

# MANAGER SEARCH REPORT

City of Los Angeles

International Equity - World ex US/EAFE Equity - Small Cap

June 2019





## CONTENTS

1. Introduction .....	1
2. Facts and Figures .....	10
3. Analysis of past performance .....	23
4. Appendix .....	48
A. Descriptions of performance exhibits	
B. Glossary of terms	
C. Description of indices	
D. Important Notices	

# 1

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## Introduction

Mercer has been appointed by City of Los Angeles to assist in the evaluation and selection of an International Equity - World ex US/EAFE Equity - Small Cap investment manager. At its July 17, 2018 meeting, the Board considered a report from staff regarding upcoming investment manager searches for the Deferred Compensation Plan investment menu and approved a proposed 2018-2019 investment manager search plan to be refined by the Investments Committee. On October 16, 2018, the Board adopted recommendations from the Investments Committee with respect to fund search types and search criteria to be applied to each investment mandate. Per these recommendations, in 2018, the FDIC-Insured Account search was completed through an RFP process. Searches for all of the other Plan's investment options are expected to be completed in 2019. Mutual fund searches will be conducted for all of the remaining options, with the exception of Stable Value. The Stable Value Fund search will utilize an RFP only process. The active core bond, active international equity and all passive mandate searches will also include commingled investment vehicles besides mutual funds and will go through an RFP process as well.

The investment managers in this report are the remaining candidates selected from a large field of investment managers that submitted information to Mercer's proprietary Global Investment Manager Database (GIMD). The database stores all types of manager information: firm-wide demographic details, investment product details, performance, and Mercer research such as our meeting notes, news items and manager ratings. There are over 5,300 investment managers on our database that manage more than 26,600 different investment strategies. All of the managers participating in this search were asked to access the database and ensure that all of their details were correct and up to date.

This report presents information on each firm covering organizational data and management style, as well as a quantitative analysis of historical performance. Return history information is provided through March 31, 2019. Returns for periods greater than one year are annualized. Portfolio characteristics are representative of a typical portfolio submitted by the investment manager as of March 31, 2019.

## Summary and Screening Process

The universe of investment options to be considered included the Mercer's proprietary institutional Global Investment Management Database (GIMD). Mercer utilized the Mercer Insight System (Insight) to further analyse the data. Data is as of March 31, 2019, unless otherwise stated. All selected funds must be able to facilitate daily pricing and liquidity requirements.

The funds profiled in this report were selected as being the most suitable for this search based on our recommended minimum qualifications for the International Equity - World ex US/EAFE Equity - Small Cap search which follow the principles outlined in the City of Los Angeles Investment Policy Statement's Investment Selection and Termination section. These recommended minimum qualification screens are tailored to each specific mandate and are based on our expertise conducting similar searches. These minimum requirements broadly establish that prospective investment strategies are accessible in the recommended investment vehicle type; have a seasoned track record in relation to similar strategies; are managers in alignment with the subject investment mandate; hold a sufficient, yet not too large, amount of assets to effectively implement the investment strategy; and maintain investment expenses that are reasonable.

The estimated mandate size is \$101 million as of 3/31/19 and the recommended vehicle type is mutual fund.

Search minimum criteria used in the screening:

- Availability in mutual fund vehicle
- Vehicle open to new investors
- Vehicle compatible with Voya platform
- Strategy track record of 5 years or longer (specific vehicle may be shorter)
- Investment style consistent with international ex-US small-cap investment style including appropriate categorization in the database. In addition, stated benchmark of the strategy will be representative of the style (MSCI EAFE Small-Cap Index or comparable)
- Minimum assets under management in strategy of \$600 million
- Maximum assets under management in strategy of \$20 billion
- Investment expense ratio equal to or less than 1.15% after revenue sharing rebates, if any

The Mercer Manager Search Process combines both quantitative and qualitative phases in an effort to identify worthy contenders. Mercer maintains Research Qualified Lists by asset class and manager style. These lists represent Mercer IC's best thinking on which managers have the highest probability of future success. The lists are proprietary and the process is dynamic in nature; and involves a unique blend of the combined knowledge of multiple investment consultants and over 150 manager research staff world-wide. Representatives from each of these groups make up the Manager Rating Committee. The Manager Rating Committee has the ultimate responsibility of deciding which managers and strategies are placed on the Mercer IC Manager Research Qualified Lists.

## Summary and Screening Process

In this report we provide detail on the qualitative and quantitative evaluation factors that the Board has outlined in the Investment Policy. Dimensions considered include the following:

### *Qualitative Factors*

- Investment research strength (Idea Generation)
  - Number of investment staff
  - Number of portfolio management staff
  - Tenure of lead portfolio management team
  
- Portfolio construction
  - Number of holdings
  - Portfolio turnover
  - Active share of portfolio
  - Weighted average market capitalization
  - Portfolio statistics (e.g., P/E ratio, growth rate, etc.)
  - Adherence to investment style relative to benchmark
  - Off benchmark exposure
  - Cash holding
  
- Implementation
  - Strategy capacity
  
- Business Management
  - Investment expenses
  - Ownership structure

### *Quantitative Factors*

- Long-term performance relative to the index and peer group
- Long-term risk-adjusted performance
- Diversification benefits of a given option in light of complementary investments selected in each Investment Option

## Executive Summary

### *Consultant Ratings*

All investment funds are candidates for letter grades pursuant to ongoing fund monitoring and due diligence that Mercer conducts for all of its clients. These letter grades will be included in the data items reported to the Committee and can be used by the Committee as an additional measure in assessing the relative strength of each fund.

### **Candidates**

We have prepared a short-list of suitable investment managers based on the outcomes of our extensive manager research process, and incorporating your specific criteria. From a total of 63 international small-cap funds in the Lipper mutual fund database, ten (10) passed the minimum criteria screening. The style consistency screen considered correlations with the benchmark and tracking error. Information ratio, a risk adjusted performance factor, was also used as an initial quantitative screening.

We have included an analysis of the following manager(s):

- Allianz Global Investors (AllianzGI)
- Brandes Investment Partners (Brandes)<sup>1</sup> (incumbent)
- Dimensional Fund Advisors (DFA)
- Fidelity Management & Research Company - FMRCo. (US Mutual Funds Only) (Fidelity)<sup>2</sup>
- Lord Abbett & Co. (Lord Abbett)
- Polaris Capital Management (Pear Tree)
- Principal Global Investors (Principal)
- Segall Bryant & Hamill (SB&H)
- Franklin Templeton Investments (Templeton)
- Vanguard (Vanguard)
- Victory Capital Management (Victory)

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<sup>1</sup> The incumbent Brandes strategy did not pass the minimum screening criteria due to a 5-year Correlation in the bottom quartile of the peer universe.

<sup>2</sup> Fidelity had a soft close on the Fund effective May 31, 2019. It is closed to be investors but available to plan sponsors (like City of Los Angeles) who were already in the process of evaluating the fund as a potential option.

## Executive Summary

### Strategy Descriptions

Firm	Fund Description
Allianz	The investment philosophy is based on the belief that financial markets are not fully efficient. Allianz aims to exploit the information inefficiencies of the small and mid-cap segment around the world through fundamental, bottom-up stock picking. The strategy does not have an explicit style bias. However, the preference is for companies that show earnings growth, supported by high and sustainable margins, pricing power, strong management, healthy balance sheets and the ability to finance their growth from their own cash flows.
Brandes (incumbent)	Brandes' investment philosophy is based on two key components: a bottom-up value approach to identifying undervalued businesses and active management, which typically sets their portfolios apart from broad market indices. Brandes performs fundamental analysis to determine a conservative estimate of a company's intrinsic value and purchases stocks trading at a discount from their intrinsic value (called the 'margin of safety'). Brandes' portfolio weightings are purely a by-product of bottom-up stock selection, and do not attempt to match the security allocations of broad market indices. Therefore, the portfolios are typically positioned quite differently from the benchmark.
DFA IntlSmCo	DFA's investment philosophy is based on rigorous theoretical and empirical research designed to cost-effectively target premiums along the dimensions of expected returns. The strategy invests in small caps in eligible non-US developed markets, and offers broad diversification across and within countries. DFA's investment process seeks to add value across all aspects of portfolio implementation; from researching which premiums to pursue to designing portfolios that integrate multiple premiums, to ensuring efficient portfolio management and trading.
Fidelity	Fidelity's investment approach targets companies with multiyear structural growth prospects, high barriers to entry and attractive valuations based on earnings forecasts. Investment ideas typically fall into three main categories: structurally attractive growth themes, where investors may be underestimating the durability of growth drivers and long-term earnings power; cyclically out-of-favor companies with limited competition and pricing power, where investors may be focusing on near-term cyclical concerns and discounting long-term prospects; and companies with strong earnings potential whose share prices have fallen due to macroeconomic events.
Templeton	Templeton enacts a disciplined and patient approach throughout market cycles through emphasizes on fundamentals and original stock-by-stock analysis rather than short-term market trends. The depth of their research also provides the conviction to wait for the market to reflect the fair value of a stock once it is added to the portfolios. Templeton's commitment to original research drives their process to uncover opportunities wherever they may exist.

## Executive Summary

Firm	Fund Description
LordAbbett	Lord Abbett's primary focus is on in-depth fundamental research to identify strong business fundamentals and catalysts for future growth, looking for companies with strong growth rates, trading at a reasonable valuation. As a core strategy, the portfolio may have either a growth- or value-bias at times, depending on where the fundamental research identifies the most attractive opportunities.
Pear Tree	Pear Tree employs an unconstrained pure value equity selection process that is characterized as an active, all-capitalization investment approach. The approach utilizes bottom-up research to uncover the most undervalued streams of free cash flow in the world. The investment strategy strongly emphasizes valuation over growth. However, many companies in the portfolios do grow faster than the assumed real growth rate, in which cases the market's valuation of the firm can increase substantially as the market's assessment of growth moves from pessimistic to optimistic. In short, the investment process is designed to invest in growth but not to pay for growth.
Principal	Principal's fund is a developed markets strategy, built one company at a time through bottom-up stock selection. The portfolio positioning is core, investing in the most optimal growth and value oriented clients. Principal seeks to maximize absolute and relative returns for clients, while managing risk. Principal believes that markets are not perfectly efficient and recognize that investors are inherently change and risk averse. Through stock selection focused on the early identification of fundamental change, and active portfolio management that embraces rewarded risks while minimizing unnecessary systematic biases, Principal seeks to consistently capitalize on persistent biases, anomalies, and inefficiencies.
SB&H	Segall Bryant & Hamill's approach to international investing is systematic, diversified, and risk aware. SB&H believes a portfolio of companies with traditional value characteristics coupled with positive company-momentum factors will consistently outperform the market.
Vanguard	Vanguard uses a multimanager approach to seek long-term capital appreciation by investing in smaller, growth-oriented companies located outside the United States. One fund advisor uses a fundamental investment approach that focuses on company-specific factors, and the other employs a more opportunistic, bottom-up stance. Vanguard manages a small portion of the fund's assets in stock index futures and/or exchange-traded funds to facilitate cash flows to and from the fund's advisors, Wellington, TimesSquare and Schroder.
Victory	Victory believes stock selection is the most reliable and consistent source of alpha. Victory implements this philosophy through the purchase of companies exhibiting positive business momentum at attractive valuations relative to their appropriate sector/peer groups and by minimizing the risk associated with country and sector allocation decisions through tight benchmark-relative risk controls.








## Executive Summary

### Mercer Summary Evaluation

In the following table, we provide a high-level assessment of some of the key selection dimensions outlined in the Investment Policy Statement. This summary evaluation is intended to provide a digest of the information contained in the Facts and Figures section of this report and should not be considered scoring of the strategies. It is important to note that certain dimensions likely will be of more importance to the Board than others so the presence of a greater amount of favorable shading for any given fund below does not necessarily convey that option is superior.

Firm	Long-term Performance	Team Depth	Personnel Stability	Portfolio Construction	Business Management	Strategy Assets	Attractiveness of fees	Mercer Rating
Allianz	above average	average	below average	average	average	weak	average	B
Brandes	below average	above average	below average	average	above average	average	average	B+(T)
DFA IntlSmCo	below average	above average	average	excellent	above average	average	excellent	A
Fidelity	excellent	above average	average	average	average	average	average	N
LordAbbett	average	average	excellent	average	excellent	average	average	N
Pear Tree	above average	average	average	average	average	weak	average	B+(T)
Principal	excellent	average	excellent	above average	average	average	average	B+
SB&H	below average	average	below average	average	average	average	average	B
Templeton	above average	above average	above average	average	average	average	average	B(T)
Vanguard*	average	excellent	excellent	excellent	excellent	average	excellent	A/R/A(T)*
Victory	excellent	average	excellent	average	average	average	average	R

Color coding legend: Candidates with excellent attributes in a dimension relative to this group are shaded  while those with above average attributes are shaded . Candidates with average attributes are shaded , candidates with below average attributes are shaded , and candidates with weak attributes are shaded .

\*This fund has subadvisors: Wellington Management Company which is rated A, Schroder Investment Management which is rated R, and TimesSquare Capital Management is rated A(T).

Ratings guide: Strategies rated A are those assessed as having above average prospects. Those rated B are those assessed as having average prospects. Those rated C are assessed as having below average prospects. B+ is an intermediate category in between A and B. If the rating shown is N, R or NR, this signifies that the strategy is not currently rated by Mercer. Some strategies may carry an additional rating (e.g., T (Higher Tracking Error), P (Provisional), W (Watch)).

## Executive Summary

### Dimensions Evaluated

**Long-term performance:** Candidates classified as “excellent” have 5-year risk-adjusted performance<sup>1</sup> that ranks in the top decile of the Mercer Mutual Fund World ex-US EAFE Equity Small Cap Universe; those labeled as having “above average” performance rank between the 11<sup>th</sup> percentile and top 25% for this period; those labeled “average” have performance that falls between the top quartile and median; those with performance labeled “below average” fall modestly below median performance over this period; and those with “weak” performance ranked well below median. By this measure, Fidelity, Principal and Victory both have “excellent” performance while Templeton, Allianz, and Pear Tree has “above average” performance. Vanguard has “average” performance and DFA, Brandes and SB&H were “below average” to “weak”.

**Team depth:** This dimension considers the amount of dedicated resources to the strategy and also the caliber and tenure of these individuals based on Mercer’s proprietary research. Most of the strategies have capable resources, but our assessment is that both Vanguard (subadvised by Wellington, Schroder and TimesSquare), DFA, Templeton, Fidelity and Brandes stand apart from the group given the amount of resources dedicated to their respective strategies and the long-tenure of the portfolio teams. We assess Allianz, Lord Abbett, Pear Tree, Principal and SB&H has having “average” team depth given the relatively small number of resources devoted to their strategies.

**Personnel stability in the last 3 years:** Candidates which had 10% or less of strategy staff departures were classified as having “above average” personnel stability; those between 11% and 20% having “average” stability; those between 21% and 50% having “below average” stability; and those over 50% having “weak” stability. “Excellent” means there were no departures. By this measure, Allianz and Brandes had high turnover over the past three years and were assigned “below average. The remaining funds had “average” to “above average” personnel stability (with Lord Abbett, Principal, Vanguard, and Victory not losing any staff over the past 3 years).

**Portfolio construction:** This factor evaluates the manager’s process and capabilities with regards to building a portfolio. Considerations include the manager’s portfolio guidelines (e.g., cash limitations, sector and stock concentration limits, ability to invest outside of the benchmark in foreign or other types of securities, etc.), typical number of portfolio holdings, typical portfolio turnover rates, and expected sources of value added versus the benchmark (e.g., stock selection, sector rotation, tactical use of cash, etc.). All else equal, we would like a manager to offer sufficient diversification (typically above 30-40 holdings) while not holding so many

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<sup>1</sup> Risk-adjusted performance takes into account the volatility of returns of a given strategy in an effort to distinguish between investment manager skill and luck. We use information ratio for the purposes of this evaluation which is defined as excess return above the benchmark divided by the standard deviation of that excess return term.

## Executive Summary

securities that it begins to replicate benchmark performance or take a substantial amount of off-benchmark positions in order to remain fully invested. For quantitative-based strategies, a high number of securities is of less concern. In addition, we examine the degree to which the firm's trading and research resources are conducive to the process. While most of the strategies employ adequate portfolio construction, we assign higher attributes to both DFA funds and Vanguard, followed by Principal.

**Business management:** This dimension contemplates the degree to which the fund's firm is run in the interest of investors. Among things included in this are continuity of ownership, focus on stability of personnel, employee ownership, a record of controlling growth (assets under management and new products brought to market), and commitment to maintaining reasonable fees for investors. While all the funds considered are managed by generally well run businesses, we believe there are some that stand apart. Vanguard and Lord Abbett are foremost among these, and we assign "excellent" business management to them. Vanguard is owned by its fund investors, creating a high degree of alignment of interest. Lord Abbett is 100% employee owned. We also view the business management of firms running the DFA and Brandes funds favorable as these companies are majority employee owned.

**Strategy assets:** All else equal, our preference is for a sufficient amount of assets in a strategy to ensure the manager's commitment long-term and that it can implement a diversified portfolio. We also prefer that the City not represent a disproportionate amount of overall strategy assets. On the other end of the spectrum, our bias is for a fund's asset base to not be so large that any specific holding would represent a significant portion of a company's overall market cap which could make it very difficult to exit the position in a cost-effective and timely manner. None of the strategies have assets under management that exceed our comfort level. Allianz and Pear Tree, however, have relatively low asset bases which detract from these strategies.

**Attractiveness of fees:** Candidates with expense ratios below 0.60% were labeled as having "excellent" attractiveness of fees; those with expense ratios between 0.60% and 0.90% were considered to have "above average" attractiveness of fees; those with expense ratios between 0.90% and 1.15% were considered to have "average" attractiveness of fees; and those with expense ratios higher than 1.15% were considered to have "weak" attractiveness of fees. It should be noted that revenue sharing<sup>1</sup> was deducted from the overall expense ratio since this is rebated back to the Plan quarterly. Vanguard offers the lowest cost options, while several others are attractively priced.

<sup>1</sup> Revenue sharing is the portion of the overall investment expense ratio that is typically used to compensate a plan's recordkeeper. In the City of LA DCP's case, revenue sharing is rebated back to the Plan. Note that revenue sharing information was not available for Allianz, Fidelity, Principal, SB&H and Templeton as these funds are not currently on the Voya's platform.

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## Facts and Figures

## Firm Background

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Firm	Year firm founded	Office location(s) in United States	Type of firm	Ownership/Affiliation
AllianzGI	1955	Boston, Massachusetts Dallas, TX New York, NY San Diego, CA San Francisco, CA	Insurance or insurance affiliate	Allianz SE 100%
Brandes (incumbent)	1974	Brookfield, WI San Diego, CA	Independent investment firm	Senior Professionals of the Firm 100%
DFA	1981	Austin, TX Charlotte, NC Santa Monica, CA	Independent investment firm	Current and former employees, 70% Other 30%
Fidelity	1946	Boston, MA Boston, MA Covington, KY Marlborough, MA Merrimack, NH New York, NY Salt Lake City, UT Smithfield, RI Westlake, TX	Independent investment firm	Employee owned 51% Family 49%
Lord Abbett	1929	Jersey City, NJ	Independent investment firm	Employee owned 100%

Pear Tree	1995	Boston, MA	Independent investment firm	Bernard R. Horn, Jr. 93% Other 7%
Principal	1998	Chesterfield, MO Chicago, IL Des Moines, IA Los Angeles, CA New York, NY Stamford, CT	Part of a financial conglomerate	Principal Financial Group 100%
SB&H	1994	Ardmore, PA Chesterfield, MO Chicago, IL Denver, Colorado Naples, FL	Independent investment firm	Thomas Bravo 55% Professional Staff of SBH 45%
Templeton	1947	Fort Lauderdale, FL New York, New York Ridgefield Park, NJ San Mateo, CA Short Hills, NJ Stamford, CT	Independent investment firm	Public 77% Directors and officers 23%
Vanguard	1975	Berwyn, PA Boston, MA Boston, Massachusetts Charlotte, NC Chicago, IL Dallas, TX Denver, CO Greenwich, Connecticut Houston, TX Los Angeles, California Los Angeles, CA Malvern, PA New York, NY New York, New York	Independent investment firm	Fund Shareholders 100%

		Pasadena, CA San Francisco, CA Stamford, CT Waltham, MA West Conshohocken, PA Wilmington, DE		
Victory	1894	Birmingham, MI Boston, MA Brentwood, Tennessee Brooklyn, OH Cincinnati, OH Des Moines, Iowa Greenwood Village, CO New York, NY Rocky River, OH San Francisco, CA	Independent investment firm	Crestview Partners, L.P. and Others 44% Victory Employees 28% Public 14% Reverence Capital Partners 12%

## Assets

Firm	As of December 31, 2018				
	Firm-wide assets (\$MM)	Tax-Exempt Public/ Government assets (\$MM)	Firm-wide equity assets (\$MM)	Strategy Assets (all vehicles) (\$MM)	Mutual Fund Vehicle Assets (all share classes) (\$MM)
Allianz	577,443	6,090	136,854	810	109
Brandes (incumbent)	24,080	7,544	22,924	1,300	659
DFA IntlSmCo	517,316	21,406	395,747	14,479	12,292
Fidelity	2,424,688	Not Calculated	Not Calculated	1,273	1,273
LordAbbett	11,456	2,209	27,656	876	632
Pear Tree	412,697	277	11,456	1,064	1,064
Principal	18,627	22,713	142,793	4,116	882
SB&H	649,539	2,114	5,365	1,420	296
Templeton	162,683	11,952	265,012	3,520	829
Vanguard*	4,933,565	20,170	3,251,219	3,418	3,418
Victory	52,763	3,370	45,271	2,678	1,707



## Personnel

Firm	As of December 31, 2018		Additions	Departures
	Total investment professionals	Investment professionals in strategy		
AllianzGI	1567	12	5	4
Brandes (incumbent)	47	36	4	9
DFA	614	57	23	11
Fidelity	769	172	14	30
Lord Abbett	458	36	11	2
Pear Tree	13	6	0	0
Principal	560	6	0	1
SB&H	90	4	1	0
Templeton	589	34	10	12
Vanguard	277	325	0	0
Victory	178	6	0	0

## Selected portfolio characteristics

Firm	Principal security selection technique	Minimum market cap (\$MM)	Maximum market cap (\$MM)	Number of stocks typically held	Average cash position over last 5 years (%)	Average portfolio turnover over last 5 years(%)
AllianzGI	Fundamental	250	5,000	89	5	100
Brandes (incumbent)	Fundamental	250	2,500	79	13	26
DFA	Blend	50	12,400	4,447	<1%	13
Fidelity	Fundamental	None stated	None stated	129	5	19
Lord Abbett	Blend	18	5,000	100	4	75
Pear Tree	Fundamental	199	5,800	75	5	24
Principal	Fundamental	500	10,000	150-250	2	75
SB&H	Quantitative	100	17,000	400	1	100
Templeton	Fundamental	100	2,000	102	10	20
Vanguard	Blend	135	20,100	336	3	29
Victory	Blend	100	5,000	220	1	75

## Sources of value added

Firm	Market selection (%)	Industry/Sector allocation (%)	Factor/Style tilts (%)	Use of cash/market timing (%)	Currency allocation (%)	Stock selection (%)	Other (%)
AllianzGI	25	5	0	0	0	70	0
Brandes (incumbent)	0	0	0	0	0	100	0
DFA	0	5	10	0	0	35	50 <sup>1</sup>
Fidelity	0	0	0	0	0	0	0
Lord Abbett	20	15	0	0	0	65	0
Pear Tree	0	0	0	0	0	0	0
Principal	5	5	0	0	0	90	0
SB&H	0	0	0	0	0	100	0
Templeton	0	0	0	0	0	100	0
Vanguard	20	10	0	5	5	60	0
Victory	5	5	0	0	0	90	0

<sup>1</sup> Other includes trading and other ancillary considerations.

