

**ALLIANCEBERNSTEIN**<sup>®</sup>

# REMASTERING VOLATILITY

## REDUCING NOISE IN EQUITY ALLOCATIONS

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**IN THIS PAPER:** Volatility is a challenge that has vexed equity investors for decades and has been amplified in today's low interest-rate environment. As many investors reach for higher-return assets to help meet future obligations, they are likely to be more exposed to the higher inherent volatility that stocks add to an allocation. In this paper, we examine the root causes of volatility to provide a holistic perspective on risk-management solutions for today's complex environment. Distinguishing between market risk, factor risk and stock-specific risk can help investors identify the most appropriate strategic solutions to combat volatility and ensure that they are compensated for the risk in their equity portfolios.

## STRATEGIC RISK-MANAGEMENT SOLUTIONS

Volatility is the admission price that investors must pay to access the higher return potential of stocks and other risk assets. Yet volatility also reduces returns through risk drag, and often prompts emotional, financially destructive decisions that stem from the fear of loss. Individual investors and institutions can avoid falling into this trap by deploying strategic solutions to actively face the volatility challenge.

Diversification will remain the bedrock of good risk management. But portfolio managers have more tools at their disposal to tackle this task. By focusing on managing market risk, factor risk and stock-specific risk, active managers can select securities and construct portfolios that aim to control volatility and deliver better long-term results. And by understanding the sources of volatility, portfolio managers can better drive their outcomes through intentional views—taking risk where insight identifies an opportunity for improved returns, while controlling the volatility of unintended exposures. This helps reduce the noise that interferes with an investing plan, and is the key to remastering portfolios and realizing the benefits of long-term equity returns.



In the fourth quarter of 2018, many equity investors had good reason to feel anxious. Stocks were falling sharply, and by late December, US and global equities had tumbled by 20% and 17% from their respective September peaks. News headlines warned of recession and an imminent bear market. Amid the noise, it may even have seemed sensible to reduce or exit an allocation to stocks.

Those who did would regret the decision just a few months later. By the beginning of the second quarter in 2019, stock markets had recovered their losses from the fourth quarter of 2018. Despite the renewed confidence, many investors still feared the potential for further uncertainty to derail future returns. Even in a rising market, the anxiety caused by large market swings is very unsettling and may cost investors money if they feel compelled to act in the midst of short-term events.

In this paper, we aim to provide a holistic perspective on a challenge that has vexed investors for decades: managing volatility in equity portfolios. By examining the root causes of volatility, we aim to provide a broader perspective on risk-management solutions for today's complex environment. Distinguishing between market risk,

factor risk and stock-specific risk can help investors identify the most appropriate strategic solutions to combat volatility and ensure that they are compensated for the risk in their equity portfolios.

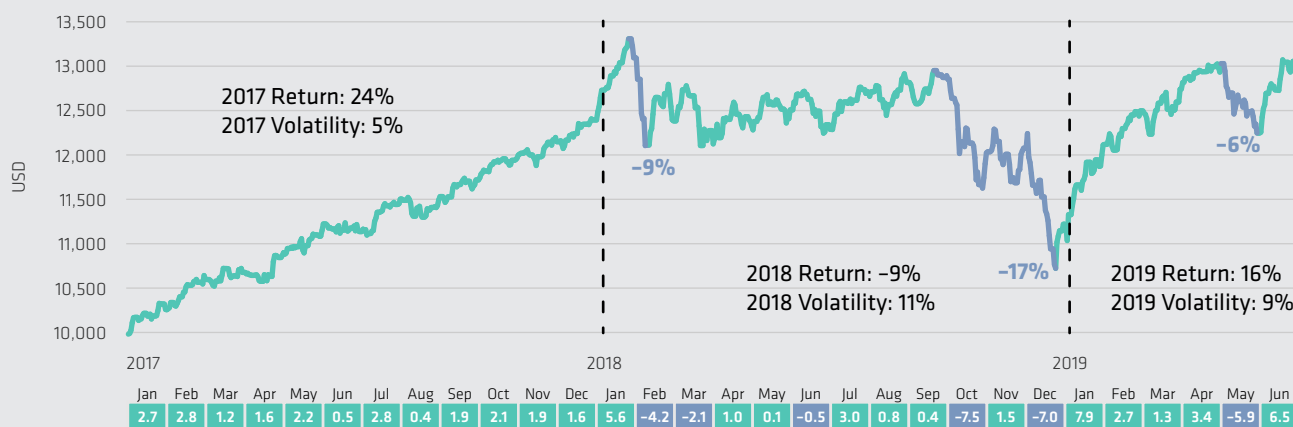
### STAYING INVESTED THROUGH BOUTS OF TURBULENCE

Equity market turbulence is nothing new. During the 10-year bull run since the end of the global financial crisis in early 2009, markets have been especially calm for prolonged periods because of the easy-money policies of central banks. The MSCI ACWI posted volatility of 5% in 2017, capping a six-year period of below-average volatility. The following year, volatility jumped to 11% (Display 1). Persistent volatility is widely expected in the years ahead because of the potential slowing of the economy, uncertainty over interest rates and monetary policy, and heightened political risks.

By identifying the sources of volatility, active managers can improve an investing experience and help investors stay in the market through bouts of turbulence. Reducing the noise that interferes with an investing plan is the key to remastering portfolios and realizing the benefits of long-term equity returns.

#### DISPLAY 1: VOLATILITY IS BACK—AND LIKELY TO PERSIST

Global Stocks: Growth of US\$10,000 (MSCI ACWI)



Past performance does not guarantee future results. There is no guarantee that any estimates or forecasts will be realized.

Through June 30, 2019  
Volatility is annualized using daily data.  
Source: Morningstar, MSCI and AB



## DEFINING VOLATILITY

Defining volatility depends on an investor's vantage point. In finance textbooks, volatility is defined by a formula that measures the variability of a return stream. It calculates the standard deviation of the returns of an asset, a portfolio or the market over a defined period. But there are many different ways to measure volatility, based on absolute or relative returns.

