REGIME CHANGE

February 2019

> "When there are multiple solutions to a problem, choose the simplest one."
>
> — **JOHN C. BOGLE**
> *The Little Book of Common Sense Investing*

About Northern Trust Asset Management

Northern Trust Asset Management is a global investment manager that helps investors navigate changing market environments, so they can confidently realize their long-term objectives.

Entrusted with more than $885 billion of assets,* we understand that investing ultimately serves a greater purpose and believe investors should be compensated for the risks they take — in all market environments and any investment strategy.

That's why we combine robust capital markets research, expert portfolio construction and comprehensive risk management to craft efficient solutions that deliver targeted outcomes.

northerntrust.com

THE PUZZLE

Read more

SUCCESS IS A MATTER OF PREPARATION MEETING OPPORTUNITY

Volatility has returned to risk asset markets and has investors asking: "Is this time different?"

THE PICTURES

Read more

CHANGE IS INEVITABLE — GROWTH IS OPTIONAL

Diversification is one way to offset the ever-present effects of individual market drivers — including rising rates, government shutdown or tariffs with China.

THE PROSPECT

Read more

STAY COMMITTED TO YOUR DECISIONS BUT FLEXIBLE IN YOUR APPROACH

As market volatility returns, it's critical to understand your risk capacity and risk preference.

* Assets under management as of December 31, 2018. For complete composition of Northern Trust Asset Management entities included in the AUM total, please see disclosure at end of this document.

THE PUZZLE

In mid-December, a private equity manager visited our Northern Trust offices to deliver a business update. That day, one of many in December, was marked with significant volatility in equity markets. As we got started, she shared her views on the recent market volatility, suggesting that she was actually pleased. Volatility, she noted, was an important part of the price discovery (determining the price of an asset between buyers and sellers) process which has been sadly lacking in the recent environment.

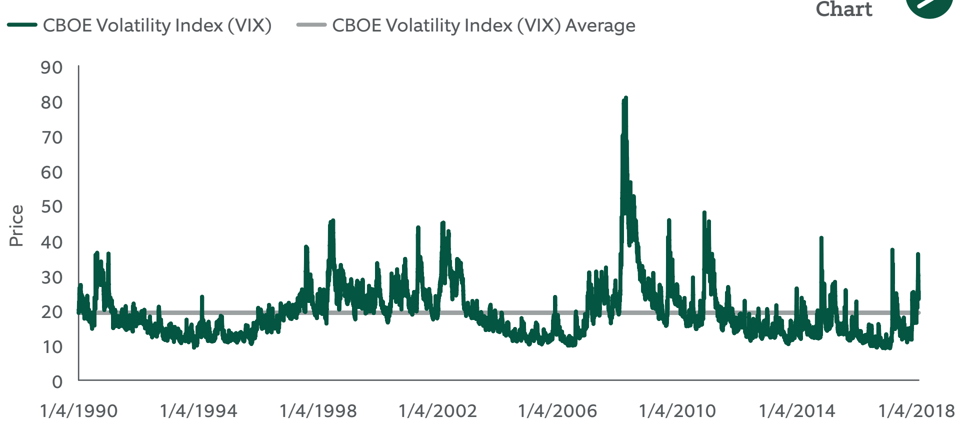
The reason her comments reverberated with our investment professionals was, as investors, we know that volatility plays a critical role in accurate, sustainable price discovery. Given volatile markets have been a relatively rare occurrence over the last few years, it was beneficial to have such an experienced person with a diverse background in addition to the private equity industry, working alongside Peter Lynch (Fidelity Magellan), as well as part of a successful hedge fund, acting as yet another voice of reason.

Are we in the midst of experiencing a full-blown regime change or is something else afoot?

This got our team thinking that it had been some time since portfolio volatility had taken a front row seat in client conversations. Prior to 2018, volatility had been taking on the characteristics of the 10-Year Treasury yield — moving steadily lower, until one felt as though it couldn't possibly go lower. It is clear that volatility has made a comeback and it is also worth noting that we have witnessed similar spikes in volatility a number of times in the post-crisis period (see Exhibit 1). So, with volatility now having firmly made its return, it is worth revisiting the question of how we think about it in terms of portfolio construction and asset allocation. Absent a "Powell put," investors are being reminded that well-constructed, multi-asset portfolios may be even more critical in our new, more volatile environment.

EXHIBIT 1: CBOE VOLATILITY INDEX (VIX)

Enlarge Chart



Source: Bloomberg; CBOE Volatility Index as of 1/3/2019.

While short-term market movements can be uncomfortable, the debate between buyers and sellers is a needed conversation through which we not only understand, but extract value from our investing and its related processes. The occasional repricing of risk, whether in a specific name or across a broad swath of asset types, is a necessary event for longer-term investors to accept.

However, if investors have not done the heavy lifting of separating Risk Capacity (objective view of an investor's financial capacity to bear losses without affecting lifestyle consumption) from Risk Preference (psychological assessment by the investor as to their ability to bear risk in relation to the expected return, or in relation to funding goals) — confusion may ensue, leading to poor investment choices being made at the wrong time. Our objective for this quarterly letter is to open a dialogue about volatility in the context of broader portfolio risks which may allow for a more robust set of options when constructing portfolios and offers investors who may find themselves on their heels given the current market environment, an opportunity to revisit their portfolio's foundational principles.

THE PICTURES

Not all asset classes are created equal. Diversification is the closest an investor can get to a free lunch.

EXHIBIT 2: ASSET CLASS RETURNS

Enlarge Chart

2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10-Year CAGR
EM Equities 79.0	Gold 29.7	TIPS 13.6	Global RE 29.8	U.S. Equities 32.6	Global RE 14.7	Municipals 3.3	Natural Res. 32.3	EM Equities 37.8	Cash 1.8	U.S. Equities 13.1
High Yield 58.8	Global RE 20.0	Municipals 10.7	EM Equities 18.6	Dev. ex-U.S. 21.6	U.S. Equities 13.4	U.S. Equities 1.3	High Yield 17.1	Dev. ex-U.S. 24.8	Municipals 1.3	High Yield 11.1
Global RE 41.3	EM Equities 19.2	Gold 10.2	Dev. ex-U.S. 17.0	Infrastructure 15.0	Infrastructure 13.0	Inv. Grade 0.5	Infrastructure 12.4	Natural Res. 22.7	Inv. Grade 0.0	Global RE 10.4
Natural Res. 36.1	EM Fixed 15.7	Inv. Grade 7.8	EM Fixed 16.8	60/40 12.7	Municipals 9.1	Cash 0.0	U.S. Equities 11.6	U.S. Equities 21.9	Global Fixed -1.2	EM Equities 8.4
Dev. ex-U.S. 34.4	U.S. Equities 15.4	Global Fixed 5.6	U.S. Equities 16.1	High Yield 7.4	Inv. Grade 6.0	Global RE -0.4	EM Equities 11.6	Infrastructure 20.1	TIPS -1.3	60/40 7.7
U.S. Equities 27.1	High Yield 14.9	High Yield 5.0	High Yield 15.8	Global RE 2.2	60/40 5.3	60/40 -0.7	EM Fixed 9.9	60/40 15.8	High Yield -2.1	Infrastructure 7.6
Infrastructure 25.3	60/40 11.1	U.S. Equities 2.0	Infrastructure 11.9	Natural Res. 1.5	TIPS 3.6	TIPS -1.4	Gold 8.6	EM Fixed 15.2	Gold -2.1	Dev. ex-U.S. 6.8
Gold 24.0	Natural Res. 11.0	Cash 0.1	60/40 11.9	Cash 0.0	High Yield 2.5	Dev. ex-U.S. -2.6	60/40 6.3	Global RE 15.0	U.S. Equities -4.5	Municipals 4.8
60/40 23.5	Dev. ex-U.S. 9.4	Infrastructure -0.4	Natural Res. 7.2	Inv. Grade -2.0	Global Fixed 0.6	Global Fixed -3.2	TIPS 4.7	Gold 13.7	60/40 -5.2	Gold 3.8
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Municipals 12.9	TIPS 6.3	EM Fixed -1.8	Gold 7.0	Municipals -2.6	Gold -1.5	Gold -10.5	Dev. ex-U.S. 3.3	Global Fixed 7.4	EM Fixed -6.2	Inv. Grade 3.5
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Global Fixed 6.9	Global Fixed 5.5	Dev. ex-U.S. -11.8	Global Fixed 4.3	TIPS -8.6	Dev. ex-U.S. -3.9	EM Equities -14.6	Global Fixed 2.1	Inv. Grade 3.5	Natural Res. -12.6	Natural Res. 3.1
Inv. Grade 5.9	Municipals 2.4	Natural Res. -14.9	Inv. Grade 4.2	EM Fixed -9.0	EM Fixed -5.7	EM Fixed -14.9	Cash 0.3	TIPS 3.0	Dev. ex-U.S. -13.6	Global Fixed 2.5
Cash 0.1	Cash 0.1	EM Equities -18.2	Cash 0.1	Gold -28.3	Natural Res. -9.7	Natural Res. -24.0	Municipals 0.2	Cash 0.8	EM Equities -14.2	Cash 0.3

