Public Equity Asset Class Review

Kristin Qualls, Public Equity Director
Frank Atkins, Public Equity Analyst

March 24-25, 2020

TMRS
Texas Municipal Retirement System

Agenda

I. PUBLIC EQUITY PROGRAM REVIEW

Public Equity Program Review - Staff

Public Equity
Kristin Qualls
Frank Atkins

CIO
TJ Carlson

Admin. Support
Cindy Morse
Debbie West

Compliance
Kurt Cressotti

Absolute Return
Marc Leavitt
Kevin Notaro

Fixed Income
Jason Weiner
Germán Gaymer
Jacob Bowland

Operations
Sally Case
Geldon Vllahu
Peter Jeske

Real Assets
Tom Masthay
Eddie Schultz
Yvonne Huang

Private Equity
Chris Schelling
Peter Teneriello
Celisse Cobos

Risk Management
Dimitry Shishkoff
Melissa Jerkins
Janine Prukop
Ryan Conner

Public Equity Team

Kristin Qualls
28 years experience
Pension Fund, formerly licensed Registered Investment Advisor, Private Trust Management/Operations
Pension fund experience 17 years

Frank Atkins, CFA, MBA
19 years experience
Equity research covering technology sector
Endowment/foundation consulting

Comprehensive Annual Review Process

Why do we conduct annual reviews?

Per the TMRS IPS, comprehensive reviews are to be conducted and documented at least annually.

The Review Process Includes:

- Annual due diligence questionnaire and required deliverables;
- Includes both quantitative and qualitative factors during the review process;
- Review of firm changes, personnel, investment strategy, style, process, and philosophy;
- Review of compliance, operations, risk management, and performance;
- An onsite due diligence visit to the Manager's office or a visit by the Manager at TMRS's office;
- The results of an annual or ad hoc comprehensive review will be reported to the Board along with recommended action, if appropriate.

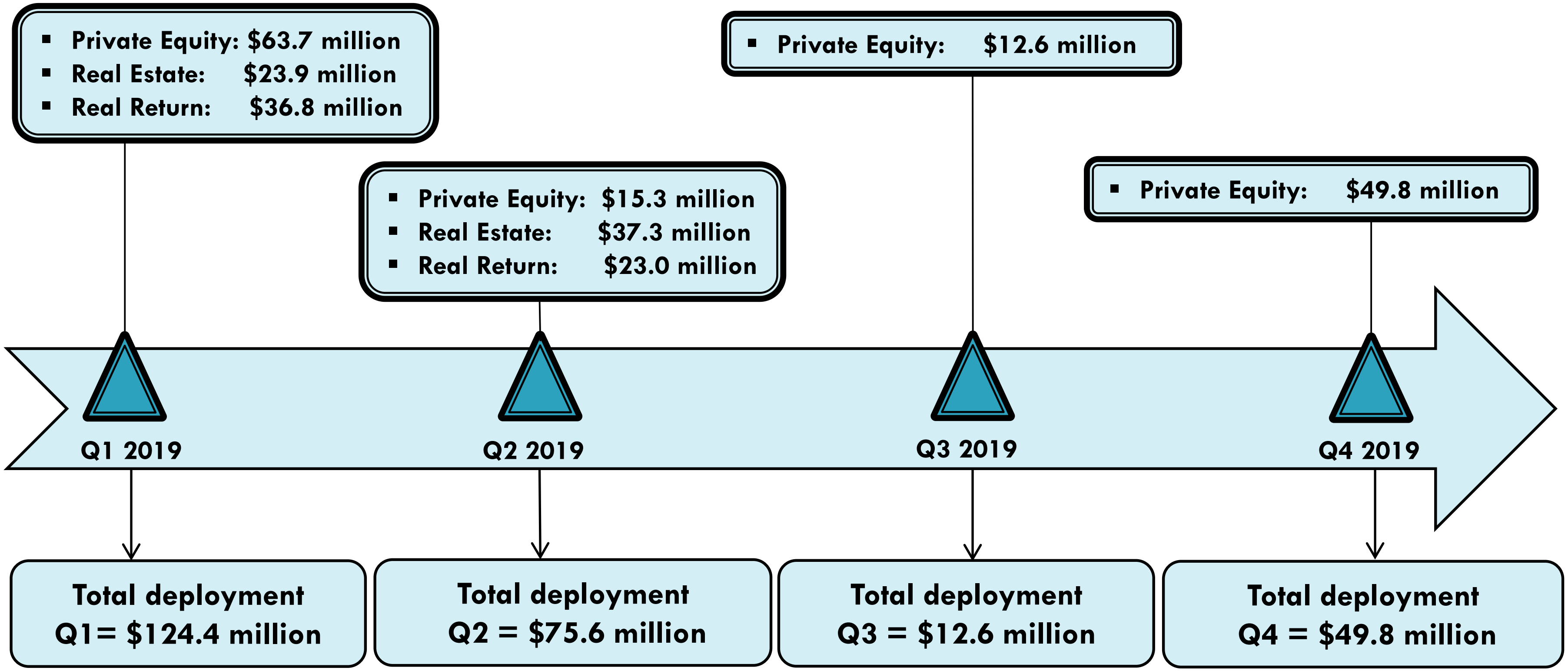
The Annual Review process holds TMRS Staff accountable for its portfolio management process in order to preempt manager specific, strategic, or other potential problems.

Public Equity Program Review - Highlights

Public Equity Initiatives: Annual Review **Status**

- **Monitor existing portfolio through due diligence, research, and oversight** ✓
  Reporting deliverables from managers are essential to staff's oversight, in addition to, internal sources for insight and review.
- **Continued research and external manager meetings to seek opportunities** ✓
  Remain cognizant of the trends for new strategy types and identification of opportunities.
- **Continue to fund other asset classes by drawing down the public equity passive portfolio** ✓
  The public equity portfolio continues to fund Private Equity.
- **Monitor the passive/active structure as it relates to TMRS' investment objectives** ✓
  As the total public equity portfolio continues to mature, staff is evaluating the portfolio's structure and investment strategies. Evaluation includes the new global benchmark.
- **The results of the 2019 asset allocation study lowered the target allocation of the public equity portfolio from 35% to 30%; increased private equity from 5% to 10%** ✓
  The public equity portfolio will fund the additional allocation to private equity.

Public Equity Program Review – Funds Deployed to Other Asset Classes



Total Funds Deployed to Other Asset Classes in 2019: $262.4 million

Execution & portfolio management is an integral part in TMRS achieving its strategic allocation objectives.

NOTE: Totals may not be exact due to rounding

Public Equity Program Review – Funds Deployed to Other Asset Classes

Russell 3000 Fund:
2014 - $180.7 million
2015 - $26.1 million
2016 - $637.9 million
2017 - $1.85 billion
2018 - $561.0 million
2019 - $262.4 million

Total re-deployed from Russell 3000 Passive Portfolio:
$3.5 billion

ACW ex. US IMI Fund:
2014 - $630.5 million
2015 - $100.0 million
2016 - $0
2017 - $0
2018 - $0
2019 - $0

Total re-deployed from ACWI ex. US IMI Passive Portfolio:
$730.5 million

Total funds deployed from passive portfolios since 2014 is $4.2 billion

NOTE: Totals may not be exact due to rounding

Public Equity Program Review

Public Equity Team Manager Research Meetings:

- 2015 Total Manager Meetings: 96
- 2016 Total Manager Meetings: 157
- 2017 Total Manager Meetings: 146
- 2018 Total Manager Meetings: 188
- 2019 Total Manager Meetings: 233

TOTAL MEETINGS: 820

Meeting Types in 2019:

- Consultant: 4
- Due Diligence: 56
- Manager Pipeline: 108
- Research/Education: 56
- Other: 9

The Public Equity team focused the majority of time on current due diligence, research, and potential new manager strategies.

II. ALLOCATION REVIEW

Public Equities: Portfolio Management Strategies

ASSET CLASS	STRATEGY TYPE	MANAGER	PORTFOLIO BENCHMARK
Domestic Equities U.S. Core/Passive	Passive Broad Market Index	Northern Trust Asset Management	Russell 3000 Index
U.S. Rules-Based	Passive Fundamental Index	State Street Global Advisors	Russell RAFI U.S. Index
U.S. Rules-Based	Passive Minimum Volatility	UBS Global Asset Management	MSCI U.S. Min Vol Index
U.S. Satellite/Active	U.S. Mid Cap Core	Champlain Investment Partners	Russell Mid Cap Index
U.S. Satellite/Active	U.S. Small Cap Opportunities	Wellington Management	Russell 2000 Index
International Equities Non-U.S. Core/Passive	Passive Broad Market Index	Northern Trust Asset Management	All Country World (ACW) ex U.S. Investable Market Index (IMI)
Non-U.S. Rules-Based	Passive Fundamental Index	State Street Global Advisors	Russell RAFI Global ex U.S. Index
Non-U.S. Rules-Based	Passive Minimum Volatility	UBS Global Asset Management	MSCI World ex U.S. Min Vol Index
Non-U.S. Satellite/Active	Non-U.S. Developed & Emerging Mkts	Wellington Management	MSCI ACWI ex U.S. Index
Non-U.S. Satellite/Active	Non-U.S. Developed & Emerging Mkts	Lazard Asset Management	MSCI ACWI ex U.S. Index
Non-U.S. Satellite/Active	Non-U.S. Emerging Markets	Acadian Asset Management	MSCI Emerging Markets (EM) IMI Index
Non-U.S. Satellite/Active	Non-U.S. Emerging Markets	William Blair & Company	MSCI Emerging Markets (EM) Index
Non-U.S. Satellite/Active	Non-U.S. Small Cap	Wasatch Global Investors*	MSCI All Country World (ACW) ex. U.S. Small Cap Index
Non-U.S. Satellite/Active	Non-U.S. Small Cap	Wellington Management	MSCI EAFE Small Cap Index

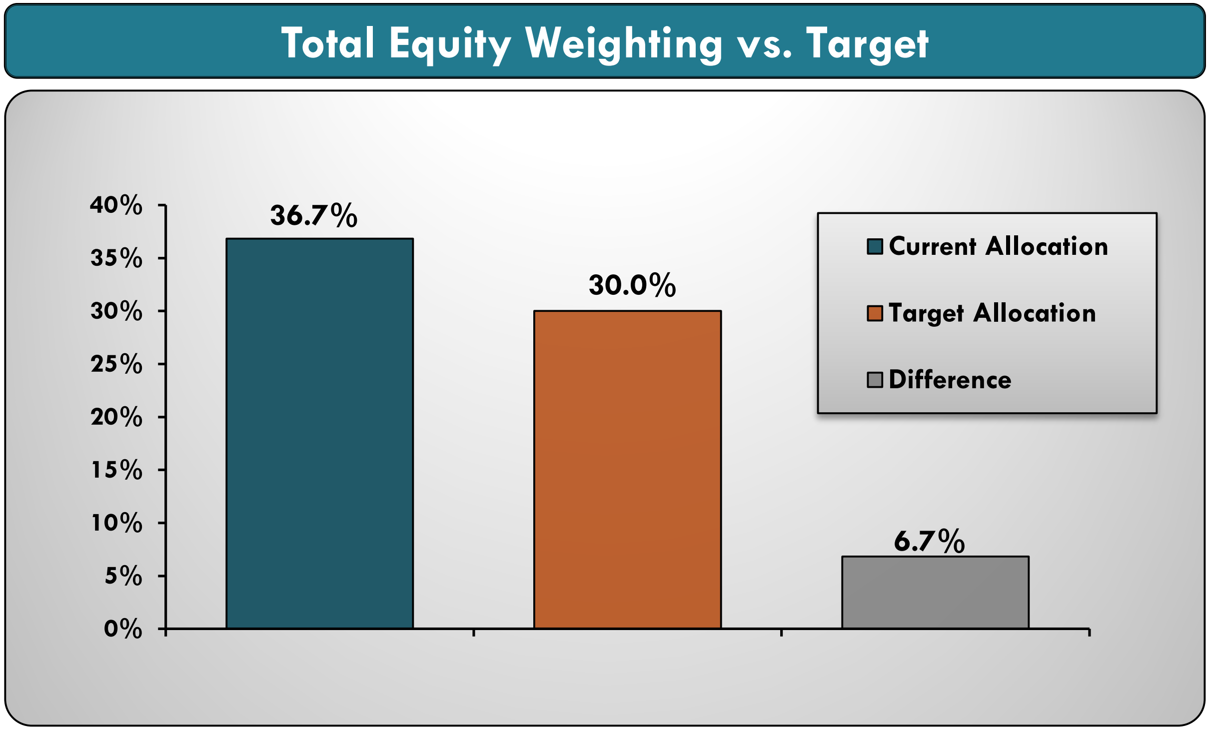
*Firm name change in 2019

As of December 31, 2019

Current vs. Target Total Equity Allocation

As of 12/31/2019

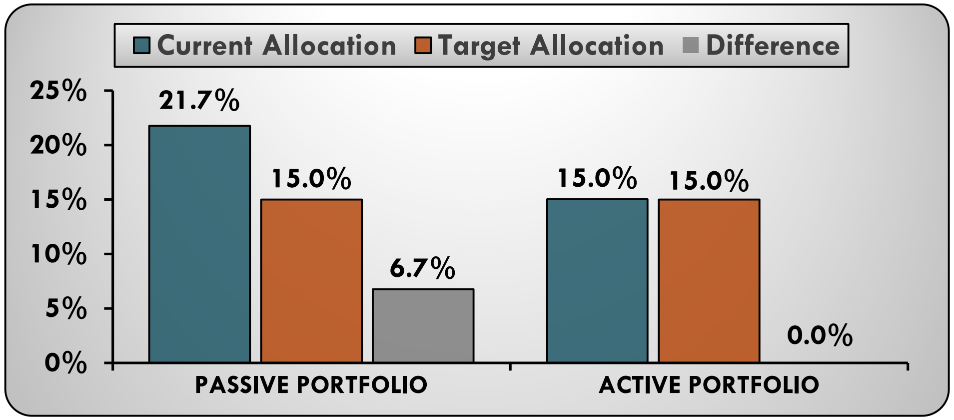
The Total Equity Portfolio is overweight the target allocation due to the recent asset allocation changes in September 2019



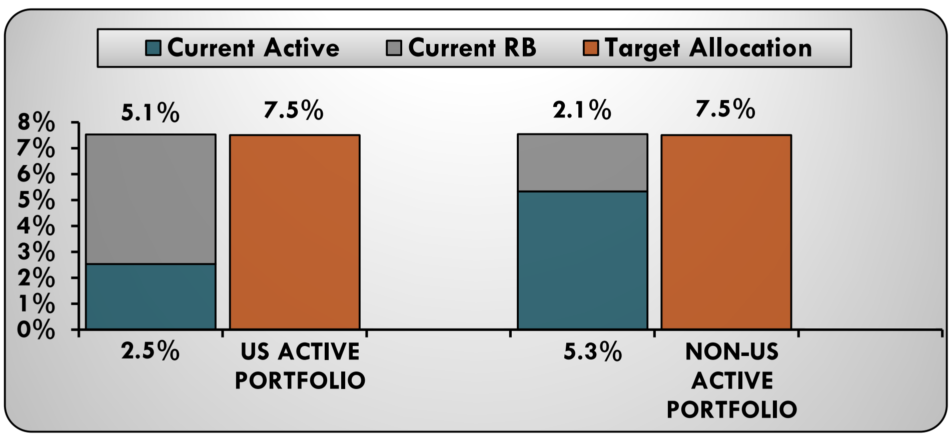
NOTE: Percentages may not be exact due to rounding

Passive/Active Structure Allocation

% of Total Fund as of 12/31/2019



PASSIVE Portfolio Managers	Market Value	% of Total Portfolio
U.S. PASSIVE EQUITY: NTAM Russell 3000	3,848,790,525	12.2%
NON-U.S. PASSIVE EQUITY: NTAM ACW ex. US IMI	2,972,623,879	9.5%
TOTAL:	**6,821,414,404**	**21.7%**



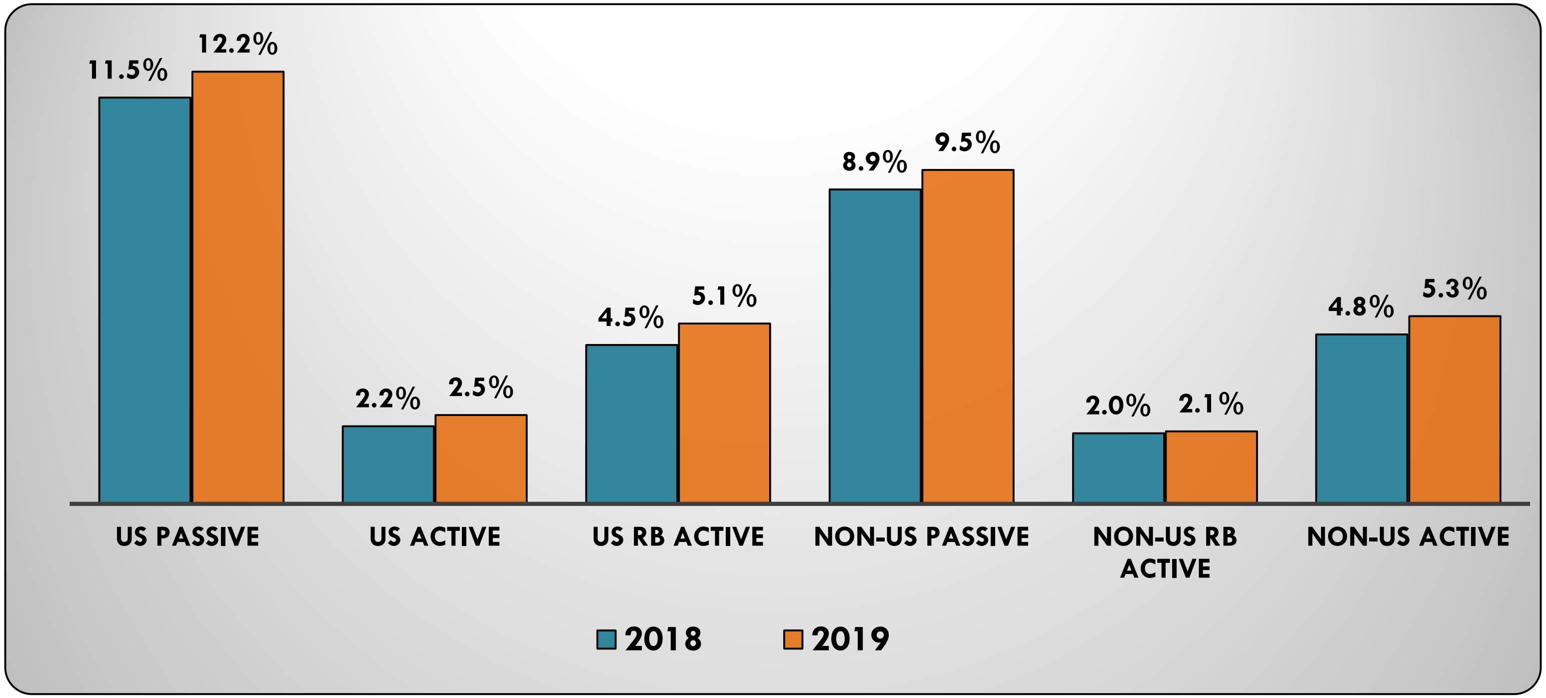
ACTIVE Portfolio Managers	Market Value	% of Total Portfolio
U.S. RULES-BASED EQUITY:	1,605,075,200	5.1%
U.S. ACTIVE EQUITY:	791,812,193	2.5%
NON-U.S. RULES-BASED EQ:	645,883,481	2.1%
NON-U.S. ACTIVE EQUITY:	1,670,612,955	5.3%
TOTAL:	**4,713,383,829**	**15.0%**

NOTE: Percentages may not be exact due to rounding

Changes to Passive/Active Allocation

Public Equity Allocation By Category vs. Total Portfolio

- The total public equity allocation increased from 33.9% in 2018 to 36.7% in 2019

