

PART 1: MARKET HISTORY



The last major equity market downturn ended more than a decade ago, and today investors worry about slowing growth and worsening trade wars. Whether the next downturn is a few months away or a few years away, this is an excellent time to prepare portfolios to successfully navigate equity stress. We believe the best way to navigate an equity market downturn is to enter it with a plan in place. Thoughtful decisions—not rash actions—during these chaotic environments are what separate the top-performing investors from everyone else. In this series, we review five important topics that should inform any plan to manage portfolios through equity market downturns:

1. MARKET HISTORY

2. Portfolio Liquidity
3. Diversification Challenges
4. Behavioral Roadblocks
5. Playing Offense

Horror must be the equivalent film genre for equity bear markets. Take any classic in that category and the mood inevitably shifts from relatively relaxed to panic-stricken, often in abrupt fashion. Few would deny that equity bear markets tend to follow this simple sequence. Sure, there may be a small cohort of investors that credibly claim they predicted the downturn in advance, but those investors' outlook is not the market's consensus view. More importantly, the decisions an investor—or a horror film's protagonist—makes during difficult times can have an outsized impact on how he or she fares.

We believe the best way to navigate an equity market downturn is to enter it with a plan in place. For many investors, the plan may simply be to rely on a well-constructed asset allocation policy and to stick to their pre-determined rebalancing policy. Investors would be well served to periodically review their asset allocation policy to ensure it aligns well with the asset owner's risk tolerance and serves his or her financial objectives. While the next downturn will no doubt vary from prior ones in ways we will not expect, a plan can help to prevent rash decisions.

This piece focuses on a key input into any plan—market history. We examine data from prior equity market downturns to understand how different asset classes have tended to perform. We also review how difficult it is to identify a market bottom during a downturn, highlighting the abysmal economic data that are common at bottoms and the limited utility of valuation data as a timing tool. Finally, we illustrate how cutting the size of a target equity allocation or holding a below-target weight allocation may undercut a portfolio's performance. Ultimately, equity market downturns are chaotic environments that are rarely short-lived—the best advice is to be prepared.

DESCENT INTO CHAOS

So, what do equity market downturns look like, and how do other asset markets perform in such environments? We examined periods over the last 50 years when the month-end price level of a prominent US equity benchmark declined by at least 20%. We chose to review the US equity market, given its large allocation in equity portfolios and its considerable influence on non-US equity markets. By our measurement, there have been five equity market downturns—also referred to as bear markets—during that time period, with one occurring roughly every decade.¹

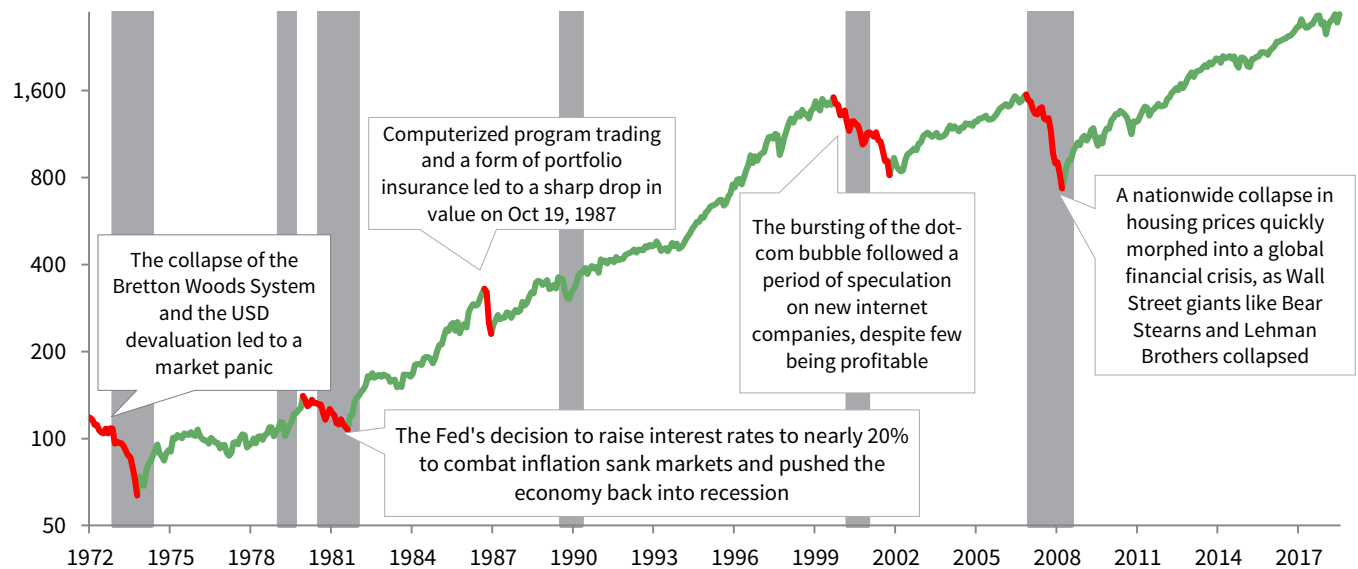
Unsurprisingly, the data paint a bleak picture. The worst downturn across our study period overlapped with the global financial crisis (GFC), when US equities returned a heart-halting -50.9%.² Sadly, the median return across the five bear markets (-42.6%) is not much better. High levels of volatility were common to these periods—the annualized standard deviation of monthly US equity returns across all downturns was 17.7% as compared to 13.6% in all other environments. And, unfortunately, the difficult return environment was rarely swift. Instead, investors had to rationalize their investment choices for a lengthy one to two years during most downturns.

1 Please see our methodology note at the end of this piece.

2 Please see the appendix for three analyses of global asset class performance during equity drawdowns as determined by an equity price level of developed markets, the UK market, and the Euro Area market.

US EQUITY MARKET DOWNTURNS

December 31, 1972 – June 30, 2019 • S&P 500 Price Index • Log Scale



Sources: National Bureau of Economic Research (NBER), Standard & Poor's, and Thomson Reuters Datastream.

Notes: Data are monthly, with red lines reflecting the five equity market downturns since the early 1970s. The gray bars represent NBER-defined US recessions.

Other equity markets displayed similar returns during downturns as US equities. The median USD total return for developed equity markets excluding the United States was -28.8%, which is a challenging result even if it is more than 10 percentage points better than the same measurement for US equities during the same period. But, in looking at just the last two downturns, which allows us to review emerging markets equity performance as well, we see all equity returns were quite similar. Given how interconnected global markets have become, it is reasonable to consider the equity market behavior witnessed more recently as the most applicable to future scenarios, all else equal.

Yet, not all asset classes performed poorly. The median returns for cash and US Treasuries during the five equity bear markets were 8.1% and 13.3%, respectively. Those investments no doubt benefited from investor desires for both quality and liquidity. While the median gold return (16.8%) was higher than US Treasuries', the investment was more volatile, with gold's return deeply negative during one of the five periods. Similarly, commodity futures and the dollar had mixed results across the different time periods, but both exhibit negative median returns.

Perhaps surprisingly, US equity market downturns and economic recessions do not always overlap. In fact, bear markets coincided with just four of the six US recessions across our study period (the 1973–75, 1981–82, 2001, and 2007–09 recessions), with bear markets typically leading recessions by roughly seven months. The equity market contractions experienced during the two other US recessions (the 1980 and 1990–91 recessions) were less severe, and the 1987 crash occurred as real GDP growth was positive and accelerating.

ASSET CLASS TOTAL RETURNS IN US EQUITY BEAR MARKETS

December 31, 1972 – June 30, 2019 • US Dollars

Asset Class	US Equity Bear Markets (Peak-to-Trough)					5 Period Median 20 mos
	12/31/1972 – 9/30/1974 21 mos	11/30/1980 – 7/31/1982 20 mos	8/31/1987 – 11/30/1987 3 mos	8/31/2000 – 9/30/2002 25 mos	10/31/2007 – 2/28/2009 16 mos	
US Equities	-42.6	-16.6	-29.6	-44.7	-50.9	-42.6
Developed ex US Equities	-28.8	-19.2	-15.1	-42.7	-56.3	-28.8
EM Equities	N/A	N/A	N/A	-34.0	-61.4	-47.7
US Treasuries	6.1	24.0	2.4	24.8	13.3	13.3
US Cash	14.5	27.9	1.9	8.1	2.8	8.1
Commodity Futures	139.5	-19.7	1.8	-7.9	-53.4	-7.9
Gold Bullion	126.9	-45.0	8.6	16.8	20.4	16.8
US Dollar	-7.0	32.3	-8.4	-5.1	15.3	-5.1

Sources: Bloomberg Index Services Limited, Intercontinental Exchange, Inc., LBMA, MSCI Inc., Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

Notes: Asset classes represented as follows: S&P 500 Index ("US Equities"), MSCI World ex US Index ("Developed ex US Equities"), MSCI Emerging Markets Index ("EM Equities"), Bloomberg Barclays US Treasury Index ("US Treasuries"), ICE BofAML 91-Day Treasury Bill Index ("US Cash"), S&P GSCI™ Index ("Commodity Futures"), LBMA Gold Spot Price ("Gold Bullion"), and US Dollar Index (DXY, "US Dollar"). Data are monthly. Total returns are gross of dividend taxes.

AN AMBIGUOUS BOTTOM

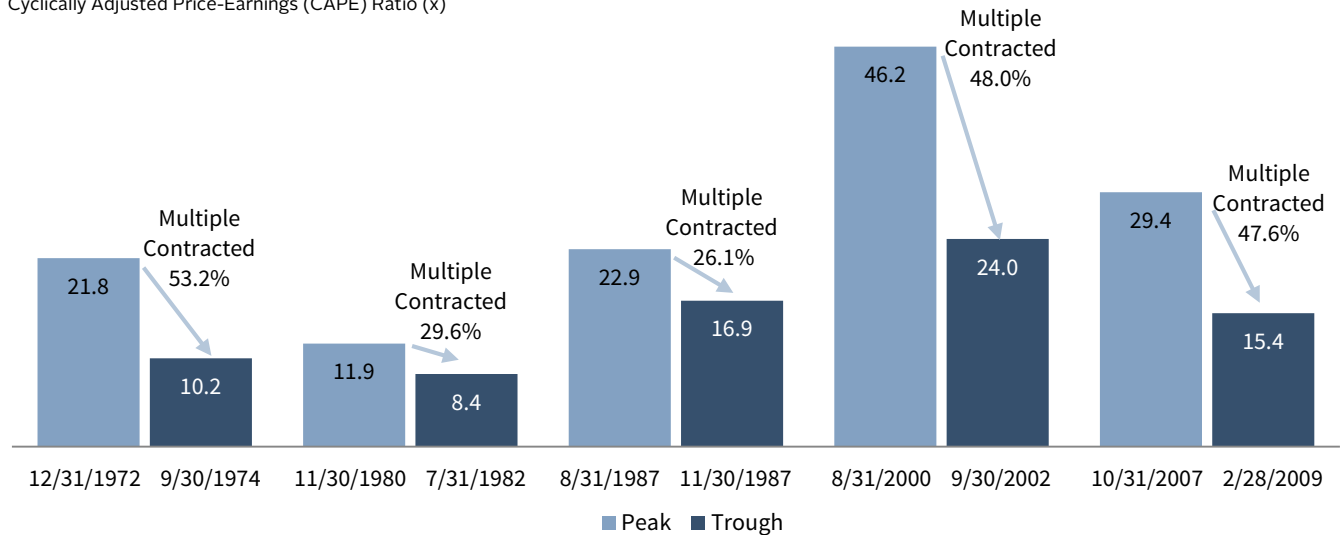
Consider the following economic environment—real US GDP, industrial production, and retail sales are contracting rapidly; financial conditions are exceptionally tight; and price levels are teetering on the edge of deflation. As you might have guessed, that environment was not fictional. It reflected economic data known in early 2009 when equity markets hit a bottom during the GFC. To perfectly time equity markets during that downturn, an investor would have needed the resolve to rebalance into that dire economic backdrop. Obviously, that's no easy task!

The challenge with identifying equity market bottoms is the lack of an obvious timing signal. For instance, while the popular cyclically adjusted price-earnings (CAPE) ratio contracted across all five equity market downturns, the magnitude of the decline varied widely from -26.1% to -53.2%. Moreover, the multiples at the various market bottoms also differed, ranging from 8.4 to 24.0. In fact, only two of the five multiples at market bottoms were even in the bottom quartile of historical observations. This is not to say that valuation data are not helpful; rather, they are ineffective timing tools.

False equity market bottoms also make it difficult to identify a true bottom. Two of the five downturns we reviewed (2000–02 and 2007–09 downturns) contained so-called “relief rallies” when equity markets pared back some of their losses. Both rallies were considerable, returning more than 20% to investors using daily data, and it would have been easy to confuse them with an end to the downturn, as many common momentum signals turned positive. But these rallies were eventually overtaken by the challenges that originally prompted the downturn, and equity prices eventually fell to lower lows.

VALUATION CHANGES DURING US EQUITY MARKET DOWNTURNS

Cyclically Adjusted Price-Earnings (CAPE) Ratio (x)



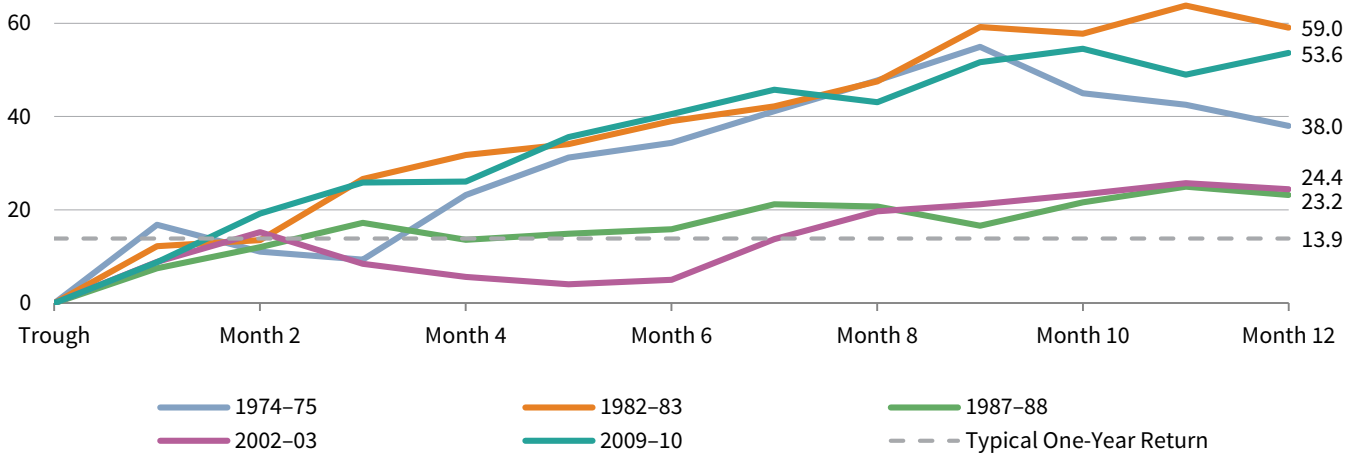
Sources: Robert J. Shiller, Standard & Poor's, and Thomson Reuters Datastream.

