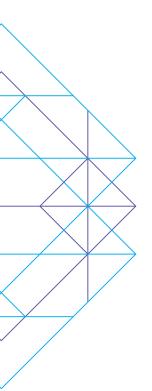


May 2025 Exceptional Expectations: U.S. vs. Non-U.S. Equities

Understanding Return Expectations, Part 2



Executive Summary

In recent years allocators to global equities have faced the conundrum of how to respond to persistent US outperformance. Some serenely maintained market cap weights despite ever more extreme relative valuations, others pursued the contrarian view implied by yield-based expected returns, and yet others gave up entirely on the rest of the world, as the US seemed so strongly placed to foster technological innovation, earnings growth and investor returns.

We address this highly topical regional question by analyzing the drivers of relative performance—in particular the different roles of fundamentals and valuations—and assessing the most likely implications for future returns.

Antti Ilmanen

Principal and Global Co-Head of Portfolio Solutions Group

Thomas Maloney

Managing Director, European Head of Portfolio Solutions Group The authors thank colleagues for comments as well as Dahlquist-Ibert (2025) and Dimson-Marsh-Staunton (2025) for the use of their data. There is much policy-related turmoil in equity markets as we write this in early 2025. We do not opine here on these events, but the long-run context we provide suggests that recent extremely stretched relative market valuations made the US vulnerable to a relative reversal even with the smallest catalyst – and US underperformance might persist for years rather than weeks.

Introduction

Part 2 of this series cuts straight to a very topical investment decision: the allocation between US equities and the rest of the world, mainly focusing on developed markets.

US equities outperformed other markets in the 1990s, and the 15 years from 2009 to 2024. The prolonged latter episode reinforced a belief in US exceptionalism (tied to entrepreneurial culture, market-friendly institutions, etc.) and led many investors (especially home-biased US ones) to ask whether they should bother with international diversification when it seemed to be such a return drag. Big names like Warren Buffett and John Bogle have been proud US-only proponents, and this view has paid off.

There are several counterarguments. We show that US outperformance since 1990 primarily reflects richening relative valuations.¹ By the end of 2024, relative valuations were at a historically extreme level, and we argue that some mean reversion is a sounder assumption than extrapolation of further richening.²

Moreover, while many investors do not have first-hand memories of the pre-GFC investment landscape, they should know that the US has underperformed the rest of the world for extended periods, for example the decades of 2000s, 1980s, and 1970s. That said, the US *has* enjoyed an average return and growth edge over the past 50 or 100+ years—though not as large as implied by recent valuations. We suspect that the recent high valuations and predicted abnormal growth edge partly reflect investors mistaking the richening-driven return outperformance for growth-driven outperformance (which would be more reasonable to extrapolate).

We acknowledge that in the past decade, valuation-based capital market assumptions (CMAs) have given too pessimistic forecasts on absolute and relative US market performance. But we also show that over longer histories such CMAs have been more often right than wrong, while rearview-mirror expectations (extrapolating the past decade's relative performance) have hurt investors. An investor's current view on US versus the rest is a Rorschach test on whether they care more about one recent observation or longer-term statistical evidence.

We also briefly discuss diversification and luck arguments, and the implications of US "Magnificent Seven" and tech edges and America First economic policies.

¹ Using MSCI data, the 35-year outperformance to December 2024 was 4.7.% p.a. Relative valuation change contributed 3.8%, real EPS growth edge 1.1%, dividend yield differential -0.6%, and real interest rate differential -0.3%. Exhibit 4 below shows similar decompositions for other windows and also for dividend-based decompositions with Dimson-Marsh-Staunton data.

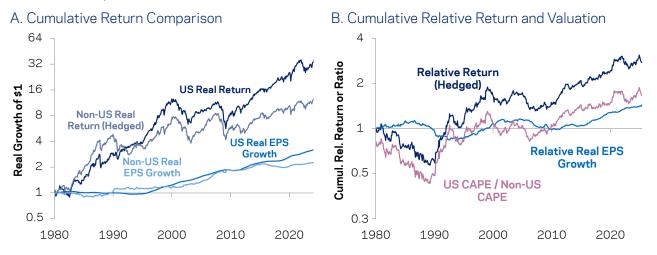
² Of course, this is not a new debate. The pro-diversification literature includes Asness-Israel-Liew (2011) who show global diversification helps over long horizons, and Dimson-Marsh-Staunton (2021) who explore the role of luck, with the US being on the winning side of world wars and the cold war and its related economic competition, and having no wars on its own soil, revolutions or hyperinflations. Asness-Ilmanen-Villalon (2023) find that most of US outperformance since 1990 reflects relative CAPE valuation increase.

