Agenda Item 16

MEETING DATE: June 20, 2018

SUBJECT: Investment Manager Recommendation – Domestic Equity

		Deliberation		**Receive**
SUBMITTED FOR:	___ Consent	__X__ and Action		___ and File

RECOMMENDATION

Staff and Verus recommend that the Board approve: (1) The selection of AQR Capital Management to manage a ~$245 million systematic, multi-factor strategy within the large capitalization active segment of SCERS' Domestic Equity portfolio; and (2) Authorize Staff to determine the most effective method for transitioning the assets and execute any necessary documents or agreements to effectuate the transition.

PURPOSE

To recommend an investment manager following the systematic, multi-factor manager search.

SUMMARY

At the February Board meeting, Staff and Verus provided an educational presentation on alternative active management equity strategies, particularly quantitatively driven systematic, multi-factor strategies that represent a hybrid approach between passive and traditional active management strategies. The objectives of the systematic, multi-factor approach are to: (1) simplify SCERS' equity structure; (2) maintain exposure to active management strategies designed to generate excess returns; (3) maintain an adequately diversified portfolio that reduces risk; and (4) reduce management fees. Following this education, the Board approved initiating a manager search for a systematic, multi-factor investment manager within the Domestic Equity asset class. The initial steps in the manger search process included:

- Screening the domestic equity manager universe for qualified investment managers that met the required criteria.
- Performing initial due diligence of managers, including preliminary discussions and reviewing manager materials, to narrow the candidate list to three managers.
- Interviewing the selected managers at SCERS' office on May 2nd and 3rd.

The managers interviewed included:
- Allianz Global Investors
- AQR Capital Management
- Analytic Investors

Following the manager interviews, Staff and Verus reviewed the finalist managers and held several conversations to discuss the merits of each candidate. Follow up calls were held with the managers to answer any outstanding questions and receive additional documentation as necessary.

Based upon all relevant considerations including the initial review, subsequent manager interviews, and extended research and due diligence, Staff and Verus are recommending AQR Capital Management (AQR), and their U.S. Enhanced Equity strategy for the Board's consideration. The recommendation is for SCERS to invest approximately $245 million with the AQR U.S. Enhanced Equity strategy. AQR will present at the Board meeting on June 20th, at which time the Board will have the opportunity to consider the recommendation for approval.

The balance of the report provides analysis and discussion for the recommendation of AQR. A recommendation report from Verus has also been posted with this report, as well as a presentation from AQR.

DISCUSSION

Within SCERS' Domestic Equity asset class, which has a target allocation of 21% of the total portfolio, the target allocation to large cap active management is 36%. The allocation to the new systematic, multi-factor strategy will be funded from existing exposures within the Domestic Equity asset class. Staff and Verus believe the addition of AQR will be complimentary to SCERS' Domestic Equity portfolio and manager structure.

Domestic Equity Structure

	Policy	Benchmark	Allocation	Manager
Russell 3000	100.0%			
LC Passive (R1000)		54.0%	54.0%	
Passive Manager				54.0%
LC Active (R1000)		36.0%	36.0%	
Active Managers				36.0%
SCV (R2000V)		5.0%	5.0%	
Active Managers				5.0%
SCG (R2000G)		5.0%	5.0%	
Active Managers				5.0%

While all three final investment manager candidates were highly qualified, AQR distinguished itself among the manager candidates. While the search focused on specific overall parameters, Staff and Verus allowed for flexibility in the investment approach taken by the managers to identify the best manager in the space. AQR takes a differentiated approach through its use of proprietary factor signals developed from internal firm research. AQR has demonstrated that their approach to building models based on fundamental economic theory, combining both established and proprietary factors, has been able to deliver positive excess returns over multiple market cycles. AQR further distinguished itself through the firm's extensive research capabilities and application of the equity research and models across the firm's equity offerings, demonstrating the strength of the firm's investment process across investment products and geographies.

Legal negotiations and documentation have been initiated by SCERS' General Counsel. If the Board approves the selection of AQR, funding will be contingent on successful negotiation of the legal terms and agreements.

ORGANIZATION

AQR CAPITAL MANAGEMENT

AQR Capital Management (AQR or the Firm) is a quantitatively driven investment management firm. AQR was founded in 1998 by several members of Goldman Sachs Asset Management's quantitative research group. Several of the Firm's founding members, including Cliff Asness, David Kabiller, and John Liew, are still active members of the management team. As of March 2018, AQR manages approximately $225 billion across 40 strategies ranging from traditional long-only equities to alternative products. The Firm is headquartered in Greenwich, Connecticut and has over 900 employees spread across seven global office locations. Over 50% of the employees hold advanced degrees, including 73 Ph.D.'s. SCERS currently has an approximately $70 million investment in AQR's Delta Fund, a multi-strategy, bottom-up hedge fund replication strategy, within SCERS' Diversifying Absolute Return portfolio.
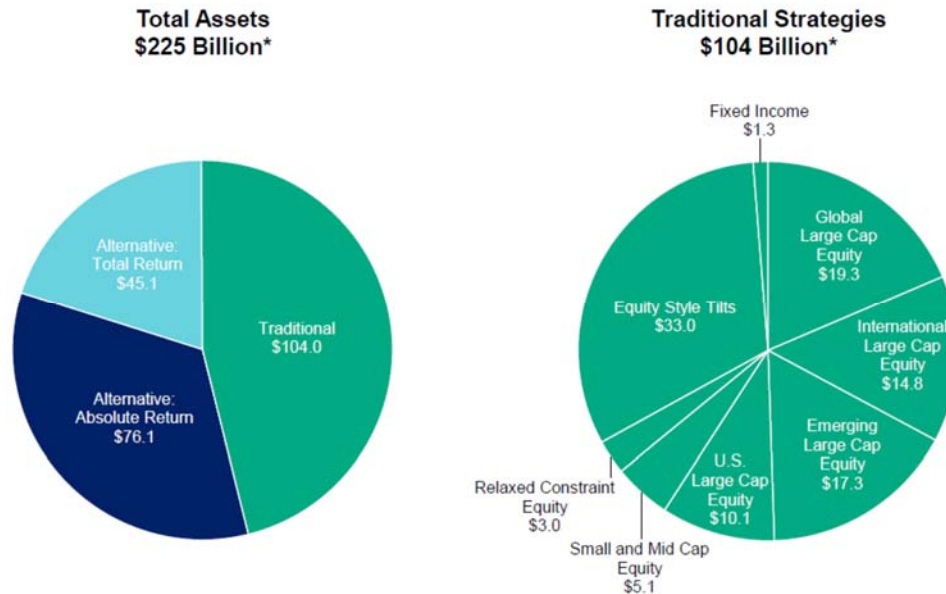
AQR was founded as an alternative investment firm with a hedge fund as the initial investment product. With deep roots in quantitative investing and research, the Firm applies quantitative tools to process fundamental information and manage risk. AQR takes a systematic approach to managing portfolios across both alternative and traditional strategies. AQR launched its first long-only equity strategy in 2000 and manages over $100 billion in traditional equity products, including U.S., international, and emerging markets.

AQR's Global Stock Selection team is responsible for managing the firm's traditional equity strategies. The team is led by Jacques Friedman, who joined AQR at its inception in 1998. Prior to joining AQR, Mr. Friedman was with Goldman Sachs where he developed quantitative stock selection strategies. The Global Stock Selection team integrates all aspects of the investment management process including Portfolio Management, Research, Portfolio Implementation, Trading, and Risk Management. The team employs 22 senior investment professionals, with over half having Ph.D.'s or advanced degrees in applied mathematics.

AQR Global Stock Selection Team

Portfolio Management and Research			
Jacques Friedman Principal	Andrea Frazzini, Ph.D. Principal	Michele Aghassi, Ph.D., CFA Principal	Hoon Kim, Ph.D., CFA Principal
Ronen Israel Principal	Tobias Moskowitz, Ph.D. Principal	Scott Richardson, Ph.D. Principal	Shaun Fitzgibbons Managing Director
Tarun Gupta, Ph.D. Managing Director	Greg McIntire, CFA Managing Director	Lukasz Pomorski, Ph.D. Managing Director	Laura Serban, Ph.D. Managing Director
	Nathan Sosner, Ph.D. Managing Director	Adrienne Ross Vice President	

Portfolio Implementation			
Michael Katz, Ph.D. Principal	Oktay Kurbanov Principal	Hoon Kim, Ph.D., CFA Principal	Alla Markova Managing Director

Trading		Risk Management	Front Office Technology
Isaac Chang Managing Director	Brian Hurst Principal	Lars Nielsen Principal	Neal Pawar Principal

As mentioned above, the Global Stock Selection team is responsible for managing all the equity strategies at AQR. This includes over $100 billion in traditional equity strategies that range from small cap to large cap, and across domestic and international geographies. The Firm also manages over $100 billion in alternative investments. The U.S. Enhanced Equity product, which is part of the $10 billion in traditional U.S. large cap equity assets managed by AQR, is the investment product SCERS evaluated for this mandate.

Total Assets $225 Billion*

- Alternative: Total Return $45.1
- Alternative: Absolute Return $76.1
- Traditional $104.0

Traditional Strategies $104 Billion*

- Fixed Income $1.3
- Global Large Cap Equity $19.3
- Equity Style Tilts $33.0
- International Large Cap Equity $14.8
- Emerging Large Cap Equity $17.3
- U.S. Large Cap Equity $10.1
- Relaxed Constraint Equity $3.0
- Small and Mid Cap Equity $5.1

Source: AQR, as of March 31, 2018

INVESTMENT STYLE

AQR's investment philosophy is based on fundamental economic theory applied through quantitative tools and methods. This same core philosophy is applied across investment products offered at the Firm. Fundamental inputs that AQR views as intuitive, persistent, and pervasive are used as inputs to AQR's systematic process for stock selection and portfolio construction. AQR's models have been developed over many years and are driven by the firm's research. The fundamental inputs (factors) include:

- Attractive Prices (Value)
- Improving Prices and Fundamentals (Momentum)
- Stable and High-Quality Financials (Stability)
- Sound Accounting Practices (Quality)
- Support of High Conviction Investors (Investor Sentiment)
- Shareholder-Friendly Management (Management Signaling)

AQR employs a disciplined and repeatable approach that allows the firm to apply its quantitative models across a broad universe of stocks. Starting with the applicable investment universe, AQR evaluates each stock in the universe based on the combined exposure to the fundamental characteristics (factors) included in their models. AQR models include traditional factor definitions (for example, P/E ratio for Value) along with proprietary signals developed from internal firm research and utilizing lesser known data sources. AQR is the only manager of the three finalists that emphasizes the use of proprietary signals into their models. Through discussions with Firm management,

Established Signals

Price / Earnings, 12-mo Price Momentum, etc…

AQR Enhanced Equity Model

Indirect Momentum, Investor Sentiment, etc…

Proprietary Signals

Source: AQR

approximately 30-40% of the signals utilized in the Enhanced Equity model are proprietary. While the weights applied to specific factors can change, they generally change slowly as "factor timing can be very difficult." AQR is continually striving to enhance their equity models, with approximately 5% of the aggregate model being new each year. The Firm sets a high bar for adding new signals (factors) to the model, noting that typically less than 5% of originated research actually makes it into the model.
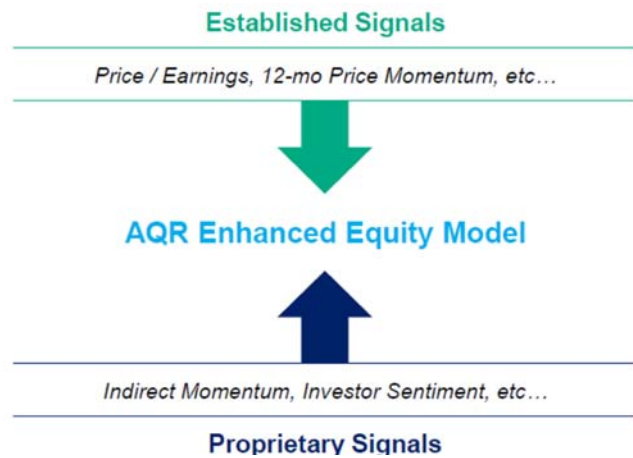
Individual stocks are evaluated in several ways to determine an overall ranking. Stocks are compared within their industry, across different industries, and using economically-linked peer groups. Within-industry evaluation is performed to compare a company to its peers based on the fundamental factors. Across-industry comparisons are performed to evaluate the relative attractiveness of the industry group. Economically-linked groups (for example, vendors and suppliers) are included for further insight into the strength of an industry. The following stylized example, showing a small subset of the signals utilized in the equity model, demonstrates how the firm evaluates each stock:

Within Industry
(Example Stock vs. Food & Staples Stock Peers)

Signal	Example	Data Value	Percentile
Valuation:	Adjusted Price / Earnings	14.4x	86%
Momentum:	Adjusted 12 Month Return*	17.5%	71%
Earnings Quality:	Accruals from Current Operating Assets	4.8%	57%
Stability:	3-year Return on Equity	19.4%	57%
Investor Sentiment	Change in % of Shares Shorted	0.8%	0%
Management Signaling:	% Change in Shares Outstanding	3.7%	43%

Source: AQR

Percentile Score: 89%
Based on weighted-average signal scores

Across Industry
(Food & Staples Industry vs. Other Industries)

Signal Example	Data Value	Percentile
Adjusted Price / Earnings	18.7x	65%

**Economically-Linked Groups**
(Example's Linked Peers vs. Other Stocks' Linked Peers)

Signal Example	Data Value	Percentile
Momentum of Cross-Suppliers	6.5%	40%

AQR's investment process is the application of a broad collection of investment themes to a large universe of stocks. When possible, the Firm focuses its research efforts on global data where the investment theme can be applied across geographies. AQR utilizes a single research team and investment process across the Firm's equity offerings. The application of the Firm's research and models are modified based on the client's specific requirements and goals (i.e. geography, risk tolerance, leverage, etc.). The AQR U.S. Enhanced Equity product is the core U.S. large cap product that offers clients exposure to the Firm's full spectrum of factor models, using both established and proprietary signals. The U.S Enhanced Equity product has an inception date of November 2003 and is the second longest running equity product that AQR offers, trailing only the International Enhanced Equity EAFE composite, which has an inception date of February 2000.

PORTFOLIO CONSTRUCTION:

AQR's portfolio construction process is focused on building efficient, diversified portfolios with an emphasis on minimizing trading costs and incorporating risk control. Portfolio construction combines the expected return (as determined from AQR models) with risk forecasts and portfolio constraints to determine the optimal weighting (position size) for each stock. The Firm focuses on risk control to ensure the resulting portfolio is close to model expectations and tracking error is held within range. Active sector weightings are +/- 6% and active stock weighting is +/- 2%.
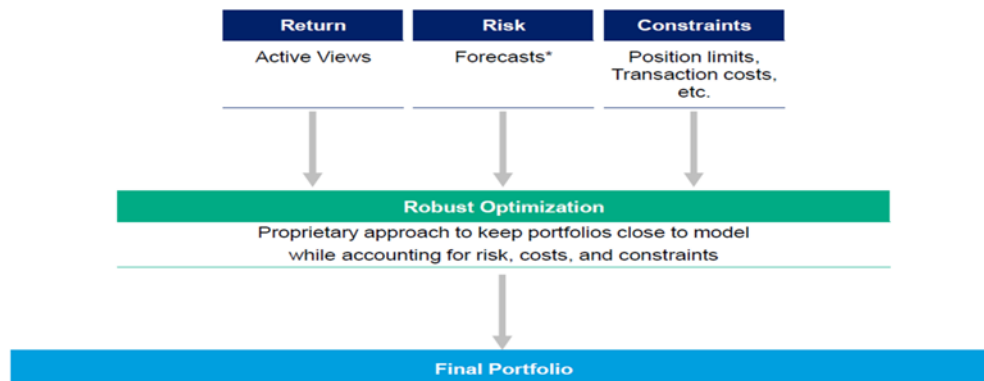
Source: AQR

AQR views its investment in trading and infrastructure as a competitive advantage. The Firm's trading department has dedicated research and technology teams, and focuses on areas such as market structure research and execution optimization. The Firm has a 50+ person team with over 15 years' experience developing custom trading algorithms. The Firm integrates trading with portfolio management, as part of the Global Stock Selection team, to help inform investment strategies and to communicate unusual circumstances or market anomalies that may impact the portfolio. Within trading, AQR has a dedicated transaction cost analysis team, which helps evaluate the tradeoff between expected return and costs, helping to reduce transaction costs and increase net returns. Based on third-party studies, AQR commissions and implicit trading costs are significantly less than other asset managers, especially for U.S. equities.

