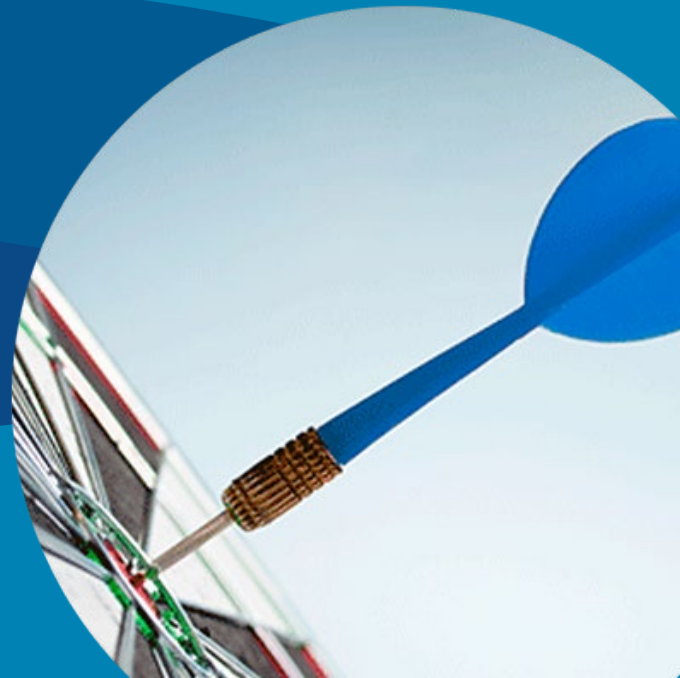




# City of Dallas Employees' Retirement Fund

December 31, 2022

Final Valuation Results



# Actuarial Valuation

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- Prepared as of December 31, 2022, using member data, financial data, benefit and contribution provisions, actuarial assumptions and methods
- Purposes:
  - Measure the actuarial liabilities of the ERF
  - Determine actuarial required contribution rate
    - Current Total Obligation Rate
    - Current Adjusted Total Obligation Rate
  - Provide other information for reporting
    - GASB #67 & #68, Annual Comprehensive Financial Report
  - Explain changes in actuarial condition of the Fund

# Key Issues and Changes

---

- ERF's investment return was below its investment target of 7.25% on both a market value and actuarial value basis in 2022
  - Return on market value was -10.31%
    - Dollar-weighted return
  - Investment shortfall in 2022 of \$701 million
    - \$221 million of shortfall was offset against prior gains, \$96 million of shortfall was recognized in this valuation, with the remaining \$384 million deferred
- 2021 and 2022 demonstrate why we use a smoothed asset value
  - The gains and losses on the actuarial value of assets these two years have to a great extent offset each other
- \$55 million liability experience loss in 2022
  - Loss from cost of living adjustment being greater than assumed
  - Loss from salary increases being higher than assumed
  - Gain on retiree mortality (more deaths than assumed)

# Key Issues and Changes

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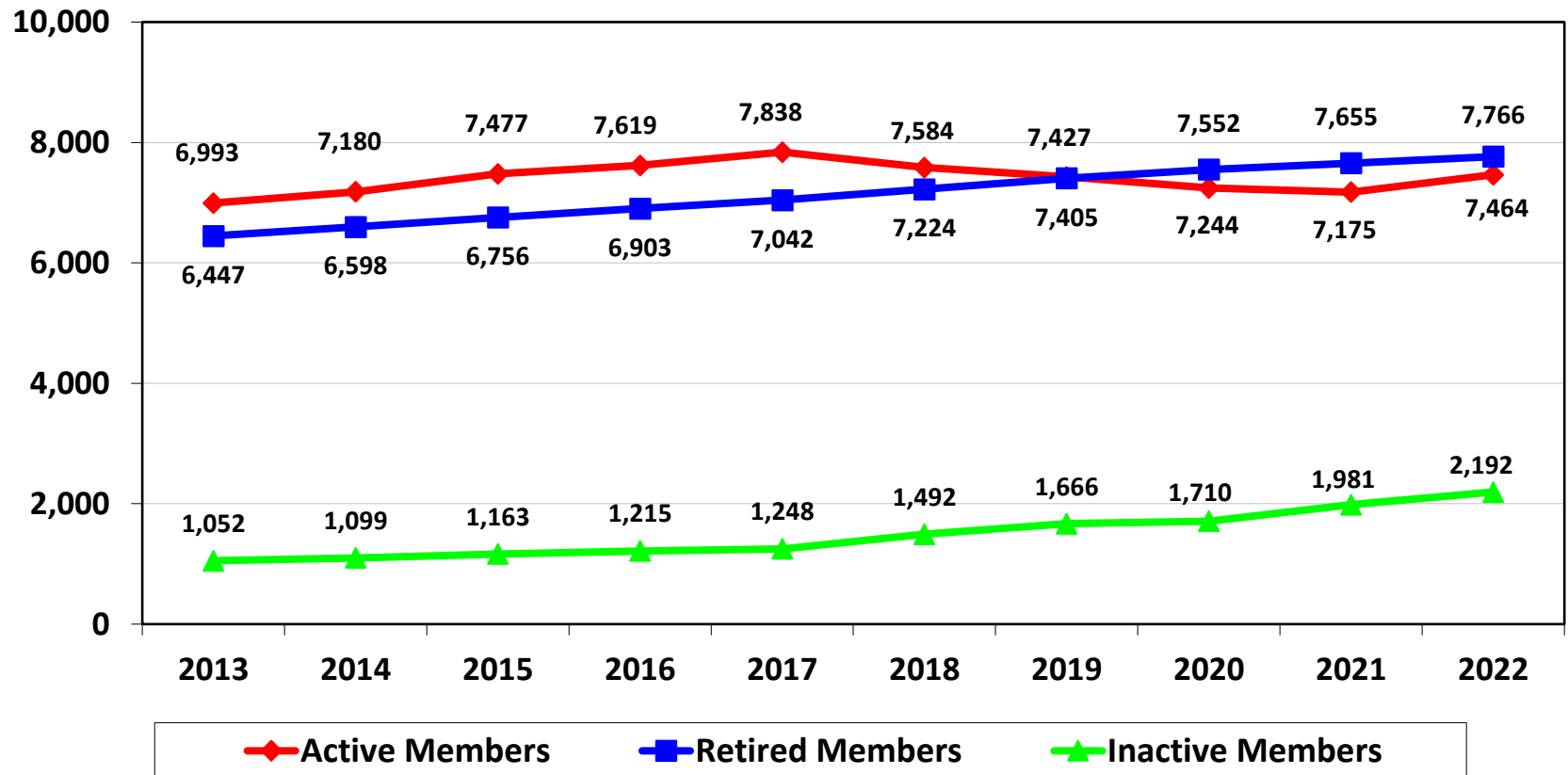
- Payroll increased more than expected
  - 7.6% increase versus 2.5% increase assumption
- Current Total Obligation Rate exceeds 36% of pay cap
  - CATOR is 36.00%
  - City contribution rate is 22.68%
  - Member rate is 13.32%
- The new Tier became effective January 1, 2017
  - Over 3,500 employees in new Tier at December 31, 2022
    - New Tier is approximately 48% of the active employees
  - NC% decreased from 19.71% last year to 19.17% this year

# Membership

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- The number of active members increased from 7,175 to 7,464, a 4.0% increase
- Payroll for active members increased from \$442.9 million to \$476.6 million, a 7.6% increase
- The number of members in payment status increased by a net 111, from 7,655 to 7,766, a 1.5% increase
- There are fewer active members than retired members, but the ratio is close to 1.0

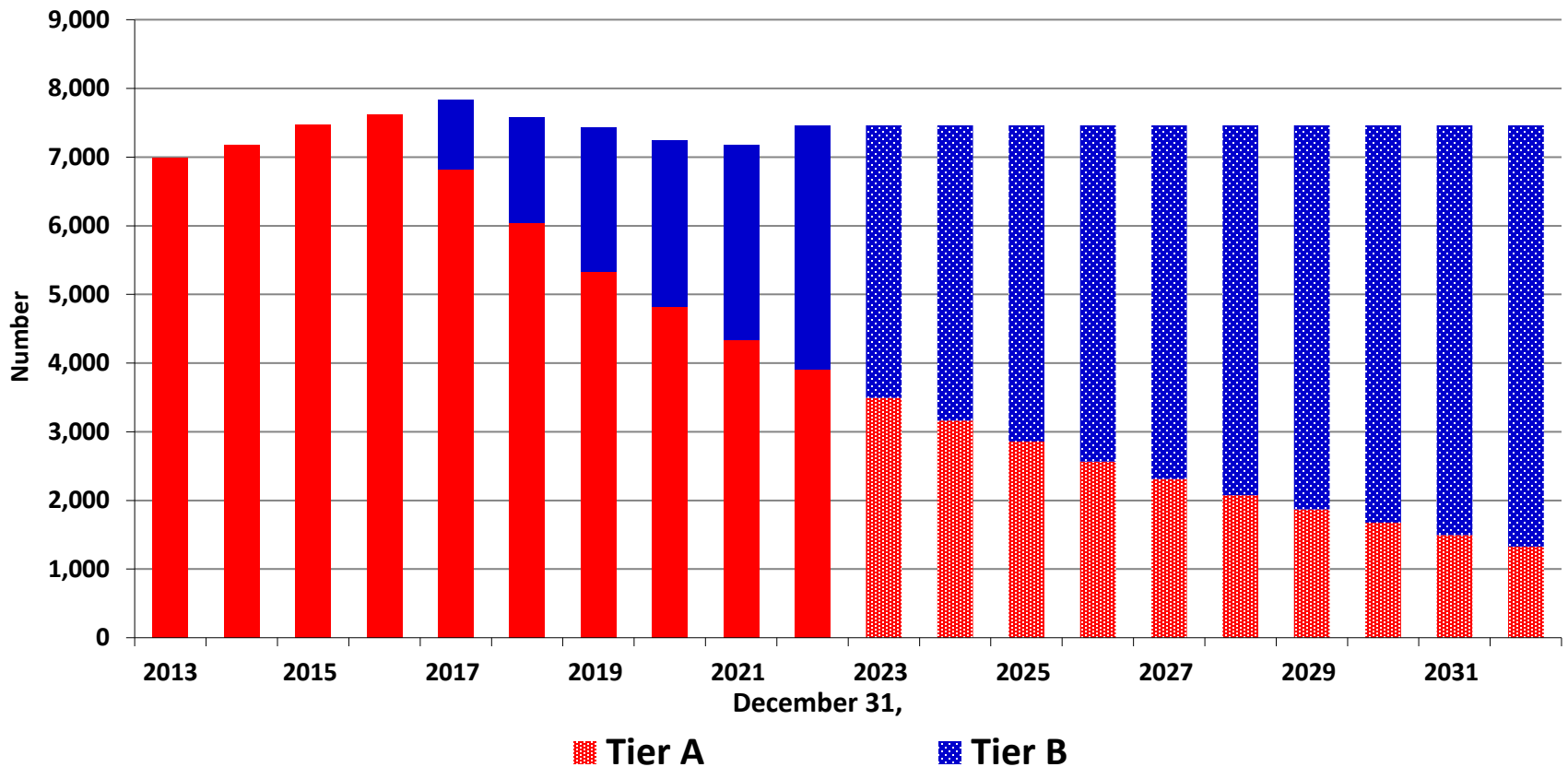
# Active Members and Retired Members



Note: active membership increased 4.0% versus last year

# Projected Active Membership

## Projected Number of Tier A and Tier B Employees



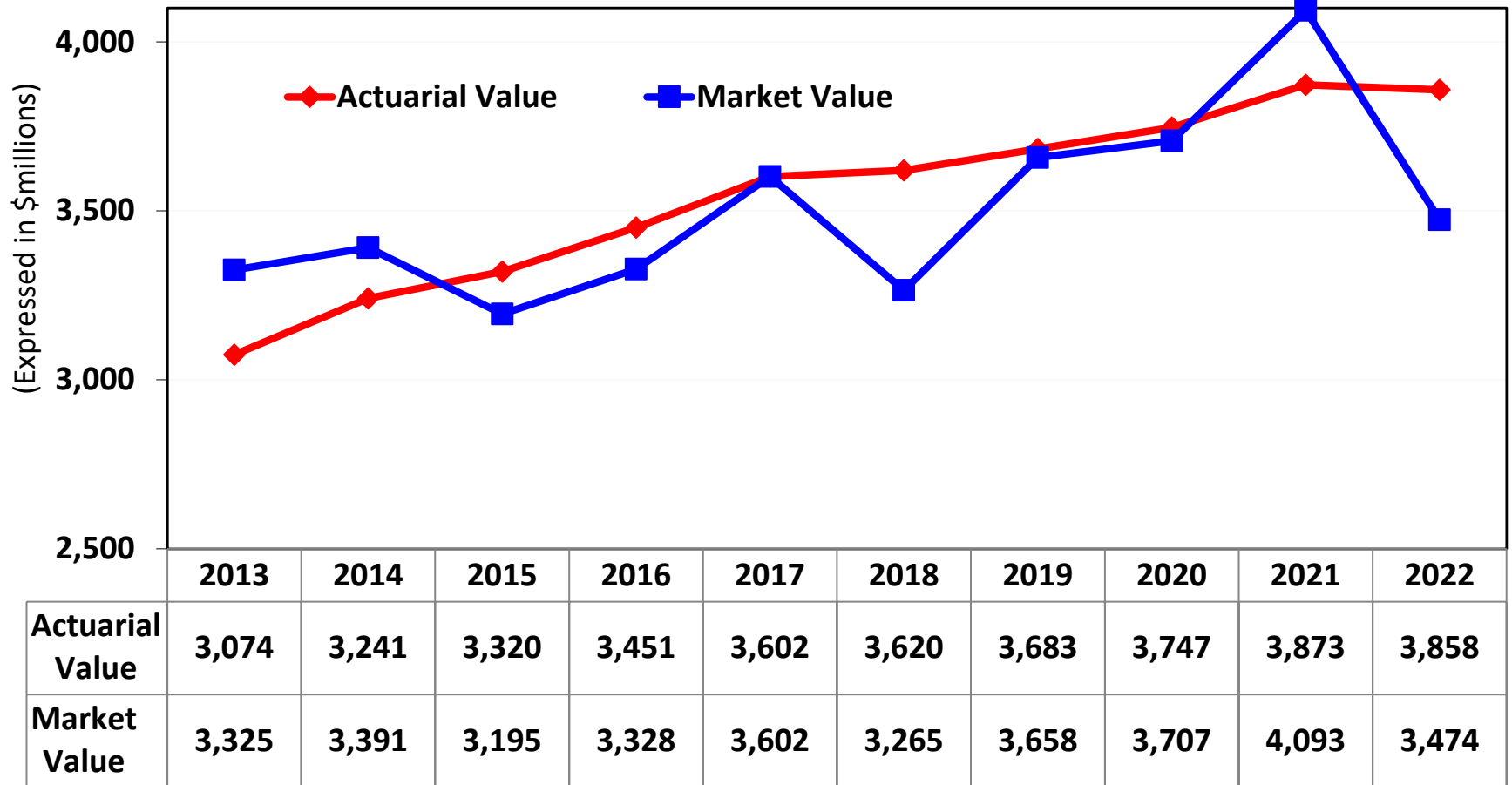
# Assets

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- Fair market value (unaudited) decreased from \$4.093 billion to \$3.474 billion
- Return on market value of assets was approximately -10.31% in 2022
- Actuarial value is \$3.858 billion, compared to \$3.873 billion last year
- Actuarial rate of return was 5.13% in 2022
  - Less than 7.25% assumed rate
- Actuarial value is 111.1% of fair market value
- Net deferred investment loss of \$384 million still to be recognized in actuarial value of assets



# Historical Asset Values



# Actuarial Results

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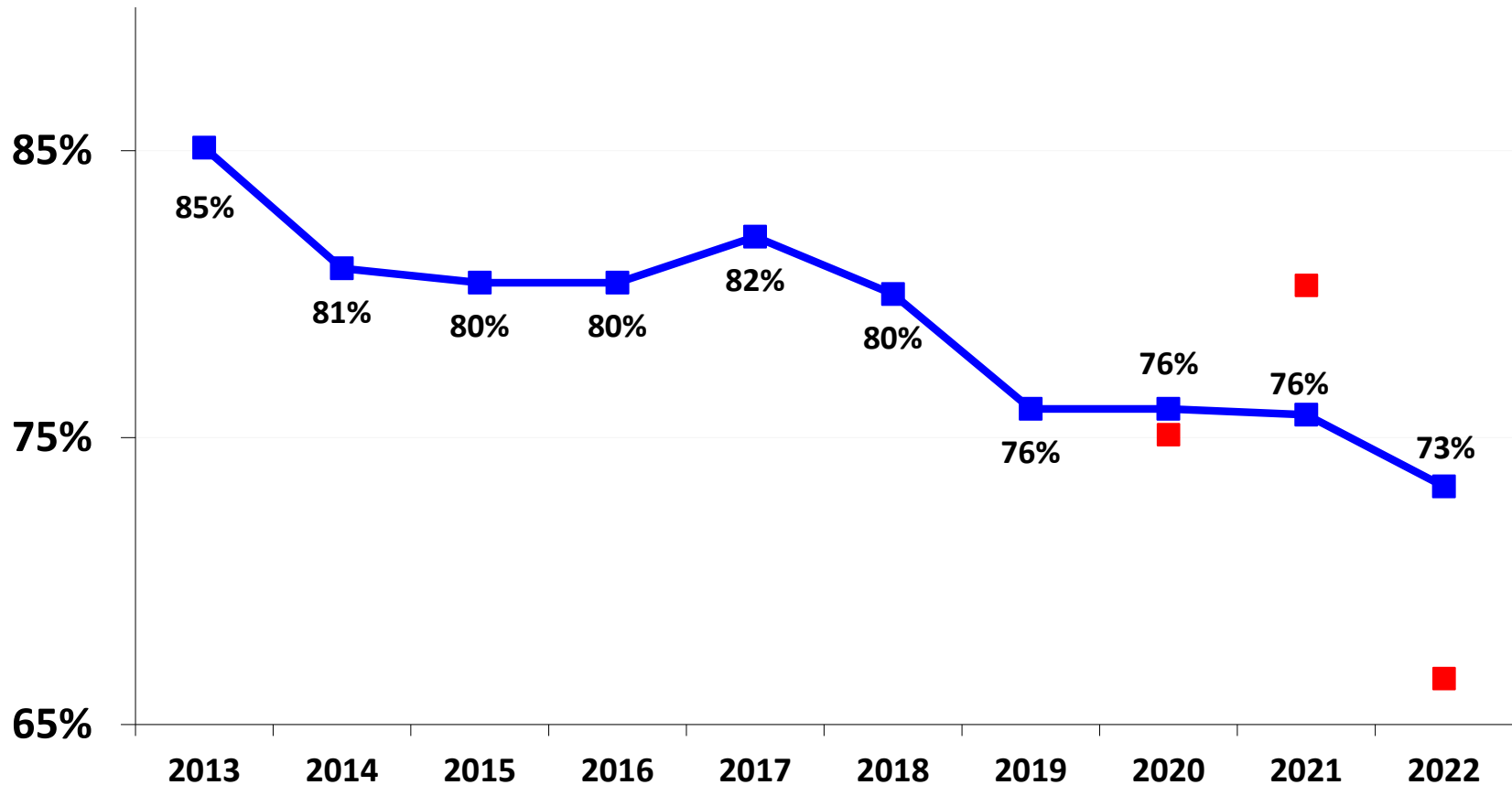
- Actuarial Accrued Liability (AAL) of benefits is now \$5.276 billion
- Unfunded Actuarial Accrued Liability (UAAL) increased from \$1,222 million to \$1,419 million
  - Expected to increase to \$1,247 million
  - Reflects \$80 million loss on actuarial value of assets and \$55 million loss on liabilities
  - UAAL increased \$36 million due to difference between calculated contribution rate and actual contribution rate

# Actuarial Results

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- Funded ratio (actuarial assets divided by actuarial accrued liability) decreased from 76.0% in 2021 to 73.1% in 2022
- Funded ratio using market value is 65.8%
  - Was 80.3% last year
- Total 30-year contribution rate is 35.50%
  - Does not include POB debt service payments
  - Based on open-group projection
  - 34.61% last year

# Historical Funded Ratios



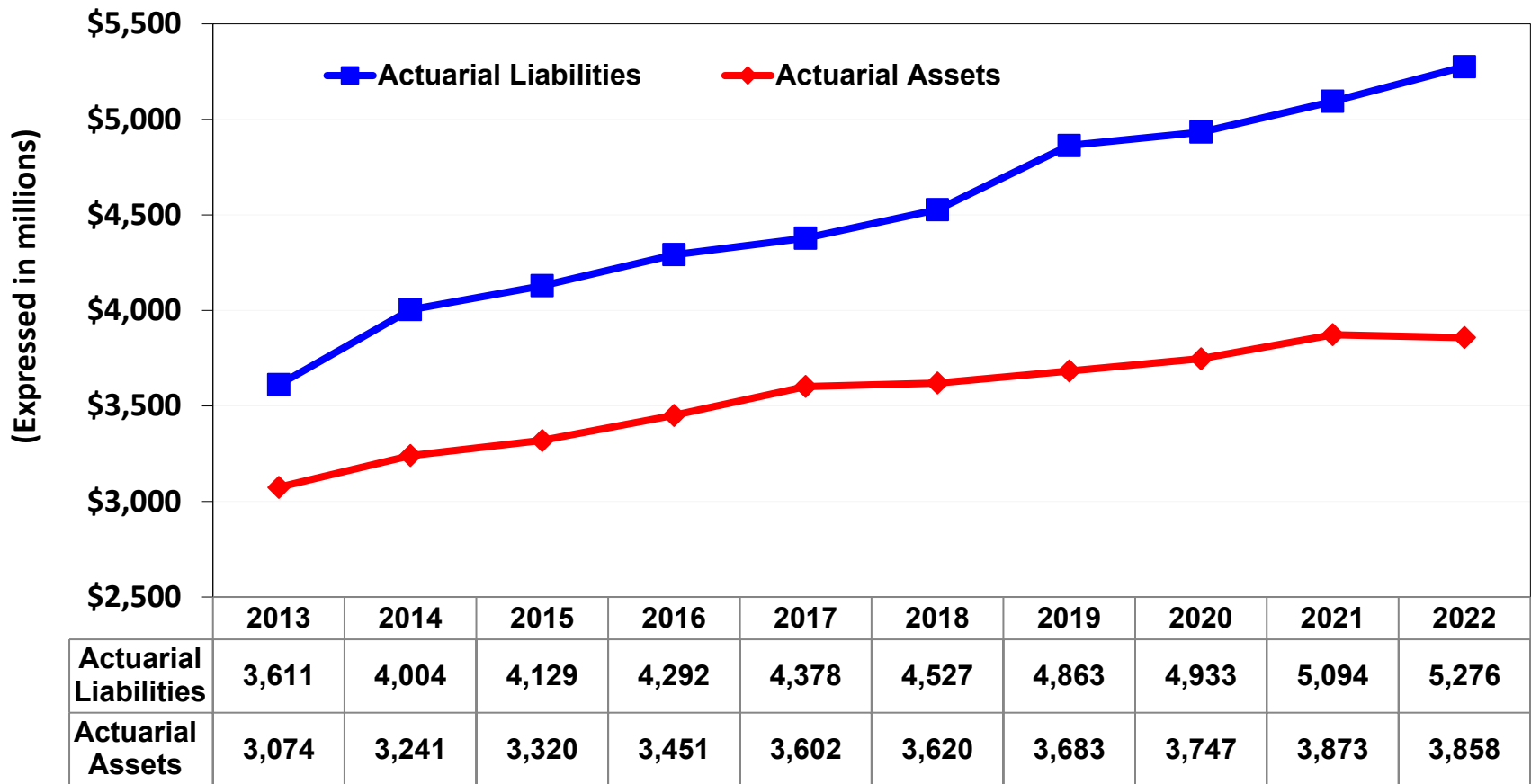
Funded ratio using market value of assets as of December 31, 2020 is 75%.

■ Funded ratio using market value of assets as of December 31, 2021 is 80%.

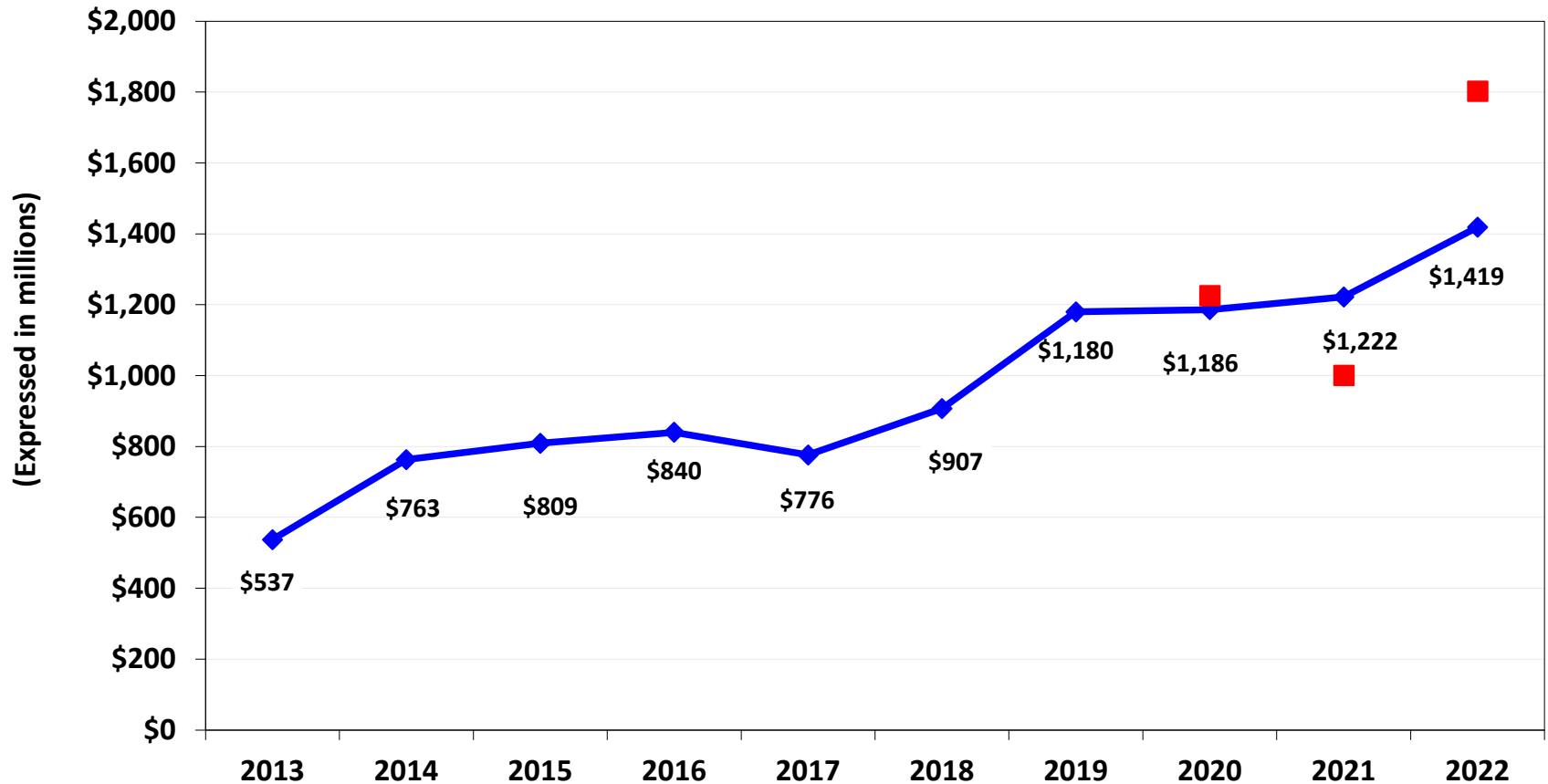
■ Funded ratio using market value of assets as of December 31, 2022 is 66%.



# Liabilities vs. Assets



# Unfunded Actuarial Accrued Liability (UAAL)



UAAL based on market value of assets as of December 31, 2020 is \$1,226 million.

■ UAAL based on market value of assets as of December 31, 2021 is \$1,001 million.

UAAL based on market value of assets as of December 31, 2022 is \$1,802 million.



# Reconciliation of UAAL

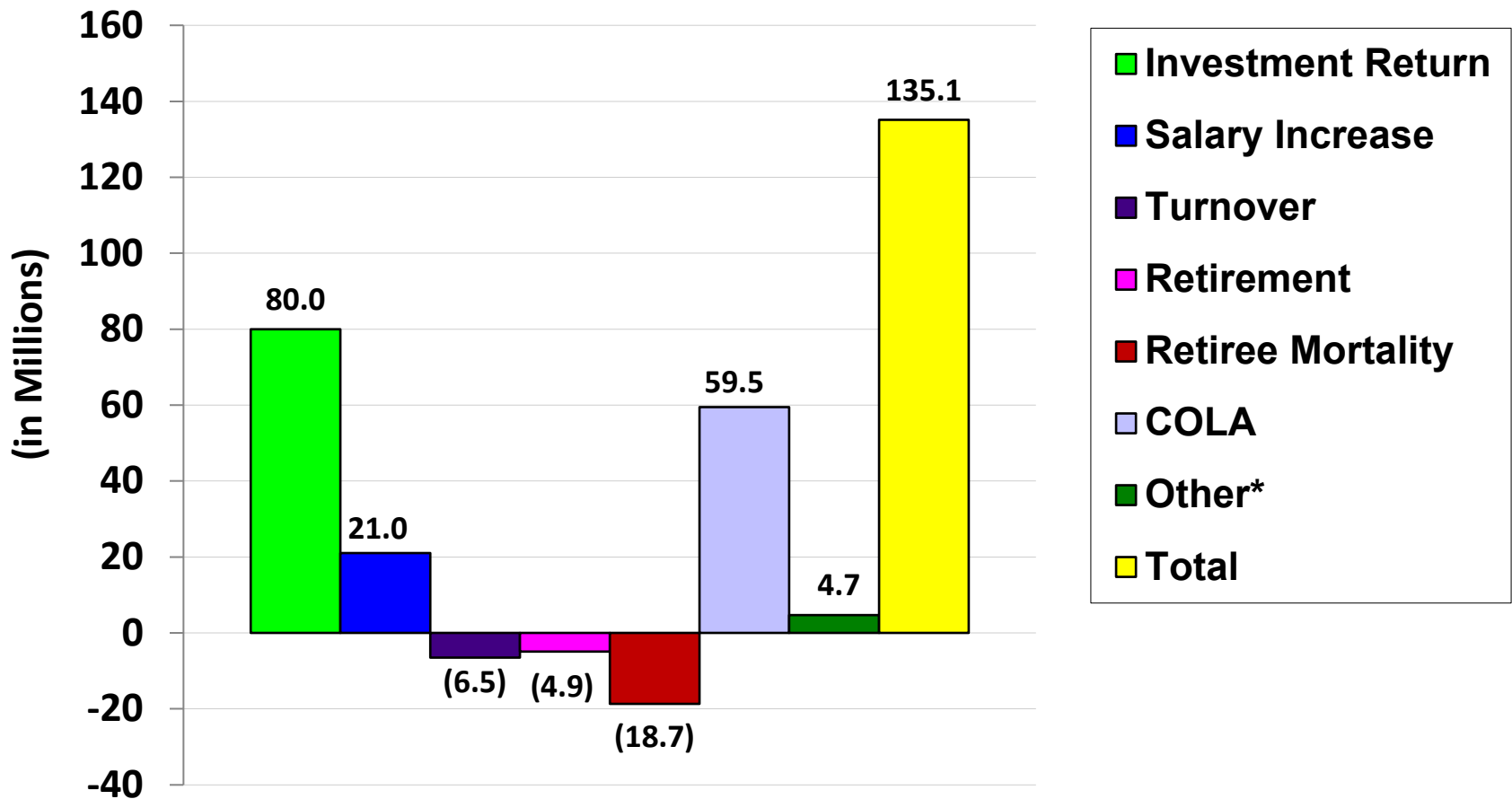
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▪ UAAL 12/31/21		\$1,221.8
▪ Expected Changes		
• Amortization Payment for 2022	(60.9)	
• Interest Adjustments	<u>86.4</u>	
		25.5
▪ Difference between expected and actual contributions		36.1
▪ Actuarial Experience Loss		<u>135.1</u>
▪ UAAL 12/31/22		\$1,418.5



\$ in Millions

# 2021 Actuarial (Gains) and Losses



\*Includes disability, active mortality, and data changes



# Actuarially Required Contribution Rate

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- We use an Open Group projection to determine the Actuarially Required Contribution Rate (ARC)
  - Reflects declining average Normal Cost % over time due to new tier of benefits
  - Rate is determined as level percentage of pay so amortization rate is increasing over time
  - Based on 30-year funding period
  - Debt service is not included

# Actuarially Required Contribution Rate

---

- ARC as of December 31, 2022 is 35.50%
  - Increase from 34.61% in prior year
  - Compares to actual rate expected to be contributed in fiscal year 2023 of 27.78%
    - Total rate of 36.00% of pay less POB Credit of 8.22%
  - Increase due to investment shortfalls, partially offset by greater than expected payroll growth
    - Decrease in POB Credit

# Fiscal Year Beginning October 1<sup>st</sup>

	<u>2022</u>	<u>2023</u>
1. Prior Adjusted Total Obligation Rate	36.00%	36.00%
2. Actuarially Required Contribution Rate	34.61%	35.50%
3. Debt Service		
a) Scheduled Debt Service Payment	\$ 38,843,241	\$ 40,142,080
b) Projected Payroll	\$453,934,344	\$488,516,155
c) Pension Obligation Bond Credit (a/b)	8.56%	8.22%
4. Current Total Obligation Rate (2+3c)	43.17%	43.72%
5. Current Adjusted Total Obligation Rate	36.00%	36.00%
6. Allocation of Contribution Rates for Fiscal Year Beginning October 1 <sup>st</sup>		
a) Employee (5 x .37)	13.32%	13.32%
b) City (5 x .63)	22.68%	22.68%
7. City Contribution to Fund (6.b. – 3.c)	14.12%	14.46%

*The formula for contributions are based on Dallas City Code 40A originally established with City ordinance 25695*



# Valuation Summary

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- The Actuarially Required Contribution to the Fund increased from 34.64% to 35.50%
- The total contribution rate including the debt service increased from 43.17% to 43.72%
- \$384 million in deferred investment loss still to be recognized or offset

# Valuation Summary

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- Calculated contribution rate is projected to remain relatively level until POBs are paid off
  - Assuming all assumptions are met including 7.25% return on AVA
  - Impact of shortfall in contributions because of 36.00% maximum rate is being somewhat offset by
    - 30-year rolling amortization period
    - Decrease in average normal cost due to new tier of benefits
- Actual contribution rate will remain at 36% cap for foreseeable future

# Level 30-Year Rate

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- Actuarially Required Contribution rate is determined without regards to the debt service payments
  - Actual cash flows will reflect the debt service payments
- Another useful number for decision making purposes would be the level 30-year contribution rate including the debt service
  - We have determined this rate as 40.28% of pay

# GASB Preview

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- GASB 67/68
  - Fund once again fails the Single Discount Rate (SDR) test
  - Anticipated Single Discount Rate is 5.37%
  - Versus 7.25% last year
- NPL increased from \$1.0 billion last year to an estimated \$3.1 billion as of 12-31-2022
  - Volatile number
    - Assets based on the market value of assets
    - Liability can vary due to the capped contribution rate which has resulted in the required use of a lower discount rate for accounting purposes in certain years (2015, 2018, 2019, 2020, and 2022)

# Employees' Retirement Fund of the City of Dallas

Actuarial Valuation Report  
as of December 31, 2022







May 4, 2023

Board of Trustees  
Employees' Retirement Fund of the City of Dallas  
1920 McKinney Avenue  
10<sup>th</sup> Floor  
Dallas, Texas 75201

Dear Members of the Board:

We are pleased to present our report of the actuarial valuation of the Employees' Retirement Fund of the City of Dallas ("ERF" or the "Fund") as of December 31, 2022.

This valuation provides information on the financial health of ERF. It includes a determination of the actuarially calculated contribution rates for the 2023 calendar year. In addition, it also contains the information necessary to determine the current total obligation rate and the current adjusted total obligation rate for the fiscal year beginning October 1, 2023 per City Ordinance. The current adjusted total obligation rate is a function of the previous year's adjusted total obligation rate, this year's actuarially calculated contribution rate, and the rate necessary to make the debt service payment on the previously issued pension obligation bonds for fiscal year 2024.

In addition, the report provides various summaries of the data. A separate report is issued with regard to valuation results determined in accordance with Governmental Accounting Standards Board (GASB) Statements 67 and 68. Results of this report should not be used for any other purpose without consultation with the undersigned. Valuations are prepared annually as of December 31st, the last day of the ERF plan year. This report was prepared at the request of the Board and is intended for use by the ERF staff and those designated or approved by the Board. This report may be provided to parties other than ERF staff only in its entirety and only with the permission of the Board.

As authorized in Chapter 40A-4(a)(16) of the Dallas City Code, the actuarial methods and assumptions are set by the Board of Trustees, based upon recommendations made by the plan's actuary. An experience study was performed for the five-year period ending December 31, 2019. As a result of that study, revised assumptions were adopted by the Board effective with the valuation as of December 31, 2019. There were no changes in the actuarial assumptions or methods since the prior valuation.

We believe the assumptions are internally consistent, reasonable, and, where appropriate, based on the actual experience of the ERF. All of the methods and assumptions used for funding purposes meet the parameters set by the Actuarial Standards of Practice. All actuarial methods and assumptions are described under Section P of this report. The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions.

Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods. Due to the limited scope of this assignment, GRS did not perform an analysis of the potential range of such possible future differences. The actuarial calculations are intended to provide information for rational decision making. Other than the sensitivity analysis shown in Section L, this report does not include a more robust assessment of the future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

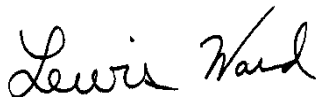
This valuation is based on the provisions of ERF in effect as of the valuation date, data on the ERF membership and information on the asset values of the Fund as of December 31, 2022. The member, annuitant and asset data used in the valuation were all prepared and furnished by ERF staff. While certain checks for reasonableness were performed, the data used was not audited.

To the best of our knowledge, this report is complete and accurate and was conducted in accordance with the Actuarial Standards of Practice as set forth by the Actuarial Standards Board and in compliance with the provisions of the Dallas City Code. The undersigned are independent actuaries and consultants. Mr. White is a Fellow of the Society of Actuaries, an Enrolled Actuary, and a Member of the American Academy of Actuaries and he meets the Qualification Standards of the American Academy of Actuaries. Both Mr. White and Mr. Ward have significant experience in performing valuations for large public retirement systems.

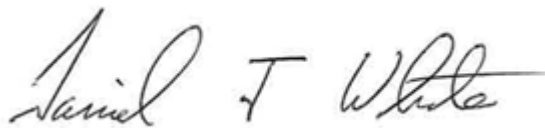
The following schedules in the actuarial section of the ERF Annual Comprehensive Financial Report were prepared by GRS: Executive Summary, Report Highlights, Summary of Actuarial Values, Demonstration of Actuarially Required Contribution Rate, Information for City Ordinance 25695, Net Assets Available for Benefits, Change in Assets Available for Benefits, Development of Actuarial Assets, Historical Investment Performance, Analysis of Change in Unfunded Actuarial Accrued Liability, Investment Experience (Gain) or Loss, Analysis of Actuarial (Gains) or Losses, Schedule of Funding Status, Summary of Data Characteristics, Distribution of Active Members and Payroll by Age and Years of Service, Distribution of Benefit Recipients, Schedule of Active Member Valuation Data, Schedule of Retirees and Beneficiaries Added to and Removed from Rolls, Solvency Test, Analysis of Pay Experience (Valuation Pay), Analysis of Retirement Experience – Each Age, Analysis of Retirement Experience - Age Groups, Analysis of Turnover Experience, Analysis of Active Mortality Experience, Analysis of Disability Experience, Analysis of Retiree Mortality Experience.

We would like to thank the ERF staff for their assistance in providing all necessary information to complete this valuation. Their courteous help is very much appreciated. We look forward to discussing this actuarial valuation report with you at your convenience. Please do not hesitate to let us know if you have any questions or need additional information.

Respectfully submitted,  
Gabriel, Roeder, Smith & Company



Lewis Ward  
Consultant



Daniel J. White, FSA, EA, MAAA  
Senior Consultant



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# EXECUTIVE SUMMARY

(\$ in 000s)

The key results from the actuarial valuation of the Employees' Retirement Fund of the City of Dallas as of December 31, 2022 may be summarized as follows:

	<u>December 31, 2021</u>	<u>December 31, 2022</u>
Members		
- Actives	7,175	7,464
- Benefit recipients	7,655	7,766
- Deferred vested*	974	1,042
- Other terminated*	<u>1,007</u>	<u>1,150</u>
- Total	16,811	17,422
Covered payroll (including overtime)	\$ 442,863	\$ 476,601
Normal cost	\$ 85,892	\$ 89,856
as % of expected payroll	19.71%	19.17%
Actuarial accrued liability	\$ 5,094,362	\$ 5,276,469
Actuarial value of assets	\$ 3,872,601	\$ 3,857,951
Market value of assets	\$ 4,093,215	\$ 3,473,976
Unfunded actuarial accrued liability (UAAL)	\$ 1,221,761	\$ 1,418,518
Estimated yield on assets (market value basis)	16.01%	(10.31)%
Estimated yield on assets (actuarial value basis)	8.68%	5.13%
Contribution Rates		
- Prior Adjusted Total Obligation Rate	36.00%	36.00%
- Current Total Obligation Rate	43.17%	43.72%
- Current Adjusted Total Obligation Rate	36.00%	36.00%
Actuarial gains/(losses)		
- Assets	\$ 52,230	\$ (80,000)
- Actuarial liability experience	\$ (29,375)	\$ (55,128)
- Assumption and method changes	\$ 0	\$ 0
30-year level % of pay funding cost	\$ 157,107	\$ 173,444
as % of payroll (Employee + City)	34.61%	35.50%
Funded ratio		
- Based on actuarial value of assets	76.0%	73.1%
- Based on market value of assets	80.3%	65.8%

\* *Deferred vested are members who have applied for a deferred pension. Other terminations are other members who have terminated and still have contribution balances in the Fund.*



## PURPOSES OF THE ACTUARIAL VALUATION

At your request, we have performed the actuarial valuation of the Employees' Retirement Fund of the City of Dallas ("ERF" or the "Fund") as of December 31, 2022.

The purposes of an actuarial valuation are as follows:

- To determine the funding status of ERF as of the valuation date;
- To develop the actuarially determined level of contributions for ERF for the 2023 calendar year; and
- To develop the current total obligation rate and the current adjusted total obligation rate for the fiscal year beginning October 1, 2023.



# REPORT HIGHLIGHTS

(\$ in 000s)

The following is a set of key actuarial results from the prior year's valuation as compared to the current year:

	Valuation Date	
	December 31, 2021	December 31, 2022
<b>Contribution Rates (% of Payroll)</b>		
Normal Cost (including administrative expense)	21.19%	20.89%
Total Actuarial Contribution Rate	34.61%	35.50%
Total Projected Actuarial Contribution	\$157,107	\$173,444
<b>Funded Status (on AVA basis)</b>		
Actuarial Accrued Liability	\$5,094,362	\$5,276,469
Actuarial Value of Assets	3,872,601	3,857,951
Unfunded Actuarial Accrued Liability	\$1,221,761	\$1,418,518
Funded Ratio	76.02%	73.12%



## FUNDING PROCESS

Based on the previous work of the Employees' Retirement Fund Study Committee, which was ratified by the ERF Board, the Dallas City Council and the voters of Dallas, a new funding process commenced October 1, 2005. From this date forward, a new "current adjusted total obligation rate" will be contributed jointly by the City (63%) and the Membership (37%). This current adjusted total obligation rate will cover both the debt service tied to the pension obligation bonds issued in 2005 and the contributions to the ERF. In subsequent years, the contribution rate changes only if the actuarial valuation develops a "current total obligation rate" which differs from the "prior adjusted total obligation rate" by more than 3.00% (plus or minus).

As shown in Section N – Table 3 and discussed later in this report, the "current total obligation rate" (Item 4 in Table 3) exceeds the "prior adjusted total obligation rate" (Item 1 in Table 3) as of December 31, 2022. This means that the "current adjusted total obligation rate" will remain at 36.00% of active member payroll for the fiscal year beginning October 1, 2023. It should be noted that under the contribution corridor methodology, the "current adjusted total obligation rate" would have been higher if not for the maximum rate of 36.00% allowed under Chapter 40A of the Dallas City Code.



## ACTUARIAL CONTRIBUTIONS

As shown in Section N – Table 2, the Actuarially Required Contribution Rate developed in this actuarial valuation is 35.50% of active member payroll. This rate excludes the amount needed to make the City's debt service payment on the pension obligation bonds in fiscal year 2024. This rate is the total level rate of pay (member + City) that would need to be contributed each of the next 30 years to pay off the unfunded liability of the Fund over that 30-year period. Note that because the total rate is assumed to remain level and the average normal cost as a percentage of pay is expected to decline over that time period (due to Tier B), the payment towards the unfunded liability as a percentage of pay is expected to increase over the 30-year period.

As shown in Section N – Table 3 of this report, the debt service payment is determined to be 8.22% of projected payroll. The sum of these rates is 43.72% (the Current Total Obligation Rate), which is 7.72% more than the Prior Adjusted Total Obligation Rate of 36.00%. Because the total contribution rate cannot exceed 36.00%, the total contribution rate in fiscal year 2024 (the Current Adjusted Total Obligation Rate) to fund the ERF and make the debt service payment on the pension obligation bonds will be 36.00%, which is the maximum rate allowed under Chapter 40A of the Dallas City Code.

The members contribute 37% of the Current Adjusted Total Obligation Rate and the City contributes 63%. Hence, the members' portion of the 36.00% total contribution rate will be 13.32% and the City portion will be 22.68%. All of the member contribution rate will be contributed to the ERF. As noted above, 8.22% of the City's contribution rate will go towards the debt service on the pension obligation bonds and the remaining 14.46% will be contributed towards the ERF. This means a total contribution rate of 27.78% will be contributed to the ERF for the 2023 fiscal year, which compares to the actuarially calculated rate of 35.50%.





## ACTUARIAL ASSUMPTIONS

Section P of this report includes a summary of the actuarial methods and assumptions used in this valuation. In short, costs are determined using the Entry Age Normal actuarial cost method. The assumed annual investment return rate is 7.25% and includes an annual assumed rate of inflation of 2.50%.

There were no changes in the actuarial assumptions since the prior valuation report. Please see Section P of this report for a summary description of these methods and assumptions.



## ERF BENEFITS

There were no changes in the benefit provisions of ERF since the prior valuation. Please see Section Q for a summary description of the ERF benefits.



## EXPERIENCE DURING PREVIOUS YEARS

An Actuarial (Gain)/Loss Analysis [(G)/L] reviews the effects of the actual experience on the expected Unfunded Actuarial Accrued Liability (UAAL). If any unexpected difference increases assets or reduces liabilities (i.e., reductions in the UAAL), we have an actuarial gain. Unexpected increases in the UAAL results in an actuarial loss.

On a market value return basis, the Fund returned approximately -10.31% (calculated on a dollar-weighted basis, net of investment expenses). Given this return, the actual investment income was less than the expected investment income on the market value of assets; therefore, an investment shortfall occurred. Please see Section N – Table 6 for the determination of the actuarial value of assets (AVA) and page 48 for a description of the AVA methodology. As developed on Section N – Table 9a, there was a \$72.0 million loss on the actuarial value of assets as of December 31, 2022. The rate of return on the actuarial value of assets for 2022 was 5.13% (calculated on a dollar-weighted basis, net of investment expenses). Since this result was less than the investment return assumption of 7.25% an actuarial loss occurred.

As developed on Section N – Table 8, ERF experienced an overall actuarial experience loss in calendar year 2022 in the amount of \$135.1 million. Since there was a \$80.0 million loss on the actuarial value of assets, this implies there was a liability actuarial loss of about \$55.1 million derived from demographic assumptions and non-investment economic assumptions (cost-of-living-adjustment). Please see Section N – Table 9b for an analysis of the experience loss by source.

The total (G)/L for the prior 5 years is broken down as follows (\$ in millions):

	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
1) Actuarial (Gain)/Loss on Assets	\$88.73	\$35.80	\$16.03	(\$52.23)	\$80.00
2) Actuarial (Gain)/Loss on Liabilities	11.35	(6.16)	(69.81)	29.37	55.13
3) Total Actuarial (Gain) or Loss (1+2)	\$100.08	\$29.64	(\$53.78)	(\$22.86)	\$135.13

The unfunded actuarial accrued liability (UAAL) also increased \$36.1 million due to the shortfall between the calculated contribution rate and the actual contributions during calendar year 2022.



## ASSET INFORMATION

The assets of the Fund (on a market value basis) decreased from \$4,093 million as of December 31, 2021 to \$3,474 million as of December 31, 2022.

An asset smoothing method (adopted by the Board) is used to recognize asset gains and losses. The purpose of such a smoothing method is to allow the use of market values, but to dampen the effect of the typical year-to-year market fluctuations. Please see page 48 of this report for a description of the smoothing method (actuarial value of asset method). See Table 6 in Section N of this report for the determination of the actuarial value of assets as of December 31, 2022.

The actuarial value of assets has decreased from \$3,873 million to \$3,858 million during 2022. The actuarial assets are less than the expected actuarial assets, \$3,938 million, due to unfavorable investment experience in calendar year 2022. This resulted in an actuarial loss on the actuarial assets of \$80.0 million.

The rate of return on investments for 2022 on the actuarial value of assets was 5.13%, compared to 8.68% in 2021. The detailed determinations of asset values utilized in this valuation and the change in assets in the last year are exhibited in Tables 4 and 5 of Section N of this report.



## FUNDED STATUS

The funded status of ERF is measured by the Funded Ratio and the Unfunded Actuarial Accrued Liability (UAAL). The Funded Ratio is the ratio of the actuarial value of assets available for benefits to the actuarial accrued liability (AAL) of the Fund on the valuation date. Therefore, it reflects the portion of the AAL that is covered by ERF assets. The UAAL is the difference between these two amounts.

A Funded Ratio of 100% means that the funding of ERF is precisely on schedule as of the particular valuation date. In addition, an increasing funded ratio from year-to-year may also mean that the funding of ERF is on schedule. By monitoring changes in the Funded Ratio each year, we can determine whether or not funding progress is being made.

Based on the market value of assets, the Funded Ratio of ERF decreased from 80.3% as of December 31, 2021 to 65.8% as of December 31, 2022. Based on the actuarial value of assets, the Funded Ratio of ERF decreased from 76.0% as of December 31, 2021 and 73.1% as of December 31, 2022.

The UAAL increased from \$1,221.8 million as of December 31, 2021 to \$1,418.5 million as of December 31, 2022. Since the UAAL is positive, this implies the actuarial accrued liabilities exceed the actuarial assets of the Fund as of December 31, 2022.

The actual \$196.8 million increase in the UAAL was more than the expected increase of \$61.6 million (\$25.5 million due to negative amortization and \$36.1 million as a result of the actual contributions being less than the actuarially determined contribution rate), resulting in a net actuarial experience loss in total. The primary reasons the increase in the UAAL was more than expected were unfavorable investment experience and the cost of living adjustment being greater than assumed.

The funded status is one of many metrics used to show trends and develop future expectations about the health of a retirement system. The funded status measure itself is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations or assessing the need for or the amount of future contributions since it does not reflect normal cost contributions, the timing of amortization payments, or future experience other than expected.



## **GASB DISCLOSURE**

Governmental Accounting Standards Board (GASB) Statement Numbers 67 and 68 detail the current accounting standards for ERF and the Fund's sponsor, the City of Dallas, Texas. These new standards were effective with the plan year ending December 31, 2014 for the Fund and the fiscal year ending September 30, 2015 for the City. The new standards created a clear distinction between the funding requirements of a pension plan and the accounting requirements. Because of these changes, the GASB disclosure information will no longer be included in the actuarial valuation report, but will instead be provided under separate cover.



# Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions

The determination of the accrued liability and the actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. Investment risk – actual investment returns may differ from the expected returns;
2. Asset/Liability mismatch – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
6. Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.



# Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (Continued)

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The Current Adjusted Total Obligation Rate shown in the Executive Summary may be considered as a minimum contribution rate that complies with Chapter 40A of the Dallas City Code. However, due to the contribution rate cap, this is less than the actuarially calculated rate. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

## **PLAN MATURITY MEASURES**

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Several generally accepted plan maturity measures are described below and are followed by a table showing a 10-year history of the measurements for ERF.

## **RATIO OF MARKET VALUE OF ASSETS TO PAYROLL**

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

## **RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL**

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.





# Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (Continued)

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll, a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

## **RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES**

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees, resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives, resulting in a ratio below 1.0.

## **RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS**

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

## **DURATION OF PRESENT VALUE OF BENEFITS**

The duration of the actuarial accrued liability may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the liability would increase approximately 10% if the assumed rate of return were lowered 1%.

## **ADDITIONAL RISK ASSESSMENT**

Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability. While a robust measurement of additional risk assessment is outside the scope of the annual actuarial valuation, we have included a scenario test of a 1% increase or 1% decrease in the investment return assumption. The results of this test are shown at the end of this section.



## Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (Continued)

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Ratio of the market value of assets to total payroll	7.29	9.24	8.64	8.43	7.71	8.55	8.13	8.12	9.34	9.72
Ratio of actuarial accrued liability to payroll	11.07	11.50	11.50	11.21	10.68	10.39	10.48	10.50	11.03	10.55
Ratio of actives to retirees and beneficiaries	0.96	0.94	0.96	1.00	1.05	1.11	1.10	1.11	1.09	1.08
Ratio of net cash flow to market value of assets	-6.0%	-4.7%	-4.9%	-4.8%	-5.1%	-4.3%	-4.4%	-4.5%	-4.2%	-4.4%
Duration of the actuarial present value of benefits*	12.47	12.54	12.69	12.37	NA	NA	NA	NA	NA	NA

\*Duration measure not available prior to 2019

### Impact on Funding Metrics of Investment Return Assumption +/- 1%

Cost Item	Investment Return Assumption		
	6.25%	7.25%	8.25%
Normal Cost % (excluding admin expenses)	23.70%	19.17%	15.81%
UAAL (\$ in millions)	\$2,033.3	\$1,418.5	\$904.6
30-year funding rate (employee + City)	44.06%	35.50%	27.73%
Funded Ratio	65.5%	73.1%	81.0%
Funding Period	Infinite	52 years	32 years



## CLOSING COMMENTS

The unfunded actuarial accrued liability of the Fund has increased by more than expected due to unfavorable experience from both the investments and liabilities.

The calculated contribution rate necessary to pay the Fund's normal cost and amortize the UAAL over 30 years is 35.50% of pay. When the debt service payment on the Pension Obligation Bonds is considered, the total contribution rate is 43.72% of payroll. However, Chapter 40A of the Dallas City Code limits the contribution rate to 36.00% of payroll, therefore, the total rate to be contributed by the employees and the City for fiscal year 2024 will be 36.00% of pay.

Following adoption of the proposed changes by the ERF Board, the Dallas City Council, and approval by the City of Dallas voters, the new tier of benefits became effective for employees hired after December 31, 2016 and the outlook for the ERF improved. Based on our projections, reflecting the new tier of benefits and assuming the actuarial assumptions are exactly met (including a 7.25% return on the actuarial value of assets), ERF is expected to be fully funded in approximately 50 years.



## ACTUARIAL TABLES

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# Summary of Actuarial Values As of December 31, 2022

(\$ in 000s)

	APV* of Projected Benefits	Entry Age Actuarial Values		
		Actuarial Accrued Liability (AAL)	Normal Cost \$	Normal Cost % of Pay**
<b>1 Active Members</b>				
a. Retirement	\$ 1,949,690	\$ 1,487,116	\$ 64,918	13.86%
b. Death	19,962	11,697	1,118	0.24%
c. Disability	13,007	4,864	1,116	0.23%
d. Termination	150,165	(6,397)	20,880	4.45%
e. Health Subsidy	39,953	30,243	1,824	0.39%
<b>Total</b>	<b>\$ 2,172,777</b>	<b>\$ 1,527,523</b>	<b>\$ 89,856</b>	<b>19.17%</b>
<b>2 Benefit Recipients</b>	3,603,830	3,603,830		
<b>3 Other Inactive</b>	145,116	145,116		
<b>4 Total Actuarial Values of Benefits</b>	<b>\$ 5,921,723</b>	<b>\$ 5,276,469</b>	<b>\$ 89,856</b>	<b>19.17%</b>
<b>5 Actuarial Value of Assets</b>		\$ 3,857,951		
<b>6 Unfunded Actuarial Accrued Liability (4 - 5)</b>		\$ 1,418,518		
<b>7 Funding Ratio</b>		73.12%		
<b>8 Market Value Measurements</b>				
UAAL on market value		\$ 1,802,493		
Funded Ratio on market value		65.84%		

\* APV – Actuarial Present Value

\*\* Percentage of expected payroll for continuing active members.



## Demonstration of Actuarially Required Contribution Rate for FY 2024

Valuation as of December 31,	Actuarially Determined Total Contribution Rate	Projected Compensation for Plan Year (in \$M)	Total Contributions to Fund for Plan Year (in \$M)	Actuarial Accrued Liability (AAL \$M)	Actuarial Value of Assets (AVA \$M)	Unfunded Actuarial Accrued Liability (UAAL \$M)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2022	35.50%	\$ 476.6	\$ 169.2	\$ 5,276.5	\$ 3,858.0	\$ 1,418.5
2023	35.50%	491.3	174.4	5,396.2	3,945.2	1,451.0
2024	35.50%	507.7	180.2	5,517.5	4,035.7	1,481.8
2025	35.50%	524.1	186.1	5,632.4	4,122.1	1,510.3
2026	35.50%	540.6	192.0	5,741.0	4,204.8	1,536.2
2027	35.50%	557.6	198.0	5,843.4	4,284.0	1,559.5
2028	35.50%	575.1	204.2	5,940.2	4,360.3	1,579.9
2029	35.50%	593.3	210.7	6,032.3	4,435.0	1,597.4
2030	35.50%	611.8	217.2	6,120.0	4,508.6	1,611.4
2031	35.50%	631.2	224.1	6,203.8	4,582.0	1,621.8
2032	35.50%	651.1	231.2	6,284.4	4,656.3	1,628.1
2033	35.50%	671.1	238.3	6,362.2	4,732.3	1,629.8
2034	35.50%	691.4	245.5	6,437.6	4,810.9	1,626.6
2035	35.50%	712.4	252.9	6,510.3	4,892.2	1,618.1
2036	35.50%	734.3	260.7	6,581.0	4,977.1	1,603.9
2037	35.50%	756.9	268.7	6,650.2	5,067.0	1,583.2
2038	35.50%	780.1	277.0	6,718.7	5,163.1	1,555.7
2039	35.50%	804.2	285.5	6,787.5	5,266.9	1,520.6
2040	35.50%	829.2	294.4	6,857.6	5,380.2	1,477.4
2041	35.50%	854.9	303.5	6,929.9	5,504.6	1,425.3
2042	35.50%	881.3	312.9	7,005.2	5,641.8	1,363.5
2043	35.50%	908.7	322.6	7,084.5	5,793.3	1,291.2
2044	35.50%	936.9	332.6	7,169.2	5,961.7	1,207.5
2045	35.50%	965.9	342.9	7,261.1	6,149.5	1,111.6
2046	35.50%	995.7	353.5	7,361.5	6,359.2	1,002.3
2047	35.50%	1,026.2	364.3	7,471.5	6,592.9	878.6
2048	35.50%	1,057.3	375.4	7,592.1	6,852.8	739.3
2049	35.50%	1,089.2	386.7	7,723.9	7,140.7	583.2
2050	35.50%	1,121.9	398.3	7,867.5	7,458.5	408.9
2051	35.50%	1,155.5	410.3	8,023.3	7,808.2	215.1
2052	35.50%	1,189.9	422.5	8,191.8	8,191.8	0.0



## Information for City Ordinance 25695 For the Fiscal Year Commencing October 1, 2023

<b>1 Prior Adjusted Total Obligation Rate</b>		36.00%
<b>2 Actuarially Required Contribution Rate*</b>		35.50%
<b>3 Debt Service</b>		
a Scheduled Debt Service Payment for FY 2024	\$	40,142,080
b Projected Payroll	\$	488,516,155
c Pension Obligation Bond Credit Rate (a/b)		8.22%
<b>4 Current Total Obligation Rate (2 + 3c)</b>		43.72%
<b>5 Current Adjusted Total Obligation Rate</b>		36.00%
<b>6 Allocation of Contribution Rates Commencing October 1, 2023</b>		
a Employee (5 x .37)		13.32%
b City (5 x .63)		22.68%

\* Actuarially determined level contribution rate as demonstrated on Table 2.

\*\* If the absolute value of the difference between the Prior Adjusted Total Obligation Rate (PATOR) and the Current Total Obligation Rate (CTOR) is less than or equal to 3.0% then:

Current Adjusted Total Obligation Rate (CATOR) = PATOR

otherwise:

1) If  $PATOR - CTOR > 3.00\%$  then the CATOR is set equal to the greater of:

- a) the average of the Prior Adjusted Total Obligation Rate and the Current Total Obligation Rate; or
- b) 90% of the Prior Adjusted Total Obligation Rate

or

2) If  $PATOR - CTOR < -3.00\%$  then the CATOR is set equal to the lesser of:

- a) the average of the Prior Adjusted Total Obligation Rate and the Current Total Obligation Rate; or
- b) 110% of the Prior Adjusted Total Obligation Rate

Additionally, the CATOR cannot exceed 36.00%.



## Excerpts from City Ordinance 25695

**ACTUARIALLY REQUIRED CONTRIBUTION RATE** – means, for any fiscal year, a rate of contribution to the fund, expressed as a percentage of members’ projected wages for such fiscal year, which is the sum of the following as determined in the actuarial valuation report for the preceding plan year:

- (A) the actuarial present value of the pension plan benefits and expenses that are allocated to a valuation period by the actuarial cost method; and
- (B) the contribution that will amortize the difference between the actuarial accrued liability of the fund and the actuarial value of the assets of the fund over the period of years required by generally accepted accounting principles.

**CITY CONTRIBUTIONS** – means, for each pay period ending during a transition year, the city shall contribute to the retirement fund an amount equal to:

- (A) 63% times the current total obligation rate for that fiscal year times the members’ wages for the pay period, minus
- (B) The pension obligation bond credit rate for that fiscal year times the members’ wages for the pay period;

and, for each pay period ending during each fiscal year, except for a transition year, the city shall contribute to the retirement fund an amount equal to:

- (C) 63% times the current adjusted total obligation rate for that fiscal year times the members’ wages for the pay period, minus
- (D) The pension obligation bond credit rate for that fiscal year times the members’ wages for the pay period.

**EMPLOYEE CONTRIBUTIONS** – means, for each pay period ending during a transition year, each member shall contribute to the retirement fund an amount equal to:

- (A) 37% times the current total obligation rate for that fiscal year times the member’s wages for the pay period;

and, for each pay period ending during each fiscal year, except for a transition year, the member shall contribute to the retirement fund an amount equal to:

- (B) 37% times the current adjusted total obligation rate for that fiscal year times the member’s wages for the pay period.





**CURRENT ADJUSTED TOTAL OBLIGATION RATE** – means, for any fiscal year, the rate determined by the board as follows, using whichever formula is applicable:

(A) If the current total obligation rate minus the prior adjusted total obligation rate is greater than three, then the current adjusted total obligation rate for such fiscal year is equal to the lesser of:

- (i) the prior adjusted total obligation rate plus one-half times the difference of the current total obligation rate minus the prior adjusted total obligation rate; or
- (ii) 110 percent times the prior adjusted total obligation rate; or
- (iii) 36 percent.

(B) If the difference between the current total obligation rate and the prior adjusted total obligation rate is less than three, then the current adjusted total obligation rate for such fiscal year is equal to the prior adjusted total obligation rate.

(C) If the prior adjusted total obligation rate minus the current total obligation rate is greater than three, then the current adjusted total obligation rate for such fiscal year is equal to the greater of:

- (i) the prior adjusted total obligation rate minus one-half times the difference of the prior adjusted total obligation rate minus the current total obligation rate; or
- (ii) 90 percent times the prior adjusted total obligation rate.

**CURRENT TOTAL OBLIGATION RATE** – means, for any fiscal year, the rate adopted by the board that is equal to the sum of the pension obligation bond credit rate for such fiscal year plus the actuarially required contribution rate for such fiscal year.

**PENSION OBLIGATION BOND CREDIT RATE** – means, for any fiscal year, the rate adopted by the board that is a percentage calculated by dividing:

- (A) the debt service due during such fiscal year on any pension obligation bonds, the proceeds of which have been deposited in the fund, by:
- (B) the total members' projected wages for such fiscal year, as reported in the relevant actuarial valuation report.

**PRIOR ADJUSTED TOTAL OBLIGATION RATE** – means:

- (A) for the fiscal year commencing October 1, 2006, the current total obligation rate that was effective for the prior fiscal year; and
- (B) for each fiscal year commencing on or after October 1, 2007, the current adjusted total obligation rate that was effective for the prior fiscal year.



**PROJECTED PAYROLL** – means the covered payroll for the valuation proceeding the fiscal year multiplied by the payroll growth assumption.

**TRANSITION YEAR** – means each of the following:

- (A) the first fiscal year in which debt service payments related to pension obligation bonds are due from the city;
- (B) the first fiscal year in which no debt service payments related to pension obligation bonds are due from the city; and
- (C) the fiscal year beginning October 1, 2005.



## Net Assets Available for Benefits

(\$ in 000s)

	December 31, 2021	December 31, 2022
<b>1 Assets</b>		
a. Cash & Short-Term	\$ 473,616	\$ 458,348
<b>2 Receivables</b>		
a. Accrued Investment Income	\$ 13,295	\$ 16,036
b. Securities Sold	1,848	18,065
c. Employer Contribution	2,445	785
d. Employee Contribution	702	741
e. Pending Contracts	287,389	278,969
	\$ 305,679	\$ 314,596
<b>3 Investments</b>		
a. Index Funds	\$ 239,274	\$ 93,082
b. Fixed Income	991,047	894,597
c. Equities	2,059,147	1,710,926
d. Real Estate	291,794	346,345
e. Private Equity	384,761	339,116
	\$ 3,966,023	\$ 3,384,066
<b>4 Total Assets</b>	\$ 4,745,318	\$ 4,157,010
<b>5 Liabilities</b>		
a. Accounts Payable	\$ 9,005	\$ 10,872
b. Investment Transactions	643,098	672,162
	\$ 652,103	\$ 683,034
<b>6 Net Assets Available For Benefits</b>	\$ 4,093,215	\$ 3,473,976



## Change in Assets Available for Benefits Fiscal Year Ending December 31, 2022

(\$ in 000s)

	2021	2022
<b>1 Assets Available at Beginning of Year</b>	\$ 3,706,753	\$ 4,093,215
Adjustment *	0	0
	\$ 3,706,753	\$ 4,093,215
 <b>2 Revenues</b>		
a. Employer Contributions	\$ 63,583	\$ 67,288
b. Employee Contributions	59,256	63,427
c. Investment Income	88,100	113,092
d. Investment Expense	(21,075)	(18,087)
e. Realized and Unrealized Gains (Losses)	510,013	(507,587)
f. Other (Security Lending)	972	1,349
Total Revenues	\$ 700,849	\$ (280,518)
 <b>3 Expenses</b>		
a. Benefits	\$ 296,586	\$ 317,528
b. Refunds	10,452	12,158
c. Administrative Expenses	6,547	8,209
d. Depreciation Expense	802	826
Total Expense	\$ 314,387	\$ 338,721
 <b>4 Assets Available at End of Year (1 + 2 - 3)</b>	\$ 4,093,215	\$ 3,473,976

\* Change due to difference between unaudited asset value used for prior valuation and audited asset value reported the following year.



## Development of Actuarial Value of Assets

(\$ in 000s)

	<b>December 31, 2022</b>
1. Market value of assets at beginning of year	\$ 4,093,215
2. External cashflow	
a. Contributions	\$ 130,715
b. Benefits and refunds paid	(329,686)
c. Administrative and miscellaneous expenses	(9,035)
d. Subtotal	(208,006)
3. Assumed investment return rate for fiscal year	7.25%
4. Assumed investment income for fiscal year	\$ 289,350
5. Expected Market Value at end of year (1+ 2 + 4)	\$ 4,174,559
6. Market value of assets at end of year	\$ 3,473,976
7. Difference (6 - 5)	\$ (700,583)
8. Development of amounts to be recognized as of December 31, 2022:	

	Remaining						
Fiscal Year End	Deferrals of Excess (Shortfall) of Investment Income	Offsetting of Gains/(Losses)	Net Deferrals Remaining	Years Remaining	Recognized for this valuation	Remaining after this valuation	
	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)	
2018	\$ 0	\$ 0	\$ 0	1	\$ 0	\$ 0	
2019	0	0	0	2	0	0	
2020	0	0	0	3	0	0	
2021	220,614	(220,614)	0	4	0	0	
2022	(700,583)	220,614	(479,969)	5	(95,994)	(383,975)	
Total	\$ (479,969)	\$ 0	\$ (479,969)		\$ (95,994)	\$ (383,975)	

9. Final actuarial value of plan net assets, end of year (Item 6 - Item 8, Column 6)	\$ 3,857,951
10. Ratio of actuarial value to market value	111.1%

Notes: Remaining deferrals in Column (1) for prior years are from last year's report Table 6, column 6. The number in the current year is Item 7, above. Column 2 is a direct offset of the current year's excess/(shortfall) return against prior years' excess/(shortfall) of the opposite type.



# Historical Investment Performance

## Dollar Weighted Basis Net of Investment Expenses

<u>Calendar Year</u>	<u>On Market Value</u>	<u>On Actuarial Value</u>
2003	27.05%	2.03%
2004	15.22%	9.38%
2005	7.93%	13.71%
2006	16.90%	13.03%
2007	3.56%	9.58%
2008	-31.31%	-3.76%
2009	30.35%	6.79%
2010	15.77%	4.30%
2011	0.86%	1.15%
2012	14.29%	2.82%
2013	16.75%	10.65%
2014	6.14%	10.29%
2015	-1.83%	7.02%
2016	8.65%	8.51%
2017*	12.34%	8.99%
2018	-5.15%	5.23%
2019	17.30%	6.74%
2020	6.42%	6.81%
2021	16.01%	8.68%
2022	-10.31%	5.13%
5-year average ending in 2022	4.26%	6.51%
10-year average ending in 2022	6.23%	7.79%
20-year average ending in 2022	7.41%	6.77%

\*The yield on the actuarial value of assets for 2017 includes the impact of the method change for the Actuarial Value of Assets.



# Analysis of Change in Unfunded Actuarial Accrued Liability For the Year Ending December 31, 2022

(\$ in 000s)

<b>1. UAAL as of December 31, 2021</b>		\$ 1,221,761
<b>2. Expected Change in UAAL during 2022</b>		
a. Expected Amortization Payment for CY 2022 based on the Actuarially Determined Contribution Rate	(60,925)	
b. Interest adjustments on 1 & 2a to Year End @ 7.25%	86,408	
c. Expected change in UAAL		25,483
<b>3. Increase/(Decrease) in UAAL Due to Difference Between the Actuarially Determined Contribution Rate and Actual Contribution Rate</b>		36,146
<b>4. Net Actuarial Experience (Gains) &amp; Losses</b>		135,128
<b>5. Assumption and Method Changes</b>		0
<b>6. UAAL as of December 31, 2022</b>		\$ 1,418,518



## Investment Experience (Gain) or Loss

(\$ in 000s)

Item	Valuation as of December 31, 2022
1. Actuarial assets, beginning of year	\$ 3,872,601
2. Contributions	130,715
3. Benefits and refunds paid with administrative expenses	(338,721)
4. Assumed net investment income at 7.25% on	
a. Beginning of year assets	280,764
b. Contributions	4,656
c. Benefits and refunds paid with administrative expenses	(12,064)
d. Total	\$ 273,356
5. Expected actuarial assets, end of year (Sum of Items 1 through 4)	3,937,951
6. Actual actuarial assets, end of year	3,857,951
7. Asset experience (gain)/loss for year	80,000





## Analysis of Actuarial (Gains) and/or Losses for 2022

(\$ in 000s)

	<u>2022</u>
Investment Return	\$ 80,000
Salary Increase	21,005
Age and Service Retirement	(4,934)
General Employment Termination	(6,535)
Disability Incidence	(260)
Active Mortality	965
Benefit Recipient Mortality	(18,719)
Actual vs. Expected Cost of Living Adjustment (COLA)*	59,457
Other	<u>4,149</u>
<b>Total Actuarial (Gain)/ Loss</b>	<b>\$ 135,128</b>

\* Actual COLA of 5.00% for Tier A and 3.00% for Tier B versus expected COLAs of 2.50% for Tier A and 2.20% for Tier B.



## Schedule of Funding Status

(\$ in 000s)

End of Year	Actuarial Value of Assets (a)	AAL (b)	UAAL (b-a)	Funding Ratio (a/b)	Payroll* (c)	UAAL as % of Payroll ((b-a)/c)
2003	1,843,099	2,489,071	645,972	74.05%	318,492	202.82%
2004	2,482,082	2,488,270	6,188	99.75%	331,201	1.87%
2005	2,739,269	2,606,173	(133,096)	105.11%	332,446	-40.04%
2006	2,998,099	2,761,404	(236,695)	108.57%	344,997	-68.61%
2007	3,183,260	2,915,164	(268,096)	109.20%	370,150	-72.43%
2008	2,957,506	3,075,385	117,879	96.17%	389,362	30.27%
2009	3,031,652	3,192,120	160,468	94.97%	375,164	42.77%
2010	3,027,439	3,282,126	254,687	92.24%	332,045	76.70%
2011	2,916,746	3,391,652	474,906	86.00%	318,972	148.89%
2012	2,846,124	3,518,356	672,232	80.89%	340,452	197.45%
2013	3,074,284	3,610,845	362,477	85.14%	352,486	102.83%
2014	3,241,053	4,004,055	763,002	80.94%	374,002	204.01%
2015	3,320,387	4,129,133	808,746	80.41%	404,981	199.70%
2016	3,451,463	4,291,802	840,339	80.42%	420,693	199.75%
2017	3,601,612	4,377,844	776,232	82.27%	432,854	179.33%
2018	3,620,319	4,526,996	906,677	79.97%	435,375	208.25%
2019	3,682,959	4,863,325	1,180,366	75.73%	444,737	265.41%
2020	3,747,078	4,932,886	1,185,808	75.96%	439,544	269.78%
2021	3,872,601	5,094,362	1,221,761	76.02%	453,934	269.15%
2022	3,857,951	5,276,469	1,418,518	73.12%	488,516	290.37%

\* Projected to following year.



## Summary of Data Characteristics

As of December 31,	2020	2021	2022
<b>Active Members</b>			
Number	7,244	7,175	7,464
Total Annualized Earnings of Members as of 12/31 (000s)	\$ 428,824	\$ 442,863	\$ 476,601
Average Earnings	59,197	61,723	63,853
<b>Benefit Recipients</b>			
Number	7,552	7,655	7,766
Total Annual Retirement Income (000s)	\$ 277,429	\$ 294,130	\$ 309,799
Total Annual Health Supplement (000s)	10,929	11,077	11,234
Average Total Annual Benefit	38,228	39,870	41,338
<b>Inactive Members*</b>			
Deferred Vested	911	974	1,042
Deferred Nonvested	799	1,007	1,150
Total	1,710	1,981	2,192

\* The number of inactives on 12/31/2022 includes 1042 members who have applied for a deferred pension and 1,150 other members who have terminated and still have contribution balances in the Fund.



## Distribution of Active Members and Payroll by Age and Years of Service

Age	Years of Service								Totals
	Under 1	1-4	5-9	10-14	15-19	20-24	25-29	30 & Over	
<b>Under 20</b>	4								4
	\$139,489								\$139,489
<b>20-24</b>	136	79	1						216
	\$5,484,825	\$3,948,501	\$85,614						\$9,518,940
<b>25-29</b>	242	283	71	1					597
	\$10,998,923	\$14,722,900	\$3,890,718	\$52,800					\$29,665,341
<b>30-34</b>	216	318	236	30	1				801
	\$10,352,190	\$17,768,789	\$14,232,849	\$2,108,895	46,861				\$44,509,584
<b>35-39</b>	185	257	234	111	55				842
	\$9,293,544	\$15,648,007	\$15,134,404	\$7,888,136	\$4,168,749				\$52,132,840
<b>40-44</b>	142	221	236	123	126	26			874
	\$7,485,589	\$14,274,691	\$15,299,477	\$8,940,498	\$8,988,797	\$2,091,917			\$57,080,969
<b>45-49</b>	117	215	219	131	148	128	43	1	1,002
	\$5,967,826	\$13,364,461	\$15,362,876	\$9,598,192	\$11,152,771	\$9,233,806	\$3,373,787	\$72,164	\$68,125,883
<b>50-54</b>	112	209	215	102	160	136	108	17	1,059
	\$5,962,119	\$13,318,810	\$14,838,798	\$7,128,895	\$11,937,719	\$9,778,593	\$8,135,391	\$1,318,606	\$72,418,931
<b>55-59</b>	92	162	185	128	204	116	60	23	970
	\$5,261,197	\$10,690,775	\$12,060,020	\$8,623,096	\$15,599,363	\$8,457,324	\$4,850,403	\$1,829,215	\$67,371,393
<b>60-64</b>	41	128	157	108	130	75	42	35	716
	\$2,053,416	\$8,752,450	\$9,654,139	\$7,450,050	\$8,930,758	\$5,490,708	\$3,390,464	\$3,212,168	\$48,934,153
<b>65&amp;Over</b>	17	39	76	55	74	49	36	37	383
	\$859,949	\$2,584,325	\$4,602,242	\$4,193,955	\$5,204,801	\$3,528,630	\$2,632,808	\$3,096,894	\$26,703,604
<b>Totals</b>	1,304	1,911	1,630	789	898	530	289	113	7,464
	\$63,859,067	\$115,073,709	\$105,161,137	\$55,984,517	\$66,029,819	\$38,580,978	\$22,382,853	\$9,529,047	\$476,601,127



## Distribution of Benefit Recipients as of December 31, 2022

Age	Number	Annual Benefit*	Annual Average Benefit*
<b>Under 50</b>	35	\$ 659,597	\$ 18,846
<b>50-54</b>	163	7,672,302	47,069
<b>55-59</b>	541	27,151,720	50,188
<b>60-64</b>	1,335	56,437,296	42,275
<b>65-69</b>	1,628	66,386,470	40,778
<b>70-74</b>	1,754	72,294,347	41,217
<b>75-79</b>	1,138	43,843,660	38,527
<b>80-84</b>	632	20,113,445	31,825
<b>85-89</b>	331	9,906,073	29,928
<b>90 &amp; Over</b>	209	5,334,225	25,523
<b>Total</b>	7,766	\$ 309,799,134	\$ 39,892

\* Does not include Health Benefit Supplement.

## Schedule of Active Member Valuation Data

Year Ending December 31,	Active Participants	Percent Change	Covered Payroll	Percent Change	Average Salary	Percent Change
2007	8,117	-	\$ 359,369,000	-	\$ 44,274	-
2008	8,371	3.1%	378,021,000	5.2%	45,158	2.0%
2009	7,654	-8.6%	364,237,000	-3.6%	47,588	5.4%
2010	7,034	-8.1%	322,374,000	-11.5%	45,831	-3.7%
2011	6,745	-4.1%	309,682,000	-3.9%	45,913	0.2%
2012	6,864	1.8%	330,536,000	6.7%	48,155	4.9%
2013	6,993	1.9%	342,219,000	3.5%	48,937	1.6%
2014	7,180	2.7%	363,109,000	6.1%	50,572	3.3%
2015	7,477	4.1%	393,186,000	8.3%	52,586	4.0%
2016	7,619	1.9%	409,433,000	4.1%	53,738	2.2%
2017	7,838	2.9%	421,269,000	2.9%	53,747	0.0%
2018	7,584	-3.2%	423,723,000	0.6%	55,871	4.0%
2019	7,427	-2.1%	433,890,000	2.4%	58,421	4.6%
2020	7,244	-2.5%	428,824,000	-1.2%	59,197	1.3%
2021	7,175	-1.0%	442,863,000	3.3%	61,723	4.3%
2022	7,464	4.0%	476,601,000	7.6%	63,853	3.5%



## Schedule of Retirees and Beneficiaries Added to and Removed from Rolls

Year Ending December 31,	Added to Rolls		Removed from Rolls		Rolls-End of Year		% Increase in Annual Allowances	Average Annual Allowances
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		
2007	239	\$ 7,250,468	205	\$ 4,551,742	5,304	\$ 142,267,609	-	\$ 26,823
2008	383	8,905,680	211	4,684,964	5,476	154,692,846	8.7%	28,249
2009	446	9,268,740	216	4,795,982	5,706	165,826,328	7.2%	29,062
2010	508	12,798,268	221	4,907,000	5,993	179,730,384	8.4%	29,990
2011	404	10,012,165	198	4,396,317	6,199	193,851,170	7.9%	31,271
2012	325	9,795,464	204	4,529,539	6,320	202,120,582	4.3%	31,981
2013	324	11,246,955	197	4,327,990	6,447	210,027,512	3.9%	32,578
2014	370	12,415,771	219	4,821,713	6,598	219,150,070	4.3%	33,215
2015	476	13,777,204	318	6,847,464	6,756	226,019,290	3.1%	33,455
2016	384	12,746,549	237	5,562,549	6,903	237,992,528	5.3%	34,477
2017	383	9,893,931	244	6,375,641	7,042	244,768,143	2.8%	34,758
2018	402	14,905,595	220	5,976,286	7,224	258,085,328	5.4%	35,726
2019	478	17,715,050	297	8,368,302	7,405	269,263,106	4.3%	36,362
2020	455	28,634,730	308	11,614,128	7,552	277,428,698	3.0%	36,736
2021	424	16,109,924	321	8,655,976	7,655	294,130,270	6.0%	38,423
2022	384	14,364,767	273	8,500,245	7,766	309,799,134	5.3%	39,892



## Solvency Test

Valuation Date	Aggregated Accrued Liabilities for			Reported Assets	Portions of Accrued Liabilities Covered by Reported Assets		
	Active and Inactive Members Contributions	Retirees and Beneficiaries	Active and Inactive Members (Employer Financed Portion)		(5)/(2)	[(5)-(2)]/3	[(5)-(2)-(3)]/(4)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
December 31, 2007	\$ 206,090	\$ 1,591,731	\$ 1,117,343	\$ 3,183,260	100.0%	100.0%	100.0%
December 31, 2008	221,667	1,707,599	1,146,119	2,957,506	100.0%	100.0%	89.7%
December 31, 2009	228,666	1,834,491	1,128,963	3,031,652	100.0%	100.0%	85.8%
December 31, 2010	232,727	2,041,322	1,008,077	3,027,439	100.0%	100.0%	74.7%
December 31, 2011	240,821	2,181,731	969,100	2,916,746	100.0%	100.0%	51.0%
December 31, 2012	257,716	2,250,533	1,010,107	2,846,124	100.0%	100.0%	33.4%
December 31, 2013	278,892	2,319,424	1,012,529	3,074,284	100.0%	100.0%	47.0%
December 31, 2014	301,567	2,578,071	1,124,417	3,241,053	100.0%	100.0%	32.1%
December 31, 2015	325,607	2,650,638	1,152,888	3,320,387	100.0%	100.0%	29.9%
December 31, 2016	350,646	2,770,533	1,170,623	3,451,463	100.0%	100.0%	28.2%
December 31, 2017	373,193	2,854,818	1,149,833	3,601,612	100.0%	100.0%	32.5%
December 31, 2018	392,004	2,989,597	1,145,395	3,620,319	100.0%	100.0%	20.8%
December 31, 2019	408,984	3,228,576	1,225,766	3,682,959	100.0%	100.0%	3.7%
December 31, 2020	430,411	3,312,228	1,190,247	3,747,078	100.0%	100.0%	0.4%
December 31, 2021	448,149	3,456,659	1,189,554	3,872,601	100.0%	99.1%	0.0%
December 31, 2022	467,549	3,603,830	1,205,090	3,857,951	100.0%	94.1%	0.0%





# EXPERIENCE TABLES

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**Pay Experience for Employees who are Active at  
Beginning and End of Year  
Valuation Pay Analysis  
Analyzed by Years of Service**

Service Beginning of Year	Experience for 2022			
	Number	Expected Pay	Actual Pay	Ratio A/E
<b>Under 5</b>	1,724	\$ 97,924,191	\$ 103,335,886	106%
<b>5-9</b>	1,659	102,983,463	106,347,979	103%
<b>10-14</b>	835	57,707,950	58,963,276	102%
<b>15-19</b>	948	67,508,847	68,684,740	102%
<b>20-24</b>	526	38,048,820	38,838,812	102%
<b>25-29</b>	322	24,618,305	24,728,975	100%
<b>30 &amp; Over</b>	129	11,228,106	10,920,917	97%
<b>Total</b>	6,143	\$ 400,019,682	\$ 411,820,585	103%
<b>Over 10 Years</b>	2,760	\$ 199,112,028	\$ 202,136,720	102%

Service Beginning of Year	Experience for 2020-2022			
	Number	Expected Pay	Actual Pay	Ratio A/E
<b>Under 5</b>	5,427	\$ 298,158,043	\$ 304,692,680	102%
<b>5-9</b>	5,088	306,050,220	309,001,185	101%
<b>10-14</b>	2,682	179,134,773	179,548,027	100%
<b>15-19</b>	2,526	176,150,067	176,934,127	100%
<b>20-24</b>	1,849	128,655,771	128,553,044	100%
<b>25-29</b>	945	71,440,221	71,158,750	100%
<b>30 &amp; Over</b>	396	33,295,180	32,856,178	99%
<b>Total</b>	18,913	\$ 1,192,884,275	\$ 1,202,743,991	101%
<b>Over 10 Years</b>	8,398	\$ 588,676,012	\$ 589,050,126	100%



**Analysis of Retirement Experience**

**Each Age**

Age	2022 Retirement			2020-2022 Retirement		
	Actual	Expected	Ratio A/E	Actual	Expected	Ratio A/E
46	-	-	N/A	-	-	N/A
47	-	-	N/A	-	-	N/A
48	-	-	N/A	-	-	N/A
49	-	0.10	0%	1	0.70	143%
50	4	6.10	66%	13	16.65	78%
51	5	7.50	67%	14	24.80	56%
52	7	7.60	92%	23	25.80	89%
53	8	9.90	81%	29	35.40	82%
54	11	10.50	105%	28	30.80	91%
55	15	12.65	119%	39	33.75	116%
56	8	10.60	75%	33	36.25	91%
57	18	15.60	115%	49	42.35	116%
58	6	7.80	77%	33	34.60	95%
59	11	11.45	96%	35	39.75	88%
60	24	19.48	123%	79	59.55	133%
61	7	15.93	44%	47	50.75	93%
62	14	14.69	95%	49	49.03	100%
63	9	13.35	67%	37	44.24	84%
64	9	15.25	59%	26	46.01	57%
65	16	15.91	101%	48	51.09	94%
66	14	16.72	84%	42	46.00	91%
67	13	14.18	92%	32	34.66	92%
68	11	7.71	143%	25	23.04	109%
69	3	5.75	52%	15	16.66	90%
<b>70 &amp; Over</b>	19	90.00	21%	58	261.00	22%
<b>Total</b>	232	328.77	71%	755	1,002.88	75%
<b>Total Under 70</b>	213	238.77	89%	697	741.88	94%



## Analysis of Retirement Experience

### Age Groups

Age Group	2022 Retirements			2020-2022 Retirements		
	Actual	Expected	Ratio A/E	Actual	Expected	Ratio A/E
<b>Under 55</b>	35	41.70	84%	108	134.15	81%
<b>55-59</b>	58	58.10	100%	189	186.70	101%
<b>60-64</b>	63	78.70	80%	238	249.58	95%
<b>65-69</b>	57	60.27	95%	162	171.45	94%
<b>70 &amp; Over</b>	19	90.00	21%	58	261.00	22%
<b>Total</b>	232	328.77	71%	755	1,002.88	75%
<b>Total Under 70</b>	213	238.77	89%	697	741.88	94%

### Analysis of Turnover Experience

Years of Service	2022 Quits			2020-2022 Quits		
	Actual	Expected	Ratio A/E	Actual	Expected	Ratio A/E
0-4	504	364.07	138%	1,394	1,100.66	127%
5-9	200	126.38	158%	516	381.51	135%
10-14	50	27.26	183%	126	81.85	154%
15-19	23	14.26	161%	57	38.84	147%
20-24	5	4.02	125%	21	15.21	138%
25-29	2	0.49	407%	3	1.43	209%
<b>Total</b>	<b>784</b>	<b>536.47</b>	<b>146%</b>	<b>2,117</b>	<b>1,619.51</b>	<b>131%</b>



### Analysis of Active Mortality Experience

<u>Age</u>	2022 Deaths			2020-2022 Deaths		
	Actual	Expected	Ratio A/E	Actual	Expected	Ratio A/E
<b>20-24</b>	1	0.03	3629%	1	0.08	1281%
<b>25-29</b>	0	0.10	0%	2	0.31	645%
<b>30-34</b>	1	0.20	497%	2	0.62	325%
<b>35-39</b>	0	0.29	0%	5	0.90	554%
<b>40-44</b>	0	0.48	0%	2	1.49	134%
<b>45-49</b>	2	0.84	239%	5	2.56	195%
<b>50-54</b>	3	1.36	221%	10	4.29	233%
<b>55-59</b>	3	1.95	154%	8	6.06	132%
<b>60 and Over</b>	6	3.38	177%	21	9.92	212%
<b>Total</b>	16	8.61	186%	56	26.23	213%



### Analysis of Disability Experience

<u>Age</u>	2022 Disabilities			2020-2022 Disabilities		
	Actual	Expected	Ratio A/E	Actual	Expected	Ratio A/E
<b>20-24</b>	0	0.00	0%	0	0.01	0%
<b>25-29</b>	0	0.02	0%	0	0.07	0%
<b>30-34</b>	0	0.12	0%	0	0.36	0%
<b>35-39</b>	0	0.27	0%	0	0.83	0%
<b>40-44</b>	0	0.53	0%	0	1.62	0%
<b>45-49</b>	0	0.93	0%	0	2.82	0%
<b>50-54</b>	0	1.28	0%	0	3.94	0%
<b>55-59</b>	0	1.46	0%	0	4.39	0%
<b>60 and Over</b>	0	0.99	0%	0	2.70	0%
<b>Total</b>	0	5.60	0%	0	16.75	0%

**Analysis of Retiree Mortality Experience\***

<b>Age</b>	<b>2022 Experience</b>			<b>2020-2022 Experience</b>		
	<b>Actual</b>	<b>Expected</b>	<b>Ratio A/E</b>	<b>Actual</b>	<b>Expected</b>	<b>Ratio A/E</b>
<b>Under 60</b>	3	2.24	134%	12	7.18	167%
<b>60-64</b>	7	8.17	86%	34	24.26	140%
<b>65-69</b>	23	17.14	134%	76	52.63	144%
<b>70-74</b>	41	29.67	138%	124	87.10	142%
<b>75-79</b>	27	28.93	93%	98	81.54	120%
<b>80-84</b>	28	27.67	101%	85	77.58	110%
<b>85-89</b>	28	21.54	130%	81	62.23	130%
<b>90 &amp; over</b>	21	23.39	90%	74	72.79	102%
<b>Total</b>	178	158.75	112%	584	465.31	126%

*\*This analysis does not include beneficiary, QDRO, or disabled deaths.*



## ACTUARIAL METHODS AND ASSUMPTIONS

The most recent experience study was completed in conjunction with the December 31, 2019 actuarial valuation. Please see our experience study, dated June 2020, to see more detail of the rationale for the current assumptions. As authorized under Sec. 40A-9 of Chapter 40A, the actuarial methods and assumptions are established set by the Board of Trustees based upon recommendations from the Fund's actuary.

