

2. Joint Meeting of the Board of Trustees and Investment Advisory Committee



May 23, 2018



Public Agenda Item #1.1

Call Meeting to Reconvene of the Board of Trustees



May 23, 2018

Public Agenda Item #1.2

Call Meeting of the Investment Advisory Committee to Order



May 23, 2018

Public Agenda Item #2.1

Review and Approval of the Minutes of the March 7, 2018 Joint Meeting of the Board of Trustees and Investment Advisory Committee- (Action)



May 23, 2018

Questions?
Action Item



Public Agenda Item #3.1

Review of ERS' Investment Policy



May 23, 2018

Tom Tull, CFA, Chief Investment Officer
Sharmila Kassam, CPA, Deputy Chief Investment Officer
Steve Voss, Aon Hewitt

Agenda

Section 1

Executive Summary

Section 2

Survey and Discussion Results

Section 3

Additional Questions to Staff from Board

Section 4

Summary and Proposed Next Steps



Executive Summary

Investment Policy Survey Process

- The Review of the ERS' Investment Policy (IPS) was multifaceted with parallel processes occurring with the Board, IAC, and staff
 - The Board received a list of interview questions in advance of their phone interview
 - The IAC was provided the same questions via an online survey tool
 - The Staff included additional questions asked by the Board during our interview process
- The results section of this presentation reports the findings for investment staff and all staff
 - Investment Staff – Senior investment staff
 - All Staff – Senior investment staff, the executive office, legal staff, and investment compliance
- Discussions with the Board were nuanced and broader than what can be obtained through an online survey
 - This results in opinions that are not easily categorized as a “yes” or a “no” to a given survey question

Background on Investment Policy

The Investment Program has evolved so like the asset allocation evolution it is time to review the Investment Policy Statement (IPS) for opportunities for improvement

2006

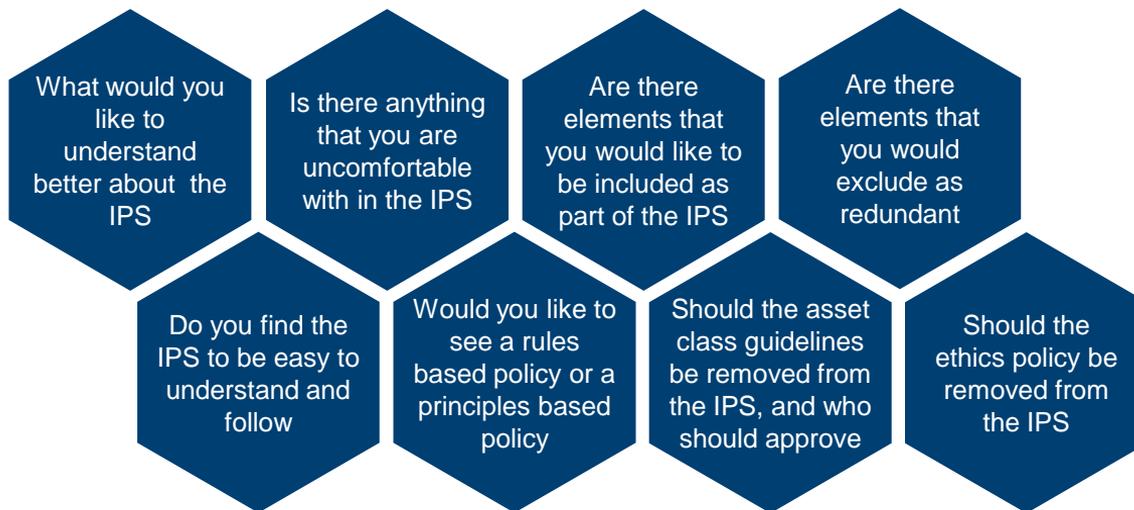
- ERS was primarily invested in public equity and public fixed income
- The Investment Policy IPS was 20 pages, includes addenda
- ERS Investment staff was 30 employees strong

2018

- ERS has invested in multiple private and public asset classes
- The IPS is approximately 250 pages, includes addenda
- ERS Investment staff is now 76 employees strong

Executive Summary

- At the March 7th ERS Board of Trustees Meeting we discussed Investment Policy Statement (IPS) best practices and potential areas of refinement
- Question topics asked to all parties and detailed in the following section included;



Executive Summary – General Comments

Below are a few areas of general consensus among the stakeholders surveyed:

- There are redundancies within the IPS that make the document more difficult to consume and use than desirable
- Consideration for revisiting the framework of the IPS
 - Whether we need rules or principles based policy to manage investment program
- The main policy should speak broadly about risk and risk management, with the “guidelines providing additional detail and not restate information”
- Create a new delegation of authority table outlining the roles and responsibilities of the Board, IAC, staff, and consultants in a clear visual
- Position the IPS as a communication tool with external stakeholders (i.e. Executive Summary for IPS)

Executive Summary – Notable Findings

- The Board generally believes that they have an understanding of the investment policy statement, and reflected that knowledge during our discussions
 - Less familiarity of the asset class guidelines and addendums
- Nearly 90% of the IAC and 70% of the investment staff believe the asset class guidelines should be removed from the IPS
- 62% of investment staff believe the current construct of the IPS creates a burden and 38% believe it prevents innovative investment solutions
- 46% of investment staff find the IPS to be difficult to understand, given its current form
- Over a majority of the IAC and staff believe the IPS should be more principles based than rules based

Principles vs Rules Based Investment Policy

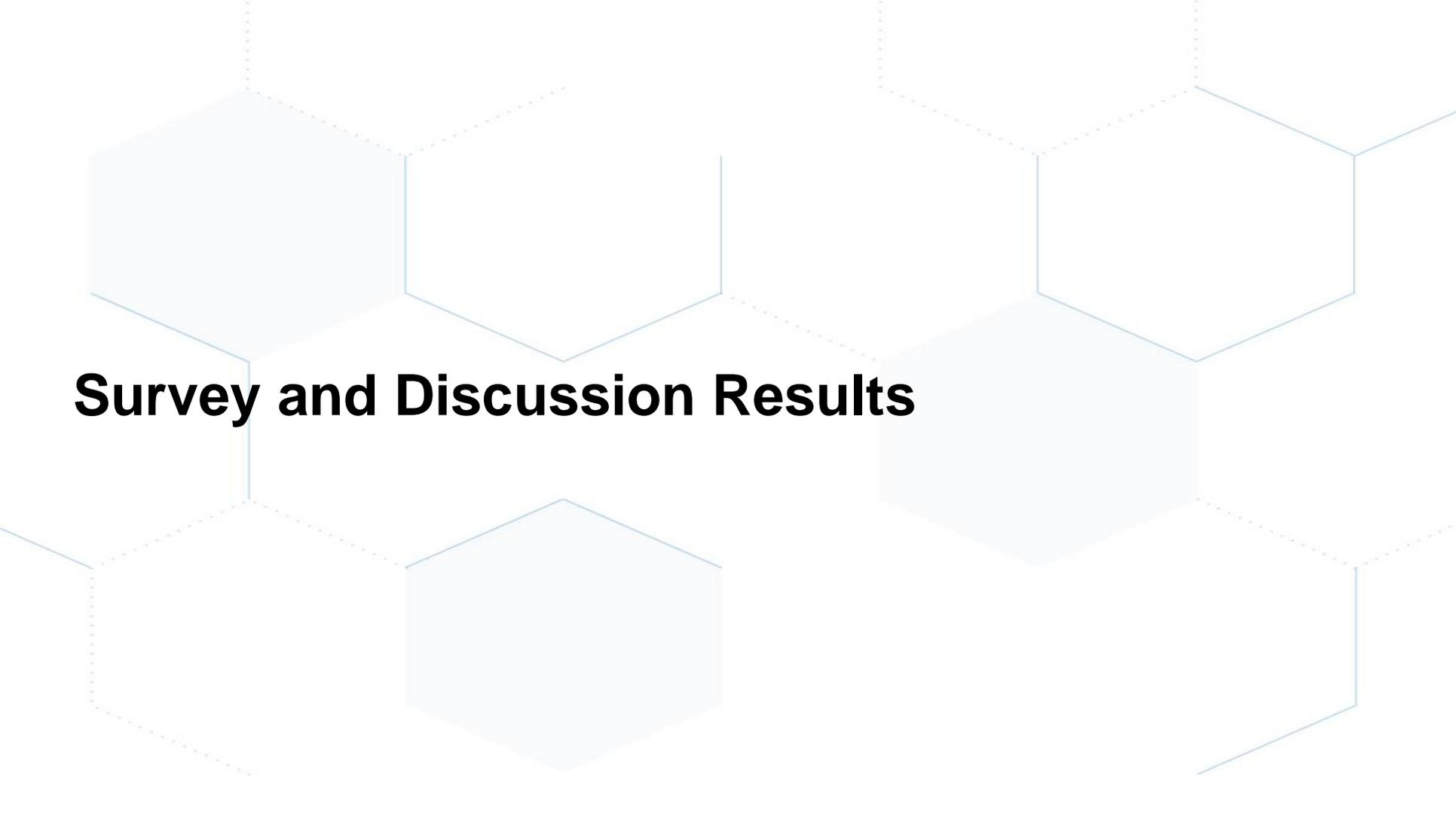
▪ Rules Based Investment Policy

- Prescriptive approach that provides guidance on what can and cannot occur
- Significant detail and foresight on future scenarios and requires modifications as the investment environment evolves
- The Board provides the detailed rule book for Staff to follow

▪ Principles Based Investment Policy

- Provides high level guidance which can be applied to many circumstances
- The Board encourages the use of professional judgment and industry expertise when making decisions

Example	
Rules Based Investment Policy	Principles Based Investment Policy
<ul style="list-style-type: none">- No more than 15% of an advisor's high yield bond portfolio, based on market values, in combined Deferred Interest, Contingent Interest and Pay-In-Kind bonds- Private equity portfolio will be invested in: 10-30% venture & growth equity; 45-70% buyouts/acquisitions; 0-15% senior, sub/distressed debt; 5 to 30% special situations; 75% funds and 25% co-investments	<ul style="list-style-type: none">- Investments shall be diversified to minimize the impact of the loss from individual investments. In addition to achieving diversification by asset class, careful attention shall be paid to diversification within each asset class and sub-allocation and across managers.

The background features a repeating pattern of light blue hexagons. Some hexagons are solid, while others are outlined with a dotted line, creating a subtle, geometric texture.

Survey and Discussion Results

A. What would you like to understand better about the IPS?

Board

- The current language/investment “jargon difficult to understand”
- The IPS is ERS’ fundamental broad view communication to the world of who we are and what we are doing
- Policy should be in “plain language” so members can understand
- The document should be formatted in a way to assist people in understanding
- “How as a board member can I be comfortable that we have the right benchmarks and benchmarking process?”
- What mechanism is in place to ensure changes in practice result in changes in policy

IAC

- Shorter and more understandable document
- In practice, is the policy as written constraining and what is “not working”?
- Better understand the risk budget, definition of measurement tools, investment risk limits and risk management

Staff

- Concern that the current form is the result of evolution and reactive changes as opposed to intentional and deliberate guidelines
- Format may make it hard for Trustees to keep up with details
- Conform investment parameters across asset classes

Aon – A rework of the IPS can increase broad utility and accountability. Current stakeholder ownership would increase through a collaborative IPS update.

B. Is there anything that you are uncomfortable with in the IPS?

Board

- Size of document
 - “unwieldy” and “difficult to manage”
 - probably not a single trustee is intimate with every piece of the IPS
 - it seems possible to “unknowingly violate the IPS”
 - redundant language create ambiguity
- Asset class guidelines
 - don’t restate objectives and clear up redundancies
 - great for an asset class researcher, but too much for the main policy
- Total fund risk management should be refined
- Multiple Board members noted their comfort with the current construct

Aon – A reduced focus on fine details can allow for the prioritization of more holistic oversight and management of the investment program.

IAC

- Risk section should be strengthened by discussing other risks being taken (active risk, credit risk, market risk, operational risk, etc) not just tracking error;
- Risk section should set guidelines around the risks and outline the policy for monitoring and managing the risk
- Certain sections belong in separate docs - ethics and asset class guidelines

Staff

- Possibly “harming the underlying constituents” by having such a complex document
- Revisit risk budget as the bands allow additional risk-taking
- Risk section is “less than precise” and “confusing”
- Not enough delegation to staff
- The personal trading policy seems “overly complicated”

C. Are there elements that you would like to be included in the IPS?

Board

- Table added to IPS for delegation of authority and roles/responsibilities
 - How are final investment decisions made?
- A section for the Texas State Constitution requirements
 - how are they overseen to ensure compliance
- Create a reporting timeline; outlining monthly, quarterly and annual reporting
- New section – Investment Philosophy and Objectives
- A stand alone risk management section
 - Remove key aspects of the asset class guidelines and incorporate into main IPS

IAC

- Policy to manage downside risk through hedging strategies

Staff

- More detail on the mission and objectives
 - What does the organization value beyond competitive risk adjusted returns?
- Description of the advantages/benefits of each asset class
- Expand the risk management section and touch on risks beyond market risk

Aon – The IPS update can be used as an opportunity to move the document toward contemporary best practice. An executive summary may be effective way to communicate the mission and objectives of the investment program.

D. Are there elements that you would exclude as redundant?

Board

- The addendums and the asset class guidelines
 - Document should get shorter as broader ideas are addressed in the main IPS
 - If they remain in IPS, they should refer to the main policy as opposed to restating ideas

IAC

- Asset class guidelines and proxy voting policy should be separated
- The policies seem to “focus on legal and technical issues”

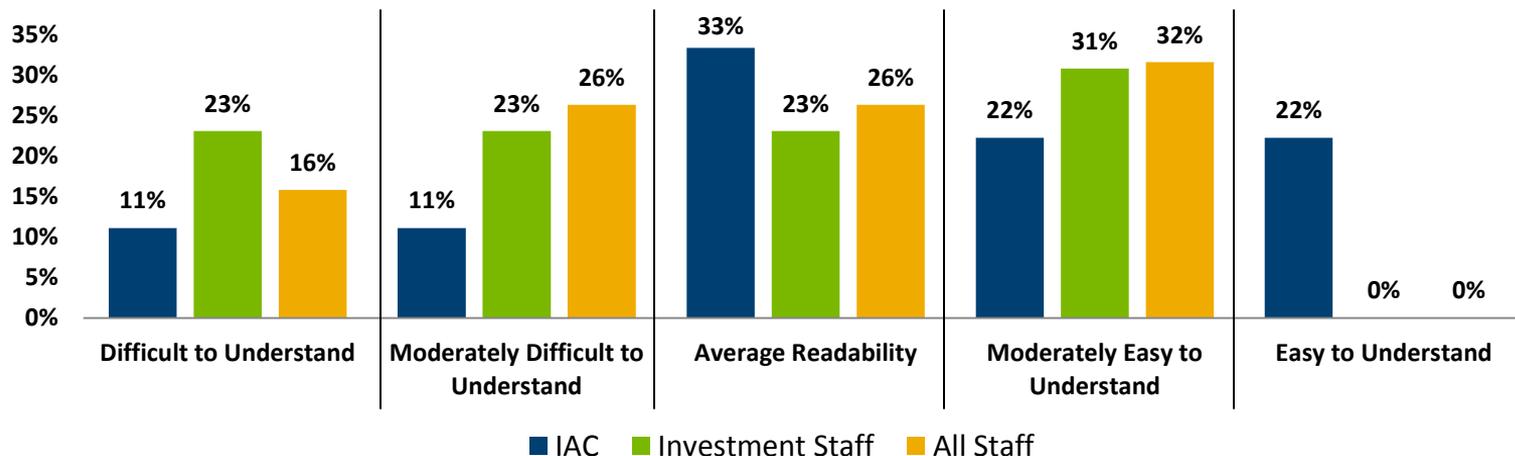
Staff

- Risk budget and the need to report violations
- Credit rating limits
- Requirement for consultants on select pool selections
- Asset Class Guidelines - have one set of procedures that apply to all and then specify areas of difference
- The tactical asset plan within the asset class guidelines because these are not requirements but expectations

Aon – Redundancies can be removed to enhance readability without altering ultimate function of the IPS; Elevate and centralize risk evaluation

E. Do you find the IPS to be easy to understand and follow? Board, IAC and Staff

- Board members generally understand but believe redundancy makes it harder to follow



- 46% of Investment Staff find the IPS to be above average difficulty to understand with 23% having a high level of difficulty; No staff found it easy to understand
- 78% of the IAC found the document to be somewhat difficult to understand

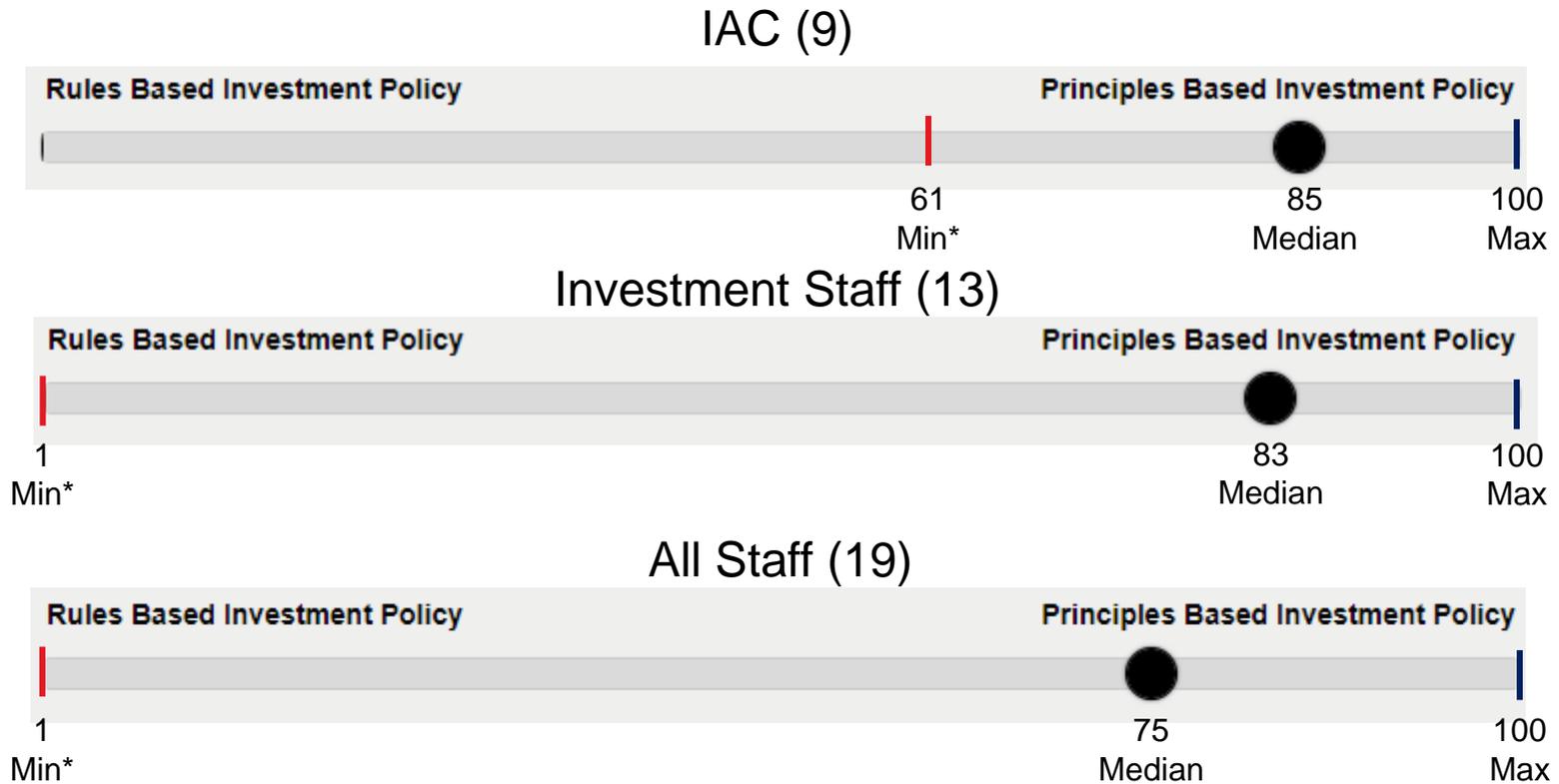
Aon – Having a policy that is detailed and redundant can result in ambiguity or inaction and weaken oversight

F. Would you like to see a rules based policy or a principles based policy? - Board Commentary

- Two Trustees noted a rules based system is “easier for oversight purposes”
 - If rules are too constrictive they should be made more flexible, with principle based concepts to reduce ambiguity
- Three Trustees stated their desire to move towards a principles based approach and viewed doing so as moving toward a “higher level of maturity” investment program
 - More discretion to staff; increased responsibility of staff to communicate and be transparent
 - Requires an “evolution in the audit and compliance function”, focusing on compliance with intent
 - Compliance reports would need to evolve and include judgements
- Given the sophistication of the Plan and expertise of staff, broad Principles based guidelines in the main IPS with rules based structure for the addendums and asset class guidelines is appropriate
 - The Board and the IAC review the IPS annually; That is the time for the Board and IAC to opine and revise
 - Reserve the right to prohibit specific investments if it is the collective judgment of the Board and IAC
- Staff needs to be comfortable with final decision on the IPS and it will need to “pass muster with the legislature”

Aon – A principles based approach represents what we see as continued evolution across public funds

F. Would you like to see a rules based policy or a principles based policy? - IAC and Staff



*Red marks indicate the lowest score in the range expressed by the survey respondents

G. Should the asset class guidelines be removed from the IPS? Board Commentary

- **Yes.** Three Trustees noted the asset class guidelines should be removed from the main IPS
 - Broad guidelines should be contained in the IPS with key nuances of each asset class being maintained in the asset class guidelines
 - The tactical plans should be current and maintained as needed by the asset classes
- **No.** Two Trustees noted the guidelines should continue to be maintained in the IPS for completeness purposes, “it is nice to have one governing document”

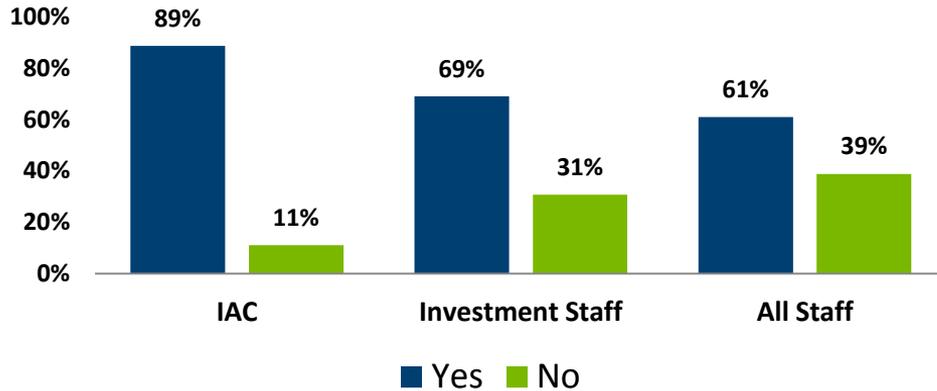
Who should approve the guidelines?

- Four trustees indicated that they “do not have the expertise” to review the guidelines, they are important, but “better determined by staff and IAC”
- There are some Board members who are capable, and think the Board should be reviewing and approving these guidelines along with the IAC

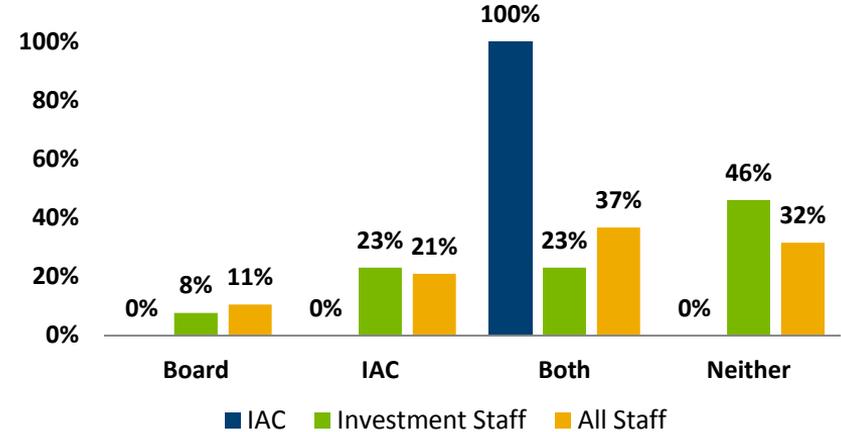
Aon – Asset class guidelines could be removed from the IPS and staff would continue to provide comprehensive reporting to the Board and IAC

G. Should the asset class guidelines be removed from the IPS? - IAC and Staff Commentary

Should Asset Class Guidelines Be Removed?