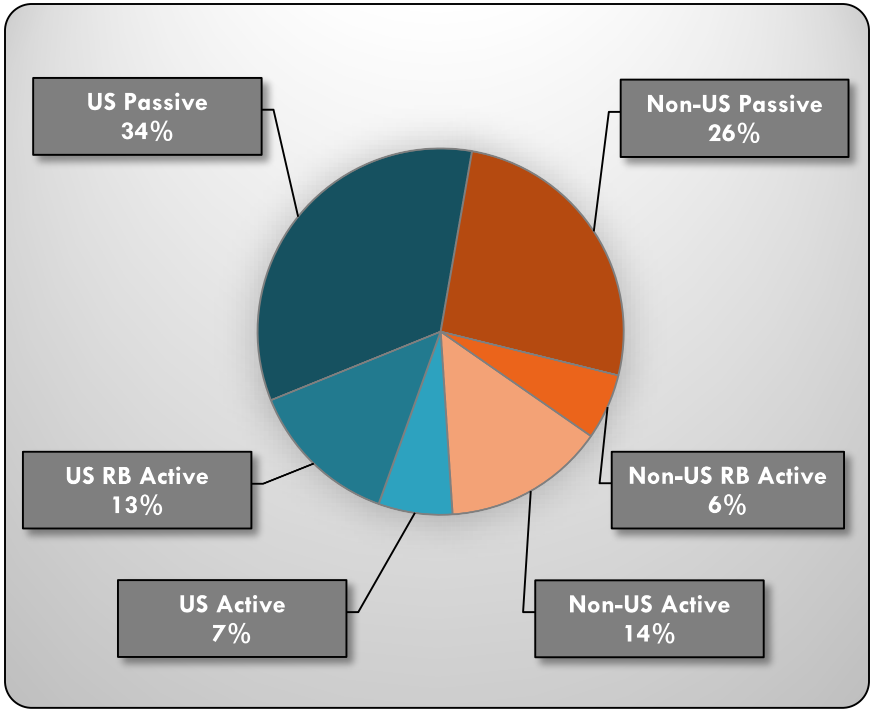


NOTE: Percentages may not be exact due to rounding

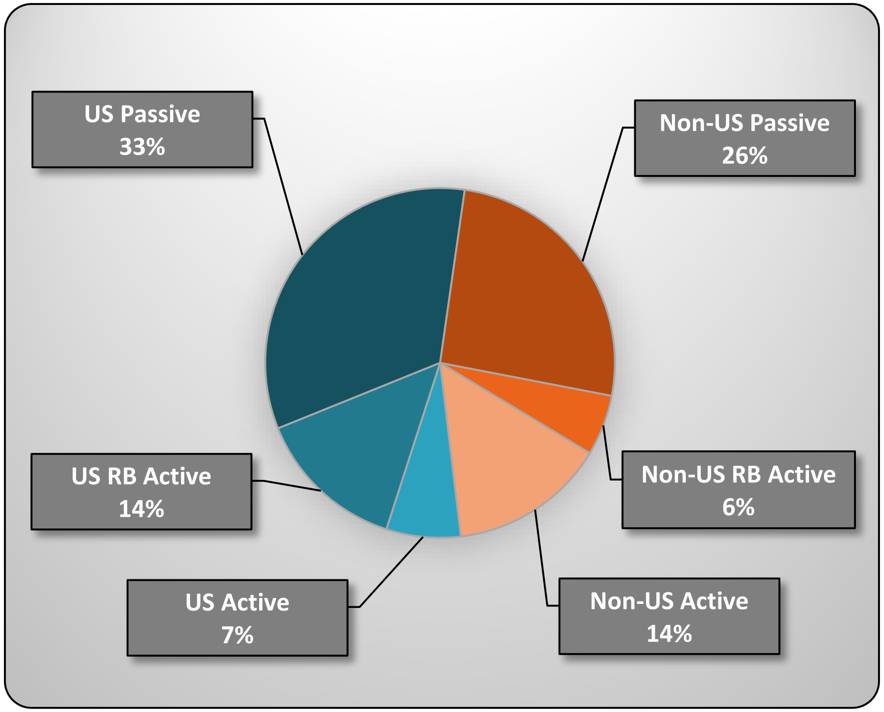
Changes to Passive/Active Allocation

Allocation by Asset Category vs. Total Equity Portfolio

As of 12/31/2018



As of 12/31/2019

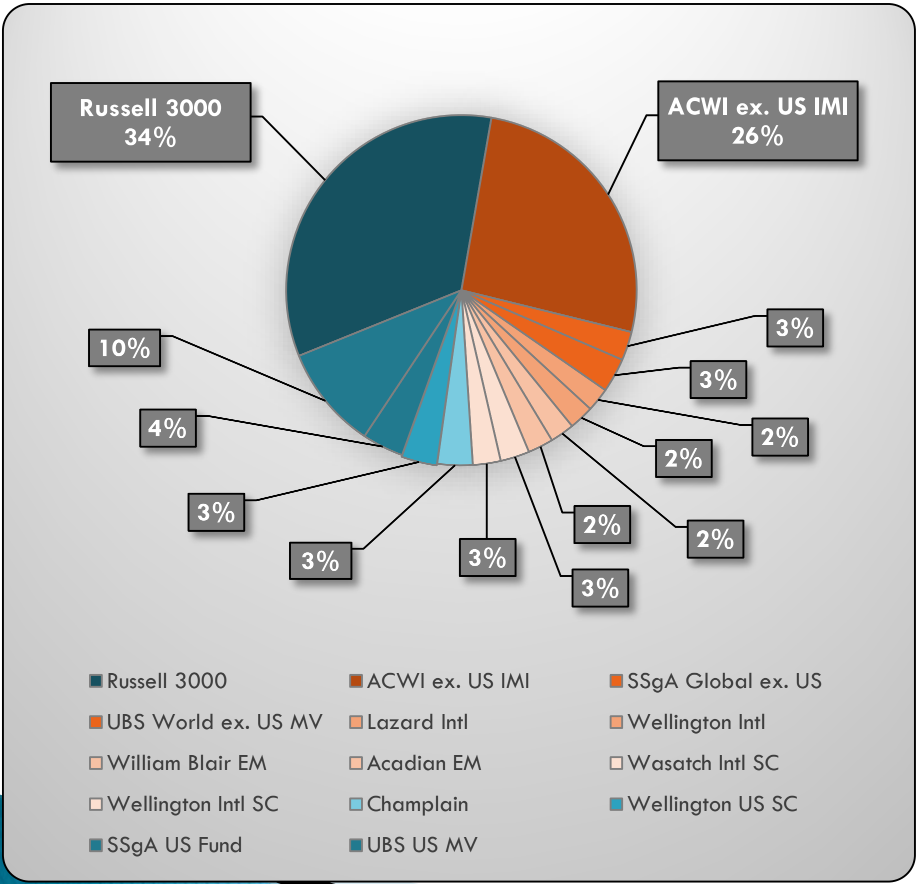


NOTE: Percentages may not be exact due to rounding

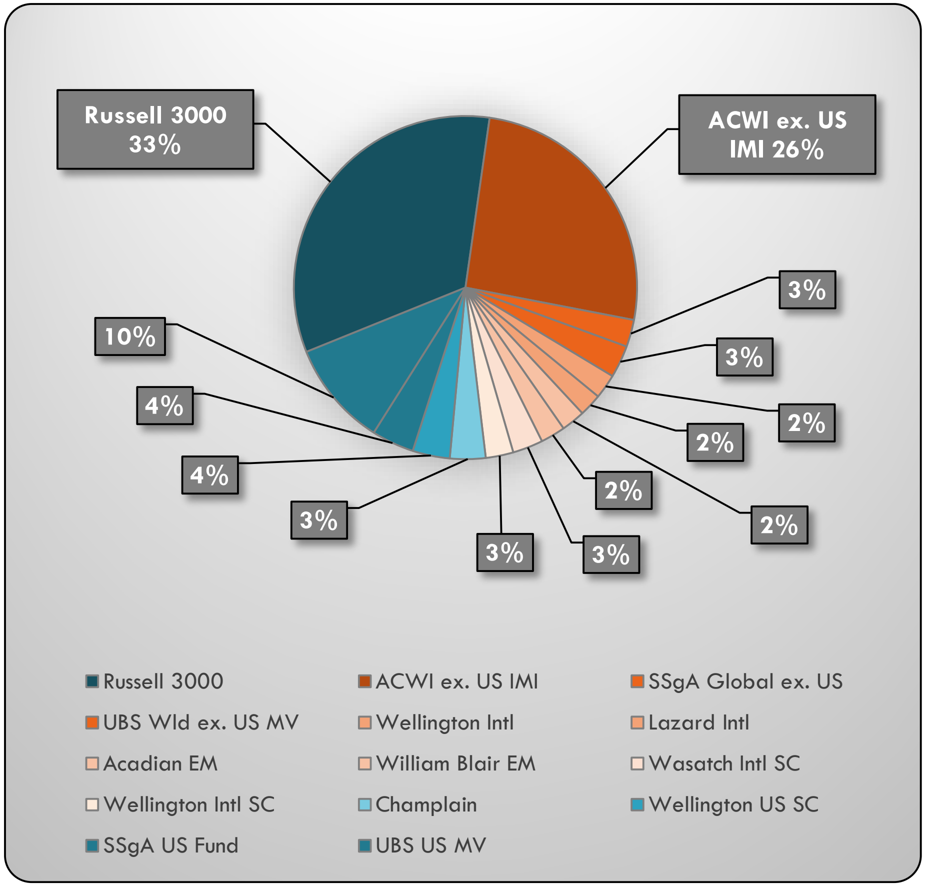
Changes to Passive/Active Allocation

Current Allocation by Manager vs. Total Equity Portfolio

As of 12/31/2018



As of 12/31/2019

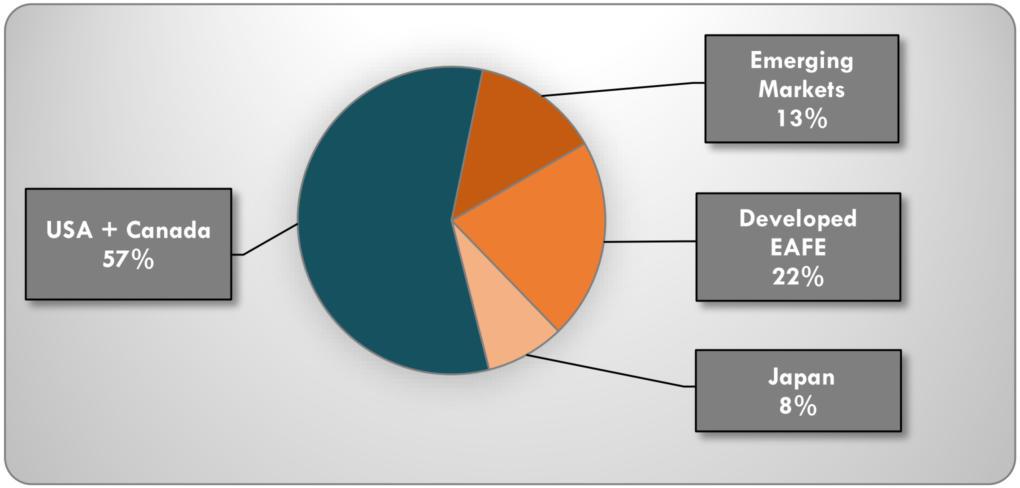


NOTE: Percentages may not be exact due to rounding

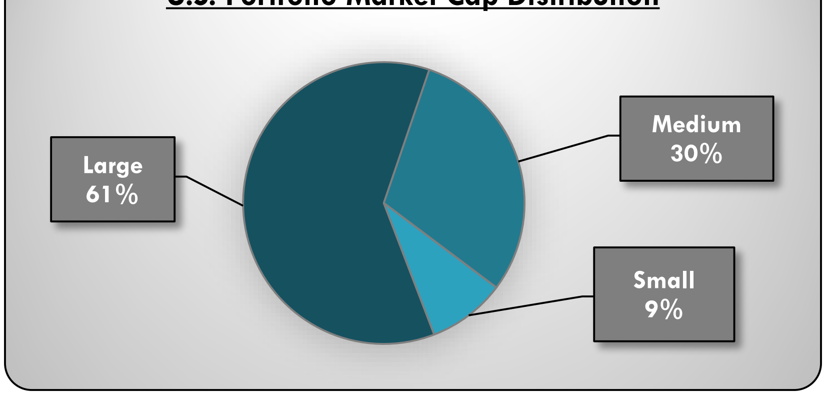
Geographic & Market Capitalization Diversification

As of 12/31/2019

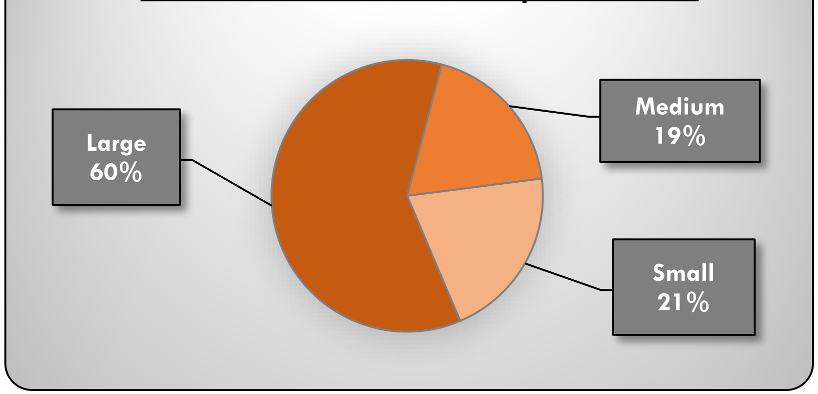
Total Equity Portfolio Regional Distribution



U.S. Portfolio Market Cap Distribution



Non U.S. Portfolio Market Cap Distribution



NOTE: Percentages may not be exact due to rounding

III. IPS MONITORING REVIEW

Equity Strategies Reviewed in 2019

U.S. and non-U.S. Passive Strategies:

- Northern Trust Asset Mgmt - Russell 3000 Fund
- Northern Trust Asset Mgmt – non-U.S. All Country World (ACW) ex. U.S. IMI Fund

Rules-Based Strategies:

- UBS Global Asset Mgmt (UBS) - Minimum Volatility – U.S. & World ex. U.S.
- State Street Global Advisors (SSgA) - Russell RAFI – U.S. & Global ex. U.S.

U.S. Active Strategies:

- Champlain Investment Partners – U.S. Mid-Cap Core
- Wellington Management – U.S. Small Cap Opportunities

Non-US Active Strategies:

- Lazard Asset Management - International Equity Plus (non-U.S. DM and EM)
- Wellington Management - International Horizons (non-U.S. DM and EM)
- Acadian Asset Management – non-U.S. Emerging Markets Equity
- William Blair – non-U.S. Emerging Markets Leaders
- Wasatch Advisors – non-U.S. Small Cap Growth
- Wellington Management – non-U.S. Small Cap Opportunities

Public Equities: Asset Class Objectives

Global Equity Asset Class:

- Intended to provide capital appreciation and is structured using a Core/Satellite Approach with the overall objective of exceeding its benchmark performance, net of fees, over rolling five year periods.

- The benchmark and expected tracking error for a specific mandate will be stated in the manager contract or otherwise agreed to in writing between TMRS and the investment manager.

- Active and Rules-Based strategies with an active component are expected to add excess return within established tracking error limits and will meet quality, diversification, and liquidity guidelines as specified in the Managers' contracts or otherwise agreed to in writing between TMRS and the investment manager.

- The performance objective is to exceed the MSCI ACWI IMI (Net), net of fees, over a rolling five year period.

- Eligible manager types may include managers that focus on US, non-US, emerging markets or global equity securities.

- No more than 15% of the Global Equity Asset Class may be invested in dedicated Emerging Market Separately Managed Accounts.

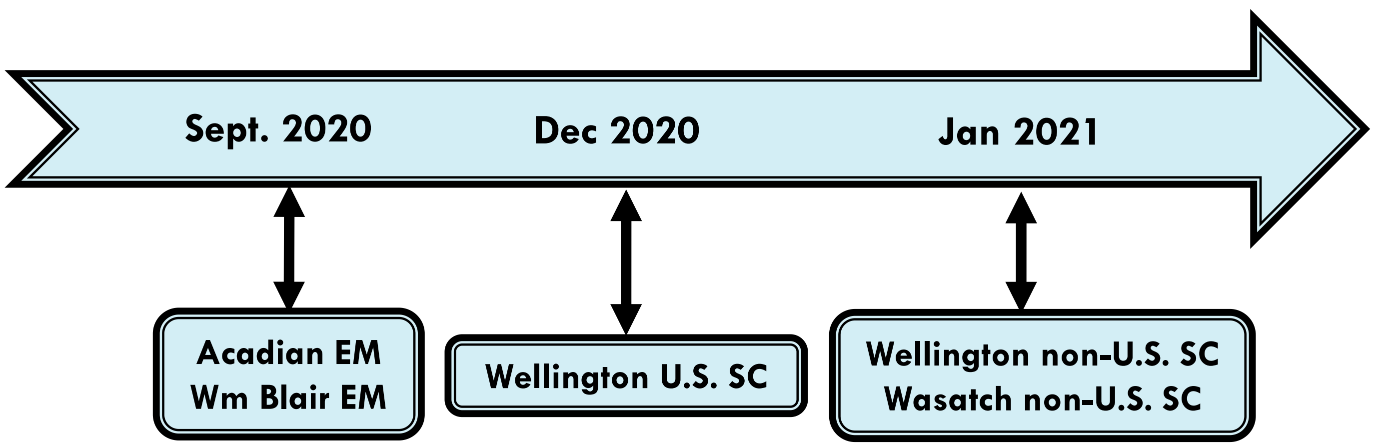
Performance Monitoring Objectives

IPS Stated Objective for Individual Portfolio Accounts:

Investment staff and the Consultant, subject to review by the CIO, will determine performance expectations for each Manager. Specific performance objectives for active strategies include, but may not be limited to, the following:

- Exceed an appropriate index or benchmark, net of fees, over rolling five-year periods;
- Rank above median in an appropriate universe of Managers possessing a similar style over rolling five-year periods.