### ***Entry Age Normal Method***

The Entry Age Normal actuarial cost method is the actuarial valuation method used for all purposes under ERF. The concept of this method is that funding of benefits for each member should be affected as a, theoretically, level contribution (as a level percentage of pay) from entry into ERF to termination of active status.

The Normal Cost (NC) for a fiscal year under this method is determined as described in the prior paragraph for each individual member. The ERF NC for the year is the total of individual normal costs determined for each active member. The Actuarial Accrued Liability (AAL) under this method is the theoretical asset balance of the normal costs that would have accumulated to date based upon current actuarial assumptions. To the extent that the current assets of the fund are insufficient to cover the AAL, an Unfunded Actuarial Accrued Liability (UAAL) develops.

### ***Actuarially Determined Contribution***

The actuarially determined contribution rate is developed using an open group projection. The total contribution rate (member plus City) is the level percentage of pay needed to fund the Normal Cost for each year and pay off the UAAL over 30 years.

In the open group projection, the demographic assumptions are applied to the current active employees and any employees that are assumed to leave employment are replaced one for one with a new employee. Over time this results in the change of the employee group from mostly Tier A members to Tier B members. The projection is built to assume no gains or losses on the actuarial accrued liability or the actuarial value of assets.

In the projection, new members' pay is assumed to increase at 3.00% year over year (i.e. a new employee in 2023 is assumed to be hired at a salary that is 3.00% greater than a new employee hired in 2022). The 3.00% growth rate is equal to our wage inflation assumption of 3.00% (ultimate salary increase



## ACTUARIAL METHODS AND ASSUMPTIONS (cont.)

assumption). Note that this is not an assumption that payroll will grow at 3.00% per year. Payroll could grow more slowly in the near-term due to membership demographics.

### ***New Entrant Profile***

For the purposes of determining the funding period, an open group projection is used which replaces on a one-to-one basis each active member who leaves employment with an average new hire. The average new hire is determined based on a new entrant profile, which is created from the valuation data by determining the entry age and entry pay for anyone with between one and six years of service as of the valuation date, with salaries normalized to the valuation date. A summary of the new entrant profile is shown in the table below, with 60% of the population being male. The salaries below would be applicable for the year preceding the valuation date. Future cohorts of new hires have starting salaries that are assumed to grow at the General Wage Inflation of 3.00% over the salaries of the previous year.

<b>New Entrant Profile</b>		
<b>Entry Age</b>	<b># of Employees</b>	<b>Average Salary</b>
15-19	4	\$54,089
20-24	216	46,562
25-29	355	50,139
30-34	359	53,095
35-39	280	56,847
40-44	276	60,463
45-49	241	60,231
50-54	230	60,942
55-59	171	58,853
60-64	94	63,496
65-69	8	49,340
<b>Total</b>	<b>2,234</b>	<b>\$55,819</b>

### ***Actuarial Value of Asset Method***

The method for determining the actuarial value of assets in future years is equal to the market value of assets less a five-year phase in of the excess (shortfall) between expected investment return and actual income. The actual calculation is based on the difference between actual market value and the expected market value of assets each year, and recognizes the cumulative excess return (or shortfall) at a minimum rate of 20% per year. Each year, a base is set up to reflect this difference. If the current year's base is of opposite sign to the deferred bases, then it is offset dollar for dollar against the deferred bases. Any remaining bases are then recognized over the remaining period for the base.



## ACTUARIAL METHODS AND ASSUMPTIONS (cont.)

**Annual Rate of Investment Return:** For all purposes under the Fund, the rate of investment return is assumed to be 7.25% per annum, net of investment expenses. This rate includes an annual assumed rate of inflation of 2.50%. In addition, annual cost-of-living adjustments are assumed to occur on average at the rate of 2.50% per annum for Tier A members and 2.20% for Tier B members (due to the lower maximum on cost-of-living-adjustments).

**Annual Compensation Increases:** Each member's compensation is assumed to increase in accordance with a table based on actual ERF experience. Sample rates follow:

Years of Service	Merit, Promotion, Longevity		General		Total
0	5.25	%	3.00	%	8.25
1	4.25		3.00		7.25
2	3.25		3.00		6.25
3	2.50		3.00		5.50
4	2.00		3.00		5.00
5	1.75		3.00		4.75
6	1.75		3.00		4.75
7	1.25		3.00		4.25
8	1.25		3.00		4.25
9	1.00		3.00		4.00
10	1.00		3.00		4.00
11	1.00		3.00		4.00
12	0.75		3.00		3.75
13	0.75		3.00		3.75
14	0.75		3.00		3.75
15	0.75		3.00		3.75
16	0.75		3.00		3.75
17	0.75		3.00		3.75
18	0.50		3.00		3.50
19 & Over	0.00		3.00		3.00



## ACTUARIAL METHODS AND ASSUMPTIONS (cont.)

**Mortality:**

Disabled Lives: The gender-distinct 2019 Texas Municipal Retirees Mortality Table for males and females respectively, set forward 4 years for males and 3 years for females. Generational mortality improvements in accordance with the ultimate rates from the scales published through 2019 by Retirement Plans Experience Committee of the Society of Actuaries (“Ultimate MP”) and projected from the year 2019.

Sample rates as of 2022 follow (rate per 1,000), with projected mortality applied:

Age	Disability Mortality Rate	
	Male	Female
20	35	30
30	35	30
40	35	30
50	35	30
60	35	30
70	35	30
80	81	49
90	234	159

Other Benefit Recipients: The gender-distinct 2019 Texas Municipal Retirees Mortality Tables are used for males and females respectively. Generational mortality improvements in accordance with the ultimate rates from the scales published through 2019 by Retirement Plans Experience Committee of the Society of Actuaries (“Ultimate MP”) and projected from the year 2019.

Sample rates as of 2022 follow (rate per 1,000), with projected mortality applied:

Age	Mortality Rate	
	Male	Female
30	0.4	0.1
40	0.8	0.3
50	2.7	1.1
60	7.3	3.5
70	19.6	10.9
80	54.2	34.7
90	152.9	111.1



## ACTUARIAL METHODS AND ASSUMPTIONS (cont.)

**Mortality, Continued:**

Active Members: The PubG-2010 Employee Mortality Table for General Employees tables are used for males and females respectively. Generational mortality improvements in accordance with the ultimate rates from the scales published through 2019 by Retirement Plans Experience Committee of the Society of Actuaries (“Ultimate MP”) and projected from the year 2010.

Sample rates as of 2022 follow (rate per 1,000), with projected mortality applied:

Age	Mortality Rate	
	Male	Female
<b>30</b>	0.3	0.1
<b>40</b>	0.6	0.3
<b>50</b>	1.3	0.7
<b>60</b>	2.8	1.6
<b>70</b>	6.2	4.3
<b>80</b>	15.3	11.8
<b>90</b>	131.2	102.7

10% of active deaths are assumed to be service related.

**Disability:** A client-specific table of disability incidence with sample rates follows (rate per 1,000):

Age	Disability Rate
<b>30</b>	0.1
<b>40</b>	0.5
<b>50</b>	1.2
<b>60</b>	2.2

20% of disabilities are assumed to be service related. There is a 0% assumption of disability for members who have over 10 years of service and are eligible for retirement.



## ACTUARIAL METHODS AND ASSUMPTIONS (cont.)

**Retirement:** Upon eligibility, active members are assumed to retire as follows (rate per 1,000):

**Tier A:**

Age	Male		Female	
	First Year Eligible	Thereafter	First Year Eligible	Thereafter
<b>48-49</b>	100	100	100	100
<b>50</b>	550	550	450	350
<b>51</b>	500	450	400	350
<b>52</b>	500	300	400	300
<b>53</b>	400	300	350	300
<b>54</b>	350	250	350	200
<b>55</b>	300	250	350	250
<b>56</b>	300	250	350	250
<b>57</b>	300	250	350	250
<b>58-59</b>	300	250	250	200
	<u>Service &lt; 18 yrs.</u>	<u>Service 18 yrs.+</u>	<u>Service &lt; 18 yrs.</u>	<u>Service 18 yrs. +</u>
<b>60</b>	80	230	90	200
<b>61</b>	90	230	90	180
<b>62</b>	100	230	90	200
<b>63</b>	100	230	150	150
<b>64</b>	150	230	120	130
<b>65</b>	150	230	120	300
<b>66</b>	200	230	150	300
<b>67</b>	200	230	250	300
<b>68</b>	200	230	150	300
<b>69</b>	200	230	150	300
<b>70</b>	1,000	1,000	1,000	300



## ACTUARIAL METHODS AND ASSUMPTIONS (cont.)

**Retirement, Continued:**

Upon eligibility, active members are assumed to retire as follows (rate per 1,000):

**Tier B:**

Age	Male		Female	
	Service < 40 yrs.	Service 40 yrs. +	Service < 40 yrs.	Service 40 yrs. +
<55	10	350	10	350
55-56	20	350	20	350
57-58	30	350	30	350
59-60	40	350	40	350
61-62	50	350	50	350
63-64	60	350	60	350
65	180	600	200	450
66	200	250	250	250
67	200	250	250	250
68	200	250	150	250
69	200	250	150	250
70	1,000	1,000	1,000	1,000

\*For service < 40 yrs, rates shown are for those who met the rule of 80.

**Retirement of Deferred Vested Members:**

All deferred vested members are assumed to commence payment at their normal retirement age, which is age 60 for Tier A members and age 65 for Tier B members.



## ACTUARIAL METHODS AND ASSUMPTIONS (cont.)

**General Turnover:** A table of termination rates based on ERF experience as shown below.

Years of Service	Terminations (per 1,000)	
	Male	Female
0	228	200
1	180	165
2	144	150
3	110	120
4	90	95
5	75	90
6	67	80
7	60	65
8	51	48
9	43	48
10	33	45
11	33	32
12	30	30
13	30	30
14	22	20
15	22	14
16	19	14
17	19	14
18	19	14
19	19	14
20	12	14
21	12	14
22	12	6
23	12	6
24	12	6
25	12	6
26 & Over	5	6

There is 0% assumption of termination for members eligible for retirement.

**Refunds of Contributions:** Members are assumed to choose the most valuable termination benefit.





## ACTUARIAL METHODS AND ASSUMPTIONS (cont.)

**Operational Expenses:** The amount of estimated administrative expenses expected in the next year is assumed to be equal to the prior year's expenses and is incorporated in the Normal Cost.

**Marital Status:** 75% of active male members and 50% of active female employees are assumed to be married.

**Vacation Leave Conversions:** Members with 20 or more years of service are assumed to convert unused vacation leave to 1.5 months of service. Other members are assumed to convert unused vacation leave to 1 month of service. No vacation leave conversion is assumed for disability retirement.

**Spouse Age:** The female spouse is assumed to be 3 years younger than the male spouse.

**Payroll Growth Rate:** Used to estimate projected payroll for the following fiscal year only. Assumed to be equal to the inflation rate of 2.50%. This assumption is not used as part of the open group projection used to calculate the Actuarially Determined Contribution Rate.

**Member's Pay:** In determining the member's valuation salary, the greater of the prior calendar year's gross pay and the member's rate of compensation is used.

**Form of Payment:** For Tier A it is assumed that 60% of married active male members and 84% of married active female employees will elect a Joint & 50% Survivor form of payment. Taking into consideration the marriage assumption and the inherent subsidy in the ERF's Joint & 100% Survivor factors, the male employees are valued with Joint and 28.0% Survivor annuities and the female employees are valued with Joint and 19.5% Survivor annuities. It is also assumed that 100% of Tier B employees will elect the normal form of payment under Tier B.

**Data Adjustments:** Certain records are missing spousal information. For these records we use the marital status assumption and spousal age difference assumption to value these records. No other adjustments are made to the data.

**Actuarial Equivalence Assumptions:** for form of payment conversion and Tier B early retirement factors are based on the following assumptions:

- a. Interest Rate of 8.00%.
- b. Mortality: Unisex blend (60% male and 40% female) of the following assumptions for males and females. 109% of the RP-2000 Combined Healthy Table for males with Blue Collar adjustment projected to 2026 using improvement scale BB for males. 103% of the RP-2000 Combined Healthy Table for females with Blue Collar adjustment projected to 2026 using improvement scale BB for females.
- c. Cost-of-living-adjustments (COLA): a 3.00% COLA assumption for Tier A members and a 2.50% COLA assumption for Tier B members.



## ACTUARIAL METHODS AND ASSUMPTIONS (cont.)

**Actuarial Model:** This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

**Changes in Methods and Assumptions Since Prior Valuation:** None.



# SUMMARY OF BENEFIT PROVISIONS

## Employees' Retirement Fund of the City of Dallas As of December 31, 2022

### Membership

An employee becomes a member upon permanent employment and contributes to the Fund.

#### Tier A

A person who was employed by the City prior to January 1, 2017, or who was re-employed by the City on or after January 1, 2017 and whose pre January 1, 2017 credited service was not cancelled by withdrawal or forfeiture or was reinstated.

#### Tier B

A person who was employed by the City on or after January 1, 2017, or who was re-employed by the City on or after January 1, 2017 and whose pre January 1, 2017 credited service has been cancelled by withdrawal or forfeiture.

### Contributions

Member: 37% of the current adjusted total obligation rate. New rates effective October 1 after the valuation date.

City: 63% of the current adjusted total obligation rate. New rates effective October 1 after the valuation date.

### Definitions

Final Average Salary:

#### Tier A

Average monthly salary over the member's highest three years (or 36 months) of service.

#### Tier B

Average monthly salary over the member's highest five years (or 60 months) of service.

Credited Service: Length of time as an employee of the City of Dallas and while making contributions to the Fund.



## SUMMARY OF BENEFIT PROVISIONS (cont.)

### Retirement Pension

Eligibility:

#### Tier A

- a. Attainment of age 60; or
- b. Attainment of age 55 (if credited service began before May 9, 1972); or
- c. At any age after completion of 30 years of credited service with a reduced benefit before age 50; or
- d. Attainment of age 50, if the sum of an active member's age and credited service is at least equal to 78.

#### Tier B

- a. Attainment of age 65 and 5 years of service; or
- b. At any age after completion of 40 years of credited service; or
- c. At any age if the sum of an active member's age and credited service is at least equal to 80 (under this eligibility the member's pension will be actuarially reduced for each year prior to the age of 65 that the member retires).
- d. Restricted Prior Service Credit included for eligibility (if approved).

Retirement Benefits:

#### Tier A

The retirement benefit equals 2-3/4% multiplied by average monthly earnings multiplied by credited service limited to a maximum of 36.3636 years plus a monthly \$125 health supplement (prorated for service less than 5 years).

#### Tier B

The retirement benefit equals 2-1/2% multiplied by average monthly earnings multiplied by credited service limited to a maximum of 40 years (no monthly health supplement).

Form of Payment:

#### Tier A

An unreduced pension benefit under a joint and one-half survivor option with 10 years guaranteed or a ten-year certain and life option. An actuarially equivalent joint and full survivor option is also available.

#### Tier B

An unreduced pension payable for life with 10 years guaranteed. Actuarially equivalent joint and survivor options (50% and 100%) are also available.



## SUMMARY OF BENEFIT PROVISIONS (cont.)

Early Retirement Factors:

### Tier A

For members retiring prior to age 50 with 30 or more years of service the pension shall be multiplied by the following percentage:

<u>Age</u>	<u>Percentage</u>
49	93.3
48	87.2
47	81.5
46	76.3
45	71.5
44	67.0

### Tier B

For members retiring prior to age 65 with less than 40 years of service, the pension shall be multiplied by the following percentage:

<u>Age</u>	<u>Percentage</u>	<u>Age</u>	<u>Percentage</u>
64	89.72	56	40.03
63	80.66	55	36.41
62	72.64	54	33.15
61	65.53	53	30.22
60	59.21	52	27.57
59	53.58	51	25.18
58	48.56	50	23.01
57	44.06	49	21.05

### Deferred Retirement

**Eligibility:** Deferred retirement pension benefit commencing at age 60 for Tier A members or at age 65 for Tier B members, with at least five (5) years of credited service, and accumulated contributions are left on deposit with the Fund.

**Monthly Benefit:** The deferred retirement benefit is equal to the retirement pension based on earnings and credited service at the time of termination.



## SUMMARY OF BENEFIT PROVISIONS (cont.)

### Disability Retirement Pension

#### Non-Service Disability:

1. Eligibility: Five (5) years of service and totally and permanently incapacitated for duty.
2. Monthly Benefit: Computed based on average monthly earnings and credited service at time of disability but not less than 10 times the percentage multiplier multiplied by the average monthly earnings.

#### Service Disability:

1. Eligibility: Totally and permanently incapacitated from the further performance of duty as a result of injury while in the course of employment for the City.
2. Monthly Benefit: Calculated as a non-service disability pension but not less than \$1,000 per month.

### Death Benefits

Eligibility: active or inactive members who die prior to retirement

Benefit: For members with less than 2 years of service or inactive member with less than 5 years of service: refund of the members contributions.

Benefit: For members with more than 2 years of service but less than 15 years of service: an unreduced pension to designated beneficiary for 120 months or a one-half survivor option for life with 120 payments guaranteed.

Benefit: For members eligible for retirement or members and inactive members with more than 15 years of service: an unreduced pension to designated beneficiary for 120 months or a Full Survivor option for life with 120 payments guaranteed.

Form: Benefit paid in accordance with the option on file, or the eligible option, or if no eligible beneficiary, a lump sum equivalent of 10 years of benefit payments to the member's estate.

Minimum Benefit for Service Death: For job-related death a minimum of 10 years of service used in calculation of benefit. Benefit will not be less than \$1,000 per month.



## SUMMARY OF BENEFIT PROVISIONS (cont.)

### Return of Accumulated Contributions

A member at the time of termination is entitled to be paid accumulated contributions without interest.

### Cost-of-Living Adjustments

An annual cost-of-living adjustment to the base pension benefit shall be made based on the greater of:

#### Tier A

- a. The percentage of change in the price index for October of the current year over October of the previous year, up to 5%, or
- b. The percentage of annual average change in the price index for the 12-month period ending with the effective date of the adjustment, up to 5%.

#### Tier B

- c. The percentage of change in the price index for October of the current year over October of the previous year, up to 3%, or
- d. The percentage of annual average change in the price index for the 12-month period ending with the effective date of the adjustment, up to 3%.



**Wilshire**

# Dallas Employees' Retirement Fund

Quarterly Investment Summary

March 31, 2023



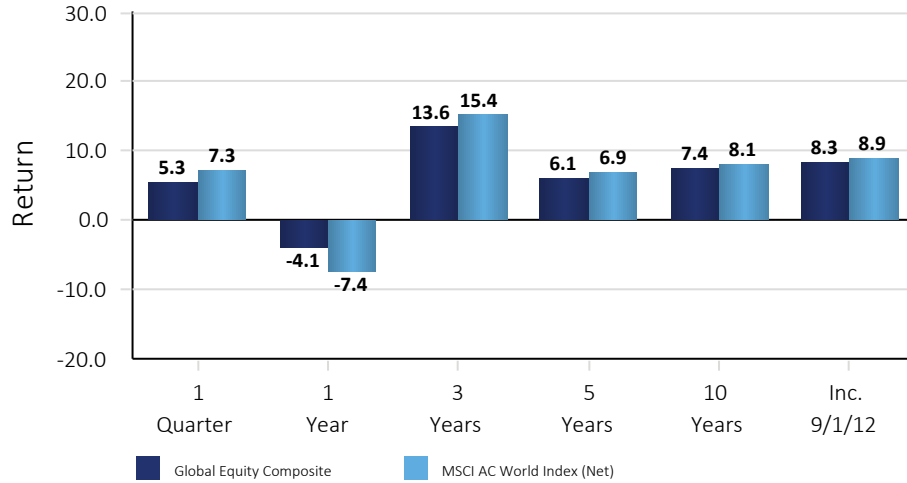
# Global Equity Composite

# Composite Performance Summary

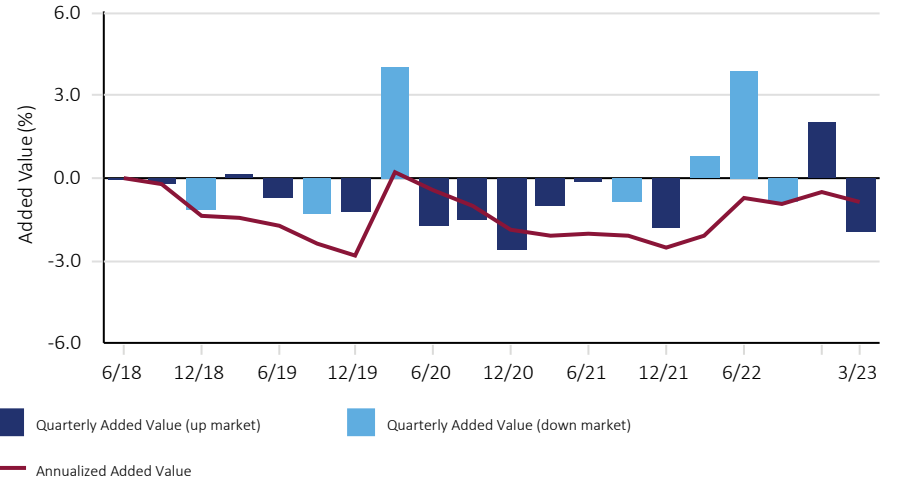
## Global Equity Composite

Periods Ended March 31, 2023

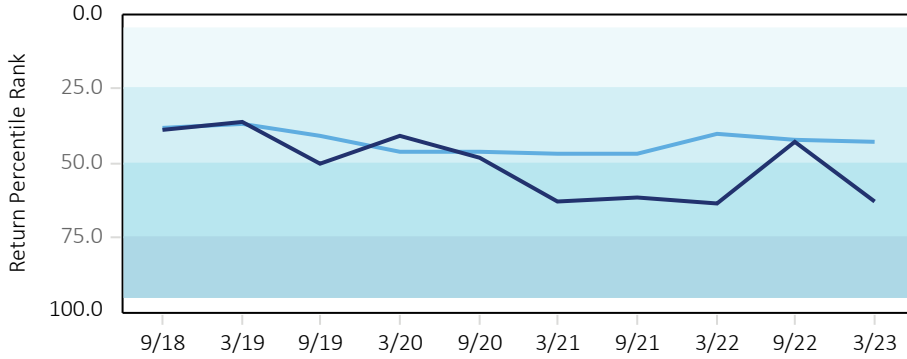
### Comparative Performance



### Added Value History

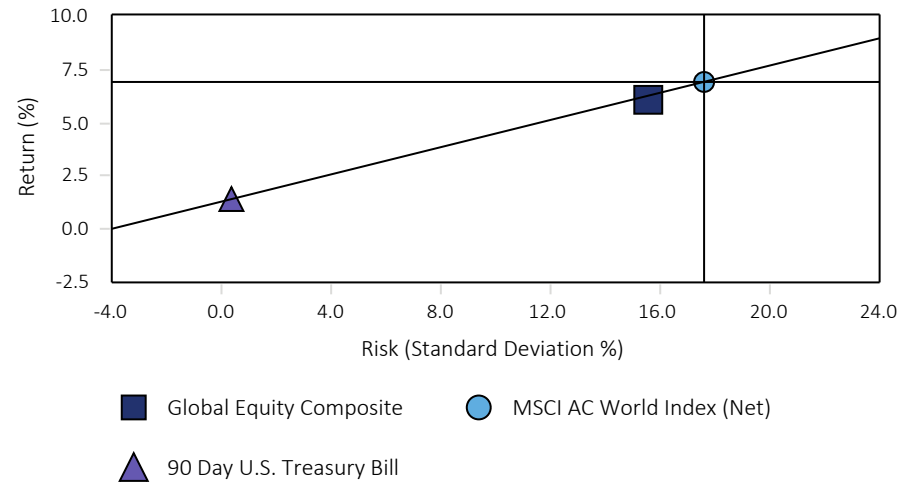


### Rolling Percentile Rank: IM Global Equity (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Global Equity Composite	10	0 (0%)	6 (60%)	4 (40%)	0 (0%)
Benchmark	10	0 (0%)	10 (100%)	0 (0%)	0 (0%)

### Risk and Return 04/1/18 - 03/31/23

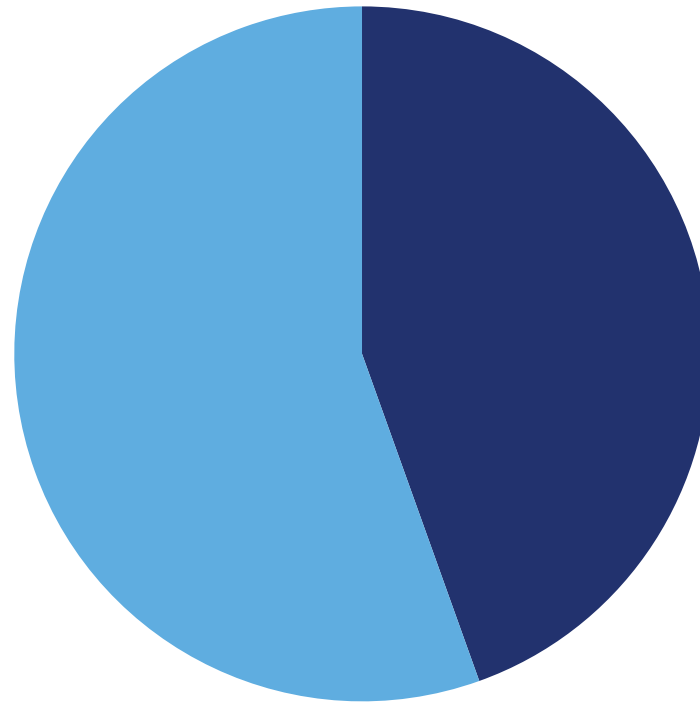


# Asset Allocation By Manager

Global Equity Composite

Periods Ended March 31, 2023

Mar-2023 : 225,111,336



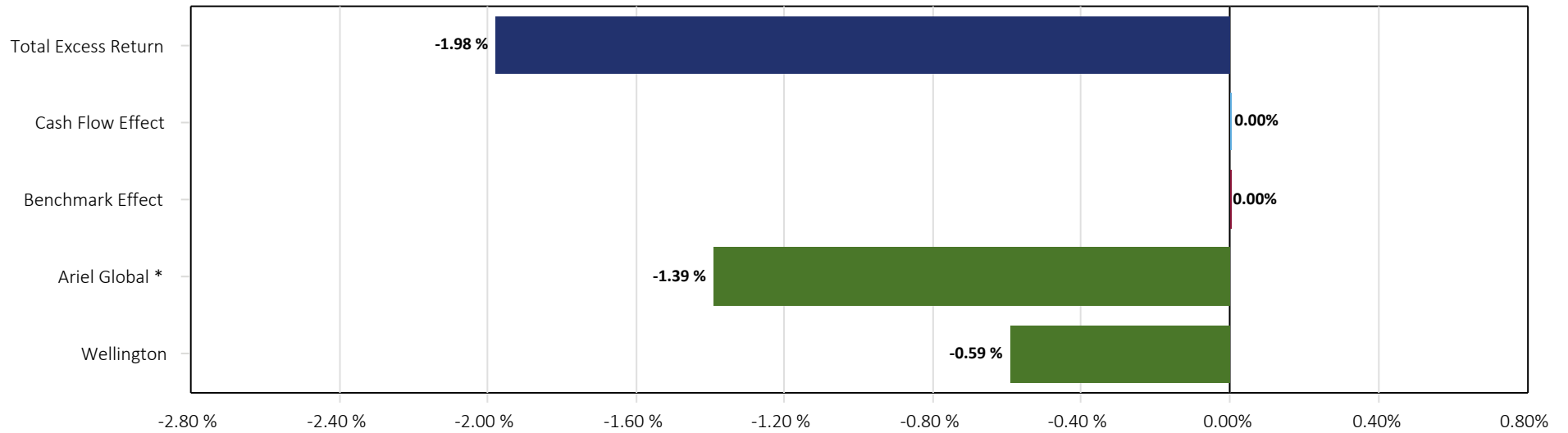
	Market Value \$	Allocation (%)
■ Ariel Global *	100,238,533	44.5
■ Wellington	124,872,803	55.5

# Asset Class Attribution

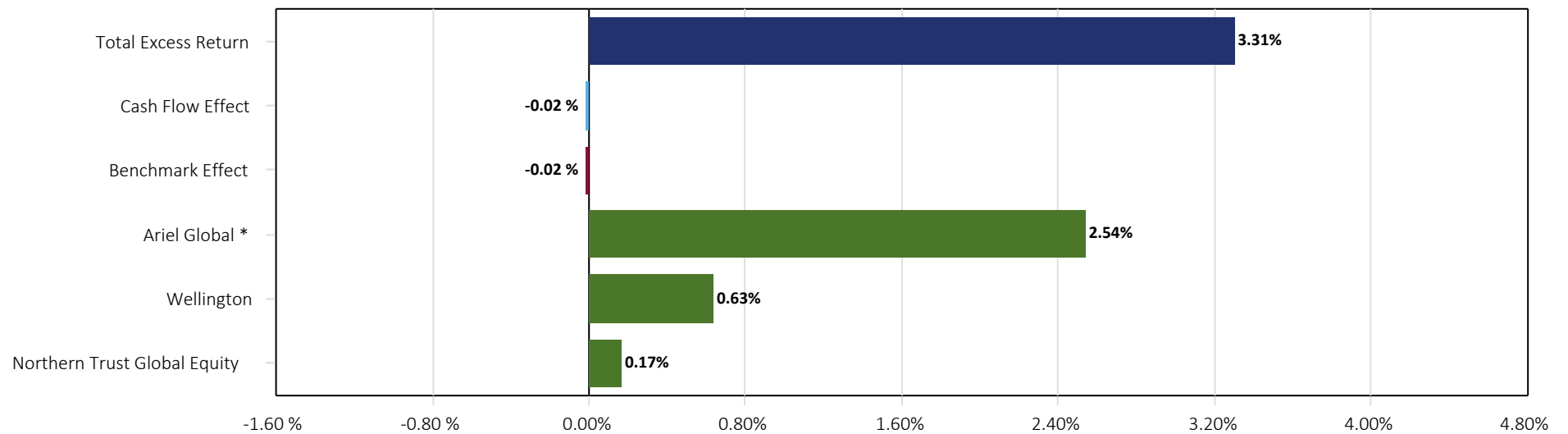
## Global Equity Composite

Periods Ended March 31, 2023

### 1 Quarter



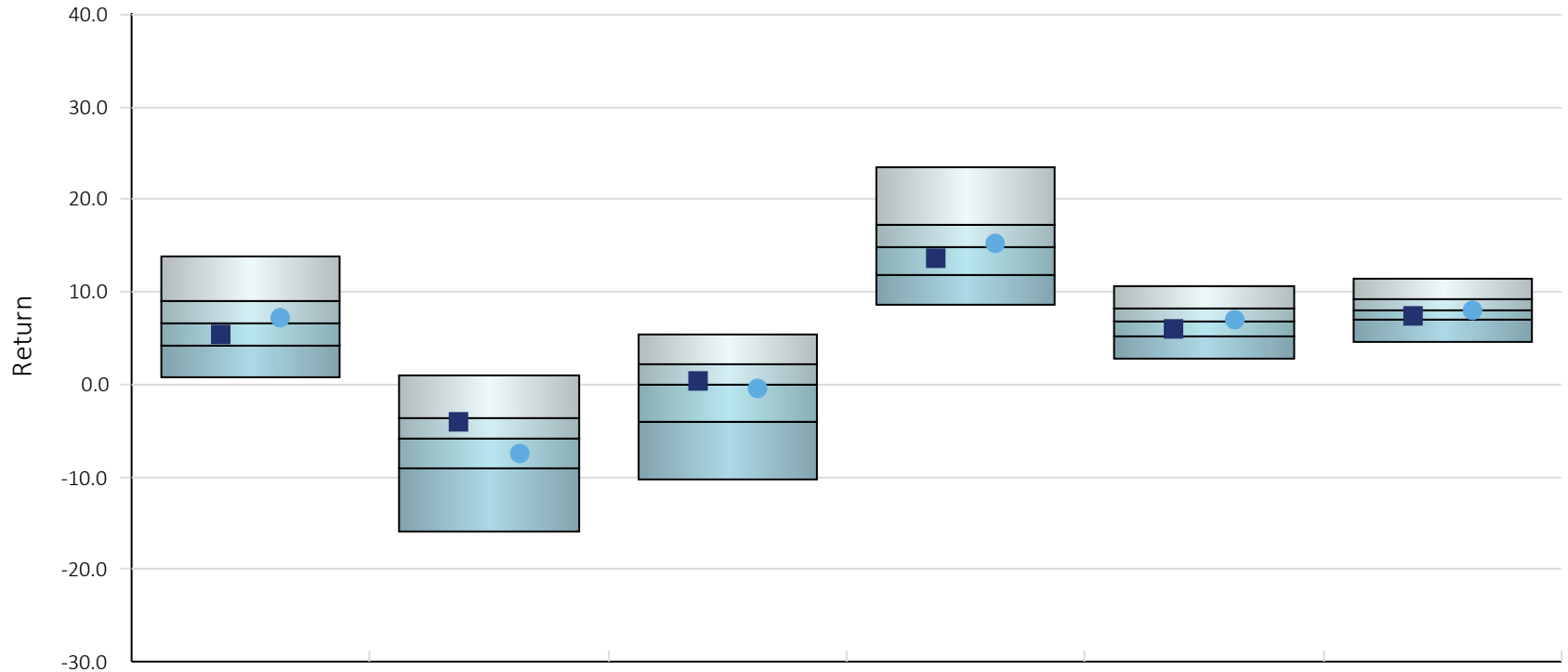
### 1 Year



# Peer Group Analysis

Global Equity Composite

Periods Ended March 31, 2023



	<b>1 Quarter</b>	<b>1 Year</b>	<b>2 Years</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ Global Equity Composite	5.33 (65)	-4.13 (30)	0.45 (45)	13.63 (63)	6.07 (61)	7.45 (64)
● MSCI AC World Index (Net)	7.31 (44)	-7.44 (64)	-0.35 (54)	15.36 (43)	6.93 (47)	8.06 (50)
5th Percentile	13.89	0.98	5.39	23.57	10.66	11.42
1st Quartile	9.01	-3.64	2.18	17.34	8.15	9.20
Median	6.70	-5.96	-0.04	14.78	6.71	8.02
3rd Quartile	4.21	-9.05	-4.15	11.92	5.11	6.93
95th Percentile	0.84	-15.86	-10.35	8.57	2.88	4.63
Population	405	398	383	373	344	249

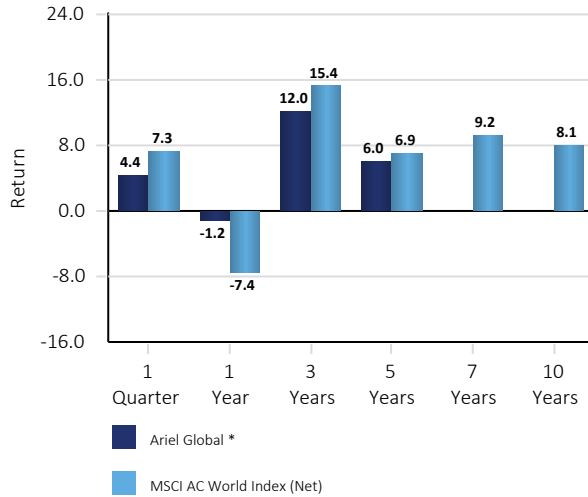
Parenteses contain percentile rankings.  
Calculation based on monthly periodicity.

# Performance Summary

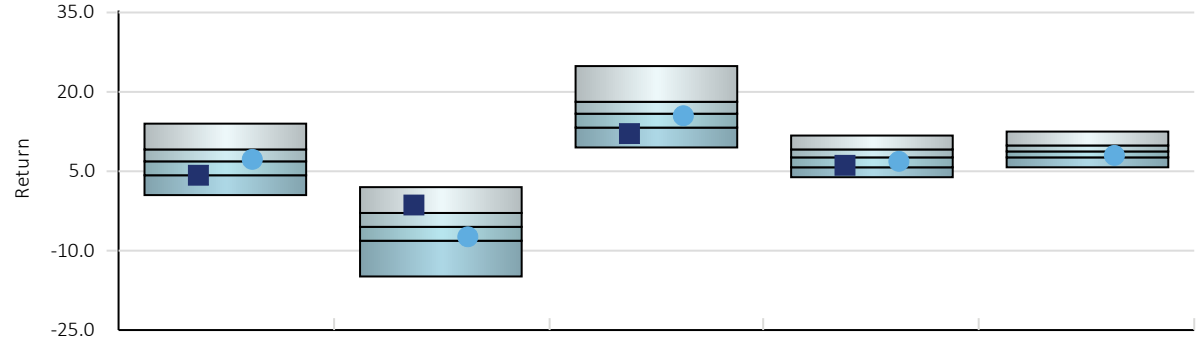
Ariel Global \*

Periods Ended March 31, 2023

## Comparative Performance

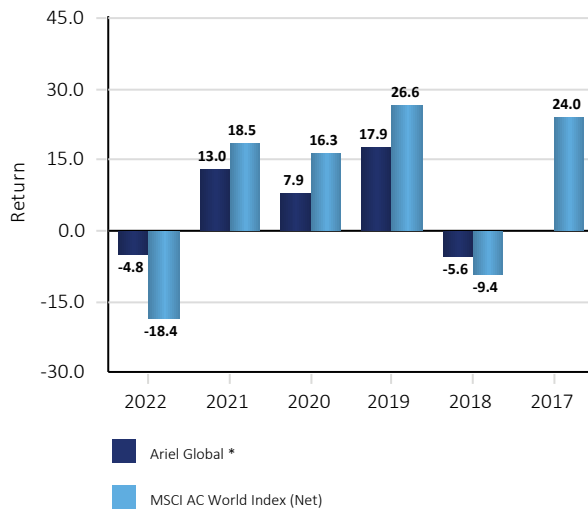


## Peer Group Analysis: IM Global Equity (SA+CF)

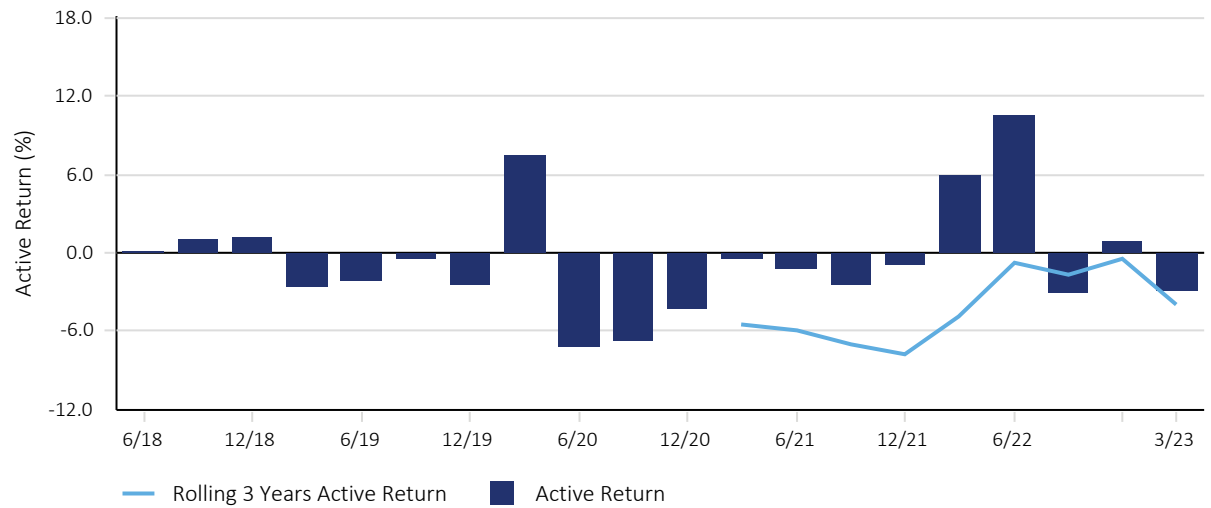


	Quarter	1 Year	3 Years	5 Years	10 Years
Fund	4.39 (74)	-1.23 (14)	12.04 (83)	6.00 (75)	-
Benchmark	7.31 (46)	-7.44 (71)	15.36 (57)	6.93 (61)	8.06 (69)
Median	6.81	-5.36	15.82	7.55	8.91

## Comparative Performance



## Rolling 3 Years Performance



## Holdings & Attribution

Ariel Global \*

Periods Ended March 31, 2023

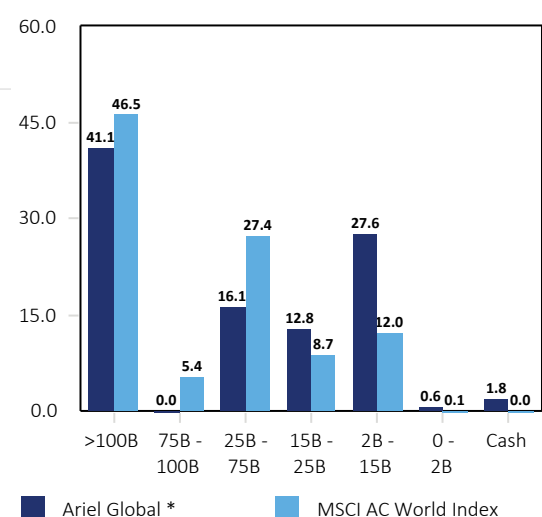
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	255,086,534,538	345,636,916,380
Median Mkt. Cap \$	23,806,116,335	11,952,750,790
Price/Earnings ratio	14.3	16.8
Price/Book ratio	2.4	3.4
5 Yr. EPS Growth (%)	12.2	15.8
Current Yield (%)	3.4	2.3
Beta (5 Years, Monthly)	0.68	1.00
Number of Stocks	67	2,888

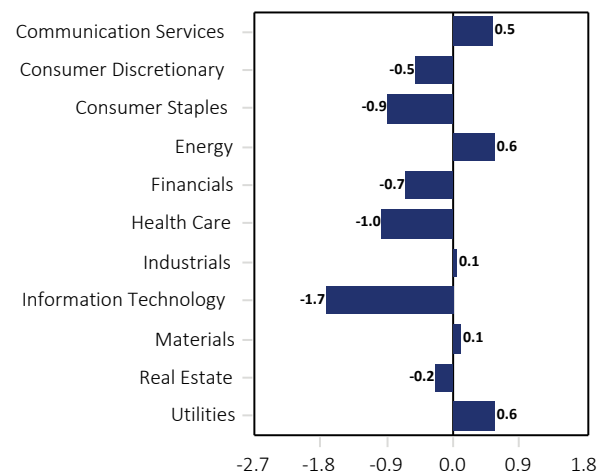
### Top 10 Holdings

	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Microsoft Corp	8.4	3.4	5.0	20.5
Baidu Inc	6.7	0.1	6.6	31.9
GSK plc	5.2	0.1	5.1	2.9
Roche Holding AG	5.2	0.3	4.9	-5.7
Philip Morris International Inc	4.8	0.3	4.5	-2.6
Verizon Communications Inc	4.7	0.3	4.4	0.3
Equity Commonwealth	4.5	0.0	4.5	-0.5
Endesa SA, Madrid	4.5	0.0	4.5	15.5
CIE Generale D.E. Michelin SA	4.1	0.0	4.1	10.3
DEUTSCHE BOERSE AG	3.4	0.0	3.4	
% of Portfolio	51.5	4.5	47.0	

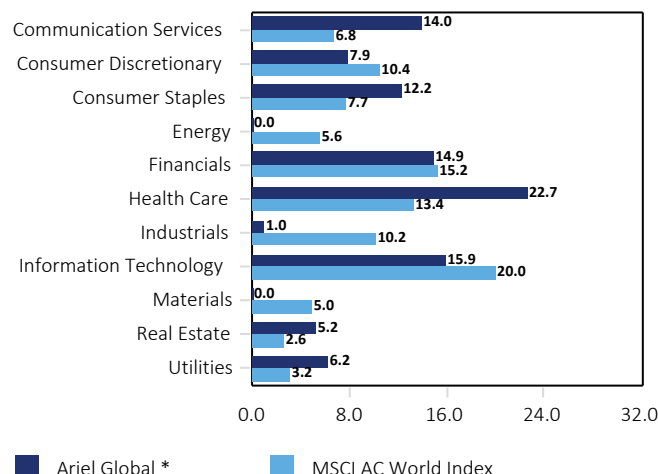
### Distribution of Market Capitalization (%)



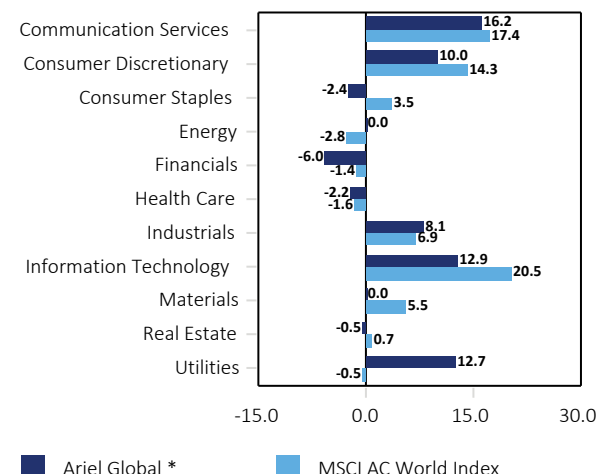
### Total Attribution



### Allocation



### Performance

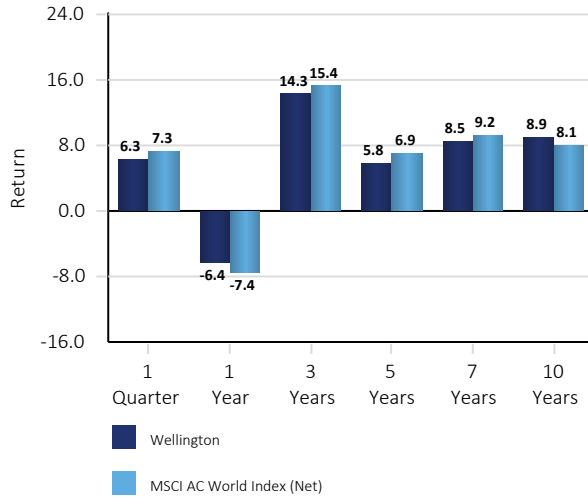


## Performance Summary

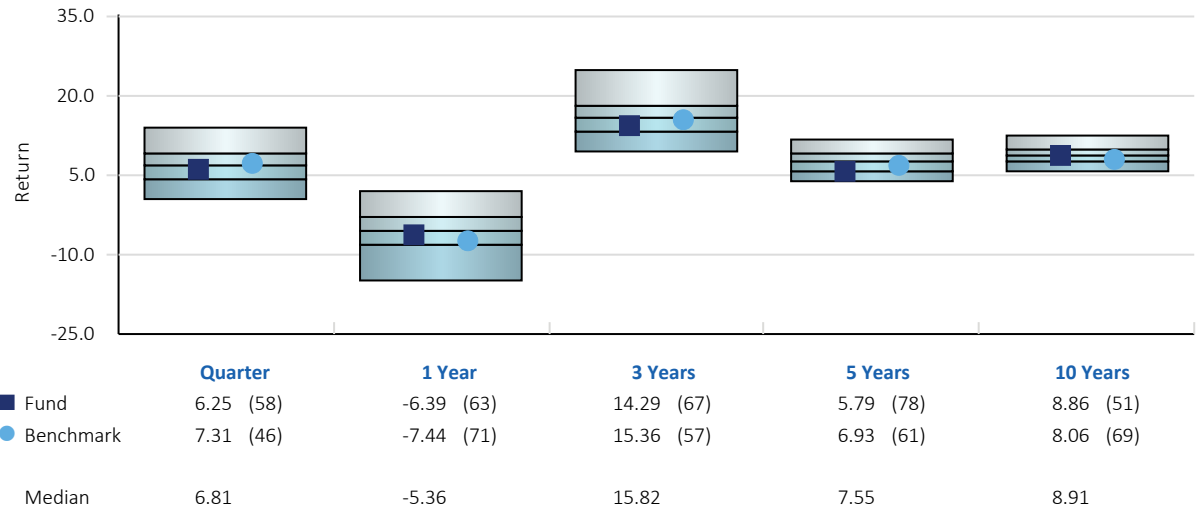
Wellington

Periods Ended March 31, 2023

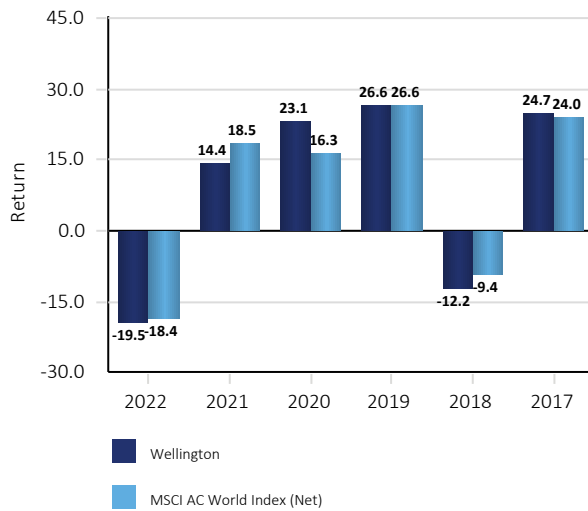
### Comparative Performance



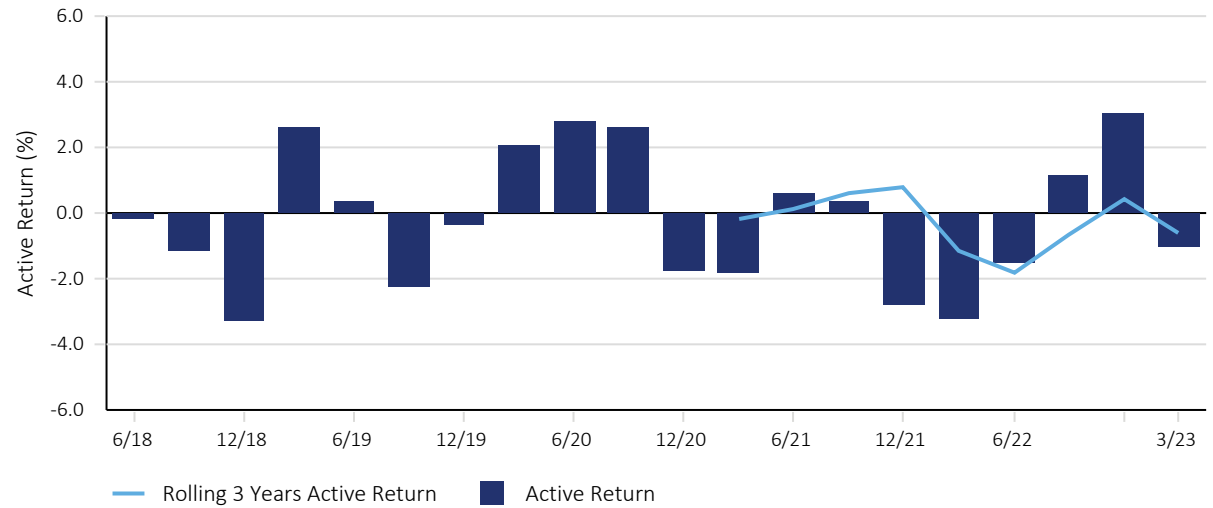
### Peer Group Analysis: IM Global Equity (SA+CF)



### Comparative Performance



### Rolling 3 Years Performance





## Holdings & Attribution

Wellington

Periods Ended March 31, 2023

### Portfolio Characteristics

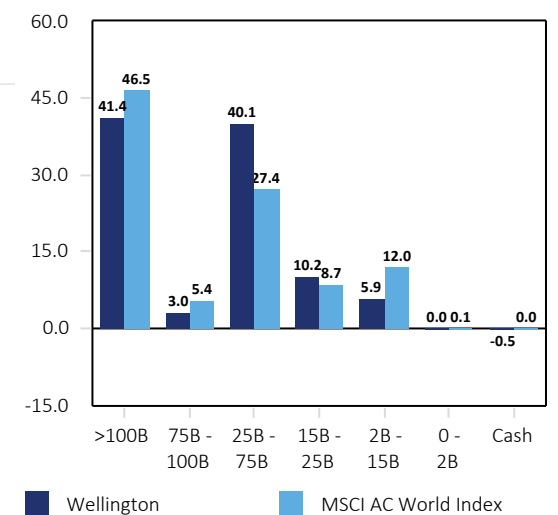
	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	273,030,481,138	345,636,916,380
Median Mkt. Cap \$	52,524,560,069	11,952,750,790
Price/Earnings ratio	19.5	16.8
Price/Book ratio	3.6	3.4
5 Yr. EPS Growth (%)	12.9	15.8
Current Yield (%)	1.4	2.3
Beta (5 Years, Monthly)	1.02	1.00
Number of Stocks	103	2,888

### Top 10 Holdings

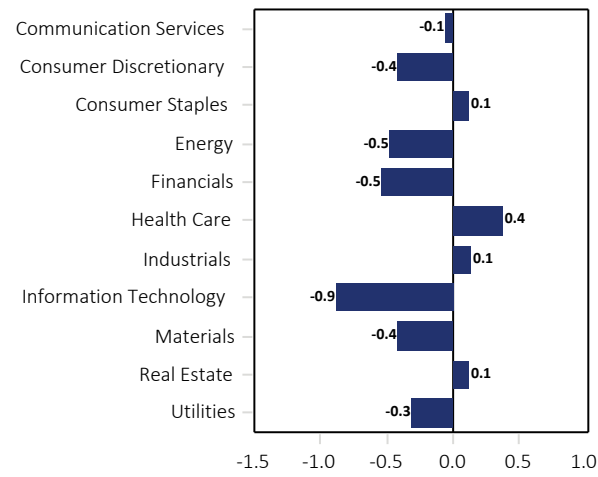
	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Microsoft Corp	3.3	3.4	-0.1	20.5
Amazon.com Inc	3.0	1.6	1.4	23.0
Apple Inc	2.3	4.4	-2.1	27.1
Unilever PLC	2.3	0.2	2.1	3.9
Meta Platforms Inc	2.3	0.8	1.5	76.1
Novartis AG	2.2	0.3	1.9	-0.7
Airbus SE	2.2	0.1	2.1	13.0
HSBC Holdings PLC	1.9	0.2	1.7	13.0
Linde Plc	1.8	0.3	1.5	8.4
SALESFORCE INC	1.8	0.3	1.5	50.7

% of Portfolio      23.1      11.6      11.5

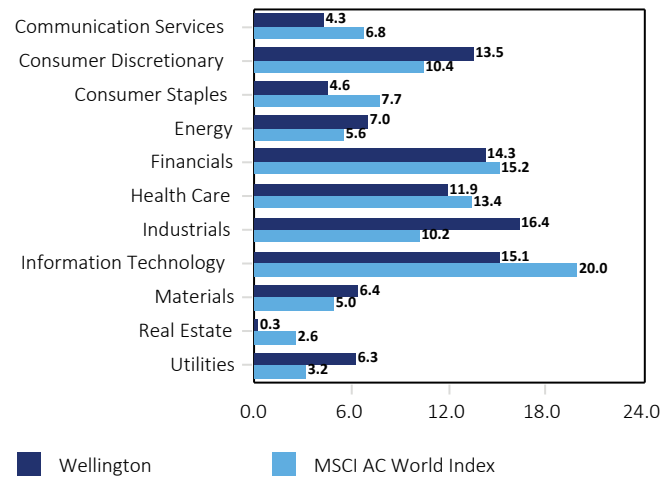
### Distribution of Market Capitalization (%)



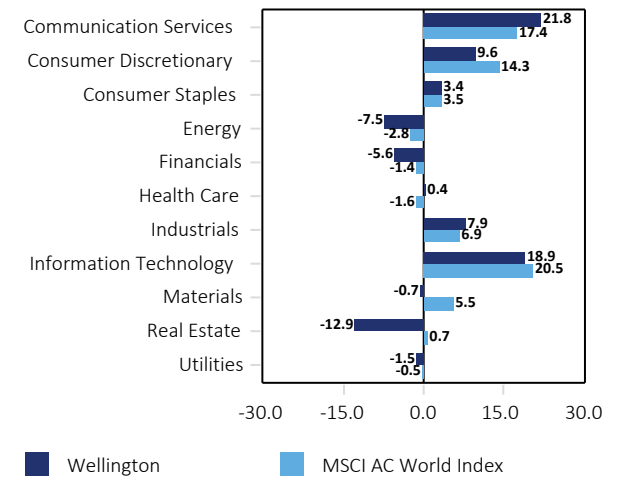
### Total Attribution



### Allocation



### Performance



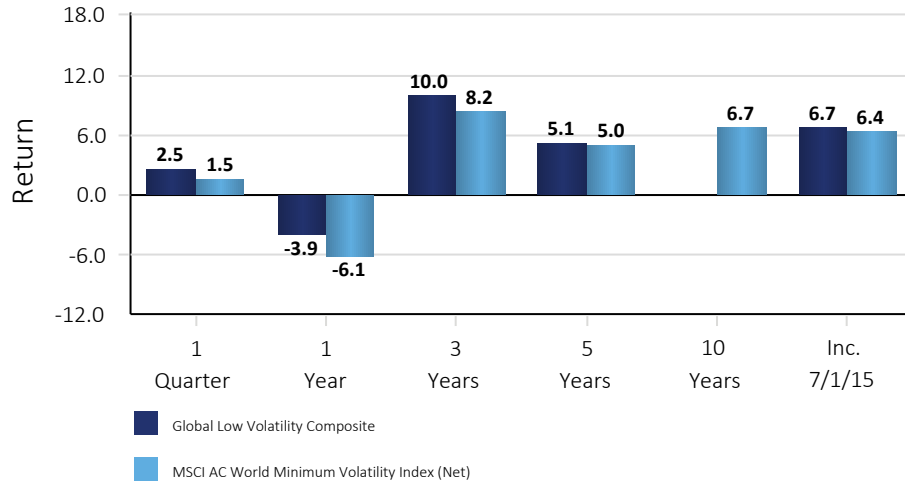
# Global Low Volatility Composite

# Composite Performance Summary

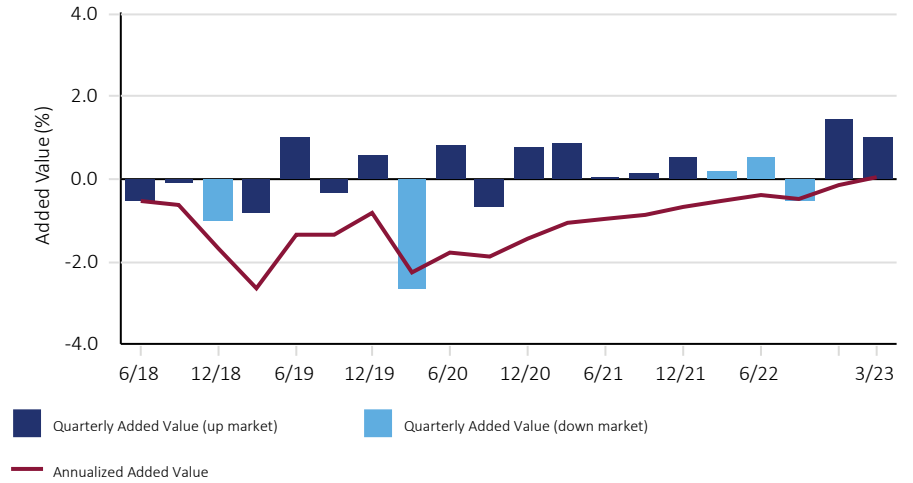
## Global Low Volatility Composite

Periods Ended March 31, 2023

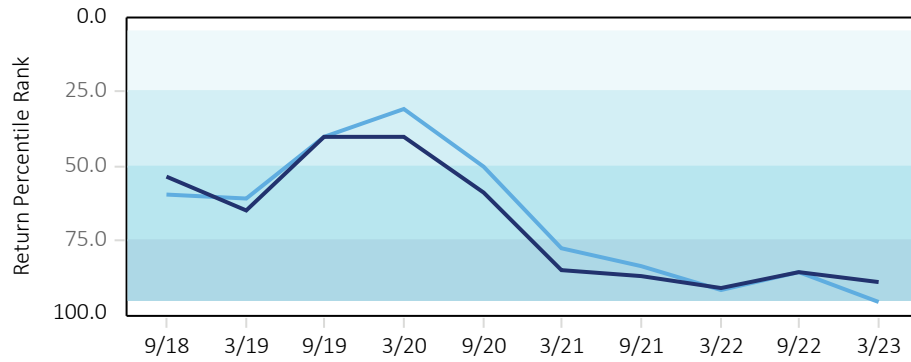
### Comparative Performance



### Added Value History

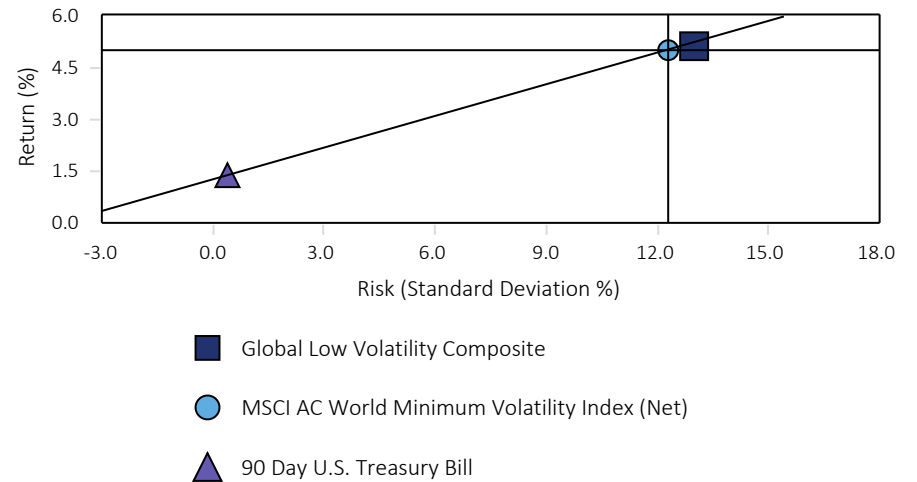


### Rolling Percentile Rank: IM Global Equity (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Global Low Volatility Composite	10	0 (0%)	2 (20%)	3 (30%)	5 (50%)
Benchmark	10	0 (0%)	3 (30%)	2 (20%)	5 (50%)

### Risk and Return 04/1/18 - 03/31/23

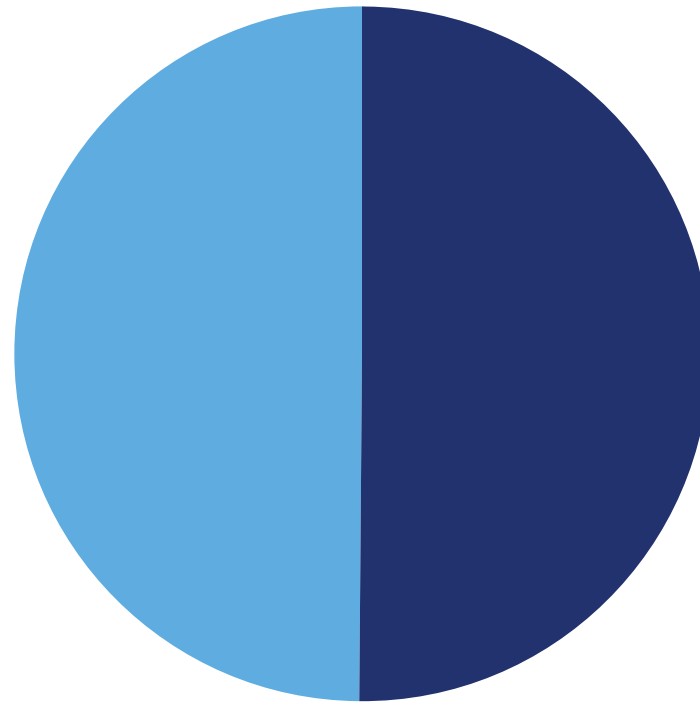


# Asset Allocation By Manager

Global Low Volatility Composite

Periods Ended March 31, 2023

Mar-2023 : 469,063,070



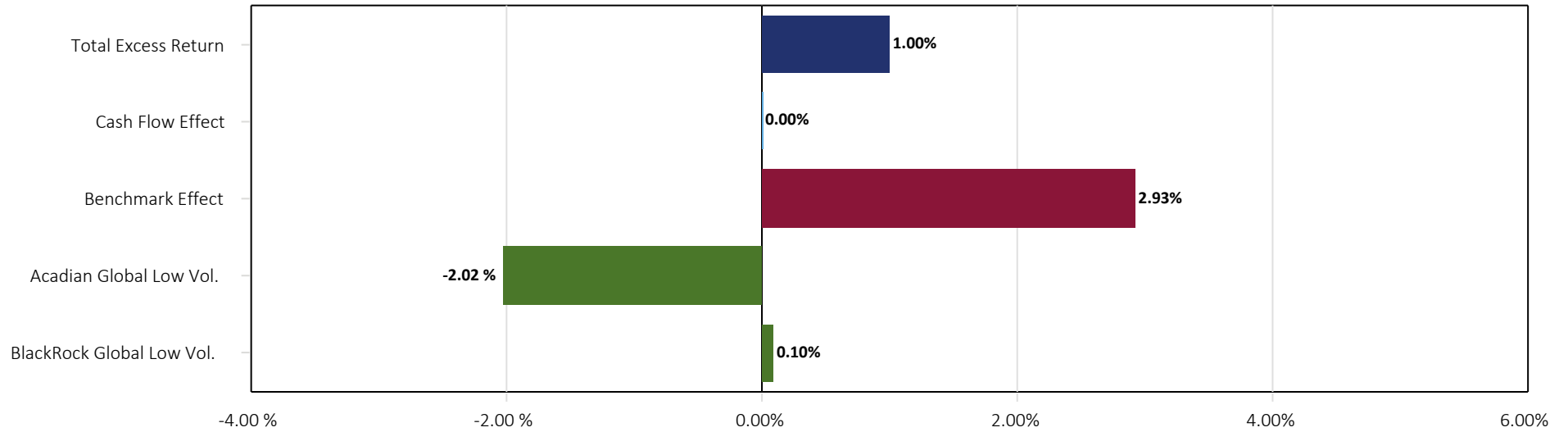
	Market Value \$	Allocation (%)
■ Acadian Global Low Vol.	235,130,766	50.1
■ BlackRock Global Low Vol.	233,932,304	49.9

# Asset Class Attribution

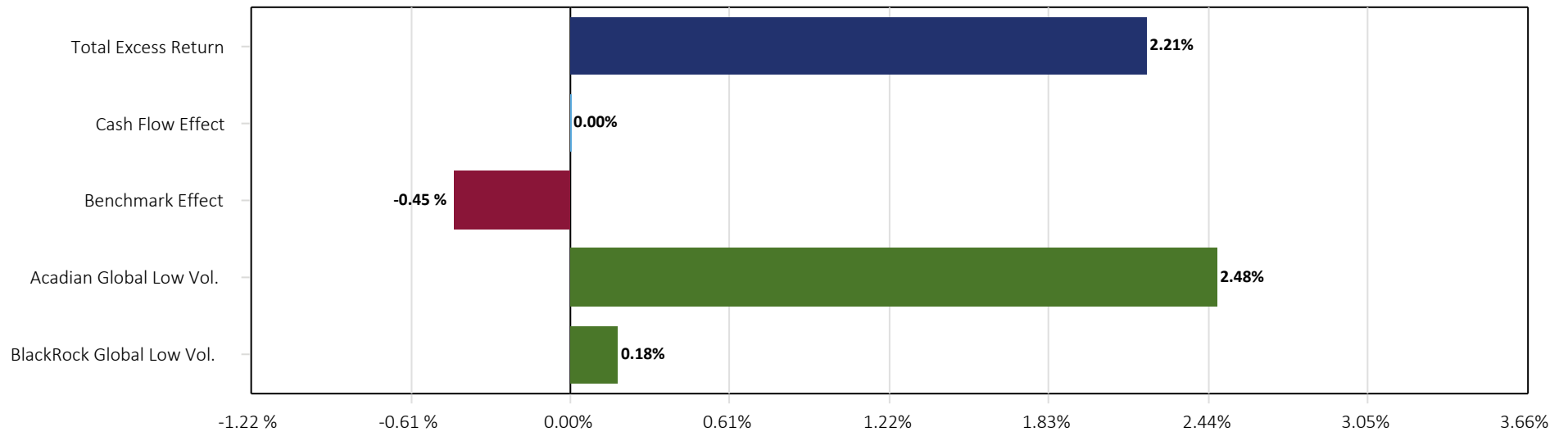
## Global Low Volatility Composite

Periods Ended March 31, 2023

### 1 Quarter



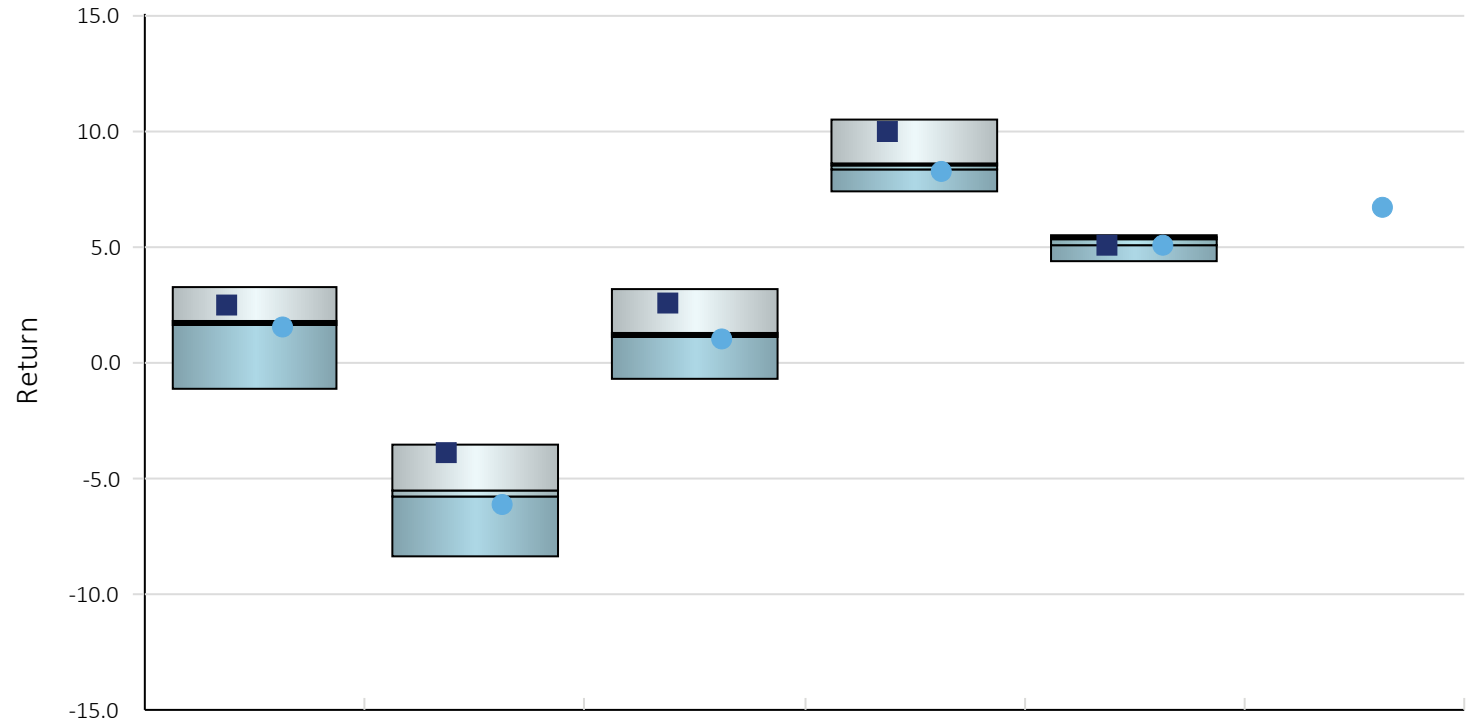
### 1 Year



# Peer Group Analysis

Global Low Volatility Composite

Periods Ended March 31, 2023



	<b>1 Quarter</b>	<b>1 Year</b>	<b>2 Years</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ Global Low Volatility Composite	2.53 (12)	-3.90 (8)	2.62 (9)	10.01 (12)	5.11 (64)	
● MSCI AC World Minimum Volatility Index (Net)	1.53 (94)	-6.10 (92)	0.99 (90)	8.25 (79)	5.05 (77)	6.73 ( )
5th Percentile	3.26	-3.56	3.21	10.49	5.49	
1st Quartile	1.78	-5.55	1.31	8.64	5.45	
Median	1.72	-5.75	1.25	8.54	5.31	
3rd Quartile	1.66	-5.81	1.15	8.39	5.07	
95th Percentile	-1.14	-8.34	-0.66	7.39	4.39	
Population	46	46	46	39	29	0

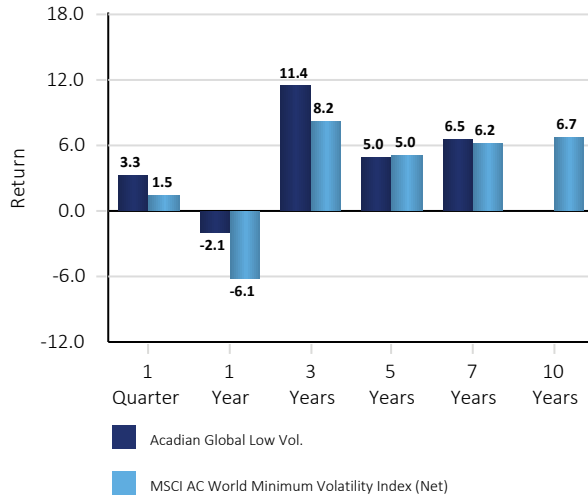
Parenteses contain percentile rankings.  
Calculation based on monthly periodicity.

# Performance Summary

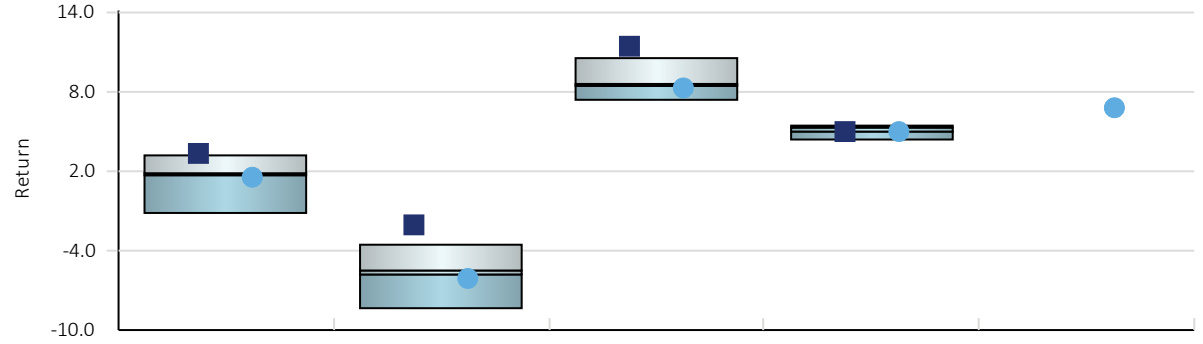
Acadian Global Low Vol.

Periods Ended March 31, 2023

## Comparative Performance

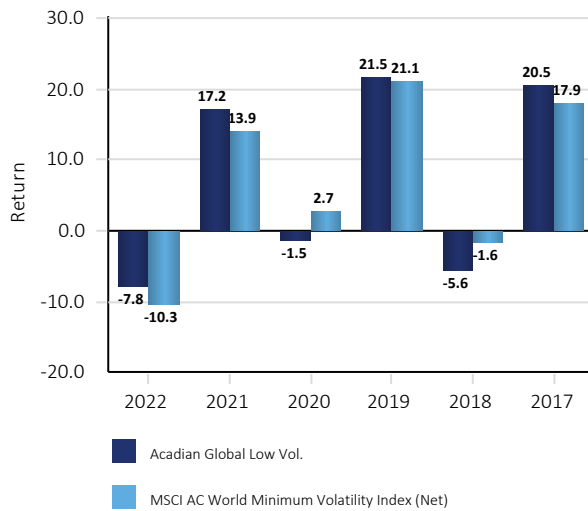


## Peer Group Analysis: Global Low Volatility Equity Custom Peer Group

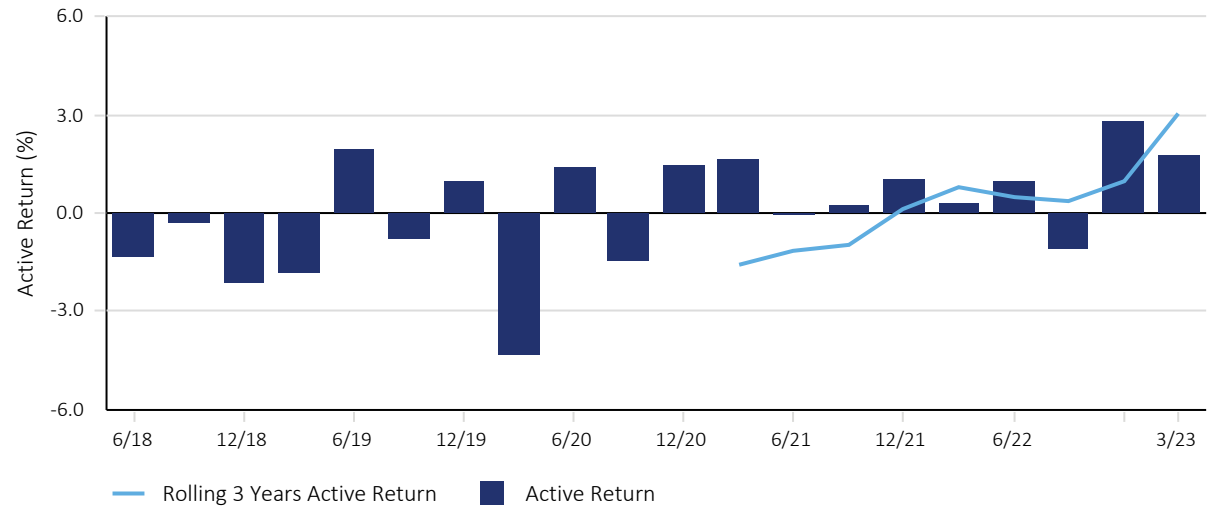


	Quarter	1 Year	3 Years	5 Years	10 Years
Fund	3.32 (3)	-2.06 (1)	11.38 (1)	4.98 (83)	-
Benchmark	1.53 (94)	-6.10 (92)	8.25 (79)	5.05 (77)	6.73 ( )
Median	1.72	-5.75	8.54	5.31	-

## Comparative Performance



## Rolling 3 Years Performance



## Holdings & Attribution

Acadian Global Low Vol.

Periods Ended March 31, 2023

### Portfolio Characteristics

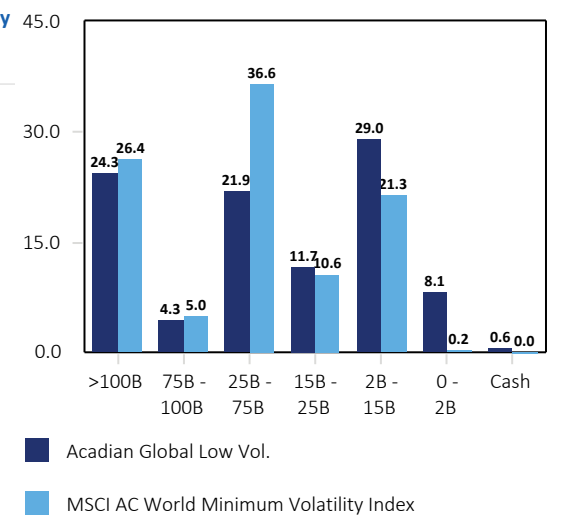
	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	153,513,990,827	102,137,702,167
Median Mkt. Cap \$	2,535,331,220	16,303,430,000
Price/Earnings ratio	14.8	16.5
Price/Book ratio	3.6	3.3
5 Yr. EPS Growth (%)	12.6	11.3
Current Yield (%)	3.0	3.0
Beta (5 Years, Monthly)	1.08	1.00
Number of Stocks	356	377

### Top 10 Holdings

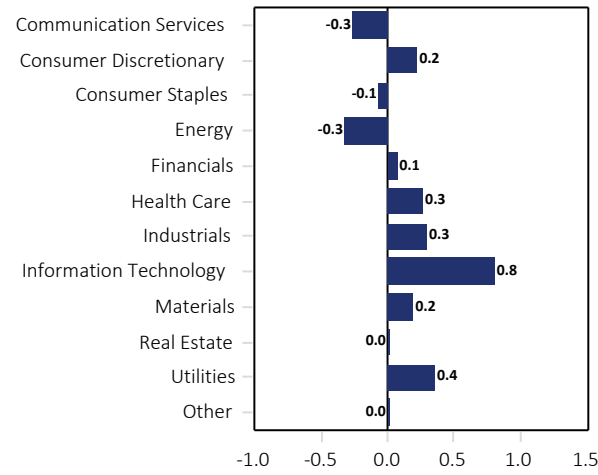
	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	2.1	0.0	2.1	27.1
Hershey Co (The)	1.5	1.0	0.5	10.3
Juniper Networks Inc	1.4	0.1	1.3	8.5
Gilead Sciences Inc	1.2	1.3	-0.1	-2.4
Cisco Systems Inc	1.2	0.7	0.5	10.6
Nippon Telegraph & Telephone Corp Ntt	1.2	0.9	0.3	6.0
Microsoft Corp	1.2	0.4	0.8	20.5
Wolters Kluwer NV	1.2	0.0	1.2	21.2
JAPAN TOBACCO INC	1.2	0.0	1.2	
RELX PLC	1.2	0.0	1.2	17.6

% of Portfolio 13.4 4.4 9.0

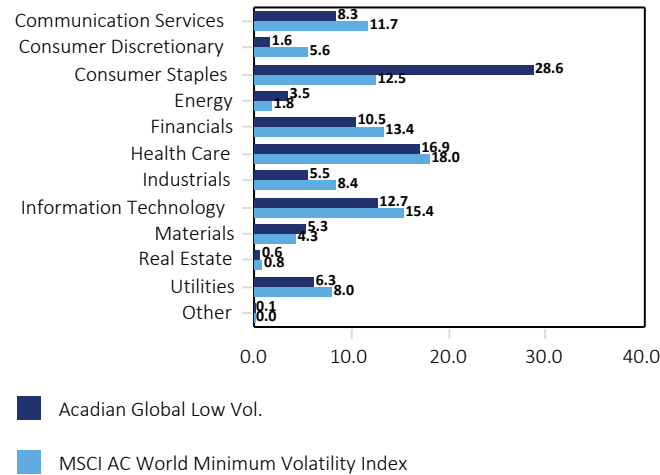
### Distribution of Market Capitalization (%)



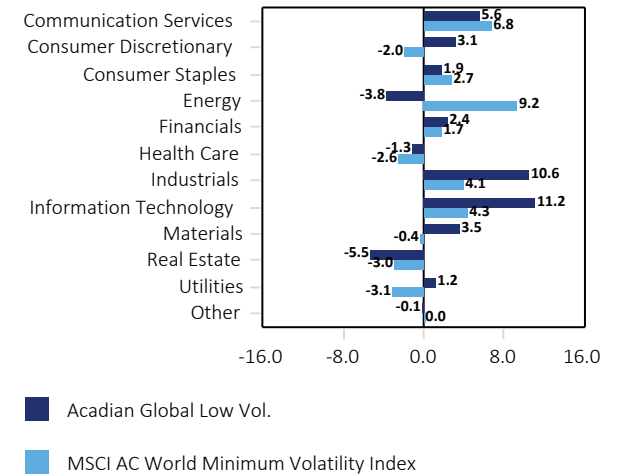
### Total Attribution



### Allocation



### Performance



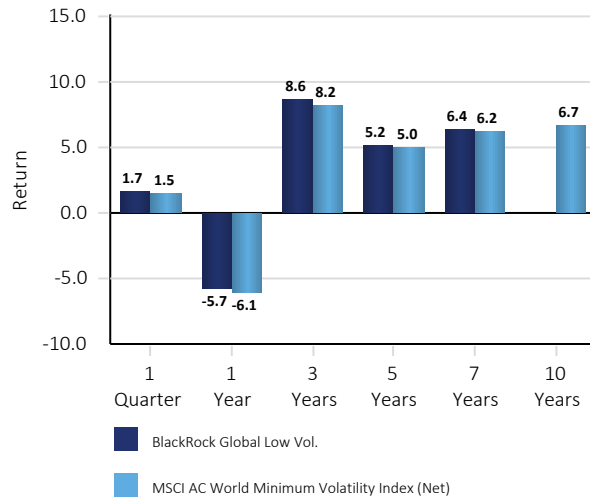


# Performance Summary

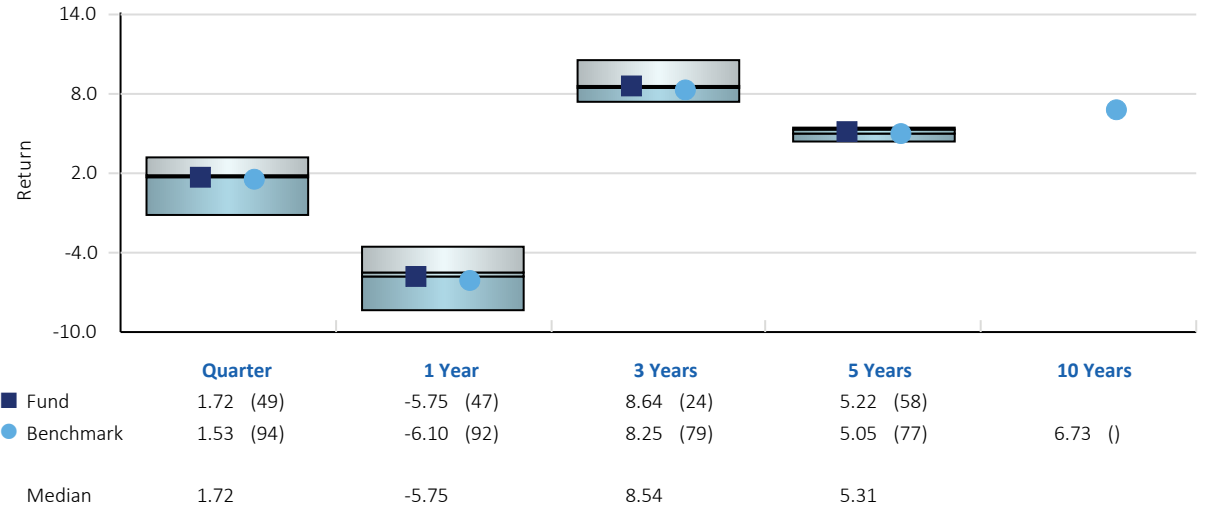
BlackRock Global Low Vol.

Periods Ended March 31, 2023

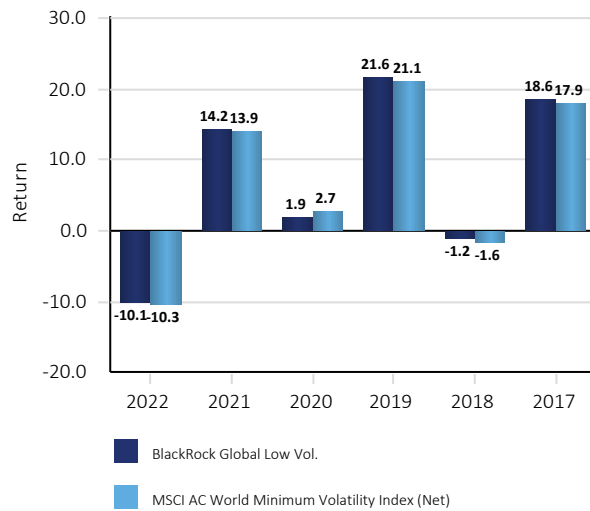
## Comparative Performance



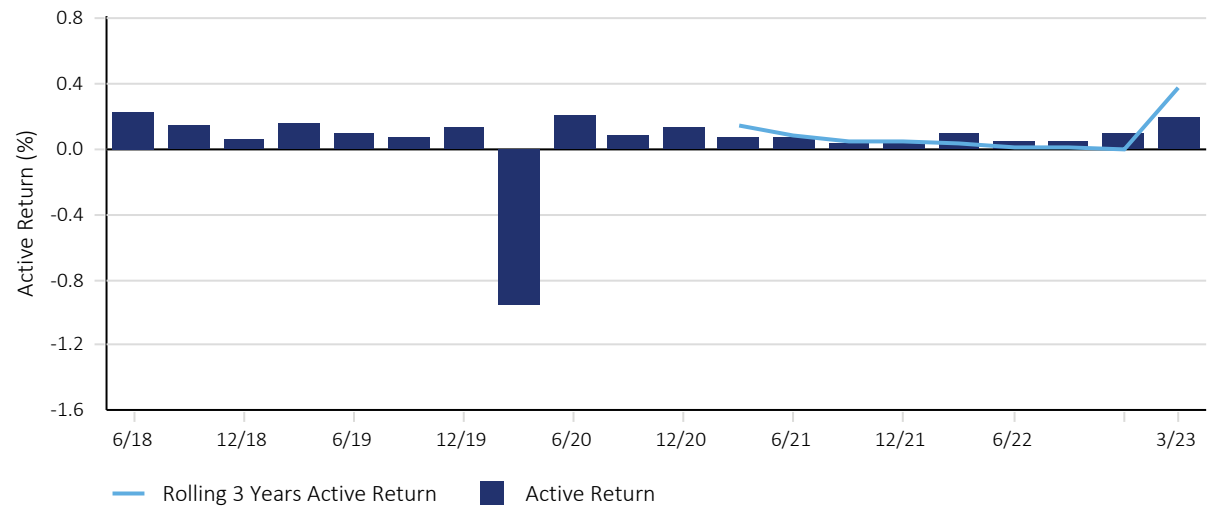
## Peer Group Analysis: Global Low Volatility Equity Custom Peer Group



## Comparative Performance



## Rolling 3 Years Performance



## Holdings & Attribution

BlackRock Global Low Vol.