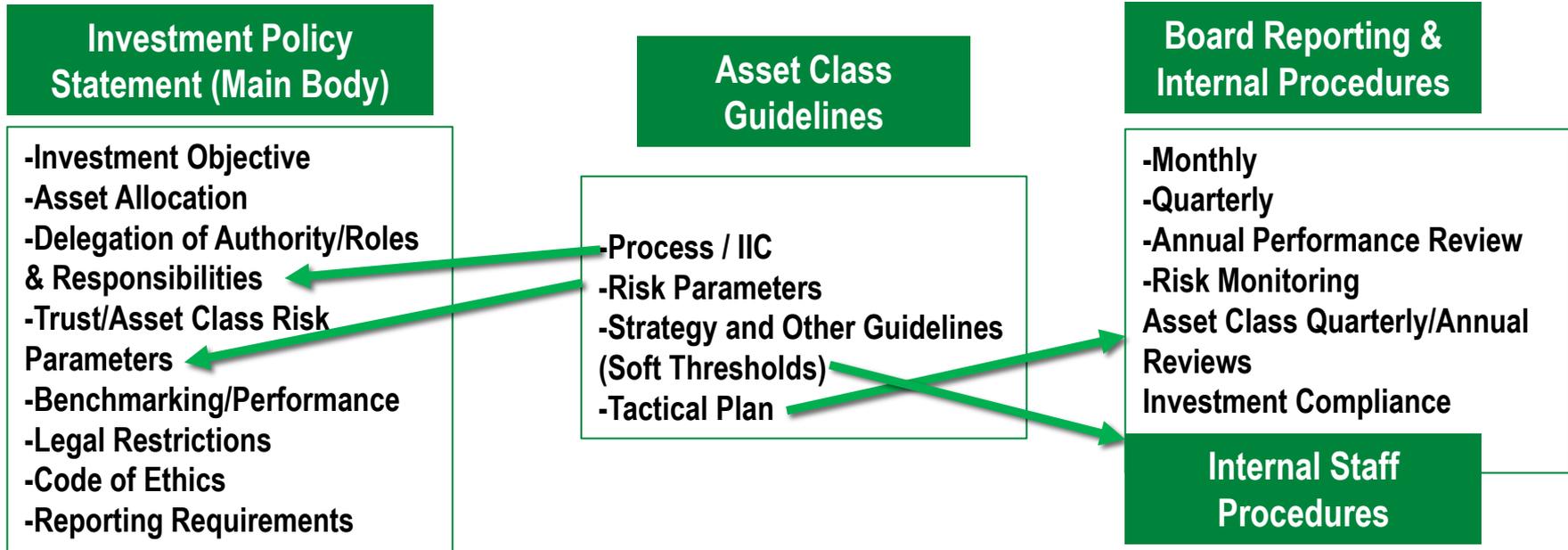


Who Should Approve the Guidelines?

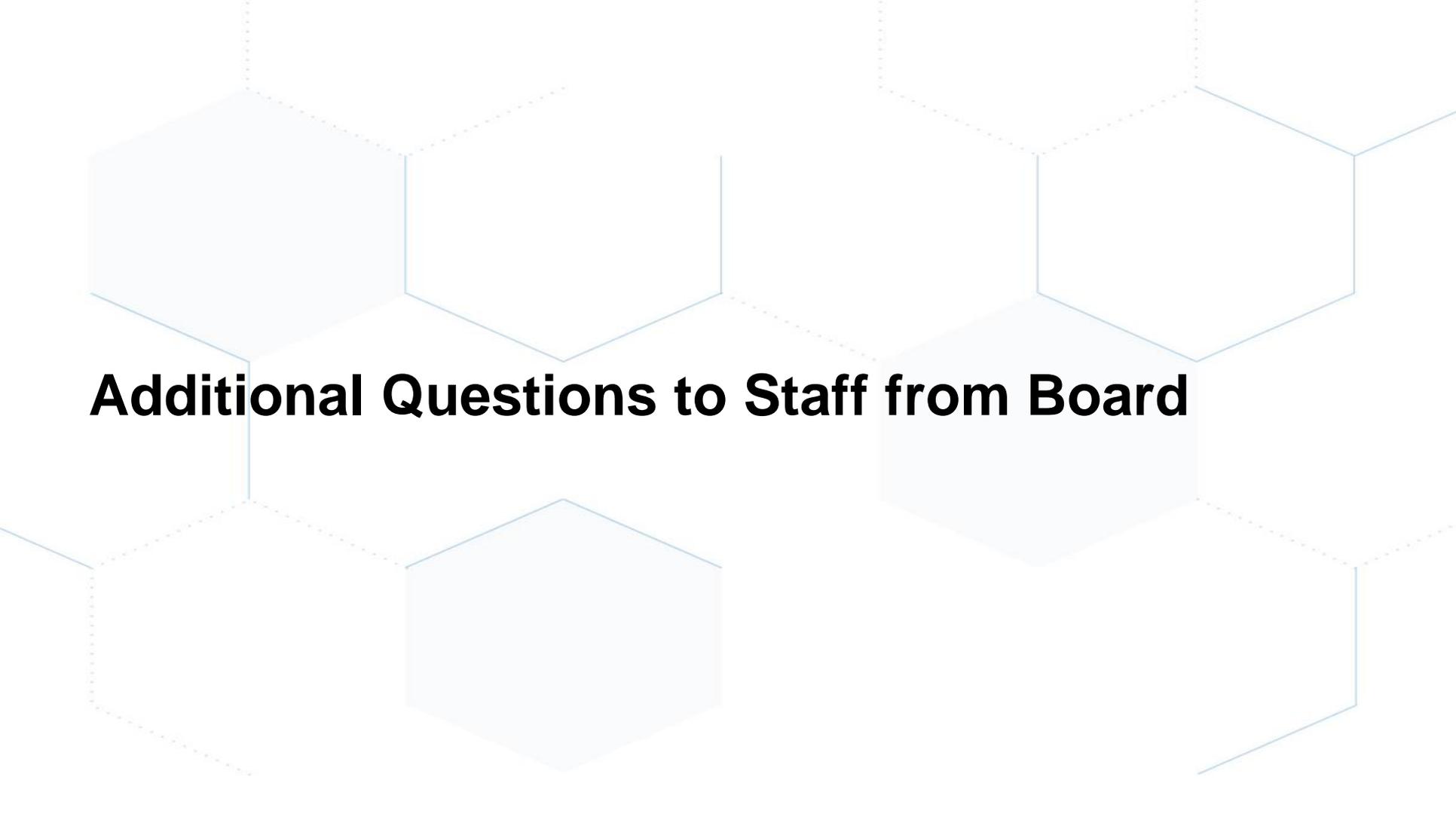


- There is general consensus that the asset class guidelines should be removed from the IPS
- The IAC believes both the Board and the IAC should approve the guidelines while nearly half of staff believes this responsibility should be held by staff

What would it look like if Asset Class Guidelines were not approved?

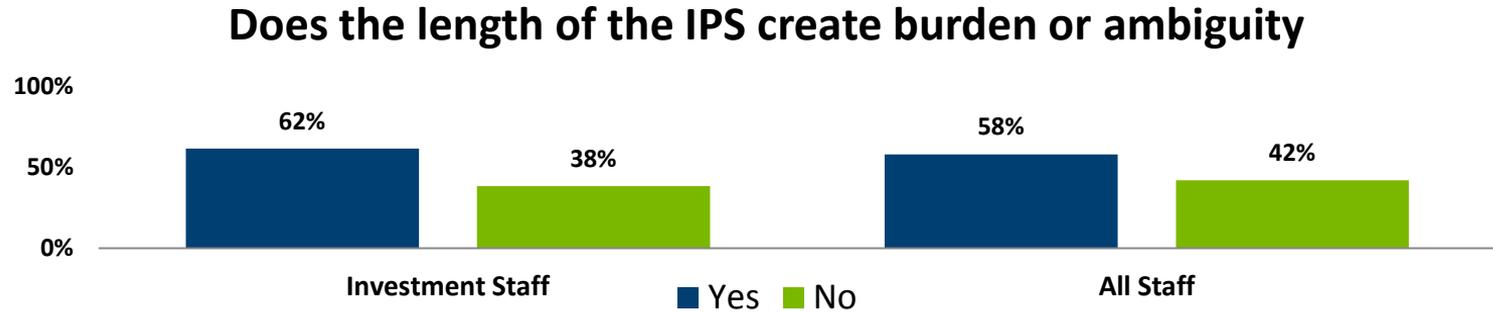


Aon – Asset class guidelines and tactical plan could be approved either (1) by Board and IAC OR (2) not approved with discretion remaining with staff and requiring staff to continue comprehensive quarterly/annual reporting in place now



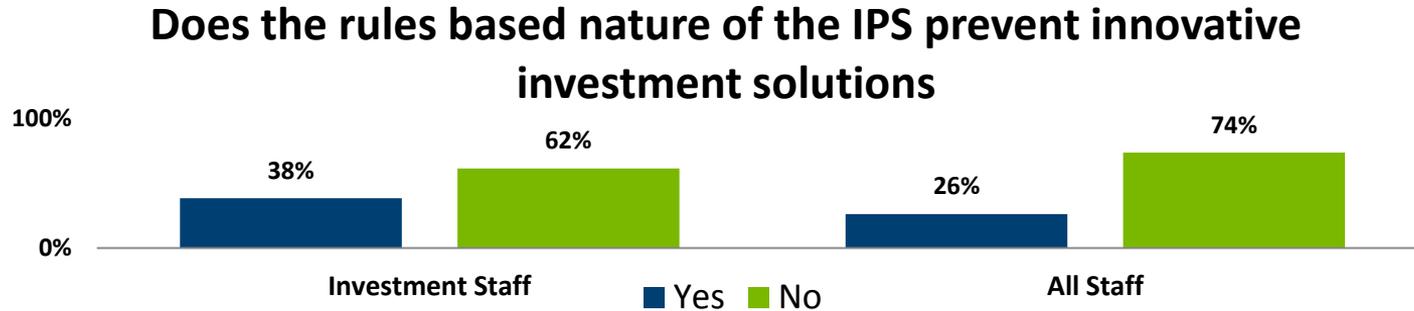
Additional Questions to Staff from Board

I. Do you feel the length of the IPS creates a burden or ambiguity? - Investment Staff Commentary



- **Some.** Investment limits in different parts of the documents, risk of duplication, and contradiction
- **Some.** The extensive detail makes it hard for staff and Trustees to keep up
 - Details should be monitored by staff and disclosed for oversight purposes
 - Asset class parameters discussions may not be useful as these are not hard limitations
 - Requests to staff from Board, IAC, and external stakeholders on where to find IPS information
- **Some.** A silo approach to policy prevents an efficient view at the overall plan level
 - Asset class updates result guideline changes, and often do not impact the broader policy

J. Does the rules based nature of the IPS prevent innovative investments? - Investment Staff Commentary



- An ideal state would allow for staff to feel innovation is encouraged
 - 38% of investment staff believes the IPS prevents innovative investment solutions
- **Yes.** Markets evolve constantly & faster than rules creating situations where rules are inappropriate
- **Yes.** Innovation is often stifled by rules that don't keep up with the changing landscape of investments
 - Derivative exposures
- **Yes.** The IPS has so many rules that a current board member could not simplistically reference them
 - This puts more of a burden on the investment staff

The background features a repeating pattern of light blue hexagons. Some hexagons are solid, while others are outlined with a dotted line. The text is centered over this pattern.

Summary and Proposed Next Steps

Areas of General Agreement

Common Theme	Board	IAC	Staff
1 Reduce redundancies within the IPS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2 Move to a more principles based policy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3 Asset class guidelines should be removed	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4 The main policy should speak broadly about risk and risk management, and the guidelines should provide detail	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5 Create a duty of care and delegation of authority table outlining the roles and responsibilities of the Board, IAC, staff, and consultants	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6 Document that the Board and IAC will review the IPS annually	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7 Creation of a Mission Statement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8 Creation of an Executive Summary	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

- The themes above represent general areas of agreement where impactful modifications to the IPS can be made
- Changes to the policy will require broad support among the three groups

Next Steps

Option 1

Create a new investment policy statement from scratch (relying upon contemporary best practices policy)

- A steering committee working with staff and Aon consisting of 2 IAC and 2 Board members could allow for more efficient implementation

Pros

- Current stakeholder ownership
- Reflective of current standards

Cons

- Meaningful change requiring broad support
- Requires differentiated approach from internal audit and compliance

Option 2

Simplify the current policy by removing manager guidelines and broadening main policy language

Pros

- Simple changes to reduce redundancy
- The body of the IPS remains the same

Cons

- The body of the IPS remains the same

Questions?



Public Agenda Item #4.1

Review of Investment Performance for the First Calendar Quarter of 2018



May 23, 2018

Sharmila Kassam, CPA, Deputy Chief Investment Officer
Steve Voss, Aon Hewitt

ERS Trust Fund Dashboard

Performance

Fund	<u>CYTD</u>	<u>FYTD</u>
Performance:	0.4%	5.4%
Benchmark:	-0.5%	4.1%
Excess Return:	0.9%	1.3%
3-Yr Tracking error	1.58	

Largest Contributors (quarter):

- Outperformance of the domestic equity, international equity, and private equity components

Largest Detractors (quarter):

- There were no meaningful detractors of relative performance during the quarter

Profile

Market Value at 3/31/18:
\$28.2 Billion

Actuarial Accrued Liability 8/31/17:
\$37.6 Billion

Retirees and Beneficiaries 8/31/17:
107,530

Retirement Payments Annually 8/31/17:
\$2.2 Billion

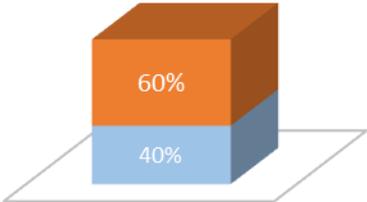
ERS Trust Funding Ratio 8/31/17:
70.1%

Compliance

Asset Allocation Compliance: Yes
Tracking Error Compliance: Yes
Investment Policy Compliance: Yes

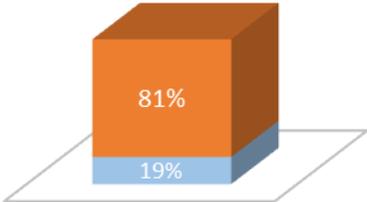
MANAGEMENT

■ External ■ Internal



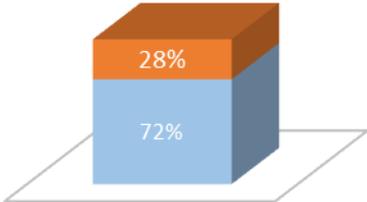
ALLOCATION

■ Risk Reducing ■ Return Seeking



LIQUIDITY

■ Liquid ■ Illiquid

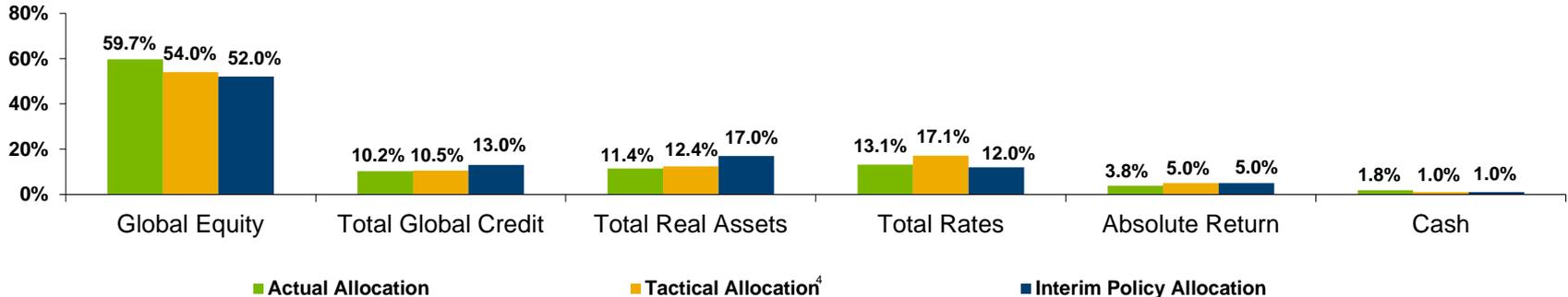


Total Fund: Asset Allocation

Summary of Cash Flow

	1 Quarter	Fiscal YTD	1 Year	3 Years	5 Years
Total Fund					
Beginning Market Value	28,554,907,251	27,531,798,643	26,282,204,070	25,886,213,890	23,885,944,436
+ Additions / Withdrawals	-436,869,710	-790,848,732	-1,210,394,616	-3,454,779,833	-5,423,140,757
+ Investment Earnings	117,284,907	1,494,372,537	3,163,512,994	5,803,888,392	9,772,518,770
= Ending Market Value	28,235,322,448	28,235,322,448	28,235,322,448	28,235,322,448	28,235,322,448

Employees Retirement System of Texas - Quarterly Asset Allocation Including Risk Management vs. Policy Target as of 3/31/2018



¹ All returns contained in this report are shown net of investment management fees. All returns longer than 1-year are annualized.

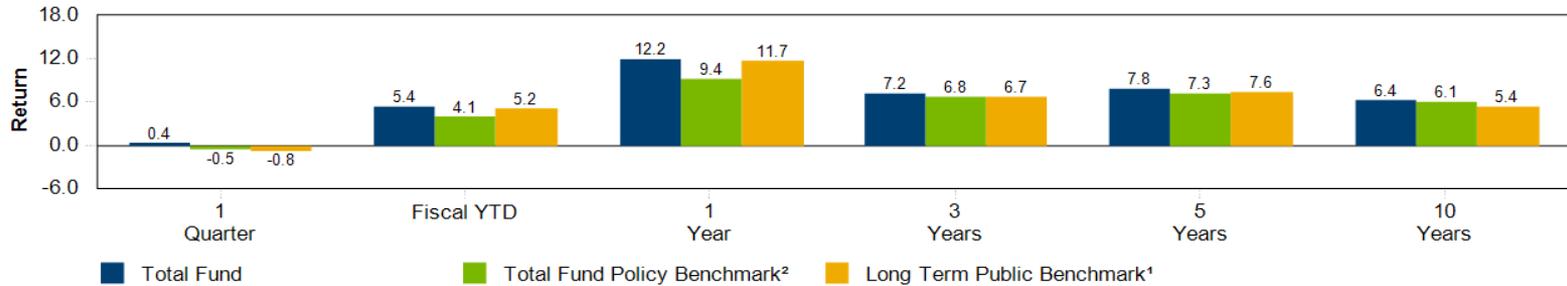
² Source data can be found on pages 30 and 39 of full report.

³ Due to rounding throughout the report, percentage totals displayed may not sum to 100%.

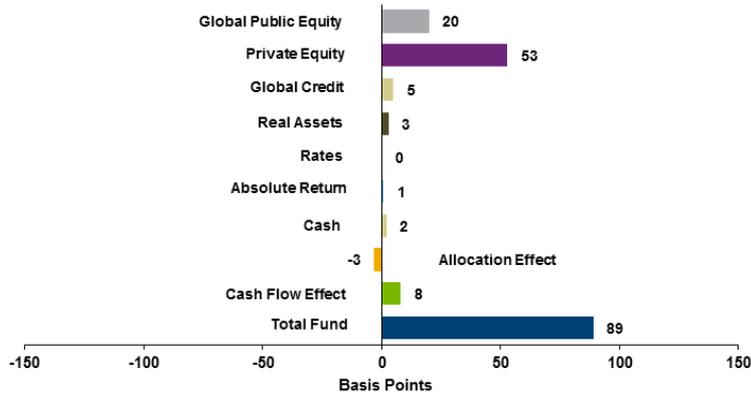
⁴ Allocation represents the paced allocation during the transition to the new policy allocation.

Total Fund: Performance

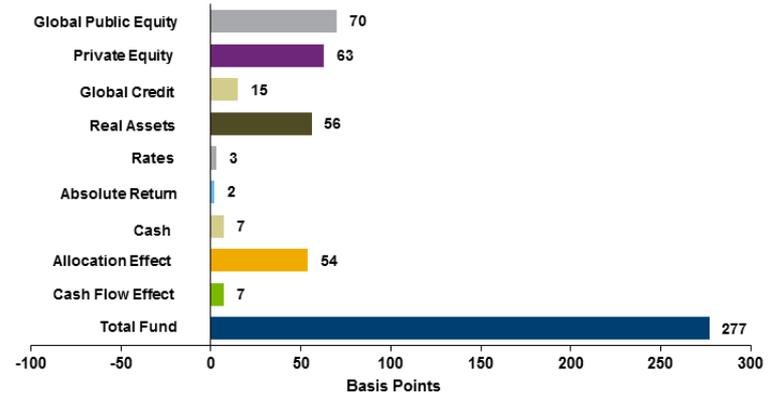
Return Summary



Total Fund Attribution Analysis 3 Months Ending 3/31/18



Total Fund Attribution Analysis 1 Year Ending 3/31/18

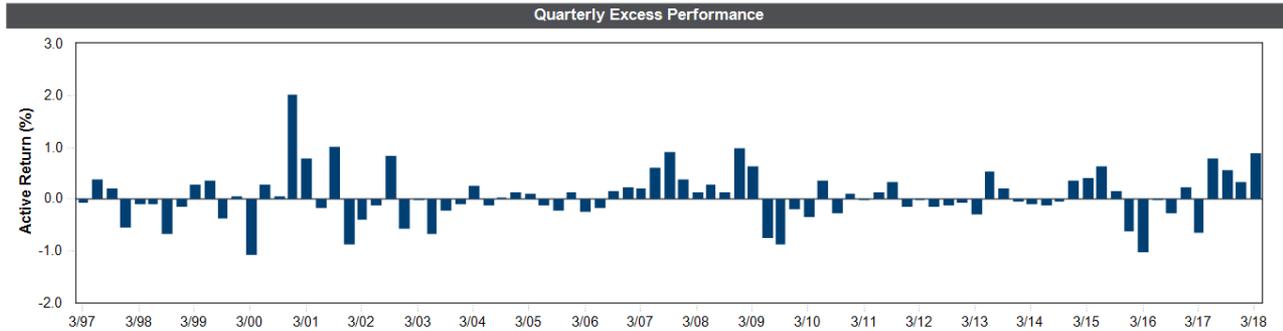
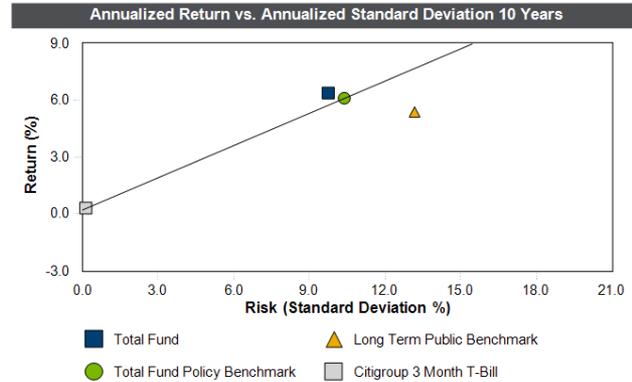
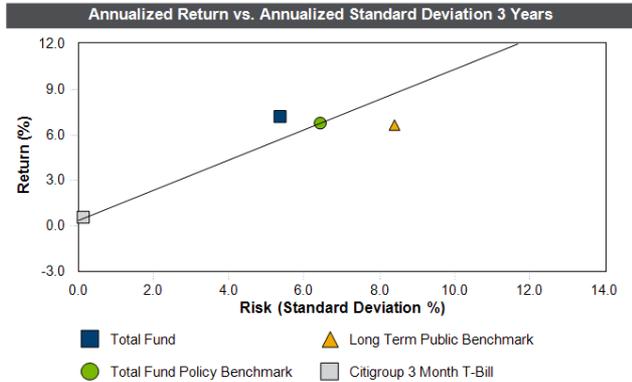


¹The Long Term Public Benchmark is a combination of 79% MSCI ACW IMI and 21% Barclays Intermediate Treasury Index.