Source: Northern Trust Investment Strategy, Bloomberg. Gross total returns in USD. Year-to-date column through 12/31/2018. Indices shown are preferred Investment Policy Committee proxies; 60/40 = 60% MSCI ACWI and 40% Barclays US Agg Bond Index; risk-control assets in shades of green; CAGR = Compound Annual Growth Rate (trailing 10 years through 12/31/2018).

continued

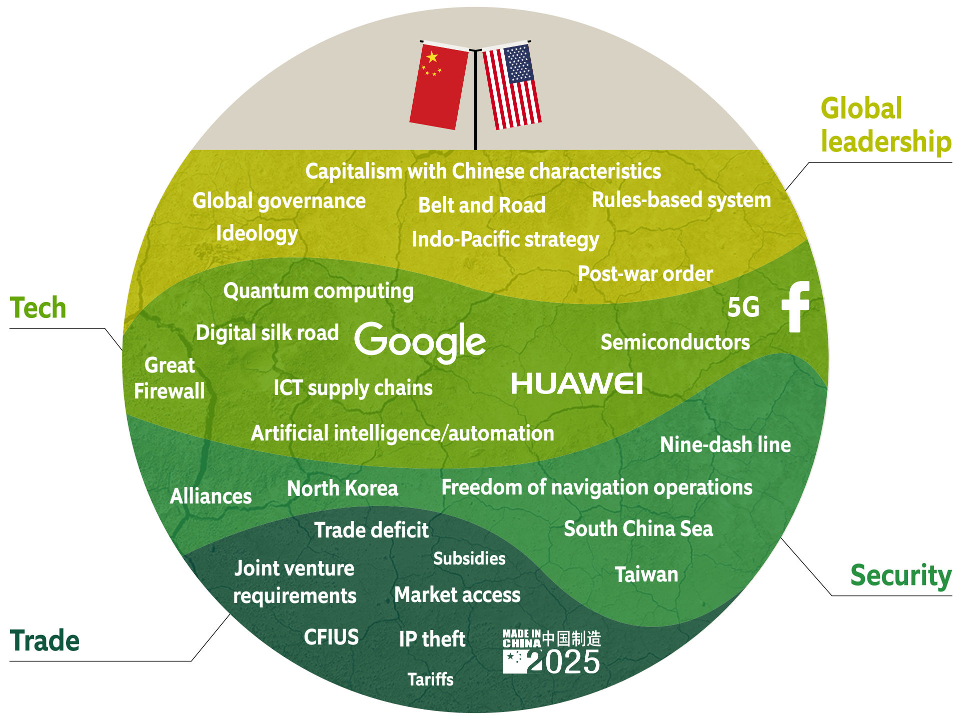
THE PICTURES

Many complex risks, such as China/U.S. tensions, are driving market volatility.

Getting Risk Capacity and Preference right ensures you don't miss the days that materially matter.

EXHIBIT 3: THE MANY LAYERS OF CHINA/U.S. TENSIONS

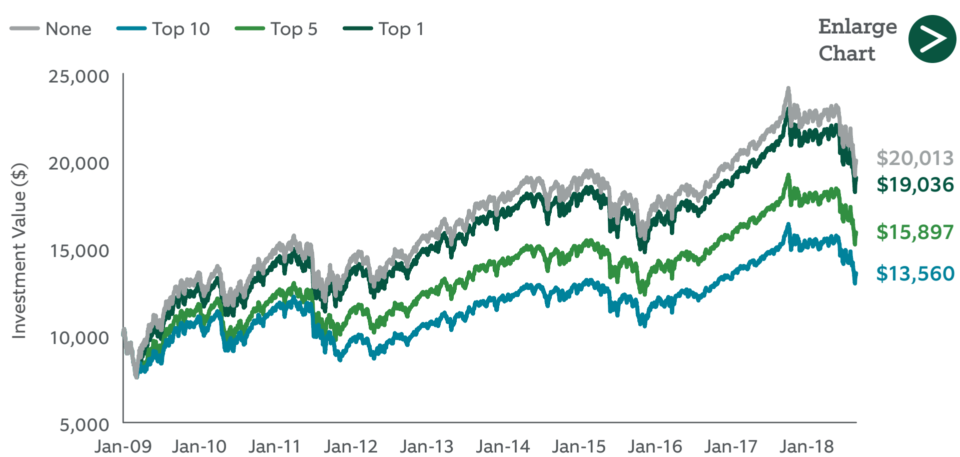
Enlarge Chart



Source: Eurasia Group — Top Risks 2019.

EXHIBIT 4: GLOBAL EQUITY RETURNS — TOP-PERFORMING DAYS REMOVED

Enlarge Chart



Source: Northern Trust, Bloomberg. Data from 12/31/2008 through 12/31/2018. MSCI ACWI Index represents global equity.

THE PROSPECT

The word prospect suggests: "the possibility or likelihood of some future event occurring." In our final section this quarter, we aim to unpack ways in which we might help guide investors toward successful outcomes that are based on Risk Capacity and Risk Preference.

The goal is to think about how current market conditions may or may not be different, whether investors should take this opportunity to reprioritize their various preferences, or if there is a case for a broader market concern. Finally, we aim to help guide investors to a place where context and data help to provide greater clarity when making decisions, both today and on a going forward basis.

A quick recap of our definitions may be a helpful place for us to start.

"Risk Capacity" is the financial capacity to bear losses without affecting lifestyle consumption. The portfolio associated with risk capacity is the lowest risk portfolio that can fund lifestyle with no expected shortfall (sufficiency). In other words, the portfolio with either a large portfolio reserve or one that statistically suggests the asset mix will maintain positive sufficiency. Risk capacity is more objective and far easier to identify than risk preference, as it depends on the investor's assets, liabilities and ultimately their goals.

"Risk Preference" tends to be less objective and more subjective — thus not always in alignment with the more objective, Risk Capacity, decision. Risk Preference is the client's view as to their ability to bear risk in relation to their expected return, or in relation to funding goals. As we already noted, risk has many dimensions. In particular, risk has more dimensions when goals or other types of targets are also considered. We commonly think of risk aversion or risk tolerance as "risk preference."