## Portfolio style characteristics as of 3/31/19

Firm	Market beta	Price to Earnings	Price to Book	Dividend yield (%)	Earnings growth	Return on equity	Debt / Equity	Market cap (\$MM)	Active Share (%)
AllianzGI	1.0	15.0	1.8	2.5	10.9	13.4	60.9	3,601	76.0
Brandes (incumbent)	0.8	11.5	0.7	3.1	-1.4	6.1	61.9	1,824	99.0
DFA	1.0	14.2	1.3	2.8	11.4 <sup>1</sup>	11.9	88.1	2,128	37.0
Fidelity	0.9	20.7	2.3	2.0	12.7	11.2	23.9	3,300	95.3
Lord Abbett	1.1	14.7	14.6	2.4	11.2	12.1	0.5	2,175	96.4
Pear Tree	1.0	12.8	1.4	4.0	0.0	11.5 <sup>1</sup>	31.9 <sup>2</sup>	1,646	98.0
Principal	1.0	14.9	1.8	2.6	13.6	12.2	52.45	4,252	85.9
SB&H	1.1	9.5	1.1	4.1	10.8	14.7	30.3 <sup>3</sup>	697	84.3
Templeton	1.0	16.8	1.8	2.6	10.0	14.1	72.7	2,269	96.9
Vanguard	1.1	16.6	1.9	2.4	15.3	12.6	24.8 <sup>4</sup>	3,418	85.0
Victory	1.1	15.2	1.8	2.2	19.8	16.4	0.5	3,573	84.0
MSEAFESC	1.0	14.6	1.5	2.7	12.4	12.5	0.7	2,610	N/A

<sup>1</sup> Sourced from MorningStar

<sup>2</sup> Manager does not calculate Debt/Equity. Debt/Capital is shown per MorningStar which is calculated by dividing long-term debt (excluding other liabilities) by total capitalization (the sum of common equity plus preferred equity plus long-term debt). This figure is not provided for financial companies.

<sup>3</sup> Long-Term Debt/Capital is shown per Manager

<sup>4</sup> Debt/Capital provided by Manager

## Sector Distribution as of 3/31/19

Firm <sup>1</sup>	Energy (%)	Materials (%)	Industrials (%)	Cons Disc (%)	Cons Staples (%)	Health Care (%)	Financials (%)	Real Estate (%)	Info Tech (%)	Telecom Services (%)	Utilities (%)
AllianzGI	3.6	11.0	23.9	7.2	5.1	10.7	12.3	7.4	16.6	1.8	0.5
Brandes (incumbent)	0.0	0.6	17.6	10.5	23.5	6.9	9.0	8.2	7.2	8.3	2.1
DFA	4.5	10.4	24.4	14.9	6.0	5.5	11.4	5.1	9.3	5.4	3.1
Fidelity	1.8	5.8	22.6	9.5	7.6	13.4	3.9	3.9	14.7	6.3	0.0
Lord Abbett	1.9	8.7	19.4	13.7	7.0	7.9	12.0	9.6	7.1	5.8	2.2
Pear Tree	0.0	6.6	17.9	19.3	6.4	1.2	16.1	2.0	14.7	2.0	5.5
Principal	3.1	9.4	21.2	11.9	6.1	8.5	10.9	12.5	8.0	4.1	2.5
SB&H	3.0	8.4	21.7	15.4	6.9	7.6	11.2	11.9	10.0	1.6	2.4
Templeton	2.4	5.3	23.1	31.1	7.6	5.0	9.0	2.1	13.2	1.3	0.0
Vanguard	0.9	8.9	29.5	18.6	3.2	8.9	9.9	4.1	10.3	4.4	1.3
Victory	4.0	8.7	20.5	12.8	5.9	9.0	10.4	10.9	11.2	5.0	1.5
MSEAFESC	2.6	8.3	21.4	12.9	6.5	7.6	11.2	12.4	9.9	4.7	2.4

<sup>1</sup> Data provided by the investment managers. May not add to 100% due to rounding or allocations to cash and multi-sectors not stated

## Country Allocation

Firm	UK (%)	Europe ex UK (Developed) (%)	Japan (%)	Pacific ex Japan (Developed) (%)	North America (%)	Emerging Markets (%)	Other Developed Markets (%)	Cash (%)
AllianzGI	11.4	44.4	30.1	6.0	0.0	4.9	0.0	3.3
Brandes (incumbent)	19.6	14.7	19.1	3.7	0.0	29.5	4.6	8.8
DFA	18.0	36.6	23.0	10.6	0.0	0.0	9.9	1.9
Fidelity	16.4	24.7	34.7	1.6	0.0	11.1	5.6	5.9
Lord Abbett	8.6	40.0	21.5	5.0	0.0	11.0	12.3	2.5
Pear Tree	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Principal	17.1	30.6	26.5	10.6	0.0	0.0	14.4	0.8
SB&H	18.5	35.9	31.0	12.1	0.0	0.0	1.8	0.7
Templeton	6.5	33.6	18.6	5.2	0.0	22.5	6.4	7.2
Vanguard	14.7	40.5	27.0	6.0	0.0	9.9	0.7	1.2
Victory	15.7	38.5	22.3	8.7	0.0	5.0	8.4	1.4

## Fee Information

Firm	Strategy name	Strategy inception year	Mutual Fund Ticker	Net Expense Ratio <sup>1</sup>	Revenue Sharing	Effective Net Expense Ratio (%)	Minimum Account Size (\$MM) <sup>2</sup>	On Voya Platform
AllianzGI	AllianzGI International Small-Cap Fund R6	1996	AISX	1.00%	0.00%	1.00%	None	No
Brandes (incumbent)	Brandes International Small Cap Equity Fund I	1995	BISMX	1.15%	0.15%	1.00%	1.0	Yes
DFA	DFA International Small Company Inst	1996	DFISX	0.53%	0.00%	0.53%	None	Yes
Fidelity	Fidelity Advisor International Small Cap Opportunities Z	2005	FIQJX	1.04%	0.00%	1.04%	None	No
Lord Abbett	Lord Abbett International Opportunities	1996	LINVX	0.87%	0.00%	0.87%	None	Yes
Pear Tree	Pear Tree Polaris Foreign Value Small Cap Instl	2008	QUSIX	1.05%	0.15%	0.90%	1.0	Yes
Principal	Principal International Small Company R6	1995	PFISX	1.07%	0.00%	1.07%	None	No
SB&H	Segall Bryant & Hamill International Small Cap I	2008	SBSIX	1.03%	0.00%	1.03%	0.25	Pending <sup>3</sup>
Templeton	Templeton Foreign Small Companies Series	2001	TFSCX	0.99%	0.00%	0.99%	1.0	No
Vanguard	Vanguard International Explorer	1996	VINEX	0.39%	0.00%	0.39%	0.03	Yes
Victory	Victory Trivalent International Small-Cap I	2007	MISIX	0.99%	0.00%	0.99%	2.0	Yes

<sup>1</sup> Some expense ratios may currently have an expense cap or fee waiver that can be changed by the manager at any time.

<sup>2</sup> Source: Lipper

<sup>3</sup> Currently in negotiations to add fund to Voya platform.



# 3

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## Analysis of past performance

### Notes:

- AllianzGI International Small-Cap Fund R6<sup>4</sup>
- Fidelity Advisor International Small Cap Opportunities Z<sup>5</sup>
- Lord Abbett International Opportunities<sup>6</sup>
- Principal International Small Company R6<sup>7</sup>

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<sup>4</sup> Due to the shorter track record of the proposed share class, the performance data for this fund reflects that of the Institutional share class (expense ratio: 1.04%).

<sup>5</sup> Due to the shorter track record of the proposed share class, the performance data for this fund reflects that of the I share class (expense ratio: 1.13%).

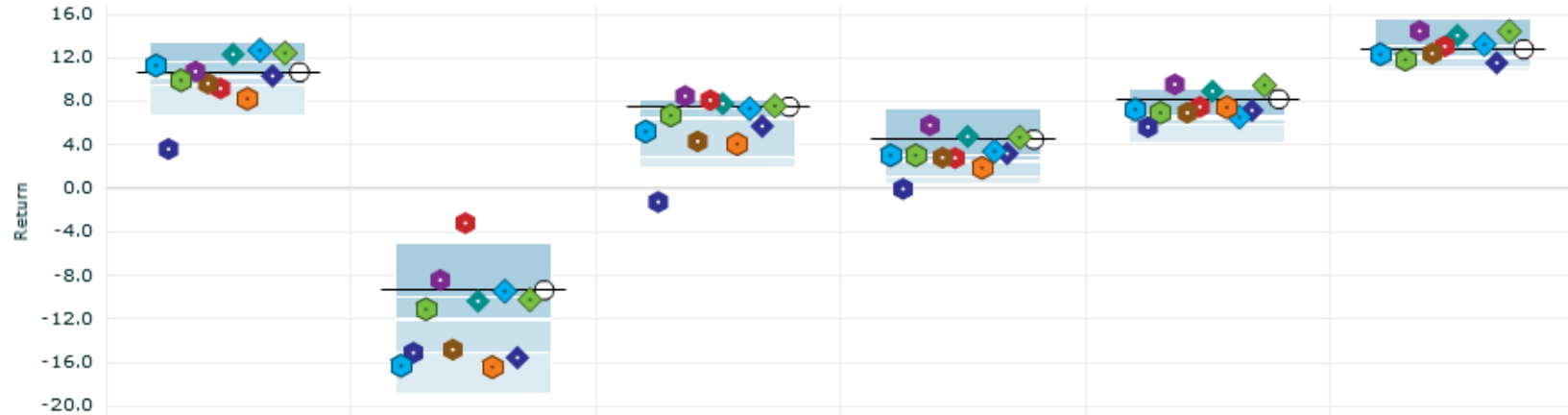
<sup>6</sup> Due to the shorter track record of the proposed share class, the performance data for this fund reflects that of the I share class (expense ratio: 0.95%).

<sup>7</sup> Due to the shorter track record of the proposed mutual fund vehicle, the performance data for this fund reflects that of the composite (net of the 1.07% expense ratio) until 1/31/2017 and the R6 class performance thereafter.

## Quantitative analysis

Return in \$US over 3 mths, 1 yr, 3 yrs, 5 yrs, 7 yrs, 10 yrs ending March-19

Comparison with the Mutual Fund World ex US/EAFE Equity Small Cap universe (Percentile Ranking)

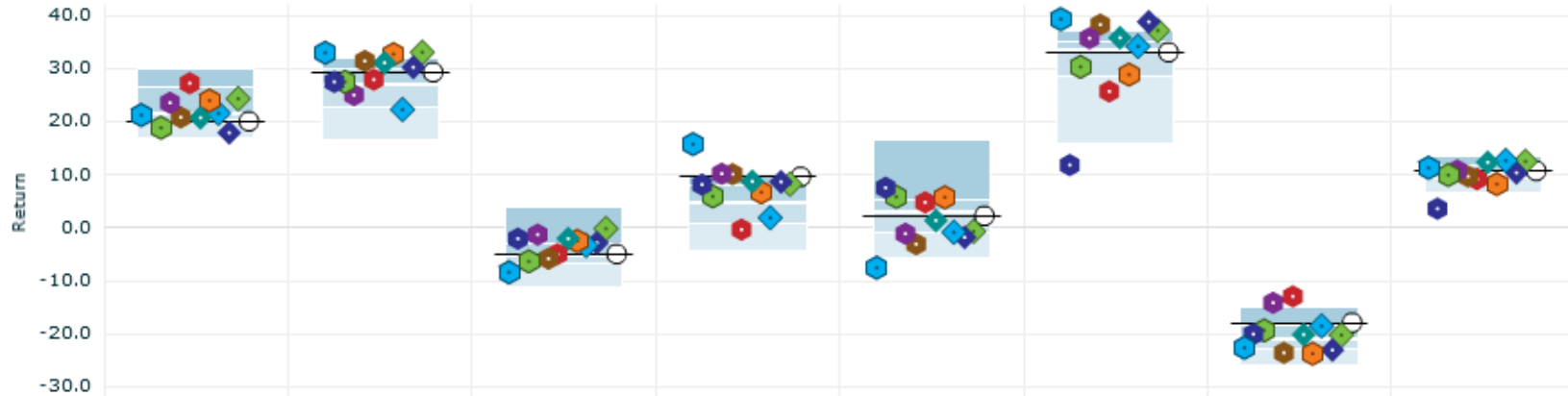


	3 mths (%)	1 yr (%)	3 yrs (%pa)	5 yrs (%pa)	7 yrs (%pa)	10 yrs (%pa)
Allianz	11.3 (31)	-16.3 (89)	5.2 (63)	3.0 (25)	7.3 (14)	12.3 (35)
Brandes	3.6 (100)	-15.1 (83)	-1.2 (100)	-0.1 (100)	5.7 (85)	-
DFA	9.9 (52)	-11.1 (31)	6.7 (47)	3.1 (25)	7.0 (15)	11.8 (64)
Fidelity	10.7 (35)	-8.4 (12)	8.5 (5)	5.8 (9)	9.5 (3)	14.5 (11)
Lord Abbett	9.6 (62)	-14.8 (73)	4.3 (66)	2.9 (28)	7.0 (15)	12.4 (34)
Pear Tree	9.2 (78)	-3.2 (2)	8.1 (7)	2.8 (30)	7.5 (13)	13.1 (27)
Principal	12.3 (15)	-10.3 (27)	7.8 (15)	4.8 (11)	9.0 (6)	14.0 (14)
SB&H	8.2 (82)	-16.4 (89)	4.1 (67)	1.9 (67)	7.5 (13)	-
Templeton	12.7 (12)	-9.5 (21)	7.3 (33)	3.4 (14)	6.5 (40)	13.2 (18)
Vanguard	10.4 (49)	-15.5 (88)	5.7 (62)	3.2 (23)	7.2 (14)	11.5 (68)
Victory	12.5 (14)	-10.2 (26)	7.6 (18)	4.7 (11)	9.5 (3)	14.4 (11)
MSEAFESCN	10.7 (37)	-9.4 (17)	7.5 (20)	4.5 (11)	8.2 (9)	12.8 (30)
5th Percentile	13.4	-4.9	8.2	7.4	9.1	15.5
Upper Quartile	11.7	-10.0	7.4	3.0	6.7	13.1
Median	10.2	-12.1	6.4	2.5	6.5	12.0
Lower Quartile	9.4	-15.0	2.9	1.2	5.8	11.2
95th Percentile	6.7	-18.9	1.9	0.4	4.3	10.8
Number	26	25	22	16	14	12

## Quantitative analysis

Return in \$US over last 8 calendar years ending March-19

Comparison with the Mutual Fund World ex US/EAFE Equity Small Cap universe (Percentile Ranking)

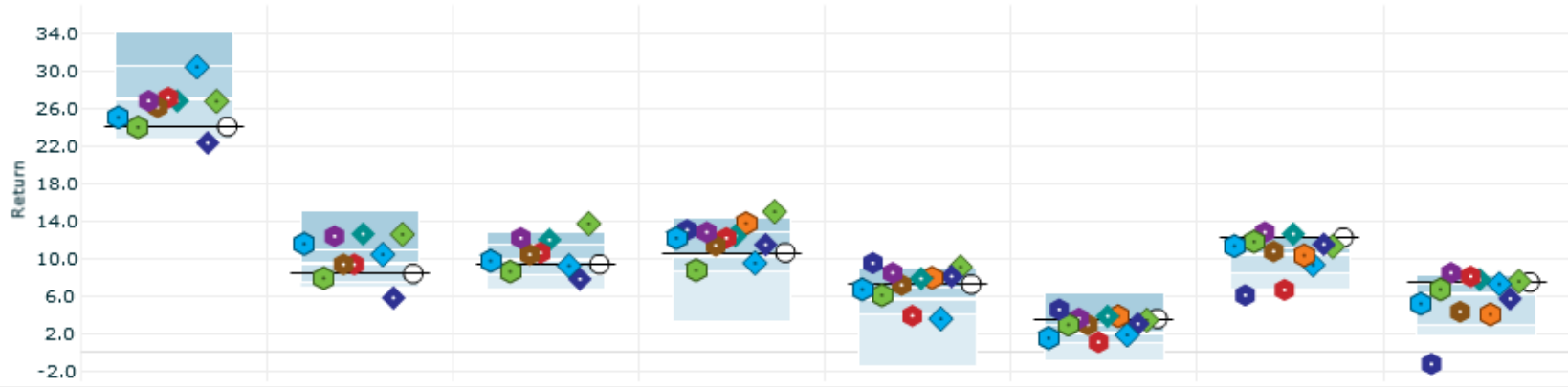


	2012 (%)	2013 (%)	2014 (%)	2015 (%)	2016 (%)	2017 (%)	2018 (%)	3 mths to 3/2019 (%)
Allianz	21.2 (59)	32.9 (3)	-8.4 (92)	15.7 (0)	-7.5 (100)	39.3 (0)	-22.6 (69)	11.3 (31)
Brandes	-	27.4 (43)	-2.1 (13)	8.1 (22)	7.5 (15)	11.8 (100)	-20.0 (39)	3.6 (100)
DFA	18.9 (84)	27.5 (43)	-6.3 (70)	5.9 (34)	5.8 (23)	30.3 (67)	-19.4 (35)	9.9 (52)
Fidelity	23.5 (38)	24.9 (65)	-1.3 (12)	10.2 (0)	-1.1 (75)	35.7 (15)	-14.1 (4)	10.7 (35)
Lord Abbett	20.8 (63)	31.4 (7)	-5.8 (57)	10.1 (0)	-3.1 (83)	38.3 (0)	-23.5 (82)	9.6 (62)
Pear Tree	27.2 (19)	27.9 (40)	-5.0 (40)	-0.4 (81)	4.8 (30)	25.7 (86)	-12.9 (3)	9.2 (78)
Principal	20.7 (64)	31.0 (14)	-2.1 (13)	8.7 (20)	1.4 (60)	35.8 (15)	-20.1 (43)	12.3 (15)
SB&H	24.0 (36)	32.7 (3)	-2.5 (18)	6.7 (32)	5.7 (23)	28.8 (72)	-23.7 (83)	8.2 (82)
Templeton	21.6 (50)	22.2 (86)	-3.3 (33)	1.9 (67)	-0.9 (70)	34.2 (38)	-18.5 (25)	12.7 (12)
Vanguard	17.9 (90)	30.2 (20)	-2.9 (24)	8.6 (20)	-1.8 (77)	38.8 (0)	-23.0 (76)	10.4 (49)
Victory	24.3 (35)	33.0 (3)	-0.2 (11)	8.2 (22)	-0.7 (65)	37.1 (5)	-20.2 (46)	12.5 (14)
MSEAFESCN	20.0 (76)	29.3 (32)	-4.9 (40)	9.6 (11)	2.2 (57)	33.0 (56)	-17.9 (18)	10.7 (37)
5th Percentile	29.8	32.1	4.0	9.7	16.7	37.1	-15.1	13.4
Upper Quartile	26.6	30.0	-3.0	8.1	5.2	34.9	-18.5	11.7
Median	21.6	27.1	-5.3	4.7	2.9	33.4	-20.8	10.2
Lower Quartile	20.2	22.7	-6.6	0.8	-1.0	28.5	-23.0	9.4
95th Percentile	17.0	16.4	-11.1	-4.5	-5.7	15.8	-25.9	6.7
Number	13	15	16	19	21	25	25	26

## Quantitative analysis

3 years rolling annualized Return in \$US over 8 annual periods

Comparison with the Mutual Fund World ex US/EAFE Equity Small Cap universe (Percentile Ranking)