²A detailed description of the Policy Index as of 3/31/2018 is provided in the appendix of the full report.

³Source data can be found on pages 29 and 31 of full report.

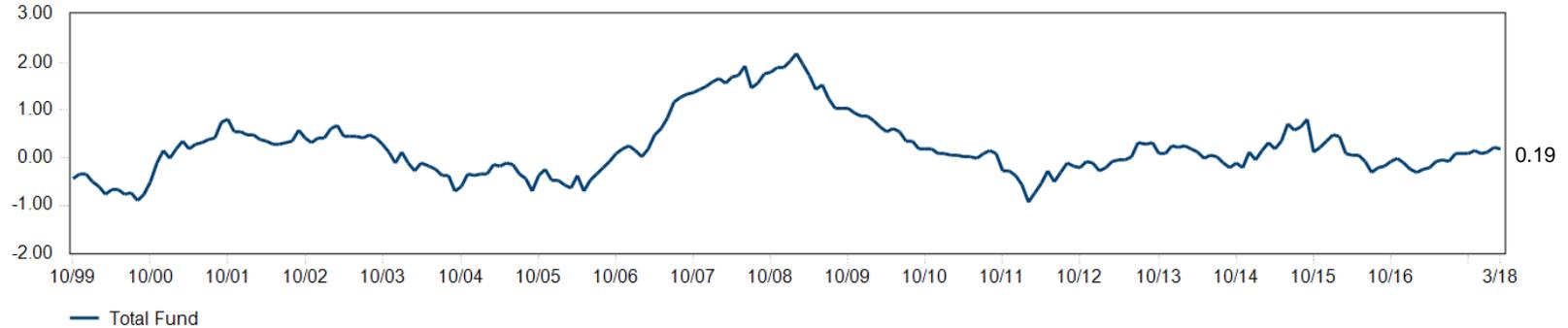
Total Fund: Risk



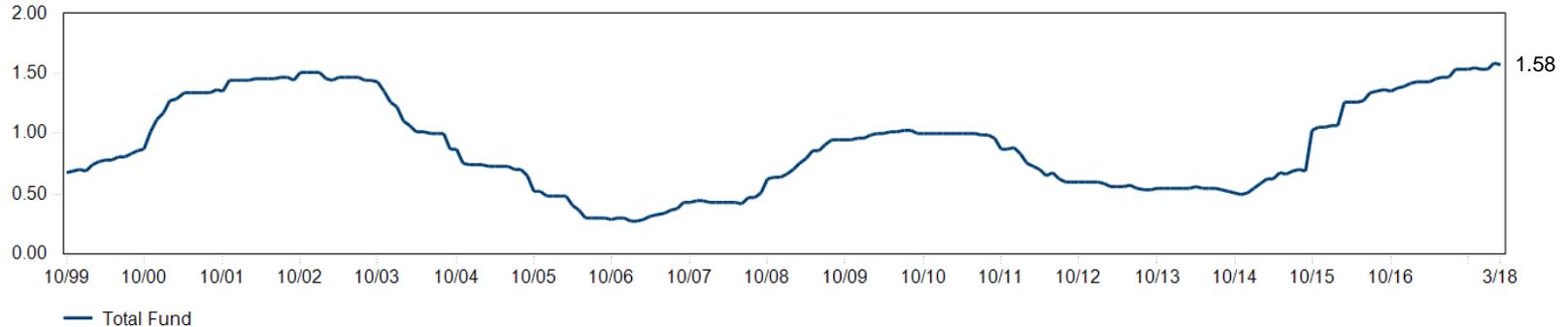
¹ Source data can be found on page 31 and 38 of full report.

Total Fund: Rolling Information Ratio and Tracking Error (36 months)

Information Ratio (Excess Return Ratio)¹



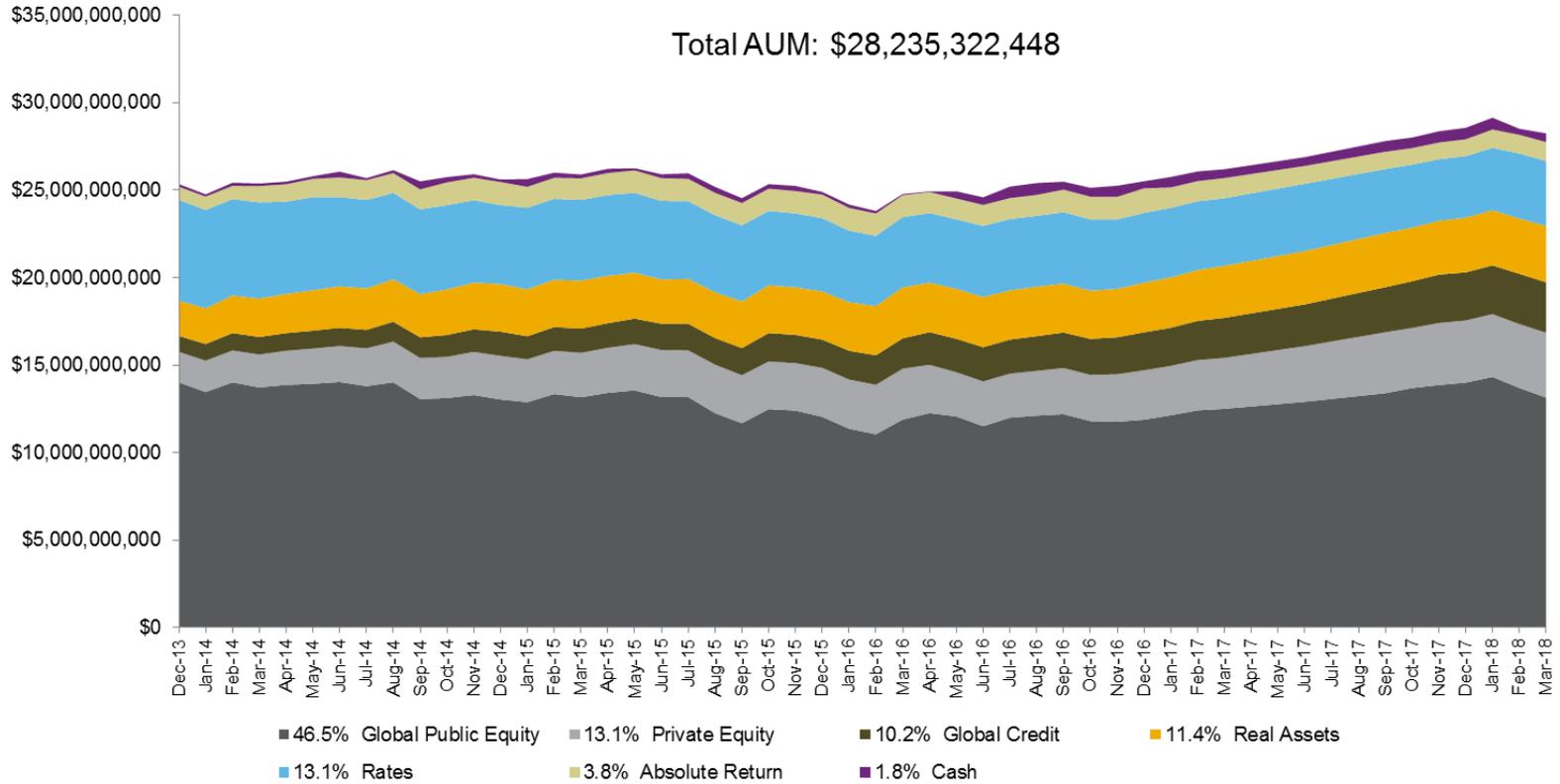
Tracking Error²



¹ Measured by dividing the active rate of return by the tracking error. The higher the Information Ratio, the more value-added contribution by the manager.

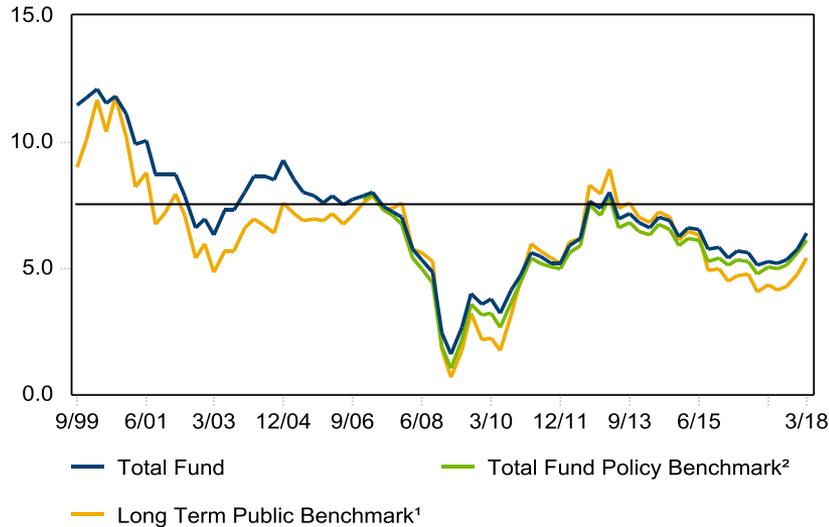
² A measure of the standard deviation of a portfolio's performance relative to the performance of an appropriate market benchmark.

ERS Asset Allocation Evolution

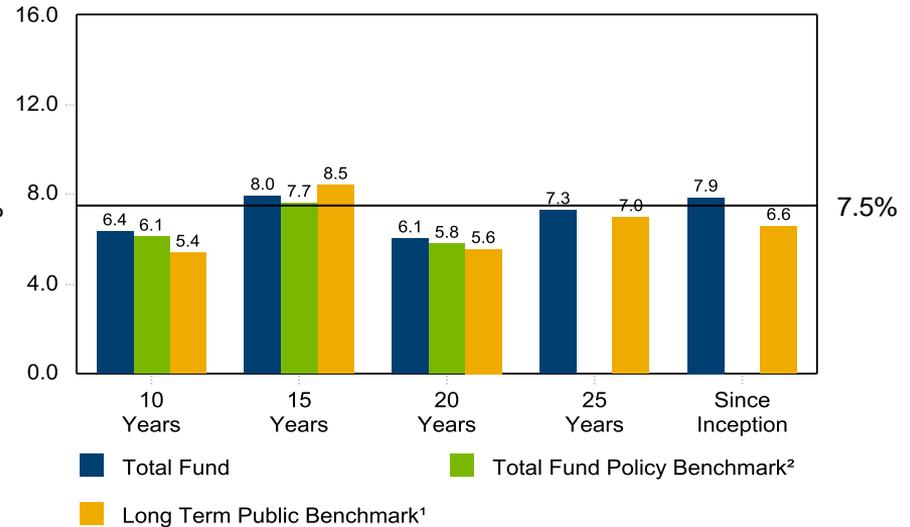


Long Term Investment Results

Rolling 10 Year Return



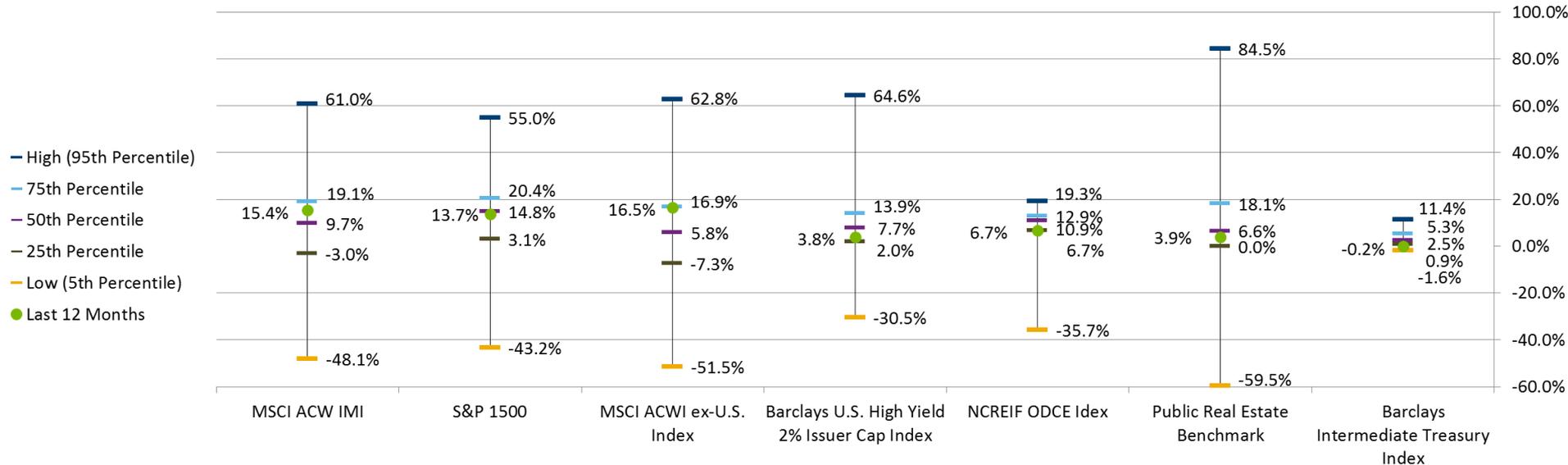
Return Summary



¹The Long Term Public Benchmark is a combination of 79% MSCI ACW IMI and 21% Barclays Intermediate Treasury Index.

²The Total Fund Policy Benchmark has an inception date of 11/30/1996.

Rolling 12-Month Capital Market Returns (10 Years ending 3/31/18)



- The chart above depicts the dispersion of rolling 12 month returns of various capital markets over the last 10 years.

Summary Analysis

- The Total Fund outperformed its benchmark by 277 bps during the trailing 12 month period.
 - The public equity and private equity components contributed 70 bps and 63 bps, respectively, while the real assets component contributed 56 bps of relative performance.
 - The other components contributed marginally for the year.
- At the end of the period global equity and cash were overweight 5.7% and 0.8%, respectively, while the total rates component was underweight 4.0% and all other asset classes were slightly underweight relative to the policy. All allocations were in compliance.
- Longer term investment results continue to be positive, the Total Fund has produced risk adjusted returns superior to the benchmark and the Long Term Public Benchmark over the five and ten year periods.
 - The Total Fund outperformed the benchmark in nominal terms by 49 bps and 27 bps over the trailing five and ten-year periods, respectively.
- Diversification has been effective, the Total Fund Policy Benchmark has produced a return similar to the Long Term Public Benchmark at a meaningfully lower level of risk (volatility) over the trailing five and ten year period.

Questions?



Public Agenda Item #5

Fixed Income Program

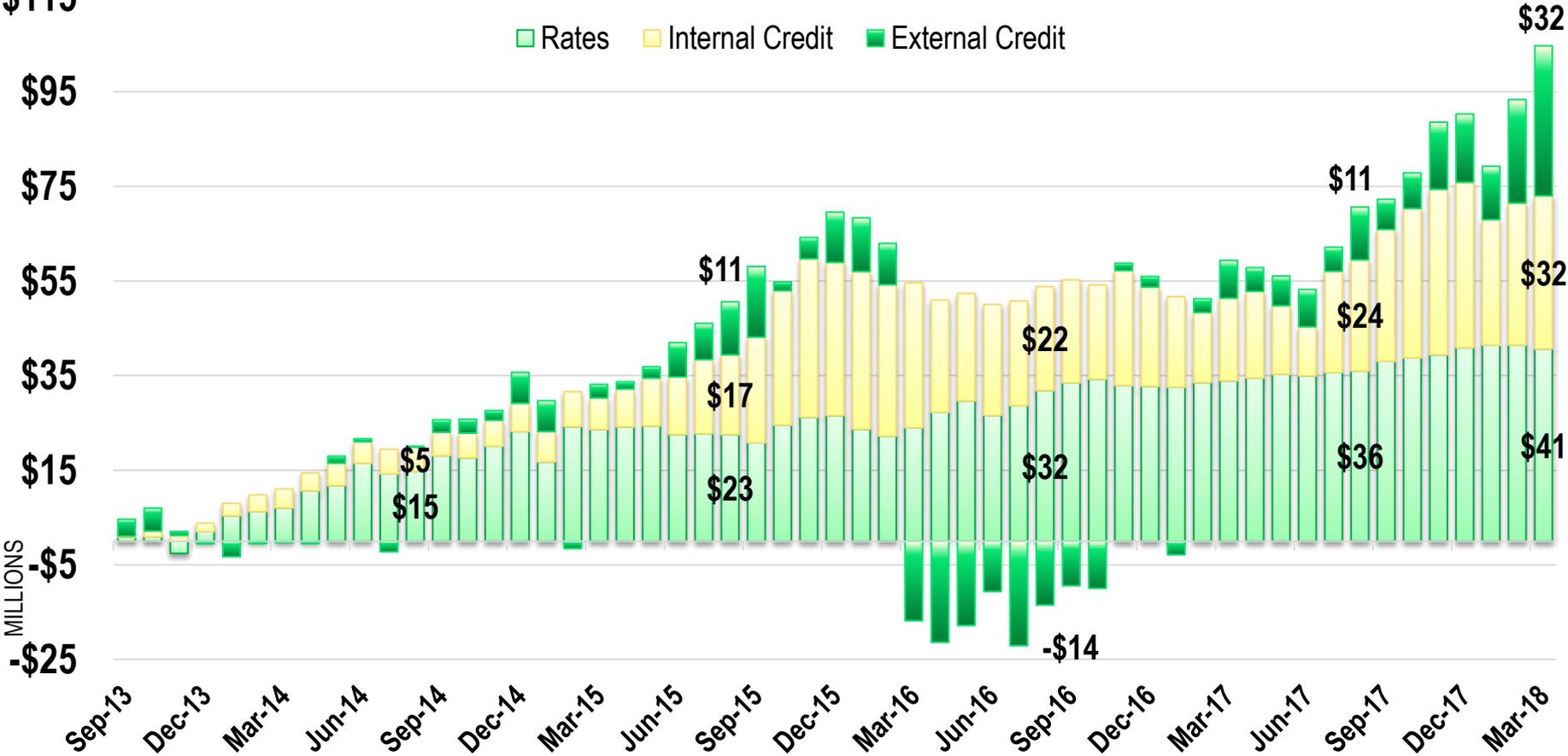
5.1 Market Update and Program Overview



May 23, 2018

Leighton Shantz, CFA, Director of Fixed Income
Peter Ehret, CFA, Director of Internal Credit
Leticia Davila, Portfolio Manager - Rates

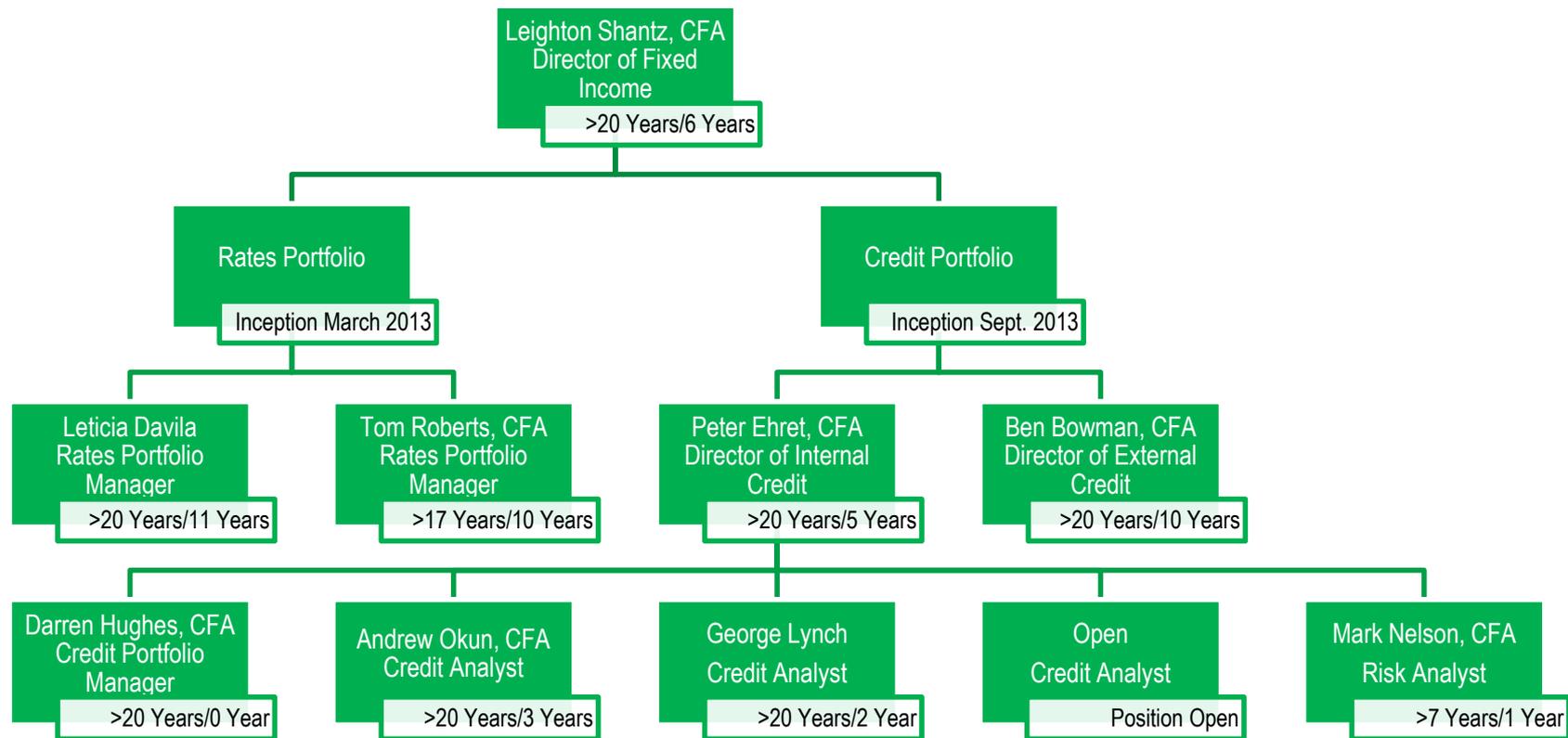
Cumulative Excess Return Based on Average Monthly Balance