For most of the post-crisis period, investors have not had to focus on risk preferences due to lower levels of volatility and the relatively short time frames in which risk assets had rebounded — often making new highs. Concurrently, over the same time frame, Risk Capacity levels were never seriously threatened for any sustained period of time.

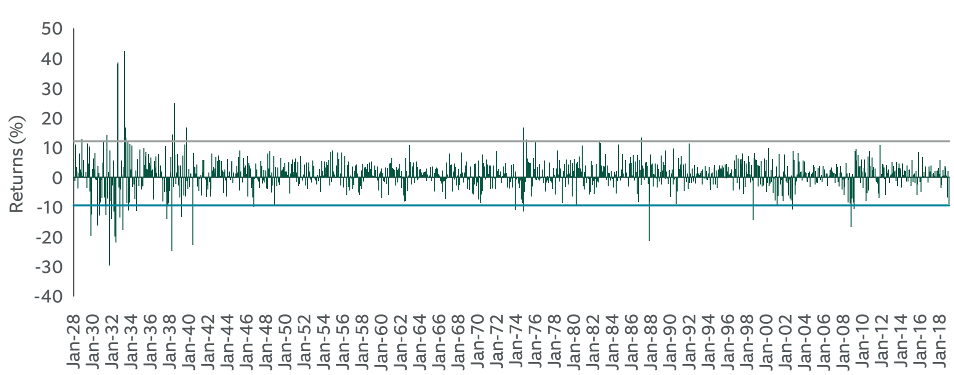
As we move into 2019, the notable return of risk asset volatility has investors asking if this time is different or whether we are experiencing a regime change in those asset types. This is understandable given investors have experienced nearly nine years of positive equity markets, along with a very accommodative monetary policy resulting in record low interest rates. The interest rate environment is the by-product of both highly active central bank policy makers and low levels of inflation on a global basis. (For a useful discussion of this issue see Dan Alpert's book, *The Age of Excess*).

When we look more closely at return streams over time, we see only modest deviations from long-term return series, even though most investors today believe they have achieved truly unique market returns (see Exhibit 5).

EXHIBIT 5: MONTHLY RETURNS OF S&P 500

January 1928 through December 2018

Enlarge Chart



Source: Northern Trust Research; Bloomberg; Standard & Poor's — S&P 500 Index.

continued

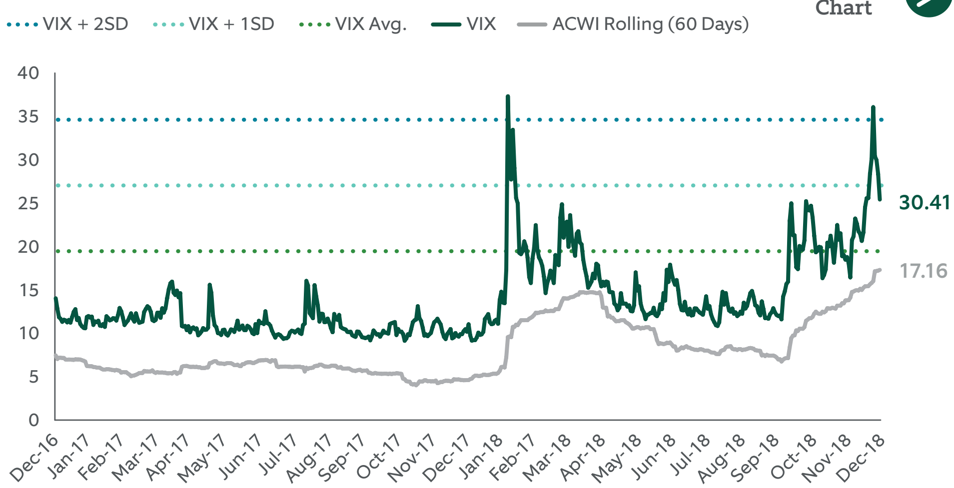
THE PROSPECT

So, while recent returns have been relatively normal, the environment in which we achieved them has been slightly less volatile than the longer-term data series would suggest. This is meaningful because as we know from behavioral finance, investors tend to have many biases. One of the more significant biases that investors display is near-term anchoring; in which individuals assume the most recent historical period represents what should be expected going forward. This bias tends to be one of the more powerful and observable behaviors displayed when we see such dramatic, short-term moves in markets.

For years we have been suggesting to clients that questions around portfolio- or asset-specific risk are deeply contextual, as it also is when it comes to discussions around volatility.

EXHIBIT 6: U.S. EQUITY MARKET VOLATILITY

Enlarge Chart



Sources: Northern Trust Research, MSCI, CBOE and Morningstar. Implied volatility is represented by the VIX of S&P 500 index options and 60-day rolling volatility is measured by the annualized standard deviation of the MSCI ACWI. SD is annualized daily standard deviation.

As clearly illustrated in the above chart (Exhibit 6), equity volatility in the fourth quarter of last year materially increased, relative to what investors experienced in 2017, thus signaling the aforementioned regime change. We would observe that the first leg of this move, from October to early December, as a potentially healthy development, signaling that global risk markets are becoming less tethered to Central Bank stimulus or reliant on the long banked "Bernanke/Yellen/Powell Put."

December's reaction to the recent U.S. Federal Reserve Bank meeting was also indicative of a return to normalized risk measuring; while markets sold off, they didn't plunge, and the day after suggested that the uptick in volatility and the accompanying decrease in the U.S. Treasury 10-Year yield were rational moves that saw investors taking risk off the table or reorganizing various risk-taking in anticipation of slower global growth. This has been most recently outlined in Northern Trust's piece, titled *2019 Outlook — First to Neutral.*

continued

THE PROSPECT

A threshold for a stressed market may be defined as -15% from peak value based on history (a 1.6 standard deviation event).

Global equity (MSCI ACWI) is -17% from its January 2018 peak (at 12/26/18 close).

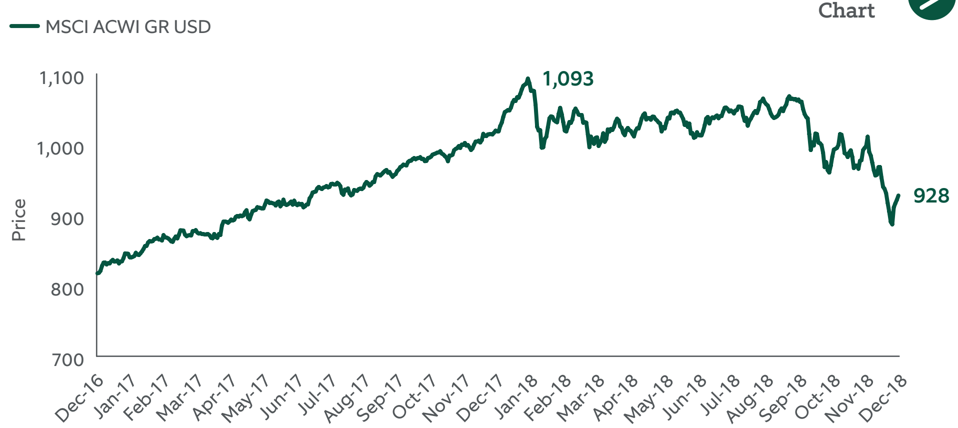
Investors are now asking themselves another question given the current volatile markets:

Should we reprioritize our Risk Preferences or should we be more concerned about the potential return of structural market issues and stick to our original, grounded basis of our current allocation — Risk Capacity?