Public Equity Strategies Approaching 5-Year Anniversary:



Active Strategies Return/Risk Objectives

MANAGER	STRATEGY	BENCHMARK	RETURN OBJECTIVES	RISK OBJECTIVES	INCEPTION DATE
U.S. Equity Portfolios					
Champlain Investment Partners	U.S. Mid Cap Core	Russell Mid Cap Index	2-4%; mkt cycle of 5 yrs	4-6%	12/1/2014
Wellington Management	U.S. Small Cap Opportunities	Russell 2000 Index	2-3% (gross of fees); 5 yrs mkt cycle	3-8% ex-post	12/1/2015
Non-U.S. Portfolios					
Wellington Management	Non-U.S. Opportunistic Core	MSCI ACWI ex U.S. Index	3% (gross of fees); full mkt cycle	3-9% ex-post	9/1/2014
Lazard Asset Management	Non-U.S. Opportunistic Relative Value	MSCI ACWI ex U.S. Index	2-3% (gross of fees); full mkt cycle	4-6% ex-ante	9/1/2014
Acadian Asset Management	Non-U.S. Emerging Markets	MSCI Emerging Markets (EM) Index	2% (gross of fees); mkt cycle 3-5 yrs	4-6% ex-post	9/1/2015
William Blair & Company	Non-U.S. Emerging Markets	MSCI Emerging Markets (EM) Index	2% (gross of fees); mkt cycle 3-5 yrs	4-6% ex-post	9/1/2015
Wellington Management	Non-U.S. Small Cap Opportunities	MSCI EAFE Small Cap Index	2.5% (gross of fees); 3-5 yrs mkt cycle	3-8% ex-post	1/1/2016
Wasatch Global Investors*	Non-U.S. Small Cap Growth	MSCI AC World ex. U.S. Small Cap Index	2% (gross of fees); mkt cycle 5-7 yrs	4-6% ex-post	1/1/2016

*Firm name change in 2019

U.S. Equity Monitoring Summary Report

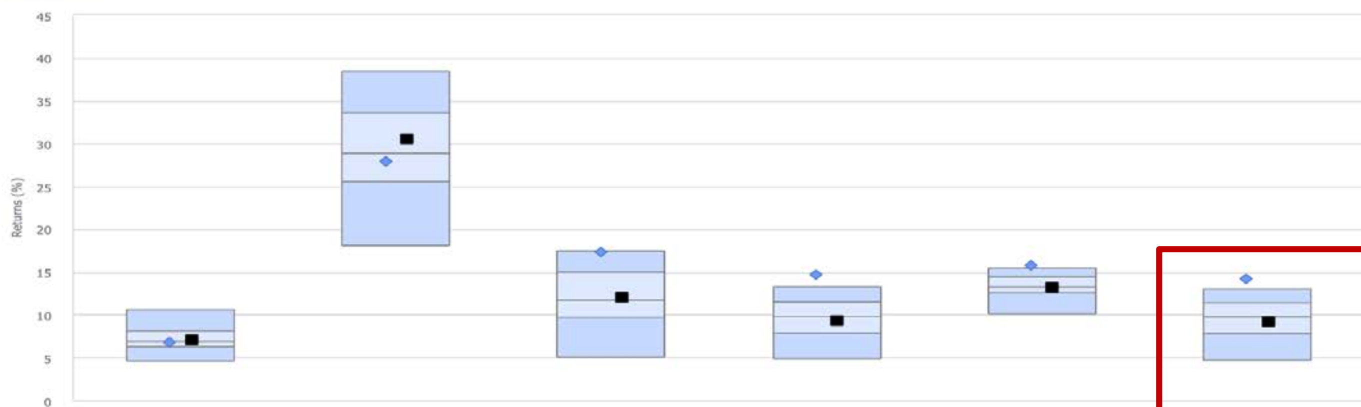
- **IPS Guidelines for Individual Portfolio Accounts:**
  - Indexed accounts should closely replicate the benchmark
  - Active accounts should exceed an appropriate benchmark, net of fees, over rolling five-year periods
  - Active accounts should rank above median in an appropriate universe of Managers over rolling five-year periods

Manager	Portfolio Name	Asset Class	Watch List?	Quantitative Performance
Northern Trust Asset Management	Russell 3000 Index Fund	U.S. Equity	No	Tracks the respective benchmark with de minimus tracking error over 1,3,5,7,10 years; (Inception Date: 12/1/08)
State Street Global Advisors	Russell RAFI U.S. Index Fund	U.S. Equity	No	Tracks the respective benchmark with de minimus tracking error over the 5 year period: (Inception Date: 2/1/2013)
UBS Global Asset Management	U.S. Equity Minimum Volatility Index Fund	U.S. Equity	No	Tracks the respective benchmark with de minimus tracking error over the 5, 7 year period: (Inception Date: 1/1/2013)
Champlain Investment Partners	U.S. Mid Cap Core	U.S. Equity	No	Outperformed the BM by 4.8% over 5 yrs; Outperformed 4.4% since inception (Inception Date: 12/1/14)
Wellington Management Company, LLP	U.S. Small Cap Opportunities	U.S. Equity	No	N/A; Outperformed the BM by 6.2% over 3 yrs; Outperformed 4.1% since inception (Inception Date: 12/1/2015)

U.S. Active Equity Analysis - Champlain

Champlain Investment Partners, LLC
Champlain Mid Cap — **December 2019**

Trailing Performance



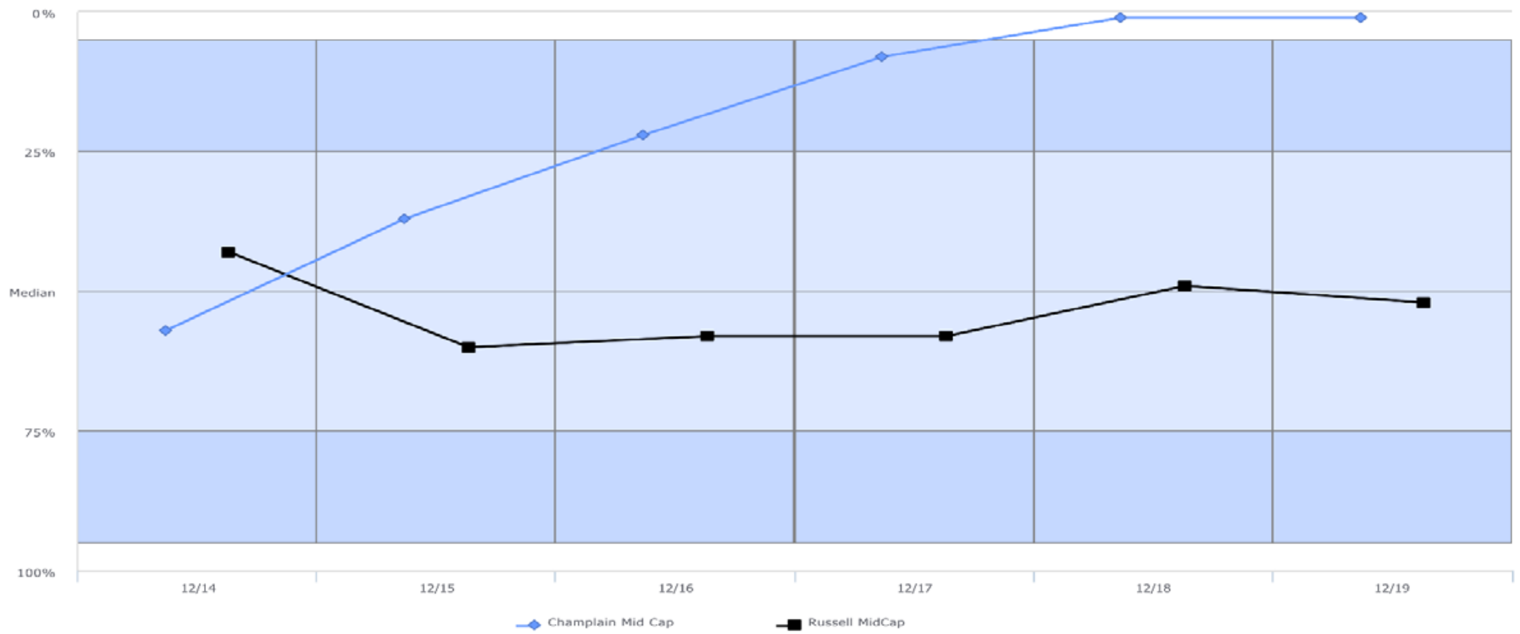
Universe: eVestment US Mid Cap Core Equity

	MRQ	Rk	1 Year	Rk	3 Years	Rk	5 Years	Rk	10 Years	Rk	5.08 Years	Rk
5th percentile	10.6		38.4		17.5		13.3		15.4		13.0	
25th percentile	8.1		33.6		15.0		11.5		14.4		11.4	
Median	6.9		28.9		11.7		9.8		13.2		9.7	
75th percentile	6.3		25.5		9.7		7.8		12.6		7.8	
95th percentile	4.6		18.1		5.1		4.9		10.1		4.7	
# of Observations	73		73		72		69		56		69	
Champlain Mid Cap	6.8	54	27.9	60	17.3	6	14.7	1	15.8	3	14.2	1
Russell MidCap	7.1	46	30.5	36	12.1	45	9.3	52	13.2	52	9.2	53

U.S. Active Equity Analysis - Champlain

Champlain Investment Partners, LLC
Champlain Mid Cap **December 2019**

Rolling 5-Yr Return Rank

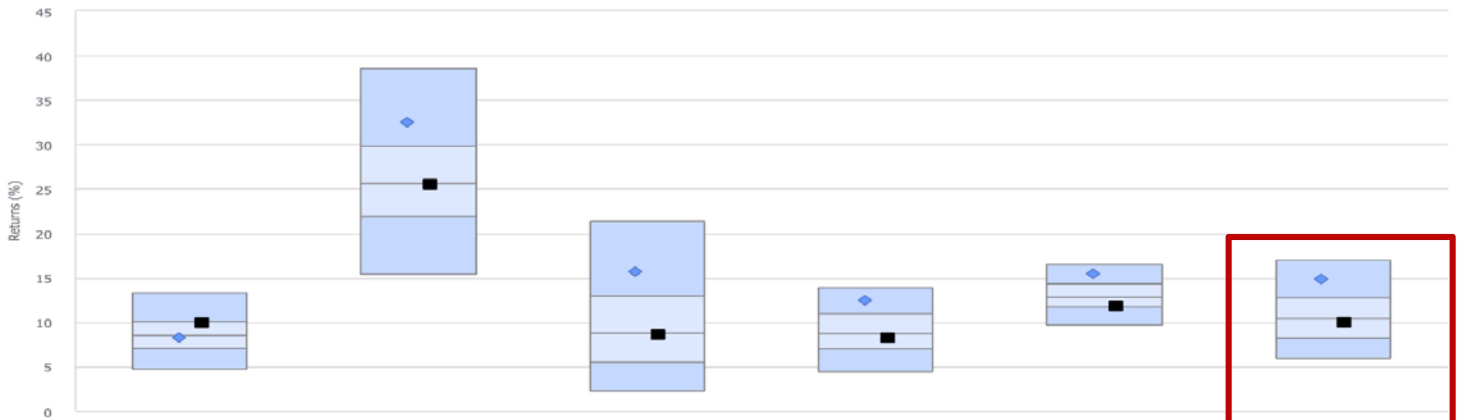


Universe: eVestment US Mid Cap Core Equity

U.S. Active Equity Analysis – Wellington U.S. Small Cap

Wellington Management Company LLP
Small Cap Opportunities — **December 2019**

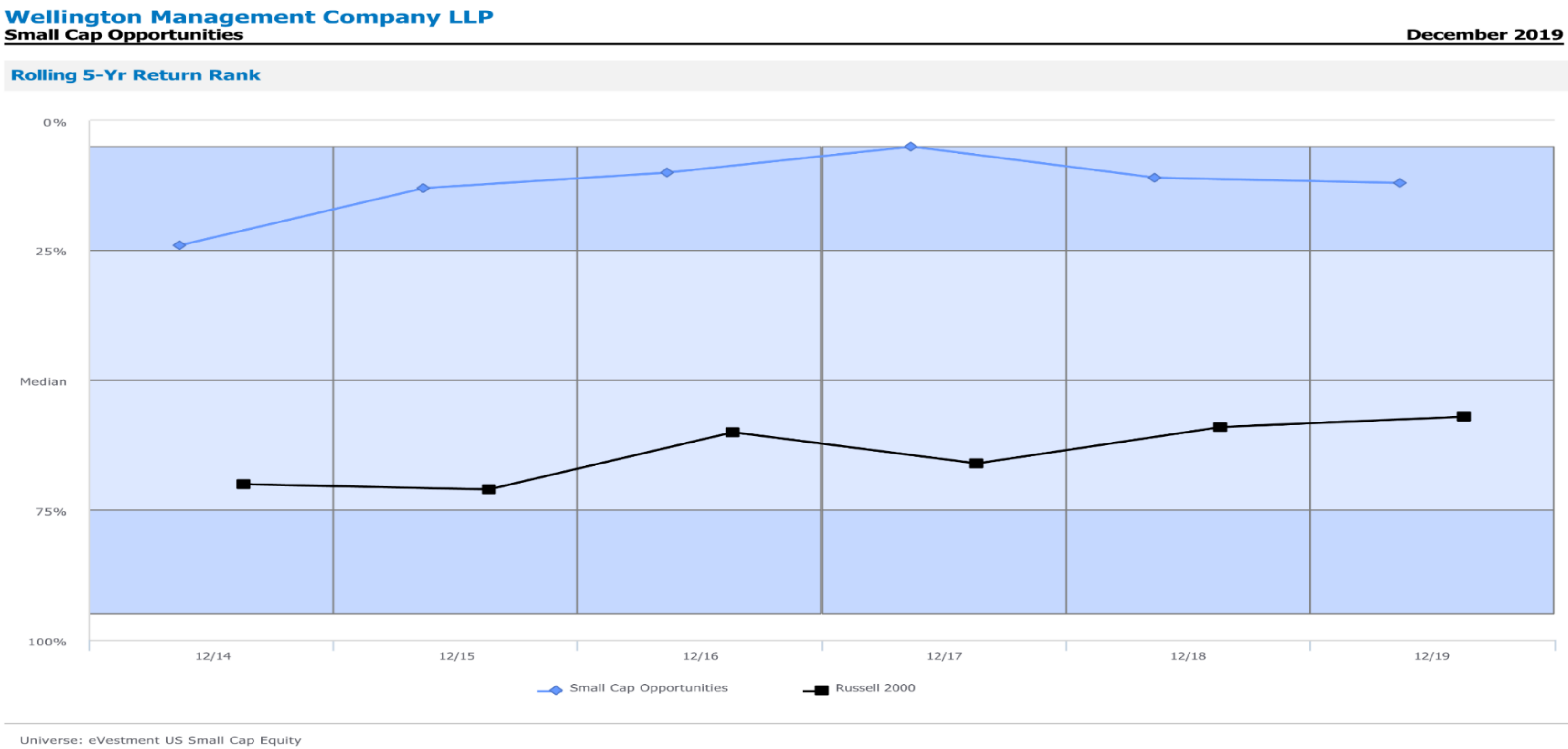
Trailing Performance



Universe: eVestment US Small Cap Equity

	MRQ	Rk	1 Year	Rk	3 Years	Rk	5 Years	Rk	10 Years	Rk	4.08 Years	Rk
5th percentile	13.3		38.5		21.3		13.8		16.5		17.0	
25th percentile	10.0		29.8		12.9		10.9		14.3		12.7	
Median	8.5		25.6		8.8		8.7		12.8		10.4	
75th percentile	7.0		21.9		5.5		7.0		11.7		8.2	
95th percentile	4.7		15.4		2.2		4.4		9.7		5.9	
# of Observations	633		633		620		590		516		606	
Small Cap Opportunities	8.3	55	32.5	17	15.7	16	12.4	12	15.4	11	14.8	10
Russell 2000	9.9	26	25.5	51	8.6	51	8.2	57	11.8	73	10.0	53

U.S. Active Equity Analysis – Wellington U.S. Small Cap



Non-U.S. Equity Monitoring Summary Report

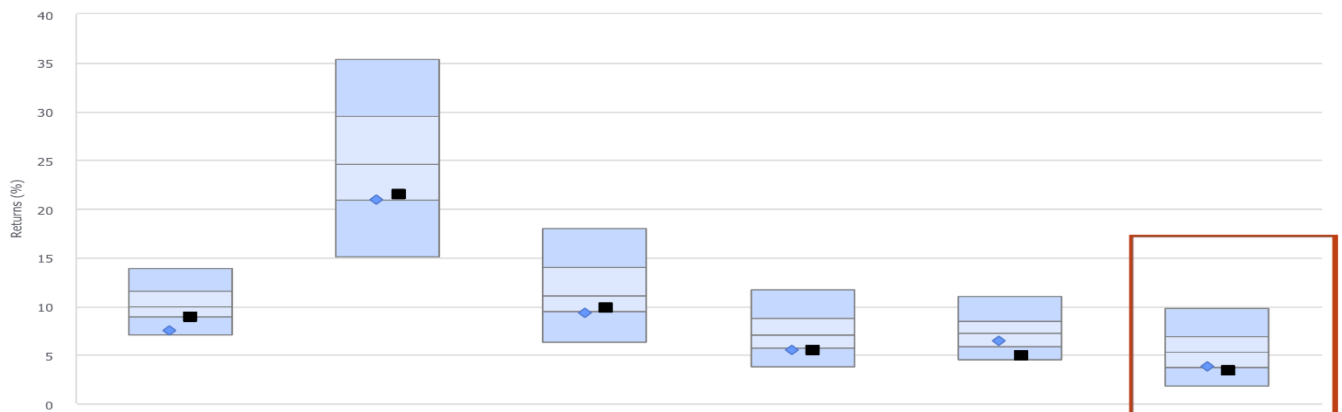
- **IPS Guidelines for Individual Portfolio Accounts:**
  - Indexed accounts should closely replicate the benchmark
  - Active accounts should exceed an appropriate benchmark, net of fees, over rolling five-year periods
  - Active Accounts should rank above median in an appropriate universe of Managers over rolling five-year periods

Manager	Fund Name	Asset Class	Watch List?	Quantitative Performance
Northern Trust Asset Management	ACW ex. U.S. IMI Fund	Non-U.S. Equity	No	Tracks the respective benchmark with de minimus tracking error over 1,3,5 & 7 yrs; (Inception Date: 9/1/2010)
State Street Global Advisors	Russell Fundamental Global ex-U.S. Index Fd	Non-U.S. Equity	No	Tracks the respective benchmark with de minimus tracking error over the 5 yr period (Inception Date: 2/1/2013)
UBS Global Asset Management	World ex U.S. Equity Minimum Volatility Index Fd	Non-U.S. Equity	No	Tracks the respective benchmark with de minimus tracking error over the 5 & 7 yrs period (Inception Date: 1/1/2013)
Lazard Asset Management LLC	International Equity Plus	Non-U.S. Equity	No	Underperformed the BM by -.18% over 5 yrs; outperformed 0.2% since inception (Inception Date: 9/1/14)
Wellington Management Company, LLP	International Horizons	Non-U.S. Equity	No	Outperformed the BM by 1.0% over 5 yrs; outperformed 1.8% since inception (Inception Date: 9/1/14)
Acadian Asset Management LLC	Emerging Markets Equity	Non-U.S. Equity	No	N/A; Outperformed the BM by 0.9% since (Inception date: 9/1/2015)
William Blair & Company LLC	Emerging Markets Leaders	Non-U.S. Equity	No	N/A; Outperformed the BM by 1.5% since (Inception date: 9/1/2015)
Wellington Management Company, LLP	International Small Cap Opportunities	Non-U.S. Equity	No	N/A; Underperformed the BM by -2.4% since (Inception date: 1/1/2016)
Wasatch Global Investors	International Small Cap Growth	Non-U.S. Equity	No	N/A; Outperformed the BM by 0.5% since (Inception date: 1/1/2016)

Non-U.S. Active Equity Analysis – Lazard International Equity (DM + EM)

Lazard Asset Management LLC
International Equity Plus (ACW ex-US) **December 2019**

Trailing Performance



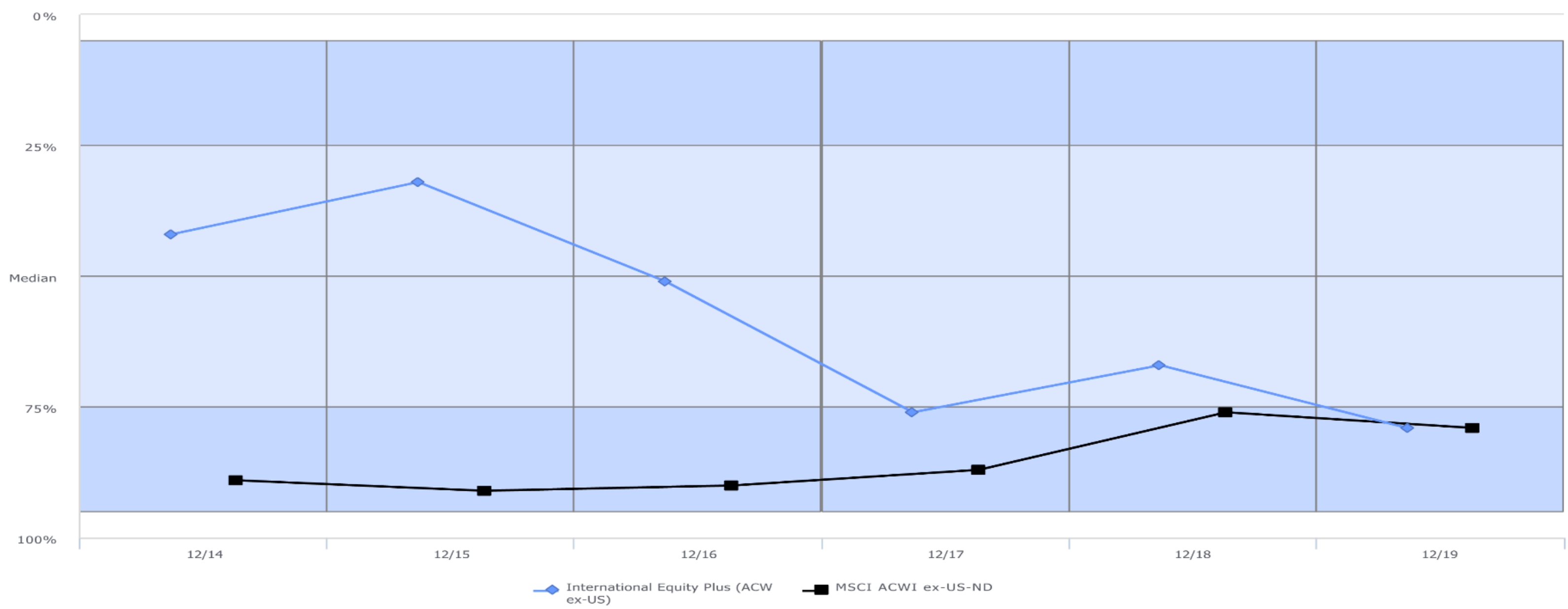
Universe: eVestment All ACWI ex-US Equity