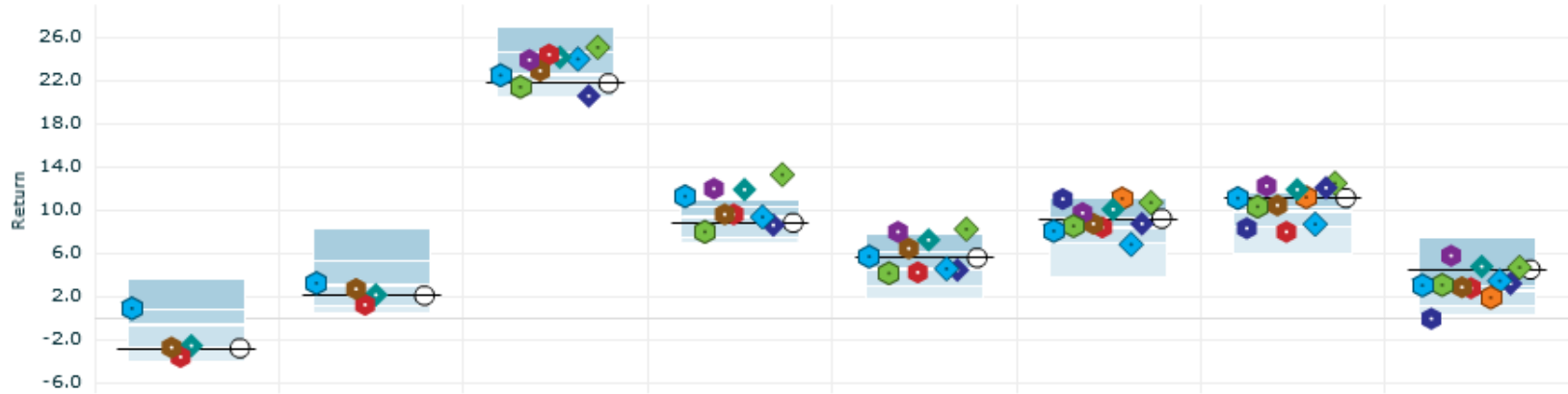


	3 yrs to 3/2012 (%pa)	3 yrs to 3/2013 (%pa)	3 yrs to 3/2014 (%pa)	3 yrs to 3/2015 (%pa)	3 yrs to 3/2016 (%pa)	3 yrs to 3/2017 (%pa)	3 yrs to 3/2018 (%pa)	3 yrs to 3/2019 (%pa)
Allianz	25.1 (67)	11.6 (22)	9.8 (52)	12.2 (38)	6.7 (31)	1.6 (68)	11.3 (23)	5.2 (63)
Brandes	-	-	-	13.1 (23)	9.5 (0)	4.6 (13)	6.1 (1...)	-1.2 (1...)
DFA	24.1 (82)	7.9 (64)	8.7 (64)	8.8 (73)	6.1 (46)	3.0 (24)	11.9 (12)	6.7 (47)
Fidelity	26.9 (50)	12.4 (19)	12.2 (9)	12.9 (26)	8.5 (9)	3.6 (18)	12.9 (4)	8.5 (5)
Lord Abbett	26.2 (53)	9.4 (51)	10.5 (35)	11.4 (44)	7.2 (16)	3.0 (24)	10.8 (33)	4.3 (66)
Pear Tree	27.2 (49)	9.4 (51)	10.7 (33)	12.2 (38)	3.9 (76)	1.1 (75)	6.7 (96)	8.1 (7)
Principal	26.9 (51)	12.7 (18)	12.0 (12)	12.4 (32)	7.9 (12)	3.9 (17)	12.7 (5)	7.8 (15)
SB&H	-	-	-	13.8 (7)	8.0 (11)	3.9 (17)	10.4 (54)	4.1 (67)
Templeton	30.5 (27)	10.5 (35)	9.3 (58)	9.6 (54)	3.6 (79)	1.9 (54)	9.4 (67)	7.3 (33)
Vanguard	22.4 (1...)	5.9 (1...)	7.9 (80)	11.5 (43)	8.1 (11)	3.1 (23)	11.5 (18)	5.7 (62)
Victory	26.8 (51)	12.6 (18)	13.7 (0)	15.0 (3)	9.1 (5)	3.5 (19)	11.3 (23)	7.6 (18)
MSEAFESCN	24.1 (81)	8.4 (60)	9.4 (56)	10.7 (48)	7.3 (15)	3.6 (19)	12.3 (5)	7.5 (20)
5th Percentile	34.2	15.2	12.8	14.4	9.1	6.5	12.4	8.2
Upper Quartile	30.6	11.0	11.5	12.9	6.9	2.9	11.2	7.4
Median	27.0	9.5	9.9	10.3	5.8	2.2	10.5	6.4
Lower Quartile	24.2	7.4	8.4	8.7	4.2	1.1	8.4	2.9
95th Percentile	22.9	6.9	6.8	3.4	-1.4	-0.8	6.9	1.9
Number	12	12	13	14	15	16	19	22

## Quantitative analysis

5 years rolling annualized Return in \$US over 8 annual periods

Comparison with the Mutual Fund World ex US/EAFE Equity Small Cap universe (Percentile Ranking)



	5 yrs to 3/2012 (%pa)	5 yrs to 3/2013 (%pa)	5 yrs to 3/2014 (%pa)	5 yrs to 3/2015 (%pa)	5 yrs to 3/2016 (%pa)	5 yrs to 3/2017 (%pa)	5 yrs to 3/2018 (%pa)	5 yrs to 3/2019 (%pa)
Allianz	0.9 (24)	3.2 (39)	22.4 (53)	11.3 (0)	5.7 (41)	8.0 (57)	11.1 (7)	3.0 (25)
Brandes	-	-	-	-	-	11.0 (7)	8.3 (79)	-0.1 (100)
DFA	-	-	21.4 (85)	8.0 (65)	4.2 (57)	8.5 (41)	10.3 (27)	3.1 (25)
Fidelity	-	-	23.9 (28)	12.0 (0)	8.0 (4)	9.7 (21)	12.2 (3)	5.8 (9)
Lord Abbett	-2.7 (75)	2.7 (55)	22.9 (37)	9.6 (36)	6.4 (16)	8.7 (30)	10.4 (17)	2.9 (28)
Pear Tree	-3.6 (91)	1.3 (69)	24.4 (26)	9.6 (36)	4.2 (56)	8.4 (48)	8.0 (86)	2.8 (30)
Principal	-2.5 (72)	2.2 (61)	24.1 (27)	11.9 (0)	7.2 (11)	10.1 (19)	11.9 (4)	4.8 (11)
SB&H	-	-	-	-	-	11.0 (6)	11.2 (7)	1.9 (67)
Templeton	-	-	23.9 (27)	9.4 (46)	4.6 (50)	6.8 (77)	8.7 (72)	3.4 (14)
Vanguard	-	-	20.5 (93)	8.6 (60)	4.4 (52)	8.7 (30)	12.1 (3)	3.2 (23)
Victory	-	-	25.0 (23)	13.3 (0)	8.2 (0)	10.7 (16)	12.5 (2)	4.7 (11)
MSEAFESCN	-2.8 (76)	2.1 (62)	21.7 (83)	8.8 (58)	5.6 (42)	9.2 (25)	11.1 (7)	4.5 (11)
5th Percentile	3.6	8.3	26.9	10.9	7.9	11.1	11.6	7.4
Upper Quartile	0.7	5.3	24.5	10.2	6.1	9.2	10.3	3.0
Median	-0.7	3.0	22.5	9.3	4.6	8.3	9.9	2.5
Lower Quartile	-2.7	1.1	21.9	7.4	2.9	6.9	8.5	1.2
95th Percentile	-4.0	0.5	20.4	6.9	1.8	3.9	5.9	0.4
Number	11	11	12	12	13	14	15	16

### Quantitative analysis

Return and Std Deviation in \$US over 5 yrs ending March-19

Comparison with the Mutual Fund World ex US/EAFE Equity Small Cap universe (quarterly calculations)



### Quantitative analysis

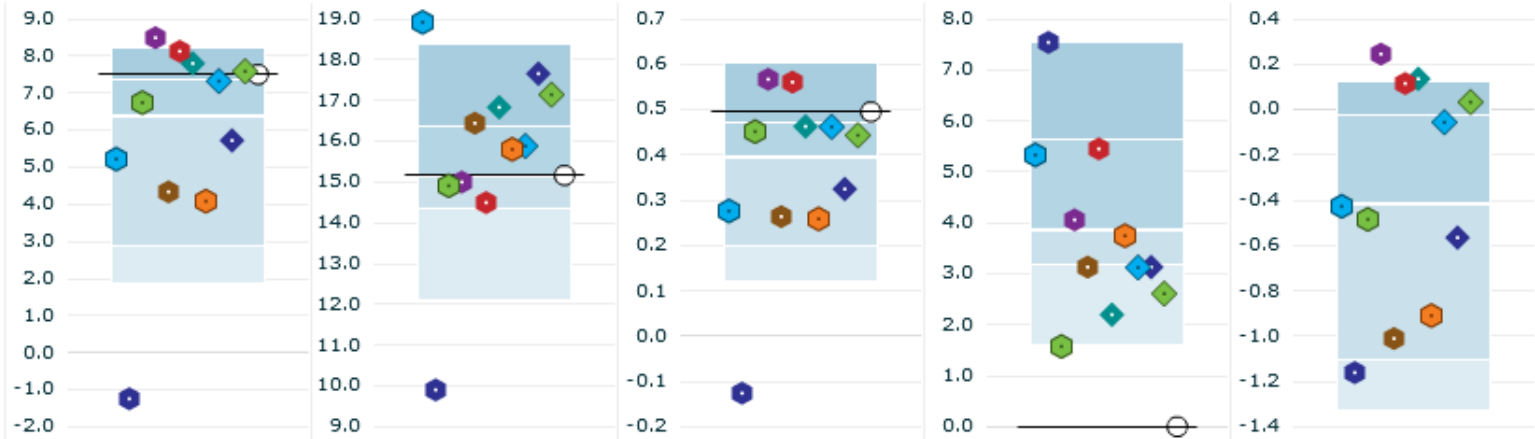
Excess Return and Tracking Error vs. MSCI EAFE Small Cap (Net) in \$US over 5 yrs ending March-19  
Comparison with the Mutual Fund World ex US/EAFE Equity Small Cap universe (quarterly calculations)



## Quantitative analysis

Performance characteristics vs. MSCI EAFE Small Cap (Net) in \$US over 3 yrs ending March-19

Comparison with the Mutual Fund World ex US/EAFE Equity Small Cap universe (Percentile Ranking) (quarterly calculations)



	Ret (%pa)	Std Dev (%pa)	Ret/SD	TE (%pa)	IR
Allianz	5.2(63)	18.9(3)	0.3(65)	5.3(27)	-0.4(50)
Brandes	-1.2(100)	9.9(100)	-0.1(100)	7.5(10)	-1.2(81)
DFA	6.7(47)	14.9(65)	0.5(36)	1.6(95)	-0.5(51)
Fidelity	8.5(5)	15.0(63)	0.6(7)	4.1(48)	0.2(4)
Lord Abbett	4.3(66)	16.4(24)	0.3(66)	3.1(85)	-1.0(65)
Pear Tree	8.1(7)	14.5(73)	0.6(8)	5.5(26)	0.1(6)
Principal	7.8(15)	16.8(19)	0.5(28)	2.2(93)	0.1(5)
SB&H	4.1(67)	15.8(39)	0.3(66)	3.7(51)	-0.9(62)
Templeton	7.3(33)	15.9(38)	0.5(29)	3.1(86)	-0.1(33)
Vanguard	5.7(62)	17.7(11)	0.3(63)	3.1(84)	-0.6(52)
Victory	7.6(18)	17.1(13)	0.4(43)	2.6(91)	0.0(16)
MSEAFESCN	7.5(20)	15.2(47)	0.5(21)	0.0(100)	-
5th Percentile	8.2	18.4	0.6	7.5	0.1
Upper Quartile	7.4	16.3	0.5	5.6	0.0
Median	6.4	15.1	0.4	3.9	-0.4
Lower Quartile	2.9	14.4	0.2	3.2	-1.1
95th Percentile	1.9	12.1	0.1	1.6	-1.3
Number	22	22	22	22	22



## Quantitative analysis

Performance characteristics vs. MSCI EAFE Small Cap (Net) in \$US over 5 yrs ending March-19

Comparison with the Mutual Fund World ex US/EAFE Equity Small Cap universe (Percentile Ranking) (quarterly calculations)

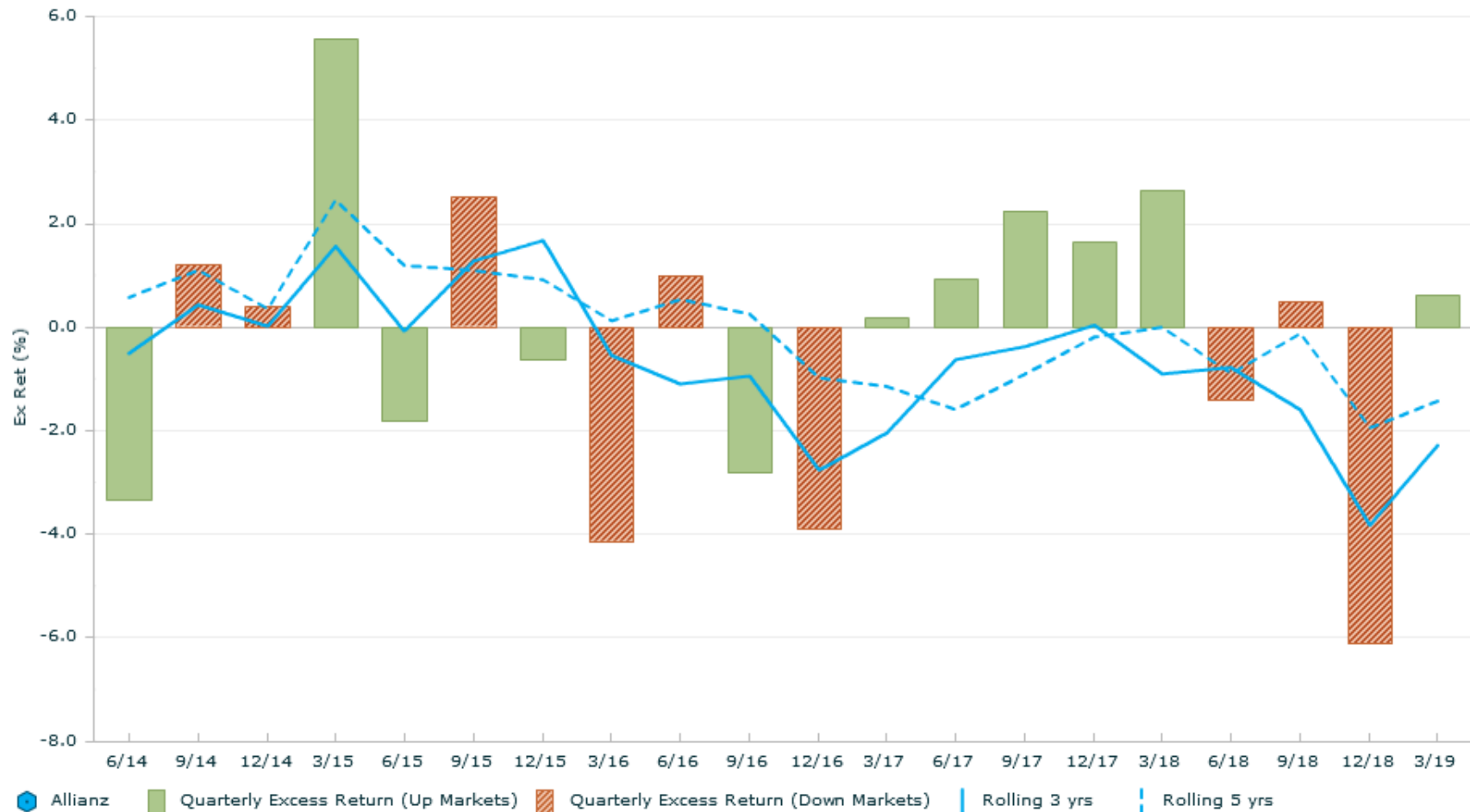


	Ret (%pa)	Std Dev (%pa)	Ret/SD	TE (%pa)	IR
Allianz	3.0(25)	16.3(5)	0.2(33)	5.6(28)	-0.3(14)
Brandes	-0.1(100)	9.9(100)	0.0(100)	7.3(7)	-0.6(53)
DFA	3.1(25)	13.5(74)	0.2(26)	1.9(99)	-0.7(73)
Fidelity	5.8(9)	13.0(94)	0.4(8)	3.4(70)	0.4(7)
Lord Abbett	2.9(28)	14.3(28)	0.2(30)	2.8(80)	-0.6(50)
Pear Tree	2.8(30)	13.5(71)	0.2(29)	4.9(32)	-0.3(24)
Principal	4.8(11)	14.4(24)	0.3(11)	1.9(98)	0.2(9)
SB&H	1.9(67)	13.6(66)	0.1(67)	3.3(73)	-0.8(75)
Templeton	3.4(14)	13.8(53)	0.2(20)	3.2(73)	-0.3(20)
Vanguard	3.2(23)	15.0(17)	0.2(28)	2.9(78)	-0.4(33)
Victory	4.7(11)	15.0(17)	0.3(12)	2.7(82)	0.1(10)
MSEAFESCN	4.5(11)	13.5(78)	0.3(11)	0.0(100)	-
5th Percentile	7.4	16.3	0.5	7.4	0.5
Upper Quartile	3.0	14.4	0.2	6.0	-0.3
Median	2.5	13.9	0.2	3.9	-0.6
Lower Quartile	1.2	13.5	0.1	3.1	-0.8
95th Percentile	0.4	12.3	0.0	2.0	-1.1
Number	16	16	16	16	16

### Quantitative analysis

#### AllianzGI International Small-Cap Fund;Inst

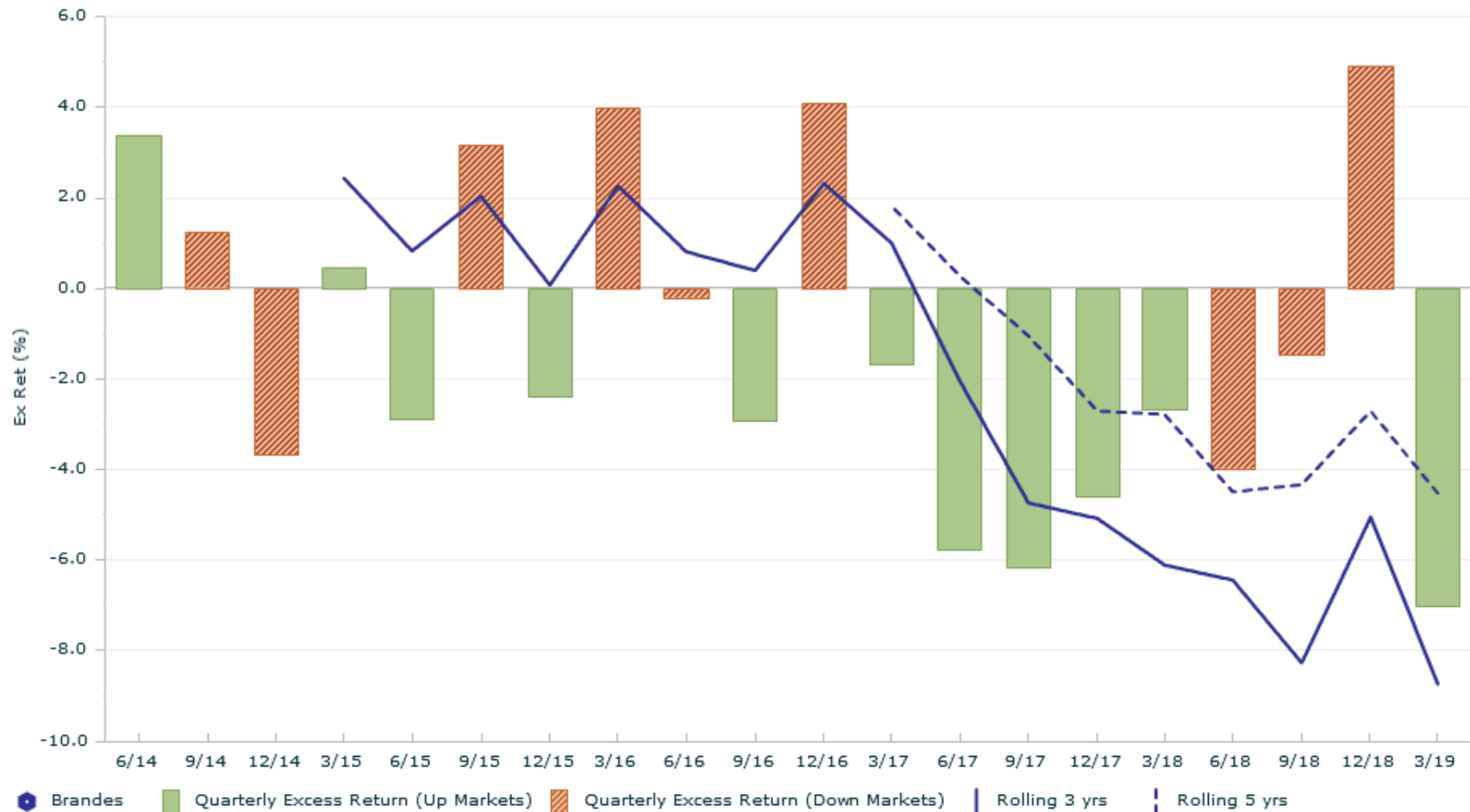
Quarterly Excess Return vs. MSCI EAFE Small Cap (Net) with rolling 3 and 5 yr lines in \$US (before fees) over 5 yrs ending March-19



