

ARKANSAS TEACHER RETIREMENT SYSTEM

June 1, 2020

1400 West Third Street

BOARD ROOM

Little Rock, AR 72201

Board of Trustees Meeting

11:00 a.m.

Trustees

Danny Knight, Chair

Dr. Richard Abernathy, Vice Chair

Anita Bell

Lloyd Black

Kathy Clayton

Kelly Davis

Shawn Higginbotham

Bobby G. Lester

Chip Martin

Robin Nichols

Janet Watson

Ex Officio Trustees

Candace A. Franks, State Bank Commissioner

Johnny Key, Education Commissioner

Honorable Andrea Lea, State Auditor

Honorable Dennis Milligan, State Treasurer

AGENDA
ARKANSAS TEACHER RETIREMENT SYSTEM
BOARD OF TRUSTEES

June 1, 2020
11:00 a.m.
1400 West Third Street
Little Rock, AR 72201

- I. ***Call to Order/Roll Call.** page 1.
- II. ***Motion for Excused Absences.**
- III. ***Adoption of Agenda.** page 2.
- IV. Executive Summary. (Attachment No. 1) page 6.
- V. ***Approval of Prior Meeting Minutes.**
 - A. ***April 6, 2020 Minutes.** (Attachment No. 2) page 12.
 - B. ***May 20, 2020 Minutes.** (Attachment No. 3) page 18.
- VI. Report of Member Interest Amount Waived Under A.C.A. Sec. 24-7-205.
- VII. Report of Employer Interest and Penalties Waived Under A.C.A. Sec. 24-7-411. (Attachment No. 4) page 21.
- VIII. Manifest Injustice Report. (Attachment No. 5) page 22.
- IX. ***Forfeiture Recommendations Pursuant to A.C.A. 24-7-734(6).** *Martha Miller, General Counsel* (Attachment No. 6) page 24.
- X. Audit Committee Report.
 - A. 2020 Risk Assessment.
 - B. ***2020-2021 Audit Plan.**
 - 1. ***Audit Plan for FY 2021.** (Attachment No. 7) page 26.
 - 2. FY 2020 Summary of Work Completed. (Attachment No. 8) page 32.

* Action Item

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3. Conflict of Interest Statements. (Attachment No. 9) page 40.
4. Code of Ethics Statements. (Attachment No. 10) page 42.

C. ***Executive Session: Evaluation of Internal Auditor Brenda West.**

XI. Investment Committee Report.

A. Arkansas Related and Investment Update.

1. List of Fund Closings.

- a. Franklin Park International Fund X, L.P. (formerly Franklin Park International Fund 2019), a Fund of Funds Managed by Franklin Park Investing in International Private Equity Funds, the Board Authorized Commitment of up to \$30 Million Dollars on December 2, 2019 was Accepted and Closed on March 27, 2020.
- b. GCG Investors V, L.P., a Mezzanine Fund Focused on Investments in both Debt and Equity Securities in the Small and Lower Middle Market with Imminent Need, the Board Authorized Commitment of up to \$35 Million Dollars on April 6, 2020 was Accepted and Closed on April 15, 2020.

2. Rebalancing Update and Recap.

- a. The Board Authorized Redeployment of the Assets Formerly Managed in the AllianzGI Structured Alpha Equity Funds to the Existing BlackRock MSCI ACWI IMI Index Fund A on April 6, 2020 was Successfully Completed on May 15, 2020.
- b. Aon Hewitt Investment Consulting Recommended Rebalancing of Fixed Income Assets to Global Equity Assets by Redeploying \$100 Million Dollars from the BlackRock U.S. Core Plus Bond Fund and \$50 Million Dollars from the SSgA U.S. Aggregate Bond Index Fund to the Existing BlackRock MSCI ACWI IMI Index Fund A was Successfully Completed on May 15, 2020.

B. General Investment Consultant Report.

1. Performance Report fo the Quarter Ending March 31, 2020. (Attachment No. 11) page 44.
2. Preliminary Performance Report for month ending April 30, 2020. (Attachment No. 12) page 208.

C. Real Assets Consultant Report.

1. Performance Report for the Quarter ending December 31, 2019. (Attachment No. 13) page 232.
2. ***Recommendation to Commit up to \$50 Million Dollars in Torchlight Debt Fund VII, L.P., an Opportunistic Real Estate Fund Focused on High Yield Debt Investments in Both the Public and Private Markets.** (Attachment No. 14) page 287.

* Action Item

- a. ***Resolution 2020-19.** (Attachment No. 15) page 307.
 3. ***Recommendation to Commit up to \$50 Million Dollars in CBRE Strategic Partners U.S. Value 9, L.P, a Value Added Real Estate Fund Focused on Institutional Quality Multifamily, Office, and Retail Properties in the U.S.** (Attachment No. 16) page 308.
 - a. ***Resolution 2020-20.** (Attachment No. 17) page 335.
 4. ***Recommendation to Commit up to \$50 Million Dollars in Macquarie Infrastructure Partners V, L.P. a Core Infrastructure Fund Focused Primarily on North American Infrastructure Assets.** (Attachment No. 18) page 336.
 - a. ***Resolution 2020-21.** (Attachment No. 19) page 382.
- D. Private Equity Consultant Report.
1. Portfolio Review fo the Quarter Ending December 31, 2019. (Attachment No. 20) page 383.
 2. ***Recommendation to Commit up to \$30 Million Dollars in LLR Equity Partners VI, L.P., a Growth Equity Fund that will Focus on Small and Middle Market Companies in the Technology and Healthcare Sectors.** (Attachment No. 21) page 435.
 - a. ***Resolution 2020-22.** (Attachment No. 22) page 438.
 3. ***Recommendation to Make an Additional Commitment of up to \$30 Million Dollars in Franklin Park Venture Capital Fund XIII, L.P., (formerly Franklin Park Venture Fund Series 2019) a Fund of Funds Managed by Franklin Park Investing in Venture Capital Private Equity Funds.** (Attachment No. 23) page 439.
 - a. ***Resolution 2020-23.** (Attachment No. 24) page 446.

XII. Operations Committee Report.

- A. Open Forum for Potential Rule or Law Changes by Committee Members and Board Members Present.
 1. Open Forum.
- B. Update on Rules.
- C. ATRS 2021 Legislative Packag.
 1. 160 Days. (Attachment No. 25) page 447.
 2. Contract Days. (Attachment No. 26) page 449.
 3. Definitions. (Attachment No. 27) page 450.
 4. Early Retirement Reduction. (Attachment No. 28) page 451.
 5. Five Year Lookback. (Attachment No. 29) page 452.
 6. Reciprocity Final Average Salary. (Attachment No. 30) page 453.

* Action Item

7. Separation Period. (Attachment No. 31) page 454.
8. Termination Refund. (Attachment No. 32) page 456.

XIII. ***Staff Reports.**

- A. Year End Litigation Report. *Martha Miller, General Counsel* (Attachment No. 33) page 457.
- B. Medical Committee Report. *Willie Kincade, Director of Operations* (Attachment No. 34) page 459.

XIV. Executive Session: Evaluation of Executive Director.

XV. Other Business.

XVI. Adjourn.

EXECUTIVE SUMMARY

TO: Board of Trustees
FROM: ATRS Staff
RE: Executive Summary
DATE: June 1, 2020

- VI. Report of Member Interest Amount Waived Under A.C.A. Sec. 24-7-205.** ATRS waives interest for members when there is a dispute between ATRS and the member as to whether ATRS made a mistake or otherwise did not do all that was required on the member's account. Since ATRS has implemented the actuarial cost method for the purchase of service credit, interest waived is slowly disappearing, as well as the number of members who purchase service credit. No member interest was waived for this reporting period. This is a standard report for information and is not an action item.
- VII. Report of Employer Penalties and Interest Waived Under A.C.A. Sec. 24-7-411.** ATRS may also waive employer interest and penalties when reports or payments are late or have issues due to a new bookkeeper, inclement weather, sickness and other situations that justify a waiver. Seven (7) employer penalties and interest amounts were waived for this reporting period in the amount of \$2,250.00. This is a standard report for information and is not an action item.
- VIII. Manifest Injustice Report.** The rule on Manifest Injustice requires reports on Manifest Injustice resolutions to the Board at least two times per year. This Manifest Injustice report is for information and is not an action item.
- IX. Forfeiture Recommendations Pursuant to A.C.A. 24-7-734(6).** A.C.A. §24-7-734(b) provides that benefits that are not paid within five (5) years of the date they are due may be forfeited if (1) ATRS is unable to contact the person entitled to the benefit by mail addressed to the last known address on record; or (2) if the person entitled to the benefit fails to submit the required paperwork to ATRS to claim the benefit. The forfeiture of benefits is a question for the Board.

A.C.A. §24-7-734. Lost payees. (b) (1) If the board is unable within five (5) years after payment of a benefit is due to a member or beneficiary to make the payment because it cannot ascertain the whereabouts of the member or the identity and whereabouts of the beneficiary or personal representative by mailing to the last known address shown on the board's records and neither the member, the beneficiary, or personal representative has submitted the

*paperwork and forms required by the system before the expiration of the five (5) years, then, and in each case, **the board shall direct that the amount shall be forfeited to the trust assets of the system.** (emphasis added)*

Staff is continuing its review of a list of four hundred twenty-three (423) member accounts where the member died more than five (5) years ago and where benefits have not been distributed to determine why the benefits have not been paid. Also, five accounts flagged by staff were reviewed that were not on the initial list. In each instance, staff confirmed that ATRS had attempted to contact a family member or beneficiary, in most cases multiple times.

In this round, staff reviewed forty-one (41) member accounts and identified benefits in thirty-two (32) accounts totaling in the aggregate \$167,975.13 that fall within the provisions of this Code section. Staff recommends that the Board find these benefits should be forfeited according to A.C.A. §24-7-734(b) and direct the staff to transfer these benefits to the trust assets of ATRS. **This is an action item.**

X. Audit Committee Report. *Kelly Davis, Chair*

A. 2020 Risk Assessment

B. 2020-2021 Audit Plan

- 1. Audit Plan for FY2021**
- 2. FY 2020 Summary of Work Completed**
- 3. Conflict of Interest Statements**
- 4. Code of Ethics Statements**

C. Evaluation of Internal Auditor, Brenda West.

XI. Investment Committee Report. *Robin Nichols, Chair*

A. Arkansas Related and Investment Update

- 1. List of Fund Closings**
 - a. Franklin Park International Fund X, L.P. (formerly Franklin Park International Fund 2019), a Fund of Funds Managed by Franklin Park Investing in International Private Equity Funds, the Board Authorized Commitment of up to \$30 Million Dollars on December 2,**

2019 was Accepted and Closed on March 27, 2020. The ATRS full commitment of \$30 million dollars was negotiated, accepted, and closed on March 27, 2020.

- b. **GCG Investors V, L.P., a Mezzanine Fund Focused on Investments in both Debt and Equity Securities in the Small and Lower Middle Market with Imminent Need, the Board Authorized Commitment of up to \$35 Million Dollars on April 6, 2020 was Accepted and Closed on April 15, 2020.** The ATRS full commitment of \$35 million dollars was negotiated, accepted, and closed on April 15, 2020.

2. Rebalancing Update and Recap.

- a. **The Board Authorized Redeployment of the Assets Formerly Managed in the AllianzGI Structured Alpha Equity Funds to the Existing BlackRock MSCI ACWI IMI Index Fund A on April 6, 2020 was Successfully Completed on May 15, 2020.** The Board authorized redeployment of assets formerly managed in the Allianz GI Structured Alpha Equity funds to the existing BlackRock MSCI ACWI IMI fund was successfully completed on May 15, 2020.
- b. **Aon Hewitt Investment Consulting Recommended Rebalancing of Fixed Income Assets to Global Equity Assets by Redeploying \$100 Million Dollars from the BlackRock U.S. Core Plus Bond Fund and \$50 Million Dollars from the SSgA U.S. Aggregate Bond Index Fund to the Existing BlackRock MSCI ACWI IMI Index Fund A was Successfully Completed on May 15, 2020.** The Aon Hewitt Investment Consulting recommended rebalancing of fixed income assets to global equity assets was successfully completed on May 15, 2020.

B. General Investment Consultant Report.

- 1. **Preliminary Performance Report for the Quarter Ended March 31, 2020.** Consulting will provide the Board with a preliminary portfolio update for the quarter ending March 31, 2020.

2. **Preliminary Performance Report for the Month Ended April 30, 2020.**
P. J. Kelly and Katie Comstock of Aon Hewitt Investment Consulting will provide the Board with a preliminary portfolio update for the month ending April 30, 2020.

C. Real Assets Consultant Report.

1. **Performance Report for the Quarter Ended December 31, 2019.**
Chae Hong of Aon Hewitt Investment Consulting will provide the Board with a performance report for the quarter ending December 31, 2019.
2. **Recommendation to Commit up to \$50 Million Dollars in Torchlight Debt Fund VII, L.P., an Opportunistic Real Estate Fund Focused on High Yield Debt Investments in Both the Public and Private Markets.**

a. Resolution 2020-19.

3. **Recommendation to Commit up to \$50 Million Dollars in CBRE Strategic Partners U.S. Value 9, L.P, a Value Added Real Estate Fund Focused on Institutional Quality Multifamily, Office, and Retail Properties in the U.S.**

a. Resolution 2020-20.

4. **Recommendation to Commit up to \$50 Million Dollars in Macquarie Infrastructure Partners V, L.P. a Core Infrastructure Fund Focused Primarily on North American Infrastructure Assets.**

a. Resolution 2020-21.

D. Private Equity Consultant Report.

1. **Private Equity Portfolio Review for the Quarter Ended December 31, 2019.** Michael Bacine of Franklin Park will provide the Board with a portfolio review for the quarter ending December 31, 2019.
2. **Recommendation to Commit up to \$30 Million Dollars in LLR Equity Partners VI, L.P., a Growth Equity Fund that will Focus on Small and Middle Market Companies in the Technology and Healthcare Sectors.**

a. Resolution 2020-22.

3. **Recommendation to Make an Additional Commitment of up to \$30 Million Dollars in Franklin Park Venture Capital Fund XIII, L.P.,**

**(formerly Franklin Park Venture Fund Series 2019) a Fund of Funds
Managed by Franklin Park Investing in Venture Capital Private Equity
Funds.**

a. Resolution 2020-23.

XII. Operations Committee Report. *Bobby Lester, Chair*

- A. Open Forum for Potential Rule or Law Changes by Committee Members and Board Members Present.**
- B. Update on Rules.**
- C. ATRS 2021 Legislative Package**
 - 1. 160 Days.**
 - 2. Contract Days.**
 - 3. Definitions.**
 - 4. Early Retirement Reduction.**
 - 5. Five year Lookback**
 - 6. Reciprocity Final Average Salary.**
 - 7. Separation Period.**
 - 8. Termination Refund.**

XIII. Staff Reports.

- A. Year End Litigation Report.** Martha Miller, General Counsel, will give the Board a Year End Litigation Report. This report will be a yearly report that is for information purposes and is not an action item.
- B. Medical Committee Reports. A Total of 14 Disability Retirement Applications Approved.** The Medical Committee Report is a standard report made by staff on behalf of the Medical Committee approving disability cases. A total of 24 disability applications were received, 14 were approved, 6 were denied, and 4 needed more information. **This is an action item.**

XIV. Executive Session – Evaluation of Executive Director.

XV. Other Business.

XVI. Adjourn.

**MINUTES
ARKANSAS TEACHER RETIREMENT SYSTEM
BOARD OF TRUSTEES**

**Monday, April 6, 2020
10:00 a.m.
1400 West Third Street
Little Rock, AR 72201**

ATTENDEES

Board Members Present

Danny Knight, Chair
Dr. Richard Abernathy, Vice Chair*
Anita Bell*
Lloyd Black*
Kathy Clayton*
Kelly Davis*
Shawn Higginbotham *
Bobby Lester*
Chip Martin *
Robin Nichols*
Janet Watson*
Candace Franks, Bank Commissioner*
Hon Andrea Lea, State Auditor*
Jason Brady, designee for Hon. Dennis Milligan*

Board Members Absent

Johnny Key, Cabinet Secretary of Department of Education

Reporters Present

Mike Wickline, Ark. Democrat Gazette

ATRS Staff Present

Clint Rhoden, Executive Director
Rod Graves, Deputy Director*
Tammy Porter, Ex. Assistant/Board Secretary
Curtis Carter, Chief Financial Officer
Willie Kincade, Assoc. Director of Operations
Mike Lauro, Information System Manager
Manju, Director of Information Technology*
Martha Miller, General Counsel*
Kevin Odum, Attorney Specialist*
Brenda West, Internal Audit/Risk Mgmt.*

Guest Present

PJ Kelly, AHIC (Aon Hewitt)*
Katie Comstock, AHIC (Aon Hewitt)*
Michael Bacine, Franklin Park*
Donna Morey, ARTA*

- I. **Call to Order/Roll Call.** Mr. Danny Knight, Chair, called the Board of Trustees meeting to order at 10:01 a.m. Roll call was taken. Mr. Johnny Key was absent
- II. **Adoption of Agenda.**

Ms. Nichols moved for adoption of the Agenda. Mr. Brady seconded the motion, and the Board unanimously approved the motion.

III. Executive Summary. The Executive Summary was provided for reference with no questions or expansions on the written summary.

IV. Approval of Prior Meeting Minutes.

A. February 3, 2020 Minutes

Ms. Bell moved for approval of the Minutes of the Board of Trustees meeting of February 3, 2020. Ms. Watson seconded the motion, and the Board unanimously approved the motion.

B. March 9, 2020 Minutes.

Mr. Martin moved for approval of the Minutes of the Board of Trustees meeting of March 9, 2020. Dr. Abernathy seconded the motion, and the Board unanimously approved the motion.

V. Report of Member Interest Waived Under A. C. A. Section 24-7-205. Mr. Rhoden presented the member interest amount waived report. ATRS waives interest for members when there is a dispute between ATRS and the member as to whether ATRS made a mistake or otherwise did not do all that was required on the member's account. No member interest was waived this reporting period.

VI. Report of Employer Interest and Penalties Waived Under A. C. A. Sec. 24-7-411. Mr. Rhoden presented the employer interest and penalties waived report. ATRS may also waive employer interest and penalties when reports or payments are late or have issues due to a new bookkeeper, inclement weather, sickness and other situations that justify a waiver. Two (2) employer penalties and interest were waived for this reporting period in the amount of \$48.90. This is a standard report for information and is not an action item.

VII. Legislative Audit Report June 30, 2019 Official Review. Mr. Clint Rhoden, Executive Director, presented the Board with the Legislative Audit Report for June 30, 2019-Official Review for review and approval by the Board.

Mr. Lester moved for approval of the Legislative Audit Report, June 30, 2019-Official Review. Dr. Abernathy seconded the motion, and the Board unanimously approved the motion.

VIII. GASB Report after Legislative Audit Review. Mr. Curtis Carter, Chief Financial Officer, presenting the Board with the GASB Report after Legislative Audit Review for review and approval by the Board.

Mr. Lester moved for approval of the GASB Report after Legislative Audit Review. Ms. Nichols seconded the motion, and the Board unanimously approved the motion.

- IX. Adoption of Number of Years for Calculating Final Average Salary pursuant to A.C.A. 24-7-736(c)(1).** Director Rhoden presented the Board with a proposal for Adoption of Number of Years for Calculating Final Average Salary.

Mr. Higginbotham moved for adoption of Resolution 2020-10, Adoption of Number of Years for Calculating Final Average Salary pursuant to A.C.A. 24-7-736(c)(1). Dr. Abernathy seconded the motion, and the Board unanimously adopted the Resolution.

- X. Investment Committee Report.** Robin Nichols, Chair, gave a report on the Investment Committee meeting.

A. Arkansas Related and Investment Update. Rod Graves, Deputy Director, gave the Committee a report on Arkansas Related and Investment Update

B. General Investment Consultant Report.

- 1. Preliminary Performance Report for the Month Ending February 29, 2020.** PJ Kelly and Katie Comstock of Aon Hewitt Investment Consulting provided the Committee with a preliminary performance report for the month ending February 29, 2020.
- 2. Market Update March 2020.** P.J. Kelly and Katie Comstock of Aon Hewitt Investment Consulting provided the Committee with a market update for March 2020.
- 3. Recommendation to Redeem in Full the ATRS Investments in the Three Allianz Structured Alpha Funds.** P.J. Kelly of Aon Hewitt Investment Consulting presented the Committee with the recommendation to redeem in full the ATRS Investments in the Three Allianz Structured Alpha Funds.

ATRS staff concurs with the recommendation.

Ms. Nichols moved to adopt Resolution 2020-14, to Redeem ATRS assets in the AllianzGI Structured

Alpha U.S. Equity 250, LLC. The Board *unanimously adopted the Resolution.*

Ms. Nichols *moved to adopt* Resolution 2020-15, to Redeem ATRS assets in the AllianzGI Structured Alpha U.S. Equity 500, LLC The Board *unanimously adopted the Resolution.*

Ms. Nichols *moved to adopt* Resolution 2020-16, to Redeem ATRS assets in the AllianzGI Structured Alpha U.S. Equity 350, LLC. The Board *unanimously adopted the Resolution.*

C. Private Equity Consultant Report.

- 1. Recommendation to Commit up to \$35 Million Dollars in GCG Investors V, L.P., a Mezzanine Fund Focused on Investments in both Debt and Equity Securities in the Small and Lower Middle Market with Imminent Need.** Michael Bacine provided the Committee with the recommendation to Commit up to \$35 Million Dollars in GCG Investors V, L.P., a Mezzanine Fund Focused on Investments in both Debt and Equity Securities in the Small and Lower Middle Market with Imminent Need.

ATRS staff concurs with the recommendation.

Ms. Nichols *moved to adopt* Resolution 2020-11, to Commit up to \$35 Million Dollars in GCG Investors V, L.P., a Mezzanine Fund Focused on Investments in both Debt and Equity Securities in the Small and Lower Middle Market with Imminent Need. The Board *unanimously adopted the Resolution.*

- 2. Recommendation to Commit up to \$20 Million Dollars in Thoma Bravo Discover Fund III, L.P., a Buyout Fund Focused on U.S. Investments with a Specialization in Software Companies with Imminent Need.** Michael Bacine provided the Committee with the recommendation to commit up to \$20 Million Dollars in Thoma Bravo Discover Fund III, L.P., a Buyout Fund Focused on U.S. Investments with a Specialization in Software Companies with Imminent Need.

ATRS staff concurs with the recommendation.

Ms. Nichols moved to adopt Resolution 2020-12, to Commit up to \$20 Million Dollars in Thoma Bravo Discover Fund III, L.P., a Buyout Fund Focused on U.S. Investments with a Specialization in Software Companies with Imminent Need. The Board unanimously adopted the Resolution.

3. **Recommendation to Commit up to \$20 Million Dollars in Thoma Bravo Fund XIV, L.P., a Private Equity Buyout Fund that Invests in Larger Market Software Companies with Imminent Need.** Michael Bacine provided the Committee with the recommendation to commit up to \$20 Million Dollars in Thoma Bravo Fund XIV, L.P., a Private Equity Buyout Fund that Invests in Larger Market Software Companies with Imminent Need.

ATRS staff concurs with the recommendation.

Ms. Nichols moved to adopt Resolution 2020-13, to Commit up to \$20 Million Dollars in Thoma Bravo Fund XIV, L.P., a Private Equity Buyout Fund that Invests in Larger Market Software Companies with Imminent Need. The Board unanimously adopted the Resolution.

XI. Staff Reports.

- A. **Medical Committee Report.** Mr. Kincade reported that a total of Eight (8) Disability Retirement Applications were approved.

Ms. Nichols moved to approve the Medical Committee Report. Mr. Lester seconded the motion and the Board unanimously approved the Motion.

XII. Other Business: None

XIII. Adjourn.

Mr. Lester moved to adjourn the Board Meeting. Dr. Abernathy seconded the motion, and the Board unanimously approved the motion.

Meeting adjourned at 10:38 a.m.

Clint Rhoden,
Executive Director

Mr. Danny Knight, Chair
Board of Trustees

Tammy Porter,
Recorder

Date Approved

**MINUTES
ARKANSAS TEACHER RETIREMENT SYSTEM
BOARD OF TRUSTEES – CALLED MEETING**

**Wednesday, May 20, 2020
4:00 p.m.
1400 West Third Street
Little Rock, AR 72201**

ATTENDEES

Board Members Present

Danny Knight, Chair*
Richard Abernathy, Vice Chair*
Anita Bell*
Lloyd Black*
Kathy Clayton*
Kelly Davis*
Shawn Higginbotham*
Bobby Lester*
Chip Martin*
Robin Nichols*
Janet Watson*
Susannah Marshall, designee for Candace Franks*
Hon. Andrea Lea, State Auditor*
Jason Brady, designee for Dennis Milligan*

Board Members Absent

Johnny Key, Cabinet Secretary, Department of Education

ATRS Staff Present

Clint Rhoden, Executive Director
Rod Graves, Deputy Director*
Tammy Porter, Ex. Assistant/Board Secretary
Willie Kincade, Director of Operations*
Manju, Director of Information Technology*
Martha Miller, General Counsel*
Brenda West, Internal Audit/Risk Mgmt.*

Consultants Present

PJ Kelly, AHIC (Aon Hewitt)*
Katie Comstock (Aon Hewitt)*

Guest Present

Donna Morey, ARTA*
Gar Chung, Fin. Investment News*

**via telephone*

- I. **Call to Order/Roll Call.** Mr. Danny Knight, Chair, called the Investment Committee meeting to order at 4:28 p.m. Roll call was taken. Mr. Johnny Key was absent

- II. **Adoption of Agenda.**

Dr. Abernathy moved for adoption of the Agenda. Mr. Higginbotham seconded the motion, and the Committee unanimously approved the motion.

- III. **Executive Summary.** The Executive Summary was provided for reference with no questions or expansions on the written summary.
- IV. **Investment Committer Report.** Ms. Robin Nichols, Chair, gave a report on the Investment Committee meeting.

A. General Investment Consultant Report

- 1. **Recommendation to Commit up to \$100 Million Dollars in TCW TALF Opportunities Fund, LP a Fund Focused on Investments in Asset-Backed Securities with Imminent Need.** P.J. Kelly AND Katie Comstock of Aon Hewitt Investment Consulting presented the Committee with the recommendation to Commit up to \$100 Million Dollars in TCW TALF Opportunities Fund, LP a Fund Focused on Investments in Asset-Backed Securities with Imminent Need

ATRS staff concurs with the recommendation.

Ms. Nichols *moved to adopt* Resolution 2020-17, to Commit up to \$100 Million Dollars in TCW TALF Opportunities Fund, LP a Fund Focused on Investments in Asset-Backed Securities with Imminent Need. The Board *unanimously approved the motion.*

- 2. **Recommendation to Commit up to \$100 Million Dollars in AB TALF Opportunity 2020 (Delaware) Fund, L.P. a Fund Focused on Investments in Asset-Backed Securities with Imminent Need.** P.J. Kelly and Katie Comstock of Aon Hewitt Investment Consulting presented the Committee with the recommendation to Commit up to \$100 Million Dollars in AB TALF Opportunity 2020 (Delaware) Fund, L.P. a Fund Focused on Investments in Asset-Backed Securities with Imminent Need.

ATRS staff concurs with the recommendation.

Ms. Nichols *moved to adopt* Resolution 2020-18, to Commit up to \$100 Million Dollars in AB TALF Opportunity 2020 (Delaware) Fund, L.P. a Fund Focused on Investments in Asset-Backed Securities with Imminent Need. The Board *unanimously approved the motion.*

- IX. **Other Business.** Parliamentary procedure. Auditor Lea posed the following question: Does a motion/recommendation from a committee require a second when considered by the full Board? After discussion by the Board members and Director Rhoden, and according to Robert's Rules, the answer is no.

X. Adjourn.

Mr. Danny Knight *moved to adjourn* the Board of Trustees Meeting. Dr. Abernathy seconded the *motion*, and the Committee *unanimously approved the motion*.

Meeting adjourned at 4:33 p.m.

Clint Rhoden,
Executive Director

Ms. Robin Nichols, Chair
Investment Committee

Tammy Porter,
Recorder

Date Approved

Waiver of Employer Report Penalties 2020

June 1, 2020 Board Meeting

A.C.A. Sec. 24-7-411

These are typical reports of employer penalties and interest waived by ATRS during a reporting period.

Employer Penalties Waived	
Ark Virtual Academy	\$150.00
Camden-Fairview School District	\$600.00
Clarendon School District	\$150.00
Dumas School District	\$600.00
Phillips Community Collage - Dewitt	\$150.00
Phillips Community Collage - UA	\$150.00
Shirley School District	\$450.00
Total Employer Penalties Waived	\$2,250.00
Employer Interest Waived	
Total Employer Waived	\$0.00
Total Employer Penalties & Interest Waived	\$2,250.00

MIC Claim #	Claimant Type	Facts and Circumstances	Findings and Recommendations of Committee	Executive Director's Remedy
2020-001	Member's Ex Spouse	Member's ex spouse claims that she should receive the Option A benefit even though she and the member were divorced. She and the member continued to function as a married couple until his death and he fully intended for his retirement to benefit his family.	The MI Committee found that a manifest injustice did not exist and recommended that no action be taken in this matter.	Concurred with Manifest Injustice Committee finding.
2020-002	Member	Executive Interpretation of ACT 595 (160 days)	The MI Committee found that a manifest injustice existed and that the member should be allowed to retire 2/1/2020 and begin to draw her retirement annuity immediately rather than wait until July 1 to begin payment of her benefits	Concurred with Manifest Injustice Committee finding.

2020-003	Member	Member purchased noncontributory service in 2011. Years 2008-2009 were not included in final purchase. Member wants to purchase those years of service at the 2011 actuarial price	The MI Committee found that a manifest injustice existed, and member should be allowed to convert one year of non-contributory service for the year 2008-09 to contributory service under the cost formula in place in 2011.	Concurred with Manifest Injustice Committee finding.
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FORFEITURE RECOMMENDATIONS

A.C.A. §24-7-734(6)

ATRS ID	MEMBER	DATE OF DEATH	AMOUNT OF BENEFIT
490304	S. R.	2/20/2014	\$8,694.93
109928	C. P.	10/27/2014	\$6,805.22
359318	S. R.	2/6/2012	\$12,073.76
418638	C. A.	2/24/2013	\$6,667.00
481436	M.K.	8/12/2003	\$10,000.00
315723	K. B.	1/11/2005	\$3,465.67
129746	L R.	1/6/2000	\$3,585.89
389454	J. C.	5/7/2011	\$8,415.25
179921	C. G.	10/1/1976	\$10,052.41
416133	C. J.	5/28/2008	\$13,452.23
291070	V. M.	7/21/2011	\$164.04
340227	J. S. M.	6/9/2011	\$12,277.30
120011	E. J.	6/23/1991	\$392.08
140503	J. S.	5/5/1998	\$6,632.11
200528	K. S.	10/14/2014	\$5,561.29
462234	G. S.	2/6/1991	\$3,747.28
193005	J. W.	5/17/2013	\$5,003.94
272080	D. M.	3/7/2011	\$2,141.67
376971	D. A.	6/4/2009	\$8,587.01
145596	K. C.	8/15/2008	\$314.10
224936	F. W.	4/14/2009	\$223.09
113422	J. M.	4/20/2005	\$2,217.04
134618	M. H.	10/11/2000	\$3,056.59
184659	P. L.	4/22/2000	\$7,309.47

328835	J. M.	9/1/1983	\$3,168.61
452362	E. B.	4/23/2014	\$5,320.40
241757	T. F.	4/22/1994	\$1,553.81
236827	Z. F.	12/7/1997	\$4,900.60
422186	O. W.	10/21/1992	\$9,056.02
420349	H. T.	4/21/2013	\$2.95
351461	R. F.	2/20/2015	\$2,728.68
			<hr/>
		TOTAL	\$167,975.13

Internal Audit Department

INTERNAL AUDIT PLAN

FOR THE PERIOD JULY 1, 2020 TO JUNE 30, 2021

PREPARED BY:

BRENDA WEST, INTERNAL AUDITOR

DENA DIXSON, ASSISTANT INTERNAL AUDITOR

Internal Audit Department

Audit Plan FY 2021

Introduction

As required by the International Standards for the Professional Practice of Internal Auditing issued by the Institute of Internal Auditors (IIA), and by Arkansas Teacher Retirement System's (ATRS) Internal Audit Charter, we submit the following Internal Audit Plan for Fiscal Year 2021.

In selecting areas for review, Internal Audit gives priority to processes where failure of the system to adequately perform could have serious consequences for ATRS, its members, stakeholders, and the Board. Therefore, projects were identified for this audit plan by using the 2020 ATRS risk assessment. Also, as ATRS continues to grow in terms of responsibilities, assets, and membership, there are areas that require regular reviews to ascertain whether the system continues to operate in an effective and efficient risk-controlled manner.

The Internal Audit Department will work with department managers to schedule a convenient time to perform audits. Audit projects will have an informal time budget associated with them. If audits require more time than planned, more hours will be used to ensure a high-quality, useful audit is conducted. If audits require less hours than originally planned, more topics will be chosen and presented to the Audit Committee for approval. This technique ensures audit flexibility and that the highest priority areas are covered first.

Scope

This plan covers the period July 1, 2020 through June 30, 2021.

Objective

The Internal Audit Department's objective is to assist the Board of Trustees and all levels of management in the effective discharge of their responsibilities by furnishing analysis, appraisals, and recommendations concerning the activities of the agency. This objective is accomplished by ensuring:

- Compliance with applicable laws and regulations
- Reliability and integrity of financial and operational information
- Safeguarding of assets
- Effectiveness and efficiency of operations

Internal Audit Department

**Audit Plan
FY 2021****Risk Assessment**

Risk assessment is defined as a "systematic process for assessing and integrating professional judgments about probable adverse conditions and/or events." The risk assessment process provides a means of organizing and integrating professional judgments for development of the annual audit work schedule.

Risk is defined as the probability that an event or action could possibly occur that may adversely affect the organization and the activity being audited. Risk is a measure of uncertainty. Control Risk is the risk that established internal controls lose effectiveness over time. Custodial Risk is the risk associated with owning and safeguarding of assets. Operation Risk is the risk of direct or indirect loss resulting from inadequate or failed internal processes, people, systems, or external events. Business Risk is the risk associated with the probable material effects of an uncertain environment or achieving established objectives. Residual Risk is the amount of risk that management is willing to assume or the amount of risk that will not be addressed by applicable controls.

The risk assessment process begins with identification of auditable areas. The risks are assessed according to the guidelines provided by the Arkansas Department of Finance and Administration Internal Audit Section.

Acceptable Level of Risk

Although this plan contemplates a wide-ranging scope of audit effort, it does not provide coverage for all ATRS's components and systems. We have tried to maximize the limited resources to provide reasonable coverage to the projects we believe require the most attention.

It is important for the Board and management to understand the limitations of the audit coverage and the risks they assume in areas not audited. We believe that this plan allocates resources of the Internal Audit Department to the highest risk areas of the system and includes audit effort to address other areas requiring periodic review. We have also scheduled time for special projects to address areas identified during the year that do not appear to warrant a full audit but should be reviewed during the upcoming fiscal year.

Reporting

All audit reports are reviewed by the audit client and the ATRS Director prior to being released as the official audit report. This procedure helps ensure the audit report is factual, accurate, and free of bias. In addition, a self-review checklist is used by the Internal Audit Department to ensure the audit reports are properly supported by sufficient audit evidence. All audit reports will be provided to the Audit Committee and the Board of Trustees for their review.

Internal Audit Department

Audit Plan FY 2021

Planning and Administrative Projects

Internal Audit Department's responsibilities include the completion of numerous administrative and planning projects each year. Some of these projects include, but are not limited to, the following:

- Development of annual audit plan;
- Development of internal risk assessment;
- Establishment and maintenance of the internal audit manual;
- Maintenance of the Internal Auditor recommendation follow-up process; and
- Development and maintenance of Disaster Recovery Plan.

Questions

If you have any questions regarding this audit plan, please contact Brenda at brendaw@artrs.gov or Dena at denad@artrs.gov.

Internal Audit Department

**FY 2021 Annual Audit Plan
Available Audit Hours**

Total Hours (2 employees * 2080 hrs)	4,160
Less: Holidays	216 (A)
Annual Leave	354 (B)
Sick Leave	192 (C)
General Administration & Board Meetings	800 (D)
Continuing Professional Education	100 (E)
	<u>1,662</u>
Available Audit Hours	<u>2,498</u>

Calculations

(A) (12 holidays * 9 hrs) * 2 employees	216
(B) 2 Employees (annual leave)	354
(C) 2 Employees (sick leave)	192
(D) General Administration and Board Meetings	800
(E) Continuing Professional Education (1 Professionals require CPE, plus additional training)	<u>100</u>
	<u>1,662</u>

Internal Audit Department

**FY 2021 Annual Audit Plan
Scheduled Audits**

<u>Name of Audit</u>	<u>Estimated Hours</u>
1. History Adjustments	300
2. Outsourcing (Requested by Legislative Audit)	300
3. Implementation of Legislation Enacted by the 92 nd General Assembly	300
4. Qualified Domestic Relations Orders (QDRO)	400
5. Teacher Deferred Retirement Option Plan (T-Drop)	300
6. Application of IRS 415 Limit Testing	300
7. Review of Legislative Audit Findings and Other Concerns	300
8. Follow-up Reports	258
9. Arkansas Continuity of Operations Program (ACOOOP)/Disaster Recovery	40
Total Estimated Hours	<u>2,498</u>

ATRS Internal Audit Department FY2020 Summary of Work

Internal Audit Reports

Board Resolutions

The Arkansas Teacher Retirement System (ATRS) Board of Trustees (board) adopted in their November 13, 2017 meeting an actuarial assumed rate of return of seven and a half percent (7.5%) and RP-2014 fully generational mortality tables. The assumptions adopted by the board necessitated various changes to ATRS member benefits and contribution rates in order to maintain financial strength and quality sustainability. Seventeen resolutions were passed by the board that affected member benefits effective July 1, 2018 and July 1, 2019.

The objectives of the audit were to determine that resolutions were implemented as prescribed by the resolution, laws, rules and procedures; resolutions were implemented in a timely manner; and to evaluate the efficiency of the process in implementing the resolutions.

The audit contained two findings and recommendations. The findings were resolved prior to the audit being presented to the board.

Issued: December 2, 2019

Status: Complete

Option Benefits

A member of the ATRS may elect at retirement to receive an actuarial reduced retirement benefit (option benefit) and provide a benefit for their beneficiary upon their death. ATRS provides three option benefits for the member to choose: 100% survivor annuity, 50% survivor annuity and guaranteed one hundred and twenty payments. Within the first year of retirement, a retiree may elect to change the option elected at retirement. When a beneficiary dies or divorce, the member may elect to cancel the 100% and 50% survivor annuities elected at retirement and draw full benefits for the remainder of their lifetime. If a member marries or fulfills the one-year marriage requirement after retirement, the member may elect to receive an actuarial reduced benefit and provide a benefit for their spouse upon their death.

The objectives of this audit were to determine the benefits received by the member and their beneficiary were paid accurately as prescribed by laws, rules and procedures; determine the beneficiary was eligible for the option benefits; and procedures followed in processing option benefits were efficient.

The audit contained two findings and recommendations. The findings were resolved prior to the audit being presented to the board.

Issued: February 3, 2020

Status: Complete

Follow-up Reports

Implementation of Legislation Enacted by the 91st General Assembly

ATRS had a twenty-one bill package including the Agency's appropriation bill for the 2018 General Assembly session. Additionally, seven more acts were passed by the General Assembly and signed by the Governor.

ATRS staff is responsible for developing and implementing policies and procedures for enacting new legislation. Scheduled implementation for many of the ACTS was subsequent to our initial audit issued December 4, 2017, thereby necessitating this follow-up audit.

The objective of this audit was to verify the proper implementation of legislation enacted by the 91st General Assembly that had an effective date subsequent to our initial audit.

We included the laws enacted by the 91st General Assembly that affect ATRS were properly implemented.

Issued: December 2, 2019

Status: Complete

Special Projects

Disaster Recovery

The Arkansas Continuity of Operations Program (ACOOOP) is administered by the Department of Information Systems. As a part of ACOOP, each agency is required to develop and maintain a Disaster Recovery Plan to ensure that essential services will continue to be provided after any disruptive event. ACOOP uses a software tool that facilitates the maintenance of standards and consistency of the plans of the various state agencies. The Internal Audit Department is responsible for entering ATRS information into the software tool on a continual basis.

ACOOOP conducts plan reviews and provides an evaluation based on criteria and a rating chart from FEMA.

Evaluated: May 7, 2019

Rating: 98%

Status: Continual Updates Required

Risk Assessment

The Department of Finance and Administration (DFA) requires each agency to perform a risk assessment every 2 years. DFA uses a software that facilitates the maintenance of standards and consistency of the plans of various state agencies. Managers and supervisors identify areas of risk in their departments and determine what controls are in place to mitigate the risk. This information is compiled by the Internal Audit Department and entered into the DFA software. Internal Audit submits the final draft to DFA.

The risk assessment allows DFA to address areas where assets may be at risk statewide. It also serves as a valuable tool for ATRS Administration and the Internal Audit Department in identifying areas within ATRS where the system of internal control needs review.

If you would like to review the report, contact Internal Audit Department and we will provide you with a copy of the report. You can reach Brenda at brendaw@artrs.gov or Dena at denad@artrs.gov.

Submitted: March 12, 2020

Status: Complete

In-Progress Internal Audit Reports

History Adjustments

ATRS maintains a history of each member's salary, service and contributions on the Arkansas Teacher Retirement Member Information System (ATRMIS). Current fiscal year salary, service and contributions are updated to a member's history each quarter.

Previous salary, service or contributions established on a member's history can be adjusted to correct any errors reported by the employer. Additional salary, service or contributions can be added to the member's history when the member purchases service credit, establishes free military, pays additional contributions due on established service or repays previously refunded service. Service is removed for any overlapping service with a reciprocal system.

The objective of this audit is to determine that the member's history is updated as prescribed by laws, rules and procedures; adjustments are updated to the member's history in a timely manner; and procedures followed in updating a member's history are efficient.

Started Audit: January 31, 2019

Status: 90% completed

Implementation of Legislation Enacted by the 92nd General Assembly

The 92nd General Assembly met from January 14, 2019, through sine die adjournment on April 10, 2019. There were ten acts affecting ATRS that passed and were signed by the Governor that included ATRS appropriation. Of the ten acts, four were for clarification or technical corrections. The remaining five acts will be reviewed for this audit.

The following acts are being reviewed:

1. Act 85 of 2019 allows a member who owes contributions on any given year to cancel the contributory service for that year. ATRS will refund any contributions received for that year.
2. Act 209 of 2019 allows a disability retiree to work for a covered employer for less than 80 days of actual service and continue to receive their disability benefit.
3. Act 210 of 2019 changes the definition of dependent child who is eligible for a survivor annuity to not older than 23 years of age. A child 18 but not older than 23 must be a full-time student in an accredited secondary school, college, or university.
4. Act 474 of 2019 allows the purchase of national guard service while on active state duty.
5. Act 595 of 2019 changed how ATRS calculates service credit. It is no longer based on quarters but days.

ATRS staff is responsible for developing and implementing policies and procedures for enacting new legislation.

The objective of this audit is to verify the proper implementation of legislation enacted by the 92nd General Assembly. To accomplish our objective, we will review changes in policies, procedures, forms, form letters, and computer programming.

Started Audit: March 2020

Status: 20% completed

In-Progress Follow-Up Reports

Reciprocal Service Benefits

Reciprocal service allows employees to move from one employer that participates in an Arkansas public retirement system to another employer participating in a different public retirement system without losing the retirement benefit accrued in their previous public service. Arkansas

participating systems are Arkansas Teacher Retirement System, Arkansas Public Employees Retirement System, Arkansas State Highway Employees' Retirement System, State Police Retirement System, Arkansas Judicial Retirement System, an alternate plan for higher education institutions, and Arkansas Local Police and Fire Retirement System.

Each system determines the member's final average salary (FAS) by their own rules. The highest FAS will be used by all reciprocal systems to determine the member's benefit. Compensation in the Arkansas Judicial Retirement System shall not be used to determine a member's FAS. Act 555 of 2013 changed the ATRS method of calculating FAS for those reciprocal members with less than 3 years of service in a reciprocal system. Under 555, ATRS is to obtain the salary and service credit information from the reciprocal system and use that information to calculate the member's final average salary as if the salary and service credit had all been earned in ATRS.

The objectives of this audit were to determine the benefits received by reciprocal members were paid accurately and consistently as prescribed by laws, rules and procedures; procedures followed in processing reciprocal benefits were efficient; and ATRS staff was properly trained to calculate reciprocal benefits.

The audit contained five findings and recommendations.

Current status on findings:

Internal audit recommended staff training in removing overlapping reciprocal service; written procedures cover all aspects of reciprocal service; and service records to be requested from reciprocal system before calculating member's FAS. **Counseling staff have been trained on reciprocal benefits. Training is planned for the other departments. Procedures have been updated to include all aspects of reciprocal benefits.**

Internal audit recommended the history screen be redesigned to reflect member's service credit, contributions, and status in an intuitive and easy to use format. **Information Technology is working on developing a new user-friendly screen to display history events for a member. The new screen should be in production by December 31, 2020.**

Submitted: February 4, 2019

Status: Follow-up audit FY 2021

Disability Benefits

Disability retirement provides benefits for members who demonstrate total and permanent physical or mental incapacity to perform the duties of his or her position while employed by an Arkansas Teacher Retirement System (ATRS) employer. To be eligible for disability benefits, a member must be active and have 5 or more years of actual and reciprocal service. Actual service does not include purchased or free military service. Applications for disability retirement are reviewed and approved by the ATRS Medical Committee. For a member to begin receiving

disability benefits, the member shall not be employed directly or indirectly by an ATRS covered employer.

Act 219 of 2015 requires a disability retiree under age 57 at the time of retirement to provide ATRS with a Social Security Administration determination letter or official documentation indicating they have been approved by the Social Security Administration for disability benefits. ATRS must receive this documentation within thirty-six months from the member's effective date of benefits.

The objectives of this audit were to determine the eligibility for disability benefits, effective date of benefits and the benefit paid were accurately and consistently calculated as prescribed by laws, rules and procedures; procedures followed in processing disability benefits and the Social Security determination were efficient.

The audit contained six findings and recommendations.

Current status on findings:

Internal audit recommended the application for determining disability effective date of benefits be applied consistently. **Member Services reviewed disability effective dates for disability members retiring July 2014 through June 2018. Letters were sent to both under and overpayment disability retirees resulting from an incorrect effective date. Ninety-three (93) underpayment retirees and eighty-five (85) overpayment retirees. Additional benefits due have been paid and overpayment of benefits have been collected.**

Internal Audit recommended staff training on disability benefits, written procedures updated to reflect current policy, and a method of safeguarding member's vital medical records. **Staff has been trained on disability benefits. Procedures are being updated to include all aspects of disability benefits. The procedures are 85% completed. Disability counselor has a safe to secure all disability documents.**

Internal audit recommended a field be added to ATRMIS for tracking whether the member has submitted their required social security determination letter. **Information Technology is working with the department to determine specifications. The new field should be in production by December 31, 2020.**

Submitted: June 3, 2019

Status: Follow-up audit FY 2021

Membership

Member name, address, beneficiary, date of birth, and other identifying information is maintained in the Arkansas Teacher Retirement Membership Information System (ATRMIS). New members are entered into the ATRMIS using a Membership Data Form (MDF). Members are also

required to complete a MDF anytime they change employers or positions. Employers contact ATRS for the member's election status through the ATRS Termination and Membership Status Sheet (Status Sheet).

The objectives of this audit were to determine if the procedures followed in adding new members and maintaining information on existing members was efficient and the ATRMIS system was updated accurately and in a timely manner.

The audit contained six findings and recommendations.

Current status on findings:

Internal audit recommended membership staff re-evaluate the prioritization of documents in the work queue to determine if the priorities need to be reset to coincide with current needs and work processes; automation of contributory/non-contributory status determination process; phone numbers and email addresses captured on the MDF be updated and kept on ATRMIS; and members have the ability to update their addresses using our website. **Membership is currently working with Information Technology on automating updating and maintaining the member system. Information Technology is working through the security issues relating to members ability to update ATRMIS through ATRS website. There is no set time period for implementing this recommendation.**

Submitted: September 25, 2017
Follow-up Audit Submitted: April 1, 2019
Status: Follow-up audit FY 2021

Lump Sum Death Benefit

Act 1022 of 1997 created a lump sum death benefit to be paid by the Arkansas Teacher Retirement System (ATRS) to the beneficiaries of active and retired members with five or more years of actual service with an ATRS covered employer. The Act provided for the payment of up to \$7,500 to the beneficiaries of contributory members and up to \$5,000 to the beneficiaries of non-contributory members, with mixed service being prorated according to credited service. The exact amount of the benefit was to be determined by the Board of Trustees as actuarially appropriate.

Over the years the law was amended to provide for different maximum amounts and eligibility requirements. ATRS Rule 11-2 currently sets the maximum lump sum death benefit at \$10,000 for those with 10 or more years of contributory service only and at \$6,667 for those with 10 or more years of non-contributory service only, with mixed service prorated at a 3:2 ratio. Per Act 977 of 2011, members with 15 years of contributory service credit are eligible for the maximum contributory only amount of \$10,000 without consideration of any non-contributory service.

The objectives of the audit were to determine lump sum death benefits disbursed to beneficiaries were paid accurately as prescribed by the laws, rules and procedures; procedures followed in processing lump sum death benefits were efficient; and procedures used to identify deceased members are sufficient.

The audit contained three findings and recommendations.

Current status on findings:

Internal audit recommended programming changes be made to ATRMIS Financial/Member Refund Screen to ensure the correct lump sum death benefit calculation is displayed. It was also recommended that Information Technology develop a code list into a centralized screen in ATRMIS. **Information Technology is working with the department to determine specifications. The recommendations should be in production by December 31, 2020.**

Submitted: February 4, 2019

Status: Follow-up audit FY 2021

ANNUAL CONFLICT OF INTEREST STATEMENT

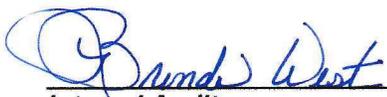
International Standards for the Professional Practice of Internal Auditing (Standards) require internal auditors to have an impartial, unbiased attitude and avoid any conflict of interest in fact and appearance. The Standards state:

- Internal auditors must have an impartial, unbiased attitude and avoid any conflict of interest.
- If independence or objectivity is impaired in fact or appearance, the details of the impairment must be disclosed to appropriate parties. The nature of the disclosure will depend upon the impairment.
- Internal auditors must refrain from assessing specific operations for which they were previously responsible. Objectivity is presumed to be impaired if an internal auditor provides assurance services for an activity for which the internal auditor had responsibility within the previous year.
- Assurance engagements for functions over which the chief audit executive has responsibility must be overseen by a party outside the internal audit activity.
- Internal auditors may provide consulting services relating to operations for which they had previous responsibilities.
- If internal auditors have potential impairments to independence or objectivity relating to proposed consulting services, disclosure must be made to the engagement client prior to accepting engagement.

Disclosure of impairments to independence: (Please list or indicate "None".)

None

I certify that I have disclosed any information of which I am aware that might be viewed as impairment to my objectivity in conducting FY 2021 Internal Audit activities. Any future impairment to my independence or objectivity that arises during the fiscal year will be immediately reported to the Internal Audit Director and the Audit Committee.



Internal Auditor

5/13/20

Date

II-a

ANNUAL CONFLICT OF INTEREST STATEMENT

International Standards for the Professional Practice of Internal Auditing (Standards) require internal auditors to have an impartial, unbiased attitude and avoid any conflict of interest in fact and appearance. The Standards state:

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- If internal auditors have potential impairments to independence or objectivity relating to proposed consulting services, disclosure must be made to the engagement client prior to accepting engagement.

Disclosure of impairments to independence: (Please list or indicate "None".)

None

I certify that I have disclosed any information of which I am aware that might be viewed as impairment to my objectivity in conducting FY 21 Internal Audit activities. Any future impairment to my independence or objectivity that arises during the fiscal year will be immediately reported to the Internal Audit Director and the Audit Committee.

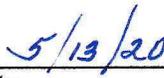
Dena Dixon
Internal Auditor

5/18/20
Date

CODE OF ETHICS ACKNOWLEDGMENT

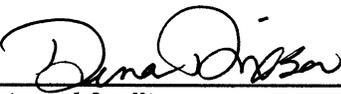
I certify that I have read and understand the Code of Ethics of the Institute of Internal Auditors. I agree to abide by the principles of the Code, which are Integrity, Objectivity, Confidentiality, and Competency. I further agree to act in accordance with the behavior expectations of internal auditors as stated in the Code.


Internal Auditor


Date

CODE OF ETHICS ACKNOWLEDGMENT

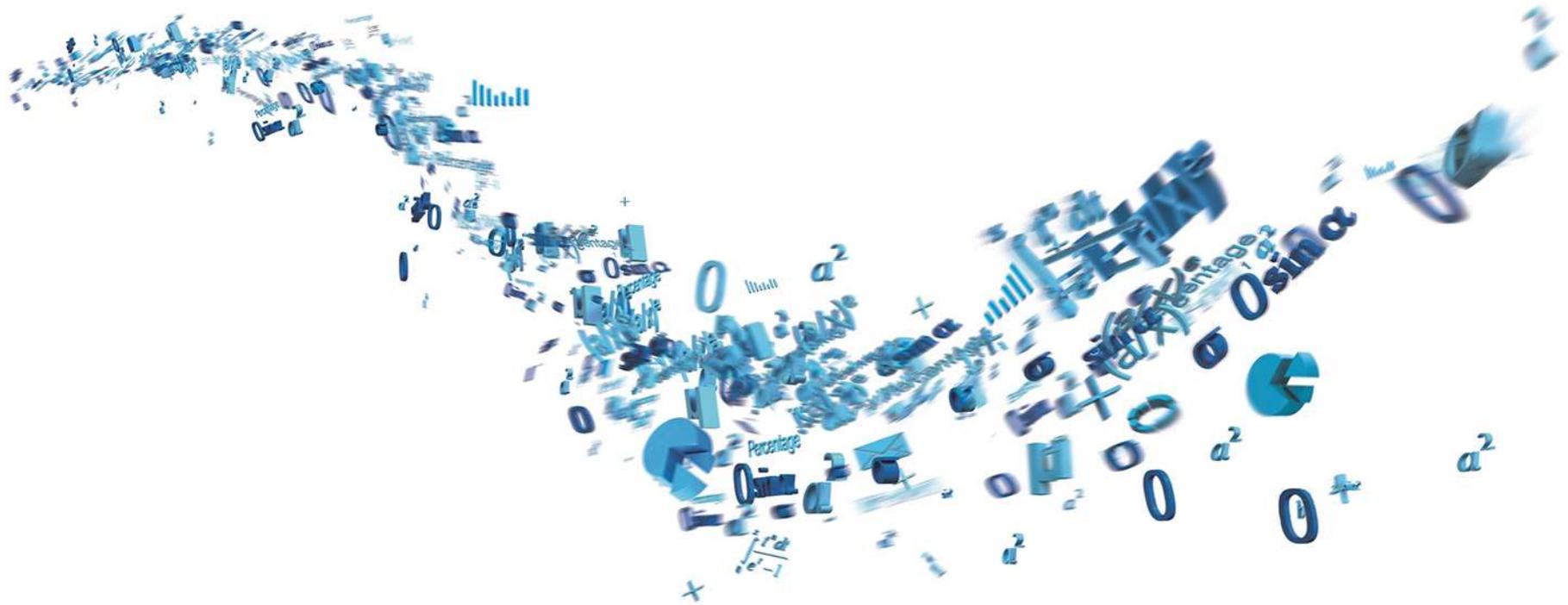
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Internal Auditor



Date



Arkansas Teacher Retirement System | First Quarter 2020

Quarterly Investment Review

Visit the Retirement and Investments Thought Leadership Site (<https://retirement-investment-insights.aon.com>); sharing our best thinking.

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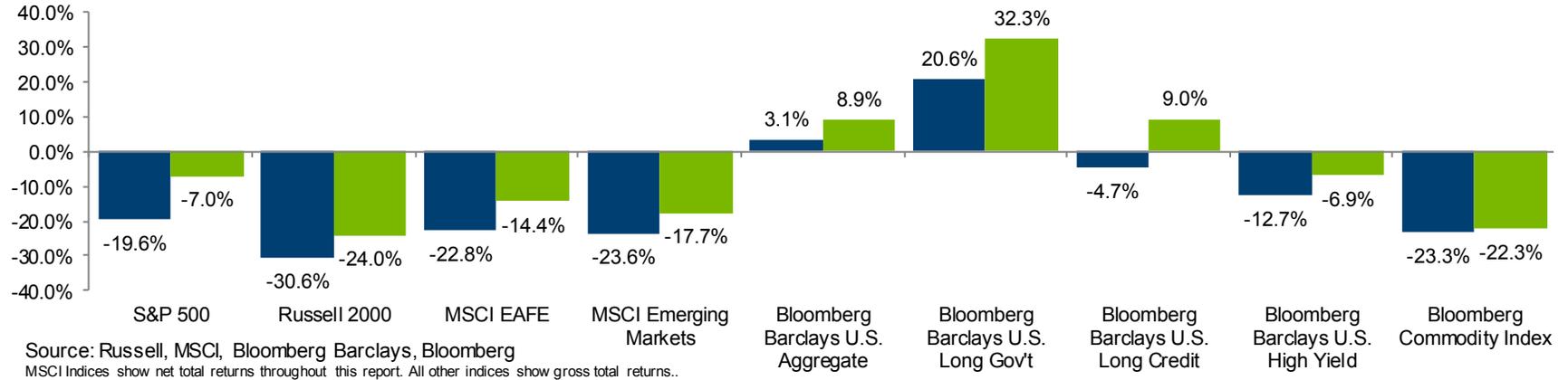


Executive Summary

Market Highlights

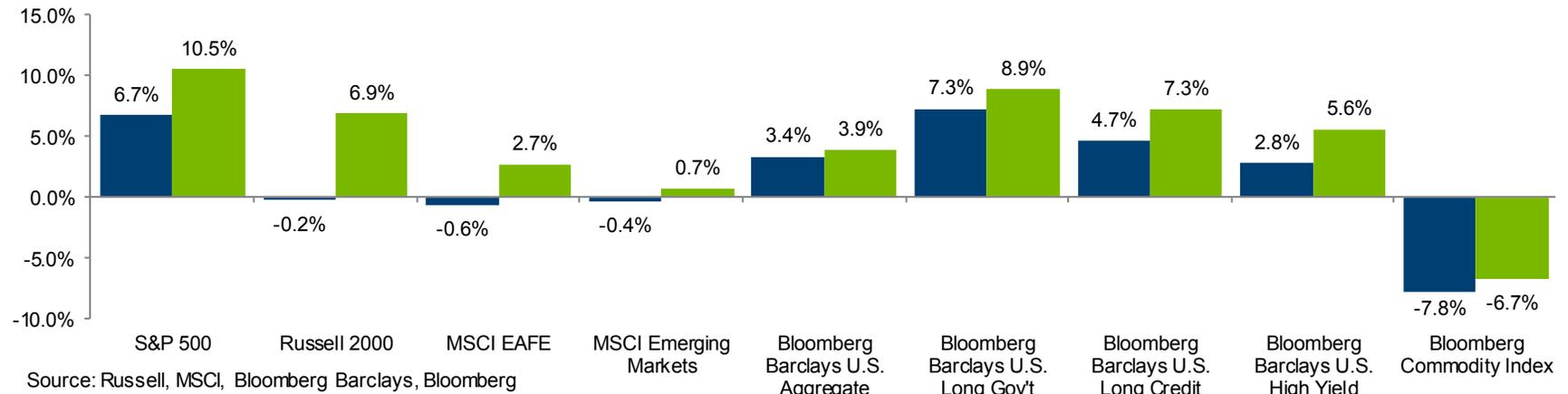
SHORT TERM RETURNS AS OF 03/31/2020

■ First Quarter 2020 ■ One-Year



LONG TERM ANNUALIZED RETURNS AS OF 03/31/2020

■ Five-Year ■ Ten-Year



Aon
Proprietary & Confidential
Investment advice and consulting services provided by Aon Investments USA Inc.

Market Highlights

Returns of the Major Capital Markets					
Period Ending 03/31/2020					
	First Quarter	1-Year	3-Year ¹	5-Year ¹	10-Year ¹
Equity					
MSCI All Country World IMI	-22.44%	-12.73%	0.76%	2.45%	5.80%
MSCI All Country World	-21.37%	-11.26%	1.50%	2.85%	5.88%
Dow Jones U.S. Total Stock Market	-20.96%	-9.28%	3.92%	5.70%	10.13%
Russell 3000	-20.90%	-9.13%	4.00%	5.77%	10.15%
S&P 500	-19.60%	-6.98%	5.10%	6.73%	10.53%
Russell 2000	-30.61%	-23.99%	-4.64%	-0.25%	6.90%
MSCI All Country World ex-U.S. IMI	-24.11%	-16.32%	-2.34%	-0.66%	2.14%
MSCI All Country World ex-U.S.	-23.36%	-15.57%	-1.96%	-0.64%	2.05%
MSCI EAFE	-22.83%	-14.38%	-1.82%	-0.62%	2.72%
MSCI EAFE (Local Currency)	-20.55%	-12.58%	-1.80%	-0.15%	4.36%
MSCI Emerging Markets	-23.60%	-17.69%	-1.62%	-0.37%	0.68%
Fixed Income					
Bloomberg Barclays Global Aggregate	-0.33%	4.20%	3.55%	2.64%	2.47%
Bloomberg Barclays U.S. Aggregate	3.15%	8.93%	4.82%	3.36%	3.88%
Bloomberg Barclays U.S. Long Gov't	20.63%	32.28%	13.30%	7.32%	8.89%
Bloomberg Barclays U.S. Long Credit	-4.65%	9.05%	6.58%	4.67%	7.26%
Bloomberg Barclays U.S. Long Gov't/Credit	6.21%	19.32%	9.68%	5.99%	8.07%
Bloomberg Barclays U.S. TIPS	1.69%	6.85%	3.46%	2.67%	3.48%
Bloomberg Barclays U.S. High Yield	-12.68%	-6.94%	0.77%	2.78%	5.64%
Bloomberg Barclays Global Treasury ex U.S.	-1.53%	2.02%	2.96%	2.44%	1.50%
JP Morgan EMBI Global (Emerging Markets)	-11.76%	-5.28%	0.44%	2.85%	4.82%
Commodities					
Bloomberg Commodity Index	-23.29%	-22.31%	-8.61%	-7.76%	-6.74%
Goldman Sachs Commodity Index	-42.34%	-41.01%	-13.33%	-12.82%	-10.43%
Hedge Funds					
HFRI Fund-Weighted Composite ²	-9.39%	-5.11%	0.32%	1.09%	2.78%
HFRI Fund of Funds ²	-7.30%	-3.94%	0.50%	0.33%	1.91%
Real Estate					
NAREIT U.S. Equity REITS	-27.30%	-21.26%	-3.14%	-0.35%	7.40%
NCREIF NF1 - ODCE	0.97%	4.87%	6.81%	8.46%	11.45%
FTSE Global Core Infrastructure Index	-17.89%	-9.29%	3.94%	4.52%	8.30%
Private Equity					
Burgiss Private iQ Global Private Equity ³		11.61%	14.89%	11.58%	13.92%

MSCI Indices show net total returns throughout this report. All other indices show gross total returns.

¹ Periods are annualized.

² Latest 5 months of HFR data are estimated by HFR and may change in the future.

³ Burgiss Private iQ Global Private Equity data is as at June 30, 2019

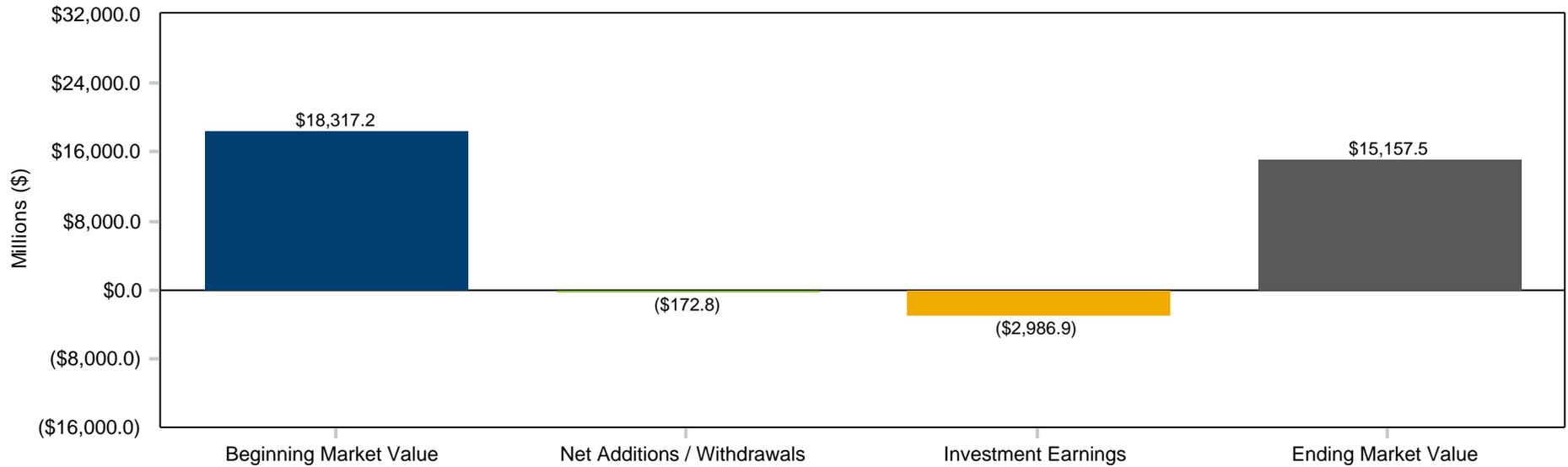
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Total Fund

Total Plan Asset Summary

**Change in Market Value
From January 1, 2020 to March 31, 2020**

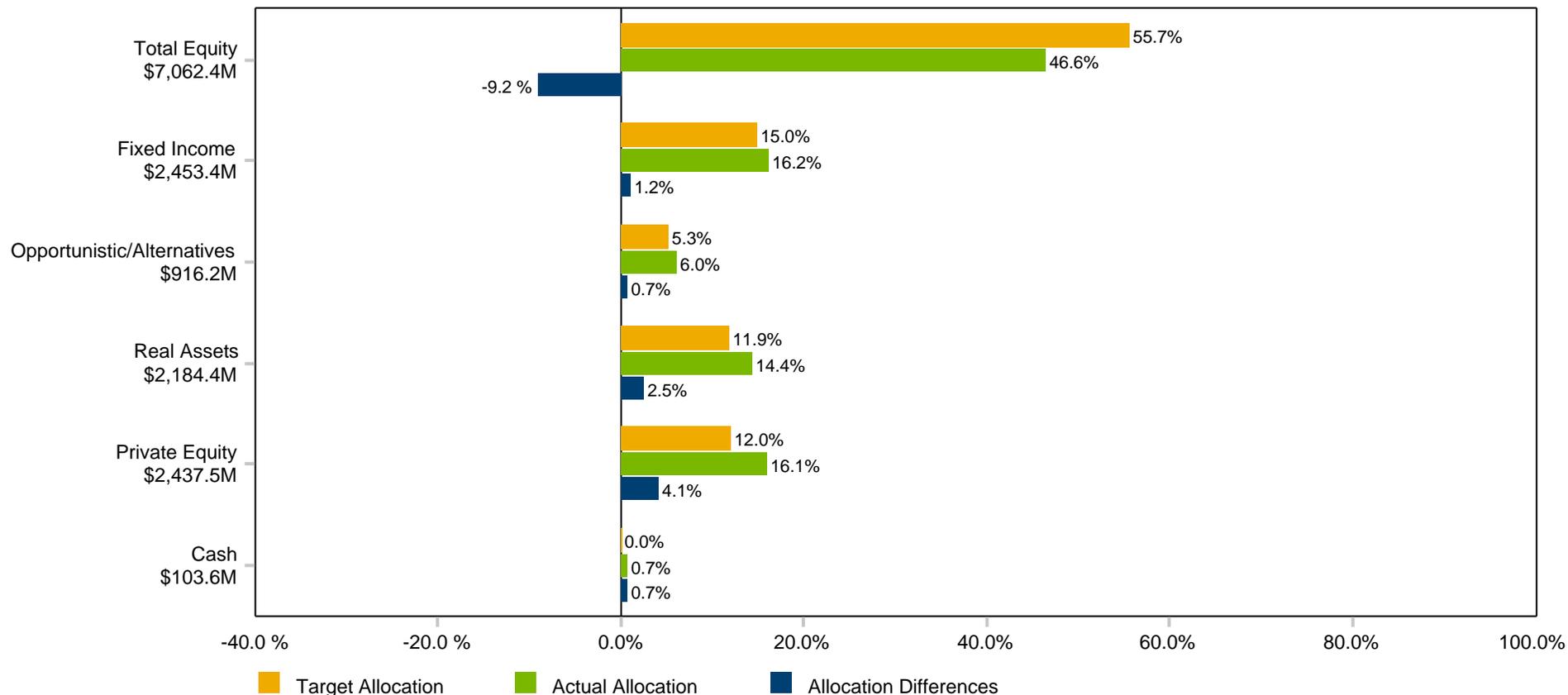


Summary of Cash Flow

	1 Quarter	Fiscal YTD	1 Year
Total Fund			
Beginning Market Value	18,317,233,920	17,586,476,970	17,203,209,191
+ Additions / Withdrawals	-172,827,253	-586,035,812	-717,744,886
+ Investment Earnings	-2,986,910,091	-1,842,944,581	-1,327,967,729
= Ending Market Value	15,157,496,576	15,157,496,576	15,157,496,576

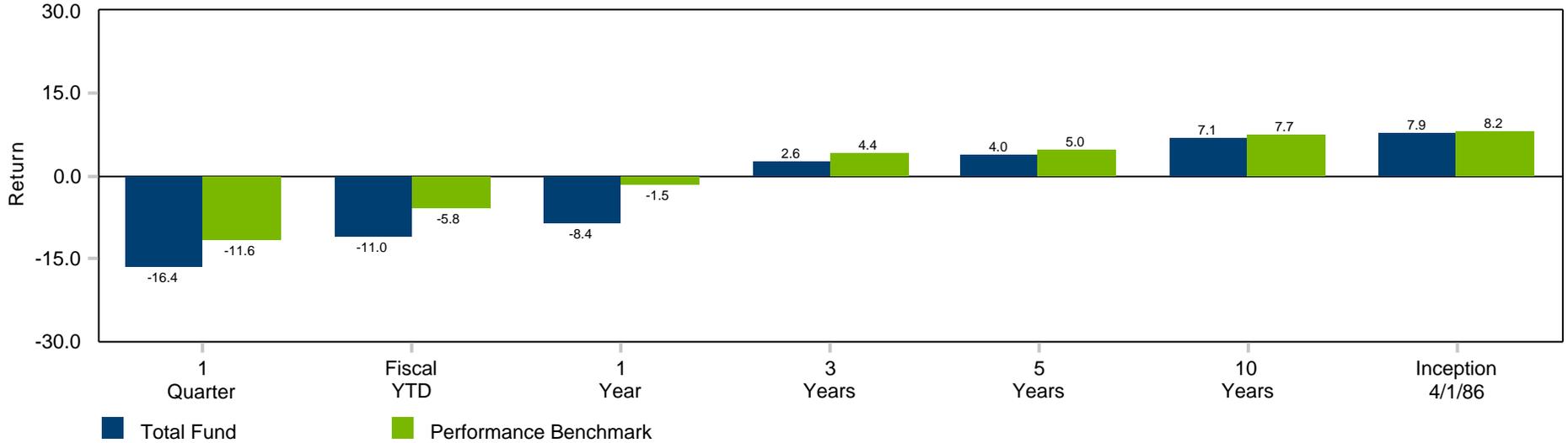
Asset Allocation Compliance

	Market Value (\$M)	Current Allocation (%)	Target Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)
Total Fund	15,157.5	100.00	100.00	N/A	N/A
Total Equity	7,062.4	46.59	55.75	50.00	60.00
Fixed Income	2,453.4	16.19	15.00	13.00	17.00
Opportunistic/Alternatives	916.2	6.04	5.32	0.00	7.00
Real Assets	2,184.4	14.41	11.94	10.00	15.00
Private Equity	2,437.5	16.08	12.00	9.50	14.50
Cash	103.6	0.68	0.00	0.00	5.00

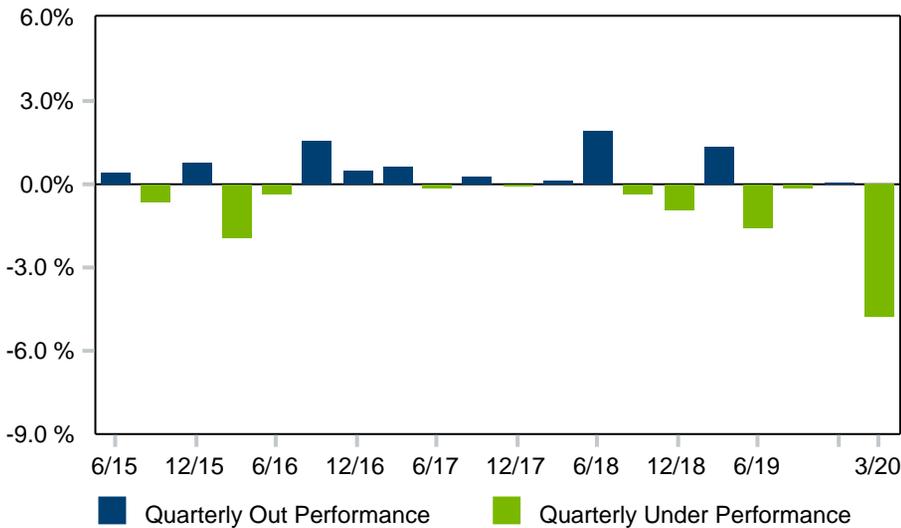


Total Plan Performance Summary

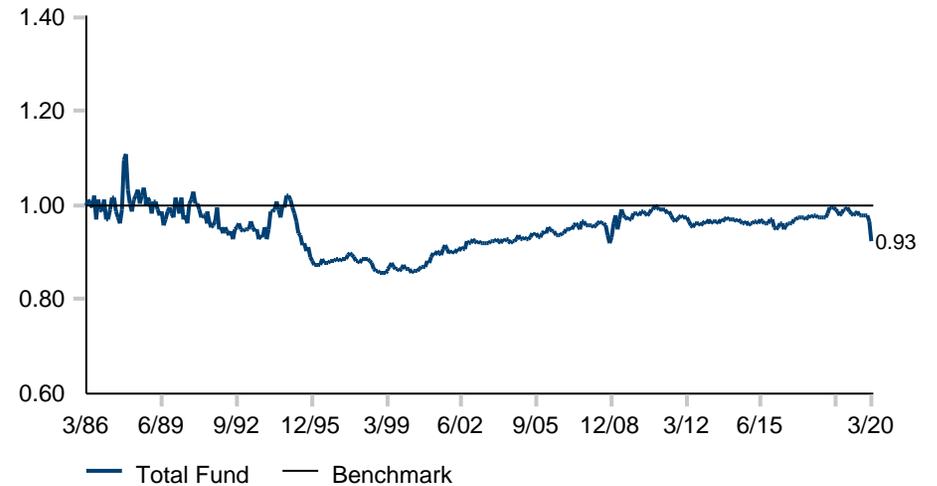
Return Summary



Quarterly Excess Performance

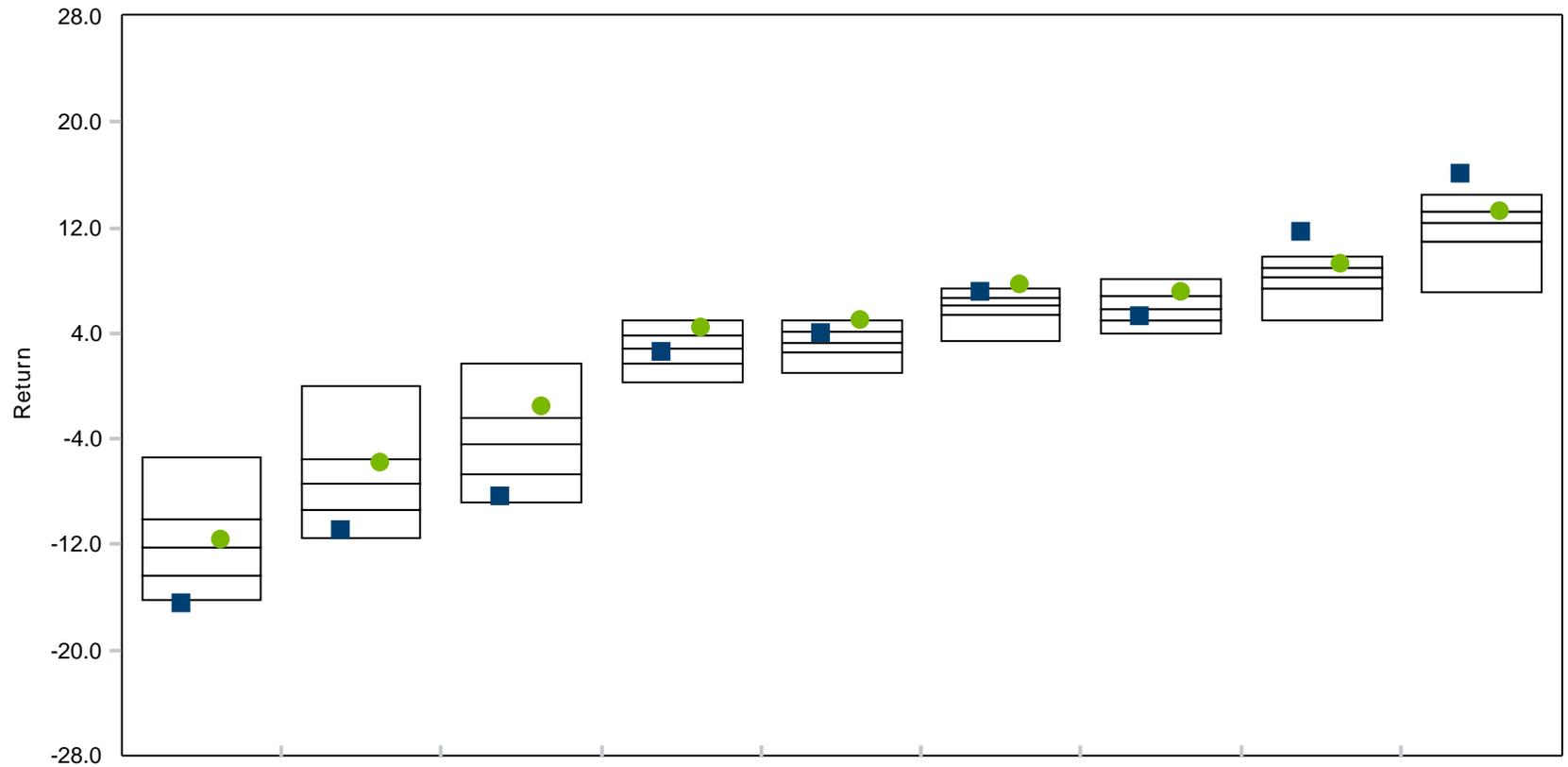


Ratio of Cumulative Wealth - Since Inception



Plan Sponsor Peer Group Analysis

All Public Plans > \$1B-Total Fund



	1 Quarter	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	Fiscal Year 2019	Fiscal Year 2018	Fiscal Year 2017
■ Total Fund	-16.4 (97)	-11.0 (93)	-8.4 (90)	2.6 (53)	4.0 (31)	7.1 (11)	5.3 (68)	11.7 (1)	16.1 (1)
● Performance Benchmark	-11.6 (39)	-5.8 (29)	-1.5 (16)	4.4 (13)	5.0 (6)	7.7 (3)	7.0 (16)	9.2 (18)	13.2 (27)
5th Percentile	-5.5	0.0	1.7	5.0	5.0	7.4	8.1	9.9	14.5
1st Quartile	-10.0	-5.5	-2.4	3.8	4.1	6.6	6.8	9.0	13.3
Median	-12.2	-7.4	-4.4	2.8	3.3	6.0	5.9	8.2	12.3
3rd Quartile	-14.3	-9.4	-6.6	1.8	2.6	5.4	5.0	7.5	11.0
95th Percentile	-16.1	-11.5	-8.8	0.2	1.0	3.4	4.0	4.9	7.1
Population	141	141	141	137	137	133	107	85	103

51 Parentheses contain percentile rankings.

As of March 31, 2020

Asset Allocation & Performance

	Allocation			Performance(%)							
	Market Value (\$)	%	Policy(%)	1 Quarter	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Total Fund	15,157,496,576	100.0	100.0	-16.4	-11.0	-8.4	2.6	4.0	7.1	7.9	04/01/1986
Performance Benchmark				-11.6	-5.8	-1.5	4.4	5.0	7.7	8.2	
Total Equity	7,062,416,326	46.6	55.7	-30.0	-23.7	-20.9	-2.1	1.1	6.2	1.0	07/01/2015
Total Equity Performance Benchmark				-22.0	-14.8	-11.7	1.7	3.5	7.5	3.7	
Fixed Income	2,453,375,687	16.2	15.0	-0.6	1.6	4.1	3.5	3.4	4.3	5.4	07/01/1992
Performance Benchmark				1.3	3.9	7.2	4.4	3.4	4.0	5.6	
Opportunistic/Alternatives	916,210,051	6.0	5.3	-7.9	-6.6	-4.8	-2.1	-0.4		2.6	05/01/2011
Custom Alternatives Benchmark				-7.2	-5.4	-4.2	0.1	-0.6		1.0	
Real Assets	2,184,426,855	14.4	11.9	2.7	5.7	7.1	7.8	8.1		8.7	07/01/2013
Total Real Assets Benchmark				1.2	3.3	4.6	5.5	6.9		8.1	
Real Estate	1,348,842,860	8.9		1.1	2.4	3.6	6.8	8.2	9.9	8.8	12/01/1998
NFI-ODCE (Net)				1.3	3.2	4.4	6.1	8.0	10.2	9.0	
Timber	301,801,945	2.0		0.8	11.4	9.0	5.1	4.5	3.9	7.2	06/01/1998
Timberland Property Benchmark				0.7	2.6	2.7	2.1	2.7	3.2		
Agriculture	205,252,216	1.4		0.6	2.5	3.4	3.4	4.9		5.6	09/01/2011
Agriculture Benchmark				1.6	3.2	4.7	4.3	4.7			
Infrastructure	328,529,835	2.2		13.4	18.4	25.5				19.1	07/01/2018
CPI + 5%				1.7	4.5	6.6				6.4	
Private Equity	2,437,509,248	16.1	12.0	2.9	9.9	13.1	15.7	14.3	14.4	12.4	03/01/1997
Private Equity Policy				9.6	16.5	33.5	16.8	13.4	15.7	10.8	
Cash	103,558,411	0.7	0.0								

*The Real Assets and Private Equity market values, returns and their benchmark returns are shown on a one-quarter lag. Market values have been adjusted for current quarter cash flows.

*The inception of the Total Equity asset class was July 1, 2015. Performance prior to July 2015 represents the weighted average of the U.S. Equity and Global Equity asset class monthly returns.

For historical performance of the U.S. Equity and Global Equity asset classes please see page 153 of this report.

*The inception date above for infrastructure reflects the inception date for the calculation and reporting of time-weighted returns. The Infrastructure program began in July 2014 and the full history of Infrastructure returns are included in Total Real Assets and Total Fund performance.

*Market values and allocation percentages may not add to the sum total due to rounding.

As of March 31, 2020

Asset Allocation & Performance

	Allocation		Performance(%)								Inception Date
	Market Value (\$)	%	1 Quarter	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	Since Inception		
Total Fund	15,157,496,576	100.0	-16.4 (97)	-11.0 (93)	-8.4 (90)	2.6 (53)	4.0 (31)	7.1 (11)	7.9 (5)	04/01/1986	
Performance Benchmark			-11.6 (39)	-5.8 (29)	-1.5 (16)	4.4 (13)	5.0 (6)	7.7 (3)	8.2 (1)		
Total Equity	7,062,416,326	46.6	-30.0 (91)	-23.7 (89)	-20.9 (86)	-2.1 (75)	1.1 (68)	6.2 (55)	1.0 (69)	07/01/2015	
Total Equity Performance Benchmark			-22.0 (60)	-14.8 (51)	-11.7 (50)	1.7 (42)	3.5 (37)	7.5 (31)	3.7 (36)		
Jacobs Levy 130/30	523,591,795	3.5	-23.2 (45)	-15.5 (39)	-13.4 (45)	2.8 (38)	8.0 (12)	12.5 (6)	7.9 (17)	01/01/2008	
Russell 3000 Index			-20.9 (35)	-12.7 (28)	-9.1 (30)	4.0 (30)	5.8 (24)	10.1 (25)	6.8 (31)		
Allianz Structured Alpha U.S. 250	100,344,400	0.7	-49.4 (100)	-43.1 (99)	-40.3 (99)	-8.9 (89)	-1.3 (79)	7.4 (61)	10.8 (52)	05/01/2009	
S&P 500 Index			-19.6 (26)	-10.8 (19)	-7.0 (21)	5.1 (23)	6.7 (18)	10.5 (21)	12.8 (23)		
Allianz Structured Alpha Global 500	206,180,236	1.4	-77.8 (100)	-75.2 (100)	-74.1 (100)	-32.0 (100)			-17.9 (100)	10/01/2015	
MSCI AC World IMI (Net)			-22.4 (63)	-15.6 (57)	-12.7 (57)	0.8 (52)			4.9 (45)		
Allianz Structured Alpha Global 350	195,907,579	1.3	-60.0 (100)	-55.7 (100)	-53.8 (100)	-17.7 (100)			-13.7 (99)	12/01/2016	
MSCI AC World IMI (Net)			-22.4 (63)	-15.6 (57)	-12.7 (57)	0.8 (52)			3.3 (50)		
Kennedy Capital Management	372,575,563	2.5	-35.4 (55)	-30.1 (51)	-28.6 (48)	-10.4 (61)	-3.3 (58)	5.7 (38)	10.2 (9)	01/01/1994	
Russell 2000 Value Index			-35.7 (58)	-30.6 (54)	-29.6 (56)	-9.5 (50)	-2.4 (39)	4.8 (66)	7.8 (93)		
Stephens	341,262,023	2.3	-21.1 (31)	-21.0 (56)	-15.7 (45)	4.7 (37)	4.2 (43)	9.7 (48)	7.8 (45)	08/01/2006	
Russell 2000 Growth Index			-25.8 (66)	-20.8 (51)	-18.6 (62)	0.1 (70)	1.7 (70)	8.9 (65)	7.0 (60)		
Voya Absolute Return	445,940,404	2.9	-25.0 (78)	-18.2 (74)	-15.1 (71)	-0.7 (66)	2.7 (47)	8.7 (19)	7.7 (25)	10/01/2008	
Performance Benchmark			-21.4 (54)	-14.3 (47)	-11.3 (47)	1.5 (44)	3.9 (33)	9.0 (16)	8.2 (21)		
Allianz (Nicholas Applegate)	568,294,665	3.7	-11.7 (4)	-4.9 (7)	0.4 (6)	8.5 (14)	6.3 (19)	9.3 (40)	9.3 (14)	12/01/1998	
Performance Benchmark			-13.6 (8)	-7.1 (11)	-3.5 (13)	4.8 (25)	4.7 (34)	7.9 (56)	7.0 (50)		
Pershing Square International	81,677,549	0.5	2.7 (1)	8.6 (1)	14.3 (1)	13.8 (3)	1.0 (61)	8.3 (51)	9.4 (15)	07/01/2008	
Dow Jones U.S. Total Stock Market Index			-21.0 (35)	-12.8 (29)	-9.3 (31)	3.9 (30)	5.7 (25)	10.1 (25)	8.2 (29)		
Pershing Square Holdings	129,825,071	0.9	-4.6 (1)	5.2 (1)	8.0 (1)	7.1 (17)	-6.7 (98)		1.3 (97)	01/01/2013	
Dow Jones U.S. Total Stock Market Index			-21.0 (35)	-12.8 (29)	-9.3 (31)	3.9 (30)	5.7 (25)		10.2 (24)		
Triam Partners	56,427,288	0.4	-22.6	-15.6	-12.6	0.0			2.8	11/01/2015	
S&P 500 Index			-19.6	-10.8	-7.0	5.1			7.2		
Triam Co-Investments	55,941,861	0.4	-26.8	-14.5	-9.9	-3.0			-2.6	01/01/2017	
S&P 500 Index			-19.6	-10.8	-7.0	5.1			6.6		
SSgA Global Index	751,537,090	5.0	-22.3 (62)	-15.3 (55)	-12.3 (55)	1.1 (48)	2.8 (45)	6.2 (54)	4.2 (55)	04/01/2008	
MSCI AC World IMI (Net)			-22.4 (63)	-15.6 (57)	-12.7 (57)	0.8 (52)	2.4 (51)	5.8 (63)	3.9 (62)		

As of March 31, 2020

Asset Allocation & Performance

	Allocation		Performance(%)							
	Market Value (\$)	%	1 Quarter	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
BlackRock MSCI ACWI IMI Fund	269,772,301	1.8	-22.3 (62)	-15.3 (55)	-12.7 (57)	0.9 (50)	2.7 (47)		5.2 (55)	07/01/2011
MSCI AC World IMI (Net)			-22.4 (63)	-15.6 (57)	-12.7 (57)	0.8 (52)	2.4 (51)		4.9 (61)	
Wellington Global Perspectives	388,354,798	2.6	-31.9 (94)	-27.2 (95)	-24.7 (93)	-5.1 (87)	-0.9 (84)	6.4 (52)	9.5 (32)	07/01/2009
Performance Benchmark			-30.2 (91)	-24.3 (90)	-23.1 (91)	-4.5 (85)	-0.5 (82)	5.0 (77)	7.5 (69)	
T. Rowe Price Global Equity	847,210,043	5.6	-15.2 (15)	-5.7 (7)	-2.7 (14)	10.1 (6)	9.9 (4)	10.5 (8)	11.3 (8)	09/01/2009
MSCI AC World Index (Net)			-21.4 (54)	-14.3 (47)	-11.3 (47)	1.5 (44)	2.8 (45)	5.9 (62)	6.8 (60)	
MSCI AC World Index Growth (net)			-15.7 (16)	-6.8 (12)	-2.3 (13)	7.0 (16)	6.1 (18)	8.2 (23)	9.2 (23)	
Lazard	463,982,991	3.1	-23.3 (69)	-17.3 (68)	-14.6 (68)	0.5 (55)	1.4 (64)	5.4 (72)	6.5 (66)	09/01/2009
MSCI AC World Index (Net)			-21.4 (54)	-14.3 (47)	-11.3 (47)	1.5 (44)	2.8 (45)	5.9 (62)	6.8 (60)	
D.E. Shaw	584,634,679	3.9	-22.0 (59)	-15.3 (54)	-13.4 (60)	1.5 (44)	3.8 (34)	7.7 (29)	8.5 (33)	09/01/2009
MSCI World Index (Net)			-21.1 (50)	-13.8 (42)	-10.4 (43)	1.9 (40)	3.2 (40)	6.6 (48)	7.3 (52)	
GMO Global All Country Equity	343,014,668	2.3	-24.2 (73)	-16.6 (62)	-14.3 (66)	-1.1 (68)	0.8 (71)		-0.2 (78)	07/01/2014
MSCI AC World Index (Net)			-21.4 (54)	-14.3 (47)	-11.3 (47)	1.5 (44)	2.8 (45)		2.5 (47)	
MSCI AC World Index Value (Net)			-27.1 (84)	-21.8 (84)	-20.0 (85)	-4.0 (83)	-0.5 (82)		-1.0 (86)	
Harris Global Equity	335,871,249	2.2	-31.4 (93)	-24.1 (90)	-20.5 (86)	-6.1 (89)	-1.0 (84)		-0.8 (86)	06/01/2014
MSCI World Index (Net)			-21.1 (50)	-13.8 (42)	-10.4 (43)	1.9 (40)	3.2 (40)		3.3 (43)	
MSCI World Value (Net)			-27.0 (84)	-21.2 (83)	-19.3 (83)	-3.8 (83)	-0.2 (81)		-0.3 (82)	
Fixed Income	2,453,375,687	16.2	-0.6 (60)	1.6 (64)	4.1 (68)	3.5 (58)	3.4 (31)	4.3 (46)	5.4	07/01/1992
Performance Benchmark			1.3 (36)	3.9 (29)	7.2 (22)	4.4 (24)	3.4 (31)	4.0 (60)	5.6	
BlackRock	403,263,048	2.7	1.6 (23)	4.1 (19)	7.2 (20)	4.4 (21)	3.3 (25)	4.3 (38)	4.6 (35)	10/01/2003
Performance Benchmark			1.3 (27)	3.9 (22)	7.2 (20)	4.4 (22)	3.4 (22)	4.0 (45)	4.4 (42)	
Loomis Sayles	419,663,725	2.8	-3.8 (70)	-1.1 (72)	1.7 (70)	3.4 (44)	3.4 (21)	6.0 (13)	7.6 (7)	09/01/2008
Performance Benchmark			-2.4 (65)	0.6 (64)	3.8 (51)	3.7 (37)	3.3 (22)	4.7 (31)	5.4 (28)	
Putnam	355,650,000	2.3	-6.8 (46)	-3.5 (38)	-1.8 (36)	1.8 (23)	1.6 (26)	2.0	2.6	08/01/2008
LIBOR			0.5 (13)	1.7 (19)	2.4 (24)	2.0 (22)	1.4 (28)	0.9	1.0	
SSgA Aggregate Bond Index	287,523,193	1.9	3.0 (11)	5.6 (9)	8.8 (11)	4.8 (14)	3.3 (22)		3.7 (50)	06/01/2010
Barclays Aggregate Index			3.1 (10)	5.7 (9)	8.9 (11)	4.8 (14)	3.4 (22)		3.8 (50)	
Wellington Global Total Return	343,009,462	2.3	-0.2 (15)	0.8 (21)	2.5 (23)	3.7 (15)	2.2 (24)		2.0 (29)	05/01/2014
BofA Merrill Lynch 3 Month US T-Bill			0.6 (13)	1.6 (19)	2.3 (24)	1.8 (23)	1.2 (35)		1.0 (56)	
Reams Core Plus Bond Fund	375,234,651	2.5	3.3 (9)	5.6 (9)	8.9 (11)	5.1 (12)	3.9 (12)		3.6 (22)	05/01/2014
Barclays Aggregate Index			3.1 (10)	5.7 (9)	8.9 (11)	4.8 (14)	3.4 (22)		3.7 (21)	
BRS Recycling Tax Credit	192,000,000	1.3								
BRS Recycling Tax Credit Phase 2	77,031,608	0.5								

As of March 31, 2020

Asset Allocation & Performance

	Allocation		Performance(%)							Inception Date
	Market Value (\$)	%	1 Quarter	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	
Opportunistic/Alternatives	916,210,051	6.0	-7.9	-6.6	-4.8	-2.1	-0.4		2.6	05/01/2011
Custom Alternatives Benchmark			-7.2	-5.4	-4.2	0.1	-0.6		1.0	
Anchorage	68,308,966	0.5	-8.3	-11.7	-9.3	-2.0	-0.2		3.6	05/01/2011
Credit Suisse Event Driven			-15.8	-15.2	-13.2	-3.2	-2.5		0.1	
York	37,303,676	0.2	-24.4	-35.8	-34.5	-11.1	-7.6		-1.4	05/01/2011
Credit Suisse Event Driven			-15.8	-15.2	-13.2	-3.2	-2.5		0.1	
Capula	87,149,107	0.6	3.0	7.5	9.3	6.0	6.5		6.3	05/01/2011
HFRI Macro (Total) Index			-1.3	0.2	2.7	1.0	-0.1		0.2	
Graham	52,722,120	0.3	-16.3	-12.7	-6.6	-4.0	-2.8		0.4	05/01/2011
HFRI Macro (Total) Index			-1.3	0.2	2.7	1.0	-0.1		0.2	
Circumference Group Core Value	27,005,134	0.2	-6.0	-4.8	-6.2	5.5			6.4	08/01/2015
Russell 2000 Index			-30.6	-25.5	-24.0	-4.6			-0.1	
Aeolus Keystone Fund	281,039,330	1.9	1.1	6.4	7.1	-6.0			-1.2	12/01/2015
Citigroup 3 Month T-Bill			0.4	1.4	2.0	1.7			1.3	
Eurekahedge ILS Advisers Index			0.3	2.3	0.8	-3.1			-0.8	
Nephila Rubik Holdings	44,349,061	0.3	-0.1	0.9	3.1	-4.5			-3.1	06/01/2016
Citigroup 3 Month T-Bill			0.4	1.4	2.0	1.7			1.4	
Eurekahedge ILS Advisers Index			0.3	2.3	0.8	-3.1			-1.3	
Parametric Global Defensive Equity Fund	145,196,940	1.0	-16.9	-12.4	-11.0				-1.1	05/01/2017
Performance Benchmark			-10.8	-6.4	-4.4				1.3	
MSCI AC World Index			-21.3	-14.0	-10.8				1.6	
Man Alternative Risk Premia	93,752,980	0.6	-4.9	-5.2	-3.1				-3.1	06/01/2018
SG Multi Alternative Risk Premia Index			-8.7	-7.7	-8.1				-4.3	
CFM ISD Fund 1.5x	79,382,736	0.5	-19.6	-21.7	-19.7				-11.6	07/01/2018
SG Multi Alternative Risk Premia Index			-8.7	-7.7	-8.1				-4.3	

As of March 31, 2020

Asset Allocation & Performance

	Allocation		Performance(%)							Inception Date
	Market Value (\$)	%	1 Quarter	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	
Real Assets	2,184,426,855	14.4	2.7	5.7	7.1	7.8	8.1		8.7	07/01/2013
Total Real Assets Benchmark			1.2	3.3	4.6	5.5	6.9		8.1	
Real Estate	1,348,842,860	8.9	1.1	2.4	3.6	6.8	8.2	9.9	8.8	12/01/1998
NFI-ODCE (Net)			1.3	3.2	4.4	6.1	8.0	10.2	9.0	
Timber	301,801,945	2.0	0.8	11.4	9.0	5.1	4.5	3.9	7.2	06/01/1998
Timberland Property Benchmark			0.7	2.6	2.7	2.1	2.7	3.2		
BTG Timber Separate Account	118,871,316	0.8								
BTG U.S. Timberland Fund, L.P.	182,930,629	1.2								
Agriculture	205,252,216	1.4	0.6	2.5	3.4	3.4	4.9		5.6	09/01/2011
Agriculture Benchmark			1.6	3.2	4.7	4.3	4.7			
HFMS Farmland	151,082,811	1.0	0.7	2.7	3.6	3.2	4.9		5.6	09/01/2011
HFMS custom NCREIF Farmland Index			1.1	3.1	4.6	3.6	4.0			
UBS Agrivest Core Farmland Fund	54,169,405	0.4	0.5	2.1	2.7	3.8			4.6	07/01/2015
UBS Agrivest custom NCREIF Farmland Index			1.0	3.1	4.8	5.0			5.9	
Infrastructure	328,529,835	2.2	13.4	18.4	25.5				19.1	07/01/2018
CPI + 5%			1.7	4.5	6.6				6.4	
Private Equity	2,437,509,248	16.1	2.9	9.9	13.1	15.7	14.3	14.4	12.5	04/01/1997
Private Equity Policy			9.6	16.5	33.5	16.8	13.4	15.7	10.9	
Cash	103,558,411	0.7								

*The Real Assets and Private Equity market values, returns and their benchmark returns are shown on a one-quarter lag. Market values have been adjusted for current quarter cash flows.

*The inception of the Total Equity asset class was July 1, 2015. Performance prior to July 2015 represents the weighted average of the U.S. Equity and Global Equity asset class monthly returns. For historical performance of the U.S. Equity and Global Equity asset classes please see page 153 of this report.

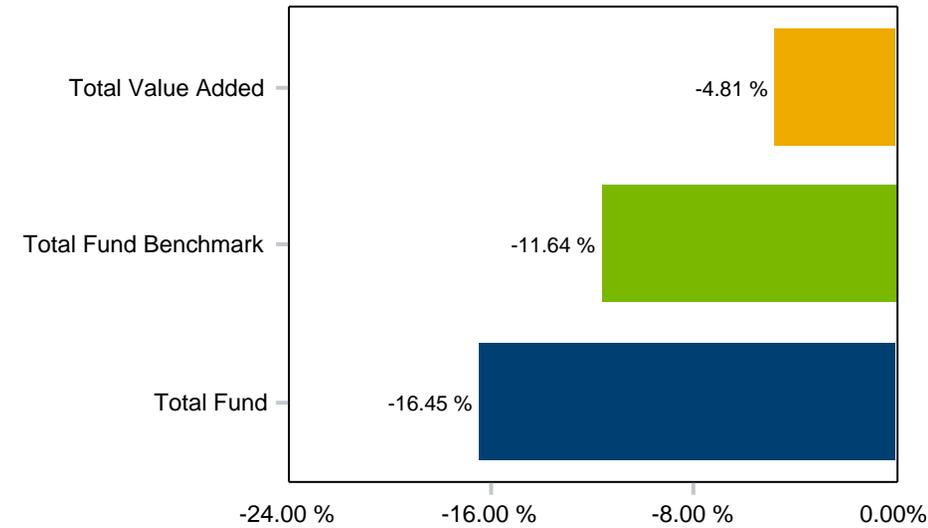
*The inception date above for infrastructure reflects the inception date for the calculation and reporting of time-weighted returns. The Infrastructure program began in July 2014 and the full history of Infrastructure returns are included in Total Real Assets and Total Fund performance.

*The BRS Recycling Tax Credit represents an annual income stream of \$16 million dollars over the next 14 years, which ATRS purchased for approximately \$162 million. This represents an approximate 9.9% yield for the 2017 fiscal year. The value shown above represents the year-end market value in accordance with GASB Statement 72, representing the 14 years of annual income, and has been incorporated into Total Fixed Income and Total Fund performance.

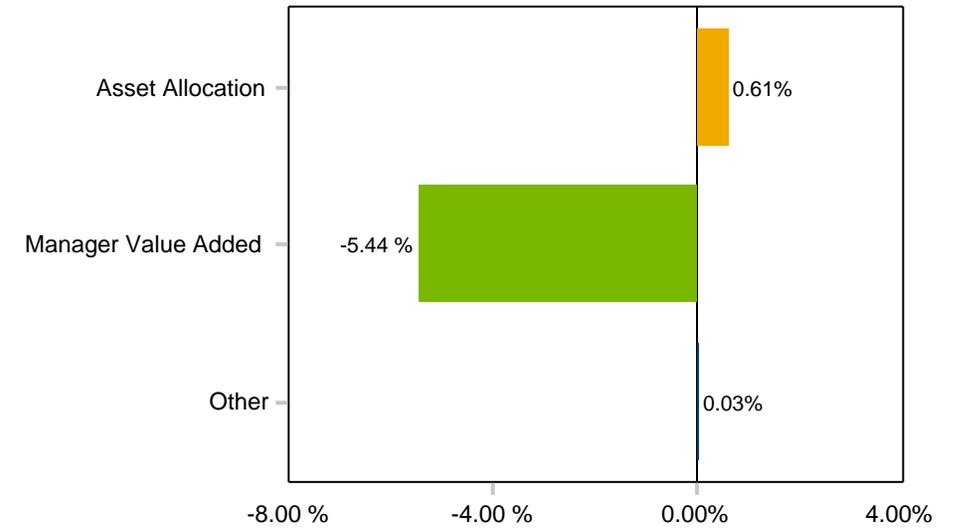
*ATRS made a total commitment of \$100 million to the Triam Co-Investments Fund. As of 3/31/2020, there was an unfunded commitment value equal to 37,016,515.

Total Fund Attribution

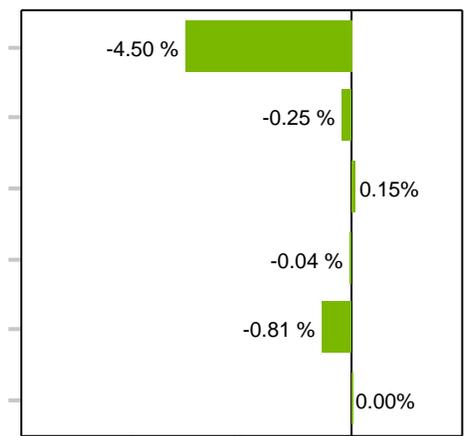
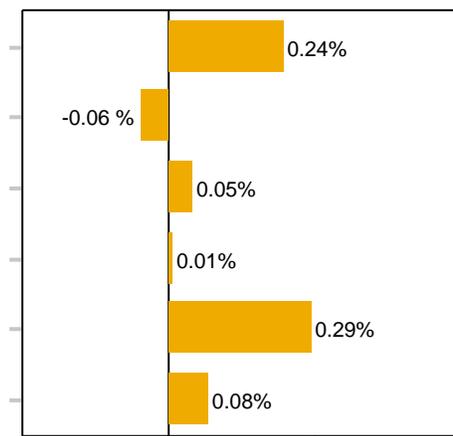
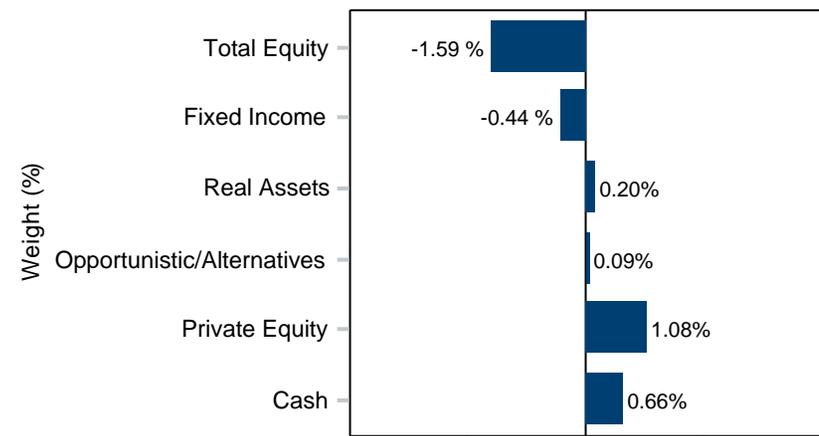
Total Fund Performance



Total Value Added: -4.81%



Total Asset Allocation: 0.61% Total Manager Value Added: -5.44%



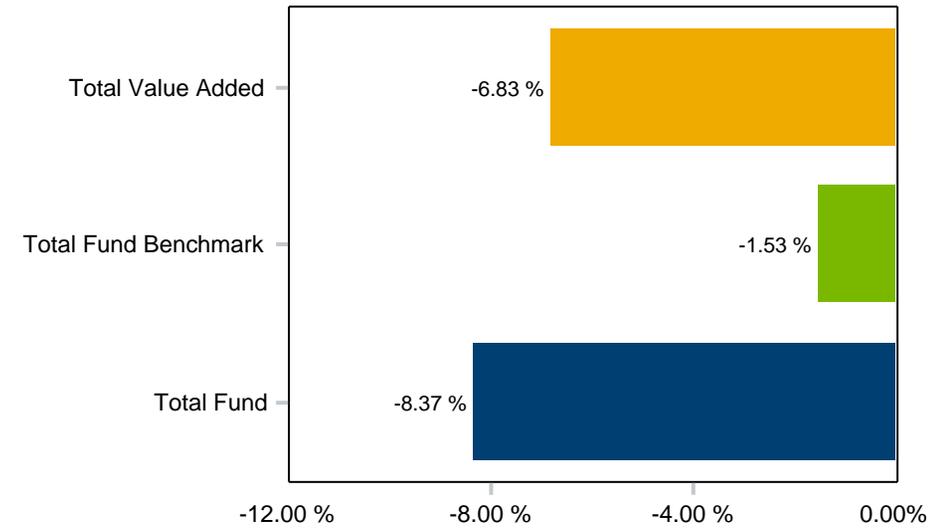
Average Active Weight

Asset Allocation Value Added

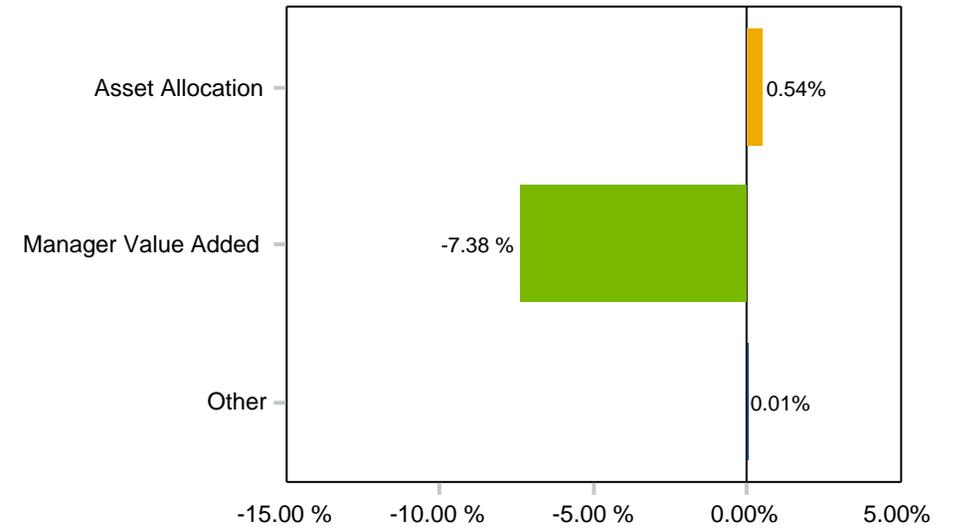
Manager Value Added

Total Fund Attribution

Total Fund Performance

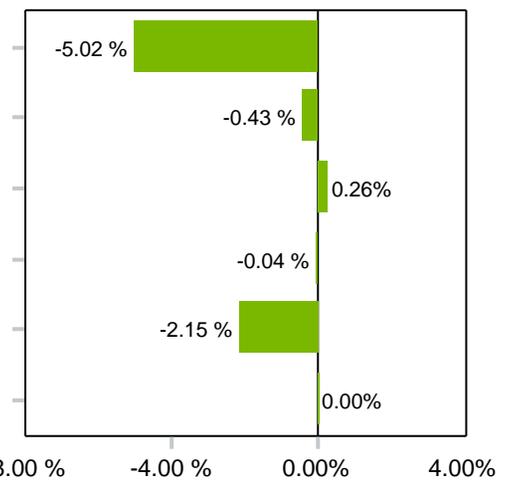
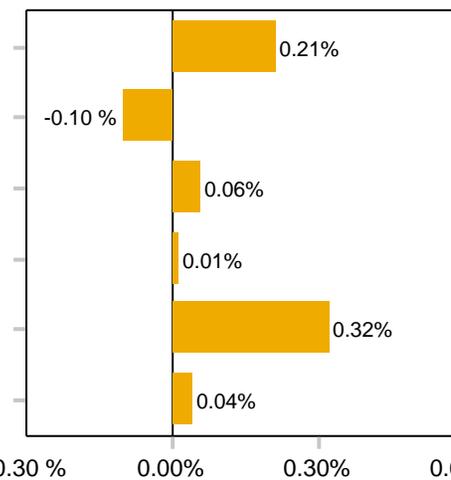
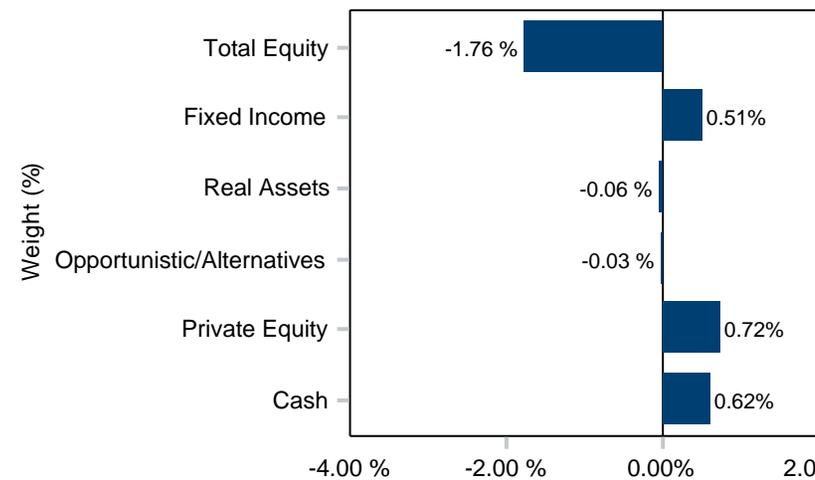


Total Value Added: -6.83 %



Total Asset Allocation: 0.54%

Total Manager Value Added: -7.38 %



Average Active Weight

Asset Allocation Value Added

Manager Value Added

As of March 31, 2020

Calendar Year Performance

	Performance(%)									
	Fiscal Year 2019	Fiscal Year 2018	Fiscal Year 2017	Fiscal Year 2016	Fiscal Year 2015	Fiscal Year 2014	Fiscal Year 2013	Fiscal Year 2012	Fiscal Year 2011	Fiscal Year 2010
Total Fund	5.3 (68)	11.7 (1)	16.1 (1)	-0.5 (71)	5.2 (1)	19.0 (3)	14.3 (3)	-1.0 (100)	22.4 (30)	13.5 (39)
Performance Benchmark	7.0 (16)	9.2 (18)	13.2 (27)	1.8 (10)	5.2 (1)	18.3 (10)	13.5 (9)	2.1 (25)	21.9 (42)	13.1 (58)
Total Equity	4.1 (57)	13.4 (28)	22.1 (26)	-4.8 (59)	4.1 (31)	25.5 (34)	20.3 (34)	-6.3 (53)	31.5 (42)	17.1 (22)
Total Equity Performance Benchmark	5.9 (46)	12.2 (34)	19.0 (47)	-1.5 (38)	3.6 (35)	23.9 (46)	18.9 (48)	-1.8 (25)	31.2 (46)	13.6 (38)
Jacobs Levy 130/30	5.5 (49)	19.9 (21)	24.6 (16)	8.3 (4)	14.2 (6)	24.3 (52)	22.4 (48)	1.4 (41)	43.2 (15)	15.2 (57)
Russell 3000 Index	9.0 (31)	14.8 (44)	18.5 (54)	2.1 (22)	7.3 (43)	25.2 (43)	21.5 (54)	3.8 (24)	32.4 (55)	15.7 (54)
Allianz Structured Alpha U.S. 250	10.9 (20)	15.7 (38)	20.4 (40)	6.0 (7)	10.7 (20)	28.1 (20)	23.7 (40)	3.7 (25)	42.6 (16)	17.0 (48)
S&P 500 Index	10.4 (23)	14.4 (46)	17.9 (58)	4.0 (12)	7.4 (41)	24.6 (49)	20.6 (60)	5.4 (14)	30.7 (66)	14.4 (63)
Allianz Structured Alpha Global 500	6.1 (44)	13.7 (26)	23.8 (17)							
MSCI AC World IMI (Net)	4.6 (54)	11.1 (42)	19.0 (47)							
Daruma Asset Management	-14.6 (100)	11.7 (86)	20.7 (68)	-8.7 (82)	-2.4 (98)	21.5 (81)	32.9 (5)	-13.6 (100)	46.3 (8)	28.6 (11)
Russell 2000 Index	-3.3 (50)	17.6 (38)	24.6 (30)	-6.7 (64)	6.5 (55)	23.6 (61)	24.2 (58)	-2.1 (45)	37.4 (71)	21.5 (54)
Kennedy Capital Management	-7.8 (67)	12.2 (51)	24.2 (30)	-4.9 (62)	2.7 (51)	29.4 (9)	34.4 (6)	-4.2 (67)	33.9 (52)	34.5 (10)
Russell 2000 Value Index	-6.2 (55)	13.1 (41)	24.9 (24)	-2.6 (41)	0.8 (67)	22.5 (70)	24.8 (58)	-1.4 (34)	31.4 (71)	25.1 (48)
Stephens	8.4 (30)	29.5 (22)	18.3 (81)	-7.8 (41)	5.1 (89)	18.4 (80)	18.7 (83)	3.0 (8)	46.7 (32)	18.9 (54)
Russell 2000 Growth Index	-0.5 (72)	21.9 (57)	24.4 (41)	-10.8 (57)	12.3 (34)	24.7 (40)	23.7 (53)	-2.7 (39)	43.5 (55)	18.0 (58)
Voya Absolute Return	4.0 (58)	9.9 (52)	20.3 (37)	1.9 (21)	7.8 (12)	26.9 (23)	19.7 (40)	6.0 (6)	30.5 (51)	14.9 (31)
Performance Benchmark	5.7 (46)	10.7 (45)	18.8 (49)	1.1 (24)	7.4 (13)	24.6 (40)	20.6 (33)	5.4 (6)	30.7 (49)	14.4 (34)
Allianz (Nicholas Applegate)	12.5 (14)	16.4 (34)	15.9 (74)	-7.1 (79)	4.4 (68)	23.1 (66)	19.4 (70)	-2.4 (65)	29.7 (72)	18.6 (40)
Performance Benchmark	7.8 (38)	12.0 (63)	16.8 (68)	-4.7 (66)	3.5 (74)	24.4 (51)	18.6 (75)	-3.2 (72)	22.5 (96)	22.6 (23)
Pershing Square International	30.7 (1)	2.8 (97)	8.2 (95)	-33.2 (100)	12.9 (10)	29.1 (15)	17.3 (81)	0.8 (45)	26.8 (87)	31.6 (6)
Dow Jones U.S. Total Stock Market Index	8.9 (31)	14.8 (44)	18.5 (54)	2.0 (23)	7.2 (44)	25.0 (45)	21.5 (54)	4.0 (23)	32.4 (54)	16.1 (51)
Pershing Square Holdings	21.7 (1)	-2.7 (100)	8.3 (95)	-49.1 (100)	15.2 (5)	30.4 (10)				
Dow Jones U.S. Total Stock Market Index	8.9 (31)	14.8 (44)	18.5 (54)	2.0 (23)	7.2 (44)	25.0 (45)				
Triam Partners	13.1	2.8	9.5							
S&P 500 Index	10.4	14.4	17.9							
SSgA Global Index	4.8 (51)	11.4 (40)	19.4 (43)	-3.4 (49)	1.2 (56)	23.8 (47)	17.5 (58)	-6.6 (55)	31.4 (43)	13.4 (39)
MSCI AC World IMI (Net)	4.6 (54)	11.1 (42)	19.0 (47)	-3.9 (53)	0.8 (59)	23.4 (50)	17.1 (60)	-6.9 (57)	31.0 (47)	13.1 (41)

As of March 31, 2020

Calendar Year Performance

	Performance(%)									
	Fiscal Year 2019	Fiscal Year 2018	Fiscal Year 2017	Fiscal Year 2016	Fiscal Year 2015	Fiscal Year 2014	Fiscal Year 2013	Fiscal Year 2012	Fiscal Year 2011	Fiscal Year 2010
BlackRock MSCI ACWI IMI Fund	4.5 (54)	11.4 (40)	19.1 (45)	-3.4 (49)	1.2 (56)	23.9 (46)	17.7 (57)	-6.6 (55)		
MSCI AC World IMI (Net)	4.6 (54)	11.1 (42)	19.0 (47)	-3.9 (53)	0.8 (59)	23.4 (50)	17.1 (60)	-6.9 (57)		
Wellington Global Perspectives	-3.8 (90)	15.7 (19)	24.8 (14)	-4.2 (54)	-1.4 (73)	33.1 (4)	30.7 (5)	-9.1 (71)	45.8 (3)	20.1 (16)
Performance Benchmark	-3.0 (87)	13.8 (26)	20.5 (36)	-4.7 (58)	1.5 (54)	26.0 (29)	20.6 (33)	-9.9 (76)	35.8 (19)	20.6 (14)
T. Rowe Price Global Equity	8.0 (31)	21.3 (6)	28.8 (6)	-0.6 (32)	7.5 (13)	32.0 (5)	18.2 (53)	-7.7 (62)	28.2 (68)	
MSCI AC World Index (Net)	5.7 (46)	10.7 (45)	18.8 (49)	-3.7 (51)	0.7 (59)	22.9 (55)	16.6 (64)	-6.5 (55)	30.1 (54)	
MSCI AC World Index Growth (net)	7.2 (37)	16.1 (17)	18.6 (50)	-2.7 (45)	4.9 (25)	23.1 (53)	15.4 (71)	-5.3 (47)	32.0 (37)	
Lazard	2.7 (67)	9.8 (52)	26.2 (11)	-10.7 (89)	7.3 (13)	23.3 (50)	15.8 (70)	-11.4 (82)	29.6 (58)	
MSCI AC World Index (Net)	5.7 (46)	10.7 (45)	18.8 (49)	-3.7 (51)	0.7 (59)	22.9 (55)	16.6 (64)	-6.5 (55)	30.1 (54)	
D.E. Shaw	2.6 (68)	15.8 (18)	19.2 (45)	0.0 (29)	3.9 (33)	25.6 (33)	19.3 (45)	-1.9 (26)	31.1 (47)	
MSCI World Index (Net)	6.3 (43)	11.1 (43)	18.2 (52)	-2.8 (46)	1.4 (55)	24.0 (45)	18.6 (49)	-5.0 (45)	30.5 (51)	
GMO Global All Country Equity	3.5	6.8	20.0	-6.5	-4.5					
MSCI AC World Index (Net)	5.7	10.7	18.8	-3.7	0.7					
MSCI AC World Index Value (Net)	4.3	5.4	19.0	-4.8	-3.4					
Harris Global Equity	-2.0	5.0	38.9	-12.8	0.7					
MSCI World Index (Net)	6.3	11.1	18.2	-2.8	1.4					
MSCI World Value (Net)	4.2	5.6	18.7	-3.7	-2.9					

As of March 31, 2020

Calendar Year Performance

	Performance(%)									
	Fiscal Year 2019	Fiscal Year 2018	Fiscal Year 2017	Fiscal Year 2016	Fiscal Year 2015	Fiscal Year 2014	Fiscal Year 2013	Fiscal Year 2012	Fiscal Year 2011	Fiscal Year 2010
Fixed Income	6.4 (68)	1.3 (18)	5.2 (6)	3.5 (85)	1.0 (63)	6.1 (46)	3.8 (13)	5.2 (95)	7.3 (35)	17.4 (22)
Performance Benchmark	8.1 (13)	-0.3 (82)	0.9 (62)	5.8 (30)	1.6 (39)	5.2 (75)	0.2 (60)	7.4 (80)	4.8 (87)	10.6 (90)
BlackRock	8.0 (27)	-0.3 (74)	0.3 (64)	6.0 (23)	2.4 (16)	5.2 (50)	0.3 (60)	8.0 (32)	6.3 (36)	13.7 (37)
Performance Benchmark	8.1 (26)	-0.3 (72)	0.9 (51)	5.8 (26)	1.6 (39)	5.2 (50)	0.2 (62)	7.4 (41)	4.8 (50)	10.6 (54)
Loomis Sayles	7.4 (40)	1.8 (25)	8.1 (16)	1.9 (72)	1.1 (59)	12.0 (11)	10.7 (7)	4.4 (75)	15.7 (10)	26.0 (6)
Performance Benchmark	8.2 (23)	0.5 (46)	4.0 (25)	5.0 (37)	1.0 (64)	6.8 (34)	2.8 (29)	8.4 (26)	7.8 (27)	15.5 (32)
Putnam	3.7 (32)	4.1 (36)	7.9 (29)	-3.6 (70)	-0.7 (53)	3.7 (71)	5.5 (29)	-1.8 (62)	4.6 (55)	16.9 (7)
LIBOR	2.6 (41)	1.5 (59)	0.8 (83)	0.4 (42)	0.2 (42)	0.3 (85)	0.4 (83)	0.4 (49)	0.4 (88)	0.4 (82)
SSgA Aggregate Bond Index	7.9 (30)	-0.4 (76)	-0.3 (80)	6.0 (23)	1.9 (28)	4.3 (62)	-0.6 (81)	7.4 (39)	3.9 (64)	
Barclays Aggregate Index	7.9 (30)	-0.4 (76)	-0.3 (82)	6.0 (23)	1.9 (29)	4.4 (61)	-0.7 (83)	7.5 (39)	3.9 (64)	
Wellington Global Total Return	5.3 (14)	5.1 (32)	-0.7 (85)	1.3 (32)	0.5 (38)					
BofA Merrill Lynch 3 Month US T-Bill	2.3 (45)	1.4 (60)	0.5 (83)	0.2 (42)	0.0 (45)					
Reams Core Plus Bond Fund	8.6	0.0	0.0	6.1	1.5					
Barclays Aggregate Index	7.9	-0.4	-0.3	6.0	1.9					
BRS Recycling Tax Credit										
BRS Recycling Tax Credit Phase 2										
Opportunistic/Alternatives	-0.2	0.6	6.8	-1.7	5.8	10.2	12.9	-1.0		
Custom Alternatives Benchmark	2.1	3.4	2.8	-3.7	1.7	6.3	7.1	-3.9		
Anchorage	1.4	6.2	5.9	-3.9	3.8	18.9	19.4	-1.0		
Credit Suisse Event Driven	1.9	3.8	9.3	-10.4	-2.0	14.1	14.5	-7.2		
York	-5.9	12.2	14.3	-12.9	-7.2	22.4	19.4	-0.8		
Credit Suisse Event Driven	1.9	3.8	9.3	-10.4	-2.0	14.1	14.5	-7.2		
Capula	6.3	3.8	7.8	6.1	8.9	7.9	4.0	3.4		
HFRI Macro (Total) Index	2.4	1.1	-2.4	1.8	4.2	1.5	-0.1	-2.8		
Graham	2.1	6.5	-3.2	-1.0	23.9	2.7	5.9	-8.3		
HFRI Macro (Total) Index	2.4	1.1	-2.4	1.8	4.2	1.5	-0.1	-2.8		
Circumference Group Core Value	2.7	15.9	14.0							
Russell 2000 Index	-3.3	17.6	24.6							
Aeolus Keystone Fund	-5.8	-17.9	11.2							
Citigroup 3 Month T-Bill	2.3	1.3	0.5							
Eurekahedge ILS Advisers Index	-5.5	-6.6	5.0							
Nephila Rubik Holdings	-6.9	-7.7	2.2							
Citigroup 3 Month T-Bill	2.3	1.3	0.5							
Eurekahedge ILS Advisers Index	-5.5	-6.6	5.0							
Parametric Global Defensive Equity Fund	3.9	5.8								
Performance Benchmark	4.4	6.0								
MSCI AC World Index	6.3	11.3								
Man Alternative Risk Premia	1.8									
SG Multi Alternative Risk Premia Index	0.4									

As of March 31, 2020

Calendar Year Performance

	Performance(%)									
	Fiscal Year 2019	Fiscal Year 2018	Fiscal Year 2017	Fiscal Year 2016	Fiscal Year 2015	Fiscal Year 2014	Fiscal Year 2013	Fiscal Year 2012	Fiscal Year 2011	Fiscal Year 2010
CFM ISD Fund 1.5x	2.8									
SG Multi Alternative Risk Premia Index	0.4									
Real Assets	5.6	9.4	7.5	9.5	11.7	9.0				
Total Real Assets Benchmark	5.7	6.2	6.6	10.0	11.5	11.4				
Real Estate	5.7	11.1	6.9	12.0	13.4	12.1	7.9	9.8	17.7	-11.4
NFI-ODCE (Net)	6.5	7.1	7.4	12.6	12.4	12.7	10.5	13.4	16.0	-9.6
Timber	-0.3	1.2	8.0	0.4	9.4	-1.1	6.8	-5.3	4.8	-3.0
Timberland Property Benchmark	0.1	2.6	3.7	2.5	10.5	7.7	6.9	-2.9	-0.4	-6.0
BTG Timber Separate Account										
BTG U.S. Timberland Fund, L.P.										
Agriculture	3.5	3.3	4.3	9.8	2.5	11.0	11.5			
Agriculture Benchmark	5.4	3.5	4.5	5.6	6.5	12.8	20.9			
HFMS Farmland	3.4	2.9	3.9	10.7	2.5	11.0	11.5			
HFMS custom NCREIF Farmland Index	4.9	2.0	4.0	4.8	6.5	12.8	20.9			
UBS Agrivest Core Farmland Fund	4.0	4.5	5.0	6.2						
UBS Agrivest custom NCREIF Farmland Index	6.2	5.0	5.5	8.4						
Infrastructure	14.6									
CPI + 5%	6.7									
Private Equity	12.8	22.3	16.7	7.7	11.9	20.6	12.5	12.5	16.0	4.5
Private Equity Policy	10.8	16.1	20.4	1.6	14.5	25.0	16.8	9.4	20.1	55.6
Cash	6.5	1.2	5.0	3.2						

*The Real Assets and Private Equity returns and their benchmark returns are shown on a one-quarter lag.

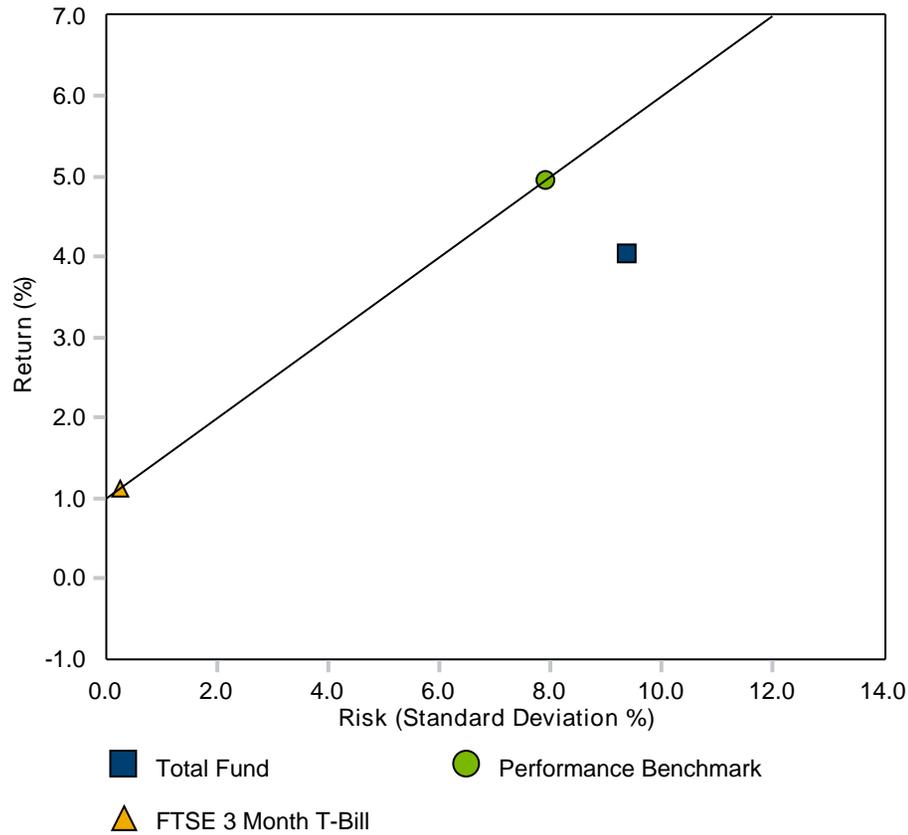
*The inception of the Total Equity asset class was July 1, 2015. Performance prior to July 2015 represents the weighted average of the U.S. Equity and Global Equity asset class monthly returns. For historical performance of the U.S. Equity and Global Equity asset classes please see page 153 of this report.

*The inception date above for infrastructure reflects the inception date for the calculation and reporting of time-weighted returns. The Infrastructure program began in July 2014 and the full history of Infrastructure returns are included in Total Real Assets and Total Fund performance.

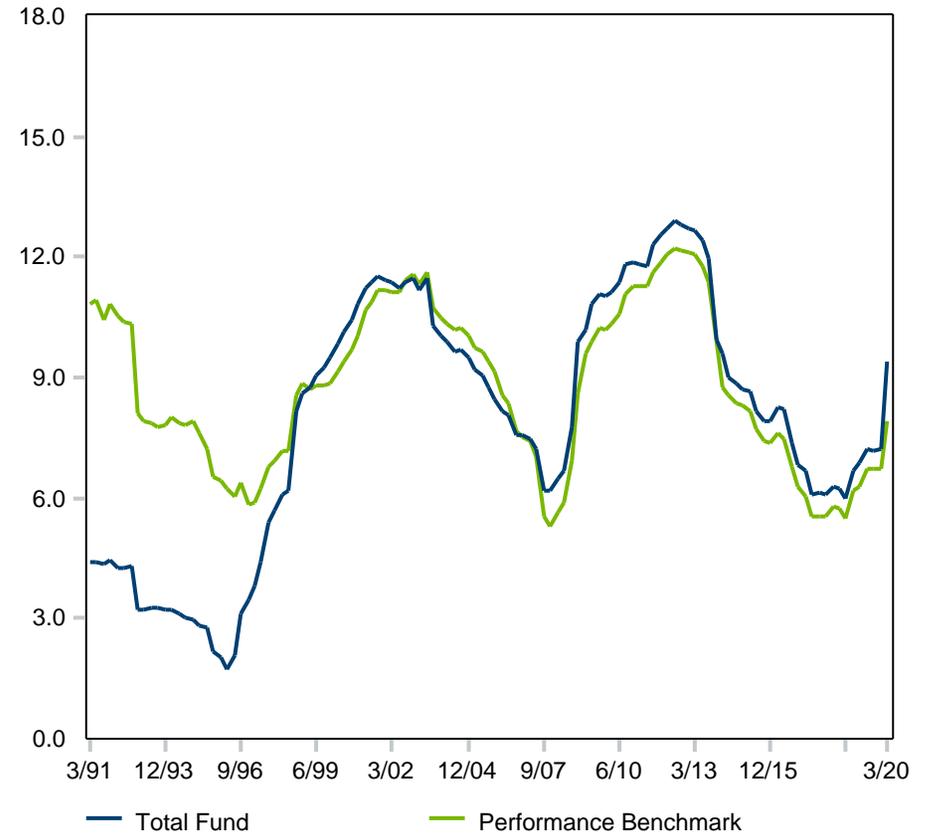
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Total Fund Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 5 Years Standard Deviation

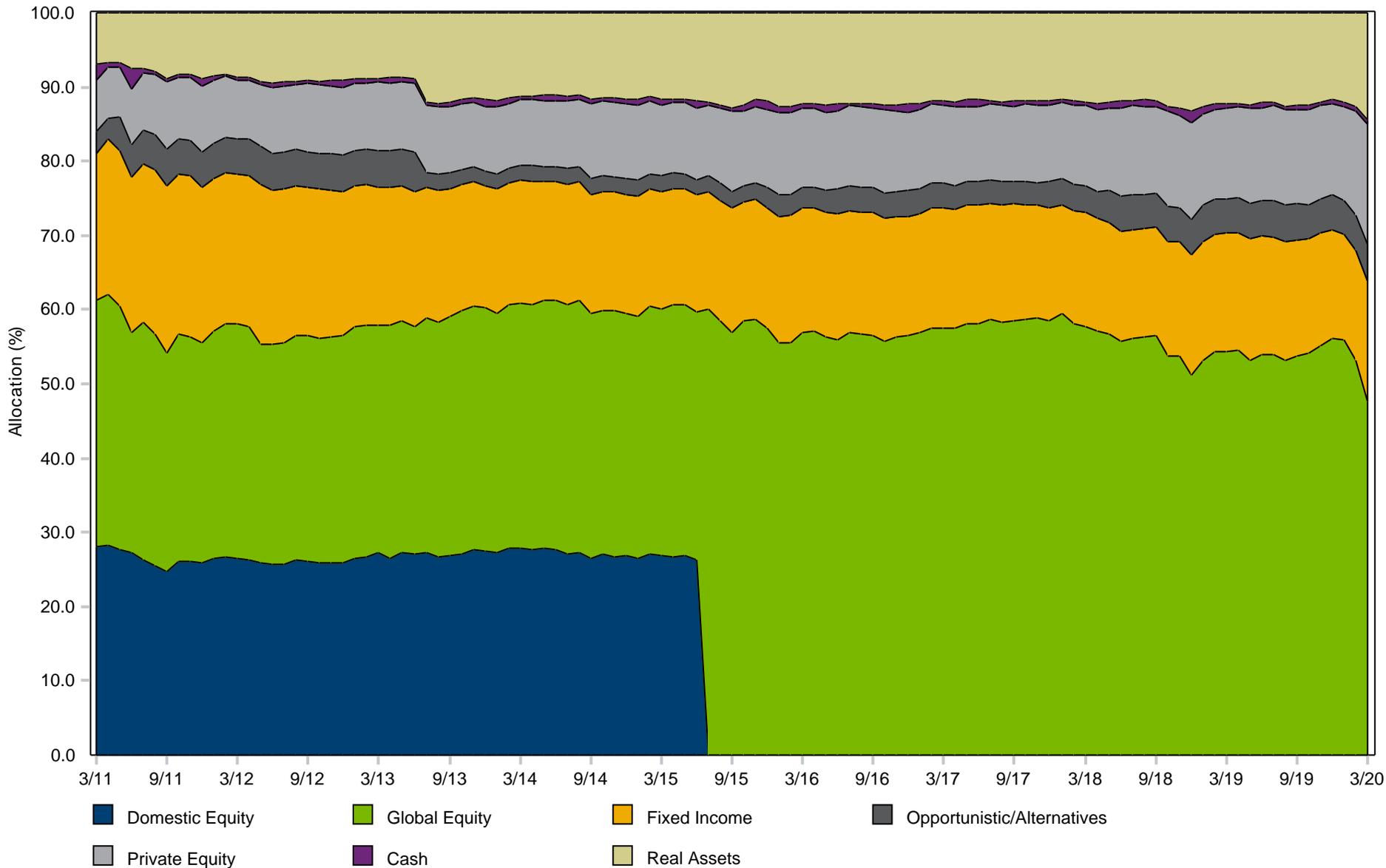


5 Years Historical Statistics

	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Total Fund	-0.75	2.64	-0.28	0.94	0.35	-1.50	1.15	4.04	9.39	0.97
Performance Benchmark	0.00	0.00	N/A	1.00	0.51	0.00	1.00	4.96	7.92	1.00
FTSE 3 Month T-Bill	-4.05	7.93	-0.51	0.00	N/A	1.13	0.00	1.12	0.25	-0.01

Historical Asset Allocation by Segment

Total Fund



Asset Allocation as of 3/312020	Values in \$1,000								
	Total Equity	U.S. Bond	Real Estate	Private Equity	Cash	Total	Percent of Total	Interim Policy	Long-Term Target
Jacobs Levy 130/30	\$523,591.8	--	--	--	--	\$523,591.8	3.45%		
Allianz Structured Alpha U.S. 250	\$100,344.4	--	--	--	--	\$100,344.4	0.66%		
Allianz Structured Alpha Global 500	\$206,180.2	--	--	--	--	\$206,180.2	1.36%		
Allianz Structured Alpha Global 350	\$195,907.6	--	--	--	--	\$195,907.6	1.29%		
Kennedy Capital Management Stephens	\$372,575.6	--	--	--	--	\$372,575.6	2.46%		
Voya Absolute Return	\$341,262.0	--	--	--	--	\$341,262.0	2.25%		
Allianz (Nicholas Applegate)	\$445,940.4	--	--	--	--	\$445,940.4	2.94%		
Pershing Square International	\$568,294.7	--	--	--	--	\$568,294.7	3.75%		
Pershing Square Holdings	\$81,677.5	--	--	--	--	\$81,677.5	0.54%		
SSgA Global Index	\$129,825.1	--	--	--	--	\$129,825.1	0.86%		
BlackRock MSCI ACWI IMI Fund	\$751,537.1	--	--	--	--	\$751,537.1	4.96%		
Wellington Global Perspectives	\$269,772.3	--	--	--	--	\$269,772.3	1.78%		
T. Rowe Price Global Equity	\$388,354.8	--	--	--	--	\$388,354.8	2.56%		
Lazard	\$847,210.0	--	--	--	--	\$847,210.0	5.59%		
D.E. Shaw	\$463,983.0	--	--	--	--	\$463,983.0	3.06%		
GMO Global All Country Equity	\$584,634.7	--	--	--	--	\$584,634.7	3.86%		
Harris Global Equity	\$343,014.7	--	--	--	--	\$343,014.7	2.26%		
Triam Partners	\$335,871.2	--	--	--	--	\$335,871.2	2.22%		
Triam Partners Co-Investments	\$56,427.3	--	--	--	--	\$56,427.3	0.37%		
Capital Guardian & Knight Vinke	\$55,941.9	--	--	--	--	\$55,941.9	0.37%		
	\$70.1	--	--	--	--	\$70.1	0.00%		
Total Equity						\$7,062,416.3	46.59%	55.75%	53.00%
BlackRock	--	\$403,263.0	--	--	--	\$403,263.0	2.66%		
Loomis Sayles	--	\$419,663.7	--	--	--	\$419,663.7	2.77%		
Putnam	--	\$355,650.0	--	--	--	\$355,650.0	2.35%		
SSgA Aggregate Bond Index	--	\$287,523.2	--	--	--	\$287,523.2	1.90%		
Wellington Global Total Return	--	\$343,009.5	--	--	--	\$343,009.5	2.26%		
Reams Core Plus Bond Fund	--	\$375,234.7	--	--	--	\$375,234.7	2.48%		
BRS Recycling Tax Credit	--	\$192,000.0	--	--	--	\$192,000.0	1.27%		
BRS Recycling Tax Credit Phase 2	--	\$77,031.6	--	--	--	\$77,031.6	0.51%		
Total Fixed Income						\$2,453,375.7	16.19%	15.00%	15.00%
Anchorage	--	--	--	\$68,309.0	--	\$68,309.0	0.45%		
Capula	--	--	--	\$87,149.1	--	\$87,149.1	0.57%		
Graham	--	--	--	\$52,722.1	--	\$52,722.1	0.35%		
York	--	--	--	\$37,303.7	--	\$37,303.7	0.25%		
Circumference Group Core Value	--	--	--	\$27,005.1	--	\$27,005.1	0.18%		
Aeolus Keystone Fund	--	--	--	\$281,039.3	--	\$281,039.3	1.85%		
Nephila Rubik Holdings	--	--	--	\$44,349.1	--	\$44,349.1	0.29%		
Parametric Global Defensive Equity	--	--	--	\$145,196.9	--	\$145,196.9	0.96%		
Man Alternative Risk Premia	--	--	--	\$93,753.0	--	\$93,753.0	0.62%		
CFM ISD Fund 1.5x	--	--	--	\$79,382.7	--	\$79,382.7	0.52%		
Total Opportunistic/Alternatives						\$916,210.1	6.04%	5.32%	5.00%
Real Estate			\$1,348,842.9			\$1,348,842.9	8.90%		
Timber			\$301,801.9			\$301,801.9	1.99%		
Agriculture			\$205,252.2			\$205,252.2	1.35%		
Infrastructure			\$328,529.8			\$328,529.8	2.17%		
Total Real Assets						\$2,184,426.9	14.41%	11.94%	15.00%
Total Private Equity				\$2,437,509.2		\$2,437,509.2	16.08%	12.00%	12.00%
Total Cash					\$103,558.4	\$103,558.4	0.68%	0.00%	0.00%
Total Fund	\$7,062,416.3	\$2,453,375.7	\$2,184,426.9	\$3,353,719.3	\$103,558.4	\$15,157,496.6	100.00%	100.00%	100.00%

*Note: The market values for the Real Assets and Private Equity investments shown above are lagged one quarter and adjusted for the current quarter's cash flows. Market values and allocation percentages may not add to the sum total due to rounding.

Asset Allocation as of 3/31/2020				Values in \$1,000			
	Real Estate	Percent of Real Estate	Percent of Total Fund		Real Estate	Percent of Real Estate	Percent of Total Fund
Almanac Realty Securities Fund V	\$134.6	0.01%	0.00%	LaSalle Income & Growth Fund VII	\$14,467.8	1.07%	0.10%
Almanac Realty Securities Fund VI	\$5,330.0	0.40%	0.04%	LaSalle Income & Growth Fund VIII	\$6,870.3	0.51%	0.05%
Almanac Realty Securities Fund VII	\$12,873.1	0.95%	0.08%	Lone Star Real Estate Fund IV	\$8,845.3	0.66%	0.06%
Almanac Realty Securities Fund VIII	\$3,177.8	0.24%	0.02%	Long Wharf Real Estate Partners V	\$25,236.2	1.87%	0.17%
American Center	\$44,677.7	3.31%	0.29%	Long Wharf Real Estate Partners VI	\$6,590.0	0.49%	0.04%
AR Insurance	\$2,258.7	0.17%	0.01%	Metropolitan RE Co-Investments	\$11,916.8	0.88%	0.08%
AR Teachers Retirement Building	\$5,201.9	0.39%	0.03%	Met Life Commercial Mtg Inc Fund	\$49,366.4	3.66%	0.33%
Blackstone Real Estate Partners VII	\$24,046.5	1.78%	0.16%	New Boston Fund VII	\$52.5	0.00%	0.00%
Blackstone RE Europe VI	\$3,238.2	0.24%	0.02%	O'Connor NAPP II	\$10,015.7	0.74%	0.07%
Carlyle Realty Partners VII	\$13,535.5	1.00%	0.09%	Olympus	\$355.4	0.03%	0.00%
Carlyle Realty VIII	\$6,352.9	0.47%	0.04%	PRISA	\$274,107.3	20.32%	1.81%
CBREI SP U.S. Opportunity V	\$9,772.4	0.72%	0.06%	Recoveries Land	\$70.0	0.01%	0.00%
CBREI SP VIII	\$23,498.9	1.74%	0.16%	Rockwood Capital RE Partners IX	\$7,968.5	0.59%	0.05%
Cerberus Institutional RE Partners III	\$14,931.4	1.11%	0.10%	Rockwood Capital RE XI	-\$287.2	-0.02%	0.00%
Chenal Retirement Village	\$1,900.0	0.14%	0.01%	Rose Law Firm	\$4,331.1	0.32%	0.03%
Calmwater	\$23,224.4	1.72%	0.15%	Texarkana DHS	\$1,640.8	0.12%	0.01%
Fletcher Properties	\$1,167.9	0.09%	0.01%	Torchlight Debt Opportunity Fund IV	\$4,991.9	0.37%	0.03%
FPA Core Plus IV	\$18,887.4	1.40%	0.12%	Torchlight Debt Opportunity Fund V	\$7,181.5	0.53%	0.05%
Harbert European Real Estate	\$21,027.6	1.56%	0.14%	Torchlight Debt Opportunity Fund VI	\$14,285.6	1.06%	0.09%
Heitman European Property IV	\$3,125.6	0.23%	0.02%	UBS Trumbull Property Fund	\$206,428.8	15.30%	1.36%
JP Morgan Strategic Property Fund	\$284,845.1	21.12%	1.88%	UBS Trumbull Property Income Fund	\$53,190.2	3.94%	0.35%
Kayne Anderson V	\$17,264.5	1.28%	0.11%	Victory	\$32,990.8	2.45%	0.22%
Landmark Fund VI	\$2,530.0	0.19%	0.02%	Walton Street Real Estate Debt II	\$3,923.3	0.29%	0.03%
Landmark Real Estate VIII	\$7,993.2	0.59%	0.05%	West Mphs. DHS	\$2,326.8	0.17%	0.02%
LaSalle Asia Opportunity Fund IV	\$2,160.5	0.16%	0.01%	Westbrook IX	\$13,345.9	0.99%	0.09%
LaSalle Asia Opportunity Fund V	\$14,850.0	1.10%	0.10%	Westbrook Real Estate Fund X	\$13,783.6	1.02%	0.09%
LaSalle Income & Growth Fund VI	\$6,841.8	0.51%	0.05%				
Total Real Estate					\$1,348,842.9	100.00%	8.90%

Asset Allocation as of 3/31/2020				Values in \$1,000			
	Private Equity	Percent of Private Equity	Percent of Total Fund		Private Equity	Percent of Private Equity	Percent of Total Fund
Arlington Capital IV	\$28,302.8	1.16%	0.19%	Insight Mezzanine I	\$1,629.4	0.07%	0.01%
Arlington Capital V	\$256.1	0.01%	0.00%	JF Lehman III	\$31,857.9	1.31%	0.21%
Advent GPE VI	\$6,326.4	0.26%	0.04%	JF Lehman IV	\$31,477.5	1.29%	0.21%
Altus Capital II	\$6,457.6	0.26%	0.04%	KPS III	\$312.2	0.01%	0.00%
American Industrial Partners VI	\$20,894.2	0.86%	0.14%	KPS IV	\$18,349.5	0.75%	0.12%
American Industrial Partners VII	\$423.2	0.02%	0.00%	KPS Mid-Cap	\$3,476.6	0.14%	0.02%
Altaris Constellation Partners	\$23,236.0	0.95%	0.15%	Levine Leichtman V	\$18,281.9	0.75%	0.12%
Altaris Health Partners IV	\$14,285.4	0.59%	0.09%	Lime Rock III	\$18,391.8	0.75%	0.12%
Atlas Capital II	\$14,324.5	0.59%	0.09%	LLR III	\$9,818.9	0.40%	0.06%
Audax Mezzanine III	\$4,357.7	0.18%	0.03%	Mason Wells III	\$7,234.3	0.30%	0.05%
Big River - Equity	\$327,000.0	13.42%	2.16%	NGP IX	\$1,051.4	0.04%	0.01%
Big River - Equity (Phase 2)	\$58,295.6	2.39%	0.38%	NGP X	\$8,101.9	0.33%	0.05%
Big River - Holdings Note 2023	\$12,871.4	0.53%	0.08%	NGP XI	\$25,843.8	1.06%	0.17%
Big River - Holdings Note 3/16/23	\$5,397.4	0.22%	0.04%	NGP XII	\$14,525.1	0.60%	0.10%
Bison V	\$19,549.6	0.80%	0.13%	One Rock Capital Partners II	\$24,411.3	1.00%	0.16%
Boston Ventures VII	\$17,028.7	0.70%	0.11%	PineBridge	\$13,536.0	0.56%	0.09%
Boston Ventures IX	\$19,027.8	0.78%	0.13%	Riverside IV	\$1,918.3	0.08%	0.01%
BV VIII	\$19,368.6	0.79%	0.13%	Riverside V	\$20,940.3	0.86%	0.14%
Castlelake II	\$16,783.6	0.69%	0.11%	Riverside VI	\$3,488.2	0.14%	0.02%
Castlelake III	\$17,736.0	0.73%	0.12%	Siris III	\$20,097.6	0.82%	0.13%
Clearlake V	\$27,062.9	1.11%	0.18%	Siris IV	\$16,106.3	0.66%	0.11%
Court Square III	\$41,308.8	1.69%	0.27%	SK Capital V	\$8,333.5	0.34%	0.05%
CSFB-ATRS 2005-1 Series	\$42,971.0	1.76%	0.28%	Sycamore Partners II	\$15,303.8	0.63%	0.10%
CSFB-ATRS 2006-1 Series	\$80,746.8	3.31%	0.53%	Sycamore Partners III	\$2,400.4	0.10%	0.02%
Diamond State Ventures II	\$5,293.1	0.22%	0.03%	TA XI	\$24,726.4	1.01%	0.16%
Doughty Hanson Tech I	\$403.6	0.02%	0.00%	Tennenbaum VI	\$10,704.4	0.44%	0.07%
DW Healthcare III	\$26,253.8	1.08%	0.17%	Thoma Bravo Discover	\$12,794.7	0.52%	0.08%
DW Healthcare IV	\$29,957.9	1.23%	0.20%	Thoma Bravo Discover II	\$8,713.7	0.36%	0.06%
DW Healthcare V	\$6,563.1	0.27%	0.04%	Thoma Bravo XI	\$32,815.8	1.35%	0.22%
EnCap IX	\$12,518.9	0.51%	0.08%	Thoma Bravo XII	\$42,523.2	1.74%	0.28%
EnCap VIII	\$9,870.5	0.40%	0.07%	Thoma Bravo XIII	\$19,187.0	0.79%	0.13%
EnCap X	\$26,480.4	1.09%	0.17%	Vista Equity III	\$4,725.7	0.19%	0.03%
EnCap XI	\$8,232.0	0.34%	0.05%	Vista Foundation II	\$16,656.3	0.68%	0.11%
Franklin Park Series	\$639,914.5	26.25%	4.22%	Vista Foundation III	\$28,046.9	1.15%	0.19%
GCG	\$23,909.2	0.98%	0.16%	Wellspring V	\$17,507.3	0.72%	0.12%
GTLA Holdings	\$20,000.0	0.82%	0.13%	Wicks IV	\$22,836.8	0.94%	0.15%
Highland	\$220,295.3	9.04%	1.45%	WNG II	\$7,535.5	0.31%	0.05%
Insight Equity II	\$18,143.2	0.74%	0.12%				
Total Private Equity					\$2,437,509.2	100.00%	16.08%

*Note: The market values for the private equity investments shown above are lagged one quarter and adjusted for the current quarter's cash flows. Market values and allocation percentages may not add to the sum total due to rounding.

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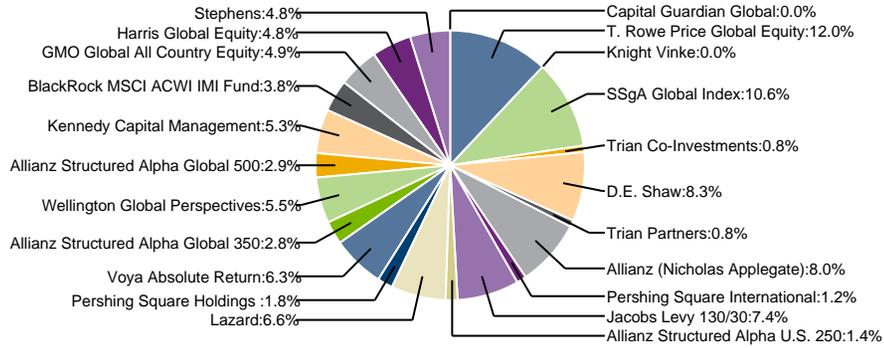


Total Equity

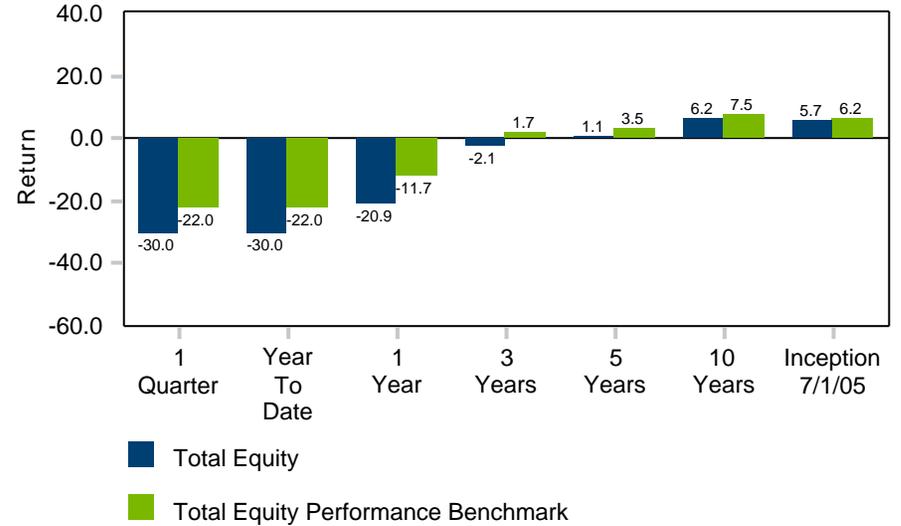
Total Equity Portfolio Overview

Current Allocation

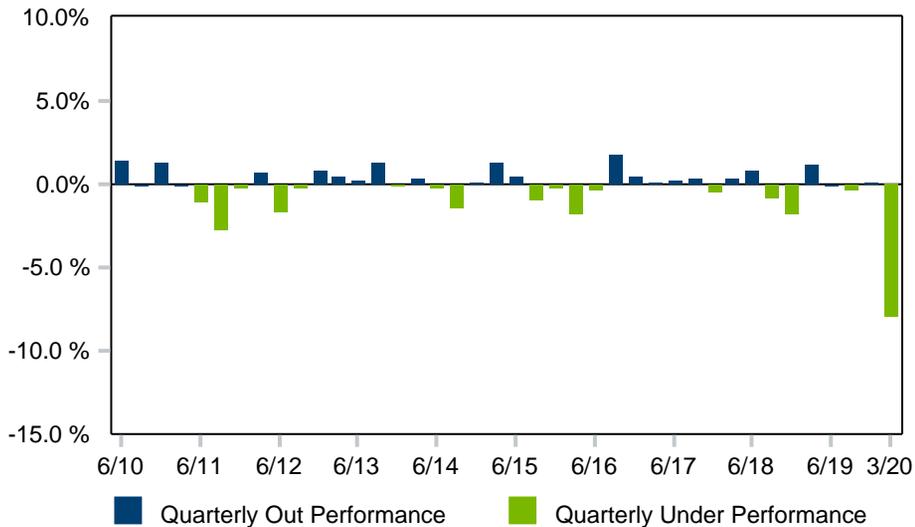
March 31, 2020 : \$7,062M



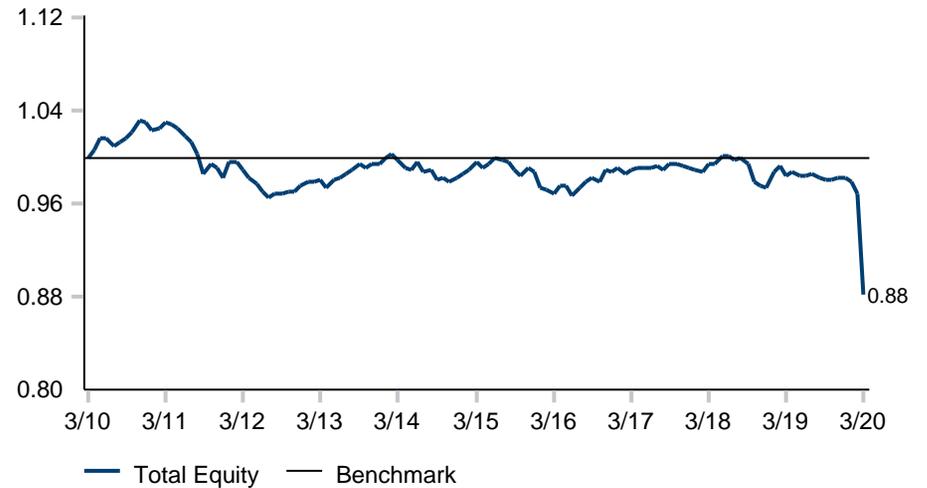
Return Summary



Quarterly Excess Performance



Ratio of Cumulative Wealth - 10 Years

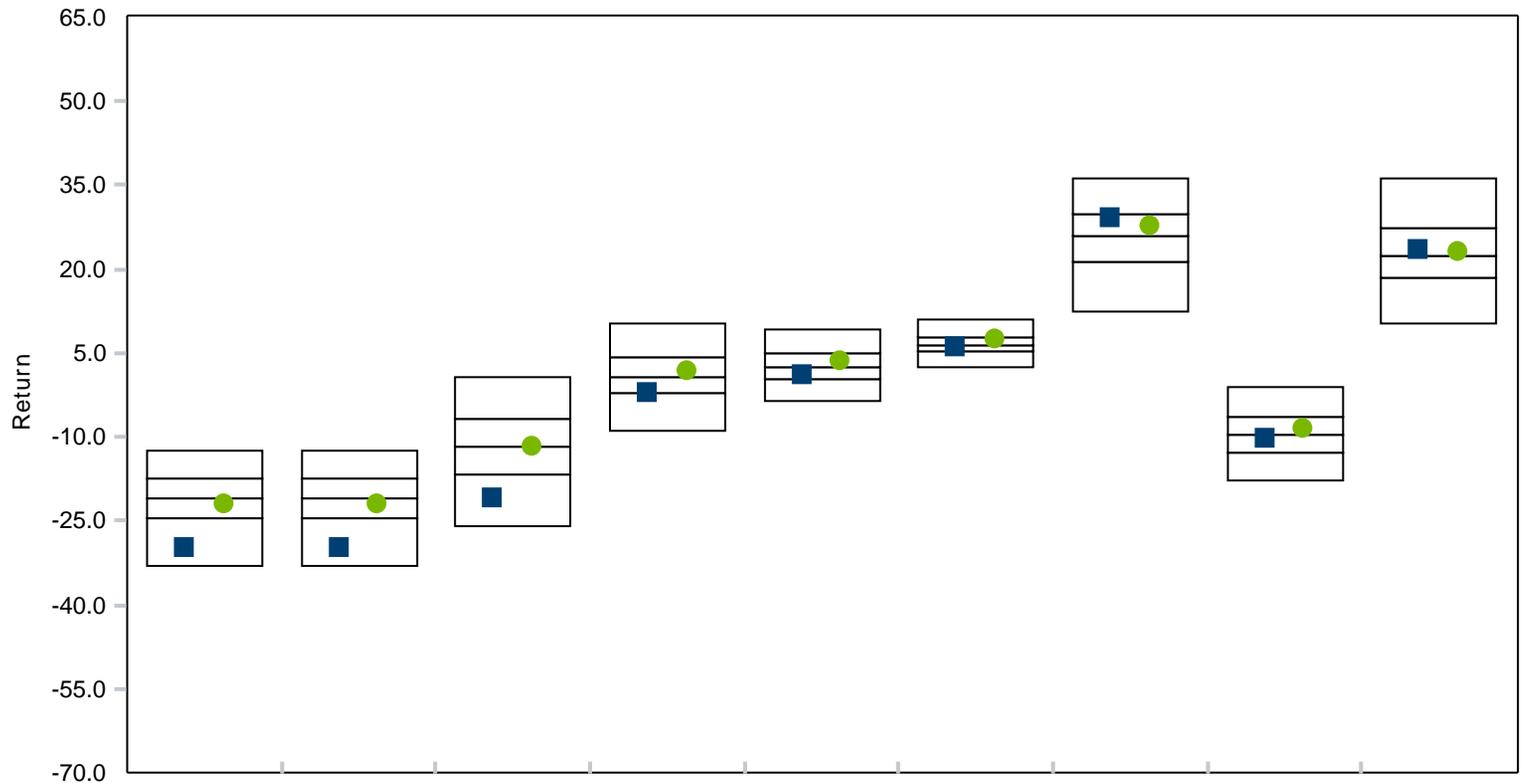


The inception of the Total Equity asset class was July 1, 2015. Performance prior to July 2015 represents the weighted average of the U.S. Equity and Global Equity asset class monthly returns. For historical performance of the U.S. Equity and Global Equity asset classes please see page 153 of this report.

