

**MWRA EMPLOYEES' RETIREMENT BOARD MEETING**

**AGENDA**

**Thursday, August 26, 2021 10:00 a.m.**

**MWRA, 2 Griffin Way**

**Conference Room 2C**

Item 1 10:00 a.m. Meeting called to order

**OLD BUSINESS**

Item 2 Standing Committee Reports

- i. By-Laws Committee: Member Kevin McKenna
- ii. Human Resources Committee: Member Thomas J. Durkin, Member Frank Zecha – Member Services Coordinator position
- iii. Special Committee, Stipend: Chair James M. Fleming, Member Kevin McKenna
- iv. Job Review Committee: Member James M. Fleming; Member Thomas J. Durkin

**NEW BUSINESS**

Item 3 Approval of July 29, 2021 Minutes – VOTE

Item 4 Approval of Warrants – VOTE

- a) Warrant 8-2021
- b) Warrant 8-2021A – Payroll

Item 5 Approval of Monthly Transfers 8-2021 – VOTE

Item 6 Acknowledgement of retirement applications under G.L. c 32 §5 – VOTE

- a) Julio Cruz DOR 7/14/2021
- b) Emilio Cabey DOR 7/24/2021
- c) Victor L'Esperance DOR 7/28/2021
- d) Carl Lindquist DOR 7/28/2021
- e) Lawrence Gabrynowicz DOR 7/31/2021
- f) John Norton DOR 7/31/2021
- g) Bradley Palmer DOR 7/31/2021
- h) William Hoppe DOR 8/4/2021
- i) Kathleen Pouche DOR 8/6/2021
- j) Renee Bell DOR 8/7/2021
- k) Kenneth Carlson DOR 8/14/2021
- l) James Kularski DOR 8/14/2021
- m) Erika Samuels DOR 8/14/2021
- n) Paul Warwick DOR 8/16/2021

Item 7 Emerging Markets Finalists' Presentations

- 10:30 a.m. a) Wellington Management
- 10:50 a.m. b) Manulife Investment Management
- 11:10 a.m. c) Thornburg Investment Management
- 11:30 a.m. d) ABS Global Investments

- Item 8                    NEPC
  - a)     Flash Report as of 7/31/2021
  - b)     Rebalance Recommendation – VOTE
  - c)     Emerging Market Equity Search Finalists – VOTE
  - d)     Q2 2021 Investment Report
  - e)     Quarterly Performance Report Private Debt 3/31/2021
  - f)     Quarterly Performance Report Private Equity 3/31/2021
  - g)     Quarterly Performance Report Real Estate 3/31/2021
  
- Item 9                    Update: Retirement Office Access
  
- Item 10                  Legal Update
  - a)     PERAC Update
  - b)     Legislative Update
  - c)     Hass v. MWRA
  - d)     PFML/Salary Continuation
  - e)     MWRA COVID Update

.....**FOR YOUR INFORMATION and REVIEW** .....

- Item 99-1     PERAC MEMO #24/2021 re. Important Amendment to G.L. 32, Section 100
- Item 99-2     Corbin re. Consent to Change of Control of Corbin Capital Partners, L.P.
- Item 99-3     TA Realty Correspondence

**The Board reserves the right to consider items on the agenda out of order. The listing of items is those reasonably anticipated by the Chair to be discussed received at least forty-eight (48) hours prior to the meeting. Not all items listed may in fact be discussed and other items not listed may also be brought up for discussion to the extent permitted by law. Items identified for discussion in Executive Session may be conducted in open session, in addition to, or in lieu of discussion in Executive Session.**

**Date of next scheduled Retirement Board meeting is Thursday, September 30, 2021, 10:00 a.m., Chelsea**

**MASSACHUSETTS WATER RESOURCES  
AUTHORITY EMPLOYEES' RETIREMENT  
BOARD MEETING  
JULY 29, 2021**

A meeting of the MWRA Employees' Retirement Board was held in person on Thursday, July 29, 2021 at Two Griffin Way, Chelsea. Remote access was provided to the public via Zoom. The number for the call was included on the public meeting notice posted on the MWRA Employees' Retirement System's and Secretary of State's websites. Participating in the in-person meeting were Board members Thomas Durkin, Kevin McKenna, and Frank Zecha, and staff members Carolyn Russo and Julie McManus. Chairman Fleming participated remotely, so Vice Chairman Durkin assumed the Chairman's role for the in-person meeting. Representatives from NEPC, Sebastian Grzejka and Kevin Leonard, as well as members of the public, attended virtually. Acting Chairman Durkin called the meeting to order at 10:16 a.m.

- 1) Call the meeting to order-roll call of members: Mr. Durkin present, Mr. McKenna present, Mr. Zecha present and Mr. Fleming present via remote access.

One microphone was left open for the Zoom call; all others were muted.

- 2) Standing Committee Reports
  - i. By-Laws Committee: No report
  - ii. Human Resources Committee: 3% increase for the Board's Executive Director effective July 1, 2021 consistent with the Board's October 31, 2019 vote to give the Executive Director the same pay increases as are received by the Non-union Managers for the MWRA.

On a motion made by Mr. Zecha and seconded by Mr. McKenna

**VOTED:**

to award the Executive Director a 3% pay increase effective July 1, 2021 4-0, roll call with Mr. Fleming voting yes, Mr. McKenna voting yes, Mr. Zecha voting yes and Mr. Durkin voting yes.

In regard to an increase for the Retirement Coordinator, Mr. Durkin stated that he is optimistic that the Unit 6 contract will be settled soon, and Mr. Fleming added that any increase will be retroactive.

The Board inquired as to the progress on the Member Services Coordinator's position. The Executive Director noted that we had one applicant, who subsequently withdrew due to internal opportunities. The Board asked the Executive Director to expand from advertising on PERAC's site to MMA and local newspapers in the Chelsea, Lynn, Saugus areas. The Executive Director stated

that she believes that the lack of interest from experienced applicants is partially due to the fact that the salary range is not provided on the posting. The Board instructed the Executive Director to add "Salary commensurate with experience" to the posting.

- iii. Special Committee, Stipend: No report
- iv. Job Review Committee: No report

3) Approval of the Minutes of the June 24, 2021 meeting – VOTE

On a motion made by Mr. Fleming and seconded by Mr. Zecha:

**VOTED**

to approve the June 24, 2021 Minutes as submitted by the Executive Director. 4-0, roll call with Mr. McKenna voting yes, Mr. Zecha voting yes, Mr. Fleming voting yes and Mr. Durkin voting yes

4) Approval of Warrants– VOTE

- a) Warrant 7-2021
- b) Warrant 7-2021A – Payroll

On a motion made by Mr. Zecha and seconded by Mr. McKenna:

**VOTED**

to approve Warrants 07-2021 and 07-2021A. 4-0, roll call with Mr. McKenna voting yes, Mr. Zecha voting yes, Mr. Fleming voting yes and Mr. Durkin voting yes

5) Approval of Monthly Transfers 7-2021 – VOTE

On a motion by Mr. Fleming and seconded by Mr. McKenna:

**VOTED**

to approve the monthly transfers as presented and as recommended by NEPC. 4-0, roll call with Mr. McKenna voting yes, Mr. Zecha voting yes, Mr. Fleming voting yes and Mr. Durkin voting yes

6) Acknowledgement of retirement applications under G.L. c 32 §5 – VOTE

- a) Sonia McDonald DOR 6/5/2021
- b) Maria Cano DOR 7/7/2021
- c) Richard W. Carr DOR 7/7/2021
- d) John W. McNulty DOR 7/7/2021
- e) Brian D. Callely DOR 7/9/2021
- f) Anthony Ricciardi DOR 7/9/2021
- g) Michael J. Hallisey DOR 7/10/2021
- h) Carl H. Leone DOR 7/10/2021
- i) Keith L. Perrin DOR 7/10/2021



- j) Larissa Zilitinkevitch DOR 7/10/2021
- k) Kevin F. McGee DOR 7/16/2021
- l) David M. Parker DOR 7/17/2021
- m) Michael Pasquale DOR 7/17/2021
- n) John F. Feeney DOR 7/17/2021

On an omnibus motion by Mr. McKenna and seconded by Mr. Fleming:

**VOTED**

to acknowledge the s. 5 retirements as detailed above. 4-0, roll call with Mr. McKenna voting yes, Mr. Zecha voting yes, Mr. Fleming voting yes and Mr. Durkin voting yes

Mr. Fleming commented about the number of people and amount of institutional knowledge the Authority is losing. Mr. Durkin asked the Executive Director if employees are giving any indication as to why they are leaving. The Executive Director responded that to her knowledge the Authority does not conduct exit interviews, but that when people retiring recently have offered information in that regard to Retirement Staff, coming back into the office and understaffing have been mentioned frequently.

7) Manager Presentations

The following managers underwent an annual investment manager review pursuant to 840 CMR 16.07. The managers presented performance and investment reports detailing the manager's activities which the Board reviewed.

UBS  
Corbin  
Baillie Gifford

Mr. McKenna inquired about NEPC's inclusion of diversity initiatives in the Due Diligence questionnaire, and noted that there seem to be more questions and disclosures regarding diversity than on securities litigation, regulatory and compliance issues. NEPC responded that they are including the additional questions for their own research purposes, because they are currently working to develop a rating system for diversity and inclusion in the evaluation criteria for prospective managers. Mr. McKenna asked if it would affect the overall rating for a manager if the firm is not rated as exceeds for diversity, in consideration of PERAC's recent commentary as it pertains to NEPC's ranking of a particular manager. Mr. Grzejka responded that he is not sure that it would disqualify a potential candidate, but that most managers have already instituted and updated systems intended to address diversity issues.

Seth Toney and Mr. Nicholas Griparich joined the call on behalf of UBS. Mr. Grzejka informed the participants that members of the public are on the call and cautioned against the release of any information which may be considered

proprietary. Mr. Toney reported that as of April the Hedge Funds Solutions groups has been integrated with UBS Asset management, but that the CIO Bruce Amlicke is still in place and no changes to process or portfolio management have been implemented. The firm is currently actively seeking female managers, and has launched all female led portfolios, attracting ESG and diversity attention. UBS has trailed its index with trading underperformance due to positioning of underlying managers, difficulties in the equity long/short space, and concerns about a slowing economy due to the surge in the delta variant. The fund seeks alpha creation with a sector tilt to biotech, which has been a challenging environment due to public policy and political factors, so performance has normalized after a period of accelerated growth. The fund has also experienced headwinds due to growth vs. value rotation. Credit continues to be strong, and relative value has performed well. Mr. Zecha commented that relative to its peers, UBS A&Q is underperforming in the 1 and 2-year periods. Mr. Toney commented that although he does not expect a turnaround when Q2 reporting is finalized, he does expect that the second half of the year will present a more constructive landscape, and that balance sheets will be better positioned for UBS' strategy. Mr. Zecha noted that with underperformance of 300-400 basis points, and of 800bps for the trailing one-year period, the Board will be watching UBS' relative performance. Mr. Fleming concurred that performance has been poor, stressing that UBS needs to ramp up their efforts. UBS acknowledged the Board's concerns and signed off the meeting at 10:45 a.m.

Mr. Grzejka noted that A&Q is a neutral alpha fund with low market sensitivity, and was therefore one of the System's best performers last year, but that the strategy is not one which will participate in wide upswings. Because Corbin's is a more aggressive portfolio with more equity and credit exposure, the two were originally paired together to reduce the volatility of the hedge fund portfolio performance overall. Mr. Zecha stated that due to the fund's underperformance he cannot support a rebalancing of \$2m to UBS at this time as is recommended by NEPC. Mr. Grzejka responded that the goal in making the recommendation was that the System may "buy low" and hopefully participate in the anticipated upswing in the second half. Mr. McKenna asked whether we are comparing UBS to the proper bench. Mr. Grzejka stated that there is no strictly accurate benchmark for a fund of funds. Each is unique.

Mr. Pappastergion arrived at 10:50 a.m. Mr. Zecha left the meeting at 11:00 a.m. and will resume participation via remote access.

Ralph Vasami and Craig Bergstrom joined the meeting on behalf of Corbin. Mr. Vasami reported strong performance YTD of 6.8%, outperforming the HFI Hedge Fund of Funds benchmark, after lagging last year. Corbin uses a disciplined approach diversifying across strategies. Credit struggled last year and is now outperforming. Corporate credit in particular is strong. Equity selection was strong last year, but is now slightly negative. Exposure to Game Stop and AMC hurt some underlying managers, who re-underwrote the positions. The position

in Autonomy was redeemed due to losses, team changes, and lack of long-term confidence. The Pinehurst Fund has a low correlation to investment grade Fixed Income, so if inflation leads to higher interest rates, Pinehurst would expect higher returns. Mr. Fleming remarked that Pinehurst is providing the System added protection vs. equities and the fixed income portfolio, and is performing better than the other manager in the Hedge Fund portfolio. Corbin signed off the meeting at 11:16 a.m.

Kelly Cameron and Kevin Fenelon joined the meeting on behalf of Baillie Gifford. Mr. Grzejka cautioned the participants against release of proprietary information given that there are members of the public on the call. Baillie Gifford International Growth Fund is a concentrated portfolio with a long-term growth focus, and a 5-8 -year outlook. Last year was a boom to Baillie Gifford, but the fund was hurt by the growth to value shift. The fund rebounded strongly in June, earning 3.4% for the month, and close to 10% since inception (September 2020). The firm had two recent retirements, but they did not have a direct impact on the fund. Baillie Gifford relies on an in-house research team of over 100 analysts who share data. Mr. Fleming asked if there have been any changes to the management team, and Ms. Cameron responded that there have not been any which affect the International Growth Fund. Mr. Fleming asked about fund inflows and Kelly directed the Board to page 2 of the on-screen presentation. Mr. Fleming inquired about diversity initiatives. Ms. Cameron reported that the firm is 20% female and minority, and Baillie Gifford has implemented a plan to expand that over time. The firm continues to get mostly male applicants, so they are actively trying to recruit equal numbers of male and female graduates. They are offering internal diversity and inclusion conferences, and view it as a thoughtfully approached, ongoing process.

Mr. Zecha signed back on the meeting as a remote participant at 11:30 a.m.

Regarding the portfolio, Mr. Fenelon noted that International Growth Fund is a low-turnover fund, with over 60% of the portfolio held for over 5 years. Baillie Gifford is pleased with the fund's performance and confident with the opportunity set, and sees "tons" of growth opportunities. China still presents opportunities over the long term, as does energy transition. Baillie Gifford is currently looking for potential names in these areas to add to the portfolio. Mr. Fleming asked about taxes paid out of our investments/returns. Mr. Fenelon stated that because the fund invests in equities, any taxes due would show up as transactional costs. Mr. Fenelon and Ms. Cameron signed off the call at 11:40 a.m.

The Board reviewed and compared each manager's performance with the Retirement System's investment goals and policies. The Board ensured that comprehensive written quarterly reports were filed with the Board and with PERAC and that these reports included a review of investment performance and relative performance, a review of the System's investments, and a report on each

investment manager's current investment outlook or forecast as well as strategy for the future and key personnel staffing changes.

The Board determined each manager continues to operate in a manner represented when retained and outlined in the agreement between the Board and the manager.

Acting Chairman Durkin called a five-minute recess. The Board reconvened at 11:50 a.m.

- 8) NEPC
- a) Flash Report as of 6/30/2021
  - b) Rebalance Recommendation
  - c) Emerging Market Equity Core Search Review – VOTE
  - d) Private Markets Search Review – VOTE

Mr. Grzejka began the Flash Report review. After being interrupted by background noise, he reminded a non-participant caller to put their microphone on mute, and stated that if the caller has any questions, they should be submitted through the chat function. Mr. Grzejka continued that the fund has performed strongly in spite of variability of growth to value to growth shifting, and the highest inflation in thirteen years. Used cars are at record prices, and travel prices have surged, but are expected to normalize. YTD the fund is up 6.9%. Coho was a strong performer last year, but has faced headwinds this year. They have consistently showed an ability to rebound. Small Cap value has performed well year to date, with Boston partners up 25.4%. In non-US equities, SEG trailed the benchmark, as did Schroders, for the one-month and year to date periods, while Axiom (funded February 2021) beat theirs over the one and three month periods. In Fixed Income, Loomis has added value relative to their benchmark, and Rhumblin TIPS returned 3.2% for the three-month period. For the month of July to date, the fund appears to be up about 2%. Garcia Hamilton is trailing year to date. Entrust is still awaiting exit from the remaining investment, and has a court date in November. Mr. McKenna asked whether we need to call them in, as we continue to pay fees, and the asset is losing value and underperforming the benchmark for the class. Mr. Grzejka stated that because there is only one remaining investment managed by Grammercy, comparison to a benchmark is not valid. Mr. Grzejka does not anticipate any progress or resolution prior to the court date. The Private Equity portfolio has returned 10.1% year to date. After the PE and EM RFP processes are completed, we will need to do a Real Estate RFP. Mr. Fleming asked what PRIT is doing that MWRAERS is not, given the disparity in the year to date numbers. Mr. Grzejka reminded the Board that with a funded ratio of the State System in the mid 60's, PRIT's asset allocation has to be more aggressive than MWRAERS', with a funded ratio over 90% on a market value basis. Other factors include that PRIT has a significant exposure to venture which helped performance, does not have to go through the same selection process as the local Boards, is not subject to the same disclosure

requirements, and has access to other managers and can negotiate because of scale.

Mr. Grzejka is recommending that \$10m be reallocated from cash. The Executive Director noted that there will be roughly \$3m going out for payroll and bills and another \$1m going out in capital calls next week. Mr. Zecha asked how long we watch Garcia Hamilton and Lord Abbett before NEPC will recommend action. Mr. Grzejka noted that Lord Abbett has greater credit exposure. The fund is currently at target for fixed income, but could add to Loomis. NEPC will review the Fixed Income portfolio for additional recommendations for the August meeting. Mr. Zecha stated he can't support giving UBS an additional \$2m. Mr. Fleming suggested that NEPC review the Hedge Fund portfolio as well. Mr. Durkin stated that NEPC is executing as planned the asset allocation determined by the Board in February, and that the Board may not want to change the long term strategy based on short term results. Mr. Grzejka stated that although UBS has underperformed recently, they have performed as expected over the since-inception period. Mr. Grzejka stated in making the recommendation that he hoped to capture some of the expected upside, but that ultimately the Board has to be comfortable with it. Mr. Zecha stated that MWRAERS is trailing PRIT YTD by over 400 basis points, and that valid comparison or not, that is the measure to which our performance will be compared. Mr. Grzejka stated that the portfolio is meeting the MWRAERS' goals and should not be measured in terms of a system with a substantially lower funded ratio. MWRAERS should not change the asset allocation based on the State System's goals, and should not be as aggressively positioned. Mr. Fleming suggested that rather than allocate \$2m to UBS, that \$1m go to UBS and \$1m go to Axiom. Mr. McKenna asked about the EM search timing, noting that Axiom is higher risk than the original EM pairing. Mr. Grzejka expects that if the Board selects finalists this month, they will present in August. The majority of the funds for the allocation are currently with Schroders with an additional small rebalance across the portfolio for the remainder. Mr. Durkin stressed the importance of remaining committed to the long-term plan, and to staying at the established target allocations, and then revisiting the annual asset allocation plan again in February, or earlier if necessary.

Mr. Fleming made a motion seconded by Mr. Pappastergion to accept the rebalance recommendations of NEPC with the exception of reducing the rebalance to UBS to \$1m with the remaining \$1m to go to Axiom. Mr. Pappastergion asked for Mr. Zecha's comments. Mr. Zecha said he would agree to the modification. Mr. McKenna asked that NEPC forward to the Board an updated rebalance sheet to reflect the changes. Mr. Fleming stated he intends to adhere to the established Asset Allocation, and that the System will still be within the targets.

On the motion made by Mr. Fleming and seconded by Mr. Pappastergion:  
**VOTED**

to approve the rebalance recommendations of NEPC with the exception of changing the \$2 recommendation for UBS to \$1m, with the remaining \$1m going to Axiom. 5-0, roll call with Mr. Fleming voting yes, Mr. McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes, and Mr. Durkin voting yes. The final approved rebalance transfers were:

Cash	(\$10,000,000)
Coho	\$5,000,000
Robeco	\$2,000,000
Corbin	\$1,000,000
UBS	\$1,000,000
Axiom	\$1,000,000

Mr. Grzejka reviewed the responses to the Emerging Markets Equity Core RFP intended to complement the more aggressive manager in the space, Axiom.

Aberdeen-has had personnel changes which may affect the management of the fund, and the fund has had losses since 2018.