**Volatility of Absolute Returns:** How much money will you lose when markets take a hit? The answer to this question can have a profound impact on investing behavior, long-term returns and outcomes. Measures include the following:

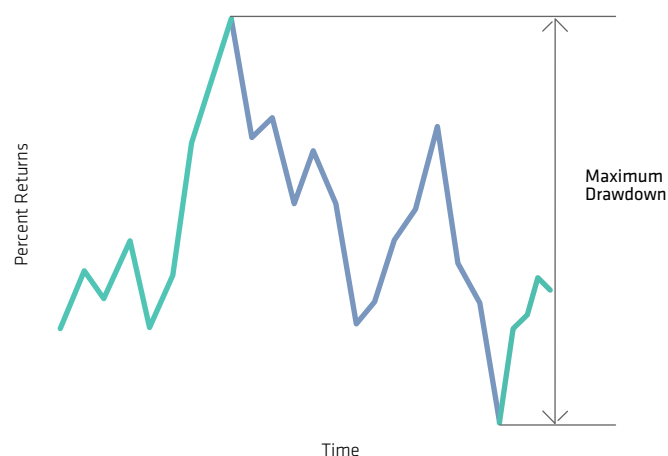
- + **Sharpe Ratio**—Portfolio performance is often measured by the Sharpe ratio, which links an investment's returns to the portfolio's volatility. This helps investors evaluate whether they're getting paid adequately for the volatility inherent to their allocation. The measure can also be used to estimate the probability of losing money in normal environments.
- + **Maximum Drawdown**—The farthest point that a market or portfolio falls from its peak during a given time period (*Display, left*). Drawdowns are common even in good years.
- + **Value at Risk (VAR)**—A measure of how much money can be lost in extreme periods. In the example below, we see that the portfolio can suffer a loss of greater than 20% in the worst 5% of outcomes (*Display, middle*). This measure can be useful in quantifying losses when markets are not behaving normally and can help investors and allocators understand if they have the appropriate allocation to tolerate a given level of risk.

**Volatility of Relative Returns:** Most investors seek to compare a portfolio's performance against a benchmark.

- + **Tracking Error**—Measures the variability of portfolio returns versus the broader market. A higher tracking error signals portfolio return streams that diverge more from the benchmark than those of a portfolio with a lower tracking error. In other

### MEASURING ABSOLUTE VOLATILITY

Maximum Drawdown



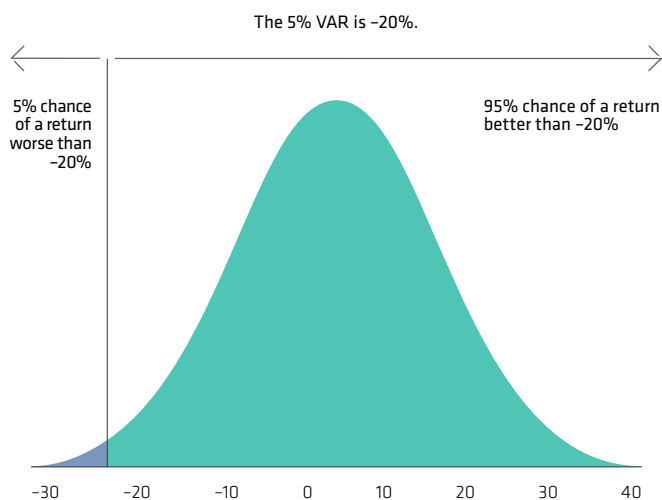
An investor cannot invest directly in an index, and its results are not indicative of the performance of any specific investment, including an AllianceBernstein fund. Indices do not include sales charges or operating expenses associated with an investment in a mutual fund, which would reduce total returns.

Source: MSCI and AB

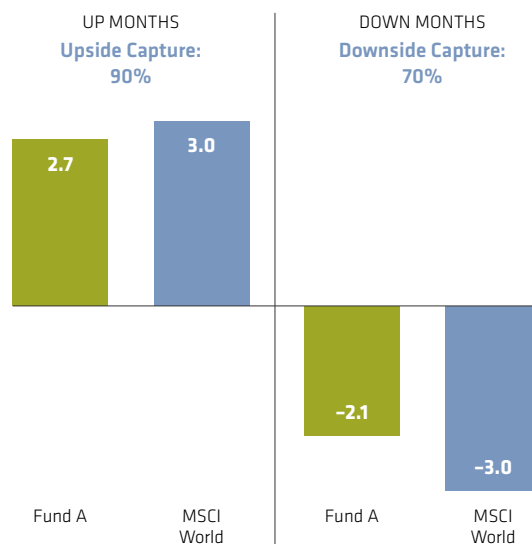
words, it measures the risk a portfolio manager is taking versus the benchmark.

- + **Information Ratio (IR)**—Compares the relative return to the tracking error. Like the Sharpe ratio, the IR gauges how much return we are getting for taking risk, but in relative terms. An investor can use the IR to compute the odds of underperforming the benchmark, assuming a normal environment.

### Value at Risk



### Upside/Downside Capture (Percent)



+ **Upside/Downside Capture**—An increasingly popular way to gauge portfolio behavior in different market environments (*Display, right*). In rising markets, upside capture measures how much a portfolio rises versus broader market gains. In falling markets, downside capture tells you how much a portfolio can be expected to be cushioned from the declines. Downturns create risk drag, meaning the erosion of portfolio value requires bigger gains to recoup losses. So, portfolios with lower downside capture can be

expected to lose less money in a falling market, making it easier to recover more quickly when markets rebound.

By any measure used, company fundamentals are the underlying source of volatility. Market and portfolio return patterns are ultimately fueled by fluctuations of individual stocks, which are driven by company performance. By understanding why different types of companies have different performance patterns, we can create portfolios with staying power.

### WHY DOES VOLATILITY MATTER TO ME?

Nobody likes to lose money. But sometimes, when volatility strikes, that fear of losing money can lead to bad investment decisions that may cost us even more money.

Numerous behavioral finance studies show that the pain we experience from losing money is more intense than the pleasure of gaining money. Loss aversion is human nature.

But that powerful, primal fear can be our worst enemy. For example, in one experiment in the US, two groups of potential investors were shown the same set of equity market return data. One was monthly, the other annual. Monthly returns are more volatile and show more negative numbers.

Then they were asked how much they wanted to allocate to equities. People seeing the monthly data said 41%. Those who saw the annual data said 70% (*Display 2*). Although the total return was the same, the effect of seeing sharper interim monthly losses triggered an emotional reaction, driven by loss aversion, which reduced the risk appetite for stocks.

The psychologists then altered the data by raising all the returns to eliminate any negative data. The volatility was the same, but all the returns were now positive. This time, both groups of investors made the same decision on equity allocation: 72%. By eliminating the trigger for loss aversion, the investors' risk appetite returned.

When markets are falling, investors may get scared and sell out of a portfolio or position at the worst possible time, locking in losses. Similarly, when markets are rising, investors can be attracted to market exuberance and end up buying into positions at high prices. The tendency to chase returns by selling low and buying high can destroy returns. This explains why the annualized returns of the average US stock investor were 50% lower than the average returns of the market over a 24-year period (*Display 3*).