Note: Multiples reflect Robert J. Shiller cyclically adjusted total return price-earnings ratios.

Not only is timing a market bottom a challenging endeavor, but poor decision making during a downturn could undercut a portfolio's performance to a greater degree than in other environments. This stems from the market's tendency to mean revert from extreme positions, which in this case means that abnormal performance in one direction is often followed by abnormal performance in the other. Take, for instance, our five equity market drawdowns—the one-year US equity return following market bottoms ranged from 23.2% to 59.0%, with a median of 38.0%. Investors that cut the size of their target equity allocation or that hold a below-target equity weight would have pocketed a smaller share of those rare chunky returns.

US EQUITY MARKET RECOVERIES

December 31, 1972 – June 30, 2019 • S&P 500 Total Return Index • Percent Change Since Trough (%)



Sources: Standard & Poor's and Thomson Reuters Datastream.

Notes: Data are monthly and reflect the one-year performance following each of the five equity market downturns since the early 1970s. The typical one-year return reflects the median one-year return on the index across the entire review period, or 1972 to present.

LESSONS LEARNED

Equity market downturns are difficult environments to navigate. To maximize the probability of navigating one successfully, investors should have a well-constructed asset allocation policy in place that is meant to withstand the ups and downs of market cycles. This policy should be regularly reviewed to ensure its associated risks continue to align well with the asset owner's risk tolerance. Investors should also devise a plan for responding to an equity market downturn and share it with other investment decision-making stakeholders. For many investors, the plan may be to rely on their asset allocation policy and follow their pre-determined rebalancing policy.

While a plan to manage a portfolio through an equity market downturn should be devised with an investor's specific circumstances in mind, it should also be informed by market history. Specifically, downturns can be prolonged affairs with considerable bouts of volatility, and market bottoms have not been easy to identify. A plan should also be informed by an in-depth understanding of liquidity, diversification, behavioral biases, and what assets might perform well as a rebound occurs, all of which are explored in the companion pieces of this series. An investor with a plan rooted in these areas stands the best chance of being prepared for the next equity market downturn. ■



Kevin Rosenbaum

Deputy Head of Capital Markets Research

Stuart Brown and Graham Landrith also contributed.

APPENDIX: ASSET CLASS TOTAL RETURNS IN DEVELOPED EQUITY BEAR MARKETS

February 28, 1973 – June 30, 2019 • US Dollars

Asset Class	Developed Equity Bear Markets (Peak-to-Trough)						6 Period Median 17 mos
	2/28/1973 – 9/30/1974	11/30/1980 – 7/31/1982	8/31/1987 – 11/30/1987	12/31/1989 – 9/30/1990	3/31/2000 – 9/30/2002	10/31/2007 – 2/28/2009	
	19 mos	20 mos	3 mos	9 mos	30 mos	16 mos	
Developed Equities	-40.0	-17.2	-20.4	-24.0	-46.3	-53.7	-32.0
EM Equities	N/A	N/A	N/A	-7.7	-43.5	-61.4	-43.5
Global Government Bonds	7.4	24.0	7.3	4.4	14.6	5.3	7.4
Global Cash	13.4	27.9	10.1	17.1	8.6	-9.1	11.7
Commodity Futures	121.9	-19.7	1.8	50.0	15.9	-53.4	8.8
Gold Bullion	79.9	-45.0	8.6	0.9	16.6	20.4	12.6
US Dollar	2.3	32.3	-8.4	-7.7	1.4	15.3	1.9

Sources: Bloomberg Index Services Limited, FTSE Fixed Income LLC, Intercontinental Exchange, Inc., J.P. Morgan Securities, Inc., LBMA, MSCI Inc., Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

Notes: Asset classes represented as follows: MSCI World Index ("Developed Equities"), MSCI Emerging Markets Index ("EM Equities"), FTSE World Government Bond Index ("Global Government Bonds"), J.P. Morgan 3-Month Global Cash Index ("Global Cash"), S&P GSCI™ Index ("Commodity Futures"), LBMA Gold Spot Price ("Gold Bullion"), US Dollar Index (DXY, "US Dollar"). Global Government Bonds returns prior to February 1985 reflect the Bloomberg Barclays US Treasury Index. Global Cash returns prior to January 1986 reflect the ICE BofAML 91-Day Treasury Bills Index. Data are monthly. Total returns are gross of dividend taxes.

APPENDIX: ASSET CLASS TOTAL RETURNS IN UK EQUITY BEAR MARKETS

August 31, 1972 – June 30, 2019 • Pound Sterling

Asset Class	UK Equity Bear Markets (Peak-to-Trough)				4 Period Median 21 mos
	8/31/1972 – 11/30/1974	9/30/1987 – 11/30/1987	12/31/1999 – 1/31/2003	10/31/2007 – 2/28/2009	
	27 mos	2 mos	37 mos	16 mos	
UK Equities	-64.7	-33.4	-41.3	-40.3	-40.8
Developed ex UK Equities	-22.3	-27.3	-44.8	-31.5	-29.4
EM Equities	N/A	N/A	-37.8	-43.8	-40.8
UK Gilts	-18.8	6.5	23.8	13.0	9.8
UK Cash	24.6	1.9	17.6	8.8	13.2
Commodity Futures	234.7	-10.1	43.9	-32.1	16.9
Gold Bullion	187.1	-4.1	24.4	76.2	50.3
Pound Sterling (vs USD)	-5.0	12.3	2.0	-31.4	-1.5

Sources: FTSE International Limited, Global Financial Data, Inc., J.P. Morgan Securities, Inc., LBMA, MSCI Inc., Standard & Poor's, Thomson Reuters Datastream, and WM/Reuters. MSCI data provided "as is" without any express or implied warranties.

Notes: Asset classes represented as follows: MSCI United Kingdom Index ("UK Equities"), MSCI World ex UK Index ("Developed ex UK Equities"), MSCI Emerging Markets Index ("EM Equities"), FTSE British Government All Stocks Index ("UK Gilts"), J.P. Morgan 3-Month UK Cash Index ("UK Cash"), S&P GSCI™ Index ("Commodity Futures"), LBMA Gold Spot Price ("Gold Bullion"), WM/Reuters GBP/USD Exchange Rate ("Pound Sterling [vs USD]"). Developed ex UK Equities, EM Equities, and Commodity Futures are based on index returns in USD terms translated to UK sterling. UK Fixed Income returns prior to February 1976 reflect the Global Financial Data 10-Year UK Bond Index. UK Cash returns prior to January 1986 reflect the Global Financial Data 3-Month UK Cash Index. Data are monthly. Total returns are gross of dividend taxes.

APPENDIX: ASSET CLASS TOTAL RETURNS IN EMU EQUITY BEAR MARKETS

July 31, 1987 – June 30, 2019 • Euro

Asset Class	EMU Equity Bear Markets (Peak-to-Trough)					5 Period Median 6 mos
	7/31/1987 – 1/31/1988 6 mos	5/31/1990 – 9/30/1990 4 mos	7/31/1998 – 9/30/1998 2 mos	2/29/2000 – 3/31/2003 37 mos	5/31/2007 – 2/28/2009 21 mos	
EMU Equities	-32.7	-24.8	-22.5	-57.8	-56.3	-32.7
Developed ex EMU Equities	N/A	-24.6	-15.7	-46.3	-47.1	-35.4
EM Equities	N/A	-20.7	-28.9	-48.1	-45.5	-37.2
Euro Government Bonds	2.8	1.6	3.6	26.5	12.0	3.6
Euro Cash	4.0	3.5	0.7	13.3	9.4	4.0
Commodity Futures	-9.5	41.4	-2.4	9.0	-37.7	-2.4
Gold Bullion	-10.2	3.0	-3.9	0.9	52.4	0.9
Euro (vs USD)	10.0	8.0	6.3	13.3	-5.6	8.0

Sources: Bloomberg Index Services Limited, Global Financial Data, Inc., Intercontinental Exchange, Inc., J.P. Morgan Securities, Inc., LBMA, MSCI Inc., Standard & Poor's, Stoxx, Thomson Reuters Datastream, and WM/Reuters. MSCI data provided "as is" without any express or implied warranties.

Notes: Asset classes represented as follows: Euro Stoxx Index ("EMU Equities"), MSCI World ex EMU Index ("Developed ex EMU Equities"), MSCI Emerging Markets Index ("EM Equities"), ICE BofAML Euro Government Bond Index ("Euro Government Bonds"), J.P. Morgan 3-Month Euro Cash Index ("Euro Cash"), S&P GSCI™ Index ("Commodity Futures"), LBMA Gold Spot Price ("Gold Bullion"), WM/Reuters EUR/USD Exchange Rate ("Euro (vs USD)"). Developed ex EMU Equities, EM Equities, Commodity Futures, and Gold Bullion are based on index returns in USD terms translated to euros. Data are monthly. Total returns are gross of dividend taxes.

METHODOLOGY NOTE

There are different ways to review US equity market downturns. For instance, an analyst could review daily equity price data and extend his or her analysis several decades prior to 1970. We limited our review to month-end data and data since that year, as this approach allows us to compare US equity performance to a broad collection of asset classes and better understand valuation levels. We also defined US equity market downturns as price declines of at least 20% peak-to-trough.

INDEX DISCLOSURES

BBG US Treasury Index

The Bloomberg Barclays US Treasury Index measures USD-denominated, fixed-rate, nominal debt issued by the US Treasury. Treasury bills are excluded by the maturity constraint, but are part of a separate Short Treasury Index.

Euro STOXX® Index

The EURO STOXX® Index is a Eurozone subset derived from the STOXX Europe 600, which represents large-, mid- and small-capitalization companies among 17 European countries, including the United Kingdom, France, Germany, Switzerland, Austria, Belgium, Denmark, Finland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Spain, and Sweden.

FTSE British Govt All Stocks Index

The FTSE Actuaries British Government-Linked All Stocks Index includes British Government Securities quoted on the London Stock Exchange. Prices used for index calculations are the official end-of-day reference prices produced by Tradeweb under the oversight of FTSE® Russell.

FTSE World Govt Bond Index

The FTSE World Government Bond Index (WGBI) measures the performance of fixed-rate, local currency, investment-grade sovereign bonds. The WGBI currently includes sovereign debt from more than 20 countries, denominated in a variety of currencies, and has more than 30 years of history available.

ICE BofAML 91-Day T Bill

Tracks the total return performance of the outstanding debt of European sovereign issuers. It is a market-capitalization weighted basket comprising bonds issued in their respective domestic markets and denominated in their local currency.

ICE BofAML Euro Government Bond Index

The ICE BofAML 91-Day Treasury Bills Index represents the return of a single 91-day Treasury bill purchased at the beginning of each month and held for a full month, at which time that issue is sold and rolled into a newly selected issue. The Treasury bill selected each month matures within the following 90 days. The performance shown for the index reflects reinvestment of dividends and, where applicable, capital gain distributions, and is not subject to fees and expenses to which the fund is subject.

J.P. Morgan 3M Euro Cash Index

The index measures the three-month performance of euro-denominated money market securities.

J.P. Morgan 3M Global Cash Index

The index measures the three-month performance of foreign currency-denominated money market securities.

J.P. Morgan 3M UK Cash Index

The index measures the three-month performance of money market securities denominated in UK pound sterling.

LBMA Gold Price

The LBMA Gold Price includes 15 accredited participants: Bank of China, Bank of Communications, Coins 'N'Things, Goldman Sachs, HSBC Bank USA NA, Industrial and Commercial Bank of China (ICBC), INTL FCStone, Jane Street Global Trading LLC, JP Morgan Chase Bank N.A. London Branch, Koch Supply and Trading LP, Marex Financial Limited, Morgan Stanley, Standard Chartered Bank, The Bank of Nova Scotia, and The Toronto Dominion Bank. The price is set twice daily in USD terms.

MSCI Emerging Markets Index

The MSCI Emerging Markets Index represents a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging markets. Emerging markets countries include: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Peru, the Philippines, Poland, Qatar, Russia, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey, and the United Arab Emirates.

MSCI United Kingdom Index

The MSCI United Kingdom Index is designed to measure the performance of the large- and mid-cap segments of the UK market. With 97 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in the United Kingdom.

MSCI World Index

The MSCI World Index represents a free float-adjusted, market capitalization-weighted index that is designed to measure the equity market performance of developed markets. It includes 23 developed markets country indexes: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

MSCI World ex EMU Index

The MSCI World ex EMU Index captures large- and mid-cap representation across 13 of 23 developed markets countries (excluding those in the EMU): Australia, Canada, Denmark, Hong Kong, Israel, Japan, New Zealand, Norway, Singapore, Sweden, Switzerland, the United Kingdom, and the United States. With 1,373 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

MSCI World ex UK Index

The MSCI World ex UK Index captures large- and mid-cap representation across 22 of 23 developed markets countries, excluding the United Kingdom. Developed markets countries include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United States.

MSCI World ex US Index

The MSCI World ex US Index captures large- and mid-cap representation across 22 of 23 developed markets countries, excluding the United States. Developed markets countries include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom.

S&P 500 Index

The S&P 500 gauges large-cap US equities. The index includes 500 leading companies and captures approximately 80% coverage of available market capitalization.

S&P GSCI™ Index

The S&P GSCI™ is designed as a benchmark for investment in the commodity markets and as a measure of commodity market performance over time. The S&P GSCI™ is calculated primarily on a world production-weighted basis and comprises the principal physical commodities that are the subject of active, liquid futures markets. There is no limit on the number of contracts that may be included in the S&P GSCI™; any contract that satisfies the eligibility criteria and the other conditions specified in this methodology are included.

US Dollar Index

The US Dollar Index is used to measure the value of the dollar against a basket of six world currencies. The six currencies are the euro, Swiss franc, Japanese yen, Canadian dollar, British pound, and Swedish krona. The value of the index is indicative of the dollar's value in global markets.

PART 2: PORTFOLIO LIQUIDITY



The last major equity market downturn ended more than a decade ago, and today investors worry about slowing growth and worsening trade wars. Whether the next downturn is a few months away or a few years away, this is an excellent time to prepare portfolios to successfully navigate equity stress. We believe the best way to navigate an equity market downturn is to enter it with a plan in place. Thoughtful decisions—not rash actions—during these chaotic environments are what separate the top-performing investors from everyone else. In this series, we review five important topics that should inform any plan to manage portfolios through equity market downturns:

1. Market History
- 2. PORTFOLIO LIQUIDITY**
3. Diversification Challenges
4. Behavioral Roadblocks
5. Playing Offense

While many institutional investors have the luxury of a long-term orientation, most periodically need to source cash from their portfolios for spending, capital calls, or rebalancing needs. Today, extracting cash is easy, with hedge fund gates virtually non-existent and secondary-market purchases of private equity limited partner (LP) interests increasingly common.¹ However, these trends are cyclical. The ability of investors to source cash from highly diversified portfolios will decline as the next downturn hits. Investors that have not recently stress-tested their portfolios to determine whether they will support spending and permit rebalancing in a sharp downturn, should do so now.²

Investors whose allocations to private investments have soared in recent years, while bond holdings have shrunk, should pay close attention to their portfolio's liquidity. Larger allocations to private equity boost the potential for strong portfolio returns; we continue to recommend that investors with spending requirements that are modest in relation to their overall portfolio, such as many family offices, consider building chunky allocations to well-chosen private investment funds.³ However, they also force investors to calibrate how illiquid their portfolios could become in a future downturn, and perhaps, whether the institution would have any spending flexibility in a severe downturn. In this piece, we provide guidance to institutions on stress-testing a portfolio's liquidity, a few thoughts on liquidity sources, and a handful of near-term portfolio modifications that could boost liquidity.