ABS-responded to first RFP and was a finalist, fund of funds approach  
Amundi-Core manager, French company, recently purchased Pioneer Investments

Ashmore-relatively high fees

Aubrey-boutique firm, growth-focused fund

Candriam—owned by New York Life, growth approach

Carrhae-Incomplete submission

Connor, Clark & Lunn-responded to original search, all cap strategy

Coronation-Tobacco exposure which may exceed restrictions

Driehaus-CEO left recently, growth focus

Eastspring-All cap, value tilt

FountainCap-China only, not a core fund

GAM-AUM losses since 2018

Glovista-value focus, <\$500m AUM

Grantham, Mayo, Van Otterloo-all cap value approach, AUM losses since 2018

Manulife-holds John Hancock as a subsidiary, all cap, relatively high fees

Newton-Owned by BNY Mellon, growth approach

Nipun-firm and strategy both <\$500m AUM

NS Partners-responded to original RFP, all cap growth approach, subsidiary of Connor Clark & Lunn

Oaktree-now owned by Brookfield, all cap

Polar-Tobacco exposure which may exceed restrictions, growth approach, <\$500m AUM

Thornburg-responded to original search, all cap strategy

Victory-Sophos team would be managing the fund (subsidiary of Victory)

Wellington-former MWRAERS manager, all cap strategy

William Blair-former MWRAERS manager, growth approach, relatively high fees

Mr. Grzejka stated that the Board may eliminate those who were not responsive to the RFP requirements or consistent with the strategy being sought, or simply select finalists. Mr. Durkin inquired as to how much importance is to be placed on fees, because the range is broad, noting that 80bps seems expensive. Mr. Grzejka responded that within the universe 80bps is average. Mr. Fleming asked whether Manulife and Wellington would pair well with Axiom, and Mr. Grzejka responded that they would. Mr. Fleming asked about Blair, and Mr. Grzejka responded that the fund proposed is a growth fund, rather than a core strategy as specified in the RFP. Mr. Zecha inquired about Thornburg, and Mr. Grzejka stated that NEPC could certainly look further at it. Mr. McKenna made a motion to invite ABS, Wellington, and Thornburg to make finalist presentations. Mr. Zecha seconded Mr. McKenna's motion. Mr. Fleming asked if Mr. McKenna would accept a friendly amendment to add Manulife, and Mr. McKenna responded in the affirmative.

On the motion made by Mr. McKenna and seconded by Mr. Zecha:

**VOTED**

to select as finalists in the EME Core search ABS, Wellington, Thornburg and Manulife. 5-0, roll call with Mr. Fleming voting yes, Mr. McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes, and Mr. Durkin voting yes.

Mr. Zecha asked if the presentations would be made in person. Mr. Grzejka responded that he could offer it on a voluntary basis, but that most of the managers have not resumed full travel. Mr. Leonard added that many still have an outright travel ban in place for their personnel. Mr. Durkin asked whether it may be perceived as unfair to have some in person and others via remote access. Mr. Zecha agreed and stated to be safe we should just be consistent and have them all call in via Zoom. The rest of the Board concurred.

Mr. Grzejka asked if the Board still wants advance copies of the presentations, and Mr. Durkin responded yes. Mr. McKenna asked if all have a three-year track record. Mr. Grzejka said yes, but that it is his recollection is that there was some flexibility built into the RFP. The Executive Director read the RFP language into the record:

“Preference will be given to Funds that have a live track record of at least three years, however, this is subject to the Board’s discretion.”

Regarding the Private Equity RFP targeting Growth Equity, Co-Investments and Special Situations for a commitment of up to \$15m, the Board received 16 responses of which 13 were determined by the Board at the June meeting to have met the basic requirements of the search.

Adams Street-5<sup>th</sup> Co-investment fund  
Capital Dynamics-team is located in Europe, US & Europe mix of investments

Carlyle-first dedicated Growth Equity fund  
 Constitution-current manager, North America mid-market co-investment  
 Hamilton Lane-current manager, \$2.5bn target, SMID co-investment  
 Harbourvest-current manager, broad-based co-investment  
 Kayne Partners-recent CEO change, growth equity focused, relatively small at \$500m  
 LGT Crown-co-investment strategy, lower than average fees  
 Mesirov-co-investment, buyout & late-stage venture strategy  
 Nile Capital-Diverse manager, focus on financial services, \$300m raise target  
 Oaktree-Special Situations, distressed, funds would not be invested until after expected 2023 close  
 PA-current manager, Co-investment, small company buyout  
 Pantheon-Global co-investment, side letter would need to be negotiated

Mr. Grzejka commented that the list contains several managers who have performed well for the System, who are familiar with PERAC's requirements and process, and who have existing side letters. Mr. McKenna asked whether it could present an issue to select Constitution for further evaluation if they are rated only "Advantageous" and why the rating was assigned. Mr. Grzejka stated that he would not expect there to be a problem, that PERAC's previous issue was that two disparate NEPC teams performing evaluations on behalf of two different Systems had assigned different rankings to the same manager. Firms assigned the HA ranking by NEPC have been fully underwritten, while the A ranking indicates that NEPC has not yet completed the research. Oaktree was ranked NA because of the extended time horizon of 2023 before any of the funds would be called. Mr. Grzejka stated that his recommendation would be to call in PA, Harbourvest, Hamilton Lane and Constitution. Each meets the criteria, has side letters, and has earned strong returns for MWRAERS. Mr. Durkin asked how this would be different from the current PE portfolio. Mr. Grzejka stated that most of the existing accounts are fund of funds strategies, now there are direct line strategies, adding co-investment to venture and buyout. The companies are established, a lot of work was done on some of the subscription documents and the side letters, familiarity with the, GP's and the higher expected returns from growth equity are perceived advantages of these recommendations. Mr. Zecha made a motion to call Constitution, Hamilton Lane, Harbourvest, and PA in for presentations. Mr. Grzejka suggested Mesirov as a viable alternative to either Hamilton Lane or Harbourvest. Mr. Fleming seconded the motion and requested that Mesirov be added, for five total PE finalists. Mr. McKenna reminded the Board that at the August meeting we already have three managers scheduled for due diligence, four prospective EM managers to make presentations, and we have now added five prospective PE managers. Mr. Pappastergion asked if the PE managers could wait until September, and Mr. Grzejka stated that there is sufficient time before the close dates to do so. Mr. Grzejka also suggested that Hamilton Lane and Harbourvest be asked to do their due diligence presentations at the same time in September.



On the motion made by Mr. Zecha and seconded by Mr. Fleming:

**VOTED**

to select as finalists in the PE search Constitution, Hamilton Lane, Harbourvest, Mesirow, and PA. 5-0, roll call with Mr. Fleming voting yes, Mr. McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes, and Mr. Durkin voting yes.

Mr. Fleming commented to Mr. Leonard that the Board appreciates all of Mr. Grzejka's work, and that he hopes NEPC recognizes and acknowledges it. Mr. Leonard responded that Mr. Grzejka is a valued and well-respected member of the NEPC team, that he heads the Due Diligence Committee, and that he is proud of his progress and contributions over the years.

9) Update: Retirement Office Access Report

Mr. Pappastergion asked about the individuals who were denied access at the scanner. The Executive Director responded that she had reviewed the report, and that the individuals listed were people whom we were expecting and with whom we had appointments, but they must have just tried their badges not knowing the office access was restricted.

10) 91A Termination Hearings

The Retirement Coordinator reported that as of this morning (during the meeting) PERAC had released the final two previously non-compliant retirees, so hearings are no longer required. All disability retirees have now complied with the 2020 91A filing requirements.

Mr. McKenna asked about the status of the Salary Continuation/PFML issue. The Executive Director stated that it was tabled, and asked if Mr. McKenna would like it placed on the August agenda under Legal. Mr. McKenna responded affirmatively.

Mr. Fleming asked that the Board approve for any Board or Staff member attendance at the two upcoming NCPERS Conferences, and the Fall MACRS Conference.

On a motion made by Mr. McKenna and seconded by Mr. Pappastergion:

**VOTED**

to approve travel for the Board and Staff to attend the two upcoming NCPERS conferences and the Fall MACRS Conference. 5-0, roll call with Mr. Fleming voting yes, Mr. McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes, and Mr. Durkin voting yes.

On a motion made by Mr. Pappastergion and seconded by Mr. Fleming:  
**VOTED**  
 to adjourn the July 29, 2021 meeting of the MWRA Employees' Retirement Board. 5-0, roll call with Mr. Fleming voting yes, Mr. McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes, and Mr. Durkin voting yes.

Mr. Fleming commended Mr. Durkin for a job well done chairing the meeting. The meeting was adjourned at 1:08 p.m.

The following communications were distributed to the Board for their review:

PERAC MEMO #18/2021 re. Updated Member and Beneficiary Applications for Distribution of Accumulated Total Deductions Forms  
 PERAC MEMO #19/2021 re. Mandatory Retirement Board Member Training – 3<sup>rd</sup> Quarter 2021  
 PERAC MEMO #20/2021 re. Tobacco Company List  
 PERAC MEMO #21/2021 re. Cost of Living Increase for Supplemental Dependent Allowance Paid to Accidental Disability Retirees and Accidental Death Survivors  
 PERAC MEMO #22/2021 re. Reinstatement to Service under G.L. c. 32 § 105  
 PERAC MEMO #23/2021 re. 91A PROSPER TASK  
 PERAC Annual Investment Report  
 StepStone Acquisition of Greenspring Associates

**The Board reserves the right to consider items on the agenda out of order. The listing of items is those reasonably anticipated by the Chair to be discussed received at least forty-eight (48) hours prior to the meeting. Not all items listed may in fact be discussed and other items not listed may also be brought up for discussion to the extent permitted by law. Items identified for discussion in Executive Session may be conducted in open session, in addition to, or in lieu of discussion in Executive Session.**

**Date of next scheduled Retirement Board meeting is Thursday, August 26, 2021, 10:00 a.m., Two Griffin Way, Chelsea.**

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James M. Fleming, Elected Member

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Kevin Mr. McKenna, Elected Member

---

Andrew Pappastergion, Ex Officio

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Thomas J. Durkin, Appointed Member

---

Frank Zecha, Fifth Member

# Emerging Market Development

For institutional use only. Not intended for reproduction or use with the public. Any views expressed herein are those of the author(s), are based on available information, and are subject to change without notice. Individual portfolio management teams may hold different views and may make different investment decisions for different clients. The material and/or its contents are current as of the most recent quarter end, unless otherwise noted. Certain data provided is that of a third party. While data is believed to be reliable, no assurance is being provided as to its accuracy or completeness.

## Agenda

- Section One** Wellington Management Company LLP overview
- Section Two** Investment process
- Section Three** Portfolio analytics
- Section Four** Appendix





# Wellington Management today

A trusted advisor and strategic partner to clients worldwide

## BY THE NUMBERS

### Business

USD 1,388 billion of client assets under management

2,319 clients

62 countries in which clients are based

### People and portfolios

883 investment professionals

17 years of experience, on average

175 partners all active at the firm

### Heritage: key dates

**1928** Wellington Fund – the first US balanced fund

**1979** Establishment of our private partnership

**1994** Our first long – short strategy

**2014** Our first dedicated private equity strategy

**2015** Global Impact: Our first diversified impact investing strategy in public equities



### OWNERSHIP MODEL

Long-term perspective of a private partnership structure

Attract and retain investment talent

Independent: No public shareholders, no outside capital

Interests aligned with clients

### BUSINESS MODEL

Singular focus on investment management

Diversification by asset class, geography, and client type

Research for client benefit only

Commitment to bringing the right resources to each client

### INVESTMENT MODEL

Comprehensive capabilities

Rigorous proprietary research

Career analysts

Global resources

Empowered portfolio teams

### CULTURE

Open, collaborative

Performance driven

Professional/collegial

High standards, ethics, and integrity

Global diversity and inclusion



### CURRENT LEADERSHIP INITIATIVES

Globalization

Sustainable investing and ESG research

Investment science and research-data analytics

Investment risk management



## Our diversity, equity and inclusion strategy pillars

DEI Steering Committee

Regional DEI Committees – APAC, Americas and EMEA

Upstanders and Becoming Allies

Global Diversity, Equity and Inclusion Team

13 Diversity Business Networks with regional chapters and two Business Network Councils – Americas and EMEA

20+ External Diversity Associations and Industry Coalitions

Partnered with more than 100 US-based diverse suppliers

Grants with 193 organizations in 11 geographies since 1992



As of 1 March 2021



## MA Public Plan and PERAC experience

### Wellington Management and US Public Funds

Long history of managing assets for US Public Funds representing \$139.6 billion as of June 30, 2021

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Relationships with 9 Massachusetts Public Fund entities representing \$1.2 billion across 12 strategies as of June 30, 2021

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Wellington is familiar and equipped to follow PERAC guidelines and reporting

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# Emerging Market Development

## Strategy overview

Unconstrained equity exposure to economic development themes in emerging markets

---

### Investment objective

- Seek to outperform broad EM equity indices over a 3 – 5 year cycle by investing in companies which we believe will benefit from themes relating to structural and economic development in emerging markets

The characteristics presented are sought during the portfolio management process. Actual experience may not reflect all of these characteristics, or may be outside of stated ranges.



# Emerging Market Development

## Why invest with Wellington?

### Defining features



5 – 10 independent, focused and dynamic investment themes

Strong ESG orientation and sustainability alignment

Active security selection within themes

Enhanced EM opportunity set and customized portfolio construction approach

### Potential portfolio benefits



Attractive upside/ downside properties

Complement to core or passive EM allocations

A longer term balance to cyclical exposures

Liquid alternative to private equity in EM

The characteristics presented are sought during the portfolio management process. Actual experience may not reflect all of these characteristics, or may be outside of stated ranges.

# Emerging Market Development

What is the opportunity?

We believe...

## Economic development

is an underappreciated driver of investment opportunities

## Equity benchmarks

are a poor representation of the companies driving structural change

## Financial metrics

alone are insufficient inputs when making long term investment decisions

## Active company engagement

Active company engagement helps drive positive portfolio outcomes

## Thematic analysis and security selection

are separate and complementary skillsets

# Wellington Next Generation Platform

## Investment philosophy

### Theme Purity

*key in driving outperformance*

### Active Management

*exploits pricing inefficiency*

### Multi-faceted Coverage

*enable well-informed decision-making*

### Looking Beyond Traditional Metrics

*empower differentiation*

### Risk-based Positioning

*facilitates better potential risk-adjusted returns*

- Relevant structural tailwinds should be the primary drivers of returns
- Themes are not priced efficiently, hence bottom-up security selection is critical in driving outperformance
- Profitability profiles differ across different stages of the thematic cycle
- Comprehensive coverage across geographies and supply chains is essential in identifying ingredients of sustainable profitability, such as industry structure, customer diversification and company positioning
- Financial metrics alone are no longer sufficient when making long-term investment decisions
- Qualitative inputs looking at sustainability become increasingly important in differentiating winners from losers
- When building benchmark agnostic portfolios, conviction should be expressed in risk contributions, not cash allocations, to avoid inefficient portfolio outcomes

Actual holdings vary and there is no guarantee the fund will have the same characteristics as described above. | The portfolio does not have a sustainable investment objective. While the evaluation of Sustainability Risks through the analysis of ESG factors is part of the investment process, it may not necessarily result in the exclusion of a security. Please refer to the sustainability-related disclosures for information on the commitments of the portfolio.

# Emerging Market Development

## Leveraging Wellington research

### PORTFOLIO MANAGEMENT



**Daire Dunne, CFA**  
Portfolio Manager  
Singapore

21 years of professional experience

Career focused on global thematic macro-oriented investing across asset classes and emerging markets



**Simon Henry, CFA**  
Portfolio Manager  
Singapore

17 years of professional experience

Specialises in quantitative valuation and analysis frameworks, and advanced portfolio construction techniques



**Pui San Shim**  
Solutions Portfolio Manager  
Singapore

16 years of professional experience

Focus on portfolio coordination and implementation for the firm's research and global equity portfolios



**Katerina Sakharova**  
Equity Portfolio Analyst  
Singapore

12 years of professional experience

Focus on portfolio coordination and implementation for the firm's research and global equity portfolios

### STRUCTURAL RESEARCH



**Santiago Millan, CFA**  
Macro Strategist  
Hong Kong

25 years of professional experience

Career analysing macro economic development in emerging economies globally

### ESG RESEARCH

#### Wellington's ESG research team Wellington

Management's ESG Research Team resides within the broad investment research resources of the firm and brings depth of ESG expertise to the investment dialogue. The ESG Team focuses on research, stewardship including engagement and proxy voting, and integration of ESG factors into portfolio managers' and analysts' processes.

### PRODUCT MANAGEMENT

**Saul Henry, CFA**  
Investment Director  
Boston

**Andrew Sharp-Paul**  
Investment Director  
Singapore

**Matthew Bullock**  
Investment Director  
London

**Sherilyn Tan, CFA, CAIA**  
Investment Specialist  
Singapore

Focus on portfolio investment integrity and oversight of portfolio positioning, performance, and risk exposures

### GLOBAL INVESTMENT RESOURCES

#### FINANCIAL MARKET DEEPENING



**Robert E. Wydenbach**  
London  
23 yrs of prof exp

#### HEALTH CARE PROVISION



**Rebecca D. Sykes, CFA**  
Boston  
15 yrs of prof exp

#### INFRASTRUCTURE EVOLUTION



**Hillary Lawson, CFA**  
Singapore  
11 yrs of prof exp

#### AUTOMATION & ROBOTICS



**Anita M. Killian, CFA**  
Tokyo  
34 yrs of prof exp

#### ENVIRONMENTAL CONSCIOUSNESS



**Juanjuan Niska, CFA**  
Boston  
16 yrs of prof exp

#### ENERGY EFFICIENCY



**Namit Nayegandhi**  
Singapore  
22 yrs of prof exp

#### SOCIAL EMPOWERMENT



**Liliana Dearth**  
Singapore  
24 yrs of prof exp

#### DIGITAL CONNECTIVITY



**Yash Patodia**  
Singapore  
13 yrs of prof exp



**Devashish Chopra**  
London  
26 yrs of prof exp



**Ann C. Gallo**  
Boston  
31 yrs of prof exp

### SUSTAINABLE INVESTMENT TEAM

**Wendy Cromwell, CFA**  
Director,  
Sustainable Investment  
26 yrs of prof exp

**Marjorie Winfrey**  
Sustainable Investment  
Research Analyst  
15 yrs of prof exp

**Andria Weil**  
Sustainable Investment  
Policy Manager  
27 yrs of prof exp

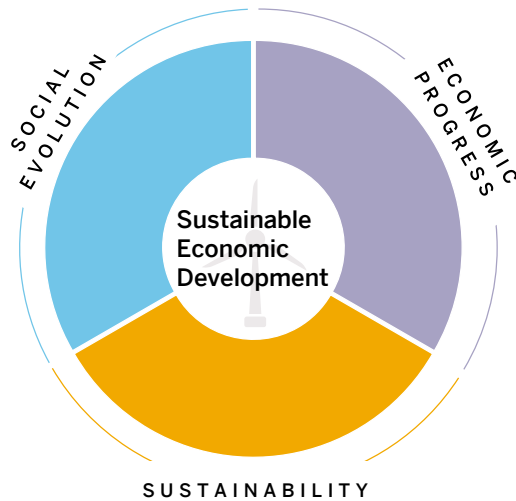
### ASPIRATIONAL SOCIETY



**Jon Jhun**  
Global Industry  
Analyst  
10 yrs of prof exp

As of 30 June 2021

## Forces of structural change



# Emerging Market Development

From the EM economic development opportunity to the investment potential

## Portfolio themes

## Investment thesis



**AUTOMATION  
& ROBOTICS**

Better affordability, supported by rising wages and technological innovation, should encourage significant catch up to developed peers



**INFRASTRUCTURE  
EVOLUTION**

The focus for infrastructure investments continues to broaden, incorporating both the physical movement of goods and the development of robust and reliable digital networks, services and platforms



**ENVIRONMENTAL  
CONSCIOUSNESS**

Social pressures continue to rise and pressure aggressive policy support



**ENERGY  
EFFICIENCY**

Increasing policy initiatives to reduce energy intensity, fueled by aggressive targets for emissions reduction, lower costs for consumers and increasing energy security



**SOCIAL  
EMPOWERMENT**

Policy initiatives and favourable demographics are creating tailwinds for the next wave of emerging and frontier market consumers



**HEALTH  
CARE  
PROVISION**

Favourable demographics and improving accessibility, along with reform commitments should fuel strong growth



**FINANCIAL  
MARKET  
DEEPENING**

Penetration of financial products and services is very low and governments are motivated to improve financial literacy and access



**DIGITAL  
CONNECTIVITY**

Virtual integration of networks, market places, ecommerce, payments and leisure activities



**ASPIRATIONAL  
SOCIETY**

Increasing disposable income in EM will increase spending via the shift in perceptions on premium consumption, consumption of experiences and formats of consumption



# Emerging Market Development

Environmental, social, and governance overview

## SUSTAINABLE ALIGNMENT

**Economic development** themes underpin a diverse and underappreciated set of attractive investment opportunities across Emerging Markets

## ESG INTEGRATION

**A wider range of factors**, beyond financial metrics, needs to be assessed when making long term capital commitments in Emerging Markets

## COMPANY ENGAGEMENT

We believe that company engagement can lead to **long-term positive outcomes** through actively sharing our views and ensuring consistent alignment to our development goals

## EXCLUSIONS LIST

Certain corporate activity is **fundamentally mis-aligned** with our definition of Economic Development

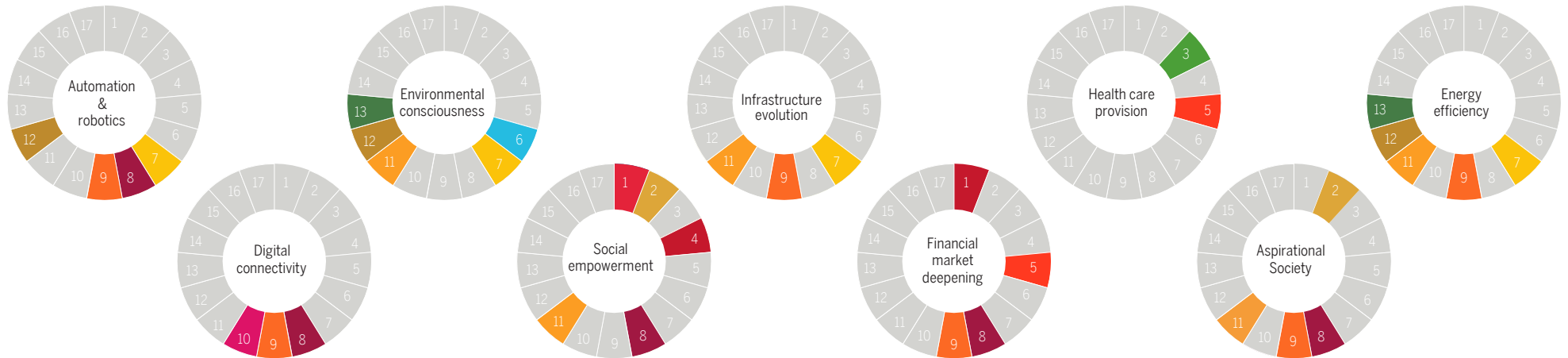


# Emerging Market Development

## Sustainable alignment of investment themes

### UN Sustainable Development Goals

- Natural synergies between the sub-themes within EM Development and the 17 SDGs
- We believe that SDGs 1 – 13 are particularly well represented in the portfolio



Note: Colored segments denote the specific UN Sustainable Development Goal that each sub-theme aligns with. | Sources: Wellington Management, UN.org | Alignment is based on the views of the Wellington Emerging Market Development portfolio management team. Individual holdings within a theme may align with one or more SDGs associated with their theme in the portfolio, but not necessarily all SDGs identified for that theme. As of 30 December 2020. May not be representative of all themes or all holdings held by the fund. | Wellington Management supports the United Nations Sustainable Development Goals.