### DISPLAY 2: ELIMINATE LOSS AVERSION, AND RATIONALITY RETURNS

	INVESTORS RECEIVING	
	Monthly Returns	Annual Returns
Frequency of Negative Reports	39%	14%
Equity Allocation	41%	70%

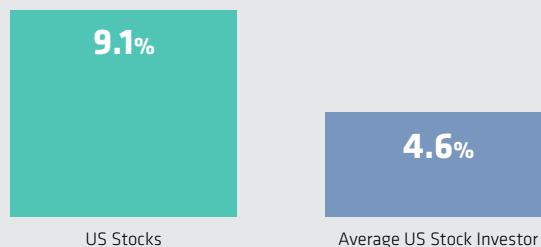
  

	ALL RETURNS INFLATED	
	Monthly Returns	Annual Returns
Frequency of Negative Reports	0%	0%
Equity Allocation	72%	72%

Source: Richard Thaler, Amos Tversky, Daniel Kahneman and Alan Schwartz, "The Effect of Myopia and Loss Aversion on Risk Taking: An Experimental Test," *The Quarterly Journal of Economics*, 112, no. 2 (May 1997): 647-661.

### DISPLAY 3: FEAR OF LOSS CAN BE VERY COSTLY

The Tendency to Chase Returns—Sell Low and Buy High—Can Destroy Returns; Annualized Returns (1995–2018)



**Past performance does not guarantee future results. There is no guarantee that any estimates or forecasts will be realized.**

As of December 31, 2018. The results for the average US stock-fund investor are in the DALBAR study "Quantitative Analysis of Investor Behavior" (QAIB), 2019. QAIB calculates investor returns as the change in mutual fund assets after excluding sales, redemptions and exchanges. This method of calculation captures realized and unrealized capital gains, dividends, interest, trading costs, sales charges, fees, expenses and any other costs, annualized over the period. US stocks are represented by the S&P 500. The average US stock-fund investor captures investors in US-registered stock funds, which may include funds that invest in whole or in part in non-US stocks.

Source: DALBAR and S&P

## RETURN PATTERNS AFFECT OUTCOMES

Even without these behavioral biases of investors, volatility itself can reduce returns. Consider three different hypothetical portfolios that offer an average return of 6% per annum over a five-year period (*Display 4, left*). The portfolio in return path A suffers a big 30% loss early on, followed by a sharp recovery later. The portfolio in return path B delivers strong returns for the first two years, but falls sharply in year five. In return path C, the portfolio returns 6% a year for each of the five years.

While the average yearly return is the same, 6%, the more volatile paths both end up with less money at the end. This is because of the difference between the arithmetic mean (the simple average of each year's return) and the geometric mean, which incorporates compounded annual growth.

The path is important for other reasons. A smoother path of returns can reduce the risk of an investor making a bad decision during a

market drawdown, or of suffering the consequences of a forced rebalancing at the wrong time. And it's even more important for investors who need to access their money. In Path A (*Display 4, right*), the investor is forced to sell a greater proportion of assets to fund his spending needs of \$4 per annum. Because this happened after an early loss, the portfolio never has a chance to catch up. This explains why a big downturn early in retirement can have devastating consequences.

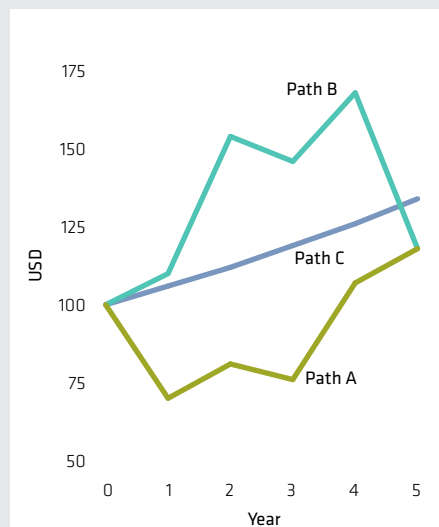
Part of the problem is that volatility is experienced over a relatively short, defined time period. Typically, volatility is based on daily or monthly trading data. Yet many investors' time horizons extend years or even decades into the future. This creates a mismatch between investors' long-term goals and their short-term experiences. Because investors are subject to emotions, controlling short-term portfolio turbulence can result in a more comfortable investment journey that fosters better decision-making and a better investment outcome.

### DISPLAY 4: RETURN PATHS MATTER, ESPECIALLY IF YOU ARE SPENDING THE MONEY

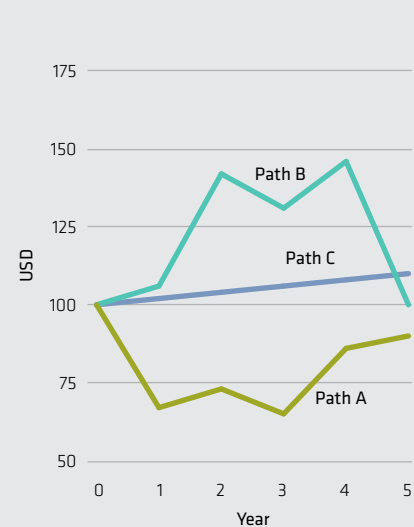
Three Return Scenarios

Year	Path A	Path B	Path C
0	-	-	-
1	-30%	10%	6%
2	15	40	6
3	-5	-5	6
4	40	15	6
5	10	-30	6
<b>Average</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>
<b>CAGR</b>	<b>3%</b>	<b>3%</b>	<b>6%</b>

With No Withdrawals



With Withdrawals (\$4 per annum)



For illustrative purposes only  
Source: AB

## WHAT CAUSES VOLATILITY?

To develop an investment strategy that can help weather turbulence, we need to understand what causes market volatility. This requires a closer look at the forces affecting the performance of individual assets in the market.

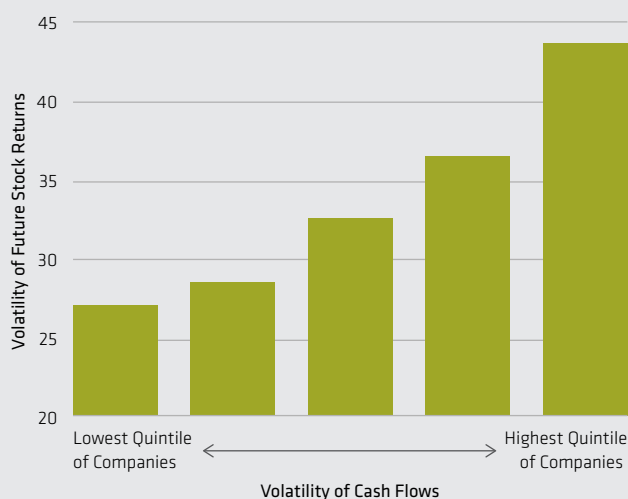
In finance textbooks, the value of an asset is defined as a function of its future cash flows and the discount rate, which itself is a function of interest rates. It's also affected by the perceived variability of a company's cash-flow potential; greater uncertainty around cash flows will raise the discount rate and lower a stock's valuation. So, anything that can provoke uncertainty around a company's cash flows may become a source of volatility.