As of March 31, 2020

Peer Group Analysis

IM Global Equity (SA+CF)

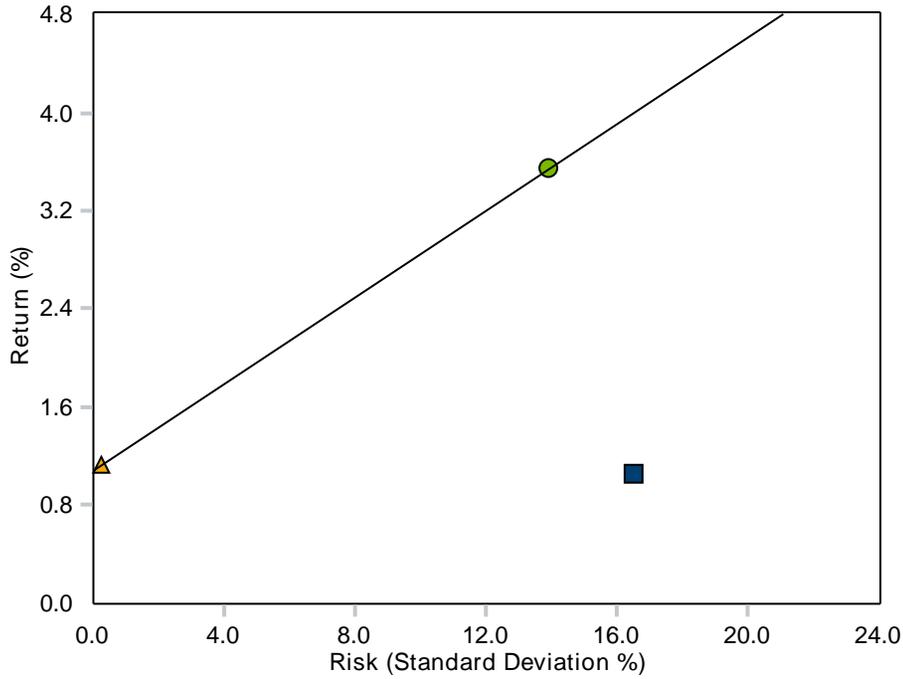


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ Total Equity	-30.0 (91)	-30.0 (91)	-20.9 (86)	-2.1 (75)	1.1 (68)	6.2 (55)	29.0 (32)	-10.2 (56)	23.5 (45)
● Total Equity Performance Benchmark	-22.0 (60)	-22.0 (60)	-11.7 (50)	1.7 (42)	3.5 (37)	7.5 (31)	27.8 (39)	-8.7 (43)	23.1 (48)
5th Percentile	-12.5	-12.5	0.5	10.3	9.3	11.1	36.3	-0.9	36.2
1st Quartile	-17.6	-17.6	-6.6	4.1	4.9	7.9	30.0	-6.4	27.2
Median	-21.1	-21.1	-11.7	0.9	2.5	6.5	25.8	-9.5	22.5
3rd Quartile	-24.6	-24.6	-16.5	-2.2	0.4	5.1	21.5	-12.9	18.5
95th Percentile	-33.0	-33.0	-26.1	-9.1	-3.5	2.5	12.5	-17.7	10.3
Population	459	459	456	441	394	251	489	530	551

7
Parentheses contain percentile rankings.

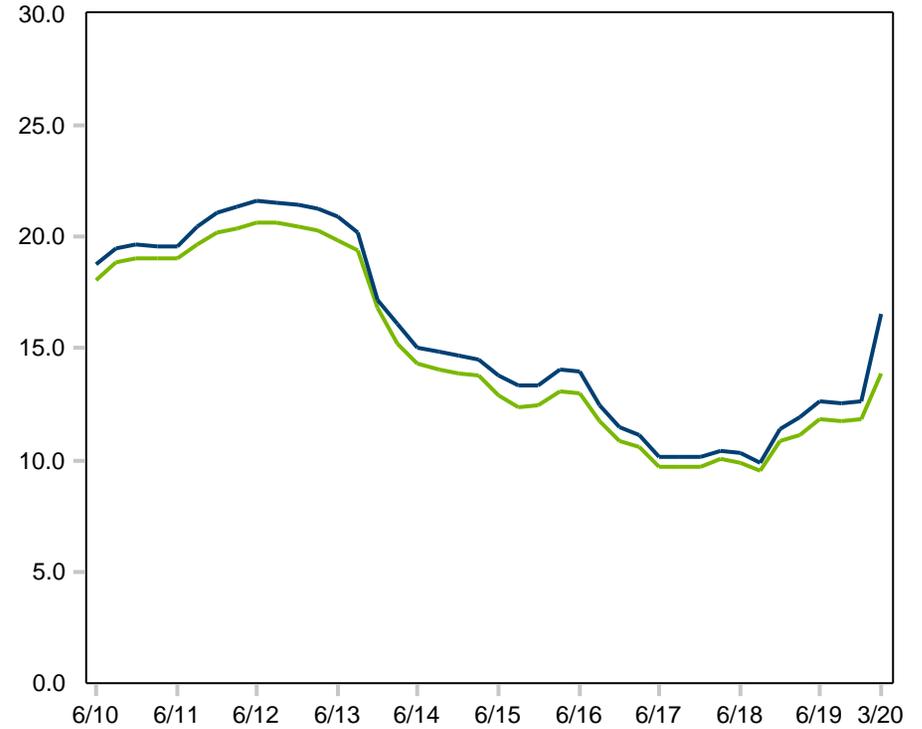
Total Equity Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



- Total Equity
- Total Equity Performance Benchmark
- ▲ FTSE 3 Month T-Bill

Rolling 5 Years Standard Deviation



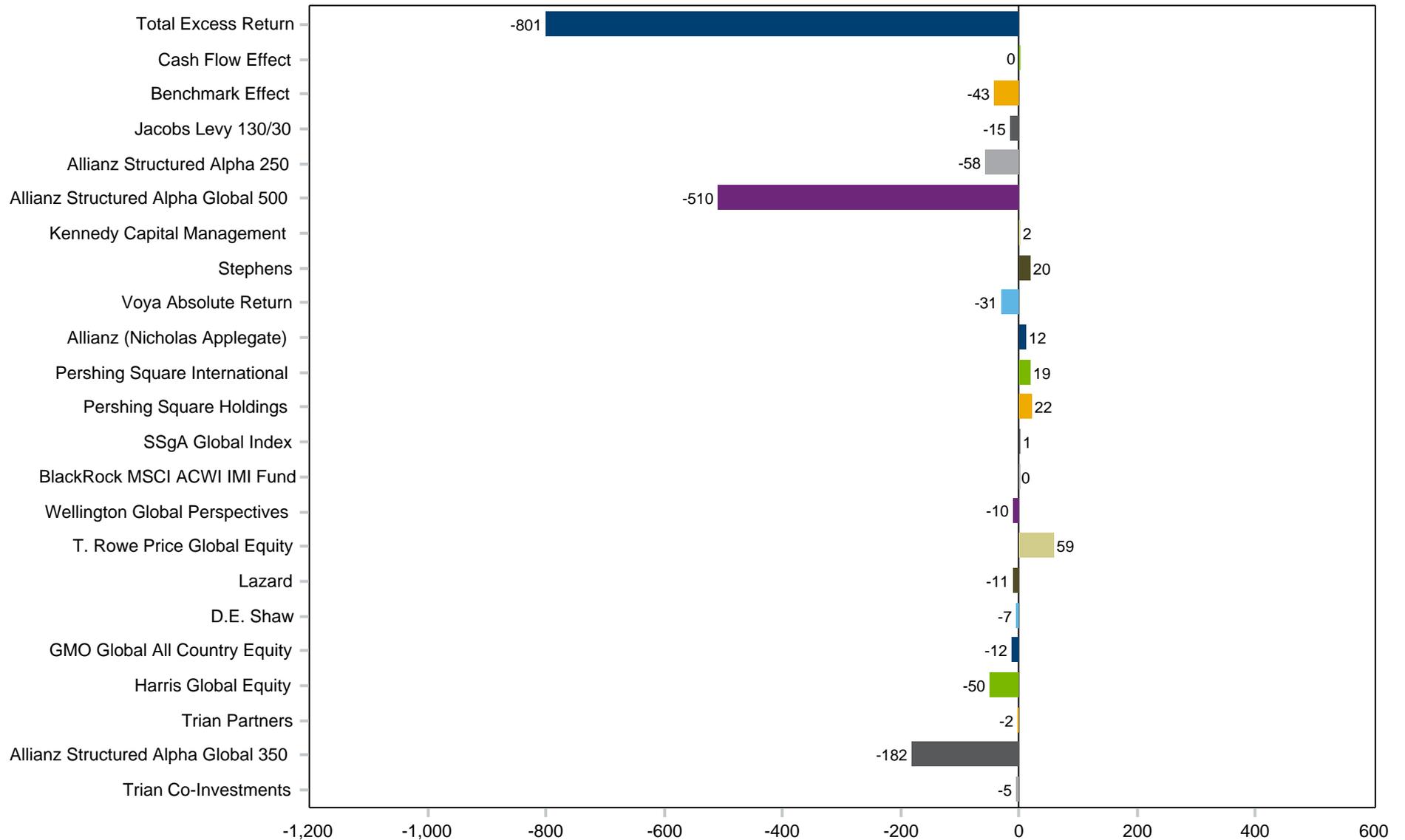
- Total Equity
- Total Equity Performance Benchmark

5 Years Historical Statistics

	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Total Equity	-1.97	3.88	-0.51	0.96	0.08	-2.68	1.17	1.06	16.52	0.98
Total Equity Performance Benchmark	0.00	0.00	N/A	1.00	0.24	0.00	1.00	3.53	13.91	1.00
FTSE 3 Month T-Bill	-3.34	13.92	-0.24	0.00	N/A	1.13	0.00	1.12	0.25	-0.03

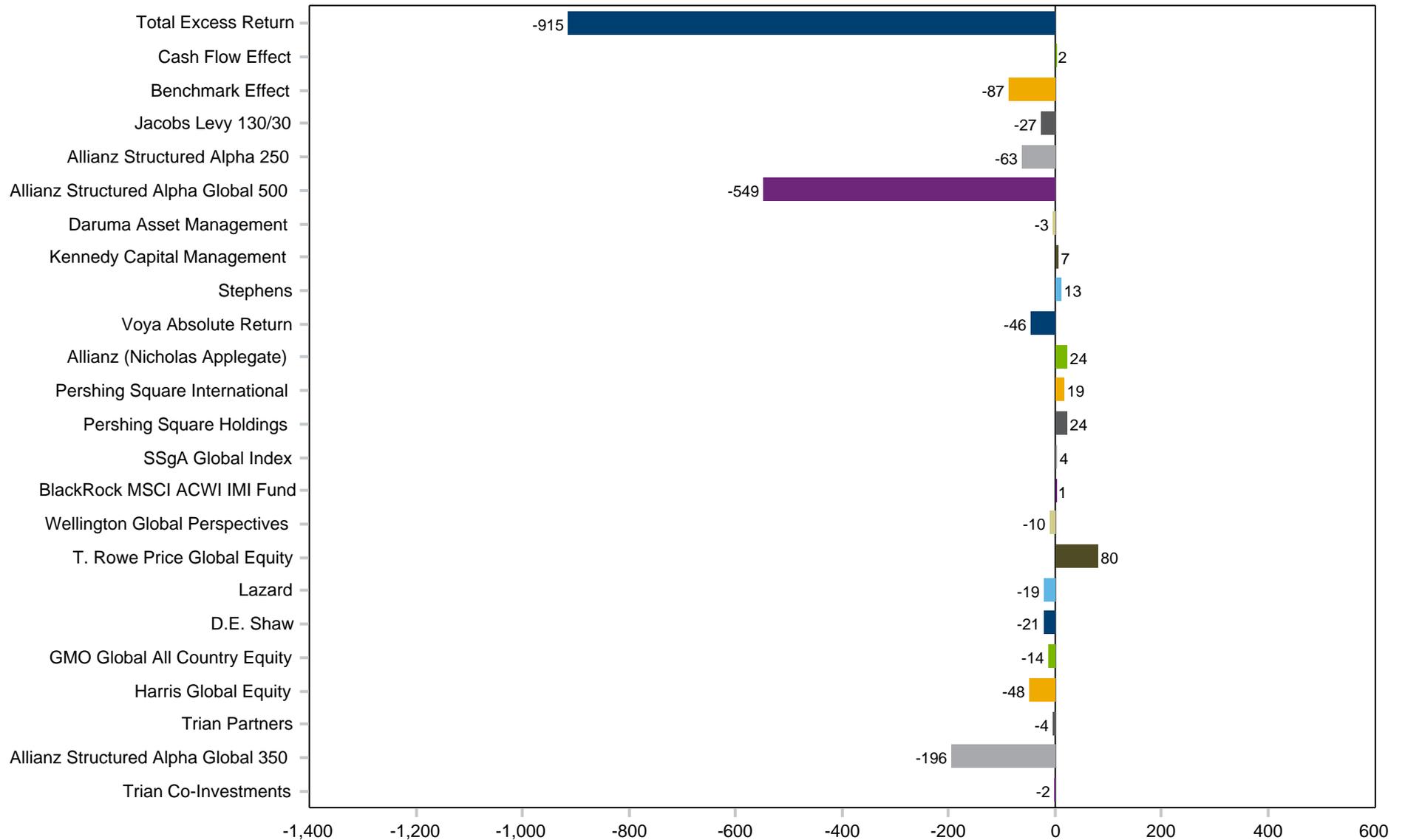
Asset Class Attribution

1 Quarter



Asset Class Attribution

1 Year

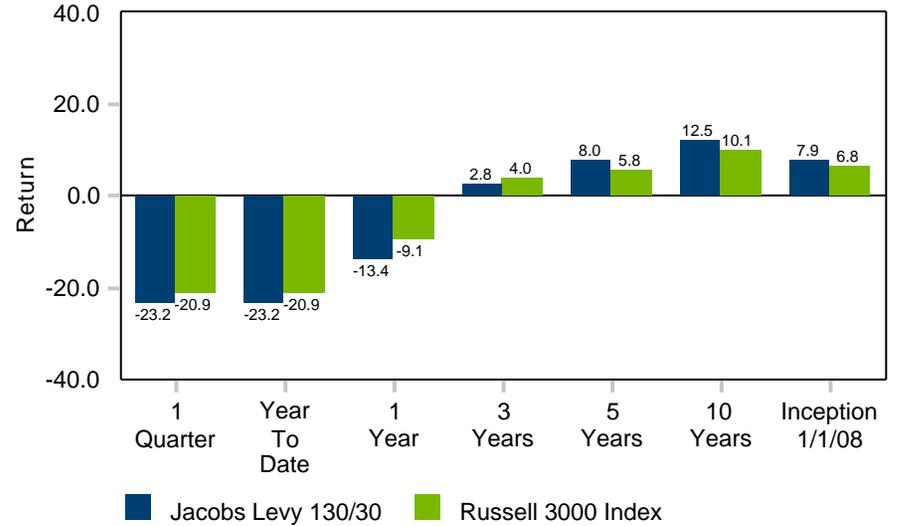


Jacobs Levy 130/30 Performance Summary

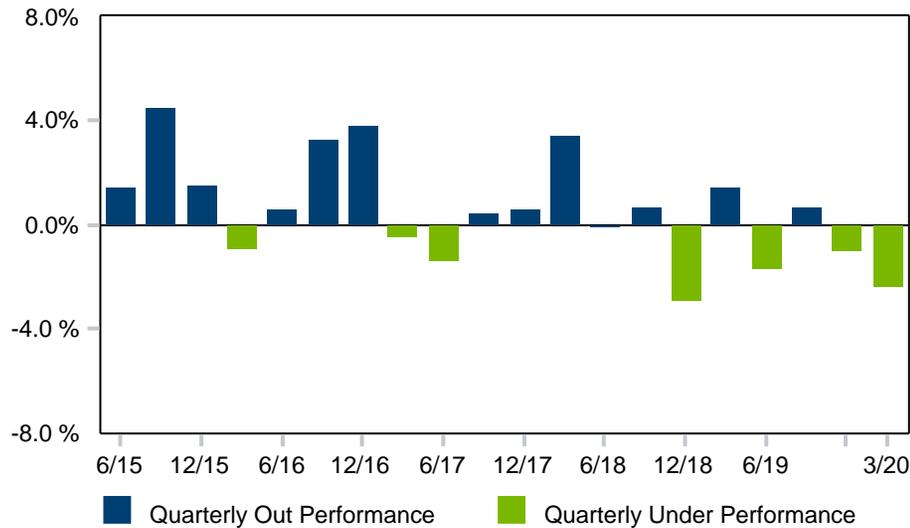
Account Information

Account Name: Jacobs Levy 130/30
 Inception Date: 12/31/2007
 Account Structure: Commingled Fund
 Asset Class: US Equity
 Benchmark: Russell 3000 Index
 Peer Group: IM U.S. Equity (SA+CF)

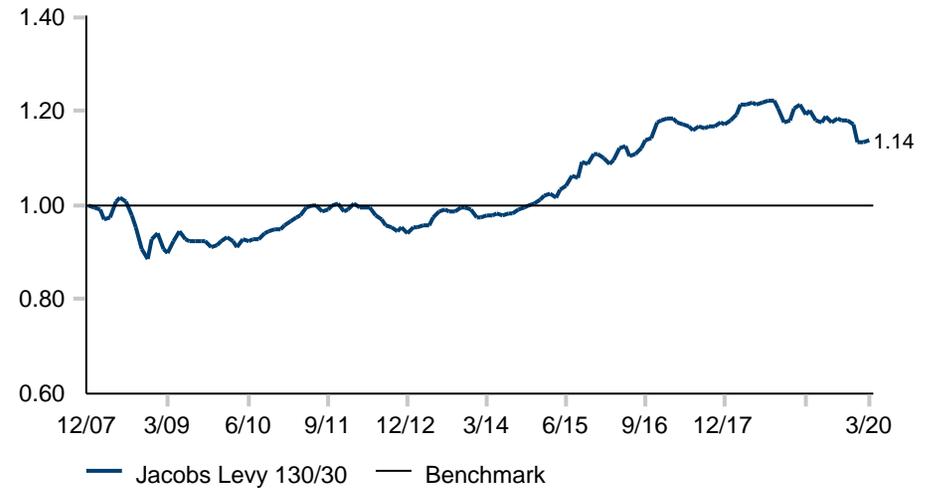
Return Summary



Quarterly Excess Performance

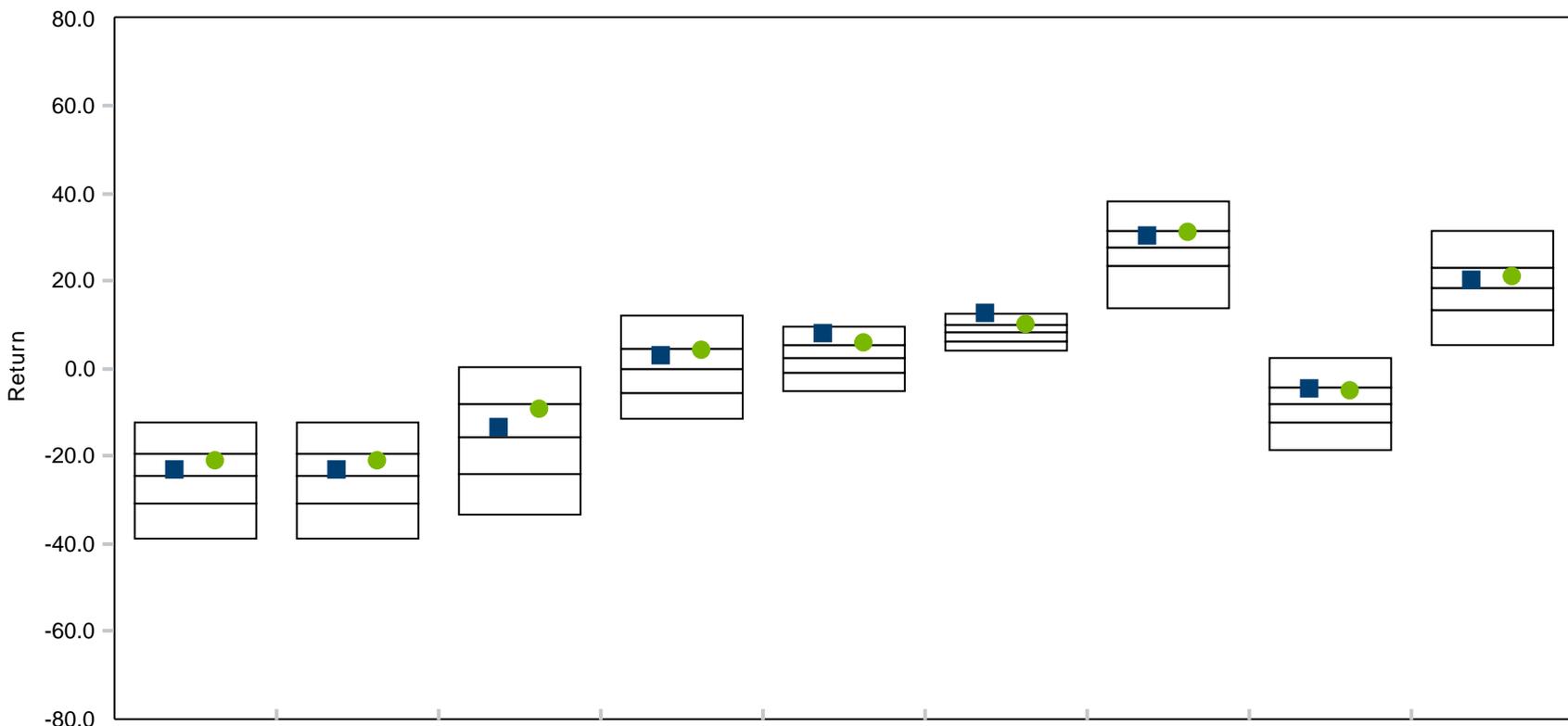


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM U.S. Equity (SA+CF)

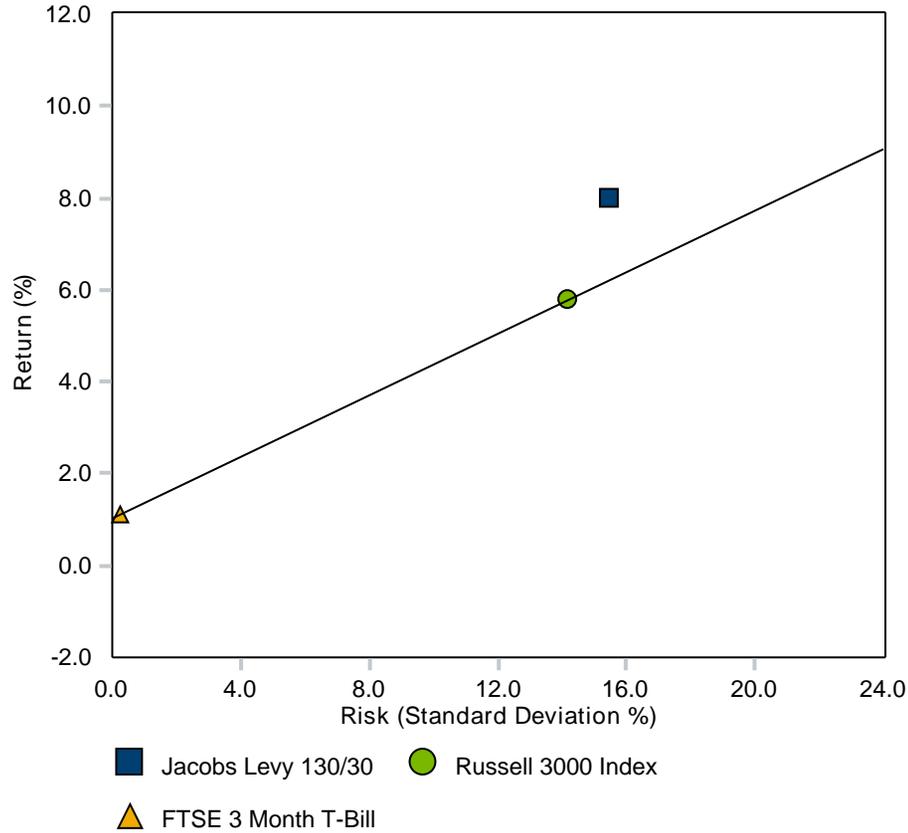


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ Jacobs Levy 130/30	-23.2 (45)	-23.2 (45)	-13.4 (45)	2.8 (38)	8.0 (12)	12.5 (6)	30.2 (34)	-4.7 (29)	20.3 (41)
● Russell 3000 Index	-20.9 (35)	-20.9 (35)	-9.1 (30)	4.0 (30)	5.8 (24)	10.1 (25)	31.0 (28)	-5.2 (33)	21.1 (35)
5th Percentile	-12.4	-12.4	0.5	12.1	9.7	12.6	38.3	2.4	31.8
1st Quartile	-19.5	-19.5	-8.0	4.6	5.6	10.1	31.5	-4.2	23.2
Median	-24.6	-24.6	-15.5	0.0	2.5	8.3	27.6	-7.8	18.3
3rd Quartile	-30.9	-30.9	-24.1	-5.4	-0.8	6.4	23.4	-12.3	13.6
95th Percentile	-38.6	-38.6	-33.2	-11.5	-4.9	4.0	14.1	-18.4	5.6
Population	2,088	2,088	2,083	2,039	1,958	1,657	2,214	2,457	2,558

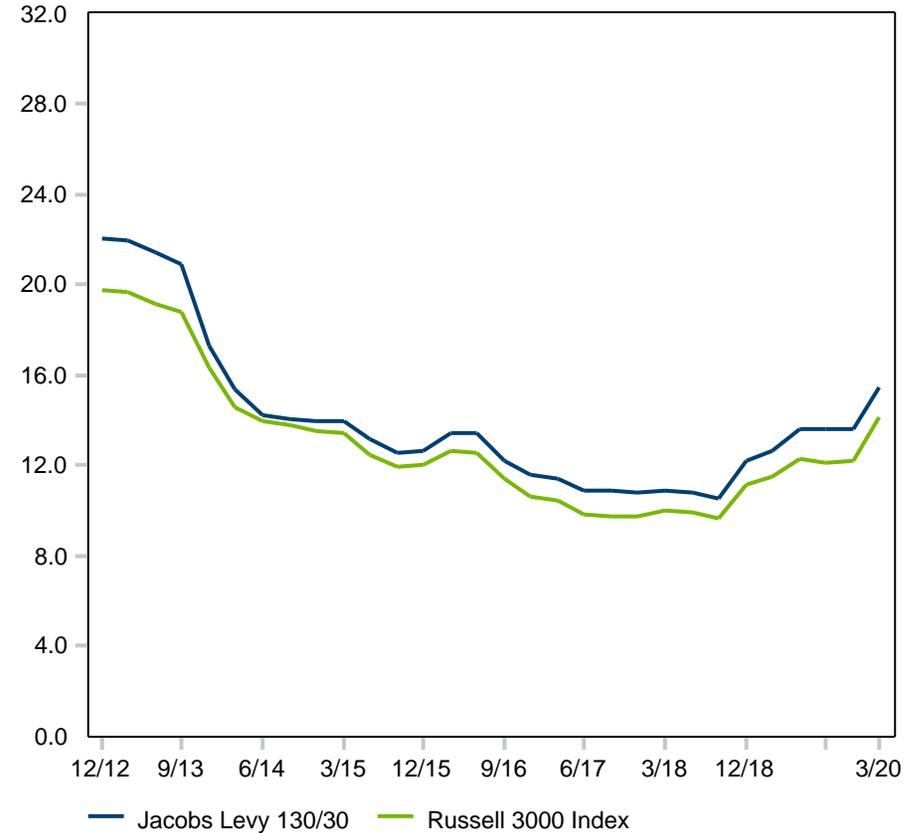
79 Parentheses contain percentile rankings.

Jacobs Levy 130/30 Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 5 Years Standard Deviation



5 Years Historical Statistics

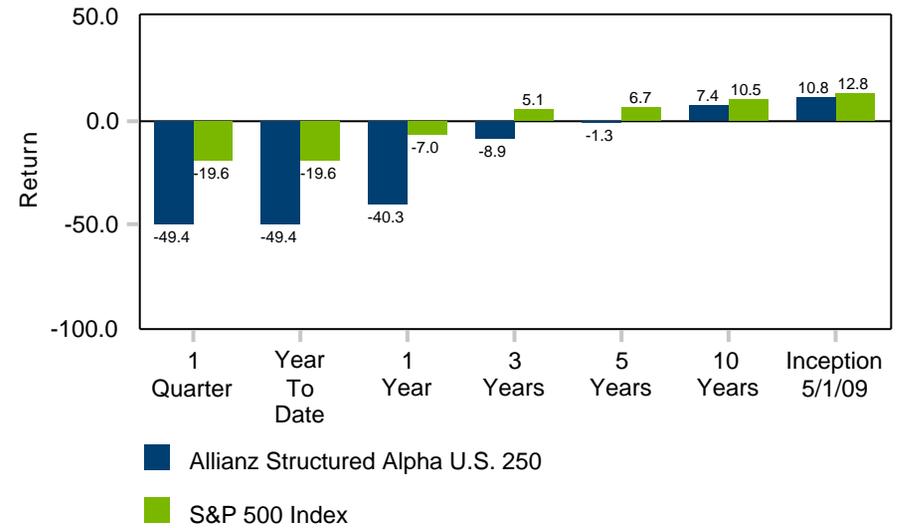
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Jacobs Levy 130/30	2.26	4.16	0.54	0.93	0.50	1.92	1.05	7.97	15.48	0.96
Russell 3000 Index	0.00	0.00	N/A	1.00	0.39	0.00	1.00	5.77	14.16	1.00
FTSE 3 Month T-Bill	-5.51	14.17	-0.39	0.00	N/A	1.13	0.00	1.12	0.25	-0.01

Allianz Structured Alpha U.S. 250 Performance Summary

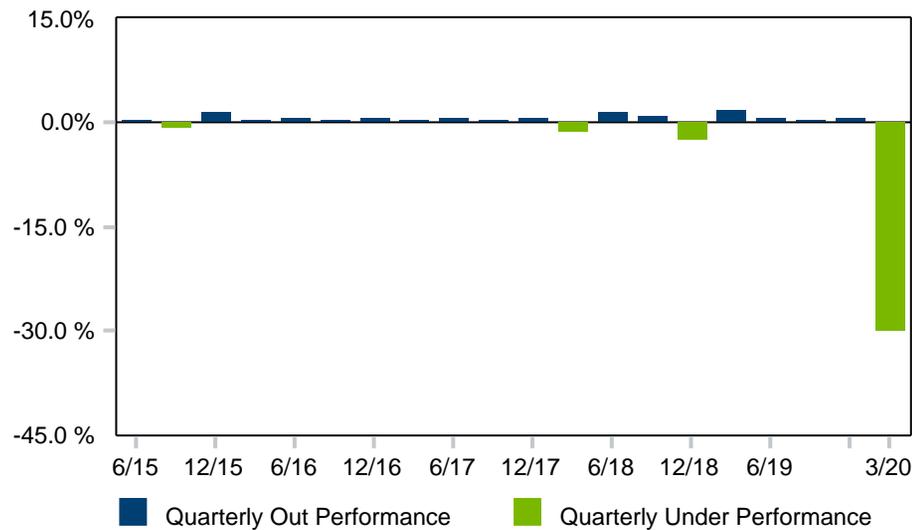
Account Information

Account Name: Allianz Structured Alpha U.S. 250
 Inception Date: 04/30/2009
 Account Structure: Commingled Fund
 Asset Class: US Equity
 Benchmark: S&P 500 Index
 Peer Group: IM U.S. Equity (SA+CF)

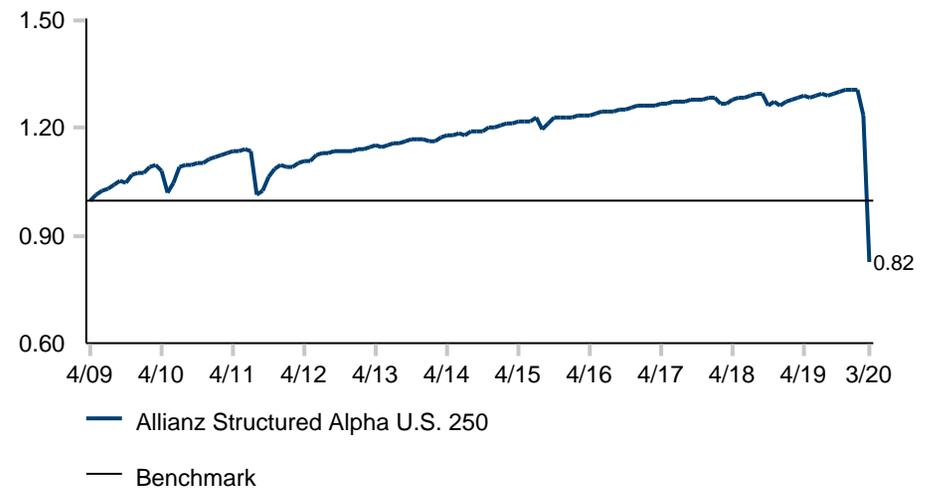
Return Summary



Quarterly Excess Performance

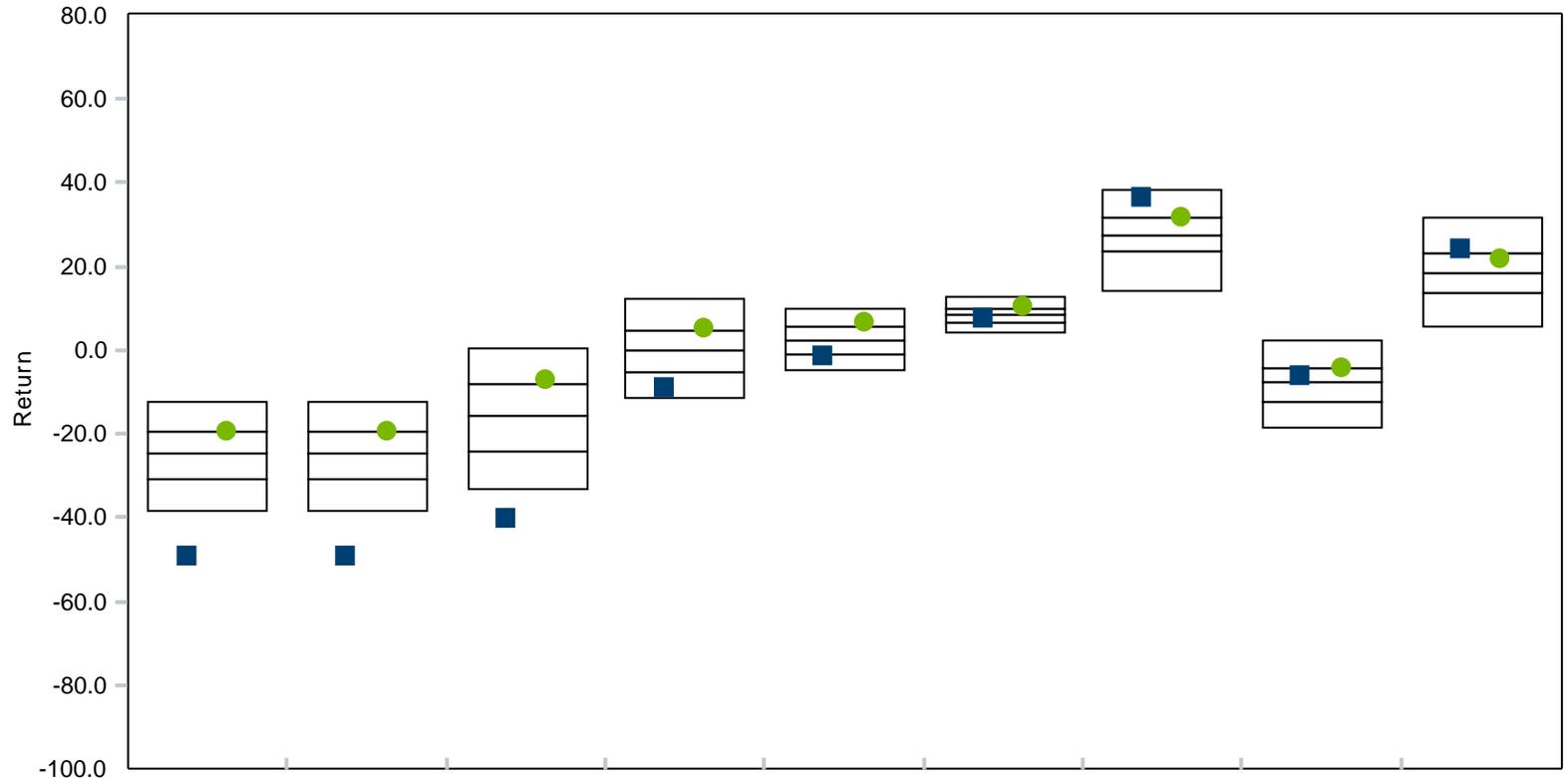


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM U.S. Equity (SA+CF)

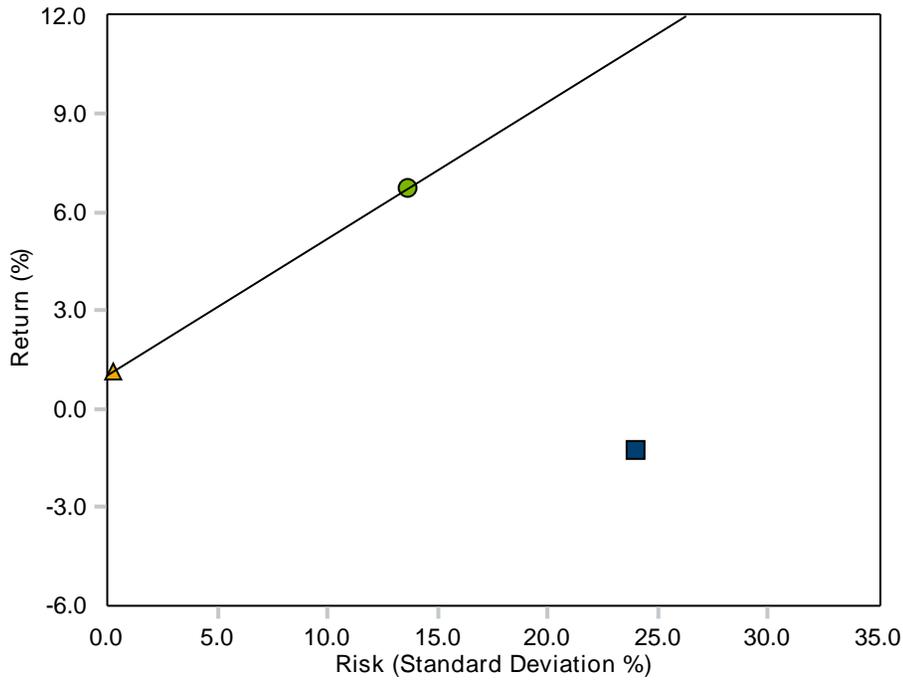


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ Allianz Structured Alpha U.S. 250	-49.4 (100)	-49.4 (100)	-40.3 (99)	-8.9 (89)	-1.3 (79)	7.4 (61)	36.4 (9)	-6.2 (40)	24.2 (22)
● S&P 500 Index	-19.6 (26)	-19.6 (26)	-7.0 (21)	5.1 (23)	6.7 (18)	10.5 (21)	31.5 (25)	-4.4 (27)	21.8 (31)
5th Percentile	-12.4	-12.4	0.5	12.1	9.7	12.6	38.3	2.4	31.8
1st Quartile	-19.5	-19.5	-8.0	4.6	5.6	10.1	31.5	-4.2	23.2
Median	-24.6	-24.6	-15.5	0.0	2.5	8.3	27.6	-7.8	18.3
3rd Quartile	-30.9	-30.9	-24.1	-5.4	-0.8	6.4	23.4	-12.3	13.6
95th Percentile	-38.6	-38.6	-33.2	-11.5	-4.9	4.0	14.1	-18.4	5.6
Population	2,088	2,088	2,083	2,039	1,958	1,657	2,214	2,457	2,558

85 Parentheses contain percentile rankings.

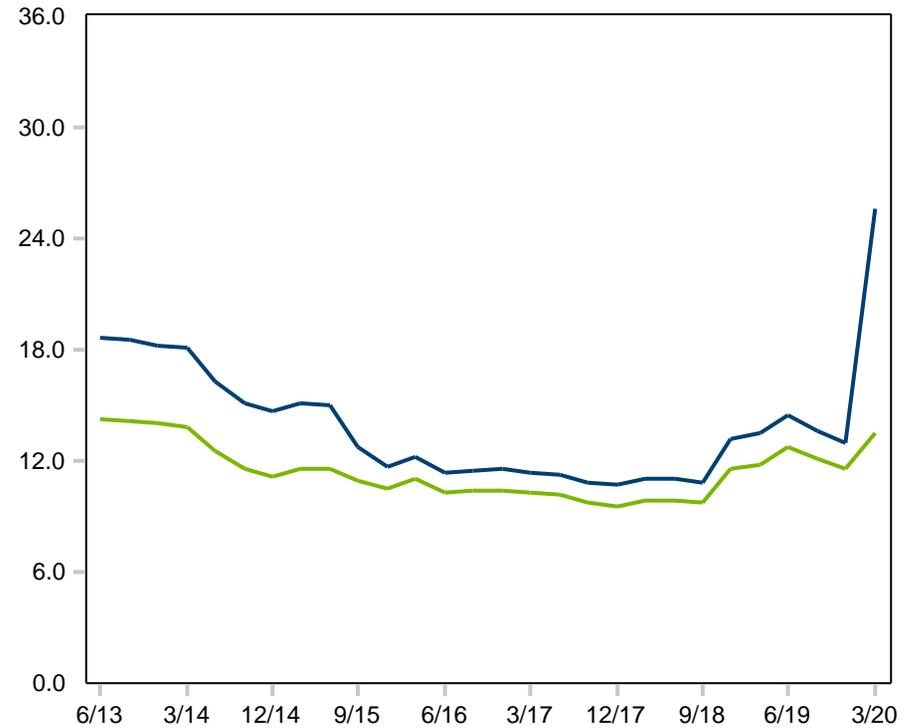
Allianz Structured Alpha U.S. 250 Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



- Allianz Structured Alpha U.S. 250
- S&P 500 Index
- ▲ FTSE 3 Month T-Bill

Rolling 4 Years Standard Deviation



- Allianz Structured Alpha U.S. 250
- S&P 500 Index

5 Years Historical Statistics

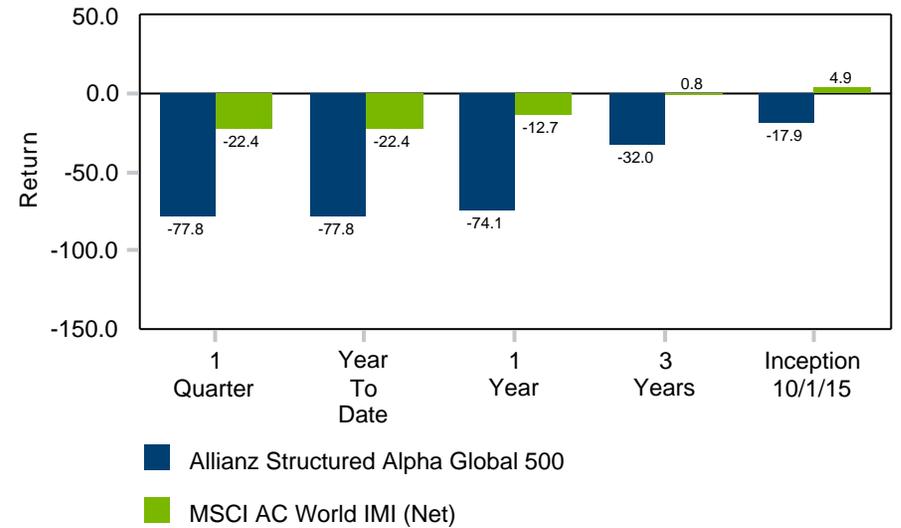
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Allianz Structured Alpha U.S. 250	-5.17	13.50	-0.38	0.78	0.05	-8.93	1.56	-1.26	24.00	0.89
S&P 500 Index	0.00	0.00	N/A	1.00	0.46	0.00	1.00	6.73	13.65	1.00
FTSE 3 Month T-Bill	-6.34	13.66	-0.46	0.00	N/A	1.13	0.00	1.12	0.25	-0.01

Allianz Structured Alpha Global 500 Performance Summary

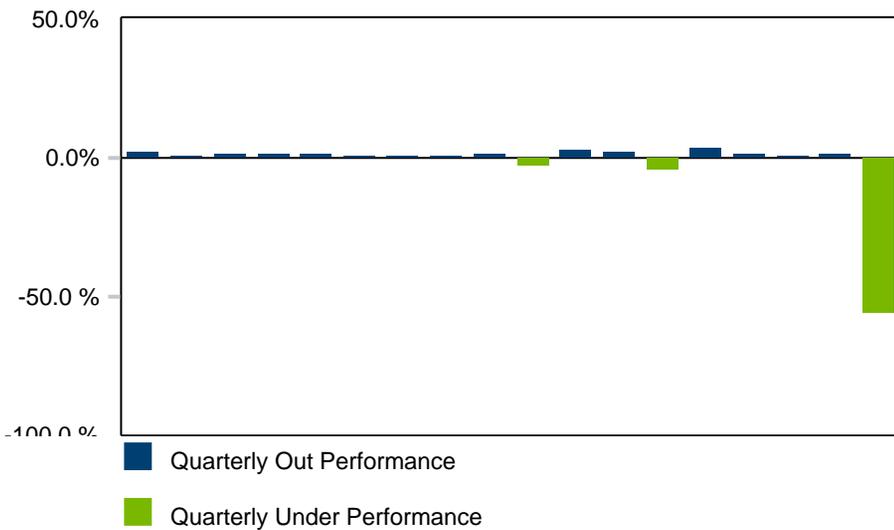
Account Information

Account Name: Allianz Structured Alpha Global 500
 Inception Date: 10/01/2015
 Account Structure: Commingled Fund
 Asset Class: Global Equity
 Benchmark: MSCI AC World IMI (Net)
 Peer Group: IM Global Equity (SA+CF)

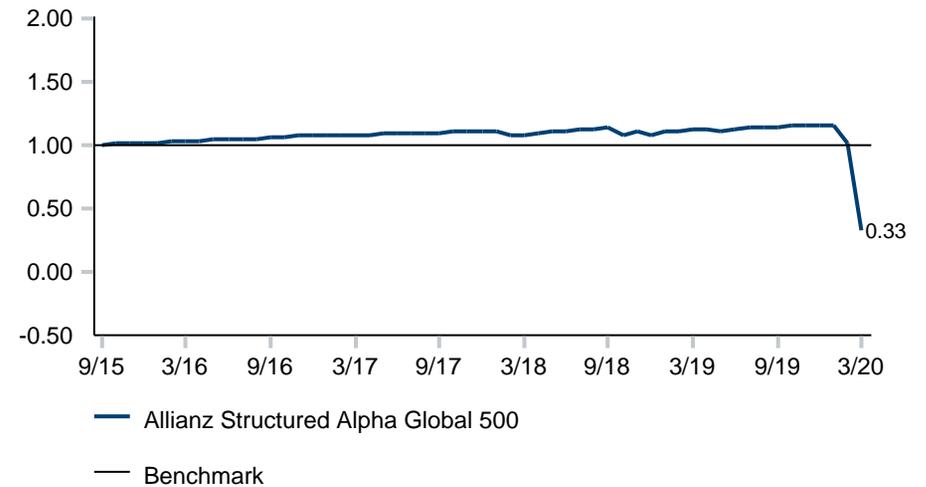
Return Summary



Quarterly Excess Performance



Ratio of Cumulative Wealth - Since Inception

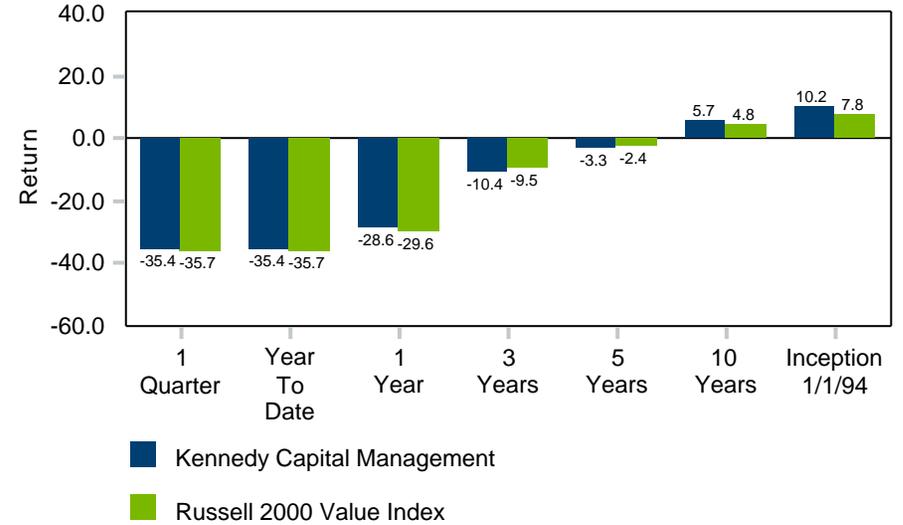


Kennedy Capital Management Performance Summary

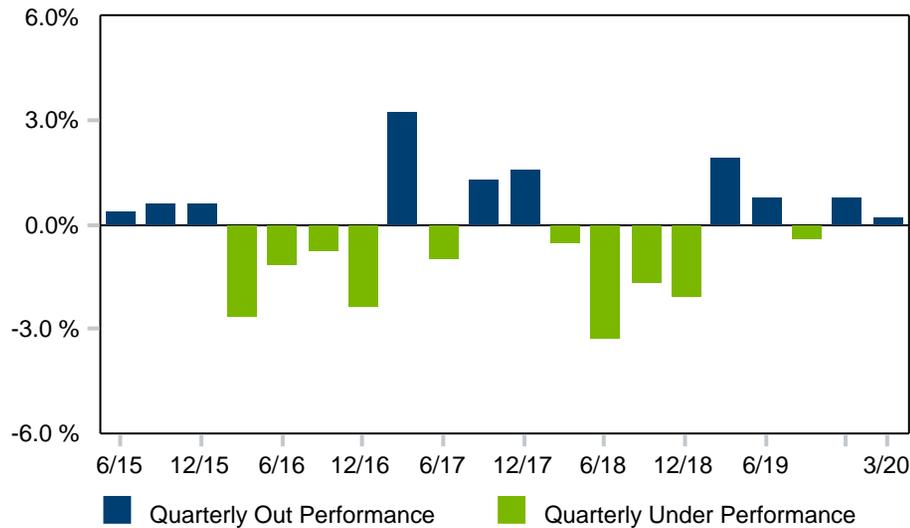
Account Information

Account Name: Kennedy Capital Management
 Inception Date: 12/31/1993
 Account Structure: Separate Account
 Asset Class: US Equity
 Benchmark: Russell 2000 Value Index
 Peer Group: IM U.S. Small Cap Value Equity (SA+CF)

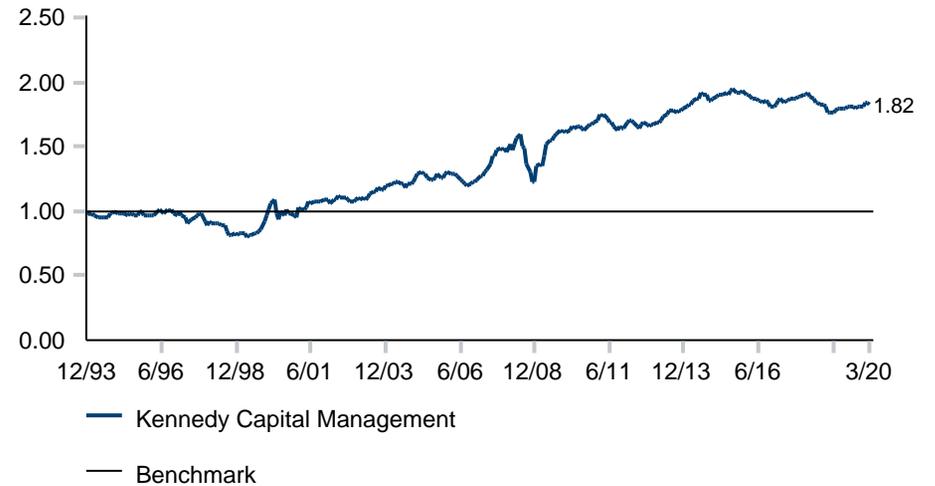
Return Summary



Quarterly Excess Performance

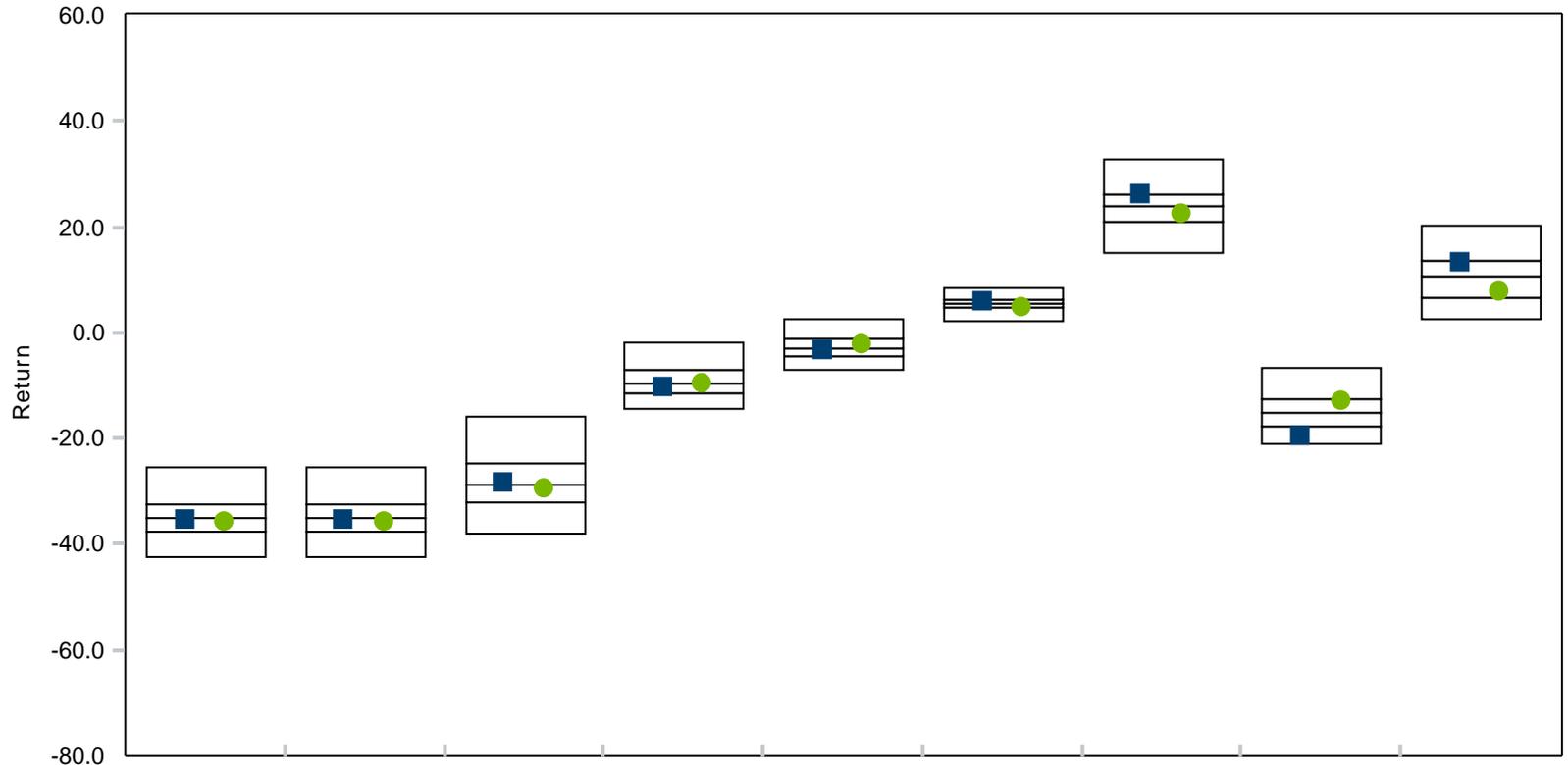


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM U.S. Small Cap Value Equity (SA+CF)

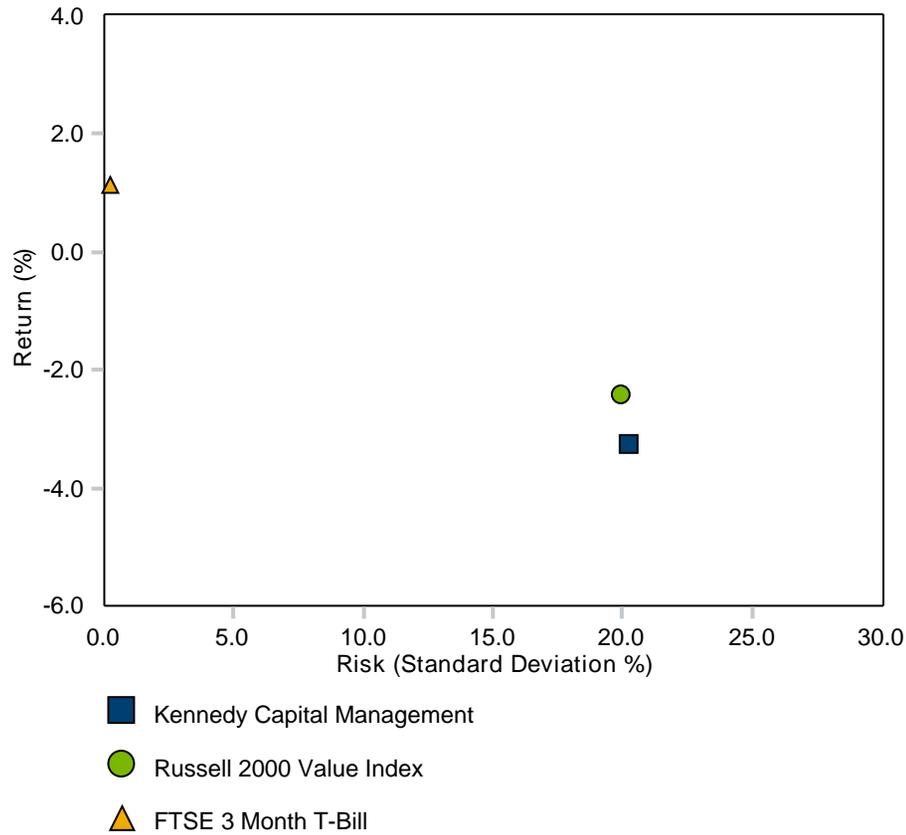


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ Kennedy Capital Management	-35.4 (55)	-35.4 (55)	-28.6 (48)	-10.4 (61)	-3.3 (58)	5.7 (38)	25.9 (28)	-19.4 (85)	13.4 (26)
● Russell 2000 Value Index	-35.7 (58)	-35.7 (58)	-29.6 (56)	-9.5 (50)	-2.4 (39)	4.8 (66)	22.4 (64)	-12.9 (30)	7.8 (68)
5th Percentile	-25.4	-25.4	-15.9	-2.0	2.4	8.3	32.6	-6.6	20.2
1st Quartile	-32.6	-32.6	-24.8	-7.0	-1.2	6.0	26.1	-12.4	13.6
Median	-35.2	-35.2	-28.9	-9.6	-3.0	5.4	23.9	-15.1	10.5
3rd Quartile	-37.8	-37.8	-32.2	-11.5	-4.4	4.6	20.9	-17.7	6.7
95th Percentile	-42.2	-42.2	-37.9	-14.5	-7.2	2.3	15.2	-21.2	2.6
Population	192	192	191	187	182	162	199	220	229

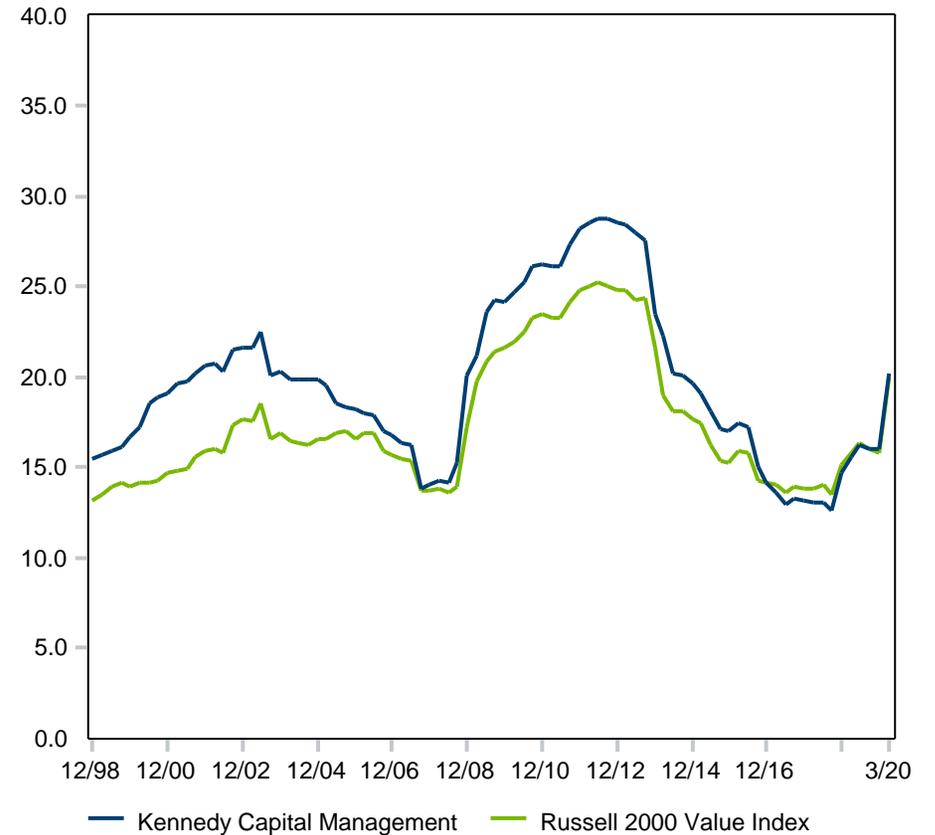
88
89
parentheses contain percentile rankings.

Kennedy Capital Management Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 5 Years Standard Deviation



5 Years Historical Statistics

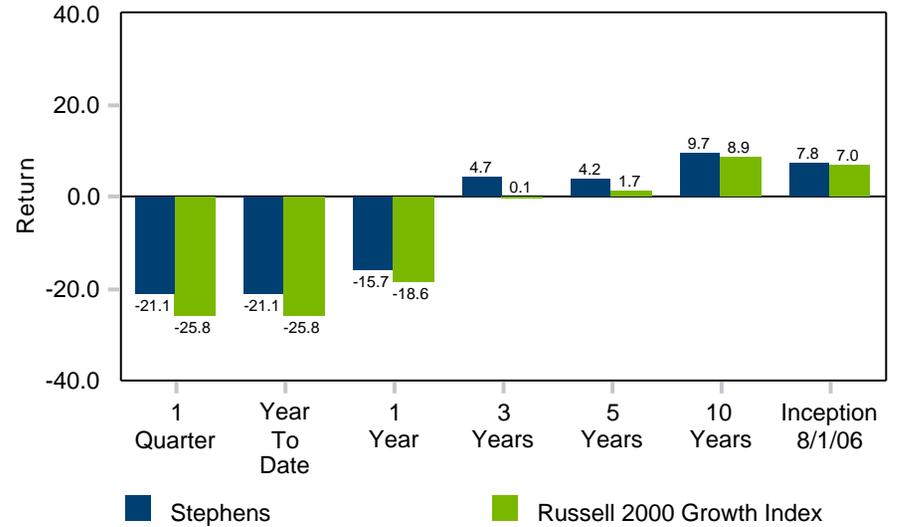
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Kennedy Capital Management	-0.79	2.85	-0.28	0.98	-0.11	-0.78	1.00	-3.28	20.25	0.99
Russell 2000 Value Index	0.00	0.00	N/A	1.00	-0.07	0.00	1.00	-2.42	19.95	1.00
FTSE 3 Month T-Bill	1.49	19.97	0.07	0.01	N/A	1.12	0.00	1.12	0.25	-0.09

Stephens Performance Summary

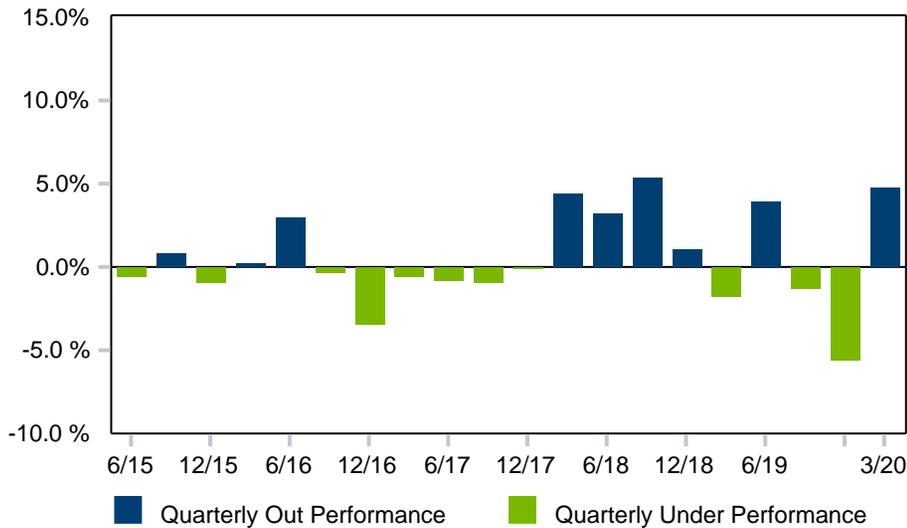
Account Information

Account Name: Stephens
 Inception Date: 07/31/2006
 Account Structure: Separate Account
 Asset Class: US Equity
 Benchmark: Russell 2000 Growth Index
 Peer Group: IM U.S. Small Cap Growth Equity (SA+CF)

Return Summary



Quarterly Excess Performance

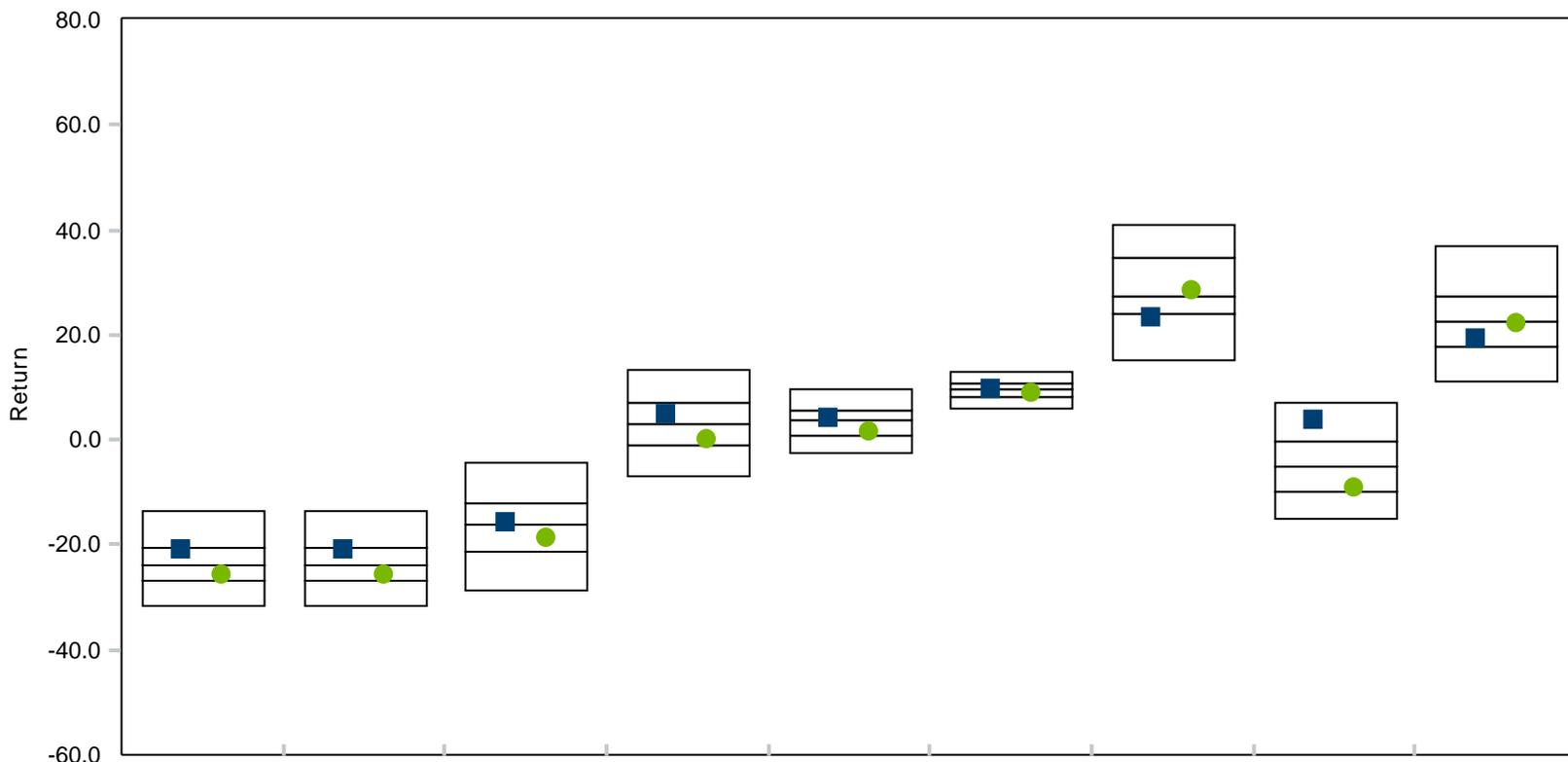


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM U.S. Small Cap Growth Equity (SA+CF)

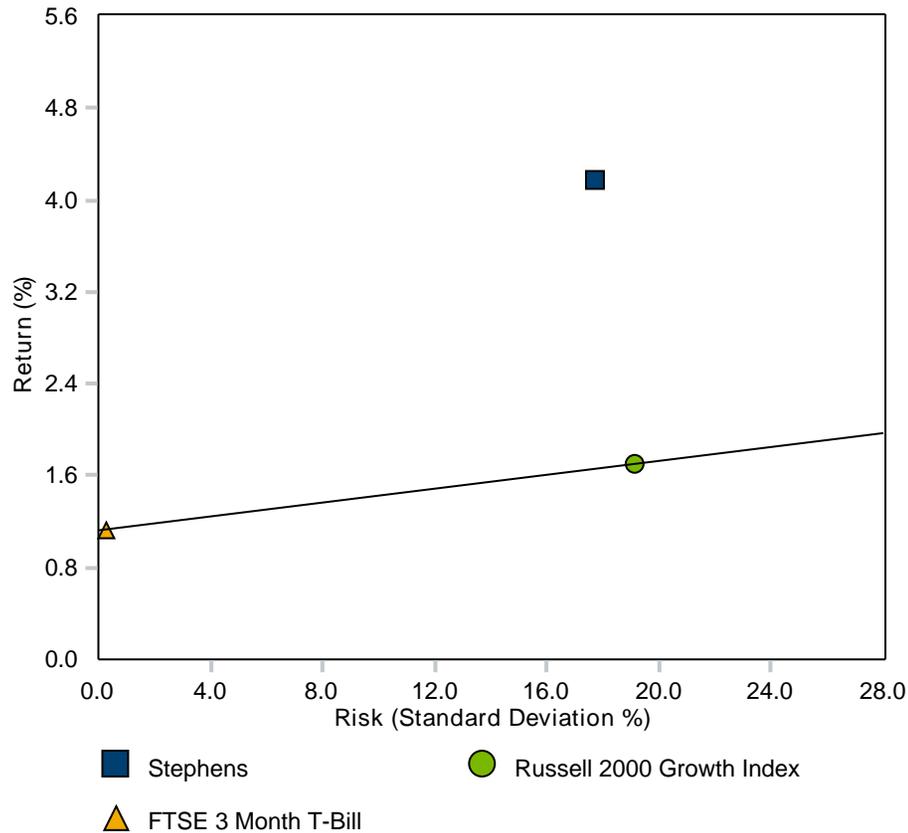


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ Stephens	-21.1 (31)	-21.1 (31)	-15.7 (45)	4.7 (37)	4.2 (43)	9.7 (48)	23.2 (77)	3.7 (11)	19.4 (67)
● Russell 2000 Growth Index	-25.8 (66)	-25.8 (66)	-18.6 (62)	0.1 (70)	1.7 (70)	8.9 (65)	28.5 (47)	-9.3 (74)	22.2 (52)
5th Percentile	-13.7	-13.7	-4.5	13.4	9.5	13.0	41.0	7.1	36.9
1st Quartile	-20.6	-20.6	-12.0	6.9	5.6	10.7	34.7	-0.3	27.5
Median	-23.7	-23.7	-16.3	3.0	3.7	9.5	27.3	-5.2	22.6
3rd Quartile	-27.0	-27.0	-21.2	-1.2	0.7	8.3	24.0	-10.0	17.7
95th Percentile	-31.8	-31.8	-28.6	-7.0	-2.6	5.8	15.3	-15.0	11.3
Population	158	158	158	155	148	136	166	181	182

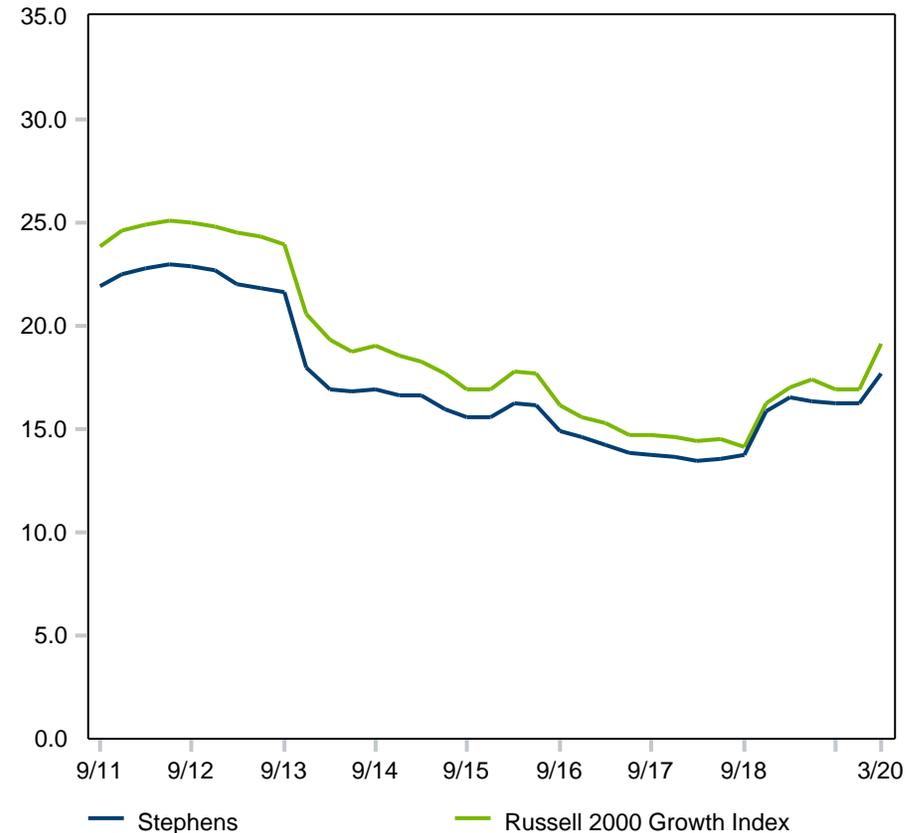
Ⓞ Parentheses contain percentile rankings.

Stephens Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 5 Years Standard Deviation



5 Years Historical Statistics

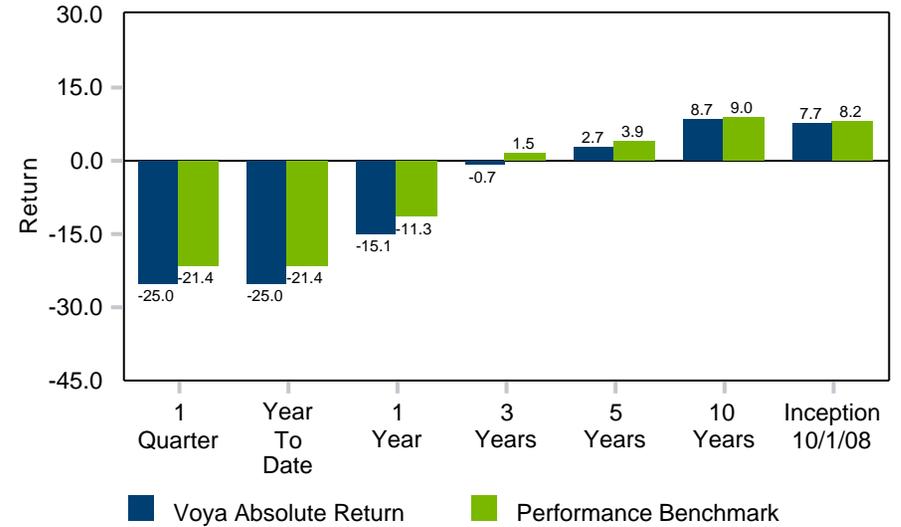
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Stephens	2.10	5.41	0.39	0.92	0.26	2.52	0.89	4.16	17.74	0.96
Russell 2000 Growth Index	0.00	0.00	N/A	1.00	0.13	0.00	1.00	1.70	19.14	1.00
FTSE 3 Month T-Bill	-2.45	19.15	-0.13	0.00	N/A	1.13	0.00	1.12	0.25	-0.02

Voya Absolute Return Performance Summary

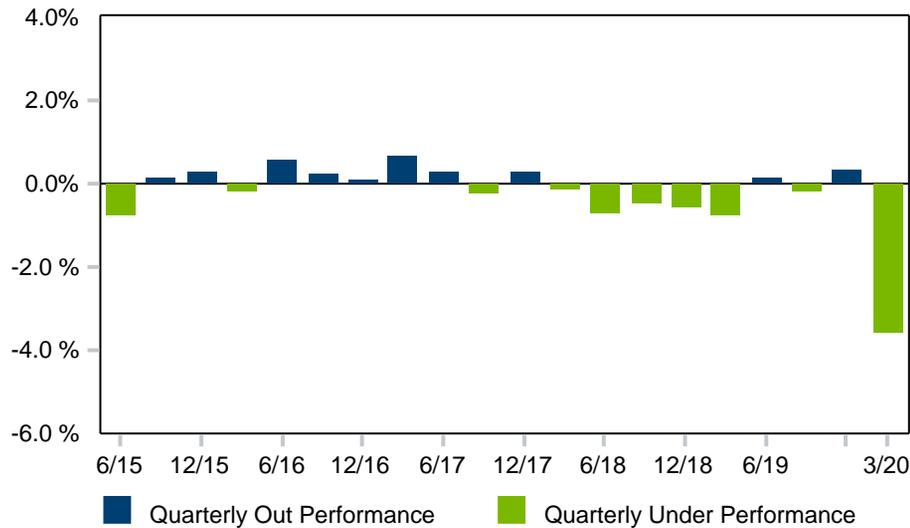
Account Information

Account Name: Voya Absolute Return
 Inception Date: 09/30/2008
 Account Structure: Commingled Fund
 Asset Class: Global Equity
 Benchmark: Performance Benchmark
 Peer Group: IM Global Equity (MF)

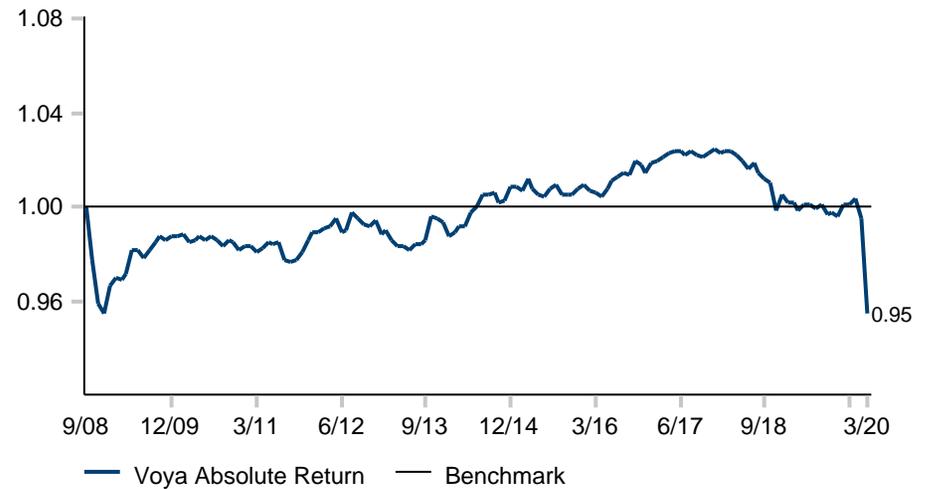
Return Summary



Quarterly Excess Performance

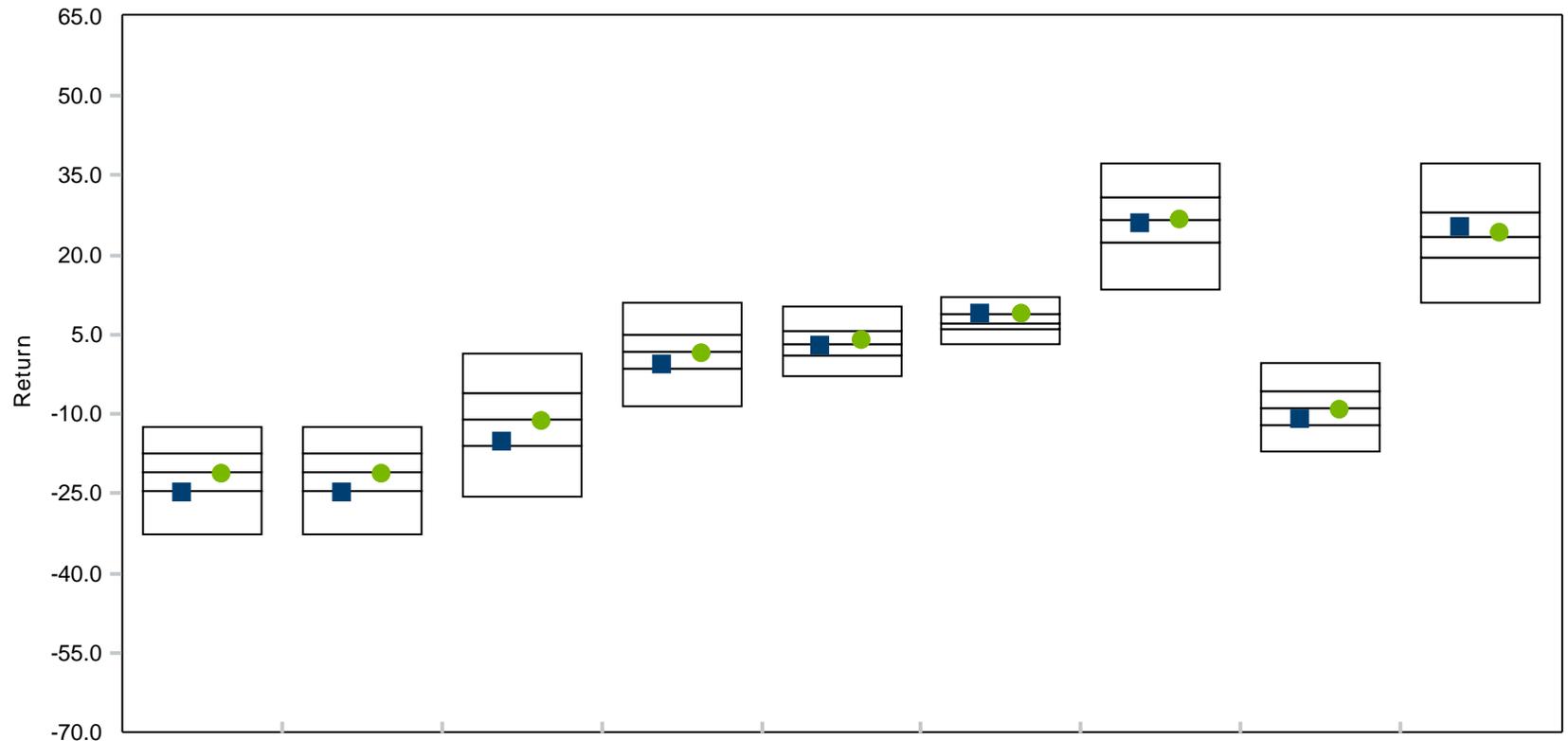


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM Global Equity (SA+CF)

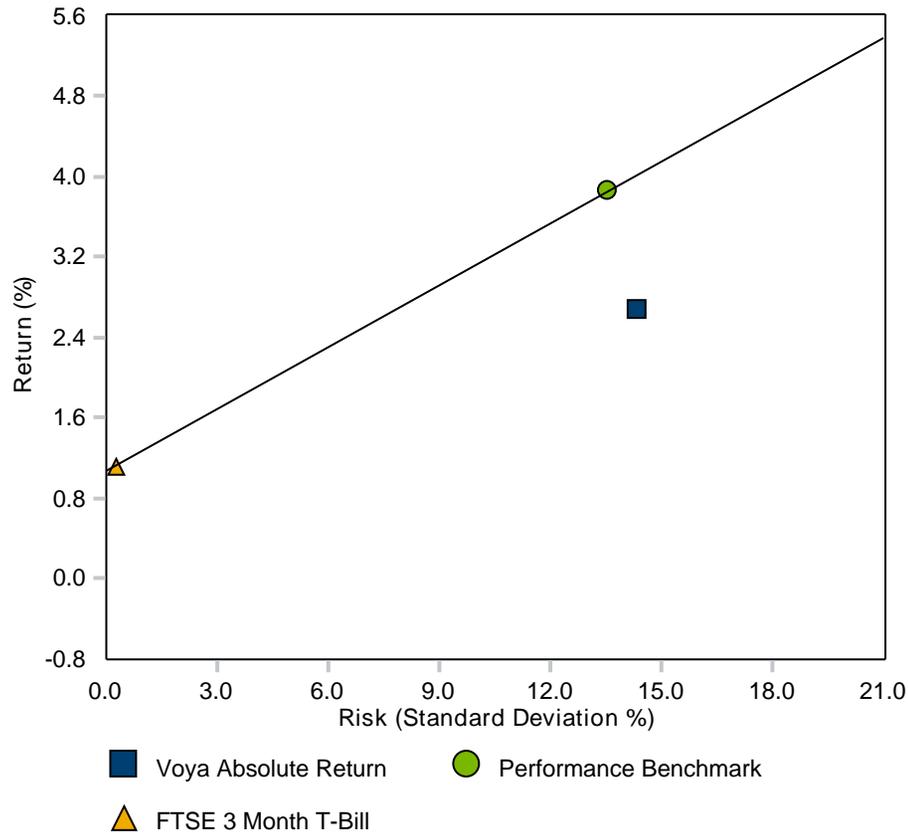


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ Voya Absolute Return	-25.0 (79)	-25.0 (79)	-15.1 (73)	-0.7 (71)	2.7 (58)	8.7 (26)	26.0 (57)	-11.1 (68)	25.2 (41)
● Performance Benchmark	-21.4 (55)	-21.4 (55)	-11.3 (52)	1.5 (52)	3.9 (43)	9.0 (23)	26.6 (52)	-9.4 (56)	24.0 (48)
5th Percentile	-12.3	-12.3	1.3	11.1	10.2	12.0	37.3	-0.2	37.2
1st Quartile	-17.4	-17.4	-5.9	4.9	5.7	8.7	30.9	-5.7	28.2
Median	-21.0	-21.0	-11.0	1.6	3.2	7.3	26.7	-8.8	23.4
3rd Quartile	-24.4	-24.4	-15.9	-1.4	1.1	5.9	22.4	-12.2	19.4
95th Percentile	-32.9	-32.9	-25.5	-8.4	-2.7	3.3	13.4	-17.1	11.1
Population	459	459	456	441	394	251	489	530	551

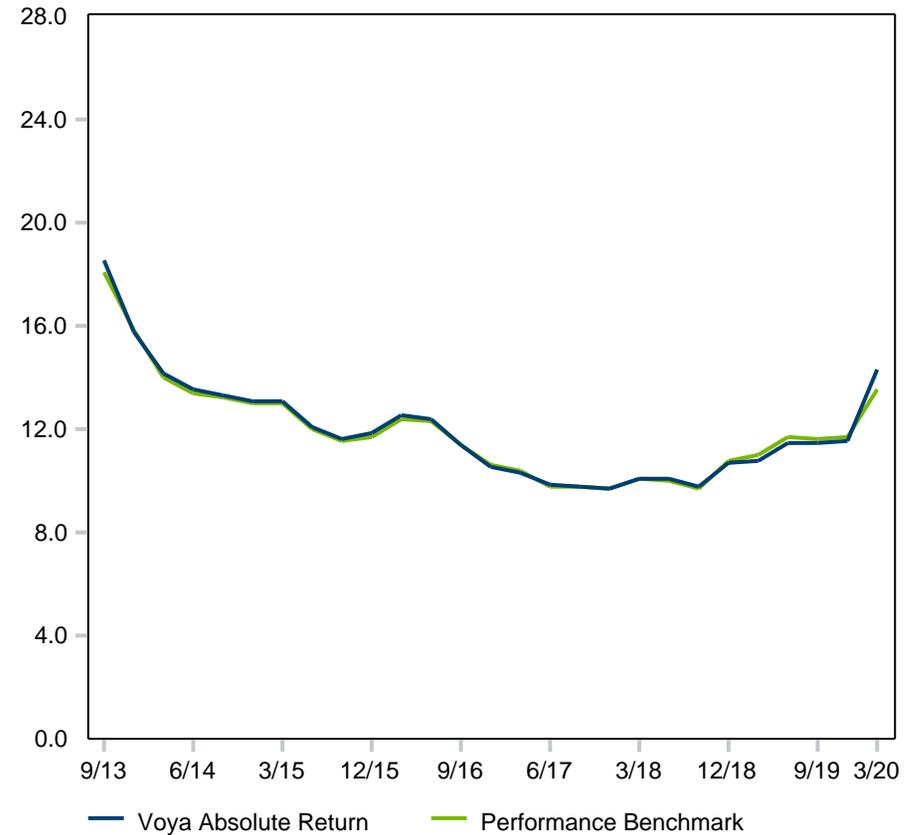
26 Parentheses contain percentile rankings.

Voya Absolute Return Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 5 Years Standard Deviation



5 Years Historical Statistics

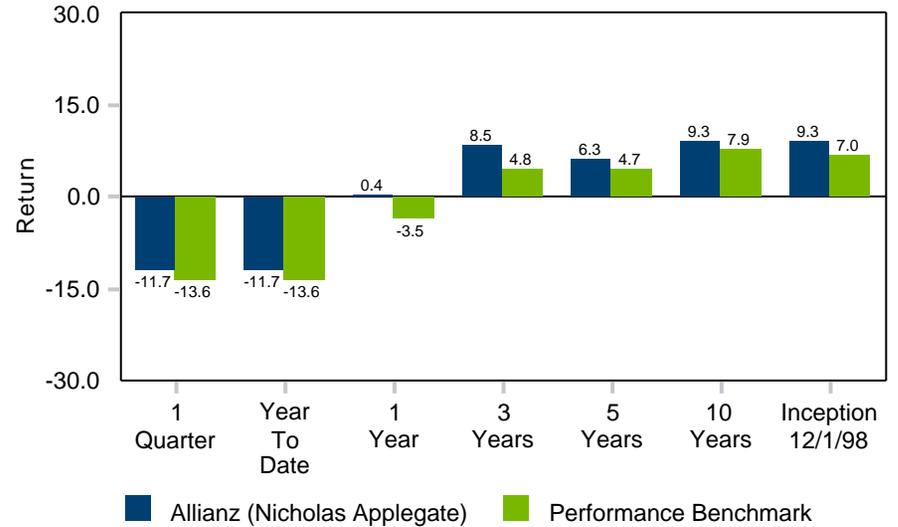
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Voya Absolute Return	-1.03	1.87	-0.55	0.99	0.18	-1.25	1.05	2.67	14.34	0.99
Performance Benchmark	0.00	0.00	N/A	1.00	0.26	0.00	1.00	3.86	13.57	1.00
FTSE 3 Month T-Bill	-3.60	13.58	-0.26	0.00	N/A	1.13	0.00	1.12	0.25	-0.05

Allianz (Nicholas Applegate) Performance Summary

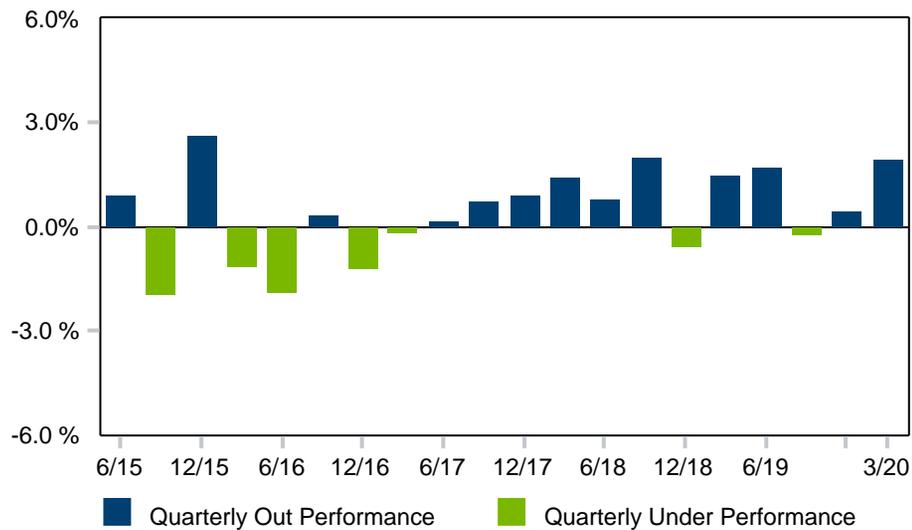
Account Information

Account Name: Allianz (Nicholas Applegate)
 Inception Date: 11/30/1998
 Account Structure: Separate Account
 Asset Class: US Equity
 Benchmark: Performance Benchmark
 Peer Group: IM U.S. Equity (SA+CF)

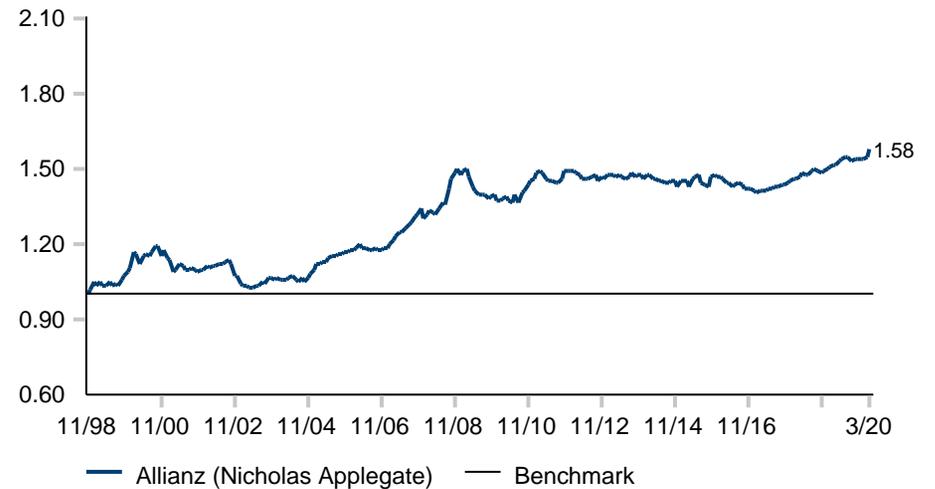
Return Summary



Quarterly Excess Performance

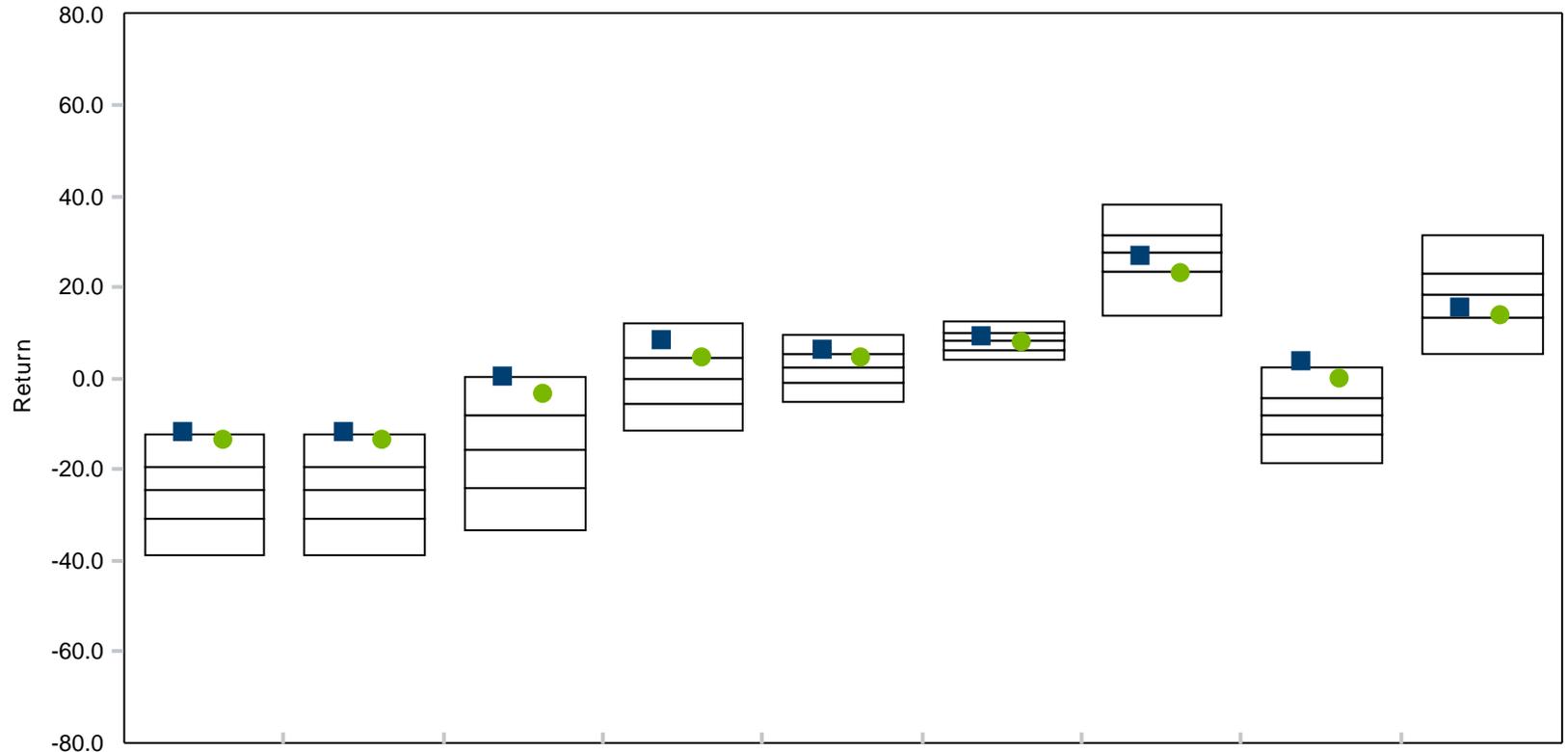


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM U.S. Equity (SA+CF)

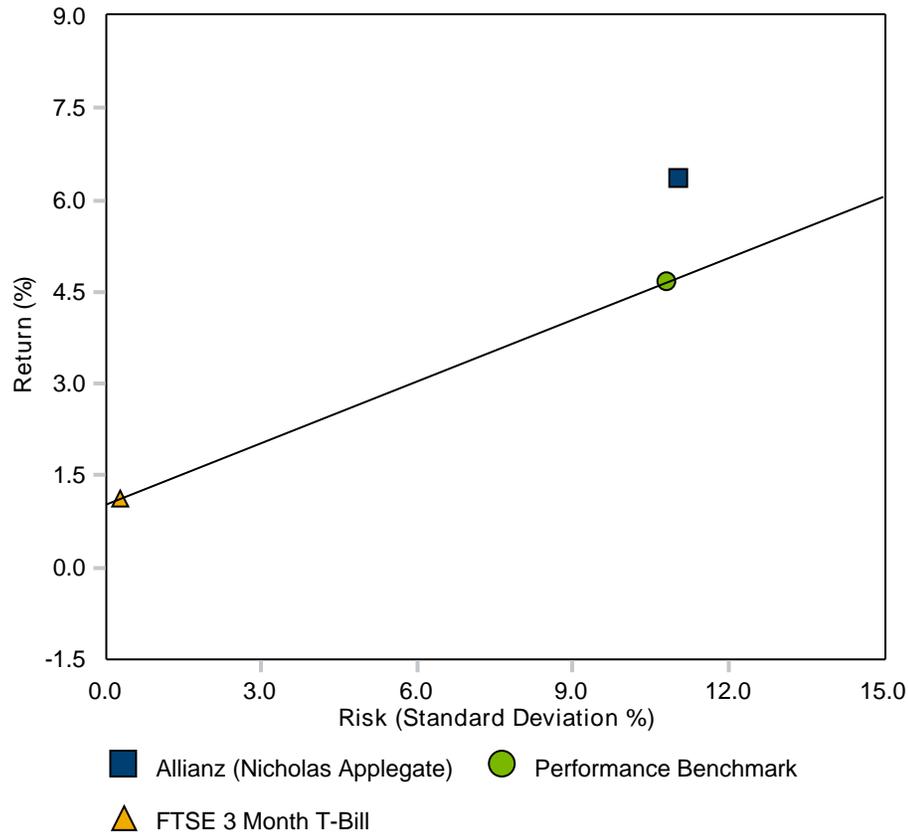


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ Allianz (Nicholas Applegate)	-11.7 (4)	-11.7 (4)	0.4 (6)	8.5 (14)	6.3 (19)	9.3 (40)	27.0 (55)	3.7 (4)	15.6 (64)
● Performance Benchmark	-13.6 (8)	-13.6 (8)	-3.5 (13)	4.8 (25)	4.7 (34)	7.9 (56)	23.1 (77)	0.2 (10)	13.7 (75)
5th Percentile	-12.4	-12.4	0.5	12.1	9.7	12.6	38.3	2.4	31.8
1st Quartile	-19.5	-19.5	-8.0	4.6	5.6	10.1	31.5	-4.2	23.2
Median	-24.6	-24.6	-15.5	0.0	2.5	8.3	27.6	-7.8	18.3
3rd Quartile	-30.9	-30.9	-24.1	-5.4	-0.8	6.4	23.4	-12.3	13.6
95th Percentile	-38.6	-38.6	-33.2	-11.5	-4.9	4.0	14.1	-18.4	5.6
Population	2,088	2,088	2,083	2,039	1,958	1,657	2,214	2,457	2,558

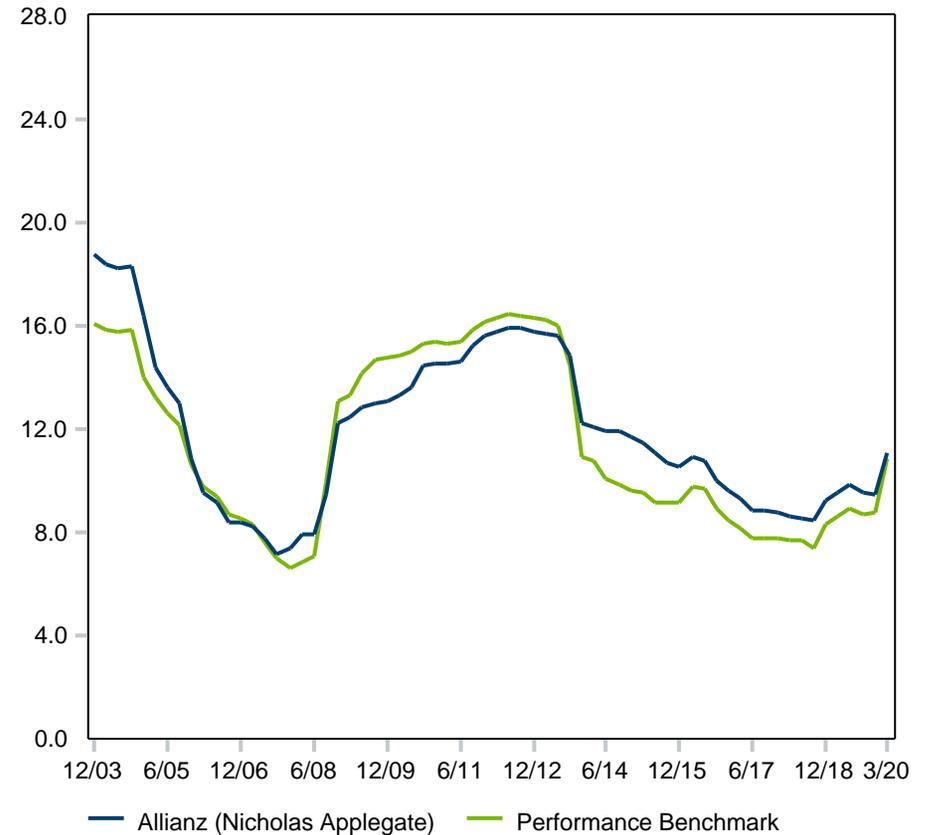
95th Percentile
 Parentheses contain percentile rankings.

Allianz (Nicholas Applegate) Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 5 Years Standard Deviation



5 Years Historical Statistics

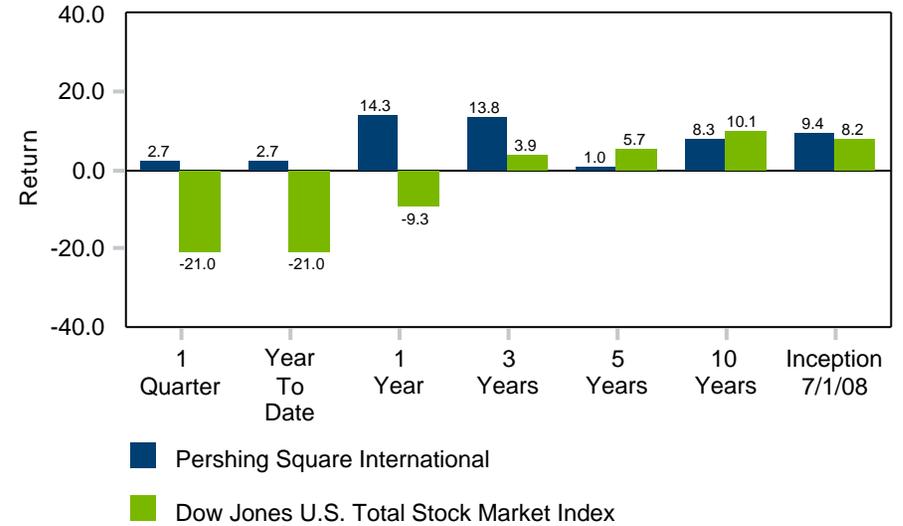
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Allianz (Nicholas Applegate)	1.62	2.81	0.58	0.94	0.51	1.70	0.99	6.34	11.06	0.97
Performance Benchmark	0.00	0.00	N/A	1.00	0.37	0.00	1.00	4.66	10.85	1.00
FTSE 3 Month T-Bill	-4.04	10.84	-0.37	0.00	N/A	1.12	0.00	1.12	0.25	0.04

Pershing Square International Performance Summary

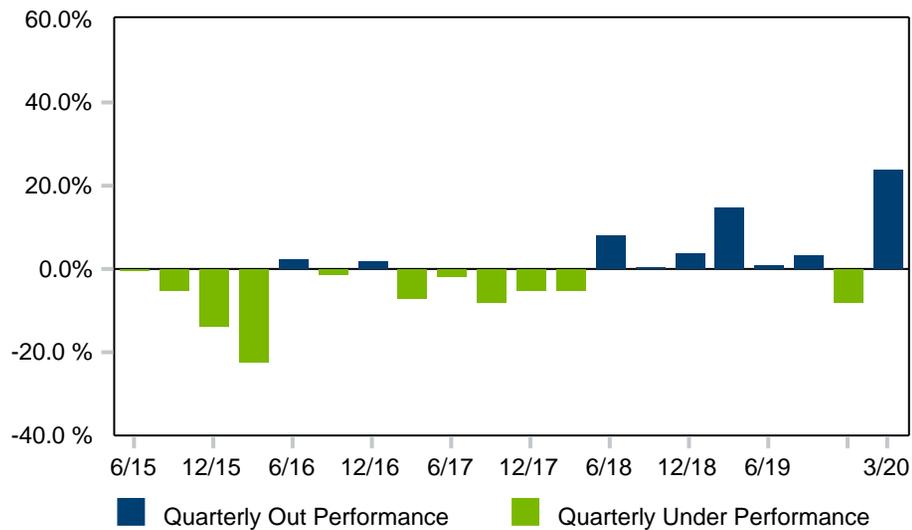
Account Information

Account Name: Pershing Square International
 Inception Date: 06/30/2008
 Account Structure: Commingled Fund
 Asset Class: US Equity
 Benchmark: Dow Jones U.S. Total Stock Market Index
 Peer Group: IM U.S. Equity (SA+CF)

Return Summary



Quarterly Excess Performance

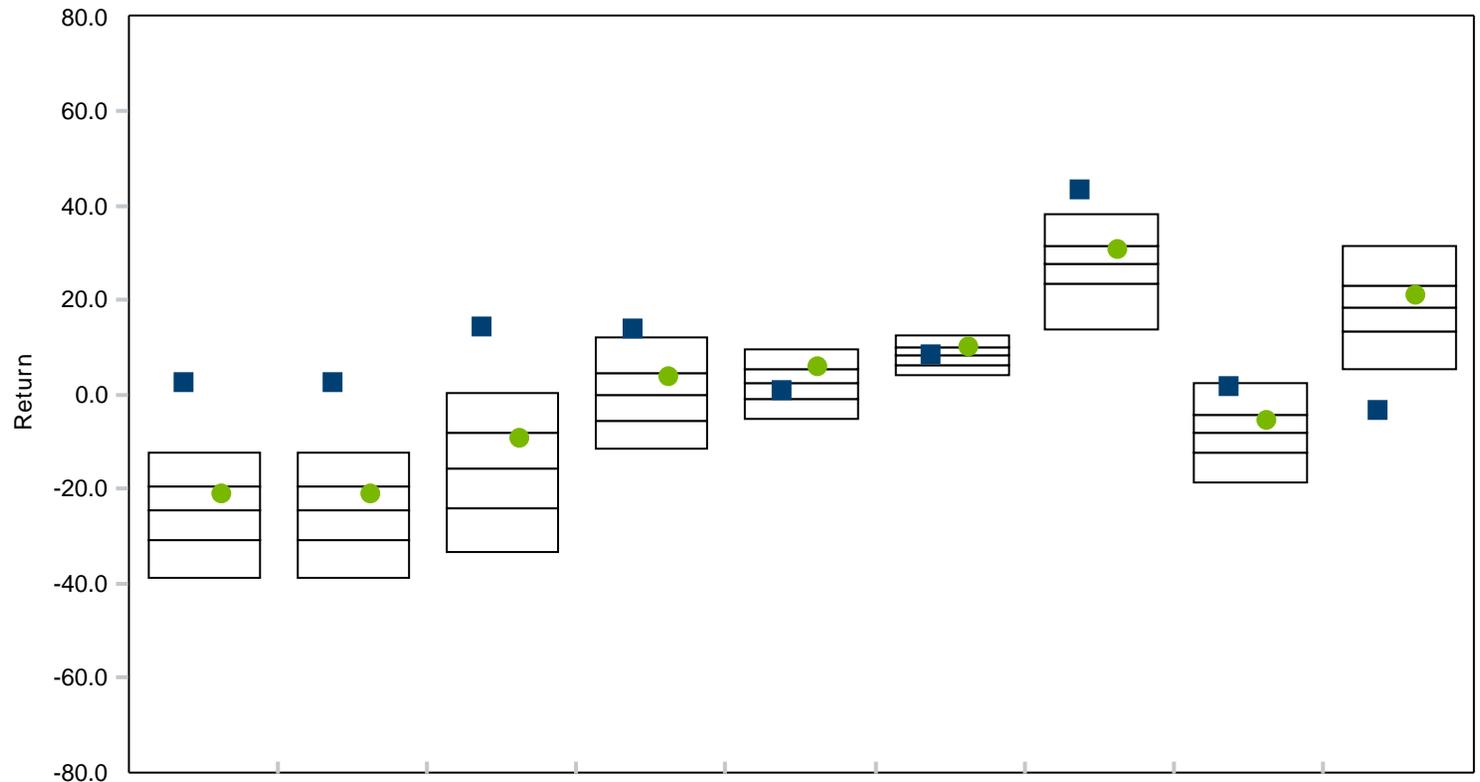


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM U.S. Equity (SA+CF)

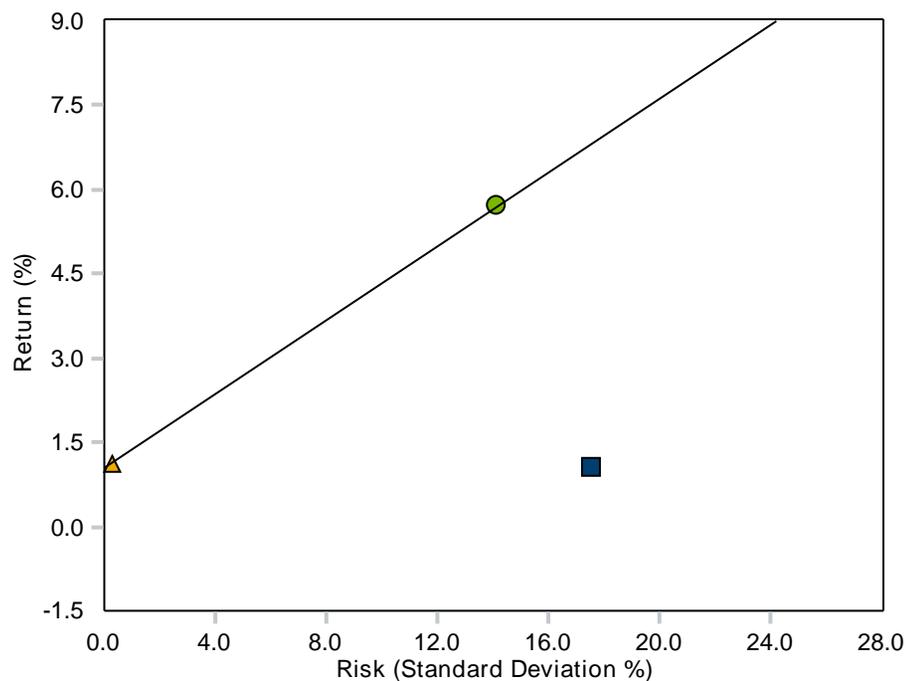


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ Pershing Square International	2.7 (1)	2.7 (1)	14.3 (1)	13.8 (3)	1.0 (61)	8.3 (51)	43.5 (2)	1.8 (7)	-3.2 (99)
● Dow Jones U.S. Total Stock Market Index	-21.0 (35)	-21.0 (35)	-9.3 (31)	3.9 (30)	5.7 (25)	10.1 (25)	30.9 (28)	-5.3 (33)	21.2 (35)
5th Percentile	-12.4	-12.4	0.5	12.1	9.7	12.6	38.3	2.4	31.8
1st Quartile	-19.5	-19.5	-8.0	4.6	5.6	10.1	31.5	-4.2	23.2
Median	-24.6	-24.6	-15.5	0.0	2.5	8.3	27.6	-7.8	18.3
3rd Quartile	-30.9	-30.9	-24.1	-5.4	-0.8	6.4	23.4	-12.3	13.6
95th Percentile	-38.6	-38.6	-33.2	-11.5	-4.9	4.0	14.1	-18.4	5.6
Population	2,088	2,088	2,083	2,039	1,958	1,657	2,214	2,457	2,558

parentheses contain percentile rankings.

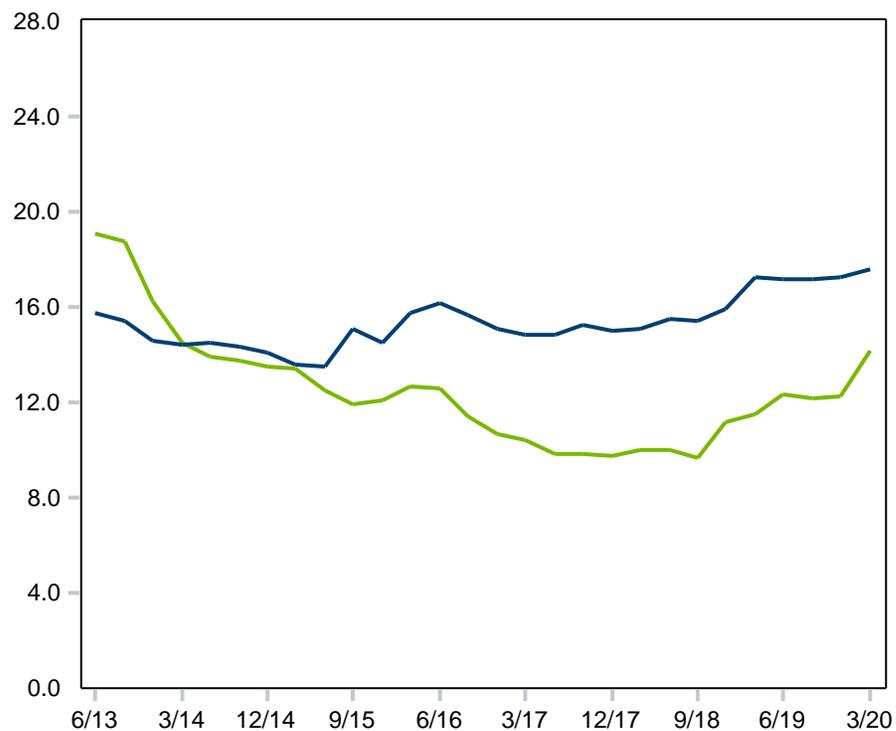
Pershing Square International Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



- Pershing Square International
- Dow Jones U.S. Total Stock Market Index
- ▲ FTSE 3 Month T-Bill

Rolling 5 Years Standard Deviation



- Pershing Square International
- Dow Jones U.S. Total Stock Market Index

5 Years Historical Statistics

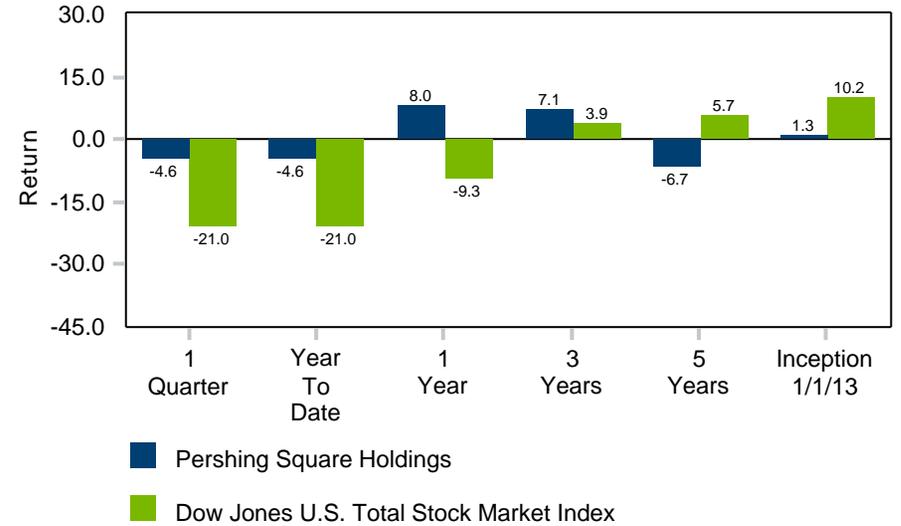
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Pershing Square International	-4.03	17.63	-0.23	0.16	0.08	-0.72	0.50	1.03	17.60	0.40
Dow Jones U.S. Total Stock Market Index	0.00	0.00	N/A	1.00	0.38	0.00	1.00	5.70	14.18	1.00
FTSE 3 Month T-Bill	-5.45	14.18	-0.38	0.00	N/A	1.13	0.00	1.12	0.25	-0.01

Pershing Square Holdings Performance Summary

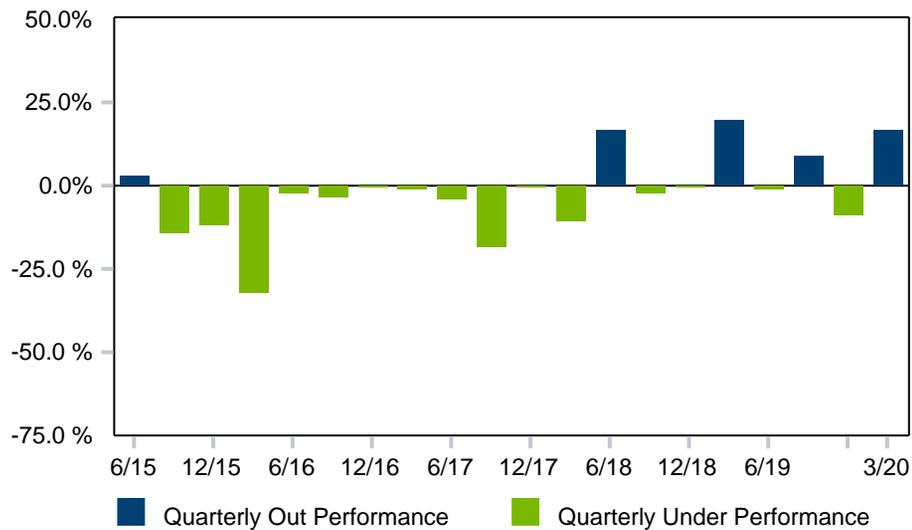
Account Information

Account Name: Pershing Square Holdings
 Inception Date: 12/31/2012
 Account Structure: Commingled Fund
 Asset Class: US Equity
 Benchmark: Dow Jones U.S. Total Stock Market Index
 Peer Group: IM U.S. Equity (SA+CF)

Return Summary



Quarterly Excess Performance

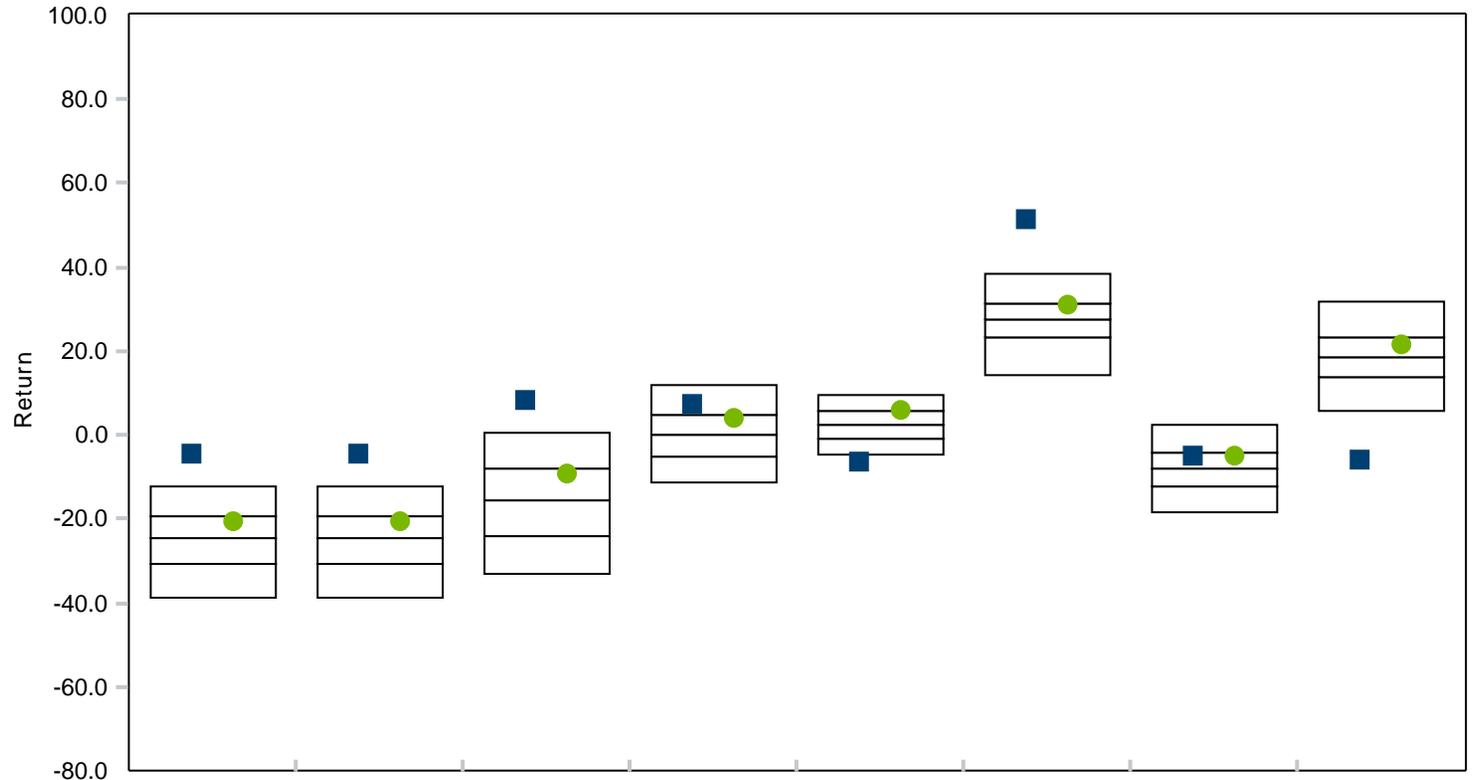


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM U.S. Equity (SA+CF)

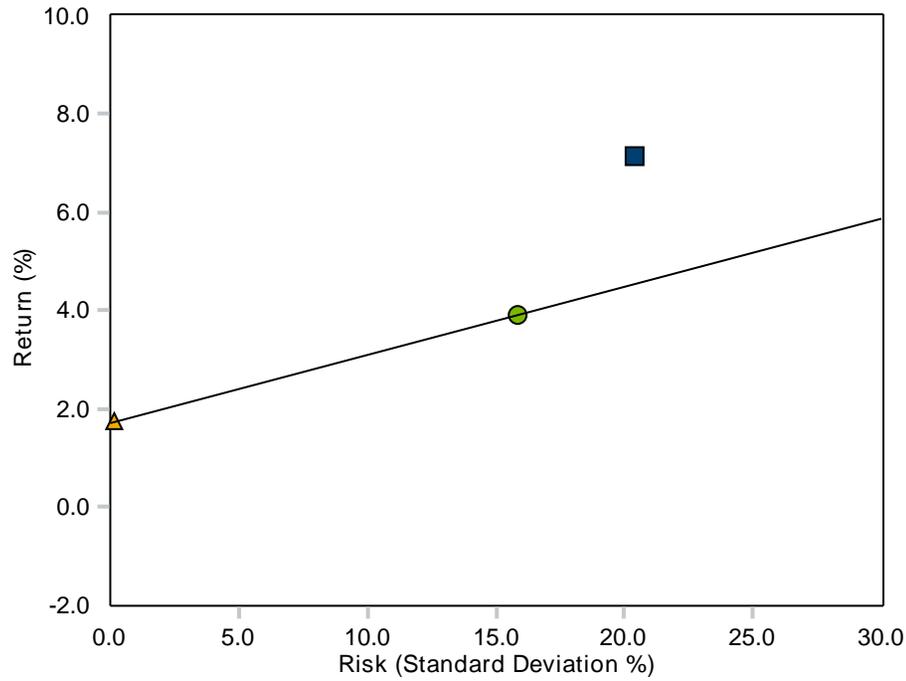


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	2019	2018	2017
■ Pershing Square Holdings	-4.6 (1)	-4.6 (1)	8.0 (1)	7.1 (17)	-6.7 (98)	51.3 (1)	-5.3 (34)	-6.0 (100)
● Dow Jones U.S. Total Stock Market Index	-21.0 (35)	-21.0 (35)	-9.3 (31)	3.9 (30)	5.7 (25)	30.9 (28)	-5.3 (33)	21.2 (35)
5th Percentile	-12.4	-12.4	0.5	12.1	9.7	38.3	2.4	31.8
1st Quartile	-19.5	-19.5	-8.0	4.6	5.6	31.5	-4.2	23.2
Median	-24.6	-24.6	-15.5	0.0	2.5	27.6	-7.8	18.3
3rd Quartile	-30.9	-30.9	-24.1	-5.4	-0.8	23.4	-12.3	13.6
95th Percentile	-38.6	-38.6	-33.2	-11.5	-4.9	14.1	-18.4	5.6
Population	2,088	2,088	2,083	2,039	1,958	2,214	2,457	2,558

Parantheses contain percentile rankings.

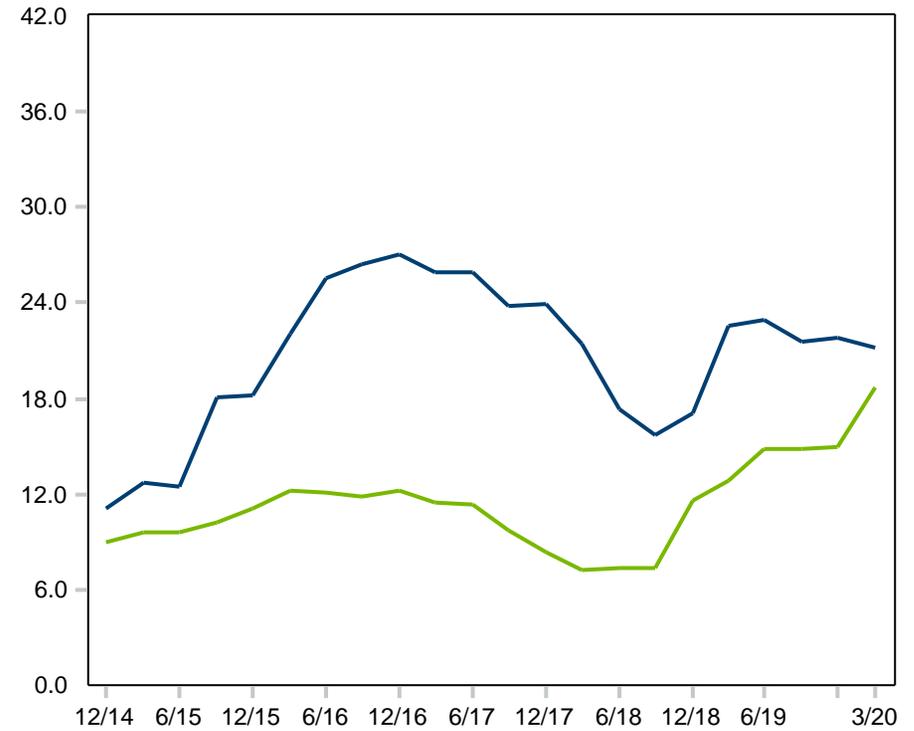
Pershing Square Holdings Risk Profile

Annualized Return vs. Annualized Standard Deviation
3 Years



- Pershing Square Holdings
- Dow Jones U.S. Total Stock Market Index
- ▲ FTSE 3 Month T-Bill

Rolling 2 Years Standard Deviation



- Pershing Square Holdings
- Dow Jones U.S. Total Stock Market Index

3 Years Historical Statistics

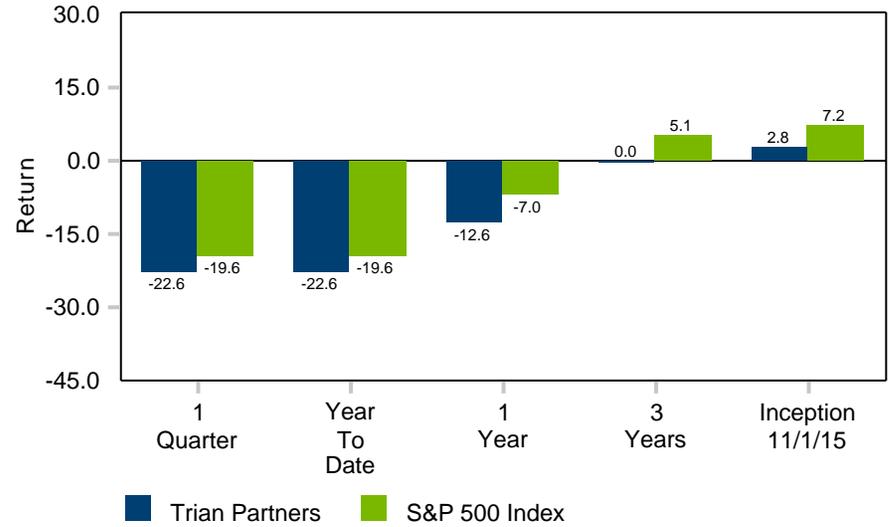
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Pershing Square Holdings	3.79	17.53	0.22	0.31	0.35	5.35	0.72	7.12	20.44	0.56
Dow Jones U.S. Total Stock Market Index	0.00	0.00	N/A	1.00	0.21	0.00	1.00	3.92	15.86	1.00
FTSE 3 Month T-Bill	-3.39	15.86	-0.21	0.00	N/A	1.74	0.00	1.74	0.16	0.01

Trian Partners Performance Summary

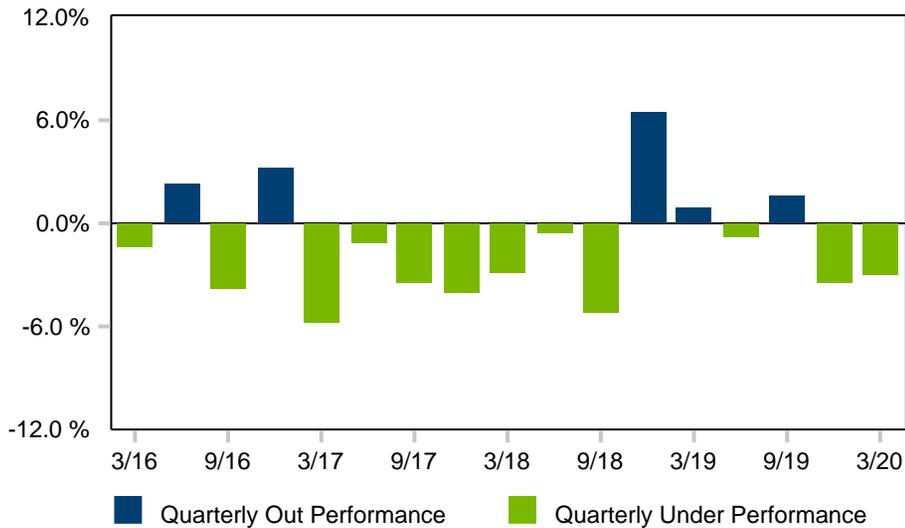
Account Information

Account Name: Trian Partners
 Inception Date: 11/01/2015
 Account Structure: Commingled Fund
 Asset Class: US Equity
 Benchmark: S&P 500 Index
 Peer Group:

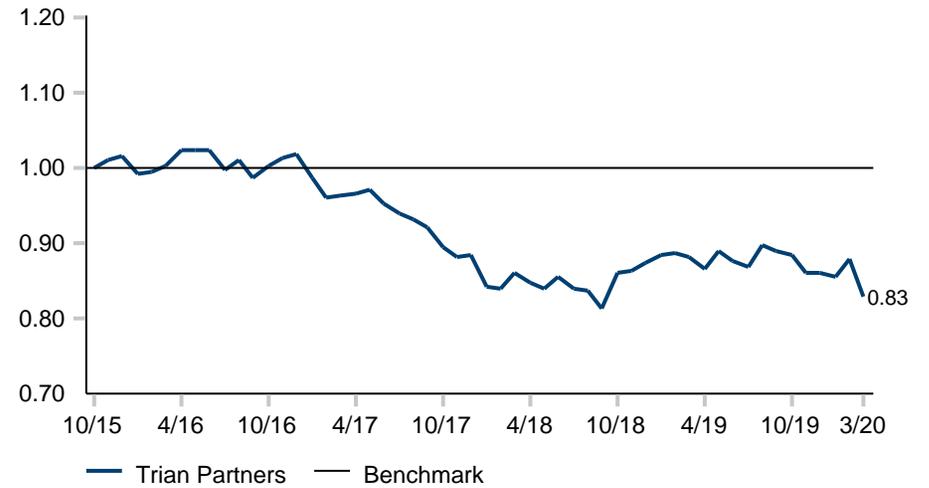
Return Summary



Quarterly Excess Performance



Ratio of Cumulative Wealth - Since Inception

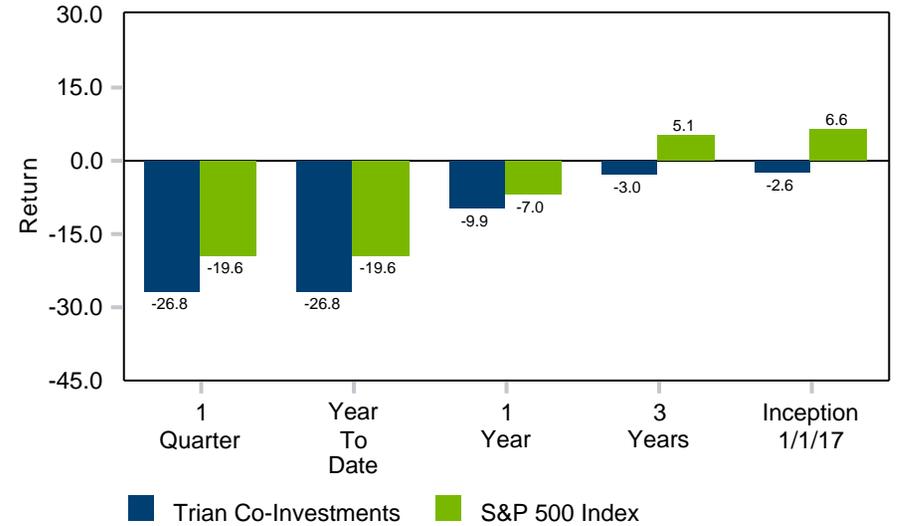


Trian Co-Investments Performance Summary

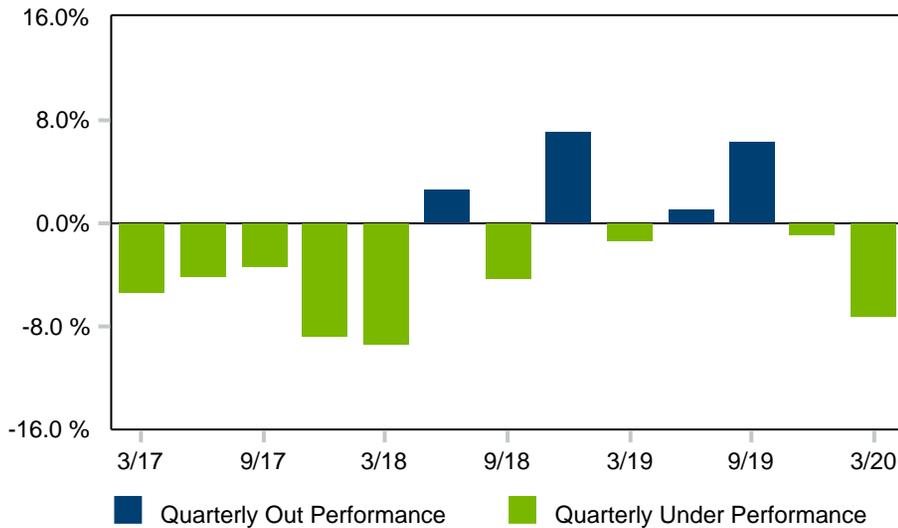
Account Information

Account Name: Trian Co-Investments
 Inception Date: 01/01/2017
 Account Structure: Commingled Fund
 Asset Class: US Equity
 Benchmark: S&P 500 Index
 Peer Group:

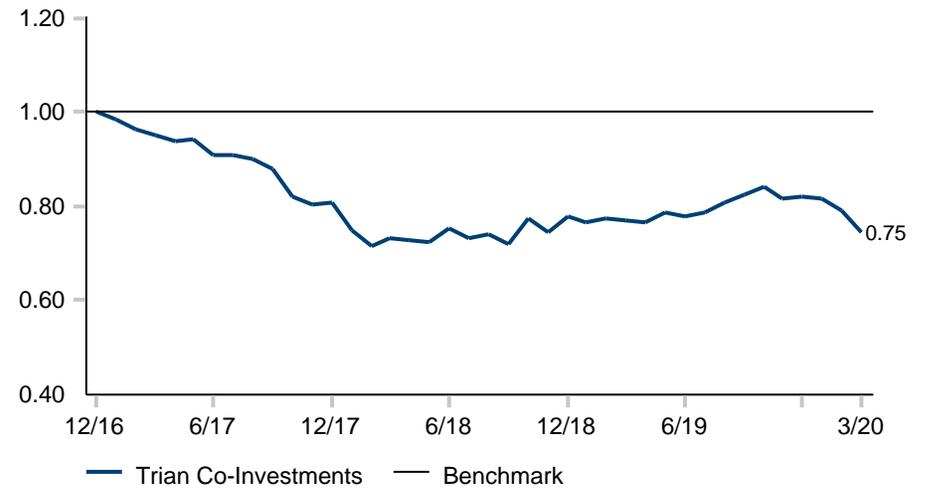
Return Summary



Quarterly Excess Performance



Ratio of Cumulative Wealth - Since Inception

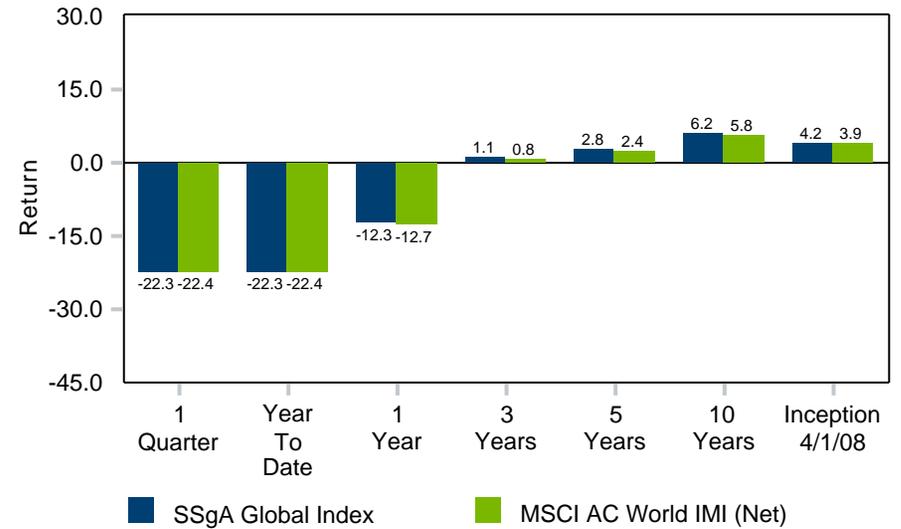


SSgA Global Index Performance Summary

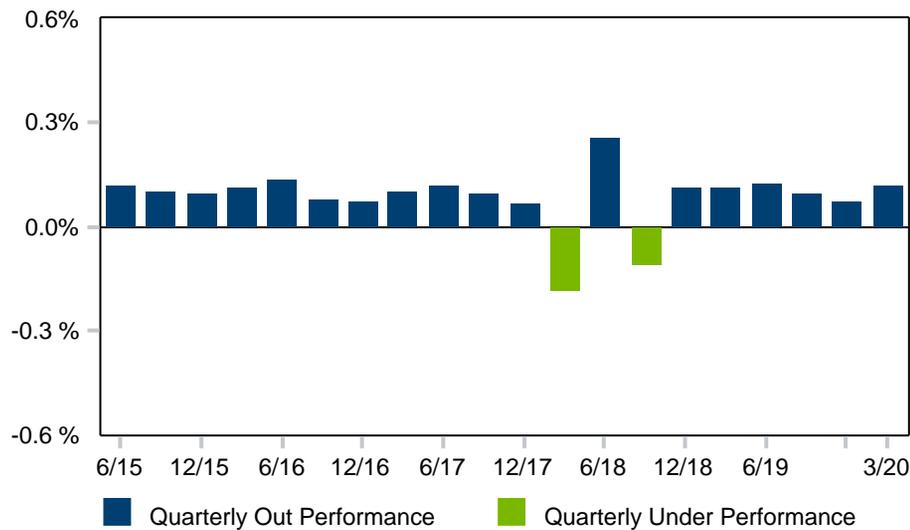
Account Information

Account Name: SSgA Global Index
 Inception Date: 03/31/2008
 Account Structure: Commingled Fund
 Asset Class: Global Equity
 Benchmark: MSCI AC World IMI (Net)
 Peer Group: IM Global Equity (SA+CF)

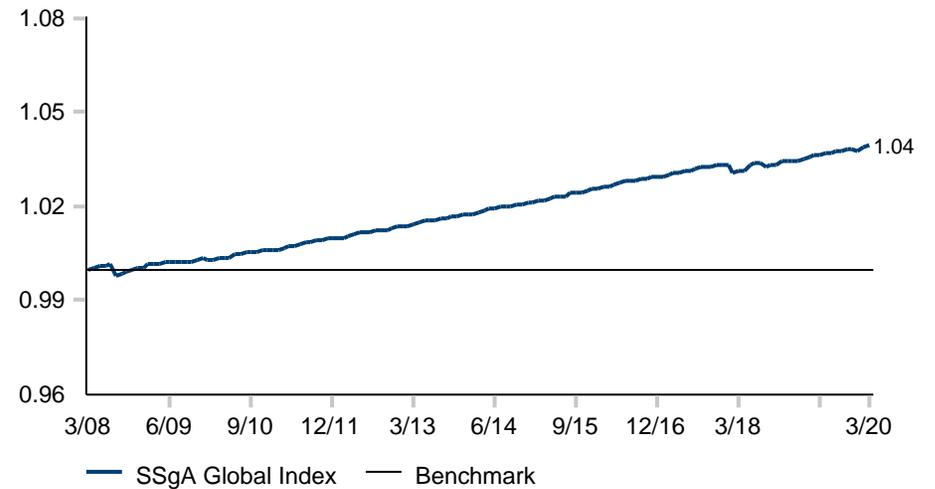
Return Summary



Quarterly Excess Performance

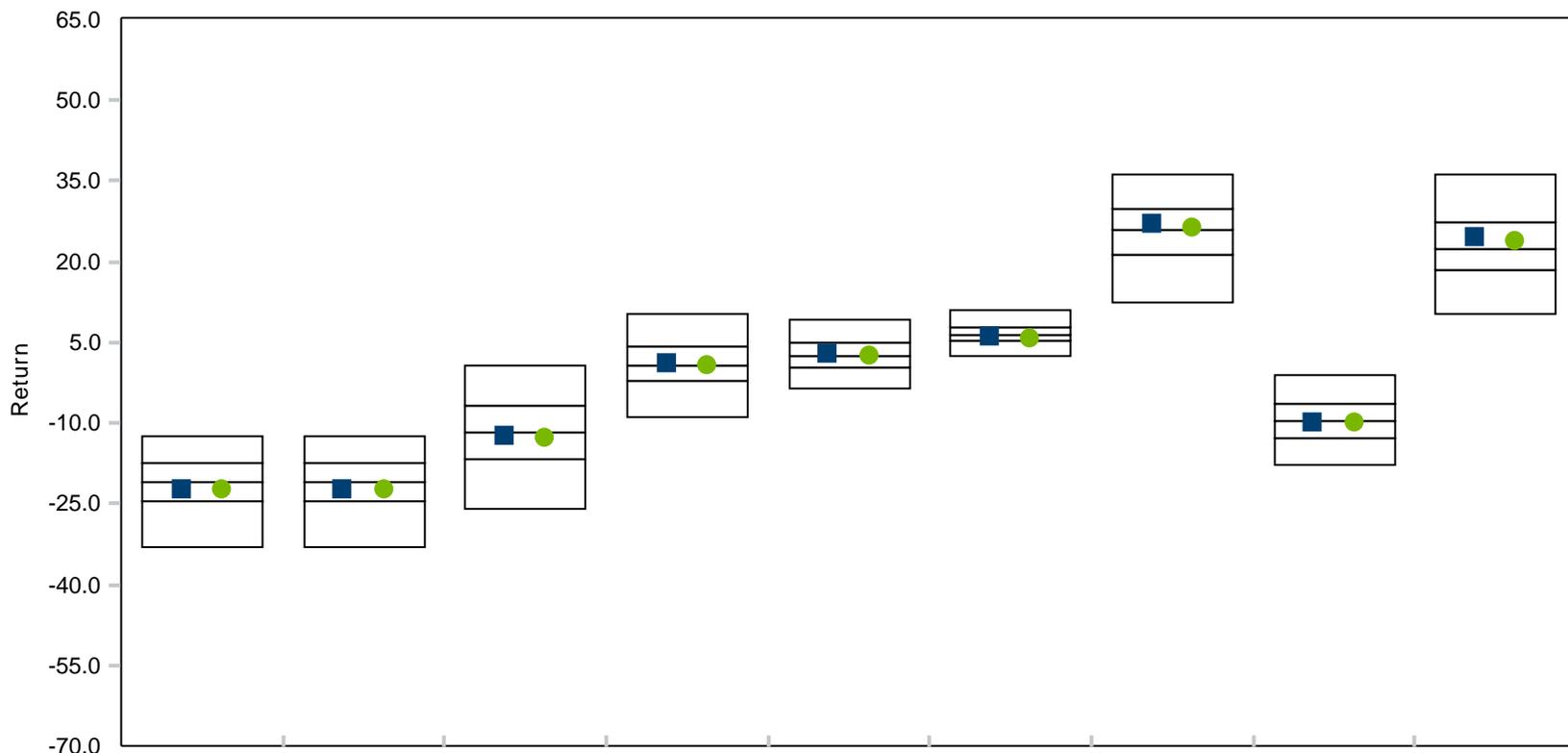


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM Global Equity (SA+CF)

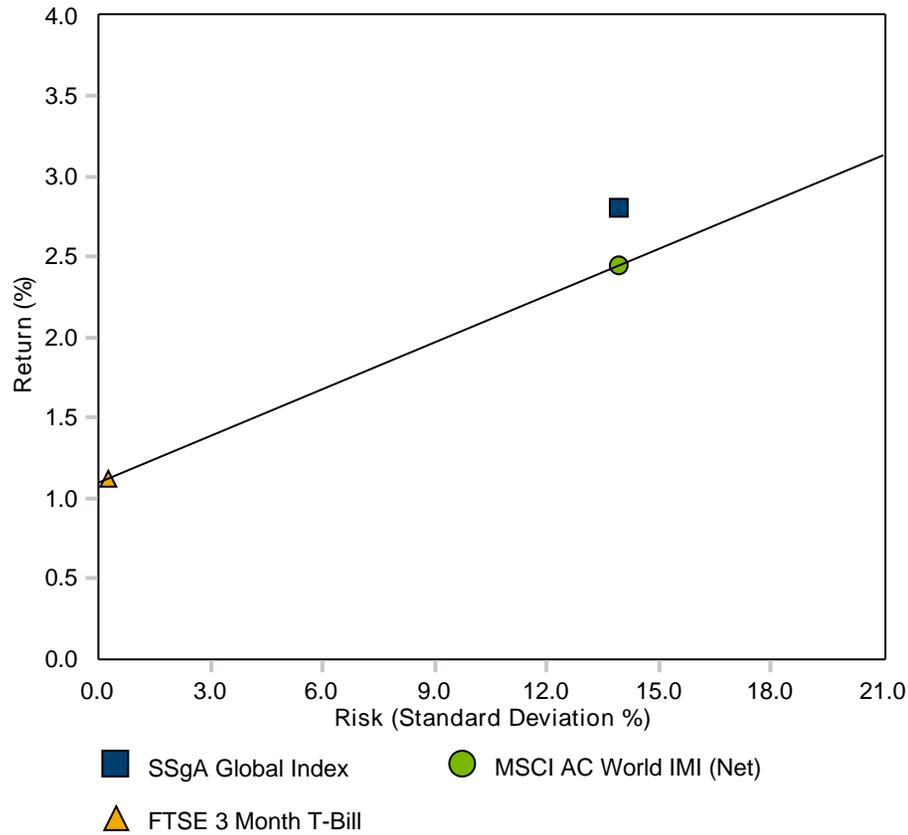


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ SSgA Global Index	-22.3 (62)	-22.3 (62)	-12.3 (55)	1.1 (48)	2.8 (45)	6.2 (54)	26.8 (44)	-10.0 (54)	24.4 (40)
● MSCI AC World IMI (Net)	-22.4 (63)	-22.4 (63)	-12.7 (57)	0.8 (52)	2.4 (51)	5.8 (63)	26.4 (47)	-10.1 (56)	23.9 (42)
5th Percentile	-12.5	-12.5	0.5	10.3	9.3	11.1	36.3	-0.9	36.2
1st Quartile	-17.6	-17.6	-6.6	4.1	4.9	7.9	30.0	-6.4	27.2
Median	-21.1	-21.1	-11.7	0.9	2.5	6.5	25.8	-9.5	22.5
3rd Quartile	-24.6	-24.6	-16.5	-2.2	0.4	5.1	21.5	-12.9	18.5
95th Percentile	-33.0	-33.0	-26.1	-9.1	-3.5	2.5	12.5	-17.7	10.3
Population	459	459	456	441	394	251	489	530	551

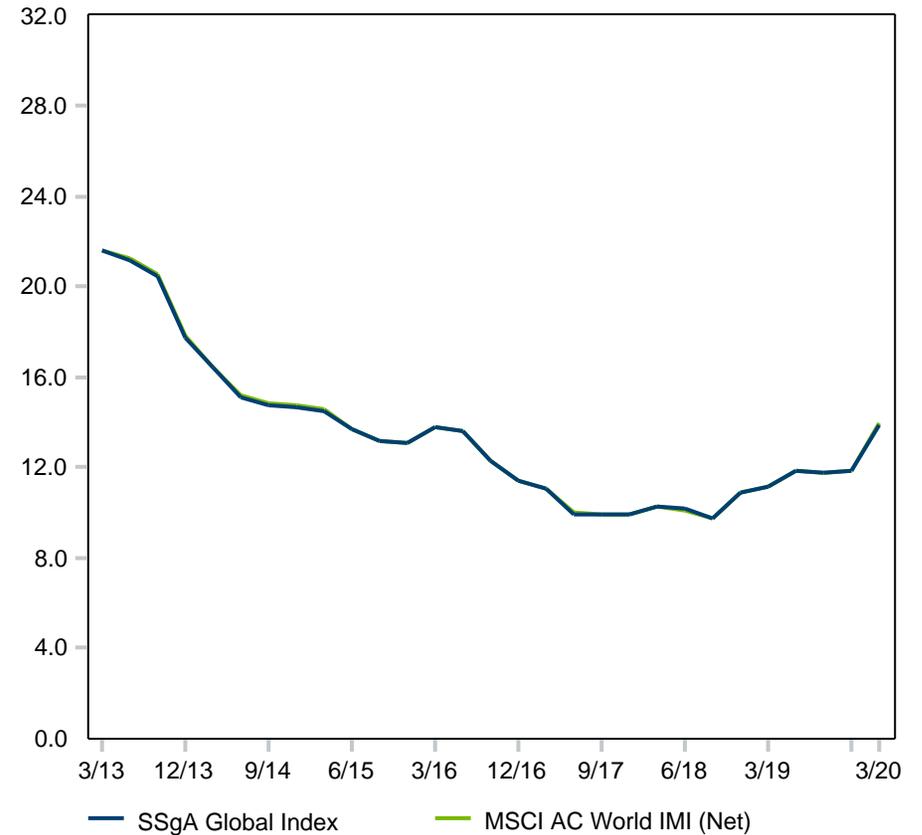
Parenteses contain percentile rankings.

SSgA Global Index Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 5 Years Standard Deviation



5 Years Historical Statistics

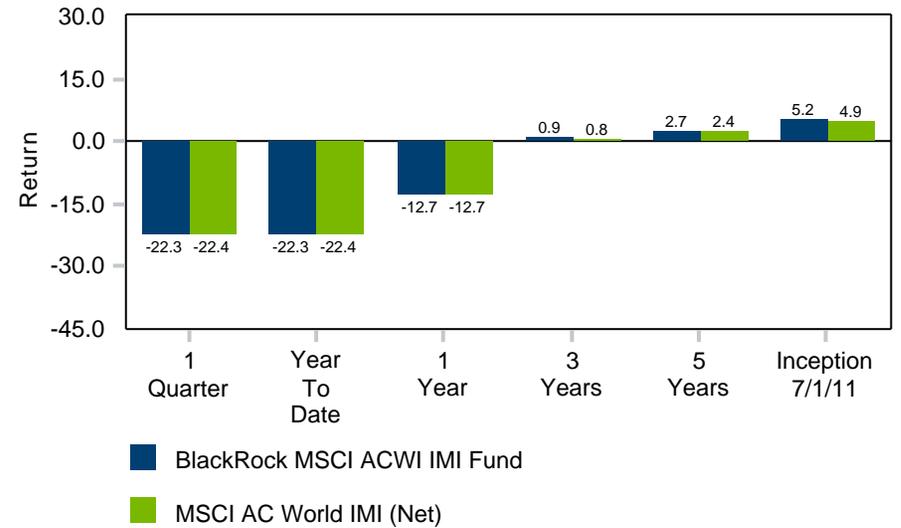
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
SSgA Global Index	0.34	0.18	1.95	1.00	0.19	0.35	1.00	2.80	13.93	1.00
MSCI AC World IMI (Net)	0.00	0.00	N/A	1.00	0.16	0.00	1.00	2.45	13.94	1.00
FTSE 3 Month T-Bill	-2.28	13.95	-0.16	0.00	N/A	1.13	0.00	1.12	0.25	-0.03

BlackRock MSCI ACWI IMI Fund Performance Summary

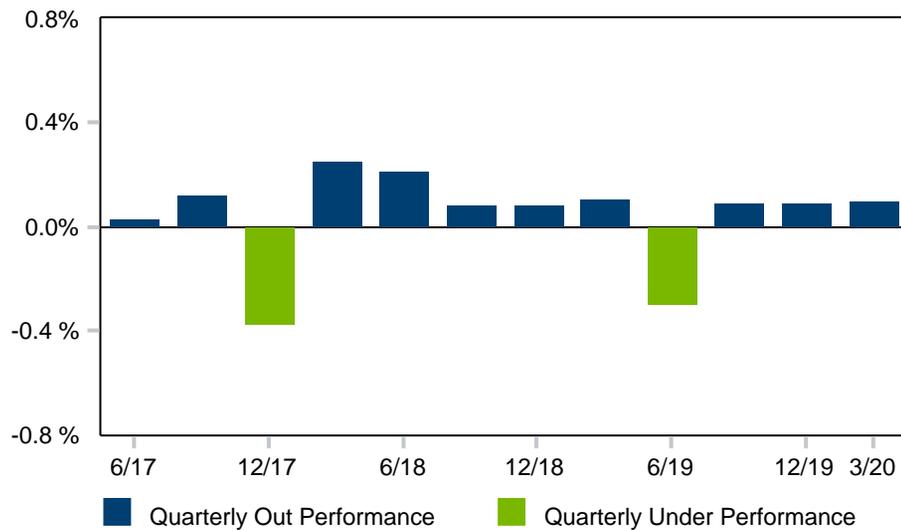
Account Information

Account Name: BlackRock MSCI ACWI IMI Fund
 Inception Date: 06/30/2011
 Account Structure: Commingled Fund
 Asset Class: Global Equity
 Benchmark: MSCI AC World IMI (Net)
 Peer Group: IM Global Equity (SA+CF)

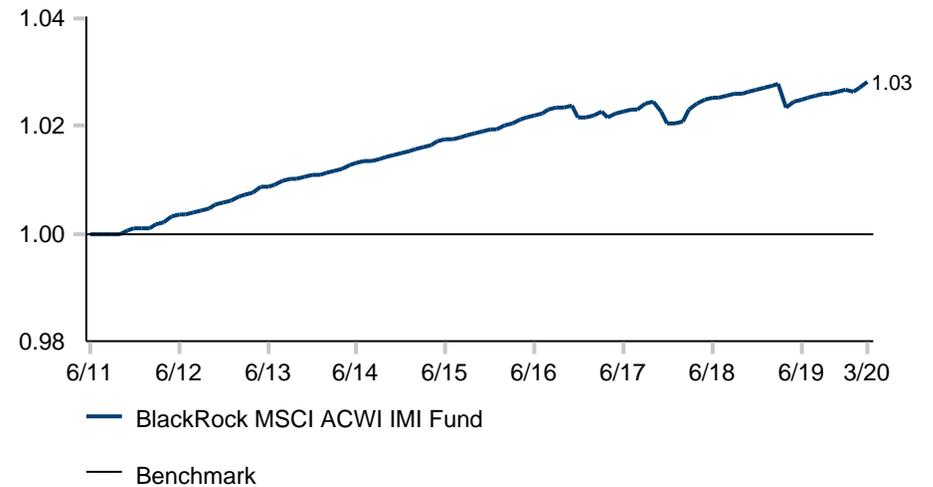
Return Summary



Quarterly Excess Performance

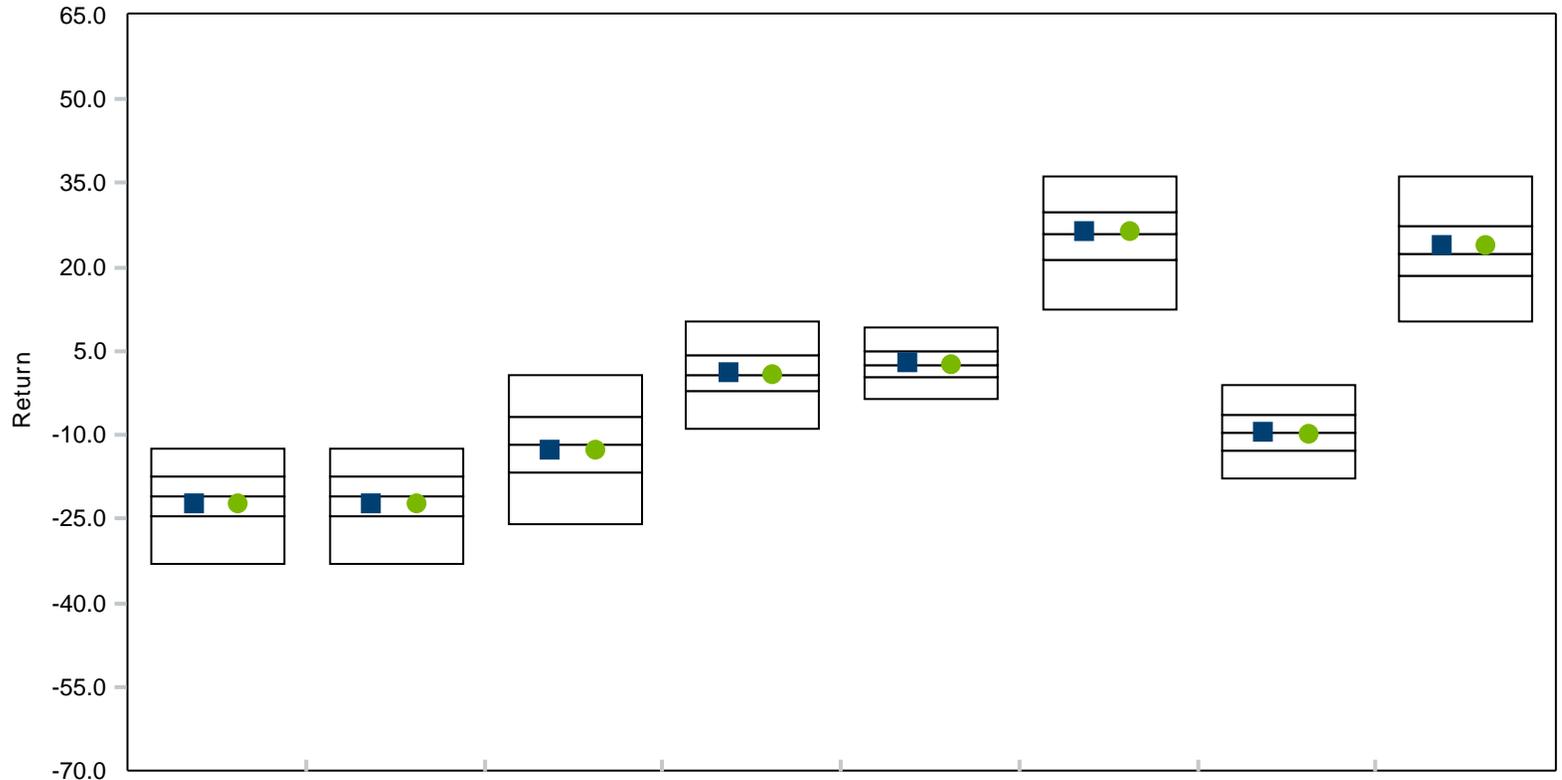


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM Global Equity (SA+CF)

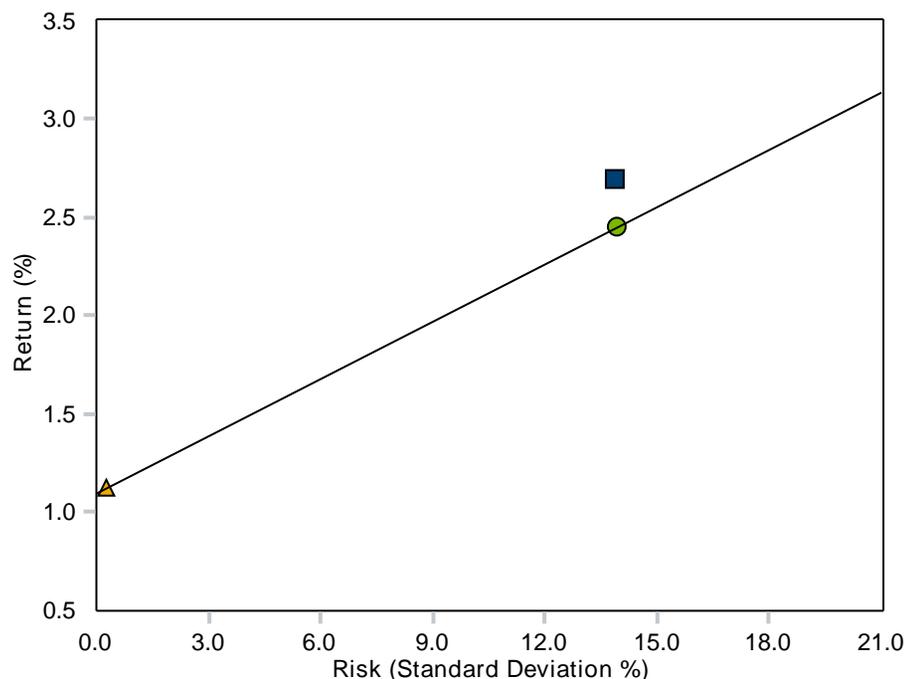


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	2019	2018	2017
■ BlackRock MSCI ACWI IMI Fund	-22.3 (62)	-22.3 (62)	-12.7 (57)	0.9 (50)	2.7 (47)	26.3 (47)	-9.5 (51)	23.8 (43)
● MSCI AC World IMI (Net)	-22.4 (63)	-22.4 (63)	-12.7 (57)	0.8 (52)	2.4 (51)	26.4 (47)	-10.1 (56)	23.9 (42)
5th Percentile	-12.5	-12.5	0.5	10.3	9.3	36.3	-0.9	36.2
1st Quartile	-17.6	-17.6	-6.6	4.1	4.9	30.0	-6.4	27.2
Median	-21.1	-21.1	-11.7	0.9	2.5	25.8	-9.5	22.5
3rd Quartile	-24.6	-24.6	-16.5	-2.2	0.4	21.5	-12.9	18.5
95th Percentile	-33.0	-33.0	-26.1	-9.1	-3.5	12.5	-17.7	10.3
Population	459	459	456	441	394	489	530	551

Parenteses contain percentile rankings.