# Wellington Next Generation Platform

## Investment process



### OBJECTIVE

- Seeks long-term structural themes that cut across regions, sectors and industries, and which are under-represented by traditional market indices
- Fundamental bottom-up security research to identify companies we believe are most likely to benefit from each structural theme
- Utilises a risk-based portfolio construction process which aims to balance long term diversification with shorter term return potential

### PROCESS

- Dedicated proprietary thematic research aiming to identify demographic, policy and innovation tailwinds. Emphasis on investability of each theme, as well liquidity and purity requirements
- Draws on Wellington's equity platform to access the insights of our Global Industry Research, equity analysts and portfolio managers, and sustainable investing team
- Long term thematic exposures are balanced using a contribution to risk framework, while shorter term analysis helps manage the investment cycle

### OUTCOME

- Selection of high conviction themes with accompanying universes
- Targeted exposure to companies we believe will be thematic winners
- A high active share portfolio, balanced across thematic exposures

# Wellington Next Generation Platform

## Investment process

### THEME SELECTION



### OUTCOME

Selection of high conviction themes with accompanying theme universes

## Dedicated research to identify most attractive themes

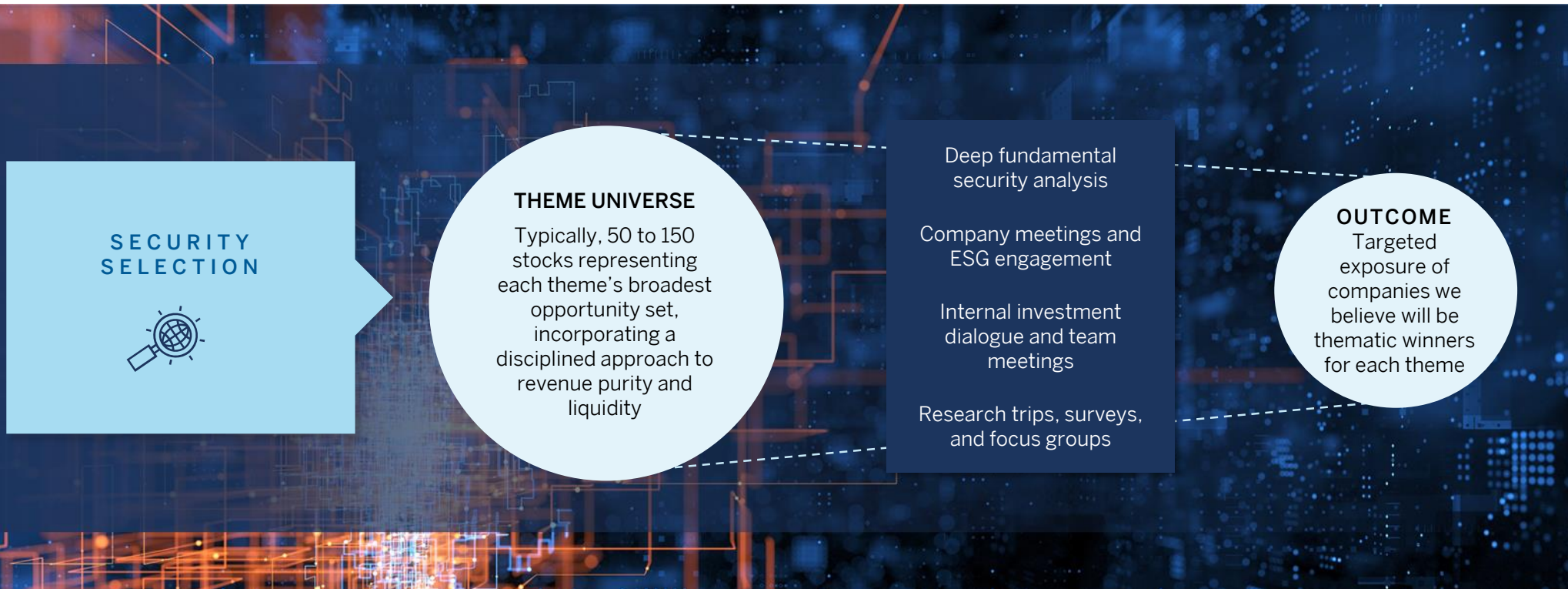


The characteristics presented are sought during the portfolio management process. Actual experience may not reflect all of these characteristics, or may be outside of stated ranges.

# Wellington Next Generation Platform

## Investment process

### Security selection: Identifying winners within each theme



The characteristics presented are sought during the portfolio management process. Actual experience may not reflect all of these characteristics, or may be outside of stated ranges.

PORTFOLIO  
CONSTRUCTION



OUTCOME

A high active share portfolio, balanced across thematic exposures

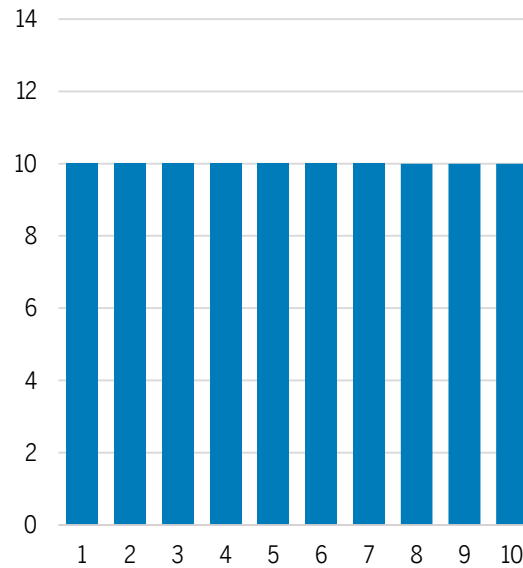
# Wellington Next Generation Platform

## Investment process

### Balancing risk and opportunity

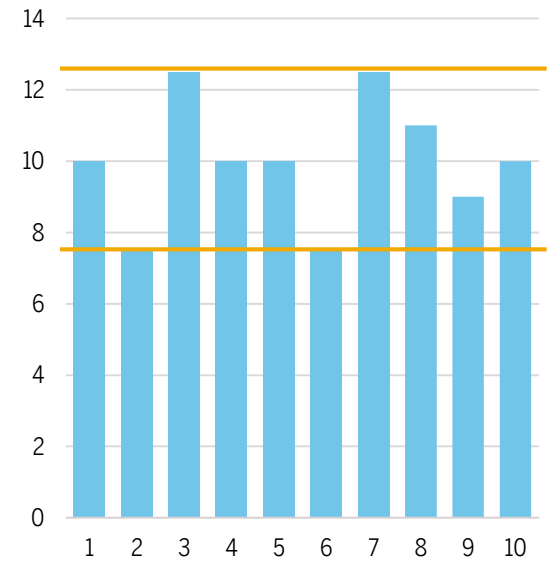
#### Long term risk balance

Equal contribution to risk



#### Short term positioning

Conviction weighted theme exposures



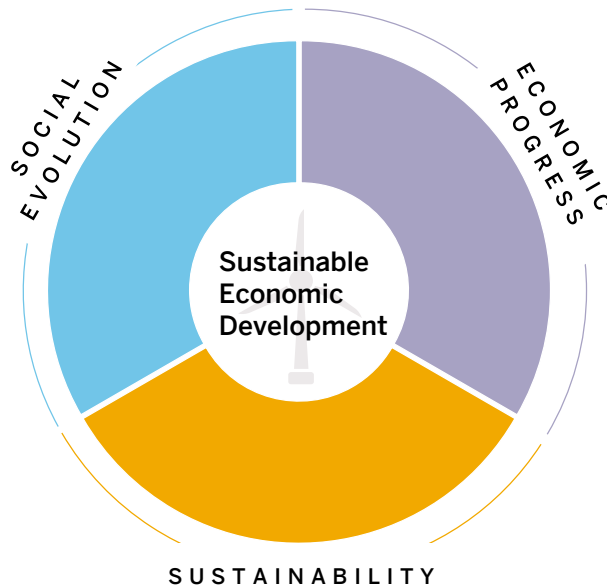
#### Why allocate in risk terms?

- Don't want any one theme to dominate the portfolio
- Higher volatility is often not commensurate with higher returns
- Volatility tends to be "sticky" in the short term
- Desire to maximise the diversification benefit on each theme

The characteristics presented are sought during the portfolio management process. Actual experience may not reflect all of these characteristics, or may be outside of stated ranges.

# Emerging Market Development

## Representative account top three holdings by theme



Stock	Country	Weight (%)
<b>Automation &amp; Robotics</b>		
Teradyne	US	1.0
Keyence	Japan	1.0
Delta Electronics	Taiwan	0.9
<b>Infrastructure Evolution</b>		
Container Corp India	India	1.2
China Merchants Port	China	1.1
Corp Inmobiliaria Vesta	Mexico	1.0
<b>Environmental consciousness</b>		
China Longyuan Power	China	2.2
Xinyi Solar	China	1.5
ENN Energy	China	1.1
<b>Energy Efficiency</b>		
Yunnan Energy New Material	China	1.4
GEM	China	0.8
LG Chem	South Korea	0.8

Stock	Country	Weight (%)
<b>Social Empowerment</b>		
Godrej Properties	India	0.9
Escorts	India	0.9
China Education	China	0.8
<b>Health Care Provision</b>		
WuXi AppTec	China	1.0
Zai Lab	China	0.8
CSPC Pharmaceutical	China	0.7
<b>Financial Market Deepening</b>		
AIA	Hong Kong	1.4
ICICI Bank	India	1.2
Housing Dev Finance	India	1.2
<b>Digital Connectivity</b>		
Alibaba	China	1.3
Tencent	China	1.3
Sea	Singapore	0.7

Stock	Country	Weight (%)
<b>Aspirational Society</b>		
CP ALL PCL	Thailand	1.1
Yatsen	China	1.0
Kweichow Moutai	China	0.8

As of 30 June 2021 | Weight of holding in total Emerging Market Development representative account. The names listed above represent the top three weights in each theme | The specific securities identified are not representative of all of the securities purchased, sold, or recommended for clients. It should not be assumed that an investment in the securities identified has been or will be profitable. Actual holdings will vary for each client and there is no guarantee that a particular client's account will hold any or all of the securities listed. The data shown is of a representative account, is for informational purposes only, is subject to change, and is not indicative of future portfolio characteristics or returns. | Portfolio characteristics are based on the underlying holdings of the representative account and are subject to change. This data may be sourced internally or externally depending on the specific approach, availability of internal data, underlying holdings characteristics, and other factors. Projected or forward looking characteristics are based on a number of assumptions and the use of alternative assumptions could yield significantly different results. Additional information on this data is available upon request. | Please refer to the Important Disclosures page for additional information.







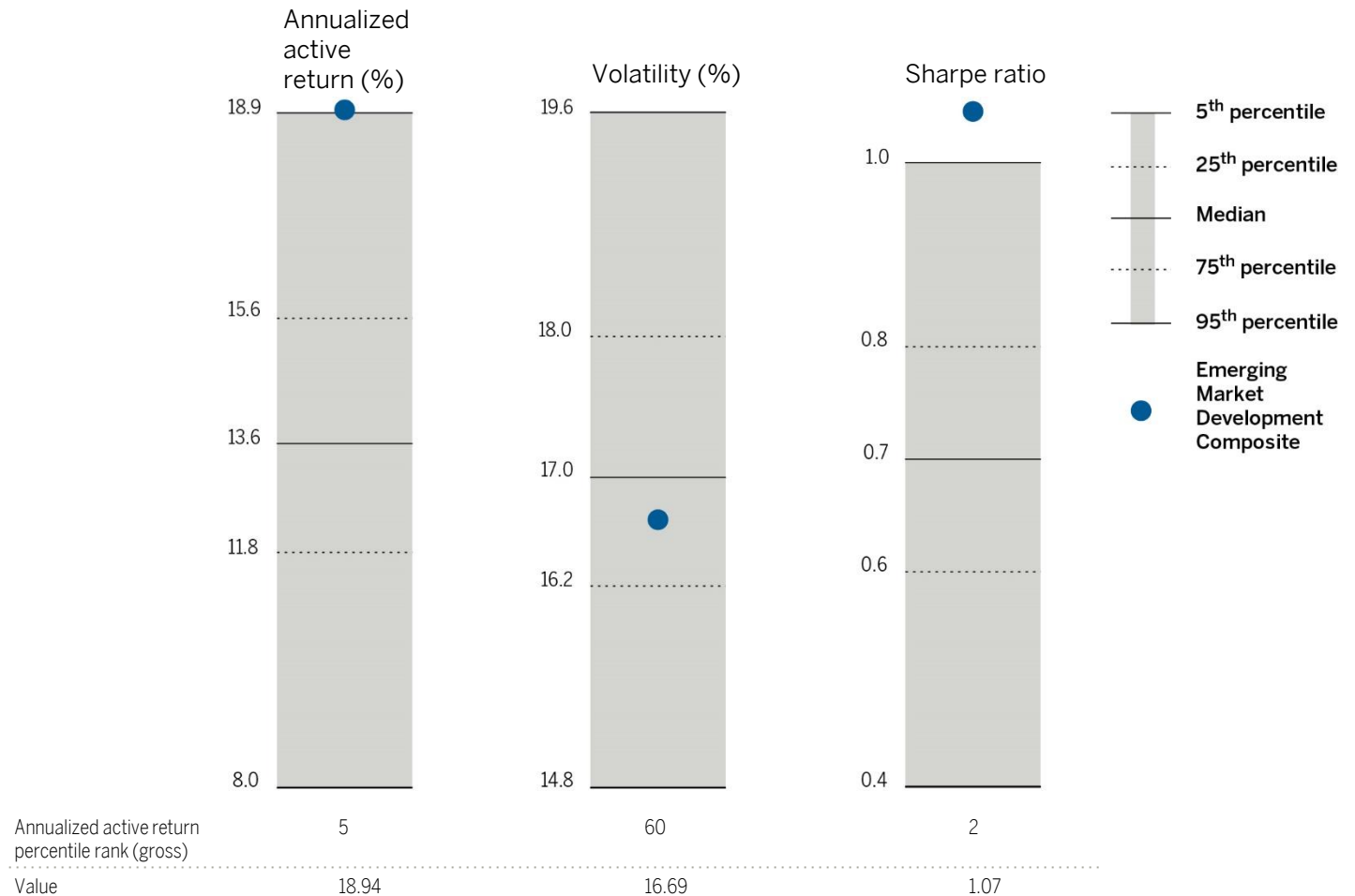


# Emerging Market Development Composite

## Risk comparison

5 years as of 30 June 2021 (gross, USD)

Source: eVestment Alliance | The Global Emerging Markets manager results are presented for 5 years as of 30 June 2021. The inception date of the Emerging Market Development Composite (the "Advisor") is 31 October 2015. | The Emerging Market Development approach is benchmark agnostic, unconstrained, and long-only equity. The peer group comparison represents percentile rankings, which are based on gross of fee returns and reflects where those returns or given metric fall within the indicated eVestment universe. The Global Emerging Market universe is defined by eVestment and is intended to include Global Emerging Market products that invest primarily emerging markets equities. The Adviser did not pay a fee to be included in the rankings. Data is that of a third party. While data is believed to be reliable, no assurance is being provided as to its accuracy or completeness. | **PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS AND AN INVESTMENT CAN LOSE VALUE.** Gross performance results are net of commissions and other direct expenses, but before (gross of) advisory fees, custody charges, withholding taxes, and other indirect expenses, and include reinvestment of dividends and other earnings. If all expenses were reflected, the performance shown would be lower. Actual fees will vary depending on, among other things, the applicable fee schedule and account size. | For use in one-on-one presentations only. | This information complements the GIPS® Composite Report included at the end of the materials. Please refer to the Important Disclosures page for additional information.



## Emerging Market Development

### Investment returns

	As of 31 July 2021 (% , USD)				
	3 mos	1 yr	3 yrs	5 yrs	SI
<b>Emerging Market Development Composite (gross)</b>	<b>-1.6</b>	<b>30.4</b>	<b>15.8</b>	<b>16.9</b>	<b>15.8</b>
<b>Emerging Market Development Composite (net)</b>	<b>-1.8</b>	<b>29.2</b>	<b>14.8</b>	<b>15.9</b>	<b>14.8</b>
MSCI Emerging Markets	-4.3	21.0	8.3	10.8	10.3
Active return (gross vs benchmark)	2.7	9.3	7.5	6.2	5.5

	YTD	2020	2019	2018	2017	2016
<b>Emerging Market Development Composite (gross)</b>	<b>2.2</b>	<b>40.0</b>	<b>23.3</b>	<b>-13.4</b>	<b>46.6</b>	<b>6.9</b>
<b>Emerging Market Development Composite (net)</b>	<b>1.6</b>	<b>38.8</b>	<b>22.2</b>	<b>-14.2</b>	<b>45.3</b>	<b>5.9</b>
MSCI Emerging Markets	0.4	18.7	18.9	-14.2	37.8	11.6
Active return (gross vs benchmark)	1.7	21.3	4.4	0.8	8.8	-4.7

	2015*
<b>Emerging Market Development Composite (gross)</b>	<b>-2.8</b>
<b>Emerging Market Development Composite (net)</b>	<b>-3.0</b>
MSCI Emerging Markets	-6.0
Active return (gross vs benchmark)	3.2

\*Partial calendar year (31 October 2015 to 31 December) | The inception date of the Emerging Market Development Composite is 31 October 2015. | Sums may not total due to rounding. | Performance returns for periods one year or less are not annualized. | **PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS AND AN INVESTMENT CAN LOSE VALUE.** Gross performance results are net of commissions and other direct expenses, but before (gross of) advisory fees, custody charges, withholding taxes, and other indirect expenses, and include reinvestment of dividends and other earnings. Net performance results are based on the highest published US advisory fee for this product, include reinvestment of dividends and other earnings, and are net of advisory fees, commissions, and other direct expenses, but before custody charges, withholding taxes, and other indirect expenses. Composite returns have the potential to be adjusted until reviewed and finalized 30 days following each calendar quarter end period. This information complements the GIPS® Composite Report included at the end of the materials. Please refer to the Important Disclosures page for additional information.

## Emerging Market Development

### Representative account characteristics

As of 31 July 2021

	Portfolio	Benchmark
<b>Size</b>		
Asset-weighted market cap (USD, bil)	45.2	144.2
Median market cap (USD, bil)	10.4	7.7
Over USD 10 bil (%)	60	80
USD 5 – 10 bil (%)	18	13
USD 2 – 5 bil (%)	14	7
USD 1 – 2 bil (%)	7	0
Under USD 1 bil (%)	2	0
<b>Financial metrics</b>		
Projected EPS growth (5-yr, %)	18.0	18.7
Projected P/E (x)	16.8	12.5
Price/book (x)	2.3	1.7
<b>Risk (holdings based)</b>		
Projected beta - equity	0.98	
Projected tracking risk (%)	4.52	

Benchmark: MSCI Emerging Markets | Sums may not total due to rounding. | If access products are held by the portfolio they may not be included in the calculation of characteristic data. Access products are instruments used to gain access to equity markets not otherwise available and may include (but are not limited to) instruments such as warrants, total return swaps, p-notes, or zero strike options. | The data shown is of a representative account, is for informational purposes only, is subject to change, and is not indicative of future portfolio characteristics or returns. Portfolio characteristics are based on the underlying holdings of the representative account and are subject to change. This data may be sourced internally or externally depending on the specific approach, availability of internal data, underlying holdings characteristics, and other factors. Projected or forward looking characteristics are based on a number of assumptions and the use of alternative assumptions could yield significantly different results. Additional information on this data is available upon request. | This information complements the GIPS® Composite Report included at the end of the materials. Please refer to the Important Disclosures page for additional information.