	MRQ	Rk	1 Year	Rk	3 Years	Rk	5 Years	Rk	10 Years	Rk	5.33 Years	Rk
5th percentile	13.9		35.3		18.0		11.7		11.0		9.8	
25th percentile	11.5		29.5		14.0		8.7		8.4		6.9	
Median	9.9		24.6		11.0		7.0		7.2		5.3	
75th percentile	8.9		20.9		9.4		5.7		5.8		3.7	
95th percentile	7.0		15.1		6.3		3.8		4.5		1.8	
# of Observations	375		374		354		313		211		305	
International Equity Plus (ACW ex-US)	7.5	93	20.9	75	9.3	77	5.5	79	6.4	63	3.8	70
MSCI ACWI ex-US-ND	8.9	73	21.5	72	9.9	68	5.5	79	5.0	90	3.4	81

Non-U.S. Active Equity Analysis – Lazard International Equity (DM + EM)

Lazard Asset Management LLC
International Equity Plus (ACW ex-US) **December 2019**

Rolling 5-Yr Return Rank

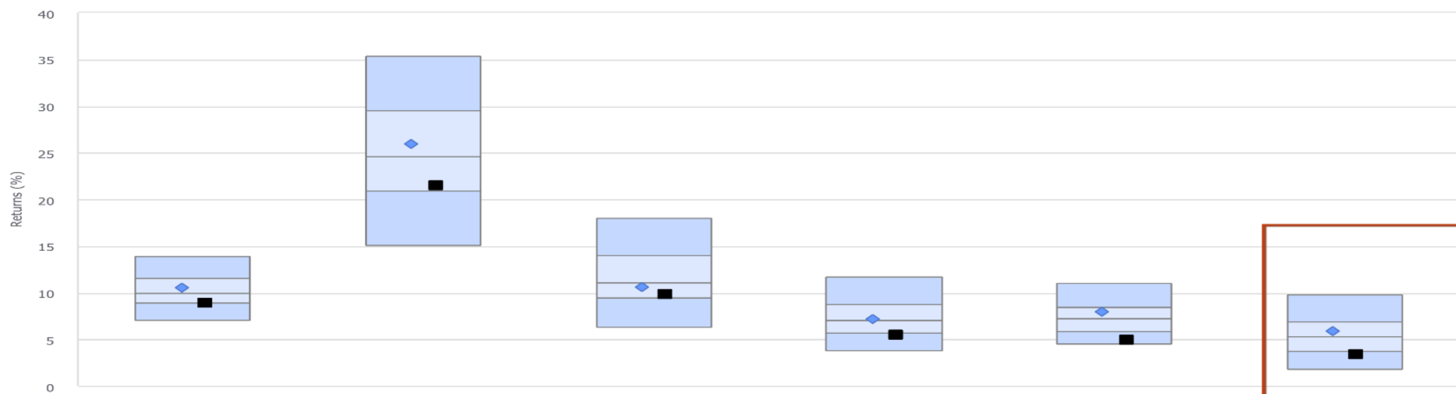


Universe: eVestment All ACWI ex-US Equity

Non-U.S. Active Equity Analysis – Wellington Intl Horizons (DM + EM)

Wellington Management Company LLP
International Horizons **December 2019**

Trailing Performance



Universe: eVestment All ACWI ex-US Equity

	MRQ	Rk	1 Year	Rk	3 Years	Rk	5 Years	Rk	10 Years	Rk	5.33 Years	Rk
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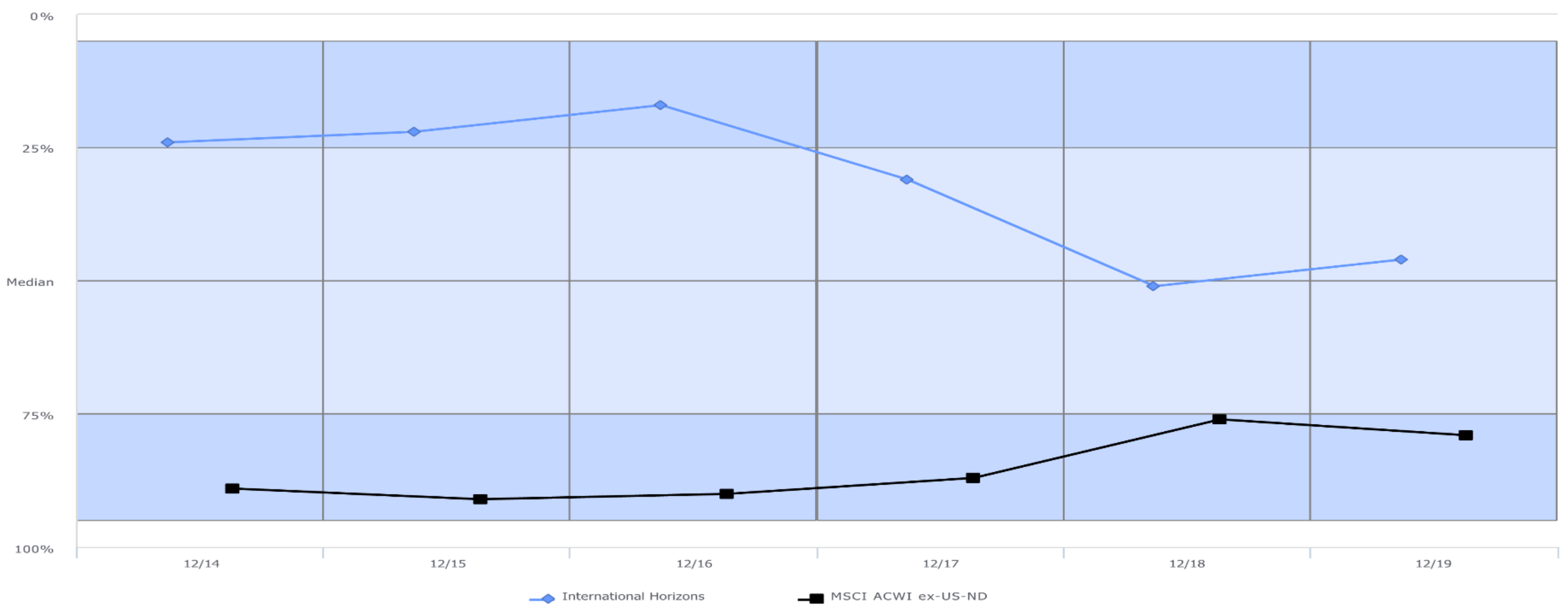
25th percentile	11.5		29.5		14.0		8.7		8.4		6.9	
Median	9.9		24.6		11.0		7.0		7.2		5.3	
75th percentile	8.9		20.9		9.4		5.7		5.8		3.7	
95th percentile	7.0		15.1		6.3		3.8		4.5		1.8	
# of Observations	375		374		354		313		211		305	
International Horizons	10.5	38	25.9	43	10.6	54	7.2	46	8.0	36	5.9	38
MSCI ACWI ex-US-ND	8.9	73	21.5	72	9.9	68	5.5	79	5.0	90	3.4	81

Non-U.S. Active Equity Analysis – Wellington Intl Horizons (DM + EM)

Wellington Management Company LLP
International Horizons **December 2019**

Rolling 5-Yr Return Rank

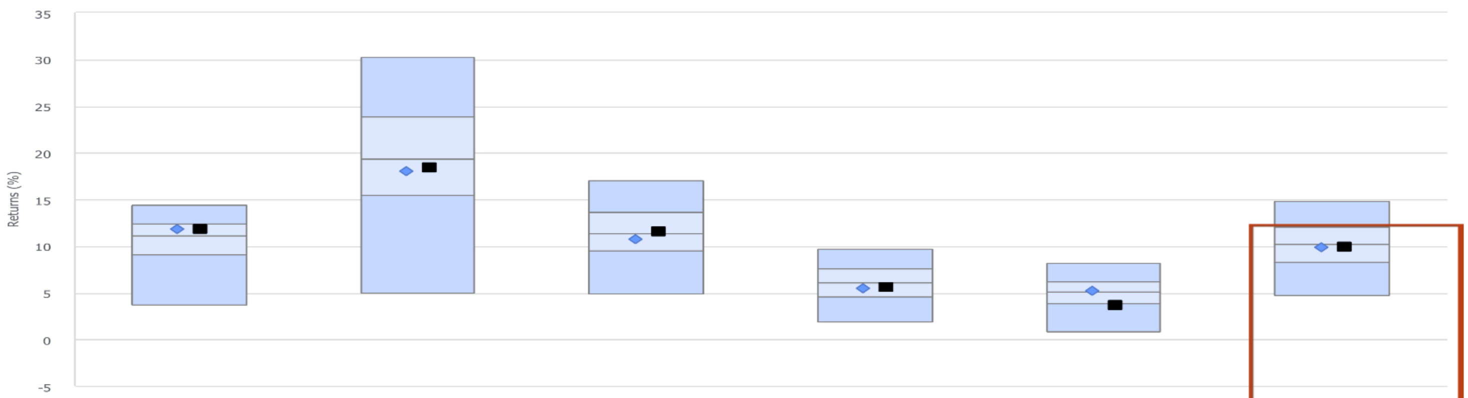


Universe: eVestment All ACWI ex-US Equity

Non-U.S. Active Equity Analysis – Acadian Emerging Markets Equity

Acadian Asset Management LLC
Emerging Markets Equity **December 2019**

Trailing Performance



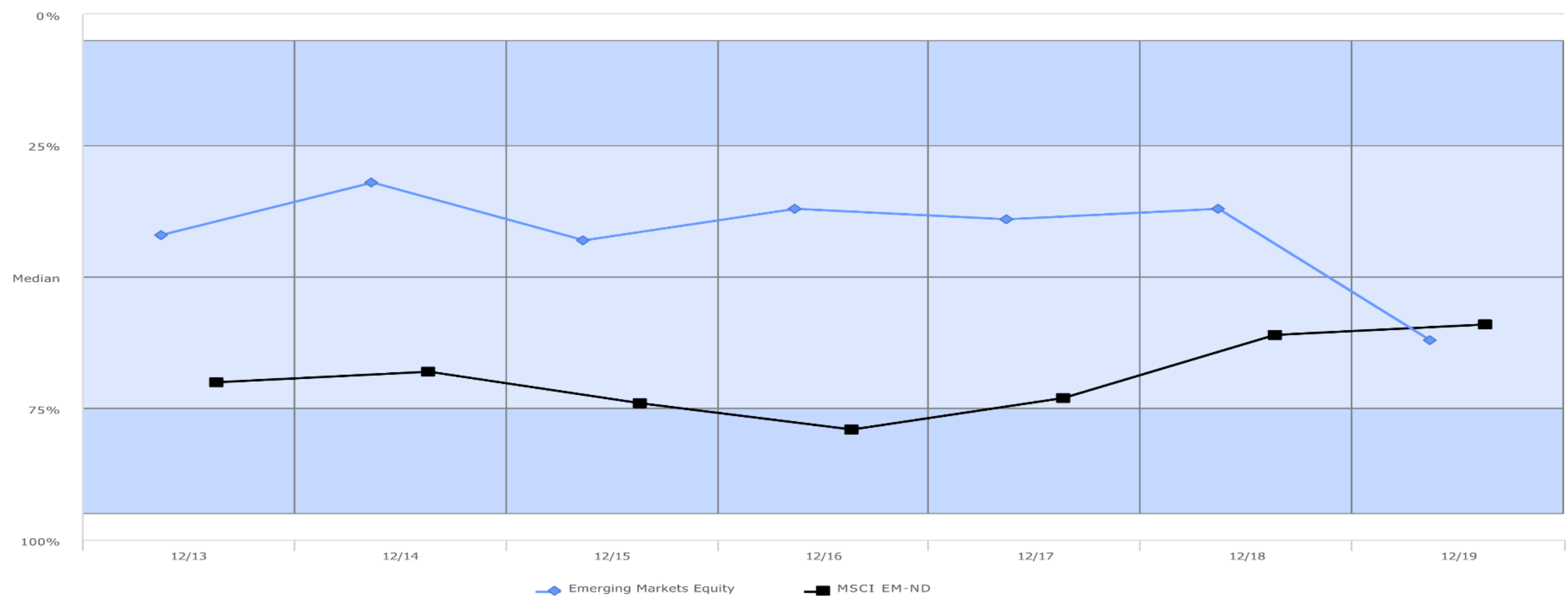
Universe: eVestment All Emerging Mkts Equity

	MRQ	Rk	1 Year	Rk	3 Years	Rk	5 Years	Rk	10 Years	Rk	4.33 Years	Rk
5th percentile	14.4		30.2		17.0		9.7		8.1		14.8	
25th percentile	12.4		23.8		13.6		7.6		6.2		12.0	
Median	11.1		19.3		11.3		6.1		5.1		10.2	
75th percentile	9.1		15.4		9.5		4.5		3.8		8.2	
95th percentile	3.7		5.0		4.9		1.9		0.8		4.7	
# of Observations	624		619		573		511		254		536	
Emerging Markets Equity	11.8	35	18.0	61	10.7	58	5.5	62	5.2	47	9.9	56
MSCI EM-ND	11.8	34	18.4	58	11.6	46	5.6	59	3.7	78	9.9	55

Non-U.S. Active Equity Analysis – Acadian Emerging Markets Equity

Acadian Asset Management LLC
Emerging Markets Equity **December 2019**

Rolling 5-Yr Return Rank

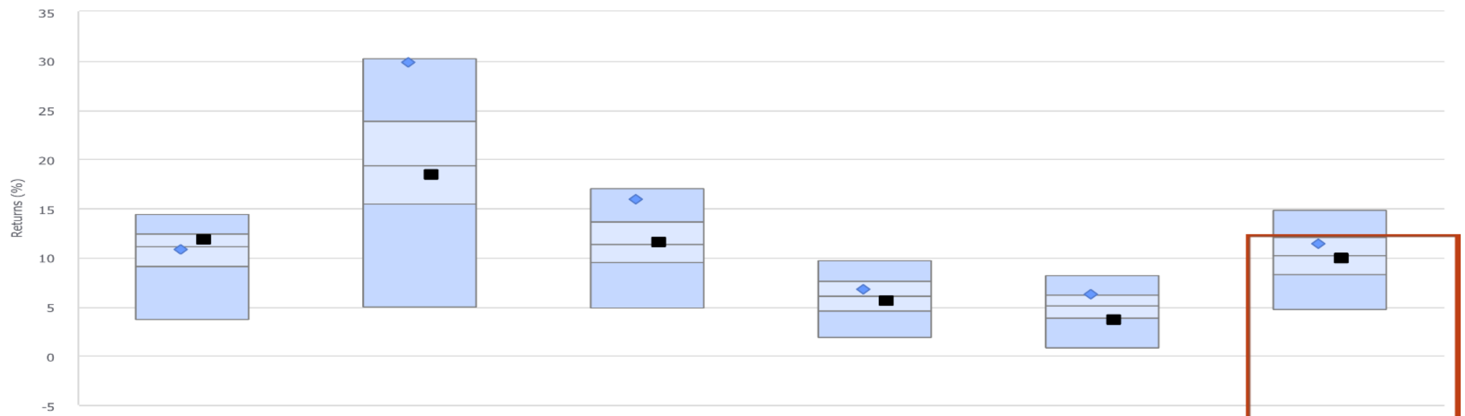


Universe: eVestment All Emerging Mkts Equity

Non-U.S. Active Equity Analysis – William Blair Emerging Markets Leaders

William Blair Investment Management, LLC
Emerging Markets Leaders — **December 2019**

Trailing Performance



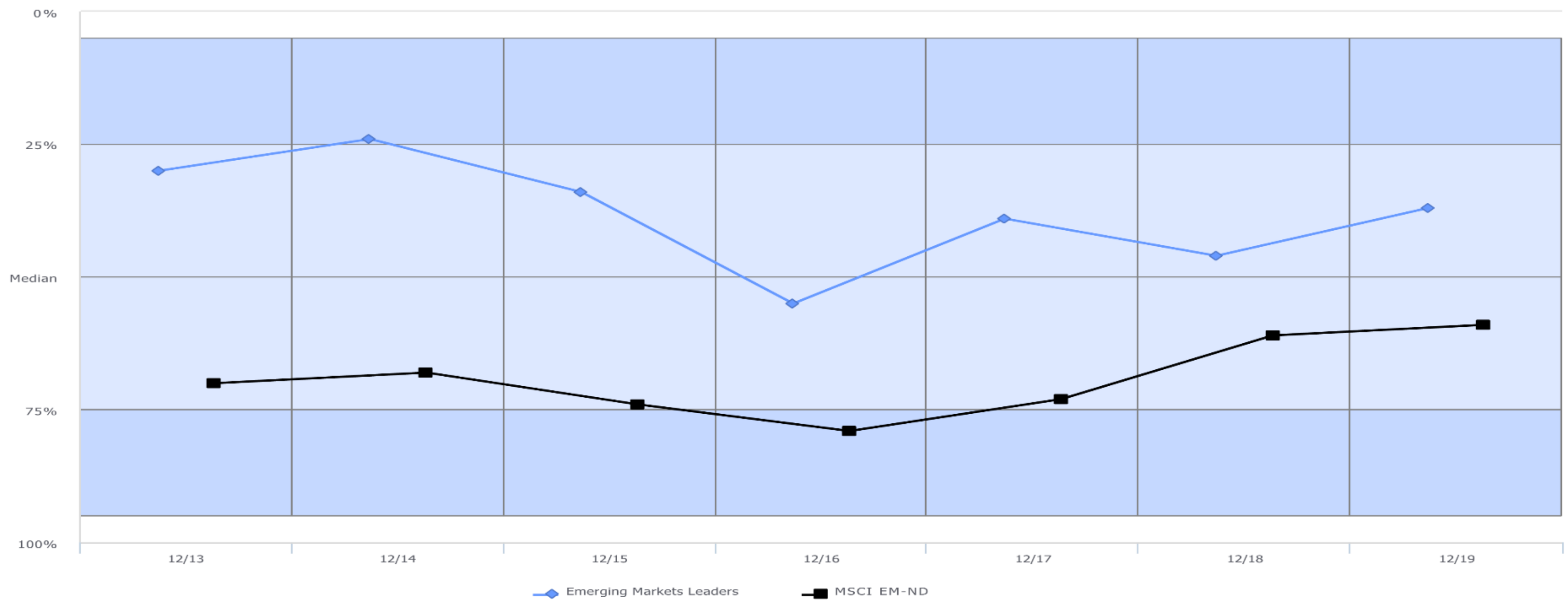
Universe: eVestment All Emerging Mkts Equity

	MRQ	Rk	1 Year	Rk	3 Years	Rk	5 Years	Rk	10 Years	Rk	4.33 Years	Rk
5th percentile	14.4		30.2		17.0		9.7		8.1		14.8	
25th percentile	12.4		23.8		13.6		7.6		6.2		12.0	
Median	11.1		19.3		11.3		6.1		5.1		10.2	
75th percentile	9.1		15.4		9.5		4.5		3.8		8.2	
95th percentile	3.7		5.0		4.9		1.9		0.8		4.7	
# of Observations	624		619		573		511		254		536	
Emerging Markets Leaders	10.8	56	29.8	6	15.9	9	6.8	37	6.3	24	11.4	33
MSCI EM-ND	11.8	34	18.4	58	11.6	46	5.6	59	3.7	78	9.9	55

Non-U.S. Active Equity Analysis – William Blair Emerging Markets Leaders

William Blair Investment Management, LLC
Emerging Markets Leaders **December 2019**

Rolling 5-Yr Return Rank

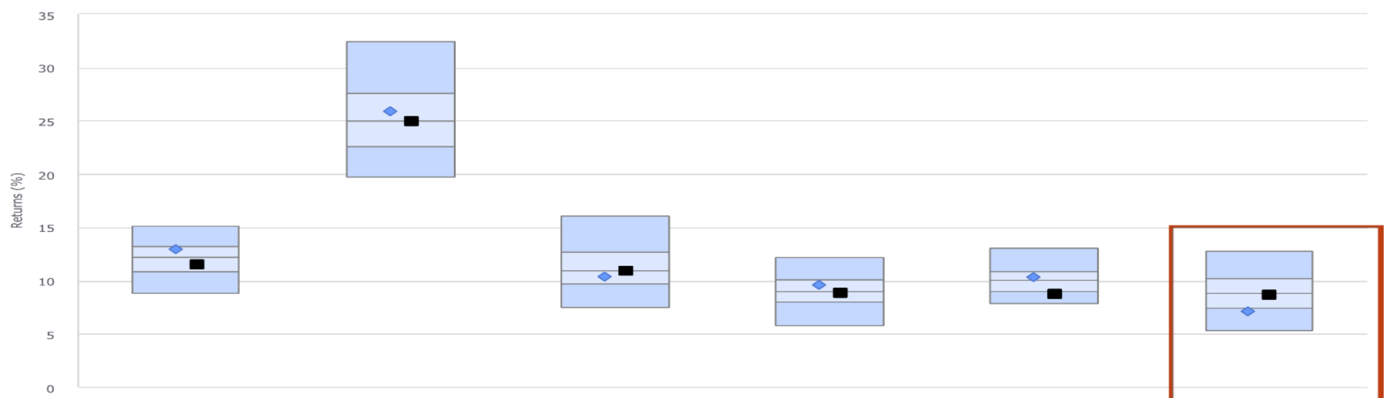


Universe: eVestment All Emerging Mkts Equity

Non-U.S. Active Equity Analysis – Wellington Intl Small Cap Opportunities

Wellington Management Company LLP
International Small Cap Opportunities — **December 2019**