Historical Evidence on US Return Edge, Growth Edge, and Valuation Changes

Exhibit 1A shows cumulative returns and earnings growth for US and Non-US developed markets since 1980. On both metrics, the US has left the rest of the world in the dust since the GFC. **Exhibit 1B** displays cumulative relative returns, relative earnings growth and relative valuation changes. The dark blue line shows that while US outperformed Non-US over the full period, it underperformed in the 1980s and 2000s. The US edge is not iron-clad.^{3, 4}

The other two lines in **Exhibit 1B** show that relative performance evolves very closely with relative valuation, but is also positively correlated with relative earnings growth. Both drivers matter, but valuations matter more. Let's focus on the relative valuation series (pink line). The US CAPE (cyclically-adjusted price-to-earnings) ratio was less than half the Non-US CAPE in the late 1980s, at the peak of the Nikkei bubble when Japanese valuations were very high and Japan had a large weight. Valuations converged in the 1990s and hovered near parity until the GFC. Since then, US has gone on a further (absolute and relative) richening spree, and by end-2024 its CAPE was nearly twice the Non-US CAPE. This relative richening (fourfold since 1989 and double since 2009) boosted US outperformance by nearly 4% per annum.

Exhibit 1. U.S. vs Non-U.S. Real Equity Market Return and EPS Growth Jan 1980 - Apr 2025



Source: AQR, Bloomberg, IBES. US and Non-US equities are represented by MSCI USA and MSCI World ex USA indices, respectively. Real returns are total returns above US CPI inflation. Real EPS (earnings per share) growth is 10-year smoothed. Non-US EPS and CAPE are estimated using the eight largest non-US developed markets (Australia, Canada, France, Germany, Japan, Netherlands, Switzerland and UK).

- 3 Exhibit 1 shows the differential in 10-year smoothed real EPS growth, to match the earnings in the CAPE. This ensures that the components aggregate to the relative compound return, once we include dividend yield differential and real interest rate differential in Exhibit 4. It also means we "lose" the 1970s decade when US lagged Non-US by a cumulative 16%.
- 4 We focus on a currency-hedged comparison because the CAPE valuations are directly related to them. The unhedged performance has similar contours as the hedged performance, as later analysis of Dimson-Marsh-Staunton unhedged returns attests.

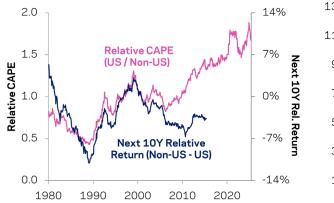
What would need to happen to return valuations to parity? A 45% drop in US stock prices from their December 2024 levels would do the trick. More realistically, a combination of a positive-but-disappointing US growth edge (say, 1% p.a.) and relative repricing of 5% p.a. over a 10-year period would also work. In practice, any mean reversion is sure to be a rocky road (7% relative repricing came already from January to April 2025).

Should investors in 2025 worry about the historically extreme relative US valuation? Yes. The valuation edge is partly understandable given the realized outperformance of US in both returns and earnings growth especially after the GFC, and the compelling stories of US tech stars. (The combined Magnificent Seven market cap exceeded all European stocks by the end of 2024.) Indeed, about half of US outperformance in the past 15 years and of its relative richness can be attributed to its different sector composition than the rest of the world (mainly a larger tech sector).

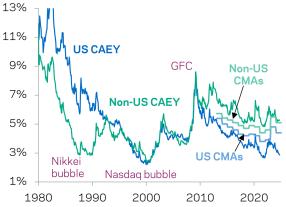
Yet, ominously we may recall what happened to the Non-US index after it enjoyed double valuations over the US 35 years ago. More systematically, **Exhibit 2A** illustrates that the relative US/Non-US CAPE has predicted quite well the next-decade relative performance.⁵ The predictive correlation is +0.5 over an admittedly short sample (only 4+ independent observations).