## Emerging Market Development

### Representative account top ten holdings

As of 31 July 2021

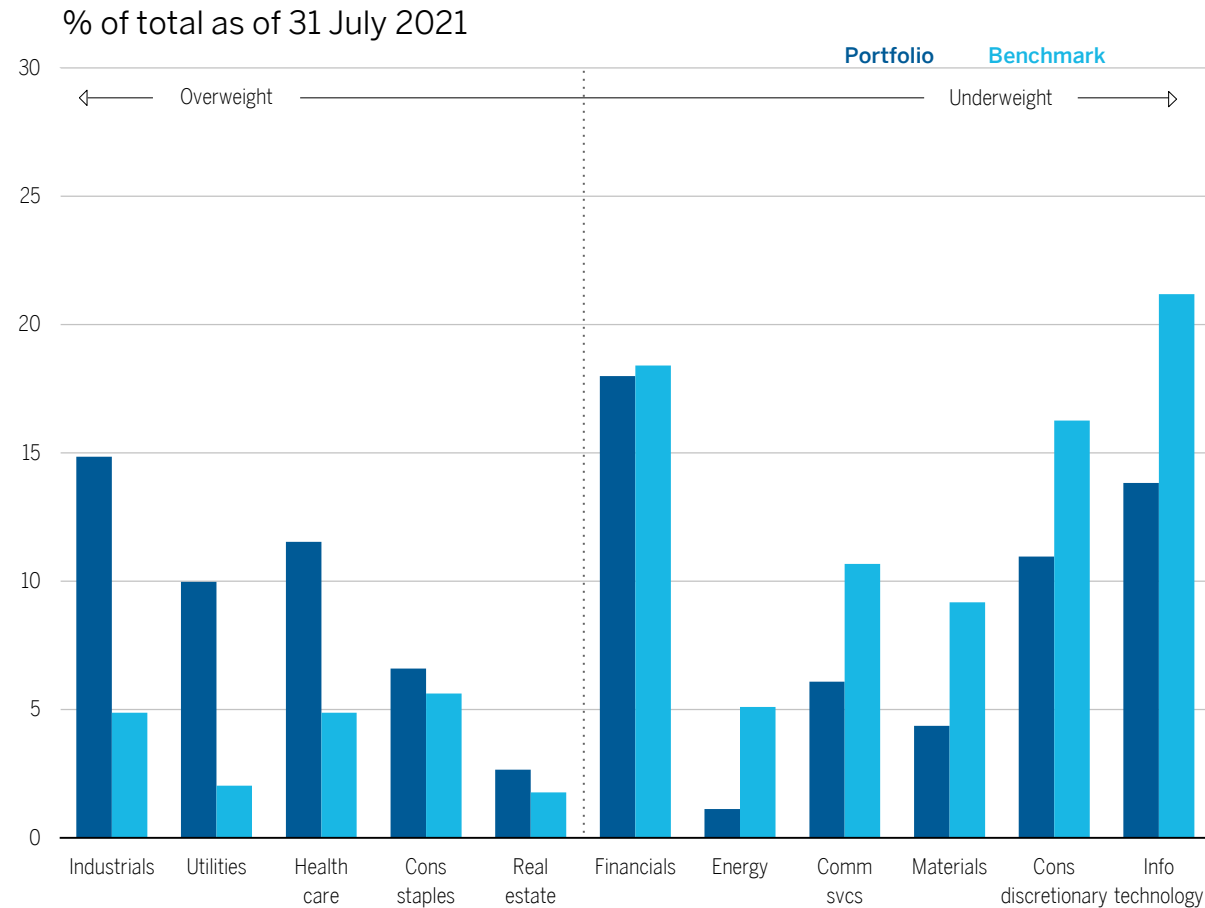
Company	Sector	Country	% of total
China Longyuan Power	Utilities	China	2.4
Xinyi Solar Holdings	Info technology	China	1.5
ICICI Bank	Financials	India	1.4
China Pacific Insurance	Financials	China	1.2
ENN Energy	Utilities	China	1.2
Keyence	Info technology	Japan	1.2
Housing Development Finance	Financials	India	1.2
Tencent	Comm svcs	China	1.2
CP ALL	Cons staples	Thailand	1.1
AIA	Financials	Hong Kong	1.1
<b>Total</b>			<b>13.6</b>

Number of equity names: 182

Sums may not total due to rounding. | The specific securities identified are not representative of all of the securities purchased, sold, or recommended for clients. It should not be assumed that an investment in the securities identified has been or will be profitable. Actual holdings will vary for each client and there is no guarantee that a particular client's account will hold any or all of the securities listed. | The data shown is of a representative account, is for informational purposes only, is subject to change, and is not indicative of future portfolio characteristics or returns. This information complements the GIPS® Composite Report included at the end of the materials. Please refer to the Important Disclosures page for additional information.

## Emerging Market Development

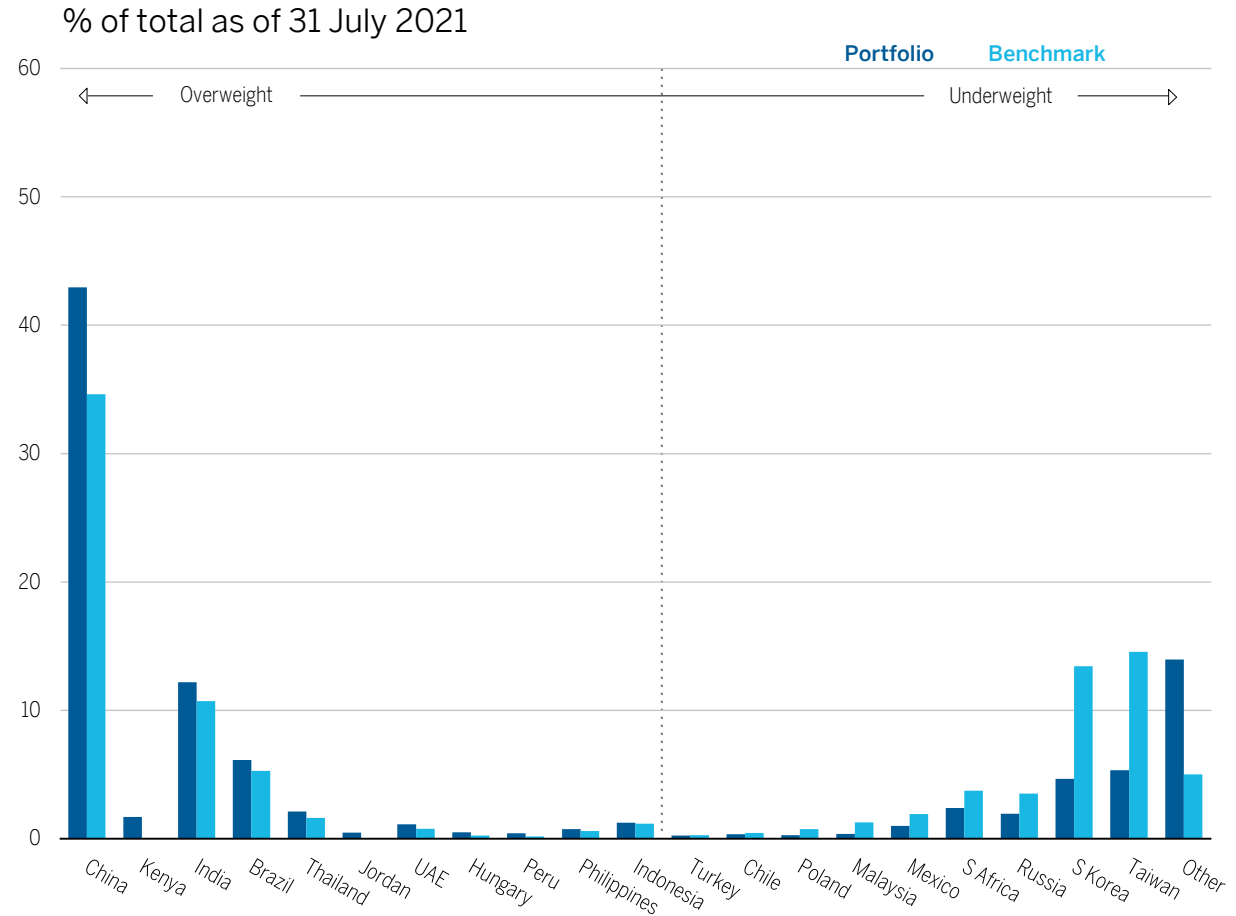
### Representative account sector weights



Benchmark: MSCI Emerging Markets. | The data shown is of a representative account, is for informational purposes only, is subject to change, and is not indicative of future portfolio characteristics or returns. This information complements the GIPS® Composite Report included at the end of the materials. Please refer to the Important Disclosures page for additional information.

# Emerging Market Development

## Representative account country weights



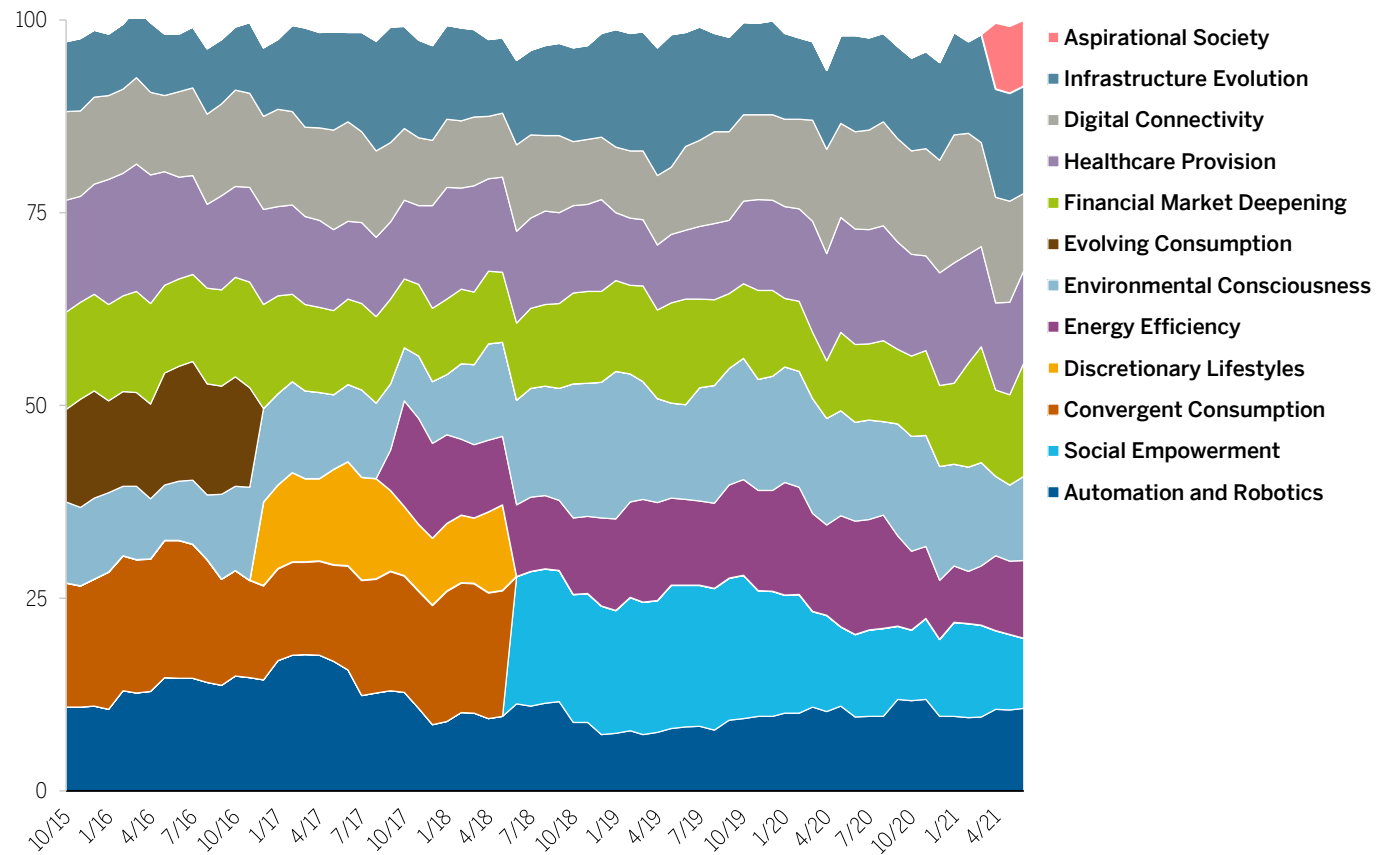
Benchmark: MSCI Emerging Markets. | Other represents additional countries held by the portfolio or benchmark. | The data shown is of a representative account, is for informational purposes only, is subject to change, and is not indicative of future portfolio characteristics or returns. This information complements the GIPS® Composite Report included at the end of the materials. Please refer to the Important Disclosures page for additional information.

# Emerging Market Development

## Representative account theme allocation history

### As of 30 June 2021

Theme allocation (%)



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## Emerging Market Development

### Conclusions

We believe economic development is a powerful force for structural change in EM

---

Our strategy holds what we think are our most attractive investment themes linked to Economic Development

---

We have combined our investment themes in a differentiated way to seek to maximize diversification potential and risk adjusted returns





## Emerging Market Development

### Fee schedule

#### Investment management fee

<b>Commingled Account</b>	<b>Annual fee</b>
On the first US\$50 million	0.80%
On the next US\$50 million	0.75%
On all remaining assets	0.70%
	<b>Minimum account size</b>
Commingled accounts	US\$1 million

Fee changes are not anticipated at this time, but could occur in the future. | Commingled pool account fees consist of two components: 1) an investment management fee and 2) routine operating expenses (e.g., custody, accounting, audit, transfer agency, and other administrative expenses).



# Sustainable Investment Research Team

Leading our investors, companies, and clients on sustainability research

## Research and strategy



**Wendy Cromwell, CFA**  
Director, Head of Sustainable Investment  
Senior Managing Director  
Vice Chair



**Luke Stellini**  
Director, Sustainable Investment  
Managing Director



**Andria Weil**  
Director, Sustainable Investment Policy  
Managing Director



**Oyin Oduya**  
Vice President  
Impact Measurement & Management  
Practice Leader



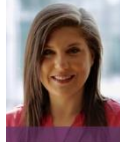
**Meredith Joly**  
Chair, SI Global Network  
Managing Director



**Beth Piskorowski**  
COO, Sustainable Investment  
Managing Director



**Andrew Montalti**  
Business Analyst,  
Sustainable Investment



**Samantha Brown**  
Business Manager,  
Sustainable Investment



**Bram Houtenbos**  
Governance Policy & Proxy  
Voting Manager

## ESG sector research



**Carolina San Martin, CFA**  
Director, ESG Research  
Managing Director  
Energy



**Jeff Barbieri**  
ESG Analyst  
Vice President  
Financials,  
Information technology



**Lindsay Blitstein, CFA**  
ESG Analyst  
Assistant Vice President  
Healthcare



**Sean Caplice, CFA**  
ESG Analyst  
Vice President  
Consumer



**Jennifer Rynne, CFA**  
ESG Analyst  
Managing Director  
Utilities, Property, Transport



**Michael Shavel, CFA**  
ESG Analyst  
Vice President  
Materials, Industrials



**Hillary Flynn**  
Director, ESG,  
Private Investments  
Managing Director



**Celi Khanyile-Lynch**  
Sustainability Analyst,  
Private Investments



**Gioia Domenido**  
Quant Analyst  
Managing Director



**Megan Galligan**  
Business Associate



**Lauren White**  
Business Associate

## Climate research



**Chris Goolgasian, CFA, CPA, CAIA**  
Director, Climate Research  
Senior Managing Director



**Julie Delongchamp, CFA**  
Climate Transition Risk  
Analyst  
Assistant Vice President



**Volkan Ozdurmus**  
Climate Transition  
Risk Analyst  
Vice President



**Erika Murphy, CFA, CAIA**  
Director, Climate Platform  
Managing Director



**Jenny Xie**  
Climate Physical Risk Analyst



**Martin Sankale**  
Research Associate



**Jeromy Wendrick**  
Senior Software Engineer

## Broader sustainable investment research community

Equity (51) and credit (32) analysts across sectors and geographies

Investment teams for the 10+ strategies on the sustainable investment platform

## Climate research

Woodwell Climate Research Center primary research team of scientists and fellows

# Emerging Market Development

## Investment risks

### PRINCIPAL RISKS

**Common Stock Risk** – Common stock are subject to many factors, including economic conditions, government regulations, market sentiment, local and international political events, and environmental and technological issues as well as the profitability and viability of the individual company. Equity security prices may decline as a result of adverse changes in these factors, and there is no assurance that a portfolio manager will be able to predict these changes. Some equity markets are more volatile than others and may present higher risks of loss. Common stock represents an equity or ownership interest in an issuer.

**Currency Risk** – Active investments in currencies are subject to the risk that the value of a particular currency will change in relation to one or more other currencies. Active currency risk may be taken in an absolute, or a benchmark relative basis. Currency markets can be volatile, and may fluctuate over short periods of time.

**Emerging Markets Risk** – Investments in emerging and frontier countries may present risks such as changes in currency exchange rates; less liquid markets and less available information; less government supervision of exchanges, brokers, and issuers; increased social, economic, and political uncertainty; and greater price volatility. These risks are likely greater relative to developed markets.

**Liquidity Risk** – Investments with low liquidity may experience market value volatility because they are thinly traded (such as small cap and private equity or private placement bonds). Since there is no guarantee that these securities could be sold at fair value, sales may occur at a discount. In the event of a full liquidation, these securities may need to be held after liquidation date.

**Smaller Capitalization Stock Risk** – The share prices of small and mid-cap companies may exhibit greater volatility than the share prices of larger capitalization companies. In addition, shares of small and mid-cap companies are often less liquid than larger capitalization companies.

### ADDITIONAL RISKS

**Concentration Risk** – Concentration risk is the risk of amplified losses that may occur from having a large percentage of your investments in a particular security, issuer, industry, or country. The investments may move in the same direction in reaction to the conditions of the industries, sectors, countries and regions of investment, and a single security or issuer could have a significant impact on the portfolio's risk and returns.

**Model Risk** – Model risk occurs when systematic and/or quantitative investment models used in investment decision making fail. These models may evolve over time and have risks related to mistakes in software or data inputs that could go undetected for a period of time before rectified. Models may fail to adequately measure or predict market risks or outcomes and could result in a loss of value or opportunity cost.

**Preferred Stock Risk** – Preferred stock represents an equity or ownership interest in an issuer. If an issuer is liquidated or declares bankruptcy, the claims of owners of bonds take precedence over the claims of those who own preferred stock. Preferred stock is subject to many of the risks to which common stock and debt securities are subject, and may be subject to more volatility because they may trade with less frequency and in more limited volume. Additional risks include interest rate sensitivity, deferred distribution payments, involuntary redemptions, and limited voting rights.

**Restricted Security Risk** – Restricted securities are securities acquired in unregistered, private sales from the issuing company or from an affiliate of the issuer. These securities may not be transferable until certain criteria are met and under the federal securities laws, generally may be resold only to qualified institutional buyers, resulting in liquidity risk.

## Important disclosures

### Additional performance information

**PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS.** There can be no assurance nor should it be assumed that future investment performance of any strategy will conform to any performance examples set forth in this material or that the portfolio's underlying investments will be able to avoid losses. The investment results and any portfolio compositions set forth in this material are provided for illustrative purposes only and may not be indicative of the future investment results or future portfolio composition. The composition, size of, and risks associated with an investment in the strategy may differ substantially from the examples set forth in this material. An investment can lose value.

### Impact of fees

Illustration of impact of fees: If USD100,000 was invested and experienced a 10% annual return compounded monthly for ten years, its ending value, without giving effect to the deduction of advisory fees, would be USD270,704 with an annualized compounded return of 10.47%. If an advisory fee of 0.95% of average net assets per year were deducted monthly for the ten-year period, the annualized compounded return would be 9.43% and the ending USD value would be USD246,355. Information regarding the firm's advisory fees is available upon request.

### Selection of representative account

The current representative account became effective on 1 November 2015 because it was the only account at the time of selection. For data shown prior to the current representative account effective date, data of the representative account(s) deemed appropriate for the time period was used. Further information regarding former representative accounts can be provided upon request. Each client account is individually managed; individual holdings will vary for each account and there is no guarantee that a particular account will have the same characteristics as described. Actual results may vary for each client due to specific client guidelines, holdings, and other factors. In limited circumstances, the designated representative account may have changed over time, for reasons including, but not limited to, account termination, imposition of significant investment restrictions, or material asset size fluctuations.

### Access products

If access products are held by the portfolio they may not be included in the calculation of characteristic data. Access products are instruments used to gain access to equity markets not otherwise available and may include (but are not limited to) instruments such as warrants, total return swaps, p-notes, or zero strike options.

### Global Industry Classification Standard (GICS) changes

S&P Dow Jones Indices and MSCI have broadened and renamed the Telecommunication Services Sector as Communication Services to include companies that facilitate communication and offer related content and information through various media. These changes to Global Industry Classification Standard (GICS) are effective as of 1 October 2018 in the data shown. The new sector name applies retroactively and therefore Communication Services will replace Telecommunications Services for all periods. Wellington Management data reflects changes in line with the official GICS update; however, MSCI and S&P have elected to update their official index structures with different timing. Therefore, index data shown may differ from data obtained directly from the index vendors.

### Additional disclosures

Securities indices are unmanaged and are not subject to fees and expenses typically associated with managed accounts or investment funds. Investments cannot be made directly into an index.

### Benchmark definition

MSCI Emerging Markets: The Index is a free float-adjusted market capitalization index that captures large and mid cap representation across Emerging Markets countries.