Agenda item 5.1 - Meeting book dated May 23, 2018

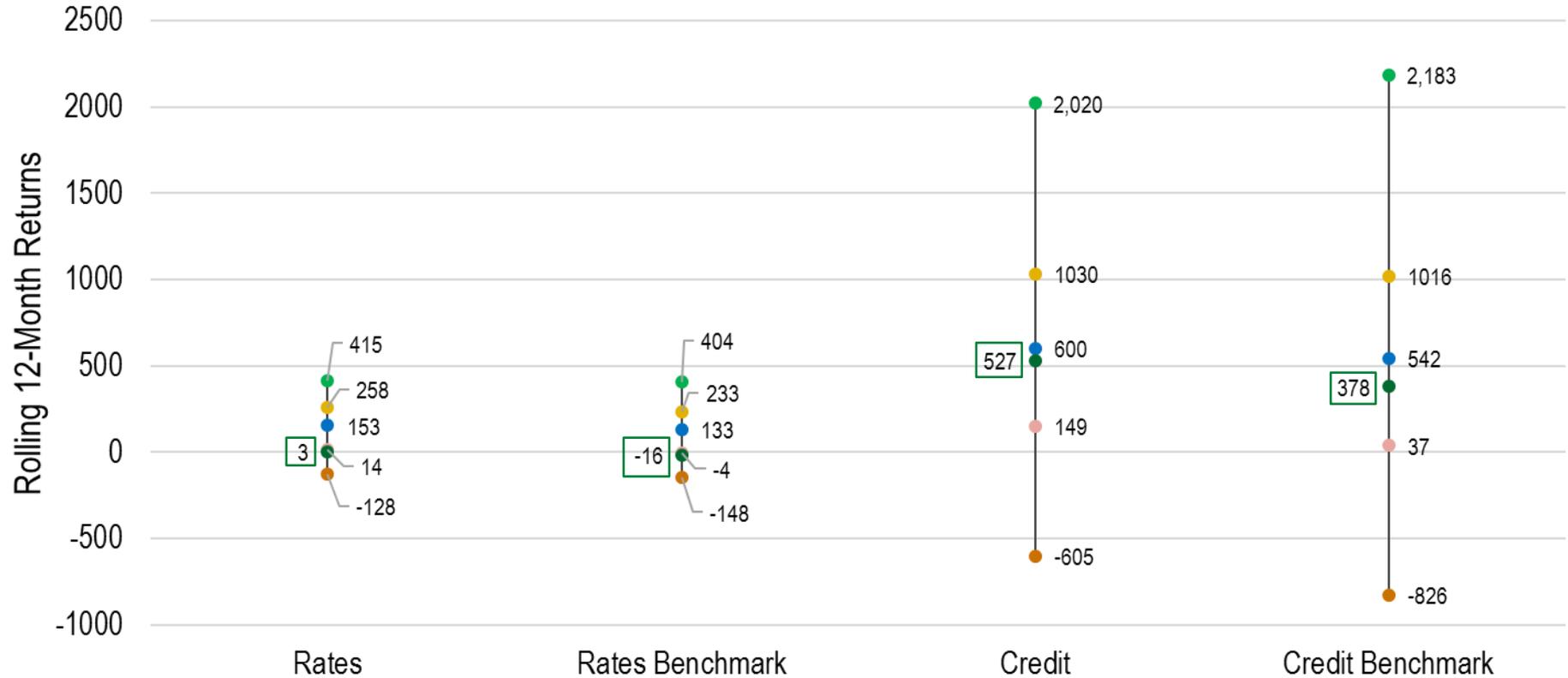
Market Update & Program Overview

Fixed Income Team

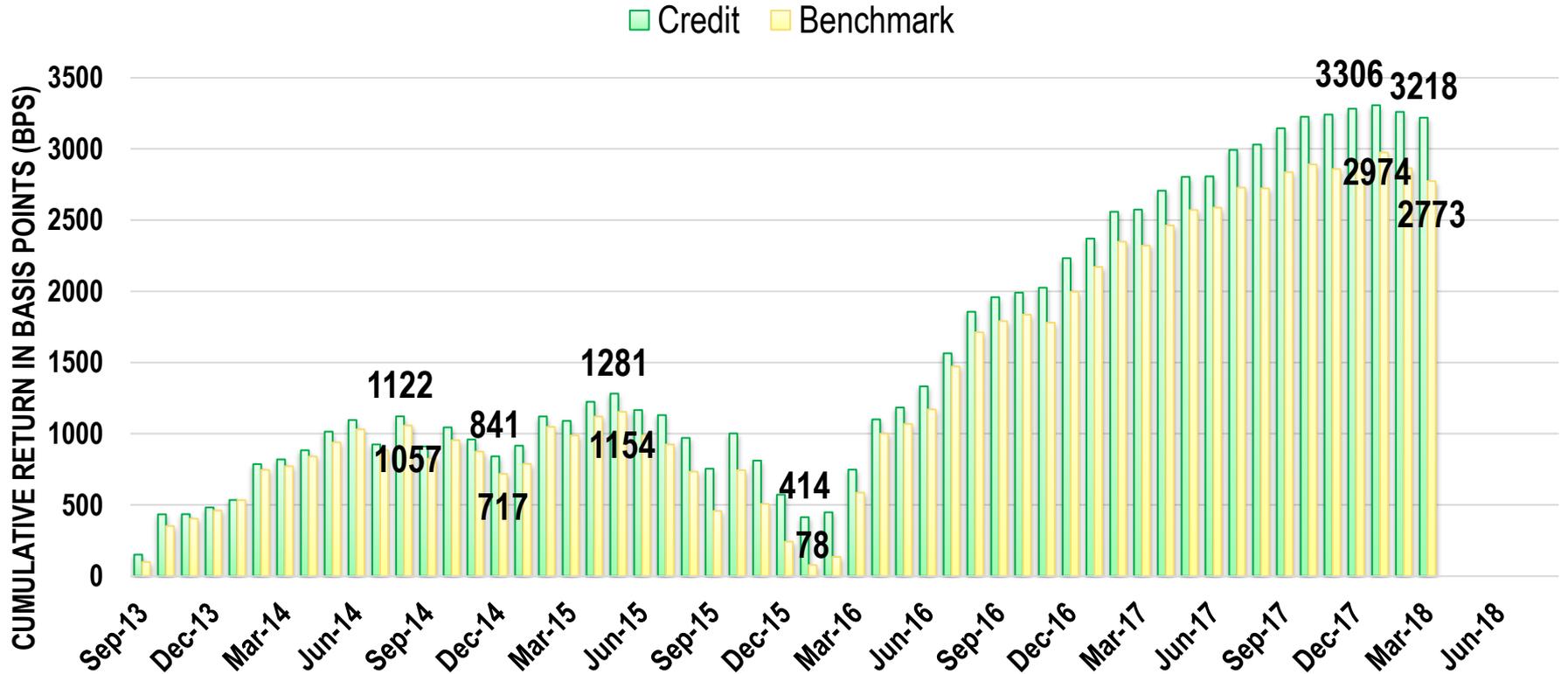


Fixed Income Rolling 12-Month Return Dispersion History

● 1st Quartile Break
 ● High
 ● Low
 ● 4th Quartile Break
 ● Average
 ● Last

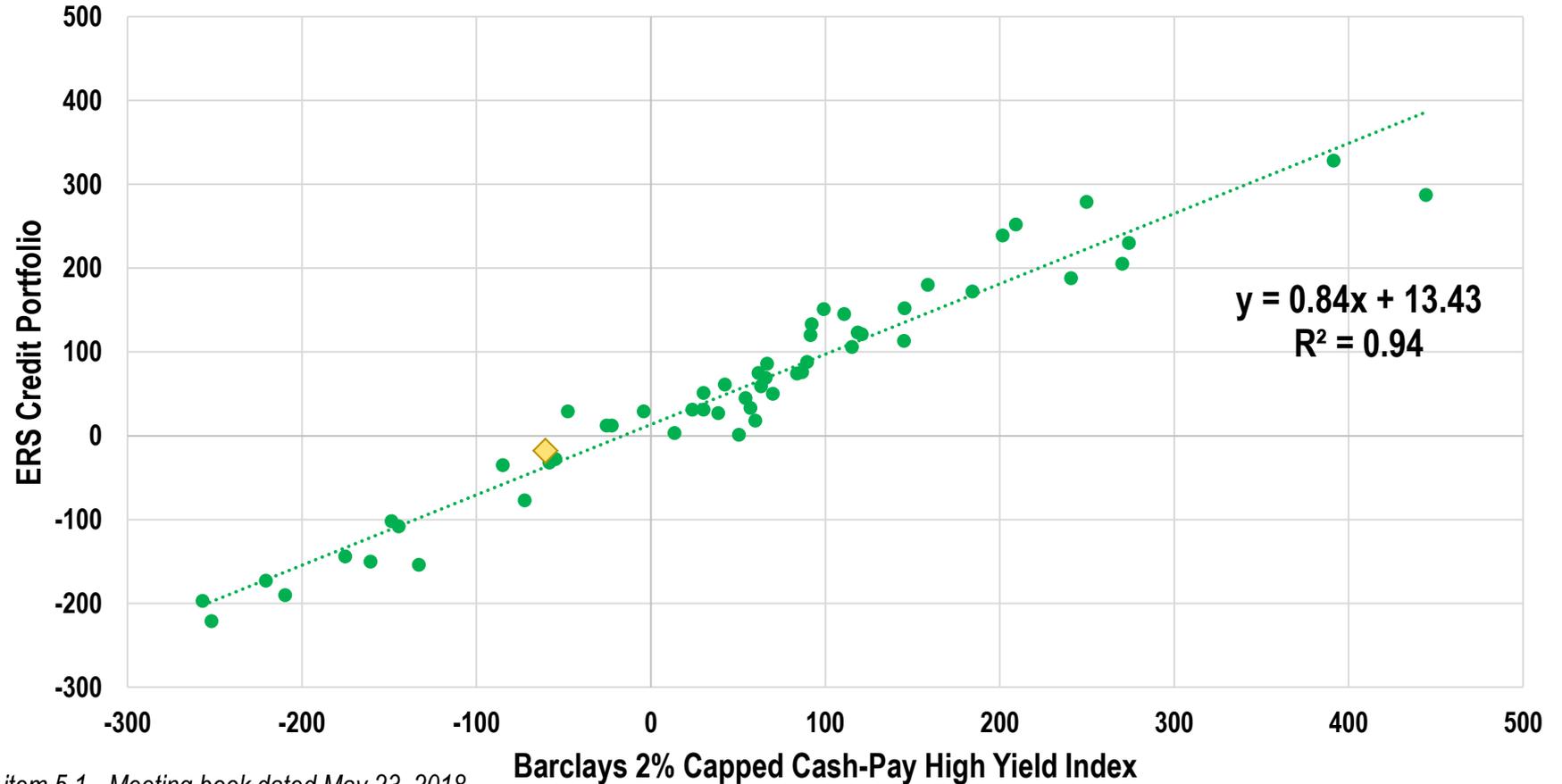


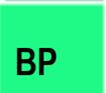
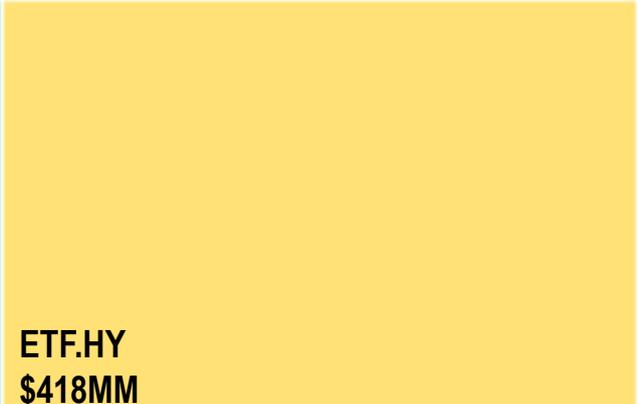
Credit Cumulative Performance Comparison



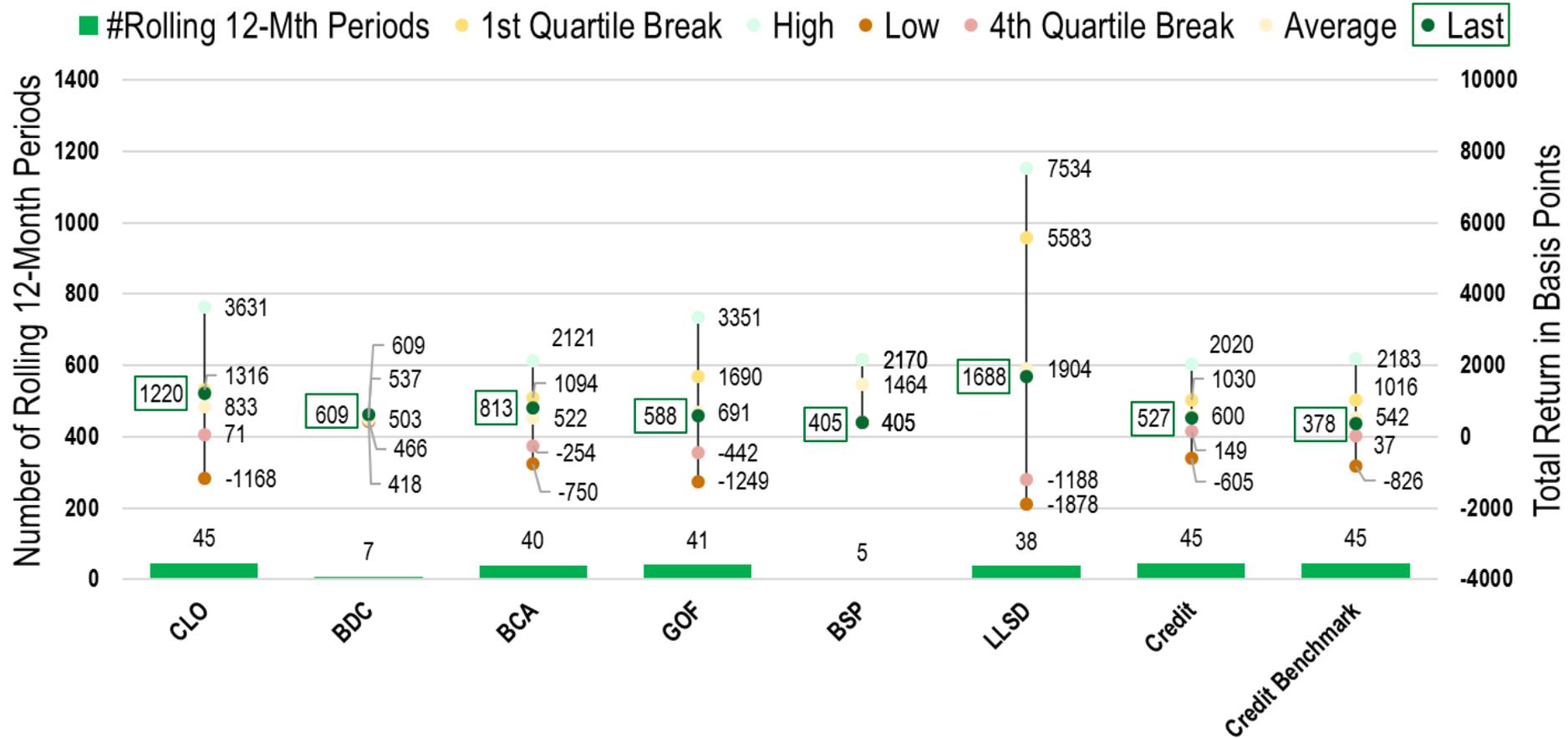
Credit Monthly Performance vs. Benchmark

● Credit Monthly Return ◆ Current Month

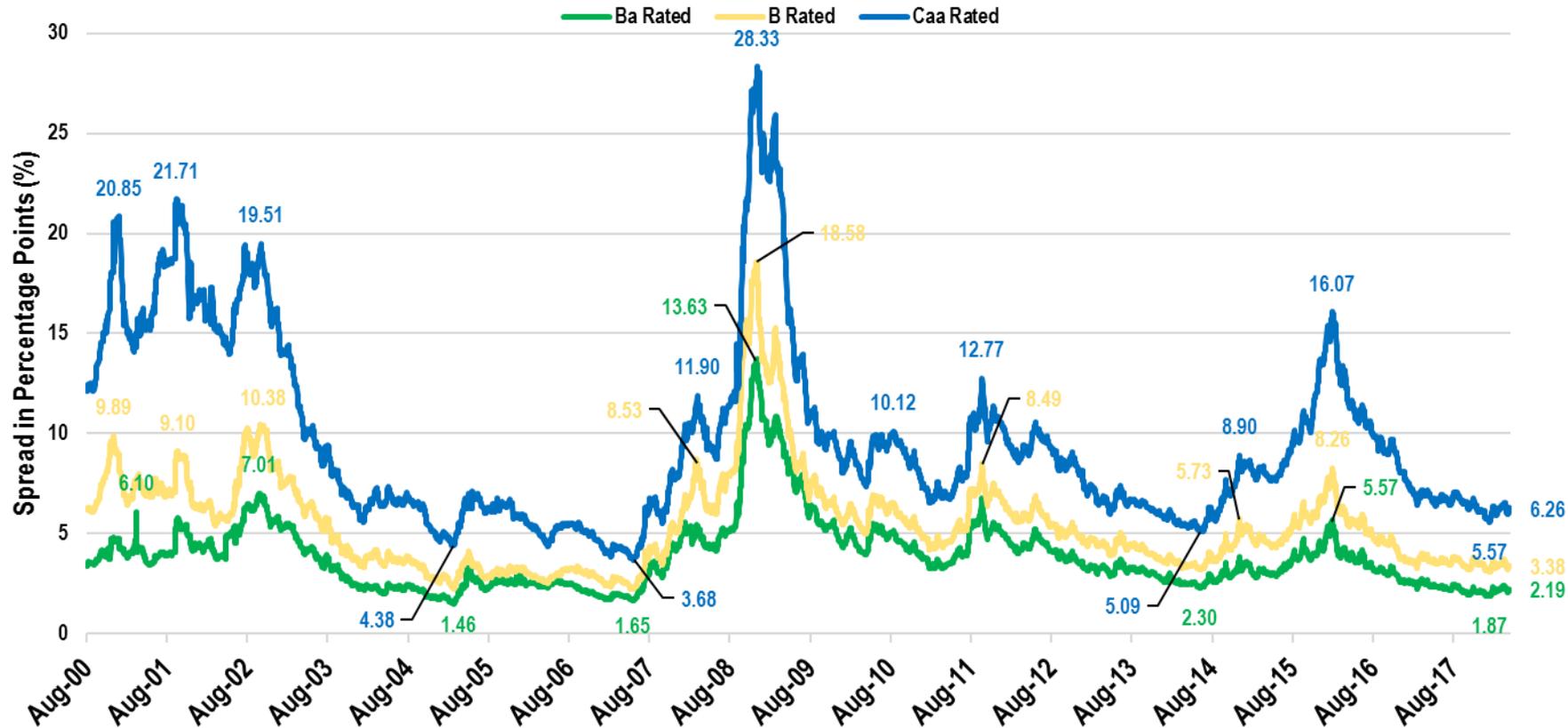




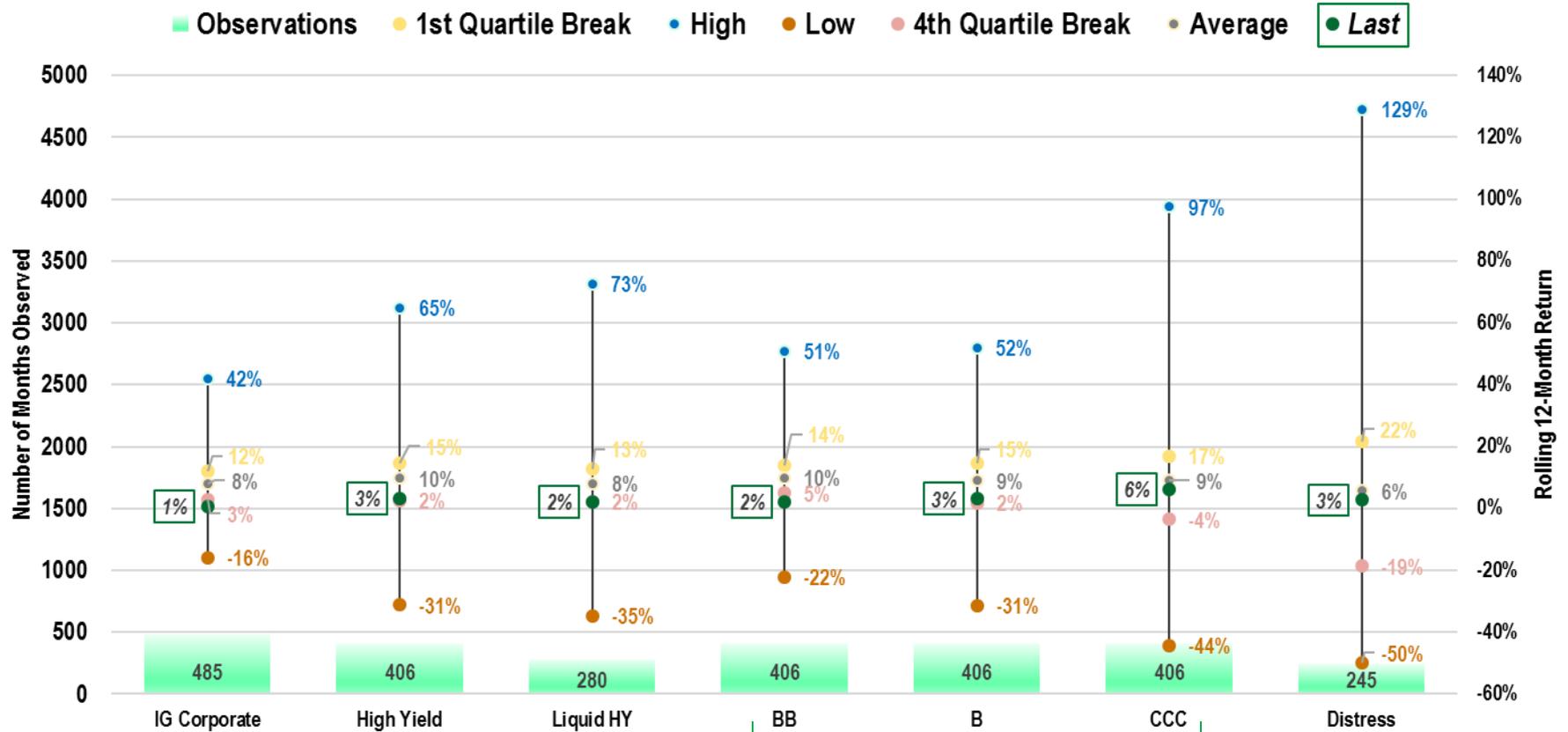
Dispersion of Rolling 12-Month Credit Returns



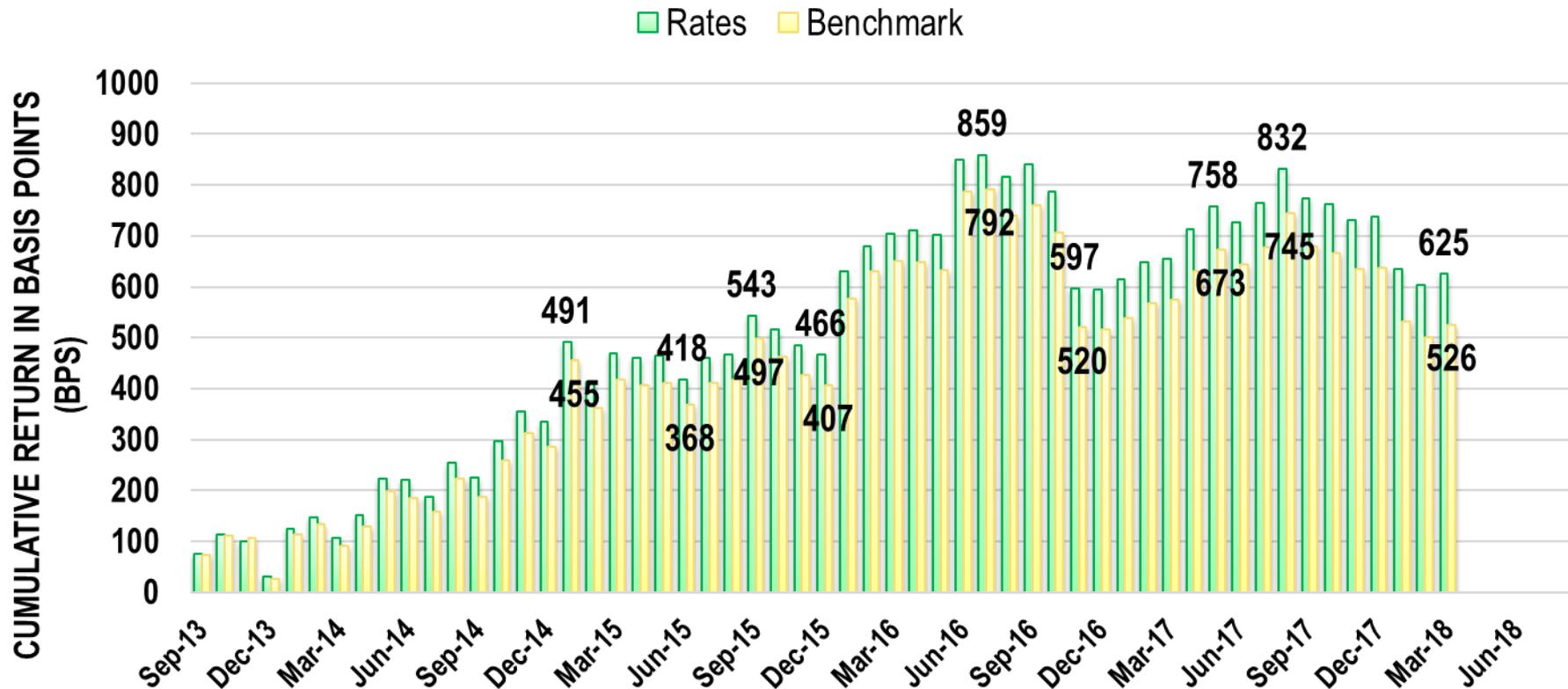
Barclays Domestic High Yield Index Spreads