### Quantitative analysis

#### Brandes International Small Cap Equity Instl

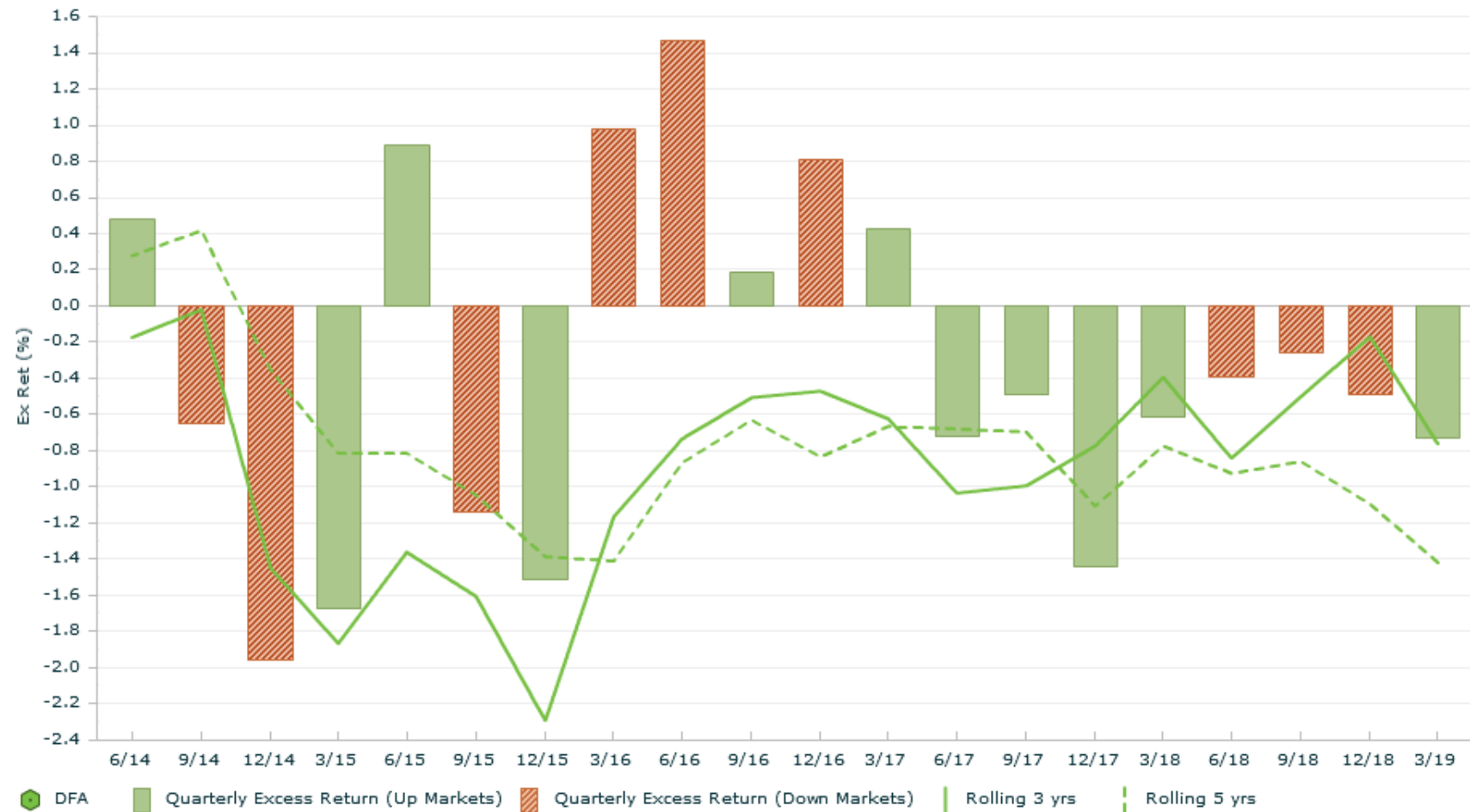
Quarterly Excess Return vs. MSCI EAFE Small Cap (Net) with rolling 3 and 5 yr lines in \$US (after fees) over 5 yrs ending March-19



## Quantitative analysis

### DFA International Small Company Instl

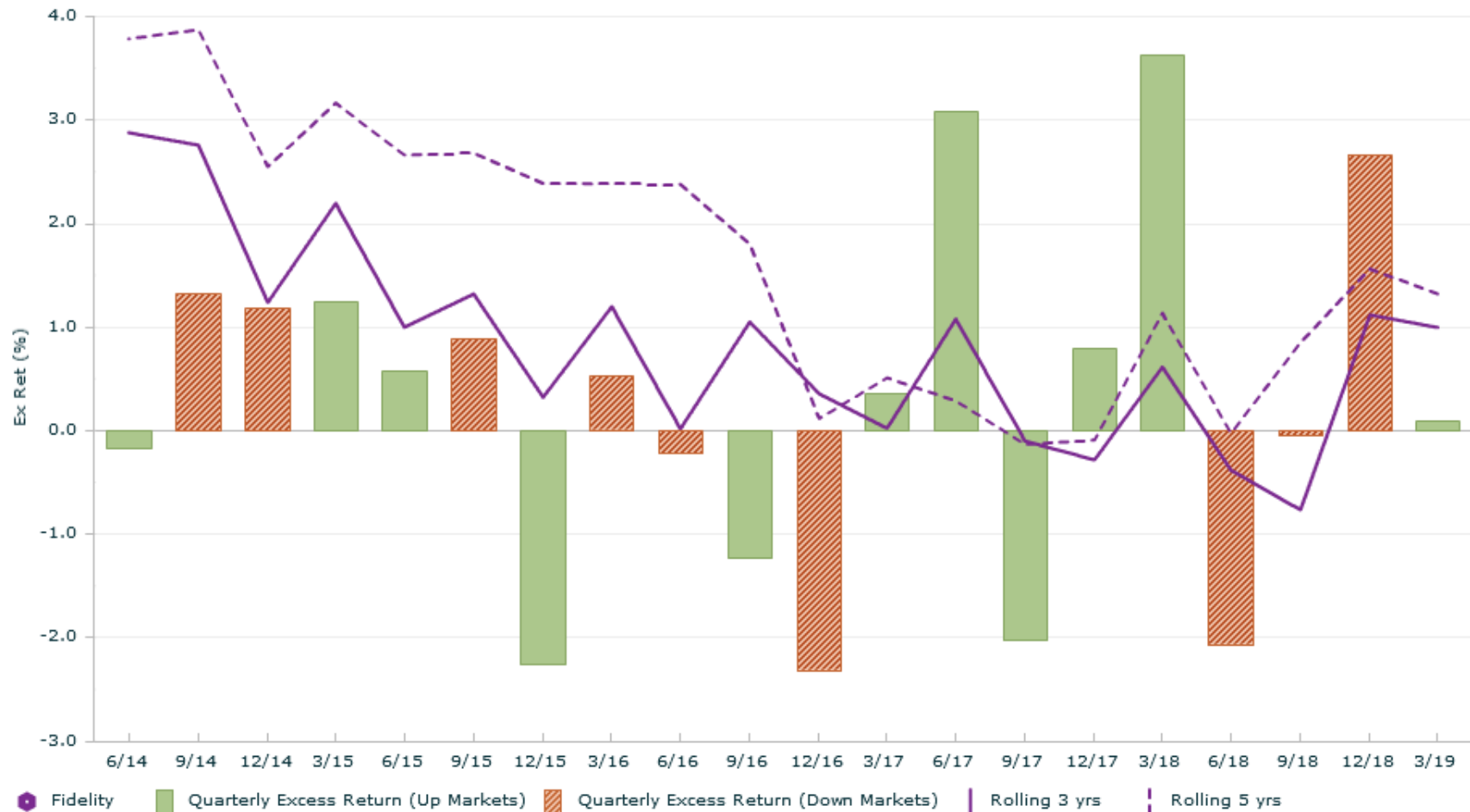
Quarterly Excess Return vs. MSCI EAFE Small Cap (Net) with rolling 3 and 5 yr lines in \$US (after fees) over 5 yrs ending March-19



## Quantitative analysis

### Fidelity Advisor International Small Cap Ops I

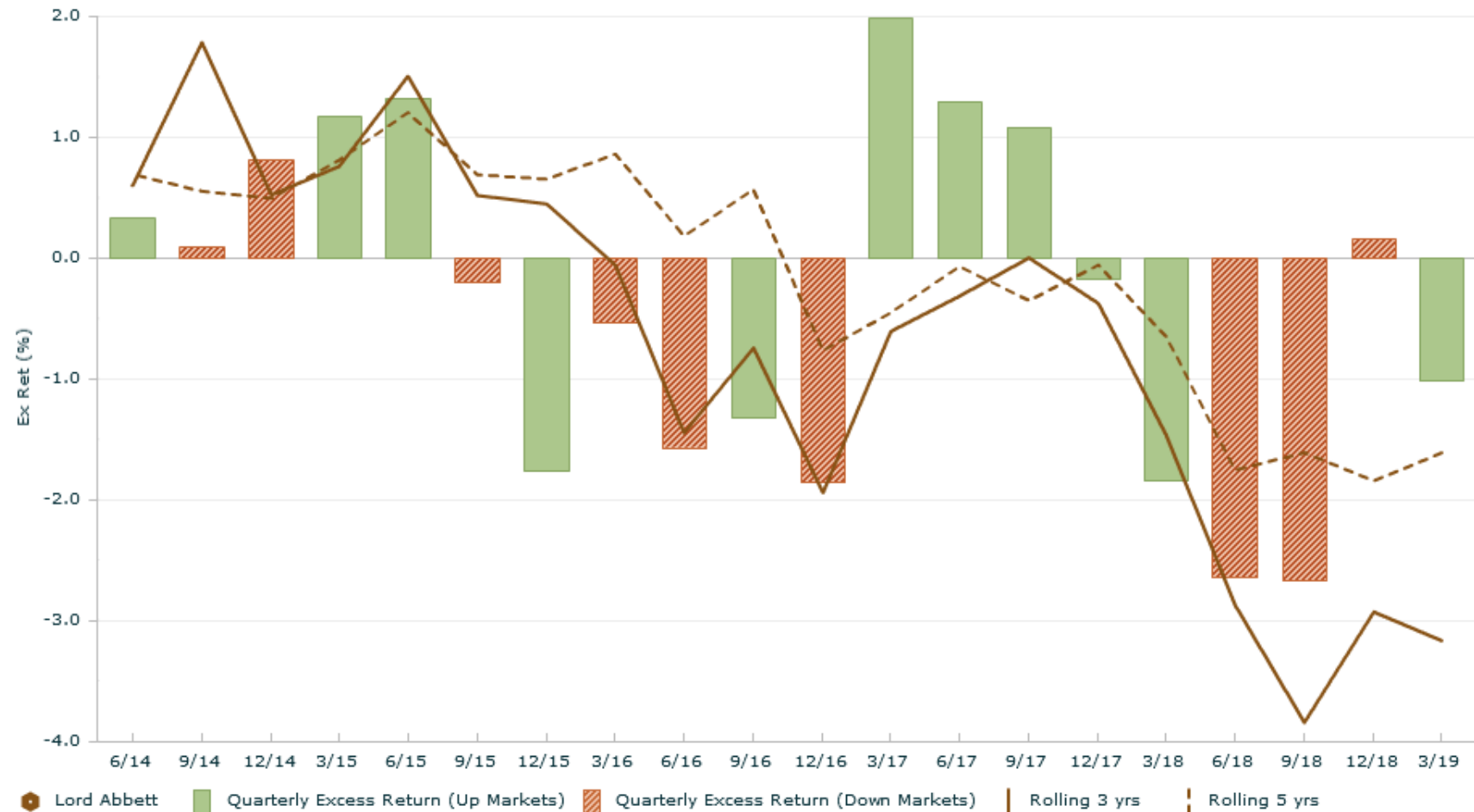
Quarterly Excess Return vs. MSCI EAFE Small Cap (Net) with rolling 3 and 5 yr lines in \$US (after fees) over 5 yrs ending March-19



## Quantitative analysis

### Lord Abbett International Opportunities Fund;I

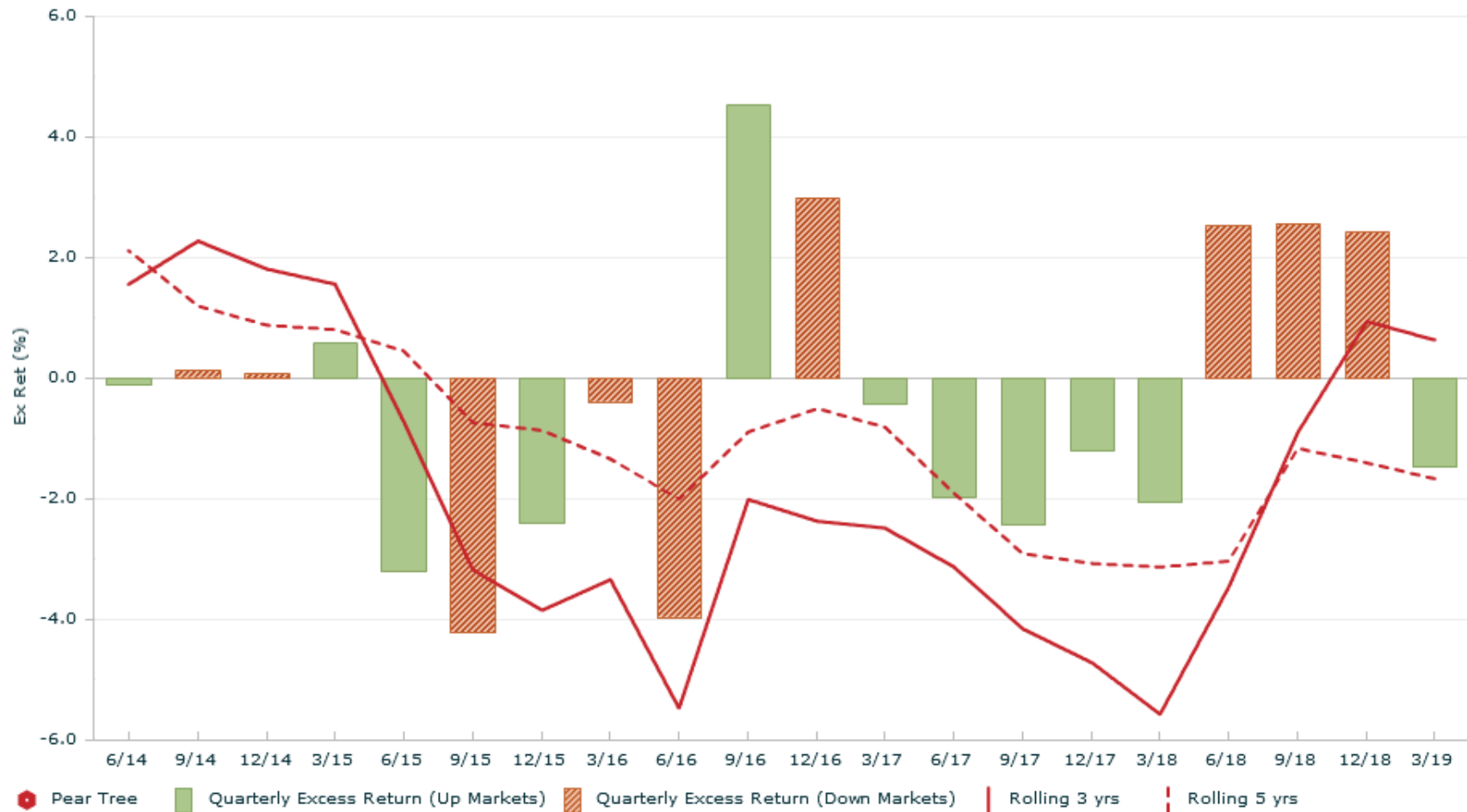
Quarterly Excess Return vs. MSCI EAFE Small Cap (Net) with rolling 3 and 5 yr lines in \$US (before fees) over 5 yrs ending March-19



### Quantitative analysis

#### Pear Tree Polaris Foreign Val Fd;Inst

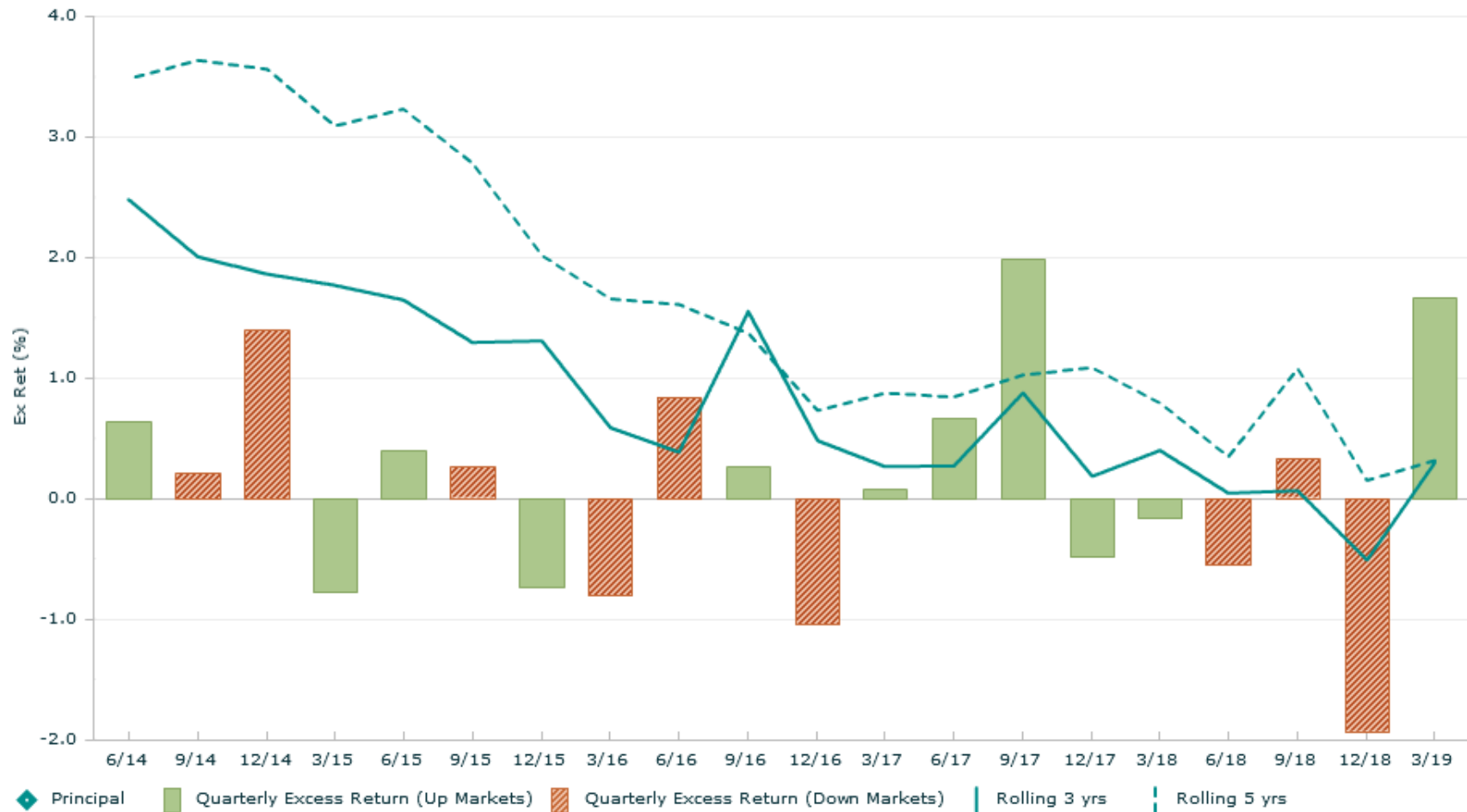
Quarterly Excess Return vs. MSCI EAFE Small Cap (Net) with rolling 3 and 5 yr lines in \$US (before fees) over 5 yrs ending March-19



## Quantitative analysis

### Principal International Small Cap Ops R6

Quarterly Excess Return vs. MSCI EAFE Small Cap (Net) with rolling 3 and 5 yr lines in \$US (after fees) over 5 yrs ending March-19