Exhibit 2. Expected Return Implications of the US vs Non-US Valuation Gap





B. US and Non-US CAEY (1/CAPE) and Investor CMAs (Dec 1979 to Dec 2024)



Source: AQR, Bloomberg, IBES. US and Non-US equities are represented by MSCI USA and MSCI World ex USA indices, respectively. Real returns are total returns above US CPI inflation. Real EPS (earnings per share) growth is 10-year smoothed. Non-US EPS and CAPE are estimated using the eight largest non-US developed markets (Australia, Canada, France, Germany, Japan, Netherlands, Switzerland and UK).

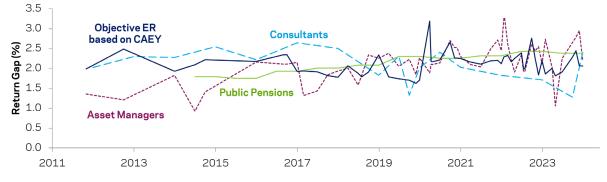
So here too (and even more than with single market performance predictions), empirical evidence suggests that starting yields/ valuations are reasonable – but not infallible – anchors for objective return expectations. Thus, it is not surprising to see in **Exhibit 2B** and **3A** that the consensus of CMA providers has since 2011 consistently assumed lower future return for US equities than for Non-US, reflecting the US higher valuation and lower

5 Note that the relative CAPE in 2A and the two CAEY series in 2B do not always seem visually consistent, because of the inversion math. Generally, carry or income is best measured as a yield spread, while for mean reversion prospects a valuation ratio matters more.

starting yield (the objective return edge estimate in **Exhibit 3A**).

However, this prediction has not panned out well for the past decade. We know this with hindsight but let's give credit to those who predicted the exceptional US tech-led edge in advance. It is interesting to see that the CMA gap in favor of Non-US in Exhibit 3A broadly matches the 2% gap predicted by inverse CAPEs, though the gap is only 0.5% in Horizon surveys in Exhibit 2B. Some CMA methods (including ours) assume an offsetting growth edge for the US, though not enough to predict US outperformance. Equity analysts have predicted an earnings growth advantage for US stocks, recently more so for the "Mag-7" stocks that dominate capweighted indices than for the median stock (see **Exhibit 3B**).





A. Institutional Assumptions for Non-US Stocks' Return Edge Over US, Jun 2011 - Dec 2023





Source: AQR, Dahlquist-Ibert "Institutions' Return Expectations across Assets and Time" (2025), IBES. Exhibit 3A shows Capital Market Assumption gaps by asset manager, consultant, and public pension subgroups. Subjective risk premia are fitted values from a panel regression of subjective equity risk premia over Treasuries on forecaster and time fixed effects. Objective ER is CAEY minus real US Treasury yield. Exhibit 3B shows equity analysts' long-term (3-5 year) EPS growth forecast for large-cap stocks in the US (Russell 1000) and EAFE (MSCI Europe, Australasia and Far East index). Exhibit 3A highlights the CMA expected return edge for Non-US, while 3B highlights analysts' expected growth edge for US.

What people take out of this evidence depends on how much they care about recent lived experience versus longer-run patterns, or stories versus statistics. The more they lean toward the former, the more they will ignore

the warning from current valuations and the more they will lean toward seductive growth stories which favor the US. Up to the end of 2024, the US bulls were proved right in the post-GFC era. The higher the relative valuations become, the harder it is to satisfy the high (relative) growth expectations embedded in them. At some point, only a small catalyst can shift sentiment, and this may already have happened in 2025. But it's important to remember that these valuation-based predictions are more useful for the next 5-10 years than for the next year. Shorter-term predictions need a catalyst besides a valuebased signal. The Fed has historically been the commonest catalyst to prick bubbles or growth stock booms, but other possibilities exist and have already moved markets in 2025: regulation, competition, sentiment, and geopolitics. Notably, the new administration's policies have raised tariff-related uncertainty and the risk of stagflation in the US.

Conversely, the more persistent the US growth edge seems and the more consistently US equities outperform, thereby embarrassing valuation-anchored CMAs, the more we may see investors losing faith in CMAs or global diversification and instead going "all-in" with US equities. Maybe even CMA methods will be modified to get more US-friendly outcomes. This might be a humanly understandable extrapolative reaction, but it is also giving in to rearview-mirror expectations at a dangerous time when relative valuations are historically extreme.