Although this piece doesn't focus on the harmful systemic impacts that downturns can have, investors should be mindful of them when considering their own liquidity needs. For some bond issuers, steep equity downturns can impact credit ratings or increase the risk of debt covenant breaches; either of these can boost borrowing costs or make borrowing very difficult. In addition, institutions that rely on charitable giving or cyclical operational revenues could see contributions decrease during a sustained downturn, which is right when spending may be most needed.

One key action that we propose is for investors to sum up the portfolio assets that are liquid on a monthly or more-frequent basis. Then, they should stress-test that sum to determine the total value of these assets after market declines comparable to the global financial crisis (GFC). If that market-stressed value is less than three times the sum of annual required spending and capital calls, investors should consider taking immediate steps to boost their portfolio liquidity.⁴

1 Secondary transactions were a record \$72 billion last year, according to Collier Capital. We note today's benign environment and refer to prior freeze-ups not because institutions are using secondary sales for liquidity today, but rather to dissuade investors from baking them into their liquidity plans for future downturns.

2 Please see part 1 in the Managing Portfolios Through Equity Market Downturns series, Kevin Rosenbaum, "Market History," Cambridge Associates Research Note, 2019.

3 Please see Maureen Austin, David Thurston, and William Prout, "Private Investing for Private Investors: Life Can Be Better After 40%," Cambridge Associates Research Report, 2018.

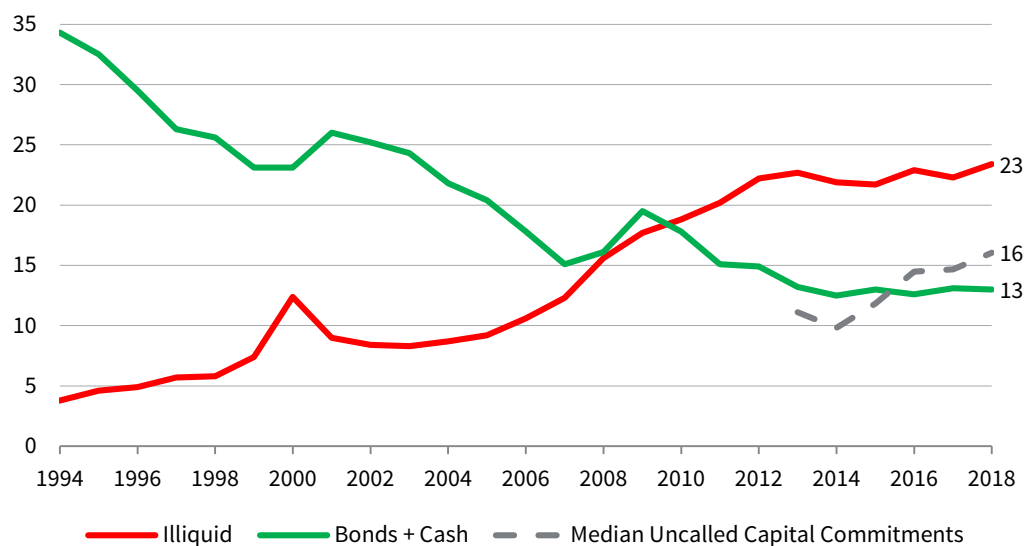
4 We address the genesis of the 3x multiple later in this piece. Boosting liquidity does not mean selling risky assets to boost cash. Rather, the focus is on holding risky assets in more-liquid vehicles.

PORTFOLIOS HAVE BECOME STRUCTURALLY LESS LIQUID

As investors have become more pessimistic about future returns from traditional stock and bond markets and more enamored with venture capital and buyouts, they have steadily boosted allocations to private investments. Endowments with greater than \$500 million in assets hold an average of 23% in private investments now, up from just 8% 15 years ago, according to Cambridge Associates data. Allocations to fixed income and cash have fallen by nearly half over that time, to 13%. And the median of these institutions has uncalled capital commitments amounting to more than 16% of the portfolio.⁵

MEAN ASSET ALLOCATION BY INVESTMENT TYPE (ASSET SIZE >\$500M)

1994–2018 • Percent of Total Assets (%)



Source: Cambridge Associates LLC.

Notes: Annual data are as of June 30. Illiquid assets include non-venture private equity, venture capital, distressed securities (private equity structure), private oil & gas/natural resources, private real estate, and timber. Uncalled capital is the amount committed, but not yet paid in, to private investment funds as a percentage of the long-term investment portfolio.

While this is a sensible shift for many institutions, a larger allocation to privates should be accompanied by an increased focus on liquidity planning. Large private investment allocations have significant implications for liquidity management, particularly for institutions with meaningful annual spending requirements that also hold hedge funds or other investments with lock-ups.

STRESSED OUT

During a downturn, institutions are often unable to slow spending or limit capital calls. To illustrate the liquidity pressures for an institution with 25% of its assets in private investments and meaningful annual spending requirements, we developed a sample portfolio and stressed it with declines equivalent to those experienced during

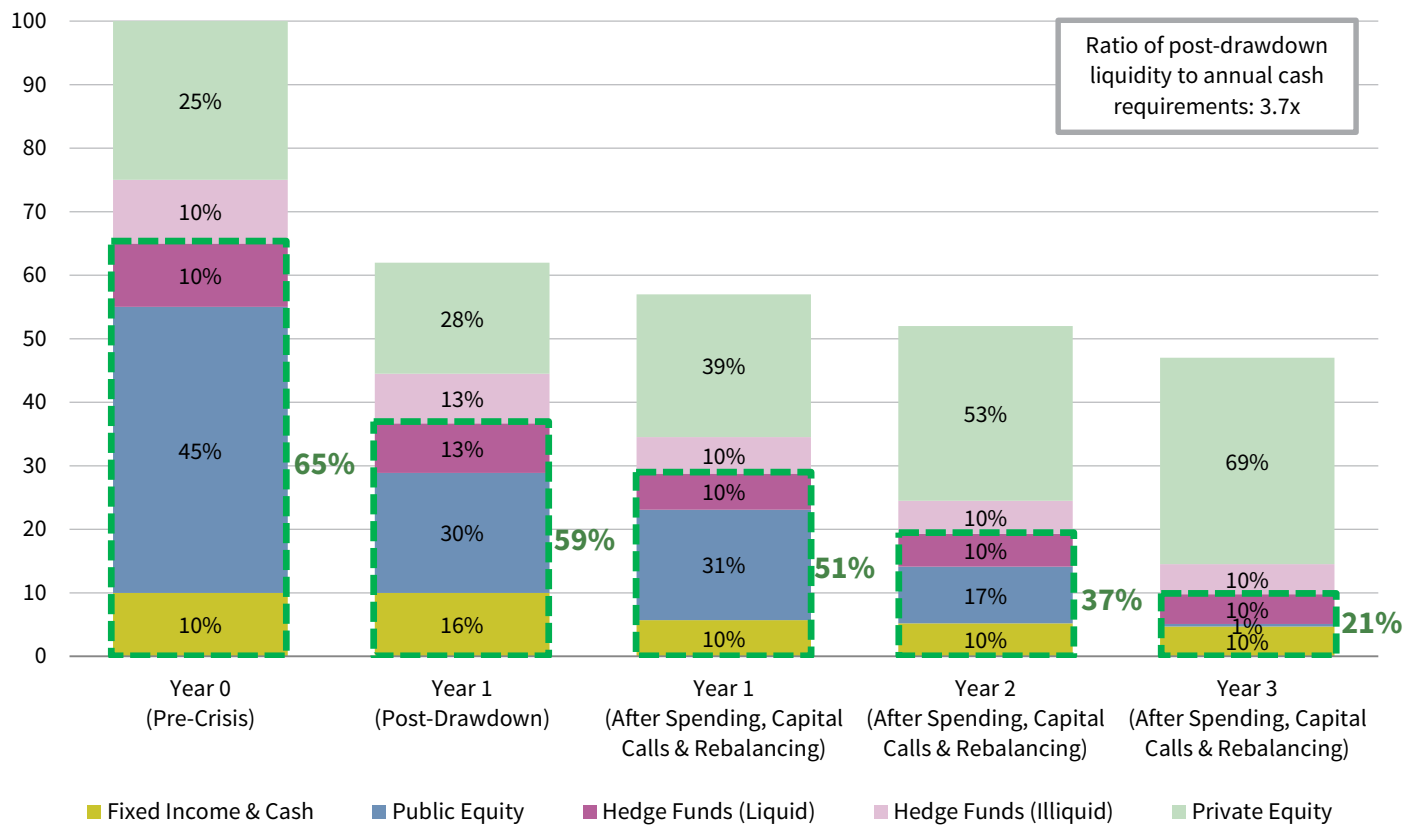
⁵ Institutions with smaller portfolios hold lighter allocations to private investments *on average*; however, many with far less than \$500 million have meaningful private stakes.

the GFC. We also assumed that markets would not rebound for three years.⁶ In this scenario, the sample portfolio could see its privates allocation swell to nearly 70% of the total portfolio, as spending and capital calls eventually consume much of the portfolio's bonds, stocks, and hedge funds. Only the private investment portfolio rebounds in market value as general partners call capital. Assuming the investor attempted to hold the overall equity allocation (listed equities plus privates) relatively static, the allocation to listed equities would be entirely consumed by the end of three disastrous years, even though it started out as 45% of the portfolio.

⁶ In this stylized and arguably extreme stress scenario, we assume Year 1 returns for each asset class are equal to the asset class's peak-to-trough drawdown during the 2007-09 period, with zero returns assumed in Years 2 and 3. Spending in this scenario is held constant at \$5 million annually (5% of the original portfolio value). The annual pace of capital calls is set at 20% of the initial allocation to private investments; this is highly variable in practice; given that the average level of unfunded commitments is 70% of the average private investments NAV in Figure 1, 20% of beginning NAV may be on the high end of the range of annual capital-call expectations. We assume both cash outlays occur at year-end. In the GFC, capital calls slowed materially, due to pushback from liquidity-challenged LPs, large bid-ask spreads for assets, severe debt funding challenges, and some general partners' reluctance to buy severely impaired assets amid a financial crisis. While the next downturn could see a repeat of this slowdown, it would be risky for LPs to assume that capital calls will again dry up in the next downturn. Spending in the scenario is drawn from asset classes in a way that targets a consistent level of portfolio exposure to equity (private and public combined), and is generally consistent with liquidity terms employed by the types of managers used by Cambridge Associates clients to invest in each asset class.

ASSET ALLOCATION AND AVAILABLE LIQUIDITY IN A CRISIS ENVIRONMENT

USD Terms



Source: Cambridge Associates LLC.

Notes: Green dotted lines represent liquid assets, and the relationship of these to total assets is shown in green as a percentage. Relatively liquid portfolios generally have a ratio of post-drawdown liquid assets to total annual cash requirements (spending + capital calls) of at least 3.0x. Totals may not sum to 100% due to rounding.

Liquid assets available on a daily or monthly basis for this hypothetical \$100 million portfolio began the scenario at \$65 million or 6.5 times the institution's annual cash requirements. The initial impact of the market decline shrinks this total to \$37 million, or 3.7 times the institution's annual cash requirements for spending and capital calls. By the end of Year 3, liquid assets are scant in USD terms, amounting to less than the next year's spending and capital calls.⁷

While there is not necessarily an optimal ratio of post-stress liquid assets to annual cash needs, we think that 3x is a reasonable (albeit conservative) minimum level. Why 3x? When Kevin Rosenbaum examined each of the post-1970 US equity bear markets for his companion piece "Market History," he found that the longest downturn lasted more than two years from peak-to-trough, so ensuring that liquid assets would cover three very lean years is a conservative yet prudent measure.

Changing any of the many assumptions used in this simple model would change the simulated results, of course,⁸ and institutions should consider their own portfolio's allocation to less-liquid assets, ability to adjust spending, and comfort level in substituting private equity with public equity in a pinch (a topic we examine next).

SUBBING PRIVATE EQUITY FOR PUBLIC EQUITY?

We have previously suggested in some venues that investors maintain a combined allocation to bonds and cash that is at least equal to one year's expected cash requirements from spending and capital calls. This is a good liquidity rule of thumb for investors that are not willing to consider public and private equity exposure to be somewhat fungible. Investors that are comfortable with the possibility that private equity could take the place of some of their portfolio's public equity can then incorporate public equity exposure into their liquidity planning. However, there are a few important caveats to this. First, while both are equity, they will perform quite differently. The returns of broad private equity benchmarks differ meaningfully from public equities, and performance dispersion across individual private managers will magnify return differences even more. To the degree that an investor's portfolio allocation becomes more heavily allocated to privates than to public equities, this will boost the portfolio's tracking error versus its benchmark (unless the investor boosts the total-portfolio benchmark's exposure to privates simultaneously). Second, investors planning to use their public equity as a funding source must plan for the available amount to shrink meaningfully in a severe downturn. For example, if an institution has \$100 million in liquid equities pre-downturn and is counting on that pool to cover future capital calls, it must recognize that market stress could easily shrink the value of public equities to

7 We assume that half of the portfolios' hedge fund allocation was available for redemption in a given year, and none of the portfolios' traditional equity allocation is in lock-up vehicles such as long-only vehicles run by hedge fund managers (even though these are common across institutional portfolios). When choosing which vehicles to spend from within a given asset class, we assume the investor chooses the more-liquid vehicle first until it is fully depleted, and tries each year to maintain a 70% total allocation to listed equities plus privates and to maintain a constant ratio of hedge funds to bonds and cash.

8 In a Fall 2008 article in *The Journal of Portfolio Management* "Alternatives and Liquidity: Will Spending and Capital Calls Eat Your 'Modern' Portfolio?," Laurence B. Siegel (the research director at that time of the Ford Foundation, and now at the CFA Institute Research Foundation) created a similar exercise, but with different assumptions. For an institution that spends 6% annually and whose portfolio began with a 50% allocation to alternatives (split 50/50 into hedge funds and private investments), the allocation to alternatives grew to 80% and 87% in three-year bear market and catastrophic market scenarios, respectively.

\$50 million or less. Third, the “equity is equity, whether public or private” approach requires an institution to sell listed equities to fulfill capital call needs, even when equity valuations may be quite depressed. To do so, investors need to have faith that the private equity managers calling capital have identified very cheap private investments to correspond to the bargain-basement stocks that are being liquidated. Investors that are uncomfortable treating public equities as a liquidity source will likely need to hold large allocations to bonds and cash, which tend to have an opportunity cost relative to risky assets.

