

December 12, 2019



## **North Carolina Supplemental Retirement Plans**

Investment Structure Evaluation

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Callan

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**Investment Structure Philosophy and  
Considerations**

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# Investment Structure Evaluation

## Summary and Objectives

Periodically, plan sponsors should conduct an Investment Structure Evaluation to review the Plan structure in the context of other reasonable alternatives. The NCSRP Statement of Investment Policy has delegated that responsibility to the Board. This evaluation seeks to guide discussion around the following broad questions:

1. While considering relevant industry, technology, market and regulatory changes that have or are anticipated to occur, what types of investment structures will be best positioned to meet the needs of Plan participants over the next five to ten years?
2. What are reasonable alternative investment structures that can meet the needs of Plan participants while balancing the assumed tradeoffs between simple and complex investment structures? Considerations should include such factors as:
  - The array of distinct asset classes represented in the investment structure.
  - The number of investment choices
  - What are the operational factors, challenges, and risks associated with each alternative investment structure?
  - What costs are associated with the implementation and management of each alternative structure? Do recordkeeper constraints hinder feasibility?
  - Are the lineup and plan design as constructed consistent with the Plan’s philosophy regarding retiree assets?
  - Plan specific considerations.
3. For multi-manager options, are the underlying managers complementary and providing the diversification and risk/return profile sought for participants?
  - Do existing multi-manager investment allocations improve upon risk-adjusted metrics and/or consistency of performance while at the same time not biasing the investment option in terms of the benchmark’s market capitalization weighting or style.
  - Evaluate the following metrics: Excess Return, Sharpe Ratio, Standard Deviation, Information ratio, Tracking Error, Combined Z-Score, Upside Capture, Downside Capture, Weighted Median Market Capitalization

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## Evaluate and Update the DC Plan Investment Structure

Human behavior influences how we approach design recommendations



### Inertia

Default options attract assets. Participants tend to remain wholly invested in default investment options.



### Momentum

Emerging market equities investors frequently over-allocate. Morningstar found that over the ten-year period ending December 31, 2014, adverse timing decisions have cost diversified emerging markets investors 1.7% percentage points annually.



### Influence

Plans weighted toward stock funds or bond funds result in participant preference for more of same.



### Choices

Individuals want choices, but are easily overwhelmed. Choice overload equals decreased plan participation.

**Structure review goal: Limit impact of participant behavioral biases to minimize adverse impact on outcomes**

# Optimizing the Investment Structure

## Callan's Philosophical Tenets

### Durable

- Investment structures should be built for the long term. Three-tier structures facilitate usage by full range of participants from “do-it-for-me” to “do-it-yourselfers”

### Simple

- Simpler can be better. The number of choices affects participants' allocation decisions. Make sure the level of complexity is suited to the sophistication level of your participants

### Open Architecture

- Multi-manager funds allow for better diversification, top-tier managers in every category, and efficient implementation of changes to the line-up without disrupting participants

### Low Cost

- Take advantage of scale and competition to manage costs for both active and passive options. Monitor all expenses

# Callan's "Clean Sheet" Investment Structure

Create a simple, tailored plan for your employees

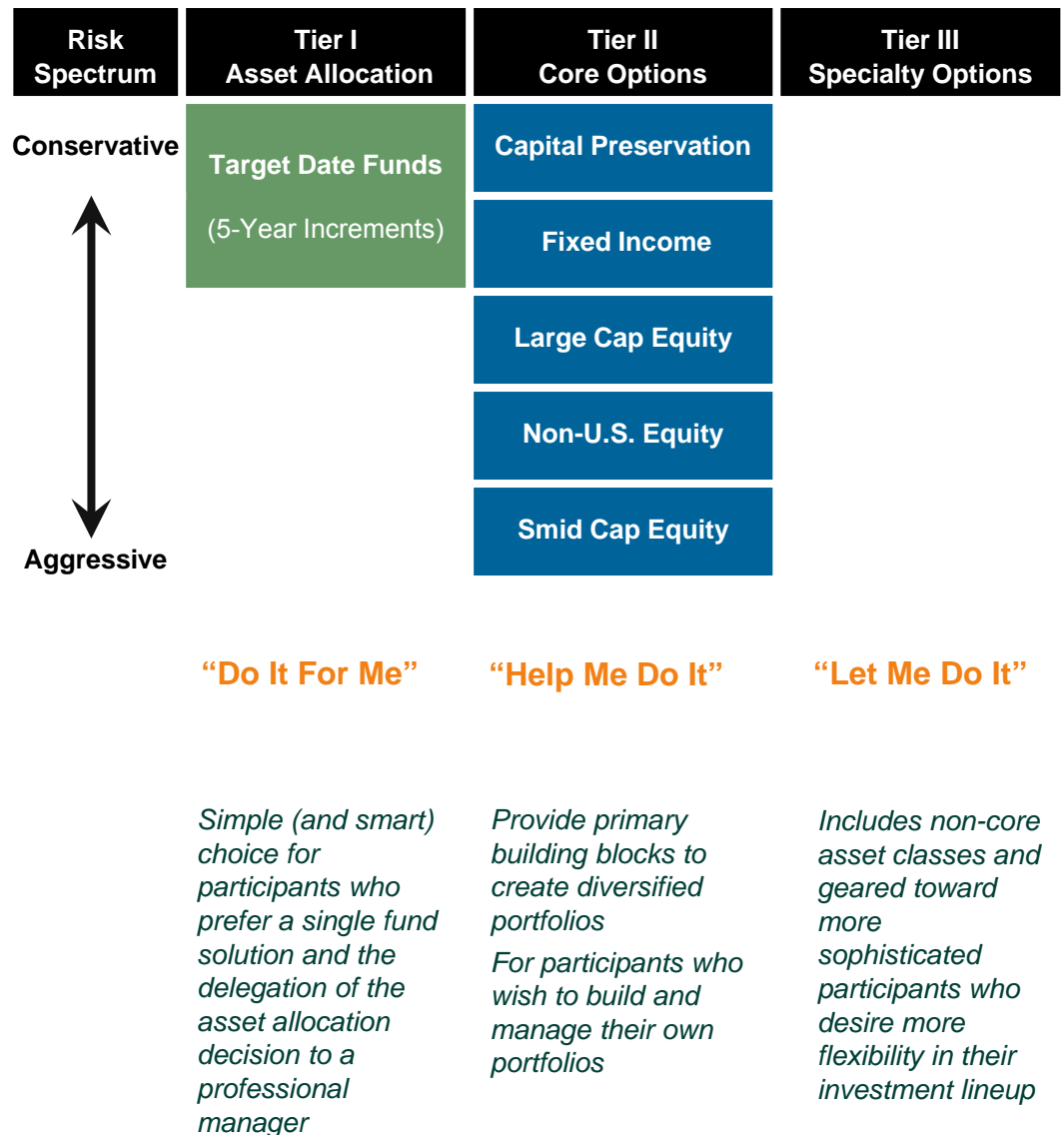
Use a three-tiered framework to assess and communicate plan offerings

Tiers address needs of the different constituencies in an employee population

This study examines the North Carolina 457 & 401(k) Plans ("the Plans") within the context of Callan's three-tier structure philosophy.

Few plan structures exactly mirror Callan's "clean sheet" due to individual investment preferences as well as a history of offering a larger number of investment options.

This study addresses only the plan structure and is agnostic with regard to individual fund performance.



# North Carolina Defined Contribution Plans' Structure

## Current Plans' Structure

Tier I: Asset Allocation	Tier II: Active Core Options	Tier II: Passive Core Options	Tier III: Specialty Options	
<b>Custom Retirement Allocations</b> Prudential GoalMaker	<b>Capital Preservation</b> Stable Value (17%)			
	<b>Fixed Income</b> Fixed Income Fund (17%)	<b>Core Fixed Income</b> Fixed Income Passive (<1%)		
			<b>Inflation Sensitive Assets</b> Treasury Inflation Protection (2%) Inflation Response Fund (3%)	
	<b>Large-Cap US Equity</b> Large-Cap Core Equity Fund (16%)	<b>Large-Cap US Equity</b> Large-Cap Passive (22%)		
	<b>Small/Mid-Cap Equity</b> Small/Mid-Cap Equity (7%)	<b>Small/Mid-Cap Equity</b> SMID Passive (3%)		
	<b>Non-US Equity</b> International Equity Fund (15%)	<b>Non-US Equity</b> International Passive (<1%)		

(Asset Percentage)

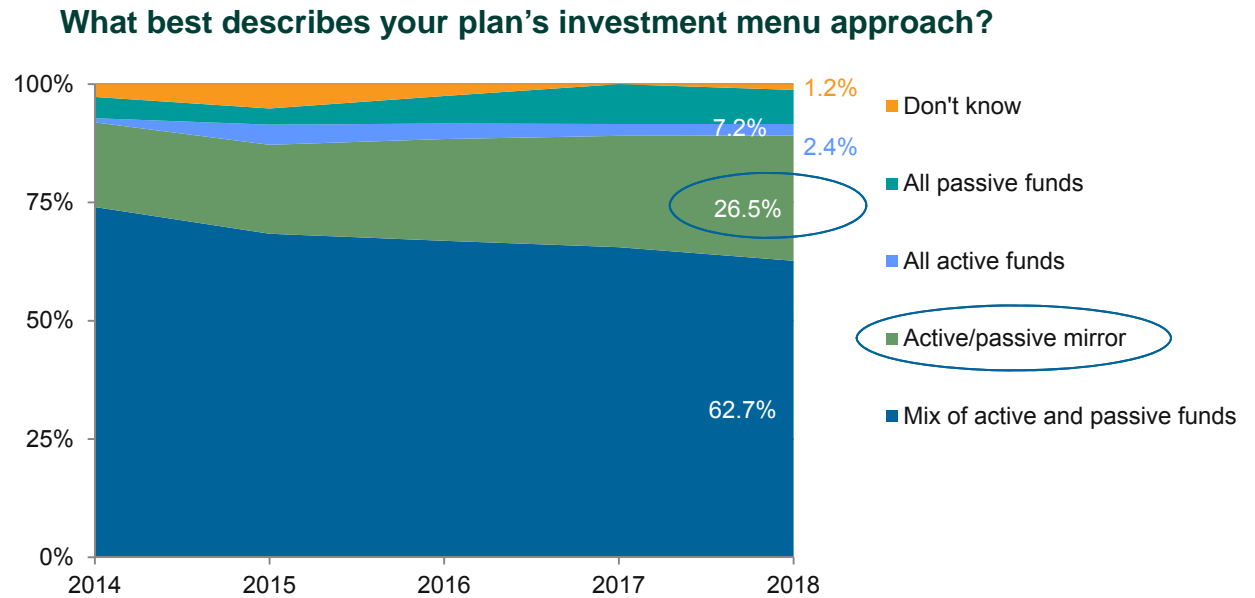
### Plan Summary Information

Total Assets: \$12B  
 Number of Options: 12 (treating the managed account as 1)  
 Number of Participants:  
 Recordkeeper: Prudential

# Comparison to Industry Averages

## Active/Passive Mirror

- It is common to offer a mix of active and passive funds.
- A fully active/passive mirror remains less common.
- An active/passive mirror allows participants to choose between low-cost beta exposure or the pursuit of alpha through active managers.
- The Plans offer a mix of active and passive options and with the exception of stable value and real assets, there is an active/passive mirror.



Source: Callan 2019 DC Trends Survey



Callan

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**Investment Structure Review and  
Active Multi-Manager Observations**

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## Summary of Recommendations and Considerations

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The current menu design and the structures of the underlying options are reasonable. We have identified opportunities for the Board to consider further improving upon the Plan's options.

We recommend near-term evaluation of the following:

1. Neutralize the style bias currently present in the Small/Mid Cap Equity Fund and evaluate the amount of passive management needed to manage liquidity in the option
2. Change the benchmark of the two international equity options from MSCI ACWI ex-US to MSCI ACWI ex-US IMI

# Tier I: Asset Allocation

## Custom Retirement Allocations

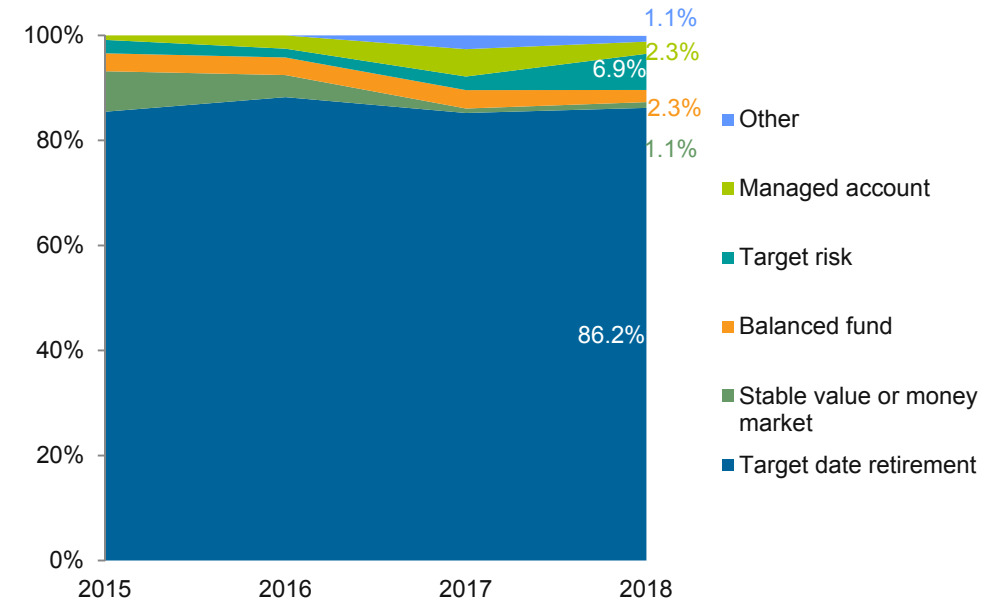
The Plans offer Prudential's GoalMaker as the lone asset allocation option. This option is integrated with the recordkeeping system.

GoalMaker is a hybrid approach, incorporating elements of both managed accounts and of target date funds.

The option is utilized by 62% of participants with less than 3% of these being defaulted. GoalMaker in this case has been highly customized based on input from North Carolina. It allocates to the following asset classes: stable value, TIPS, active fixed income, passive large-cap equity, inflation responsive, SMID (active) and non-US equity (active).

Approximately 86% of Plans utilize target date funds default investment. While 59% of Plans offered a managed account, only 2.3% offer it as the default investment.

## What is your current default investment alternative for non-participant directed monies?



Source: Callan's DC Trends Survey

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## Tier I: Asset Allocation

### GoalMaker Custom Retirement Allocations

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GoalMaker builds out the allocation based on the funds available in the Plan's lineup. This is the principal drawback to using GoalMaker. Most target-date managers utilize or have been adding asset classes such as emerging markets, international fixed income, commodities, REITs and TIPS to achieve superior projected risk-adjusted returns. Historically, unless a fund is offered as a standalone option the asset class is not included in the GoalMaker allocation. Therefore, asset classes which could potentially improve outcomes within the GoalMaker allocations, but may not be ideal as standalone options for the fund lineup, are not represented in GoalMaker.

Utilizing the underlying Plan options is also a strength for GoalMaker. By utilizing only underlying Plan options, GoalMaker is using the same funds already being monitored in the Plan. Rather than being limited to largely proprietary underlying funds as is the case with most target-date offerings, GoalMaker can utilize best-of-breed underlying fund offerings. Likewise, strategies that are not performing can easily be replaced.

Another consideration is that unlike standard target-date funds, GoalMaker allows for participants to further fine tune the asset allocation by controlling for their individual risk tolerance. Therefore, by considering both age and perceived risk tolerance, the GoalMaker allocation is better calibrated to a particular participant's preferences and circumstances.

#### **Key Observations:**

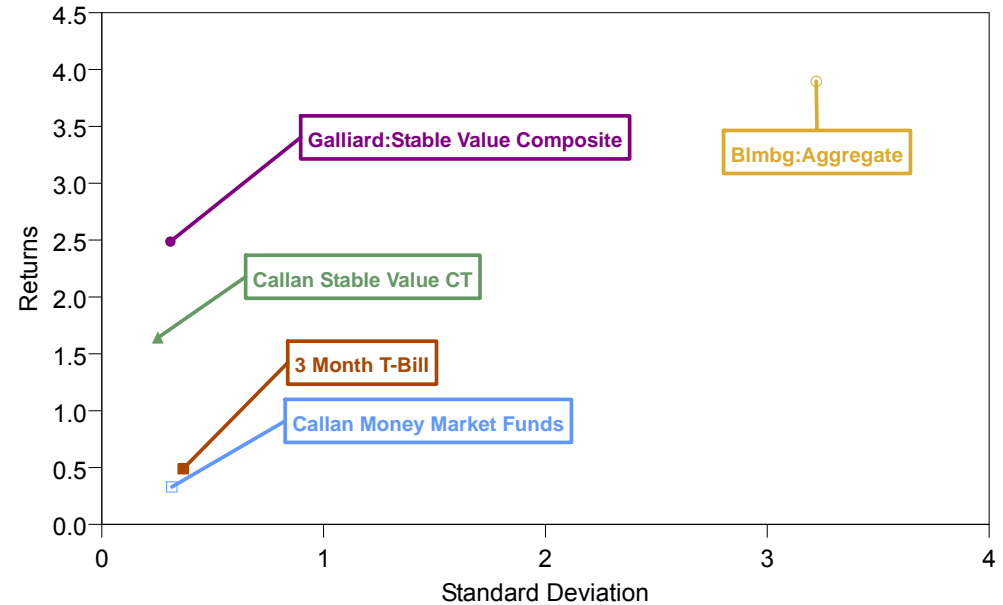
The Plans should continue to document that the use of a custom model portfolio as the sole asset allocation option is suitable. In examining suitability, the Plans should review the GoalMaker allocation in light of its methodology, the robustness of underlying participant data, fees and communication materials (to name a few).

## Tier II: Core Options – Capital Preservation

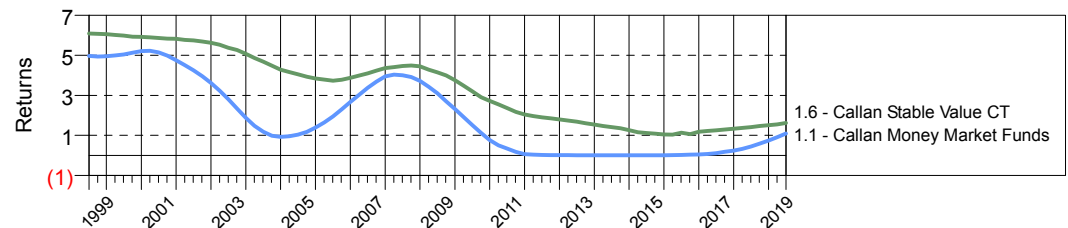
### Observations

- The Plans currently utilize a stable value option managed by Galliard as their capital preservation option.
- Stable value has consistently offered a premium over money market funds. However, stable value is not without issues.
  - Wrap contracts: Wrap contracts often forbid plan sponsors from offering “competing options.” Low duration bond, TIPS, and sometimes even managed accounts can now be considered “competing options.”
  - Performance: In a rapidly rising interest rate environment, the crediting rate for stable value will typically lag the increase in money market yields due to the longer duration of the underlying portfolio.

Risk & Returns  
for 10 Years Ended June 30, 2019



Rolling 12 Quarter Returns for 20 Years Ended June 30, 2019



### Key Observations:

Callan generally recommends including stable value as a preferred capital preservation option.