Rolling 12-Month Return Dispersion

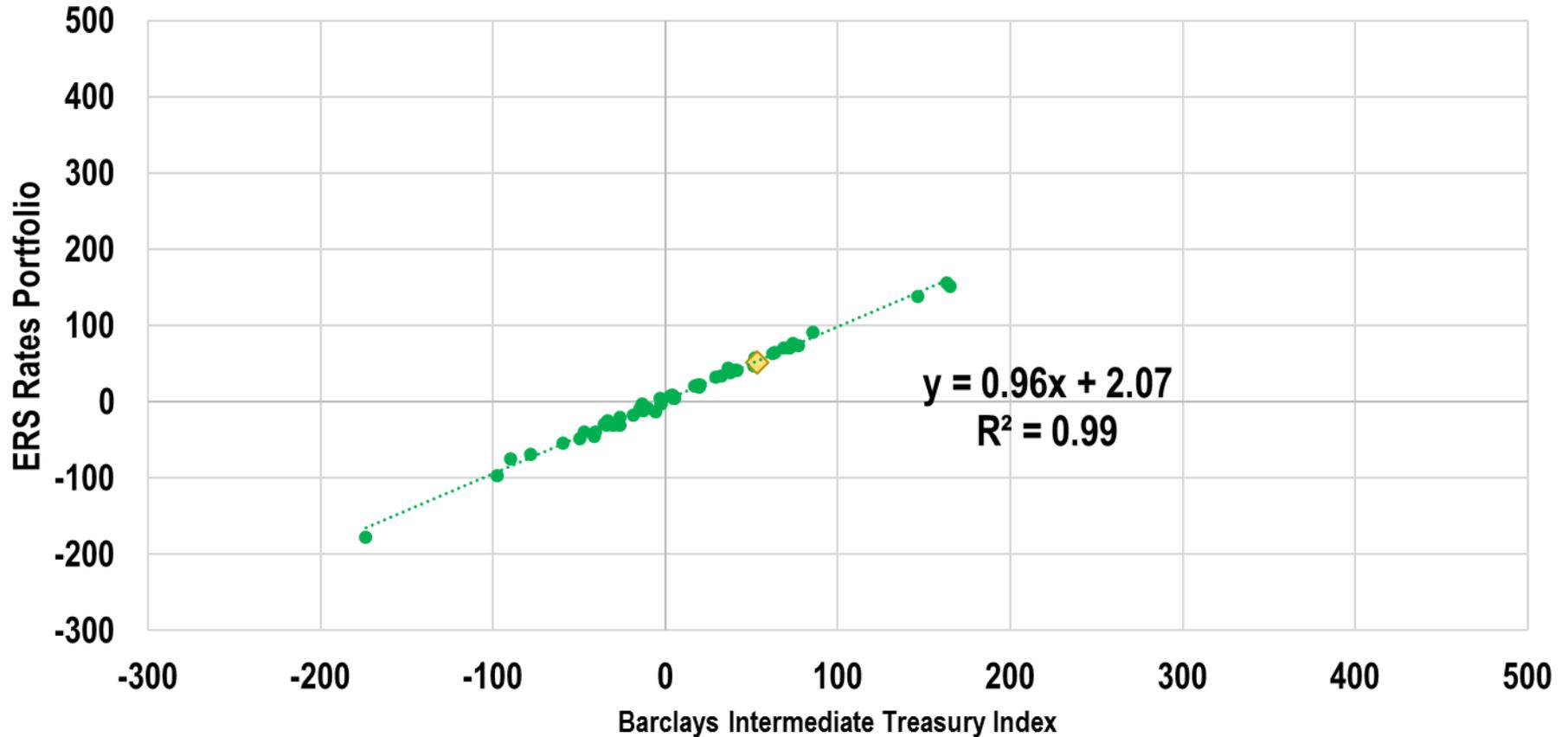


Rates Cumulative Performance Comparison



Rates Monthly Performance vs. Benchmark

● Rates Monthly Return ◆ Current Month



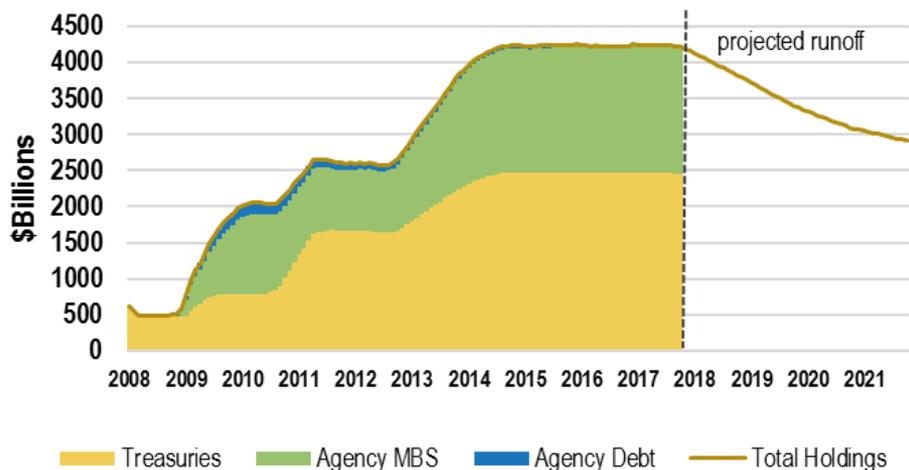
Fixed Income Program Overview

Rates Market

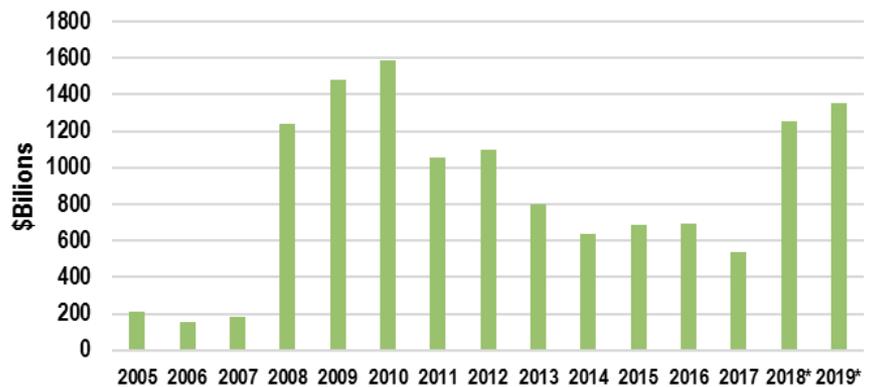


Treasury supply set to surge in response to wider deficits and Fed portfolio runoff – pressuring rates higher.

Federal Reserve Balance Sheet Assets



Net Annual Treasury Issuance



Source: Bloomberg, Citi, JPM, Morgan Stanley

*Projection

Questions?



Public Agenda Item #5

Fixed Income Program

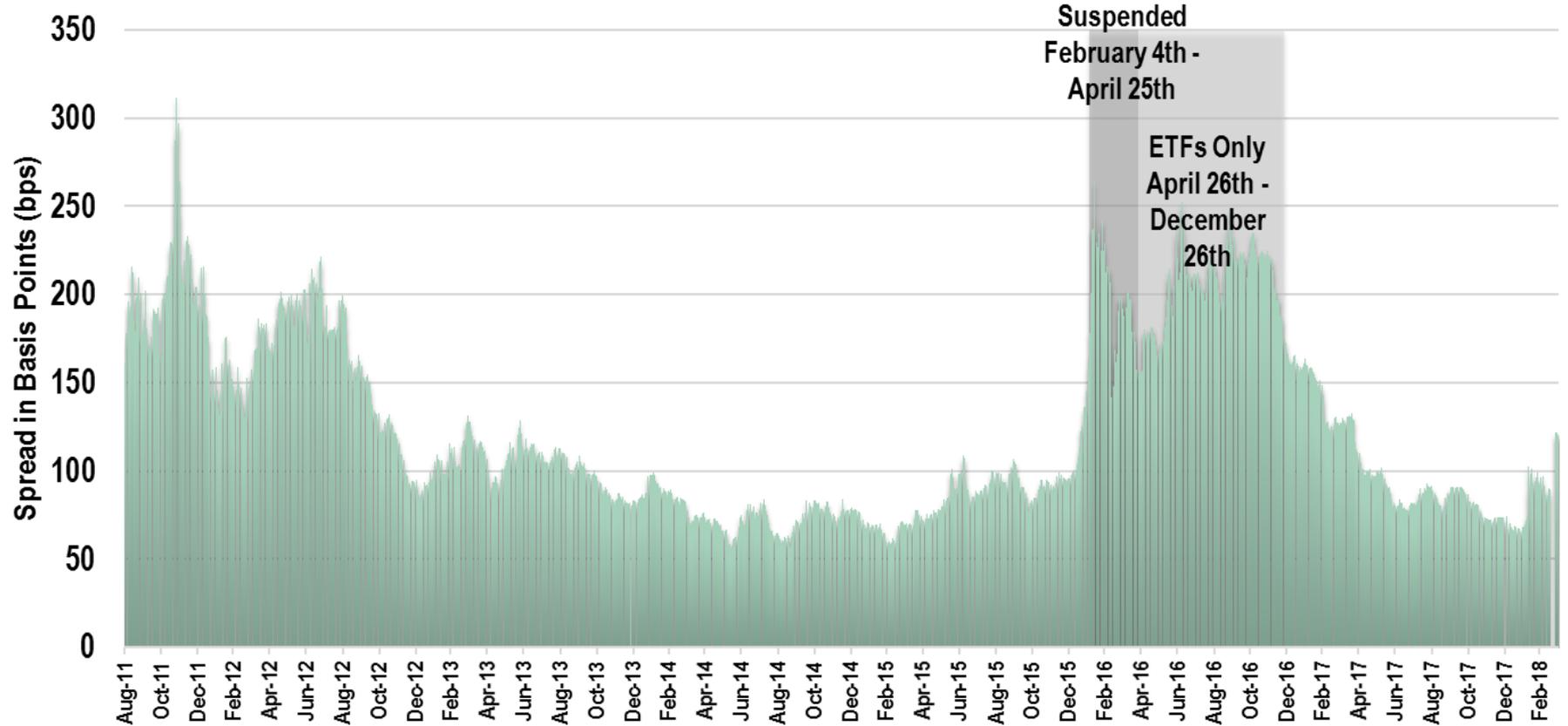
5.2 Review of the Securities Lending Program



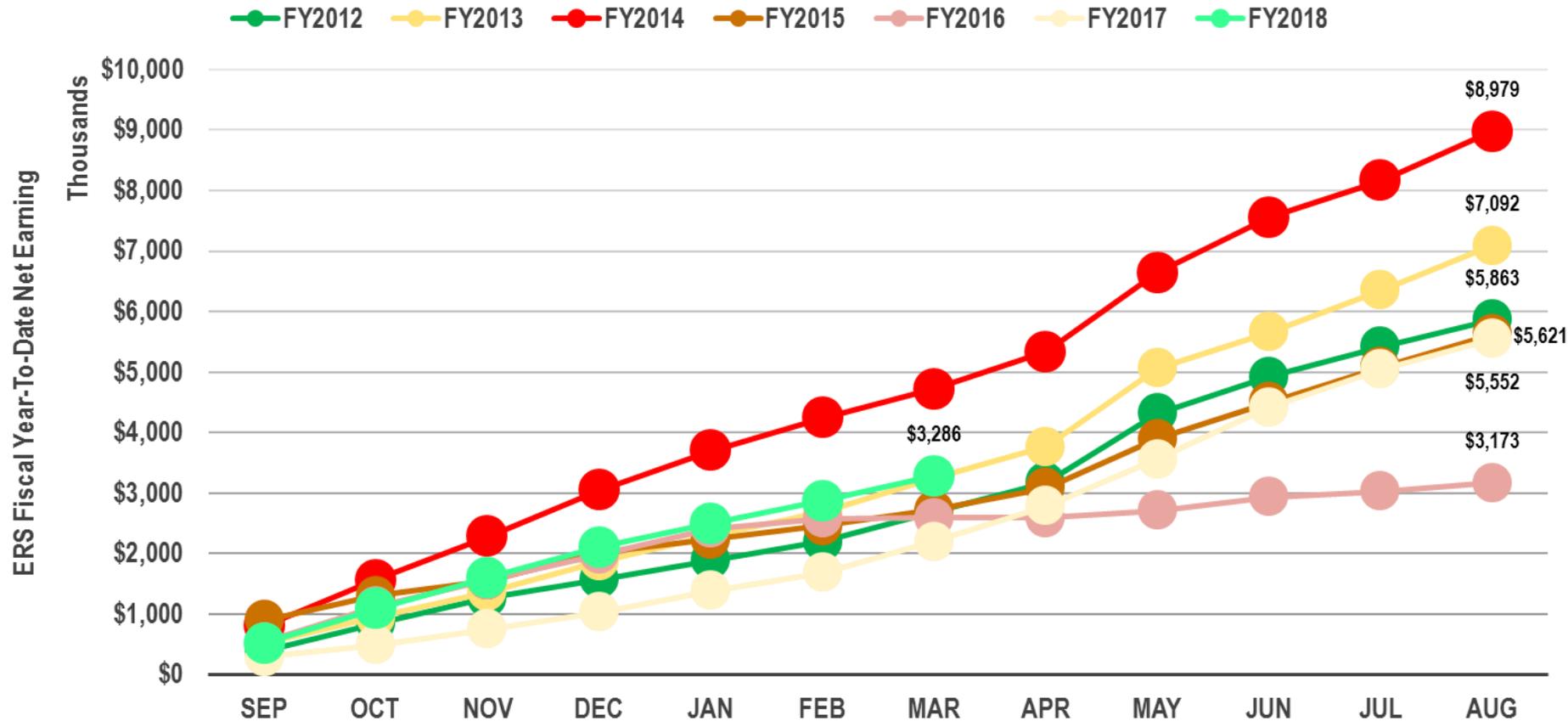
May 23, 2018

Leighton Shantz, CFA, Director of Fixed Income
Peter Ehret, CFA, Director of Internal Credit
Leticia Davila, Portfolio Manager - Rates

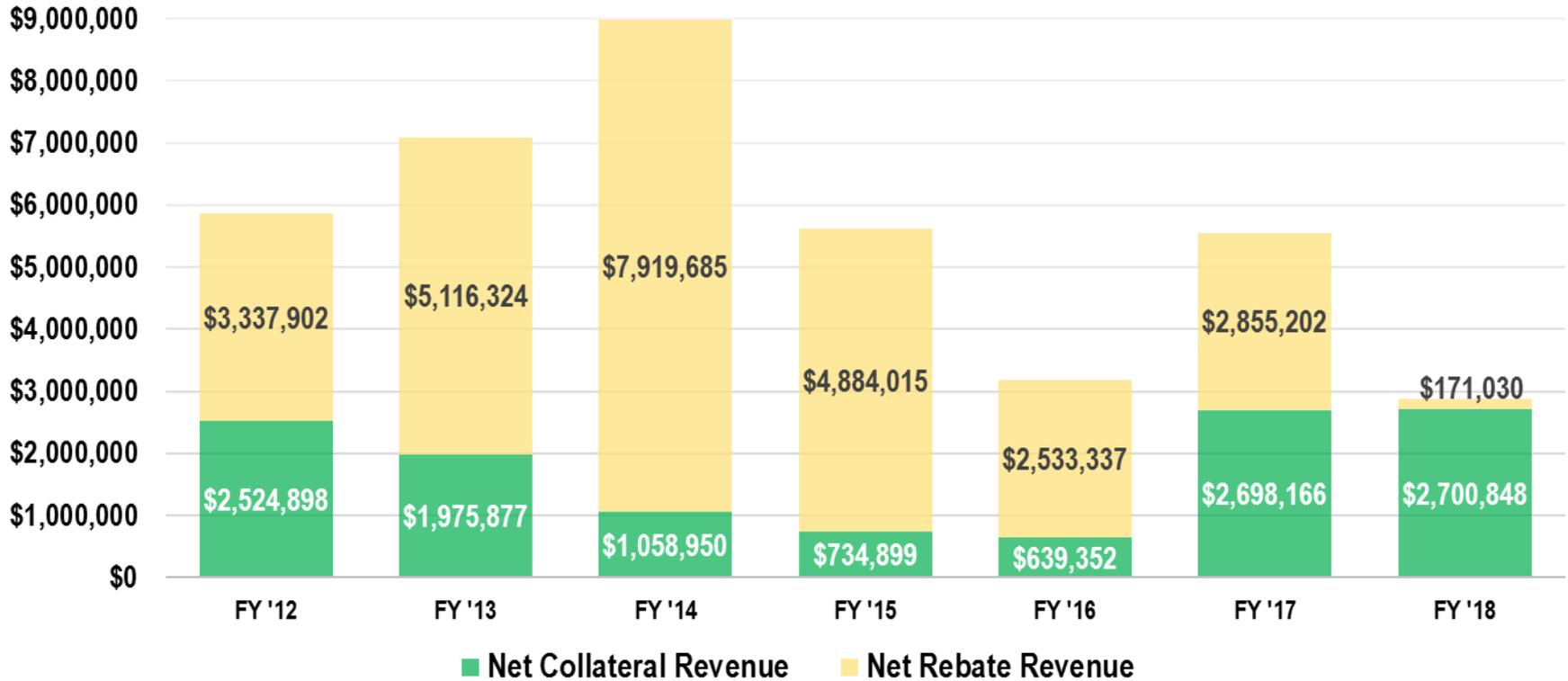
Lending Agent Credit Default Swap Spread History



Fiscal YTD Revenue Comparison



FISCAL YEARS REVENUE BREAKDOWN



Questions?



Public Agenda Item #6



6.1 Market Update and Real Estate Program Overview



March 7, 2018

Robert Sessa, CFA, Director of Real Estate
Tony Cardona, Real Estate Portfolio Manager
Amy Cureton, Real Estate Portfolio Manager

Christy Fields, Managing Director - Pension Consulting Alliance
David Glickman, Managing Director - Pension Consulting Alliance

Market Update & Program Overview

Agenda



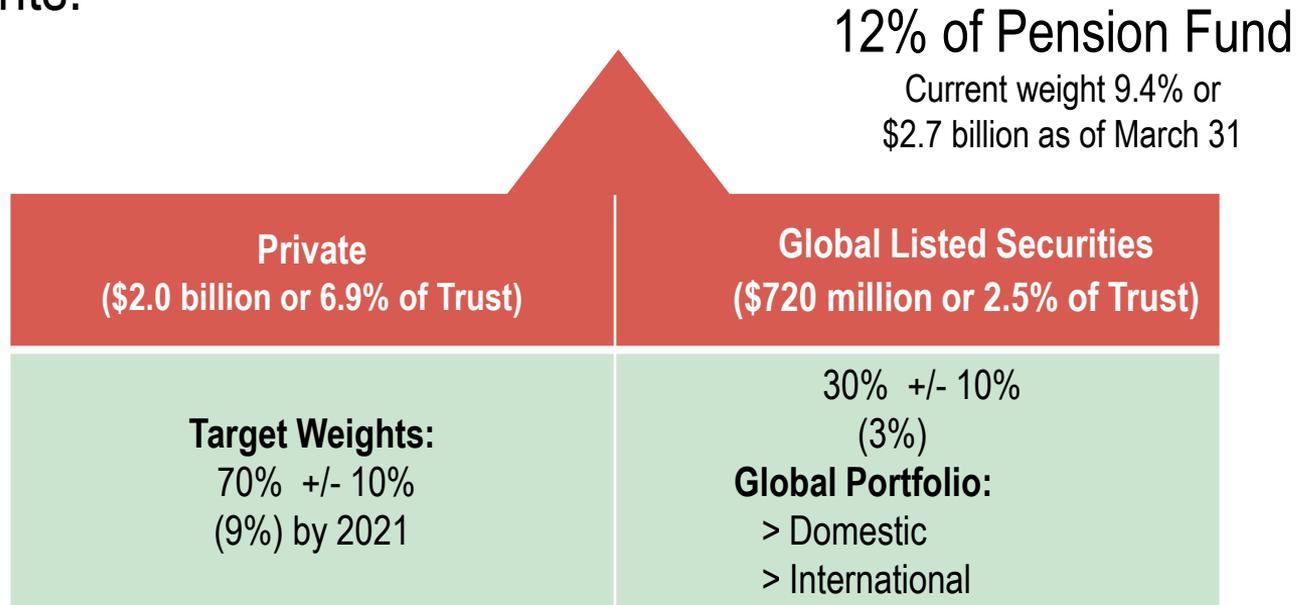
- Real Estate Overview
- Staffing
- Listed Securities as of March 31, 2018
- Private Real Estate
- Accomplishments
- Initiatives

Market Update & Program Overview

Overview



Target Weights:



Market Update & Program Overview

Staffing



Bob Sessa, CFA Director of Real Estate

- 24 years work experience, 17 real estate
- BS from Fordham University and MBA from UT Austin

Annie Xiao, CFA Portfolio Manager

- Covers Int'l Listed Securities
- 17 years work experience, 12 real estate
- BS from Zhengzhou University and MBA from Duke

Ken McDowell, CPA Portfolio Manager

- Private Real Estate Focused
- 27 years work experience, 27 real estate
- BA and BS from Ohio State University

Amy Cureton Portfolio Manager

- Private Real Estate, 15 years work experience, 10 real estate
- BA and MBA from UT Austin

Adam Cibik Portfolio Manager

- Private Real Estate Focused
- 17 years work experience, 17 real estate
- BS and MBA from the University of Wisconsin

Tony Cardona Portfolio Manager

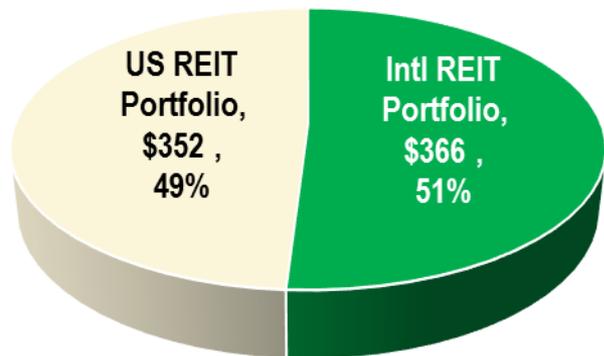
- Public Real Estate Focused
- 9 years work experience, 4 real estate
- BS from Cornell University