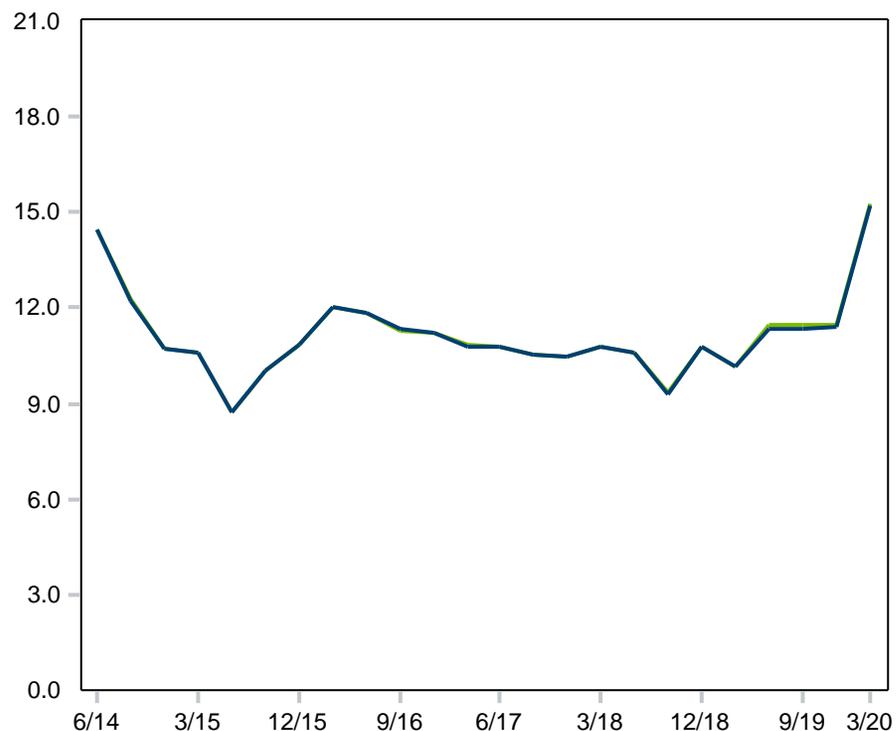
BlackRock MSCI ACWI IMI Fund Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



- BlackRock MSCI ACWI IMI Fund
- MSCI AC World IMI (Net)
- ▲ FTSE 3 Month T-Bill

Rolling 3 Years Standard Deviation



- BlackRock MSCI ACWI IMI Fund
- MSCI AC World IMI (Net)

5 Years Historical Statistics

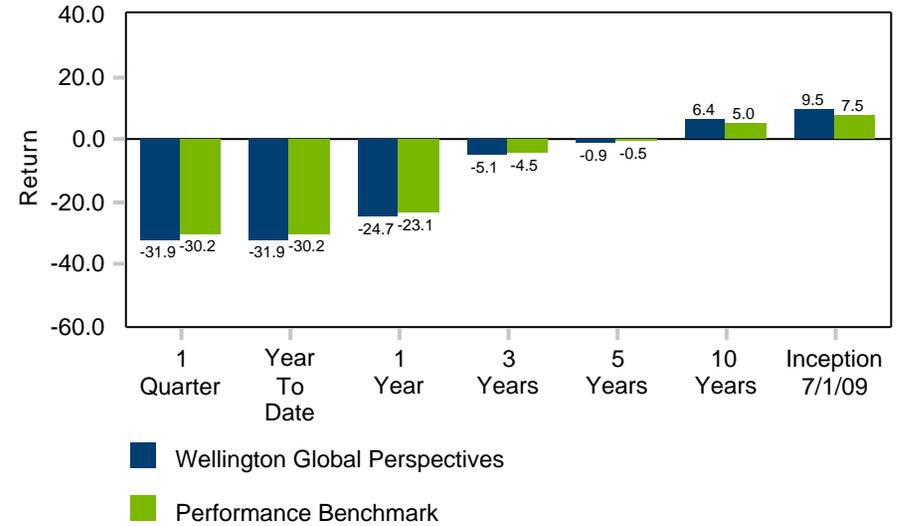
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
BlackRock MSCI ACWI IMI Fund	0.23	0.31	0.72	1.00	0.18	0.24	1.00	2.69	13.89	1.00
MSCI AC World IMI (Net)	0.00	0.00	N/A	1.00	0.16	0.00	1.00	2.45	13.94	1.00
FTSE 3 Month T-Bill	-2.28	13.95	-0.16	0.00	N/A	1.13	0.00	1.12	0.25	-0.03

Wellington Global Perspectives Performance Summary

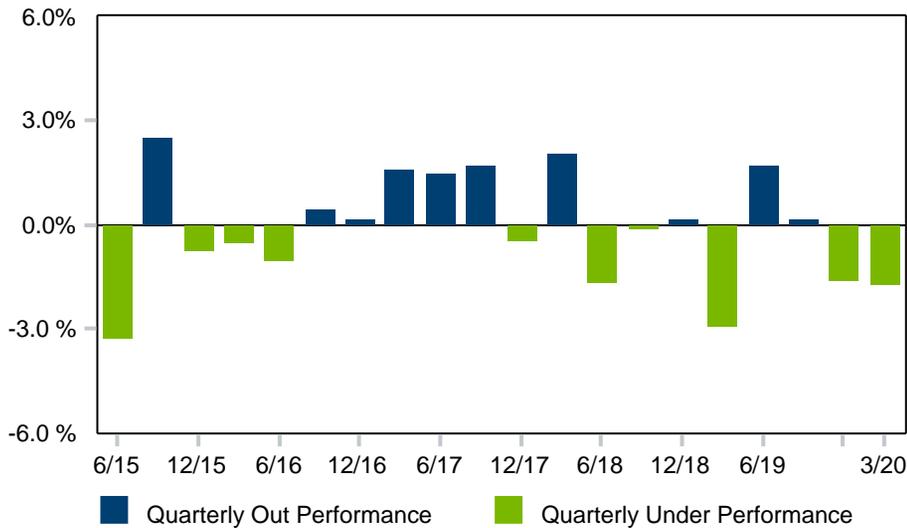
Account Information

Account Name: Wellington Global Perspectives
 Inception Date: 06/30/2009
 Account Structure: Separate Account
 Asset Class: Global Equity
 Benchmark: Performance Benchmark
 Peer Group: IM Global Equity (SA+CF)

Return Summary



Quarterly Excess Performance

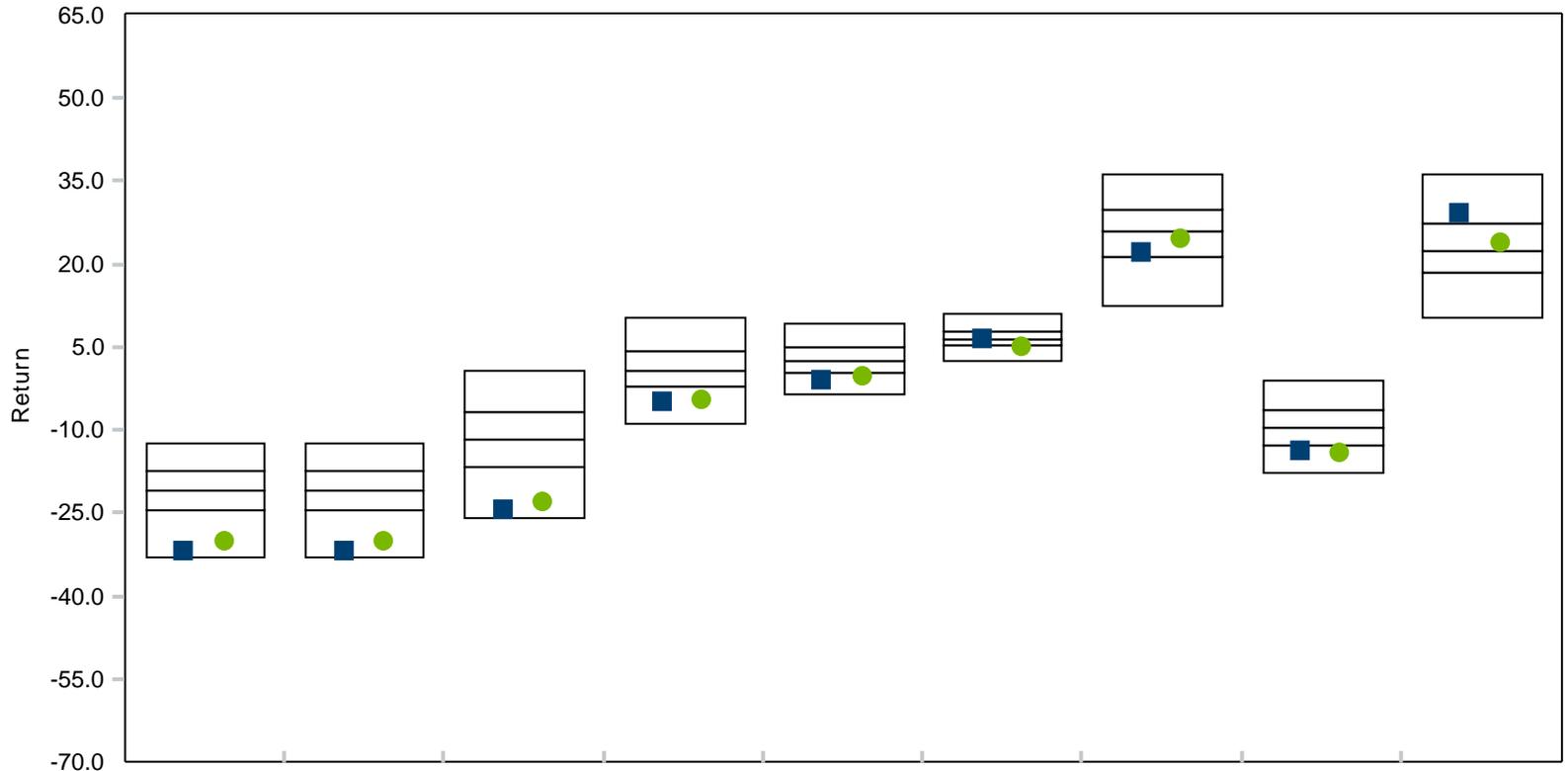


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM Global Equity (SA+CF)

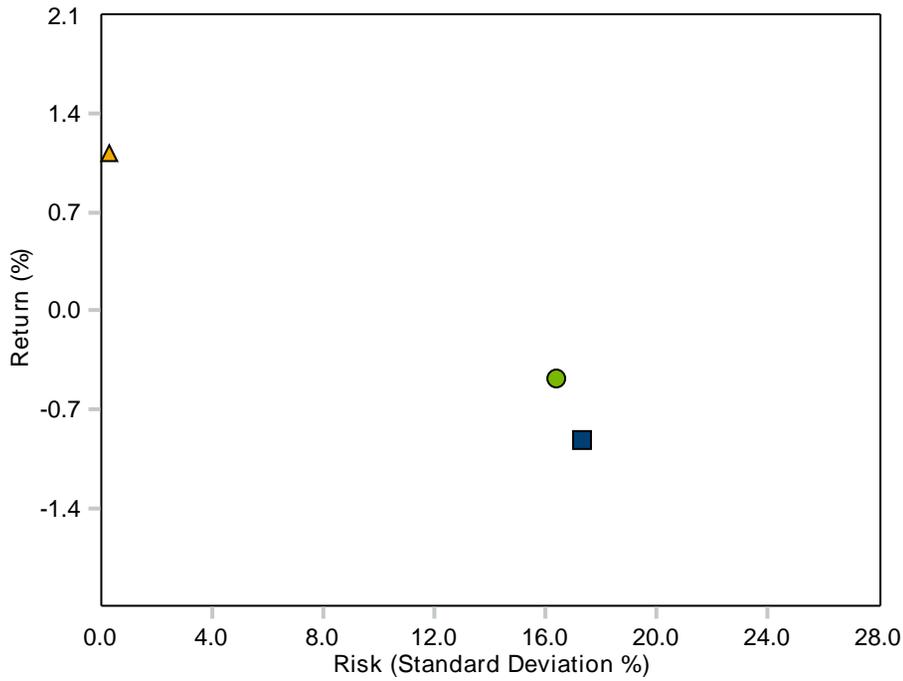


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
Wellington Global Perspectives	-31.9 (94)	-31.9 (94)	-24.7 (93)	-5.1 (87)	-0.9 (84)	6.4 (52)	21.9 (74)	-14.0 (82)	29.0 (20)
Performance Benchmark	-30.2 (91)	-30.2 (91)	-23.1 (91)	-4.5 (85)	-0.5 (82)	5.0 (77)	24.7 (60)	-14.4 (83)	23.8 (43)
5th Percentile	-12.5	-12.5	0.5	10.3	9.3	11.1	36.3	-0.9	36.2
1st Quartile	-17.6	-17.6	-6.6	4.1	4.9	7.9	30.0	-6.4	27.2
Median	-21.1	-21.1	-11.7	0.9	2.5	6.5	25.8	-9.5	22.5
3rd Quartile	-24.6	-24.6	-16.5	-2.2	0.4	5.1	21.5	-12.9	18.5
95th Percentile	-33.0	-33.0	-26.1	-9.1	-3.5	2.5	12.5	-17.7	10.3
Population	459	459	456	441	394	251	489	530	551

Parenteses contain percentile rankings.

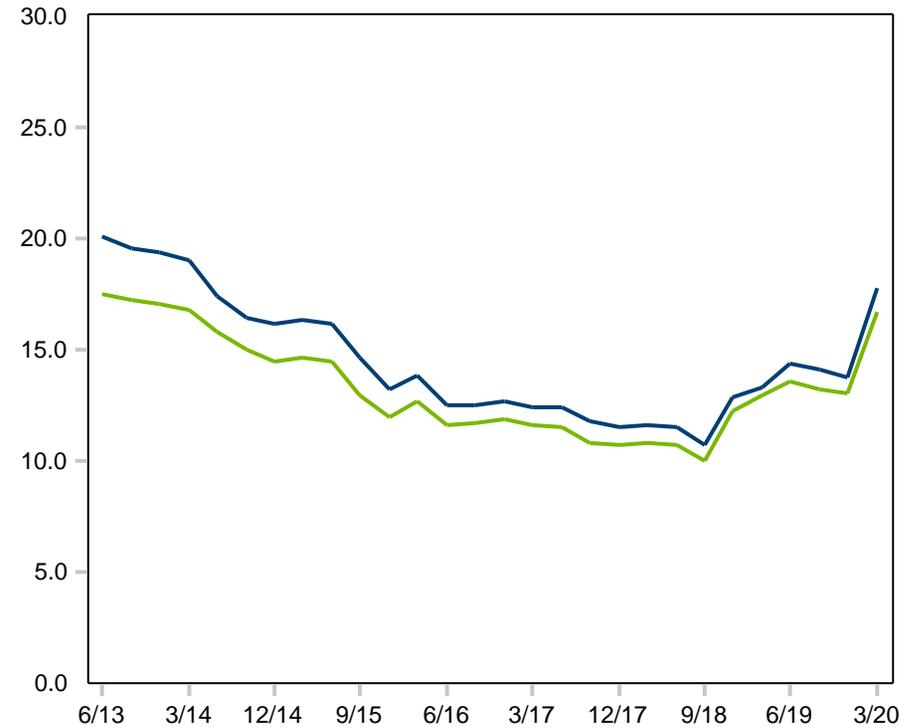
Wellington Global Perspectives Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



- Wellington Global Perspectives
- Performance Benchmark
- ▲ FTSE 3 Month T-Bill

Rolling 4 Years Standard Deviation



- Wellington Global Perspectives
- Performance Benchmark

5 Years Historical Statistics

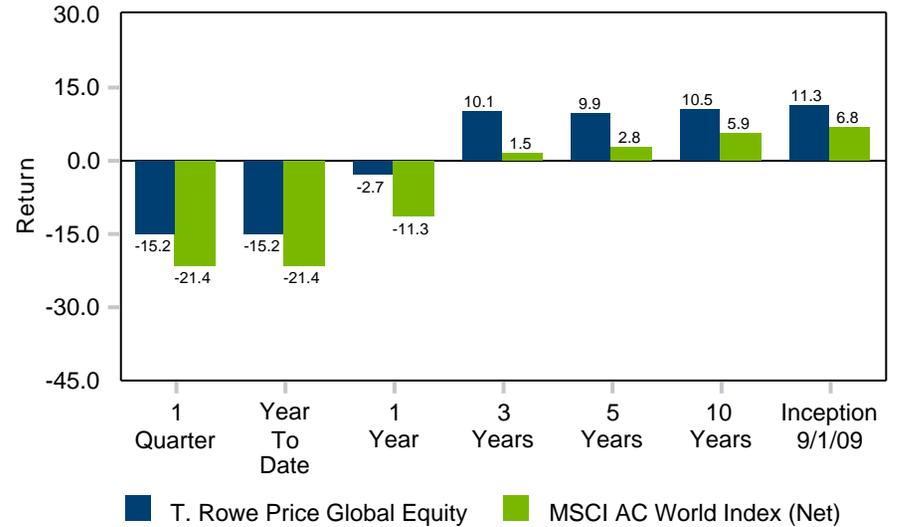
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Wellington Global Perspectives	-0.27	3.05	-0.09	0.97	-0.03	-0.30	1.04	-0.93	17.39	0.99
Performance Benchmark	0.00	0.00	N/A	1.00	-0.01	0.00	1.00	-0.49	16.42	1.00
FTSE 3 Month T-Bill	0.20	16.44	0.01	0.01	N/A	1.13	0.00	1.12	0.25	-0.07

T. Rowe Price Global Equity Performance Summary

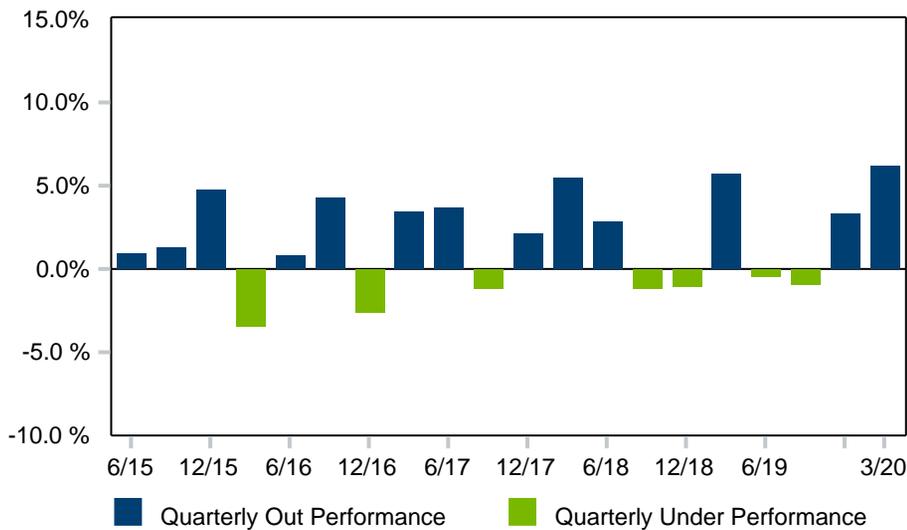
Account Information

Account Name: T. Rowe Price Global Equity
 Inception Date: 08/31/2009
 Account Structure: Separate Account
 Asset Class: Global Equity
 Benchmark: MSCI AC World Index (Net)
 Peer Group: IM Global Equity (SA+CF)

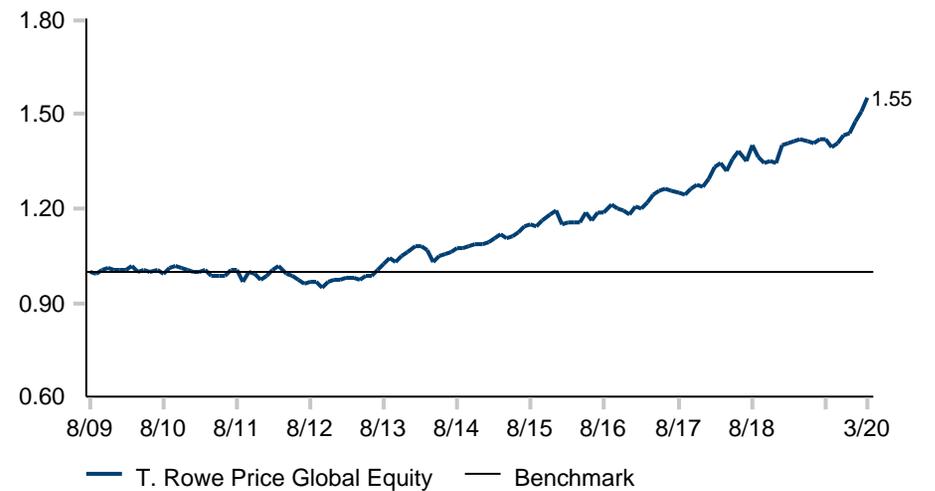
Return Summary



Quarterly Excess Performance

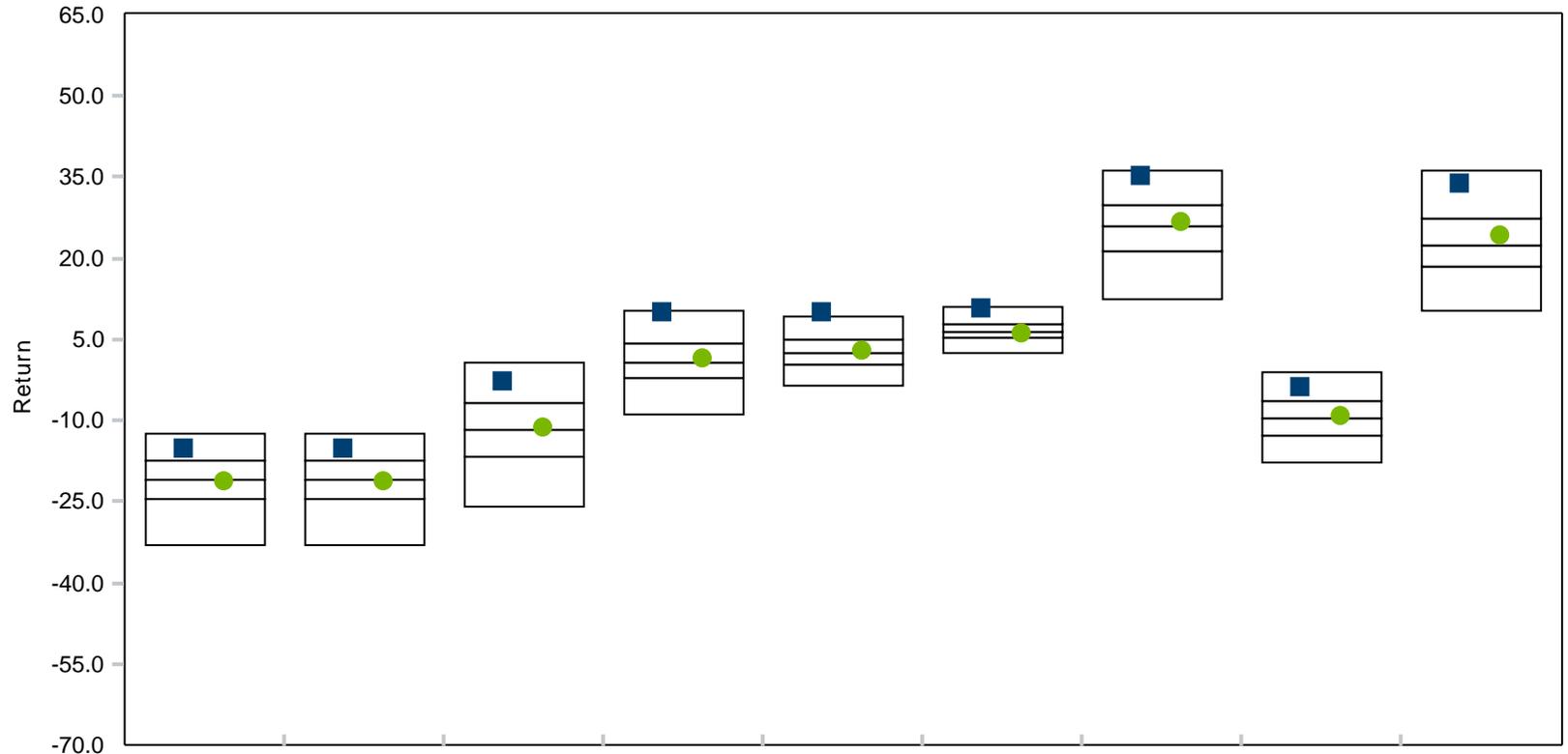


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM Global Equity (SA+CF)

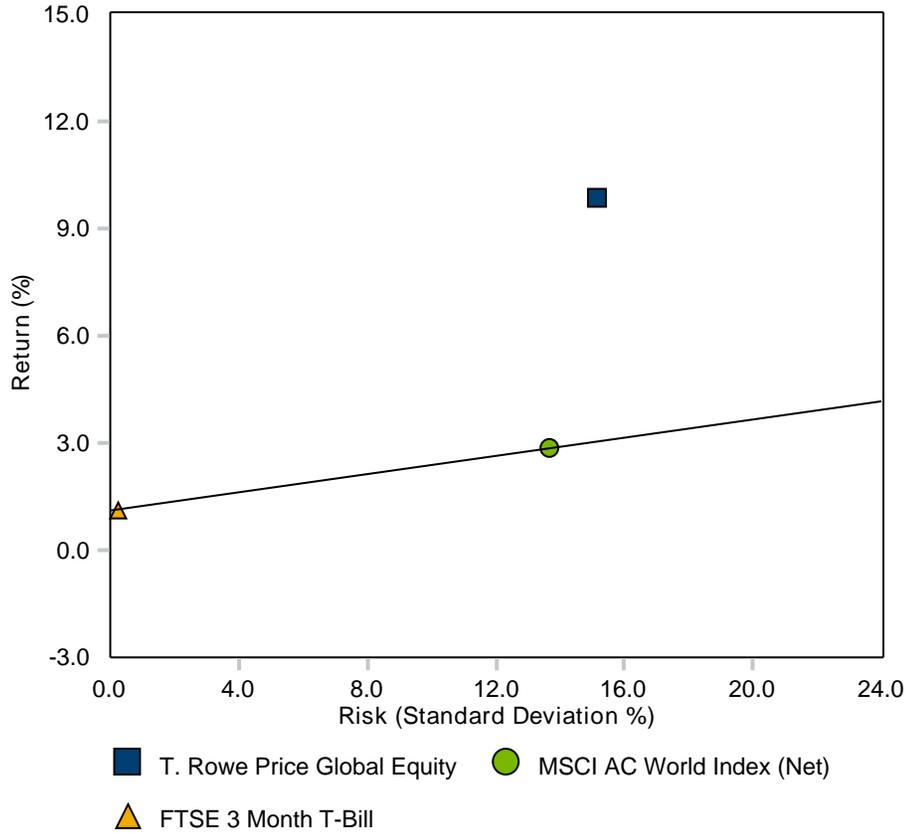


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ T. Rowe Price Global Equity	-15.2 (15)	-15.2 (15)	-2.7 (14)	10.1 (6)	9.9 (4)	10.5 (8)	35.2 (8)	-4.0 (14)	33.7 (9)
● MSCI AC World Index (Net)	-21.4 (54)	-21.4 (54)	-11.3 (47)	1.5 (44)	2.8 (45)	5.9 (62)	26.6 (45)	-9.4 (50)	24.0 (42)
5th Percentile	-12.5	-12.5	0.5	10.3	9.3	11.1	36.3	-0.9	36.2
1st Quartile	-17.6	-17.6	-6.6	4.1	4.9	7.9	30.0	-6.4	27.2
Median	-21.1	-21.1	-11.7	0.9	2.5	6.5	25.8	-9.5	22.5
3rd Quartile	-24.6	-24.6	-16.5	-2.2	0.4	5.1	21.5	-12.9	18.5
95th Percentile	-33.0	-33.0	-26.1	-9.1	-3.5	2.5	12.5	-17.7	10.3
Population	459	459	456	441	394	251	489	530	551

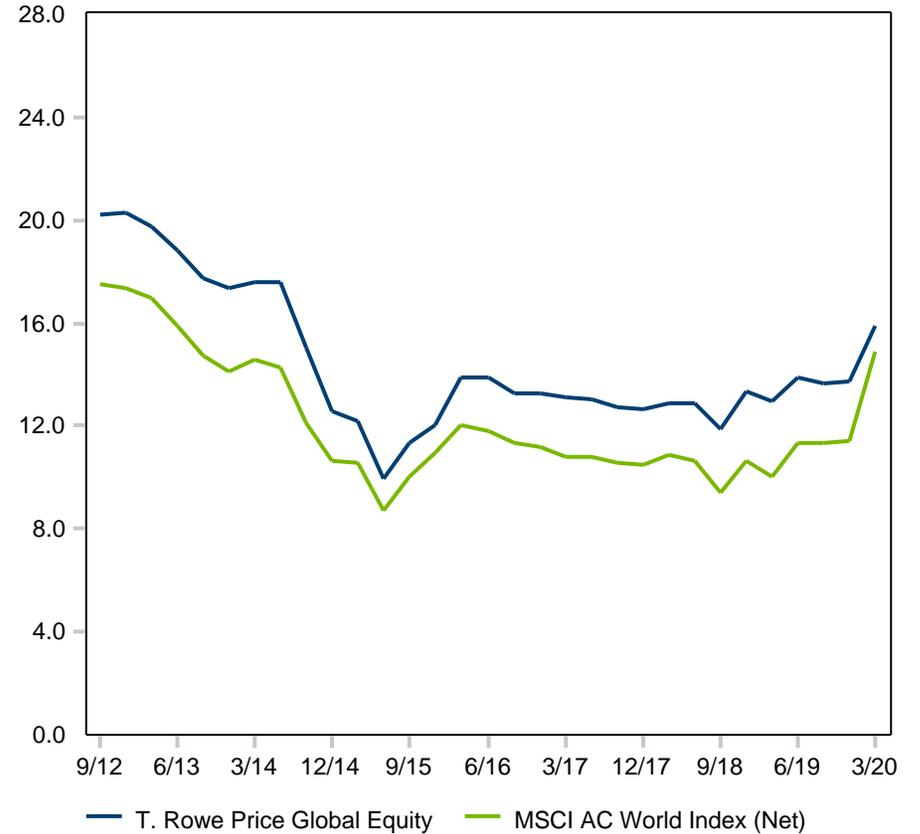
Parenteses contain percentile rankings.

T. Rowe Price Global Equity Risk Profile

Annualized Return vs. Annualized Standard Deviation
5 Years



Rolling 3 Years Standard Deviation



5 Years Historical Statistics

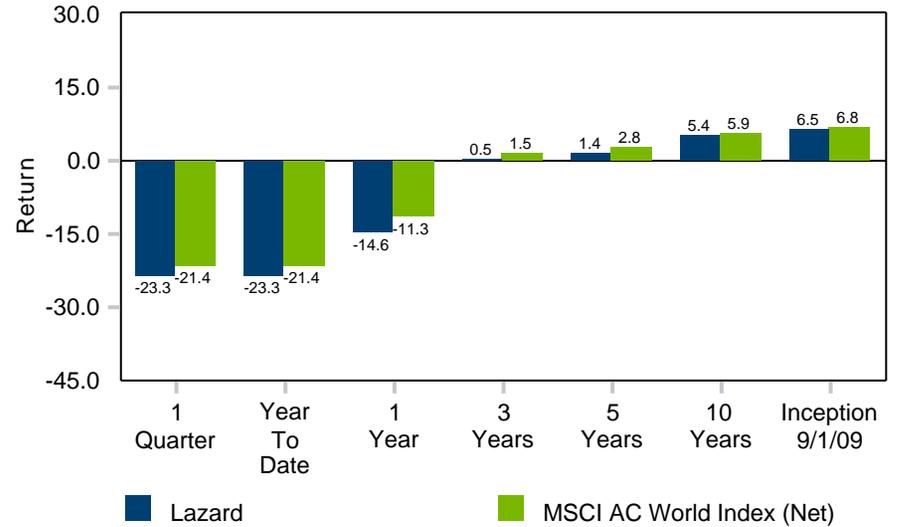
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
T. Rowe Price Global Equity	6.82	5.36	1.27	0.88	0.62	6.89	1.04	9.85	15.18	0.94
MSCI AC World Index (Net)	0.00	0.00	N/A	1.00	0.19	0.00	1.00	2.85	13.69	1.00
FTSE 3 Month T-Bill	-2.64	13.69	-0.19	0.00	N/A	1.13	0.00	1.12	0.25	-0.02

Lazard Performance Summary

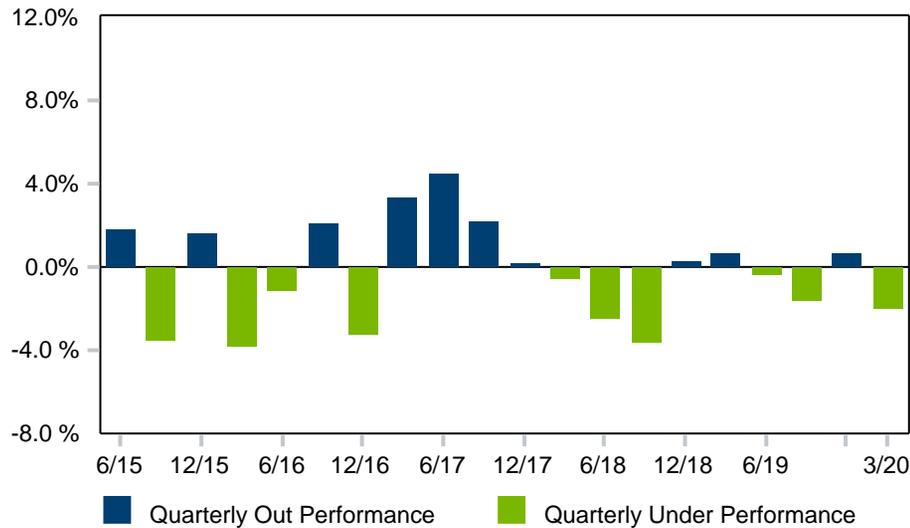
Account Information

Account Name: Lazard
 Inception Date: 08/31/2009
 Account Structure: Separate Account
 Asset Class: Global Equity
 Benchmark: MSCI AC World Index (Net)
 Peer Group: IM Global Equity (SA+CF)

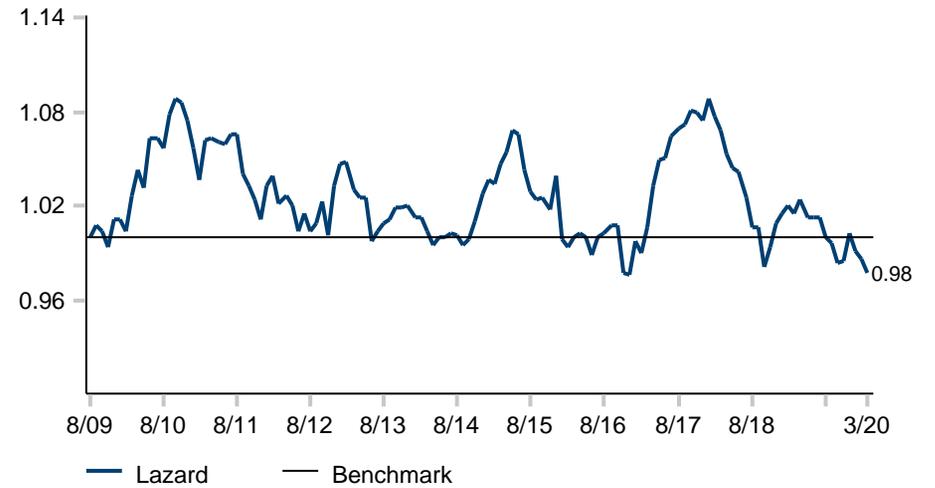
Return Summary



Quarterly Excess Performance

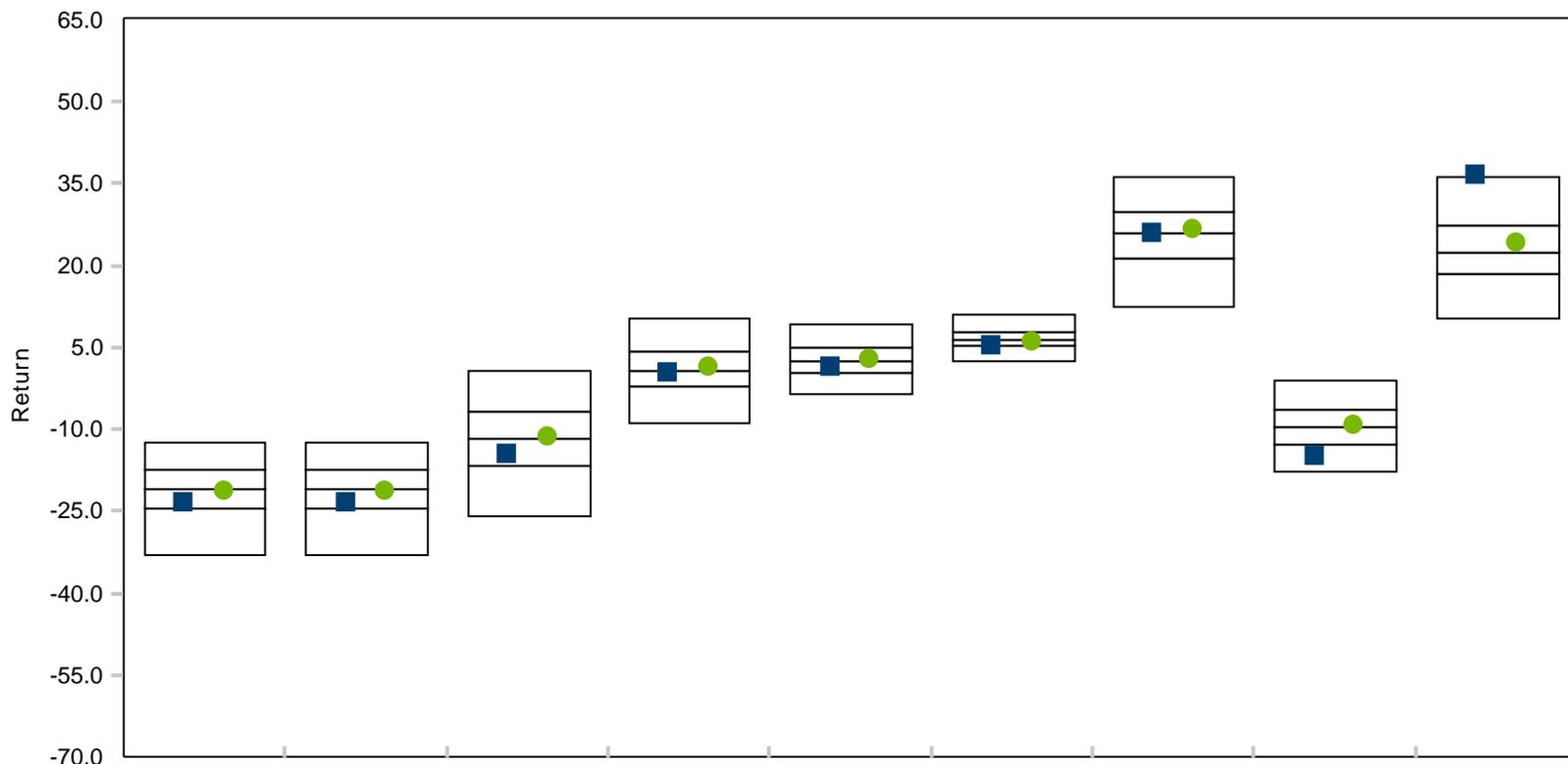


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM Global Equity (SA+CF)

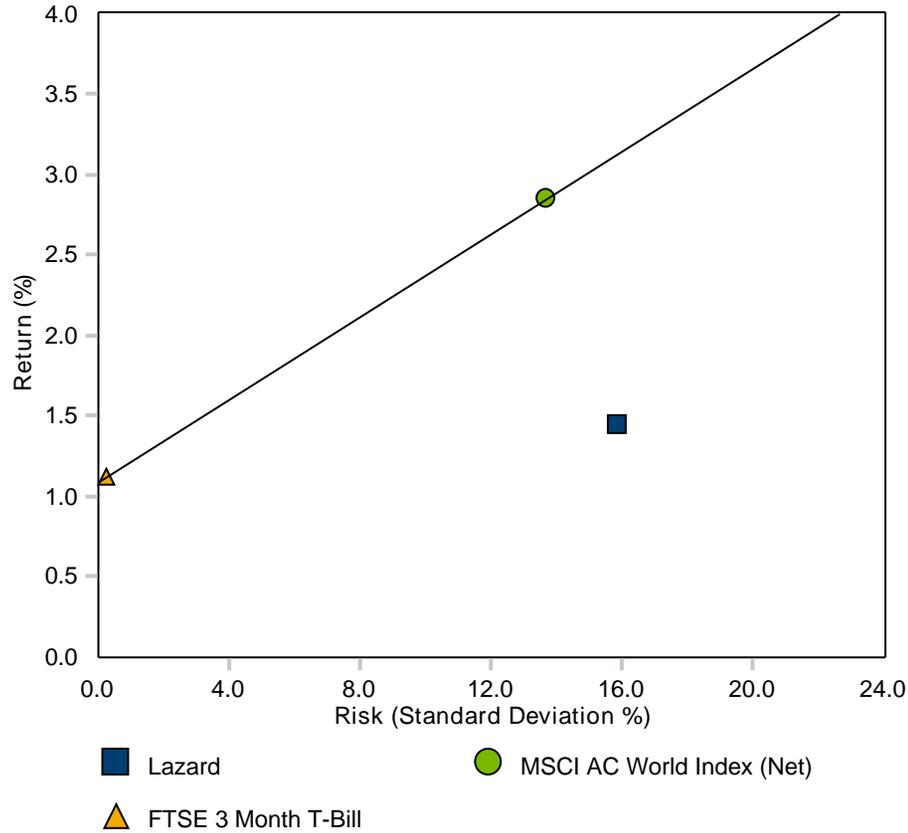


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ Lazard	-23.3 (69)	-23.3 (69)	-14.6 (68)	0.5 (55)	1.4 (64)	5.4 (72)	25.7 (51)	-14.9 (87)	36.5 (5)
● MSCI AC World Index (Net)	-21.4 (54)	-21.4 (54)	-11.3 (47)	1.5 (44)	2.8 (45)	5.9 (62)	26.6 (45)	-9.4 (50)	24.0 (42)
5th Percentile	-12.5	-12.5	0.5	10.3	9.3	11.1	36.3	-0.9	36.2
1st Quartile	-17.6	-17.6	-6.6	4.1	4.9	7.9	30.0	-6.4	27.2
Median	-21.1	-21.1	-11.7	0.9	2.5	6.5	25.8	-9.5	22.5
3rd Quartile	-24.6	-24.6	-16.5	-2.2	0.4	5.1	21.5	-12.9	18.5
95th Percentile	-33.0	-33.0	-26.1	-9.1	-3.5	2.5	12.5	-17.7	10.3
Population	459	459	456	441	394	251	489	530	551

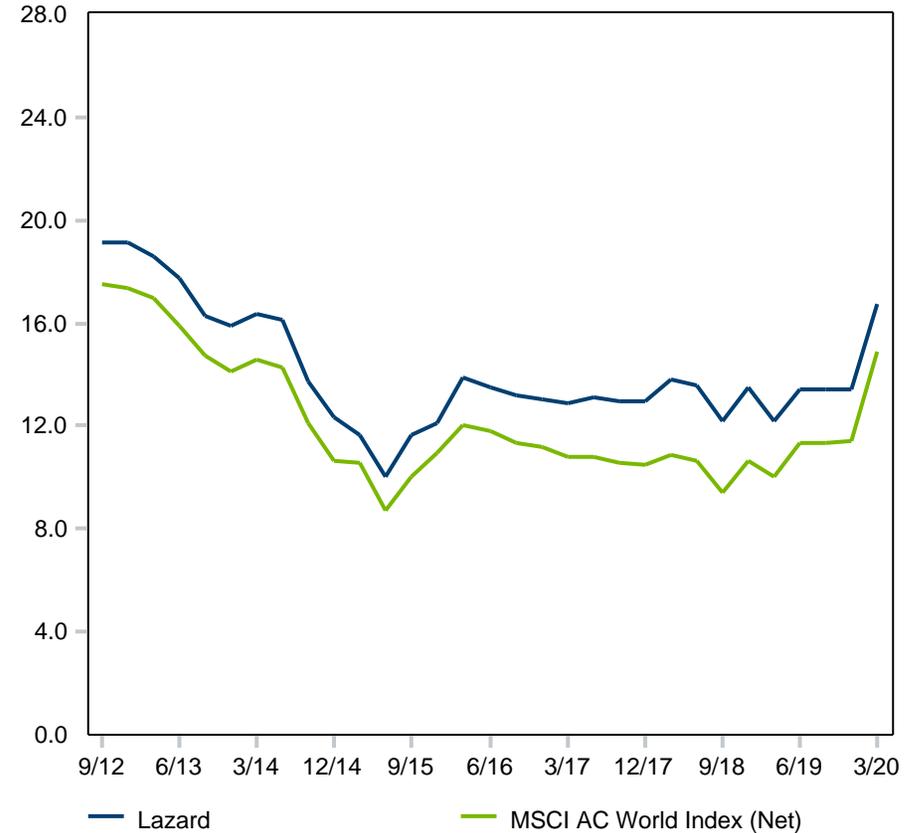
118
 Parentheses contain percentile rankings.

Lazard Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 3 Years Standard Deviation



5 Years Historical Statistics

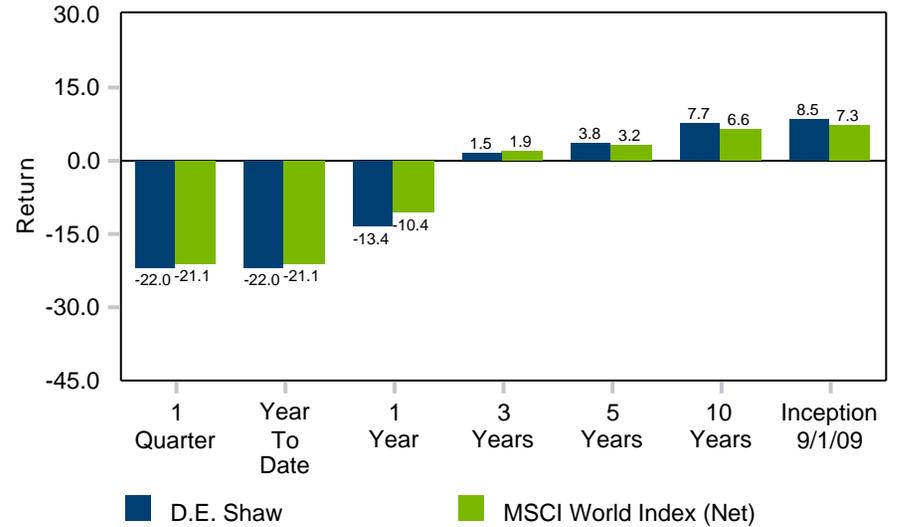
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Lazard	-1.05	4.38	-0.24	0.93	0.10	-1.49	1.12	1.45	15.86	0.97
MSCI AC World Index (Net)	0.00	0.00	N/A	1.00	0.19	0.00	1.00	2.85	13.69	1.00
FTSE 3 Month T-Bill	-2.64	13.69	-0.19	0.00	N/A	1.13	0.00	1.12	0.25	-0.02

D.E. Shaw Performance Summary

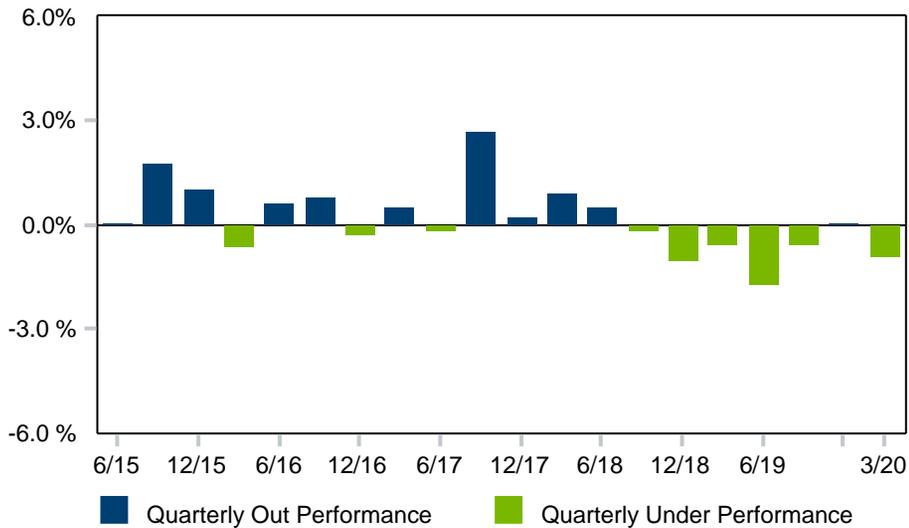
Account Information

Account Name: D.E. Shaw
 Inception Date: 08/31/2009
 Account Structure: Commingled Fund
 Asset Class: Global Equity
 Benchmark: MSCI World Index (Net)
 Peer Group: IM Global Equity (SA+CF)

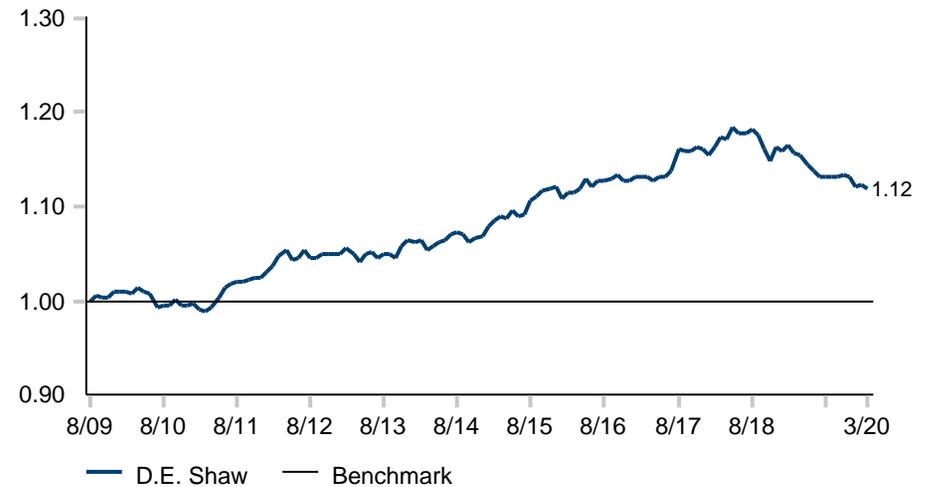
Return Summary



Quarterly Excess Performance

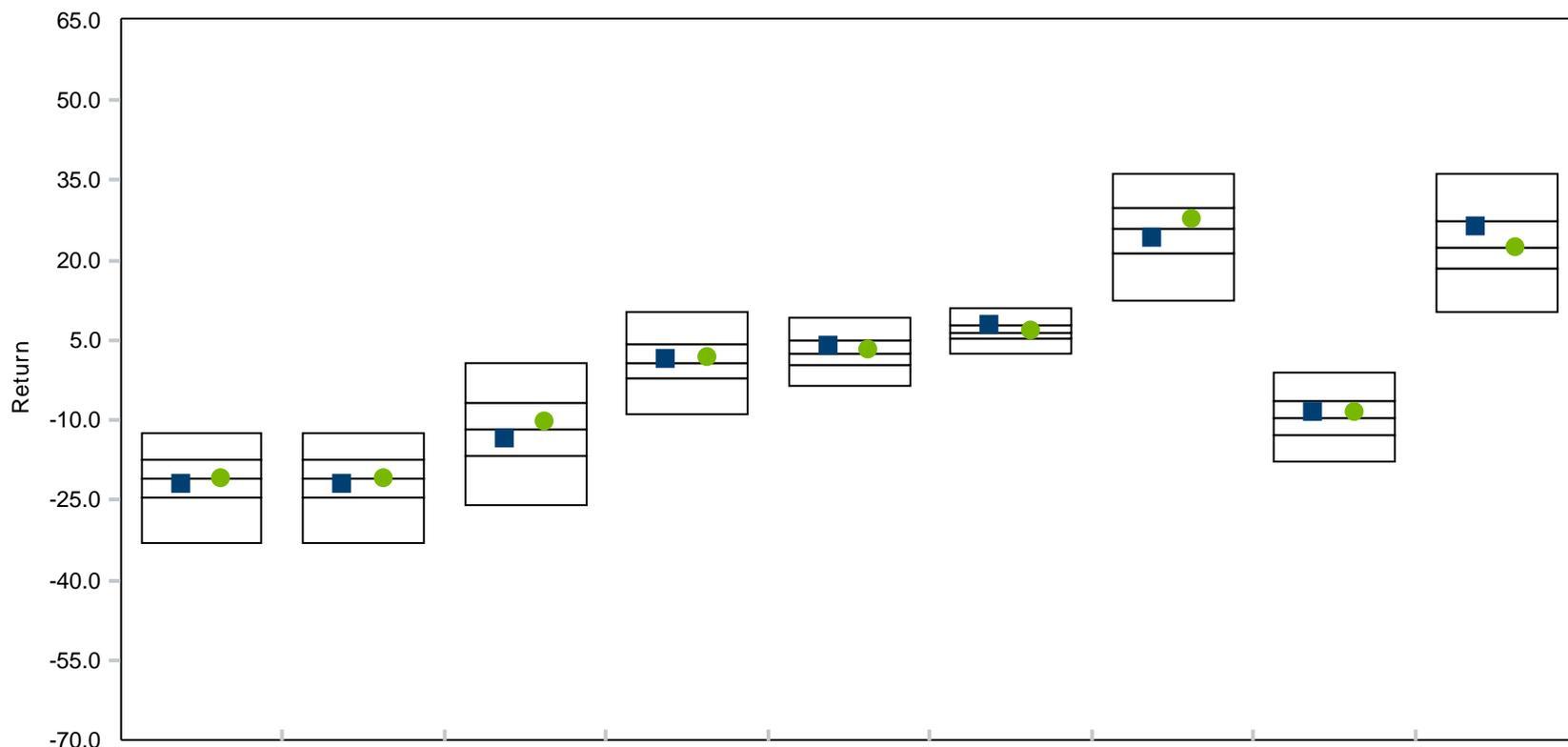


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM Global Equity (SA+CF)

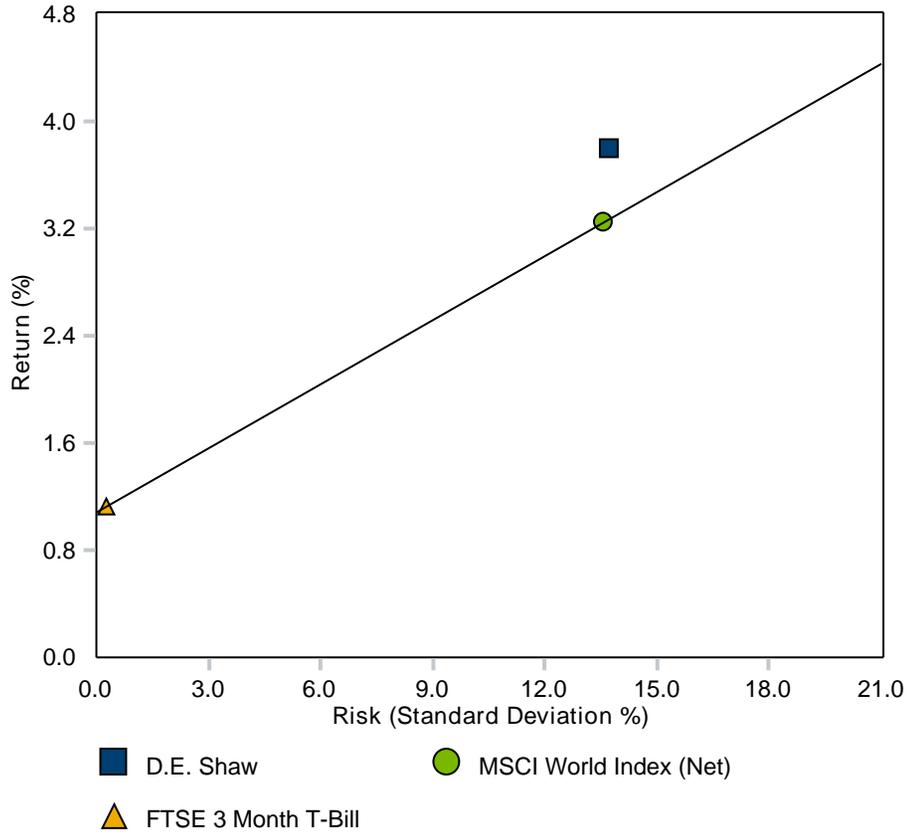


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ D.E. Shaw	-22.0 (59)	-22.0 (59)	-13.4 (60)	1.5 (44)	3.8 (34)	7.7 (29)	24.2 (63)	-8.6 (43)	26.2 (30)
● MSCI World Index (Net)	-21.1 (50)	-21.1 (50)	-10.4 (43)	1.9 (40)	3.2 (40)	6.6 (48)	27.7 (39)	-8.7 (44)	22.4 (51)
5th Percentile	-12.5	-12.5	0.5	10.3	9.3	11.1	36.3	-0.9	36.2
1st Quartile	-17.6	-17.6	-6.6	4.1	4.9	7.9	30.0	-6.4	27.2
Median	-21.1	-21.1	-11.7	0.9	2.5	6.5	25.8	-9.5	22.5
3rd Quartile	-24.6	-24.6	-16.5	-2.2	0.4	5.1	21.5	-12.9	18.5
95th Percentile	-33.0	-33.0	-26.1	-9.1	-3.5	2.5	12.5	-17.7	10.3
Population	459	459	456	441	394	251	489	530	551

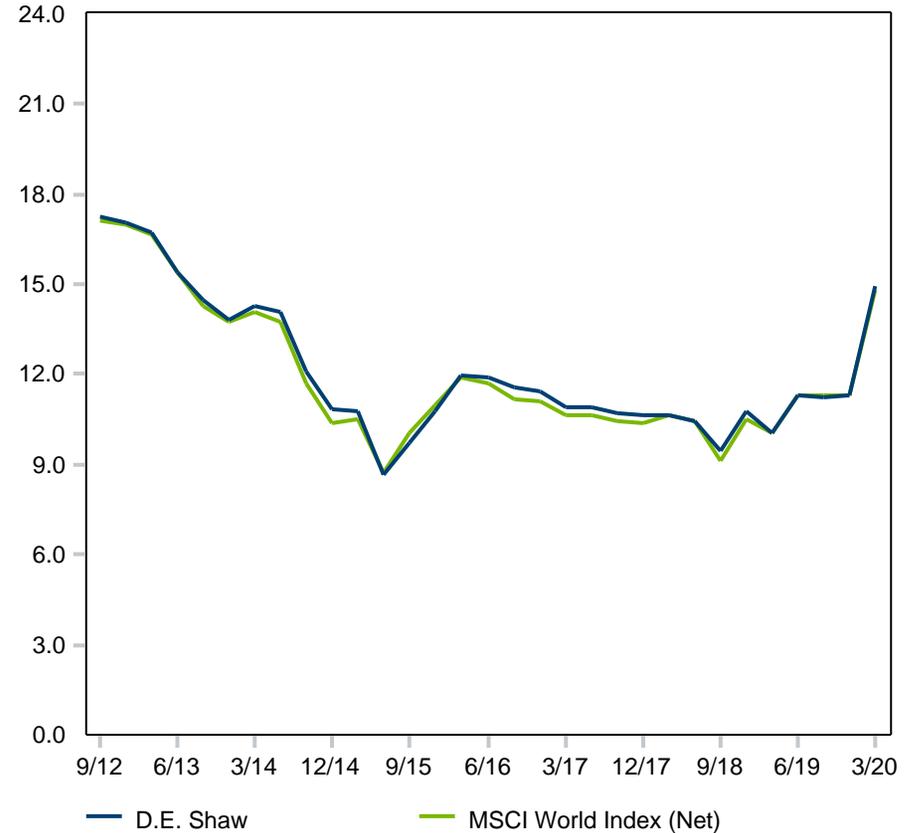
1211
 Parentheses contain percentile rankings.

D.E. Shaw Risk Profile

Annualized Return vs. Annualized Standard Deviation
5 Years



Rolling 3 Years Standard Deviation



5 Years Historical Statistics

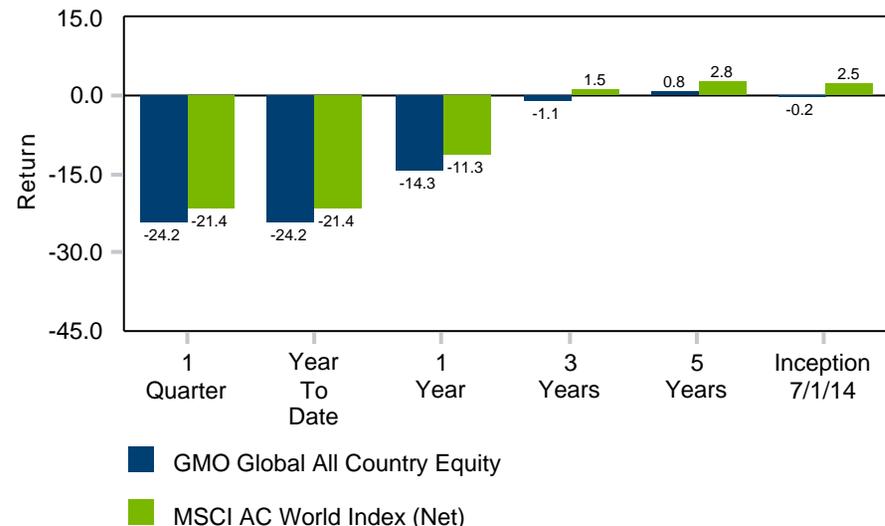
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
D.E. Shaw	0.56	2.12	0.26	0.98	0.26	0.56	1.00	3.80	13.74	0.99
MSCI World Index (Net)	0.00	0.00	N/A	1.00	0.22	0.00	1.00	3.25	13.57	1.00
FTSE 3 Month T-Bill	-3.01	13.57	-0.22	0.00	N/A	1.13	0.00	1.12	0.25	-0.02

GMO Global All Country Equity Performance Summary

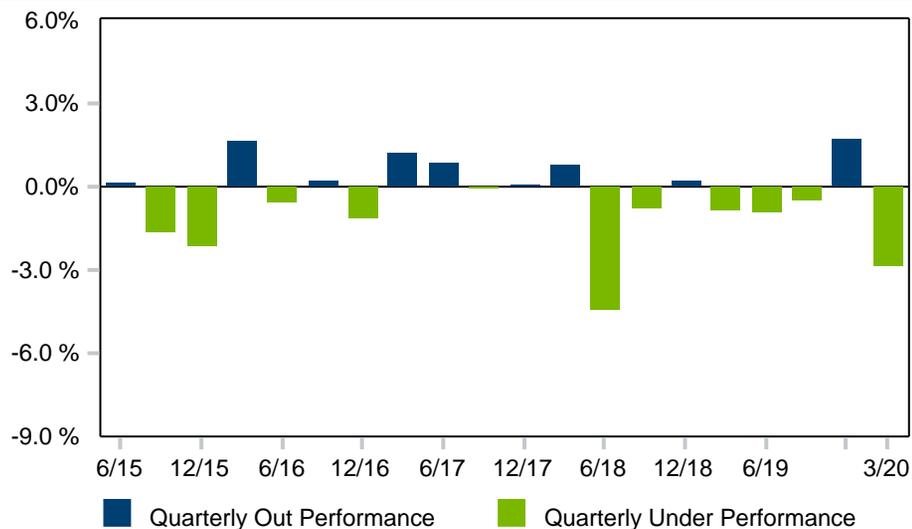
Account Information as of 03/31/20

Product Name : GMO:Global Eq All;III (GMGEX)
Fund Family : Grantham Mayo Van Otterloo & Co LLC
Ticker : GMGEX
Peer Group : IM Global Multi-Cap Core Equity (MF)
Benchmark : MSCI AC World Index (Net)
Fund Inception : 11/26/1996
Portfolio Manager : Inker/Thorndike
Total Assets : \$1,656.40 Million
Total Assets Date : 12/31/2019
Gross Expense : 0.62%
Net Expense : 0.61%
Turnover : 11%

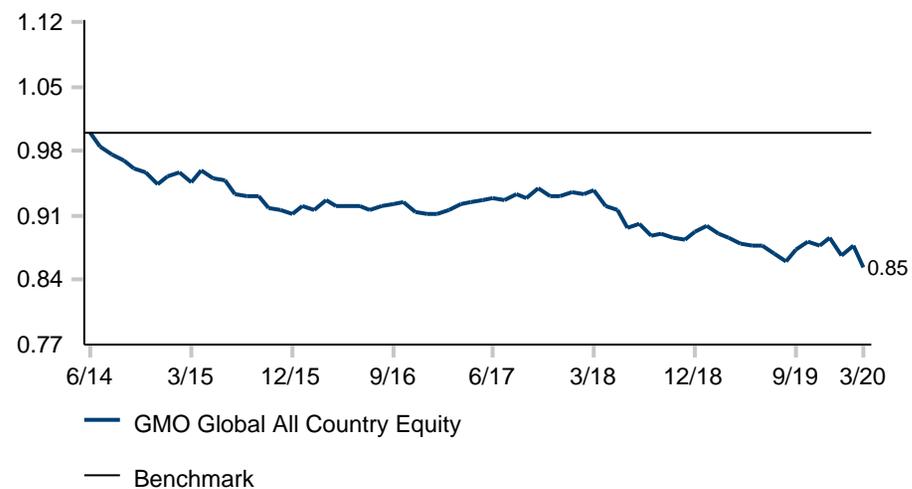
Return Summary



Quarterly Excess Performance

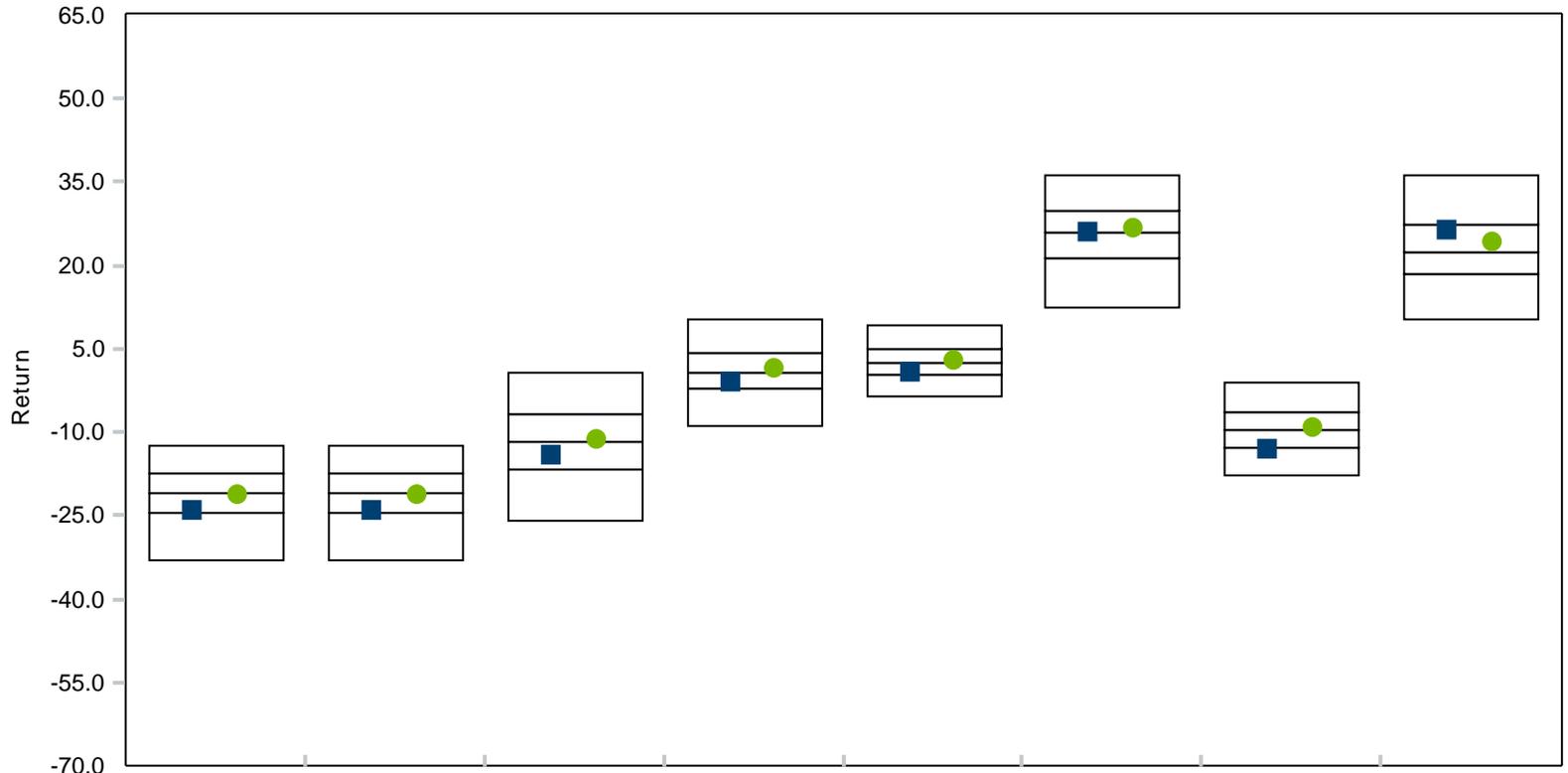


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM Global Equity (SA+CF)

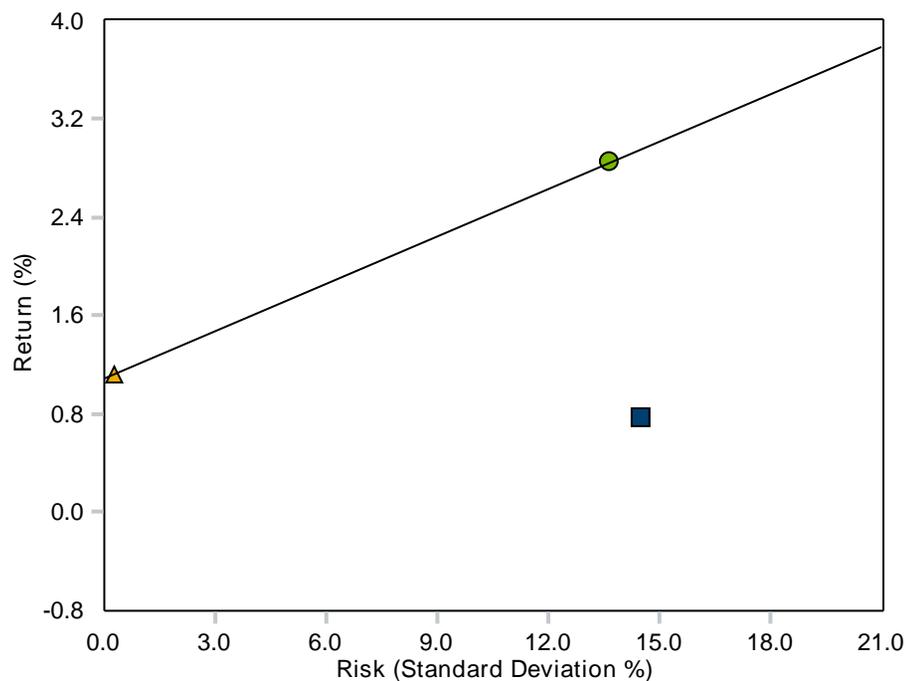


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	2019	2018	2017
■ GMO Global All Country Equity	-24.2 (73)	-24.2 (73)	-14.3 (66)	-1.1 (68)	0.8 (71)	25.8 (50)	-13.1 (76)	26.4 (29)
● MSCI AC World Index (Net)	-21.4 (54)	-21.4 (54)	-11.3 (47)	1.5 (44)	2.8 (45)	26.6 (45)	-9.4 (50)	24.0 (42)
5th Percentile	-12.5	-12.5	0.5	10.3	9.3	36.3	-0.9	36.2
1st Quartile	-17.6	-17.6	-6.6	4.1	4.9	30.0	-6.4	27.2
Median	-21.1	-21.1	-11.7	0.9	2.5	25.8	-9.5	22.5
3rd Quartile	-24.6	-24.6	-16.5	-2.2	0.4	21.5	-12.9	18.5
95th Percentile	-33.0	-33.0	-26.1	-9.1	-3.5	12.5	-17.7	10.3
Population	459	459	456	441	394	489	530	551

parentheses contain percentile rankings.

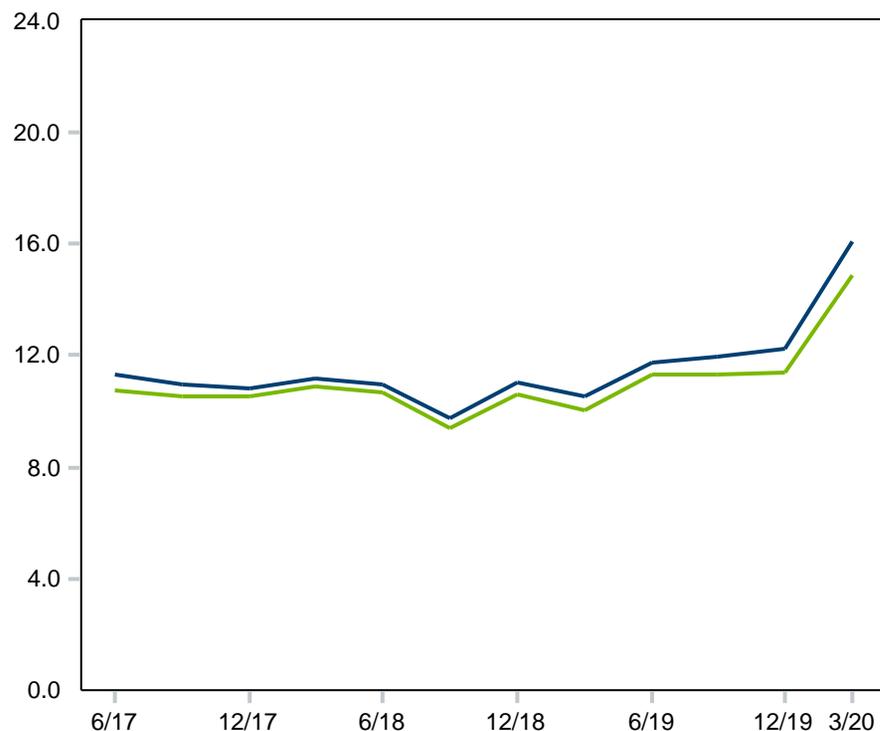
GMO Global All Country Equity Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



- GMO Global All Country Equity
- MSCI AC World Index (Net)
- ▲ FTSE 3 Month T-Bill

Rolling 3 Years Standard Deviation



- GMO Global All Country Equity
- MSCI AC World Index (Net)

5 Years Historical Statistics

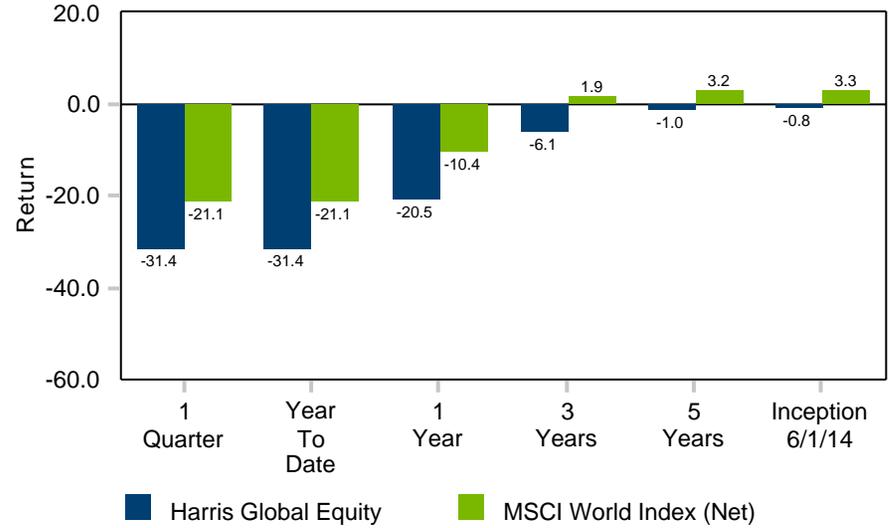
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
GMO Global All Country Equity	-1.93	3.10	-0.62	0.96	0.05	-2.05	1.04	0.76	14.54	0.98
MSCI AC World Index (Net)	0.00	0.00	N/A	1.00	0.19	0.00	1.00	2.85	13.69	1.00
FTSE 3 Month T-Bill	-2.64	13.69	-0.19	0.00	N/A	1.13	0.00	1.12	0.25	-0.02

Harris Global Equity Performance Summary

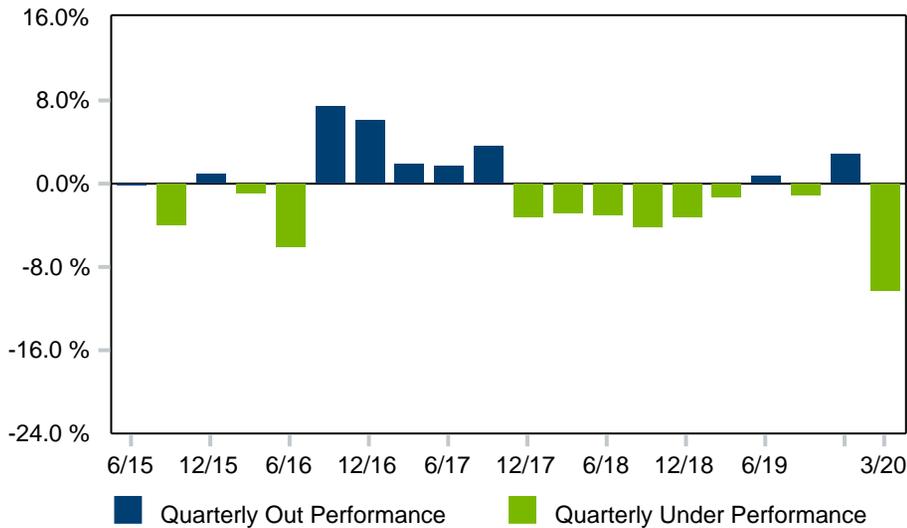
Account Information

Account Name: Harris Global Equity
 Inception Date: 06/01/2014
 Account Structure: Separate Account
 Asset Class: Global Equity
 Benchmark: MSCI World Index (Net)
 Peer Group: IM Global Equity (SA+CF)

Return Summary



Quarterly Excess Performance

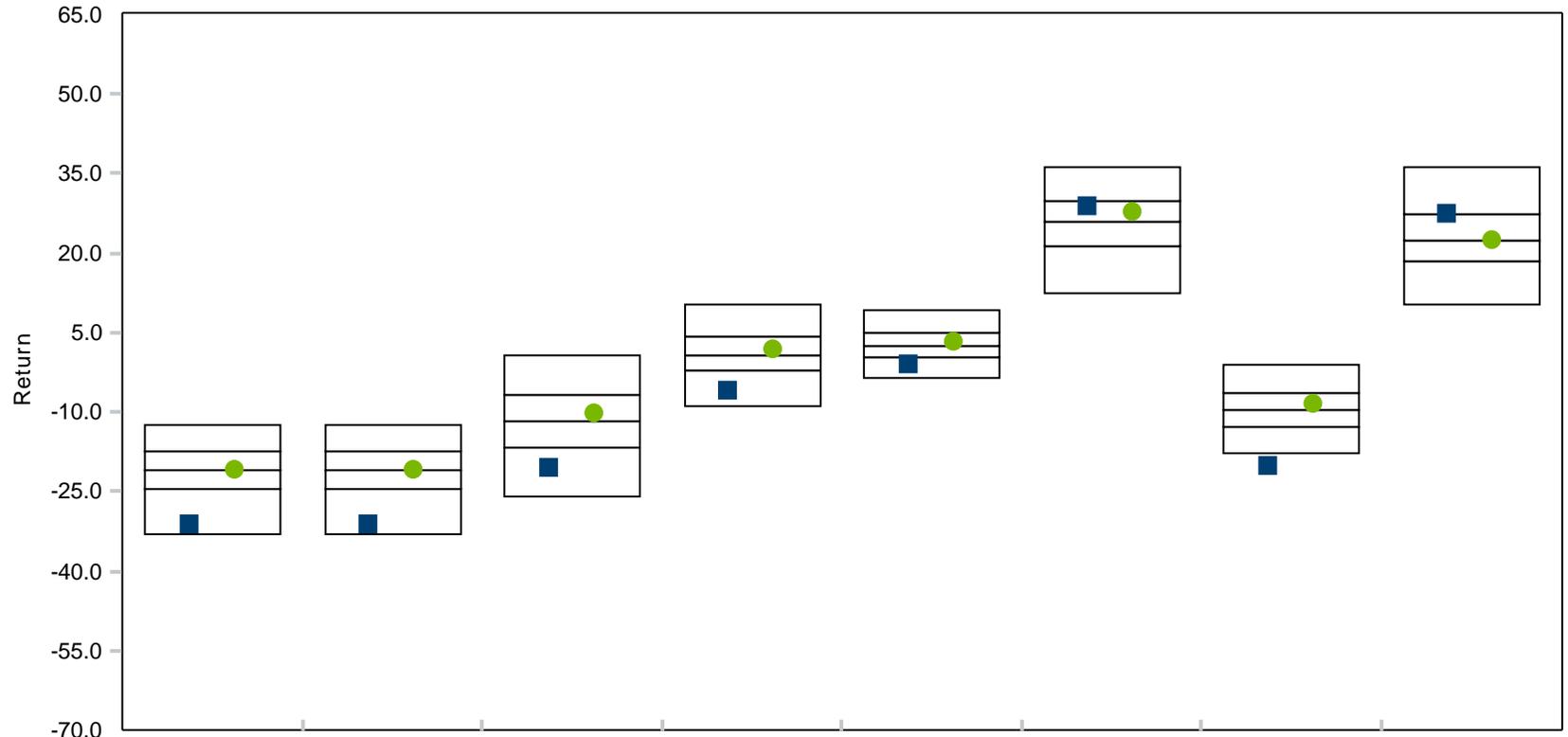


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM Global Equity (SA+CF)

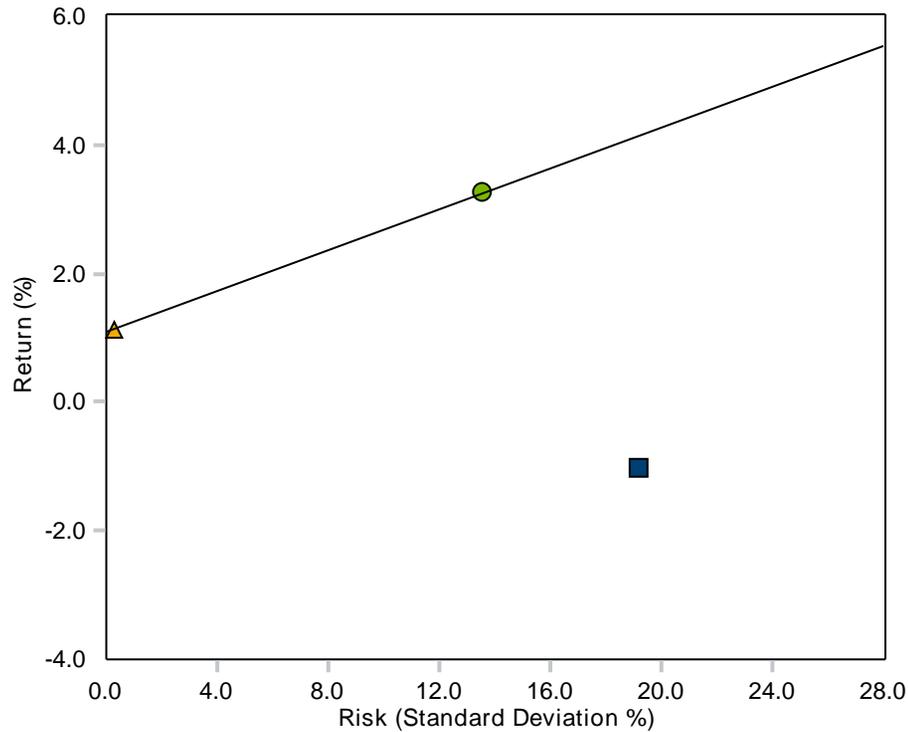


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	2019	2018	2017
■ Harris Global Equity	-31.4 (93)	-31.4 (93)	-20.5 (86)	-6.1 (89)	-1.0 (84)	28.9 (32)	-20.4 (98)	27.2 (26)
● MSCI World Index (Net)	-21.1 (50)	-21.1 (50)	-10.4 (43)	1.9 (40)	3.2 (40)	27.7 (39)	-8.7 (44)	22.4 (51)
5th Percentile	-12.5	-12.5	0.5	10.3	9.3	36.3	-0.9	36.2
1st Quartile	-17.6	-17.6	-6.6	4.1	4.9	30.0	-6.4	27.2
Median	-21.1	-21.1	-11.7	0.9	2.5	25.8	-9.5	22.5
3rd Quartile	-24.6	-24.6	-16.5	-2.2	0.4	21.5	-12.9	18.5
95th Percentile	-33.0	-33.0	-26.1	-9.1	-3.5	12.5	-17.7	10.3
Population	459	459	456	441	394	489	530	551

Parenteses contain percentile rankings.

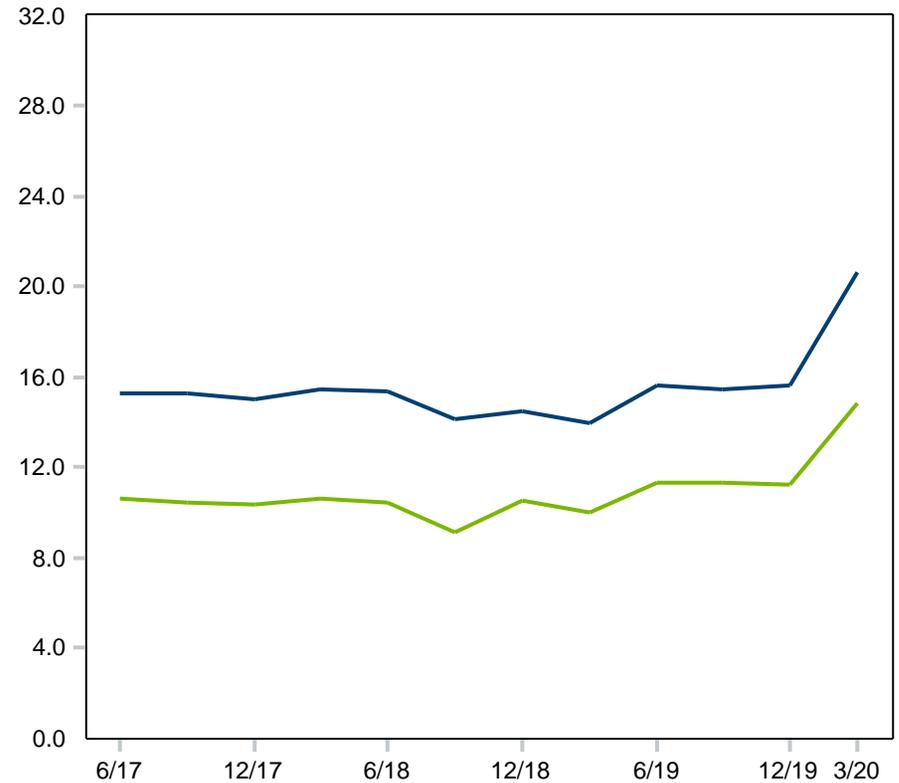
Harris Global Equity Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



■ Harris Global Equity ● MSCI World Index (Net)
 ▲ FTSE 3 Month T-Bill

Rolling 3 Years Standard Deviation

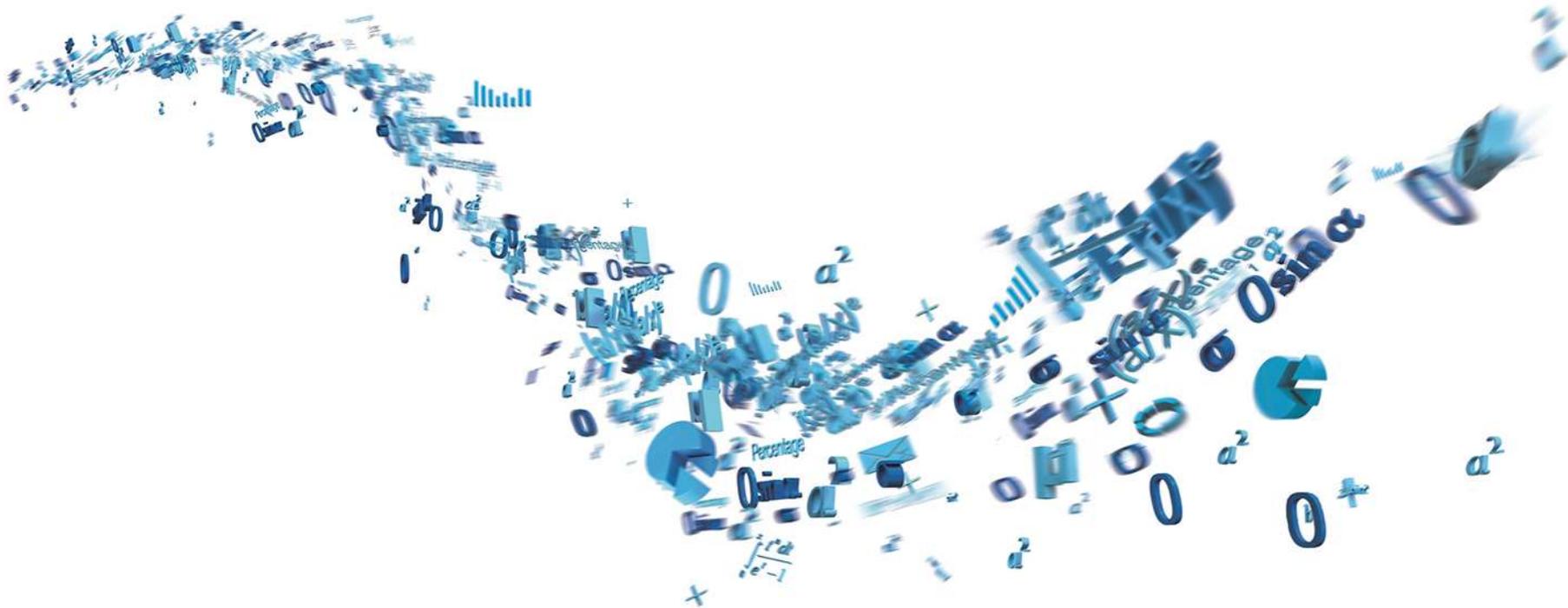


— Harris Global Equity — MSCI World Index (Net)

5 Years Historical Statistics

	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Harris Global Equity	-3.28	7.73	-0.42	0.90	-0.01	-4.58	1.34	-1.03	19.20	0.95
MSCI World Index (Net)	0.00	0.00	N/A	1.00	0.22	0.00	1.00	3.25	13.57	1.00
FTSE 3 Month T-Bill	-3.01	13.57	-0.22	0.00	N/A	1.13	0.00	1.12	0.25	-0.02

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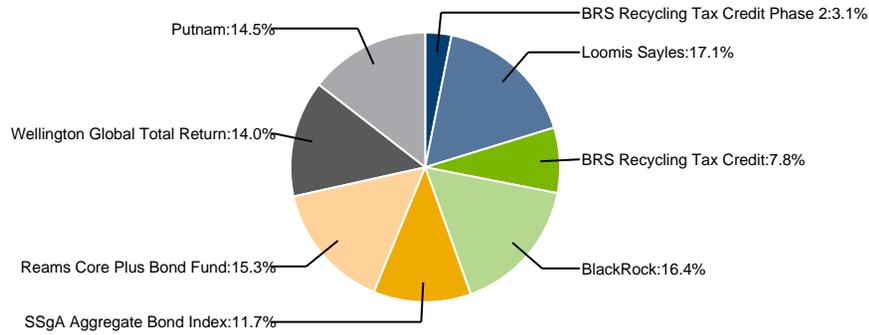


Fixed Income

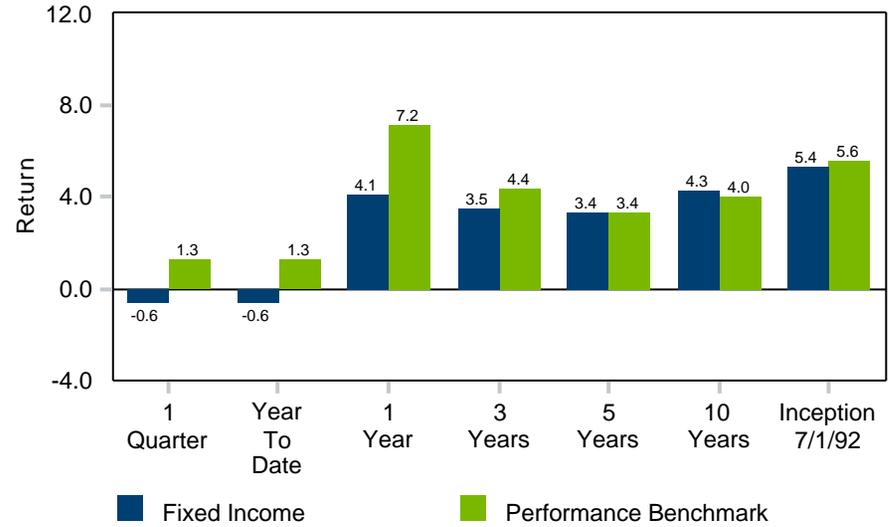
Fixed Income Portfolio Overview

Current Allocation

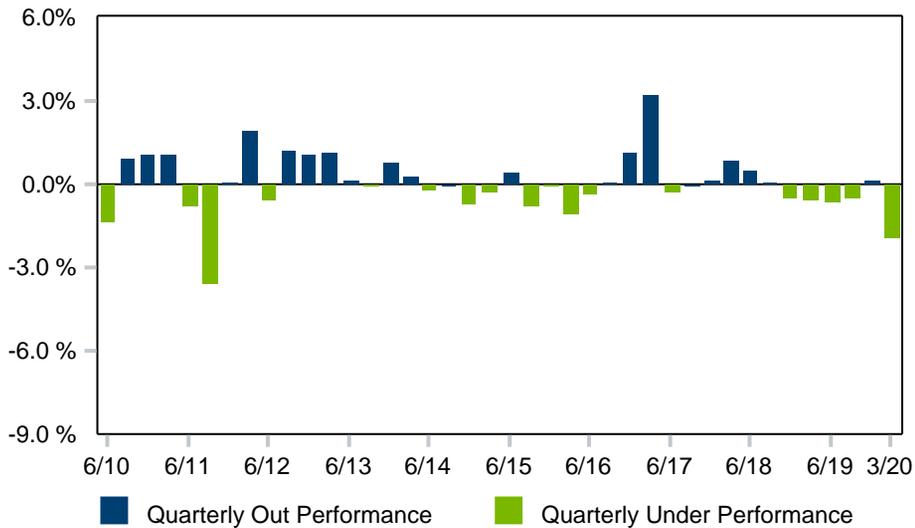
March 31, 2020 : \$2,453M



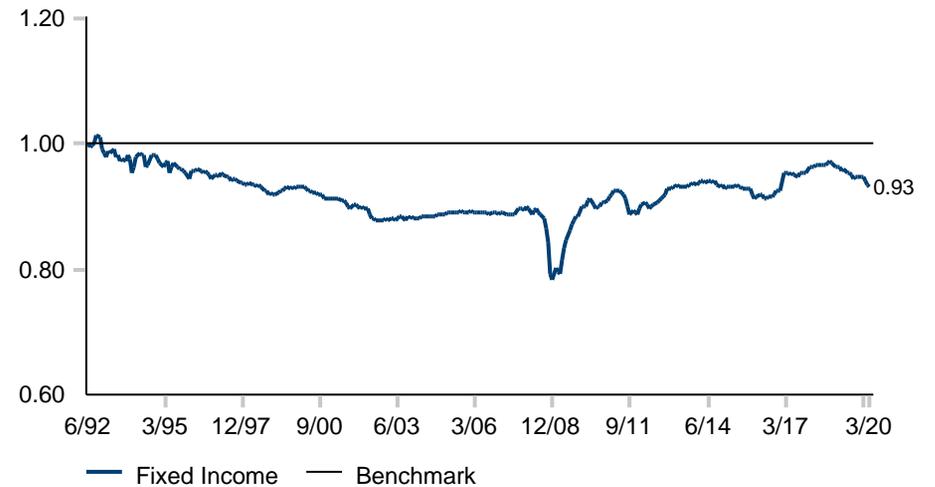
Return Summary



Quarterly Excess Performance

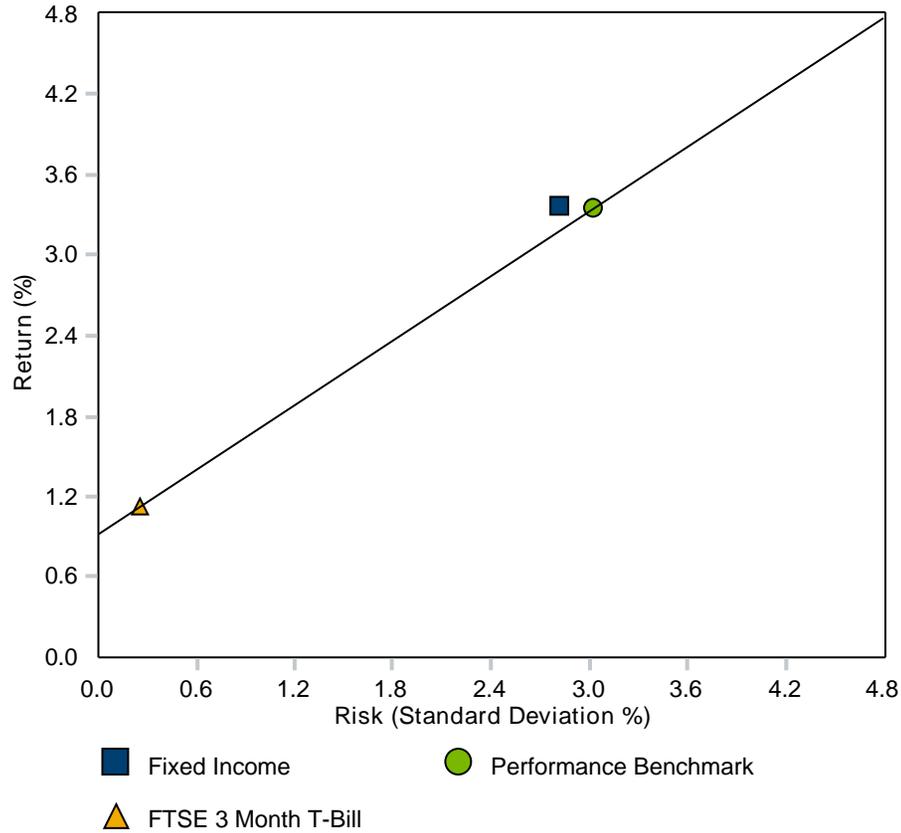


Ratio of Cumulative Wealth - Since Inception

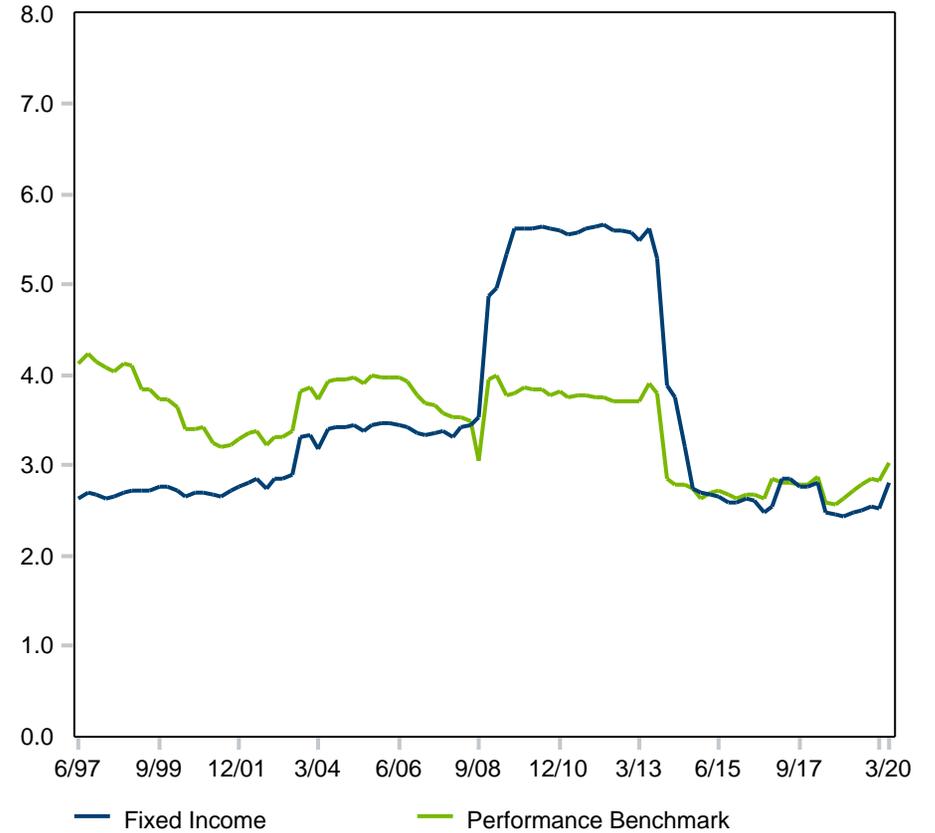


Fixed Income Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 5 Years Standard Deviation

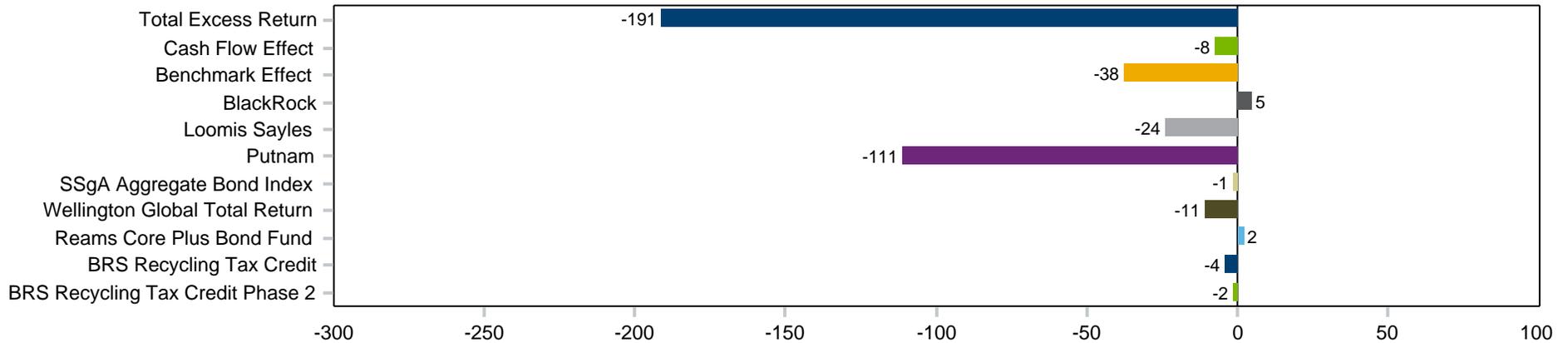


5 Years Historical Statistics

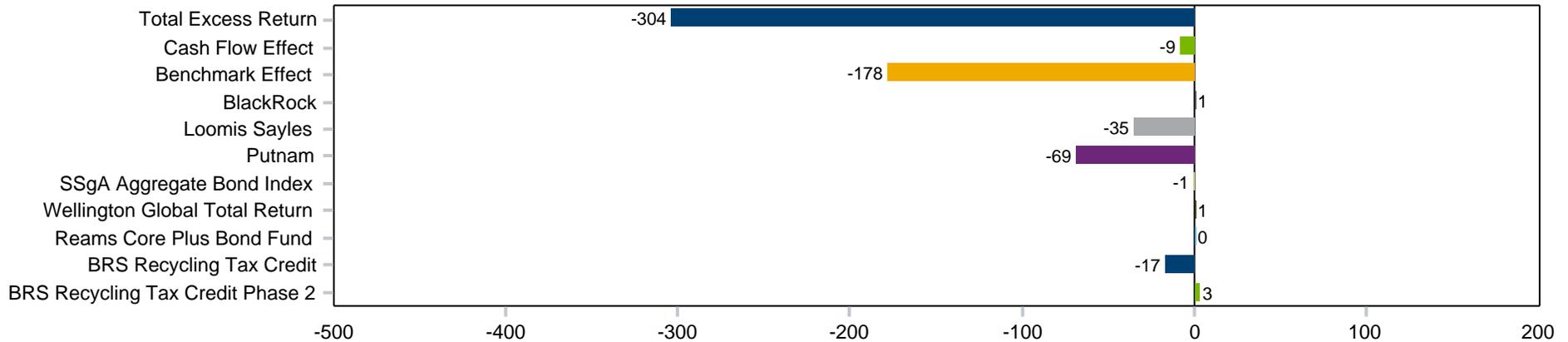
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Fixed Income	0.00	1.81	0.00	0.66	0.80	0.83	0.76	3.36	2.82	0.81
Performance Benchmark	0.00	0.00	N/A	1.00	0.75	0.00	1.00	3.35	3.03	1.00
FTSE 3 Month T-Bill	-2.23	2.98	-0.75	0.05	N/A	1.06	0.02	1.12	0.25	0.22

Asset Class Attribution

1 Quarter



1 Year



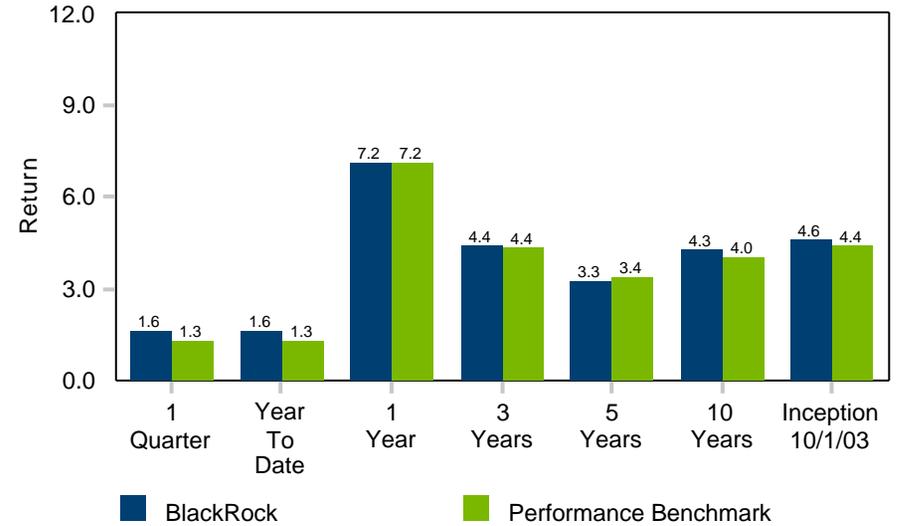
*The BRS Recycling Tax Credit represents an annual income stream of \$16 million dollars over the next 14 years, which ATRS purchased for approximately \$162 million. This represents an approximate 9.9% yield for the 2017 fiscal year. The value shown above represents the year-end market value in accordance with GASB Statement 72, representing the 14 years of annual income, and has been incorporated into Total Fixed Income and Total Fund performance.

BlackRock Performance Summary

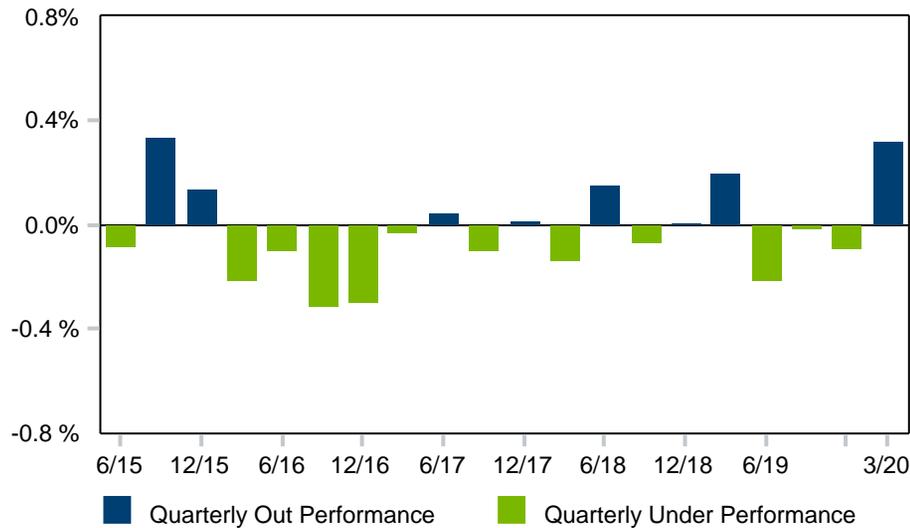
Account Information

Account Name: BlackRock
 Inception Date: 09/30/2003
 Account Structure: Separate Account
 Asset Class: US Fixed Income
 Benchmark: Performance Benchmark
 Peer Group: IM U.S. Fixed Income (SA+CF)

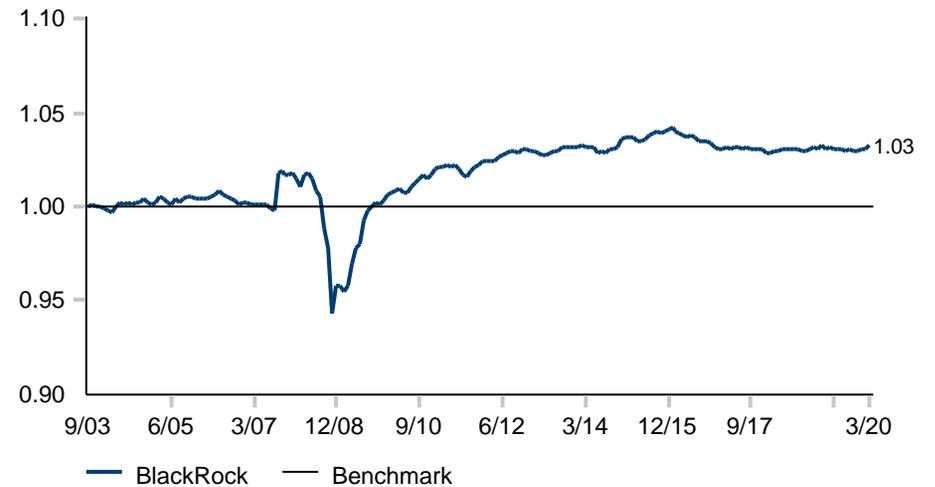
Return Summary



Quarterly Excess Performance

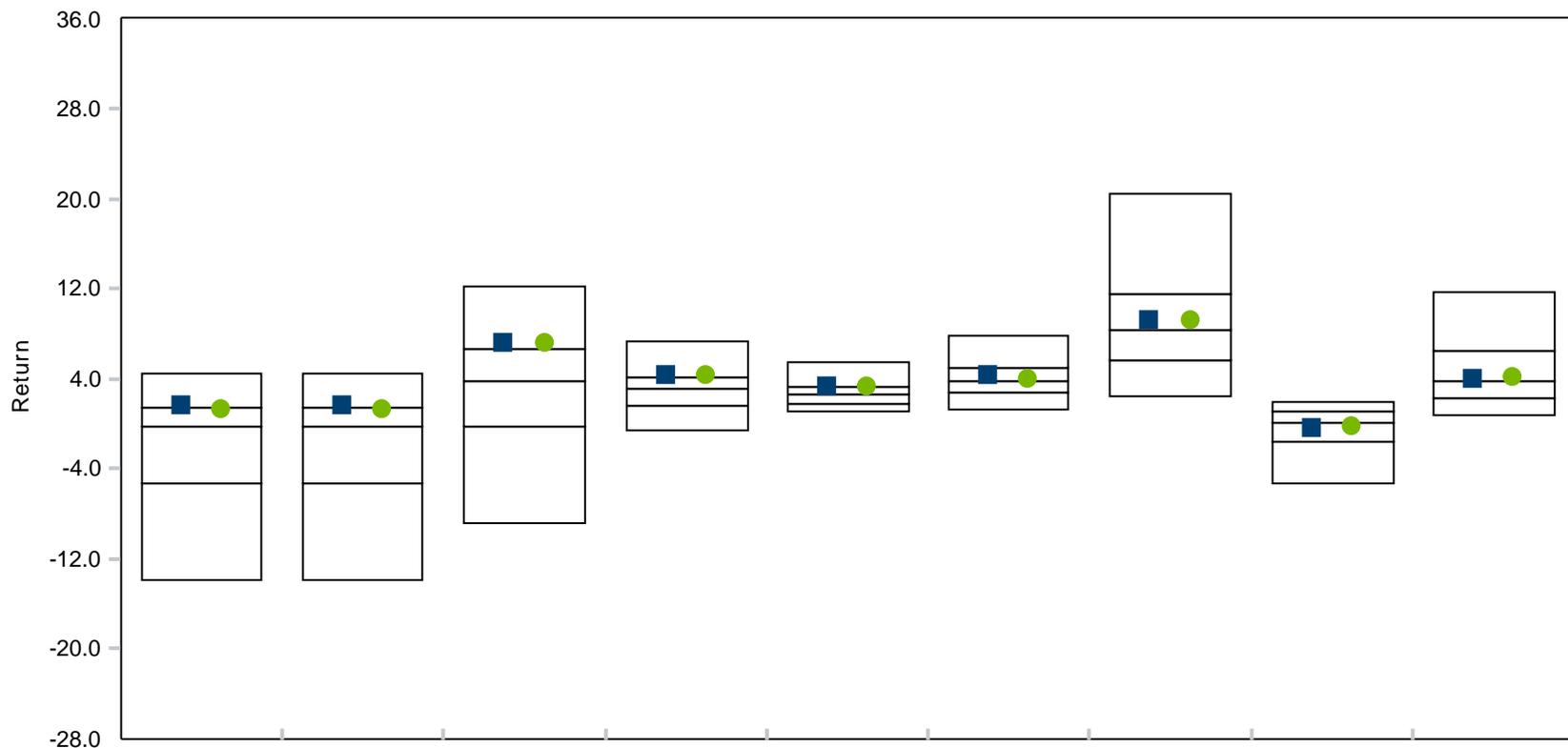


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM U.S. Fixed Income (SA+CF)

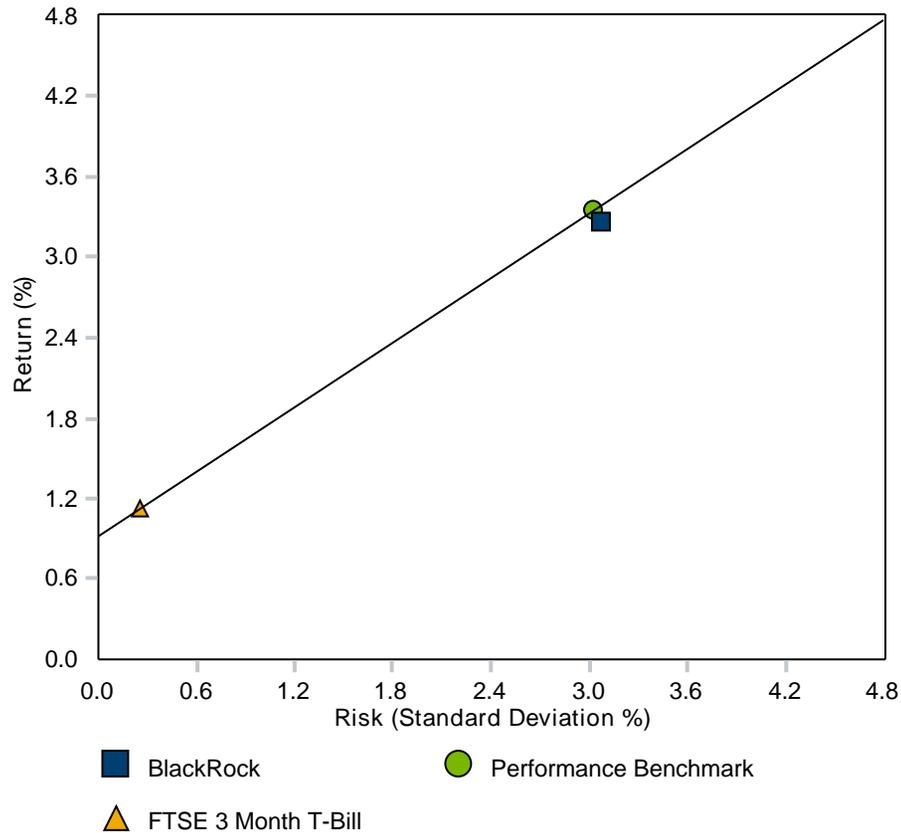


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ BlackRock	1.6 (23)	1.6 (23)	7.2 (20)	4.4 (21)	3.3 (25)	4.3 (38)	9.2 (40)	-0.3 (60)	4.0 (48)
● Performance Benchmark	1.3 (27)	1.3 (27)	7.2 (20)	4.4 (22)	3.4 (22)	4.0 (45)	9.3 (39)	-0.3 (58)	4.1 (46)
5th Percentile	4.5	4.5	12.3	7.4	5.5	8.0	20.6	1.9	11.7
1st Quartile	1.4	1.4	6.7	4.2	3.3	5.1	11.5	1.2	6.5
Median	-0.2	-0.2	3.9	3.1	2.6	3.8	8.4	0.1	3.9
3rd Quartile	-5.3	-5.3	-0.2	1.7	1.9	2.8	5.7	-1.5	2.3
95th Percentile	-13.8	-13.8	-8.8	-0.5	1.1	1.3	2.5	-5.3	0.9
Population	1,299	1,299	1,294	1,267	1,215	1,043	1,378	1,487	1,519

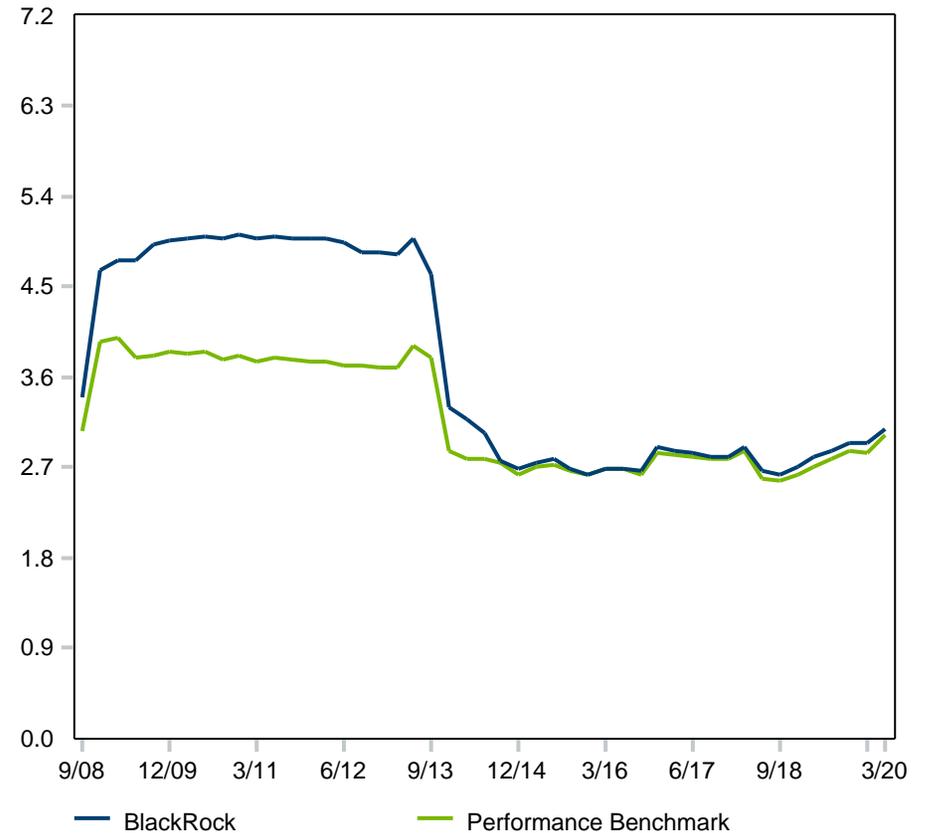
parentheses contain percentile rankings.

BlackRock Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 5 Years Standard Deviation



5 Years Historical Statistics

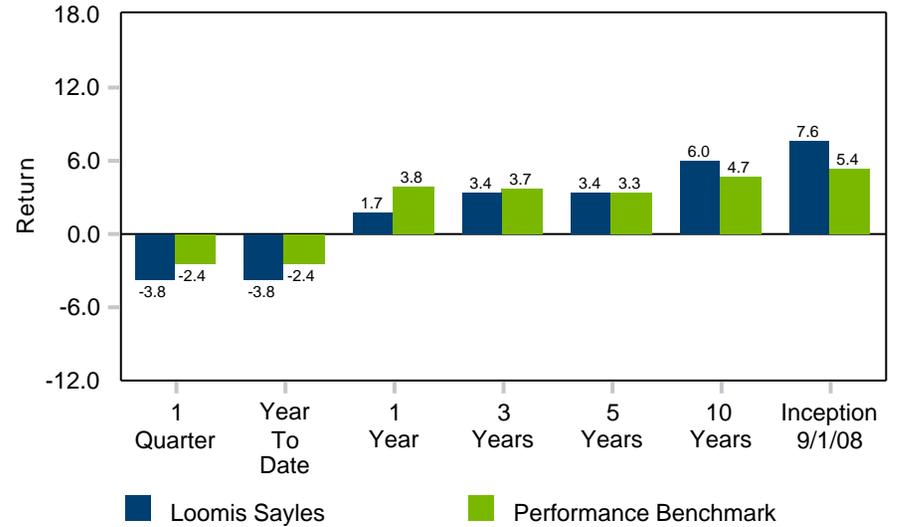
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
BlackRock	-0.09	0.32	-0.28	0.99	0.70	-0.13	1.01	3.26	3.08	0.99
Performance Benchmark	0.00	0.00	N/A	1.00	0.75	0.00	1.00	3.35	3.03	1.00
FTSE 3 Month T-Bill	-2.23	2.98	-0.75	0.05	N/A	1.06	0.02	1.12	0.25	0.22

Loomis Sayles Performance Summary

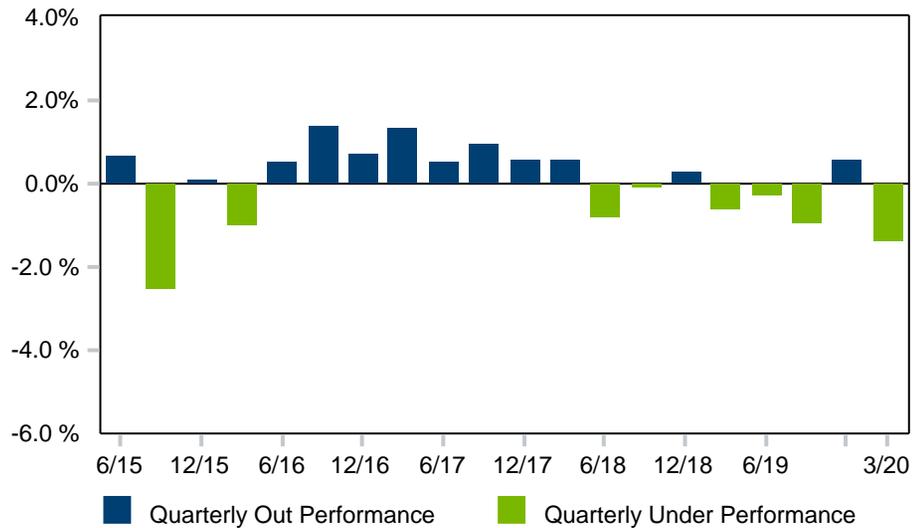
Account Information

Account Name: Loomis Sayles
 Inception Date: 06/30/2008
 Account Structure: Separate Account
 Asset Class: US Fixed Income
 Benchmark: Performance Benchmark
 Peer Group: IM U.S. Fixed Income (SA+CF)

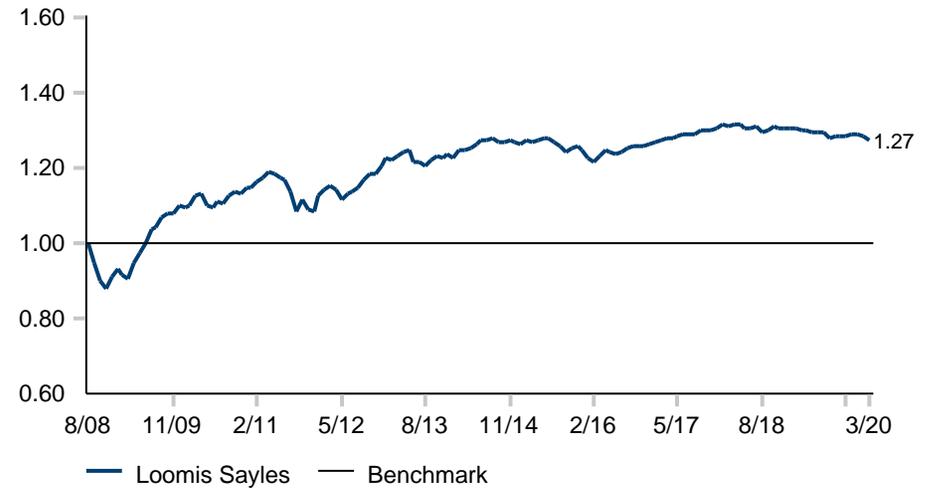
Return Summary



Quarterly Excess Performance

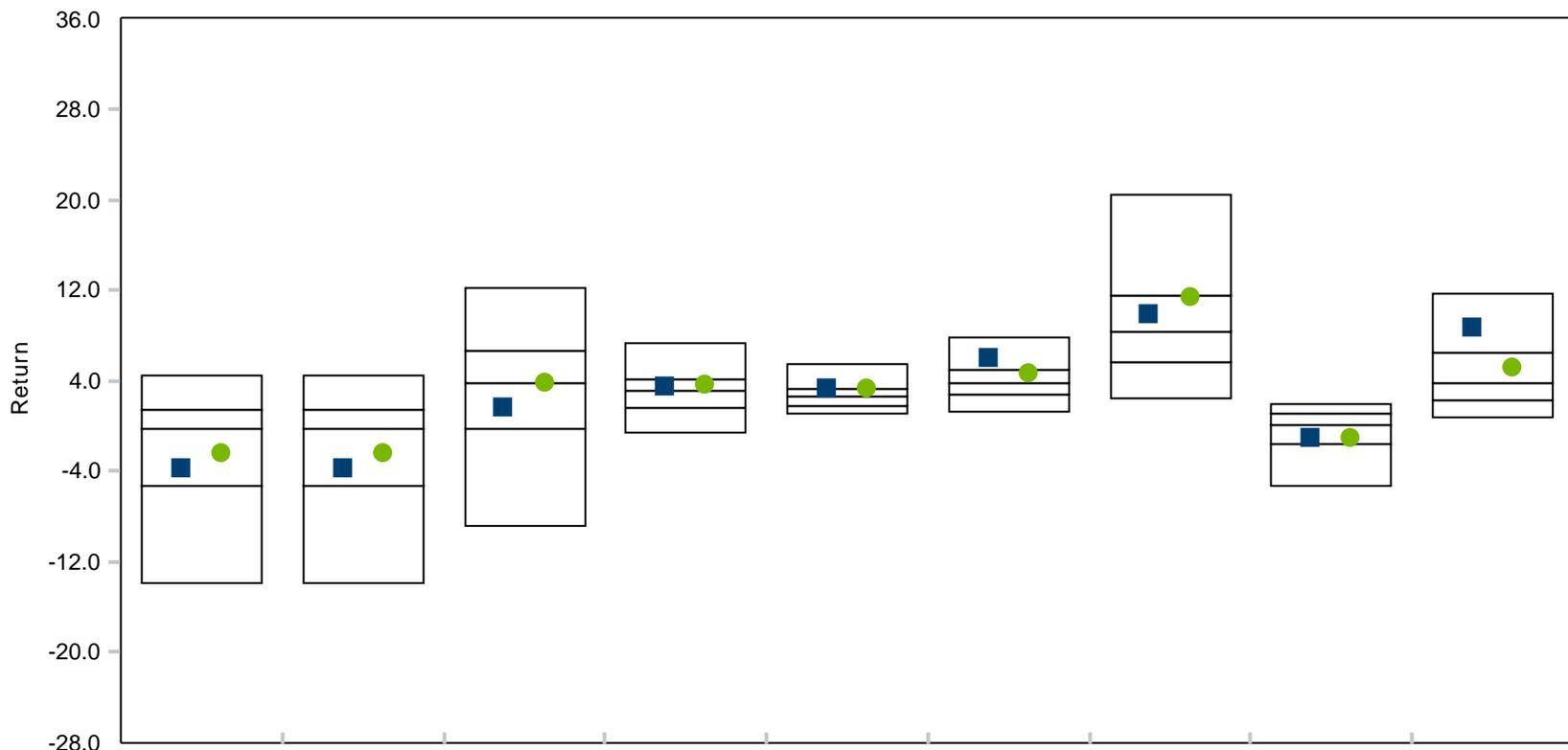


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM U.S. Fixed Income (SA+CF)

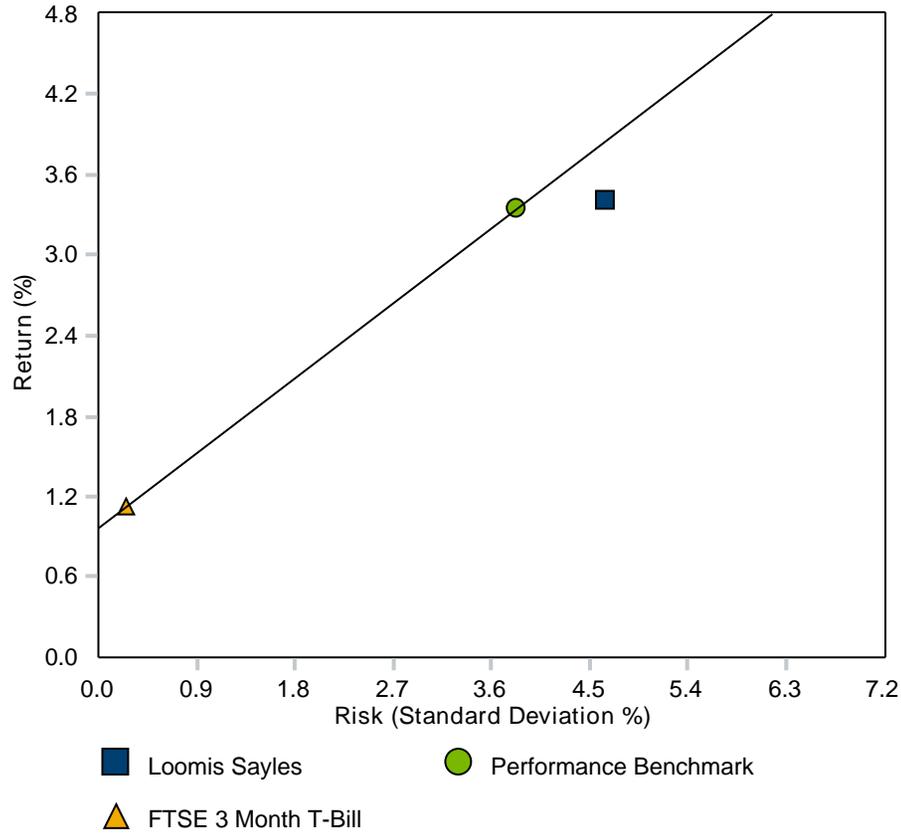


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years	2019	2018	2017
■ Loomis Sayles	-3.8 (70)	-3.8 (70)	1.7 (70)	3.4 (44)	3.4 (21)	6.0 (13)	10.0 (32)	-1.1 (72)	8.8 (12)
● Performance Benchmark	-2.4 (65)	-2.4 (65)	3.8 (51)	3.7 (37)	3.3 (22)	4.7 (31)	11.4 (26)	-1.0 (71)	5.2 (33)
5th Percentile	4.5	4.5	12.3	7.4	5.5	8.0	20.6	1.9	11.7
1st Quartile	1.4	1.4	6.7	4.2	3.3	5.1	11.5	1.2	6.5
Median	-0.2	-0.2	3.9	3.1	2.6	3.8	8.4	0.1	3.9
3rd Quartile	-5.3	-5.3	-0.2	1.7	1.9	2.8	5.7	-1.5	2.3
95th Percentile	-13.8	-13.8	-8.8	-0.5	1.1	1.3	2.5	-5.3	0.9
Population	1,299	1,299	1,294	1,267	1,215	1,043	1,378	1,487	1,519

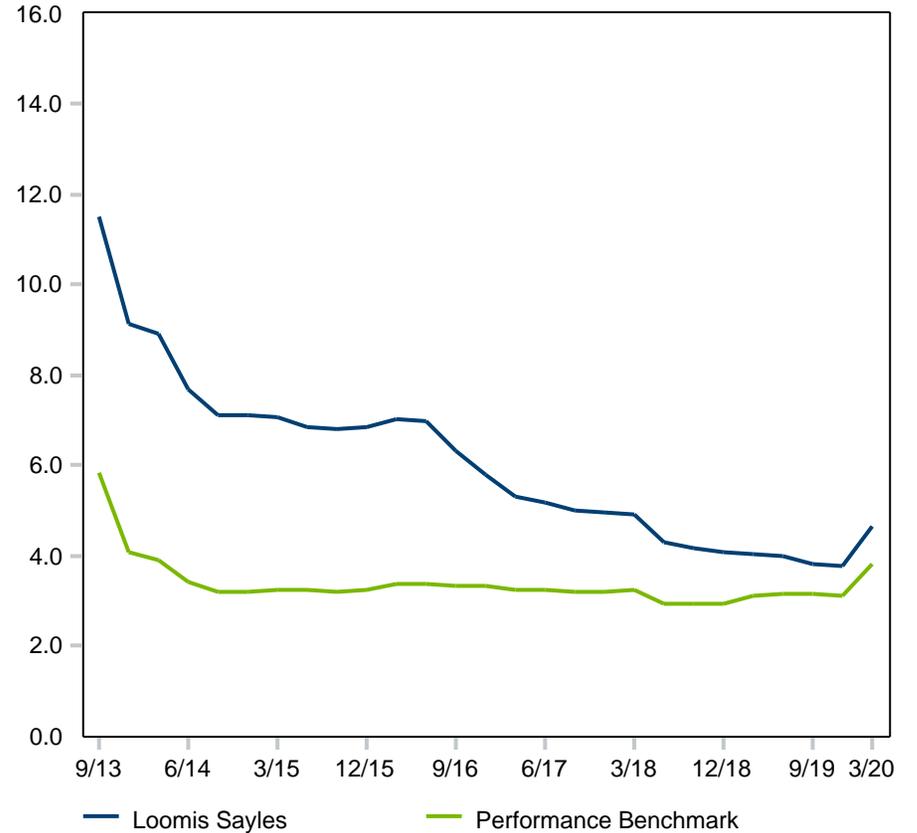
parentheses contain percentile rankings.

Loomis Sayles Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 5 Years Standard Deviation



5 Years Historical Statistics

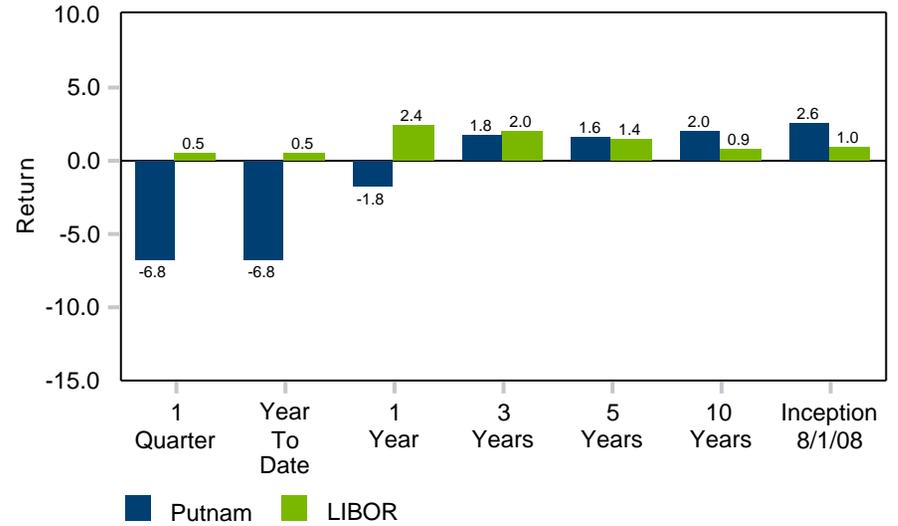
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Loomis Sayles	0.09	2.02	0.05	0.82	0.50	-0.23	1.10	3.40	4.65	0.90
Performance Benchmark	0.00	0.00	N/A	1.00	0.59	0.00	1.00	3.34	3.83	1.00
FTSE 3 Month T-Bill	-2.25	3.81	-0.59	0.02	N/A	1.09	0.01	1.12	0.25	0.14

Putnam Performance Summary

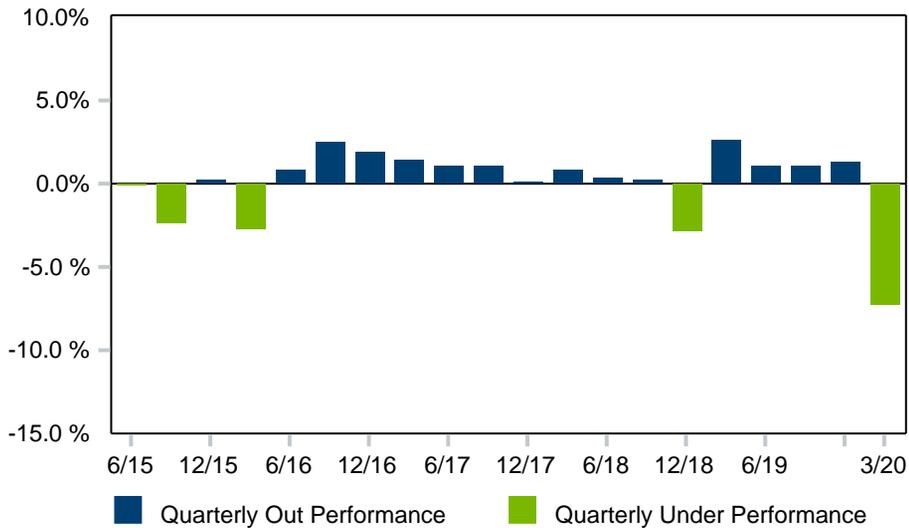
Account Information

Account Name: Putnam
 Inception Date: 06/30/2008
 Account Structure: Commingled Fund
 Asset Class: US Fixed Income
 Benchmark: LIBOR
 Peer Group: IM U.S. Fixed Income (SA+CF)

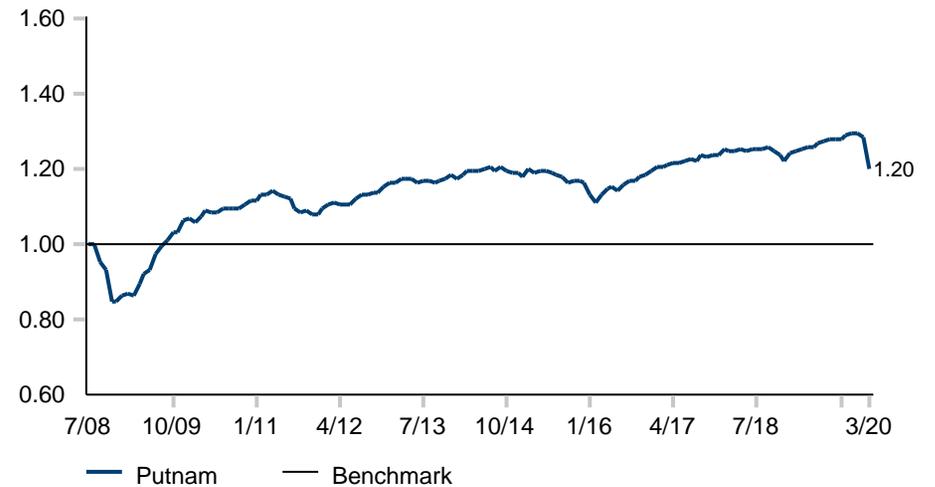
Return Summary



Quarterly Excess Performance

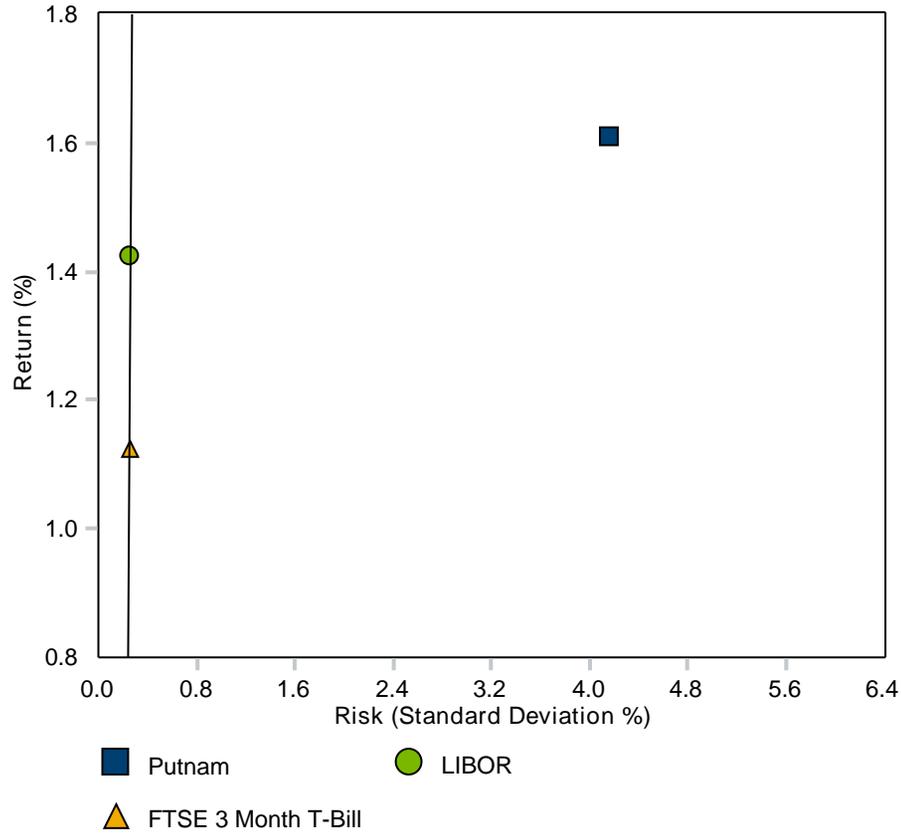


Ratio of Cumulative Wealth - Since Inception

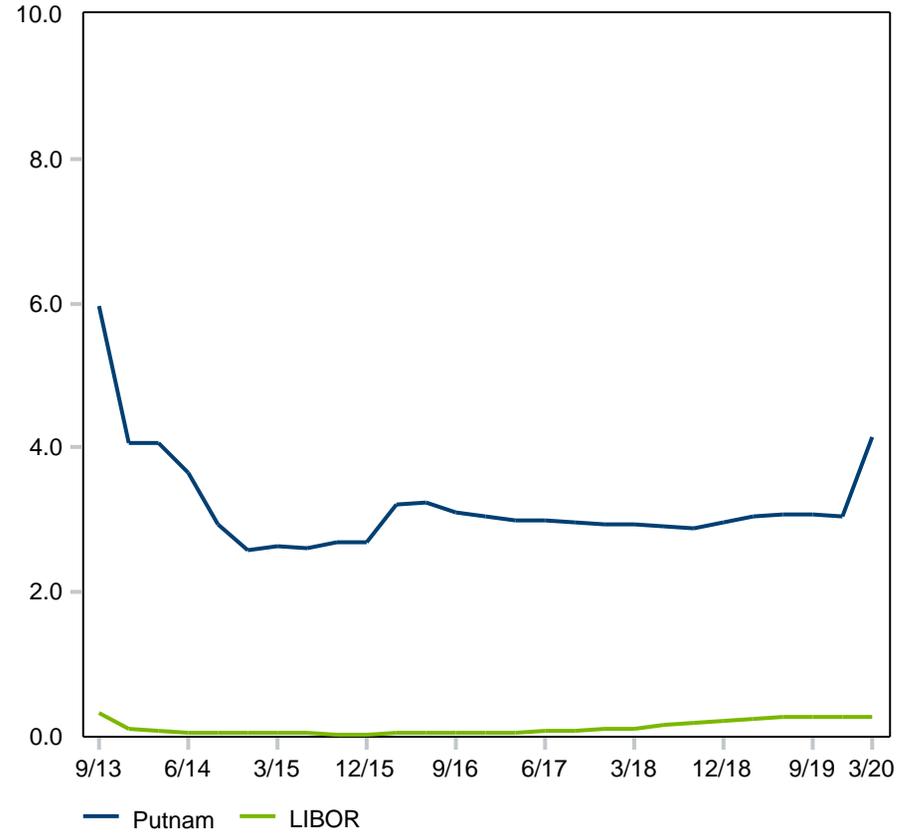


Putnam Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 5 Years Standard Deviation



5 Years Historical Statistics

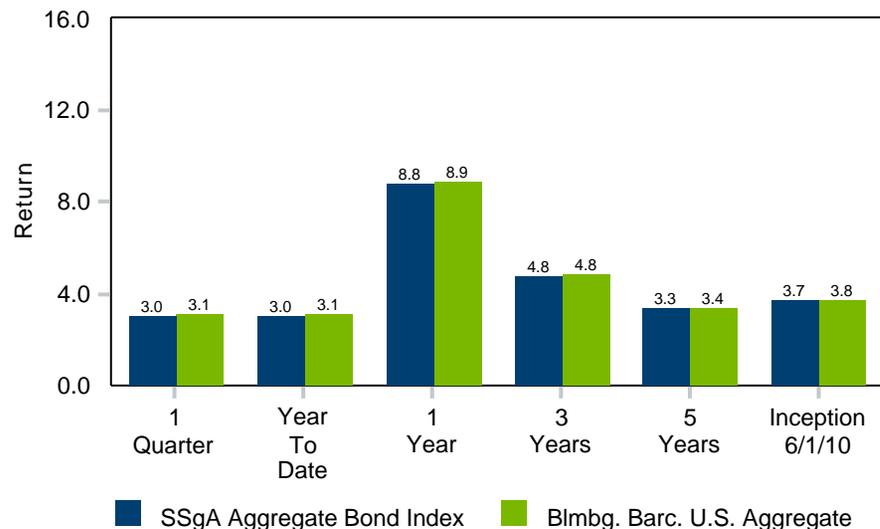
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Putnam	0.27	4.13	0.07	0.02	0.14	-1.63	2.36	1.61	4.16	0.15
LIBOR	0.00	0.00	N/A	1.00	4.10	0.00	1.00	1.42	0.26	1.00
FTSE 3 Month T-Bill	-0.29	0.07	-4.10	0.92	N/A	-0.19	0.93	1.12	0.25	0.96

SSgA Aggregate Bond Index Performance Summary

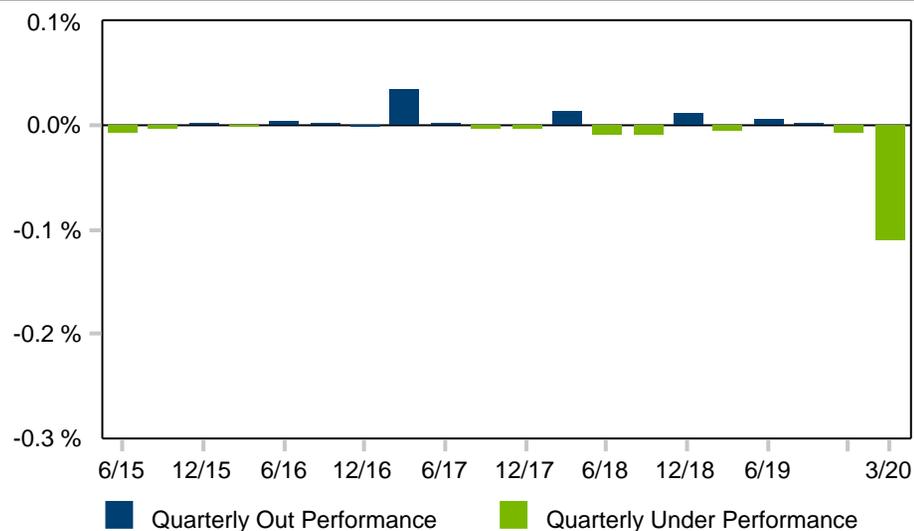
Account Information

Account Name: SSgA Aggregate Bond Index
 Inception Date: 01/01/1901
 Account Structure: Commingled Fund
 Asset Class: US Fixed Income
 Benchmark: Blmbg. Barc. U.S. Aggregate
 Peer Group: IM U.S. Fixed Income (SA+CF)

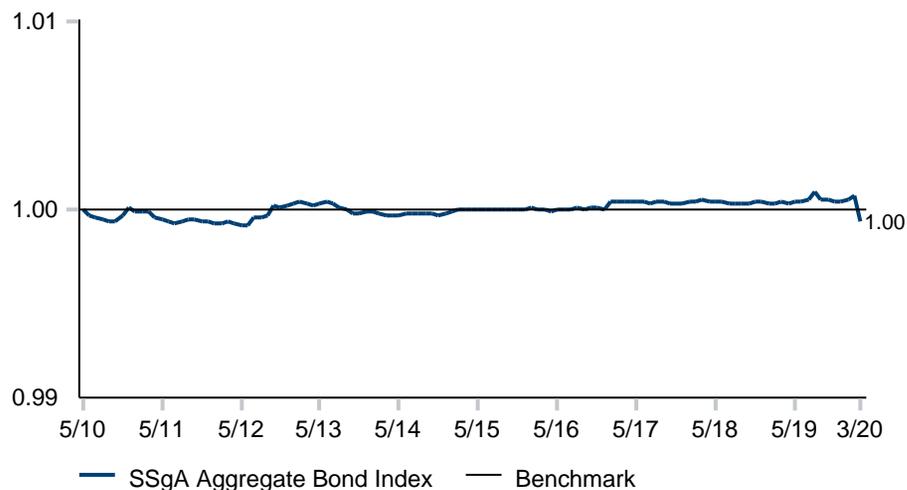
Return Summary



Quarterly Excess Performance

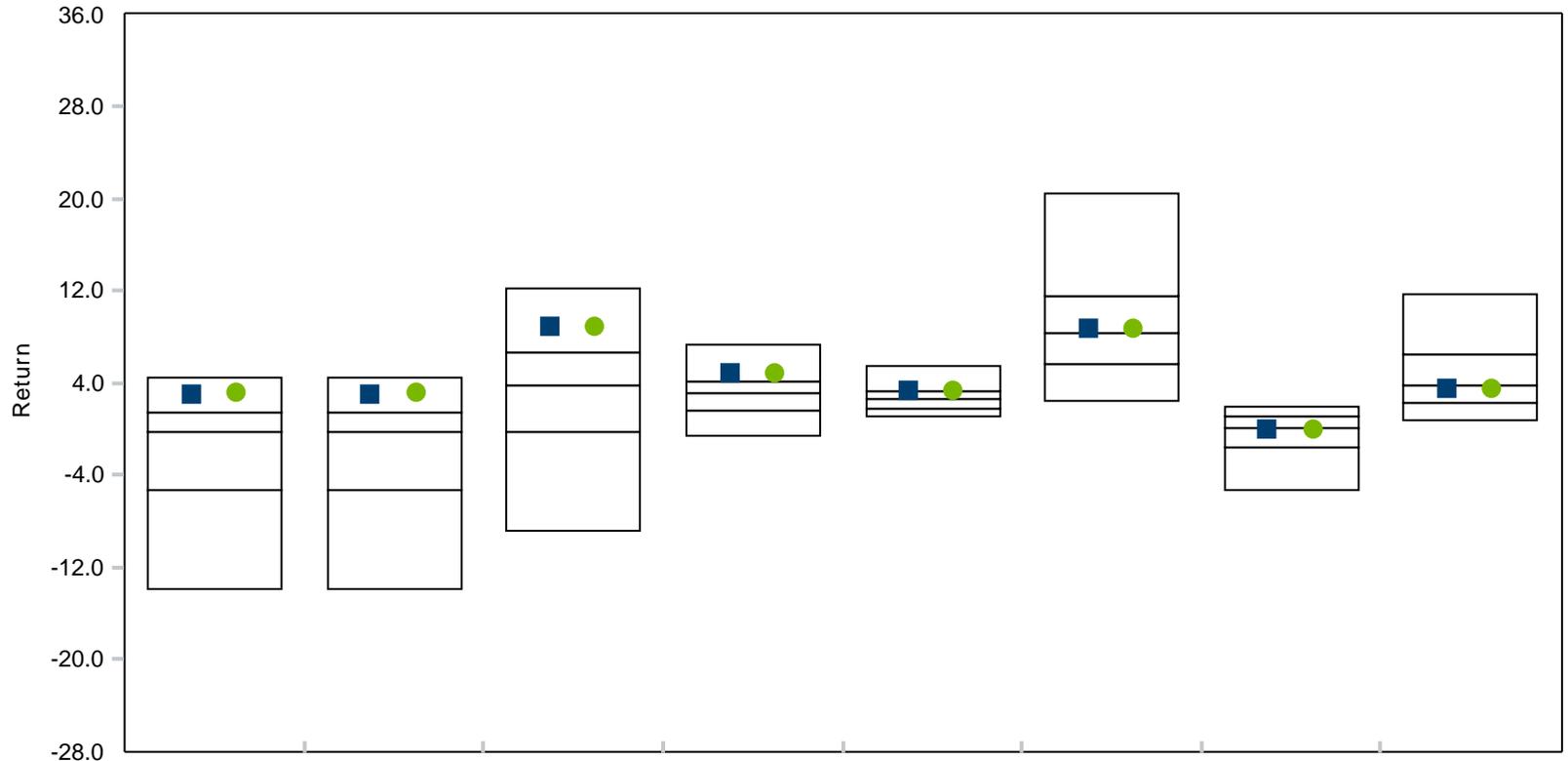


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM U.S. Fixed Income (SA+CF)

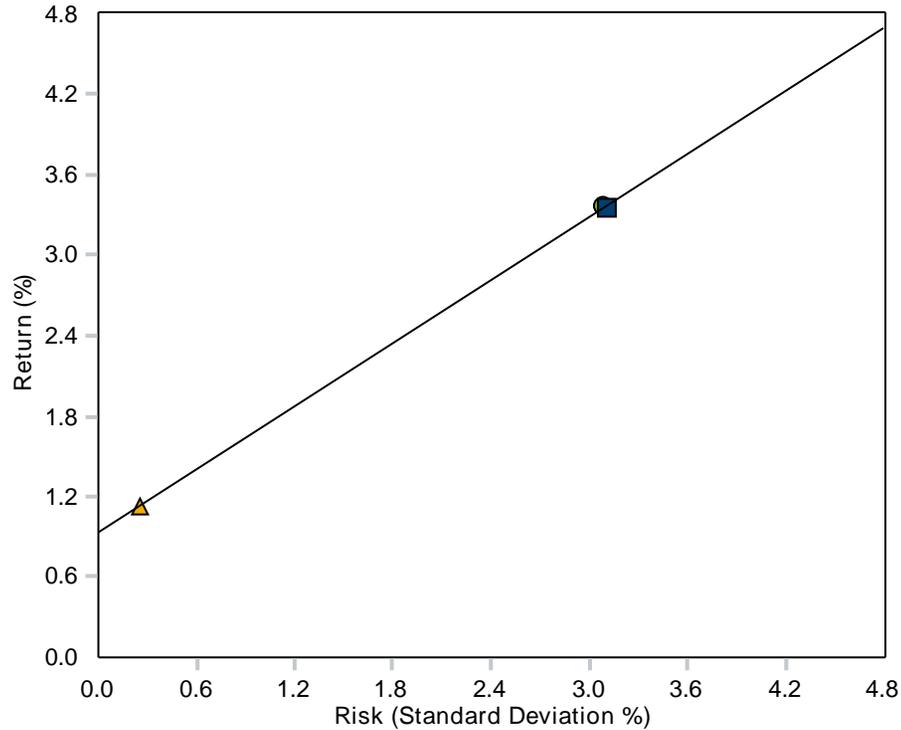


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	2019	2018	2017
■ SSgA Aggregate Bond Index	3.0 (11)	3.0 (11)	8.8 (11)	4.8 (14)	3.3 (22)	8.7 (47)	0.0 (52)	3.6 (56)
● Blmbg. Barc. U.S. Aggregate	3.1 (10)	3.1 (10)	8.9 (11)	4.8 (14)	3.4 (22)	8.7 (47)	0.0 (52)	3.5 (56)
5th Percentile	4.5	4.5	12.3	7.4	5.5	20.6	1.9	11.7
1st Quartile	1.4	1.4	6.7	4.2	3.3	11.5	1.2	6.5
Median	-0.2	-0.2	3.9	3.1	2.6	8.4	0.1	3.9
3rd Quartile	-5.3	-5.3	-0.2	1.7	1.9	5.7	-1.5	2.3
95th Percentile	-13.8	-13.8	-8.8	-0.5	1.1	2.5	-5.3	0.9
Population	1,299	1,299	1,294	1,267	1,215	1,378	1,487	1,519

Partheses contain percentile rankings.

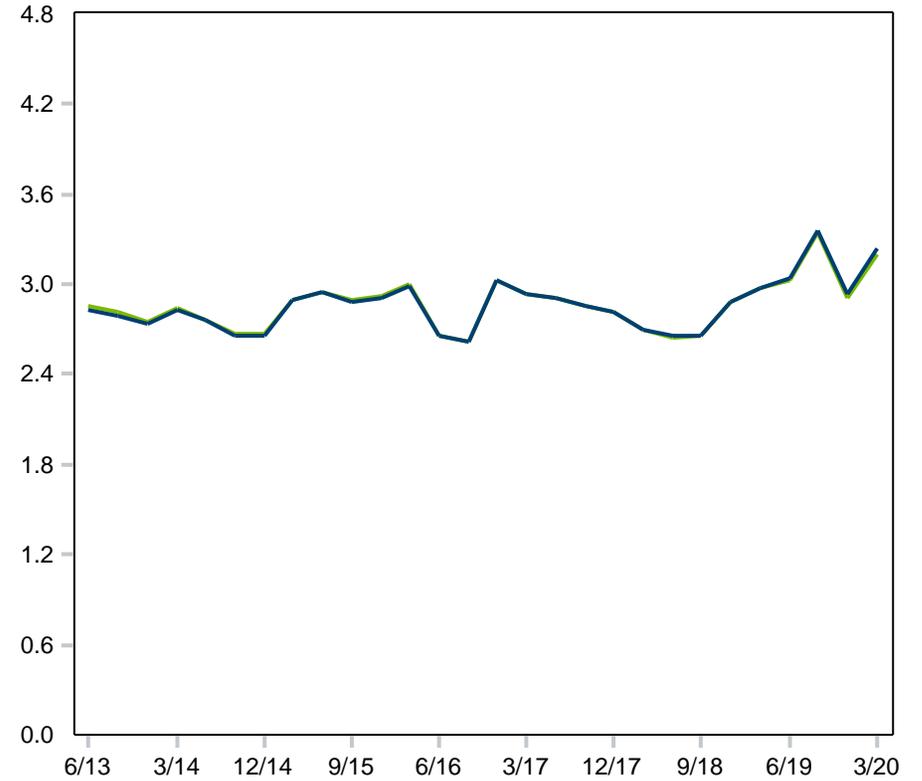
SSgA Aggregate Bond Index Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



■ SSgA Aggregate Bond Index ● Blmbg. Barc. U.S. Aggregate
 ▲ FTSE 3 Month T-Bill

Rolling 3 Years Standard Deviation



— SSgA Aggregate Bond Index — Blmbg. Barc. U.S. Aggregate

5 Years Historical Statistics

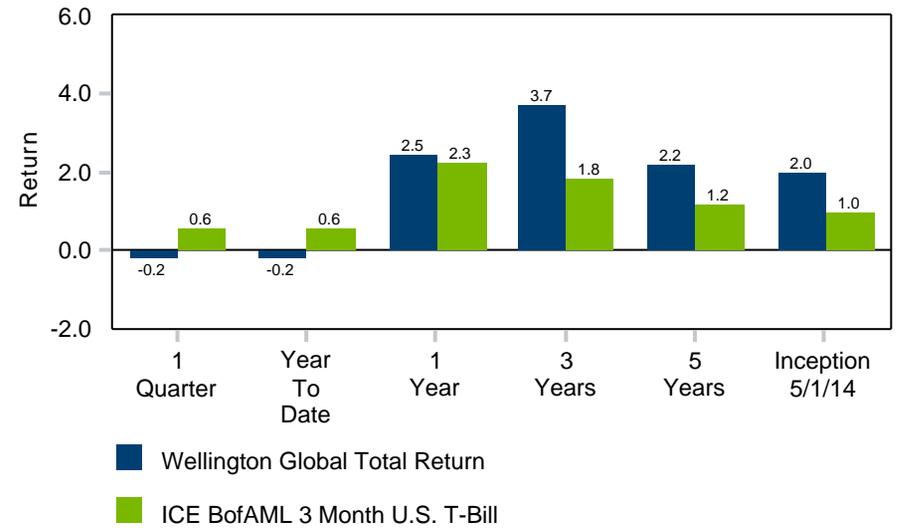
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
SSgA Aggregate Bond Index	-0.01	0.07	-0.18	1.00	0.73	-0.04	1.01	3.34	3.12	1.00
Blmbg. Barc. U.S. Aggregate	0.00	0.00	N/A	1.00	0.74	0.00	1.00	3.36	3.09	1.00
FTSE 3 Month T-Bill	-2.24	3.04	-0.74	0.07	N/A	1.05	0.02	1.12	0.25	0.26

Wellington Global Total Return Performance Summary

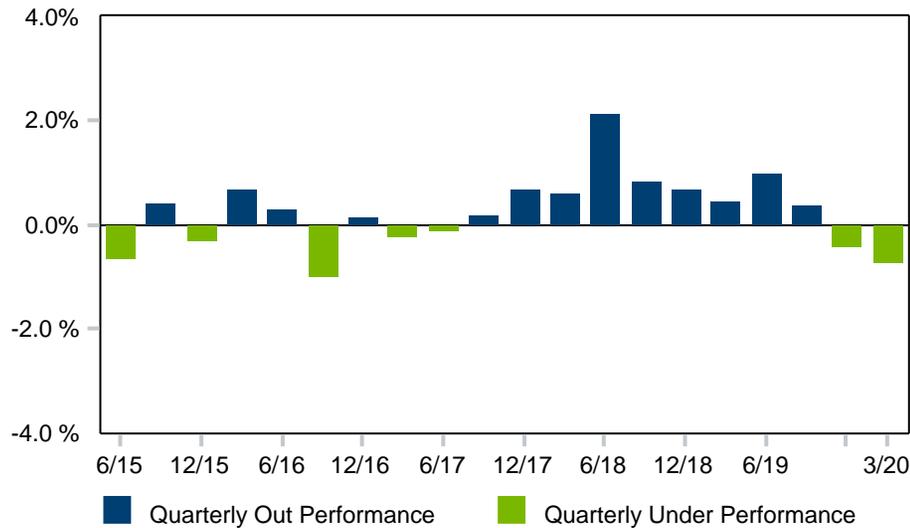
Account Information

Account Name: Wellington Global Total Return
 Inception Date: 05/13/2014
 Account Structure: Commingled Fund
 Asset Class: Global Fixed Income
 Benchmark: ICE BofAML 3 Month U.S. T-Bill
 Peer Group: IM Absolute Return (MF)

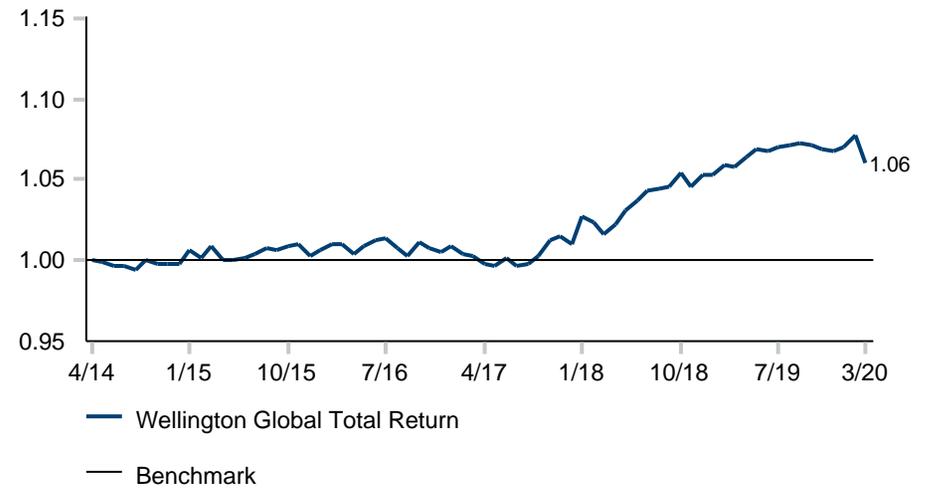
Return Summary



Quarterly Excess Performance

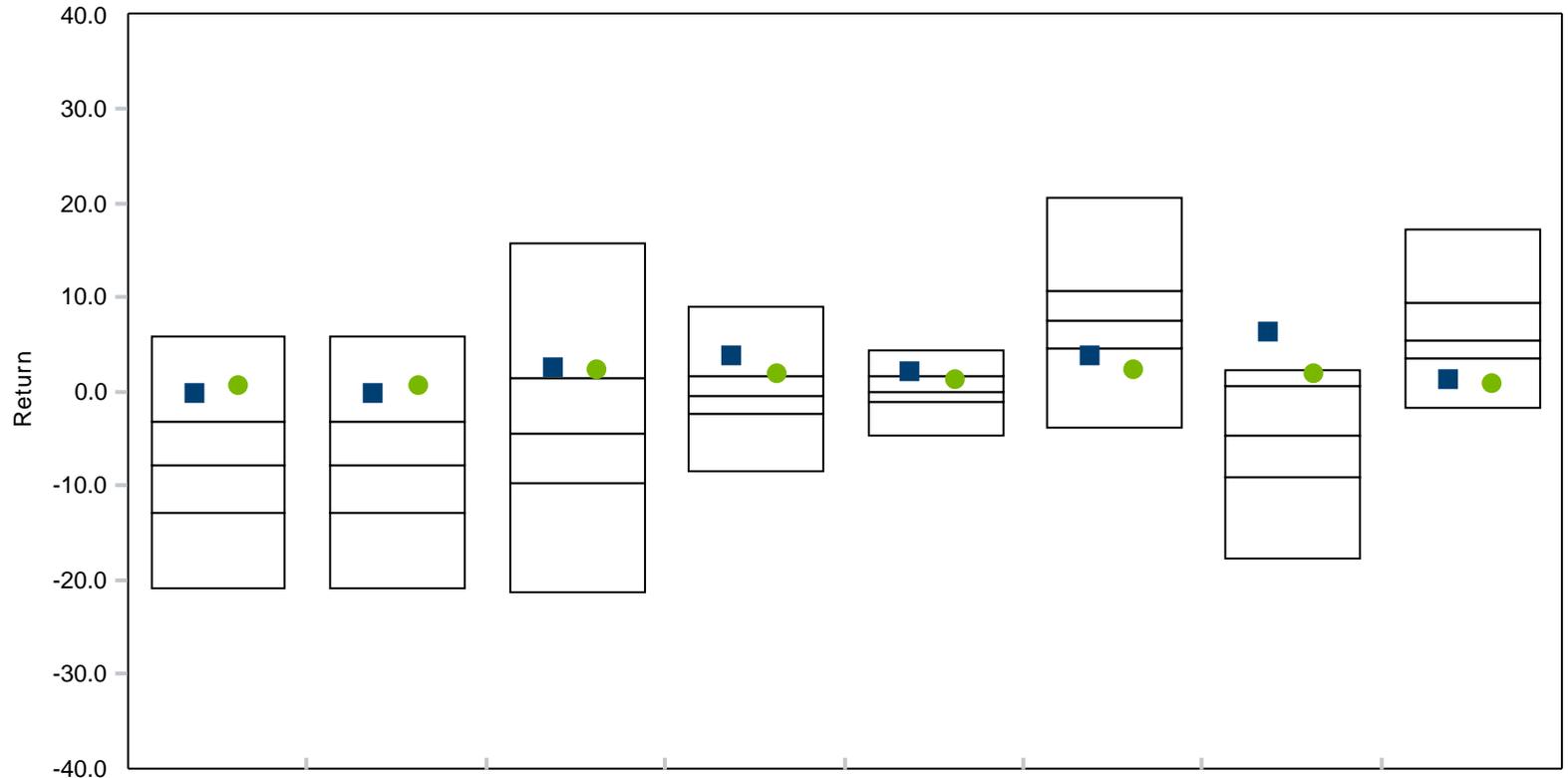


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM Absolute Return (MF)

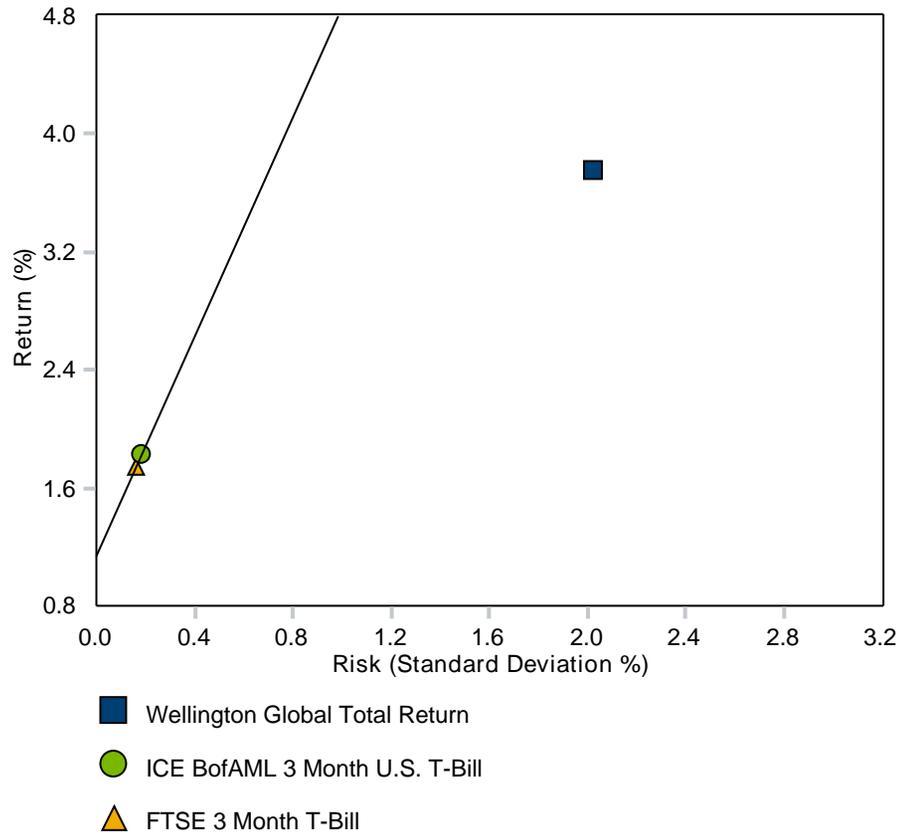


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	2019	2018	2017
Wellington Global Total Return	-0.2 (15)	-0.2 (15)	2.5 (23)	3.7 (15)	2.2 (24)	3.7 (83)	6.2 (4)	1.4 (91)
ICE BofAML 3 Month U.S. T-Bill	0.6 (13)	0.6 (13)	2.3 (24)	1.8 (23)	1.2 (35)	2.3 (84)	1.9 (6)	0.9 (91)
5th Percentile	5.9	5.9	15.7	9.1	4.5	20.7	2.4	17.2
1st Quartile	-3.1	-3.1	1.5	1.7	1.7	10.7	0.5	9.5
Median	-7.8	-7.8	-4.5	-0.3	0.1	7.7	-4.6	5.5
3rd Quartile	-12.9	-12.9	-9.7	-2.3	-1.1	4.6	-9.0	3.5
95th Percentile	-20.8	-20.8	-21.3	-8.5	-4.5	-3.8	-17.6	-1.7
Population	40	40	40	40	40	40	49	51

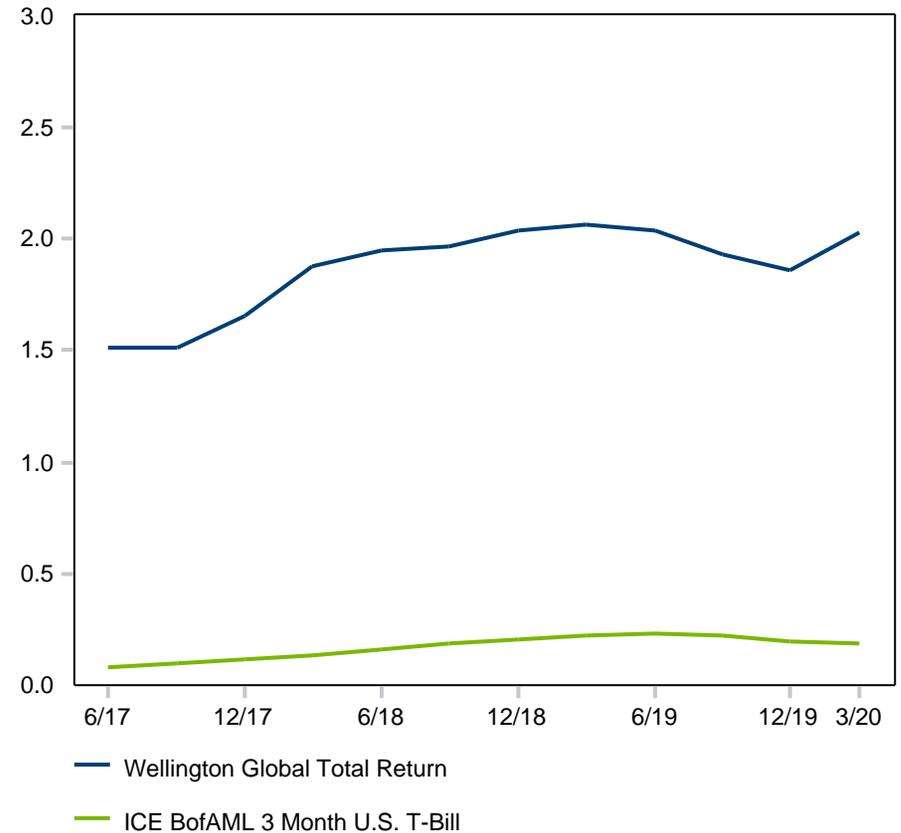
Parentheses contain percentile rankings.