SOURCING LIQUIDITY YESTERDAY, TODAY, AND TOMORROW

Beyond the basics of simply using portfolio cash and liquidating public equities and bonds to raise cash, we will touch on a few more nuances.

First, investors with large allocations to funds that have gating provisions should assume that managers will lower those gates during a stress scenario,⁹ as managers will likely find few reasonable bids for their assets and will receive more redemption requests than usual. Gates were employed by many hedge fund managers in 2008 and 2009, and they impacted UK property funds in the aftermath of the 2016 Brexit vote. Gates and floating net asset values (NAVs) may also be employed within “prime” money market funds in the United States, though money market fund gates would likely not be employed for an extended period.¹⁰

Second, while investors could use the secondary markets to liquidate private investments during a severe downturn (and some prominent institutions did that during the GFC), we would not incorporate this into liquidity planning. In the first half of 2009, the median secondary market bid was just 35% of NAV!

And, third, some institutions may consider using the liability side of their balance sheet to manage liquidity. For example, organizations may secure a line of credit from a financial institution. However, many such lines can be withdrawn or curtailed at the discretion of the bank unless the institution pays a fee for a committed line. During the GFC, a few institutions issued bonds; however, market conditions may not always support this, even for highly appealing issuers. And investors can use futures or total return swaps to maintain targeted exposure to listed equities, but the appetite of many organizations to use leverage during a crisis is probably limited, especially if they don’t regularly use derivatives.

9 When we refer to gates being lowered, we mean that managers are employing temporary restrictions to prevent investors from withdrawing assets from the fund.

10 For more information on recent money market fund regulatory changes including gating provisions, please see the August 2015 edition of our *Quarterly Regulatory Update* publication.

TODAY'S TO-DO LIST

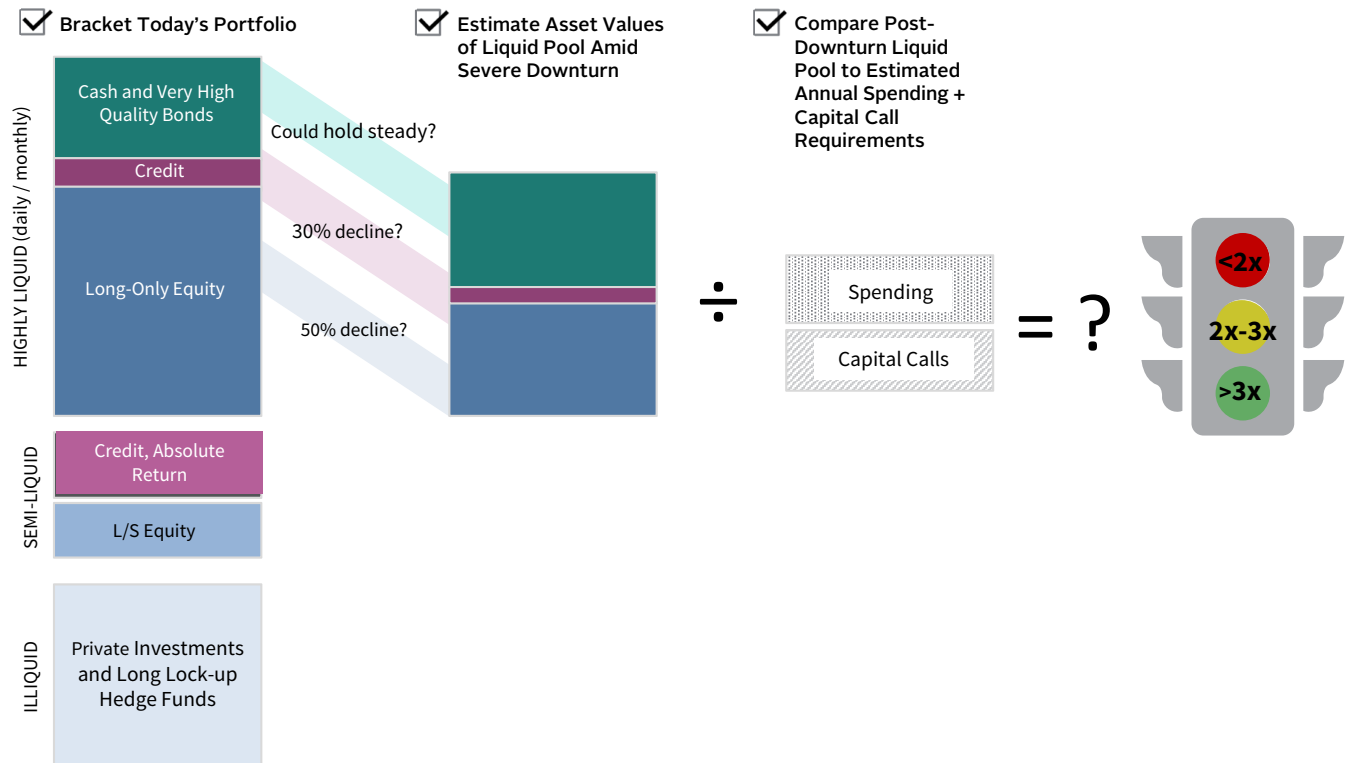
Investors with meaningful allocations to illiquid and semi-liquid funds should engage in some stress testing, and should develop a plan for sourcing and using available liquidity during the next downturn. First, they should determine the assets that can be sold within a matter of weeks. Next, investors should simulate the impact of market stress by assuming extreme market conditions, such as the peak-to-trough declines of the GFC. Finally, they should compare the size of that hypothetical post-downturn liquidity bucket to the expected annual sum of spending and capital calls.

If the stress-scenario liquidity bucket is below 3x projected annual cash requirements, then it's time to start making changes to build liquidity. When investors have many avenues open to them, it is better to act deliberately than to wait until markets force one's hand. Depending on how dire a picture the stress scenario paints, the investor may need to employ several measures, or they may be able to choose only the least disruptive options. Specifically, investors can sharply limit future capital commitments to private investments, or at least can substitute shorter-fuse investments like secondaries funds for very long-term commitments like early-stage venture capital.¹¹ Portfolios with hefty allocations to vehicles employing multi-year or multi-quarter lock-ups (or

¹¹ While secondary markets currently offer robust demand for private investment stakes, with discounts to NAV that are narrower than they have been during market downturns, most investors would find secondary sales unappealing unless they are severely overallocated to privates.

LIQUIDITY TO-DO LIST

For Illustrative Purposes Only



Source: Cambridge Associates LLC.

with gating provisions) may want to submit redemption notices now if their stress-scenario liquidity bucket is inadequate, switching to vehicles that offer more flexibility. Disrupting a well-thought-out manager structure is unappealing, but so is selling locked-up funds on the secondary market for pennies on the dollar during a crisis.

CONCLUSION

Allocations to private investments have ballooned in size over the past 15 years, which has the potential to boost returns and is prudent for many investors. However, investors that have inflexible spending needs¹² and large allocations to illiquid assets should plan how they will tackle the next downturn's liquidity challenges.

If they are planning to use their public equity holdings (and perhaps safe-haven assets described in Sean Duffin's "Diversification Challenges") as part of their liquidity reserve to support spending and capital calls in the next downturn, they should stress-test their liquidity bucket. Next, they should calculate the value of the portfolio's liquid assets in a scenario where asset classes fall to GFC lows. Then, compare that stressed sum to the institution's annual cash demand (required spending and capital calls). If the former is less than three times the latter, investors should consider taking steps now to boost liquidity. It's best to inflate the raft *before* the river rises. Investors that have planned well and have adequate liquidity will be positioned well to go on offense when the next market meltdown offers appealing opportunities, as outlined in Wade O'Brien's "Playing Offense." ■

¹² Or indeed, spending requirements that could *expand* during a recession.



Sean McLaughlin

Head of Capital Markets Research

David Kautter also contributed.

PART 3: DIVERSIFICATION CHALLENGES



The last major equity market downturn ended more than a decade ago, and today investors worry about slowing growth and worsening trade wars. Whether the next downturn is a few months away or a few years away, this is an excellent time to prepare portfolios to successfully navigate equity stress. We believe the best way to navigate an equity market downturn is to enter it with a plan in place. Thoughtful decisions—not rash actions—during these chaotic environments are what separate the top-performing investors from everyone else. In this series, we review five important topics that should inform any plan to manage portfolios through equity market downturns:

1. Market History
2. Portfolio Liquidity
- 3. DIVERSIFICATION CHALLENGES**
4. Behavioral Roadblocks
5. Playing Offense

Diversification is a cornerstone of any investment program, but as bull markets become extended, investors may be tempted to concentrate portfolios on positions that have recently worked the best (today, US equities). Further, the global financial crisis (GFC) exposed the supposed failure of diversification, as many risk assets marched down together. Numerous academic studies have reviewed the pervasiveness of correlation spikes during crisis periods, even among risk assets that typically have low or negative correlations to one another. These issues prompt investors to question whether their portfolios can still benefit from diversification during an equity downturn. In our view, the answer is unequivocally yes.

In this piece, we discuss why investors should remain diversified and how they can avoid diversification pitfalls when preparing their portfolio for the next downturn, whenever it occurs. As part of this analysis, we examine the importance of diversification (especially for investors that spend from the portfolio), review the performance of safe-haven and alternative assets during crisis periods, discuss common misconceptions of correlations, and consider the significance of portfolio risk factors.

A REMINDER OF THE IMPORTANCE OF DIVERSIFICATION

The late innings of a protracted bull market are as good a time as any to review the rationale for diversification. First, it is harder for investors to hit asset class home runs this late in the game. Asset class performance fluctuates over time. Investors don't know which asset class will be the top performer next, but winners rarely persist, and consistently timing such bets perfectly is impracticable. Second, while diversification is not perfect, it dampens portfolio declines relative to a portfolio consisting entirely of equities. Holding a diversified portfolio means owning some assets that will lag while others lead—which means the diversified portfolio will inevitably underperform some simple portfolios over shorter windows—but provides a smoother ride and superior returns over the long term. And finally, diversification is especially helpful for investors that spend from the portfolio. Indeed, well implemented diversified portfolios protect on the downside without compromising upside returns during good periods, enabling higher spending than a simple stock/bond portfolio.

Controlling risk on the downside is imperative for institutions that rely on spending. For illustrative purposes, consider an institution that has 5% spending needs annually. If the institution held a 100% equity portfolio, it could be susceptible to a 50% decline in its portfolio value in the next major bear market (the S&P 500 Index declined by roughly half during the bursting of the dot-com bubble and the GFC). Assuming spending needs were subject to a floor of nominal spending prior to the crisis, then spending would jump from 5% to 10% of the total portfolio value after the decline. Such an erosion of portfolio value would make recovering prior high-water marks extremely challenging. By diversifying effectively, investors can diminish volatility and protect the portfolio on the downside, supporting spending needs and allowing for quicker recoveries than simple, concentrated portfolios.

ASSET CLASS MOVEMENTS IN CRISIS PERIODS

Many liquid risk assets show rising correlations during stock sell-offs. Intuitively, investors might expect correlations to rise incrementally during times of panic, but in some cases risk assets have become almost perfectly correlated with equities and each other. In particular, risk assets that have historically shown a low or negative correlation with equities—such as real estate, commodities, and emerging markets bonds—move to positive correlations with equities during downturns, as investors seek to offload risk assets in tandem. Hedge funds, which generally have lower correlations with equities than other risk assets, often sync up with equities in stress periods.

Private equity investments have a unique relationship with listed equities; they can look defensive during public equity drawdown periods due primarily to infrequent, appraisal-based pricing, which creates a smoothing effect on reported returns. For instance, during the GFC for the five quarters from March 2008 through March 2009, private equity substantially outperformed public equities. In the initial market recovery over the subsequent two years, public equities bounced sharply off lows and outperformed private equity funds, which were not marked down as much and didn't have as far to bounce back. Yet, for the full period from March 2008 through March 2011, public equities declined 3%, while private equity gained 11%. Private equity funds tend to show a shallower decline during public equity drawdowns because they are not marked to market on a frequent basis, which will reduce overall portfolio volatility. Some investors consider the illiquidity of private investments to be a *benefit* to investors during crisis periods, as it can help prevent some of the unhelpful behavioral tendencies identified by Michael Salerno in the companion piece “Behavioral Challenges” and their related outcomes (such as selling at market troughs, or being reluctant to rebalance during a crisis). Other categories of private investments can reduce reliance on economic growth, while still targeting returns commensurate with equities. Certain strategies—life settlements, royalty investments, and infrastructure investments—have offered healthy returns that are uncorrelated with typical portfolio exposures and less sensitive to economic conditions.¹ However, such strategies have lower long-term expected returns than venture capital, buyouts, and growth equity.

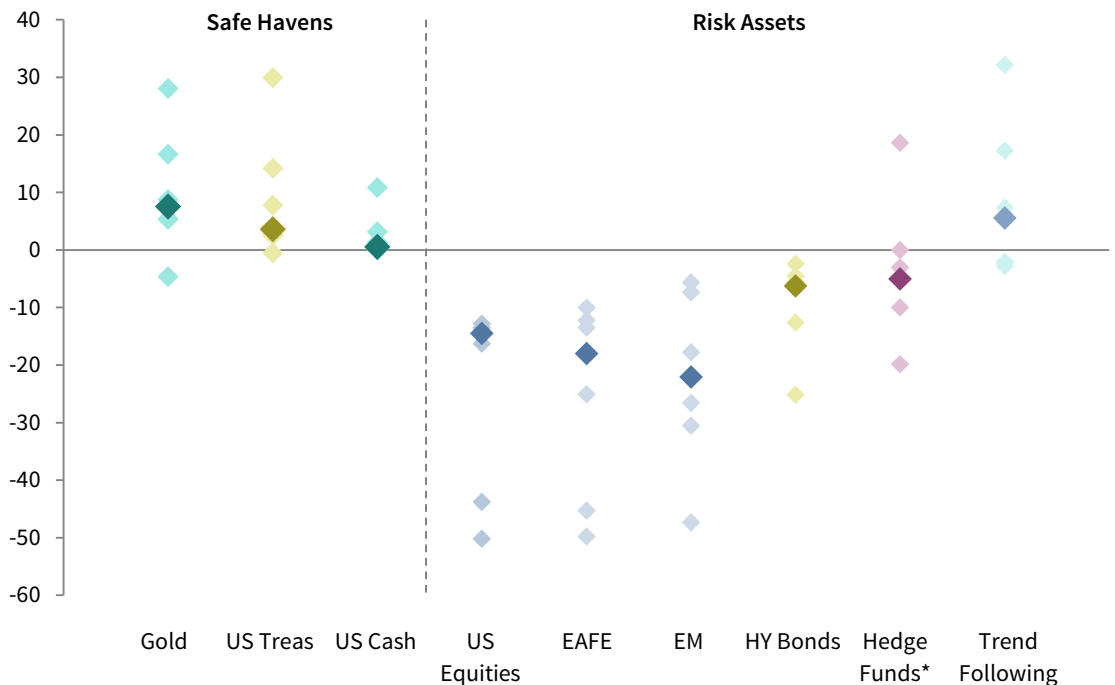
Hedge funds are quite heterogeneous, and certain styles can offer protective features during downside environments. For instance, trend-following strategies have historically outperformed during equity drawdown periods. Yet, these strategies have faced scrutiny in the recent years as performance has lagged, raising questions about whether the benefits of trend following have waned. Rapid market reversals are a challenge for the trend-following strategies, and these reversals have occurred frequently over the past five years as central bank policy tweaks, geopolitics, and trade frictions have dominated market news. Still, these strategies can offer diversification appeal over a prolonged bear market period, where funds would be expected to incrementally adopt net short equity and long bond positioning as the signals turn.

