Callan
FORTY YEARS

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Tucson Supplemental Retirement System Board of Trustees

Non-US Equity Structure Discussion

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Agenda

A discussion to advance the new asset allocation policy

- Asset Allocation and Manager Structure: what’s the diff?
- Considerations for Manager Structure
- TSRS’s current non-US equity structure
- Evaluation Criteria
- Alternative non-US equity structures
- Next Steps

Asset Allocation and Manager Structure

Both are important but have different objectives

ASSET ALLOCATION

The Game Plan

- The goal is to identify a mix of broad asset classes, then to establish target allocations that produce an appropriate risk/return profile.
- Asset Allocation assumes passive investment in index funds except in asset classes where no passive alternative exists – such as private equity, real estate, and hedge funds
- Focuses on multiple asset classes.
- Relies heavily on quantitative analysis.
- Targets a risk/reward profile that meets or exceeds a Total Fund return assumption and a custom benchmark or multiple indices.
- Asset classes with high correlations do not combine well within an asset allocation model

MANAGER STRUCTURE

The Player Roster

- Goal is to allocate capital within a single asset class across active and passive styles relative to the asset class's benchmark/index.
- Manager Structure establishes the optimal combination of active and passive strategies by evaluating different investment styles within a single asset class
- Focuses on just a single asset class.
- Relies heavily on qualitative analysis.
- Targets a risk/reward profile that meets or exceeds the risk-adjusted return of an index representing a single asset class.
- Correlations between styles within a single asset class are high

Considerations for Manager Structure

Implementation that matches investor beliefs

- The starting point is the asset class index used in the asset allocation study.
  - Is a passive investment the optimal allocation for the asset class, or do active managers offer a meaningful opportunity to produce better after-fee risk-adjusted returns over a reasonable period of time?
- How large is the allocation to the asset class?
  - Smaller allocations call for simpler solutions in order to minimize the effect of fees
  - Larger allocations provide an opportunity to create specialization within the asset class
- How many mandates / styles within the asset class make sense?
  - All styles within a single asset class tend to be highly correlated to one another, thereby potentially offsetting any diversification benefit.
  - Within an asset class, it is reasonable to avoid:
    - ***<u>Overlap</u>****: managers whose investment strategies tend to duplicate one another*
    - ***<u>Holes</u>****: managers who in combination do not provide coverage or exposure to important elements of the asset class (e.g.– styles, capitalization ranges; credit quality; economic sectors).*
  - The Board of Trustees and staff have an affirmative obligation to monitor all aspects of the investment program.
- Does the investment structure provide a reasonable chance of producing net of fee returns that exceed that of the asset class benchmark?