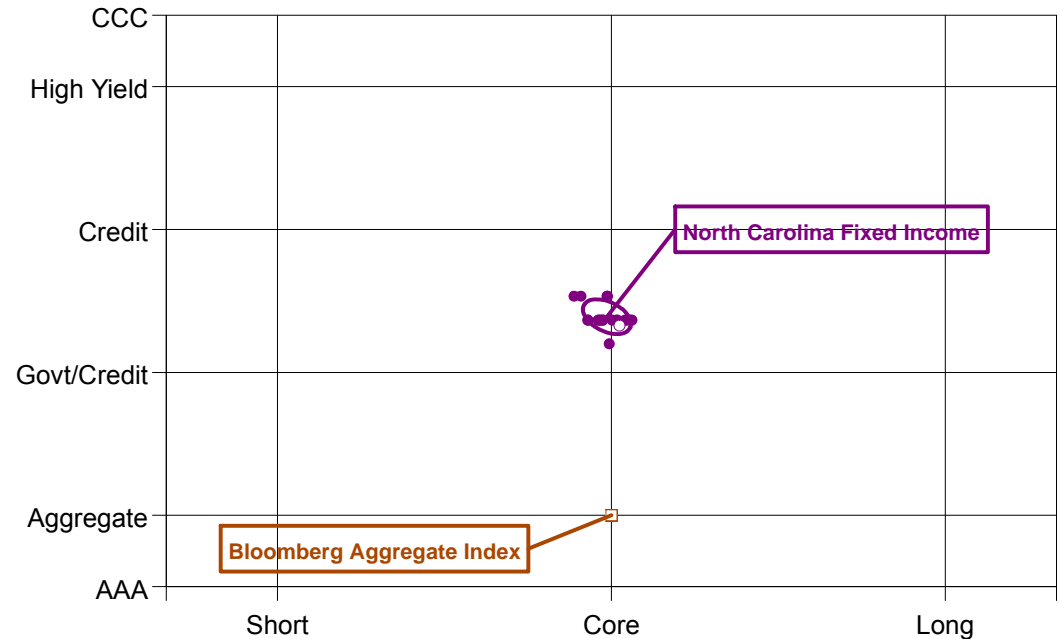
## Tier II: Core Options – Fixed Income

### Observations

	Duration (years)	Average Credit Quality
North Carolina Fixed Income	6.0	AA-
Bloomberg U.S. Aggregate Index	5.8	AA+

- The Plans currently offer two Tier II fixed income options: the passive North Carolina Fixed Income Index (BlackRock tracking BB Aggregate Index) and the active multimanager core plus North Carolina Fixed Income Fund (50% TCW Core Plus and 50% Prudential Core Plus).
- Callan generally supports active management in fixed income in the form of core plus options. Such funds have shown an ability to outperform the benchmark (see appendix for Historical Active Management Premiums) and allow for further diversification as they can allocate to non-benchmark sectors such as high yield, emerging markets debt and non-U.S. fixed income.

Fixed Income Style Map for 5 Years Ended June 30, 2019



#### Key Observations:

Callan continues to support the offering of an active / passive mirror structure by continuing to offer both active and passive fixed income options.

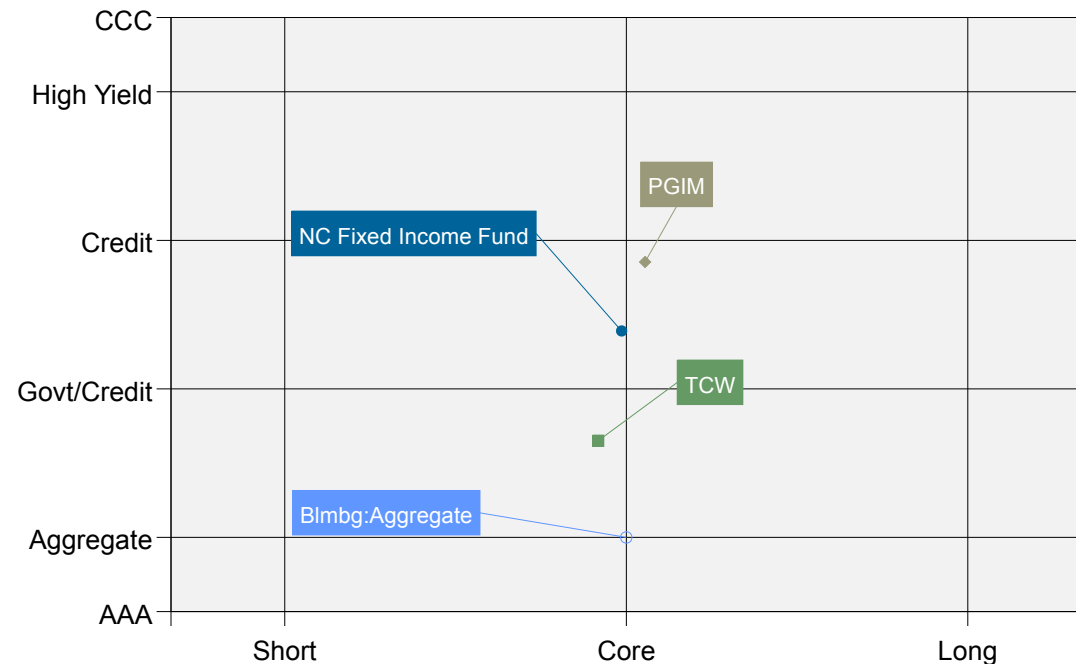
# NCSR Fixed Income Fund

## Overview

- The Fixed Income Fund consists of two active core plus strategies, TCW (Trust Company of the West) and PGIM (Prudential Global Investment Management).
- The approaches are complementary, with TCW's more defensive and higher quality approach balancing PGIM's more credit-oriented strategy.
- The Fund's overall duration is in line with the Bloomberg Barclays Aggregate Index with a lower average quality, consistent with actively managed peers.
- The option is 100% actively managed, which is consistent with the communication to participants that this is an active option. This is appropriate as participants also have the ability to select a fully passive low cost option.

	Target Weights
TCW	50%
PGIM	50%

Fixed Income Style Map  
for 5 Years Ended June 30, 2019

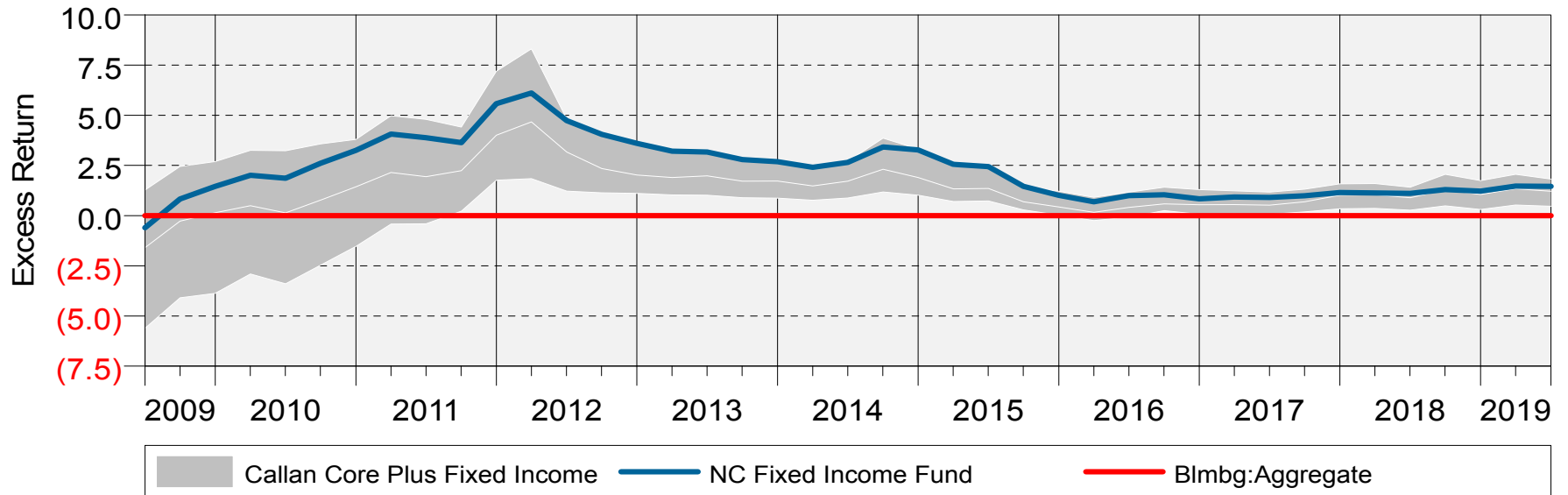


# NCSRP Fixed Income Fund

Risk Statistics 7 Years Ended June 30, 2019

	Excess Return	Sharpe Ratio	Up Market Capture	Down Market Capture	Tracking Error	Standard Deviation	Information Ratio
TCW:Core Plus	1.30 (30)	1.04 (23)	122.27 (41)	63.53 (77)	1.27 (41)	3.15 (79)	1.08 (36)
PGIM FI:Core Plus FI	2.10 (7)	1.07 (16)	159.57 (4)	92.67 (7)	1.29 (36)	3.82 (5)	1.44 (13)
<b>NC Fixed Income Fund</b>	<b>1.70 (10)</b>	<b>1.07 (6)</b>	<b>140.55 (6)</b>	<b>78.23 (78)</b>	<b>1.14 (68)</b>	<b>3.45 (28)</b>	<b>1.35 (2)</b>
Callan Core Plus FI	1.06	0.93	121.42	75.75	1.19	3.24	0.89
Blmbg:Aggregate	0.03 (99)	0.64 (99)	98.79 (99)	94.96 (17)	0.55 (77)	3.08 (88)	0.12 (99)

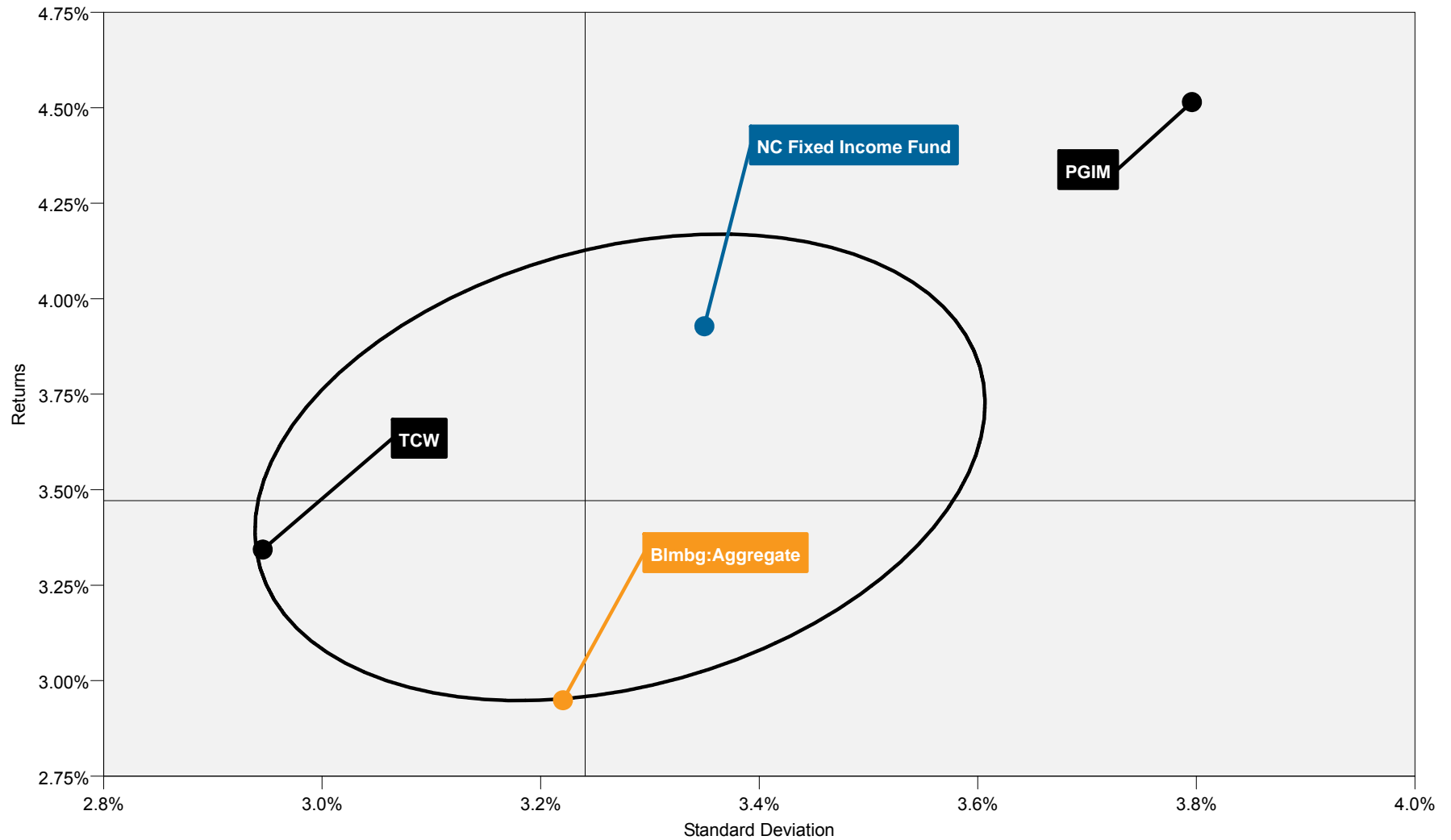
Rolling 36 Month Excess Return Relative To Blmbg:Aggregate for 10 Years Ended June 30, 2019





# NCSR Fixed Income Fund

Risk versus Return 5 Years ended June 30, 2019



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# NCSRP Fixed Income Fund

## Summary Observations

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- The two active strategies are strong complements:
  - TCW's conservative use of credit risk is complemented by PGIM's higher usage of BBB, BB, and B-rated securities
  - Within structured products allocations, PGIM has leaned more heavily towards ABS and CMBS, and TCW has leaned more heavily towards mortgages
  - PGIM maintains global tilt (approximately 80% US debt) while TCW is more US-centric (approximately 96% US)
  - PGIM takes on some currency risk while TCW only holds US-dollar denominated debt
  - During periods of spread widening and flight to quality such as 2018, 2015, and 2013, TCW has functioned as a ballast limiting the total Fund's downside capture
  - During periods of spread tightening PGIM has added competitive returns to the structure

### Considerations:

- The current blend of TCW and PGIM provide good diversification and fixed income exposure for participants, generating higher returns than the benchmark with similar risk.
- Over time, the Board may consider adding dedicated global exposure.

## Tier II: Inflation Sensitive

### Observations

The Plans offers two inflation sensitive asset funds. There is the North Carolina Inflation Responsive Fund (underlying this is the BlackRock Strategic Completion Fund) as well as the passive TIPS Fund:

However:

- Utilization is often low for such funds. According to Callan's DC Index™ TIPS/Real Asset funds are offered in 33% of plans, but when offered, garner only 1% of plan assets.
- The recent track record for multi-asset class funds is poor given the current commodity cycle and persistently low inflation.

Ten Year Return Correlations as of 6/30/19

Bloomberg Commodity	1.00						
NAREIT	0.50	1.00					
BB Barclays US TIPS	0.13	0.04	1.00				
Russell Midcap Index	0.72	0.82	-0.13	1.00			
Russell 3000	0.69	0.81	-0.18	0.98	1.00		
BB Barclays Aggregate	-0.13	0.05	0.76	-0.20	-0.27	1.00	
CPI-U	0.58	0.35	0.06	0.43	0.39	-0.23	1.00
	Bloomberg Commodity	NAREIT	BB Barclays US TIPS	Russell Midcap Index	Russell 3000	BB Barclays Aggregate	CPI-U

#### Key Observations:

Callan supports the inclusion of a single core investment option that aims to mitigate inflation risk.

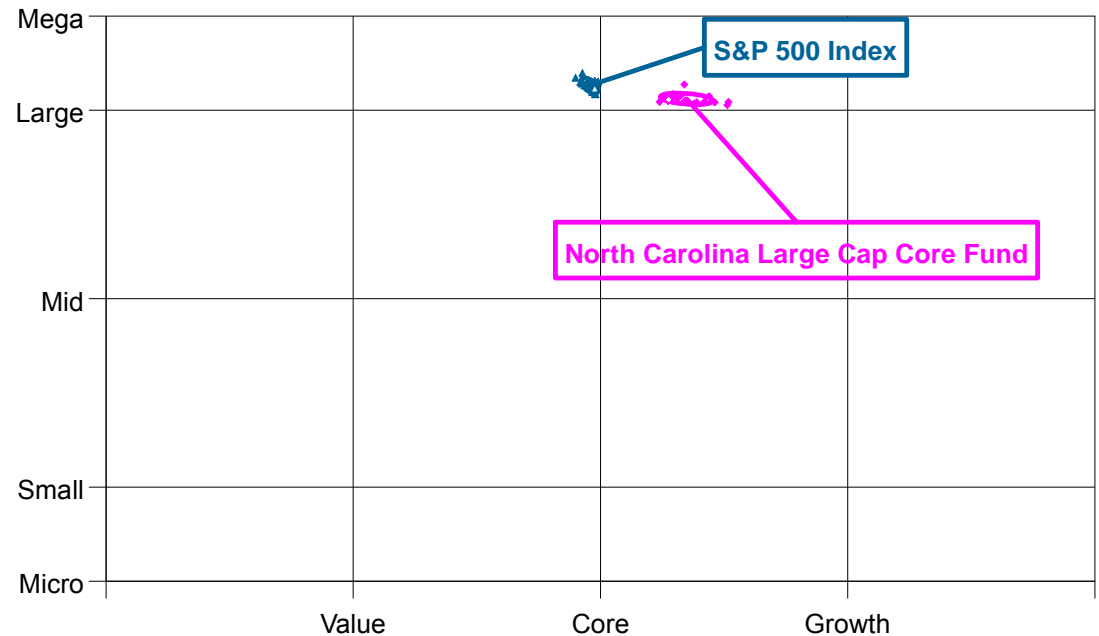
## Tier II: Core Options – Large-Cap Equity

### Observations

Within the U.S. all-cap large-cap equity space, the Plans offer two options:

- Large Cap Core Fund – This fund contains 5 underlying managers of which one (BlackRock Russell 1000) is passive and has a 25% target allocation. The fund does have a slight growth bias.
- The passively managed Large Cap Equity Index option tracks the S&P 500 Index.

U.S. Equity Style Map for 5 Years ended June 30, 2019



#### Key Observations:

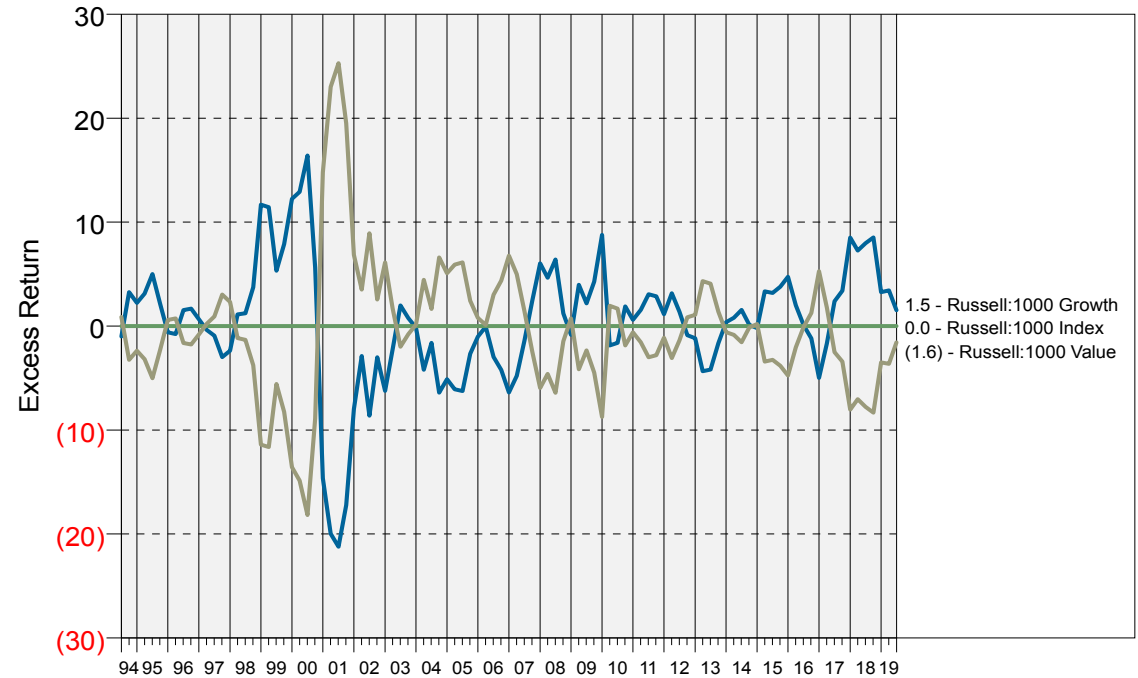
Callan continues to support the offering of an active / passive mirror structure by continuing to offer both active and passive large cap options. This affords participants the ability to chose between active and passive strategies and as such whether they want the low-cost option or the slightly higher fee option with the possibility for alpha generation.

## Tier II: Core Options – Large-Cap Equity

### Observations

As shown in the chart to right, the various styles tend to go in and out of favor over time. It is often difficult to time when to pivot to a certain style. For this reason, Callan supports blending value and growth styles into a single core offering.