¹ For further discussion on this topic, please see Celia Dallas, “VantagePoint,” Cambridge Associates, Second Quarter 2017.

“Safe-haven” assets can provide portfolio ballast during periods of market turbulence, sometimes at the cost of poor returns in other periods. An examination of various asset classes during downturns clearly shows the defensive benefits of such assets. In the nearly 30 years since 1990, there have been seven periods where the S&P 500 declined more than 15% from peak-to-trough on a daily basis. The median nominal returns of gold, US Treasury bonds, and US T-bills were 7.5%, 3.6%, and 0.6%, respectively. These safe-haven assets were rarely negative during those periods, while major equity regions had similar drawdowns across all periods. Hedge funds held up better than other risk assets, given their defensive characteristics, with a median decline of 5.0%. Trend-following strategies posted median nominal returns of 5.5%, outperforming US Treasury bonds during drawdown periods. Indeed, safe havens and hedge funds outperformed equities in every downturn over the past 30 years.

PERFORMANCE DURING S&P 500 DRAWDOWNS OF 15% OR MORE

Percent (%) • Based on seven (7) S&P Drawdowns Since 1990 • Bold Marker Represents Median



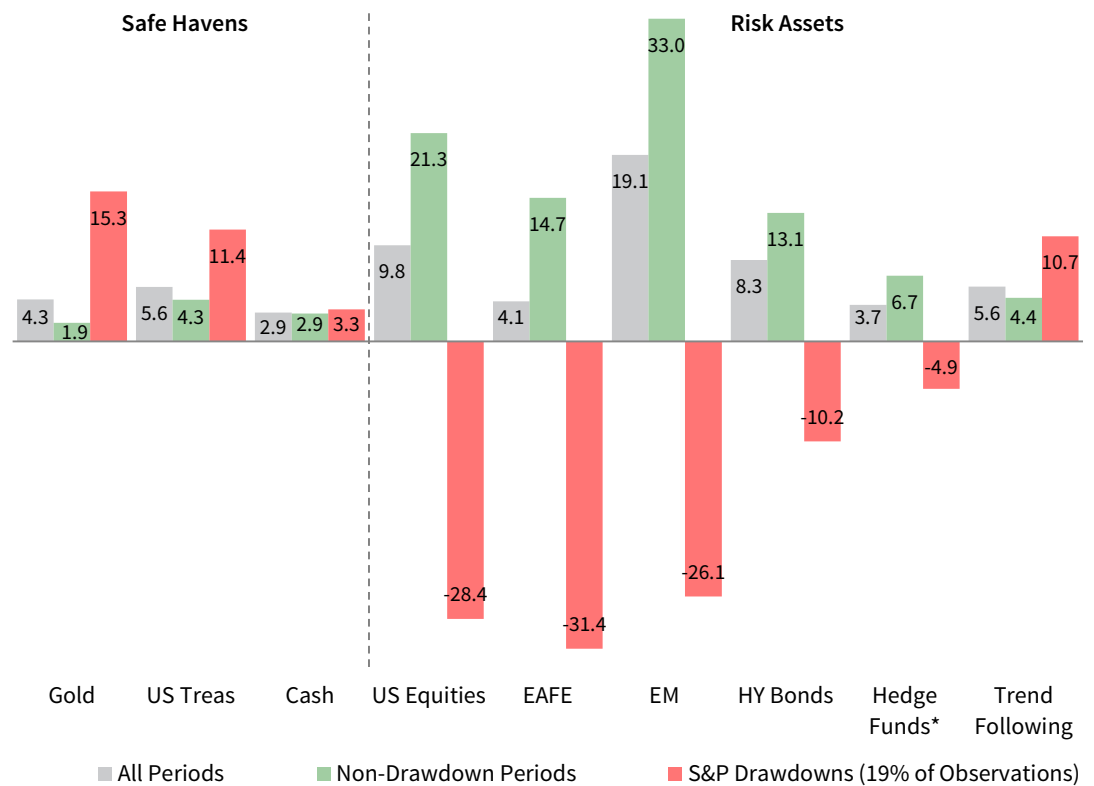
* Hedge fund data begin on January 31, 1998 and captures six of seven drawdown periods.

Sources: Barclay Trading Group, Bloomberg Index Services Limited, Hedge Fund Research, Inc., Intercontinental Exchange, MSCI Inc., Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties. Notes: Observations are based S&P declines of 15% or more, calculated from daily data. Data are based on monthly returns, calculated from closest month-end to S&P daily peak and trough. All returns are total returns, except gold, for which returns are based on changes in the spot price. Asset classes represented by the following: Gold Bullion Prices ("Gold"), Bloomberg Barclays US Treasury Bond Index ("US Treas"), ICE BofAML 91-Day Treasury Bill Index ("Cash"), S&P 500 Index ("US Equities"), MSCI EAFE Index ("EAFE"), MSCI EM Index ("EM"), Bloomberg Barclays US Corporate High-Yield Index ("HY Bonds"), and Barclay BTOP50 Index ("Trend Following"). Hedge fund data are represented by a proxy blend of 50% Hedge Fund Research (HFRX) Absolute Return Index and 50% Hedge Fund Research (HFRX) Equity Hedge Index. Trend following data are through June 30, 2019.

Intuitively, safe-haven assets are characterized as such because they have historically offered stability in market downturns, but investors lacking crystal balls must also consider the opportunity costs (i.e., trade-offs) of owning these assets in lieu of riskier assets in more sanguine market environments. Equity drawdown periods are a small portion of the history; since 1990, the seven S&P drawdown periods of 15% or more occurred across a combined 67 months out of the 355-month period. While the returns of safe havens look stable and defensive during drawdowns, the returns look much less attractive during all other periods. The resulting returns during non-drawdown periods have been slightly positive in nominal terms, but real returns are paltry or negative. A non-income-producing asset like gold has historically had a high opportunity cost during non-drawdown periods, and its volatile returns have looked poor even in relation to cash. However, given paltry yields today, expected returns on fixed income are muted, and the opportunity cost of holding gold in favor of cash is low.

ANNUALIZED PERFORMANCE

January 1, 1990 – July 31, 2019 • Percent (%) • Geometrically Linked AACRs



* Hedge Fund data begin on January 31, 1998 and captures six of seven drawdown periods.

Sources: Barclay Trading Group, Bloomberg Index Services Limited, Hedge Fund Research, Inc., Intercontinental Exchange, MSCI Inc., Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

Notes: S&P drawdowns represent price declines of greater than 15%. All returns are total returns, except gold, for which returns are based on changes in the spot price. Asset classes represented by the following: Gold Bullion Prices ("Gold"), Bloomberg Barclays US Treasury Bond Index ("US Treas"), ICE BofAML 91-Day Treasury Bill Index ("Cash"), S&P 500 Index ("US Equities"), MSCI EAFE Index ("EAFE"), MSCI EM Index ("EM"), Bloomberg Barclays US Corporate High-Yield Index ("HY Bonds"), and Barclay BTOP50 Index ("Trend Following"). Hedge fund data are represented by a proxy blend of 50% Hedge Fund Research (HFRX) Absolute Return Index and 50% Hedge Fund Research (HFRX) Equity Hedge Index. Trend following data are through June 30, 2019.

CORRELATION MISCONCEPTIONS

Correlations can be an important input to assess diversification in the portfolio, but are commonly misinterpreted. They measure the linear relationship between two random variables and indicate the tendency of those variables to move together. However, asset classes can move in the same direction but with varying degrees of magnitude, particularly over long-term periods. For example, for the ten years ended October 31, 2010, EM equities had a strong correlation with US equities: 0.80. Yet, EM equities trounced US equities by 14% *per year* during this ten-year period. This trend has since reversed, and for the ten-year period through July 31, 2019, US equities have topped EM equities by 8% *per year*—the widest gap on record. Equities in one region or country can outperform over many years, but leadership ultimately changes. Simply assessing directionality without magnitude is insufficient to understanding the long-term benefits of diversification.

In shorter-term crisis periods, correlations can be unstable and can spike as assets decline in tandem. Asset allocation models tend to rely on static inputs, which aim to capture long-term correlations, but do not reflect the reality of short-term deviations in correlations. For example, in Cambridge Associates' equilibrium assumptions, we estimate a correlation of 0.69 between US and non-US equity market returns, and 0.62 between US and EM market returns. However, correlations observed during equity sell-offs are much higher, near 0.9 and 0.8, respectively, as sentiment and supply/demand drivers can cause risk assets to simultaneously crash. For this reason, having alternative assets and safe havens with a variety of economic exposures can serve as ballast to the portfolio during such periods. Diversifying globally may not provide a short-term benefit during drawdown periods, but over longer periods, regional markets are more likely to exhibit meaningful performance dispersion.

THE IMPORTANCE OF RISK FACTORS

Many investors recognize that the sharp rise in correlations during crisis periods can mitigate the volatility-reducing benefits of traditional diversification across asset classes. Thus, investors should understand *risk* diversification ahead of a downturn. For investors that employ alternative-beta strategies or whose managers have persistent exposures to certain factors, understanding how those factors perform and interact during downturns is crucial. Among well-known equity style factors, quality and minimum volatility strategies posted strong excess returns during the GFC, and we would typically expect them to outperform broad indexes in times of crisis. Size and value lagged during the crisis, as smaller stocks tend to have higher equity betas versus large-cap stocks, and value tends to be cyclical. Yet today, value is quite cheap relative to growth, and may be cheap enough to outperform growth again during the next crisis period, as it did in the downturns from 1980 to 1982 and the early

2000s. Correlations of excess returns across various factor strategies have been low to negative in the past 20 years, and combining such strategies can offer investors a more transparent way to diversify risk factors. For example, value and momentum strategies are a promising combination. During the past ten S&P drawdowns, these factors complemented each other on an excess return basis. While exposures to multi-factor combinations can have attractive diversification properties, individual style factors can be highly cyclical, and concentrated risk exposure to any single risk factor can present unintended risks.

DRAWDOWNS AND FACTORS

Excess Returns of US Factor Indexes During the Global Financial Crisis

Quality	10.1
Min Vol	9.5
Momentum	-0.9
Size (Equal Wtd)	-3.3
Value	-5.2

Correlations of Excess Returns of US Factor Indexes Since 1998

	Equal Wtd	Min Vol	Value	Momentum	Quality
Equal Wtd	1.00				
Min Vol	-0.05	1.00			
Value	0.63	0.21	1.00		
Momentum	-0.20	0.15	-0.47	1.00	
Quality	-0.49	0.25	-0.43	0.15	1.00

Excess Returns of US Momentum and Value Strategies During S&P 500 Drawdowns of 15% or More

Start Date	End Date	EXCESS		
		Momentum	Value	50/50
1/31/1980	3/31/1980	0.3	-0.3	0.0
11/30/1980	7/31/1982	-6.8	7.3	0.3
8/31/1987	11/30/1987	-0.4	0.8	0.2
7/31/1990	9/30/1990	0.9	-0.6	0.1
7/31/1998	8/31/1998	-1.8	0.4	-0.7
3/31/2000	9/30/2002	9.8	17.1	13.4
9/30/2007	2/28/2009	0.4	-5.7	-2.6
4/30/2010	6/30/2010	1.1	-0.4	0.3
4/30/2011	9/30/2011	3.3	-1.7	0.8
9/30/2018	12/31/2018	-1.9	0.2	-0.9

Sources: MSCI Inc., Ned Davis Research, Inc., Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

Notes: S&P 500 drawdowns of 15% or more are based on daily price levels. Due to data availability, start and end dates for these drawdown periods are based on the nearest month-end data. Returns shown are total returns net of dividend taxes.

CONCLUSION

As investors prepare for the next equity market downturn (whenever it occurs), they should take a closer look at the benefits and limits of diversification. The commonly used adage that “all correlations go to one in a crisis” may be an exaggeration, but it still serves as a reminder that traditional diversification across risk assets has little short-term efficacy in times of market turbulence. To ensure adequate diversification for the next downturn, investors should reexamine the merits and trade-offs of holding safe-haven assets, consider the benefits of alternative assets strategies as a way to diversify dependence on economic growth, and evaluate the downturn performance of any persistent factor exposures employed by equity managers (such as value or quality tilts). While traditional safe-haven assets provide stability during drawdowns, opportunity costs of holding such assets across cycles can be high, particularly in the case of gold—but also in the cases of cash and Treasury bonds, which offer paltry rates. Private equity strategies can help investors avoid behavioral mistakes during prolonged market drawdowns, and certain other private investment categories offer attractive characteristics uncorrelated to economic growth. Trend-following hedge fund strategies have historically offered strong diversification properties in market drawdown periods. Factor tilts can offer diversification benefits to the portfolio, but investors must consider that factors can be cyclical through downturns, and should beware of excessive exposure to any single factor. Correlations spike over short-term horizons during downturns, but over the longer term, the magnitude or performance dispersion of asset classes plays a key role in portfolio diversification. Perhaps the biggest mistake that investors could make is abandoning diversification in the late innings of one of the longest bull markets on record. ■



Sean Duffin

Investment Director, Capital Markets Research

Gabriel Fontana also contributed.

INDEX DISCLOSURES

Barclay BTOP50 Index

The BTOP50 Index seeks to replicate the overall composition of the managed futures industry with regard to trading style and overall market exposure.

BBG US Corporate High Yield Index

The Bloomberg Barclays US Corporate High Yield Bond Index is composed of fixed-rate, publicly issued, non-investment grade debt, is unmanaged, with dividends reinvested.

BBG US Treasury Index

The Bloomberg Barclays US Treasury Index measures USD-denominated, fixed-rate, nominal debt issued by the US Treasury. Treasury bills are excluded by the maturity constraint, but are part of a separate Short Treasury Index.

Hedge Fund Research Absolute Return Index

The HFRX Absolute Return Index is designed to be representative of the overall composition of the hedge fund universe.

ICE BofAML 91-Day T Bill

The ICE BofAML 91-Day Treasury Bills Index represents the return of a single 91-day Treasury bill purchased at the beginning of each month and held for a full month, at which time that issue is sold and rolled into a newly selected issue. The Treasury bill selected each month matures within the following 90 days. The performance shown for the index reflects reinvestment of dividends and, where applicable, capital gain distributions, and is not subject to fees and expenses to which the fund is subject.

MSCI EAFE Index

The MSCI EAFE Index is designed to represent the performance of large and mid-cap securities across 21 developed markets, including countries in Europe, Australasia and the Far East, excluding the United States and Canada.