**Wellington Management**  
**Composite: Emerging Market Development**  
**Schedule of Performance Returns from 01 November 2015 to 31 December 2020**

<i>Period</i>	<i>Gross Return (%)</i>	<i>Net Return (%)</i>	<i>Benchmark Return (%)</i>	<i>Number of Portfolios</i>	<i>Internal Dispersion (%)</i>	<i>Composite Mkt. Value (USD Mil)</i>	<i>Total Firm Assets (USD Mil)</i>
2015 <sup>1</sup>	-2.82	-2.97	-5.98	< 6	N/M	2	926,949
2016	6.88	5.93	11.60	< 6	N/M	108	979,210
2017	46.57	45.30	37.75	< 6	N/M	185	1,080,307
2018	-13.45	-14.23	-14.24	< 6	N/M	164	1,003,389
2019	23.26	22.18	18.88	< 6	N/M	243	1,154,735
2020	39.99	38.77	18.69	< 6	N/M	692	1,291,419

Benchmark: MSCI Emerging Markets

<sup>1</sup> Returns reflect performance beginning 01 November 2015. Partial year returns are not annualized.

N/M: For years where there are less than six portfolios throughout the performance period, Internal Dispersion is not meaningful.

**Composite Description:** Portfolios included in the Emerging Market Development composite seek to outperform broad emerging markets indexes over a full market cycle, with high tracking risk to the reference benchmark MSCI Emerging Market Index. The approach is benchmark agnostic, unconstrained, and long-only equity. The approach has exposure to a selected set of evolving investment themes related to economic development in emerging markets, and integrates top-down views with security selection expertise. Theme selection is based on a combination of fundamental, quantitative and investability considerations. The opportunity set incorporates securities with exposure to long term trends in emerging market development, domiciled in emerging, frontier and developed countries. In times of increased market volatility, the composite characteristics may change significantly due to various risk factors. Key risks of this composite, in no particular order include, but are not limited to, Emerging Markets Risk, Liquidity Risk, and Currency Risk.

**Composite Inception Date:** The composite inception date is 31 October 2015.

**Composite Creation Date:** The composite creation date is December 2015.

**Composite Membership:** All fully discretionary, fee paying portfolios are eligible for inclusion in the composite.

**Fee Schedule:** The institutional management fee schedule for this product is:

<u>Market Value</u>	<u>Annual Fee</u>
First US\$50 Million	0.90%
Next US\$50 Million	0.85
Remaining Assets	0.80

**Benchmark Definition:** MSCI Emerging Markets is a free float-adjusted market capitalization index that captures large and mid cap representation across Emerging Markets countries.

**Composite Name Change:** As of March 2019, the composite name changed from Emerging Market Themes to Emerging Market Development. The name change has not resulted in any material changes to the investment philosophy or process.

**Firm:** For purposes of GIPS® compliance, the Firm is defined as all portfolios managed by Wellington Management Company LLP, an independently owned, SEC-registered investment adviser, as well as its affiliates (collectively, Wellington Management). Wellington Management provides investment advisory services to institutions around the world.

**GIPS®:** Wellington Management claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS® standards. Wellington Management has been independently verified for the periods 1 January 1993 to 31 December 2019. The verification reports are available upon request.

A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. Verification does not provide assurance on the accuracy of any specific performance report.

GIPS® is a registered trademark of CFA Institute. CFA Institute does not endorse or promote this organization, nor does it warrant the accuracy or quality of the content contained herein.

**Performance Calculation:** Gross performance results are net of trading expenses. Returns are gross of withholding taxes on dividends, interest and capital gains and include reinvestment of any earnings. Returns, market values, and assets are reported in USD except when otherwise noted. Returns, market values and assets reported in currencies other than USD are calculated by converting the USD monthly return and assets using the appropriate exchange rate (official 4:00 p.m. London closing spot rates). Policies for valuing portfolios, calculating performance, and preparing GIPS composite reports are available upon request.

Net of fees performance reflects the deduction of the highest tier investment management fee ("model fee") that would be charged based on the fee schedule appropriate to you for this mandate, without the benefit of breakpoints and is calculated by subtracting 1/12th of the model fee from monthly gross composite returns. In certain instances Wellington Management may charge certain clients a fee in excess of the standard model fee, such as to legacy clients or clients receiving additional investment services. Performance net of model fees is intended to provide the most appropriate example of the impact management fees would have for you.

Pool investors will experience costs in excess of investment management fees, such as operating expenses and custodial fees. These indirect costs are not reflected in the model fee, or net of fees performance.

**Internal Dispersion:** The dispersion measure presented is the asset-weighted standard deviation. The asset-weighted standard deviation measures the dispersion of individual portfolio gross returns relative to the asset-weighted composite return. Only portfolios that have been included in the composite for the full period are included in the standard deviation calculation. Limitations imposed by client guidelines or by law on a portfolio's ability to invest in certain securities or instruments, such as IPO securities, and/or implementation of the firm's Trade Allocation Policies and Procedures, may cause the portfolio's performance to differ from that of the composite.



**Wellington Management**  
**Composite: Emerging Market Development**  
**Schedule of Performance Returns from 01 November 2015 to 31 December 2020**

**External Dispersion:** The dispersion measure presented is the three-year annualized ex-post standard deviation. It measures the variability of the composite gross returns and the benchmark(s) over the preceding 36-month period. For periods prior to 1 January 2011, the Firm was not required to present the three-year annualized ex-post standard deviation.

	<i>3-Year Standard Deviation (%)</i>					
<i>Year</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>
Composite	N/A*	N/A*	N/A*	13.33	12.32	20.20
Benchmark	N/A*	N/A*	N/A*	14.62	14.17	19.62

*\*N/A for performance periods with less than 36 months of data based on composite inception date.*

**Composite Listing:** Wellington Management's list of composite descriptions is available upon request.

**Pooled Fund Listing:** Wellington Management's list of pooled fund descriptions is available upon request.

**Other Matters:** This material contains summary information regarding the investment approach described herein and is not a complete description of the investment objectives, policies, guidelines, or portfolio management and research that supports this investment approach. Any decision to engage Wellington Management should be based upon a review of the terms of the investment management agreement and the specific investment objectives, policies, and guidelines that apply under the terms of such agreement.

**Past Performance:** Past results are not necessarily indicative of future results and an investment can lose value.

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August 26, 2021

# Emerging Markets Equity Strategy

Prepared for Massachusetts Water Resource Authority  
Employees' Retirement System

**Philip Ehrmann**  
Senior Portfolio Manager

**Michael Kotarski, CFA**  
Senior Managing Director, Head of U.S. Direct Institutional Sales

**Michael P. Evans, CFA**  
Client Portfolio Manager

For a discussion of the risks associated with this strategy, please see the Investment Considerations page at the end of the presentation.



# Manulife Investment Management

Part of a leading global financial services group

## Manulife

Protecting customer assets since 1887

More than **37,000** employees serving more than **30M** customers worldwide

**\$1.0T** in assets under management and administration

- Global wealth and asset management
- Financial advice
- Insurance

## Manulife Investment Management

- Institutional asset management
- Retirement
- Retail investments

**1,000+** institutional accounts

**\$834B** in assets under management and administration

More than **14M** retirement plan participants and investor accounts

**245,465** retirement plans served globally

Source: MFC Statistical Information Package. Manulife Investment Management is the unified global brand for Manulife's global wealth and asset management business, which serves individual investors and institutional clients in three businesses: retirement, retail and institutional asset management (public and private markets). Global Wealth and Asset Management AUMA at June 30, 2021 which includes \$189.7 billion of assets managed on behalf of other segments and \$140.7B of assets under administration. Assets shown in U.S. dollars.

# Institutional asset management

What sets us apart?

A passion for providing solutions

Backed by the full resources of a leading global financial institution

A specialist approach

Leveraging the diverse expertise of a robust investment organization in a culture of cross-asset-class collaboration

A commitment to sustainability

Through environmental, social, governance (ESG) due diligence, risk monitoring, and active ownership

A decades-long tradition of seeking to exceed client expectations — today we manage more than **\$491B** worldwide.

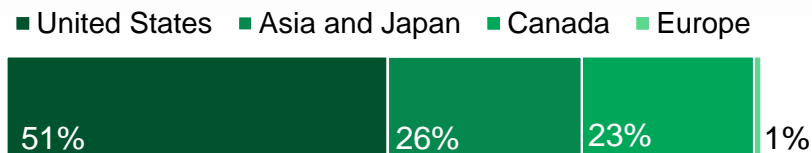
Source: MFC Statistical Information Package as of June 30, 2021. AUM is in U.S. dollars. AUM includes assets managed by the institutional asset management arm of Manulife Investment Management on behalf of external clients, the Insurance business and other affiliated businesses, as well as \$199.76M of unfunded committed capital of Manulife IM Private Markets (US) LLC. The methodologies used to compile the total AUM are subject to change and may not reflect regulatory AUM as reported on certain affiliates Form ADV.

# Combining local insight with global reach

More than 600 investment professionals. Offices in 18 geographies.



## Client AUM by market



Source: Manulife Investment Management, as of June 30, 2021.

Manulife Investment Management's global investment professional team includes expertise from several Manulife IM affiliates and joint ventures; not all entities represent all asset classes.

Total investment professionals is comprised of individuals from Manulife Investment Management, Manulife-TEDA Fund Management Co. LTD., a 49% joint venture between Manulife Financial and Northern International Trust, part of the Tianjin TEDA Investment Holding Co. Ltd. (TEDA), and Mahindra Manulife Investment Management Private Limited, a 49% joint venture of Manulife and Mahindra AMC.



# Diversity, equity, and inclusion: driving change through action

We're committed to fostering a working environment in which all our employees feel accepted, valued, and included. We believe we're stronger if we embrace our differences, and that diversity in gender, race, religion, identity, and ability plays a key role in driving innovation and growth within our company.



## Current areas of focus

### 1 Employment opportunities

- Achieve a clearer understanding of the dimensions of diversity that exists within our team
- Build representation of black, indigenous, and people of color (BIPOC) professionals across all levels of the organization
- Set up a new leadership team to drive progress in this area, focusing on how we recruit, cultivate talent, and create a more inclusive workplace

### 2 Enhanced training

- Expand the scope of the firm's unconscious bias training, which is mandatory for all staff members
- Launch our new Inclusive Leadership platform, which has the ability to create personalized learning experiences that'll enable our managers to become more inclusive leaders
- Launch our All Against Racism platform in North America, which provides related educational resources to managers

### 3 Community support

- Create strong partnerships with relevant organizations and provide DEI support in the communities in which we live, work, and serve
- Support our communities through donations and volunteerism, with a focus on financial education and career mentorship

# A commitment to sustainability

We seek to be a leader in sustainable investing, creating long-term value for our stakeholders while helping realize a sustainable trajectory for the global economy

## Integration

**A+**

Received an A+ from UN PRI for ESG strategy and governance, and integration in listed equity and fixed income SSA<sup>1</sup>

**80%+**

Of AUM for public market equity and fixed-income have achieved internal ESG integration thresholds<sup>2</sup>

**199**

Countries and territories covered by our proprietary sovereign credit model that incorporates ESG factors

## Stewardship

**471k+**

Acres of sensitive lands protected across our timberland assets<sup>3</sup>

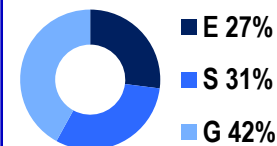
**81%**

Global green building certification across our global real estate portfolio<sup>4</sup>

**\$2.5B**

Renewable energy private equity investments under management<sup>5</sup>

Engagement Factor Focus, FY 2020<sup>6</sup>



## Collaboration

Some of our affiliations<sup>7</sup>

### Nature



Task Force on Nature-Related Financial Disclosures

### Climate



### Transparency



Source: Manulife Investment Management. Information provided as of December 31, 2019, unless otherwise noted and represents experience of certain Manulife Investment Management affiliates. Currency stated in Canadian dollars.  
<sup>1</sup> Most current data shown; scores based on the assessment report for 2019. SSA refers to sovereigns, supranationals, and agency bonds. For more information on PRI's methodology and for Manulife IM's full PRI assessment and transparency report please see: <https://www.manulifeim.com/institutional/global/en/sri-report>. <sup>2</sup> As of June 30, 2021. Integration is based on Manulife IM's Proprietary Integration Progression Levels (IPL), which measures investment teams progress in ESG integration. <sup>3</sup> As of December 31, 2020. Source: <https://www.manulifeim.com/institutional/global/en/resources/documents/timber-agriculture-sustainability-responsible-investing-report> <sup>4</sup> As of December 31, 2020, Source: 2021 Real Estate Sustainability Report, <https://www.manulifeim.com/institutional/global/en/resources/documents/real-estate-sustainability-report>. Calculated based on square footage of the gross floor area (GFA) of properties in the global portfolio. Totals from different certification standards do not sum as properties with multiple certifications are only counted once. Certifications include: LEED rating system, BOMA Best, CASBEE, MND Green Mark, BOMA 360, ENERGY STAR Certification <sup>5</sup> The infrastructure team manages renewable energy private equity investments on behalf of external clients and the insurance business of Manulife and renewable energy infrastructure debt investments on behalf of the insurance business of Manulife. Source: Sustainable and responsible investing report, 2019, <https://www.manulifeim.com/institutional/global/en/sustainability#sustainability-leadership>. <sup>6</sup> As of December 31, 2020. <sup>7</sup> The logos above are registered trademarks of the respective organizations/firms represented. Manulife IM is prompting each of the ESG actions shown through becoming member of respective programs or partner with the organizations on these endeavors. (i) Leading harvest: <https://www.leadingharvest.org/>. (ii) Task Force on Nature- Related Financial Disclosures: <https://www.fsb-tcfd.org/>. (iii) Climate Action 100+: <https://www.climateaction100.org/>. (iv) Asia Investor Group on Climate Change (AIGCC): <https://www.aigcc.net/members/>. (v) Investor Network on Climate Risk: <https://www.ceres.org/networks/ceres-investor-network>. (vi) World Benchmarking Alliance: <https://www.worldbenchmarkingalliance.org/wba-allies/>. (vii) SASB: <https://www.sasb.org/investor-use/supporters/>. (viii) PRI: <https://www.unpri.org/>.

# Manulife Emerging Markets Equity Advantage










For illustrative purposes only.

<sup>1</sup> Refer to team slide. <sup>2</sup> Refer to performance slide

# Emerging markets equity team

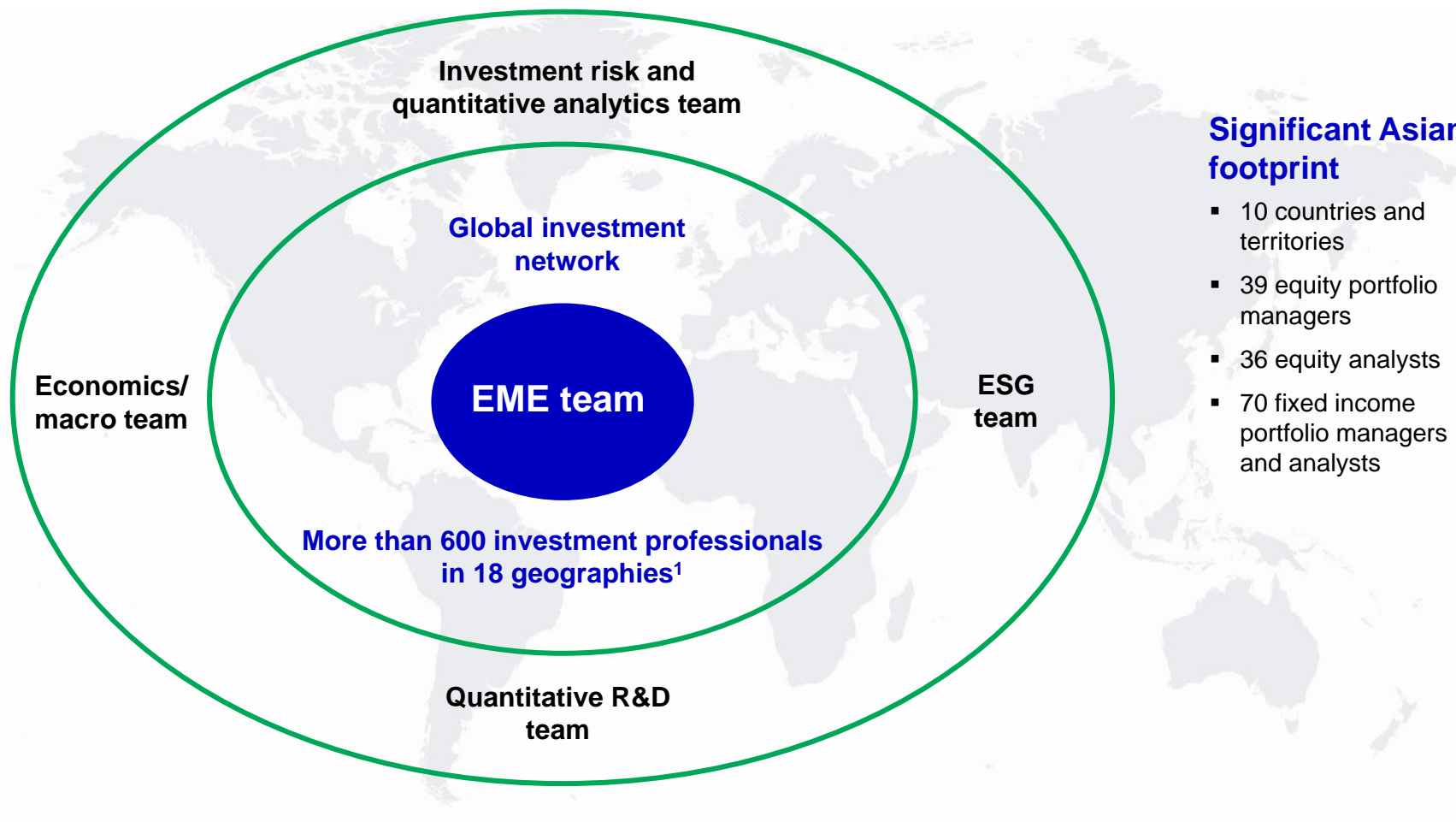
Multigenerational profiles provide a diversity of experience

	Team member	Role	Years of experience	Oversight/expertise	Background
	<b>Kathryn Langridge</b>	Lead Senior Portfolio Manager	41	Emerging markets	Jupiter, Lloyd George, Invesco Perpetual/Perpetual, Jardine Fleming Jardine Group
	<b>Philip Ehrmann</b>	Senior Portfolio Manager	40	Emerging markets	Jupiter, Gartmore, Invesco, Prudential-Bache, Rowe & Pitman
	<b>David Dugdale, Ph.D., CFA</b>	Senior Investment Analyst	19	Technology, energy, materials, industrials, utilities	Manulife's European and EAFE Equities teams
	<b>Talib Saifee</b>	Senior Investment Analyst	21	Financials, consumer discretionary	HSBC, Goldman Sachs, Citigroup, Salomon Smith Barney
	<b>Bhupinder Sachdev, CFA</b>	Senior Investment Analyst	7	Financials, consumer staples, health care	Aberdeen Standard
	<b>Bryony Deuchars, CFA</b>	Senior Investment Analyst	21	TBD	Mirabaud, Aviva Investors, Schroders, WestAM, Deloitte & Touche
	<b>Michael Evans, CFA</b>	Client Portfolio Manager	30	Communications and strategy positioning	Evercore, Schroders, Gray Capital, Smith Barney

As of August 18, 2021.

# Harnessing the power of the network

Global team, specialist insights



For illustrative purposes only.

<sup>1</sup> Source: Manulife Investment Management, as of June 30, 2021. Manulife Investment Management's global investment professional team includes expertise from several Manulife IM affiliates and joint ventures; not all entities represent all asset classes. Total investment professionals is comprised of individuals from Manulife Investment Management, Manulife-TEDA Fund Management Co. LTD., a 49% joint venture between Manulife Financial and Northern International Trust, part of the Tianjin TEDA Investment Holding Co. Ltd. (TEDA), and Mahindra Manulife Investment Management Private Limited, a 49% joint venture of Manulife and Mahindra AMC.