Rolling 4 Quarter Excess Return Relative To Russell:1000 Index for 25 Years Ended June 30, 2019



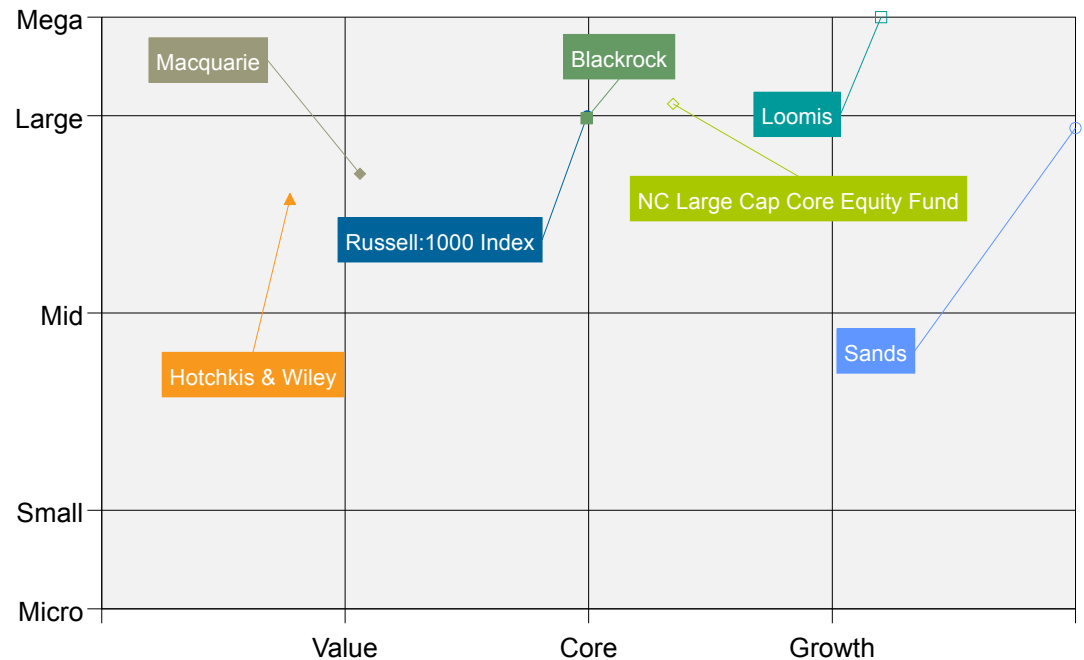
# NCSRP Large Cap Core Equity Fund

## Overview

- The Large Cap Core Equity Fund is broadly diversified:
  - Two active value managers, Hotchkis & Wiley and Macquarie
  - Two active growth managers, Loomis Sayles and Sands
  - One passive Russell 1000 Index fund.
- The option exhibits some modest style bias over time, largely a function of Sands' more aggressive growth characteristics with less off-setting deeper value characteristics.
- The fund does not exhibit any capitalization bias or misfit risk.

	Target Weights
Blackrock Russell 1000 Index	25%
Hotchkis & Wiley	18.75%
Macquarie	18.75%
Sands	18.75%
Loomis Sayles	18.75%

Domestic Equity Style Map  
for 5 Years Ended June 30, 2019

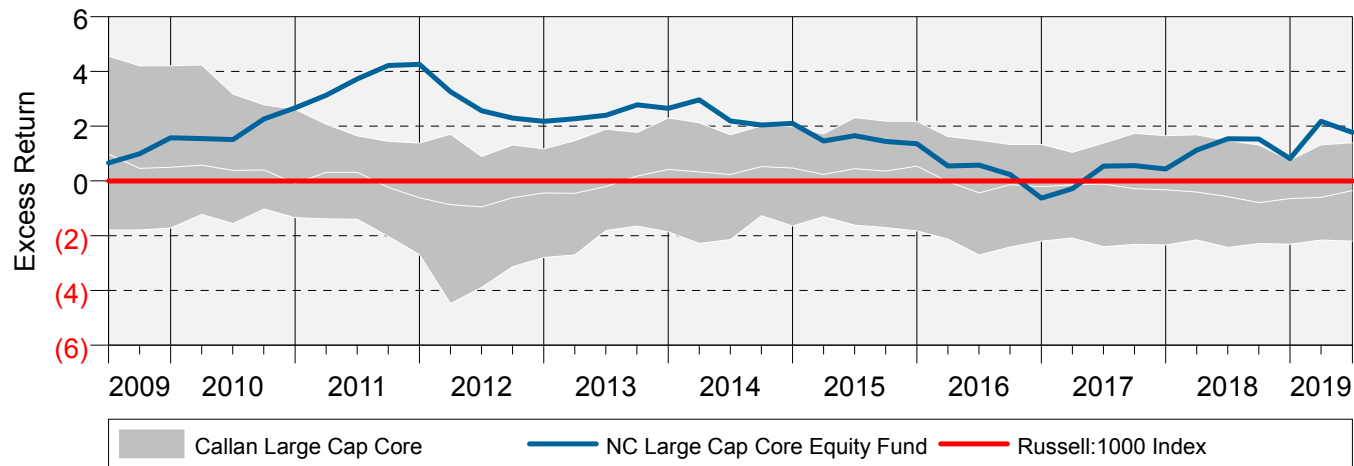


# NCSRP Large Cap Core Equity Fund

Risk Statistics 7 Years Ended June 30, 2019

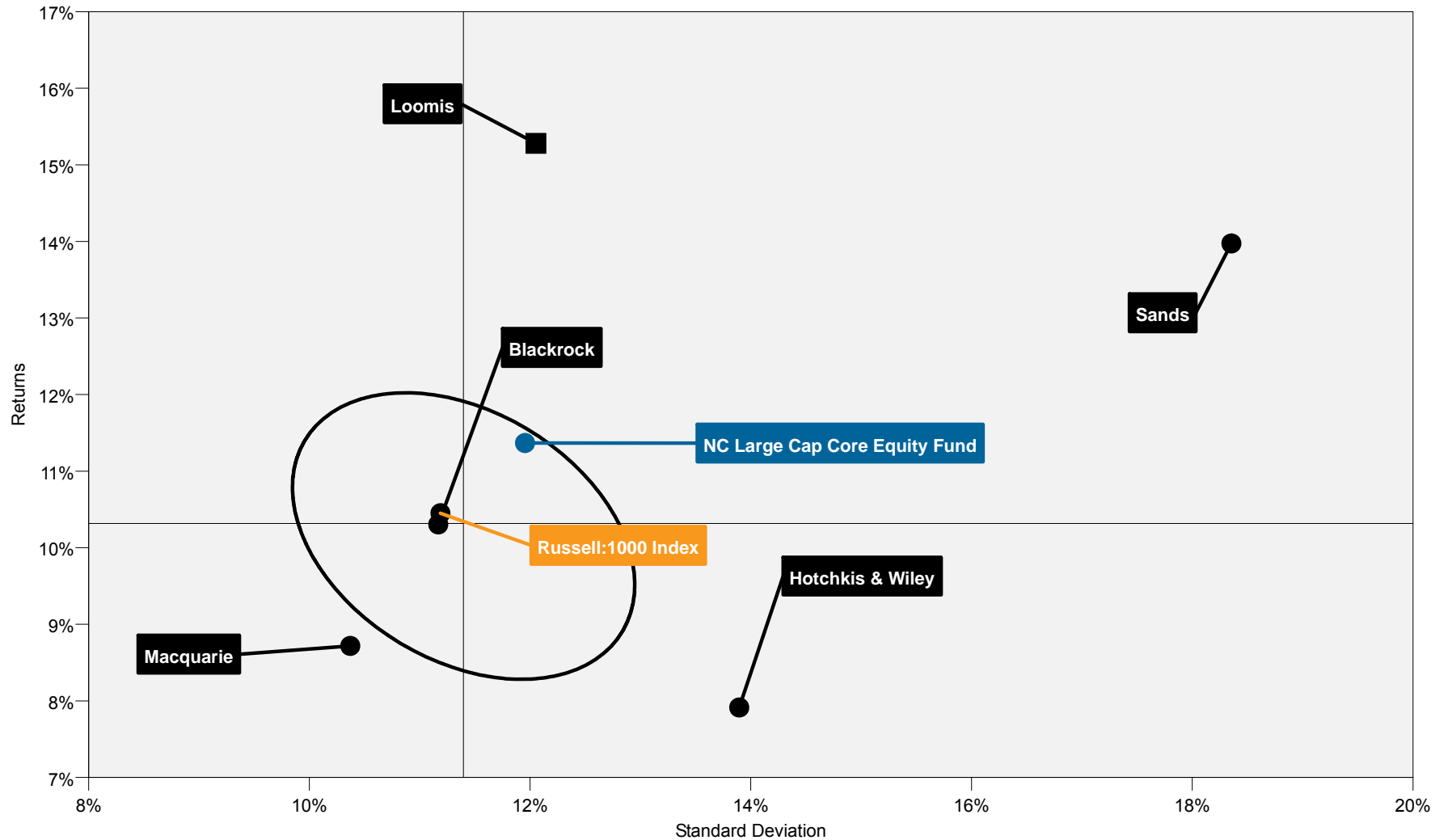
	Excess Return	Sharpe Ratio	Up Market Capture	Down Market Capture	Tracking Error	Standard Deviation	Information Ratio
BlackRock:LC Idx;Instl	(0.14) (55)	1.26 (36)	98.78 (50)	100.05 (55)	0.15 (100)	10.48 (67)	(0.89) (98)
Hotchkis & Wiley Large Cap Value	1.78 (11)	1.02 (79)	135.52 (1)	132.67 (4)	4.49 (4)	12.91 (3)	(0.11) (69)
Macquarie:US Lrg Cap Value Equity	1.05 (24)	1.25 (13)	96.58 (79)	67.77 (98)	3.78 (18)	9.99 (82)	0.51 (16)
Sands Capital Large Cap Growth	1.44 (14)	0.98 (93)	118.60 (4)	114.01 (13)	9.35 (1)	16.97 (3)	(0.18) (62)
Loomis:Large Cap Growth	2.51 (8)	1.58 (4)	103.46 (39)	50.72 (100)	4.59 (21)	11.16 (75)	0.88 (5)
<b>NC Large Cap Core Equity Fund</b>	<b>1.34 (8)</b>	<b>1.32 (21)</b>	<b>111.01 (9)</b>	<b>96.23 (67)</b>	<b>2.34 (52)</b>	<b>11.08 (29)</b>	<b>0.35 (21)</b>
Callan Large Cap Core	(0.06)	1.24	98.96	100.81	2.34	10.71	(0.05)
Russell:1000 Index	0.00 (45)	1.27 (31)	100.00 (42)	100.00 (55)	0.00 (100)	10.47 (67)	0.00 (46)

Rolling 36 Month Excess Return Relative To Russell:1000 Index for 10 Years Ended June 30, 2019



# NCSRP Large Cap Core Equity Fund

Risk versus Return 5 Years ended June 30, 2019





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# NCSRP Large Cap Core Equity Fund

## Summary Observations

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- The active management pairings are complementary and offer broad exposure and diversification for participants.
- Maquarie's downside protection has balanced the strong upmarket participation of Hotchkis & Wiley in the value space.
- Similarly in growth space, Sands' strong upmarket participation is offset by Loomis' ability to preserve capital in down markets.
- Correlations of excess returns are low, with the exception of Loomis and Sands.
- The modest growth orientation is not uncommon given the strong outperformance of growth over value since the financial crisis.
- The option has outperformed the Russell 1000 Index with only modestly higher risk.

## Considerations

- This option is communicated as an active option to participants, and participants also have the ability to select a fully passive low cost option. The 25% allocation to passive within an active strategy is on the higher end of the range for an "active" option. The Board may consider lowering the passive allocation and increasing exposure to active management.

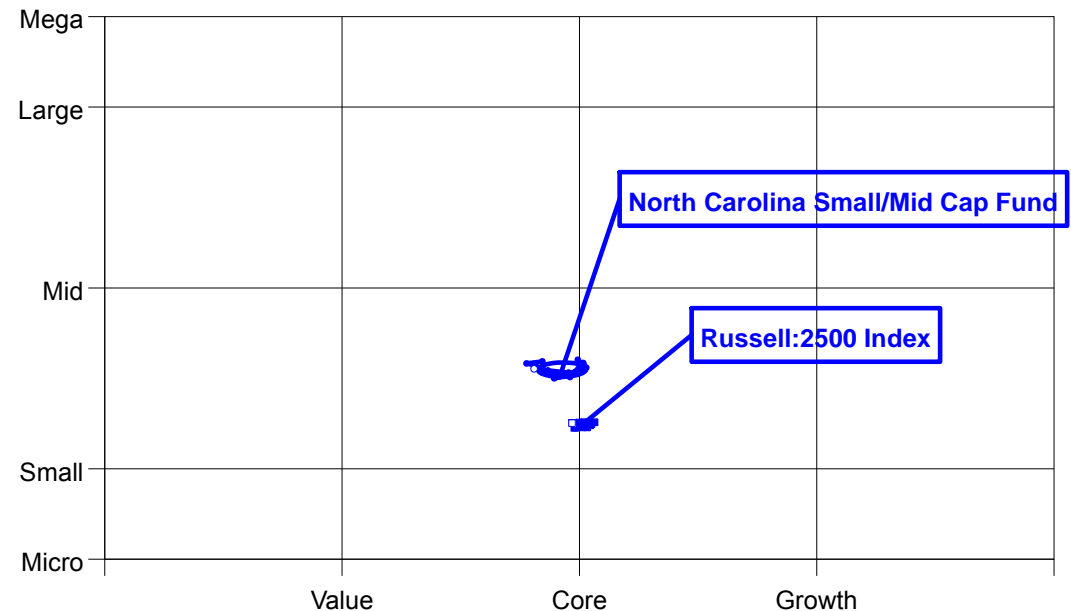
## Tier II: Core Options – U.S. Smid Cap Equity

### Observations

The Plans offer two funds within the small and mid cap equity space:

- Small/Mid Cap Fund consists of five managers, one of which (BlackRock Russell 2500 Index) is passively managed and has a 28.75% target allocation. The fund has a modest value bias and
- Passively implemented Small/Mid Cap Index Fund
- The average DC Plan (as measured by Callan's DC Index), typically offers three small/mid cap options.

Style Map for 5 Years ended June 30, 2019



#### Key Observations:

As with the other asset classes, Callan supports offering an active-passive mirror in the small/mid-cap equity space.

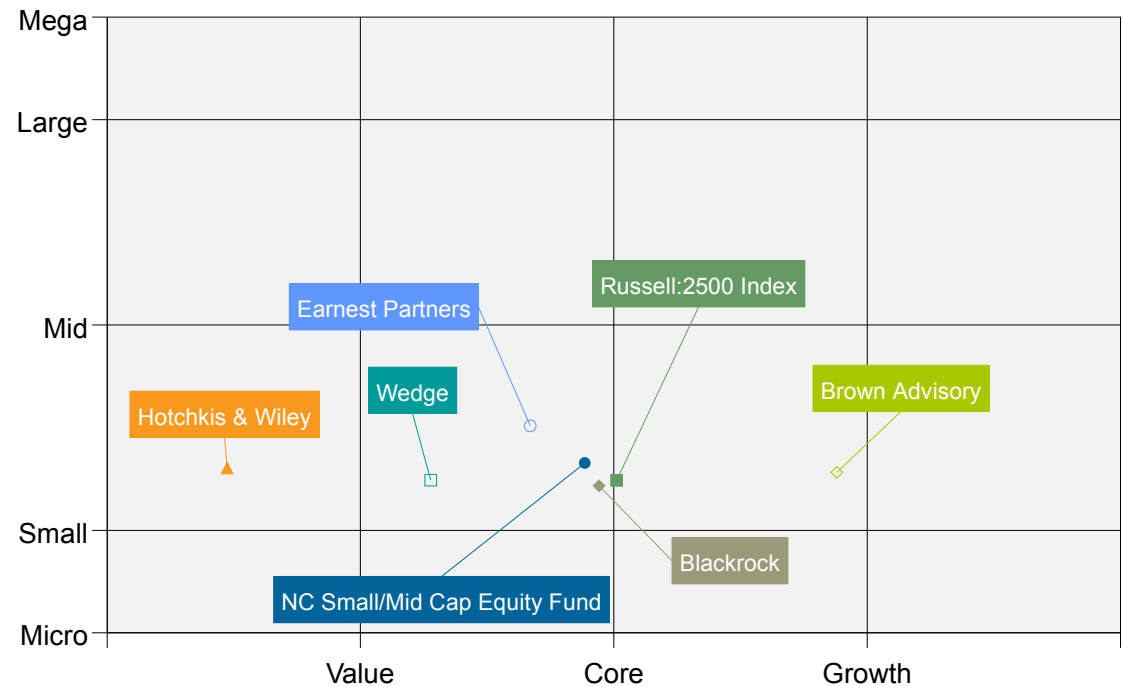
# NCSRP Small/Mid Cap Equity Fund

## Overview

- The Small/Mid Cap Equity Fund is comprised of 5 managers:
  - Three value managers—Hotchkis & Wiley, Wedge, and Earnest Partners
  - Brown is the sole growth manager
  - BlackRock passive core index
- While the NC SMID Cap fund's 5 year z-score observations does not exhibit a meaningful style bias, there does appear to be a persistent value style bias.
- There is some misfit risk that could represent an uncompensated risk (i.e. all managers may outperform their respective benchmarks, but the total fund could still underperform Russell 2500).
- The fund does not exhibit any meaningful capitalization bias.

	Target Weights
Blackrock Russell 2500 Index	28.75%
Hotchkis & Wiley	15.83%
EARNEST	15.83%
Brown	23.75%
Wedge	15.83%