Market Update & Program Overview

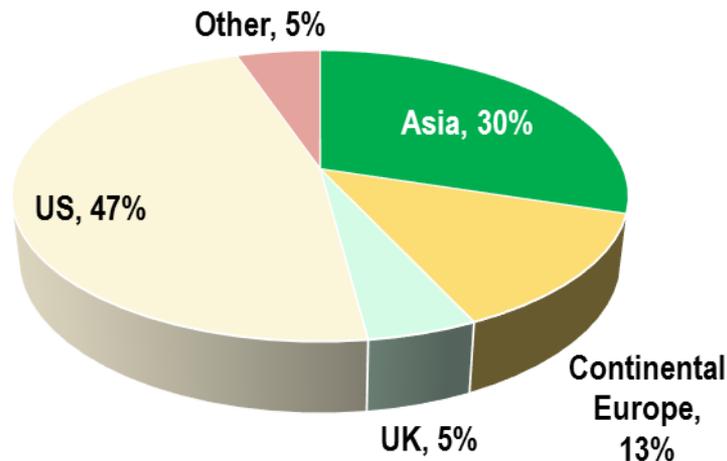
Listed Securities as of March 31, 2018



Total Portfolio: \$720 million



Total Portfolio - Geography

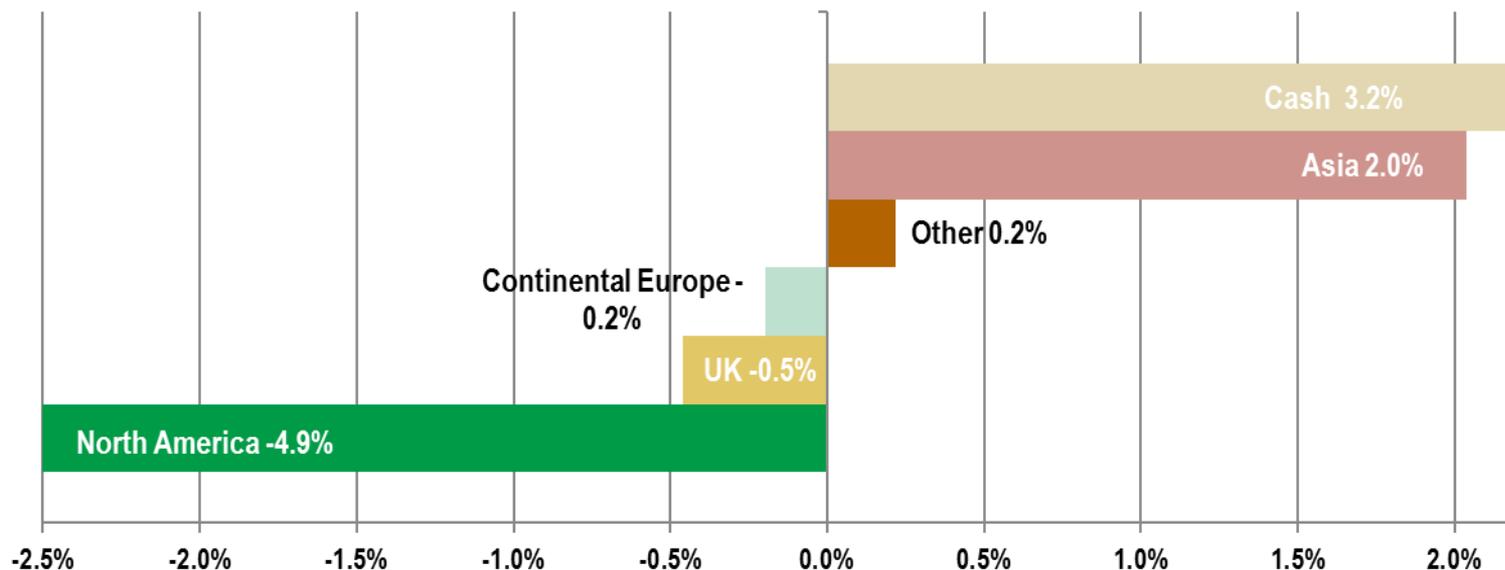


Market Update & Program Overview

Listed Securities as of March 31, 2018



Portfolio Over/Underweight

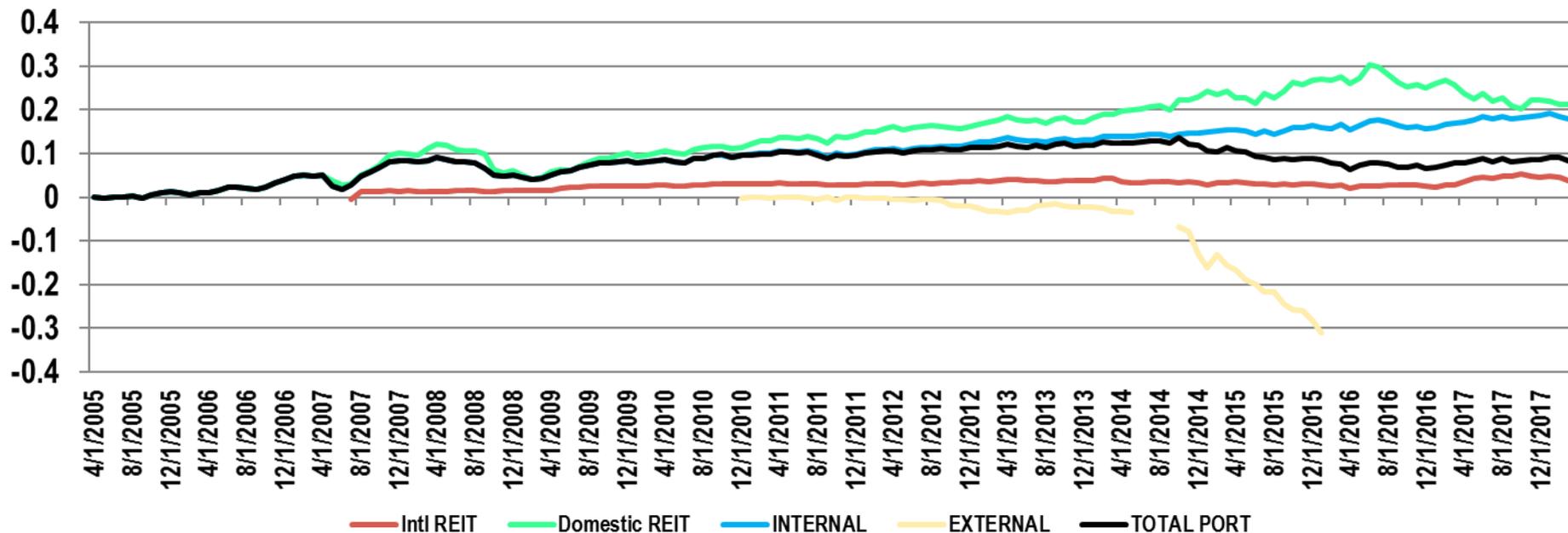


Market Update & Program Overview

Excess Total Return as of March 31, 2018



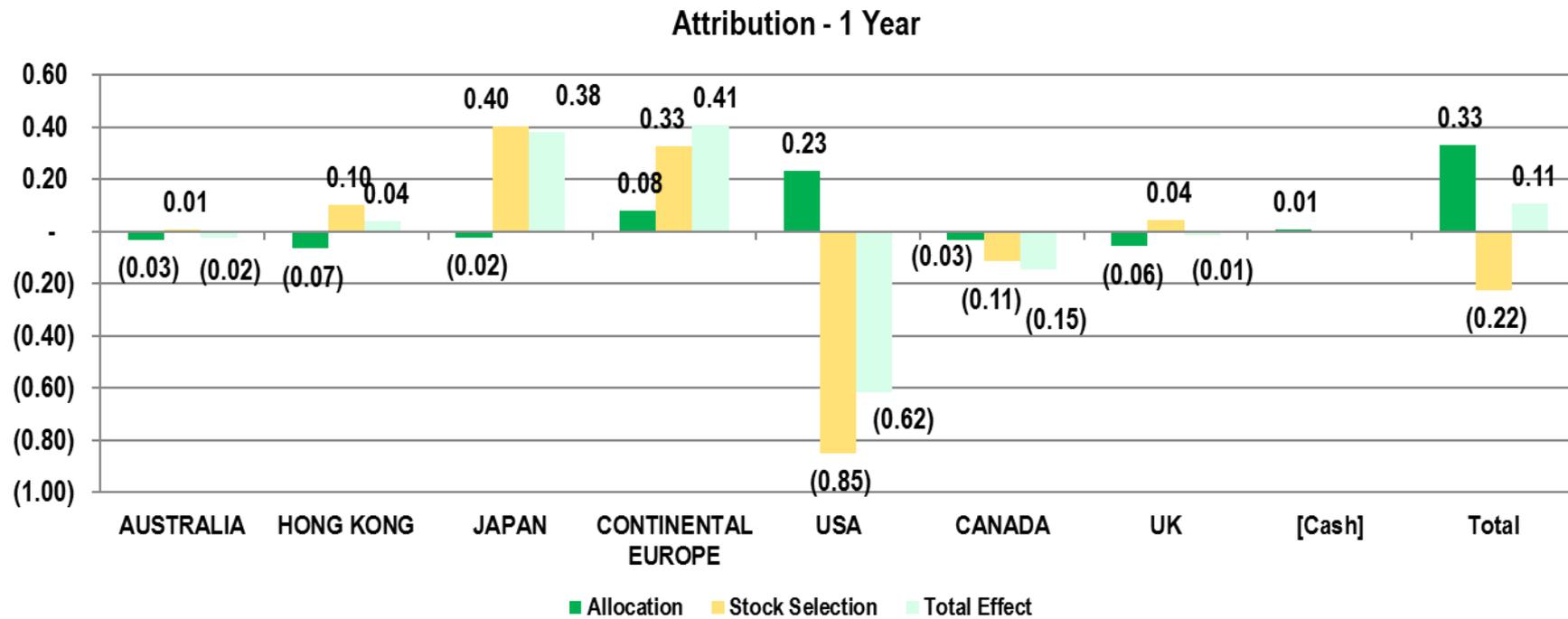
Since Inception Cumulative Excess Total Return



Intl REIT Domestic REIT INTERNAL EXTERNAL TOTAL PORT

Market Update & Program Overview

Attribution as of March 31, 2018– One Year

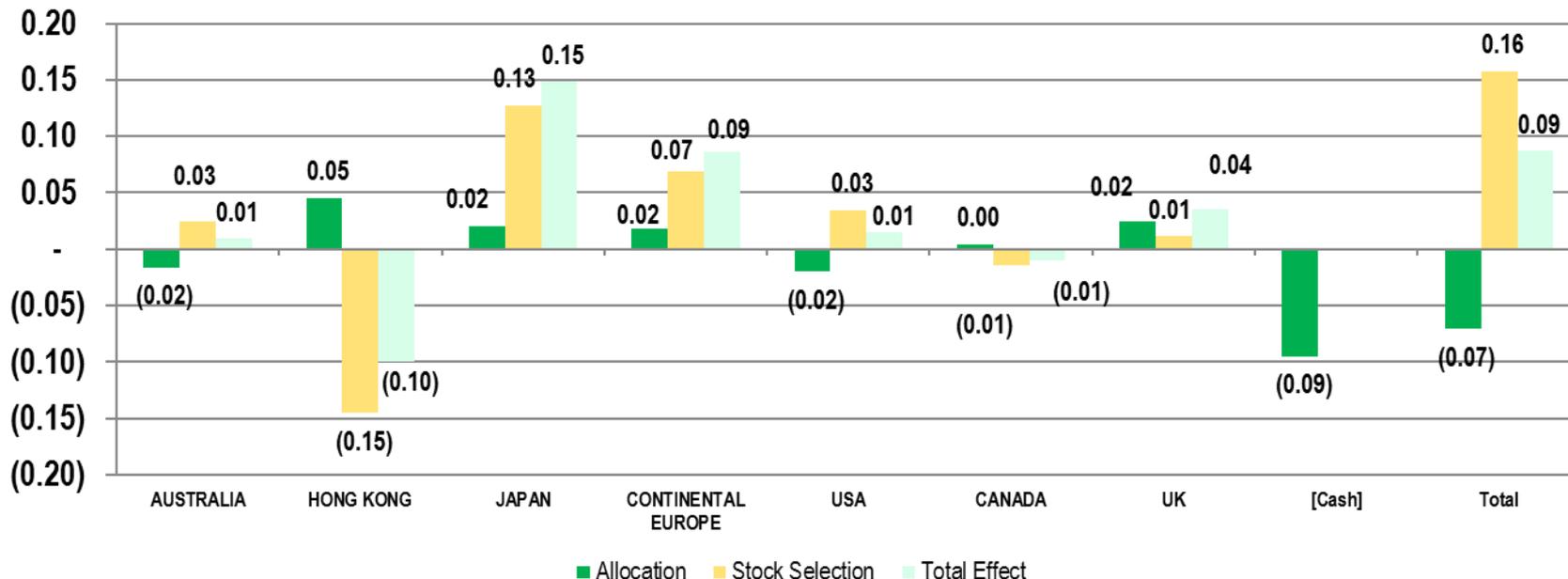


Market Update & Program Overview

Attribution as of March 31, 2018– Five Years



Attribution - 5 Years



Note: Internal portfolios only

Agenda item 6.1 - Meeting book dated May 23, 2018

* Benchmark is FTSE EPRA/NAREIT Developed Index

Global Real Estate USD Total Returns by Major Countries

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 YTD
	Hong Kong 88.7%	Japan 30.8%		Singapore 65.3%						
	Singapore 82.6%	US 28.1%		Japan 49.7%		US 30.4%		Australia 13.4%	Singapore 43.0%	
	ContEuro 44.7%	Global 20.4%		Hong Kong 43.7%		Australia 16.5%		US 7.6%	Hong Kong 38.7%	
	Global ex US 44.6%	Global ex US 16.0%		Global ex US 38.6%	Japan 32.0%	Global 15.9%		Hong Kong 5.4%	ContEuro 31.8%	
	Global 38.3%	Australia 14.4%		UK 35.9%	UK 26.2%	UK 14.2%	ContEuro 6.6%	Global 5.0%	UK 22.4%	
	Australia 33.3%	Singapore 13.9%		Australia 33.8%	ContEuro 10.1%	Hong Kong 13.4%	UK 6.0%	Japan 4.1%	Global ex US 20.8%	
	UK 29.1%	ContEuro 13.5%		Global 28.7%	Global ex US 6.1%	ContEuro 8.0%	US 3.0%	ContEuro 2.1%	Australia 13.5%	Japan 6.6%
	US 28.6%	Hong Kong 11.9%	Canada 12.3%	ContEuro 27.9%	Global 4.4%	Singapore 5.4%	Australia 1.4%	Global ex US 2.0%	Global 11.4%	Global ex US 0.5%
	Japan 1.4%	UK 1.8%	US 7.8%	US 18.0%	US 2.5%	Global ex US 3.2%	Global 0.1%	Singapore 1.9%	US 3.9%	ContEuro 0.1%
Japan -33.4%			Australia -2.0%		Australia -8.1%	Japan -14.7%	Global ex US -3.2%	UK -23.3%	Japan -1.6%	Singapore -0.1%
US -39.6%			Global -5.8%		Hong Kong -9.3%		Japan -5.8%			UK -0.3%
ContEuro -44.2%			UK -8.6%		Singapore -10.6%		Singapore -11.9%			Hong Kong -3.6%
Global -47.7%			ContEuro -11.4%				Hong Kong -12.9%			Global -4.0%
Global ex US -52.0%			Global ex US -15.3%							US -7.8%
Singapore -56.0%			Germany -20.9%							Australia -8.0%
Hong Kong -57.4%			Japan -22.1%							
UK -61.1%			Hong Kong -25.3%							
Australia -64.4%			Singapore -27.7%							

Market Update & Program Overview

Private Real Estate, as of March 31, 2018

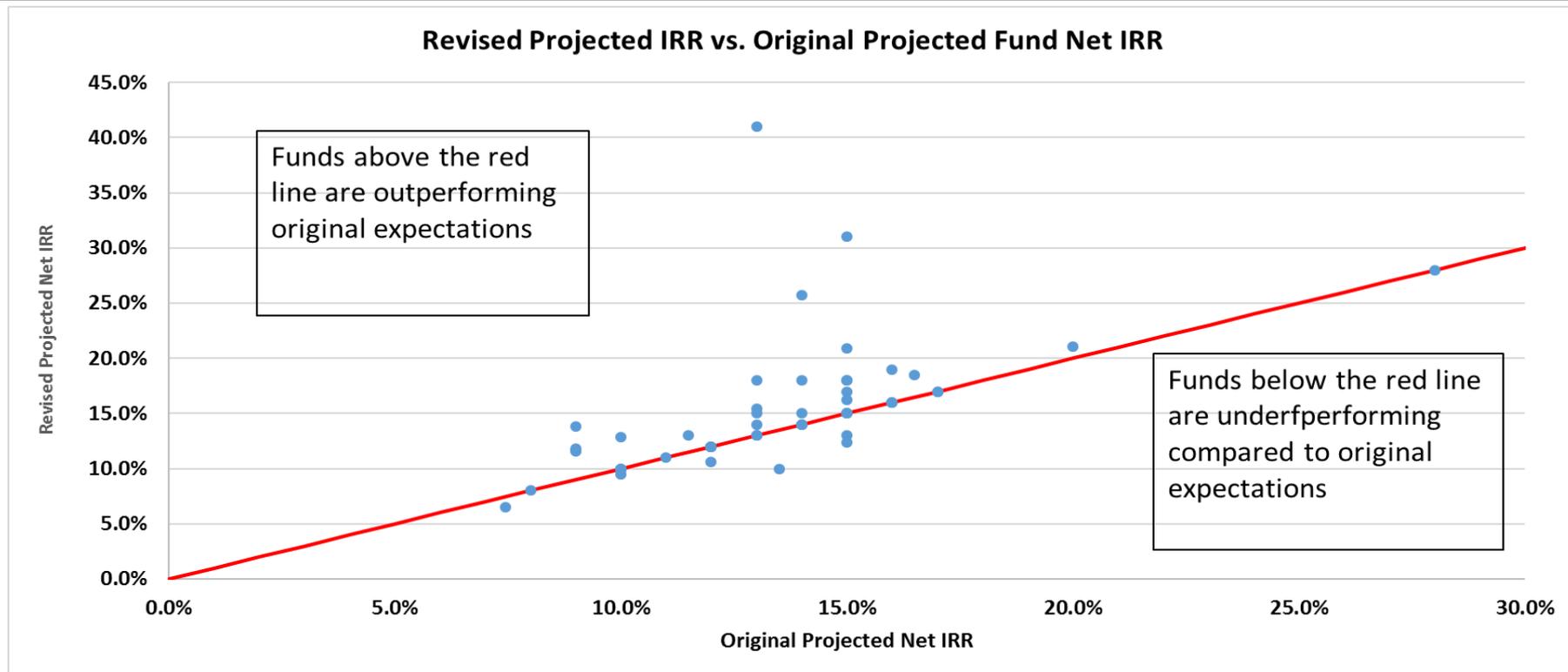


- **PORTFOLIO NET ASSET VALUE:** \$2.0 billion
- **INVESTMENT TYPE:** Equity 89%; Debt 11%
- **OVERALL LOAN TO VALUE RATIO:** 50%
- **COMMITMENTS:**
 - Total Portfolio (since inception) \$3.6 billion with 56 Investments and 32 managers
 - FY 2018 Committed \$417 million to 8 funds
- **PROGRAM AVERAGE ECONOMICS:**
 - Management Fee: 111 bps
 - Carry: 16.90%
- **CAPITAL CALLED:**
 - Since Inception \approx \$2.9 billion
 - FY 2018 \$240 million
- **DISTRIBUTIONS:**
 - Since Inception \approx \$2.0 billion
 - FY 2018 \$345 Million

Market Update & Program Overview



Private Real Estate Portfolio Original and Current Return Projections

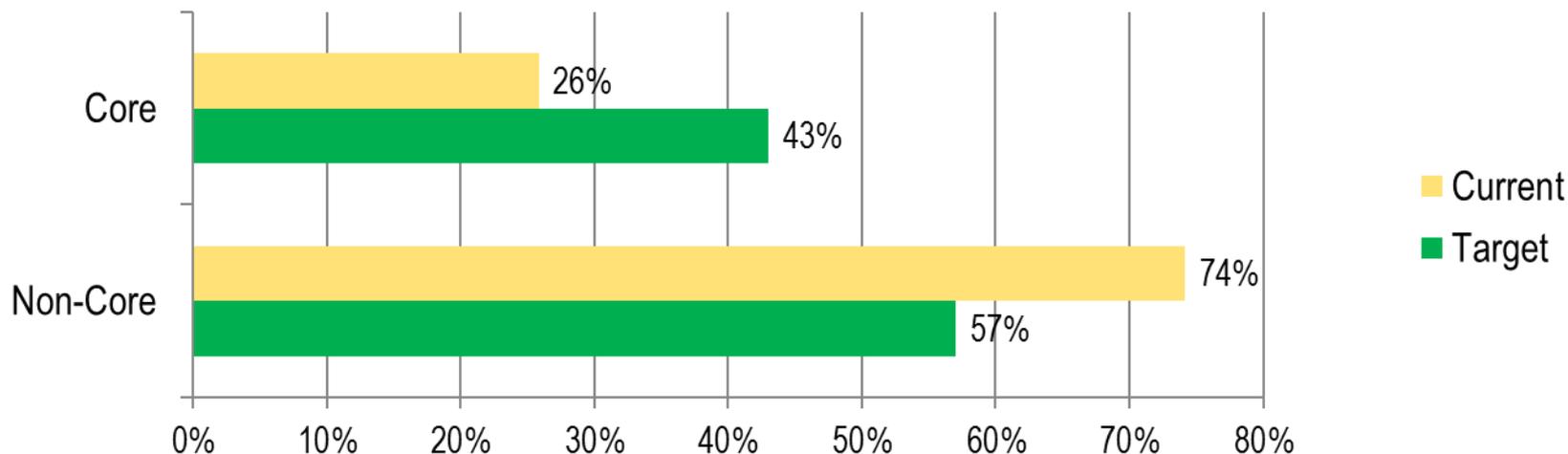


Market Update & Program Overview

Asset Allocation vs. Target as of March 31, 2018



Current Allocation vs. Target Allocation



Note: Current allocation based on current NAV + unfunded commitments (economic exposure)

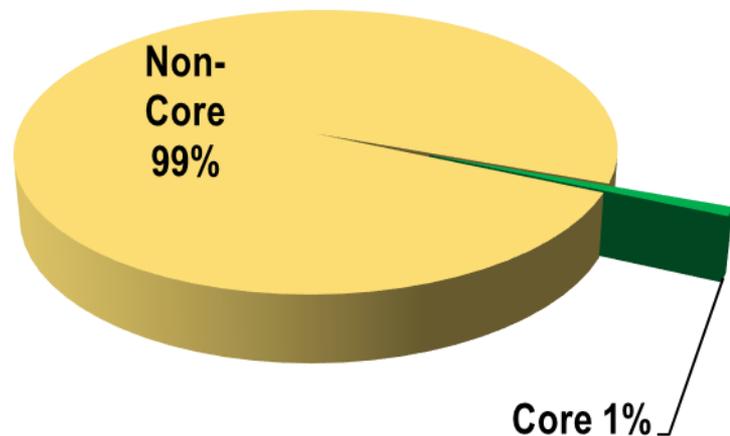
Agenda item 6.1 - Meeting book dated May 23, 2018

Market Update & Program Overview

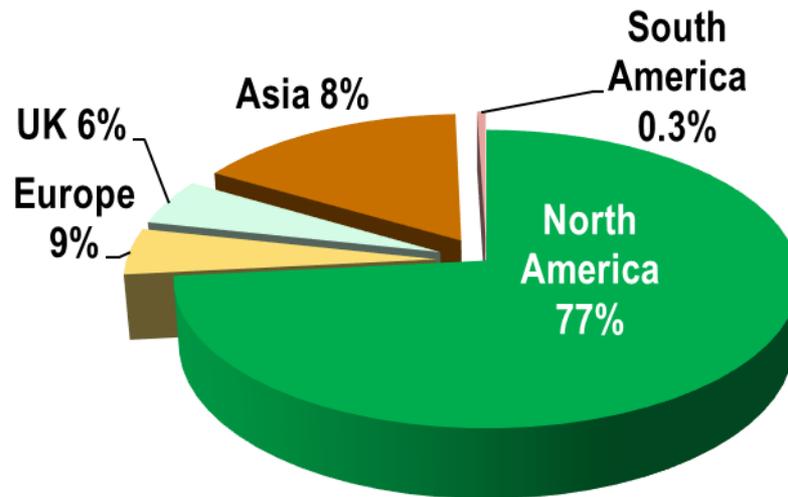
Private Real Estate Portfolio as of March 31, 2018



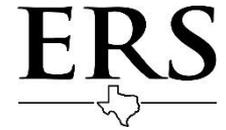
Unfunded Commitments by Strategy
≈ \$715 million



Unfunded Commitments by Geographic Region



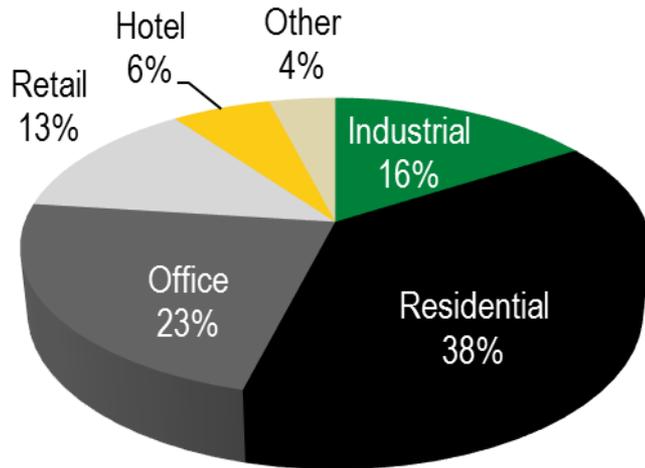
Market Update & Program Overview



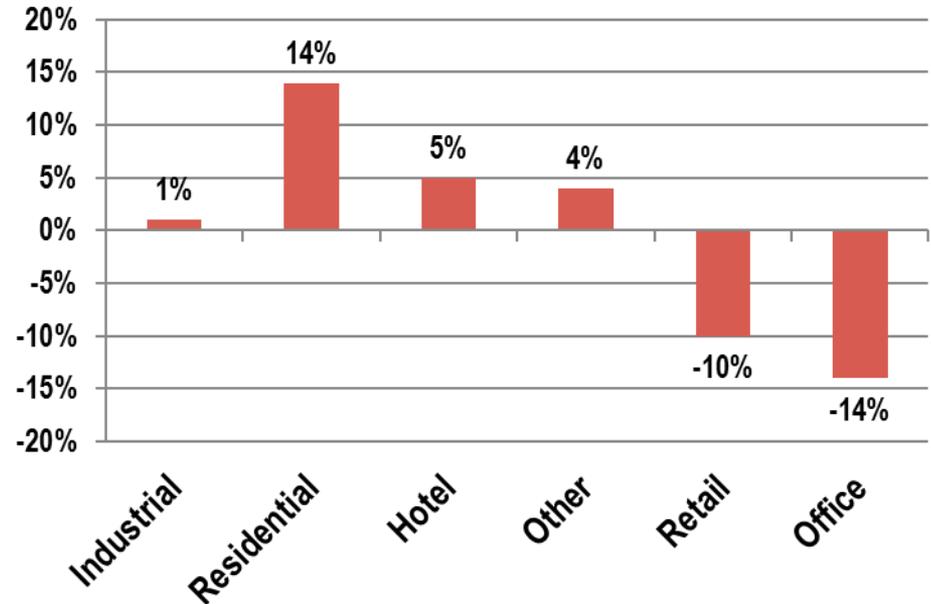
Property Type Weights as of December 31, 2017