Wellington Global Total Return Risk Profile

Annualized Return vs. Annualized Standard Deviation 3 Years



Rolling 3 Years Standard Deviation



3 Years Historical Statistics

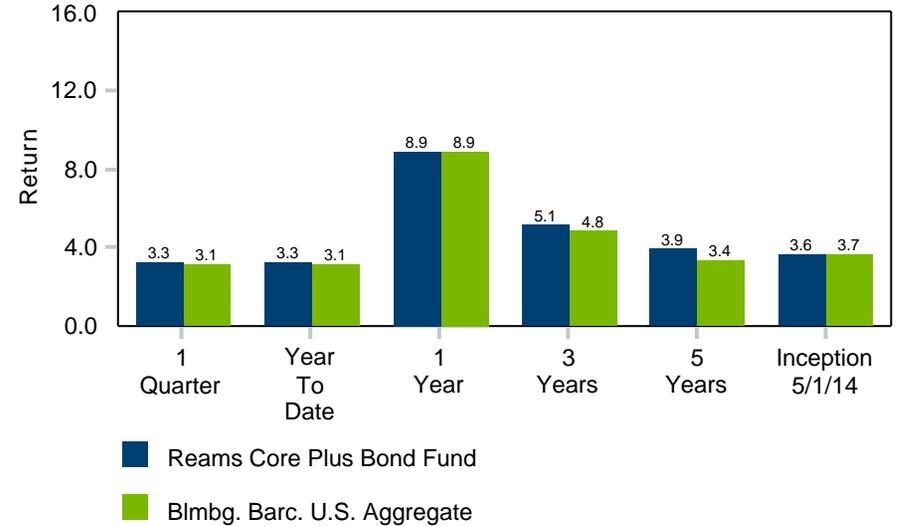
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Wellington Global Total Return	1.89	2.06	0.92	0.01	0.98	6.02	-1.19	3.75	2.03	-0.11
ICE BofAML 3 Month U.S. T-Bill	0.00	0.00	N/A	1.00	0.83	0.00	1.00	1.83	0.19	1.00
FTSE 3 Month T-Bill	-0.09	0.10	-0.83	0.69	N/A	0.41	0.73	1.74	0.16	0.83

Reams Core Plus Bond Fund Performance Summary

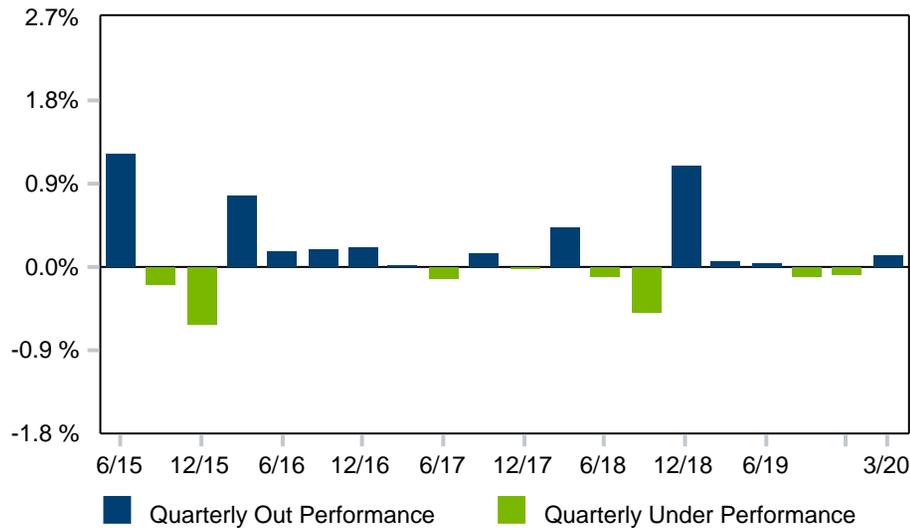
Account Information

Account Name: Reams Core Plus Bond Fund
 Inception Date: 05/08/2014
 Account Structure: Commingled Fund
 Asset Class: US Fixed Income
 Benchmark: Blmbg. Barc. U.S. Aggregate
 Peer Group: IM U.S. Fixed Income (SA+CF)

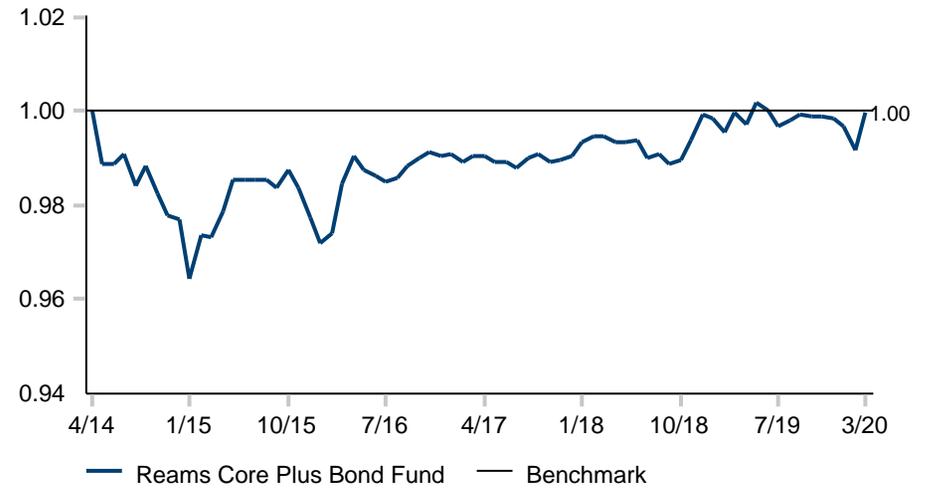
Return Summary



Quarterly Excess Performance

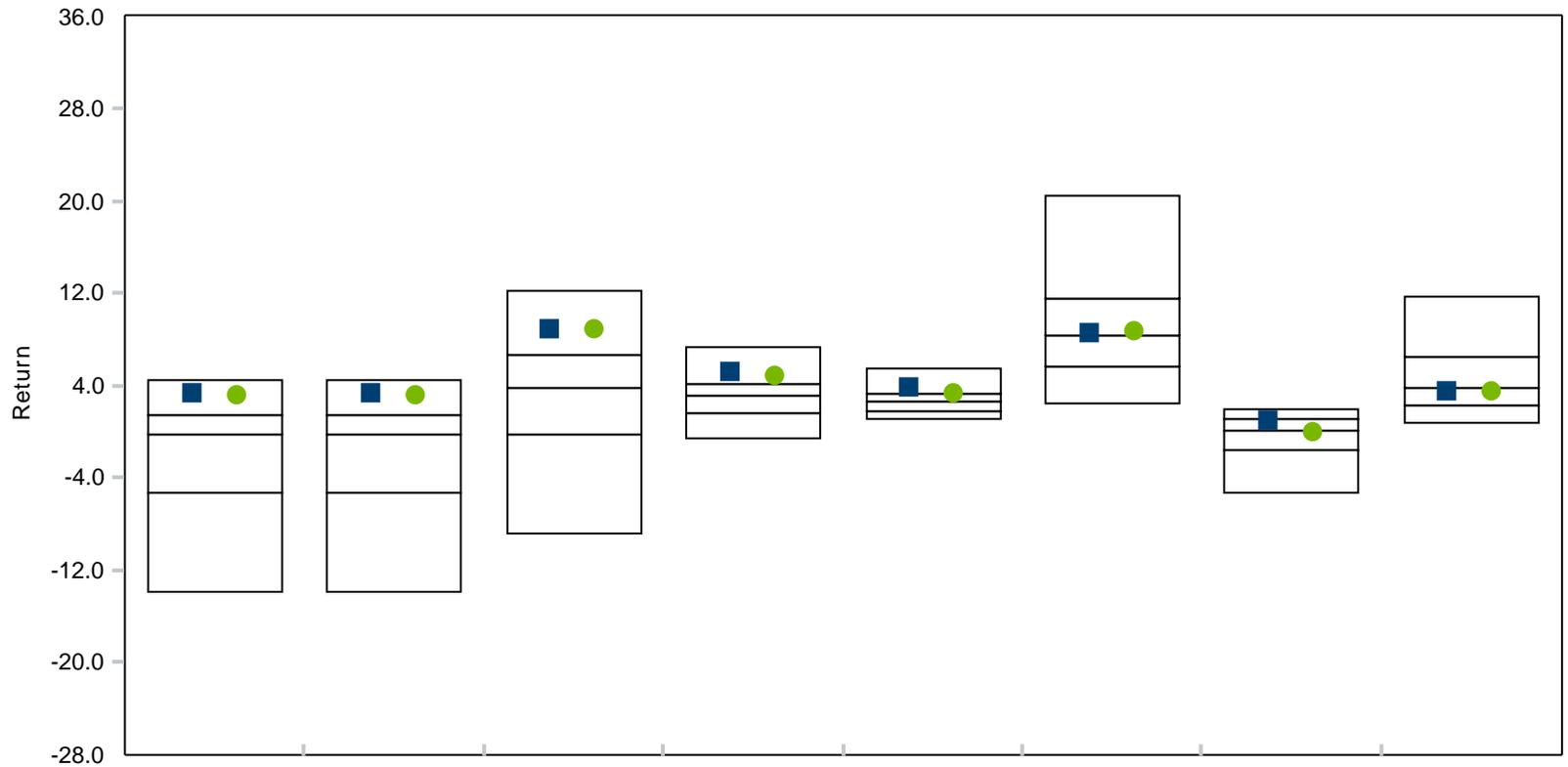


Ratio of Cumulative Wealth - Since Inception



Peer Group Analysis

IM U.S. Fixed Income (SA+CF)

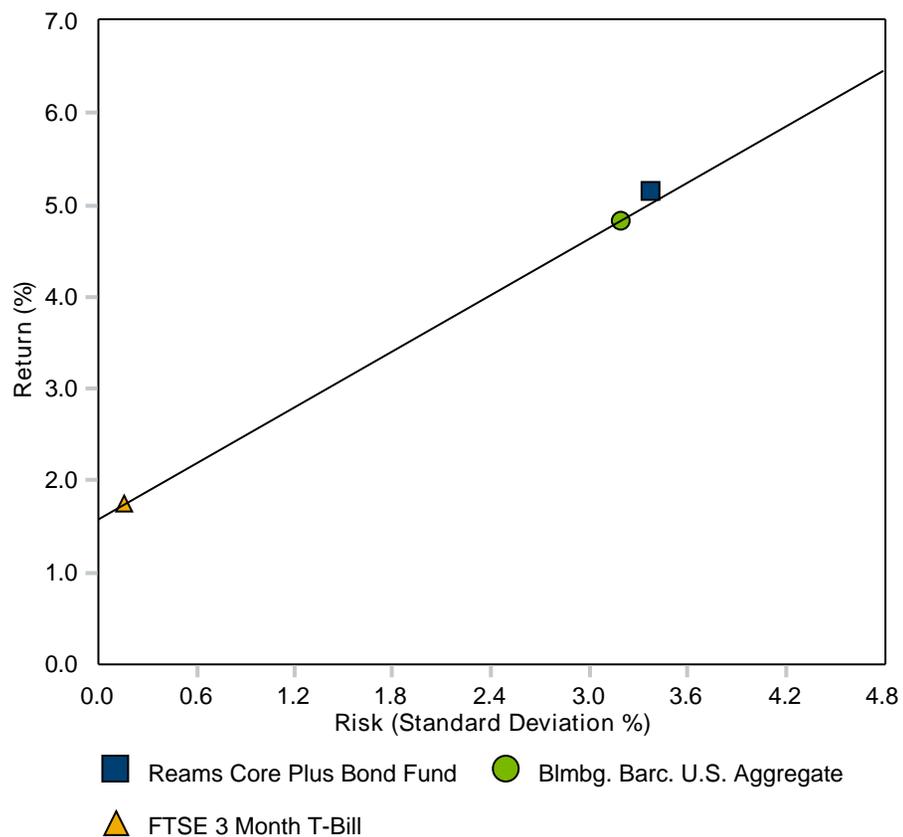


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	2019	2018	2017
■ Reams Core Plus Bond Fund	3.3 (9)	3.3 (9)	8.9 (11)	5.1 (12)	3.9 (12)	8.6 (48)	0.9 (34)	3.6 (56)
● Blmbg. Barc. U.S. Aggregate	3.1 (10)	3.1 (10)	8.9 (11)	4.8 (14)	3.4 (22)	8.7 (47)	0.0 (52)	3.5 (56)
5th Percentile	4.5	4.5	12.3	7.4	5.5	20.6	1.9	11.7
1st Quartile	1.4	1.4	6.7	4.2	3.3	11.5	1.2	6.5
Median	-0.2	-0.2	3.9	3.1	2.6	8.4	0.1	3.9
3rd Quartile	-5.3	-5.3	-0.2	1.7	1.9	5.7	-1.5	2.3
95th Percentile	-13.8	-13.8	-8.8	-0.5	1.1	2.5	-5.3	0.9
Population	1,299	1,299	1,294	1,267	1,215	1,378	1,487	1,519

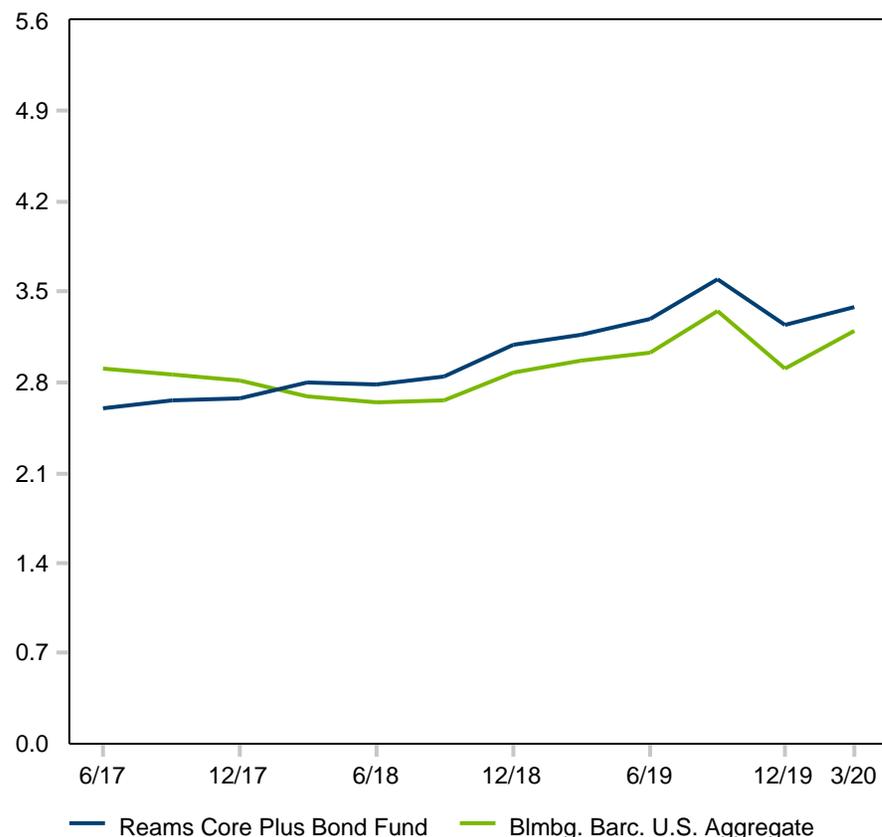
parentheses contain percentile rankings.

Reams Core Plus Bond Fund Risk Profile

Annualized Return vs. Annualized Standard Deviation 3 Years

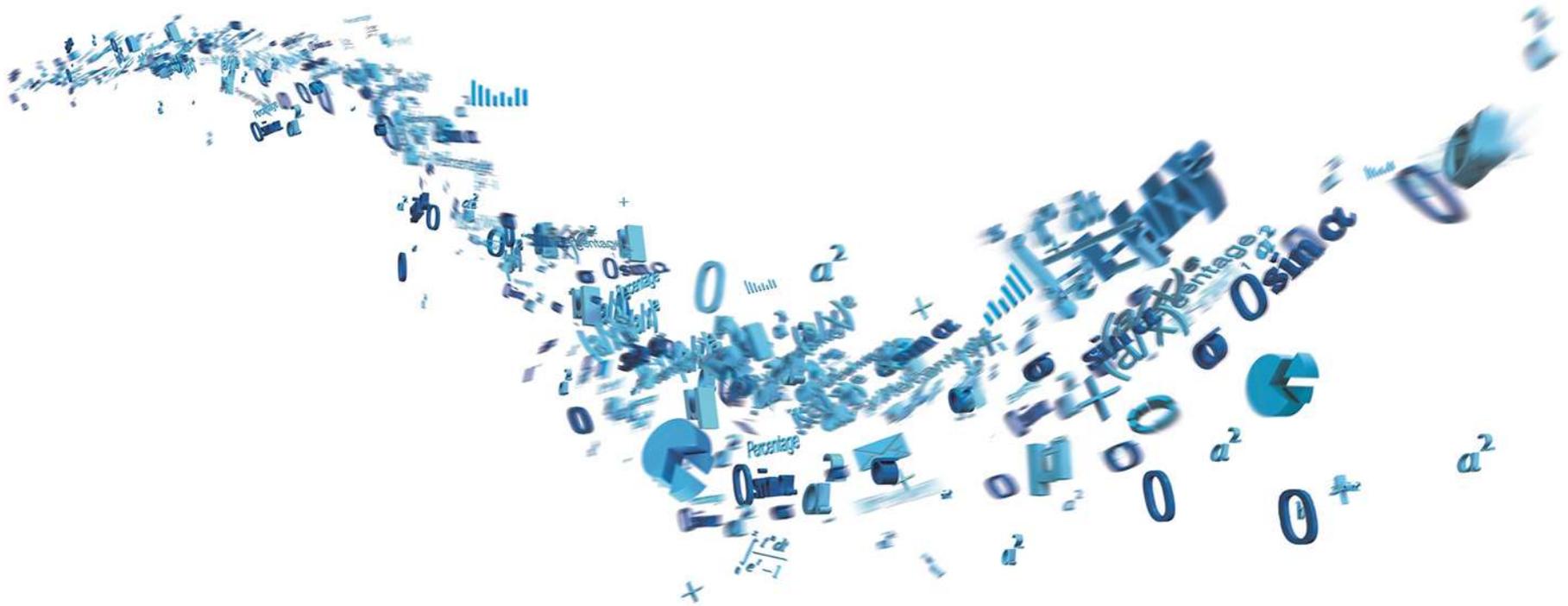


Rolling 3 Years Standard Deviation



3 Years Historical Statistics

	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Reams Core Plus Bond Fund	0.31	0.95	0.33	0.92	1.00	0.24	1.01	5.14	3.38	0.96
Blmbg. Barc. U.S. Aggregate	0.00	0.00	N/A	1.00	0.96	0.00	1.00	4.82	3.20	1.00
FTSE 3 Month T-Bill	-3.04	3.16	-0.96	0.08	N/A	1.67	0.01	1.74	0.16	0.28

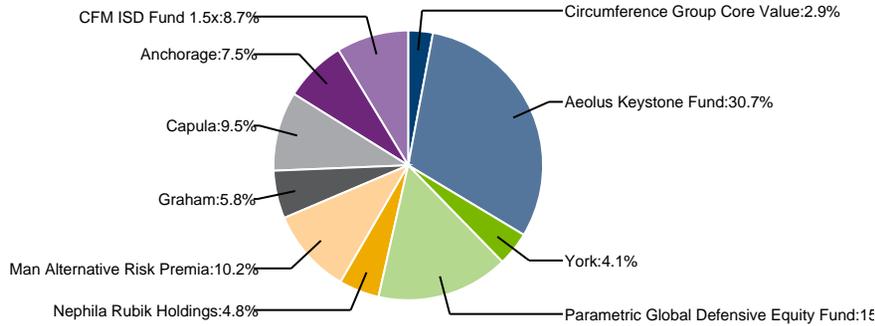


Opportunistic/Alternatives

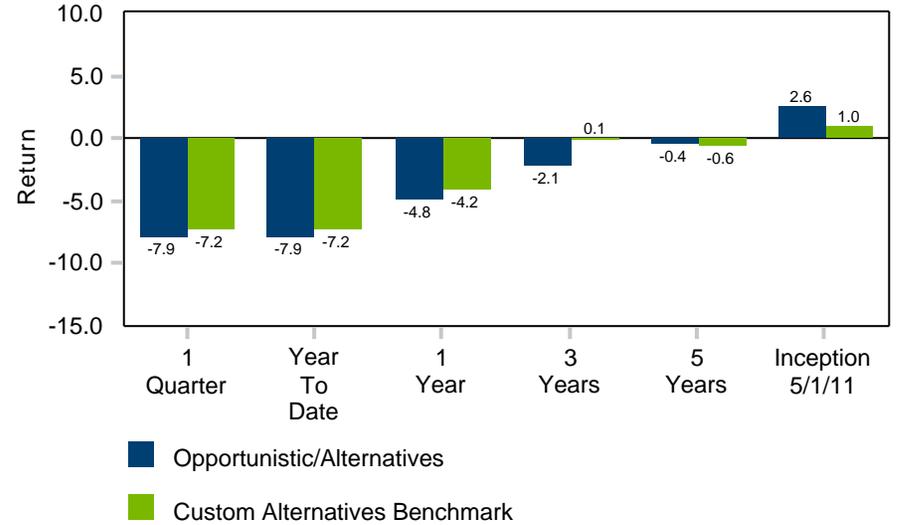
Opportunistic/Alternatives Portfolio Overview

Current Allocation

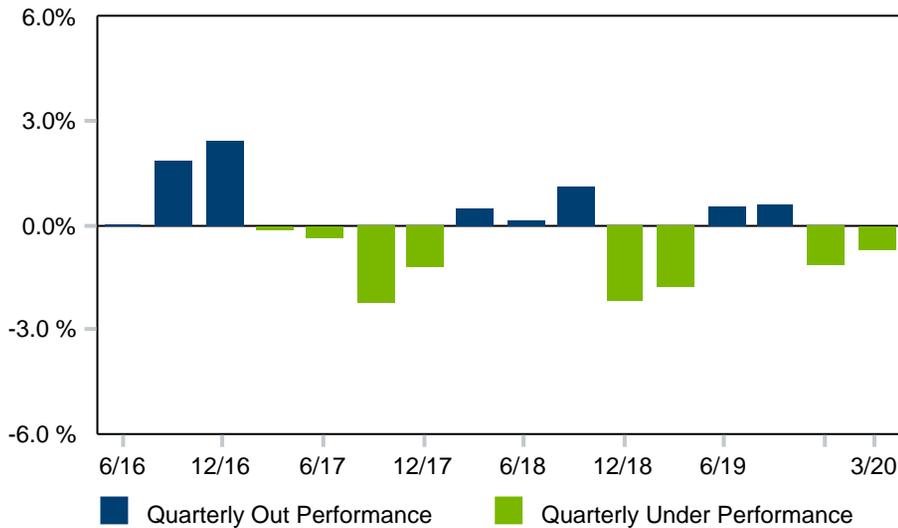
March 31, 2020 : \$916M



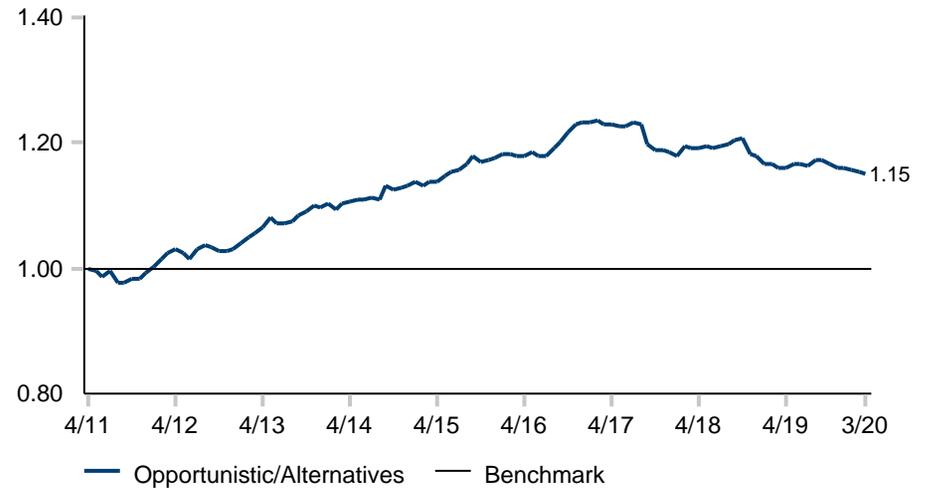
Return Summary



Quarterly Excess Performance

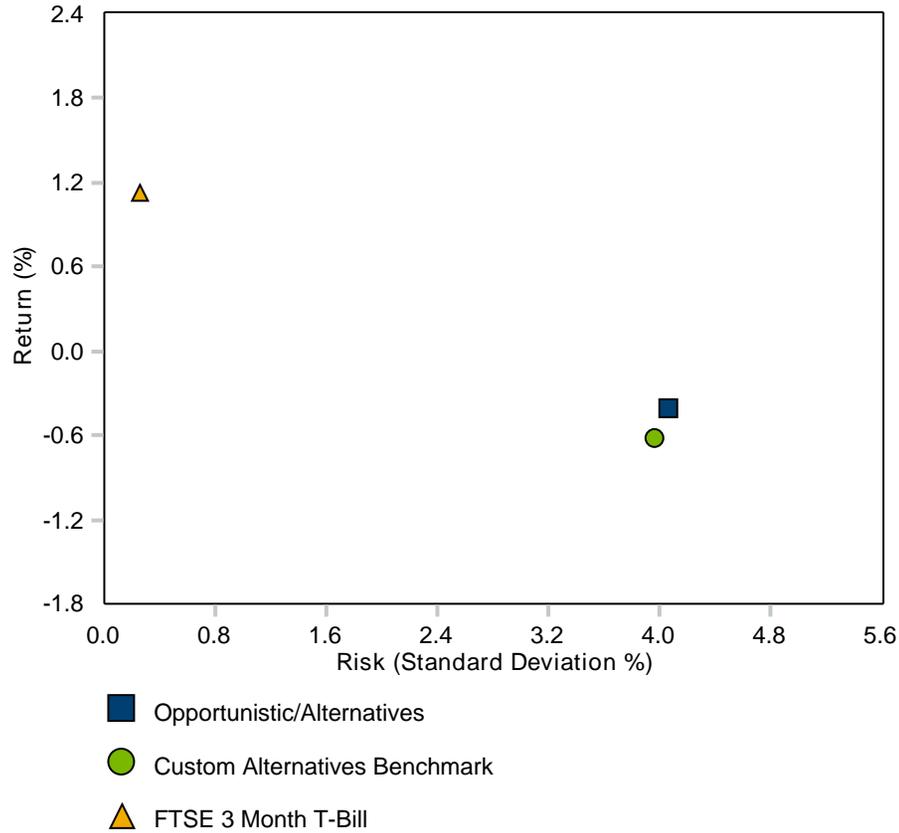


Ratio of Cumulative Wealth - Since Inception

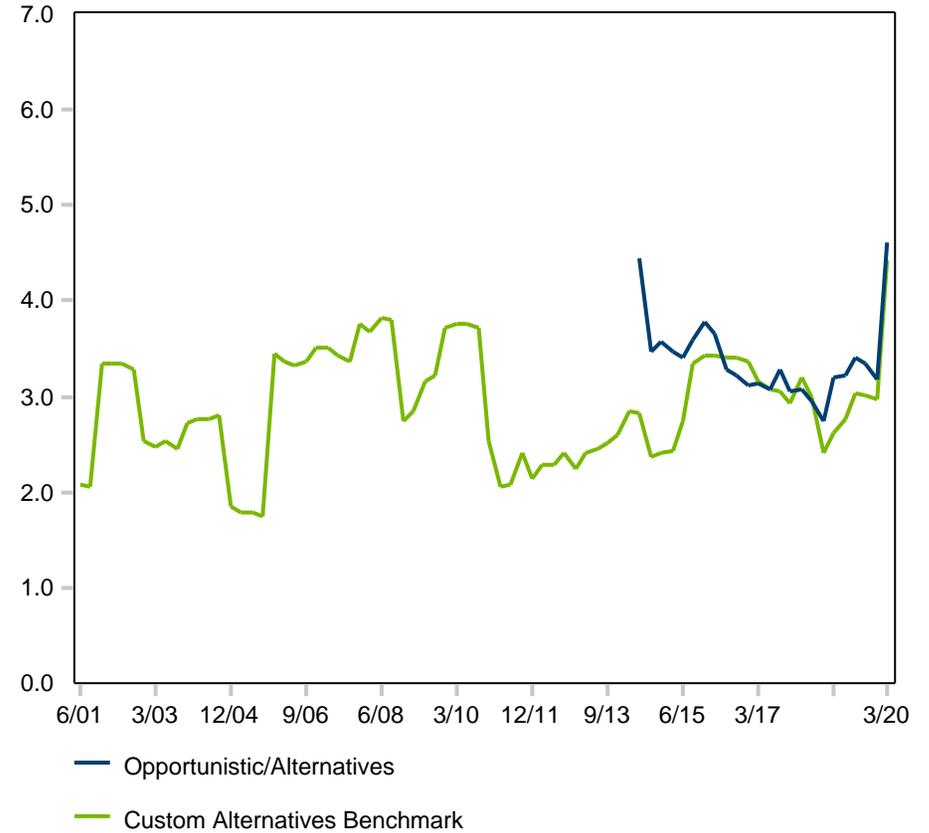


Opportunistic/Alternatives Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 3 Years Standard Deviation

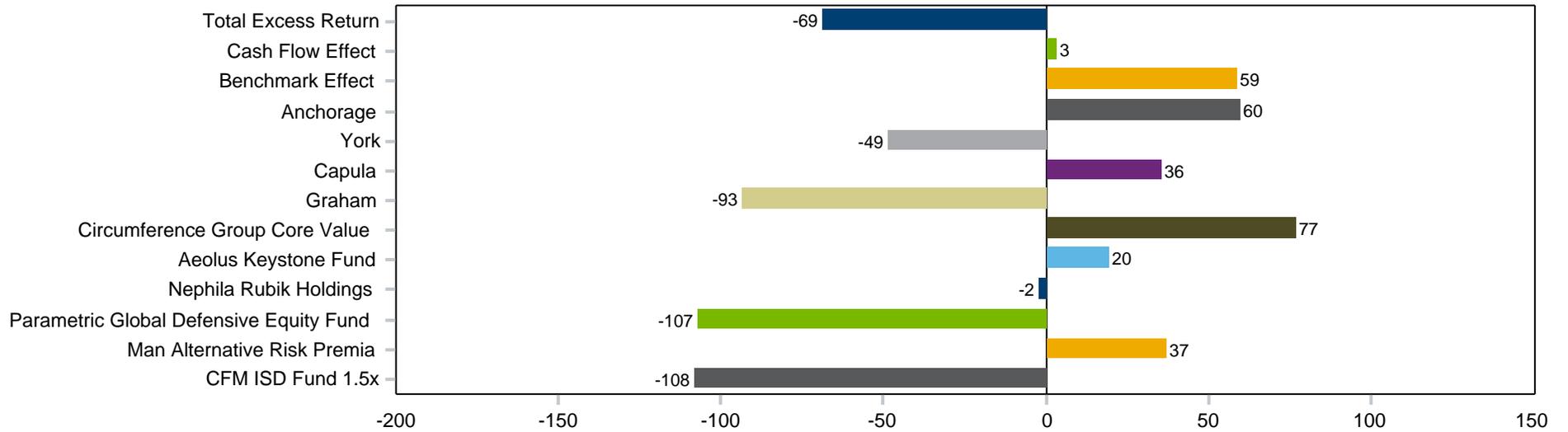


5 Years Historical Statistics

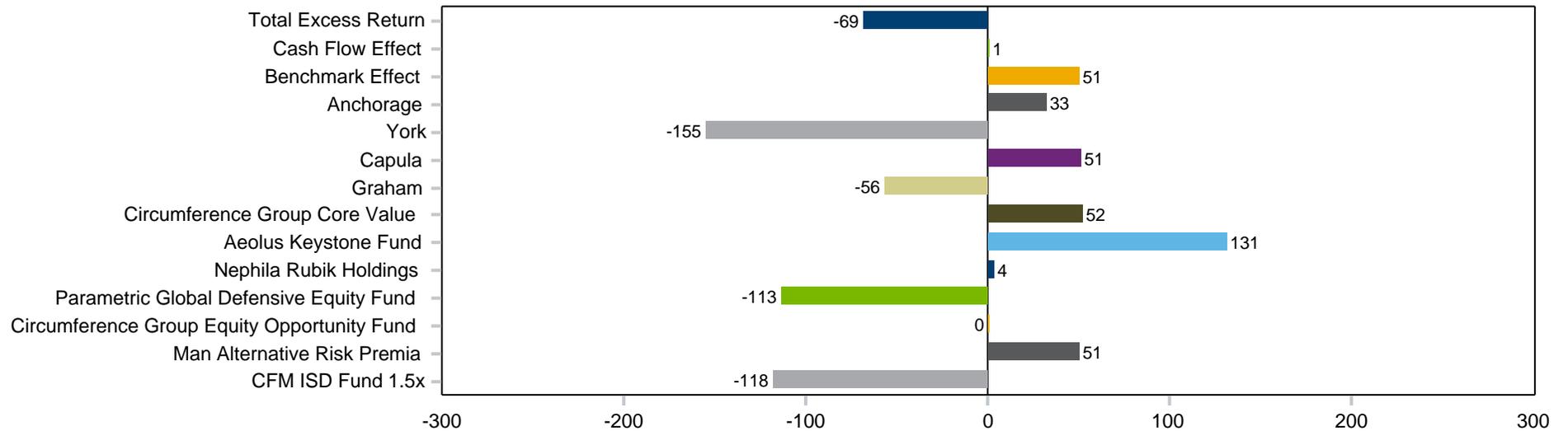
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Opportunistic/Alternatives	0.22	2.29	0.10	0.70	-0.35	0.14	0.86	-0.41	4.08	0.84
Custom Alternatives Benchmark	0.00	0.00	N/A	1.00	-0.42	0.00	1.00	-0.63	3.97	1.00
FTSE 3 Month T-Bill	1.67	3.95	0.42	0.01	N/A	1.13	0.01	1.12	0.25	0.10

Asset Class Attribution

1 Quarter



1 Year

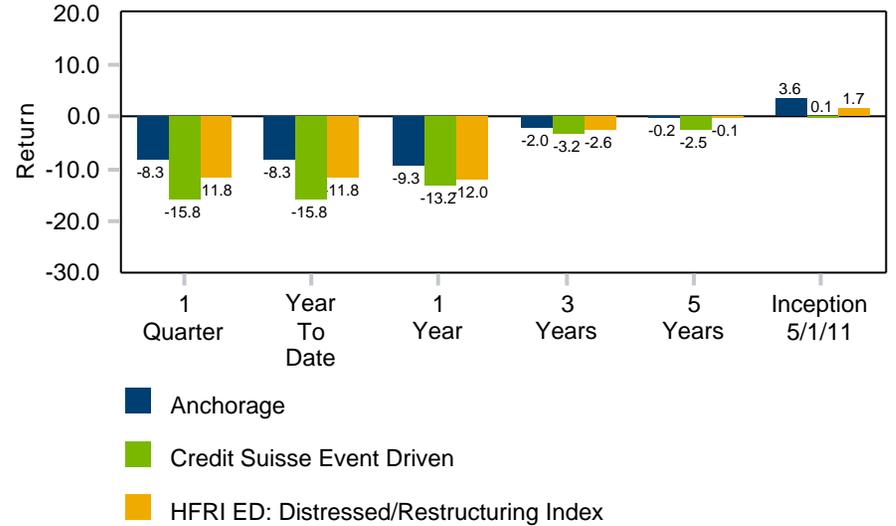


Anchorage Performance Summary

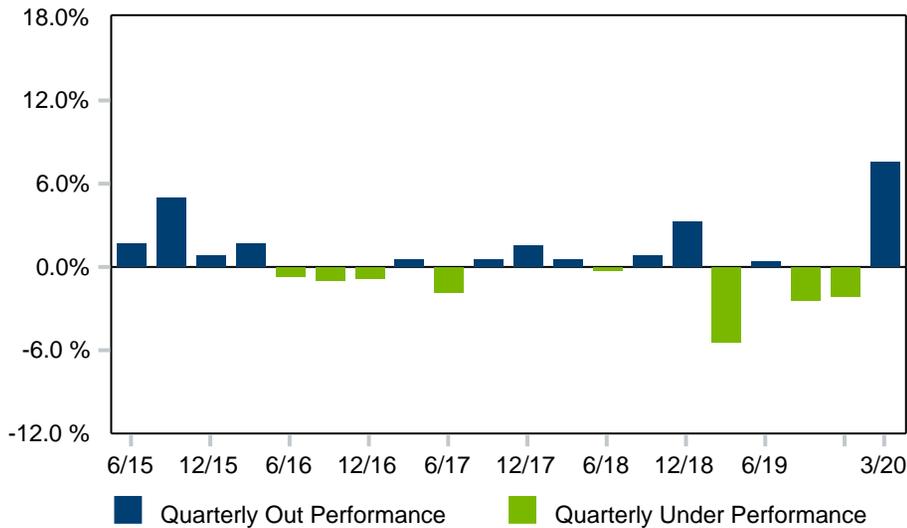
Account Information

Account Name: Anchorage
 Inception Date: 05/01/2011
 Account Structure: Hedge Fund
 Asset Class: US Hedge Fund
 Benchmark: Credit Suisse Event Driven
 Peer Group:

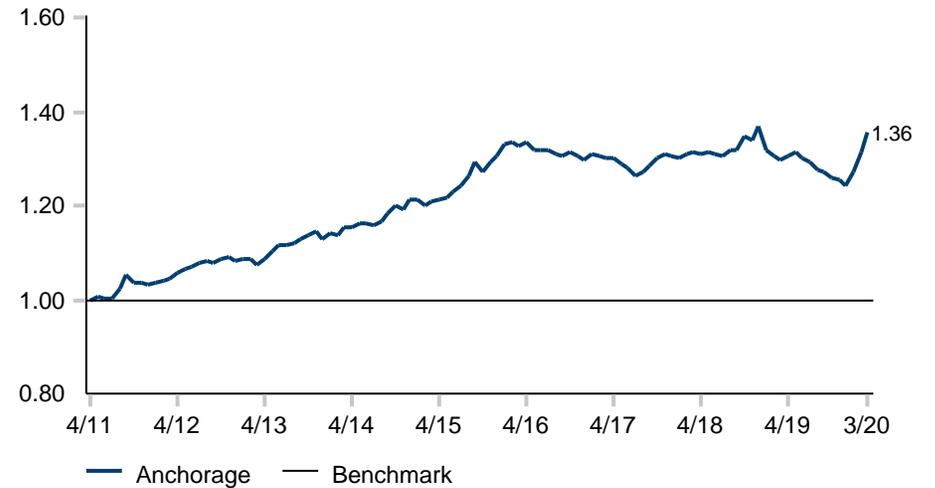
Return Summary



Quarterly Excess Performance

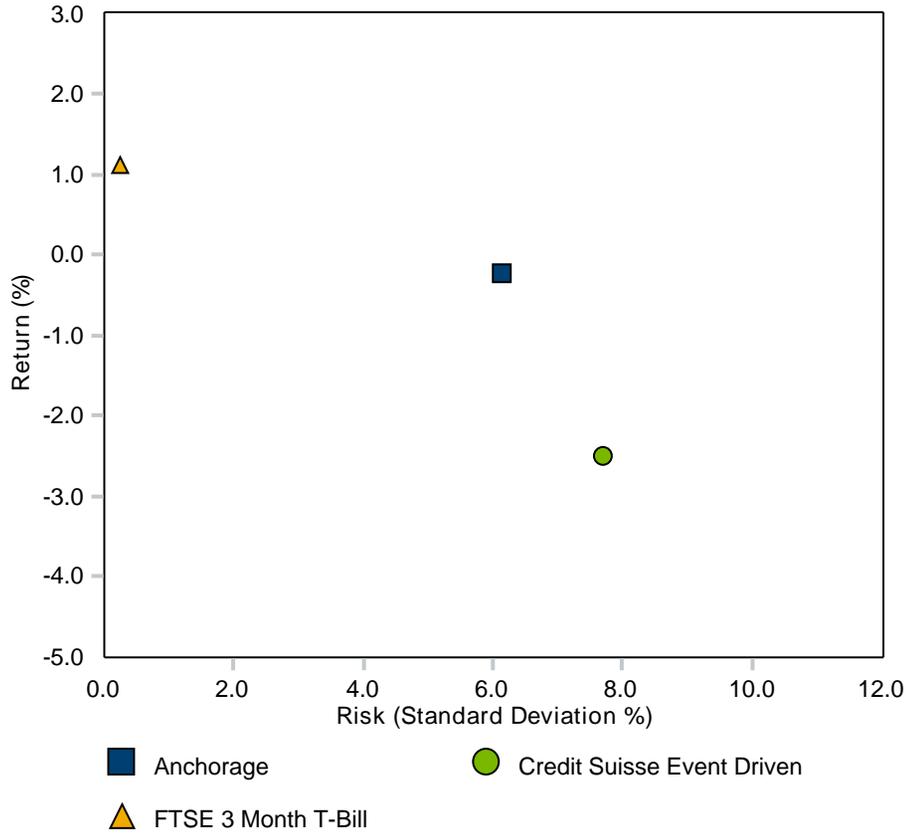


Ratio of Cumulative Wealth - Since Inception

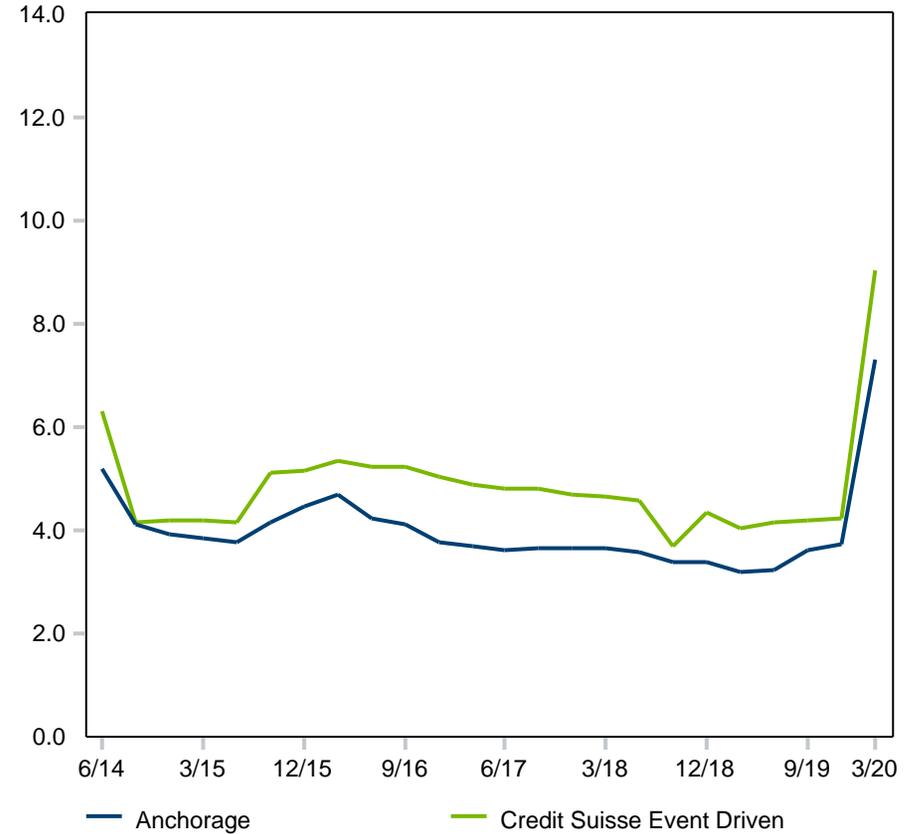


Anchorage Risk Profile

Annualized Return vs. Annualized Standard Deviation
5 Years



Rolling 3 Years Standard Deviation



5 Years Historical Statistics

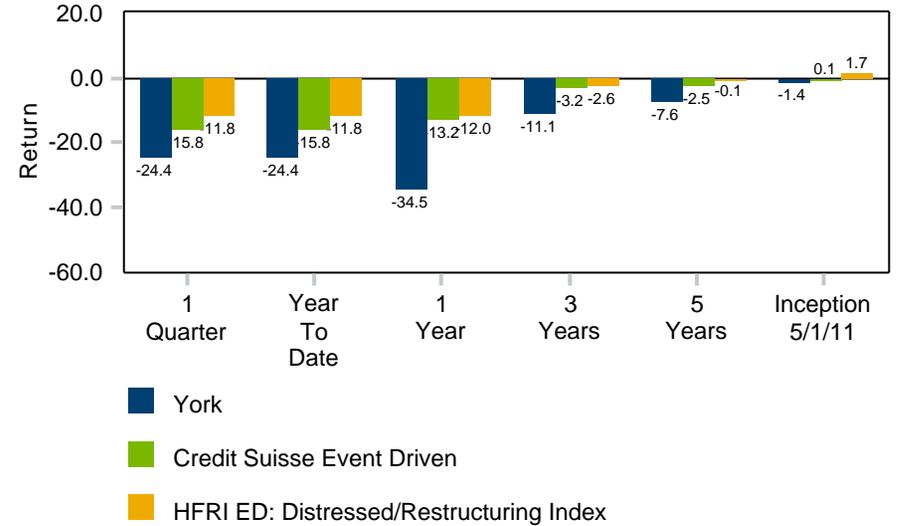
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Anchorage	2.20	4.20	0.52	0.70	-0.19	1.48	0.67	-0.22	6.16	0.84
Credit Suisse Event Driven	0.00	0.00	N/A	1.00	-0.43	0.00	1.00	-2.51	7.70	1.00
FTSE 3 Month T-Bill	3.35	7.70	0.43	0.00	N/A	1.13	0.00	1.12	0.25	0.01

York Performance Summary

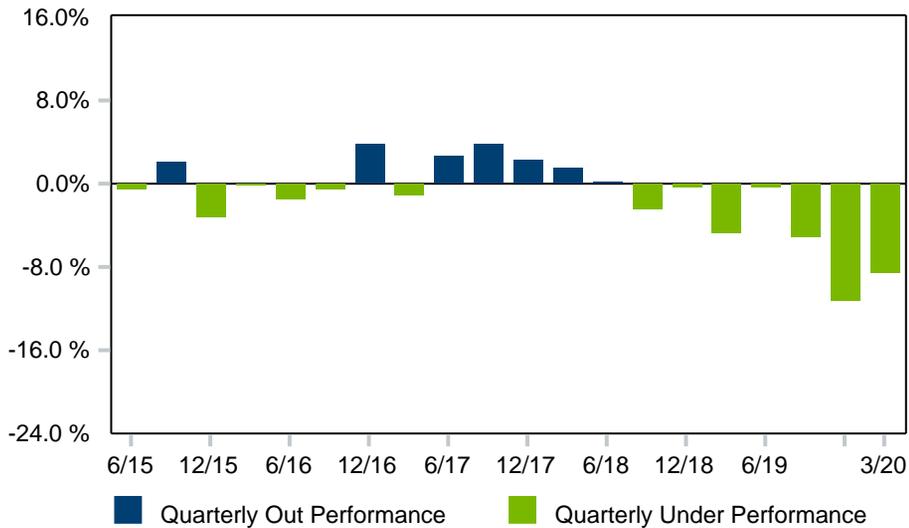
Account Information

Account Name: York
 Inception Date: 05/01/2011
 Account Structure: Hedge Fund
 Asset Class: US Hedge Fund
 Benchmark: Credit Suisse Event Driven
 Peer Group:

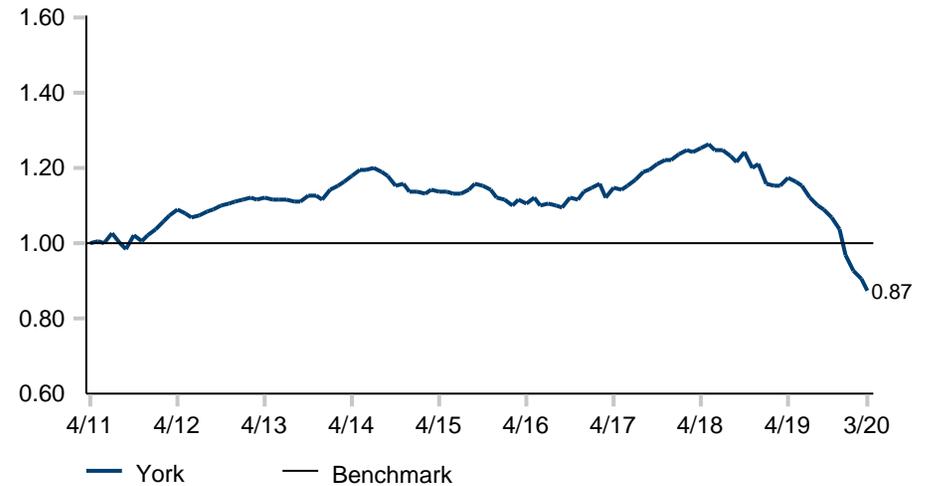
Return Summary



Quarterly Excess Performance

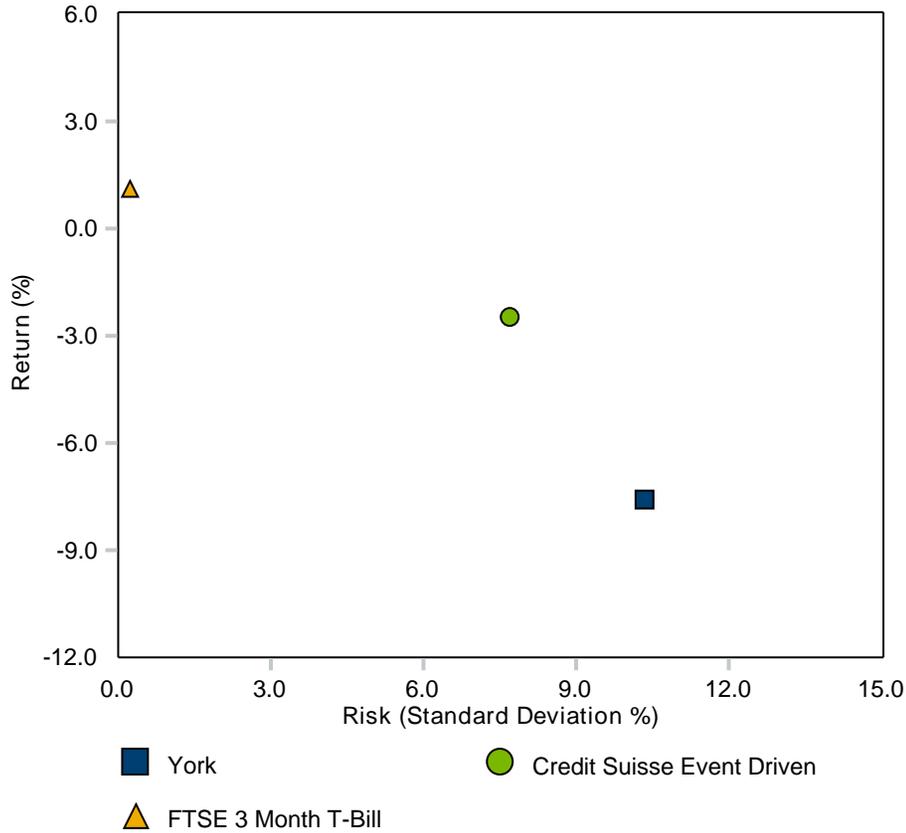


Ratio of Cumulative Wealth - Since Inception

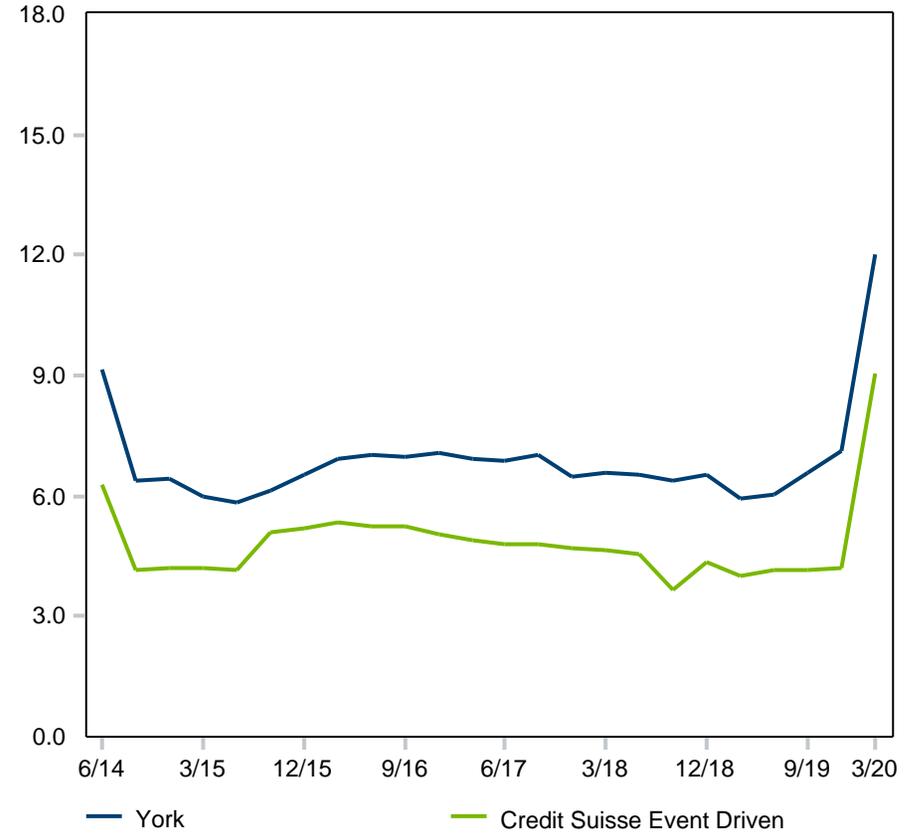


York Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 3 Years Standard Deviation



5 Years Historical Statistics

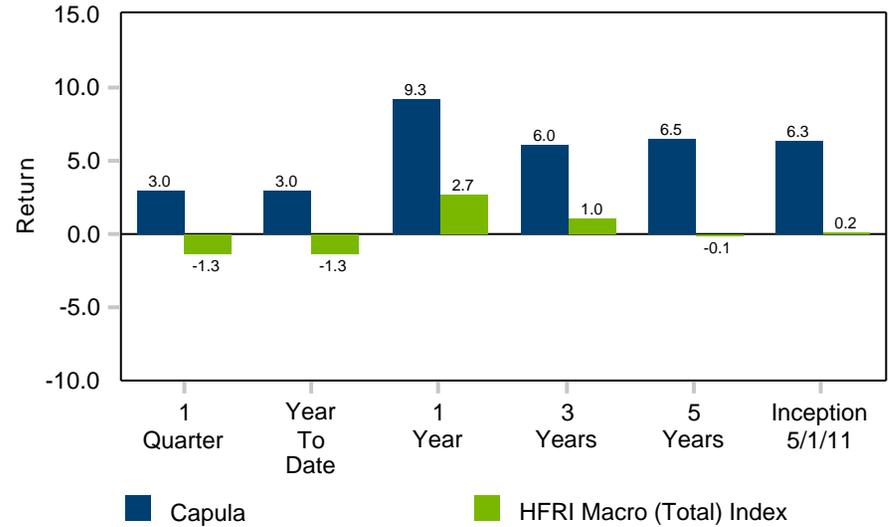
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
York	-5.08	6.23	-0.82	0.64	-0.81	-4.80	1.08	-7.59	10.35	0.80
Credit Suisse Event Driven	0.00	0.00	N/A	1.00	-0.43	0.00	1.00	-2.51	7.70	1.00
FTSE 3 Month T-Bill	3.35	7.70	0.43	0.00	N/A	1.13	0.00	1.12	0.25	0.01

Capula Performance Summary

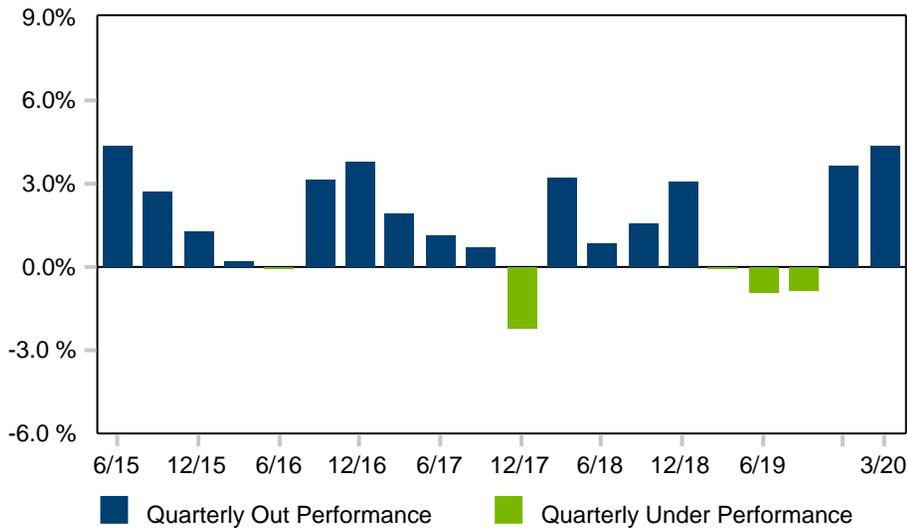
Account Information

Account Name: Capula
 Inception Date: 05/01/2011
 Account Structure: Hedge Fund
 Asset Class: US Hedge Fund
 Benchmark: HFRI Macro (Total) Index
 Peer Group:

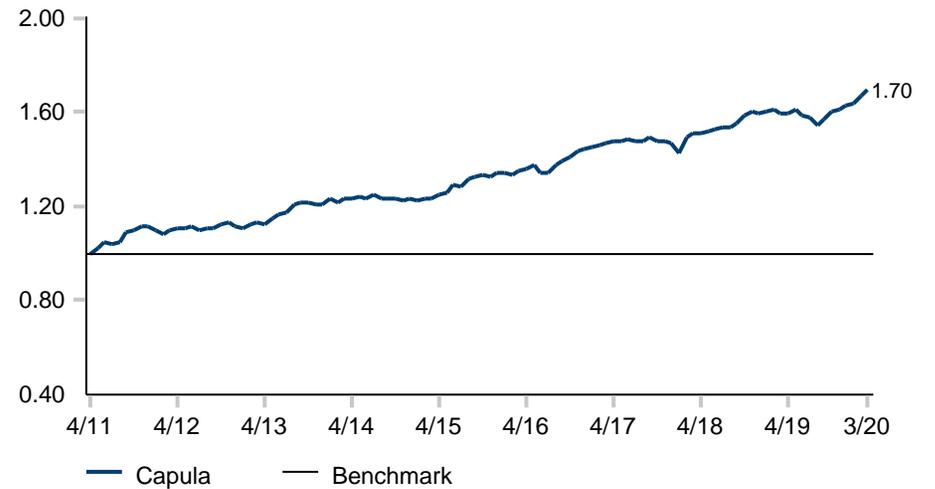
Return Summary



Quarterly Excess Performance

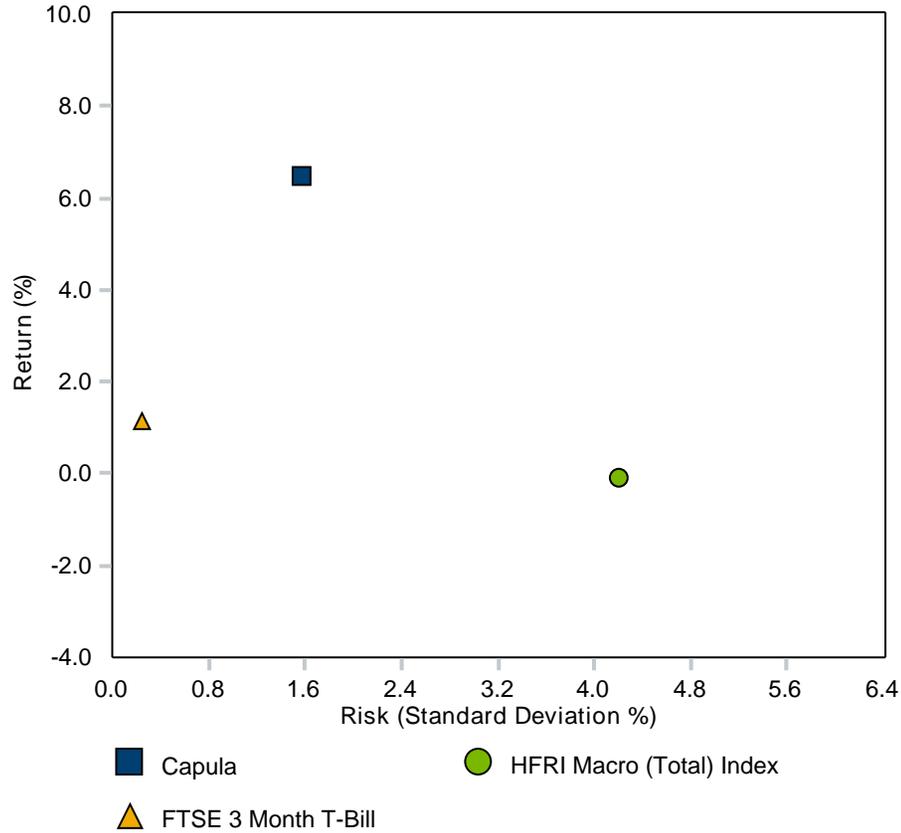


Ratio of Cumulative Wealth - Since Inception

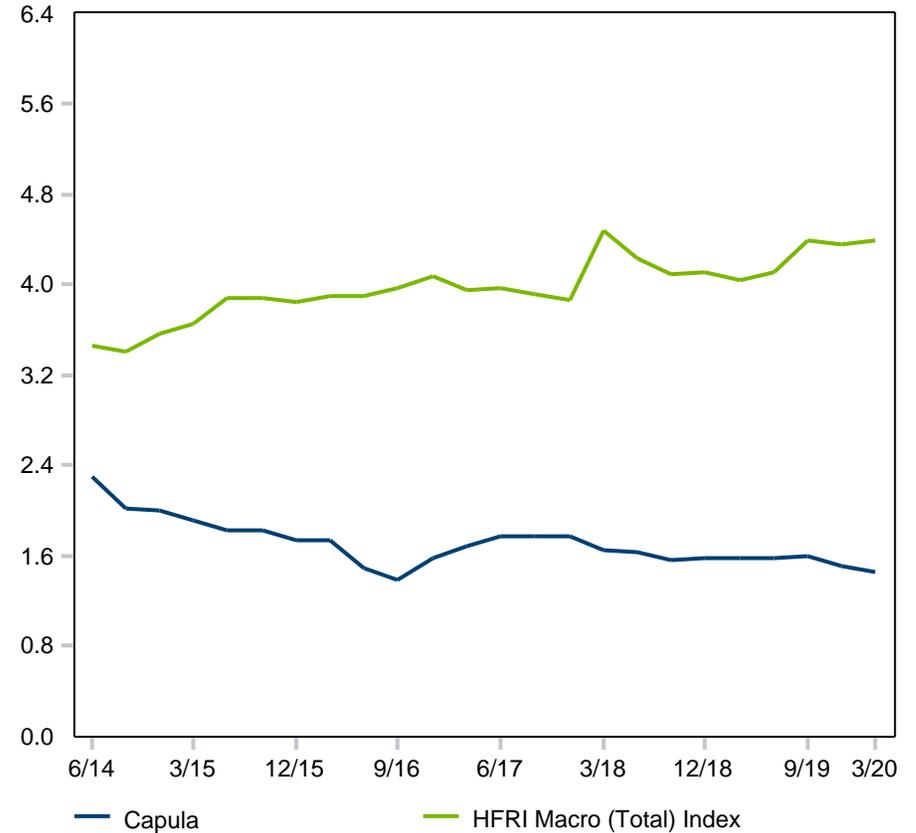


Capula Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 3 Years Standard Deviation



5 Years Historical Statistics

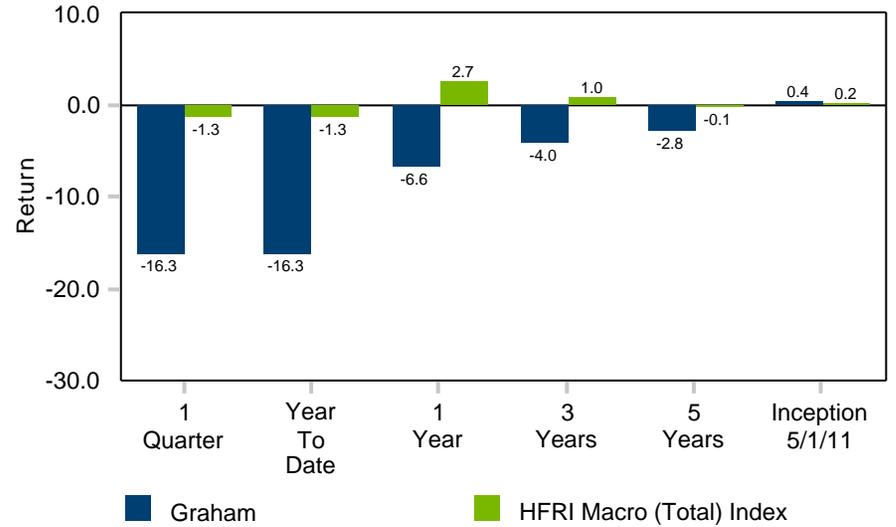
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Capula	6.30	4.49	1.40	0.00	3.23	6.46	0.00	6.45	1.58	0.00
HFRI Macro (Total) Index	0.00	0.00	N/A	1.00	-0.27	0.00	1.00	-0.11	4.21	1.00
FTSE 3 Month T-Bill	1.14	4.18	0.27	0.02	N/A	1.13	0.01	1.12	0.25	0.14

Graham Performance Summary

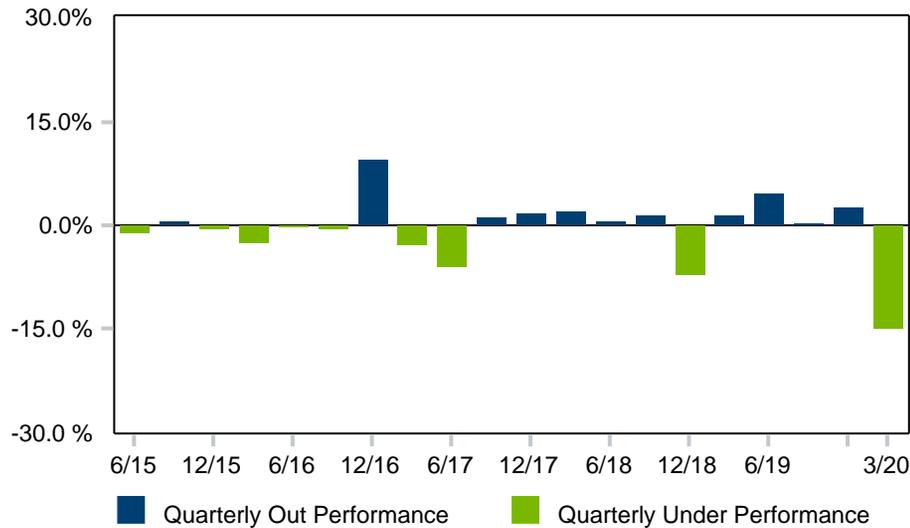
Account Information

Account Name: Graham
 Inception Date: 05/01/2011
 Account Structure: Hedge Fund
 Asset Class: Hedge Fund
 Benchmark: HFRI Macro (Total) Index
 Peer Group:

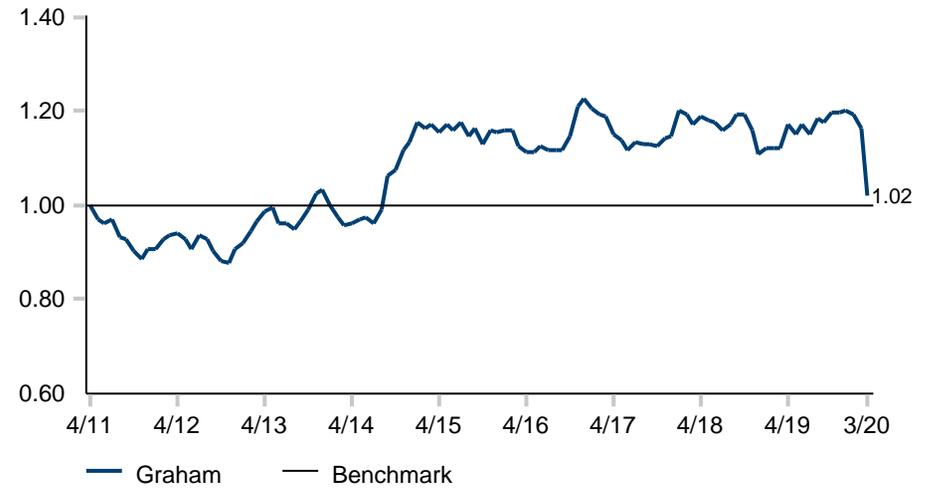
Return Summary



Quarterly Excess Performance

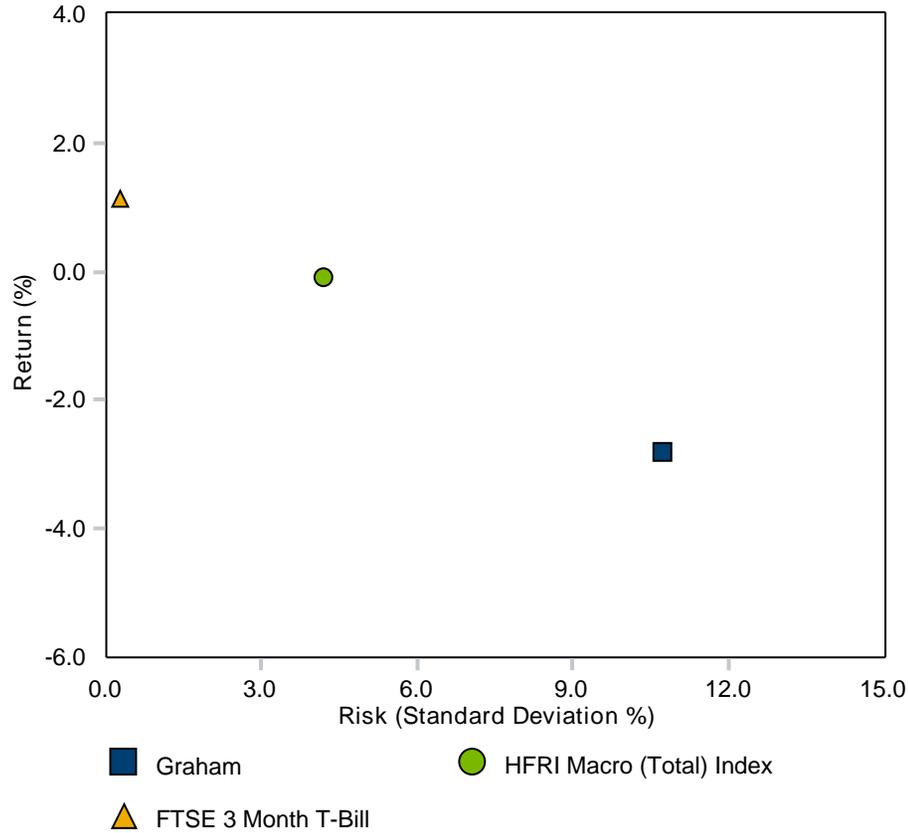


Ratio of Cumulative Wealth - Since Inception

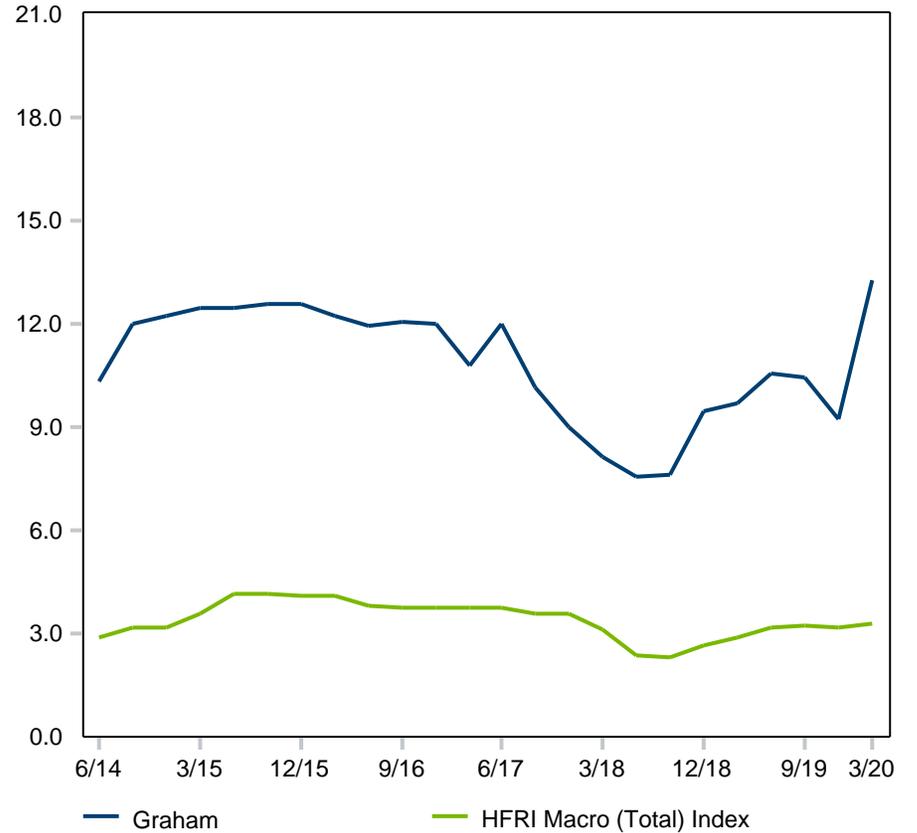


Graham Risk Profile

Annualized Return vs. Annualized Standard Deviation 5 Years



Rolling 3 Years Standard Deviation



5 Years Historical Statistics

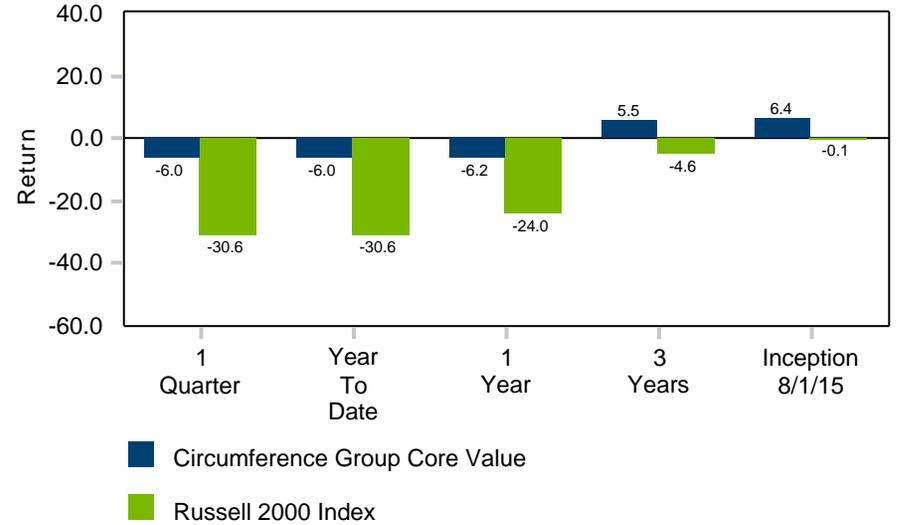
	Active Return	Tracking Error	Information Ratio	R-Squared	Sharpe Ratio	Alpha	Beta	Return	Standard Deviation	Actual Correlation
Graham	-2.26	8.67	-0.26	0.41	-0.32	-2.23	1.64	-2.82	10.75	0.64
HFRI Macro (Total) Index	0.00	0.00	N/A	1.00	-0.27	0.00	1.00	-0.11	4.21	1.00
FTSE 3 Month T-Bill	1.14	4.18	0.27	0.02	N/A	1.13	0.01	1.12	0.25	0.14

Circumference Group Core Value Performance Summary

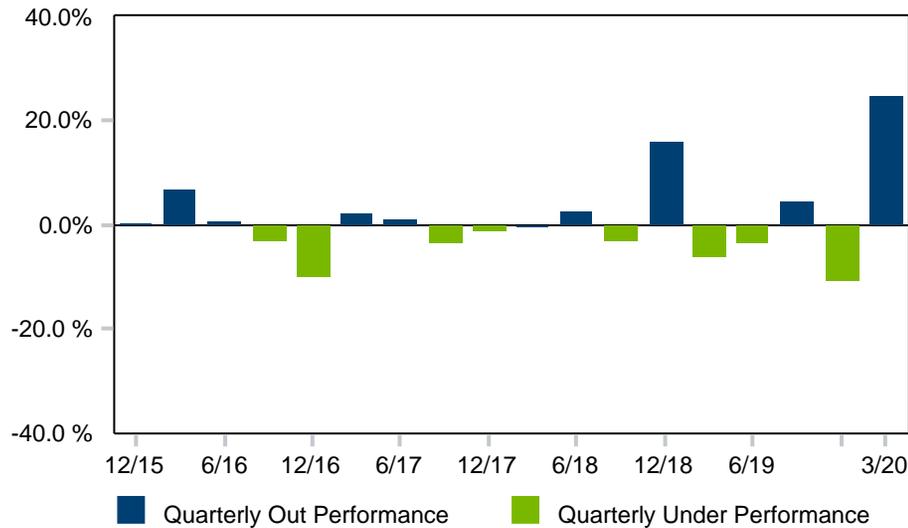
Account Information

Account Name: Circumference Group Core Value
 Inception Date: 08/31/2015
 Account Structure: Hedge Fund
 Asset Class: US Hedge Fund
 Benchmark: Russell 2000 Index
 Peer Group:

Return Summary



Quarterly Excess Performance



Ratio of Cumulative Wealth - Since Inception

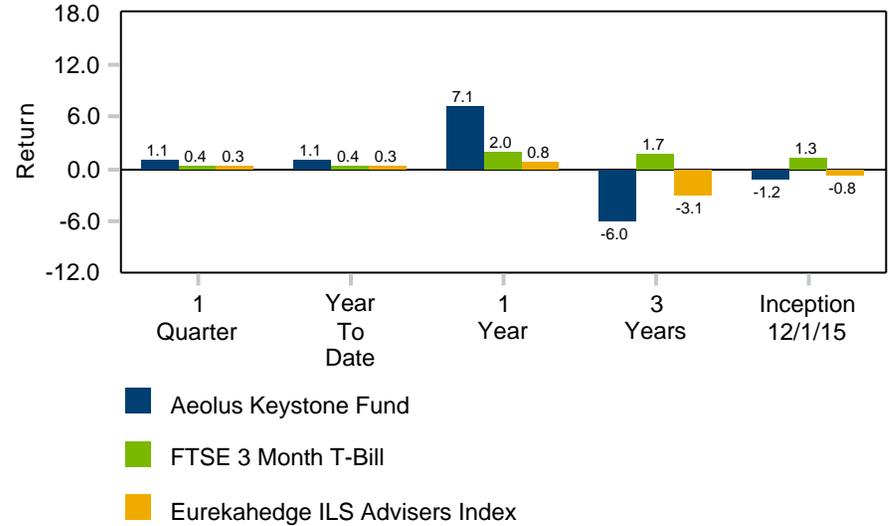


Aeolus Keystone Fund Performance Summary

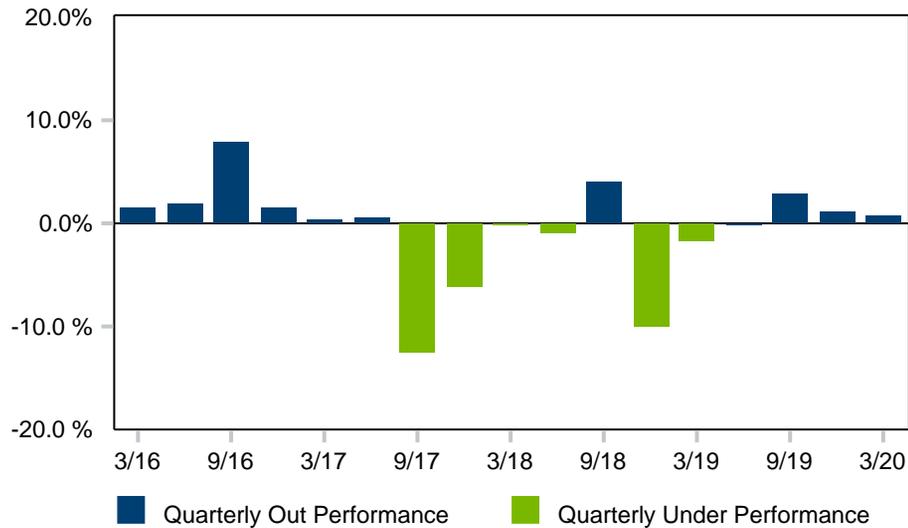
Account Information

Account Name: Aeolus Keystone Fund
 Inception Date: 12/01/2015
 Account Structure: Hedge Fund
 Asset Class: Hedge Fund
 Benchmark: FTSE 3 Month T-Bill
 Peer Group:

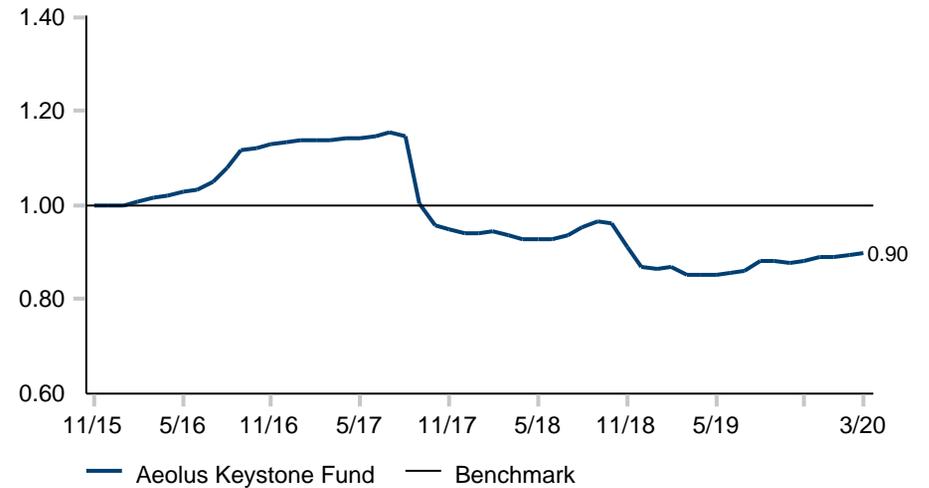
Return Summary



Quarterly Excess Performance



Ratio of Cumulative Wealth - Since Inception

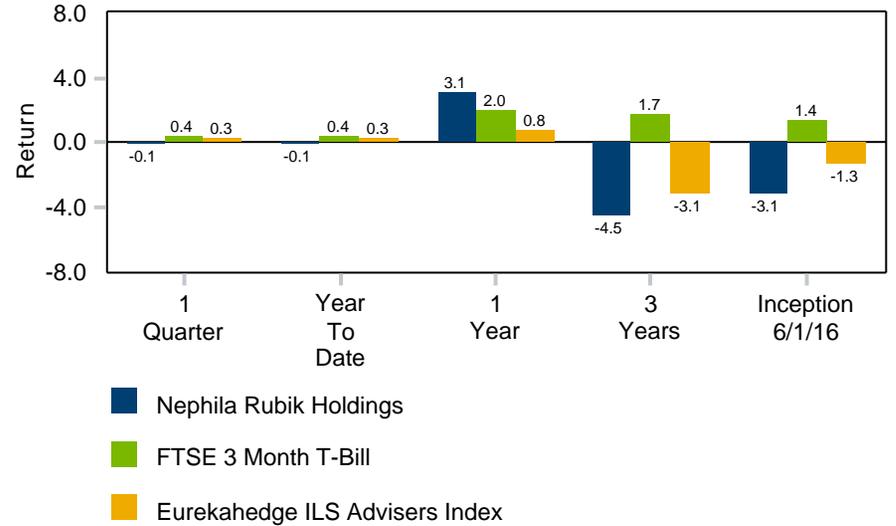


Nephila Rubik Holdings Performance Summary

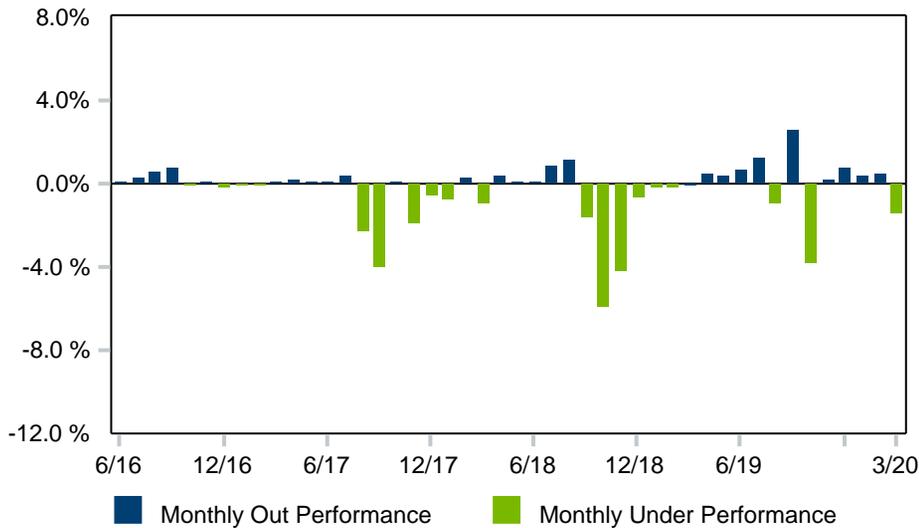
Account Information

Account Name: Nephila Rubik Holdings
 Inception Date: 06/01/2016
 Account Structure:
 Asset Class: Hedge Fund
 Benchmark: FTSE 3 Month T-Bill
 Peer Group:

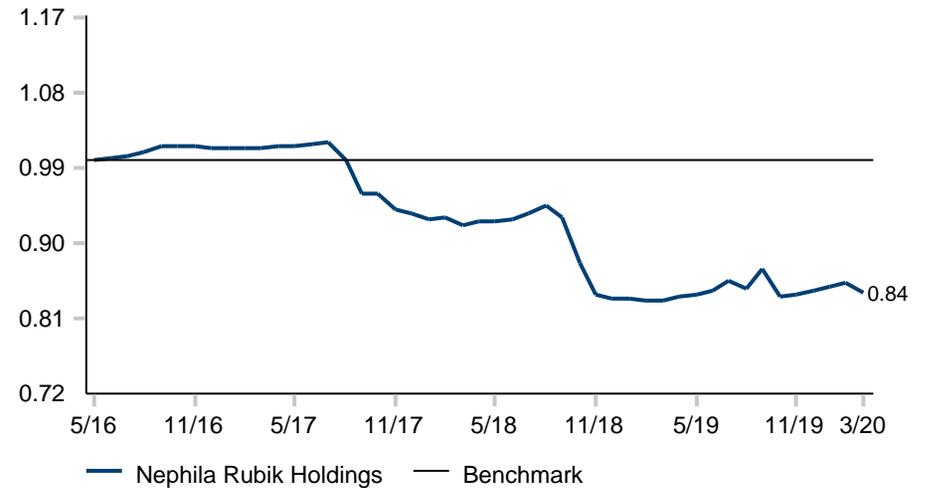
Return Summary



Monthly Excess Performance



Ratio of Cumulative Wealth - Since Inception

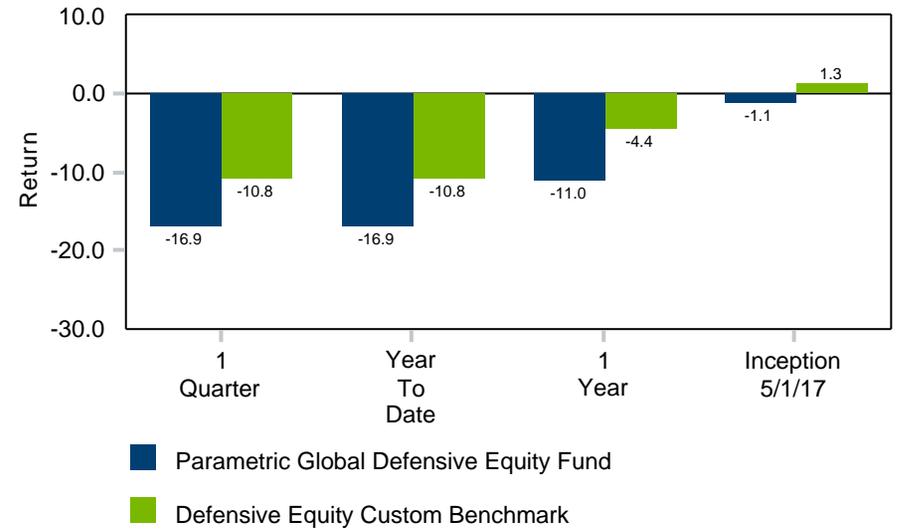


Parametric Global Defensive Equity Fund Performance Summary

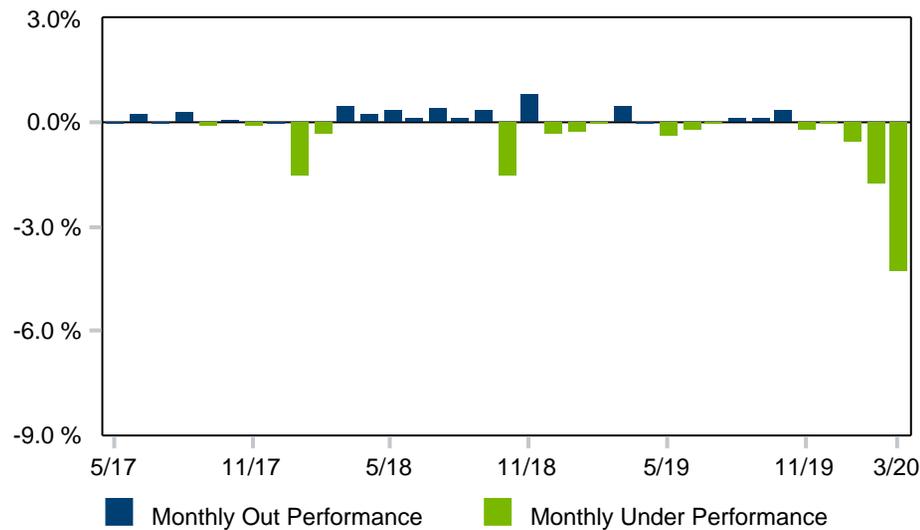
Account Information

Account Name: Parametric Global Defensive Equity Fund
 Inception Date: 06/01/2017
 Account Structure: Commingled Fund
 Asset Class: Global Equity
 Benchmark: Defensive Equity Custom Benchmark
 Peer Group:

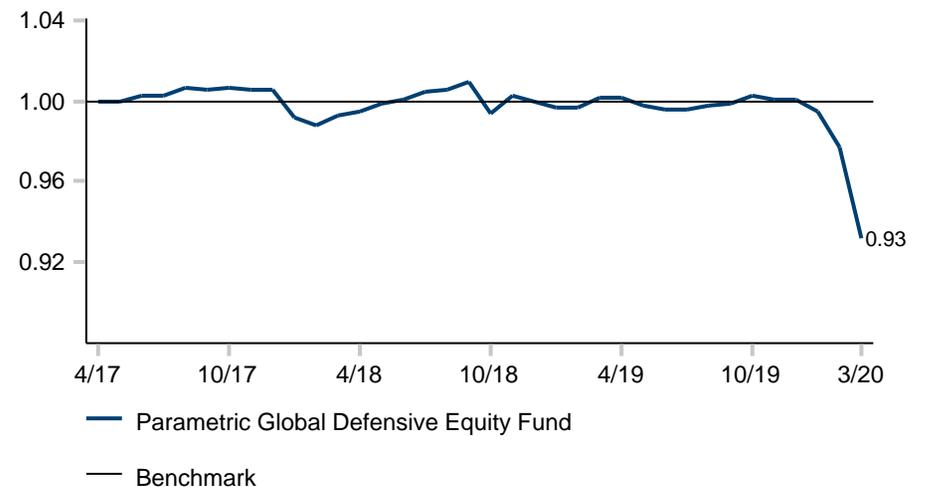
Return Summary



Monthly Excess Performance



Ratio of Cumulative Wealth - Since Inception

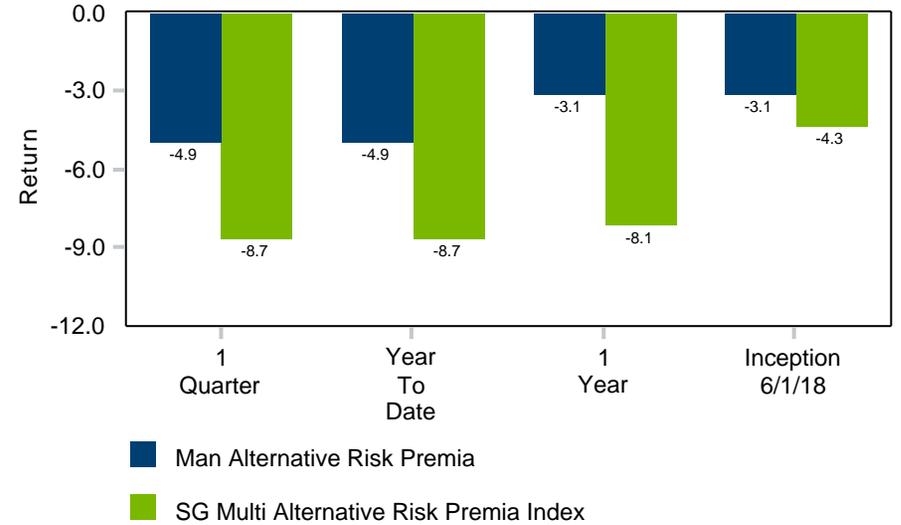


Man Alternative Risk Premia Performance Summary

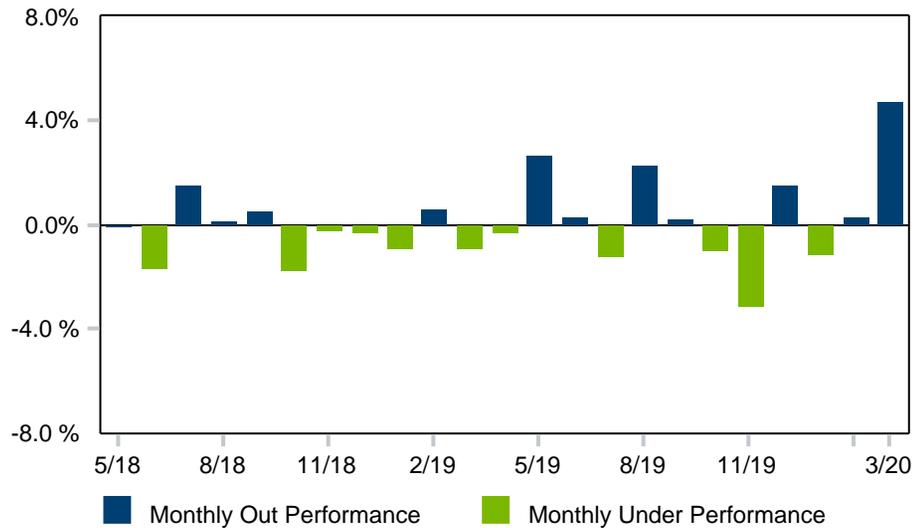
Account Information

Account Name: Man Alternative Risk Premia
 Inception Date: 06/01/2018
 Account Structure: Commingled Fund
 Asset Class: US Equity
 Benchmark: SG Multi Alternative Risk Premia Index
 Peer Group:

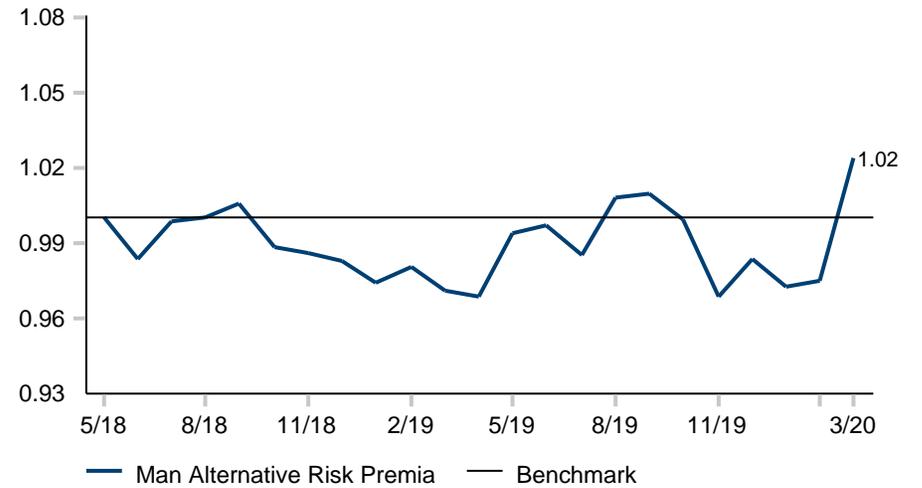
Return Summary



Monthly Excess Performance



Ratio of Cumulative Wealth - Since Inception

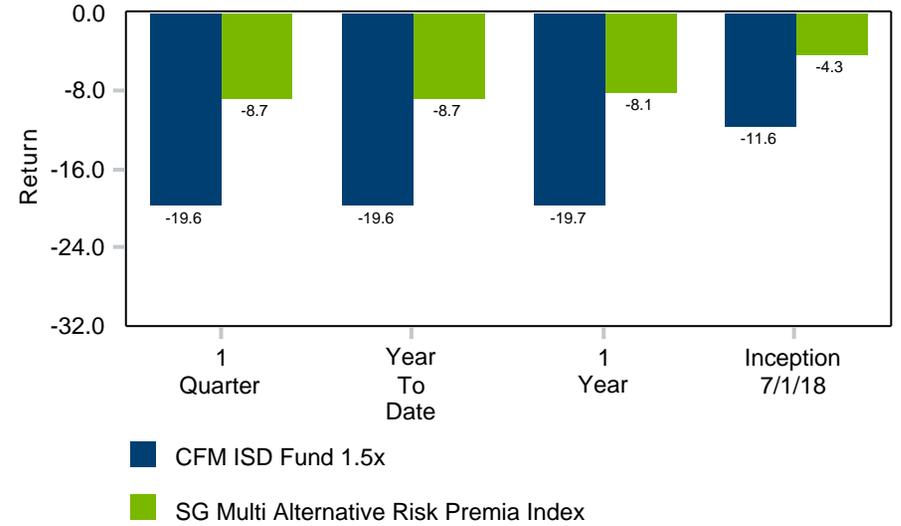


CFM ISD Fund 1.5x Performance Summary

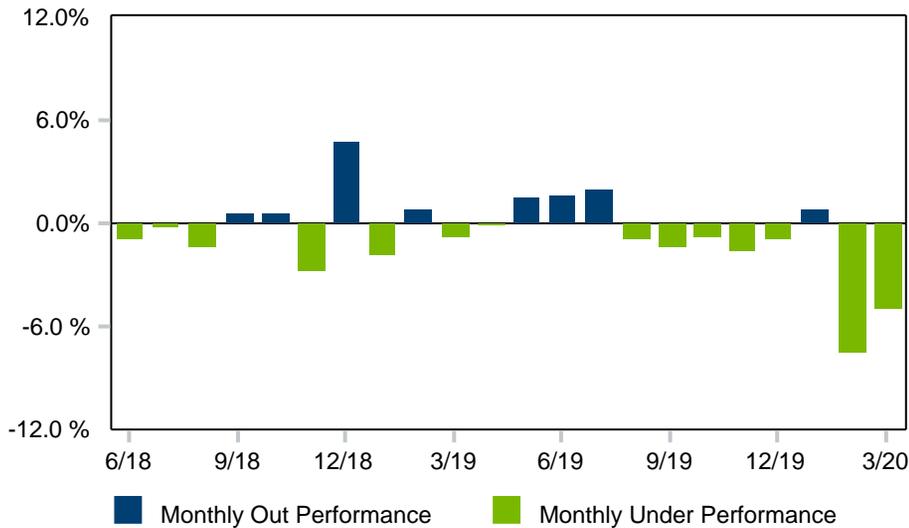
Account Information

Account Name: CFM ISD Fund 1.5x
 Inception Date: 07/01/2018
 Account Structure: Commingled Fund
 Asset Class: US Equity
 Benchmark: SG Multi Alternative Risk Premia Index
 Peer Group:

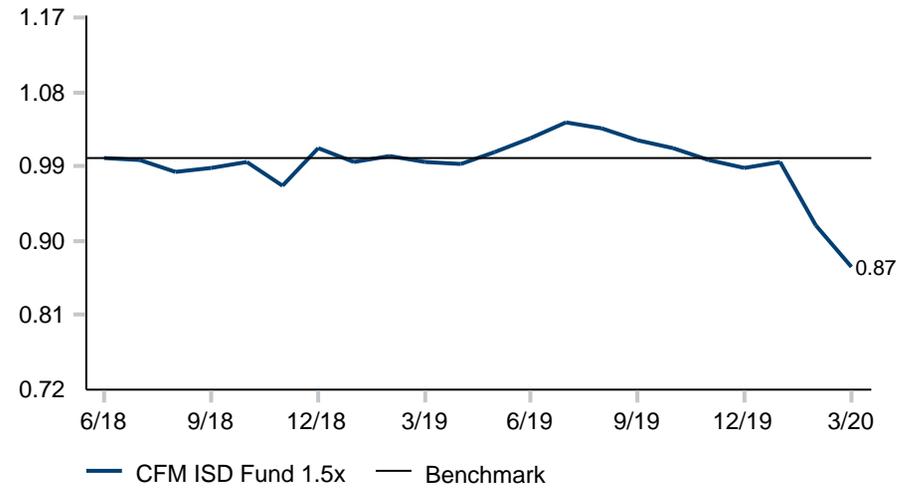
Return Summary

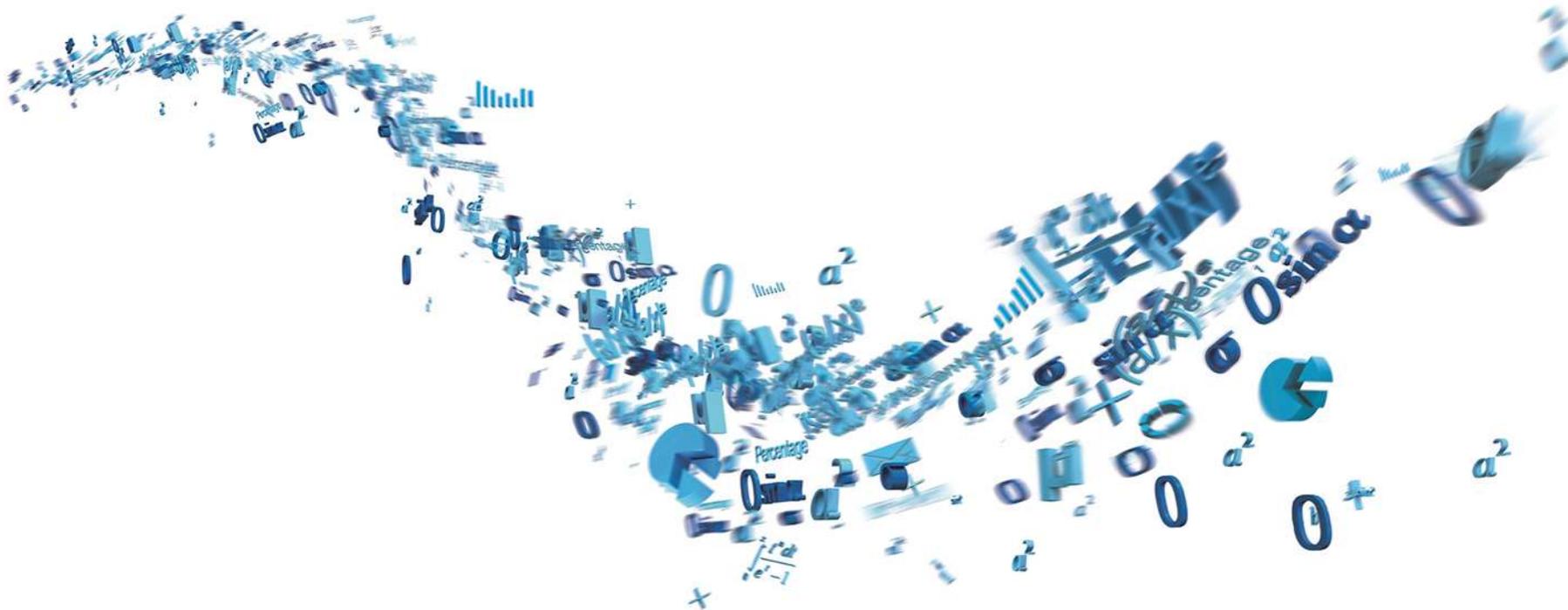


Monthly Excess Performance



Ratio of Cumulative Wealth - Since Inception



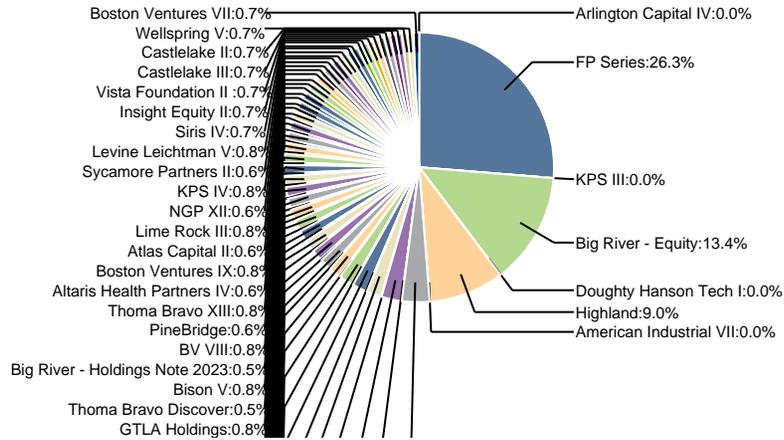


Private Equity

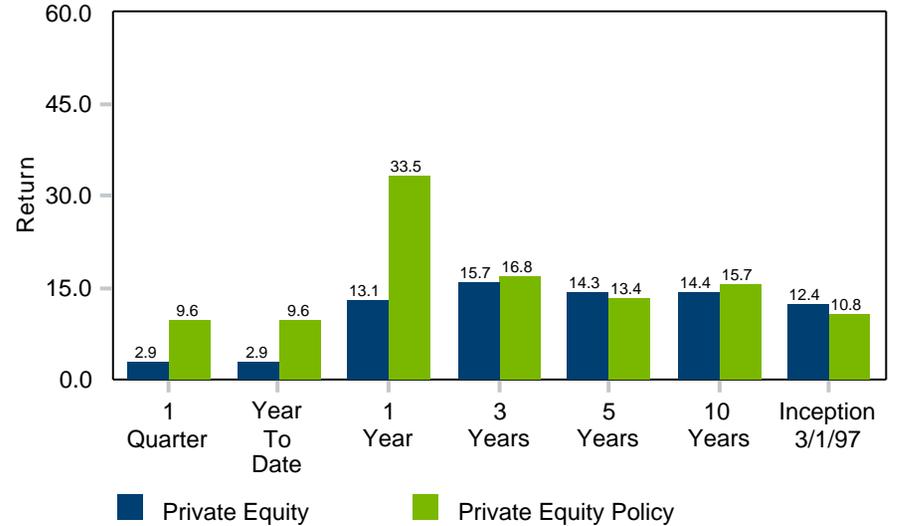
Private Equity Portfolio Overview

Current Allocation

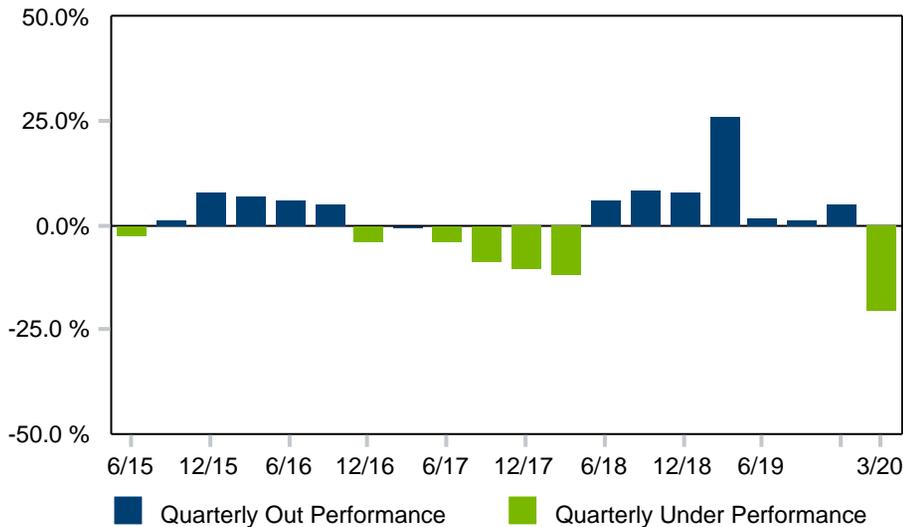
March 31, 2020 : \$2,438M



Return Summary



Quarterly Excess Performance



Ratio of Cumulative Wealth - Since Inception



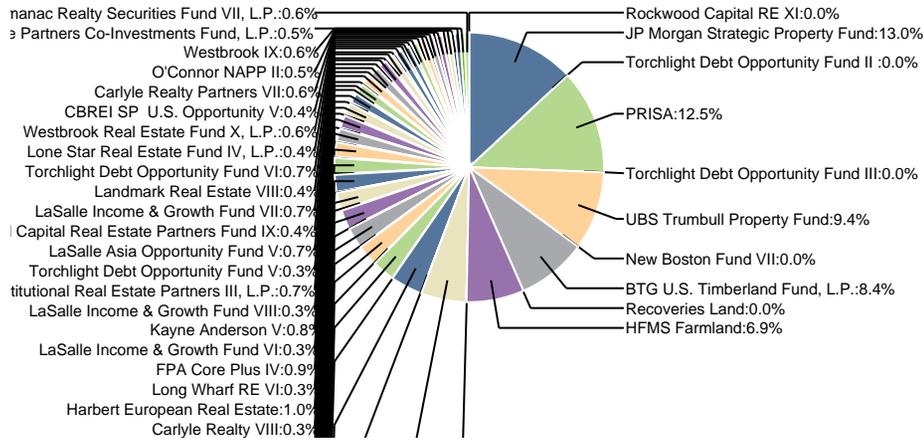


Real Assets

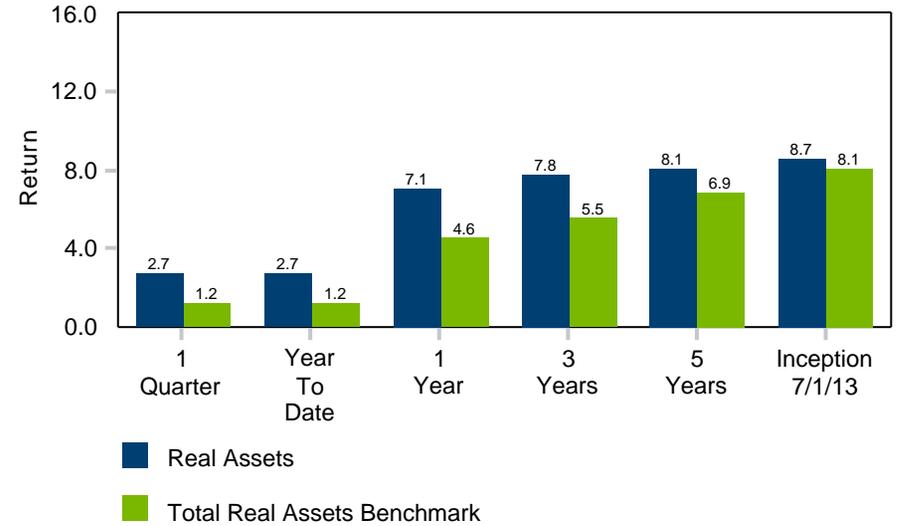
Real Assets Portfolio Overview

Current Allocation

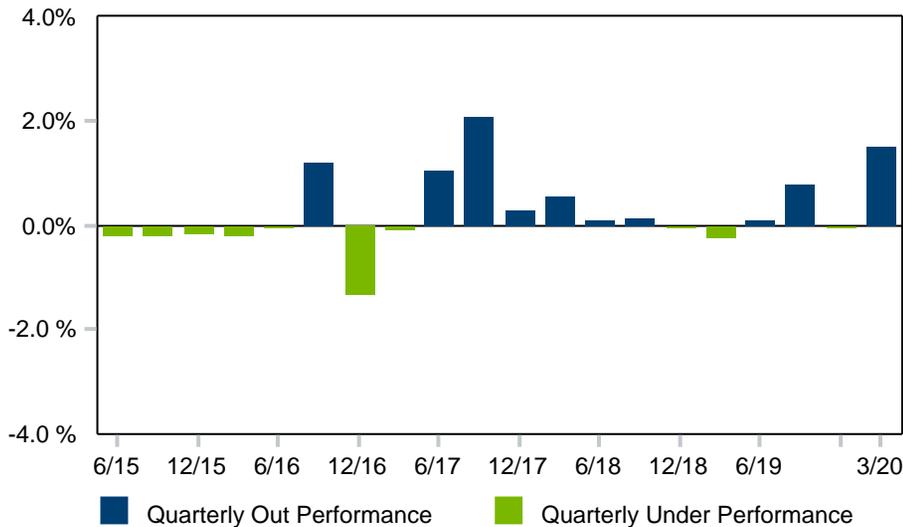
March 31, 2020 : \$2,184M



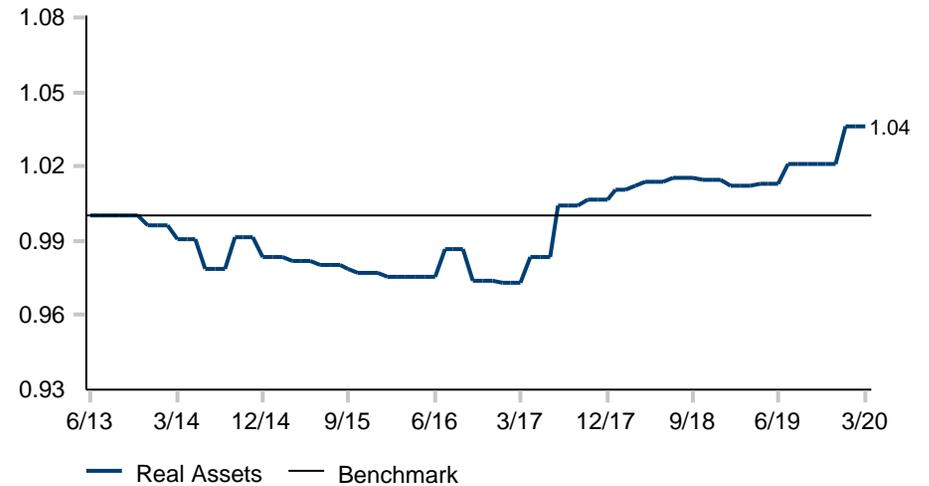
Return Summary

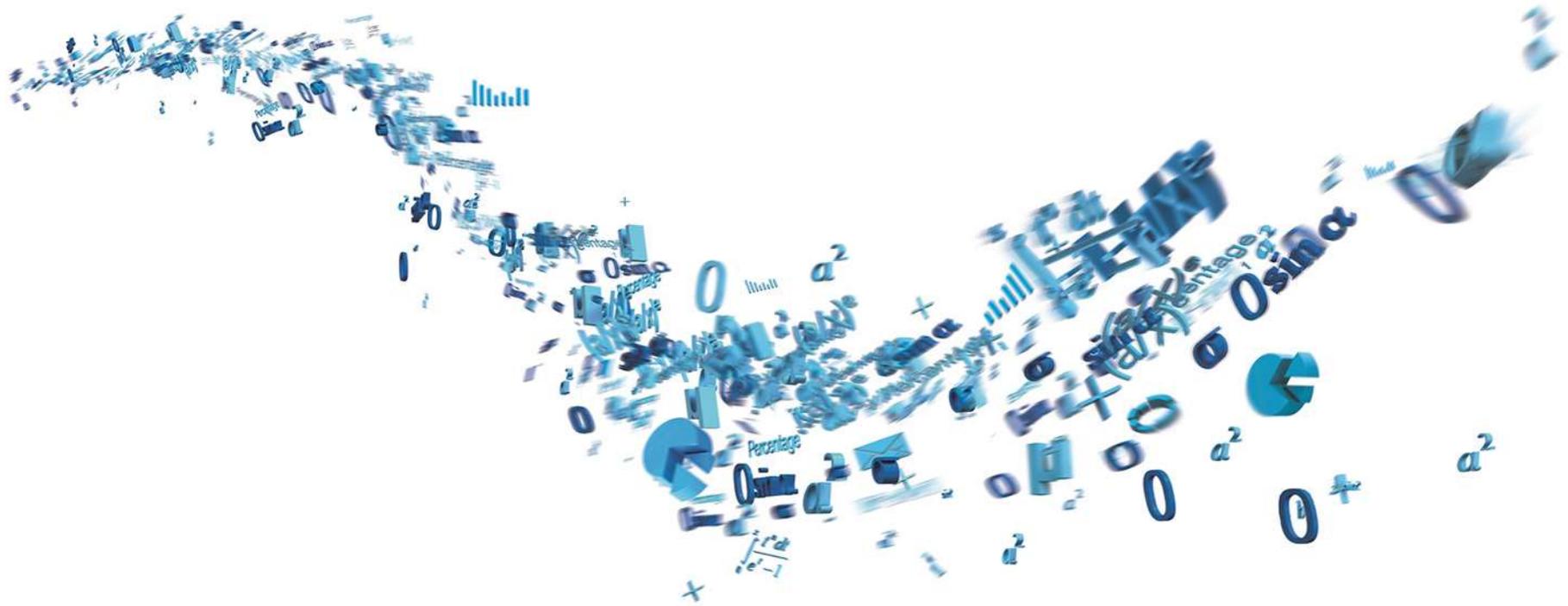


Quarterly Excess Performance



Ratio of Cumulative Wealth - Since Inception

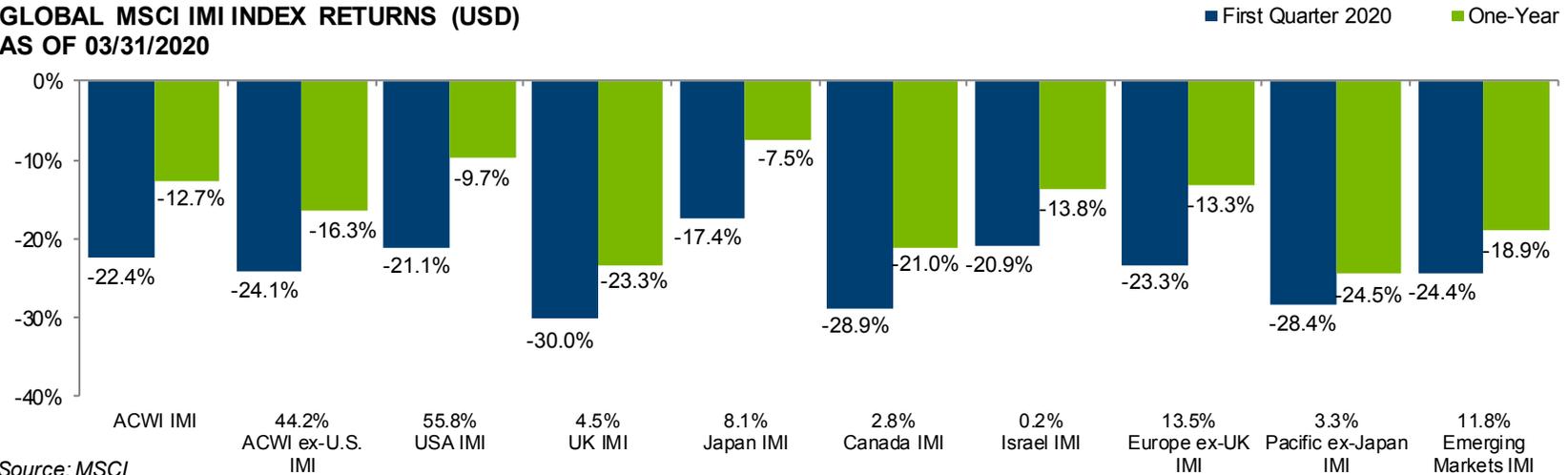




Market Environment

Global Equity Markets

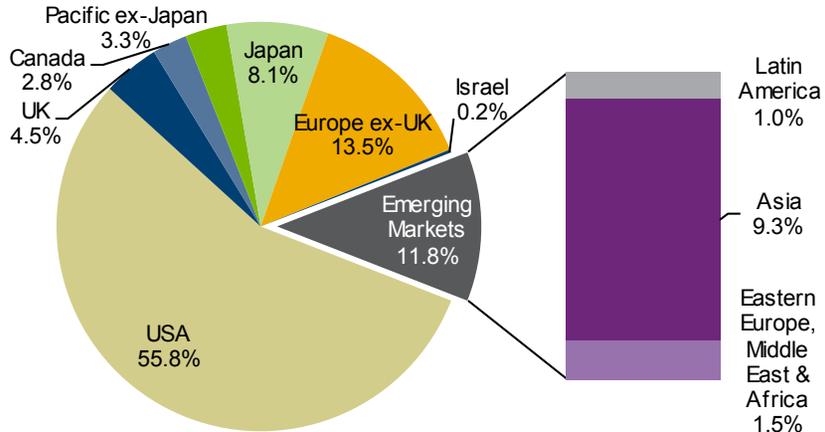
GLOBAL MSCI IMI INDEX RETURNS (USD) AS OF 03/31/2020



- A decade-long bull market came to an abrupt halt as the Covid-19 outbreak in China turned into a global pandemic. After reaching all-time highs in mid-February, global equities sold off sharply as infection numbers grew and governments worldwide ramped up virus containment measures. With much of the economy shuttered, a deep global recession appears to be inevitable despite unprecedented fiscal and monetary stimulus measures. In local currency terms, the MSCI AC World Investable Market Index fell by 21.0%. Appreciation of the U.S. dollar further dragged down the returns to -22.4% in USD terms in Q1 2020.
- UK equities were the worst performers (-30.0%) over the quarter where its sizeable resource sector (Oil & Gas and Basic Materials) underperformed due to sharp drop in crude oil prices amidst the coronavirus outbreak. Brexit negotiations ran into difficulties as the UK and the European Union (EU) clashed on “level playing field” requirements. The UK Prime Minister Boris Johnson stated that Britain would be prepared to leave the EU on the World Trade Organization’s (WTO) terms if progress is not made by June 2020.

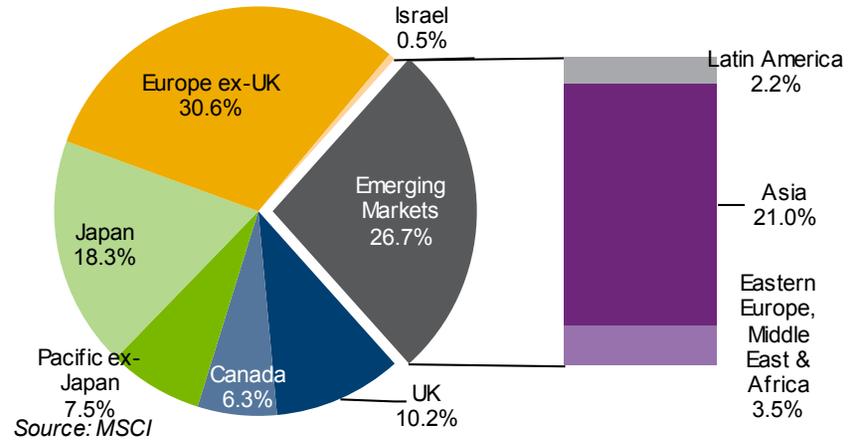
Global Equity Markets

**MSCI ALL COUNTRY WORLD IMI INDEX
GEOGRAPHIC ALLOCATION AS OF 03/31/2020**



Source: MSCI

**MSCI ALL COUNTRY WORLD EX-U.S. IMI INDEX
GEOGRAPHIC ALLOCATION AS OF 03/31/2020**

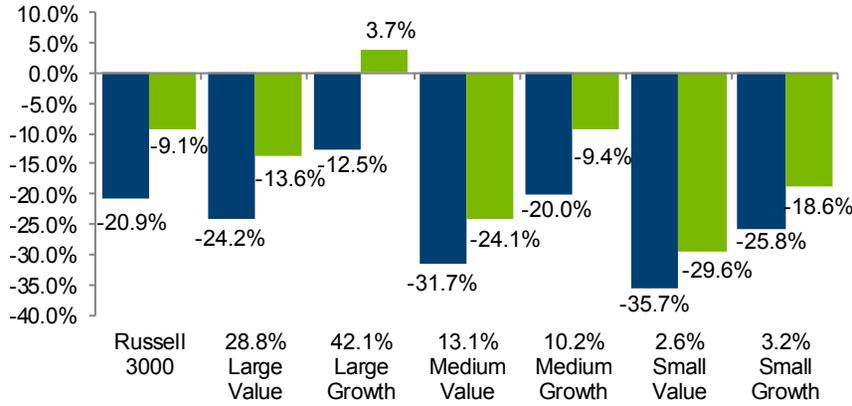


Source: MSCI

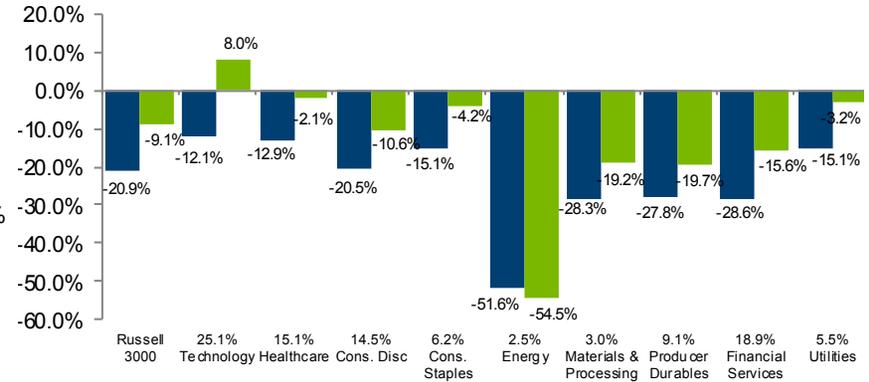
- The two exhibits on this slide illustrate the percentage that each country/region represents of the global and international equity markets as measured by the MSCI All Country World IMI Index and the MSCI All Country World ex-U.S. IMI Index, respectively.

U.S. Equity Markets

RUSSELL STYLE RETURNS AS OF 03/31/2020



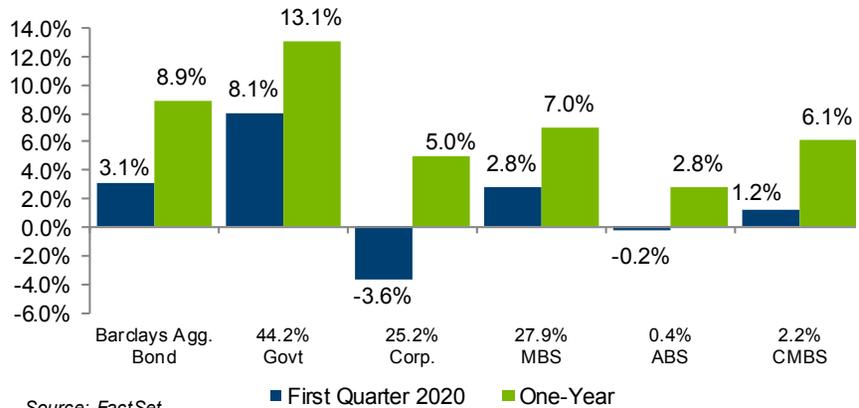
RUSSELL SECTOR RETURNS AS OF 03/31/2020



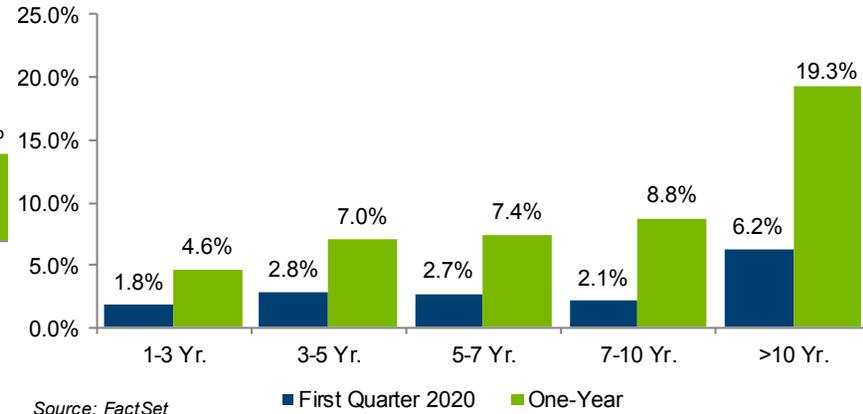
- Three major U.S. equity indices (S&P 500, Dow Jones Industrial Average and Nasdaq Composite) entered bear market territory as the indices fell more than 20% below their mid-February peaks in the fastest bear market on record ending the 11-year bull market, the longest on record. Returns were on pace to be much worse before stock markets rallied to end the quarter. Large fiscal stimulus packages were credited as the major reason for improving risk sentiment. For the quarter, the Dow Jones US Total Stock Market Index returned -21.0%. The Russell 3000 Index fell 20.9% during the first quarter and 9.1% over the one-year period.
- The CBOE Volatility Index (VIX), Wall Street’s “fear gauge”, set a new record peak of 82.7 in mid-March before ending the quarter slightly lower at 53.5 after having averaged 19.0 over the previous 12 months.
- All sectors generated negative returns over the quarter. In particular, Energy (-51.6%) and Financial Services (-28.6%) were the worst performing sectors in Q1 2020.
- Performance was negative across the market capitalization spectrum over the quarter. Small cap stocks underperformed both large and medium cap stocks over the quarter. Value stocks underperformed their Growth counterparts in Q1 2020 and over the last year.

U.S. Fixed Income Markets

BLOOMBERG BARCLAYS AGGREGATE RETURNS BY SECTOR AS OF 03/31/2020

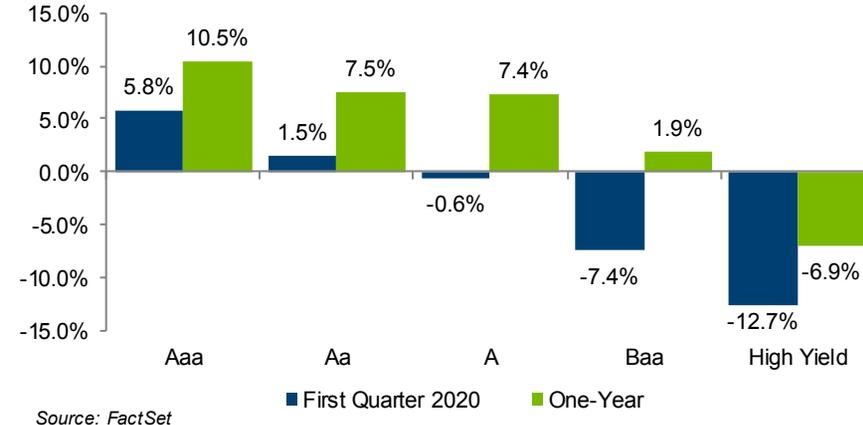


BLOOMBERG BARCLAYS AGGREGATE RETURNS BY MATURITY AS OF 03/31/2020



- The Bloomberg Barclays U.S. Aggregate Bond Index rose by 3.1% over the quarter, supported by Government bond's return of 8.1%. The risk asset sell-off which tormented equity markets were also evident in the corporate bonds space, as concerns over corporate leverage that were disregarded in more benign times resurfaced. Corporate bonds underperformed with a return of -3.6%.
- Performance was mixed across all credit grades. High yield bonds fell by 12.7%. Within investment grade bonds, Aaa bonds outperformed with a return of 5.8%.
- Long-maturity bonds outperformed intermediate and short-maturity bonds over the quarter. Long-maturity bonds returned 6.2% while short-maturity bonds returned only 1.8% in Q1 2020.

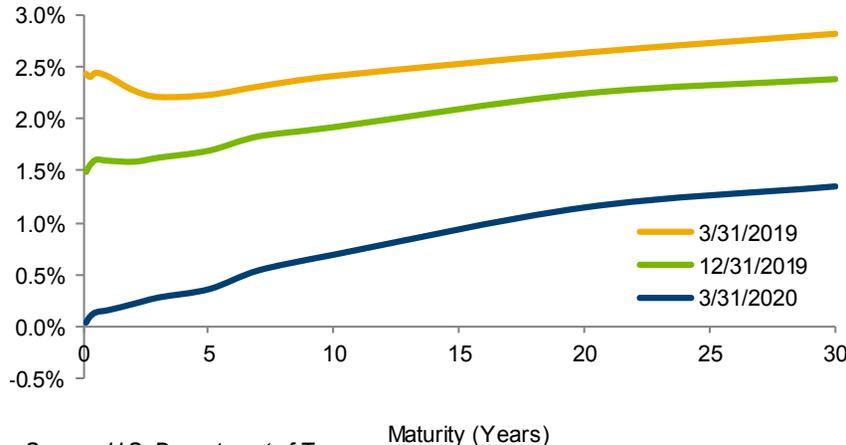
BLOOMBERG BARCLAYS AGGREGATE RETURNS BY QUALITY AND HIGH YIELD RETURNS AS OF 03/31/2020



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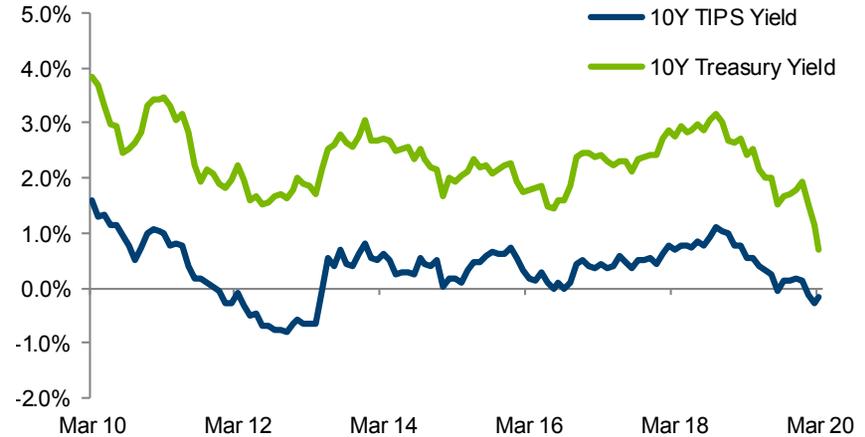
U.S. Fixed Income Markets

U.S. TREASURY YIELD CURVE



Source: U.S. Department of Treasury

U.S. 10-YEAR TREASURY AND TIPS YIELDS

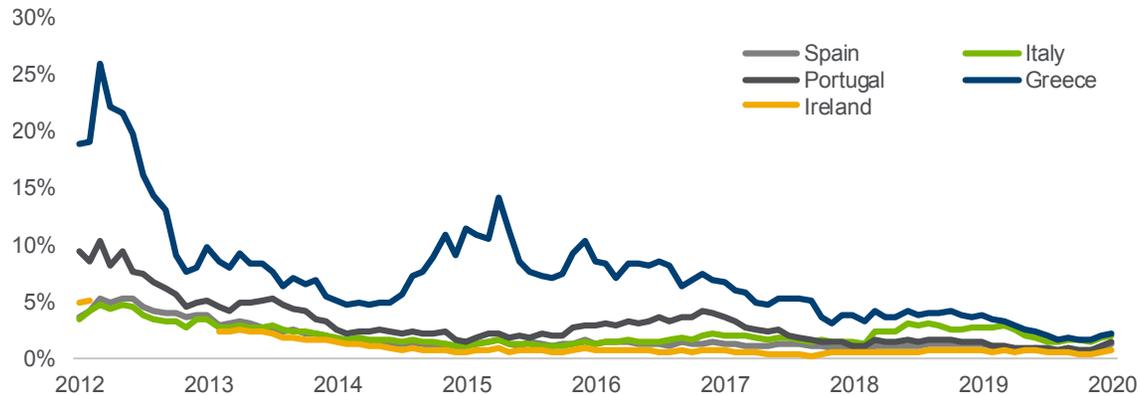


Source: U.S. Department of Treasury

- The U.S. nominal yield curve shifted downwards over the quarter as the combination of economic damage caused by the Pandemic and the response of easing monetary policy caused yields to fall across the curve.
- The rate cuts, along with decreases in global output, caused 10-year US treasury yields to decrease by over 122 basis points to 0.70%, the first time in history it fell below 1.0%, and it remained there at the end of the quarter. The 30-year yield began the quarter at 2.39% and ended the quarter at 1.27%, a decline of 1.12%. The 30-year yield briefly closed below 1% on March 9, 2020, a sign of how stressed the outlook had become
- The 10-year TIPS yield fell by 32bps over the quarter to -0.17%.
- The US Federal Reserve (Fed) announced two emergency rate cuts over the quarter, lowering the Fed Funds Rate target by a total of 150bps to 0.00%-0.25%. The Federal Reserve also launch unlimited QE, and an expansion of QE into other markets, such as corporate bonds and municipal bonds. In addition to this, Congress passed a \$2.2tn stimulus package, the largest bailout in US history.

European Fixed Income Markets

**EUROZONE PERIPHERAL BOND SPREADS
(10-YEAR SPREADS OVER GERMAN BUNDS)**



Source: FactSet

- European government bond spreads over 10-year German bunds rose across the Euro Area with core yields falling and peripheral yields rising (except Ireland). The European Central Bank (ECB) expanded its asset purchase programme and removed a self-imposed limit to buy no more than a third of any country's eligible bond, restoring some stability to the Euro Area's government bond market.
- German government bund yields fell in line with other developed market government bond yields, falling by 30bps to -0.49% over the quarter. Germany's annual economic growth slowed to its lowest rate in six years at 0.6% whilst it posted zero growth in Q4, hit by falling household and government consumption while capital investment in machinery and equipment fell.
- Italian government bond yields rose by 6bps to 1.48% over the quarter, retracting from a nine-month high of 2.3% after it spiked by 130bps mid-March and Spanish government bond yields rose by 18bps to 0.64%. Both the countries were the worst affected by novel coronavirus in Europe and were the first to impose quarantine measures.
- Greek government bond yields rose by 18bps to 1.61% over the quarter which saw the country's 10-year yield drop below 1% mid-Feb for the first time.

Credit Spreads

Spread (bps)	03/31/2020	12/31/2019	03/31/2019	Quarterly Change (bps)	One-Year Change (bps)
U.S. Aggregate	95	39	44	56	51
Long Govt	4	0	1	4	3
Long Credit	279	139	172	140	107
Long Govt/Credit	151	79	99	72	52
MBS	60	39	35	21	25
CMBS	188	72	69	116	119
ABS	213	44	39	169	174
Corporate	272	93	119	179	153
High Yield	880	336	391	544	489
Global Emerging Markets	619	287	283	332	336

Source: FactSet, Bloomberg Barclays

- The rapid reassessment of the economic outlook took a dramatic toll on credit assets during the quarter. Credit spreads over U.S. Treasuries widened over the quarter.
- Riskier areas of credit, such as US high yield bonds and emerging market debt, saw double digit losses due to a decrease in investors' risk appetite. High Yield bond spreads widened significantly in Q1 2020, increasing by 544bps. This was followed by Global Emerging Markets bonds spreads, which widened by 332bps.

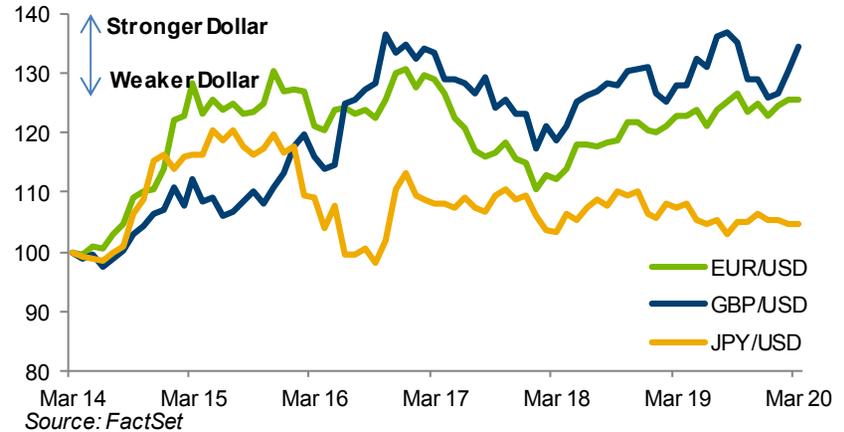
Currency

**TRADE WEIGHTED U.S. DOLLAR INDEX
(1973 = 100)**



Source: Federal Reserve

**U.S. DOLLAR RELATIVE TO EUR, GBP AND JPY
REBASED TO 100 AT 03/31/2014**

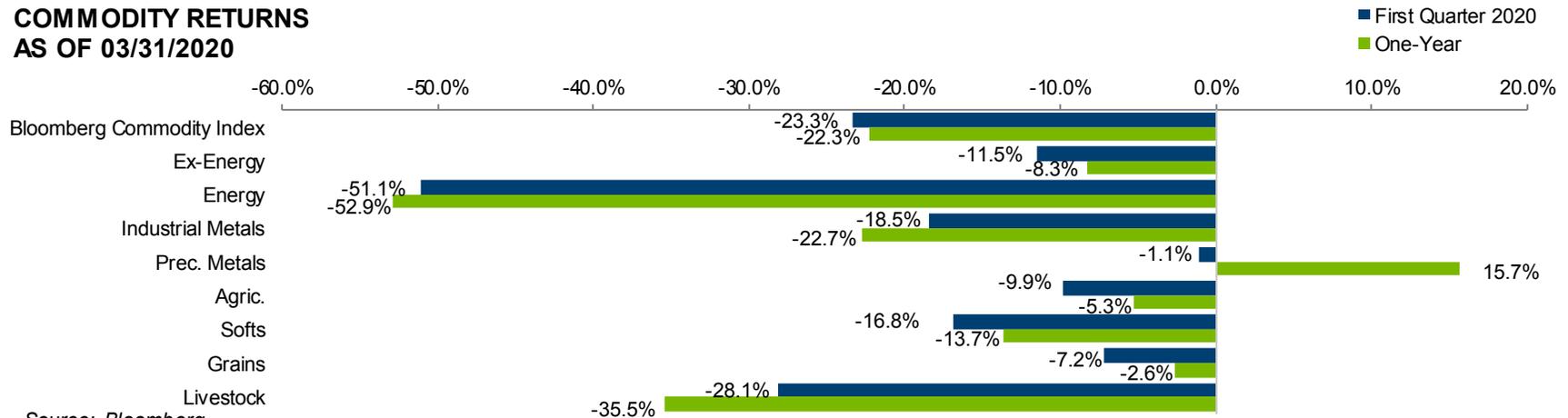


Source: FactSet

- The U.S. dollar generally strengthened against major currencies over the quarter as it rose 7.1% on a trade-weighted basis. U.S. dollar appreciated against euro and sterling but marginally depreciated against Japanese yen.
- Sterling fell sharply over the quarter amidst “risk-off” trade flows as the coronavirus outbreak escalated. The UK’s current account deficit and its status as a relatively small open economy means that sterling is particularly exposed to international fund flows. As investor concerns over economic growth and financial market stability grew, capital flows started to dry up from the UK as investors seek “safe haven” assets such as the US dollar. Sterling depreciated by 6.4% against the U.S. dollar.
- Alongside a more dovish ECB and a weaker economic outlook, the euro fell against both the US dollar and the Japanese yen, depreciating by 2.2% and 2.9% respectively. However, it rose by 4.2% against sterling.

Commodities

COMMODITY RETURNS AS OF 03/31/2020



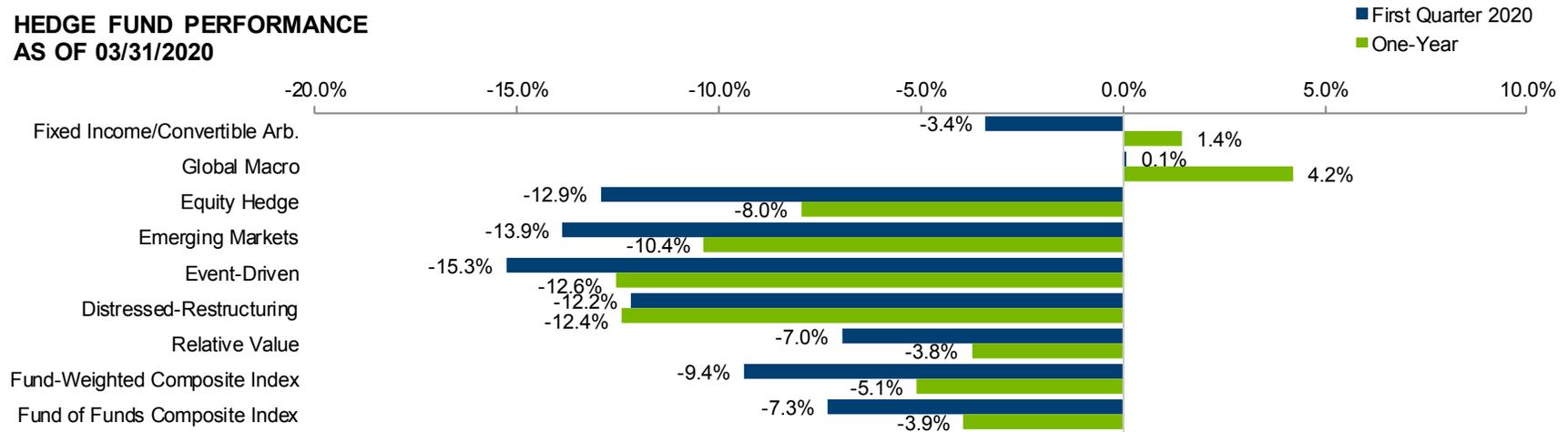
Source: Bloomberg

Note: Softs and Grains are part of the wider Agriculture sector

- Amidst Covid-19 pandemic, commodities fell sharply over the quarter which saw the Bloomberg Commodity Index tumble by 23.3%.
- Energy was the worst performing sector over the quarter with a return of -51.1% as crude oil prices fell sharply following Saudi Arabia's plans to raise production and offer deep discounts to key markets in a bid to gain market share after Russia rejected a proposal by OPEC to cut oil production. The price of Brent crude oil fell by 65.5% to \$23/bbl. and WTI crude oil spot prices fell by 66.5% to \$20/bbl.
- Livestock (-28.1%) was the second worst performing sector in Q1 2020.

Hedge Fund Markets Overview

HEDGE FUND PERFORMANCE AS OF 03/31/2020



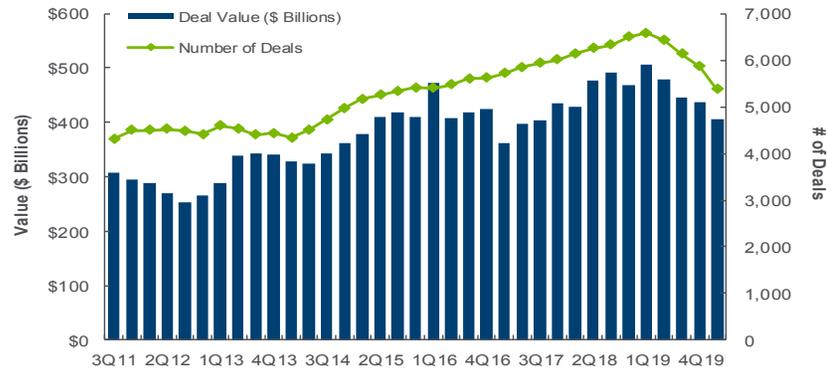
Note: Latest 5 months of HFR data are estimated by HFR and may change in the future.

Source: HFR

- Hedge fund performance was generally negative across all strategies in the first quarter.
- Over the quarter, Global Macro was the only strategy to generate marginal positive return of 0.1%. Conversely, Event-Driven and Emerging Markets were the worst performers, falling 15.3% and 13.9% respectively.
- HFRI Fund-Weighted Composite Index and the HFRI Fund of Funds Composite Index produced returns of -9.4% and -7.3% respectively.

Private Equity Market Overview – Q4 2019 Slide 1 of 2

LTM Global Private Equity-Backed Buyout Deal Volume



Source: Preqin

- Fundraising:** In 2019, \$787.2 billion was raised by 1,725 funds, which was a decrease of 3.4% on a capital basis and a decrease of 19.2% by number of funds from the prior year. Dry powder stood at \$2.2 trillion at the end of the year, an increase of 5.4% and 39.7% compared to year-end 2018 and the five year average, respectively.¹
- Buyout:** Global private equity-backed buyout deals totaled \$405.7 billion in 2019, which was down 19.9% and 5.6% from 2018 and the five year average, respectively.¹ At the end of 2019, the average purchase price multiple for all U.S. LBOs was 11.5x EBITDA, up from year-end 2018's average of 10.6x and up from the five-year average (10.6x).² Large cap purchase price multiples stood at 11.4x, up compared to the full-year 2018 level of 10.6x.² The weighted average purchase price multiple across all European transaction sizes averaged 11.1x EBITDA for year-end 2019, down slightly from the 11.3x multiple seen at year-end 2018. Purchase prices for transactions of €1.0 billion or more decreased from 11.7x in 2018 to 11.2x in 2019. Globally, exit value totaled \$336.5 billion on 1,804 deals during the year, significantly lower than the \$412.0 billion in exits from 2,369 deals during 2018.
- Venture:** During the year, 5,906 venture-backed transactions totaling \$108.0 billion were completed, which was a decrease on a capital and number of deals basis over the prior year's total of \$118.4 billion across 6,452 deals. This was 34.7% higher than the five-year average of \$80.2 billion.³ Total U.S. venture-backed exit activity totaled approximately \$256.4 billion across 882 completed transactions in 2019, up notably from \$130.2 billion across 1,015 exits in 2018.⁴
- Mezzanine:** 25 funds closed on \$6.1 billion during the year. This was a significant decrease from the prior year's total of \$27.3 billion raised by 56 funds and represented a decrease of 71.5% from the five-year average of \$21.1 billion. Estimated dry powder was \$44.6 billion at the end of 2019, down by \$18.5 billion from the prior year.

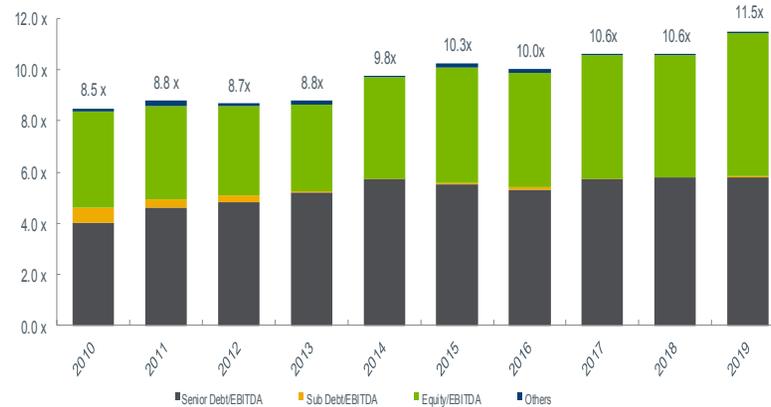
Sources: ¹ Preqin ² Standard & Poor's ³ PwC/CB Insights MoneyTree Report ⁴ PitchBook/NVCA Venture Monitor ⁵ Fitch Ratings ⁶ Thomson Reuters ⁷ UBS

Notes: FY=Fiscal year ended 12/31; YTD=Year to date; LTM=Last 12 months (aka trailing 12 months); PPM=Purchase Price Multiples: Total Purchase Price ÷ EBITDA.

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Private Equity Market Overview – Q4 2019 Slide 2 of 2

U.S. LBO Purchase Price Multiples – All Transactions Sizes



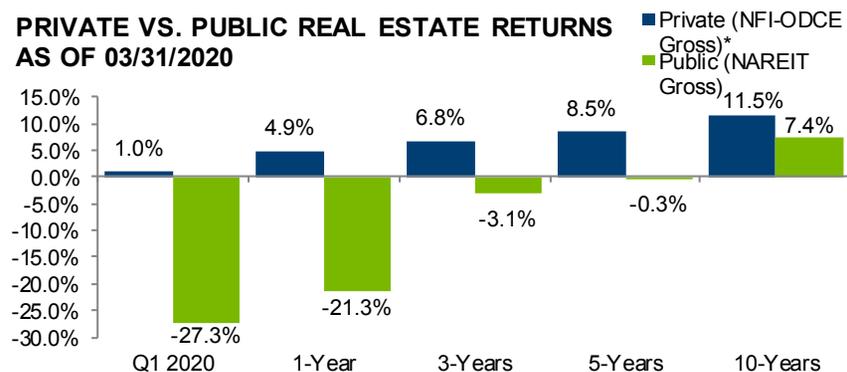
Source: S&P

- Distressed Debt:** The LTM U.S. high-yield default rate was 3.3% as of December 2018, which was up from December 2018's LTM rate of 2.4%.⁵ This was the highest level seen since 2016. During the year, \$52.6 billion was raised by 66 funds, higher than the \$41.8 billion raised by 72 funds during 2018.¹ Dry powder was estimated at \$117.2 billion at the end of 2019, which was down 1.0% from year-end 2018. This remained above the five-year annual average level of \$101.8 billion.¹
- Secondaries:** 30 funds raised \$23.2 billion during the year, down slightly from the \$23.6 billion raised by 49 funds in 2018 and down significantly from the \$43.1 billion raised by 61 funds in 2017.¹ The average discount rate for all private equity sectors finished the year at 8.1%, lower than the 8.9% discount at the end of 2018.⁶
- Infrastructure:** \$104.5 billion of capital was raised by 107 funds in 2019 compared to \$91.8 billion of capital raised by 99 partnerships in 2018. At the end of the year, dry powder stood at \$212.1 billion, up from last year's record of \$177.9 billion. Infrastructure managers completed 2,608 deals for an aggregate deal value of \$469.1 billion in 2019 compared to 2,749 deals totaling \$406.1 billion in 2018.¹
- Natural Resources:** During 2019, 27 funds closed on \$12.1 billion compared to 51 funds totaling \$22.2 billion in 2018. Energy and utilities industry managers completed 156 deals totaling \$17.0 billion in 2019, compared to \$34.4 billion across 155 deals in 2018.¹

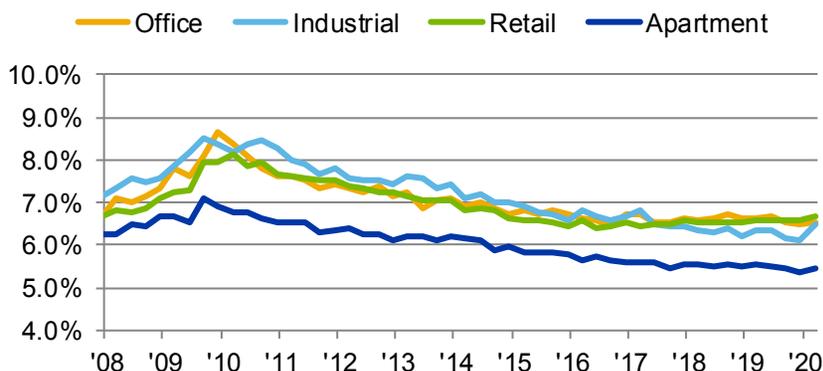
Sources: ¹ Preqin ² Standard & Poor's ³ PwC/CB Insights MoneyTree Report ⁴ PitchBook/NVCA Venture Monitor ⁵ Fitch Ratings ⁶ Thomson Reuters ⁷ UBS

Notes: FY=Fiscal year ended 12/31; YTD=Year to date; LTM=Last 12 months (aka trailing 12 months); PPM=Purchase Price Multiples: Total Purchase Price ÷ EBITDA.

U.S. Commercial Real Estate Markets



*First quarter returns are preliminary
Sources: NCREIF, FactSet



- U.S. Core Real Estate returned 0.97%* over the first quarter, equating to a 4.9% total gross return year-over-year, including a 4.2% income return. The industrial sector was once again the best performing sector, while retail continues to perform poorly relative to other major property types. E-commerce continues to be the primary force driving the bifurcation of performance between the industrial and retail sectors.
- Global property markets, as measured by the FTSE EPRA/NAREIT Developed Real Estate Index, returned -28.3% (USD) in aggregate during the first quarter. REIT market performance was driven by Asia Pacific (-29.1% USD), North America (-29.2% USD) and Europe (-35.0% USD). The U.S. REIT markets (FTSE NAREIT Equity REITs Index) declined -27.3% in the first quarter. The U.S. 10-year treasury bond yield decreased 122bps to 0.70%.
- The coronavirus fueled market volatility and decline in the stock and bond markets has created a situation of uncertainty for private real estate pricing. Public markets are searching for the right pricing level in light of the global pandemic, and how it will affect the regional and global economies. New information and the current assessments change literally daily and often in a material amount. Considering this situation, we are recommending that investments with pre-specified assets be postponed. Private market transactions based on appraisal valuations lag the most current information, and they do not fully reflect the current market conditions.
- We are proactively evolving our strategy to seek such investments. In the post-coronavirus world, supply chains may move back to North America which will require corresponding real estate infrastructure. Demand for last mile logistics, already a key investment theme, will accelerate. Live and work preference changes will create opportunities. Interest rates are likely to remain lower for even longer, making real estate a very compelling alternative to fixed income investments.
- Blind pool funds offer a potential to have capital available when the new opportunity set presents itself. Those strategies need careful review in light of the changing market dynamics. Strategies that worked previously in a growth-oriented market may not be appropriate for what may be more opportunistic style investing. Regions, countries and property types all need to be reevaluated.

*Indicates preliminary NFI-ODCE data gross of fees

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Fee Schedule

Total Equity

As of March 31, 2020

Fee Schedule

	Fee Schedule	Market Value As of 03/31/2020 \$000	Estimated Annual Fee \$000	Estimated Annual Fee (%)
Total Equity		7,062,416	33,376	0.47
Jacobs Levy 130/30	0.60 % of First \$200 M 0.35 % of Next \$300 M 0.30 % Thereafter	523,592	2,321	0.44
Allianz Structured Alpha U.S. 250		100,344	-	-
Allianz Structured Alpha Global 500		206,180	-	-
Allianz Structured Alpha Global 350		195,908	-	-
Kennedy Capital Management	0.60 % of First \$100 M 0.50 % Thereafter	372,576	1,963	0.53
Stephens	0.75 % of First \$150 M 0.70 % of Next \$50 M 0.65 % Thereafter	341,262	2,393	0.70
Voya Absolute Return	0.60 % of First \$250 M 0.40 % Thereafter	445,940	2,284	0.51
Allianz (Nicholas Applegate)	0.40 % of First \$100 M 0.30 % of Next \$100 M 0.25 % of Next \$100 M 0.20 % Thereafter	568,295	1,487	0.26
Pershing Square International	1.50 % of Assets	81,678	1,225	1.50
Pershing Square Holdings	1.50 % of Assets	129,825	1,947	1.50
Triam Partners	1.50 % of Assets	56,427	846	1.50
Triam Co-Investments	0.50 % of Assets	55,942	280	0.50
SSgA Global Index	0.04 % of First \$1000 M 0.03 % Thereafter	751,537	301	0.04
BlackRock MSCI ACWI IMI Fund	0.05 % of First \$250 M 0.04 % Thereafter	269,772	133	0.05
Wellington Global Perspectives	0.80 % of Assets	388,355	3,107	0.80
T. Rowe Price Global Equity	0.43 % of First \$500 M 0.40 % Thereafter	847,210	3,514	0.41
Lazard	0.68 % of First \$300 M 0.65 % Thereafter	463,983	3,106	0.67
D.E. Shaw	0.84 % of First \$100 M 0.80 % of Next \$100 M 0.76 % Thereafter	584,635	4,563	0.78
GMO Global All Country Equity	0.64 % of Assets	343,015	2,195	0.64
Harris Global Equity	0.60 % of First \$100 M 0.50 % of Next \$100 M 0.45 % Thereafter	335,871	1,711	0.51

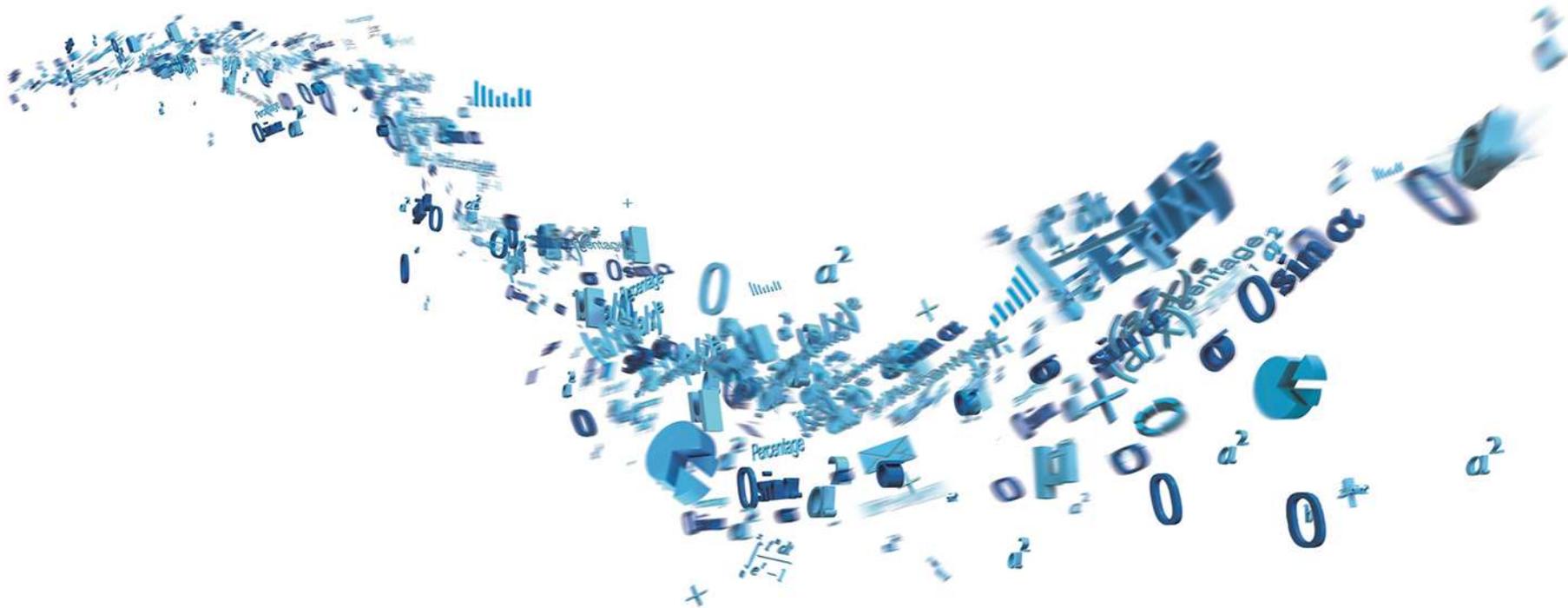
609 Above fees reflect only the current base management fee and excludes any performance fee arrangement.

Fee Schedule

	Fee Schedule	Market Value As of 03/31/2020 \$000	Estimated Annual Fee \$000	Estimated Annual Fee (%)
Fixed Income		2,453,376	5,126	0.21
BlackRock	0.20 % of First \$200 M 0.15 % of Next \$200 M 0.10 % of Next \$400 M 0.08 % Thereafter	403,263	703	0.17
Loomis Sayles	0.50 % of First \$20 M 0.40 % of Next \$30 M 0.30 % Thereafter	419,664	1,329	0.32
Putnam	0.40 % of First \$100 M 0.35 % of Next \$150 M 0.30 % of Next \$250 M 0.25 % Thereafter	355,650	1,242	0.35
SSgA Aggregate Bond Index	0.04 % of First \$100 M 0.02 % Thereafter	287,523	73	0.03
Wellington Global Total Return	0.30 % of Assets	343,009	1,029	0.30
Reams Core Plus Bond Fund	0.20 % of Assets	375,235	750	0.20
BRS Recycling Tax Credit		192,000	-	-
BRS Recycling Tax Credit Phase 2		77,032	-	-
Opportunistic/Alternatives		916,210	13,268	1.45
Anchorage	2.00 % of Assets	68,309	1,366	2.00
York	1.50 % of Assets	37,304	560	1.50
Capula	2.00 % of Assets	87,149	1,743	2.00
Graham	2.00 % of Assets	52,722	1,054	2.00
Circumference Group Core Value	1.50 % of Assets	27,005	405	1.50
Aeolus Keystone Fund	2.00 % of Assets	281,039	5,621	2.00
Nephila Rubik Holdings	1.50 % of Assets	44,349	665	1.50
Parametric Global Defensive Equity Fund	0.40 % of First \$150 M 0.35 % Thereafter	145,197	581	0.40
Man Alternative Risk Premia	0.85 % of Assets	93,753	797	0.85
CFM ISD Fund 1.5x	0.60 % of Assets	79,383	476	0.60

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 Above fees reflect only the current base management fee and excludes any performance fee arrangement.

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Disclaimers and Notes

Arkansas Teacher Retirement System

Appendix

Description of Benchmarks

Total Fund - The Performance Benchmark for the Total Fund reflects a weighted average of the underlying asset class benchmarks, weighted as follows: Opportunistic/Alternatives and Real Assets at the weight of the previous month's ending market values, Fixed Income at its long-term Policy Target of 15%, and Total Equity at its long-term Policy Target of 55% plus the balance of the unfunded or uncommitted assets of the Opportunistic/Alternatives and Real Assets categories. These targets can be found on page 21 of this report. From October 2007 to July 2013, the Performance Benchmark was the performance of the asset class benchmarks as a weighted average of the previous month's ending market values. The historical components of the benchmark are shown in the table below. Returns prior to September 30, 1996, consist of the actual allocations to the seven different asset classes included in the Arkansas Teacher Retirement System over time. The historical benchmarks used for each asset class are noted below.

Date	DJ Total Stock Market Index	Russell 3000 Index	MSCI ACW ex-U.S. Index	MSCI All Country World Index	BC Universal Bond Index	BC Aggregate Bond Index	Alternative Policy*
03/2004-9/2007	40.0 %	--	17.5 %	--	25.0 %	--	17.5 %
06/2003-02/2004	40.0	--	17.5	--	--	25.0 %	17.5
10/2001-07/2003	--	40.0 %	17.5	--	--	25.0	17.5
08/1998-09/2001	--	40.0	17.0	--	--	28.0	15.0
10/1996-07/1998	--	40.0	20.0	--	--	28.0	12.0

*Historically, the Alternative Policy was comprised of the weighted averages of the Private Equity, Real Estate, and Alternatives policy benchmarks. Prior to July 31, 2003 the alternative benchmark consisted of 57.0% of the Russell 3000 + a 2% Premium per year, 8.5% of the NCREIF Southeast Timberland Index, 28.5% of the Real Estate Index, 6% of the EnnisKnupp STIF Index.

Benchmark Descriptions

Total Equity - A weighted average of the Dow Jones U.S. Total Stock Market Index and the MSCI All Country World IMI Index based on weights of the underlying investment manager allocations. As of March 1, 2020, the Total Equity Performance Benchmark was comprised of 29.4% DJ U.S. Total Stock Market Index and 70.6% MSCI ACWI IMI.

Fixed Income - The Barclays U.S. Universal Bond Index as of March 1, 2004.