Recent market moves suggest that we have — from a statistical perspective — crossed the line into what some may describe as stressed market conditions (Exhibit 7). However, the data suggests that recent moves in risk assets have more to do with near- to middle-term economic indicators such as the recent China PMI data, U.S. Durable Goods and European inflation data, most of which suggest a slowdown back to what Northern Trust believes is slower channel growth. In this context, one might see the retreat from new highs achieved earlier in 2018 to new multi-year lows in late 2018 as a recalibration of return expectations rather than any signal of significant structural issues that may lead to a continuation in downward market pressure.

EXHIBIT 7: MSCI ACWI RETURNS

Enlarge Chart



Sources: Northern Trust Research, MSCI and Morningstar. Daily closing price of the MSCI ACWI GR USD. Data as of December 31, 2018.

TWO LENSES

As we discussed in our last paper, **Principals,** there are multiple ways in which family offices conceptualize risk. Northern Trust's work in goals-driven investing suggests a more nuanced way for clients to think about our long-held distinction between risks that clients have to take and those that they are willing to take — Risk Capacity and Risk Preference.

The reasons we are revisiting this concept in the context of volatility is that we know it makes a material difference in decision-making when it comes to both initial portfolio construction and its ongoing maintenance and monitoring — especially as one approaches the recent bouts of market volatility.

continued

THE PROSPECT

Traditionally asset managers and wealth advisors to family offices have relied on the "Asset Allocation" or "Asset Only" lens to help guide them and their client through the process of discussing and deciding on an investment objective for an investment program. The outcome and steps of this kind of work are shown below:

Select a portfolio from the frontier with the preferred return-to-risk profile;

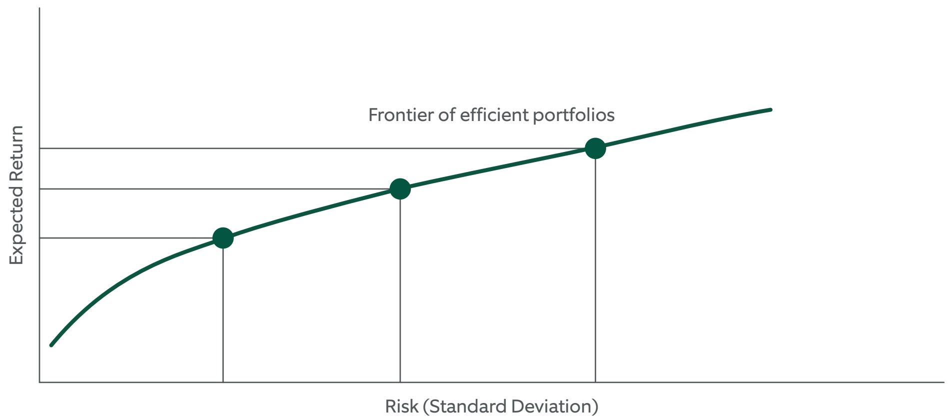
Set your investment objective and stay the course, rebalancing to target allocations; and

Modify strategic allocation targets modestly utilizing tactical changes where alpha opportunities appear to be most likely.

EXHIBIT 8: RISK-BASED ASSET ALLOCATION (ASSET-ONLY)

Strategic asset allocation with optional tactical overlays

Enlarge Chart



For illustrative purposes only.

A portfolio that is more goal- or liability-driven suggests a path that looks to incorporate alternative ways in which to manage through episodic volatility or stressed market scenarios in ways that ensure investors "stay on track" as it pertains to their investment objective(s). The process and the outcomes are potentially quite unique.

Start by identifying risk capacity; then modify to risk preference;

Manage to the goal- or liability-aligned target;

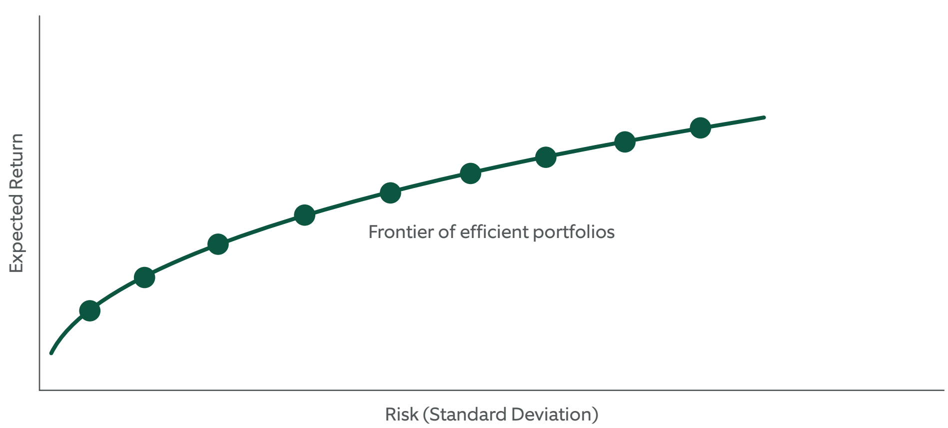
In distressed markets utilize predetermined asset pools — otherwise stay the course; and

Adapt by revisiting asset types, goals and risk preferences when conditions stabilize.

EXHIBIT 9: GOALS-BASED ASSET ALLOCATION (ASSET-LIABILITY)

Goal-aligned portfolio with Portfolio Reserve management

Enlarge Chart



For illustrative purposes only.

continued

THE PROSPECT

It has most certainly been the case that late Q4 2018 will have marked a regime change of sorts. The specifics as to this increase have yet to fully reveal themselves, however, this event has left us with a number of useful lessons. With monetary policy in the U.S. having made significant strides toward "normalization," we should not be surprised to find risk market assets also returning to the kinds of characteristics with which we have been more historically familiar.

The recent market conditions should provide a unique opportunity to check one's risk preferences against one's risk capacity. If there has been an uncomfortable conflict between these two views, perhaps a reprioritization of interests in one's portfolio is up for discussion. If not, perhaps the recent reorganization of risk markets presents an opportunity. This is for each investor to decide.

CONCLUSION AND OBSERVATIONS

While some statistical measures of risk have moved toward more challenging market conditions over the short term — the underlying fundamentals suggest that the markets may just be slowing to a more normalized lower growth channel, which is reasonable given the virtually, uninterrupted move up in global risk asset prices over the last nine years.

Use the current, more volatile market environment, not as an opportunity to panic and make short-term trading decisions, but as an invaluable opportunity to step back and make sure that your portfolio is built around the lens of Risk Capacity (taking only the amount of risk necessary to achieve risk/return goals) and then make needed adjustments through the more personal lens of Risk Preferences.