The weight for each stock in the portfolio is determined based on the aggregate model view for each stock. The Firm avoids concentration in any single name and holds a diversified portfolio

with around +/- 200 positions. AQR focuses on a bottom up approach to building the portfolio, based on its quantitative models and systematic investment process. An example of the U.S. Enhanced Equity portfolio characteristics and sector exposure, with comparison to the Russell 1000 index, is presented in the exhibits below.
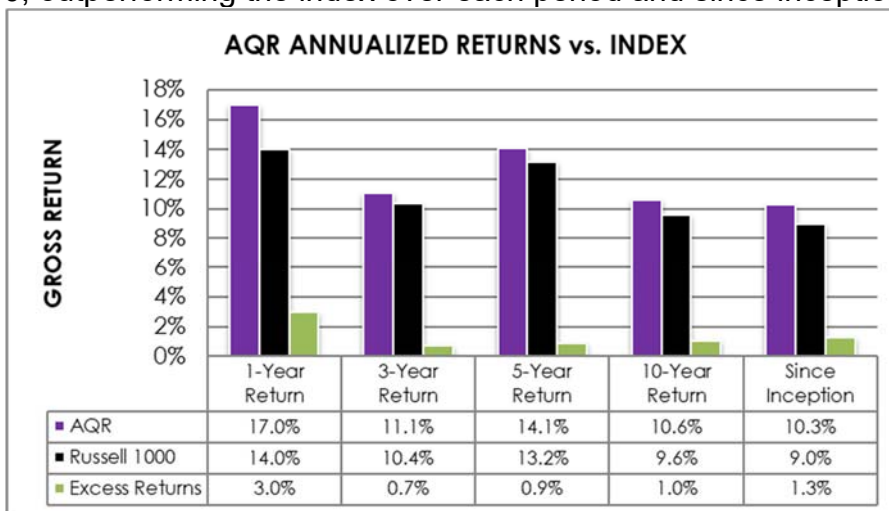
Portfolio Characteristics

	Portfolio	Benchmark
Number of Stocks	233	975
Average Market Cap ($M)	170,158	179,209
Median Market Cap ($M)	26,409	10,444
P/E (trailing)	18.3	20.8
P/E (forward)	16.7	18.5
P/B	3.1	3.0
P/CF	13.2	15.1
ROE (5-yr)	21.4	19.7
Debt/EQ	1.3	1.1
Sales/EV	0.5	0.4
Earnings Growth (5 yr trailing)	10.0	6.6

Source: AQR, March 31, 2018

Sector Exposure

	Portfolio	Benchmark	Active Weight
Consumer Discretionary	14.2%	12.9%	1.3%
Consumer Staples	5.5%	7.2%	-1.6%
Energy	2.3%	5.6%	-3.3%
Financials	13.8%	14.9%	-1.1%
Health Care	11.6%	13.1%	-1.4%
Industrials	11.6%	10.5%	1.1%
Information Technology	29.2%	24.5%	4.8%
Materials	3.8%	3.2%	0.6%
Real Estate	0.0%	3.4%	-3.4%
Telecom Services	0.8%	1.9%	-1.0%
Utilities	7.1%	2.8%	4.2%
Total	100.0%	100.0%	0.0%

PERFORMANCE

AQR's investment performance goal is to deliver stable and consistent excess returns independent of market environment (advancing or declining market). The Firm does not place a specific emphasis on providing excess returns through superior downside protection (i.e. lower downside capture ratio), but rather seeks to consistently outperform independent of the market environment. The excess return goal of 1.5% to 2.5% is within the construct of a tightly controlled tracking error goal of below 2.5%. AQR has produced consistent excess returns compared to the Russell 1000, outperforming the index over each period and since inception.

AQR ANNUALIZED RETURNS vs. INDEX

	1-Year Return	3-Year Return	5-Year Return	10-Year Return	Since Inception
AQR	17.0%	11.1%	14.1%	10.6%	10.3%
Russell 1000	14.0%	10.4%	13.2%	9.6%	9.0%
Excess Returns	3.0%	0.7%	0.9%	1.0%	1.3%

Source: Verus, SCERS, as of March 31, 2018

AQR's systematic, multi-factor investment approach is designed to generate excess returns with a lower level of return volatility, relative to the benchmark, compared to other active managers

that have higher tracking error. Tracking error is defined as the standard deviation of the difference in returns between a portfolio and its benchmark. AQR designs its portfolio to keep tracking error between 2.0% and 3.5%. In recent years, given the low volatility environment and lack of cross-sectional dispersion among stocks, tracking error has been below 2.0%.

Managers within the space tightly control for risk, measured by tracking error against the benchmark, and are typically evaluated based on the strategy's Information Ratio. Information Ratio is defined as the portfolio's excess returns divided by the tracking error. It evaluates the manager's ability to generate excess returns against the benchmark compared to the volatility of those returns. AQR has the highest Information Ratio of the managers evaluated for this search. The nearby charts show the Tracking Error and Information Ratio for AQR over multiple time periods.
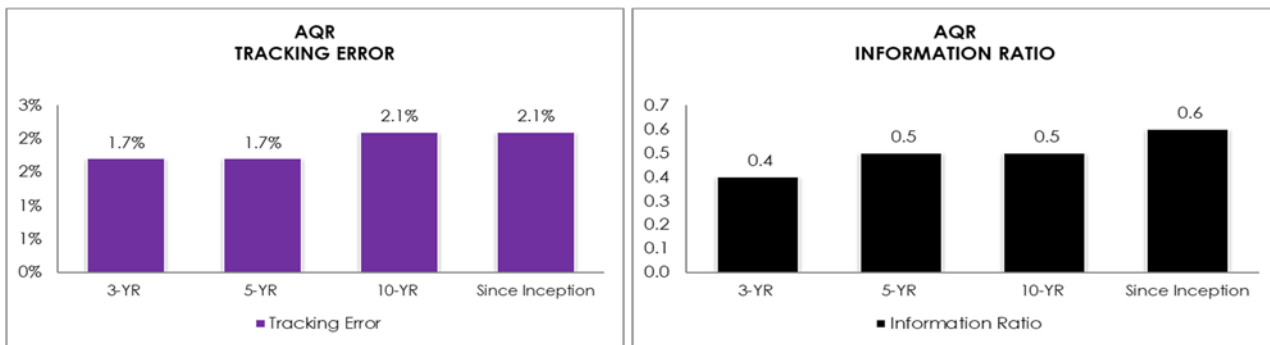
Despite maintaining a low tracking error with the benchmark, AQR has been able to generate excess returns while also delivering lower absolute volatility, as measured by standard deviation of returns.   The slightly lower standard deviation compared to the benchmark, along with better absolute returns, generates a higher Sharpe Ratio. AQR also generated the greatest Sharpe Ratio among managers evaluated.
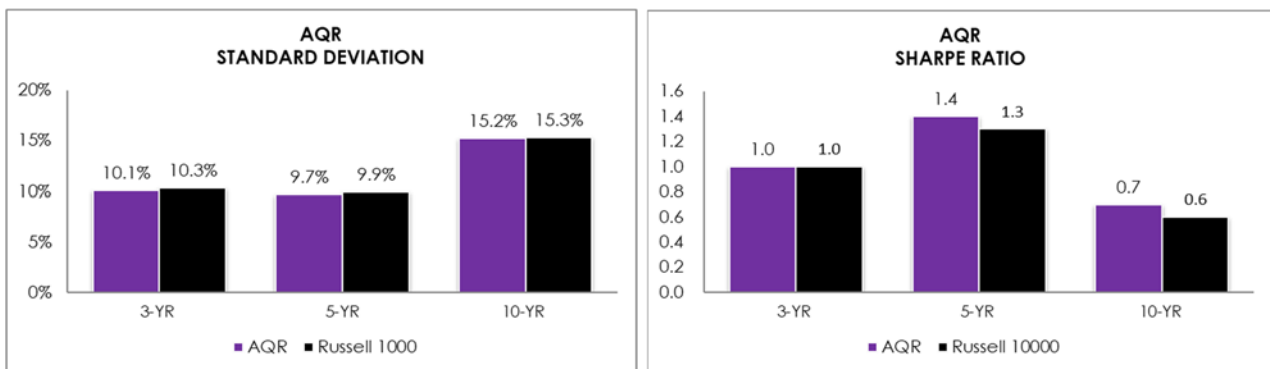
As noted above, AQR does not specifically focus on delivering a lower downside capture ratio as a means to generate excess returns. However, past results have shown that the strategy has been able to maintain performance in up markets (upside capture), while also declining less in down markets (downside capture). AQR represented the best combination of higher upside along with a low downside ratio, which demonstrates an ability to generate excess returns across market cycles.
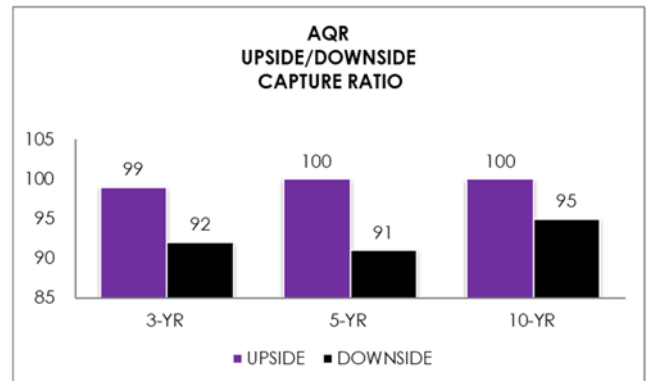
Staff and Verus were impressed with AQR's historical performance and the consistent excess returns generated across market cycles. AQR's has demonstrated an ability to generate positive excess returns, with low levels of risk, across different investment products targeted at both U.S. and International equity markets.

MANAGEMENT FEE

AQR's base fee schedule is a tiered management fee for separate accounts. The fee tiers are based on AUM levels and decline for each $100 million under management. The fee tiers start from 35 bps for the first $100 million AUM down to 25 bps for AUM over $300 million. The average fee for a $200 million separate account would be 33.5 bps.

Based on SCERS' existing relationship with AQR (SCERS has been an investor in the AQR Delta Fund since 2013), and AQR's expressed interest to offer the most competitive fee possible, AQR has proposed a 25 basis point flat fee for this mandate. The 25 bps fee is a 25% reduction from the average blended fee of 33.5 bps.

AQR also offers a performance based fee schedule with a base fee of 10 bps and performance fee of 15% for returns above the benchmark, with a total fee cap of 1.00%. The performance fee would include a high water mark, where AQR would not earn the performance fee unless total returns since inception have exceeded the benchmark.

Staff and Verus believe the flat fee of 25 basis points is the preferred option for SCERS. Based on past historical returns, and the current return expectation of 1.5%-2.5% annual excess returns, the flat fee presents a lower cost to SCERS. The flat fee of 25 basis points represents a meaningful reduction in fees compared to most of SCERS' existing large cap equity managers.

ACCOUNT STRUCTURE AND IMPLEMENTATION

Staff and Verus recommend a separate account structure be initiated with AQR subject to SCERS' typical Investment Management Agreement (IMA) terms and conditions. Staff and Verus will formulate a set of guidelines that AQR will follow to construct and manage SCERS' mandate with AQR.

The implementation of the AQR mandate will take place in conjunction with other Domestic Equity manager recommendations, and will be executed as part of one aggregate transition of assets within the Domestic Equity asset class.

SUMMARY

AQR distinguished itself as the most attractive manager for SCERS' Domestic Equity portfolio given its unique approach and impressive performance. AQR's consistent application of its investment process, and differentiated approach of combining proprietary and traditional factors when building its quantitative models, has generated positive excess returns across market cycles. Additionally, AQR has been successfully managing portfolios under the U.S. Enhanced Equity strategy since 2003. Based upon the summary of all factors considered, Staff and Verus are confident that AQR will be a positive addition to the investment manager lineup within SCERS' Domestic Equity portfolio.

AQR is scheduled to present at the June Board meeting, at which time the Board will have the opportunity to hear from AQR directly, and ask any specific questions about the Firm and its investment process. The Board will then have the opportunity to consider the approval of the recommendation to hire AQR.

It is anticipated that the major terms within the Investment Management Agreement (IMA) will be close to finalized before the June 20 Board meeting.

ATTACHMENTS

- Verus recommendation report
- AQR manager presentation

Prepared by: Reviewed by:

/S/   /S/

_____   _____
Brian Miller   Eric Stern
Investment Officer   Chief Executive Officer

/S/

_____
Steve Davis
Chief Investment Officer

Memorandum

To: Sacramento County Employees' Retirement System Board (SCERS)

From: Barry Dennis, John Nicolini, Margaret Jadallah (Verus)

Date: June 20th, 2018

RE: **U.S. Large Cap Multi-Factor Strategy Search**

Following Board approval in February for a multi-factor strategy search, Verus began by screening the eVestment database and reviewing data and meeting notes in the Firm's internal database. The universe of strategies that provide exposure to multiple risk factors (i.e. size, momentum, value, quality, etc.) is quite heterogeneous and not easily defined as a peer group so the search was fairly broad at the outset. The only initial requirement for strategies to pass our initial screen, apart from the US Large Cap Multi-Factor approach, was that they needed to offer some element of excess return potential. There are multi-factor indices, primarily MSCI, that one can passively implement but our preference was to allocate to a more active approach.

1) Created custom universe of US Multi-Factor products that meet the criteria SCERS has set including the following:

    a. Multi-factor U.S. Large Cap strategy

    b. Ability to generate excess returns above a passive benchmark

2) Verus and SCERS staff reviewed an initial list of 15 strategies that met our search criteria.

3) The initial list of 15 was narrowed down to 8 strategies based on initial phone calls/meetings, prior experience with the strategies and/or considering their fit for the mandate.

4) Staff and Verus conducted phone calls and/or meetings with each of the 8 managers from which we further narrowed that list down to the 3 finalist candidates.

5) Two hours were allocated to each manager for onsite presentations at SCERS' office. SCERS' Staff and Verus reviewed organizations, investment processes and how they have evolved over time, prior performance and team stability with each of the strategies portfolio managers. There was broad agreement among staff and consultant that each of the three managers have positive attributes and all are well qualified to manage SCERS' assets. However, it was apparent that one manager stood out as having the greatest excess return

potential and offered the most differentiated strategy. The three strategies that presented are listed below:

a. Allianz – US Best Styles

b. Analytic – US Factor Enhanced

c. AQR – US Enhanced Equity

Recommendation

Verus and staff have performed a thorough review of each of the finalists and recommend an initial investment of $245 million in the AQR US Enhanced Equity strategy for benefit of the Sacramento County Employees' Retirement System portfolio. AQR has been a thought leader in factor investing since its inception when the team left Goldman Sachs' quantitative investment team in 1998. AQR's history as a pioneer in value and momentum factor investing has resulted in a lengthy track record and live experience that few other teams can replicate. The AQR process has evolved over time to incorporate additional risk factors and enhance the factors that they have always traded on, namely value and momentum. SCERS already utilizes AQR within the absolute return portfolio to replicate hedge fund risk factors, also called alternative beta factors. The same academic underpinning that identifies the risk factors within the US Enhanced Equity strategy would later lead to the development of the hedge fund replication product that SCERS funded in 2013.

U.S. Large Cap Multi-Factor Strategy Finalists

Firm	Firm Assets (at 3/30/18)	Strategy Assets (at 3/30/18)	Firm/Strategy Highlights
Allianz: US Best Styles	$598 billion	$9.4 billion	• Allianz is a German based financial services firm with almost $600 billion in AUM. The Best Styles team manages $47 billion across a mix of global and region-specific equity strategies.
			• The Best Styles strategy was developed in the late '90s to invest Allianz insurance capital in systematic strategies that captured most of the "alpha" from active management but delivered a more consistent excess return and high information ratio. The strategy has expanded across different geographies and has been refined over time to include additional factors and improve risk management.
			• US Best Styles optimizes exposure to risk premiums (value, momentum, revisions, quality, growth) by ensuring diversity across risk premiums. The strategy utilizes a model that ranks stocks on investment attractiveness and correlation to other stocks. The strategy will constrain stocks deemed to be "super stocks" that are over-bought and screen well across multiple risk premiums in an effort to avoid stocks that are over-loved by factor models and thus subject to market turnarounds.
			• The portfolio consists of approximately 200-350 positions, a targeted tracking error of 1-3% and typical turnover of 50-70%.
			• The Global Best Styles product has achieved more consistent alpha over time. The US Best Styles product was formed in 2012 and on a net of fee basis has performed in-line with the benchmark.
			• The US Best Styles product has a few unique attributes that distinguish it from the universe of multi factor products but isn't quite as active as we were looking for in this search. The product is priced at 30bps as an initial breakpoint.