Although institutional CMAs have had a contrarian spirit (predicting lower returns for US equities), it is less clear that institutional portfolios reflect this view. As we showed in part 1 of this series, by the end of 2024 the weight of US in global portfolios stood at record highs (since 1970) – 72% of the developed market MSCI World and 65% of the broader MSCI ACWI. Thus, investors in aggregate must have embraced the rearview mirror for the market to clear with these weights.⁶

There is some evidence that US pension funds have held the US weight in their global equity portfolios quite stable during the past 15 years, as the US weight in global indices increased.⁷ Not letting the US weight drift higher with its market-cap weight would be consistent with some respect toward valuation-based CMAs' message, even if there are many anecdotal counterexamples.

6 Regional fund flow data hint at the demand forces driving the valuation gap, with unprecedented disparity in favor of US equities from 2021 to 2024 (source: EPFR Global).

⁷ See Thinking Ahead Institute Global Pension Assets Study 2025 and Milliman Public Pension Funding Study 2024. Any interpretation is clouded by the fact that the largest asset allocation change for public pensions and other institutions in the past decade is the increase in allocations to private equity, venture capital, and other private assets. The US bias in the private portfolios is significant, so the stable US share in public equities may conceal a rising US share in the total portfolio. Even ignoring private assets, it is conceivable that the stable domestic equity share reflects the net impact of two offsetting trends which are not driven by expected return views: passively following market-cap weights (US share up) and gradually reducing the portfolio's home bias (US share down).

Historical Return Decomposition

We now decompose historical US outperformance into three components: yield, growth, and valuation change. What period is most relevant? Views on this may differ, so we present results for various historical periods, all ending in December 2024.⁸ **Exhibit 4A** shows on the left MSCI earningsbased decompositions for selected periods up to 45 years (also showing the impact of the interest rate differential), while on the right the Dimson-Marsh-Staunton (DMS) dividend-based decompositions can extend up to 125 years. **Exhibit 4B** and **4C** give the same decompositions visually but for every possible starting point. The US does have a long-run growth edge of around 1% p.a. over the past century, but in recent decades its return edge has been significantly boosted by relative repricing. The long-run annual return edge is near 2% but outperformance has been much larger since the GFC, mainly reflecting relative valuation change but also a larger growth edge and dollar appreciation. Another peak coincides with samples starting near the Nikkei bubble in the late 1980s. US outperformance has been more modest starting after its own relatively strong decades like the 1990s, 1940s, and 1920s.

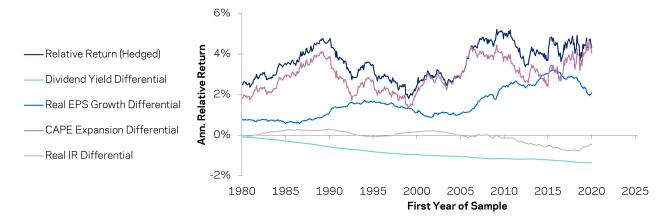
Exhibit 4. Decomposing U.S. vs. Rest-of-World Outperformance

		MSCI Earnings-Based Decomposition					DMS Dividend-Based Decomposition			
Start Year	Years in sample	Relative Return (Hedged)	Dividend Yield Differential	Real EPS Growth Differential	Valuation Change Impact	Real Interest Rate Diff.	Relative Return (Unhedged)	Dividend Yield Differential	Real Dividend Growth Diff.	Valuation Change Impact
1900	125	-	-	-	-	-	2.2%	0.0%	1.7%	0.5%
1925	100	-	-	-	-	-	1.7%	0.0%	0.8%	1.0%
1950	75	-	-	-	-	-	0.8%	-0.2%	-0.5%	1.6%
1980	45	2.5%	-0.1%	0.8%	1.8%	0.0%	2.8%	-0.2%	0.8%	2.2%
1990	35	4.7%	-0.6%	1.1%	3.8%	0.3%	4.7%	-0.6%	0.9%	4.4%
2000	25	2.4%	-1.0%	1.1%	2.1%	0.2%	2.8%	-0.9%	1.9%	1.9%
2010	15	5.0%	-1.2%	2.4%	3.8%	-0.1%	7.1%	-1.0%	4.5%	3.5%
2015	10	3.7%	-1.2%	3.0%	2.4%	-0.5%	6.2%	-1.1%	2.4%	4.7%