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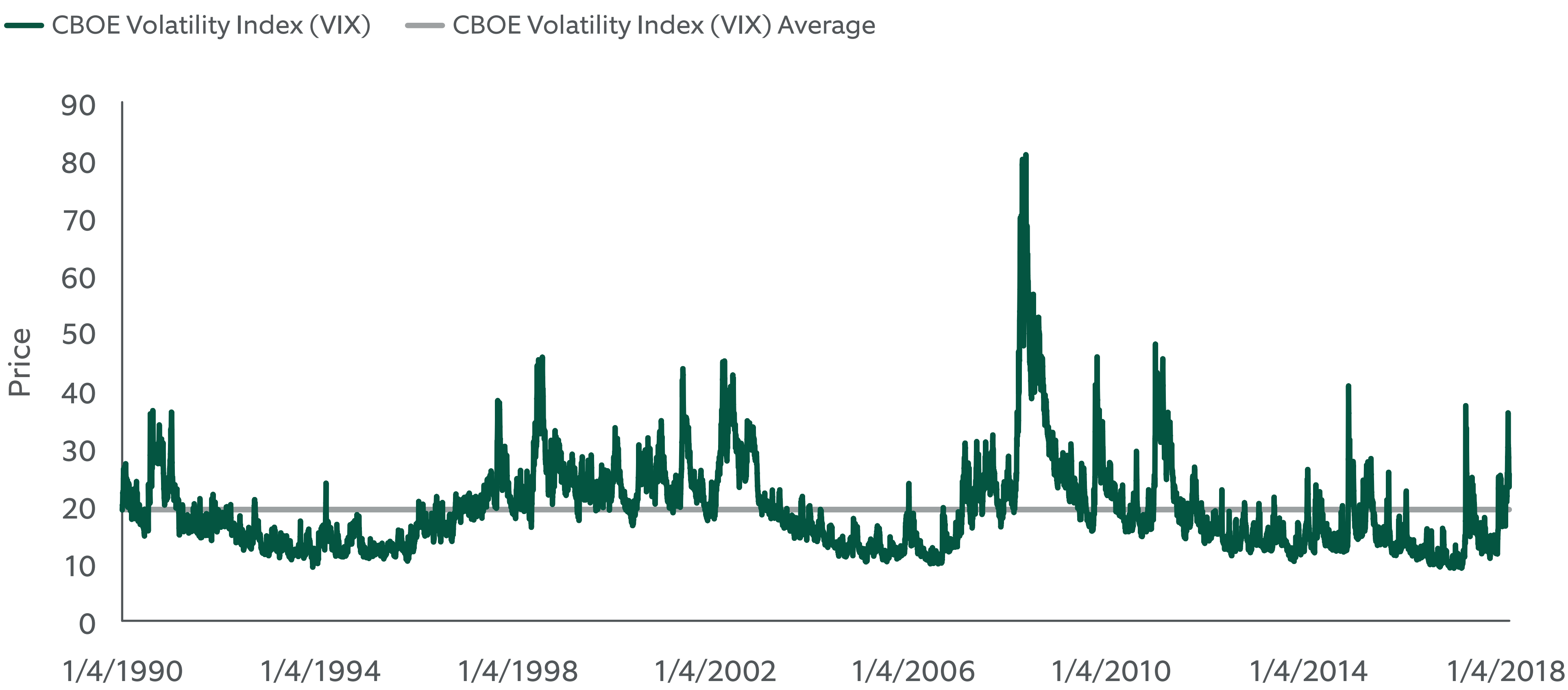
Northern Trust Asset Management is composed of Northern Trust Investments, Inc. Northern Trust Global Investments Limited, Northern Trust Global Investments Japan, K.K., NT Global Advisors Inc., 50 South Capital Advisors, LLC and investment personnel of The Northern Trust Company of Hong Kong Limited and The Northern Trust Company.

APPENDIX

EXHIBIT 1: CBOE VOLATILITY INDEX (VIX)

Go back



Source: Bloomberg; CBOE Volatility Index as of 1/3/2019.

APPENDIX

EXHIBIT 2: ASSET CLASS RETURNS

Go back

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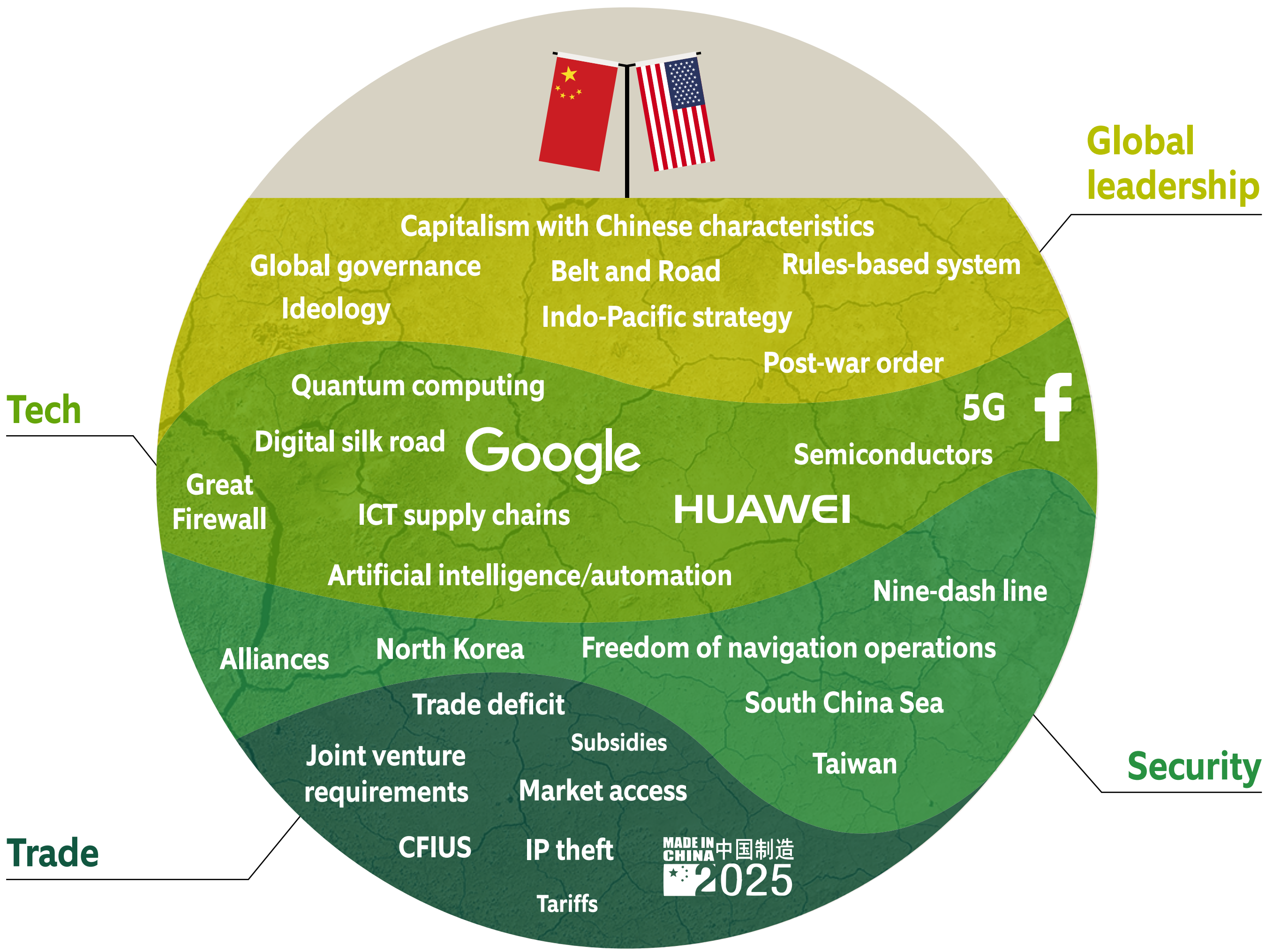
Inv. Grade 5.9	Municipals 2.4	Natural Res. -14.9	Inv. Grade 4.2	EM Fixed -9.0	EM Fixed -5.7	EM Fixed -14.9	Cash 0.3	TIPS 3.0	Dev. ex-U.S. -13.6	Global Fixed 2.5
Cash 0.1	Cash 0.1	EM Equities -18.2	Cash 0.1	Gold -28.3	Natural Res. -9.7	Natural Res. -24.0	Municipals 0.2	Cash 0.8	EM Equities -14.2	Cash 0.3

Source: Northern Trust Investment Strategy, Bloomberg. Gross total returns in USD. Year-to-date column through 12/31/2018. Indices shown are preferred Investment Policy Committee proxies; 60/40 = 60% MSCI ACWI and 40% Barclays US Agg Bond Index; risk-control assets in shades of green; CAGR = Compound Annual Growth Rate (trailing 10 years through 12/31/2018).