Firm	Firm Assets (at 3/30/18)	Strategy Assets (at 3/30/18)	Firm/Strategy Highlights
Analytic/Wells Fargo: US Factor Enhanced	$25 billion	$3.8 billion	• Analytic Investors is a wholly-owned subsidiary of Wells Fargo Bank. Wells Fargo closed on the Analytic acquisition in 2016. • US Factor Enhanced was launched in 2017, utilizing much of the work that Analytic had developed in low vol strategies and other risk factor models. Today the factor enhanced strategies and low vol are driving the Firm's growth in AUM. • The US Factor Enhanced product targets exposure to five factors: size, momentum, value, quality and low volatility. Portfolios are built stock-by-stock with a goal of balancing exposure to each of the factors and limiting the risk of overexposure to any one single factor. By dynamically risk weighting the portfolio to each factor, it ensures that if volatility to a single factor goes up (e.g. momentum) that the risk model will reduce exposure to that factor to account for the increase in risk. • The portfolio is composed of 700-800 stocks, with a tracking error of 2-3% and turnover of 10-15% per rebalance. • The US Factor Enhanced product is closer to an enhanced index than we were looking for in this search. Priced at 14bps for an initial breakpoint, this is one of the cheaper products that we reviewed.
Firm	Firm Assets (at 3/30/18)	Strategy Assets (at 3/30/18)	Firm/Strategy Highlights
AQR: US Enhanced Equity	$225 billion	$10.2 billion	• AQR was formed in 1998 by several of the key members of Goldman Sachs quantitative investment team. AQR was an early pioneer of value and momentum factor investing which have led to additional factors and risk premia strategies over time.

			• AQR US Enhanced utilizes the value and momentum work that AQR has refined over the years and includes exposure to investor sentiment, quality, growth and management signaling. More detailed models based on industry performance drivers provide a unique approach to valuing companies and in AQR's view better culling the universe of attractive companies. • The academic pedigree from the Firm's founders to the 45+ Ph.D.'s on staff has contributed to a culture of rigorous research and constant innovation. AQR has a high bar in place for additions to their investment models but they are always seeking to be in front of other investors whether that's shifting market sentiment or technology. • Strong hedge fund pedigree with quant background driving their model development. Trading is another area that AQR has devoted significant resources. Having a sizable business in long/short strategies and other absolute return products, AQR must be able to trade effectively and cheaply. • The US Enhanced Equity product typically holds 150-250 stocks with a targeted tracking error of 2.5-3%. The product is priced at 35bps at the initial breakpoint.

Manager Evaluation

AQR US Enhanced Equity Strategy

STRATEGY BASICS

Asset Class:	Domestic Equity
Investment Style:	Enhanced
Firm Inception:	1998
Firm Assets:	$225 Billion
Strategy Inception:	November 2003
Strategy Assets:	$10 Billion
Fund Fee:	0.25%

Firm Background and History

AQR Capital Management (AQR), based in Greenwich, CT, was founded in 1998. The Firm was an early adopter of factor-based investing through the implementation of risk premia and is one of leaders in this arena. They apply quantitative tools to process fundamental information and manage risk with a suite of alternative and traditional offerings.

AQR is 70% owned by its principals and 30% owned by Affiliated Managers Group (AMG).   36 principals currently have equity ownership, and this number continues to expand. Cliff Asness, Ph.D., Managing and Founding Principal, is the majority owner of AQR. Principals are granted equity but lose their ownership if they leave AQR. Since 2014, AQR has had a profit-sharing arrangement with AMG. At that time, AMG re-struck employee agreements with AQR's key principals with time commitments ranging from 5-7 years at the senior level. It is anticipated that Asness will stay beyond his seven-year agreement. Over half of AQR's 871 employees hold advanced degrees with many portfolio managers and researchers having Ph.D.s This strong academic background has led to a number of acclaimed published research papers and awards in finance.

AQR currently manages $225 billion in total assets under management with about half in alternatives approaches, including multi-strategy vehicles, risk parity, managed futures, global asset allocation and equity-related absolute return strategies.

Strategy Background

Their investment philosophy is based on the fundamental concepts of value and momentum and then augmented with additional investment themes of investor sentiment, earnings quality, growth and management signaling. Value investing is simply buying cheap securities and selling expensive ones. Momentum investing is simply buying improving securities and selling worsening ones. AQR utilizes both concepts along with the other factors described above to build a stock selection model that can be used across the global universe of stocks. They consider themselves fundamental investors who use quantitative models to create and maintain a diversified portfolio that is overweight cheap securities with good momentum and underweight expensive securities with poor momentum. AQR believes that this robust process will lead to attractive long-term, risk-adjusted returns.

Key Investment Professionals

The Global Stock Selection (GSS) team, led by Jacques Friedman, Andrea Frazzini and Michele Aghassi are responsible for bottom-up stock selection research, modeling, and portfolio management across global regions and cap ranges. The GSS team of 18 is divided into Portfolio Management/Research, Portfolio Implementation and Technology teams. GSS team is supported by the firm's trading, risk management and broader technology teams.

GSS' key investment professionals are:

Andrea Frazzini, Principal

Andrea is a senior member of AQR's Global Stock Selection team, focusing on research and portfolio management of Long/Short and Long-Only equity strategies. He has published in top academic journals and won several awards for his research, including Bernstein Fabozzi/Jacobs Levy Award, the Amundi Smith Breeden Award, the Fama-DFA award, the BGI best paper award and the PanAgora Crowell Memorial Prize. Prior to AQR, Andrea was an associate professor of finance at the University of Chicago's Graduate School of Business and a Research Associate at the National Bureau of Economic Research. He also served as a consultant for DKR Capital Partners and JPMorgan Securities. He earned a B.S. in economics from the University of Rome III, an M.S. in economics from the London School of Economics and a Ph.D. in economics from Yale University.

Jacques A. Friedman, Principal
Jacques is the head of AQR's Global Stock Selection team and is involved in all aspects of research, portfolio management and strategy development for the firm's equity products and strategies. Prior to AQR, he developed quantitative stock-selection strategies for the Asset Management division of Goldman, Sachs & Co. Jacques earned a B.S. in applied mathematics from Brown University and an M.S. in applied mathematics from the University of Washington. Before joining Goldman, he was pursuing a Ph.D. in applied mathematics at Washington, where his research interests ranged from mathematical physics to quantitative methods for sports handicapping.

Michele L. Aghassi, Principal
Michele is co-head of research in AQR's Global Stock Selection group. She played a key role in launching the firm's emerging equities strategy in 2008 and is responsible for oversight of emerging-market stock selection. Michele contributes to the advancement of the investment process in a variety of areas, including alpha signals, portfolio construction and optimization and performance attribution. She developed the proprietary optimization technology that AQR uses to build long-only portfolios. Michele graduated magna cum laude from Brown University with a B.Sc. in applied mathematics. She also earned a Ph.D. in operations research from the Massachusetts Institute of Technology, where she was a National Science Foundation Graduate Research Fellow and an MIT Presidential Graduate Fellow. Between Brown and MIT, Michele worked as a quantitative analyst in the proprietary equities department of D.E. Shaw & Co.

Process

AQR's team is organized into three sub-categories: Portfolio Management/Research, Portfolio Implementation and Technology. The Portfolio Management/Research team is responsible for improving and developing their investment processes from identifying sub-strategies and factors to enhancing measurement and efficacy of existing factors. The Portfolio Implementation team runs the daily process of running their models to establish implementable portfolios and positions. The Front Office Technology team supports both the Research and Portfolio Management teams by building the infrastructure and coding programs needed to complete these daily tasks.

Value Strategies
Value strategies are associated with long-term mean reversion in returns. For example, individual equities (and markets) with high P/E, P/B, P/CF, etc. (growth stocks) tend to have lower returns going forward than individual equities with low P/E, P/B, P/CF (value stocks). An efficient markets explanation for the return premium of value vs. growth, based on Fama and French research, is that it corresponds to a risk factor associated with the underlying equities. Value stocks tend to be lower quality, sometimes distressed, firms. Hence, the value vs. growth return premium may be fair compensation for investors willing to bear the additional risks of owning value stocks. An inefficient markets explanation for the predictability of these factors is that markets tend to over extrapolate past information (like earnings). Markets set prices of equities that have very high past growth, assuming that growth will continue going forward. However, at some point in the future, markets have been overly optimistic and returns drop. Conversely, markets set prices of equities that have very low past growth, assuming that the low growth will persist. At some point in the future, markets realize that they have been overly pessimistic and those stocks are rewarded. This explanation falls under the heading of psychological biases.

Momentum Strategies
Momentum strategies are the simple strategy of buying stocks that have done well over the last year and selling stocks that have done poorly which seems to produce positive excess returns over time. One explanation for momentum strategies is that in the short term, markets tend to under-react to new information (lagged market reaction). For example, one measure of equity

momentum is revisions in aggregate analyst earnings forecasts. Revisions tend to be positively autocorrelated over time, as analysts tend to herd. Thus, revisions this period are positively related to revisions next period. Despite the empirical regularity in analyst behavior, markets seem to under-react to current revisions (i.e. they do not price in all the anticipated future revisions associated with the current revision). Another related explanation of momentum strategies follows from the fact that investors tend to chase performance. There is a strong documented relation between flows of funds and the past performance of those funds. On the other side, investors also tend to sell stocks which have performed poorly. Both sides would result in a momentum strategy producing positive results.

Finally, AQR's internal research also points to a possible risk-related explanation for the existence of a momentum premium. They find that the returns to momentum strategies are significantly negatively skewed. That is, while these strategies have positive average returns, they occasionally experience abnormally large negative events. Moreover, while the pay-off to momentum strategies also exhibits negative skewness across all of the asset classes, AQR has found that momentum strategies (and the occurrence of these negatively skewed events) are close to uncorrelated across asset classes. Thus, a portfolio of these momentum strategies offers diversification and risk-reduction.

Additional Signals

In addition to Value and Momentum, Earnings Stability, Earnings Quality, Investor Sentiment and Management Signaling all contribute to the models that drive portfolio construction. AQR's models also evaluate these signals across industries and within them meaning that stocks will be evaluated against their industry and that industry vs other industries (Ex. Ford vs. Auto Industry; Auto Industry vs. Other Industries). They will also evaluate a stocks economically linked group vs other economically linked peers. Each stocks ranking across all these metrics will be combined to provide a score for how attractive the company is for purchase or sell.

AQR uses an optimization approach that explicitly incorporates trade cost analysis. The firm tracks its trading costs across securities and portfolios and uses that as input data in the optimization decision.

As described above, AQR uses a systematic, quantitatively-driven approach. The only time they will override the model is if the model is not capturing risk accurately. On example of this infrequent override was a one-week override to factors that were tightly tied to the Brexit vote last year. Any overrides will be made only for risk-reduction purposes.

Risk Management

AQR has a segregated risk team that oversees all enterprise risk at the firm, including market and liquidity, research and model, compliance, technology and operational. Risks are quantified and ranked as high, medium or low with the proper resources allocated to their oversight. As an example, administrative counterparty risk is viewed as low, while prime broker risk is viewed as high and monitored in real time. AQR uses multiple prime brokers on each fund to further mitigate this risk. The size of the risk management team, now numbering 45, has tripled in the last five years in appreciation of the importance of risk management role as part of their investment process and business. They also have an experienced, external advisor that consults to them and spends one day each week in their offices to ensure that best practices risk management is utilized at the firm.

AQR has an equally robust compliance team with 40 professionals.

Performance

AQR has historically been able to provide attractive risk adjusted returns. The Sharpe Ratio has been over 1 for the 1, 3, 5, and 7-year trailing periods ending March 31, 2018. The Strategy has also outperformed its benchmark over each trailing 1, 3, 5, 7, 10 and Since Inception time periods. With a tracking error in the 2.5-3% range, the outperformance is also quite steady so there won't be large swings in out/under performance. Additional performance information is provided in an accompanying document.
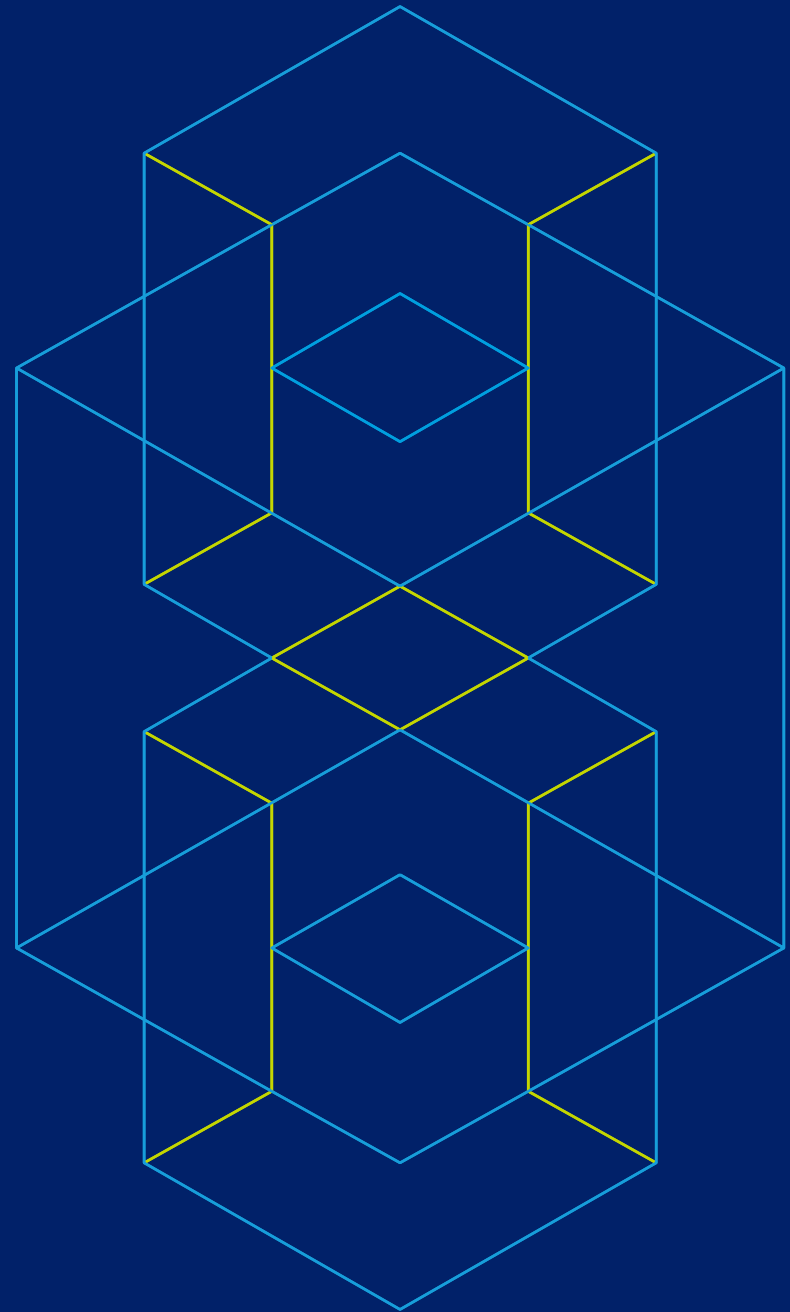
Recommendation

AQR's US Enhanced Equity strategy provides an attractive blend of systematic factor driven investing with modest levels of active management at an attractive fee point.

Unlike many competitors that have launched products in recent years to capitalize on trends in factor investing, AQR has been investing the same way since inception. Though they have enhanced their models and are constantly innovating their processes, the underlying DNA of systematic model-driven investing at the Firm hasn't changed. We believe on a net-of-fee basis, AQR has the strongest likelihood of providing excess returns and will be a nice complement to SCERS' passive and fundamental active exposure in Large Cap US Equities.

AQR U.S. Enhanced Equity

Prepared Exclusively for Sacramento County ERS

June 20, 2018

Disclosures

AQR Presenters

Rodolfo Martell, Ph.D.
Managing Director, Portfolio Management

Rodolfo is a Managing Director on the strategy team within AQR's Global Stock Selection group, where he conducts research on equity markets and portfolio attribution. In this role, he is responsible for communicating investment strategy and performance to a wide range of investors globally based on a deep understanding of GSS product offerings and capabilities. Prior to AQR, Rodolfo was a Managing Director and portfolio manager with Quantitative Management Associates. Prior to this, Rodolfo was a Director and portfolio manager with BlackRock, a Principal with Barclays Global Investors, and an Assistant Professor of Finance at Purdue University. His research has been published in top academic journals, including the American Economic Review and Review of Finance. Rodolfo earned a B.A. in economics from Universidad de las Americas-Puebla, an M.A. in economics and Ph.D. in finance from The Ohio State University.