Trailing Performance



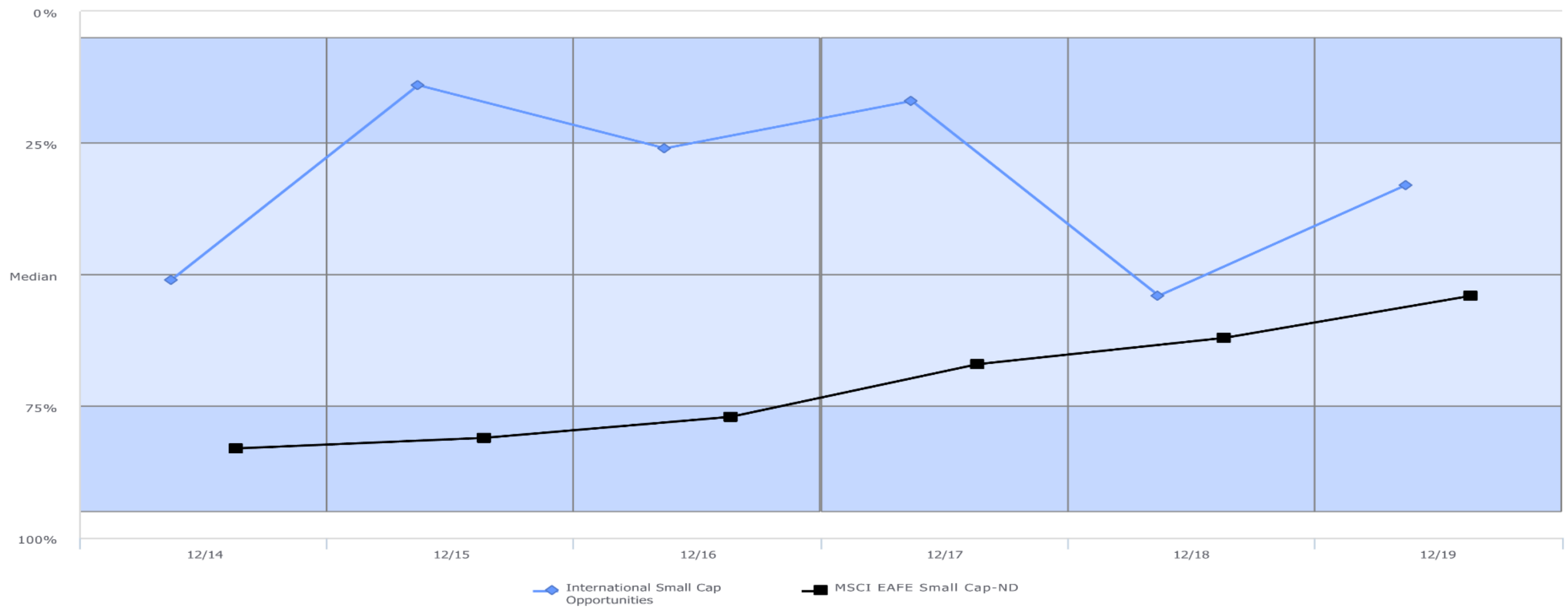
Universe: eVestment EAFE Small Cap Equity

	MRQ	Rk	1 Year	Rk	3 Years	Rk	5 Years	Rk	10 Years	Rk	4 Years	Rk
5th percentile	15.1		32.4		16.1		12.2		13.0		12.8	
25th percentile	13.2		27.6		12.7		10.1		10.8		10.2	
Median	12.2		25.0		10.9		9.0		10.0		8.8	
75th percentile	10.8		22.6		9.7		8.0		9.0		7.4	
95th percentile	8.8		19.7		7.5		5.8		7.8		5.3	
# of Observations	99		99		92		74		48		82	
International Small Cap Opportunities	12.9	31	25.9	38	10.4	60	9.6	33	10.3	40	7.1	78
MSCI EAFE Small Cap-ND	11.5	65	25.0	50	10.9	50	8.9	54	8.7	78	8.7	53

Non-U.S. Active Equity Analysis – Wellington Intl Small Cap Opportunities

Wellington Management Company LLP
International Small Cap Opportunities **December 2019**

Rolling 5-Yr Return Rank



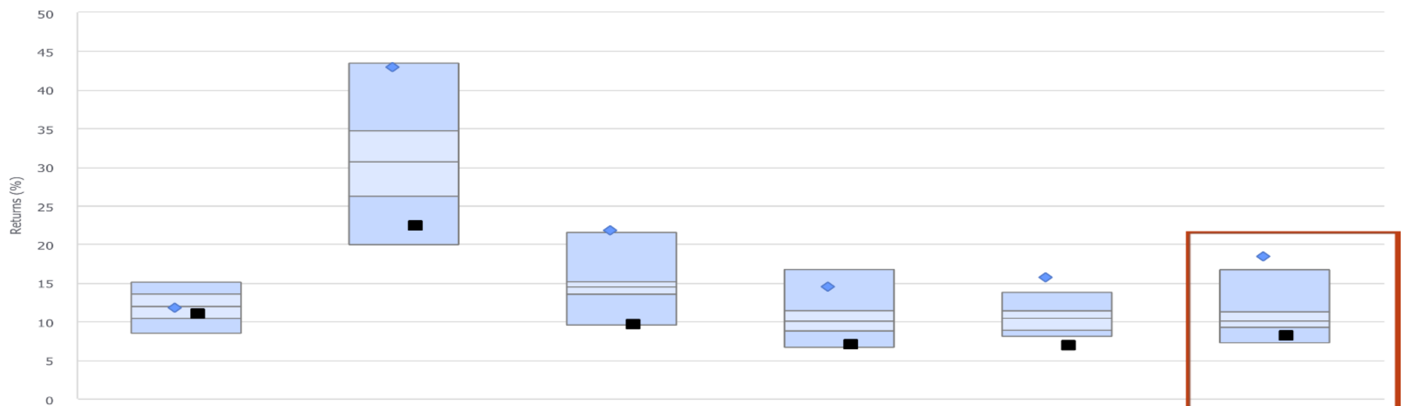
Universe: eVestment EAFE Small Cap Equity

Non-U.S. Active Equity Analysis – Wasatch Small Cap Growth

Wasatch Global Investors
Small Cap Growth

December 2019

Trailing Performance



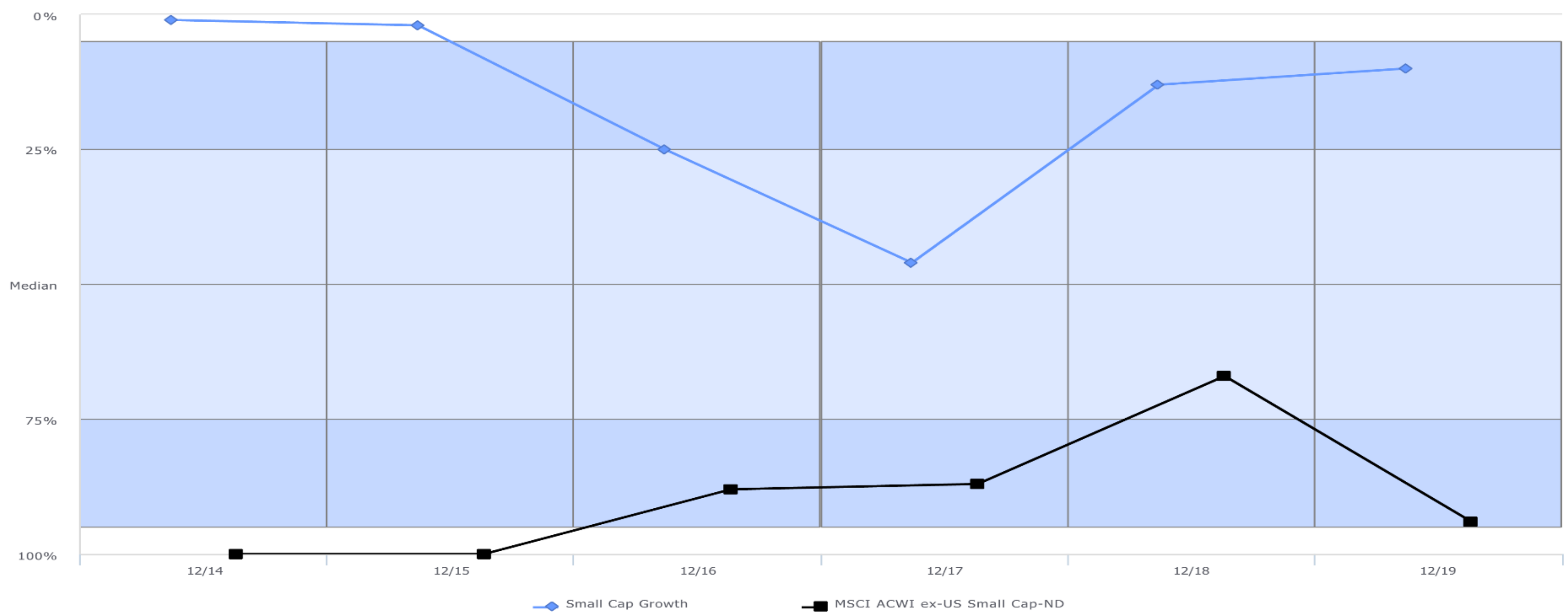
Universe: eVestment ACWI ex-US Small Cap Growth Equity

	MRQ	Rk	1 Year	Rk	3 Years	Rk	5 Years	Rk	10 Years	Rk	4 Years	Rk
5th percentile	15.1		43.4		21.5		16.7		13.8		16.7	
25th percentile	13.5		34.7		15.1		11.4		11.4		11.2	
Median	11.9		30.6		14.5		10.0		10.4		10.0	
75th percentile	10.4		26.2		13.5		8.8		8.8		9.2	
95th percentile	8.5		19.9		9.5		6.6		8.1		7.2	
# of Observations	26		26		25		23		15		25	
Small Cap Growth	11.8	55	42.9	7	21.8	5	14.5	10	15.7	1	18.4	1
MSCI ACWI ex-US Small Cap-ND	11.0	63	22.4	86	9.6	95	7.0	94	6.9	100	8.2	86

Non-U.S. Active Equity Analysis – Wasatch Small Cap Growth

Wasatch Global Investors
Small Cap Growth **December 2019**

Rolling 5-Yr Return Rank



Universe: eVestment ACWI ex-US Small Cap Growth Equity

Asset Growth in 2019

- Total market value growth in 2019 was $2.1 Billion

U.S. & non-U.S. Passive Strategies				
Manager	**Strategy**	**2018 MV ($ millions)**	**2019 MV ($ millions)**	**Difference ($ millions)**
NTAM	Russell 3000 Fund	$3,200	$3,800	$600.0
NTAM	MSCI ACW IMI ex. US Fd	$2,400	$3,000	$600.0
Rules-based (Factor) Strategies				
Manager	**Strategy**	**2018 MV ($ millions)**	**2019 MV ($ millions)**	**Difference ($ millions)**
UBS	US Minimum Vol	$895	$1,100	$205
UBS	non-US Minimum Vol	$296	$351	$55
SSgA	US Russell RAFI	$359	$462	$103
SSgA	non-US Russell RAFI	$249	$295	$46
U.S. Active Strategies				
Manager	**Strategy**	**2018 MV ($ millions)**	**2019 MV ($ millions)**	**Difference ($ millions)**
Champlain	Mid Cap	$304	$387	$83
Wellington	Small Cap	$307	$405	$98
Non-U.S. Active Strategies				
Manager	**Strategy**	**2018 MV ($ millions)**	**2019 MV ($ millions)**	**Difference ($ millions)**
Lazard	Developed/Emerging Mkts	$204	$246	$42
Wellington	Developed/Emerging Mkts	$213	$267	$54
Acadian	Emerging Markets	$219	$258	$39
William Blair	Emerging Markets	$209	$268	$59
Wasatch	Small Cap	$252	$330	$78
Wellington	Small Cap	$240	$300	$60

IV. MARKET UPDATE & PUBLIC EQUITY PERFORMANCE

What Happened in 2019?

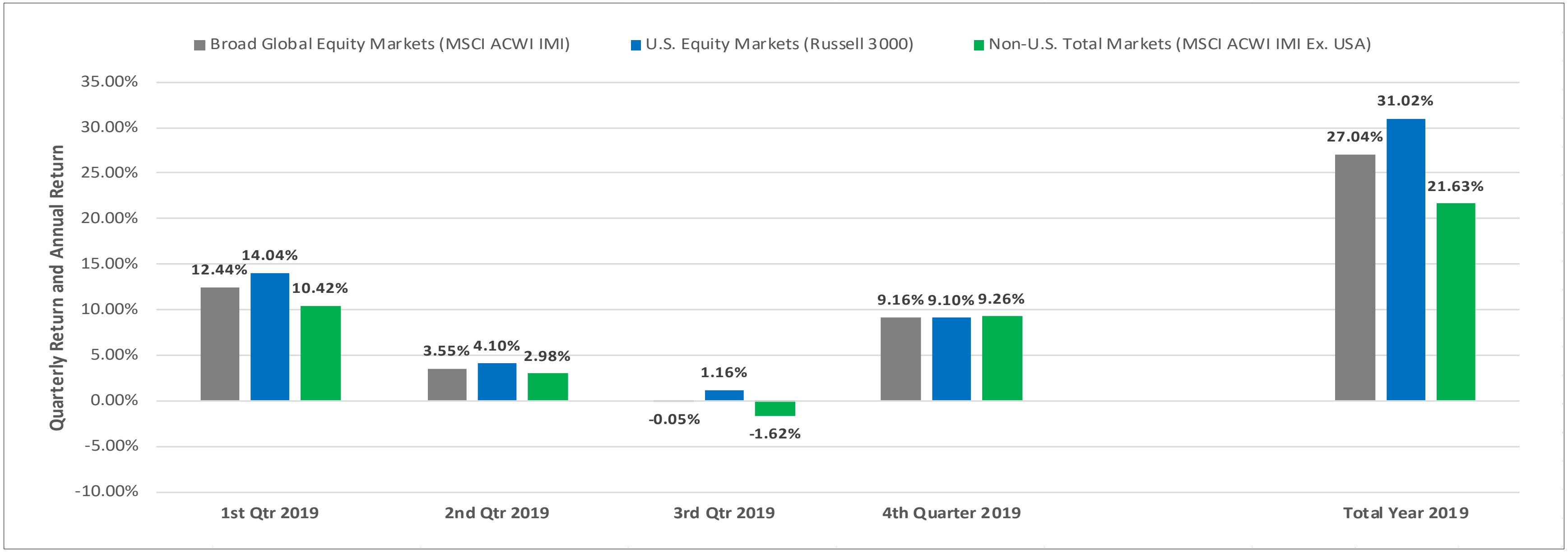
- Public equities posted very strong returns in 2019, led by large U.S.-based technology companies. This performance occurred despite concerns related to U.S.-China trade negotiations. U.S. companies also posted strong sales growth and profitability fundamentals supporting stock prices. Fears of a global economic slowdown subsided a bit as government monetary policy, tax rates, low interest rates and strong employment trends supported business results in 2019.

- International equities markets were slightly weaker than the U.S. due to Brexit and banking sector weakness in Europe, geopolitical issues in Latin America, continued slower growth in Japan. A strengthening U.S. dollar and weakness in China due to trade also impacted international returns.

- Forward-looking risks: (1) Volatility in the U.S. around the election cycle; (2) continued China-related issues (trade war and coronavirus impact); (3) potential Fed tightening or inflation; (4) regulatory changes in U.S. (relating to taxes, healthcare or large technology companies); (5) a reverse in globalization trends; and (6) potential slower business growth or corporate profitability.

Equity Performance By Quarter in 2019 and Annual Performance

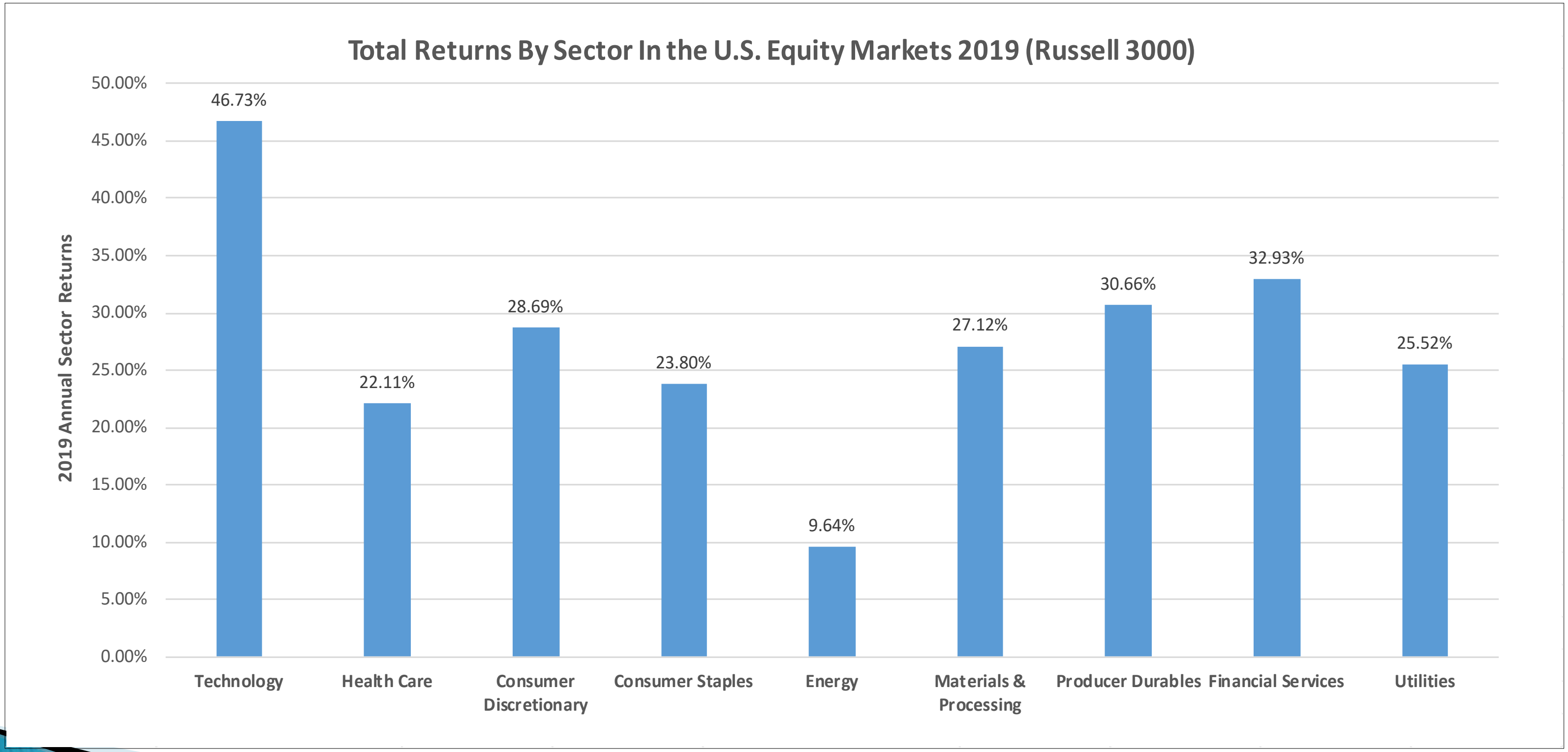
- **U.S. markets outperformed international markets in 2019**
- Total 2019 year returns for **TMRS U.S. Equity were +30.0%**
- Total 2019 year returns for **TMRS International Equity were +22.3%**
- **Total TMRS Global Equity** (blend of U.S. and international) **returns were +26.4%**
- TMRS **Global Public Equites exposure added approximately $2.1B to plan assets in 2019** (while contributing $262M to other assets classes such as private equity)