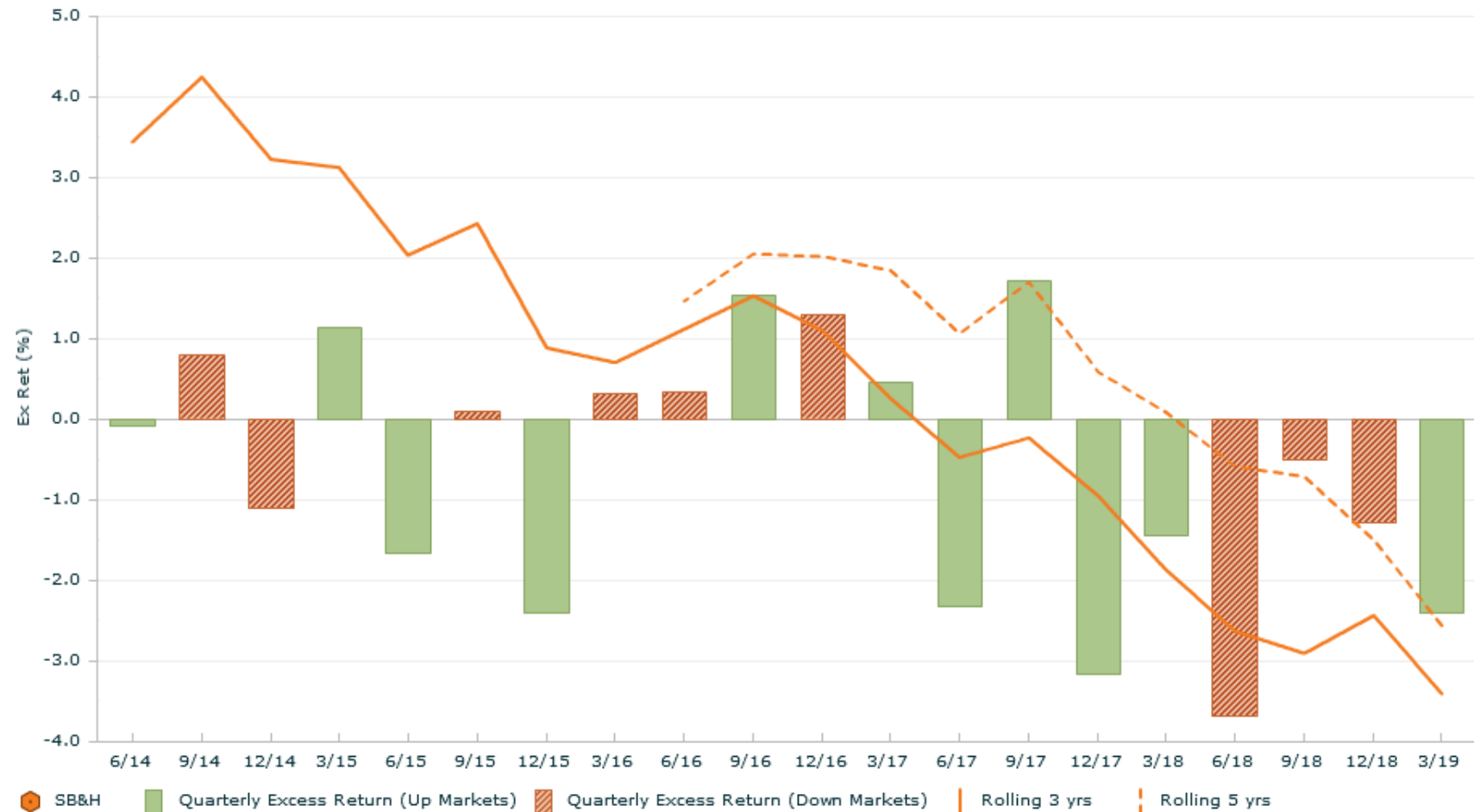




## Quantitative analysis

### Segall Bryant & Hamill International Small Cap I

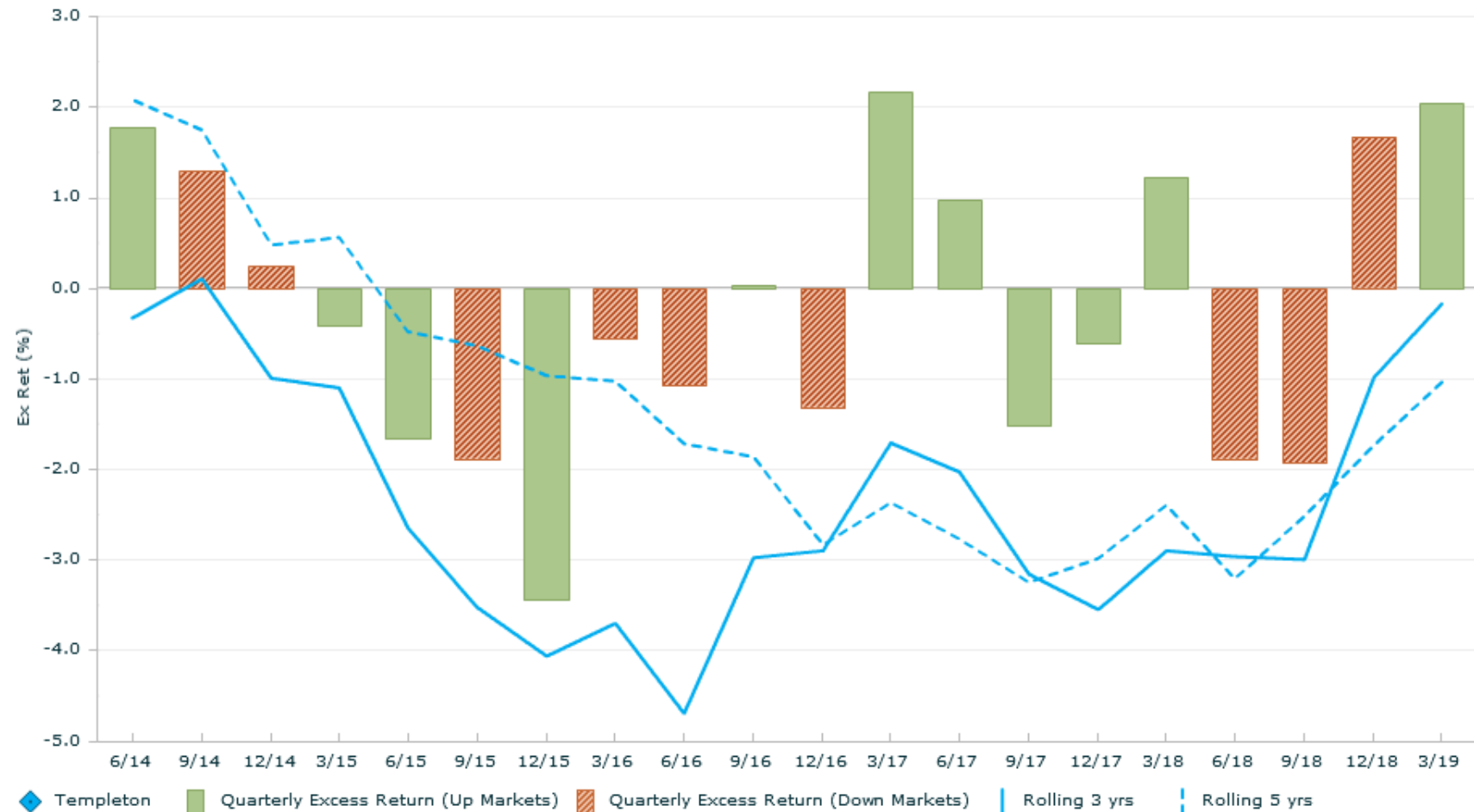
Quarterly Excess Return vs. MSCI EAFE Small Cap (Net) with rolling 3 and 5 yr lines in \$US (after fees) over 5 yrs ending March-19



## Quantitative analysis

### Templeton Foreign Smaller Companies Series

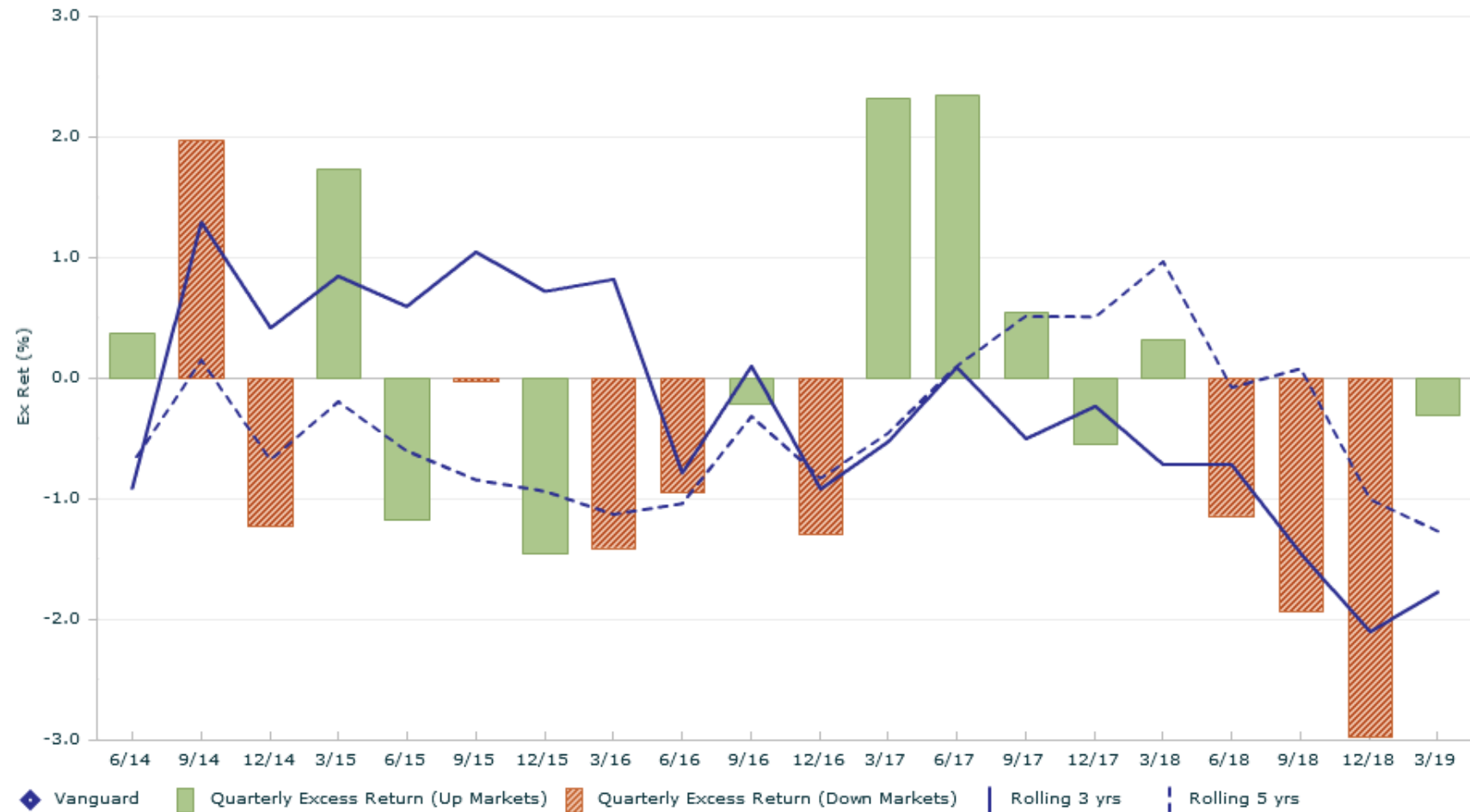
Quarterly Excess Return vs. MSCI EAFE Small Cap (Net) with rolling 3 and 5 yr lines in \$US (after fees) over 5 yrs ending March-19



## Quantitative analysis

### Vanguard International Explorer

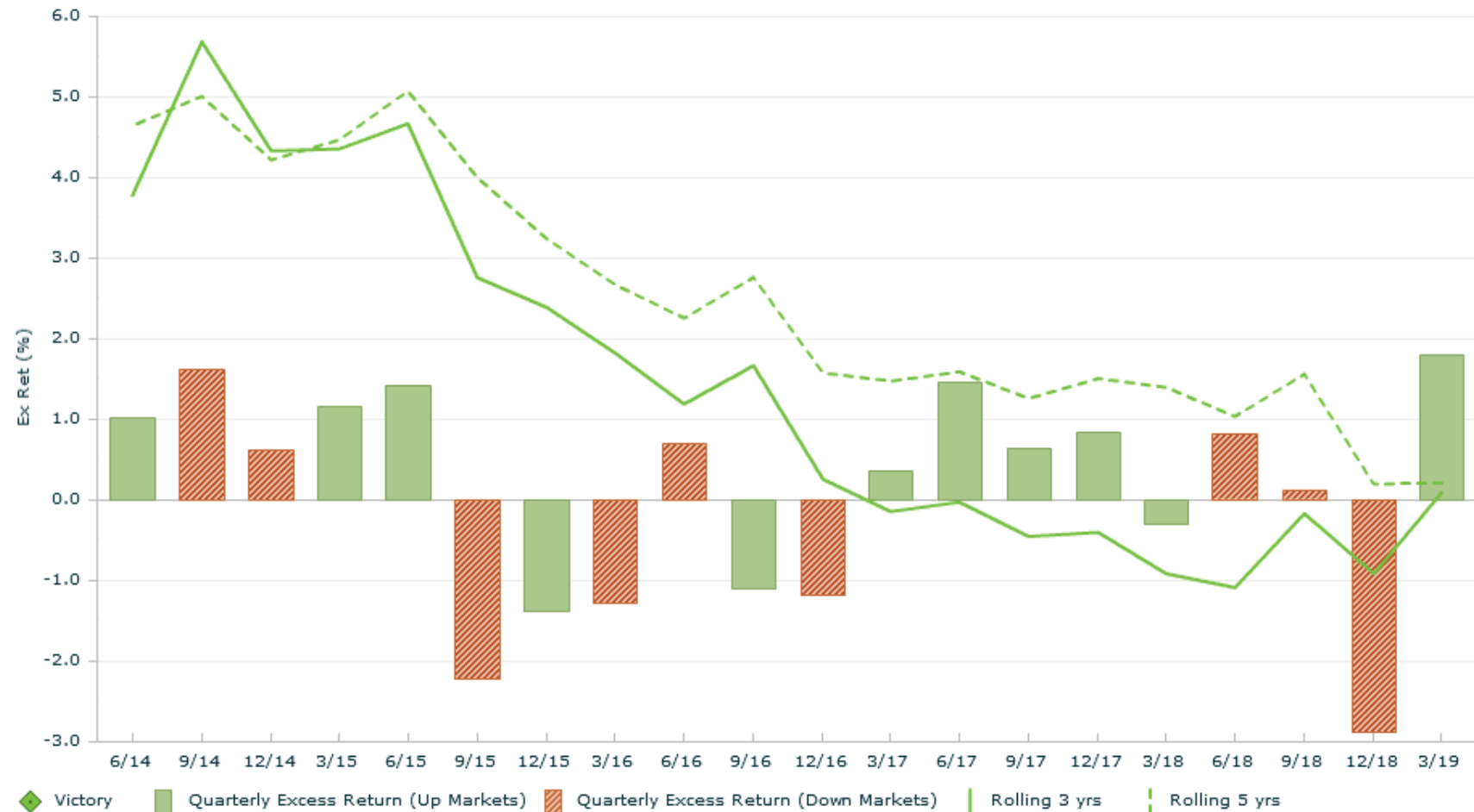
Quarterly Excess Return vs. MSCI EAFE Small Cap (Net) with rolling 3 and 5 yr lines in \$US (after fees) over 5 yrs ending March-19



## Quantitative analysis

### Victory Trivalent International Small Cap I

Quarterly Excess Return vs. MSCI EAFE Small Cap (Net) with rolling 3 and 5 yr lines in \$US (after fees) over 5 yrs ending March-19

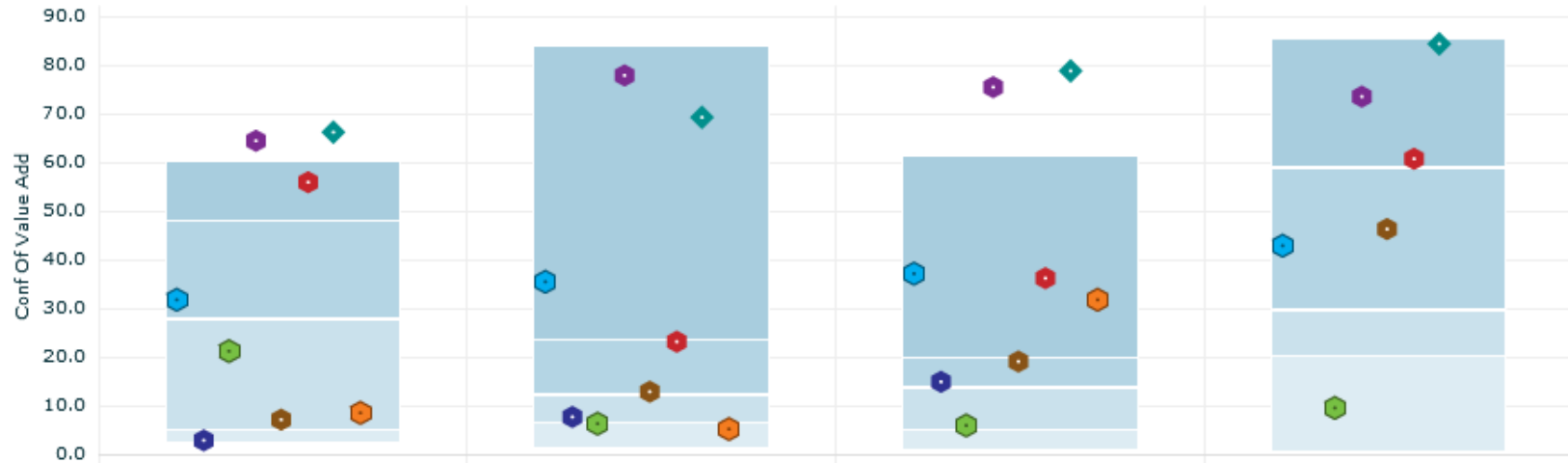


### Quantitative analysis

#### City of Los Angeles - AllianzGI International Small-Cap Fund;Inst, Brandes International Small Cap E

Confidence Of Value Added vs. MSCI EAFE Small Cap (Net) in \$US over 3 yrs, 5 yrs, 7 yrs, 10 yrs ending March-19

Comparison with the Mutual Fund World ex US/EAFE Equity Small Cap universe (Percentile Ranking) (quarterly calculations)



	3 yrs (%)	5 yrs (%)	7 yrs (%)	10 yrs (%)
Allianz	31.8 (48)	35.5 (13)	37.1 (12)	42.9 (37)
Brandes	3.0 (86)	7.8 (73)	15.0 (31)	-
DFA	21.3 (53)	6.4 (76)	6.0 (70)	9.6 (87)
Fidelity	64.5 (4)	77.9 (7)	75.5 (0)	73.5 (13)
Lord Abbett	7.2 (67)	13.0 (46)	19.1 (26)	46.3 (35)
Pear Tree	56.0 (13)	23.3 (26)	36.2 (12)	60.8 (19)
Principal	66.2 (4)	69.3 (8)	78.8 (0)	84.3 (6)
SB&H	8.6 (61)	5.2 (77)	31.9 (13)	-
MSEAFESCN	-	-	-	-
5th Percentile	60.3	84.0	61.5	85.3
Upper Quartile	48.0	23.6	20.1	59.0
Median	27.8	12.4	13.9	29.6
Lower Quartile	5.0	6.7	5.2	20.3
95th Percentile	2.5	1.5	1.2	0.8
Number	22	16	14	12

**Performance characteristics vs. MSCI EAFE Small Cap (Net) in \$US over 5 yrs ending March-19**

Comparison with the Mutual Fund World ex US/EAFE Equity Small Cap universe (quarterly calculations)

Name	Up Markets			Down Markets			All Markets				
	Outperform		Excess (Av) (%pm)	Outperform		Excess (Av) (%pm)	Outperform		Excess (Av) (%pm)	Outperform (Av) (%pm)	Underperform (Av) (%pm)
	No.	%		No.	%		No.	%			
AllianzGI	7	64	0.5	5	56	-1.1	12	60	-0.2	1.6	-3.0
Brandes (incumbent)	2	18	-2.9	5	56	0.9	7	35	-1.2	3.0	-3.5
DFA	4	36	-0.5	3	33	-0.2	7	35	-0.3	0.7	-0.9
Fidelity	7	64	0.4	5	56	0.2	12	60	0.3	1.4	-1.3
Lord Abbett	6	55	0.1	3	33	-0.9	9	45	-0.4	0.9	-1.4
Pear Tree	2	18	-0.9	6	67	0.2	8	40	-0.4	2.0	-2.0
Principal	7	64	0.3	5	56	-0.1	12	60	0.1	0.7	-0.8
Segall Bryant & Hamill	4	36	-0.8	5	56	-0.4	9	45	-0.6	0.9	-1.8
Templeton	6	55	0.0	3	33	-0.6	9	45	-0.2	1.3	-1.5
Vanguard	6	55	0.4	1	11	-1.0	7	35	-0.3	1.4	-1.1
Victory	8	73	0.5	5	56	-0.4	13	65	0.1	1.0	-1.5
<b>Benchmark</b>											
MSCI EAFE Small Cap (Net)	11	0	0.0	9	0	0.0	20	0	0.0	na	na
<b>Group Statistics</b>											
Upper Quartile	8	73	0.9	6	67	0.4	13	65	0.5	2.1	-1.2
Median	6	55	0.4	5	56	-0.1	11	55	0.1	1.5	-1.5
Lower Quartile	5	45	-0.2	4	44	-0.5	9	45	-0.1	1.1	-2.1
Number	71	71	71	71	71	71	71	71	71	71	71

**Performance characteristics vs. MSCI EAFE Small Cap (Net) in \$US over 5 yrs ending March-19**

Comparison with the Mutual Fund World ex US/EAFE Equity Small Cap universe (quarterly calculations)

Name	1st Quartile		2nd Quartile		3rd Quartile		4th Quartile		Average Percentile Rank	Outperform	
	No.	%	No.	%	No.	%	No.	%		No.	%
AllianzGI	8	40.0	4	20.0	2	10.0	6	30.0	44	12	60
Brandes (incumbent)	6	30.0	2	10.0	2	10.0	10	50.0	59	7	35
DFA	2	10.0	9	45.0	8	40.0	1	5.0	47	7	35
Fidelity	9	45.0	3	15.0	5	25.0	3	15.0	39	12	60
Lord Abbett	5	25.0	5	25.0	7	35.0	3	15.0	48	9	45
Pear Tree	7	35.0	0	0.0	5	25.0	8	40.0	54	8	40
Principal	5	25.0	8	40.0	6	30.0	1	5.0	40	12	60
Segall Bryant & Hamill	4	20.0	4	20.0	6	30.0	6	30.0	54	9	45
Templeton	4	20.0	6	30.0	7	35.0	3	15.0	46	9	45
Vanguard	4	20.0	9	45.0	3	15.0	4	20.0	45	7	35
Victory	9	45.0	4	20.0	6	30.0	1	5.0	35	13	65
<b>Benchmark</b>											
MSCI EAFE Small Cap (Net)	6	30.0	7	35.0	6	30.0	1	5.0	41	20	0

The benchmark result for Number Outperform represents the total number of observations in the period.