Opportunistic/Alternatives - A custom benchmark consisting of 25% DJ/CS Event-Driven Index, 25% HFR Macro Index, and 50% South Timberland NCREIF Index until June 30, 2013; 60% HFRI Macro Index and 40% DJ/CS Event-Driven Index until July 31, 2015; 56% HFRI Macro Index, 38% DJ/CS Event-Driven Index, and 6% Russell 2000 Index until March 31, 2016; 45% HFRI Macro Index, 30% DJ/CS Event-Driven Index, 5% Russell 2000 Index, and 20% Citigroup 3 Month T-bill until May 31, 2016; 37% HFRI Macro Index, 25% DJ/CS Event-Driven Index, 5% Russell 2000 Index, and 33% Citigroup 3 Month T-bill until May 31, 2017; 28% HFRI Macro Index, 20% DJ/CS Event-Driven Index, 4% Russell 2000 Index, 25% Citigroup 3 Month T-bill, and 23% Parametric Performance Benchmark thereafter.

Real Assets - A custom benchmark consisting of a weighted average of the net asset values at previous month's end of the sub-categories' benchmarks, defined as Real Estate Benchmark, Timber Benchmark, Agriculture Benchmark and Infrastructure Benchmark.

Real Estate- NFI-ODCE - NCREIF Fund Index Open-end Diversified Core Equity Index is an index of investment returns reporting on both a historical and current basis the results of 33 open-end commingled funds pursuing a core investment strategy; underlying funds are leveraged with gross and net returns available.

Timber Property Benchmark - NCREIF Timberland Property Index (NTPI) weighted according to ATRS' regional exposure based on net asset value.

Agriculture Benchmark - NCREIF Farmland Index (NFI) weighted according to ATRS' regional and crop type exposure based on net asset value.

Infrastructure Benchmark - Consumer Price Index (CPI) plus 500 basis points annually.

Private Equity - The Dow Jones U.S. Total Stock Market Index + a 2% premium per year.

Cash Equivalents - The Citigroup 90 day T-bill.

Benchmark Descriptions

Allianz (Convertibles) Performance Benchmark - On January 1, 2005, the benchmark for the portfolio was changed to the Merrill Lynch Convertible Bond (All Quality) Index. Prior to January 1, 2005, the performance benchmark for the Allianz (previously Nicholas Applegate) portfolio was the CSFB Convertible Securities Index. Prior to May 1, 2004, the performance benchmark consisted of 90% CSFB Convertible Securities Index and 10% Salomon High Yield Index.

BlackRock Performance Benchmark - The Barclays Universal Bond Index as of March 1, 2004. Previously it was the Barclays Aggregate Bond Index.

Jacobs Levy Performance Benchmark - On January 1, 2008, the benchmark for the portfolio was changed to the Russell 3000 Index. Prior to January 1, 2008, the portfolio benchmark was the Russell 1000 Growth Index.

Loomis Sayles Performance Benchmark - An Index that splices 65% of the Barclays Government/Credit Index and 35% Barclays High Yield Index.

Nicholas Applegate Performance Benchmark - On January 1, 2005, the benchmark for the portfolio was changed to the Merrill Lynch Convertible Bond (All Quality) Index. Prior to January 1, 2005, the performance benchmark for the Nicholas Applegate portfolio was the CSFB Convertible Securities Index. Prior to May 1, 2004, the performance benchmark consisted of 90% CSFB Convertible Securities Index and 10% Salomon High Yield Index.

Parametric Performance Benchmark - 50% MSCI All Country World Index (net) and 50% Citigroup 90 day T-Bill Index as of June 1, 2017.

Wellington Global Performance Benchmark - As of July 1, 2012 the benchmark was changed to MSCI All Country World Small Cap Index. Prior to July 1, 2012, the benchmark was MSCI All Country World Small/Mid Cap Index.

Voya Absolute Return Performance Benchmark - As of December 1, 2015 the benchmark was changed to MSCI All Country World Index. Prior to December 1, 2015, the benchmark was the S&P 500 Stock Index.

Barclays Aggregate Bond Index - A market-value weighted index consisting of the Barclays Corporate, Government and Mortgage-Backed Securities Indices. The Index also includes credit card-, auto- and home equity loan-backed securities, and is the broadest available measure of the aggregate U.S. fixed income market.

Barclays Government/Credit Index - The Barclays Government/Credit Index measures the investment return of all medium and larger public issues of U.S. Treasury, agency, investment-grade corporate, and investment-grade international dollar-denominated bonds.

Barclays High Yield Index - The Barclays High Yield Index covers the universe of fixed rate, non-investment grade debt. Pay-in-kind (PIK) bonds, Eurobonds, and debt issues from countries designated as emerging markets (e.g., Argentina, Brazil, Venezuela, etc.) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included.

Barclays U.S. Universal Bond Index - A market-value weighted index consisting of the components of the Barclays Aggregate Bond Index, plus EuroDollar bonds, emerging markets bonds, 144A fixed income securities, and U.S. corporate high yield securities.

Benchmark Descriptions

Barclays Mortgage Index - A market value-weighted index consisting of the mortgage pass-through securities of Ginnie Mae (GNMA), Fannie Mae (FNMA) and Freddie Mac (FHLMC).

Citigroup 90 day T-bill Index - Treasury bill rates of return, as reported by Citigroup (Salomon Smith Barney), for bills with a maximum time remaining to maturity of 90 days.

Dow Jones U.S. Total Stock Market Index - A capitalization-weighted stock index representing all U.S. common stocks traded regularly on the organized exchanges. The Index is the broadest measure of the aggregate U.S. stock market.

FTSE Europe - A tradable index, designed to represent the performance of the 100 most highly capitalized blue chip companies in Europe.

Merrill Lynch Convertible Bond (All Quality) Index -The Merrill Lynch All Convertibles All Qualities Index is a widely used index that measures convertible securities' performance. It measures the performance of U.S. dollar-denominated convertible securities not currently in bankruptcy with a total market value greater than \$50 million at issuance.

MSCI All Country World ex-U.S. Index - A capitalization-weighted index consisting of 22 developed and 23 emerging countries, but excluding the U.S. Covers approximately 85% of global equity opportunity set outside of the U.S.

MSCI All Country World Index - A capitalization-weighted index of stocks representing 46 stock markets in Europe, Australia, the Far East, the Middle East, Latin America and North America.

MSCI All Country World IMI Index - A capitalization-weighted index representing large and small cap stock from 46 stock markets in Europe, Australia, the Far East, the Middle East, Latin America and North America.

MSCI Europe, Australasia, Far East (EAFE) Non-U.S. Stock Index - A capitalization-weighted index of stocks representing 21 developed and emerging country markets in Europe, Australia, Asia and the Far East.

MSCI World Index - A capitalization-weighted index of stocks representing 22 developed stock markets in Europe, Asia and Canada.

NFI-ODCE Index- NCREIF Fund Index Open-end Diversified Core Equity Index is an index of investment returns reporting on both a historical and current basis the results of 33 open-end commingled funds pursuing a core investment strategy; underlying funds are leveraged with gross and net returns available

DJ/CS Event-Driven Index - Event driven funds typically invest in various asset classes and seek to profit from potential mispricing of securities related to a specific corporate or market event. Such events can include: mergers, bankruptcies, financial or operational stress, restructurings, asset sales, recapitalizations, spin-offs, litigation, regulatory and legislative changes as well as other types of corporate events. Event driven funds can invest in equities, fixed income instruments (investment grade, high yield, bank debt, convertible debt and distressed), options and various other derivatives. Many event driven fund managers use a combination of strategies and adjust exposures based on the opportunity sets in each subsector.

Benchmark Descriptions

LIBOR Index - London Interbank Offered Rate. A filtered average of the world's most creditworthy banks' interbank deposit rates with maturities between overnight and one full year.

Russell 3000 Index - An index that measures the performance of the 3,000 stocks that make up the Russell 1000 and Russell 2000 Indices.

Russell 1000 Index - An index that measures the performance of the largest 1,000 stocks contained in the Russell 3000 Index.

Russell 1000 Value Index - An index that measures the performance of those Russell 1000 companies with lower price-to-book ratios and lower I/B/E/S growth forecasts.

Russell 2000 Index - An index that measures the performance of the smallest 2,000 companies contained in the Russell 3000 Index.

Russell 2000 Growth Index - An index that measures the performance of those Russell 2000 companies with greater price-to-book ratios and greater I/B/E/S growth forecasts.

Russell 2000 Value Index - An index that measures the performance of those Russell 2000 companies with lower price-to-book ratios and lower I/B/E/S growth forecasts.

Russell Mid Cap Value Index - An index that measures the performance of those Russell 1000 companies with lower price-to-book ratios and lower forecasted growth values.

S&P 500 Stock Index - A capitalization-weighted stock index consisting of the 500 largest publicly traded U.S. stocks.

South Timberland Index - The largest regional subindex of the NCREIF Timberland Index, consisting of timberland properties held in the U.S. South. This includes close to 300 properties with more than 10 million cumulative acres of timberland in the following states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. Calculations are based on quarterly returns at the individual property level. Performance is reported on an all-cash, unlevered basis, gross of investment management fees.

HFR Macro Index - Macro: Investment Managers which trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed income, hard currency and commodity markets. Managers employ a variety of techniques, both discretionary and systematic analysis, combinations of top down and bottom up theses, quantitative and fundamental approaches and long and short term holding periods. Primary investment thesis is predicated on predicted or future movements in the underlying instruments.

HFR Distressed/Restructuring Index - Distressed Restructuring Strategies employ an investment process focused on corporate fixed income instruments, primarily on corporate credit instruments of companies trading at significant discounts to their value at issuance or obliged (par value) at maturity as a result of either formal bankruptcy proceeding or financial market perception of near term proceedings. Distressed Strategies employ primarily debt (greater than 60%) but also may maintain related equity exposure. Hedge Fund Research, Inc. (HFR) utilizes a UCITSIII compliant methodology to construct the HFR Hedge Fund Indices. The methodology is based on defined and predetermined rules and objective criteria to select and rebalance components to maximize representation of the Hedge Fund Universe.

Arkansas Teacher Retirement System

Appendix

Historical U.S. Equity and Global Equity composite returns

As of June 30, 2015	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
U.S. Equity	6.7	18.1	16.4	9.4	10.5	04/01/1986
Dow Jones U.S. Total Stock Market Index	7.2	17.6	17.5	8.3	-	
Global Equity	1.8	14.6	12.1	-	2.5	11/01/2007
MSCI AC World Index (Net)	0.7	13.0	11.9	6.4	2.1	

In June 2015, the ATRS Board approved the combination of the U.S. and Global equity asset classes to a single Total Equity asset class. Total Equity performance reporting began in July 2015. In the table above, we show the historical returns for the U.S. Equity and Global Equity asset classes since inception through June 2015. Performance for the Total Equity asset class prior to July 2015 represents a weighted average of the U.S. Equity and Global Equity historical performance.

Benchmark Descriptions

Bloomberg Barclays Corporate High Yield Bond Index - An index that covers the U.S.D-dominated, non-investment grade, fixed rate, taxable corporate bond market. Debt issues from emerging market countries are excluded. Securities are classified as high-yield if the middle rating is Ba1/BB+ or below.

Bloomberg Barclays Emerging Markets Index - An unmanaged index that tracks total returns for external-currency-denominated debt instruments of the emerging markets.

Bloomberg Barclays Global Aggregate - Provides a broad-based measure of the global investment-grade fixed income markets. The three major components of this index are the U.S. Aggregate, the Pan-European Aggregate, and the Asian-Pacific Aggregate Indices. The index also includes Eurodollar and Euro-Yen corporate bonds, Canadian government, agency and corporate securities, and U.S.D investment grade 144A securities.

Bloomberg Barclays Global Treasury Ex-U.S. - The Barclays Global Treasury ex U.S. Index is a subset of the flagship Global Treasury Index that does not have any exposure to U.S. debt. This multi-currency benchmark includes investment grade, fixed-rate bonds issued by governments in their native currencies.

Bloomberg Barclays Inflation Index - Measures the performance of the U.S. Treasury Inflation Protected Securities ("TIPS") market.

Bloomberg Barclays Universal Index - A market value-weighted index which is the union of the U.S. Aggregate Index, U.S. High Yield Corporate Index, Eurodollar Index, U.S. Emerging Markets Index and the CMBS High Yield Index. The Index is appropriate for core plus fixed income mandates.

Bloomberg Barclays U.S. Aggregate Bond Index - A market value-weighted index consisting of government bonds, SEC-registered corporate bonds and mortgage-related and asset-backed securities with at least one year to maturity and an outstanding par value of \$250 M or greater. This index is a broad measure of the performance of the investment grade U.S. fixed income market.

Bloomberg Barclays U.S. Government/Credit Index - A subcomponent of the Barclays Capital Aggregate Index, this benchmark includes treasury securities, government related issues, and high quality corporate bonds with an outstanding par value of \$250 M or greater and at least one year of maturity remaining.

Bloomberg Barclays U.S. Government Index - A market value weighted index of U.S. government and government agency securities (other than mortgage securities) with maturities of one year or more.

Bloomberg Barclays U.S. High Yield Index - An index composed of non-investment grade corporate debt denominated in U.S. dollars. The issues have to have an outstanding par value of \$150 M or greater and at least one year of maturity remaining.

Bloomberg Barclays U.S. Intermediate Aggregate Bond Index - A market value-weighted index consisting of U.S. Treasury securities, corporate bonds and mortgage-related and asset-backed securities with one to ten years to maturity and an outstanding par value of \$250 M or greater.

Bloomberg Barclays U.S. Intermediate Government Bond Index - An unmanaged index considered representative of intermediate-term fixed-income obligations issued by the U.S. Treasury, government agencies and quasi-federal corporations.

Bloomberg Barclays U.S. Intermediate Government/Credit Index - A market-value weighted index consisting of U.S. government bonds and SEC-registered corporate bonds with one to ten years to maturity and an outstanding par value of \$150 M or greater.

Bloomberg Barclays U.S. Intermediate Treasury - An unmanaged index considered representative of intermediate-term fixed-income obligations issued by the U.S. Treasury.

Bloomberg Barclays U.S. Long Credit Bond Index - An unmanaged index considered representative of long-term fixed-income obligations issued by U.S. corporate, specified foreign debentures, and secured notes that meet the specified maturity, liquidity, and quality requirements. To qualify, bonds must be SEC-registered.

Benchmark Descriptions

Bloomberg Barclays U.S. Long Gov't/Credit Index - The Barclays Capital U.S. Government/ Credit Bond Index measures performance of U.S. dollar denominated U.S. treasuries, government-related, and investment grade U.S. corporate securities that have a remaining maturity of greater than or equal to 1 year. In addition, the securities have \$250 M or more of outstanding face value, and must be fixed rate and non-convertible.

Bloomberg Barclays U.S. Long Government Bond Index - An unmanaged index considered representative of long-term fixed- income obligations issued by the U.S. Treasury, government agencies and quasi-federal corporations.

Bloomberg Barclays U.S. TIPS - A market value-weighted index consisting of U.S. Treasury Inflation Protected Securities with one or more years remaining until maturity with total outstanding issue size of \$500m or more.

Bloomberg Barclays U.S. Treasury 20-30 Year STRIPS Index - A subcomponent of the Barclays Aggregate Index, this benchmark includes long-term treasury STRIPS.

Bloomberg Commodity Index - Consists of 22 exchange-traded futures on physical commodities, which are weighted to account for economic significance and market liquidity. Performance is calculated on an excess return basis and reflects commodity future price movements.

BofA Merrill Lynch 3 Month Treasury Bill - An index that measures the average return of the last three-month U.S. Treasury Bill issues.

BofA Merrill Lynch High Yield Master - A market-capitalization weighted index that tracks the performance of U.S. dollar- denominated, below investment grade corporate debt publicly issued in the U.S. domestic market.

Citigroup 90-Day T-Bill Index - An index that measures the average return of the last three-month U.S. Treasury Bill issues.

Credit Suisse Leveraged Loan Index - Designed to mirror the investable universe of the U.S. dollar denominated leveraged loan market.

CRSP U.S. Large Cap Index - an index comprised of nearly 640 U.S. large cap companies and includes securities traded on NYSE, NYSE Market, NASDAQ, or ARCA, representing nearly 85% of the U.S. investable equity market. The index is reconstituted quarterly after the market close on the third Fridays of March, June, September, and December.

CRSP U.S. Total Market Index - an index comprised of nearly 4,000 constituents across mega, large, small, and micro capitalizations and includes securities traded on NYSE, NYSE Market, NASDAQ, or ARCA, representing nearly 100% of the U.S. investable equity market. The index is reconstituted quarterly after the market close on the third Fridays of March, June, September, and December.

DJ U.S. Completion Total Stock Market Index - A capitalization-weighted index that consists of the stocks in the Dow Jones U.S. Total Stock Market Index less the stocks in the S&P 500 Stock Index.

DJ U.S. Total Stock Market Index - A capitalization-weighted stock index representing all domestic common stocks traded regularly on the organized exchanges. The index is the broadest measure of the aggregate domestic stock market and includes approximately 5,000 stocks.

FTSE 4Good U.S. Select Index - a socially responsible investment (SRI) index of U.S. stocks that excludes companies with certain business activities such as weapons, tobacco, gambling, alcohol, nuclear power, and adult entertainment.

FTSE All-World ex-U.S. Index - A capitalization-weighted stock index representing 46 developed market countries and emerging market countries excluding the U.S.

Benchmark Descriptions

FTSE EPRA NAREIT Global ex-U.S. Index - Designed to represent general trends in eligible real estate equities worldwide. Relevant real estate activities are defined as the ownership, disposal and development of income-producing real estate.

FTSE Global All Cap ex U.S. Index - a market-capitalization weighted index representing the performance of roughly 5350 large, mid and small cap companies in 46 Developed and Emerging markets worldwide, excluding the USA.

FTSE Global Core Infrastructure Index - Represents the performance of infrastructure and infrastructure-related securities companies in a set of industries that FTSE defines as being involved in infrastructure. The series is based on the FTSE Global Equity Index Series and both developed and emerging markets are included.

FTSE NAREIT U.S. Equity REITS - Free float adjusted, market capitalization weighted index of U.S. based equity real estate investment trusts (REITs).

Goldman Sachs Commodity Index - A composite index of commodity sector returns which represents a broadly diversified, unleveraged, long-only position in commodity futures.

HFRI Fund-of-Fund Index - This index is equal-weighted including 800 constituents. It includes both domestic and offshore accounts and is valued in U.S. dollars. Only fund-of-fund products are included in the index that have at least \$50 M under managements and have been actively trading for at least one year. All funds report net monthly returns.

HFRI Fund Weighted Composite Index - The HFRI Fund Weighted Composite Index is a global, equal-weighted index of over 2,000 single-manager funds that report to HFR Database. Constituent funds report monthly net of all fees performance in U.S. Dollar and have a minimum of \$50 M under management or a twelve (12) month track record of active performance. The HFRI Fund Weighted Composite Index does not include Funds of Hedge Funds.

Hueler Stable Value Index - The Hueler Analytics Stable Value Pooled Fund Comparative Universe represents investment strategies of \$96 billion in stable value assets, across 24 pooled funds, invested in contracts universe across a universe of 16 general account issuers and 14 synthetic wrap providers. The allocation of pooled fund assets is dominated by synthetic contracts issued by insurance companies and banks.

iMoneyNet All Taxable Money Funds Index - An index made up of the entire universe of money market mutual funds. The index currently represents over 1,300 funds, or approximately 99 percent of all money fund assets.

iMoneyNet Money Fund Average - An index made up of the entire universe of money market mutual funds. The index currently represents over 1,300 funds, or approximately 99 percent of all money fund assets.

J.P. Morgan EMBI Global Diversified - Comprised of dollar-denominated Brady bonds, traded loans and Eurobonds issued by emerging market sovereign and quasi-sovereign entities. The Diversified version limits the weights of the index countries by only including a specified portion of those countries' eligible current face amounts of debt outstanding, providing for a more even distribution of weights within the countries in the index.

MSCI All Country World ex-U.S. Index - A capitalization-weighted index of stocks representing 44 stock markets in Europe, Australia, the Far East, the Middle East, Latin America and North America. Index consists of 23 developed and 21 emerging countries, but excludes the U.S.

MSCI All Country World ex-U.S. Index IMI- A capitalization-weighted index of large, mid and small cap stocks representing 22 developed (excluding the United States) and 24 emerging market countries. The index is the broadest measure of the aggregate non-U.S. stock market, covering approximately 99% of the global equity investment opportunity set outside of the United States.

Benchmark Descriptions

MSCI All Country World ex-U.S. Small Cap Index - Covers all investable small cap securities with a market capitalization below that of the companies in the MSCI Standard Indices (excluding U.S.), and target approximately 14% of each market's free-float adjusted market capitalization.

MSCI All Country World Index - A capitalization-weighted index of stocks representing 46 stock markets in Europe, Australia, the Far East, the Middle East, Latin America and North America.

MSCI All Country World Index IMI - A capitalization-weighted index of large, mid and small cap stocks representing 23 developed and 24 emerging market countries. The index is the broadest measure of the aggregate global stock market, covering approximately 99% of the global equity investment opportunity set.

MSCI EAFE Growth Index - A capitalization-weighted index of 21 stock markets in Europe, Australia, Asia and the Far East designed to capture the growth-oriented companies.

MSCI EAFE Index - A capitalization-weighted index of stocks representing 22 developed countries in Europe, Australia, Asia, and the Far East.

MSCI EAFE Small Cap Index - A capitalization-weighted index of small cap stocks representing 23 developed country markets in Europe, Australia, Asia, and the Far East.

MSCI EAFE Value Index - A capitalization-weighted index of 21 stock markets in Europe, Australia, Asia and the Far East designed to capture the value-oriented companies.

MSCI Emerging Markets Index - A capitalization-weighted index of stocks representing 22 emerging country markets.

MSCI Emerging Markets Value Index - A capitalization-weighted index considered representative of value stocks across 46 stock markets in Europe, Australia, the Far East, the Middle East, Latin America and North America.

MSCI U.S. Broad Market Index - A capitalization-weighted stock index that aggregates the MSCI U.S. Large Cap 300, Mid Cap 450, Small Cap 1,750 and Micro Cap Indices. This index represents approximately 99.5% of the capitalization of the U.S. Equity market and includes approximately 3,562 companies.

MSCI U.S. REIT Index - A broad index that fairly represents the equity REIT opportunity set with proper investability screens to ensure that the index is investable and replicable. The index represents approximately 85% of the U.S. REIT universe.

MSCI World Index - A free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets, representing 24 developed market country indices.

NCREIF Property Index - A capitalization-weighted index of privately owned investment grade income-producing properties representing approximately \$269 billion in assets.

NFI ODCE Index - A capitalization weighted index comprised of open-end, Core funds investing in commercial real estate properties. The funds that constitute the index are subject to certain geographic and property type diversification requirements as well as leverage restrictions. The index reflects the impact of leverage on investment results. The returns shown in this report are net of management fees of the respective funds included in the index.

Rolling 3-year Constant Maturity Treasury Index - An index published by the Federal Reserve Board based on the monthly average yield of a range of Treasury securities, all adjusted to the equivalent of a three-year maturity.

Russell 1000 Growth Index - An index that measures the performance of those Russell 1000 companies with higher price-to-book ratios and higher I/B/E/S growth forecasts.

Russell 1000 Index - A capitalization-weighted index of the 1,000 largest publicly traded U.S. stocks by capitalization.

Benchmark Descriptions

Russell 1000 Value Index - An index that measures the performance of those stocks included in the Russell 1000 Index with lower price-to-book ratios and lower I/B/E/S earnings growth forecasts.

Russell 2000 Growth Index - A capitalization-weighted index of those stocks in the Russell 2000 Index with higher price-to-book ratios and higher I/B/E/S earnings growth forecasts.

Russell 2000 Index - A capitalization-weighted index of the smallest 2,000 stocks in the Russell 3000 Index. The index excludes the largest- and smallest-capitalization issues in the domestic stock market.

Russell 2000 Value Index - An index that measures the performance of those stocks included in the Russell 2000 Index with lower price-to-book ratios and lower I/B/E/S earnings growth forecasts.

Russell 2500 Growth Index - A capitalization-weighted index representing those companies within the Russell 2500 Index with higher price-to-book ratios and higher I/B/E/S earnings growth forecasts.

Russell 2500 Index - The Index is constructed by first identifying the 3,000 largest-capitalization U.S. stocks and ranking them by market capitalizations, choosing the bottom 2,500 names on the list.

Russell 2500 Value Index - An index that measures the performance of those stocks included in the Russell 2500 Index with lower price-to-book ratios and lower I/B/E/S earnings growth forecasts.

Russell 3000 Growth Index - A capitalization-weighted index consisting of those Russell 3000 Index stocks that have higher price-to-book ratios and higher I/B/E/S earnings growth forecasts.

Russell 3000 Index - A capitalization-weighted index consisting of the 3,000 largest publicly traded U.S. stocks by capitalization. This index is a broad measure of the performance of the aggregate domestic equity market.

Russell 3000 Value Index - A capitalization-weighted index consisting of those Russell 3000 Index stocks that have lower price-to-book ratios and lower I/B/E/S earnings growth forecasts.

Russell Mid Cap Growth Index - A capitalization-weighted index representing those stocks in the Russell MidCap Index with higher price-to-book ratios and higher I/B/E/S earnings growth forecasts.

Russell Mid Cap Index - A capitalization-weighted index of the 800 smallest stocks in the Russell 1000 Index. This index is a broad measure of mid-capitalization stocks.

Russell Mid Cap Value Index - A capitalization-weighted index consisting of those Russell MidCap Index stocks that have lower price-to-book ratios and lower I/B/E/S earnings growth forecasts.

S&P 500 Index - A capitalization-weighted index representing stocks chosen by Standard & Poor's, Inc. for their size, liquidity, stability and industry group representation. The companies in the S&P 500 Index are generally among the largest in their industries.

Benchmark Descriptions

S&P Completion Index -The S&P Completion Index is a sub-index of the S&P Total Market Index, including all stocks eligible for the S&P TMI and excluding all current constituents of the S&P 500. The index covers approximately 4,000 constituents, offering investors broad exposure to mid, small, and micro cap companies.

S&P Leverage Loan Index - A daily total return index that uses LSTA/LPC Mark-to-Market Pricing to calculate market value change.

S&P MidCap 400 Index - A market-capitalization-weighted index of stocks in all major industries in the mid-range of the U.S. stock market.

Wilshire REIT - A measure of the types of U.S. real estate securities that represent the ownership and operation of commercial or residential real estate. To be included in the index, a company must have a market capitalization of \$200 M and have at least 75% of the total revenue derived from the ownership and operation of the real estate assets.

- Indices cannot be invested in directly. Unmanaged index returns assume reinvestment of any and all distributions and do not reflect our fees or expenses.
- Past performance is no guarantee of future results.
- Please feel free to contact us at retirement@aon.com for more index information.

Thought Leadership Highlights

White Papers

All Investors: Avoiding Behavior Traps in Investing	Link
All Investors ex-DC: Rebalancing: Ignore the Crowd...Follow Your Policy	Link
All Investors ex-DC: When Opportunity Knocks Again: Ideas for Incorporating Opportunistic Flexibility Into Asset Allocation	Link
All Investors ex-DC: Update from Hedge Fund Land	Link
Retirement Plans: Legal and Compliance Quarterly Update	Link
Retirement Plans: The Real Deal - Impact of Investment on Retirement Income Adequacy	Link
Retirement Plans: Six Key Themes of the SECURE Act and Other Retirement Plan Provisions	Link
Private DB: Global Pension Risk Survey 2019	Link
Private DB: 2020 U.S Pension Risk Transfer Annuity Settlement Market Update	Link
Private DB: Retiree Lump Sum Windows: Analytics, Elections and Adverse Selections in Defined Benefit Pension Plans	Link
Private DB: Case Study: Integrated Pension Management Simplifies Plan Management and Enhances Outcomes	Link
DC: 6 Benefits of an OCIO for a DC Plan	Link
DC: Could Partial OCIO Delegation Improve Your DC Plan Participant Outcomes?	Link
DC: 2020 Defined Contribution Employer Survey	Link
Non-Profit: 2020's Key Themes for Non-Profit Organizations	Link

Current Topics of Interest and Events

Aon's COVID-19 Response Site	Link
Investment Weekly Market Update	Link
5-minute Recording on Investment Ideas for Corporate Defined Benefit Plans – Use Access Code 'aon2020'	Link
Webinar: How do you Create DC Plans of the Future	Replay
Webinar: Investment Implications for Qualified Defined Benefit Plans	Replay
Webinar: Q2 Investment Market Update – Opportunities in Today's Challenging Environment	5-minute Summary Use Access Code 'aon2020' Full Replay

Thought Leadership Hub

<https://retirement-investment-insights.aon.com/>

Notes

- The rates of return contained in this report are shown on an after-fees basis unless otherwise noted. They are geometric and time-weighted. Returns for periods longer than one year are annualized.
- Universe percentiles are based upon an ordering system in which 1 is the best ranking and 100 is the worst ranking.
- Due to rounding throughout the report, percentage totals displayed may not sum to 100%. Additionally, individual fund totals in dollar terms may not sum to the plan total.

Disclaimer

Past performance is not necessarily indicative of future results.

Unless otherwise noted, performance returns presented reflect the respective fund's performance as indicated. Returns may be presented on a before-fees basis (gross) or after-fees basis (net). After-fee performance is net of each respective sub-advisors' investment management fees and include the reinvestment of dividends and interest as indicated on the notes page within this report or on the asset allocation and performance summary pages. Actual returns may be reduced by Aon Investments' investment advisory fees or other trust payable expenses you may incur as a client. Aon Investments' advisory fees are described in Form ADV Part 2A. Portfolio performance, characteristics and volatility also may differ from the benchmark(s) shown.

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Refer to Hedge Fund Research, Inc. www.hedgefundresearch.com for information on HFR indices.

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Aon Investments USA Inc.
200 East Randolph Street
Suite 700
Chicago, IL 60601
ATTN: Aon Investments Compliance Officer



Arkansas Teacher Retirement System | April 30, 2020

Monthly Investment Review

All information presented in this report should be considered preliminary.

Finalized data will be available on the next Quarterly Investment Report after the close of the quarter.

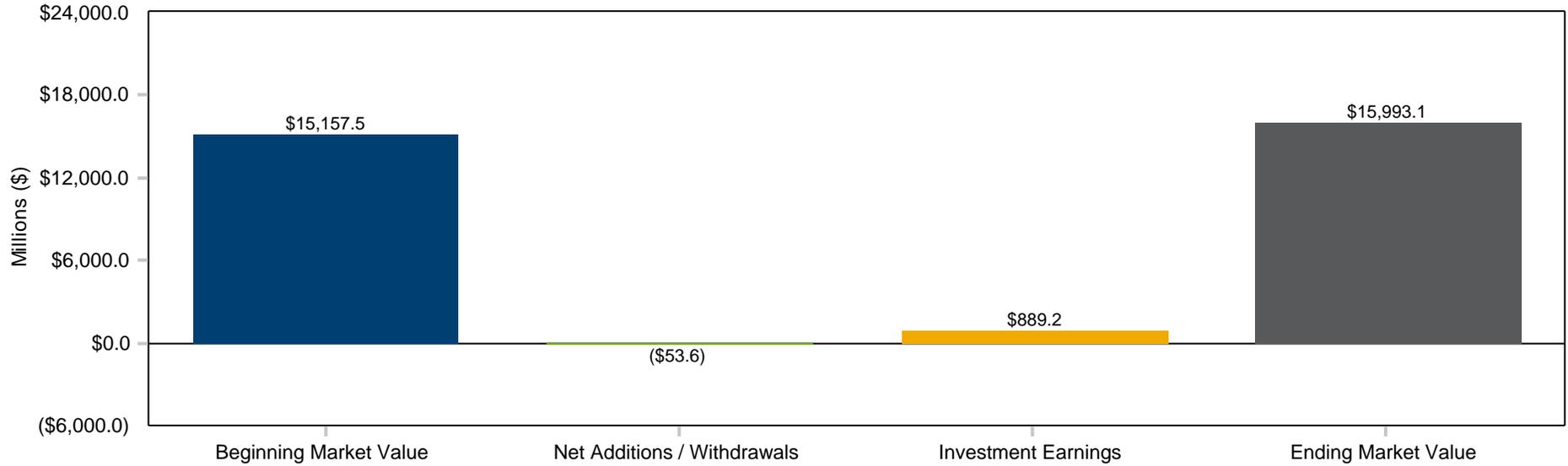
As of April 30, 2020

Market Environment

	Performance(%)						
	1 Month	Year To Date	Fiscal YTD	1 Year	3 Years	5 Years	10 Years
Dow Jones U.S. Total Stock Market Index	13.3	-10.5	-1.3	-1.2	7.9	8.3	11.3
S&P 500 Index	12.8	-9.3	0.6	0.9	9.0	9.1	11.7
Russell 1000 Index	13.2	-9.7	-0.1	0.1	8.7	8.7	11.6
Russell 1000 Value Index	11.2	-18.5	-11.3	-11.0	1.4	3.9	8.5
Russell 1000 Growth Index	14.8	-1.4	10.7	10.8	15.7	13.3	14.4
Russell 2000 Index	13.7	-21.1	-15.3	-16.4	-0.8	2.9	7.7
Russell 2000 Value Index	12.3	-27.7	-22.0	-23.8	-6.1	0.3	5.3
Russell 2000 Growth Index	14.9	-14.7	-9.0	-9.2	4.2	5.2	10.0
MSCI AC World IMI (Net)	11.0	-13.9	-6.3	-6.2	3.8	4.0	6.8
MSCI AC World ex USA IMI (Net)	8.1	-17.9	-11.9	-11.8	-0.5	-0.1	3.0
MSCI EAFE Index (Net)	6.5	-17.8	-12.1	-11.3	-0.6	-0.2	3.5
MSCI Emerging Markets Index (Net)	9.2	-16.6	-10.7	-12.0	0.6	-0.1	1.4
Blmbg. Barc. U.S. Universal Index	2.0	3.3	6.0	9.1	4.8	3.8	4.1
Blmbg. Barc. U.S. Aggregate	1.8	5.0	7.6	10.8	5.2	3.8	4.0
Blmbg. Barc. U.S. Government	0.6	8.8	10.5	14.1	5.8	3.9	3.7
Blmbg. Barc. Credit Bond Index	4.6	1.3	5.4	9.4	5.4	4.3	5.0
Blmbg. Barc. U.S. Mortgage Backed Securities	0.6	3.5	5.6	7.8	4.0	3.1	3.3
Blmbg. Barc. U.S. Corp: High Yield	4.5	-8.8	-5.1	-4.1	1.9	3.4	5.9
Citigroup 90-Day T-Bill	0.1	0.5	1.5	1.9	1.8	1.1	0.6

Total Plan Asset Summary

**Change in Market Value
From April 1, 2020 to April 30, 2020**



Summary of Cash Flow

Total Fund	1 Month	Fiscal YTD	1 Year
Beginning Market Value	15,157,496,576	17,586,476,970	17,427,732,453
+ Additions / Withdrawals	-53,636,814	-639,672,626	-531,916,829
+ Investment Earnings	889,222,543	-953,722,038	-902,733,318
= Ending Market Value	15,993,082,306	15,993,082,306	15,993,082,306

As of April 30, 2020

Asset Allocation & Performance

	Allocation			Performance(%)								
	Market Value (\$)	%	Policy(%)	1 Month	Year To Date	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Total Fund	15,993,082,306	100.0	100.0	5.9	-11.6	-5.8	-5.5	4.0	5.1	7.5	8.1	04/01/1986
Performance Benchmark				6.6	-5.8	0.4	1.6	6.1	6.2	8.3	8.4	
Total Equity	7,875,034,428	49.2	52.4	11.7	-21.8	-14.7	-14.9	1.0	3.1	7.2	3.3	07/01/2015
Total Equity Performance Benchmark				11.7	-12.9	-4.8	-4.7	5.0	5.5	8.6	6.0	
Fixed Income	2,402,446,003	15.0	15.0	2.5	1.8	4.1	6.4	4.1	3.9	4.4	5.4	07/01/1992
Performance Benchmark				2.0	3.3	6.0	9.1	4.8	3.8	4.1	5.7	
Opportunistic/Alternatives	873,445,425	5.5	6.1	0.1	-7.8	-6.5	-5.9	-2.2	-0.3		2.5	05/01/2011
Custom Alternatives Benchmark				2.0	-5.3	-3.5	-3.2	0.6	-0.2		1.2	
Real Assets	2,181,967,476	13.6	14.5									
Real Estate	1,349,877,435	8.4										
Timber	301,993,785	1.9										
Agriculture	203,260,655	1.3										
Infrastructure	326,835,602	2.0										
Private Equity	2,467,766,501	15.4	12.0									
Cash	192,422,471	1.2	0.0									

***Preliminary Results**

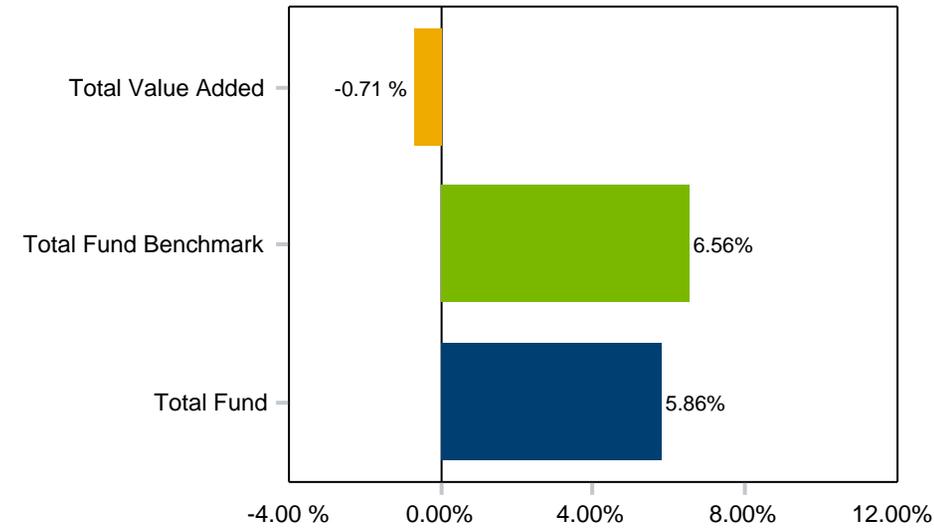
*Policy % is the interim target used for benchmarking purposes. See page 17 for long-term targets. Beginning July 1, 2013, an updated Investment Policy was adopted which includes the new Real Assets category, which includes Real Estate, Timber, Agriculture and Infrastructure.

*Real Assets and Private Equity are valued on a quarterly basis and reported on a quarter lag. Market values have been adjusted for the current month's cash flows. Updated results for these portfolios are not yet available and will be included in the quarterly performance report.

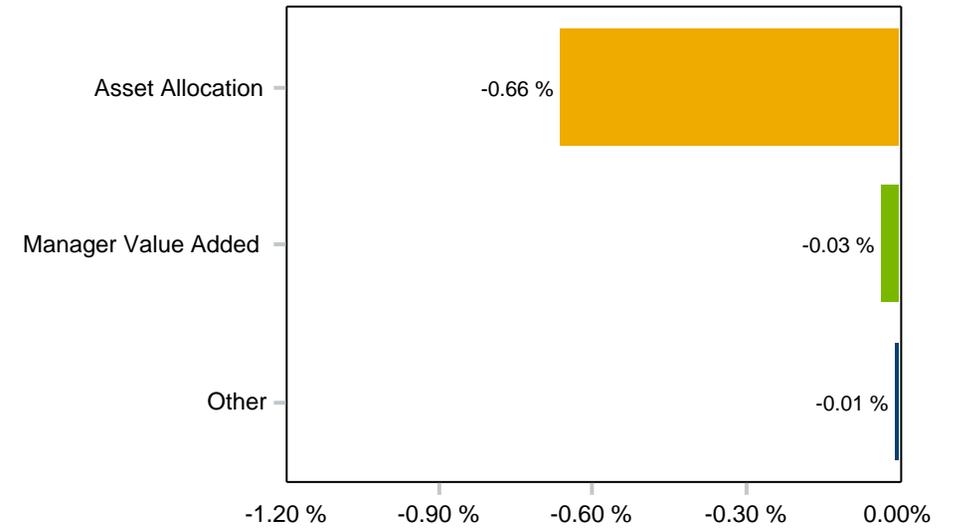
*The inception of the Total Equity asset class was July 1, 2015. Performance prior to July 2015 represents the weighted average of the U.S. Equity and Global Equity asset class monthly returns. For historical performance of the U.S. Equity and Global Equity asset classes please see page 21 of this report.

Total Fund Attribution

Total Fund Performance

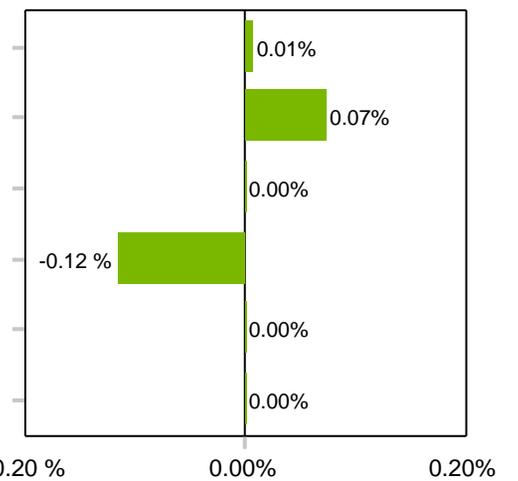
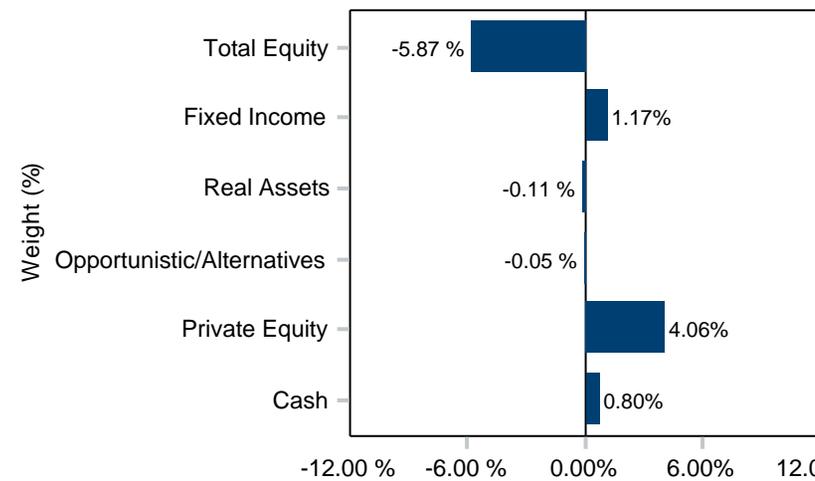


Total Value Added: -0.71 %



Total Asset Allocation: -0.66 %

Total Manager Value Added: -0.03 %



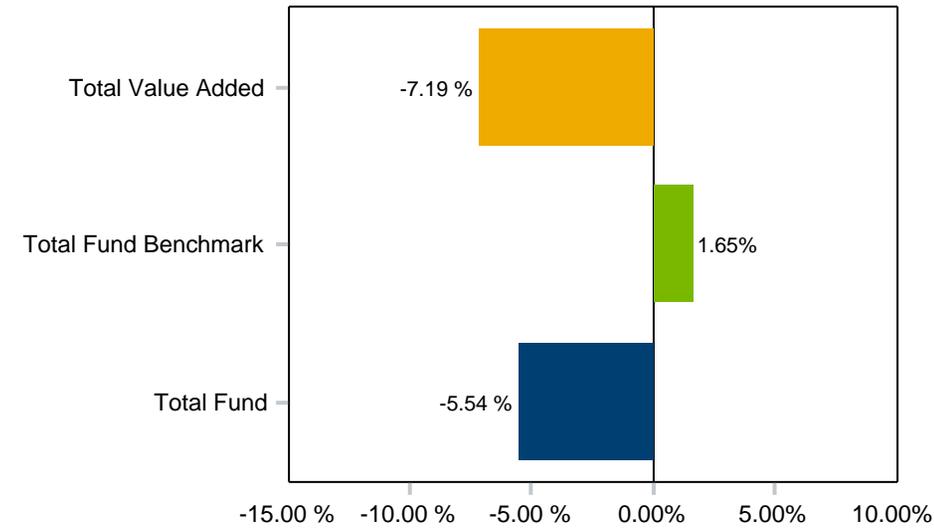
Average Active Weight

Asset Allocation Value Added

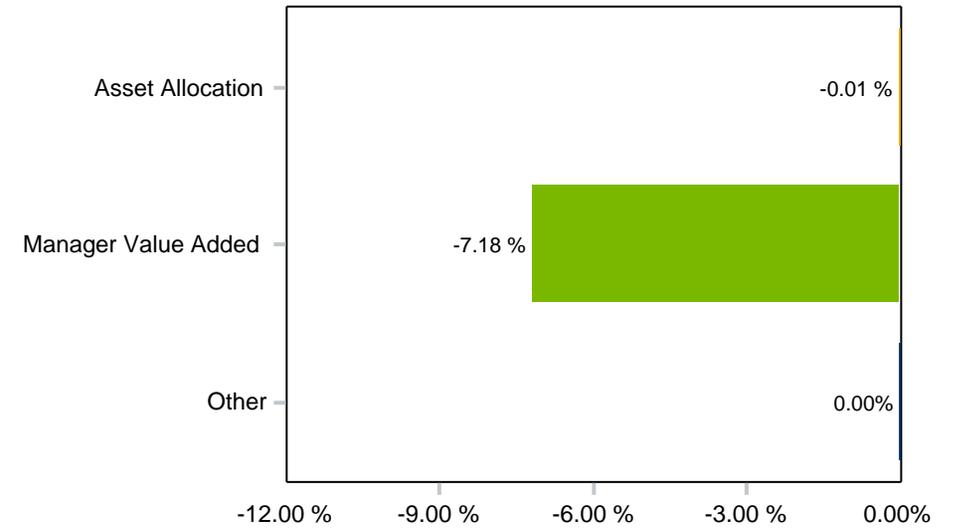
Manager Value Added

Total Fund Attribution

Total Fund Performance

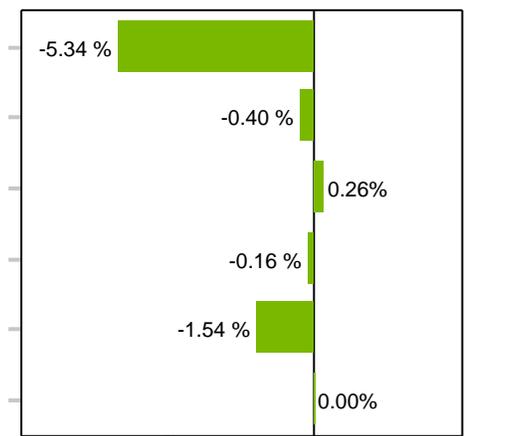
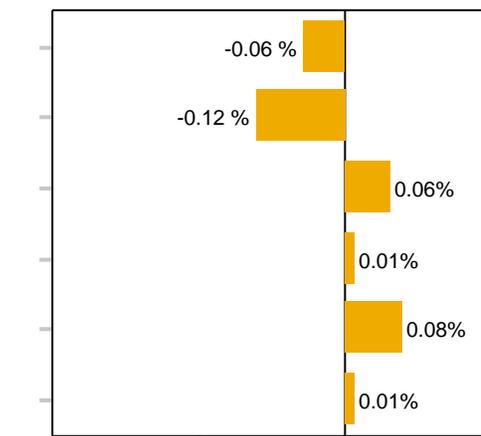
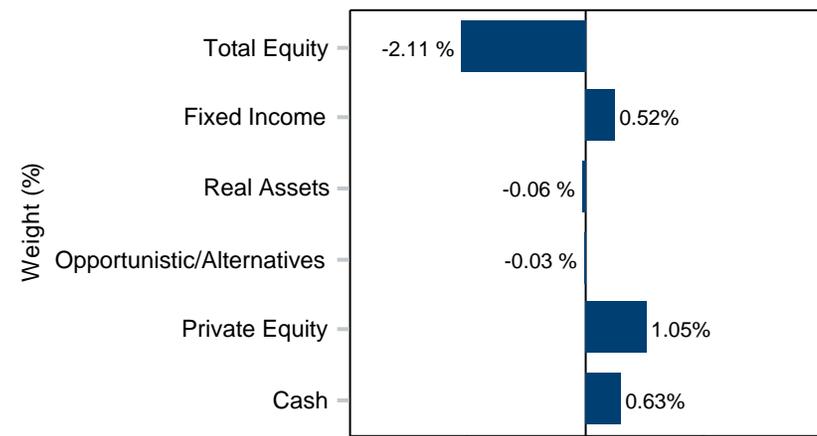


Total Value Added:-7.19 %



Total Asset Allocation:-0.01 %

Total Manager Value Added:-7.18 %



Average Active Weight

Asset Allocation Value Added

Manager Value Added

As of April 30, 2020

Asset Allocation & Performance

	Allocation		Performance(%)							
	Market Value (\$)	%	1 Month	Year To Date	Fiscal YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
Total Equity	7,875,034,428	100.0	11.7	-21.8	-14.7	-14.9	1.0	3.1	3.3	07/01/2015
Total Equity Performance Benchmark			11.7	-12.9	-4.8	-4.7	5.0	5.5	6.0	
Jacobs Levy 130/30	589,049,972	7.5	12.5	-13.6	-4.9	-6.8	6.8	10.6	8.9	01/01/2008
Russell 3000 Index			13.2	-10.4	-1.1	-1.0	8.0	8.3	7.8	
Allianz Structured Alpha U.S. 250	112,469,475	1.4	12.1	-43.2	-36.2	-35.9	-5.7	0.8	11.9	05/01/2009
S&P 500 Index			12.8	-9.3	0.6	0.9	9.0	9.1	13.9	
Allianz Structured Alpha Global 500	223,902,297	2.8	8.6	-75.9	-73.1	-73.0	-30.6		-16.1	10/01/2015
MSCI AC World IMI (Net)			11.0	-13.9	-6.3	-6.2	3.8		7.3	
Allianz Structured Alpha Global 350	214,061,445	2.7	9.3	-56.3	-51.6	-51.4	-15.8		-11.1	12/01/2016
MSCI AC World IMI (Net)			11.0	-13.9	-6.3	-6.2	3.8		6.5	
Kennedy Capital Management	416,090,111	5.3	11.6	-27.9	-22.0	-23.5	-6.8	-0.7	10.7	01/01/1994
Russell 2000 Value Index			12.3	-27.7	-22.0	-23.8	-6.1	0.3	8.2	
Stephens	400,411,202	5.1	17.3	-7.4	-7.4	-6.7	10.0	7.8	9.0	08/01/2006
Russell 2000 Growth Index			14.9	-14.7	-9.0	-9.2	4.2	5.2	8.0	
Voya Absolute Return	500,167,392	6.4	12.1	-15.9	-8.3	-8.2	2.5	4.9	8.8	10/01/2008
Performance Benchmark Voya Absolute Return			10.7	-12.9	-5.2	-5.0	4.5	5.8	9.1	
Allianz (Nicholas Applegate)	630,944,260	8.0	11.0	-2.0	5.6	8.6	12.1	8.8	9.8	12/01/1998
Performance Benchmark			11.1	-4.0	3.2	4.4	8.1	6.7	7.5	
Pershing Square International	71,934,417	0.9	9.5	12.4	18.9	22.7	15.7	2.3	10.2	07/01/2008
Dow Jones U.S. Total Stock Market Index			13.3	-10.5	-1.3	-1.2	7.9	8.3	9.3	
Pershing Square Holdings	148,534,734	1.9	14.4	9.2	20.3	20.8	10.9	-4.2	3.1	01/01/2013
Dow Jones U.S. Total Stock Market Index			13.3	-10.5	-1.3	-1.2	7.9	8.3	11.9	
SSgA Global Index	834,476,994	10.6	11.0	-13.7	-6.0	-5.8	4.1	4.4	5.1	04/01/2008
MSCI AC World IMI (Net)			11.0	-13.9	-6.3	-6.2	3.8	4.0	4.8	
BlackRock MSCI ACWI IMI Fund	299,324,647	3.8	11.0	-13.8	-6.0	-5.9	4.0	4.3	6.4	07/01/2011
MSCI AC World IMI (Net)			11.0	-13.9	-6.3	-6.2	3.8	4.0	6.1	

2020

Preliminary Results

The inception of the Total Equity asset class was July 1, 2015. Performance prior to July 2015 represents the weighted average of the U.S. Equity and Global Equity asset class monthly returns. For historical performance of the U.S. Equity and Global Equity asset classes please see page 21 of this report.

As of April 30, 2020

Asset Allocation & Performance

	Allocation		Performance(%)							
	Market Value (\$)	%	1 Month	Year To Date	Fiscal YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
Wellington Global Perspectives	437,345,295	5.6	12.5	-23.4	-18.0	-18.9	-1.9	1.2	10.6	07/01/2009
Performance Benchmark			13.5	-20.8	-14.1	-15.1	-1.1	1.7	8.7	
T. Rowe Price Global Equity	960,394,932	12.2	13.3	-3.9	6.8	6.2	13.5	12.2	12.6	08/01/2009
MSCI AC World Index (Net)			10.7	-12.9	-5.2	-5.0	4.5	4.4	8.0	
MSCI AC World Index Growth (Net)			12.4	-5.3	4.7	5.6	10.3	8.1	10.4	
Lazard	516,999,247	6.6	11.4	-14.6	-7.9	-8.7	2.8	2.9	7.3	08/01/2009
MSCI AC World Index (Net)			10.7	-12.9	-5.2	-5.0	4.5	4.4	8.0	
D.E. Shaw	650,406,080	8.3	11.3	-13.2	-5.7	-6.7	4.8	5.6	9.5	09/01/2009
MSCI World Index (Net)			10.9	-12.4	-4.4	-4.0	5.0	4.9	8.3	
GMO Global All Country Equity	375,730,422	4.8	9.5	-17.0	-8.6	-8.6	1.4	1.8	1.3	07/01/2014
MSCI AC World Index (Net)			10.7	-12.9	-5.2	-5.0	4.5	4.4	4.3	
MSCI AC World Index Value (Net)			8.7	-20.7	-15.0	-15.3	-1.5	0.5	0.4	
Harris Global Equity	373,319,041	4.7	11.1	-23.8	-15.6	-17.2	-3.7	0.4	1.0	06/01/2014
MSCI World Index (Net)			10.9	-12.4	-4.4	-4.0	5.0	4.9	5.1	
MSCI World Value (Net)			8.8	-20.6	-14.3	-14.7	-1.2	0.9	1.1	
Triam Partners	63,703,148	0.8	12.9	-12.6	-4.7	-3.5	3.7		5.5	11/01/2015
S&P 500 Index			12.8	-9.3	0.6	0.9	9.0		10.0	
Triam Co-Investments	55,699,348	0.7	0.0	-26.8	-14.5	-13.1	-3.0		-2.5	01/01/2017
S&P 500 Index			12.8	-9.3	0.6	0.9	9.0		10.4	

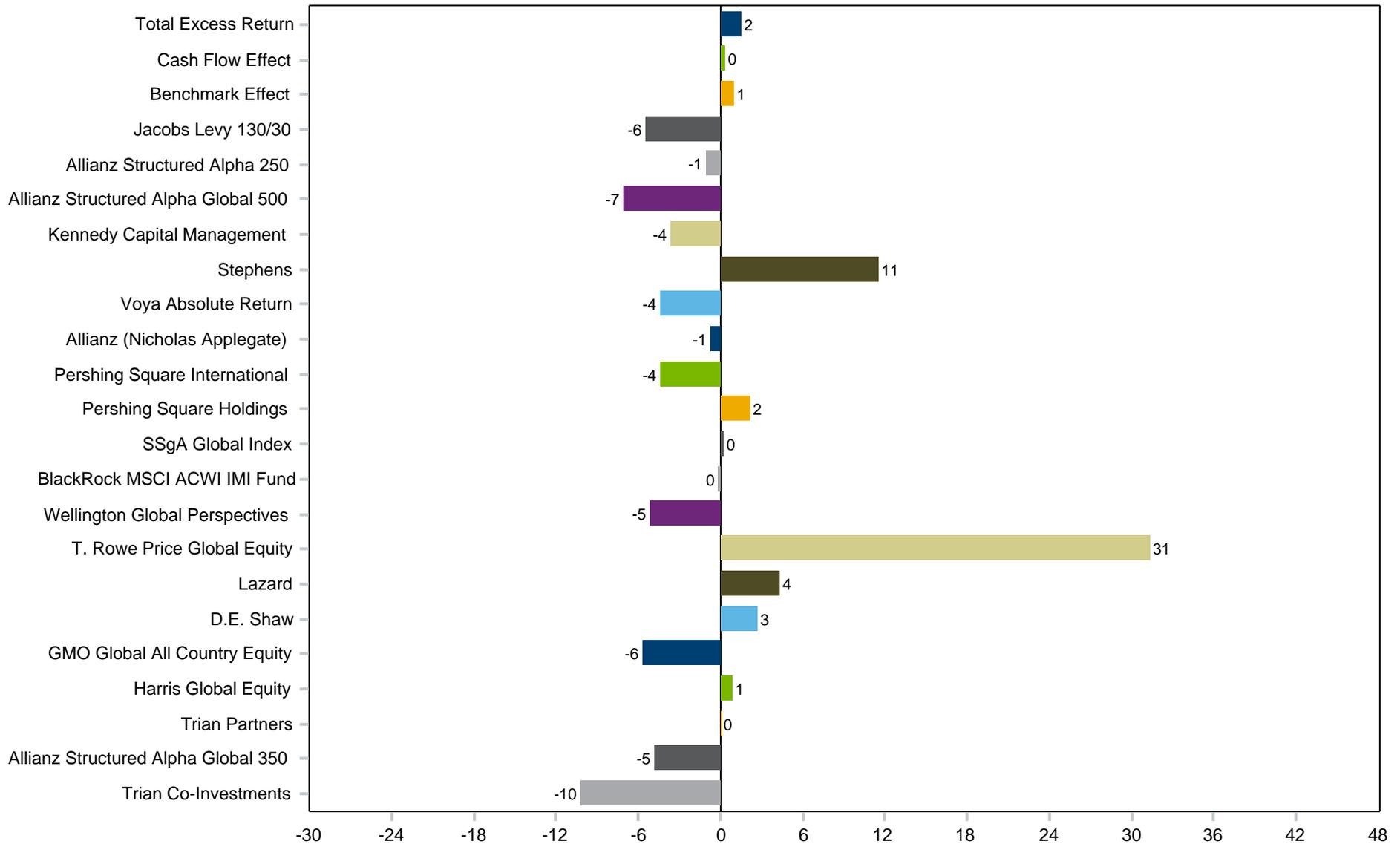
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Preliminary Results

The inception of the Total Equity asset class was July 1, 2015. Performance prior to July 2015 represents the weighted average of the U.S. Equity and Global Equity asset class monthly returns. For historical performance of the U.S. Equity and Global Equity asset classes please see page 21 of this report.

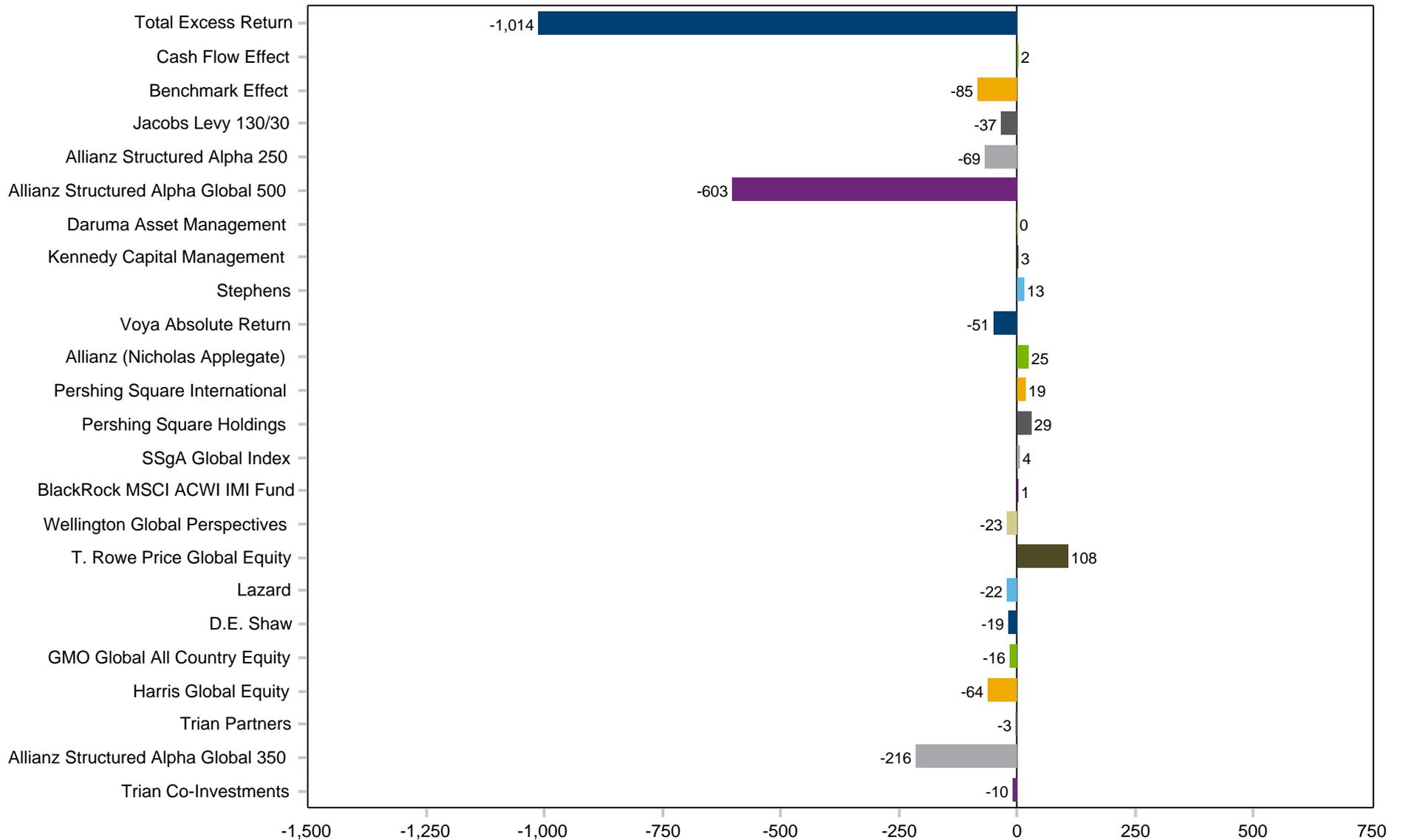
Asset Class Attribution

1 Month



Asset Class Attribution

1 Year



As of April 30, 2020

Asset Allocation & Performance

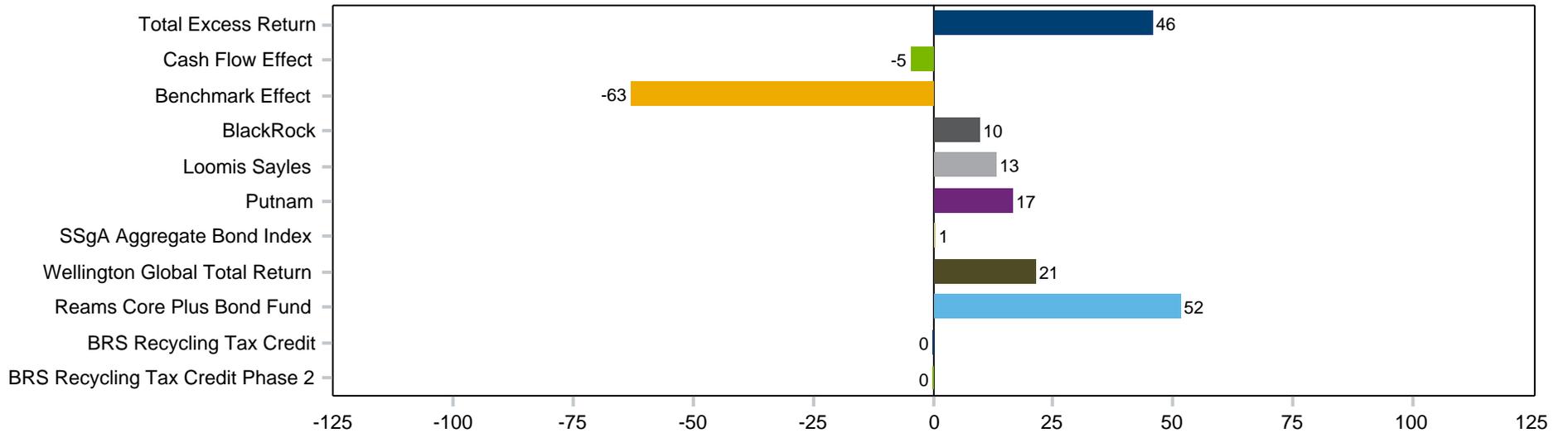
	Allocation		Performance(%)							
	Market Value (\$)	%	1 Month	Year To Date	Fiscal YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
Fixed Income	2,402,446,003	100.0	2.5	1.8	4.1	6.4	4.1	3.9	5.4	07/01/1992
Performance Benchmark			2.0	3.3	6.0	9.1	4.8	3.8	5.7	
BlackRock	372,499,070	15.5	2.6	4.3	6.8	9.9	5.0	3.9	4.8	10/01/2003
Performance Benchmark			2.0	3.3	6.0	9.1	4.8	3.8	4.5	
Loomis Sayles	435,713,678	18.1	3.8	-0.1	2.6	4.9	4.4	4.0	7.9	09/01/2008
Performance Benchmark			3.0	0.5	3.7	6.4	4.4	3.9	5.7	
Putnam	360,950,000	15.0	1.5	-5.4	-2.1	-1.1	2.1	1.8	2.7	08/01/2008
LIBOR			0.3	0.8	2.0	2.5	2.1	1.5	1.0	
SSgA Aggregate Bond Index	242,301,734	10.1	1.8	4.9	7.5	10.8	5.2	3.8	3.9	06/01/2010
Blmbg. Barc. U.S. Aggregate			1.8	5.0	7.6	10.8	5.2	3.8	3.9	
Wellington Global Total Return	348,339,375	14.5	1.5	1.4	2.4	3.3	4.4	2.7	2.3	06/01/2014
ICE BofAML 3 Month U.S. T-Bill			0.0	0.6	1.6	2.1	1.8	1.2	1.0	
Reams Core Plus Bond Fund	373,610,539	15.6	5.1	8.6	11.0	14.8	6.6	4.9	4.5	06/01/2014
Blmbg. Barc. U.S. Aggregate			1.8	5.0	7.6	10.8	5.2	3.8	3.8	
BRS Recycling Tax Credit	192,000,000	8.0								
BRS Recycling Tax Credit Phase 2	77,031,608	3.2								

*Preliminary Results

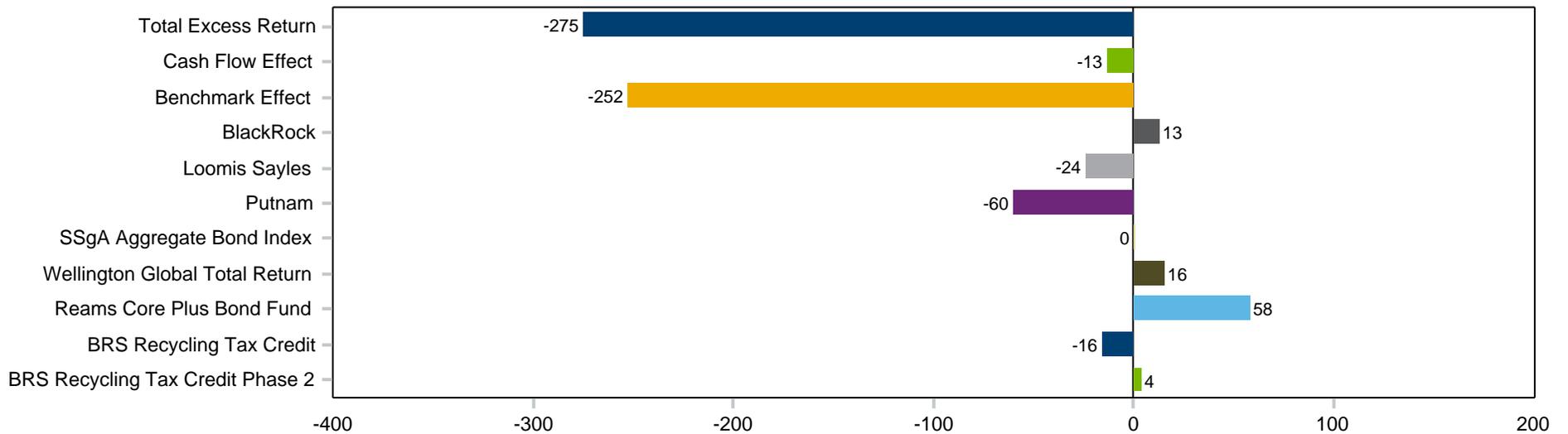
*The BRS Recycling Tax Credit represents an annual income stream of \$16 million dollars over the next 14 years, which ATRS purchased for approximately \$162 million. The value shown above represents the year-end market value in accordance with GASB Statement 72, representing the 14 years of annual income, and has been incorporated into Total Fixed Income and Total Fund performance.

Asset Class Attribution

1 Month



1 Year



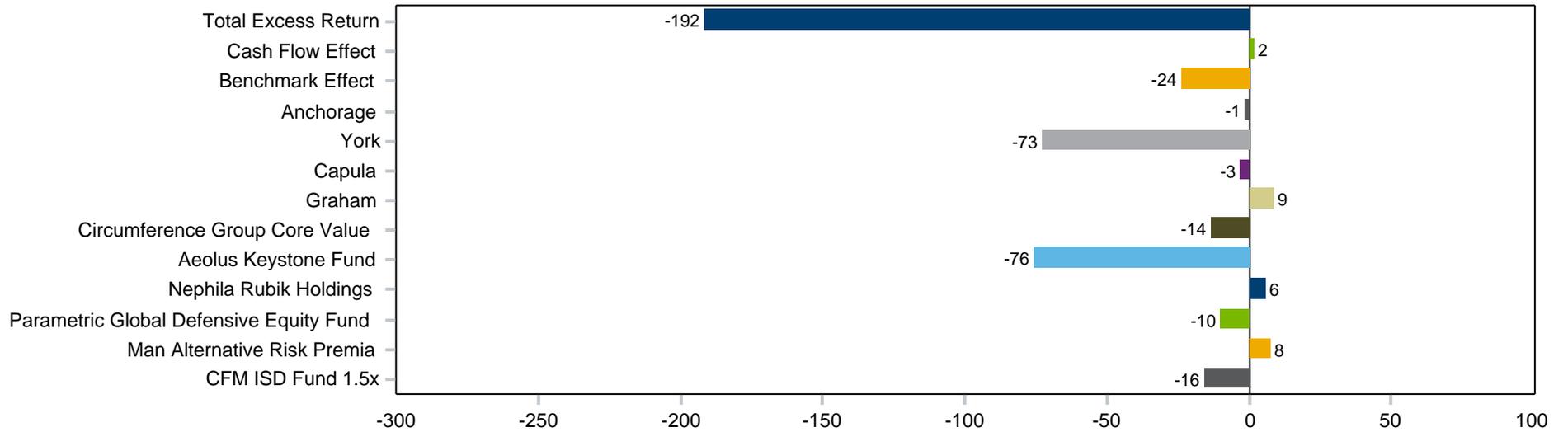
As of April 30, 2020

Asset Allocation & Performance

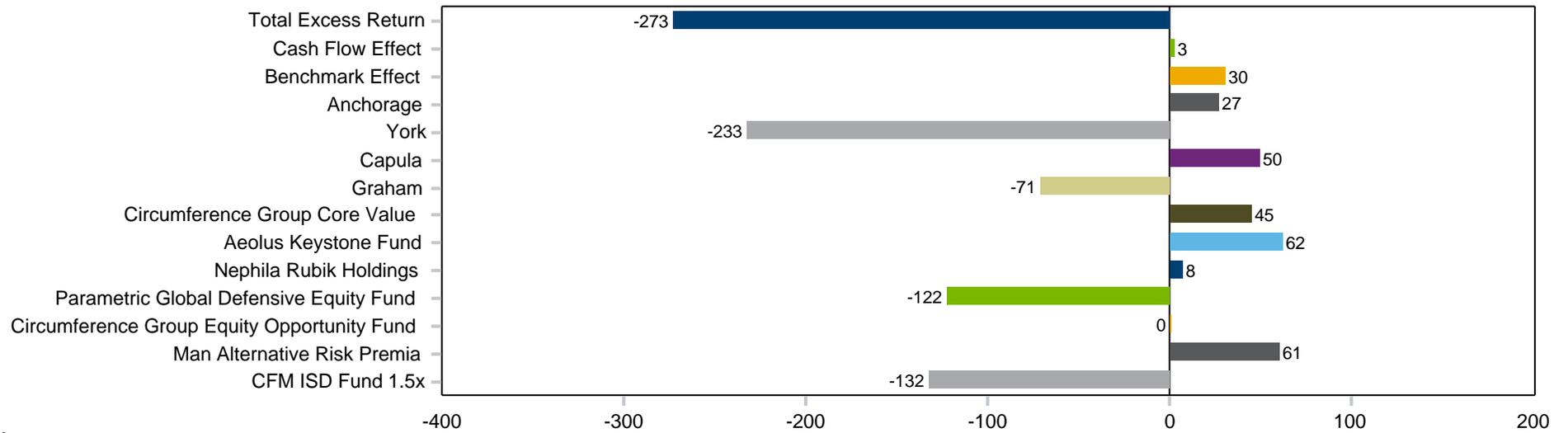
	Allocation		Performance(%)							
	Market Value (\$)	%	1 Month	Year To Date	Fiscal YTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
Opportunistic/Alternatives	873,445,425	100.0	0.1	-7.8	-6.5	-5.9	-2.2	-0.3	2.5	05/01/2011
Custom Alternatives Benchmark			2.0	-5.3	-3.5	-3.2	0.6	-0.2	1.2	
Anchorage	71,143,788	8.1	4.2	-4.5	-8.1	-7.8	-0.8	0.3	4.1	05/01/2011
Credit Suisse Event Driven			4.3	-12.2	-11.6	-11.1	-2.1	-1.8	0.6	
HFRI ED: Distressed/Restructuring Index			3.4	-8.8	-10.5	-10.2	-1.8	0.4	2.0	
York	30,900,174	3.5	-13.5	-34.7	-44.5	-45.2	-16.0	-10.4	-3.0	05/01/2011
Credit Suisse Event Driven			4.3	-12.2	-11.6	-11.1	-2.1	-1.8	0.6	
HFRI ED: Distressed/Restructuring Index			3.4	-8.8	-10.5	-10.2	-1.8	0.4	2.0	
Capula	87,959,593	10.1	0.9	3.9	8.5	9.4	6.2	6.7	6.4	05/01/2011
HFRI Macro (Total) Index			1.3	-0.1	1.4	2.9	1.4	0.4	0.3	
Graham	54,205,919	6.2	2.8	-13.9	-10.3	-8.8	-2.1	-1.7	0.7	05/01/2011
HFRI Macro (Total) Index			1.3	-0.1	1.4	2.9	1.4	0.4	0.3	
Circumference Group Core Value	29,454,835	3.4	9.1	2.5	3.9	0.8	8.4		8.2	08/01/2015
Russell 2000 Index			13.7	-21.1	-15.3	-16.4	-0.8		2.6	
Aeolus Keystone Fund	232,498,881	26.6	-2.4	-1.3	3.9	4.5	-6.9		-1.7	12/01/2015
FTSE 3 Month T-Bill			0.1	0.5	1.5	1.9	1.8		1.3	
Eurekahedge ILS Advisers Index			0.2	0.5	2.6	1.7	-3.1		-0.7	
Nephila Rubik Holdings	44,940,625	5.1	1.3	1.2	2.3	3.8	-4.1		-2.7	06/01/2016
FTSE 3 Month T-Bill			0.1	0.5	1.5	1.9	1.8		1.4	
Eurekahedge ILS Advisers Index			0.2	0.5	2.6	1.7	-3.1		-1.2	
Parametric Global Defensive Equity Fund	152,133,384	17.4	4.8	-12.9	-8.2	-8.4			0.5	06/01/2017
Performance Benchmark			5.4	-6.0	-1.4	-1.0			3.1	
MSCI AC World Index			10.8	-12.8	-4.8	-4.4			4.4	
Man Alternative Risk Premia	93,294,949	10.7	-0.5	-5.4	-5.7	-3.7			-3.2	06/01/2018
SG Multi Alternative Risk Premia Index			-1.3	-9.8	-8.8	-9.7			-4.8	
CFM ISD Fund 1.5x	76,913,277	8.8	-3.1	-22.1	-24.1	-22.4			-12.6	07/01/2018
SG Multi Alternative Risk Premia Index			-1.3	-9.8	-8.8	-9.7			-4.7	

Asset Class Attribution

1 Month



1 Year



Asset Allocation as of 4/30/2020	Values in \$1,000								
	Total Equity	U.S. Bond	Real Estate	Private Equity	Cash	Total	Percent of Total	Interim Policy	Long-Term Target
Jacobs Levy 130/30	\$589,050.0	--	--	--	--	\$589,050.0	3.68%		
Allianz Structured Alpha U.S. 250	\$112,469.5	--	--	--	--	\$112,469.5	0.70%		
Allianz Structured Alpha Global 500	\$223,902.3	--	--	--	--	\$223,902.3	1.40%		
Allianz Structured Alpha Global 350	\$214,061.4	--	--	--	--	\$214,061.4	1.34%		
Kennedy Capital Management	\$416,090.1	--	--	--	--	\$416,090.1	2.60%		
Stephens	\$400,411.2	--	--	--	--	\$400,411.2	2.50%		
Voya Absolute Return	\$500,167.4	--	--	--	--	\$500,167.4	3.13%		
Allianz (Nicholas Applegate)	\$630,944.3	--	--	--	--	\$630,944.3	3.95%		
Pershing Square International	\$71,934.4	--	--	--	--	\$71,934.4	0.45%		
Pershing Square Holdings	\$148,534.7	--	--	--	--	\$148,534.7	0.93%		
SSgA Global Index	\$834,477.0	--	--	--	--	\$834,477.0	5.22%		
BlackRock MSCI ACWI IMI Fund	\$299,324.6	--	--	--	--	\$299,324.6	1.87%		
Wellington Global Perspectives	\$437,345.3	--	--	--	--	\$437,345.3	2.73%		
T. Rowe Price Global Equity	\$960,394.9	--	--	--	--	\$960,394.9	6.01%		
Lazard	\$516,999.2	--	--	--	--	\$516,999.2	3.23%		
D.E. Shaw	\$650,406.1	--	--	--	--	\$650,406.1	4.07%		
GMO Global All Country Equity	\$375,730.4	--	--	--	--	\$375,730.4	2.35%		
Harris Global Equity	\$373,319.0	--	--	--	--	\$373,319.0	2.33%		
Triam Partners	\$63,703.1	--	--	--	--	\$63,703.1	0.40%		
Triam Partners Co-Investments	\$55,699.3	--	--	--	--	\$55,699.3	0.35%		
Capital Guardian & Knight Vinke	\$70.0	--	--	--	--	\$70.0	0.00%		
Total Equity						\$7,875,034.4	49.24%	52.40%	53.00%
BlackRock	--	\$372,499.1	--	--	--	\$372,499.1	2.33%		
Loomis Sayles	--	\$435,713.7	--	--	--	\$435,713.7	2.72%		
Putnam	--	\$360,950.0	--	--	--	\$360,950.0	2.26%		
SSgA Aggregate Bond Index	--	\$242,301.7	--	--	--	\$242,301.7	1.52%		
Wellington Global Total Return	--	\$348,339.4	--	--	--	\$348,339.4	2.18%		
Reams Core Plus Bond Fund	--	\$373,610.5	--	--	--	\$373,610.5	2.34%		
BRS Recycling Tax Credit	--	\$192,000.0	--	--	--	\$192,000.0	1.20%		
BRS Recycling Tax Credit Phase 2	--	\$77,031.6	--	--	--	\$77,031.6	0.48%		
Total Fixed Income						\$2,402,446.0	15.02%	15.00%	15.00%
Anchorage	--	--	--	\$71,143.8	--	\$71,143.8	0.44%		
Capula	--	--	--	\$87,959.6	--	\$87,959.6	0.55%		
Graham	--	--	--	\$54,205.9	--	\$54,205.9	0.34%		
York	--	--	--	\$30,900.2	--	\$30,900.2	0.19%		
Circumference Group Core Value	--	--	--	\$29,454.8	--	\$29,454.8	0.18%		
Aeolus Keystone Fund	--	--	--	\$232,498.9	--	\$232,498.9	1.45%		
Nephila Rubik Holdings	--	--	--	\$44,940.6	--	\$44,940.6	0.28%		
Parametric Global Defensive Equity	--	--	--	\$152,133.4	--	\$152,133.4	0.95%		
Man Alternative Risk Premia	--	--	--	\$93,294.9	--	\$93,294.9	0.58%		
CFM ISD Fund 1.5x	--	--	--	\$76,913.3	--	\$76,913.3	0.48%		
Total Opportunistic/Alternatives						\$873,445.4	5.46%	6.09%	5.00%
Real Estate			\$1,349,877.4			\$1,349,877.4	8.44%		
Timber			\$301,993.8			\$301,993.8	1.89%		
Agriculture			\$203,260.7			\$203,260.7	1.27%		
Infrastructure			\$326,835.6			\$326,835.6	2.04%		
Total Real Assets						\$2,181,967.5	13.64%	14.51%	15.00%
Total Private Equity				\$2,467,766.5		\$2,467,766.5	15.43%	12.00%	12.00%
Total Cash					\$192,422.5	\$192,422.5	1.20%	0.00%	0.00%
Total Fund	\$7,875,034.4	\$2,402,446.0	\$2,181,967.5	\$3,341,211.9	\$192,422.5	\$15,993,082.3	100.00%	100.00%	100.00%

*Note: The market values for the Real Assets and Private Equity investments shown above are lagged one quarter and adjusted for the current quarter's cash flows. Market values and allocation percentages may not add to the sum total due to rounding.

Asset Allocation as of 4/30/2020				Values in \$1,000			
	Real Estate	Percent of Real Estate	Percent of Total Fund		Real Estate	Percent of Real Estate	Percent of Total Fund
Almanac Realty Securities Fund V	\$134.6	0.01%	0.00%	LaSalle Income & Growth Fund VII	\$14,467.8	1.07%	0.09%
Almanac Realty Securities Fund VI	\$5,330.0	0.39%	0.03%	LaSalle Income & Growth Fund VIII	\$6,870.3	0.51%	0.04%
Almanac Realty Securities Fund VII	\$13,041.7	0.97%	0.08%	Lone Star Real Estate Fund IV	\$8,845.3	0.66%	0.06%
Almanac Realty Securities Fund VIII	\$4,360.9	0.32%	0.03%	Long Wharf Real Estate Partners V	\$25,236.2	1.87%	0.16%
American Center	\$44,277.7	3.28%	0.28%	Long Wharf Real Estate Partners VI	\$6,590.0	0.49%	0.04%
AR Insurance	\$2,258.7	0.17%	0.01%	Metropolitan RE Co-Investments	\$11,916.8	0.88%	0.07%
AR Teachers Retirement Building	\$5,201.9	0.39%	0.03%	Met Life Commercial Mtg Inc Fund	\$48,779.3	3.61%	0.31%
Blackstone Real Estate Partners VII	\$25,650.6	1.90%	0.16%	New Boston Fund VII	\$52.5	0.00%	0.00%
Blackstone RE Europe VI	\$3,298.0	0.24%	0.02%	O'Connor NAPP II	\$10,015.7	0.74%	0.06%
Carlyle Realty Partners VII	\$13,535.5	1.00%	0.08%	Olympus	\$355.4	0.03%	0.00%
Carlyle Realty VIII	\$6,352.9	0.47%	0.04%	PRISA	\$274,107.3	20.31%	1.71%
CBREI SP U.S. Opportunity V	\$9,772.4	0.72%	0.06%	Recoveries Land	\$70.0	0.01%	0.00%
CBREI SP VIII	\$23,498.9	1.74%	0.15%	Rockwood Capital RE Partners IX	\$7,968.5	0.59%	0.05%
Cerberus Institutional RE Partners III	\$14,931.4	1.11%	0.09%	Rockwood Capital RE XI	-\$287.3	-0.02%	0.00%
Chenal Retirement Village	\$1,900.0	0.14%	0.01%	Rose Law Firm	\$4,331.1	0.32%	0.03%
Calmwater	\$23,224.4	1.72%	0.15%	Texarkana DHS	\$1,640.8	0.12%	0.01%
Fletcher Properties	\$1,167.9	0.09%	0.01%	Torchlight Debt Opportunity Fund IV	\$4,991.9	0.37%	0.03%
FPA Core Plus IV	\$18,887.4	1.40%	0.12%	Torchlight Debt Opportunity Fund V	\$7,181.5	0.53%	0.04%
Harbert European Real Estate	\$21,027.6	1.56%	0.13%	Torchlight Debt Opportunity Fund VI	\$21,785.6	1.61%	0.14%
Heitman European Property IV	\$3,125.6	0.23%	0.02%	UBS Trumbull Property Fund	\$204,617.3	15.16%	1.28%
JP Morgan Strategic Property Fund	\$282,601.5	20.94%	1.77%	UBS Trumbull Property Income Fund	\$52,756.4	3.91%	0.33%
Kayne Anderson V	\$17,264.5	1.28%	0.11%	Victory	\$32,990.8	2.44%	0.21%
Landmark Fund VI	\$2,530.0	0.19%	0.02%	Walton Street Real Estate Debt II	\$3,923.3	0.29%	0.02%
Landmark Real Estate VIII	\$7,993.2	0.59%	0.05%	West Mphs. DHS	\$2,326.8	0.17%	0.01%
LaSalle Asia Opportunity Fund IV	\$2,160.5	0.16%	0.01%	Westbrook IX	\$13,345.9	0.99%	0.08%
LaSalle Asia Opportunity Fund V	\$11,722.2	0.87%	0.07%	Westbrook Real Estate Fund X	\$12,906.4	0.96%	0.08%
LaSalle Income & Growth Fund VI	\$6,841.8	0.51%	0.04%				
Total Real Estate					\$1,349,877.4	100.00%	8.44%

*Note: The market values for the real estate investments shown above are lagged one quarter and adjusted for the current quarter's cash flows. Market values and allocation percentages may not add to the sum total due to rounding.

Asset Allocation as of 4/30/2020				Values in \$1,000			
	Private Equity	Percent of Private Equity	Percent of Total Fund		Private Equity	Percent of Private Equity	Percent of Total Fund
Arlington Capital IV	\$28,382.0	1.15%	0.18%	Insight Mezzanine I	\$1,629.4	0.07%	0.01%
Arlington Capital V	\$383.6	0.02%	0.00%	JF Lehman III	\$31,857.9	1.29%	0.20%
Advent GPE VI	\$6,326.4	0.26%	0.04%	JF Lehman IV	\$30,746.1	1.25%	0.19%
Altus Capital II	\$6,457.6	0.26%	0.04%	KPS III	\$312.2	0.01%	0.00%
American Industrial Partners VI	\$20,894.2	0.85%	0.13%	KPS IV	\$20,455.5	0.83%	0.13%
American Industrial Partners VII	\$1,413.4	0.06%	0.01%	KPS Mid-Cap	\$3,476.6	0.14%	0.02%
Altaris Constellation Partners	\$23,236.0	0.94%	0.15%	Levine Leichtman V	\$18,263.8	0.74%	0.11%
Altaris Health Partners IV	\$17,054.3	0.69%	0.11%	Lime Rock III	\$18,391.8	0.75%	0.11%
Atlas Capital II	\$14,324.5	0.58%	0.09%	LLR III	\$9,818.9	0.40%	0.06%
Audax Mezzanine III	\$4,290.8	0.17%	0.03%	Mason Wells III	\$7,234.3	0.29%	0.05%
Big River - Equity	\$327,000.0	13.25%	2.04%	NGP IX	\$1,051.4	0.04%	0.01%
Big River - Equity (Phase 2)	\$58,295.6	2.36%	0.36%	NGP X	\$8,101.9	0.33%	0.05%
Big River - Holdings Note 2023	\$12,871.4	0.52%	0.08%	NGP XI	\$25,843.8	1.05%	0.16%
Big River - Holdings Note 3/16/23	\$5,397.4	0.22%	0.03%	NGP XII	\$14,525.1	0.59%	0.09%
Bison V	\$19,084.8	0.77%	0.12%	One Rock Capital Partners II	\$28,850.2	1.17%	0.18%
Boston Ventures VII	\$17,028.7	0.69%	0.11%	PineBridge	\$13,536.0	0.55%	0.08%
Boston Ventures IX	\$20,832.9	0.84%	0.13%	Riverside IV	\$1,918.3	0.08%	0.01%
BV VIII	\$19,368.6	0.78%	0.12%	Riverside V	\$20,940.3	0.85%	0.13%
Castlelake II	\$16,783.6	0.68%	0.10%	Riverside VI	\$8,484.4	0.34%	0.05%
Castlelake III	\$17,736.0	0.72%	0.11%	Siris III	\$20,097.6	0.81%	0.13%
Clearlake V	\$30,829.5	1.25%	0.19%	Siris IV	\$16,106.3	0.65%	0.10%
Court Square III	\$41,379.0	1.68%	0.26%	SK Capital V	\$8,353.9	0.34%	0.05%
CSFB-ATRS 2005-1 Series	\$43,084.3	1.75%	0.27%	Sycamore Partners II	\$15,303.8	0.62%	0.10%
CSFB-ATRS 2006-1 Series	\$80,905.5	3.28%	0.51%	Sycamore Partners III	\$2,400.4	0.10%	0.02%
Diamond State Ventures II	\$5,293.1	0.21%	0.03%	TA XI	\$23,926.4	0.97%	0.15%
Doughty Hanson Tech I	\$403.6	0.02%	0.00%	Tennenbaum VI	\$10,704.4	0.43%	0.07%
DW Healthcare III	\$26,253.8	1.06%	0.16%	Thoma Bravo Discover	\$12,794.7	0.52%	0.08%
DW Healthcare IV	\$29,957.9	1.21%	0.19%	Thoma Bravo Discover II	\$10,438.4	0.42%	0.07%
DW Healthcare V	\$6,563.1	0.27%	0.04%	Thoma Bravo XI	\$32,815.8	1.33%	0.21%
EnCap IX	\$12,651.8	0.51%	0.08%	Thoma Bravo XII	\$42,523.2	1.72%	0.27%
EnCap VIII	\$10,037.7	0.41%	0.06%	Thoma Bravo XIII	\$22,544.3	0.91%	0.14%
EnCap X	\$26,626.4	1.08%	0.17%	Vista Equity III	\$4,725.7	0.19%	0.03%
EnCap XI	\$8,232.0	0.33%	0.05%	Vista Foundation II	\$16,656.3	0.67%	0.10%
Franklin Park Series	\$644,224.5	26.11%	4.03%	Vista Foundation III	\$28,046.9	1.14%	0.18%
GCG	\$23,909.2	0.97%	0.15%	Wellspring V	\$17,507.3	0.71%	0.11%
GTLA Holdings	\$20,000.0	0.81%	0.13%	Wicks IV	\$22,895.8	0.93%	0.14%
Highland	\$221,295.3	8.97%	1.38%	WNG II	\$7,535.5	0.31%	0.05%
Insight Equity II	\$18,143.2	0.74%	0.11%				
Total Private Equity					\$2,467,766.5	100.00%	15.43%

*Note: The market values for the private equity investments shown above are lagged one quarter and adjusted for the current quarter's cash flows. Market values and allocation percentages may not add to the sum total due to rounding.

Arkansas Teacher Retirement System

Appendix

Description of Benchmarks

Total Fund - The Performance Benchmark for the Total Fund reflects a weighted average of the underlying asset class benchmarks, weighted as follows: Opportunistic/Alternatives and Real Assets at the weight of the previous month's ending market values, Fixed Income and Private Equity at their long-term Policy Targets of 15% and 12%, respectively, and Total Equity at its long-term Policy Target of 50% plus the balance of the unfunded or uncommitted assets of the Opportunistic/Alternatives and Real Assets categories. These targets can be found on page 14 of the this report. From October 2007 to July 2013, the Performance Benchmark was the performance of the asset class benchmarks as a weighted average of the previous month's ending market values. The historical components of the benchmark are shown in the table below. Returns prior to September 30, 1996, consist of the actual allocations to the seven different asset classes included in the Arkansas Teacher Retirement System over time. The historical benchmarks used for each asset class are noted below.

Date	DJ Total Stock Market Index	Russell 3000 Index	MSCI ACW ex-U.S. Index	MSCI All Country World Index	BC Universal Bond Index	BC Aggregate Bond Index	Alternative Policy*
03/2004-9/2007	40.0 %	—	17.5 %	—	25.0 %	—	17.5 %
06/2003-02/2004	40.0	—	17.5	—	—	25.0 %	17.5
10/2001-07/2003	—	40.0 %	17.5	—	—	25.0	17.5
08/1998-09/2001	—	40.0	17.0	—	—	28.0	15.0
10/1996-07/1998	—	40.0	20.0	—	—	28.0	12.0

*Historically, the Alternative Policy was comprised of the weighted averages of the Private Equity, Real Estate, and Alternatives policy benchmarks. Prior to July 31, 2003 the alternative benchmark consisted of 57.0% of the Russell 3000 + a 2% Premium per year, 8.5% of the NCREIF Southeast Timberland Index, 28.5% of the Real Estate Index, 6% of the EnnisKnupp STIF Index.

Arkansas Teacher Retirement System

Appendix

Total Equity -A weighted average of the Dow Jones U.S. Total Stock Market Index and the MSCI All Country World IMI Index based on weights of the underlying investment manager allocations. As of April 1, 2020, the Total Equity Performance Benchmark was comprised of 31.6% DJ U.S. Total Stock Market Index and 68.4% MSCI ACWI IMI.

Fixed Income - The Barclays Capital Universal Bond Index as of March 1, 2004.

Opportunistic/Alternatives - A custom benchmark consisting of 25% DJ/CS Event-Driven Index, 25% HFR Macro Index, and 50% South Timberland NCREIF Index until June 30,2013; 60% HFRI Macro Index and 40% DJ/CS Event-Driven Index until July 31, 2015; 56% HFRI Macro Index, 38% DJ/CS Event-Driven Index, and 6% Russell 2000 Index until March 31, 2016; 45% HFRI Macro Index, 30% DJ/CS Event-Driven Index, 5% Russell 2000 Index, and 20% FTSE 3 Month T-bill until May 31, 2016; 37% HFRI Macro Index, 25% DJ/CS Event-Driven Index, 5% Russell 2000 Index, and 33% FTSE 3 Month T-bill until May 31, 2017; 28% HFRI Macro Index, 20% DJ/CS Event-Driven Index, 4% Russell 2000 Index, 25% FTSE 3 Month T-bill, and 23% Parametric Performance Benchmark Until May 31, 2018. 22% HFRI Macro Index, 18% DJ/CS Event-Driven Index, 3% Russell 2000 Index, 27% FTSE 3 Month T-bill, 18.50% Parametric Performance Benchmark, and 11.5% SG Multi-Alternative Risk Premia Until June 30, 2018. 20% HFRI Macro Index, 15% DJ/CS Event-Driven Index, 3.5% Russell 2000 Index, 25% FTSE 3 Month T-bill, 16.5% Parametric Performance Benchmark, and 20% SG Multi-Alternative Risk Premia Until August 31, 2018. 17% HFRI Macro Index, 15% DJ/CS Event-Driven Index, 3.5% Russell 2000 Index, 28% FTSE 3 Month T-bill, 16.5% Parametric Performance Benchmark, and 20% SG Multi-Alternative Risk Premia Until November 30, 2018. 15% HFRI Macro Index, 15% DJ/CS Event-Driven Index, 3.5% Russell 2000 Index, 30% FTSE 3 Month T-bill, 16.5% Parametric Performance Benchmark, and 20% SG Multi-Alternative Risk Premia thereafter.

Real Assets - A custom benchmark consisting of a weighted average of the net asset values at previous month's end of the sub-categories' benchmarks, defined as Real Estate Benchmark, Timber Benchmark, Agriculture Benchmark and Infrastructure Benchmark.

Real Estate-The NCREIF Index.

Timberland Property Benchmark - NCREIF Timberland Property Index (NTPI) weighted according to ATRS' regional exposure based on net asset value.

Agriculture Benchmark - NCREIF Farmland Index (NFI) weighted according to ATRS' regional and crop type exposure based on net asset value.

Infrastructure Benchmark - Consumer Price Index (CPI) plus 500 basis points annually.

Private Equity - The Dow Jones U.S. Total Stock Market Index + a 2% premium per year.

Cash Equivalents - The Citigroup 90 day T-bill.

Arkansas Teacher Retirement System

Appendix

Description of Benchmarks

FTSE 90 day T-bill Index - Treasury bill rates of return, as reported by Citigroup (Salomon Smith Barney), for bills with a maximum time remaining to maturity of 90 days.

Bloomberg Barclays Aggregate Bond Index - A market-value weighted index consisting of the Barclays Capital Corporate, Government and Mortgage-Backed Securities Indices. The Index also includes credit card-, auto- and home equity loan-backed securities, and is the broadest available measure of the aggregate U.S. fixed income market.

Bloomberg Barclays Universal Bond Index - A market-value weighted index consisting of the components of the Barclays Capital Bond Index, plus EuroDollar bonds, emerging markets bonds, 144A fixed income securities, and U.S. credit high yield securities.

Bloomberg Barclays Mortgage Index - A market value-weighted index consisting of the mortgage pass-through securities of Ginnie Mae (GNMA), Fannie Mae (FNMA) and Freddie Mac (FHLMC).

MSCI All Country World ex-U.S. Index - A capitalization-weighted index consisting of 22 developed and 23 emerging countries, but excluding the U.S. Covers approximately 85% of global equity opportunity set outside of the U.S.

MSCI All Country World Index - A capitalization-weighted index of stocks representing 46 stock markets in Europe, Australia, the Far East, the Middle East, Latin America and North America.

MSCI All Country World IMI Index - A capitalization-weighted index representing large and small cap stock from 46 stock markets in Europe, Australia, the Far East, the Middle East, Latin America and North America.

FTSE Europe - A tradable index, designed to represent the performance of the 100 most highly capitalized blue chip companies in Europe.

MSCI Europe, Australasia, Far East (EAFE) Non-U.S. Stock Index - A capitalization-weighted index of stocks representing 21 developed and emerging country markets in Europe, Australia, Asia and the Far East.

NCREIF Index - The National Council of Real Estate Investment Fiduciaries (NCREIF) Net Property Index is an unlevered, market-value weighted Index consisting of \$128 billion in domestic institutional real estate assets. The Index is representative of the national real estate market, across all property types and regions.

Nicholas Applegate Performance Benchmark - On January 1, 2005, the benchmark for the portfolio was changed to the Merrill Lynch Convertible Bond (All Quality) Index. Prior to January 1, 2005, the performance benchmark for the Nicholas Applegate portfolio was the CSFB Convertible Securities Index. Prior to May 1, 2004, the performance benchmark consisted of 90% CSFB Convertible Securities Index and 10% Salomon High Yield Index.

Wellington Global Performance Benchmark- As of July 1, 2012 the benchmark was changed to MSCI All Country World Small Cap Index. Prior to July 1, 2012, the benchmark was MSCI All Country World Small/Mid Cap Index.

As of April 30, 2020

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Appendix

BlackRock Performance Benchmark - The Barclays Capital Universal Bond Index as of March 1, 2004.

Voya Absolute Return Performance Benchmark - As of December 1, 2015 the benchmark was changed to MSCI All Country World Index. Prior to December 1, 2015, the benchmark was the S&P 500 Stock Index.

LIBOR Index - London Interbank Offered Rate. A filtered average of the world's most creditworthy banks' interbank deposit rates with maturities between overnight and one full year.

Russell 3000 Index - An index that measures the performance of the 3000 stocks that make up the Russell 1000 and Russell 2000 Indices.

Russell 1000 Index - An index that measures the performance of the largest 1,000 stocks contained in the Russell 3000 Index.

Russell 1000 Value Index - An index that measures the performance of those Russell 1000 companies with lower price-to-book ratios and lower I/B/E/S growth forecasts.

Russell 2000 Index - An index that measures the performance of the smallest 2000 companies contained in the Russell 3000 Index.

Russell 2000 Growth Index - An index that measures the performance of those Russell 2000 companies with greater price-to-book ratios and greater I/B/E/S growth forecasts.

Russell 2000 Value Index - An index that measures the performance of those Russell 2000 companies with lower price-to-book ratios and lower I/B/E/S growth forecasts.

Russell Mid Cap Value Index - An index that measures the performance of those Russell 1000 companies with lower price-to-book ratios and lower forecasted growth values.

S&P 500 Stock Index - A capitalization-weighted stock index consisting of the 500 largest publicly traded U.S. stocks.

HFR Macro Index - Macro: Investment Managers which trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed income, hard currency and commodity markets. Managers employ a variety of techniques, both discretionary and systematic analysis, combinations of top down and bottom up theses, quantitative and fundamental approaches and long and short term holding periods. Primary investment thesis is predicated on predicted or future movements in the underlying instruments.

HFR Distressed/Restructuring Index - Distressed Restructuring Strategies employ an investment process focused on corporate fixed income instruments, primarily on corporate credit instruments of companies trading at significant discounts to their value at issuance or obliged (par value) at maturity as a result of either formal bankruptcy proceeding or financial market perception of near term proceedings. Distressed Strategies employ primarily debt (greater than 60%) but also may maintain related equity exposure.

Parametric Performance Benchmark - 50% MSCI All Country World Index and 50% Citigroup 90 day T-Bill Index as of June 1, 2017.

SG Multi Alternative Risk Premia Index - An equally weighted index composed of risk premia managers who employ investment programs diversified across multiple asset classes while utilizing multiple risk premia factors.

Arkansas Teacher Retirement System

Appendix

Historical U.S. Equity and Global Equity composite returns

As of June 30, 2015	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
U.S. Equity	6.7	18.1	16.4	9.4	10.5	04/01/1986
Dow Jones U.S. Total Stock Market Index	7.2	17.6	17.5	8.3	-	
Global Equity	1.8	14.6	12.1	-	2.5	11/01/2007
MSCI AC World Index (Net)	0.7	13.0	11.9	6.4	2.1	

In June 2015, the ATRS Board approved the combination of the U.S. and Global equity asset classes to a single Total Equity asset class. Total Equity performance reporting began in July 2015. In the table above, we show the historical returns for the U.S. Equity and Global Equity asset classes since inception through June 2015. Performance for the Total Equity asset class prior to July 2015 represents a weighted average of the U.S. Equity and Global Equity historical performance.

Notes

- The rates of return contained in this report are shown on an after-fees basis unless otherwise noted. They are geometric and time-weighted. Returns for periods longer than one year are annualized.
- Universe percentiles are based upon an ordering system in which 1 is the best ranking and 100 is the worst ranking.
- Due to rounding throughout the report, percentage totals displayed may not sum to 100%. Additionally, individual fund totals in dollar terms may not sum to the plan total.
- All information presented in this report should be considered preliminary. Finalized data will be available on next Quarterly Investment Report after the close of the quarter.

Disclaimer

Past performance is not necessarily indicative of future results.

Unless otherwise noted, performance returns presented reflect the respective fund's performance as indicated. Returns may be presented on a before-fees basis (gross) or after-fees basis (net). After-fee performance is net of each respective sub-advisors' investment management fees and include the reinvestment of dividends and interest as indicated on the notes page within this report or on the asset allocation and performance summary pages. Actual returns may be reduced by Aon Investments' investment advisory fees or other trust payable expenses you may incur as a client. Aon Investments' advisory fees are described in Form ADV Part 2A. Portfolio performance, characteristics and volatility also may differ from the benchmark(s) shown.

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Refer to Hedge Fund Research, Inc. www.hedgefundresearch.com for information on HFR indices.

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Arkansas Teachers Retirement System Fourth Quarter 2019 Real Assets Performance Review

PROPRIETARY & CONFIDENTIAL

June 2020

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Agenda

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Section 2	Market Overview
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Section 4	Glossary

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Real Assets Markets Performance and Overview

MARKET RETURN SUMMARY

As of 12/31/2019	Quarter	1 year	3 years	5 years	10 years
NFI-ODCE (Net)	1.3%	4.4%	6.1%	8.0%	10.4%
NPI	1.6%	6.4%	6.7%	8.3%	10.1%
NCREIF Timberland Index	0.0%	1.3%	2.7%	3.1%	4.5%
NCREIF Farmland Index	2.3%	4.8%	5.9%	7.0%	11.0%

Note: Please see Glossary for Index Definitions

- In the fourth quarter of 2019, the NFI-ODCE (net) returned 1.3%, up 19 basis points quarter-over-quarter. NFI-ODCE returns are struggling, due to the maturity of the real estate cycle. Quarterly returns have begun to shift away from the long-term average with the lack of appreciation being a larger driver of the total return
- The NCREIF Timberland Index (“NTI”) returned -0.04% for the quarter. The NTI’s trailing one-year return was 1.3% and driven primarily by an income return of 2.68% while appreciation returned -1.36%. Regionally, the Lake States were the NTI’s top performer while the Northwest and Northeast regions lagged for the quarter
- The NCREIF Farmland Index returned 2.34%, up 137 basis points from the prior quarter. Permanent crops drove performance with a return of 3.86%. For the trailing one-year, permanent crops returned 5.48% compared to row crops’ 4.40%

Portfolio Funding Status and Composition

As of December 31, 2019	ATRS' Portfolio \$ in Millions
Number of Investments	64
Total Commitments	\$3,663.4
Unfunded Commitments	\$471.8
Total Paid-In Capital	\$3,481.3
Total Distributions	\$2,940.4
Net Asset Value	\$2,161.2
Gross Asset Value	\$2,618.5
DPI*	0.8x
TVPI*	1.5x
Since Inception IRR*	7.3%
<i>*Active and Liquidated</i>	

PORTFOLIO COMPOSITION TO TARGETS (As of 12/31/2019)		
	Target	Actual Funded
Target Real Asset Allocation	15%	11.8%
<u>Portfolio Style Composition</u>		
Real Estate	10%	7.3%
Core*	50%-70%	73.2%
Non-Core	30%-50%	26.8%
<i>Value-Added**</i>	N/A	14.3%
<i>Opportunistic**</i>	N/A	12.6%
Agriculture	1%	1.1%
Timber	2%	1.6%
Infrastructure	2%	1.7%
Leverage	50%	16.3%

* Includes Arkansas Investments

** No stated targets

- Recent infrastructure and real estate commitments will help the portfolio continue to move towards its target allocation irrespective of liquidating investments
- In general, the portfolio is in compliance with its Statement of Investment Policy. There are a few exceptions:
 - Slight overweight to core real estate, which will correct over time as noncore commitments are fully funded
 - An overallocation to hotels though still less than 5% of the real estate portfolio
 - Timber geographic concentration remains out of compliance though significantly improved with recent BTG OEF commitment
 - Infrastructure is currently overweight Non-U.S., however Townsend and Staff are actively pursuing US focused managers

ATRS' Real Assets Performance

ATRS TOTAL REAL ASSETS RETURN SUMMARY

As of 12/31/2019	Quarter	1 Year Ending	3 Year Ending	5 Year Ending	10 Year Ending
Total Real Assets Portfolio	1.4%	5.6%	7.2%	7.7%	8.8%
Real Assets Benchmark*	1.2%	4.6%	5.5%	6.9%	8.6%

- The table shows the returns for ATRS' Total Real Assets Portfolio and the Real Assets Benchmark. ATRS outperformed the real assets benchmark for the fourth quarter and has outperformed over longer term periods

ATRS' Real Estate Performance

ATRS TOTAL REAL ESTATE RETURN SUMMARY

As of 12/31/2019	Quarter	1 Year Ending	3 Year Ending	5 Year Ending	10 Year Ending
Total Real Estate	1.1%	3.6%	6.8%	8.2%	10.2%
NFI-ODCE (Net)	1.3%	4.4%	6.1%	8.0%	10.4%

- The table shows the time-weighted, net of fee returns for ATRS' Total Real Estate Portfolio and the NFI-ODCE benchmark. ATRS underperformed the benchmark for the quarter and 1 year periods by 20 basis points and 80 basis points respectively.
- There are a number of Non-Core Funds that have entered the J-curve and performance is expected to have a more meaningful impact as newer funds move out of the J-Curve and investments are realized
- For the quarter, JP Morgan was the primary driver of the real estate return with a 2.1% total return, while the Arkansas Investments has dragged with a -2.1% total return

ATRS' Timberland and Agriculture Performance

As of 12/31/2019	Quarter	1 Year Ending	3 Year Ending	5 Year Ending	10 Year Ending
Total Timberland	0.8%	9.0%	5.2%	4.5%	3.9%
Timberland Property Benchmark*	0.7%	2.7%	2.1%	2.7%	3.2%
Total Agriculture	0.6%	3.4%	3.4%	4.8%	N/A
Agriculture Benchmark*	1.6%	4.7%	4.3%	4.7%	N/A
CPI + 500 BPS	1.3%	7.4%	7.2%	6.9%	6.8%

- The timber portfolio performed in line with the benchmark over the quarter, returning 0.8%
- The agriculture portfolio underperformed the benchmark over the quarter, returning 0.6%. The portfolio underperforms over the trailing one and three-year time periods
- Both the Timber Property and Agriculture benchmarks are reported gross of fees. If ATRS managers were to account for fees, the portfolio would look better in comparison

ATRS' Infrastructure Performance



As of 12/31/2019

Asset Class	Total Commitment (\$)	Unfunded Commitment (\$)	Total Paid-In (\$)	Total Distributions (\$)	Net Asset Value (\$)	Total Value (\$)	DPI	TVPI	Net IRR
Total Infrastructure	345,413,930	49,078,529	308,901,449	86,464,981	313,379,526	399,844,506	0.28x	1.29x	12.84%

- ATRS' Infrastructure portfolio has been slowly moving out of the J-Curve and performance has been showing solid results to date
- First Reserve Energy Infrastructure Fund II is currently driving portfolio performance; the fund is achieving a 27.84% Net IRR

*Infrastructure Benchmark: Over the long term (10 years or longer), the infrastructure portfolio is expected to generate a minimum internal rate of return ("IRR") equal to the Consumer Price Index plus 500 basis points, net of all investment management fees and expenses. The Consumer Price Index plus 500 basis points will be used as the benchmark to reflect the opportunity cost of investing in infrastructure.

ATRS' Real Assets Portfolio Highlights

- Commitment activity update
 - ATRS made commitments to the following
 - Long Wharf Real Estate Partners V: \$50 million
 - ATRS is in the queue for a partial redemption of UBS TPF
 - Subsequent to quarter end, TPF's queue is up to \$8 billion and all redemption requests have been delayed as of 2Q20 given the uncertainty surrounding COVID-19
 - ATRS is pausing on its \$50 million Axium infrastructure commitment following Townsend's recommendation to refrain from entering funds with pre-specified assets

Significant Events

- Lone Star: André Collin has been named to serve as acting President of the North American and Latin American region, replacing Brian Collyer, who has left the firm. Additionally, Billy Young, Global General Counsel, has assumed the dual roles of COO and CLO. Rebecca Williams, Deputy General Counsel, will succeed Billy as Global General Counsel
- UBS: Matt Johnson, managing director, has been appointed as Head of Real Estate US, replacing former head Matt Lynch, who left to pursue other opportunities. Johnson has also appointed Rod Chu, managing director, as Head of Transactions for Real Estate US, replacing Jack Connelly. Connelly has also left to pursue other opportunities
- Subsequent to quarter end, a novel coronavirus (COVID-19) swept the world's countries and their respective economies. The implications of this virus are expected to impact real estate valuations with Retail and Leisure hit hardest. As a result, the Townsend Group has recommended its clients defer new capital investments in funds with pre-specified assets. Blind pool funds, such as closed-end funds higher on the risk/return spectrum, offer a potential to have capital available when a new opportunity set presents itself

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United States Real Estate Market Update (4Q19)

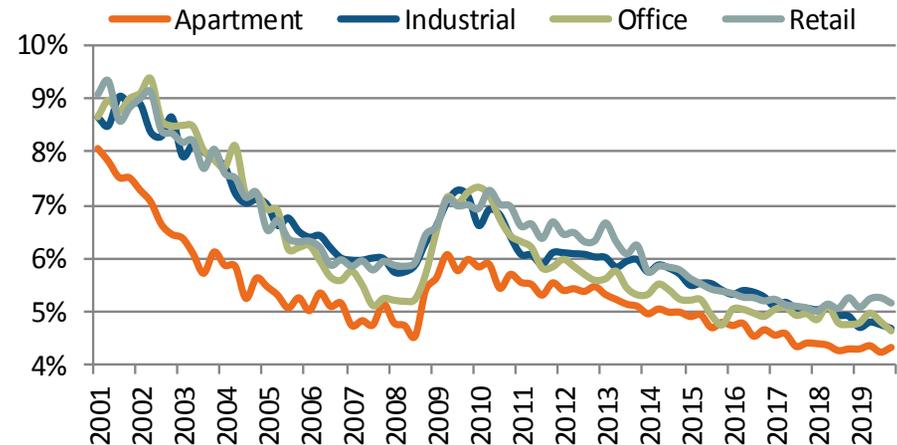
General

- The S&P 500 produced a gross total return of 9.1% during the quarter. The MSCI US REIT index produced a return of -0.8%. Ending the year on a high note, Consumer Sentiment increased to 99.3. Subsequent to quarter-end, the macro environment took a sharp turn as a result of the novel coronavirus spreading globally, disrupting supply chains, and impacting consumer behavior.
- Macro indicators for U.S. real estate continue to be positive; GDP grew at an annualized rate of 2.0% in the fourth quarter and headline CPI rose by 2.3% YoY, just above the Fed's 2% target. As of quarter-end, the economy has now experienced 111 consecutive months of job growth. The Federal Reserve cut rates three times in 2019 and, in 2020, an emergency 50bps rate cut was made intermeeting as a result of the previously mentioned coronavirus.

Commercial Real Estate

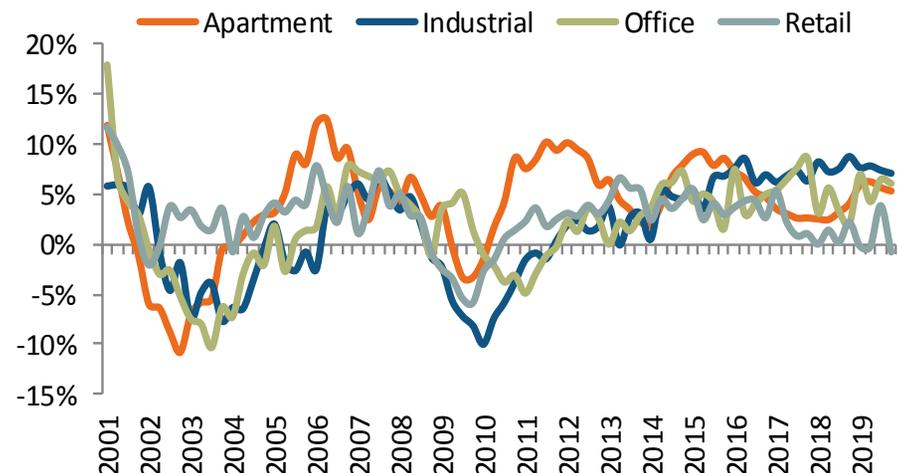
- Private real estate market carrying values remained flat over the quarter. Transaction cap rates (5.4%) expanded 4 bps during the quarter, while current valuation cap rates compressed across property sectors, industrial (-7 bps), office (-17 bps), and retail (-10 bps). Apartment cap rates were expanded 9 bps during the quarter.
- NOI growth continues to be elevated across property sectors during the quarter, with the industrial sector continuing to outpace the other traditional property types. While the industrial sector has faced increasing supply, it continues to benefit from outsized demand tailwinds (e-commerce and economic growth). Retail NOI growth continues to struggle (-82 bps) in the face of e-commerce headwinds.
- In the fourth quarter of 2019, \$22 bn of aggregate capital was raised by real estate funds. Through the fourth quarter of 2019, private equity real estate funds raised \$157 bn which is an increase of 5% YoY. Transaction volume was flat during the 4th quarter at \$581.2 bn.
- 10-year treasury bond yields increased to 1.88% during the quarter, and, subsequent to quarter-end, have dropped to 0.57%.

Current Value Cap Rates by Property Type



Source: NCREIF

4 Qtr Rolling NOI Growth



Source: NCREIF

United States Property Matrix (4Q19)



INDUSTRIAL

MULTIFAMILY

- In 4Q19, industrial properties were the highest returning sector at 3.2% and outperformed the NPI by 160 bps.
- Transaction volumes reached \$35.9 billion in the fourth quarter of the year, a 10.0% year-over-year increase. Individual asset sales were up 25.5% year-over-year, while portfolio purchases turned in a year-over-year volume increase of 149.0%. Yet again, portfolio transaction volume was driven by multiple megadeals occurring in the sector, as well as a significant year-over-year decrease in entity-level transactions. This large portfolio transaction volume increase is expected to be an outlier and should regress to the mean positive growth rate.
- The industrial sector continued to experience steady NOI growth of 7.1% over the past year, decreasing from the prior periods TTM growth of 7.5% in 3Q19. Market rent growth is expected to decelerate compared to the recent phenomenal pace, but still remains strong.
- Vacancy increased by 11 bps to 3.3%, still remaining close to all-time historic lows. E-commerce continues to drive demand.
- Industrial cap rates compressed approximately 23 bps from a year ago, to 4.68%. Industrial fundamentals still top all property sectors.

- The apartment sector delivered a 1.5% return during the quarter, underperforming the NPI by 9 bps.
- Transaction volume in the fourth quarter of 2019 reached \$52.7 billion, an decrease of 1.8% year-over-year. This volume continues to make multifamily the most actively traded sector for the tenth straight quarter.
- Cap rates grew to 4.33%, inflating 3 bps year-over-year. Robust job growth and improving wages have supported healthy operating fundamentals.
- Steady demand for the sector continues to keep occupancy floating around 94.0%, vacancy has decreased 16 bps from a year ago. The aging millennials have begun shifting their desires to suburban living but continued home price appreciation has deterred the full effect of this migratory trend.

OFFICE

RETAIL

- The office sector returned 1.7% in 4Q19, 15 bps above the NPI return over the period.
- Transaction volumes decreased by 3.8% year-over-year in Q4. Annual sales volumes equaled \$41.1 billion for the quarter. Single asset transactions accounted for 79% of volume.
- Occupancy growth within the office sector has improved, increasing 0.7% year-over-year. Office continues to be the highest vacancy property type at close to 9.8%.
- NOI growth of 6.1% in the last year is a positive as the sector continues to benefit from positive job growth. Sun Belt and tech-oriented West Coast office fundamentals continue to prove healthiest.
- Office cap rates compressed from a year ago to approximately 4.67% in the fourth quarter. Office-using job growth is positive, though decelerating as expected.

- As of 4Q19, the retail sector delivered a quarterly return of 0.1%, performing 150 bps below the NPI.
- Transaction volumes totaled \$19.4 billion in the fourth quarter, increasing 2.5% year-over-year.
- Cap rates have compressed approximately 10 bps within the sector over the last year. Strong fundamental headwinds continue to affect the retail landscape.
- After showing positive for the first time this year last quarter, NOI growth has turned a negative for the fourth quarter. NOI has decreased 82 bps over the past year. Retail is expected to continue to suffer from the shift towards e-commerce.
- Retail vacancy rates increased 19 bps over the past year to 7.1%. Many big box stores have closed as the need for retail space shrinks, translating to a negative outlook for rent growth.

Global Real Estate Market Update (4Q19)

- Global investment activity during the fourth quarter of 2019 was down relative to the same period in 2018. In 2019, the New York, San Francisco and Los Angeles metro markets have witnessed the greatest transaction volume.

- Broad geopolitical risk factors, such as Brexit and the Trade War, continue to have negatively influenced sentiment. An impending global slowdown, especially in the manufacturing sector, further dampened transaction volumes. Loose monetary policy continued supporting low yields and pushing capital inflows towards real estate which offers a premium to other asset classes.

- Investment volumes in the Americas decreased by 2% year-over-year, including Canada and Brazil showing declines, the US remaining unchanged, and Mexico posting investment volume growth.

- The Asia Pacific region declined as a whole due largely to activity levels falling in several key markets. Specifically in Hong Kong volume hit its lowest level since the Global Financial Crisis as a product of continued sociopolitical uncertainty within the metro. Japan was the sole country to experience growth as Australia was flat and both China and South Korea declined.

- In EMEA, Brexit continued to press UK investment volumes lower, a 21% decline from fourth quarter 2018. Growth was mixed for the rest of EMEA countries with Italy, Ireland, Sweden, and Greece reporting the largest increases.

- In the office sector, global leasing activity was healthy but moderated in the final quarter of 2019. The U.S office market saw net absorption hit a cyclical high despite a 6% QoQ decline in leasing activity. Europe experienced an uptick in demand, and office net absorption surpassed the 10 year average by nearly 20%. Economic, geopolitical, and sectoral headwinds subdued leasing activity in the APAC region resulting in leasing volumes 13% lower than in 2018.

- The retail sector continued to face headwinds globally as e-commerce disrupts traditional consumer spending habits. Within the U.S., net absorption continued to trend downward, declining 10% YoY. Retail sales increased 3.8% YoY driven by non-store retailers and food services. Across Europe, rents were broadly stable, while APAC markets rents were muted.

- The multifamily market in the U.S. has continued to see strong growth, with vacancy rates hitting their lowest Q4 level since 2000. Construction remains near peak levels, possibly presenting future supply headwinds. Rent control and low supply constrained activity in many European markets, but investment volume remains positive. APAC markets were mixed, a result of macroeconomic uncertainty and holiday season effects.

- Industrial properties demand continued to grow but at a slower pace. Uptake was robust globally driven by logistics and omnichannel distribution demand. New supply has been increasing rapidly, and there are signs of slowing demand in Asia while Europe recovered from a slow start earlier in the year.

Global Total Commercial Real Estate Volume - 2018 - 2019

\$ US Billions			% Change		% Change	
	Q4 2019	Q4 2018	Q4 19 - Q4 18	2019	2018	2019 - 2018
Americas	155	159	-2%	520	525	-1%
EMEA	121	124	-3%	335	361	-7%
Asia Pacific	199	229	-13%	825	868	-5%
Total	475	512	-7%	1680	1754	-4%

Source: Real Capital Analytics, Inc., Q4' 19

Global Outlook - GDP (Real) Growth % pa, 2019-2021

	2019	2020	2021
Global	2.9	3.0	3.3
Asia Pacific	4.5	4	4.4
Australia	1.8	2.0	2.6
China	6.1	5.5	5.8
India	5.0	5.8	6.6
Japan	0.8	0.3	0.8
North America	2.1	1.7	2.0
US	2.3	1.8	2.0
MENA*	2.0	2.7	2.9
European Union	1.5	1.2	1.5
France	1.3	1	1.3
Germany	0.6	0.6	1.2
UK	1.4	1.0	1.5

*Middle East North Africa

Source: Bloomberg (March 2, 2020)

Market Update: Real Estate Four Quadrants Summary

April 13 – April 24

Real Estate Private Equity	Real Estate Public Equity
<ul style="list-style-type: none"> • Open end fund redemption queues remain elevated at roughly \$14.4 billion (doubled since year end). We expect redemption queues to continue to grow, apparently driven by the “denominator” effect causing rebalancing out of real estate, as well as tactical “sales” to avoid value declines. • Open-end Fund managers are suspending or limiting redemptions to preserve cash and to protect assets of the funds. As of today, Townsend is aware of 40% of funds we monitor that have gated redemptions. • Early reported Q1 2020 returns saw little impact on real estate valuations. NCREIF ODCE reported -0.05% appreciation loss on this \$208.1 billion (GAV) sample of US commercial real estate. It remains to be seen how closed-end funds and separate account managers will adjust valuations as of March 31. Larger impacts are expected in Q2 and Q3. • Income returns in the first quarter remained stable, this should not be expected for the second quarter as many tenants are seeking rent relief options. • Townsend is more positive on blind pool funds that offer the potential to have capital available when new opportunity sets present themselves. 	<ul style="list-style-type: none"> • REITs are largely trading at material discounts. • REITs total returns declined -3.6% for the week of April 17th after a rebound of 22% over the prior week. • The retail sector continues to be the worst performing sector producing double-digits negative returns (-12.9%) for the week ended April 17. Most other sectors had single digit negative returns. • Data centers and listed infrastructure remain at the forefront, with little to no impact on total returns this year. • In the upcoming weeks, REIT investors should pay special attention to first quarter earning reports for the impact of COVID-19 on operations, revenues and ultimately dividends.
Real Estate Private Debt	Real Estate Public Debt
<ul style="list-style-type: none"> • Banks continue to selectively pursue relationship lending, but administration of PPP and small business loan facilities are a main focus. • Transaction repricing has hit many private loans set to settle in April. Many managers confirm that spreads have widened between 100 and 250 basis points, at lower loan-to-value ratios. • Transactions that are taking place are through banks and life companies who are being selective and usually working with their best customers. The underwriting for these deals require larger reserves and increased debt service coverage. • Private debt fund managers report that they expect one of the best lending vintages of the decade. We have observed some managers attempting to move their fundraising schedule to “as soon as possible” from an end of year timing. <p>249 Senior bridge loans “in process” when the crisis began in March have either stalled, or they have been re-priced to reflect revised costs to finance the loans.</p>	<ul style="list-style-type: none"> • Spreads on AAA Conduit CMBS have fluctuated between 150bps and 200bps since April 3rd, while BBB CMBS paper has seen spreads between 1000bps and 1250bps over the same time. • AAA Agency CMBS spreads have recently become fragmented. Spreads on AAA CMBS paper with leisure and retail loan pools have retrenched lately. Investors might shift their focus to the underlying mortgage pool and look to avoid riskier property types. • Significant negative performance of mortgage REITs has made it economical for such REITs to use incremental capital to buy back their shares rather than issue new loans, essentially freezing new lending from this sector. • Anecdotally, some Public Debt managers are modeling a longer-tailed recovery from COVID-19. • Lower quality issues continue to exhibit low liquidity, which is expected to continue as uncertainty around the pandemic's trajectory continues.

Market Update: Property Type Summary

April 13 – April 24

Property Type	Market Sentiment	Commentary
Multifamily		April rent collections have been impacted. Around 80% to 90% of scheduled rent payments have been collected. Properties with exposure to large gateway cities have been hit particularly hard. May rent collections will be a stronger indicator of COVID-19's impact on tenants' ability to pay rent, because many hourly employees have sheltered the entirety of the month of April.
Office		Anecdotally, office rent collects declined by 10% during April, with non-payment correlated to tenant size (more defaults by smaller tenants). Managers expect near term negative absorption of 3-5% as tenants give backspace or seek to sublease. Rental rates will vary by market, but 10% declines in national rental rates would not be surprising.
Industrial		The pandemic is expected to accelerate trends already evident across the sector such as increased online retail penetration rates, expansion of online grocery, omni-channel retailing and the integration of technology into warehousing.
Retail		Rent collections in April were around 25% of scheduled rents, with grocers and pharmacies as the only two groups paying rents. Big name retailers such as JC Penny and Nieman Marcus are expected to file for bankruptcy. This has resulted in little to no liquidity in the property type; all current mall transactions have been the product of distress.
Hotel		Few hotels are able to operate quarantine lodging for the homeless or health care workers; however, many remain unoccupied. Nearly 20% of all lodging CMBS loans are categorized as either "in grace period" or "beyond grace period". The dollar amount of these loans not paid could reach \$15 billion.
Other		Senior Housing: remains a trouble asset class, however fund managers who place an emphasis on upper-middle market, private pay assets have yet to see requests for rent deferral. The distress of senior housing is heavily influenced by the quality of the property. Student Housing: Student Housing has been surprisingly resilient. Pre-leasing for the Fall semester has some properties already 65% pre-leased. A second wave of COVID-19 in the Fall has the potential to negatively impact this sector in a unique way.

Farmland - Fourth Quarter 2019 Market Update

FARMLAND MARKETS

- Global commodity prices improved during 2019 and saw strong gains during 4Q19 as markets were anticipating a U.S./China trade agreement by year-end. **(FIGURE 1)**, which was reached in Dec 2019 (and made official in Jan 2020) with China committing to purchase \$32 billion of agricultural goods over the next two years.
- However, commodity markets remained somewhat muted in early 2020 driven by concerns over China's initial outbreak of COVID-19, raising concerns about its agricultural purchases as the global spread of the virus has significant implications for economic growth.
- U.S. soybean exports were up 9% during the quarter, while U.S. corn exports continued to decline as a result of the trade war. Since last year U.S. corn exports declined by 41% and by 16% since last quarter, while Brazil's exports increased by 86% since last year and by 10% since last quarter.
- Tree nut markets were mixed, with almond prices down 4% as California production set another record at 2.3 billion pounds. Walnut prices continued to drag with another significant price drop of 48% driven by continued strong production. Pistachio prices increased 6.7% despite record U.S. production offset by Iran's off-year crop. **(FIGURE 2)**

FIGURE 1: Key Commodity Prices 4Q19

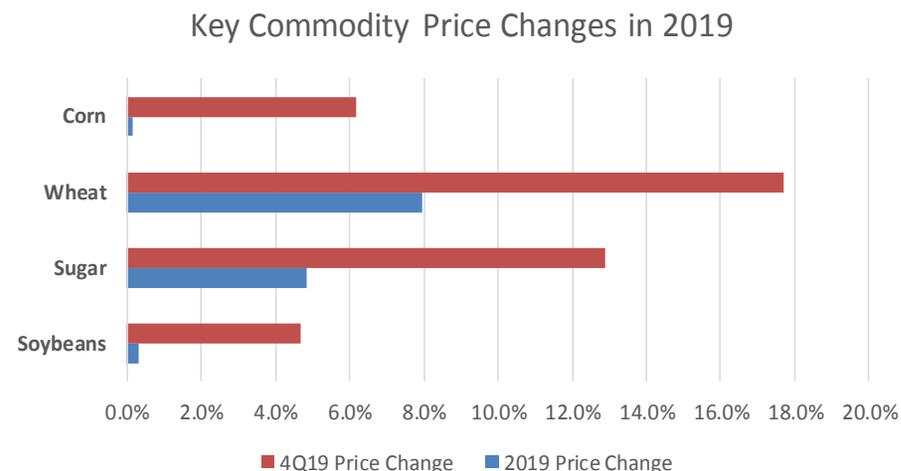
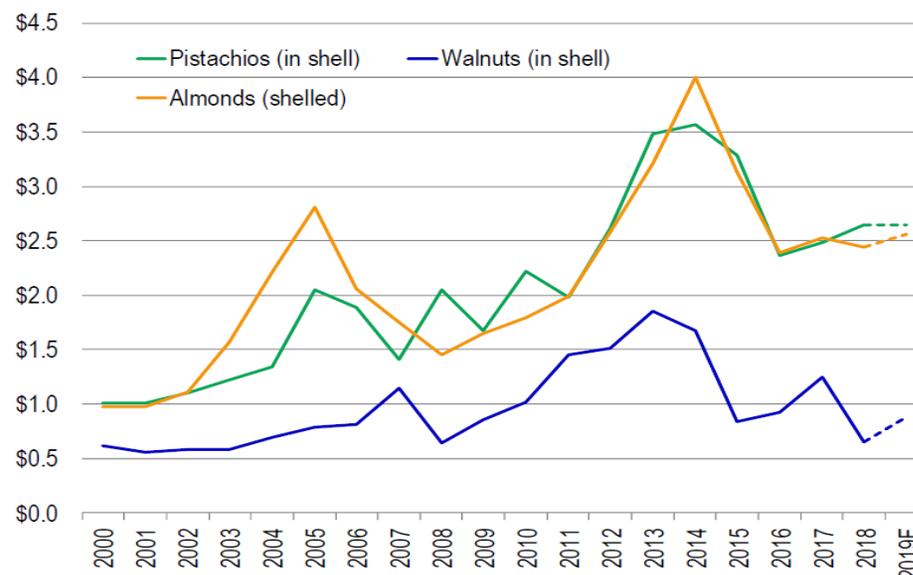


FIGURE 2: Annual U.S. Average Grower Tree Nut Prices (USD per lb.)



Farmland - Fourth Quarter 2019 Market Update

FARMLAND MARKETS

- Australian commodity prices remained strong with grain and oilseeds at the top of the historical 10-year average driven by lower production, as the impact of drought continued to be felt across the agricultural sector leading to a third straight year of falling production. **(FIGURE 3)**
- Reduced production has resulted in lower exports with the est. 2019-20 ag export earnings falling by 8%, driven by lower crop and livestock production. Major grain export prices are also expected to decline in 2020 due to strong global production expectations.
- Australian farmland returns were strong for the year with a 13% annual return, albeit slightly below the 13.8% annual return at year-end 2018. Permanent crops outperformed row crops as strong demand for almonds, citrus and grapes continued to drive performance. *(Source: Australian Farmland Idx 4Q19)*
- Brazilian agriculture experienced significant (positive and negative) impacts throughout 2019 due to the US/China trade dispute and China's African swine fever (ASF) outbreak. While the value of Brazil's meat exports rose by 13% compared to 2018, soybean export revenues declined by 21%, as a result of lower volume and lower prices.
- Despite soybeans difficulties, Brazil's corn and cotton sectors performed very well as it became the world's 2nd largest exporter of cotton and established its position as the 2nd largest exporter of corn in 2019. **(FIGURE 4)**

FIGURE 3: Volume of Farm Production, 1957-58 to 2019-20f

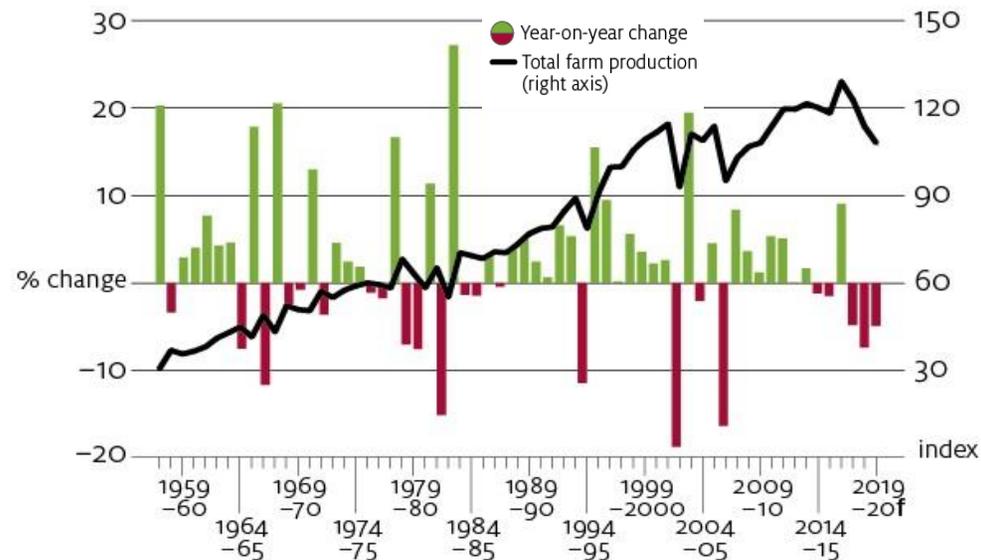
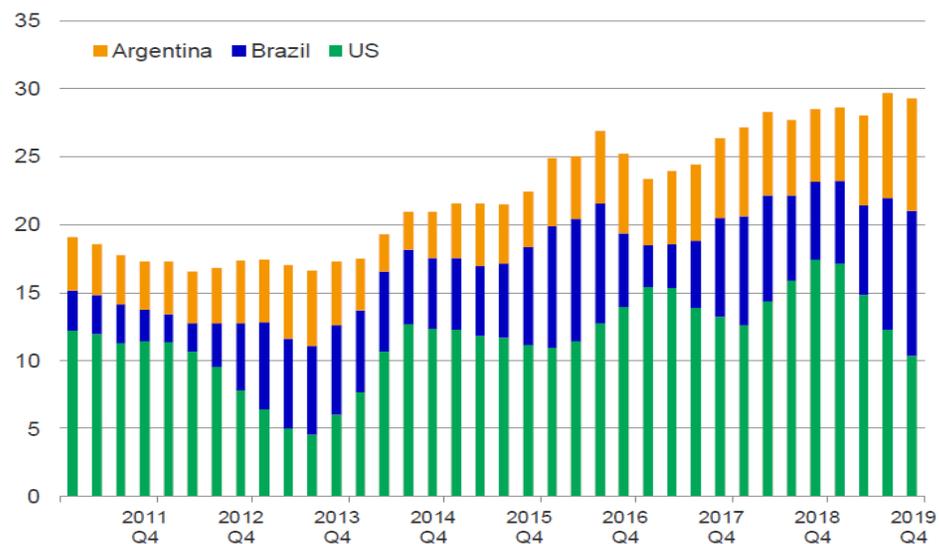


FIGURE 4: Four Quarter Moving Average Corn Exports



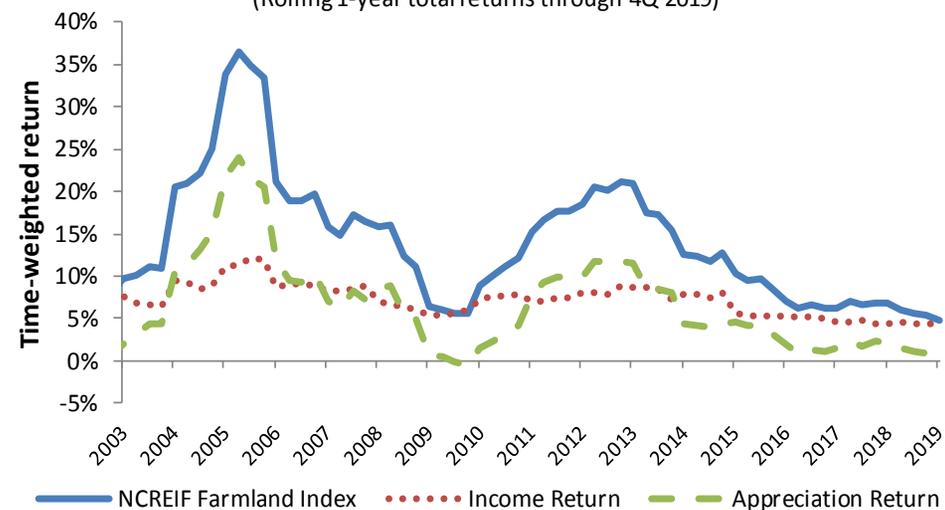
Farmland - Fourth Quarter 2019 Market Update

FARMLAND PERFORMANCE

- The NCREIF Farmland Index (“NFI”) returned 0.97% for the quarter and entirely driven by its 0.98% income return as appreciation was effectively flat at -0.01%. The quarterly return improved 24 basis points from the prior quarter (0.73%) but was down 32 bps from 3Q18’s 1.29% return.
- Permanent crops outperformed slightly with a total return of 1.1% versus 0.9% for row crop. Permanent crops negative appreciation of -0.29% drove the NFI’s slight decline in values in 3Q19.
- The trailing twelve-month period (“TTM”) total return was 5.3% in 3Q19, down from 6.8% for the same TTM period ending 3Q18. The TTM total return was comprised of 4.4% income and 0.9% appreciation.
- Permanent crops outperformed over the TTM period with a 6.7% total return over row crops 4.5% total return.
- The total annual return delta for the two farm types have remained relatively consistent since inception, with annualized returns for permanent crops of 11.9% and 10.1% for row crops.
- On a regional basis, eight of the NFI’s 10 regions were positive performers with the Mountain (+1.6%) and Pacific West (+1.4%) leading, while the Pacific Northwest (-2.5%) was the lowest performing region.

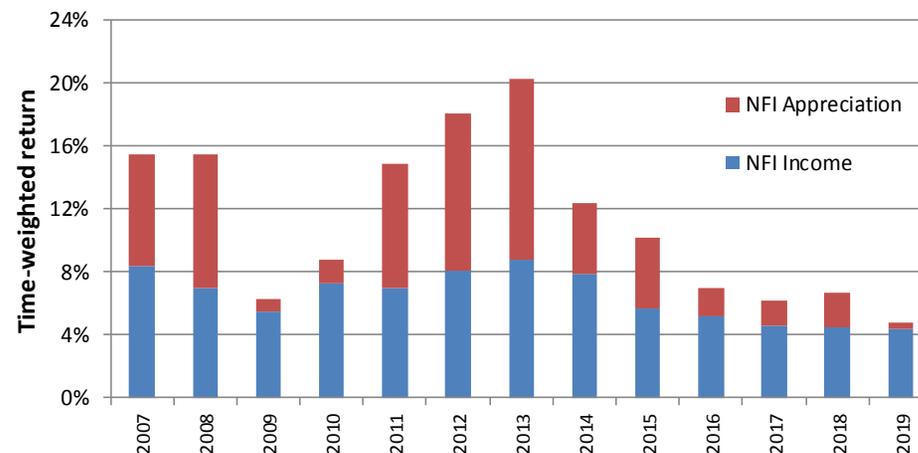
NCREIF Farmland Index Performance

(Rolling 1-year total returns through 4Q 2019)



NCREIF Farmland Index Performance Attribution

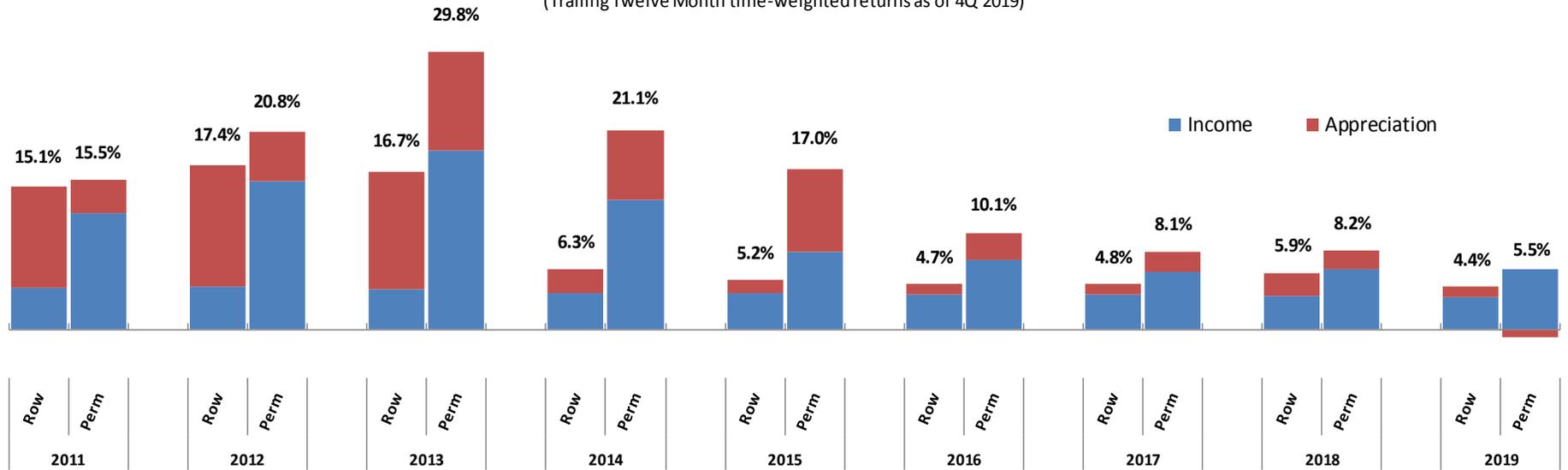
(Trailing 12-month Return Attribution as of 4Q 2019)



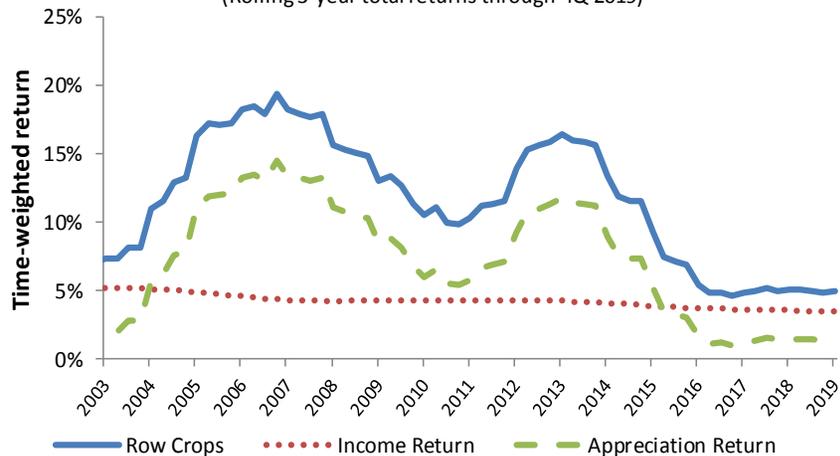
Farmland - Fourth Quarter 2019 Market Update

FARMLAND PERFORMANCE

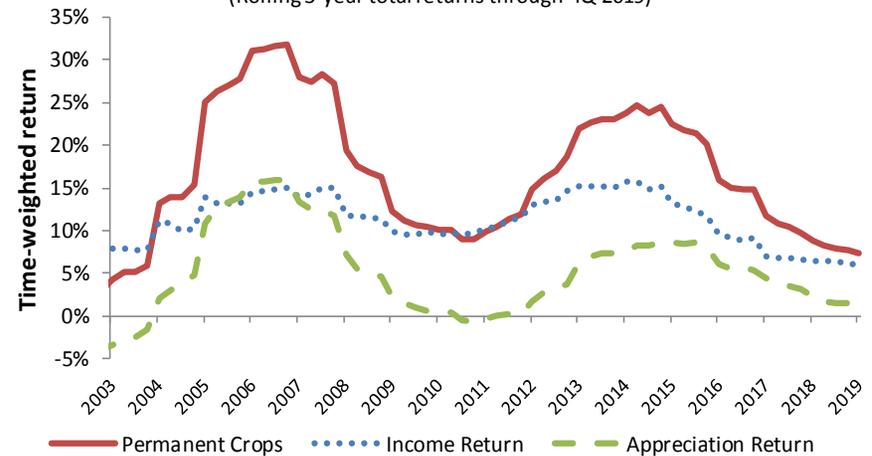
NCREIF Farm Type Performance Attribution
(Trailing Twelve Month time-weighted returns as of 4Q 2019)



NCREIF Row Crop Performance
(Rolling 3-year total returns through 4Q 2019)



NCREIF Permanent Crop Performance
(Rolling 3-year total returns through 4Q 2019)



Infrastructure

General

- Thirty-three funds reached a final dose in Q4 2019 totaling US\$44.0bn in aggregate commitments. This represents an 11% increase y-o-y in the number of funds holding a final dose. Aggregate capital raised increased by US\$14.9bn in comparison to the fourth quarter 2018.
- Transaction value for the quarter was up 29% in comparison to last quarter (est. aggregate value of US\$486.1bn) with a 10% increase in the number of deals dosed. Average deal size increased by 17% q-o-q.

Europe

- Notable secondary trades that dosed during the quarter included the US\$7.1bn sale of a c.50.0% stake in Gatwick airport. The sellers (Global Infrastructure Partners and co-shareholders) divested additional ownership stakes following their sale earlier in 2019 to Vinci. Other notable transactions included the dosing of Chevron's UK North Sea oil and gas fields for US\$2.8bn and the sale of ExxonMobil's Norwegian upstream oil and gas field to Var Energi for US\$4.5bn. Renewable energy transactions increased in 2019 led by offshore and onshore wind, including France's first offshore wind project for US\$2.5bn in Saint Nazaire.

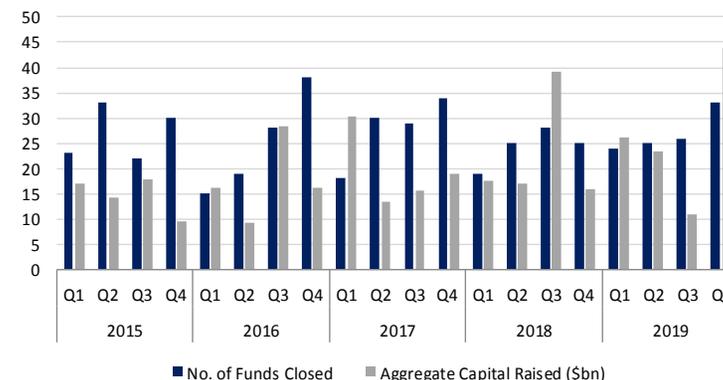
North America

- Notable transactions included the US\$10.3bn acquisition of Houston-based midstream owner Buckeye Partners by IFM and the US\$8.7bn acquisition of global freight railroad owner Genesee & Wyoming by Brookfield. During 2019, offshore and onshore wind were a significant percentage share of transaction volume in North America. During the quarter a 385MW portfolio of hydroelectric power generation assets was sold by I Squared Capital for US\$1.1bn.

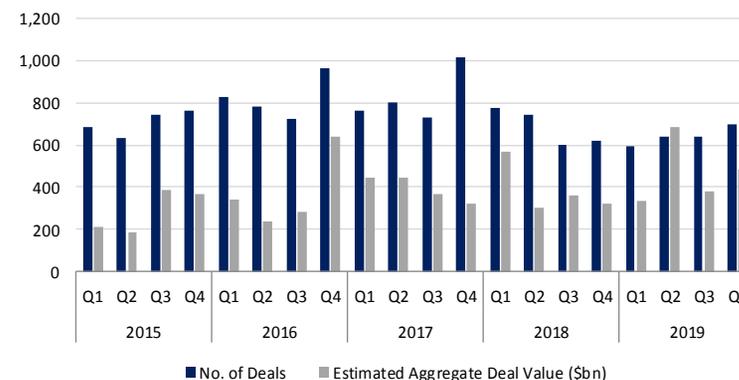
Asia Pacific

- Deal flow was dominated by a number of transactions including the financial dose of the development of the Sydney Metro Stage Two for US\$7.8bn, the line is expected to open in 2024. Another notable transaction was the privatization of a bundle of seven state owned airports in Hokkaido, Japan with a deal value of US\$3.3bn. China remained the largest investor in renewable energy for 2019, with a primary focus on offshore and onshore wind. A notable renewable energy deal dosed during the quarter was the development of a 376MW offshore wind project, Formosa II, in Taiwan for US\$2.7bn.

Unlisted Infrastructure Fundraising



Infrastructure Deals Completed



Source: Preqin

Timberland – Fourth Quarter 2019 Market Update

TIMBERLAND MARKETS

- U.S. housing starts improved greatly in 2019, increasing by 12% over the quarter (1.4 mil), and 22% over 2018; this was the highest quarterly level since 3Q07. **(FIGURE 1)**
- U.S. timberland markets were shaped by the large price correction experienced in North American wood products, the overall retreat in Northwest timber prices, and the slight increase in southern timber prices.
- U.S. timber prices improved across both the South and Northwest, driven by upticks in demand along with improving lumber markets. However, Northwest prices still remain 17% below 2018 levels. Lumber prices improved slightly for both the year and quarter, supported by strong late-season construction demand along with curtailments in production and several mills going offline.
- 2019 preliminary transaction estimates were about half of 2018’s \$3.6 billion, driven by a pronounced slow-down in the volume of timberland transactions in the Northwest and South. In contrast, the value of timberland transactions in the Lake States and Northeast during 2019 were well ahead of 2018. **(FIGURE 2)**
- Australia’s housing market continued to decrease, as the slow down in domestic housing reflected an easing of Australia’s strong economic momentum. Lumber prices decreased in turn, but remain near the all-time peak reached in 4Q18.

FIGURE 1: US Housing Starts (1000 UNITS) and U.S. Softwood Lumber

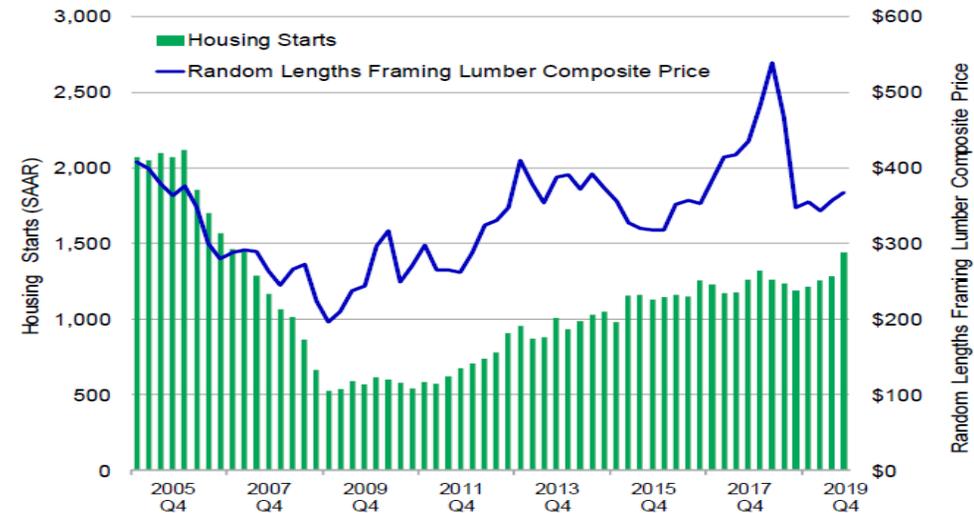
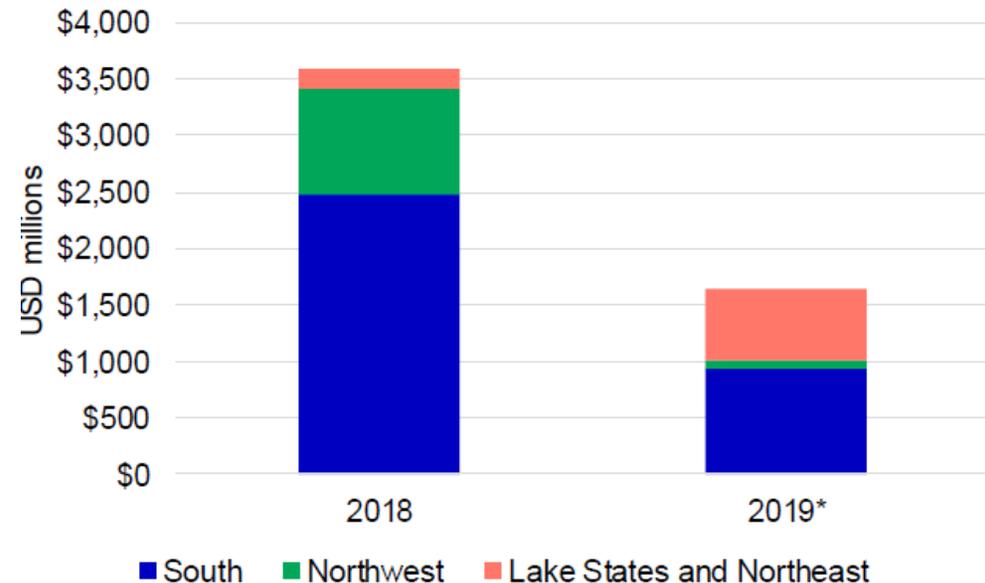


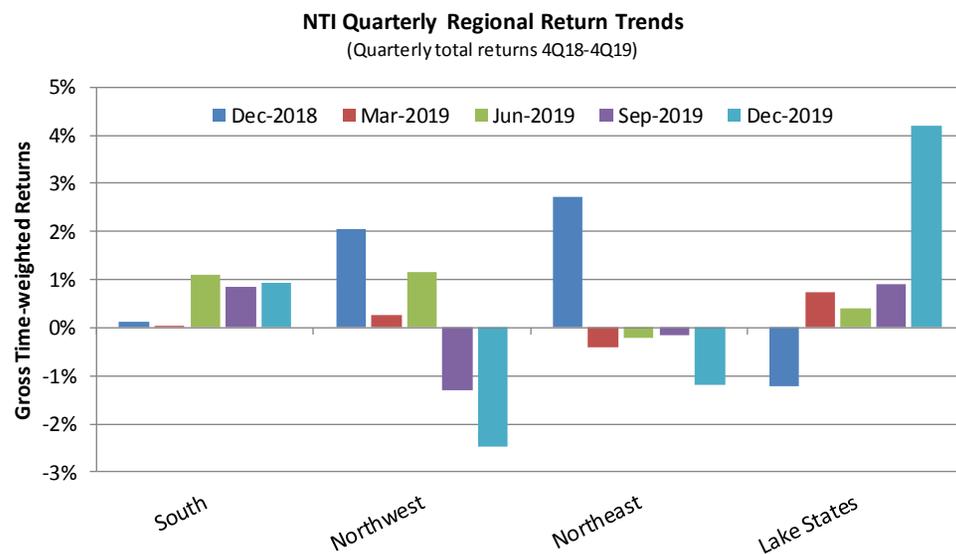
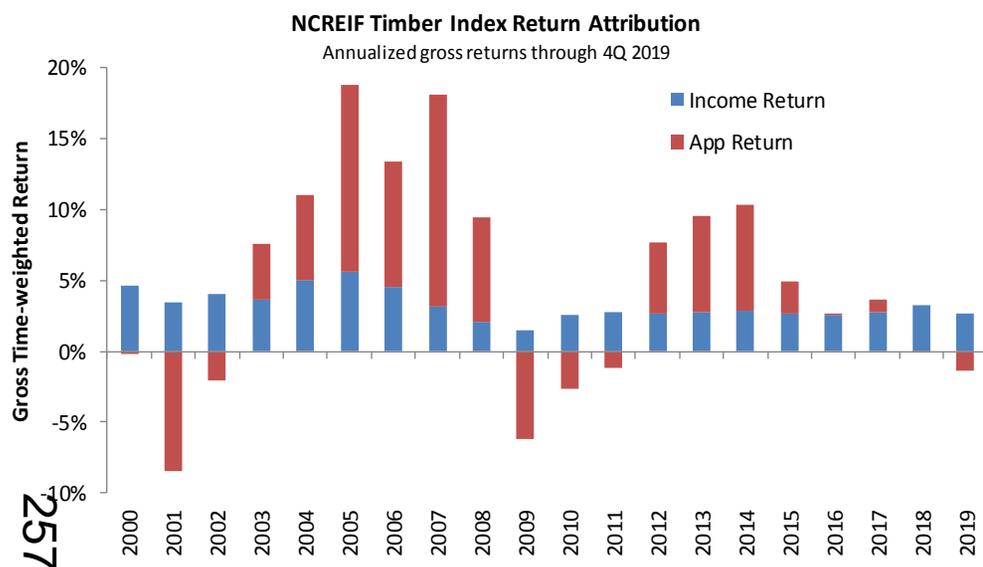
FIGURE 2: U.S. Timberland Transaction Value by Region



Timberland – Fourth Quarter 2019 Market Update

TIMBERLAND PERFORMANCE

- The NCREIF Timberland Index (“NTI”) returned -0.04% for the quarter, down from last quarter’s 0.18% return and 4Q18’s 0.75% return; the return consisted of 0.6% income and -0.7% appreciation.
- For the second consecutive quarter, the Northwest reported a negative return with a -2.5% total return driven by depreciation of -2.9%, which is now the region’s second negative return in over three years. The South, the largest regional component, and the Lake States remained the NTI’s top performing regions with returns of 0.9% and 4.2%, respectively. The Northeast remained pressured with a -1.2% return for the quarter as hardwood values and exports continued to suffer as a result of the trade war.
- For 2019, the NTI returned 1.3%, which continued to be driven entirely by its relatively consistent income return (+2.7%) while appreciation continued to drag on performance with a -1.4% return for the year.
- Timberland values experienced a slight decrease during the quarter dropping 19 basis points (\$1,874 per acre), but gained 1.4% over the year, driven primarily by a sharp increase in Northeastern per acre values (+17%) attributable to a drop off in regional acreage due to sales over the year (i.e., denominator effect).