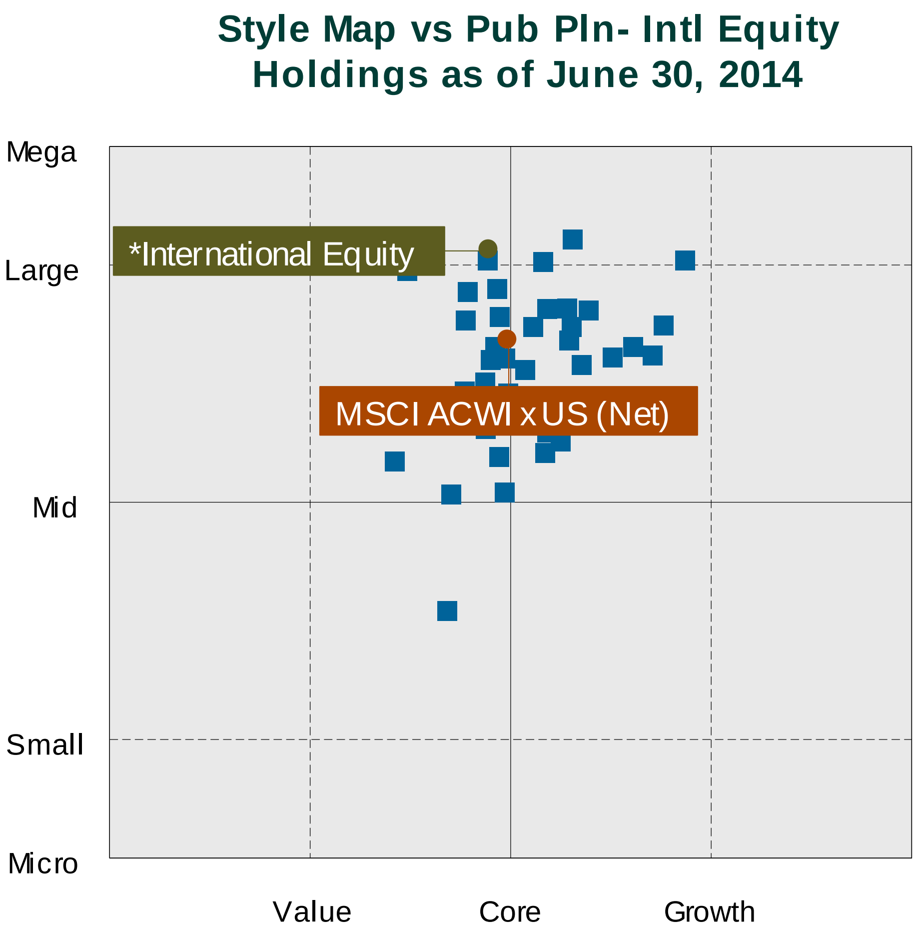
Transition time: asset class weightings will change

Tucson Supplemental Retirement System as of June 30, 2014

Asset Class	Current		New Target		Difference	
	%	$mm	%	$mm	%	$mm
Domestic Equity	49.5%	365,531	34.0%	250,940	-15.5%	(114,591)
International Equity	14.6%	107,977	25.0%	184,515	10.4%	76,538
Fixed Income	22.3%	164,321	27.0%	199,276	4.7%	34,955
Real Estate	7.4%	54,642	9.0%	66,425	1.6%	11,783
Infrastructure	5.9%	43,404	5.0%	36,903	-0.9%	(6,501)
Cash	0.3%	2,185	0.0%	0	-0.3%	(2,185)
TOTAL		$ 738,060				

- The new asset allocation policy reduces domestic equity by about 1/3, or $114.6 million based on June 30, 2014 market values.
- The target allocation to international equity increases by 10%, or $76.5 million based on June 30, 2014 market values.
- The largest impact of the new asset allocation will be on the domestic and international equity structures.
  - Domestic equity is likely to retain all incumbent managers with a proportional reduction in assets managed.
  - International equity opens up the opportunity to diversify the investment structure through either revising the mandates of existing managers, and/or adding a diversifying strategy to the asset class.
- Estimate: sales and purchases of $123 million each way to reach the new target.

TSRS International Equity: Decidedly Large Cap



- TSRS presently employs two international equity managers:
  - Aberdeen’s EAFE Plus (large cap developed markets with tactical allocations to emerging markets);
  - Causeway Capital’s International Value Equity (large cap developed markets with very small, tactical allocations to emerging markets).
- The style map at left illustrates the very large capitalization bias that flows through the two managers’ portfolios. In aggregate, the TSRS international portfolio has approximately 80% of its holdings in large cap names.
  - TSRS has very little exposure to small-mid cap stocks.
  - When small cap international does better than large cap, TSRS will lag its benchmark due to the large cap bias of your two incumbents.