Iwan Djanali
Vice President, Client Strategies

Iwan is a senior member of AQR's Client Strategies team, collaborating with institutional investors throughout the Western and Southwestern U.S. In this role, he is responsible for overseeing existing client relationships within the region, advising on asset allocation, portfolio construction and AQR's investment strategies. Prior to AQR, Iwan was a senior consultant at Monitor Group, advising Fortune 500 companies in corporate strategy and finance. He has also worked as a Summer Associate at Goldman Sachs. He earned a B.A. with High Honors in economics and mathematics from Wesleyan University and an M.B.A. with Distinction from Harvard Business School. He has passed all levels of the CFA and CAIA exams.

Executive Summary
AQR Enhanced Equity – Core Investment Strategy

AQR Enhanced Equity strategy seeks to outperform its benchmark through a systematic process based on fundamental investment principles.

Experienced Team

- Stable PM team has 18-year track record with $103B* in long-only equity assets

Fundamental Investing – Systematically Applied

- Innovative research applied systematically to risk-controlled, diversified portfolios

Targets Consistent Returns

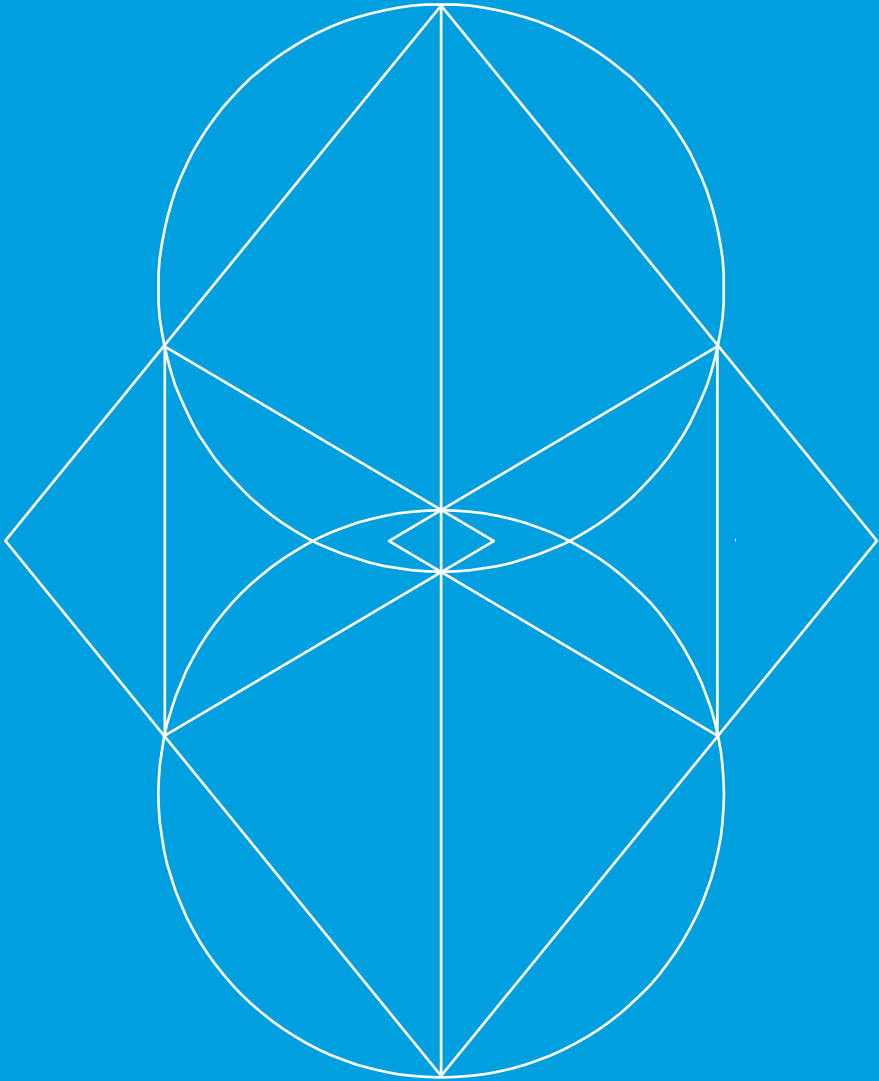- Seeks excess returns of 1.8% on 2.5% Tracking Error**

Firm Overview

Our Firm

AQR is a global investment management firm built at the intersection of financial theory and practical application. We strive to deliver superior, long-term results for our clients by looking past market noise to identify and isolate what matters most, and by developing ideas that stand up to rigorous testing. Our focus on practical insights and analysis has made us leaders in alternative and traditional strategies since 1998.

At a Glance

- AQR takes a systematic, research-driven approach to managing alternative and traditional strategies
- We apply quantitative tools to process fundamental information and manage risk
- Our clients include institutional investors, such as pension funds, defined contribution plans, insurance companies, endowments, foundations, family offices and sovereign wealth funds, as well as RIAs, private banks and financial advisors
- The firm has 36 principals and 914 employees; over half of employees hold advanced degrees
- AQR is based in Greenwich, Connecticut, with offices in Boston, Chicago, Hong Kong, London, Los Angeles, and Sydney
- Approximately $225 billion in assets under management as of March 31, 2018*

*Approximate as of 3/31/2018, includes assets managed by AQR and its advisory affiliates.

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Assets Under Management

Total Assets
$225 Billion*
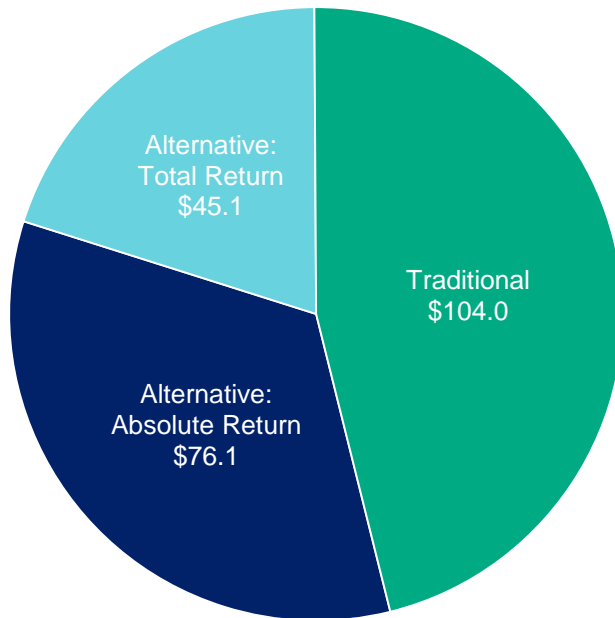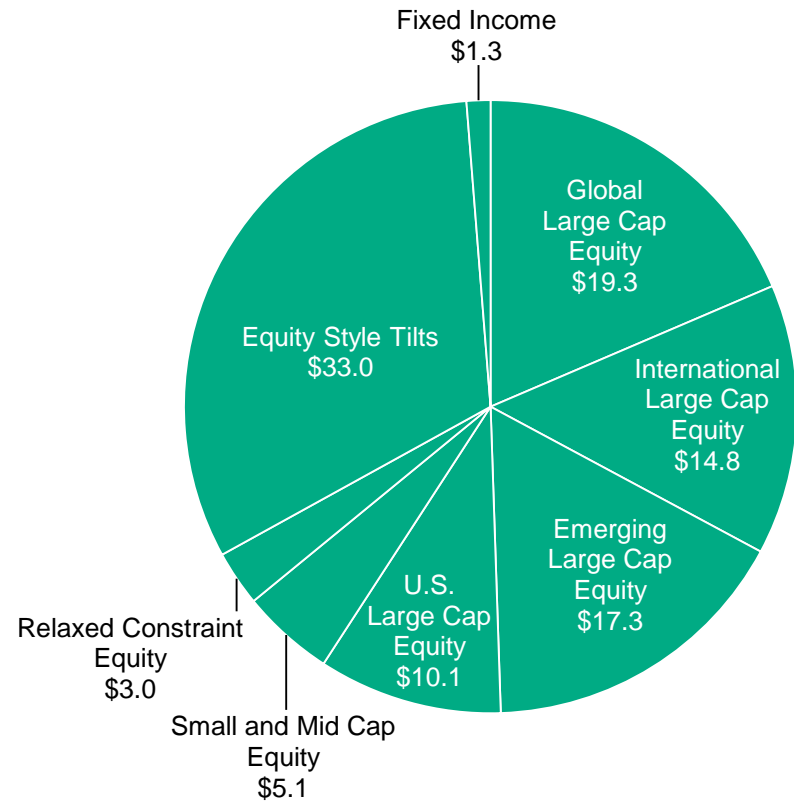
Alternative:
Total Return
$45.1

Traditional
$104.0

Alternative:
Absolute Return
$76.1

Traditional Strategies
$104 Billion*

Fixed Income
$1.3

Global
Large Cap
Equity
$19.3

Equity Style Tilts
$33.0

International
Large Cap
Equity
$14.8

Emerging
Large Cap
Equity
$17.3

U.S.
Large Cap
Equity
$10.1

Relaxed Constraint
Equity
$3.0

Small and Mid Cap
Equity
$5.1

*Approximate as of 3/31/2018, includes assets managed by AQR and its advisory affiliates.

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Who We Are

Cliff Asness, Ph.D.*
Managing and Founding Principal

Portfolio Management, Research & Trading	Risk Management	Business Development	Corporate Infrastructure	Legal & Compliance

John Liew, Ph.D.*
Founding Principal

David Kabiller, CFA*
Founding Principal

Portfolio Management and Research

Michele Aghassi, Ph.D. Principal	**Michael Mendelson*** Principal
Andrea Frazzini, Ph.D. Principal	**Tobias Moskowitz, Ph.D.** Principal
Jacques Friedman* Principal	**Yao Hua Ooi** Principal
Brian Hurst* Principal	**Lasse Pedersen, Ph.D.** Principal
John Huss Principal	**Scott Richardson, Ph.D.** Principal
Ronen Israel* Principal	**Mark Mitchell, Ph.D.** Principal (CNH)
Roni Israelov, Ph.D. Principal	**Todd Pulvino, Ph.D.** Principal (CNH)
Michael Katz, Ph.D. Principal	**Rocky Bryant** Principal (CNH)
David Kupersmith Principal	
Oktay Kurbanov Principal	
Ari Levine Principal	

Risk Management

Lars Nielsen*
Principal
Chief Risk Officer

Client Solutions

Gregor Andrade, Ph.D.* Principal	**Jeremy Getson, CFA*** Principal
Bill Cashel Principal	**Marco Hanig, Ph.D.** Principal
Jeff Dunn Principal	**Chris Palazzolo, CFA** Principal

Portfolio Solutions

Antti Ilmanen, Ph.D.
Principal

Marketing

Suzanne Escousse
Principal
Chief Marketing Officer

Trading

Isaac Chang
Managing Director

Brian Hurst*
Principal

Finance

John Howard*
Principal,
Chief Finance Officer /
Co-Chief Operating Officer

Bradley Asness
Principal
Co-Chief Operating Officer

Accounting, Operations and Client Administration

Steve Mellas
Principal

Systems Development and IT

Neal Pawar
Principal
Chief Technology Officer

Human Resources

Jen Frost
Principal
Chief Human Resources Officer

Legal

Billy Fenrich
Principal
Chief Legal Officer

Compliance

H.J. Willcox
Principal
Chief Compliance Officer

AQR Overview
Recognized research excellence among world class academia

Academic Engagement

19 current and former professors work at AQR

Nearly half of our employees hold advanced degrees (including 78 Ph.D.s)

Established the AQR Asset Management Institute at The London Business School to promote excellence in asset management

The AQR Insight Award gives an annual $100,000 prize honoring unpublished papers that provide the most significant investment insights

Our online research library contains more than 300 papers, journal articles, books and periodicals, as well as our data sets

Awards and Prizes

54 Research Awards

Notable awards include[1]:

- 8 Bernstein Fabozzi JPM Awards
- 8 Graham & Dodd Awards
- 6 Smith Breeden Awards[2]
- 4 DFA Prizes
- 3 Michael Brennan Awards[2]
- 1 Fischer Black Prize
- 1 Bernacer Prize
- 1 Markowitz JOIM Award

Highly Ranked Finance Research[3]

SSRN Downloads

1. New York University (NYU)
2. Harvard University
3. University of Chicago
4. University of Navarra
5. Stanford University
6. University of Pennsylvania
7. Columbia University
8. Yale University
9. Duke University
10. University of Oxford
11. MIT
12. **AQR Capital Management**
13. U.S. Government
14. University of Toronto
15. University of New South Wales

Top Journal Article Citations

1. University of Chicago
2. **AQR Capital Management**
3. Yale University
4. University of Pennsylvania
5. New York University (NYU)
6. Duke University
7. Ohio State University
8. Copenhagen
9. Harvard University
10. Universita Bocconi
11. U. of Rochester
12. Columbia University
13. Federal Reserve Bank of NY
14. Washington University
15. Dartmouth College

Global Stock Selection Team

Portfolio Management and Research

Jacques Friedman Principal	**Andrea Frazzini, Ph.D.** Principal	**Michele Aghassi, Ph.D., CFA** Principal	**Ronen Israel** Principal
Tobias Moskowitz, Ph.D. Principal	**Scott Richardson, Ph.D.** Principal	**Shaun Fitzgibbons** Managing Director	**Tarun Gupta, Ph.D.** Managing Director
Rodolfo Martell, Ph.D. Managing Director	**Greg McIntire, CFA** Managing Director	**Lukasz Pomorski, Ph.D.** Managing Director	**Laura Serban, Ph.D.** Managing Director
Nathan Sosner, Ph.D. Managing Director	**Greg Hall** Vice President		**Adrienne Ross** Vice President

Portfolio Implementation

Michael Katz, Ph.D. Principal	**Oktay Kurbanov** Principal	**Alla Markova** Managing Director

Trading

Isaac Chang Managing Director	**Brian Hurst** Principal

Risk Management

Lars Nielsen
Principal

Front Office Technology

Neal Pawar
Principal

Investment Philosophy
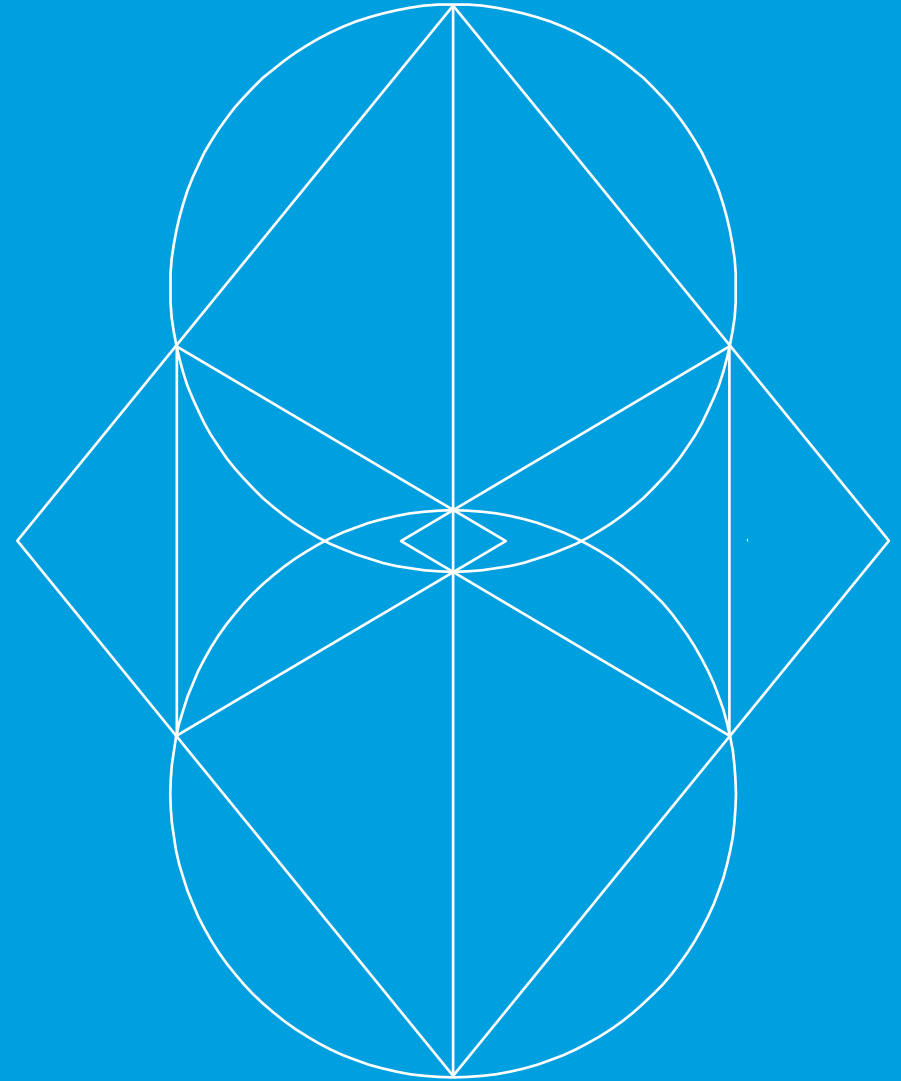
Investment Philosophy
Fundamental investing – systematically applied

Markets are mostly efficient, but inefficiencies exist.