Domestic Equity Style Map  
for 5 Years Ended June 30, 2019

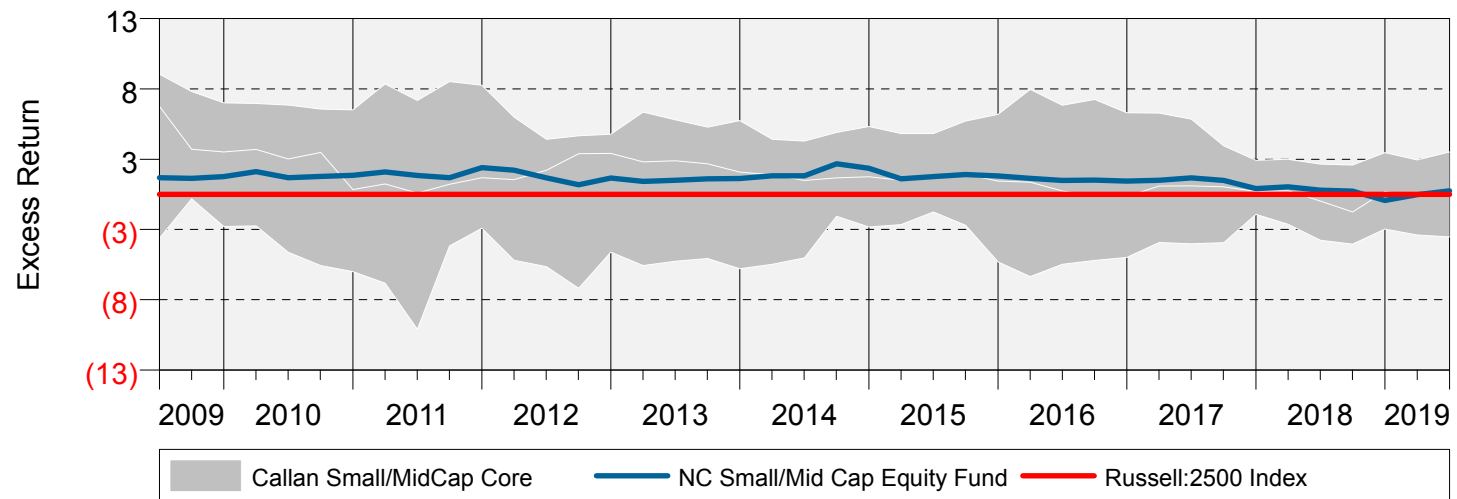


# NCSRP Small/Mid Cap Equity Fund

Risk Statistics 7 Years Ended June 30, 2019

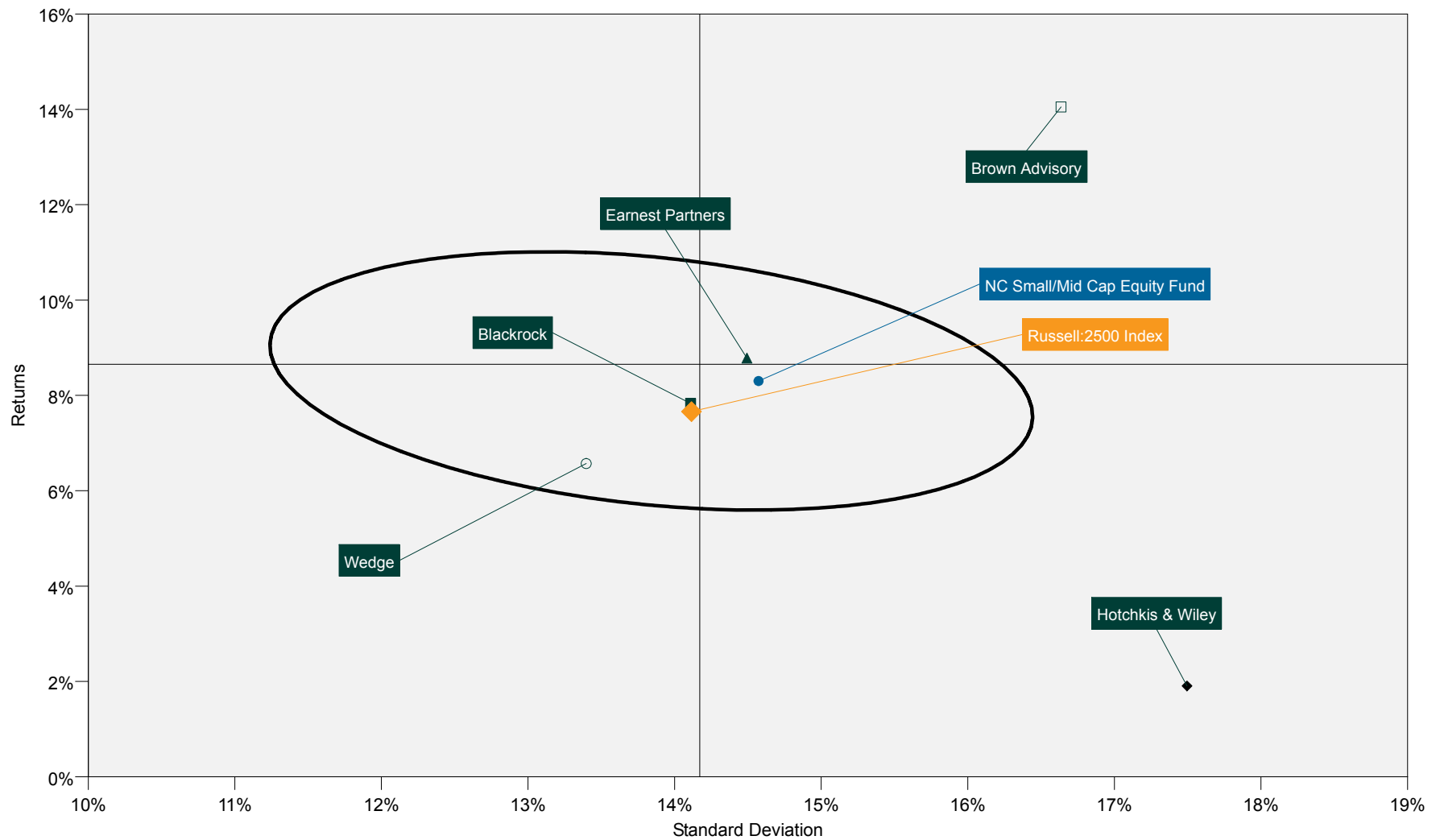
	Excess Return	Sharpe Ratio	Up Market Capture	Down Market Capture	Tracking Error	Standard Deviation	Information Ratio
BlkRck:Russell 2500 Eq Index	0.16 (64)	0.93 (62)	101.16 (44)	99.57 (35)	0.06 (100)	12.96 (55)	2.48 (1)
Hotchkis & Wiley Mid Cap Value	(2.19) (95)	0.57 (98)	102.90 (35)	138.91 (1)	7.88 (1)	16.52 (1)	(0.68) (92)
Brown Advisory Small/Mid Cap Growth	2.06 (17)	1.04 (18)	113.89 (30)	94.44 (76)	4.88 (28)	15.00 (53)	0.42 (19)
Earnest Partners Small/Mid Cap Value	2.96 (10)	1.01 (11)	128.69 (8)	98.53 (50)	4.63 (39)	13.20 (52)	0.63 (12)
Wedge Small/Mid Cap Value	1.01 (38)	0.88 (41)	105.46 (53)	94.31 (60)	2.73 (90)	12.89 (70)	0.31 (42)
<b>NC Small/Mid Cap Equity Fund</b>	<b>0.77 (56)</b>	<b>0.95 (56)</b>	<b>106.49 (30)</b>	<b>99.23 (35)</b>	<b>1.14 (100)</b>	<b>13.36 (33)</b>	<b>0.38 (43)</b>
<b>Callan Small/MidCap Core</b>	<b>0.86</b>	<b>0.96</b>	<b>99.33</b>	<b>94.54</b>	<b>3.52</b>	<b>13.05</b>	<b>0.29</b>
Russell:2500 Index	0.00 (39)	0.91 (26)	100.00 (28)	100.00 (41)	0.00 (100)	12.97 (82)	0.00 (40)

Rolling 36 Month Excess Return Relative To Russell:2500 Index for 10 Years Ended June 30, 2019



# NCSRP Small/Mid Cap Equity Fund

Risk versus Return 5 Years ended June 30, 2019



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# NCSRP Small/Mid Cap Equity Fund

## Summary Observations

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- The active management pairings are complementary, as measured by lower correlation of excess returns over time.
- Three of the four active managers are value-oriented, and the option has exhibited a sustained value bias.
- The value approaches of Hotchkis & Wiley and Wedge are complimentary and have provide consistent SMID cap value exposure, while EARNEST's characteristics have steered more toward a core/value orientation. Brown Small Cap Growth strategy has performed well relative to their benchmark and peers while remaining true to the growth objective.
- The option has generated returns similar to the Russell 2500 Index with modestly higher risk.

## Considerations

- This option is communicated as an active option to participants, and participants also have the ability to select a fully passive low cost option. The 28.75% allocation to passive within an active strategy is on the higher end of the range for an “active” option. The Board may consider lowering the passive allocation and increasing exposure to active management.
- The fund offers diversification in the value space with two traditional value managers and one value/core-oriented strategy, but only one growth manager. The Board may consider adding a second growth manager whose process and strategy complement Brown's to improve diversification and to address the persistent value orientation represented by the Z-score. (The Z-score is a holdings-based measure of the “growthiness” or “valueyness” of an individual stock or portfolio based on fundamental financial ratio analysis.)

## Tier II: Core Options – Non-U.S. Equity

### Observations

The Plans offer two active non-U.S. equity options:

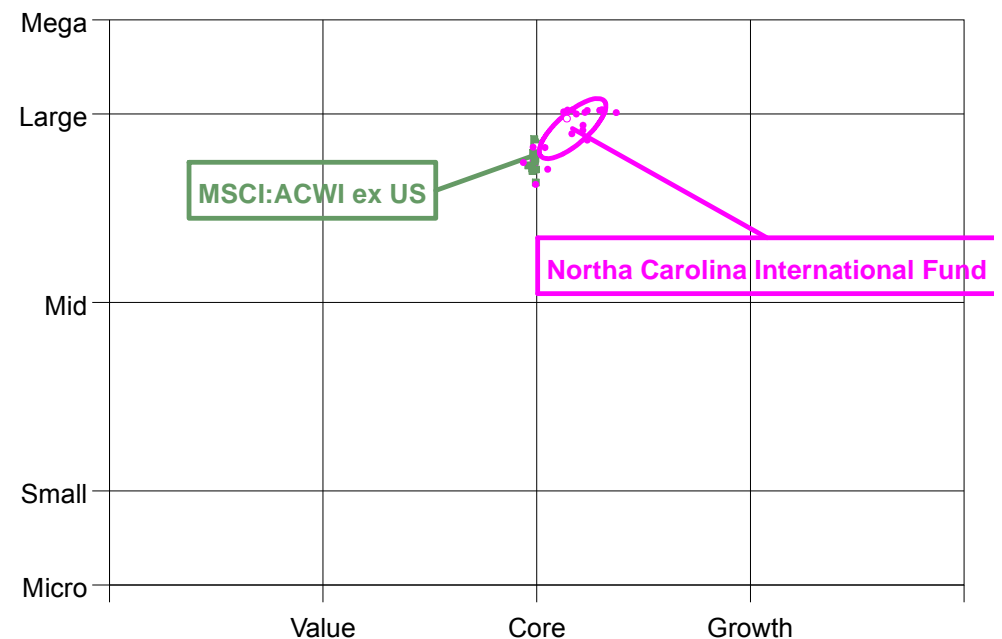
- Actively managed North Carolina International Fund utilizes two underlying managers (Mondrian in value and Baillie Gifford in growth).
- Passively implemented North Carolina International Index
- Both are benchmarked to the MSCI ACWI-ex US Index

Given that non-U.S. equity managers have been able to add value net of fees (see appendix for Historical Active Management Premiums), Callan supports the use of active management in this space.

These funds contain underlying exposure to emerging markets (23% for the active and 26% for the passive).

These mandates do not contain allocations to non-US small cap exposure which the Plans could explore by moving the benchmark to ACWI-ex US IMI with a roughly 11% allocation to small cap.

Non-U.S. Equity Style Map for 5 Years ended June 30, 2019



#### Key Observations:

The Plans could explore shifting the current active option to the more broad ACWI-ex US IMI benchmark. This could occur by adding a dedicated small cap manager as a third underlying sub-advisor.

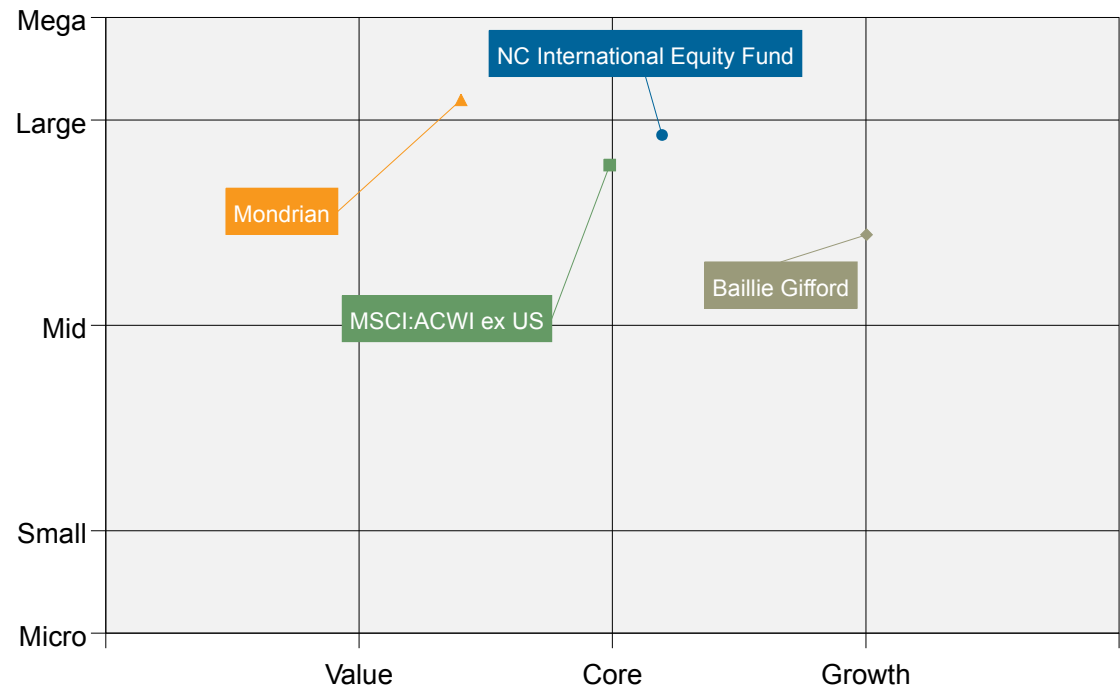
# NCSRP International Equity Fund

## Overview

- The International equity option consists of one value and one growth manager, each investing in both developed and emerging markets.
- The fund does not have a meaningful style bias, with the two strategies complementing one another resulting in only a modest growth tilt.
- The fund does not exhibit any capitalization bias or misfit risk.
- The option is 100% actively managed, which is consistent with the communication to participants that this is an active option. This is appropriate as participants also have the ability to select a fully passive low cost option.

	Target Weight
Mondrian	50%
Baillie Gifford	50%

International Equity Style Map  
for 5 Years Ended June 30, 2019



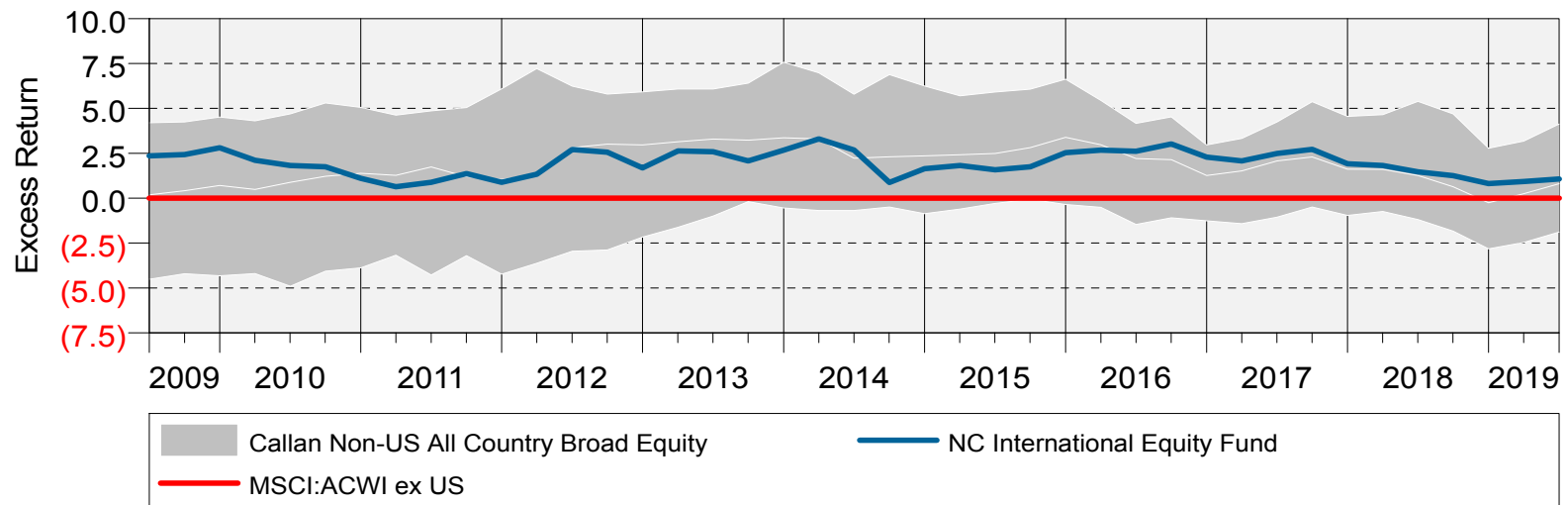


# NCSRP International Equity Fund

Risk Statistics 7 Years Ended June 30, 2019

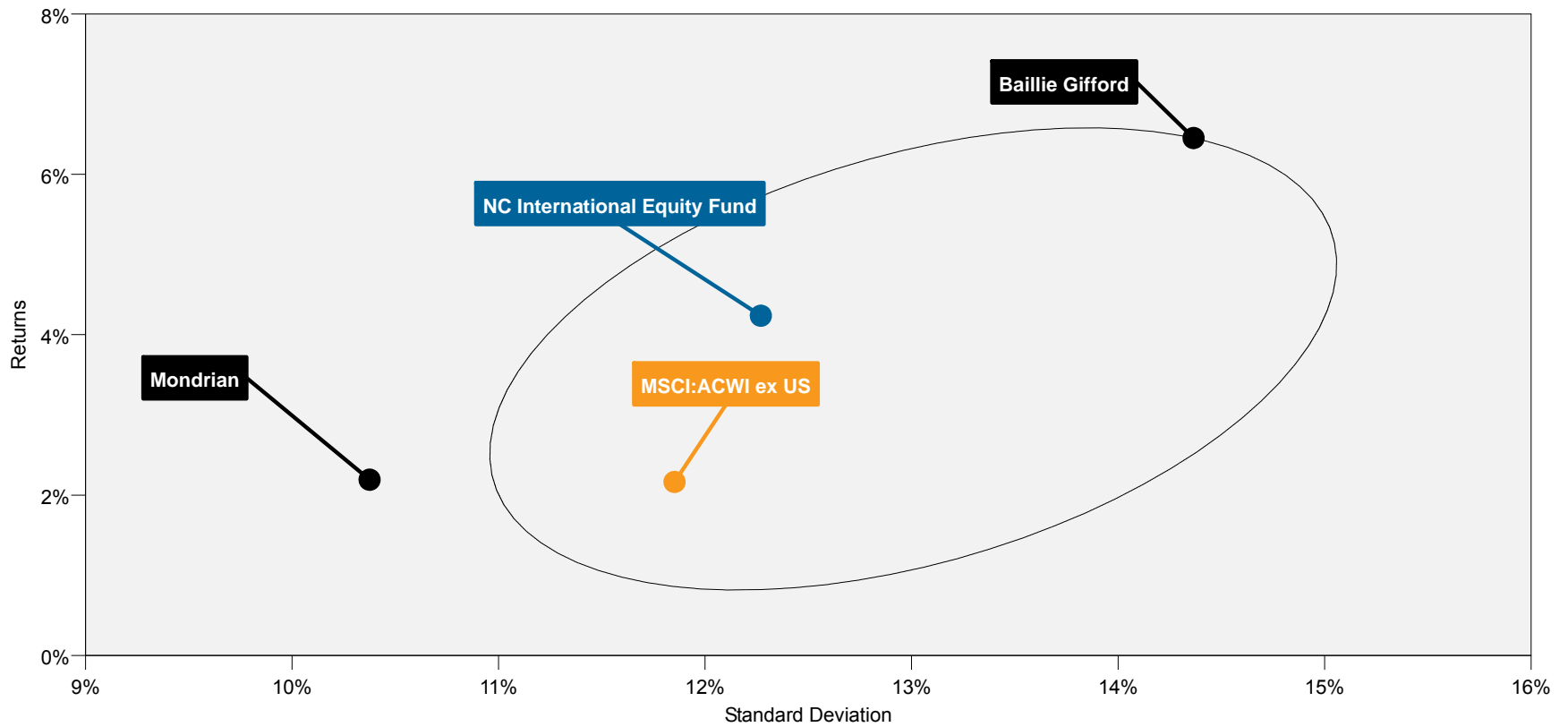
	Excess Return	Sharpe Ratio	Up Market Capture	Down Market Capture	Tracking Error	Standard Deviation	Information Ratio
Baillie Gifford ACWI ex-US Growth	3.27 (29)	0.68 (35)	139.98 (18)	99.43 (38)	3.52 (65)	13.14 (21)	0.77 (30)
Mondrian ACWI ex-US Value	0.24 (87)	0.61 (56)	87.54 (96)	82.68 (87)	3.12 (74)	9.70 (97)	0.43 (54)
<b>NC International Equity Fund</b>	<b>1.57 (50)</b>	<b>0.66 (38)</b>	<b>109.87 (61)</b>	<b>91.62 (64)</b>	<b>1.73 (99)</b>	<b>11.26 (80)</b>	<b>0.93 (10)</b>
Callan NonUS AC Broad Eq	1.55	0.62	114.22	95.31	3.46	12.16	0.41
MSCI:ACWI ex US	0.00 (62)	0.51 (53)	100.00 (64)	100.00 (53)	0.00 (100)	11.25 (81)	0.00 (65)

Rolling 36 Month Excess Return Relative To MSCI:ACWI ex US for 10 Years Ended June 30, 2019



# NCSR International Equity Fund

Risk versus Return 5 Years ended June 30, 2019



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# NCSRP International Equity Fund

## Summary Observations

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- The two existing managers complement one another well, including style, risk, return, and portfolio characteristic perspectives.
- The current risk and return profile, as well as the overall volatility of the fund, are reasonable for Plan participants seeking MSCI ACWI ex-US oriented exposure.
- The actively managed strategies are consistent with the intended Plan structure
- NCSRP may wish to consider expanding the benchmark of the International Equity Fund to the MSCI ACWI ex-US IMI to further diversify the fund with the inclusion of international small cap. Callan recommends evaluating the following:
  - Opportunity Set: Including international small cap provides exposure to the broadest opportunity set, including local sector themes.
  - Availability: The product marketplace has evolved for international small cap. There is larger product availability in the institutional marketplace than previously and active managers have proven an ability to deliver alpha in this category.
  - Returns: Over the long-term, international small cap indices have delivered higher returns than the MSCI ACWI ex-US (which is comprised of large and mid cap Non-US stocks), but accompanied by higher volatility.
  - Fees: Active international small cap strategies come at higher fees than those focused on large and mid cap stocks.