MSCI Emerging Markets Index

The MSCI Emerging Markets Index represents a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging markets. Emerging markets countries include: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Peru, the Philippines, Poland, Qatar, Russia, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey, and the United Arab Emirates.

S&P 500 Index

The S&P 500 gauges large-cap US equities. The index includes 500 leading companies and captures approximately 80% coverage of available market capitalization.

PART 4: BEHAVIORAL ROADBLOCKS



The last major equity market downturn ended more than a decade ago, and today investors worry about slowing growth and worsening trade wars. Whether the next downturn is a few months away or a few years away, this is an excellent time to prepare portfolios to successfully navigate equity stress. We believe the best way to navigate an equity market downturn is to enter it with a plan in place. Thoughtful decisions—not rash actions—during these chaotic environments are what separate the top-performing investors from everyone else. In this series, we review five important topics that should inform any plan to manage portfolios through equity market downturns:

1. Market History
2. Portfolio Liquidity
3. Diversification Challenges
- 4. BEHAVIORAL ROADBLOCKS**
5. Playing Offense

Investing is difficult enough in normal times, even for the most seasoned investors, given the underlying emotions and mental biases inherent in human decision making. Downturns can exacerbate these behavioral challenges, increasing the risk of mistakes that can permanently impair portfolio value. For these reasons, developing and maintaining a sound investment process is as much about effective risk management as it is about setting an appropriate investment strategy and asset allocation. Ahead of the next downturn, investors should (re)familiarize themselves with the behavioral biases that inevitably rear their ugly heads during sustained market declines. Ensuring a “prepared mind”—that is, understanding what a downturn looks and feels like¹ and having a playbook for mitigating behavioral risks when the market cycle eventually turns south—is even more critical. When it comes to the human component of investing, self-awareness regarding behavioral biases certainly can help, but the best defense against common behavioral pitfalls is developing a plan to help navigate a bear market with buy-in from relevant stakeholders and then sticking to it.

In this piece, we discuss the behavioral biases to which investors could be most susceptible in the next market downturn. We then review some hard lessons we and many clients learned during the global financial crisis (GFC). Specifically, rebalancing equity exposure back to policy targets following a major correction is very difficult, but is critical for maintaining total portfolio beta, limiting tracking error vis-à-vis policy benchmarks, and achieving long-term investment objectives. Finally, we provide some simple, yet practical strategies for mitigating the behavioral risks that often arise during bear market environments, the most important of these being the establishment of a formal rebalancing policy that all investment stakeholders agree to in advance.

BEWARE OF BEHAVIORAL BIASES

Like all animals exposed to danger, human beings are hard-wired with “fight or flight” survival instincts that have enabled our species to endure. Yet, our innate risk aversion can be problematic when it comes to investment decision making during a market downturn. As we noted a few years ago, “investor risk tolerance is not static, but instead shifts with asset prices.”² Paradoxically, human instinct gives investors the impression that risks are rising when markets are falling, which can prompt them to cut exposures precisely when the risk/reward proposition is often moving in their favor. Conversely, a prolonged bull market such as we have experienced can lull investors into a false sense of security, when, in fact, risk premiums are compressed and financial asset prices are vulnerable to correction. As a result, executing a rebalancing policy during a sustained market correction requires investors to boost exposure to risky assets in the face of rising fear. Easier said than done!

1 As a stark reminder of the pervading sense of doom felt by even the most seasoned investment professional at the depths of the GFC, consider the following quote that appeared in a *Financial Times* article “Market crash shakes world” on October 10, 2008: “The events we’ve seen this week represent a once-in-a-generation increase in risk aversion and total lack of faith in the financial system surviving in its current state,” said Graham Secker, equity strategist at Morgan Stanley in London.”

2 Please see Eric Winig, “Behavioral Risk (Annotated),” Cambridge Associates Research Report, 2015.

Behavioral economists have identified, analyzed, and documented dozens of behavioral biases, many of which can negatively influence investment decisions.³ Our earlier paper⁴ on this topic summed up how such dynamics can manifest themselves during an equity bear market.

“Slammed by *financial* shock, the same instincts result in heightened risk aversion (gimme cash!), a dramatic foreshortening of our normal investment time horizon, an overwhelming impulse to flee with the herd, a tendency to extrapolate current trends all the way to Armageddon, and a deep desire to latch on to anyone who seems able to explain what is going on and what will happen next—that is, to alleviate the misery of our deep uncertainty.”

Said more directly, long-term investors facing a downturn are most susceptible to loss aversion, herding, recency bias, and availability bias. When downside volatility picks up, so does loss aversion. Investors often lose sight of the strategic investment objective (often to maintain or grow the portfolio’s real purchasing power) and instead become preoccupied with the “nominals” as mark-to-market portfolio losses mount, as well as with saving their own careers, preferring the safety of the herd. The goal swiftly becomes to stem the bleeding, at any cost. Investors also tend to exaggerate the importance of recent information and to forget the longer-term historical context during times of market stress. As market uncertainty rises, investors can lose their objectivity and begin grasping onto any available information and advice, regardless of its strategic relevance and particularly if the source is perceived as a market expert. Experienced in combination, and without effective strategies to mitigate them, these natural human reactions to short-term financial pain and loss can be devastating to the long-term investment mission.

WHAT NOT TO DO IN A DOWNTURN: LEARNING FROM THE GFC

Decisions taken by institutional investors during the GFC of 2008–09 provide useful case studies of how behavioral biases can infect investment decision making and lead to sub-optimal outcomes. During the depths of the crisis, many investors considerably shortened their investment time horizons upon being deluged with a steady stream of negative financial headlines and weak economic data, as well as in response to daily mark-to-market portfolio losses. Other investors had simply misjudged their liquidity needs and/or had taken on leverage that exposed them to margin calls, forcing them to part with beaten-down growth assets (i.e., listed equities and, in some cases, private investments) at the worst possible time. The combination of panic selling and forced liquidations raised correlations among risk assets, rendering portfolio diversification less effective, as many so-called “long-term strategic” investors simultaneously rushed for the exits alongside more short-term oriented market participants. Loss aversion then prevented many institutional investors from buying back in and participating fully in the market recovery.

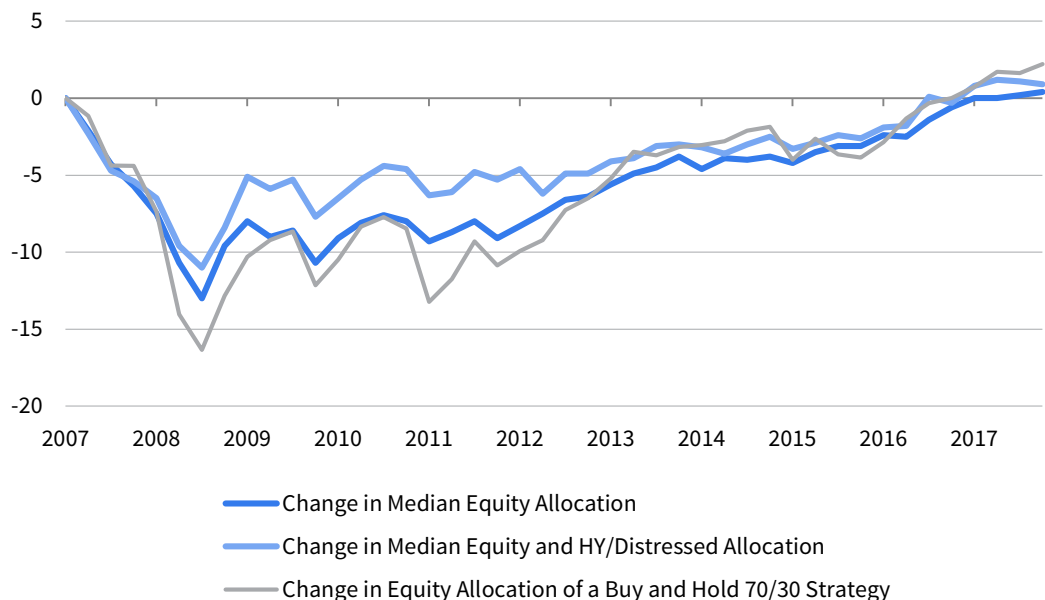
3 For a more detailed discussion, please see Hersh Shefrin, *Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing*, Harvard Business School Press, 1999. Additional book recommendations on this subject include Daniel Kahneman, *Thinking, Fast and Slow*, Farrar, Straus and Giroux, 2011, and Richard Thaler, *Misbehaving: The Making of Behavioral Economics*, W. W. Norton & Company, 2015.

4 Please see Ian Kennedy, “Behavioral Risk,” Cambridge Associates Research Report, 2009.

We didn't have to look any further than our own quarterly asset allocation surveys to quantify the extent to which institutional investors (many of which we advise—Cambridge Associates investment teams are certainly not immune from behavioral biases) were slow to rebalance their portfolios' equity exposures in the aftermath of the GFC.⁵ We compared the cumulative change since June 2007 in the median allocation to equities, as well as to “equity-like” assets (i.e., high-yield bonds and distressed credit strategies), with what an investor would have experienced from buying and holding (i.e., without rebalancing) a pure passive portfolio comprising 70% global equities and 30% US bonds. The data show that, while clients' allocations to equities and “equity-like” assets fell less than for the buy-and-hold portfolio, the median “equity” exposure still fell by more than 10 percentage points cumulatively as of the March 2009 market trough and remained at least 5 percentage points below its pre-crisis level over the ensuing five years. The relatively milder drawdown versus the purely passive portfolio is perhaps partly explained by exposures to private investments whose market values were not marked down as much or as quickly as publicly listed equities. In addition, on our advice heading into and during the crisis, many clients also increased allocations to high-yield bonds and boosted commitments to distressed credit strategies to capitalize on market dislocations where the risk/reward opportunities appeared most asymmetric, thereby helping to maintain exposures to equity-like assets. Yet, the data also suggest institutions did not sufficiently rotate back into listed equities once

5 For the original version of this analysis and further related discussion, please see Celia Dallas, “VantagePoint,” Cambridge Associates, Fourth Quarter 2014.

CUMULATIVE CHANGE IN MEDIAN ALLOCATION TO EQUITY AND “EQUITY-LIKE” ASSETS
Third Quarter 2007 – Second Quarter 2018 • Percentage Points



Sources: Bloomberg Index Services Limited, Cambridge Associates LLC, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.

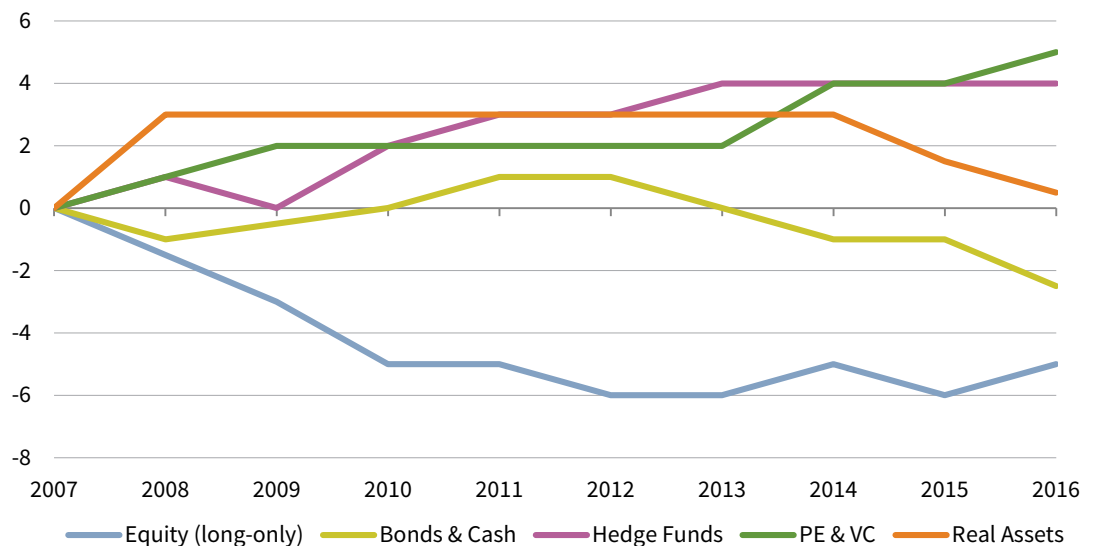
Notes: Median allocations based on quarterly data from a constant universe of 151 institutions. Equity allocation includes long-only public equity, venture capital, and non-venture private equity. HY/Distressed allocation includes high-yield bonds and distressed credit strategies. Buy and Hold strategy is represented by the MSCI All Country World Index (Net) in LC terms and the Bloomberg Barclays US Aggregate Bond Index in USD terms.

the distressed credit cycle had run its course. As a result, the median equity allocation did not return to its pre-crisis level any faster than an “unrebalanced” simple 70/30 portfolio would have.

Following the “Great Recession” and its associated bear market, many institutions further diversified their portfolios by increasing policy allocation targets to private investments, hedge funds, and real assets at the expense of long-only equities, fixed income, and cash. These changes were likely driven by long-term strategic objectives and with liquidity considerations in mind. Yet, a prolonged bull market in both equities and bonds, combined with historically low volatility, have helped simple stock/bond portfolios deliver risk-adjusted returns against which diversified portfolios have struggled to compete. As a result, some investors may have come to question their decisions to increase portfolio diversification, yet such buyer’s remorse could be setting them up to abandon diversification at the wrong time. Those who dial back portfolio diversification now risk compounding their regret and leaving their portfolios whipsawed by a pick-up in downside market volatility whenever the cycle ultimately turns.

CUMULATIVE CHANGE IN MEDIAN TARGET ALLOCATION BY ASSET CLASS

2007–16 • Percentage Points



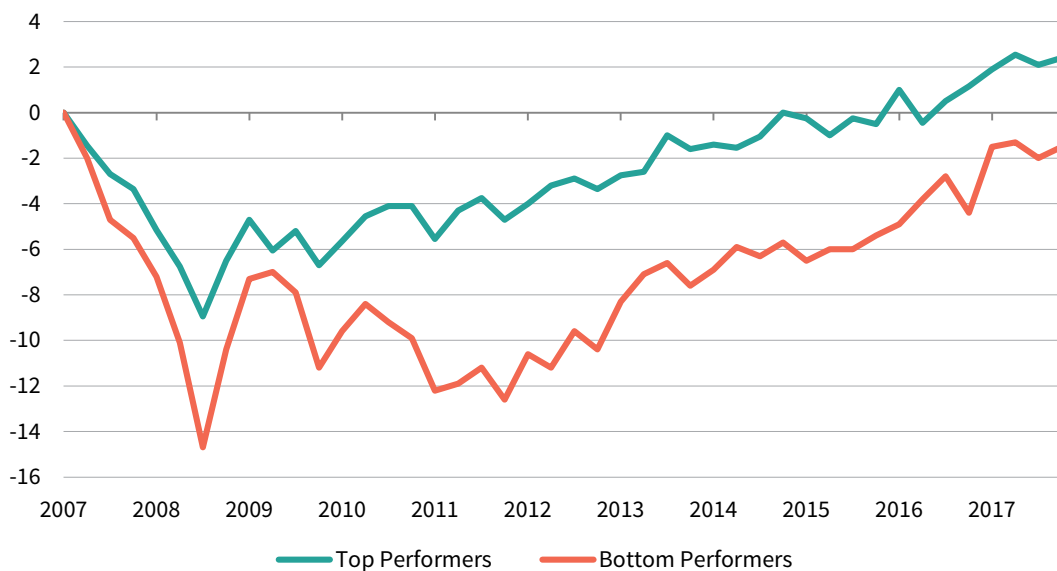
Source: Cambridge Associates LLC.