APPENDIX

EXHIBIT 3: THE MANY LAYERS OF CHINA/U.S. TENSIONS

Go back

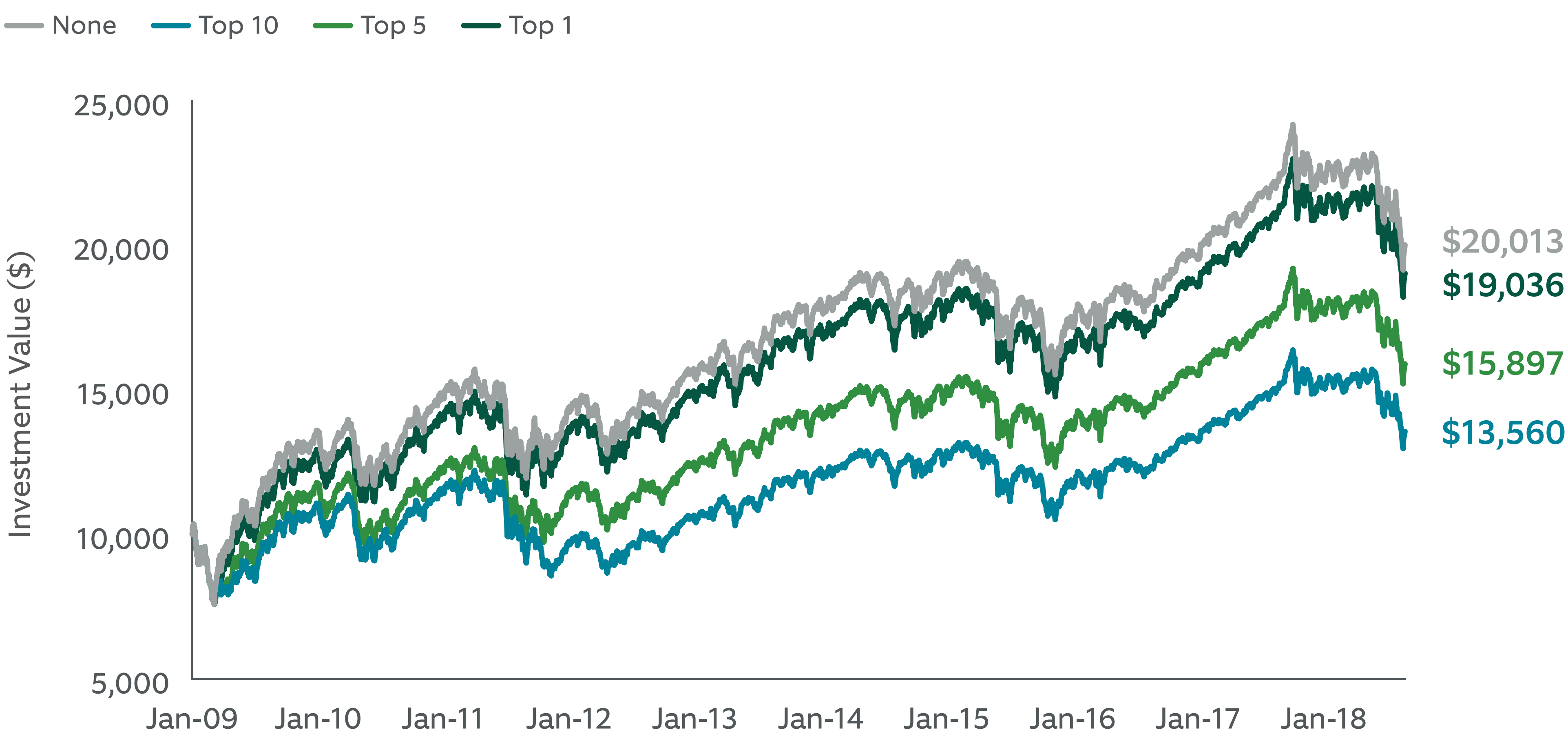


Source: Eurasia Group — Top Risks 2019.

APPENDIX

EXHIBIT 4: GLOBAL EQUITY RETURNS — TOP-PERFORMING DAYS REMOVED

Go back



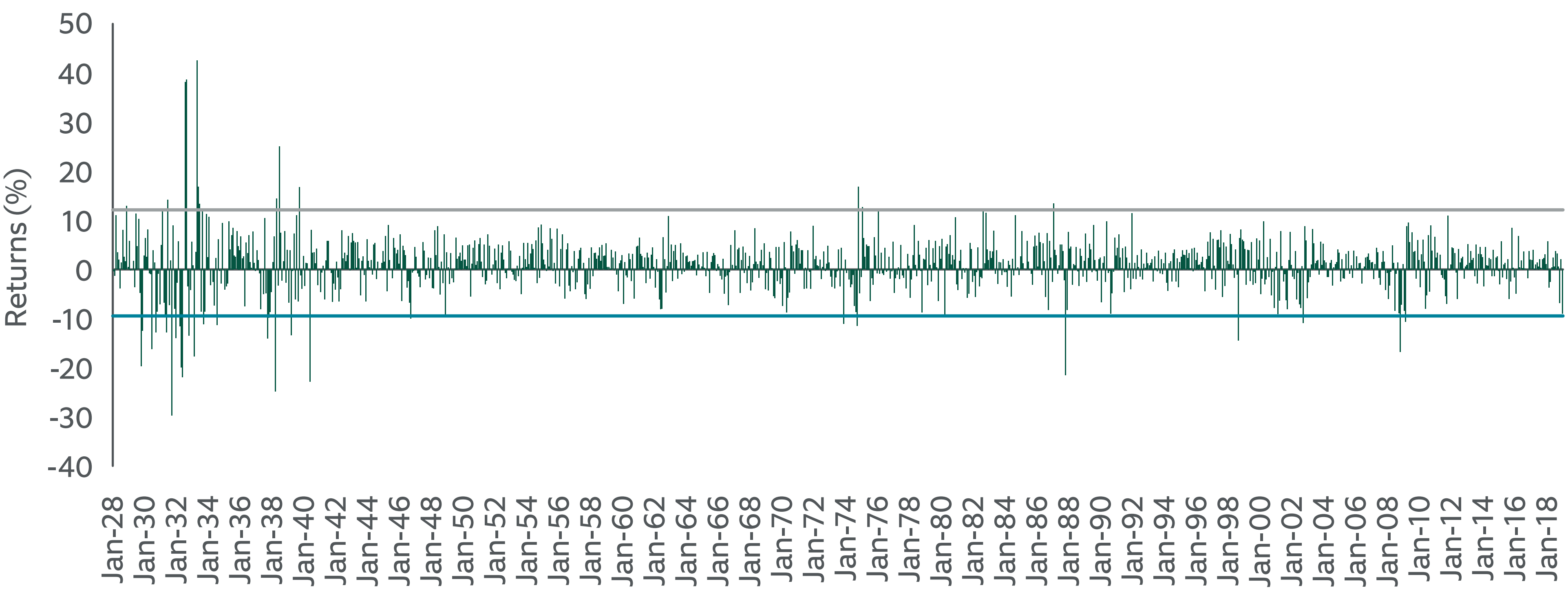
Source: Northern Trust, Bloomberg. Data from 12/31/2008 through 12/31/2018. MSCI ACWI Index represents global equity.