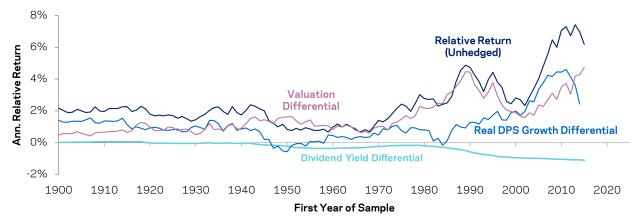
A. Annualized returns based on various start dates, all ending December 31, 2024

8 Multiple windows serve as useful robustness analysis. The backward-expanding perspective may be unfamiliar but is especially useful when we know we care about the recent ending point but are not sure how far back to look. Remember that all samples end in 2024 at a time of extreme relative richness and strong recent performance, hardly a neutral endpoint. For an opposite and more conventional time-perspective, a forward-expanding chart would show annualized outperformance starting from 1900 for different ending years. The outperformance since the DMS sample inception exceeded 4% after the roaring '20s and after WWII, but then edged down to near 2% by the '70s. It has hovered near that level ever since (1.1% trough at end-1988 and 2.2% peak at end-2024).





C. DMS Dividend-Based Decomposition: Various Start Dates to December 31, 2024



Source: AQR, Bloomberg, IBES, and Dimson-Marsh-Staunton "Global Investment Returns Yearbook" (2025). MSCI decomposition uses 10-year smoothed EPS consistent with the CAPE metric, with Non-US EPS estimated using the eight largest non-US developed markets. FX hedging cost is captured by interest rate differential (we use real IR to offset inflation in the real EPS component). DMS Non-US return includes 89 countries and is unhedged; FX impact is not captured in the components shown. Real Dividend Growth includes 34 countries.

Exhibit 4C shows that US has enjoyed an elevated return and growth edge in more recent histories, and the gap between the return edge and growth edge has increased (as more of the return edge has come from repricing). The combination of using a short rearview mirror and ignoring the impact of valuation changes can make extrapolative investors form overly optimistic expectations on the future US growth and return edge. Even the past decade's exceptional US growth edge is not good news for the US, since both valuation changes and abnormal growth have negative autocorrelation at a decadal horizon. As noted in Part 1, subjective growth expectations are often extrapolative, but objectively a strong decade of growth predicts a weaker decade ahead.

One warning on Exhibit 4: All observations in the relative return series are positive, but this does not mean the US always outperforms. There's an upward bias from the 2024 endpoint, following an exceptional period of US outperformance.

The main message from these decompositions is that US has had a long-run growth edge of, say, 1% (more if we start in 1900, less if we start after WWII). It is likely fair to assume some edge going ahead, but it seems that markets are discounting a much larger growth edge.

How much larger? There are different ways to quantify this, producing different answers. One approach is to ask what growth edge would bring CAPE valuations to parity over some horizon (see p.3). Another is to ask what growth edge would be needed over the next decade for the US market *to deliver the same return* as the non-US market, assuming no change in valuation of either market. Using AQR's capital market assumptions as of December 2024, we calculate a required growth edge of 2.2% p.a. for US equities to earn the same return as Non-US equities hedged to USD.⁹ Note this assumes the exceptionally wide gap in valuations persists—any assumption of convergence towards more equal regional valuations would lead to a larger estimate of the required US growth edge.

Conclusion

The outperformance of US equities over Non-US during the past 35 years mainly reflects relative richening, as US market valuations rose from roughly half Non-US to double Non-US. Equity investors tend to extrapolate past growth and past returns, and post-GFC US outperformance has been exceptionally consistent. It may be fair to extrapolate some growth edge (say, 1% p.a.) because the US has enjoyed such an edge over long histories, and today's AI tailwinds may well justify a continued edge. However, markets seem to expect even more. We suspect that few investors appreciate how much of the past absolute and relative performance reflects repricing, which really should not be extrapolated – especially when today's extreme valuations point the other way.¹⁰ Rearview mirror expectations may be strongest just when they are most dangerous.