**Correlation of Return in \$US (after fees) over 5 yrs ending March-19 (quarterly calculations)**

CITY OF LOS ANGELES

Page 46

	Allianz	Brandes (incumbent)	DFA	Fidelity	Lord Abbett	Pear Tree	Principal	SB&H	Templeton	Vanguard	Victory	MSEAFESCN
Allianz		0.75	0.91	0.94	0.94	0.83	0.95	0.92	0.91	0.96	0.95	0.95
Brandes (incumbent)	-0.8		0.87	0.80	0.84	0.82	0.81	0.89	0.83	0.84	0.80	0.85
DFA	-0.3	-0.4		0.95	0.97	0.93	0.98	0.97	0.96	0.97	0.98	0.99
Fidelity	-0.2	-0.6	-0.2		0.97	0.88	0.96	0.93	0.98	0.97	0.96	0.97
Lord Abbett	-0.2	-0.5	-0.1	-0.1		0.90	0.98	0.96	0.97	0.98	0.98	0.98
Pear Tree	-0.6	-0.5	-0.2	-0.4	-0.4		0.91	0.92	0.92	0.91	0.92	0.93
Principal	-0.2	-0.6	-0.1	-0.1	-0.1	-0.3		0.97	0.97	0.98	0.99	0.99
SB&H	-0.3	-0.3	-0.1	-0.2	-0.1	-0.3	-0.1		0.95	0.97	0.95	0.97
Templeton	-0.3	-0.5	-0.1	-0.1	-0.1	-0.3	-0.1	-0.2		0.98	0.97	0.97
Vanguard	-0.2	-0.5	-0.1	-0.1	-0.1	-0.3	-0.1	-0.1	-0.1		0.98	0.98
Victory	-0.2	-0.6	-0.1	-0.1	-0.1	-0.3	0.0	-0.2	-0.1	-0.1		0.99
MSEAFESCN	-0.2	-0.4	0.0	-0.1	-0.1	-0.2	0.0	-0.1	-0.1	-0.1	0.0	

Notes: Correlation is shown in the right hand side of the table. Risk Reduction is shown in the left hand side of the table. Risk Reduction is defined as the reduction in standard deviation from diversification when using a 50:50 mix of the two managers.



**Correlation of Excess Returns vs. MSCI EAFE Small Cap in \$US (after fees) over 5 yrs ending March-19 (quarterly calculations)**

	Allianz	Brandes (incumbent)	DFA	Fidelity	Lord Abbett	Pear Tree	Principal	SB&H	Templeton	Vanguard	Victory
Allianz		-0.74	-0.25	0.15	0.13	-0.76	0.70	-0.15	-0.07	0.56	0.78
Brandes (incumbent)	-3.9		0.51	0.02	-0.19	0.44	-0.76	0.33	-0.03	-0.58	-0.84
DFA	-0.9	-0.3		-0.39	-0.18	0.05	0.00	0.65	-0.20	-0.07	-0.21
Fidelity	-1.1	-1.5	-0.9		0.28	-0.34	-0.21	-0.41	0.65	0.19	-0.09
Lord Abbett	-1.0	-1.5	-0.7	-0.7		-0.38	0.19	0.14	0.52	0.64	0.11
Pear Tree	-3.5	-1.0	-0.6	-2.0	-1.7		-0.56	0.13	-0.19	-0.47	-0.60
Principal	-0.2	-1.8	-0.5	-1.0	-0.6	-1.5		0.20	-0.06	0.49	0.73
SB&H	-1.5	-0.9	-0.2	-1.8	-0.8	-1.1	-0.6		-0.16	0.07	-0.37
Templeton	-1.2	-1.3	-0.7	-0.3	-0.4	-1.4	-0.8	-1.2		0.38	-0.08
Vanguard	-0.5	-2.2	-0.6	-0.8	-0.3	-1.9	-0.4	-0.9	-0.5		0.55
Victory	-0.2	-2.3	-0.7	-1.0	-0.7	-1.8	-0.2	-1.3	-0.9	-0.3	

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## Appendix

## Appendix A: Descriptions of performance exhibits

### **Description of Universe calculation**

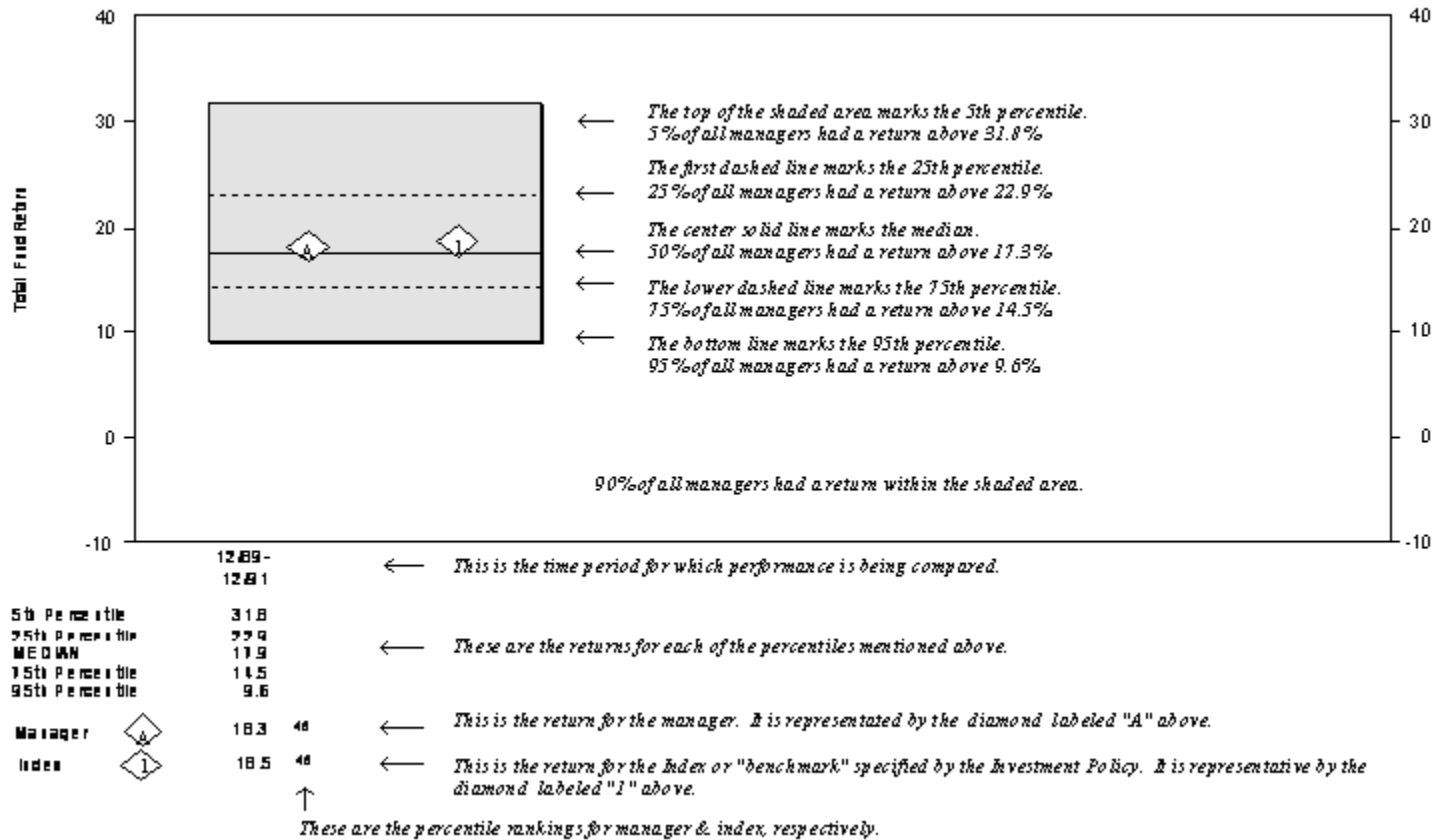
Mercer Manager Universes are constructed using the composite portfolios submitted by investment managers to the Research Unit for evaluation. Each portfolio is reviewed and, based on Mercer's professional judgement, placed within the appropriate universe, which contains similarly managed portfolios.

Universes are calculated by sorting the returns from highest to lowest for each unique time period independently. The highest return is assigned the rank of zero (0) and the lowest a rank of 100. Depending on the number of observations between these two points, the remaining results are normalized to create the percentile rankings.

Results longer than one year are annualized.

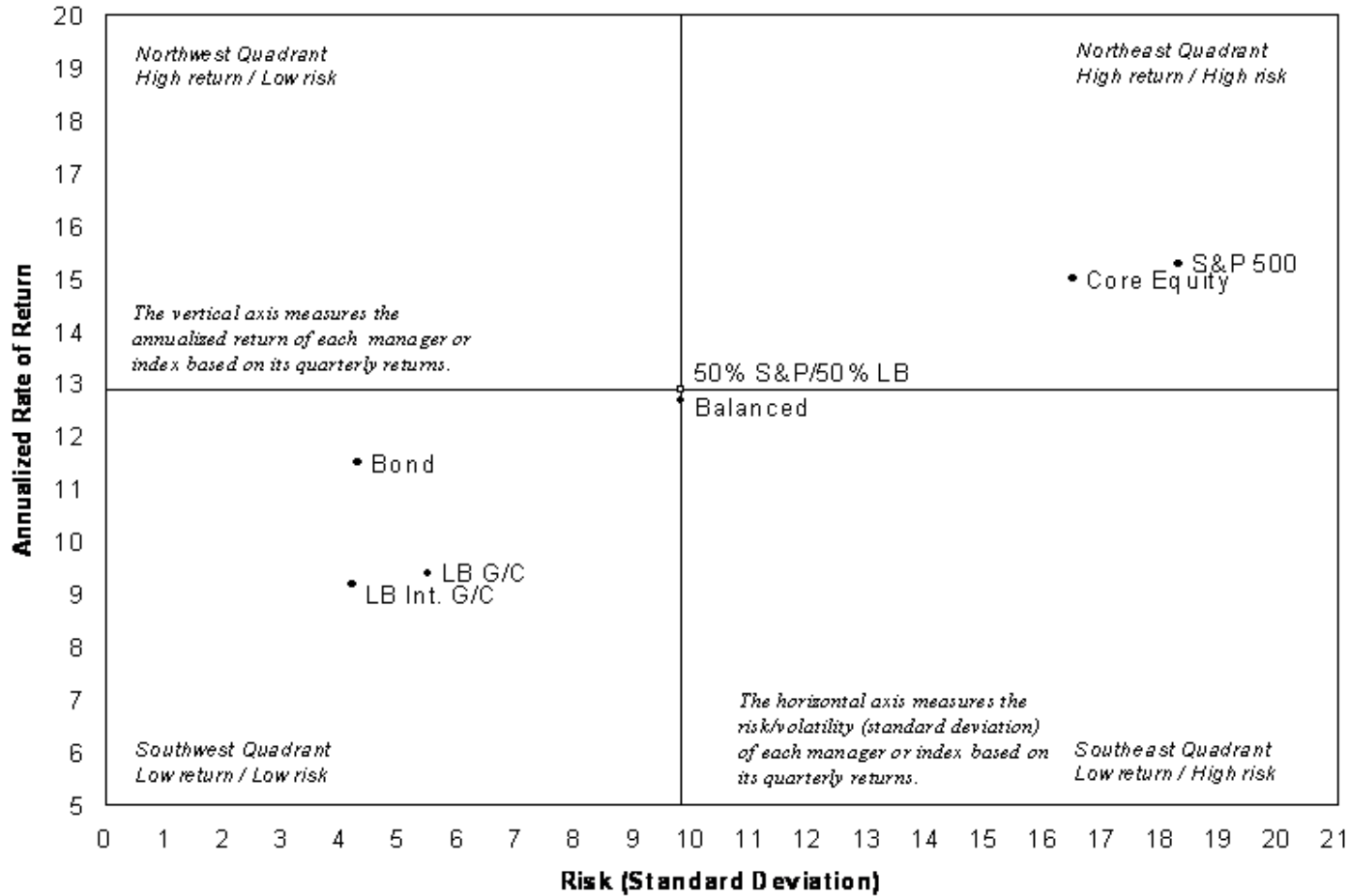
## Appendix A

### Description of performance graph



## Appendix A

### Description of Risk / Return graph



## Appendix B: Glossary of terms

**ADR** American Depository Receipt is a receipt for shares of a foreign company held by a U.S. bank, facilitating receipt of dividends and simulating purchase of the stock.

**Agency Bonds** Debt obligations issued by government sponsored organizations such as the Federal Home Loan Bank and the Federal Land Bank. After Treasuries, agency bonds are considered to be the next highest quality securities in the domestic fixed income market.

**Alpha** A measure of value added provided by the manager. Specifically, alpha is the excess portfolio return compared to the risk-adjusted benchmark.

**Asset Allocation** The combination of assets in a portfolio to different asset types such as common stocks, bonds, cash, real estate, venture capital, etc. Different approaches to the asset allocation decision are employed such as strategic, dynamic or tactical.

**Asset-Backed Security** A collateralized fixed-income security which is supported by installment loans (autos, mobile homes, boats, etc.) or revolving lines of credit (credit cards). Asset-backed securities generally have AAA ratings based on recourse provisions or third-party credit enhancements. Most collateral behind asset-backed securities is subject to prepayment. However, unlike mortgage-backed securities, prepayments are virtually unaffected by changing market interest rate levels.

**Association for Investment Manager Research (AIMR)** An international, non-profit organization whose mission is to serve its members and investors as a global leader in educating and examining investment managers and analysts and sustaining high standards of professional conduct. AIMR's membership is global in scope, and its activities are worldwide.

**AIMR Level I Verification** Independent attestation that the requirements of the AIMR Performance Presentation Standards (PPS) have been met on a firm-wide basis.

**AIMR Level II Verification** Independent attestation that the performance results of specific composites have been calculated according to the AIMR-PPS standards, and that the requirements of the AIMR Performance Presentation Standards (PPS) have been met on a firm-wide basis.

**Balanced (asset class)** Investments in common stock, preferred stock and bonds which are combined in an effort to obtain the highest return consistent with a low-risk strategy. A balanced portfolio typically offers a higher yield than a pure stock fund and performs better than such a fund when stocks are falling. In a rising market, however, a balanced portfolio usually will not keep pace with an all-equity portfolio.

**Base Currency** The currency of an investor's home country.

**Basic Industry** A sector classification which includes securities of firms that convert raw materials into unfinished products.

**Basis Point** 1/100th of 1.0%, or 0.01%.

**Blend** An evaluation of securities using a combination of fundamental and quantitative methods.

**Bottom-up** A money-management style which begins with security selection.

**Callable Bond** A bond which can be "called" (i.e., redeemed) by the issuer at a date prior to maturity. If interest rates drop significantly below a callable bond's coupon, the issuer can call the bond and refinance it at a lower rate. From a bond investor's perspective, the proceeds received when the bond is called will have to be reinvested at a lower rate. Thus, callable bonds expose bondholders to reinvestment risk. The bond investor receives compensation for this disadvantage in the form of a higher yield.

**Capital Goods** A sector classification which include securities of firms that are involved in the production of other goods--industrial buildings, machinery, equipment--as well as highways, office buildings, government installations. In the aggregate such goods form a country's productive capacity.

## Appendix B

**Capitalization** Market value times shares outstanding (common stock).

**Cash Equivalents** All fixed income securities that are highly liquid, with a known market value and a maturity, when acquired, of less than three months.

**CMO** Collateralized Mortgage Obligation is a security which groups mortgage pass-through bonds together and partitions the cash flows into successive maturity groups called tranches. CMOs attempt to mitigate prepayment risk by transferring the various degrees of prepayment risk among different tranches; thus, each tranche has different risk and return characteristics.

**Commingled Fund** An investment fund in which the manager pools the assets of several accounts to permit more efficient management and to reduce administrative cost. Also called collective investment funds, common funds or pooled funds.

**Confidence Level** The degree of certainty associated with a statistical measure, such as a t-statistic. In the context of this report, the confidence level provides insight into whether the manager's results were due to skill or luck. For example, with 20 or more observations, a t-statistic of 1.73 generally implies a confidence level of at least 95%; this means that there is only a 5% chance that the result was due to blind luck.

**Consumer Durables** A sector classification which includes securities of firms whose products, bought by consumers, are expected to last three years or more. These include automobiles, appliances, boats, and furniture. Economists look at the trend in consumer expenditure on durables as an important indicator of the strength of the economy, since consumers need confidence to make such large and expensive purchases.

**Consumer Non-Durables** A sector classification which includes securities of firms that provide consumable products such as food or drugs.

**Consumer Services** A sector classification which includes securities of firms that provide a service to the consumer rather than a product.

**Convertible Securities** These obligations include bonds, debentures, or preferred stock which may be exchanged by their owners for common stock -- usually in the same corporation. The terms which must be met to exercise this right of exchange are usually specified for each issue.

**Convexity** A measure of interest rate sensitivity. To demonstrate the concept, if bonds A and B have the same duration, but bond B has greater convexity, then the price of bond B will increase more than bond A if interest rates fall. Similarly, if rates increase, the price of bond B will fall less than the price of bond A. Investors who buy the price of bonds with a high degree of convexity will have to pay for convexity in the form of accepting a lower yield.

**Core Style** A strategy with investments in a large number of securities within a market capitalization range. Unlike an index strategy, a core strategy does try to exceed the return of the target index.

**Corporates** Debt obligations issued by private corporations. This type of debt instrument varies greatly in quality and liquidity as the terms of the obligation and the financial health of the issuer are factored in by the market.

**Correlation Coefficient** A statistical measure of the degree to which the movements of two variables are related. A correlation of 1.0 indicates that the two variables move perfectly in tandem. A correlation of 0.0 indicates a random relationship between the variables, and a correlation of -1.0 indicates perfect negative correlation (perfect tandem but in opposite directions). Combining assets in a portfolio with negative correlations or with positive correlations less than 1.0 will reduce total portfolio volatility.

**Country Weighting** The percentage exposure a portfolio has to the securities of a given country.

**Coupon** The annual rate of interest that the bond issuer promises to pay the bondholder.

**CPI** Consumer Price Index is a measure of the cost of a basket of consumer items. Changes in the index are generally accepted as a proxy for inflation.

## Appendix B

**Cross Hedging** A cross hedge occurs when a foreign currency is hedged to another foreign currency instead of into the base currency (the U.S. dollar for U.S. investors). Managers may cross hedge when they want added currency exposure to a country.

**Cross-Sectional Beta** Beta is a measure of a portfolio's return volatility relative to the market (benchmark index). An estimate of the cross-sectional beta of a portfolio is a weighted average of the betas of the portfolio's component assets. A beta of 1.00 means a stock has exhibited the same volatility as the market over the period measured. A beta of 0.85 means, in general, a stock is less volatile than the market (moves 0.85% for each 1.00% move in the market) where a beta of 1.15 means a stock is more volatile than the market (moves 1.15% for each 1.00% move in the market).

**Currency Hedging** International managers may use currency hedges to minimize the effect of currency fluctuation against the U.S. dollar. A 100% hedge will neutralize the effect while a partial hedge will reduce the effect.

**Current Yield** A bond's coupon rate divided by the bond's current price.

**Debt to Equity** The ratio of long-term debt to total common equity.

**Derivative** A financial instrument whose value is "derived" from or based upon the value of other financial instruments or the level of a financial index. Also refers to financial instruments which have complex structures with option-like features. Futures, options and currency forward contracts are examples of derivatives.

**Diversification** The reduction in risk that is sought by investing in assets which are not perfectly positively correlated. Diversification is the spreading of risk among a number of different investment opportunities. Since the assets are not perfectly correlated, losses of any one asset tend to be offset by gains on other assets.

**Dividend** A payment to owners of common or preferred stock. Dividends are usually paid out of the current earnings of a corporation. On preferred stock shares, the dividend is usually a fixed amount. On common stock

shares, the dividend will vary with the fortunes of the corporation. Dividends are usually declared and paid quarterly.

**Dividend Yield** The current dividend per share of a stock divided by its current price per share. For example, a stock with a price of \$100 per share paying a dividend of \$5 per share would have a dividend yield of  $\$5/\$100=5\%$ .

**Down Market** A quarter in which the market return is negative.

**Duration** A measure of a bond's price volatility relative to a change in the general level of interest rates, measured in years. It is a measure of the number of years until the average dollar, in present value terms, is received from coupon and principal payments. In general, bonds with longer durations have greater sensitivity to interest rates and vice versa.

**Duration - Active** Average portfolio duration is allowed to vary outside of a 20% range around the benchmark's duration.

**Duration - Controlled** Average portfolio duration is maintained within a 20% range around the benchmark's duration.

**Duration - Neutral** Average portfolio duration is maintained close to the benchmark's duration.

**Duration - Tightly Controlled** Average portfolio duration is maintained within a 10% range around the benchmark's duration.

**Dynamic Asset Allocation** An approach (such as portfolio insurance) where are investments hedged through the use of derivatives to theoretically limit any losses beyond a floor level.

**Earnings Per Share (EPS)** That portion of a company's profit allocated to each outstanding share of common stock.

**Earnings Per Share Growth Rate** The rate at which the earnings per share grows over various time periods.



## Appendix B

**Economic Risk** The probability that economic conditions will deteriorate and thereby affect the safety of a company.

**Effective Asset Allocation** Tool to discern style orientation of a portfolio. The concept of effective asset allocation was introduced by Professor William F. Sharpe in 1988. Mercer has applied Sharpe's concept by developing its own version of effective asset allocation. Mercer's model regresses a minimum of five years of quarterly returns on a maximum of five various style indices. The coefficients of the linear combination are fitted using a quadratic rather than a linear program in order for the coefficients to lie within a specified range. These coefficients must sum to one, but lie between zero and one. In addition, the constant term (alpha) is omitted. The resulting coefficients are interpreted as the "effective asset allocation" of the manager's investment style. With this model, we can distinguish the investment styles of both equity and fixed income managers.

**Effective Duration** Also known as option-adjusted duration, a measure of how sensitive a bond's price is to interest rate changes with the option and structural characteristics of the bond taken into account.

**Energy** A sector classification which includes securities of firms that produce and/or sell oil, oil service, gas, solar energy, coal companies and makers of energy saving devices.

**Equity** Investment or ownership interest possessed by shareholders in a corporation -- stock as opposed to bonds.

**Eurodollar Bonds** A U.S. dollar denominated bond issued and traded outside the jurisdiction of the United States.

**Finance** A sector classification which includes securities of firms that engage in making loans to individuals or businesses.

**Fixed Income** Debt instruments issued by corporations, governments or government agencies characterized by a fixed interest rate and stated maturity date. These represent the terms of the arrangement between someone who borrows money and someone who lends it.