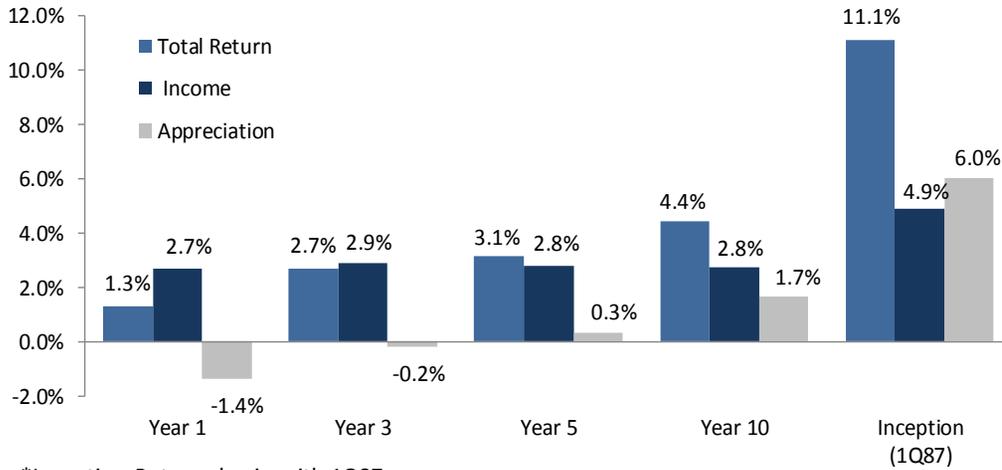


Timberland – Fourth Quarter 2019 Market Update

TIMBERLAND PERFORMANCE

NCREIF Timber Index Returns

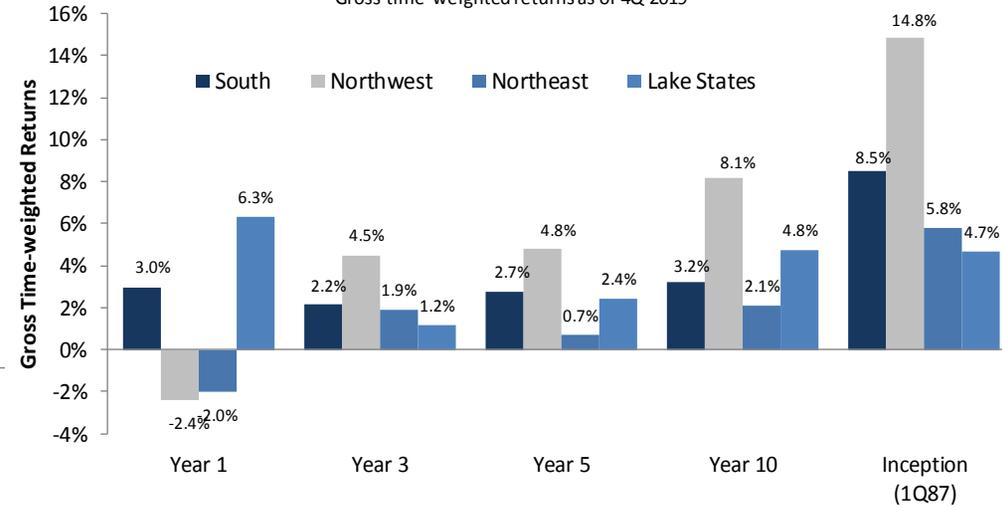
Gross time-weighted returns as of 4Q 2019



*Inception Returns begin with 1Q87

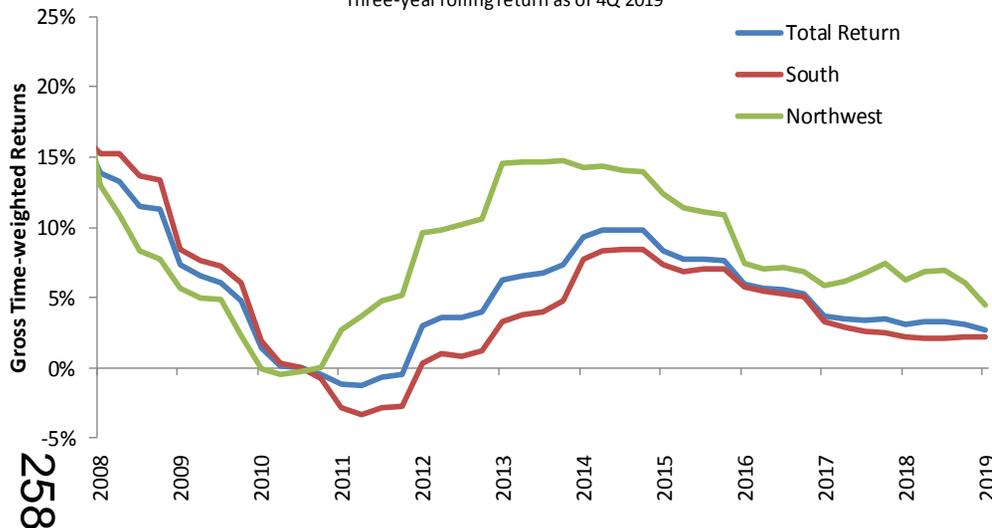
NCREIF Timber Index Regional Returns

Gross time-weighted returns as of 4Q 2019



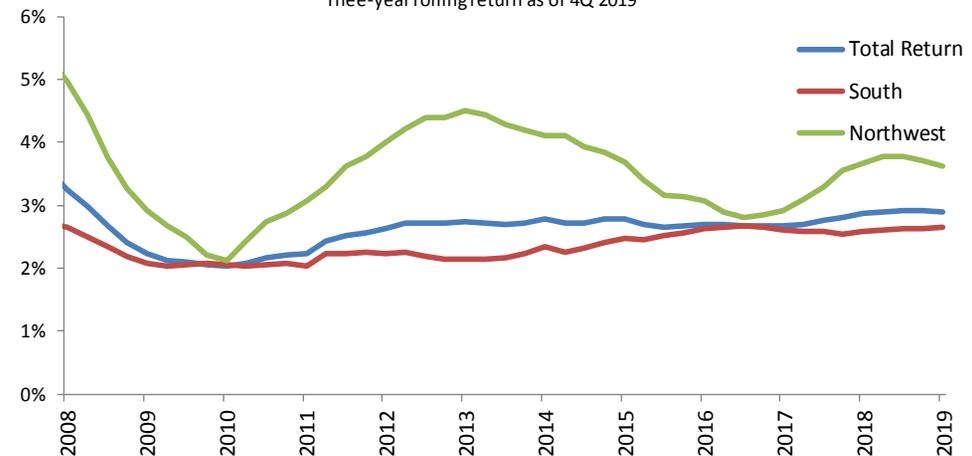
Total Returns by Region

Three-year rolling return as of 4Q 2019



EBITDA Returns by Region

Three-year rolling return as of 4Q 2019



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Agenda

Section 1	Executive Summary
Section 2	Market Overview
Section 3	Real Assets Portfolio Update
Section 4	Glossary

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ATRS' Portfolio Overview

As of 12/31/2019	Quarter	1 Year Ending	3 Year Ending	5 Year Ending	10 Year Ending
Total Real Assets Portfolio	1.4%	5.6%	7.2%	7.7%	8.8%
Real Assets Benchmark*	1.2%	4.6%	5.5%	6.9%	8.6%

As of December 31, 2019	ATRS' Portfolio \$ in Millions
Number of Investments	64
Total Commitments	\$3,663.4
Unfunded Commitments	\$471.8
Total Paid-In Capital	\$3,481.3
Total Distributions	\$2,940.4
Net Asset Value	\$2,161.2
Gross Asset Value	\$2,618.5
DPI*	0.8x
TVPI*	1.5x
Since Inception IRR*	7.3%
<i>*Active and Liquidated</i>	

As of December 31, 2019	Market Value (\$ millions)	Current Allocation (%)	Target (%)
ATRS Total Assets	\$18,317.5		
Real Assets Portfolio:	2,161.2	11.8%	15%
Real Estate	1,346.1	7.3%	10%
Core*	984.8	73.2%	50-70%
Non-Core	361.3	26.8%	30-50%
<i>Value-Added**</i>	191.9	14.3%	<i>N/A**</i>
<i>Opportunistic**</i>	169.4	12.6%	<i>N/A**</i>
Agriculture	200.5	1.1%	1%
Timber	301.2	1.6%	2%
Infrastructure	313.4	1.7%	2%
Unfunded Commitments	471.8	2.6%	
Market Value + Unfunded	2,633.0	14.4%	

* Includes Arkansas Investments

** No stated targets

ATRS' Real Estate Performance: Core Portfolio

As of 12/31/2019

Fund Name	Vintage Year	Total Commitment (\$)	Unfunded Commitment (\$)	Total Paid-In (\$)	Total Distributions (\$)	Net Asset Value (\$)	Total Value (\$)	DPI	TVPI	Net IRR
Arkansas Investments	2007	142,694,200	0	144,624,546	187,009,813	96,565,735	283,575,548	1.29x	1.96x	8.92%
JPMorgan Strategic Property Fund	2006	170,000,000	0	170,000,000	64,318,991	287,043,228	351,362,219	0.38x	2.07x	6.69%
MetLife Commercial Mortgage Income Fund, LP	2018	50,000,000	0	50,000,000	1,279,620	49,993,410	51,273,030	0.03x	1.03x	2.58%
Prudential Property Investment Separate Account	2005	170,000,000	0	212,936,320	130,139,034	276,475,038	406,614,071	0.61x	1.91x	6.51%
UBS Trumbull Property Fund	2005	170,000,000	0	199,152,820	131,225,493	221,141,186	352,366,679	0.66x	1.77x	5.67%
UBS Trumbull Property Income Fund	2016	50,000,000	0	50,000,000	3,557,156	53,614,534	57,171,690	0.07x	1.14x	6.07%
Total Core		752,694,200	0	826,713,686	517,530,105	984,833,131	1,502,363,237	0.63x	1.82x	6.71%

Time Weighted Returns:

As of 12/31/2019 Partnership Name	Quarter	1 Year Ending	3 Year Ending	5 Year Ending	10 Year Ending
Arkansas Investments	-2.1%	-0.6%	13.0%	12.1%	9.5%
JPMorgan Strategic Property Fund	2.1%	3.5%	5.6%	7.7%	10.3%
MetLife Commercial Mortgage Income Fund, LP	1.1%	N/A	N/A	N/A	N/A
Prudential Property Investment Separate Account	-0.1%	4.2%	6.2%	8.2%	11.1%
UBS Trumbull Property Fund	1.3%	-1.5%	3.3%	5.5%	8.4%
UBS Trumbull Property Income Fund	1.4%	5.2%	N/A	N/A	N/A
Total Core & Open-End Portfolio	0.7%	2.1%	6.1%	7.8%	9.5%

Note: Arkansas Investments are included in Core portfolio



ATRS' Real Estate Performance: Value-Add Portfolio

As of 12/31/2019

Fund Name	Vintage Year	Total Commitment (\$)	Unfunded Commitment (\$)	Total Paid-In (\$)	Total Distributions (\$)	Net Asset Value (\$)	Total Value (\$)	DPI	TVPI	Net IRR
Almanac Realty Securities Fund V, L.P.	2008	50,000,000	0	54,264,528	80,323,261	461,569	80,784,830	1.48x	1.49x	11.76%
Almanac Realty Securities Fund VI, L.P.	2012	30,000,000	0	18,829,376	20,657,864	5,329,971	25,987,835	1.10x	1.38x	11.62%
Almanac Realty Securities Fund VII, L.P.	2015	30,000,000	8,788,126	24,877,241	20,359,739	13,083,948	33,443,687	0.82x	1.34x	14.53%
Almanac Realty Securities Fund VIII, L.P.	2018	30,000,000	27,104,183	2,895,817	51,680	2,548,812	2,600,492	0.02x	0.90x	-25.23%
Calmwater Fund III	2017	30,000,000	7,427,676	32,658,362	11,382,016	23,507,303	34,889,319	0.35x	1.07x	7.36%
CBRE Strategic Partners U.S. Value 8, L.P.	2016	25,000,000	3,174,066	21,825,934	3,110,402	23,422,674	26,533,076	0.14x	1.22x	11.37%
FPA Core Plus Fund IV, L.P.	2018	30,000,000	11,400,000	18,600,000	593,581	18,225,696	18,819,277	0.03x	1.01x	1.27%
Harbert European Real Estate Fund IV	2016	25,009,965	1,706,259	23,985,080	6,606,643	23,949,322	30,555,965	0.28x	1.27x	9.18%
LaSalle Income & Growth Fund VI	2013	20,000,000	952,381	19,047,619	21,551,268	6,841,759	28,393,027	1.13x	1.49x	11.98%
LaSalle Income & Growth Fund VII	2017	20,000,000	4,867,555	18,436,536	8,537,892	13,763,015	22,300,907	0.46x	1.21x	12.13%
LaSalle Income & Growth Fund VIII	2018	50,000,000	50,000,000	0	0	-645,173	-645,173	N/A	N/A	N/A
Long Wharf Real Estate Partners V	2015	30,000,000	-0	31,494,655	13,524,292	25,236,187	38,760,479	0.43x	1.23x	10.88%
New Boston Real Estate Investment Fund VII	2008	10,000,000	0	9,668,685	7,995,420	52,507	8,047,927	0.83x	0.83x	-2.71%
Rockwood Capital Real Estate Partners Fund IX, L.P.	2012	30,000,000	4,081,464	27,422,960	31,112,586	7,968,548	39,081,134	1.13x	1.43x	13.05%
Rockwood Capital Real Estate Partners Fund XI, L.P.	2019	40,000,000	39,735,362	264,638	0	-286,940	-286,940	0.00x	-1.08x	N/A
Walton Street Real Estate Debt Fund II, LP	2019	40,000,000	38,111,727	1,888,273	1,385	2,022,720	2,024,105	0.00x	1.07x	7.08%
Westbrook Real Estate Fund IX, L.P.	2012	40,000,000	3,603,488	46,061,791	45,979,349	13,310,300	59,289,649	1.00x	1.29x	10.39%
Westbrook Real Estate Fund X, L.P.	2015	25,000,000	10,726,243	19,752,116	9,794,516	13,076,363	22,870,879	0.50x	1.16x	11.67%
Total Value Added		635,009,965	211,678,531	448,883,996	381,488,021	191,868,582	573,356,603	0.85x	1.28x	7.25%

ATRS' Real Estate Performance: Opportunistic Portfolio

As of 12/31/2019

Fund Name	Vintage Year	Total Commitment (\$)	Unfunded Commitment (\$)	Total Paid-In (\$)	Total Distributions (\$)	Net Asset Value (\$)	Total Value (\$)	DPI	TVPI	Net IRR
Blackstone Real Estate Partners VII, L.P.	2011	50,000,000	6,997,801	63,022,421	79,731,474	24,723,428	104,454,902	1.27x	1.66x	16.41%
Blackstone Real Estate Partners Europe VI	2019	49,095,200	47,815,564	1,503,596	0	1,472,048	1,472,048	0.00x	0.98x	-2.29%
Carlyle Realty Partners VII, L.P.	2014	30,000,000	19,739,550	28,126,518	23,906,526	13,535,498	37,442,024	0.85x	1.33x	12.17%
Carlyle Realty Partners VIII, L.P.	2018	25,000,000	19,074,722	6,357,351	413,389	5,820,514	6,233,903	0.07x	0.98x	-2.98%
CB Richard Ellis Strategic Partners U.S. Opportunity Fund V, L.P.	2008	50,000,000	1,643,033	48,619,340	56,973,829	10,177,345	67,151,174	1.17x	1.38x	5.30%
Cerberus Institutional Real Estate Partners III, L.P.	2012	30,000,000	7,307,395	39,123,764	38,368,449	14,931,401	53,299,850	0.98x	1.36x	10.75%
Heitman European Property Partners IV	2009	50,000,000	2,267,095	34,448,111	24,292,222	3,125,575	27,417,797	0.71x	0.80x	-3.73%
Kayne Anderson Real Estate Partners V, L.P.	2018	25,000,000	10,250,000	14,957,799	489,595	15,764,466	16,254,061	0.03x	1.09x	7.73%
Landmark Real Estate Partners VI, L.P.	2010	40,000,000	4,909,392	35,090,608	52,067,409	2,791,781	54,859,190	1.48x	1.56x	19.12%
Landmark Real Estate Partners VIII, L.P.	2017	25,000,000	18,329,483	10,040,949	3,447,536	8,089,988	11,537,524	0.34x	1.15x	17.18%
LaSalle Asia Opportunity Fund IV	2014	30,000,000	11,080,298	26,115,903	35,748,490	2,160,463	37,908,953	1.37x	1.45x	29.95%
LaSalle Asia Opportunity Fund V	2016	30,000,000	20,838,256	10,597,005	2,271,468	11,396,558	13,668,026	0.21x	1.29x	14.67%
Lone Star Real Estate Fund IV, L.P.	2015	24,260,817	5,102,992	20,914,154	20,017,359	8,992,138	29,009,497	0.96x	1.39x	16.26%
Metropolitan Real Estate Partners Co-Investments Fund, L.P.	2015	20,000,000	867,124	19,098,261	14,525,253	12,441,998	26,967,251	0.76x	1.41x	14.72%
O'Connor North American Property Partners II	2008	50,000,000	5,000,000	58,194,810	40,094,759	10,015,676	50,110,435	0.69x	0.86x	-2.77%
Olympus Real Estate Fund III, L.P.	2000	100,000,000	0	112,839,568	98,504,479	355,396	98,859,875	0.87x	0.88x	-3.66%
Torchlight Debt Opportunity Fund IV	2013	30,000,000	0	32,937,974	40,896,085	4,991,873	45,887,958	1.24x	1.39x	10.16%
Torchlight Debt Opportunity Fund V	2015	25,000,000	5,000,000	20,001,134	16,695,757	8,799,714	25,495,471	0.83x	1.27x	11.73%
Torchlight Debt Opportunity Fund VI, LP	2017	25,000,000	15,703,340	11,434,224	2,137,564	9,852,665	11,990,229	0.19x	1.05x	8.15%
Total Opportunistic		1,256,393,378	201,926,045	1,180,916,442	1,423,815,353	169,438,525	1,593,253,879	1.21x	1.35x	10.23%



ATRS' Timberland, Agriculture, and Infrastructure Performance

As of 12/31/2019

Fund Name	Vintage Year	Total Commitment (\$)	Unfunded Commitment (\$)	Total Paid-In (\$)	Total Distributions (\$)	Net Asset Value (\$)	Total Value (\$)	DPI	TVPI	Net IRR
BTG Timber Separate Account	1998	316,000,000	0	349,311,032	498,003,538	118,266,932	616,270,470	1.43x	1.76x	5.26%
BTG Pactual Open Ended Core U.S. Timberland Fund, LP	2019	182,930,629	0	182,930,629	0	182,930,629	182,930,629	0.00x	1.00x	0.00%
Total Timber		498,930,629	0	532,241,661	498,003,538	301,197,561	799,201,099	0.94x	1.50x	5.26%
HFMS Farmland Separate Account	2011	125,000,000	9,100,000	133,658,887	27,686,779	145,718,811	173,405,590	0.21x	1.30x	5.39%
UBS Agrivest Core Farmland Fund	2013	50,000,000	0	50,000,000	5,377,370	54,744,087	60,121,458	0.11x	1.20x	4.52%
Total Agriculture		175,000,000	9,100,000	183,658,887	33,064,149	200,462,898	233,527,048	0.18x	1.27x	5.20%

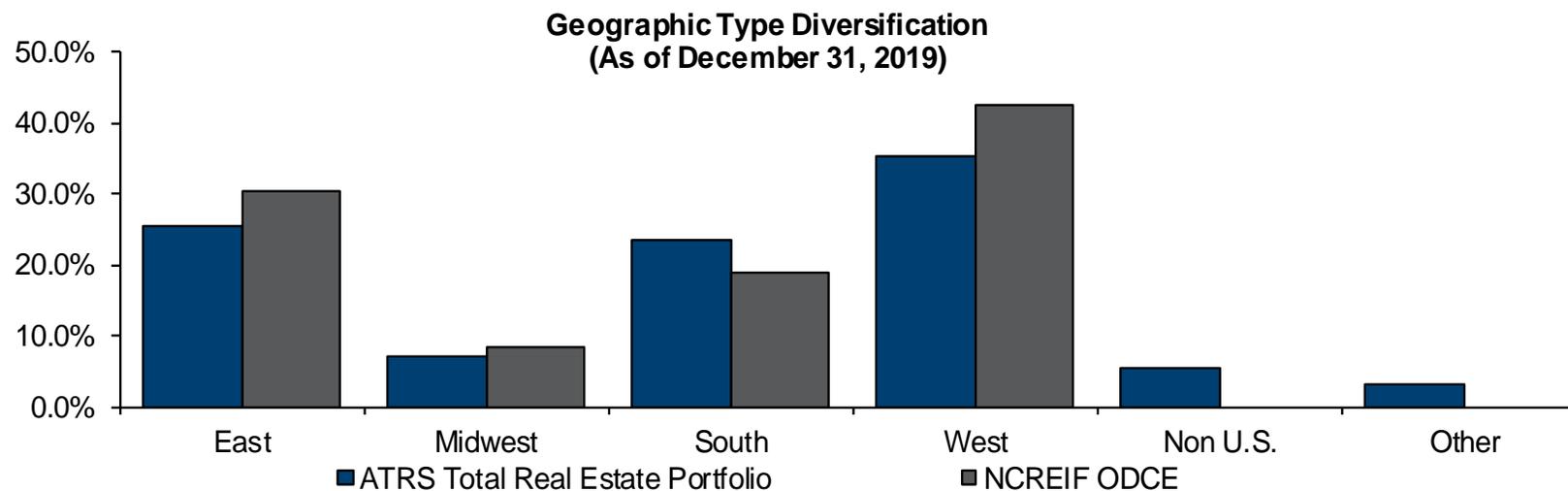
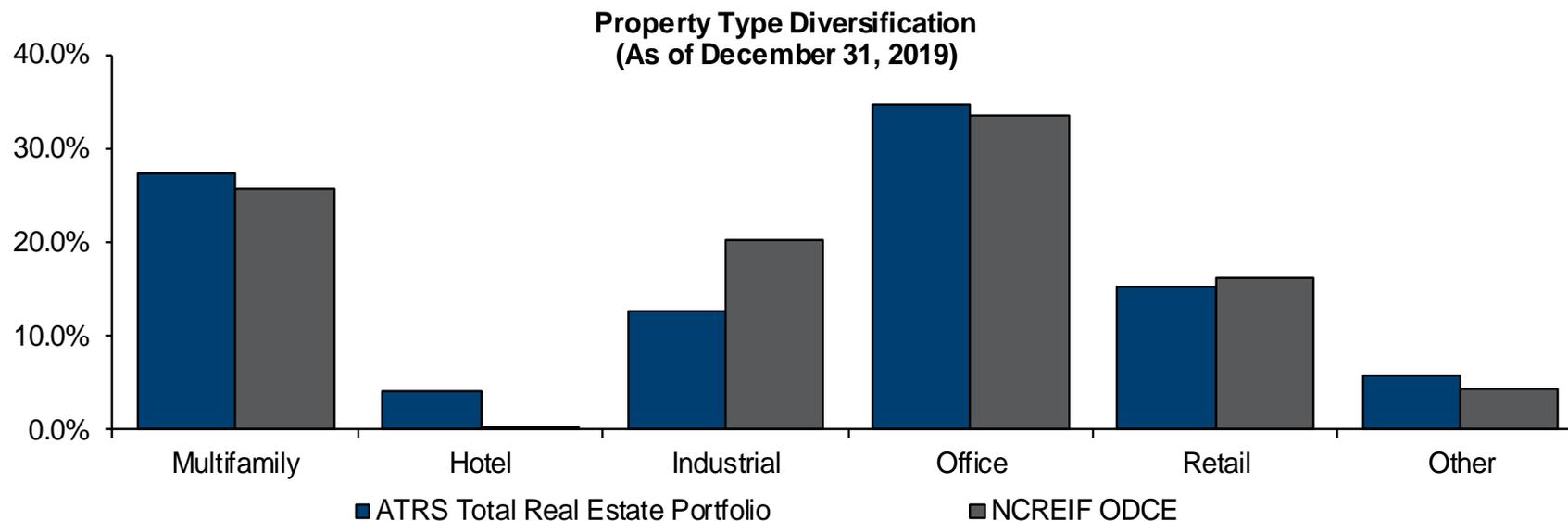
Fund Name	Vintage Year	Total Commitment (\$)	Unfunded Commitment (\$)	Total Paid-In (\$)	Total Distributions (\$)	Net Asset Value (\$)	Total Value (\$)	DPI	TVPI	Net IRR
DIF Infrastructure Fund V	2018	47,766,330	16,747,453	31,346,972	2,693,216	30,091,725	32,784,941	0.09x	1.05x	5.46%
IFM Global Infrastructure (US), L.P.	2017	50,000,000	0	50,000,000	751,307	58,113,413	58,864,721	0.02x	1.18x	14.03%
KKR Global Infrastructure Investors II, L.P.	2015	50,000,000	2,761,452	53,424,646	10,907,679	57,202,379	68,110,058	0.20x	1.27x	10.99%
Macquarie Infrastructure Partners III, L.P.	2013	50,000,000	7,231,715	46,770,085	20,474,934	45,187,139	65,662,073	0.44x	1.40x	12.89%
Global Infrastructure Partners III, L.P.	2016	50,000,000	12,863,054	40,845,195	5,542,374	41,006,665	46,549,039	0.14x	1.14x	7.16%
Total Core		197,766,330	26,740,621	181,541,703	34,827,137	190,594,657	225,421,793	0.19x	1.24x	11.90%
Antin Infrastructure Partners II, L.P.	2014	47,647,600	5,337,388	35,754,093	8,442,272	48,808,044	57,250,316	0.24x	1.60x	11.37%
First Reserve Energy Infrastructure Fund II, L.P.	2014	50,000,000	4,137,466	50,760,458	37,653,198	32,970,160	70,623,358	0.74x	1.39x	27.84%
Global Infrastructure Partners III, L.P.	2016	50,000,000	12,863,054	40,845,195	5,542,374	41,006,665	46,549,039	0.14x	1.14x	7.16%
Total Non-Core		147,647,600	22,337,908	127,359,746	51,637,844	122,784,869	174,422,713	0.41x	1.37x	13.82%
Total Infrastructure		345,413,930	49,078,529	308,901,449	86,464,981	313,379,526	399,844,506	0.28x	1.29x	12.84%

Portfolio Performance Detail: By Vintage Year

As of 12/31/2019

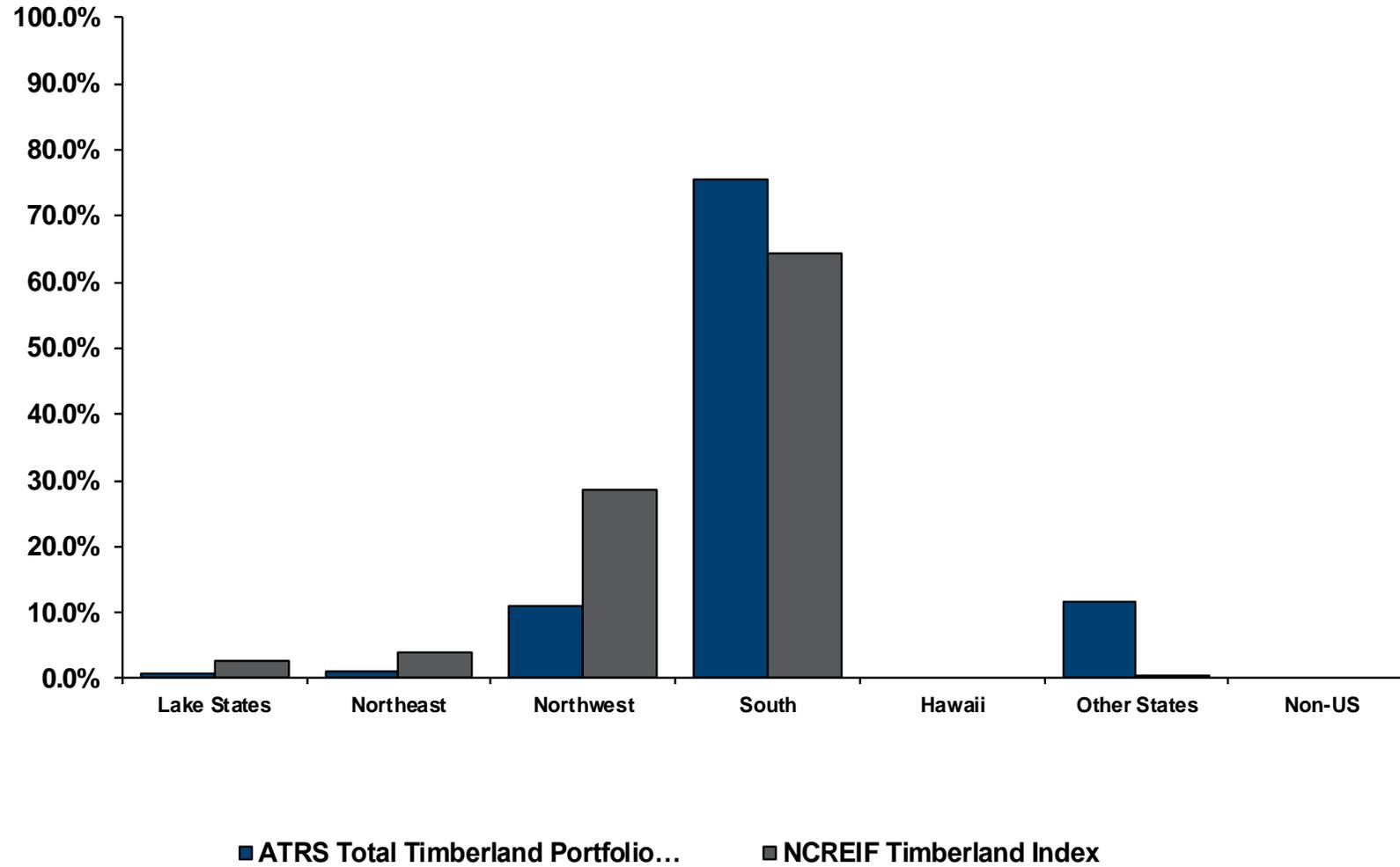
Vintage Year (ATRS)	Total Commitment	Unfunded Commitment	Total Paid-In	Total Distributions	Net Asset Value as of 12/31/2019	Total Value	DPI	TVPI	Net IRR
1997	75,000,000	0	80,737,536	120,795,230	0	120,795,230	1.50x	1.50x	13.42%
1998	416,000,000	0	462,173,681	645,943,315	118,266,932	764,210,247	1.40x	1.65x	5.63%
1999	178,794,401	0	189,842,518	316,052,650	0	316,052,650	1.66x	1.66x	15.90%
2000	209,242,960	0	228,396,220	289,418,462	355,396	289,773,858	1.27x	1.27x	8.51%
2005	340,000,000	0	412,089,139	261,364,526	497,616,224	758,980,750	0.63x	1.84x	6.11%
2006	220,000,000	0	220,000,000	128,548,327	287,043,228	415,591,555	0.58x	1.89x	6.05%
2007	197,694,200	0	199,624,547	234,678,733	96,565,735	331,244,469	1.18x	1.66x	6.62%
2008	220,000,000	6,643,033	231,151,345	270,927,211	20,707,097	291,634,308	1.17x	1.26x	5.17%
2009	50,000,000	2,267,095	34,448,111	24,292,222	3,125,575	27,417,797	0.71x	0.80x	-3.73%
2010	40,000,000	4,909,392	35,090,608	52,067,409	2,791,781	54,859,190	1.48x	1.56x	19.12%
2011	175,000,000	16,097,801	196,681,308	107,418,252	170,442,239	277,860,491	0.55x	1.41x	8.27%
2012	130,000,000	14,992,348	131,437,892	136,118,248	41,540,220	177,658,468	1.04x	1.35x	11.28%
2013	150,000,000	8,184,096	148,755,679	88,299,657	111,764,859	200,064,516	0.59x	1.34x	8.97%
2014	157,647,600	40,294,702	140,756,972	105,750,486	97,474,165	203,224,651	0.75x	1.44x	16.50%
2015	204,260,817	33,245,937	189,562,208	105,824,595	138,832,727	244,657,322	0.56x	1.29x	12.68%
2016	180,009,965	38,581,635	147,253,214	21,088,043	153,389,754	174,477,797	0.14x	1.18x	8.23%
2017	150,000,000	46,328,054	122,570,071	26,256,316	113,326,384	139,582,700	0.21x	1.14x	12.06%
2018	257,766,330	134,576,358	124,157,939	5,521,081	121,799,450	127,320,531	0.04x	1.03x	3.51%
2019	312,025,829	125,662,654	186,587,136	1,385	186,138,457	186,139,842	0.00x	1.00x	-13.49%
Grand Total(s):	3,663,442,102	471,783,105	3,481,316,121	2,940,366,148	2,161,180,223	5,101,546,371	0.84x	1.47x	7.25%

Portfolio Diversification – Real Estate



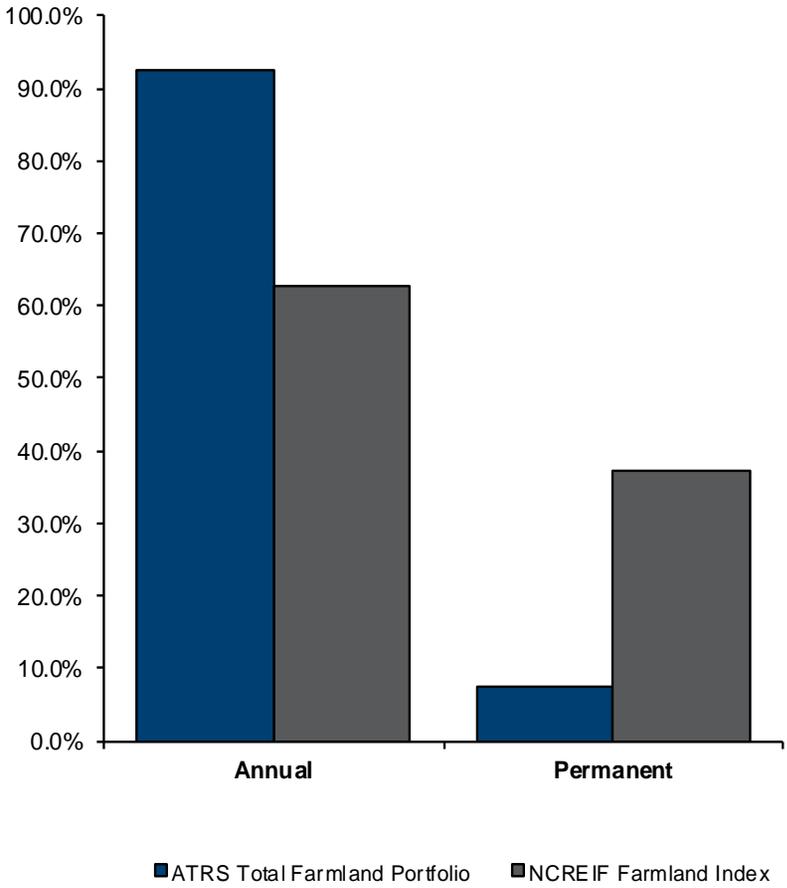
Portfolio Diversification – Timberland

**Geographic Type Diversification
(As of December 31, 2019)**

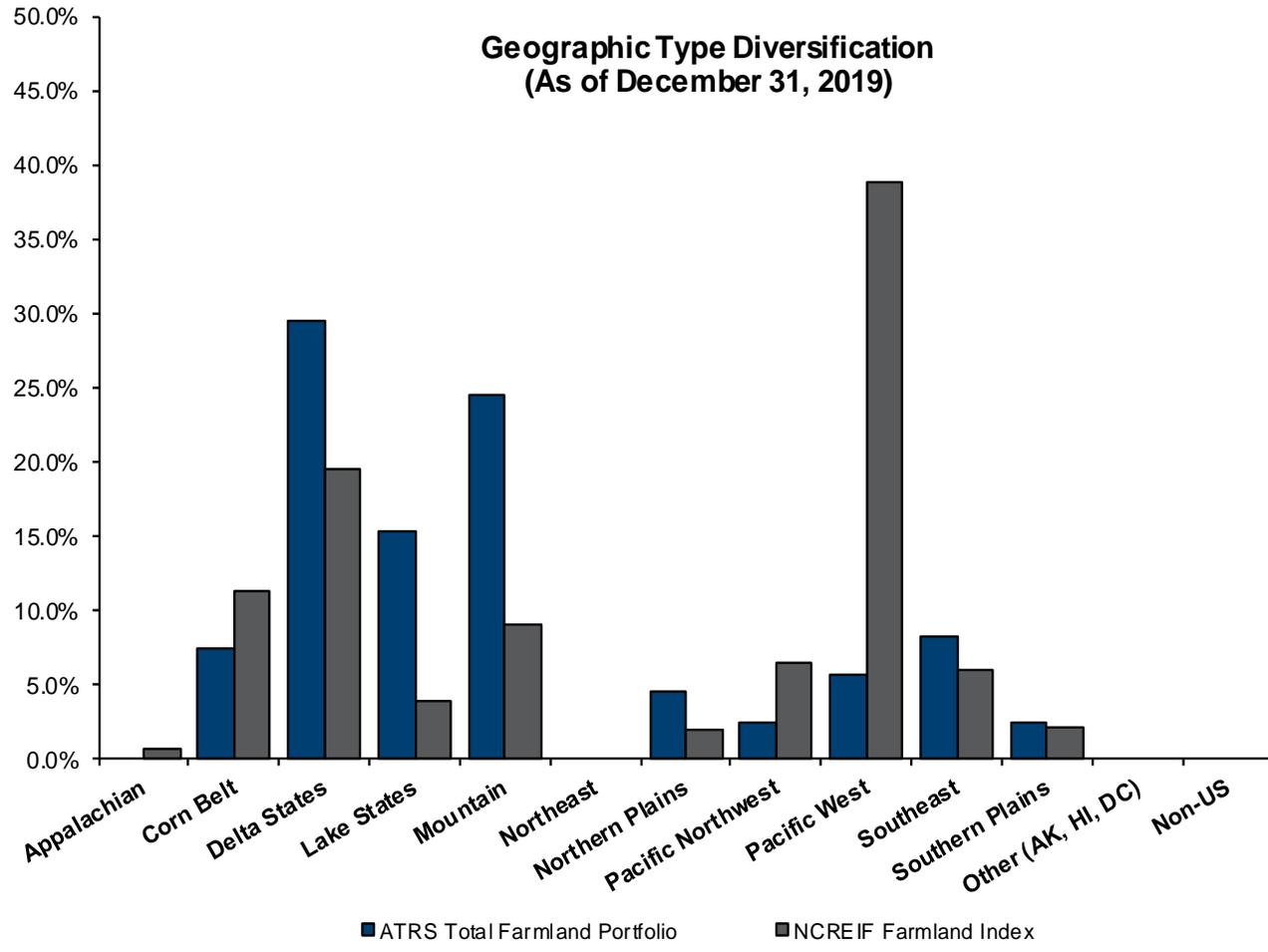


Portfolio Diversification – Agriculture

Crop Type Diversification as of 12/31/2019



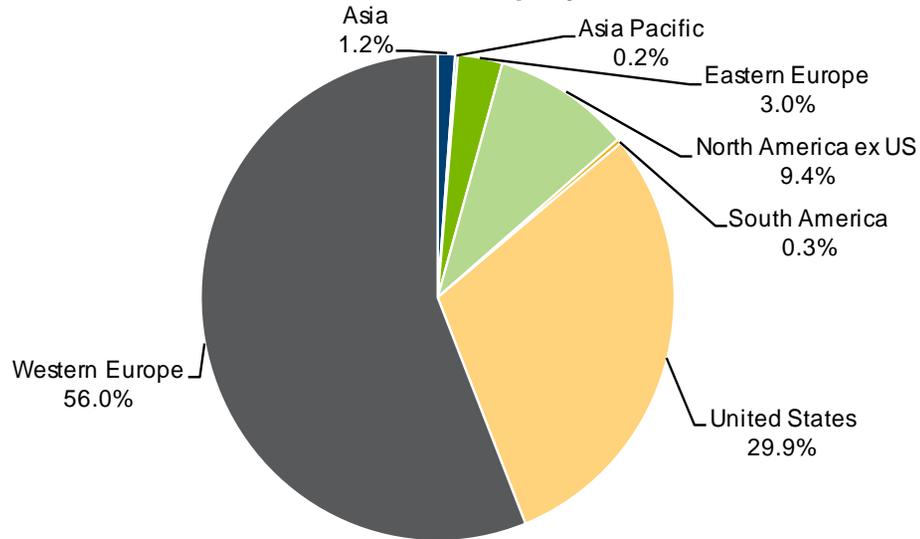
Geographic Type Diversification (As of December 31, 2019)



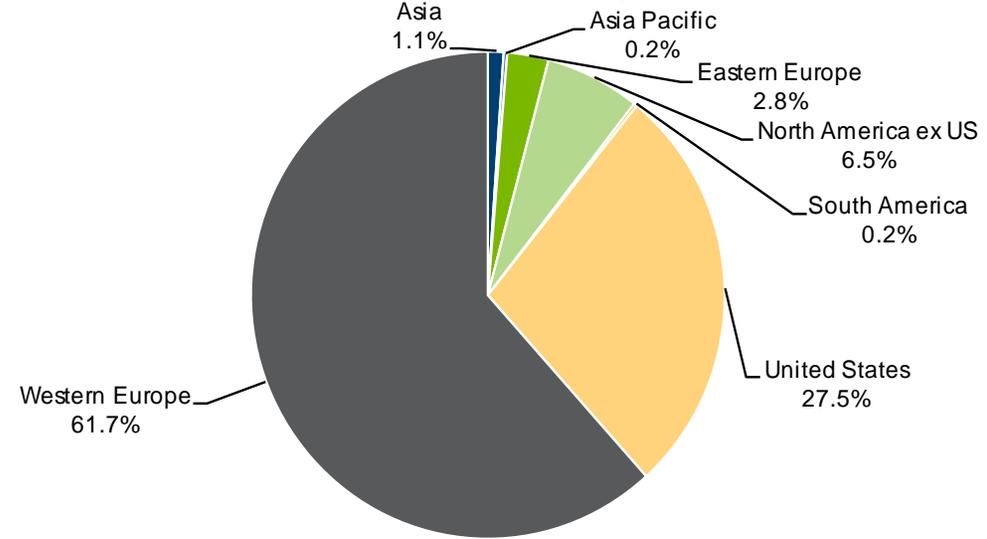


Portfolio Diversification – Infrastructure

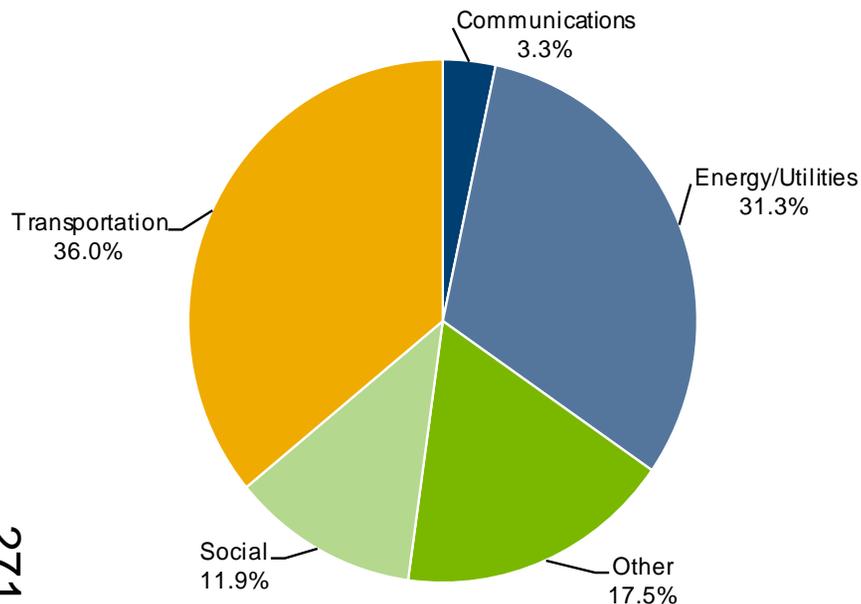
Geographic Diversification as % of Portfolio Company Cost



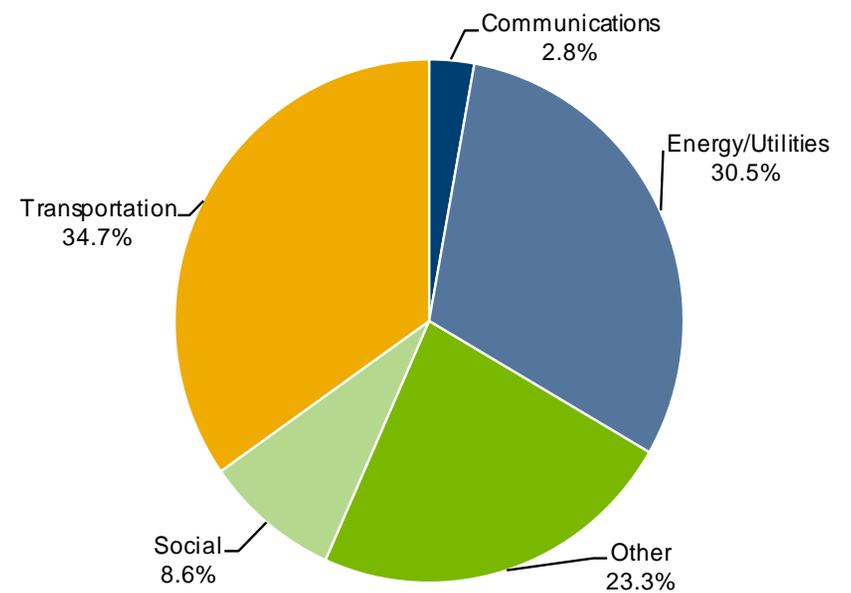
Geographic Diversification as % of Portfolio Company Value



Industry Diversification as % of Portfolio Company Cost

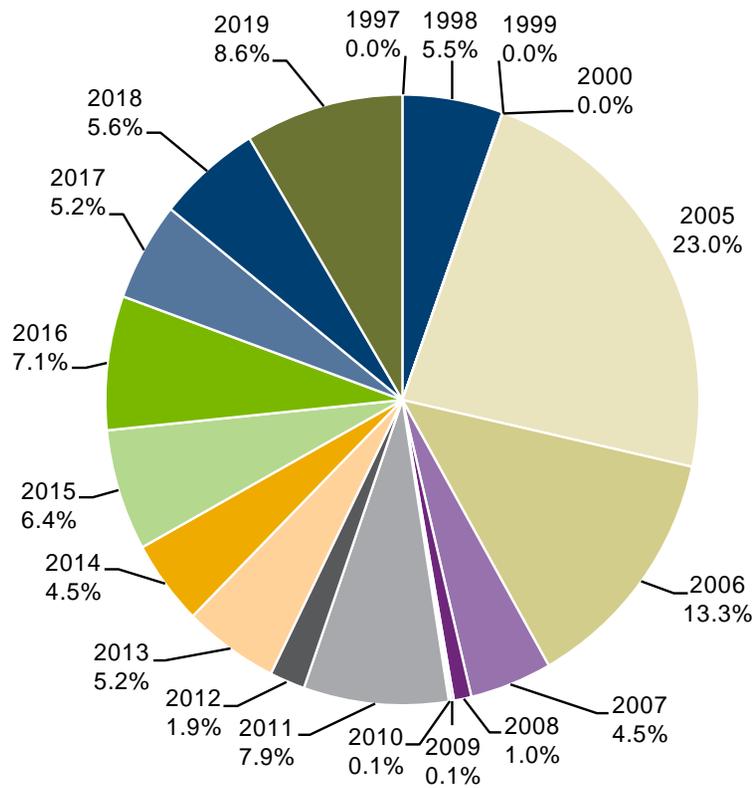


Industry Diversification as % of Portfolio Company Value

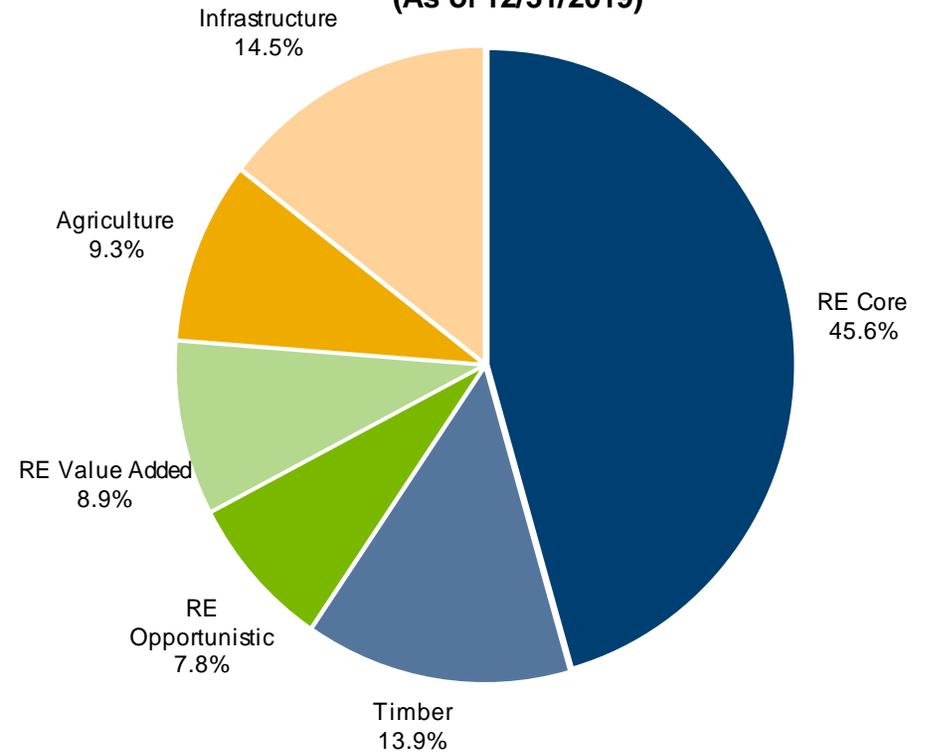


Portfolio Diversification (cont'd)

**Vintage Year Diversification by Net Asset Value
(As of 12/31/2019)**



**Style Diversification by Net Asset Value
(As of 12/31/2019)**



Note: Arkansas Investments are included in Core portfolio

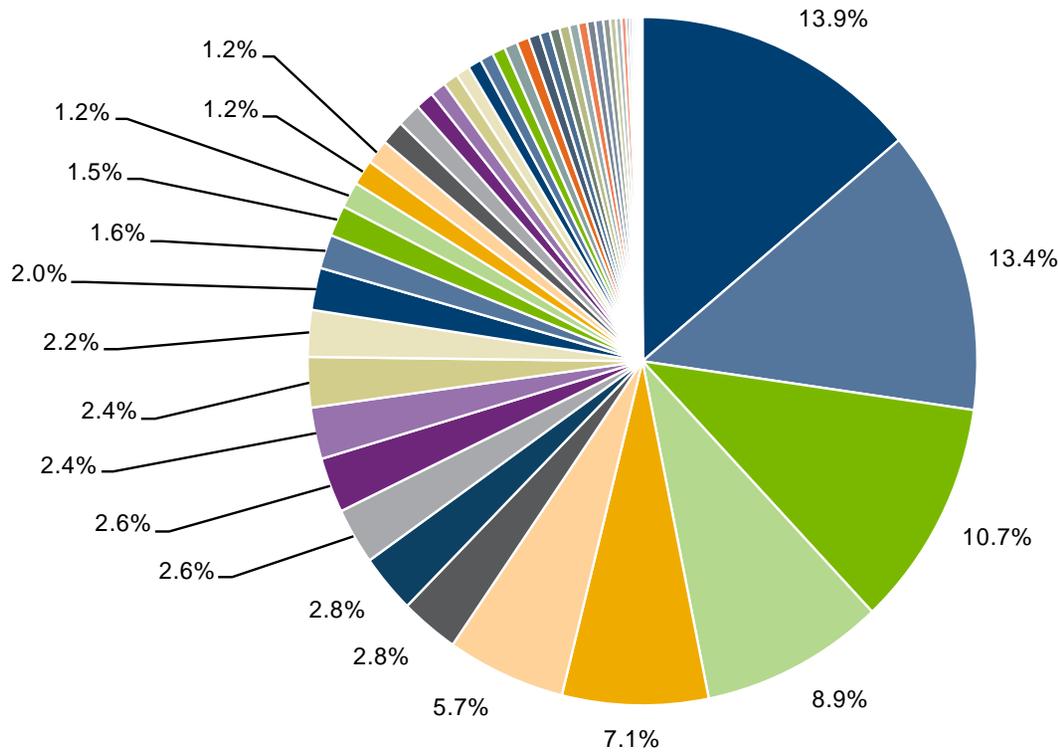
Portfolio Funding Summary

Partnership Name	Funded Commitment as of 12/31/2019	Unfunded Commitment as of 12/31/2019	Total Commitment
Almanac Realty Securities Fund V, L.P.	50,000,000	0	50,000,000
Almanac Realty Securities Fund VI, L.P.	30,000,000	0	30,000,000
Almanac Realty Securities Fund VII, L.P.	21,211,874	8,788,126	30,000,000
Almanac Realty Securities Fund VIII, L.P.	2,895,817	27,104,183	30,000,000
Antin Infrastructure Partners II, L.P.	42,310,212	5,337,388	47,647,600
Blackstone Real Estate Partners Europe VI	1,279,636	47,815,564	49,095,200
Blackstone Real Estate Partners VII, L.P.	43,002,199	6,997,801	50,000,000
BTG Pactual Open Ended Core U.S. Timberland Fund, LP	182,930,629	0	182,930,629
BTG Timber Separate Account	316,000,000	0	316,000,000
Calmwater Fund III	22,572,324	7,427,676	30,000,000
Carlyle Realty Partners VII, L.P.	10,260,450	19,739,550	30,000,000
Carlyle Realty Partners VIII, L.P.	5,925,278	19,074,722	25,000,000
CB Richard Ellis Strategic Partners U.S. Opportunity Fund V, L.P.	48,356,967	1,643,033	50,000,000
CBRE Strategic Partners U.S. Value 8, L.P.	21,825,934	3,174,066	25,000,000
Cerberus Institutional Real Estate Partners III, L.P.	22,692,605	7,307,395	30,000,000
DIF Infrastructure Fund V	31,018,877	16,747,453	47,766,330
First Reserve Energy Infrastructure Fund II, L.P.	45,862,534	4,137,466	50,000,000
FPA Core Plus Fund IV, L.P.	18,600,000	11,400,000	30,000,000
Global Infrastructure Partners III, L.P.	37,136,946	12,863,054	50,000,000
Harbert European Real Estate Fund IV	23,303,706	1,706,259	25,009,965
Heitman European Property Partners IV	47,732,905	2,267,095	50,000,000
HFMS Farmland Separate Account	115,900,000	9,100,000	125,000,000
IFM Global Infrastructure (US), L.P.	50,000,000	0	50,000,000
JPMorgan Strategic Property Fund	170,000,000	0	170,000,000
Kayne Anderson Real Estate Partners V, L.P.	14,750,000	10,250,000	25,000,000
KKR Global Infrastructure Investors II, L.P.	47,238,548	2,761,452	50,000,000
Landmark Real Estate Partners VI, L.P.	35,090,608	4,909,392	40,000,000
Landmark Real Estate Partners VIII, L.P.	6,670,517	18,329,483	25,000,000

Portfolio Funding Summary (cont'd)

Partnership Name	Funded Commitment as of 12/31/2019	Unfunded Commitment as of 12/31/2019	Total Commitment
LaSalle Asia Opportunity Fund IV	18,919,702	11,080,298	30,000,000
LaSalle Asia Opportunity Fund V	9,161,744	20,838,256	30,000,000
LaSalle Income & Growth Fund VI	19,047,619	952,381	20,000,000
LaSalle Income & Growth Fund VII	15,132,445	4,867,555	20,000,000
LaSalle Income & Growth Fund VIII	0	50,000,000	50,000,000
Lone Star Real Estate Fund IV, L.P.	19,157,825	5,102,992	24,260,817
Long Wharf Real Estate Partners V	30,000,000	0	30,000,000
Macquarie Infrastructure Partners III, L.P.	42,768,285	7,231,715	50,000,000
MetLife Commercial Mortgage Income Fund, LP	50,000,000	0	50,000,000
Metropolitan Real Estate Partners Co-Investments Fund, L.P.	19,132,876	867,124	20,000,000
New Boston Real Estate Investment Fund VII	10,000,000	0	10,000,000
O'Connor North American Property Partners II	45,000,000	5,000,000	50,000,000
Olympus Real Estate Fund III, L.P.	100,000,000	0	100,000,000
Prudential Property Investment Separate Account	170,000,000	0	170,000,000
Rockwood Capital Real Estate Partners Fund IX, L.P.	25,918,536	4,081,464	30,000,000
Rockwood Capital Real Estate Partners Fund XI, L.P.	264,638	39,735,362	40,000,000
Torchlight Debt Opportunity Fund III	30,000,000	0	30,000,000
Torchlight Debt Opportunity Fund IV	30,000,000	0	30,000,000
Torchlight Debt Opportunity Fund V	20,000,000	5,000,000	25,000,000
Torchlight Debt Opportunity Fund VI, LP	9,296,660	15,703,340	25,000,000
UBS Agrivest Core Farmland Fund	50,000,000	0	50,000,000
UBS Trumbull Property Fund	170,000,000	0	170,000,000
UBS Trumbull Property Income Fund	50,000,000	0	50,000,000
Walton Street Real Estate Debt Fund II, LP	1,888,273	38,111,727	40,000,000
Westbrook Real Estate Fund IX, L.P.	36,396,512	3,603,488	40,000,000
Westbrook Real Estate Fund X, L.P.	14,273,757	10,726,243	25,000,000
	2,437,210,199	471,783,103	2,922,710,541

Manager Diversification



*each manager represents less than 1% of NAV

- JPMorgan Strategic Property Fund
- Prudential Property Investment Separate Account
- UBS Trumbull Property Fund
- BTG Pactual Open Ended Core U.S. Timberland Fund, LP
- HFMS Farmland Separate Account
- BTG Timber Separate Account
- IFM Global Infrastructure (US), L.P.
- KKR Global Infrastructure Investors II, L.P.
- UBS Agrivest Core Farmland Fund
- UBS Trumbull Property Income Fund
- MetLife Commercial Mortgage Income Fund, LP
- Antin Infrastructure Partners II, L.P.
- Macquarie Infrastructure Partners III, L.P.
- Global Infrastructure Partners III, L.P.
- First Reserve Energy Infrastructure Fund II, L.P.
- DIF Infrastructure Fund V
- Long Wharf Real Estate Partners V
- Blackstone Real Estate Partners VII, L.P.
- Harbert European Real Estate Fund IV
- Calmwater Fund III
- CBRE Strategic Partners U.S. Value 8, L.P.
- FPA Core Plus Fund IV, L.P.
- Kayne Anderson Real Estate Partners V, L.P.
- Cerberus Institutional Real Estate Partners III, L.P.
- LaSalle Income & Growth Fund VII
- Carlyle Realty Partners VII, L.P.
- Westbrook Real Estate Fund IX, L.P.
- Almanac Realty Securities Fund VII, L.P.
- Westbrook Real Estate Fund X, L.P.
- Metropolitan Real Estate Partners Co-Investments Fund, L.P.
- LaSalle Asia Opportunity Fund V
- CB Richard Ellis Strategic Partners U.S. Opportunity Fund V, L.P.
- O'Connor North American Property Partners II
- Torchlight Debt Opportunity Fund VI, LP
- Lone Star Real Estate Fund IV, L.P.
- Torchlight Debt Opportunity Fund V
- Landmark Real Estate Partners VIII, L.P.
- Rockwood Capital Real Estate Partners Fund IX, L.P.
- LaSalle Income & Growth Fund VI
- Carlyle Realty Partners VIII, L.P.
- Almanac Realty Securities Fund VI, L.P.
- Torchlight Debt Opportunity Fund IV
- Heitman European Property Partners IV
- Landmark Real Estate Partners VI, L.P.
- Almanac Realty Securities Fund VIII, L.P.
- LaSalle Asia Opportunity Fund IV
- Walton Street Real Estate Debt Fund II, LP
- Blackstone Real Estate Partners Europe VI
- Almanac Realty Securities Fund V, L.P.
- Olympus Real Estate Fund III, L.P.
- New Boston Real Estate Investment Fund VII
- Torchlight Debt Opportunity Fund III
- Rockwood Capital Real Estate Partners Fund XI, L.P.
- LaSalle Income & Growth Fund VIII

Management Fees

ATRS Sub-Asset Class	ATRS Style	Partnership Name	Current Quarter Management Fees as of 12/31/2019	YTD Management Fees
Agriculture		HFMS Farmland Separate Account	(431,604.54)	(1,710,576.90)
Agriculture		UBS Agrivest Core Farmland Fund	(136,735.57)	(544,731.69)
Subtotal:			(568,340.11)	(2,255,308.59)
Subtotal: Agriculture			(568,340.11)	(2,255,308.59)
Infrastructure		Antin Infrastructure Partners II, L.P.	(79,143.09)	(312,870.10)
Infrastructure		DIF Infrastructure Fund V	11,159.81	33,817.74
Infrastructure		First Reserve Energy Infrastructure Fund II, L.P.	(156,919.00)	(655,674.00)
Infrastructure		Global Infrastructure Partners III, L.P.	(214,449.00)	(832,502.00)
Infrastructure		IFM Global Infrastructure (US), L.P.	(109,342.89)	(416,105.09)
Infrastructure		KKR Global Infrastructure Investors II, L.P.	(94,797.00)	(444,892.00)
Infrastructure		Macquarie Infrastructure Partners III, L.P.	(115,254.30)	(465,862.31)
Subtotal:			(758,745.47)	(3,094,087.76)
Subtotal: Infrastructure			(758,745.47)	(3,094,087.76)
Real Estate	Core	JPMorgan Strategic Property Fund	(617,680.06)	(2,467,569.70)
Real Estate	Core	MetLife Commercial Mortgage Income Fund, LP	(50,000.00)	(100,000.00)
Real Estate	Core	Prudential Property Investment Separate Account	(548,118.51)	(2,177,586.88)
Real Estate	Core	UBS Trumbull Property Fund	(420,507.53)	(1,756,068.95)
Real Estate	Core	UBS Trumbull Property Income Fund	(105,495.64)	(416,150.70)
Subtotal: Core			(1,741,801.74)	(6,917,376.23)

Management Fees (cont'd)

ATRS Sub-Asset Class	ATRS Style	Partnership Name	Current Quarter Management Fees as of 12/31/2019	YTD Management Fees
Real Estate	Opportunistic	Blackstone Real Estate Partners Europe VI	0.00	0.00
Real Estate	Opportunistic	Blackstone Real Estate Partners VII, L.P.	(71,209.00)	(325,879.00)
Real Estate	Opportunistic	Carlyle Realty Partners VII, L.P.	(58,594.00)	(246,064.00)
Real Estate	Opportunistic	Carlyle Realty Partners VIII, L.P.	(88,219.00)	(350,000.00)
Real Estate	Opportunistic	CB Richard Ellis Strategic Partners U.S. Opportunity Fund V, L.P.	0.00	(31,250.00)
Real Estate	Opportunistic	Cerberus Institutional Real Estate Partners III, L.P.	(20,775.00)	(90,985.00)
Real Estate	Opportunistic	Heitman European Property Partners IV	(109,122.48)	(280,647.43)
Real Estate	Opportunistic	Kayne Anderson Real Estate Partners V, L.P.	(109,375.00)	(437,500.00)
Real Estate	Opportunistic	Landmark Real Estate Partners VI, L.P.	(8,687.00)	(49,826.00)
Real Estate	Opportunistic	Landmark Real Estate Partners VIII, L.P.	(62,500.00)	(249,591.00)
Real Estate	Opportunistic	LaSalle Asia Opportunity Fund IV	(3,877.00)	(39,420.00)
Real Estate	Opportunistic	LaSalle Asia Opportunity Fund V	(85,010.00)	(324,454.00)
Real Estate	Opportunistic	Lone Star Real Estate Fund IV, L.P.	(7,349.00)	(36,985.00)
Real Estate	Opportunistic	Metropolitan Real Estate Partners Co-Investments Fund, L.P.	(28,735.68)	(125,276.79)
Real Estate	Opportunistic	O'Connor North American Property Partners II	(17,665.00)	(70,664.00)
Real Estate	Opportunistic	Olympus Real Estate Fund III, L.P.	0.00	0.00
Real Estate	Opportunistic	Torchlight Debt Opportunity Fund III	0.00	0.00
Real Estate	Opportunistic	Torchlight Debt Opportunity Fund IV	(17,854.00)	(93,999.00)
Real Estate	Opportunistic	Torchlight Debt Opportunity Fund V	(36,257.00)	(236,563.00)
Real Estate	Opportunistic	Torchlight Debt Opportunity Fund VI, LP	(79,688.00)	(318,752.00)
Subtotal: Opportunistic			(804,917.16)	(3,307,856.22)

Management Fees (cont'd)

ATRS Sub-Asset Class	ATRS Style	Partnership Name	Current Quarter Management Fees as of 12/31/2019	YTD Management Fees
Real Estate	Value Added	Almanac Realty Securities Fund V, L.P.	(1,790.00)	(21,354.00)
Real Estate	Value Added	Almanac Realty Securities Fund VI, L.P.	(11,699.00)	(57,200.00)
Real Estate	Value Added	Almanac Realty Securities Fund VII, L.P.	(37,517.00)	(214,625.00)
Real Estate	Value Added	Almanac Realty Securities Fund VIII, L.P.	(94,521.00)	(375,001.00)
Real Estate	Value Added	Calmwater Fund III	(83,333.17)	(302,722.00)
Real Estate	Value Added	CBRE Strategic Partners U.S. Value 8, L.P.	(51,567.00)	(204,756.00)
Real Estate	Value Added	FPA Core Plus Fund IV, L.P.	(31,556.00)	(109,565.00)
Real Estate	Value Added	Harbert European Real Estate Fund IV	(79,611.55)	(325,232.34)
Real Estate	Value Added	LaSalle Income & Growth Fund VI	(15,592.23)	(68,169.56)
Real Estate	Value Added	LaSalle Income & Growth Fund VII	(30,709.64)	(202,954.40)
Real Estate	Value Added	LaSalle Income & Growth Fund VIII	(456,164.36)	(456,164.36)
Real Estate	Value Added	Long Wharf Real Estate Partners V	(83,010.00)	(390,192.91)
Real Estate	Value Added	New Boston Real Estate Investment Fund VII	0.00	(5,637.00)
Real Estate	Value Added	Rockwood Capital Real Estate Partners Fund IX, L.P.	(71,067.95)	(281,895.74)
Real Estate	Value Added	Rockwood Capital Real Estate Partners Fund XI, L.P.	0.00	0.00
Real Estate	Value Added	Walton Street Real Estate Debt Fund II, LP	(16,740.00)	(44,202.00)
Real Estate	Value Added	Westbrook Real Estate Fund IX, L.P.	(44,441.00)	(194,123.00)
Real Estate	Value Added	Westbrook Real Estate Fund X, L.P.	(60,799.00)	(229,140.00)
Subtotal: Value Added			(1,170,118.90)	(3,482,934.31)
Subtotal: Real Estate			(3,716,837.80)	(13,708,166.76)
Timber		BTG Pactual Open Ended Core U.S. Timberland Fund, LP	0.00	0.00
Timber		BTG Timber Separate Account	(604,383.81)	(2,316,798.52)
Subtotal:			(604,383.81)	(2,316,798.52)
Subtotal: Timber			(604,383.81)	(2,316,798.52)
Grand Total(s):			(5,648,307.19)	(21,374,361.63)

Compliance Matrix

RISK MANAGEMENT

Property Type - Real Estate	NFI-ODCE	Target/Constraint	Minimum	Maximum	Actual	Compliant?
Office	33.5%	NFI-ODCE +/- 50%	16.8%	50.0%	34.7%	Yes
Retail	16.1%	NFI-ODCE +/- 50%	8.1%	24.2%	15.4%	Yes
Industrial	20.3%	NFI-ODCE +/- 50%	10.2%	30.5%	12.5%	Yes
Multifamily	25.7%	NFI-ODCE +/- 50%	12.9%	38.6%	27.3%	Yes
Lodging/Hotel	0.1%	NFI-ODCE +/- 50%	0.1%	0.2%	4.2%	No
Other ¹	4.3%	NFI-ODCE +/- 50%	2.2%	6.5%	5.9%	Yes
Geography - Real Estate	NFI-ODCE	Target/Constraint	Minimum	Maximum	Actual	Compliant?
West	42.4%	NFI-ODCE +/- 50%	21.2%	63.6%	35.4%	Yes
East	30.3%	NFI-ODCE +/- 50%	15.2%	45.5%	25.3%	Yes
Midwest	8.5%	NFI-ODCE +/- 50%	4.3%	12.8%	7.2%	Yes
South	18.8%	NFI-ODCE +/- 50%	9.4%	28.2%	23.5%	Yes
Other ^{2,3}	0.0%	n/a	n/a	n/a	3.0%	Yes
Non-U.S.	0.0%	n/a	0.0%	40.0%	5.6%	Yes
Geography - Timber	NCREIF Timberland	Target/Constraint	Minimum	Maximum	Actual	Compliant?
Lake States	2.7%	NCREIF Timberland +/- 50%	1.4%	4.1%	0.9%	No
Northeast	4.0%	NCREIF Timberland +/- 50%	2.0%	6.0%	1.0%	No
Northwest	28.7%	NCREIF Timberland +/- 50%	14.4%	43.1%	10.9%	No
South	64.2%	NCREIF Timberland +/- 50%	32.1%	96.3%	75.6%	Yes
Other	0.5%	NCREIF Timberland +/- 50%	0.3%	0.8%	11.7%	No

Compliance Matrix (cont'd)

RISK MANAGEMENT						
Geography - Agriculture	NCREIF Farmland	Target/Constraint	Minimum	Maximum	Actual	Compliant?
Appalachian	0.6%		0.0%	50.0%	0.0%	Yes
Corn Belt	11.3%		0.0%	50.0%	7.5%	Yes
Delta States	19.5%		0.0%	50.0%	29.5%	Yes
Lake States	3.9%		0.0%	50.0%	15.3%	Yes
Mountain	9.1%		0.0%	50.0%	24.5%	Yes
Northeast	0.0%		0.0%	50.0%	0.0%	Yes
Northern Plains	2.0%		0.0%	50.0%	4.6%	Yes
Pacific Northwest	6.5%		0.0%	50.0%	2.4%	Yes
Pacific West	38.9%		0.0%	50.0%	5.6%	Yes
Southeast	6.0%		0.0%	50.0%	8.3%	Yes
Southern Plains	2.2%		0.0%	50.0%	2.4%	Yes
Other	0.0%		0.0%	50.0%	0.0%	Yes
Non-U.S.	0.0%		0.0%	50.0%	0.0%	Yes
Geography - Infrastructure	Target/Constraint		Minimum	Maximum	Actual	Compliant?
U.S.			n/a	n/a	27.5%	No
Non-U.S.			0.0%	50.0%	72.5%	No
Asset Type - Infrastructure	Target/Constraint		Minimum	Maximum	Actual	Compliant?
Energy/Utilities			0.0%	70.0%	30.5%	Yes
Transportation			0.0%	70.0%	34.7%	Yes
Social			0.0%	70.0%	8.6%	Yes
Communications			0.0%	70.0%	2.8%	Yes
Other			0.0%	70.0%	23.3%	Yes
Manager	Target/Constraint		Minimum	Maximum	Max	Compliant?
			0.0%	30.0%	13.7%	Yes
Style	Target/Constraint		Minimum	Maximum	Actual	Compliant?
Core			50.0%	70.0%	73.2%	No
Non-Core			30.0%	50.0%	26.8%	No

Agenda

Section 1	Executive Summary
Section 2	Market Overview
Section 3	Real Assets Portfolio Update
Section 4	Glossary

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Glossary of Terms

- Catch-up - The provision that dictates how cash flows from the fund will be allocated between the investors and the manager in order for the manager to receive their performance fee. This allocation of cash flows occurs once the investors have collected their capital and preferred return
- Core - The most conservative institutional real estate investing style
- Core-Plus - A style whereby investments have a slightly higher level of risk and expected return than Core, primarily through use of leverage
- Development - The construction of buildings from breaking the ground through building completion. This may also include entitlement of the land and the pursuit of permits prior to construction
- DPI – Distributions to Paid In; the ratio of distributions from investments to total invested capital
- First Closing - The point at which a manager receives and executes the subscription documents and can begin drawing capital from investors
- Final Closing - The final date at which new investors can subscribe to a fund
- Internal Rate of Return (IRR) - A method of measuring the performance of a portfolio from inception through a particular point in time. This method weights returns according to the dollars invested at each point in time. Hence, this is known as dollar-weighted return. This is a better measure when the manager controls when dollars must be invested and is the most commonly used method of real estate performance evaluation; Gross IRR is gross of fee and Net IRR is net of fee
- NFI-ODCE – NCREIF Fund Index Open-end Diversified Core Equity Index is an index of investment returns reporting on both a historical and current basis the results of 33 open-end commingled funds pursuing a core investment strategy; underlying funds are leveraged with gross and net returns available
- NPI – NCREIF Property Index is a quarterly time series composite total rate of return measure of investment performance of a very large pool of individual commercial real estate properties acquired in the private market for investment purposes only; it is reported unlevered and gross of fee

Glossary of Terms (Cont'd)

- FTSE-NAREIT Equity REIT – An unmanaged capitalization-weighted index of all equity real estate investment trusts
- FTSE EPRA/NAREIT Global REIT – An unmanaged market-weighted total return index, which consists of many companies from Global markets whose floats are larger than \$100 million and derive more than half of their revenue from property-related activities
- Opportunistic - A style that is the riskiest form of real estate investing. The name derives from when such funds were formed after the early 1990s real estate market crash to take advantage of opportunities in unwanted properties. Such investments include ground-up development, highly-leveraged purchases, or transactions involving highly complicated legal or environmental situations
- Pre-Specified Deals – Investments that are purchased for a fund before its final close. The assets are typically warehoused on a line of credit
- Promote (Carried Interest) -The performance fee a manager receives once the investors have received their return of capital and the preferred return (return promised by the manager)
- RVPI – Residual Value to Paid In; the ratio of the residual value of an investment to total invested capital
- Time-Weighted Return - A method of measuring the performance of a portfolio over a particular period of time. Effectively, it is the return of one dollar invested in the portfolio at the beginning of the measurement period. This is a better return measure when the manager does not control when the dollars must be invested
- TVPI – Total value to paid-in ratio; the ratio of total value from an investment, including distributions, to total invested capital
- Value-Added - A style that represents moderate-risk real estate. A manager typically increases the future value of the investment by undertaking activities such as leasing, improving an existing building, or taking some risk through operating intensive assets, such as hotels or self-storage
- Vintage Year - The year in which a fund has its final closing. Typically coincides with the year a fund begins making investments

Glossary of Terms (Cont'd)

- NCREIF Timberland Index- The National Council of Real Estate Investment Fiduciaries (NCREIF) Timberland Index is a quarterly time series composite return measure of investment performance of a large pool of individual timber properties acquired in the private market for investment purposes only.
- NCREIF Farmland Index- The National Council of Real Estate Investment Fiduciaries (NCREIF) Farmland Index is a quarterly time series composite return measure of investment performance of a large pool of individual agricultural properties acquired in the private market for investment purposes only.

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There can be no assurance that any account will achieve results comparable to those presented. Past performance is not indicative of future results.



Real Estate InDetail

Torchlight Debt Fund VII, L.P.

A high return real estate debt fund

February 2020

Trade Secret and Confidential

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EXECUTIVE SUMMARY

OVERVIEW

Date

Rating

February 2020

Buy

Torchlight Investors, LLC (“Torchlight” or the “Sponsor”) is forming Torchlight Debt Fund VII, LP (the “Fund”), a \$1.5 billion closed-end commingled fund that will invest in commercial real estate debt. The Fund return target is a leveraged 10%-12% net IRR overall including a targeted 6% annual distribution, and a 1.35x net equity multiple over its 10-year term.

Primary Strategy: Originate high yield loans and acquire high risk/return pieces of CMBS securitizations. Debt is expected to be collateralized by traditional property types plus hotels and student housing. Fund is expected to be comprised ultimately of a large number of positions, ranging from 75 to 125 in number anywhere from \$5 to \$75 million in size.

- Subordinate debt in the form of pref equity and mezzanine;
 - Typically on transitional collateral, and usually higher LTV and non-recourse loans.
 - Properties located in population growth markets.
- Securities in the form of CMBS, mostly conduit B-pieces;
 - Typically on stable collateral.
 - May include other pieces or tranches of conduit securitizations, and may include agency k-series B-pieces.

Sponsor:

Parent	Torchlight Holdings, LLC	HQ Locations	New York City
Ownership	Privately held by employees. Majority owned/controlled by founder.	Founded	1995
Employees	56	AUM	\$3.4 billion GAV
Organization	Torchlight Holdings is a holdco for wholly-owned subsidiaries: SEC-registered investment management business Torchlight Investors, special servicing business Torchlight Loan Services, and a CDO advisory and collateral management business.		

Performance (as of Sep 30, 2019):

Fund	Fund Size (M)	Vintage	Fair Market Value			Realizations		DPI
			Net IRR	Net EM	Quartile Ranking* by IRR / Multiple	% of Projection	% of Transactions	
ING Clarion Debt Opportunity Fund	\$283	2003	25.1%	1.54x	1Q/2Q	100%	100%	1.54x
ING Clarion Debt Opportunity Fund II	\$732	2006	-1.2%	0.91x	3Q/3Q	100%	100%	0.91x
ING Clarion Debt Opportunity Fund III	\$765	2008	13.7%	1.54x	2Q/2Q	100%	100%	1.54x
Torchlight Debt Opportunity Fund IV	\$942	2012	10.3%	1.44x	3Q/3Q	83%	88%	1.20x
Torchlight Debt Opportunity Fund V	\$1,359	2015	11.7%	1.26x	3Q/3Q	44%	70%	0.56x
Torchlight Debt Opportunity Fund VI	\$1,684	2018	5.8%	1.04x	NM	5%	28%	0.00x

*Compared to all non-core closed-end real estate funds, which is predominantly equity but includes equity and debt, using Townsend plus Prequin data. Dataset comprised of 71 funds in 2003, 136 (2006), 78 (2008), 109 (2012), and 60 (2015).

Fund Structure Characteristics:

Structure	Closed-end fund	Risk Segment	Non-Core
Targeted Size	\$1.5 billion	Sponsor Commitment	\$10 million
Term	10 years from Final Close	Investment Period	3 years from Final Close
Avg Transaction	Ranges from \$5 to \$75 million	Typical Hold	5 to 7 years

Fees:

Management Fee	1.5% on Committed during the Investment Period, then on Invested	Incentive Fee	20% subject to an 8% IRR preferred return followed by a 50/50 catch-up.
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Status/Timing:

- Targeting a First Close on June 30 of about \$400M to \$500M. Sponsor offers a fee break for First Close timing.

COMPARATIVE ADVANTAGES

1. Management Experience

- Market Experience
 - The senior management team of Torchlight has an average tenure of 11 years at the Firm and 24 years of professional experience which spans mini meltdowns and the GFC and the long-running collapse of interest rates to near zero.
 - Since its inception, Torchlight has acquired over \$23 billion in public and private commercial real estate investments; and its wholly-owned special serving affiliate, Torchlight Loan Services, has worked out of 690 loans with a par amount of \$10.8 billion, and had to manage 230 properties totaling \$2.3 billion of equity.
 - For the CMBS portion of this fund strategy, the Sponsor has a long history as a B-piece buyer, a specialized niche with few long-time participants. The experience enables favorable structuring and negotiating up front to improve downside scenarios.
- Fiduciary Experience
 - The Sponsor has invested in a fiduciary capacity for commingled fund-based institutional capital since 2003, sponsoring ten investment funds for institutional clients, including public and corporate pension funds, endowments and foundations, and sovereign wealth funds.

2. Well-Established Market Participant

The business has been operating for 25 years as a CMBS B-piece buyer and investor in high yield structured finance. Continuity in the field is actually distinguishing given the exits and re-organizations of so many financial institutions that historically were participants, and the industry reputation developed over that time period provides sourcing advantages and relationship advantages with finance providers and with the various constituents in the securitization business.

3. Relative Track Record

Unlike the majority of high risk/return debt funds, and unlike many conduit CMBS B-piece buyers, the Sponsor has a good track record with this fund series. In stable markets the strategy has delivered 10%-12% net returns and when the down-scenario did occur, the GFC-impacted fund produced a 0.9x net equity multiple, which reflects a successful workout over time from its 0.4x FMV during the GFC.

4. Control Over Workouts

Typically in any conduit CMBS securitization, 1 to 5 loans out of a pool of 100 is expected to default. The Sponsor has an affiliated Fitch-rated special servicing business. When the Fund buys CMBS b-pieces, it can direct the special servicing of defaulted loans to its affiliate. The Sponsor can then control the workout, eliminating the risk of third party workout firms that are self-interested with no duty to the Torchlight Fund VII result. While this business model opens the door for possible conflicts of interest from affiliated transactions, Torchlight uses its special servicing affiliate as a support resource for its funds, not a primary revenue generator, and thereby remains aligned with fund outcomes.

POTENTIAL ISSUES AND CONCERNS

1. Leverage Guidelines

The manager uses non-recourse leverage (aka asset-level leverage) in the form of loan-on-loan financing, and embedded financing through structuring, collectively with no formal limit. It is a common practice to exclude embedded leverage from guidelines, but not explicit borrowing from creditors just because they are non-recourse.

Recourse leverage (aka fund-level leverage) may be used in addition to non-recourse asset-level leverage. Recourse leverage is capped at 30% of the Carrying Value¹ of the total assets of the Fund plus Unfunded Commitments. Recourse leverage in the form of repo financing on securities, and warehousing facilities for loans was a primary contributor to the collapse of certain levered debt funds during the GFC. In general, the inherent characteristics of higher risk/return levered debt funds allow for severe downside in the extreme scenarios.

Discussion: Because unfunded commitments naturally reduce to near-zero during the Investment Period, post-Investment Period, the cap on recourse leverage becomes meaningful. Torchlight funds historically have used high amounts of leverage initially that is progressively reduced to low levels such as 20% to 40% post-investment period. With or without formalized leverage guidelines, the Sponsor's self-imposed risk management practice comes from 25 years of workouts and from 25 years of negotiating financing agreements.

2. Fee Structure

This fund has an opportunity fund fee structure typical of the highest returning PERE funds. In contrast to those funds, this is a debt strategy targeting net returns 300-500 bps lower. Given the market evolution of collapsing interest rates and credit spread compression, debt fund returns don't support opportunity fund fee structures the way they could in the past.

Discussion: Most importantly, proper staffing with depth and long-time fiduciary experience is particularly worth paying for in this strategy given the complexities and ever-changing rules, and the interaction with usually self-interested constituents in the securitization business. Also, partly in recognition of the lowered return environment, meaningful fee breaks are offered. Fee discounts are offered for First Close timing and additionally for size (discussed in *Fees* section).

3. Underlying Collateral Risk Profile

Within the conduit CMBS component of the strategy, a buyer's kick-out right is not extensive enough to shape the exposures to only preferred property types, sizes, and locations. With limited control over the composition, the Fund will likely have to accept higher risk exposures it might not proactively seek, at a time in the cycle where selection increasingly becomes more important. Exposures in conduit CMBS typically include smaller-sized properties, less liquid tertiary markets, and higher risk properties such as hotels, retail strips, and suburban office.

Discussion: The Sponsor's experience and expertise is in CMBS deal selection. As a private independent sponsor, and one without a large third-party special servicing business to feed, it has no volume objective pressuring investment in a marginal deal or riskier collateral pool. And, because it's not a newer entrant it doesn't need to buy its way into I-banks' favor to see deal flow. The collateral quality and lending discipline of CMBS in general is much improved post-GFC. So, within the context of the CMBS market, the Sponsor can be selective, and, it can underweight CMBS altogether if risk-adjusted returns in private market debt are more compelling.

STRATEGY

OVERVIEW

The targeted gross return of 14%-16% is abnormally high for commercial real estate debt investing, reflective of (i) the use of financing, (ii) the expected rates for high-LTV situational loans, and (iii) the yield expectation for conduit CMBS B-pieces. Pro-forma assumptions:

- 60%-70% private market investments.

¹ This is a defined term. It means the value of unlevered assets plus the unencumbered portion of assets levered with non-recourse leverage. So, combining that net value with the amount of unfunded commitments, produces the total value used to compute a cap on recourse leverage. Recourse leverage is capped at 30% of that total value.

- Senior loans up to 70% LTV; bifurcated into an A-note to be sold and a B-note to be retained.
- Mezzanine and pref equity up to 90% LTV.
- 30%-40% public market securities.
 - Conduit CMBS B-pieces or other portions of securitizations.
 - Agency k-series B-pieces are not likely given reduced returns too dilutive to the target.

Base case business plan for all debt is hold-to-maturity. Any loan fees paid by borrowers accrue to the benefit of the Fund. Upside involves opportunistic sales of loans or securities, and also a re-securitization exit.

INVESTMENT GUIDELINES

Based on total Capital Commitments:

- Maximum of 15% exposure to a single asset.
- Maximum of 35% exposure to a single borrower.
- Up to 15% of the Fund may be non-US.
- No investments in other sponsors funds.

LEVERAGE

Certain individual holdings such as mezz loans will be held unlevered. Certain securities and senior loans will be leveraged with non-recourse asset-level financing. And then recourse fund-level leverage will be applied.

- Unlevered: In the context of a debt fund, such holdings as mezz and preferred equity are regularly referred to as unlevered because there is no credit-provider to the fund financing such positions. They have embedded leverage, meaning they are subordinate positions to a senior loan. Embedded leverage is not captured in reported leverage. It is an industry standard that is inherent in the sector, it is not any failure on the Sponsor's part to disclose risk.
- Non-Recourse Asset-Level: Maximum amount of financing on any single asset is unconstrained; Maximum rolled-up asset-level leverage is unconstrained.
- Recourse Fund-Level: The amount of fund-level financing will be capped at 30% of the Carrying Value of the fund assets plus 100% of Unfunded Commitments.

PIPELINE

Exhibit A provides the recent pipeline overview for the fund series.

SPONSORSHIP

Background: Loan workout and special servicing business founded in 1995 by Dan Heflin, backed by Jones Lang Wootton Realty Advisors. Established debt investment management alongside special servicing. In 2002, ING Group bought 70%, and folded it into its ING Clarion Capital division as it grew its US real estate financing businesses. The ING Clarion Debt Opportunity Fund series was launched in 2003 with Fund I (now raising Fund VII as Torchlight Investors), focused on non-investment grade CMBS and subordinate debt. Post GFC, ING Group retrenched and sold off many businesses, including the sponsorship of this fund series and its special servicing starting in 2010. Over time the business was sold entirely back to Dan Heflin and employees.

Ownership: Privately held by employees

- Dan Heflin (64%), Marc Young (8%), Robert Kopchains (7%), Mike Romo (5%), Felipe Dorregaray (5%), remaining ownership held by five additional employees with < 5% each.

AUM: \$3.4 billion GAV including uncalled capital

- ~90% is in the debt fund series; balance is in a public market securities-oriented hedge fund.

Organization: Holdco with an investment management subsidiary and a special servicer subsidiary.

- **Exhibit B** is the org chart.

Staffing: 60 people across the two subsidiaries.

- Investment Management: 56 people working out of a New York City office location.
 - Investment Management (12), Asset Management (14)
 - Financial/Accounting and Corporate Functions (21)
 - Marketing (9)
- Special Servicing: An additional 4 people are dedicated employees of the special servicer subsidiary.
 - Currently managing a \$273 million portfolio of distressed loans. 84% of assets under management/advisement are from Fund positions, 16% from third-party business.

TURNOVER, COMPENSATION AND RETENTION

Turnover within senior personnel (Senior VP and higher levels) has been one to three people per year over the past five years out of 20-24 senior professionals. This is not atypical. Departures of note included: Bill Stasiulatis, Managing Director in Investment Management, left in 2016 after 20 years to take time off; and Steve Schwartz, Managing Director in Special Servicing left after 6 years to join another firm's distressed debt workout team. In both cases departures did not trigger any Key Person clauses, and others at the firm took on portions of the departing professionals roles.

Compensation: Industry standard salary and bonus; plus, ~20% of carried interest is awarded subjectively to various integral non-owner employees across all functional groups.

Retention: 80% of the carried interest vests incrementally over five years, with the last 20% vesting upon liquidation.

CLIENT BASE

Public (68%), corporate pensions (9%), E&Fs (9%), Taft-Hartley (5%), HNWs (3%), other types collectively (6%).

ESG POLICIES & PRACTICES

As part of its underwriting and asset management, the Sponsor evaluates environmental elements and a borrower's plans for sustainability efforts and related efficiency improvements at the property. The Sponsor believes, as a financier and not an owner, it is in a position to analyze but not to craft and implement. It is not a signatory to the UN PRI or a participant in GRESB.

As an employer, the firm has a detailed code of ethics and sexual harassment policy overseen by the CCO who reports directly to the CEO, and participates in philanthropic and charitable actions.

COMPLIANCE / LITIGATION DISCLOSURES

No issues according to the firm's disclosures:

- Neither the firm nor any senior members been reported to or investigated by any regulatory authority within the past ten years.
- No key individuals, the GP, or any affiliated entity have ever filed for bankruptcy or had any judgments entered against them.
- Regarding past, pending, and/or threatened litigation, course-of-business actions due to the firm's roles as an investor in commercial mortgage debt as well as a special servicer responsible for the resolution of defaulted mortgages were disclosed. None are characterized as a material uninsured threat to the firm's current financial status.

OPERATIONAL DUE DILIGENCE

OVERVIEW

Independent of investment due diligence, the Aon Operational Due Diligence team (“AON ODD”) reviewed all relevant policies, procedures, and capabilities across a range of operations, middle and back office, and control functions, looking for established controls and operating procedures that align with best practice. Areas covered are (i) corporate governance, (ii) transaction execution, (iii) cash controls, (iv) valuations, (v) compliance, regulatory, and legal controls, (vi) counterparty risk oversight, (vii) business continuity/disaster recovery, (viii) cyber security, and (ix) service provider selection and monitoring.

- The review resulted in an A2 Pass rating. The firm has generally implemented institutional levels of controls and oversight.
 - Aon identified minor deviations that include i) a separation of duties concern regarding the sponsor’s Portfolio Analytics team that has both front and back office functions, ii) traders’ permission to execute CMBS trades with non-pre-approved brokers, and iii) a potential for a conflict-of interest situation between the Chief Compliance Officer and the Firm’s legal counsel firm where the Chief Compliance Officer is a co-owner.

INVESTMENT PROCESS

OVERVIEW

The structure and staffing of the Sponsor’s investment process is borne of its 25 years of operating experience.

- The investment team is comprised of 12 professionals with primary responsibility for acquisitions, deal structuring, and risk management. Team responsibilities are divided-up amongst members by public and private commercial real estate sourcing channels.
 - Uses in-house and external legal for structuring loan agreements with desired rights, remedies, and procedures for special servicing.
 - Those in public markets negotiate/structure loan pools with respect to finalization of loan terms and loan kick-outs.
- The Asset Management and Credit team is comprised of 14 professionals responsible for the underwriting of collateral cashflows, evaluating credit/borrower risk of proposed investments, distressed debt workout, hold/sell analysis, business plan development and execution, and asset disposition.
 - Engages third party firms during the due diligence process for CMBS deals;
 - Engage third parties for background reports for borrowers, guarantors, and other key entities/principals;
 - Orders property appraisals and property condition assessments;
 - Responsible for ongoing asset management (surveillance).

INVESTMENT COMMITTEE

Acts by unanimous vote for acquisitions and dispositions, and setting and re-setting parameters for purchasing and selling investment grade securities (which can then be executed via authorized employees without IC vote required for each and every buy/sell).

Name	Title/Function	Years of Experience	Years with Firm
Dan Heflin, Partner	CEO and Co-CIO	32	25
Mark Young, Partner	Co-CIO	26	11
Greg Dineen, Partner	Chief Credit Officer	17	3
Gianluca Montalti, Partner	Leads asset management	22	9
Sam Chang, Partner	Leads process for public market investments	21	21

Bios in **Exhibit C**.

USE OF AFFILIATED SERVICES

Whenever the Fund buys B-pieces, it will appoint the Sponsor’s Fitch-rated affiliated special servicer Torchlight Loan Services (“TLS”). This entitles TLS to receive standard fees from the CMBS trust for services provided.

- The fees paid to TLS by the CMBS trusts are reported in the annual financial statements of the Fund that owns the B-pieces.
- Because the markets in general have been stable for an extended period, there has been diminishing need for special servicing. Torchlight has in fact shrunk its affiliate drastically down to 4 dedicated employees, and fee revenues received by the affiliate are not material enough to represent a significant conflict-of-interest situation.

LP ADVISORY COMMITTEE

Five to nine members to be named at GP discretion². Typical duties and situations requiring consents as specified in the Fund’s LPA. Voting matters require majority vote.

VALUATIONS

Fair value to be determined in-house by the Sponsor for quarterly reporting, utilizing regularly/periodically provided external valuation inputs as follows:

- Loans: The fair value of senior loans, mezzanine loans, b-notes, JV partnerships, preferred equity and equity investments are determined by an independent third-party service provider at year-end.
- Securities: Torchlight obtains preliminary pricing from a third-party pricing service (presently IDC).

Valuations are prepared by a Valuation Committee (led by Felipe Dorregaray, Chief Operating Officer, Robert Del Monaco, Chief Financial Officer, and Richard Metsch, Chief Compliance Officer)

Independent auditor of the Fund is PricewaterhouseCoopers LLP

- As part of the Fund’s annual financial statement preparation and audit, the external auditor reviews valuation models and calculation methodologies.

FUND STRUCTURE

OVERVIEW

Closed-end fund to be organized as a Delaware limited partnership. May include parallel vehicles and feeder funds to accommodate various investor types.

- Sponsor: Torchlight Investors LLC
- General Partner of the Fund: Torchlight Debt GP, LLC
- Investment Manager to the Fund: Torchlight Investors LLC
 - Registered Investment Advisor with the SEC since 1998.
- Legal structuring chart is attached as **Exhibit D**.

REVIEW OF TERMS & CONDITIONS

Key Terms		Townsend Comment	
Target Returns:	14%-16% gross IRR; 10%-12% net	Neutral	
Fund Size:	\$1.5 billion (\$2 billion cap)	Neutral	

² Prior fund, Fund VI LPAC comprised of ArkTRS, Hawaii, Illinois Municipal, LA Dept of Water & Power, Louisiana TRS, NYC Comptroller, SWIB, The World Bank, and Utah.

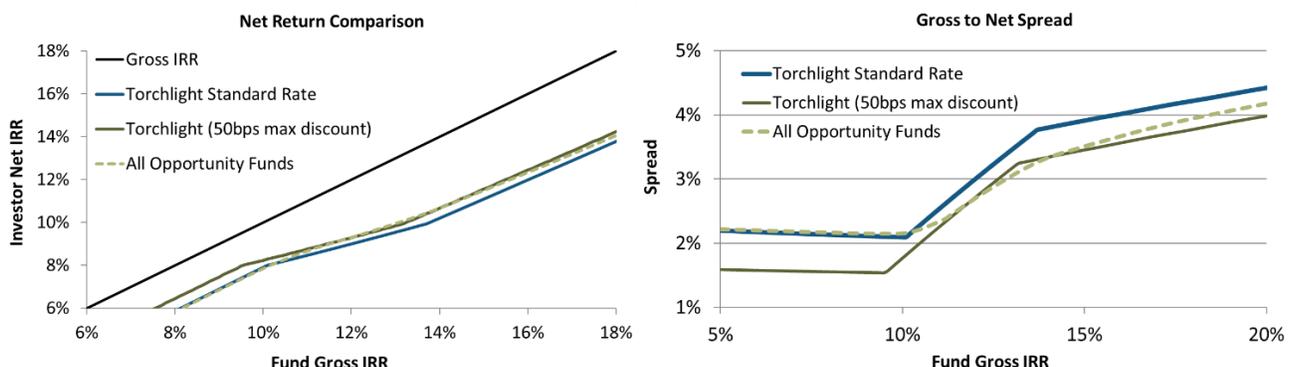
Sponsor Commitment:	\$10 million (0.67% of target, 0.5% of cap)	Neutral	This is a small percentage compared to PERE funds. Comes from owners, pro-rata by ownership.
Investment Period:	3 years from Final Close	Neutral	
Term:	10 years from Final Close; plus two 1-year extension options.	Neutral	This is a long term for a lock-up. Historically, 2 of the 3 realized funds liquidated within the term, and the GFC-impacted fund extended to 13 years.
Key Person Provision:	Triggered during the Investment Period in the event there are not at least three Officers involved managing the Fund, one of whom must be Mr Heflin or Mr Young. Officers are Sam Chang, Greg Dineen, Dan Heflin, Gianluca Montalti, and Marc Young.	Neutral	Sufficient provision. Relatedly, a somewhat unique feature of note regarding loss of the majority/controllers owner, Torchlight owns a life insurance policy on Dan Heflin which is to enable the minority partners to buy Mr Heflin's share from his estate.
No-Fault Removal/Termination Provisions:	75% of LP Capital may remove the GP; and 75% of LP capital may terminate the Investment Period.	Neutral	
Exclusivity:	None formally; the Sponsor expressly states it may take on competing capital at its discretion.	Negative	In practice the fund series has been the firm's primary vehicle for the strategy and primary source of revenue.
Placement Agent:	None. If that changes, GP will bear all associated expense.		

Fees and Distribution Waterfall

Organizational Expenses:	Fund pays up to \$2,250,000.			
Management Fee:	1.5% charged on Committed during the Investment period; on Invested thereafter. Discounts offered:			
	Standard Fee	First Close Fee Schedule Any Size Commitment	Additional Fee Break Offered* (Whichever method of the three below that produces the largest discount for each individual LP is the discount applied)	Subsequent Close LP - Aon/Townsend Client Discount* (If Applicable)
	1.50%	1.35%	10 bps for every \$75M, or 10 bps for every \$100M in AUM with Torchlight, or For AON/Townsend clients in the aggregate, 10 bps for the first \$100M and 5bps for each additional \$100M.	For Aon/Townsend clients, if a client participates in the First Close, any other client(s) coming into later closes receive a 10 bp reduction.
	<small>*In addition to a First Close Fee discount for timing, additional fee discounts are available to LPs up to a maximum of a 50 bps in reduction. The aggregated 50 bps in reduction is inclusive of the First Close Fee discount, Additional Fee Break that produces the largest discount, and the Subsequent Close LP - Aon/Townsend Client Discount (if applicable).</small>			
Incentive Fee/Waterfall Distribution:	20% of total profit subject to an 8% IRR preferred return followed by a 50/50 catch-up. (Fully pooled basis, requires all contributions and payments to be returned before GP receives any carry.)			
Clawback:	Triggered by (i) an incomplete return of capital and preferred, and (ii) in the event carried interest received by GP exceeds 20% of cumulative net profit. Guaranteed through personal guarantees of the partners.			

FEE AND EXPENSE COMPARISON

The following charts compare the total fee level at various gross returns to the average of 126 Real Estate Opportunity Funds currently in the market or recently closed. In that context, the Fund's fees are market, and the Sponsor offers the potential for meaningful Management Fee breaks.



PERFORMANCE (as of Sep 30, 2019)

SUMMARY

The track record for the fund series, by fund, is summarized as follows:

Fund	Vintage	Assets	Targeted Return (Net IRR)	Fair Market Value		Projected Life-of-Fund Net IRR	Realizations		
				Net IRR	Net Equity Multiple		% of Projection	% of Transactions	DPI
ING Clarion Debt Opportunity Fund	2003	21	15%+	25.1%	1.54x	25.1%	100%	100%	1.54x
ING Clarion Debt Opportunity Fund II	2006	70	15%+	-1.2%	0.91x	-1.2%	100%	100%	0.91x
ING Clarion Debt Opportunity Fund III	2008	92	15%+	13.7%	1.54x	13.7%	100%	100%	1.54x
Torchlight Debt Opportunity Fund IV	2012	117	15%+	10.3%	1.44x	10% -11%	83%	88%	1.20x
Torchlight Debt Opportunity Fund V	2015	112	13%-15%	11.7%	1.26x	12% -13%	44%	70%	0.56x
Torchlight Debt Opportunity Fund VI	2018	79	12%-15%	5.8%	1.04x	12% -15%	5%	28%	0.00x
Torchlight Debt Opportunity Fund VII	2020		10%-12%			10%-12%			

Realized Funds:

- Fund I was a short-lived 3.5 year CMBS B-piece fund that exited positions through a re-securitization that produced an outsized IRR along with sufficient equity multiple.
- Fund II went through the GFC. It also held mostly CMBS B-pieces. It de-levered drastically and was able to control workouts. The Fund was ultimately liquidated 13 years later, and at a 0.9x was actually one of the more successful results within that particular sector.
- Fund III included agency CMBS which provided investors strong returns, and it included higher LTV private market loans at a time competition was diminished. Those two drivers resulted in a strong 13.7% net IRR along with sufficient equity multiple.
- Fund IV results were driven again by higher LTV private market loans at a time competition was diminished, as well as restructured debt at an opportune time for collateral recoveries. The overall fund result was hampered by a wide range of returns including losses from CMBS B-pieces, and by less successful workouts and exposures to particular operator-dependent collateral types, namely retail, hotel, and student housing.

Unrealized Funds:

- Fund V reverted to a heavy weighting to CMBS, over half of which was realized relatively quickly. The primary drivers of projected returns, which are stronger than current FMVs, are equity and pref equity holdings that have back-ended accruals/participations.
- Fund VI is still in its Investment Period. It is again majority weighted to CMBS, a large portion of which may be re-securitizable. If that were to occur it would boost the FMV for the whole fund materially. A large overweight in the private market loan exposure is intentionally to Apartment collateral, in the form of higher LTV pref equity.

Vintage Peer Comparison

Debt-oriented opportunity funds whether credit distress specialists or CMBS B-piece buyers or high leverage lenders all are part of the PERE Opportunity Fund data set used below (from Townsend plus Preqin fund databases):



Dispersion of Returns

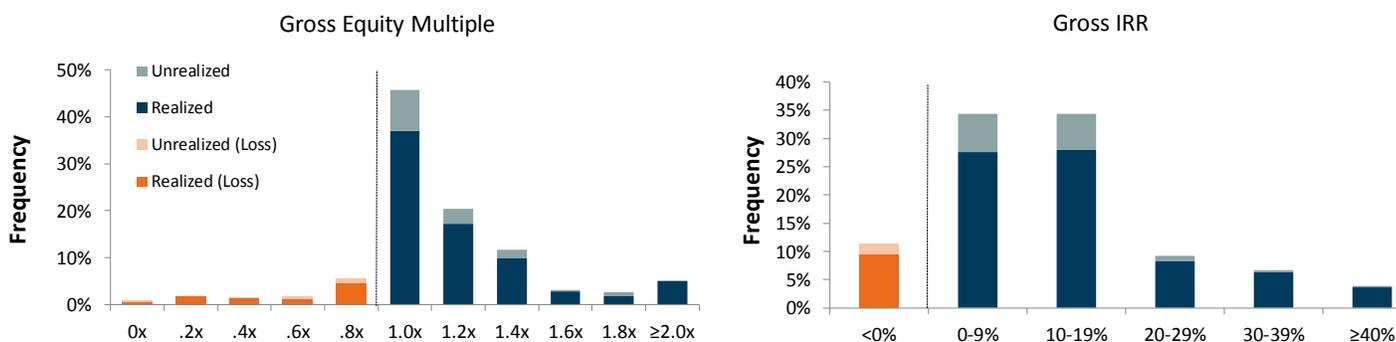
Across all the funds in the series, the Sponsor's track record is comprised of 491 transactions.

Gross deal level performance is broken into the Sponsor's various investment types and summarized as follows (chart at right):

The charts below displays the dispersion of 465 gross returns, (excluding 2019 Fund VI acquisitions held at cost) using FMVs for the portion of unrealized transactions:

Debt		Average Gross Return** (using FMVs on unrealized)			
		IRR		Equity Multiple	
Type	% of Track Record	Average	Range	Average	Range
CMBS					
Conduit	68%	9.3%	-91% to 58%	1.2x	0.1x to 2.7x
Agency	10%	26.0%	1.1% to 280%	1.5x	1.0x to 6.3x
Total	78%				
Senior Loans	7%	11.5%	3% to 29%	1.2x	1.0x to 1.6x
Mezzanine Loans	6%	15.2%	-1% to 31%	1.3x	1.0x to 1.8x
Pref Equity	3%	5.0%	-7% to 22%	1.1x	1.0x to 1.6x
Other	2%				
Equity					
Diversified	4%	7.0%	-13% to 25%	1.2x	0.9x to 2.0x
		100%			

** The numbers in the charts are simple averages of the gross asset-level returns after throwing out the high and low to adjust for extremes.



High Return/Opportunistic Debt Fund Sub-Set

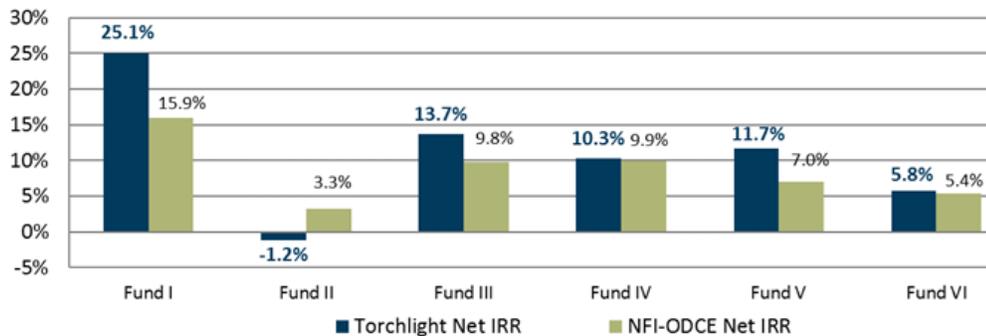
The following charts illustrate the Sponsor's track record relative to other high risk/return debt funds only. It is a sub-set of the PERE Opportunity Fund dataset used in the *Vintage Peer Comparison* chart above.

Amongst its immediate peer group, the Sponsor's track record stands out as consistently above median in net IRR and net equity multiple.



Benchmark Comparison

The following analysis assumes the Torchlight fund net cash flows were instead invested into and out of the NFI-ODCE index, a typical index for core. While opportunity funds collectively represent a catch-all of various non-core higher risk/return strategies, they commonly target a significant net-of-fee premium to core that has ranged historically around 500+ bps.



OTHER PERFORMANCE

Over its history the firm has generally been successful within its market segment, producing positive investment results for its investors in its various vehicles outside the Debt Opportunity Fund series.

Vehicle Name	Inception	Size (M)	Type/Strategy	Net Performance		Status
				IRR	Equity Multiple	
Value Fund	1995	\$420	Public securities (investment grade) hedge fund	7.5%	Open-end	Active
Gramercy Fund	1996	\$330	CMBS hedge fund	9.6%	2.7x	Liquidated in 2006
Solomer Fund	2005	\$500	Short strategy closed-end fund	60.0%	2.5x	Liquidated in 2008
Aeterno Fund	2005	\$400	Long/short securities hedge fund	8.0%	2.0x	Liquidated in 2014

EXHIBIT A: Pipeline

Torchlight Deal Pipeline

Private Real Estate

Investment Type	Projected Investment Size	Collateral Description	Projected Gross Base Case Yield
Note Purchase	\$60,800,000	\$65 million non-performing senior loan backed by a 425-unit class B multifamily property in Illinois	14% to 16%
Senior & Mezzanine Loan	\$44,000,000	\$50 million total capitalization backed by a 264-unit multifamily property in Tennessee	12% to 14%
Mezzanine Loan	\$30,000,000	\$295 million total capitalization backed by an 18-property industrial portfolio in Georgia, Texas, Florida, North Carolina, and Ohio	13% to 15%
Preferred Equity	\$40,760,000	\$143 million total capitalization backed by a 3-property multifamily portfolio in Texas	13% to 15%
Senior & Mezzanine Loan	\$125,000,000	\$175 million total capitalization backed by a 130-unit multifamily and retail property in New York	12% to 14%

Debt Securities

Investment Type	Projected Investment Size	Collateral Description	Projected Gross Base Case Yield
B-Piece	\$24,000,000	\$708 million Agency CMBS backed by 47 fixed rate loans	12% to 14%
B-Piece	\$30,000,000	\$950 million CMBS backed by 45 fixed rate loans	13% to 15%

EXHIBIT B: Org Chart

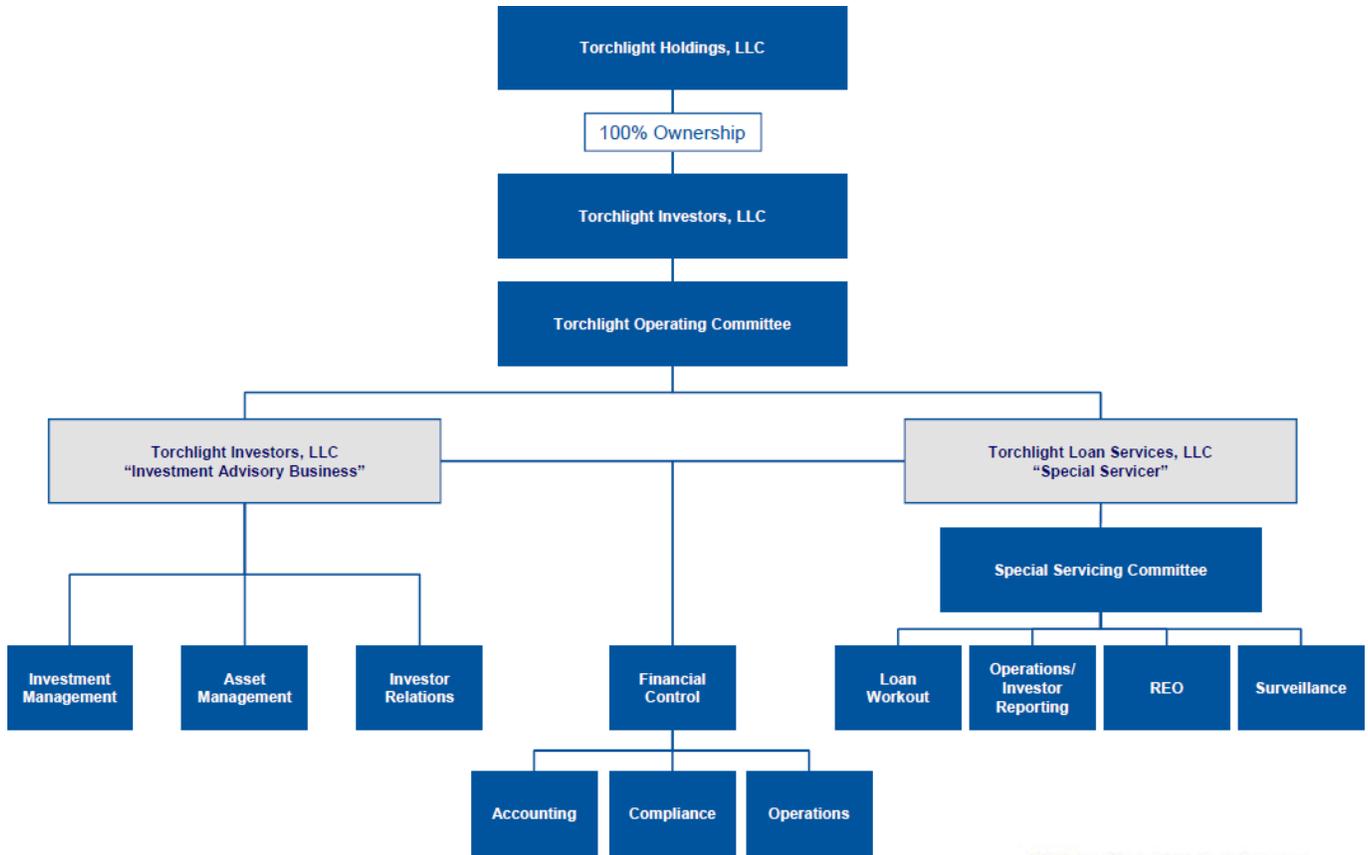


EXHIBIT C: Senior Professionals

Investment Committee

DANIEL HEFLIN, *Partner, Chief Executive Officer, co-Chief Investment Officer*

Dan is a Partner, the Chief Executive Officer and Co-Chief Investment Officer, as well as a member of the Investment and Operating Committees. Dan was the Founder of Torchlight and has 32 years of professional experience. Prior to Torchlight, Dan worked at Ocwen Financial Corporation, Credit Suisse and Arthur Andersen. While with Arthur Andersen, Dan received his Certified Public Accountant license in the State of New York. He holds an MS from the London School of Economics and Political Science and a BS from Texas Christian University.

MARC YOUNG, *Partner, co-Chief Investment Officer*

Marc is a Partner and a co-Chief Investment Officer as well as a member of the Investment and Operating Committees. He has 26 years of professional experience. Prior to Torchlight, Marc worked at CWC Capital and AIG Global Investments. Marc holds an MBA from Temple University and a BS from Pennsylvania State University.

GREGORY DINEEN, *Partner, Chief Credit Officer*

Greg is a Partner and Chief Credit Officer as well as a member of the Investment and Operating Committees. He has 17 years of professional experience. Prior to Torchlight, Greg worked at B2R Finance (Blackstone), Guggenheim Partners and Credit Suisse. Greg holds a BS from Villanova University.

GIANLUCA MONTALTI, *Partner*

Luca is a Partner in the asset management group as well as a member of the Investment and Operating Committees. He has 22 years of professional experience. Prior to Torchlight, Luca worked at Investcorp International, Greenstreet Real Estate Partners and LaSalle Investment Management. Luca holds an MBA from the University of Chicago and a BBA from the University of Michigan.

SAMUEL CHANG, *Partner*

Sam is a Partner in the investment management and acquisitions group as well as a member of the Investment and Operating Committees. He has 21 years of professional experience. Sam holds a BS from Columbia University.

Other Senior Professionals

MICHAEL BUTZ, *Partner*

Mike is a Partner in the investment management and acquisitions group as well as a member of the Operating Committee. He has 25 years of professional experience. Prior to Torchlight, Mike worked at Hypo Real Estate, Morgan Stanley and Nomura Securities. Mike holds a BS from Lehigh University.

FELIPE DORREGARAY, *Partner, Chief Operating Officer*

Felipe is a Partner and Chief Operating Officer as well as a member of the Operating Committee. He has 23 years of professional experience. Prior to Torchlight, Felipe worked at The Carlyle Group / Metropolitan Real Estate Equity Management, LLC, ABN AMRO, Inc., and Salomon Smith Barney, Inc. Felipe holds an MBA from The American University and a BS from the University of Miami.

ROBERT KOPCHAINS, *Partner*

Bob is a Partner in the investor relations group as well as a member of the Operating Committee. Bob has 28 years of professional experience, including 20 in the financial services industry. Prior to Torchlight, Bob worked at American Express TRS Company. Bob holds an MBA from New York University and a BA from Middlebury College.

MICHAEL ROMO, *Partner*

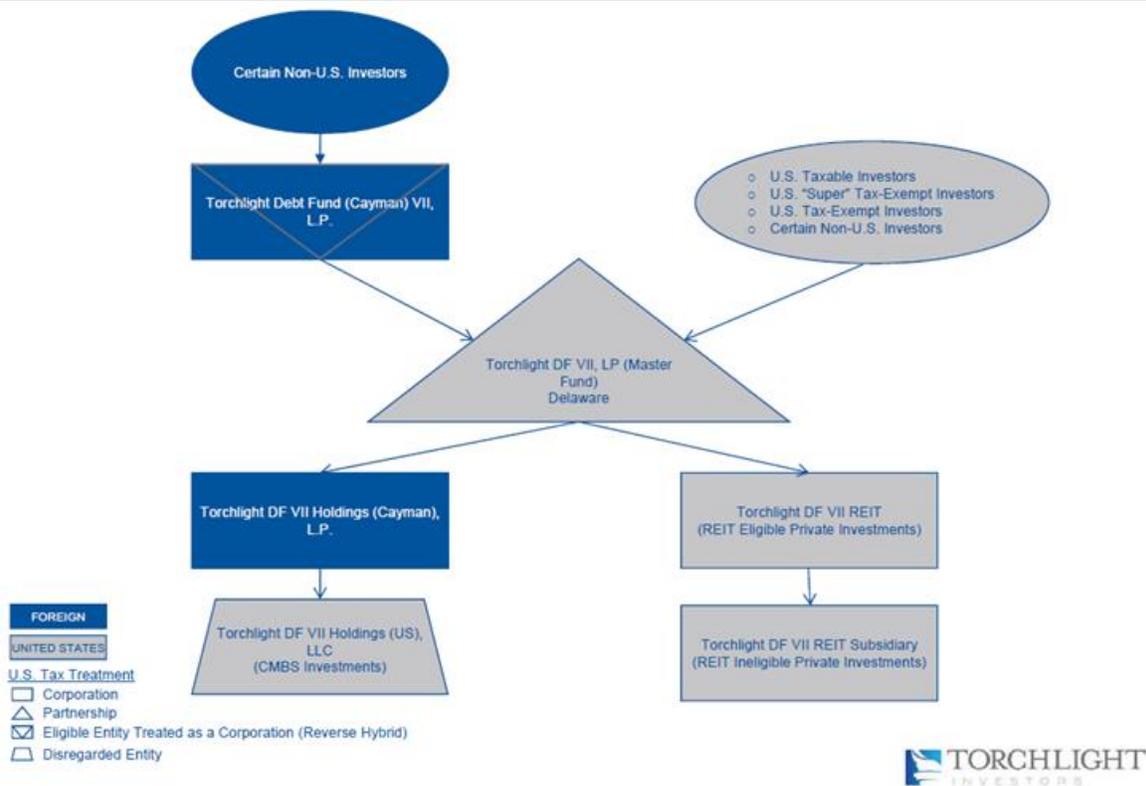
Mike is a Partner in the investor relations group as well as a member of the Operating Committee. He has 26 years of professional experience. Prior to Torchlight, Mike worked at Hawkeye Partners and Giuliani Partners. Mike holds a BBA from Southern Methodist University.

JENNIFER YUEN, *Partner*

Jen is a Partner in the investor relations group as well as a member of the Operating Committee. She has 21 years of professional experience. Prior to Torchlight, Jen worked at Credit Suisse and Deutsche Bank. Jen holds an MBA and a BS from New York University.

EXHIBIT D: Legal Structure Chart

Torchlight Debt Fund VII Fund Structure



Appendix

Rating Rationale

<i>ESG Policy & Practices</i>	ESG policies are not the reason for the Buy rating. The manager's limitations in this area are typical of managers that don't own real estate or control the business plan for properties.
<i>Fund Structure</i>	Compared to open-end debt funds with a predominantly current pay component of return, closed-end is appropriate considering the less liquid nature of B-pieces and the accrual/participation feature of certain pref equity holdings.
<i>Investment Process</i>	The investment process is not materially different than prior funds in the series; utilizing/benefitting from affiliated special servicing business.
<i>Operational Due Diligence</i>	A2-Pass
<i>Performance</i>	Consistently above-median relative to its immediate peers. When the down-scenario did occur, the GFC-impacted fund produced a 0.9x net equity multiple, which reflects a successful workout over time, and, comparatively is one of the better results for higher risk/return closed-end debt funds from that era.
<i>Manager/Sponsor</i>	Long-time fiduciary and institutional fund sponsor. Very experienced manager with specialized expertise executing day-to-day.
<i>Strategy</i>	Consistent with the prior funds in the series; consistent with the manager's core competencies.
<i>Terms & Conditions</i>	Overall fair and within industry standard.
<i>Overall</i>	Buy-rated.

Investment Rating Explanation

The comments and assertions reflect Townsend views of the specific investment product, its strengths and weaknesses in general and in the context of Townsend's *View of the World* and same vintage alternative choices.

Buy - Suitable for institutional investors that have a portfolio construction need. Appropriate overall risk profile given the strategy and targeted returns.

Qualified - Suitable for institutional capital. In addition to customary risks, contains one or more heightened risks that should be weighed against an investor's preferences, risk tolerances, and portfolio construction needs.

Operational due diligence rating provided by Aon's dedicated multi-asset class Operational Due Diligence team according to its autonomous review of the Sponsor's policies & procedures, infrastructure and capabilities across a range of operations, middle and back office, and control functions.

A1-Pass - No material operational concerns; firm's operations largely align with a well-controlled operating environment.

A2-Pass - Firm's operations largely align with a well-controlled operating environment, with limited exceptions due to resource limitations or where isolated areas do not align with best practice.

Conditional Pass - Aon noted specific operational concerns that the firm has agreed to address in a reasonable timeframe.

About Townsend Group – An Aon Company

Founded in 1983, The Townsend Group provides custom real asset solutions that help clients worldwide achieve their unique investment goals. As an Aon company, The Townsend Group is now part of one of the top three outsourced chief investment officer (OCIO) providers in the world measured by global assets under management. Aon's Investment organization, including Townsend, manages more than \$130 billion of worldwide assets under management and has advised on more than \$240 billion of real estate assets.

Disclaimer

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Past performance is no guarantee of future results.

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Townsend is a registered investment adviser with the Securities and Exchange Commission and is a wholly owned, indirect subsidiary of Aon plc



Skylight Office Tower
1660 West Second Street, 4th Floor
Cleveland, Ohio 44113

Memorandum

To: Arkansas Teacher Retirement System (“ATRS”)
From: Chae Hong
CC: PJ Kelly; Jack Dowd; Richard Ferguson
Date: June 1, 2020
Re: Torchlight Debt Fund VII – \$50 million Commitment Recommendation

Background and Recommendation

Torchlight Investors, LLC is forming Torchlight Debt Fund VII, LP (the “Fund”), a \$1.5 billion closed-end commingled fund that will invest in commercial real estate debt. The Fund return target is a leveraged 10%-12% net IRR overall including a targeted 6% annual distribution, and a 1.35x net equity multiple over its 10-year term. The primary strategy of the Fund will be to originate high yield loans and acquire high risk/return pieces of CMBS securitizations. Debt is expected to be collateralized by traditional property types plus hotels and student housing. The Fund is expected to be comprised ultimately of a large number of positions, ranging from 75 to 125 in number anywhere from \$5 to \$75 million in size.

AHIC is satisfied with the strategy of the Fund and its appropriateness for ATRS. Additionally, we believe that the merits of this offering outweigh its risks. A Torchlight Debt Fund VII InDetail is attached for reference. We recommend that ATRS invest \$50 million in the Fund to fulfill ATRS’ 2020 Opportunistic real estate allocation, in accordance with the previously approved 2020 ATRS Real Asset Pacing Schedule.

**ARKANSAS TEACHER RETIREMENT SYSTEM
1400 West Third Street
Little Rock, Arkansas 72201**

**RESOLUTION
No. 2020-19**

Approving Investment in Torchlight Debt Fund VII L.P.

WHEREAS, the Board of Trustees (Board) of the Arkansas Teacher Retirement System (ATRS) is authorized to invest and manage trust assets for the benefits of its plan participants; and

WHEREAS, the Board has reviewed the recommendation of its real assets investment consultant, Aon Hewitt Investment Consulting, Inc., along with the recommendation of the Investment Committee and ATRS staff regarding a potential investment in **Torchlight Debt Fund VII L.P.**, a closed-ended opportunistic fund focused on high yield real estate debt investments in both the public and private markets.

THEREFORE, BE IT RESOLVED, that the ATRS Board approves an investment of up to **\$50 million dollars (\$50,000,000.00)** in **Torchlight Debt Fund VII L.P.** The total investment amount is to be determined by the real assets consultant and ATRS staff based upon the allocation available to ATRS and the overall investment objectives set by the ATRS Board; and

FURTHER, BE IT RESOLVED, that the ATRS staff is hereby authorized to take all necessary and proper steps to implement this investment, if acceptable terms are reached.

Adopted this 1st day of June, 2020.

Mr. Danny Knight, Chair
Arkansas Teacher Retirement System



Real Estate InDetail

CBRE Strategic Partners U.S. Value 9, L.P.

A diversified value-add fund

April 2019

Trade Secret and Confidential

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EXECUTIVE SUMMARY

OVERVIEW

Date	Rating	Previous Rating
April 2019	Buy	Buy

CBRE Strategic Partners U.S. Value 9, LP (“CB 9” or the “Fund”) is being formed as a \$2 billion closed-end commingled fund to invest in a diversified portfolio of value-add commercial real estate. The Fund’s objective is to produce a 15% gross, 12% net leveraged IRR over its 8 year term utilizing 60% leverage.

Strategy: The strategy is acquisition-only with no development, focused on operational value-add at the property level as the primary driver of return. This is repositioning and lease-up over a relatively shorter term hold of two to five years on average. For better disposition pricing and liquidity, the Fund will hold larger size assets (\$75-\$150M) in the more major cities/MSAs that attract institutional core and core-plus buyers. Given the manager’s assessment of current conditions, the Fund will be over-weighting to apartments (40% of the Fund) and office assets (40% of the Fund).

Sponsor:

HQ Location	Los Angeles, CA	Parent	CBRE Group, Inc (NYSE: CBRE)
Ownership	Public company	Founded	Sponsor 1972; Parent 100+ years ago
Employees	90,000 total across 480 offices globally	Team	780 in investment management, 70 of which directly support this US value-add fund series.
AUM (Dec 31, 2018)	\$105 billion (gross)	RIA	Yes

Performance (as of Dec 31, 2018):

Vehicle	Invested Equity (M)	Vintage	Projected Life-of-Fund Net IRR	Fair Market Value			Realizations		Net DPI (Distributions to Paid-in-Capital)
				Net IRR	Net EM	IRR Quartile	% of Projection	% of Transactions	
Strategic Partners I	\$324	2000	13.3%	13.3%	1.5x	3Q	100%	100%	1.5
Strategic Partners II	\$301	2002	25.0%	25.0%	1.7x	1Q	100%	100%	1.7
Strategic Partners III	\$526	2003	8.7%	8.7%	1.3x	2Q	100%	100%	1.3
Strategic Partners U.S. IV	\$1,172	2005	-26.0%	-26.0%	0.0x	4Q	100%	100%	0.0
Strategic Partners U.S. Value 5	\$1,295	2008	16.2%	16.2%	1.5x	1Q	100%	100%	1.5
Strategic Partners U.S. Value 6	\$1,100	2012	11.9%	11.9%	1.4x	4Q	100%	100%	1.4
Strategic Partners U.S. Value 7	\$1,335	2014	12.5%	12.3%	1.4x	3Q	78%	85%	1.1
Strategic Partners U.S. Value 8	\$1,337	2017	12.5%	12.3%	1.1x	2Q	0%	0%	0.0

For ranking purposes, compared to 304 non-core USD-based fund returns.

Portfolio Characteristics:

Structure	Closed-end fund	Risk Segment	Enhanced Return/Value-Add
Size	\$2 billion	Sponsor Commitment	2.5% up to \$50 million
Target Return	11%-13% net IRR; 1.5x net multiple	Leverage	55% - 60% LTV (60% max)
Term	8 years from Final Close	Investment Period	3 years from Final Close
Avg Deal Size	\$50 million equity	Typical Business Plans	Ranges from 2 to 5 years
Guidelines	15% max in a single asset; Max 10% in development on excess land already held (No investments in unrelated development); Max 10% in debt & preferred equity type investments; No hotels. US only.		

Fees and Timing:

Management Fee	1.5% on committed during the Investment Period; 1.5% on invested thereafter (Fee breaks are offered for size and timing)	Incentive Fee	20% subject to an 8% preferred return and a 50/50 catch-up after a 13% cumulative return.
Status/Timing	First Close to be held in July. First Close investors offered meaningful Fee break.		

COMPARATIVE ADVANTAGES

1. Platform Advantages

The Fund is sponsored by CBRE Global Investors, LLC (“CBREI” or the “Sponsor”), the investment management affiliate of CBRE Group, Inc. (“CBRE” or the “Parent”). The Parent is a global, full-service real estate firm offering leasing/sales brokerage; property, facilities, and project management; development/construction management; mortgage banking; research; appraisal/valuation services; and investment management. It is the world’s largest commercial real estate services organization in terms of revenues. The Sponsor, CBREI, is the wholly-owned, independently operated investment management affiliate of CBRE. The Sponsor has its own significant investment management resources to support its \$105 billion in real estate AUM, and in affiliation with the Parent, has significant internal/proprietary real-time local market intelligence and capabilities to identify markets and access property opportunities, and to execute value-add business plans as a vertically integrated operator. Most relevant to this Fund, resources and intel advantages include:

- The fund team is comprised of 70 people overall within CBREI that focuses on the US, and supports the value-add fund series (the “Strategic Partners” team, or the “Manager”).
 - Includes regionally focused US CBREI acquisitions and asset management personnel: Los Angeles (22 employees), Boston (10), New York City (6), Atlanta (4), Dallas (4), and Nashville (2).
 - Includes well-staffed and formally managed support that is In-house and dedicated to CBREI:
 - US members of the Research Group within CBREI (22 dedicated professionals worldwide) providing forecasts of submarket conditions and rental rate trends, and real estate and capital market forecasts that are integrated into property-specific business plans and exit strategies.
 - Includes shared infrastructure within CBREI in the following areas: Human Resources, IT, Legal & Compliance, Investor Relations, and Performance Management (which oversees fund accounting, cash management, and performance reporting).
- The fund team formally and informally engages local CBRE offices:
 - Source for market rent data, tenant information, leasing activity, future supply potential, mortgage credit conditions, and construction cost data.
 - Access to off-market and/or limited competition transactions.

2. Primary Vehicle

The firm channels its resources predominantly to this one fund series for value-add investing in the U.S., not multiple separate accounts and multiple fund products requiring rotations and involving various acquisition teams. This ensures time/attention and alignment since the product is an important component of the team and Sponsor’s profitability potential.

3. Experience

The investment process for this Fund, because it’s an important product of a large Sponsor within a large firm, calls upon a broad array of inputs; and in this case long time industry professionals populate all the leadership roles and many mid-level roles providing inputs and executing the strategy. The 10 senior-most people with direct input and responsibilities for the Fund average 26 years of real estate investment management experience and have 18 years with the firm. Lessons learned and prior cycle experiences from this collective group will shape decision making and execution for this 2019 vintage Fund.

4. Sponsor’s Business Model

Given its resources, the Sponsor adopts the business model of a direct operator and owner. The Manager’s control over asset management and property level business plan execution is direct, and this enhanced control is important to a fund deriving the majority of its return from value-add strategies. This model additionally saves LPs from paying a double promote, which, at the Fund’s targeted returns is estimated to eliminate over 150 basis points of leakage. The Manager has a long history of managing the potential conflicts with use of affiliated businesses, providing industry accepted transparency and pricing.

5. Overall Fee Load

The Sponsor offers several fee breaks with respect to the Management Fee. The other contributor to an attractive overall fee load is the avoidance of a double promote. Together these factors make this one of the lower fee structures amongst current non-core closed end fund offerings.

POTENTIAL ISSUES AND CONCERNS

1. Leadership Transition

Longtime PM and well regarded 35 year employee of the firm Vance Maddocks is passing the reins to Robert Perry as part of succession planning. Until now, any departure by Mr Maddocks solely would have triggered the Key Person provision. A transition involving the founder and architect of the strategy/fund series is a significant change creating uncertainty, plus last time Mr. Maddock’s time/attention was diluted (by promotion to a CEO role in 2007) poor risk management occurred.

Discussion: Amongst transitions, a couple factors in this case should mitigate disruption: (i) the depth of the platform, (ii) the fact that it’s been a planned succession with a full five year timeframe, and (iii) this does not additionally involve transfer of an ownership stake. Also of note, Mr. Maddocks is one of the largest individual investors in the funds. He will stay engaged and is moving into a Senior Advisor role as opposed to retiring out of the business.

2. Potentially Less Attractive Vintage

The Manager is positive in the short term and cautious on the medium/long term regarding the macro environment and real estate market conditions. That was not the case during the prior two vintages when the Manager had no reason to moderate its up-side expectation or worsen its downside scenario.

Discussion: It is reasonable to assume the Manager’s “cycle-aware” approach to this vintage, if executed consistently, should provide *relative* outperformance to higher risk same vintage peers if there is a cyclical down market during the eight to nine year life of this closed-end vehicle. Also, this Manager has a fifteen year multi-cycle experience executing this tactical strategy where time is risk, and demonstrates notable sell discipline within its track record.

3. Mixed Track Record

The GFC-impacted fund was wiped out and significant modifications were made to lower the risk profile, creating a mixed track record, susceptible to underperforming higher leverage/ higher risk peers in markets where conditions remain strong.

Discussion: The series was initially offered as a higher risk/return product within the spectrum of value-add, targeting 16% net returns. The strategy allowed for-sale condo conversions, pre-entitlement land acquisitions, and high vacancy offices, all of which were negative cash flow, and then recourse financing was used. That profile was one of the worst for a GFC condition, and Fund IV in fact was collapsed by creditors and produced lessons learned regarding limiting/avoiding recourse financing and cross-collateralization within overall leverage limitations, cash management, reserving, and limiting/avoiding cash flow negative assets in a finite capital vehicle. In contrast, Funds 5 thru 8 targeted a 12% net IRR and emphasized cash flow. The strategy was narrowed to acquisition-only in traditional property types. The modified strategy has produced targeted returns four of four times, and has averaged 350 bps in excess of ODCE for non-core risks taken.

STRATEGY

OVERVIEW

Fund 9 will likely be comprised of roughly 30-40 transactions averaging \$50 million in fund equity, weighted as follows:

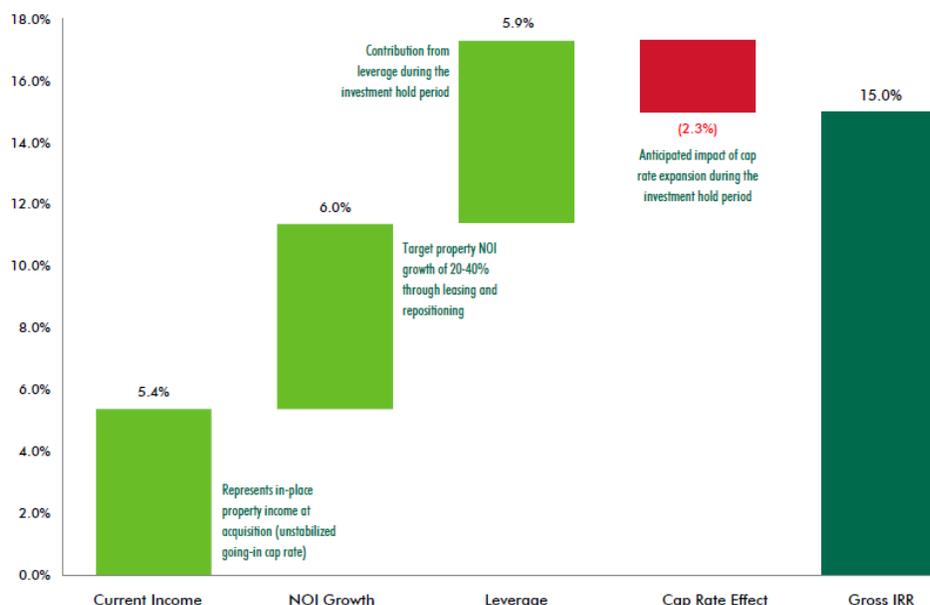
Stable & Continued Growth Market Scenario					Local/Regional Real Estate Dislocation Scenario	
		Target Markets	Targeted Property Characteristics	Business Plans	Strategy	Target Markets
Office	40%	Atlanta, Miami, Oakland, Orange County, Phoenix, Pittsburgh, Portland	Currently well-leased as far as immediate occupancy, but with rents below market and lease terms ending during the Fund’s hold period.	Modify traditional/ outdated to amenitized, flexible, modernized for today’s tech adaptations	Opportunistic acquisition pricing of high quality core-like properties in a credit distress situation.	Chicago, Denver, NYC, San Francisco, San Jose, Washington DC
Apartments	40%	Dallas, Orange County, Orlando, Phoenix, Portland, San Jose	Well-leased but current rates viewed as below market. Avoiding the luxury segment.	Move rents closer towards market; Improve operational efficiency		NYC
Other	20%	Atlanta, Bay area, Los Angeles, Las Vegas, NY/NJ, Phoenix	Most likely logistics properties, including last-mile properties.*	Move rents closer towards market; Improve operational efficiency		

* May also include open-air retail with an experiential component and NOI-growth potential; and, may include self storage aggregation across sub-markets with new apartment supply

The chart illustrates the contributing return components that build up to the targeted return (utilizing the Manager’s base case model assumptions for exit cap rates).

Operating strategies to create value include:

- Securing new tenants and retaining the profitable existing ones by restructuring and possibly terminating some leases, reworking the rent roll, proactively securing renewals;
- Upgrading the on-site leasing and property management teams, and initiating marketing campaigns to re-brand the property, thus creating new appeal in the brokerage and investment communities and completing the repositioning of a property;
- Converting building physical characteristics to better institutional quality by contributing capital to upgrade the appearance and functionality, enhancing amenities such as fitness centers or dining, and curing any deferred maintenance issues; and
- Maximizing the amount of the net operating income by increasing revenue from parking and signage, while re-bidding service contracts to reduce costs.



In order to achieve requisite NOI growth, market selection is aimed at areas offering the highest likelihood of rental growth; in general focusing on population and employment growth, and more specifically identifying:

- Urban and edge of city office;
- Multi-family properties in markets with barriers to new supply; with walkable access to transportation;
- Under-managed experiential retail and street retail;
- In-fill last mile logistics facilities in prime industrial markets.

Initial market selection is combined with a larger sized and higher quality asset, so that exiting to a core buyer/valuation is a typical and reasonable assumption. Within underwriting, residual cap rates are modeled higher than going-in cap rates, conservatively producing an assumed negative cap rate effect.

Sourcing in most cases is through off-market or limited bid situations.

Exhibit A provides overviews of recent Fund 8 transactions that are illustrative of the Fund 9 strategy.

USE OF OPERATING PARTNERS

The Fund will generally be a direct owner and operator of real estate. The Manager does consider using operating partners in retail and hotel investments, with limited instances in the past, and in those instances the operator worked on a for-fee basis as opposed to utilizing a promoted joint venture structure.

LEVERAGE

Overall, the targeted use of leverage is 55%-60%; and the cap is 60% LTV.

- This 60% cap is based on projected total cost during the Investment Period; on Fair Market Value thereafter.
- The overall fund cap does not include use of a subscription facility, which may hold balances for up to 180 days.
- The Manager avoids recourse debt, repayment guaranties and completion guaranties, and cross-collateralization.
 - No recourse debt or cross-collateralized debt was used in Funds V through VIII.
 - Recourse financing is formally limited to 10% of the aggregate Capital Commitments of the Fund.

Floating rate property level senior financing expected; hedged.

- The Manager typically uses floating rate financing for its lower cost and greater flexibility as compared to longer term fixed rate debt, and then buys a cap several hundred basis points out-of-the-money or a collar (sells a floor to offset cost of buying a cap).

SPONSOR

PARENT COMPANY

The parent company roots go back 100 years to CB Commercial, a western US regional commercial services company. Over the years the company broadened its services and expanded geographically through a list of acquisitions. The company expanded globally in the 1990s, and changed its name to CB Richard Ellis with the acquisition of UK-based Richard Ellis in 1998. To capitalize growth, the company first went public in the 1960s, was taken private in 1989, and in 2004 the company went public again. Since then the company acquired Trammell Crow and became the largest commercial developer in the US, acquired ING Clarion Real Estate Securities expanding into listed real assets, and acquired Global Workplace Solutions to boost occupier services.

Today, CBRE Group, Inc is the world's largest commercial real estate services and investment company.

- Headquartered in Los Angeles; Worldwide total of 90,000 employees across 480 offices
 - Includes 40,000 employees across 250+ offices in the Americas.
- Market capitalization of approximately \$17 billion.
 - Largest shareholders (each with over 5% ownership as of March 2019) are Vanguard, BlackRock, and JPMorgan.
- \$21 billion in gross revenue (2018) through these primary lines of business:

Advisory Services	Workplace Solutions	Real Estate Investments
Advisory & Transaction Services Capital Markets Project Management Property Management Valuation Services	Advisory & Transaction Services to Occupiers Client Strategy & Consulting Facilities management Project Management	Investment Management (CBRE Global Investors) Development Services (Trammell Crow Co)

SPONSORING DIVISION

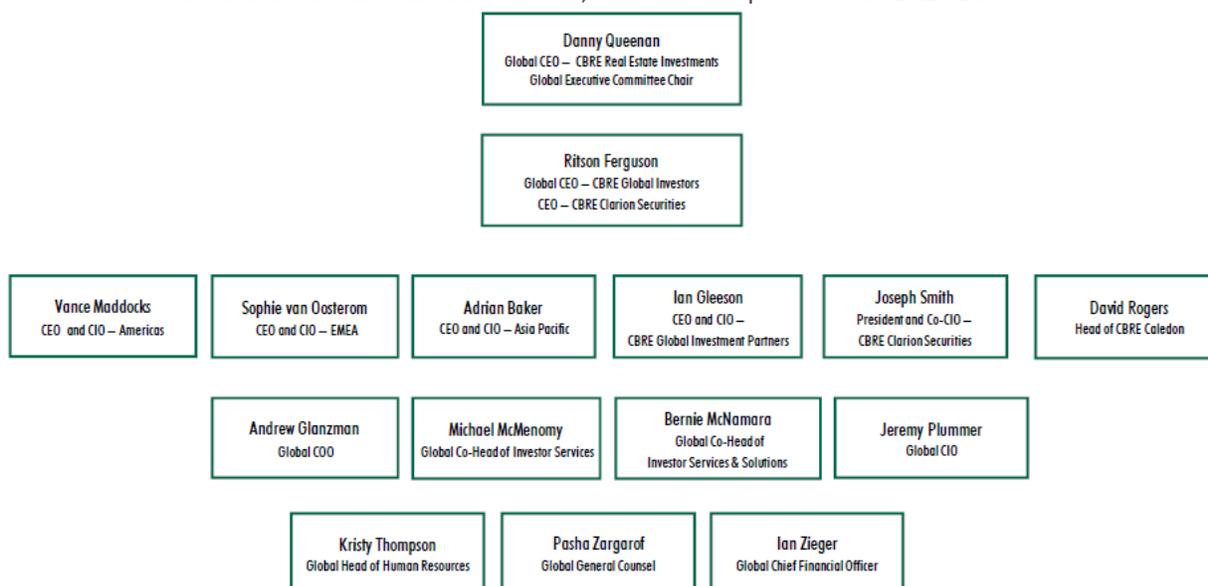
CBREI is a wholly owned independently operated division of CBRE. 100% of CBRE's AUM resides within this affiliate. The investment management business line was formed in 1972 to invest in real estate for tax-exempt U.S. investors. The platform was grown and broadened from core investment offerings to a long list of investment programs for institutional investors in North America, Europe and Asia.

- CBREI has 780 employees across 30 offices in 20 countries.
- 500+ investor/clients in programs spanning the risk spectrum in equity (core, value-add, and development), in private and public markets, through separate accounts and commingled funds.
- \$105 billion in gross AUM.
- CBREI generated 2% of the parent company's 2018 revenues; and 4.1% of EBITDA.
- The division's operating units are:

Operating Unit	Business	Employees	AUM (gross)
CBRE Global Investors Direct Business	Traditional commingled funds and separate accounts	572	\$61B
Global Investment Partners ("GIP")	Customized fund-of-funds, and accounts investing in secondaries, co-investments, and programmatic JVs	84	\$27B
CBRE Clarion Securities	Listed real asset separate accounts, funds	81	\$7B
CBRE Caledon Capital Management	Infrastructure and private equity funds and separate accounts	43	\$10B

780 \$105

- Corporate Organization:
 - Ritson Ferguson, the Sponsor's CEO¹, reports to Dan Queenan, the executive overseeing the CBREI affiliate and the Trammell Crow affiliate, who in turn reports to the CBRE CEO.



- AUM: \$105 billion gross; \$89 billion in equity
 - 91% real estate, 9% infrastructure and private equity
 - Within real estate, 90% private, 10% public
 - Within private real estate,
 - 99% equity investments, 1% debt investing
 - 88% Core, 12% Non-Core
 - 77% Non-US; 23% US
 - Within US private, 52% office, 19% apartment, 12% mixed use, 10% industrial, 7% retail
 - By structure: 40% in funds, 60% in separate accounts

FUND TEAM

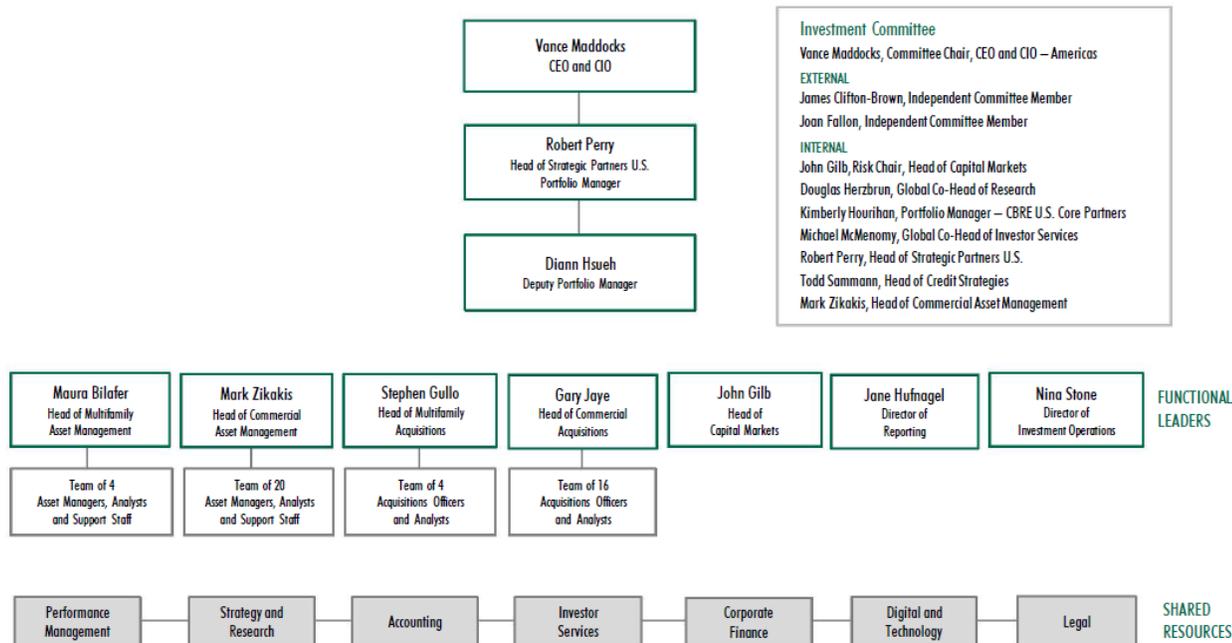
The Fund will be managed by the Americas group within CBREI, 70 professionals covering core and non-core, funds and separate accounts. Senior leadership of the group is comprised of 10 principals with an average of 26 years of experience. Bios are in **Exhibit B**.

- The group's resources are directed by Vance Maddocks who joined CBRE in 1984, established the Strategic Partners US team/business in 2000, and is now CEO of the Americas group. The Fund's PM, Robert Perry Head of Strategic Partners US, was hired in 2016 after an extensive search to add a senior executive for depth and succession planning. Both are Key Persons named in Fund 9 documents.
- Underlying functional professionals that have more experience with value-add are therefore heavily focused on the fund series, though not dedicated per se, while the PMs Robert Perry and Diann Hsueh are formally 100% dedicated.

Team Leader	Fund Responsibility	Years in Industry	Years w/Firm
Vance Maddocks	Portfolio Management	36	35
Robert Perry	Portfolio Management	27	3
Diann Hseuh	Portfolio Management	14	9
Mark Zikakis	Commercial Asset Management	22	21
Maura Bilafer	Multifamily Asset Management	31	4
Gary Jaye	Commercial Acquisitions	28	13
Stephen Gullo	Multifamily Acquisitions	18	10
John Gilb	Capital Markets	35	35
Jane Hufnagel	Reporting	37	37
Nina Stone	Investment Operations	14	9

¹ During the prior fundraise, Matt Khouri moved from the position of CEO of CBREI to CEO of Trammell Crow Company, an independently operated subsidiary of the CBRE Group. Mr. Khouri had been with CBREI for seven years, during which time Ritson Ferguson was CIO of the Sponsor and head of CBRE Clarion Securities.

- The Fund team is comprised of the PMs, the Americas group CEO Vance Maddocks, the heads of all functional areas and their staff members with value-add acquisition and asset management responsibilities, supported by shared resources. The team reports to the Americas Investment Committee.



TURNOVER, COMPENSATION AND RETENTION

Turnover: Amongst the team as a whole from the Associate level up there has been some turnover over the past 5 years but not an atypical amount for a large team housed within a large public company. The team is deep enough such that the periodic single departure of a senior leader is not viewed as overly problematic.

- Recent senior departures include Steve Zaleski, former head of the multifamily group, backfilled by Steve Gullo, multifamily acquisitions, plus newer hire Maura Bilafer, multifamily asset management.
- Ritson Ferguson and Andrew Glanzman remain with the team in global roles, but were replaced on fund IC by US focused veterans Mark Zikakis (Asset Management) and Kim Hourihan (Core Fund PM). One fund IC member departed, Peter DiCorpo (formerly in US Managed Accounts) while newer outside hire additions include Robert Perry (Head of Strategic Partners US and PM of the fund series) and Todd Sammann (Head of Credit).
- Key Person Vance Maddocks remains and succession planning was addressed with the 2016 hiring of the Fund’s additional Key Person, Robert Perry.

Compensation and Retention: Appears within the range of common practice amongst peers with similar business models (investment affiliate operating within broader parent organization with significant resources).

- The Sponsor and the Parent each retain about half the carry earned from Strategic Partners US activities. Team members are awarded the large majority of the Sponsor’s share.
- For retention purposes, awards incrementally vest over a five year period.

CLIENT BASE

The Sponsor’s investor base for its current Strategic Partners US funds consists primarily of public pensions (61%), corporate pensions (20%), and SWFs (15%) plus the company balance sheet and employee investments.

COMPLIANCE / LITIGATION DISCLOSURES

The Sponsor has made the following disclosures:

- Neither the firm nor any senior investment professionals are subject to investigation by any regulatory authority.
- The SEC conducted a routine examination within CBREI in 2015/16. Suggestions were addressed and the exam is considered closed.

- The Office of Federal Contract Compliance Programs (“OFCCP”) audited the Sponsor’s equal opportunity policies and practices in its LA office beginning in 2014. The OFCCP found no violations.
- The Sponsor does not believe any litigation, characterized as ordinary course of business disputes, to be material to the business.

INVESTMENT PROCESS

OVERVIEW

The investment process for the Fund is not materially different than the past several funds.

- The Manager’s 22 acquisitions professionals, organized regionally, are responsible for sourcing, due diligence, and closing new investments.
- The Manager’s 26 asset management professionals, split according to commercial and multifamily, are located across 6 regional offices, and staff/oversee the leasing, property management, and construction projects required by the business plans.
- Fund PMs approve operating budgets, major leases, valuations, and hold/sell recommendations. Otherwise, major investment decisions are subject to review/approval of committees.

Consistent with a large sponsoring organization that is additionally housed and interactive with an even larger parent, the investment process involves input, oversight, and approvals from a variety of senior people throughout the firm. One of the positives to such a process is that it helps promote the utilization of the vast internal resources available to the Fund. The primary committees involved in the process are:

Americas Investment Committee: Responsible for the following Fund approvals by majority of a quorum (quorum is two-thirds):

- Acquisitions and dispositions;
- Financing: Loan originations, re-financings, debt restructurings;
- Asset Management: Material changes to previously approved business plans.

Global Investment Committee: Reviews and approves acquisitions larger than \$175M GAV and \$125M NAV. Requires majority of a quorum (quorum is two-thirds):

- Global CEO of the whole Investment Management division has a veto right on anything that comes to this committee.

Biographies of IC members are provided in **Exhibit B**.

Global Executive Committee:

- Oversees the strategic direction of the Sponsor, including new investment programs.
- Designs/implements the policies and procedures governing the Sponsor’s operations and investment management processes.
- 15 member committee, similar to Global IC but also includes Head of HR, the Sponsor’s CFO, and product Heads in place of research Heads.

Americas IC Member	Responsibility	Years in Industry	Years w/Firm
Vance Maddocks	IC Chair, CEO and CIO of Americas	36	35
Robert Perry	Head of Strategic Partners US	27	3
John Gilb	Head of Capital Markets	35	35
Doug Herzbrun	Co-Head of Research	40	35
Mark Zikakis	Head of Commercial Asset Mgmt	22	21
Kim Hourihan	Core Fund Portfolio Manager	29	12
Todd Sammann	Credit Strategies Portfolio Manager	26	1
Mike McMenomy	Global Head of Investor Services	40	40
James Clifton-Brown	Independent External IC Member	37	na
Joan Fallon	Independent External IC Member	39	na

Global IC Member	Title	Years in Industry	Years w/Firm
Danny Queenan	Global CEO of Investment Management	24	9
Ritson Ferguson	CEO of CBREI and CEO of Clarion Securities	33	24
Jeremy Plummer	Global CIO of CBREI	31	15
Doug Herzbrun	Global Co-Head of Research of CBREI	40	35
Sabina Kalyan	Global Co-Head of Research of CBREI	18	11
Pasha Zargarof	Global General Counsel of CBREI	16	15
Andrew Glanzman	Global COO of CBREI	15	9
Mike McMenomy	Global Co-Head of Investor Services for CBREI	40	40
Bernie McNamara	Global Co-Head of Investor Services for CBREI	23	1
Vance Maddocks	CEO and CIO of Americas	36	35
Sophie Van Oosterom	CEO and CIO of Europe and MidEast	22	6
Adrian Baker	CEO and CIO of Asia Pacific	22	12
Joe Smith	President of Clarion Securities	29	22
Ian Gleeson	CEO and CIO of GIP	26	11

USE OF AFFILIATED SERVICE PROVIDERS

Similar to the prior fund, the Sponsor will hire an affiliate, CBRE Global Investment Administration, to provide certain required fund-level and property-level admin services on a master contract basis.

- Includes cash and debt management, fund accounting, performance measurement and investor reporting.

Also similar to prior funds, the Fund will retain various CBRE affiliates on a transactional basis.

- Acquisition/disposition brokerage, mortgage banking, landlord leasing brokerage, construction management, and property management.

The terms of such arrangements must be no less favorable to the Fund than what would be quoted or charged by a comparably qualified unaffiliated third party at the time such services are to be provided. In addition, the funds receive a 5% rebate on the cost. The team then provides details to the fund LPAC regarding fees paid to any affiliated service providers and comparable market fees. In addition to enhanced control and alignment, these stipulations are intended to insure the use of affiliates is transparent and at a minimum cost neutral.

EXCLUSIVITY

The Fund is the Sponsor's exclusive vehicle in the U.S. for value-add investments.

- No successor vehicle will be raised until the Fund is 75% invested/committed, or completed its Investment Period.
- A small potential for competing capital on any individual deal exists. Certain core-oriented separate accounts and the Sponsor's U.S. open-ended core fund include small allocations to value add.
 - Rationale for allocation is disclosed as an LPAC matter.

LP ADVISORY COMMITTEE ("LPAC")

Each LP whose capital commitment to the Fund is \$50+ million will be offered an LPAC seat.

The committee reviews (i) all affiliate engagements and fees, (ii) any deal allocation required amongst competing capital, and (iii) any conflicts of interest presented.

Prior fund LPAC members are CalSTRS, TCRS, KPERS, TxTRS, Colorado PERA, Hawaii, Illinois Municipal, United Methodist Church, Toronto Transit, Hydro-Quebec.

VALUATIONS

The Fund's valuation policy is to obtain desktop quarterly valuations and full annual appraisals from third-parties (not from CBRE). The Fund's investments will be carried at estimated fair value as determined by the Manager in conjunction with those appraisals. This policy differs slightly from that of the prior funds where quarterlies were done in-house.

USE OF PLACEMENT AGENT

The Sponsor is not engaging a placement agent for this fundraise.

FUND STRUCTURE

OVERVIEW

The Fund is a Delaware limited partnership; utilizing underlying private REIT entities plus parallel structures to accommodate US and non-US LPs in a tax-efficient manner.

- General Partner of the Fund: CBRE Partners U.S. Value 9 GP, LLC
- The Investment Manager to the Fund: CBRE Global Value Investors, LLC
 - Wholly owned by CBRE Global Investors
 - Registered with the SEC since 1999

An illustrative legal structure chart is provided as **Exhibit C**.

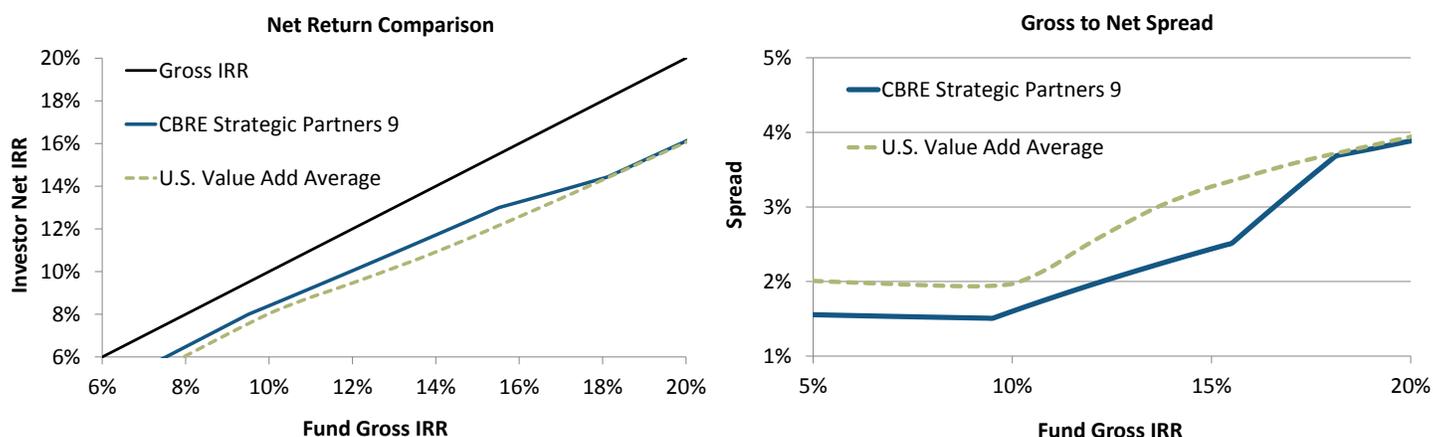
Key Terms		Townsend Comment	
Target Return:	14%-16% gross; 11%-13% net IRR	Neutral	Implies net equity multiple of 1.5x
Fund Size:	\$2 billion target; No cap set yet	Neutral	Prior fund placed \$1.3 billion within 2.5 years
Sponsor Commitment:	2.5% up to \$50 million	Positive	Good alignment. Comprised of \$46.5M from the Parent balance sheet plus \$3.5M from 12-15 individuals within CBREI.
Investment Period:	3 years from Final Close	Neutral	
Term:	8 years from Final Close	Neutral	Two one-year extensions permitted, requiring approval of 2/3rds of LP capital.
Key Person Provision:	Triggered during the Investment Period if both Vance Maddocks and Robert Perry are no longer employed by CBRE Global Investors or devoting requisite time/attention	Positive	Consistent with succession plan. It's a genuine and purposeful trigger or threshold, applying only to the top-most leaders that have the authority to marshal the firm's vast resources, and doesn't require some unlikely large group of people to depart. Suspends any further new investing; Any replacement Key Person, or a resumption without a replacement, requires an LP majority approval.
No-Fault Remedies:	GP/Manager can be removed by two-thirds vote of unaffiliated LP capital; Investment Period may be terminated with two-thirds, and, an orderly fund liquidation can be demanded with a majority vote.	Positive	These provisions, though somewhat PERE industry standard and ILPA recommended, are not always present with public company sponsors. Here, a public company sponsor gives LPs three provisions and reasonable thresholds which is favorable/notable.

Fees and Distribution Waterfall

Organizational Expenses:	Fund pays up to \$2M.				
Investment Management Fee:	1.5% on Committed during the Investment Period; 1.5% on Invested thereafter. Discounts available as follows:				
	Close	Commitment Size		Consultant Aggregation	Total Commitments to Fund Series**
		≥ \$100M	< \$100M	≥ \$200M*	≥ \$500M
	First Close	0.75%	1.00%	1.25%	0.75%
	Subsequent	1.00%	1.50%	1.25%	0.75%
	*Aggregation applies to LPs committing less than \$100M				
	**For a single LP. Fund Series includes SP I, II, III, SP US IV, SP US Value 5, 6, 7, 8, 9, and SP US Opp V				
Incentive Fee/Waterfall Distribution:	20% of total profit subject to an 8% preferred return compounded annually, and a 50/50 catch-up after a 13%. Fully-Pooled (requires all contributions and payments to be returned before the GP receives any carry).				
Clawback:	Triggered if GP carried interest distributions exceed 20% of cumulative profit, or if cumulative LP distributions fall below a return of capital plus a full preferred return. Clawback is post-tax, which is not LP-friendly but standard, backed by GP reserve				

FEE AND EXPENSE ANALYSIS

The charts below illustrate the expected net IRR and gross-to-net spread across a range of gross IRR outcomes, and compares the structure to a market average, sampling 136 U.S. value-add peer offerings currently available or recently closed. The assumption modeled is a First Close investor of < \$100M.



The Sponsor has made tweaks from its prior structure, lowering the pref from 9% to 8%, basing the Management Fee on Committed capital during the Investment Period (no longer based on Invested capital only), and eliminating its Acquisition Fee which had been 0.50% of gross acquisition cost. Taken collectively and compared to the value-add universe, it remains an attractive fee-load at low IRRs and target range IRRs, and only at high IRRs does it require an LP to pay the average fee charged by the peer set.

PERFORMANCE (as of Dec 31, 2018)

SUMMARY

The performance of the Strategic Partners US fund series is comprised of 178 investments totaling \$16.3 billion in gross market value across eight funds since inception in 2000. Funds I through IV targeted a 16% net while the post-GFC risk-modified strategy of Funds 5 through 8 targeted a 12% net.

Vehicle	Invested Equity (M)	Vintage	Assets	Projected Life-of-Fund Net IRR	Fair Market Value			Realizations		Net DPI (Distributions to Paid-in-Capital)
					Net IRR	Net EM	IRR Quartile	% of Projection	% of Transactions	
Strategic Partners I	\$324	2000	15	13.3%	13.3%	1.5x	3Q	100%	100%	1.5
Strategic Partners II	\$301	2002	12	25.0%	25.0%	1.7x	1Q	100%	100%	1.7
Strategic Partners III	\$526	2003	19	8.7%	8.7%	1.3x	2Q	100%	100%	1.3
Strategic Partners U.S. IV	\$1,172	2005	27	-26.0%	-26.0%	0.0x	4Q	100%	100%	0.0

Vehicle	Invested Equity (M)	Vintage	Assets	Projected Life-of-Fund Net IRR	Fair Market Value			Realizations		Net DPI (Distributions to Paid-in-Capital)
					Net IRR	Net EM	IRR Quartile	% of Projection	% of Transactions	
Strategic Partners U.S. Value 5	\$1,295	2008	27	16.2%	16.2%	1.5x	1Q	100%	100%	1.5
Strategic Partners U.S. Value 6	\$1,100	2012	28	11.9%	11.9%	1.4x	4Q	100%	100%	1.4
Strategic Partners U.S. Value 7	\$1,335	2014	26	12.5%	12.3%	1.4x	3Q	78%	85%	1.1
Strategic Partners U.S. Value 8	\$1,337	2017	29	12.5%	12.3%	1.1x	2Q	0%	0%	0.0

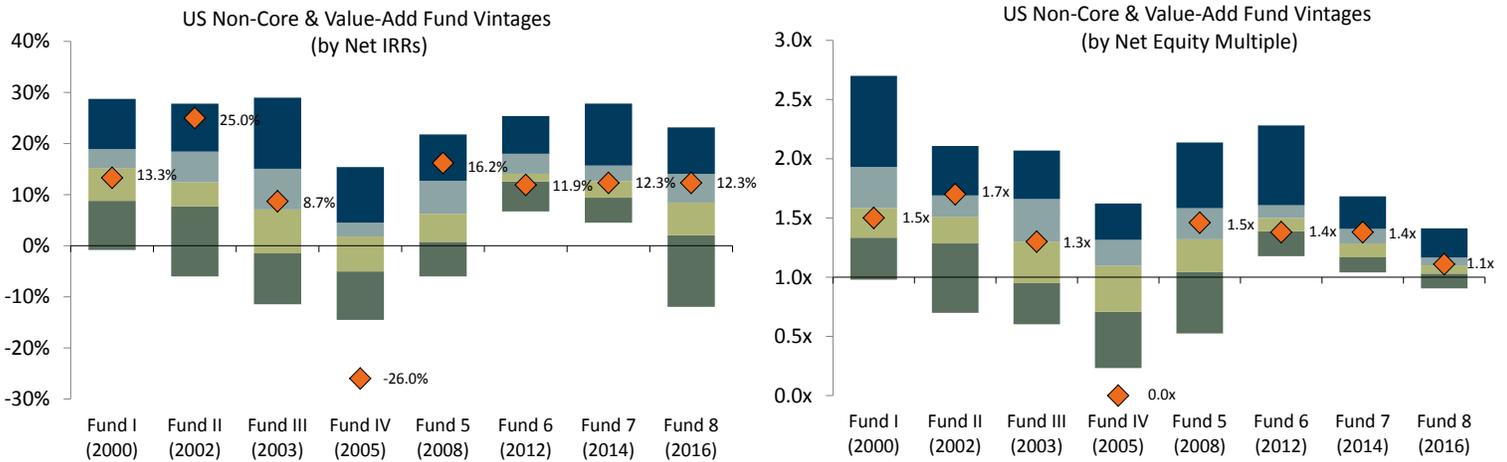
The majority of the track record is realized. It has produced or is projected to produce targeted net IRRs in five of eight funds.

- In the case of Fund III, despite underperformance to target, the fund's net 8.7% was a Second Quartile return on a relative basis compared to same vintage peers. The top two quartiles tended to be populated by quick deployment/realization within the run-up to the GFC, while much of the lesser performing peer set reflects impacts of the drastic swing in real estate conditions brought on by the GFC post Investment Period.

- In the case of Fund IV, the vintage was fully impacted by the GFC and the higher risk exposures within value-add such as development, for-sale or conversion projects, land for development, hotels and resorts serving discretionary spending, and highly vacant anything, caused the most severe impairments. The written down valuations caused severe credit distress which created greater loss in instances of recourse and cross collateralization.
 - The fund underperformed its peers with a total loss due to complacency with high risk and aggressive capital market assumptions.
 - The relevance of this going forward is meaningful. The Manager modified its strategy by implementing tangible guidelines and practices effectively eliminating every higher risk property exposure, limiting overall leverage and prohibiting dangerous credit features and practices, and ensuring conservative cash management.

RELATIVE TO VINTAGE PEERS

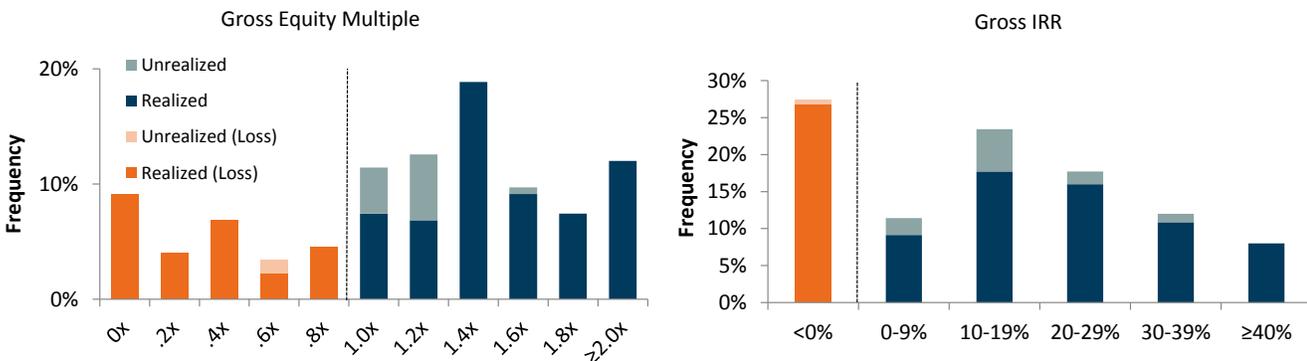
These charts, based on FMV for unrealized assets, place the performance of the Strategic Partners US series of funds in the context of the market to highlight quartile ranking amongst similar vintage peers. The Sponsor’s modified strategy is not built to outperform high risk peers in an up-market, but plainly has greater downside protections. Funds I – IV are compared to all non-core peers given the higher risk profile of the strategy at the time, while Funds 5 through 8 are compared to the smaller sub-set of US value-add peers only.



Source: TTG database and Prequin fund database.

DISPERSION OF RETURNS

The following charts display the dispersion of returns across the Manager’s investments within the fund series:

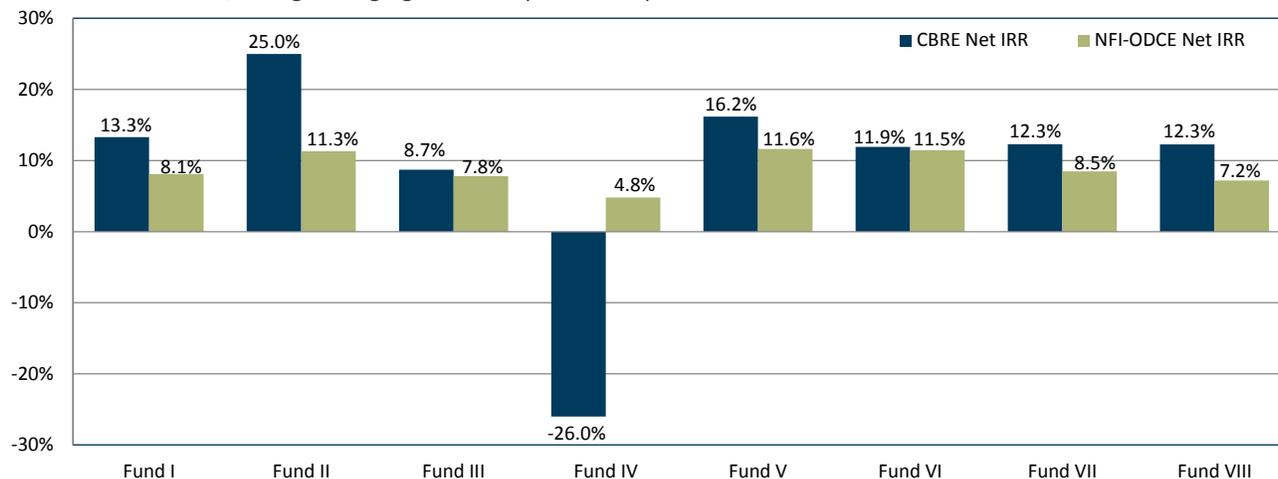


- In the aggregate, 26% of all these transactions lost capital.
 - This is heavily skewed by the GFC impacted Fund IV, with the large majority of capital lost across the track record in Fund IV transactions.
 - Post-GFC (funds 5 thru 8), only 9% of 110 investments have lost or are projected to lose capital.
 - **Exhibit D** lists out deal-by-deal gross performance within those funds.

BENCHMARK PREMIUM

The following translates the core index into an IRR for an IRR comparison. It assumes fund series cash flows are instead invested into and out of ODCE in order to create an ODCE IRR directly comparable to each CBRE fund.

- The Sponsor's modified strategy (Funds 5 -8) has averaged 350 bps in excess of core for its non-core risks taken, with individual funds/vintages ranging from 50 bps to 400 bps.



OTHER PERFORMANCE

The Manager's entire discretionary track record includes activity outside of the fund series. In terms of historical commitments outside this series, approximately 25% of the Manager's total historical activity has been in connection with the investment and management of the following vehicles:

- CBRE Strategic Partners US Opportunity V:
 - \$679 million 2008 vintage opportunity fund.
 - Performance using FMV is +5.5% net IRR; Fourth Quartile relative to same vintage Opportunistic peers.
 - Projected +5.6% net IRR; 1.4x net projected equity multiple. Approximately 80% realized.
 - This has not been an ongoing strategy of the Manager since the GFC.

- CBRE Wood/Development Partners:

- A successful ongoing series of development ventures started in 2010.

	Wood 1	Wood 2	Wood 3	Wood 4	Development 5
Vintage	2010	2012	2013	2015	2017
Equity Size	\$155	\$165	\$305	\$410	\$500
Strategy	Merchant build apartments				Build-to-own apts and industrial
Developer	Wood Partners				Trammel Crow
Net IRR	17.7%	23.6%	19.5%	16.0%	12.0%
% Realized	100%	100%	62%	0%	0%

- CBRE US Core Partners
 - A successful \$2 billion NAV open-end core fund started in 2013.
 - Returns on a TWR basis:

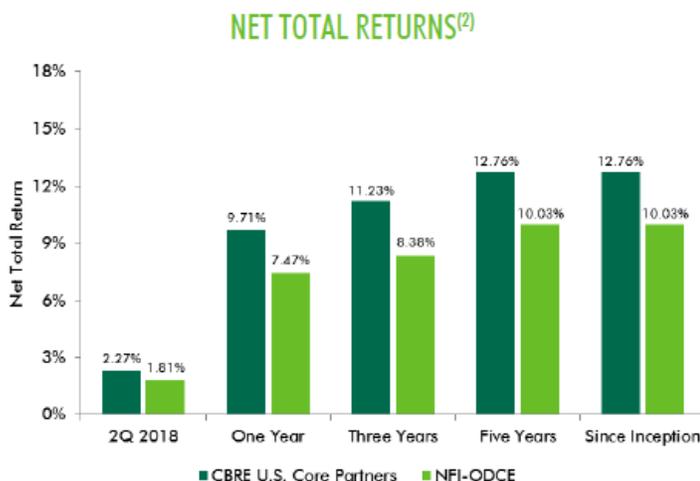


EXHIBIT A: Illustrative Fund 8 Transactions

THE WARNER Washington D.C.



OPERATION CHECKLIST

- ✓ Activate & Reposition Asset
- ✓ Address Upcoming Vacates
- ✓ Mark Rents to Market
- ✓ Maximize NOI

Note: Forecasts are inherently uncertain and subject to change. There can be no assurance that any target/expected returns will ultimately be realized. This case study is not representative of all Strategic Partners 8 investments. For a complete list, please see page 33. (1) Source: CBRE Global Investors Research. As of 2H18 forecast. (2) Sale comparables/new construction cost as of October 2018.

Investment Summary

Property Description	Class "A" Office
Year Built / Renovated	1992 / 2012
Square Footage / Stories	612,098 / 13
Acquisition Date	December 2018
Percent Leased at Acquisition	99% going to 70%
Purchase Price	\$376.5 M (\$615 PSF)
Total Project Cost	\$457.3 M (\$747 PSF)
Equity Investment	\$186.4 M (\$305 PSF)
Loan to Cost	59%
Holding Period	4 Years
Target Gross Levered IRR / Equity Multiple	14.8% / 1.6x
Going-In Cap Rate / Return on Cost	6.6% / 6.4%
New Construction Cost (PSF)	\$950

Investment Strategy

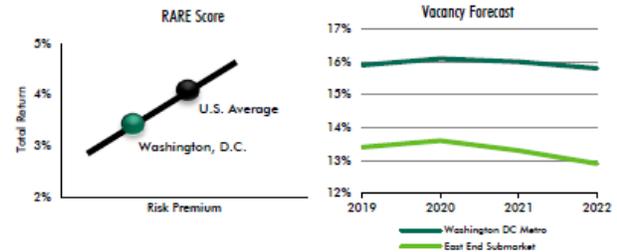
- Acquire the Property at a 6.6% cap rate (210 bps above recent sales and 160 bps above the Washington D.C. RARE index), implement a \$26 M capital plan focused on transforming the top four floors of the building into one-of-a-kind tenant space, lease at repositioned rates and sell to a core buyer.