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## Appendix

## Alternative Structure – Further Streamlined (Potential Future Considerations)

### Tier I: Asset Allocation

Custom Retirement Allocations  
Prudential GoalMaker

### Tier II: Active Core Options

Capital Preservation  
Stable Value (17%)

Fixed Income  
Fixed Income Fund (17%)

US Equity Fund  
All Cap Core Equity Fund (23%)

Non-US Equity  
International Equity Fund (15%)

### Tier II: Passive Core Options

Core Fixed Income  
Fixed Income Passive (<1%)

Inflation Sensitive Assets  
Diversified Real Assets Fund (5%)

Passive US Equity  
All Cap Passive (25%)

Non-US Equity  
International Passive (<1%)

### Tier III: Specialty Options

### Approach:

The lineup is further streamlined, providing the broad building blocks for diversification without distracting participants with options within asset classes

### Action Items:

Consolidate large and small US into a single broad US equity option

Consolidate Inflation Sensitive Assets into a single option

Broaden the fixed income option to include global bonds

### Considerations:

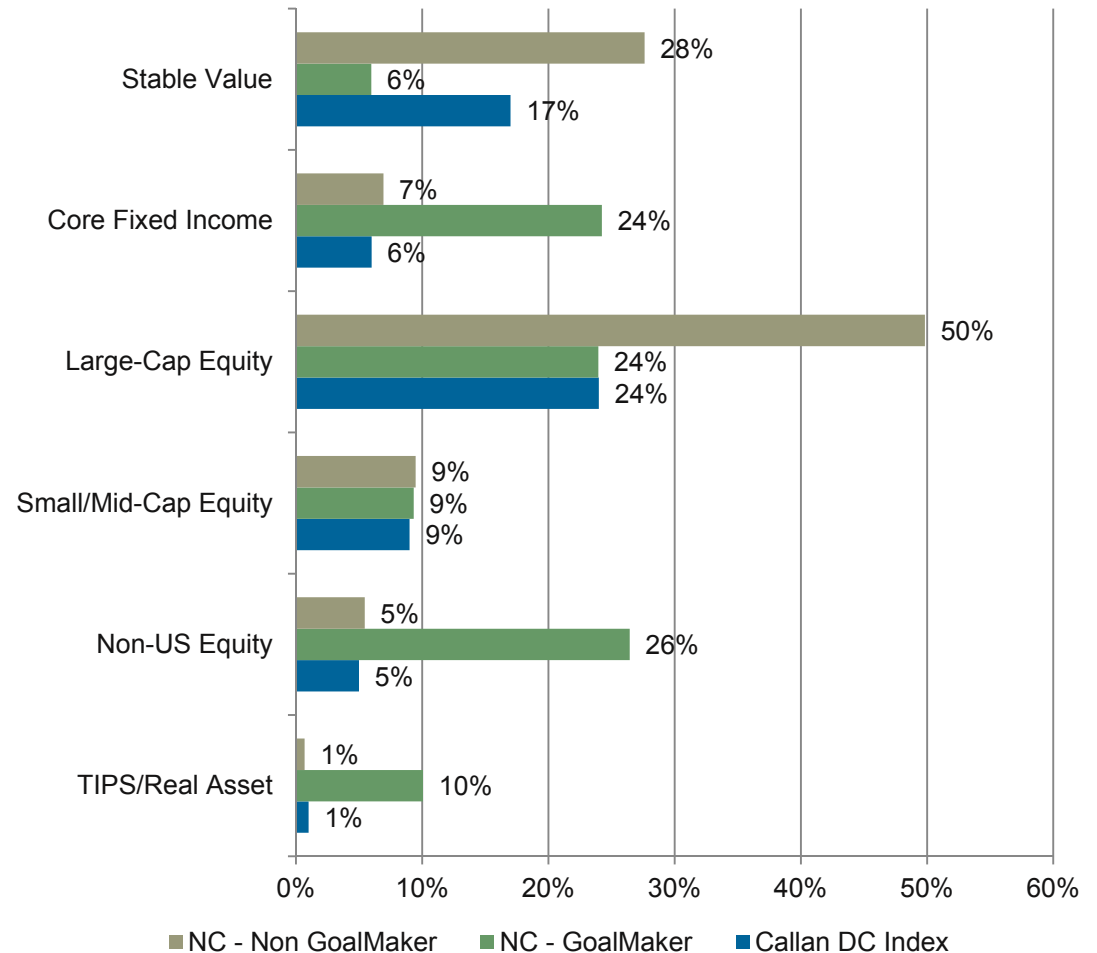
GoalMaker allocations, which currently utilize passive US large Cap and active US small cap, would need to be revisited.

# Comparison to Industry Averages

## Prevalence of options in DC plans

- The figures for the “Callan DC Index” represent the average allocation across roughly 100 defined contribution plans representing over \$150 billion in assets. This will serve as a proxy for the wider DC universe.
- The Plans’ feature widespread use of a model allocations (just under half of all assets are allocated to core funds through GoalMaker model portfolios). This usage in large part explains much of the asset allocation.
- Without a standalone target date option, the allocation to core asset classes is higher (as expected) to the core asset classes.
  - Relative to both the global opportunity set and the DC Index, there is a pronounced home country bias among participant that allocate outside of GoalMaker
  - Additionally there is a higher relative allocation to Stable Value among those that set their own allocation outside of GoalMaker

Share of Plan Assets when Offered



Source: Callan DC Index

# Appendix I: A Guide to Our Active versus Passive Data

This publication contains two charts for each category of active managers. The top table shows the percentage of rolling 3-year periods in which managers in various percentiles beat their benchmark by more than a certain fee hurdle. Percentages 50% and above are shaded in green.

The bottom chart displays the gross excess return for all the managers in Callan's database for specific asset class categories across the distribution spectrum, from the 10th percentile to the 90th percentile.

## Large Cap Core Equity Style versus S&P 500

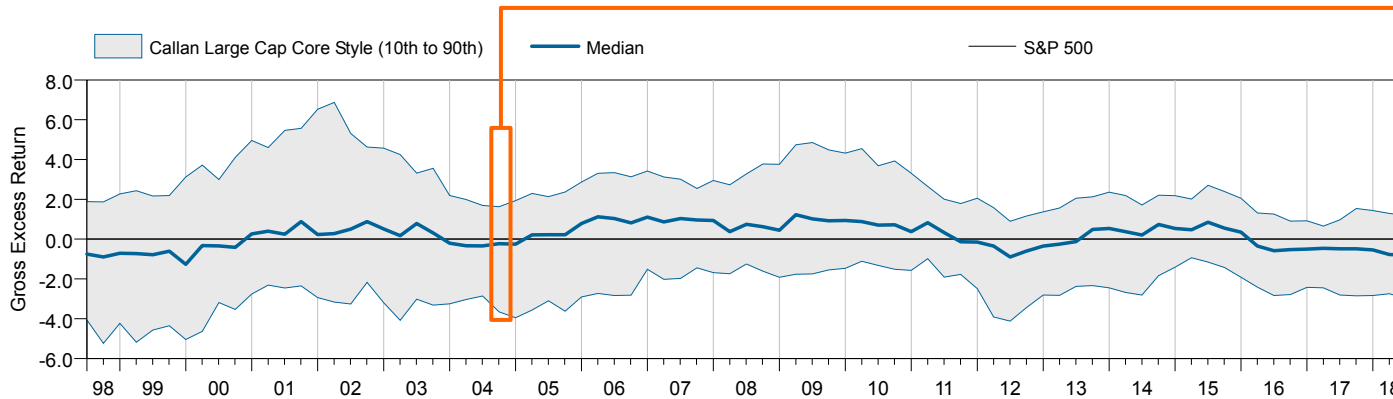
How often Manager Beat Benchmark by more than Fee Hurdle in Rolling 3-Year Periods over last 20 Years

Fee Hurdle	0.25%	0.30%	0.35%	0.40%	0.45%	0.50%	0.55%	0.60%	0.65%	0.70%
Median	51%	49%	48%	40%	40%	36%	31%	30%	29%	29%
45th Percentile	61%	61%	61%	59%	59%	55%	54%	49%	41%	39%
40th Percentile	66%	65%	65%	65%	64%	64%	64%	61%	60%	59%
35th Percentile	79%	75%	71%	69%	69%	68%	68%	66%	65%	65%
30th Percentile	85%	84%	84%	80%	79%	79%	78%	76%	73%	70%
25th Percentile	95%	94%	93%	89%	86%	85%	83%	83%	81%	79%

Average Annualized 3-Year Excess Return (gross) – Median Manager: 0.18%

This data point indicates that managers in the 40th percentile beat the benchmark by at least 0.35% in 65% of the rolling 3-year periods over the last 20 years.

Rolling 3-Year Gross Excess Return relative to S&P 500 for 20 Years ended June 30, 2018



This data point shows that in the 4th quarter of 2004, the median manager in Callan's database reported gross excess returns over the benchmark of -0.25%, with returns ranging from 1.94% for managers in the 10th percentile to -3.95% for those in the 90th percentile.

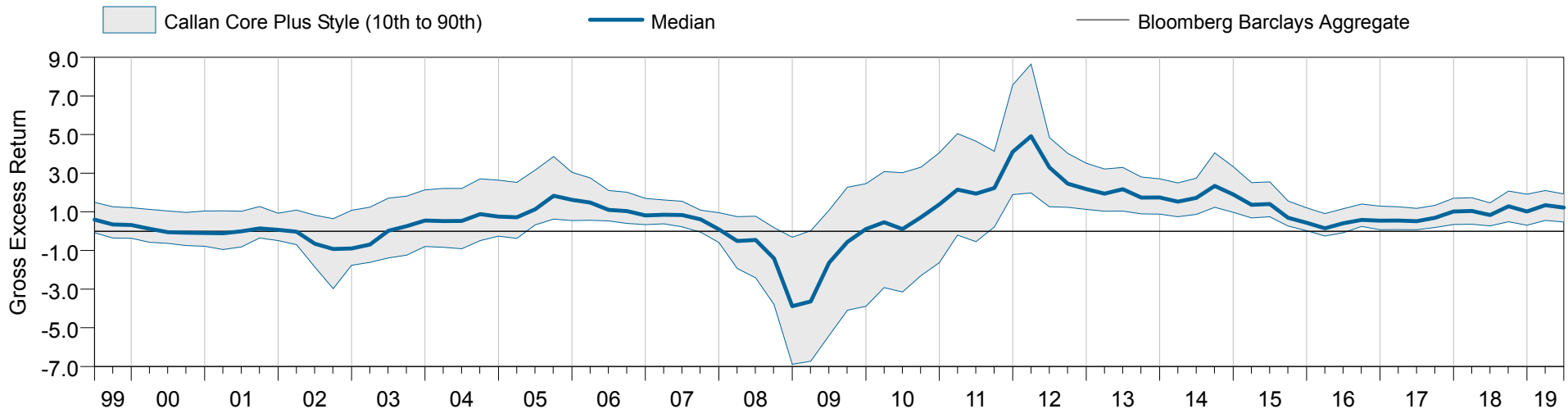
# Core Plus Bond Style vs. Bloomberg Barclays Aggregate

## How often Manager Beat Benchmark by more than Fee Hurdle in Rolling 3-Year Periods over last 20 Years

Fee Hurdle	0.20%	0.25%	0.30%	0.35%	0.40%	0.45%	0.50%	0.55%	0.60%	0.65%
Median	69%	69%	68%	65%	65%	63%	61%	55%	53%	51%
45th Percentile	71%	70%	68%	68%	68%	65%	64%	63%	58%	54%
40th Percentile	76%	74%	74%	71%	71%	70%	68%	65%	65%	63%
35th Percentile	80%	79%	76%	74%	73%	73%	73%	69%	69%	65%
30th Percentile	84%	83%	83%	81%	80%	78%	75%	74%	74%	69%
25th Percentile	90%	88%	88%	88%	84%	83%	80%	79%	76%	75%

Average Annualized 3-Year Excess Return (gross) – Median Manager: **0.72%**

## Rolling 3-Year Gross Excess Return relative to Bloomberg Barclays Aggregate for 20 Years ended June 30, 2019





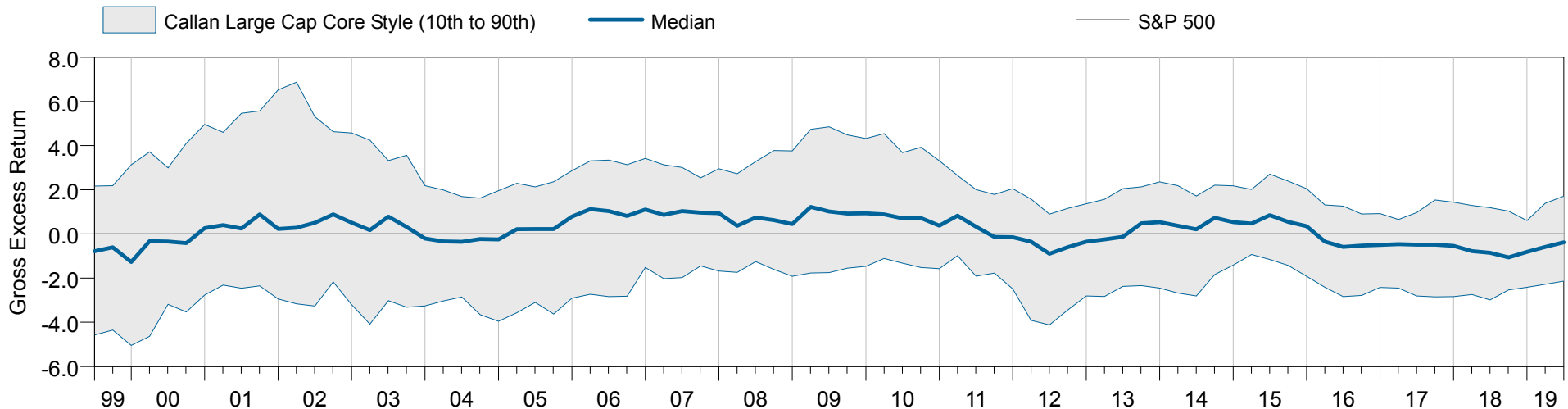
# Large Cap Core Equity Style vs. S&P 500

## How often Manager Beat Benchmark by more than Fee Hurdle in Rolling 3-Year Periods over last 20 Years

Fee Hurdle	0.25%	0.30%	0.35%	0.40%	0.45%	0.50%	0.55%	0.60%	0.65%	0.70%
Median	51%	49%	46%	40%	39%	36%	31%	30%	29%	29%
45th Percentile	61%	61%	60%	59%	59%	55%	54%	49%	41%	39%
40th Percentile	66%	65%	65%	65%	64%	64%	64%	61%	60%	59%
35th Percentile	78%	74%	71%	69%	69%	68%	68%	66%	65%	65%
30th Percentile	84%	83%	83%	79%	78%	78%	76%	75%	71%	70%
25th Percentile	94%	90%	89%	86%	83%	83%	81%	81%	80%	78%

Average Annualized 3-Year Excess Return (gross) – Median Manager: **0.18%**

## Rolling 3-Year Gross Excess Return relative to S&P 500 for 20 Years ended June 30, 2019



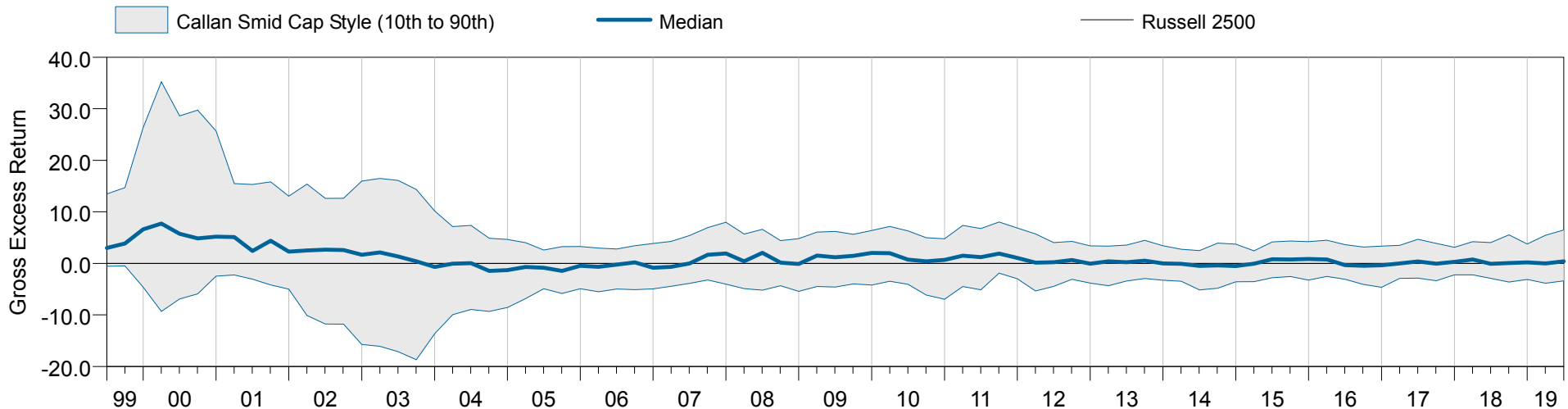
# Smid Cap Equity Style vs. Russell 2500

## How often Manager Beat Benchmark by more than Fee Hurdle in Rolling 3-Year Periods over last 20 Years

Fee Hurdle	0.35%	0.40%	0.45%	0.50%	0.55%	0.60%	0.65%	0.70%	0.75%	0.80%
Median	54%	53%	46%	46%	45%	45%	44%	43%	43%	38%
45th Percentile	73%	70%	68%	65%	63%	59%	58%	58%	56%	53%
40th Percentile	88%	88%	86%	86%	85%	83%	80%	78%	76%	74%
35th Percentile	93%	93%	93%	93%	91%	89%	88%	88%	88%	86%
30th Percentile	100%	99%	99%	99%	99%	99%	98%	96%	95%	94%
25th Percentile	100%	100%	100%	100%	100%	100%	99%	99%	99%	99%

Average Annualized 3-Year Excess Return (gross) – Median Manager: **1.00%**

## Rolling 3-Year Gross Excess Return relative to Russell 2500 for 20 Years ended June 30, 2019



# Non-U.S. Equity Broad Style vs MSCI ACWI ex USA

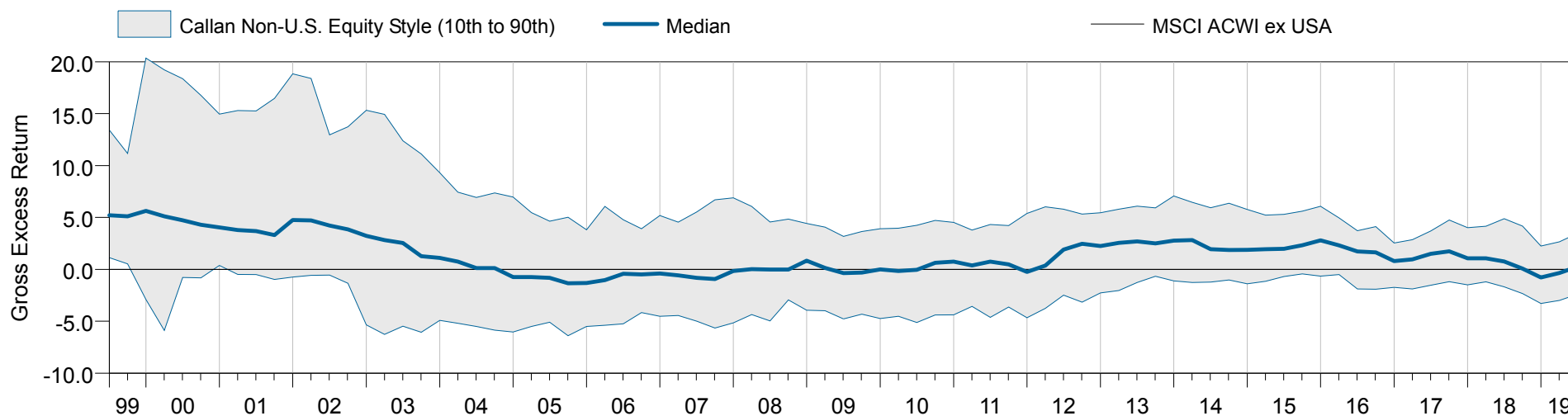
## How often Manager Beat Benchmark by more than Fee Hurdle in Rolling 3-Year Periods over last 20 Years