Notes: Median target allocations based on data from a constant universe of 69 institutions. Data for each year are as of June 30.

Measuring the performance impact of these asset allocation moves since the GFC would be a complicated and very imprecise exercise, and we have not attempted to do so for this piece. Yet, from an anecdotal standpoint, again based on our own institutional asset allocation survey data, the divergence in asset allocation trends between the top- and bottom-performing cohorts is stark. The top performers from September 2007 through June 2018 were those whose equity exposures had declined the least at the March 2009 market trough and had returned to their pre-crisis levels the soonest. In contrast, the bottom performers were those whose equity exposures dropped the most at the depth of the crisis, either because they didn’t meaningfully rebalance back into equities during the subsequent market recovery or because they chose to permanently cut portfolio risk from a long-term policy standpoint.

CUMULATIVE CHANGE IN MEDIAN EQUITY ALLOCATION BY PERFORMANCE QUINTILE

Third Quarter 2007 – Second Quarter 2018 • Percentage Points



Source: Cambridge Associates LLC.

Notes: Median allocations based on quarterly data from a constant universe of 151 institutions. Equity allocation includes long-only public equity, venture capital, and non-venture private equity. Universe is divided by performance quintile based on cumulative returns from third quarter 2007 to second quarter 2018.

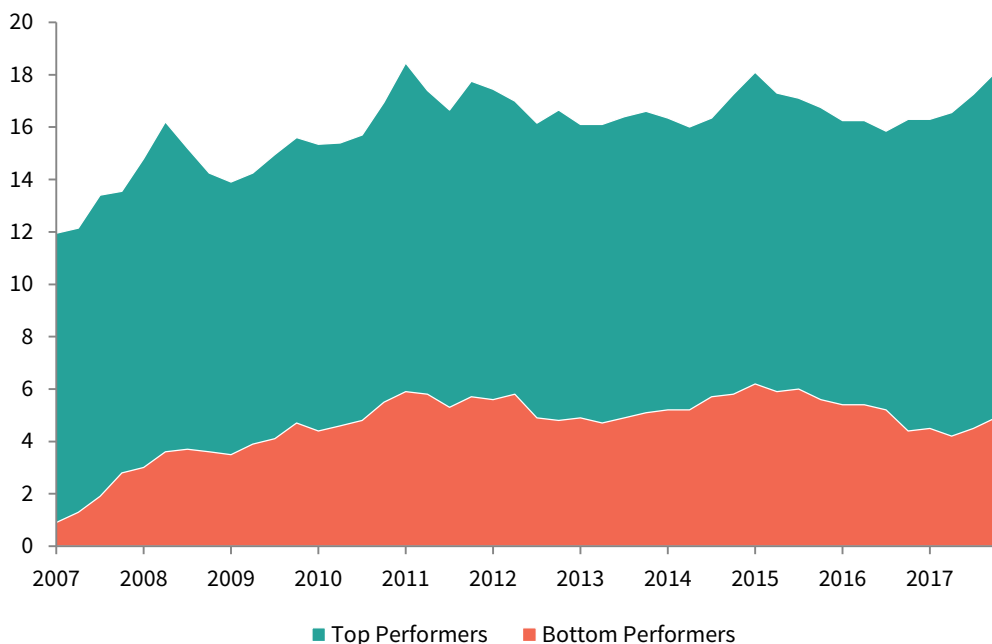
The role of private investments allocations is also a key factor distinguishing the performance leaders from the laggards. The top-performing institutions since the GFC have been those that started with and maintained the highest exposures to venture capital and non-venture private equity. As we recently discussed,⁶ exposure to illiquid private investments vehicles whose managers call down committed capital for investment over time can help institutional investors mitigate behavioral risks associated with market cycles, both by forcing them to stay more invested and by taking some of the investment timing decision out of their hands. Without needing to be fully invested at all times or being required to mark-to-market their portfolios daily, experienced and disciplined private investments general partners can take advantage of market downturns to use uncalled dry powder to purchase valuable assets at undemanding prices. They can also exploit bull market cycles to monetize the value created in their portfolio companies at attractive exit points when capital is abundant and markets are most receptive. Thus, private investments strategies, though their performance tends to be pro-cyclical,⁷ potentially offer a natural countercyclical buy/sell discipline that may help counteract the tendency for investors to make pro-cyclical asset allocation decisions.

⁶ For a further discussion, please see Maureen Austin, David Thurston, and William Prout, "Private Investments for Private Investors: Life Can Be Better After 40(%)," Cambridge Associates Research Report, 2018.

⁷ This is particularly true of buyout strategies.

MEDIAN ALLOCATION TO PRIVATE INVESTMENTS BY PERFORMANCE QUINTILE

Third Quarter 2007 – Second Quarter 2018 • Percent (%)



Source: Cambridge Associates LLC.

Notes: Data are sourced from a constant universe of 151 institutions. Private investments include venture capital and non-venture private equity. Institutions are broken down by performance quintile based on cumulative returns from third quarter 2007 to second quarter 2018.

SOME GO-TO STRATEGIES TO HELP MITIGATE COMMON BEHAVIORAL RISKS

Our long-standing capital markets research philosophy—“Read the history, do the math, understand what is different this time (and it’s usually nothing)” —pairs well with some practical strategies for neutralizing the dangerous behavioral biases that often arise during market downturns. As we discussed in a companion piece,⁸ the first step in surviving a bear market is periodically reviewing capital markets history to understand prior market downturns (how long they typically last, as well as how deep are the market declines). Armed with this knowledge, investors may be better able to remain grounded and rational in their decision making. As part of this exercise, investors should regularly stress test their portfolios to evaluate whether they can tolerate the extent of the paper losses their portfolios would likely suffer during a bear market. Mitigating the psychological impact of a market sell-off is certainly important, but maintaining sufficient liquidity⁹ for spending needs (including potential private investment vehicle capital calls) under a downside scenario is also critical to the long-term mission.

⁸ Please see part 1 in the Managing Portfolios Through Equity Market Downturns series Kevin Rosenbaum, “Market History,” Cambridge Associates Research Note, 2019.

⁹ For a further discussion on this topic, please see part 2 in the Managing Portfolios Through Equity Market Downturns series Sean McLaughlin, “Portfolio Liquidity,” Cambridge Associates Research Note, 2019.

Successful long-term investors are those that, in the event of a major market dislocation, are able to meet their spending requirements, while still keeping strategic portfolio exposures near their policy targets to meet the portfolio's long-term investment objective. To maintain strategic exposures, investment fiduciaries should delineate a specific rebalancing policy, as well as delegate execution responsibility to a specific subset of stakeholders, be it the investment committee or an execution sub-committee, investment office staff, or their outside investment advisor.

Importantly, when it comes to a portfolio rebalancing policy, the decision to rebalance is more important than the particulars of the underlying strategy. That is because the strategic objective of rebalancing is not performance optimization, but rather overall portfolio risk management. Any fixed weight asset allocation benchmark automatically incorporates periodic rebalancing and thus inherently embeds a contrarian value discipline, and therefore opting not to rebalance would be an active decision to underweight the value factor and to overweight momentum by allowing outperforming asset classes to run, and vice versa. It also would translate into greater tracking error and volatility and less diversification relative to the policy portfolio. When determining the optimal rebalancing frequency, investors should consider the benefit of holding their market exposure steady as well as the transaction costs associated with rebalancing.

Our research supports a rebalancing policy combining range (or deviation) rebalancing with cash flow rebalancing.¹⁰ Policy ranges should be set in proportion to both the target weighting and the underlying historical volatility, both on an absolute basis and relative to other portfolio exposures. Historical cross-asset correlations should also be considered. As a practical example, equities are substantially more volatile than bonds, and prices for equities and bonds have typically been negatively correlated during equity bear markets. Therefore, the equity policy range should be set wider as a percentage of the target weighting than the bond policy range. Related to this, rebalancing between equities and bonds will impact portfolio tracking error and volatility far more than rebalancing between, say, US and non-US equities.

A sound rebalancing policy should also stipulate how much to buy once the actual allocation moves outside the target range, and there are a few options to consider. Some simple rules would involve rebalancing the allocation back to the range threshold, halfway to the policy target, or fully back to target. We recommend rebalancing to halfway between the outer limit of the policy range and the target. Such an approach, in combination with policy ranges calibrated to target levels and underlying asset class volatilities and correlations, strikes a balance between value and price momentum, as well as reduces transaction costs by limiting the frequency of rebalancing. Aside from rebalancing moves driven by market volatility and policy ranges, investors should also look to take advantage of any cash inflows or outflows to move allocations closer to target to help minimize the drag from trading commissions and market impact associated with the overall rebalancing strategy.

10 Please see Andre H. Mehta, "Rebalancing," Cambridge Associates Research Report, 2004.

CONCLUSION

As discussed, bear markets often trigger emotional responses that can sometimes lead investors to act contrary to their long-term objectives, which is why investors need simple strategies to help them to overcome their worst instincts. Recency bias caused by a steady drip of negative developments can shorten investors' investment horizons and allow loss aversion to creep in, causing investors to cut risk at exactly the wrong time, or at the very least preventing them from rotating portfolios to maintain strategic risk exposures. Following such moves (or lack thereof), further market declines can make investors feel falsely vindicated and therefore further prone to act in conflict with their strategic interests.

Such behavioral pitfalls were on full display during the GFC, as many investors did not keep the expected risk/return characteristics of their portfolios adequately in line with the long-term financial goals embedded in the policy asset allocation. Some were slow to rebalance fully back into equities once the economic recovery was underway, others cut portfolio risk more permanently by reducing equity targets and increasing policy allocations to hedge funds, distressed credit, and other asset classes with less equity beta exposure.

In preparing for the next downturn, whenever it may occur, investors should certainly keep these behavioral tendencies and the hard experiences and lessons of the GFC (as well as from prior bear markets) top of mind. More importantly, they should also have in place a simple, but sound rebalancing policy—a plan that has full buy-in from all investment stakeholders—to serve as a risk management tool for surviving a prolonged market downturn. ■



Michael Salerno

Senior Investment Director, Capital Markets Research

Greg Gonsalves also contributed.

INDEX DISCLOSURES

Bloomberg Barclays US Aggregate Bond Index

The Bloomberg Barclays US Aggregate Bond Index is a broad-based bond market index representing intermediate-term investment-grade bonds traded in United States.

MSCI ACWI Index

The MSCI ACWI captures large- and mid-cap representation across 23 developed markets and 26 emerging markets countries. With 2,844 constituents, the index covers approximately 85% of the global investable equity opportunity set. Developed markets countries include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom. Emerging markets countries include: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Peru, the Philippines, Poland, Qatar, Russia, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey, and the United Arab Emirates.

PART 5: PLAYING OFFENSE



The last major equity market downturn ended more than a decade ago, and today investors worry about slowing growth and worsening trade wars. Whether the next downturn is a few months away or a few years away, this is an excellent time to prepare portfolios to successfully navigate equity stress. We believe the best way to navigate an equity market downturn is to enter it with a plan in place. Thoughtful decisions—not rash actions—during these chaotic environments are what separate the top-performing investors from everyone else. In this series, we review five important topics that should inform any plan to manage portfolios through equity market downturns:

1. Market History
2. Portfolio Liquidity
3. Diversification Challenges
4. Behavioral Roadblocks

5. PLAYING OFFENSE

While earlier installments in this series have touched on aspects of preparing for market downturns, this piece is intended to help investors pivot and “play offense” after the downturn has already occurred. In preview, we think market timing is difficult and regularly rebalancing may be all the “offense” most investors need. But sell-offs can be missed opportunities and specifics are important. Investors need investment policy statements (or similar guidelines) in place that include detailed guidance for portfolio rebalancing. Investors should also understand the risk exposures of existing managers and have a view as to which managers and vehicles are best suited to adjust exposures back to desired levels. Playing offense can also involve asset classes that are not part of formal policy allocations but may provide compelling risk-adjusted returns following a downdraft. The overarching goal for portfolios is to maximize returns by taking the desired amount of risk while minimizing tracking error. Investors with more flexibility to make tactical decisions (e.g., those less constrained by targets for asset allocation or volatility) should know the history and do the math regarding how to improve their chances of success.

HOW TO PLAY OFFENSE?

There is a spectrum of ways in which investors can play offense. For many investors, rebalancing portfolios during a serious equity downturn is itself a serious challenge,¹ and thus a form of playing offense. As discussed in a companion piece, a general guideline for rebalancing might be rebalancing an underweight asset class to around midway between the outer limit of a policy range and the target allocation, striking a balance between valuation and momentum. The goal is to avoid having recency (or other behavioral) biases result in allocations that are below or at the low end of acceptable ranges for an extended period.

More aggressive forms of “playing offense” (which include rebalancing to higher weights than discussed above) may appeal to some investors that have sufficient liquidity² and appropriate governance, as well as tolerance for extended tracking error with policy portfolios. For these risk-tolerant investors, the right time to plan is now, rather than in the teeth of the downturn. Portfolios should be stress-tested to ensure they can meet spending requirements and liquidity needs during market downdrafts. Proactively lower intended commitments to illiquid assets if they are too high, and consider lining up backup financing sources. Having a plan to identify funding sources when playing offense or rebalancing is important. The obvious candidates are core fixed income allocations, presuming they have exhibited their traditional inverse correlation to risk assets and weights have risen above or to a high end of allowable ranges. Certain types of hedge funds should also be viewed as funding sources, assuming they too have experienced a lower correlation to risk assets and that terms or gates are not in place that restrict investor outflows.

1 Please see part 4 in the Managing Portfolios Through Equity Market Downturns series, Michael Salerno, “Behavioral Roadblocks,” Cambridge Associates Research Note, 2019.

2 Please see part 2 in the Managing Portfolios Through Equity Market Downturns series, Sean McLaughlin, “Portfolio Liquidity,” Cambridge Associates Research Note, 2019.

Having planned for potential liquidity needs and identified funding sources, investors that can tolerate meaningful tracking error should consider playing offense by opportunistically allocating to assets for which there are no formal policy weights. For example, while many investors will have detailed policies in place for maintaining equity allocations, policy descriptions for fixed income may be intentionally vague. Specifically, where portfolios lack existing exposure to credit, investors should have some familiarity with existing (and potential) sub-asset classes and vehicles, and given (then) current valuations be able to reasonably argue that their potential risk-adjusted returns will compare favorably to those of the candidates for underweighting.

VEHICLES FOR PLAYING OFFENSE

Depending on the asset class, investors may have a variety of instruments and vehicles through which they can play offense. Investors can quickly top up allocations to liquid assets (e.g., US equities) via vehicles like exchange-traded funds (ETFs) or increase commitments to commingled funds already in portfolios. Sell-offs also create an opportunity to upgrade manager rosters, so investors may want to have on hand a shortlist of managers across asset classes to which they desire access.