Periods Ended March 31, 2023

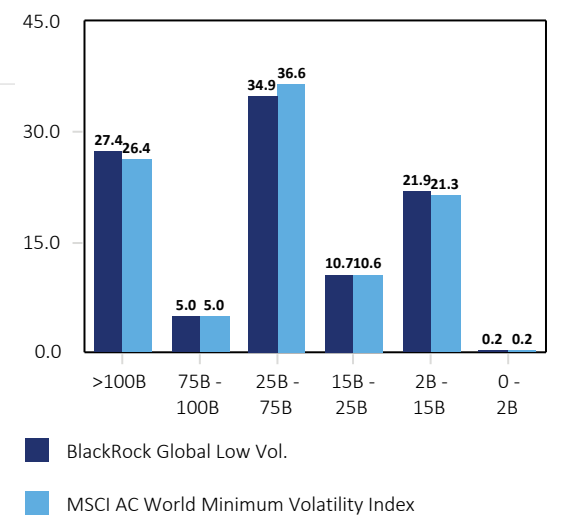
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	107,305,781,336	102,137,702,167
Median Mkt. Cap \$	16,426,868,908	16,303,430,000
Price/Earnings ratio	20.2	16.5
Price/Book ratio	3.4	3.3
5 Yr. EPS Growth (%)	12.0	11.3
Current Yield (%)	2.2	3.0
Beta (5 Years, Monthly)	1.02	1.00
Number of Stocks	388	377

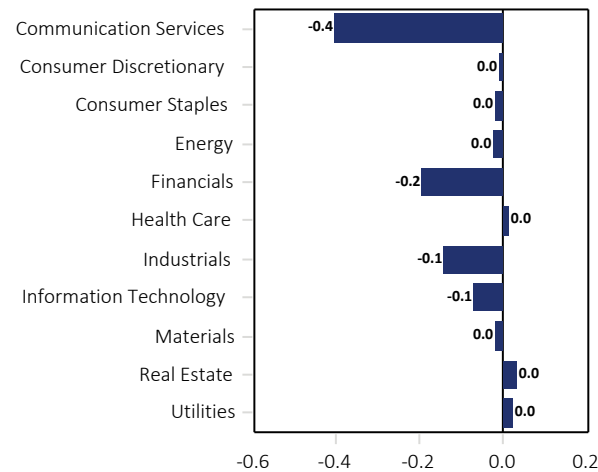
### Top 10 Holdings

	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Merck & Co Inc	1.5	1.5	0.0	-3.5
Waste Management Inc.	1.5	1.5	0.0	4.5
PepsiCo Inc	1.4	1.3	0.1	1.6
Johnson & Johnson	1.3	1.3	0.0	-11.6
Gilead Sciences Inc	1.3	1.3	0.0	-2.4
Motorola Solutions Inc	1.3	1.3	0.0	11.4
Walmart Inc	1.2	1.2	0.0	4.4
ROCHE HOLDING AG	1.2	0.0	1.2	
Verizon Communications Inc	1.2	1.2	0.0	0.3
Consolidated Edison Inc.	1.1	1.1	0.0	1.3
% of Portfolio	13.0	11.7	1.3	

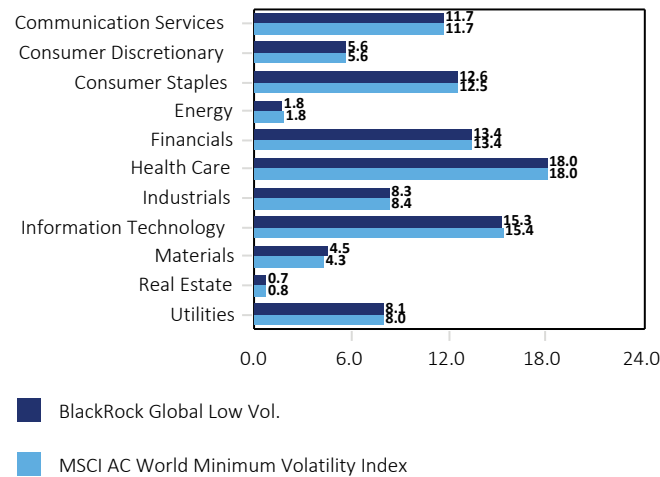
### Distribution of Market Capitalization (%)



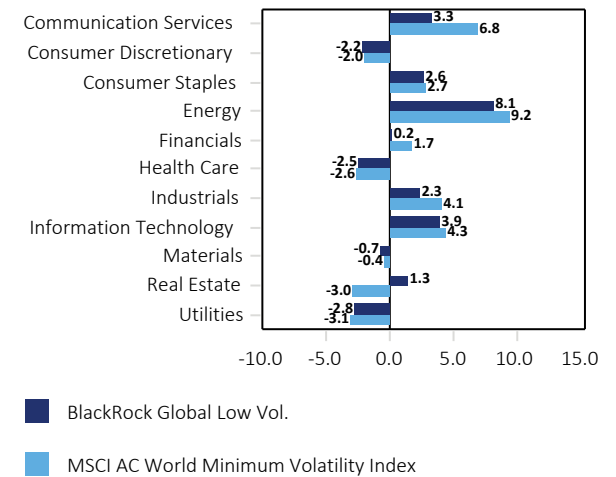
### Total Attribution



### Allocation



### Performance



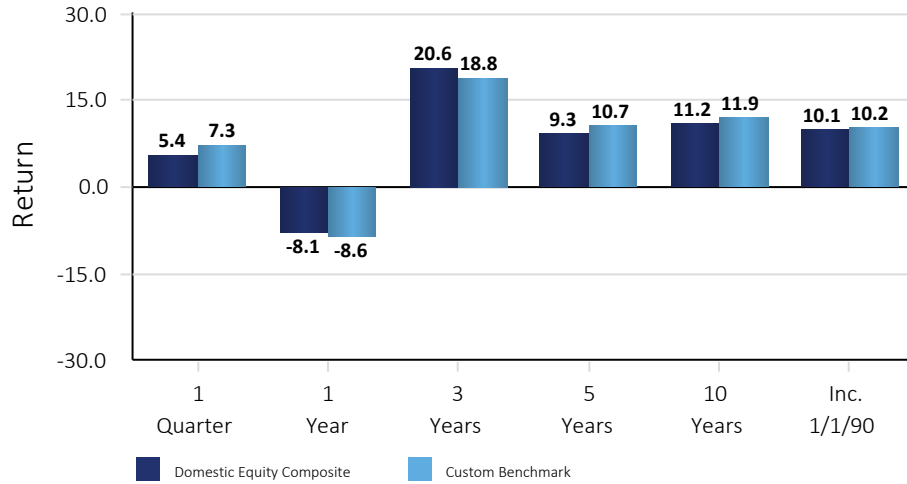
# Domestic Equity Composite

# Composite Performance Summary

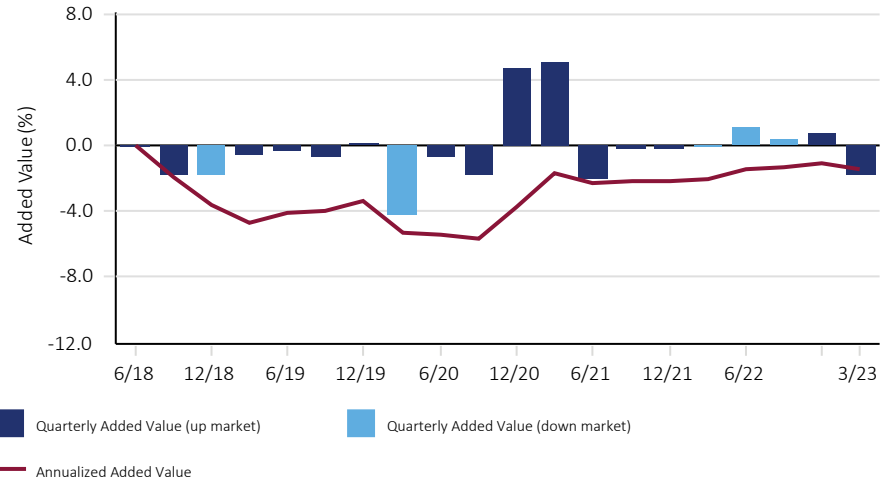
## Domestic Equity Composite

Periods Ended March 31, 2023

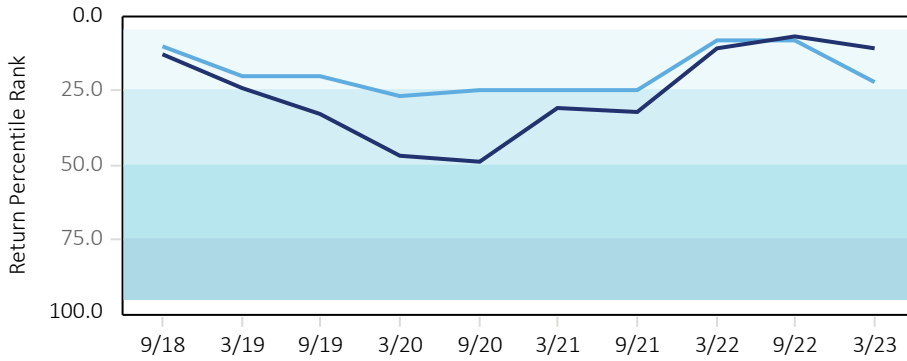
### Comparative Performance



### Added Value History

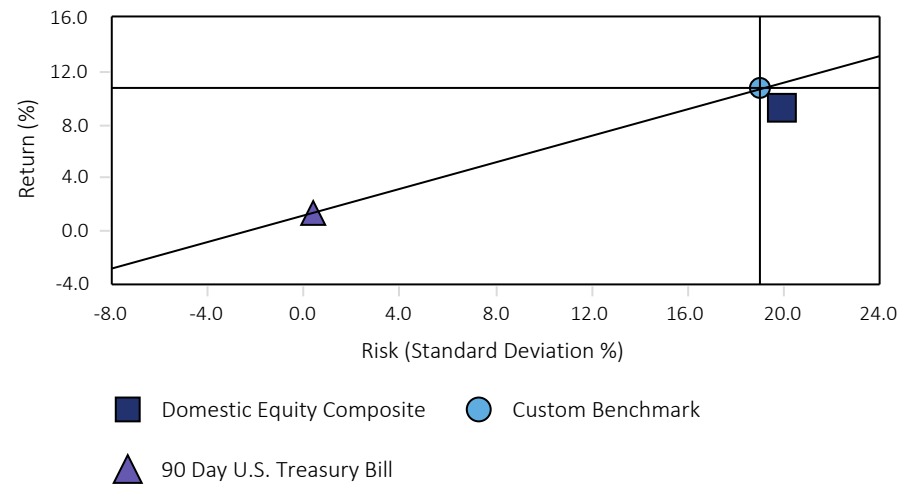


### Rolling Percentile Rank: IM U.S. Equity ALL (MA)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Domestic Equity Composite	10	5 (50%)	5 (50%)	0 (0%)	0 (0%)
Benchmark	10	9 (90%)	1 (10%)	0 (0%)	0 (0%)

### Risk and Return 04/1/18 - 03/31/23

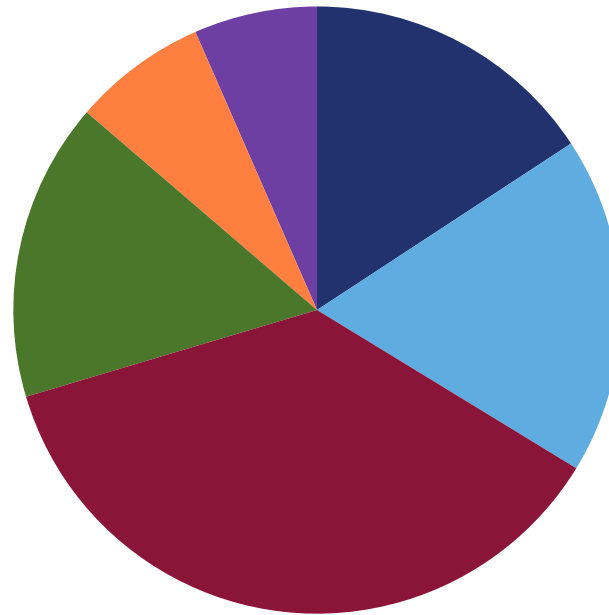


# Asset Allocation By Manager

Domestic Equity Composite

Periods Ended March 31, 2023

**Mar-2023 : 395,588,339**



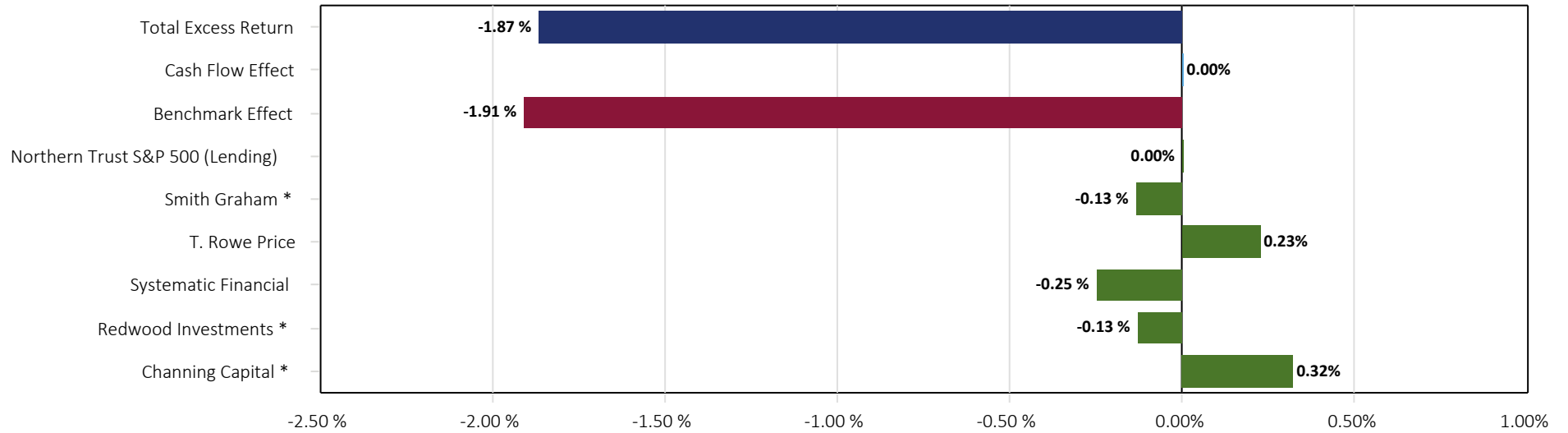
	Market Value \$	Allocation (%)
■ Northern Trust S&P 500 (Lending)	62,341,740	15.8
■ Smith Graham *	71,061,159	18.0
■ T. Rowe Price	145,041,055	36.7
■ Systematic Financial	62,936,354	15.9
■ Redwood Investments *	28,255,133	7.1
■ Channing Capital *	25,952,898	6.6

# Asset Class Attribution

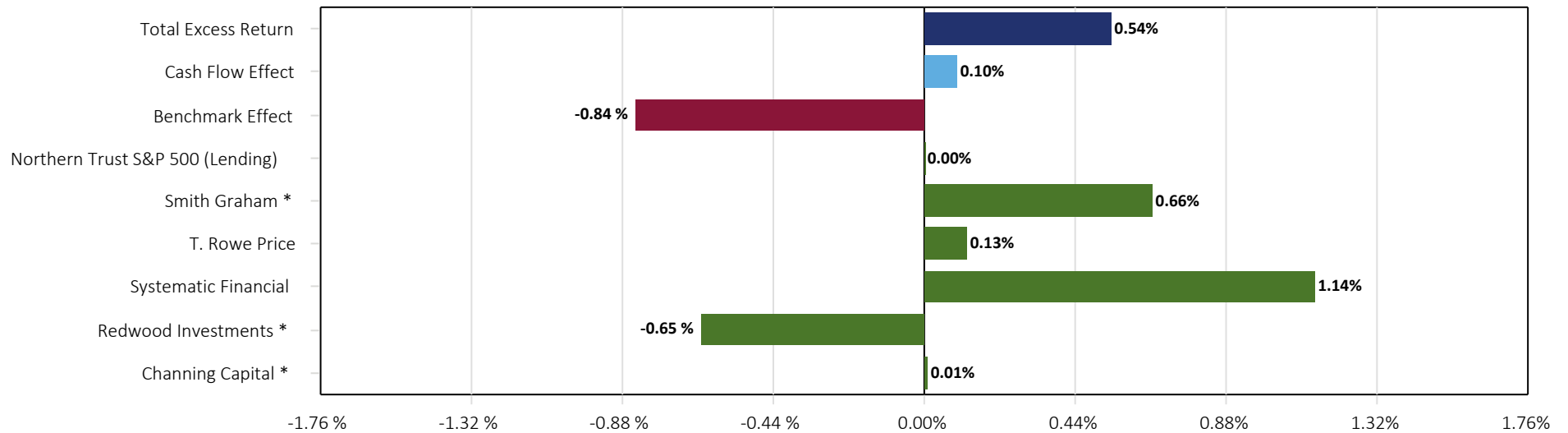
## Domestic Equity Composite

Periods Ended March 31, 2023

### 1 Quarter



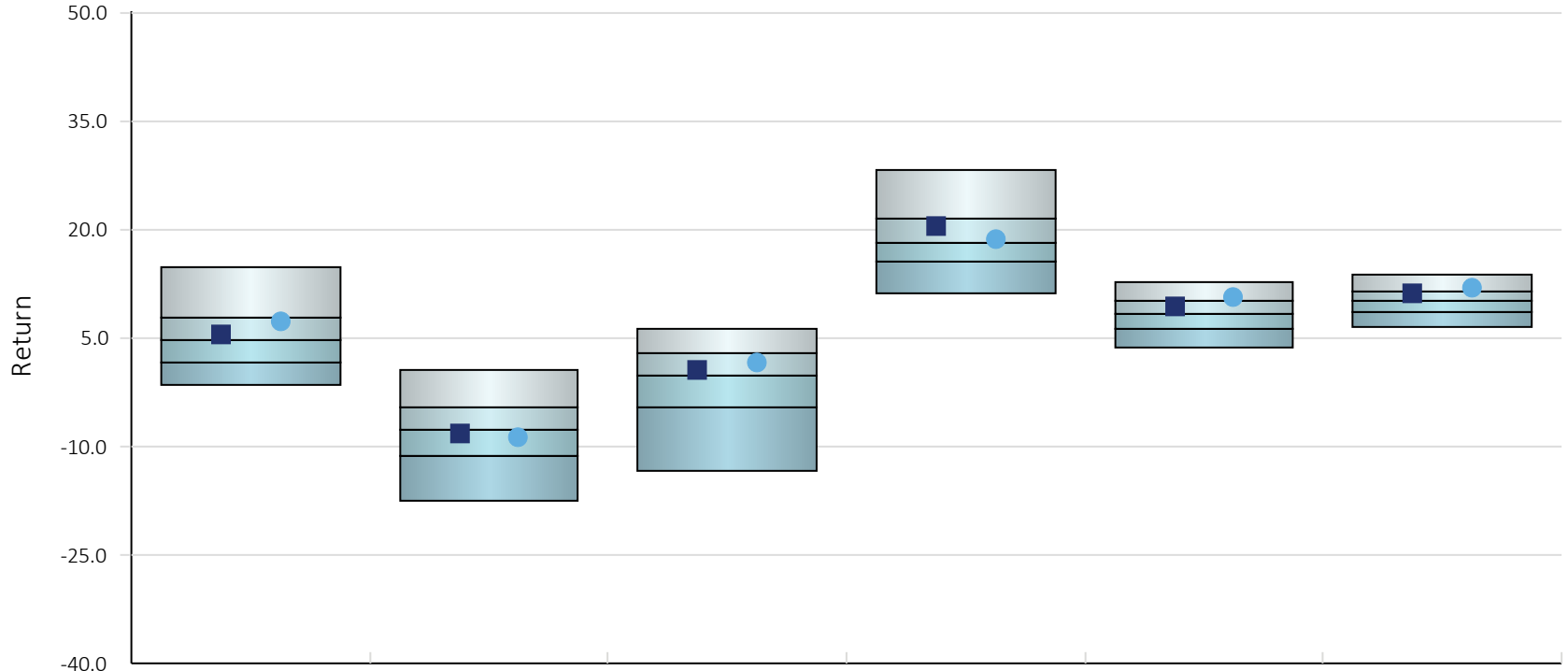
### 1 Year



# Peer Group Analysis

## Domestic Equity Composite

Periods Ended March 31, 2023



	<b>1 Quarter</b>	<b>1 Year</b>	<b>2 Years</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ Domestic Equity Composite	5.42 (47)	-8.08 (54)	0.69 (46)	20.60 (32)	9.31 (37)	11.18 (33)
● Custom Benchmark	7.29 (31)	-8.62 (59)	1.66 (37)	18.80 (45)	10.71 (20)	11.91 (21)
5th Percentile	14.92	0.51	6.35	28.34	12.88	13.70
1st Quartile	7.86	-4.66	2.92	21.53	10.25	11.57
Median	4.84	-7.76	-0.10	18.32	8.36	10.10
3rd Quartile	1.55	-11.22	-4.48	15.71	6.38	8.71
95th Percentile	-1.35	-17.52	-13.40	11.25	3.75	6.68
Population	1,676	1,658	1,632	1,602	1,534	1,238

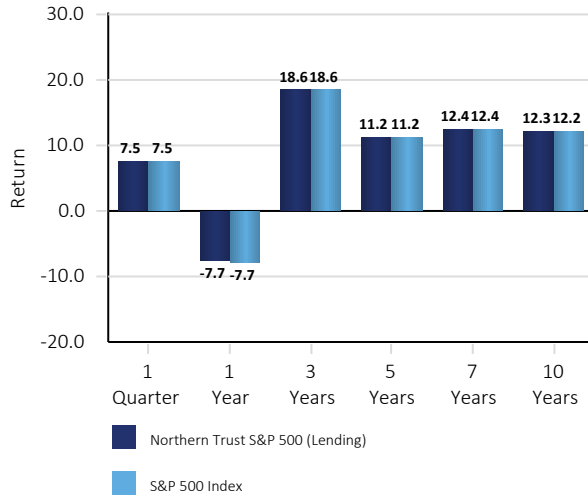
Parenteses contain percentile rankings.  
Calculation based on monthly periodicity.

# Performance Summary

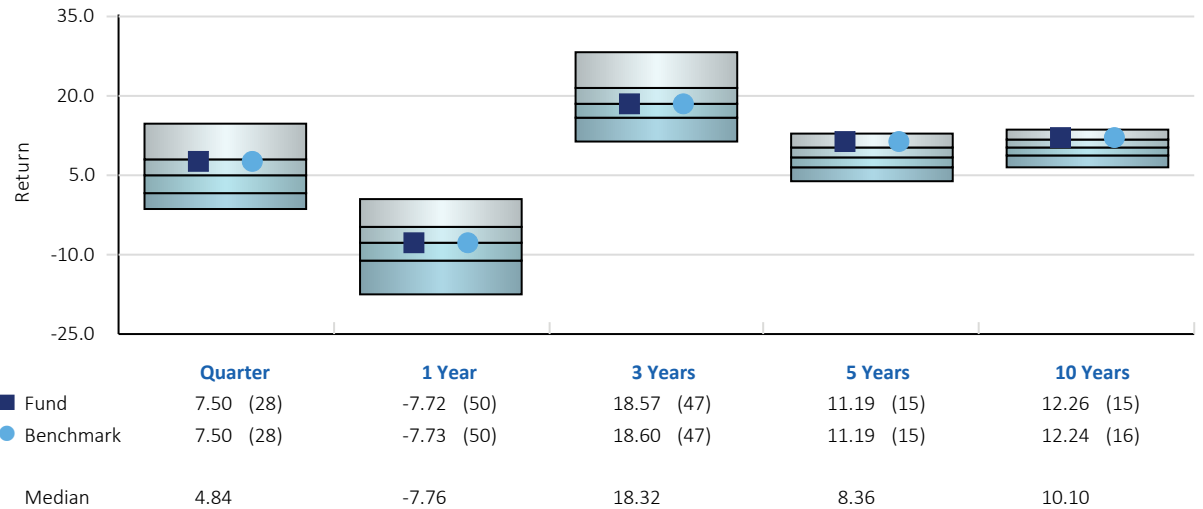
Northern Trust S&P 500 (Lending)

Periods Ended March 31, 2023

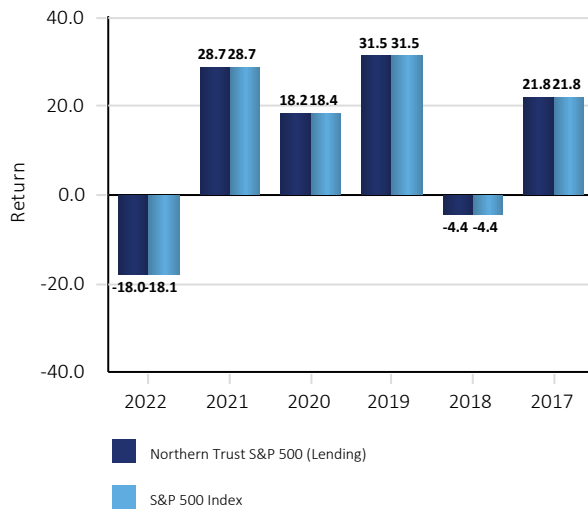
## Comparative Performance



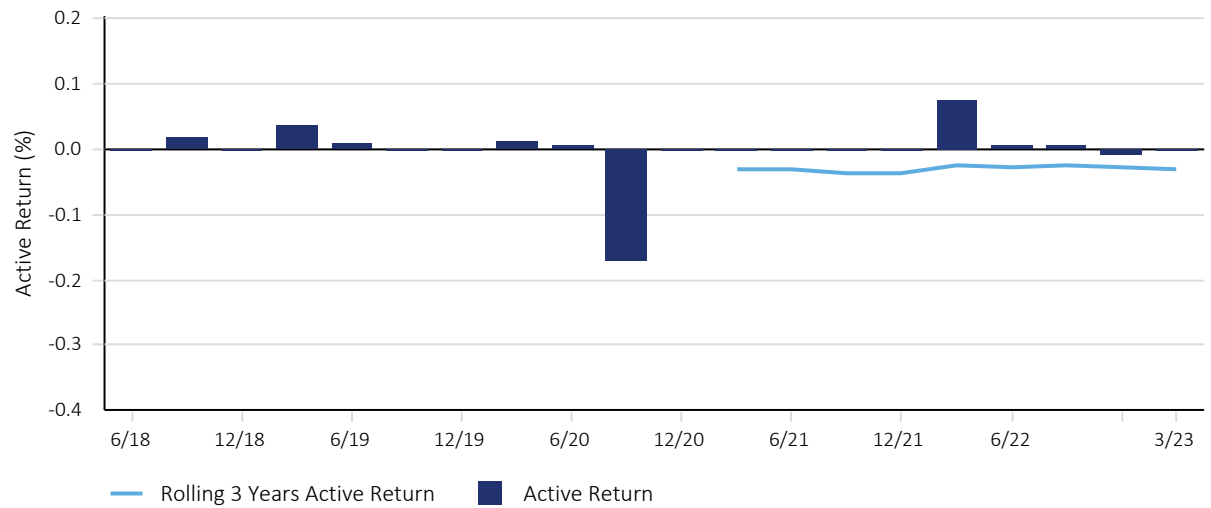
## Peer Group Analysis: IM U.S. Equity (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance





## Holdings & Attribution

Northern Trust S&P 500 (Lending)

Periods Ended March 31, 2023

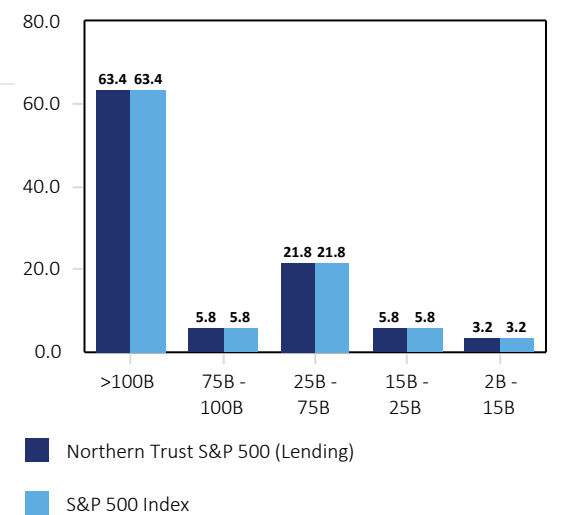
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	536,687,849,342	536,687,849,342
Median Mkt. Cap \$	30,282,840,000	30,282,840,000
Price/Earnings ratio	20.9	20.9
Price/Book ratio	4.2	4.2
5 Yr. EPS Growth (%)	19.0	19.0
Current Yield (%)	1.7	1.7
Beta (5 Years, Monthly)	1.00	1.00
Number of Stocks	503	503

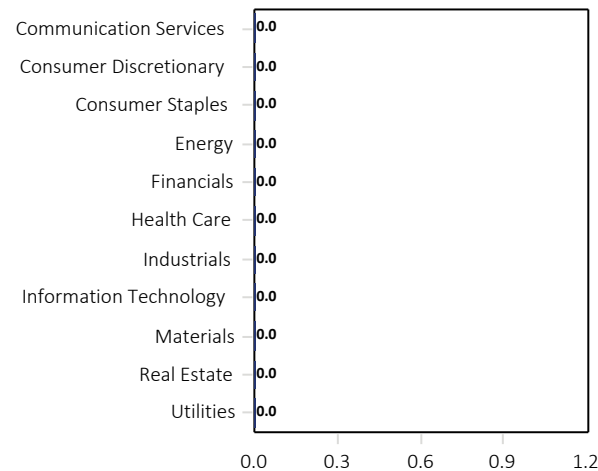
### Top 10 Holdings

	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	7.1	7.1	0.0	27.1
Microsoft Corp	6.2	6.2	0.0	20.5
Amazon.com Inc	2.7	2.7	0.0	23.0
NVIDIA Corporation	2.0	2.0	0.0	90.1
Alphabet Inc Class A	1.8	1.8	0.0	17.6
Tesla Inc	1.6	1.6	0.0	68.4
Berkshire Hathaway Inc	1.6	1.6	0.0	0.0
Alphabet Inc	1.6	1.6	0.0	17.2
Meta Platforms Inc	1.4	1.4	0.0	76.1
Exxon Mobil Corp	1.3	1.3	0.0	0.2
% of Portfolio	27.3	27.3	0.0	

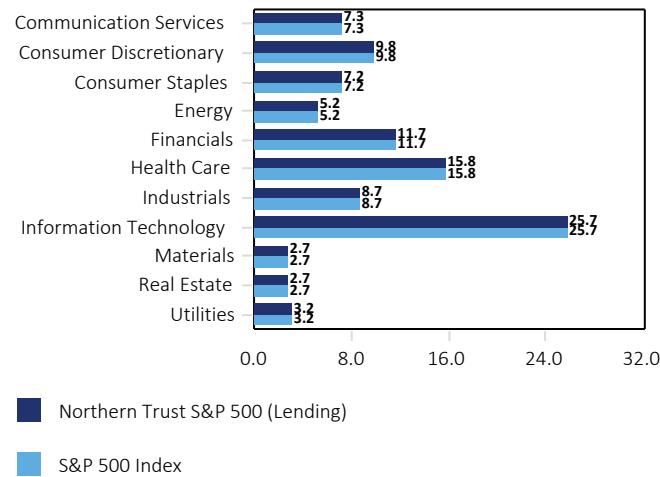
### Distribution of Market Capitalization (%)



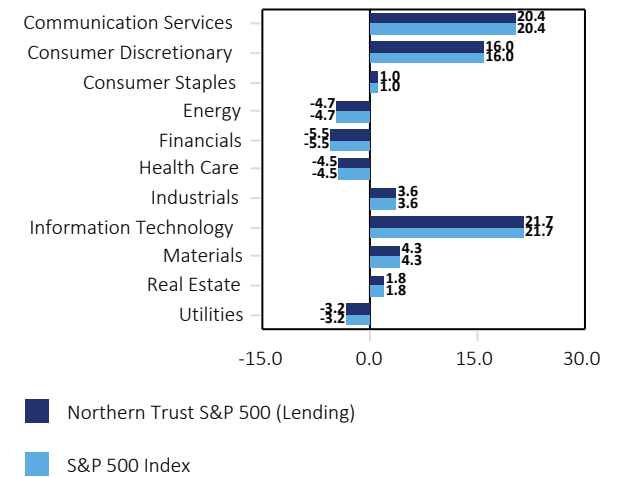
### Total Attribution



### Allocation



### Performance

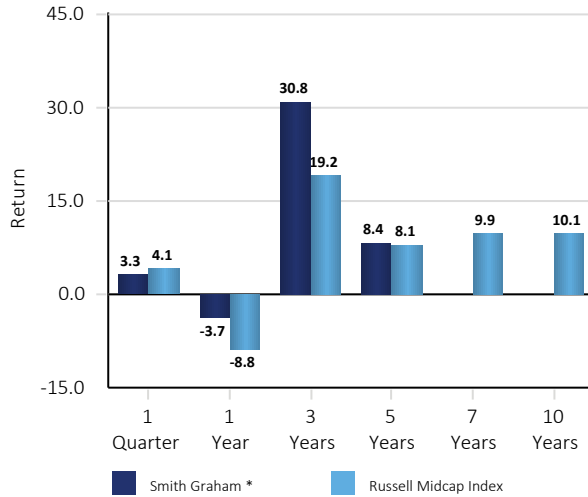


# Performance Summary

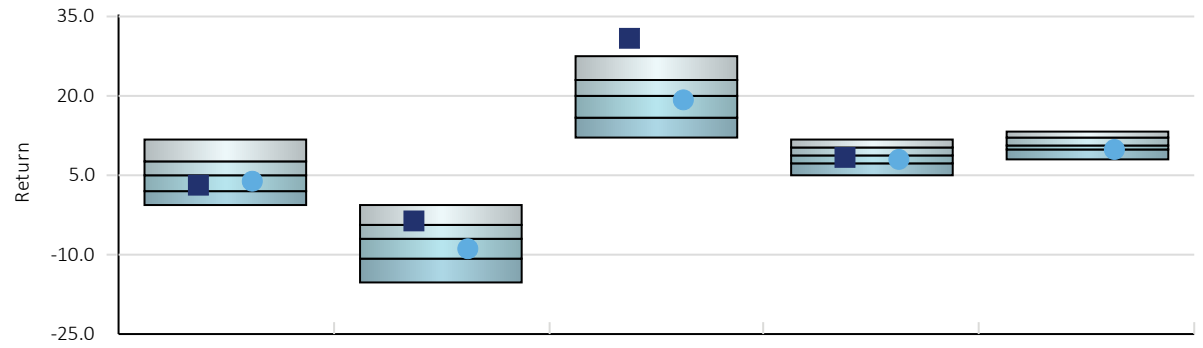
Smith Graham \*

Periods Ended March 31, 2023

## Comparative Performance

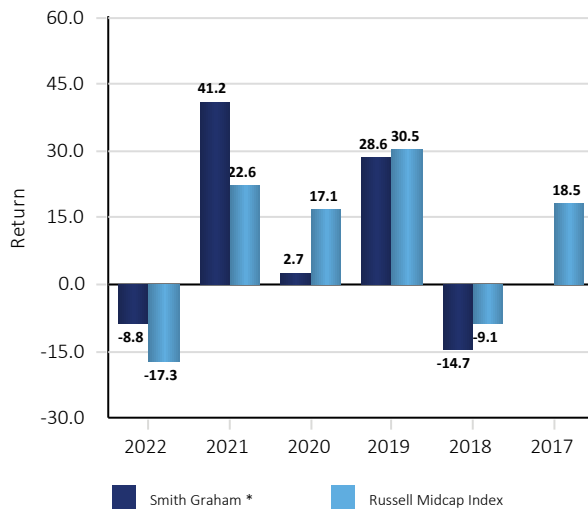


## Peer Group Analysis: IM U.S. Mid Cap Equity (SA+CF)

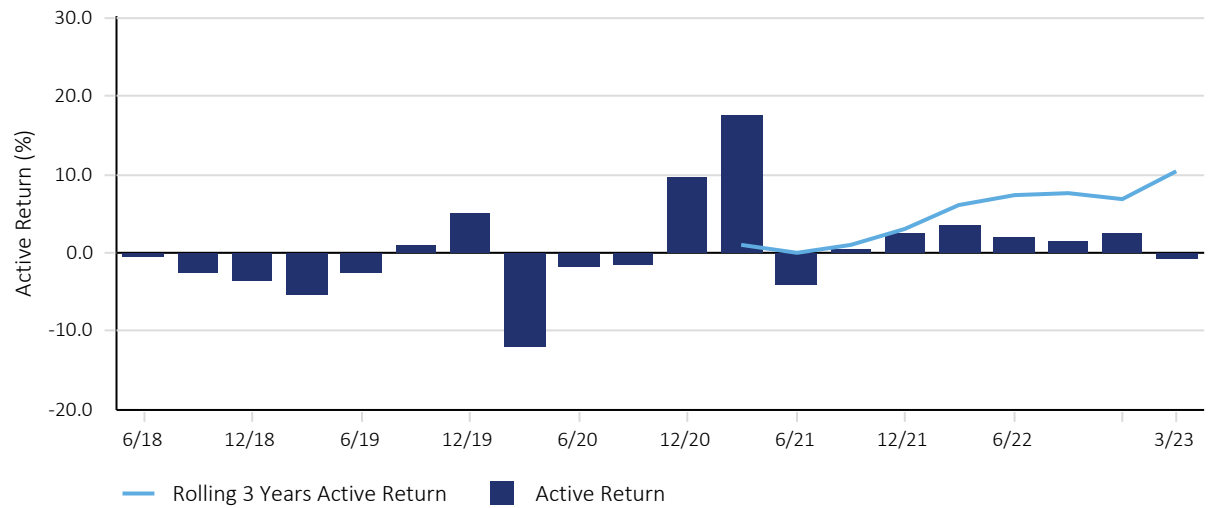


	Quarter	1 Year	3 Years	5 Years	10 Years
Fund	3.29 (70)	-3.72 (22)	30.83 (3)	8.37 (54)	
Benchmark	4.06 (60)	-8.78 (66)	19.20 (55)	8.05 (58)	10.05 (63)
Median	5.13	-6.82	20.05	8.58	10.79

## Comparative Performance



## Rolling 3 Years Performance



## Holdings & Attribution

Smith Graham \*

Periods Ended March 31, 2023

### Portfolio Characteristics

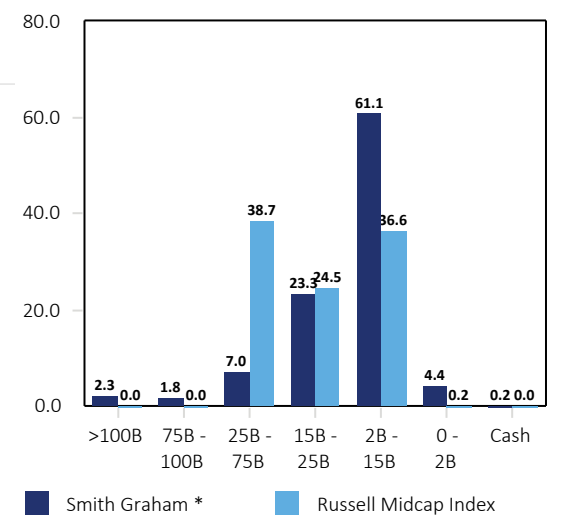
	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	15,928,986,719	22,290,914,118
Median Mkt. Cap \$	8,991,159,085	9,436,963,515
Price/Earnings ratio	9.7	17.3
Price/Book ratio	2.0	3.0
5 Yr. EPS Growth (%)	18.8	16.6
Current Yield (%)	1.8	1.7
Beta (5 Years, Monthly)	1.16	1.00
Number of Stocks	76	814

### Top 10 Holdings

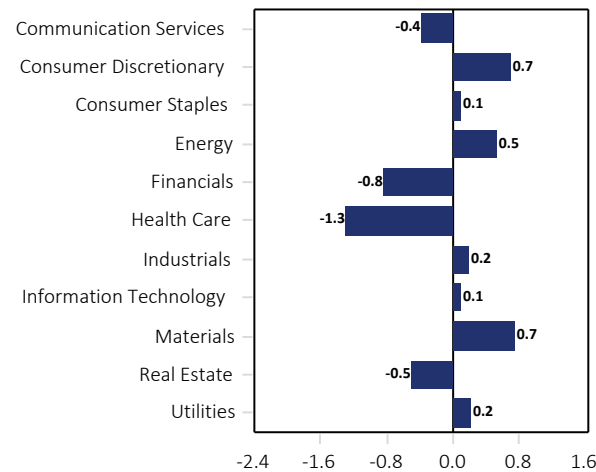
	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Jabil Inc	2.9	0.1	2.8	29.4
Quanta Services Inc.	2.8	0.2	2.6	16.9
Elevance Health Inc	2.3	0.0	2.3	-10.1
Sprouts Farmers Market Inc	2.1	0.0	2.1	8.2
Builders FirstSource Inc	2.1	0.1	2.0	36.8
AutoNation Inc	2.0	0.0	2.0	25.2
Reliance Steel & Aluminum Co	2.0	0.2	1.8	27.3
Tapestry Inc	1.9	0.1	1.8	14.0
Dick's Sporting Goods Inc.	1.9	0.1	1.8	18.8
Textron Inc	1.9	0.2	1.7	-0.2

% of Portfolio      21.9      1.0      20.9

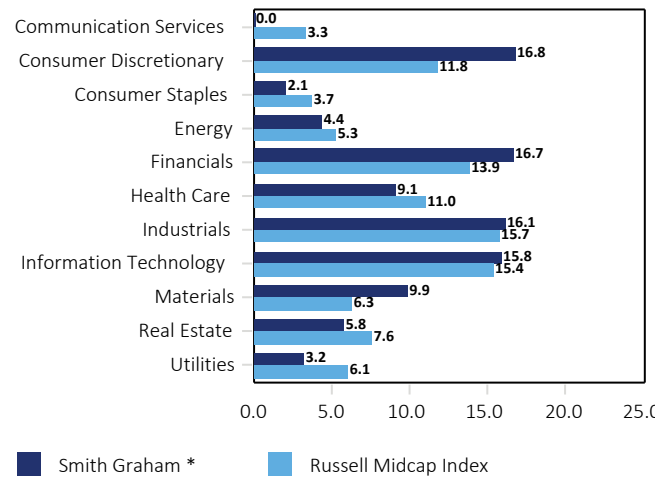
### Distribution of Market Capitalization (%)



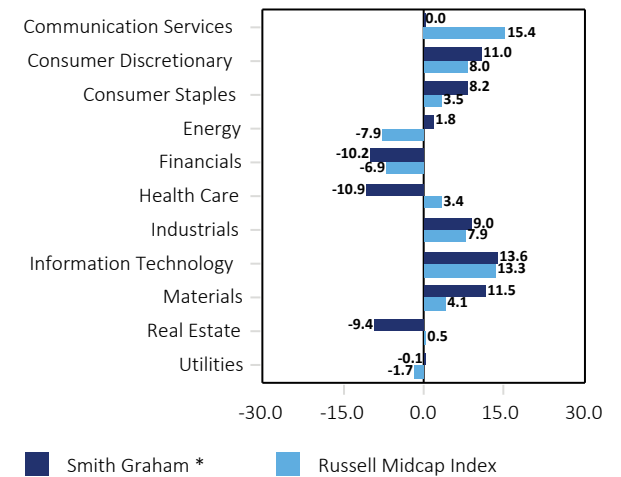
### Total Attribution



### Allocation



### Performance

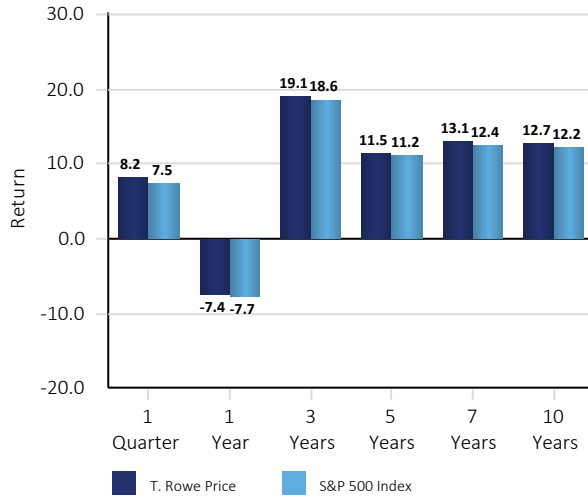


# Performance Summary

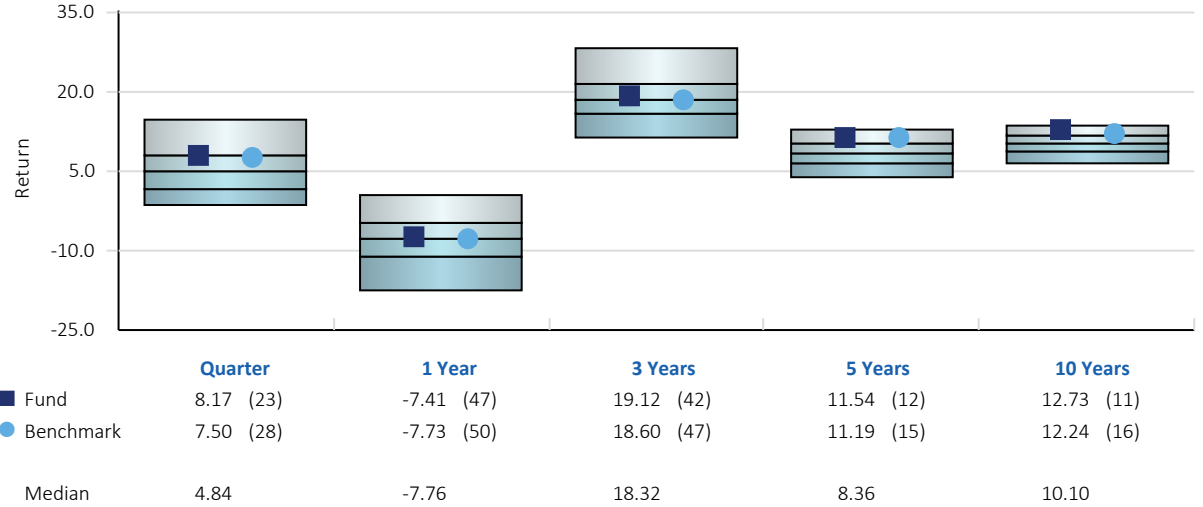
T. Rowe Price

Periods Ended March 31, 2023

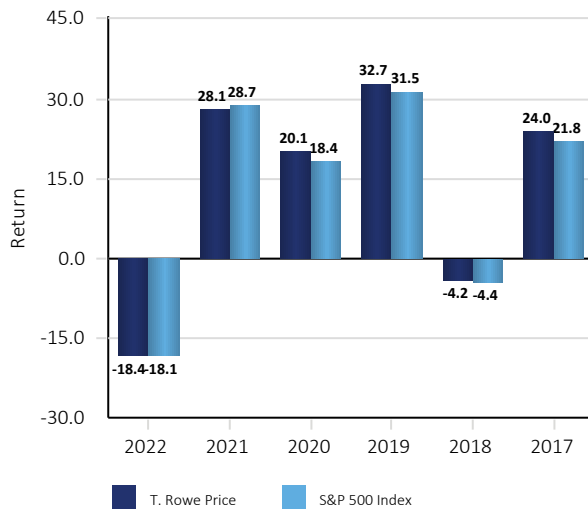
## Comparative Performance



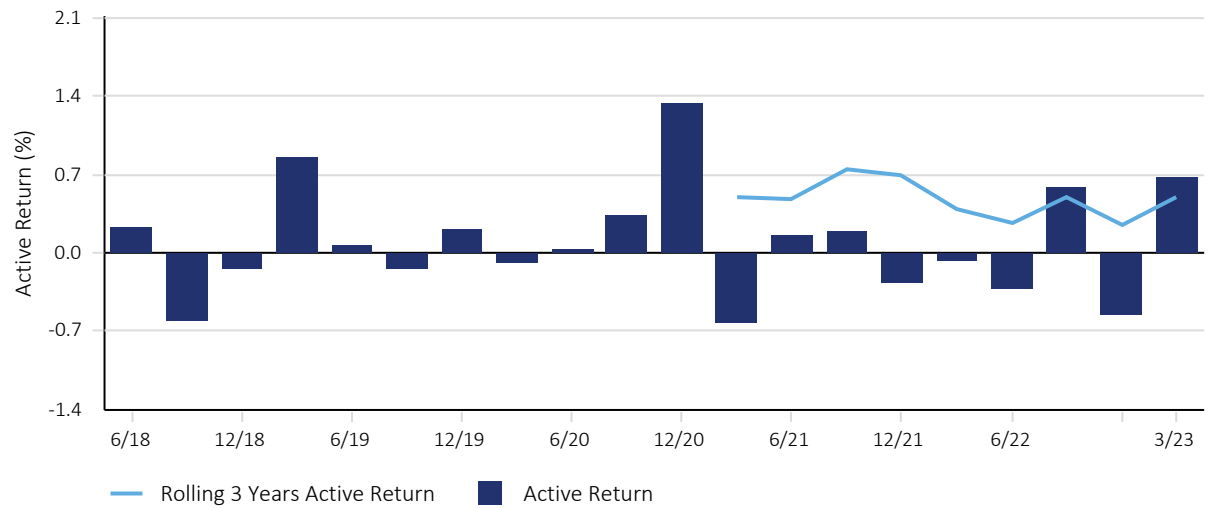
## Peer Group Analysis: IM U.S. Equity (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance



## Holdings & Attribution

T. Rowe Price

Periods Ended March 31, 2023

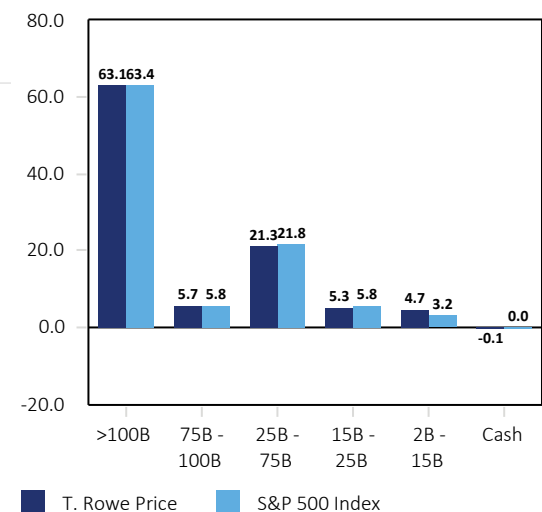
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	547,978,429,637	536,687,849,342
Median Mkt. Cap \$	46,820,227,670	30,282,840,000
Price/Earnings ratio	21.8	20.9
Price/Book ratio	4.4	4.2
5 Yr. EPS Growth (%)	17.9	19.0
Current Yield (%)	1.4	1.7
Beta (5 Years, Monthly)	1.01	1.00
Number of Stocks	281	503

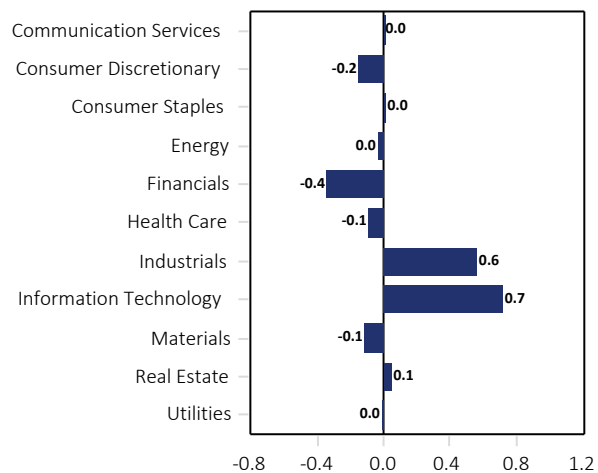
### Top 10 Holdings

	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	7.1	7.1	0.0	27.1
Microsoft Corp	6.7	6.2	0.5	20.5
Amazon.com Inc	2.7	2.7	0.0	23.0
NVIDIA Corporation	2.5	2.0	0.5	90.1
Alphabet Inc	2.1	1.6	0.5	17.2
Unitedhealth Group Inc	1.5	1.3	0.2	-10.5
Alphabet Inc Class A	1.4	1.8	-0.4	17.6
Exxon Mobil Corp	1.4	1.3	0.1	0.2
Meta Platforms Inc	1.4	1.4	0.0	76.1
Berkshire Hathaway Inc	1.3	1.6	-0.3	0.0
% of Portfolio	28.1	27.0	1.1	

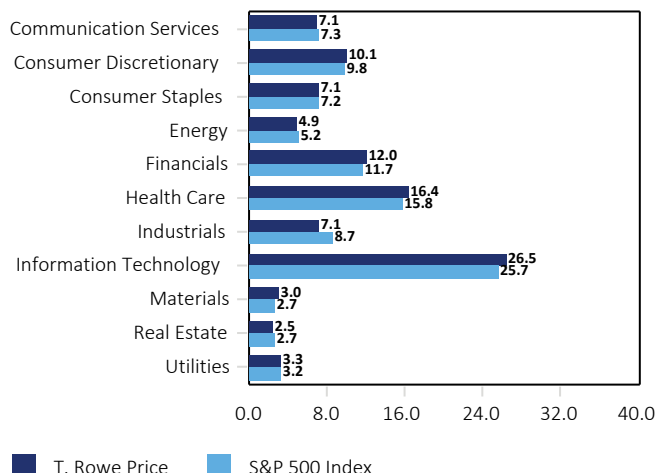
### Distribution of Market Capitalization (%)



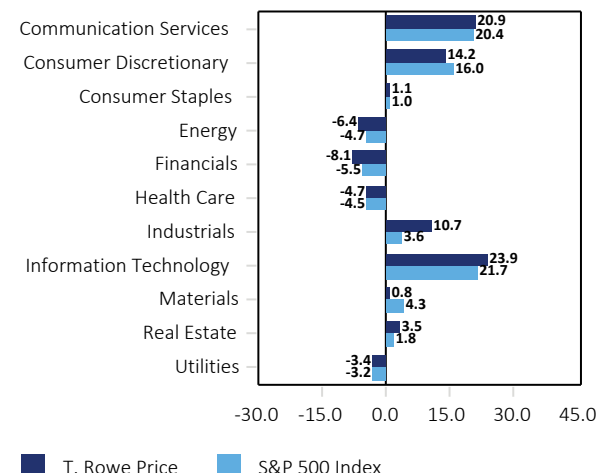
### Total Attribution



### Allocation



### Performance

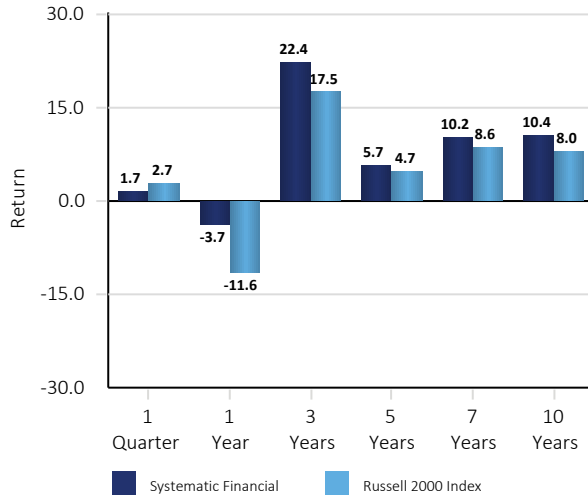


# Performance Summary

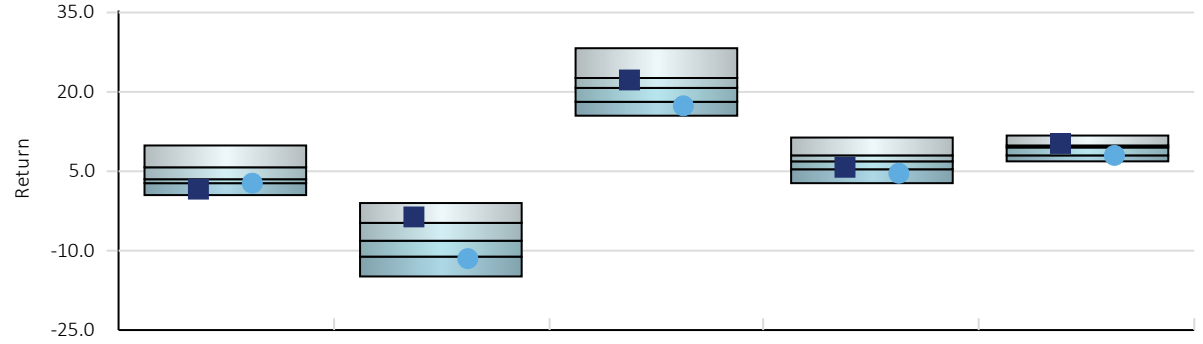
## Systematic Financial

Periods Ended March 31, 2023

### Comparative Performance

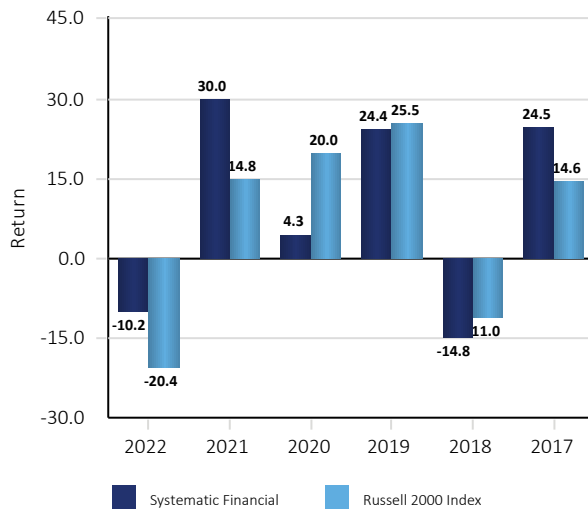


### Peer Group Analysis: IM U.S. Small Cap Core Equity (SA+CF)

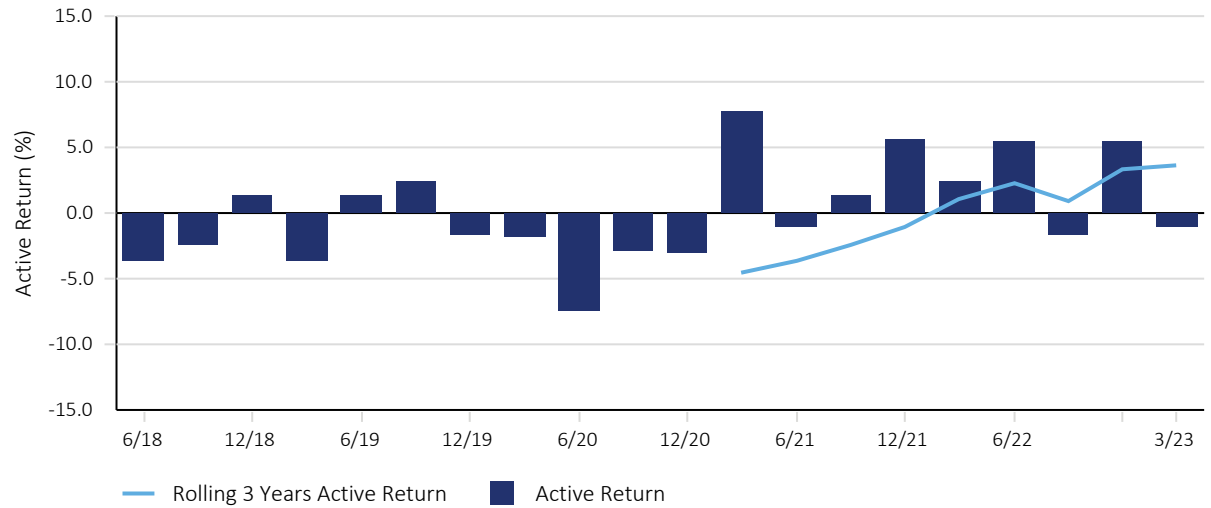


	Quarter	1 Year	3 Years	5 Years	10 Years
<b>Fund</b>	1.72 (87)	-3.72 (13)	22.42 (26)	5.70 (68)	10.39 (15)
<b>Benchmark</b>	2.74 (75)	-11.61 (84)	17.51 (86)	4.71 (82)	8.04 (76)
<b>Median</b>	3.67	-8.00	20.64	6.83	9.55

### Comparative Performance



### Rolling 3 Years Performance



## Holdings & Attribution

### Systematic Financial

Periods Ended March 31, 2023

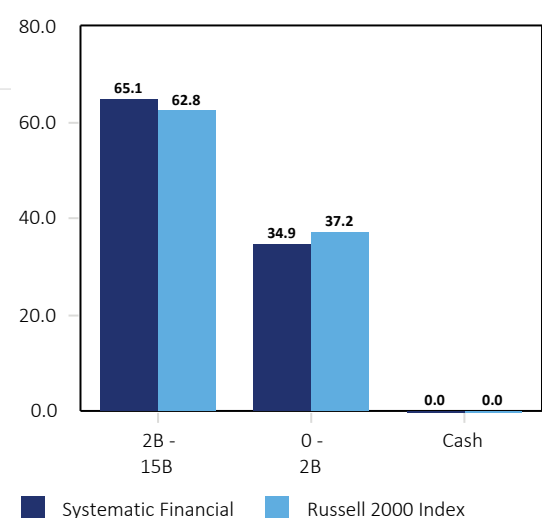
#### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	4,133,520,092	2,871,210,646
Median Mkt. Cap \$	2,504,343,290	938,606,260
Price/Earnings ratio	11.8	12.1
Price/Book ratio	1.9	2.4
5 Yr. EPS Growth (%)	16.6	18.5
Current Yield (%)	1.7	1.6
Beta (5 Years, Monthly)	0.89	1.00
Number of Stocks	147	1,921

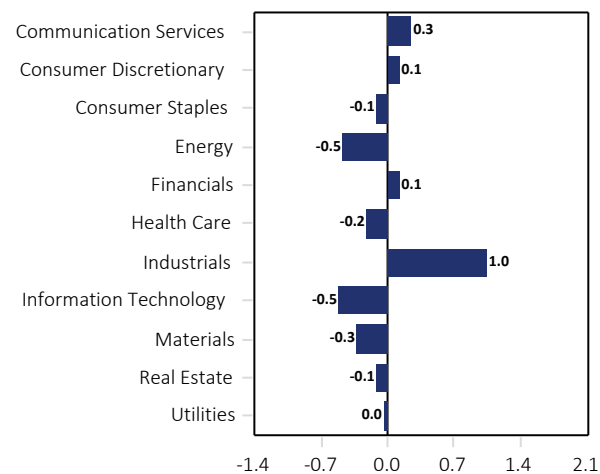
#### Top 10 Holdings

	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
First Citizens BancShares Inc	3.1	0.0	3.1	28.4
Magnolia Oil & Gas Corp	2.2	0.2	2.0	-6.2
EMCOR Group Inc.	1.8	0.3	1.5	9.9
NorthWestern Corp	1.7	0.1	1.6	-1.4
KBR Inc	1.6	0.0	1.6	4.5
Cross Country Healthcare Inc	1.5	0.0	1.5	-16.0
Comfort Systems USA Inc.	1.5	0.2	1.3	27.0
ICF International Inc	1.4	0.1	1.3	10.9
Mueller Industries Inc.	1.4	0.2	1.2	25.1
Curtiss-Wright Corp	1.3	0.0	1.3	5.7
% of Portfolio	17.5	1.1	16.4	

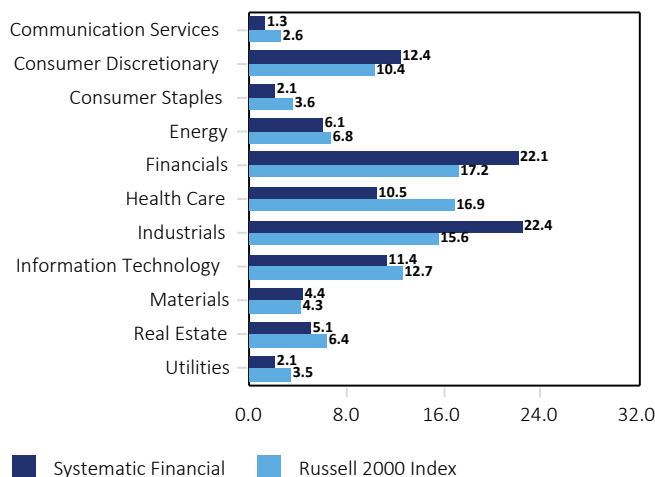
#### Distribution of Market Capitalization (%)



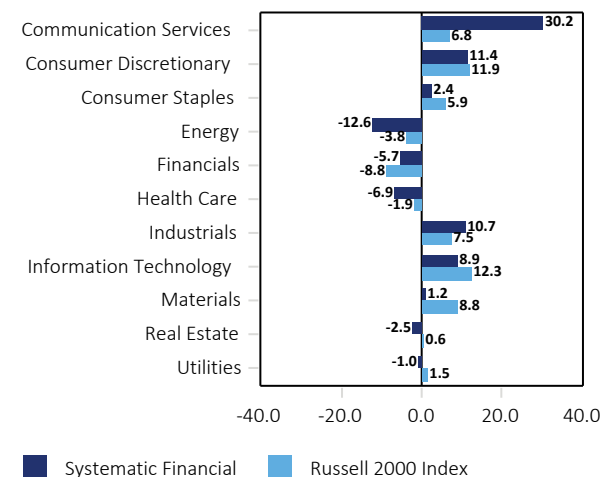
#### Total Attribution



#### Allocation



#### Performance

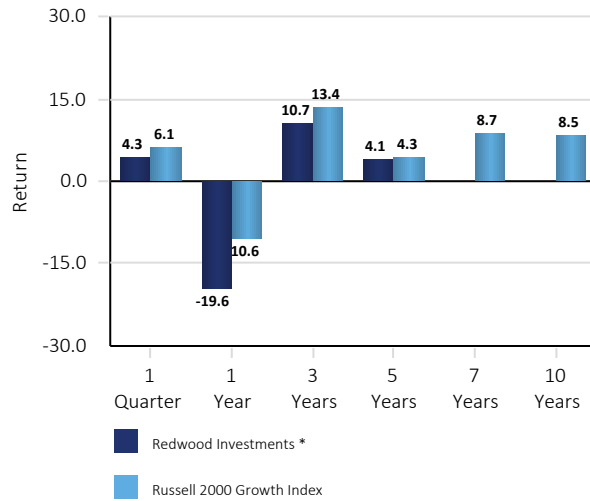


# Performance Summary

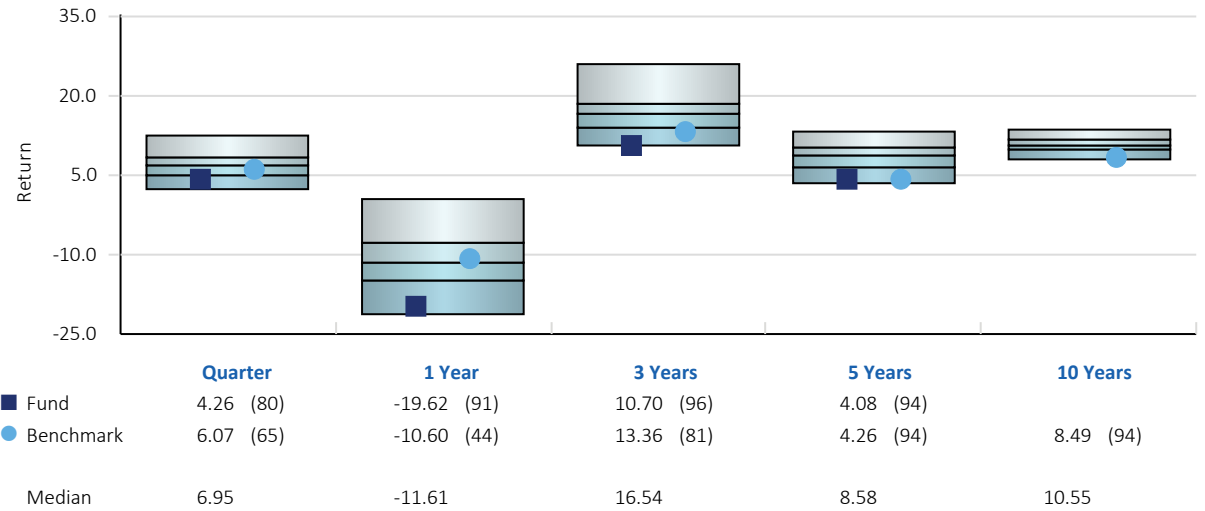
Redwood Investments \*

Periods Ended March 31, 2023

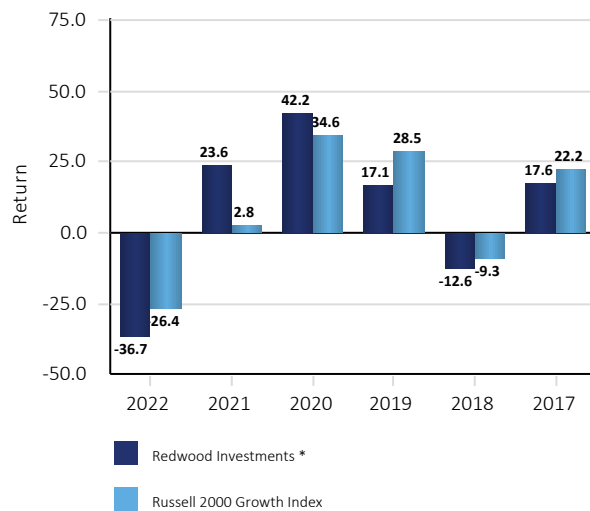
## Comparative Performance



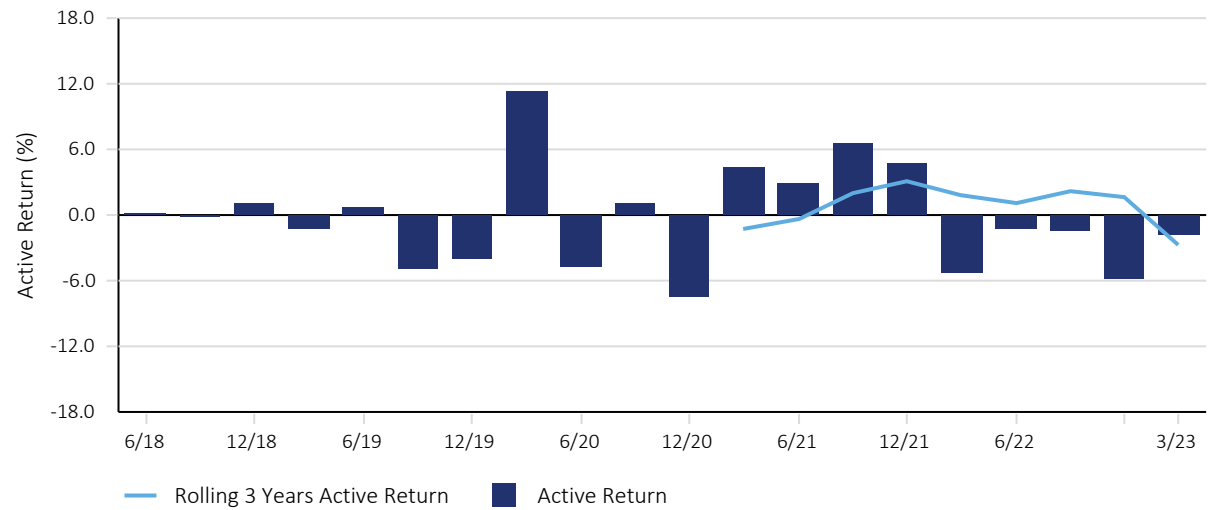
## Peer Group Analysis: IM U.S. Small Cap Growth Equity (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance





## Holdings & Attribution

Redwood Investments \*

Periods Ended March 31, 2023

### Portfolio Characteristics

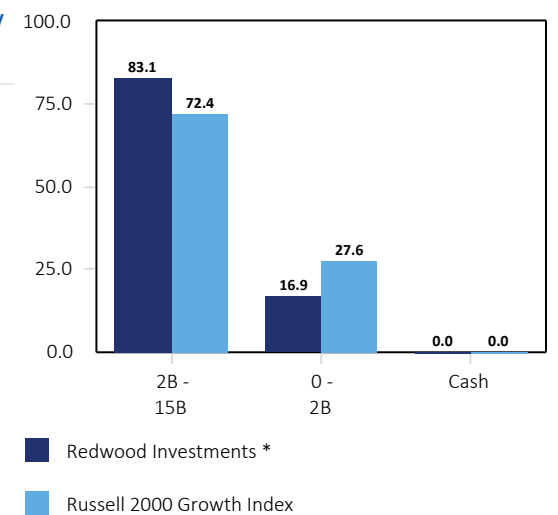
	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	4,161,796,061	3,316,586,179
Median Mkt. Cap \$	3,544,796,640	1,152,780,960
Price/Earnings ratio	18.2	15.0
Price/Book ratio	4.0	3.6
5 Yr. EPS Growth (%)	25.7	23.9
Current Yield (%)	0.3	0.8
Beta (5 Years, Monthly)	0.85	1.00
Number of Stocks	51	1,095

### Top 10 Holdings

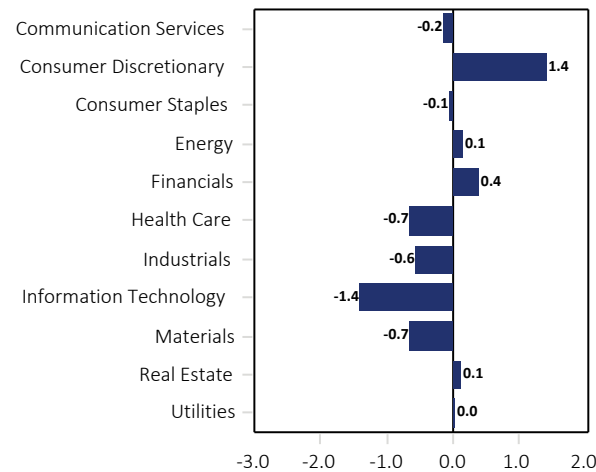
	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Fox Factory Holding Corp	3.6	0.4	3.2	33.0
Kinsale Capital Group Inc	3.3	0.5	2.8	14.8
Workiva Inc	3.3	0.4	2.9	22.0
Texas Roadhouse Inc	3.0	0.6	2.4	19.4
Applied Industrial Technologies Inc	2.8	0.5	2.3	13.1
Ensign Group Inc (The)	2.8	0.4	2.4	1.0
Freshpet Inc	2.8	0.0	2.8	25.4
Brink's Co (The)	2.7	0.3	2.4	24.8
Halozyme Therapeutics Inc	2.7	0.4	2.3	-32.9
Boyd Gaming Corp	2.7	0.0	2.7	17.9

% of Portfolio 29.7 3.5 26.2

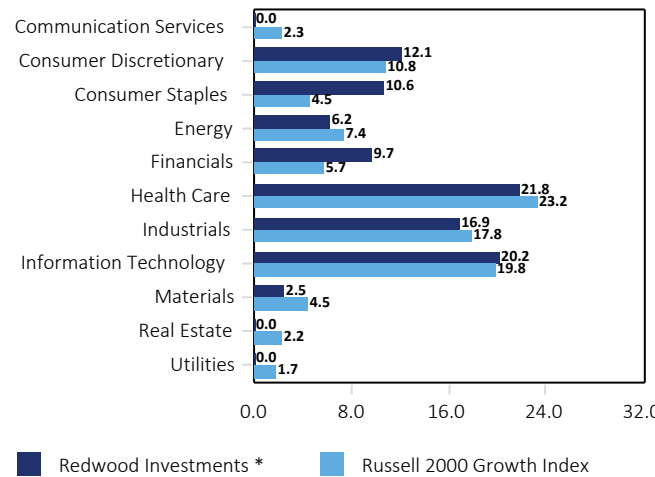
### Distribution of Market Capitalization (%)



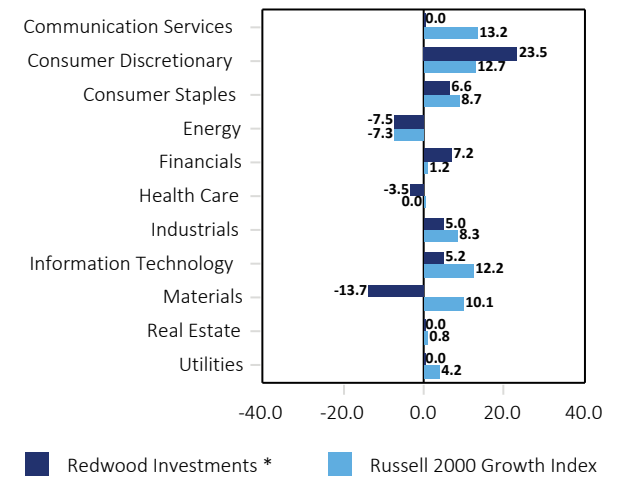
### Total Attribution



### Allocation



### Performance

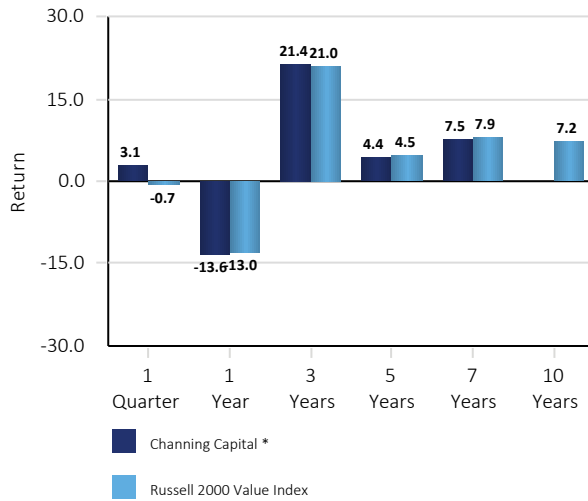


# Performance Summary

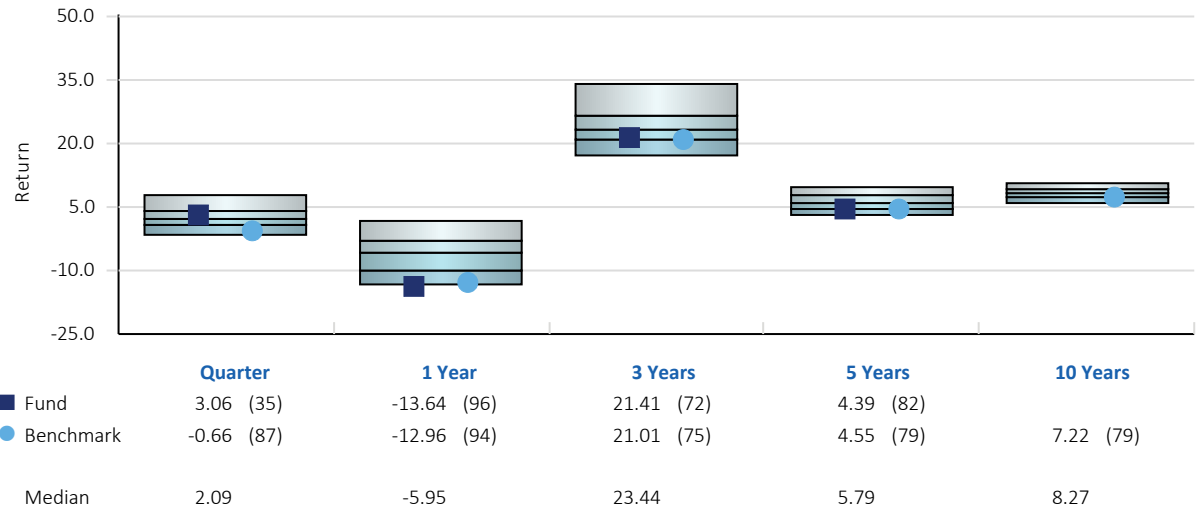
Channing Capital \*

Periods Ended March 31, 2023

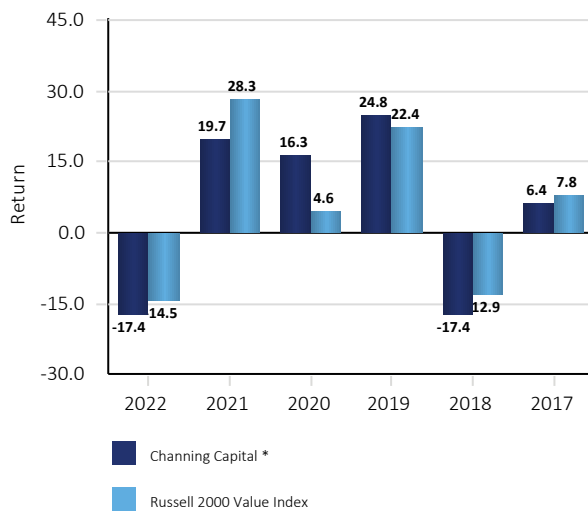
## Comparative Performance



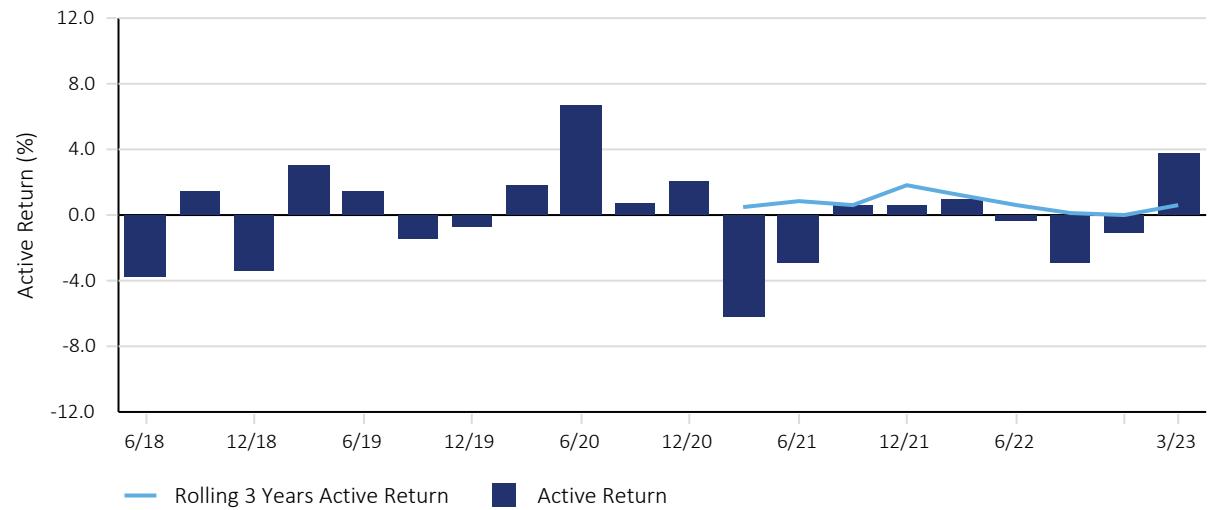
## Peer Group Analysis: IM U.S. Small Cap Value Equity (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance



## Holdings & Attribution

Channing Capital \*

Periods Ended March 31, 2023

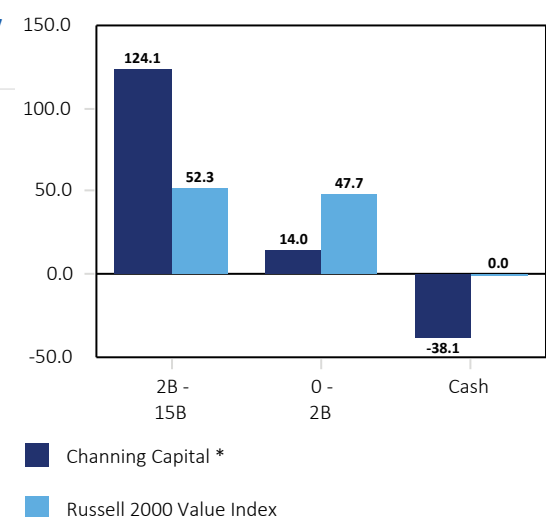
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	5,619,190,957	2,384,076,589
Median Mkt. Cap \$	3,981,767,340	806,466,955
Price/Earnings ratio	12.7	10.0
Price/Book ratio	2.1	1.6
5 Yr. EPS Growth (%)	20.8	13.5
Current Yield (%)	1.7	2.4
Beta (5 Years, Monthly)	1.00	1.00
Number of Stocks	48	1,363

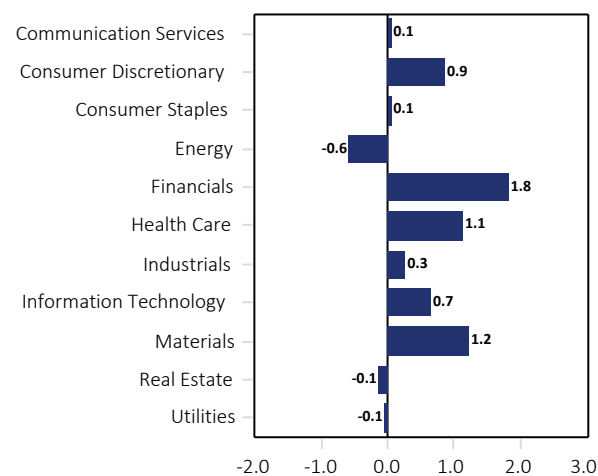
### Top 10 Holdings

	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Hillenbrand Inc	4.4	0.1	4.3	11.9
Hexcel Corp	4.3	0.0	4.3	16.2
Brink's Co (The)	4.2	0.0	4.2	24.8
Integer Holdings Corp	4.0	0.2	3.8	13.2
Avient Corp	4.0	0.1	3.9	22.7
Southwest Gas Holdings Inc	4.0	0.3	3.7	1.9
MSA Safety Inc	3.8	0.0	3.8	-7.1
SPX Technologies Inc	3.8	0.3	3.5	7.5
Physicians Realty Trust	3.7	0.3	3.4	4.8
Corporate Office Properties Trust	3.6	0.2	3.4	-7.5
% of Portfolio	39.8	1.5	38.3	

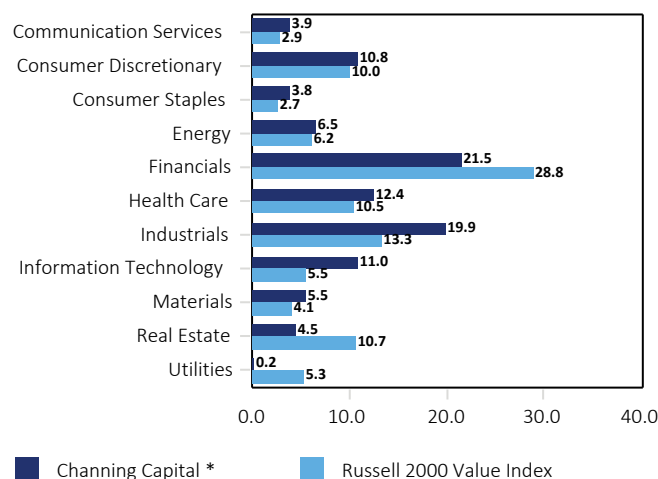
### Distribution of Market Capitalization (%)