Uncertainty can be derived from three sources: a company's business model, its debt position (or leverage) and its sensitivity to exogenous shocks from the macroeconomy or politics.

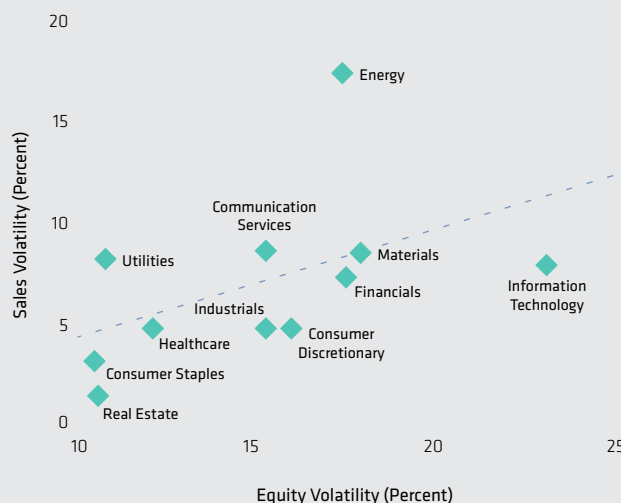
**Business Model:** Understanding a company's business model and forecasting its cash flows is the cornerstone of active equity investing. But for fundamental research to be effective, it must also identify the risks to a company's cash flows. Our research shows that companies with a higher volatility of cash flows also tend to have more volatile stock returns (*Display 5*). This means that the structure of a company's business model can also be a source of volatility—and its income statement may offer important clues about its resilience or underlying vulnerabilities.

### DISPLAY 5: STABLE CASH FLOWS AND SALES FOSTER MORE STABLE STOCK RETURNS

US Company Cash-Flow Volatility vs. Future Stock-Return Volatility, 1990–2018 (Percent)\*



Global Equity Volatility vs. Sales Volatility†  
MSCI World, Sectors, 1995–2019



#### Historical analysis does not guarantee future results.

Left display through December 31, 2018. Right display through August 31, 2019

\* Future stock-return volatility is measured as the standard deviation of absolute monthly returns, over the next two years, annualized, with group averages reported.

Volatility of past cash-flow profitability is measured by cash flow/assets standard deviation over the past three years. Stocks are grouped according to their past cash-flow profitability and future return volatility. Universe is US large-caps excluding financials. Returns from CRSP, financial data from S&P Compustat, for January 1, 1990, through December 31, 2018.

† Sales volatility is the volatility in sales growth.

Source: Center for Research in Security Prices (CRSP), FactSet, IDC MSCI, S&P Compustat and AB



# How a company makes money can have a material impact on its consistency.

Let's start at the top, with revenues. Sales are an important driver of company earnings, but can be unpredictable. And sales volumes can be very sensitive to changes in economic cycles in industries like autos and retail; changes in supply/demand balances, which often get reflected in changing prices for commodities, for example; and changes in competition or technology, which can impact market shares. Other industries, such as consumer staples and utilities, typically see more stable demand and pricing, and thus more stable sales.

Moving down the income statement, cost structures matter, too. Consider two companies with very different cost structures (*Display 6, left*). One requires little capital to get started, so it has low operating leverage. The other requires a much bigger investment to get started and has high operating leverage. The company with lower operating leverage starts out in a much more profitable position, while the company with higher operating leverage starts off with losses and will need to sell more units to become profitable (*Display 6, right*).

So how the company makes money can have a material impact on its profitability and consistency. Industries that generally exhibit lower operating leverage include services and retail. Companies with higher operating leverage tend to have high fixed costs, either from large upfront capital requirements in industries like mining and autos, or a fixed labor force. These types of companies also tend to be more sensitive to the economic cycle and to the changing tastes and habits of consumers.

**Balance Sheet:** Uncertainty can also be traced to a company's balance sheet. Companies that borrow heavily will have, by definition, higher fixed financing costs than competitors with less debt.

That said, leverage can't be measured simplistically. Just because a company has leverage doesn't mean it is riskier (See "Beta and Leverage, Risk Has Many Faces," page 8). For example, in the steel industry, where demand is cyclical, it would be imprudent for a company to take on too much debt and risk default if its income declines. By contrast, a utility company, which enjoys stable income

## DISPLAY 6: COMPANY BUSINESS MODELS CAN ALSO BE A SOURCE OF VOLATILITY

Income Statement

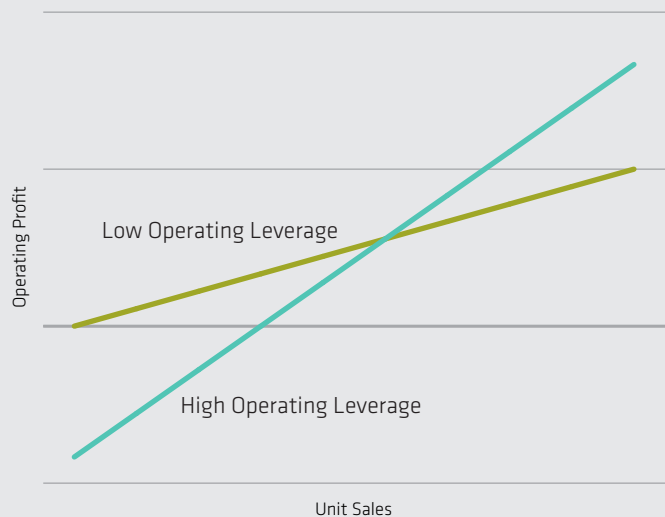
Income Statement	
Revenue (Price x Volume)	
- Variable Costs (Unit Cost x Volume)	
- Fixed Costs	
= Operating Profit	

### Two Business Models

	Low Operating Leverage (USD)	High Operating Leverage (USD)
PRICE	100	100
UNIT COST	High	Low
FIXED COST	Low	High

Source: AB

Operating Profit vs. Volume





# BETA AND LEVERAGE RISK HAS MANY FACES

What makes a stock risky? Often, portfolio managers will use beta as a shorthand for describing risky stocks, and indeed, it is closely related to other risk measures like leverage. However, recent experience reminds us that beta and leverage can behave quite differently.