APPENDIX

EXHIBIT 5: MONTHLY RETURNS OF S&P 500

Go back

January 1928 through December 2018

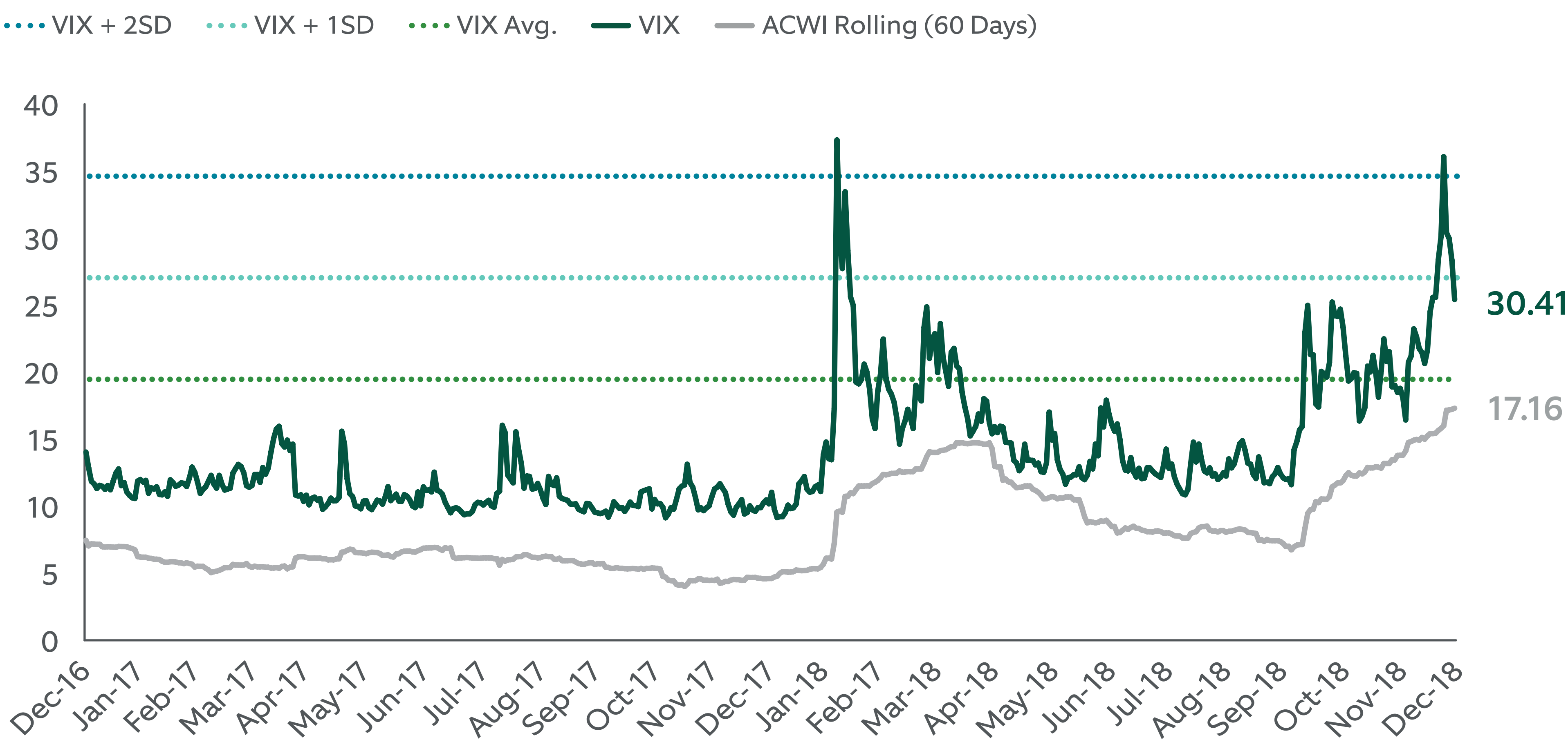


Source: Northern Trust Research; Bloomberg; Standard & Poor's — S&P 500 Index.

APPENDIX

EXHIBIT 6: U.S. EQUITY MARKET VOLATILITY

Go back

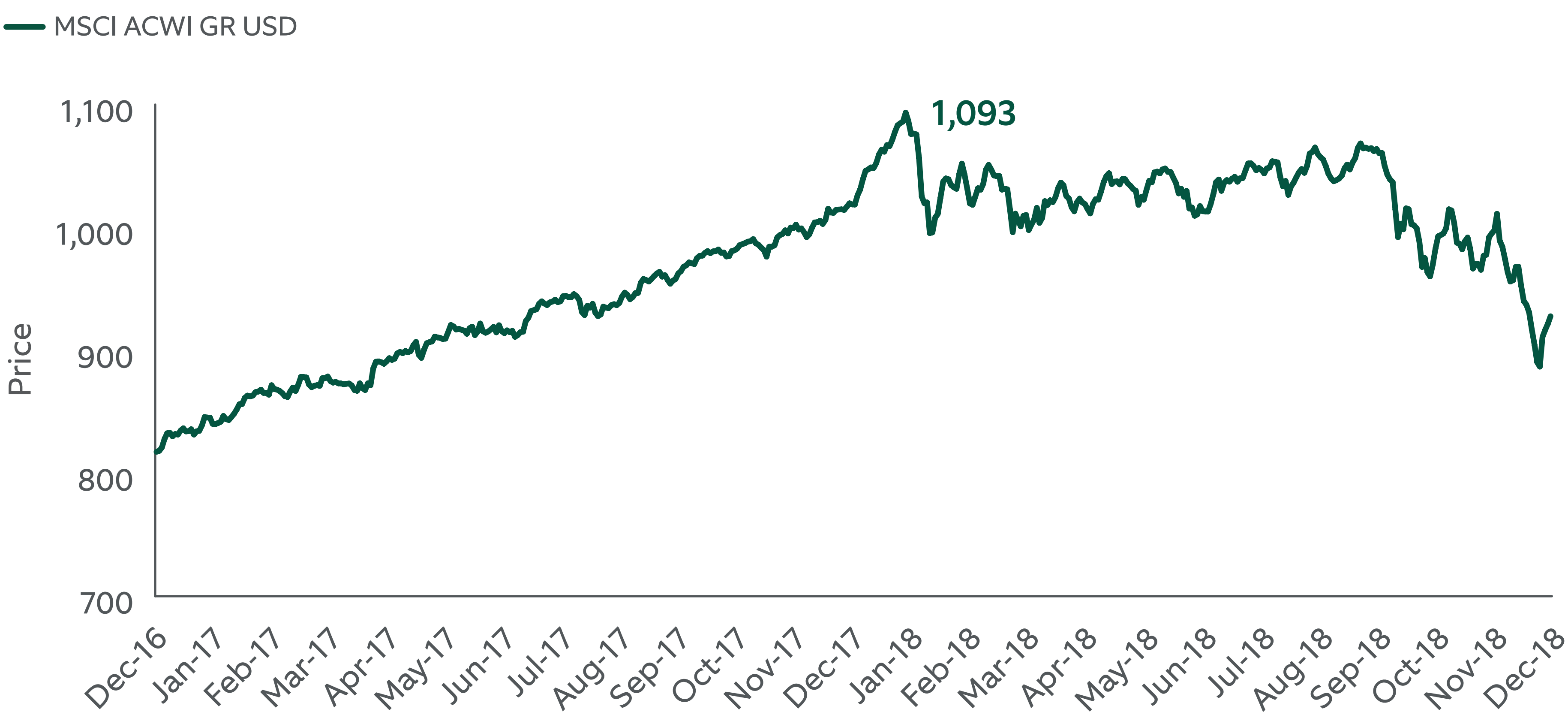


Sources: Northern Trust Research, MSCI, CBOE and Morningstar. Implied volatility is represented by the VIX of S&P 500 index options and 60-day rolling volatility is measured by the annualized standard deviation of the MSCI ACWI. SD is annualized daily standard deviation.