TSRS International Equity: Regions and Style

Ten Years Ended June 30, 2014

	Value	Core	Growth	Total
Europe	19.8% (19) 15.8% (158) 11.6% (9)	21.3% (18) 15.7% (157) 19.3% (15)	24.3% (21) 17.0% (213) 19.0% (16)	65.3% (58) 48.5% (528) 57.8% (41)
N. America	0.1% 2.1% (36) 0.5%	1.6% (2) 2.7% (31) 1.1% (1)	1.4% (2) 2.2% (34) 0.9% (1)	3.1% (4) 7.1% (100) 3.3% (3)
Pacific	3.8% (5) 7.8% (158) 5.4% (4)	8.6% (10) 9.6% (184) 10.3% (8)	7.0% (7) 7.9% (162) 8.1% (7)	19.3% (22) 25.4% (504) 25.8% (20)
Emerging	4.5% (5) 5.8% (300) 0.9% (1)	5.0% (5) 6.8% (255) 3.9% (4)	2.2% (1) 6.5% (250) 1.2% (1)	11.6% (12) 19.0% (805) 7.4% (7)
Total	28.1% (29) 31.5% (652) 23.3% (17)	36.7% (36) 34.8% (627) 36.1% (31)	35.3% (31) 33.7% (659) 34.9% (28)	100.0% (97) 100.0% (1938) 100.0% (76)