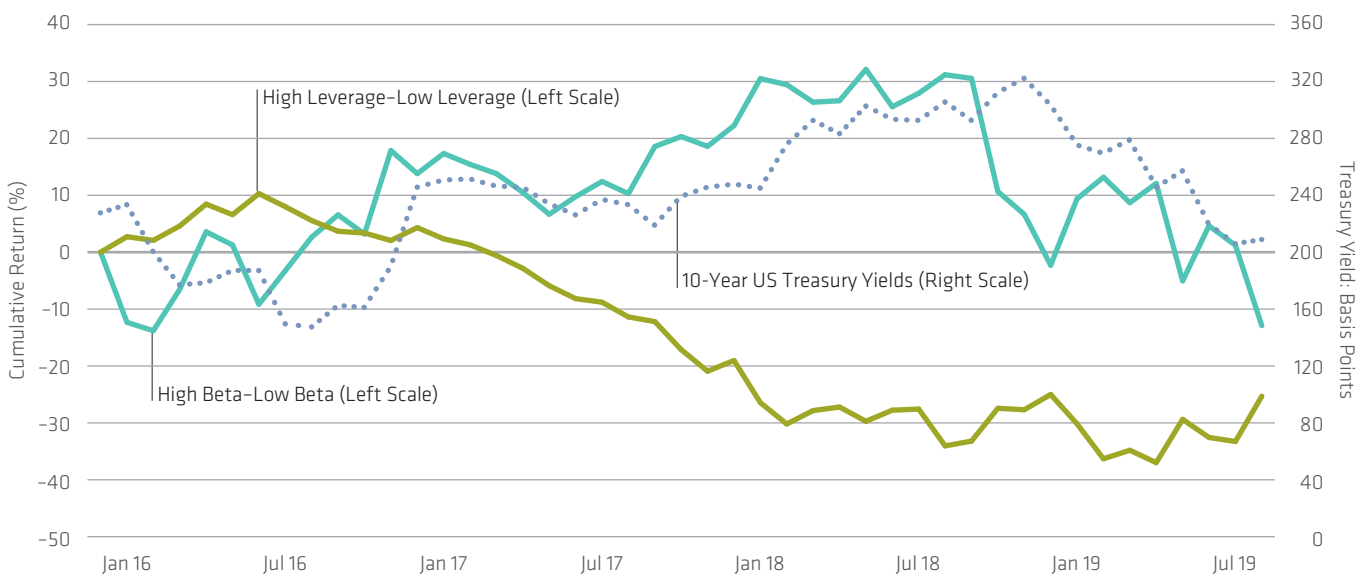
For example, sectors such as utilities, real estate and consumer staples are generally considered less volatile because they have a lower beta than the market. Yet these sectors also tend to have higher leverage than other sectors, which is another risk factor. At the same time, technology and consumer-discretionary companies have a higher beta, but lower leverage, than other sectors.

Leverage might not seem to matter much when interest rates are at historical lows. But in 2017–2018, mounting fears of rising rates led high-leverage companies to underperform (*Display*). During the same period, high-beta companies delivered strong outperformance.

The moral of this story? One-dimensional perspectives on risk are too simplistic to capture the nuances of what creates turbulent return patterns for equities. And passive investment vehicles that purport to reduce volatility by investing in lower-beta stocks might be vulnerable to other risks. Active managers must clearly demonstrate the concepts and tools that they deploy to manage multiple types of risks occurring concurrently in markets, industries and individual stocks.

## BETA AND LEVERAGE RESPOND DIFFERENTLY TO INTEREST RATES

Cumulative US Stock Returns: High-Leverage vs. Low-Leverage Stocks and High-Beta vs. Low-Beta Stocks



**Past performance does not guarantee future results.**

Through August 31, 2019

AB US Large-Cap Equity Universe. Leverage is represented by net debt to equity (total long-term debt minus cash) divided by total assets minus total liabilities. Beta is based on the regression of trailing five years of weekly hedged stock equity returns to global equity market. Outliers are winsorized at the 5% interval by region each month. 10-year US Treasury yield shown as of the beginning of each month.

Sources: Bloomberg, Compustat, MSCI and AB

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patterns, can take on more debt without creating an unacceptable risk. Investors must look within sectors to assess the relative leverage of individual companies, given industry strengths or weaknesses, to identify potentially volatile stocks.

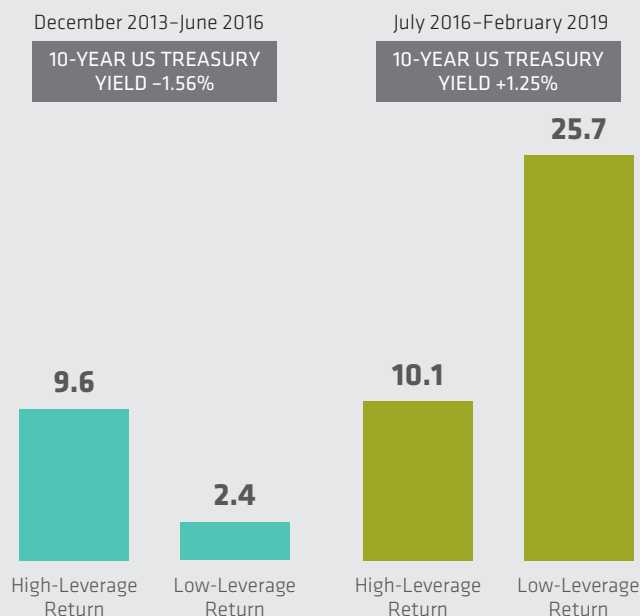
Since the global financial crisis, historically low interest rates have seduced many companies into borrowing more. Higher leverage introduces another risk factor to a stock—interest-rate sensitivity. Between the end of 2013 and mid-2016, when interest rates were low and there was no sign of an imminent rate hike, high-leverage US stocks returned 9.6%, four times the return of low-leverage stocks (*Display 7, left*). But from July 2016 through early 2019, high-leverage stocks underperformed lower-leverage stocks by a wide margin. At the time, signs of potential rising rates prompted

investors to punish stocks of companies that had borrowed too much. While expectations of interest-rate hikes faded in early 2019, we believe that long-term investors should be wary of companies with heavy debt burdens, which could be vulnerable to a change in the rate environment, according to our research (*Display 7, right*).