Source: MSCI, Russell, TMRS

2019 Sector Exposure and Performance – U.S. Equities

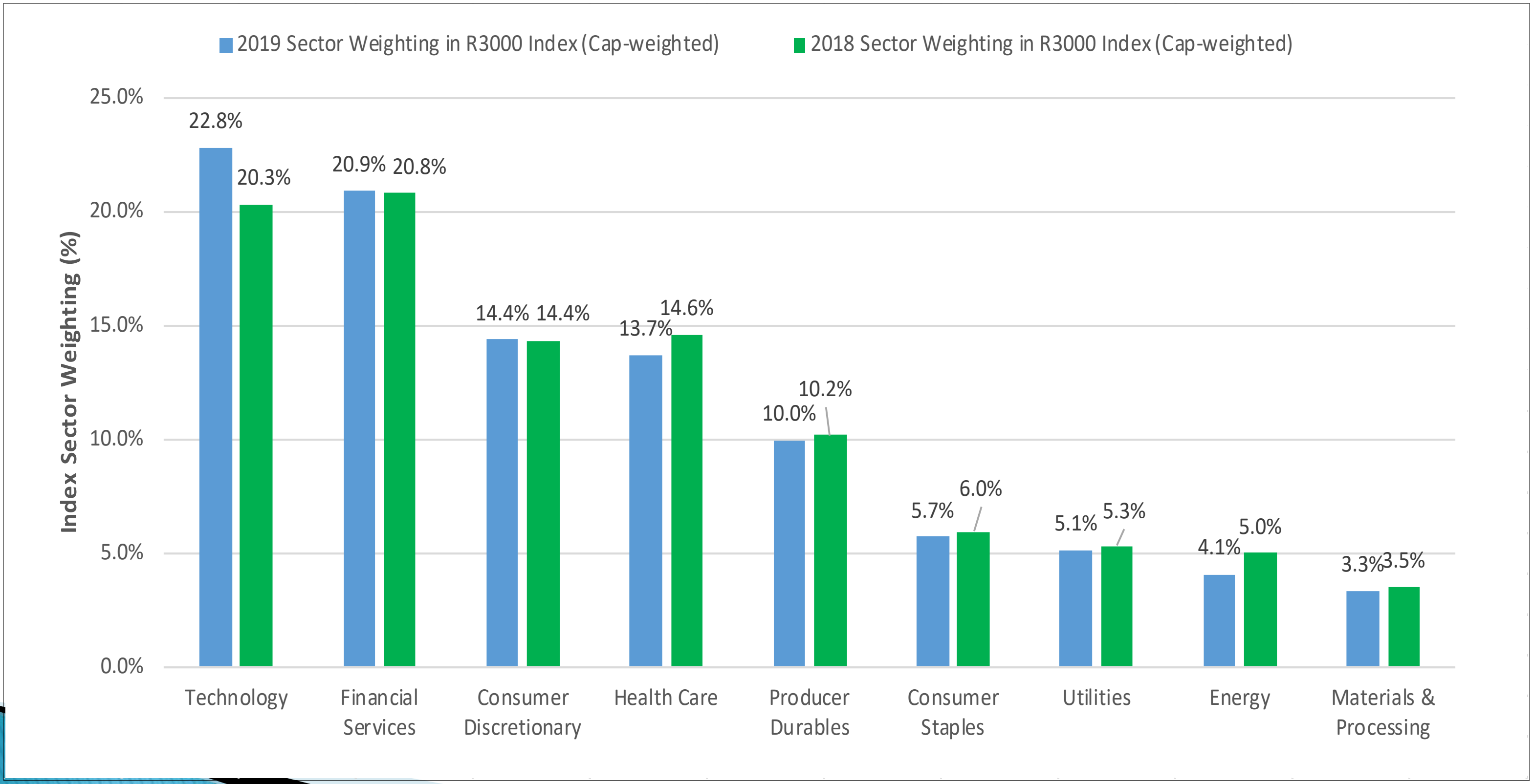
- U.S. markets saw significant strength in the Technology sector, much of this was driven by some of the largest technology stocks such as Apple, Microsoft, Amazon, Google.
- The weakest sector was energy, on low oil prices, demand trends and weaker balance sheets; however, this sector still posted positive returns of approximately 9.6%.



Source: Russell, TMRS

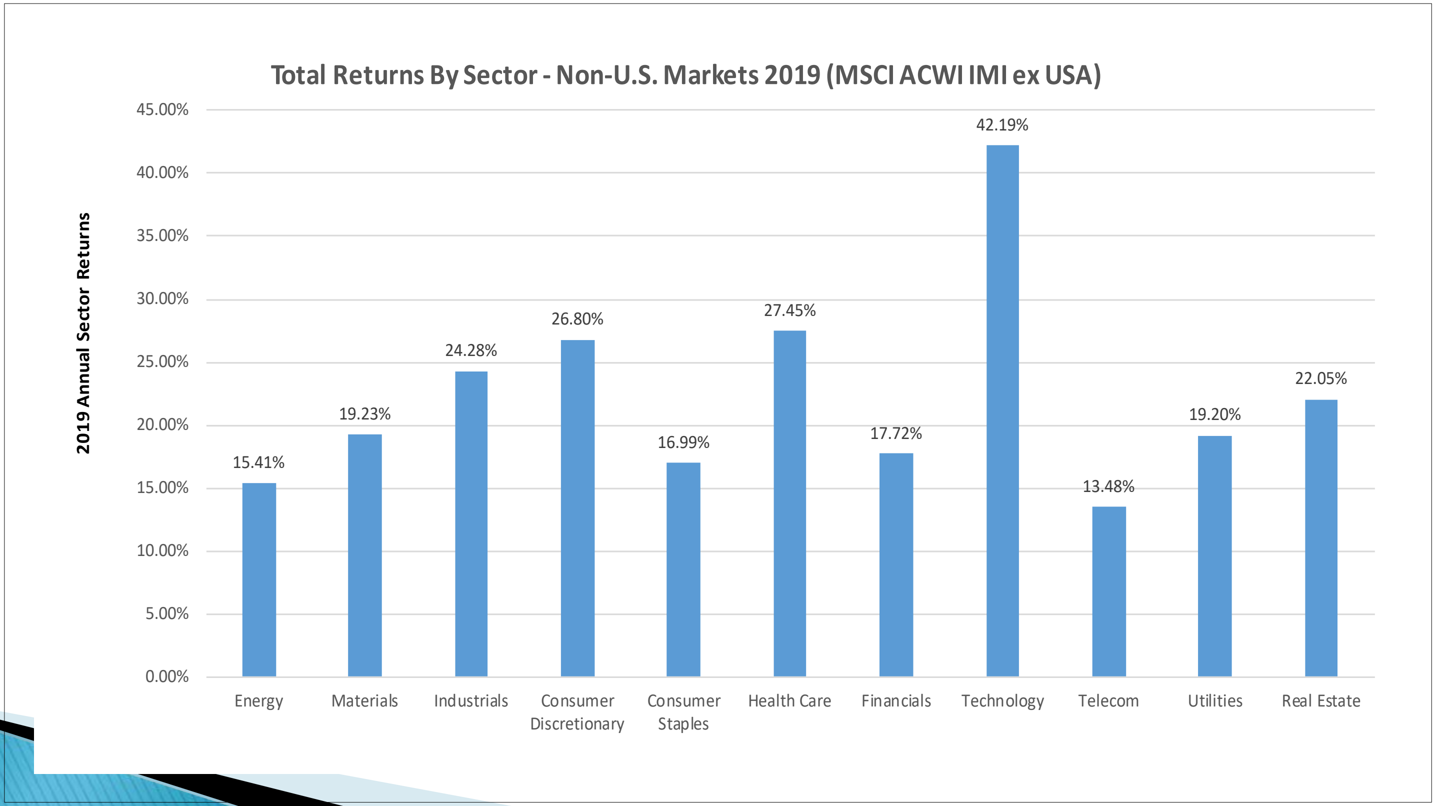
Sector Weightings in U.S. Equity Markets as of 2018 and 2019

- **Strong performance in technology continues to drive up the sector's weight and influence in public markets. Markets becoming less sensitive to energy and materials.**
- **Financial services appears static, but significant rotation from banks (under pressure due to interest rates, etc.) to companies such as global payments and financial technology.**



2019 Sector Exposure and Performance – International & Emerging Markets Equities

- **Non-U.S. markets also saw significant strength in the Technology sector, much of this was driven by some of the largest global technology stocks, such as Alibaba Holdings (China), SAP Software (Germany), Samsung (South Korea), Tencent Holdings (China).**
- **The weakest sectors were Telecommunications and Energy, but both still posted positive returns.**



Source: MSCI, TMRS

2019 Country Exposure And Performance

- Non-U.S. performance by country showed strong performance in: Taiwan, Italy, France, U.K., Russia, Canada, Switzerland and China.
- The weaker countries were: Argentina, Chile, Malaysia, India, Korea.

MSCI ACWI ex USA IMI Index
Country Weights as of 2019-12-31

Country	Weight In Index	2019 Total Return
Japan	16.91%	20.02%
United Kingdom	11.19%	23.25%
China	8.46%	22.92%
France	6.84%	26.95%
Canada	6.69%	28.87%
Switzerland	5.80%	33.46%
Germany	5.53%	22.50%
Australia	4.59%	22.92%
Taiwan	3.35%	36.46%
Korea	3.22%	10.18%
Netherlands	2.51%	32.72%
India	2.42%	5.33%
Hong Kong	2.17%	9.73%
Sweden	2.12%	24.89%
Brazil	2.07%	29.61%
Spain	1.82%	12.79%
Italy	1.67%	28.05%
South Africa	1.27%	11.85%
Denmark	1.22%	26.89%
Russia	0.96%	51.92%
Singapore	0.89%	16.44%
Belgium	0.76%	26.35%
Thailand	0.72%	9.85%
Saudi Arabia	0.69%	9.72%

MSCI ACWI ex USA IMI Index
Country Weights as of 2019-12-31

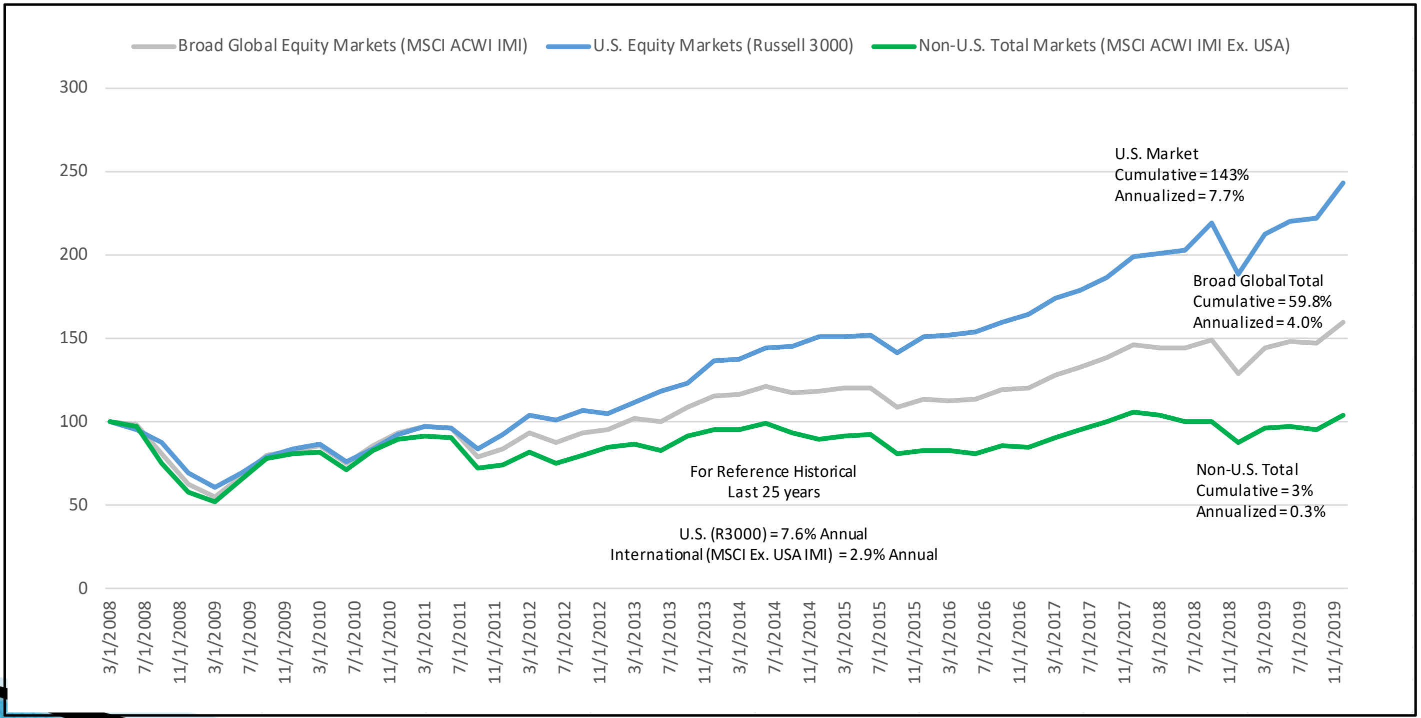
Country	Weight In Index	2019 Total Return
Finland	0.65%	13.52%
Mexico	0.62%	13.34%
Norway	0.57%	14.18%
Malaysia	0.52%	0.83%
Indonesia	0.52%	7.43%
Israel	0.50%	21.95%
Ireland	0.36%	32.56%
Philippines	0.25%	10.31%
Qatar	0.25%	0.09%
Poland	0.24%	-4.07%
New Zealand	0.24%	31.91%
Austria	0.21%	18.45%
Chile	0.21%	-16.42%
United Arab Emirates	0.16%	3.74%
Turkey	0.15%	13.18%
Portugal	0.12%	18.54%
Colombia	0.10%	32.51%
Greece	0.09%	56.16%
Peru	0.08%	3.87%
Hungary	0.08%	17.75%
Argentina	0.06%	-17.91%
Egypt	0.04%	29.28%
Czech Republic	0.03%	8.28%
Pakistan	0.02%	4.60%

TOTAL Weights	100.00%
Weighted Return	21.63%

Source: MSCI, TMRS

Since 2008 U.S. Equity Markets have Outperformed - Returns By Major Region from 2008-2019

- **The last ten years have been very strong for the U.S., posting annualized returns of approximately 7.7%, while International and Emerging Markets have not had as strong of performance. The weakness out of the Global Financial Crisis, currency and other factors have kept returns lower outside the U.S. to about 0.3% annualized.**
- **International market returns are below their long term averages, while U.S. returns have recently exceeded long term averages.**



Source: MSCI, Russell, TMRS

Russell 3000 vs ACWI ex-US IMI Sector and Market Cap Comparison

Several reasons explain the outperformance of US over International markets:

- US has significantly larger market cap and this market cap has outperformed.
- US has a higher IT sector weight and this sector has outperformed.
- International has higher financials weight and this sector has underperformed.
- International has higher materials weight and this sector has underperformed.

Global Factors Over Time

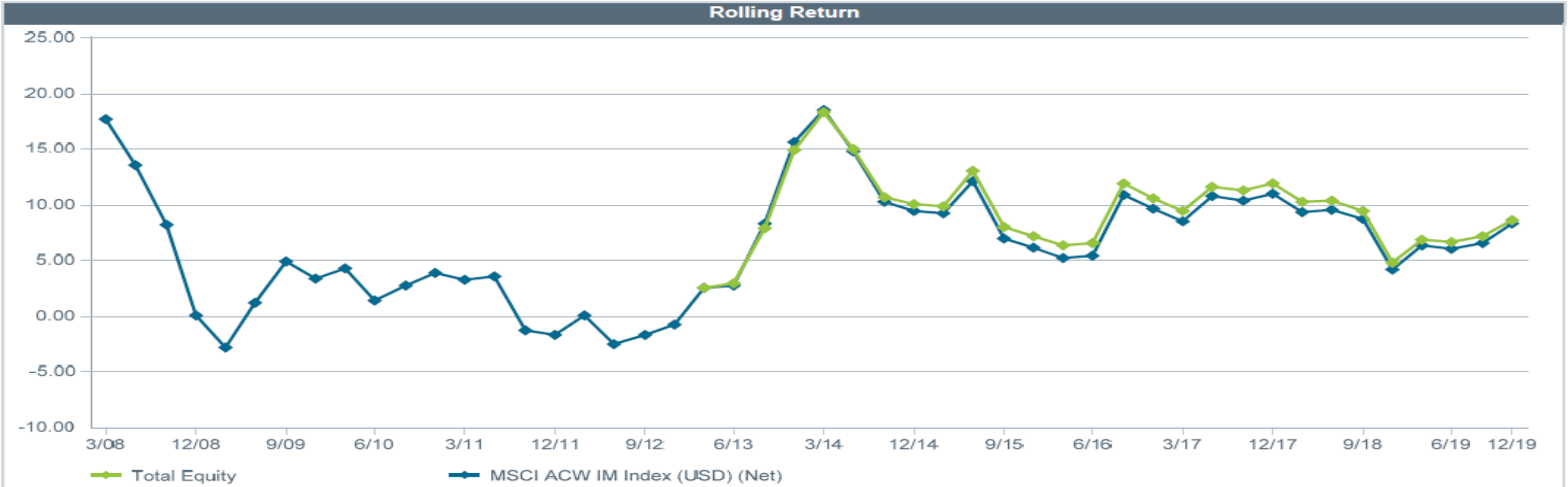
- **In the global public equity context "Factors" are: 1) consistent characteristics that describe exposure to groups of stocks and explain returns; and 2) are quantified in a specific manner.**
- **Once a factor has been identified and agreed upon through both academic research and real world applications over time, it becomes a helpful lever to understand groups of equity. This applies to both drivers of return, as well as risk.**
- **Commonly accepted and supported factors are:**
  - **Value –** this factor identifies and expresses the idea that stocks that are inexpensive perform better over time than those that are expensive.
  - **Volatility** - this factor identifies and expresses the idea that stocks that are less volatile perform better over time than those that are more volatile.
  - **Quality** - this factor identifies and expresses the exposure that stocks that are higher quality perform better over time than those of lower quality.
  - **Momentum** - this factor identifies and expresses the exposure that stocks that are performing well over the last year (mean revert in the past month), perform better over time than those that are showing the opposite.
  - **Size** - this factor identifies and expresses the exposure that stocks that are smaller outperform those that are larger by market capitalization.
- **Recently Value, Size and Quality have been weak while Volatility and Momentum have performed well.**

Global Performance Perspective

- The performance objective is to exceed the MSCI ACWI IMI (Net), net of fees, over a rolling five year period.
- The global mandate has only been in place for approximately one year but the Total Equity portfolio has slightly outperformed the global policy benchmark, on a relative basis, for the 1, 5, 7, and 10 year periods.

Total Equity Performance & Rolling Return

As of December 31, 2019



Comparative Performance

	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Total Equity	26.41	12.03	8.67	10.35	9.39	6.29	02/01/2008
MSCI ACW IM Index (USD) (Net)	26.35	12.09	8.34	9.73	8.91	6.04	
Difference	0.06	-0.06	0.33	0.62	0.48	0.25	

Performance shown is net of fees.

RVK

Total Global Equity Portfolio Performance

FUND NAME	MKT VAL	% of plan	1 Month	3 Months	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	Since Inception	Incept Date
TMRS TOTAL GLOBAL PUBLIC EQUITY	**11,534,798,927.49**	**36.68**	**3.30**	**8.42**	**26.41**	**12.03**	**8.67**	**10.35**	**9.39**	**5.82**	**01-01-08**
Total Equity Portfolio Policy Index			*3.55*	*9.05*	*26.35*	*12.24*	*8.81*	*10.40*	*9.42*	*5.81*	*01-01-08*
Excess			*-0.25*	*-0.63*	*0.06*	*-0.21*	*-0.14*	*-0.05*	*-0.03*	*0.01*	
TMRS TOTAL DOMESTIC EQUITY	**6,245,678,274.02**	**19.86**	**2.52**	**7.69**	**30.00**	**13.56**	**10.54**	**13.81**	**13.00**	**9.12**	**01-01-08**
RUSSELL 3000 (DAILY)			*2.89*	*9.10*	*31.02*	*14.57*	*11.24*	*14.38*	*13.42*	*9.45*	*01-01-08*
Excess			*-0.37*	*-1.41*	*-1.02*	*-1.01*	*-0.70*	*-0.57*	*-0.41*	*-0.33*	
TMRS - TOTAL INTERNATIONAL EQUITY	**5,289,120,316.25**	**16.82**	**4.24**	**9.30**	**22.31**	**10.43**	**6.13**	**6.12**	**5.24**	**2.05**	**01-01-08**
INTL EQ ACTIVE WEIGHTED INDEX(DAILY)			*4.41*	*9.20*	*21.63*	*9.84*	*5.71*	*5.65*	*4.87*	*1.70*	*01-01-08*
Excess			*-0.17*	*0.10*	*0.68*	*0.59*	*0.42*	*0.47*	*0.37*	*0.35*	

Source: State Street Investment Analytics

Public Equity Performance – U.S.