# Investment philosophy



“ **Well-run businesses** in emerging markets can generate **superior growth** and sustain **high returns on capital**. Investing in these **best-in-class companies** at the **right valuation** can deliver **long-term outperformance**. ”

Kathryn Langridge, Senior Portfolio Manager

## Identifying sustainable quality

Visible  
growth

Business  
sustainability

Free  
cash flow

Capital  
structure

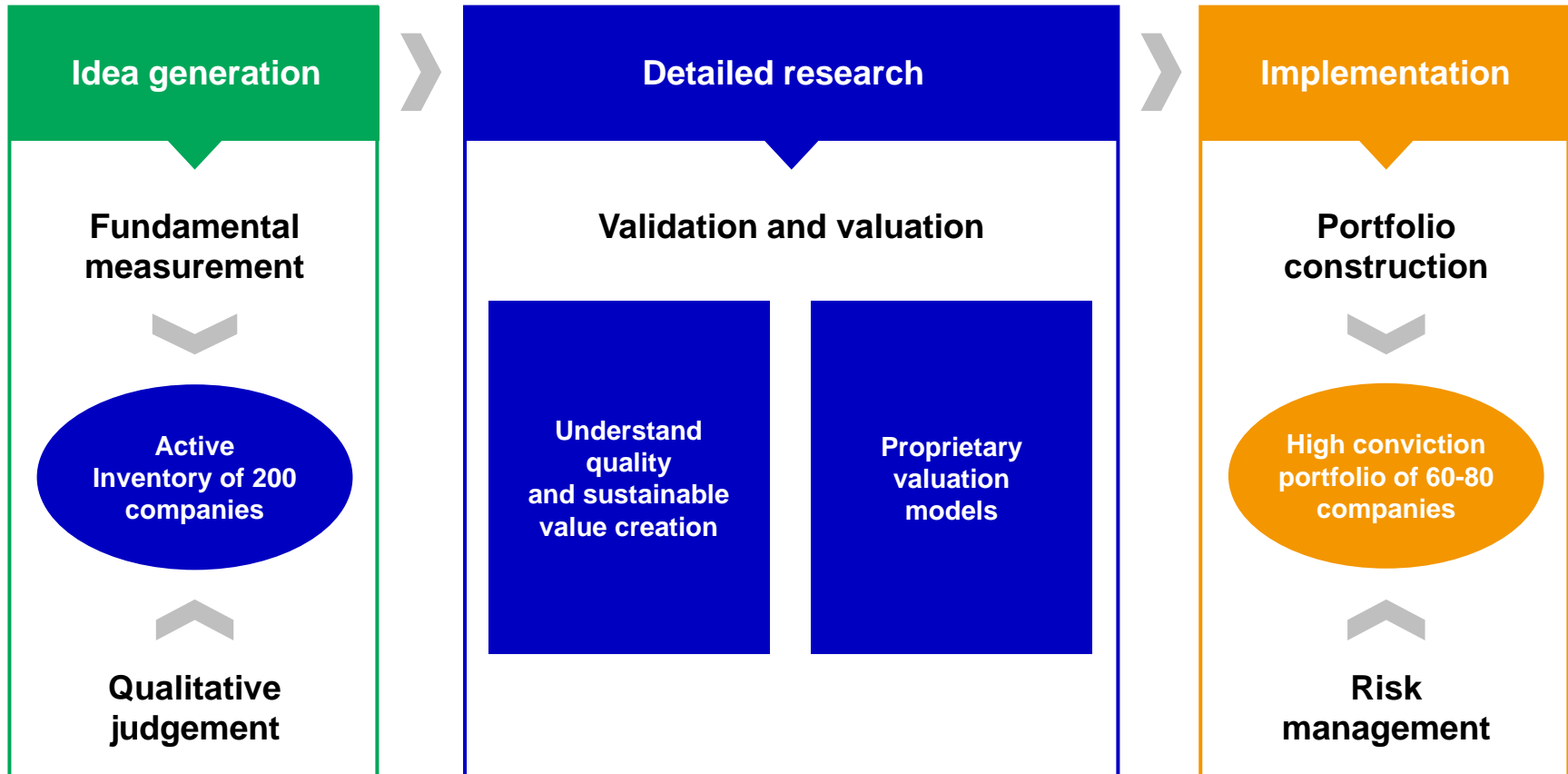
Strong  
governance

For illustrative purposes only.



# Investment process

Find, validate, implement



For illustrative purposes only.

# Detailed fundamental research

## Validation and valuation

### Summary view

Fair value based on reasonable forecast assumptions

### Qualitative analysis

Understanding quality growth and sustainable value creation

### Financial analysis

Proprietary financial modeling

### Sensitivity analysis

Dynamic fair value analysis

#### Korean personal and consumer products company

SOUTH KOREA | Consumer Staples | Personal Products

Manulife Investment Management  
4/21/2020

Target price	1551979	Conviction	High	Cost of equity	8%		
Current price	1303000	ESG rating	A	Growth rate	3%		
Upside	19%						
<b>Market data</b>							
Mkt cap (\$ MM)	16,467	ADTV (\$ MM)	48	52 wk high	1466000.00	3m return	-3%
EV (\$ MM)	16,538	Free float	52%	52 wk low	1045000.00	6m return	4%

**Investment summary**

- Leading consumer company in Korea. Produces cosmetics, personal care and beverage products (60/20/20 split)
- Key driver of growth is the cosmetics segment, and specifically the sale of luxury cosmetics to China via the duty free channel and direct onshore sales
- XXXX brand now considered one of the leading global skincare brands
- Capable management team, proven track record, 18-20% historical ROIC generation, net cash balance sheet

**Risks**

- Near term risk from coronavirus due to disruption in distribution across China, less frequent visits of daigous to Korea and reduction in tourism from China
- Will require additional advertising expenditure to take XXXX to the next level and for YYYY to succeed as a second generation luxury brand
- Execution risk in launching new luxury YYYY line, turnaround of ZZZZ acquisition and expansion into other countries
- Still not considered a leading global beauty brand and therefore trades on a lower multiple compared to the likes of industry leaders

**ESG**

- Strong on product safety and health, less so on water stress
- Majority independent board but multiple voting classes

**Financials & Valuation**

		2019	2020	2021	2022
Growth	Revenue	7,685,424	8,031,730	8,729,722	9,503,498
	YOY growth (%)		5%	9%	9%
	EBIT	1,176,411	1,114,121	1,363,727	1,522,050
	YOY growth (%)		-5%	22%	12%
Profitability	Net income	778,098	790,489	969,796	1,083,339
	YOY growth (%)		2%	23%	12%
	EBIT margin	15.3%	13.9%	15.6%	16.0%
	EBITDA margin	18.6%	16.3%	18.0%	18.4%
Balance sheet	ROE	18.4%	16.3%	17.3%	16.8%
	ROIC	18.2%	15.3%	16.4%	16.1%
	ND/EBITDA	-0.2x	-0.2x	-0.2x	-0.2x
Valuation	FCF yield	4.3%	2.9%	3.6%	4.0%
	Dividend yield	0.8%	0.9%	1.1%	1.2%
	P/E	23.8x	24.2x	19.7x	17.6x
3 month consensus change	EV/EBITDA	4.4x	3.9x	3.4x	3.0x
	Revenue		-4.5%	-1.3%	-4.5%
	EBIT		-11.2%	-4.9%	-11.4%
Net income		-13.0%	-5.6%	-11.0%	

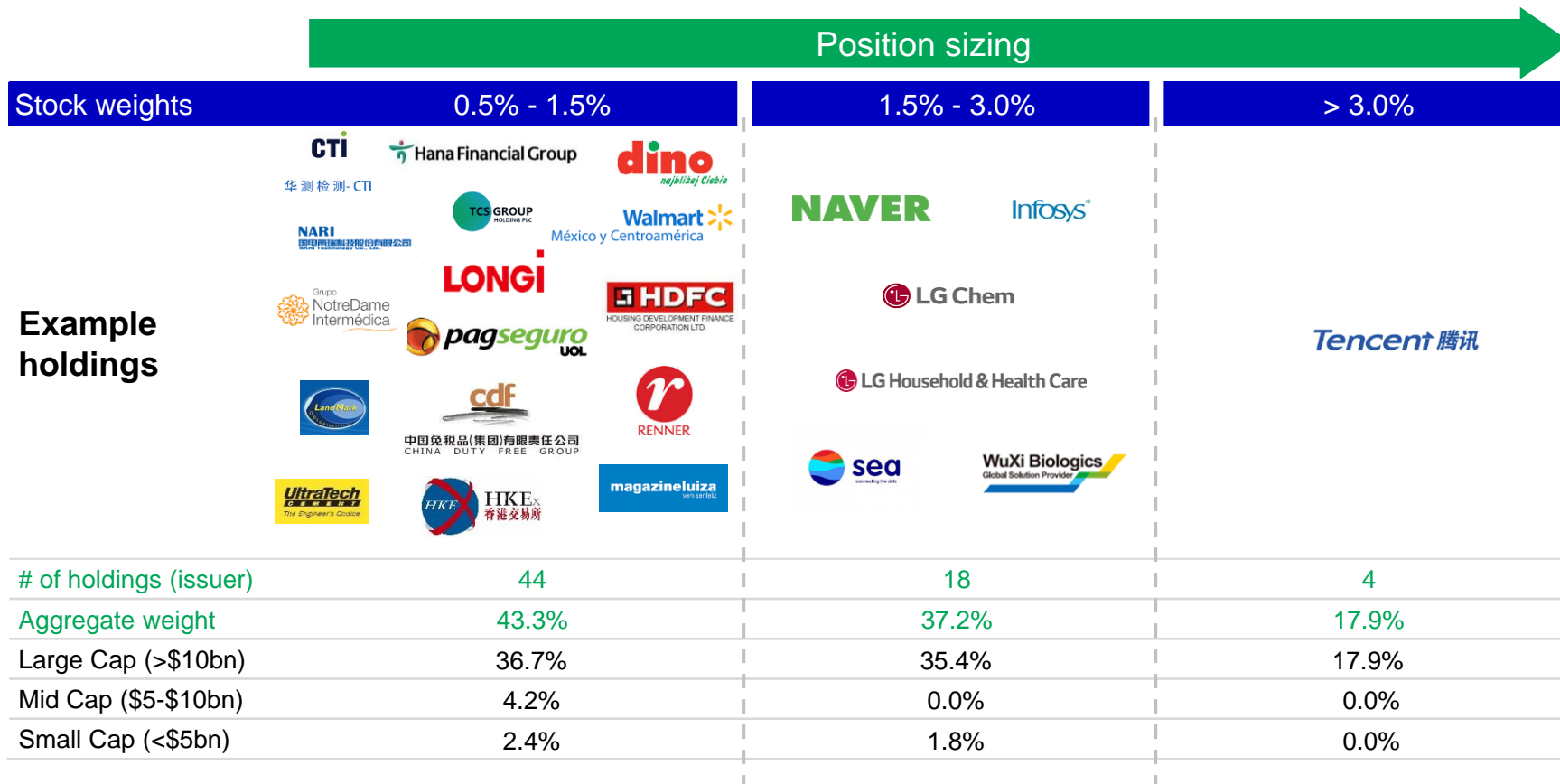
**Sensitivity analysis**

		Cost of equity				
		6%	7%	8%	9%	10%
E	1%	37%	12%	-6%	-19%	-29%
	2%	63%	28%	5%	-12%	-24%
	3%	105%	51%	19%	-2%	-17%
	4%	190%	90%	41%	11%	-9%
	5%	445%	169%	77%	31%	4%

For illustrative purposes only. Source: Manulife Investment Management, Bloomberg, FactSet, data as of June 30, 2020. This information is intended only to illustrate some of the investment methodologies and philosophies of the strategy team. The material does not constitute an offer or an invitation by or on behalf of Manulife Investment Management to any person to buy or sell any security. This material should not be viewed as a current or past recommendation or solicitation of an offer to buy or sell any investment products or to adopt any investment strategy. The historical success, or the strategy team's belief in future success, of any of the strategies is not indicative of, and has no bearing on, future results. Risk controls and other proprietary technology do not promise any level of performance or guarantee against loss of principal. Past performance is not indicative of future results. The securities described do not represent all of the securities purchased, sold or recommended for the portfolio. It should not be assumed that an investment in these securities or sectors was or will be profitable.

# Implementation

Calibrating growth potential, diversification and risk control



As of June 30, 2021. The logos referenced above are registered trademarks of the respective firms represented. The citation of specific trades or strategies is intended only to illustrate some of the investment methodologies and philosophies of the investment team. The material does not constitute an offer or an invitation by or on behalf of Manulife Investment Management to any person to buy or sell any security. This material should not be viewed as a current or past recommendation or a solicitation of an offer to buy or sell any investment products or to adopt any investment strategy. The historical success, or the investment team's belief in the future success, of any of the strategies is not indicative of, and has no bearing on, future results. Risk controls and other proprietary technology do not promise any level of performance or guarantee against loss of principal. Past performance is not indicative of future results. The securities identified and described do not represent all of the securities purchased, sold or recommended for the portfolio. It should not be assumed that an investment in these securities or sectors was or will be profitable. Diversification does not guarantee a profit nor protect against loss in any market.

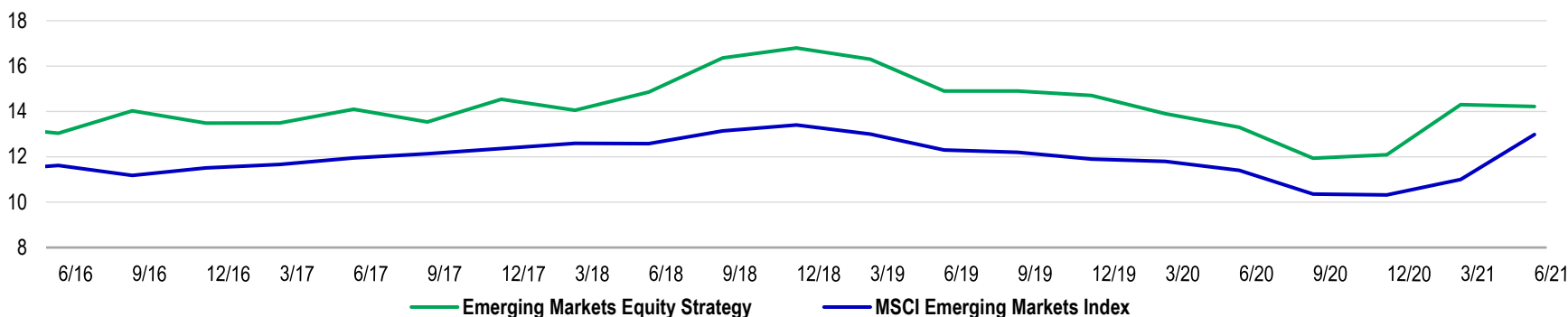
# Emerging Markets Equity Strategy

## Portfolio characteristics as of June 30, 2021

Characteristics	Emerging Markets Equity Strategy	MSCI Emerging Markets Index
Wtd. avg. market cap (\$B)	160.2	165.7
Median market cap (\$B)	55.0	7.8
Number of holdings (by issuer)	64	1,347
Number of countries	12	27
ROE (%)	14.2	13.0
Debt to equity (%)	72.4	77.9
Active share (%)	66.6	N/A
MSCI ESG score <sup>1</sup>	5.6	5.0

Top ten active holdings	Country	EM Equity Strategy active weight (%)
Anglo American	United Kingdom	2.52
Sea Ltd.	Singapore	2.30
NAVER	Korea	2.05
HDFC Bank	India	1.94
MediaTek	Taiwan	1.92
AIA Group	Hong Kong	1.86
LG Chem	Korea	1.86
SK hynix	Korea	1.84
eMemory Technology	Taiwan	1.78
LG Household & Health Care	Korea	1.74
<b>Total</b>		<b>19.81</b>

### Return on Equity (%)<sup>2</sup>



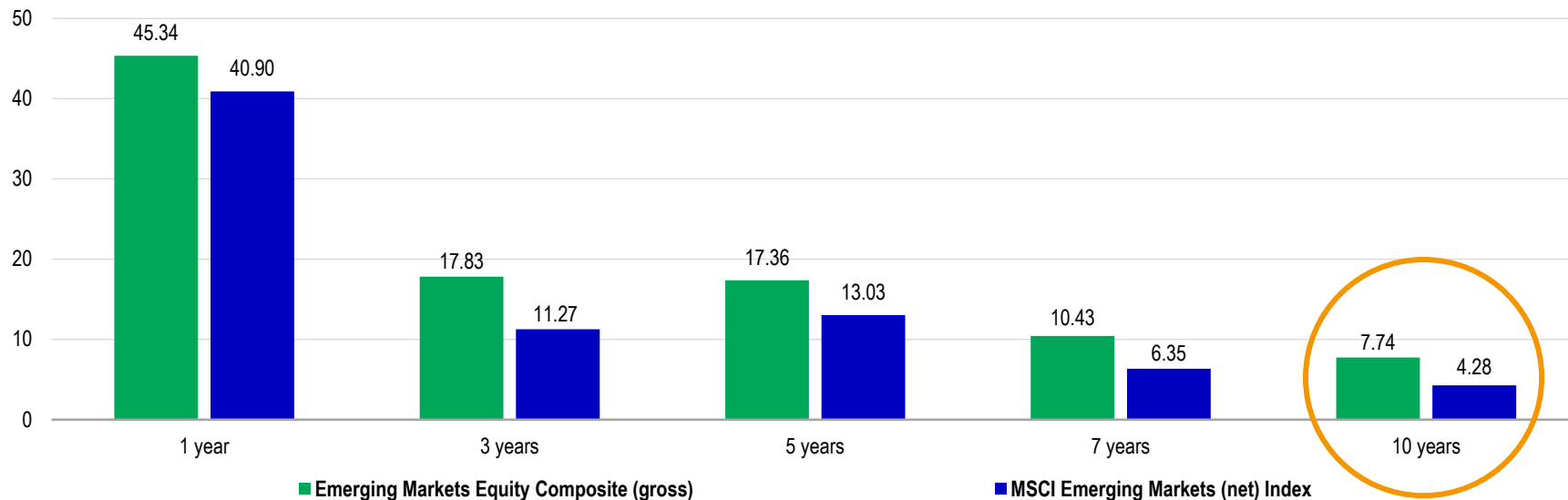
<sup>1</sup> Scores as of June 30, 2021. The Portfolio and Benchmark Overall Adjusted ESG Scores (0.0 to 10.0) are calculated based on the MSCI ESG Ratings methodology, where the relevant securities are within MSCI's research coverage. It comprises a weighted-average of each individual security's industry-adjusted ESG rating score. If only a subset of the securities in a portfolio or benchmark are in coverage, the weights are readjusted to add up to 100%. MSCI's methodology for generating ESG scores is summarized at <https://www.msci.com/documents/10199/123a2b2b-1395-4aa2-a121-ea14de6d708a>. <sup>2</sup> Five-year period ending June 30, 2021.

Holdings, sector weightings, market capitalisation and portfolio characteristics are subject to change at any time and are for illustrative and reference purpose only. Holdings, sector weightings, market capitalisation and portfolio characteristics of individual client portfolios in the program may differ, sometimes significantly, from those shown. This information does not constitute, and should not be construed as, investment advice or recommendations with respect to the securities and sectors listed. This information is supplemental to the GIPS-compliant presentation included as a part of this material.

# Emerging Markets Equity Composite

## Investment results as of June 30, 2021

### Annualized returns (%)



### Calendar year returns (%)

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Emerging Markets Equity Composite (gross)	34.73	28.28	-16.24	43.40	4.61	-9.54	-0.14	5.27	19.11	-18.29
MSCI Emerging Markets (net) Index	18.31	18.44	-14.58	37.28	11.19	-14.92	-2.19	-2.60	18.22	-18.42
<b>Excess return</b>	<b>16.42</b>	<b>9.84</b>	<b>-1.66</b>	<b>6.12</b>	<b>-6.58</b>	<b>5.38</b>	<b>2.05</b>	<b>7.87</b>	<b>0.89</b>	<b>0.13</b>

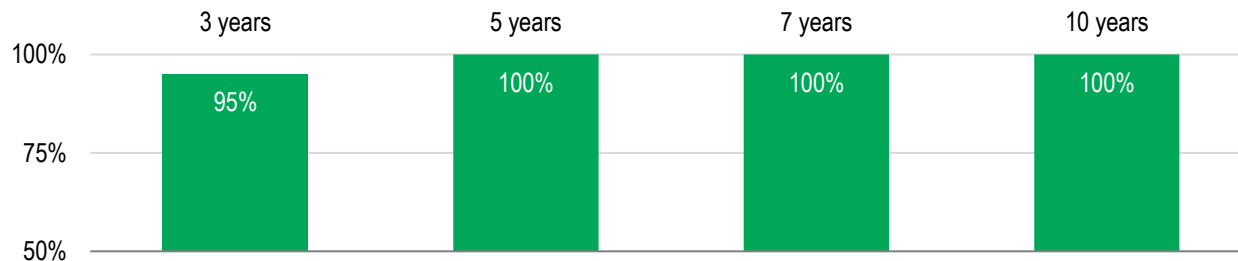
Past performance is not indicative of future results. Performance is shown in USD, gross of fees and does not include advisory fees and other expenses an investor may incur, which when deducted will reduce returns. Changes in exchange rates may have an adverse effect. Returns greater than one year are annualized.

# Emerging Markets Equity Strategy

## Rolling and risk-adjusted returns

Consistency since inception

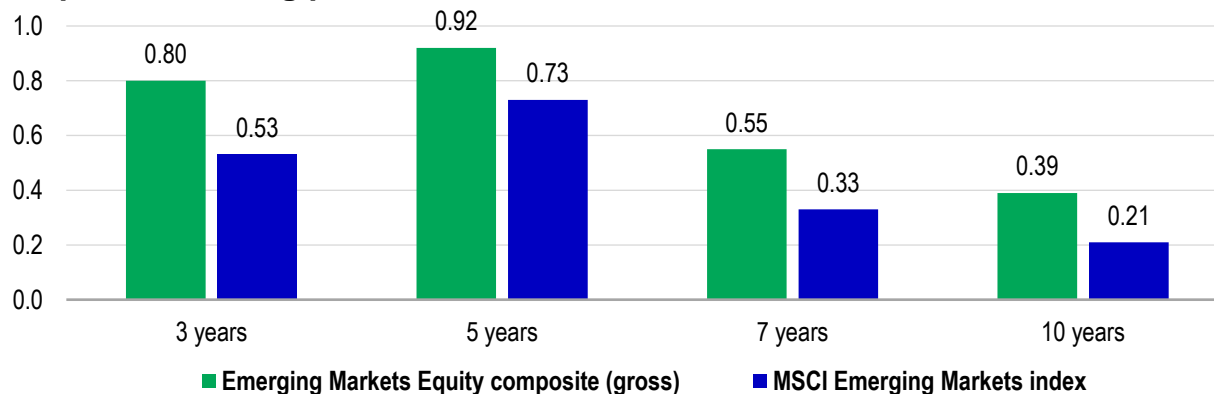
% of rolling periods outperformance, since inception



Average annualized gross excess return %	3.16	2.85	3.07	3.36
# of periods	92	68	44	8

Returns earned with risk in mind

Sharpe ratio, trailing periods



As of June 30, 2021. Source: eVestment Alliance. Performance shown is gross of fees. Results displayed in US Dollar (USD).