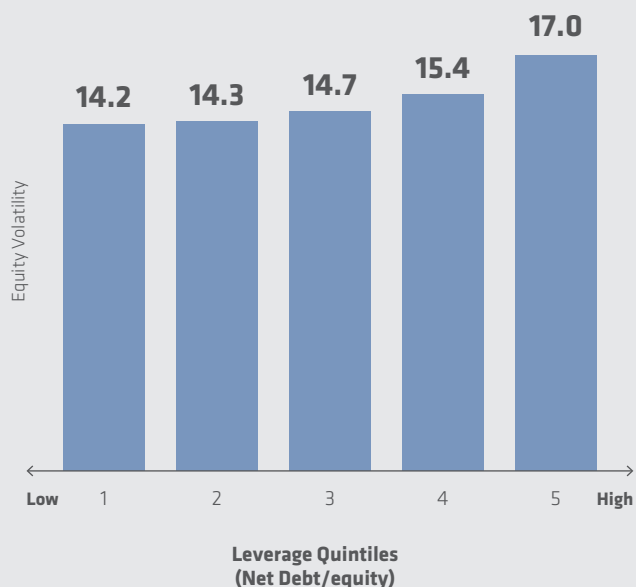
**Exogenous Shocks:** Not everything that causes volatility is under a company’s control.

Sometimes changes in the macroeconomic environment and political events provoke instability for a company’s business, its shares and the wider markets. For example, since 2018, the trade war between the US and China has incited market turbulence. Concerns that the escalating trade war will weigh on the global economy have worried

**DISPLAY 7: LEVERAGE IMPACTS EQUITY PRICES (PERCENT)**



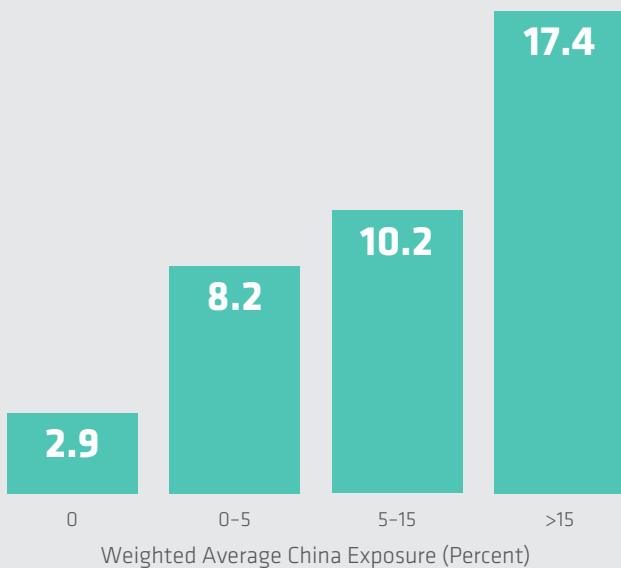
Equity Volatility vs. Leverage. MSCI World 1995–2019



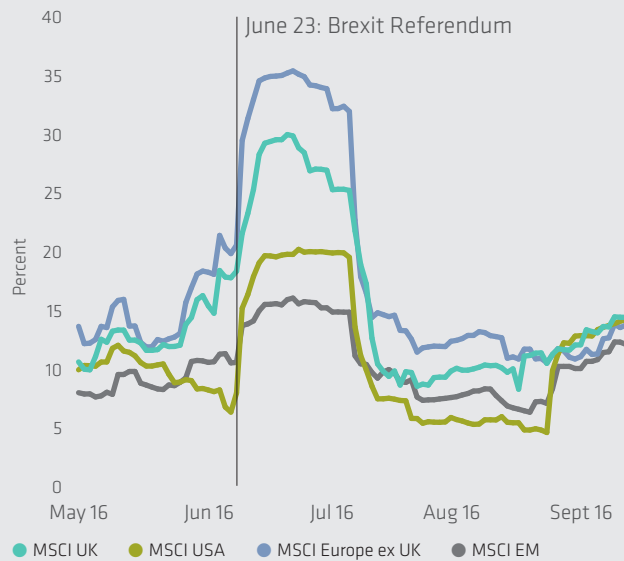
Past performance does not guarantee future results. All portfolio statistics, characteristics and holdings are subject to change.  
 From January 1, 1995, through August 31, 2019  
 Source: CRSP, IDC, MSCI, Worldscope and AB

### DISPLAY 8: EXPOSURE TO GOVERNMENT POLICY CAN ALSO DRIVE VOLATILITY

China Exposure and Percent Change in Volatility (1H 2018 vs. 2H 2018)



20-Day Rolling Volatility Around Brexit Referendum



As of February 28, 2019

An investor cannot invest directly in an index, and its results are not indicative of the performance of any specific investment, including an AllianceBernstein fund. Indices do not include the sales charges or operating expenses associated with an investment in a mutual fund, which would reduce total returns.

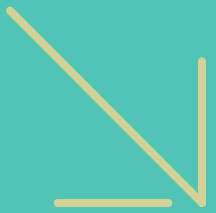
Source: FactSet, MSCI, S&P and AB

investors. Uncertainty about the potential exposure of different companies to tariffs makes it harder to develop investment theses (See “Exogenous Forces, Evaluating Company Exposures to Trade Wars,” page 11). Portfolios with higher exposure to Chinese stocks experienced a sharp spike in volatility in the first half of 2018 (Display 8, left).

Similarly, the UK’s decision to leave the European Union has also stoked volatility. Markets were extremely volatile when the country

voted for Brexit in a referendum in June 2016 (Display 8, right). The unresolved Brexit saga has been a recurring source of concern and volatility for UK and European stocks.

Exogenous risks are always changing. That’s why when investors think about volatility, it’s important to focus on both constant risks—such as threats to business models and balance sheets—and changing risks. Active strategies must be dynamic and attuned to shifting sentiment in real time.



# EXOGENOUS FORCES

## EVALUATING COMPANY EXPOSURES TO TRADE WARS

The US-China trade war tops the list of investing risks in 2019. Nobody can predict how it will unfold, so it would be imprudent to position a portfolio for a particular outcome.

Still, investors can figure out which types of companies could get caught in the crossfire if things get worse. The technology and industrial sectors are both more exposed to trade winds than most. Yet a closer look within the sectors reveals that not all companies are equally at risk.