Investment Highlights

- The LEED Gold-certified Property offers a Pennsylvania Avenue address and a full block presence in the East End, two blocks from the White House with views of the Washington Monument and the National Mall. The building benefits from immediate access to the Federal Triangle metro station and government headquarters.
- Floors 1-9 are long-term leased to a mix of high quality tenants with a weighted average lease term of 8.5 years. Credit tenancy in the base of the building includes Cooley LLP (AmLaw #27), General Electric (S&P: BBB+) and LiveNation (\$11.5 B market cap).
- The \$376.5 M (\$615 PSF) purchase price represents a 36% discount to recent sales and a 35% discount to new construction cost of \$950 PSF.²



Market Selection: Strong Fundamentals¹



Investment Strategy & Timeline



SKYHOUSE UPTOWN

Charlotte, North Carolina



Operation Checklist

- ✓ Install & Train Top Talent
- ✓ Execute Capital Campaign
- ✓ Complete Lease-up
- ✓ Maximize NOI

Investment Summary

Property Description	High-Rise Class "A" Multifamily
Year Built	2015 / 2017
Units / Percent Leased at Acquisition	672 / 87%
Acquisition Date	December 2018
Purchase Price	\$190.0 M (\$282,700/Unit)
Total Project Cost	\$195.6 M (\$291,100/Unit)
Equity Investment	\$78.2 M (\$116,400/Unit)
Loan to Cost	60.0%
Holding Period	4 Years
Target Gross Levered IRR / Equity Multiple	15.2% / 1.6x
Going-In Cap Rate / Return on Cost	4.6% / 6.1%
Income Return (Year 3)	5.6%
New Construction Cost (Per Unit) ²	\$335,000

Investment Strategy

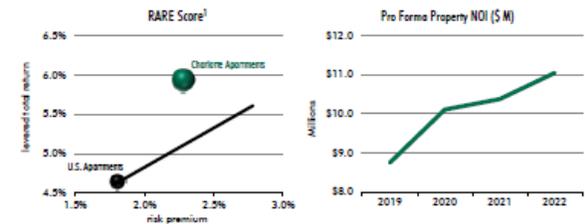
- Capitalize on a distressed marketing effort to acquire a newly built, luxury high-rise apartment community in Uptown Charlotte at a discount to new construction cost.
- Stabilize the asset by completing the lease-up, implement A&B and enhance the market-leading amenity set.
- Capture rent growth driven by improving fundamentals as the Uptown submarket stabilizes.

Investment Highlights

- Due to current ownership's mismanagement, elevated competitive supply and the distressed sale process, the purchase price for Skyhouse is 16% below estimated replacement cost. The lack of full stabilization due to seller dysfunction has resulted in achieved rents unjustifiably below the high-rise competitive set. This underperformance allows for the opportunity to acquire a core-quality asset at an attractive basis with enhanced return potential through aggressive management and submarket recovery.
- Skyhouse consists of two identical steel-and-concrete apartment towers that delivered in 2015 and 2017. The Property features luxury finishes, skyline views and a best-in-class amenity package.
- The Charlotte economy continues to benefit from robust population and job growth. This outperformance is expected to continue with population growth in Uptown forecast to be four times the national average over the next five years.



Strategy: Drive Rents and NOI Growth



Note: Forecasts are inherently uncertain and subject to change. There can be no assurance that any target/expected returns will ultimately be realized. This case study is not representative of all Strategic Partners 8 investments. For a complete list, please see page 33. (1) Source: CBRE Global Investors Research. As of 2H18 forecast. (2) New construction cost as of December 2018.

SIGNATURE RIDGE

San Antonio, Texas



Operation Checklist

- ✓ Install & Train Top Talent
- ✓ Execute Capital Campaign
- ✓ Rebrand & Reposition
- ✓ Drive Leasing
- ✓ Maximize NOI

Investment Summary

Property Description	Garden-Style Multifamily
Year Built	2000 / 2003
Units / Percent Leased at Acquisition	612 / 94%
Acquisition Date	August 2018
Purchase Price	\$70.4 M (\$115,100/Unit)
Total Project Cost	\$79.5 M (\$130,000/Unit)
Equity Investment	\$32.0 M (\$52,400/Unit)
Loan to Cost	59.7%
Holding Period	4 Years
Target Gross Levered IRR / Equity Multiple	15.8% / 1.7x
Going-In Cap Rate / Return on Cost	5.2% / 6.8%
Income Return (Year 3)	5.6%
Exit Cap Rate	5.8%
New Construction Cost (Per Unit) ²	\$150,000

Investment Strategy

- Acquire a well-located, underperforming, garden-style apartment community at a 23% discount to new construction cost.
- Execute a capital improvement program to address curb appeal, upgrade amenities and reposition half of the units to target a middle-market renter profile. The pro forma post-renovation rent premium of \$150 per month represents a 22.5% return on investment.
- Implement the Firm's A&B amenity program to enhance the resident experience and differentiate the asset from its competition. Install best-in-class property management to drive rents and occupancy.

Investment Highlights

- Signature Ridge features large units, nine-foot ceilings and a low-density site that would be difficult to replicate today given current development costs and scarcity of land.
- Upon repositioning, the property will feature two distinct finish levels at different price points, offering residents a premier middle-market housing option at an attractive discount to newer construction.
- The property is located in the South Texas Medical Center submarket, ten miles northwest of the San Antonio CBD with convenient access to the area's largest employers including the Medical Center, USAA and the University of Texas at San Antonio.
- RARE/Research: San Antonio is a top-ranked market.¹



Strategy: Drive Rents and NOI Growth



EXHIBIT B: Bios

Senior Team

Vance Maddocks, CEO and CIO for the Americas

In this role, Mr. Maddocks oversees the overall Americas business and leads the CBRE Global Investors Americas Investment Team with an emphasis on transaction execution and talent development.

Mr. Maddocks is a member of the Global Executive Committee, Global Investment Committee and serves as Chair of the Americas Investment Committee. He is also a member of the Global Operating Committee for CBRE Group.

Mr. Maddocks is the founder of Strategic Partners U.S. and served as head of the platform from 2000 to 2018. Between 2007 and 2010, Mr. Maddocks also served as Global CEO. During his tenure as Global CEO, Mr. Maddocks enhanced the Firm's corporate governance, risk management and investment practices creating greater consistency and discipline in decision-making. He also created the CBRE Global Investors Global Green Initiative, which has led numerous properties worldwide to be certified based on local sustainability standards.

Mr. Maddocks joined CBRE in 1984 and is a three-time recipient of the CBRE Chairman's Award for Leadership. In 2006, Mr. Maddocks received the company's highest honor for his distinguished service and deal-making capability, the Edward S. Gordon Award. He was the second recipient of this prestigious award in the history of the company.

Mr. Maddocks earned a Bachelor of Science degree in Finance and Accounting from California State University, Northridge.

Robert Perry, Head of Strategic Partners U.S.

In this role, he is responsible for all aspects of the Firm's enhanced return investment activity, including existing and future Strategic Partners U.S. funds. Mr. Perry is involved in capital raising, investment and operations decisions and financing strategy. Mr. Perry joined CBRE Global Investors in 2016 and is a member of the Americas Investment Committee and the Global Leadership Team.

Mr. Perry previously served as a Senior Managing Director and the leader of the North American real estate business for CarVal Investors, a global alternative investment fund manager and a subsidiary of Cargill. In that capacity, Mr. Perry was responsible for investment management and implementation for equity and debt investments, capital raising and investor relations. He served as Chairman of the Investment Committee for North America and as a member of the firm's Executive Committee.

Mr. Perry also has extensive experience in real estate finance. Mr. Perry's experience includes acquiring large international real estate debt and equity portfolios across the Americas and Asia, leading several public to private executions, as well as being involved in several initial public offerings in the U.S. and Canada.

Mr. Perry earned a Bachelor of Arts degree and a Master of Science degree in Real Estate Investment Analysis from the University of Wisconsin-Madison.

Diann Hsueh, Deputy Portfolio Manager CBRE Strategic Partners US

Joined CBRE Global Investors in 2010. Ms. Hsueh is the Deputy Portfolio Manager for CBRE Strategic Partners U.S. Value 8 and 9 and is responsible for driving each fund's investment performance. Ms. Hsueh played a key role in prior capital raising efforts, yielding over \$2.6 billion in equity commitments for CBRE Strategic Partners U.S. Value 7 and 8.

From 2010 to 2017, Ms. Hsueh was a member of the Firm's acquisitions team, responsible for underwriting, negotiating, structuring and closing transactions throughout the U.S. Ms. Hsueh was directly involved in the acquisition, financing and disposition of over \$3.0 billion in investments.

Prior to joining CBRE Global Investors, Ms. Hsueh was a member of the asset management team at CenterSquare Investment Management.

Ms. Hsueh earned a Bachelor of Science degree in Economics with concentrations in real estate and public policy from the Wharton School at the University of Pennsylvania. Ms. Hsueh is a member of the Urban Land Institute, CBRE Global Investors' Americas Responsible Investment Management Committee, the CBRE Women's Network and the CBRE Asia Pacific Network. Ms. Hsueh previously served as a committee leader for CBRE Global Investors' Real Estate Network of Executive Women (RENEW).

Maura Bilafer, Head of Multifamily Asset Management for the Americas

In this capacity, she has overall responsibility for multifamily property operations in the Americas business and manages a nationwide portfolio of multifamily investment properties.

Ms. Bilafer began her career in the commercial real estate industry in 1988. Prior to joining CBRE Global Investors in 2015, Ms. Bilafer was a Senior Managing Director at Greystar, ensuring that clients' operational, occupancy and operating income goals were met. She oversaw a portfolio of apartment homes in the mid-Atlantic and Northeast regions. Ms. Bilafer has been active in the multifamily industry since 1988 and is an expert in lease up and stabilized residential communities, financially and physically stressed assets and mixed-use communities. Prior to her role at Greystar, Ms. Bilafer served as Division President for Riverstone Residential Group, Vice President at Trammell Crow Residential Services, Senior Regional Manager at NHP/AIMCO, Asset Manager at NHP and Analyst at Boston Financial Group.

Ms. Bilafer earned a Bachelor of Arts degree from Harvard University.

Mark Zikakis, Head of Commercial Asset Management for the Americas

Mark Zikakis joined CBRE Global Investors in 1998 and serves as Head of Commercial Asset Management for the Americas. Mr. Zikakis' areas of expertise include repositioning assets by completing capital improvement plans, implementing creative marketing programs and reducing operating expenses to create value and achieve an optimal outcome at disposition. He is also a member of the Americas Investment Committee.

In 2011, Mr. Zikakis assumed the role of Fund Manager for Strategic Partners 5 where he established fund-level objectives and strategies, benchmarked performance and directed the asset management team in the execution of specific property-level action plans. Strategic Partners 5 was fully realized as of March 2014. Mr. Zikakis plays key roles on initiatives that span CBRE Global Investors' U.S. office investment portfolio. He has been instrumental in the creation and growth of the Above & Beyond™ program of services and amenities in office properties, which has resulted in improved tenant satisfaction and cost savings. Mr. Zikakis also has experience with multifamily, industrial and retail investments. Prior to focusing on asset management, Mr. Zikakis completed over \$750 million in acquisitions for the Strategic Partners U.S. funds.

Mr. Zikakis earned a Bachelor of Science degree from Syracuse University and a Master's degree in Business Administration from Columbia University.

Stephen Gullo, Head of Multifamily Acquisitions for the Americas

In this capacity, Mr. Gullo leads acquisition and development efforts in the apartment sector. Since joining CBRE Global Investors in 2009, Mr. Gullo has been directly involved in the acquisition of \$4.5 billion of multifamily properties on behalf of six funds and five separate accounts. Additionally, Mr. Gullo maintains an active role in the asset management and disposition of investments.

Prior to joining CBRE Global Investors, Mr. Gullo was a Partner and Vice President of Acquisitions for Berkshire Property Advisors. Prior to that, he was a Senior Analyst in the Multifamily Capital Transactions Group for Lend Lease Real Estate Investments and its successor purchaser Morgan Stanley.

Mr. Gullo earned a Bachelor of Science degree in Business Administration with concentrations in Finance and Marketing from the Questrom School of Business at Boston University. He is a member of the National Multi-Housing Council.

Gary Jaye, Head of Commercial Acquisitions for the Americas

In this capacity, Mr. Jaye is responsible for all commercial acquisitions activities and all commercial acquisitions professionals across the Americas. Preceding his current role, Mr. Jaye was the head of commercial acquisitions for the U.S. Core Investment Platform, focused on acquisitions in the Central and Eastern regions of the U.S.

Mr. Jaye is responsible for all facets of the investment process including sourcing, underwriting, negotiating, due diligence and closing real estate transactions. Mr. Jaye joined CBRE Global Investors in 2006 and began his real estate career in 1991. He has been directly involved in over \$9.5 billion of acquisitions including \$6.5 billion of direct investments and over \$3.0 billion in structured transactions and joint ventures. In addition, Mr. Jaye has extensive expertise in structuring transactions for off-shore investors including sovereign wealth funds. Prior to joining CBRE Global Investors, Mr. Jaye was a Director of Acquisitions for UBS Realty Investors, LLC and Hart Realty Advisors.

Mr. Jaye earned a Bachelor of Science degree from Central Connecticut State University and a Master's degree in Business Administration from the Martin J. Whitman School of Management at Syracuse University. In addition, Mr. Jaye is a member of the International Council of Shopping Centers and NAIOP.

John Gilb, Head of Capital Markets for the Americas

John Gilb joined CBRE Global Investors in 1984 and leads the capital markets function for the Americas. In this role, he is responsible for all disposition and financing transactions. Mr. Gilb has experience across all functions of the real estate investment management business having served in portfolio management, acquisitions, dispositions, debt restructuring, recapitalization and operations roles with CBRE

Global Investors. Prior to accepting the capital markets leadership role, Mr. Gilb served as a Principal on the Strategic Partners U.S. investment team. In addition, Mr. Gilb has been responsible for the Firm's relationships with multiple separate account clients, overseeing and providing strategic direction for all investment and management activity including negotiating and structuring core equity investments, participating construction loans and joint venture development agreements.

Mr. Gilb serves as the Risk Chair for the Americas Investment Committee and is a member of the Global Leadership Team and a co-chair of the Global Investment Risk Council. He earned a Bachelor of Arts degree in Business with an emphasis in Finance from Loyola Marymount University.

Jane Hufnagel, Director of Reporting for the Americas

She joined CBRE Global Investors in 1982 and is currently responsible for investor reporting, communications and administration of the Firm's closed-end enhanced return funds, which total \$4.5 billion in assets under management.

Ms. Hufnagel's prior responsibilities included heading the Firm's performance measurement and reporting team, heading the RFP team and serving as controller in the client accounting group. Ms. Hufnagel earned a Bachelor of Science degree in Business Administration from Pepperdine University.

Nina Stone, Director of Investment Operations for the Americas

Joined CBRE Global Investors in 2010. Is responsible for driving the Firm's investment performance through development and use of market-leading technology, operating policies and procedures. In this capacity, Ms. Stone works closely with the Firm's portfolio and asset management teams.

Previously, Ms. Stone worked in portfolio management for the Strategic Partners U.S. funds and was a key participant in the formation of four funds, raising \$4.0 billion of capital since 2012. She was also a member of the acquisitions/dispositions team, closing \$350 million in transactions.

Ms. Stone earned a Bachelor of Science degree in Business Administration with an emphasis in finance and international business from California Lutheran University.

Investment Committee

Vance Maddocks, CEO and CIO for the Americas (listed previously)

Robert Perry, Head of Strategic Partners U.S. (listed previously)

Mark Zikakis, Head of Commercial Asset Management for the Americas (listed previously)

John Gilb, Head of Capital Markets for the Americas (listed previously)

Doug Herzbrun, Global Co-Head of Research for CBRE Global Investors

He directs strategic analysis of the economies, capital markets and property markets in North America, Europe and Asia. These analyses support the acquisition and portfolio management processes and the development of new product concepts. Mr. Herzbrun communicates research insights to CBRE Global Investors' clients and prospects, as well as to the larger real estate community. He serves on the Global Investment Committee, Americas Investment Committee and Global Investment Partners Investment Committee.

Mr. Herzbrun began his career in real estate investment research in 1979. He joined CBRE Global Investors in 1984 after four and one-half years with Coldwell Banker Real Estate Consultation Services. Mr. Herzbrun is a member of the Education Committee of NCREIF and serves as an instructor in their Professional Certificate Program. A member of NAREIM, he is a frequent presenter at their meetings. He is also a member, and former Co-Chair, of PREA's Research Affinity Group.

Mr. Herzbrun earned a Bachelor of Arts degree from the University of California, Berkeley and a Master's degree in City and Regional Planning from Harvard University.

Kimberly Hourihan, Senior Managing Director and the Portfolio Manager for CBRE U.S. Core Partners

Joined CBRE Global Investors in 2007. Ms. Hourihan is a member of the Americas Investment Committee and the Global Leadership Team.

Ms. Hourihan began her real estate investment management career in 1990. In her previous role with the Firm, she served as a Managing Director and the Portfolio Manager for two international sovereign wealth fund clients with total assets under management with the firm of more than \$4 billion representing 11.7 million square feet. In this position, Ms. Hourihan was responsible for client relations, portfolio management, asset management, acquisitions and dispositions.

Prior to joining CBRE Global Investors, Ms. Hourihan held a position at Starwood Capital Group, where her responsibilities included the formation of a value add real estate fund. Previously, Ms. Hourihan was Partner and Regional Director at TA Associates Realty, a Boston-based real estate advisory firm. In that capacity, she was a portfolio manager for a separate account relationship and a closed-end commingled value add real estate fund. Ms. Hourihan also served as an asset manager with expertise in office, industrial, retail and multifamily assets in major markets throughout the U.S. Prior to that, Ms. Hourihan was Senior Vice President at the Georgetown Holding in Kuala Lumpur, Malaysia, directing multiple acquisitions ranging from a bank in Geneva to a magazine in Hong Kong. Ms. Hourihan began her career at U.S. Trust Company where she was responsible for lending on real estate.

Ms. Hourihan earned a Bachelor of Arts degree from Boston College and a Master's degree in Business Administration from Harvard University.

Michael McMenemy, Global Co-Head of Investor Services for CBRE Global Investors

Responsible for the development of investment programs and investor relations. Since 2005, Mr. McMenemy has led the global capital raise effort on behalf of CBRE Global Investors yielding more than \$89.2 billion in equity commitments. He is a member of the Global Executive Committee, Global Investment Committee and Americas Investment Committee.

Prior to joining CBRE Global Investors, Mr. McMenemy served as Senior Managing Director of the CBRE Investment Properties Institutional Group. The 50-member Institutional Group serves as CBRE's higher value equity sales team, generally placing transactions into the capital markets at values exceeding \$50 million. In his leadership role, Mr. McMenemy led a nationwide team of investment professionals dedicated to providing integrated service delivery to that division's largest multi-market institutional clients.

Mr. McMenemy earned a Bachelor of Science degree in Business Administration from California State University, Los Angeles and is the past Chairman of the Urban Land Institute's Office Development Council.

Todd Sammann, Head of Credit Strategies

Joined CBRE Global Investors in 2018. In this role, he is responsible for all aspects of existing and future Credit Strategies funds, including product design, capital formation, investment, dispositions and financing strategy. He also serves as Portfolio Manager for CBRE U.S. Credit Partners. Mr. Sammann is a member of the Americas Investment Committee.

Prior to joining CBRE Global Investors, Mr. Sammann was founder and Managing Principal of Narrative Capital from 2015-2018, managing a commercial real estate debt fund on behalf of institutional investors. Mr. Sammann chaired the firm's investment committee and had overall responsibility for investment activity and portfolio management. Prior to forming Narrative, Mr. Sammann was Principal and Head of Credit Strategies at Colony Capital from 2008-2015, which invested \$5 billion across a variety of credit strategies during his tenure. Previously, Mr. Sammann was Managing Director and Head of North American Large Loan Commercial Mortgage Backed Securities at Deutsche Bank from 2002-2008, where he oversaw the origination of more than \$50.0 billion of structured real estate financings and served as a member of the firm's global Group Executive Committee. Previously, Mr. Sammann served as Vice President within Goldman, Sachs & Co.'s real estate investment banking unit from 1996- 2002.

Mr. Sammann earned a Bachelor of Arts degree from the University of California, Berkeley and a Master's degree in Business Administration from Duke University.

James Clifton-Brown, Independent member of the Americas Investment Committee

Mr. Clifton-Brown recently retired from CBRE Global Investors having begun his tenure in 1984. He was Chairman of EMEA Separate Accounts and Chief Investment Officer – United Kingdom for CBRE Global Investors and chaired the CBRE Global Investors Investment Committee in the United Kingdom. Prior to becoming CIO, Mr. Clifton-Brown served on the investment acquisitions team. Mr. Clifton-Brown began his career in the real estate industry in 1982.

Mr. Clifton-Brown earned an Urban Estate Management degree from the University of Westminster. He is a member of the Royal Institution of Chartered Surveyors and the Investment Property Forum.

Joan Fallon, Independent member of the Americas Investment Committee

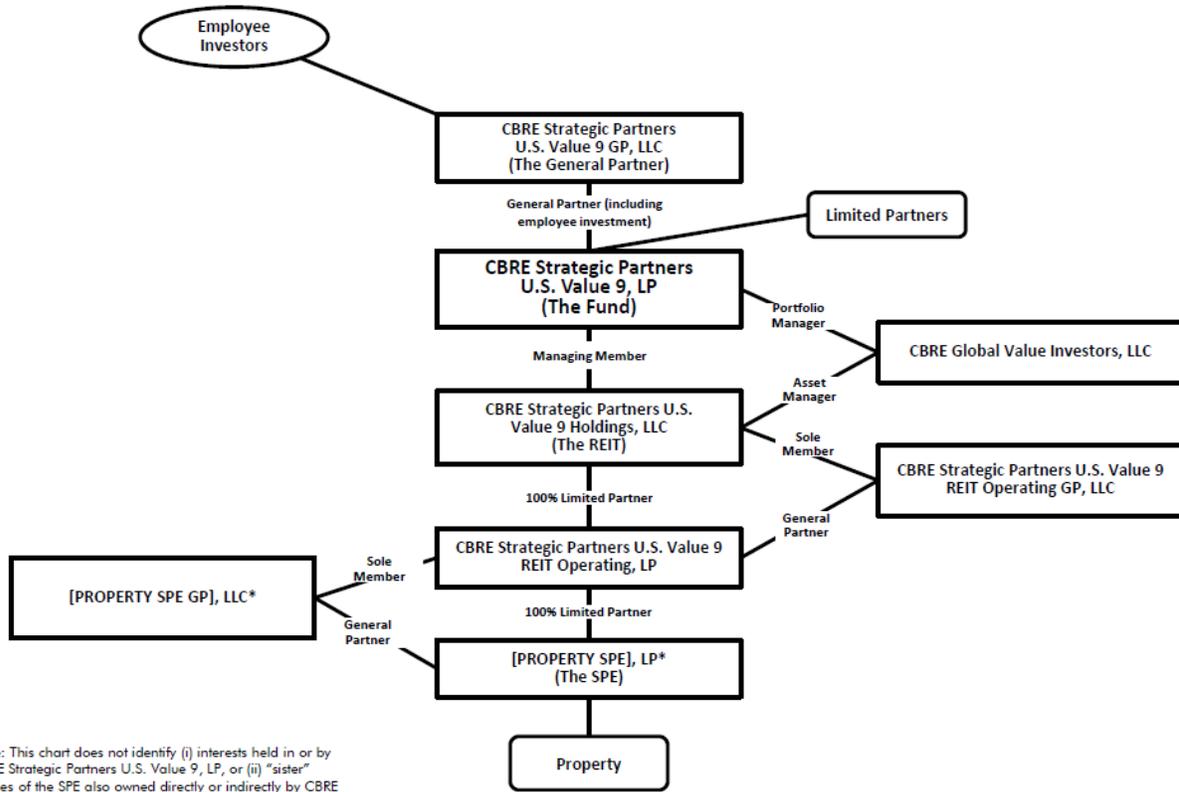
Ms. Fallon began her real estate career in 1980 at TIAA-CREF. During her tenure at TIAA-CREF, Ms. Fallon's responsibilities covered both equity and debt investing. While serving as a Special Assistant to the Chairman, Ms. Fallon designed the TIAA Real Estate Account, a commingled real estate fund for the defined contribution market. Subsequently, Ms. Fallon served as the account's first portfolio manager, overseeing its growth from \$100 million to over \$5 billion. Ms. Fallon then worked for the U.S. Steel and Carnegie Pension Fund, where she was responsible for real estate investing activities until her retirement in 2014.

Ms. Fallon also served on the Board of Directors of Morgan Stanley's Prime Property Fund as an Independent Director for more than 10 years. She was also a David Rockefeller Fellow with the Partnership of New York City and a member of the Pension Real Estate Association.

Ms. Fallon earned a Bachelor of Arts degree and a Master of Science degree in Urban Affairs from Hunter College and a Master's degree in Business Administration in Finance from Baruch College.

EXHIBIT C: Legal Structure

CBRE STRATEGIC PARTNERS U.S. VALUE 9, LP



Note: This chart does not identify (i) interests held in or by CBRE Strategic Partners U.S. Value 9, LP, or (ii) "sister" entities of the SPE also owned directly or indirectly by CBRE Strategic Partners U.S. Value 9 REIT Operating, L.P., or (iii) other entities not in the ownership chain of the SPE. All entities are Delaware entities.

CONFIDENTIAL AND PROPRIETARY

EXHIBIT D: Deal-by-Deal Performance

Deal Level Information								Projected Returns		Fair Market Value Returns	
Investment	Fund	Deal Descriptor / Business Plan	Property Type	Location	Acquisition Date	Sale Date or Modeled Sale Date	Fund Equity (\$million)	Gross Equity Multiple ^{6,7}	Gross IRR ^{6,7}	Gross Equity Multiple ^{6,8}	Gross IRR ^{6,8}
REALIZED INVESTMENTS											
The Colonnade	5	Reposition	Office	Dallas, TX	06/08	03/13	129	0.9x	-3.2%	0.9x	-3.2%
Northcreek Office Park	5	Reposition	Office	Atlanta, GA	07/08	04/13	44	1.1x	1.9%	1.1x	1.9%
Esperante	5	Reposition	Office	West Palm Beach, FL	12/08	12/13	47	0.9x	-1.5%	0.9x	-1.5%
Metropolitan Center	5	Reposition	Office	East Rutherford, NJ	12/08	12/11	38	1.9x	34.9%	1.9x	34.9%
500 North Brand	5	Reposition	Office	Los Angeles, CA	12/08	06/13	51	1.1x	3.1%	1.1x	3.1%
1540 Broadway	5	Reposition	Office	New York, NY	03/09	09/11	138	2.6x	63.2%	2.6x	63.2%
Cambridge Court	5	Multifamily	Multifamily	Baltimore, MD	04/09	08/11	29	1.9x	36.5%	1.9x	36.5%
Mass Court	5	Multifamily	Multifamily	Washington, D.C.	02/10	08/12	44	2.5x	47.0%	2.5x	47.0%
Faxon Park	5	Multifamily	Multifamily	Boston, MA	09/09	12/12	13	2.0x	33.0%	2.0x	33.0%
The Metro	5	Multifamily	Multifamily	Denver, CO	12/09	11/12	23	2.8x	50.1%	2.8x	50.1%
Woodway at Trinity Centre	5	Multifamily	Multifamily	Washington, D.C.	12/09	05/12	36	1.7x	26.2%	1.7x	26.2%
Emerson at Cherry Lane	5	Multifamily	Multifamily	Washington, D.C.	02/10	07/13	40	1.6x	16.5%	1.6x	16.5%
2000 Market Street	5	Reposition	Office	Philadelphia, PA	12/09	03/13	49	1.5x	20.5%	1.5x	20.5%
Oakland City Center	5	Reposition	Office	Oakland, CA	06/10	09 & 12/13	208	1.3x	9.7%	1.3x	9.7%
Preston Commons	5	Reposition	Office	Dallas, TX	07/10	06/13	44	1.5x	19.3%	1.5x	19.3%
Sterling Plaza	5	Reposition	Office	Dallas, TX	07/10	06/13	27	1.5x	20.4%	1.5x	20.4%
The Resort at Pembroke Pines	5	Multifamily	Multifamily	Pembroke Pines, FL	08/10	06/13	84	1.5x	20.0%	1.5x	20.0%
Haverhill	5	Multifamily	Multifamily	Washington, D.C.	03/11	09/13	21	1.6x	22.7%	1.6x	22.7%
Icon	5	Multifamily	Multifamily	Atlanta, GA	11/10	08/13	13	1.7x	23.6%	1.7x	23.6%
Park District	5	Multifamily	Multifamily	Atlanta, GA	11/10	08/13	12	1.8x	26.5%	1.8x	26.5%
800 Madison	5	Multifamily	Multifamily	Hoboken, NJ	05/11	12/13	40	1.4x	16.1%	1.4x	16.1%
Mustang Park	5	Multifamily	Multifamily	Dallas, TX	04/11	09/13	11	1.5x	21.6%	1.5x	21.6%
Sheridan Park	5	Multifamily	Multifamily	Dallas, TX	04/11	09/13	10	1.8x	29.7%	1.8x	29.7%
Kline Ranch	5	Reposition	Industrial	Los Angeles, CA	04/11	04/13	28	2.2x	49.4%	2.2x	49.4%
One Washingtonian	5	Reposition	Office	Washington, D.C.	04/11	06/13	50	0.6x	-25.1%	0.6x	-25.1%
2603 Augusta	5	Reposition	Office	Houston, TX	06/11	06/13	16	1.2x	11.1%	1.2x	11.1%
The Domaine	5	Multifamily	Multifamily	Dallas, TX	05/11	09/13	13	1.5x	20.4%	1.5x	20.4%
201 17th Street	6	Reposition	Office	Atlanta, GA	12/11	06/15	25	2.2x	20.4%	2.2x	20.4%
Heritage Creek	6	Multifamily	Multifamily	Denver, CO	12/11	10/14	23	1.8x	27.6%	1.8x	27.6%
Downtown Littleton Station	6	Multifamily	Multifamily	Denver, CO	05/12	11/14	24	1.9x	32.8%	1.9x	32.8%
400 South Hope	6	Reposition	Office	Los Angeles, CA	07/12	05/16	120	1.6x	16.0%	1.6x	16.0%
The Renaissance at the Quarter	6	Multifamily	Multifamily	Baltimore, MD	07/12	09/15	14	1.5x	16.1%	1.5x	16.1%
The Jazz at the Quarter	6	Multifamily	Multifamily	Baltimore, MD	07/12	09/15	22	1.6x	17.4%	1.6x	17.4%
One O'Hare Centre	6	Reposition	Office	Chicago, IL	08/12	10/15	31	1.5x	19.2%	1.5x	19.2%
7421 on Frankford	6	Multifamily	Multifamily	Dallas, TX	07/12	06/15	21	1.9x	30.7%	1.9x	30.7%
Tollway Plaza I & II	6	Reposition	Office	Dallas, TX	10/12	11/15	34	1.7x	23.9%	1.7x	23.9%
Highland Square	6	Multifamily	Multifamily	Washington, DC	10/12	12/16	26	0.9x	-1.5%	0.9x	-1.5%
50 West	6	Reposition	Office	San Jose, CA	12/12	12/15	42	2.6x	47.0%	2.6x	47.0%
Connection at Buffalo Pointe	6	Multifamily	Multifamily	Houston, TX	04/13	12/16	16	1.6x	17.3%	1.6x	17.3%
Dunwoody Place	6	Multifamily	Multifamily	Atlanta, GA	05/13	07/15	21	2.0x	45.7%	2.0x	45.7%
Three Ravinia	6	Reposition	Office	Atlanta, GA	05/13	12/16	79	1.4x	14.7%	1.4x	14.7%
San Jose Marriott	6	Reposition	Hotel	San Jose, CA	05/13	07/16	40	2.7x	51.5%	2.7x	51.5%
Residences at Moorefield Village	6	Multifamily	Multifamily	Washington, DC	05/13	04/17	34	1.5x	12.1%	1.5x	12.1%
181 W. Madison	6	Reposition	Office	Chicago, IL	11/13	03/17	127	1.4x	11.2%	1.4x	11.2%
Signature Exchange	6	Reposition	Office	Dallas, TX	06/13	12/15	30	1.4x	25.1%	1.4x	25.1%
Murphy Crossing	6	Reposition	Office	San Jose, CA	06/13	01/17	38	1.0x	1.2%	1.0x	1.2%
7900 at Park Central	6	Multifamily	Multifamily	Dallas, TX	09/13	11/16	17	1.5x	16.7%	1.5x	16.7%
The Meritage	6	Multifamily	Multifamily	Houston, TX	11/13	12/16	15	1.2x	5.6%	1.2x	5.6%
Marathon Oil	6	Reposition	Office	Houston, TX	10/13	01/18	100	0.5x	-18.3%	0.5x	-18.3%
Old Farm	6	Multifamily	Multifamily	Houston, TX	08/13	12/16	47	0.7x	-12.0%	0.7x	-12.0%
River Run	6	Multifamily	Multifamily	Chicago, IL	10/13	12/16	18	1.3x	8.6%	1.3x	8.6%
Alexander on Ponce	6	Multifamily	Multifamily	Atlanta, GA	11/13	01/17	22	1.6x	18.3%	1.6x	18.3%
Tustin Centre I & II	6	Reposition	Office	Orange County, CA	12/13	12/16	35	1.3x	11.5%	1.3x	11.5%
180 Montgomery	6	Reposition	Office	San Francisco, CA	12/13	05/16	63	1.8x	34.2%	1.8x	34.2%
Stone Creek at Old Farm	6	Multifamily	Multifamily	Houston, TX	02/14	12/16	10	0.8x	-7.1%	0.8x	-7.1%

Deal Level Information								Projected Returns		Fair Market Value Returns	
Investment	Fund	Deal		Location	Acquisition Date	Sale Date or Modeled Sale Date	Fund Equity (\$million)	Gross Equity Multiple ^{6,7}	Gross IRR ^{6,7}	Gross Equity Multiple ^{6,8}	Gross IRR ^{6,8}
		Descriptor / Business Plan	Property Type								
Gramercy on the Park	7	Multifamily	Multifamily	Dallas, TX	12/14	07/18	27	1.6x	16.6%	1.6x	16.6%
Plantation at the Woodlands	7	Multifamily	Multifamily	Houston, TX	09/14	07/18	29	0.9x	-2.4%	0.9x	-2.4%
The Landing at MIA	7	Reposition	Office	Miami, FL	10/14	07/18	77	2.0x	20.8%	2.0x	20.8%
Arbor Heights	7	Multifamily	Multifamily	Portland, OR	10/14	12/17	23	2.3x	36.7%	2.3x	36.7%
100 High Street	7	Reposition	Office	Boston, MA	09/14	04/17	129	1.5x	20.6%	1.5x	20.6%
235 Pine	7	Reposition	Office	San Francisco, CA	09/14	06/18	53	1.4x	13.0%	1.4x	13.0%
125-150 Cambridgepark Dr	7	Reposition	Office	Boston, MA	11/14	06/17	74	1.7x	27.3%	1.7x	27.3%
Residences at Springfield	7	Multifamily	Multifamily	Washington, DC	11/14	07/18	71	1.3x	8.4%	1.3x	8.4%
The Tribute	7	Multifamily	Multifamily	Raleigh, NC	12/14	07/18	23	1.4x	12.0%	1.4x	12.0%
Metropolitan Park	7	Reposition	Office	Seattle, WA	03/15	07/18	125	2.1x	31.4%	2.1x	31.4%
Park 80 West	7	Reposition	Office	New York Metro	02/15	08/18	45	1.3x	13.4%	1.3x	13.4%
Montgomery Mills	7	Multifamily	Multifamily	Philadelphia, PA	02/15	07/18	24	1.5x	15.7%	1.5x	15.7%
1650 Arch	7	Reposition	Office	Philadelphia, PA	04/15	06/18	36	1.2x	6.4%	1.2x	6.4%
United Plaza	7	Reposition	Office	Philadelphia, PA	04/15	11/17	55	1.3x	14.7%	1.3x	14.7%
Mockingbird Flats	7	Multifamily	Multifamily	Dallas, TX	07/15	07/18	28	1.3x	10.5%	1.3x	10.5%
Element at Deer Valley	7	Multifamily	Multifamily	Phoenix, AZ	07/15	07/18	27	2.1x	33.5%	2.1x	33.5%
7000 Central Park	7	Reposition	Office	Atlanta, GA	11/15	07/18	48	0.9x	-8.5%	0.9x	-8.5%
Creekside	7	Multifamily	Multifamily	Dallas, TX	12/15	07/18	28	1.3x	13.3%	1.3x	13.3%
Lakeshore	7	Multifamily	Multifamily	Dallas, TX	12/15	07/18	18	1.5x	19.2%	1.5x	19.2%
Station Square	7	Multifamily	Multifamily	Philadelphia, PA	12/15	07/18	20	1.4x	16.6%	1.4x	16.6%
1850 Gateway	7	Reposition	Office	San Francisco, CA	12/15	11/18	32	1.0x	0.3%	1.0x	0.3%
Wheeler Hill	7	Multifamily	Multifamily	Boston, MA	12/15	07/18	25	1.2x	8.9%	1.2x	8.9%
PARTIALLY REALIZED / UNREALIZED INVESTMENTS											
Galleria Towers	7	Reposition	Office	Dallas, TX	09/15	09/19	119	1.3x	5.3%	0.7x	3.4%
800 Connecticut	7	Reposition	Office	Stamford, CT	10/15	09/19	47	1.0x	-1.6%	0.6x	-5.8%
Irvine Marriott	7	Reposition	Multifamily	Orange County, CA	06/15	12/19	65	1.7x	18.6%	1.7x	22.3%
Pullman Hotel San Francisco Bay	7	Reposition	Multifamily	San Francisco, CA	11/15	09/19	83	1.6x	15.0%	1.3x	8.7%
California Plaza	8	Reposition	Office	San Francisco Bay Area, CA	10/16	12/20	60	1.5x	11.3%	1.4x	19.3%
Liberty Center	8	Reposition	Office	Pittsburgh, PA	12/16	12/19	45	1.4x	16.9%	1.3x	17.7%
The Ashborough	8	Multifamily	Multifamily	Washington, DC	12/16	12/20	51	1.6x	15.8%	1.2x	11.8%
Vibe Medical District	8	Multifamily	Multifamily	Dallas, TX	01/17	12/20	27	1.6x	15.0%	1.2x	11.8%
The Aster Buckhead	8	Multifamily	Multifamily	Atlanta, GA	01/17	12/21	21	1.7x	14.0%	1.1x	5.3%
ArtWalk City Center	8	Multifamily	Multifamily	Denver, CO	04/17	12/19	41	1.4x	17.1%	1.3x	19.3%
Stamford Towers	8	Reposition	Office	Stamford, CT (New York Me	07/17	12/20	43	1.5x	14.2%	1.2x	12.8%
8750 NorthPark Central	8	Reposition	Office	Dallas, TX	06/17	12/20	50	1.6x	16.7%	1.2x	12.7%
Retreat at Danada Farms	8	Multifamily	Multifamily	Chicago, IL	08/17	12/20	32	1.5x	15.3%	1.2x	15.9%
North Bethesda Market	8	Reposition	Mixed-Use	Washington, DC	12/17	12/21	84	1.6x	15.0%	1.1x	12.7%
150 N. Michigan Ave	8	Reposition	Office	Chicago, IL	09/17	12/20	55	1.6x	16.6%	1.1x	5.1%
2600 Michelson	8	Reposition	Office	San Jose, CA (Orange Count	12/17	12/22	48	1.8x	14.0%	1.2x	23.9%
Pointe at West Chester	8	Multifamily	Multifamily	Philadelphia, PA	11/17	12/21	25	1.7x	16.7%	1.1x	12.4%
Chicago Industrial Portfolio	8	Reposition	Industrial	Chicago, IL	12/17	12/21	42	1.4x	15.0%	1.3x	33.2%
The Collective at Concourse	8	Reposition	Office	Atlanta, GA	12/17	12/19	77	1.3x	19.3%	1.3x	34.7%
St. Marin	8	Multifamily	Multifamily	Dallas, TX	02/18	12/22	44	1.8x	15.4%	n/a	n/a
Brand801 / 700 N. Central	8	Reposition	Office	Los Angeles, CA	12/17	10 & 12/19	55	1.3x	24.5%	1.2x	28.4%
2100 Powell	8	Reposition	Office	San Francisco Bay Area, CA	06/18	12/21	66	1.6x	16.8%	n/a	n/a
Kota North Scottsdale	8	Multifamily	Multifamily	Phoenix, AZ	04/18	12/22	78	1.7x	15.5%	n/a	n/a
Signature Ridge	8	Multifamily	Multifamily	San Antonio, TX	08/18	07/22	32	1.7x	15.8%	n/a	n/a
Southwest Industrial Center	8	Reposition	Industrial	Phoenix, AZ	08/18	07/21	21	1.5x	14.0%	n/a	n/a
Marketplace at Seminole	8	Reposition	Retail	Orlando, FL	12/18	11/22	18	1.8x	15.5%	n/a	n/a
The Warner Building	8	Reposition	Office	Washington, DC	12/18	12/22	186	1.6x	14.8%	n/a	n/a
Skyhouse Uptown	8	Multifamily	Multifamily	Charlotte, NC	12/18	12/22	78	1.6x	15.2%	n/a	n/a

Appendix

Rating Rationale

<i>Strategy</i>	Modified post-GFC to a lower risk profile within the value-add spectrum.
<i>Sponsor</i>	Well-resourced vertically integrated with competitive advantages as largest CRE service provider.
<i>Investment Process</i>	Typical for large organization. Driven by regional teams, managed by committee with dedicated PM and head of the US group Key Persons.
<i>ESG Policy & Practices</i>	Notable time/attention to these areas relative to peers. The firm is a participant in GRESB, and signatory to the PRI. Energy efficiency is a standard asset management objective.
<i>Fund Structure</i>	Closed-end is appropriate for the nature of the strategy, especially given transitional business plans with capex draws. Legal structuring is accommodative to the varied tax, regulatory, and other sensitivities of the historical investor types.
<i>Performance</i>	Mixed, but, since modifying its strategy, met target four of four times.
<i>Operational Due Diligence</i>	Satisfactory according to information provided; Long established prolific fund sponsor; SEC-registered since 1999. Rated an A1-Pass by Aon's Operational Due Diligence team.
<i>Terms & Conditions</i>	Overall fair and within industry standard; Fees are attractive.
<i>Overall</i>	Buy-rated

Investment Rating Explanation

The comments and assertions reflect Townsend views of the specific investment product, its strengths and weaknesses in general and in the context of Townsend's *View of the World* and same vintage alternative choices.

Buy - Suitable for institutional investors that have a portfolio construction need. Appropriate overall risk profile given the strategy and targeted returns.

Qualified - Suitable for institutional capital. In addition to customary risks, contains one or more heightened risks that should be weighed against an investor's preferences, risk tolerances, and portfolio construction needs.

Operational due diligence rating provided by Aon's dedicated multi-asset class Operational Due Diligence team according to its autonomous review of the Sponsor's policies & procedures, infrastructure and capabilities across a range of operations, middle and back office, and control functions.

A1-Pass - No material operational concerns; firm's operations largely align with a well-controlled operating environment.

A2-Pass - Firm's operations largely align with a well-controlled operating environment, with limited exceptions due to resource limitations or where isolated areas do not align with best practice

Conditional Pass - Aon noted specific operational concerns that the firm has agreed to address in a reasonable timeframe.

About Townsend Group – An Aon Company

Founded in 1983, The Townsend Group provides custom real asset solutions that help clients worldwide achieve their unique investment goals. As an Aon company, The Townsend Group is now part of one of the top three outsourced chief investment officer (OCIO) providers in the world measured by global assets under management. Aon's Investment organization, including Townsend, manages more than \$130 billion of worldwide assets under management and has advised on more than \$240 billion of real estate assets.

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Townsend is a registered investment adviser with the Securities and Exchange Commission and is a wholly owned, indirect subsidiary of Aon plc

Memorandum

To: Arkansas Teacher Retirement System (“ATRS”)
From: Chae Hong
CC: PJ Kelly; Jack Dowd; Richard Ferguson
Date: June 1, 2020
Re: CBRE Strategic Partners U.S. Value 9 – \$50 million Commitment Recommendation

Background and Recommendation

CBRE Strategic Partners U.S. Value 9, LP (the “Fund”) is being formed as a \$2 billion closed-end commingled fund to invest in a diversified portfolio of Value-Add commercial real estate. The Fund’s objective is to produce a 15% gross, 12% net leveraged IRR over its 8-year term utilizing 60% leverage. The strategy is acquisition-only with no development, focused on operational value-add at the property level as the primary driver of return. This is repositioning and lease-up over a relatively shorter term hold of two to five years on average. For better disposition pricing and liquidity, the Fund will hold larger size assets (\$75-\$150M) in the more major cities/MSAs that attract institutional core and core-plus buyers. Given the manager’s assessment of current conditions, the Fund will be over-weighting to apartments (40% of the Fund) and office assets (40% of the Fund).

AHIC is satisfied with the strategy of the Fund and its appropriateness for ATRS. Additionally, we believe that the merits of this offering outweigh its risks. A CBRE Strategic Partners U.S. Value 9 In Detail is attached for reference. We recommend that ATRS invest \$50 million in the Fund to fulfill ATRS’ 2020 Value-Add real estate allocation, in accordance with the previously approved 2020 ATRS Real Asset Pacing Schedule.

**ARKANSAS TEACHER RETIREMENT SYSTEM
1400 West Third Street
Little Rock, Arkansas 72201**

**RESOLUTION
No. 2020-20**

**Approving Investment in CBRE Strategic Partners U.S. Value 9,
L.P.**

WHEREAS, the Board of Trustees (Board) of the Arkansas Teacher Retirement System (ATRS) is authorized to invest and manage trust assets for the benefits of its plan participants; and

WHEREAS, the Board has reviewed the recommendation of its real assets investment consultant, Aon Hewitt Investment Consulting, Inc., along with the recommendation of the Investment Committee and ATRS staff regarding a potential investment in **CBRE Strategic Partners U.S. Value 9, L.P.**, a closed-end value add fund that will look to acquire, reposition, and re-lease high-quality real estate in select U.S. markets for sale into the core marketplace.

THEREFORE, BE IT RESOLVED, that the ATRS Board approves an investment of up to **\$50 million dollars (\$50,000,000.00)** in **CBRE Strategic Partners U.S. Value 9, L.P.** The total investment amount is to be determined by the real assets consultant and ATRS staff based upon the allocation available to ATRS and the overall investment objectives set by the ATRS Board; and

FURTHER, BE IT RESOLVED, that the ATRS staff is hereby authorized to take all necessary and proper steps to implement this investment, if acceptable terms are reached.

Adopted this 1st day of June, 2020.

Mr. Danny Knight, Chair
Arkansas Teacher Retirement System



Infrastructure InDetail

Macquarie Infrastructure Partners V, L.P.

March 2020

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EXECUTIVE SUMMARY

OVERVIEW

Review Date	Rating	Previous Rating
December 2019	Buy	N/A

Macquarie Infrastructure Partners V, L.P. (“MIP V”, “Fund V” or the “Fund”) is targeting to raise \$5.0 billion in total commitments. The Fund is sponsored by Macquarie Infrastructure Partners Inc. (“MIP”, the “Firm” or the “Manager”), an entity within Macquarie Infrastructure and Real Assets (“MIRA”) that is wholly owned by Macquarie Asset Management (“MAM”) and ultimately by Macquarie Group (“Macquarie”) which is listed on the Australian Securities Exchange (ASX: MQG).

MIP has been actively investing in the North American infrastructure market since 2003. Across its prior North American funds, the Firm has raised \$14.1 billion in total commitments, invested / committed \$12.9 billion¹ and realized \$12.3 billion as of September 30, 2019. MIP V is a continuation of strategy similar to its predecessor funds listed below;

- Macquarie Essential Assets Partnership (“MEAP”), a CAD 460.0 million 2003 vintage fund that is fully realized;
- Macquarie Infrastructure Partners I (“Fund I” or “MIP I”), a \$4.0 billion 2006 vintage fund that is largely realized;
- Macquarie Infrastructure Partners II (“Fund II” or “MIP II”), a \$1.6 billion 2008 vintage fund that is fully invested and currently in disposition stage;
- Macquarie Infrastructure Partners III (“Fund III” or “MIP III”), a \$3.0 billion 2013 vintage fund that is largely invested and currently in optimization stage;
- Macquarie Infrastructure Partners IV (“Fund IV” or “MIP IV”), a \$5.0 billion 2018 vintage fund that is over 90% committed to nine portfolio companies.

Strategy: MIP’s strategy has broadly been consistent across all predecessor funds from MEAP through MIP IV. The Fund will primarily make brownfield, core and core+ investments in companies across transportation, waste management, utilities, energy and communication sectors located predominantly in the United States and Canada (with an ability to invest in other countries in the Americas, mainly Mexico and Brazil, up to the greater of 20% of the aggregate commitments or \$250 million). MIP V will target to allocate \$250 million to \$750 million per investment to create a portfolio of 7 to 10 companies and leverage its co-investment partners to execute larger deals, if required. Consistent with predecessor funds, MIP V will seek to take control or significant influence positions in the portfolio companies to implement value creation initiatives. The Fund will target net returns of 10.0% to 12.0% over the life of the Fund and a gross cash yield of 4.0% to 6.0% following the investment period over the remaining life of the Fund.

Sponsor:

HQ Location	New York, NY	Parent	Macquarie Infrastructure Real Assets (“MIRA”)
Ownership	Macquarie Group – 100%	Founded	1990
Employees	700+ Total / 350+ Inv. Professionals	Team	97 Total / 52 Inv. Professionals
AUM (Sep 30, 2019)	MIRA: \$129.0 billion, MIP: \$9.0 billion ¹		

¹ Includes approximately \$1.6 billion of capital committed to deals closed by MIP IV but not yet funded.

Performance (as of September 30, 2019):

Fund	Vintage Year	Fund Size	Capital Invested	# of Inv.	Inv. Realized	Realized Value	Unrealized Value	Total Value	Loss Ratio	Ave. Hold Period	Gross TVPI	Net TVPI	Gross IRR	Net IRR
MEAP	2003	\$336.4	\$384.1	4	4	\$822.7	\$0.0	\$822.1	0.0%	5.3	2.1x	1.9x	28.6%	22.6%
MIP I	2006	4,000.0	3,917.9	10	9	8,529.8	175.3	8,705.1	7.3%	10.1	2.2x	2.0x	10.0%	8.1%
MIP II	2008	1,569.0	1,452.9	6	2	1,853.5	1,110.7	2,964.2	2.9%	7.9	2.0x	1.7x	12.2%	8.3%
MIP III	2013	3,042.7	2,587.2	7	1	1,141.1	2,982.7	4,123.8	0.0%	2.2	1.6x	1.4x	18.2%	13.4%
MIP IV	2018	5,050.0	2,996.9	9	0	1.1	3,182.8	3,183.9	0.0%	N/A	1.1x	1.0x	12.3%	5.3%
Total			11,338.9	36	16	12,348.3	7,451.5	19,799.2	2.9%	8.0	1.7x	1.6x	11.7%	9.0%

Notes:

- MEAP was raised in CAD with a total fund size of C\$460 million that generated gross and net IRR of 23.3% and 17.9%, respectively and gross and net TVPI of 1.9x and 1.7x, respectively, all in CAD terms. The returns shown in the above table and elsewhere in this report have been calculated in USD terms after converting the cashflows at spot rate at each of the respective cash flow date. However, the fund size of MEAP has been converted into USD as of May 16, 2003 being date of first cash flow date.
- MEAP had total 5 investments, all of which have been realized – 2 out of these 5 investments (ERR and S2S) have been combined here as they were realized in a single sales process. Hence the table shows 4 investments.
- MIP I had total 13 investments, 12 of which have been realized – 4 out of these 13 investments (the four road assets that make up the U.S. Roads Portfolio) were acquired in a single transaction. Hence the table shows 10 investments.
- MIP IV has committed total of \$4.6 billion to nine investments, two of which had not been funded as of September 30, 2019. This brings the invested status to over 91% for MIP IV.

Portfolio Characteristics and Terms:

Structure	Closed-End Fund	Risk Segment	Moderate / Core, Core+
Size	\$5.0 billion target	Sponsor Commitment	1.0 % (minimum \$50 million)
Target Sectors	Transportation, Utilities, Energy, Communication	Target Geography	North America
Target Stage	Mainly Brownfield	Diversification Guidelines	<ul style="list-style-type: none"> 20% or \$500 million for a single investment 25% or \$500 million in Greenfield 20% or \$250 million outside United States and Canada
Target Return (USD)	10.0% – 12.0% net IRR	Leverage	Lesser of 30% of the capital commitments and undrawn commitments
Fund Term	10 years from final close Two 1-year extension by GP Two 1-year extension by LPs (or LPAC)	Investment Period	4 years from final close
Minimum Commitment	\$10.0 million		

Fees and Timing:

Management Fee²	0.75% p.a. on uninvested capital 1.5% p.a. on invested capital	Carried Interest	20.0% (Calculated on the whole fund basis)
Hurdle Rate	8.0% p.a.	Catch-Up	50 GP / 50 LP
Organization Expenses	Capped at greater of 0.10% of the capital commitments or \$5 million	Fee Income	100% offset against management fee for all transaction, break-up, directors', monitoring, financing and other fees
Co-invest Rights	Offered to LPs with commitments over \$100 million or via MIP V Co-Investment Sidecar	Valuations	Quarterly internal valuations, audited by Pwc annually
Status/Timing	First Close: Expected by mid-April 2020 Final Close: TBD		

COMPETITIVE ADVANTAGES

1. Experienced Infrastructure Team

MIRA is one of the most experienced infrastructure managers having invested in over 200 infrastructure assets across 30 countries, over 120 of such infrastructure assets are currently under MIRA's management. MIRA has built dedicated regional teams that are further divided by infrastructure sub-sectors, providing deep sector knowledge and expertise. MIP is very well resourced with over 95 professionals for North America, over 52 of which are investment professionals. Led by Karl Kuchel, Chief Executive Officer, senior investment professionals at MIP have over 20 years of average experience in the infrastructure industry and 10 years of average tenure at the Firm.

2. Infrastructure Track Record

MIRA currently manages over 30 infrastructure specific investment vehicles globally, five of which (MIP I, MIP II, MIP III, MIP IV and Macquarie Infrastructure Corporation (MIC)) have a mandate for investments in the United States and Canada. The Firm has one of the longest track record in infrastructure investing in North America since 2003. MIP funds (MEAP through MIP IV) have collectively invested / committed over \$12.9 billion of equity across 36 individual deals (including 2 deals closed by MIP IV but not yet funded), of which 16 have been fully realized. These funds have generated \$11.8 billion in income and sale proceeds and have most of the remaining portfolio investments marked at or above cost. The five predecessor funds have combined to generate 9.0% net IRR and 1.6x net equity multiple in USD.

² First close investors will benefit from a reduction in the uninvested capital fee to 0.375% during the investment period. Additionally, the Manager offers size rebates for commitments above \$100 million as per the following schedule;

Commitment Size	Invested Fee
=>\$100 million	1.25%
=>\$200 million	1.15%
=>\$300 million	1.05%

- MEAP, a CAD 460.0 million (\$336.4 million) 2003 vintage fund that is fully realized, generated 17.9% net IRR and 1.7x net equity multiple in Canadian Dollars (“CAD”), 22.6% net IRR and 1.9x net equity multiple in U.S. Dollars (“USD”). The data set for 2003 vintage funds is not sufficient for benchmarking.
- MIP I, a \$4.0 billion 2006 vintage fund that is largely realized, generated an 8.1% net IRR (2nd quartile) and 2.0x net equity multiple (1st quartile), in USD.
- MIP II, a \$1.6 billion 2008 vintage fund that is fully invested, currently in divestment stage and tracking to an 8.3% net IRR (1st quartile) and 1.7x net equity multiple (1st quartile), in USD.
- MIP III, a \$3.0 billion 2013 vintage fund that is largely invested, is currently in optimization stage and is tracking to a 13.4% net IRR (1st quartile) and 1.4x net equity multiple (1st quartile), in USD.
- MIP IV, a \$5.0 billion 2018 vintage fund that is over 90% committed to nine portfolio companies. Performance is not yet meaningful for this fund.

3. Strong Realizations

MIP has one of the strongest realized track records among infrastructure managers. While MIP IV is still a young portfolio at this stage, four prior funds from MEAP through MIP III have collectively exited 16 of the 27 investments made that produced \$12.3 billion in realized proceeds reflecting a gross DPI of 1.5x. MIP I and MIP II both rank 1st quartile on a net DPI basis among the North American Infrastructure peers for their vintage years. MEAP ranks 2nd quartile in fund currency (CAD) and 1st quartile in USD.

Fund	Vintage Year	Fund Size	Capital Invested	# of Inv.	Inv. Realized	Realized Value	Gross DPI
MEAP	2003	\$336.4	\$384.1	4	4	\$822.7	2.1x
MIP I	2006	4,000.0	3,917.9	10	9	8,529.8	2.2
MIP II	2008	1,569.0	1,452.9	6	2	1,853.5	1.3
MIP III	2013	3,042.7	2,587.2	7	1	1,141.1	0.4
Total			8,342.0	27	16	12,347.1	1.5

4. Ability and track record in closing traditional (non-energy) infrastructure sectors

The size and depth of the MIRA platform allows significant time and resources to be allocated to proactively developing relationships with government and regulatory authorities, among other key stakeholders. The result of this proactive approach has led to a greater percentage of transaction opportunities outside the energy sector, which has otherwise made up the highest percentage of many other infrastructure funds.

Combined exposure to mid-stream energy, power and renewables has been under 15% of the total capital invested by all MIP funds. We believe an investment in MIP V is likely to be a sector diversifier to other peer funds.

Industry	# of Deals	% of Deals	Capital Invested	% of Cost	% of Gain
Utilities	9	25.0%	2,961.5	26.1%	40.9%
Transportation	11	30.6%	2,728.5	24.1%	20.3%
Communications	6	16.7%	\$2,594.3	22.9%	22.4%
Waste	6	16.7%	2,364.3	20.9%	16.2%
Midstream	1	2.8%	238.5	2.1%	-0.5%
Power	1	2.8%	231.5	2.0%	0.6%
Renewable	2	5.6%	220.3	1.9%	0.2%
Total	36	100.0%	\$11,338.9	100.0%	N/A

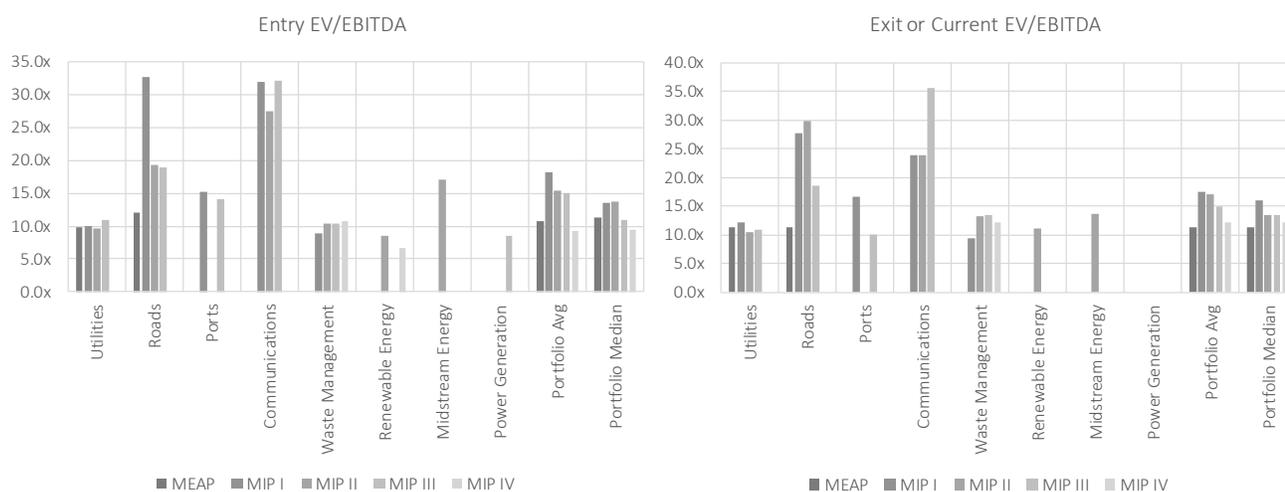
5. Evidence of Operational Value-add

Macquarie takes an active role in managing the assets they acquire in order to improve their efficiency and enhance returns, a skill they have demonstrated consistently over time. The Manager relies on the expertise of its senior investment

professionals to either assist in the transition immediately post-closing of an asset by accepting roles as senior management, identifying immediate improvements or operational efficiencies, or providing the short term, medium term and long term strategic plans. Macquarie has proven its ability to add value to the assets within their portfolio.

Growth in revenue and EBITDA has consistently been the largest contributor of performance across MEAP, MIP I, MIP II and MIP III portfolio assets. Many of these assets were able to generate positive returns despite a decline in valuation multiple and slight increase in debt level. Such attribution has also been quite consistent across sectors. This demonstrates the Firm's ability to generate returns by creating value in the assets without over relying on expansion in valuation multiples or changes in the capital structure.

Approximately 22 of 29 assets acquired since 2003 (excluding assets acquired by MIP IV) have generated positive revenue and EBITDA growth. Average CAGR in revenue and EBITDA across MEAP, MIP I, MIP II, and MIP III is 7.9% and 9.5% (excluding MIP IV and some assets where data was not available or meaningful), respectively. We believe that some of these assets achieved growth meaningfully higher than the average growth in the respective industry.



6. Fund Size, investment mandate and valuation discipline

While many of its peers have targeted to raise funds significantly larger than their predecessor fund, MIP is targeting \$5.0 in aggregate commitments for MIP V, same as MIP IV that closed on \$5.0 billion. We believe this is critical to staying within the mid-market mandate MIP has, as we observed some level of strategy drift or a general trend of moving up the transaction sizes by peers that raised larger funds. Our analysis indicates that MIP has stayed consistent with its mid-market mandate across funds it manages. Average equity investment and enterprise value across prior funds has been under \$400.0 million and \$2.0 billion, respectively. The Manager has also been quite disciplined in valuation it has paid for assets in each sector across funds and over time.

7. Favorable Fee Terms

The overall fee load is favorable to investors relative to comparable North American and global infrastructure funds. The shorter investment period, lower fee on uninvested capital, fully-pooled waterfall and lower 50/50 catch-up combine to improve the gross-to-net spread relative to peers. In a competitive environment where capital deployment could be slower we favor the reduced fee on uninvested capital. First close investors can lower that fee to 0.375% making it even more attractive.

POTENTIAL ISSUES AND CONCERNS

Although we believe MIP V offers a compelling investment opportunity, below we have listed concerns that should be considered prior to the investment decision. Following each is a discussion of mitigating factors that help reduce our level of concern.

1. Team Continuity / Turn over

MIP has reported some turnover in the investment team as five senior investment professionals have left the platform (including an investment committee member) over the past 5 years. This raises questions around team stability and performance attribution to team members who are no longer part of the platform.

Discussion: Of the five departed members, two were transferred internally within MIRA and three left the Firm for other opportunities outside Macquarie. Also, two of these five members were generalists from a sector perspective, one was focused on debt, and the other two were focused on utilities, one of the sectors in which MIP has deep expertise. Also note that six of the most senior investment professionals who led or co-led 27 of the 36 deals closed by MIP since inception are still actively involved except for Chris Leslie, Executive Chairman of MIRA Americas and previously CEO of MIP, who previously led the highest number of deals in MEAP through MIP II. Therefore, we believe these departures have not materially impacted the ability of the MIP team and that MIP V will essentially be executed by the same team as prior funds with little changes at the senior leadership level (Mark Fay, one of the five departed members, has been replaced with David Fass as an investment committee member).

MIP has also hired four senior level investment professionals over the past couple of years to either replace the departed members and / or add further strength in relatively new areas of focus for MIP, mainly in communications and technology. The Firm also hired a head of Mexico.

Lastly, we believe MIRA remains a deep and experienced global platform with the ability of the North American team to access significant resources and expertise as needed.

2. Investment Losses

MIP I has loss ratio of 7.3% (based on invested capital) and 10.0% (based on number of deals). All of the losses came from the US road portfolio that the fund eventually sold for 0.7x cost. The portfolio consisted of Chicago Skyway, Dulles Greenway, Indiana Toll Road and South Bay Expressway (reported as a single deal in this report). While Chicago Skyway and Dulles Greenway were realized at 30-40% loss, Indiana Toll Road and South Bay Expressway were essentially written off.

Discussion: We attribute underperformance of some of the MIP I assets to underwriting aggressive growth assumptions (specially just before GFC) that failed to materialize, and/or inappropriately excessive debt financing. Later fund investments provide evidence of how MIP changed to a more conservative approach to focus on downside risk. The Manager learned several lessons regarding investing in roads and ports that have been proven in several MIP II and MIP III investments.

- The four assets within the U.S. Roads portfolio (invested in 2006) suffered due to the massive decline in traffic volume during the global financial crisis. The Manager had underwritten those four assets using the assumption that traffic volume would continue its upward trend seen over the previous 70 years. However, in 2007, traffic volume plummeted and took almost ten years to return to the pre-global financial crisis trend. The assets have suffered from this downturn, but Macquarie has since revised their roads investment strategy in that they will implement more downside protections on the assets (availability PPP projects with contracted revenues, lower leverage ratio, etc.) and will discount the traffic volume assumption to account for another downturn. This was most recently demonstrated in the Goethals Bridge Replacement Project (availability-based PPP with a 35-year concession agreement in MIP III) and Elizabeth River Tunnels (underwritten by discounting historical traffic patterns by 25%).
- Ports initially contributed to the high loss ratio in MIP I as both Halterm and Fraser Surrey Docs were held below cost for some time. These assets are still the lowest performing investments after the US road portfolio. When investing in

ports, MIP I assumed a 100% ownership stake in the port, which imposes significant shipment volume risk with the shipping lines. Since that time, the Manager realized that there is significant value and risk protection in forming relationships with and investing alongside shipping lines, which control that port's incoming shipment volume. This shift in strategy can be seen in MIP III's investments in NYK Ports and more recently Maher Terminals, in which Macquarie shares an ownership stake with the NYK shipping line. Both investments have met or exceeded expectations and are performing well.

3. Lower performance of MIP I and MIP II

MIP I and MIP II had target returns of 7-8% net IRR and 9-11% net IRR, respectively. While MIP I just reached its target, MIP II has so far fallen short.

Discussion: In addition to factors behind loss ratio of MIP I discussed above that contributed to lower performance, also note that both funds were difficult vintages due to GFC. MIP I took longer to realize portfolio investments that certainly impacted the net IRR. While it is 2nd quartile on net IRR basis, the Fund is actually 1st quartile on TVPI and DPI basis among 2006 vintage peers. MIP II, on the other hand is 1st quartile on net IRR, TVPI and DPI basis as well, despite having a higher fee structure that charges 1.5% management fee on commitment capital during the investment period (vs. 0.75% MIP IV offers).

Additionally, we believe MIP has historically been able to exit some of their investments at a meaningful premium to most recent valuations reported on their books. More specifically, the ten realizations from MEAP – MIP II averaged a 15% premium above the most recent valuation. This speaks to their conservative valuation methodology, success in implementing their exit strategy, and their ability to enhance returns later in each fund's life ultimately helping them to reach their target return.

4. Conflicts

MIRA and Macquarie groups have several entities / business units with potentially overlapping or conflicting functions and / or mandates with that of MIP. These include (i) conflict with other infrastructure funds / entities managed by MIRA where such funds / entities may have priority in allocation of investment opportunities over MIP and (ii) engagement of Macquarie affiliate(s) to provide transaction or advisory services.

Discussion: We believe that following are the main areas where conflict may arise;

- A. **Other infrastructure funds managed by MIRA:** MIRA manages separate core+ European infrastructure strategy ("MEIFs"), a super core European infrastructure strategy ("MSCIF"), Asian infrastructure strategy ("MAIFs"), a global infrastructure strategy ("MGIFs") and infrastructure debt strategy ("MIDFs"). While there is clearly no overlap or conflict with any of the other regional strategies, the MGIF funds do not underwrite separate deals, rather only feeds into (as an LP) and co-invests alongside MIPs and MEIFs. Also, MIRA has separate and fully dedicated investment teams for all these strategies, hence there is no overlap of team resources as well.
- B. **Macquarie Infrastructure Corporation ("MIC"):** MIRA also manages MIC, a company listed on the New York Stock Exchange that owns, operates, and manages a diversified portfolio of infrastructure investments in the U.S., often or potentially in the same sectors also targeted by MIP funds. MIC has first right over several categories of infrastructure investment opportunities in the U.S. and thus may have priority in allocation of such opportunities over MIP V.

We understand that MIC requires its assets to be yield-generating upon initial investment, a characteristic of pure core infrastructure assets. Given that the MIP funds are largely comprised of core+ assets, which typically require significant operational improvements and add-on acquisitions to generate returns and often do not generate strong yield upon initial investment, there is infrequent overlap between assets that are appropriate for MIC and those for MIP funds.

In addition, there are specific types of deals (i.e. contracted power and renewable energy, airport services, and logistic business) in which MIC invests but MIP has historically avoided. Lastly, we also understand that MIC has not been actively deploying capital in new opportunities, it is rather undergoing a strategic review and looking to divest some or all of its assets.

- C. **Macquarie Capital and other affiliates:** Lastly, Macquarie has an investment bank that actively provides advisory services in the infrastructure space. There is possibility that the Fund engages this affiliate as a financial advisor and pays fees for the sourcing and execution of transactions. The Fund and its portfolio companies may also use other services provided by several other affiliated operating groups of Macquarie, when needed. The main concern is that the Fund may be pressured to engage these affiliates in transactions and / or complete deals just to generate fee revenue for these affiliates.

We understand that Macquarie Capital is not a preferred financial advisor to the Manager and all dealings between MIP, Macquarie Capital and other divisions of Macquarie are at an arm's length basis. All related party transactions are tested by reference to market proposals and reviewed by independent parties. The Limited Partner Advisory Committee ("LPAC") is asked to scrutinize and approve proposals and matters regarding engagement of any related party advisor. The Fund has and will hire a competing investment bank / advisory firm should the fees be more competitive, or if it offers better expertise.

Macquarie Capital was retained on 3 out of 7 transactions in MIP III and 1 out of 9 in MIP IV. Macquarie Capital is seen as a competent advisor, particularly in transportation and utilities sectors in the US. This is evident in MIP III and MIP IV's usage of Macquarie Capital. We also reviewed that the two most recent funds (MIP III and MIP IV) paid \$61.6 million in advisory and underwriting fees across 16 transactions of which, \$28.6 million was paid to Macquarie affiliates across 4 transactions. Although the fees paid to affiliates are material, we understand they were hired on competitive basis and approved by LPAC for each for these transactions.

5. Achieving Target Returns

Interest rates remain low and operating fundamentals have generally improved over the past five years resulting in elevated market multiples and lower expected returns. Nowhere has this trend been more evident than in the utility and transportation sectors in the United States and Canada that are trading at historically high valuations. We believe that achieving 10-12% net returns on transactions in these sectors will be relatively difficult. MIP V may rely on riskier transactions in waste management and communications or allocate some capital outside United States and Canada (mainly in Mexico and Brazil) where the Manager has a less favorable or limited track record to achieve target returns.

Discussion: The Manager has not materially changed its strategy to maintain target return levels. MIRA is still committed to building a diversified portfolio across sectors and with assets that exhibit an appropriate risk profile. There is a demonstrated willingness to include lower risk, lower returning assets to manage overall portfolio risk levels. We believe investors should be prepared for total net Fund returns in the current environment at the lower end of the 10-12% targeted range.

STRATEGY

OVERVIEW

MIP's investment philosophy and strategy has broadly been consistent across all predecessor funds since the establishment of its first fund, MEAP in 2003. The Fund will seek to acquire equity positions of control or significant influence primarily in operating infrastructure businesses where the investment team can implement value-creation initiatives, drive strategic, commercial, and / or financial decisions of the target companies. The Fund will mainly focus on making brownfield core and core+ investments in companies located predominantly in the United States, however the Fund will also have the ability to invest in other countries in the Americas, mainly Mexico and Brazil, up to the greater of 20% of the aggregate commitments or \$250 million.

The Fund will target net returns of 10.0% to 12.0% over the life of the Fund and a gross cash yield of 4.0% to 6.0% following the investment period over the remaining life of the Fund. Similar to its predecessor funds, the Fund will focus on the following sub-sectors of infrastructure;

- **Transportation:** roads, sea ports, airports, storage, rail, and other logistic or supply chain businesses
- **Waste management:** landfills, waste collection, processing and disposal businesses, waste to energy, etc.
- **Utilities:** regulated electric and gas transmission / distribution networks, water and waste water, cogeneration assets, district heating and cooling, etc.
- **Energy:** pipelines, gathering and processing systems, export facilities, etc.
- **Communication:** fiber cable networks, wireless towers, data centers, etc.

MIP V will target to allocate \$250 million to \$750 million per investment to create a portfolio of 7 to 10 companies and leverage its co-investment partners to execute larger deals, if required.

LEVERAGE

The Fund may incur indebtedness and guarantee obligations, borrow money, obtain financing / credit facilities / letter of credits for the purpose of covering organizational expenses, partnership expenses, management fee expenses, providing interim financing to fund portfolio investments, repaying credit facilities, or funding any other investment related activities of the Fund.

- Aggregate borrowing or indebtedness will not exceed the lesser of (i) greater of the (i) 30.0% of the aggregate commitments of the Fund and (ii) \$900.0 million and (i) undrawn commitments of the Fund.
- The borrowing at the portfolio company level is not capped and may vary across sub-sectors and types of business accordingly to their underlying risk.
- Weighted average portfolio level leverage has ranged between 45% and 60% across predecessor funds (calculated as net debt to enterprise value as of June 30, 2019 or at exit for realized investments). There has been a trend in employing lower leverage at portfolio company level in more recent funds (MIP II and MIP III have weighted average leverage below 50.0%) compared to earlier funds (MEAP and MIP I that have weighted average leverage of just under 60.0%).

HEDGING

The strategy targets to allocate bulk of the capital (at least 80%) to investments in the US and Canada and exposure outside these two countries will be limited. The Manager generally does not but will evaluate the need for hedging any currency exposure to non-USD deals.

INVESTMENT GUIDELINES

The Fund will not invest;

- More than greater of 20% of aggregate capital commitments or \$500 million in a single portfolio investment

- More than greater of 25% of aggregate capital commitments or \$500 million in greenfield projects
- More than greater of 20% of aggregate capital commitments or \$250 million outside United States and Canada in other countries in Americas (mainly in Mexico and Brazil)
- MIRA funds no longer will invest in coal mining businesses or businesses for which coal-fired generation accounts for more than 25% of revenue. In the case of businesses where some coal generation exists, decommissioning will be incorporated into the acquisition case business plan. In other sectors, such as rail and ports, revenues generated from coal-related activities will not exceed 25%.

PIPELINE

No pre-specified assets have closed to-date. MIP highlighted several transactions that are well advanced that could be the first investments for MIP V. Since MIP IV is over 90% committed, MIP is expecting to close several new deals in MIP V before the final close of the Fund. A short list of active pipeline opportunities is attached as **Exhibit I**.

SPONSOR

OVERVIEW

Macquarie's history dates to 1969 when a merchant bank, Hill Samuel Australia Limited was created as a wholly-owned subsidiary of Hill Samuel & Co. Limited, that acquired Australian banking license as Macquarie Bank Limited ("MBL") in 1985 which was listed on Australian Securities Exchange ("ASX") in 1996. Following a restructure in 2007, MBL became an indirect subsidiary of Macquarie Group, a new ASX listed company (ASX: MQG).

ASX-listed Macquarie Group is owned by over 130,000 registered shareholders as at March 31, 2019. Approximately 10% of Macquarie Group is owned by Macquarie Group employees. As per Macquarie's annual report, five largest shareholders include HSBC Custody Nominees (Australia) Limited (~30%), JP Morgan Nominees Australia Limited (~17%), Citicorp Nominees Pty Limited (~6%), National Nominees Limited (~4%), and Bond Street Custodians Limited (4%). As of March 31, 2019, there had been no material changes reported in the ownership pattern over the past 5 years.

Macquarie Group operates across four distinct operating businesses: Macquarie Capital, Macquarie Asset Management, Commodities and Global Markets, Banking and Financial Services. These operating businesses benefit from shared services across four central functions: Risk Management, Legal and Governance, Financial Management and Corporate Operations.

Macquarie Infrastructure Partners or MIP that manages the infrastructure strategy in North America was established in 2001 as an entity within MIRA, a real assets division, that is wholly owned by Macquarie Asset Management ("MAM") and ultimately by Macquarie Group ("Macquarie"). Macquarie is headquartered in Sydney, Australia, MIRA as a standalone entity is headquartered in London, United Kingdom, with 29 offices around the world and 360 total employees (including MIP). MIP is headquartered in New York, United States.

As of June 30, 2019, MIRA has approximately \$130.0 billion in total assets under management of which approximately \$108.0 billion relates to infrastructure representing ownership in over 130 infrastructure assets globally. This includes ~\$9.0 billion managed by MIP team across 22 remaining infrastructure assets, including deals closed but not yet funded by MIP IV.

The MIP team is led by Karl Kuchel (CEO) and consists of 52 professionals dedicated to infrastructure investing in Americas. Mr. Kuchel has been responsible for MIP strategies for roughly 7 years. The senior team members have 20+ years of average infrastructure investing and managing experience. Below is a list of the Firm's most senior investment and asset management professionals who will lead execution of MIP V strategy.

Name	Title	Responsibility/Functional Area	Location	Total Experience	Years at Macquarie	Investment Committee Member
Martin Stanley	Senior Managing Director	Head of MAM	London	33	15	Yes
Karl Kuchel	Senior Managing Director	Chief Executive Officer, MIP Inc.	New York	19	16	Yes
David Fass	Senior Managing Director	Head of MIRA Americas	New York	33	8	Yes
Christopher Leslie	Senior Managing Director	Executive Chairman, MIRA Americas	New York	32	27	Yes
Graeme Conway	Senior Managing Director	MAM Chief Commercial Officer	New York	22	22	Yes
Jenny Chan	Managing Director	Head of Portfolio and Strategy	New York	18	18	No
Andrew Chapman	Senior Managing Director	Asset Management	New York	34	13	No
Paul Mitchener	Senior Managing Director	Sector Head, Waste Management	New York	37	14	No
Richard Nicholson	Managing Director	Sector Head, Ports	New York	30	11	No
Aaron Rubin	Managing Director	Sector Head, Power & Energy	New York	18	11	No
Louis Paul	Managing Director	Sector Head, Transportation	New York	11	11	No
Anton Moldan	Managing Director	Sector Head, Communications	New York	13	13	No
Ernesto Gonzalez	Managing Director	Head of MIRA Mexico	Mexico	19	3	No
Fernando Lohmann	Managing Director	Head of MIRA Brazil	Brazil	20	5	No
David Kirkwood	Managing Director	Head of Construction and Safety	New York	33	5	No

TURNOVER

MIP team has generally been stable and growing with less than 10% turnover in the investment team over the past 5 years. Five investment professionals have left MIP, of which, two were internally transferred within MIRA and only three left the Firm

for other opportunities outside Macquarie. We believe most senior investment professionals who led or co-led 27 of the 36 deals closed by MIP since inception are still actively involved. MIP has also hired four senior level investment professionals over the past couple of years to either replace the departed members and / or add further strength in relatively new areas of focus for MIP, mainly in communications and technology. The Firm also hired a head of Mexico.

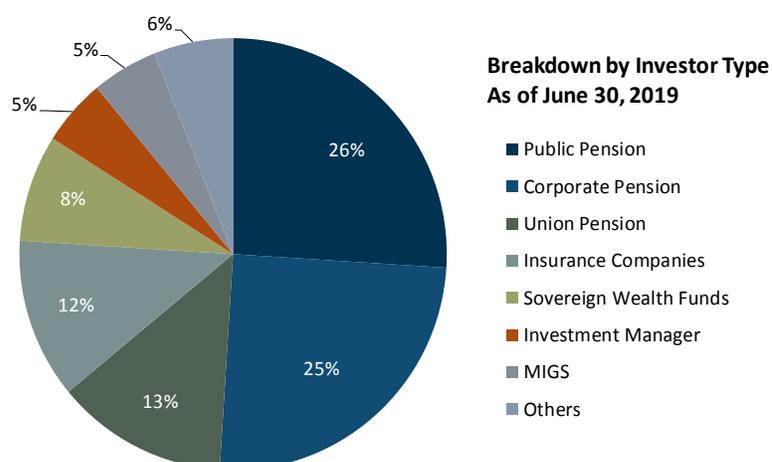
COMPENSATION AND RETENTION

The Firm offers market-competitive compensation that seeks to promote alignment of interests of investment professionals with the Fund objective. The basic compensation framework is standard that consists of fixed base salary and annual performance-based profit share. Carried interest is also allocated to senior team members.

- Fixed base salaries reflect individuals' functional expertise and role and are reviewed annually.
- Annual performance-based profit share allocations are made from a MIRA profit share pool and reflect individual performance and contribution.
 - Portion of the annual performance-based profit share for certain key Fund employees is retained and notionally reinvested in Macquarie equity and MIRA-managed funds (the "Fund Retention") as per Macquarie's retention policy.
 - Total retention may range between 25% and 50% of the total annual performance-based profit share, 50% to 75% of which could be the Fund Retention, depending on the seniority of the employee.
 - The vesting and release period for such retention arrangements is currently over 2 to 7 years, depending on seniority of the employee.
- Because MIP calculates carried interest on a whole-of-fund basis, carried interest is expected to be paid at or near the end of the Fund's life.
 - Similar to predecessor fund, 40% of the carried interest earned by MIP V will be allocated to the MIP team and 60% of it will go to MIRA. Of that 40% allocated to the MIP team, three-eighths is allocated to ownership carry (that counts towards GP commit), which is made available for all Senior MDs on a global basis to purchase. One-eighth is allocated to phantom carry, which is carry that is dispersed to the remainder of the team based on performance over the life of the fund. The remainder is allocated to a general pool intended for entire team even down to the junior levels.

CLIENT BASE

MIP has over 190 distinct institutions that have invested across its predecessor funds. While more than 60% of the commitments have come from public, corporate and union pension, MIP III and MIP IV saw relatively increased interest from insurance companies and foreign sovereign wealth funds. MIP expects largely a similar investor base in MIP V.



COMPLIANCE / LITIGATION DISCLOSURES

There is no pending litigation or regulatory investigations. However, we are aware that Macquarie's outgoing CEO Nicholas Moore, incoming CEO Shemara Wikramanayake, and certain other executives are likely to be interviewed by German authorities, for involvement in approving a controversial lending transaction in 2011, as part of an ongoing investigation into a tax fraud scandal. We understand that Macquarie was one of over 100 financial institutions involved in such market, from which it withdrew later in 2012. We were informed that Macquarie received extensive external legal advice prior to the transaction.

We understand that such loan was made by a division of Macquarie that was separate from MIRA. We have also been informed that none of the MIP investment team members or its IC members have been classified or associated with this investigation. While it continues to cooperate with German authorities, Macquarie believes there are no direct legal or commercial implications expected for MIRA or MIP.

MANAGER ONSITE

OVERVIEW OF SCOPE

Townsend conducted onsite visit to Macquarie Infrastructure Partners' headquarter in New York as part of its due diligence and prior to completing this report. The scope of the onsite visit included but was not limited to the following;

- Firm overview of MIRA and MIP and its platforms
- Overview of current team, structure, turnover, departures and additions, etc.
- Overview of prior MIP funds, their performance and future outlook
- Review of underperforming deals and outlook
- Overview of MIP strategy, fund terms and investment restrictions, etc.
- Overview of market opportunities by each target sector and relevant deals in the Fund's investment pipeline
- Meetings with most of the senior management, investment professionals, sector specialists, and other staff members
- Review of case studies, recent investments in MIP IV, and underwriting assumptions in current environment
- Review of some of the investment memos and other reports prepared by MIP team for their investment committee

OPERATIONAL DUE DILIGENCE

SUMMARY

A2 Pass

Macquarie Infrastructure Partners Inc. ("MIP" or "MIP Inc.") is an asset manager primarily focused on equity-related investments in infrastructure assets. It is a subsidiary of Macquarie Group Limited, a large, publicly traded investment bank and financial services company. MIP has implemented intuitional levels of controls across its operational construct, and the A2 Pass rating is intended to draw attention to the Limited Partnership structure of the Fund that operates without a Board of Directors with independent representation, as well as the lack of external valuation by an independent appraiser.

INVESTMENT PROCESS

OVERVIEW

Sourcing deals

Macquarie has one of the longest track records in infrastructure investing and advisory services. The size of the existing MIP team, their experience, and reputation gives MIP a strong advantage over its peers. Investment professionals source opportunities through their network and relationship with management teams, governments, and industry professionals or advisors. MIP team is organized by sectors and each sector team is responsible for managing industry relationships and sourcing deals for the Fund. Majority of the deals sourced and executed by MIP V predecessor funds were done either on a bilateral basis or in a limited competition.

Screening, Due diligence and approval

MIP employs a rigorous screening and due diligence process that has consistently been used and refined by the Firm over time.

- The investment team will first review and assess key characteristics of the potential deal against the Fund’s investment strategy and decide whether to proceed to further consideration or not. These include but are not limited to;
 - Stability of cash flow and the factors that influence the future cash flow
 - Competent and reputed management team aligned with shareholders
 - Current and projected financial position of the business and capex analysis
 - Current capital structure and any potential optimization opportunities
 - Tax considerations and treatment
 - Current and potential environmental, social and governance (“ESG”) and occupational health and safety (“OHS”) issues and means to rectify and ensure on-going compliance with best practices
 - Opportunities to enhance performance, grow cash flows and / or improve overall risk profile of the business
- Deal team typically consists of sector head and other professionals with relevant sector, deal type and diligence experience.
- Industry analysis, financial analysis, technical and asset review, business planning and capital structure review, valuation, sensitivity and scenario analysis, tax considerations, documentation, are among the key areas of focus in investment due diligence.
- Deal team will also visit the target company’s head office and its operating assets.
- Investment committee approval required before bid costs are incurred and before a binding offer is submitted.
- In addition to the approval process outlined above, each deal can only be executed once deal team has completed and a Transaction Compliance Certificate (“TCC”). The TCC is a single document that works as a checklist and pulls together wide array of risk management factors and analyses necessary to complete before final closing.

Asset Management

- Post-closing the same deal team which includes investment and asset management professionals remains involved through disposition.
- MIRA seeks to apply what it refers to as “System 7” framework for active asset management that attempts to ensure that appropriate business planning, performance reporting, governance and risk management are implemented and maintained. The framework consists of stakeholder engagement, setting strategic vision, putting right leadership, business planning and alignment between management and shareholders, optimizing capital, managing risk and governance.
- On an annual basis, the Fund asset management teams work together with portfolio company management to develop a comprehensive business plan, which includes a one-year budget, a five-year cash flow forecast, and strategic goals and initiatives.

MIP will focus on creating value through revenue and EBITDA growth, organically and through bolt-on acquisitions, de-risking, capex programs and operational improvements, capital structure improvements.

INVESTMENT COMMITTEE

All new investments, dispositions and any significant transactions require the approval of the investment committee. The committee will consist of five members as listed below;

- Martin Stanley – Senior Managing Director, Global Head, MAM
- Karl Kuchel – Senior Managing Director, Chief Executive Officer, MIP Inc.
- David Fass – Senior Managing Director, Head, MIRA Americas
- Graeme Conway - Senior Managing Director, Chief Commercial Officer, MAM
- Christopher J. Leslie - Senior Managing Director, Executive Chairman, MIRA

The investment committee is informed of transactions as they progress through due diligence with a formal vote required when due diligence costs are to be incurred or a binding bid is about to be submitted. Final decisions require a unanimous vote by the committee members.

LIMITED PARTNER ADVISORY COMMITTEE

An advisory committee will be established from selected representatives of the limited partners. The committee will be responsible to resolve certain issues involving changes to the investment limitations, conflicts of interest and other matters that may arise.

- Because of the history of related party fees, we feel the committee is an important source of governance
- Investors with commitments of \$150 million or greater will be offered representation on the LP committee
- Up to seven seats available on the committee
- One vote per member of the committee with a majority threshold for approval

No member of the LPAC may be an employee of Macquarie or its affiliates or an affiliate of the General Partner

VALUATIONS

Valuation policy is consistent with market standards and comparable to other closed-end infrastructure funds reviewed by Townsend;

- Unrealized investments will be reported at fair value with valuations determined quarterly and a full review at least once annually
- Valuations are prepared by an analyst dedicated to the asset, reviewed by an asset manager, peer-reviewed, and then presented to the investment committee for approval
- Methodology to rely primarily on discounted cash flow analysis and supported by market comparable and performance multiples

Each investment is audited on an annual basis by third party external auditors; PwC will serve as the independent auditor for the Fund

ENVIRONMENTAL, SOCIAL AND GOVERNANCE

Environmental, social and governance (“ESG”) is incorporated and imbedded in MIP’s investment process that analyzes current and potential ESG and occupational health and safety issues, identifies means to rectify and ensure on-going compliance with best practices.

MIRA also has a dedicated global risk and sustainability team, including a local risk officer supporting the MIP funds, who works to promote the sharing of best practice across the regional and global portfolios.

MIRA is a division of Macquarie Asset Management which is a signatory to United Nations-supported Principles for Responsible Investment (“PRI”). MIRA has also been an active member of Global Real Estate Sustainability Benchmark (“GRESB”), that assesses and benchmarks the ESG performance of real assets.

FUND STRUCTURE

OVERVIEW

Macquarie Infrastructure Partners V, L.P., will be a Delaware limited partnership. There will also be a number of parallel funds and feeder vehicles established to meet the requirements of certain limited partners. Below is a summary of the key terms sourced from the PPM Supplement dated February 2017. These terms are subject to change.

REVIEW OF TERMS & CONDITIONS

Key Terms		Townsend Comment	
Target Return:	10-12% net IRR	Neutral	Consistent with strategy and predecessor fund
Fund Size:	Target: \$5.0 billion Hard-cap: (TBD)	Neutral	No change from MIP IV that closed on \$5.05 billion
Sponsor Commitment:	Greater of 1.0% or \$50 million	Neutral	Consistent with predecessor funds and market, although on the lower side
Commitment Period:	4 years from the final close	Neutral	Consistent with Townsend's preference and prior MIP funds
Term:	10 years from final close + 2x1 year extensions at GP discretion + 2x1 year extensions with advisory board consent	Neutral	Consistent with market and prior MIP funds
Key Person Provision:	<p>There are fifteen "Key Persons" for MIP V. The Key Persons for MIP V include the five members of the Investment Committee and senior investment professionals.</p> <p>Key Person is triggered if i) fewer than 9 Key Persons or ii) fewer than 4 Investment Committee Members are meeting their respective time requirements.</p> <p>Key Persons: Martin Stanley, Karl Kuchel, David Fass, Christopher Leslie, Graeme Conway, Jenny Chan, Andrew Chapman, Paul Mitchener, Richard Nicholson, Aaron Rubin, Louis Paul, Anton Moldan, Ernesto Gonzalez, Fernando Lohmann and David Kirkwood.</p>	Neutral	Maintaining 9 Key Persons and 4 Investment Committee Members to be compliant appears reasonable within the context of the depth of the MIRA platform.

No-Fault Provisions	Investment period can be suspended anytime following second anniversary of the initial close with a 66 2/3% vote of limited partners (other than Affiliates of the General Partner or Defaulting limited partners)	Neutral	Consistent with market								
For Cause GP Removal Provisions	For cause removal with a majority vote of limited partners.	Neutral	Consistent with market								
Placement Agent: N/A											
Fees and Distribution Waterfall											
Organizational Expenses:	Expenses capped at greater of 0.10% of aggregate capital commitments or \$5.0 million; further expenses are borne by the general partner										
Investment Management Fee:	0.75% on uninvested capital, 1.5% p.a. on invested capital. First close investors will benefit from a reduction in the uninvested capital fee to 0.375% during the investment period. Additionally, the Manager offers size rebates for commitments above \$100 million.	<table border="1"> <thead> <tr> <th>Commitment Size</th> <th>Invested Fee</th> </tr> </thead> <tbody> <tr> <td>=>\$100 million</td> <td>1.25%</td> </tr> <tr> <td>=>\$200 million</td> <td>1.15%</td> </tr> <tr> <td>=>\$300 million</td> <td>1.05%</td> </tr> </tbody> </table>		Commitment Size	Invested Fee	=>\$100 million	1.25%	=>\$200 million	1.15%	=>\$300 million	1.05%
Commitment Size	Invested Fee										
=>\$100 million	1.25%										
=>\$200 million	1.15%										
=>\$300 million	1.05%										
Distributions / Incentive Waterfall:	<ul style="list-style-type: none"> • Whole of fund incentive structure • 8% preferred return • 50/50 GP/LP catch-up • 20% Carried Interest 										
Clawback:	Yes, standard provisions; covers over-distributions to GP, and any shortfalls to LPs' priority distributions (return of capital plus preferred return). No escrow in place.										

FEE AND EXPENSE ANALYSIS

The standard management fee structure applies 0.75% p.a. (or 0.375% for investors in first close) on uninvested capital and 1.5% p.a. on invested capital. We believe this management fee structure is competitive among peers. The management fee load could further be reduced with size rebates as per the following schedule;

Commitment Size	Management Fee on Invested Capital
=>\$100 million	1.25%
=>\$200 million	1.15%
=>\$300 million	1.05%

Townsend will also have the ability to aggregate all sub \$100.0 million commitments from its clients towards the size rebates as per the following schedule;

Aggregate commitments	Management Fee on Invested Capital
=>\$100 million	1.40%
=>\$200 million	1.35%

Whole of fund structured carried interest of 20.0% over 8.0% preferred return with 50/50 gp/lp catch up is in line with best practice.

PERFORMANCE

SUMMARY

Fund	Vintage Year	Fund Size	Capital Invested	# of Inv.	Inv. Realized	Realized Value	Unrealized Value	Total Value	Loss Ratio	Ave. Hold Period	Gross TVPI	Net TVPI	Gross IRR	Net IRR
MEAP	2003	\$336.4	\$384.1	4	4	\$822.7	\$0.0	\$822.1	0.0%	5.3	2.1x	1.9x	28.6%	22.6%
MIP I	2006	4,000.0	3,917.9	10	9	8,529.8	175.3	8,705.1	7.3%	10.1	2.2x	2.0x	10.0%	8.1%
MIP II	2008	1,569.0	1,452.9	6	2	1,853.5	1,110.7	2,964.2	2.9%	7.9	2.0x	1.7x	12.2%	8.3%
MIP III	2013	3,042.7	2,587.2	7	1	1,141.1	2,982.7	4,123.8	0.0%	2.2	1.6x	1.4x	18.2%	13.4%
MIP IV	2018	5,050.0	2,996.9	9	0	1.1	3,182.8	3,183.9	0.0%	N/A	1.1x	1.0x	12.3%	5.3%
Total			11,338.9	36	16	12,348.3	7,451.5	19,799.2	2.9%	8.0	1.7x	1.6x	11.7%	9.0%

Notes:

- MEAP was raised in CAD with a total fund size of C\$460 million that generated gross and net IRR of 23.3% and 17.9%, respectively and gross and net TVPI of 1.9x and 1.7x, respectively, all in CAD terms. The returns shown in the above table and elsewhere in this report have been calculated in USD terms after converting the cashflows at spot rate at each of the respective cash flow date. However, the fund size of MEAP has been converted into USD as of May 16, 2003 being date of first cash flow date.
- MEAP had total 5 investments, all of which have been realized – 2 out of these 5 investments (ERR and S2S) have been combined here as they were realized in a single sales process. Hence the table shows 4 investments.
- MIP I had total 13 investments, 12 of which have been realized – 4 out of these 13 investments (the four road assets that make up the U.S. Roads Portfolio) were acquired in a single transaction. Hence the table shows 10 investments.
- MIP IV has committed total of \$4.6 billion to nine investments, two of which had not been funded as of September 30, 2019. This brings the invested status to over 91% for MIP IV.

MIP funds (MEAP through MIP IV) have collectively invested / committed over \$12.9 billion of equity across 36 individual deals (including 2 deals closed by MIP IV but not yet funded), of which 16 have been fully realized. These funds have generated \$11.8 billion in income and sale proceeds and have most of the remaining portfolio investments marked at or above cost. The five predecessor funds have combined to generate 9.0% net IRR and 1.6x net equity multiple in USD.

- MEAP, a CAD 460.0 million (\$336.4 million) 2003 vintage fund that is fully realized, generated 17.9% net IRR and 1.7x net equity multiple in Canadian Dollars (“CAD”), 22.6% net IRR and 1.9x net equity multiple in U.S. Dollars (“USD”). The data set for 2003 vintage funds is not sufficient for benchmarking.
- MIP I, a \$4.0 billion 2006 vintage fund that is largely realized, generated an 8.1% net IRR and 2.0x net equity multiple in USD.
- MIP II, a \$1.6 billion 2008 vintage fund that is fully invested and currently in divestment stage, tracking to an 8.3% net IRR and 1.7x net equity multiple in USD.
- MIP III, a \$3.0 billion 2013 vintage fund that is largely invested, is currently in optimization stage and is tracking to a 13.4% net IRR and 1.4x net equity multiple in USD.
- MIP IV, a \$5.0 billion 2018 vintage fund that is over 90% committed to nine portfolio companies. Performance is not yet meaningful for this fund.

VINTAGE COMPARISON

The following chart compares MIP funds’ since inception net returns to the Burgiss Private iQ North American Infrastructure Benchmark. Please note that Burgiss’ infrastructure peer universe’s sample size is limited, thus does not provide a very useful analysis. All returns are based on realized and fair market value of unrealized investments as of September 30, 2019.

Due to the data set for 2003 vintage funds being insufficient, benchmarking of MEAP is not meaningful. MIP I, MIP II and MIP III all rank 1st or 2nd quartile on various metrics presented in the table on the next page. Performance of MIP IV is not yet meaningful for this analysis.

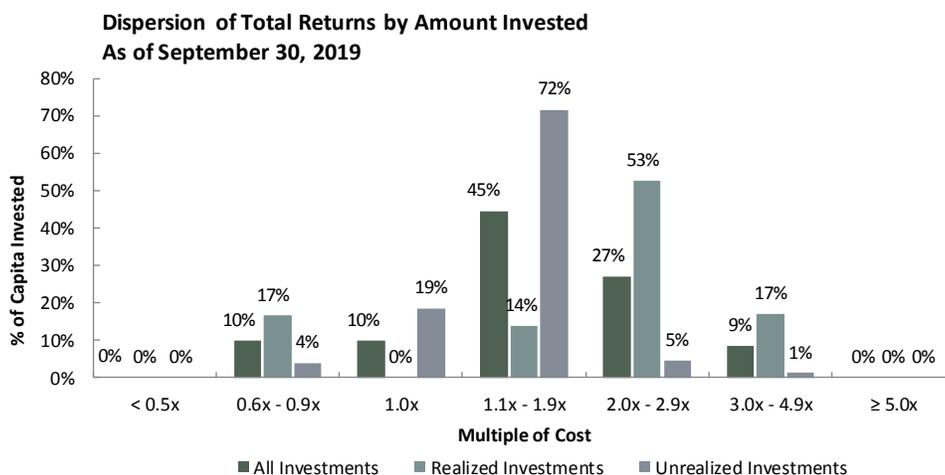
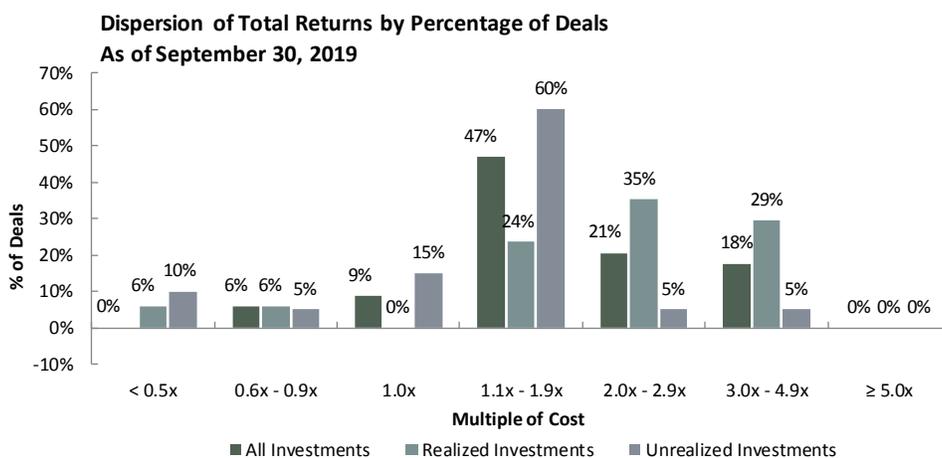
Fund	Vintage Year	Net IRR	Sample Size	1st	2nd	3rd	Benchmark Quartile
MEAP	2003	22.6%	1	25.8%	25.8%	25.8%	4th
MIP I	2006	8.1%	6	8.4%	5.3%	-10.6%	2nd
MIP II	2008	8.3%	2	2.2%	0.9%	-0.5%	1st
MIP III	2013	13.4%	3	-1.6%	-15.3%	-30.5%	1st
MIP IV	2018	5.3%	9	15.6%	12.8%	-0.5%	3rd

Fund	Vintage Year	Net TVPI	Sample Size	1st	2nd	3rd	Quartile
MEAP	2003	1.9x	1	1.8x	1.8x	1.8x	1st
MIP I	2006	2.0	6	1.5x	1.2x	0.7x	1st
MIP II	2008	1.7	2	1.1x	1.1x	1.0x	1st
MIP III	2013	1.4	3	1.0x	0.5x	0.3x	1st
MIP IV	2018	1.0	9	1.1x	1.1x	1.0x	3rd

Fund	Vintage Year	Net DPI	Sample Size	1st	2nd	3rd	Quartile
MEAP	2003	1.9x	1	1.8x	1.8x	1.8x	1st
MIP I	2006	2.0	6	1.5x	1.2x	0.7x	1st
MIP II	2008	1.1	2	0.9x	0.8x	0.8x	1st
MIP III	2013	0.4	3	0.4x	0.2x	0.1x	2nd
MIP IV	2018	0.0	9	0.2x	0.0x	0.0x	3rd

DISPERSION OF RETURNS

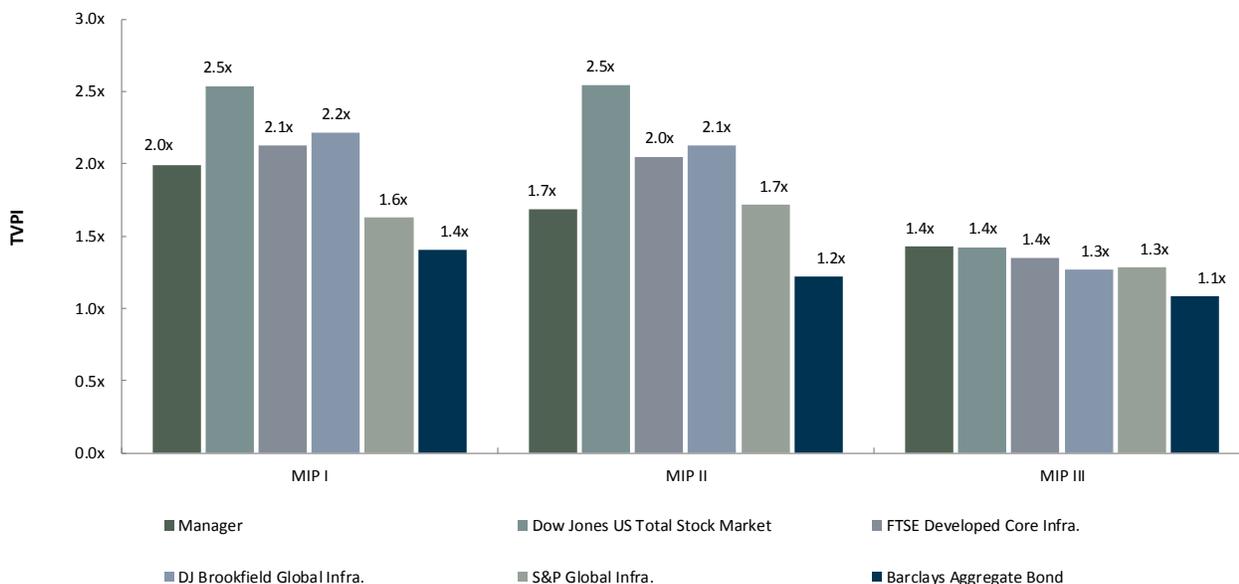
The following charts display the dispersion of individual investment returns across the series.



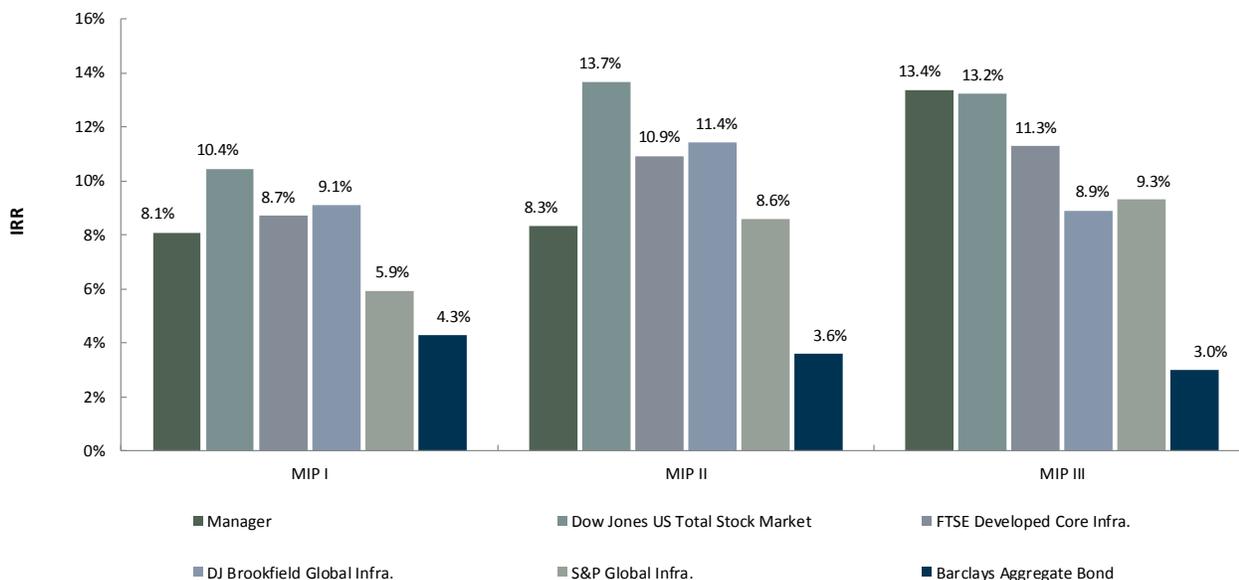
PUBLIC MARKET COMPARISON

The charts below compare performance of MIP funds to public infrastructure market indices: Barclays Aggregate Bond Index, FTSE Developed Core Infrastructure Index, DJ Brookfield Infrastructure Index, and S&P Global Infrastructure Index. We are comparing the manager’s prior performance against the opportunity cost represented by the multiples and IRRs that would have been generated by investing in the public market indices highlighted. The fund series’ net cash flows are assumed to be invested into and redeemed out of the index to create a comparable IRR.

**Public Market Comparison Performance by TVPI
As of September 30, 2019**



**Public Market Comparison Performance by IRR
As of September 30, 2019**



EXHIBITS

EXHIBIT A: INVESTMENT SCHEDULE

MEAP

(in millions)

Company	Entry Date	Exit Date	Capital Invested	Realized Value	Unrealized Value	Total Value	Ownership %	% of Gain	Gross TVPI	Gross IRR
AltaLink	May-03	Sep-11	\$93.0	\$309.3	\$0.0	\$309.3	23%	49.3%	3.3x	24.0%
Michigan Electric Transmission Company	Sep-03	Oct-06	70.2	185.7	0.0	185.7	42%	26.3%	2.6x	44.8%
Sea-to-Sky Highway & Edmonton Ring Road	Jun-05	Dec-10	126.7	189.9	0.0	189.9	100%	14.4%	1.5x	40.0%
Aquarion Water Company	Apr-07	Aug-11	94.1	137.8	0.0	137.8	33%	10.0%	1.5x	10.6%
Total Realized			\$384.1	\$822.7	\$0.0	\$822.7	N/A	N/A	2.1x	28.6%
Total Unrealized			\$0.0	\$0.0	\$0.0	\$0.0	N/A	N/A		0.0%
Total			\$384.1	\$822.7	\$0.0	\$822.7	N/A	N/A	2.1x	28.6%

MIP I

(in millions)

Company	Entry Date	Exit Date	Capital Invested	Realized Value	Unrealized Value	Total Value	Ownership %	% of Gain	Gross TVPI	Gross IRR
U.S. Roads Portfolio	Dec-06	Multiple	\$880.6	\$596.0	\$0.0	\$596.0	Various	-5.9%	0.7x	-4.0%
Aquarion Water Company	Apr-07	Dec-17	161.9	586.8	0.0	586.8	55%	8.9%	3.6x	15.5%
Duquesne Light	May-07	Sep-16	315.1	691.5	0.0	691.5	24%	7.9%	2.2x	11.3%
Global Tower Partners	Jul-07	May-14	610.8	1,658.2	0.0	1,658.2	51%	21.9%	2.7x	18.5%
Autoroute 25	Sep-07	Jun-18	252.0	851.5	0.0	851.5	100%	12.5%	3.4x	22.6%
Waste Industries	May-08	Sep-17	305.8	960.6	0.0	960.6	71%	13.7%	3.1x	16.2%
Puget Energy	Feb-09	Apr-19	1,063.8	2,653.4	0.0	2,653.4	34%	33.2%	2.5x	10.4%
Halterm	Jan-07	Jul-19	133.8	231.4	0.0	231.4	100%	2.0%	1.7x	5.0%
Penn Terminals	Apr-08	Aug-19	91.7	291.8	0.0	291.8	100%	4.2%	3.2x	12.5%
Total Realized	N/A	N/A	\$3,815.6	\$8,521.1	\$0.0	\$8,521.1	N/A	N/A	2.2x	10.2%
Fraser Surrey Docks	Mar-07	N/A	\$102.3	\$8.7	\$175.3	\$184.0	100%	1.7%	1.8x	4.8%
Total Unrealized	N/A	N/A	\$102.3	\$8.7	\$175.3	\$184.0	N/A	N/A	1.8x	4.8%
Total			\$3,917.9	\$8,529.8	\$175.3	\$8,705.1	N/A	N/A	2.2x	10.0%

MIP II

(in millions)

Company	Entry Date	Exit Date	Capital Invested	Realized Value	Unrealized Value	Total Value	Ownership %	% of Gain	Gross TVPI	Gross IRR
Global Tower Partners	Sep-08	May-14	\$393.0	\$1,019.7	\$0.0	\$1,019.7	31%	41.5%	2.6x	21.2%
Puget Energy	Feb-09	Apr-19	342.4	826.1	0.0	826.1	10%	32.0%	2.4x	10.2%
Total Realized	N/A	N/A	\$735.4	\$1,845.8	\$0.0	\$1,845.8	N/A	N/A	2.5x	15.4%
Broadrock Renewables	Nov-10	N/A	\$128.0	\$0.0	\$135.9	\$135.9	100%	0.5%	1.1x	0.7%
WCA Waste Corporation	Mar-12	N/A	275.4	4.7	537.5	542.2	92%	17.7%	2.0x	9.5%
Elizabeth River Tunnels	Apr-12	N/A	75.6	3.0	240.9	243.9	36%	11.1%	3.2x	54.6%
Leaf River Energy Center	Nov-12	N/A	238.5	0.0	196.4	196.4	100%	-2.8%	0.8x	-2.9%
Total Unrealized	N/A	N/A	\$717.5	\$7.7	\$1,110.7	\$1,118.4	N/A	N/A	1.6x	6.7%
Total			\$1,452.9	\$1,853.5	\$1,110.7	\$2,964.2	N/A	N/A	2.0x	12.2%

MIP III

(in millions)

Company	Entry Date	Exit Date	Capital Invested	Realized Value	Unrealized Value	Total Value	Ownership %	% of Gain	Gross TVPI	Gross IRR
GFL Environmental	Feb-16	May-18	\$377.0	\$717.1	\$0.0	\$717.1	36%	22.1%	1.9x	37.8%
Total Realized	N/A	N/A	\$377.0	\$717.1	\$0.0	\$717.1	N/A	N/A	1.9x	37.8%
Goethals Bridge Replacement Project	Nov-13	N/A	\$97.9	35.6	129.0	164.6	90%	4.3%	1.7x	69.1%
NYK Ports	Feb-15	N/A	420.0	127.4	504.4	631.8	49%/100%	13.8%	1.5x	10.5%
Lordstown Energy Center	Apr-16	N/A	231.5	19.1	265.6	284.7	50%	3.5%	1.2x	28.2%
Cleco Corporation	Apr-16	N/A	608.5	45.9	771.9	817.9	25%	13.6%	1.3x	9.4%
InSite Wireless Group	Jul-16	N/A	304.5	0.0	450.4	450.4	42%	9.5%	1.5x	13.5%
Maher Terminals	Nov-16	N/A	547.8	196.0	861.4	1,057.4	80%	33.2%	1.9x	28.2%
Total Unrealized	N/A	N/A	\$2,210.2	\$424.0	\$2,982.7	\$3,406.7	N/A	N/A	1.5x	15.7%
Total			\$2,587.2	\$1,141.1	\$2,982.7	\$4,123.8	N/A	N/A	1.6x	18.2%

MIP IV
(in millions)

Company	Entry Date	Exit Date	Capital Invested	Realized Value	Unrealized Value	Total Value	Ownership %	% of Gain	Gross TVPI	Gross IRR
Total Realized	N/A	N/A	\$0.0	\$0.0	\$0.0	\$0.0	N/A	N/A		0.0%
Aligned Energy	Apr-18	N/A	382.4	0.0	454.0	454.0	50%	38.3%	1.2	17.5%
Lagoon Water Solutions	Sep-18	N/A	212.5	0.0	212.5	212.5	67%	0.0%	1.0	0.0%
Centauro Energia	Mar-19	N/A	92.3	0.0	97.9	97.9	90%	3.0%	1.1	12.3%
Tunnel Hill Partners	Feb-19	N/A	322.6	0.0	347.5	347.5	100%	13.3%	1.1	11.9%
Wheelabrator Technologies	Feb-19	N/A	1,083.5	1.1	1,167.3	1,168.4	92%	45.4%	1.1	12.8%
Bluebird Fiber	Aug-19	N/A	247.6	0.0	247.6	247.6	0%	0.0%	1.0	0.0%
Long Beach Container Terminal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Solví Participações S.A.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Neutrality Properties	Aug-19	N/A	656.0	0.0	656.0	656.0	0%	0.0%	1.0	0.0%
Total Unrealized	N/A	N/A	\$2,996.9	\$1.1	\$3,182.8	\$3,183.9	N/A	N/A	1.1	12.3%
Total			\$2,996.9	\$1.1	\$3,182.8	\$3,183.9	N/A	N/A	1.1	12.3%

EXHIBIT B: REALIZED AND UNREALIZED INVESTMENT SCHEDULE

Fund	# of Inv.	Capital Invested	Realized Value	Unrealized Value	Gross TVPI	Gross IRR
MEAP - Realized	4	\$384.1	\$822.7	\$0.0	2.1x	28.6%
MEAP - Unrealized	0	\$0.0	\$0.0	\$0.0	0.0	0.0%
	4	\$384.1	\$822.7	\$0.0	2.1x	28.6%
MIP I - Realized	9	\$3,815.6	\$8,521.1	\$0.0	2.2x	10.2%
MIP I - Unrealized	1	\$102.3	\$8.7	\$175.3	1.8	4.8%
	10	\$3,917.9	\$8,529.8	\$175.3	2.2x	10.0%
MIP II - Realized	2	\$735.4	\$1,845.8	\$0.0	2.5x	15.4%
MIP II - Unrealized	4	\$717.5	\$7.7	\$1,110.7	1.6	6.7%
	6	\$1,452.9	\$1,853.5	\$1,110.7	2.0x	12.2%
MIP III - Realized	1	\$377.0	\$717.1	\$0.0	1.9x	37.8%
MIP III - Unrealized	6	\$2,210.2	\$424.0	\$2,982.7	1.5	15.7%
	7	\$2,587.2	\$1,141.1	\$2,982.7	1.6x	18.2%
MIP IV - Unrealized	7	\$2,996.9	\$1.1	\$3,182.8	1.1	12.3%
<i>All Prior Funds - Realized</i>	16	\$5,312.0	\$11,906.7	\$0.0	2.2x	12.0%
<i>All Prior Funds - Unrealized</i>	18	\$6,026.8	\$441.6	\$7,451.5	1.3x	10.4%
All Prior Funds - Total	34	\$11,338.9	\$12,348.3	\$7,451.5	1.7	11.7%

EXHIBIT C: PERFORMANCE SENSITIVITY ANALYSIS

Fund	Winner Removed	Base Net IRR	New Net IRR	Quartile	New Quartile	Base Net TVPI	New Net TVPI	Quartile	New Quartile
Largest Gain Removed									
MEAP	AltaLink	22.6%	26.5%	4th	1st	1.9x	1.6x	1st	4th
MIP I	Puget Energy	8.1%	7.9%	2nd	2nd	2.0	1.9	1st	1st
MIP II	Global Tower Partners	8.3%	5.7%	1st	1st	1.7	1.5	1st	1st
MIP III	Maher Terminals	13.4%	11.5%	1st	1st	1.4	1.3	1st	1st
MIP IV	Wheelabrator Technologies	5.3%	5.1%	3rd	3rd	1.0	1.0	3rd	3rd
Largest IRR Removed									
MEAP	Michigan Electric Transmission Company	22.6%	17.4%	4th	4th	1.9x	1.8x	1st	1st
MIP I	Autoroute 25	8.1%	7.6%	2nd	2nd	2.0	1.9	1st	1st
MIP II	Elizabeth River Tunnels	8.3%	7.9%	1st	1st	1.7	1.6	1st	1st
MIP III	Goethals Bridge Replacement Project	13.4%	13.0%	1st	1st	1.4	1.4	1st	1st
MIP IV	Aligned Energy	5.3%	4.4%	3rd	3rd	1.0	1.0	3rd	3rd
Largest Multiple of Cost Removed									
MEAP	AltaLink	22.6%	26.5%	4th	1st	1.9x	1.6x	1st	4th
MIP I	Aquarion Water Company	8.1%	7.8%	2nd	2nd	2.0	1.9	1st	1st
MIP II	Elizabeth River Tunnels	8.3%	7.9%	1st	1st	1.7	1.6	1st	1st
MIP III	Maher Terminals	13.4%	11.5%	1st	1st	1.4	1.3	1st	1st
MIP IV	Aligned Energy	5.3%	4.4%	3rd	3rd	1.0	1.0	3rd	3rd

EXHIBIT D: PERFORMANCE BY SECTORS

MEAP

Industry	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Utilities	3	\$257.4	\$632.8	\$0.0	\$632.8	67.0%	0.0%	85.6%	2.5x	27.7%
Transportation	1	126.7	189.9	0.0	189.9	33.0%	0.0%	14.4%	1.5	40.0%
Total	4	\$384.1	\$822.7	\$0.0	\$822.7	100.0%	0.0%	N/A	2.1x	28.6%

MIP I

Industry	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Transportation	5	\$1,460.5	\$1,979.4	\$175.3	\$2,154.7	37.3%	19.5%	14.5%	1.5x	4.1%
Utilities	3	1,540.7	3,931.7	0.0	3,931.7	39.3%	0.0%	49.9%	2.6	11.3%
Communications	1	610.8	1,658.2	0.0	1,658.2	15.6%	0.0%	21.9%	2.7	18.5%
Waste	1	305.8	960.6	0.0	960.6	7.8%	0.0%	13.7%	3.1	16.2%
Total	10	\$3,917.9	\$8,529.8	\$175.3	\$8,705.1	100.0%	7.3%	N/A	2.2x	10.0%

MIP II

Industry	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Communications	1	\$393.0	\$1,019.7	\$0.0	\$1,019.7	27.0%	0.0%	41.5%	2.6x	21.2%
Utilities	1	342.4	826.1	0.0	826.1	23.6%	0.0%	32.0%	2.4	10.2%
Renewable	1	128.0	0.0	135.9	135.9	8.8%	0.0%	0.5%	1.1	0.7%
Waste	1	275.4	4.7	537.5	542.2	19.0%	0.0%	17.7%	2.0	9.5%
Transportation	1	75.6	3.0	240.9	243.9	5.2%	0.0%	11.1%	3.2	54.6%
Midstream	1	238.5	0.0	196.4	196.4	16.4%	17.6%	-2.8%	0.8	-2.9%
Total	6	\$1,452.9	\$1,853.5	\$1,110.7	\$2,964.2	100.0%	2.9%	N/A	2.0x	12.2%

MIP III

Industry	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Transportation	3	\$1,065.7	\$359.0	\$1,494.8	\$1,853.8	41.2%	0.0%	51.3%	1.7x	19.1%
Waste	1	377.0	717.1	0.0	717.1	14.6%	0.0%	22.1%	1.9	37.8%
Power	1	231.5	19.1	265.6	284.7	8.9%	0.0%	3.5%	1.2	28.2%
Utilities	1	608.5	45.9	771.9	817.9	23.5%	0.0%	13.6%	1.3	9.4%
Communications	1	304.5	0.0	450.4	450.4	11.8%	0.0%	9.5%	1.5	13.5%
Total	7	\$2,587.2	\$1,141.1	\$2,982.7	\$4,123.8	100.0%	0.0%	N/A	1.6x	18.2%

MIP IV

Industry	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Communications	3	\$1,286.0	\$0.0	\$1,357.6	\$1,357.6	42.9%	0.0%	38.3%	1.1x	15.0%
Utilities	1	212.5	0.0	212.5	212.5	7.1%	0.0%	0.0%	1.0	0.0%
Renewable	1	92.3	0.0	97.9	97.9	3.1%	0.0%	3.0%	1.1	12.3%
Waste	3	1,406.1	1.1	1,514.8	1,516.0	46.9%	0.0%	58.7%	1.1	12.6%
Transportation	1	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0%	0.0	0.0%
Total	9	\$2,996.9	\$1.1	\$3,182.8	\$3,183.9	100.0%	0.0%	N/A	1.1x	12.3%

Investments by Industry Since Inception

Industry	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	% of Gain	Gross TVPI
Communications	6	\$2,594.3	\$2,677.8	\$1,808.0	\$4,485.8	22.9%	22.4%	1.7x
Midstream	1	238.5	0.0	196.4	196.4	2.1%	-0.5%	0.8
Power	1	231.5	19.1	265.6	284.7	2.0%	0.6%	1.2
Renewable	2	220.3	0.0	233.8	233.8	1.9%	0.2%	1.1
Transportation	11	2,728.5	2,531.2	1,911.0	4,442.2	24.1%	20.3%	1.6
Utilities	9	2,961.5	5,436.6	984.4	6,421.0	26.1%	40.9%	2.2
Waste	6	2,364.3	1,683.6	2,052.3	3,735.9	20.9%	16.2%	1.6
Total	36	\$11,338.9	\$12,348.3	\$7,451.5	\$19,799.8	100.0%	N/A	1.7x

EXHIBIT E: PERFORMANCE BY INVESTMENT STAGES

MEAP

Type	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Brownfield	3	\$257.4	\$632.8	\$0.0	\$632.8	67.0%	0.0%	85.6%	2.5x	27.7%
Greenfield	1	126.7	189.9	0.0	189.9	33.0%	0.0%	14.4%	1.5	40.0%
Total	4	\$384.1	\$822.7	\$0.0	\$822.7	100.0%	0.0%	N/A	2.1x	28.6%

MIP I

Type	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Brownfield & Greenfield	1	\$880.6	\$596.0	\$0.0	\$596.0	22.5%	32.3%	-5.9%	0.7x	-4.0%
Brownfield	8	2,785.3	7,082.3	175.3	7,257.6	71.1%	0.0%	93.4%	2.6	12.7%
Greenfield	1	252.0	851.5	0.0	851.5	6.4%	0.0%	12.5%	3.4	22.6%
Total	10	\$3,917.9	\$8,529.8	\$175.3	\$8,705.1	100.0%	7.3%	N/A	2.2x	10.0%

MIP II

Type	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Brownfield	4	\$1,249.2	\$1,850.6	\$733.9	\$2,584.5	86.0%	3.4%	88.3%	2.1x	12.4%
Greenfield	2	203.6	3.0	376.8	379.8	14.0%	0.0%	11.7%	1.9	10.3%
Total	6	\$1,452.9	\$1,853.5	\$1,110.7	\$2,964.2	100.0%	2.9%	N/A	2.0x	12.2%

MIP III

Type	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Greenfield	2	\$329.4	\$54.7	\$394.6	\$449.3	12.7%	0.0%	7.8%	1.4x	40.9%
Brownfield	5	2,257.8	1,086.4	2,588.1	3,674.5	87.3%	0.0%	92.2%	1.6	17.5%
Total	7	\$2,587.2	\$1,141.1	\$2,982.7	\$4,123.8	100.0%	0.0%	N/A	1.6x	18.2%

MIP IV

Type	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Brownfield	8	\$2,904.6	\$1.1	\$3,084.9	\$3,086.0	96.9%	0.0%	97.0%	1.1x	12.3%
Greenfield	1	92.3	0.0	97.9	97.9	3.1%	0.0%	3.0%	1.1	12.3%
Total	9	\$2,996.9	\$1.1	\$3,182.8	\$3,183.9	100.0%	0.0%	N/A	1.1x	12.3%

Investments by Stage Since Inception

Type	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Gross TVPI	% of Gain
Brownfield	28	\$9,454.3	\$10,653.2	\$6,582.2	\$17,235.4	83.4%	1.8x	92.0%
Brownfield & Greenfield	1	880.6	596.0	0.0	596.0	7.8%	0.7	-3.4%
Greenfield	7	1,004.0	1,099.0	869.3	1,968.3	8.9%	2.0	11.4%
Total	36	\$11,338.9	\$12,348.3	\$7,451.5	\$19,799.8	100.0%	1.7x	N/A

EXHIBIT F: PERFORMANCE BY GEOGRAPHIES

MEAP

Geography	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Canada	2	\$219.7	\$499.2	\$0.0	\$499.2	57.2%	0.0%	63.7%	2.3x	26.0%
United States	2	164.4	323.5	0.0	323.5	42.8%	0.0%	36.3%	2.0	32.6%
Total	4	\$384.1	\$822.7	\$0.0	\$822.7	100.0%	0.0%	N/A	2.1x	28.6%

MIP I

Geography	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
United States	7	\$3,429.7	\$7,438.3	\$0.0	\$7,438.3	87.5%	8.3%	83.7%	2.2x	9.8%
Canada	3	488.1	1,091.5	175.3	1,266.8	12.5%	0.0%	16.3%	2.6	11.6%
Total	10	\$3,917.9	\$8,529.8	\$175.3	\$8,705.1	100.0%	7.3%	N/A	2.2x	10.0%

MIP II

Geography	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
United States	6	\$1,452.9	\$1,853.5	\$1,110.7	\$2,964.2	100.0%	2.9%	100.0%	2.0x	12.2%
Total	6	\$1,452.9	\$1,853.5	\$1,110.7	\$2,964.2	100.0%	2.9%	N/A	2.0x	12.2%

MIP III

Geography	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
United States	4	\$1,485.7	\$296.6	\$2,027.9	\$2,324.5	57.4%	0.0%	54.6%	1.6x	18.9%
North America	3	1,101.5	844.5	954.8	1,799.3	42.6%	0.0%	45.4%	1.6	17.5%
Total	7	\$2,587.2	\$1,141.1	\$2,982.7	\$4,123.8	100.0%	0.0%	N/A	1.6x	18.2%

MIP IV

Geography	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
United States	7	\$2,904.6	\$1.1	\$3,084.9	\$3,086.0	96.9%	0.0%	97.0%	1.1x	12.3%
Mexico	1	92.3	0.0	97.9	97.9	3.1%	0.0%	3.0%	1.1	12.3%
Brazil	1	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0%	0.0	0.0%
Total	9	\$2,996.9	\$1.1	\$3,182.8	\$3,183.9	100.0%	0.0%	N/A	1.1x	12.3%

Investments by Geography Since Inception

Geography	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Gross TVPI	% of Gain
United States	26	\$9,437.2	\$9,913.1	\$6,223.5	\$16,136.6	83.2%	1.7x	N/A
North America	3	1,101.5	844.5	954.8	1,799.3	9.7%	1.6	N/A
Canada	5	707.9	1,590.7	175.3	1,766.0	6.2%	2.5	N/A
Mexico	1	92.3	0.0	97.9	97.9	0.8%	1.1	N/A
Brazil	1	0.0	0.0	0.0	0.0	0.0%	0.0	N/A
Total	36	\$11,338.9	\$12,348.3	\$7,451.5	\$19,799.8	100.0%	1.7x	N/A

EXHIBIT G: PERFORMANCE BY TEAL LEAD

MEAP

Investor	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Chris Leslie	2	\$163.2	\$495.0	\$0.0	\$495.0	42.5%	0.0%	75.6%	3.0x	32.1%
Michael Smerdon	1	126.7	189.9	0.0	189.9	33.0%	0.0%	14.4%	1.5	40.0%
Andrew Chapman	1	94.1	137.8	0.0	137.8	24.5%	0.0%	10.0%	1.5	10.6%
Total	4	\$384.1	\$822.7	\$0.0	\$822.7	100.0%	0.0%	N/A	2.1x	28.6%

MIP I

Investor	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Chris Leslie	5	\$3,032.2	\$6,185.9	\$0.0	\$6,185.9	77.4%	9.4%	65.9%	2.0x	9.1%
Thomas Yanagi	1	133.8	231.4	0.0	231.4	3.4%	0.0%	2.0%	1.7	5.0%
Michael Smerdon	2	194.1	300.5	175.3	475.8	5.0%	0.0%	5.9%	2.5	8.4%
Karl Kuchel	1	252.0	851.5	0.0	851.5	6.4%	0.0%	12.5%	3.4	22.6%
Paul Mitchener	1	305.8	960.6	0.0	960.6	7.8%	0.0%	13.7%	3.1	16.2%
Total	10	\$3,917.9	\$8,529.8	\$175.3	\$8,705.1	100.0%	7.3%	N/A	2.2x	10.0%

MIP II

Investor	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Chris Leslie	2	\$631.4	\$1,019.7	\$196.4	\$1,216.1	43.5%	6.7%	38.7%	1.9x	16.3%
Andrew Chapman	1	342.4	826.1	0.0	826.1	23.6%	0.0%	32.0%	2.4	10.2%
Paul Mitchener	2	403.4	4.7	673.4	678.1	27.8%	0.0%	18.2%	1.7	7.0%
Karl Kuchel	1	75.6	3.0	240.9	243.9	5.2%	0.0%	11.1%	3.2	54.6%
Total	6	\$1,452.9	\$1,853.5	\$1,110.7	\$2,964.2	100.0%	2.9%	N/A	2.0x	12.2%

MIP III

Investor	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Karl Kuchel	1	\$97.9	\$35.6	\$129.0	\$164.6	3.8%	0.0%	4.3%	1.7x	69.1%
Richard Nicholson	2	967.8	323.4	1,365.8	1,689.2	37.4%	0.0%	46.9%	1.7	18.1%
Paul Mitchener	1	377.0	717.1	0.0	717.1	14.6%	0.0%	22.1%	1.9	37.8%
Aaron Rubin	1	231.5	19.1	265.6	284.7	8.9%	0.0%	3.5%	1.2	28.2%
Chris Leslie	1	608.5	45.9	771.9	817.9	23.5%	0.0%	13.6%	1.3	9.4%
Anton Moldan	1	304.5	0.0	450.4	450.4	11.8%	0.0%	9.5%	1.5	13.5%
Total	7	\$2,587.2	\$1,141.1	\$2,982.7	\$4,123.8	100.0%	0.0%	N/A	1.6x	18.2%

MIP IV

Investor	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	% of Gain	Gross TVPI	Gross IRR
Anton Moldan	3	\$1,286.0	\$0.0	\$1,357.6	\$1,357.6	42.9%	0.0%	38.3%	1.1x	15.0%
Andrew Gentile	1	212.5	0.0	212.5	212.5	7.1%	0.0%	0.0%	1.0	0.0%
Carlos Isorna	1	92.3	0.0	97.9	97.9	3.1%	0.0%	3.0%	1.1	12.3%
Paul Mitchener	2	1,406.1	1.1	1,514.8	1,516.0	46.9%	0.0%	58.7%	1.1	12.6%
Richard Nicholson	1	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	N/A
Fernando Lohmann	1	0.0	0.0	0.0	0.0	N/A	N/A	N/A	N/A	N/A
Total	9	\$2,996.9	\$1.1	\$3,182.8	\$3,183.9	100.0%	0.0%	N/A	1.1x	12.3%

Investments by Lead Investor Since Inception

Investor	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	% of Gain	Gross TVPI
Aaron Rubin	1	\$231.5	\$19.1	\$265.6	\$284.7	2.0%	0.6%	1.2x
Andrew Chapman	2	436.6	963.9	0.0	963.9	3.9%	6.2%	2.2
Andrew Gentile	1	212.5	0.0	212.5	212.5	1.9%	0.0%	1.0
Anton Moldan	4	1,590.5	0.0	1,808.0	1,808.0	14.0%	2.6%	1.1
Carlos Isorna	1	92.3	0.0	97.9	97.9	0.8%	0.1%	1.1
Chris Leslie	10	4,435.4	7,746.5	968.3	8,714.9	39.1%	50.6%	2.0
Fernando Lohmann	1	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0
Karl Kuchel	3	425.5	890.0	369.9	1,259.9	3.8%	9.9%	3.0
Michael Smerdon	3	320.8	490.4	175.3	665.7	2.8%	4.1%	2.1
Paul Mitchener	6	2,492.3	1,683.6	2,188.2	3,871.8	22.0%	16.3%	1.6
Richard Nicholson	3	967.8	323.4	1,365.8	1,689.2	8.5%	8.5%	1.7
Thomas Yanagi	1	133.8	231.4	0.0	231.4	1.2%	1.2%	1.7
Total	36	\$11,338.9	\$12,348.3	\$7,451.5	\$19,799.8	100.0%	N/A	1.7x

EXHIBIT H: PERFORMANCE BY REVENUE TYPE

MEAP

Exit Type	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	Gross TVPI	Gross IRR
Regulated	3	\$257.4	\$632.8	\$0.0	\$632.8	67.0%	0.0%	2.5x	27.7%
Contracted	1	126.7	189.9	0.0	189.9	33.0%	0.0%	1.5	40.0%
Total	4	\$384.1	\$822.7	\$0.0	\$822.7	100.0%	0.0%	2.1x	28.6%

MIP I

Exit Type	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	Gross TVPI	Gross IRR
Volume/Throughput	5	\$1,460.5	\$1,979.4	\$175.3	\$2,154.7	37.3%	19.5%	1.5x	4.1%
Regulated	3	1,540.7	3,931.7	0.0	3,931.7	39.3%	0.0%	2.6	11.3%
Contracted	2	916.7	2,618.8	0.0	2,618.8	23.4%	0.0%	2.9	17.8%
Total	10	\$3,917.9	\$8,529.8	\$175.3	\$8,705.1	100.0%	7.3%	2.2x	10.0%

MIP II

Exit Type	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	Gross TVPI	Gross IRR
Contracted	4	\$1,034.8	\$1,024.4	\$869.8	\$1,894.2	71.2%	4.1%	1.8x	12.4%
Regulated	1	342.4	826.1	0.0	826.1	23.6%	0.0%	2.4	10.2%
Volume/Throughput	1	75.6	3.0	240.9	243.9	5.2%	0.0%	3.2	54.6%
Total	6	\$1,452.9	\$1,853.5	\$1,110.7	\$2,964.2	100.0%	2.9%	2.0x	12.2%

MIP III

Exit Type	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	Gross TVPI	Gross IRR
Contracted	3	\$779.3	\$752.6	\$579.4	\$1,332.0	30.1%	0.0%	1.7x	27.1%
Volume/Throughput	3	1,199.3	342.5	1,631.4	1,973.9	46.4%	0.0%	1.6	18.5%
Regulated	1	608.5	45.9	771.9	817.9	23.5%	0.0%	1.3	9.4%
Total	7	\$2,587.2	\$1,141.1	\$2,982.7	\$4,123.8	100.0%	0.0%	1.6x	18.2%

MIP IV

Exit Type	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	Loss Ratio by Invested Capital	Gross TVPI	Gross IRR
Contracted	8	\$2,996.9	\$1.1	\$3,182.8	\$3,183.9	100.0%	0.0%	1.1x	12.3%
Volume/Throughput	1	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0	0.0%
Total	9	\$2,996.9	\$1.1	\$3,182.8	\$3,183.9	100.0%	0.0%	1.1x	12.3%

Investments by Exit Type Since Inception

Exit Type	# of Deals	Capital Invested	Proceeds	Unrealized	Total Value	% of Cost	% of Gain	Gross TVPI
Contracted	18	\$5,854.4	\$4,586.9	\$4,632.0	\$9,218.9	51.6%	39.8%	1.6x
Volume/Throughput	10	2,735.4	2,324.9	2,047.6	4,372.4	24.1%	19.3%	1.6
Regulated	8	2,749.1	5,436.6	771.9	6,208.5	24.2%	40.9%	2.3
Total	36	\$11,338.9	\$12,348.3	\$7,451.5	\$19,799.8	100.0%	N/A	1.7x

EXHIBIT I: PIPELINE

Project Name	Sector	Description	Equity Requirement (\$m)
A	Utilities	U.S. regulated utility take-private	1,000+
B	Power	Small diversified U.S. power generation portfolio	350
C	Power	Portfolio of U.S. operating renewables, with development pipeline	500
D	Midstream	Mature U.S. gathering assets	750
E	Midstream	Mature U.S. gathering assets	200
F	Waste Management	Vertically-integrated U.S. solid waste platform	1,000+
G	Waste Management	Vertically-integrated U.S. solid waste platform	250
H	Transportation	Operating Mexican toll road	500
I	Communications	U.S. fiber network	1,000+
J	Communications	Data center platform in Latin America	600

EXHIBIT J: PORTFOLIO METRICS

Local Currency in million

Fund	Portfolio Company	100% Equity Value	EV	LTM Revenue	LTM EBITDA	EBITDA Margin	EV / EBITDA	Leverage (ND/EV)	100% Equity Value	EV	LTM Revenue	LTM EBITDA	EBITDA Margin	EV / EBITDA	Leverage (ND/EV)
		At Acquisition								Current or at Exit					
MEAP	AltaLink	145.8	836.8	152.2	109.0	71.6%	7.7x	82.6%	1,209.9	2,764.2	317.9	213.2	67.1%	13.0x	56.2%
	Michigan Electric Transmission Company	213.5	559.2	120.8	55.3	45.8%	10.1x	61.8%	492.7	834.3	166.5	86.6	52.0%	9.6x	40.9%
	Sea-to-Sky Highway	104.8	595.2	64.0	52.7	82.4%	11.3x	82.4%	165.0	897.9	66.4	54.9	82.7%	11.4x	81.6%
	Edmonton Ring Road	27.2	304.7	32.8	23.5	71.8%	12.9x	91.1%			39.9	24.1	60.4%		
	Aquarion Water Company	313.6	944.0	147.4	82.0	55.6%	11.5x	66.8%	322.8	997.5	171.6	89.5	52.2%	11.1x	67.6%
MIP I	U.S. Roads Portfolio	2,579.8	8,530.7	300.5	211.0	70.2%	40.4x	69.8%	1,442.6	10,693.4	428.5	347.1	81.0%	30.8x	86.5%
	Halterm	76.3	161.8	41.5	10.3	24.8%	15.7x	52.8%	224.4	237.4	53.3	14.0	26.3%	16.9x	5.5%
	Fraser Surrey Docks	102.3	123.1	44.3	6.4	14.5%	19.2x	16.9%	179.5	207.6	93.5	10.6	11.4%	19.5x	13.5%
	Aquarion Water Company	276.8	844.9	132.8	73.9	55.6%	11.4x	67.2%	880.0	1,675.0	211.9	110.2	52.0%	15.2x	47.5%
	Duquesne Light	1,131.5	3,117.9	1,123.9	352.3	31.3%	8.9x	63.7%	2,276.1	4,453.3	987.3	405.9	41.1%	11.0x	48.9%
	Global Tower Partners	996.8	1,470.1	88.5	46.0	51.9%	32.0x	32.2%	3,233.6	4,797.5	316.0	200.5	63.5%	23.9x	32.6%
	Autoroute 25	250.9	522.6	34.5	20.8	60.2%	25.1x	52.0%	651.9	936.1	52.1	37.7	72.3%	24.8x	30.4%
	Penn Terminals	91.7	91.1	26.4	8.4	32.0%	10.8x	(0.6%)	227.2	265.7	47.2	19.2	40.7%	13.8x	14.5%
	Waste Industries	443.0	753.0	347.5	85.2	24.5%	8.8x	41.2%	1,150.0	1,925.0	650.8	202.5	31.1%	9.5x	40.3%
	Puget Energy	3,342.9	7,768.8	3,357.8	818.1	24.4%	9.5x	57.0%	6,955.2	13,267.9	3,423.3	1,258.6	36.8%	10.5x	47.6%
MIP II	Global Tower Partners	949.6	1,646.5	112.5	59.9	53.2%	27.5x	42.3%	3,240.6	4,804.5	316.0	200.5	63.5%	24.0x	32.6%
	Puget Energy	3,458.9	7,884.7	3,357.8	818.1	24.4%	9.6x	56.1%	6,955.2	13,267.9	3,423.3	1,258.6	36.8%	10.5x	47.6%
	Broadrock Renewables	102.4	255.2	56.7	30.0	52.9%	8.5x	59.9%	136.4	226.6	52.8	20.4	38.7%	11.1x	39.8%
	WCA Waste Corporation	304.7	584.3	267.2	56.3	21.1%	10.4x	47.9%	584.7	1,030.2	386.5	78.4	20.3%	13.1x	43.2%
	Elizabeth River Tunnels	258.3	1,398.1	108.3	72.6	67.0%	19.3x	81.5%	648.6	1,714.2	90.8	57.3	63.1%	29.9x	62.2%
	Leaf River Energy Center	238.1	418.1	36.9	24.4	66.1%	17.2x	43.1%	144.7	306.5	34.8	22.4	64.4%	13.7x	52.8%
MIP III	Goethals Bridge Replacement Project	106.8	1,073.1	65.0	56.5	86.8%	19.0x	90.0%	154.4	1,107.2	66.8	59.7	89.4%	18.5x	86.1%
	NYK Ports								703.3	919.6	492.6	65.4	13.3%	14.1x	23.5%
	Ceres	857.1	857.1	644.2	78.6	12.2%	10.9x	-%	146.0	228.9	533.9	41.4	7.8%	5.5x	36.2%
	GFL Environmental	987.0	1,902.6	674.9	182.4	27.0%	10.4x	48.1%	1,722.7	3,977.7	1,306.4	297.3	22.8%	13.4x	56.7%
	Lordstown Energy Center	449.4	894.4	306.3	104.0	34.0%	8.6x	49.8%	534.5	984.2	NA	NA	NA	NA	45.7%
	Cleco Corporation	2,227.0	4,825.0	1,179.3	442.6	37.5%	10.9x	53.8%	3,042.8	6,072.9	1,766.5	557.6	31.6%	10.9x	49.9%
	InSite Wireless Group	677.6	1,089.9	65.9	33.8	51.3%	32.2x	37.8%	969.1	1,675.0	95.0	47.1	49.6%	35.5x	42.1%
Maher Terminals	689.8	967.6	417.5	56.5	13.5%	17.1x	28.7%	1,080.6	1,429.2	558.5	137.6	24.6%	10.4x	24.4%	
MIP IV	Aligned Energy	360.6	485.0	5.9	(29.7)	NM	NM	25.7%	820.9	1,085.9	13.7	(15.8)	NM	NM	24.4%
	Lagoon Water Solutions	148.5	148.5	26.4	(3.5)	NM	NM	-%	176.7	169.1	25.6	(7.5)	NM	NM	44.5%
	Tunnel Hill Partners	343.8	605.8	294.5	64.1	21.8%	9.5x	43.2%	343.8	613.7	308.5	59.7	19.4%	10.3x	44.0%
	Wheelabrator Technologies	1,154.5	3,122.1	741.5	260.5	35.1%	12.0x	63.0%	1,154.5	3,169.6	711.9	228.7	32.1%	13.9x	63.6%
	Centauro Energia	102.0	168.0	28.8	25.4	88.2%	6.6x	39.3%	102.0	166.1	NA	NA	NA	NA	38.6%

EXHIBIT K: ORGANIZATIONAL CHART

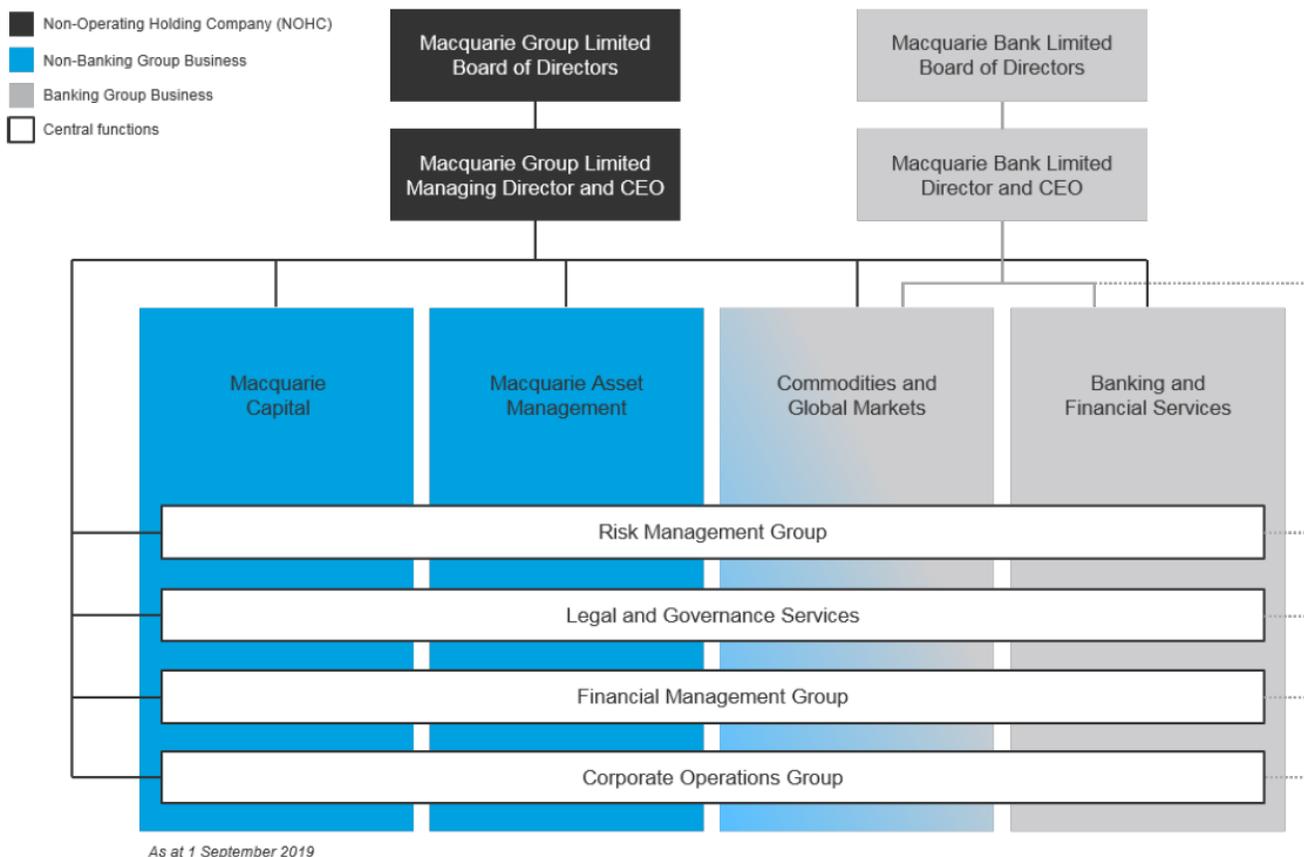


EXHIBIT L: INFRASTRUCTURE TEAM CHART



EXHIBIT M: BIOGRAPHIES**Martin Stanley, Head of Macquarie Asset Management, Investment Committee Member**

Martin leads the global business of Macquarie Infrastructure and Real Assets (MIRA) in addition to leading the European MIRA team. In his role, Martin sets strategic direction for the European and global business and works closely with MIRA's regional leadership and local asset managers. His role is to ensure investment strategy, governance and expertise are focused to achieve the best outcomes for the global portfolio of funds, their portfolio companies, their communities and, ultimately, MIRA's investors. Martin chairs the Boards and Investment Committees of the largest of MIRA's funds, supporting MIRA's investment professionals worldwide with his strong mix of industry and financial experience.

He joined Macquarie in 2004 to help establish Macquarie's first European infrastructure fund (MEIF1), and directed the acquisition and management of investments for MEIF1 and its successor funds until being appointed to his current role in 2010. Martin has supervised and directed a number of landmark transactions for MIRA including the acquisition of Thames Water plc -- the largest water and waste water company in the UK; the take private of Techem GmbH in Germany; the divestment of Global Tower Partners in the United States and the development of successful infrastructure investment businesses in Korea, China, India and Mexico.

Martin joined Macquarie Group following an 18-year career in the utility and energy sector. Prior to 2004 he was a director at TXU Europe Group plc, an energy services business involved in generation, supply and trading of electricity and gas. He started his career at Manweb, the regulated power distribution network covering Merseyside, Cheshire and North Wales.

Martin holds an MPhil Energy Economics degree from Loughborough University of Technology.

Karl Kuchel, Chief Executive Officer (MIP), Investment Committee Member

Karl is the CEO of MIP Inc., the manager of MIP IV and its three North American predecessor funds, MIP I, MIP II and MIP III. Collectively the funds have invested more than \$8 billion in U.S. and Canadian infrastructure assets. In addition to his role as CEO, Karl serves as an investment committee member for MIP I, MIP II and MIP III, and will serve in such capacity for MIP IV. He is a board director for many of the MIP portfolio companies and is actively involved in the evaluation and execution of transaction opportunities.

Prior to his appointment as CEO, Karl served as the Chief Operating Officer of MIP Inc., where his responsibilities included capital allocation, cash flow management, valuation, financing and business planning across each fund's portfolio companies.

Karl joined Macquarie in 2003 in Sydney, Australia, where he was involved with acquisition and asset management activities for Macquarie Infrastructure Group and Macquarie Communications Infrastructure Group, prior to transferring to MIRA's New York office in 2004.

Karl holds a Bachelor of Commerce with Honors degree and a Bachelor of Laws degree from the University of Queensland.

David Fass, Head of MIRA Americas, Investment Committee Member

David is a Senior Managing Director who was appointed as the Head of MIRA Americas. David joined the Macquarie Group in 2011 as the CEO of Macquarie's operations in Europe, the Middle East and Africa (EMEA). In addition to his CEO role, David is a member of the Management Committee that oversaw Macquarie's global Operating Groups, cross-divisional collaboration opportunities and culture. He is a Board member of the Macquarie Group Foundation, the philanthropic arm of the organization and was also a board member of our United Kingdom banking entities.

David's financial services career spans over 30 years with expertise founded in capital markets and advisory. He has had active involvement in emerging and frontier markets and takes a keen interest in the developing thematic of balancing growth opportunities with prudent risk management.

David's career began on Wall Street at Paine Webber (UBS), trading over-the-counter equities before moving to focus on origination, structuring and distribution of mezzanine debt and high yield bond issues. He then spent time at JPMorgan (Chase Manhattan Bank) in leveraged finance and high yield capital markets before moving to London to Co-head European Media and Telecoms Investment Banking. His time in London continued with 11 years at Deutsche Bank where he held various senior management and client-facing roles, including as European Head of Global Banking and as a member of the Global Banking Executive Committee.

David has an MBA from the Stern School of Business at New York University and a BA in Economics from the University of Michigan.

Graeme Conway, *Head of MIRA Americas; Investment Committee Member*

Graeme leads MIRA's operations in the Americas, which includes six infrastructure funds managed through key offices in New York, Mexico City and São Paulo.

Graeme has 19 years' experience in infrastructure and has worked in markets around the world including Australia, Europe and North America. He has led numerous transactions across the water, energy, storage and renewable energy sectors. Graeme began his career with the Macquarie Group in 1997 and has worked across the infrastructure industry in advisory, project finance, structured finance and infrastructure funds management. In 2001, he moved to the U.K., where he worked on the establishment of MIRA's first European infrastructure fund, MEIF1. He subsequently established Macquarie Capital Advisory's European utilities and energy team and thereafter became Head of Macquarie Capital Europe. Graeme moved to MIRA's New York offices in 2012.

Graeme holds a Bachelor of Engineering with First Class Honors and a Bachelor of Commerce in Finance & Management from University of Western Australia.

Christopher Leslie, *Executive Chairman (MIRA Americas), Investment Committee Member*

Chris became Executive Chairman of MIRA Americas in June 2016 and has been with Macquarie since 1992. From 2006 to 2016 he served as the CEO of MIP Inc., the Manager of MIP IV and its predecessor funds, MIP I, MIP II and MIP III, where he was integral to raising and investing more than \$8 billion in North American infrastructure.

Chris has been a member of the MIP Inc. Investment Committee since 2006. He is a board member of several MIP portfolio companies including Puget Energy, Cleco Corporation and Leaf River Energy Center. Chris has led a number of major transactions for the MIP funds, including the \$7.9 billion take-private of Puget Energy (2009), the \$4.7 billion take-private of Cleco Corporation (2016) and the \$4.8 billion sale of Global Tower Partners (2014). Prior to the establishment of MIP I in 2006, Chris played an integral role advising MEAP, MIRA's private Canadian infrastructure fund, including the creation of AltaLink to acquire the electricity transmission business of TransAlta Utilities in Alberta in 2003 and MEAP's acquisition and refinancing of the Michigan Electric Transmission Company in 2003.

He has established offices for Macquarie's infrastructure business in New York, Singapore, Mumbai and Perth. Chris received a Bachelor of Commerce with Honors degree from the University of Melbourne.

Andrew Chapman, *Sector Director, Utilities*

Andrew is responsible for asset management across the Manager's utility portfolio, including providing operational and regulatory expertise. He serves on the boards of Cleco Corporation and Puget Energy, and is the chairman of the Board for Aquarion Water. During 2010, he acted as the interim CEO of DQE and from 2009-2013 was a director of DQE.

Andrew has been managing and financing infrastructure for more than 30 years, and was a utility company President before joining MIRA in 2006. From 1989 until 2003, Andrew was Chief Financial Officer, and later President, of the Elizabethtown Water Company. During Andrew's tenure as President, the company achieved ISO 9001 and 14001 quality certifications and increased earnings per share by 30%. Andrew led the sale of Elizabethtown to Thames Water in 2000 and later combined

Elizabethtown with New Jersey American Water; the combined company was, at the time, the state's largest water utility provider, serving over two million people in 176 New Jersey communities.

During 2003 and 2004, Andrew was President of New Jersey American Water, and was later Vice President of Strategy and Regulation for American Water for all of its U.S. utility assets. Andrew is the former Chairman of the Board of New Jersey Future, a state-wide organization advocating open space preservation and redevelopment of New Jersey's cities and towns.

Andrew holds a Bachelor of Science from the University of California, Berkeley and a Masters of Business Administration from the Yale School of Management.

Paul Mitchener, Sector Director, Waste Management

Paul is the head of the Manager's waste management sector team. He also serves on the boards for all four of the Manager's current waste sector investments – Waste Industries, WCA Waste Corporation, Broadrock Renewables and GFL Environmental.

Paul has worked in the waste and waste-related renewable energy sector for approximately 34 years. He has held a variety of senior management positions, including President of the U.S. subsidiary of Energy Developments (a listed renewable energy company), Director and General Manager of the China subsidiary of Swire SITA Waste Services Ltd and Executive Vice President of SITA (a waste management subsidiary of SUEZ Group).

Paul is a fellow of the Chartered Institution of Wastes Management and a member of the Chartered Institution of Water and Environmental Management. He is also a director and former chairman of the Environmental Research and Education Foundation, based in Raleigh, North Carolina.

He holds a Bachelor of Science (Honors) in Environmental Science from the University of Plymouth.

Richard Nicholson, Sector Director, Ports

Richard is the head of MIRA's global ports team. He also serves as the asset director for the MIP I and MIP III port investments. Richard's more than 25 years of ports experience includes leading over 30 ports transactions globally and developing, directing or managing as many terminals worldwide.

Prior to joining the Macquarie Group, Richard worked in A.P. Moller-Maersk's ports and terminals division as Vice President for Greater China in Beijing and later for Sub-Saharan Africa in Cape Town, South Africa. He also led business development at Sea-Land and CSX in Russia and the Republics of the former Soviet Union.

Richard holds a Bachelor of Arts in Language and Literature from New England College. Richard attended the Whittemore Graduate School of Business and Economics at the University of New Hampshire, as well as the Graduate Faculty of Political and Social Science at the New School for Social Research in New York.

Aaron Rubin, Sector Director, Power & Energy Infrastructure

Aaron is responsible for MIRA's investment team that covers utility, power generation, midstream oil & gas and other energy related sectors in the U.S. and Canada. He has over 15 years of experience in infrastructure investment and M&A, including transactions in renewable and conventional generation, utilities, gas pipelines and related sub-sectors.

Since joining MIRA in 2008, Aaron has had extensive responsibility for deal origination and execution as well as for asset management of portfolio companies. He is currently a director of Lordstown Energy Center, a 940MW gas fired power plant construction project in Ohio. Aaron has also served as the CEO of the Moscow-based Macquarie Russia & CIS Infrastructure Fund, serves on the board of Brunswick Rail and has been a director of a number of MIRA portfolio companies in the energy, transportation and communications sectors.

Prior to joining Macquarie, Aaron was a Vice President in JPMorgan's North American mergers & acquisitions team.

He holds a Bachelor of Commerce and a Bachelor of Laws degree from the University of Queensland.

Louis Paul, Managing Director, Sector Head, Transportation

Louis is a Managing Director and responsible for the Transport sector across MIRA Americas based in New York having joined the team in April 2014.

During his time in New York, Louis led the acquisitions of Long Beach Container Terminal, Maher Terminals in the Port of New York / New Jersey, and NYK Ports (a group of container terminals and associated businesses in North America). Louis also led the sale of Autoroute25 (a toll bridge in Montreal).

From an asset management perspective, Louis has executed a wide array of value accretive projects, including the recapitalization, and resulting dividend increase, of Maher Terminals and Autoroute 25, the implementation of a range of operating efficiencies at Maher terminals resulting in significant improvement in EBITDA, and the overhaul of the tolling and invoicing system at Elizabeth River Tunnels (a tolled set of tunnels in Norfolk, VA) resulting in improved customer experience and payment rates.

Louis is currently on the board of Long Beach Container Terminal, Maher Terminals, NYK Ports, Ceres, and Elizabeth River Tunnels.

Prior to joining MIRA, Louis spent 7 years in Sydney, Australia working for the principal and advisory teams of Macquarie Capital. There he worked on a range of infrastructure, mining, and technology transactions and investments.

Louis holds both a Master of Finance from INSEAD and a Bachelor of Science from Purdue University, and is a Chartered Accountant.

Anton Moldan, Managing Director, Sector Head, Communications

Anton is the head of the communications sector team in the Americas for MIRA. Anton holds board positions of InSite Wireless Group (a tower and wireless infrastructure platform in the U.S.), Aligned Energy (a developer and operator of hyperscale data centers the U.S.), Bluebird Networks (a Midwest fiber company), Netrality Data Centers (a portfolio for data network interconnection facilities in the U.S.), and Mexico Tower Partners (a tower and wireless infrastructure platform in Mexico).

Prior to his current role, Anton served as a director and asset manager for MIRA's industrials portfolio investments across North America, Australia, and the United Kingdom. During this time, he was involved in the management and divestment of Icon Parking, the largest valet parking garage business in Manhattan, SmarteCarte, a leading concessionaire of self-serve vended luggage carts, Petermann, a large regional student transportation company, Sentient, a private jet aviation services company, and AIRserv, which operated over 65,000 vehicle tire inflation, vacuum, and jet wash machines across North America, the United Kingdom, and continental Europe.

Anton has a Bachelor of Commerce from the University of Sydney, where he majored in Finance with minors in Accounting and Economics.

Ernesto Gonzalez, Managing Director, Head of MIRA Mexico

Ernesto is a Managing Director at MIRA based in Mexico City and is the CEO of Macquarie Mexico Infrastructure Fund. Ernesto has over 19 years of experience as an energy executive in operating companies and has executed project financings and investments with an aggregate value of over \$9 billion. Ernesto currently sits on the board of directors for Mexico Tower Partners and Centauro Energía.

Prior to joining MIRA, he was a founding member and Executive Vice President of Business Development of ContourGlobal based in New York where he was responsible for the development of greenfield power projects and the acquisition of operating power plants. During his tenure at ContourGlobal, the company expanded to assets exceeding \$3.5 billion from 36 power plants in 21 countries with an installed capacity of nearly 4 GW and over 1,500 employees. Previously, he also held positions with The AES Corporation and Credit Suisse.

Ernesto received a Bachelor of Science in Finance from Texas A&M University.

Fernando Lohmann, *Managing Director, Head of MIRA Brazil*

Fernando joined Macquarie's São Paulo office in 2014, with responsibility for MIRA's infrastructure activities in Brazil.

Fernando has extensive experience across the private and public sectors in Brazil, having worked locally in the strategic consulting, government and private equity industries. For the seven years prior to joining Macquarie, Fernando worked at Votorantim Cimentos, a global supplier of heavy building materials, where he served as Global Head of M&A and subsequently as Head of the Aggregates Business Unit (Brazil), a business unit with 21 production plants across 15 states throughout Brazil. Through this experience, Fernando has developed extensive relationships in both the private and public sectors in Brazil. He has significant experience both in managing acquisition and due diligence processes, operational day to day management of acquired assets as well as dealing with the development and operational issues relevant to the infrastructure sector, including licensing, land acquisition and community relations.

Fernando holds a Master of Public Policy from Duke University and a Bachelor of Arts in Economics from the University of Notre Dame.

Jenny Chan, *Managing Director, Head of Portfolio & Strategy*

Jenny is a Managing Director with MIRA and is currently the Head of Portfolio and Strategy for MIRA's North American Private Funds. Prior to this role, Jenny had responsibility for developing and executing the debt capital management strategy across MIRA portfolio assets and new acquisition targets. Jenny began her career with Macquarie as a graduate in 2001.

Before joining the MIRA New York office in 2015, she worked in the Macquarie Capital advisory business and Macquarie's direct lending business, making credit investments on behalf of Macquarie Bank Limited. In her role with Macquarie Capital, Jenny advised on the acquisitions of Hawaii Gas and the Dulles Greenway.

She earned her Bachelor of Commerce (Honors) and Bachelor of Laws (Honors) from The University of Queensland.

David Kirkwood, *Managing Director, Head of Construction and Safety*

David is responsible for the successful management of all major construction projects in the Americas for MIRA. Prior to joining MIRA in 2014, David was a Vice President for Kiewit Infrastructure for more than 12 years of his 25 year career with Kiewit. He currently serves on the Board of Directors of Goethals Bridge, Fraser Surrey Docks, and Lordstown Energy Center.

David's infrastructure management experience in the last 15 years includes over \$8 billion in construction and engineering projects spanning multiple industry sectors including, bridges, pipelines, desalination, rail, highways, oil & gas, deep pump stations, marine work and water/wastewater projects. In particular, he served as Managing Director for the \$1 billion Carlsbad Desalination Project. This is a public private partnership (P3) between Poseidon Water and the San Diego Water Authority. This 50 Million Gallons per Day plant is the largest in the western hemisphere.

David holds a Bachelor of Science in Civil Engineering from the University of Washington.

David Agnew, *Managing Director, Government Affairs*

David is based in New York and serves as MIRA's liaison with federal, state and local governments in the United States, building on MIRA's existing presence in the marketplace while also exploring new investment opportunities. Prior to joining

MIRA, David served at the White House, where he was Deputy Assistant to the President and Director of Intergovernmental Affairs. In this role, David oversaw the Obama Administration's relationship with state, city, county, and tribal elected officials across the country. David previously served as Deputy Director of the office and was the President's liaison to America's mayors and county officials.

Before working in the White House, David was a businessman and community leader in Charleston, South Carolina. He has served as a top deputy to Charleston Mayor Joseph P. Riley Jr., a Special Assistant in the Office of U.S. Secretary of Labor Robert Reich, and as a management consultant at Price Waterhouse. David has been active in public affairs and urban policy throughout his career, and has served in leadership roles for numerous non-profit organizations, including the Trust for Public Land, the Charleston Parks Conservancy, and the College of Charleston Riley Center.

David received his Master's Degree in Public Policy from Harvard University's Kennedy School of Government. He is a Harry S. Truman Scholar, a European Union Visiting Fellow, and a Liberty Fellow.

John Howard, Managing Director, Acquisitions & Investment Management

John joined Macquarie in April of 2016, establishing the Houston office for MIRA. John is responsible for origination, consummation, and management of midstream investments.

John has spent over 25 years in the oil and gas midstream and upstream energy space with experience in (i) managing and operating upstream and midstream oil and gas assets and organizations, (ii) consummating complex energy transactions, and (iii) managing pipeline merchant energy divisions.

Prior to joining Macquarie, John was a co-founder, officer and Board Member at several private equity portfolio companies including Century Midstream, LLC (First Reserve), Bayside Resources, LLC and Foothills Resources, Inc. (Regiment Capital Advisors Special Situations Fund), and Concert Capital Resources (Morgan Stanley Private Capital/Metalmark Capital). In addition, John was Senior Vice President for Strategy and Development for NiSource, Inc. where he was responsible for the company's upstream operations and assets (500,000 acres) and establishment of Pennant Midstream, LLC (Chairman). John's career also involved senior positions at Kinder Morgan and the Williams Companies.

John holds a Bachelor of Science in Geological Sciences from the University of Texas and a Masters of Business Administration and Juris Doctor from the University of Houston. John is licensed to practice law in the State of Texas and the federal court system and is a member of the State Bar of Texas as well as the American Association of Petroleum Geologists.

Biliana Pehlivanova, Managing Director, Technology

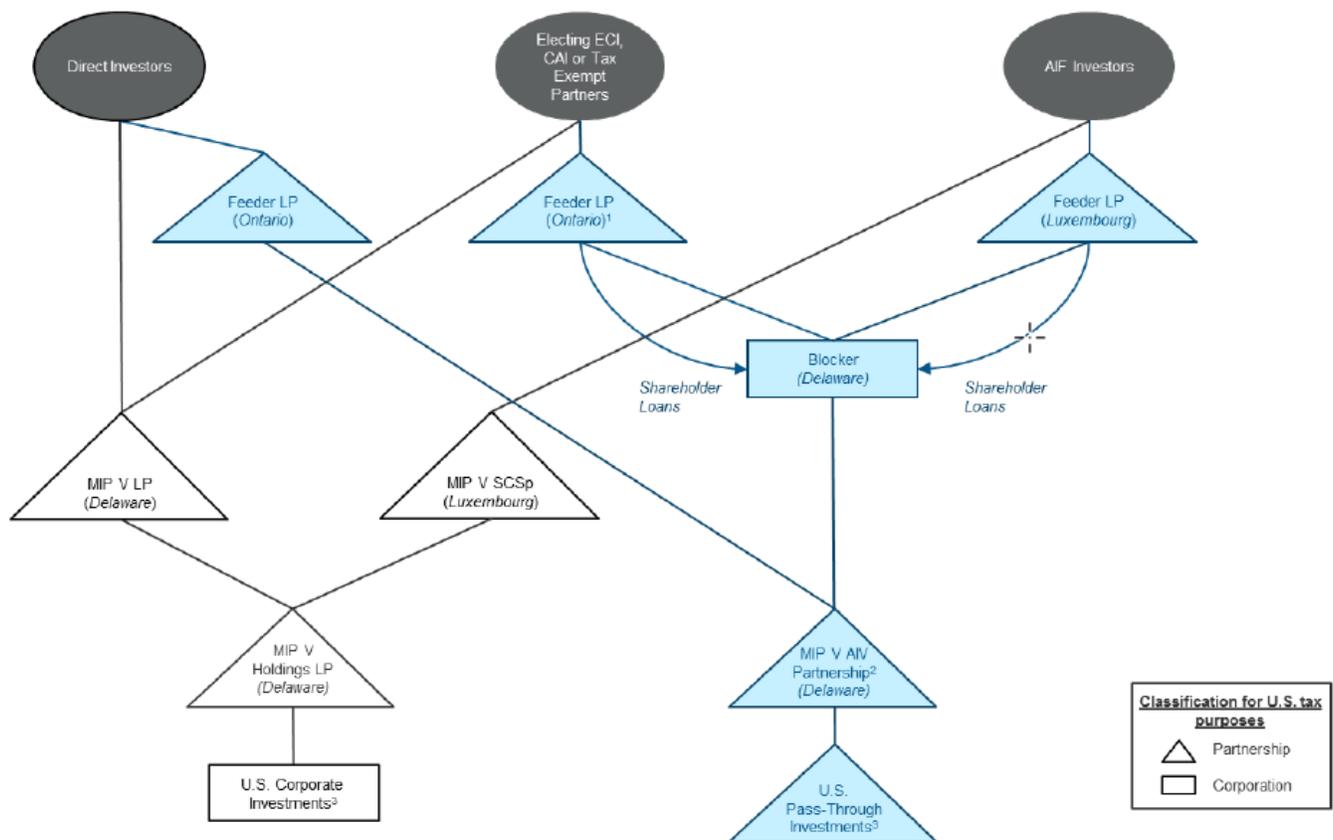
Biliana is a Managing Director at MIRA, with a focus on emerging technologies and innovation across MIRA's portfolio investments in the Americas.