We seek to exploit inefficiencies through the **systematic implementation** of a **diversified portfolio**, driven by **innovative research**.

Our research is **grounded in fundamental economic theory**.

Fundamental Inputs to AQR's Systematic Process

Attractive Prices

Improving Prices and Fundamentals

Stable and High-Quality Financials

Sound Accounting Practices

Support of High-Conviction Investors

Shareholder-Friendly Management

Investment Philosophy
Potential benefits of a systematic approach

AQR's Systematic Approach

Stock Selection Benefits

- Evaluate broad universe of stocks, not just a select few

- Process large amounts of stock-related data

- Repeatable and disciplined process minimizes effects of emotions in decision making
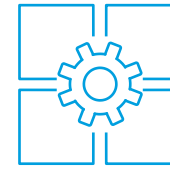
Implementation Benefits

- Diversified portfolios reduce risk of a few large positions

- Risk is tightly controlled and unintended exposures are minimized

- Focus on lowering trading costs

Investment Process
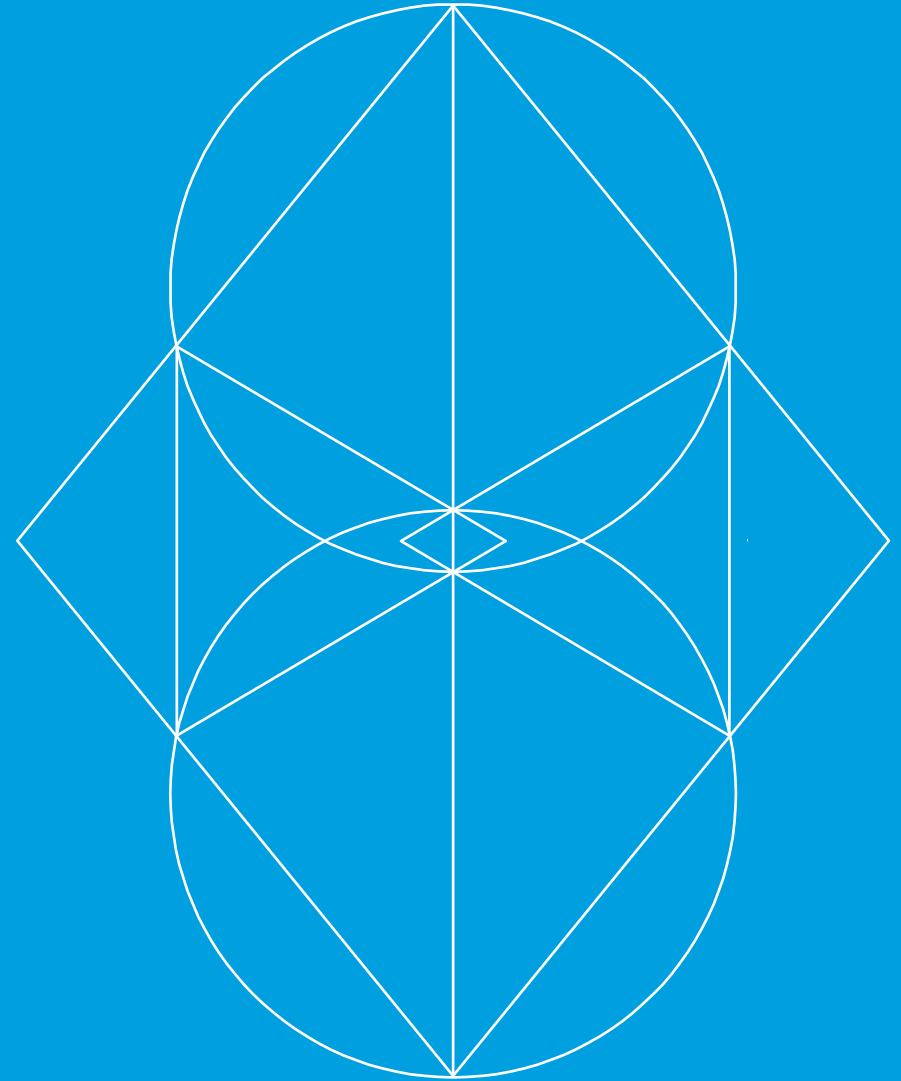
Investment Process
Consistent process across AQR Enhanced Equity Strategies

1. Select Investment Universe

MSCI World   MSCI ACWI   MSCI EM

S&P 500
Russell 2000   MSCI EAFE
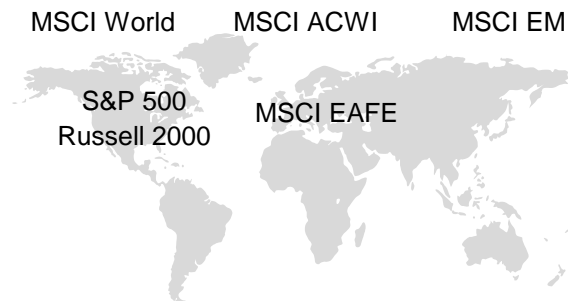
We use the broad investment universe and do not stray from benchmark names.

2. Evaluate Attractiveness of Each Stock

Value
Momentum
Stability   **Stock's**
Earnings Quality   **Final View**
Investor Sentiment
Management Signaling

3. Portfolio Construction

Stock Views →

**Real World Constraints & Costs** →

Implementable Portfolio

4. Trading

Rebalance Portfolio → **Customized Trading Algorithms** → **Market**
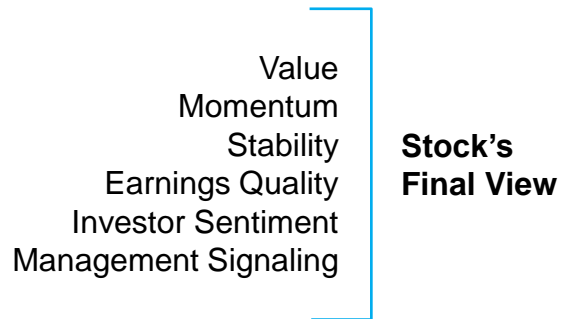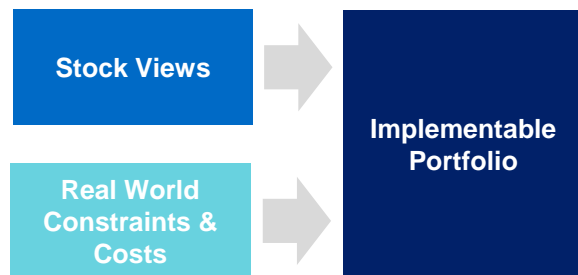
Source: AQR. Investment process is subject to change at any time without notice. Please read important disclosures in the Appendix. In equities and futures markets, AQR utilizes broker's infrastructure to access electronic trading venues. In FX markets, AQR connects directly to dealers and electronic trading venues.

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Evaluating Stocks
AQR's evaluation criteria are based on economic signals

- We form a view on each stock through a model developed over more than 19 years.
- Stocks are evaluated based on the below signals, relative to other stocks in the below peer groups, both regionally and globally.

Signal Groups

Valuation:	Attractive prices
Momentum:	Improving prices and fundamentals
Stability:	Stable and high quality financials
Earnings Quality:	Sound accounting practices
Investor Sentiment:	Support of high conviction investors
Management Signaling:	Shareholder-friendly management

Peer Groups

Within Industries

Across Industries

Economically-Linked Groups

Country-Industry Pairs

Evaluating Stocks
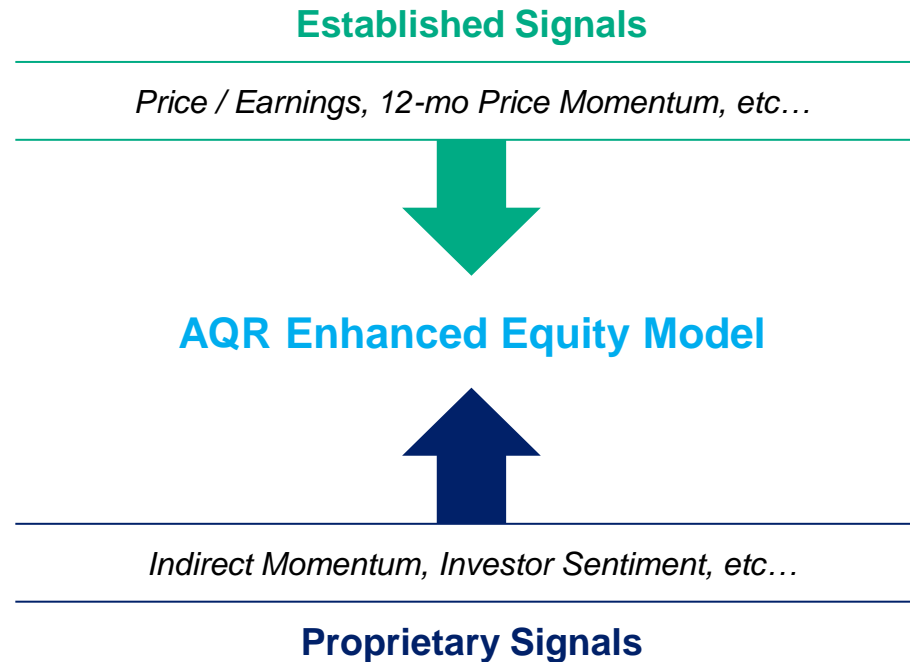## AQR signals

Using innovative implementation, excess returns may be extracted from:

- Established signals backed by academic evidence
- Proprietary signals based on rigorous research and lesser known data sources

Established Signals

Price / Earnings, 12-mo Price Momentum, etc…

AQR Enhanced Equity Model

Indirect Momentum, Investor Sentiment, etc…

Proprietary Signals

Evaluating Stocks
Example: U.S. Food & Staples Stock

Below is a stylized example of our model's view on a single stock (ranks/percentiles), highlighting a small subset of our signals.

Within Industry
(Example Stock vs. Food & Staples Stock Peers)

Signal	Example	Data Value	Percentile
Valuation:	Adjusted Price / Earnings	14.4x	86%
Momentum:	Adjusted 12 Month Return*	17.5%	71%
Earnings Quality:	Accruals from Current Operating Assets	4.8%	57%
Stability:	3-year Return on Equity	19.4%	57%
Investor Sentiment	Change in % of Shares Shorted	0.8%	0%
Management Signaling:	% Change in Shares Outstanding	3.7%	43%

Percentile Score: 89%
Based on weighted-average signal scores

Across Industry
(Food & Staples Industry vs. Other Industries)

Signal Example	Data Value	Percentile
Adjusted Price / Earnings	18.7x	65%

Economically-Linked Groups
(Example's Linked Peers vs. Other Stocks' Linked Peers)

Signal Example	Data Value	Percentile
Momentum of Cross-Suppliers	6.5%	40%

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Evaluating Stocks
Continuous model enhancements

- ~5% of aggregate model is new each year

- High bar for new signals: typically less than 5% of originated research goes into the model

- Below is a **composite of model additions since 2008** – each factor is added to the composite on the day it was added to the model

Sharpe Ratio of Hypothetical Long/Short Portfolios of New Signals

	Large Cap		Small Cap		Average across Regions / Countries		
	Developed	Emerging	Developed	Emerging	Large	Small	All
Sharpe Ratio	1.83	1.69	2.63	2.69	1.35	1.66	1.53

Portfolio Construction
Proprietary rebalancing process
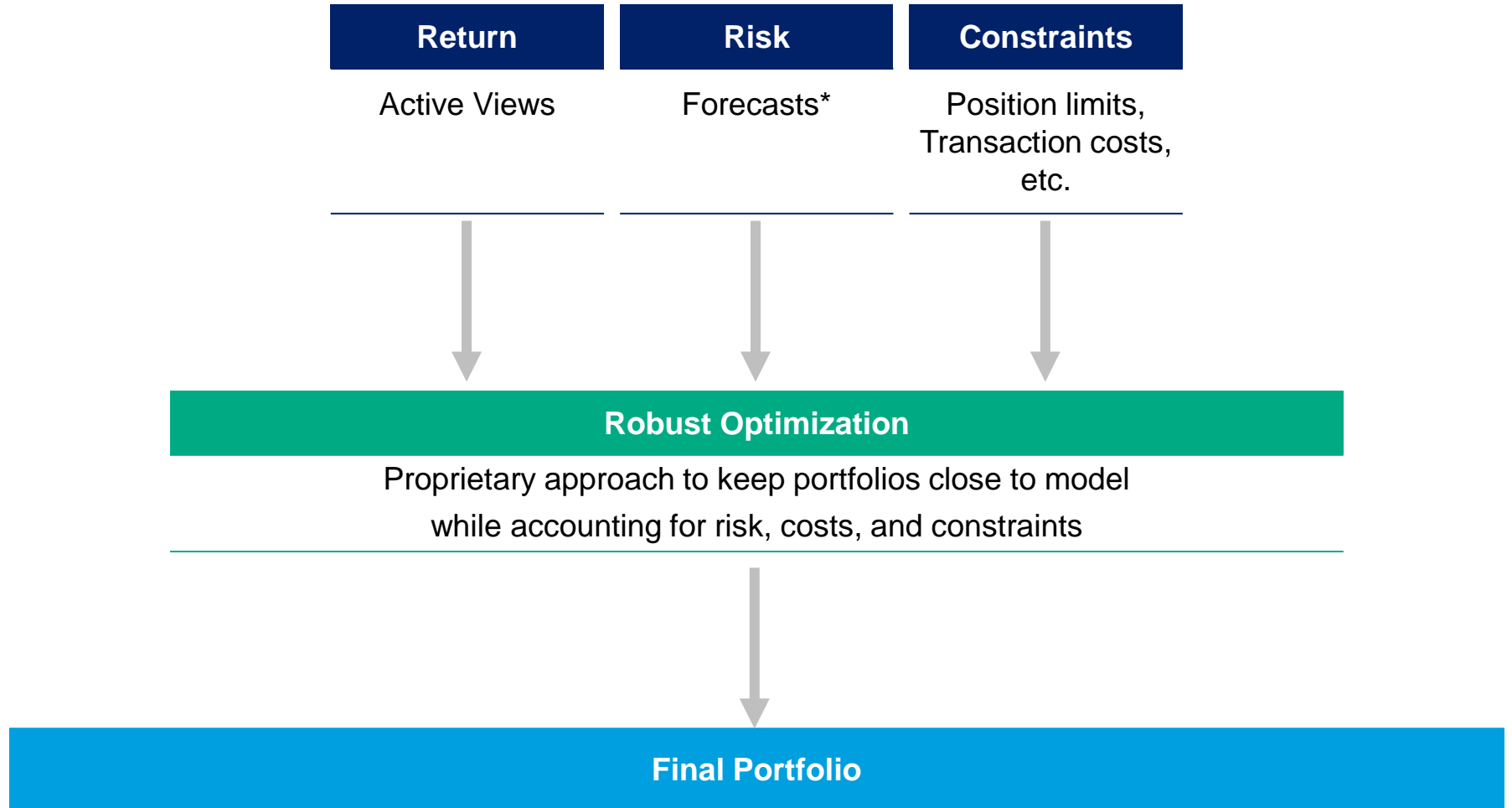
Return	Risk	Constraints
Active Views	Forecasts*	Position limits, Transaction costs, etc.