While almost anything could happen in the near term, over a multi-year horizon we echo Asness (2025) in asking even US bulls to consider whether it's possible that US overvaluation >> US exceptionalism.

⁹ Our real return assumptions were 4.2% and 6.1% for US and hedged Non-US equities respectively, a gap of 1.9%. This already assumed a modest US growth edge of 0.3%, so a total edge of 2.2% p.a. would be needed to give equal returns. If instead we assume US and Non-US should deliver the same premium over their respective local risk-free rates, we get a similar result.

¹⁰ Our focus has been on a currency-hedged comparison. The more common unhedged trade is also influenced by dollar moves against other currencies. The two trades move relatively closely as it is rare that currency moves overwhelm equity moves. In any case, today's richness of US equities is reinforced by richness of the dollar, so the story remains the same for an unhedged trade.

References

- 2003, AQR Portfolio Solutions Group, 2025, "Capital Market Assumptions," AQR Alternative *Thinking*.
- Asness, C., 2025, "2035: An Allocator Looks Back Over the Last 10 Years," Cliff's Perspectives, aqr.com.
- Asness, C., A. Ilmanen, and D. Villalon, 2023, "International Diversification Still Not Crazy after All These Years," *Journal of Portfolio Management* 49(6).
- Asness, C., R. Israelov, and J. Liew. 2011. "International Diversification Works (Eventually)," *Financial Analysts Journal* 67(3).
- Dahlquist, M. and M. Ibert, 2025, ""Institutions' Return Expectations across Assets and Time," working paper.
- Dimson, E., P. Marsh and M. Staunton, 2021, "American exceptionalism: the long-term evidence. *Journal of Portfolio Management* 47(7).

Dimson, E., P. Marsh and M. Staunton, 2025, UBS Global Investment Returns Yearbook.

Disclosures

This document has been provided to you solely for information purposes and does not constitute an offer or solicitation of an offer or any advice or recommendation to purchase any securities or other financial instruments and may not be construed as such. The factual information set forth herein has been obtained or derived from sources believed by the author and AQR Capital Management, LLC ("AQR"), to be reliable, but it is not necessarily all-inclusive and is not guaranteed as to its accuracy and is not to be regarded as a representation or warranty, express or implied, as to the information's accuracy or completeness, nor should the attached information serve as the basis of any investment decision. This document is not to be reproduced or redistributed without the written consent of AQR. The information set forth herein has been provided to you as secondary information and should not be the primary source for any investment or allocation decision.

Past performance is not a reliable indicator of future performance, and patterns in historical data may not persist in the future.

This document is not intended to, and does not relate specifically to any investment strategy or product that AQR offers. It is being provided merely to provide a framework to assist in the implementation of an investor's own analysis and an investor's own view on the topic discussed herein. This presentation is not research and should not be treated as research. This presentation does not represent valuation judgments with respect to any financial instrument, issuer, security, or sector that may be described or referenced herein and does not represent a formal or official view of AQR.

The views expressed reflect the current views as of the date hereof, and neither the author nor AQR undertakes to advise you of any changes in the views expressed herein. It should not be assumed that the author or AQR will make investment recommendations in the future that are consistent with the views expressed herein, or use any or all of the techniques or methods of analysis described herein in managing client accounts. AQR and its affiliates may have positions (long or short) or engage in securities transactions that are not consistent with the information and views expressed in this article.

The information contained herein is only as current as of the date indicated and may be superseded by subsequent market events or for other reasons. Charts and graphs provided herein are for illustrative purposes only. The information in this presentation has been developed internally and/or obtained from sources believed to be reliable; however, neither AQR nor the author guarantees the accuracy, adequacy, or completeness of such information. Nothing contained herein constitutes investment, legal, tax, or other advice, nor is it to be relied on in making an investment or other decision.

There can be no assurance that an investment strategy will be successful. Historic market trends are not reliable indicators of actual future market behavior or future performance of any particular investment, which may differ materially, and should not be relied upon as such. Target allocations contained herein are subject to change. There is no assurance that the target allocations will be achieved, and actual allocations may be significantly different from those shown here. This presentation should not be viewed as a current or past recommendation or a solicitation of an offer to buy or sell any securities or to adopt any investment strategy.