Fee Hurdle	0.45%	0.50%	0.55%	0.60%	0.65%	0.70%	0.75%	0.80%	0.85%	0.90%
Median	61%	60%	60%	60%	59%	59%	59%	53%	53%	51%
45th Percentile	70%	69%	69%	69%	66%	65%	64%	64%	64%	59%
40th Percentile	84%	83%	81%	81%	78%	76%	75%	75%	75%	74%
35th Percentile	93%	93%	91%	90%	89%	89%	85%	84%	81%	81%
30th Percentile	99%	98%	98%	98%	98%	98%	98%	98%	96%	94%
25th Percentile	100%	100%	100%	99%	99%	99%	99%	99%	99%	99%

Average Annualized 3-Year Excess Return (gross) – Median Manager:

1.38%

## Rolling 3-Year Gross Excess Return relative to MSCI ACWI ex USA for 20 Years ended June 30, 2019



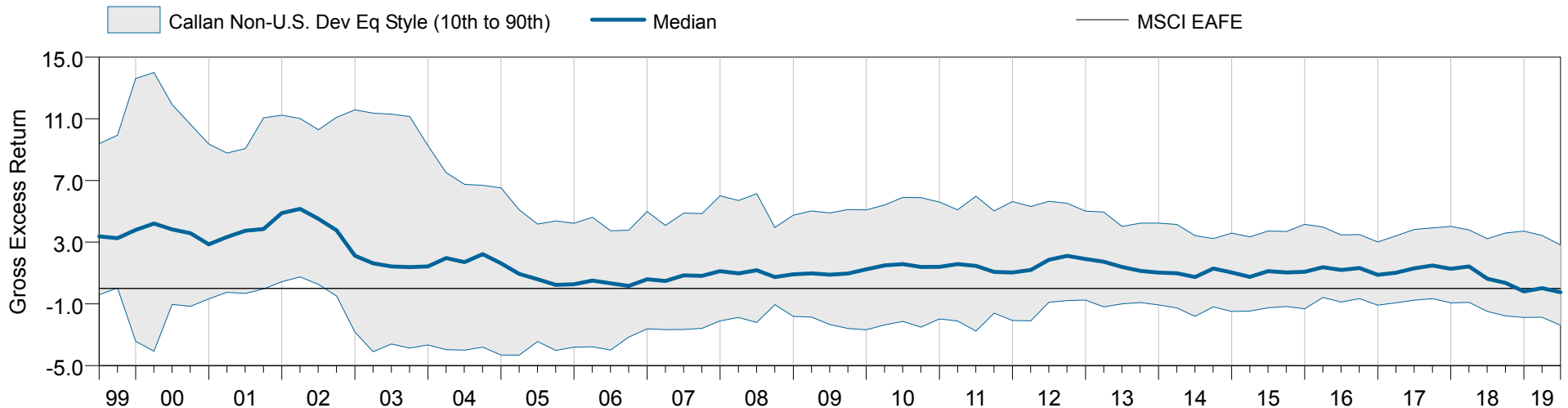
# Non-U.S. Developed Broad Equity Style vs. MSCI EAFE

## How often Manager Beat Benchmark by more than Fee Hurdle in Rolling 3-Year Periods over last 20 Years

Fee Hurdle	0.45%	0.50%	0.55%	0.60%	0.65%	0.70%	0.75%	0.80%	0.85%	0.90%
Median	90%	89%	88%	85%	84%	84%	81%	80%	79%	76%
45th Percentile	95%	95%	95%	95%	93%	91%	90%	90%	89%	85%
40th Percentile	99%	98%	98%	96%	96%	96%	96%	95%	94%	94%
35th Percentile	100%	99%	99%	98%	98%	96%	96%	96%	96%	96%
30th Percentile	100%	100%	100%	100%	100%	100%	100%	99%	98%	98%
25th Percentile	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Average Annualized 3-Year Excess Return (gross) – Median Manager: **1.56%**

## Rolling 3-Year Gross Excess Return relative to MSCI EAFE for 20 Years ended June 30, 2019



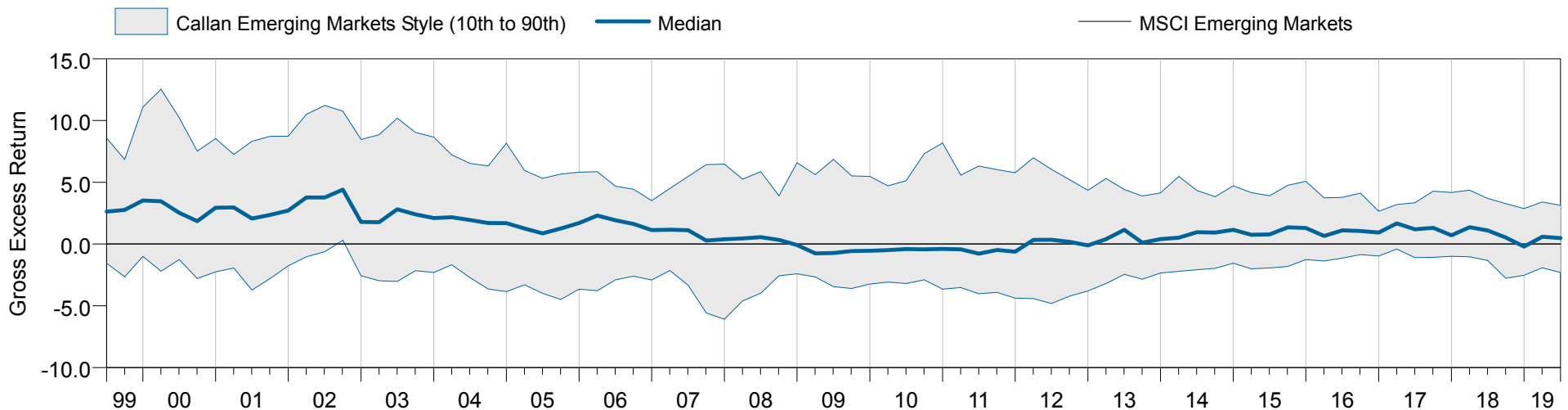
# Emerging Market Broad Equity Style vs MSCI Emerging Markets

## How often Manager Beat Benchmark by more than Fee Hurdle in Rolling 3-Year Periods over last 20 Years

Fee Hurdle	0.70%	0.75%	0.80%	0.85%	0.90%	0.95%	1.00%	1.05%	1.10%	1.15%
Median	61%	60%	58%	58%	56%	54%	53%	53%	50%	44%
45th Percentile	73%	69%	68%	68%	64%	63%	63%	63%	63%	59%
40th Percentile	83%	83%	80%	79%	76%	73%	73%	70%	69%	69%
35th Percentile	91%	91%	90%	90%	88%	86%	85%	85%	83%	81%
30th Percentile	98%	98%	96%	95%	95%	95%	95%	95%	95%	94%
25th Percentile	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Average Annualized 3-Year Excess Return (gross) – Median Manager: **1.13%**

## Rolling 3-Year Gross Excess Return relative to MSCI Emerging Markets for 20 Years ended June 30, 2019



# Non-U.S. Small Cap Style vs MSCI ACWI ex USA Small Cap

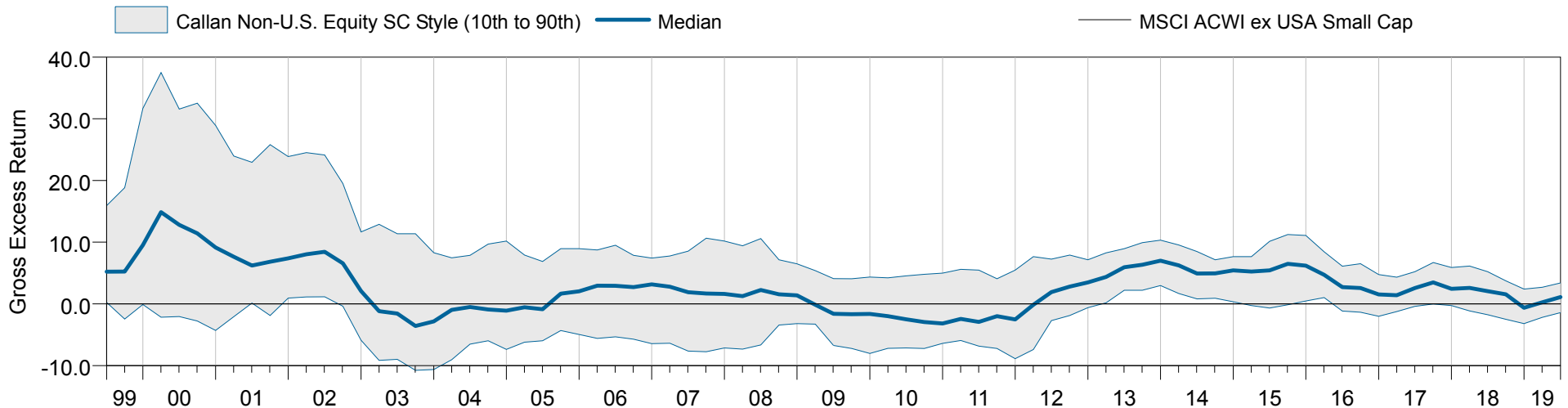
## How often Manager Beat Benchmark by more than Fee Hurdle in Rolling 3-Year Periods over last 20 Years

Fee Hurdle	0.75%	0.80%	0.85%	0.90%	0.95%	1.00%	1.05%	1.10%	1.15%	1.20%
Median	69%	69%	69%	69%	69%	69%	69%	69%	68%	68%
45th Percentile	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%
40th Percentile	80%	80%	80%	80%	76%	75%	75%	75%	73%	73%
35th Percentile	81%	81%	81%	81%	81%	81%	80%	80%	80%	80%
30th Percentile	86%	86%	86%	86%	86%	85%	85%	85%	85%	85%
25th Percentile	89%	89%	88%	88%	88%	86%	86%	86%	86%	86%

Average Annualized 3-Year Excess Return (gross) – Median Manager:

2.65%

## Rolling 3-Year Gross Excess Return relative to MSCI ACWI ex USA Small Cap for 20 Years ended June 30, 2019



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## Multi-Manager Structure Observations

Objective: evaluate whether existing multi-manager investment allocations improve upon risk-adjusted metrics and/or consistency of performance while at the same time not biasing the investment option in terms of the benchmark's market capitalization weighting or style.

The following metrics are observed:

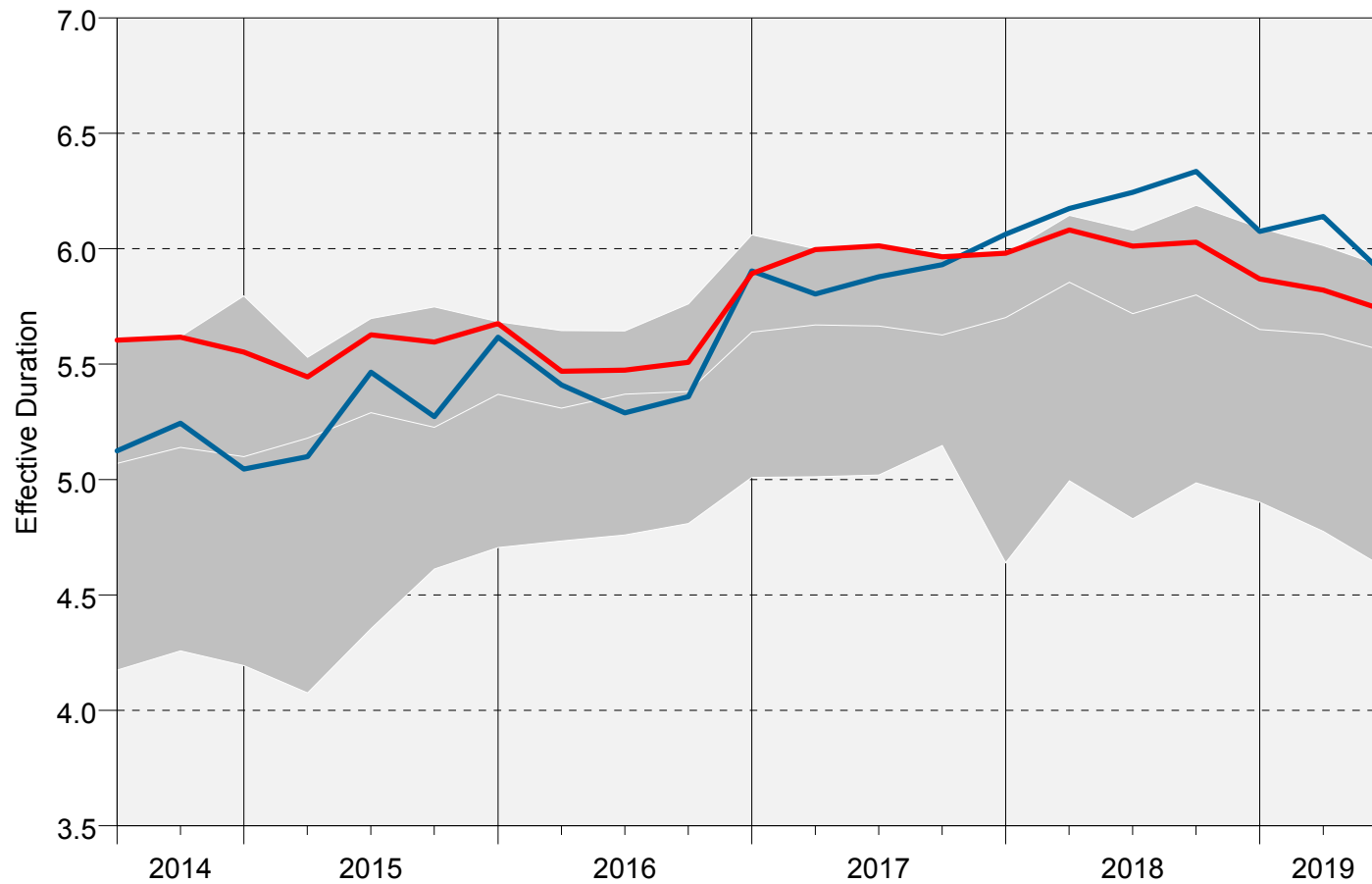
- **Excess Return:** Excess return is a portfolio's return minus its benchmark return. This measure is used to examine whether an active manager or managers is outperforming its respective benchmark.
- **Sharpe Ratio:** The Sharpe ratio is a commonly used measure of risk-adjusted return, or excess return per unit of risk (as measured by standard deviation).
- **Standard Deviation:** Standard deviation is a statistical measure of portfolio risk. It reflects the average deviation of returns from their mean. Standard deviation is used as an estimate of risk since it measures how wide the range of returns has been.
- **Information ratio:** in order to assess value (if any) added over the benchmark while also penalizing volatility (in the form of tracking error).
- **Tracking Error:** Standalone tracking error will help to assess how closely the portfolio is tracking the respective benchmark.
- **Combined Z-Score:** to assess style (growth, core or value) tilts in the existing as well as prospective manager combinations.
- **Upside Capture:** This measure details how much a given portfolio increases relative to the benchmark in a market. For example, an upside capture of 105 indicates the portfolio increased by 5% more than the benchmark.
- **Downside Capture:** This measure details how much a given portfolio decreases relative to the benchmark in a market. For example, a downside capture of 105 indicates the portfolio fell by 5% more than the benchmark.
- **Weighted Median Market Capitalization:** This measure along with the z-score indicates how well a portfolio is matching the benchmark from a size perspective.

# Fixed Income Fund

## Effective Duration

The charts below illustrate Effective Duration for the Fixed Income Fund over time. As a backdrop, the range (from 10th to 90th percentile) is shown for the Callan Core Plus Fixed Income group in the grey shaded area. The fixed income fund is shown in **blue**. The Bloomberg Barclay's Aggregate is shown in **red** for comparison.

Effective Duration  
for 5 Years Ended June 30, 2019



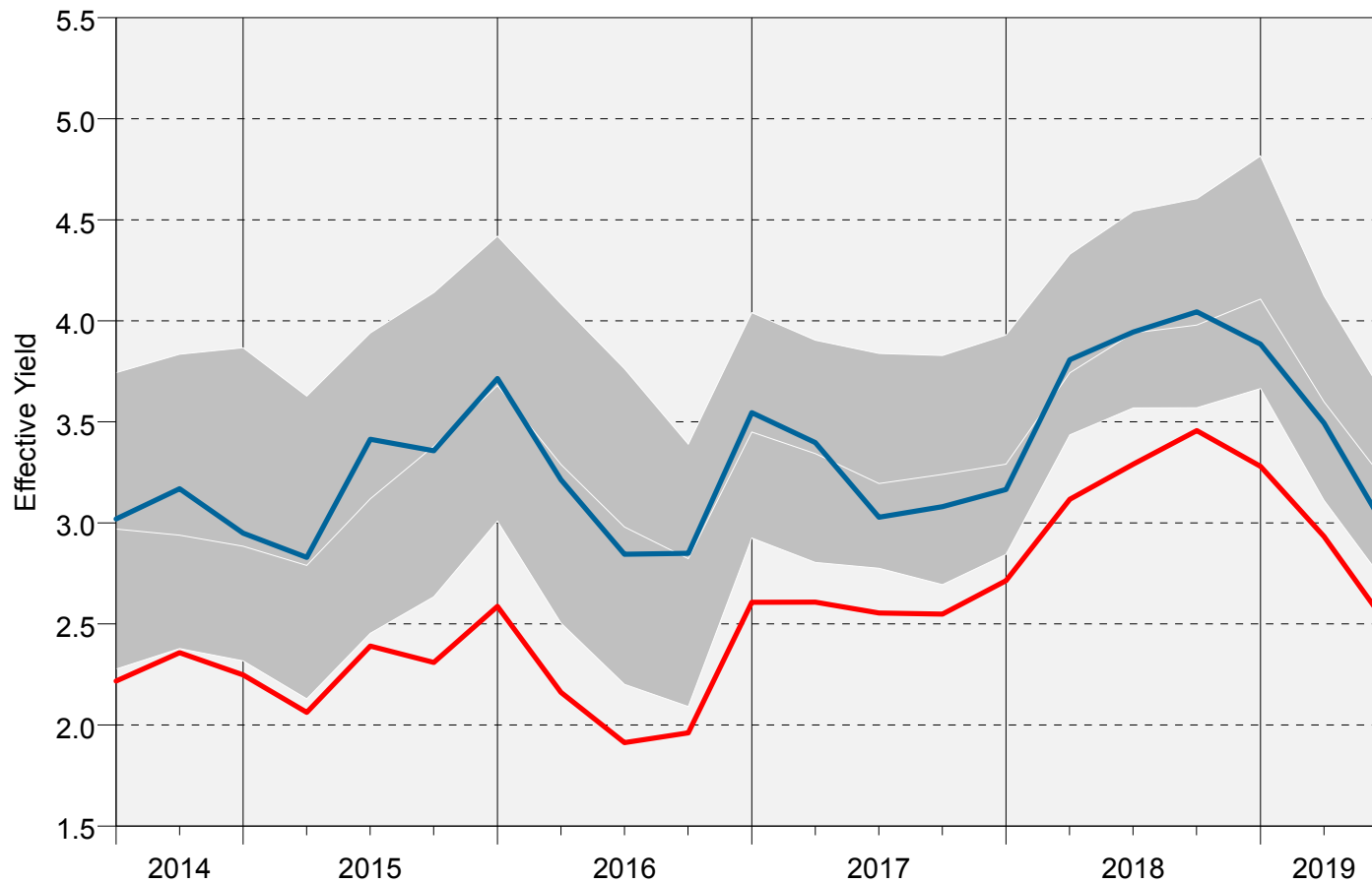


# Fixed Income Fund

## Effective Yield

The charts below illustrate Effective Yield for the Fixed Income Fund over time. As a backdrop, the range (from 10th to 90th percentile) is shown for the Callan Core Plus Fixed Income group in the grey shaded area. The fixed income fund is shown in **blue**. The Bloomberg Barclay's Aggregate is shown in **red** for comparison.