IMPLEMENTATION VEHICLES

	Derivatives	ETF	Mutual/ Commingled Fund	Hedge Fund	Private Fund
Speed of Implementation	High	High	High	Medium	Low
Access to Illiquid Assets	N/A	Low	Low/Medium	Medium	High
Manager Access	N/A	N/A	Varies	Varies	Varies
Alpha Potential	N/A	N/A	Low/Medium	Medium/High	High
Market Beta	High	High	High	Low/Medium	High
Cost	Low	Low	Low/Medium	Medium	High
Liquidity	High	High	High	Medium	Low

Source: Cambridge Associates LLC.

Derivatives can offer an elegant way to play offense, but effective implementation requires tight guidelines and specialized expertise. For example, an investor could design an ongoing put-selling program that would entail increasing index stock exposure at different price levels (e.g., -15%, -20%, etc.). These systematic options-based strategies can help automatically rebalance portfolios back to targets during downturns and avoid behavioral issues.

There are trade-offs. Selling put options requires keeping dry powder on hand to cover them, which can introduce tracking error and weigh on returns. During a sell-off, attractive opportunities may arise in asset classes other than the one on which options were sold; the result may be that investors add exposure to assets (e.g., US stocks) that held up well on a relative basis and thus to which they were already overweight. Buying call options while holding more cash magnifies some of these issues (e.g., tracking error) and creates behavioral risk. It may become tough to swallow paying soaring option premiums just as falling stock valuations make such options more likely to pay off.

Equity long/short (ELS) hedge funds may not be an ideal vehicle for rebalancing shrunken equity exposures during a market downturn. ELS hedge fund exposure to equities fluctuates, and as a group their average beta to the market is around 0.4 and rarely exceeds 0.6. Managers attempting to control volatility may in fact lower their equity exposure during sell-offs. While this can provide protection if markets fall further, it creates the risk that allocations to such funds will not help achieve the investor's desired equity exposure when markets recover. More generally, ELS funds face headwinds such as the lack of a meaningful short rebate during periods of low policy rates.

ROLLING 6-MONTH BETA OF LONG/SHORT HEDGE FUNDS TO GLOBAL EQUITIES

September 30, 2003 – June 30, 2019



Sources: Hedge Fund Research, Inc., MSCI Inc., and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

Notes: Data are based on daily total returns in USD terms. Long/short hedge fund and global equities data are represented by the Hedge Fund Research (HFRX) Equity Hedge Index and MSCI All Country World Index (Net), respectively.

Corrections in credit markets can be played by either hedge funds or long-only vehicles, depending on the sub-asset class in question. For example, certain parts of the structured credit market are hard to access via public open-ended vehicles given liquidity issues; hedge funds targeting these assets tend to have high betas to the underlying exposures. In contrast, investors can play technically driven sell-offs in asset classes like leveraged loans or high-yield bonds via mutual funds or ETFs, but situations where fundamentals are also weakening are best accessed via active managers. For these and other non-policy assets, the investor must be able to bear the tracking error of overweighting these versus an underweight like equities or ELS funds.

Closed-end private investment funds can offer access to potential manager alpha, as well as harder-to-access markets, but investors need to consider market technicals, such as how much dry powder is already allocated to these strategies. Distressed managers are currently sitting on \$72 billion of dry powder, and would likely raise more during a downdraft. Investors that funded distressed investments by reducing allocations to other assets where valuations had cheapened might be disappointed if funds were slow

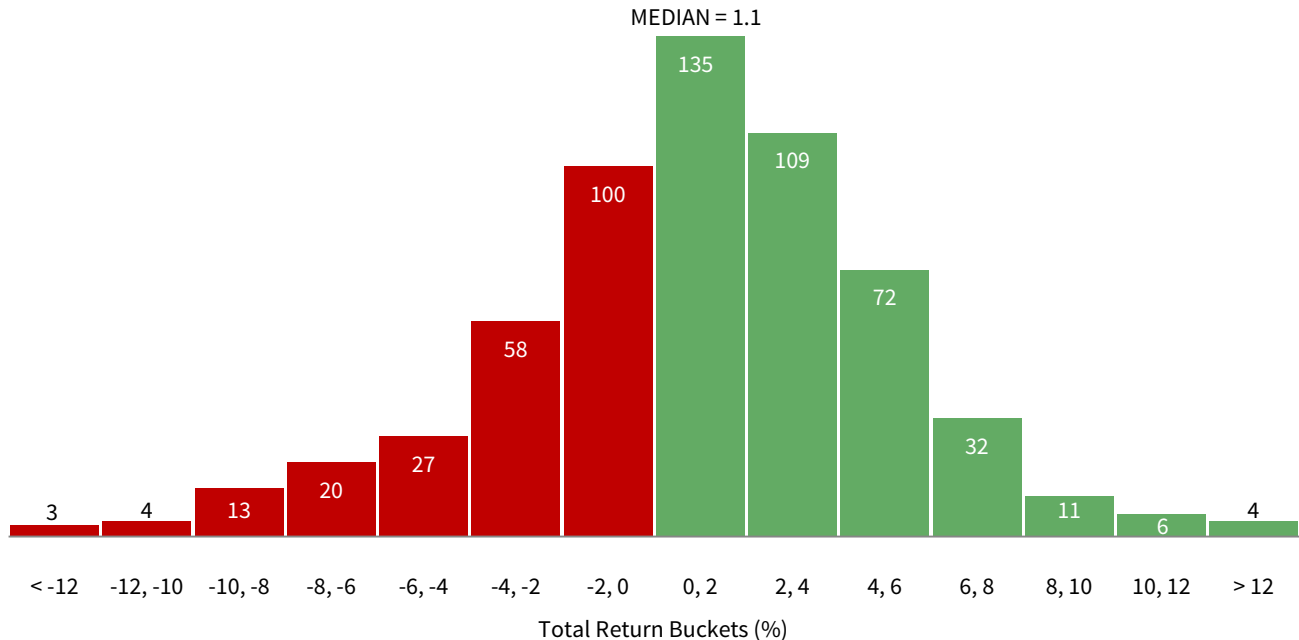
to put new money to work even as the opportunity set ebbed. Drawdown vehicles that promise not to call capital (and thus charge fees) until attractive opportunities present themselves are one possible solution, presuming the manager can be relied upon to draw capital at the right time (as well as wind down such vehicles in a timely fashion). Including so-called “triggers” (e.g., valuation levels at which capital will be drawn) in fund documentation can help mitigate these risks.

WHEN TO PLAY OFFENSE

Investors should be prepared to regularly rebalance, as drawdowns are a frequently occurring event. Since 1980, the median annual intra-year drawdown for the MSCI US Index is -10%, and many years (including 2018) see even deeper sell-offs. Playing offense (assuming you have the policy freedom and stakeholder support to do so) in the hopes of scoring an immediate gain may be disappointing, as historically there is little relationship between the size of an equity market drawdown and magnitude of the short-term recovery. But historical returns also speak to the potential costs of waiting too long after a sell-off to rebalance. The median monthly historical return for the MSCI US Index is around 1.1%, but the top ten individual months saw an average return of around 12.2%. Missing just these *ten months* would have dropped the annualized return on the index from 9.2% to 6.7%.

DISTRIBUTION OF HISTORICAL MONTHLY US EQUITY RETURNS

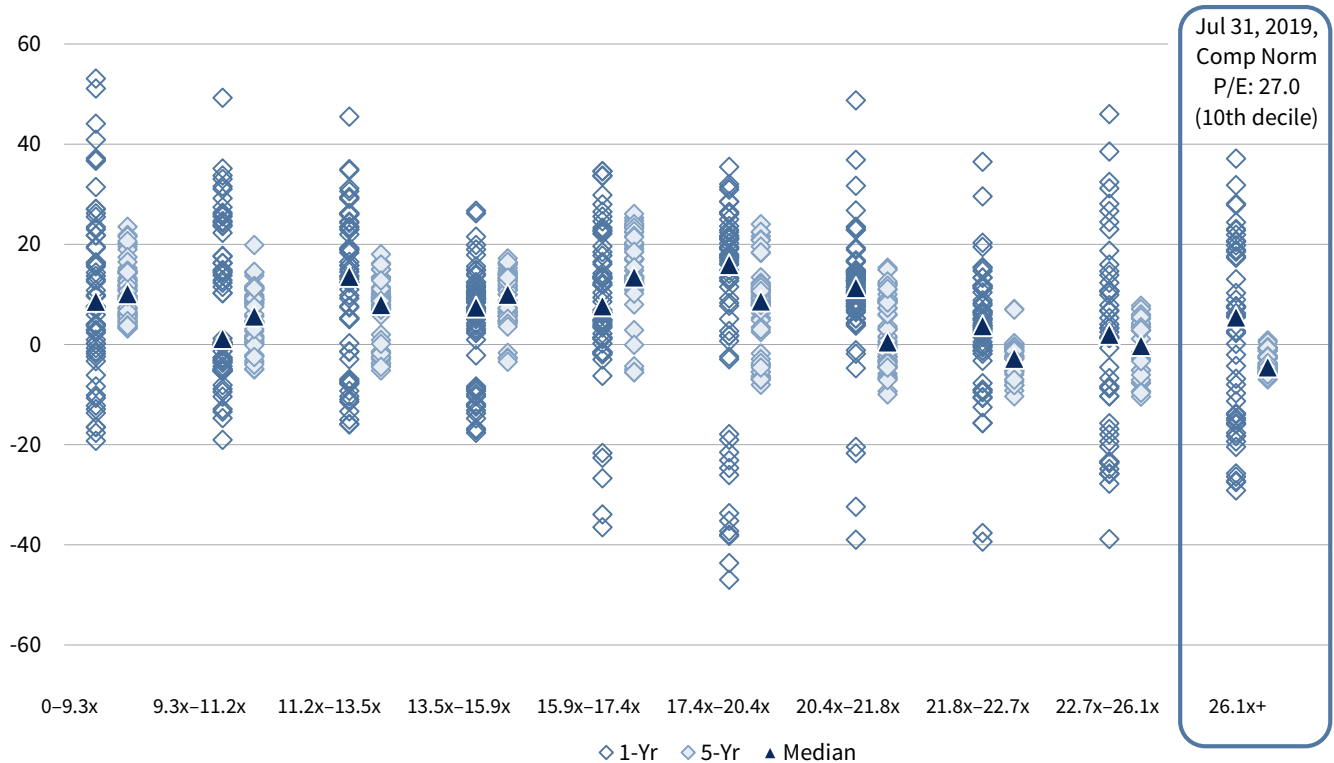
December 31, 1969 – June 30, 2019 • Number of Monthly Periods



Sources: MSCI Inc. and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.
 Notes: US equity represented by MSCI US Index total returns in USD terms. Total returns are net of dividend taxes.

While we advise against trying to time the market, investors can improve their odds of obtaining higher future returns by buying at the right valuations. But investors waiting for bargains in certain asset classes should also be realistic. Today's normalized P/E of 27x (as of July 31) for US stocks would need to drop by around 35% to fall back to the median historical P/E multiple (17x); there have only been a handful of declines near this level in the MSCI US Index in the past 50 years. Even waiting until valuations fall back to the 75th percentile is not much of a better bet, as the commensurate decline (a return of around -25%) has only occurred during 3% of all 12-month periods.

DISTRIBUTION OF SUBSEQUENT REAL RETURNS FROM STARTING COMPOSITE NORMALIZED P/E DECILES: US
 December 31, 1969 – July 31, 2019 • Subsequent Real Return AACR (%)



Sources: MSCI Inc. and Thomson Reuters Datastream. MSCI data provided "as is" without and express or implied warranties.

Note: The composite normalized price-earnings (P/E) is calculated by dividing the inflation-adjusted index price by the simple average of three normalized earnings metrics: ten-year average real earnings (i.e., Shiller earnings), trend-line earnings, and return on equity-adjusted earnings.

When deciding how quickly to rebalance during a sell-off, it is worth examining if the signaling power of valuations (which as implied above are often imprecise) can be enhanced by also looking at other signals. The utility of macro data varies across markets and time periods, but buying when stocks are inexpensive *and* when macro data (business confidence, PMIs, etc.) are depressed can help generate better results than solely relying on valuations. Macro data, like valuations, are also often mean-reverting (expansion follows contraction, and so on), in part because economic activity can't shrink forever and policymakers loosen monetary or boost fiscal stimulus when macro data are depressed.

Before assuming macro data will rebound and boost risky assets, investors should ask if anything may have changed. For example, while valuations for European banks looked attractive in the middle of 2016 and macro data looked abysmal, the remedy used by authorities (zero interest rates) combined with existing headwinds like higher regulation and elevated competition did not allow for an extended recovery. Similarly, the ability of authorities to stimulate through further interest rate cuts is now much in question, as base rates are already below zero in regions including the Eurozone, and many debate whether low interest rates are doing as much harm as good.

WHAT INVESTORS SHOULD DO NEXT

Investors should review existing policies regarding portfolio rebalancing and tactical asset allocation and ensure they have a strategy to play offense during the next downturn. This plan should lay out a reasonable timeframe over which the portfolio will be rebalanced and include an analysis of liquidity needs and possible funding sources. For investors that can tolerate meaningful tracking error and being wrong for a substantial period, being ready to play offense also entails an awareness of asset classes where there is no policy weight but where tactical opportunities may arise, such as credit, as well as an assessment of how existing and potential managers may adjust market exposures during and after sell-offs. Investors that have more discretion in playing offense should rely on valuations and a comparison of expected returns on the target asset class versus the potential funding source, but be realistic about trying to time the market. History suggests sell-offs are frequent and market snapbacks can be violent; returns can be front-loaded when sentiment changes. Depending on the asset class, investors are likely to have a choice of several different vehicles through which to add exposure. To the extent that investors will consider lock-up or drawdown vehicles, they should consider opportunity costs, dry powder already in that strategy, and whether the vehicle's tenor (the duration of the investment period and harvest period) matches the length of the expected opportunity. Derivatives programs can be an elegant way to force a portfolio to add risk during drawdowns but can entail high tracking error. ■



Wade O'Brien

Managing Director, Capital Markets Research

Brandon Smith also contributed.

INDEX DISCLOSURES

HFEX Equity Hedge Index

The HFEX Equity Hedge EUR Index is euro-denominated. Hedge Fund Research, Inc. uses a UCITSIII-compliant methodology to construct the HFEX Hedge Fund Indexes, including multi-level screening, cluster analysis, Monte Carlo simulations, and optimization techniques.

MSCI ACWI Index

The MSCI ACWI is a free float-adjusted, market capitalization-weighted index designed to measure the equity market performance of developed and emerging markets. The MSCI ACWI consists of 46 country indexes comprising 23 developed and 26 emerging markets country indexes. The developed markets country indexes included are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom, and the United States. The emerging markets country indexes included are: 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 the United Arab Emirates.

MSCI US Index

The MSCI US Index is designed to measure the performance of the large- and mid-cap segments of the US market. With 617 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in the United States.

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