The information in this presentation might contain projections or other forward-looking statements regarding future events, targets, forecasts, or expectations regarding the strategies described herein and is only current as of the date indicated. There is no assurance that such events or targets will be achieved and might be significantly different from that shown here. The information in this presentation, including statements concerning financial market trends, is based on current market conditions, which will fluctuate and may be superseded by subsequent market events or for other reasons. Performance of all cited indices is calculated on a total return basis with dividends reinvested.

The investment strategy and themes discussed herein may be unsuitable for investors depending on their specific investment objectives and financial situation. Please note that changes in the rate of exchange of a currency might affect the value, price, or income of an investment adversely. Neither AQR nor the author assumes any duty to, nor undertakes to update forward-looking statements. No representation or warranty, express or implied, is made or given by or on behalf of AQR, the author, or any other person as to the accuracy and completeness or fairness of the information contained in this document, and no responsibility or liability is accepted for any such information. By accepting this presentation in its entirety, the recipient acknowledges its understanding and acceptance of the foregoing statement. Diversification does not eliminate the risk of experiencing investment losses.

"Expected" or "Target" returns or characteristics refer to expectations based on the application of mathematical principles to portfolio attributes and/or historical data, and do not represent a guarantee. These statements are based on certain assumptions and analyses made by AQR in light of its experience and perception of historical trends, current conditions, expected future developments and other factors it believes are appropriate in the circumstances, many of which are detailed herein. Changes in the assumptions may have a material impact on the information presented.

Broad-based securities indices are unmanaged and are not subject to fees and expenses typically associated with managed accounts or investment funds. Investments cannot be made directly in an index.

The <u>S&P 500 Index</u> is the Standard & Poor's composite index of 500 stocks, a widely recognized, unmanaged index of common stock prices.

The MSCI USA Index is designed to measure the performance of the large and mid cap segments of the US market.

The <u>MSCI World ex USA Index</u> captures large and mid cap representation across 22 of 23 Developed Markets countries - excluding the United States.

There is a risk of substantial loss associated with trading commodities, futures, options, derivatives, and other financial instruments. Before trading, investors should carefully consider their financial position and risk tolerance to determine whether the proposed trading style is appropriate. Investors should realize that when trading futures, commodities, options, derivatives, and other financial instruments, one could lose the full balance of their account. It is also possible to lose more than the initial deposit when trading derivatives or using leverage. All funds committed to such a trading strategy should be purely risk capital.

Regional Disclosures

Australia: AQR Capital Management, LLC, is exempt from the requirement to hold an Australian Financial Services License under the Corporations Act 2001, pursuant to ASIC Class Order 03/1100 as continued by ASIC Legislative Instrument 2016/396 (as extended by amendment). AQR is regulated by the Securities and Exchange Commission ("SEC") under United States of America laws and those laws may differ from Australian laws.

Canada: This material is being provided to you by AQR Capital Management, LLC, which provides investment advisory and management services in reliance on exemptions from adviser registration requirements to Canadian residents who qualify as "permitted clients" under applicable Canadian securities laws. No securities commission or similar authority in Canada has reviewed this presentation or has in any way passed upon the merits of any securities referenced in this presentation and any representation to the contrary is an offence.

Dubai: AQR Capital Management (Europe) LLP (DIFC Representative Office) is regulated by the Dubai Financial Services Authority of the Dubai International Financial Centre as a Representative Office (firm reference number: F007651). Its principal place of business is Gate Village 10, Level 3, Unit 4, DIFC, Dubai, UAE. This marketing communication is distributed on behalf of AQR Capital Management, LLC.

UK: The information set forth herein has been prepared and issued by AQR Capital Management (Europe), LLP, a UK limited liability partnership with its office at 15 Bedford St, Covent Garden, London, WC2E 9HE, which is authorized and regulated by the UK Financial Conduct Authority ("FCA").