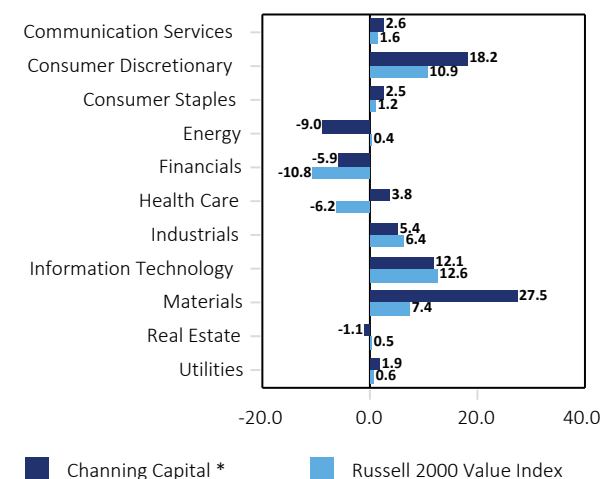
### Total Attribution



### Allocation



### Performance



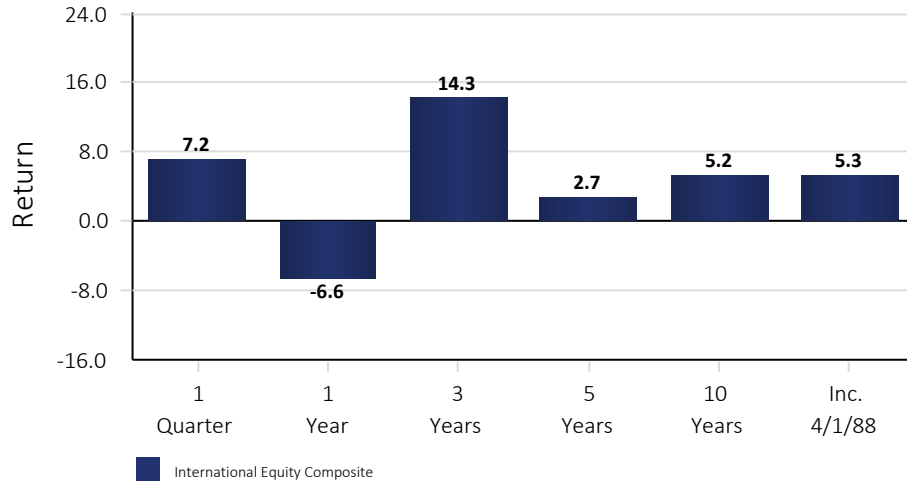
# International Equity Composite

# Composite Performance Summary

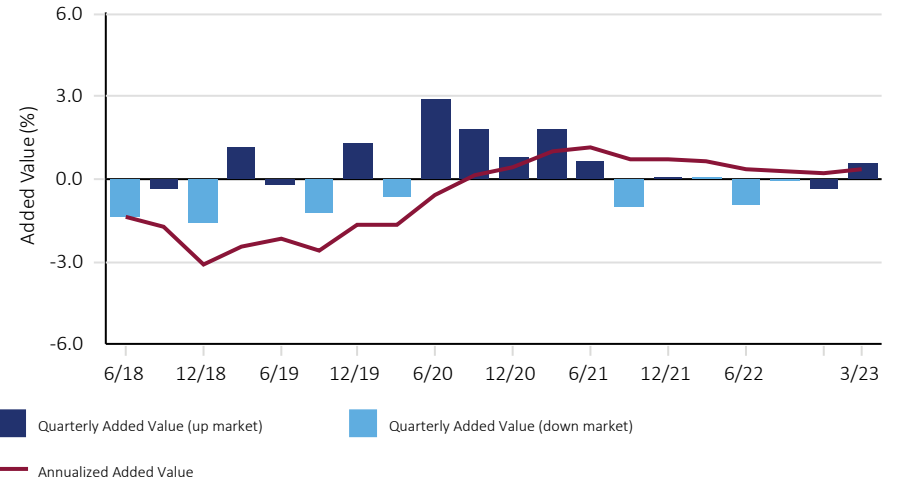
## International Equity Composite

Periods Ended March 31, 2023

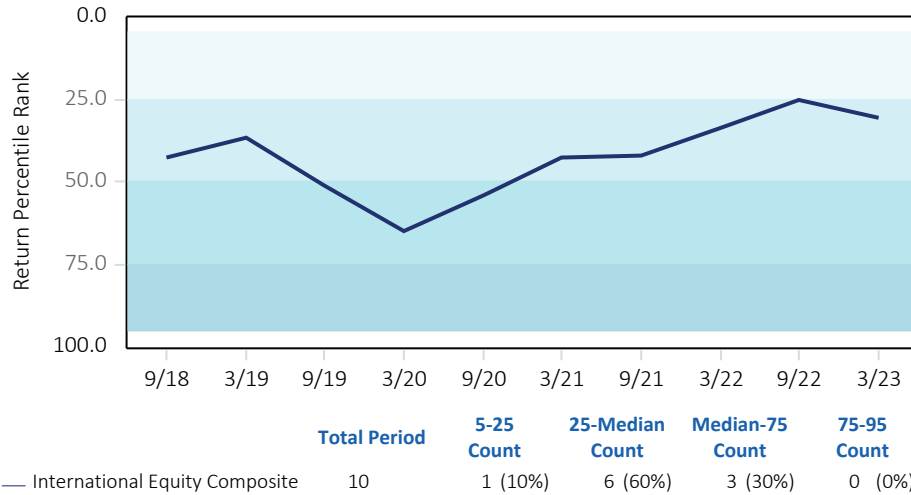
### Comparative Performance



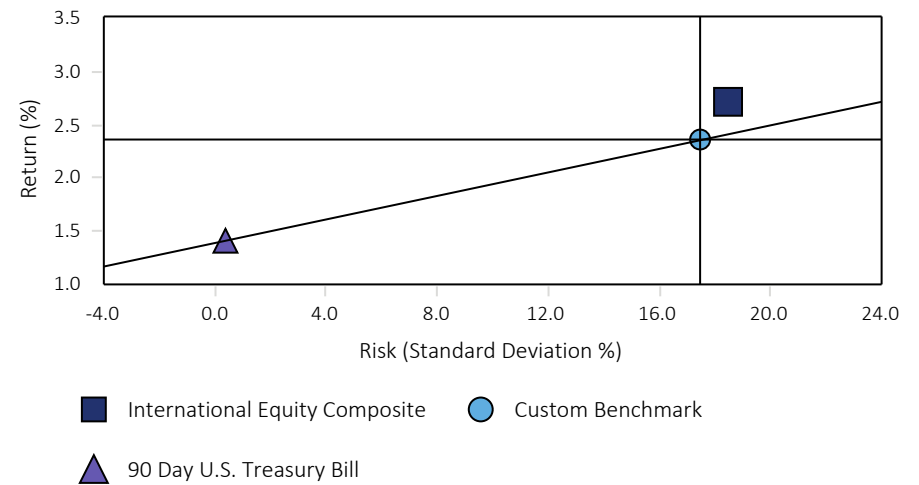
### Added Value History



### Rolling Percentile Rank: IM International Equity (SA+CF)



### Risk and Return 04/1/18 - 03/31/23

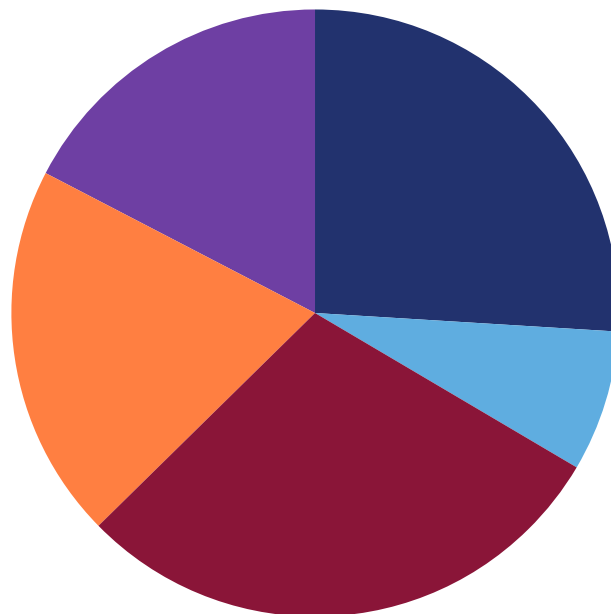


# Asset Allocation By Manager

International Equity Composite

Periods Ended March 31, 2023

**Mar-2023 : 409,327,415**



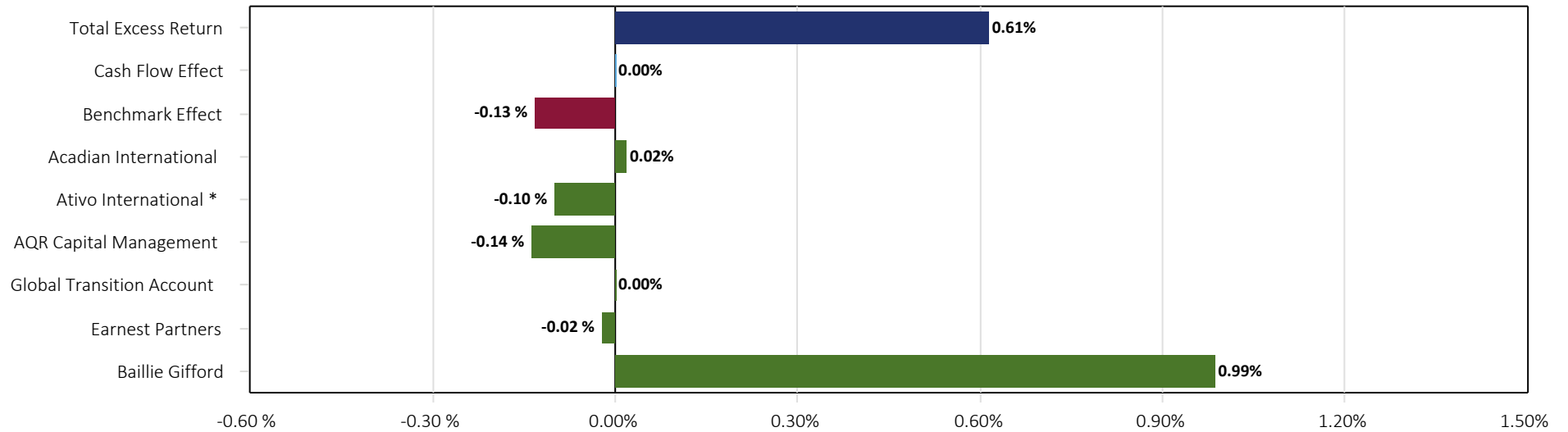
	Market Value \$	Allocation (%)
■ Acadian International	106,304,315	26.0
■ Ativo International *	30,759,755	7.5
■ AQR Capital Management	119,334,420	29.2
■ Global Transition Account	1	0.0
■ Earnest Partners	81,832,097	20.0
■ Baillie Gifford	71,096,827	17.4

# Asset Class Attribution

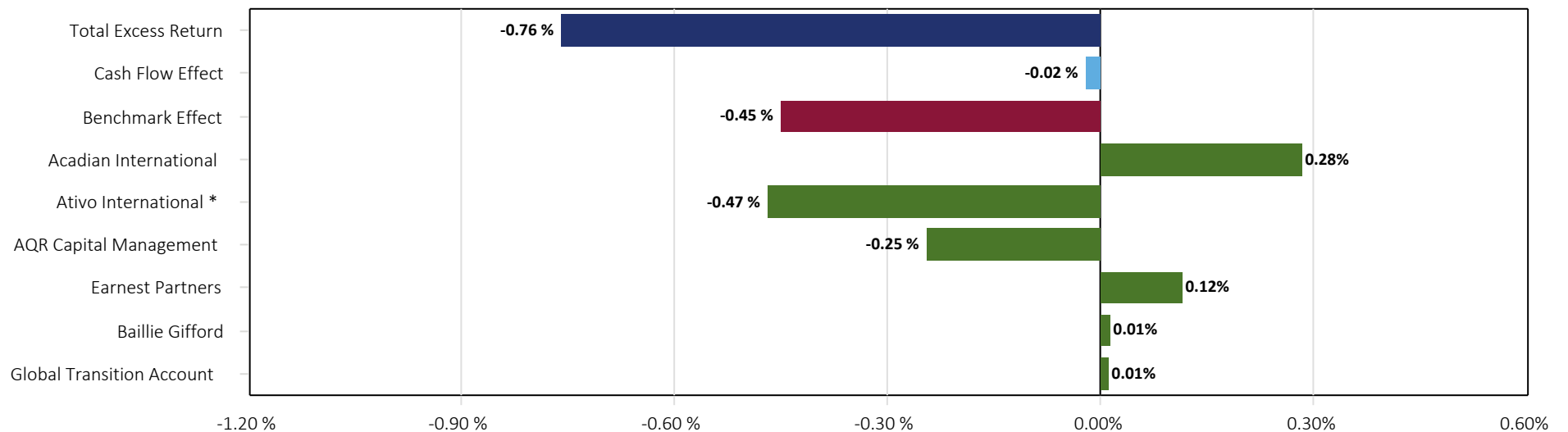
## International Equity Composite

Periods Ended March 31, 2023

### 1 Quarter



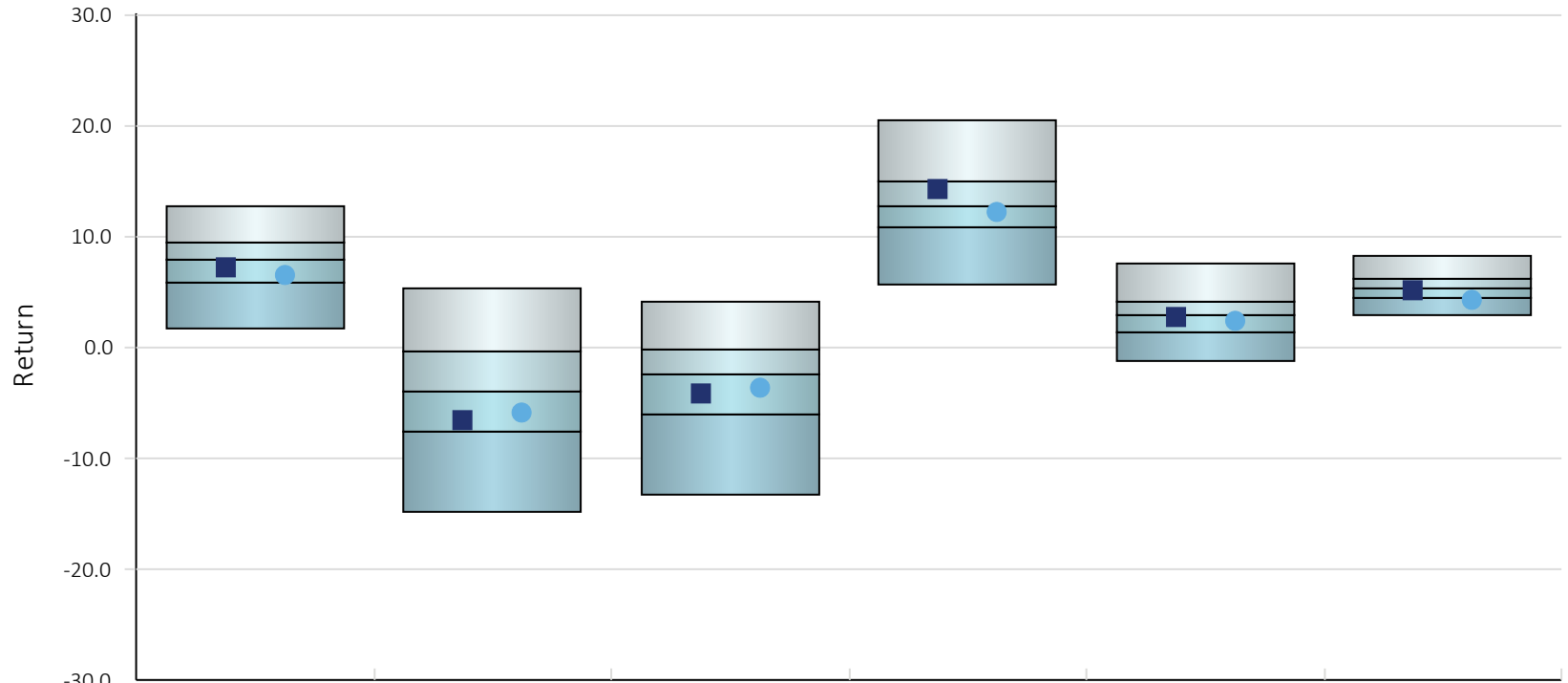
### 1 Year



# Peer Group Analysis

## International Equity Composite

Periods Ended March 31, 2023



	<b>1 Quarter</b>	<b>1 Year</b>	<b>2 Years</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ International Equity Composite	7.18 (60)	-6.60 (69)	-4.08 (65)	14.25 (31)	2.71 (56)	5.20 (55)
● Custom Benchmark	6.56 (70)	-5.84 (64)	-3.58 (61)	12.20 (56)	2.35 (62)	4.28 (82)
5th Percentile	12.69	5.34	4.07	20.46	7.63	8.26
1st Quartile	9.54	-0.39	-0.16	15.04	4.11	6.21
Median	7.98	-3.95	-2.47	12.68	2.98	5.32
3rd Quartile	5.91	-7.53	-6.07	10.91	1.34	4.50
95th Percentile	1.74	-14.86	-13.26	5.63	-1.20	2.92
Population	561	555	542	532	504	365

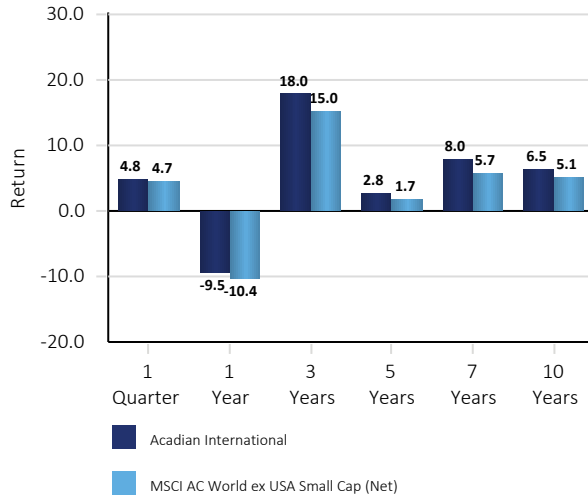
Parenteses contain percentile rankings.  
Calculation based on monthly periodicity.



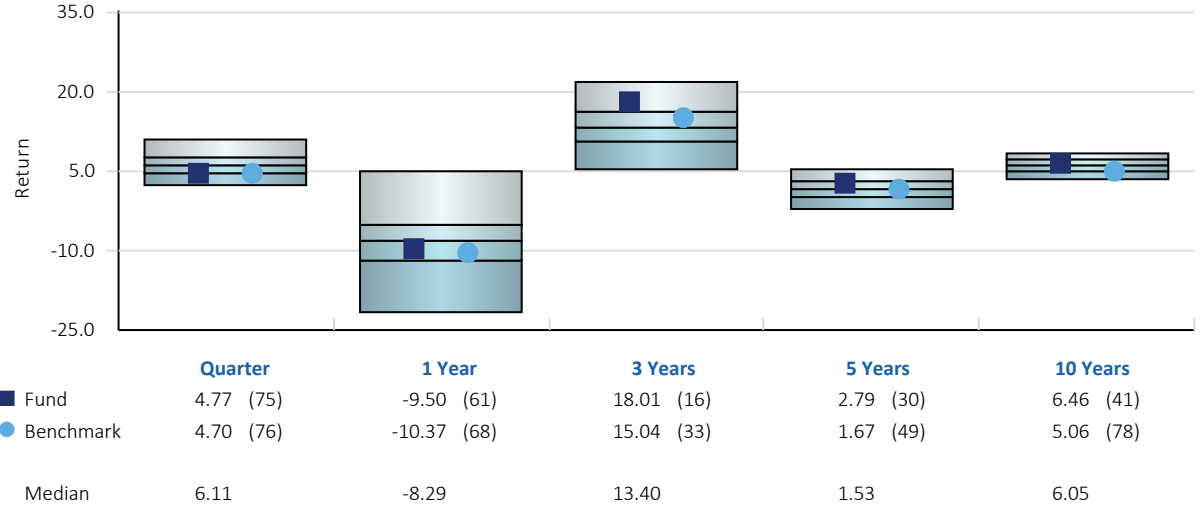
# Performance Summary

Acadian International  
Periods Ended March 31, 2023

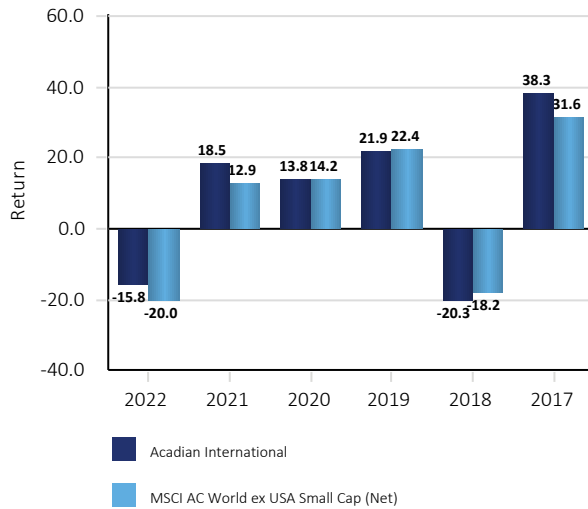
## Comparative Performance



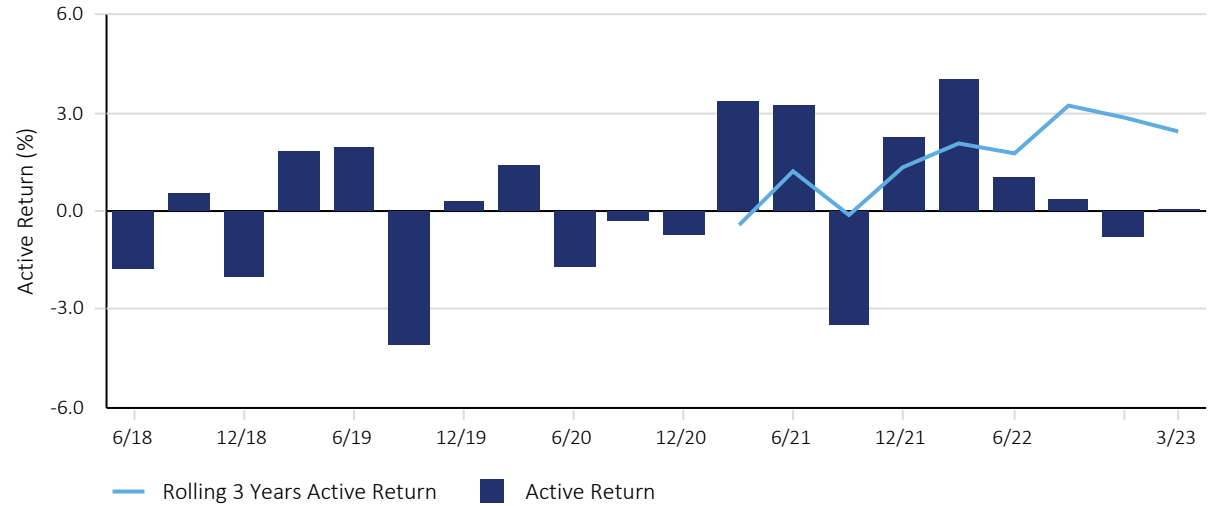
## Peer Group Analysis: IM International Small Cap Equity (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance



## Holdings & Attribution

Acadian International

Periods Ended March 31, 2023

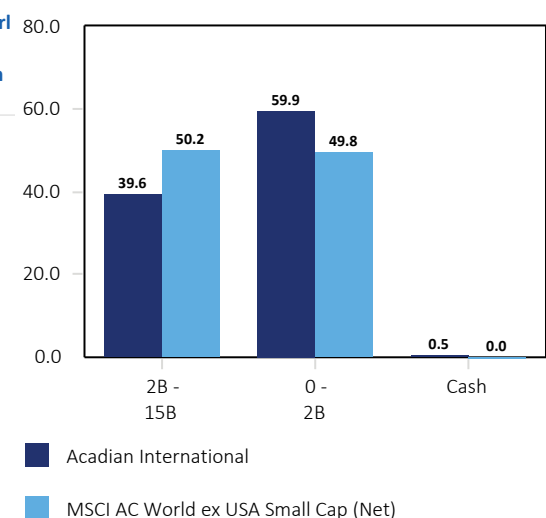
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	1,896,776,813	2,389,401,517
Median Mkt. Cap \$	733,509,805	1,013,869,834
Price/Earnings ratio	7.1	11.8
Price/Book ratio	2.0	2.2
5 Yr. EPS Growth (%)	18.2	10.7
Current Yield (%)	4.8	3.2
Beta (5 Years, Monthly)	0.98	1.00
Number of Stocks	521	4,358

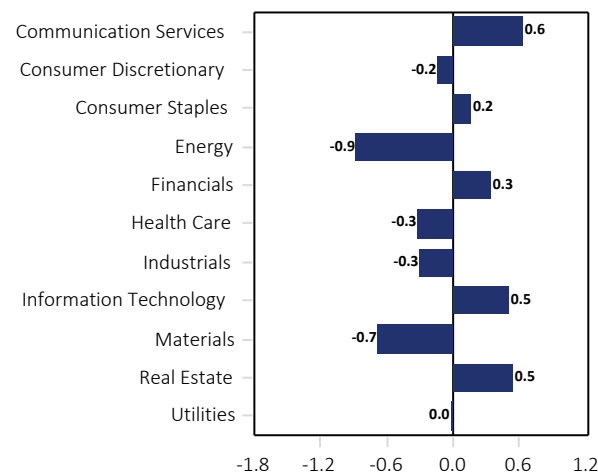
### Top 10 Holdings

	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Information Services International-Dentsu Ltd	1.9	0.0	1.9	31.3
AP (Thailand) PCL	1.8	0.0	1.8	4.8
Nova Ltd	1.5	0.1	1.4	27.9
TECAN GROUP AG	1.3	0.1	1.2	-2.0
WNS (Holdings) Ltd	1.3	0.0	1.3	16.5
Leonardo SPA	1.3	0.1	1.2	36.7
Atco Ltd	1.2	0.1	1.1	3.6
Russel Metals Inc	1.1	0.0	1.1	16.1
Whitehaven Coal Ltd	1.1	0.1	1.0	-26.4
Perion Network Ltd	1.1	0.0	1.1	56.4
<b>% of Portfolio</b>	<b>13.6</b>	<b>0.5</b>	<b>13.1</b>	

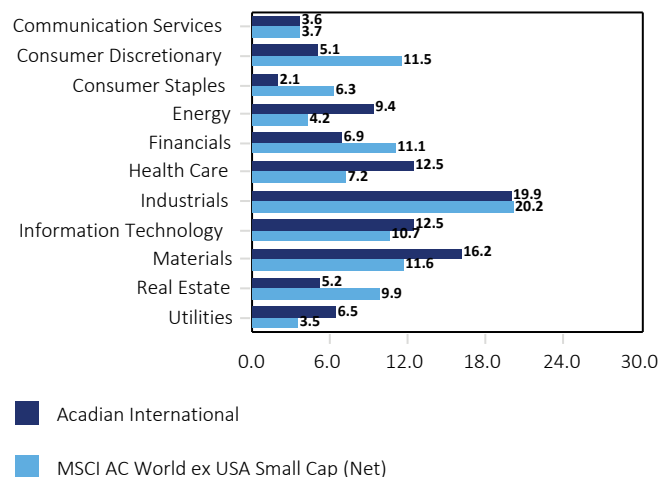
### Distribution of Market Capitalization (%)



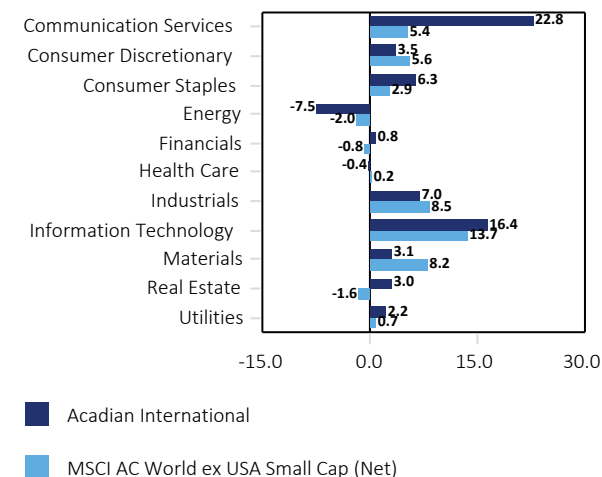
### Total Attribution



### Allocation



### Performance

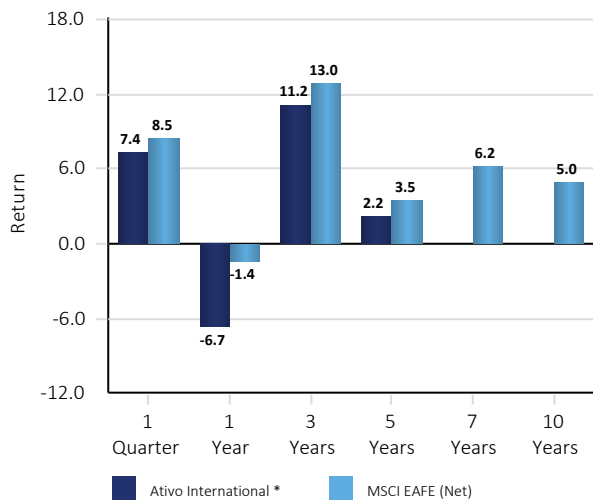


# Performance Summary

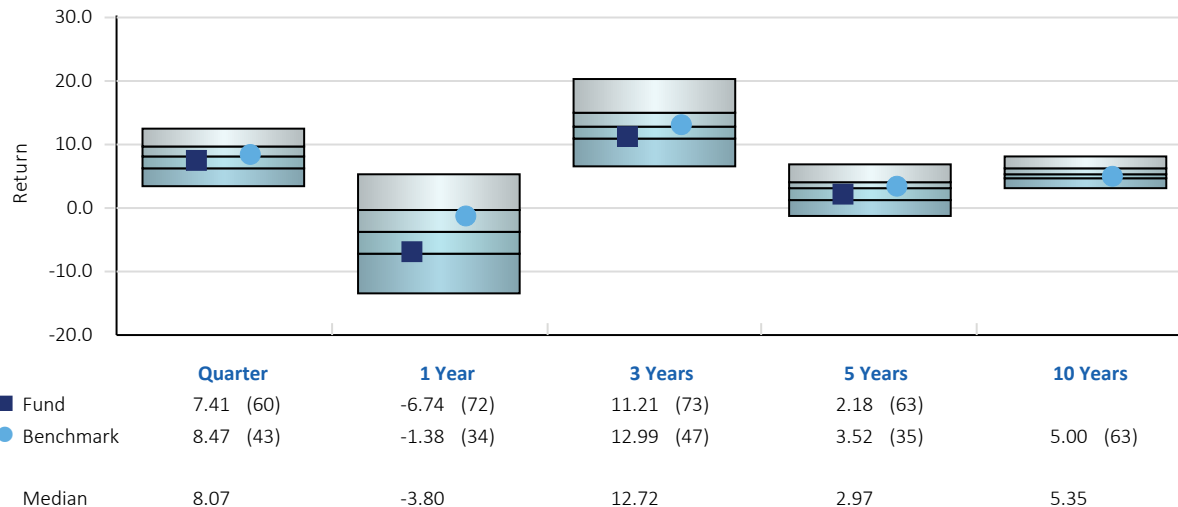
Ativo International \*

Periods Ended March 31, 2023

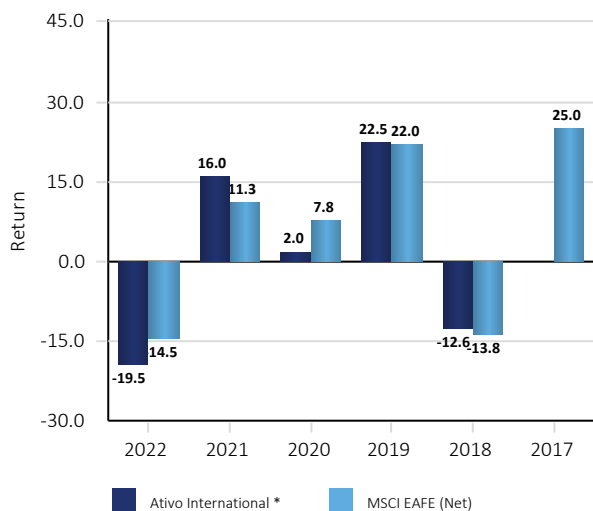
## Comparative Performance



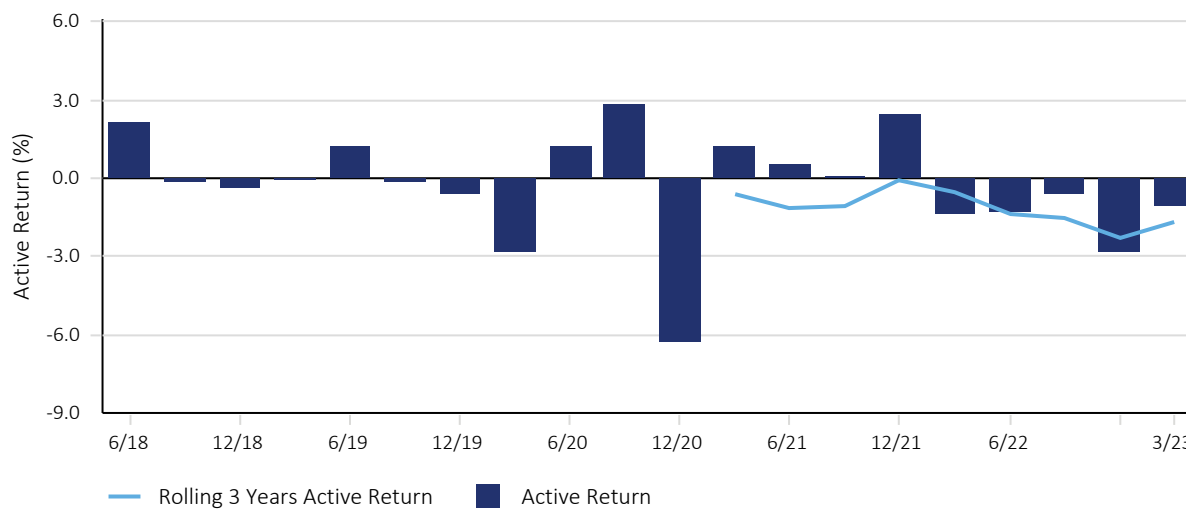
## Peer Group Analysis: IM International Equity Developed Markets (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance



## Holdings & Attribution

Ativo International \*

Periods Ended March 31, 2023

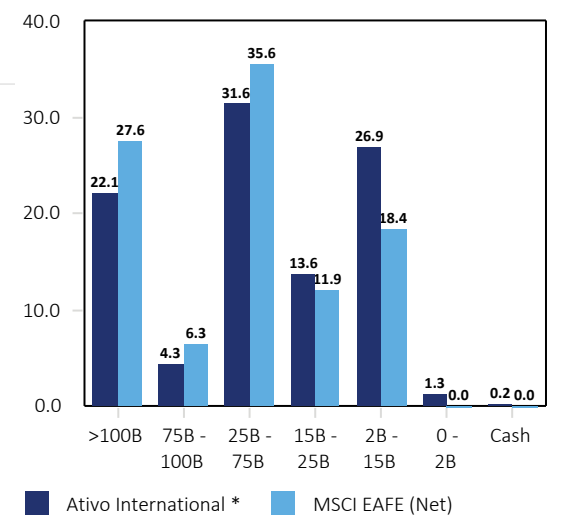
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	82,657,790,973	83,611,618,260
Median Mkt. Cap \$	28,314,389,003	12,646,503,911
Price/Earnings ratio	9.5	13.6
Price/Book ratio	2.3	2.6
5 Yr. EPS Growth (%)	14.7	8.7
Current Yield (%)	3.3	3.3
Beta (5 Years, Monthly)	0.99	1.00
Number of Stocks	129	795

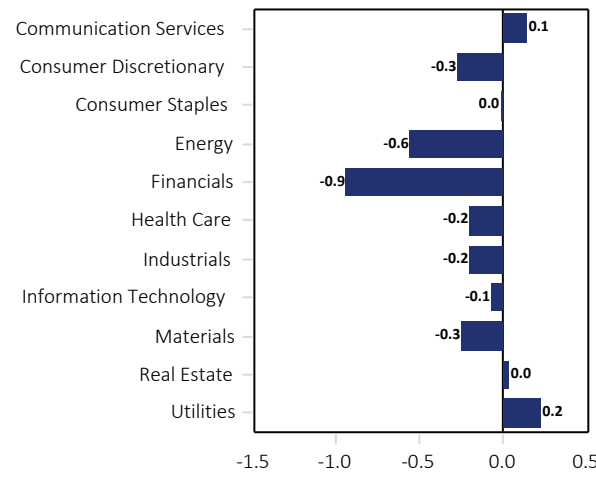
### Top 10 Holdings

	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Nestle SA, Cham Und Vevey	2.1	2.2	-0.1	3.0
Novo Nordisk A/S	1.9	1.7	0.2	18.6
LVMH Mt Henn Louis Vtn	1.8	1.7	0.1	26.4
ASML Holding NV	1.6	1.8	-0.2	26.6
UBS Group AG	1.3	0.5	0.8	13.5
Roche Holding AG	1.2	1.3	-0.1	-5.7
BAYER MOTOREN WERKE AG	1.1	0.0	1.1	
L'Oreal SA	1.1	0.7	0.4	
RELX PLC	1.1	0.4	0.7	17.4
ADVANTEST CORP	1.1	0.0	1.1	
% of Portfolio	14.3	10.3	4.0	

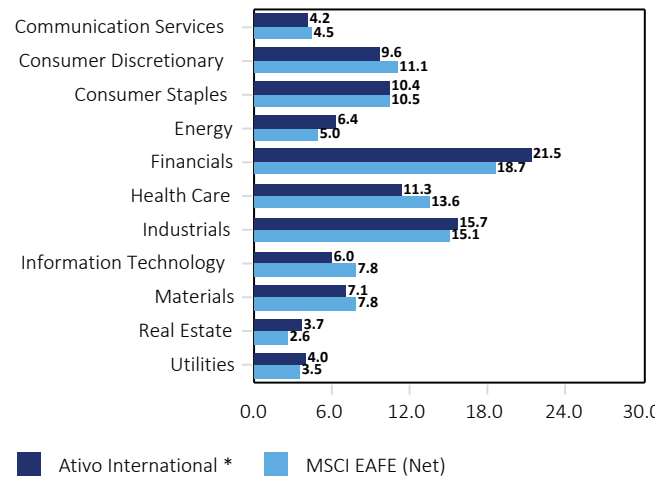
### Distribution of Market Capitalization (%)



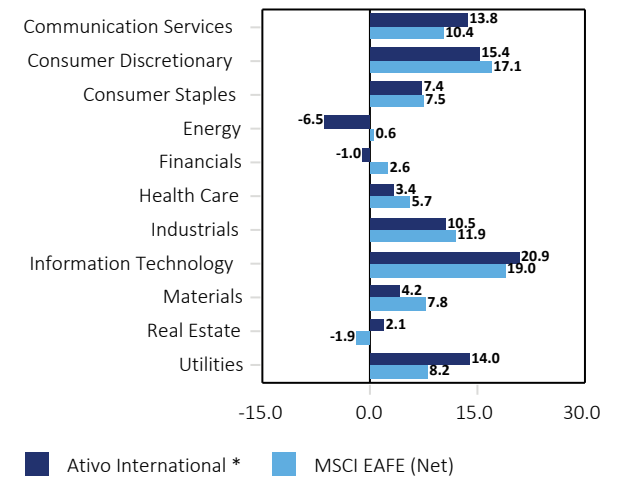
### Total Attribution



### Allocation



### Performance

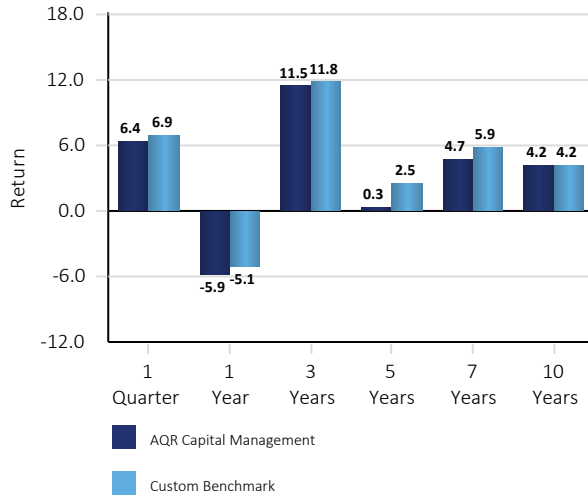


# Performance Summary

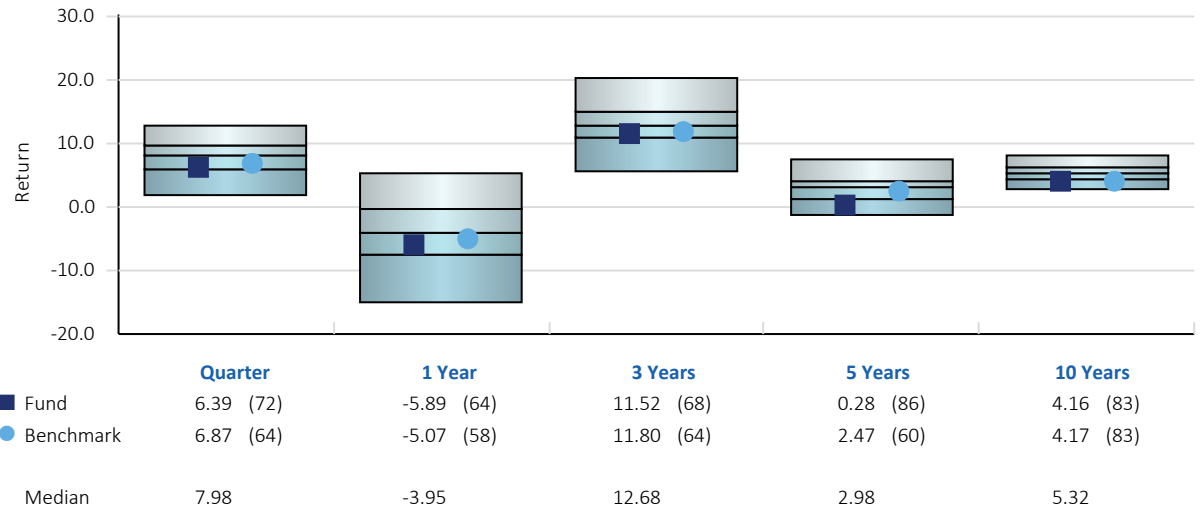
AQR Capital Management

Periods Ended March 31, 2023

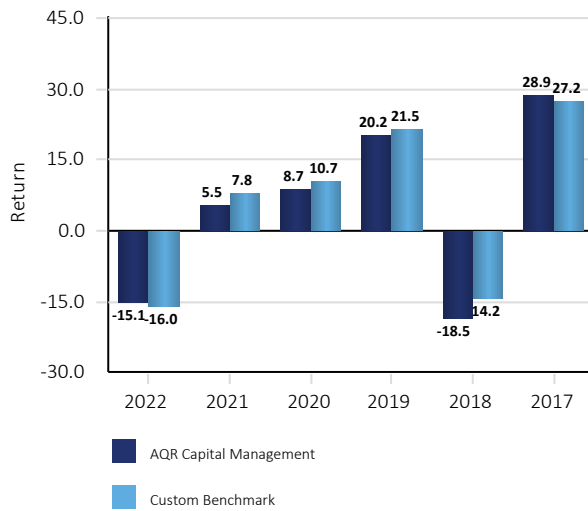
## Comparative Performance



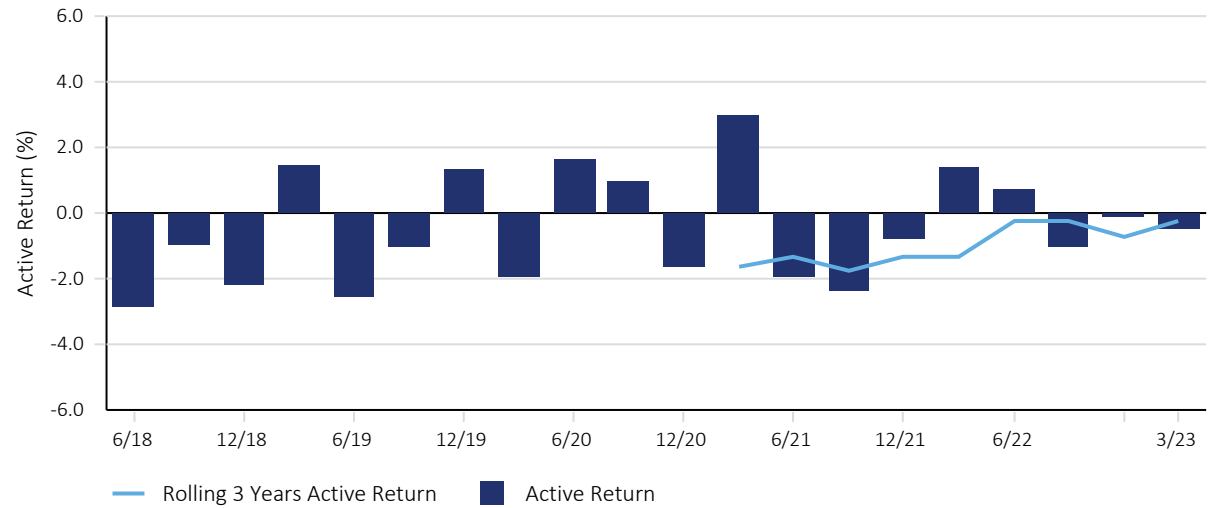
## Peer Group Analysis: IM International Equity (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance



## Holdings & Attribution

AQR Capital Management

Periods Ended March 31, 2023

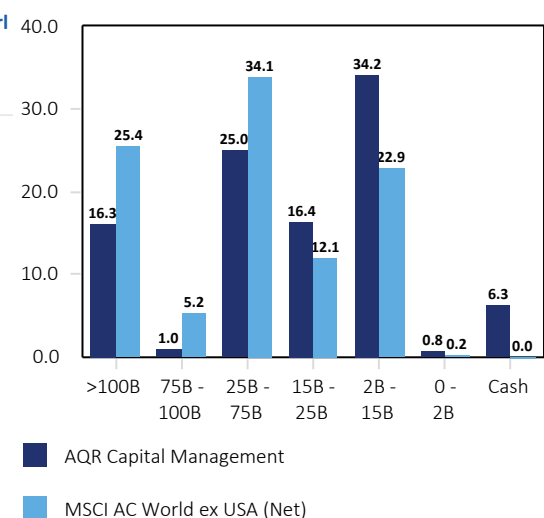
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	61,857,882,686	86,263,644,894
Median Mkt. Cap \$	14,427,351,058	8,945,935,945
Price/Earnings ratio	6.6	12.8
Price/Book ratio	2.1	2.5
5 Yr. EPS Growth (%)	18.7	10.5
Current Yield (%)	4.6	3.3
Beta (5 Years, Monthly)	1.03	1.00
Number of Stocks	464	2,262

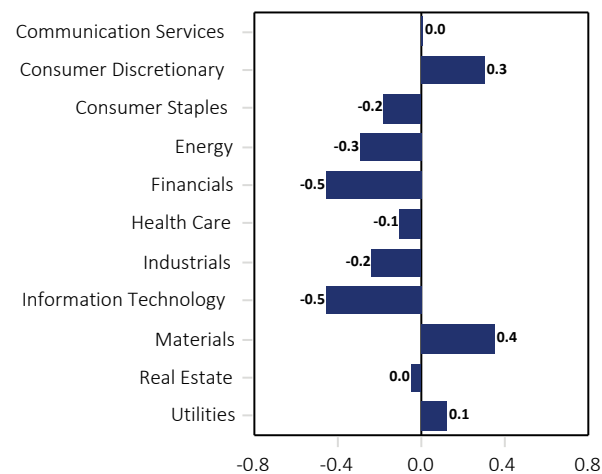
### Top 10 Holdings

	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Taiwan Semiconductor Manufacturing Co Ltd	1.8	1.8	0.0	25.5
Novartis AG	1.6	0.8	0.8	-0.7
BHP Group Ltd	1.6	0.7	0.9	5.2
HSBC Holdings PLC	1.2	0.6	0.6	13.0
TotalEnergies SE	1.2	0.6	0.6	-3.4
STMICROELECTRONICS NV	1.1	0.0	1.1	
BAYER MOTOREN WERKE AG	1.0	0.0	1.0	
OCI NV	1.0	0.0	1.0	-4.8
Bayer AG	1.0	0.3	0.7	24.2
Compagnie de Saint Gobain S A	1.0	0.1	0.9	16.7
% of Portfolio	12.5	4.9	7.6	

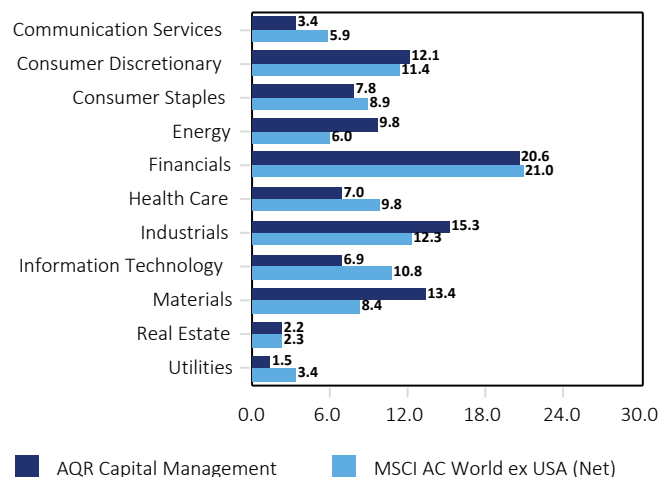
### Distribution of Market Capitalization (%)



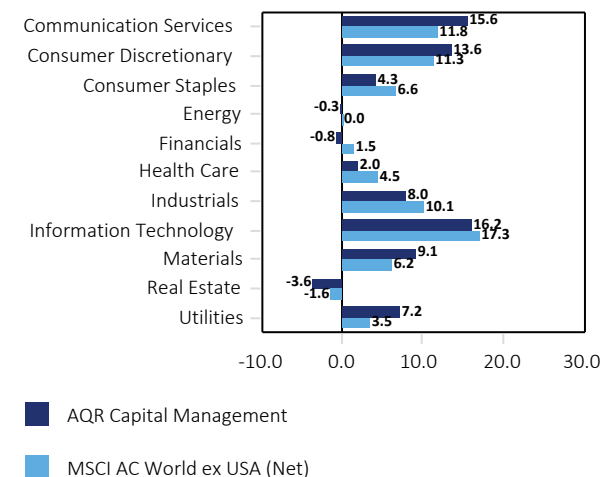
### Total Attribution



### Allocation



### Performance

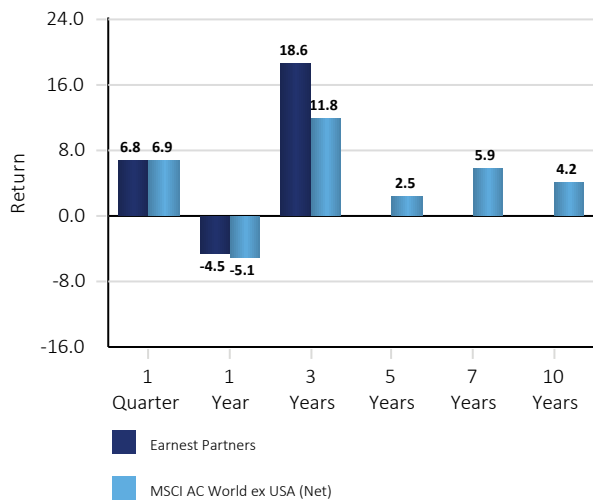


# Performance Summary

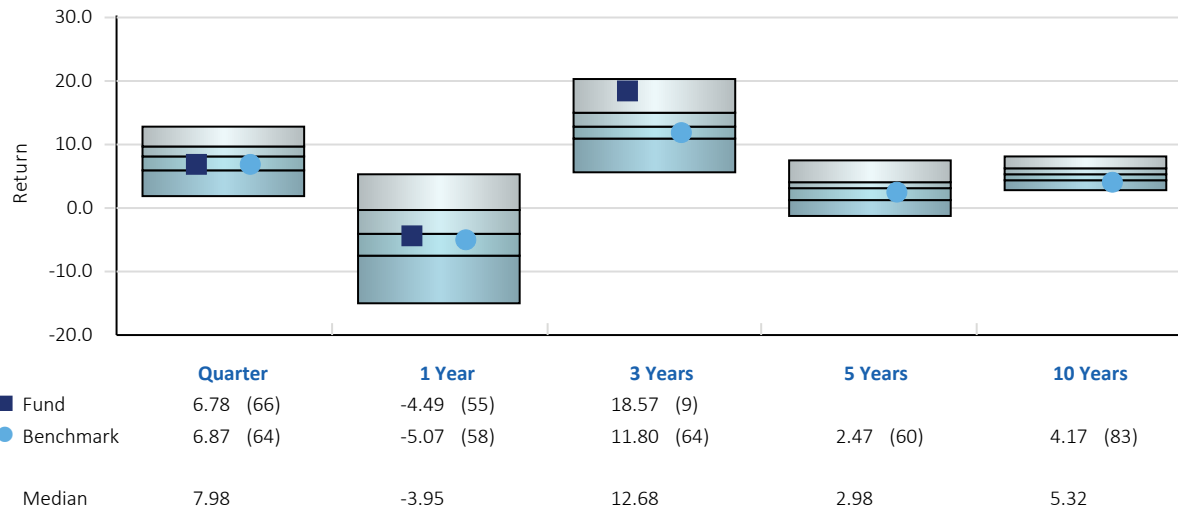
Earnest Partners

Periods Ended March 31, 2023

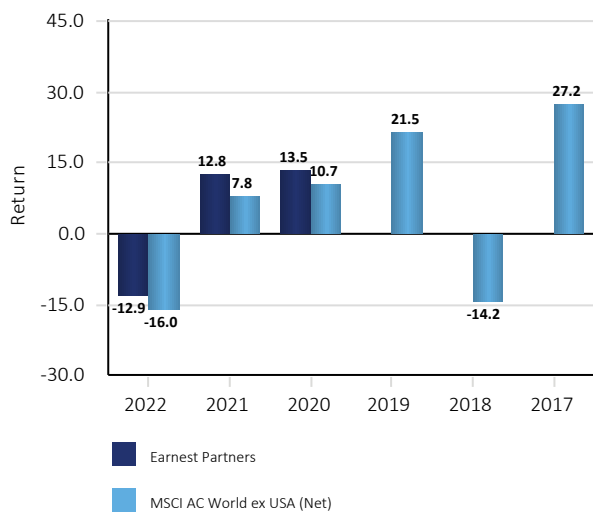
## Comparative Performance



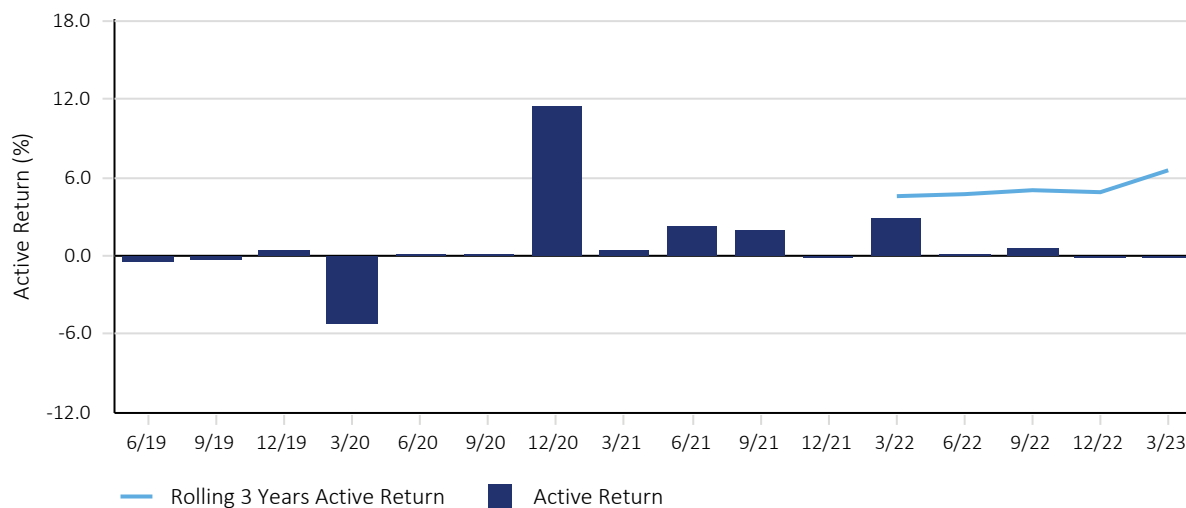
## Peer Group Analysis: IM International Equity (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance



## Holdings & Attribution

Earnest Partners

Periods Ended March 31, 2023

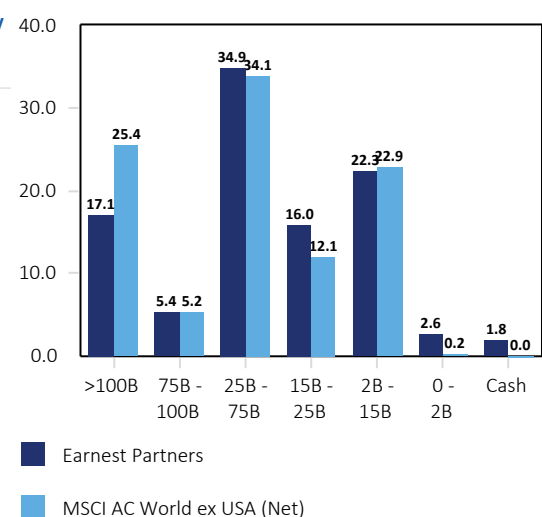
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	65,109,574,883	86,263,644,894
Median Mkt. Cap \$	27,733,993,439	8,945,935,945
Price/Earnings ratio	11.3	12.8
Price/Book ratio	2.1	2.5
5 Yr. EPS Growth (%)	9.3	10.5
Current Yield (%)	3.2	3.3
Beta (3 Years, Monthly)	1.08	1.00
Number of Stocks	66	2,262

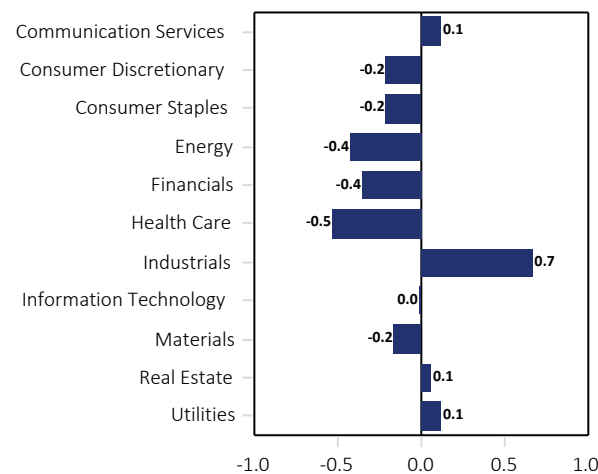
### Top 10 Holdings

	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Safran SA	2.8	0.2	2.6	18.9
AMADEUS IT GROUP SA	2.5	0.0	2.5	
Norsk Hydro ASA	2.4	0.0	2.4	-0.2
Taiwan Semiconductor Manufacturing	2.3	1.8	0.5	20.6
Diageo PLC	2.3	0.4	1.9	2.7
Restaurant Brands International Inc	2.3	0.1	2.2	4.7
MERCK KOMMANDITGESELLSCHAFT	2.2	0.0	2.2	
BAE Systems PLC	2.2	0.2	2.0	17.9
Rio Tinto Group	2.1	0.3	1.8	-0.5
RELX PLC	2.1	0.3	1.8	17.4
% of Portfolio	23.2	3.3	19.9	

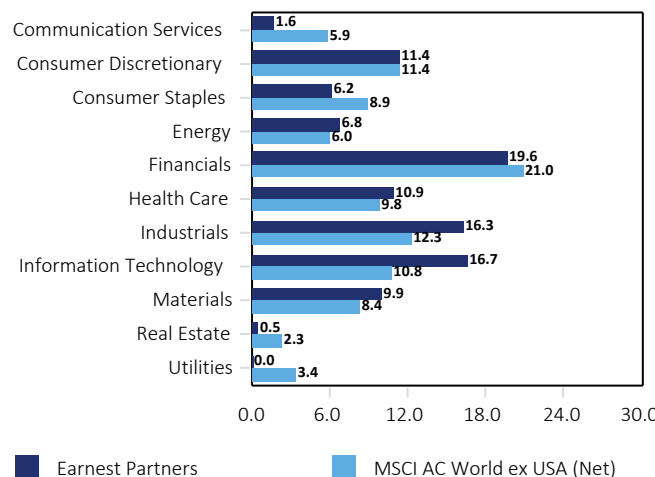
### Distribution of Market Capitalization (%)



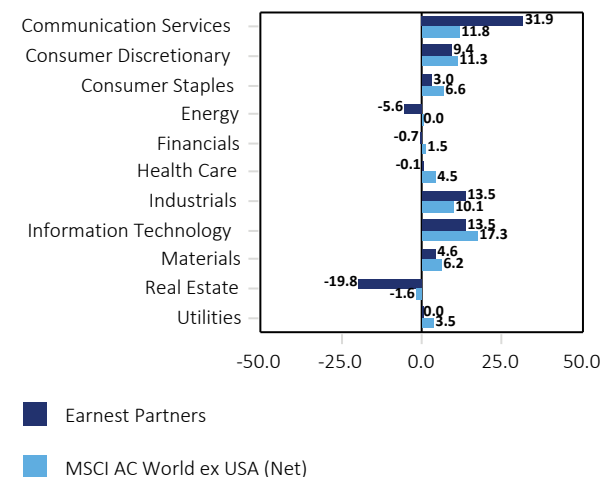
### Total Attribution



### Allocation



### Performance



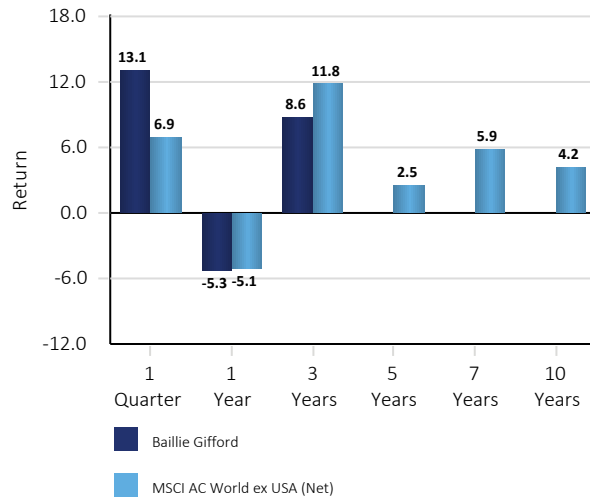


# Performance Summary

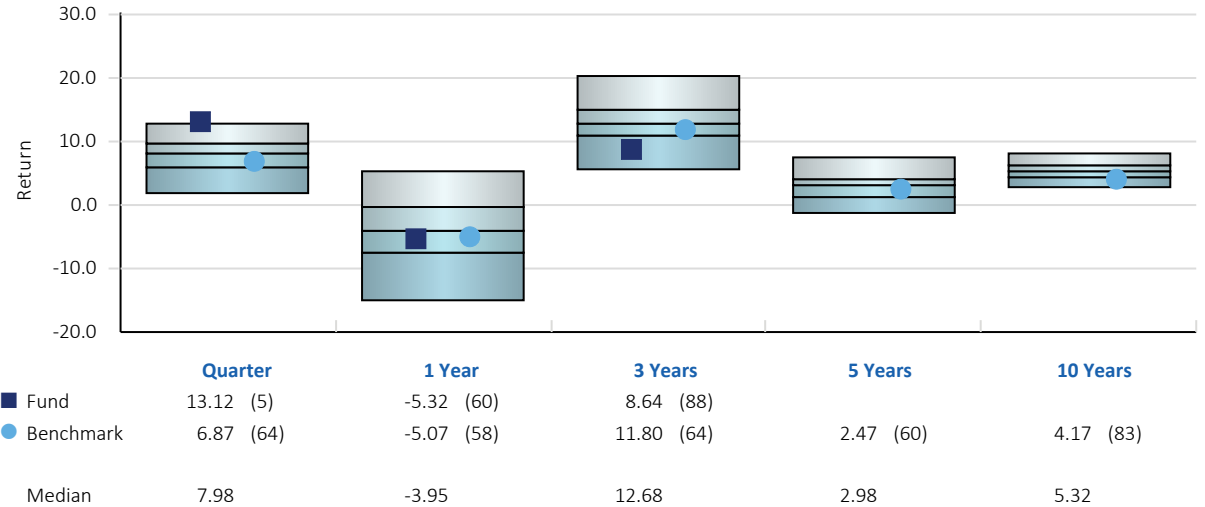
Baillie Gifford

Periods Ended March 31, 2023

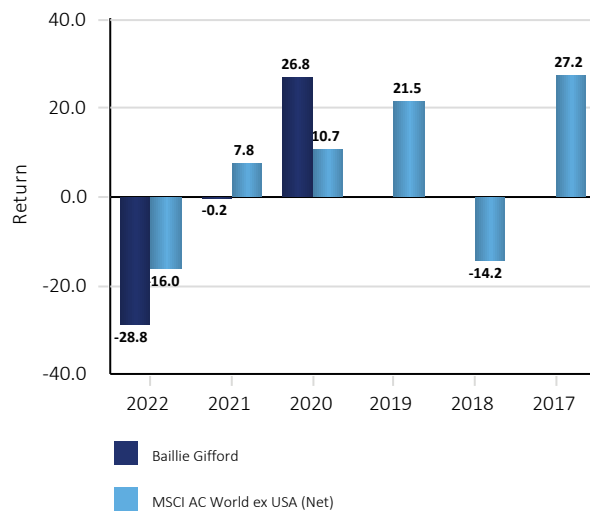
## Comparative Performance



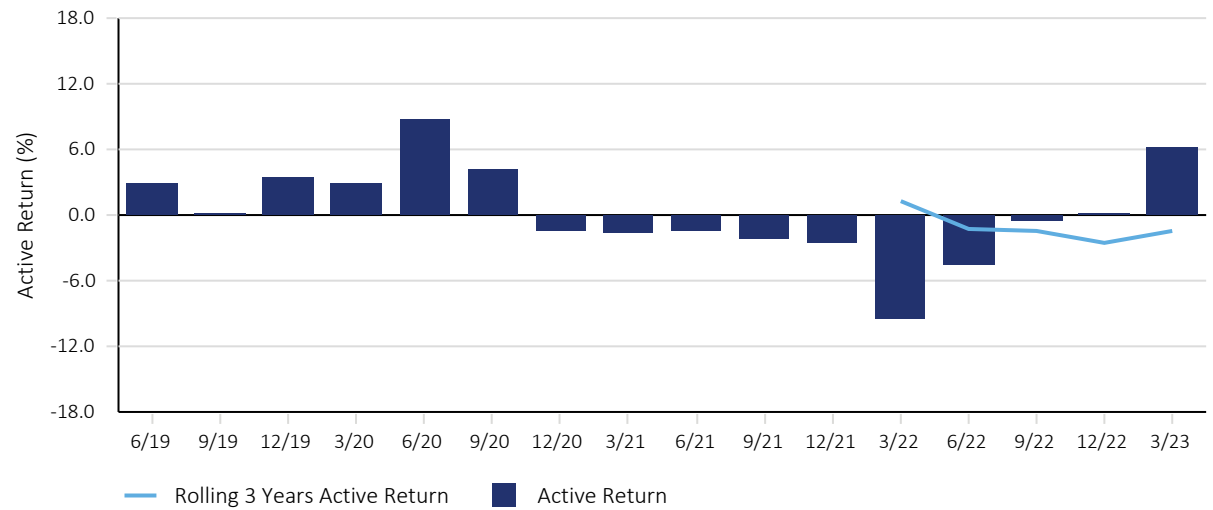
## Peer Group Analysis: IM International Equity (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance



## Holdings & Attribution

Baillie Gifford

Periods Ended March 31, 2023

### Portfolio Characteristics

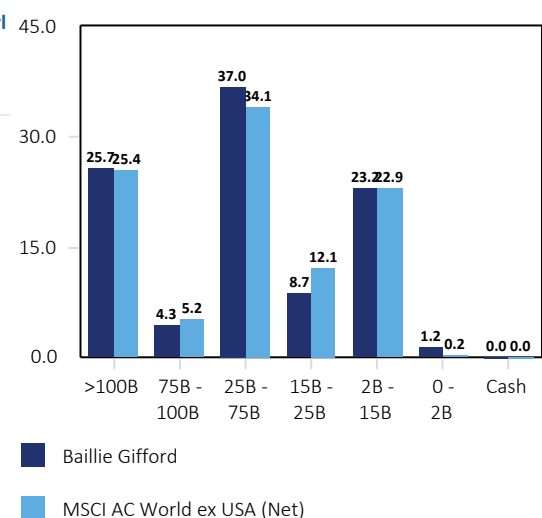
	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	96,078,276,694	86,263,644,894
Median Mkt. Cap \$	30,178,179,371	8,945,935,945
Price/Earnings ratio	21.1	12.8
Price/Book ratio	3.7	2.5
5 Yr. EPS Growth (%)	15.9	10.5
Current Yield (%)	1.2	3.3
Beta (3 Years, Monthly)	1.20	1.00
Number of Stocks	82	2,262

### Top 10 Holdings

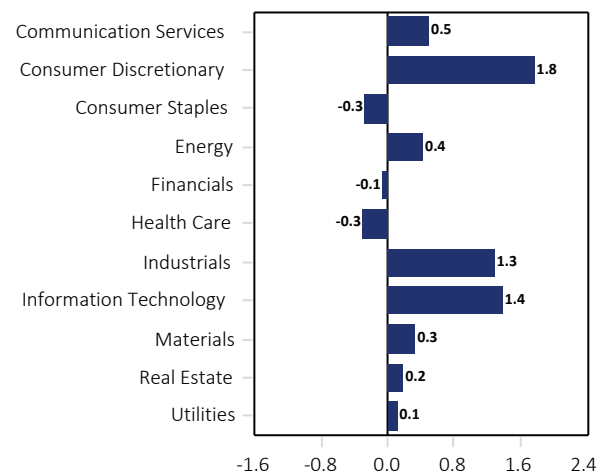
	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
MercadoLibre Inc	4.9	0.0	4.9	55.8
Taiwan Semiconductor Manufacturing Co Ltd	3.5	1.8	1.7	25.5
AIA Group Ltd	3.2	0.5	2.7	-5.3
Ryanair Holdings PLC	2.6	0.0	2.6	26.1
SAP SE	2.5	0.6	1.9	22.6
Housing Development Finance Corp Ltd	2.4	0.2	2.2	0.2
CRH PLC	2.3	0.2	2.1	29.9
Cie Financiere Richemont AG, Zug	2.3	0.4	1.9	23.2
Nestle SA, Cham Und Vevey	2.2	1.4	0.8	3.0
Samsung Electronics Co Ltd	2.2	1.0	1.2	12.4

% of Portfolio 28.1 6.1 22.0

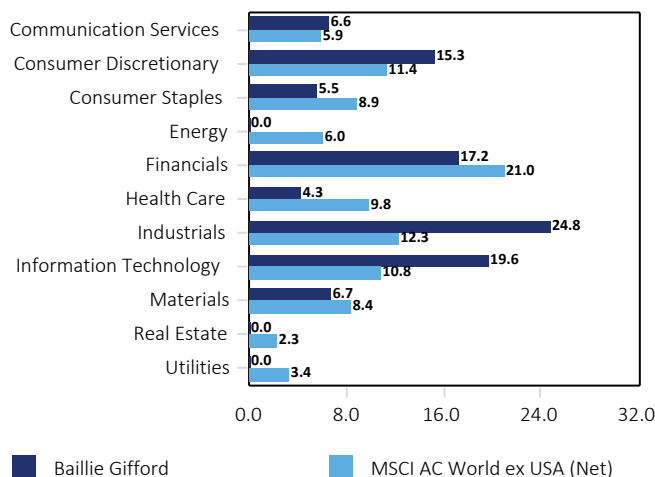
### Distribution of Market Capitalization (%)



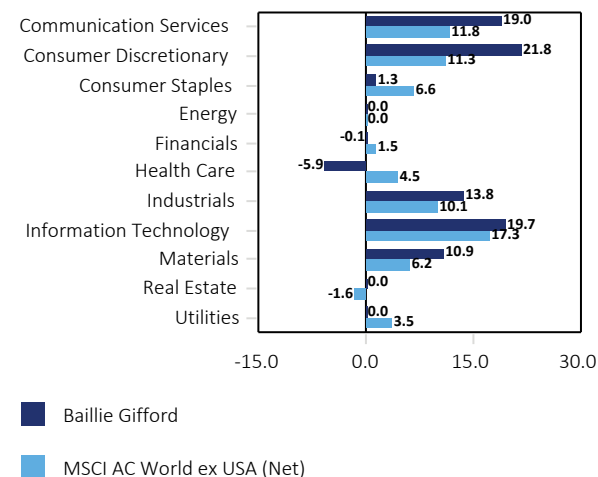
### Total Attribution



### Allocation



### Performance



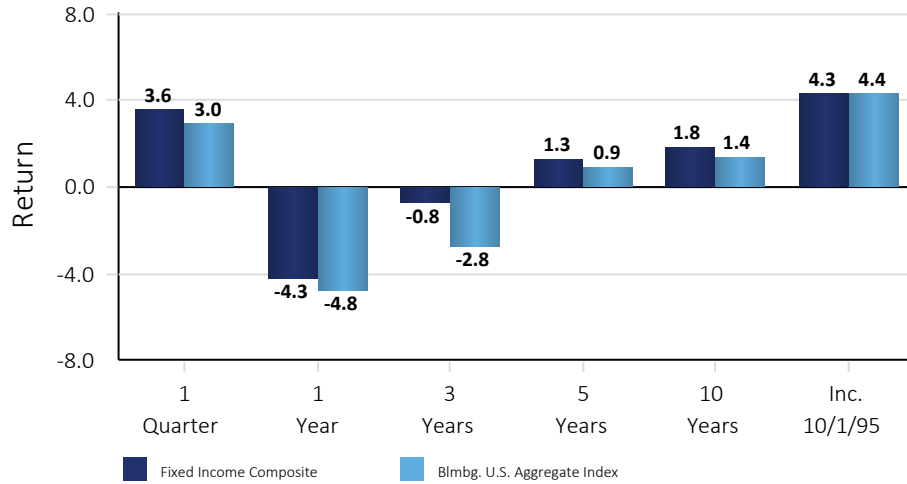
# Fixed Income Composite

# Composite Performance Summary

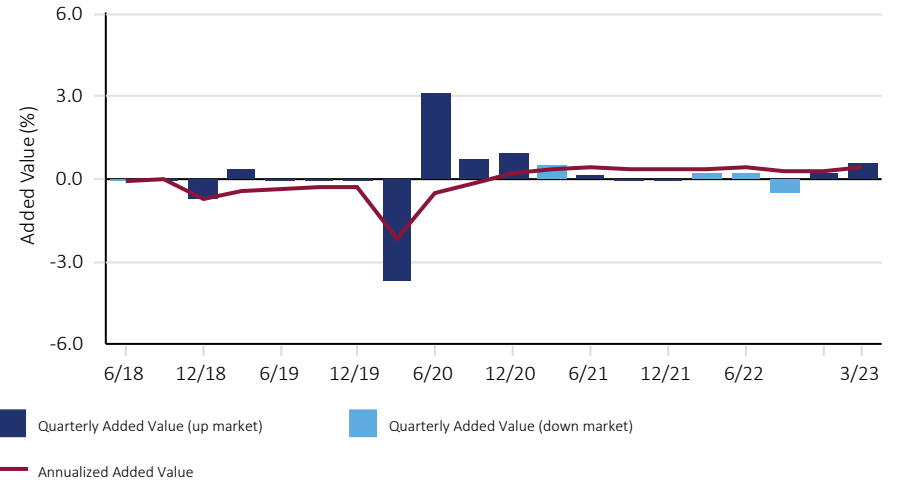
Fixed Income Composite

Periods Ended March 31, 2023

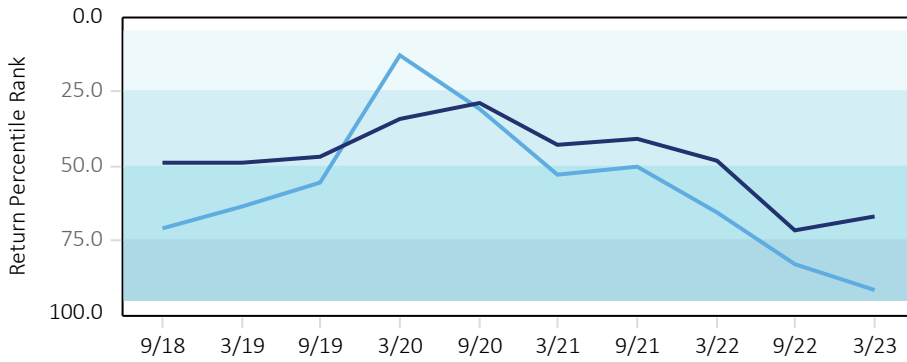
## Comparative Performance



## Added Value History

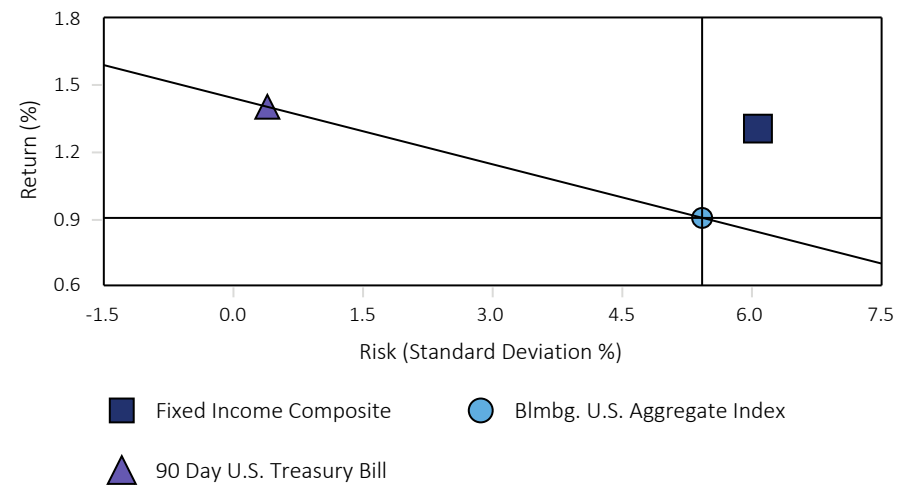


## Rolling Percentile Rank: IM U.S. Fixed Income (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Fixed Income Composite	10	0 (0%)	8 (80%)	2 (20%)	0 (0%)
Benchmark	10	1 (10%)	2 (20%)	5 (50%)	2 (20%)

## Risk and Return 04/1/18 - 03/31/23

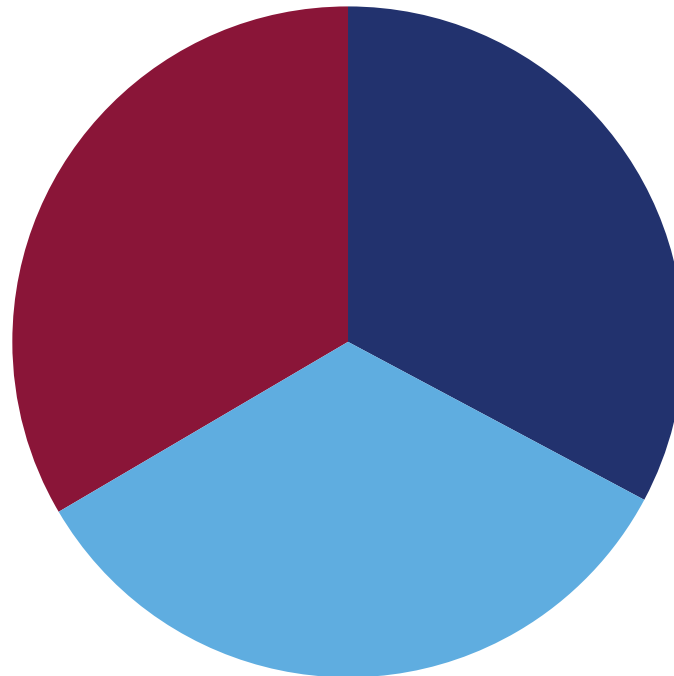


# Asset Allocation By Manager

Fixed Income Composite

Periods Ended March 31, 2023

Mar-2023 : 460,296,404



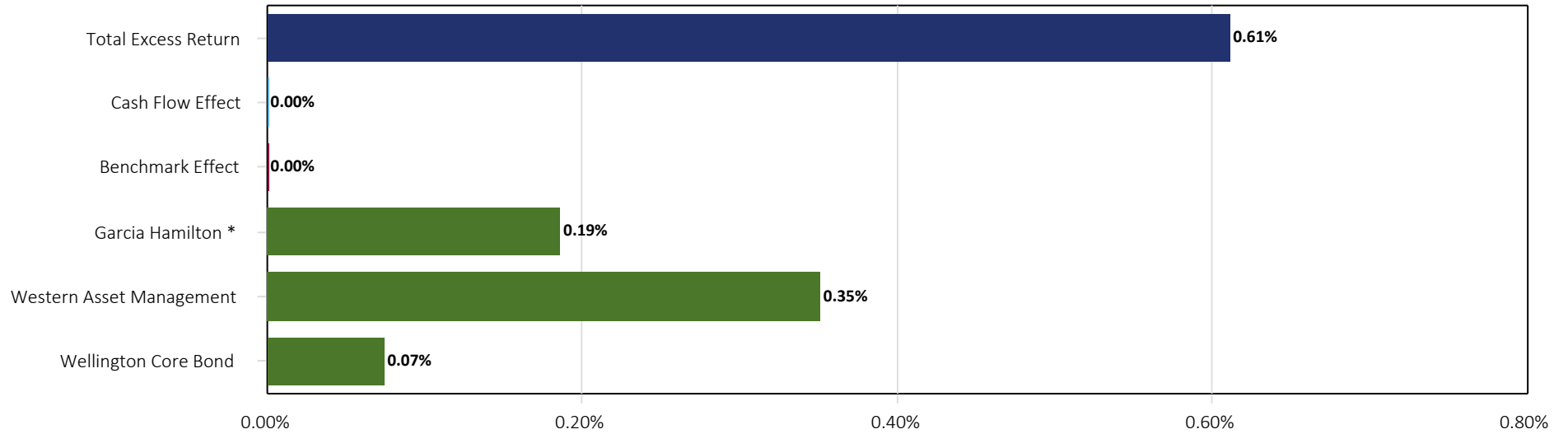
	Market Value \$	Allocation (%)
■ Garcia Hamilton *	150,989,470	32.8
■ Western Asset Management	155,310,666	33.7
■ Wellington Core Bond	153,996,268	33.5

# Asset Class Attribution

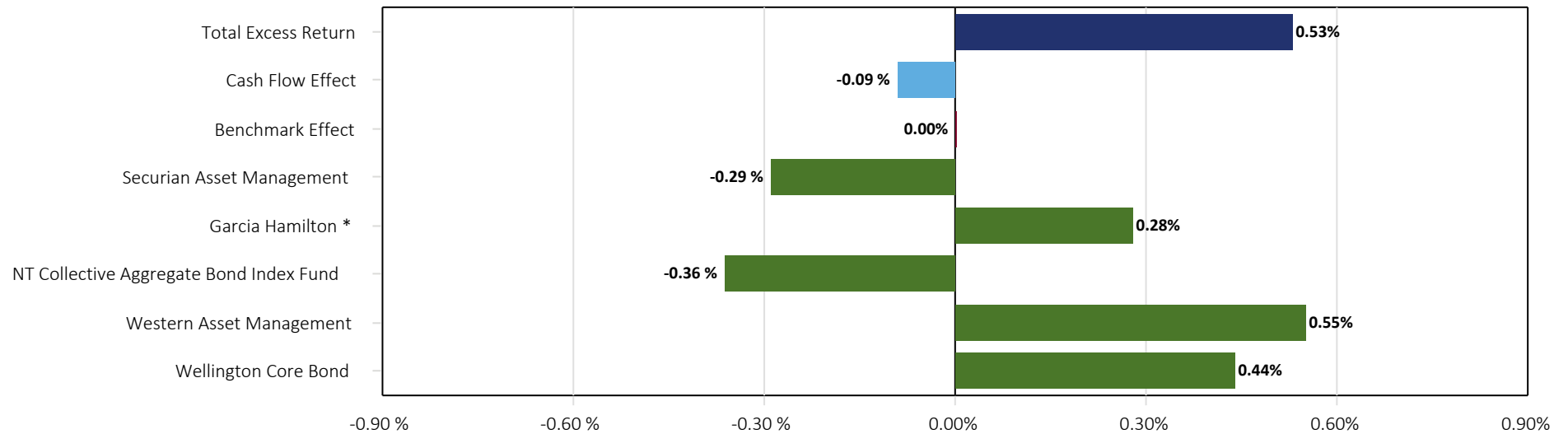
## Fixed Income Composite

Periods Ended March 31, 2023

### 1 Quarter



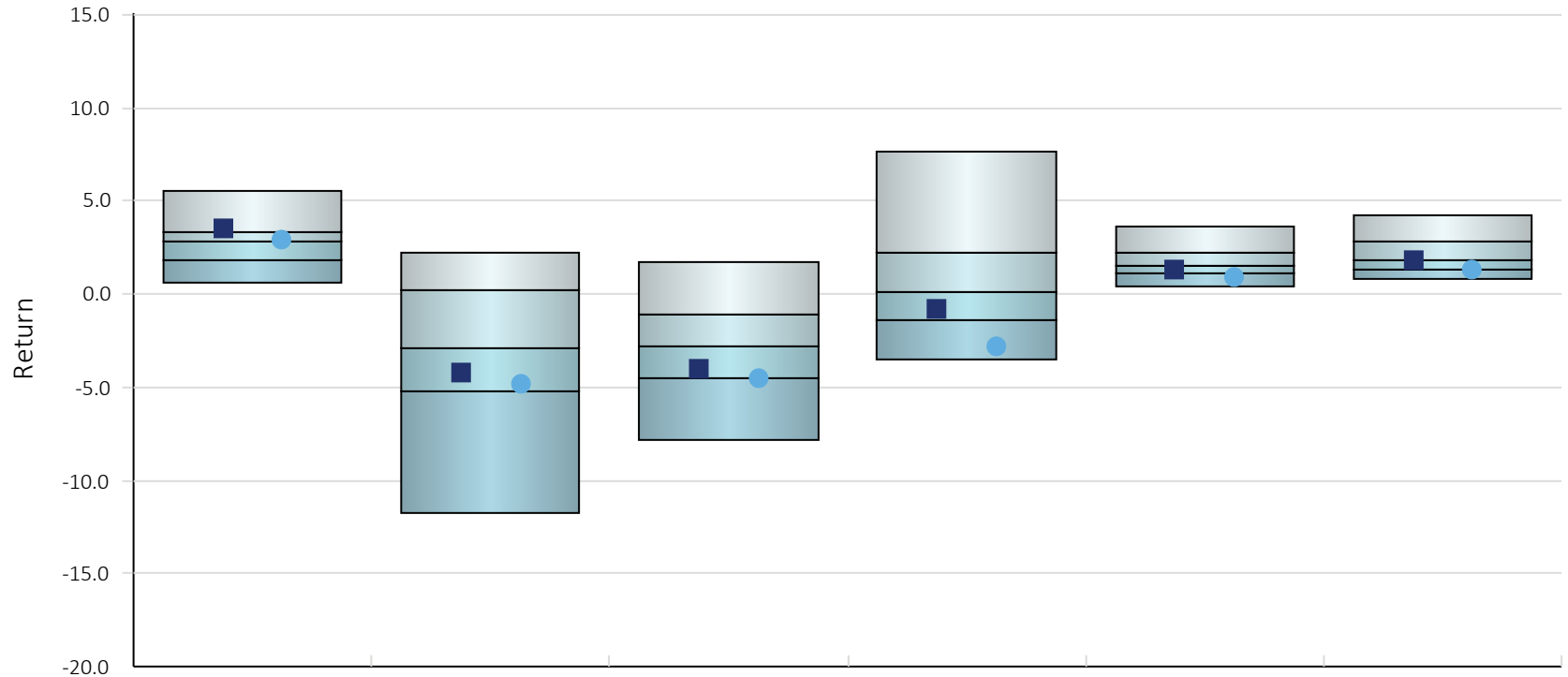
### 1 Year



# Peer Group Analysis

## Fixed Income Composite

Periods Ended March 31, 2023



	<b>1 Quarter</b>	<b>1 Year</b>	<b>2 Years</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ Fixed Income Composite	3.57 (18)	-4.25 (60)	-4.04 (67)	-0.78 (67)	1.31 (68)	1.84 (48)
● Blmbg. U.S. Aggregate Index	2.96 (43)	-4.78 (67)	-4.47 (75)	-2.77 (92)	0.90 (87)	1.36 (72)
5th Percentile	5.57	2.18	1.74	7.66	3.67	4.22
1st Quartile	3.34	0.18	-1.06	2.24	2.27	2.88
Median	2.79	-2.89	-2.75	0.07	1.56	1.79
3rd Quartile	1.78	-5.25	-4.48	-1.37	1.16	1.32
95th Percentile	0.66	-11.73	-7.79	-3.47	0.44	0.77
Population	1,065	1,040	1,015	1,007	966	820

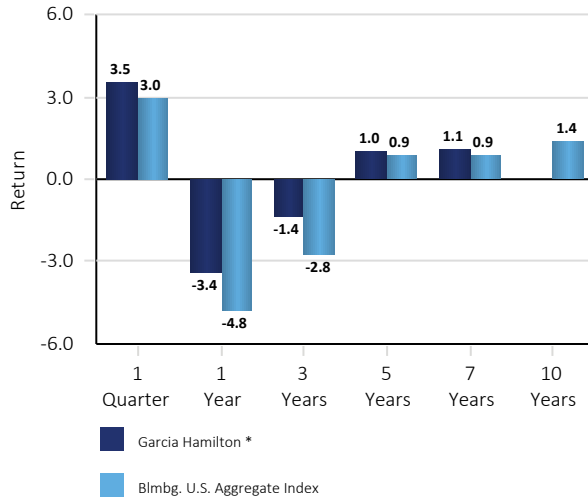
Parenteses contain percentile rankings.  
Calculation based on monthly periodicity.