Periods ending December 31, 2019

FUND NAME	MKT VAL	% of plan	1 Month	3 Months	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	Since Inception	Incept Date
TMRS TOTAL DOMESTIC EQUITY	**6,245,678,274.02**	**19.86**	**2.52**	**7.69**	**30.00**	**13.56**	**10.54**	**13.81**	**13.00**	**9.12**	**01-01-08**
RUSSELL 3000 (DAILY)			*2.89*	*9.10*	*31.02*	*14.57*	*11.24*	*14.38*	*13.42*	*9.45*	*01-01-08*
Excess			*-0.37*	*-1.41*	*-1.02*	*-1.01*	*-0.70*	*-0.57*	*-0.41*	*-0.33*	
TMRS - RUSSELL 3000 INDEX FUND (NL)	**3,848,790,524.92**	**12.24**	**2.89**	**9.08**	**30.98**	**14.53**	**11.22**	**14.35**	**13.39**	**14.75**	**12-01-08**
RUSSELL 3000 (DAILY)			*2.89*	*9.10*	*31.02*	*14.57*	*11.24*	*14.38*	*13.42*	*14.77*	*12-01-08*
Excess			*0.00*	*-0.01*	*-0.04*	*-0.04*	*-0.02*	*-0.03*	*-0.03*	*-0.02*	
TMRS - SSGA RUSSELL RAFI US	**461,581,367.87**	**1.47**	**3.00**	**8.68**	**28.70**	**11.60**	**9.58**			**12.45**	**02-01-13**
Russell RAFI U.S. Index			*3.02*	*8.75*	*28.84*	*11.72*	*9.72*			*12.61*	*02-01-13*
Excess			*-0.01*	*-0.07*	*-0.13*	*-0.12*	*-0.14*			*-0.16*	
TMRS - UBS US EQUITY MIN VOL FUND NL	**1,143,493,842.36**	**3.64**	**1.88**	**3.06**	**27.84**	**15.56**	**12.47**	**14.76**		**14.76**	**01-01-13**
MSCI USA Minimum Volatility Index-Net			*1.82*	*2.90*	*27.09*	*14.93*	*11.83*	*14.11*		*14.11*	*01-01-13*
Excess			*0.06*	*0.16*	*0.75*	*0.63*	*0.64*	*0.66*		*0.66*	
TMRS - CHAMPLAIN MID-CAP CORE	**387,127,488.30**	**1.23**	**0.28**	**6.60**	**27.44**	**16.76**	**14.09**			**13.61**	**12-01-14**
RUSSELL MIDCAP (DAILY)			*2.29*	*7.06*	*30.54*	*12.06*	*9.33*			*9.21*	*12-01-14*
Excess			*-2.01*	*-0.46*	*-3.10*	*4.70*	*4.76*			*4.39*	
TMRS - WELLINGTON US SMALL CAP OPP	**404,681,794.81**	**1.29**	**2.47**	**8.06**	**31.64**	**14.82**				**14.06**	**12-01-15**
RUSSELL 2000 (DAILY)			*2.88*	*9.94*	*25.52*	*8.59*				*9.99*	*12-01-15*
Excess			*-0.42*	*-1.88*	*6.12*	*6.22*				*4.07*	

Source: State Street Investment Analytics

Public Equity Performance – non-U.S.

Periods ending December 31, 2019

FUND NAME	MKT VAL	% of plan	1 Month	3 Months	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	Since Inception	Incept Date
TMRS - TOTAL INTERNATIONAL EQUITY	**5,289,120,316.25**	**16.82**	**4.24**	**9.30**	**22.31**	**10.43**	**6.13**	**6.12**	**5.24**	**2.05**	**01-01-08**
INTL EQ ACTIVE WEIGHTED INDEX(DAILY)			*4.41*	*9.20*	*21.63*	*9.84*	*5.71*	*5.65*	*4.87*	*1.70*	*01-01-08*
Excess			*-0.17*	*0.10*	*0.68*	*0.59*	*0.42*	*0.47*	*0.37*	*0.35*	
TMRS - NTGI ACWI ex. US IMI (NL)	**2,972,623,878.91**	**9.45**	**4.29**	**9.07**	**21.76**	**10.04**	**5.91**	**5.86**		**6.37**	**09-01-10**
TMRS MSCI ACWI ex-US IMI NET (DAILY)			*4.41*	*9.20*	*21.63*	*9.84*	*5.71*	*5.65*		*6.17*	*09-01-10*
Excess			*-0.12*	*-0.13*	*0.13*	*0.20*	*0.20*	*0.21*		*0.20*	
TMRS - SSGA RUSSELL RAFI GLOBAL EX-US	**294,958,823.38**	**0.94**	**4.10**	**8.81**	**18.44**	**8.42**	**5.81**			**5.52**	**02-01-13**
Russell RAFI Global ex-U.S. Index NET			*4.25*	*8.95*	*18.68*	*8.66*	*6.09*			*5.72*	*02-01-13*
Excess			*-0.15*	*-0.13*	*-0.24*	*-0.24*	*-0.28*			*-0.21*	
TMRS - UBS WORLD EX US MIN VOL FD NL	**350,924,657.97**	**1.12**	**1.44**	**4.10**	**18.48**	**10.53**	**7.52**	**8.30**		**8.30**	**01-01-13**
MSCI world ex USA Minimum Volatility-Net			*1.40*	*4.03*	*18.00*	*10.23*	*7.29*	*8.14*		*8.14*	*01-01-13*
Excess			*0.04*	*0.07*	*0.48*	*0.30*	*0.22*	*0.16*		*0.16*	
TMRS - LAZARD INT'L EQUITY PLUS	**246,444,408.15**	**0.78**	**4.26**	**7.53**	**20.77**	**9.19**	**5.33**			**3.65**	**09-01-14**
MSCI AC WORLD ex US (NET)			*4.33*	*8.92*	*21.51*	*9.87*	*5.51*			*3.41*	*09-01-14*
Excess			*-0.07*	*-1.39*	*-0.74*	*-0.68*	*-0.18*			*0.24*	
TMRS - WELLINGTON INT'L HORIZONS	**267,086,085.34**	**0.85**	**5.13**	**10.28**	**25.34**	**9.87**	**6.49**			**5.22**	**09-01-14**
MSCI AC WORLD ex US (NET)			*4.33*	*8.92*	*21.51*	*9.87*	*5.51*			*3.41*	*09-01-14*
Excess			*0.80*	*1.36*	*3.83*	*0.01*	*0.99*			*1.81*	
TMRS - WILLIAM BLAIR EMERGING MARKETS	**268,460,668.24**	**0.85**	**5.98**	**10.71**	**28.19**	**15.23**				**11.45**	**09-01-15**
MSCI EMERGING MARKETS			*7.46*	*11.84*	*18.42*	*11.57*				*9.94*	*09-01-15*
Excess			*-1.48*	*-1.13*	*9.77*	*3.66*				*1.51*	
TMRS - ACADIAN EMERGING MARKETS	**258,488,322.47**	**0.82**	**7.91**	**10.72**	**17.93**	**11.79**				**10.31**	**09-01-15**
MSCI EMERGING MARKETS IMI INDEX (NET)			*7.32*	*11.59*	*17.64*	*11.00*				*9.45*	*09-01-15*
Excess			*0.59*	*-0.87*	*0.29*	*0.79*				*0.86*	
TMRS - WASATCH INT'L SMALL CAP GROWTH	**329,729,140.97**	**1.05**	**2.31**	**13.08**	**30.97**	**14.33**				**8.65**	**01-01-16**
MSCI ACWI Ex US Small Cap (DAILY)			*4.93*	*11.01*	*22.42*	*9.65*				*8.18*	*01-01-16*
Excess			*-2.62*	*2.07*	*8.55*	*4.68*				*0.47*	
TMRS - WELLINGTON INT'L SMALL CAP OPP	**300,404,330.82**	**0.96**	**4.03**	**12.63**	**25.15**	**9.37**				**6.25**	**01-01-16**
MSCI EAFE SMALL CAP NET			*4.37*	*11.52*	*24.96*	*10.92*				*8.67*	*01-01-16*
Excess			*-0.34*	*1.11*	*0.19*	*-1.55*				*-2.42*	

Source: State Street Investment Analytics

Transaction Cost Analysis

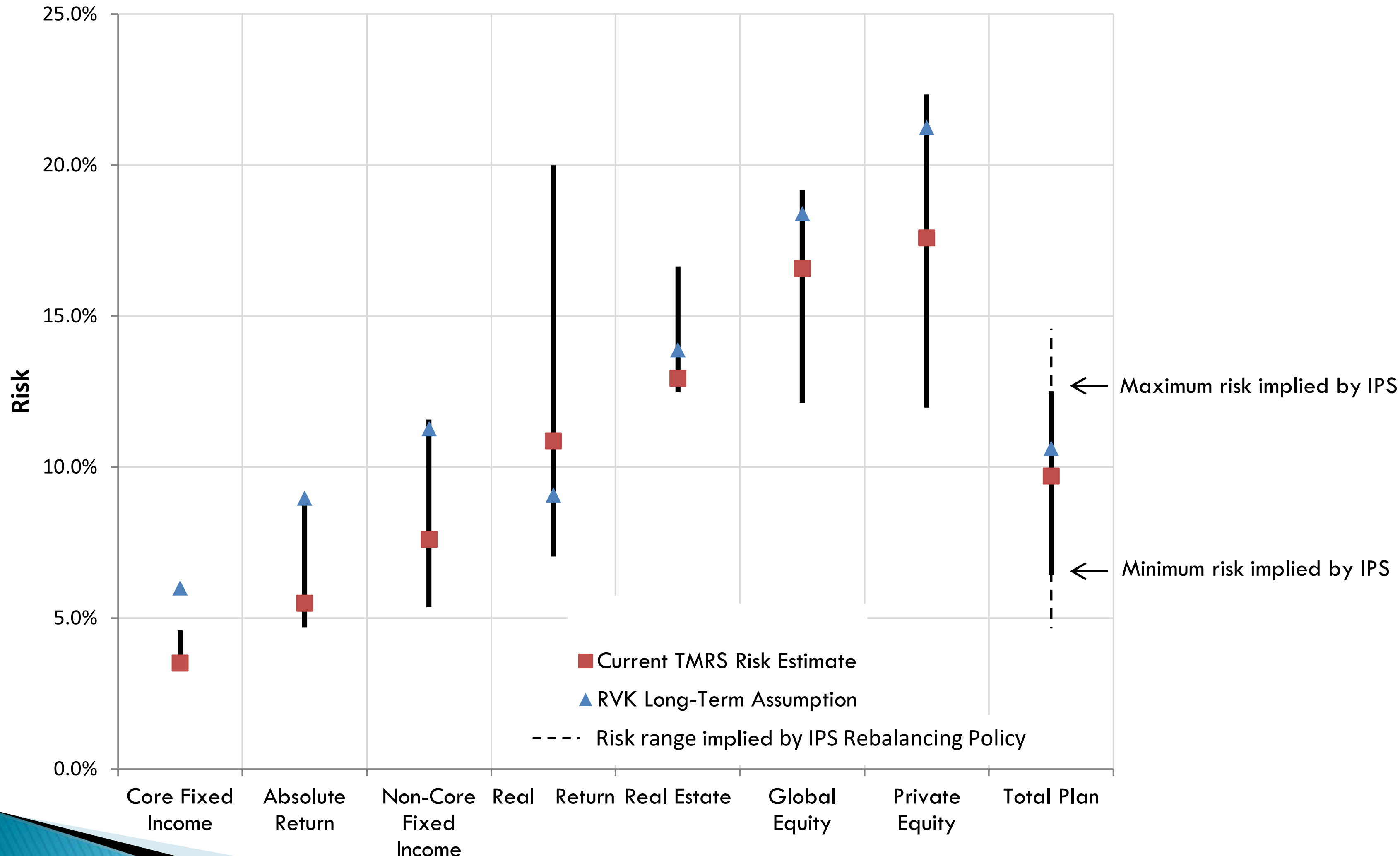
- TMRS retained a transaction cost analysis firm in May 2017;
- Staff receives quarterly reports to aid in due diligence of managers;
- Reporting shows cost/benefit results quarterly and for previous rolling four quarters;
- Staff reviews results with managers, as needed.

2019 Results:

- **Total benefit, net market impact plus net commissions, vs. universe was +0.85 bps, which was within an acceptable range.**

Implementation Risk Ranges Implied by IPS Asset Class Guidelines December 2019

- Based on current as-invested strategy allocations and Investment Department long-term assumptions regarding each strategy



The risk range implied by the IPS Rebalancing Policy includes the ability to allocate 0-10% to Cash.

V. THE FUTURE OF THE PUBLIC EQUITY PORTFOLIO

2020 Initiatives

- Complete re-structuring decisions for the global equity portfolio in 2020. This will include:
  - Potential changes to the equity passive/active structure and weights
  - Potential changes to the US and non-US weights
  - Evaluate adding more strategy types to potentially enhance return expectations
- Utilize TMRS' Rebalancing Policy for adjustments between managers, as needed;
- Continue expanding the search process to better evaluate new investment opportunities;
- Continue to develop new monitoring analysis of current and future equity managers;
- Consider merging all passively managed portfolios with one investment manager for possible fee reductions.

Conclusions

- Most current TMRS public equity portfolios are performing in accordance with expectations.

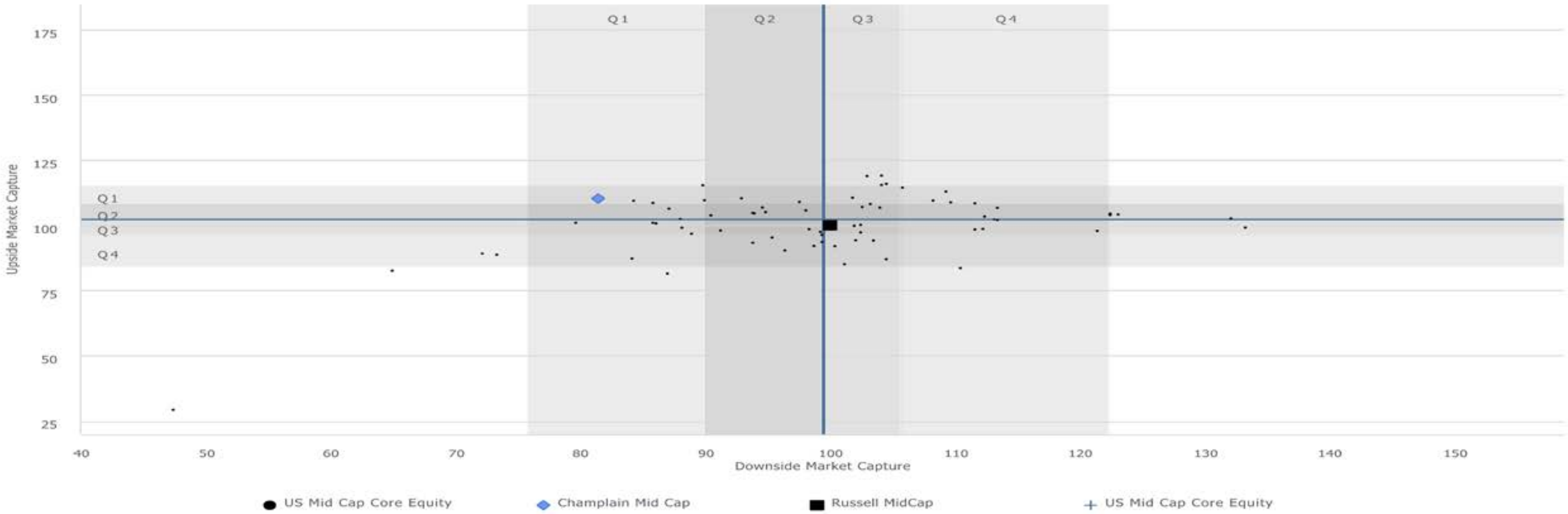
- TMRS Staff and RVK will continue to monitor the public equity portfolio for other potential portfolio improvements over time.

VI. APPENDIX

U.S. Active Equity Analysis – Champlain

Champlain Investment Partners, LLC
Champlain Mid Cap **December 2019**

Upside Vs Downside (as of 12/1/2014 Inception Date)

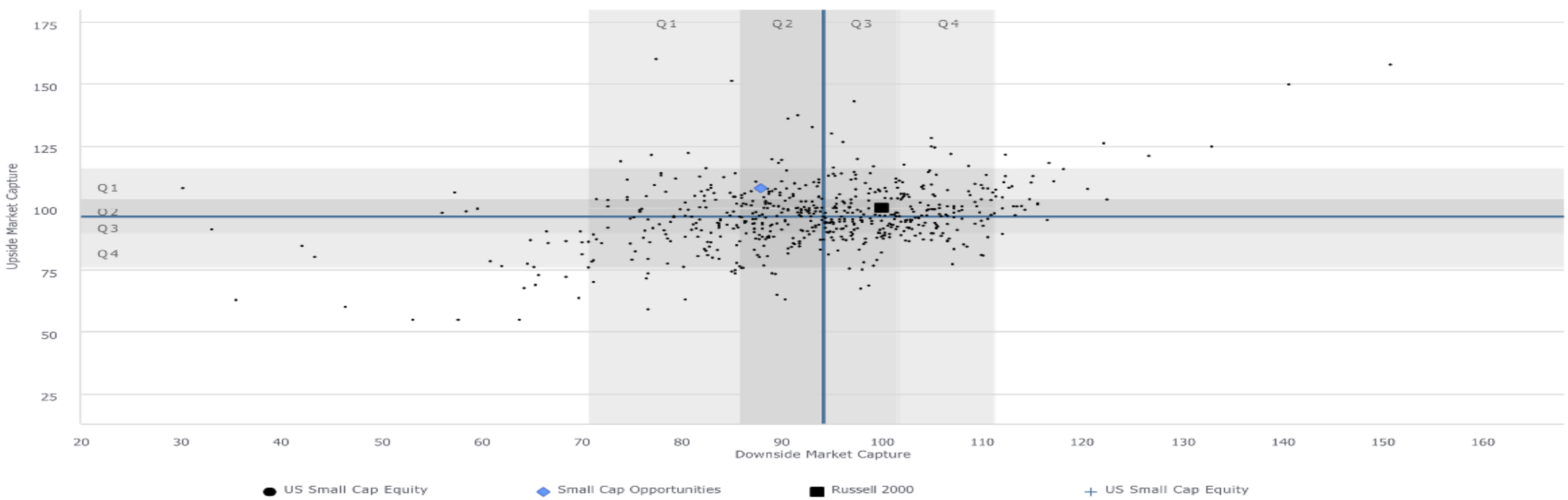


Product Name	Num of Positive Periods (12/2014 - 12/2019)	Num of Negative Periods (12/2014 - 12/2019)	Best Period (12/2014 - 12/2019)	Worst Period (12/2014 - 12/2019)	Upside Market Capture (12/2014 - 12/2019)	Downside Market Capture (12/2014 - 12/2019)
Champlain Mid Cap	46	15	10.25	-8.81	110.32	81.42
Russell MidCap	43	18	10.79	-9.92	100.00	100.00

U.S. Active Equity Analysis – Wellington U.S. Small Cap

Wellington Management Company LLP
Small Cap Opportunities — **December 2019**

Upside Vs Downside (as of 12/1/2015 Inception Date)