Robust Optimization

Proprietary approach to keep portfolios close to model
while accounting for risk, costs, and constraints

Final Portfolio

Portfolio Construction

Sample portfolio

- Model views drive active weights
- Avoid concentration in any single name

Top Active Positions

Signals Groups	Information Technology Stock	Consumer Discretionary Stock	Industrials Stock	Industrials Stock	Utilities Stock		Financials Stock	Consumer Discretionary Stock	Consumer Staples Stock	Health Care Stock	Financials Stock
Value											
Momentum											
Earnings Quality											
Stability											
Investor Sentiment											
Management Signaling											
Active Weight	1.4%	1.2%	1.1%	1.0%	1.0%		-0.6%	-0.7%	-0.7%	-0.7%	-0.8%

Top 5 Overweights   **Views on remaining stocks**   **Top 5 Underweights**

Advanced Trading and Research Infrastructure
AQR employs customized algorithms to help reduce trading costs

AQR Trading Highlights

- Significant focus on market structure research, execution optimization and technology
- Staff of 50+ people across traders, researchers, analysts and trading developers
- 15+ years of customized AQR algorithm development
- Electronic markets: trade and quote data for stocks, futures, currencies and options
- OTC markets: bids and offers for bonds, interest rate swaps, currencies and volatility

Typical Asset Manager
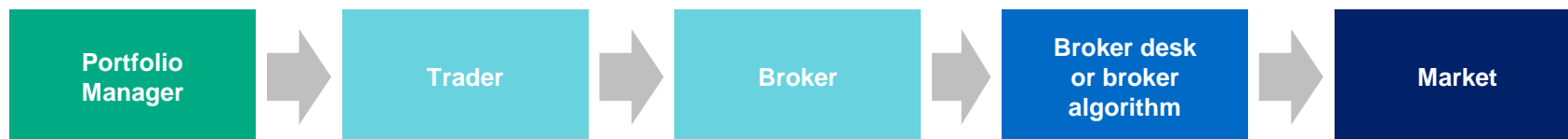
| Portfolio Manager | → | Trader | → | Broker | → | Broker desk or broker algorithm | → | Market |

AQR

AQR Investment Team

| Portfolio Management | Trading | → | Customized Algorithms and Broker Connectivity* | → | Market |

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AQR's Trading Advantage
Transaction cost savings

Third-Party Study of AQR's Equities Transaction Costs vs. Other Asset Managers'
January 2012 – December 2016

AQR **Commissions** as a % of Average Asset Managers'
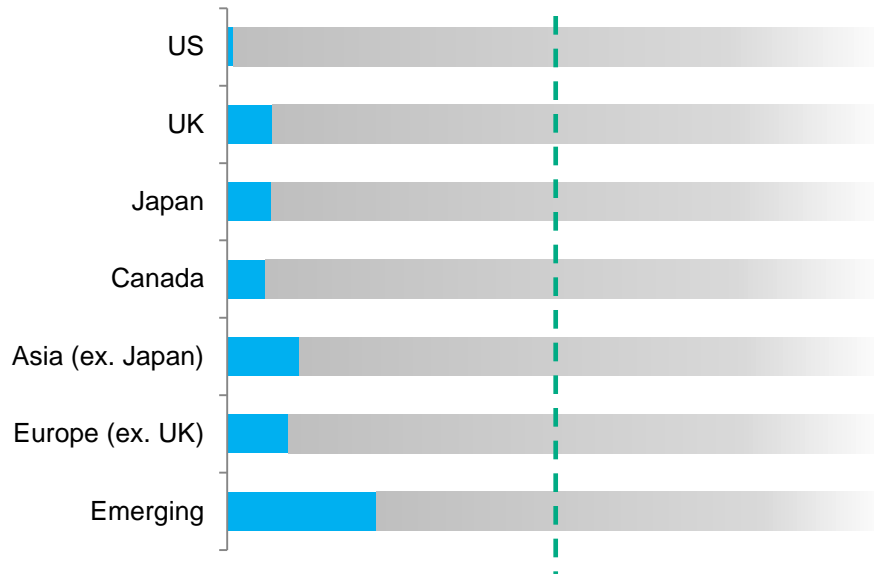
AQR **Implicit Costs** as a % of Average Asset Managers'
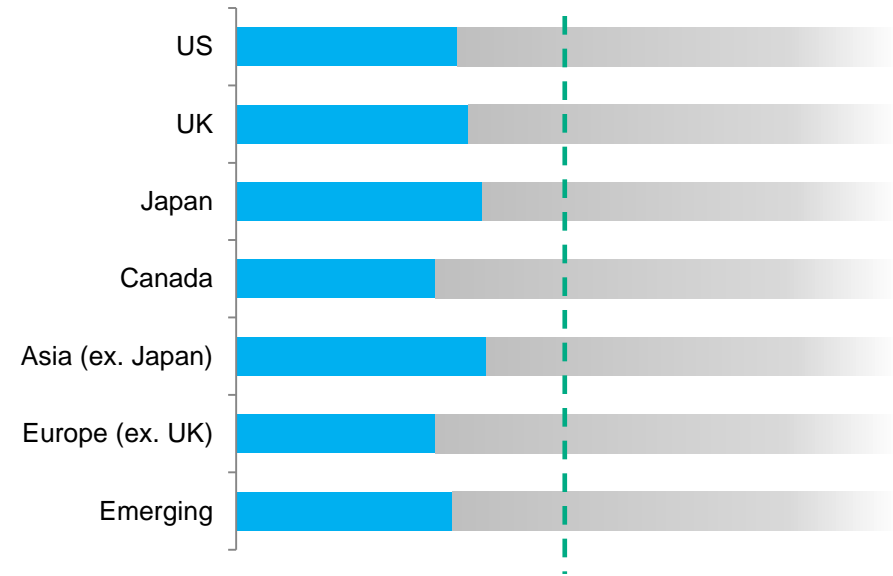
- AQR's **commissions** and **implicit costs** are meaningfully less than the average asset managers'

■ AQR   ■ Range of Other Asset Managers   – – Average of Other Asset Managers

Firm Wide Risk Management
Approach to risk management

Identification

Measurement

Monitoring

Management

Financial
- Market and liquidity risk
- Model risk
- Counterparty credit risk

Non-Financial
- Operational risk
- Vendor risk
- Technology and cybersecurity risk
- Physical security
- Business continuity

AQR's risk management process is subject to change at any time without notice. The Risk Control Systems described herein will not always be successful at controlling risk or limiting portfolio losses.

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Example Strategy Characteristics*
Diversified, risk controlled, moderate turnover

Performance Targets	1.8% excess return / 2.5% tracking error**
Number of Holdings	Hundreds (e.g. >100 for U.S.)
Average Turnover	70%–100%
Benchmark	Russell 1000
Maximum Active Weighting	Sector: +/- 6.5%, Stock +/-2%
Market Capitalization	Large Cap

Performance and Characteristics

Strategy Characteristics
US Enhanced Equity stock exposure

Portfolio Characteristics
Stock Selection Exposure
March 31, 2018

	Portfolio	Benchmark
Number of Stocks	233	975
Average Market Cap ($M)	170,158	179,209
Median Market Cap ($M)	26,409	10,444
P/E (trailing)	18.3	20.8
P/E (forward)	16.7	18.5
P/B	3.1	3.0
P/CF	13.2	15.1
ROE (5-yr)	21.4	19.7
Debt/EQ	1.3	1.1
Sales/EV	0.5	0.4
Earnings Growth (5 yr trailing)	10.0	6.6
12 Month Return of Holdings*	25.8%	19.2%

Sector Exposure
Stock Selection Exposure
March 31, 2018

	Portfolio	Benchmark	Active Weight
Consumer Discretionary	14.2%	12.9%	1.3%
Consumer Staples	5.5%	7.2%	-1.6%
Energy	2.3%	5.6%	-3.3%
Financials	13.8%	14.9%	-1.1%
Health Care	11.6%	13.1%	-1.4%
Industrials	11.6%	10.5%	1.1%
Information Technology	29.2%	24.5%	4.8%
Materials	3.8%	3.2%	0.6%
Real Estate	0.0%	3.4%	-3.4%
Telecom Services	0.8%	1.9%	-1.0%
Utilities	7.1%	2.8%	4.2%
Total	100.0%	100.0%	0.0%

Performance Summary: Enhanced Strategies
AQR's large cap Enhanced Equity strategies composite performance

AQR vs. Benchmark
Rolling Three-Year Annualized Gross Returns

Batting Average = 94%
U.S.: 125/138 three year periods (11/2003 – 3/2018)
International: 183/183 three year periods (2/2000 – 3/2018)
Global: 138/138 three year periods (11/2003 – 3/2018)
Emerging: 41/57 three year periods (8/2010 – 3/2018)

● Emerging Enhanced   ● Global Enhanced   ● International Enhanced   ● U.S. Enhanced

Performance: US Enhanced Equity
AQR US Enhanced Equity Composite performance

As of March 31, 2018

	AQR Composite Gross Return	AQR Composite Net Return	Blended Benchmark	Gross Excess Return
2003 (Nov. – Dec.)	6.1%	6.0%	6.1%	0.0%
2004	14.6%	14.2%	10.1%	4.5%
2005	12.2%	11.8%	5.1%	7.1%
2006	17.6%	17.2%	14.7%	2.9%
2007	3.1%	2.8%	5.4%	-2.3%
2008	-34.3%	-34.6%	-37.6%	3.2%
2009	27.0%	26.5%	26.3%	0.7%
2010	14.5%	14.2%	14.8%	-0.2%
2011	4.6%	4.2%	1.3%	3.2%
2012	15.4%	15.0%	15.6%	-0.2%
2013	36.1%	35.6%	32.2%	3.9%
2014	13.8%	13.4%	13.3%	0.5%
2015	2.0%	1.6%	1.4%	0.6%
2016	11.4%	11.0%	12.0%	-0.5%
2017	22.9%	22.5%	21.8%	1.1%
2018 YTD	0.1%	0.0%	-0.8%	0.9%
Summary (since November 1, 2003)				
Q1 2018	0.1%	0.0%	-0.8%	0.9%
1 Year	17.0%	16.6%	14.0%	3.0%
3 Year (Annl)	11.1%	10.7%	10.7%	0.3%
5 Year (Annl)	14.1%	13.7%	13.2%	0.9%
7 Year (Annl)	13.6%	13.3%	12.4%	1.2%
10 Year (Annl)	10.6%	10.3%	9.2%	1.5%
Since Inception (Annl)	**10.3%**	**9.9%**	**8.5%**	**1.9%**
Tracking Error				**2.2%**
Information Ratio*				**0.8**

Conclusion

Experienced Team
- Stable PM team with 18-year track record
- $103B in long-only equity assets

Fundamental Investing Systematically Applied
- Continuous model enhancement through innovative research
- Disciplined process

Consistent Returns
- Seeks stable and consistent returns
- Tightly controlled tracking error of 2.5%

Appendices
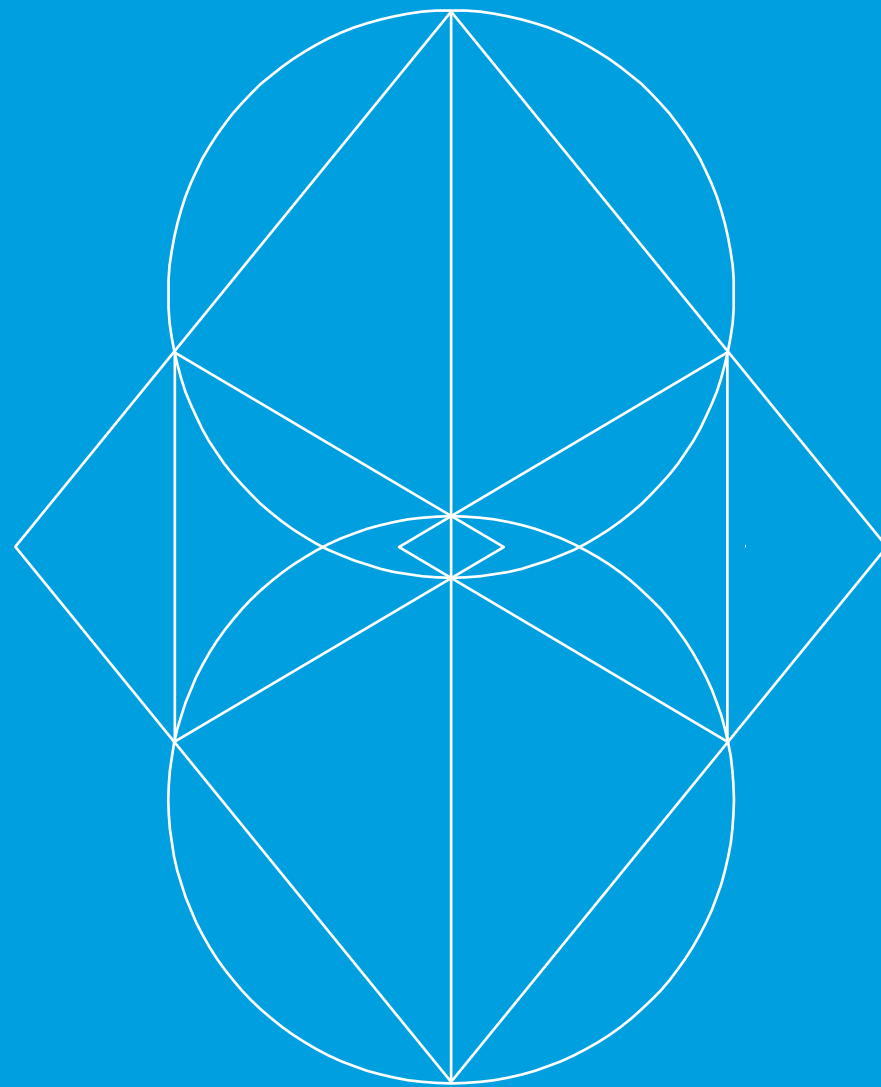
Performance Summary: Enhanced Strategies
Gross excess returns

As of March 31, 2018

Strategy Name	Inception	Benchmark	Q1 2018	Annualized 1 Yr	3 Yr	5 Yr	7 Yr	10 Yr	Inception
International Enhanced EAFE	(2/00)	MSCI EAFE	0.0%	-0.7%	0.8%	1.3%	1.5%	1.7%	1.9%
Tracking Error									1.7%
Information Ratio									**1.1**
Global Enhanced	(11/03)	MSCI World	0.4%	2.2%	0.6%	1.4%	1.6%	1.7%	1.6%
Tracking Error									1.6%
Information Ratio									**1.0**
U.S. Enhanced Equity	(11/03)	Blended Benchmark*	0.9%	3.0%	0.3%	0.9%	1.2%	1.5%	1.9%
Tracking Error									2.2%
Information Ratio									**0.8**
Small Cap Core	(1/05)	Russell 2000	-1.2%	-4.7%	-1.5%	0.2%	0.5%	0.3%	0.4%
Tracking Error									3.2%
Information Ratio									**0.1**
International Small Cap EAFE	(8/07)	MSCI EAFE Small Cap	-0.2%	0.6%	0.8%	0.9%	1.5%	2.3%	2.4%
Tracking Error									2.1%
Information Ratio									**1.1**
All Country Enhanced	(8/10)	MSCI ACWI	0.6%	2.2%	0.6%	1.3%	1.6%	-	1.6%
Tracking Error									1.4%
Information Ratio									**1.2**
Emerging Enhanced	(8/10)	MSCI Emerging	0.9%	0.4%	-0.4%	0.4%	1.0%	-	1.3%
Tracking Error									1.8%
Information Ratio									**0.7**
Emerging Small Cap	(12/12)	MSCI Emerging Small Cap	2.0%	5.8%	3.5%	3.0%	-	-	3.7%
Tracking Error									2.4%
Information Ratio									**1.6**

Performance Summary: Enhanced Strategies
Net excess returns

As of March 31, 2018

Strategy Name	Inception	Benchmark	Q1 2018	Annualized 1 Yr	Annualized 3 Yr	Annualized 5 Yr	Annualized 7 Yr	Annualized 10 Yr	Inception
International Enhanced EAFE	(2/00)	MSCI EAFE	-0.1%	-1.2%	0.3%	0.8%	1.0%	1.2%	1.4%
Tracking Error									1.7%
Information Ratio									**0.8**
Global Enhanced	(11/03)	MSCI World	0.3%	1.7%	0.2%	1.0%	1.1%	1.3%	1.2%
Tracking Error									1.6%
Information Ratio									**0.7**
U.S. Enhanced Equity	(11/03)	Blended Benchmark*	0.8%	2.6%	0.0%	0.5%	0.8%	1.1%	1.5%
Tracking Error									2.2%
Information Ratio									**0.7**
Small Cap Core	(1/05)	Russell 2000	-1.4%	-5.6%	-2.4%	-0.6%	-0.4%	-0.6%	-0.5%
Tracking Error									3.2%
Information Ratio									**-0.2**
International Small Cap EAFE	(8/07)	MSCI EAFE Small Cap	-0.4%	-0.6%	-0.3%	-0.2%	0.4%	1.3%	1.3%
Tracking Error									2.1%
Information Ratio									**0.6**
All Country Enhanced	(8/10)	MSCI ACWI	0.5%	1.7%	0.2%	0.8%	1.1%	-	1.2%
Tracking Error									1.4%
Information Ratio									**0.8**
Emerging Enhanced	(8/10)	MSCI Emerging	0.7%	-0.4%	-1.0%	-0.2%	0.4%	-	0.7%
Tracking Error									1.8%
Information Ratio									**0.4**
Emerging Small Cap	(12/12)	MSCI Emerging Small Cap	1.7%	4.5%	2.4%	1.9%	-	-	2.6%
Tracking Error									2.4%
Information Ratio									**1.1**

Founding Principal Biographies

Clifford S. Asness, Ph.D., Managing and Founding Principal

Cliff is a Founder, Managing Principal and Chief Investment Officer at AQR Capital Management. He is an active researcher and has authored articles on a variety of financial topics for many publications, including The Journal of Portfolio Management, Financial Analysts Journal and The Journal of Finance. He has received five Bernstein Fabozzi/Jacobs Levy Awards from The Journal of Portfolio Management, in 2002, 2004, 2005, 2014 and 2015. Financial Analysts Journal has twice awarded him the Graham and Dodd Award for the year's best paper, as well as a Graham and Dodd Excellence Award, the award for the best perspectives piece, and the Graham and Dodd Readers' Choice Award. In 2006, CFA Institute presented Cliff with the James R. Vertin Award, which is periodically given to individuals who have produced a body of research notable for its relevance and enduring value to investment professionals. Prior to cofounding AQR Capital Management, he was a managing director and director of quantitative research for the Asset Management Division of Goldman, Sachs & Co. He is on the editorial board of The Journal of Portfolio Management, the governing board of the Courant Institute of Mathematical Finance at NYU, the board of directors of the Q-Group and the board of the International Rescue Committee. Cliff received a B.S. in economics from the Wharton School and a B.S. in engineering from the Moore School of Electrical Engineering at the University of Pennsylvania, graduating summa cum laude in both. He received an M.B.A. with high honors and a Ph.D. in finance from the University of Chicago, where he was Eugene Fama's student and teaching assistant for two years (so he still feels guilty when trying to beat the market).