# Performance Summary

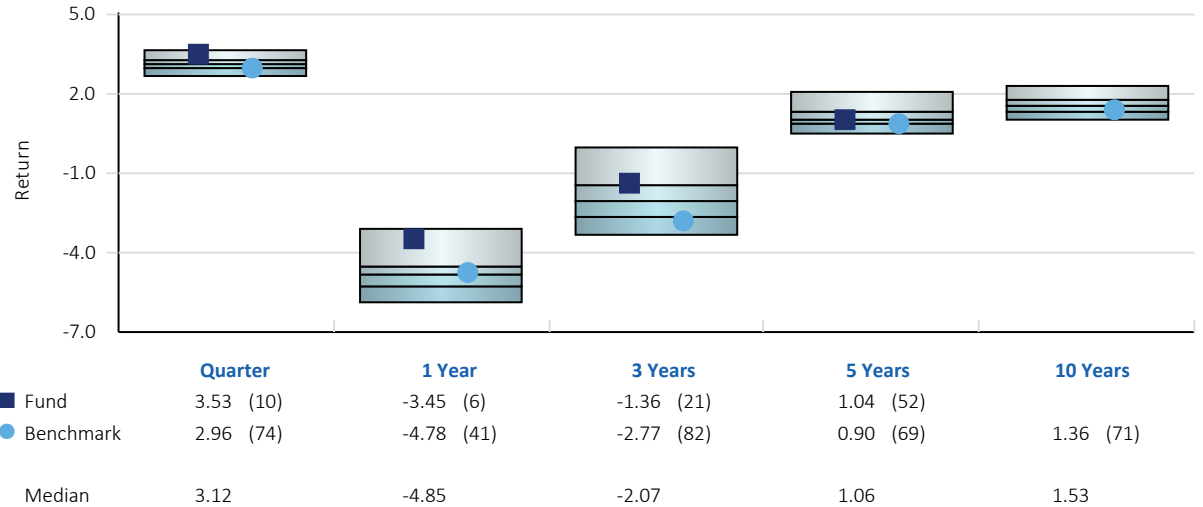
Garcia Hamilton \*

Periods Ended March 31, 2023

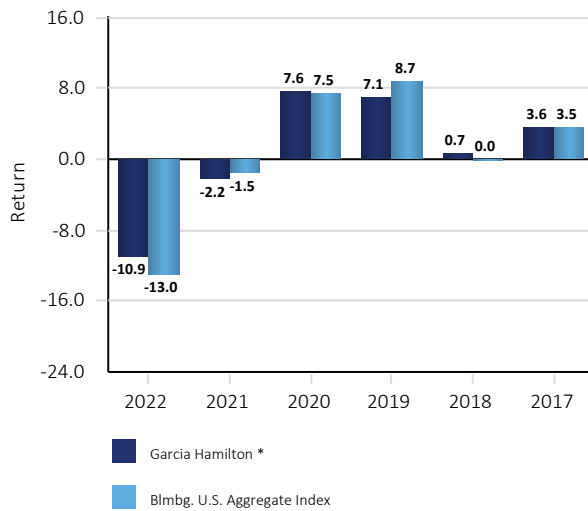
## Comparative Performance



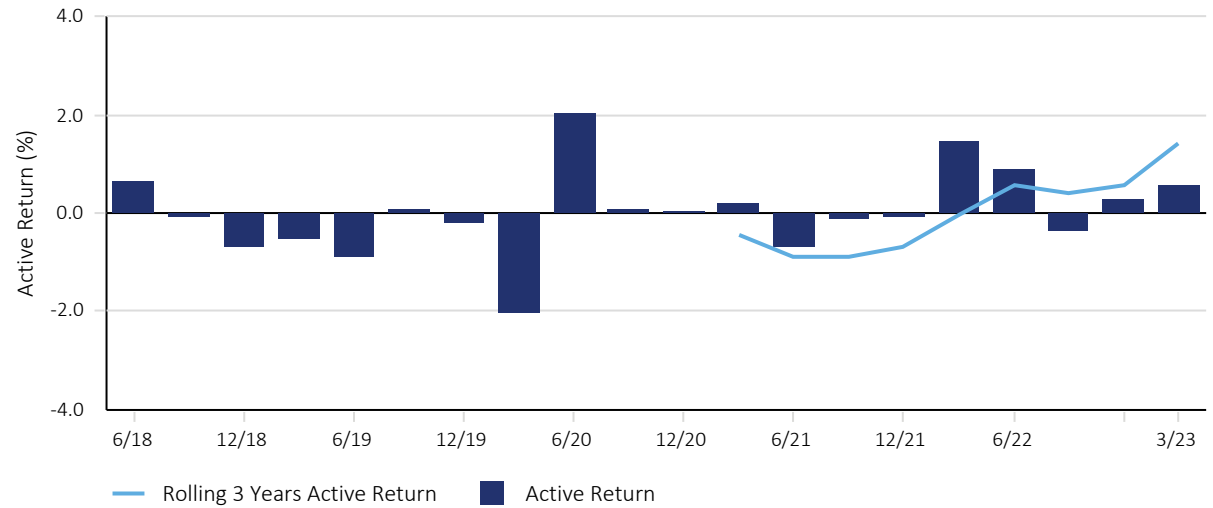
## Peer Group Analysis: IM U.S. Broad Market Core Fixed Income (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance





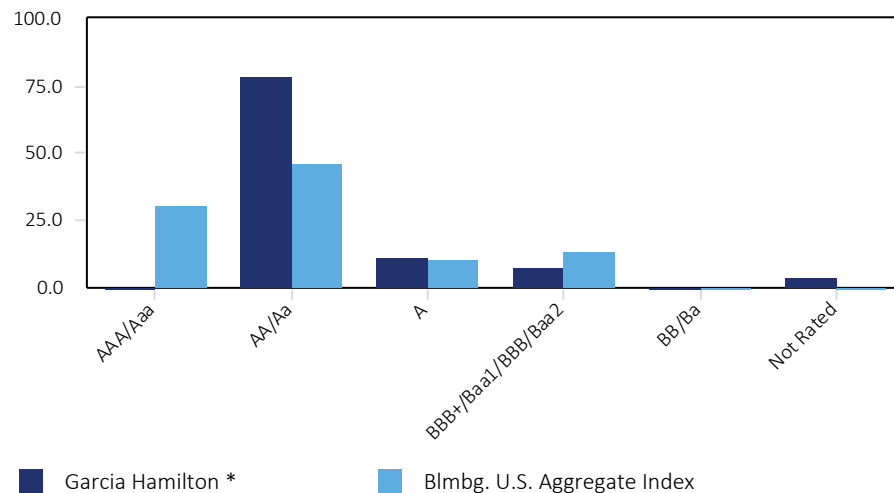
# Portfolio Characteristics

Garcia Hamilton \* vs Blmbg. U.S. Aggregate Index  
 Periods Ended As of March 31, 2023

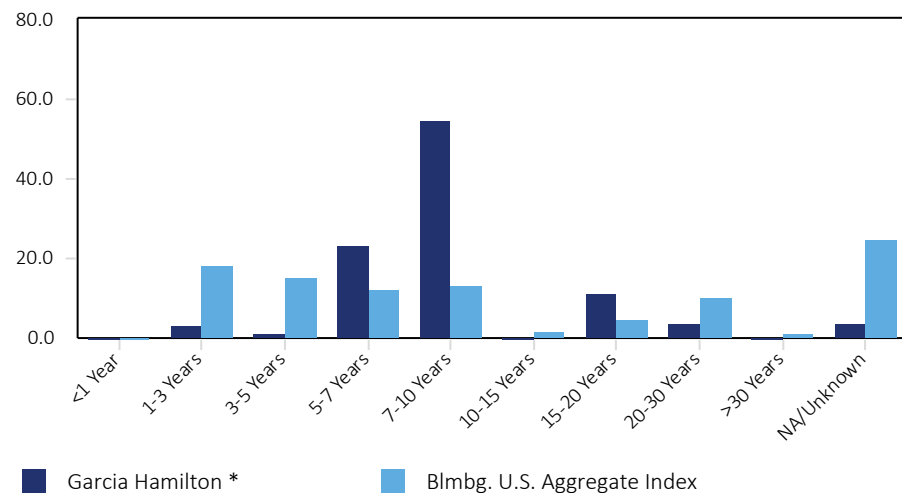
## Portfolio Characteristics

	Portfolio	Benchmark
Avg. Maturity	9.62	8.96
Avg. Quality	AA	AA
Convexity	0.19	0.40
Coupon Rate (%)	3.01	2.89
Current Yield		4.63
Modified Duration	7.36	6.51
Effective Duration	6.91	6.49
Spread Duration		
Yield To Maturity (%)	4.60	4.63
Yield To Worst	4.60	4.67
Market To Book Value		
Crediting Rate		
Crediting to Underlying Ratio		
Underlying Yield		

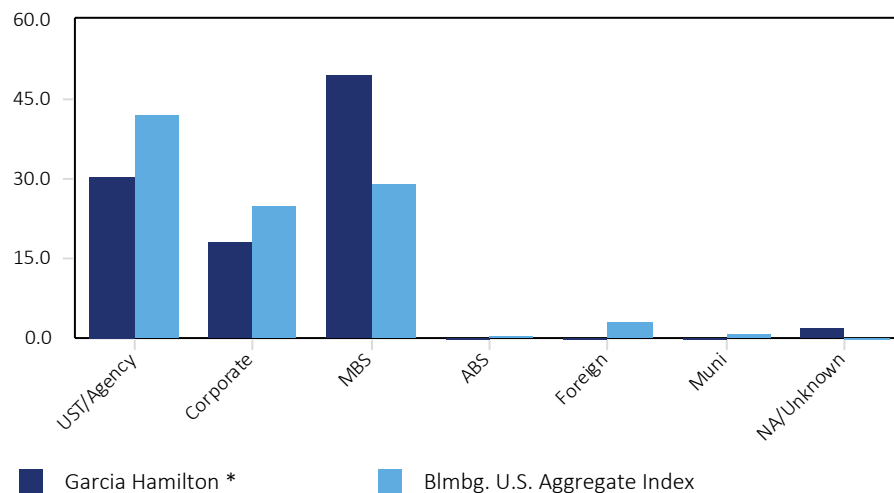
## Credit Quality Distribution (%)



## Maturity Distribution (%)



## Sector Distribution (%)

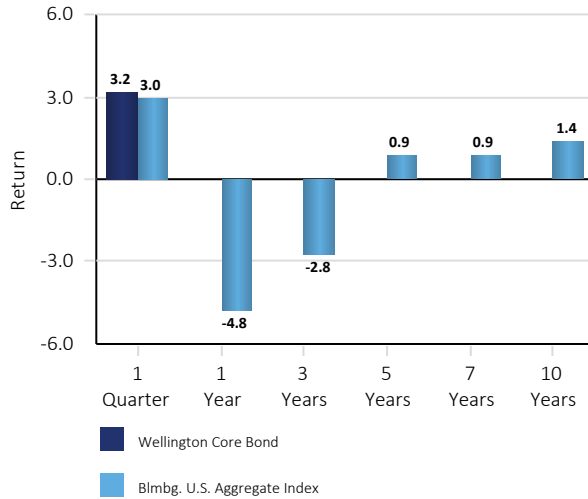


# Performance Summary

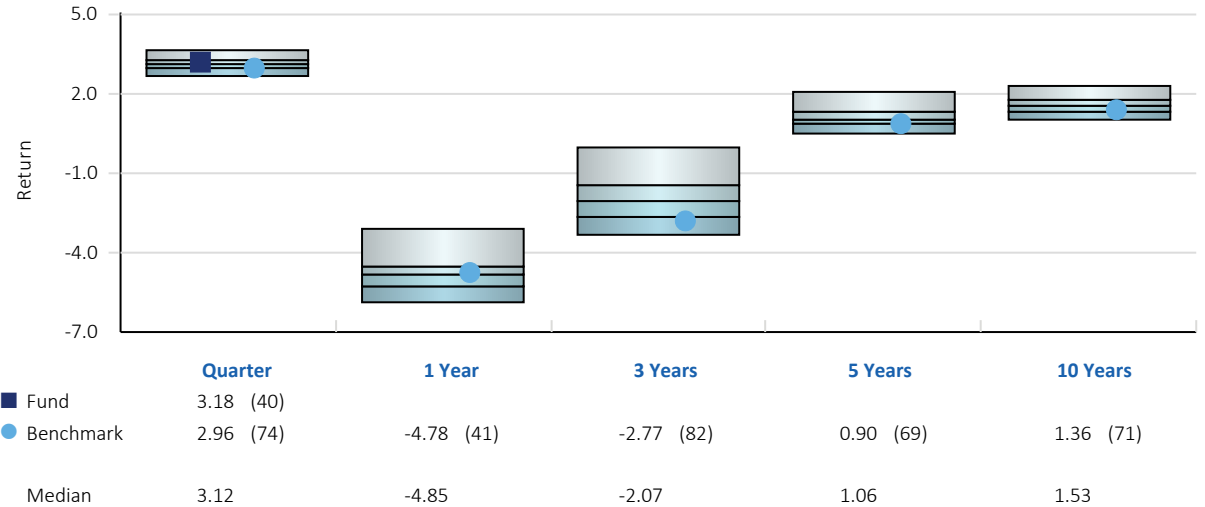
## Wellington Core Bond

Periods Ended March 31, 2023

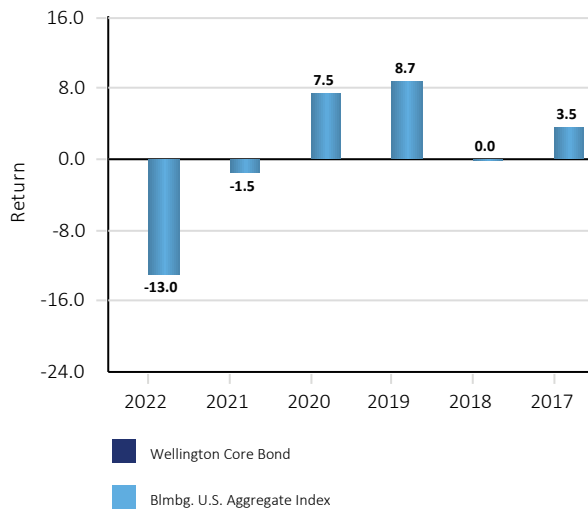
### Comparative Performance



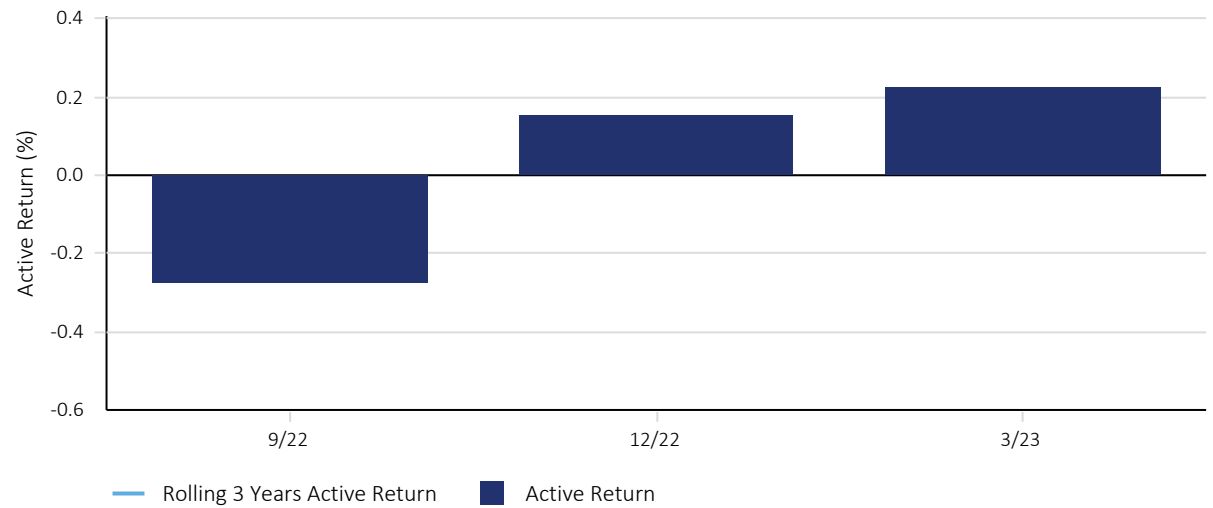
### Peer Group Analysis: IM U.S. Broad Market Core Fixed Income (SA+CF)



### Comparative Performance



### Rolling 3 Years Performance



# Portfolio Characteristics

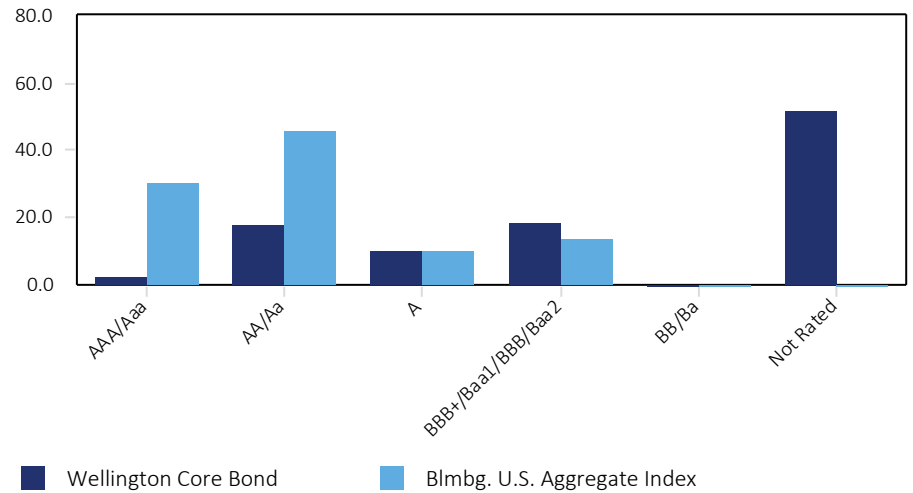
Wellington Core Bond vs Blmbg. U.S. Aggregate Index

Periods Ended As of March 31, 2023

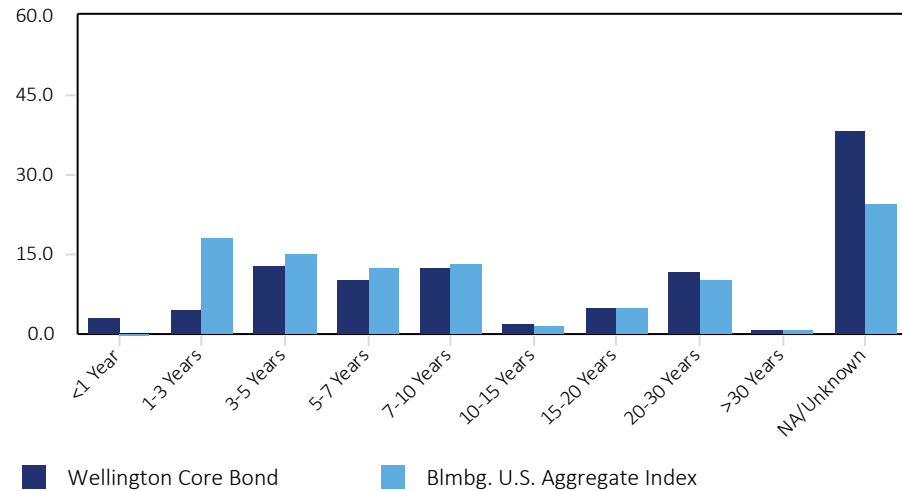
## Portfolio Characteristics

	Portfolio	Benchmark
Avg. Maturity	11.39	8.96
Avg. Quality	A	AA
Convexity	0.61	0.40
Coupon Rate (%)	3.21	2.89
Current Yield		4.63
Modified Duration	7.41	6.51
Effective Duration	7.97	6.49
Yield To Maturity (%)	5.56	4.63
Yield To Worst	5.56	4.67
Average Duration	7.42	6.51
Years to Maturity	11.39	8.96

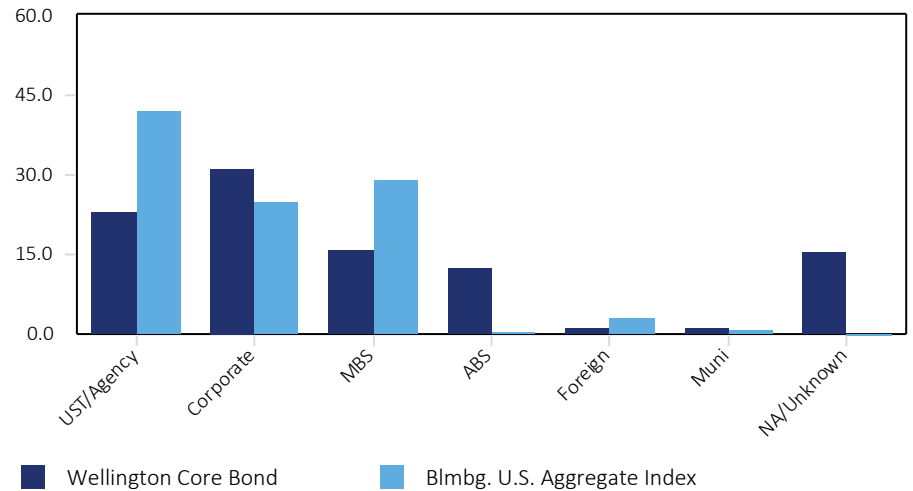
## Credit Quality Distribution (%)



## Maturity Distribution (%)



## Sector Distribution (%)

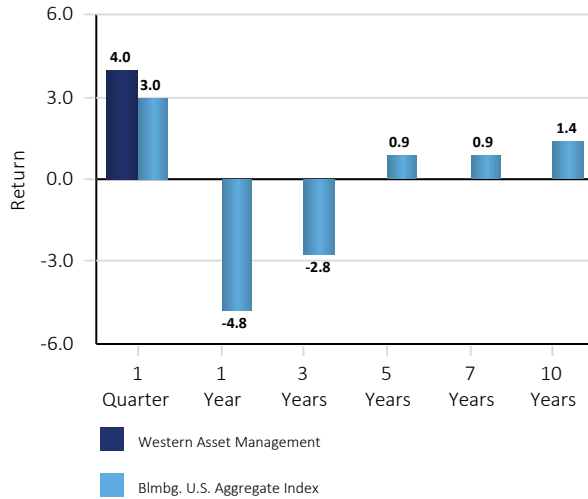


# Performance Summary

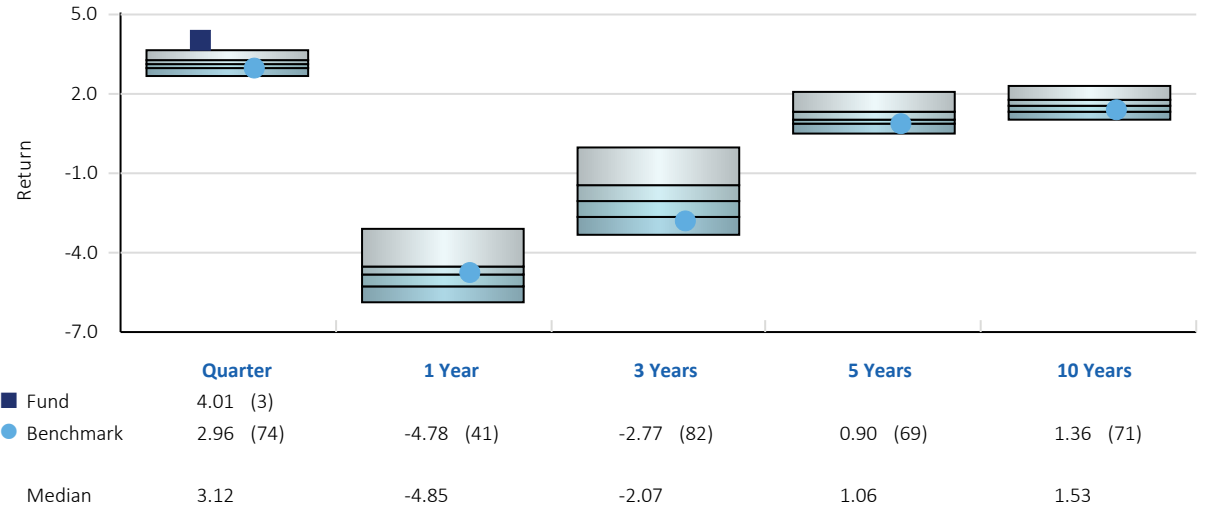
Western Asset Management

Periods Ended March 31, 2023

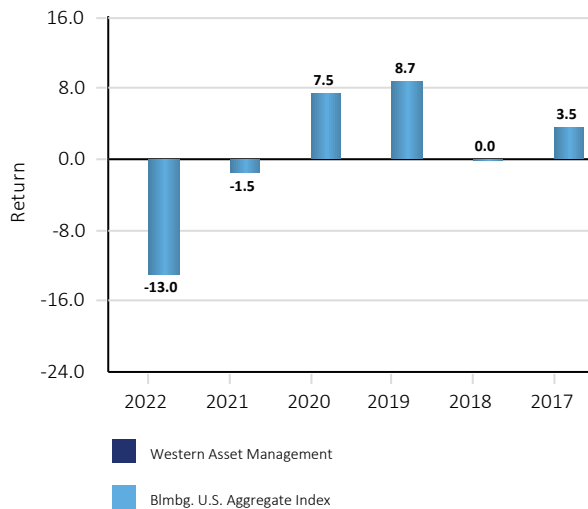
## Comparative Performance



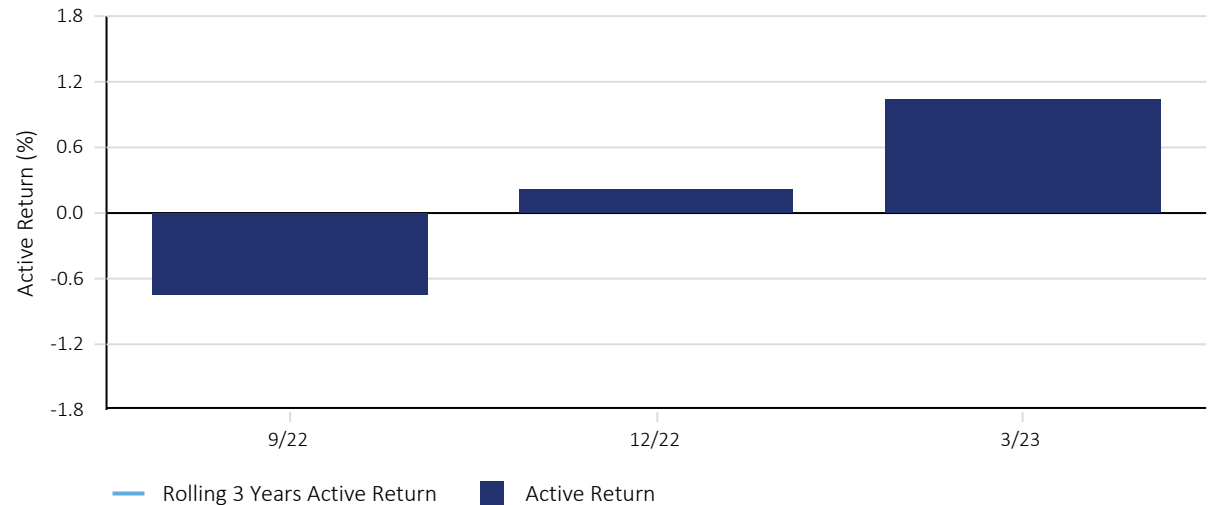
## Peer Group Analysis: IM U.S. Broad Market Core Fixed Income (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance



# Portfolio Characteristics

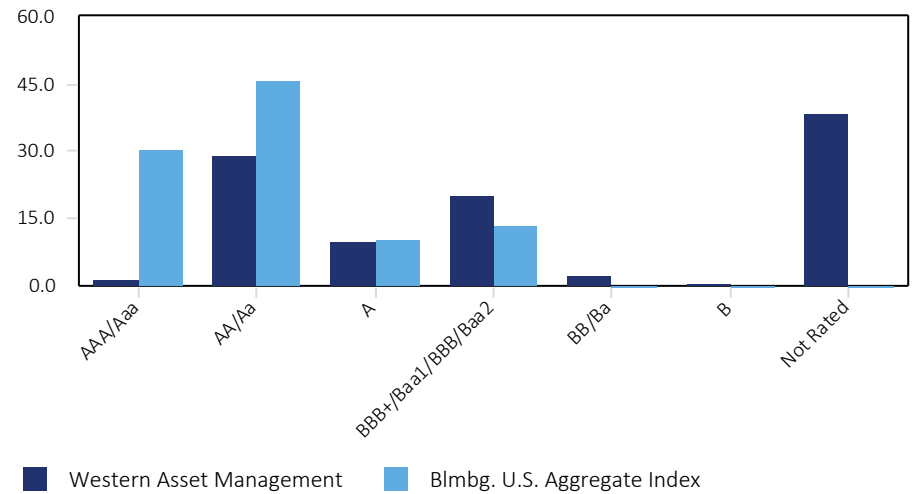
Western Asset Management vs Blmbg. U.S. Aggregate Index

Periods Ended As of March 31, 2023

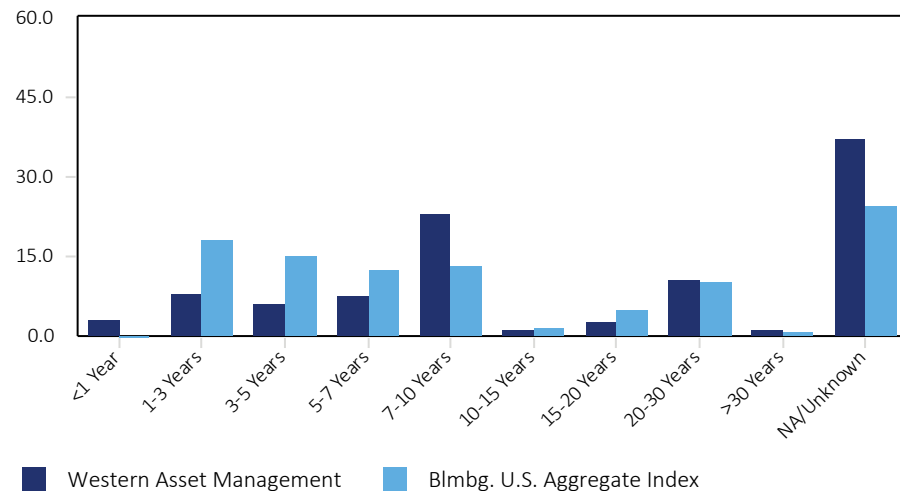
## Portfolio Characteristics

	Portfolio	Benchmark
Avg. Maturity	10.82	8.96
Avg. Quality	A	AA
Convexity	0.41	0.40
Coupon Rate (%)	3.28	2.89
Current Yield		4.63
Modified Duration	7.22	6.51
Effective Duration	7.06	6.49
Yield To Maturity (%)	5.23	4.63
Yield To Worst	5.23	4.67
Average Duration	7.26	6.51
Years to Maturity	10.82	8.96

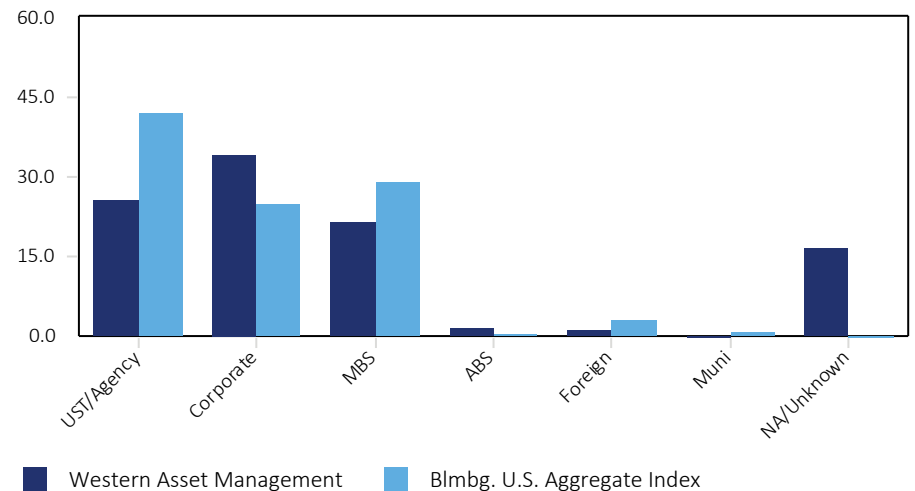
## Credit Quality Distribution (%)



## Maturity Distribution (%)



## Sector Distribution (%)

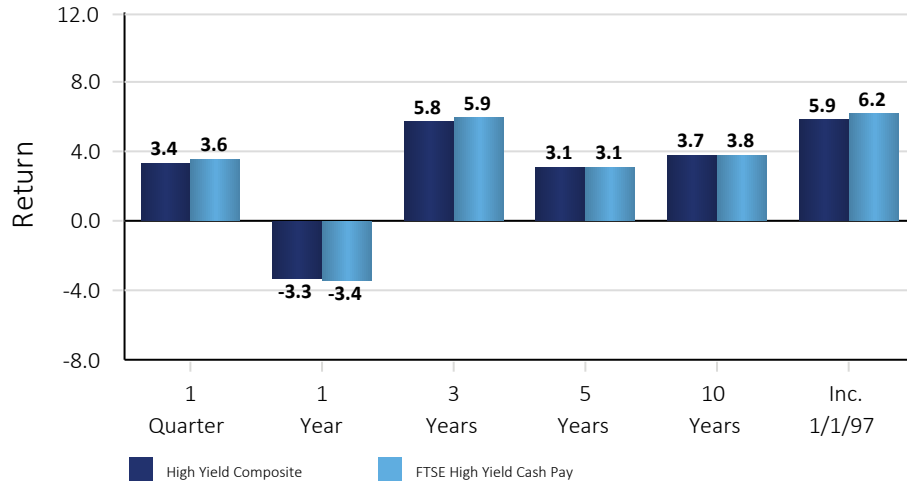


# High Yield Composite

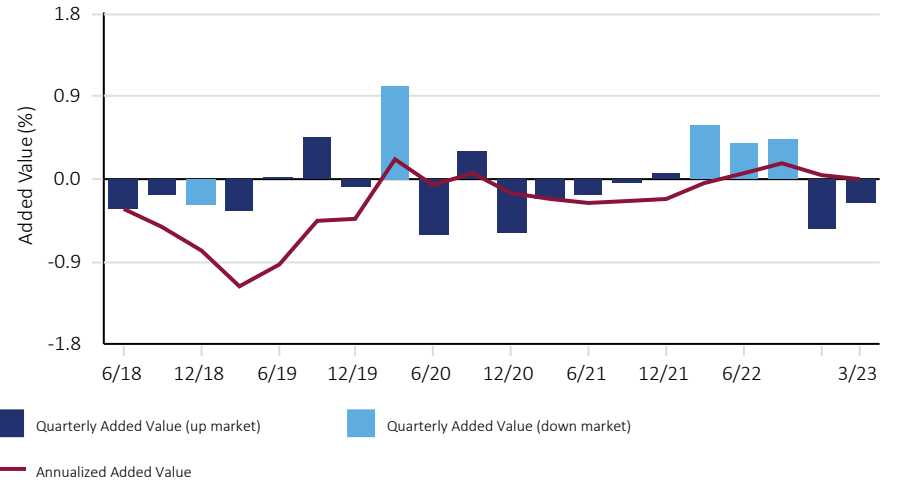
# Composite Performance Summary

High Yield Composite  
Periods Ended March 31, 2023

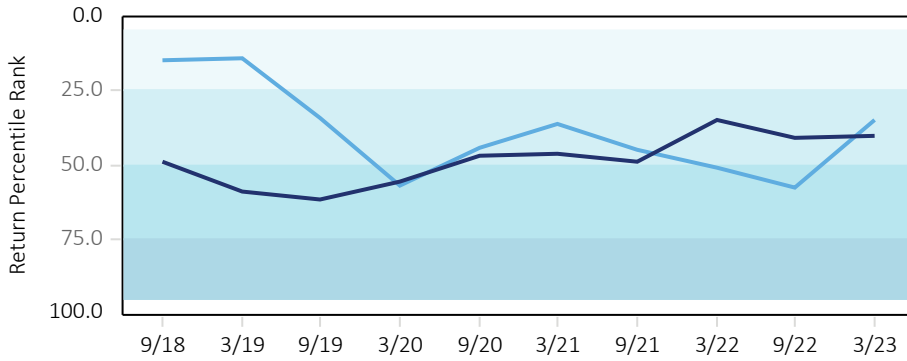
## Comparative Performance



## Added Value History

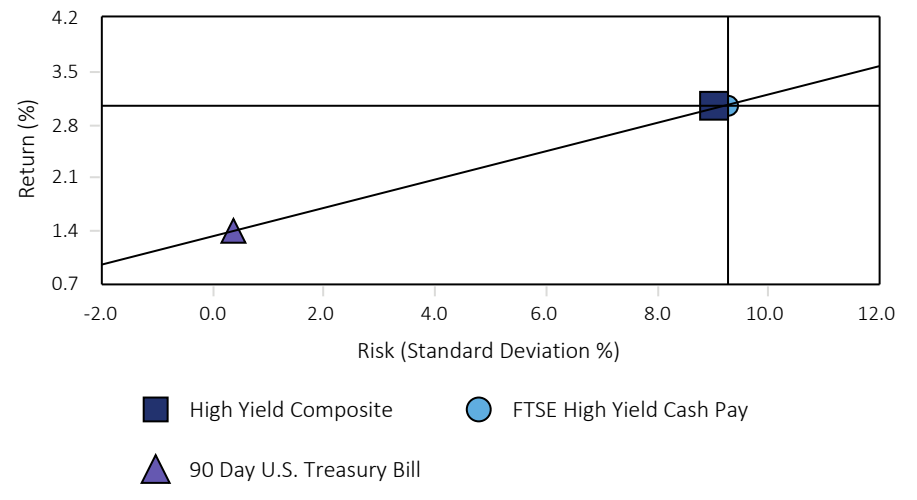


## Rolling Percentile Rank: IM U.S. High Yield Bonds (SA+CF)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
— High Yield Composite	10	0 (0%)	7 (70%)	3 (30%)	0 (0%)
— Benchmark	10	2 (20%)	5 (50%)	3 (30%)	0 (0%)

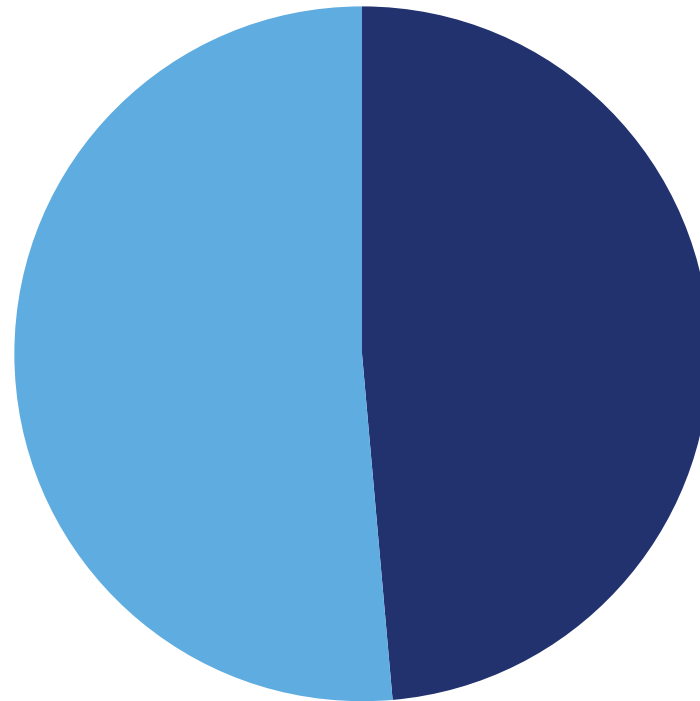
## Risk and Return 04/1/18 - 03/31/23



# Asset Allocation By Manager

High Yield Composite  
Periods Ended March 31, 2023

Mar-2023 : 342,753,823



	Market Value \$	Allocation (%)
■ Oaktree Capital Management	166,583,031	48.6
■ BlackRock	176,170,792	51.4

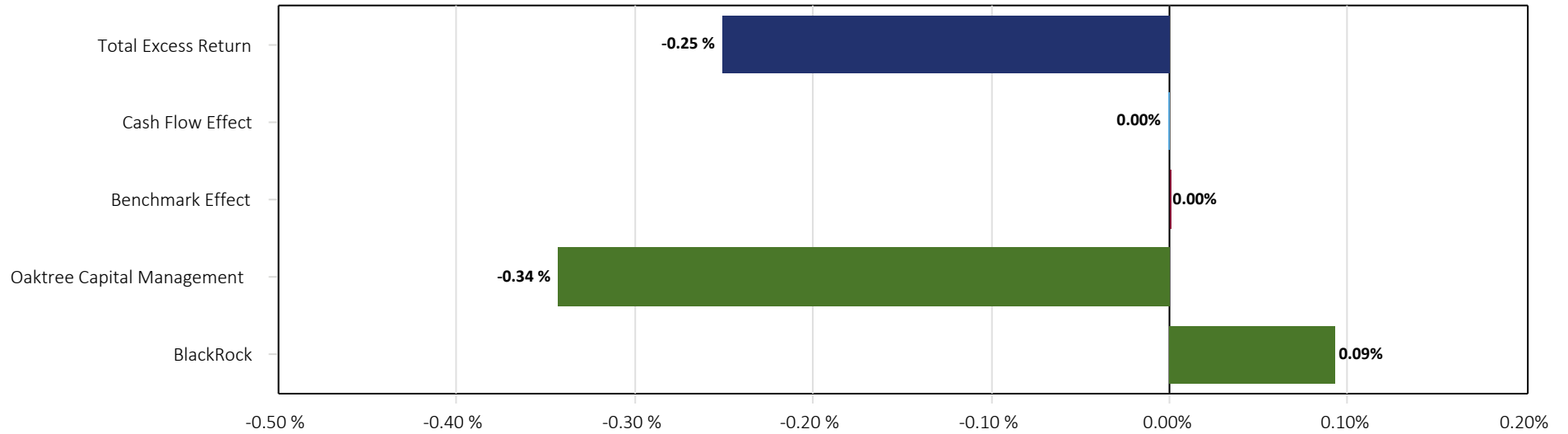


# Asset Class Attribution

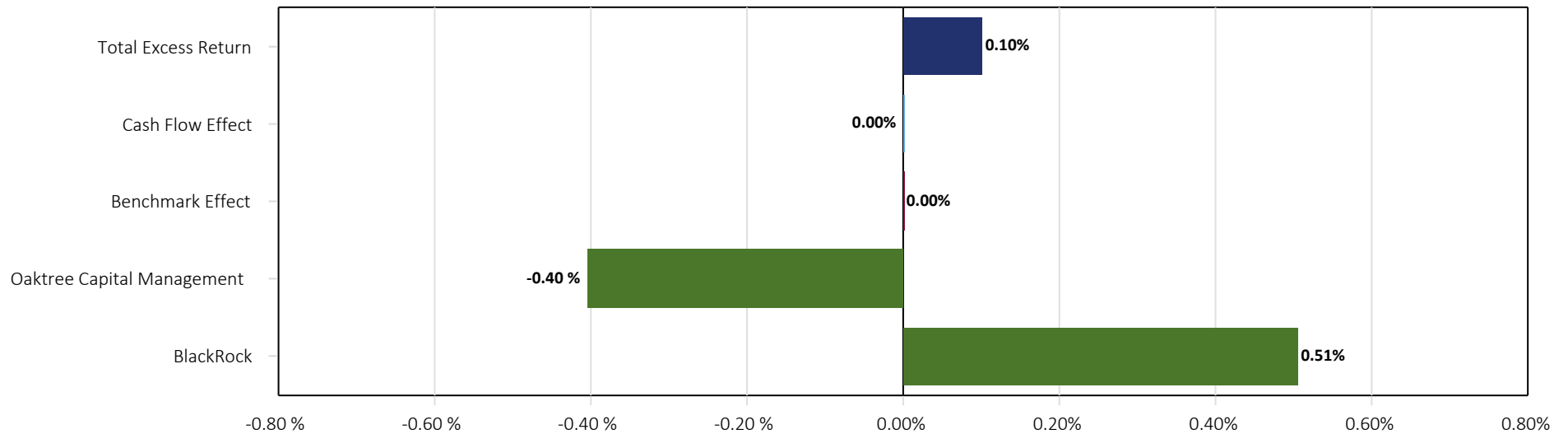
## High Yield Composite

Periods Ended March 31, 2023

### 1 Quarter



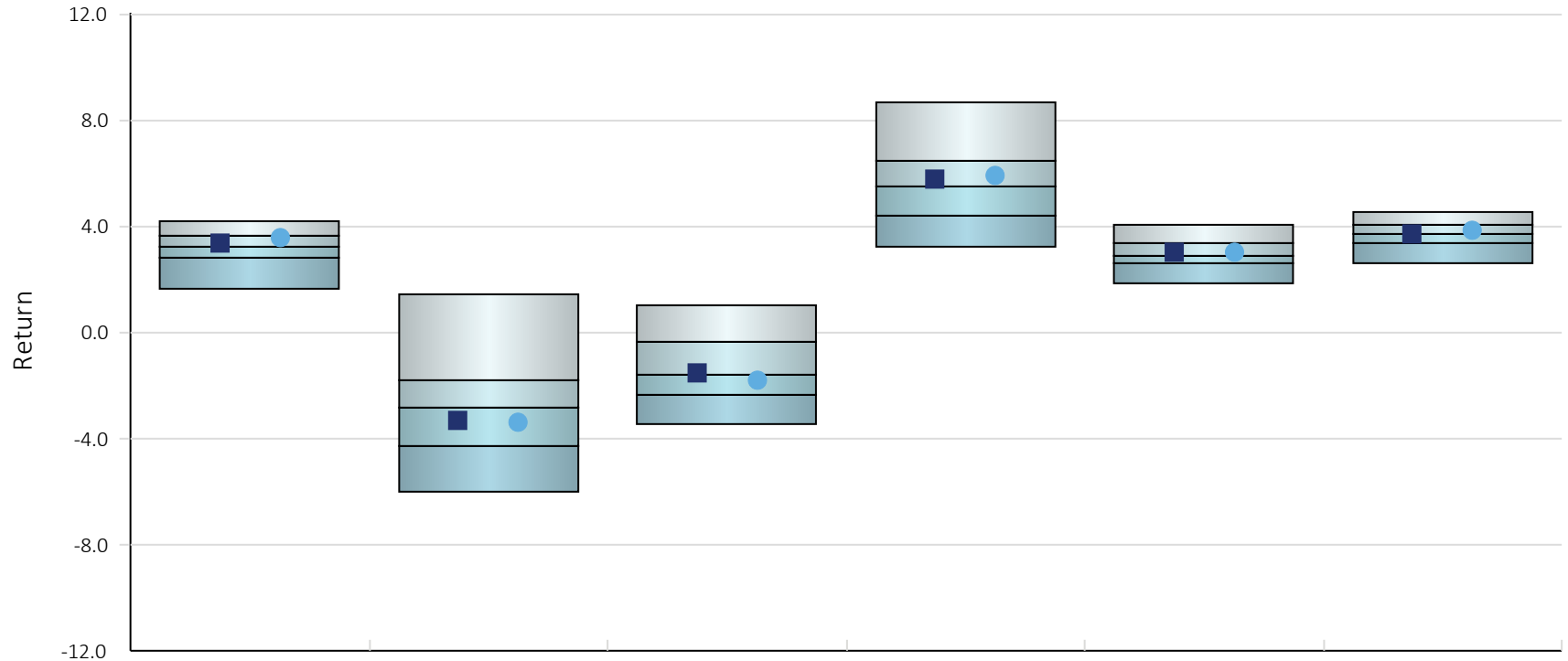
### 1 Year



# Peer Group Analysis

## High Yield Composite

Periods Ended March 31, 2023



	<b>1 Quarter</b>	<b>1 Year</b>	<b>2 Years</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ High Yield Composite	3.35 (47)	-3.31 (61)	-1.52 (47)	5.78 (40)	3.05 (37)	3.75 (49)
● FTSE High Yield Cash Pay	3.60 (28)	-3.41 (63)	-1.80 (55)	5.94 (35)	3.06 (37)	3.83 (41)
5th Percentile	4.20	1.46	1.03	8.71	4.09	4.53
1st Quartile	3.63	-1.78	-0.33	6.49	3.36	4.04
Median	3.23	-2.85	-1.60	5.51	2.88	3.70
3rd Quartile	2.84	-4.29	-2.34	4.43	2.61	3.35
95th Percentile	1.68	-6.03	-3.44	3.25	1.83	2.60
Population	127	127	125	124	120	95

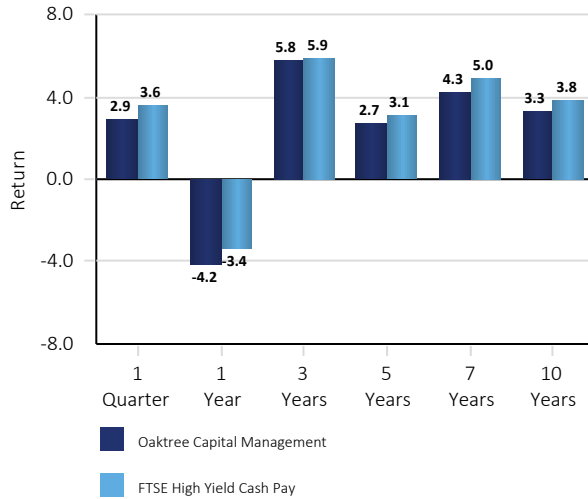
Parenteses contain percentile rankings.  
Calculation based on quarterly periodicity.

# Performance Summary

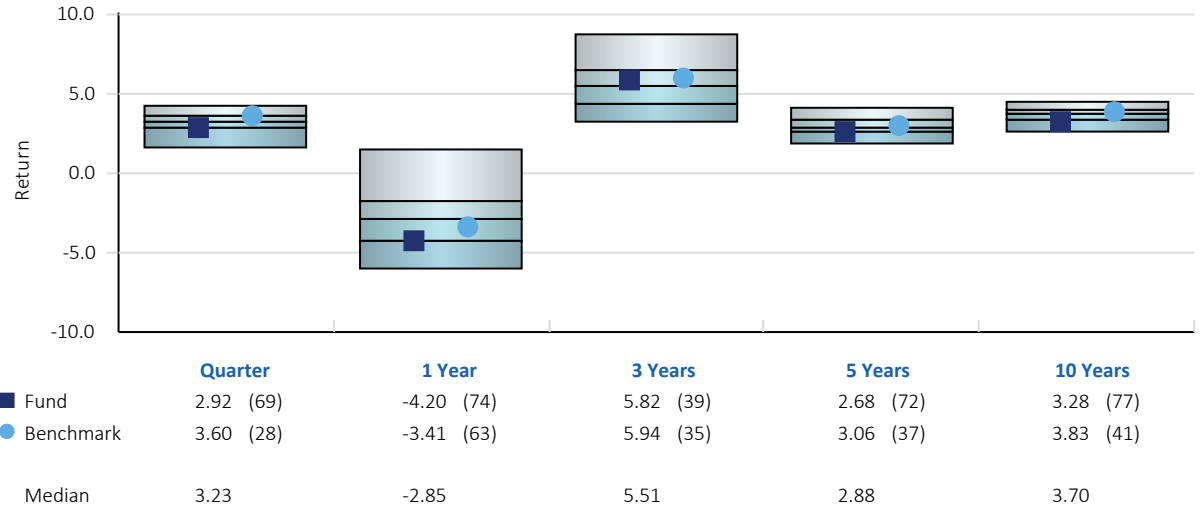
Oaktree Capital Management

Periods Ended March 31, 2023

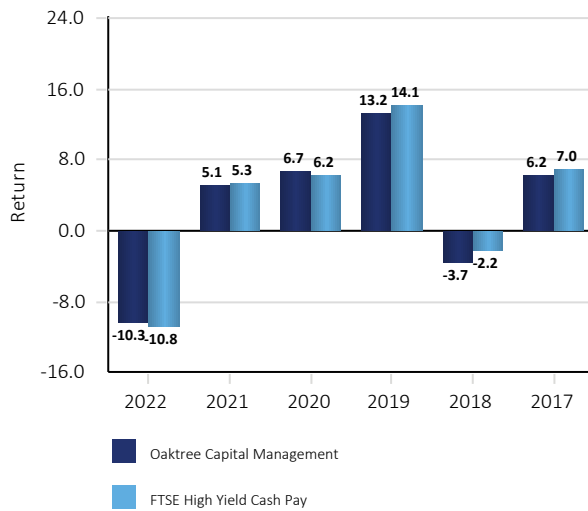
## Comparative Performance



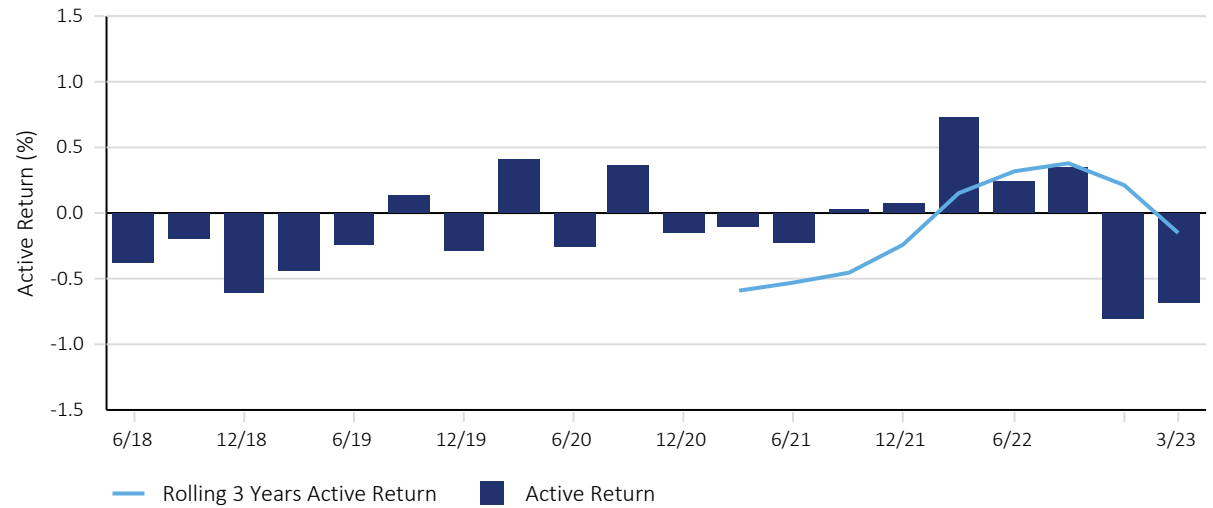
## Peer Group Analysis: IM U.S. High Yield Bonds (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance



# Portfolio Characteristics

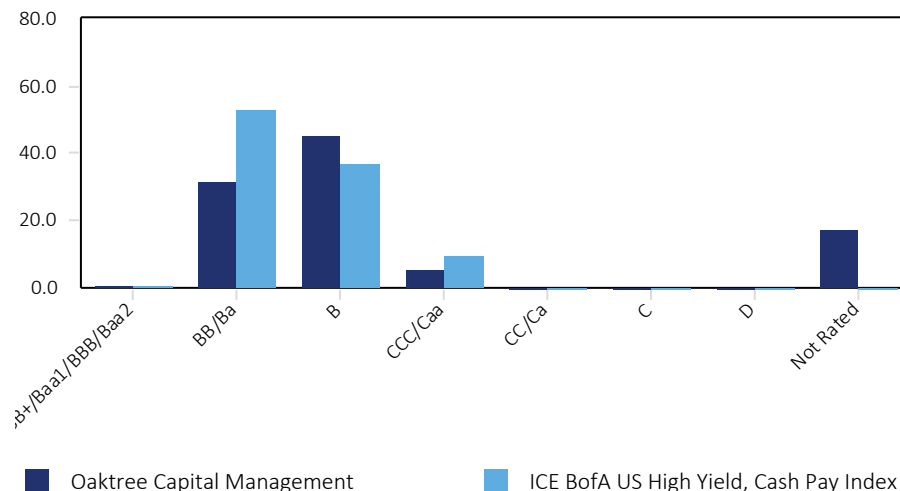
## Oaktree Capital Management vs ICE BofA US High Yield, Cash Pay Index

Periods Ended As of March 31, 2023

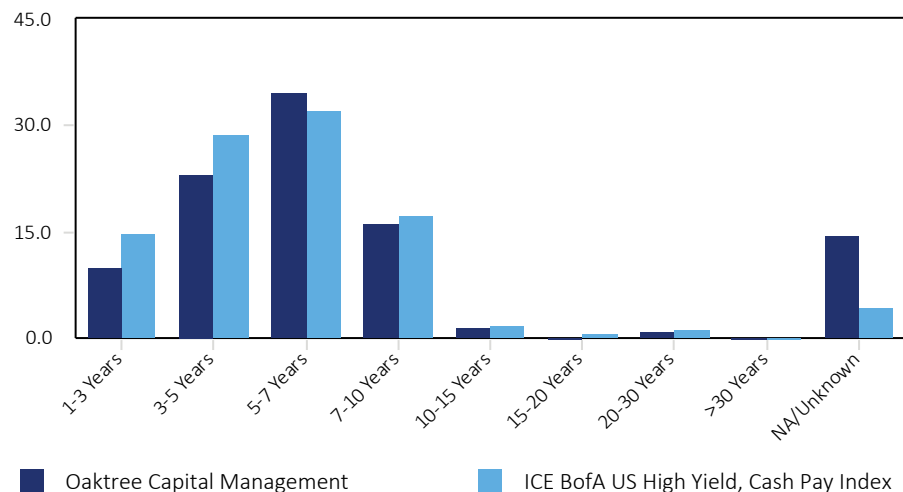
### Portfolio Characteristics

	Portfolio	Benchmark
Avg. Maturity	5.63	5.56
Avg. Quality	B	B
Convexity	0.05	0.06
Coupon Rate (%)	5.68	5.84
Current Yield		8.89
Modified Duration	4.45	4.34
Effective Duration	4.24	4.34
Spread Duration		
Yield To Maturity (%)	8.61	8.89
Yield To Worst	8.60	9.11
Market To Book Value		
Crediting Rate		
Crediting to Underlying Ratio		
Underlying Yield		

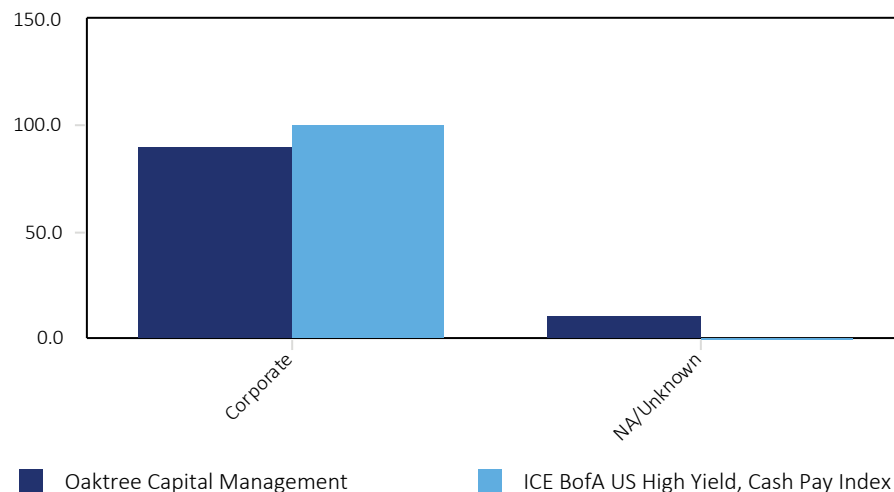
### Credit Quality Distribution (%)



### Maturity Distribution (%)



### Sector Distribution (%)

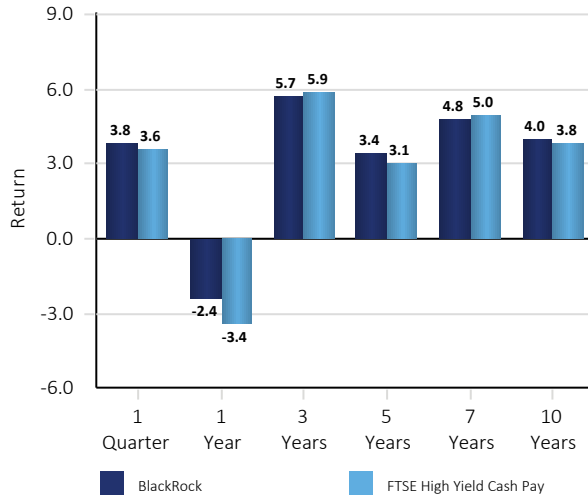


# Performance Summary

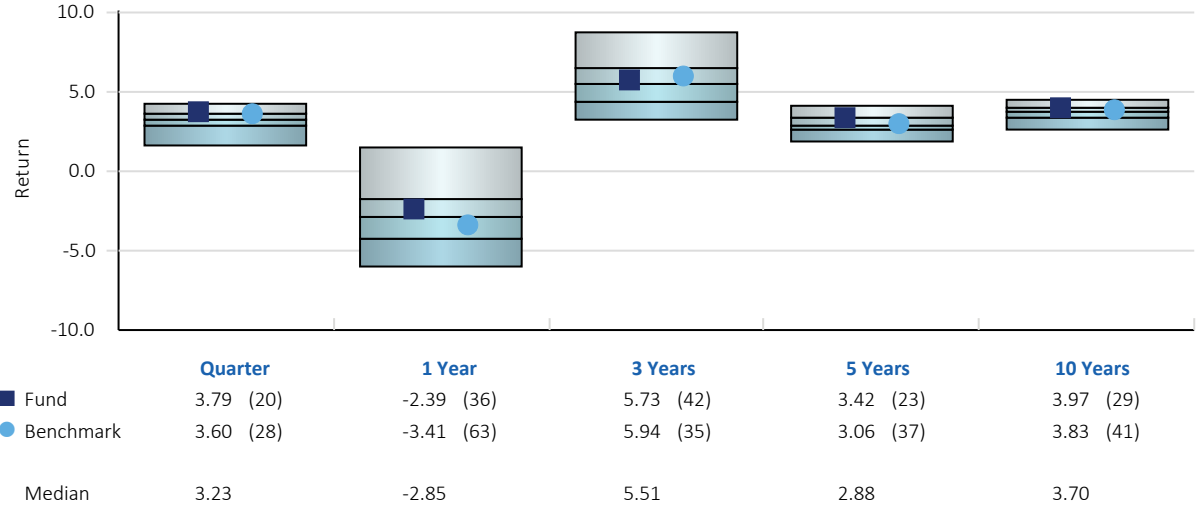
BlackRock

Periods Ended March 31, 2023

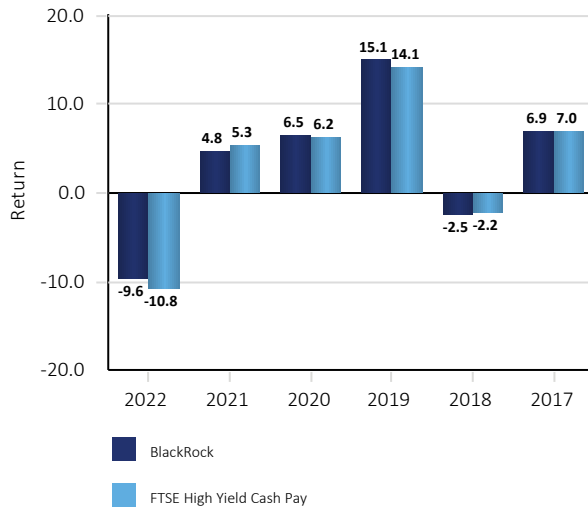
## Comparative Performance



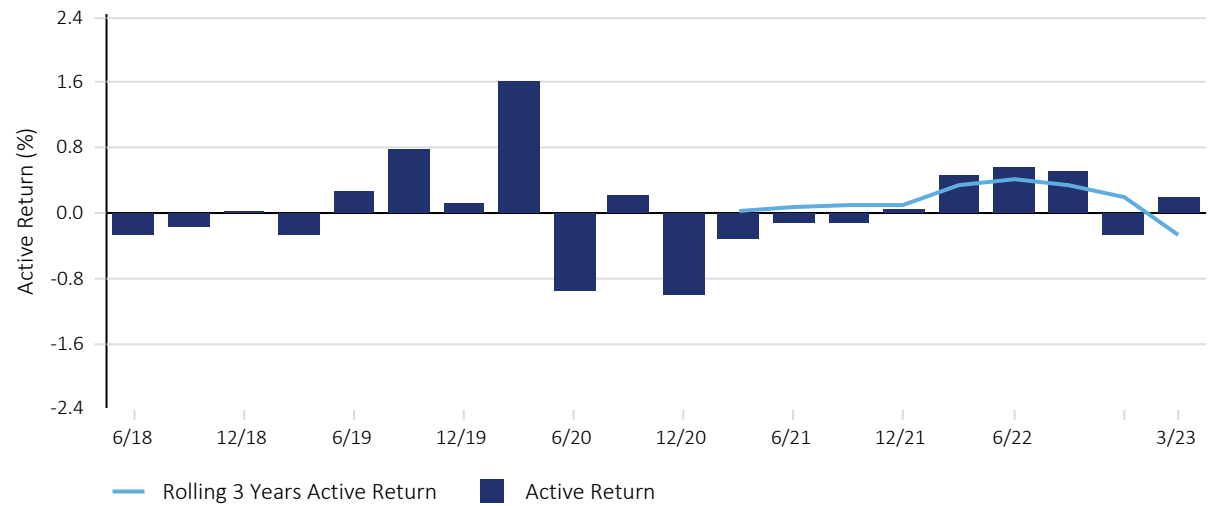
## Peer Group Analysis: IM U.S. High Yield Bonds (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance



# Portfolio Characteristics

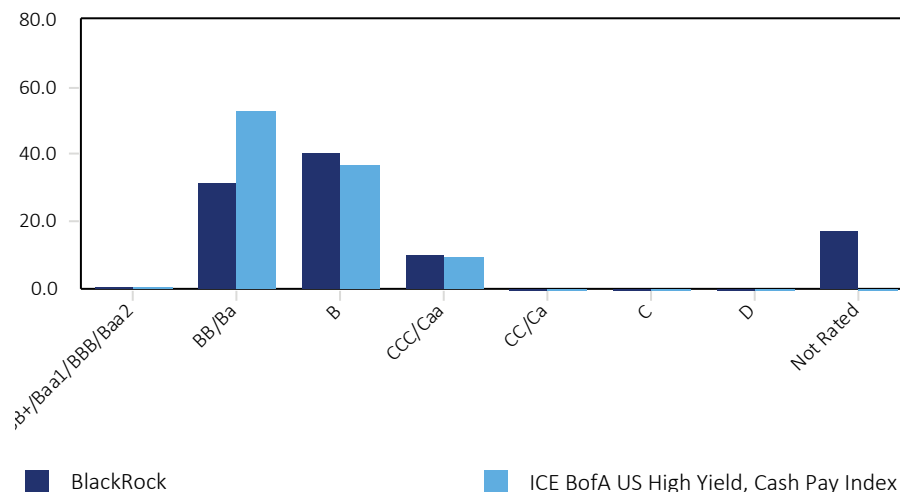
## BlackRock vs ICE BofA US High Yield, Cash Pay Index

Periods Ended As of March 31, 2023

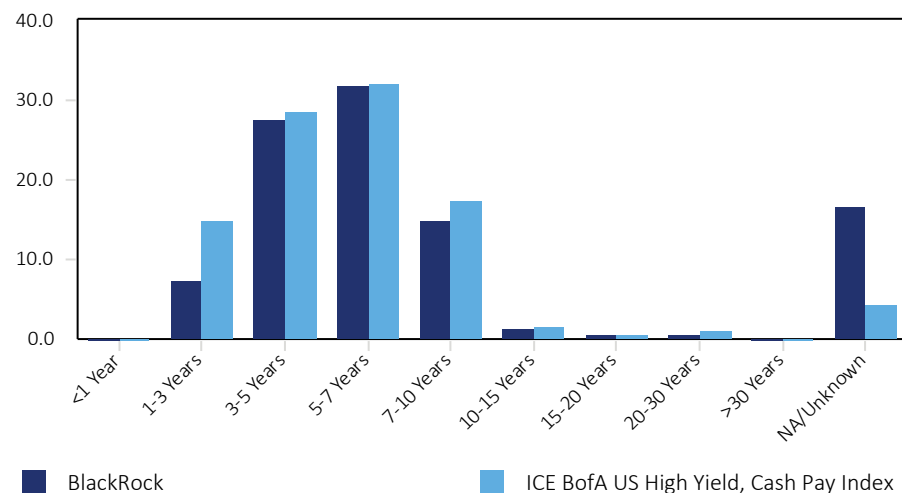
### Portfolio Characteristics

	Portfolio	Benchmark
Avg. Maturity	5.63	5.56
Avg. Quality	B	B
Convexity	0.03	0.06
Coupon Rate (%)	5.83	5.84
Current Yield		8.89
Modified Duration	4.48	4.34
Effective Duration	4.21	4.34
Spread Duration		
Yield To Maturity (%)	8.32	8.89
Yield To Worst	8.31	9.11
Market To Book Value		
Crediting Rate		
Crediting to Underlying Ratio		
Underlying Yield		

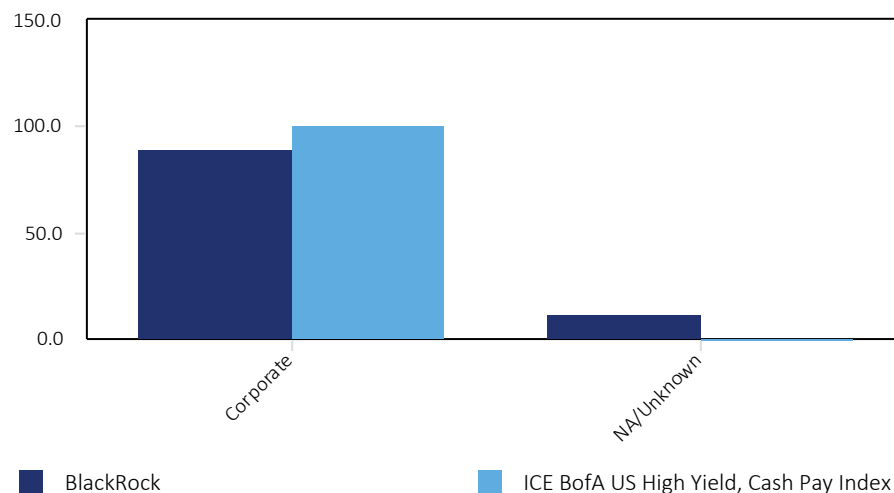
### Credit Quality Distribution (%)



### Maturity Distribution (%)



### Sector Distribution (%)



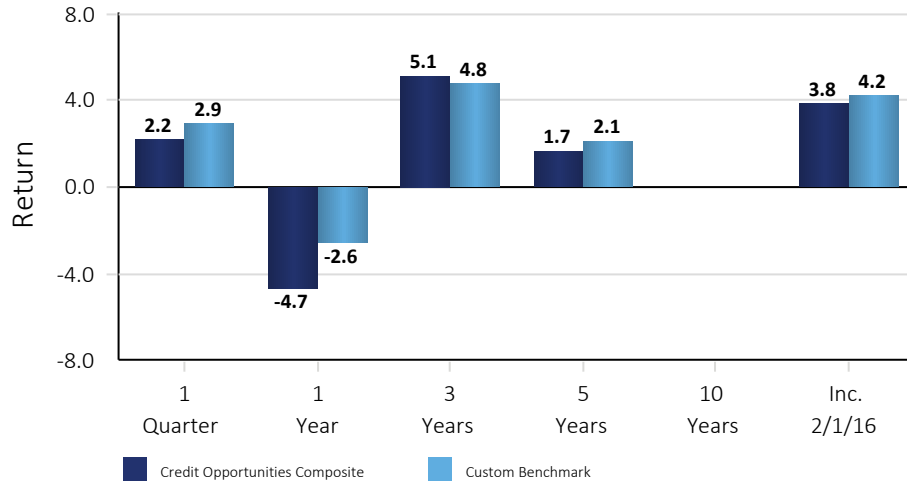
# Credit Opportunities Composite

# Composite Performance Summary

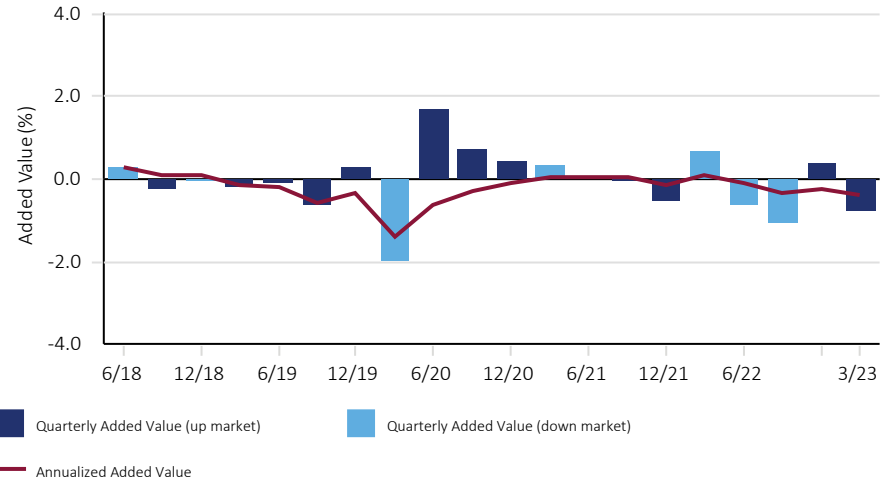
## Credit Opportunities Composite

Periods Ended March 31, 2023

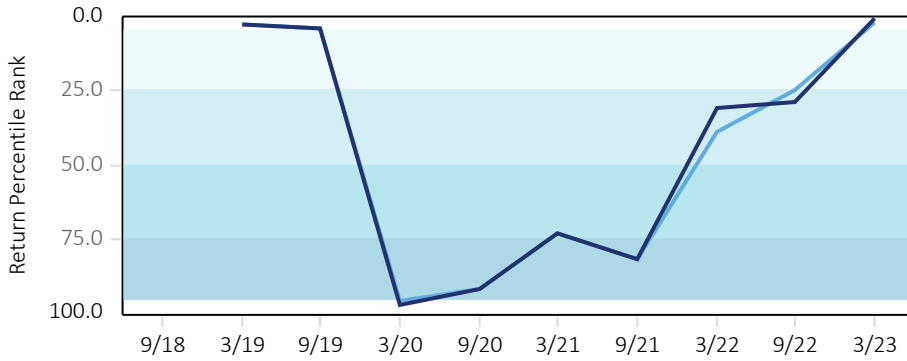
### Comparative Performance



### Added Value History

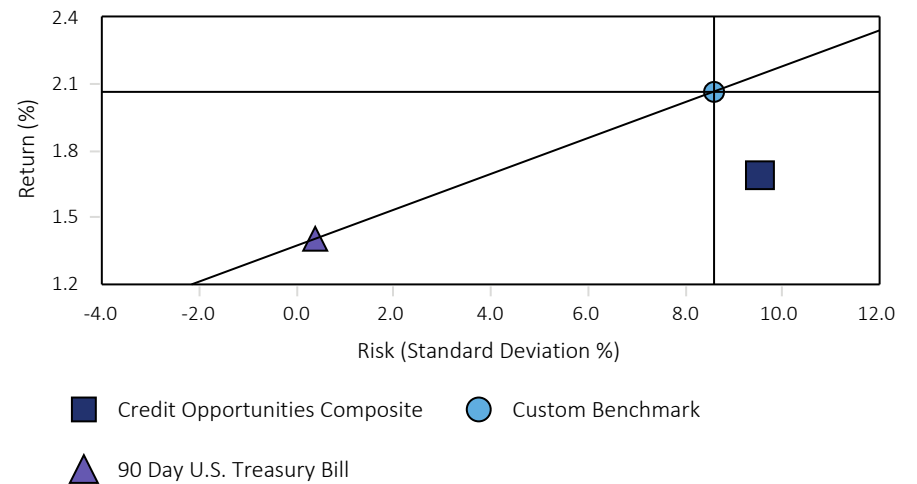


### Rolling Percentile Rank: 1M U.S. Broad Market Core+ Fixed Income (S&P 500)



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
— Credit Opportunities Composite	9	3 (33%)	2 (22%)	1 (11%)	3 (33%)
— Benchmark	9	4 (44%)	1 (11%)	1 (11%)	3 (33%)

### Risk and Return 04/1/18 - 03/31/23



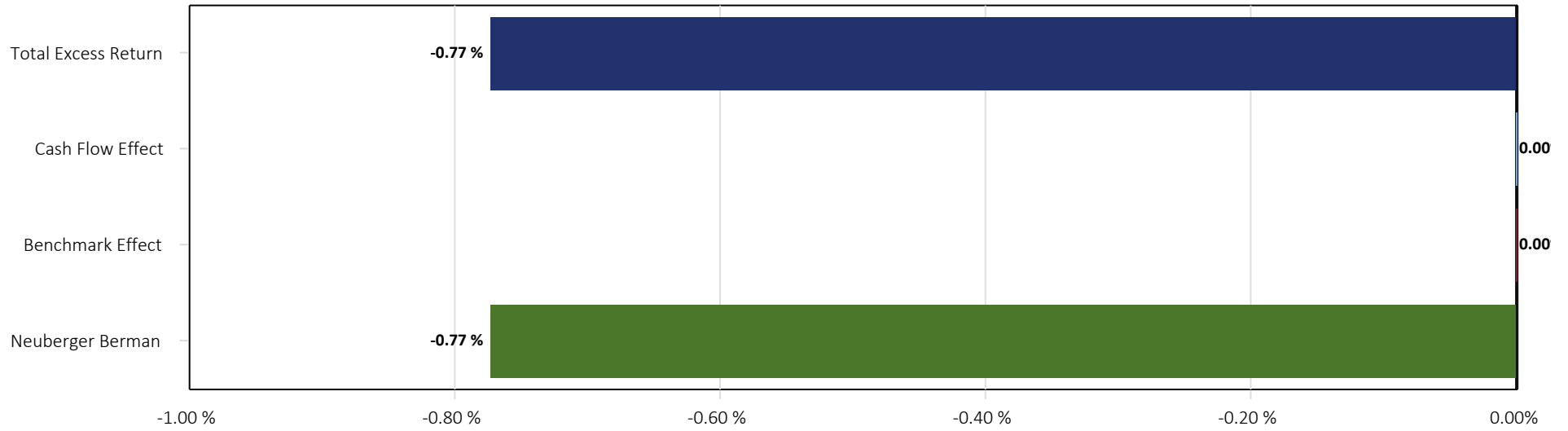


# Asset Class Attribution

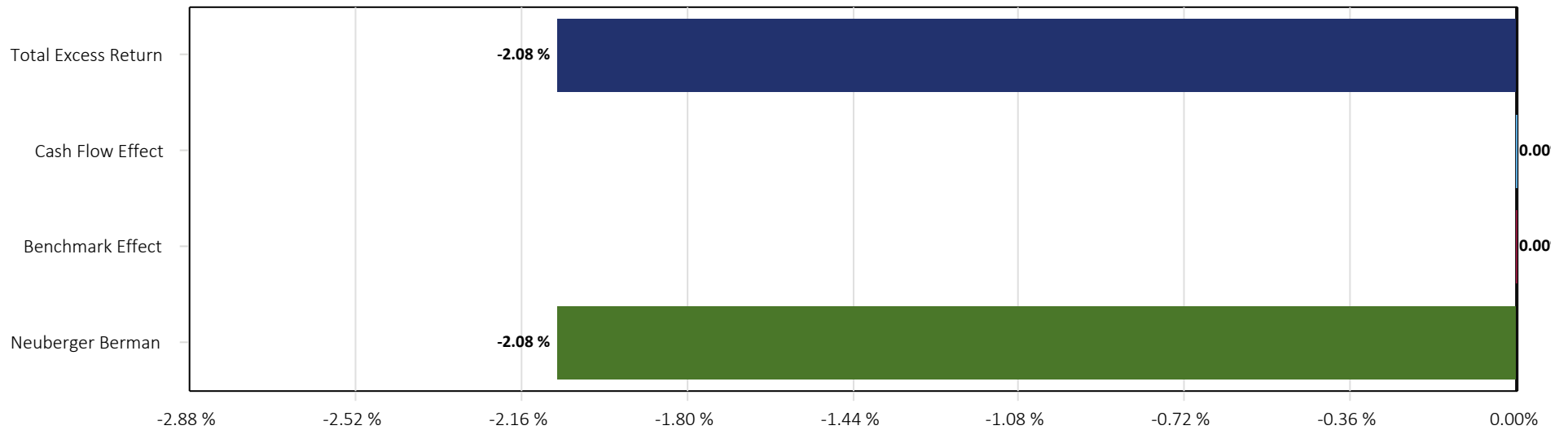
Credit Opportunities Composite

Periods Ended March 31, 2023

## 1 Quarter



## 1 Year

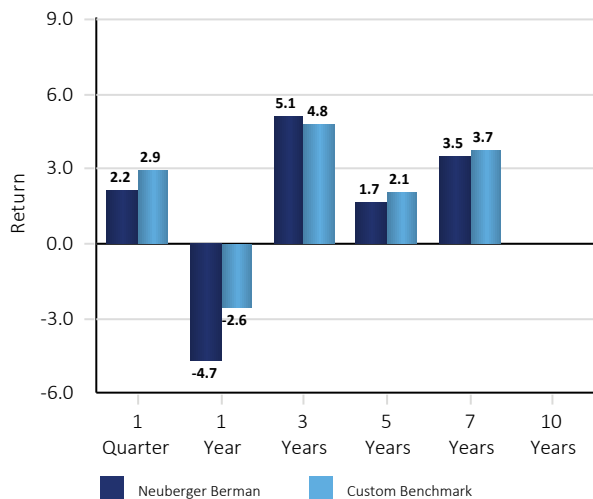


# Performance Summary

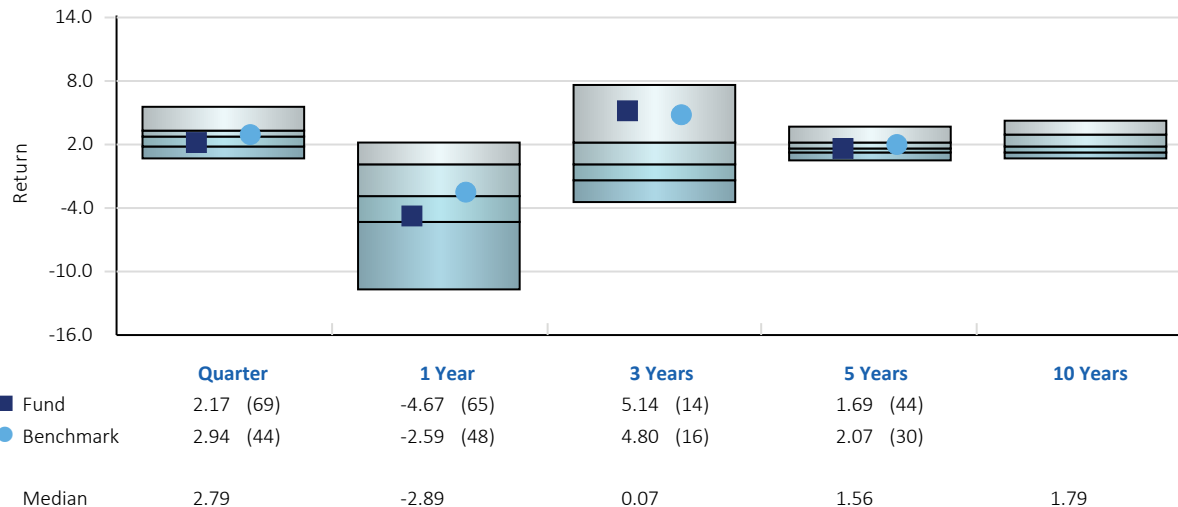
Neuberger Berman

Periods Ended March 31, 2023

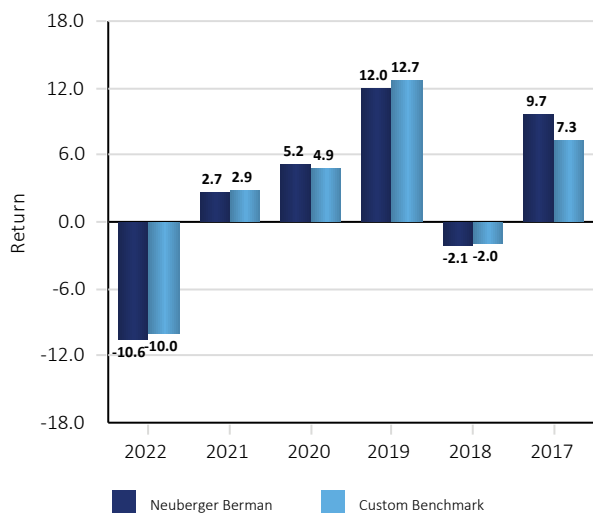
## Comparative Performance



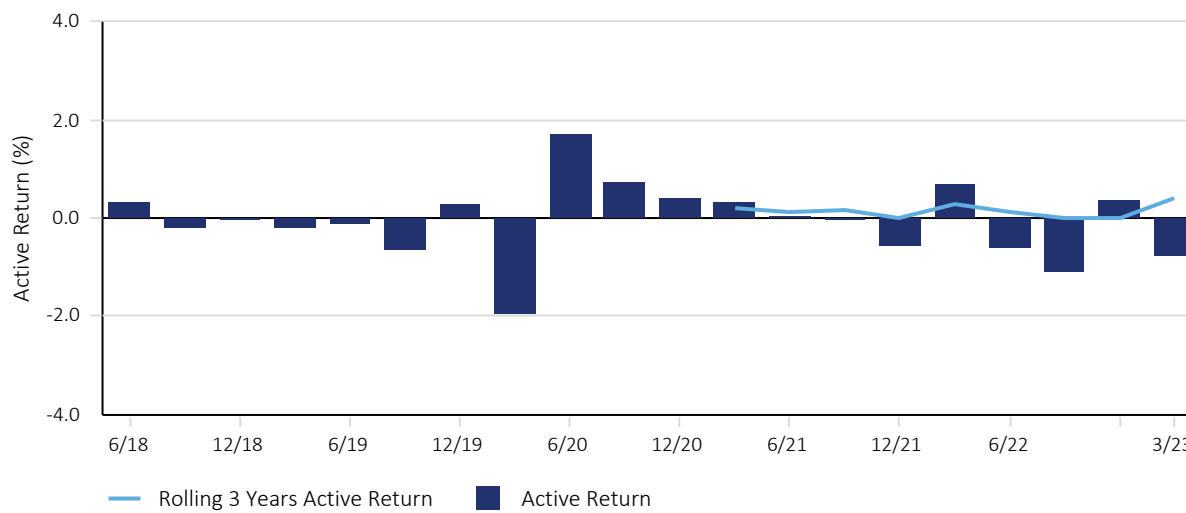
## Peer Group Analysis: IM U.S. Fixed Income (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance



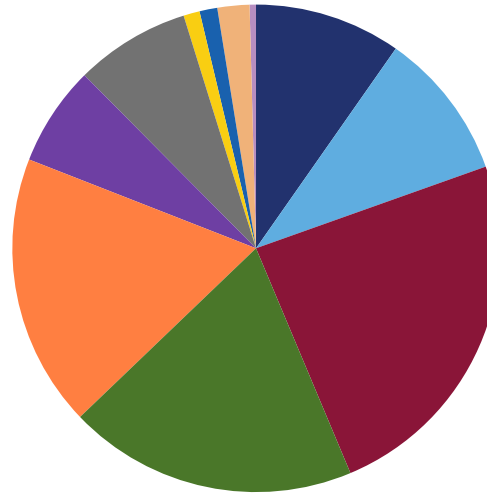
# Total Real Estate Composite

# Asset Allocation By Manager

Total Real Estate Composite

Periods Ended March 31, 2023

Mar-2023 : 439,295,134



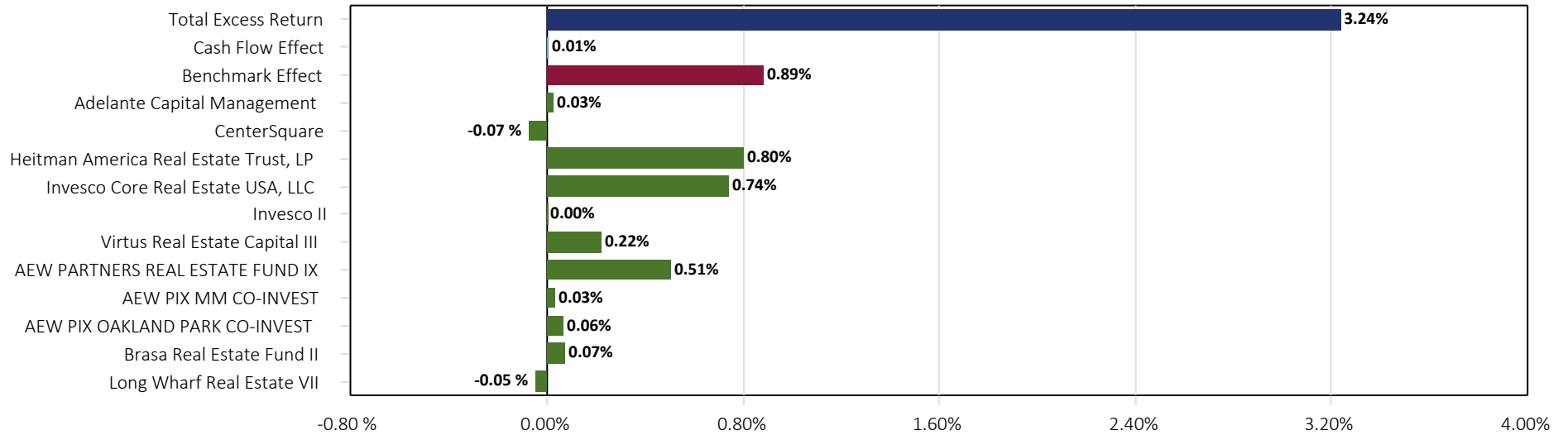
	Market Value \$	Allocation (%)
Adelante Capital Management	42,682,215	9.7
CenterSquare	43,230,099	9.8
Heitman America Real Estate Trust, LP	105,944,229	24.1
Invesco Core Real Estate USA, LLC	84,217,126	19.2
Invesco II	79,499,601	18.1
Virtus Real Estate Capital III	29,124,742	6.6
AEW PARTNERS REAL ESTATE FUND IX	33,483,418	7.6
AEW PIX MM CO-INVEST	4,707,129	1.1
AEW PIX OAKLAND PARK CO-INVEST	5,185,067	1.2
Brasa Real Estate Fund II	9,353,431	2.1
Long Wharf Real Estate VII	1,868,078	0.4

# Asset Class Attribution

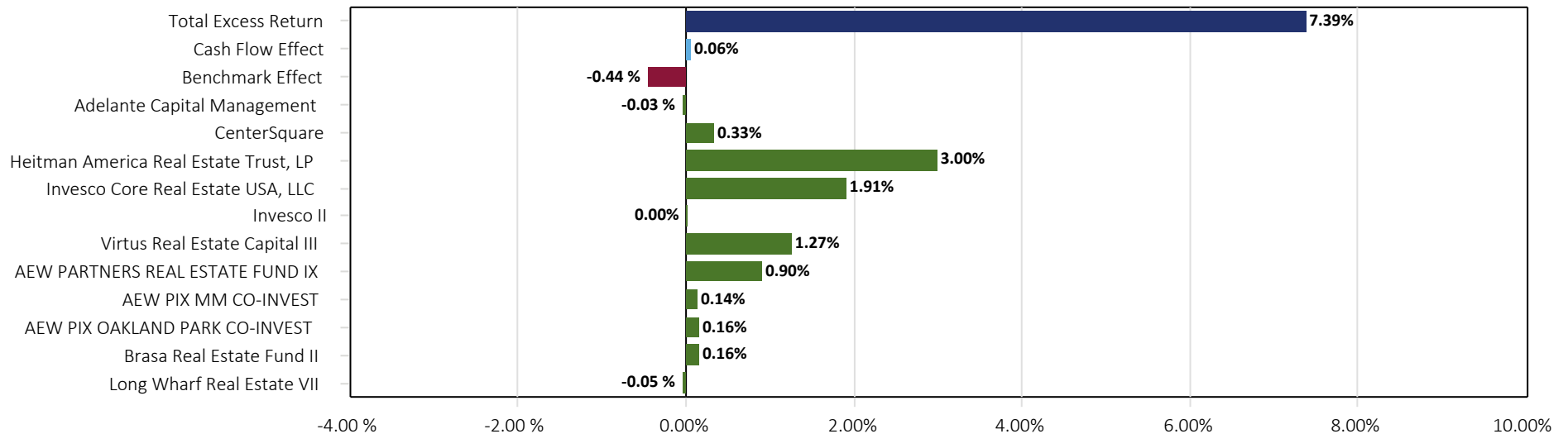
## Total Real Estate Composite

Periods Ended March 31, 2023

### 1 Quarter



### 1 Year

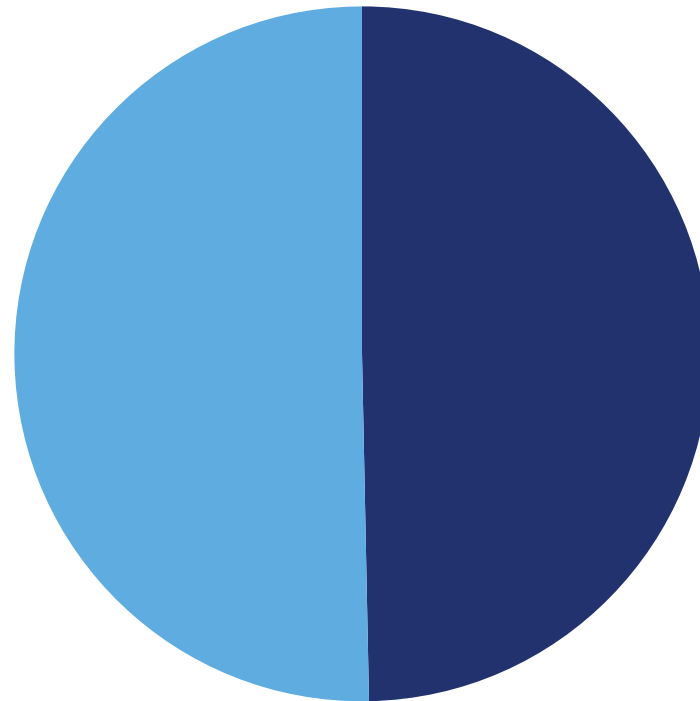


# Asset Allocation By Manager

REIT Composite

Periods Ended March 31, 2023

Mar-2023 : 85,912,314



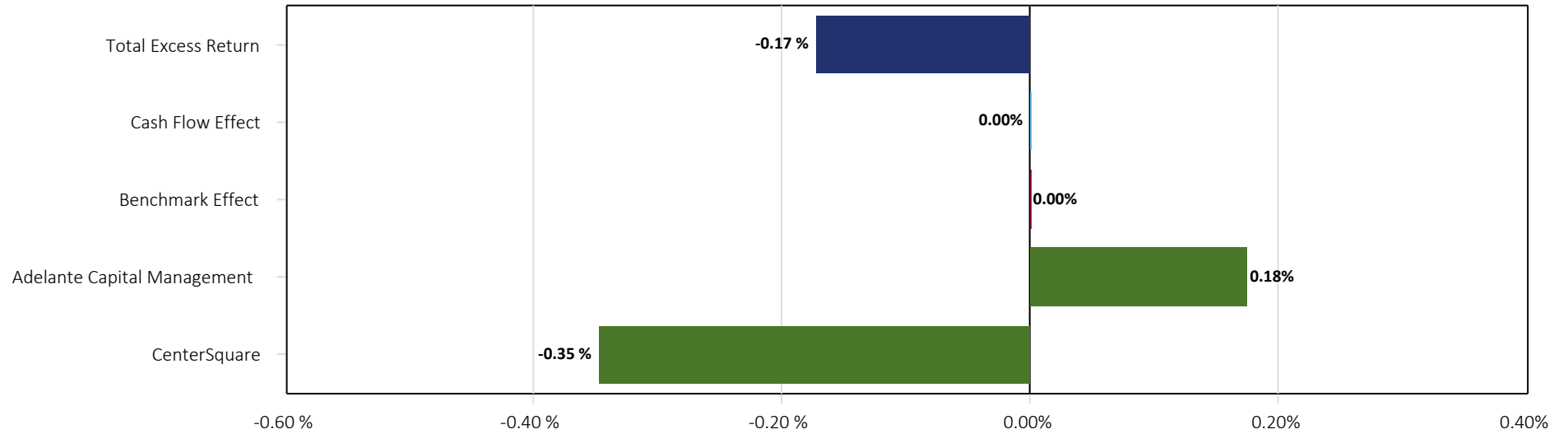
	Market Value \$	Allocation (%)
■ Adelante Capital Management	42,682,215	49.7
■ CenterSquare	43,230,099	50.3

# Asset Class Attribution

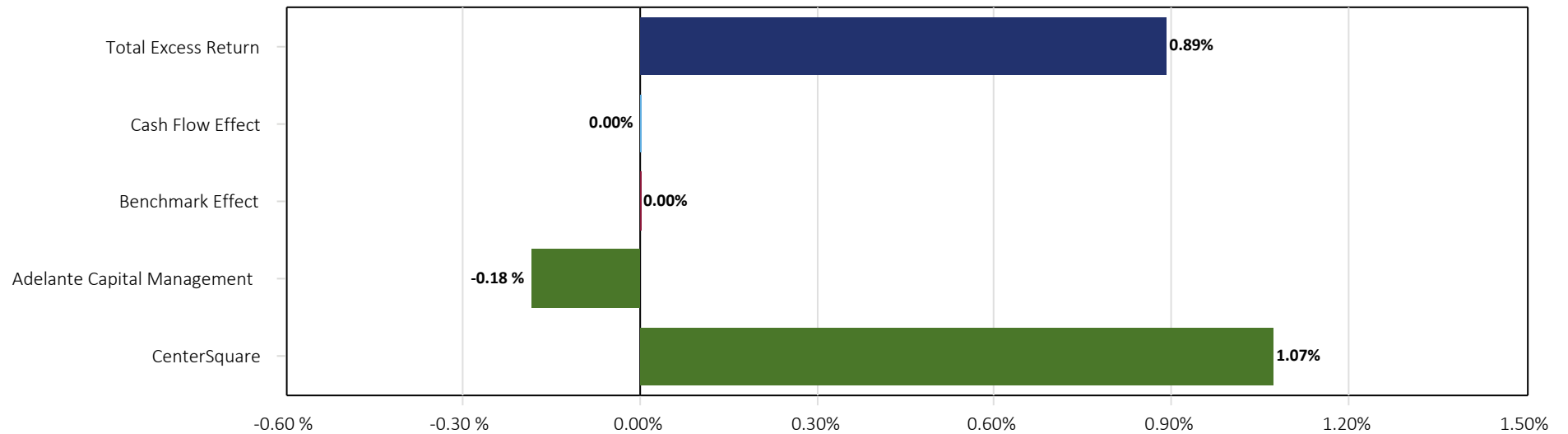
REIT Composite

Periods Ended March 31, 2023

## 1 Quarter



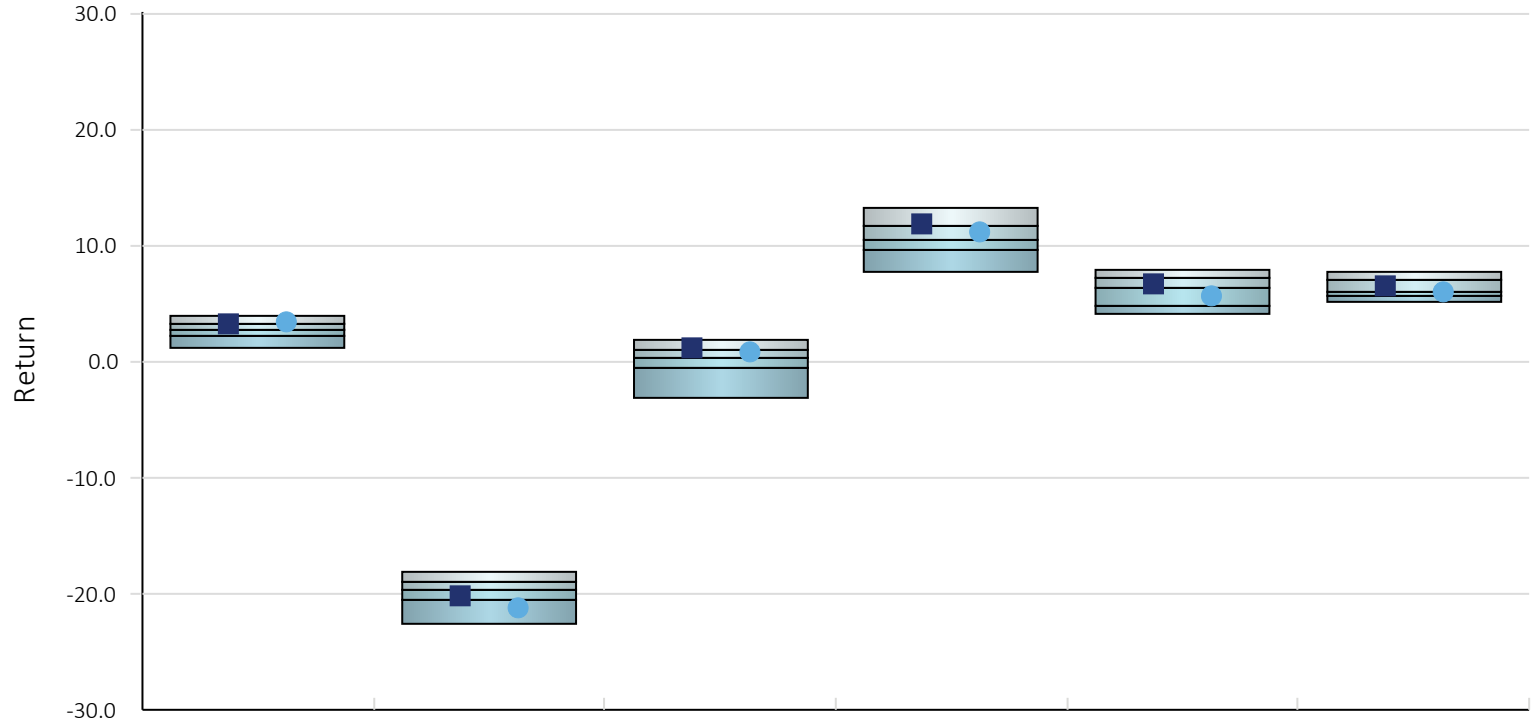
## 1 Year



# Peer Group Analysis

REIT Composite

Periods Ended March 31, 2023



	<b>1 Quarter</b>	<b>1 Year</b>	<b>2 Years</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ REIT Composite	3.27 (21)	-20.26 (64)	1.26 (18)	11.91 (22)	6.69 (39)	6.53 (41)
● Wilshire U.S. Real Estate Securities Index	3.44 (16)	-21.15 (83)	0.89 (30)	11.15 (40)	5.69 (72)	6.09 (50)
5th Percentile	3.93	-18.04	1.97	13.30	7.85	7.79
1st Quartile	3.20	-18.89	1.00	11.76	7.25	7.03
Median	2.81	-19.61	0.28	10.52	6.44	6.09
3rd Quartile	2.28	-20.57	-0.59	9.59	4.90	5.65
95th Percentile	1.22	-22.58	-3.04	7.68	4.16	5.23
Population	36	35	32	29	29	24

Parenteses contain percentile rankings.  
Calculation based on monthly periodicity.