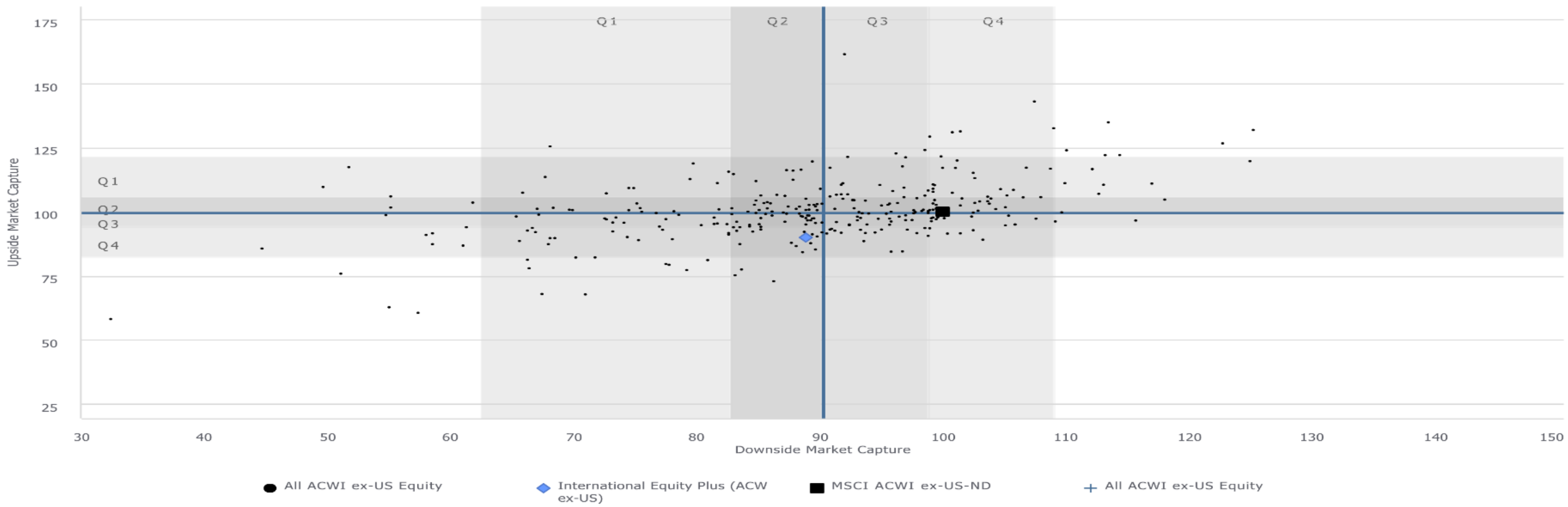


Product Name	Num of Positive Periods (12/2015 - 12/2019)	Num of Negative Periods (12/2015 - 12/2019)	Best Period (12/2015 - 12/2019)	Worst Period (12/2015 - 12/2019)	Upside Market Capture (12/2015 - 12/2019)	Downside Market Capture (12/2015 - 12/2019)
Small Cap Opportunities	35	14	11.92	-11.21	107.89	87.95
Russell 2000	34	15	11.25	-11.88	100.00	100.00

Non-U.S. Active Equity Analysis – Lazard International Equity (DM + EM)

Lazard Asset Management LLC
International Equity Plus (ACW ex-US) **December 2019**

Upside Vs Downside (as of 9/1/14 Inception Date)



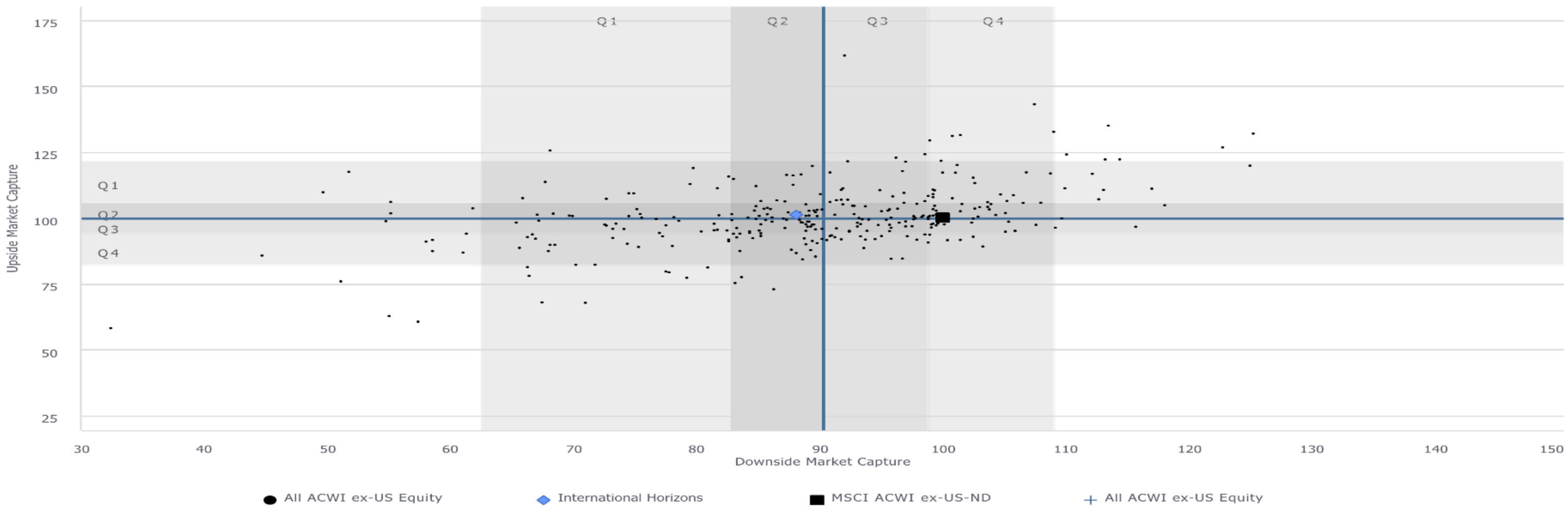
Product Name	Num of Positive Periods (09/2014 - 12/2019)	Num of Negative Periods (09/2014 - 12/2019)	Best Period (09/2014 - 12/2019)	Worst Period (09/2014 - 12/2019)	Upside Market Capture (09/2014 - 12/2019)	Downside Market Capture (09/2014 - 12/2019)
International Equity Plus (ACW ex-US)	35	29	7.77	-7.01	89.91	88.92
MSCI ACWI ex-US-ND	36	28	8.13	-8.13	100.00	100.00

Non-U.S. Active Equity Analysis – Wellington Intl Horizons (DM + EM)

Wellington Management Company LLP
International Horizons

December 2019

Upside Vs Downside (as of 9/1/14 Inception Date)

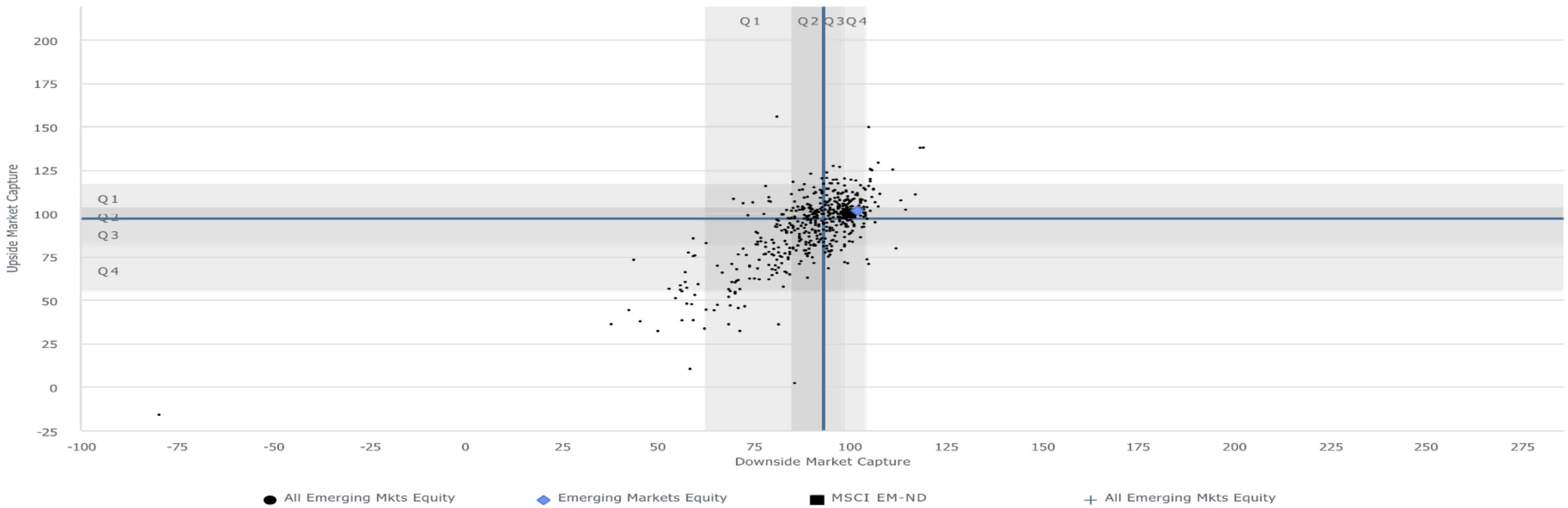


Product Name	Num of Positive Periods (09/2014 - 12/2019)	Num of Negative Periods (09/2014 - 12/2019)	Best Period (09/2014 - 12/2019)	Worst Period (09/2014 - 12/2019)	Upside Market Capture (09/2014 - 12/2019)	Downside Market Capture (09/2014 - 12/2019)
International Horizons	41	23	9.07	-8.74	101.10	88.13
MSCI ACWI ex-US-ND	36	28	8.13	-8.13	100.00	100.00

Non-U.S. Active Equity Analysis – Acadian Emerging Markets Equity

Acadian Asset Management LLC
Emerging Markets Equity **December 2019**

Upside Vs Downside (as of 9/1/15 Inception Date)

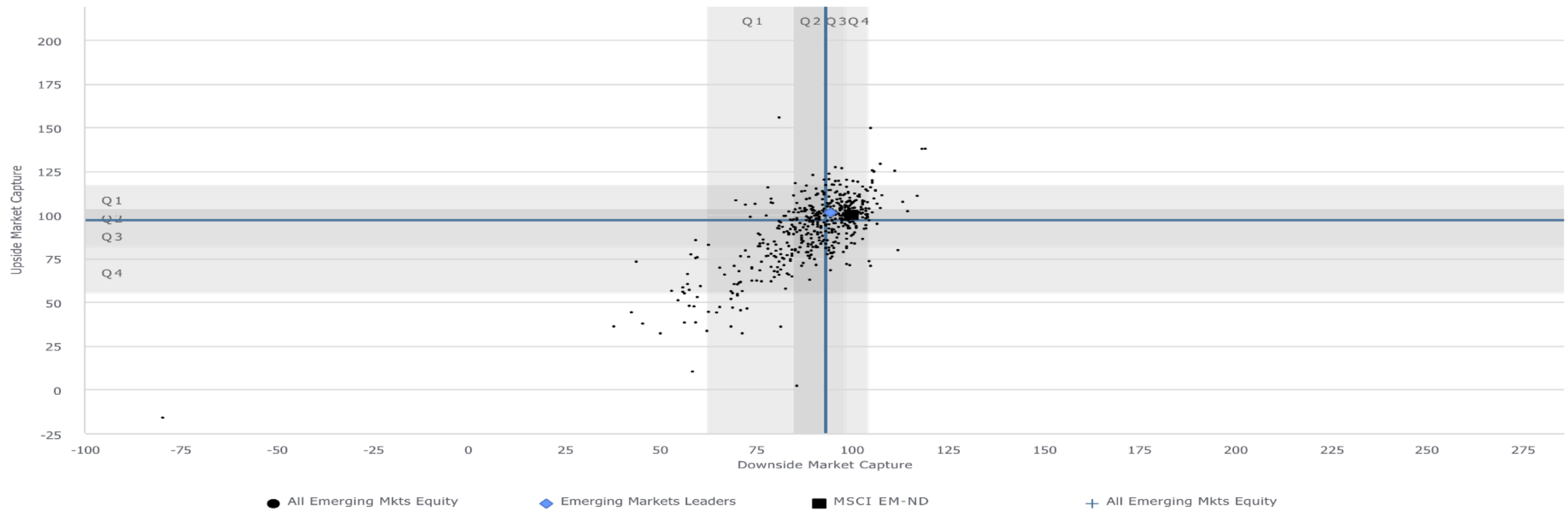


Product Name	Num of Positive Periods (09/2015 - 12/2019)	Num of Negative Periods (09/2015 - 12/2019)	Best Period (09/2015 - 12/2019)	Worst Period (09/2015 - 12/2019)	Upside Market Capture (09/2015 - 12/2019)	Downside Market Capture (09/2015 - 12/2019)
Emerging Markets Equity	30	22	12.57	-8.41	101.59	101.98
MSCI EM-ND	31	21	13.23	-8.71	100.00	100.00

Non-U.S. Active Equity Analysis – William Blair Emerging Markets Leaders

William Blair Investment Management, LLC
Emerging Markets Leaders **December 2019**

Upside Vs Downside (as of 9/1/15 Inception Date)

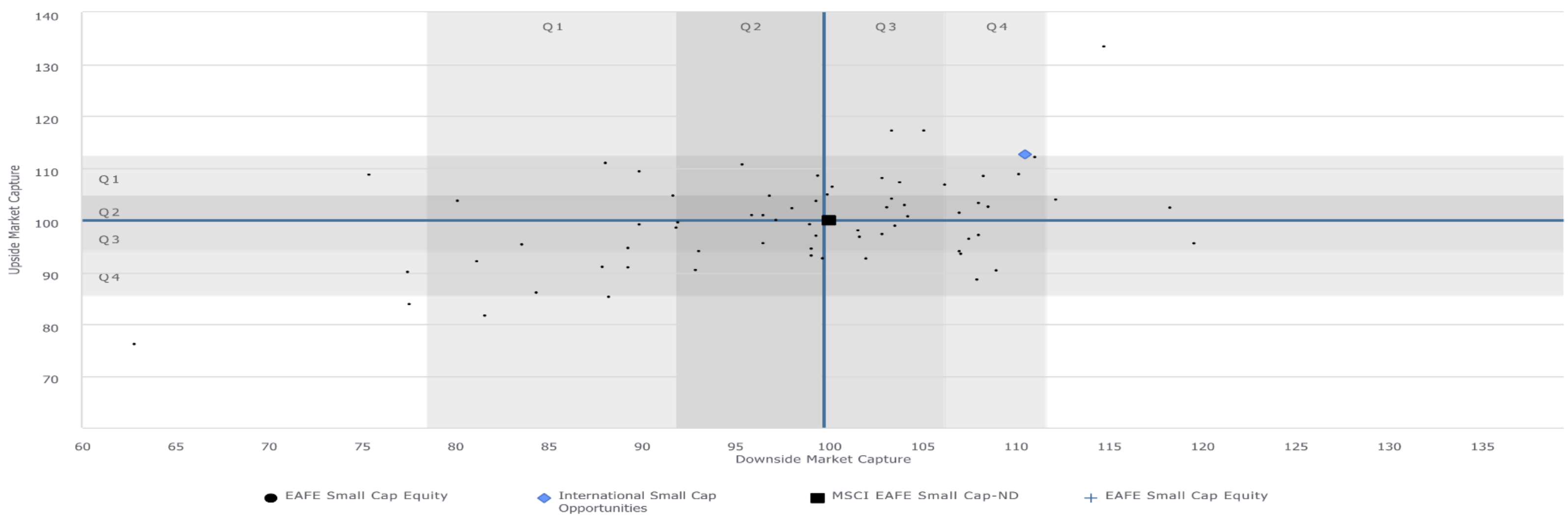


Product Name	Num of Positive Periods (09/2015 - 12/2019)	Num of Negative Periods (09/2015 - 12/2019)	Best Period (09/2015 - 12/2019)	Worst Period (09/2015 - 12/2019)	Upside Market Capture (09/2015 - 12/2019)	Downside Market Capture (09/2015 - 12/2019)
Emerging Markets Leaders	32	20	11.53	-9.23	101.29	94.53
MSCI EM-ND	31	21	13.23	-8.71	100.00	100.00

Non-U.S. Active Equity Analysis – Wellington Intl Small Cap Opportunities

Wellington Management Company LLP
International Small Cap Opportunities **December 2019**

Upside Vs Downside (as of 1/1/16 Inception Date)

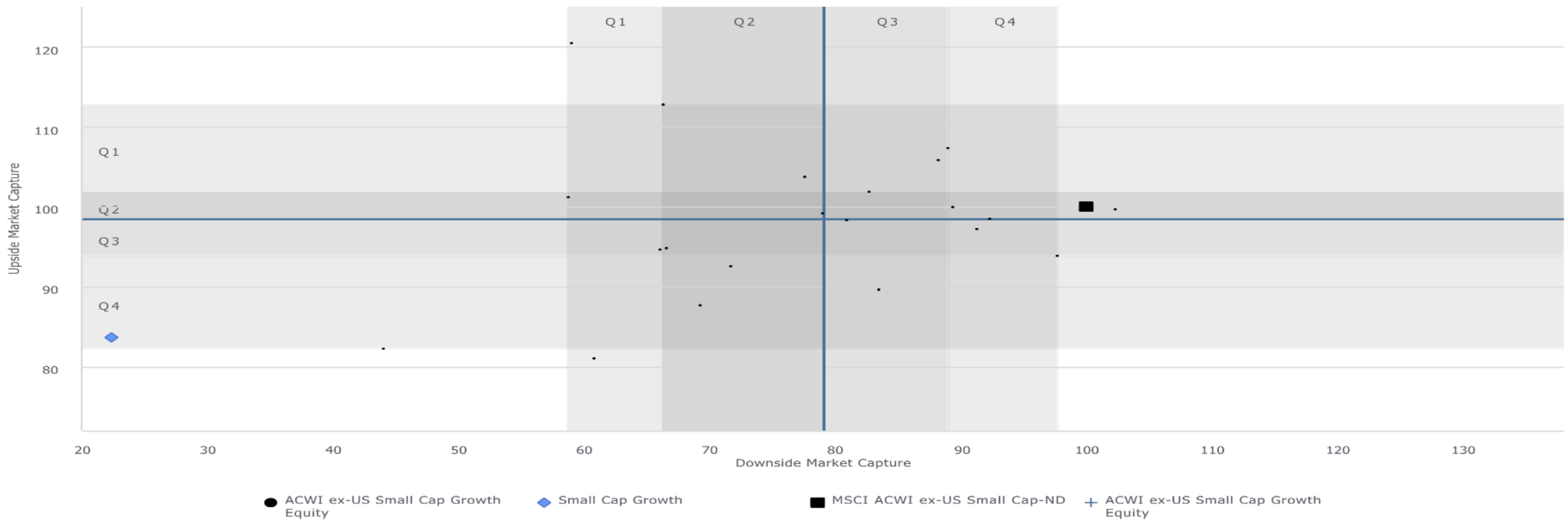


Product Name	Num of Positive Periods (01/2016 - 12/2019)	Num of Negative Periods (01/2016 - 12/2019)	Best Period (01/2016 - 12/2019)	Worst Period (01/2016 - 12/2019)	Upside Market Capture (01/2016 - 12/2019)	Downside Market Capture (01/2016 - 12/2019)
International Small Cap Opportunities	27	21	8.38	-11.53	109.45	118.38
MSCI EAFE Small Cap-ND	29	19	8.06	-9.63	100.00	100.00

Non-U.S. Active Equity Analysis – Wasatch Small Cap Growth

Wasatch Global Investors
Small Cap Growth — **December 2019**

Upside Vs Downside (as of 1/1/16 Inception Date)



Product Name	Num of Positive Periods (01/2016 - 12/2019)	Num of Negative Periods (01/2016 - 12/2019)	Best Period (01/2016 - 12/2019)	Worst Period (01/2016 - 12/2019)	Upside Market Capture (01/2016 - 12/2019)	Downside Market Capture (01/2016 - 12/2019)
Small Cap Growth	34	14	13.17	-12.19	94.73	28.74
MSCI ACWI ex-US Small Cap-ND	31	17	8.68	-9.73	100.00	100.00

DISCLOSURES

TMRS periodically discloses public information that is not excepted from disclosure under Section 552.0225(b) of the Texas Public Information Act. Information provided by a manager, a Managing General Partner (GP), any of its Associates or other data provider to TMRS or a TMRS service provider, and contained in these materials (i) may have been independently produced or modified by TMRS or the TMRS service provider; (ii) has not been reviewed or approved by the manager, Managing GP or any of its Associates and (iii) may not reflect the historical performance or asset value reflected in the manager's, Managing GP's or any of its Associates' records and, therefore, should not be used for comparative purposes.