatility strategies could continue to protect on the downside in normal market conditions similar to their performance throughout the Tech Bubble and Global Financial Crisis.

Chart 13: COVID-19 Downturn



Source: February 10, 2020 to March 23, 2020, the information was prepared by CIBC Asset Management Inc. using the following third-party service providers' data: Morningstar Direct as at August 31, 2021. The S&P Global Low Volatility Index is a product of S&P Dow Jones Indices LLC or its affiliates ("SPDJI") and TSX Inc., and has been licensed for use by CIBC Asset Management.

Chart 14: COVID-19 Downturn

Index	Return (%)	Std. Dev. (%)	Max Draw. (%)	Max Draw. # of Periods	Max Draw. Peak Date	Max Draw. Valley Date
MSCI World Index	-25.45	70.87	-26.13	33	02/13 2020	03/16 2020
S&P Global Low Volatility Index	-21.54	48.36	-22.03	31	02/13 2020	03/16 2020

Source: the information was prepared by CIBC Asset Management Inc. using the following third-party service providers' data: Morningstar Direct as at August 31, 2021. The S&P Global Low Volatility Index is a product of S&P Dow Jones Indices LLC or its affiliates ("SPDJI") and TSX Inc., and has been licensed for use by CIBC Asset Management.

Qi Global Low Volatility Dividend Strategy

A core holding or complement within a portfolio

In light of the potential benefits of low volatility investing as outlined above, investors may want to consider adding a low volatility component to their portfolios. The CIBC Qi Global Low Volatility Dividend Strategy is a quantitative approach that utilizes robust research and strong risk management to enhance investment decision making. The strategy aims to deliver superior risk-adjusted returns, combining the benefits of quantitative modelling with the oversight of dedicated portfolio managers. The CIBC Quantitative Research Team leverages more than 50 years of combined experience in investment management, mathematics, statistics and computer science to construct a strategy that acts on empirical evidence and not emotion. The CIBC Qi Global Low Volatility Dividend Strategy screens out non-dividend payers to improve yield and total return. It invests in the lowest-volatility stocks globally to help mitigate downside risk and provide a smoother return profile. For investors seeking a low volatility dividend-focused quantitative solution, this strategy may be considered as a complement to existing portfolio allocations.

[1] Source: eVestment Alliance as at December 31, 2020.

[2] David Blitz, Pim van Vliet and Guido Baltussen (2007), "The Volatility Effect: Lower Risk without Lower Return," in The Journal of Portfolio Management 34 (1), pp. 102-113.

[3] David Blitz, Pim van Vliet and Guido Baltussen (2019), "The Volatility Effect Revisited," in The Journal of Portfolio Management Quantitative Special Issue 2020 46 (2), pp 45-63

[4] David Blitz, Pim van Vliet and Guido Baltussen (2007), "The Volatility Effect: Lower Risk without Lower Return," in The Journal of Portfolio Management 34 (1), pp. 102-113

[5] https://www.spglobal.com/en/research-insights/articles/low-volatility-and-minimum-volatility-are-not-the-same