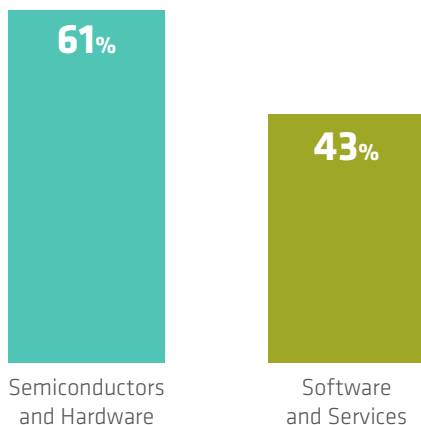
We assessed the revenue that is susceptible to trade wars within each sector, as well as within key sub-industries. For US companies, we defined non-US revenue as exposed, while for non-US stocks, we defined US revenue as exposed. In technology, the picture is mixed: in the semiconductor and hardware industries, about 61% of revenue is at risk, while in

software and services, only 43% of revenue is exposed (*Display*). Within industrials, about a third of goods are exposed to trade wars versus 28% of services revenue.

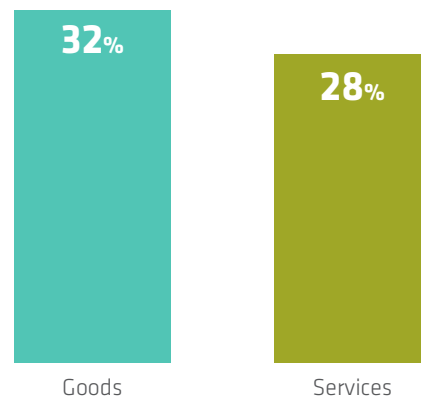
These findings are an important reminder for investors about politically driven risks like trade wars. Don't waste your risk budget on things you can't really forecast. Not only is the outcome of an event uncertain, but the reaction of other investors is also difficult to predict, which could cause share prices to swing excessively and irrationally. While it's important to gauge the potential exposure of a portfolio and holdings to exogenous risks, it's even more important to take risks that can be assessed with confidence. Fundamental research can help identify companies with solid business models that are unlikely to get caught up in the trade war crossfire.

### WHAT INDUSTRIES ARE MORE EXPOSED TO TRADE WAR FALLOUT?

Technology "Trade War Revenue" of MSCI World



Industrials "Trade War Revenue" of MSCI World



Based on benchmark data as of September 11, 2019. Revenue data based on individual company reports and varies for each stock included. "Trade war revenue" for US stocks is non-US revenue and for non-US stocks is US revenue. Source: FactSet, MSCI and AB

# Just because volatility is inevitable doesn't make it unmanageable.

## DISAGGREGATING VOLATILITY

Just because volatility is inevitable doesn't make it unmanageable. Active managers can select securities and construct portfolios to control volatility and deliver better long-term results by framing the problem at three levels:

- + **Market Risk**—Different equity markets (and asset classes) have different levels of risk. Often these risks are not correlated with each other. By combining asset classes (including those outside equities) and taking advantage of correlations, we can use diversification to improve outcomes.
- + **Factor Risk**—Factors are characteristics shared by a group of stocks that can cause the stocks to move together. Exposure to factors—such as attractive valuations, strong momentum or profitability—can help portfolios outperform the market over time. But over short periods, factors come into and out of favor, and their performance can be very volatile.

In addition, exposure to equity factors usually comes with risk and sensitivity to other influences like style, economic cycle or interest rates. Actively understanding and managing these exposures helps asset allocators have a better sense of what is driving returns, and when returns may be at risk. Factors can also reveal when sentiment has moved too far in one direction; for example, when valuations and momentum across a broad set of stocks become stretched.

- + **Stock-Specific Risk**—Business models, financing sources and sensitivity to outside forces like regulation can shed light on the sources of individual security volatility. This can help an active manager better assess the risk-taking needed to achieve the desired returns and to properly construct a portfolio that meets the investment objectives.

## WHAT CAN YOU DO ABOUT VOLATILITY?

Proper diversification remains the basic tenet for reducing portfolio volatility. This ensures that not all parts of your portfolio will suffer losses at the same time. However, without a proper framework, it could be difficult to know whether that diversification will help when you need it the most. There are many ways to apply fundamental and quantitative analysis to this framework for managing portfolio risk:

- + **Beta Management**—In addition to diversifying across different market betas or exposures, it can be helpful to manage the sensitivity of individual investments to those markets. Much research indicates that, in contrast to the Capital Asset Pricing Model, stocks with lower betas can provide better risk-adjusted returns than would be expected. These types of stocks also typically deliver outperformance during down markets, making them a good complement for more aggressive, procyclical types of portfolios.

Importantly, though, beta to an index is only one measure of a security's or portfolio's sensitivity. Beta can be tied up in complicated ways with other fundamental financial measures such as leverage, volatility of earnings and asset intensity. Similarly, risks can change over time: China and Brexit dominate investors' concerns today, but are likely to be surpassed by new and unforeseen risks in a year or two. It is important to measure the correlations of investments to a wide variety of risks in the market—of which many may be temporary and may require active monitoring and management.

- + **Factor Analysis**—Investor preferences for equity styles—such as value, growth and momentum—can shift dramatically in volatile markets. While style-based equity investing can deliver strong long-term results, short-term performance patterns can be shaky. In 2018, the best- and worst-performing equity styles swung each month (*Display 9, next page*). With factor volatility, stocks of companies competing in very different markets may appear to be diversifying, but could actually move in a correlated fashion because they have similar exposures to characteristics like size, profitability and valuation. And as passive vehicles increasingly enable investors to seek out factor exposure through systematic strategies, seemingly unrelated stocks may become even more linked.

By monitoring exposures to equity factors, asset allocators can have a better sense of how various economic or market environments may impact returns. Those who want to tactically express a point of view about economic or market cycles can use factor-based approaches for this purpose.

### DISPLAY 9: EQUITY-STYLE RETURN PATTERNS SWUNG SHARPLY IN 2018

Global Equities: MSCI ACWI Month Factor Index Returns (USD, Percent)