Legend

Top: TSRS

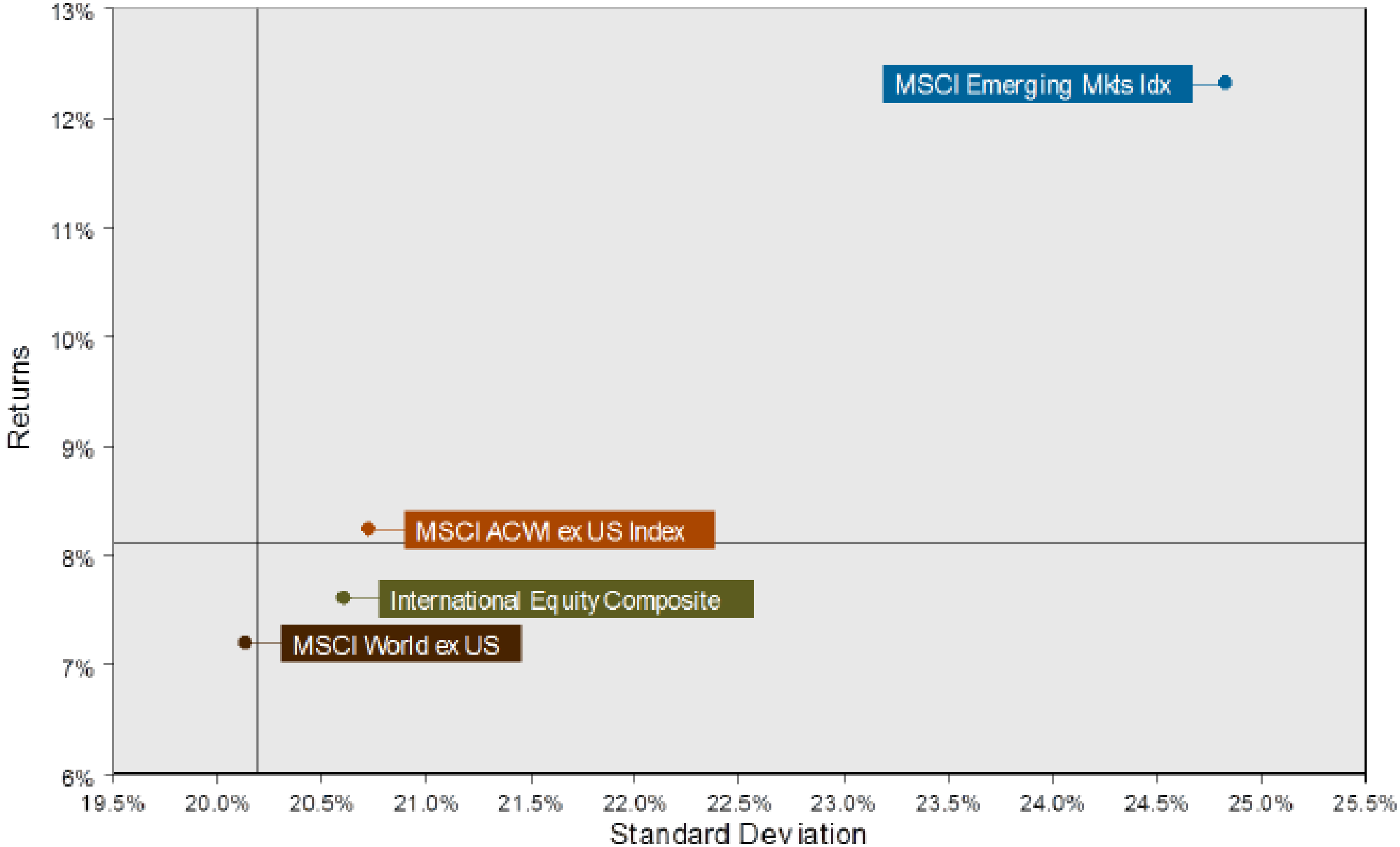
Mid: ACWI ex-US

Bottom: Non-US Style

- Over the decade ended June 30, 2014, the TSRS international equity program has revealed three notable biases compared to the ACWI ex-US Index and the "typical" international manager:
  1. TSRS has been meaningfully overweight Europe;
  2. TSRS has been underweight the Pacific Basin; and
  3. TSRS has been underweight Emerging Markets.

Is there room for improvement?

Ten Years Ended June 30, 2014



- **MSCI World ex-US Index** (dark brown) is a passive allocation to 22 developed countries.
- **MSCI ACWI ex-US Index** (tan) is a passive allocation to 22 developed plus 23 emerging countries.
- **TSRS Int'l Equity composite** (green) has been systematically underweight to emerging markets.

Consideration in selecting a structure

Investor preferences will shape the ideal manager structure

- Broad mandates?
  - Single managers with latitude to invest across the capitalization spectrum, as well as in both developed and emerging markets
  - Requires fewer managers within the investment structure
  - Fewer managers typically means larger accounts with lower fees
- Narrow mandates?
  - Each manager has a specific charge: developed markets only, or emerging markets only, or small caps across developed and emerging markets
  - Requires more managers within the investment structure
  - More managers typically means smaller accounts with higher fees
- Does passive management have a place?
  - An index fund serves as an anchor within the structure
  - An index fund does not add value beyond (or below) the index return
  - Passive funds provides a ready means of liquidity for rebalancing and meeting

Four scenarios

Each has its own pros and cons

1. **Three managers: one search**
   Realign incumbents' mandates, adds one ACWI small cap manager so that the EM exposure is increased:
   – Two (2) ACWI ex-US (current or switch products within Aberdeen/Causeway
   – One (1) ACWI ex-US Small Capitalization manager (a new assignment)

2. **Four managers: two searches**
   Leave the current managers and mandates in place and add two new managers/mandates with a little extra EM exposure built in:
   – Two (2) EAFE Plus (retains current managers)
   – One (1) Emerging Markets manager (a new assignment)
   – One (1) ACWI ex-US Small Capitalization manager (a new assignment)

3. **Three managers: two searches**
   Replace the two incumbent EAFE plus active managers and replace with an EAFE index and diversify with active EM and ACWI ex-US small cap:
   – One (1) EAFE Passive (choose from among the incumbents or hire a new manager for this mandate)
   – One (1) Emerging Markets manager (a new assignment)
   – One (1) ACWI ex-US Small Capitalization manager (a new assignment)

4. **Four managers: two searches**
   Maintain incumbents' mandates and adds dedicated EM plus an EAFE-oriented small cap manager (a little more EM exposure than at present):
   – Retain two (2) current managers
   – One (1) new EM (a new assignment)
   – One (1) new EAFE plus Small Capitalization manager (a new assignment)