Effective Yield  
for 5 Years Ended June 30, 2019



# Fixed Income Fund

## Excess Return Correlation

Excess Correlation Table

Benchmark: Blmbg:Aggregate

for 5 Years Ended June 30, 2019

PGIM FI:Core Plus FI	1.0000			
TCW:Core Plus	0.1044	1.0000		
NC Fixed Income Fund	0.9095	0.5084	1.0000	
Callan Core Plus FI	0.6552	0.5216	0.8003	1.0000
	PGIM FI:Core Plus FI	TCW:Core Plus	NC Fixed Income Fund	Callan Core Plus FI

Excess Correlation Table

Benchmark: Blmbg:Aggregate

for 7 Years Ended June 30, 2019

PGIM FI:Core Plus FI	1.0000			
TCW:Core Plus	0.5693	1.0000		
NC Fixed Income Fund	0.8875	0.8841	1.0000	
Callan Core Plus FI	0.7162	0.5872	0.7164	1.0000
	PGIM FI:Core Plus FI	TCW:Core Plus	NC Fixed Income Fund	Callan Core Plus FI

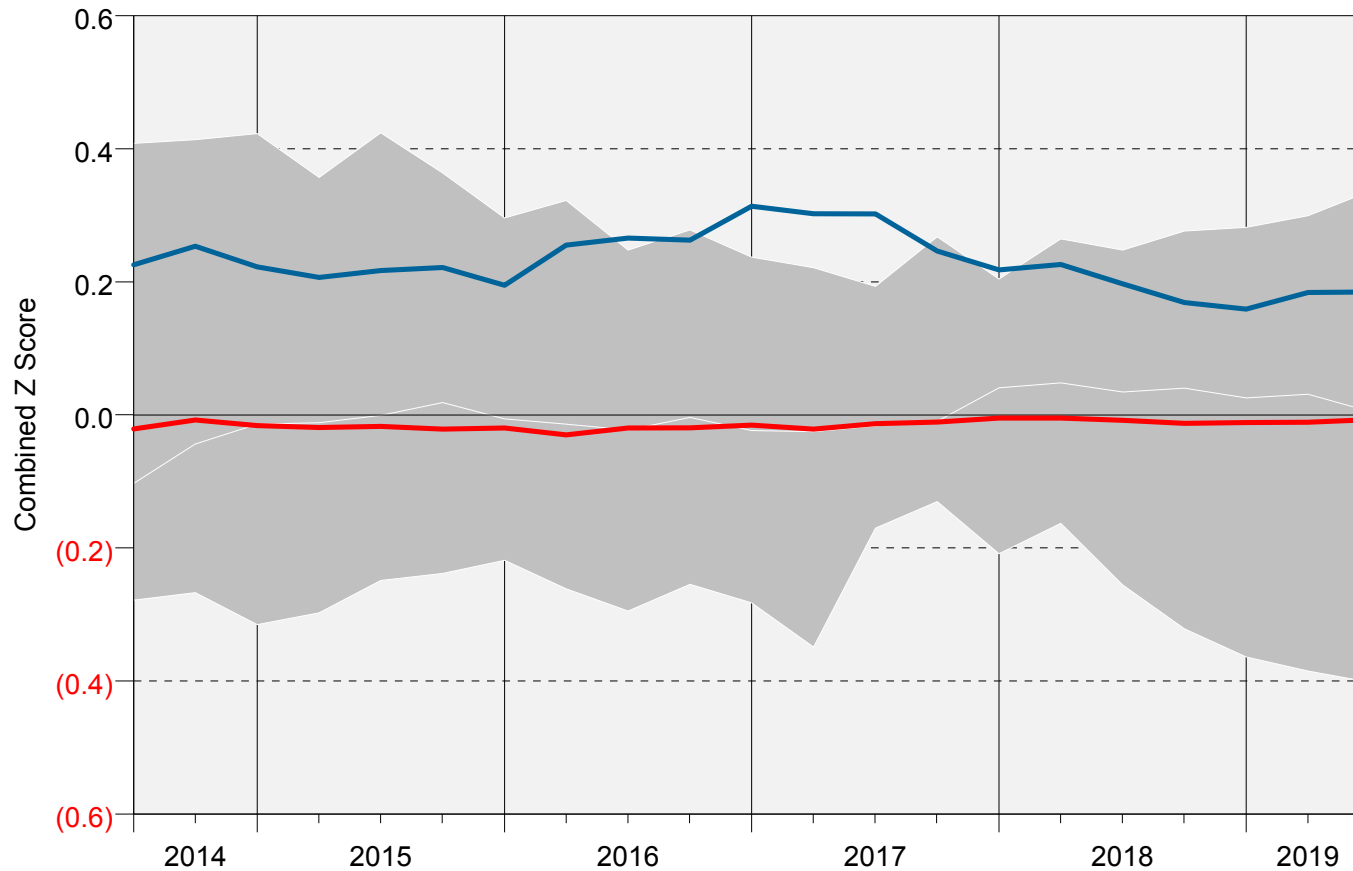
A low, or negative, excess return correlation suggests managers are complimentary in nature. A correlation below 0.2 and 0.6 is typically considered a weak-to-moderate positive correlation, while -0.2 to 0.2 is considered to be very weak, or uncorrelated.

# Large Cap Core Equity Fund

## Combined Z-Score

The charts below illustrate Combined Z Score for the Large Cap Core Equity option over time. As a backdrop, the range (from 10th to 90th percentile) is shown for the Callan Large Cap Core group in the grey shaded area. The Large Cap Core Equity Fund is shown in **blue**. The Russell 1000 Index is shown in **red** for comparison.

Combined Z Score  
for 5 Years Ended June 30, 2019



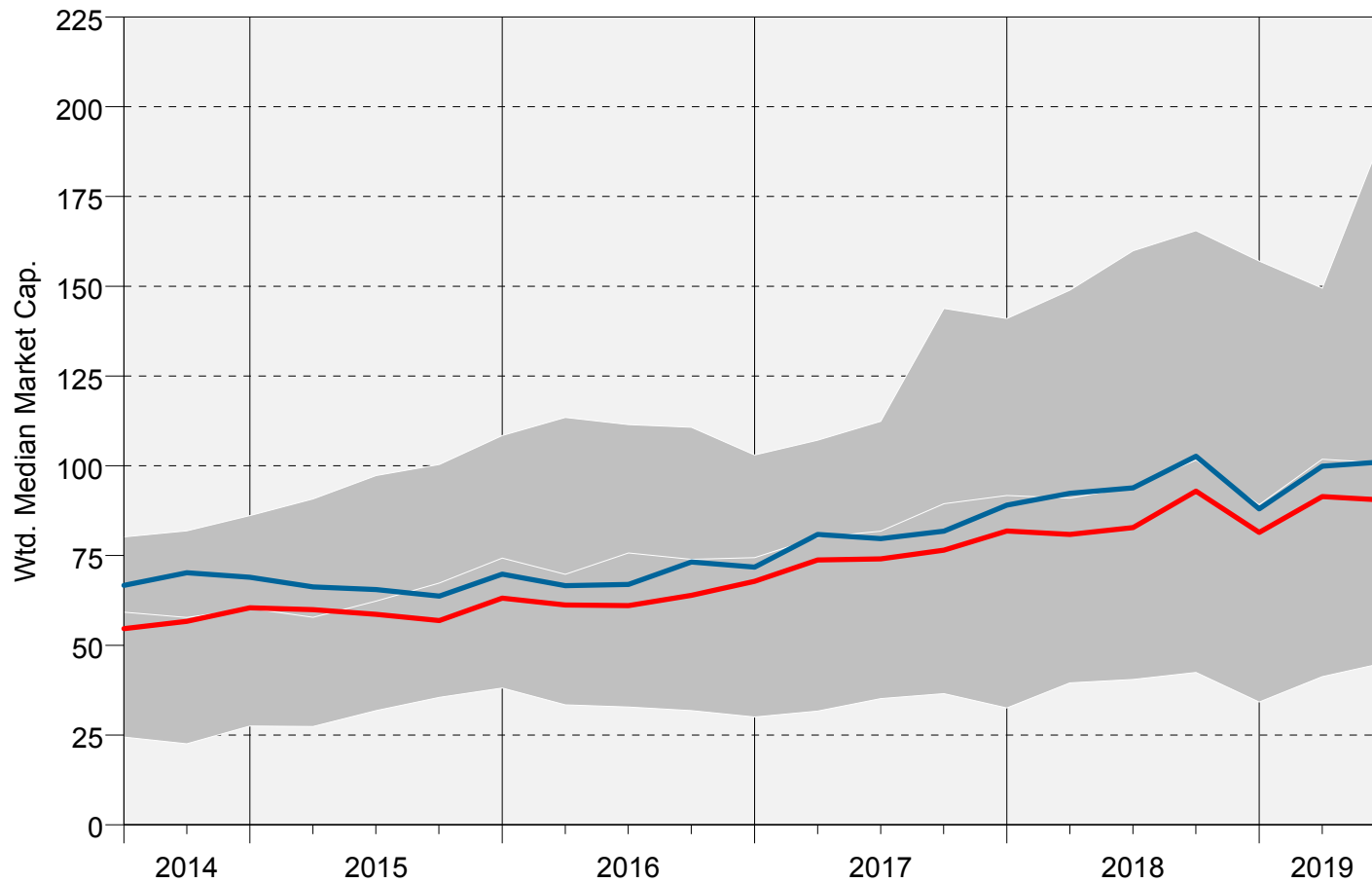
The Combined Z Score is a single holdings-based measure of the "growthiness" or "valueyness" of an individual stock or portfolio of stocks based on fundamental financial ratio analysis. The Combined Z Score usually ranges between +2 and -2. A significant positive Combined Z Score implies significant "growthiness" in the stock or portfolio. A Combined Z Score close to 0.00 (positive or negative) implies "core-like" style characteristics, and a significantly negative Combined Z Score implies more "valueyness" in the stock or portfolio.

# Large Cap Core Equity Fund

## Weighted Median Market Capitalization

The charts below illustrate Weighted Median Market Capitalization for the Large Cap Core option over time. As a backdrop, the range (from 10th to 90th percentile) is shown for the Callan Large Cap Core group in the grey shaded area. The Large Cap Core Equity Fund is shown in **blue**. The Russell 1000 Index is shown in **red** for comparison.

Wtd. Median Market Cap.  
for 5 Years Ended June 30, 2019



# Large Cap Core Equity Fund

## Excess Return Correlation

### Excess Correlation Table

Benchmark: Russell:1000 Index  
for 5 Years Ended June 30, 2019

BlackRock:LC Idx;Instl	1.0000						
Hotchkis:Lg Cap Value	(0.0470)	1.0000					
Macquarie:US Lrg Cap Value Equity	(0.0931)	(0.3629)	1.0000				
Sands:Lg Cap Growth	(0.0120)	(0.2620)	(0.4154)	1.0000			
Loomis:Large Cap Growth	0.0668	(0.5936)	(0.2266)	0.6244	1.0000		
NC Large Cap Core Equity Fund	(0.0346)	(0.2703)	(0.2366)	0.9434	0.7168	1.0000	
Callan Large Cap Core	(0.0837)	(0.0133)	(0.0500)	0.1024	(0.0023)	0.0612	1.0000
	BlackRock:LC Idx;Instl	Hotchkis:Lg Cap Value	Macquarie:US Lrg Cap Value Equity	Sands:Lg Cap Growth	Loomis:Large Cap Growth	NC Large Cap Core Equity Fund	Callan Large Cap Core

### Excess Correlation Table

Benchmark: Russell:1000 Index  
for 7 Years Ended June 30, 2019

BlackRock:LC Idx;Instl	1.0000						
Hotchkis:Lg Cap Value	(0.1774)	1.0000					
Macquarie:US Lrg Cap Value Equity	(0.0999)	(0.1340)	1.0000				
Sands:Lg Cap Growth	0.0063	(0.2589)	(0.4467)	1.0000			
Loomis:Large Cap Growth	0.1368	(0.5297)	(0.2669)	0.6365	1.0000		
NC Large Cap Core Equity Fund	(0.0404)	(0.1136)	(0.2178)	0.9137	0.6988	1.0000	
Callan Large Cap Core	0.0206	0.0138	(0.0971)	0.0708	(0.0193)	0.0478	1.0000
	BlackRock:LC Idx;Instl	Hotchkis:Lg Cap Value	Macquarie:US Lrg Cap Value Equity	Sands:Lg Cap Growth	Loomis:Large Cap Growth	NC Large Cap Core Equity Fund	Callan Large Cap Core

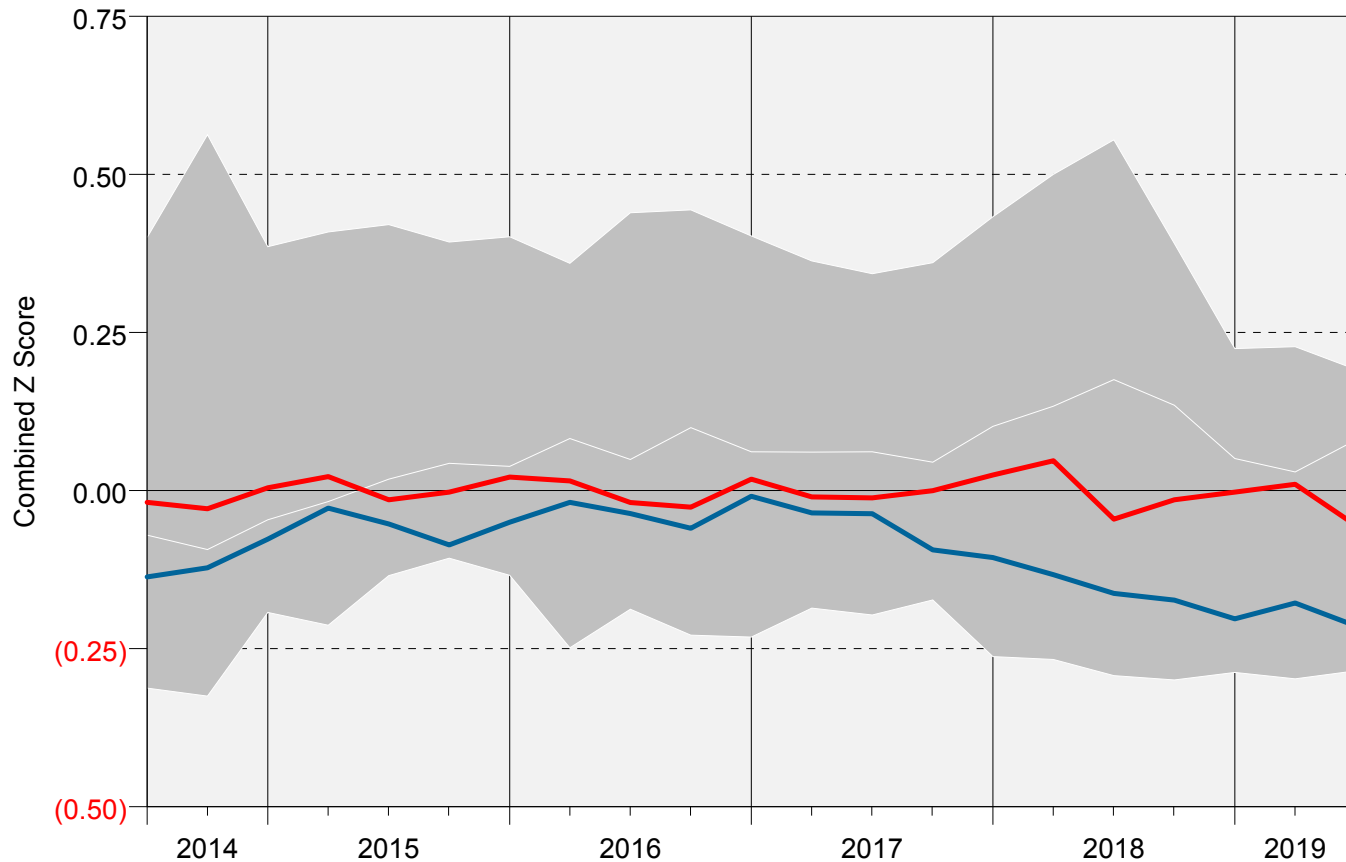
A low, or negative, excess return correlation suggests managers are complimentary in nature. A correlation below 0.2 and 0.6 is typically considered a weak-to-moderate positive correlation, while -0.2 to 0.2 is considered to be very weak, or uncorrelated.

# Small/Mid Cap Equity Fund

## Combined Z-Score

The charts below illustrate Combined Z Score for the Small/Mid Cap Fund over time. As a backdrop, the range (from 10th to 90th percentile) is shown for the Callan Small/Mid group in the grey shaded area. The Small/Mid Cap Equity Fund is shown in **blue**. The Russell 2500 Index is shown in **red** for comparison.

Combined Z Score  
for 5 Years Ended June 30, 2019



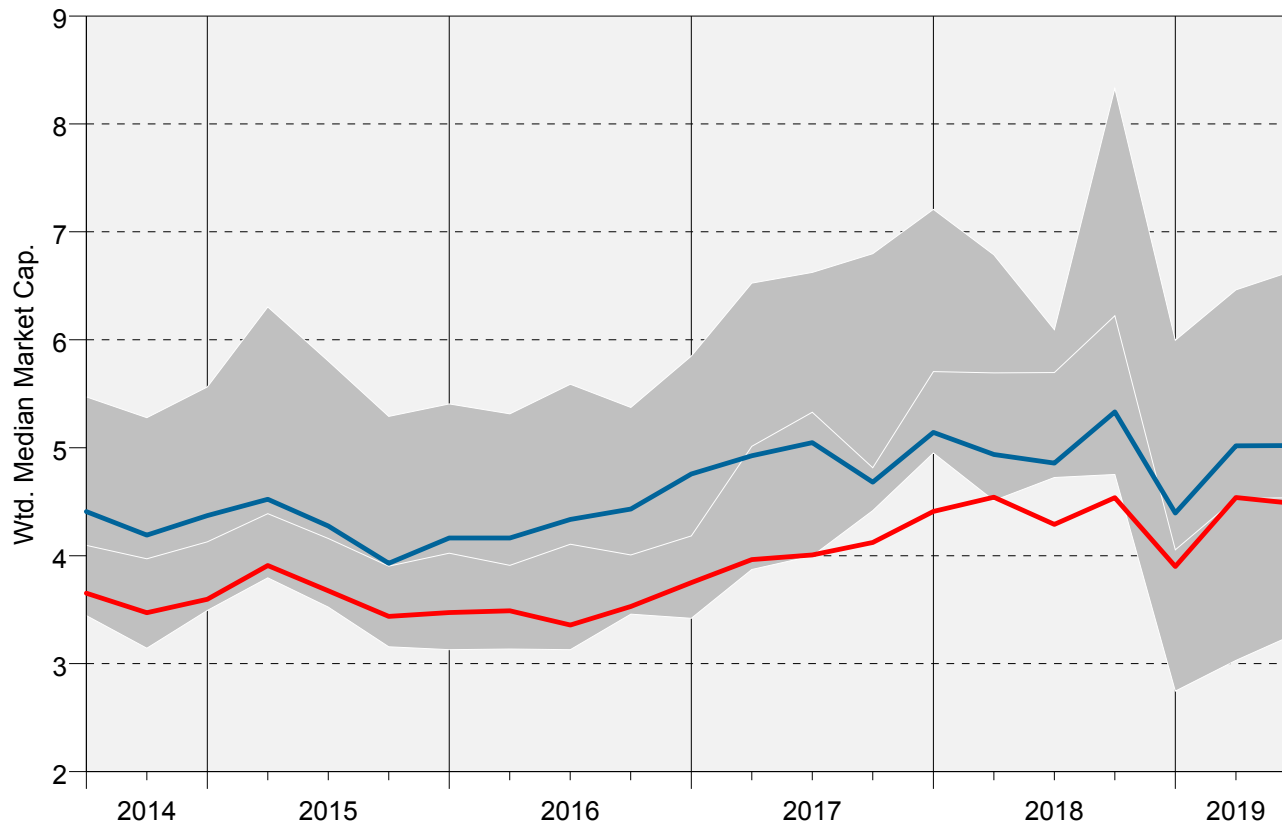
The Combined Z Score is a single holdings-based measure of the "growthiness" or "valueyness" of an individual stock or portfolio of stocks based on fundamental financial ratio analysis. The Combined Z Score usually ranges between +2 and -2. A significant positive Combined Z Score implies significant "growthiness" in the stock or portfolio. A Combined Z Score close to 0.00 (positive or negative) implies "core-like" style characteristics, and a significantly negative Combined Z Score implies more "valueyness" in the stock or portfolio.

# Small/Mid Cap Equity Fund

## Weighted Median Market Capitalization

The charts below illustrates Weighted Median Market Cap for the Small/Mid Cap Fund over time. As a backdrop, the range (from 10th to 90th percentile) is shown for the Callan Small/Mid group in the grey shaded area. The Small/Mid Cap Equity Fund is shown in **blue**. The Russell 2500 Index is shown in **red** for comparison.