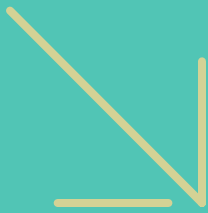
	January	February	March	April	May	June	July	August	September	October	November	December
Best	Momentum 7.9	Momentum -2.2	Minimum Volatility 0.0	Value 1.3	Momentum 2.4	Minimum Volatility 0.3	High Dividend Yield 3.9	Momentum 3.8	High Dividend Yield 1.2	Minimum Volatility -4.7	Minimum Volatility 3.1	Risk-Weighted -4.6
	Growth 6.5	Quality -3.3	Risk-Weighted -1.0	Momentum 0.8	Quality 2.1	Growth -0.3	Value 3.7	Quality 2.7	Minimum Volatility 1.1	High Dividend Yield -4.9	Risk-Weighted 2.3	Minimum Volatility -5.0
	Quality 5.3	Growth -3.4	High Dividend Yield -1.6	Growth 0.6	Growth 1.9	High Dividend Yield -0.4	Quality 3.1	Growth 2.3	Value 1.0	Value -5.5	High Dividend Yield 2.3	High Dividend Yield -6.0
	Value 4.8	Minimum Volatility -3.9	Quality -1.7	Risk-Weighted 0.6	Minimum Volatility 0.1	Quality -0.5	Minimum Volatility 3.1	Minimum Volatility 1.5	Momentum 0.8	Risk-Weighted -7.1	Momentum 2.0	Quality -6.9
	Risk-Weighted 4.5	Risk-Weighted -4.1	Growth -2.1	High Dividend Yield 0.3	High Dividend Yield -1.5	Value -0.8	Risk-Weighted 2.6	High Dividend Yield 0.0	Risk-Weighted 0.2	Quality -7.6	Value 1.8	Growth -6.9
	High Dividend Yield 4.5	High Dividend Yield -4.7	Value -2.2	Minimum Volatility 0.0	Risk-Weighted -1.5	Momentum -0.8	Growth 2.4	Risk-Weighted -0.6	Growth -0.1	Growth -9.4	Growth 1.2	Value -7.2
Worst	Minimum Volatility 3.3	Value -5.0	Momentum -2.9	Quality -0.7	Value -1.8	Risk-Weighted -1.7	Momentum 1.7	Value -0.7	Quality -0.2	Momentum -10.0	Quality 0.8	Momentum -7.2

Historical and current analysis do not guarantee future results.

As of December 31, 2018

Returns based on MSCI ACWI for each factor shown.

Source: MSCI and AB



# CONCENTRATED PORTFOLIOS

## SURPRISING STABILITY WITH FEWER STOCKS

Investors often think that investing in a concentrated portfolio with a small number of stocks is inherently riskier than investing in a diversified portfolio with more names. And for clients who are sensitive to risk, that may seem like a difficult hurdle to overcome. But is the assumption correct?

Not necessarily. By incorporating many of the tenets of active risk management in an equity portfolio, investors can achieve the benefits of the higher active share that concentrated portfolios offer, as well as lower overall volatility and downside protection, in our view.

How is that possible? First, a concentrated focus may translate into a greater risk focus. Since concentrated managers have much more to lose than managers of diversified portfolios if a single stock underperforms, they tend to be much more focused on the earnings risk of individual holdings and of the portfolio.

Second, high active share can be a good thing when surprises rattle the market. Portfolios with small numbers of stocks by definition have a high active share and diverge from the benchmark substantially. Benchmarks give investors exposure to volatile sectors, especially in down markets. For example, both energy and financials are sectors that are notoriously unstable. So constructing a portfolio that is less exposed to those sectors will tend to protect against vulnerability in those markets.

Finally, identifying companies with more stable fundamentals can help manage risk in a concentrated portfolio. For example, business services or companies supplying consumer staples have more attractive valuations and can deliver long-term growth—and downside protection, in our view.

Based on our experience—and academic studies—we believe that concentrated portfolios don't have to be more vulnerable to a market correction than diversified portfolios. In fact, concentrated portfolios can even cushion damage in a downturn.



# Multiple perspectives on risk are vital in today's complex market conditions.

Factor-based analyses can also help separate alpha based on manager stock-selection skill from returns driven by factor exposures. Taken a step further, an individual portfolio can be insulated from sharp shifts in style performance. By actively neutralizing factor exposures at the portfolio level, a manager can create alpha that is truly idiosyncratic. Portfolios and allocations with a built-in methodology to monitor and manage biases will have an advantage in today's market conditions, in our view.

- + **Cluster Analysis:** Cluster risk analysis is a good supplement to traditional risk tools. This technique seeks unidentified sources of risk that might not be obvious to quantitative risk models or fundamental analysts. Instead of grouping securities according to factors, it segments stocks into groups whose returns have been moving closely together over the past few months. These can include groups of stocks within an industry or sub-industry that will benefit in a risk-on trade, and others that might be more aligned with a risk-off environment. The findings often defy conventional wisdom. For example, while industrials are generally seen as risk-on stocks, some companies in the sector have more defensive business models. In contrast, healthcare is widely seen as a defensive sector, but some drugmakers with a small number of products or imminent patent expiries might be less defensive than perceived.
- + **Adjusting the Discount Rate:** At the individual security level, the discount rate effectively represents the return hurdle an investment must earn to compensate for its risk. Risk and volatility are not inherently bad, but the expected return must be high enough to compensate for it.

As explained on page 6, the discount rate of an asset is determined, in part, by the uncertainty around its cash flows. So, we can create rules of thumb to explicitly incorporate different types of risks into the discount rate. For example, a cyclical company that's more vulnerable to macroeconomic growth risks would receive a higher discount rate than a consumer-staples manufacturer, which tends to have steadier income even when growth is weak. Similarly, a heavily indebted company would also have its discount rate increased accordingly.

Applying systematic criteria to the discount rate can provide an objective hurdle rate for an investment, which helps determine the appropriate risk/reward ratio.

These approaches are all complementary. Fundamental, bottom-up research that targets attractive stocks with solid risk profiles can be combined with top-down analysis using traditional correlations, cluster risk and factor-risk tools to build more durable portfolios. Multiple perspectives on risk are essential in a world driven by so many sources of volatility.

Volatility is the admission price that investors must pay to access the higher return potential of stocks and other risk assets. Yet the key to overcoming volatility is to prevent the fear of losses from prompting emotional, destructive decisions. Individual investors and institutions can avoid falling into this trap by deploying strategic solutions to the volatility challenge.

## APPLYING RISK-AWARE STRATEGIES TO ACHIEVE LONG-TERM RETURNS

There are many ways to apply the concepts described above in equity portfolios. For example, equity portfolio managers can reduce volatility by focusing on companies that have quality businesses and stable cash flows with stocks trading at reasonable valuations. Another way to help safeguard a portfolio is by intentionally neutralizing its factor exposures. This can best be accomplished in core strategies that seek to insulate the portfolio from style swings. Within more concentrated portfolios, making sure that the balance of stocks has uncorrelated volatility can help diminish damage from downturns (see "Concentrated Portfolios: Surprising Stability with Fewer Stocks," page 14).

Whatever allocation investors choose, it's important for them to focus on the overall results of their investments rather than on the short-term results of individual portfolios. In a truly diversified allocation, not all investments will perform well at the same time. And during periods of turbulence and challenging performance, understanding volatility can help reassure investors, allowing them to make good decisions and stay invested to achieve better long-term results.

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