**Foreign Exchange** Transactions involving the purchase and sale of currencies.

**Forward Market** A market in which participants agree to trade some commodity, security, or foreign exchange at a fixed price at some future date.

**Forward Rate** The rate at which forward transactions in some specific maturity are being made, e.g., the dollar price at which Deutschmarks can be bought for delivery three months hence.

**Fundamental** A qualitative method of evaluating securities by attempting to measure the underlying value of a particular stock using traditional security analysis.

**Growth at a Reasonable Price Style** An investment style employed by investment managers who invest in companies which have superior growth prospects. However, security selection techniques try to identify those companies that are underpriced relative to other companies in the same industry or sector.

**Growth Style** An investment style employed by investment managers who invest in companies that have superior growth prospects. Generally, these companies have higher price to earnings and price to book ratios and lower dividend yields.

**Health Services** A sector classification which includes securities of firms that provide health related services or products.

**Hedging** Strategy used to offset investment risk.

**High Yield** Bonds rated BB (Ba) or lower by Standard & Poor's Corporation and Moody's Investor Service. High yield bonds are lower quality than investment grade bonds and have greater credit risk.

## Appendix B

**Historical Beta** Beta is a measure of a stock's (or portfolio) return volatility relative to the market (benchmark index). A beta of 1.00 means a stock has exhibited the same volatility as the market over the period measured. A beta of 0.85 means, in general, a stock is less volatile than the market (moves 0.85% for each 1.00% move in the market) where a beta of 1.15 means a stock is more volatile than the market (moves 1.15% for each 1.00% move in the market). An estimate of the historical beta of a portfolio is based on a simple linear regression of the portfolio returns.

**Information Ratio** A measure of the consistency of value added by an investment manager. Specifically, the information ratio is the average alpha divided by the variability of alpha.

**Intermediate-Term Bond** Bonds with a maturity between three and ten years.

**Investment Grade** Bonds rated BBB (Baa) or higher by Standard & Poor's Corporation and Moody's Investment Services. Investment grade bonds are higher quality than high yield bonds and have lower credit risk.

**Kurtosis** A measure of the relative peakedness or flatness of a distribution compared to the normal distribution. Positive kurtosis indicates a relatively peaked distribution. Negative kurtosis indicates a relatively flat distribution.

**Limited Partnership** An organization made up of a general partner, who manages a project, and limited partners, who invest money but have limited liability, are not involved in day-to-day management, and usually cannot lose more than their capital contribution. Typically, public limited partnerships are sold through brokerage firms, for minimum investments of \$5,000, whereas private limited partnerships are put together with fewer than 35 limited partners who invest more than \$20,000 each.

**Local Currency** The currency of the same country as a security or index.

**Long-Term Bond** A bond with a maturity of ten years or more.

**Market Average Capitalization** The average market (equity) capitalization of an aggregate portfolio of equity securities weighted by the proportion of each security to the total portfolio.

**Market Timing** A practice whereby a manager shifts between asset classes depending on the expected performance of each class. Can include timing between stocks and cash, or an unlimited number of asset classes. (see Tactical Asset Allocation.)

**Maturity** The date on which the principal or stated value of a bond becomes due and payable in full to the bondholder.

**Maturity Structure** The distribution of bonds in a portfolio across the maturity spectrum.

**Maturity Structure - Actively Managed** The portfolio's distribution of bonds by maturity will vary over time in order to benefit from temporary valuation differences among maturity ranges or expected shifts in the yield curve.

**Maturity Structure - Laddered** Bonds held in a portfolio are evenly distributed across the maturity spectrum.

**Maturity Structure - Neutral** The distribution of bonds by maturity in a portfolio is similar to the benchmark.

**Median Market Capitalization** The middle market value in a distribution of stock holdings.

## Appendix B

**Mortgage-Backed Security** A collateralized fixed income security in which a group of mortgages are pooled together and act as collateral for the issuance of the security. Depending on the specific structure of the security, some combination of principal and interest payments of the underlying mortgages are “passed through” to the security holder. Types of mortgages that serve as collateral include: level payment fixed rate mortgages, adjustable rate mortgages, balloon mortgages, and graduated payment mortgages. The majority of these securities are issued and/or guaranteed by government agencies such as GNMA (Government National Mortgage Association - “Ginnie Mae”), FNMA (Federal National Mortgage Association - “Fannie Mae”), and FHLMC (Federal Home Loan Mortgage Corporation - “Freddie Mac”). Only GNMA is an arm of the US government and as such, is backed by the full faith and credit of the US government. FNMA and FHLMC, which are government-sponsored entities, are generally recognized as AAA quality due to their close ties to the US government.

**Municipal Bonds** Bonds issued by a state or local government or one of its agencies to supplement tax revenues for use in operating or capital expenditures. These debt instruments come in one of two forms, general obligation bonds and revenue bonds. Typically these bonds are exempt from federal and sometimes state and local taxes.

**Mutual Fund** An investment fund in which the investment company raises money from shareholders and invests in stocks, bonds, options, futures, currencies, or money market securities. These funds offer investors the advantages of diversification and professional management.

**Non-U.S. Dollar Bonds** Bonds issued by foreign governments, corporations or other entities whose value is denominated in a currency other than the U.S. dollar. Non-U.S. dollar bonds incur currency risk to a U.S. based investor.

**Peer Group** A narrowly defined group of investment managers who use a similar investment style, such as value investment managers.

**Percentile Rank** Time-weighted rates of return are ranked against Mercer universes or peer groups. For example, an investment manager’s return may rank at the 20th percentile of a particular Mercer universe or peer group. This indicates that 80% of the investment managers in the sample had lower performance. The highest percentile rank is 1 and the lowest is 100. Bars in graphic displays are divided by percentiles with the top of each bar denoting the 5th percentile followed by lines for the 25th, 50th (median), 75th, and 95th percentiles.

**Political Risk** The probability that a company will be affected by political actions.

**Portfolio Turnover** Volume of shares traded as a percentage of total shares currently held in the portfolio during a given period of time.

**Price to Book Ratio (P/B)** The current price of a stock divided by its book value per share. For instance a stock selling for \$20 a share whose book value is \$5 per share has a P/B of 4.

**Price to Earnings Ratio (P/E)** The current price of a stock divided by its earnings per share. For instance, a stock selling for \$20 a share that earned \$2 per share in the last 12 months has a P/E ratio of 10. Mercer excludes companies with negative earnings in its calculation.

**Quality Rating** A measure of a bond issuer’s credit quality, or its ability to meet future contractual obligations. Two widely used bond rating systems are those of Moody’s Investor Service and Standard & Poor’s Corporation.

**Quantitative** A systematic method of evaluating securities using a model composed of ranking or rating tools.

**Quartile** Represents a range of twenty-five percent of the outcomes. A first quartile rank means that the manager performed in the top twenty-five percent of its peer group or universe.

## Appendix B

**Return on Equity (ROE)** An amount, expressed as a percentage, earned on a company's common stock investment for a given period of time. It is calculated by dividing net income for the accounting period by common stock equity (net worth) at the beginning of the period.

**Return/Risk Comparison** Analysis that presents the rate of return in relation to the volatility of those returns as measured by the annualized standard deviation of quarterly returns.

**Sector Biased** The portfolio tends to have a concentration in a particular sector or maintains sector weightings which are significantly greater than or less than those of the benchmark's over all market environments.

**Sector Neutral** The portfolio's allocation among sectors is similar to that of the market.

**Sector Rotation** A portfolio's sector distribution will vary over time according to perceived valuation differences among different sectors and sub-sectors.

**Semi Standard Deviation** A measure of the downside volatility of returns.

**Separate Account** A single portfolio managed for a client.

**Short-Term Bond** A bond with a maturity less than three years.

**Skewness** A measure of the degree of asymmetry of a distribution around its mean. Positive skewness indicates a distribution of excess return over the benchmark with an asymmetric tail extending towards more positive values. Negative skewness indicates a distribution of excess return over the benchmark with an asymmetric tail extending towards more negative values.

**Spot Market** Market for immediate delivery (as opposed to future delivery). In the spot market for foreign exchange, settlement is two business days ahead.

**Spot Price** The current market price.

**Standard Deviation** A measure of the dispersion of a set of numbers around the average. In a regression analysis (which assumes a normal distribution), 68% of the data points fall between 1 standard deviation below the average and 1 standard deviation above.) Standard deviation is frequently used as a measure of risk (see Return/Risk Comparison).

**Strategic Asset Allocation** An approach where an asset allocation policy is established for the long run and the portfolio is invested at that static mix.

**Systematic Risk** The component of return that is associated with the broad-based market. Systematic risk is the volatility of rates of return on stocks or portfolios associated with changes in rates of return on the market as a whole.

**T-Statistic** Used to measure statistical significance, a t-statistic is a standardized ratio which measures how significantly far apart two measures are. To calculate the t-statistic of excess returns versus a benchmark, three measures are required: the average quarterly excess return over the benchmark, the standard deviation of quarterly excess returns and the square root of the number of observations. Divide the average excess return by the standard deviation, then multiply this ratio by the square root of one less than the number of observations.

**Tactical Asset Allocation** An approach where the weighting to different asset classes is changed frequently - up to several times per year - as a function of the expected performance from each asset class in the short run (see Market Timing).

**Target Index Return** The return derived from a portfolio invested in benchmark indices and weighted according to policy asset allocation targets.

**Technology** A sector classification which includes securities of firms that provide technology related services or products.

## Appendix B

**Time-Weighted Rate of Return** A rate of return calculation. The time-weighted method minimizes the impact of cash flows on rate of return calculations. Time-weighted returns are an appropriate measure of an investment manager's performance, since investment managers may not have direct control over the timing or amount of cash flows directed to them.

**Top-Down** A money management style which begins with an assessment of the economy as a whole.

**Tracking Error** A measure of how much a return series deviates from its benchmark. Mercer measures the tracking error by the annualized standard deviation of quarterly excess returns.

**Transportation** A sector classification which includes securities of firms that provide transportation related services or products.

**Treasury Securities** Bonds which are direct debt obligations of the U.S. government issued by the U.S. Treasury. Backed by the "full faith and credit" of the United States, these bond are considered among the safest of investments carrying AAA/Aaa ratings. Treasury Bills are short-term securities issued with three-month, six-month, and one-year maturities. Notes are intermediate-term obligations available in maturities of one to ten years. Bonds are long-term obligations with maturities greater than ten years.

**Universe** A broadly defined group of investment managers. For example, a group of equity investment managers.

**Unsystematic Risk** The variability not explained by general market movements.

**Up Market** A quarter in which the market return is positive.

**Utilities** A sector classification which includes securities of firms that own or operate facilities used for the generation, transmission, or distribution of electric energy. Utilities distribute electricity, gas and water to their customers. Utility stocks usually offer above-average dividend yields to investors, but less capital appreciation potential than growth stocks. Utility stocks are also very sensitive to the direction of interest rates. Rising interest rates tend to harm the value of utility shares because higher rates provide a more attractive alternative to investors. In addition, utilities tend to be heavy borrowers, so higher interest rates add to their borrowing costs. Conversely, falling interest rates tend to buoy the value of utility stocks because utility dividends look more attractive and because the companies' borrowing costs will be reduced.

**Value Style** An investment style employed by investment managers who invest in companies that appear to be undervalued relative to the market. Generally, these companies have lower price to earnings and price to book ratios and higher dividend yields.

**Yankee Bonds** A U.S. dollar-denominated bond issued by foreign banks and corporations in the U.S. market.

**Yield Curve** A graph showing the relationship between yield and maturity for a set of similar securities.

**Yield to Maturity** Internal rate of return on a bond bought at the current price and held to maturity. This assumes that coupon income is reinvested at the yield to maturity.

**Yield to Worst** The yield to maturity under the least desirable of all possible bond repayment patterns under the assumption that market yields are unchanged. If market yields are higher than the coupon, the yield to worst would assume no prepayment. If market yields are below the coupon, yield to worst would assume prepayment at the earliest call date.

## **Appendix C: Description of Indices**

### **Equity Indices**

#### **American Stock Exchange**

The American Stock Exchange Index (AMEX) contains issues of medium and smaller-sized companies, representing less than 5% of the market value of all U.S. stocks. The index represents all major industry groups and includes American Depository Receipts and warrants. The index is market value-weighted.

#### **Dow Jones Industrial Average**

The Dow Jones Industrial Average (DJIA) contains 30 actively traded blue-chip stocks. The 106-year-old average is the best-known U.S. stock average. The editors of the Wall Street Journal, which is owned by Dow Jones select the stocks. All but three of the stocks are listed on the New York Stock Exchange. In October of 1999, Microsoft Corp. and Intel Corp were the first NASDAQ Stock Market stocks to be included in the DJIA. The stocks are generally leaders in their industry. The DJIA purpose is to represent US listed equities, excluding transportation and utility stocks. The Dow is a price-weighted arithmetic average.

#### **FTSE KLD 400 Social Index**

The FTSE KLD 400 Social Index (KLD400) is a float-adjusted, market capitalization-weighted, common stock index of U.S. equities. Launched by KLD in May 1990, the KLD400 (formerly KLD's Domini 400 Social Index) is constructed using environmental, social and governance (ESG) factors. The Domini 400 Social Index was renamed the FTSE KLD 400 Social Index in July 2009. It is a widely recognized benchmark for measuring the impact of social and environmental screening on investment portfolios. The index consists of 400 U.S. stocks, which are screened on factors such as military contracting, alcohol and tobacco, gambling, nuclear power, environmental management and employee relations.

## Appendix C

### MSCI EAFE

The MSCI Europe, Australasia and the Far East (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 index is market value-weighted and calculated both with net and gross dividends reinvested. The index consists of approximately 1,000 securities from the following 21 countries:

Australia	Denmark	Germany	Ireland	Netherlands	Portugal	Sweden
Austria	Finland	Greece	Italy	New Zealand	Singapore	Switzerland
Belgium	France	Hong Kong	Japan	Norway	Spain	United Kingdom

### MSCI EAFE (GDP-Weighted)

The MSCI Europe, Australasia and the Far East (EAFE) GDP-Weighted Index is designed to reflect the size of a country's economy rather than the size of its equity market, by using country weights based on a country's gross domestic product (GDP)..

### MSCI Emerging Markets

The MSCI Emerging Markets Index is a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging markets. The index consists of the following 22 emerging markets country indices:

Brazil	Czech Republic	Indonesia	Mexico	Poland	Thailand
Chile	Egypt	Israel	Morocco	Russia	Turkey
China	Hungary	Korea	Peru	South Africa	
Colombia	India	Malaysia	Philippines	Taiwan	

## Appendix C

### MSCI World Index

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 index measures the performance of stock markets in the United States, Europe, Canada, Australia, New Zealand and the Far East and currently consists of securities from the following 23 countries: The index is market value-weighted and calculated both with net and gross dividends reinvested.

Australia	Denmark	Greece	Japan	Portugal	Switzerland
Austria	Finland	Hong Kong	Netherlands	Singapore	United Kingdom
Belgium	France	Ireland	New Zealand	Spain	United States
Canada	Germany	Italy	Norway	Sweden	

### NASDAQ Composite

The National Association of Securities Dealers, a network of brokers, sponsors the NASDAQ (National Association of Securities Dealers Automated Quotation system). It is often called the OTC (over-the-counter) market. Unlike the NYSE and AMEX, the OTC has no trading floor and no auction market. It is a dealer to dealer market that operates via an electronic network.

The NASDAQ Composite Index measures all NASDAQ domestic and non-U.S. based securities. The NASDAQ Composite includes over 3,000 issues. The composite is a market value-weighted index calculated on a total return basis including dividends. The index represents many small company stocks but is heavily influenced by about 100 of the largest NASDAQ issues.

### NASDAQ 100

The NASDAQ 100 Index includes 100 of the largest domestic and international non-financial companies listed on The NASDAQ Stock Market based on market capitalization. The NASDAQ 100 Index is a modified capitalization-weighted index which is designed to limit domination of the index by a few large stocks while retaining the capitalization ranking of companies. To be eligible for inclusion in the index, a stock must have a minimum average daily trading volume of 200,000 shares. Component stocks are adjusted quarterly to reflect changes in market capitalization.

### New York Stock Exchange



## Appendix C

The New York Stock Exchange Index (NYSE) is the largest equities marketplace in the world. It represents approximately 80% of the value of all publicly owned companies in America. The NYSE has the most stringent listing requirements of any stock exchange in the United States. Because of the Exchange listing requirements, the stocks tend to be larger, well established companies. The NYSE uses a specialist system of trading. The specialist brings buyers and sellers together on the Exchange floor and will buy or sell shares if there is an imbalance of orders. The index is market value-weighted and calculated on a total return basis with dividends re-invested.

### **Russell 1000**

The Russell 1000 is intended to represent the universe of stocks in which most active equity managers invest. The index measures the performance of the 1,000 largest companies in the Russell 3000 Index, which represents approximately 92% of the total market capitalization of the Russell 3000 Index. The index is market value-weighted and restated annually based on May 31 market capitalization rankings.

### **Russell 1000 Growth**

The Russell 1000 Growth Index is intended to be a benchmark for growth managers. The stocks are selected from the Russell 1000 Index, which currently contains approximately 1,000 of the largest U.S. equity stocks by market capitalization. The index includes those stocks, which have had high earnings per share growth rate, high dividends per share growth rate, high price earnings ratio, high price book ratio, and a low dividend yield relative to the market.

The Russell 1000 securities are ranked by adjusted book to price ratios and by the I/B/E/S (Institutional Brokers Estimate System) growth rate. These ranks are then normalized into common units and combined to arrive at a composite rank. A company's composite rank is then used to determine its probability of being growth or value.

Companies with probabilities of 100% growth are placed entirely in the growth index. Companies with probabilities of being partially growth and value are held in both indexes according to their probability, i.e., a company with an 80% probability of growth would have 80% of its available market cap in the growth index and 20% in the value index. Inception is 12/31/83.

### **Russell 1000 Value**

The Russell 1000 Value Index is intended to be a benchmark for value managers. The securities are chosen from the Russell 1000 Index, which currently contains approximately 1,000 of the largest U.S. equity stocks by market capitalization. The index includes those stocks, which have a low price to book ratio, low price earnings ratio, high dividend yield and a low earnings per share growth rate.

The Russell 1000 securities are ranked by adjusted book to price ratios and by the I/B/E/S (Institutional Brokers Estimate System) growth rate. These ranks are then normalized into common units and combined to arrive at a composite rank. A company's composite rank is then used to determine its probability of being growth or value.

## Appendix C

Companies with probabilities of 100% value are placed entirely in the value index. Companies with probabilities of being partially growth and value are held in both indexes according to their probability, i.e., a company with an 80% probability of value would have 80% of its available market cap in the value index and 20% in the growth index. Inception is 12/31/83.

### **Russell 2000**

The Russell 2000 is intended to be a small capitalization market proxy. The index currently consists of approximately the 2,000 smallest stocks in the Russell 3000, representing approximately 10% of the total U.S. equity market. The index is restated annually based on May 31 market capitalization rankings.

### **Russell 2000 Growth**

The Russell 2000 Growth Index contains those Russell 2000 securities, which have a greater-than-average growth orientation. These securities generally have higher price-to-book and price-earnings ratios than those securities in the Russell 2000 Value Index.

The Russell 2000 securities are ranked by adjusted book to price ratios and by the I/B/E/S (Institutional Brokers Estimate System) growth rate. These ranks are then normalized into common units and combined to arrive at a composite rank. A company's composite rank is then used to determine its probability of being growth or value.

Companies with probabilities of 100% growth are placed entirely in the growth index. Companies with probabilities of being partially growth and value are held in both indexes according to their probability, i.e., a company with an 80% probability of growth would have 80% of its available market cap in the growth index and 20% in the value index. The index is restated annually based on May 31 market capitalization rankings. Inception is 12/31/83.

### **Russell 2000 Value**

The Russell 2000 Value Index contains those Russell 2000 securities, which have a less-than-average growth orientation. These securities generally have lower price-to-book and price-earnings ratios than those securities in the Russell 2000 Growth Index.

The Russell 2000 securities are ranked by adjusted book to price ratios and by the I/B/E/S (Institutional Brokers Estimate System) growth rate. These ranks are then normalized into common units and combined to arrive at a composite rank. A company's composite rank is then used to determine its probability of being growth or value.

Companies with probabilities of 100% value are placed entirely in the value index. Companies with probabilities of being partially growth and value are held in both indexes according to their probability, i.e., a company with an 80% probability of value would have 80% of its available market cap in the value index and 20% in the growth index. The index is restated annually based on May 31 market capitalization rankings. Inception is 12/31/83.

### **Russell 2500**

## Appendix C

The Russell 2500 Index measures the performance of the 2500 smallest companies in the Russell 3000 Index, which represents approximately 16% of the total market capitalization of the Russell 3000 Index.

### **Russell 3000**

The Russell 3000 Index currently consists of the largest U.S. company stocks by market capitalization. The Russell 3000 represents approximately 99% of the investable U.S. equity market. The index is restated annually based on May 31 market capitalization rankings.

### **Russell Midcap**

The Russell MidCap Index measures the performance of the 800 smallest companies in the Russell 1000 which represent approximately 35% of the total market capitalization of the Russell 1000 index.

### **S&P 500**

The S&P 500 index contains a representative sample of common stocks that trade on the New York and American Stock Exchanges and some over-the-counter stocks. The index represents about 86% of the market value of all the issues traded on the NYSE.

The index does not contain the 500 largest stocks. It has many relatively small companies in it because it is constructed of industry groups. Standard and Poor's first identifies important industry categories and allocates a representative sample of stocks to each group. The companies chosen to be in the S&P 500 generally do have the largest market values within their industry group.

The industry categories are grouped into ten sectors: Consumer Discretionary, Consumer Staples, Energy, Financials, Health Care, Industrials, Information Technology, Materials, Telecommunication Services and Utilities. The index is weighted by market capitalization and calculated on a total return basis with dividends reinvested.

### **S&P 500 Value & Growth**

The S&P Value and Growth indices were developed by Standard and Poor's in conjunction with BARRA using a method developed by William F. Sharpe of Stanford University.