David G. Kabiller, CFA, Founding Principal

David Kabiller is co-founder and the Head of Business Development at AQR, overseeing client relationships, business development and strategic initiatives. In this role, he has helped foster AQR's tradition of innovation by initiating AQR's international expansion into Europe and Asia and spearheading its introduction of mutual funds. In addition to these corporate milestones, David is dedicated to investor education and fostering young research talent. To that end, he was instrumental in creating the "AQR University" symposia series for financial advisors and the Master Class program for institutional investors. For the academic community, David helped create the AQR Insight Award for outstanding innovation in applied academic research and was a founding member of the LBS AQR Asset Management Institute. David has co-authored papers on topics including derivatives, enhanced indexation, securities lending, insurance-linked securities, hedge funds and the secret of Warren Buffett's investing acumen. He is a member of Northwestern University's Board of Trustees and chairman of the Executive Council of the university's International Institute for Nanotechnology (IIN). He is also a member of the Advisory Council of the AQR Asset Management Institute at London Business School and has served on the Board of Trustees for the Terra Foundation for American Art. Prior to AQR, David was a vice president at Goldman, Sachs & Co., where he established and maintained relationships with the chief investment officers of many of the largest pension and endowment funds in North America. He earned a BA in economics and an MBA from Northwestern, where he received an athletic scholarship to play tennis and was named to the Big Ten's Academic All-Conference team. At Northwestern, David founded the Kabiller Prize and the Kabiller Young Investigator Award for researchers in nanoscience and nanomedicine, and established NU for Life, a program dedicated to the professional development of Northwestern student-athletes. He is a CFA charterholder.

John M. Liew, Ph.D., Founding Principal

John is a Founder and the head of the Global Asset Allocation team at AQR, where he oversees the research, portfolio management and trading associated with that strategy. Prior to AQR, he worked at Goldman, Sachs & Co. as a portfolio manager in the Asset Management Division where he developed and managed quantitative trading strategies. He began his career at Trout Trading, developing quantitative market-neutral stock-selection strategies. John has published articles in The Journal of Portfolio Management and Financial Analysts Journal, and has received the Bernstein Fabozzi/Jacobs Levy award and the Graham and Dodd award for his articles. John is a member of the University of Chicago's Board of Trustees and sits on the university's investment committee. He earned a B.A. in economics from the University of Chicago, where he was elected a member of Phi Beta Kappa, and went on to earn an M.B.A. and a Ph.D. in finance, also from Chicago.

GSS Principal Biographies

Jacques A. Friedman, Principal

Jacques is a Principal and head of AQR's Global Stock Selection team. In this role, he is involved in all aspects of research, portfolio management and strategy development for the firm's equity products and strategies. He is also a member of both the firm's Strategic Planning and Risk Committees. Prior to joining AQR at its inception in 1998, Jacques was with Goldman, Sachs & Co., where he developed quantitative stock-selection strategies within the asset management division. Before joining Goldman, he was pursuing a Ph.D. in applied mathematics at the University of Washington, where his research interests ranged from mathematical physics to quantitative methods for sports handicapping. Jacques earned a B.S. in applied mathematics from Brown University and an M.S. in applied mathematics from the University of Washington.

Michele L. Aghassi, Ph.D., CFA, Principal

Michele is co-head of research in AQR's Global Stock Selection group. She played a key role in launching the firm's emerging equities strategy in 2008 and is responsible for oversight of emerging-market stock selection. Michele has contributed to the advancement of our investment process in a variety of areas, and developed the proprietary robust optimization technology that AQR uses to build portfolios. In addition, Michele serves on the Editorial Advisory Board of the Journal of Portfolio Management. Michele graduated magna cum laude from Brown University with a B.Sc. in applied mathematics. She also earned a Ph.D. in operations research from the Massachusetts Institute of Technology, where she was a National Science Foundation Graduate Research Fellow and an MIT Presidential Graduate Fellow. Between Brown and MIT, Michele worked as a quantitative analyst in the proprietary equities department of D.E. Shaw & Co.

Andrea Frazzini, Ph.D., Principal

Andrea is a Principal on AQR's Global Stock Selection team, focusing on research and portfolio management of the Firm's Long/Short and Long-Only equity strategies. He is also an Adjunct Professor of Finance at New York University's Stern School of Business. He has published in top academic journals and won several awards for his research, including the Smith Breeden Award, the Fama-DFA award, the BGI best paper award, several Bernstein Fabozzi/Jacobs Levy Awards, and the PanAgora Crowell Memorial Prize. Prior to AQR, Andrea was an associate professor of finance at the University of Chicago's Graduate School of Business and a Research Associate at the National Bureau of Economic Research. He also served as a consultant for DKR Capital Partners and J.P. Morgan Securities and on the board of directors of the Center for Research in Security Prices at the University of Chicago. He earned a B.S. in economics from the University of Roma Tre, an M.S. in economics from the London School of Economics and a Ph.D. in economics from Yale University.

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Performance Disclosures

The **MSCI EAFE Index** is a free float-adjusted market capitalization index that is designed to measure the equity market performance of developed markets, excluding the US & Canada.
The **MSCI World Index** is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets.
The **MSCI ACWI ex USA Index** is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets.
The **MSCI U.S. Total Return Index** measures the price performance of markets with the income from constituent dividend payments. The MSCI Daily Total Return (DTR) Methodology reinvests an index constituent's dividends at the close of trading on the day the security is quoted ex-dividend (the ex-date).
The **MSCI World Small Cap Index** provides an exhaustive representation of the small cap size segment. The indexes target companies that are in the Investable Market Index (IMI) but that are not in the Standard Index in each market.
The **MSCI Emerging Index** is a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging markets.

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GIPS Compliance: AQR claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. AQR has been independently verified for the period August 1998 through December 2016. Verification assesses whether (1) the Firm has complied with all composite construction requirements of the GIPS standards on a firm-wide basis and (2) the Firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The verification reports are available upon request. Verification does not ensure the accuracy of any specific composite presentation.

Composite Characteristics: New accounts that fit the Composite definition are added at the start of the first full calendar month after the assets come under management, or after it is deemed that the investment decisions made by the investment advisor fully reflect the intended investment strategy of the portfolio. Composites will exclude terminated portfolios after the last full calendar month performance measurement period that the assets were under management. The Composite will continue to include the performance results for all periods prior to termination. Effective for periods beginning July 1, 2010 through February 28, 2015, the Composite defined a significant cash flow as an external cash flow within a portfolio of 50%. Additional information is available upon request.

Calculation Methodology: All portfolios except mutual funds and UCITS are valued monthly and intra-month for large cash flows as defined by Firm policy. The Modified Dietz calculation methodology is used when calculating monthly and intra-month returns. Mutual funds and UCITS are valued daily and performance is calculated on a daily basis. Gross of fees returns are calculated gross of management and performance fees, administrative and custodial costs and net of transaction costs beginning January 1, 2010. Prior to January 1, 2010, gross of fees returns are gross of management and performance fees, and net of administrative, custodial, and transaction costs. Additional information regarding fees and the calculation of gross and net performance is available upon request.

Composite net of fees returns are calculated by deducting the maximum management or advisory fee charged by AQR from the gross composite monthly returns to all portfolios in the Composite. Please refer to respective Composite pages for standard model management fee per annum. Composite assets may have been exposed to the impact of performance fees.

The dispersion measure is the equal-weighted standard deviation of accounts in the Composite for the entire year. Dispersion is not considered meaningful for periods shorter than one year or for periods during which the Composite contains five or fewer accounts for the full period. The three-year annualized ex-post standard deviation measure is inapplicable when 36 monthly returns are not available.

Fees: Returns are calculated net of all withholding taxes on foreign dividends. Accruals for fixed income and equity securities are included in calculations. AQR's management or advisory fees are described in Part 2A of its Form ADV. In addition, AQR funds may have a redemption charge up to 2.00% based on gross redemption proceeds that may be charged upon early withdrawals. Consultants supplied with gross results are to use this data in accordance with SEC, CFTC and NFA guidelines.

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Past performance is not an indication of future performance.

Performance Disclosures

AQR Capital Management, LLC
International Enhanced Equity EAFE Composite
1/31/2000 – 12/31/2016

Year	Gross Return %	Net Return %	Benchmark * Return %	Number of Portfolios	Dispersion %	Composite 3-Yr StDev %	Benchmark * 3-Yr StDev %	Composite Assets ($M)	Total Firm Assets ($M)	Carve-Out %
2000	-6.50	-6.88	-8.34	1	N/A	N/A	N/A	84.13	611.28	100
2001	-17.80	-18.18	-21.44	1	N/A	N/A	N/A	69.71	1,459.49	100
2002	-12.00	-12.40	-15.94	3	N/A	N/A	N/A	408.62	4,005.25	100
2003	41.60	40.98	38.59	4	N/A	16.86	17.81	524.79	8,661.37	100
2004	22.23	21.69	20.25	5	N/A	14.84	15.43	840.43	11,830.59	100
2005	14.95	14.44	13.54	8	N/A	11.26	11.39	1,930.41	17,972.28	100
2006	28.69	28.13	26.34	12	0.93	9.46	9.33	3,949.71	30,288.30	100
2007	9.73	9.24	11.17	14	0.72	9.94	9.43	4,567.24	34,495.05	100
2008	-42.86	-43.13	-43.38	12	0.60	19.88	19.24	2,479.26	19,207.22	100
2009	35.35	34.76	31.78	11	1.87	24.00	23.58	3,219.46	23,571.55	100
2010	10.60	10.11	7.75	13	0.75	26.52	26.23	4,899.07	32,701.21	N/A
2011	-10.90	-11.30	-12.14	10	0.60	22.57	22.43	3,162.78	43,540.99	N/A
2012	20.00	19.47	17.32	9	0.54	19.50	19.37	3,777.94	71,122.42	N/A
2013	25.42	24.87	22.78	6	0.66	16.46	16.25	3,245.54	98,302.69	N/A
2014	-2.78	-3.22	-4.90	7	0.36	12.75	13.03	3,354.20	122,655.99	N/A
2015	2.56	2.10	-0.81	8	0.37	11.82	12.46	3,390.61	142,173.39	N/A
2016	-0.33	-0.78	1.00	8	0.49	11.97	12.46	3,083.58	175,089.36	N/A

*MSCI EAFE Index (Net of Dividends)

AQR claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. AQR has been independently verified for the period August 1998 through December 2016. Verification assesses whether (1) the Firm has complied with all composite construction requirements of the GIPS standards on a firm-wide basis and (2) the Firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The International Enhanced Equity EAFE Composite has been examined for the periods from its inception through December 31, 2016. The verification and performance examination reports are available upon request.

Composite Description: The International Enhanced Equity EAFE Composite (the "Composite") was created in January 2016. Accounts included invest, hold and trade in securities of developed markets outside of the United State and Canada. The Composite strategy utilizes a set of valuation, momentum and economic factors based on proprietary Security Selection models geared to assist the underlying portfolios in meeting their investment objective. Accounts included will generally be managed by both underweighting and overweighting securities relative to the benchmark. The Composite is denominated in USD. The Composite benchmark is the MSCI EAFE Index (Net of Dividends) (the "Benchmark'). The index is a free float-adjusted market capitalization index that is designed to measure the equity market performance of developed markets, excluding the United States and Canada. Benchmark returns are not covered by the report of independent verifiers.

From inception to May 31, 2010, all accounts included represent the Stock Selection segment of portfolios that are managed to the Firm's International Equity Composite. Beginning June 1, 2010, the Composite includes all dedicated International Equity Stock Selection portfolios as well as the Stock Selection segment of portfolios that are managed to the Firm's International Equity Composite. Percent that is carve-out noted above represents the percent of the Composite made up of the International Stock Selection segment. Prior to December 31, 2009, cash is allocated to the carve-out segment based on a target cash allocation. Beginning January 1, 2010, all accounts are managed with their own cash balance. Further detail on carve-out calculation methodology and cash allocation to carve-out segment returns is available upon request.

Fees: AQR's asset-based fees for portfolios within the Composite may range up to 0.45% of assets under management and are generally billed monthly or quarterly at the commencement of the calendar month or quarter during which AQR will perform the services to which the fees relate.

Past performance is not an indication of future performance.

Performance Disclosures

AQR Capital Management, LLC
Global Enhanced Equity Composite
10/31/2003 – 12/31/2016

Year	Gross Return %	Net Return %	Benchmark * Return %	Number of Portfolios	Dispersion %	Composite 3-Yr StDev %	Benchmark * 3-Yr StDev %	Composite Assets ($M)	Total Firm Assets ($M)	Carve-Out %
2003	7.25	7.18	7.87	1	N/A	N/A	N/A	244.85	8,661.37	100
2004	18.35	17.88	14.72	2	N/A	N/A	N/A	395.34	11,830.59	100
2005	13.31	12.86	9.49	4	N/A	N/A	N/A	725.60	17,972.28	100
2006	22.32	21.84	20.07	11	N/A	8.25	7.64	4,601.10	30,288.30	100
2007	6.39	5.96	9.04	13	0.92	8.69	8.10	5,096.50	34,495.05	100
2008	-38.59	-38.84	-40.71	13	0.50	17.30	17.02	2,811.25	19,207.22	52
2009	31.30	30.79	29.99	12	0.91	21.73	21.40	3,518.41	23,571.55	33
2010	13.06	12.61	11.76	12	0.40	23.82	23.72	4,628.95	32,701.21	N/A
2011	-3.16	-3.55	-5.54	11	0.38	20.22	20.15	4,044.75	43,540.99	N/A
2012	17.08	16.62	15.83	11	0.18	16.46	16.74	4,462.67	71,122.42	N/A
2013	30.11	29.60	26.68	12	0.44	13.56	13.54	5,425.11	98,302.69	N/A
2014	6.67	6.25	4.94	16	0.33	10.07	10.23	7,723.99	122,655.99	N/A
2015	1.71	1.30	-0.87	18	0.40	10.22	10.80	8,623.28	142,173.39	N/A
2016	5.52	5.10	7.51	20	0.40	10.48	10.92	9,383.16	175,089.36	N/A

*MSCI World (Net of Dividends) Index

AQR claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. AQR has been independently verified for the period August 1998 through December 2016. Verification assesses whether (1) the Firm has complied with all composite construction requirements of the GIPS standards on a firm-wide basis and (2) the Firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The Global Enhanced Equity Composite has been examined for the periods from its inception through December 31, 2016. The verification and performance examination reports are available upon request.