Next Steps

A plan to implement the revised non-US equity allocation

- TSRS Board of Trustees select the target international equity structure
  - Description of mandates: broad or narrow?
    - *Benchmarks for individual managers should roll up to the overall asset class benchmark*
  - Number of managers
- Callan drafts manager search criteria for each mandate approval by TSRS
- Callan will initiate manager search(es)
- TSRS will interview manager candidates for each mandate
  - Callan will assist TSRS in the interviews, as requested by TSRS
- TSRS selects managers
- TSRS staff and legal counsel review documentation to hire managers
  - Upon approval by legal counsel, TSRS can execute agreements required to fund managers
- Custodian bank is notified of incoming managers and sets up new accounts
- Determination and possible selection of a transition manager to minimize costs
- Assets are transferred according to new asset allocation policy to fund new managers

Appendix

Historical Active Management Premiums by Asset Class and Style

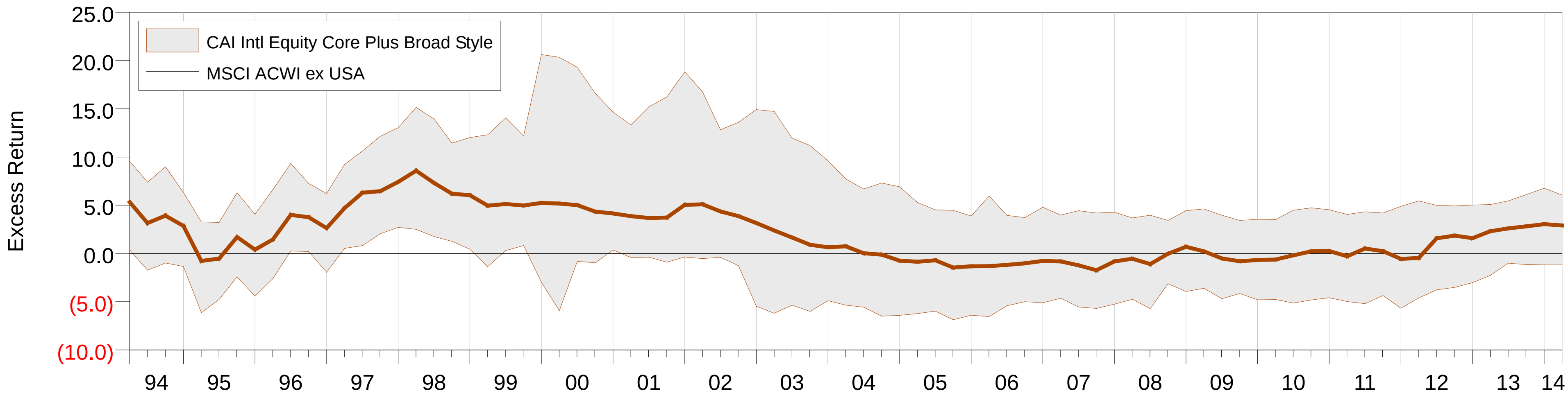
International Equity Core Plus Broad Style vs MSCI ACWI ex USA

Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

Hurdle	0.45%	0.50%	0.55%	0.60%	0.65%	0.70%	0.75%	0.80%	0.85%	0.90%
Median	59%	59%	58%	58%	56%	55%	55%	54%	54%	54%
45th Percentile	65%	65%	65%	65%	60%	58%	58%	58%	58%	58%
40th Percentile	73%	71%	71%	71%	71%	69%	69%	68%	65%	64%
35th Percentile	85%	83%	81%	80%	79%	76%	76%	75%	75%	74%
30th Percentile	95%	95%	95%	94%	94%	94%	94%	91%	86%	83%
25th Percentile	100%	100%	100%	100%	100%	100%	99%	98%	98%	98%

Average Annualized Excess Return – Median Manager: 1.94%

Rolling 12 Quarter Excess Return relative to MSCI ACWI ex USA for 20 Years ended March 31, 2014