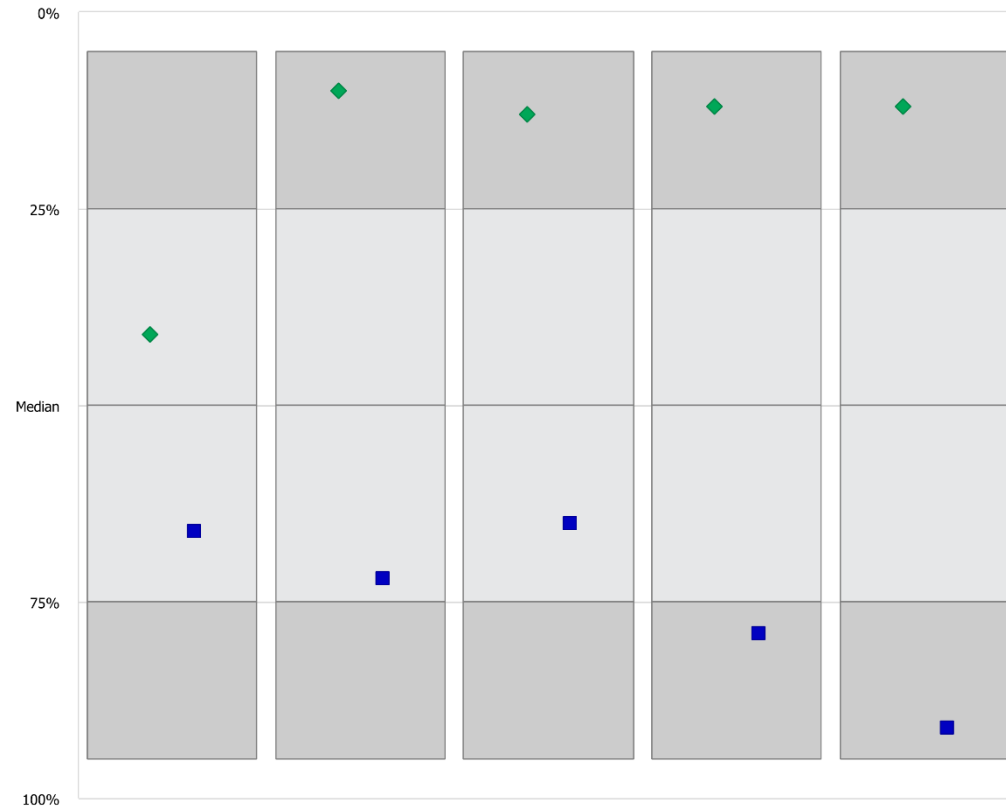
Table shows annualized rolling returns, shown monthly with indicated time periods beginning in December 2010 through periods ending June 2021.

Past performance is not indicative of future results. Performance is shown in USD, gross of fees and does not include advisory fees and other expenses an investor may incur, which when deducted will reduce returns. Changes in exchange rates may have an adverse effect.



# Emerging Markets Equity Strategy

## Trailing performance as of June 30, 2021



Universe: eVestment Global Emerging Mkts All Cap Core Equity

	1 Year		3 Years		5 Years		7 Years		10 Years	
		Rk		Rk		Rk		Rk		Rk
◆ Manulife Investment Management: Emerging Markets Equity	45.35	41	17.83	10	17.36	13	10.43	12	7.74	12
■ MSCI Index: MSCI EM-ND	40.90	66	11.27	72	13.03	65	6.35	79	4.28	91

Results displayed in USD using Spot Rate (SR).

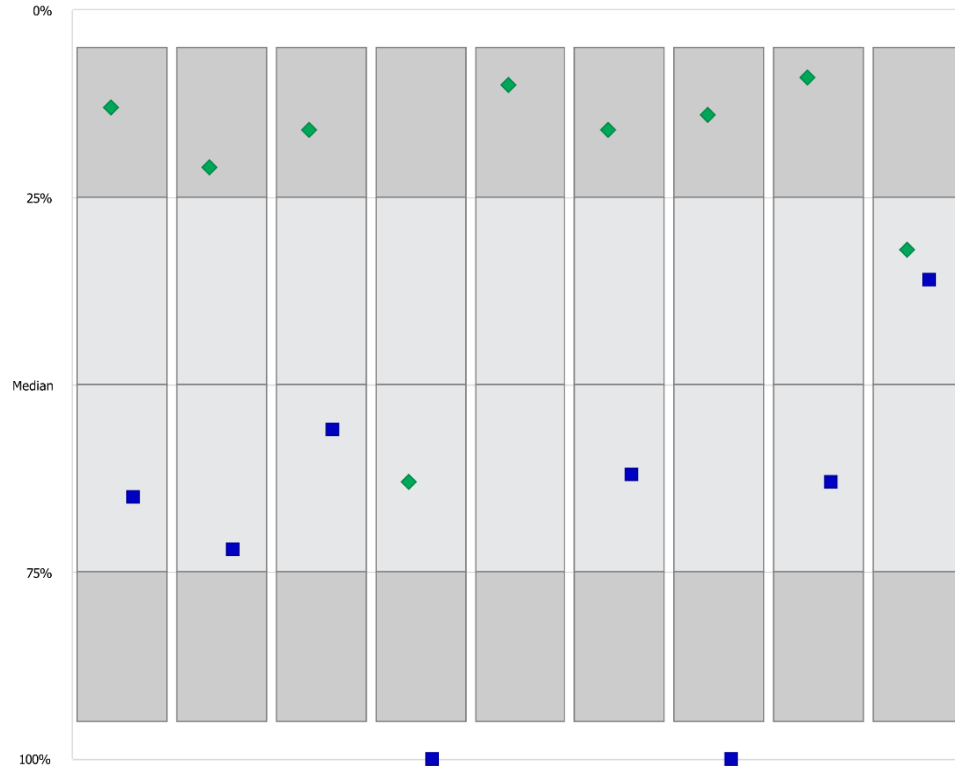
As of June 30, 2021.

Source: eVestment Alliance.

Performance is shown in gross of fee. Past performance does not guarantee future results.

# Emerging Markets Equity Strategy

## eVestment 5-year risk metrics



Universe: eVestment Global Emerging Mkts All Cap Core Equity

	Excess Returns 5 Years <sup>1</sup>		Standard Deviation 5 Years		Beta 5 Years <sup>1</sup>		Tracking Error 5 Years <sup>1</sup>		Information Ratio 5 Years <sup>1</sup>		Sharpe Ratio 5 Years <sup>2</sup>		Batting Average 5 Years <sup>1</sup>		Upside Market Capture 5 Years <sup>1</sup>		Downside Market Capture 5 Years <sup>1</sup>	
		Rk		Rk		Rk		Rk		Rk		Rk		Rk		Rk		Rk
◆ Manulife Investment Management: Emerging Markets Equity	4.33	13	17.56	21	1.06	16	3.64	63	1.19	10	0.92	16	0.62	14	117...	9	100...	32
■ MSCI Index: MSCI EM-ND	0.00	65	16.24	72	1.00	56	0.00	100	---	---	0.73	62	0.00	100	100...	63	100...	36

Results displayed in USD using Spot Rate (SR).

<sup>1</sup>MSCI EM-ND; <sup>2</sup>FTSE 3-Month T-Bill

As of June 30, 2021.

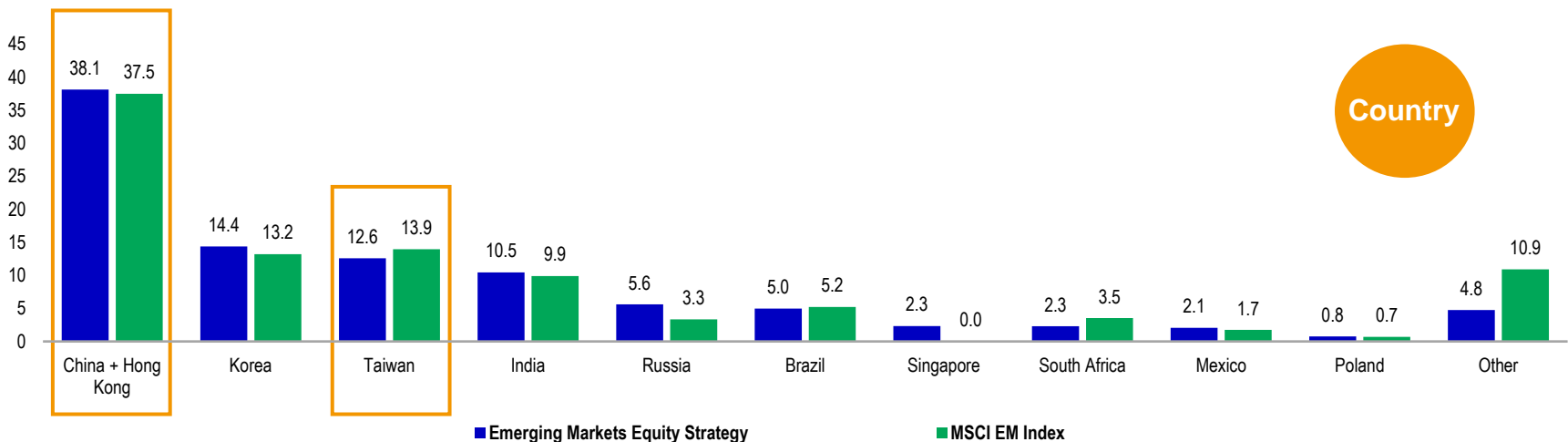
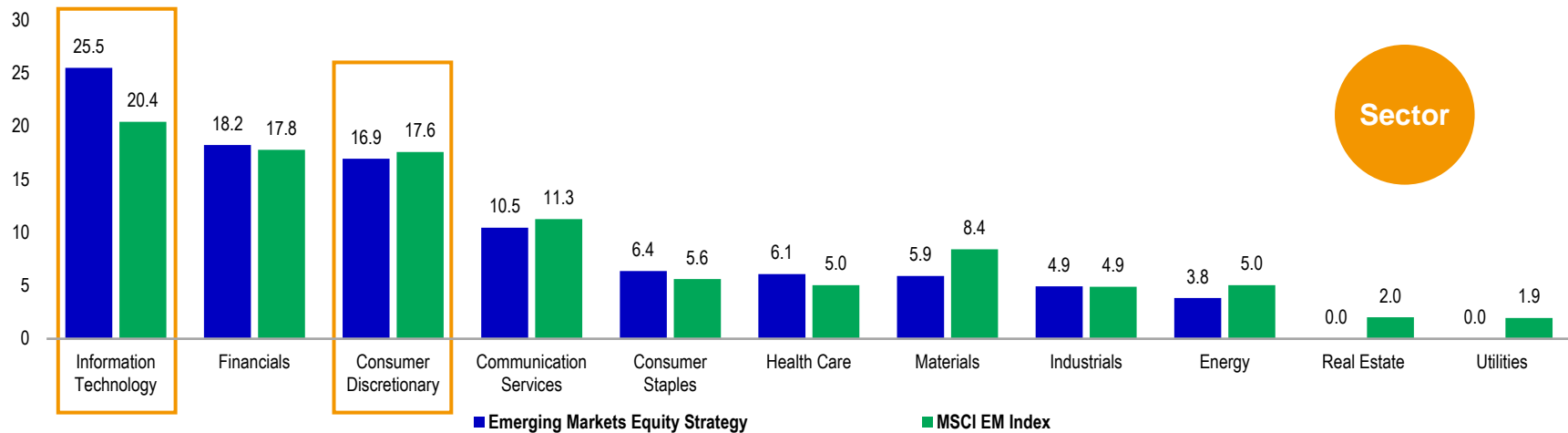
Source: eVestment Alliance.

Performance is shown in gross of fee. Past performance does not guarantee future results.

# Appendix

# Emerging Markets Equity Strategy

Portfolio diversification driven by bottom-up stock selection

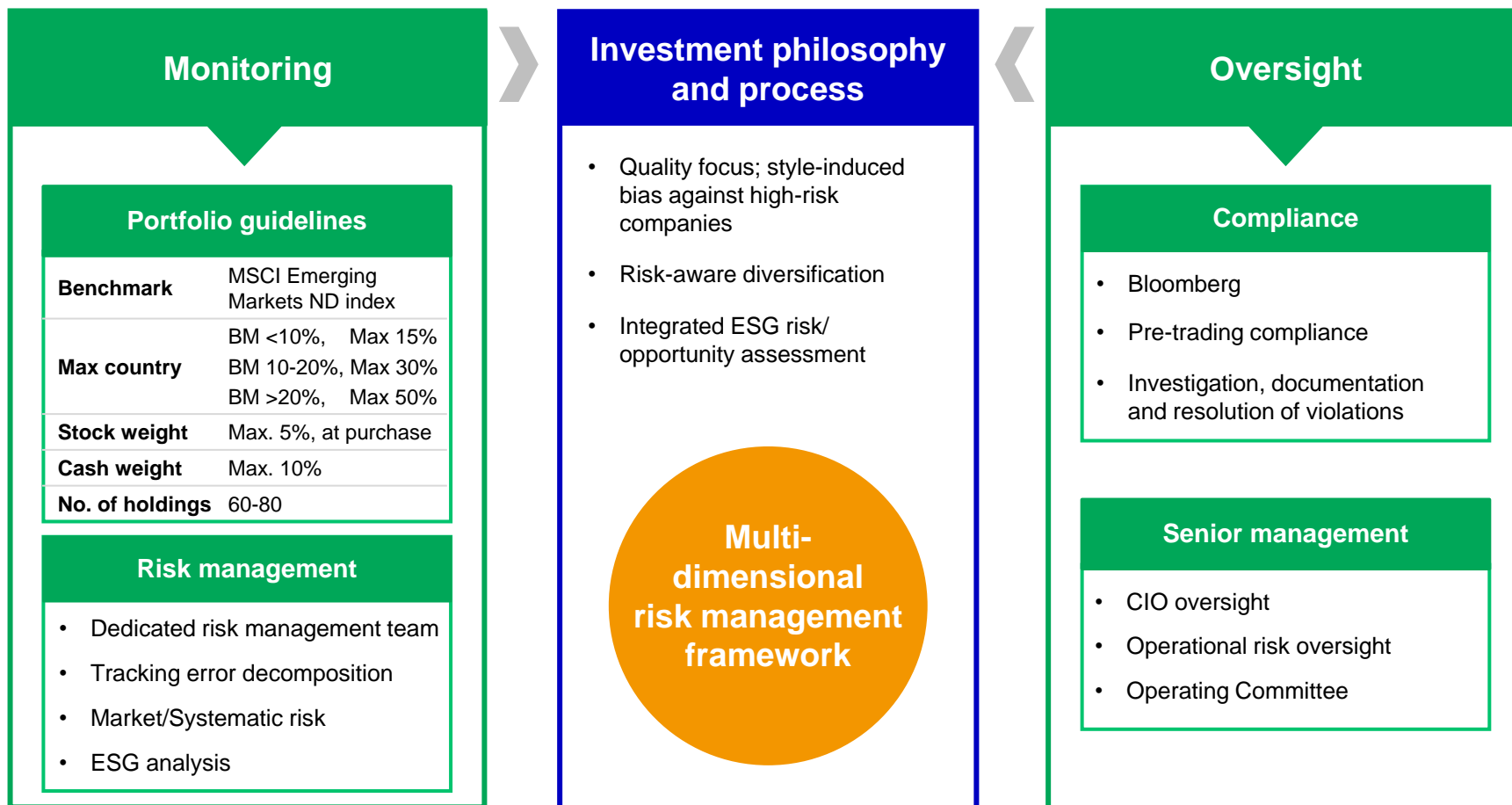


Data as of June 30, 2021

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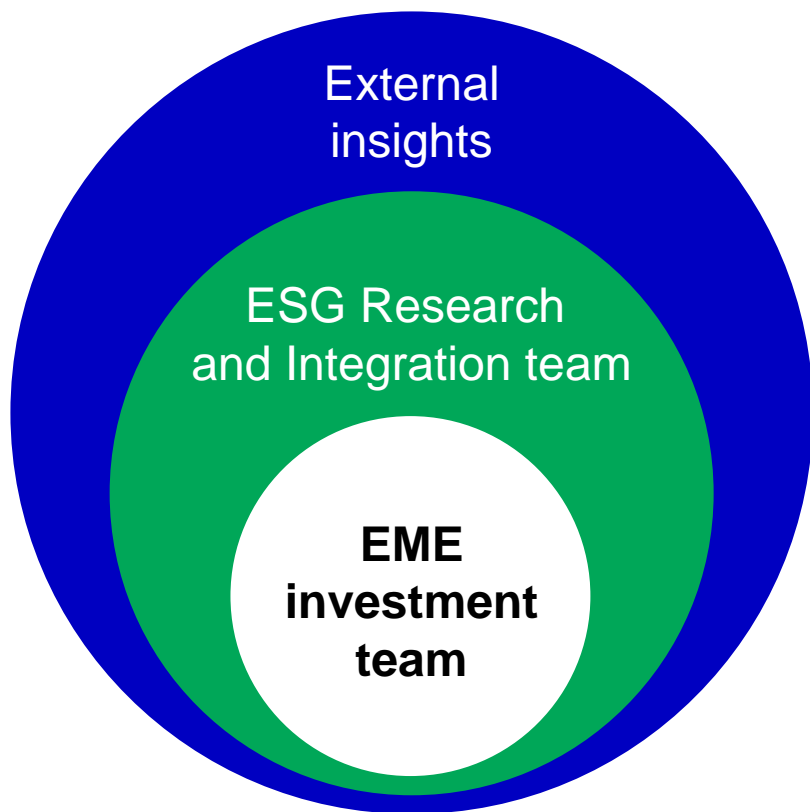
# Implementation

## Integrated risk management



For illustrative purposes only.

# ESG and emerging markets



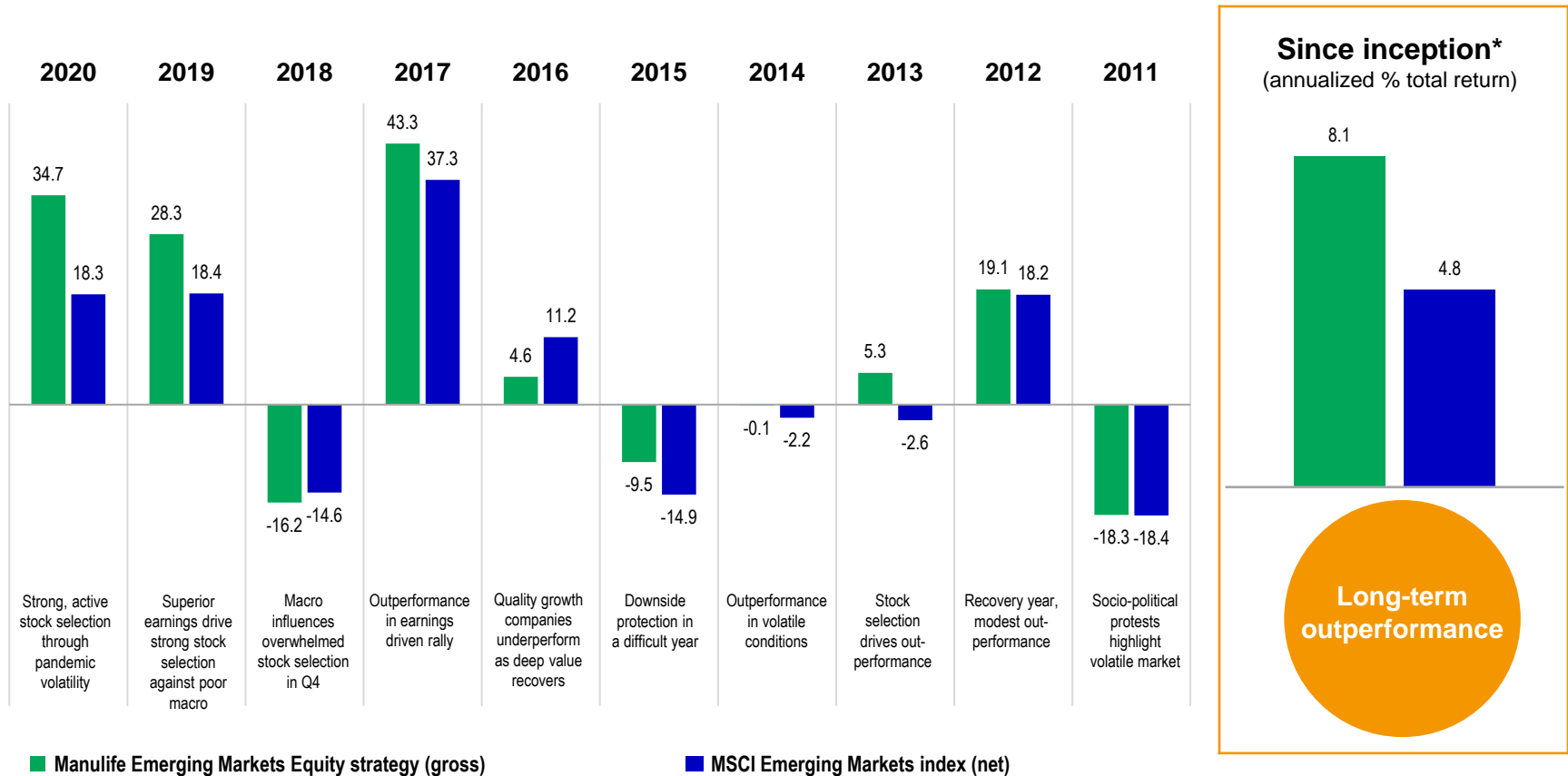
- Natural alignment with our philosophy
- We believe that well-run companies with high ESG standards command higher valuations
- Intense engagement helps us identify a company's ESG DNA
- We believe ESG analysis reveals inefficiently valued risks and opportunities

For illustrative purposes only.