Composite Description: The Global Enhanced Equity Composite (the "Composite") was created in September 2009. Accounts included invest in developed markets across the world. The Composite strategy utilizes a set of valuation, momentum and economic factors based on proprietary security selection models geared to assist the underlying portfolios in meeting their investment objective. The Composite is denominated in USD. The Composite benchmark is the MSCI World Index (Net of Dividends) (the "Benchmark"). The index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of 23 developed markets' country indices throughout the world. Benchmark returns are not covered by the report of independent verifiers.

From inception to November 30, 2008, all accounts included represent the Stock Selection segment of portfolios that are managed to the firm's Global Equity Composite. From December 1, 2008 forward, the Composite includes all dedicated Global Equity Stock Selection portfolios as well as the Stock Selection segment of portfolios that are managed to the firm's Global Equity composite. Percent that is carve-out noted above represents the percent of the Composite made up of the Global Stock Selection segment. Prior to December 31, 2009, cash is allocated to the carve-out segment based on a target cash allocation. Beginning January 1, 2010, all accounts are managed with their own cash balance. Further detail on carve-out calculation methodology and cash allocation to carve-out segment returns is available upon request.

Fees: AQR's asset-based fees for portfolios within the Composite may range up to 0.40% of assets under management and are generally billed monthly or quarterly at the commencement of the calendar month or quarter during which AQR will perform the services to which the fees relate.

Past performance is not an indication of future performance.

Performance Disclosures

AQR Capital Management, LLC
US Enhanced Equity Composite
10/31/2003 – 12/31/2016

Year	Gross Return %	Net Return %	Benchmark * Return %	Number of Portfolios	Dispersion %	Composite 3-Yr StDev %	Benchmark * 3-Yr StDev %	Composite Assets ($M)	Total Firm Assets ($M)	Carve-out %
2003	6.10	6.04	6.11	1	N/A	N/A	N/A	139.64	8,661.37	100
2004	14.64	14.24	10.14	2	N/A	N/A	N/A	229.21	11,830.59	100
2005	12.21	11.83	5.14	4	N/A	N/A	N/A	387.53	17,972.28	100
2006	17.60	17.20	14.67	11	N/A	7.55	6.92	2,304.08	30,288.30	100
2007	3.13	2.77	5.44	13	1.34	8.29	7.74	2,515.91	34,495.05	100
2008	-34.34	-34.58	-37.57	13	1.04	15.91	15.28	1,436.14	19,207.22	100
2009	26.96	26.53	26.25	12	0.90	20.49	19.63	1,668.24	23,571.55	100
2010	14.55	14.15	14.77	12	0.62	22.26	21.88	2,288.42	32,701.21	N/A
2011	4.56	4.20	1.34	15	0.36	18.66	18.64	2,980.60	43,540.99	N/A
2012	15.40	15.00	15.59	16	0.76	14.48	15.24	4,727.86	71,122.42	N/A
2013	36.09	35.63	32.19	18	1.73	11.97	12.09	8,499.78	98,302.69	N/A
2014	13.79	13.40	13.28	23	0.62	9.13	9.04	12,647.96	122,655.99	N/A
2015	1.98	1.62	1.36	7	2.08	10.27	10.47	8,261.80	142,173.39	N/A
2016	11.42	11.04	11.96	7	0.92	10.31	10.60	10,709.32	175,089.36	N/A

*S&P 500 / R1000 / MSCI US Blended Benchmark

AQR claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. AQR has been independently verified for the period August 1998 through December 2016. Verification assesses whether (1) the Firm has complied with all composite construction requirements of the GIPS standards on a firm-wide basis and (2) the Firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The US Enhanced Equity Composite has been examined for the periods from its inception through December 31, 2016. The verification and performance examination reports are available upon request.

Composite Description: The US Enhanced Equity Composite (the "Composite") was created in September 2015. Accounts invest in in large capitalization stocks in the United States. The strategy utilizes a set of valuation, momentum and economic factors based on proprietary security selection models geared to assist the underlying portfolios in meeting their investment objective. The Composite is denominated in USD. The Composite benchmark is S&P 500 / R1000 / MSCI US Blended Benchmark (the "Benchmark"). The Benchmark reflects asset-weighted returns of S&P 500, Russell 1000 and MSCI US indices, rebalanced monthly based on the beginning values of portfolios included in the Composite. As of December 31, 2016, the breakdown of the Benchmark is 93% S&P 500 Index and 7% Russell 1000 Index. The breakdown of the custom Benchmark for different time periods is available upon request. Benchmark returns are not covered by the report of independent verifiers.

From inception through July 31, 2011, all accounts included represent the US Stock Selection segment of portfolios that are managed to the Firm's Global Equity composite or Global Enhanced Equity composites. From August 1, 2011, the Composite includes all dedicated US Stock Selection portfolios as well as the US Stock Selection segment of portfolios that are managed to the Firm's Global Equity composite and Global Enhanced Equity composites. Carve-out % noted above represents the percent of the Composite made up of the US Stock Selection segment. Prior to 12/31/2009, cash is allocated to the carve-out segment based on a target cash allocation. Beginning January 1, 2010, all accounts are managed with their own cash balance. Further detail on carve-out calculation methodology and cash allocation to carve-out segment returns is available upon request.

Fees: AQR's asset-based fees for portfolios within the Composite may range up to 0.35% of assets under management and are generally billed monthly or quarterly at the commencement of the calendar month or quarter during which AQR will perform the services to which the fees relate.

Prior to October 2016, the Composite was known as US Equity Composite.

Past performance is not an indication of future performance.

Performance Disclosures

AQR Capital Management, LLC
Emerging Enhanced Equity Composite
7/31/2010 – 12/31/2016

Year	Gross Return %	Net Return %	Benchmark * Return %	Number of Portfolios	Dispersion %	Composite 3-Yr StDev %	Benchmark * 3-Yr StDev %	Composite Assets ($M)	Total Firm Assets ($M)
2010	18.72	18.43	16.95	1	N/A	N/A	N/A	32.24	32,701.21
2011	-15.65	-16.17	-18.42	4	N/A	N/A	N/A	156.95	43,540.99
2012	20.48	19.77	18.22	6	N/A	N/A	N/A	1,318.67	71,122.42
2013	-0.13	-0.72	-2.60	9	N/A	18.75	19.04	493.55	98,302.69
2014	-0.62	-1.22	-2.19	21	0.13	15.19	15.00	5,978.50	122,655.99
2015	-15.66	-16.17	-14.92	27	0.60	14.02	14.06	10,138.88	142,173.39
2016	10.38	9.73	11.19	25	0.73	16.06	16.07	10,075.67	175,089.36

*MSCI Emerging Markets Total Return Index (Net of Dividends) Unhedged

AQR claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. AQR has been independently verified for the period August 1998 through December 2016. Verification assesses whether (1) the Firm has complied with all composite construction requirements of the GIPS standards on a firm-wide basis and (2) the Firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The Emerging Enhanced Equity Composite has been examined for the periods from its inception through December 31, 2016. The verification and performance examination reports are available upon request.

Composite Description: The Emerging Enhanced Equity Composite (the "Composite") was created in July 2012. Accounts included invest in emerging markets. The Composite strategy utilizes a set of valuation, momentum and economic factors based on proprietary security selection models geared to assist the underlying portfolios in meeting their investment objective. Accounts included will generally be managed by both underweighting and overweighting securities relative to the benchmark. The Composite is denominated in USD. The Composite benchmark is the MSCI Emerging Markets Total Return Index (Net of Dividends) Unhedged (the "Benchmark"). The index is a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging markets. Benchmark returns are not covered by the report of independent verifiers.

The Composite includes all dedicated Emerging Equity Stock Selection portfolios as well as the Stock Selection segment of portfolios managed to the Firm's All Country Enhanced Equity, All Country Equity, All Country International Enhanced Equity, All Country International Equity, All Country International Enhanced Equity without FX, and Emerging Equity composites. From inception, all accounts are managed with their own cash balance. Further detail on carve-out calculation methodology and cash allocation to carve-out segment returns is available upon request.

Fees: AQR's asset-based fees for portfolios within the Composite may range up to 0.60%** of assets under management and are generally billed monthly or quarterly at the commencement of the calendar month or quarter during which AQR will perform the services to which the fees relate.

**AQR retroactively revised the Composite's highest management fee from 0.65% to 0.60% per annum on January 1, 2016.

Past performance is not an indication of future performance.

Performance Disclosures

AQR Capital Management, LLC
All Country Enhanced Equity Composite
7/31/2010 – 12/31/2016

Year	Gross Return %	Net Return %	Benchmark * Return %	Number of Portfolios	Composite 3-Yr StDev %	Benchmark * 3-Yr StDev %	Composite Assets ($M)	Total Firm Assets ($M)
2010	15.47	15.27	14.96	1	N/A	N/A	238.44	32,701.21
2011	-4.96	-5.37	-7.35	1	N/A	N/A	225.73	43,540.99
2012	18.00	17.50	16.13	1	N/A	N/A	533.22	71,122.42
2013	26.15	25.62	22.80	1	13.90	13.94	669.76	98,302.69
2014	5.59	5.14	4.16	1	10.30	10.50	655.24	122,655.99
2015	0.00	-0.43	-2.36	1	10.15	10.79	745.73	142,173.39
2016	6.12	5.67	7.86	1	10.54	11.06	788.45	175,089.36

*MSCI All-Country World Index Net Total Return

Composite Description: The All Country Enhanced Equity Composite (the "Composite") was created in August 2010. Accounts included invest in developed and emerging markets, in relation to the benchmark. Accounts included utilize a set of valuation, momentum and economic factors based on security selection models geared to assist the underlying portfolios in meeting their investment objective. The Composite is denominated in USD. The Composite benchmark is the MSCI All Country World Index (net dividends) (the "Benchmark"). The index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets' country indices throughout the world.

Fees: AQR's asset-based fees for portfolios within the Composite may range up to 0.43% of assets under management and are generally billed monthly or quarterly at the commencement of the calendar month or quarter during which AQR will perform the services to which the fees relate.

Past performance is not an indication of future performance.

Performance Disclosures

AQR Capital Management, LLC
International Small Cap Equity EAFE Composite
7/31/2007 – 12/31/2016

Year	Gross Return %	Net Return %	Benchmark * Return %	Number of Portfolios	Composite 3-Yr StDev %	Benchmark * 3-Yr StDev %	Composite Assets ($M)	Total Firm Assets ($M)
2007	-8.76	-9.14	-8.77	1	N/A	N/A	4.54	34,495.05
2008	-43.09	-43.68	-47.01	1	N/A	N/A	2.58	19,207.22
2009	48.91	47.47	46.78	1	N/A	N/A	3.84	23,571.55
2010	27.78	26.53	22.04	1	28.10	28.86	4.91	32,701.21
2011	-12.97	-13.85	-15.94	1	22.98	23.01	4.28	43,540.99
2012	23.01	21.80	20.00	1	19.99	19.84	198.85	71,122.42
2013	32.07	30.78	29.30	2	16.29	16.14	420.93	98,302.69
2014	-3.53	-4.49	-4.95	4	13.34	13.32	755.29	122,655.99
2015	13.24	12.12	9.59	4	10.99	11.26	844.04	142,173.39
2016	-0.51	-1.50	2.18	4	11.66	12.11	809.03	175,089.36

*MSCI EAFE Small Cap Index

Composite Description: The International Small Cap Equity EAFE Composite (the "Composite") was created in January 2016. Accounts included invest, hold, and trade in securities of developed small cap markets outside of the U.S. and Canada. The Composite strategy utilizes a set of valuation, momentum and economic factors based on proprietary Security Selection models geared to assist the underlying portfolios in meeting their investment objective. Accounts included will generally be managed by both underweighting and overweighting securities relative to the benchmark. The Composite is denominated in USD. The Composite benchmark is the MSCI EAFE Small Cap Index (the "Benchmark"). The index is designed to measure the equity market performance of small cap indices across the world, excluding the U.S. and Canada.

Fees: Effective February 2018, AQR's asset-based fees for portfolios within the Composite may range up to 0.85% of assets under management. Prior to February 2018, the Composite's model fee schedule was 1.00% management fee per annum. Fees are generally billed monthly or quarterly at the commencement of the calendar month or quarter during which AQR will perform the services to which the fees relate.

Past performance is not an indication of future performance.

Performance Disclosures

AQR Capital Management, LLC
Emerging Small Cap Composite
11/30/2012 – 12/31/2016

Year	Gross Return %	Net Return %	Benchmark * Return %	Number of Portfolios	Composite 3-Yr StDev %	Benchmark * 3-Yr StDev %	Composite Assets ($M)	Total Firm Assets ($M)
2012	5.18	5.10	4.81	1	N/A	N/A	53.62	71,122.42
2013	4.85	3.76	1.04	1	N/A	N/A	100.97	98,302.69
2014	4.21	3.12	1.01	1	N/A	N/A	104.69	122,655.99
2015	-5.57	-6.56	-6.85	2	13.93	13.48	218.33	142,173.39
2016	5.69	4.59	2.28	2	14.57	14.33	263.48	175,089.36

*MSCI Emerging Small Cap USD Net Total Return Index (net dividends)

Composite Description: The Emerging Small Cap Composite (the "Composite") was created in December 2012. Accounts included invest, hold and trade in securities, derivatives and other financial instruments of emerging small cap entities. The Composite is denominated in USD. The Composite benchmark is the MSCI Emerging Small Cap USD Net TR Index (the "Benchmark"). The index is a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging small cap markets across the world.

Fees: AQR's asset-based fees for portfolios within the Composite may range up to 1.05% of assets under management and are generally billed monthly or quarterly at the commencement of the calendar month or quarter during which AQR will perform the services to which the fees relate.

Past performance is not an indication of future performance.

AQR

Performance Disclosures

AQR Capital Management, LLC
Small Cap Core Composite
12/31/2004 – 12/31/2016

Year	Gross Return %	Net Return %	Benchmark * Return %	Number of Portfolios	Dispersion %	Composite 3-Yr StDev %	Benchmark * 3-Yr StDev %	Composite Assets ($M)	Total Firm Assets ($M)	% Non-Fee Paying Portfolios
2005	12.19	11.31	4.55	4	N/A	N/A	N/A	178.88	17,972.28	2.05
2006	15.08	14.17	18.37	8	N/A	N/A	N/A	528.26	30,288.30	-
2007	-7.51	-8.26	-1.57	9	1.37	13.67	13.16	517.44	34,495.05	-
2008	-33.15	-33.70	-33.79	5	N/A	20.17	19.85	203.20	19,207.22	-
2009	31.34	30.32	27.17	6	N/A	25.85	24.83	582.42	23,571.55	-
2010	27.12	26.13	26.85	5	N/A	28.43	27.69	504.10	32,701.21	-
2011	-2.24	-3.02	-4.18	4	N/A	25.69	24.99	273.27	43,540.99	-
2012	16.36	15.45	16.35	7	N/A	20.28	20.20	392.66	71,122.42	-
2013	39.94	38.85	38.82	7	1.14	17.06	16.45	598.70	98,302.69	0.48
2014	6.84	6.00	4.89	6	0.75	13.07	13.12	491.34	122,655.99	1.11
2015	0.09	-0.71	-4.41	6	0.58	13.55	13.96	382.20	142,173.39	1.44
2016	20.58	19.63	21.31	6	N/A	14.94	15.76	1,044.70	175,089.36	0.64

*Russell 2000 Index

Composite Description: The Small Cap Core Composite (the "Composite") was created in December 2016. Accounts included invest in United States Small Cap securities. The Composite strategy utilizes a set of valuation, momentum and economic factors based on proprietary Security Selection models geared to assist the underlying portfolios in meeting their investment objective. In December 2016, the Small Cap Core – Low Track Error Composite was combined with the Composite due to the same investment objectives. The Composite is denominated in USD. The Composite benchmark is the Russell 2000 Index (net dividends) (the "Benchmark"). The index is a free float-adjusted market capitalization weighted index that is designed to measure the performance of the Small Cap segment of the U.S. equity universe.

Fees: AQR's asset-based fees for portfolios within the Composite may range up to 0.80% of assets under management and are generally billed monthly or quarterly at the commencement of the calendar month or quarter during which AQR will perform the services to which the fees relate.

Past performance is not an indication of future performance.