Since joining the Macquarie Group in 2018, Biliana has been involved in due diligence and asset management across a variety of sectors including regulated utilities, power, transportation, and communications. She identifies and leads operational improvement initiatives deploying emerging technologies to drive innovation across MIRA's investments platform in the Americas. Biliana also leads macro analysis efforts focusing on the impact of emerging technologies on industry trends and new business models across the utilities, power, midstream, and transportation sectors.

Biliana is currently serving on the board of Leaf River Energy Center, a natural gas storage facility and Elizabeth River Tunnels, a system of tunnels and bridges in Norfolk and Portsmouth, VA.

Prior to joining MIRA, Biliana spent 18 years focusing on energy markets. Most recently she was responsible for energy market strategy as part of the asset management team at Loews Corporation, and served as the Head of Global LNG, Gas and Power Research at Barclays Capital. Her prior experience includes roles with Bank of America, Washington Policy & Analysis Inc., and Enron. Biliana has a Bachelor's Degree from University of Houston, where she majored in Finance.

EXHIBIT N: FUND LEGAL STRUCTURE



APPENDIX

RATING RATIONALE

Factor	Comments
Strategy	<p>MIP's investment strategy has broadly been consistent across all prior funds since 2003 which involves acquiring control or significant influence positions in mid-cap operating infrastructure businesses in North America (primarily in U.S. and Canada) where the investment team can implement initiatives to drive EBITDA growth and other strategic, commercial, and / or financial decisions of the target companies.</p> <p>We believe appropriate fund size is critical to staying with in the mid-market mandate to avoid potential strategy drifts or a general trend of moving up the transaction sizes. Our analysis indicate that MIP has stayed consistent with its mid-market mandate across funds it managed.</p> <p>MIP has historically sourced and executed greater percentage of deals outside the energy sector, which has otherwise made up the highest percentage of many other infrastructure funds. We believe an investment in MIP V is likely to be a sector diversifier to other peer funds.</p>
Sponsor	<p>MIP is an entity within MIRA, wholly owned by Macquarie Asset Management and ultimately by Macquarie Group. Macquarie and MIRA have significant experience and one of the longest track record in infrastructure investing with approximately \$108.0 billion in infrastructure assets under management, representing ownership in over 130 infrastructure assets globally. The senior most team members have 20+ years of average infrastructure investing and managing experience. MIP V will essentially be executed by the same team as prior funds with little changes at the senior leadership level.</p>
Investment Process	<p>Well defined and in-depth investment process that has been consistently utilized and refined over time and across funds. The Firm focuses on sourcing bilateral or limited competition deals. Investment committee approval is required before bid costs are incurred and before a binding offer is submitted and unanimous approval of the investment committee members and transaction compliance certificate is required before final closing.</p> <p>Sufficient restrictions or guidelines exist to ensure appropriate level of portfolio diversification and use of leverage in the Fund.</p>
ESG Policy & Practices	<p>Environmental, social and governance ("ESG") is incorporated and imbedded in MIP's investment process that analyzes current and potential ESG and occupational health and safety issues, identifies means to rectify and ensure on-going compliance with best practices. MIRA has a dedicated global risk and sustainability team, including a local risk officer supporting the MIP funds, who works to promote the sharing of best practice across the regional and global portfolios.</p> <p>MIRA is a division of Macquarie Asset Management which is a signatory to United Nations-supported Principles for Responsible Investment ("PRI"). MIRA has also been an active member of Global Real Estate Sustainability Benchmark ("GRESB"), that assesses and benchmarks the ESG performance of real assets.</p>
Fund Structure	<p>Not really a reason for a broad one-size-fits-all rating, but on a client-specific basis, this sponsor tends to accommodate many investor types sensitivities to tax, ERISA, etc. This needs to be reviewed by clients' legal teams.</p>

Performance	<p>MIRA currently manages over 30 infrastructure specific investment vehicles globally, five of which (MIP I, MIP II, MIP III, MIP IV and Macquarie Infrastructure Corporation (MIC)) have a mandate for investments in the United States and Canada. The Firm has one of the longest track record in infrastructure investing in North America since 2003. MIP funds (MEAP through MIP IV) have collectively invested / committed over \$12.9 billion of equity across 36 individual deals (including 2 deals closed by MIP IV but not yet funded), of which 16 have been fully realized. These funds have collectively generated \$11.8 billion in total realized proceeds and have most of the remaining portfolio investments marked at or above cost. The five predecessor funds have combined to generate 9.0% net IRR and 1.6x net equity multiple in USD.</p> <p>While performance of MIP IV is not yet meaningful, MIP I, MIP II and MIP III all rank 1st or 2nd quartile on various metrics.</p>
Operational Due Diligence	A2-Pass
Terms & Conditions	<p>Most terms and conditions of the Fund are either in line with market or better. The management fee structure applies lower percentage on uninvested capital which we believe is very competitive among peers. Overall fee load may be reduced by capitalizing on first close and size rebates offered by MIP or negotiated by Townsend.</p>
Overall Rating	<p>We believe MIP is a very credible manager and that its mid-market core+ infrastructure strategy is attractive where it focuses on generating returns through cash yield and growing revenue and EBITDA of the portfolio companies with less reliance on expansion in valuation multiples. The investment team has significant track record and is largely the same that implemented prior funds. However, we believe investors should be prepared for total net returns at the lower end of the 10-12% targeted range in the current environment.</p>

INVESTMENT RATING EXPLANATION

The comments and assertions reflect Townsend views of the specific investment product and its strengths and weaknesses in general and in the context of Townsend's *View of the World* and same vintage alternative choices.

Buy – Townsend recommends the investment for those client portfolios where it is a fit.

Qualified – Townsend believes the manager to be qualified to manage client assets.

OPERATIONAL DUE DILIGENCE RATING EXPLANATION

A1 Pass – No material operational concerns; firm's operations largely align with a well-controlled environment.

A2 Pass – The firm's operations largely align with a well-controlled environment, with limited exceptions.

Conditional Pass – AON identified specific operation concerns that the firm agreed to address in a reasonable time frame.

Fail – AON noted material operational concerns that introduce potential economic or reputational exposure.

About Townsend Group – An Aon Company

Founded in 1983, The Townsend Group provides custom real asset solutions that help clients worldwide achieve their unique investment goals. As an Aon company, The Townsend Group is now part of one of the top three outsourced chief investment officer (OCIO) providers in the world measured by global assets under management. Aon's investment organization, including Townsend, manages more than \$130 billion of worldwide assets under management and has advised on more than \$240 billion of real estate assets.

Disclaimer

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Townsend is a registered investment adviser with the Securities and Exchange Commission and is a wholly owned, indirect subsidiary of Aon plc.

Memorandum

To: Arkansas Teacher Retirement System (“ATRS”)
From: Chae Hong; Iftikhar Ahmed
CC: PJ Kelly; Jack Dowd; Richard Ferguson
Date: June 1, 2020
Re: Macquarie Infrastructure Partners V – \$50 million Commitment Recommendation

Background and Recommendation

Macquarie Infrastructure Partners V, L.P. (“MIPV”, “Fund V” or the “Fund”) is targeting to raise \$5.0 billion in total commitments. The Fund will primarily make brownfield, core and core+ investments in companies across transportation, waste management, utilities, energy and communication sectors located predominantly in the United States and Canada (with an ability to invest in other countries in the Americas, mainly Mexico and Brazil, up to the greater of 20% of the aggregate commitments or \$250 million). The Fund will target to allocate \$250 million to \$750 million per investment to create a portfolio of 7 to 10 companies and leverage its co-investment partners to execute larger deals, if required. Consistent with predecessor funds, MIPV will seek to take control or significant influence positions in the portfolio companies to implement value creation initiatives. The Fund will target net returns of 10.0% to 12.0% over the life of the Fund and a gross cash yield of 4.0% to 6.0% following the investment period over the remaining life of the Fund.

AHIC is satisfied with the strategy of the Fund and its appropriateness for ATRS. Additionally, we believe that the merits of this offering outweigh its risks. A Macquarie Infrastructure Partners V In Detail is attached for reference. We recommend that ATRS invest \$50 million in the Fund to fulfill ATRS’ 2020 infrastructure allocation, in accordance with the previously approved 2020 ATRS Real Asset Pacing Schedule.

**ARKANSAS TEACHER RETIREMENT SYSTEM
1400 West Third Street
Little Rock, Arkansas 72201**

**RESOLUTION
No. 2020-21**

**Approving Investment in Macquarie Infrastructure Partners V,
L.P.**

WHEREAS, the Board of Trustees (Board) of the Arkansas Teacher Retirement System (ATRS) is authorized to invest and manage trust assets for the benefits of its plan participants; and

WHEREAS, the ATRS Board has reviewed the recommendation of its real assets investment consultant, Aon Hewitt Investment Consulting, Inc., along with the recommendation of the Investment Committee and ATRS staff regarding a potential investment in **Macquarie Infrastructure Partners V, L.P.** a closed end, core infrastructure fund which invests primarily in North American infrastructure assets.

THEREFORE, BE IT RESOLVED, that the ATRS Board approves an investment of up to **\$50 million dollars (\$50,000,000)** in **Macquarie Infrastructure Partners V, L.P.** The total investment amount is to be determined by the real assets consultant and ATRS staff based upon the allocation available to ATRS and the overall investment objectives set by the ATRS Board; and

FURTHER, BE IT RESOLVED, that the ATRS staff is hereby authorized to take all necessary and proper steps to implement this investment, if acceptable terms are reached.

Adopted this 1st day of June, 2020.

Mr. Danny Knight, Chair
Arkansas Teacher Retirement System

Arkansas Teacher Retirement System Private Equity Portfolio Review

December 31, 2019

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Executive Summary

Portfolio Summary

Since establishing the private equity program in 1996, Arkansas Teacher Retirement System (“ATRS”) has committed approximately \$5.0 billion to 81 primary funds, 24 fund-of-funds, 1 co-investment fund, and 15 direct investments through December 31, 2019. Of the \$5.0 billion committed, 86% has been contributed, 104% of contributed capital has been returned, and a total value of 1.6 times contributed capital has been generated. ATRS’ portfolio has outperformed the Dow Jones U.S. Total Stock Market Index equivalent (“PME”) by 370 basis points since inception.

Investment Activity

For the twelve months ended December 31, 2019, ATRS made capital contributions of approximately \$362.1 million and received distributions of \$412.0 million, for net distributions of \$49.9 million.

Commitment Activity

Since January 1, 2019, ATRS closed on commitments totaling \$425.0 million to the following fifteen funds:

- FP International 2019 (\$30.0 million)
- American Industrial VII (\$30.0 million)
- Arlington V (\$25.0 million)
- FP Venture 2019 (\$30.0 million)
- JF Lehman V (\$30.0 million)
- DW Healthcare V (\$30.0 million)
- FP CF Access (\$30.0 million)
- KPS Mid-Market I (\$20.0 million)
- KPS V (\$30.0 million)
- Clearlake VI (\$30.0 million)
- Thoma Bravo Explore I (\$15.0 million)*
- FP VC XIII (\$30.0 million)
- BV X (\$30.0 million)
- FP Intl X (\$30.0 million)
- Greyrock V (\$35.0 million)

Further, in 2019 ATRS closed on an additional \$58.0 million direct investment in Big River Steel and an additional \$14.0 million commitment to Highland LLC. The previously approved \$30.0 million commitment to ATRS/FP Private Equity was instead committed directly to FP CF Access Fund, following board approval in June 2019. ATRS has also approved \$20.0 million commitments to each of Thoma Bravo XIV and Thoma Bravo Discover III, which remain pending.

*Subsequent to closing a \$15.0 million commitment to Thoma Bravo Explore I, the General Partner increased the allocation to ATRS to \$20.0 million. The additional \$5.0 million commitment is pending.

Market Commentary

U.S. Private Equity: M&A activity overall declined by more than 22% year-over-year during 2019, led by a 27% drop in corporate M&A. PE Activity, which has grown since 2015 to represent one-third of total activity, was down 15% from the prior year. After a slight downtick early in the year, LBO entry multiples increased to nearly 11x EBITDA. Fundraising in terms of fund count remained muted relative to 2014-2017 levels, though aggregate capital commitments grew by nearly 50% year-over-year.

U.S. Venture Capital: Investment activity in deal count terms has grown modestly at a 4% CAGR since 2016 compared to a 21% CAGR of deal value driven by a sharp increase in mega-deals (>\$100 million raised) at both early and late stages. Fundraising has slowed from the record-setting 2018 but the more than \$46 billion remains well in excess of the \$37 billion annual average from 2014-2017. Median valuation step-up in early stage (Series A & B rounds) deals has increased steadily since 2016 and rose to 2.0x during 2019 compared to 1.5x step-ups in angel/seed and later stage deals.

Franklin Park

May 15, 2020

Portfolio Overview

Portfolio Summary



Group	Num.	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	Remaining Value (%)	Exposure (\$)	DPI	TVPI	Net IRR
By Vehicle											
1996-2000: Legacy Portfolio	13	1,106,390,461	1,070,676,238	0	1,639,768,422	403,576	0.0%	403,576	1.5 x	1.5 x	9.2%
2005-2006: CSFB Portfolio	2	654,300,000	688,981,733	67,260,744	946,092,713	134,768,993	5.8%	202,029,737	1.4 x	1.6 x	8.8%
Post 2006 Fund Portfolio	91	2,858,323,718	2,131,222,694	996,431,019	1,684,903,870	1,693,304,054	73.0%	2,689,735,072	0.8 x	1.6 x	15.4%
Big River Steel	9	257,880,449	257,940,356	0	132,006,068	403,564,375	17.4%	403,564,375	0.5 x	2.1 x	24.4%
Blue Oak Arkansas	1	18,000,000	19,740,000	0	4,717,993	0	0.0%	0	0.2 x	0.2 x	-50.5%
Highland LLC	4	65,000,000	80,870,000	0	31,674,525	68,050,598	2.9%	68,050,598	0.4 x	1.2 x	13.4%
GTLA Holdings	1	20,000,000	20,000,000	0	0	20,000,000	0.9%	20,000,000	0.0 x	1.0 x	0.0%
Total	121	4,979,894,628	4,269,431,022	1,063,691,763	4,439,163,590	2,320,091,596	100.0%	3,383,783,358	1.0 x	1.6 x	10.9%
By Fund Type											
Co-Investment Fund	1	263,823,718	234,007,257	118,974,129	127,912,320	202,917,770	8.7%	321,891,899	0.5 x	1.4 x	14.0%
Fund-of-Funds	24	1,214,300,000	1,013,161,844	297,887,635	1,114,512,139	589,863,730	25.4%	887,751,365	1.1 x	1.7 x	10.7%
Operating Company	15	360,880,449	378,550,356	0	168,398,585	491,614,973	21.2%	491,614,973	0.4 x	1.7 x	20.6%
Primary Fund	81	3,140,890,461	2,643,711,564	646,829,999	3,028,340,546	1,035,695,123	44.6%	1,682,525,121	1.1 x	1.5 x	10.5%
Total	121	4,979,894,628	4,269,431,022	1,063,691,763	4,439,163,590	2,320,091,596	100.0%	3,383,783,358	1.0 x	1.6 x	10.9%

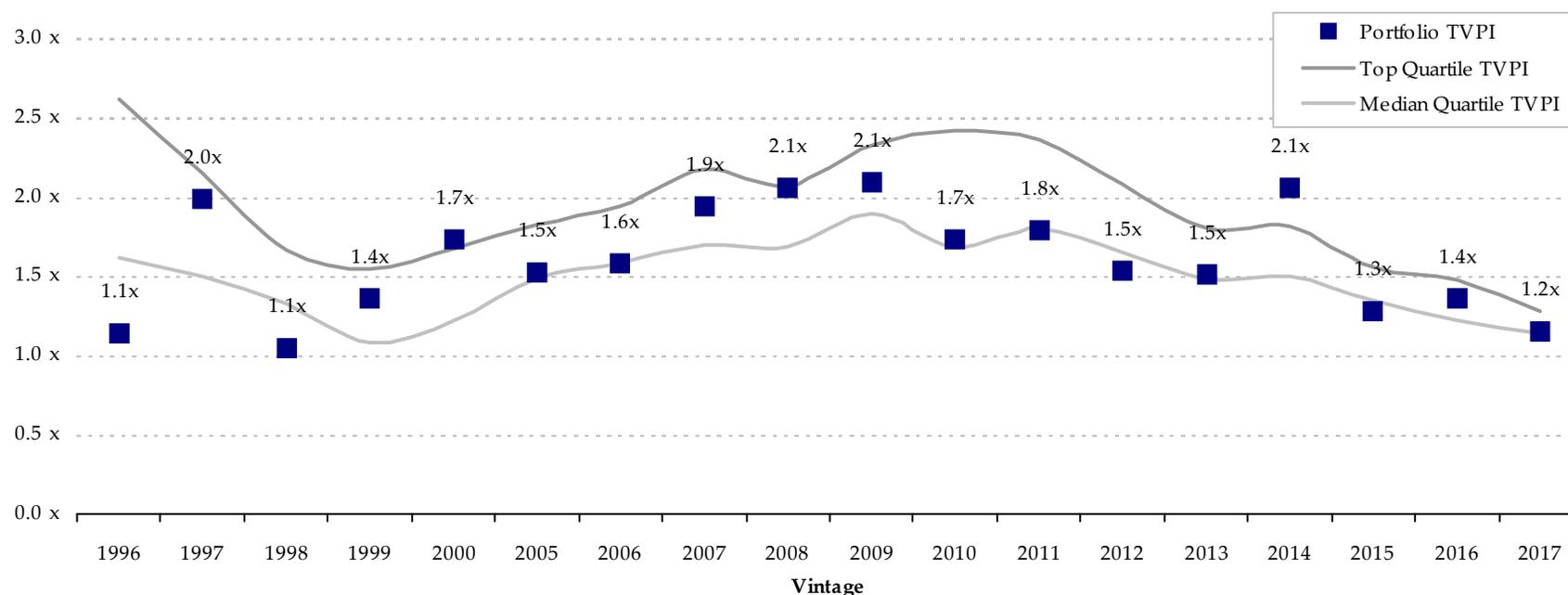
Portfolio Summary



Group	Num.	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	Remaining Value (%)	Exposure (\$)	DPI	TVPI	Net IRR
By Strategy											
Buyout	57	2,272,390,461	1,846,782,501	535,861,957	2,258,905,777	778,944,565	33.6%	1,314,806,522	1.2 x	1.6 x	11.2%
Distressed Debt	3	100,000,000	93,881,464	23,335,628	79,446,634	46,745,918	2.0%	70,081,546	0.8 x	1.3 x	6.6%
Growth Equity	2	90,000,000	87,804,590	5,057,033	160,861,721	34,545,293	1.5%	39,602,326	1.8 x	2.2 x	18.4%
Hard Assets	14	392,500,000	376,390,513	53,877,425	208,333,532	211,295,323	9.1%	265,172,748	0.6 x	1.1 x	4.5%
Infrastructure	9	270,880,449	272,676,670	0	128,498,770	403,564,375	17.4%	403,564,375	0.5 x	2.0 x	21.7%
Mezzanine	6	250,000,000	178,940,744	15,228,111	206,262,043	29,963,117	1.3%	45,191,228	1.2 x	1.3 x	10.1%
Multi-Strategy	6	974,123,718	989,977,024	186,717,873	1,100,817,340	343,383,391	14.8%	530,101,264	1.1 x	1.5 x	7.6%
Special Assets	1	30,000,000	8,497,598	21,502,402	3,195	7,535,540	0.3%	29,037,942	0.0 x	0.9 x	NMF
Structured Capital	3	85,000,000	68,592,821	34,322,863	28,392,658	47,971,985	2.1%	82,294,848	0.4 x	1.1 x	5.7%
Turnaround	8	210,000,000	132,555,793	102,457,458	130,865,289	77,535,884	3.3%	179,993,342	1.0 x	1.6 x	15.8%
Venture Capital	12	305,000,000	213,331,303	85,331,012	136,776,633	338,606,205	14.6%	423,937,217	0.6 x	2.2 x	20.6%
Total	121	4,979,894,628	4,269,431,022	1,063,691,763	4,439,163,590	2,320,091,596	100.0%	3,383,783,358	1.0 x	1.6 x	10.9%
By Sub-Asset Class											
Corporate Finance	94	4,314,014,179	3,677,549,362	978,360,751	4,133,988,372	1,489,870,418	64.2%	2,468,231,168	1.1 x	1.5 x	10.3%
Direct Investments	15	360,880,449	378,550,356	0	168,398,585	491,614,973	21.2%	491,614,973	0.4 x	1.7 x	20.6%
Venture Capital	12	305,000,000	213,331,303	85,331,012	136,776,633	338,606,205	14.6%	423,937,217	0.6 x	2.2 x	20.6%
Total	121	4,979,894,628	4,269,431,022	1,063,691,763	4,439,163,590	2,320,091,596	100.0%	3,383,783,358	1.0 x	1.6 x	10.9%

- Remaining Value is defined as the investor's value as reported by the fund's manager.
- Exposure is defined as the sum of the investor's Remaining Value plus Unfunded Commitment.
- DPI is the ratio of Distributed Capital to Contributed Capital.
- TVPI is the ratio of Distributed Capital plus Remaining Value to Contributed Capital.
- Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Remaining Value as of the Report Date, net of fees and expenses, including late closing interest.
- Results include fully liquidated investments (if applicable).
- Commitments made in a foreign currency have been converted into U.S. dollars using an exchange rate as of the Report Date.

TVPI by Vintage



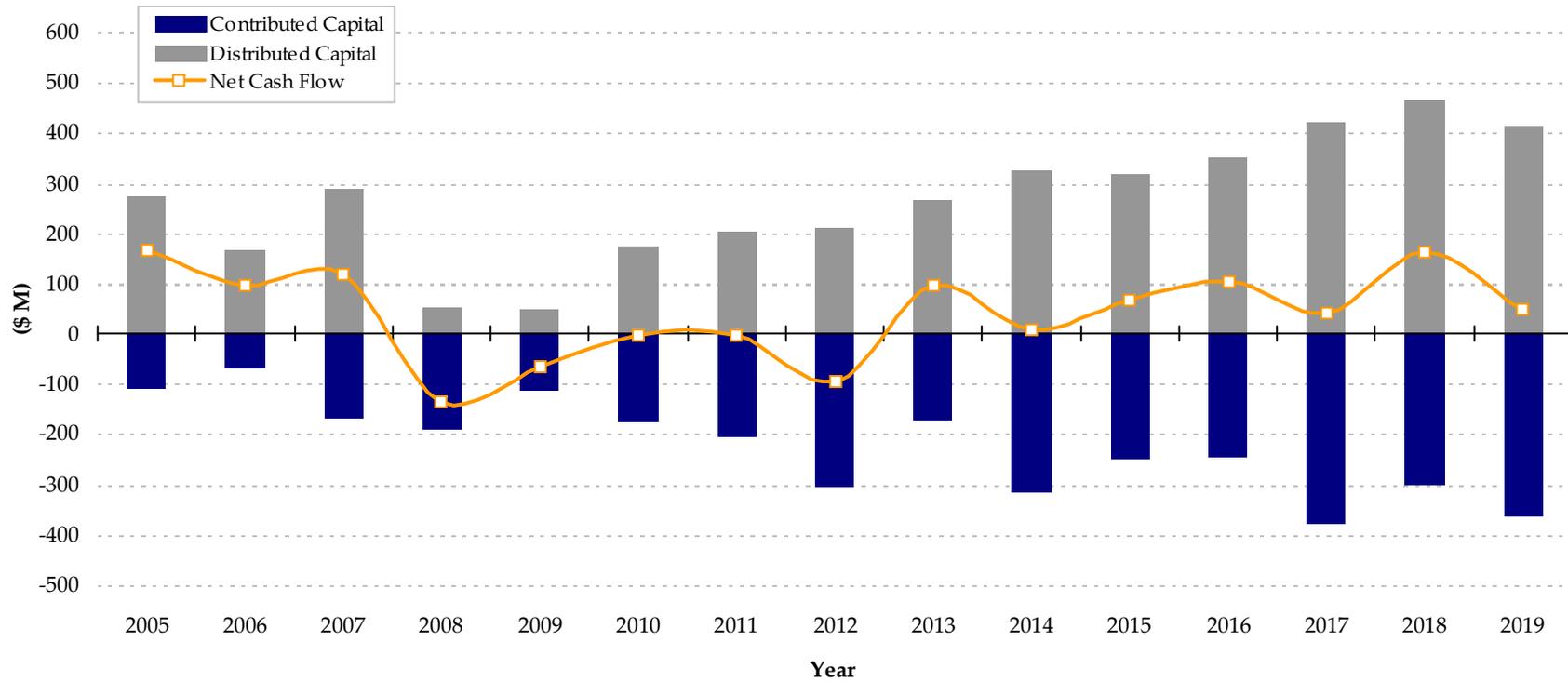
Net IRR vs. PME vs. Cambridge Associates: U.S. All Private Equity

Calculation Set	1-Year	3-Year	5-Year	10-Year	Inception
Aggregate Portfolio	13.2%	17.0%	14.9%	14.4%	10.9%
DJ US TSM TR Index* Public Market Equivalent (Aggregate Portfolio)	30.9%	14.5%	10.9%	13.5%	7.2%
Cambridge Associates: U.S. All Private Equity	11.2%	14.8%	12.8%	14.9%	N/A
Post 2006 Fund Portfolio	16.9%	15.8%	14.4%	15.9%	15.4%
DJ US TSM TR Index* Public Market Equivalent (Post 2006 Fund Portfolio)	30.9%	14.4%	11.1%	13.5%	13.0%

* The Dow Jones U.S. Total Stock Market Total Return Index measures all U.S. equity securities that have readily available prices and is calculated with dividend reinvestment.

-
- Benchmark TVPI represents vintage year first quartile per Cambridge Associates, as of September 30, 2019. The portfolio is compared to data compiled across multiple strategies including U.S. Buyout, Growth Equity, Venture Capital, Mezzanine, Distressed, Fund-of-funds, and Secondary funds.
 - Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Remaining Value as of the Report Date, net of fees and expenses, including late closing interest.
 - The public market equivalent (PME) represents the performance of a public market index expressed in terms of an IRR, using the same cash flows and timing as the investor's investment activity in private equity. The PME serves as a proxy for the return the investor could have achieved by investing in the public market. The PME return assumes cash flows are invested at the end of each day.
 - Cambridge Associates: U.S. All Private Equity reflects the pooled net IRR based on data compiled from Cambridge Associates as of September 30, 2019.
 - Benchmark data is not available (N/A).

Annual Cash Flow

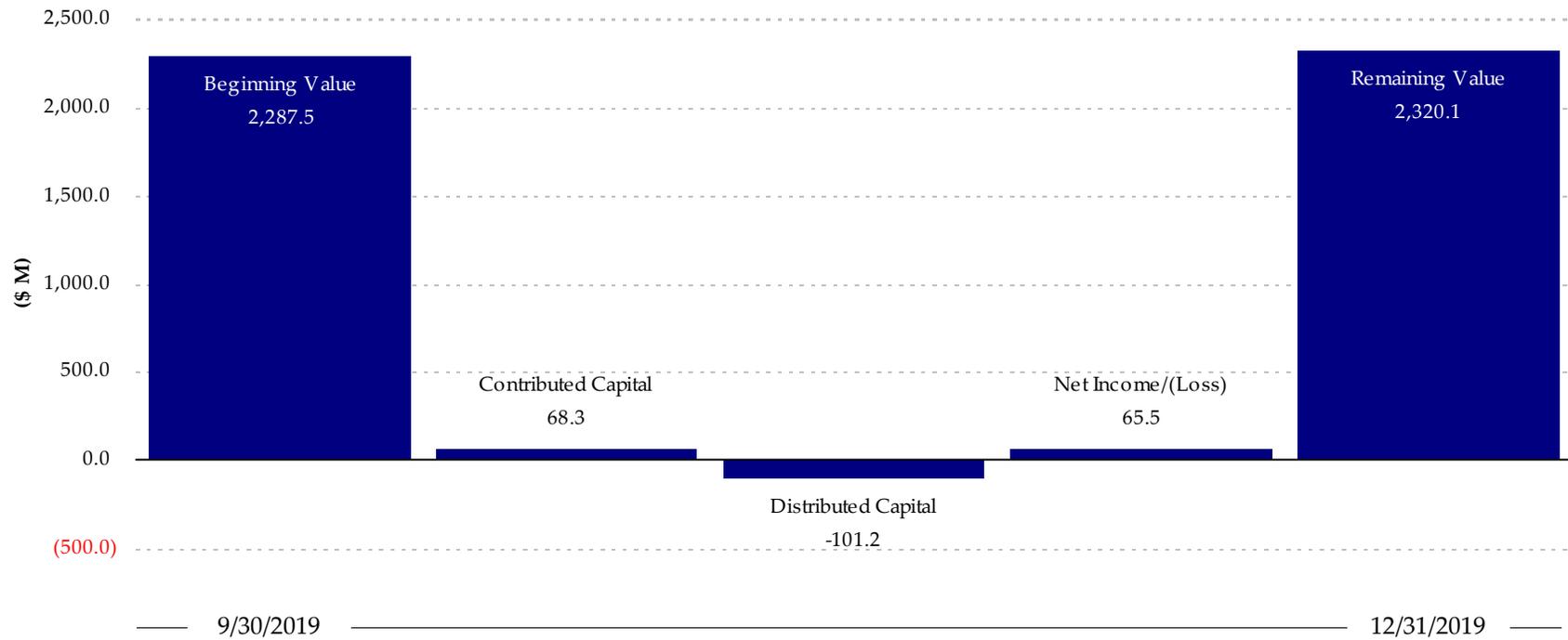


2019 (\$)		
Distributed	Contributed	Net Cash Flow
412,009,302	-362,144,819	49,864,483

▫ Cash flow data was compiled through the Report Date.

Capital Account Change Since Prior Quarter

Quarterly Portfolio Activity



Percent Change in Value	2.9%
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- Beginning Value represents the aggregate Remaining Value of the portfolio as of the prior quarter-end.
- Percent Change in Value is calculated by dividing Net Income / (Loss) by Beginning Value.

Recent Commitments



Commitments for Year Ended December 31, 2019

Fund	Strategy	Date	Commitment (\$)
FP Intl 2019	Buyout	Mar 2019	30,000,000
American Industrial VII	Buyout	Mar 2019	30,000,000
Arlington V	Buyout	May 2019	25,000,000
Big River - Equity Phase II	Infrastructure	May 2019	58,000,000
Highland Note 2020	Hard Assets	Jun 2019	14,000,000
FP Venture 2019	Venture Capital	Jun 2019	30,000,000
JF Lehman V	Buyout	Jun 2019	30,000,000
DW Healthcare V	Buyout	Jul 2019	30,000,000
FP CF Access	Buyout	Jul 2019	30,000,000
KPS Mid-Market I	Turnaround	Oct 2019	20,000,000
KPS V	Turnaround	Oct 2019	30,000,000
Clearlake VI	Buyout	Dec 2019	30,000,000
Total			357,000,000

Year to Date Commitments as of May 14, 2020

Fund	Strategy	Date	Commitment (\$)
Thoma Bravo Explore I	Buyout	Jan 2020	15,000,000
FP VC XIII	Venture Capital	Feb 2020	30,000,000
BV X	Buyout	Feb 2020	30,000,000
FP Intl X	Buyout	Mar 2020	30,000,000
Greyrock V	Mezzanine	Apr 2020	35,000,000
Total			140,000,000

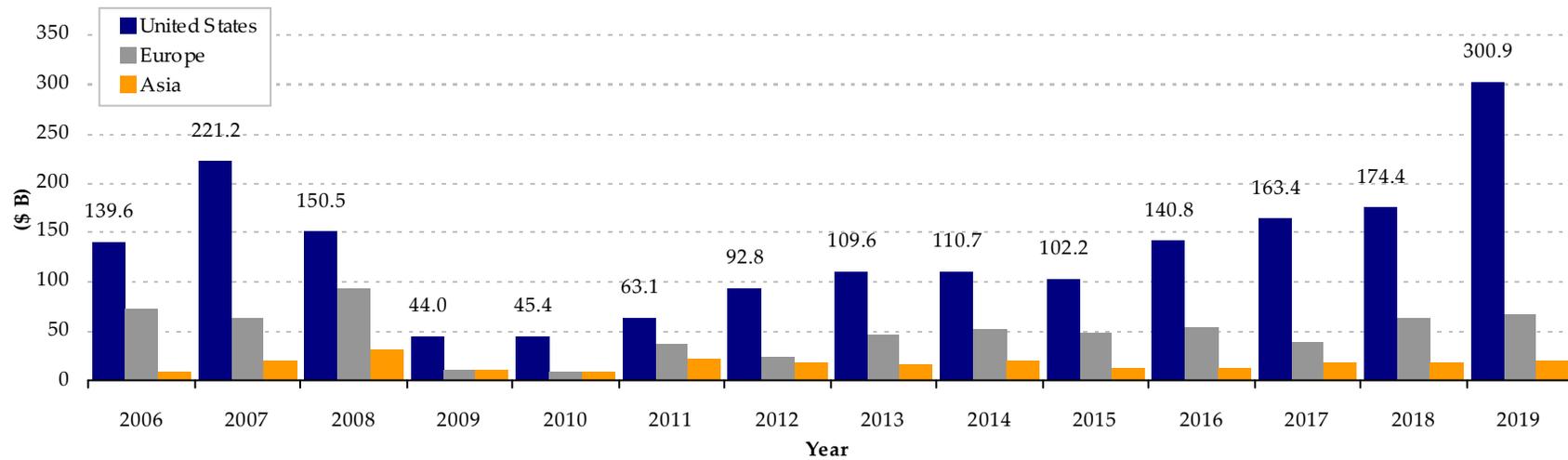
Approved and Pending Commitments as of May 14, 2020

Fund	Strategy	Date	Target Commitment (\$)
Thoma Bravo XIV	Buyout	N/A	20,000,000
Thoma Bravo Discover III	Buyout	N/A	20,000,000

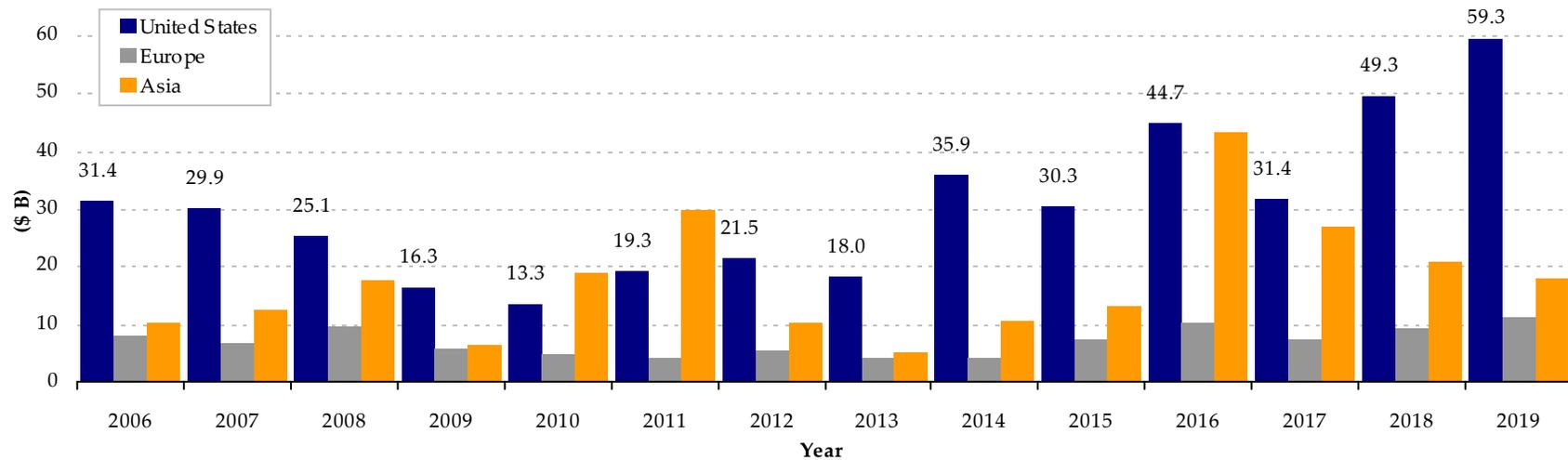
- Commitments made in a foreign currency have been converted into U.S. dollars using an exchange rate as of the Report Date, if applicable.
- ATRS committed an additional \$30.0 million to ATRS/FP Private Equity Fund as as part of the 2019 allocation, which was subsequently reversed.

Market Update

Buyout Funds

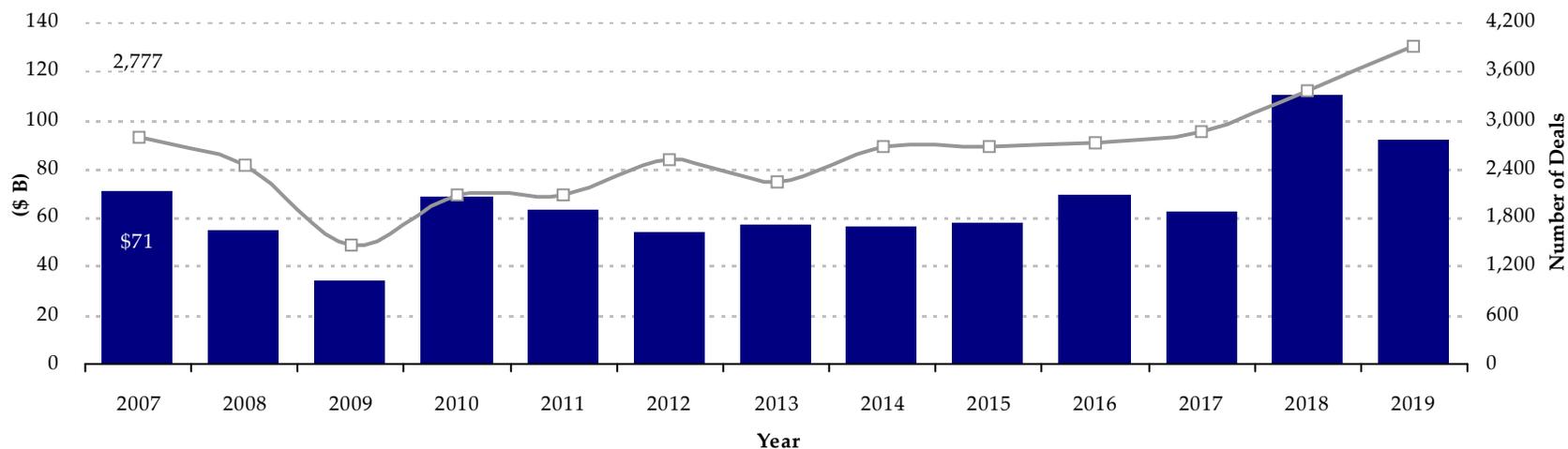


Venture Funds

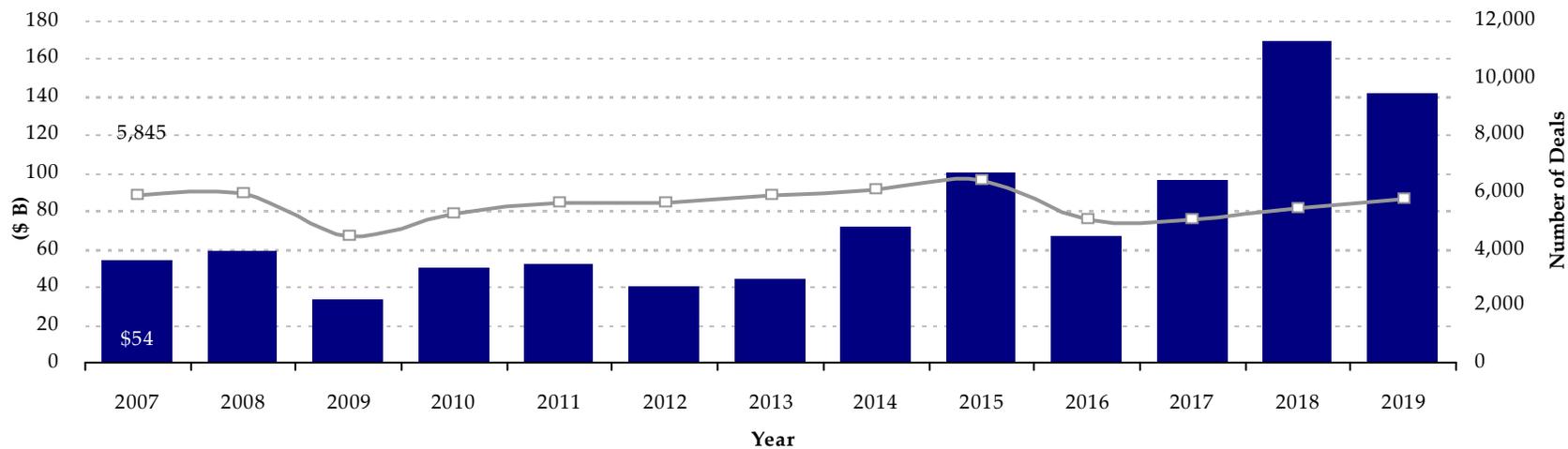


Source: Thomson One Private Equity.
Data compiled through 4Q 2019.

U.S. Buyout

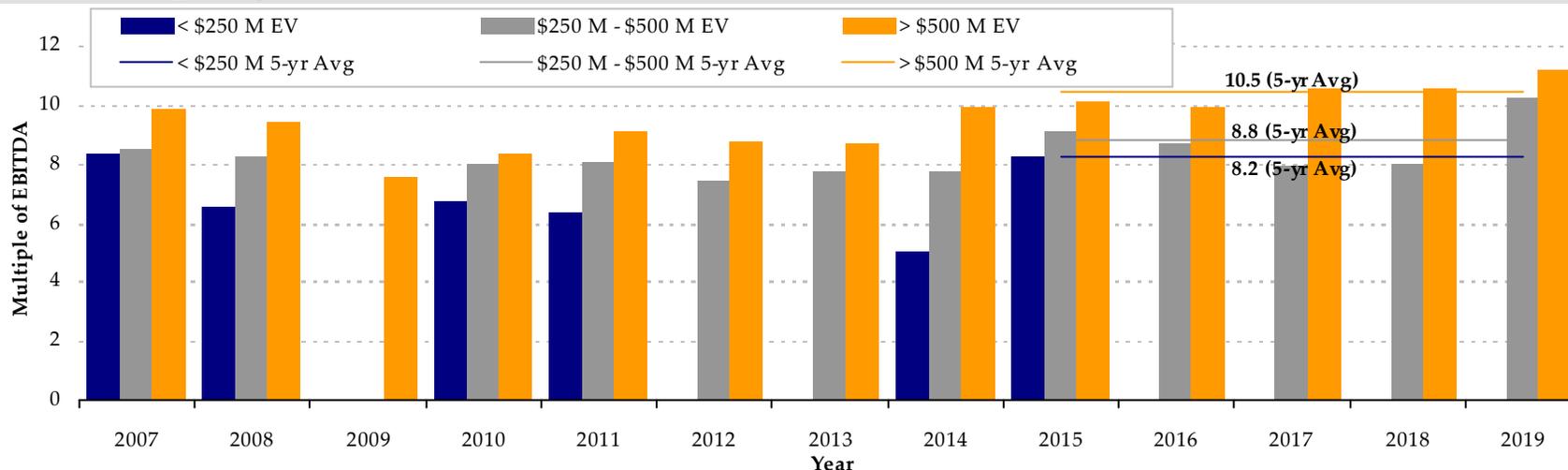


U.S. Venture

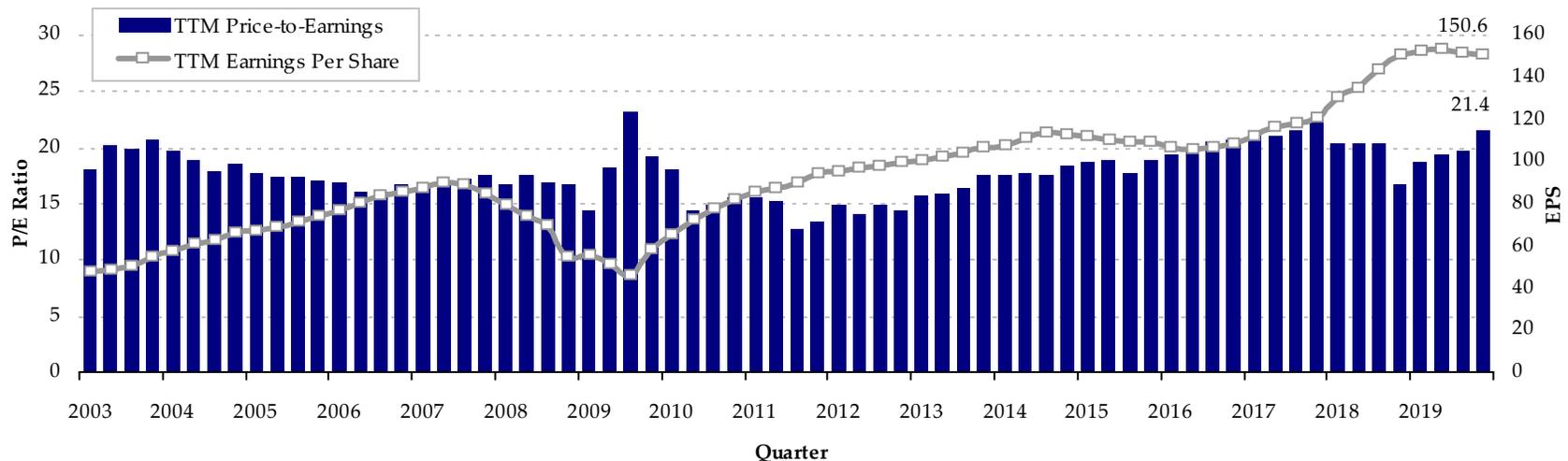


- Source: Thomson One Private Equity.
- Data compiled through 4Q 2019.

U.S. LBO Pricing Multiples

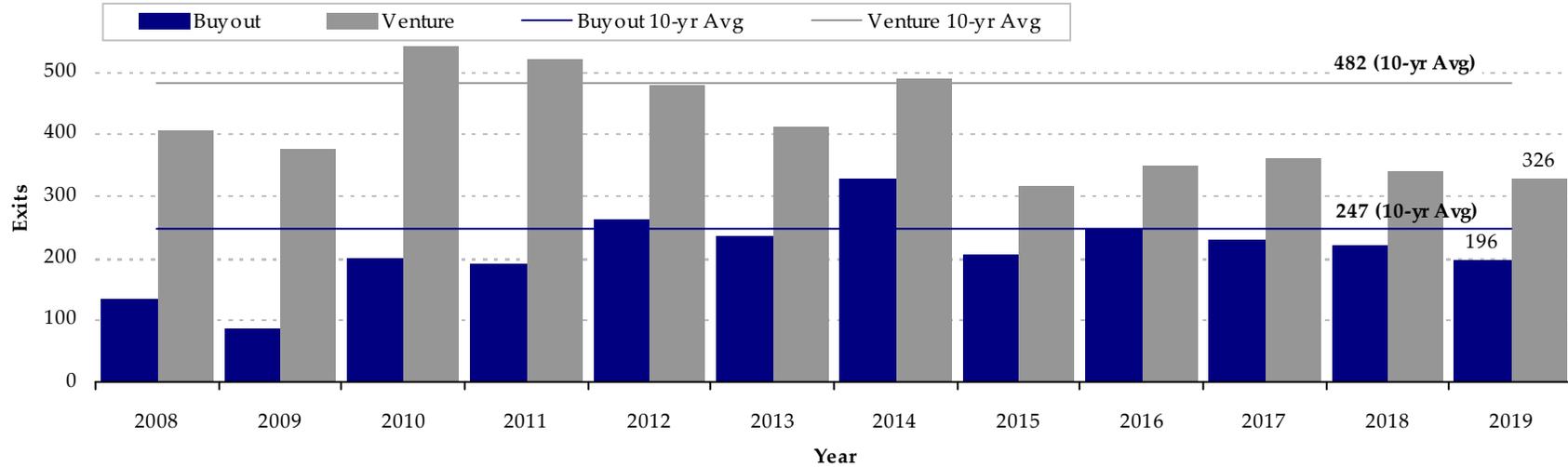


S&P 500 Valuation and Earnings

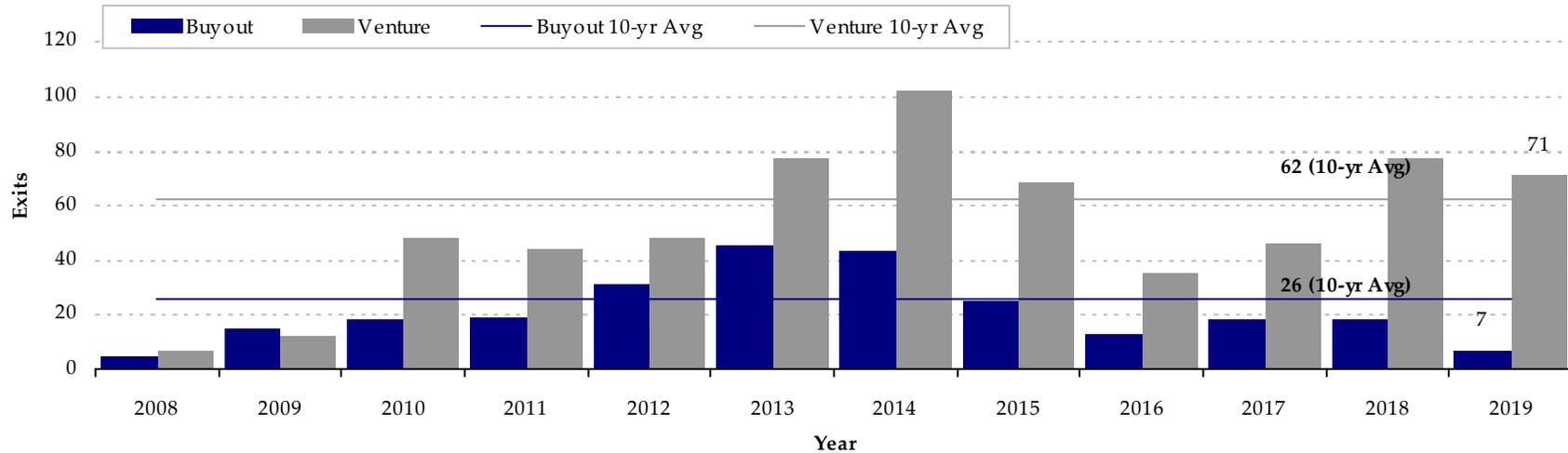


Source: Standard & Poor's Leveraged Commentary.

U.S. Mergers and Acquisitions



U.S. Initial Public Offerings



- Source: Thomson One Private Equity.
- Data compiled through 4Q 2019.

Vintage Returns

Group	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
U.S. All PE Median	12.0%	15.6%	13.7%	14.9%	14.5%	13.1%	14.7%	13.9%	13.7%	11.9%
U.S. All PE Top Quartile	17.7%	22.9%	19.9%	21.2%	19.8%	18.4%	22.7%	21.7%	24.5%	25.5%
U.S. Buyout Median	14.0%	21.0%	16.9%	17.5%	16.8%	14.9%	16.2%	17.5%	12.4%	18.1%
U.S. Buyout Top Quartile	21.0%	26.0%	22.1%	22.8%	22.3%	19.1%	23.4%	23.2%	22.9%	29.8%
U.S. Energy Median	1.7%	8.2%	10.7%	3.4%	1.9%	7.5%	9.8%	9.6%	7.4%	2.4%
U.S. Energy Top Quartile	6.0%	17.8%	28.1%	7.8%	9.8%	20.1%	15.1%	15.6%	11.7%	12.0%
U.S. Real Estate Median	10.0%	15.1%	13.7%	15.9%	11.8%	12.4%	12.0%	11.8%	10.7%	9.0%
U.S. Real Estate Top Quartile	13.2%	19.8%	19.0%	21.0%	17.1%	14.4%	14.7%	15.8%	13.1%	11.5%
U.S. Venture Median	6.9%	12.7%	14.8%	16.7%	15.1%	13.5%	15.0%	14.1%	15.3%	11.0%
U.S. Venture Top Quartile	15.7%	21.2%	25.0%	22.3%	21.2%	20.5%	27.3%	23.3%	29.6%	24.9%

- Source: Cambridge Associates.
- Data compiled through September 30, 2019.

Performance Analysis

Investment Performance by Strategy



Investment	Vintage	Fund Size	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	TVPI	Net IRR
Buyout									
21st Century Group I *	2000	\$80,365,451	25,000,000	27,141,173	0	22,841,928	0	0.8 x	-3.8%
Advent GPE VI-A	2008	\$9,000,000,000	40,000,000	40,167,228	0	78,231,051	6,326,393	2.1 x	16.8%
Altaris Constellation	2017	\$165,000,000	20,000,000	16,225,389	4,766,723	991,694	23,236,035	1.5 x	20.4%
Altaris IV	2018	\$1,085,000,000	24,000,000	11,678,374	12,321,626	0	14,285,381	1.2 x	NMF
Altus Capital II	2010	\$200,000,000	20,000,000	18,479,906	4,381,151	19,259,847	9,004,292	1.5 x	11.9%
American Industrial VI	2016	\$1,845,000,000	20,000,000	21,012,120	2,483,627	3,495,748	22,536,053	1.2 x	11.6%
American Industrial VII	2019	\$3,075,000,000	30,000,000	449,621	29,550,713	334	273,228	0.6 x	NMF
Arlington IV	2016	\$700,000,000	23,000,000	21,673,532	1,326,468	0	28,302,824	1.3 x	19.1%
Arlington V	2019	\$1,692,000,000	25,000,000	328,734	24,671,266	0	125,771	0.4 x	NMF
Boston Ventures VII	2006	\$434,507,010	50,000,000	43,016,769	8,258,947	44,748,285	17,028,731	1.4 x	6.0%
BV IX	2017	\$750,000,000	30,000,000	15,343,227	15,497,125	840,350	17,369,635	1.2 x	19.9%
BV VIII	2012	\$486,800,000	30,000,000	26,447,466	3,833,720	37,441,744	19,831,563	2.2 x	57.0%
Clearlake V	2018	\$3,623,125,000	30,000,000	21,959,798	10,030,689	4,112,526	29,484,727	1.5 x	NMF
Clearlake VI	2020	\$7,068,000,000	30,000,000	0	30,000,000	0	0	N/A	NMF
Court Square III	2012	\$3,173,449,997	40,000,000	42,860,329	2,914,898	26,689,802	42,215,393	1.6 x	20.0%
Cypress MBP II *	1999	\$2,376,060,606	50,000,000	52,304,562	0	50,840,220	0	1.0 x	-0.5%
DLJ MBP III *	2000	\$5,304,941,647	200,000,000	215,345,711	0	458,746,671	0	2.1 x	19.4%
Doughty Hanson III *	1997	\$2,660,000,000	100,000,000	99,374,207	0	197,482,184	0	2.0 x	13.5%
DW Healthcare III	2012	\$268,147,500	40,000,000	35,694,363	4,305,637	40,738,290	26,253,818	1.9 x	19.3%
DW Healthcare IV	2016	\$294,274,000	30,000,000	25,957,390	5,571,576	11,273,132	29,957,935	1.6 x	35.3%
DW Healthcare V	2019	\$611,000,000	30,000,000	4,095,647	25,904,353	0	3,523,625	0.9 x	NMF
FP CF Access	2020	\$100,000,000	30,000,000	0	30,000,000	0	0	N/A	NMF
FP Intl 2011	2011	\$45,000,000	25,000,000	23,001,840	2,278,685	15,420,647	17,513,133	1.4 x	8.4%
FP Intl 2012	2012	\$70,000,000	25,000,000	16,426,600	8,742,680	6,790,585	15,098,247	1.3 x	8.9%
FP Intl 2013	2013	\$97,000,000	20,000,000	13,093,700	7,028,550	1,806,973	15,970,634	1.4 x	9.2%
FP Intl 2014	2014	\$97,000,000	25,000,000	14,690,610	10,408,013	5,553,176	16,723,258	1.5 x	17.4%
FP Intl 2015	2015	\$113,000,000	25,000,000	14,513,344	10,567,615	976,174	16,974,770	1.2 x	11.1%
FP Intl 2016	2016	\$97,000,000	25,000,000	13,659,794	11,431,902	1,095,238	16,161,622	1.3 x	13.3%
FP Intl 2017	2017	\$98,000,000	25,000,000	9,693,877	15,401,419	0	12,882,530	1.3 x	25.2%
FP Intl 2018	2018	\$65,500,000	25,000,000	5,343,511	19,782,134	0	4,928,497	0.9 x	NMF
FP Intl 2019	2019	\$70,500,000	30,000,000	425,532	29,654,881	0	235,841	0.6 x	NMF
HMTF III *	1996	\$2,458,754,795	76,743,018	76,799,039	0	87,834,289	0	1.1 x	1.8%
HMTF IV *	1998	\$4,023,532,721	100,000,000	98,010,015	0	67,130,479	0	0.7 x	-6.1%
HMTF V *	2000	\$1,552,965,194	207,366,433	205,198,451	0	378,102,491	0	1.8 x	17.6%
JF Lehman III	2011	\$575,500,000	39,000,000	43,513,187	5,812,626	36,058,155	34,211,508	1.6 x	12.9%
JF Lehman IV	2016	\$833,000,000	30,000,000	24,731,562	5,268,439	11,401,706	34,683,367	1.9 x	34.2%

Investment Performance by Strategy



Investment	Vintage	Fund Size	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	TVPI	Net IRR
JF Lehman V	2020	\$1,000,000,000	30,000,000	0	30,000,000	0	0	N/A	NMF
Mason Wells III	2010	\$525,000,000	30,000,000	28,553,580	1,446,420	68,546,055	7,234,273	2.7 x	19.3%
Oak Hill I *	1999	\$1,600,000,000	50,000,000	50,786,497	0	91,264,962	0	1.8 x	10.6%
One Rock II	2017	\$964,000,000	30,000,000	21,546,254	8,453,746	0	24,314,208	1.1 x	11.2%
Riverside IV	2009	\$406,091,370	40,000,000	31,433,665	10,099,013	72,962,455	1,918,306	2.4 x	21.4%
Riverside V	2013	\$561,224,490	35,000,000	33,220,137	3,574,280	24,247,705	20,940,266	1.4 x	8.8%
Riverside VI	2019	\$327,916,667	30,000,000	5,039,698	24,960,302	0	3,488,160	0.7 x	NMF
Second Cinven *	1998	£904,547,000	65,281,010	65,281,010	0	104,700,661	0	1.6 x	9.3%
Siris III	2015	\$1,810,000,000	25,000,000	27,225,659	7,155,449	16,198,542	16,949,611	1.2 x	11.6%
Siris IV	2019	\$3,452,454,000	30,000,000	13,889,558	16,110,442	0	16,106,312	1.2 x	NMF
SK Capital V	2018	\$2,013,000,000	30,000,000	8,423,852	21,576,148	10,490	8,316,421	1.0 x	NMF
Thoma Bravo Discover	2016	\$1,074,000,000	10,000,000	11,350,409	1,767,370	9,155,280	12,794,735	1.9 x	34.7%
Thoma Bravo Discover II	2018	\$2,402,685,000	17,000,000	8,625,362	8,374,638	0	8,713,729	1.0 x	NMF
Thoma Bravo XI	2014	\$3,662,000,000	20,000,000	20,862,528	2,058,676	23,483,943	35,336,752	2.8 x	30.2%
Thoma Bravo XII	2016	\$7,603,860,000	30,000,000	29,270,901	2,230,932	1,503,987	41,983,491	1.5 x	19.3%
Thoma Bravo XIII	2019	\$12,575,745,000	30,000,000	10,831,104	19,168,896	121	11,673,148	1.1 x	NMF
Vista Equity III	2007	\$1,287,129,725	50,000,000	54,230,289	4,000,393	127,483,122	4,700,772	2.4 x	28.6%
Vista Foundation II	2013	\$1,145,000,000	15,000,000	15,365,897	7,768,739	10,905,347	16,553,705	1.8 x	16.7%
Vista Foundation III	2016	\$2,950,561,226	30,000,000	24,386,447	5,651,268	4,739	32,080,718	1.3 x	17.7%
Wellspring V	2011	\$1,194,387,756	40,000,000	45,743,660	14,521,493	52,036,509	17,864,395	1.5 x	15.7%
Wicks IV	2011	\$414,000,000	40,000,000	42,059,387	4,748,289	46,498,139	22,836,753	1.6 x	17.4%
Total Buyout			2,272,390,461	1,846,782,501	535,861,957	2,258,905,777	778,944,565	1.6 x	11.2%
Distressed Debt									
Castlelake II	2011	\$996,762,000	35,000,000	32,656,036	2,625,461	27,537,421	16,783,640	1.4 x	6.3%
Castlelake III	2014	\$1,421,000,000	25,000,000	23,149,741	1,864,884	14,340,110	17,823,937	1.4 x	7.8%
Tennenbaum VI	2010	\$530,000,000	40,000,000	38,075,687	18,845,283	37,569,103	12,138,341	1.3 x	6.3%
Total Distressed Debt			100,000,000	93,881,464	23,335,628	79,446,634	46,745,918	1.3 x	6.6%
Growth Equity									
LLR III	2008	\$803,000,000	50,000,000	48,504,590	4,357,033	85,370,014	9,818,941	2.0 x	15.2%
TA XI	2010	\$4,000,100,000	40,000,000	39,300,000	700,000	75,491,707	24,726,352	2.6 x	23.3%
Total Growth Equity			90,000,000	87,804,590	5,057,033	160,861,721	34,545,293	2.2 x	18.4%

Investment Performance by Strategy



Investment	Vintage	Fund Size	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	TVPI	Net IRR
Hard Assets									
EnCap IX	2013	\$5,154,639,175	25,000,000	28,215,982	1,537,622	21,343,911	12,848,704	1.2 x	8.1%
EnCap VIII	2010	\$3,608,247,422	47,500,000	52,253,424	2,087,574	31,031,849	9,870,521	0.8 x	-8.1%
EnCap X	2015	\$6,701,030,928	30,000,000	26,999,097	4,982,947	5,587,562	26,620,005	1.2 x	8.4%
EnCap XI	2017	\$6,961,190,722	35,000,000	10,342,507	24,657,493	0	8,232,021	0.8 x	-24.6%
GTLA Holdings	2018	\$20,000,000	20,000,000	20,000,000	0	0	20,000,000	1.0 x	NMF
Highland Contingent Note	2018	\$150,000,000	0	0	0	15,000,000	0	N/A	NMF
Highland Equity	2016	\$25,000,000	25,000,000	25,000,000	0	181,250	25,420,000	1.0 x	0.7%
Highland Note	2017	\$26,000,000	26,000,000	41,870,000	0	16,493,275	28,630,598	1.1 x	6.0%
Highland Note 2020	2019	\$15,000,000	14,000,000	14,000,000	0	0	14,000,000	1.0 x	NMF
Lime Rock Resources III	2014	\$762,000,000	25,000,000	25,512,829	383,791	4,687,078	18,372,703	0.9 x	-2.3%
NGP IX	2007	\$4,000,000,000	50,000,000	54,215,131	201,825	76,326,171	1,051,373	1.4 x	10.8%
NGP X	2012	\$3,586,000,000	35,000,000	35,558,356	1,135,374	28,816,645	7,739,010	1.0 x	0.9%
NGP XI	2014	\$5,325,000,000	30,000,000	28,378,281	2,935,705	8,766,659	24,711,381	1.2 x	7.2%
NGP XII	2017	\$4,304,081,633	30,000,000	14,044,906	15,955,094	99,132	13,799,007	1.0 x	-0.9%
Total Hard Assets			392,500,000	376,390,513	53,877,425	208,333,532	211,295,323	1.1 x	4.5%
Infrastructure									
Big River - Equity	2014	\$93,090,000	93,090,000	93,090,000	0	19,160,000	327,000,000	3.7 x	27.4%
Big River - Equity Phase II	2019	\$58,000,000	58,000,000	58,000,000	0	0	58,295,562	1.0 x	NMF
Big River - Funding *	2017	\$3,750,000	3,750,000	3,750,000	0	3,812,795	0	1.0 x	4.3%
Big River - Holdings Note *	2017	\$12,000,000	12,000,000	12,000,000	0	13,343,726	0	1.1 x	11.0%
Big River - Holdings Note 2023	2018	\$12,000,000	12,000,000	12,000,000	0	0	12,871,433	1.1 x	NMF
Big River - Holdings Note 2023-2	2018	\$5,150,000	5,150,000	5,150,000	0	62,323	5,397,380	1.1 x	NMF
Big River - Preferred Equity *	2017	\$41,980,449	41,980,449	41,980,449	0	51,702,368	0	1.2 x	12.5%
Big River - Sr Secured Debt *	2015	\$26,910,000	26,910,000	26,966,221	0	35,699,565	0	1.3 x	14.7%
Blue Oak Arkansas *	2014	\$18,000,000	18,000,000	19,740,000	0	4,717,993	0	0.2 x	-50.5%
Total Infrastructure			270,880,449	272,676,670	0	128,498,770	403,564,375	2.0 x	21.7%

Investment Performance by Strategy



Investment	Vintage	Fund Size	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	TVPI	Net IRR
Mezzanine									
Audax Mezzanine III	2011	\$1,002,250,000	25,000,000	23,938,667	6,675,000	27,289,020	4,400,338	1.3 x	9.9%
Big River - Mezzanine *	2014	\$5,000,000	5,000,000	5,003,686	0	8,225,290	0	1.6 x	17.3%
Blackstone Mezzanine I *	1999	\$1,141,000,000	100,000,000	73,353,517	0	96,729,026	0	1.3 x	10.2%
DLJ Investment II *	1999	\$1,600,000,000	80,000,000	43,611,022	0	60,455,204	0	1.4 x	10.3%
Greyrock IV	2017	\$275,000,000	30,000,000	23,104,999	8,030,987	3,783,831	21,895,532	1.1 x	8.0%
Insight Mezzanine I	2009	\$94,678,011	10,000,000	9,928,853	522,124	9,779,671	3,667,247	1.4 x	6.7%
Total Mezzanine			250,000,000	178,940,744	15,228,111	206,262,043	29,963,117	1.3 x	10.1%
Multi-Strategy									
ATRS-FP PE	2012	\$265,516,382	263,823,718	234,007,257	118,974,129	127,912,320	202,917,770	1.4 x	14.0%
CSFB-ATRS 2005-1 Series	2005	\$252,525,253	250,000,000	280,325,864	7,921,211	376,140,683	51,389,294	1.5 x	7.6%
CSFB-ATRS 2006-1 Series	2006	\$406,331,658	404,300,000	408,655,870	59,339,533	569,952,030	83,379,699	1.6 x	9.9%
DH Tech I	2000	\$236,700,000	50,000,000	61,471,034	0	20,543,107	403,576	0.3 x	-22.5%
Diamond State *	1999	\$46,000,000	2,000,000	2,000,000	0	3,097,200	0	1.5 x	5.5%
Diamond State II	2007	\$25,361,350	4,000,000	3,517,000	483,000	3,172,000	5,293,052	2.4 x	10.6%
Total Multi-Strategy			974,123,718	989,977,024	186,717,873	1,100,817,340	343,383,391	1.5 x	7.6%
Special Assets									
WNG II	2019	\$438,350,000	30,000,000	8,497,598	21,502,402	3,195	7,535,540	0.9 x	NMF
Total Special Assets			30,000,000	8,497,598	21,502,402	3,195	7,535,540	0.9 x	NMF
Structured Capital									
Bison V	2017	\$384,132,653	35,000,000	20,268,407	19,471,701	7,316,665	15,846,924	1.1 x	10.5%
Levine Leichtman V	2013	\$1,644,081,633	20,000,000	24,432,083	3,866,741	16,110,316	18,589,026	1.4 x	12.7%
PineBridge Structured III	2016	\$600,000,000	30,000,000	23,892,330	10,984,421	4,965,677	13,536,035	0.8 x	-15.7%
Total Structured Capital			85,000,000	68,592,821	34,322,863	28,392,658	47,971,985	1.1 x	5.7%

Investment Performance by Strategy



Investment	Vintage	Fund Size	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	TVPI	Net IRR
Turnaround									
Atlas Capital II	2014	\$900,000,000	15,000,000	18,302,559	5,165,832	11,934,548	13,787,929	1.4 x	20.7%
Insight Equity II	2009	\$429,735,291	30,000,000	30,345,986	1,566,669	24,807,229	25,799,577	1.7 x	10.3%
KPS III Supplemental	2009	\$816,326,531	40,000,000	37,763,491	16,118,021	80,019,827	312,218	2.1 x	22.8%
KPS IV	2014	\$3,571,428,571	25,000,000	19,152,436	5,471,515	5,488,365	18,000,100	1.2 x	16.8%
KPS Mid-Market I	2019	\$1,020,408,163	20,000,000	1,759,863	18,240,137	0	1,690,053	1.0 x	NMF
KPS V	2020	\$6,000,000,000	30,000,000	0	30,000,000	0	0	N/A	NMF
Sycamore Partners II	2014	\$2,700,000,000	25,000,000	21,842,009	4,284,733	8,615,321	15,815,238	1.1 x	5.2%
Sycamore Partners III	2018	\$4,870,000,000	25,000,000	3,389,449	21,610,551	0	2,130,769	0.6 x	NMF
Total Turnaround			210,000,000	132,555,793	102,457,458	130,865,289	77,535,884	1.6 x	15.8%
Venture Capital									
FP Venture 2008	2008	\$102,000,000	30,000,000	29,733,510	415,192	39,073,163	25,443,721	2.2 x	15.2%
FP Venture 2009	2009	\$58,000,000	25,000,000	24,329,950	848,161	37,633,517	22,557,052	2.5 x	18.0%
FP Venture 2010	2010	\$80,000,000	25,000,000	15,890,625	1,722,207	9,551,451	28,866,154	2.4 x	16.8%
FP Venture 2011	2011	\$70,000,000	25,000,000	24,107,625	1,048,349	21,812,459	80,760,531	4.3 x	33.8%
FP Venture 2012	2012	\$80,000,000	25,000,000	21,718,750	3,392,442	15,620,847	36,207,882	2.4 x	21.0%
FP Venture 2013	2013	\$87,000,000	20,000,000	17,425,662	2,644,254	6,897,662	33,529,184	2.3 x	25.5%
FP Venture 2014	2014	\$93,000,000	25,000,000	23,387,340	1,685,889	4,497,526	39,011,116	1.9 x	19.3%
FP Venture 2015	2015	\$113,000,000	25,000,000	22,234,620	2,840,277	997,938	30,747,099	1.4 x	16.6%
FP Venture 2016	2016	\$82,000,000	25,000,000	15,945,122	9,134,969	396,634	21,444,687	1.4 x	20.6%
FP Venture 2017	2017	\$113,000,000	25,000,000	8,340,708	16,710,223	271,619	10,378,273	1.3 x	27.8%
FP Venture 2018	2018	\$80,500,000	25,000,000	6,490,683	18,574,211	217	6,198,856	1.0 x	NMF
FP Venture 2019	2019	\$80,500,000	30,000,000	3,726,708	26,314,838	23,600	3,461,650	0.9 x	NMF
Total Venture Capital			305,000,000	213,331,303	85,331,012	136,776,633	338,606,205	2.2 x	20.6%
Total Portfolio			4,979,894,628	4,269,431,022	1,063,691,763	4,439,163,590	2,320,091,596	1.6 x	10.9%

- Remaining Value is defined as the investor's value as reported by the fund's manager.
- TVPI is the ratio of Distributed Capital plus Remaining Value to Contributed Capital.
- Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Remaining Value as of the Report Date, net of fees and expenses, including late closing interest.
- An asterisk indicates an investment that is fully liquidated, if applicable.
- Commitments made in a foreign currency have been converted into U.S. dollars using an exchange rate as of the Report Date, if applicable.

Investment Performance by Vintage Year



Investment	Strategy	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	TVPI	Net IRR
1996								
HMTF III *	Buyout	76,743,018	76,799,039	0	87,834,289	0	1.1 x	1.8%
Total 1996		76,743,018	76,799,039	0	87,834,289	0	1.1 x	1.8%
1997								
Doughty Hanson III *	Buyout	100,000,000	99,374,207	0	197,482,184	0	2.0 x	13.5%
Total 1997		100,000,000	99,374,207	0	197,482,184	0	2.0 x	13.5%
1998								
HMTF IV *	Buyout	100,000,000	98,010,015	0	67,130,479	0	0.7 x	-6.1%
Second Cinven *	Buyout	65,281,010	65,281,010	0	104,700,661	0	1.6 x	9.3%
Total 1998		165,281,010	163,291,025	0	171,831,140	0	1.1 x	0.9%
1999								
Blackstone Mezzanine I *	Mezzanine	100,000,000	73,353,517	0	96,729,026	0	1.3 x	10.2%
Cypress MBP II *	Buyout	50,000,000	52,304,562	0	50,840,220	0	1.0 x	-0.5%
Diamond State *	Multi-Strategy	2,000,000	2,000,000	0	3,097,200	0	1.5 x	5.5%
DLJ Investment II *	Mezzanine	80,000,000	43,611,022	0	60,455,204	0	1.4 x	10.3%
Oak Hill I *	Buyout	50,000,000	50,786,497	0	91,264,962	0	1.8 x	10.6%
Total 1999		282,000,000	222,055,598	0	302,386,613	0	1.4 x	7.7%
2000								
21st Century Group I *	Buyout	25,000,000	27,141,173	0	22,841,928	0	0.8 x	-3.8%
DH Tech I	Multi-Strategy	50,000,000	61,471,034	0	20,543,107	403,576	0.3 x	-22.5%
DLJ MBP III *	Buyout	200,000,000	215,345,711	0	458,746,671	0	2.1 x	19.4%
HMTF V *	Buyout	207,366,433	205,198,451	0	378,102,491	0	1.8 x	17.6%
Total 2000		482,366,433	509,156,369	0	880,234,197	403,576	1.7 x	14.8%
2005								
CSFB-ATRS 2005-1 Series	Multi-Strategy	250,000,000	280,325,864	7,921,211	376,140,683	51,389,294	1.5 x	7.6%
Total 2005		250,000,000	280,325,864	7,921,211	376,140,683	51,389,294	1.5 x	7.6%

Investment Performance by Vintage Year



Investment	Strategy	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	TVPI	Net IRR
2006								
Boston Ventures VII	Buyout	50,000,000	43,016,769	8,258,947	44,748,285	17,028,731	1.4 x	6.0%
CSFB-ATRS 2006-1 Series	Multi-Strategy	404,300,000	408,655,870	59,339,533	569,952,030	83,379,699	1.6 x	9.9%
Total 2006		454,300,000	451,672,639	67,598,480	614,700,315	100,408,430	1.6 x	9.4%
2007								
Diamond State II	Multi-Strategy	4,000,000	3,517,000	483,000	3,172,000	5,293,052	2.4 x	10.6%
NGP IX	Hard Assets	50,000,000	54,215,131	201,825	76,326,171	1,051,373	1.4 x	10.8%
Vista Equity III	Buyout	50,000,000	54,230,289	4,000,393	127,483,122	4,700,772	2.4 x	28.6%
Total 2007		104,000,000	111,962,420	4,685,218	206,981,293	11,045,197	1.9 x	20.5%
2008								
Advent GPE VI-A	Buyout	40,000,000	40,167,228	0	78,231,051	6,326,393	2.1 x	16.8%
FP Venture 2008	Venture Capital	30,000,000	29,733,510	415,192	39,073,163	25,443,721	2.2 x	15.2%
LLR III	Growth Equity	50,000,000	48,504,590	4,357,033	85,370,014	9,818,941	2.0 x	15.2%
Total 2008		120,000,000	118,405,328	4,772,225	202,674,228	41,589,055	2.1 x	15.8%
2009								
FP Venture 2009	Venture Capital	25,000,000	24,329,950	848,161	37,633,517	22,557,052	2.5 x	18.0%
Insight Equity II	Turnaround	30,000,000	30,345,986	1,566,669	24,807,229	25,799,577	1.7 x	10.3%
Insight Mezzanine I	Mezzanine	10,000,000	9,928,853	522,124	9,779,671	3,667,247	1.4 x	6.7%
KPS III Supplemental	Turnaround	40,000,000	37,763,491	16,118,021	80,019,827	312,218	2.1 x	22.8%
Riverside IV	Buyout	40,000,000	31,433,665	10,099,013	72,962,455	1,918,306	2.4 x	21.4%
Total 2009		145,000,000	133,801,945	29,153,988	225,202,699	54,254,400	2.1 x	17.6%
2010								
Altus Capital II	Buyout	20,000,000	18,479,906	4,381,151	19,259,847	9,004,292	1.5 x	11.9%
EnCap VIII	Hard Assets	47,500,000	52,253,424	2,087,574	31,031,849	9,870,521	0.8 x	-8.1%
FP Venture 2010	Venture Capital	25,000,000	15,890,625	1,722,207	9,551,451	28,866,154	2.4 x	16.8%
Mason Wells III	Buyout	30,000,000	28,553,580	1,446,420	68,546,055	7,234,273	2.7 x	19.3%
TA XI	Growth Equity	40,000,000	39,300,000	700,000	75,491,707	24,726,352	2.6 x	23.3%
Tennenbaum VI	Distressed Debt	40,000,000	38,075,687	18,845,283	37,569,103	12,138,341	1.3 x	6.3%
Total 2010		202,500,000	192,553,222	29,182,635	241,450,012	91,839,933	1.7 x	13.2%

Investment Performance by Vintage Year



Investment	Strategy	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	TVPI	Net IRR
2011								
Audax Mezzanine III	Mezzanine	25,000,000	23,938,667	6,675,000	27,289,020	4,400,338	1.3 x	9.9%
Castlelake II	Distressed Debt	35,000,000	32,656,036	2,625,461	27,537,421	16,783,640	1.4 x	6.3%
FP Intl 2011	Buyout	25,000,000	23,001,840	2,278,685	15,420,647	17,513,133	1.4 x	8.4%
FP Venture 2011	Venture Capital	25,000,000	24,107,625	1,048,349	21,812,459	80,760,531	4.3 x	33.8%
JF Lehman III	Buyout	39,000,000	43,513,187	5,812,626	36,058,155	34,211,508	1.6 x	12.9%
Wellspring V	Buyout	40,000,000	45,743,660	14,521,493	52,036,509	17,864,395	1.5 x	15.7%
Wicks IV	Buyout	40,000,000	42,059,387	4,748,289	46,498,139	22,836,753	1.6 x	17.4%
Total 2011		229,000,000	235,020,401	37,709,903	226,652,350	194,370,298	1.8 x	15.8%
2012								
ATRS-FP PE	Multi-Strategy	263,823,718	234,007,257	118,974,129	127,912,320	202,917,770	1.4 x	14.0%
BV VIII	Buyout	30,000,000	26,447,466	3,833,720	37,441,744	19,831,563	2.2 x	57.0%
Court Square III	Buyout	40,000,000	42,860,329	2,914,898	26,689,802	42,215,393	1.6 x	20.0%
DW Healthcare III	Buyout	40,000,000	35,694,363	4,305,637	40,738,290	26,253,818	1.9 x	19.3%
FP Intl 2012	Buyout	25,000,000	16,426,600	8,742,680	6,790,585	15,098,247	1.3 x	8.9%
FP Venture 2012	Venture Capital	25,000,000	21,718,750	3,392,442	15,620,847	36,207,882	2.4 x	21.0%
NGP X	Hard Assets	35,000,000	35,558,356	1,135,374	28,816,645	7,739,010	1.0 x	0.9%
Total 2012		458,823,718	412,713,121	143,298,880	284,010,233	350,263,683	1.5 x	16.0%
2013								
EnCap IX	Hard Assets	25,000,000	28,215,982	1,537,622	21,343,911	12,848,704	1.2 x	8.1%
FP Intl 2013	Buyout	20,000,000	13,093,700	7,028,550	1,806,973	15,970,634	1.4 x	9.2%
FP Venture 2013	Venture Capital	20,000,000	17,425,662	2,644,254	6,897,662	33,529,184	2.3 x	25.5%
Levine Leichtman V	Structured Capital	20,000,000	24,432,083	3,866,741	16,110,316	18,589,026	1.4 x	12.7%
Riverside V	Buyout	35,000,000	33,220,137	3,574,280	24,247,705	20,940,266	1.4 x	8.8%
Vista Foundation II	Buyout	15,000,000	15,365,897	7,768,739	10,905,347	16,553,705	1.8 x	16.7%
Total 2013		135,000,000	131,753,462	26,420,186	81,311,913	118,431,519	1.5 x	13.3%

Investment Performance by Vintage Year



Investment	Strategy	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	TVPI	Net IRR
2014								
Atlas Capital II	Turnaround	15,000,000	18,302,559	5,165,832	11,934,548	13,787,929	1.4 x	20.7%
Big River - Equity	Infrastructure	93,090,000	93,090,000	0	19,160,000	327,000,000	3.7 x	27.4%
Big River - Mezzanine *	Mezzanine	5,000,000	5,003,686	0	8,225,290	0	1.6 x	17.3%
Blue Oak Arkansas *	Infrastructure	18,000,000	19,740,000	0	4,717,993	0	0.2 x	-50.5%
Castlelake III	Distressed Debt	25,000,000	23,149,741	1,864,884	14,340,110	17,823,937	1.4 x	7.8%
FP Intl 2014	Buyout	25,000,000	14,690,610	10,408,013	5,553,176	16,723,258	1.5 x	17.4%
FP Venture 2014	Venture Capital	25,000,000	23,387,340	1,685,889	4,497,526	39,011,116	1.9 x	19.3%
KPS IV	Turnaround	25,000,000	19,152,436	5,471,515	5,488,365	18,000,100	1.2 x	16.8%
Lime Rock Resources III	Hard Assets	25,000,000	25,512,829	383,791	4,687,078	18,372,703	0.9 x	-2.3%
NGP XI	Hard Assets	30,000,000	28,378,281	2,935,705	8,766,659	24,711,381	1.2 x	7.2%
Sycamore Partners II	Turnaround	25,000,000	21,842,009	4,284,733	8,615,321	15,815,238	1.1 x	5.2%
Thoma Bravo XI	Buyout	20,000,000	20,862,528	2,058,676	23,483,943	35,336,752	2.8 x	30.2%
Total 2014		331,090,000	313,112,019	34,259,038	119,470,008	526,582,414	2.1 x	19.5%
2015								
Big River - Sr Secured Debt *	Infrastructure	26,910,000	26,966,221	0	35,699,565	0	1.3 x	14.7%
EnCap X	Hard Assets	30,000,000	26,999,097	4,982,947	5,587,562	26,620,005	1.2 x	8.4%
FP Intl 2015	Buyout	25,000,000	14,513,344	10,567,615	976,174	16,974,770	1.2 x	11.1%
FP Venture 2015	Venture Capital	25,000,000	22,234,620	2,840,277	997,938	30,747,099	1.4 x	16.6%
Siris III	Buyout	25,000,000	27,225,659	7,155,449	16,198,542	16,949,611	1.2 x	11.6%
Total 2015		131,910,000	117,938,941	25,546,288	59,459,781	91,291,485	1.3 x	12.7%
2016								
American Industrial VI	Buyout	20,000,000	21,012,120	2,483,627	3,495,748	22,536,053	1.2 x	11.6%
Arlington IV	Buyout	23,000,000	21,673,532	1,326,468	0	28,302,824	1.3 x	19.1%
DW Healthcare IV	Buyout	30,000,000	25,957,390	5,571,576	11,273,132	29,957,935	1.6 x	35.3%
FP Intl 2016	Buyout	25,000,000	13,659,794	11,431,902	1,095,238	16,161,622	1.3 x	13.3%
FP Venture 2016	Venture Capital	25,000,000	15,945,122	9,134,969	396,634	21,444,687	1.4 x	20.6%
Highland Equity	Hard Assets	25,000,000	25,000,000	0	181,250	25,420,000	1.0 x	0.7%
JF Lehman IV	Buyout	30,000,000	24,731,562	5,268,439	11,401,706	34,683,367	1.9 x	34.2%
PineBridge Structured III	Structured Capital	30,000,000	23,892,330	10,984,421	4,965,677	13,536,035	0.8 x	-15.7%
Thoma Bravo Discover	Buyout	10,000,000	11,350,409	1,767,370	9,155,280	12,794,735	1.9 x	34.7%
Thoma Bravo XII	Buyout	30,000,000	29,270,901	2,230,932	1,503,987	41,983,491	1.5 x	19.3%
Vista Foundation III	Buyout	30,000,000	24,386,447	5,651,268	4,739	32,080,718	1.3 x	17.7%
Total 2016		278,000,000	236,879,606	55,850,972	43,473,391	278,901,467	1.4 x	16.7%

Investment Performance by Vintage Year



Investment	Strategy	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	TVPI	Net IRR
2017								
Altaris Constellation	Buyout	20,000,000	16,225,389	4,766,723	991,694	23,236,035	1.5 x	20.4%
Big River - Funding *	Infrastructure	3,750,000	3,750,000	0	3,812,795	0	1.0 x	4.3%
Big River - Holdings Note *	Infrastructure	12,000,000	12,000,000	0	13,343,726	0	1.1 x	11.0%
Big River - Preferred Equity *	Infrastructure	41,980,449	41,980,449	0	51,702,368	0	1.2 x	12.5%
Bison V	Structured Capital	35,000,000	20,268,407	19,471,701	7,316,665	15,846,924	1.1 x	10.5%
BV IX	Buyout	30,000,000	15,343,227	15,497,125	840,350	17,369,635	1.2 x	19.9%
EnCap XI	Hard Assets	35,000,000	10,342,507	24,657,493	0	8,232,021	0.8 x	-24.6%
FP Intl 2017	Buyout	25,000,000	9,693,877	15,401,419	0	12,882,530	1.3 x	25.2%
FP Venture 2017	Venture Capital	25,000,000	8,340,708	16,710,223	271,619	10,378,273	1.3 x	27.8%
Greyrock IV	Mezzanine	30,000,000	23,104,999	8,030,987	3,783,831	21,895,532	1.1 x	8.0%
Highland Note	Hard Assets	26,000,000	41,870,000	0	16,493,275	28,630,598	1.1 x	6.0%
NGP XII	Hard Assets	30,000,000	14,044,906	15,955,094	99,132	13,799,007	1.0 x	-0.9%
One Rock II	Buyout	30,000,000	21,546,254	8,453,746	0	24,314,208	1.1 x	11.2%
Total 2017		343,730,449	238,510,723	128,944,511	98,655,455	176,584,763	1.2 x	11.2%
2018								
Altaris IV	Buyout	24,000,000	11,678,374	12,321,626	0	14,285,381	1.2 x	NMF
Big River - Holdings Note 2023	Infrastructure	12,000,000	12,000,000	0	0	12,871,433	1.1 x	NMF
Big River - Holdings Note 2023-2	Infrastructure	5,150,000	5,150,000	0	62,323	5,397,380	1.1 x	NMF
Clearlake V	Buyout	30,000,000	21,959,798	10,030,689	4,112,526	29,484,727	1.5 x	NMF
FP Intl 2018	Buyout	25,000,000	5,343,511	19,782,134	0	4,928,497	0.9 x	NMF
FP Venture 2018	Venture Capital	25,000,000	6,490,683	18,574,211	217	6,198,856	1.0 x	NMF
GTLA Holdings	Hard Assets	20,000,000	20,000,000	0	0	20,000,000	1.0 x	NMF
Highland Contingent Note	Hard Assets	0	0	0	15,000,000	0	N/A	NMF
SK Capital V	Buyout	30,000,000	8,423,852	21,576,148	10,490	8,316,421	1.0 x	NMF
Sycamore Partners III	Turnaround	25,000,000	3,389,449	21,610,551	0	2,130,769	0.6 x	NMF
Thoma Bravo Discover II	Buyout	17,000,000	8,625,362	8,374,638	0	8,713,729	1.0 x	NMF
Total 2018		213,150,000	103,061,029	112,269,997	19,185,556	112,327,193	1.3 x	NMF

Investment Performance by Vintage Year



Investment	Strategy	Committed Capital (\$)	Contributed Capital (\$)	Unfunded Commitment (\$)	Distributed Capital (\$)	Remaining Value (\$)	TVPI	Net IRR
2019								
American Industrial VII	Buyout	30,000,000	449,621	29,550,713	334	273,228	0.6 x	NMF
Arlington V	Buyout	25,000,000	328,734	24,671,266	0	125,771	0.4 x	NMF
Big River - Equity Phase II	Infrastructure	58,000,000	58,000,000	0	0	58,295,562	1.0 x	NMF
DW Healthcare V	Buyout	30,000,000	4,095,647	25,904,353	0	3,523,625	0.9 x	NMF
FP Intl 2019	Buyout	30,000,000	425,532	29,654,881	0	235,841	0.6 x	NMF
FP Venture 2019	Venture Capital	30,000,000	3,726,708	26,314,838	23,600	3,461,650	0.9 x	NMF
Highland Note 2020	Hard Assets	14,000,000	14,000,000	0	0	14,000,000	1.0 x	NMF
KPS Mid-Market I	Turnaround	20,000,000	1,759,863	18,240,137	0	1,690,053	1.0 x	NMF
Riverside VI	Buyout	30,000,000	5,039,698	24,960,302	0	3,488,160	0.7 x	NMF
Siris IV	Buyout	30,000,000	13,889,558	16,110,442	0	16,106,312	1.2 x	NMF
Thoma Bravo XIII	Buyout	30,000,000	10,831,104	19,168,896	121	11,673,148	1.1 x	NMF
WNG II	Special Assets	30,000,000	8,497,598	21,502,402	3,195	7,535,540	0.9 x	NMF
Total 2019		357,000,000	121,044,063	236,078,230	27,250	120,408,889	1.0 x	NMF
2020								
Clearlake VI	Buyout	30,000,000	0	30,000,000	0	0	N/A	NMF
FP CF Access	Buyout	30,000,000	0	30,000,000	0	0	N/A	NMF
JF Lehman V	Buyout	30,000,000	0	30,000,000	0	0	N/A	NMF
KPS V	Turnaround	30,000,000	0	30,000,000	0	0	N/A	NMF
Total 2020		120,000,000	0	120,000,000	0	0	N/A	NMF
Total Portfolio		4,979,894,628	4,269,431,022	1,063,691,763	4,439,163,590	2,320,091,596	1.6 x	10.9%

- Remaining Value is defined as the investor's value as reported by the fund's manager.
- TVPI is the ratio of Distributed Capital plus Remaining Value to Contributed Capital.
- Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Remaining Value as of the Report Date, net of fees and expenses, including late closing interest.
- An asterisk indicates an investment that is fully liquidated, if applicable.
- Commitments made in a foreign currency have been converted into U.S. dollars using an exchange rate as of the Report Date, if applicable.

Performance by Vintage Year and Quartile Group

	1996	1997	1998	1999
1st		○ Doughty Hanson III 13.5%		
2nd			○ Second Cinven 9.3%	○ Oak Hill I 10.6% ○ Diamond State 5.5%
3rd	○ HMTF III 1.8%			
4th			○ HMTF IV -6.1%	○ Cypress MBP II -0.5%

● Venture ○ Non-venture

BOLD = Realized

Performance by Vintage Year and Quartile Group



	2000	2005	2006	2007
1st				○ Vista Equity III 28.6%
2nd	○ DLJ MBP III 19.4% ○ HMTF V 17.6%	○ CSFB-ATRS 2005-1 Series 7.6%	○ CSFB-ATRS 2006-1 Series 9.9%	○ NGP IX 10.8%
3rd			○ Boston Ventures VII 6.0%	○ Diamond State II 10.6%
4th	○ 21st Century Group I -3.8% ○ DH Tech I -22.5%			

● Venture ○ Non-venture

BOLD = Realized

Performance by Vintage Year and Quartile Group



● Venture ○ Non-venture

BOLD = Realized

Performance by Vintage Year and Quartile Group



	2012	2013	2014	2015
1st	<ul style="list-style-type: none"> ○ BV VIII 57.0% 	<ul style="list-style-type: none"> ● FP Venture 2013 25.5% 	<ul style="list-style-type: none"> ○ Thoma Bravo XI 30.2% 	
2nd	<ul style="list-style-type: none"> ● FP Venture 2012 21.0% ○ Court Square III 20.0% ○ DW Healthcare III 19.3% 	<ul style="list-style-type: none"> ○ Vista Foundation II 16.7% ○ EnCap IX 8.1% 	<ul style="list-style-type: none"> ○ Atlas Capital II 20.7% ● FP Venture 2014 19.3% ○ FP Intl 2014 17.4% ○ KPS IV 16.8% 	<ul style="list-style-type: none"> ● FP Venture 2015 16.6%
3rd	<ul style="list-style-type: none"> ○ ATRS-FP PE 14.0% ○ NGP X 0.9% 	<ul style="list-style-type: none"> ○ FP Intl 2013 9.2% 		<ul style="list-style-type: none"> ○ Siris III 11.6% ○ FP Intl 2015 11.1% ○ EnCap X 8.4%
4th	<ul style="list-style-type: none"> ○ FP Intl 2012 8.9% 	<ul style="list-style-type: none"> ○ Riverside V 8.8% 	<ul style="list-style-type: none"> ○ NGP XI 7.2% ○ Sycamore Partners II 5.2% ○ Lime Rock Resources III -2.3% 	

● Venture ○ Non-venture

BOLD = Realized

Performance by Vintage Year and Quartile Group

	2016	2017
1st	<ul style="list-style-type: none"> ○ DW Healthcare IV 35.3% ○ Thoma Bravo Discover 34.7% ○ JF Lehman IV 34.2% 	<ul style="list-style-type: none"> ● FP Venture 2017 27.8%
2nd	<ul style="list-style-type: none"> ● FP Venture 2016 20.6% ○ Thoma Bravo XII 19.3% ○ Arlington IV 19.1% ○ Vista Foundation III 17.7% ○ FP Intl 2016 13.3% 	<ul style="list-style-type: none"> ○ FP Intl 2017 25.2% ○ Altaris Constellation 20.4% ○ BV IX 19.9%
3rd	<ul style="list-style-type: none"> ○ American Industrial VI 11.6% 	<ul style="list-style-type: none"> ○ One Rock II 11.2%
4th		<ul style="list-style-type: none"> ○ NGP XII -0.9% ○ EnCap XI -24.6%

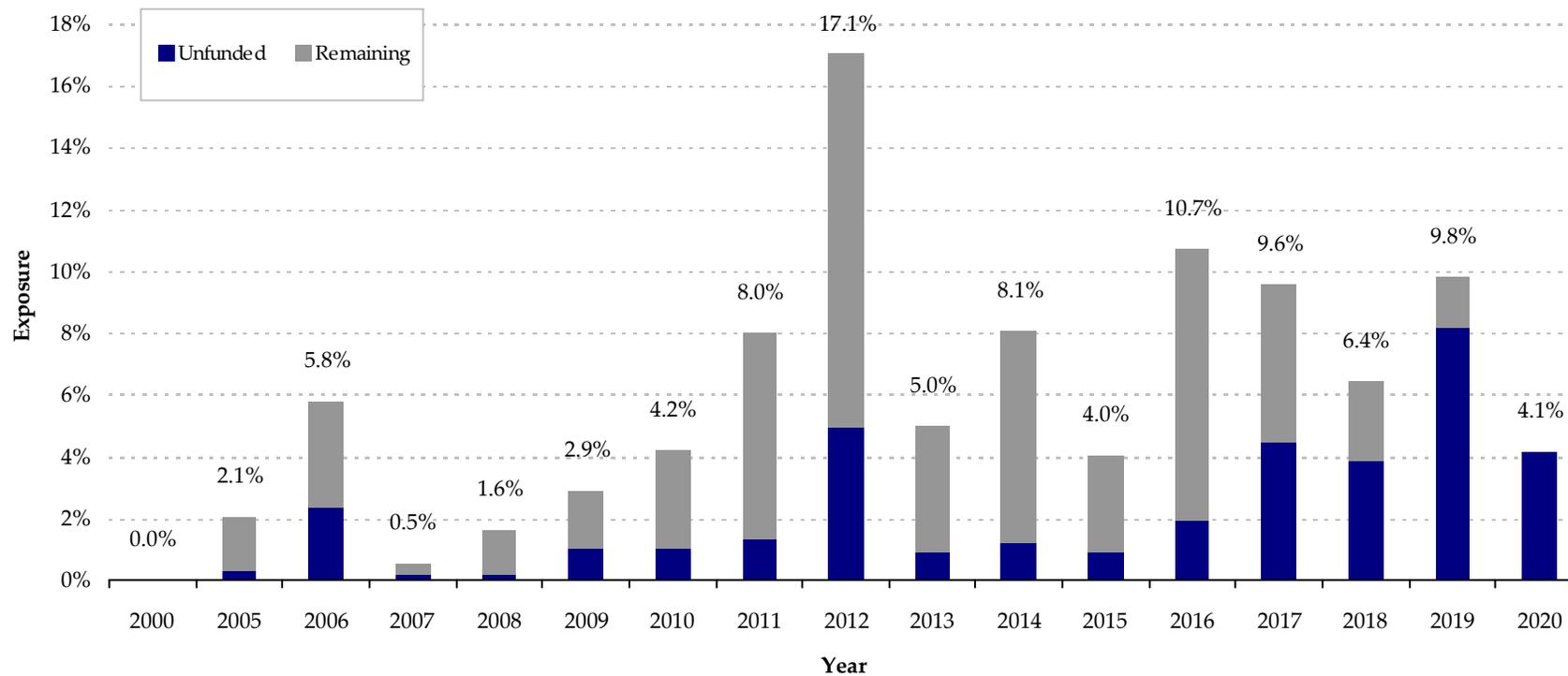
● Venture ○ Non-venture

BOLD = Realized

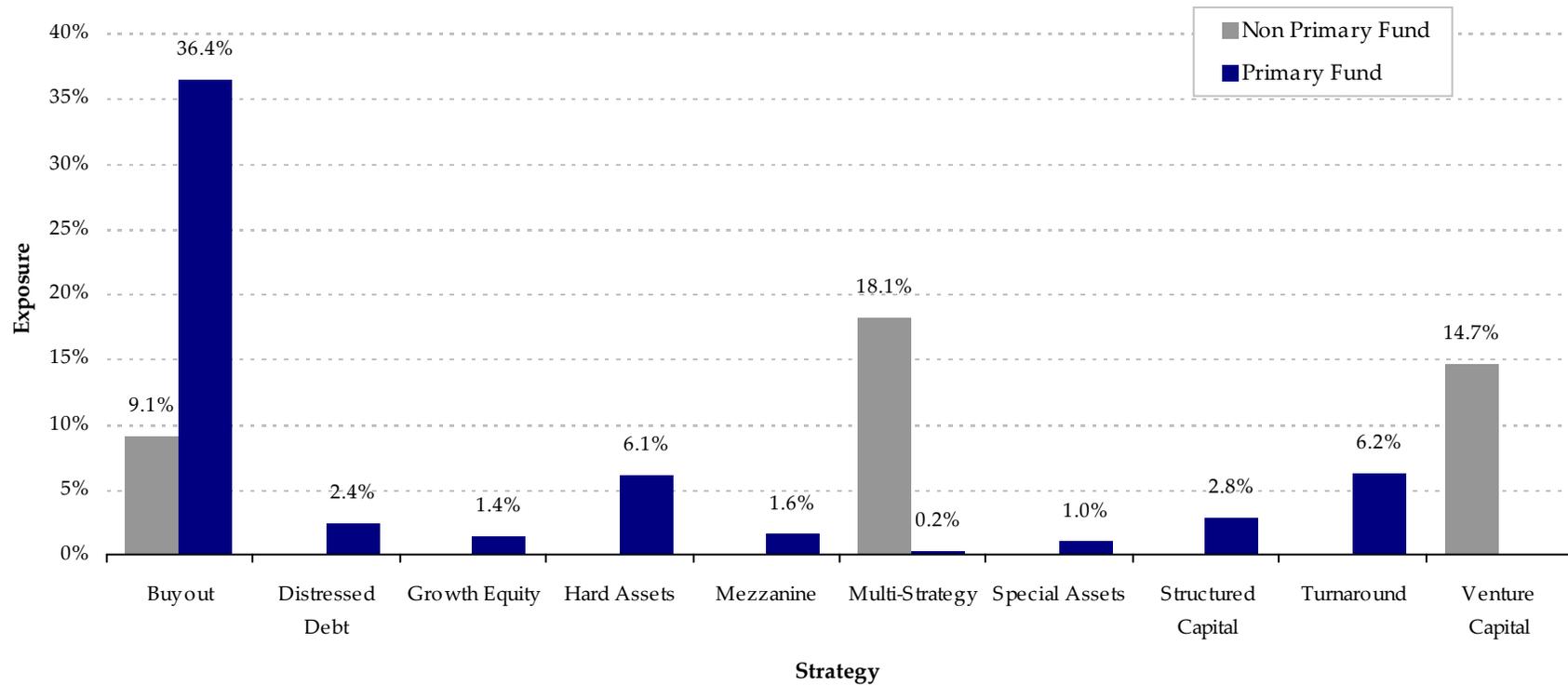
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- The analysis compares each fund's Net IRR versus its respective peer group by vintage year and strategy. Funds with a corporate finance strategy, excluding private debt, are compared to Cambridge Associates, U.S. Buyout. Funds with a venture capital strategy are compared to Cambridge Associates, U.S. Venture Capital. Multi-strategy funds are compared to data compiled by Cambridge Associates for funds across multiple strategies including U.S. Buyout, Growth Equity, Venture Capital, Mezzanine, Distressed, Fund-of-Funds, and Secondary Funds. Funds with a hard assets strategy are compared to Cambridge Associates, U.S. Private Equity Energy. Funds with a real estate strategy are compared to Cambridge Associates, U.S. Real Estate. Benchmark data is not available for funds with a private debt strategy.
 - The analysis excludes the two most recent vintage years, as fund performance is deemed not yet meaningful (NMF).
 - Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Remaining Value as of the Report Date, net of fees and expenses, including late closing interest.
 - Benchmark data was compiled from Cambridge Associates as of September 30, 2019. Hard Assets benchmark data for Vintage Years prior to 2005 is not available.

Diversification Analysis

Exposure By Vintage Year



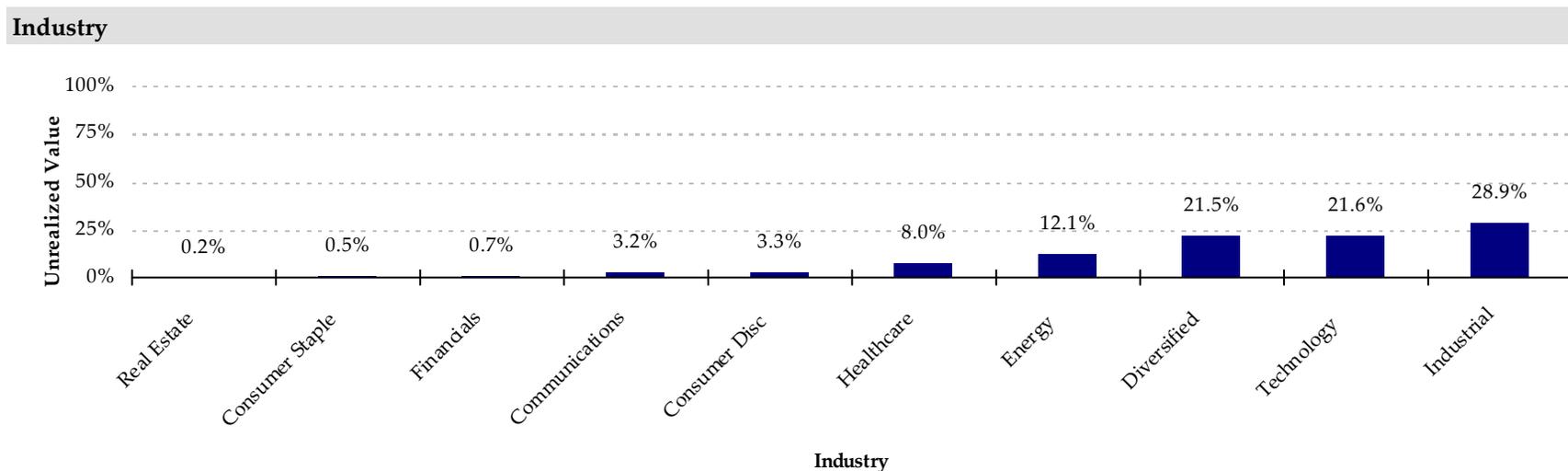
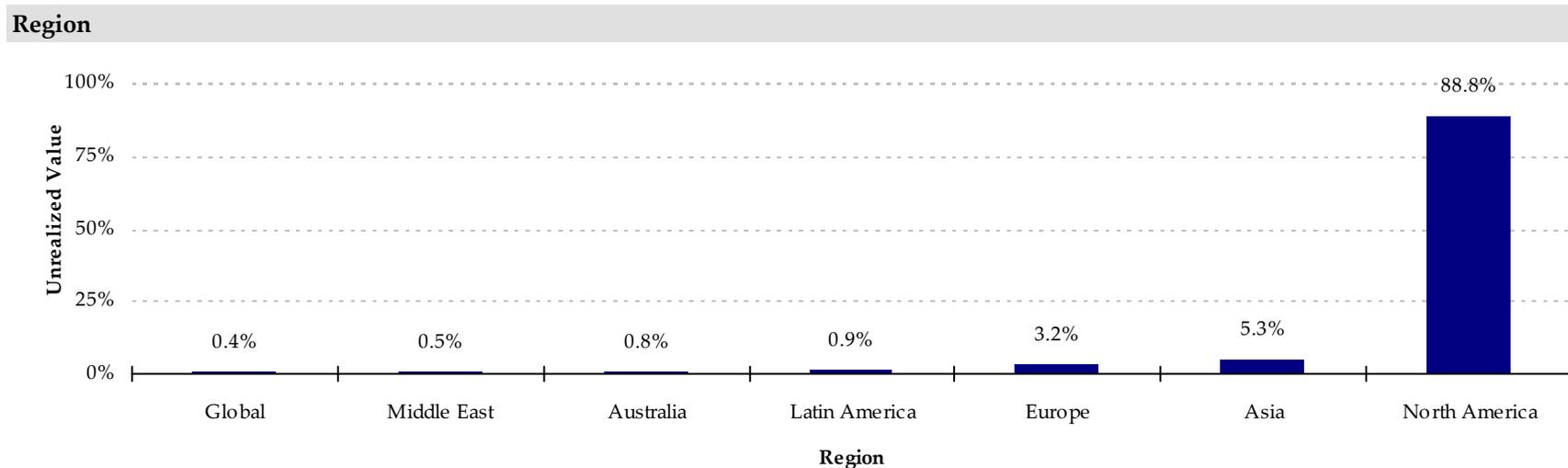
- Exposure is defined as the sum of the investor's Remaining Value plus Unfunded Commitment.
- Data includes commitments through the Report Date.



◦ Exposure is defined as the sum of the investor's Remaining Value plus Unfunded Commitment.

◦ Primary Fund represents interests in private equity funds acquired directly from the seller (i.e. fund manager). Non Primary Fund represents interests in private equity funds acquired through a commitment to a fund-of-funds or secondary fund-of-funds.

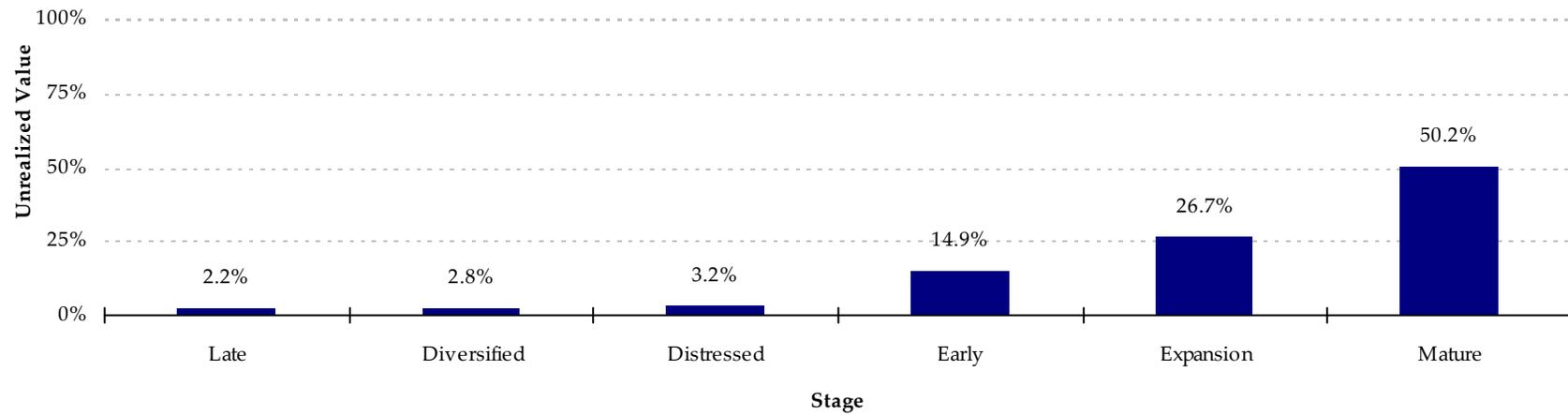
Holdings by Region and Industry



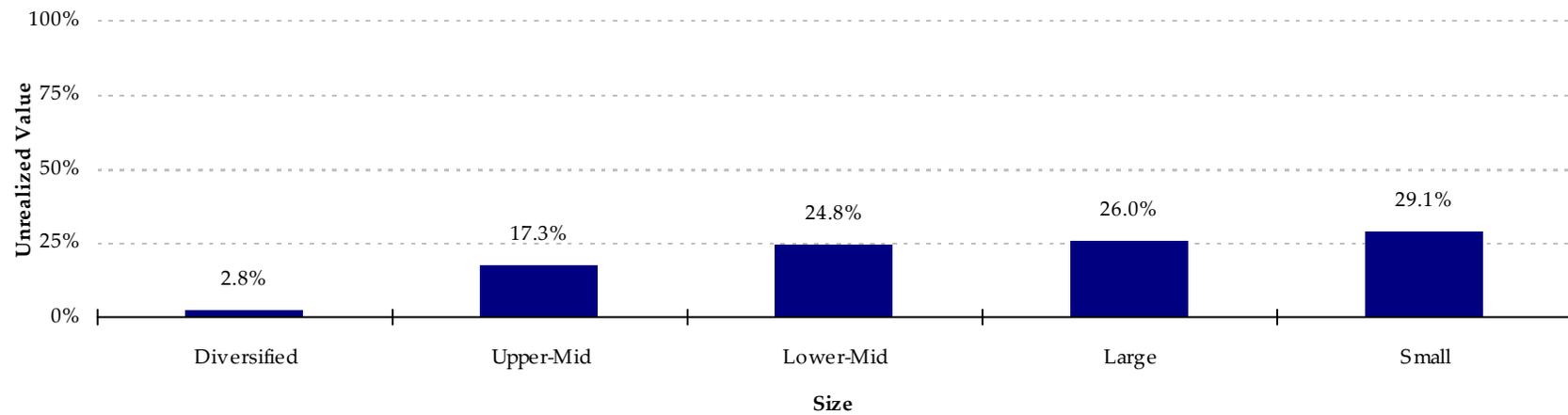
- Unrealized Value represents the value of portfolio holdings as reported by fund managers.
- Values are estimated based on the investor's percent interest in each fund's portfolio holdings.
- Values are converted to the investor's currency, when applicable, as of the Report Date.

Holdings by Stage and Size

Stage



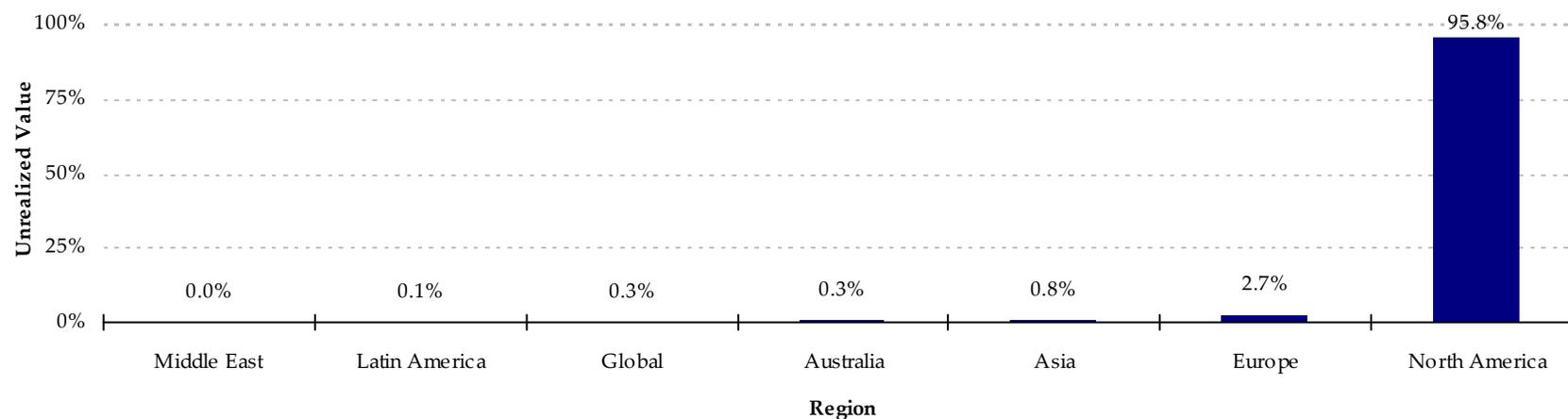
Size



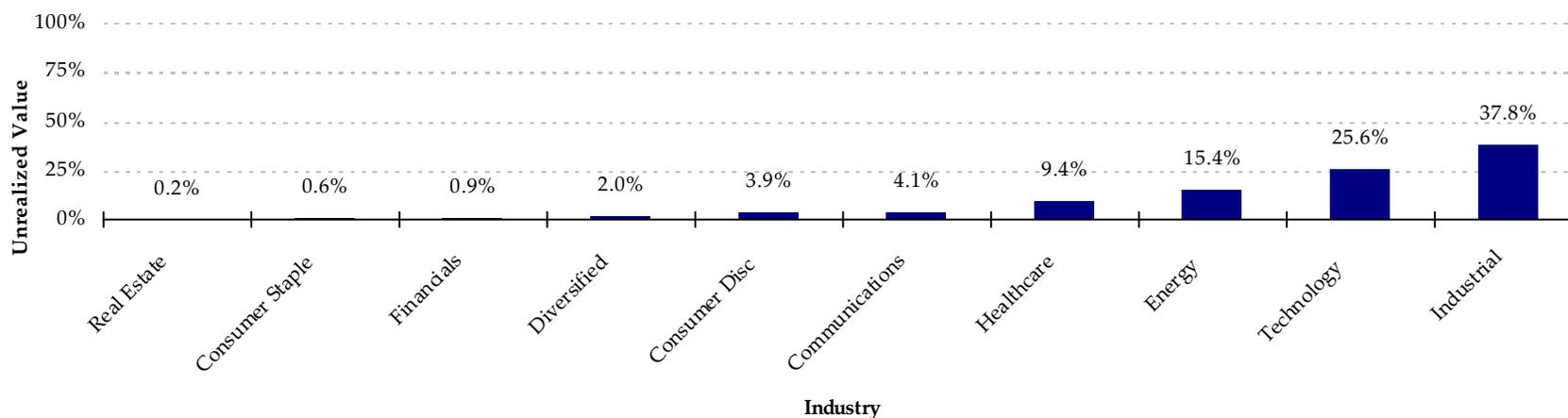
- Unrealized Value is the value of portfolio holdings as reported by the fund manager.
- Values are estimated based on the investor's percent interest in each fund's portfolio holdings.
- Values converted to the investor's currency, when applicable, as of the Report Date.

Holdings by Region and Industry (ex Fund Holdings)

Region



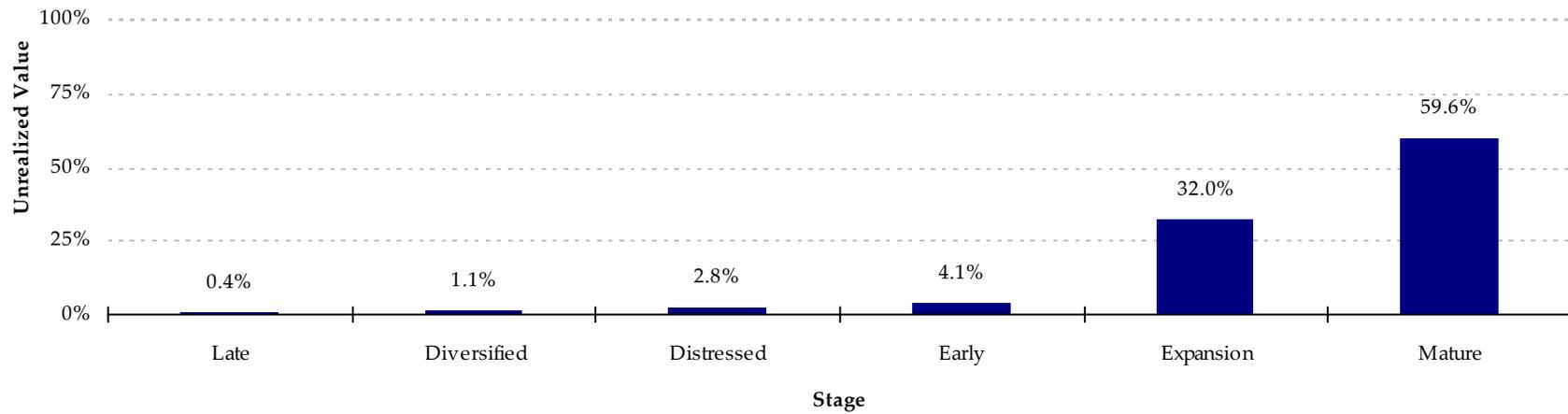
Industry



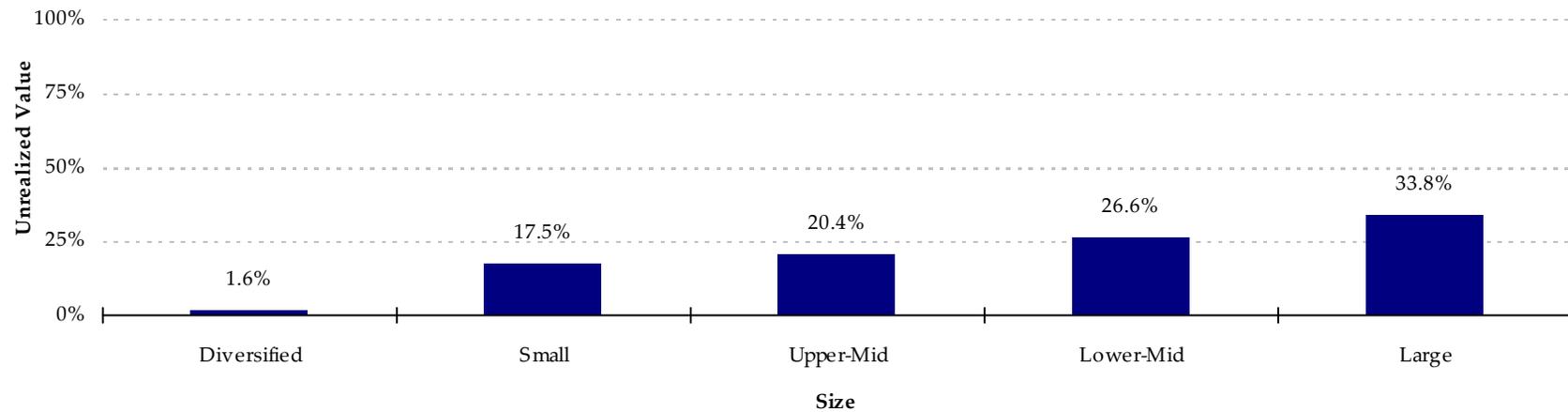
- Fund investments in other funds were excluded from this analysis.
- Unrealized Value represents the value of portfolio holdings as reported by fund managers.
- Values are estimated based on the investor's percent interest in each fund's portfolio holdings.
- Values are converted to the investor's currency, when applicable, as of the Report Date.

Holdings by Stage and Size (ex Fund Holdings)

Stage

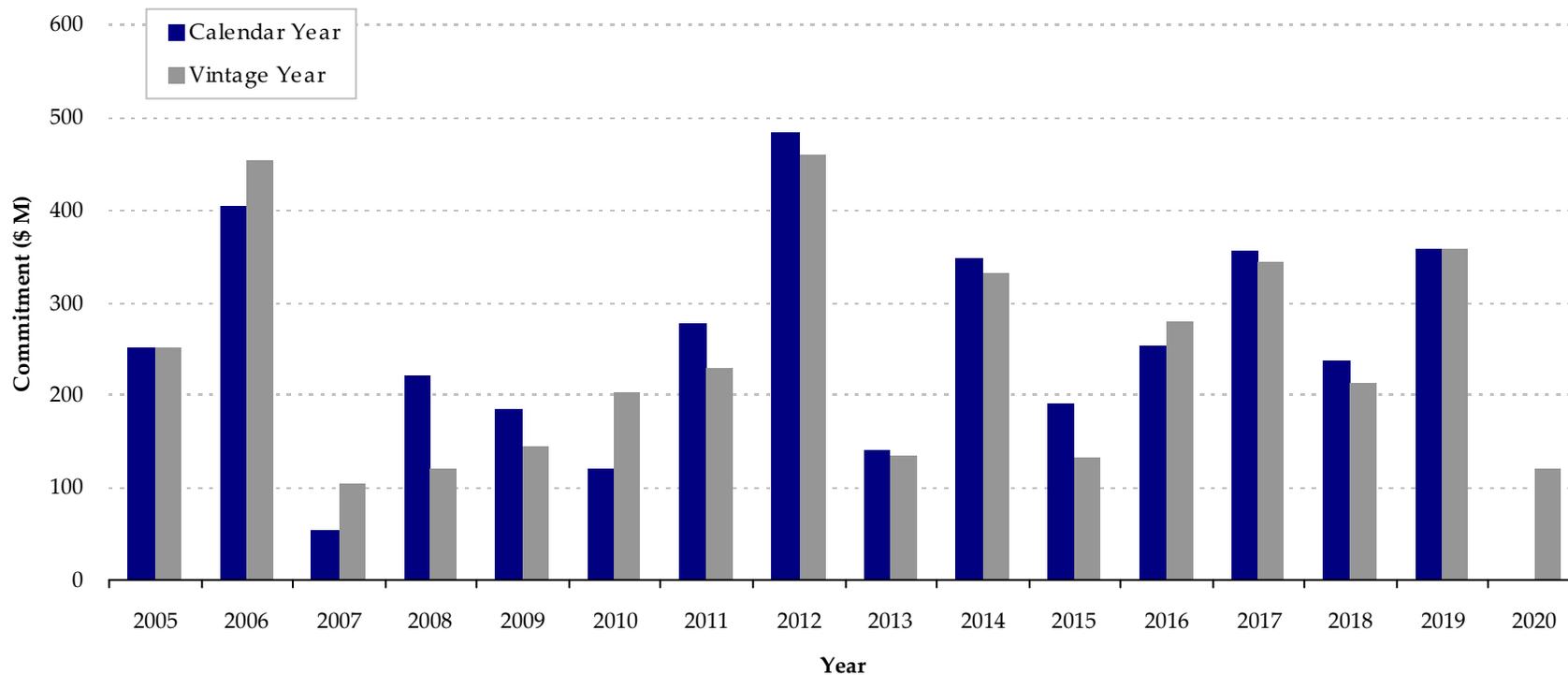


Size



- Fund investments in other funds were excluded from this analysis.
- Unrealized Value represents the value of portfolio holdings as reported by fund managers.
- Values are estimated based on the investor's percent interest in each fund's portfolio holdings.
- Values are converted to the investor's currency, when applicable, as of the Report Date.

Recent Activity



- Vintage Year represents the year in which investors first contribute capital to a fund.
- Calendar Year represents the year in which a commitment to a fund formally closed.
- Commitments made in a foreign currency have been converted into U.S. dollars using an exchange rate as of the Report Date, if applicable.
- Commitments were compiled through the Report Date.

Glossary

Term	Definition	Term	Definition
Barclays US Corporate High Yield Index	The Barclays US Corporate High Yield Bond Index measures the USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below. Bonds from issuers with an emerging markets country of risk, based on Barclays EM country definition, are excluded.	Dow Jones US Total Stock Market Total Return Index	The Dow Jones US Total Stock Market Total Return Index measures all U.S. equity securities with readily available prices. It is a free float-adjusted market capitalization weighted index and is calculated with dividend reinvestment.
Bridge Financing	Temporary funding that will eventually be replaced by permanent capital from equity investors or debt lenders	DPI	Ratio of Distributed Capital to Contributed Capital
Buyout	Fund whose strategy is to acquire controlling interests in companies	Early Stage	A company's first Stage of development. Company is generally generating modest or no revenues
Co/Direct Investment	Investment made directly into a company, rather than indirectly through a fund	Equity	Security type that signifies ownership of a company (e.g. common stock, preferred stock, warrants, etc.)
Committed Capital	Total dollar amount of capital pledged to a fund	Expansion Stage	A company's third Stage of development. Company is generally experiencing high growth and nearing profitability
Contributed Capital	Total capital contributed to a fund for investments, fees and expenses, including late closing interest paid, less returns of excess capital called	Exposure	Sum of Remaining Value plus Unfunded Commitment
Cost Basis	Remaining amount of invested capital	Fund-of-Funds	Fund whose strategy is to make investments in other funds
Debt	Security type that signifies a repayment obligation by a company (e.g. senior debt, subordinated debt, bridge loan etc.)	Geographic Region	Market location of a company: North America, Western Europe, Africa/Middle East, Latin America, Asia/Pacific Rim
Distressed	A company's final Stage of development. Company is generally experiencing operational or financial distress	Growth Equity	Fund whose strategy is to invest in companies to expand or restructure operations, enter new markets or finance an acquisition without a change of control of the business
Distressed Debt	<ul style="list-style-type: none"> • Distressed Trading – Fund whose strategy is to invest and trade debt of financially stressed companies • Distressed Restructuring – Fund whose strategy is to acquire and restructure debt of financially stressed companies • Opportunistic Credit – Fund whose strategy is to flexibly invest in debt securities and income-producing assets of any kind, where the issuer or holder is financially stressed • Structured Capital – Fund whose strategy is to issue hybrid debt and equity securities to mature companies 	Hard Assets	Fund whose strategy is to invest in natural resources or infrastructure
Distributed Capital	Capital distributed to the limited partners, including late closing interest earned	Infrastructure	Fund whose strategy is to acquire interests in physical structures and networks that provide the essential services for society's economic and social needs, e.g. roads, tunnels, communication networks, etc.
		Internal Rate of Return (IRR)	The discount rate that results in a net present value of zero of a series of cash flows. The IRR considers both cash flow timing and amount and is the preferred performance measure for private market funds
		Invested Capital	Capital invested by a fund in portfolio holdings
		Investment Type	Classification of an investment vehicle: Primary Fund, Secondary Fund, Fund-of-Funds

Term	Definition	Term	Definition
J-Curve	Refers to the shape of the curve illustrating a fund's performance over time. During the initial years of a fund's life, as a result of illiquidity, stagnant valuations, fees and expenses, a fund's performance tends to be negative (the bottom of the "J"). Eventually, as portfolio companies are realized or increase in value and fees become a smaller percentage of overall contributions, performance improves and investors' returns move up the "J" shaped curve	Net IRR	Annualized effective compound rate of return using daily contributions, distributions and Remaining Value as of the Report Date, net of all fees and expenses, including late closing interest
Large	Company with a Size greater than \$1 billion	Percent Interest	Represents an investor's economic interest in a fund based upon the investor's commitment divided by total fund commitments
Late Stage	A company's second Stage of development. Company is generally generating high revenue growth and high losses	Primary Investment	An interest in a private equity fund acquired directly from the fund manager during the fundraising period
Lower-Mid	Company with a Size greater than \$100 million, but less than \$250 million	Public Market Equivalent (PME)	A private equity benchmark that represents the performance of a public market index expressed in terms of an IRR, using the same cash flows and timing as the investor's investment activity in private equity. The PME serves as a proxy for the return the investor could have achieved by investing in the public market. The PME benchmark return assumes cash flows are invested at the end of each day
Mature	A company's fourth Stage of development. Company is generally generating modest to no growth and operating profitably	Publication Date	Refers to the date this report was created as reflected in the Executive Summary
Mezzanine	<ul style="list-style-type: none"> • Sponsored Mezzanine – Fund whose strategy is to issue subordinated loans to companies owned by private equity fund sponsors • Non-Sponsored Mezzanine – Fund whose strategy is to issue subordinated loans to companies not owned by private equity fund sponsors 	Real Assets	Fund whose strategy is to invest in assets that are tangible or physical in nature such as land, machinery, and livestock
MSCI ACWI Index - Total Return	The MSCI ACWI Total Return is a reflection of the performance of the MSCI ACWI Index, including dividend reinvestment, as calculated by Bloomberg. The MSCI ACWI Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets. The MSCI ACWI consists of 45 country indices comprising 24 developed and 21 emerging market country indices.	Real Estate	Fund whose strategy is to acquire interests in real estate property
Natural Resources	Fund whose strategy is to acquire interests in naturally-occurring, economically valuable raw materials and all physical facilities and capabilities required for the extraction, refinement, and delivery to end users, e.g. oil and gas properties, timberland, etc.	Realized Capital	Capital distributed to a fund from portfolio holdings
NCREIF Property Index	The NCREIF Property Index is a quarterly, unleveraged composite total return for private commercial real estate properties held for investment purposes only.	Recallable / Recyclable Capital	Capital that has been previously distributed by a fund to investors but may be called again for investment purposes. It is generally associated with realizations that have occurred in the early years of a fund or refers to uninvested capital that has been temporarily returned (i.e. returns of excess capital)
		Recapitalization	The reorganization of a company's capital structure
		Remaining Value	Capital account balance as reported by the General Partner, generally on a fair value basis
		Report Date	Refers to the end date of the reporting period as reflected on the cover page
		Return on Investment (ROI)	Ratio of Realized Capital plus Unrealized Value to Invested Capital

Term	Definition	Term	Definition
Russell 1000® Total Return Index	The Russell 1000® Total Return Index measures the performance, including dividend reinvestment, of the large-cap segment of the U.S. equity universe. It is a subset of the Russell 3000® Index and includes approximately 1000 of the largest securities based on a combination of their market cap and current index membership. The Russell 1000 represents approximately 92% of the U.S. market.	Size	Capitalization size of a company: Large, Upper-Mid, Lower-Mid, Small
Russell 3000® Total Return Index	The Russell 3000® Total Return Index measures the performance, including dividend reinvestment, of the largest 3000 U.S. companies representing approximately 98% of the investable U.S. equity market.	Small	Company with a Size of less than \$100 million
S&P 500 Price Index	The S&P 500 Price Index is a capitalization-weighted index of 500 stocks. The index is designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries.	Small Business Investment Company (SBIC)	Lending and investment firms that are licensed and regulated by the Small Business Administration (SBA). The licensing enables them to borrow from the federal government to supplement the private funds of their investors
S&P 500 Total Return Index	The S&P 500 Total Return Index is a reflection of the performance of the S&P 500 Index, including dividend reinvestment. All regular cash dividends are assumed to be reinvested in the S&P 500 Index on the ex-date. Special cash dividends trigger a price adjustment in the price return index.	Small Buyout	Fund whose strategy is to acquire or recapitalize Small businesses
Secondary Investment	Investments that involve the purchase of private equity fund interests or portfolios of direct investments in privately held companies from existing institutional investors	Special Assets	<ul style="list-style-type: none"> • Healthcare Royalties – Fund whose strategy is to acquire royalty or revenue interests, or issue loans, backed by approved life science products • Music Royalties – Fund whose strategy is to acquire royalty or revenue interests, or issue loans, backed by music copyright assets • Aircraft Leasing – Fund whose strategy is to acquire and lease commercial aircraft • Life Settlement - Fund whose strategy is to acquire life insurance policies • Shipping – Fund whose strategy is to acquire and charter commercial shipping vessels • Asset Backed Securities – Fund whose strategy is to acquire or structure securities that are backed by income-producing assets
Sector	Industry in which the company operates: technology, telecommunications, healthcare, financial services, diversified, industrial, consumer, energy, etc.	Stage	The course of development through which a company passes from its inception to its termination: Early, Late, Expansion, Mature, Distressed
Senior Debt	<ul style="list-style-type: none"> • Direct Lending – Fund whose strategy is to issue senior loans to mature companies • Unitranche – Fund whose strategy is to issue hybrid senior and subordinated loans to mature companies • Venture Debt – Fund whose strategy is to issue loans to venture stage companies • Asset Based Lending – Fund whose strategy is to issue loans to companies where the amount of allowable borrowing outstanding is based on asset collateral value • Rescue Financing – Fund whose strategy is to issue loans to financially stressed companies 	Sub-Asset Class	Private equity investments are generally classified as Buyout, Venture Capital, Mezzanine, Distressed/Turnaround, and Fund-of-Funds
		TVPI	Ratio of Distributed Capital plus Remaining Value to Contributed Capital
		Unfunded Commitment	Amount of capital that remains to be contributed to a fund as defined in a fund's limited partnership agreement
		Unrealized Value	Holding value of a portfolio company assigned by the General Partner, which generally represents fair value
		Upper-Mid	Company with a Size greater than \$250 million but less than \$1 billion
		Venture Capital	Fund whose strategy is to make investments in Early Stage and/or Late Stage companies

Term	Definition
Vintage Year	The calendar year in which an investor first contributes capital to a fund

End Notes

The information contained in this report is confidential and may contain proprietary information. The information contained herein is strictly for the use of Arkansas Teacher Retirement System and, subject to applicable law, may not be reproduced, transmitted or used in whole or in part for any other purpose without the expressed written consent of Franklin Park.

Information regarding the Arkansas Teacher Retirement System portfolio, trends and performance returns are based on or derived from information and data provided by third-party sources, including Arkansas Teacher Retirement System's historical records. Franklin Park assumes that such information is accurate and that the sources from which it has been obtained are reliable. For example, the performance figures contained within this report are calculated by Franklin Park based on information provided by the managers of Arkansas Teacher Retirement System's private equity fund investments (General Partners). The General Partners have not verified the performance figures presented by Franklin Park and such figures may differ from those calculated by General Partners or other investors.

Franklin Park presents Net IRR performance as recommended by the CFA Institute. The IRR calculation is a dollar-weighted return measurement, which considers both cash flow timing and amount, and is net of fees, expenses and carried interest. The total portfolio Net IRR presented herein is net of fees, expenses and carried interest paid by underlying private equity fund investments, but is gross of fees and expenses paid to Franklin Park. The IRR is most commonly used for measuring the performance of private equity funds. Until a fund is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. An IRR is particularly not meaningful in the first two years of a fund's life given the J-curve effect (see footnote). The actual IRR of any private equity fund investment is not known until final liquidation.

▫ The J-curve refers to the shape of the curve that illustrates a private equity fund's performance over time. During the initial years of a fund's life, due to fees and expenses, a fund's performance tends to be negative (the bottom of the "J"). Eventually, as portfolio company investments increase in value, fund performance improves and returns move up the "J" shaped curve.



**Recommendation Report
LLR Equity Partners VI, L.P.**

Executive Summary

Fund	LLR Equity Partners VI, L.P. (the “Fund”)
General Partner	LLR Partners (the “General Partner” or “LLR”)
Report Date	April 2020
Fundraising	The General Partner is targeting capital commitments of \$1.4 billion, with a cap of \$1.6 billion. The General Partner is targeting a first closing in July 2020.
Source	Franklin Park sourced the offering directly from the General Partner.
Investment Strategy	The Fund is being formed to invest in control and non-control transactions in U.S. small and lower middle market growth companies. The Fund will focus on companies in the technology and healthcare sectors.
Management Team	Based in Philadelphia, the General Partner was established by Ira Lubert, Seth Lehr and Howard Ross in 1999 as a member of Independence Capital Partners (“ICP”), a not-for-profit organization of private equity firms. Today, the General Partner is led by nine senior investment professionals (the “Principals”). The General Partner has a 33-person investment team, a 12-person business development team, a six-person value creation team and a 17-person operations team.
Track Record	The General Partner has raised five prior funds. The following chart summarizes the performance of the prior funds, as of September 30, 2019 (\$000).

Fund (Vintage)	Fund Size	Rizd Deals / # Deals	Invested	Realized	Unrealized	Gross ROI	Gross IRR
Fund I (1999)	260,000	23 / 23	233,561	642,845	0	2.8x	29.8%
Fund II (2004)	360,000	15 / 16	397,948	813,277	6,276	2.1x	17.6%
Fund III (2008)	803,000	18 / 22	733,688	1,617,419	178,007	2.4x	22.6%
Fund IV (2013)	905,000	8 / 24	859,448	1,052,990	1,046,812	2.4x	31.3%
Fund V (2017)	1,225,000	0 / 17	704,261	82,506	743,437	1.2x	17.2%
Total		64 / 102	2,928,906	4,209,037	1,974,532	2.1x	25.6%

¹ Gross of fees and carried interest expenses. The unrealized investments are valued by the General Partner.

Investment Evaluation

- The Fund’s strategy is compelling.** The return potential for the Fund’s strategy is high given the Fund’s focus on small and lower middle market growing companies. Purchase prices for small companies are typically lower than larger companies, and smaller companies often have higher growth potential. Moreover, there are significant opportunities for value creation with small companies that an experienced private equity investment team can exploit. The Fund’s target companies have a number of favorable investment traits, including recurring revenues, significant organic growth, high cash flow margins and often limited leverage. Further, the General Partner’s proactive sourcing approach can position it to acquire companies outside formal sale processes or through limited auction processes.



2. **The General Partner's team is deep, experienced and cohesive.** The Principals average more than 18 years of private equity experience and more than 16 years with the General Partner. Further, in recent years, the General Partner has supported the investment team with the additions of dedicated business development and value creation teams.
3. **The General Partner has a deep and attractive track record.**
 - In aggregate, the General Partner's 102 prior investments have produced a 2.1x ROI and 25.6% gross IRR.
 - In aggregate, the General Partner's 64 realized deals since inception have produced a 3.0x ROI and 27.8% gross IRR.
 - Funds I, II, III and IV have performed well, with net IRRs, DPIs and TVPIs that each rank in the first or second quartile, as compared to buyout funds of the same vintage.
 - While early in its life, Fund V has performed in-line with expectations. The underlying portfolio companies have demonstrated impressive growth since investment.

However, Fund II exhibited a high loss ratio. Fund II has a 48% loss ratio. However, the General Partner has narrowed its sector focus to technology and healthcare over the last two funds. Five of the six losses or markdowns in the Fund II portfolio were in the industrial, consumer discretionary and financial sectors, which are no longer areas of focus for the General Partner. Further, based on lessons learned from prior losses, the General Partner's strategy has evolved to prioritize companies with double digit revenue growth, meaningful recurring revenue and competitive differentiation.

Recommendation Franklin Park recommends a commitment of up to \$30 million to the Fund, subject to satisfactory negotiation of final documentation, based on the following:

- The Fund's investment strategy is compelling;
- The General Partner's team is deep, experience and cohesive; and
- The General Partner has a deep and attractive track record.

**ARKANSAS TEACHER RETIREMENT SYSTEM
1400 West Third Street
Little Rock, Arkansas 72201**

**RESOLUTION
No. 2020-22**

Approving Investment in LLR Equity Partners VI, L.P.

WHEREAS, the Board of Trustees (Board) of the Arkansas Teacher Retirement System (ATRS) is authorized to invest and manage trust assets for the benefits of its plan participants; and

WHEREAS, the ATRS Board has reviewed the recommendation of its private equity consultant, Franklin Park Associates, LLC, along with the recommendation of the Investment Committee and ATRS staff regarding a potential investment in **LLR Equity Partners VI, L.P.**, a growth equity fund that will focus on small and middle market companies in the technology and healthcare sectors.

THEREFORE, BE IT RESOLVED, that the ATRS Board approves an investment of up to **\$30 million dollars (\$30,000,000.00)** in **LLR Equity Partners VI, L.P.** The total investment amount is to be determined by the private equity consultant and ATRS staff based upon the allocation available to ATRS and the overall investment objectives set by the ATRS Board; and

FURTHER, BE IT RESOLVED, that the ATRS staff is hereby authorized to take all necessary and proper steps to implement this investment, if acceptable terms are reached.

Adopted this 1st day of June 2020.

Mr. Danny Knight, *Chair*
Arkansas Teacher Retirement System



Arkansas Teacher Retirement System
Franklin Park Venture Capital Fund XIII, L.P.

June 1, 2020

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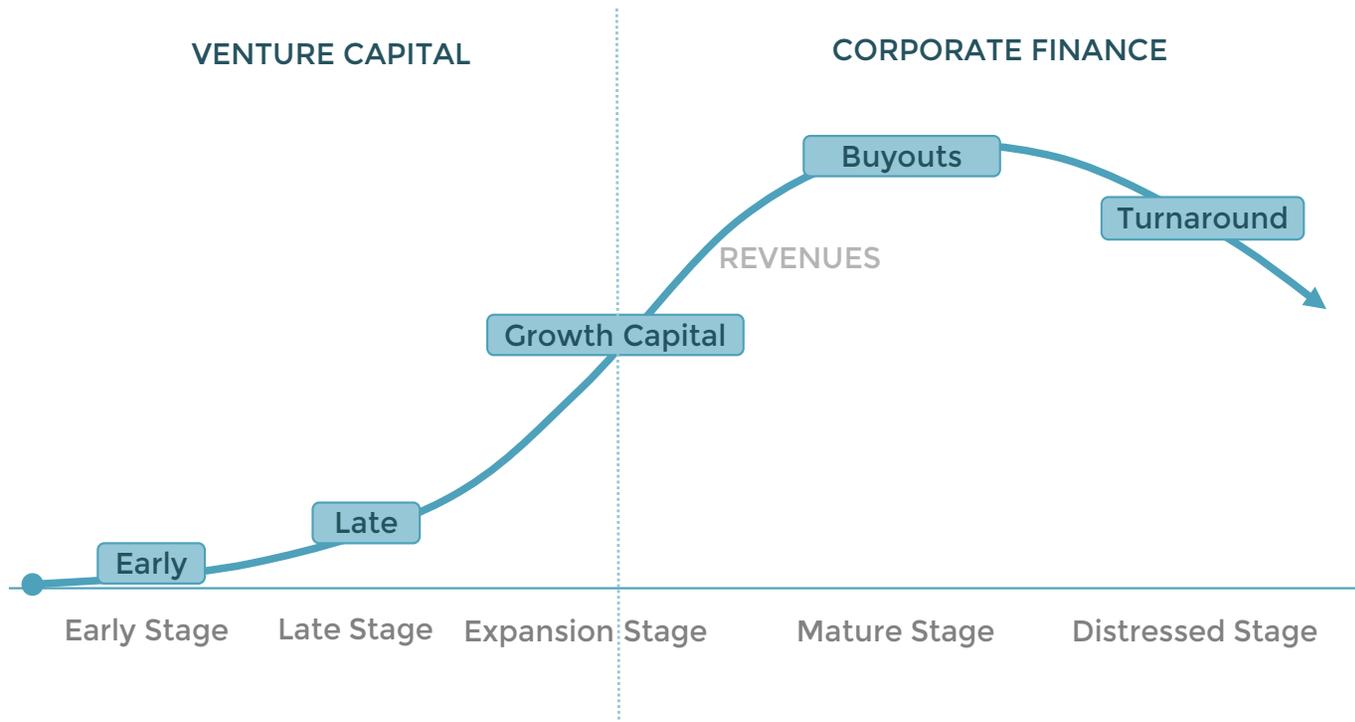
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Venture Capital Overview

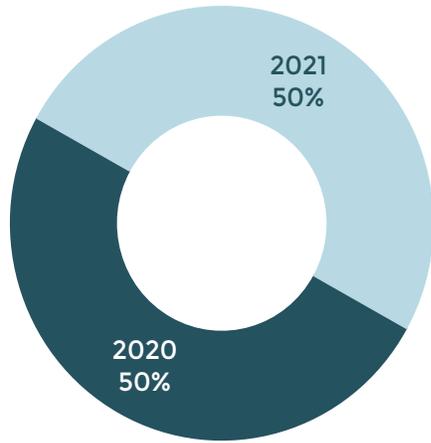
The expected return and risk level for venture capital is high and access to the best funds is challenging



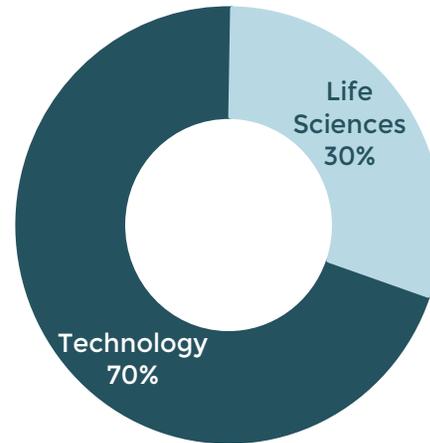
Portfolio Diversification

The portfolio is expected to be diversified by vintage, sector, stage and geography

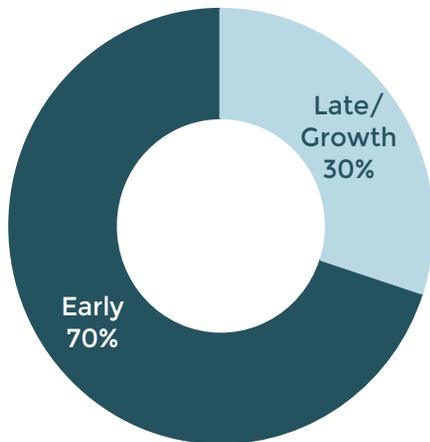
Diversification By Vintage



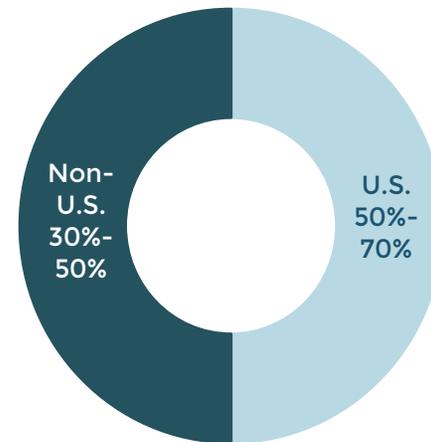
Diversification By Sector



Diversification By Stage



Diversification By Geography



Historical Performance

ATRS has committed \$305 million to 12 prior Franklin Park venture capital vehicles raised since 2008

VEHICLE	ATRS COMMITMENT	CONTRIBUTED	DISTRIBUTED	REMAINING	TVPI	NET IRR
FPV 2008	\$30.0	\$29.7	\$39.1	\$25.4	2.2x	15.2%
FPV 2009	25.0	24.3	37.6	22.6	2.5x	18.0%
FPV 2010	25.0	15.9	9.6	28.9	2.4x	16.8%
FPV 2011	25.0	24.1	21.8	80.8	4.3x	33.8%
FPV 2012	25.0	21.7	15.6	36.2	2.4x	21.0%
FPV 2013	20.0	17.4	6.9	33.5	2.3x	25.5%
FPV 2014	25.0	23.4	4.5	39.0	1.9x	19.3%
FPV 2015	25.0	22.2	1.0	30.7	1.4x	16.6%
FPV 2016	25.0	15.9	0.4	21.4	1.4x	20.6%
FPV 2017	25.0	8.3	0.3	10.4	1.3x	27.8%
FPV 2018	25.0	6.5	0.0	6.2	1.0x	NMF
FPV 2019	30.0	3.7	0.0	3.5	0.9x	NMF
Total	\$305.0	\$213.1	\$136.8	\$338.6	2.2x	20.6%

Data in the table is as of December 31, 2019 and represents only ATRS' interests in each vehicle; \$ in millions. The returns presented are net of underlying private fund manager fees, transaction expenses and carried interest charges, as well as expenses incurred by the Franklin Park Venture Fund Series vehicles. Past results are not necessarily indicative of future performance. There can be no assurance that investments recommended by Franklin Park will realize the rates of return indicated in this presentation. Wherever there is potential for profit, there is also potential for loss.

Franklin Park Venture Capital Fund XIII (“FP VC XIII”) – Commitments to Date

FP VC XIII currently has \$59.5m in LP commitments and has \$54.5m in closed/pending underlying commitments

FUND	STRATEGY	FUND SIZE	CLOSING DATE	COMMITMENT AMOUNT
S Capital II	Early stage Israel technology	\$120m	FEB 2020	\$10.0m
Mayfield XVI	Early stage U.S. technology	450m	MAR 2020	10.0m
Zetta III	Early stage U.S. technology	175m	MAR 2020	7.5m
IDG China VI	Early stage China technology	600m	APR 2020	15.0m
FCVC II	Seed stage U,S, technology	35m	Pending	5.0m
Atlas XII	Early stage U.S. healthcare	400m	Pending	7.0m
Total				\$54.5m

Proposal

Consider committing an additional \$30 million to Franklin Park Venture Capital Fund XIII, L.P. (“FP VC XIII”)

ATRS (and other existing FP clients) will pay no management fees or carried interest in FP VC XIII

Franklin Park plans to raise additional capital for FP VC XIII from other LPs that will pay market terms

**ARKANSAS TEACHER RETIREMENT SYSTEM
1400 West Third Street
Little Rock, Arkansas 72201**

**RESOLUTION
No. 2020-23**

**Approving Additional Investment in Franklin Park Venture
Capital Fund XIII, L.P.**

WHEREAS, the Board of Trustees (Board) of the Arkansas Teacher Retirement System (ATRS) is authorized to invest and manage trust assets for the benefits of its plan participants; and

WHEREAS, the ATRS Board has reviewed the recommendation of its private equity consultant, Franklin Park Associates, LLC, along with the recommendation of the Investment Committee and ATRS staff regarding a potential additional investment in **Franklin Park Venture Capital Fund XIII, L.P.** (formerly Franklin Park Venture Fund Series 2019, L.P.), a fund of funds formed to build a diversified portfolio of top-tier venture capital funds.

THEREFORE, BE IT RESOLVED, that the ATRS Board approves an additional investment of up to **\$30 million dollars (\$30,000,000.00)** in **Franklin Park Venture Capital Fund XIII, L.P.** The total investment amount is to be determined by the private equity consultant and ATRS staff based upon the allocation available to ATRS and the overall investment objectives set by the ATRS Board; and

FURTHER, BE IT RESOLVED, that the ATRS staff is hereby authorized to take all necessary and proper steps to implement this investment, if acceptable terms are reached.

Adopted this 1st day of June 2020.

Mr. Danny Knight, Chair
Arkansas Teacher Retirement System

ATRS DRAFT BILL: 160 DAYS

SECTION 1. Arkansas Code § 24-7-701(d), concerning the Arkansas Teacher Retirement System, is amended to read as follows:

(d) If a member has accrued a full year of service credit for a fiscal year, the annuity shall not begin earlier than on the July 1 after the fiscal year unless an exception under the rules of the system exists.

SECTION 2. Arkansas Code § 24-7-702(e), concerning the Arkansas Teacher Retirement System, is amended to read as follows:

(e) If a member has accrued a full year of service credit for a fiscal year, the annuity shall not begin earlier than on the July 1 after the fiscal year unless an exception under the rules of the system exists.

OR

SECTION 1. Arkansas Code § 24-7-701(d), concerning the Arkansas Teacher Retirement System, is amended to read as follows:

(d) If a member has accrued a full year of service credit for a fiscal year, the annuity shall not begin earlier than on the July 1 after the fiscal year unless the employers providing covered employment to the member at the time of retirement certify that there is no adverse effect on a classroom.

SECTION 2. Arkansas Code § 24-7-702(e), concerning the Arkansas Teacher Retirement System, is amended to read as follows:

(e) If a member has accrued a full year of service credit for a fiscal year, the annuity shall not begin earlier than on the July 1 after the fiscal year unless the employers providing covered employment to the member at the time of retirement certify that there is no adverse effect on a classroom.

OR

SECTION 1. Arkansas Code § 24-7-701(d), concerning the Arkansas Teacher Retirement System, is amended to read as follows:

(d) If a member has accrued a full year of service credit for a fiscal year, the annuity shall not begin earlier than on the July 1 after the fiscal year unless an exception has been granted by the system.

SECTION 2. Arkansas Code § 24-7-702(e), concerning the Arkansas Teacher Retirement System, is amended to read as follows:

(e) If a member has accrued a full year of service credit for a fiscal year, the annuity shall not begin earlier than on the July 1 after the fiscal year unless an exception has been granted by the system.

OR

SECTION 1. Arkansas Code § 24-7-701(d), concerning the Arkansas Teacher Retirement System, is amended to read as follows:

(d) If a ~~member~~ teacher has accrued a full year of service credit for a fiscal year, the annuity shall not begin earlier than on the July 1 after the fiscal year unless normal retirement age has been attained and the teacher remains in their current covered employment, or an exception has been granted by the system.

SECTION 2. Arkansas Code § 24-7-702(e), concerning the Arkansas Teacher Retirement System, is amended to read as follows:

(e) If a ~~member~~ teacher has accrued a full year of service credit for a fiscal year, the annuity shall not begin earlier than on the July 1 after the fiscal year unless normal retirement age has been attained and the teacher remains in their current covered employment, or an exception has been granted by the system.

ATRS DRAFT BILL: CONTRACT DAYS

SECTION 1. Arkansas Code § 24-7-406(e)(3), concerning the Arkansas Teacher Retirement System, is amended to read as follows:

(E)(i) Effective July 1, 2020, a new member employed by a covered employer in a certified position as defined by the Division of Elementary and Secondary Education shall be a contributory member of the system.

(ii) A new member employed by a covered employer in a classified position as defined by the Division of Elementary and Secondary Education may make an irrevocable election to become a contributory member of the system.

ATRS DRAFT BILL: DEFINITIONS

SECTION 1. Arkansas Code § 24-7-202, concerning the Arkansas Teacher Retirement System, is amended to read as follows:

(2) “Active member” means:

(A) any member eligible for service credit rendering service to an employer that is covered by the Arkansas Teacher Retirement System;

(B) a member that acquires at least forty (40) days of service credit in any fiscal year is active for the complete fiscal year;

(17) “Employer”, ~~or~~ “covered employer”, or “system-covered employer” means any public school, public educational agency, or other eligible employer participating in the Arkansas Teacher Retirement System unless the context clearly indicates that the employer is not a covered employer, does not include a nonmandatory employer or a PSHE employer as defined under SS 24-7-1602;

(18) (D)(i) Employment in a position with an educationally related agency or organization if the employee is or has been a member of the Arkansas Teacher Retirement System for a minimum of five (5) years and elects to become or remain a member of the Arkansas Teacher Retirement System. The employment shall be related to:

(a) Training public school employees or school board members;

(b) Teaching public school students; or

(c) Adult education programs.

(ii) The employment shall not be related in any manner to private schools.

(iii) Each educationally related agency or organization shall be:

(a) Approved according to rules established by the board;

(b) Considered an employer under subdivision (17) of this section; and

(c) Responsible for all required employer contributions;

(26) “Nonteacher” means a member who is not a teacher or administrator;

ATRS DRAFT BILL: EARLY RETIREMENT REDUCTION

SECTION 1. Arkansas Code § 24-7-702(b), concerning final average salary of the Arkansas Teacher Retirement System, is amended to read as follows:

(2)(A) The percent shall be one hundred percent (100%) reduced by between five-twelfths percent (5/12%) and fifteen-twelfths percent (15/12%) multiplied by the number of months by which the time of early retirement precedes the earlier of either completion of twenty-eight (28) years of credited service or attainment of sixty (60) years of age.

(B) The board may set by board resolution the early annuity reduction under subdivision (b)(1) of this section at a percentage rate between five percent (5%) per year and fifteen percent (15%) per year, to be prorated monthly, if the:

(i) System's actuary certifies to the board that the amortization period to pay the unfunded liabilities of the system exceeds eighteen (18) years; and

(ii) Board determines that a reduction in the cost of early voluntary retirement is prudent to maintain actuarial soundness.

NOTE FOR DRAFTING CONSIDERATION:

Probably a better way of wording this.

Maybe in (2)(A) refer to the "early annuity reduction rate" that is spelled out in (B) rather than the 5/12 to 15/12 language.

ATRS DRAFT BILL: FIVE YEAR LOOKBACK

SECTION 1. Arkansas Code § 24-7-406(c), concerning final average salary of the Arkansas Teacher Retirement System, is amended to read as follows:

(c)(1)(A) Each employer shall deduct the member contributions provided for in this section from the salary of each member on every payroll, for every payroll period, from the date of his or her entrance into the system until the member retires or terminates, and the employer shall remit the contributions to the system.

(B)(i) Before July 1, 2011, if the employer fails to report the required contributory service of a member and remit the contributions to the system, the system shall have the right to collect from the employee and the employer the contributions due, if any, from each, together with interest beginning with the subsequent fiscal year if the unreported service is within the look-back period under SS 24-7-205.

(ii) If the unreported service is not within the look-back period, the unreported required service shall be considered an optional purchase of service and the actuarial equivalent of the member's benefits due to the system shall be required by the member.

(iii) A member shall not be given credit for service rendered until all member contributions on the service is paid in full.

(2) The member's contributions provided for in this section shall be made notwithstanding that the minimum salary provided by law for any member shall be thereby changed.

(3)(A) Each member shall be deemed to consent and agree to the deductions made and provided for in this section.

(B) Payment of his or her salary less the deductions shall be a full and complete discharge and acquittance of all claims and demands whatsoever for the services rendered by the member during the period covered by the payment, except as to benefits provided by the system.

(4) The members' contributions, so deducted from their salaries, shall be remitted to the system in such manner and form and into such frequency and shall be accompanied by such supporting data as the board shall prescribe from time to time.

NOTE FOR DRAFTING CONSIDERATION:

The policy here is that if a member meets their end of the agreement by providing service, they should at least get noncontributory service credited. In order to get contributory service, they must also make sure ATRS is paid the member contributions on that service.

The member's service history should not be affected by an employer's failure to paid employer contributions, that issue should be between ATRS and the employer.

ATRS DRAFT BILL: RECIPROCITY FINAL AVERAGE SALARY

SECTION 1. Arkansas Code § 24-7-601(e), concerning final average salary of the Arkansas Teacher Retirement System, is amended to read as follows:

(4) The final average salary used shall be that of the reciprocal system, in which the member is vested, that furnishes the highest final average salary at the time of retirement.

~~(5) Beginning July 1, 2014, if the reciprocal system in which a member has service credit has fewer than the number of years of service credit required in the Arkansas Teacher Retirement System's formula for the calculation of final average salary for a member, then the Arkansas Teacher Retirement System shall obtain the salary and service credit information from the reciprocal system and use the combined salary and service credit information to calculate the member's final average salary as if the salary and service credit have all been earned in the Arkansas Teacher Retirement System.~~

~~(6)~~(5) When the Arkansas Teacher Retirement System provides a benefit amount that is not dependent on length of credited service, the benefit amount shall be reduced to the proportion that actual system service bears to total reciprocal system credited service.

SECTION 2. Arkansas Code § 24-2-402(4)(B), concerning final average compensation, is amended to read as follows:

(B) The final average compensation to be used to determine monthly benefits payable to that person shall be that of the reciprocal system in which the member is vested and ~~which~~ furnishes the highest final average compensation at the time of retirement, but each reciprocal system shall use the method of computing final average compensation stipulated by its law, and compensation in the Arkansas Judicial Retirement System shall not be used to determine final average compensation.

NOTE FOR DRAFTING CONSIDERATION:

ATRS DRAFT BILL: SEPARATION PERIOD

SECTION 1. Arkansas Code § 24-7-202, concerning definitions of the Arkansas Teacher Retirement System, is amended to read as follows:

(27) “Normal retirement age” means sixty-five (65) years of age; or at least fifty-nine and one-half (59 1/2) years of age and years of age and years of credited service in the system, Teacher Deferred Retirement Option Plan, or reciprocal service in another eligible state retirement system added together are 100 or more;

SECTION 2. Arkansas Code § 24-7-502(a)(2), concerning terminating from a system-covered employer of the Arkansas Teacher Retirement System, is amended to read as follows:

(2)(A) Effective July 1, ~~2021~~ 2011, a member shall not be terminated from employment for purposes of retirement eligibility if within six (6) calendar months of the member’s effective date of retirement the member:

(i) Meets both of the following requirements:

(a) Becomes employed with a covered employer ~~covered by the system;~~ and

(b) Has not attained the system’s normal retirement age; ~~or~~

~~(ii) Does not have a total or a combined total of thirty-eight (38) years or more of credited service in the system, Teacher Deferred Retirement Option Plan, or reciprocal service in another eligible state retirement system.~~

~~(B) If a member has a combined total of thirty-eight (38) years or more of credited service in the system, Teacher Deferred Retirement Option Plan, or reciprocal credited service in another eligible state retirement system, then the member shall not be terminated from employment for purposes of retirement eligibility if within one (1) calendar month of the member’s effective date of retirement the member:~~

~~(i) Becomes employed with an employer covered by the system; and~~

~~(ii) Has not attained the system’s normal retirement age.~~

SECTION 3. Arkansas Code § 24-7-502(d)(1), concerning terminating from a system-covered employer of the Arkansas Teacher Retirement System, is amended to read as follows:

(d) As used in this section:

~~(1) “System covered employer” means all employers as defined in SS 24-7-202 and also includes all employers offering the Arkansas Teacher Retirement System as an optional retirement plan on or before January 1, 2011, to any employee;~~

~~(2)(1)(A) “Terminate” means:~~

(i) The member’s covered employment has ended at all system-covered employers;

(ii) A complete severance of the employer-employee relationship has occurred at all system-covered employers the member was employed prior to retirement;

(iii) The member has ceased performing any employment services for any system-covered employer, except for uncompensated functions related to the transfer of the duties or the transfer of the position of the member;

(iv) The member has not formed any express or implied employment agreement or taken action that would obligate the member to render compensable services to a system-covered employer or entitle a system-covered employer to the services of the member after the termination separation period;

(v) The member has followed normal retirement procedures for resigning from the system-covered employer unless involuntarily terminated before the member's effective date of retirement; and
(vi) All system-covered employers have paid or have initiated the process to pay all accumulated benefits such as annual leave and sick leave to the member by the effective date of retirement.

(B) "Terminate" does not mean:

(i) Taking a leave of absence; or

(ii) Performing any job duties or services without remuneration, except for the functions related to the transfer of duties or the transfer of the position itself.

(C) Providing volunteer activities at a system-covered employer that does not have the effect of holding a position open for the member during a termination separation period does not mean that the member is not terminated; and

NOTE FOR DRAFTING CONSIDERATION:

ATRS DRAFT BILL: TERMINATION REFUND

SECTION 1. Arkansas Code § 24-7-711(a), concerning final average salary of the Arkansas Teacher Retirement System, is amended to read as follows:

(a)(1) If a member discontinues covered employment and does not plan to be rehired by a covered employer, the member may elect to be paid a refund of his or her contributions and regular interest credited to the member's deposit account within six (6) months following the date the member's written application is filed with the Arkansas Teacher Retirement System.

(2) Any contributions remaining on deposit shall accrue regular interest at the end of each fiscal year as provided by law

NOTE FOR DRAFTING CONSIDERATION:

Issue from Legislative Audit – regarding termination refunds when a member went back to work for the same employer immediately after termination was certified by the employer. This new language matches ATRS Form 101a.

Arkansas Teacher Retirement System
LITIGATION REPORT
June 1, 2020

MEMBER APPEALS

None pending.

PENDING SECURITIES LITIGATION CASES
Active Cases in which ATRS is Lead Plaintiff

Company Name	Case Caption	Lead Plaintiff Motion Date	Lead Plaintiff Status	Firm
OSI Systems	Longo v. OSI Systems, Inc., No. 17-cv-8841 (C.D. Cal Dec 7, 2017)	2/5/2018	Hearing on motion to dismiss amended complaint under submission.	Kessler Topaz
Frontier Communications	In re: Frontier Communications Corporation Stockholders Litigation, No. 17-cv-1617 (D. Conn. Sept 26, 2017)	11/27/2017	Order granting Defendants' Motion to Dismiss on appeal filed 4/6/2020.	Bernstein Litowitz
Adeptus	Oklahoma Law Enforcement Retirement System v. Adeptus Health Inc., No. 17-cv-0449 (E.D. Tex. Oct. 27, 2016)	12/27/2016	Settled; Motion for Final Approval granted 5/20/2020.	Bernstein Litowitz and Kessler Topaz
Insulet	<i>Arkansas Teacher Retirement System v. Insulet Corporation</i> , No. 15-cv-12345 (D. Mass. May 5, 2015)	7/6/2015	Settled; Motion for Final Approval granted; Motions for Approval of Distribution Plan and Fees pending.	Bernstein Litowitz

Facebook	In re Facebook, Inc., IPO Securities & Derivative Litigation, No. 12-md-2389 (S.D.N.Y. Oct. 5, 2012)	7/23/2012	Settled; Motion for Final Approval granted; <i>pro se</i> objection pending	Labaton and Bernstein Litowitz
Goldman Sachs	In re Goldman Sachs Group, Inc. Securities Litigation, No. 10-cv-3461 (S.D.N.Y. Apr. 26, 2010)	6/25/2010	Motion to Grant Class Certification granted; Class Certification affirmed by Second Circuit; rehearing requested on 5/13/2020	Labaton

POTENTIAL SECURITIES LITIGATION UNDER CONSIDERATION

ATRS Executive Staff are currently evaluating legal options to recover losses on investments in General Electric Company, AllianzGI, and Bayer AG.

SUMMARY OF DISABILITY APPLICATIONS SUBMITTED
FOR CONSIDERATION BY THE MEDICAL COMMITTEE

The Medical Committee met in executive session in the first floor conference room at 9:30 a.m. on April 15, 2020. Those members present were Dr. Eddie Phillips, Dr. Hoyte Pyle, and Dr. Jim Morse. Anne Marie Lehman Berardi of the Teacher Retirement System was also in attendance.

A total of ten disability applications were considered. Of the ten applicants, six were approved. One was denied. Three had more information requested.

Respectfully Submitted,



Eddie Phillips, CMO
Medical Committee Chairman

Respectfully Submitted,



Anne Marie Lehman Berardi
Retirement Benefits Counselor

SUMMARY OF DISABILITY APPLICATIONS SUBMITTED
FOR CONSIDERATION BY THE MEDICAL COMMITTEE

The Medical Committee met in executive session in the first floor conference room at 9:30 a.m. on May 6, 2020. Those members present were Dr. Eddie Phillips, Dr. Hoyte Pyle, and Dr. Jim Morse. Anne Marie Lehman Berardi of the Teacher Retirement System was also in attendance.

A total of fourteen disability applications were considered. Of the fourteen applicants, eight were approved. Five were denied. One had more information requested.

Respectfully Submitted,



Eddie Phillips, CMO
Medical Committee Chairman

Respectfully Submitted,



Anne Marie Lehman Berardi
Retirement Benefits Counselor