ERS Portfolio by Property Type

Based on ERS' NAV, US only

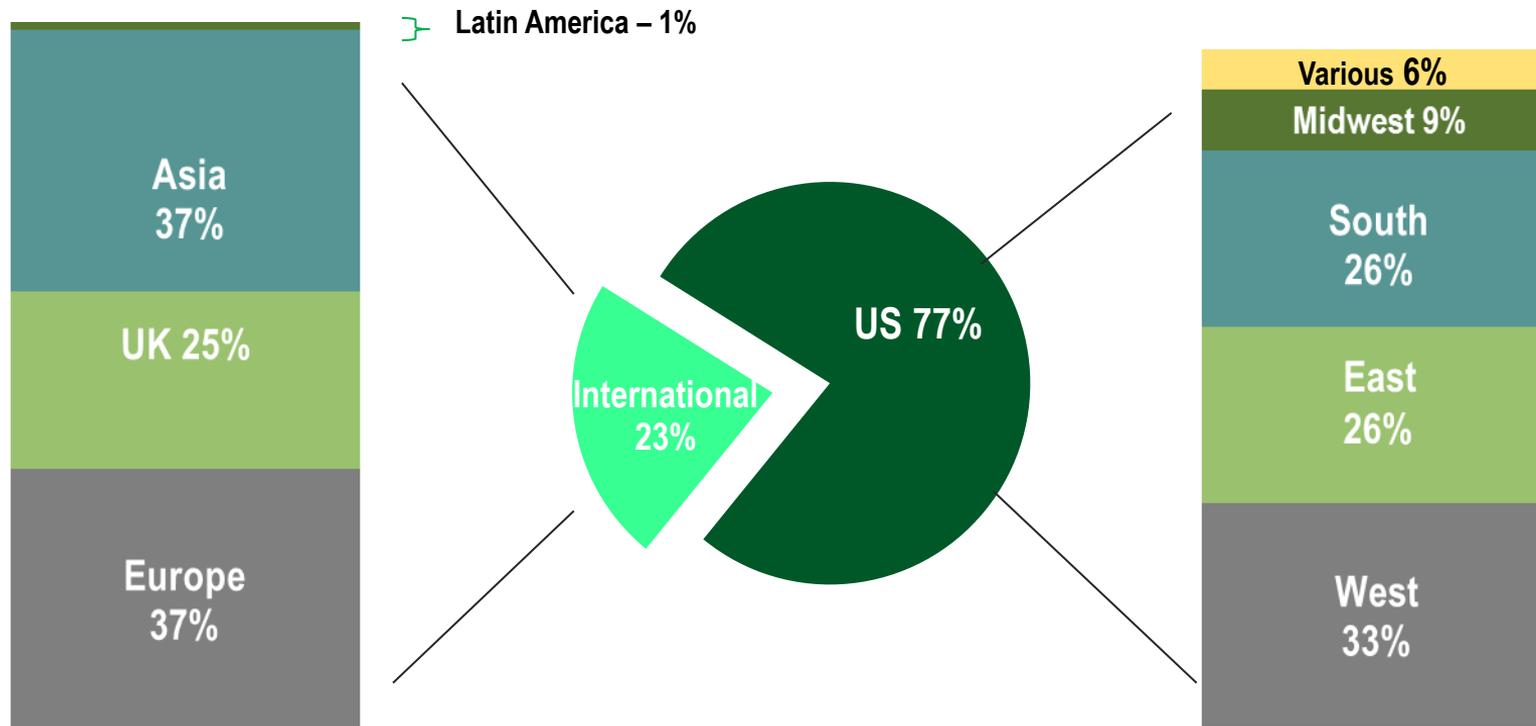


ERS Portfolio Compared to NCREIF Property Index Benchmark, US Only



Market Update & Program Overview

Geographic Weights Based on ERS' NAV as of Dec.31, 2017



Private Real Estate Portfolio “Amenity” Metric

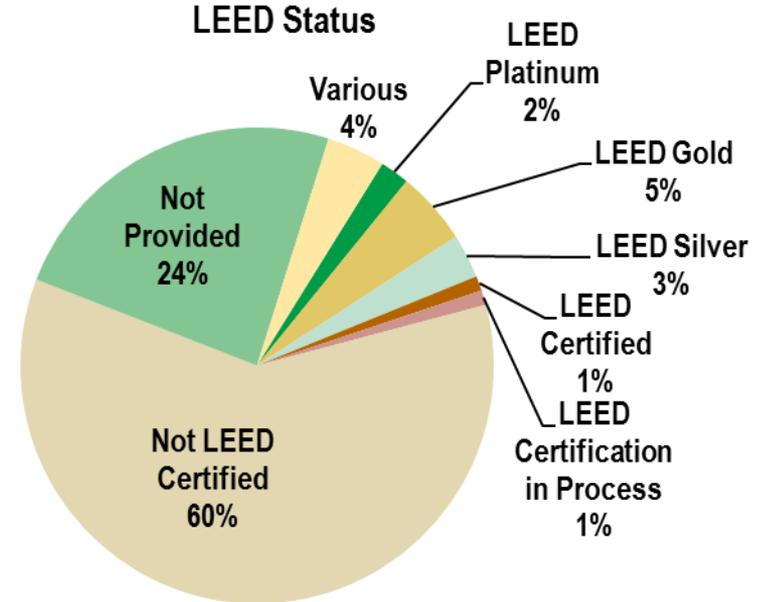
Tracking LEED Certification



ERS Staff tracks LEED certification and Walk Score, which are both indicators of amenities that are becoming increasingly desirable by tenants and investors.

Leadership in Energy and Environmental Design (LEED) is an indication of various sustainability features incorporated into a building which can improve its operating costs.

ERS Private Real Estate Select Portfolio*:



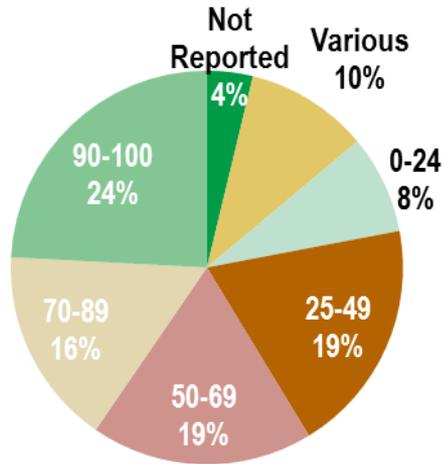
*The chart above is based on a select portfolio of ERS assets: US only and excluding industrial, self storage, manufactured housing and land. LEED is less relevant for these sectors. Percentages are based on ERS' NAV as of Q4 '17

Private Real Estate Portfolio “Amenity” Metric

Tracking Walk Score



ERS PRE Walk Score-Select Portfolio



Walk Score®	Description
90 – 100	Walker's Paradise – Daily errands do not require a car
70 – 89	Very Walkable – Most errands can be accomplished on foot
50 – 69	Somewhat Walkable – Some amenities within walking distance
25 – 49	Car-Dependent – A few amenities within walking distance
0 – 24	Car-Dependent – Almost all errands require a car

Source: Walk Score



40% of the select portfolio scored above 70 (very walkable or better)

*The chart above is based on a select portfolio of ERS assets: US only and excluding industrial, self storage, manufactured housing and land. Walk Score is less relevant for these sectors. %'s are based on ERS' NAV as of Q4 '17.

Market Update & Program Overview

FY 2018 Accomplishments



- Both Internal REIT and Private Real Estate portfolio has outperformed the benchmark for the 1,3,5 years and since inception period
- Committed \$417 million to Private Real Estate through March 31, 2018 (closed on 8 investments)
- Negotiated an estimated \$85 million in savings since inception plus non-economic terms to improve corporate governance
- Option strategies continue to be used in listed real estate portfolios
- Co-Hosted the 4th Bi-Annual Real Estate Emerging Manager conference in January 2018. The inaugural multi-asset class emerging manager open house was held in February 2018.

Market Update & Program Overview

FY 2019 Initiatives



- Continue committing capital to Private Real Estate on a selective basis
- Focus on non-core fund commitments to existing managers, niche strategies and co-investments while also selectively considering core investments and debt
- Targeting \$550 million in commitments with a range of \$275 million to \$825 million and 5 to 12 new commitments
- Continue to improve upon the REIT investment process and performance

Questions?





Market Overview

PCA
PENSION
CONSULTING
ALLIANCE

Employees Retirement System of Texas (ERS)

May 2018

PCA Overview

Experienced/Stable Organization

- Founded as an independent firm in 1988
- Offices in Portland, Los Angeles and New York City
- 26 experienced investment professionals
- Multi-disciplinary team with diverse backgrounds
- Significant tenures at PCA

Focused Client Base

- 85% of client base is government-sponsored agencies
- Advise over \$1.2 trillion in institutional assets
- Client size ranges from \$130 million to \$323 billion
- Median client size of \$6.7 billion

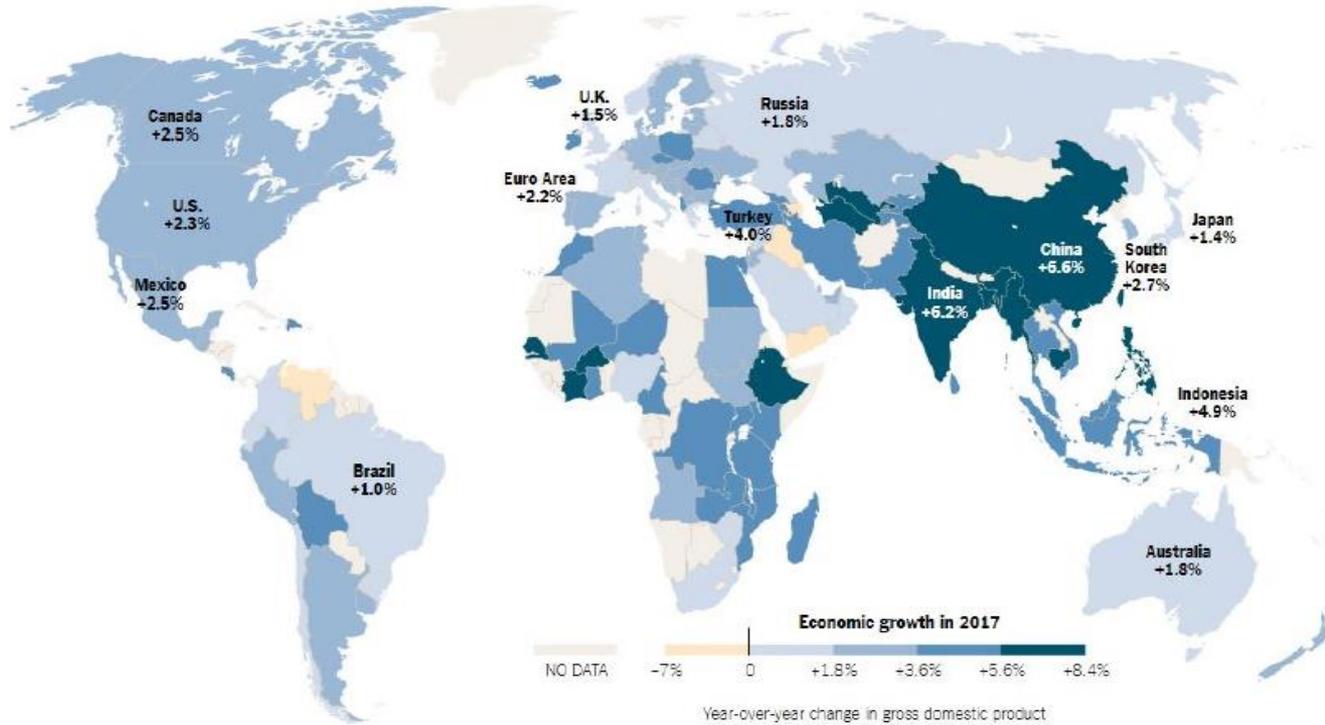
Business Model Structured to Avoid Conflicts of Interest

- Non-discretionary consulting services provider
- Independent and 100% employee-owned
- Registered Investment Adviser
- No AUM, other business channels, or b/d platform

Distinctive Approach to Consulting

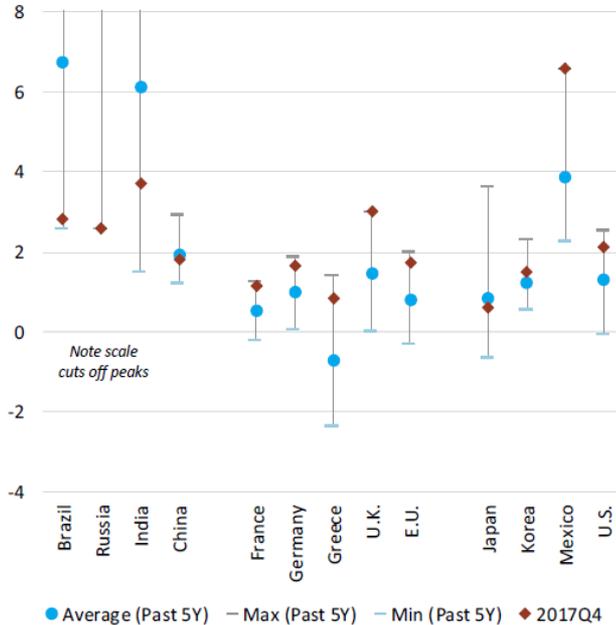
- Client advocate
- Customized advisory services
- Work for Trustees and serve as extension of Staff
- Strong, informed opinions

Synchronized Global Growth – Real GDP Growth in 2017

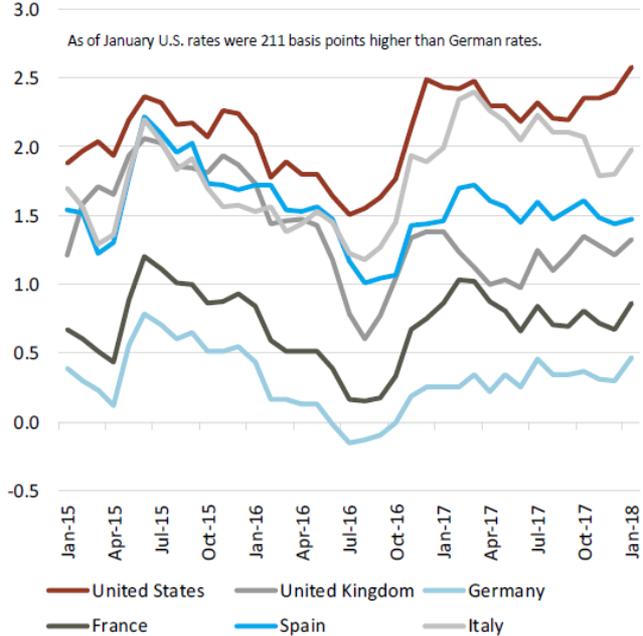


Global Inflation and Bond Rates

Inflation Rates



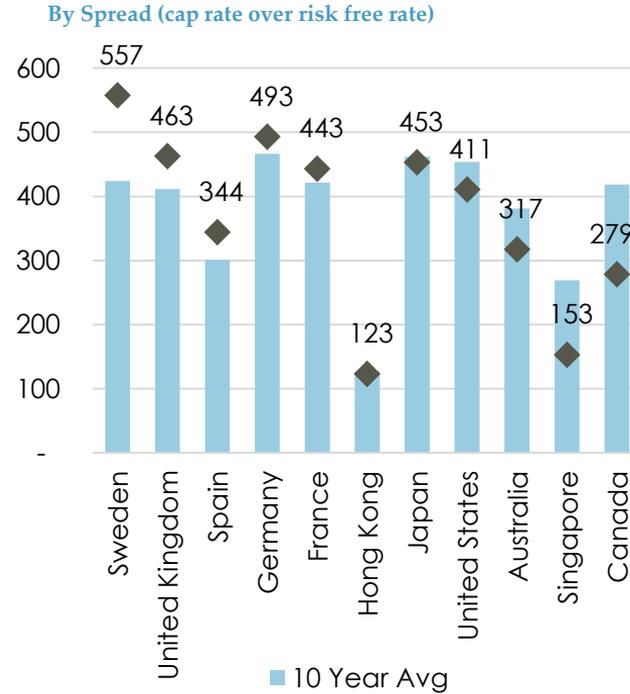
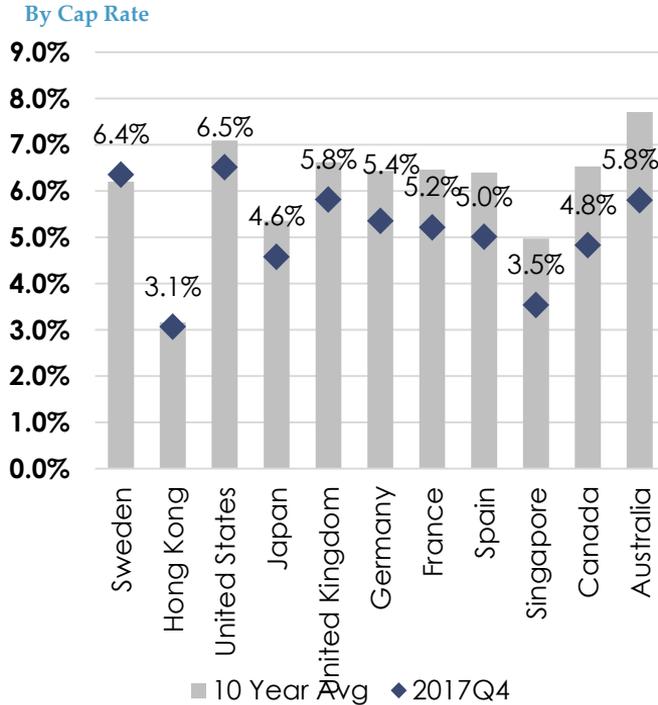
10- Year Government Bond Rates



Source: OECD, Hawkeye Partners

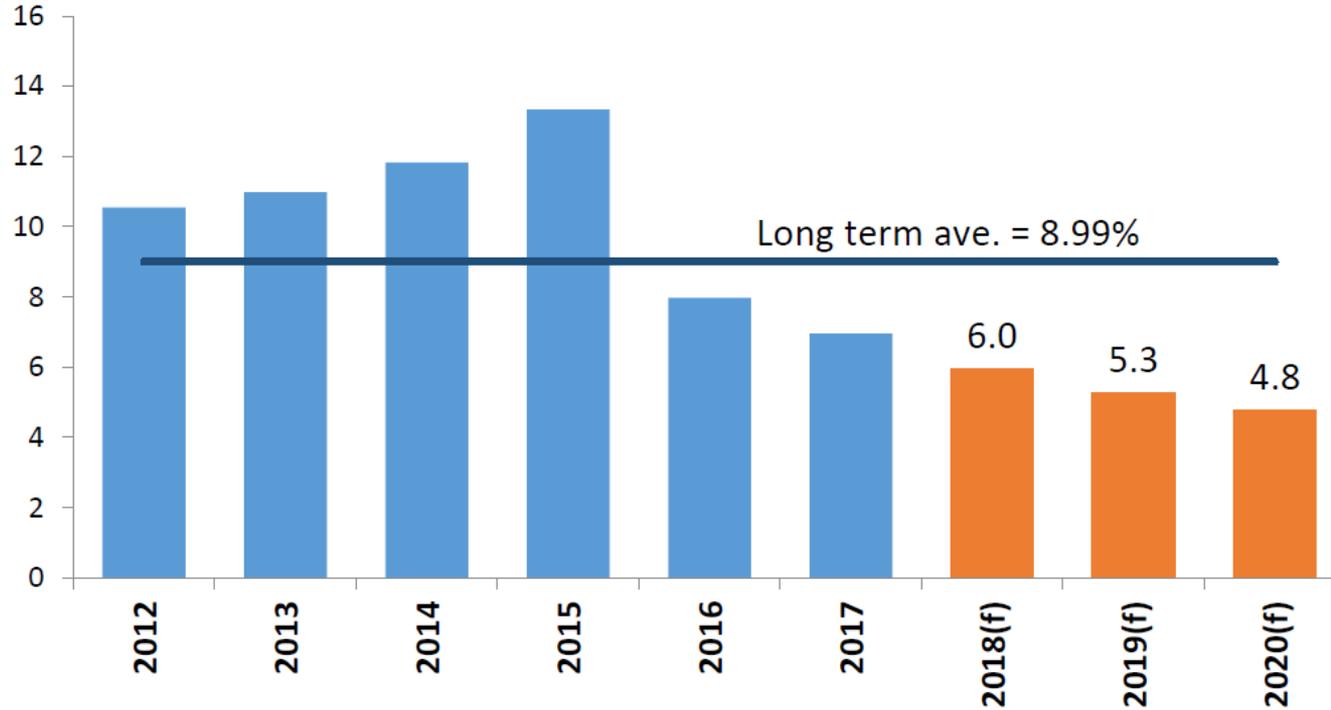
Relative Value by Country

Current vs. 10-year averages, ranked by difference



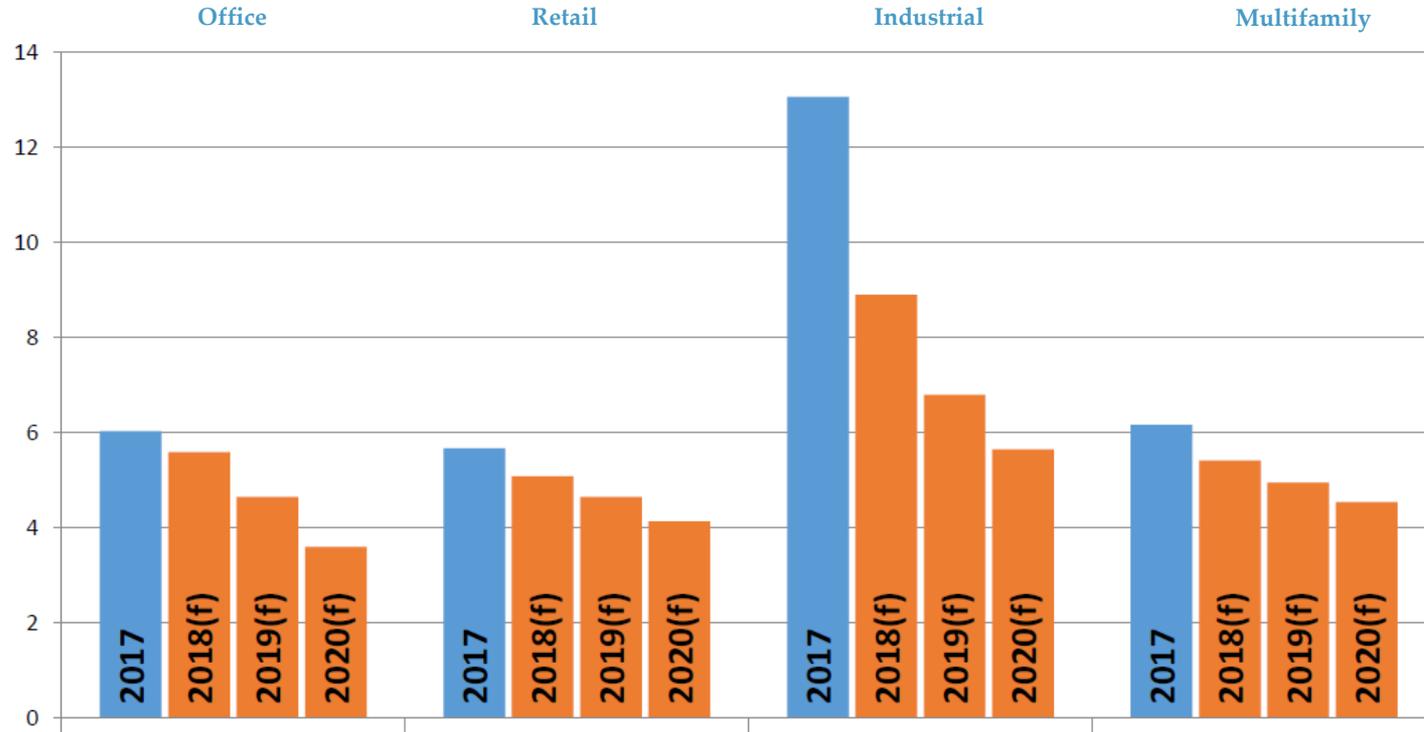
Source: Real Capital Analytics, Hawkeye Partners