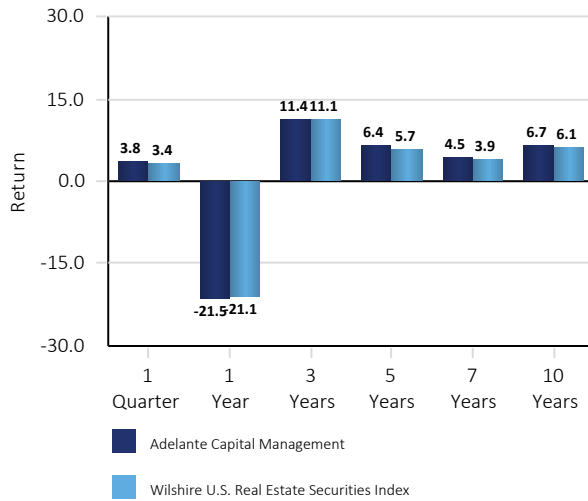


## Performance Summary

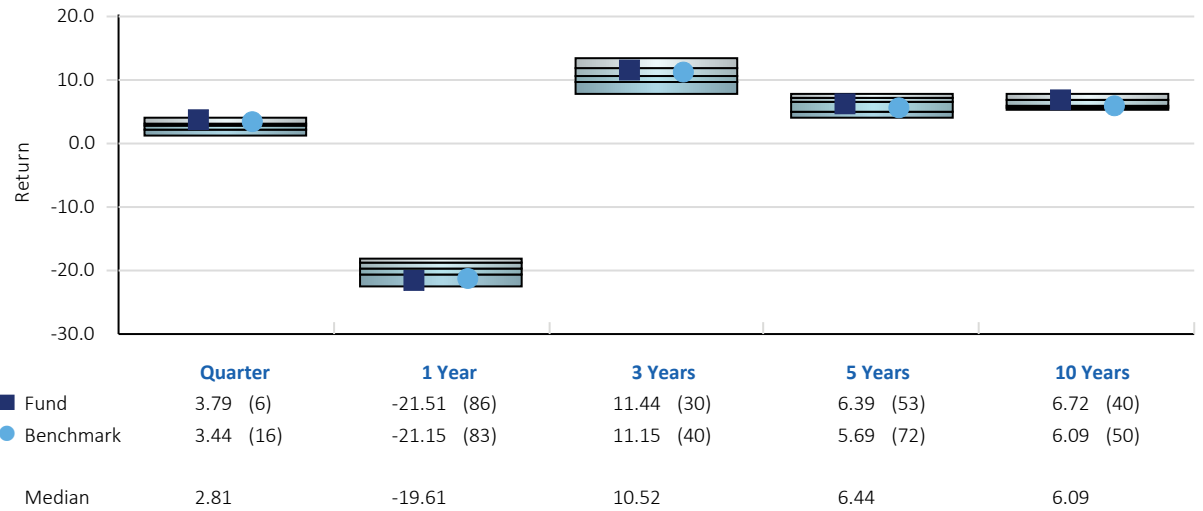
Adelante Capital Management

Periods Ended March 31, 2023

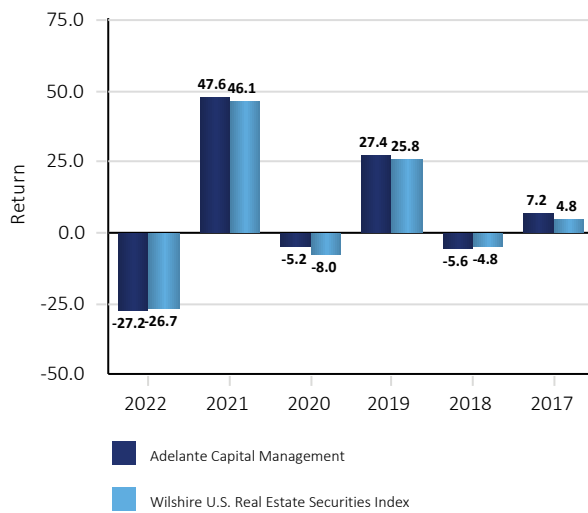
### Comparative Performance



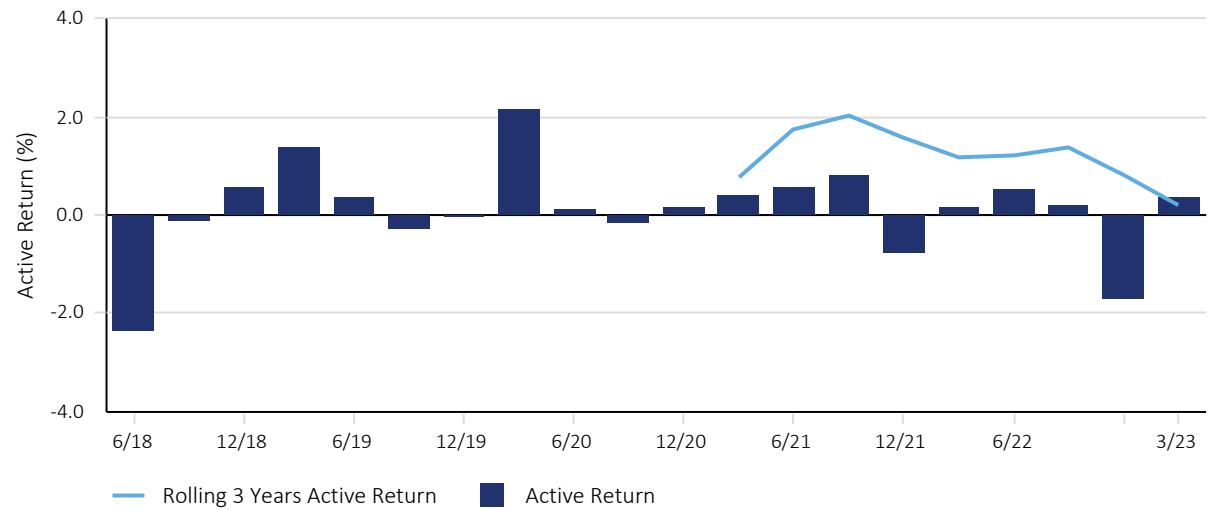
### Peer Group Analysis: IM U.S. REIT (SA+CF)



### Comparative Performance



### Rolling 3 Years Performance



## Portfolio Characteristics

Adelante Capital Management

Periods Ended As of March 31, 2023

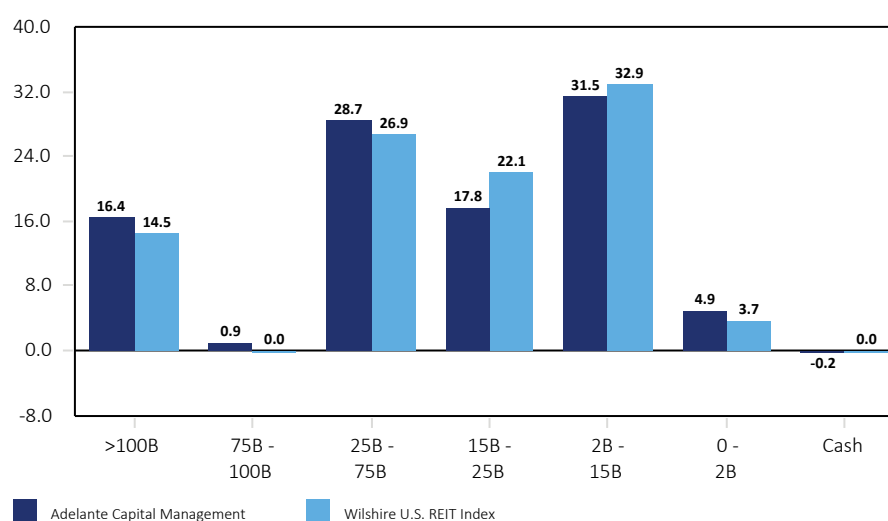
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	41,081,020,061	37,324,908,174
Median Mkt. Cap \$	12,498,196,270	2,993,596,610
Price/Earnings ratio	29.1	28.4
Price/Book ratio	2.4	2.4
5 Yr. EPS Growth Rate (%)	5.6	8.5
Current Yield (%)	3.8	4.0
Beta (5 Years, Monthly)	0.95	1.00
Number of Stocks	33	90

### Top Ten Equity Holdings

	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Prologis Inc	16.4	14.5	1.9	11.5
Equinix Inc	8.5	8.4	0.1	10.6
Public Storage	6.2	5.9	0.3	9.0
Equity Residential	5.5	2.8	2.7	2.9
Welltower Inc	5.5	4.4	1.1	10.3
Simon Property Group Inc.	4.7	4.6	0.1	-3.2
Kimco Realty Corp	4.5	1.5	3.0	-6.7
Boston Properties Inc	4.0	1.1	2.9	-18.4
Extra Space Storage Inc	4.0	2.7	1.3	11.8
Essex Property Trust Inc.	3.9	1.7	2.2	-0.2
% of Portfolio	63.2	47.6	15.6	

### Distribution of Market Capitalization (%)

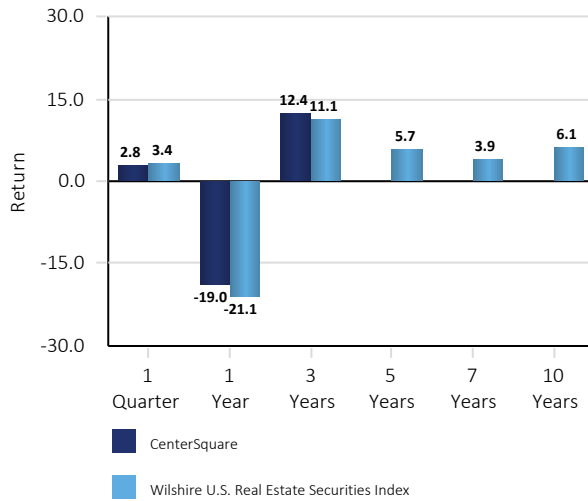


# Performance Summary

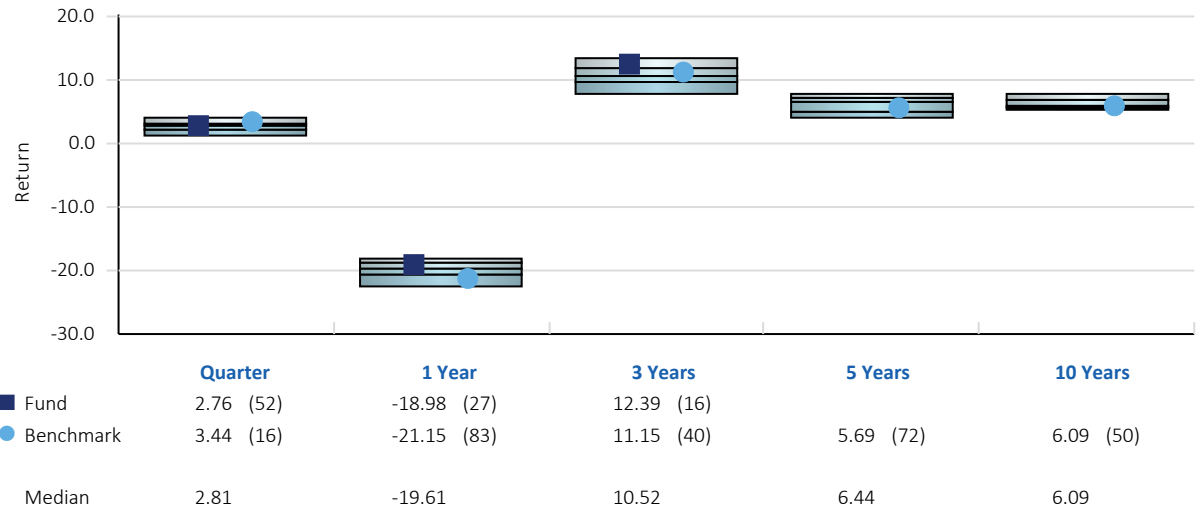
CenterSquare

Periods Ended March 31, 2023

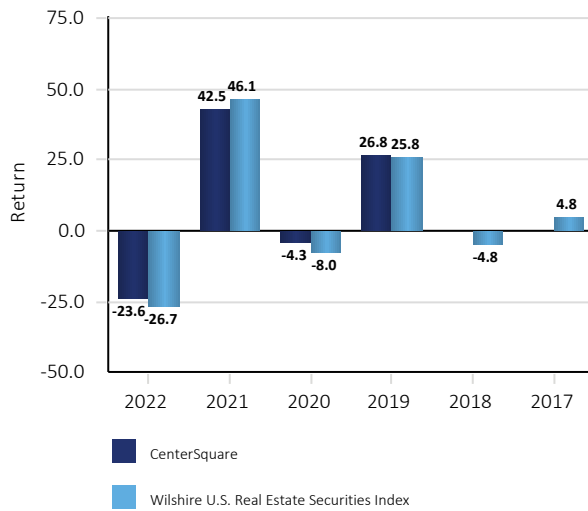
## Comparative Performance



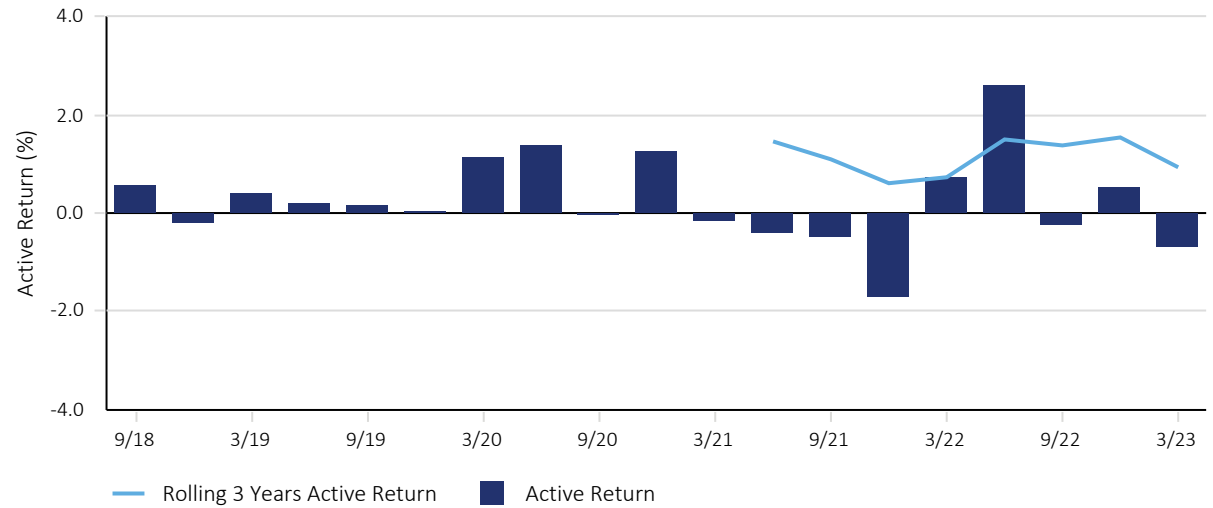
## Peer Group Analysis: IM U.S. REIT (SA+CF)



## Comparative Performance



## Rolling 3 Years Performance



# Portfolio Characteristics

CenterSquare

Periods Ended As of March 31, 2023

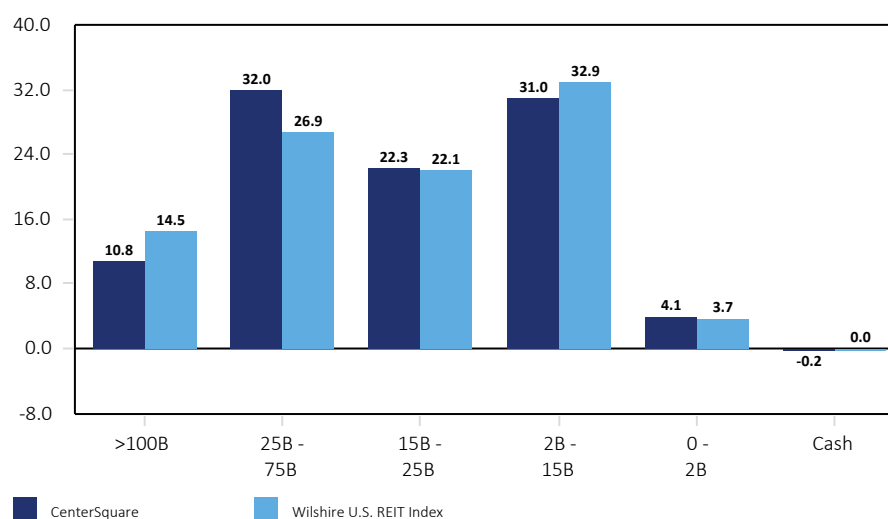
## Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	33,779,438,520	37,324,908,174
Median Mkt. Cap \$	10,480,623,440	2,993,596,610
Price/Earnings ratio	27.2	28.4
Price/Book ratio	2.1	2.4
5 Yr. EPS Growth Rate (%)	7.3	8.5
Current Yield (%)	4.2	4.0
Beta (3 Years, Monthly)	0.98	1.00
Number of Stocks	55	90

## Top Ten Equity Holdings

	Portfolio Weight (%)	Index Weight (%)	Active Weight (%)	Quarterly Return (%)
Prologis Inc	10.8	14.5	-3.7	11.5
Equinix Inc	5.7	8.4	-2.7	10.6
Public Storage	5.7	5.9	-0.2	9.0
Realty Income Corp.	5.0	0.0	5.0	1.0
Digital Realty Trust Inc	4.3	3.6	0.7	-0.8
Welltower Inc	4.2	4.4	-0.2	10.3
Equity Residential	3.8	2.8	1.0	2.9
AvalonBay Communities Inc.	3.7	3.0	0.7	5.1
Invitation Homes Inc	3.5	2.4	1.1	6.2
Sun Communities Inc.	3.3	2.2	1.1	-0.8
% of Portfolio	50.0	47.2	2.8	

## Distribution of Market Capitalization (%)



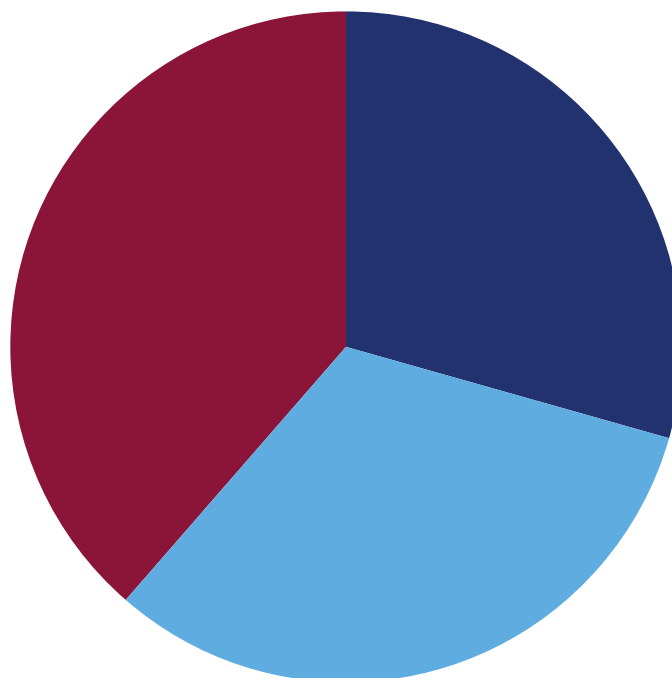
# Global Listed Infrastructure

# Asset Allocation By Manager

Global Listed Infrastructure Composite

*Periods Ended March 31, 2023*

**Mar-2023 : 150,385,232**



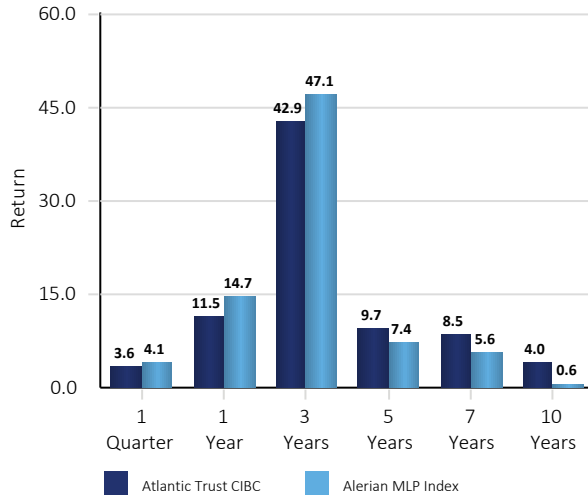
	Market Value \$	Allocation (%)
■ Atlantic Trust CIBC	44,189,359	29.4
■ Harvest Fund Advisors MLP	48,145,904	32.0
■ C&S Global Listed Infrastructure	58,049,970	38.6

# Performance Summary

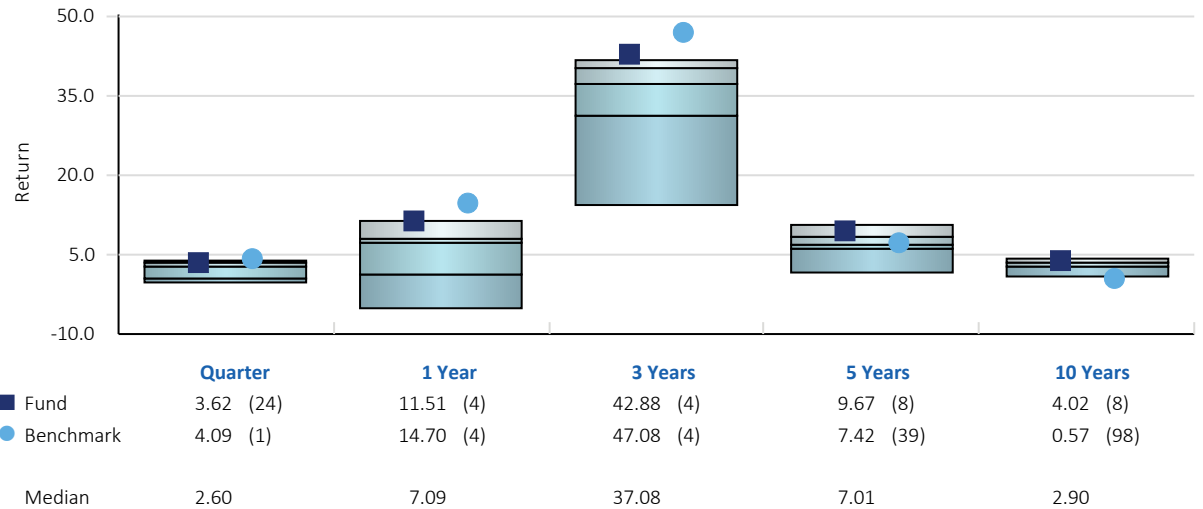
Atlantic Trust CIBC

Periods Ended March 31, 2023

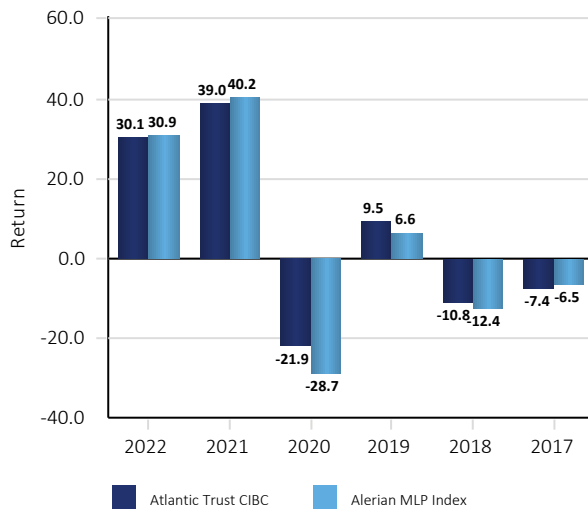
## Comparative Performance



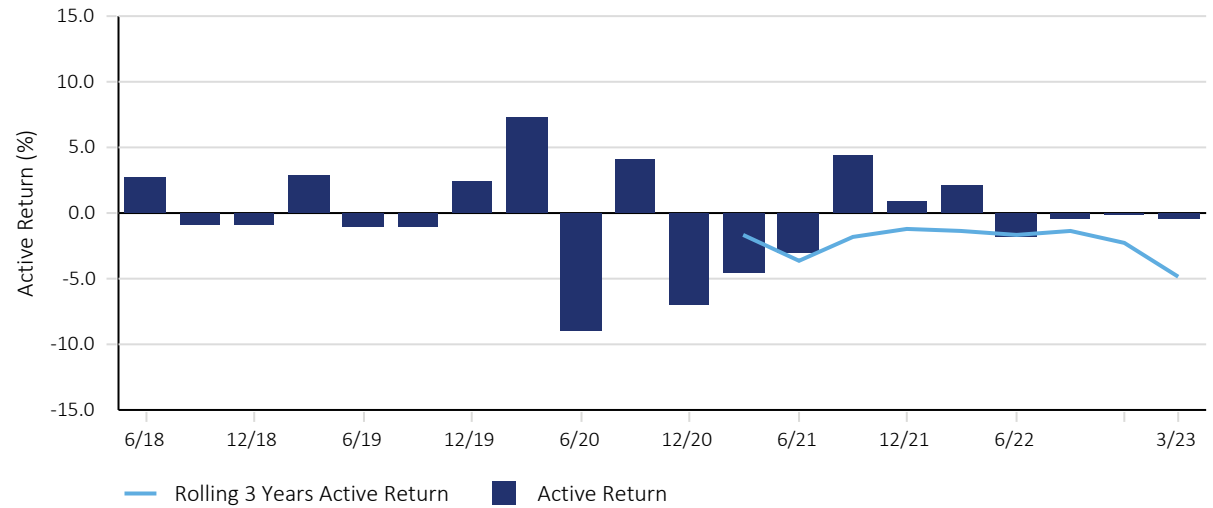
## Peer Group Analysis: MLP Peers



## Comparative Performance



## Rolling 3 Years Performance

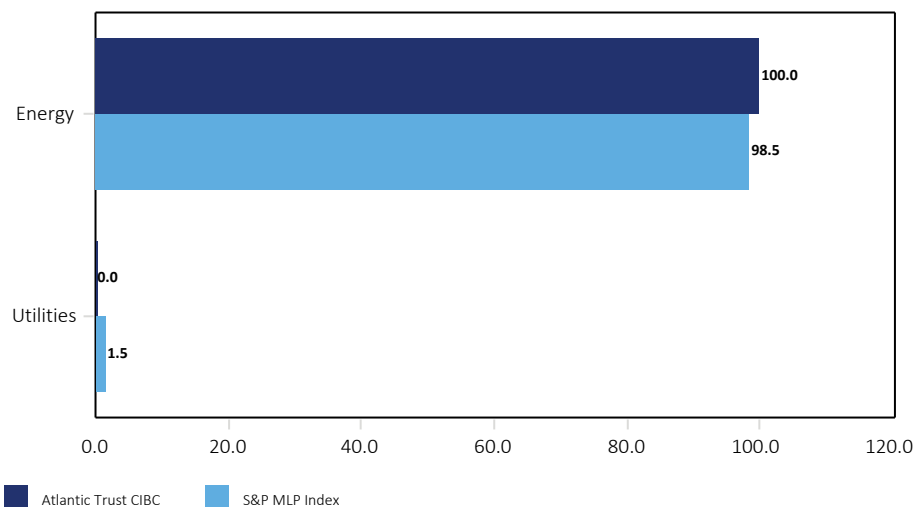


## Portfolio Characteristics

Atlantic Trust CIBC

Periods Ended As of March 31, 2023

### Sector Weights (%)



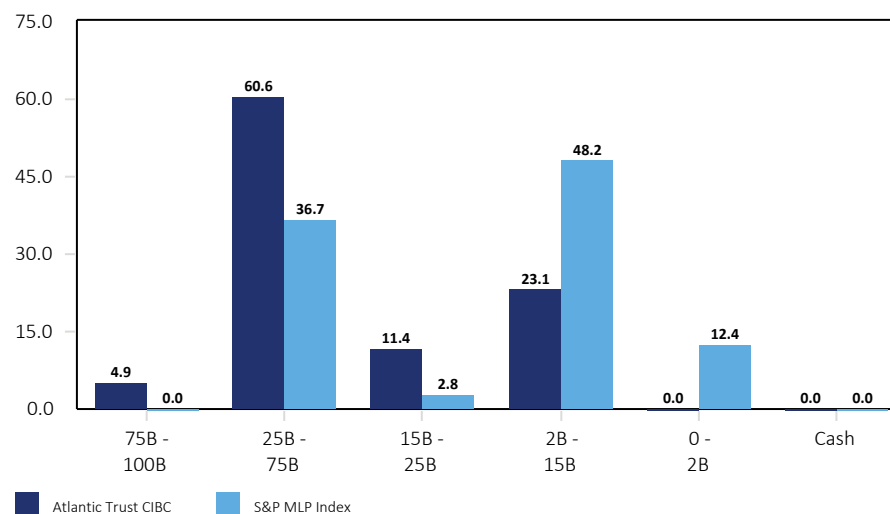
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	33,125,673,259	20,429,646,230
Median Mkt. Cap \$	28,416,422,340	2,529,406,060
Price/Earnings ratio	13.0	9.6
Price/Book ratio	2.0	2.1
5 Yr. EPS Growth Rate (%)	7.6	15.6
Current Yield (%)	6.5	8.2
Beta (5 Years, Monthly)	0.90	1.00
Number of Stocks	17	28

### Top Ten Equity Holdings

	Portfolio Weight (%)	Quarterly Return (%)
Enterprise Products Partners LP	14.4	9.4
Energy Transfer LP	13.6	7.5
Cheniere Energy Inc.	10.4	5.4
Targa Resources Corp	10.3	-0.3
Plains All American Pipeline LP	10.1	8.3
MPLX LP	8.0	7.3
Western Midstream Partners LP	6.1	0.0
Williams Cos Inc. (The)	5.8	-7.8
TC Energy Corp	5.3	-0.7
Enbridge Inc	4.9	-0.8
% of Portfolio	88.9	

### Distribution of Market Capitalization (%)



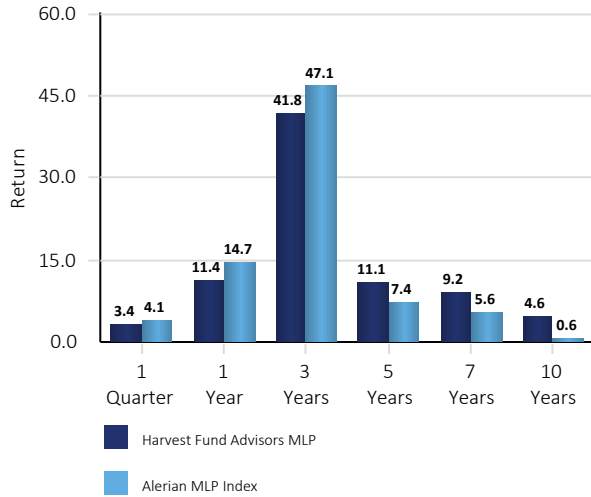


# Performance Summary

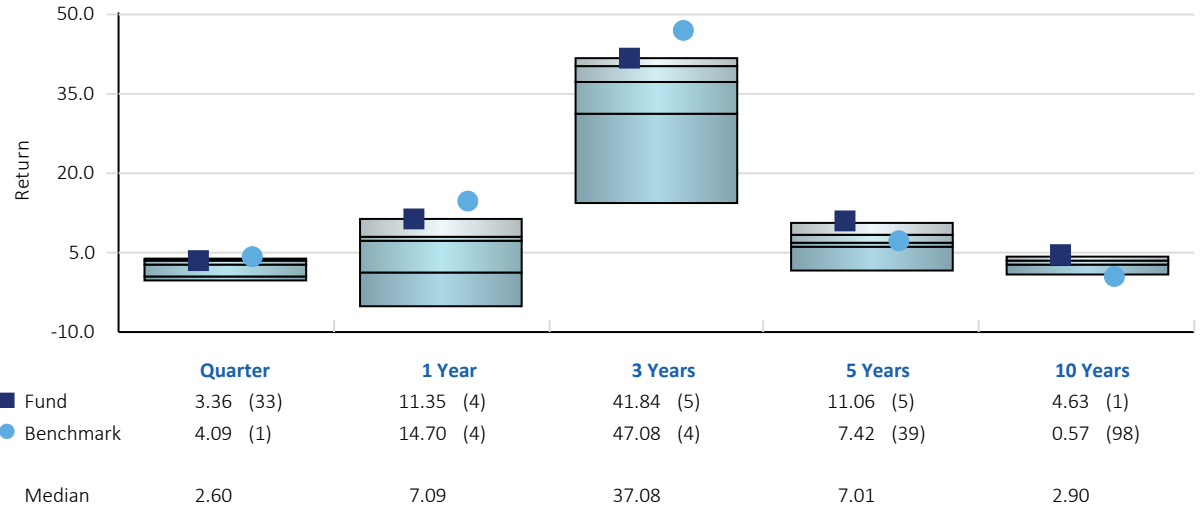
Harvest Fund Advisors MLP

Periods Ended March 31, 2023

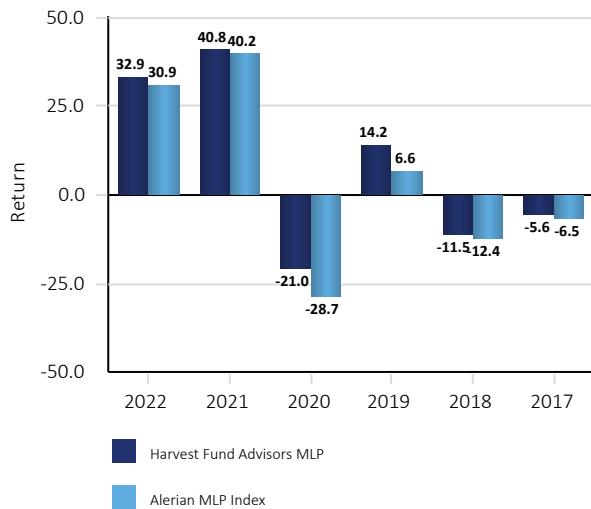
## Comparative Performance



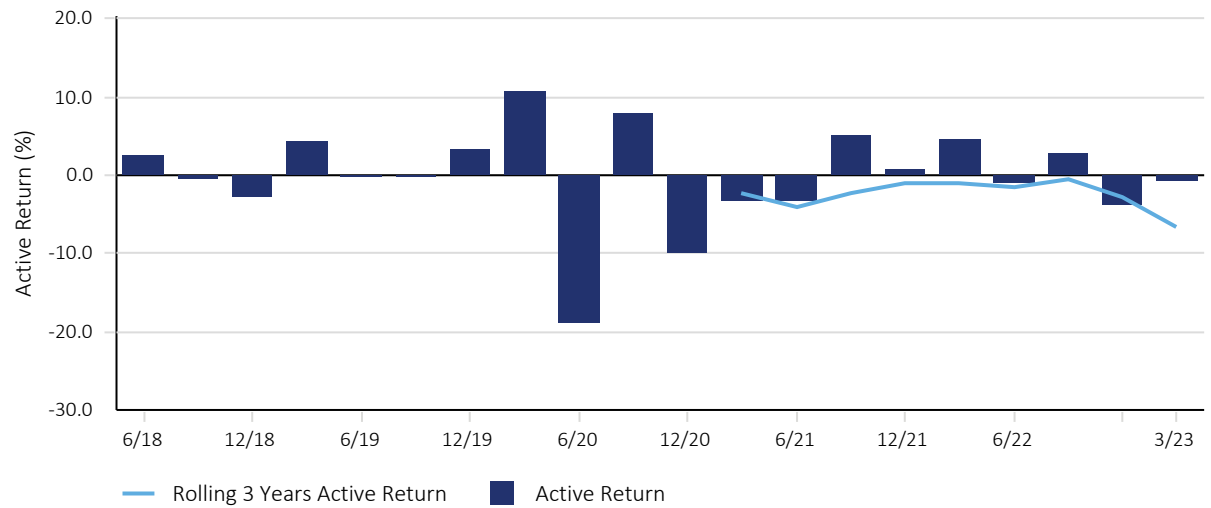
## Peer Group Analysis: MLP Peers



## Comparative Performance



## Rolling 3 Years Performance

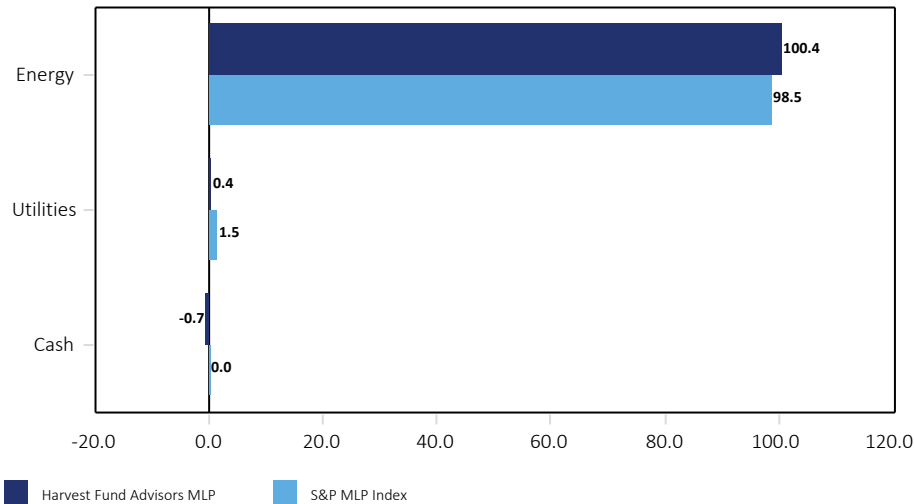


## Portfolio Characteristics

Harvest Fund Advisors MLP

Periods Ended As of March 31, 2023

### Sector Weights (%)



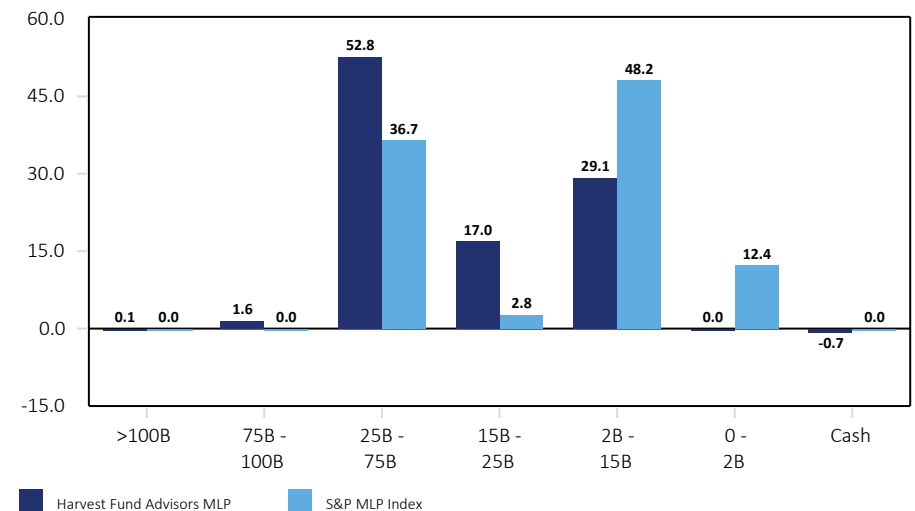
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap \$	28,356,972,885	20,429,646,230
Median Mkt. Cap \$	17,312,616,925	2,529,406,060
Price/Earnings ratio	11.5	9.6
Price/Book ratio	2.4	2.1
5 Yr. EPS Growth Rate (%)	22.7	15.6
Current Yield (%)	6.1	8.2
Beta (5 Years, Monthly)	0.82	1.00
Number of Stocks	22	28

### Top Ten Equity Holdings

	Portfolio Weight (%)	Quarterly Return (%)
Cheniere Energy Inc.	14.3	5.4
MPLX LP	13.9	7.3
Energy Transfer LP	13.6	7.5
Targa Resources Corp	10.9	-0.3
Western Midstream Partners LP	10.2	0.0
Magellan Midstream Partners LP	7.5	10.2
Enterprise Products Partners LP	7.4	9.4
DCP Midstream LP	7.3	8.7
Pembina Pipeline Corp	6.1	-3.1
Kinder Morgan Inc.	1.9	-1.7
% of Portfolio	93.1	

### Distribution of Market Capitalization (%)

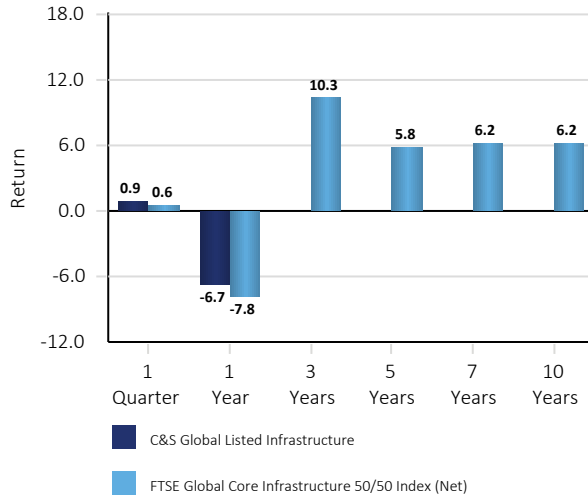


# Performance Summary

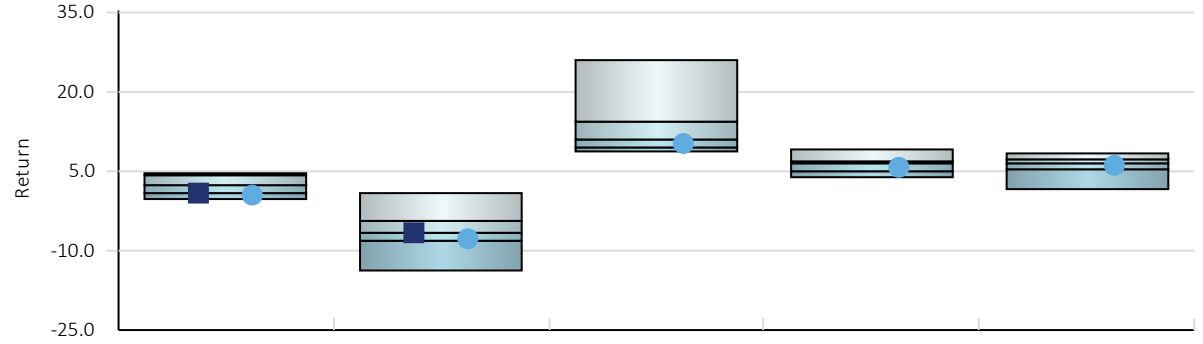
C&S Global Listed Infrastructure

Periods Ended March 31, 2023

## Comparative Performance

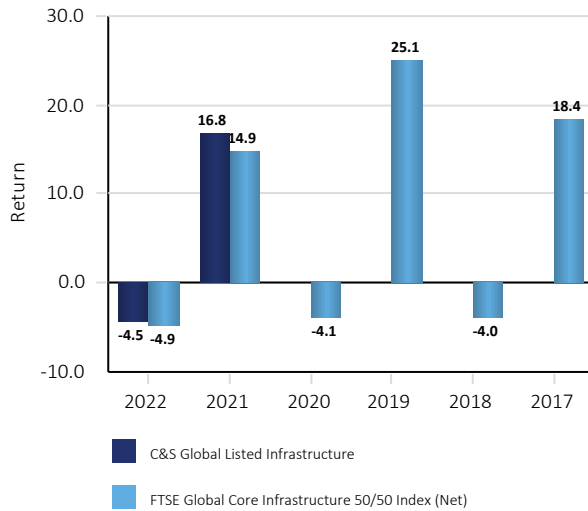


## Peer Group Analysis: Global Infrastructure Securities Custom Universe

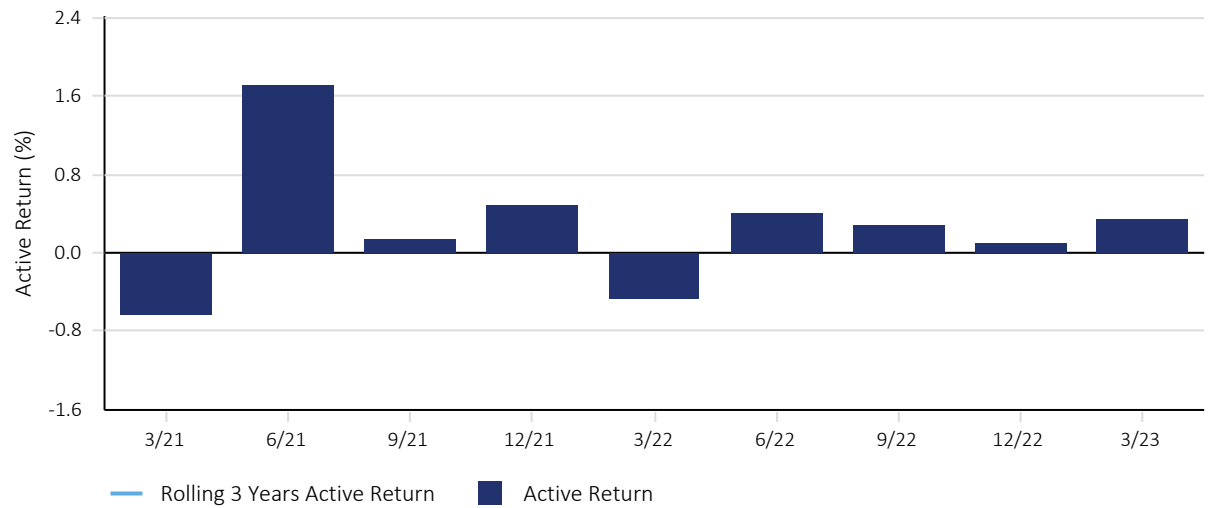


	Quarter	1 Year	3 Years	5 Years	10 Years
<b>Fund</b>	0.90 (81)	-6.67 (58)	10.27 (68)	5.81 (70)	6.24 (58)
<b>Benchmark</b>	0.55 (88)	-7.77 (70)			
<b>Median</b>	2.44	-6.47	11.17	6.37	6.61

## Comparative Performance



## Rolling 3 Years Performance



**Wilshire**

# Dallas Employees' Retirement Fund

Quarterly Investment Summary

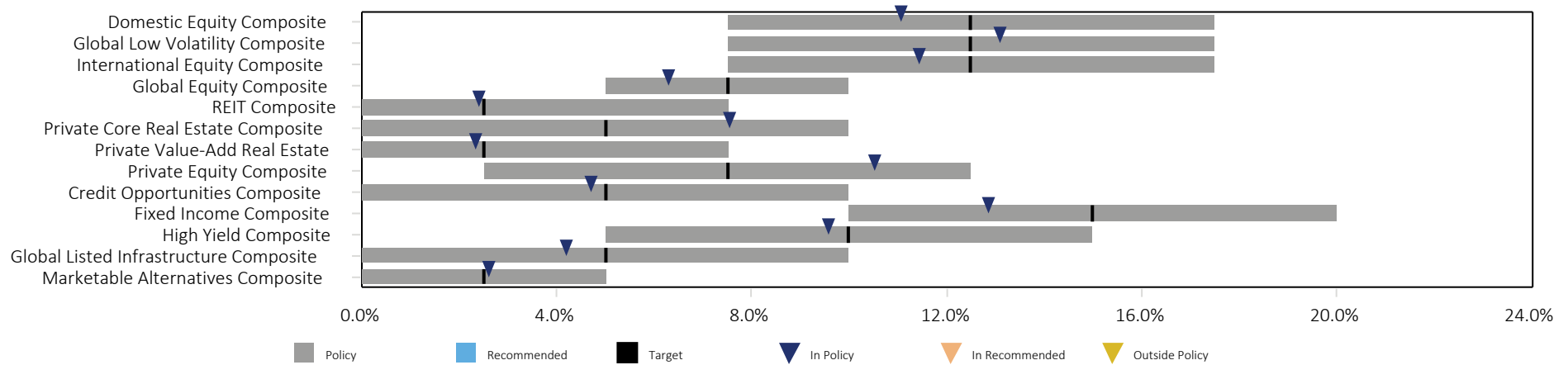
March 31, 2023

# Asset Allocation Compliance

## Dallas Total Fund

Periods Ended As of March 31, 2023

### Executive Summary



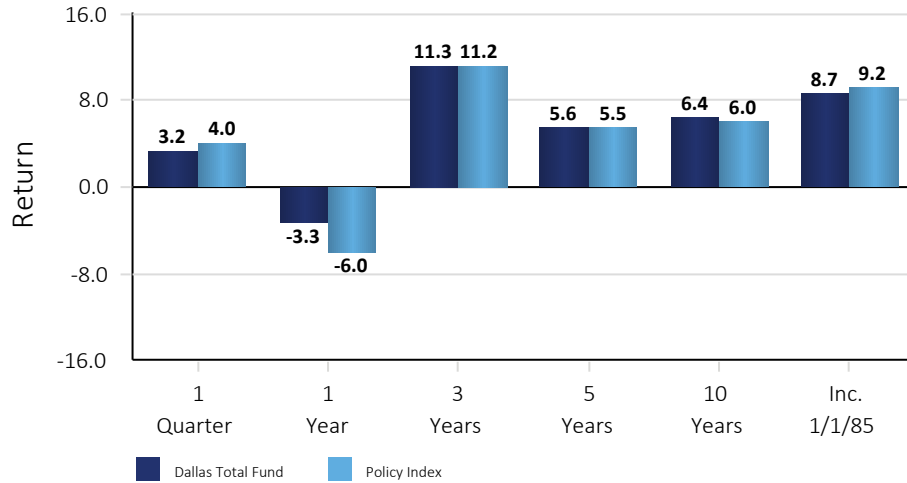
	Asset Allocation \$	Asset Allocation (%)	Target Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Rebalance \$
Dallas Total Fund	3,577,278,068	100.0	100.0			
Domestic Equity Composite	395,588,339	11.1	12.5	7.5	17.5	51,571,420
Global Low Volatility Composite	469,063,070	13.1	12.5	7.5	17.5	-21,903,311
International Equity Composite	409,327,415	11.4	12.5	7.5	17.5	37,832,343
Global Equity Composite	225,111,336	6.3	7.5	5.0	10.0	43,184,519
REIT Composite	85,912,314	2.4	2.5	0.0	7.5	3,519,638
Private Core Real Estate Composite	269,660,956	7.5	5.0	0.0	10.0	-90,797,052
Private Value-Add Real Estate	83,721,865	2.3	2.5	0.0	7.5	5,710,087
Private Equity Composite	376,925,206	10.5	7.5	2.5	12.5	-108,629,351
Credit Opportunities Composite	168,480,622	4.7	5.0	0.0	10.0	10,383,281
Fixed Income Composite	460,296,404	12.9	15.0	10.0	20.0	76,295,306
High Yield Composite	342,753,823	9.6	10.0	5.0	15.0	14,973,984
Global Listed Infrastructure Composite	150,385,232	4.2	5.0	0.0	10.0	28,478,671
Marketable Alternatives Composite	92,914,448	2.6	2.5	0.0	5.0	-3,482,496

# Composite Performance Summary

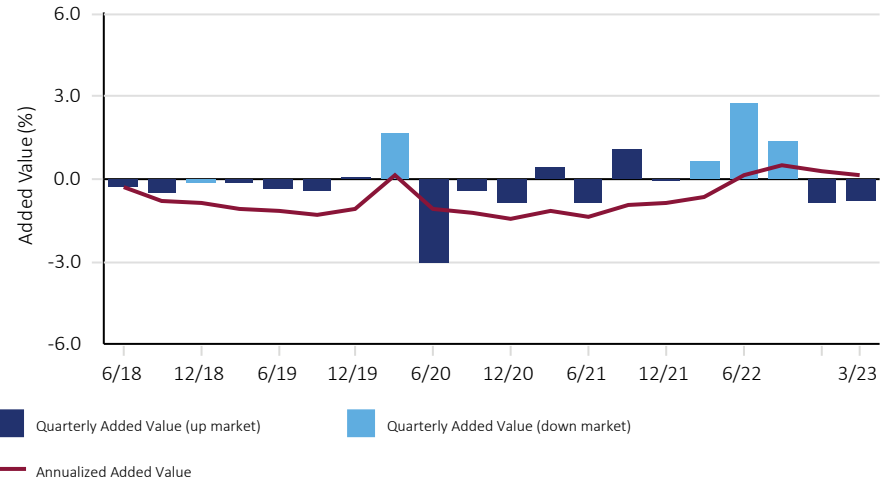
Dallas Total Fund

Periods Ended March 31, 2023

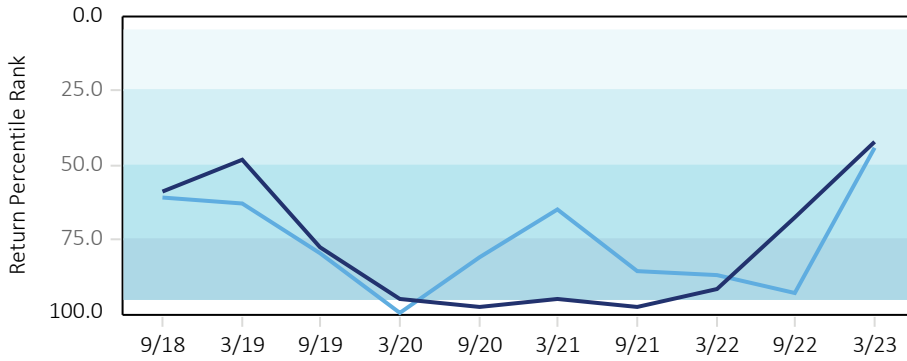
## Comparative Performance



## Added Value History

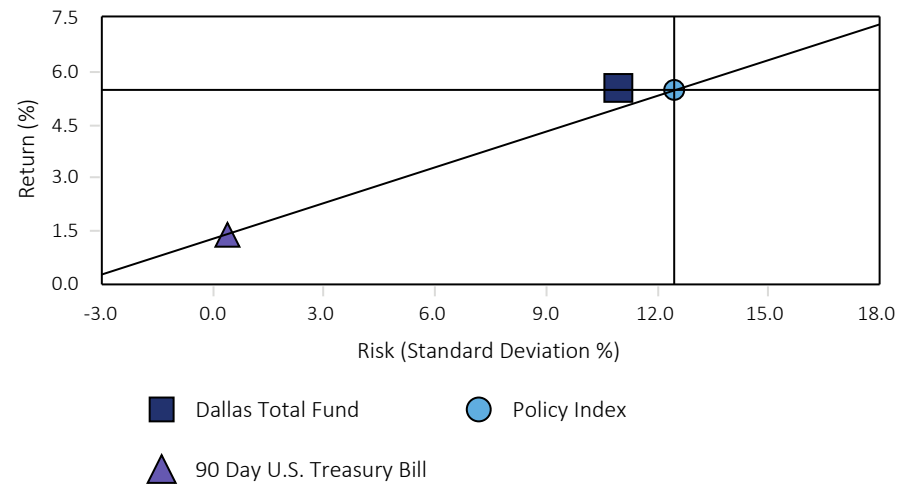


## Rolling Percentile Rank: All Public Plans > \$1B-Total Fund



	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
— Dallas Total Fund	10	0 (0%)	2 (20%)	2 (20%)	6 (60%)
— Benchmark	10	0 (0%)	1 (10%)	3 (30%)	6 (60%)

## Risk and Return 04/1/18 - 03/31/23

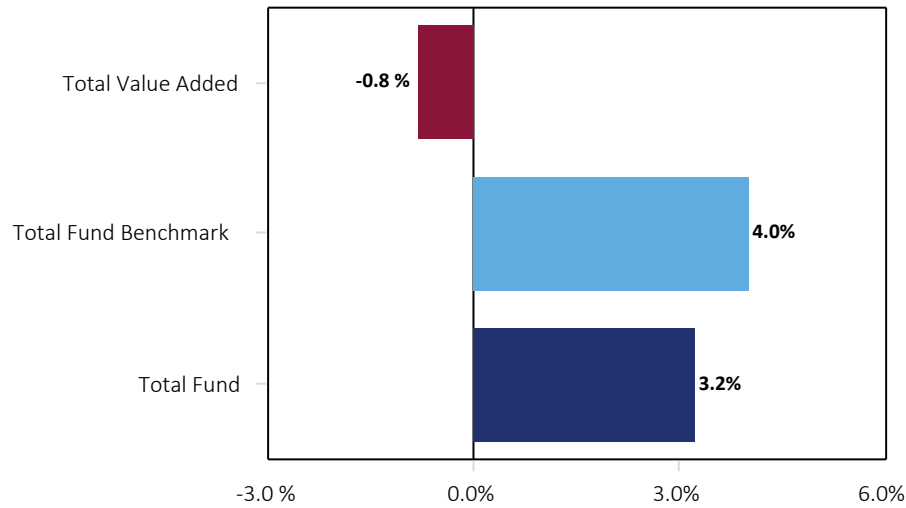


# Total Fund Attribution

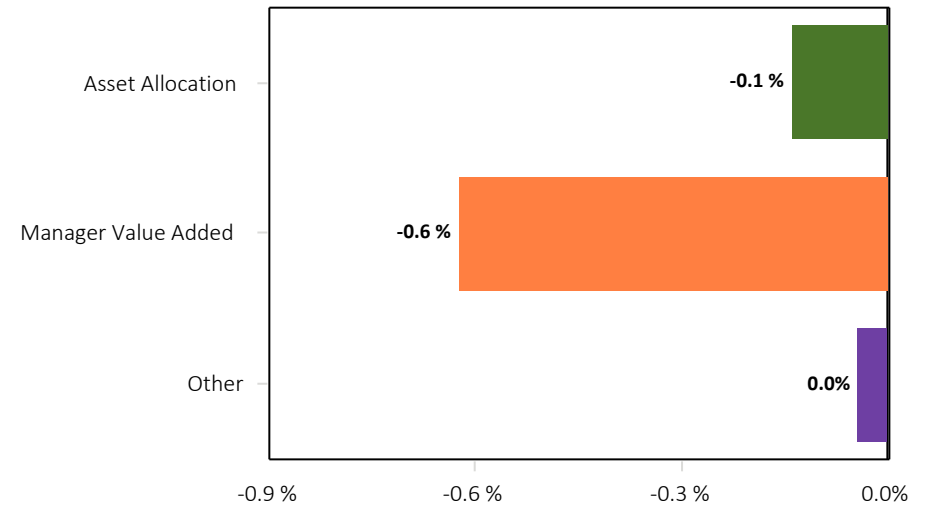
Dallas Total Fund

Periods Ended 1 Quarter Ending March 31, 2023

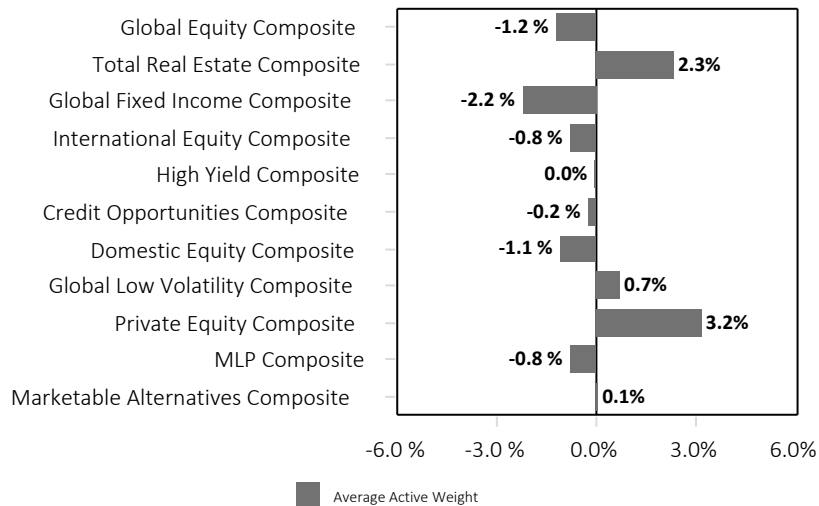
## Total Fund Performance



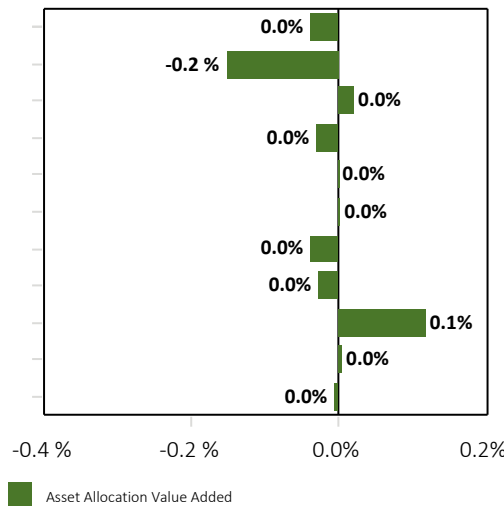
## Total Value Added:-0.8 %



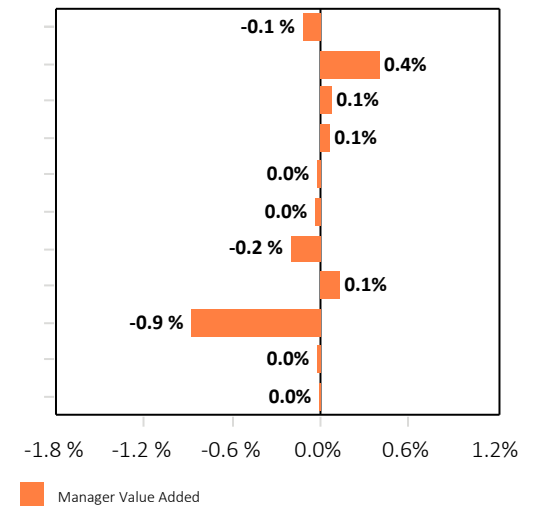
## Total Asset Allocation:-0.1 %



## Asset Allocation Value Added:-0.1 %



## Total Manager Value Added:-0.6 %

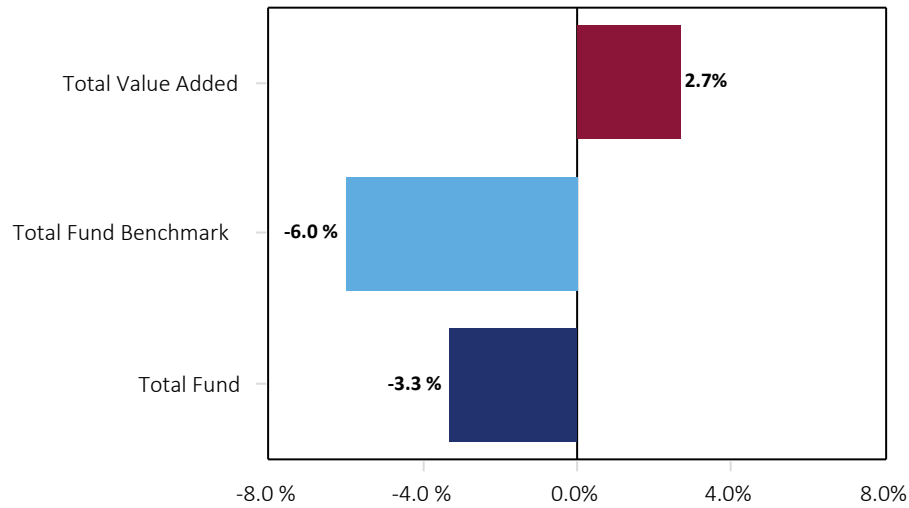


# Total Fund Attribution

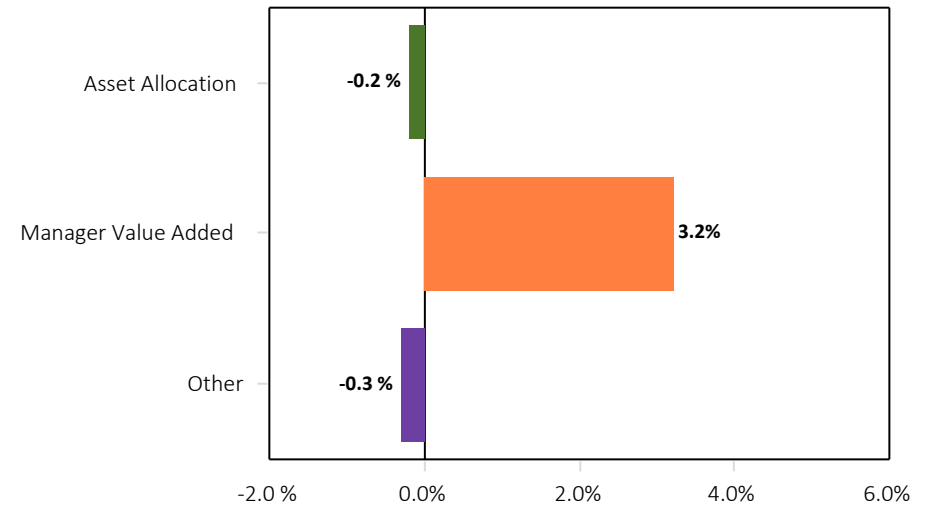
Dallas Total Fund

Periods Ended 1 Year Ending March 31, 2023

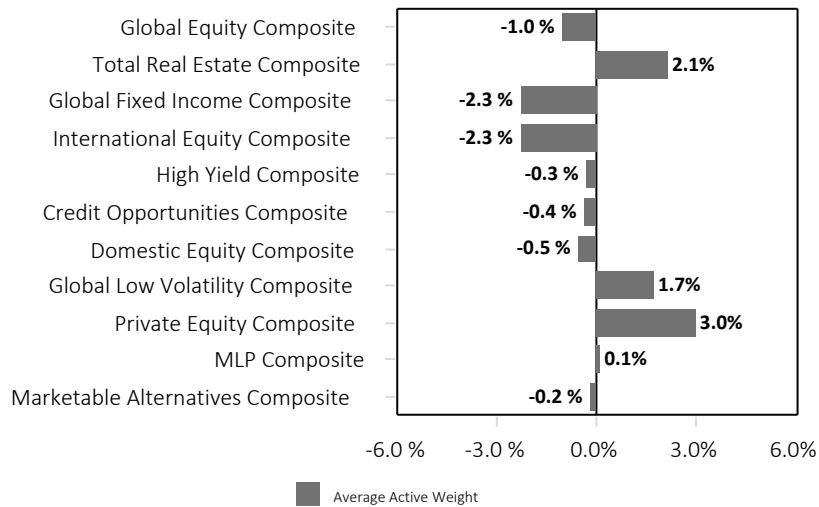
## Total Fund Performance



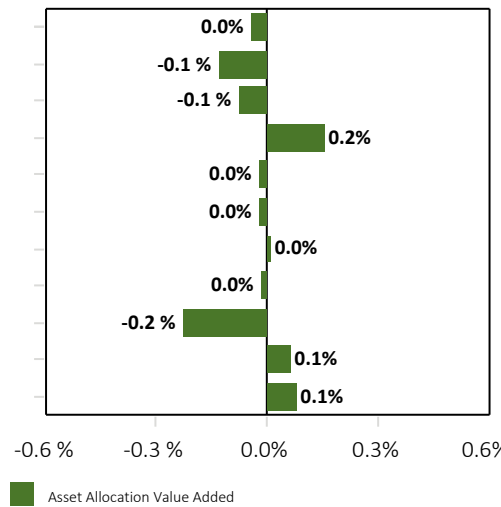
## Total Value Added: 2.7%



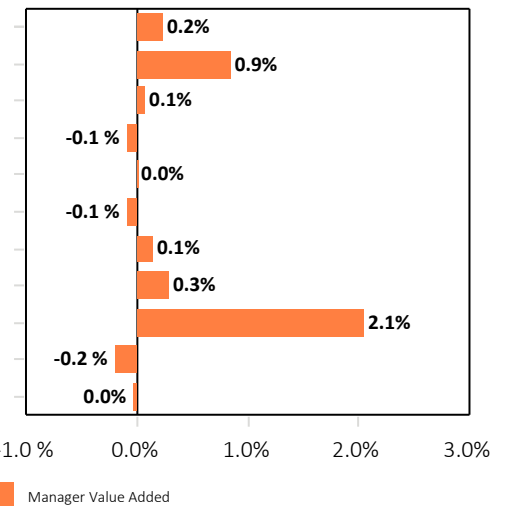
## Total Asset Allocation: -0.2%



## Asset Allocation Value Added: -0.2%



## Total Manager Value Added: 3.2%



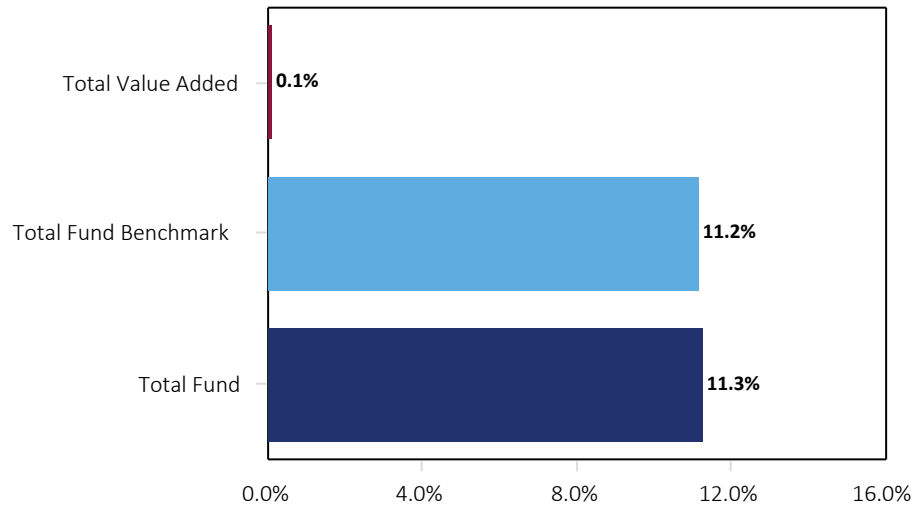


# Total Fund Attribution

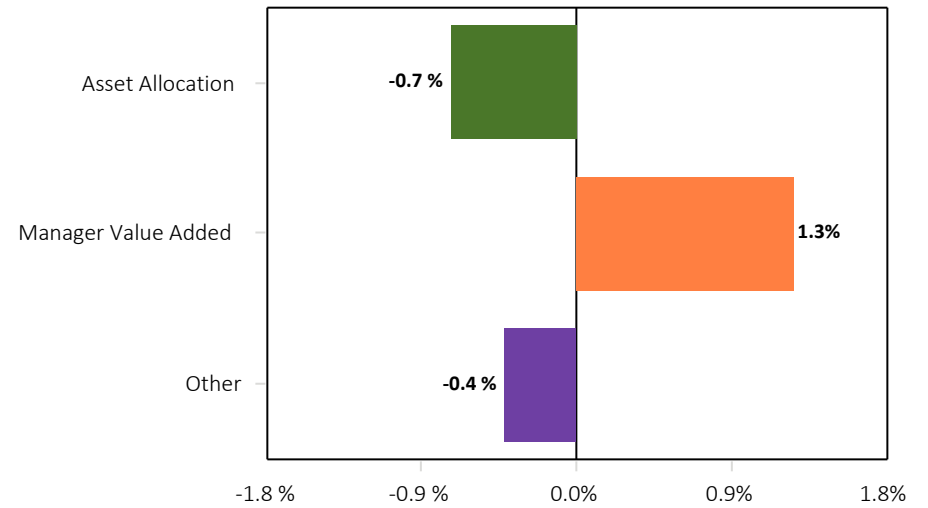
Dallas Total Fund

Periods Ended 3 Years Ending March 31, 2023

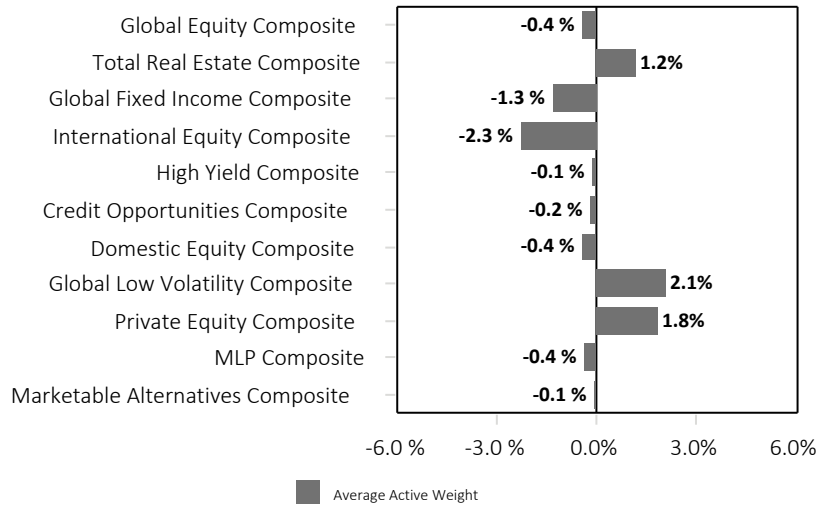
## Total Fund Performance



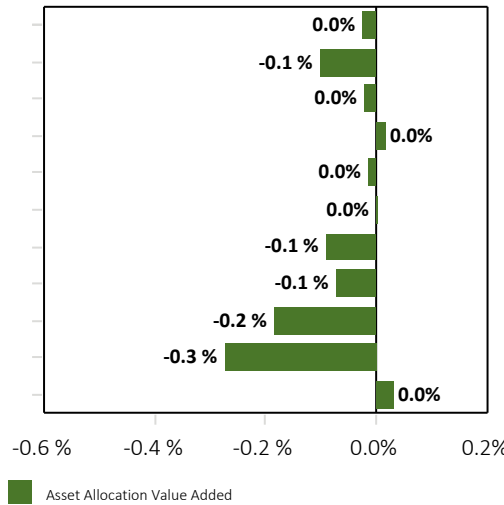
## Total Value Added: 0.1%



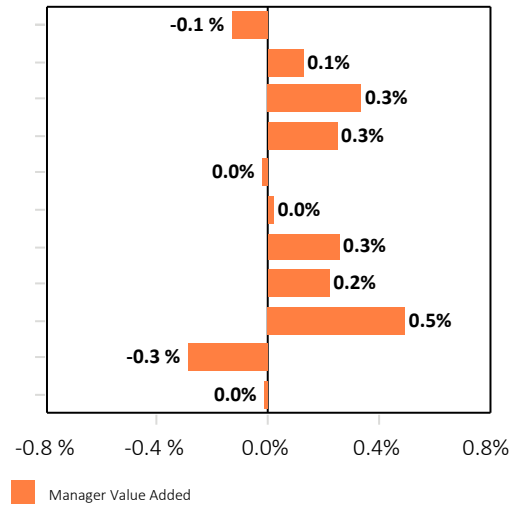
## Total Asset Allocation: -0.7%



## Asset Allocation Value Added: -0.7%



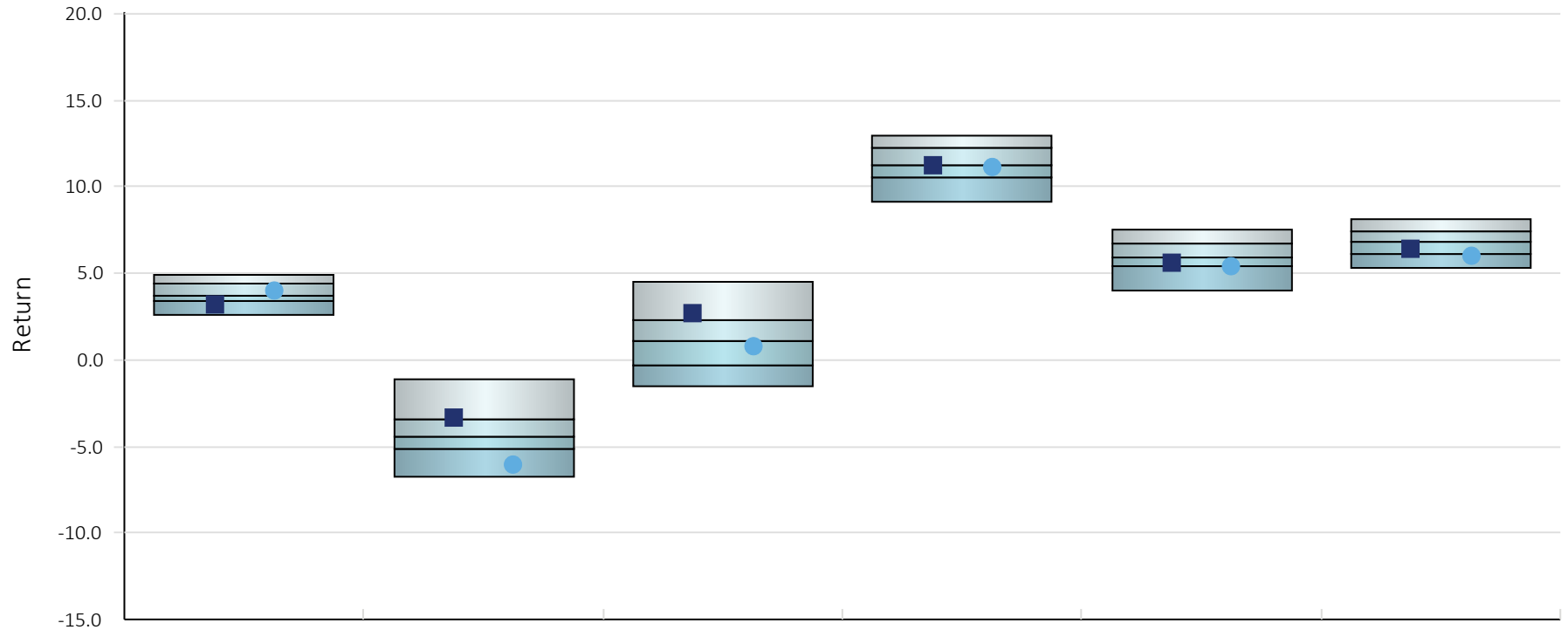
## Total Manager Value Added: 1.3%



# Plan Sponsor Peer Group Analysis

Dallas Total Fund vs All Public Plans > \$1B-Total Fund

Periods Ended March 31, 2023



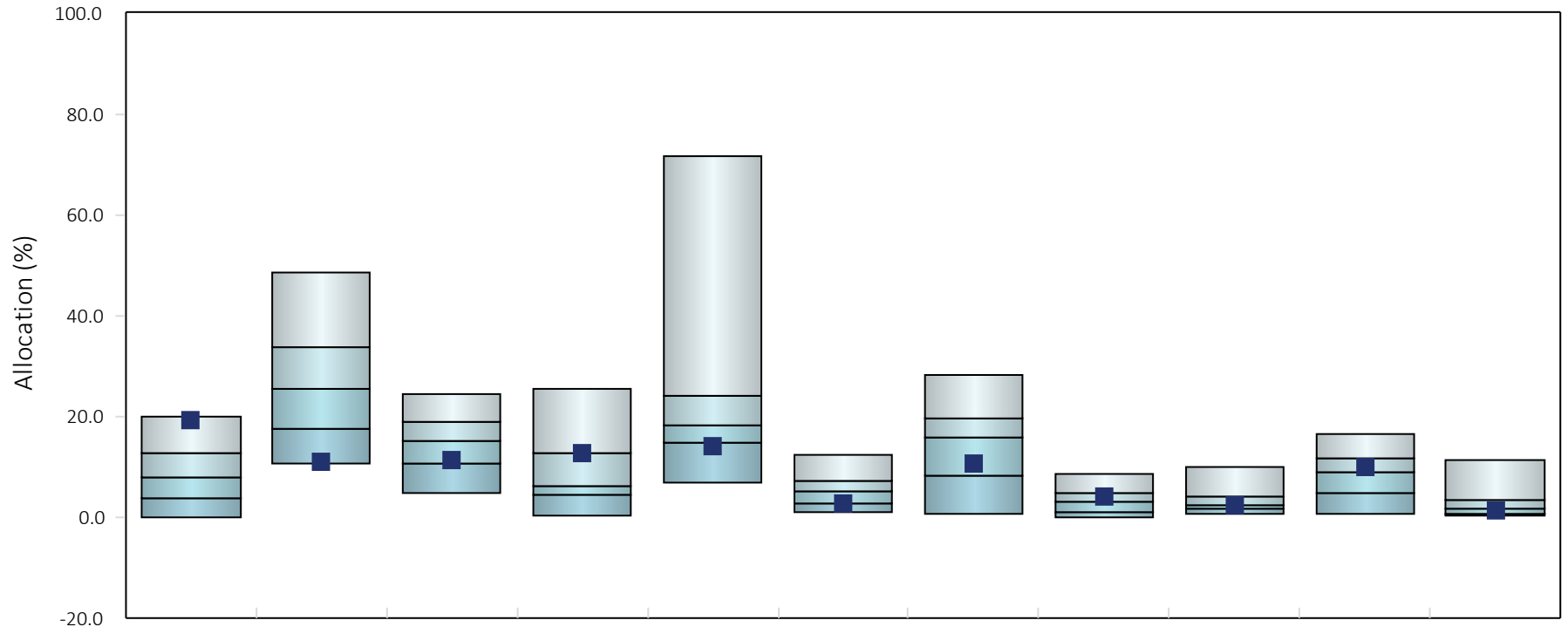
	<b>QTD</b>	<b>1 Year</b>	<b>2 Years</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ Dallas Total Fund	3.22 (81)	-3.31 (20)	2.71 (18)	11.29 (50)	5.57 (62)	6.37 (73)
● Policy Index	4.03 (41)	-6.01 (88)	0.79 (59)	11.18 (55)	5.46 (71)	6.00 (84)
5th Percentile	4.91	-1.12	4.46	12.96	7.55	8.10
1st Quartile	4.40	-3.40	2.33	12.26	6.68	7.40
Median	3.74	-4.41	1.08	11.29	5.90	6.82
3rd Quartile	3.44	-5.15	-0.30	10.55	5.40	6.14
95th Percentile	2.62	-6.72	-1.53	9.11	4.01	5.36
Population	48	42	41	41	40	37

Parenteses contain percentile rankings.  
Calculation based on monthly periodicity.