Wtd. Median Market Cap.  
for 5 Years Ended June 30, 2019



# Small/Mid Cap Equity Fund

## Excess Return Correlation

Excess Correlation Table  
 Benchmark: Russell:2500 Index  
 for 5 Years Ended June 30, 2019

BlkRck:Russell 2500 Eq Index	1.0000						
EARNEST:SMID Value	0.0307	1.0000					
WEDGE:Sm/Mid Cap Value	0.6486	0.1325	1.0000				
Brown Inv:Small Cap Growth	(0.5819)	(0.1011)	(0.5214)	1.0000			
Hotchkis:Mid-Cap Value	0.3464	(0.3044)	0.2153	(0.5267)	1.0000		
NC Small/Mid Cap Equity Fund	(0.1341)	0.1337	0.0393	0.5509	0.1862	1.0000	
Callan Small/MidCap Core	0.0826	0.1903	0.1114	(0.1786)	(0.0708)	(0.0817)	1.0000
	BlkRck:Russell 2500 Eq Index	EARNEST:SMID Value	WEDGE:Sm/Mid Cap Value	Brown Inv:Small Cap Growth	Hotchkis:Mid- Cap Value	NC Small/Mid Cap Equity Fund	Callan Small/ MidCap Core

Excess Correlation Table  
 Benchmark: Russell:2500 Index  
 for 7 Years Ended June 30, 2019

BlkRck:Russell 2500 Eq Index	1.0000						
EARNEST:SMID Value	(0.0746)	1.0000					
WEDGE:Sm/Mid Cap Value	0.4335	0.1604	1.0000				
Brown Inv:Small Cap Growth	(0.3976)	(0.1465)	(0.5527)	1.0000			
Hotchkis:Mid-Cap Value	0.2362	(0.2723)	0.2727	(0.5422)	1.0000		
<name not found>	--	--	--	--	--	1.0000	
Callan Small/MidCap Core	0.0388	0.1020	0.0744	(0.1198)	(0.0672)	--	1.0000
	BlkRck:Russell 2500 Eq Index	EARNEST:SMID Value	WEDGE:Sm/Mid Cap Value	Brown Inv:Small Cap Growth	Hotchkis:Mid- Cap Value	<name not found>	Callan Small/ MidCap Core

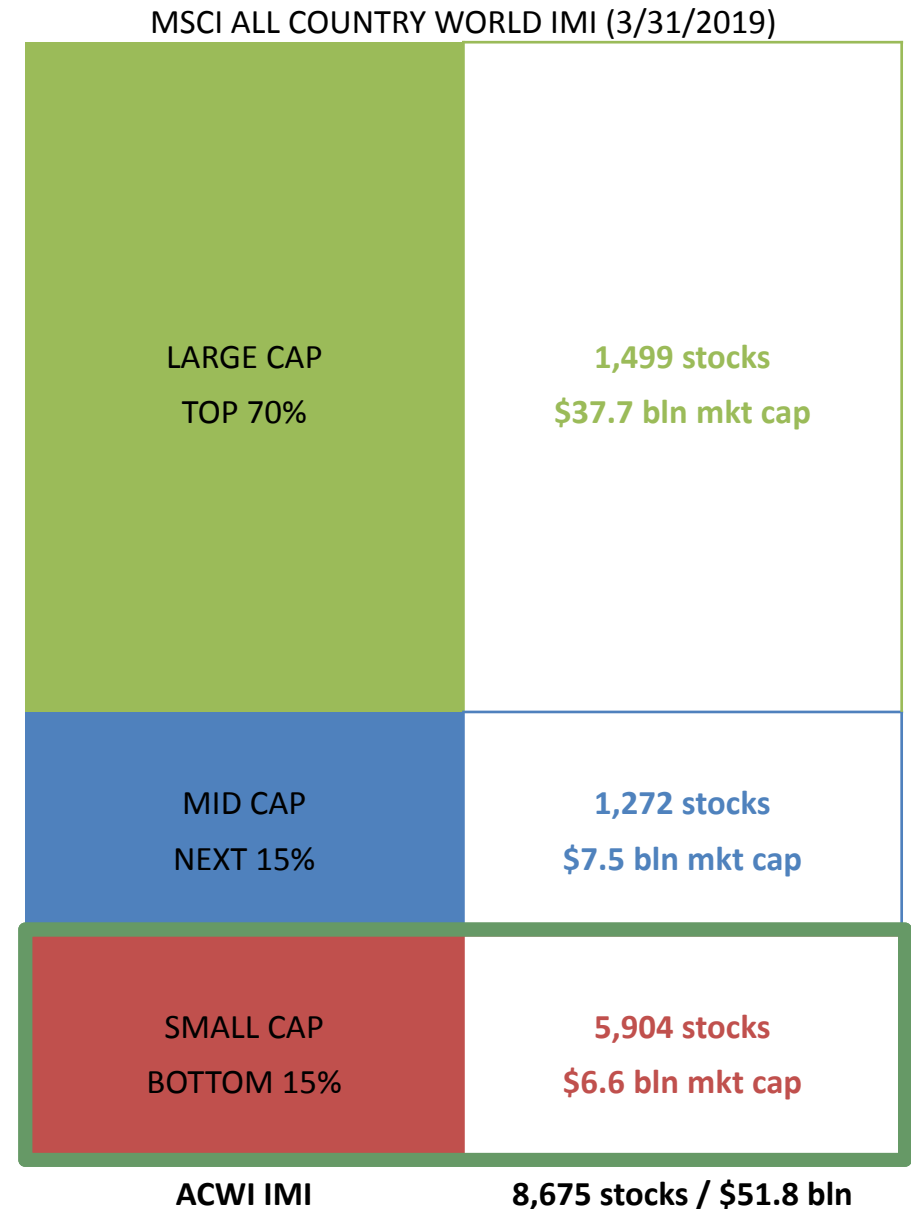
A low, or negative, excess return correlation suggests managers are complimentary in nature. A correlation below 0.2 and 0.6 is typically considered a weak-to-moderate positive correlation, while -0.2 to 0.2 is considered to be very weak, or uncorrelated.



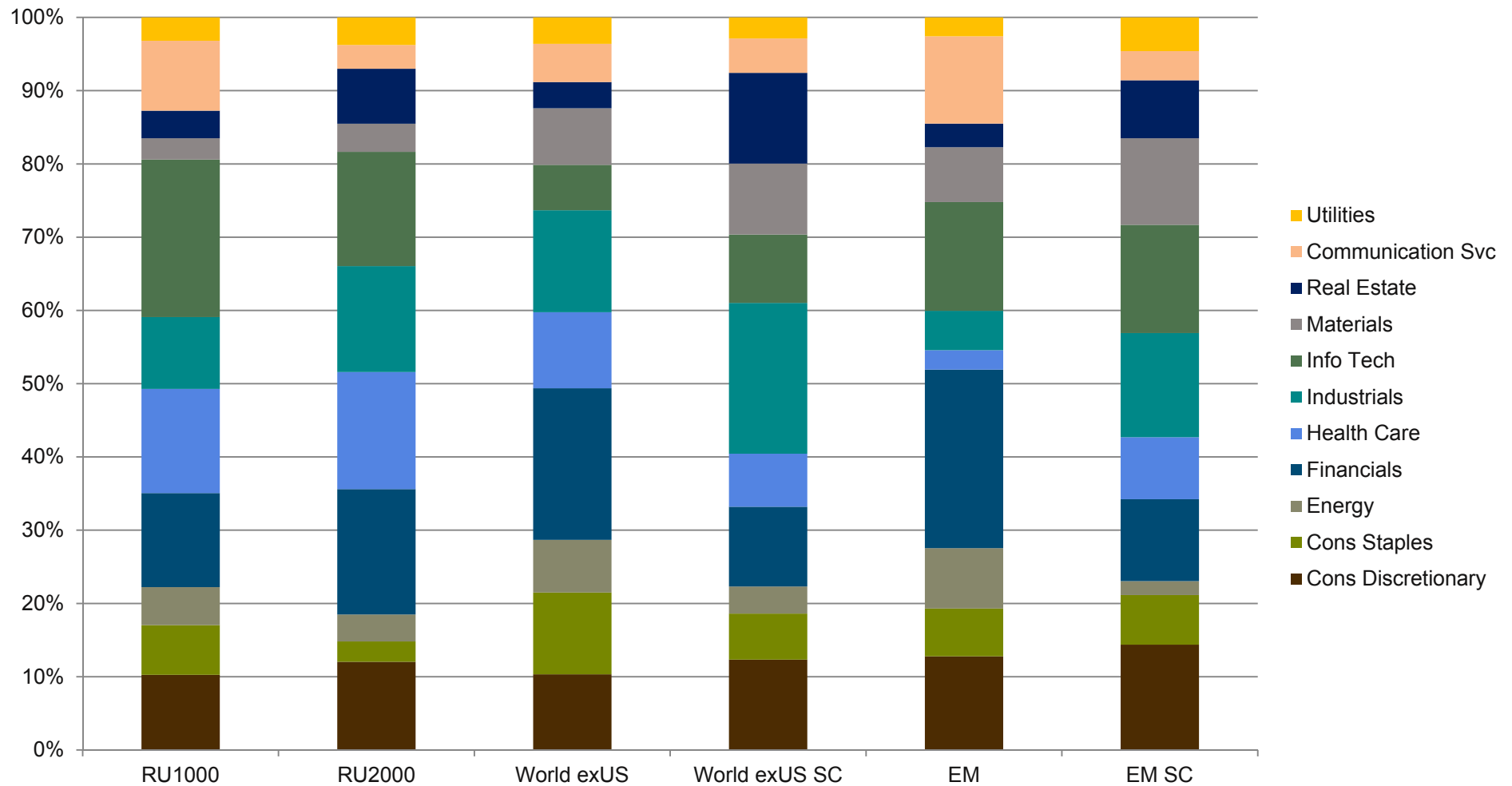
# International Small Cap

## Why International Small Cap?

- Broadens the opportunity set
  - Most international equity funds have little or no exposure to small cap
  - 68% of all stocks are small cap
- Similar to the US, international small cap outperforms international large cap over longer time periods.
- Better access to local themes
- Sector exposures differ significantly as shown on next slide
- Active management premium in international small cap is high



# Regional Markets by Sector



- Sector exposures differ significantly – more local plays in small cap (Discretionary & Real Estate).

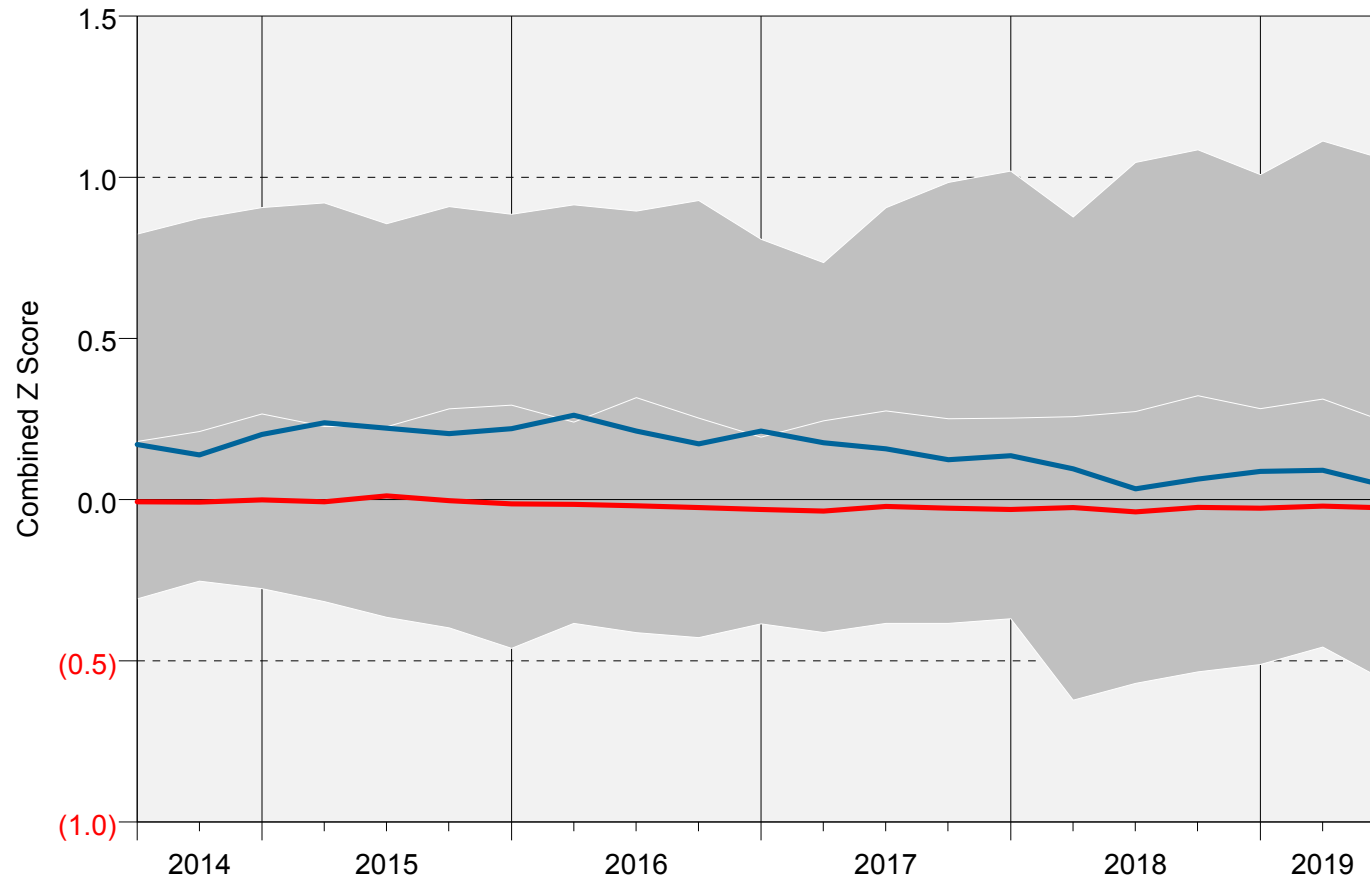
Source: Russell, MSCI as of March 31, 2019

# International Equity Fund

## Combined Z-Score

The charts below illustrate Combined Z Score for different managers over time. As a backdrop, the range (from 10th to 90th percentile) is shown for the Callan Large Cap Value group in the grey shaded area. The International Equity Fund is shown in **blue**. The MSCI ACWI ex US Index is shown in **red** for comparison.

International Equity Combined Z Score  
for 5 Years Ended June 30, 2019



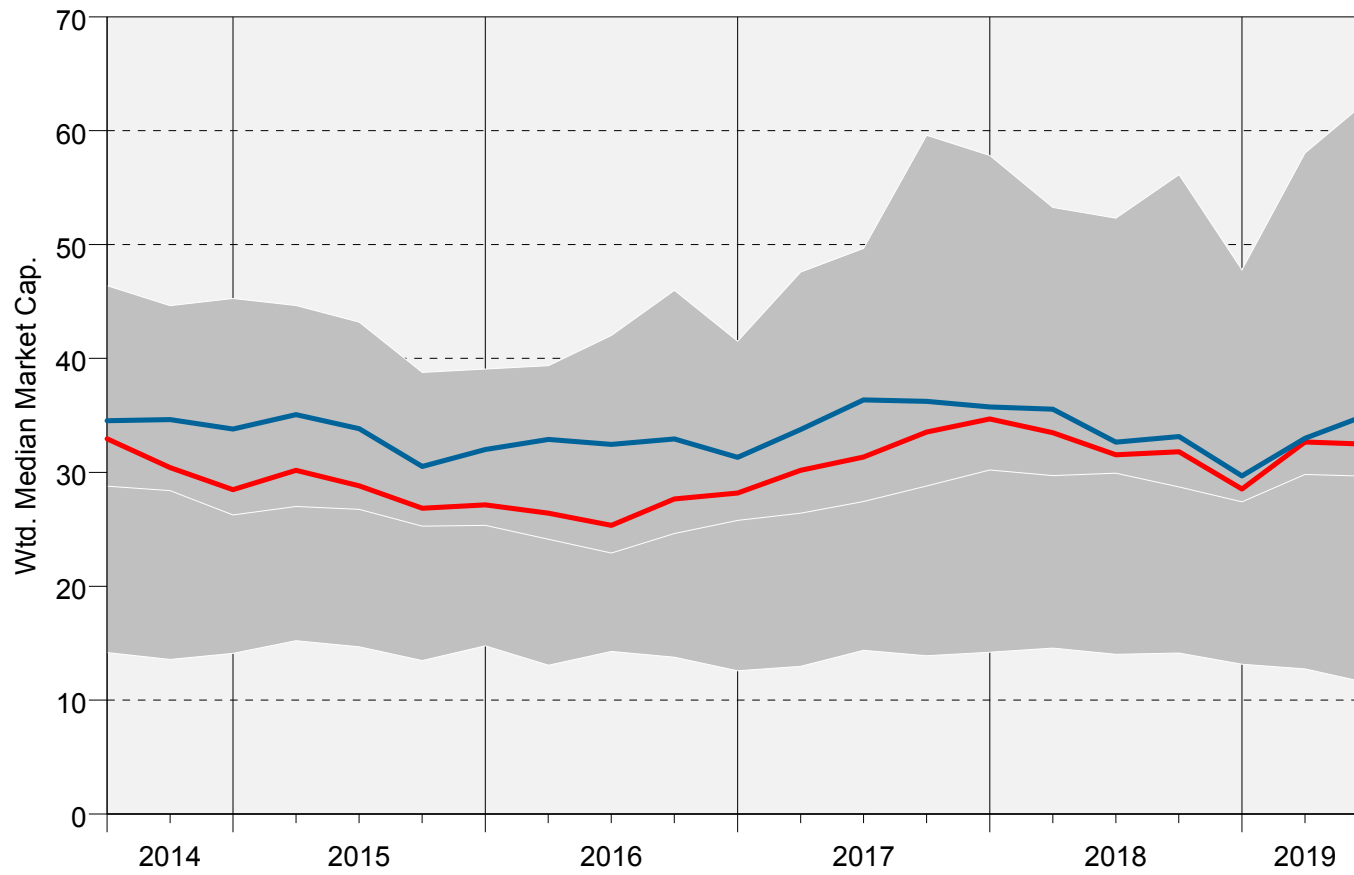
The Combined Z Score is a single holdings-based measure of the "growthiness" or "valueyness" of an individual stock or portfolio of stocks based on fundamental financial ratio analysis. The Combined Z Score usually ranges between +2 and -2. A significant positive Combined Z Score implies significant "growthiness" in the stock or portfolio. A Combined Z Score close to 0.00 (positive or negative) implies "core-like" style characteristics, and a significantly negative Combined Z Score implies more "valueyness" in the stock or portfolio.

# International Equity Fund

## Weighted Median Market Capitalization

The charts below illustrate Weighted Median Market Capitalization for different managers over time. As a backdrop, the range (from 10th to 90th percentile) is shown for the Callan Large Cap Value group in the grey shaded area. The International Equity Fund is shown in **blue**. The MSCI ACWI ex US Index is shown in **red** for comparison.

International Equity Wtd. Median Market Cap.  
for 5 Years Ended June 30, 2019



## Excess Return Correlation

Excess Correlation Table  
 Benchmark: MSCI:ACWI ex US  
 for 5 Years Ended June 30, 2019

Baillie:ACWI ex US Alpha Eq	1.0000			
Mondrian:Foc ACW ex US Eq	(0.4579)	1.0000		
NC International Equity Fund	0.7439	0.2534	1.0000	
Callan NonUS Eq	0.2787	(0.2037)	0.1546	1.0000
	Baillie:ACWI ex US Alpha Eq	Mondrian:Foc ACW ex US Eq	NC International Equity Fund	Callan NonUS Eq

Excess Correlation Table  
 Benchmark: MSCI:ACWI ex US  
 for 7 Years Ended June 30, 2019

Baillie:ACWI ex US Alpha Eq	1.0000			
Mondrian:Foc ACW ex US Eq	(0.4272)	1.0000		
NC International Equity Fund	0.6387	0.4227	1.0000	
Callan NonUS Eq	0.1869	(0.0890)	0.1816	1.0000
	Baillie:ACWI ex US Alpha Eq	Mondrian:Foc ACW ex US Eq	NC International Equity Fund	Callan NonUS Eq

A low, or negative, excess return correlation suggests managers are complimentary in nature. A correlation below 0.2 and 0.6 is typically considered a weak-to-moderate positive correlation, while -0.2 to 0.2 is considered to be very weak, or uncorrelated.

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