EU: AQR in the European Economic Area is AQR Capital Management (Germany) GmbH, a German limited liability company (Gesellschaft mit beschränkter Haftung; "GmbH"), with registered offices at Maximilianstrasse 13, 80539 Munich, authorized and regulated by the German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, "BaFin"), with offices at Marie-Curie-Str. 24-28, 60439, Frankfurt am Main und Graurheindorfer Str. 108, 53117 Bonn, to provide the services of investment advice (Anlageberatung) and investment broking (Anlagevermittlung) pursuant to the German Securities Institutions Act (Wertpapierinstitutsgesetz; "WpIG"). The Complaint Handling Procedure for clients and prospective clients of AQR in the European Economic Area can be found here: https://ucits.aqr. com/Legal-and-Regulatory.

AQR Capital Management (Asia): This presentation may not be copied, reproduced, republished, posted, transmitted, disclosed, distributed

or disseminated, in whole or in part, in any way without the prior written consent of AQR Capital Management (Asia) Limited (together with its affiliates, "AQR") or as required by applicable law. This presentation and the information contained herein are for educational and informational purposes only and do not constitute and should not be construed as an offering of advisory services or as an invitation, inducement or offer to sell or solicitation of an offer to buy any securities, related financial instruments or financial products in any jurisdiction. Investments described herein will involve significant risk factors which will be set out in the offering documents for such investments and are not described in this presentation. The information in this presentation is general only and you should refer to the final private information memorandum for complete information. To the extent of any conflict between this presentation and the private information memorandum, the private information memorandum shall prevail. The contents of this presentation have not been reviewed by any regulatory authority in Hong Kong. You are advised to exercise caution and if you are in any doubt about any of the contents of this presentation, you should obtain independent professional advice.

AQR Capital Management (Asia) Limited is licensed by the Securities and Futures Commission ("SFC") in the Hong Kong Special Administrative Region of the People's Republic of China ("Hong Kong") pursuant to the Securities and Futures Ordinance (Cap 571) (CE no: BHD676). AQR Capital Management (Asia) Limited, Unit 2023, 20/F, One IFC, 1 Harbour View Street, Central Hong Kong, Hong Kong. Licensed and regulated by the Securities and Futures Commission of Hong Kong (CE no: BHD676).

China: This document does not constitute a public offer of any fund which AQR Capital Management, LLC ("AQR") manages, whether by sale or subscription, in the People's Republic of China (the "PRC"). Any fund that this document may relate to is not being offered or sold directly or indirectly in the PRC to or for the benefit of, legal or natural persons of the PRC. Further, no legal or natural persons of the PRC may directly or indirectly purchase any shares/units of any AQR managed fund without obtaining all prior PRC's governmental approvals that are required, whether statutorily or otherwise. Persons who come into possession of this document are required by the issuer and its representatives to observe these restrictions.

Singapore: This document does not constitute an offer of any fund which AQR Capital Management, LLC ("AQR") manages. Any fund that this document may relate to and any fund related prospectus that this document may relate to has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this document and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of shares may not be circulated or distributed, nor may the shares be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor pursuant to Section 304 of the Securities and Futures Act, Chapter 289 of Singapore (the "SFA")) or (ii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Korea: Neither AQR Capital Management (Asia) Limited or AQR Capital Management, LLC (collectively "AQR") is making any representation with respect to the eligibility of any recipients of this document to acquire any interest in a related AQR fund under the laws of Korea, including but without limitation the Foreign Exchange Transaction Act and Regulations thereunder. Any related AQR fund has not been registered under the Financial Investment Services and Capital Markets Act of Korea, and any related fund may not be offered, sold or delivered, or offered or sold to any person for re-offering or resale, directly or indirectly, in Korea or to any resident of Korea except pursuant to applicable laws and regulations of Korea.

Japan: This document does not constitute an offer of any fund which AQR Capital Management, LLC ("AQR") manages. Any fund that this document may relate to has not been and will not be registered pursuant to Article 4, Paragraph 1 of the Financial Instruments and Exchange Law of Japan (Law no. 25 of 1948, as amended) and, accordingly, none of the fund shares nor any interest therein may be offered or sold, directly or indirectly, in Japan or to, or for the benefit, of any Japanese person or to others for re-offering or resale, directly or indirectly, in Japan or to any Japanese person except under circumstances which will result in compliance with all applicable laws, regulations and guidelines promulgated by the relevant Japanese governmental and regulatory authorities and in effect at the relevant time. For this purpose, a "Japanese person" means any person resident in Japan, including any corporation or other entity organised under the laws of Japan.

Request ID: 39238