# Plan Sponsor TF Asset Allocation

Dallas Total Fund vs All Public Plans > \$1B-Total Fund

Periods Ended March 31, 2023



	Global Equity	US Equity	Global ex-US Equity	Global Fixed Income	US Fixed	Hedge Funds	Private Equity	Real Assets/Commod	Real Estate - Public	Real Estate - Private	Cash & Equivalents
■ Dallas Total Fund	19.41	11.06	11.44	12.87	14.29	2.60	10.54	4.20	2.40	9.88	1.32
5th Percentile	20.00	48.66	24.39	25.55	71.76	12.33	28.15	8.69	9.91	16.40	11.24
1st Quartile	12.81	33.79	18.98	12.78	24.11	7.12	19.75	4.75	4.26	11.62	3.59
Median	7.88	25.49	15.29	6.21	18.43	5.24	15.98	3.05	2.40	8.89	1.78
3rd Quartile	3.65	17.75	10.84	4.62	14.74	2.70	8.16	1.07	1.69	4.87	0.85
95th Percentile	0.14	10.65	4.67	0.43	6.76	1.05	0.54	0.11	0.68	0.58	0.20
Population	18	91	90	25	95	22	38	27	11	33	79

# Asset Allocation & Performance

Dallas Total Fund

Periods Ended March 31, 2023

	Performance (%) net of fees							Allocation	
	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Market Value \$	%
Global Equity Composite	5.33	-4.13	13.63	6.07	7.45	8.30	9/1/2012	225,111,336	6.29
Global Low Volatility Composite	2.53	-3.90	10.01	5.11		6.66	7/1/2015	469,063,070	13.11
Domestic Equity Composite	5.42	-8.08	20.60	9.31	11.18	10.06	1/1/1990	395,588,339	11.06
International Equity Composite	7.18	-6.60	14.25	2.71	5.20	5.40	1/1/1990	409,327,415	11.44
Fixed Income Composite	3.57	-4.25	-0.78	1.31	1.84	4.34	10/1/1995	460,296,404	12.87
High Yield Composite	3.35	-3.31	5.78	3.05	3.75	5.87	1/1/1997	342,753,823	9.58
Credit Opportunities Composite	2.17	-4.67	5.14	1.69		3.85	2/1/2016	168,480,622	4.71
Total Real Estate Composite	0.98	-0.17	11.62	8.41	8.35	6.78	1/1/1990	439,295,134	12.28
Global Listed Infrastructure Composite	2.47	5.06	32.20	5.61	2.23	4.91	1/1/2012	150,385,232	4.20
Private Equity Composite	-0.31	8.42	16.62	15.23	13.77	14.11	6/1/2009	376,925,206	10.54
Marketable Alternatives Composite	2.09					3.24	10/1/2022	92,914,448	2.60
Managed Short Term Composite	1.07	2.50	0.89	1.41	0.87	2.74	1/1/1990	47,137,039	1.32
<b>Dallas Total Fund</b>	<b>3.22</b>	<b>-3.31</b>	<b>11.29</b>	<b>5.57</b>	<b>6.37</b>	<b>8.70</b>	<b>1/1/1985</b>	<b>3,577,278,068</b>	<b>100.00</b>
Policy Index	4.03	-6.01	11.18	5.46	6.00	9.18			

# Asset Allocation & Performance

## Domestic Equity

Periods Ended March 31, 2023

	Performance (%) net of fees							Allocation	
	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Market Value \$	%
<b>Systematic Financial</b>	<b>1.72</b>	<b>-3.72</b>	<b>22.42</b>	<b>5.70</b>	<b>10.39</b>	<b>10.23</b>	<b>8/1/2003</b>	<b>62,936,354</b>	<b>15.91</b>
Russell 2000 Index	2.74	-11.61	17.51	4.71	8.04	8.43			
<b>Redwood Investments *</b>	<b>4.26</b>	<b>-19.62</b>	<b>10.70</b>	<b>4.08</b>		<b>5.49</b>	<b>10/1/2016</b>	<b>28,255,133</b>	<b>7.14</b>
Russell 2000 Growth Index	6.07	-10.60	13.36	4.26		7.44			
<b>Channing Capital *</b>	<b>3.06</b>	<b>-13.64</b>	<b>21.41</b>	<b>4.39</b>		<b>5.76</b>	<b>12/1/2013</b>	<b>25,952,898</b>	<b>6.56</b>
Russell 2000 Value Index	-0.66	-12.96	21.01	4.55		5.83			
<b>Domestic Equity Small Cap Composite</b>	<b>2.56</b>	<b>-9.94</b>	<b>19.48</b>	<b>5.22</b>	<b>9.00</b>	<b>8.91</b>	<b>6/1/2003</b>	<b>117,144,385</b>	<b>29.61</b>
<b>Smith Graham *</b>	<b>3.29</b>	<b>-3.72</b>	<b>30.83</b>	<b>8.37</b>		<b>8.02</b>	<b>1/1/2018</b>	<b>71,061,159</b>	<b>17.96</b>
Russell Midcap Index	4.06	-8.78	19.20	8.05		7.56			
<b>T. Rowe Price</b>	<b>8.17</b>	<b>-7.41</b>	<b>19.12</b>	<b>11.54</b>	<b>12.73</b>	<b>9.73</b>	<b>4/1/2006</b>	<b>145,041,055</b>	<b>36.66</b>
S&P 500 Index	7.50	-7.73	18.60	11.19	12.24	9.21			
<b>Northern Trust S&amp;P 500 (Lending)</b>	<b>7.50</b>	<b>-7.72</b>	<b>18.57</b>	<b>11.19</b>	<b>12.26</b>	<b>10.17</b>	<b>1/1/1995</b>	<b>62,341,740</b>	<b>15.76</b>
S&P 500 Index	7.50	-7.73	18.60	11.19	12.24	10.13			
<b>Domestic Equity Composite</b>	<b>5.42</b>	<b>-8.08</b>	<b>20.60</b>	<b>9.31</b>	<b>11.18</b>	<b>10.06</b>	<b>1/1/1990</b>	<b>395,588,339</b>	<b>100.00</b>
Custom Benchmark	7.29	-8.62	18.80	10.71	11.91	10.17			

# Asset Allocation & Performance

## International Equity

Periods Ended March 31, 2023

	Performance (%) net of fees							Allocation	
	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Market Value \$	%
<b>Acadian International</b>	<b>4.77</b>	<b>-9.50</b>	<b>18.01</b>	<b>2.79</b>	<b>6.46</b>	<b>8.10</b>	<b>4/1/1989</b>	<b>106,304,315</b>	<b>25.97</b>
Custom Benchmark	4.70	-10.37	15.04	1.67	5.06	5.65			
<b>Ativo International *</b>	<b>7.41</b>	<b>-6.74</b>	<b>11.21</b>	<b>2.18</b>		<b>1.73</b>	<b>1/1/2018</b>	<b>30,759,755</b>	<b>7.51</b>
MSCI EAFE (Net)	8.47	-1.38	12.99	3.52		3.05			
<b>AQR Capital Management</b>	<b>6.39</b>	<b>-5.89</b>	<b>11.52</b>	<b>0.28</b>	<b>4.16</b>	<b>3.03</b>	<b>4/1/2006</b>	<b>119,334,420</b>	<b>29.15</b>
Custom Benchmark	6.87	-5.07	11.80	2.47	4.17	3.00			
<b>Baillie Gifford</b>	<b>13.12</b>	<b>-5.32</b>	<b>8.64</b>			<b>4.50</b>	<b>4/1/2019</b>	<b>71,096,827</b>	<b>17.37</b>
MSCI AC World ex USA (Net)	6.87	-5.07	11.80			4.22			
<b>Earnest Partners *</b>	<b>6.78</b>	<b>-4.49</b>	<b>18.57</b>			<b>6.94</b>	<b>4/1/2019</b>	<b>81,832,097</b>	<b>19.99</b>
MSCI AC World ex USA (Net)	6.87	-5.07	11.80			4.22			
<b>International Equity Composite</b>	<b>7.18</b>	<b>-6.60</b>	<b>14.25</b>	<b>2.71</b>	<b>5.20</b>	<b>5.40</b>	<b>1/1/1990</b>	<b>409,327,415</b>	<b>100.00</b>
Custom Benchmark	6.56	-5.84	12.20	2.35	4.28	4.43			

# Asset Allocation & Performance

## Global Equity

Periods Ended March 31, 2023

	Performance (%) net of fees							Allocation	
	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Market Value \$	%
<b>Ariel Global *</b>	<b>4.39</b>	<b>-1.23</b>	<b>12.04</b>	<b>6.00</b>		<b>5.84</b>	<b>1/1/2018</b>	<b>100,238,533</b>	<b>44.53</b>
MSCI AC World Index (Net)	7.31	-7.44	15.36	6.93		6.39			
<b>Wellington</b>	<b>6.25</b>	<b>-6.39</b>	<b>14.29</b>	<b>5.79</b>	<b>8.86</b>	<b>9.93</b>	<b>9/1/2012</b>	<b>124,872,803</b>	<b>55.47</b>
MSCI AC World Index (Net)	7.31	-7.44	15.36	6.93	8.06	8.85			
<b>Global Equity Composite</b>	<b>5.33</b>	<b>-4.13</b>	<b>13.63</b>	<b>6.07</b>	<b>7.45</b>	<b>8.30</b>	<b>9/1/2012</b>	<b>225,111,336</b>	<b>100.00</b>
MSCI AC World Index (Net)	7.31	-7.44	15.36	6.93	8.06	8.85			

# Asset Allocation & Performance

## Low Volatility

Periods Ended March 31, 2023

	Performance (%) net of fees							Allocation	
	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Market Value \$	%
<b>Acadian Global Low Vol.</b>	<b>3.32</b>	<b>-2.06</b>	<b>11.38</b>	<b>4.98</b>		<b>6.62</b>	<b>7/1/2015</b>	<b>235,130,766</b>	<b>50.13</b>
MSCI AC World Index (Net)	7.31	-7.44	15.36	6.93		7.57			
MSCI AC World Minimum Volatility Index (Net)	1.53	-6.10	8.25	5.05		6.40			
<b>BlackRock Global Low Vol.</b>	<b>1.72</b>	<b>-5.75</b>	<b>8.64</b>	<b>5.22</b>		<b>6.69</b>	<b>7/1/2015</b>	<b>233,932,304</b>	<b>49.87</b>
MSCI AC World Minimum Volatility Index (Net)	1.53	-6.10	8.25	5.05		6.40			
<b>Global Low Volatility Composite</b>	<b>2.53</b>	<b>-3.90</b>	<b>10.01</b>	<b>5.11</b>		<b>6.66</b>	<b>7/1/2015</b>	<b>469,063,070</b>	<b>100.00</b>
MSCI AC World Minimum Volatility Index (Net)	1.53	-6.10	8.25	5.05		6.40			



# Asset Allocation & Performance

Real Estate

Periods Ended March 31, 2023

	Performance (%) net of fees							Allocation	
	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Market Value \$	%
<b>Adelante Capital Management *</b>	<b>3.79</b>	<b>-21.51</b>	<b>11.44</b>	<b>6.39</b>	<b>6.72</b>	<b>8.85</b>	<b>10/1/2001</b>	<b>42,682,215</b>	<b>49.68</b>
Wilshire U.S. Real Estate Securities Index	3.44	-21.15	11.15	5.69	6.09	8.96			
<b>CenterSquare</b>	<b>2.76</b>	<b>-18.98</b>	<b>12.39</b>			<b>6.15</b>	<b>6/1/2018</b>	<b>43,230,099</b>	<b>50.32</b>
Wilshire U.S. Real Estate Securities Index	3.44	-21.15	11.15			4.81			
<b>REIT Composite</b>	<b>3.27</b>	<b>-20.26</b>	<b>11.91</b>	<b>6.69</b>	<b>6.53</b>	<b>8.98</b>	<b>10/1/2001</b>	<b>85,912,314</b>	<b>100.00</b>
Wilshire U.S. Real Estate Securities Index	3.44	-21.15	11.15	5.69	6.09	8.96			

# Private Real Estate Summary

Periods Ended as of March 31, 2023

	Month-End Market Value	Commitment Value	Drawn Down Capital	Cash Distributions	Inception Date	IRR Since Inception	TVPI Multiple
Invesco II	79,499,601	65,188,333	65,188,333	13,663,828	Jan-14	5.8%	1.4
<b>Total Direct Private Real Estate</b>	<b>79,499,601</b>	<b>65,188,333</b>	<b>65,188,333</b>	<b>13,663,828</b>	<b>Jan-14</b>	<b>5.8%</b>	<b>1.4</b>

	Month-End Market Value	Commitment Value	Drawn Down Capital	Cash Distributions	Inception Date	IRR Since Inception	TVPI Multiple
Heitman America Real Estate Trust	105,944,229	75,000,000	88,210,161	92,344,808	Dec-10	7.7%	2.2
Invesco Core Real Estate USA	84,217,126	75,000,000	75,000,000	93,351,398	Oct-10	11.3%	2.4
<b>Total Core Private Real Estate</b>	<b>190,161,355</b>	<b>150,000,000</b>	<b>163,210,161</b>	<b>185,696,206</b>	<b>Oct-10</b>	<b>10.0%</b>	<b>2.3</b>

	Month-End Market Value	Commitment Value	Drawn Down Capital	Cash Distributions	Inception Date	IRR Since Inception	TVPI Multiple
AEW Partners Real Estate Fund IX	33,483,418	45,000,000	31,481,481	16,806	Mar-21	6.4%	1.1
AEW PIX MM Co-Invest	4,707,129	10,000,000	4,584,906	321,769	Nov-21	11.2%	1.1
AEW PIX Oakland Park Co-Invest	5,185,067	5,000,000	5,000,000	345,235	Feb-22	9.9%	1.1
Virtus Real Estate Capital III	29,124,742	43,281,585	27,369,556	3,714,853	Jan-21	10.1%	1.2
Brasa Real Estate Fund II	9,353,431	20,000,000	9,899,977	546,545	Jul-22	-	1.0
Long Wharf Real Estate Partners VII	1,868,078	20,000,000	2,158,516		Mar-23	-	0.9
<b>Total Value-Add Private Real Estate</b>	<b>83,721,865</b>	<b>143,281,585</b>	<b>80,494,436</b>	<b>4,945,208</b>	<b>Jan-21</b>	<b>8.3%</b>	<b>1.1</b>

<sup>1</sup> Total Value to Paid-in Capital ("TVPI") multiple calculation = (market value + distributions) / capital called

# Private Equity Summary

Periods Ended as of March 31, 2023

	Month-End Market Value	Commitment Value	Drawn Down Capital	Cash Distributions	Inception Date	IRR Since Inception	Multiple <sup>3</sup>
Hamilton Lane Secondary Fund II	182,152	25,000,000	22,058,532	31,222,789	Jul-09	13.5%	1.4
Hamilton Lane Secondary Fund III	3,383,281	30,000,000	23,372,292	28,082,252	Nov-12	10.0%	1.3
Hamilton Lane Secondary Fund IV	17,174,397	30,000,000	25,907,343	24,579,643	Mar-17	18.5%	1.6
Hamilton Lane Secondary Fund V	54,360,134	65,000,000	43,128,993	8,244,733	Mar-20	25.3%	1.5
Hamilton Lane Secondary Fund VI-A	1,500,000	30,000,000	1,500,000	-	Feb-23	-	1.0
Hamilton Lane Fund VII Composite	15,431,594	50,000,000	45,600,834	55,162,854	Jan-10	6.3%	1.5
Hamilton Lane Fund VIII (Global)	17,728,829	30,000,000	22,270,594	16,385,283	Nov-12	7.5%	1.5
GCM Grosvenor - Partnership, L.P.	27,110,896	75,000,000	93,988,722	132,884,962	Jun-11	14.3%	1.7
GCM Grosvenor - Partnership II, L.P. (2014)	50,289,382	60,000,000	71,665,890	66,885,465	Jul-14	16.5%	1.6
GCM Grosvenor - Partnership II, L.P. (2015)	59,605,348	30,000,000	41,980,082	11,065,785	Dec-15	13.7%	1.7
GCM Grosvenor - Partnership II, L.P. (2017)	31,001,435	30,000,000	29,053,710	8,384,101	Jan-18	15.9%	1.4
GCM Grosvenor - Advance Fund, L.P.	5,297,032	10,000,000	4,746,483	53,279	Jun-21	-	1.1
GCM Grosvenor - Partnership II, L.P. (2022)	2,217,137	20,000,000	2,229,719	974	May-22	-15.1%	1.0
Fairview Capital - Lone Star Fund I	51,512,615	40,000,000	35,813,040	14,458,863	Aug-15	15.4%	1.8
Fairview Capital - Lone Star Fund II	28,195,947	30,000,000	20,966,085	496,453	Dec-18	12.0%	1.4
Fairview Capital - Lone Star Fund III - A	10,517,855	25,000,000	10,833,831	-	Apr-21	-3.7%	1.0
Fairview Capital - Lone Star Fund III - B	277,356	20,000,000	384,907	-	Dec-22	-	0.7
Fairview Capital - Private Markets Fund VI	1,139,816	10,000,000	1,484,127	210,556	Apr-22	-9.1%	0.9
<b>Total Private Equity Composite</b>	<b>376,925,206</b>	<b>610,000,000</b>	<b>496,985,184</b>	<b>398,117,992</b>	<b>Jul-09</b>	<b>14.0%</b>	<b>1.6</b>

Public Market Equivalent (PME) <sup>2</sup>

455,958,077

15.9%

# Asset Allocation & Performance

## Global Listed Infrastructure

Periods Ended March 31, 2023

	Performance (%) net of fees							Allocation	
	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Market Value \$	%
<b>Atlantic Trust CIBC</b>	<b>3.62</b>	<b>11.51</b>	<b>42.88</b>	<b>9.67</b>	<b>4.02</b>	<b>6.84</b>	<b>1/1/2012</b>	<b>44,189,359</b>	<b>29.38</b>
Alerian MLP Index	4.09	14.70	47.08	7.42	0.57	2.55			
<b>Harvest Fund Advisors MLP</b>	<b>3.36</b>	<b>11.35</b>	<b>41.84</b>	<b>11.06</b>	<b>4.63</b>	<b>6.88</b>	<b>1/1/2012</b>	<b>48,145,904</b>	<b>32.02</b>
Alerian MLP Index	4.09	14.70	47.08	7.42	0.57	2.55			
<b>C&amp;S Global Listed Infrastructure</b>	<b>0.90</b>	<b>-6.67</b>				<b>8.41</b>	<b>11/1/2020</b>	<b>58,049,970</b>	<b>38.60</b>
FTSE Global Core Infrastructure 50/50 (Net)	0.55	-7.77				7.85			
<b>Global Listed Infrastructure Composite</b>	<b>2.47</b>	<b>5.06</b>	<b>32.20</b>	<b>5.61</b>	<b>2.23</b>	<b>4.91</b>	<b>1/1/2012</b>	<b>150,385,232</b>	<b>100.00</b>
Global Listed Infrastructure Benchmark	3.24	9.04	39.24	3.95	-1.07	1.07			

# Asset Allocation & Performance

## Fixed Income

Periods Ended March 31, 2023

	Performance (%) net of fees							Allocation	
	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Market Value \$	%
<b>Garcia Hamilton *</b>	<b>3.53</b>	<b>-3.45</b>	<b>-1.36</b>	<b>1.04</b>		<b>2.01</b>	<b>11/1/2013</b>	<b>150,989,470</b>	<b>32.80</b>
Blmbg. U.S. Aggregate Index	2.96	-4.78	-2.77	0.90		1.55			
<b>Western Asset Management</b>	<b>4.01</b>					<b>0.34</b>	<b>7/1/2022</b>	<b>155,310,666</b>	<b>33.74</b>
Blmbg. U.S. Aggregate Index	2.96					-0.09			
<b>Wellington Core Bond</b>	<b>3.18</b>					<b>-0.02</b>	<b>7/1/2022</b>	<b>153,996,268</b>	<b>33.46</b>
Blmbg. U.S. Aggregate Index	2.96					-0.09			
<b>Fixed Income Composite</b>	<b>3.57</b>	<b>-4.25</b>	<b>-0.78</b>	<b>1.31</b>	<b>1.84</b>	<b>4.34</b>	<b>10/1/1995</b>	<b>460,296,404</b>	<b>100.00</b>
Blmbg. U.S. Aggregate Index	2.96	-4.78	-2.77	0.90	1.36	4.36			

# Asset Allocation & Performance

Opportunistic Credit

Periods Ended March 31, 2023

	Performance (%) net of fees							Allocation
	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Market Value \$
Neuberger Berman	2.17	-4.67	5.14	1.69		3.85	2/1/2016	168,480,622
Custom Benchmark	2.94	-2.59	4.80	2.07		4.21		

# Asset Allocation & Performance

## High Yield

Periods Ended March 31, 2023

	Performance (%) net of fees							Allocation	
	QTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Market Value \$	%
<b>Oaktree Capital Management</b>	<b>2.92</b>	<b>-4.20</b>	<b>5.82</b>	<b>2.68</b>	<b>3.28</b>	<b>6.01</b>	<b>2/1/1997</b>	166,583,031	48.60
FTSE High Yield Market Capped Index	3.62	-3.48	5.79	2.89	3.74				
FTSE High Yield Cash Pay	3.60	-3.41	5.94	3.06	3.83	6.16			
<b>BlackRock</b>	<b>3.79</b>	<b>-2.39</b>	<b>5.73</b>	<b>3.42</b>	<b>3.97</b>	<b>5.51</b>	<b>10/1/2006</b>	176,170,792	51.40
FTSE High Yield Market Capped Index	3.62	-3.48	5.79	2.89	3.74	5.73			
FTSE High Yield Cash Pay	3.60	-3.41	5.94	3.06	3.83	5.83			
<b>High Yield Composite</b>	<b>3.35</b>	<b>-3.31</b>	<b>5.78</b>	<b>3.05</b>	<b>3.75</b>	<b>5.87</b>	<b>1/1/1997</b>	342,753,823	100.00
FTSE High Yield Cash Pay	3.60	-3.41	5.94	3.06	3.83	6.17			

# Asset Allocation & Performance

## Marketable Alternatives

Periods Ended March 31, 2023

	Performance (%) net of fees			Allocation	
	1 Quarter	Since Inception	Inception Date	Market Value \$	%
<b>Davidson Kempner</b>	<b>1.76</b>	<b>3.25</b>	<b>10/1/2022</b>	<b>46,462,275</b>	<b>50.01</b>
HFRI Event-Driven (Total) Index	1.72	4.91			
Value Added	0.04	-1.66			
<b>Hudson Bay Capital</b>	<b>2.43</b>	<b>3.23</b>	<b>10/1/2022</b>	<b>46,452,173</b>	<b>49.99</b>
HFRI Relative Value (Total) Index	1.16	2.65			
Value Added	1.27	0.58			
<b>Marketable Alternatives Composite</b>	<b>2.09</b>	<b>3.24</b>	<b>10/1/2022</b>	<b>92,914,448</b>	<b>100.00</b>
Marketable Alternatives Policy	2.41	4.86			
Value Added	-0.32	-1.62			



# Cash Flow Summary

Dallas Total Fund

1 Quarter Ending March 31, 2023

	<b>Begin Value</b>	<b>Net Cash Flow</b>	<b>Fees</b>	<b>Expenses</b>	<b>Capital Apprec./ Deprec.</b>	<b>End Value</b>
<b>Dallas Total Fund</b>	<b>3,516,767,763</b>	<b>-52,601,038</b>	<b>-3,395,661</b>	<b>-1,336,020</b>	<b>117,843,025</b>	<b>3,577,278,068</b>
<b>Domestic Equity Composite</b>	<b>393,055,510</b>	<b>-18,998,913</b>	<b>-517,531</b>	<b>-1,572</b>	<b>22,050,845</b>	<b>395,588,339</b>
Northern Trust S&P 500 (Lending)	57,993,427	1,087			4,347,226	62,341,740
Smith Graham *	68,798,813		-131,876	-206	2,394,428	71,061,159
T. Rowe Price	134,082,405		-100,182	-222	11,059,053	145,041,055
<b>Domestic Equity Small Cap Composite</b>	<b>132,180,865</b>	<b>-19,000,000</b>	<b>-285,474</b>	<b>-1,144</b>	<b>4,250,138</b>	<b>117,144,385</b>
Systematic Financial	73,117,866	-12,000,000	-155,547	-675	1,974,709	62,936,354
Redwood Investments *	27,102,061		-50,894	-242	1,204,208	28,255,133
Channing Capital *	31,960,938	-7,000,000	-79,032	-228	1,071,220	25,952,898
<b>Total Real Estate Composite</b>	<b>432,213,330</b>	<b>2,828,390</b>	<b>-530,340</b>	<b>-328</b>	<b>4,784,081</b>	<b>439,295,134</b>
<b>REIT Composite</b>	<b>83,192,091</b>		<b>-116,252</b>	<b>-328</b>	<b>2,836,803</b>	<b>85,912,314</b>
Adelante Capital Management	41,122,023		-62,869	-234	1,623,295	42,682,215
CenterSquare	42,070,068		-53,383	-94	1,213,508	43,230,099
<b>Private Core Real Estate Composite</b>	<b>271,816,145</b>	<b>-2,603,241</b>	<b>-414,088</b>		<b>862,139</b>	<b>269,660,956</b>
Heitman America Real Estate Trust, LP	106,652,390	-708,161	-233,557		233,557	105,944,229
Invesco Core Real Estate USA, LLC	84,989,266	-1,220,191	-180,531		628,582	84,217,126
Invesco II	80,174,490	-674,889				79,499,601
<b>Private Value-Add Real Estate</b>	<b>77,205,094</b>	<b>5,431,631</b>			<b>1,085,140</b>	<b>83,721,865</b>
Virtus Real Estate Capital III	29,124,742					29,124,742
AEW PARTNERS REAL ESTATE FUND IX	29,441,646	2,777,777			1,263,995	33,483,418
AEW PIX MM CO-INVEST	4,122,474	584,655				4,707,129
AEW PIX OAKLAND PARK CO-INVEST	5,162,801	-89,317			111,583	5,185,067
Brasa Real Estate Fund II	9,353,431					9,353,431
<b>Private Equity Composite</b>	<b>375,084,937</b>	<b>3,078,670</b>	<b>-171,362</b>	<b>-78,617</b>	<b>-988,421</b>	<b>376,925,206</b>
Fairview Capital - Lone Star Fund I	51,512,615					51,512,615

# Cash Flow Summary

Dallas Total Fund

1 Quarter Ending March 31, 2023

	Begin Value	Net Cash Flow	Fees	Expenses	Capital Apprec./ Deprec.	End Value
Fairview Capital - Lone Star Fund II	26,215,749	1,980,198				28,195,947
Fairview Capital - Lone Star Fund III - A	10,517,855					10,517,855
Fairview Capital - Lone Star Fund III - B	158,544	118,812				277,356
Fairview Private Markets Fund VI	1,125,284	5,249			9,283	1,139,816
Grosvenor Composite	176,399,508	369,406	-171,362	-78,617	-997,704	175,521,230
<b>Hamilton Lane Test</b>	<b>109,155,382</b>	<b>605,005</b>				<b>109,760,387</b>
Hamilton Lane Secondary Fund II	182,152					182,152
Hamilton Lane Secondary Fund III	3,530,350	-147,069				3,383,281
Hamilton Lane Secondary Fund IV	17,357,356	-182,959				17,174,397
Hamilton Lane Secondary Fund V	54,360,134					54,360,134
Hamilton Lane Fund VIII (Global)	18,293,796	-564,967				17,728,829
<b>Hamilton Lane Fund VII Composite</b>	<b>15,431,594</b>					<b>15,431,594</b>
Hamilton Lane Fund VII (Series B)	4,632,507					4,632,507
Hamilton Lane Fund VII (Series A)	10,799,087					10,799,087
<b>International Equity Composite</b>	<b>400,209,905</b>	<b>-19,688,382</b>	<b>-550,893</b>	<b>-3,005</b>	<b>29,359,790</b>	<b>409,327,415</b>
Acadian International	101,332,569	141,333	-141,333	-106	4,971,852	106,304,315
Ativo International *	36,149,107	-8,000,000	-53,028	-141	2,663,817	30,759,755
AQR Capital Management	112,001,625	170,284	-147,358	-1,942	7,311,811	119,334,420
Earnest Partners	87,874,119	-12,000,000	-126,670	-563	6,085,212	81,832,097
Baillie Gifford	62,852,485		-82,503	-253	8,327,098	71,096,827
<b>Global Equity Composite</b>	<b>223,200,255</b>	<b>-10,000,000</b>	<b>-334,633</b>	<b>-1,232</b>	<b>12,246,946</b>	<b>225,111,336</b>
Ariel Global *	105,677,282	-10,000,000	-161,967	-662	4,723,880	100,238,533
Wellington	117,522,973		-172,667	-570	7,523,066	124,872,803
<b>Global Low Volatility Composite</b>	<b>466,253,648</b>	<b>-8,976,977</b>	<b>-217,139</b>	<b>-405</b>	<b>12,003,943</b>	<b>469,063,070</b>
Acadian Global Low Vol.	236,305,890	-9,000,000	-194,116	-405	8,019,396	235,130,766

# Cash Flow Summary

Dallas Total Fund

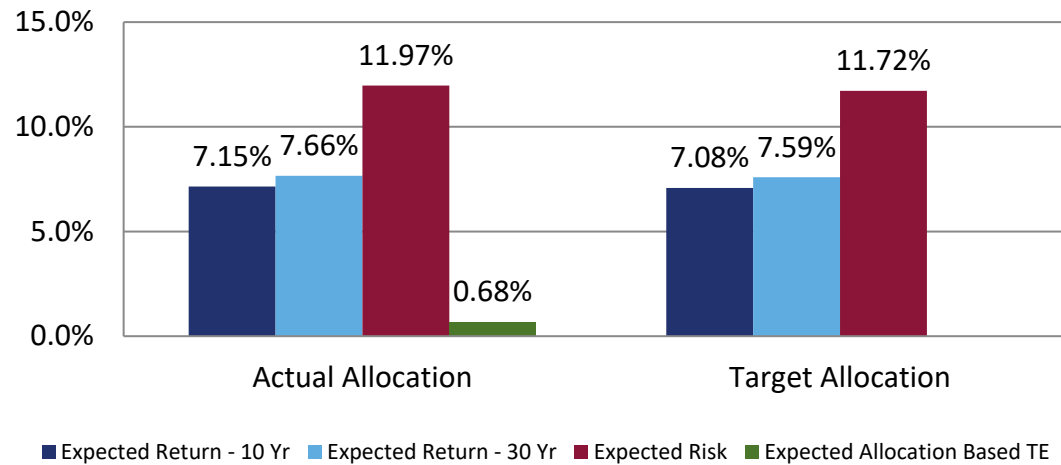
1 Quarter Ending March 31, 2023

	<b>Begin Value</b>	<b>Net Cash Flow</b>	<b>Fees</b>	<b>Expenses</b>	<b>Capital Apprec./ Deprec.</b>	<b>End Value</b>
BlackRock Global Low Vol.	229,947,758	23,023	-23,023		3,984,546	233,932,304
<b>Global Listed Infrastructure Composite</b>	<b>146,756,055</b>		<b>-288,784</b>	<b>-718</b>	<b>3,918,680</b>	<b>150,385,232</b>
Atlantic Trust CIBC	42,646,624		-77,486	-286	1,620,507	44,189,359
Harvest Fund Advisors MLP	46,579,869		-126,584	-291	1,692,910	48,145,904
C&S Global Listed Infrastructure	57,529,563		-84,714	-141	605,262	58,049,970
<b>Fixed Income Composite</b>	<b>444,418,382</b>		<b>-256,776</b>	<b>-4,741</b>	<b>16,139,539</b>	<b>460,296,404</b>
Garcia Hamilton *	145,843,378		-91,504	-155	5,237,752	150,989,470
Western Asset Management	149,325,909		-98,772	-551	6,084,080	155,310,666
Wellington Core Bond	149,249,094		-66,500	-4,034	4,817,708	153,996,268
<b>Credit Opportunities Composite</b>	<b>164,904,532</b>		<b>-118,605</b>	<b>-395</b>	<b>3,695,091</b>	<b>168,480,622</b>
Neuberger Berman	164,904,532		-118,605	-395	3,695,091	168,480,622
<b>High Yield Composite</b>	<b>344,544,342</b>	<b>-13,297,872</b>	<b>-409,597</b>	<b>-2,360</b>	<b>11,919,310</b>	<b>342,753,823</b>
Oaktree Capital Management	174,805,909	-13,297,872	-213,287	-1,000	5,289,280	166,583,031
BlackRock	169,738,433		-196,310	-1,360	6,630,030	176,170,792
<b>Marketable Alternatives Composite</b>	<b>91,010,234</b>				<b>1,904,214</b>	<b>92,914,448</b>
Davidson Kempner	45,660,637				801,638	46,462,275
Hudson Bay Capital	45,349,597				1,102,576	46,452,173
<b>Managed Short Term Composite</b>	<b>35,116,633</b>	<b>12,454,046</b>		<b>-1,242,647</b>	<b>809,007</b>	<b>47,137,039</b>
Cash Account	35,116,633	12,454,046		-1,242,647	809,007	47,137,039

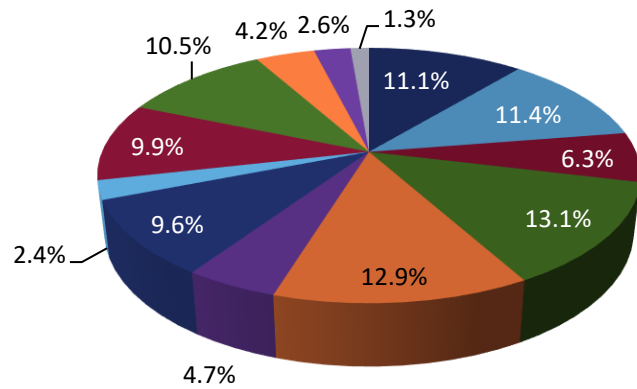
# Risk Analysis & Performance Objectives

# Expected Return and Risk

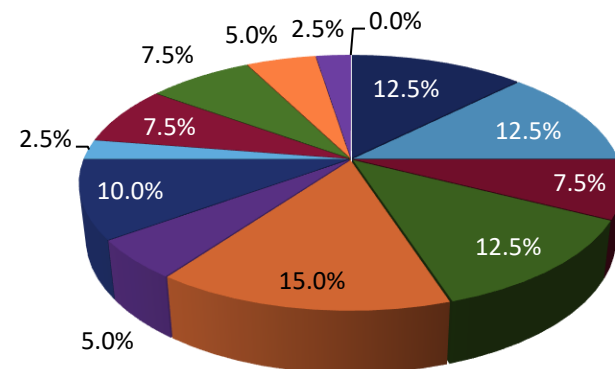
Periods Ended as of March 31, 2023



## Actual Asset Allocation



## Target Asset Allocation

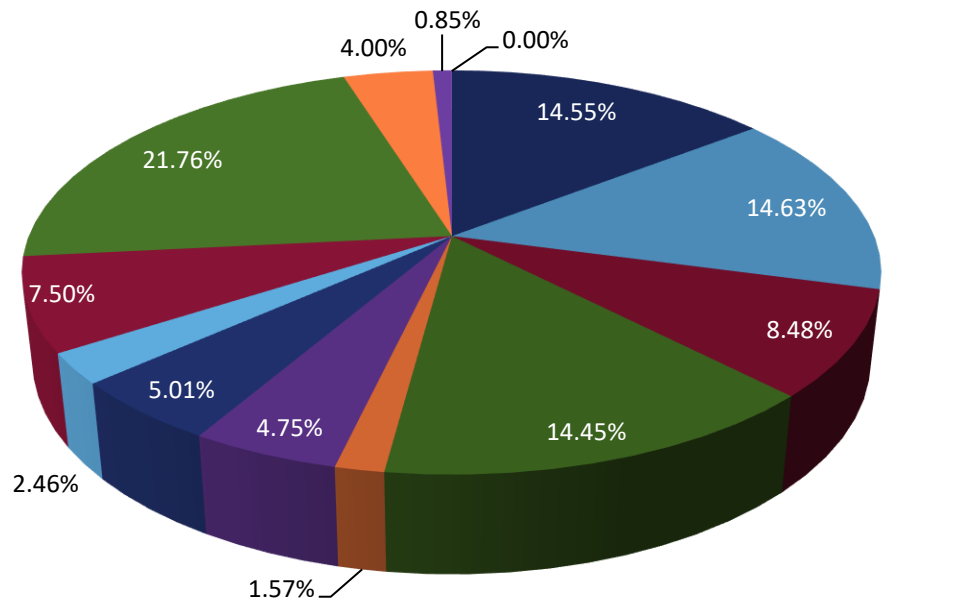


- Domestic Equity
- International Equity
- Global Equity
- Global Low Volatility
- Domestic Equity
- International Equity
- Global Equity
- Global Low Volatility
- US Fixed Income
- Opportunistic Credit
- High Yield
- Public REITs
- US Fixed Income
- Opportunistic Credit
- High Yield
- Public REITs
- Private Real Estate
- Private Equity
- Global Public Infrastructure
- Marketable Alternatives
- Private Real Estate
- Private Equity
- Global Public Infrastructure
- Marketable Alternatives
- Cash
- Cash

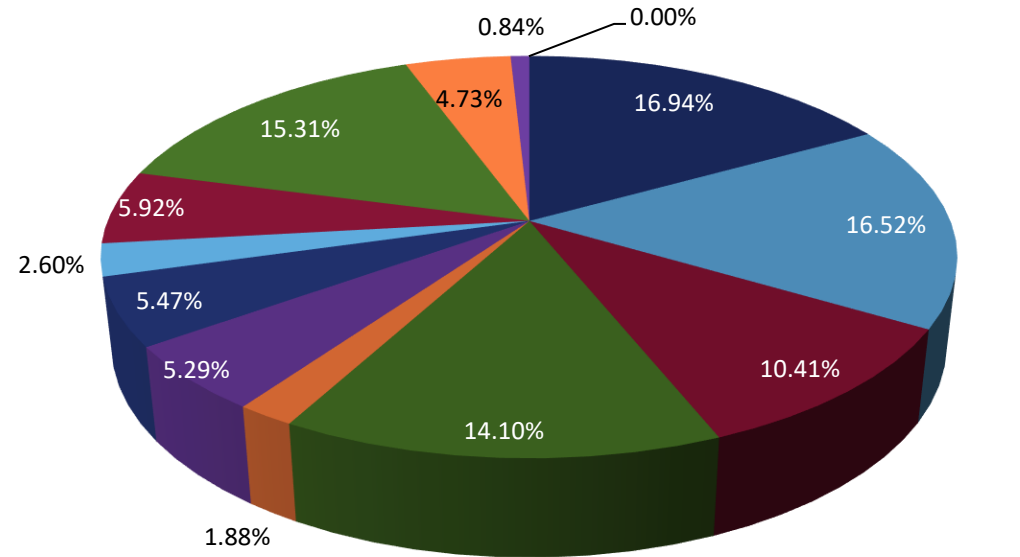
## Expected Return and Risk

Periods Ended as of March 31, 2023

### Contribution to Total Risk - Actual Allocation



### Contribution to Total Risk - Target Allocation



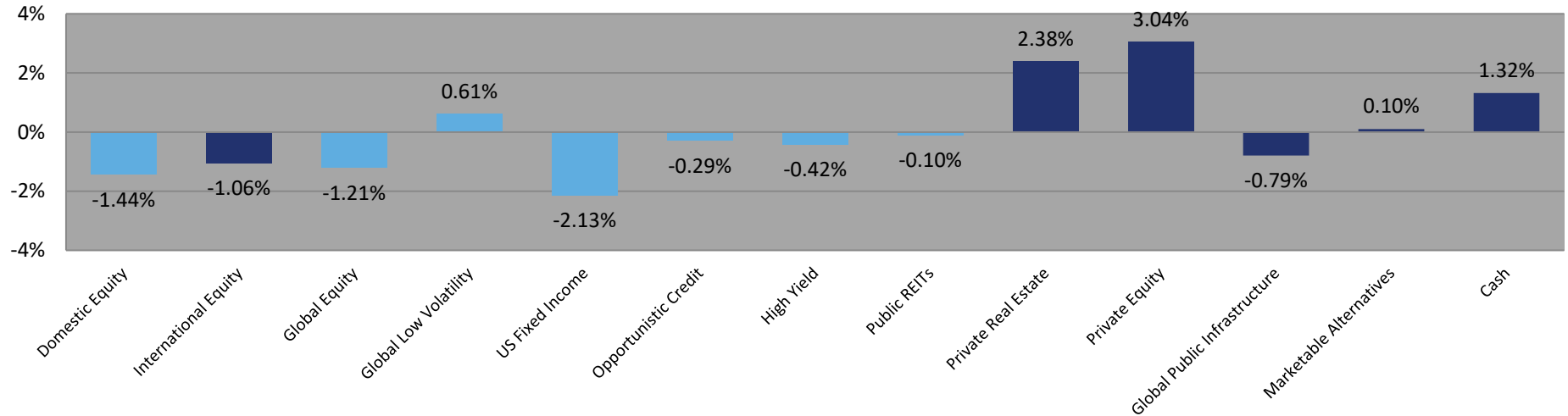
- Domestic Equity
- International Equity
- Global Equity
- Global Low Volatility
- US Fixed Income
- Opportunistic Credit
- High Yield
- Public REITs
- Private Real Estate
- Private Equity
- Global Public Infrastructure
- Marketable Alternatives
- Cash

- Domestic Equity
- International Equity
- Global Equity
- Global Low Volatility
- US Fixed Income
- Opportunistic Credit
- High Yield
- Public REITs
- Private Real Estate
- Private Equity
- Global Public Infrastructure
- Marketable Alternatives
- Cash

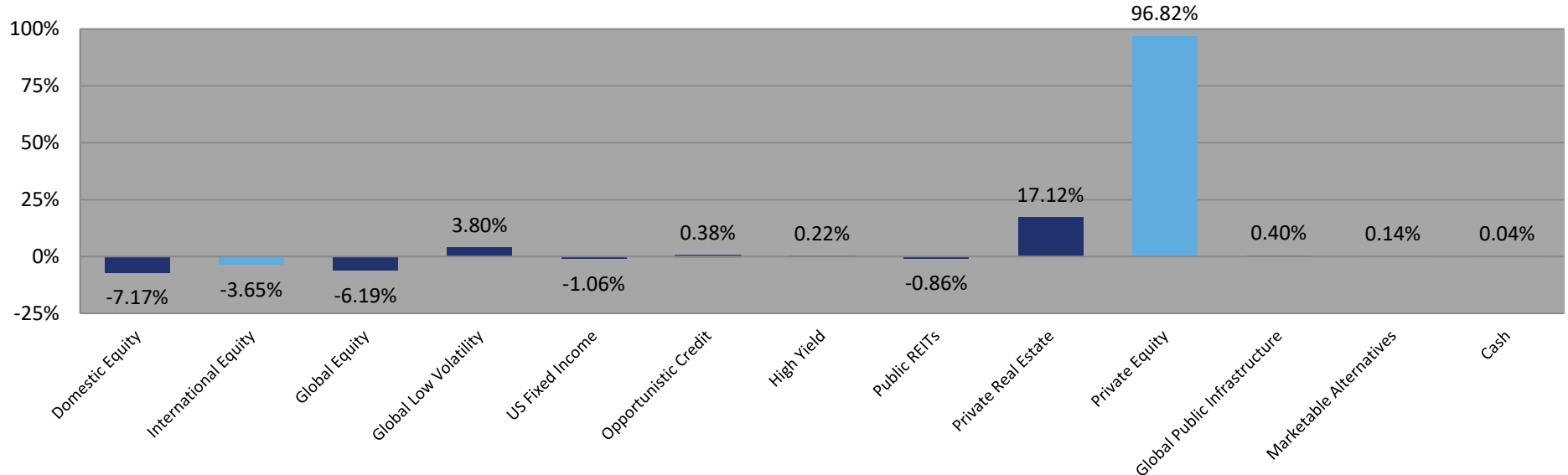
# Expected Return and Risk

Periods Ended as of March 31, 2023

## Asset Allocation Variance



## Contribution to TF Tracking Error



# 1-Year Risk Statistics

Periods Ended March 31, 2023

	1 Year Standard Deviation	1 Year Sharpe Ratio	1 Year Excess Risk	1 Year Information Ratio
<b>DOMESTIC EQUITY</b>				
<b>Systematic Financial</b>	<b>22.82</b>	<b>-0.16</b>	<b>22.84</b>	<b>1.21</b>
Russell 2000 Index	25.56	-0.45	25.57	
<b>Channing Capital *</b>	<b>26.77</b>	<b>-0.50</b>	<b>26.76</b>	<b>-0.16</b>
Russell 2000 Value Index	26.81	-0.47	26.85	
<b>Redwood Investments *</b>	<b>24.16</b>	<b>-0.88</b>	<b>24.14</b>	<b>-1.72</b>
Russell 2000 Growth Index	25.19	-0.42	25.16	
<b>Smith Graham *</b>	<b>26.54</b>	<b>-0.10</b>	<b>26.54</b>	<b>0.96</b>
Russell Midcap Index	23.88	-0.37	23.83	
<b>T. Rowe Price</b>	<b>22.76</b>	<b>-0.33</b>	<b>22.67</b>	<b>0.31</b>
S&P 500 Index	22.74	-0.35	22.65	
<b>INTERNATIONAL EQUITY</b>				
<b>Acadian International</b>	<b>21.81</b>	<b>-0.46</b>	<b>21.66</b>	<b>0.36</b>
MSCI AC World ex USA Small Cap (Net)	21.93	-0.50	21.77	
<b>AQR Capital Management</b>	<b>21.40</b>	<b>-0.29</b>	<b>21.24</b>	<b>-0.22</b>
Custom Benchmark	21.64	-0.25	21.46	
<b>Ativo International *</b>	<b>21.72</b>	<b>-0.33</b>	<b>21.55</b>	<b>-1.76</b>
MSCI EAFE (Net)	22.25	-0.06	22.07	
<b>Baillie Gifford</b>	<b>27.33</b>	<b>-0.16</b>	<b>27.13</b>	<b>0.15</b>
MSCI AC World ex USA (Net)	21.64	-0.25	21.46	
<b>Earnest Partners</b>	<b>22.30</b>	<b>-0.21</b>	<b>22.16</b>	<b>0.16</b>
MSCI AC World ex USA (Net)	21.64	-0.25	21.46	
<b>GLOBAL EQUITY</b>				
<b>Wellington</b>	<b>21.69</b>	<b>-0.31</b>	<b>21.54</b>	<b>0.40</b>
MSCI AC World Index (Net)	21.63	-0.36	21.50	
<b>Ariel Global *</b>	<b>14.01</b>	<b>-0.20</b>	<b>13.88</b>	<b>0.47</b>
MSCI AC World Index (Net)	21.63	-0.36	21.50	



# 1-Year Risk Statistics

Periods Ended March 31, 2023

	1 Year Standard Deviation	1 Year Sharpe Ratio	1 Year Excess Risk	1 Year Information Ratio
<b>GLOBAL LOW VOLATILITY</b>				
<b>Acadian Global Low Vol.</b>	<b>14.81</b>	<b>-0.24</b>	<b>14.69</b>	<b>0.49</b>
MSCI AC World Index (Net)	21.63	-0.36	21.50	
<b>REIT's</b>				
<b>Adelante Capital Management</b>	<b>23.12</b>	<b>-1.03</b>	<b>23.06</b>	<b>-0.39</b>
Wilshire U.S. Real Estate Securities Index	24.55	-0.94	24.50	
<b>CenterSquare</b>	<b>23.83</b>	<b>-0.86</b>	<b>23.80</b>	<b>1.21</b>
Wilshire U.S. Real Estate Securities Index	24.55	-0.94	24.50	
<b>FIXED INCOME</b>				
<b>Garcia Hamilton *</b>	<b>10.38</b>	<b>-0.53</b>	<b>10.25</b>	<b>0.91</b>
Blmbg. U.S. Aggregate Index	9.29	-0.76	9.14	
<b>HIGH YIELD</b>				
<b>BlackRock</b>	<b>11.64</b>	<b>-0.37</b>	<b>11.54</b>	<b>0.93</b>
FTSE High Yield Cash Pay	12.10	-0.43	12.00	
<b>Oaktree Capital Management</b>	<b>12.56</b>	<b>-0.48</b>	<b>12.50</b>	<b>-0.37</b>
FTSE High Yield Cash Pay	12.10	-0.43	12.00	
<b>CREDIT OPPORTUNITIES</b>				
<b>Neuberger Berman</b>	<b>10.03</b>	<b>-0.68</b>	<b>9.85</b>	<b>-0.85</b>
Custom Benchmark	9.64	-0.49	9.48	
<b>Global Listed Infrastructure</b>				
<b>Harvest Fund Advisors MLP</b>	<b>22.26</b>	<b>0.48</b>	<b>22.32</b>	<b>-0.63</b>
Alerian MLP Index	27.09	0.55	27.16	
<b>Atlantic Trust CIBC</b>	<b>23.86</b>	<b>0.47</b>	<b>23.91</b>	<b>-0.78</b>
Alerian MLP Index	27.09	0.55	27.16	
<b>C&amp;S Global Listed Infrastructure</b>	<b>18.05</b>	<b>-0.43</b>	<b>18.00</b>	<b>0.53</b>
FTSE Global Core Infra. 50/50 Index (Net)	18.22	-0.49	18.17	

# 3-Year Risk Statistics

Periods Ended March 31, 2023

	3 Years Standard Deviation	3 Years Sharpe Ratio	3 Years Excess Risk	3 Years Information Ratio
<b>DOMESTIC EQUITY</b>				
<b>Systematic Financial</b>	<b>19.33</b>	<b>1.10</b>	<b>19.42</b>	<b>0.43</b>
Russell 2000 Index	22.52	0.79	22.61	
<b>Channing Capital *</b>	<b>23.95</b>	<b>0.89</b>	<b>24.04</b>	<b>0.08</b>
Russell 2000 Value Index	22.70	0.91	22.81	
<b>Redwood Investments *</b>	<b>22.51</b>	<b>0.53</b>	<b>22.60</b>	<b>-0.31</b>
Russell 2000 Growth Index	23.75	0.61	23.81	
<b>Smith Graham *</b>	<b>22.08</b>	<b>1.29</b>	<b>22.17</b>	<b>1.16</b>
Russell Midcap Index	20.14	0.93	20.20	
<b>T. Rowe Price</b>	<b>19.13</b>	<b>0.97</b>	<b>19.18</b>	<b>0.41</b>
S&P 500 Index	18.96	0.95	19.01	
<b>INTERNATIONAL EQUITY</b>				
<b>Acadian International</b>	<b>18.76</b>	<b>0.93</b>	<b>18.79</b>	<b>0.62</b>
MSCI AC World ex USA Small Cap (Net)	18.99	0.79	19.02	
<b>AQR Capital Management</b>	<b>17.01</b>	<b>0.68</b>	<b>17.01</b>	<b>-0.07</b>
Custom Benchmark	17.11	0.69	17.09	
<b>Ativo International *</b>	<b>17.40</b>	<b>0.65</b>	<b>17.40</b>	<b>-0.38</b>
MSCI EAFE (Net)	17.90	0.73	17.88	
<b>Baillie Gifford</b>	<b>21.43</b>	<b>0.45</b>	<b>21.39</b>	<b>-0.29</b>
MSCI AC World ex USA (Net)	17.11	0.69	17.09	
<b>Earnest Partners</b>	<b>19.20</b>	<b>0.94</b>	<b>19.22</b>	<b>1.18</b>
MSCI AC World ex USA (Net)	17.11	0.69	17.09	
<b>GLOBAL EQUITY</b>				
<b>Wellington</b>	<b>18.29</b>	<b>0.78</b>	<b>18.30</b>	<b>-0.24</b>
MSCI AC World Index (Net)	17.78	0.85	17.81	
<b>Ariel Global *</b>	<b>12.69</b>	<b>0.89</b>	<b>12.72</b>	<b>-0.42</b>
MSCI AC World Index (Net)	17.78	0.85	17.81	

# 3-Year Risk Statistics

Periods Ended March 31, 2023

	3 Years Standard Deviation	3 Years Sharpe Ratio	3 Years Excess Risk	3 Years Information Ratio
<b>GLOBAL LOW VOLATILITY</b>				
<b>Acadian Global Low Vol.</b>	<b>12.98</b>	<b>0.83</b>	<b>13.00</b>	<b>-0.53</b>
MSCI AC World Index (Net)	17.78	0.85	17.81	
<b>REIT's</b>				
<b>Adelante Capital Management</b>	<b>19.59</b>	<b>0.61</b>	<b>19.68</b>	<b>0.07</b>
Wilshire U.S. Real Estate Securities Index	20.32	0.58	20.41	
<b>CenterSquare</b>	<b>19.93</b>	<b>0.64</b>	<b>20.03</b>	<b>0.50</b>
Wilshire U.S. Real Estate Securities Index	20.32	0.58	20.41	
<b>FIXED INCOME</b>				
<b>Garcia Hamilton *</b>	<b>6.65</b>	<b>-0.31</b>	<b>6.61</b>	<b>1.11</b>
Blmbg. U.S. Aggregate Index	6.20	-0.57	6.15	
<b>HIGH YIELD</b>				
<b>BlackRock</b>	<b>9.42</b>	<b>0.54</b>	<b>9.44</b>	<b>-0.05</b>
FTSE High Yield Cash Pay	8.91	0.59	8.94	
<b>Oaktree Capital Management</b>	<b>8.98</b>	<b>0.57</b>	<b>9.03</b>	<b>-0.08</b>
FTSE High Yield Cash Pay	8.91	0.59	8.94	
<b>CREDIT OPPORTUNITIES</b>				
<b>Neuberger Berman</b>	<b>8.20</b>	<b>0.54</b>	<b>8.21</b>	<b>0.21</b>
Custom Benchmark	7.55	0.54	7.55	
<b>MLP's</b>				
<b>Harvest Fund Advisors MLP</b>	<b>26.12</b>	<b>1.44</b>	<b>26.21</b>	<b>-0.51</b>
Alerian MLP Index	37.48	1.18	37.55	
<b>Atlantic Trust CIBC</b>	<b>30.02</b>	<b>1.31</b>	<b>30.10</b>	<b>-0.59</b>
Alerian MLP Index	37.48	1.18	37.55	

# 5-Year Risk Statistics

Periods Ended March 31, 2023

	5 Years Standard Deviation	5 Years Sharpe Ratio	5 Years Excess Risk	5 Years Information Ratio
<b>DOMESTIC EQUITY</b>				
<b>Systematic Financial</b>	<b>21.93</b>	<b>0.30</b>	<b>22.04</b>	<b>0.08</b>
Russell 2000 Index	23.70	0.26	23.80	
<b>Channing Capital *</b>	<b>25.57</b>	<b>0.24</b>	<b>25.68</b>	<b>0.01</b>
Russell 2000 Value Index	24.49	0.25	24.62	
<b>Redwood Investments *</b>	<b>22.02</b>	<b>0.23</b>	<b>22.10</b>	<b>-0.08</b>
Russell 2000 Growth Index	24.10	0.24	24.17	
<b>Smith Graham *</b>	<b>25.89</b>	<b>0.39</b>	<b>26.01</b>	<b>0.17</b>
Russell Midcap Index	20.93	0.41	21.02	
<b>T. Rowe Price</b>	<b>18.73</b>	<b>0.60</b>	<b>18.80</b>	<b>0.35</b>
S&P 500 Index	18.48	0.59	18.55	
<b>INTERNATIONAL EQUITY</b>				
<b>Acadian International</b>	<b>19.66</b>	<b>0.17</b>	<b>19.74</b>	<b>0.26</b>
MSCI AC World ex USA Small Cap (Net)	19.59	0.11	19.66	
<b>AQR Capital Management</b>	<b>18.08</b>	<b>0.03</b>	<b>18.13</b>	<b>-0.60</b>
Custom Benchmark	17.22	0.15	17.26	
<b>Ativo International *</b>	<b>17.79</b>	<b>0.13</b>	<b>17.84</b>	<b>-0.28</b>
MSCI EAFE (Net)	17.49	0.21	17.52	
<b>GLOBAL EQUITY</b>				
<b>Wellington</b>	<b>18.34</b>	<b>0.32</b>	<b>18.39</b>	<b>-0.27</b>
MSCI AC World Index (Net)	17.60	0.39	17.66	
<b>Ariel Global *</b>	<b>13.22</b>	<b>0.40</b>	<b>13.27</b>	<b>-0.20</b>
MSCI AC World Index (Net)	17.60	0.39	17.66	
<b>GLOBAL LOW VOLATILITY</b>				
<b>Acadian Global Low Vol.</b>	<b>13.63</b>	<b>0.32</b>	<b>13.68</b>	<b>-0.35</b>
MSCI AC World Index (Net)	17.60	0.39	17.66	

# 5-Year Risk Statistics

*Periods Ended March 31, 2023*

	<b>5 Years Standard Deviation</b>	<b>5 Years Sharpe Ratio</b>	<b>5 Years Excess Risk</b>	<b>5 Years Information Ratio</b>
<b>REIT's</b>				
<b>Adelante Capital Management</b>	<b>19.26</b>	<b>0.35</b>	<b>19.34</b>	<b>0.26</b>
Wilshire U.S. Real Estate Securities Index	20.19	0.31	20.28	
<b>CenterSquare</b>				
Wilshire U.S. Real Estate Securities Index				
<b>FIXED INCOME</b>				
<b>Garcia Hamilton *</b>	<b>5.56</b>	<b>-0.04</b>	<b>5.51</b>	<b>0.11</b>
Blmbg. U.S. Aggregate Index	5.42	-0.07	5.34	
<b>HIGH YIELD</b>				
<b>BlackRock</b>	<b>9.16</b>	<b>0.26</b>	<b>9.21</b>	<b>0.14</b>
FTSE High Yield Cash Pay	9.27	0.22	9.34	
<b>Oaktree Capital Management</b>	<b>9.05</b>	<b>0.18</b>	<b>9.12</b>	<b>-0.32</b>
FTSE High Yield Cash Pay	9.27	0.22	9.34	
<b>CREDIT OPPORTUNITIES</b>				
<b>Neuberger Berman</b>	<b>9.55</b>	<b>0.08</b>	<b>9.61</b>	<b>-0.16</b>
Custom Benchmark	8.61	0.12	8.67	
<b>MLP's</b>				
<b>Harvest Fund Advisors MLP</b>	<b>30.52</b>	<b>0.46</b>	<b>30.64</b>	<b>0.01</b>
Alerian MLP Index	39.34	0.36	39.46	
<b>Atlantic Trust CIBC</b>	<b>33.38</b>	<b>0.41</b>	<b>33.49</b>	<b>-0.02</b>
Alerian MLP Index	39.34	0.36	39.46	

# 10-Year Risk Statistics

*Periods Ended March 31, 2023*

	<b>10 Years Standard Deviation</b>	<b>10 Years Sharpe Ratio</b>	<b>10 Years Excess Risk</b>	<b>10 Years Information Ratio</b>
<b>DOMESTIC EQUITY</b>				
<b>Systematic Financial</b>	<b>18.03</b>	<b>0.59</b>	<b>18.10</b>	<b>0.35</b>
Russell 2000 Index	19.37	0.45	19.43	
<b>Channing Capital *</b>				
Russell 2000 Value Index				
<b>Redwood Investments *</b>				
Russell 2000 Growth Index				
<b>Smith Graham *</b>				
Russell Midcap Index	16.48	0.61	16.54	
<b>T. Rowe Price</b>	<b>14.98</b>	<b>0.82</b>	<b>15.03</b>	<b>0.43</b>
S&P 500 Index	14.79	0.80	14.83	
<b>INTERNATIONAL EQUITY</b>				
<b>Acadian International</b>	<b>16.35</b>	<b>0.41</b>	<b>16.40</b>	<b>0.36</b>
MSCI AC World ex USA Small Cap (Net)	16.09	0.34	16.14	
<b>AQR Capital Management</b>	<b>15.09</b>	<b>0.29</b>	<b>15.12</b>	<b>0.02</b>
Custom Benchmark	14.76	0.29	14.78	
<b>Ativo International *</b>				
MSCI EAFE (Net)				
<b>GLOBAL EQUITY</b>				
<b>Wellington</b>	<b>15.14</b>	<b>0.58</b>	<b>15.18</b>	<b>0.25</b>
MSCI AC World Index (Net)	14.40	0.55	14.44	
<b>Ariel Global *</b>				
MSCI AC World Index (Net)				
<b>GLOBAL LOW VOLATILITY</b>				
<b>Acadian Global Low Vol.</b>				
MSCI AC World Index (Net)				

# 10-Year Risk Statistics

*Periods Ended March 31, 2023*

	<b>10 Years Standard Deviation</b>	<b>10 Years Sharpe Ratio</b>	<b>10 Years Excess Risk</b>	<b>10 Years Information Ratio</b>
<b>REIT's</b>				
<b>Adelante Capital Management</b>	<b>16.56</b>	<b>0.42</b>	<b>16.61</b>	<b>0.25</b>
Wilshire U.S. Real Estate Securities Index	17.41	0.38	17.46	
<b>CenterSquare</b>				
Wilshire U.S. Real Estate Securities Index				
<b>FIXED INCOME</b>				
<b>Garcia Hamilton *</b>				
Blmbg. U.S. Aggregate Index				
<b>HIGH YIELD</b>				
<b>BlackRock</b>	<b>7.30</b>	<b>0.45</b>	<b>7.33</b>	<b>0.05</b>
FTSE High Yield Cash Pay	7.60	0.42	7.64	
<b>Oaktree Capital Management</b>	<b>7.40</b>	<b>0.36</b>	<b>7.45</b>	<b>-0.53</b>
FTSE High Yield Cash Pay	7.60	0.42	7.64	
<b>CREDIT OPPORTUNITIES</b>				
<b>Neuberger Berman</b>				
Custom Benchmark				
<b>MLP's</b>				
<b>Harvest Fund Advisors MLP</b>	<b>24.99</b>	<b>0.28</b>	<b>25.06</b>	<b>0.27</b>
Alerian MLP Index	30.56	0.15	30.62	
<b>Atlantic Trust CIBC</b>	<b>26.98</b>	<b>0.26</b>	<b>27.04</b>	<b>0.37</b>
Alerian MLP Index	30.56	0.15	30.62	

# Asset Allocation & Performance

## DOMESTIC EQUITY

Periods Ended March 31, 2023

	Performance (%) net of fees			
	3 Years	5 Years	Since Inception	Inception Date
<b>DOMESTIC EQUITY</b>				
<b>T. Rowe Price</b>	<b>19.12</b>	<b>11.54</b>	<b>9.73</b>	<b>4/1/2006</b>
Standard & Poor's 500 +1%	19.78	12.30	10.30	
Value Added	-0.66	-0.76	-0.57	
<b>Systematic Financial</b>	<b>22.42</b>	<b>5.70</b>	<b>10.23</b>	<b>8/1/2003</b>
Russell 2000 + 1.25%	18.97	6.02	9.79	
Value Added	3.45	-0.32	0.44	
<b>Channing Capital *</b>	<b>21.41</b>	<b>4.39</b>	<b>5.76</b>	<b>12/1/2013</b>
Russell 2000 Value + 1.25%	22.51	5.86	7.16	
Value Added	-1.10	-1.47	-1.40	
<b>Redwood Investments *</b>	<b>10.70</b>	<b>4.08</b>	<b>5.49</b>	<b>10/1/2016</b>
Russell 2000 Growth + 1.50%	15.06	5.83	9.06	
Value Added	-4.36	-1.75	-3.57	
<b>Smith Graham *</b>	<b>30.83</b>	<b>8.37</b>	<b>8.02</b>	<b>1/1/2018</b>
Russell Mid Cap + 2%	21.57	10.22	9.72	
Value Added	9.26	-1.85	-1.70	



# Asset Allocation & Performance

## INTERNATIONAL EQUITY

Periods Ended March 31, 2023

	Performance (%) net of fees			
	3 Years	5 Years	Since Inception	Inception Date
<b>INTERNATIONAL EQUITY</b>				
<b>Acadian International</b>	<b>18.01</b>	<b>2.79</b>	<b>8.10</b>	<b>4/1/1989</b>
Custom Benchmark + 2%	17.34	3.72	7.78	
Value Added	0.67	-0.93	0.32	
<b>AQR Capital Management</b>	<b>11.52</b>	<b>0.28</b>	<b>3.03</b>	<b>4/1/2006</b>
Custom Benchmark +1.5%	13.47	4.01	4.55	
Value Added	-1.95	-3.73	-1.52	
<b>Ativo International *</b>	<b>11.21</b>	<b>2.18</b>	<b>1.73</b>	<b>1/1/2018</b>
MSCI EAFE Index (N) + 2%	15.25	5.61	5.13	
Value Added	-4.04	-3.43	-3.40	
<b>Baillie Gifford</b>	<b>8.64</b>		<b>4.50</b>	<b>4/1/2019</b>
MSCI ACWI ex US + 2.00%	14.04		6.32	
Value Added	-5.40		-1.82	
<b>Earnest Partners</b>	<b>18.57</b>		<b>6.94</b>	<b>4/1/2019</b>
MSCI ACWI ex US + 2.00%	14.04		6.32	
Value Added	4.53		0.62	

# Asset Allocation & Performance

## GLOBAL EQUITY

Periods Ended March 31, 2023

	Performance (%) net of fees			
	3 Years	5 Years	Since Inception	Inception Date
<b>GLOBAL EQUITY</b>				
<b>Wellington</b>	<b>14.29</b>	<b>5.79</b>	<b>9.93</b>	<b>9/1/2012</b>
MSCI ACWI (N) + 2%	17.66	9.08	11.03	
Value Added	-3.37	-3.29	-1.10	
<b>Ariel Global *</b>	<b>12.04</b>	<b>6.00</b>	<b>5.84</b>	<b>1/1/2018</b>
MSCI ACWI (N) + 1.5%	17.08	8.54	7.99	
Value Added	-5.04	-2.54	-2.15	
<b>Acadian Global Low Vol.</b>	<b>11.38</b>	<b>4.98</b>	<b>6.62</b>	<b>7/1/2015</b>
MSCI ACWI (N) + 2%	17.66	9.08	9.73	
Value Added	-6.28	-4.10	-3.11	

# Asset Allocation & Performance

## REAL ESTATE

*Periods Ended March 31, 2023*

	Performance (%) net of fees			
	3 Years	5 Years	Since Inception	Inception Date
<b>REAL ESTATE</b>				
<b>Adelante Capital Management</b>	<b>11.44</b>	<b>6.39</b>	<b>8.85</b>	<b>10/1/2001</b>
Wilshire Real Est. Secs + 1%	12.26	6.75	10.05	
Value Added	-0.82	-0.36	-1.20	
<b>CenterSquare</b>	<b>12.39</b>		<b>6.15</b>	<b>6/1/2018</b>
Wilshire Real Est. Secs + 1%	12.26		5.86	
Value Added	0.13		0.29	

# Asset Allocation & Performance

## FIXED INCOME

Periods Ended March 31, 2023

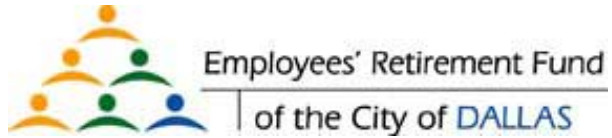
	Performance (%) net of fees			
	3 Years	5 Years	Since Inception	Inception Date
<b>FIXED INCOME</b>				
<b>Garcia Hamilton *</b>	-1.36	1.04	2.01	11/1/2013
Bloomberg Aggregate + 0.5%	-2.28	1.41	2.06	
Value Added	0.92	-0.37	-0.05	
<b>HIGH YIELD</b>				
<b>Oaktree Capital Management</b>	5.82	2.68	5.95	4/1/1988
FTSE HY Cash Pay + 1%	7.00	4.09		
Value Added	-1.18	-1.41		
<b>BlackRock</b>	5.73	3.42	5.51	10/1/2006
FTSE HY Cash Pay + 1%	6.99	4.09	6.88	
Value Added	-1.26	-0.67	-1.37	
<b>CREDIT OPPORTUNITIES</b>				
<b>Neuberger Berman</b>	5.14	1.69	3.85	2/1/2016
Custom Benchmark + 1%	5.85	3.10	5.25	
Value Added	-0.71	-1.41	-1.40	

# Asset Allocation & Performance

## MLP'S

*Periods Ended March 31, 2023*

	Performance (%) net of fees			
	3 Years	5 Years	Since Inception	Inception Date
<b>MLP's</b>				
<b>Harvest Fund Advisors MLP</b>	<b>41.84</b>	<b>11.06</b>	<b>6.88</b>	<b>1/1/2012</b>
Alerian MLP Index + 1.5%	49.24	9.05	4.11	
Value Added	-7.40	2.01	2.77	
<b>Atlantic Trust CIBC</b>	<b>42.88</b>	<b>9.67</b>	<b>6.84</b>	<b>1/1/2012</b>
Alerian MLP Index + 1.5%	49.24	9.05	4.11	
Value Added	-6.36	0.62	2.73	



# **The Employees' Retirement Fund of the City of Dallas**

## **Review of ERF Investment Policies**

**May 9, 2023**



## **ERF Investment Policy Review & Updates**

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### ***1.) ERF General Investment Policy***

- ERF Asset Allocation changes made by the Board will now be reflected in the General Investment Policy, as is always our process to document Board decisions/ actions
- The General Investment Policy (“GIP”) has been simplified to include four ERF policies as Appendices: Equity; Fixed Income; Real Assets; and Diversifying Strategies. Three of these four policies existed previously but were separate from the GIP
- ERF General Investment Policy includes
  - Equity Policy (Appendix A)
  - Fixed Income Policy (Appendix B)
  - Real Assets Policy (Appendix C)
  - Diversifying Strategies Policy (Appendix D)



# ERF Investment Policy Review & Updates

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## 1.) *ERF General Investment Policy – Continued*

### ERF General Investment Policy

- Equity Policy (Appendix A)
  - Derivative language removed and now housed in the General Investment Policy for clarity and consistency
  - International & Global Equity language is now simplified to be “Equity”
- Fixed Income Policy (Appendix B)
  - More detailed definition of Credit Strategies
  - Private Credit definition and strategic purpose included
- Real Assets Policy (Appendix C)
  - Primary objective language updated
  - Asset class performance targets removed and are housed in manager Investment Manager Agreements (“IMA”)/ legal documents
- Diversifying Strategies Policy (Appendix D)
  - State and clarify the allocation purpose and objectives, investment approach and process, and the implementation





## **ERF Investment Policy Updates**

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### ***2.) ERF Manager Selection and Monitoring Policy***

- ERF investment staff revised the Manager Selection and Monitoring Policy to simplify, streamline, and update language to ensure consistency with Board mandates
- Updates made primarily to simplify the process of manager selection:
  - i) Staff will prepare an appropriate selection process with feedback from the Consultant;
  - ii) Staff and the Consultant will independently review manager's responses;
  - iii) After extensive reviews, Staff and the Consultant will meet to select managers for on-site or virtual due diligence;
  - iv) Managers will be brought to the Board for final presentations and selection
- Follow-on investments permitted as long as manager is in good standing; Due diligence includes a virtual option.

## **EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS**

### **MANAGER SELECTION AND MONITORING POLICY**

#### **A. PURPOSE**

This Manager Selection and Monitoring Policy ("MS&MP") in conjunction with the General Investment Policy ("GIP") and the Specific Asset Class Policy ("SACP") of the Employees' Retirement Fund of the City of Dallas ("the Fund") will provide the framework for ensuring that the Fund's investment managers are prudently selected and reviewed. This MS&MP has been designed to allow for sufficient flexibility in the selection and monitoring process yet provide reasonable parameters to ensure prudence and care in the execution of the Fund's investment program.

#### **B. MANAGER SELECTION**

##### 1. Minimum Criteria:

Managers selected to manage Fund assets shall meet the following minimum criteria:

- a) The manager must have a history of returns which are fully compliant with Chartered Financial Analyst (CFA) Institute standards. Managers in newer asset classes should have at least three years of returns for the subject product. Other potential managers should have at least three to five years of returns for the subject strategy. Some exceptions may be made depending on the investment strategy and manager;
- b) The manager's ADV (the manager's registration document with the Securities and Exchange Commission which discloses any violations of securities laws or regulations) must not contain any irregularities. If a manager's ADV does indicate any such violations, it should be reviewed by legal counsel;
- c) The manager must manage assets for institutional clients;
- d) The manager's investment professionals should have a high level of experience and several years of experience at the manager under consideration;
- e) The manager should have low employee turnover of its professional staff;
- f) The manager should have deep resources in terms of breadth of staff, research capabilities, and information management; and
- g) A low client to staff ratio for the portfolio management, client service, and analytical staff is preferred.

2. Manager(s) Selection Process:

The following process should serve as a guideline for an investment manager search and may be modified as needed.

- a) Before a search is conducted, the Employees' Retire Fund of the City of Dallas Board (the "Board") will outline a clear mandate for the potential manager(s) through an Asset Allocation Study and determine the strategic role it (they) will serve in the Fund's investment program ("Initial Search Criteria"), with advice from the Fund's staff ("Staff") and from the Fund's investment consultant ("Consultant"). The Consultant shall provide analysis on how the new manager would fit into the Fund's investment program. (revised 05/23)
- b) Manager searches should be conducted:
  - i) to replace a terminated manager;
  - ii) upon restructuring following an asset allocation study; and
  - iii) when investing in a new asset class;
  - iv) upon expiration of a manager's contract term.
- c) Candidate Identification:
  - i) The Consultant or Staff will prepare a list of managers that meet the Initial Search Criteria; (revised 05/23)
  - ii) The Consultant will provide reviews of managers from the Consultant's internal research team; and
  - iii) Staff and the Consultant will review and analyze managers with the goal of producing a list of approximately ten managers for more detailed analysis.
- d) Selection Process:
  - i) Staff will prepare an appropriate process, with feedback from the Consultant. (revised 05/23)
  - ii) Staff and the Consultant will independently review manager's responses (revised 05/23)
  - iii) After extensive review, Staff and the Consultant will meet to select managers for on-site or virtual due diligence. (revised 05/23)
- e) Due Diligence:

Staff and the Consultant will conduct thorough due diligence of manager candidates in each candidate's office or virtually. The purpose of such diligence is to meet all

the manager's appropriate and most pertinent executives and staff, confirm manager responses, review trading and office capabilities, discuss significant personnel, and obtain an overall good understanding of the firm's culture, capabilities, and capacity. Staff and the Consultant will review, evaluate each visit, and select a list of finalists. (revised 05/23)

f) **Manager Hiring:**

Finalists will visit the Board to make final presentations. The Board, in consultation with Staff and with the Consultant, will make final decisions regarding new manager selection and allocations. The Board will delegate the authority for follow-on investments with existing managers, provided they are in good standing. Following final Board selection of a manager(s), Staff will complete the process by facilitating onboarding of each manager(s) with the Fund's custodian bank and by finalizing all legal documentation with Board investment counsel for execution by both the manager and by the Fund's Board Chair. (revised 05/23)

**C. MANAGER MONITORING**

1. Board Meetings; Staff Contact:

The Board and/ or ERF Staff should meet with each manager approximately every three years at either a Board meeting, ERF office, or at the managers' offices. An additional monitoring checkpoint may be a manager-sponsored conference where both the Board Members and ERF Staff may speak to the manager at length. The meeting schedule will be determined by the Board and/or Staff. The session should focus on the manager's performance versus required objectives and market environment, a review of investment philosophy and process, changes to either the manager or investment process, the manager's view of the market going forward, and any outstanding issues or concerns relating to the account.

Staff shall maintain telephone, virtual, or face-to-face contact with each manager every quarter.

2. Investment Performance Reports:

The Board shall review the quarterly investment performance report provided by the Consultant. The Consultant will calculate and provide portfolio returns which have been reconciled with the manager and the custodian bank. The Consultant will also provide portfolio characteristics and performance attribution data for each manager. From this information, managers can be reviewed by the Board and by Staff based on manager's performance, as warranted.

3. Monthly Updates:

In addition to the quarterly performance report, the Consultant will provide monthly updates on each managers' performance, as warranted.

## **D. DISCIPLINARY ACTION**

### **1. Managers Placed on Watch:**

The Board may place a manager on watch (“Watch”) in its discretion, including, without limitation, when there is a breach of contract (including guidelines or other compliance issues), a protracted downturn in performance relative to its benchmark, or major organizational changes (*e.g.*, a sale or other change of control of the manager, departure of key personnel or other significant organizational turnover, or reassignment of the manager). Staff and the Consultant shall apprise the Board of any such conditions of which they have knowledge.

Each case is unique and will be evaluated individually, but the following instances generally may be considered when placing a manager on Watch:

- a) If a manager is in violation of its contract for a non-performance related breach of contract, Staff or the Consultant will provide written notification to the manager and a reasonable deadline for resolving the problem. If the manager fails to correct the problem by the stated deadline, the manager will be placed on Watch;
- b) If a manager deviates significantly from its stated style (which is outlined in the manager’s guidelines) for an extended period or if there is a protracted downturn in a manager’s performance relative to its benchmark, the Consultant will provide the Board with a recommendation on whether placing the manager on Watch status is warranted; and
- c) If a manager has experienced major organizational changes (*e.g.*, a sale or other change of control of the manager, departure of key personnel or other significant organizational turnover, or reassignment of the manager), Staff and the Consultant will review the changes and will provide the Board with a recommendation on whether Watch status is warranted.

Subject to the Executive Director’s authority in D.3, below, before any manager is placed on Watch for any reason, Staff and the Consultant shall conduct one or more meetings with the manager (either in person or by phone).

### **2. Watch Period:**

- a) The Watch period will be at the discretion of the Board.
- b) When the Board places a manager on Watch, the manager will be notified in writing by Staff.
- c) A manager on Watch will be monitored by Staff monthly. The manager’s Watch status will be noted in the quarterly Executive Summary of Investment Performance prepared by the Consultant.

3. Actions by the Executive Director:

The Executive Director has the authority to place a manager on Watch immediately between Board meetings for any of the following reasons, until such Watch status subsequently is either ratified or removed by the Board:

- a) The manager does not comply with securities laws;
- b) The manager does not comply with industry regulations;
- c) The manager violates professional conduct standards; or
- d) The manager violates contractual agreements.

4. Board Termination:

Depending on the seriousness of the violation(s), the Board may terminate the manager at will in accordance with the terms of the manager's contract.

**E. REMOVING A MANAGER FROM WATCH**

1. Watch Period Termination:

When the Watch period has ended, Staff or the Consultant will revisit the manager's performance and will provide a recommendation to the Board.

2. Removal from Watch Status:

Subject to the Board's discretion, a manager will generally be removed from Watch status in the following instances:

- a) After a significant improvement in performance relative to its benchmark;
- b) If the manager restores its style elements and portfolio characteristics originally established in the contract and continues to maintain those characteristics in the portfolio management process;
- c) If the manager was found to be in violation of its contract for a non-performance related reason and resolves the violation; and/or
- d) If the manager can demonstrate that organizational changes have not impeded the investment process and that sufficient resources are in place (or have been restored).

## **F. FAILURE TO CORRECT DEFICIENCIES; TERMINATION**

### 1. Failure to Correct Deficiencies:

If Staff or the Consultant's review of the manager at the end of its Watch period finds that the manager has not corrected the identified deficiencies, Staff and the Consultant may recommend to the Board one or more of the following actions:

- a) Extend the Watch period for a specified amount of time;
  - b) Reduce the manager's assets under management, keeping the Fund's asset allocation policy in mind;
  - c) Renegotiate fees; and
  - d) Terminate the manager.
2. Should the Board choose to terminate a manager, Staff and the Consultant will advise the Board on the transition of the affected assets.
  3. This policy does not preclude the Board's discretion to terminate any manager at will in accordance with the terms of the manager's contract.

## **G. POLICY AUTHORITY OF THE EXECUTIVE DIRECTOR AND BOARD CHAIR**

Temporary exceptions to the GIP, SACP, and this MS&MP may be granted with the approval of both the Board Chair and the Executive Director where the Board Chair and the Executive Director together have determined that such temporary exception is in the best interest of the Fund. Any such temporary exception shall last for a defined period of time between Board meetings, until such exception is either ratified or removed by the Board. The Board shall review and either ratify or remove such exception at a future Board meeting.

Attest:

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Employees' Retirement Fund of the  
City of Dallas  
Board Chair

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Employees' Retirement Fund of the  
City of Dallas  
Executive Director  
**Last revised: May 2023**



## H. GLOSSARY

Request For Information	“RFI”
Request for Proposal	“RFP”
Request for Questions	“RFQ”

# EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

## GENERAL INVESTMENT POLICY (revised 05/23)

### A. **PURPOSE**

The investment policies of the Employees' Retirement Fund of the City of Dallas (the "Fund"), which include this General Investment Policy (the "General Investment Policy"), that certain Manager Selection and Monitoring Policy, dated [May 9, 2023] (the "MS&MP") and the Fund's specific asset class policies (each, a "SACP" and collectively, the "SACPs") will provide the framework for the management of the Fund's assets. The SACPs are described in the following Appendices: 1) Appendix A is the Equity Asset Class Policy, 2) Appendix B is the Fixed Income Investment Policy, 3) Appendix C is the Real Assets Asset Class Policy, and 4) Appendix D is the Diversifying Strategies Investment Policy. Appendices A through D attached hereto are incorporated herein by reference. They have been designed to allow for sufficient flexibility in the management process to capture investment opportunities as they may occur yet provide reasonable parameters to ensure prudence and care in the execution of the Investment Program (as such term is defined below).

The Fund's General Investment Policy has been developed from a comprehensive study and evaluation of many alternatives. The primary objective of this policy is to implement a plan of action that will result in the highest probability of maximum investment return from the Fund's assets available for investment within prudent levels of risk.

The cornerstone of this policy rests upon the proposition that there is a direct correlation between risk and return for any investment alternative. While such a proposition is reasonable in logic, it is also probable based on empirical investigations.

It is essential that the Fund's investment management be intended to offset inflationary effects and achieve the investment goals of the Fund. Meeting the Fund's investment goals contributes to financing a reasonable package of retirement benefits for Dallas employees and maximizes the utilization of the members' contributions and the tax dollars of the citizens of Dallas.

It is the policy of the Employees' Retirement Fund Board of Trustees (the "Board") to diversify between various investment types as deemed reasonable.

### B. **GENERAL INVESTMENT GOALS**

The general investment goals are broad in nature to encompass the purpose of the Fund and its investments. They articulate the philosophy by which the Board will manage the Fund's assets within the applicable regulatory constraints.

1. The overall goal of the Fund is to provide benefits, as anticipated under the Fund document, Dallas City Code, Chapter 40A ("40A") (revised 11/04; 11/16), to its

members and their beneficiaries through a carefully planned and executed investment program (the "Investment Program").

2. The Fund seeks to produce the highest return on investment that is consistent with sufficient liquidity and investment risk that are prudent and reasonable, given prevailing capital market conditions. While the importance of the preservation of capital is recognized, the theory of capital market pricing which maintains that varying degrees of investment risk should be rewarded with compensating returns is also recognized. Consequently, prudent risk taking is reasonable and necessary (revised 7/99).
3. The Fund's (revised 07/99) Investment Program shall at all times comply with (revised 07/99) applicable local, state, and federal laws.

### **C. GENERAL POLICIES**

1. The Board, and any investment manager, in investing the Fund's assets shall discharge its duties solely in the interests of members and beneficiaries acting with the care, skill, prudence, and diligence under the prevailing circumstances that a prudent person acting in a like capacity and familiar with matters of the type would use in the conduct of an enterprise of a like character and like aims.
2. The General (revised 07/99) Investment Policy shall be based on an asset allocation study (an "Asset Allocation Study") that considers the current and expected condition of the Fund, the expected long-term capital market outlook and the Fund's risk tolerance. The Asset Allocation Study shall measure the potential impact on pension costs of alternative asset allocation policies based on various degrees of diversification in terms of risk and return and the existing and projected liability structure of the Fund. The Board, with assistance of the Consultant, will undertake strategic Asset Allocation Studies no less frequently than every five years. Such studies address the appropriateness of asset classes to be considered for inclusion in the investment portfolio, define the targeted or normal commitments to each asset class to achieve the desired level of diversification and return, and assign the range in which the commitments are permitted to fluctuate.
3. Based on the Asset Allocation Study it will be the responsibility of the Board to determine the specific allocation of the investments among the various asset classes. This will constitute the asset allocation plan (the "Asset Allocation Plan").
4. The Asset Allocation Plan shall be predicated on the following factors:
  - a) the historical performance of capital markets adjusted for the perception of the future short and long-term capital market performance;
  - b) the correlation of returns among the relevant asset classes;
  - c) the perception of future economic conditions, including inflation and interest rate assumptions;
  - d) the projected liability stream of benefits and the costs of funding Fund benefits; and
  - e) the relationship between the current and projected assets of the Fund and the projected actuarial liability stream.

5. The asset allocation as provided for in the Asset Allocation Plan shall be sufficiently diversified to maintain investment risk at a reasonable level as determined by the Board without imprudently sacrificing return.
6. In accordance with the Asset Allocation Plan, the Board will select external investment managers with demonstrated experience and expertise whose investment styles collectively will implement the planned asset allocation as provided for in the Asset Allocation Plan to form the Fund's investment structure. Each investment manager shall be a registered advisor under the Investment Advisers Act of 1940 (or appropriately exempt from registration). Additionally, each investment manager will acknowledge its fiduciary obligations to the Fund, and other conformity with applicable state and federal laws. The Board will set guidelines for these investment managers and regularly review their investment performance on a total return basis against stated objectives. Formal meetings with the Fund's investment managers will be held at Board meetings at least periodically to discuss objectives, styles and returns, or other matters deemed important by the Board.
7. Notwithstanding any other provisions of this policy, assets of the Fund may be invested in any collective investment fund or funds, including common and group trust funds presently in existence or hereafter established which are maintained by a bank or trust company supervised by a state or federal agency, including BlackRock Institutional Trust Company, N.A. The assets so invested shall be subject to all the provisions of the instruments establishing such funds as they may be amended from time to time. Such instruments of group trusts as they may be amended from time to time are hereby adopted, incorporated and made a part of this policy as if fully set forth herein. The combining of money and other assets of the Fund with money and other assets of other trusts and accounts in such fund or funds is specifically authorized. (added 06/15)
8. The Board will utilize the service of a master custodian bank that will be responsible for holding the assets of the Fund that are not held in a collective investment fund described in paragraph 7, above, (revised 06/15), settling purchases and sales of securities, identifying and collecting income that becomes due and payable on assets held, and providing a management information and accounting system.
9. The Board may retain independent professional investment consultants to assist in the development and implementation of the Investment Program, to monitor, oversee, report on and make recommendations with respect to the activity of current and, if appropriate, prospective investment managers.
10. A formal review of the Fund's Asset Allocation Plan and investment structure will be conducted annually by the Board. The purpose of this review shall be to ensure that asset allocation policy guidelines as determined in the most recent asset allocation plan continue to be met. The source of information for these reviews shall come from Fund staff, outside consultants, and investment managers, as they may be retained.
11. It is the responsibility of the Board to administer the investments of the Fund at reasonable cost, being careful to avoid sacrificing quality. These costs include, but are not limited to, management and custodial fees, consulting fees, transaction costs, and

other administrative costs chargeable to the Fund.

12. The Board will reallocate assets on a periodic basis to balance the overall asset allocation against target when deviations occur because of capital market fluctuations. All percentage allocations in this policy are based on the market value of assets (revised 07/99).
13. The Board considers the active voting of proxies an integral part of the investment process. Proxy voting may be delegated to the discretion of investment managers retained by the Board. The investment managers shall be required to establish a proxy voting policy and maintain records of proxy votes and shall make these records available quarterly to the Board or its designee. The Board may at its discretion establish an overall policy of voting proxies in which case the investment managers' proxy voting policy shall be in accordance with that of the Board's. The Board recognizes that in certain non-U.S. (revised 07/99) markets, investment managers may, balancing the costs and benefits, determine not to exercise proxy voting.
14. No investment or action pursuant to an investment may be taken unless expressly permitted by this General Investment Policy, unless separately reviewed and approved by the Board (for example, in an investment manager's contract).
15. The Board may at any time amend, supplement, or rescind this General Investment Policy. (revised 07/99)
16. All transactions undertaken on behalf of the Fund shall be for the sole benefit of the Fund's members, inactive members, retirees, and their beneficiaries.

## D. STRATEGIC ASSET ALLOCATION POLICY

The Board has adopted the following Asset Allocation Plan that has four primary asset groups: Equity, Fixed Income, Real Assets, and Diversifying Strategies. The ERF Board approved a dedicated allocation to the Next Generation Investment Manager Program (see below) of a target of 10% within an acceptable range of 5% to 20% of the total portfolio.

(revised 10/17; 05/23)

### EQUITY

Domestic Equity: 12.0% (revised 09/14, 11/19; 05/23) is the target of assets (revised 07/99) to be allocated within an acceptable range of 10.0% to 14.0% (revised 09/14, 11/19; 05/23) to domestic equity-oriented marketable securities to provide the Fund with the potential to earn high rates of return relative to other asset classes, recognizing that equity investments also generate commensurate risk levels.

International Equity: 11.5% (revised 07/99; 09/14, 11/19; 05/23) is the target of assets to be allocated within an acceptable range of 9.5% to 13.5% (revised 09/14, 11/19; 05/23) to the equity securities of companies domiciled outside of the U.S. which may be traded (revised 07/99) on non-U.S. stock exchanges and may be denominated in non-U.S. (revised 07/99) dollars. This asset class should provide low correlation performance to U.S. equities over time thereby enhancing the overall rate of return through diversification. There is no fixed allocation to emerging market equity, but index weighting up to 8.0 to 10.0% of the international equity asset class may be invested in this asset class at the discretion of the active international equity managers, governed by specific investment manager guidelines. Emerging market equity represents equity investments in public securities of companies domiciled in developing markets which may be traded on non-U.S. stock exchanges and may be denominated in currencies other than the U.S. dollar. These markets are generally smaller and the public securities of such markets tend to offer the potential for somewhat higher long term returns than those of more developed markets.

Global Equity: 5.0% (revised 06/11; 05/18; 05/23) is the target of assets to be allocated within an acceptable range of 3.0% to 7.0% (revised 09/14; 05/18; 05/23) to the equity securities of companies domiciled inside and outside of the U.S.; and which may be traded on either U.S. or non-U.S. stock exchanges; and which may be denominated in U.S. and non-U.S. dollars.

Global Low Volatility Equity: 10.0% is the target of assets to be allocated within an acceptable range of 8% to 12.0% (revised 09/14, 11/19; 05/23) to holdings that will moderate the level of risk in the total equity portfolio by incorporating a strategic allocation to portfolios with an explicit low volatility objective relative to the broader global equity market. Low volatility strategies will generally have a higher allocation to sectors such as utilities, healthcare, and consumer staples which exhibit more stable fundamental characteristics and lower price variation (added 09/14).