APPENDIX

EXHIBIT 7: MSCI ACWI RETURNS

Go back



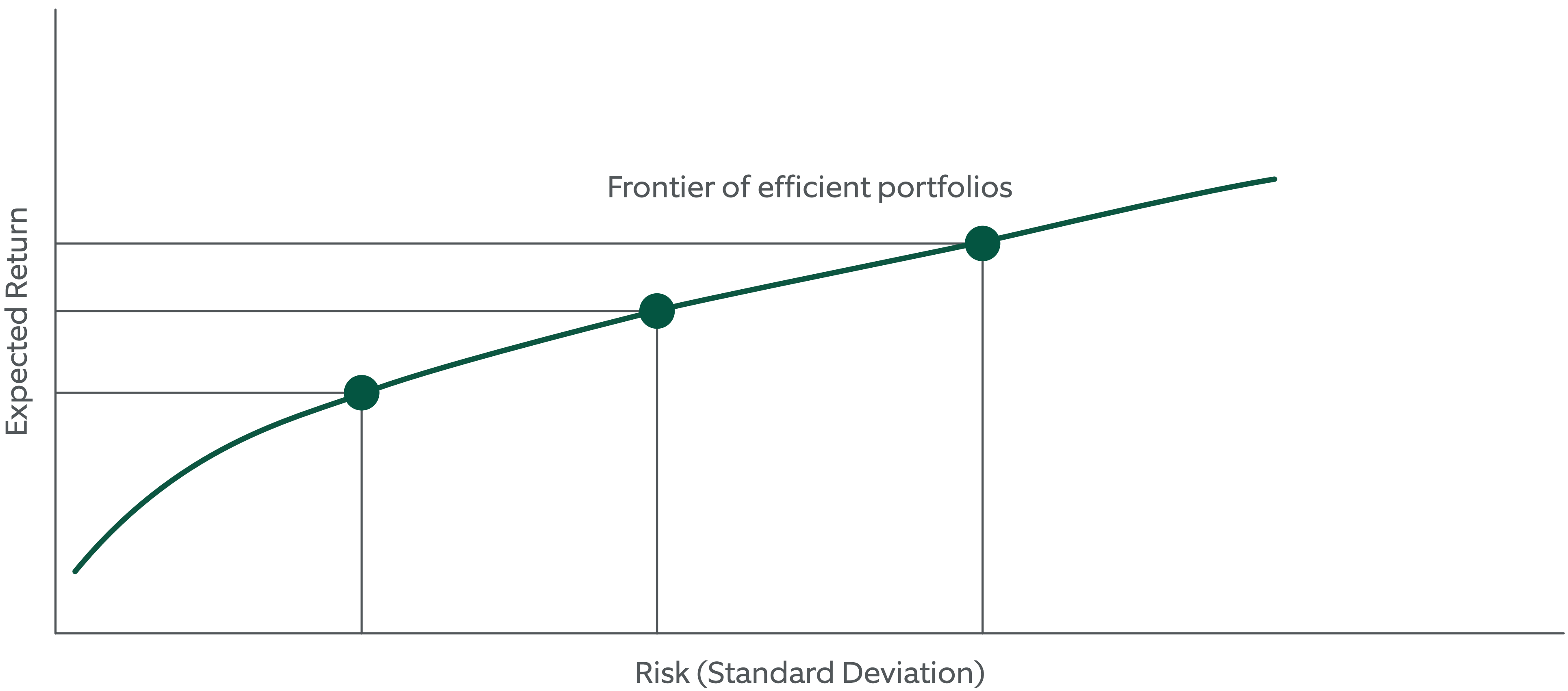
Sources: Northern Trust Research, MSCI and Morningstar. Daily closing price of the MSCI ACWI GR USD. Data as of December 31, 2018.

APPENDIX

EXHIBIT 8: RISK-BASED ASSET ALLOCATION (ASSET-ONLY)

Go back

Strategic asset allocation with optional tactical overlays

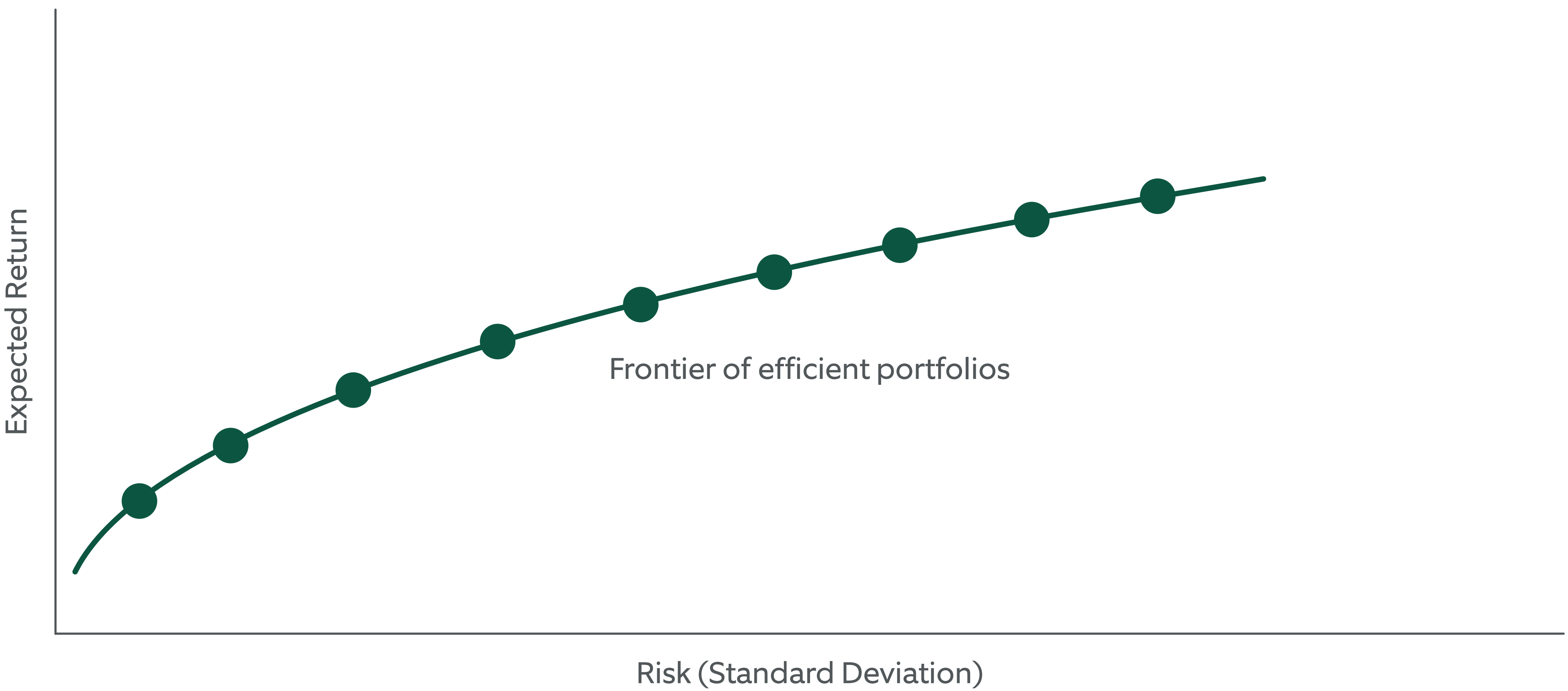


For illustrative purposes only.

EXHIBIT 9: GOALS-BASED ASSET ALLOCATION (ASSET-LIABILITY)

Go back

Goal-aligned portfolio with Portfolio Reserve management



For illustrative purposes only.