Consensus Forecast for U.S. Real Estate Returns - Unlevered



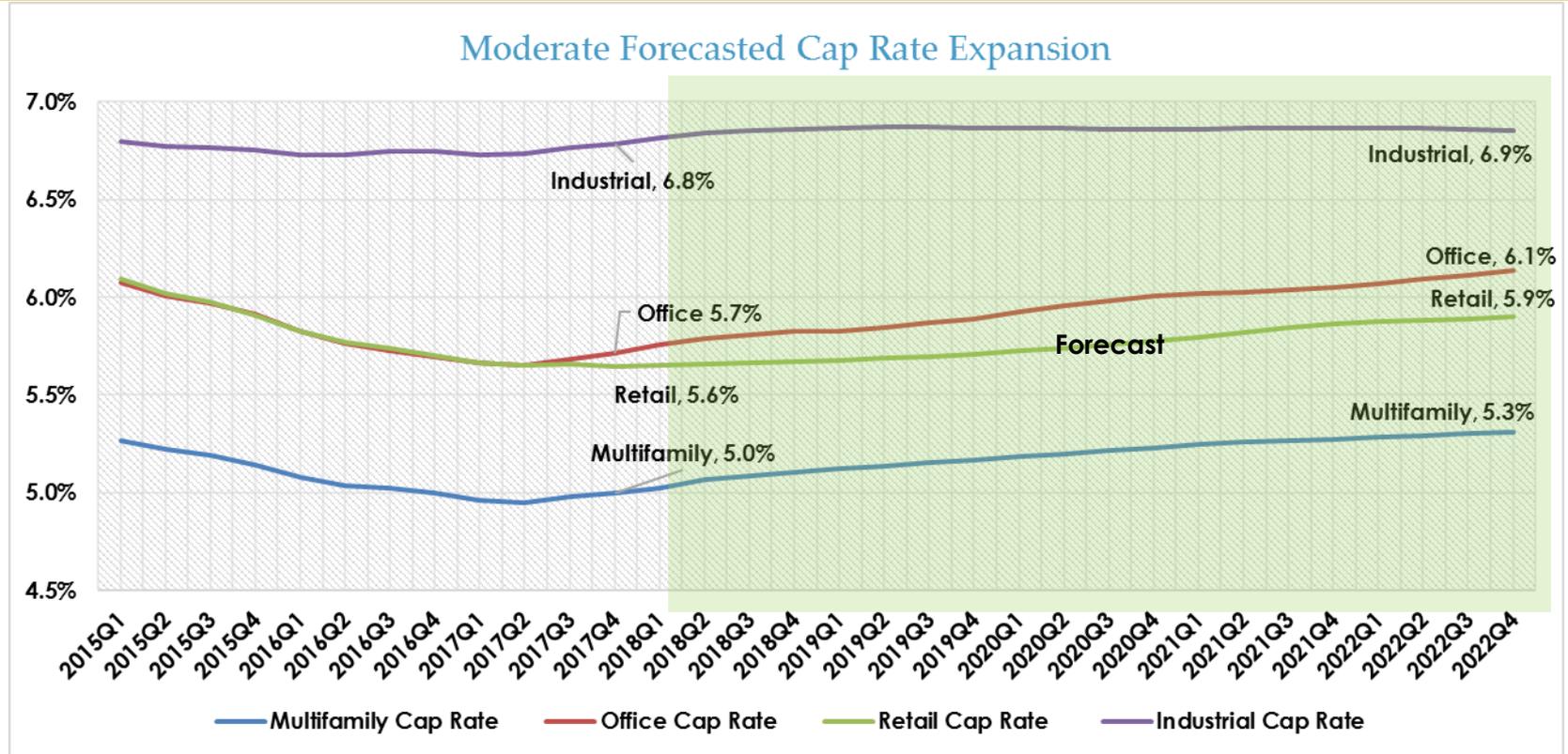
Source: PREA Consensus Forecast Survey, Q1 2018

Consensus Forecast for U.S. Real Estate Returns – By Property Type



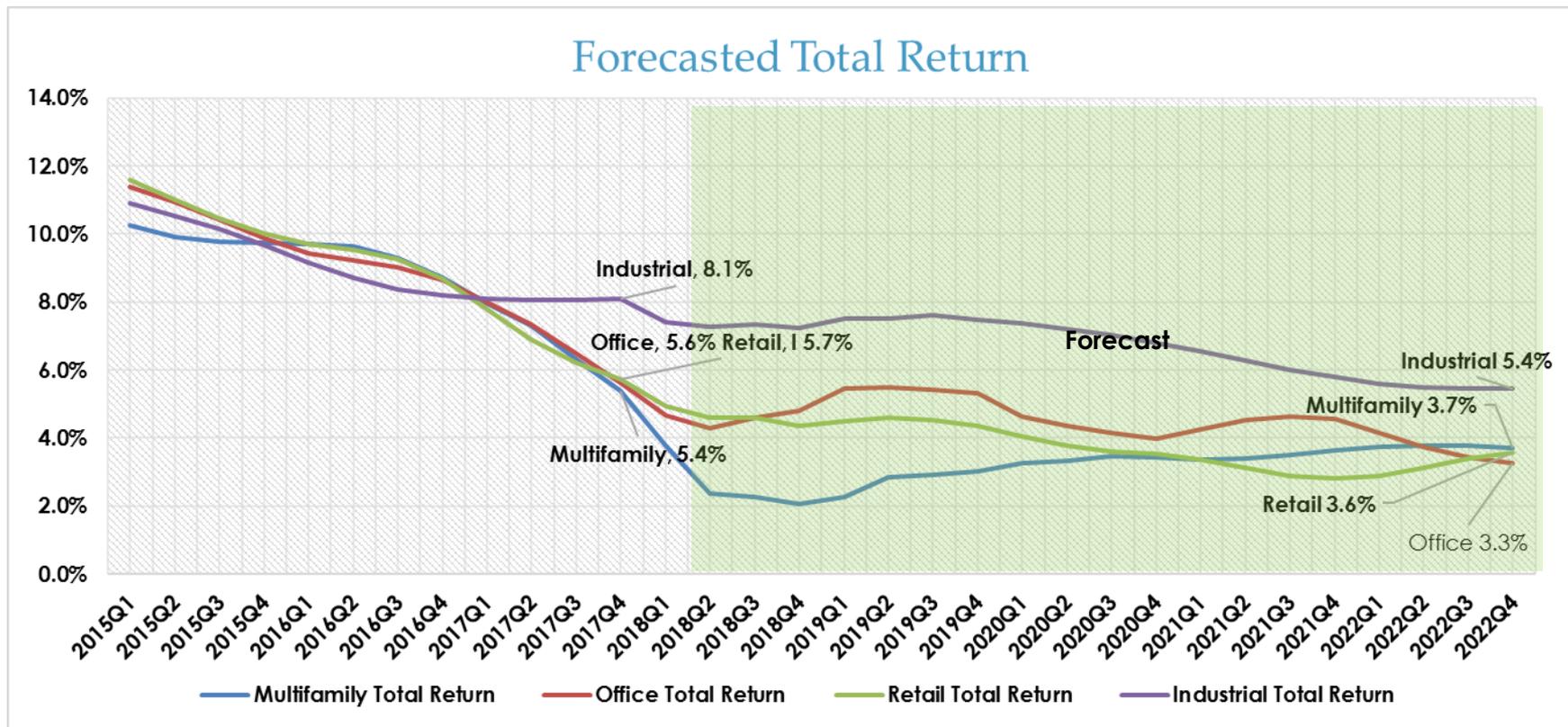
Source: PREA Consensus Forecast Survey, Q1 2018

Moderate Forecasted Cap Rate Expansion – By Property Type



Source: CoStar

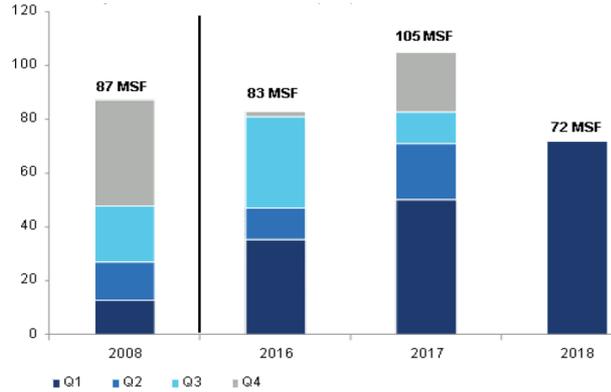
Forecasted Total Returns – By Property Type



Source: CoStar

Retail Concerns Going Forward

Retail Space Announced for Closure Including Toys “R” Us



Other Suspects: Current Sears and Kmart Space



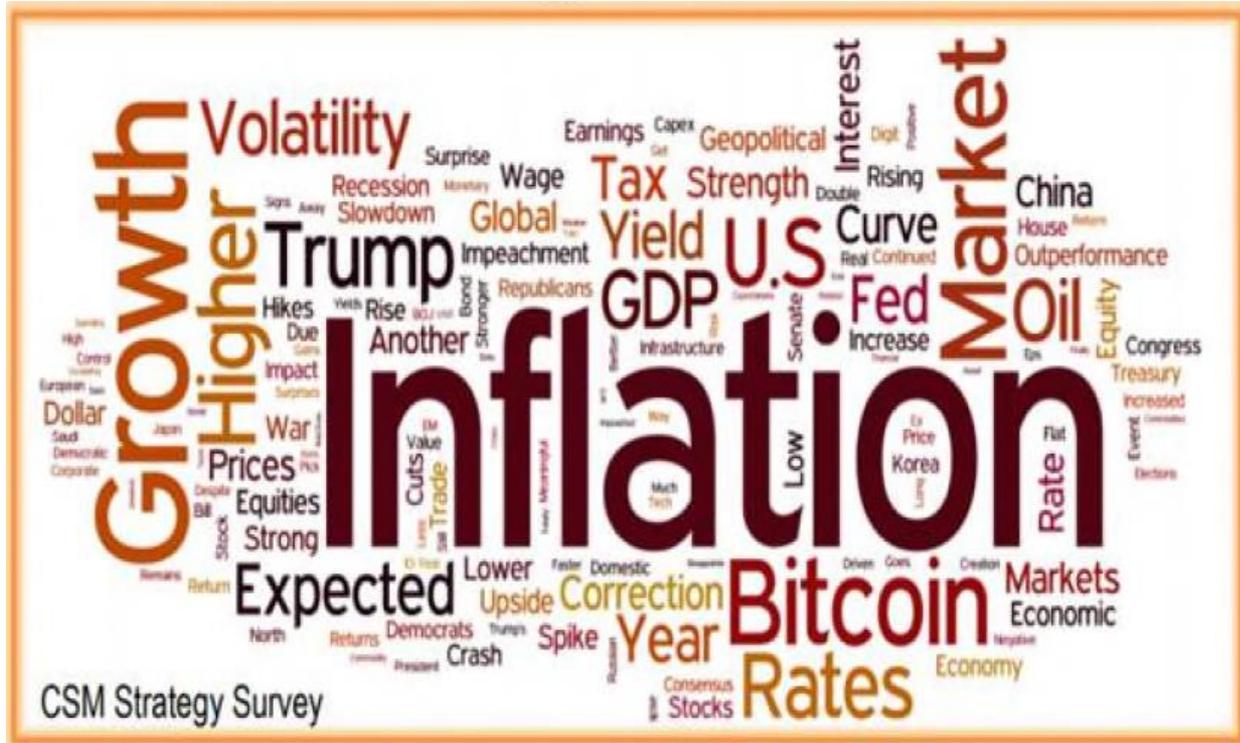
Source: CoStar

Retail Now Looks Barbelled: Only High & Low End Grocer Leasing Grows



Source: CoStar - Change in total square footage leased 2010-13 vs. 2014-17. Data as of September 30, 2017

Major Concerns Going Forward



Source: Comerstone, AEW

Questions?



Public Agenda Item #6

Real Estate Program

*6.2 Consideration of the Proposed Real Estate Annual Tactical Plan for Fiscal Year 2018 – Fiscal Year 2019 – (**Action**)*



May 23, 2018

Robert Sessa, CFA, Director of Real Estate
Adam Cibik, Real Estate Portfolio Manager

Proposed Tactical Plan for FY2019

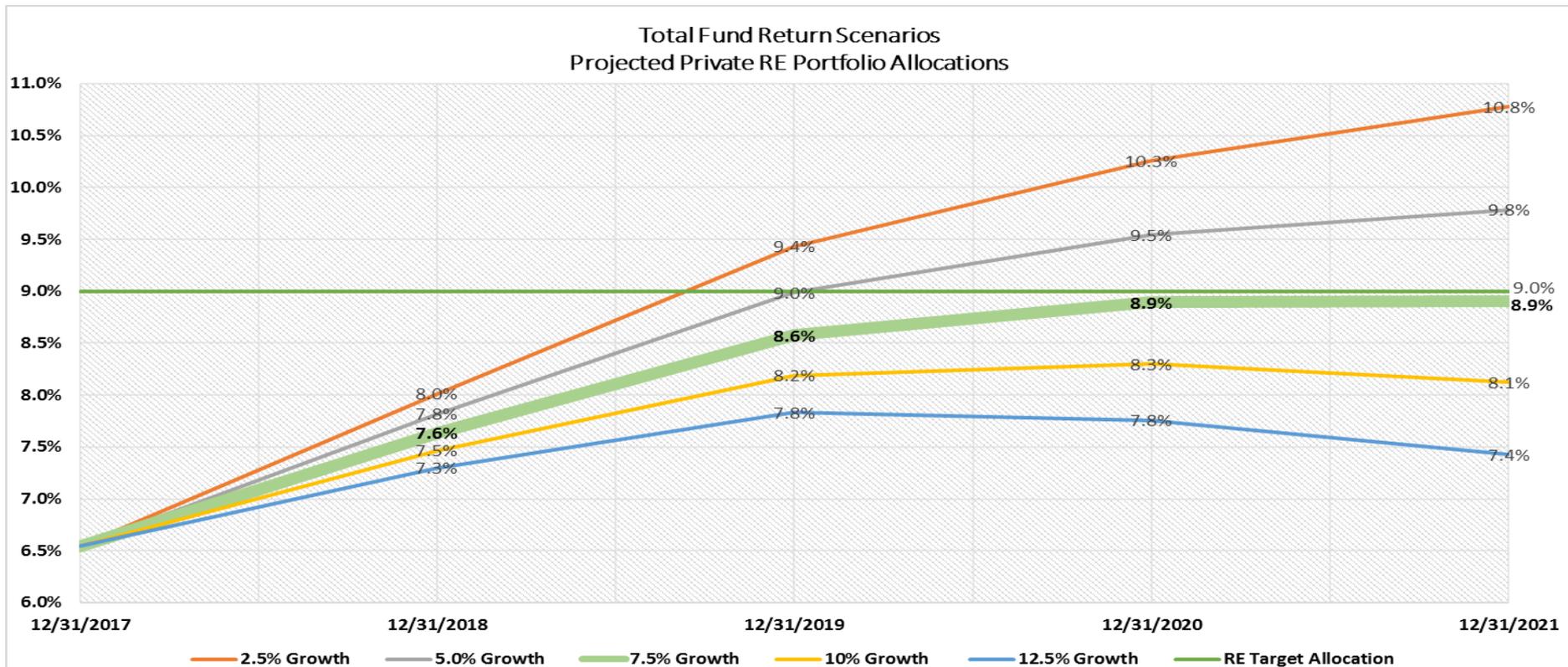


Overview

- Private Real Estate Annual Tactical Plan is a guideline for investing
- Current value of Private Real Estate is \$2.0 billion
- Currently at 6.9% of the total ERS portfolio (target allocation is 9%)
- Commitments will target \$550 million for FY2019, with a range of \$275 million to \$825 million
- \$50 million - \$100 million commitment sizes, but may be smaller or larger for niche or special situations

Proposed Tactical Plan for FY2019

Pacing Model



Proposed Tactical Plan for FY2019

Fiscal Year 2018 in Review



FY 2018 Tactical Plan			FY 2018 Actual (as of March 31, 2018)	
Category	Number of new Investments	New Commitment in millions (range)	Number of New Commitments	Commitment Amount
Core	0 – 3	\$20 (\$0 - \$150)	1	\$12
Non-Core	3 – 11	\$505 (\$250 - \$757)	7	\$405
Total	3 – 11	\$525 (\$250 - \$787)	8	\$417

Proposed Tactical Plan for FY2019

Fiscal Year 2019 Tactical Plan

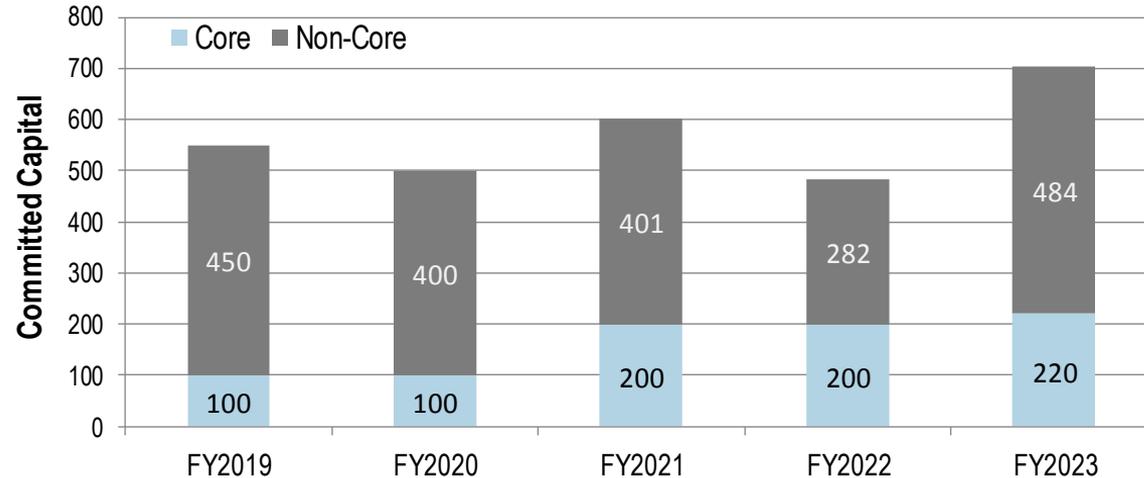


FY 2019 Tactical Plan

Category	Number of new Investments	New Commitment in millions (range)	
Core	0 – 2	\$100	(\$0 - \$250)
Non-Core	4 – 10	\$450	(\$200 - \$700)
Total	5 – 12	\$550	(\$275 - \$825)

Proposed Tactical Plan for FY2019

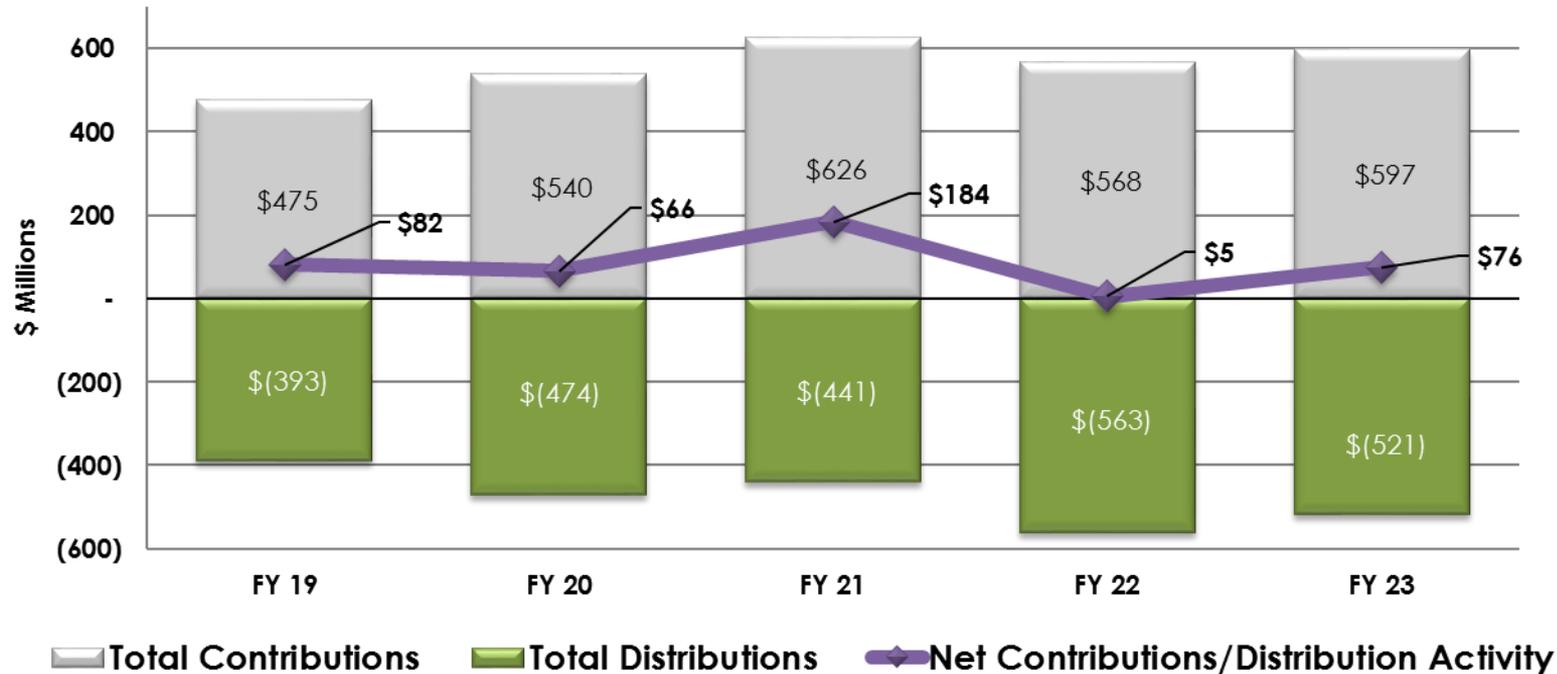
Targeted Commitments Through Fiscal Year 2023



Targeted Annual Commitments (millions)	\$550	\$500	\$601	\$482	\$704
# of Investments	2 - 10	2 - 10	2 - 10	2 - 10	2 - 10

Proposed Tactical Plan for FY2019

Projected Invested Capital Through FY2023



Proposed Tactical Plan for FY2019

Near Term Strategy



- Build relationships of scale with strong partners and small groups of investors
- Niche type funds that are likely to be resilient through economic downturns (medical office, self-storage and manufactured housing and debt funds)
- Co-Investments and separate accounts to leverage strategic partnerships
- Explore long term holds for select investments, including core
- Selective international investments – Asia and Advanced Emerging Asia, possibly Europe

Questions?
Action Item



Public Agenda Item #7.1

Set date for the next Joint meeting of the ERS Board of Trustees and Investment Advisory Committee, the next meeting of the Board of Trustees and the next meeting of the Audit Committee



May 23, 2018

Next Meeting Dates



2018 Meeting Dates

Wednesday, August 29, 2018

2 Day Workshop:

Tuesday – Wednesday, December 11-12, 2018

Public Agenda Item #8.1

*Adjournment of the Joint Meeting of the Board of Trustees and
Investment Advisory Committee*



May 23, 2018