Private Equity: 10.0% is the target of assets to be allocated within an acceptable range of 5.0%

to 15.0% (revised 11/19; 05/23) to private equity-oriented investments to provide the Fund with the potential to earn high rates of return relative to other asset classes, recognizing that private equity investments also generate commensurate risk levels. Funding of committed capital in the private equity portfolio will occur over an extended time period and may take several years before the total allocation becomes fully invested. In order to reach the allocation target, a "committed" allocation up to 1.5 times the allocation is authorized as of the date the commitment is approved.

## FIXED INCOME

Global Investment Grade Fixed Income: 17.5% (revised 09/14; 11/16; 05/23) is the target of assets (revised 07/99) to be allocated within an acceptable range of 15.5% to 19.5% (revised 09/14; 1/16; 05/23) to an actively managed bond portfolio invested within a global universe (revised 07/99). This portfolio will be primarily invested in domestic issues and will allow exposure to non-US dollar issues on an opportunistic basis, up to 20.0% (revised 07/99). This portfolio is expected to provide returns above a market index by capturing yield opportunities around the world when US yields are not as favorable.

High Yield Fixed Income: 10.0% (revised 05/09,1/16, 05/18) is the target of assets (revised 07/99) to be allocated within an acceptable range of 8.0% to 12.0% (revised 05/09; 1/16, 5/18) to high yield fixed income (revised 07/99). These are bonds which are rated below investment grade but have (revised 07/99) been issued by going concerns. They display a low correlation to virtually all asset classes, thereby reducing overall portfolio volatility. High yield bonds exhibit higher yield to maturity (revised 07/99) than investment grade bonds that improves the Fund's net cash flow.

Credit Opportunities: 4.0% is the target of assets to be allocated within an acceptable range of 2.0% to 6.0% (revised 05/18; 05/23) to credit opportunities. These investments are viewed as a separate macro asset class group resulting from the diversification benefits relative to individual asset classes. Despite higher correlations to stocks, credit products also generate higher levels of yield so sensitivity to economic growth drivers is substantially dampened offering some downside protection in stressful equity markets. In strong equity markets, credit products can benefit even if bonds are struggling. (added 09/14)

Private Credit: 2.5% is the target of assets to be allocated within an acceptable range of 0.0% to 5.0% to private credit strategies. These investments are viewed as a complement to traditional fixed income strategies, offering incremental income generation, return enhancement, potential resilience, lower correlation to public markets, and diversification. Private credit is a type of debt financing that is provided to companies by non-bank lenders. Private credit can take different forms, including but not limited to direct lending, distressed debt, special situations, specialty finance, real asset credit, mezzanine debt, and may be structured with various types of collateral and covenants.

## TOTAL REAL ASSETS

Total Real Assets (revised 09/14; 09/18; 05/23): 15.0% is the target of assets to be allocated within an acceptable range of 13.0% to 17.0% to real assets-oriented investments (to include public and private Real Assets including but not limited to; real estate, master limited partnerships (MLPs), timber, farm land, and infrastructure (added 11/19) as hedge against inflation and diversification for

the Fund (revised 09/14). Funding of committed capital in the real asset portfolio will occur over an extended time period and may take several years from the inception of this asset class before the total allocation becomes fully invested. In order to reach the allocation target, a "committed" allocation up to 1.5 times the allocation is authorized as of the date the commitment is approved (revised by adding 05/09).

Real Estate Investment Trust: 2.5% (revised 11/19) is the target of assets to be allocated within an acceptable range of 0.5% to 5.0% (revised 09/14, 11/19) to Real Estate Investment Trust (REIT) oriented marketable securities to provide the Fund with the potential to earn high rates of return relative to other asset classes, generate fixed income like net cash flow, and provide a broader diversification than equity and fixed income provides. (added 01/01)

Global Listed Infrastructure: 5.0% (revised 11/19) is the target of assets to be allocated within an acceptable range of 3.0% to 7.0% (revised 09/14, 11/19; 05/23) to marketable infrastructure securities to provide the Fund with the potential to earn high risk-adjusted rates of return relative to other asset classes, generate fixed income like net cash flow, and provide a broader diversification than equity and fixed income provides. Listed infrastructure can provide protection against inflation, as revenues and cash flows are often linked to inflation through regulatory mechanisms or long-term contracts.

Private Real Estate: 7.5% is the target of assets to be allocated to Private Real Estate within an acceptable range of 2.5% to 12.5% (revised 05/23). Private Real Estate consists of a targeted Core Real Estate allocation of 5.0%, and Value-Add Real Estate with a targeted allocation of 2.5%. Funding of committed capital in the real asset portfolio will occur over an extended time period and may take several years from the inception of this asset class before the total allocation becomes fully invested. In order to reach the allocation target, a "committed" allocation up to 1.5 times the allocation is authorized as of the date the commitment is approved (revised by adding 05/09; 05/23; 05/23).

## DIVERSIFYING STRATEGIES

Marketable Alternatives (added 11/19): 2.5% is the target of assets to be allocated within an acceptable range of 0.5% to 4.5% to provide the desired level of both diversification and growth; generally defined as benchmark-agnostic strategies with liquidity provisions less than or equal to five years. They are segregated into two groups of strategies that can be structured together and are generally defined as directional and diversifying.



## CASH EQUIVALENTS

There is no specific allocation to cash equivalents. It is recognized that residual cash (revised 07/99) can result from normal trading activity, and sufficient cash is held in the STIF to accommodate expense payments (revised 07/99).

## NEXT GENERATION INVESTMENT MANAGER PROGRAM

The Board approved a dedicated allocation to the Next Generation Investment Manager Program of a target of 10% within an acceptable range of 5% to 20% of the total portfolio (added 10/11). The assets allocated to this program may be invested in all asset classes. The purpose of the Program is to: generate investment returns by identifying earlier stage investment managers with strong performance; provide access to investment opportunities that may otherwise be overlooked; discover and cultivate the next generation of external portfolio management talent; and increase diversification among the Fund's investment managers. The criteria for Next Generation Investment Managers are defined by the Board. (added 07/15)

**SUMMARY OF ASSET ALLOCATION TARGETS AND RANGES**

	<b>Target</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Equity</b>			
Domestic Equity	12.00%	10.00%	14.00%
International Equity	11.50%	9.50%	13.50%
Global Equity	5.00%	3.00%	7.00%
Global Low Volatility Equity	10.00%	8.00%	12.00%
Private Equity	10.00%	5.00%	15.00%
<b>Total Equity</b>	<b>48.50%</b>	<b>46.50%</b>	<b>50.50%</b>
<b>Fixed Income</b>			
Core Fixed Income	17.50%	15.50%	19.50%
High Yield	10.00%	8.00%	12.00%
Credit Opportunities	4.00%	2.00%	6.00%
Private Credit	2.50%	0.00%	5.00%
<b>Total Fixed Income</b>	<b>34.00%</b>	<b>32.00%</b>	<b>36.00%</b>
<b>Real Assets</b>			
Real Estate Investment Trusts	2.50%	0.50%	4.50%
Global Listed Infrastructure	5.00%	3.00%	7.00%
Private Real Estate	7.50%	2.50%	12.50%
<b>Total Real Assets</b>	<b>15.00%</b>	<b>13.00%</b>	<b>17.00%</b>
<b>Diversifying Strategies</b>			
Marketable Alternatives	2.50%	0.50%	4.50%
<b>Total Diversifying Strategies</b>	<b>2.50%</b>	<b>0.50%</b>	<b>4.50%</b>
<b>TOTAL PORTFOLIO</b>	<b>100.00%</b>		

**E. REBALANCING TO THE ASSET ALLOCATION POLICY**

An asset allocation review shall be conducted at least quarterly. This review shall be developed from the month-end asset valuation obtained generally online from the Fund's custodian. If this review reveals that an asset class is above the upper or below the lower boundary of the designated range, the Board or the Executive Director of the Fund (the "Executive Director") shall affect a reallocation of assets to achieve the target. (revised 07/99; 05/23)

**F. PERFORMANCE OBJECTIVES**

Long-term objectives have been established against which the performance of the Investment Policy is to be measured. Because capital markets fluctuate and given the duration of the liability stream, the viability of the asset allocation is to be judged over a period of a full market cycle which is generally three to five years. The performance objectives are:

1. To avoid actuarial loss;

Match or exceed the actuarial interest rate assumption as adopted periodically by the Board (revised 07/99) to avoid an actuarial loss.

2. To match or exceed inflation; and (revised 07/99)

Match or exceed inflation as measured by an appropriate consumer price index, to ensure that real asset growth maintains pace with real pay growth and cost of living adjustments, primary determinants of benefits and, therefore, pension costs.

3. To add value by active management; (revised 07/99)

The value added by active management to the total Fund performance is intended to (revised 07/99) exceed a Board-approved policy-weighted index over time that is calculated by weighting the appropriate indices according to asset allocation.

**G. GENERAL INVESTMENT MANAGER GUIDELINES**

The investment management for the Fund is to be provided by external investment managers. The guidelines for the investment managers are provided below:

1. Each investment manager shall operate under a set of guidelines specific to the strategic role its portfolio is to fulfill in the overall investment structure and any other applicable investment related policies.

2. A manager under contract to the Board must advise the Board in writing within 24 hours if at any time there is:
  - a. a significant change in investment philosophy;
  - b. a loss of one or more key management personnel;
  - c. a new portfolio manager on the Fund's account;
  - d. a change in ownership structure of its firm;
  - e. any occurrence which might potentially impact the management, professionalism, integrity, or financial position of the investment manager or its firm; or
  - f. a change in any other matter requiring notice in the contract between the investment manager and the Fund.
3. Sector and security selection, portfolio quality and timing of purchase and sales are delegated to the investment manager subject to the constraints within the investment manager's specific guidelines.
4. Unless specifically permitted in the investment manager guidelines or other governing document (*e.g.*, an investment manager's contract) (revised 07/99), the following transactions are prohibited: purchase of non-negotiable securities, short sales, selling on margin, puts, calls, straddles, options, or "letter" (restricted) stock.
5. Transactions that involve a broker acting as a "principal", where such broker is also the investment manager who is making the transaction, are prohibited.
6. Transactions will be made on a best execution basis, taking into consideration cost and prevailing market considerations.
7. The use of derivatives is prohibited unless specifically authorized in an investment manager's individual guidelines or contract. Investment managers shall only be authorized to use derivatives if they can present a written detailed derivatives investment policy that addresses at a minimum the standard of care, the back office and accounting, valuation and reconciliation procedures, monitoring procedures and permitted uses and circumstances. Further, investment managers shall specifically demonstrate an understanding of and processes to manage: market, credit, liquidity, cash flow, basis, legal, settlement, operational, and other pertinent risks associated with the use of derivatives.

The strategic objectives of the use of derivatives are to facilitate risk management and to manage the cost of investing in publicly traded stocks and bonds. Of the four basic strategies that can be achieved through the use of derivatives, only substitution and risk control are permitted. Arbitrage and speculation are never permitted to be used as strategies unless specifically authorized in the investment managers individual guidelines. Any derivative transaction that results in the leveraging of the portfolio is strictly prohibited unless specifically authorized in the investment managers individual guidelines (revised 05/23).

In light of the amendment change to 40A permitting the use of futures, the Fund may now invest in the following classes of derivatives: futures contracts; options on futures; warrants; options; currency forward contracts; swaps; and structured notes (revised 12/16).

The following listing requirements apply to permitted derivatives: they must be either

exchange traded or traded over the counter.

Over-the-counter traded derivatives are subject to counterparty risk. Investment managers shall prepare, maintain, and review a detailed counterparty credit policy for non-exchange traded derivatives that outlines a standard of care in selecting appropriate counterparties. Counterparty requirements are as follows:

- a. Counterparty creditworthiness shall be equivalent to "investment grade" of "A3" as defined by Moody's Investor Services or "A-" by Standard and Poor's. The use of counterparties holding a split rating with one of the ratings below A3/A- is prohibited. Investment managers shall notify the Executive Director if a counterparty is downgraded below A3/A- while an instrument held in the portfolio is outstanding with that counterparty. The use of un-rated counterparties is prohibited unless that counterparty has a written unconditional guarantee from a rated counterparty. The rated counterparty must meet the requirements listed above. *(revised 01/07)*
- b. For non-exchange traded derivatives, individual counterparty exposure, including the Fund's master custodial bank, may be limited to 33% of the notional amount of the derivative exposure of the portfolio being managed for the Fund. Exceptions may be reflected in an individual investment manager's guidelines, which exceptions shall require Board approval.
- c. Any entity acting as a counterparty shall be regulated in either the United States or the United Kingdom.
- d. The investment manager shall, where applicable and enforceable, use master agreements permitting the netting of counterparty exposures to minimize credit risk.
- e. Investment managers are prohibited from "name washing" where credit guarantees extend through to another party or parties, regardless of which party holds a higher rating.

The Board may at its discretion request reports from the investment manager on the use of derivatives in the Fund's portfolio. *(revised by adding 07/99)*

8. If any guideline is breached violated due to market events, actions, or conditions, the investment manager must immediately inform the Executive Director and work together with Fund's staff to determine a course of action. This course of action will be based upon the best judgement recommendation of the investment manager and the Executive Director's discussion with the investment consultant and the Board. Correction of the violation or implementation of such course of action may be postponed if it is deemed to be in the best interest of the Fund. *(revised by adding 07/99)*
9. For purposes of the guidelines, (a) all percentages apply on a market value basis immediately after a purchase or initial investment and (b) any subsequent change in any applicable percentage resulting from market fluctuations or other changes in total assets does not require immediate elimination of any security from the Portfolio. *(revised by adding 07/99)*

Each individual investment manager will be judged according to benchmarks that reflect the objectives and characteristics of the strategic role its portfolio is to fulfill.

#### **H. OTHER INVESTMENT RELATED POLICIES**

The Board from time to time at its discretion may adopt investment-related policies that address specific issues. These issues may include but are not limited to specific asset classes, investment manager selection and monitoring, and others as may be deemed appropriate (revised 07/99).

**I. GLOSSARY**

Actuarial Interest Rate	The actuary's assumed rate of investment return used to discount future benefits and amortize the unfunded liability.
Actuarial Liability	The excess of the present value of all benefits payable under the Fund over the present value of future normal costs.
Arbitrage	When the characteristics of a derivative are more attractive than either the cash market instrument or another related derivative, then the first derivative is purchased, or the cash market instrument is swapped, to capture the short-term return potential from the derivative instrument alone. This strategy is particularly useful to capture mispricing in the derivative instrument relative to either the cash market instrument or another derivative (revised 7/99).
Basis Risk	Basis risk is the financial risk that offsetting investments in a hedging strategy will not experience price changes in entirely opposite directions from each other. This imperfect correlation between the two investments creates the potential for excess gains or losses in a hedging strategy, thus adding risk to the position.
Beta	Beta is a measure of the volatility—or systematic risk—of a security or portfolio compared to the market as a whole.
Call Option	An instrument that conveys the right, but not the obligation to buy a deliverable instrument at a specified price.
Correlation	Correlation is a measure of the degree to which returns of asset classes move together.
Derivative	An instrument that derives its value, usefulness and marketability from an underlying instrument which represents direct ownership of an asset or a direct obligation of an issuer, i.e. a "spot" or cash market instrument (revised 7/99).

Futures Contracts	Stock index futures, bond futures and currency futures contracts which are Commodities and Futures Trading Commission (CFTC) approved are permitted when the investment manager has permission to invest in the underlying or deliverable cash market instrument (revised 7/99).
Investment Manager Guidelines	Specifications for each manager's oversight and investment of a designated portfolio of assets which are included in each of the investment managers' contracts.
Investment Risk	The risk associated with the uncertainty of a given investment's future return. The theory of capital market pricing maintains that varying degrees of investment risk should be rewarded with compensating returns.
Letter Stock	Stock that is unregistered and sold directly to the purchaser, rather than through a public offering.
Liquidity	The capacity of the marketplace to accommodate a given supply of and/or demand for a security without unreasonable price changes resulting.
Margin	Collateral representing a portion of the notional amount of a transaction specified by the exchange clearing the transaction or the counterparty to the transaction.
Market Cycle	The length of time for a market to move from peak to trough to peak, on average three to five years.
Market Value	The value of securities and other investments at any specific point in time as reported by the custodian. Market value differs from cost value in that cost is the original value (revised 7/99).
Non-negotiable Securities	Securities that cannot be re-sold and are privately held.
Options	Contracts that give the holder the right (not obligation) to buy or sell a particular asset at a specified exercise price within a set time period.



Puts	The right (not obligation) to sell a given security or portfolio of securities at a specified exercise price within a fixed time period.
Real Estate Investment Trusts (“REIT”)	A real estate investment trust that purchases real property with investors' money. Investors in an equity REIT earn dividend income from rental income earned by the REIT on property it owns. The investors also participate in increases in value of the owned real estate.
Risk Control	When characteristics of the derivative instrument sufficiently parallel those of the cash market instrument, an opposite position in the derivative can be taken from the cash market instrument to alter the exposure to or the risk (volatility) of the cash instrument. This strategy is useful to manage risk without having to sell the cash instrument. Sometimes referred to as 'hedging', the use of derivatives in this context means that there is at least a .95 correlation in price movement between the cash market or instrument and derivative instrument, over a rolling three-year period. The .95 correlation refers to the correlation between the proxy basket and the underlying portfolio (revised 07/99).
Short Sales	The sale of a security that is not owned by the investor, but rather is borrowed from a broker. The investor eventually repays the broker in kind by purchasing the same security in a subsequent transaction.
Structured Notes	Structured notes (such as, but not limited to, inverse floaters) and mortgages are not considered derivatives for the purposes of this Policy, and are prohibited, unless expressly permitted by the manager's investment guidelines contained within its contract with the Fund (revised 07/99).
Substitution	When the characteristics of the derivative sufficiently parallel those of the cash market instrument, the derivative may be substituted on a short-term basis for the cash market instrument, or on a longer-term basis to avoid withholding taxes. This strategy is particularly useful when investing cash flow

	or liquidating investments, as the derivative can be used to manage more precisely market entry and exit points (revised 07/99).
Speculation	When the characteristics of the derivative are the sole reason for its purchase or sale and an underlying naked cash position is taken in the portfolio. This strategy also implies the leveraging of the portfolio which may create an obligation of value in excess of the value of that portfolio (revised 07/99).
Straddles	An options strategy which involves buying both a call and a put on the same asset, with the options having the same exercise price and expiration date.
Strategic Asset Allocation	The long-range asset allocation of a plan designed to obtain a reasonable long term total return consistent with the degree of risk assumed while emphasizing the preservation of long-term capital.
Swaps	Swaps which provide for the receipt of the rate of return of the permitted cash market instrument are allowed (revised 07/99).
Tactical Asset Allocation	The procedural and implementation aspects of the strategic asset allocation to include periodic review and on-going adjustment to achieve goals of the plan.
Yield to Maturity	The single discount rate which sets the present value of all cash flows from a fixed income security equal to the current price. It thus represents the internal rate of return of a particular fixed income investment.
Warrants	Purchasing warrants separately is prohibited; however, warrants are permitted when attached to securities authorized for investment.

*[Remainder of page is intentionally blank. Signature page follows.]*

Attest:

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Employees' Retirement Fund of the City of Dallas Board Chair

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Employees' Retirement Fund of the City of Dallas Executive Director

**Last revised: May 2023**

# EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

## EQUITY ASSET CLASS POLICY APPENDIX A

### I. Purpose

To establish the investment policy and objectives for the equity segments of the Employees' Retirement Fund of the City of Dallas (revised 6/11) (the "Fund"). This policy in conjunction with the General Investment Policy (revised 6/11) allows for sufficient flexibility in the management process to capture investment opportunities and provide parameters that will ensure prudence and care in the execution of domestic U.S., international, and global equity investment program.

The domestic U.S., international, and global equity segments are to be managed to:

- A. enhance the Fund's total return and increase the Fund's assets through identification of opportunities in U.S. dollar, non-dollar developed, and emerging markets;
- B. ensure protection of long-term liability payments from equity investments, rather than less volatile fixed income investments which are better suited to protect short-term liability payments;
- C. provide diversification to the Fund's overall equity investment program and reduce risk through diversifying the equity asset investments. By including domestic U.S., international, and global developed and emerging markets equities across all market capitalizations and liquidity profiles; in an investment portfolio, the Fund can boost its investment return while lowering the overall portfolio risk; and
- D. moderate the level of risk in the total equity portfolio by incorporating a strategic allocation to portfolios with an explicit low volatility objective relative to the broader global equity market. Low volatility strategies will generally have a higher allocation to sectors such as utilities, healthcare, and consumer staples which exhibit more stable fundamental characteristics and lower price variation. (added 9/14).

## **II. Strategic Objectives**

### **A. Primary Objective**

To achieve the highest return possible consistent with the Board's desire (1) to control asset volatility and covariance risk with assumed liabilities, and (2) to emphasize opportunities to add value through active management.

### **B. Secondary Objectives**

1. The Fund's equity investments are to achieve a rate of return that exceeds the rate of return of the Morgan Stanley Capital International All Country World Investable Market Index (IMI) (revised 06/11), or other comparable indexes. Each individual manager will be tasked with a net of fees performance target in their guidelines.
2. Collectively, domestic U.S., international, and global equity investments are expected to exceed the actuarial assumed rate of interest.

## **III. Investment Approach**

The investment approach shall be to identify equity opportunities across countries and industry sectors of developed and emerging markets. The Fund shall also have exposure to small capitalization non-dollar equities.

The equity managers will manage risk by

- A. lowering stock-specific risk through issue diversification
- B. diversifying the portfolio across markets
- C. diversifying the portfolio across industries  
judiciously using derivatives when permitted (revised 07/99)

## **IV. Investment Process**

### **General Strategies**

- A. The domestic U.S., international and global equity assets are to be managed across regions, market capitalizations, and liquidity profiles, in both developed and emerging markets to add value principally through country selection and stock selection.
- B. Exposure to emerging markets will be limited and controlled by individual investment manager guidelines, and they will be used to add value to developed market portfolios.

## V. Investment Implementation

### A. External Management

The Fund shall retain qualified registered money managers (or those which are exempt from registration, i.e. banks, insurance companies, 3(c)1 Funds, and 3(c)7 Funds) in sufficient number to diversify manager risk, being careful not to over-diversify and thereby increase costs.

### B. Qualifications

The selected managers must have demonstrated expertise in all areas of equity investments with espoused investment approaches consistent with this policy. Selected managers must adhere to a set of guidelines which outline the strategic role their firm is to fulfill.

*Last revised: May 2023*

# EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

## FIXED INCOME ASSET CLASS POLICY APPENDIX B

### I Purpose

To establish the investment policy and objectives for the fixed income segment, of the Employees' Retirement Fund of the City of Dallas (the "Fund"). This policy in conjunction with the General Investment Policy (revised 7/99; 05/23) allows for sufficient flexibility in the management process to capture investment opportunities yet provide parameters that will ensure prudence and care in the execution of the fixed income investment program.

The fixed income segment is to be managed to:

- A. enhance the Fund's total return through the identification of market inefficiencies and fluctuations which create risk-adjusted yield opportunities;
- B. ensure better protection of shorter-term liability payments through lower volatility investments than equities which are better suited to protect longer-term liability payments;
- C. provide diversification to the Fund's overall investment program by investing in the domestic, non-dollar, high yield, credit opportunities (added 9/14) markets, and private credit markets; (added 05/23) and
- D. reduce risk through diversifying the fixed income asset investments across the capital stack and liquidity profile. By including both domestic and non-dollar bonds, high yield securities, credit opportunities, and private credit (added 9/14; 05/23) in an investment portfolio, the Fund can maintain a solid investment return while significantly lowering the overall portfolio risk. Besides being relatively safe, domestic bonds display low correlation relative to other asset classes. Although non-dollar bonds have a higher volatility than their US counterparts, they do display a low correlation to each other. High yield bonds display a low correlation to virtually all asset classes and except for zero coupon bonds, generate a high level of cash income thereby reducing overall portfolio volatility and helping the Fund to meet its cash needs. Credit opportunities are viewed as a separate macro asset class group resulting from the diversification benefits relative to individual asset classes. Despite higher correlations to stocks, credit products also generate higher levels of yield so sensitivity to economic growth drivers is substantially dampened offering some downside protection in stressful equity markets. In strong equity markets, credit products can benefit even if bonds are struggling (added 9/14). These fixed income strategies can offer diversification benefits to an investor's portfolio, as they invest in a range of fixed income securities that can provide exposure to different sectors, geographies, and credit ratings. These investments can

potentially offer higher returns compared to traditional fixed-income investments such as bonds, as they use active management and hedging strategies to take advantage of market inefficiencies and mispricing. Private credit investments can offer higher potential returns compared to traditional fixed-income investments as well as a diversification benefit to an investment portfolio, as they have a low correlation to traditional asset classes like stocks and bonds. Private credit investments can be structured to meet the specific needs of an investor, including terms such as interest rates, maturities, and collateral.

## **II Strategic Objectives**

### **A. Primary Objective**

To achieve the highest risk adjusted return possible consistent with the Board's desire (1) to control asset volatility and covariance risk with assumed liabilities, and (2) to emphasize high current yield to maturity opportunities to add value through active management. This objective may require an underweighting of US Treasury issues relative to their representation in the broad, publicly traded bond market.

### **B. Secondary Objectives**

1. The Fund's investment grade domestic and non-dollar fixed income investments are to be actively managed to achieve a rate of return that exceeds the rate of return of the Bloomberg Aggregate Bond Index or other comparable public market equivalent index (revised 7/99; 05/23) net of fees.
2. The Fund's defensive growth segment including high yield, opportunistic credit, and private credit is to be actively managed to achieve a rate of return that exceeds the rate of return net of all fees of an appropriate benchmark agreed upon by the Investment Manager, ERF's Consultant, and Staff (revised 7/99; 9/14; 05/23).
3. Collectively, fixed income investments are expected to preserve asset value. (revised 7/99).

## **III Investment Approach**

The investment approach shall be to identify enhanced yield opportunities across bond market segments and to invest where credit and reinvestment risks are understood and can be managed well within yield benefits.

A. The investment grade fixed income managers will manage the five major categories of fixed income risk within a global context:

1. credit risk
2. interest rate risk,



3. yield curve risk,
4. reinvestment risk, and where necessary,
5. currency risk.

*Credit Risk* is the uncertainty surrounding the borrower's ability to repay its obligations. Credit risk is to be actively managed, employing yield spread analysis and credit research.

*Interest Rate Risk* is price volatility produced by changes in the overall level of interest rates. This risk is to be managed in a controlled manner using historical real return relationships and economic analysis.

*Yield Curve Risk* is price changes induced by the changing slope of the yield curve. Yield curve risk is to be managed, but in a controlled, disciplined fashion, by employing duration and maturity yield spread analysis.

*Reinvestment Risk* is the uncertain future yield opportunities available to invest funds which become available due to call, maturity or coupon generated cash flow. Reinvestment risk is to be managed through call risk analysis, and diversification of maturities.

*Currency Risk* is price volatility emanating from the value of the US dollar relative to the currencies of the world when invested in non-dollar denominated fixed income instruments. Currency risk is to be hedged, if appropriate, employing currency spread and valuation analysis.

B. The high yield fixed income managers will also manage risk by diversifying their portfolios across industries and credit qualities, as outlined in the high yield manager guidelines. In addition to the types of risk outlined above, the high yield fixed income managers will also manage Default Risk. Default Risk is the possibility that the bond issuers will no longer be able to make their (revised 7/99) scheduled payments to the bond holders. Generally, this type of risk is minimized through disciplined credit analysis.

C. Credit opportunities managers will manage risk by diversifying their portfolios across an opportunity set that includes emerging market debt, bank loans, and distressed debt. The various types of fixed income risks will be managed as noted in A and B above (added 9/14).

D. Private Credit managers will manage risk through disciplined underwriting of lending opportunities and active engagement in structuring collateral and covenants (added 05/23).

## IV Investment Process

### A. General Strategies – Investment Grade Bonds

1. A portion of the fixed income assets are to be managed globally to add value principally through credit, valuation, and interest rate level analysis.

A two-tier macro/micro management approach is to be used to implement the portfolio strategies. The “macro” component is to include strategic and some tactical decision processes such as the allocation among different fixed income segments. The “micro” component will address security selection within each fixed income segment utilizing credit, duration, and valuation analysis.

2. Value is to be added by purchasing bonds where the yield spread over the US Treasury yield curve is such that the risks of not realizing the promised yield spread, either from credit or call risk, do not materially reduce the expected yield benefit. Bond sales should be limited primarily to circumstances where risk can no longer be managed to levels below the yield benefits.

3. Value at the macro level is to be added through the allocation of cash flow to fixed income segments which offer the highest current yield to maturity spreads, globally, relative to their historical norms. Within policy ranges duration should be managed with cash flow by concentrating purchases along the yield curve where the yield premium is high relative to historical norms.

4. Only when value cannot be found should US Treasury issues be purchased. Under most market circumstances the fixed income segment will have a Treasury allocation well below its public market representation.

### B. General Strategies – High Yield Bonds

1. The High Yield bond segment will be managed to generate strong cash flow from coupon income and capital appreciation through bonds with credit quality below investment grade (revised 7/99).

2. Issue selection will be of primary importance with in-depth credit analysis, asset strength, debenture covenants and valuation the key factors.

3. The high yield portfolios will contain predominately (revised 7/99) cash-paying securities of solvent companies. Unless specifically authorized, no payment-in-kind securities (revised 7/99) are permitted.

4. High yield portfolios shall be well-diversified across companies, industries, and sectors.

C. General Strategies – Credit Opportunities (added 9/14)

1. The credit opportunities strategy will be managed to generate strong cash flow from coupon income.
2. The flexible nature of the asset class also allows for value generation through portfolio construction decisions and capital appreciation.
3. Issue selection will be of primary importance with in-depth credit analysis, asset strength, debenture covenants and valuation the key factors.

D. General Strategies – Private Credit (added 05/23)

1. The credit opportunities strategy will be managed to generate strong cash flow from coupon income.
2. The flexible nature of the asset class also allows for value generation through portfolio construction decisions and capital appreciation.
3. Issue selection will be of primary importance with in-depth credit analysis and asset strength and; debenture covenants and valuation being the key factors.

## V Investment Implementation

A. External Management

The Fund (revised 7/99) shall retain qualified registered money managers or those which are exempt from registration (revised 7/99) in sufficient number to diversify manager risk, being careful not to over-diversify and thereby increase cost.

B. Qualifications

The selected investment grade managers must have demonstrated expertise in all areas of investment-grade fixed income specified in their guidelines (revised 7/99), domestically and internationally, with espoused investment approaches consistent with this policy. The selected high yield managers must have demonstrated expertise in all areas of high yield fixed income specified in their guidelines with espoused investment approaches consistent with this policy (revised 7/99). Selected credit opportunities and private credit managers must have demonstrated expertise in flexible fixed income mandates and private opportunities as specified in their guidelines and consistent with this policy. Selected managers must adhere to a set of guidelines which outline the strategic role their firm is to fulfill.

**Last revised: May 2023**

# EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS

## REAL ASSETS - ASSET CLASS POLICY APPENDIX C

### I. Purpose

To establish the investment policy and objectives for the real assets ("RA") segment of the Employees' Retirement Fund of the City of Dallas ("the Fund"). This policy, in conjunction with/ the General Investment Policy, allows for sufficient flexibility in the management process to capture investment opportunities, yet provides parameters that will ensure prudence and care in the execution of the real assets investment program.

The real assets segment is to be managed to:

- A. provide a hedge against inflation and diversification for the Fund. The RA Portfolio is expected to provide a rate of return, net of fees, exceeding that of a market benchmark that reflects public market equivalent plus a premium to compensate for the expense, risk and lack of liquidity of the asset class agreed upon by the Investment Manager, ERF's Consultant, and Staff (revised: 05/23).
- B. address the Fund's longer-term liability payments through real asset investments as a complement to less volatile fixed income investments which may be better suited to protect shorter-term liability payments; and
- C. provide diversification to the Fund's overall investment program and reduce risk through diversification.

### II. Strategic Objectives

#### A. Primary Objective

To achieve the highest return possible consistent with the Board's desire (1) to provide competitive returns through capital appreciation, (2) to generate strong cash flow from coupon income, (3) to control asset volatility and covariance risk with assumed liabilities, and (4) to emphasize opportunities to add value through active management.

#### B. Secondary Objectives

The RA Portfolio is expected to diversify the total fund by investing in assets that are not highly correlated with traditional equity securities. A long-term objective of the RA Portfolio is to develop a prudently diversified portfolio of investments that is expected to enhance the overall risk-return profile of the total Fund and to reduce risk within the RA Portfolio. Due to its primary focus on diversification, the RA Portfolio will focus on both public and private real estate debt or equity investment opportunities, infrastructure, timber, agricultural real estate, oil and gas, real asset mezzanine debt or equity, mortgage-

related investments, entity-level investments, master limited partnerships ("MLPs"), and other opportunistic investments in real assets. (revised: 05/23)

### **III. Investment Approach**

The investment approach shall be to identify real assets opportunities across various economic sectors, industries, and liquidity profiles. The RA Portfolio will be comprised of Strategic Real Estate ("RE") (benchmark-like tracking), Tactical RE and Other public and private Real Assets investments.

- A. The Strategic component will include both "Core", and "Core-Plus" investments. Core investments are institutional quality, well-located assets in the traditional property types: office, apartment, retail, industrial, and hotel. Core investments generally offer relatively high current income returns and, as a result, greater predictability of returns. Core-Plus investments will include higher amounts of leverage or greater leasing risk than traditional Core investments, or both. Core-Plus leverage will generally be typically 50% or less of this Strategic component.
- B. The Tactical component will typically consist of "Value-Added" and "Opportunistic" strategies. Value-Added investments targeting return-enhancing strategies executed at the property level are comprised of institutional quality traditional property types and offer the opportunity to enhance value through lease-up, rehabilitation, or repositioning. These investments are of medium risk with typical leverage of 50% - 65%. Opportunistic investments cover a broad range of risk and return, including opportunity funds, specialized investments, and international investments. One or more of the following attributes typically characterize Opportunistic investments: development, repositioning, a non-traditional vehicle (e.g., non-performing loans or mezzanine investments), entity level investments, public securities, public-to-private, or recapitalizations. Historically, leverage has usually been 70% and higher.
- C. The Other Real Assets component will typically include investments in both public and private real estate infrastructure, timber, agricultural real estate, oil and gas, real asset mezzanine debt or equity, mortgage-related investments, entity-level investments and other opportunistic investments providing value enhancement with relatively low expected volatility. Investments in real assets, mortgages secured by real or personal property, or physical commodities (or derivatives underlain by physical commodities) may only be made through investments in funds that also provide limited liability or limited risk of loss to investors.

### **IV. Investment Process**

- A. The RA Portfolio is to be constructed considering the objectives and investment approach noted above.
- B. The Fund's staff in conjunction with the Fund's consultant shall initiate the review and due diligence process for each investment. Thereafter, staff and the consultant shall make investment recommendations along with a written report setting forth their findings and

support materials as prescribed in the Manager Selection and Monitoring Policy.

- C. Board – The Board, at its regularly scheduled meetings or at a special meeting, if so requested, shall review staff’s investment report and recommendation, and make the final decision regarding the Fund's investment.
- D. The Fund shall retain qualified legal counsel to review and negotiate the terms and conditions of the investment documents to ensure that the investment objectives and documentation are based on the Fund's understanding of the investment and are on market terms.

Indemnification by the Fund, if any, pursuant to the terms and covenants of the investment documents, shall not cause the Fund to have at risk more than its original commitment or investment.

## **V. Investment Implementation**

### **A. External Management**

The Fund shall retain qualified registered investment managers (or those which are exempt from registration, i.e., banks or insurance companies) in sufficient numbers to diversify manager risk, being careful not to over-diversify and thereby increase costs.

### **B. Qualifications**

The selected managers must have demonstrated expertise and experience in all areas of real assets investments with espoused investment approaches consistent with this policy. Selected external investment managers shall operate under a set of guidelines which will provide appropriate governance for the investment manager based on the particular investment manager's specific strategy. The guidelines will include appropriate benchmarks, concentration limits, leverage limits, and other guidelines.

### C. Leverage

The use of leverage is permitted within the RA portfolio. However, in no case will the leverage cause the Fund to have at risk more than its original investment. Recourse against the Fund is not permitted.

With regard to such leverage, any affidavits or certificates required to be executed by lenders need to be on terms and conditions reasonable to the Fund. The Fund's investment interest shall not be assigned or collateralized, and the Fund shall reserve all immunities, defenses, rights or actions arising out of any sovereign status it may have under either or both the Eleventh Amendment to the United States Constitution or any applicable State law(s).

The Fund shall not provide legal opinions with regard to such leverage but may execute an officer's certificate that states that the Fund is authorized to make such investments and execute investment documents and subscription agreements pursuant thereto.

**Last revised: May 2023**

## **EMPLOYEES' RETIREMENT FUND OF THE CITY OF DALLAS**

### **DIVERSIFYING STRATEGIES ASSET CLASS POLICY APPENDIX D**

#### **I. Purpose**

To establish the investment objectives for the diversifying strategies segment of the Employees' Retirement Fund of the City of Dallas ("the Fund"). This policy in conjunction with the General Investment Policy allows for sufficient flexibility in the management process to capture investment opportunities yet provides parameters that will ensure prudence and care in the execution of the diversifying strategies investment program.

The diversifying strategies segment is to be managed to:

- A. allocate investments across different asset classes, such as stocks, bonds, commodities, and real estate. This helps to reduce risk by spreading investments across different sectors and industries;
- B. invest in asset classes that are not highly correlated with each other. This means that their prices and performance do not move in the same direction at the same time, which can help to reduce overall portfolio risk;
- C. invest in alternative asset classes that can provide diversification benefits by having unique risk and return characteristics;
- D. risk management techniques such as hedging, diversification, or other strategies to reduce the impact of market volatility on the portfolio; and
- E. to realize the benefits of diversification through enhanced risk adjusted returns.

#### **II. Strategic Objectives**

##### **A. Primary Objectives**

- 1. Reducing risk: By spreading investments across different asset classes and strategies, a diversified portfolio can help preserve capital during market downturns.
- 2. Improving returns: A diversified portfolio can also potentially improve overall returns by capturing the benefits of different asset classes and strategies that may perform well at different times.



3. Enhancing stability: A diversified portfolio can provide greater stability and predictability of returns, which can help investors to better plan for their future needs.
4. Increasing opportunities: By investing in a broader range of assets, a diversified portfolio can provide access to new investment opportunities and potential sources of return that may not be available through traditional investments.

Overall, a diversified investment strategy can help to improve portfolio performance, reduce risk, and increase stability and opportunities for a larger portfolio.

### **III. Investment Approach**

The investment approach shall be to identify diversifying strategies investment opportunities centered around low beta, un-correlated, and non-directional investing that aims to reduce overall portfolio risk, improve risk-adjusted returns, and preserve capital.

### **IV. Investment Process**

#### **A. General Strategies**

1. Managers are expected to adhere to risk limits and strategy guidelines as laid out in their specific agreements that emphasize specific risk as their primary exposure. This philosophy entails conservative volatility tolerance and informs overall leverage and allocation decisions.

### **V. Investment Implementation**

#### **A. External Management**

The Fund shall retain qualified registered money managers (or those which are exempt from registration, i.e., banks, insurance companies, 3(c)1 Funds, and 3(c)7 Funds) in sufficient number to diversify manager risk, being careful not to over-diversify and thereby increase costs.

#### **B. Qualifications**

The selected managers must have demonstrated expertise and experience in all areas of diversifying strategies investments with espoused investment approaches consistent with this policy. Selected external investment managers shall operate under a set of guidelines which will provide appropriate governance for the investment manager based on the

particular investment manager's specific strategy. The guidelines include appropriate benchmarks, concentration limits, leverage limits, and other guidelines as appropriate.

Date created: May 2023

# DISCUSSION SHEET

## Employees' Retirement Fund Board of Trustees Meeting

May 9, 2023

- Issue:** Smith Graham & Co. Investment Advisors, L.P.  
("Smith Graham")
- Attachments:** None
- Discussion:** Smith Graham exercised its option to transfer its Equity Group to William (Bill) G. Charcalis, to be effective as of February 29, 2024.
- The Equity Group is responsible for the Small Cap Value, Midcap Value, and SMID strategies at Smith Graham. The Equity Group is currently looking at strategic options for the business. ERF investment team suggests placing the manager on watch as they evaluate next steps. Wilshire was consulted on this matter and concurs with staff regarding this recommendation.
- Recommendation:** Suggested motion for approval is as follows: Motion to approve placing Smith Graham on watch for six months.

## 2023 McGuireWoods Emerging Manager Conference The Ritz-Carlton, Dallas, TX May 16-17, 2023

### AGENDA

#### DAY 1: TUESDAY, MAY 16

- 7:30 a.m.                      **Registration / Breakfast, Ballroom Foyer**
- 8 a.m. – 4:30 p.m.            **1:1 Speed-Networking, Ballroom**
- 4:30 – 6:30 p.m.              **Welcome Reception, Ballroom Foyer**  
*Sponsored by Siguler Guff*

**NOTE:** Beverages and light snacks will be provided throughout the day. Grab and go lunch will available during lunch hours.

#### DAY 2: WEDNESDAY, MAY 17

- 7:30 – 8:15 a.m.              **Registration / Breakfast / Networking, Ballroom Foyer**
- 7:30 – 8:10 a.m.              **Women in Private Equity & Finance Breakfast, Salon B**  
*Sponsored by Barings*
- 8:15 a.m.                      **Welcome, Ballroom**  
*Jon Finger, McGuireWoods*
- 8:20 – 9 a.m.                  **Navigating the Journey from Independent Sponsor to Emerging Manager**  
*Nick Antoine, Co-Founder and Managing Partner, Red Arts Capital*  
*John Huhn, Founder and Managing Partner, Compass Group Equity Partners*  
*Scott Hutchins, Partner, Solamere Capital*  
*Ward McNally, Founder and Managing Partner, McNally Capital*  
*Jeff McNelley, Managing Principal, Head of Americas, Allstate Investments*  
[Ben Hantz](#), Partner, McGuireWoods (moderator)
- 9:05 – 9:45 a.m.              **How to be Differentiated as an Emerging Manager**  
*Christopher Aluce, Senior Portfolio Manager, SkyBox Capital*  
*Chris Barbier, Managing Director, Siguler Guff & Company*  
*Brady Hyde, Vice President, Director of Private Equity, B1 Capital Partners*  
*Elliot Wagner, Partner and Co-Head of Growth Equity, Declaration Partners*  
*Sara Zulkosky, Co-Founder and Managing Partner, Recast Capital*  
[Richard Grant](#), Partner, McGuireWoods (moderator)

9:50 – 10:30 a.m.

### **How to Engage with Endowments as an Emerging Manager**

*Trish DiGirolomo, Investment Manager, Babson College*

*Michael Kakenmaster, Director of Investments, Loyola University Chicago*

*Matt McGanity, Managing Director, University of Illinois Foundation*

*Tarek Saghir, Chief Investment Officer, Brandeis University*

[Ramsey White](#), Partner, McGuireWoods (moderator)

10:30 – 10:45 a.m.

### **Break**

10:45 – 11:25 a.m.

### **Constructing Your Desired LP Base for Long-Term Success**

*Cris Conner, Portfolio Manager, Briar Hall*

*Sean Kelly, Director of Private Markets, The Alfred I. DuPont Charitable Trust*

*Rob Langley, Co-Founder and Managing Partner, Align Capital Partners*

*Todd Roland, Managing Director, Brookfield Asset Management*

*Greg Walsh, Managing Director, Brandywine Group Advisors*

[Tom Zahn](#), Partner, McGuireWoods (moderator)

11:30 a.m. – 12:10 p.m.

### **What I Wish I Knew Before I Raised My First Fund**

*Kate Beardsley, Founding Partner, Hannah Grey Ventures*

*JP Gutfreund, Founder and Managing Partner, Halle Capital Management*

*Trevor Nelson, Founder and Managing Partner, Aria Growth Partners*

*Jim Pieri, Managing Partner and Chief Investment Officer, Assured Healthcare Partners*

*Adrian Polak, Co-Founder and Partner, Strattam Capital*

[David McLean](#), Partner, McGuireWoods (moderator)

12:10 – 1 p.m.

### **Lunch**

1 – 1:40 p.m.

### **What do LPs Actually Care About**

*Jeremy Knox, Senior Investment Director, Schroders Capital*

*Michael Marvelli, Deputy CIO & Head of Privates, University of California Los Angeles*

*Brad McCarter, Sr. Director, University of Texas/Texas A&M Investment Management Company*

*Casey Peters, Co-Founder and Managing Partner, Pacenote Equity*

*Blair Webb, Director of Investments, Purdue Research Foundation*

[Jon Finger](#), Partner, McGuireWoods (moderator)

1:45 – 2:25 p.m.

### **Improving Diversity in PE through Emerging Managers**

*Yibai Li Haney, Director, MPowered Capital*

*Mary Hunt, Principal, Portfolio Manager, RCP Advisors*

*Sheryl Mejia, Managing Partner, Steward Asset Management*

*Kenneth Saffold, Managing Partner, o15 Capital Partners*

*Elizabeth Weindruch, Managing Director, Barings*

[Amber Walsh](#), Partner, McGuireWoods (moderator)

2:25 – 2:45 p.m.

### **Break**

2:45 – 3:25 p.m.

### **How to Develop and Implement an Emerging Manager Program**

*Chris Anderson, Private Investments, TIFF Investment Management*

*Liseth Lin, Vice President and Head of U.S. Primaries, Private Equity, Unigestion*

*Brian Nobis, Private Equity Investment Professional, Liberty Mutual Insurance*

*Michael Sustarsic, Partner, Fiducient Advisors*

*Whit Matthews, Senior Investment Director, abrdn*

[Abdul Lediju](#), Associate, McGuireWoods (moderator)

3:30 – 4:10 p.m.

**Nuts and Bolts of Different GP Stakes/Seed Structures**

*Elizabeth Browne, Managing Director, Sponsor Solutions, GCM Grosvenor*  
*Michelle Jacobi, Managing Director, Gatewood Capital Partners*  
*Chris Keller, Founder and Managing Partner, Moelis Catalyst Partners*  
*Mark Millard, Principal, East Rock Capital*  
*William Prather, Founding Partner and Chief Investment Officer, Cypress Creek Partners*  
[Kevin Boardman](#), Partner, McGuireWoods (moderator)

4:15 – 5 p.m.

**Sector and Other Specialization Approaches as an Emerging Manager**

*Tim Burke, Partner, Stride Consumer Partners*  
*Brooke Coburn, Co-Founder and Partner, Capitol Meridian Partners*  
*Neil Keegan, CEO, Marlinspike*  
*John Kim, Co-Founder and Managing Partner, Datavest Partners*  
*Matt Pettit, Founding Partner, Seven Hills Capital*  
[Geoff Cockrell](#), Partner, McGuireWoods (moderator)

5 – 6:45 p.m.

**Closing Cocktail Reception, Ballroom Foyer**

**Many thanks to these great sponsors for their partnership and support.**

**SIGULER GUFF**

**BARINGS**



# 2023 Heitman Fund Meetings

June 6<sup>th</sup>–7<sup>th</sup>, 2023

The Peninsula Hotel, Chicago



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You are cordially invited to join us for Heitman's 2023 Fund Meetings, which will be held in-person at the Peninsula Hotel in Chicago. During the discussions, we will provide a detailed update on our portfolios and share our expectations for the remainder of 2023 and beyond.

Please RSVP, using the buttons below by May 1, so we can make arrangements for your accommodations and meals as appropriate.

As always, we appreciate your trust in Heitman to help you achieve your real estate investment objectives. We look forward to seeing you in June!

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[Yes, I will attend](#)

[No, I will not attend](#)

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## Tuesday, June 6<sup>th</sup>

**Office Conversion: Case Study and Tour:** 10:00 - 11:30am

**CEO Opening Remarks & Firm Update:** 1:00 - 1:45pm

**Property Markets Update:** 1:45 - 2:15pm

**HART Session:** 2:30 - 4:00pm, Investor-Only Meeting to Follow

**HDP II Session:** 4:30 - 5:45pm, Investor-Only Meeting to Follow

**Cocktails & Dinner:** 6:30pm, Arts Club of Chicago

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## Wednesday, June 7<sup>th</sup>

**Macroeconomic Update with Kevin Warsh:** 8:30 - 9:15am

**CREDIT Session:** 9:15 - 10:45am, Investor-Only Meeting to Follow

**HVP IV Session:** 11:15am - 12:30pm, Investor-Only Meeting to Follow

**HVP V Session:** 1:30 - 2:45pm, Investor-Only Meeting to Follow

**G II Session:** 3:15 - 4:15pm, Investor-Only Meeting to Follow

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Please register by May 1, 2023 by clicking on the buttons below.

[Yes, I will attend](#)

[No, I will not attend](#)





## 2023 Investment Leaders' Summit & NB Private Markets Limited Partners Annual Meeting

New York Private Markets Agenda

ILS Agenda Forthcoming

Join us on **Wednesday, June 21** in New York City for the **2023 Investment Leaders' Summit**, our annual gathering of Chief Investment Officers, senior asset allocators and decision makers from institutions around the world. The agenda will include an industry CIO panel, interactive peer-to-peer discussions and insights from our senior investment professionals, among other compelling topics.

Directly following, join us at The Plaza Hotel to commence our **2023 New York Private Markets Limited Partners Annual Meeting**. The evening will include cocktails and dinner featuring **Jon Huntsman Jr.**, U.S. Ambassador to Russia (2017-2019), U.S. Ambassador to China (2009-2011) and Governor of Utah (2005-2009).

The Annual Meeting will continue **Thursday, June 22** with a full-day program and afternoon keynote from Andre Agassi, Author, Philanthropist, Education Advocate, Former #1 Ranked Tennis Player and Multi Grand Slam Champion. Program topics will include market insights, as well as an update on our diversified private equity, co-investment, secondary, private credit and specialty strategies.

Our inaugural European annual meeting of Limited Partners in London. The day will include a half-day of investor content, followed by a cocktail reception. Topics will include market insights, as well as a recap of the New York annual meeting and any updates on our diversified private equity, co-investment, secondary and private credit strategies.

**ASSET ALLOCATION COMPARISON**

April 30, 2023

	Market Value	% of Total Fund	Allocation Policy	% Difference from Allocation	Prior Period Market Value	Prior Period % of Total Fund
<b>EQUITY</b>						
CHANNING CAPITAL	25,581,531.73	0.71			25,952,898.16	0.73
REDWOOD- SL	27,392,446.11	0.76			28,255,133.31	0.79
SYSTEMATIC	61,388,226.82	1.71			62,936,353.56	1.76
<i>Total Small Cap</i>	<b>114,362,204.66</b>	<b>3.19</b>			<b>117,144,385.03</b>	<b>3.27</b>
SMITH GRAHAM	68,971,663.09	1.92			71,061,158.89	1.99
T. ROWE PRICE	148,271,111.36	4.14			145,041,055.21	4.05
<i>Total Domestic/Enhanced equity</i>	<b>217,242,774.45</b>	<b>6.06</b>			<b>216,102,214.10</b>	<b>6.04</b>
NTGI S&P 500 EQUITY INDEX	63,316,746.12	1.77			62,341,739.82	1.74
<i>Total Index</i>	<b>63,316,746.12</b>	<b>1.77</b>			<b>62,341,739.82</b>	<b>1.74</b>
<i>Total Domestic</i>	<b>394,921,725.23</b>	<b>11.02</b>	<b>12.50</b>	<b>-1.48</b>	<b>395,588,338.95</b>	<b>11.06</b>
ADELANTE CAPITAL	43,363,097.68	1.21			42,682,215.06	1.19
CENTERSQUARE-SL	43,805,379.17	1.22			43,230,098.93	1.21
<i>Total REITS</i>	<b>87,168,476.85</b>	<b>2.43</b>	<b>2.50</b>	<b>-0.07</b>	<b>85,912,313.99</b>	<b>2.40</b>
AEW PARTNERS	43,375,614.00	1.21			43,375,614.00	1.21
BRASA CAPITAL MGMT	9,353,431.00	0.26			9,353,431.00	0.26
HEITMAN	101,330,850.80	2.83			105,944,228.89	2.96
INVESCO	79,522,019.29	2.22			79,941,528.00	2.35
INVESCO - SL	80,228,247.00	2.24			84,217,125.61	2.23
LONG WHARF CAPITAL	1,868,078.00	0.05			2,158,516.00	0.06
VIRTUS REAL ESTATE CAP	29,349,404.00	0.82			29,124,742.00	0.81
<i>Total Real Estate</i>	<b>345,027,644.09</b>	<b>9.63</b>	<b>7.50</b>	<b>2.13</b>	<b>354,115,185.50</b>	<b>9.90</b>
FAIRVIEW CAPITAL	93,184,237.00	2.60			91,643,589.00	2.56
GROSVENOR GCM - CFG	175,521,230.00	4.90			175,521,230.00	4.91
HAMILTON LANE	109,594,678.00	3.06			109,760,387.00	3.07
<i>Total Private Equity</i>	<b>378,300,145.00</b>	<b>10.55</b>	<b>7.50</b>	<b>3.05</b>	<b>376,925,206.00</b>	<b>10.54</b>
ACADIAN	106,550,186.48	2.97			106,304,314.95	2.97
AQR CAPITAL	121,072,294.23	3.38			119,334,420.08	3.34
AQR CAPITAL MGMT - Russia		0.00			1.01	0.00
ATIVO	31,331,213.38	0.87			30,759,755.06	0.86
BAILLIE GIFFORD	71,068,985.98	1.98			71,096,826.67	1.99
EARNEST PARTNERS	82,237,751.62	2.29			81,823,610.91	2.29
<i>Total International</i>	<b>412,260,431.69</b>	<b>11.50</b>	<b>12.50</b>	<b>-1.00</b>	<b>409,318,928.68</b>	<b>11.44</b>
ARIEL	101,804,994.74	2.84			100,238,533.30	2.80
WELLINGTON MGMT	127,404,222.30	3.55			124,872,802.78	3.49
<i>Total Global Equity</i>	<b>229,209,217.04</b>	<b>6.39</b>	<b>7.50</b>	<b>-1.11</b>	<b>225,111,336.08</b>	<b>6.29</b>
ACADIAN-LVG	242,342,364.43	6.76			235,130,765.89	6.57
BLACKROCK	240,573,861.09	6.71			233,932,303.97	6.54
<i>Total Global Low Volatility Equity</i>	<b>482,916,225.52</b>	<b>13.47</b>	<b>12.50</b>	<b>0.97</b>	<b>469,063,069.86</b>	<b>13.11</b>
ATLANTIC TRUST	45,445,446.83	1.27			44,189,358.95	1.24
HARVEST FUND	49,040,692.94	1.37			48,145,903.66	1.35
COHEN & STEERS	59,374,983.90	1.66			58,049,969.57	1.62
<i>Total Global Listed Infrastructure</i>	<b>153,861,123.67</b>	<b>4.29</b>	<b>5.00</b>	<b>-0.71</b>	<b>150,385,232.18</b>	<b>4.20</b>
DAVIDSON KEMPNER INST PTRS	46,153,558.00	1.29			46,462,275.00	1.30
HUDSON BAY CAPITAL	46,348,300.00	1.29			46,452,173.00	1.30
<i>Total Marketable Alternatives</i>	<b>92,501,858.00</b>	<b>2.58</b>	<b>2.50</b>	<b>0.08</b>	<b>92,914,448.00</b>	<b>2.60</b>
<b>TOTAL EQUITY</b>	<b>2,576,166,847.09</b>	<b>71.87</b>	<b>70.00</b>	<b>1.87</b>	<b>2,559,334,059.24</b>	<b>71.54</b>
<b>FIXED INCOME</b>						
GARCIA HAMILTON	151,866,895.42	4.24			150,989,469.85	4.22
WESTERN ASSET MANAGEMENT	156,109,631.68	4.35			155,376,330.62	4.34
WELLINGTON-CORE BOND	154,824,524.37	4.32			153,850,356.60	4.30
<i>Total Investment Grade</i>	<b>462,801,051.47</b>	<b>12.91</b>	<b>15.00</b>	<b>-2.09</b>	<b>460,216,157.07</b>	<b>12.86</b>
NEUBERGER BERMAN	169,623,212.08	4.73			168,295,711.15	4.70
<i>Total Opportunistic Credit</i>	<b>169,623,212.08</b>	<b>4.73</b>	<b>5.00</b>	<b>-0.27</b>	<b>168,295,711.15</b>	<b>4.70</b>
BLACKROCK-HY	178,107,570.72	4.97			176,170,792.13	4.92
OAKTREE	168,731,387.31	4.71			166,583,030.59	4.66
<i>Total High Yield</i>	<b>346,838,958.03</b>	<b>9.68</b>	<b>10.00</b>	<b>-0.32</b>	<b>342,753,822.72</b>	<b>9.58</b>
CASH ACCOUNT	29,206,121.71	0.81			47,137,038.65	1.32
<i>Total Short Term</i>	<b>29,206,121.71</b>	<b>0.81</b>	<b>0.00</b>	<b>0.81</b>	<b>47,137,038.65</b>	<b>1.32</b>
<b>TOTAL FIXED INCOME</b>	<b>1,008,469,343.29</b>	<b>28.13</b>	<b>30.00</b>	<b>-1.87</b>	<b>1,018,402,729.59</b>	<b>28.46</b>

**TOTAL FUND** \$ 3,584,636,190.38

\$ 3,577,736,788.83

**Market Value YE 2022** \$ 3,464,128,741.93

**Market Value Variance**

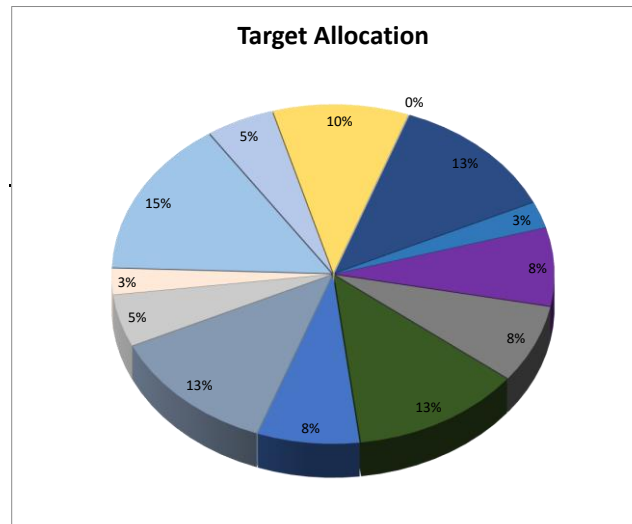
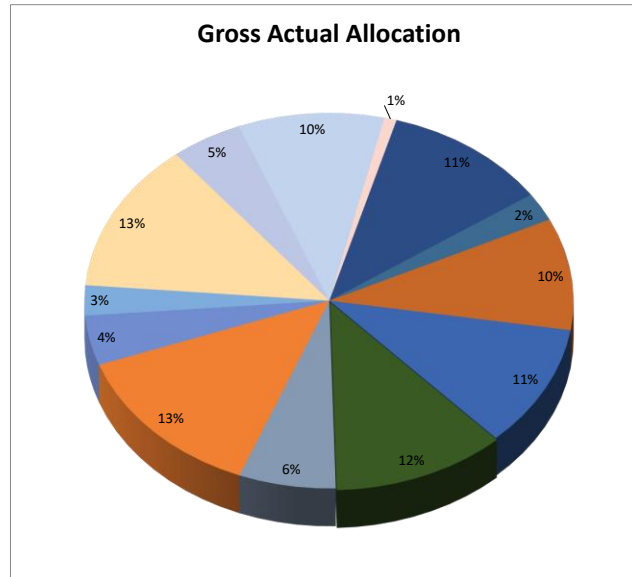
Change from YE 2022: \$ 120,507,448.45

Change from prior month: \$ 6,899,401.55

**Asset Allocation: Actual vs. Target**

April 30, 2023

	Market Value	Gross Actual Allocation	Target Allocation	% Difference from Allocation
<b>EQUITY</b>				
CHANNING CAPITAL	25,581,531.73	0.71		
REDWOOD- SL	27,392,446.11	0.76		
SYSTEMATIC	61,388,226.82	1.71		
<i>Total Small Cap</i>	114,362,204.66	3.19		
SMITH GRAHAM	68,971,663.09	1.92		
T. ROWE PRICE	148,271,111.36	4.14		
<i>Total Domestic/Enhanced equity</i>	217,242,774.45	6.06		
NTGI S&P 500 EQUITY INDEX	63,316,746.12	1.77		
<i>Total Index</i>	63,316,746.12	1.77		
<i>Total Domestic</i>	394,921,725.23	11.02	12.50	-1.48
ADELANTE CAPITAL	43,363,097.68	1.21		
CENTERSQUARE-SL	43,805,379.17	1.22		
<i>Total REITS</i>	87,168,476.85	2.43	2.50	-0.07
AEW PARTNERS	43,375,614.00	1.21		
BRASA CAPITAL MGMT	9,353,431.00	0.26		
HEITMAN	101,330,850.80	2.83		
INVESCO	80,228,247.00	2.22		
INVESCO - SL	79,522,019.29	2.24		
LONG WHARF CAPITAL	1,868,078.00	0.05		
VIRTUS REAL ESTATE CAP	29,349,404.00	0.82		
<i>Total Real Estate</i>	345,027,644.09	9.63	7.50	2.13
FAIRVIEW CAPITAL	93,184,237.00	2.60		
GROSVENOR GCM - CFG	175,521,230.00	4.90		
HAMILTON LANE	109,594,678.00	3.06		
<i>Total Private Equity</i>	378,300,145.00	10.55	7.50	3.05
ACADIAN	106,550,186.48	2.97		
AQR CAPITAL	121,072,294.23	3.38		
ATIVO	31,331,213.38	0.87		
BAILLIE GIFFORD	71,068,985.98	1.98		
EARNEST PARTNERS	82,237,751.62	2.29		
<i>Total International</i>	412,260,431.69	11.50	12.50	-1.00
ARIEL	101,804,994.74	2.84		
WELLINGTON MGMT	127,404,222.30	3.55		
<i>Total Global Equity</i>	229,209,217.04	6.39	7.50	-1.11
ACADIAN-LVG	242,342,364.43	6.76		
BLACKROCK	240,573,861.09	6.71		
<i>Total Global Low Volatility Equity</i>	482,916,225.52	13.47	12.50	0.97
ATLANTIC TRUST	45,445,446.83	1.27		
HARVEST FUND	49,040,692.94	1.37		
COHEN & STEERS	59,374,983.90	1.66		
<i>Total Global Listed Infrastructure</i>	153,861,123.67	4.29	5.00	-0.71
DAVIDSON KEMPNER INST PTRS	46,153,558.00	1.29		
HUDSON BAY CAPITAL	46,348,300.00	1.29		
<i>Total Marketable Alternatives</i>	92,501,858.00	2.58	2.50	0.08
<b>TOTAL EQUITY</b>	<b>2,576,166,847.09</b>	<b>71.87</b>	<b>70.00</b>	<b>1.87</b>
<b>FIXED INCOME</b>				
GARCIA HAMILTON	151,866,895.42	4.24		
WESTERN ASSET MANAGEMENT	156,109,631.68	4.35		
WELLINGTON-CORE BOND	154,824,524.37	4.32		
<i>Total Investment Grade</i>	462,801,051.47	12.91	15.00	-2.09
NEUBERGER BERMAN	169,623,212.08	4.73		
<i>Total Opportunistic Credit</i>	169,623,212.08	4.73	5.00	-0.27
BLACKROCK-HY	178,107,570.72	4.97		
OAKTREE	168,731,387.31	4.71		
<i>Total High Yield</i>	346,838,958.03	9.68	10.00	-0.32
CASH ACCOUNT	29,206,121.71	0.81		
<i>Total Short Term</i>	29,206,121.71	0.81	0.00	0.81
<b>TOTAL FIXED INCOME</b>	<b>1,008,469,343.29</b>	<b>28.13</b>	<b>30.00</b>	<b>-1.87</b>
<b>TOTAL FUND</b>	<b>\$ 3,584,636,190.38</b>			



**Wilshire**

# Dallas Employees' Retirement Fund

Monthly Investment Summary

April 30, 2023

# Monthly Index Performance

Periods Ended April 30, 2023

	Performance (%)				
	1 Month	YTD	1 Year	3 Years	5 Years
U.S. Equity					
FT Wilshire 5000 Index	1.04	8.40	1.51	14.36	10.85
S&P 500 Index	1.56	9.17	2.66	14.52	11.45
Wilshire 4500 Completion Index	-2.00	3.66	-5.19	13.22	6.91
MSCI USA Minimum Volatility Index	1.50	2.82	2.40	9.68	9.42
U.S. Equity by Size/Style					
Wilshire U.S. Large-Cap Index	1.29	9.03	2.02	14.47	11.61
Wilshire U.S. Large-Cap Growth Index	1.38	17.27	2.53	14.78	12.62
Wilshire U.S. Large-Cap Value Index	1.19	1.25	1.47	13.88	9.75
Wilshire U.S. Small-Cap Index	-1.83	1.65	-3.73	13.81	5.34
Wilshire U.S. Small-Cap Growth Index	-1.77	4.46	-0.03	11.49	5.33
Wilshire U.S. Small-Cap Value Index	-1.89	-0.88	-6.99	16.13	4.94
Wilshire U.S. Micro-Cap Index	-3.21	0.05	-7.64	9.10	-0.36
Non-U.S. Equity (USD)					
MSCI AC World ex USA (Net)	1.74	8.72	3.05	9.74	2.50
MSCI ACWI ex USA Minimum Volatility Index (Net)	3.62	7.51	0.11	5.71	2.57
MSCI EAFE (Net)	2.82	11.53	8.42	11.68	3.63
MSCI Emerging Markets (Net)	-1.13	2.78	-6.51	4.33	-1.05
MSCI AC World ex USA Small Cap (Net)	1.47	6.24	-2.78	11.27	1.73
U.S. Fixed Income					
Blmbg. U.S. Aggregate Index	0.61	3.59	-0.43	-3.15	1.18
Blmbg. U.S. Treasury: Long	0.52	6.72	-7.33	-11.76	0.14
Blmbg. U.S. Long Corporate Index	0.75	6.24	-1.15	-4.61	1.69
Blmbg. U.S. TIPS Index	0.11	3.45	-4.00	0.86	2.98
Blmbg. U.S. Credit Index	0.79	4.26	0.72	-1.92	1.88
Blmbg. U.S. Corp: High Yield Index	1.00	4.60	1.22	4.71	3.28
Morningstar LSTA US Leveraged Loan	1.05	4.31	3.39	7.31	3.76

# Asset Allocation & Performance

Dallas Total Fund

Periods Ended April 30, 2023

	Performance (%) net of fees								Allocation	
	1 Month	1 Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date	Market Value \$	%
Global Equity Composite	1.82	1.38	7.24	4.27	10.65	6.31	8.42	9/1/2012	229,209,217	6.40
Global Low Volatility Composite	2.96	3.42	5.56	3.10	8.30	5.69	6.99	7/1/2015	482,923,035	13.47
Domestic Equity Composite	-0.17	-2.27	5.24	0.05	15.85	9.24	10.03	1/1/1990	394,921,725	11.02
International Equity Composite	0.73	-0.58	7.96	0.46	11.07	2.66	5.41	1/1/1990	411,611,638	11.48
Fixed Income Composite	0.55	0.32	4.14	-0.27	-1.62	1.55	4.35	10/1/1995	462,801,052	12.91
High Yield Composite	1.17	0.29	4.56	1.19	4.83	3.17	5.90	1/1/1997	346,814,440	9.68
Credit Opportunities Composite	0.68	-0.88	2.86	-0.96	3.92	1.81	3.90	2/1/2016	169,623,212	4.73
Total Real Estate Composite	-1.47	-2.34	-0.24	-4.11	10.20	8.04	6.72	1/1/1990	432,196,121	12.06
Global Listed Infrastructure Composite	2.31	0.17	4.84	9.94	20.65	4.40	5.09	1/1/2012	153,861,124	4.29
Private Equity Composite	-0.02	-0.31	-0.33	0.61	16.44	14.86	14.02	6/1/2009	378,300,145	10.56
Marketable Alternatives Composite	-0.44	1.64	1.64				2.78	10/1/2022	92,501,858	2.58
Managed Short Term Composite	0.37	1.13	1.45	2.87	1.01	1.46	2.75	1/1/1990	29,206,122	0.81
Dallas Total Fund	0.66	-0.06	3.93	0.39	9.09	5.51	8.70	1/1/1985	3,583,969,688	100.00
Policy Index	1.21	0.85	5.30	0.00	8.18	5.43	9.20			

# Asset Allocation & Performance

## Domestic Equity

Periods Ended April 30, 2023

	Performance (%) net of fees								Allocation	
	1 Month	1 Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date	Market Value \$	%
<b>Systematic Financial</b>	<b>-2.46</b>	<b>-7.22</b>	<b>-0.78</b>	<b>0.03</b>	<b>17.14</b>	<b>5.42</b>	<b>10.05</b>			
Russell 2000 Index	-1.80	-8.07	0.89	-3.65	11.90	4.15	8.29	8/1/2003	61,388,227	15.54
<b>Redwood Investments *</b>	<b>-3.05</b>	<b>-4.98</b>	<b>1.07</b>	<b>-11.29</b>	<b>6.30</b>	<b>3.55</b>	<b>4.93</b>			
Russell 2000 Growth Index	-1.16	-4.64	4.84	0.72	7.82	4.00	7.15	10/1/2016	27,392,446	6.94
<b>Channing Capital *</b>	<b>-1.43</b>	<b>-8.92</b>	<b>1.59</b>	<b>-7.17</b>	<b>15.63</b>	<b>3.79</b>	<b>5.55</b>			
Russell 2000 Value Index	-2.49	-11.57	-3.13	-7.99	15.44	3.66	5.50	12/1/2013	25,581,532	6.48
<b>Domestic Equity Small Cap Composite</b>	<b>-2.37</b>	<b>-7.24</b>	<b>0.13</b>	<b>-4.36</b>	<b>14.32</b>	<b>4.79</b>	<b>8.74</b>			
								6/1/2003	114,362,205	28.96
<b>Smith Graham *</b>	<b>-2.94</b>	<b>-9.10</b>	<b>0.25</b>	<b>-0.90</b>	<b>23.60</b>	<b>7.66</b>	<b>7.29</b>			
Russell Midcap Index	-0.53	-4.43	3.51	-1.69	13.78	7.97	7.33	1/1/2018	68,971,663	17.46
<b>T. Rowe Price</b>	<b>2.23</b>	<b>3.64</b>	<b>10.58</b>	<b>4.30</b>	<b>15.37</b>	<b>11.93</b>	<b>9.82</b>			
S&P 500 Index	1.56	2.72	9.17	2.66	14.52	11.45	9.26	4/1/2006	148,271,111	37.54
<b>Northern Trust S&amp;P 500 (Lending)</b>	<b>1.56</b>	<b>2.72</b>	<b>9.18</b>	<b>2.67</b>	<b>14.49</b>	<b>11.45</b>	<b>10.20</b>			
S&P 500 Index	1.56	2.72	9.17	2.66	14.52	11.45	10.16	1/1/1995	63,316,746	16.03
<b>Domestic Equity Composite</b>	<b>-0.17</b>	<b>-2.27</b>	<b>5.24</b>	<b>0.05</b>	<b>15.85</b>	<b>9.24</b>	<b>10.03</b>			
FT Wilshire 5000	1.04	1.41	8.40	1.51	14.36	10.85	10.18	1/1/1990	394,921,725	100.00

\* Domestic Equity Composite Since Inception benchmark includes S&P 500 until March, 1999.

# Asset Allocation & Performance

## International Equity

Periods Ended April 30, 2023

	Performance (%) net of fees								Allocation	
	1 Month	1 Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date	Market Value \$	%
<b>Acadian International</b>	<b>0.24</b>	<b>-1.68</b>	<b>5.02</b>	<b>-4.33</b>	<b>13.93</b>	<b>2.93</b>	<b>8.09</b>	<b>4/1/1989</b>	<b>106,557,053</b>	<b>25.89</b>
Custom Benchmark	1.47	-0.90	6.24	-2.78	11.27	1.73	5.68			
<b>Ativo International *</b>	<b>1.86</b>	<b>2.50</b>	<b>9.41</b>	<b>1.54</b>	<b>9.14</b>	<b>2.01</b>	<b>2.06</b>	<b>1/1/2018</b>	<b>31,331,213</b>	<b>7.61</b>
MSCI EAFE (Net)	2.82	3.17	11.53	8.42	11.68	3.63	3.54			
<b>AQR Capital Management</b>	<b>1.51</b>	<b>-0.90</b>	<b>7.99</b>	<b>1.19</b>	<b>8.85</b>	<b>0.34</b>	<b>3.10</b>	<b>4/1/2006</b>	<b>120,416,633</b>	<b>29.25</b>
Custom Benchmark	1.74	0.57	8.72	3.05	9.74	2.50	3.09			
<b>Baillie Gifford</b>	<b>-0.04</b>	<b>1.67</b>	<b>13.07</b>	<b>3.57</b>	<b>5.50</b>		<b>4.40</b>	<b>4/1/2019</b>	<b>71,068,986</b>	<b>17.27</b>
MSCI AC World ex USA (Net)	1.74	0.57	8.72	3.05	9.74		4.57			
<b>Earnest Partners *</b>	<b>0.50</b>	<b>-1.57</b>	<b>7.31</b>	<b>3.42</b>	<b>15.37</b>		<b>6.92</b>	<b>4/1/2019</b>	<b>82,237,752</b>	<b>19.98</b>
MSCI AC World ex USA (Net)	1.74	0.57	8.72	3.05	9.74		4.57			
<b>International Equity Composite</b>	<b>0.73</b>	<b>-0.58</b>	<b>7.96</b>	<b>0.46</b>	<b>11.07</b>	<b>2.66</b>	<b>5.41</b>	<b>1/1/1990</b>	<b>411,611,638</b>	<b>100.00</b>
Custom Benchmark	1.70	0.36	8.37	2.21	9.93	2.39	4.47			



# Asset Allocation & Performance

## Global Equity

Periods Ended April 30, 2023

	Performance (%) net of fees								Allocation	
	1 Month	1 Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date	Market Value \$	%
<b>Ariel Global *</b>	<b>1.56</b>	<b>2.20</b>	<b>6.02</b>	<b>3.77</b>	<b>9.53</b>	<b>5.93</b>	<b>6.05</b>	<b>1/1/2018</b>	<b>101,804,995</b>	<b>44.42</b>
MSCI AC World Index (Net)	1.44	1.57	8.85	2.06	12.04	7.03	6.57			
<b>Wellington</b>	<b>2.03</b>	<b>0.74</b>	<b>8.41</b>	<b>4.75</b>	<b>10.95</b>	<b>6.29</b>	<b>10.05</b>	<b>9/1/2012</b>	<b>127,404,222</b>	<b>55.58</b>
MSCI AC World Index (Net)	1.44	1.57	8.85	2.06	12.04	7.03	8.92			
<b>Global Equity Composite</b>	<b>1.82</b>	<b>1.38</b>	<b>7.24</b>	<b>4.27</b>	<b>10.65</b>	<b>6.31</b>	<b>8.42</b>	<b>9/1/2012</b>	<b>229,209,217</b>	<b>100.00</b>
MSCI AC World Index (Net)	1.44	1.57	8.85	2.06	12.04	7.03	8.92			

# Asset Allocation & Performance

## Global Low Volatility

Periods Ended April 30, 2023

	Performance (%) net of fees								Allocation	
	1 Month	1 Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date	Market Value \$	%
<b>Acadian Global Low Vol.</b>	<b>3.07</b>	<b>4.03</b>	<b>6.49</b>	<b>4.79</b>	<b>9.53</b>	<b>5.59</b>	<b>6.96</b>	7/1/2015	242,349,174	50.18
MSCI AC World Index (Net)	1.44	1.57	8.85	2.06	12.04	7.03	7.68			
MSCI AC World Minimum Volatility Index (Net)	2.82	2.62	4.39	0.88	6.67	5.63	6.71			
<b>BlackRock Global Low Vol.</b>	<b>2.84</b>	<b>2.78</b>	<b>4.61</b>	<b>1.39</b>	<b>7.07</b>	<b>5.77</b>	<b>7.00</b>	7/1/2015	240,573,861	49.82
MSCI AC World Minimum Volatility Index (Net)	2.82	2.62	4.39	0.88	6.67	5.63	6.71			
<b>Global Low Volatility Composite</b>	<b>2.96</b>	<b>3.42</b>	<b>5.56</b>	<b>3.10</b>	<b>8.30</b>	<b>5.69</b>	<b>6.99</b>	7/1/2015	482,923,035	100.00
MSCI AC World Minimum Volatility Index (Net)	2.82	2.62	4.39	0.88	6.67	5.63	6.71			

# Asset Allocation & Performance

Real Estate

Periods Ended April 30, 2023

	Performance (%) net of fees								Allocation	
	1 Month	1 Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date	Market Value \$	%
<b>Adelante Capital Management *</b>	<b>1.60</b>	<b>-4.69</b>	<b>5.45</b>	<b>-16.57</b>	<b>9.33</b>	<b>6.50</b>	<b>8.90</b>	<b>10/1/2001</b>	<b>43,363,098</b>	<b>49.75</b>
Wilshire U.S. Real Estate Securities Index	0.85	-6.35	4.25	-16.75	8.47	5.56	8.96			
<b>CenterSquare</b>	<b>1.33</b>	<b>-5.88</b>	<b>4.13</b>	<b>-14.39</b>	<b>10.15</b>		<b>6.32</b>	<b>6/1/2018</b>	<b>43,805,379</b>	<b>50.25</b>
Wilshire U.S. Real Estate Securities Index	0.85	-6.35	4.25	-16.75	8.47		4.90			
<b>REIT Composite</b>	<b>1.46</b>	<b>-5.29</b>	<b>4.78</b>	<b>-15.49</b>	<b>9.74</b>	<b>6.73</b>	<b>9.02</b>	<b>10/1/2001</b>	<b>87,168,477</b>	<b>100.00</b>
Wilshire U.S. Real Estate Securities Index	0.85	-6.35	4.25	-16.75	8.47	5.56	8.96			

# Private Real Estate Summary

Periods Ended as of April 30, 2023

	Month-End Market Value	Commitment Value	Drawn Down Capital	Cash Distributions	Inception Date	IRR Since Inception	TVPI Multiple
Invesco II	80,228,247	65,188,333	65,188,333	14,109,754	Jan-14	5.8%	1.4
<b>Total Direct Private Real Estate</b>	<b>80,228,247</b>	<b>65,188,333</b>	<b>65,188,333</b>	<b>14,109,754</b>	<b>Jan-14</b>	<b>5.8%</b>	<b>1.4</b>

	Month-End Market Value	Commitment Value	Drawn Down Capital	Cash Distributions	Inception Date	IRR Since Inception	TVPI Multiple
Heitman America Real Estate Trust	101,330,851	75,000,000	88,210,161	92,984,057	Dec-10	7.5%	2.2
Invesco Core Real Estate USA	79,522,019	75,000,000	75,000,000	94,066,258	Oct-10	11.0%	2.3
<b>Total Core Private Real Estate</b>	<b>180,852,870</b>	<b>150,000,000</b>	<b>163,210,161</b>	<b>187,050,315</b>	<b>Oct-10</b>	<b>9.7%</b>	<b>2.3</b>

	Month-End Market Value	Commitment Value	Drawn Down Capital	Cash Distributions	Inception Date	IRR Since Inception	TVPI Multiple
AEW Partners Real Estate Fund IX	33,483,418	45,000,000	31,481,481	16,806	Mar-21	5.9%	1.1
AEW PIX MM Co-Invest	4,707,129	10,000,000	4,584,906	321,769	Nov-21	10.3%	1.1
AEW PIX Oakland Park Co-Invest	5,185,067	5,000,000	5,000,000	345,235	Feb-22	9.2%	1.1
Virtus Real Estate Capital III	29,349,404	43,281,585	27,369,556	3,714,853	Jan-21	10.1%	1.2
Brasa Real Estate Fund II	9,353,431	20,000,000	9,899,977	546,545	Jul-22	-	1.0
Long Wharf Real Estate Partners VII	1,868,078	20,000,000	2,158,516		Mar-23	-	0.9
<b>Total Value-Add Private Real Estate</b>	<b>83,946,527</b>	<b>143,281,585</b>	<b>80,494,436</b>	<b>4,945,208</b>	<b>Jan-21</b>	<b>7.6%</b>	<b>1.1</b>

<sup>1</sup> Total Value to Paid-in Capital ("TVPI") multiple calculation =  $(market\ value + distributions) / capital\ called$

# Private Equity Summary

Periods Ended as of April 30, 2023

	Month-End Market Value	Commitment Value	Drawn Down Capital	Cash Distributions	Inception Date	IRR Since Inception	Multiple <sup>3</sup>
Hamilton Lane Secondary Fund II	194,746	25,000,000	22,058,532	31,222,789	Jul-09	13.5%	1.4
Hamilton Lane Secondary Fund III	3,204,978	30,000,000	23,372,292	28,260,555	Nov-12	10.0%	1.3
Hamilton Lane Secondary Fund IV	17,174,397	30,000,000	25,907,343	24,579,643	Mar-17	18.3%	1.6
Hamilton Lane Secondary Fund V	54,360,134	65,000,000	43,128,993	8,244,733	Mar-20	24.1%	1.5
Hamilton Lane Secondary Fund VI-A	1,500,000	30,000,000	1,500,000	-	Feb-23	-	1.0
Hamilton Lane Fund VII Composite	15,431,594	50,000,000	45,600,834	55,162,854	Jan-10	6.3%	1.5
Hamilton Lane Fund VIII (Global)	17,728,829	30,000,000	22,270,594	16,385,283	Nov-12	7.5%	1.5
GCM Grosvenor - Partnership, L.P.	27,110,896	75,000,000	93,988,722	132,884,962	Jun-11	14.3%	1.7
GCM Grosvenor - Partnership II, L.P. (2014)	50,289,382	60,000,000	71,665,890	66,885,465	Jul-14	16.5%	1.6
GCM Grosvenor - Partnership II, L.P. (2015)	59,605,348	30,000,000	41,980,082	11,065,785	Dec-15	13.7%	1.7
GCM Grosvenor - Partnership II, L.P. (2017)	31,001,435	30,000,000	29,053,710	8,384,101	Jan-18	15.9%	1.4
GCM Grosvenor - Advance Fund, L.P.	5,297,032	10,000,000	4,746,483	53,279	Jun-21	-	1.1
GCM Grosvenor - Partnership II, L.P. (2022)	2,217,137	20,000,000	2,229,719	974	May-22	-15.1%	1.0
Fairview Capital - Lone Star Fund I	51,574,534	40,000,000	33,903,847	14,458,863	Aug-15	15.2%	1.9
Fairview Capital - Lone Star Fund II	28,195,947	30,000,000	20,583,585	496,453	Dec-18	11.5%	1.4
Fairview Capital - Lone Star Fund III - A	12,003,004	25,000,000	12,131,480	-	Apr-21	-3.7%	1.0
Fairview Capital - Lone Star Fund III - B	270,936	20,000,000	294,907	-	Dec-22	-	0.9
Fairview Capital - Private Markets Fund VI	1,139,816	10,000,000	1,484,127	210,556	Apr-22	-8.7%	0.9
<b>Total Private Equity Composite</b>	<b>378,300,145</b>	<b>610,000,000</b>	<b>495,901,140</b>	<b>398,296,295</b>	<b>Jul-09</b>	<b>13.9%</b>	<b>1.6</b>

Public Market Equivalent (PME) <sup>2</sup>

463,137,663

15.9%

# Asset Allocation & Performance

## Global Listed Infrastructure

Periods Ended April 30, 2023

	Performance (%) net of fees								Allocation	
	1 Month	1 Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date	Market Value \$	%
<b>Atlantic Trust CIBC</b>	<b>2.84</b>	<b>0.83</b>	<b>6.56</b>	<b>15.95</b>	<b>29.39</b>	<b>8.51</b>	<b>7.05</b>	1/1/2012	45,445,447	29.54
Alerian MLP Index	1.72	-0.68	5.88	16.78	29.33	6.12	2.69			
<b>Harvest Fund Advisors MLP</b>	<b>1.86</b>	<b>0.15</b>	<b>5.28</b>	<b>14.71</b>	<b>30.41</b>	<b>9.75</b>	<b>7.00</b>	1/1/2012	49,040,693	31.87
Alerian MLP Index	1.72	-0.68	5.88	16.78	29.33	6.12	2.69			
<b>C&amp;S Global Listed Infrastructure</b>	<b>2.29</b>	<b>-0.31</b>	<b>3.21</b>	<b>-0.18</b>			<b>9.10</b>	11/1/2020	59,374,984	38.59
FTSE Global Core Infrastructure 50/50 (Net)	2.14	0.10	2.70	-2.22			8.49			
<b>Global Listed Infrastructure Composite</b>	<b>2.31</b>	<b>0.17</b>	<b>4.84</b>	<b>9.94</b>	<b>20.65</b>	<b>4.40</b>	<b>5.09</b>	1/1/2012	153,861,124	100.00
Global Listed Infrastructure Benchmark	1.82	-0.46	5.12	12.13	22.48	2.71	1.22			

# Asset Allocation & Performance

## Fixed Income

Periods Ended April 30, 2023

	Performance (%) net of fees								Allocation	
	1 Month	1 Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date	Market Value \$	%
<b>Garcia Hamilton *</b>	<b>0.58</b>	<b>0.26</b>	<b>4.13</b>	<b>0.43</b>	<b>-1.93</b>	<b>1.23</b>	<b>2.05</b>	<b>11/1/2013</b>	<b>151,866,895</b>	<b>32.81</b>
Blmbg. U.S. Aggregate Index	0.61	0.49	3.59	-0.43	-3.15	1.18	1.61			
<b>Western Asset Management</b>	<b>0.52</b>	<b>0.41</b>	<b>4.54</b>				<b>0.86</b>	<b>7/1/2022</b>	<b>156,109,632</b>	<b>33.73</b>
Blmbg. U.S. Aggregate Index	0.61	0.49	3.59				0.51			
<b>Wellington Core Bond</b>	<b>0.54</b>	<b>0.27</b>	<b>3.74</b>				<b>0.52</b>	<b>7/1/2022</b>	<b>154,824,524</b>	<b>33.45</b>
Blmbg. U.S. Aggregate Index	0.61	0.49	3.59				0.51			
<b>Fixed Income Composite</b>	<b>0.55</b>	<b>0.32</b>	<b>4.14</b>	<b>-0.27</b>	<b>-1.62</b>	<b>1.55</b>	<b>4.35</b>	<b>10/1/1995</b>	<b>462,801,052</b>	<b>100.00</b>
Blmbg. U.S. Aggregate Index	0.61	0.49	3.59	-0.43	-3.15	1.18	4.37			

# Asset Allocation & Performance

Opportunistic Credit

Periods Ended April 30, 2023

	Performance (%) net of fees								Allocation	
	1 Month	1 Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date	Market Value \$	%
Neuberger Berman	0.68	-0.88	2.86	-0.96	3.92	1.81	3.90	2/1/2016	169,623,212	
Custom Benchmark	0.84	0.54	3.81	1.27	3.89	2.27	4.28			



# Asset Allocation & Performance

High Yield

Periods Ended April 30, 2023

	Performance (%) net of fees								Allocation	
	1 Month	1 Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date	Market Value \$	%
<b>Oaktree Capital Management</b>	<b>1.26</b>	<b>-0.49</b>	<b>4.22</b>	<b>0.35</b>	<b>4.96</b>	<b>2.83</b>	<b>6.04</b>	<b>2/1/1997</b>	<b>168,731,363</b>	<b>48.65</b>
FTSE High Yield Cash Pay	1.08	0.84	4.72	1.13	5.09	3.15	6.18			
<b>BlackRock</b>	<b>1.09</b>	<b>1.09</b>	<b>4.92</b>	<b>2.07</b>	<b>4.69</b>	<b>3.52</b>	<b>5.56</b>	<b>10/1/2006</b>	<b>178,083,077</b>	<b>51.35</b>
FTSE High Yield Cash Pay	1.08	0.84	4.72	1.13	5.09	3.15	5.87			
<b>High Yield Composite</b>	<b>1.17</b>	<b>0.29</b>	<b>4.56</b>	<b>1.19</b>	<b>4.83</b>	<b>3.17</b>	<b>5.90</b>	<b>1/1/1997</b>	<b>346,814,440</b>	<b>100.00</b>
FTSE High Yield Cash Pay	1.08	0.84	4.72	1.13	5.09	3.15	6.19			

# Asset Allocation & Performance

## Marketable Alternatives

Periods Ended April 30, 2023

	Performance (%) net of fees								Allocation	
	1 Month	1 Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date	Market Value \$	%
<b>Davidson Kempner</b>	-0.66	1.08	1.08				2.56	10/1/2022	46,153,558	49.89
Davidson Kempner Policy	-1.68	1.38	1.05				4.56			
<b>Hudson Bay Capital</b>	-0.22	2.20	2.20				3.00	10/1/2022	46,348,300	50.11
Hudson Bay Policy	-0.53	1.34	1.51				2.83			
<b>Marketable Alternatives Composite</b>	-0.44	1.64	1.64				2.78	10/1/2022	92,501,858	100.00
Marketable Alternatives Policy	-1.10	1.36	1.28				3.70			

# Asset Allocation & Performance

Cash

*Periods Ended April 30, 2023*

	Performance (%) net of fees								Allocation	
	1 Month	1 Quarter	YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date	Market Value \$	%
Cash Account	0.37	1.13	1.45	2.87	1.01	1.46	3.08	1/1/1988	29,206,122	100.00
Managed Short Term Composite	0.37	1.13	1.45	2.87	1.01	1.46	2.75	1/1/1990	29,206,122	100.00

# At A Glance

For period ended April 30, 2023

	2022		2023	
	This Month	YTD	This Month	YTD
<b>Retirements</b>				
Age	19	72	16	78
Service	0	5	2	10
Rule of 78	9	37	5	30
QDRO	0	1	2	4
<i>Total</i>	28	115	25	122
<b>Disability Retirements</b>				
Service	0	0	0	0
Non-service	0	0	2	2
<i>Total</i>	0	0	2	2
<b>Benefits Paid</b>	\$ 26,651,511.67	\$ 105,558,438.64	\$ 27,199,655.93	\$ 108,637,824.83
<b>Refunds</b>	\$ 714,316.76	\$ 3,570,185.09	\$ 1,311,117.85	\$ 3,903,367.93
<b>Number of refunds</b>	60	208	113	285
<b>*Contributions</b>	\$ 9,635,991.18	\$ 38,370,462.25	\$ 10,584,139.30	\$ 43,681,866.00

<b>Members on record at month end</b>					
	Retirees & beneficiaries	Disabilities	Actives	Tier A actives	Tier B Actives
Jan	7,757	130	7,643	3,850	3,793
Feb	7,768	129	7,625	3,800	3,825
Mar	7,802	128	7,653	3,752	3,901
April	7,812	130	7,676	3,715	3,961
May					
June					
July					
Aug					
Sep					
Oct					
Nov					
Dec					