The stocks in the S&P 500 are ranked from the lowest to highest price-to-book ratios. Then, starting with the company with the lowest price-to-book ratio, the market capitalization of each company is added until 50% of the total market capitalization of the S&P 500 has been reached. Those companies, which fall into this group, constitute the S&P Value Index and the remaining companies comprise the S&P Growth Index.

## Appendix C

Each index is capitalization-weighted and re-balanced semi-annually on January 1 and July 1. The indices are adjusted each month to reflect changes in the S&P 500. Companies, which are added to the S&P 500 are assigned to the Value or Growth Index, based on where their price-to-book ratio would have ranked at the most recent cut-off period.

### **S&P Midcap 400**

The S&P MidCap 400 Index consists of 400 domestic stocks which are chosen by a committee at Standard & Poor's based on market capitalization, liquidity and industry group representation. The index is made up of companies listed on the NYSE, NASDAQ, and AMEX. None of the companies within the S&P MidCap overlap with those included in the S&P 500 index. The index is market value-weighted.

### **S&P Midcap Value & Growth**

The S&P MidCap Value and Growth indices were developed by Standard and Poor's in conjunction with BARRA using a method developed by William F. Sharpe of Stanford University.

The stocks in the S&P MidCap 400 are ranked from the lowest to highest price-to-book ratios. Then, starting with the company with the lowest price-to-book ratio, the market capitalization of each company is added until 50% of the total market capitalization of the S&P 400 has been reached. Those companies, which fall into this group, constitute the S&P MidCap Value and the remaining companies comprise the S&P MidCap Growth Index.

Each index is capitalization-weighted and re-balanced semi-annually on January 1 and July 1. The indices are adjusted each month to reflect changes in the S&P MidCap 400. Companies which are added to the S&P MidCap 400 are assigned to the Value or Growth Index based on where their price-to-book ratio would have ranked at the most recent cut-off period.

### **S&P Smallcap 600**

The S&P SmallCap 600 index is designed to be a benchmark of small capitalization stock performance and an investable portfolio for passive replication purposes. S&P began development of the index by surveying active and passive small cap managers, quantitative research analysts, academics and traders to determine a small cap market value definition.

S&P converted this market capitalization range into percentiles of the entire stock market in order to account for fluctuations in performance over time. The \$600 million level converted into the 50th percentile and the \$80 million lower level became the 83rd percentile. This percentile range was used to select the index back history and is used to select future index constituents.

S&P applied the target percentile range to their Index Selection Database to create a small cap universe of 1,850 stocks. The following screens were then used to select the 600 companies: 1. Companies must trade on the New York, NASDAQ or American stock exchanges, 2. Companies must have a trading history of at least six months, 3. Stocks that do not trade on any three days during a 12-month period are removed, 4. Companies with stock prices below \$1.00 are removed, 5. Share turnover has to exceed 20% on an annualized basis, 6. Companies with 50% or more of the common shares owned by another corporation or 60% owned by insiders

## Appendix C

are removed, 7. Companies in bankruptcy or financial distress are eliminated, 8. Bid/Ask spreads calculated for 30 days must be 5% or less. The index was started on December 31, 1993, and a simulation for back history was used for returns back to January 1984.

### **Wilshire 4500**

The Wilshire 4500 Index measures the performance of all small and midcap U.S. equities. It is constructed using the Wilshire 5000 with the companies in the S&P 500 Composite excluded. The Wilshire 4500 is a misnomer, there are actually over 5,000 companies in the index. ADRs are excluded from the index. The Wilshire 4500 exchange distribution by market value is 35% NASDAQ, 63% NYSE and 2% AMEX.

### **Wilshire 5000**

The Wilshire 5000 Equity Index was created by Wilshire Associates in 1974 and has historical data back to December 1970. The index measures the performance of all U.S. headquartered equity securities with readily available price data. The Wilshire 5000 is a misnomer, there are actually over 7,000 stocks in the Index. The Wilshire 5000 exchange distribution by market value is 80% NYSE, 20% NASDAQ, and 1% AMEX. Non-domiciled US stocks, foreign issues and ADRs are excluded from the index. The index is computed on both an equal-weighted and value-weighted basis.

## **Fixed Income Indices**

### **Barclays Capital Global Aggregate**

The Barclays Capital Global Aggregate Index provides a broad-based measure of the global investment-grade fixed income markets. The three major components of this index are the U.S. Aggregate Index, the Pan-European Index and the Asian-Pacific Aggregate Index. The index also includes Eurodollar and Euro-Yen corporate bonds, Canadian government, agency and corporate securities, and USD investment grade 144A securities. All issues must be fixed rate, nonconvertible and have at least one year remaining to maturity.

### **Barclays Capital Global Treasury**

The Barclays Capital Global Treasury Index covers local currency-denominated debt of 30 countries. All issues must be fixed rate, nonconvertible and have at least one year remaining to maturity.

### **Barclays Capital U.S. Aggregate**

The Barclays Capital U.S. Aggregate Index covers the U.S. investment-grade, fixed-rate bond market and includes government and corporate bonds, agency mortgage pass-through securities, asset-backed issues, and ERISA-qualified CMBS. Price, coupon and total return are reported on a month-end to month-end basis. All returns are market value-weighted inclusive of accrued income.

## **Appendix C**

### **Barclays Capital U.S. Intermediate Aggregate**

The Barclays Capital U.S. Intermediate Aggregate Index consists of those bonds in the Government and Corporate Bond Indexes which have a maturity between one and ten years, and all Mortgage-Backed Securities and all Asset-Backed Securities within the Aggregate Index (i.e. the Aggregate Index less the Long Government/Corporate Index). The index was created to provide a broad based benchmark with a shorter duration than the Aggregate Index.

Price, coupon and total return are reported on a month-end to month-end basis. All returns are market value-weighted inclusive of accrued income.

### **Barclays Capital U.S. Agency**

The Barclays Capital U.S. Agency Bond Index consists of all publicly issued debt of the U.S. Government, quasi-federal corporations and corporate debt guaranteed by the U.S. Government with a minimum outstanding of \$250 million. Price, coupon and total return are reported on a month-end to month-end basis. All returns are market value weighted inclusive of accrued interest.

### **Barclays Capital U.S. Credit**

The Barclays Capital U.S. Credit Bond Index includes bonds issued by both U.S. and Non-U.S. corporations. To qualify all bonds must be SEC registered.

The Credit Index is subdivided into pure corporate (industrial, utility, and finance, including both U.S and Non U.S. corporations) and non-corporates (sovereign, supranational, foreign agencies, and foreign local governments). The first the sectors are composed of all publicly issued, non-convertible, investment grade domestic corporate debt. Issues must have a minimum rating of Baa by Moody's Investor Service, BBB by Standard and Poor's Corporation or BBB by Fitch Investor Services. Collateralized Mortgage Obligations (CMO's) and Asset-Backed securities are not included. All issues must have a maturity of at least one year and a par amount outstanding of at least \$250 million. Price, coupon and total return are reported on a month-end to month-end basis. All returns are market value weighted inclusive of accrued interest.

### **Barclays Capital U.S. Government Bond**

The Barclays Capital U.S. Government Bond Index is made up of the Treasury Bond Index and the Agency Bond Index. The Treasury index consists of all publicly issued domestic debt of the US Government with maturity greater than one year. Flower bonds, targeted investor notes (TINs), and state and local government series are excluded. U.S. agency debt issues include both callable and noncallable securities. The Agency index includes publicly issued debt of U.S. Government agencies, quasi-federal corporations, and corporate or foreign debt guaranteed by the U.S. Government. Global issues associated with the World Bank are included. The largest issuers are Fannie Mae, the Resolution Trust Funding Corporation (REFCORP) and the Federal Home Loan Bank System (FHLB). All issues must have an outstanding par value of at least \$250 million and a maturity of at least one year. Price, coupon and total return are reported for all sectors on a month-end to month-end basis. All returns are market value-weighted inclusive of accrued interest. The index is rebalanced monthly by market capitalization.

### **Barclays Capital U.S. 1-3 Year Government**

## **Appendix C**

The Barclays Capital U.S. 1-3 Year Government Index consists of those issues within the Government Bond Index which have a maturity greater than or equal to one year and less than or equal to three years. When an issue no longer meets the maturity criterion it is dropped from the index. All issues must have an outstanding par value greater than \$250 million.

### **Barclays Capital U.S. Government /Credit**

The Barclays Capital U.S. Government/Credit Bond Index combines the U.S. Government and U.S Credit Bond Indices.

### **Barclays Capital U.S. Long Government/Credit**

The Barclays Capital U.S. Long Government/Credit Index consists of those issues within the U.S. Government/Credit Index which have a maturity greater than ten years. Price, coupon and total return are reported on a month-end to month-end basis. All returns are market value weighted inclusive of accrued interest.

### **Barclays Capital U.S. High Yield**

The Barclays Capital U.S. High Yield Bond Index covers fixed rate, publicly issued, below investment-grade debt registered with the SEC. Eurobonds and debt issues from countries designated as emerging markets (e.g., Argentina, Brazil, Venezuela, etc.) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included. Original issue zeroes, step-up coupon structures, 144-As and pay-in-kind bonds (PIKs, as of October 1, 2009) are also included. The bonds must be dollar denominated and nonconvertible, have at least one year remaining to maturity and an outstanding par value of at least \$150 million. The bonds must be rated high-yield (Ba1/BB+ or lower) by at least two of the following ratings agencies: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. If only one of the three agencies rates a security, the rating must be high-yield. A small number of unrated bonds are included in the index; to be eligible they must have previously held a high yield rating or have been associated with a high yield issuer, and must trade accordingly.

### **Barclays Capital U.S. Mortgage Backed**

The Barclays Capital U.S. Mortgage Backed Securities Index is composed of all 15- and 30-year fixed rate security issues backed by mortgage pools of the Government National Mortgage Association (GNMA), the Federal National Mortgage Association (FNMA), and the Federal Home Loan Mortgage Corporation (FHLMC).

Balloon securities are included in the index. The index excludes graduated payment mortgages (GPMs), buydowns, graduated equity mortgages (GEMs), project loans and manufactured homes (GNMA). Non-agency (whole loan) jumbo and 20-year securities are also excluded. The MBS universe groups over 600,000 individual fixed rate MBS pools into approximately 3,500 generic aggregates. To qualify for inclusion in the index, the aggregate must have a weighted average maturity (WAM) of at least one year and a minimum \$250 million par amount outstanding.

### **Barclays Capital U.S. Treasury Bond**

## **Appendix C**

The Barclays Capital U.S. Treasury Bond Index consists of all public obligations of the U.S. Treasury, including inflation-indexed securities. The index excludes flower bonds and foreign-targeted issues. All issues must have at least one year to maturity and a minimum amount outstanding of \$250 million. Price, coupon and total return are reported on a month-end to month-end basis. All returns are market value-weighted inclusive of accrued interest.

### **Barclays Capital U.S. Treasury Inflation Protected Securities (TIPS)**

The Barclays Capital U.S. Treasury Inflation Protected Securities (TIPS) Index measures the performance of inflation-protected bonds issued by the U.S. Treasury. The rules for inclusion in the index are as follows:

All bonds must be a U.S. Treasury Inflation Note.

The minimum amount outstanding is \$250 million.

All bonds must be dollar denominated and non-convertible.

All bonds must have more than 1 year to maturity.

### **Barclays Capital U.S. Universal**

The Barclays Capital U.S. Universal Index consists of the Aggregate Index, plus dollar-denominated Eurobonds (Eurodollar Index), 144A Index, Non-ERISA CMBS Index, High Yield CMBS Index, US High-Yield Corporate Index, and dollar-denominated Emerging Markets Index. The Universal Index was designed to capture the entire portfolio management choice set of fixed-income securities issued in US Dollars.

### **BofA Merrill Lynch Corporate 1-3 Year**

The BofA Merrill Lynch 1-3 Year Corporate Bond Index consists of all those issues in the Corporate Master Index with a maturity greater than or equal to one year and less than or equal to three years. When an issue no longer meets the maturity criterion it is dropped from the index.

### **BofA Merrill Lynch High Yield Master**

The BofA Merrill Lynch High Yield Master Index consists of U.S. domestic and Yankee bonds which are rated less than BBB by Standard and Poor's or Baa by Moody's Investors Service but which are not in default (DDD1 or less). The issues must be publicly traded, nonconvertible and have a fixed coupon schedule. The issues must have a minimum maturity of 1 year and a par amount outstanding of at least \$100 million at the start and close of the performance measurement period. The index excludes private placements, Title II securities, equipment trust certificates, inflation linked securities, convertible bonds, deferred interest (DIB) and pay-in-kind (PIK) bonds.

### **BofA Merrill Lynch 1-3 Year Treasury**



## Appendix C

The BofA Merrill Lynch 1-3 Year Treasury Index consists of those issues within the Treasury Master Index which have a maturity greater than or equal to one year and less than or equal to three years. When an issue no longer meets the maturity criterion it is dropped from the index.

### **Citigroup 3-Month Treasury Bill**

The Citigroup 3-Month Treasury Bill Index is a monthly return equivalent of yield averages which are not marked to market. The calculation methodology is as follows: 1. Obtain discount yields for current month-end and two previous month-end dates. For example the January return requires the rates at the end of January, December and November. 2. Convert the discount rates to bond-equivalent yields. 3. Compute the simple average of the bond-equivalent yields. 4. Decompose to a monthly frequency using the actual number of days in the month in a 365-day year. Inception is 12/31/77.

### **Citigroup Broad Investment Grade**

The Citigroup Broad Investment Grade (BIG) Bond Index measures the monthly total rate-of-return performance of the investment-grade universe of bonds issued in the United States. The BIG index includes institutionally traded U.S. Treasury (excluding inflation-indexed securities), Government-sponsored (agency and supranational), mortgage and credit (corporate) securities. For inclusion in the index, all issues must have fixed coupon rate and a minimum maturity of one year. Each issue is individually Citigroup trader priced on the bid side at month-end.

U. S. Treasury issues and mortgage pass-throughs have a required entry and exit minimum amount outstanding of \$1 billion. Credit and Government-sponsored securities must have a minimum amount outstanding of \$100 million to be included in the index and are dropped from the index if the amount outstanding falls below \$75 million. Credit bonds must be rated BBB-/Baa3 or better by either S&P or Moody's.

The index is market value-weighted. Total returns include price change, principal payments, coupon payments, accrued income and reinvestment income on intra-money cash flows. Coupon interest is put into 30-day T-bills until month-end when it is re-invested in the same issues. The index is re-weighted monthly. The inception date is December 31, 1979.

### **Citigroup High-Yield Cash-Pay**

The Citigroup High-Yield Cash-Pay Index measures the performance of below investment-grade bonds issued in the United States. All of the bonds are publicly placed, have a fixed coupon and are nonconvertible. For inclusion in the index, an issue must have a minimum maturity of 1 year and a minimum amount outstanding of \$100 million. The maximum quality rating allowed is BB+/Ba1 by either S&P or Moody's. The index includes only cash-pay bonds. Deferred-interest and issues are excluded. The inception date is December 31, 1988.

### **Citigroup High-Yield Market**

The Citigroup High-Yield Market Index captures performance of below investment-grade corporate bonds issued in the United States. All the bonds are publicly placed, have a fixed coupon and are nonconvertible. For inclusion in the index, an issue must have minimum maturity of 1 year, a minimum amount outstanding of \$100 million per issue when the issuer has a minimum of US\$400 million total outstanding debt that qualifies for inclusion, or US\$200 million minimum outstanding

## Appendix C

per issue when the issuer does not meet the US\$400 million minimum.. The maximum quality rating allowed is BB+/Ba1 by both S&P and Moody's. The index includes cash-pay and deferred-interest bonds. Defaulted issues are excluded. When an issuer misses or expects to miss an interest payment, or enters into Chapter 11, the corresponding bonds exit the index at month end, reflecting the loss of the coupon payment or accrued interest. The index inception date is December 31, 1988.

### **Citigroup High-Yield Market 7+ Year Index (formerly Composite High Yield)**

The Citigroup High-Yield Market 7+ Year Index measures the performance of below investment-grade bonds issued in the United States. All of the bonds are publicly placed, have a fixed coupon and are nonconvertible. For inclusion in the index, an issue must have a minimum maturity of 7 years and a minimum amount outstanding of \$100 million. The maximum quality rating allowed is BB+/Ba1 by either S&P or Moody's. The index includes cash-pay and deferred-interest bonds. Defaulted issues are excluded. The inception date is December 31, 1984.

### **Citigroup World Government Bond**

The Citigroup World Government Bond Index is designed to provide a measure of performance of fixed-rate securities in the world government bond market. Country eligibility is determined based on market capitalization and inevitability criteria. A market's eligible issues must total at least US\$20 billion, DM30 billion, and 2.5 trillion for three consecutive months for the market to be considered eligible for inclusion.

The index includes only Sovereign debt issued in each domestic market in the local currency. Foreign and Eurobonds are excluded from the index. Government securities that are floating- or variable-rate bonds, securities aimed principally at non-institutional investors or private placement-type securities are also excluded from the index. All issues must have a maturity of at least 1 year. The minimum amount outstanding required for index inclusion varies by each country since a local currency standard is used to determine eligibility. In the United States, the required minimum for each issue is \$5 billion public amount outstanding. The returns are calculated monthly in local currency, U.S. dollar terms and in non-base currency for each country and on a combined basis. The index is also available on a hedged-basis.

The index includes bonds from the following 23 countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Malaysia, Netherlands, Norway, Poland, Portugal, Singapore, Spain, Sweden, Switzerland, United Kingdom, and United States

### **Citigroup World Government Bond (Currency-Hedged)**

The Citigroup World Government Bond (Currency-Hedged) Index is designed to provide a measure of performance of fixed-rate securities in the world government bond market. The index includes only Sovereign debt issued in the domestic market in local currency. Foreign and Eurobonds are excluded from the index. Government securities that are floating- or variable-rate bonds, securities aimed principally at non-institutional investors or private placement-type securities are also excluded from the index. All issues must have a maturity of at least 1 year.

## **Appendix C**

The minimum amount outstanding required for index inclusion varies by each country since a local currency standard is used to determine eligibility. In the United States, the required minimum outstanding is \$5 billion. The returns are calculated by using a rolling one-month forward exchange contract as a hedging instrument.

The index includes bonds from the following 23 countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Malaysia, Netherlands, Norway, Poland, Portugal, Singapore, Spain, Sweden, Switzerland, United Kingdom, and United States

### **CS First Boston High Yield**

The CS First Boston High Yield Index is constructed to mirror the public high yield debt market. Issues must be BB rated by either Moody's or Standard and Poor's (Split BBB rated securities are included). New issues with par amounts greater than \$75 million are automatically added to the index at the time of issuance. There are no more than two issues of any one issuer. Fallen Angels with market values greater than \$75 million are added to the index three months after being downgraded. Defaulted issues are included after a company misses an interest and/or principal payment and defaults on its obligation, or when one or both Moody's and/or Standard and Poor's issue a D rating on an issue.

### **U.S. 91 Day Treasury Bill**

The U.S. 91 Day Treasury Bill Index is based on the monthly auction average yield of the 91-Day Treasury Bill reported in the Federal Reserve Bulletin.

## **Real Estate Indices**

### **FTSE NAREIT Equity Index**

The FTSE NAREIT Equity Index is designed to provide the most comprehensive assessment of overall REIT industry performance, and includes all tax-qualified REITs with common shares that trade on the New York Stock Exchange, the American Stock Exchange or the NASDAQ National Market List. Companies with shares that trade on the NASDAQ Small Cap List or that trade over the counter are not included.

### **NCREIF Property Index**

The National Council of Real Estate Investment Fiduciaries (NCREIF) and the Frank Russell Company NCREIF jointly developed the NCREIF Property Index. NCREIF is a non-profit association, which represents the institutional real estate industry. The NCREIF contributors include banks, insurance companies and independent advisors. Beginning with the first quarter of 1995, NCREIF has produced the index entirely on its own.

The purpose of the index is to serve as a benchmark for performance measurement of real estate owned by tax-exempt institutions and held in a fiduciary environment. The index tracks the income, appreciation and total return for a portfolio of unleveraged, institutional quality property. Sub-indices track the performance of five different property types (office, retail, industrial, hotel and apartment) within four geographical areas (east, west, south and midwest).

## **Appendix C**

The property in the index must be investment grade, non- agricultural, income-producing property. Developmental property is excluded. Qualifying properties are added to the database quarterly. Properties, which are sold, are deleted during the quarter in which the sale takes place (historical data remains). Returns are calculated quarterly on a pre-management fee basis. Each property return is weighted by its market value. The property market value is determined by real estate appraisal methodology, consistently applied.

### **Other Indices**

#### **Consumer Price Index (CPI-U)**

The Consumer Price Index (CPI-U) is published by the United States Department of Labor, Bureau of Labor Statistics. The index measures the average change in prices over time of a fixed basket of goods and services. The CPI-U calculates this price change for all urban consumers.

All urban consumers is defined as all wage earners, clerical workers, professional, managerial and technical workers, the self-employed, short-term workers, the unemployed, retirees and others not in the labor force. The index does not include persons in the military services, institutions or people outside the urban area. The CPI-U covers approximately 80% of the total non-institutional civilian population.

The Consumer Price Index (CPI-U) is based on prices of food, clothing, shelter, fuels, transportation fares, medical fees drugs, and other day-to-day living expenses. Prices are collected in 88 urban areas across the United States from about 57,000 housing units and 19,000 department stores, supermarkets, hospitals, gas stations and other stores and service establishments.

The manner by which the index is created by calculating price changes of the various items in each location. These price changes are averaged together with weights, which represent the importance in the spending of the appropriate population group. The local data is then combined to obtain the U.S. city average.

## Appendix D

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## Appendix D

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## Appendix D

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## **Appendix D**



Mercer Investments

55 North Wacker Drive 15th Floor

Chicago, Illinois 60606

Tel: +1 312 917 9900