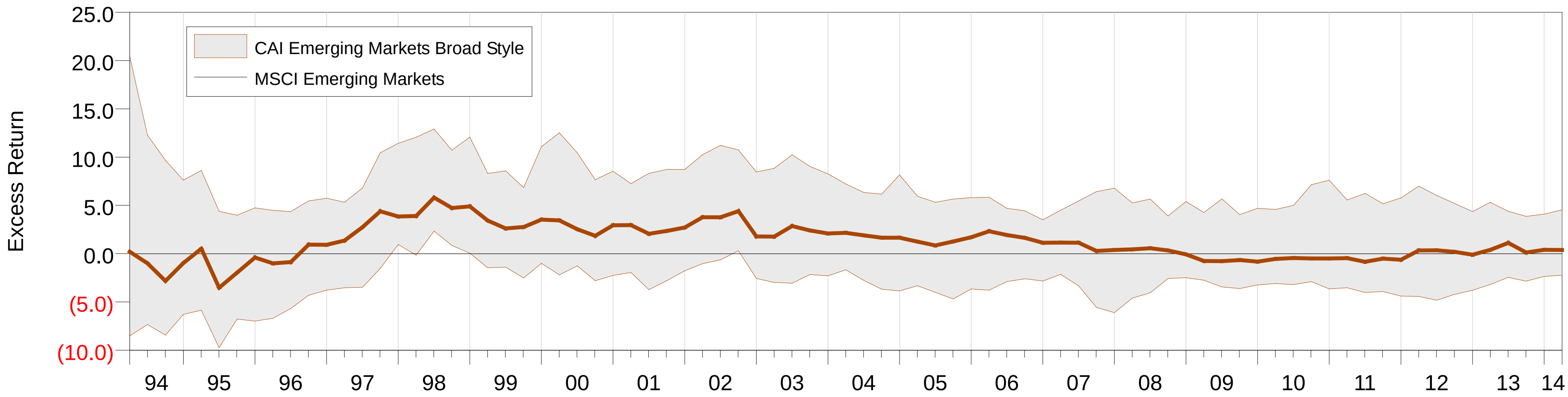
Emerging Markets Broad Equity Style vs MSCI Emerging Markets

Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

Hurdle	0.70%	0.75%	0.80%	0.85%	0.90%	0.95%	1.00%	1.05%	1.10%	1.15%
Median	56%	56%	56%	56%	55%	53%	53%	53%	53%	49%
45th Percentile	66%	64%	64%	63%	60%	60%	60%	59%	59%	58%
40th Percentile	74%	74%	74%	73%	73%	70%	70%	68%	66%	66%
35th Percentile	84%	84%	83%	81%	80%	78%	76%	76%	76%	75%
30th Percentile	95%	95%	94%	94%	93%	93%	93%	93%	91%	89%
25th Percentile	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Average Annualized Excess Return – Median Manager: 1.22%

Rolling 12 Quarter Excess Return relative to MSCI Emerging Markets for 20 Years ended March 31, 2014



International Equity Small Cap Style vs MSCI EAFE Small Cap

Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

Hurdle	0.75%	0.80%	0.85%	0.90%	0.95%	1.00%	1.05%	1.10%	1.15%	1.20%
Median	61%	61%	61%	61%	59%	59%	57%	57%	57%	55%
45th Percentile	69%	69%	67%	65%	65%	65%	65%	63%	63%	63%
40th Percentile	78%	76%	76%	73%	73%	71%	71%	71%	71%	69%
35th Percentile	86%	86%	82%	82%	82%	82%	78%	78%	78%	78%
30th Percentile	98%	98%	98%	98%	98%	98%	98%	98%	98%	96%
25th Percentile	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Average Annualized Excess Return – Median Manager: 1.49%

Rolling 12 Quarter Excess Return relative to MSCI EAFE Small Cap for 12 1/4 Years ended March 31, 2014