# High quality EM companies in different market conditions

## Annualized returns (%)



As of June 30, 2021. Source: eVestment Alliance. Results displayed in USD.

\*Composite inception date: December 2010. Past performance is not indicative of future results. Gross of fee.

# Benchmark definitions

Index	Definition
<b>MSCI Emerging Markets (EM)</b>	The MSCI Emerging Markets Index is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets. The universe includes large, mid, and small cap securities, and can be segmented across styles and sectors. Net total return indices reinvest dividends after the deduction of withholding taxes, using a tax rate applicable to non-resident institutional investors who do not benefit from double taxation treaties.

# Biographies

## **Kathryn Langridge**

*Senior Portfolio Manager, Emerging Markets Equity, Manulife Investment Management*

Kathryn is head of the emerging markets equity team and lead portfolio manager for the Emerging Markets Equity Strategy. Prior to joining the firm, she served as fund management director for Jupiter Asset Management, where she was responsible for global emerging-markets equity funds, with additional management responsibilities for equity funds in Latin America and Eastern Europe. Prior to that, she worked as head of the global emerging-markets equities team at Lloyd George Management and in various positions at Invesco Perpetual, including as head of Asian investments and head of international equity products. Kathryn began her career with the Jardine Group and held roles at Jardine Fleming in Asia during the 1980s.

**Education:** M.A., English Literature, Cambridge University

**Joined the company:** 2014

**Began career:** 1980

## **Philip Ehrmann**

*Senior Portfolio Manager, Emerging Markets Equity, Manulife Investment Management*

Philip is a portfolio manager for the Emerging Markets Equity Strategy. Prior to joining the firm, he was a co-head of Asian equities and a fund management director for Jupiter Asset Management. Previously, he was head of global emerging markets at Gartmore, where he later added the Pacific equity business to his responsibilities as head of Pacific and emerging markets. Philip started his career focusing on North American equities before becoming a portfolio manager at Invesco, where he was appointed to lead the firm's emerging-markets desk.

**Education:** B.Sc., Economics, London School of Economics

**Joined the company:** 2015

**Began career:** 1981

# Biographies

## **David Dugdale, Ph.D., CFA**

*Senior Investment Analyst, Emerging Markets Equity, Manulife Investment Management*

David is responsible for supporting the emerging markets equity team with sector research across emerging markets. After joining Manulife Investment Management in 2002, he became a member of the firm's European and Europe, Australasia, and Far East equities team. He worked on semiconductor modeling while earning a Ph.D. in Physics and holds the Chartered Financial Analyst designation.

**Education:** Ph.D., Physics, University of Durham

**Joined the company:** 2002

**Began career:** 2002

## **Talib Saifee**

*Senior Investment Analyst, Emerging Markets Equity, Manulife Investment Management*

Talib began his career as a financial analyst in the investment banking division at Salomon Smith Barney and held roles in Strategy and Corporate M&A at Citigroup. After receiving his MBA from Columbia Business School in 2008, Talib joined Goldman Sachs Asset Management as an analyst covering EMEA banks and telecoms. He moved to HSBC Asset Management in 2013 where he worked as a generalist analyst covering Emerging Asia and Latin America (2013-17) and most recently as a Portfolio Manager (2018-19) on their Frontier Markets fund.

**Education:** The Wharton School & College of Arts & Sciences, Finance & History, University of Pennsylvania; Columbia Business School

**Joined Company:** 2019

**Began Career:** 2000

# Biographies

## **Bhupinder Sachdev, CFA**

*Senior Investment Analyst, Emerging Markets Equity, Manulife Investment Management*

Bhupinder is a sector research analyst for the Emerging Markets Equity Strategy. He began his career as a generalist analyst on the emerging-markets team at Aberdeen Standard Investments covering Eastern Europe, the Middle East, Africa, and Latin America. He also helped to co-manage the team's Russian, Eastern European, and frontier-market funds. Bhupinder holds the Chartered Financial Analyst designation.

**Education:** M.A., Economics, Cambridge University

**Joined the company:** 2019

**Began career:** 2014

## **Bryony Deuchars, CFA**

*Senior Investment Analyst, Emerging Markets Equity, Manulife Investment Management*

Bryony is a sector research analyst for the Emerging Markets Equity Strategy. Prior to joining the firm, she was an emerging-markets equity fund manager at Mirabaud and, before that, at Aviva Investors. She has particular interest and expertise in environmental, social, and governance (ESG) principles and implementation. Previously, she worked at Schroders as a senior equity analyst for Europe, the Middle East, and Africa. Her early career includes roles at WestAm and at Deloitte & Touche. Bryony holds the Chartered Financial Analyst designation and is a Fellow of the Institute of Chartered Accountants in England and Wales.

**Education:** B.Sc., Economics, University of Wales, Cardiff

**Joined the company:** 2021

**Began career:** 2000

# Biographies

## **Michael Kotarski, CFA**

*Senior Managing Director and Head of U.S. Direct Institutional Sales*

Mike leads the U.S. direct institutional team in the U.S and LATAM focused on building partnerships with institutional investors including pension plans, endowments and foundations and insurance companies. Prior to joining Manulife, he held senior sales and management roles at Dalton Investments, Eaton Vance and Mellon Capital Management. He is a Chartered Financial Analyst and is a member of the CFA Society Boston.

**Education:** University of Massachusetts, Amherst B.A, Bentley University, MBA

**Joined the company:** 2020

**Began career:** 1992

## **Michael P. Evans, CFA**

*Client Portfolio Manager, Emerging Markets Equity, Manulife Investment Management*

Mike works closely with select equity investment teams to support the firm's client service and business development efforts. He also provides perspective in communicating and positioning investment strategies with clients, prospects, and consultants. Prior to joining the firm, Mike spent 10 years at Evercore Asset Management as a senior equity research analyst, focusing on small- and mid-cap core investment portfolios for institutional clients. Previously, he worked for Gray Capital Management as a fixed-income analyst and assistant portfolio manager. Mike holds the Chartered Financial Analyst designation and is a member of the CFA Institute and the CFA Society Boston.

**Education:** B.A., Economics, Bates College; M.S., Finance, Boston College

**Joined the company:** 2014

**Began career:** 1991



# Manulife Investment Management

## Emerging Markets Equity Composite

Creation Date: January 1, 2018

Inception Date: December 1, 2010

Reporting Currency: USD

### Schedule of Calendar Year Returns and Assets

Year End	Gross of Fees Return (%)	Net of Fees Return (%)	Benchmark Return (%)	Composite 3-Yr Std. Dev. (%)	Benchmark 3-Yr Std. Dev. (%)	Number of Portfolios End of Period	Composite Dispersion (%)	Total Assets End of Period (Millions)	Firm Assets End of Period (Millions)
2020	34.71	33.51	18.31	21.25	19.61	<=5	N/A	2,688	421,097
2019	28.28	27.12	18.44	14.95	14.17	<=5	N/A	2,342	422,034
2018	-16.24	-16.99	-14.58	14.86	14.60	<=5	N/A	1,652	392,058
2017	43.40	42.11	37.28	14.80	15.35	<=5	N/A	1,258	N/A
2016	4.61	3.67	11.19	15.77	16.07	<=5	N/A	890	N/A
2015	-9.54	-10.35	-14.92	14.45	14.07	<=5	N/A	521	N/A
2014	-0.14	-1.04	-2.19	15.59	15.01	<=5	N/A	13	N/A
2013	5.27	4.33	-2.60	19.50	19.05	<=5	N/A	40	N/A
2012	19.11	18.04	18.22	N/A	N/A	<=5	N/A	46	N/A
2011	-18.29	-19.02	-18.42	N/A	N/A	<=5	N/A	40	N/A

#### Firm Definition

For purposes of compliance with the Global Investment Performance Standards (GIPS®), our firm Manulife Investment Management "Manulife IM" was created on January 1, 2018 as a result of a consolidation of six firms that claimed compliance with GIPS®. Manulife IM comprises Manulife Investment Management (US) LLC, Manulife Investment Management (North America) Limited, Manulife Investment Management (Europe) Limited, Manulife Investment Management (Japan), Manulife Investment Management (Hong Kong) Limited, Manulife Investment Management (Singapore) Pte. Ltd., Manulife Investment Management Limited, Manulife Investment Management Private Markets (Canada) Corp. and John Hancock Trust Company. Effective January 1, 2021, the firm includes assets managed under contract by Manulife Investment Management Private Markets (US) LLC ("Manulife IM PM US") and the unaffiliated managers SMA/Wrap business from John Hancock Investment Management LLC, a Manulife IM company.

#### Compliance Statement

Manulife Investment Management claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS® standards. Manulife Investment Management has been independently verified for the periods 1/1/2018 through 12/31/2019. The verification report is available upon request. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS® standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS® standards. Verification does not ensure the accuracy of any specific composite reports. Compliance with the GIPS® Standards for the predecessor firms were verified by a third party for the periods noted: MAM US 1/1/1993 to 12/31/2017, MAM UK 1/1/2008 to 12/31/2017, MAMJ 1/1/2006 to 12/31/2017, MAM HK 1/1/2006 to 12/31/2017, MAMS 6/5/2007 to 12/31/2017, and MAML 1/1/2007 to 12/31/2017. GIPS® is a registered trademark of CFA Institute. CFA Institute does not endorse or promote this organization, nor does it warrant the accuracy or quality of the content contained herein.

#### General Disclosure

A complete list of the Firm's composite descriptions and policies regarding valuing portfolios, calculating performance, and preparing GIPS compliant reports are available upon request. All returns reflect the reinvestment of dividends and other earnings. Gross performance results do not reflect the deduction of investment management fees, and are net of commissions and foreign withholding tax. Net performance results reflect the application of the highest incremental rate of the standard investment advisory fee schedule to gross performance results. Actual fees may vary depending on, among other things, the applicable fee schedule and portfolio size. Advisory fees are available upon request. Dispersion of annual returns is measured by an asset-weighted standard deviation calculation of gross of fee returns. Dispersion is not presented when there are five or fewer accounts in the composite for the entire year. Past performance is not a guarantee of future results. For annual periods starting January 1, 2011, the 3-year annualized ex-post standard deviation is not shown for the composite or the benchmark when 36 monthly composite returns are not available.

#### Composite Description

The Emerging Markets Equity strategy seeks to achieve long term capital growth by primarily investing in securities of companies incorporated in, or exposed to, emerging market economies worldwide. The composite consists of accounts managed at a prior firm until December 31, 2014. Performance results have been linked to results achieved at Manulife Investment Management. The reduction in composite assets as of December 31, 2014 is a result of a lift-out of the investment team from another firm. As of December 2014 the percentage of composite assets that were non fee-paying affiliated seed capital was 100%, as of December 2015 the percentage of composite assets that were non fee-paying affiliated seed capital was 4% and as of December 2016 the percentage of composite assets that were non fee-paying affiliated seed capital was 2%, as of December 2017 the percentage of composite assets that were non fee-paying affiliated seed capital was 1%, and as of December 31, 2018 the percentage of composite assets that were non fee-paying affiliated seed capital was 1%, as of December 31, 2019 the percentage of strategy assets that were non fee-paying affiliated seed capital was 1%, and as of December 31, 2020 the percentage of strategy assets that were non fee-paying affiliated seed capital was 1%.

#### Fee Schedule

This report is intended for institutional investors and the standard investment advisory fee schedule is 0.90% on the first 25 million; 0.80% on the next 50 million; and 0.70% thereafter. From inception to June 30, 2019 the standard investment advisory fee schedule was 0.90% on the first 25 million; 0.85% on the next 50 million; and 0.75% thereafter.

#### Benchmark Description

The MSCI Emerging Markets Net Index is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets. The universe includes large, mid, and small cap securities, and can be segmented across styles and sectors. Net total return indices reinvest dividends after the deduction of withholding taxes, using a tax rate applicable to non-resident institutional investors who do not benefit from double taxation treaties.

# Investment Considerations

A widespread health crisis such as a global pandemic could cause substantial market volatility, exchange-trading suspensions and closures, and affect portfolio performance. For example, the novel coronavirus disease (COVID-19) has resulted in significant disruptions to global business activity. The impact of a health crisis and other epidemics and pandemics that may arise in the future, could affect the global economy in ways that cannot necessarily be foreseen at the present time. A health crisis may exacerbate other pre-existing political, social and economic risks. Any such impact could adversely affect the portfolio's performance, resulting in losses to your investment.

Any performance information shown is the investment strategy composite gross of fees, including advisory and investment management fees and other expenses an investor would incur, but net of transaction costs, unless otherwise noted; deduction of such expenses would reduce returns. Net performance results reflect the application of the highest incremental rate of the standard investment advisory or management fee schedule to gross performance results, unless otherwise indicated. Changes in exchange rates may have an adverse effect. Actual fees may vary depending on, among other things, the applicable fee schedule, portfolio size and/or investment management agreement. For example, if \$100,000 were invested and experienced a 10% annual return compounded monthly for 10 years, its ending value, without giving effect to the deduction of advisory or investment management fees, would be \$270,704 with an annualized compounded return of 10.47%. If an advisory or investment management fee of 0.95% of the average market value of the account were

deducted monthly for the 10-year period, the annualized compounded return would be 9.43% and the ending dollar value would be \$246,355. Unless otherwise noted, returns greater than 1 year are annualized; calendar year returns for each one year period end in December. Discrepancies may occur due to rounding. Past performance does not guarantee future results.

Performance information shown is generally for discretionary strategies/solutions and managed by a Manulife entity which is GIPS compliant and falls under the definition of a corresponding Manulife GIPS firm. Some investment strategies/solutions may not be included in a GIPS compliant firm under certain circumstances, such as SMA/UMA business in Canada.

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securities was or will be profitable. Top ten holdings information combines share listings from the same issuer, and related depositary receipts, into a singular holding to accurately present aggregate economic interest in the referenced company.

No investment strategy or risk management technique can guarantee returns or eliminate risk in any market environment. Diversification or asset allocation does not guarantee a profit or protect against the risk of a loss in any market. The indices referenced herein are broad-based securities market indices and used for illustrative purposes only. The indices cited are widely accepted benchmarks for investment performance within their relevant regions, sectors or asset classes, and represent non-managed investment portfolios.

If derivatives are employed, note that investing in derivative instruments involves risks different from, or possibly greater than, the risks associated with investing directly in securities and other traditional investments and, in a down market, could become harder to value or sell at a fair price.

## Information about SFDR

Unless otherwise noted, any references in this presentation to ESG or sustainability reflect the general approach of Manulife Investment Management to integrating sustainability risk considerations into our investment decision-making processes. Further details on Manulife Investment Management's general approach to sustainability are available at [www.manulifeim.com/institutional/global/en/sustainability](http://www.manulifeim.com/institutional/global/en/sustainability).

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Manulife Investment Management is the global wealth and asset management segment of Manulife Financial Corporation. We draw on more than a century of financial stewardship to partner with clients across our institutional, retail, and retirement businesses globally. Our specialist approach to money management includes the highly differentiated strategies of our fixed-income, specialized equity, multi-asset solutions, and private markets teams—along with access to specialized, unaffiliated asset managers from around the world through our multimanager model.

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AUGUST 26, 2021

# Thornburg Emerging Markets Equity Strategy

*for the Massachusetts Water Resource's Authority Retirement System*

Charles Wilson, PhD  
MANAGING DIRECTOR  
PORTFOLIO MANAGER

Josh Rubin  
MANAGING DIRECTOR  
PORTFOLIO MANAGER

Ben Kirby, CFA  
MANAGING DIRECTOR  
CO-HEAD OF INVESTMENTS  
PORTFOLIO MANAGER

Frances D'Alessio  
MANAGING DIRECTOR  
REGIONAL DIRECTOR-INSTITUTIONAL GROUP

# Firm & Team

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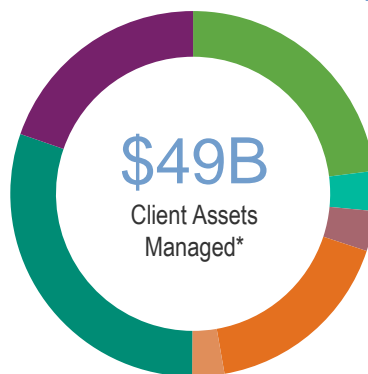


# Thornburg Investment Management

Active strategies to help investors achieve their investment objectives

## ASSETS BY TYPE

■ Multi-Asset	\$11.2B
■ Global Equity	\$1.7B
■ U.S. Equity	\$1.7B
■ Global Equity ex-U.S.	\$8.4B
■ Emerging Markets Equity	\$1.4B
■ Global Fixed Income	\$14.7B
■ Municipal Fixed Income	\$9.6B



## INVESTMENT VEHICLES

- Institutional Separate Accounts
- Mutual Funds
- UCITS Funds
- Retail Managed Accounts
- Collective Funds

\*Includes assets under management (\$46.7B) and assets under advisement (\$2.0B), as of June 30, 2021

## KEY FACTS

- 39**  
years since founding
- 26**  
diversified strategies
- 53**  
investment professionals
- 25**  
CFA Charterholders
- 38**  
employee owners

## AMERICAS | EMEA | ASIA-PACIFIC

Santa Fe, New Mexico | London | Hong Kong | Shanghai

### EQUITY

- Global Equity
- Global Equity ex-U.S.
- U.S. Equity
- Emerging Markets

### FIXED INCOME

- Ultra-Short & Short
- Intermediate & Long
- Multi-Sector Credit
- High Yield
- Municipal Bonds

### MULTI-ASSET

- Global Income
- Multi-Asset

### ESG

Signatory of:  
**PRI** Principles for Responsible Investment



# Portfolio Management

**Charles Wilson, PhD**  
Portfolio Manager  
16 years experience



**Charlie Wilson** is a portfolio manager for Thornburg Investment Management. He joined the firm in 2012 as associate portfolio manager and was promoted to portfolio manager in 2014. Prior to Thornburg, Charlie co-managed the emerging markets equity strategy at Marsico Capital Management in Denver, where he was also a senior analyst covering global companies across sectors. Charlie earned a BS in geology from the University of Arizona in Tucson and a PhD in geophysics from the University of Colorado in Boulder.

**Josh Rubin**  
Portfolio Manager  
20 years of experience



**Josh Rubin** is portfolio manager for Thornburg Investment Management. He joined Thornburg in 2017, initially working with the global strategies before being named associate portfolio manager in 2018, and portfolio manager in 2021. Before Thornburg, Josh worked at Driehaus Capital Management in Chicago, where he was first an associate portfolio manager responsible for emerging markets, and then the portfolio manager of the firm's Global and certain U.S. strategies. Prior to Driehaus, Josh co-managed the emerging markets equity strategy at Marsico Capital Management in Denver, where he was also a senior analyst covering global companies across sectors. Before asset management, Josh held investment banking and consulting roles. Josh earned a BSFS in international politics from the Walsh School of Foreign Service at Georgetown University.

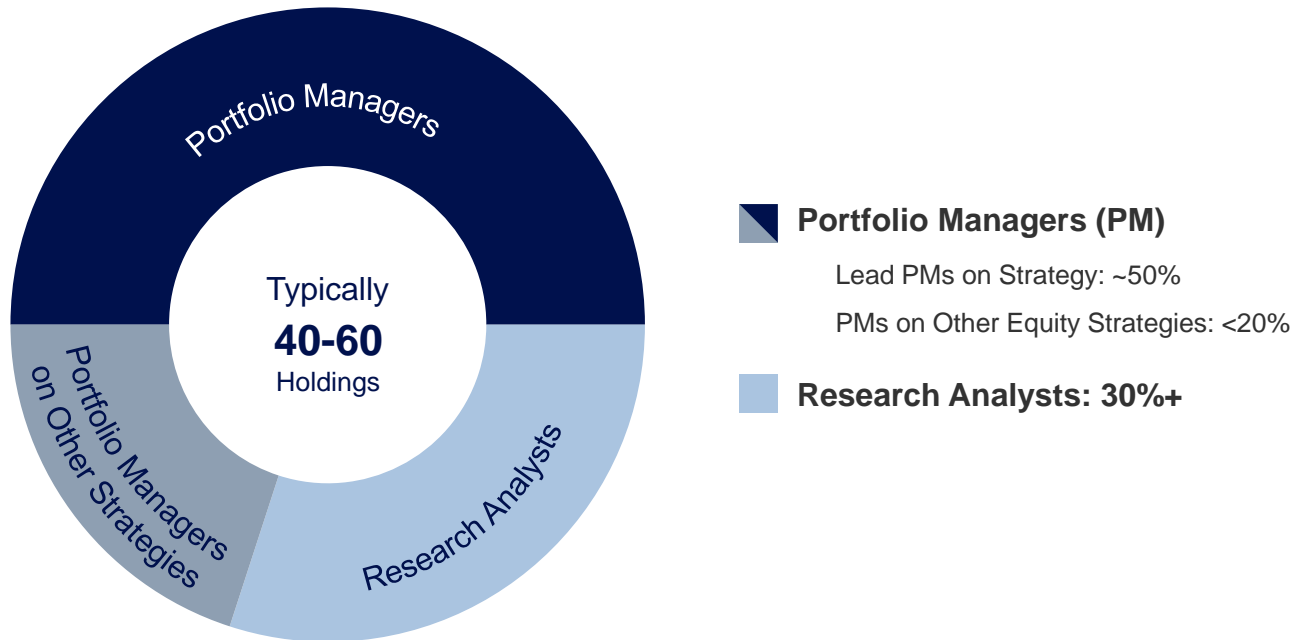
**Ben Kirby, CFA**  
Co-Head of Investments,  
Portfolio Manager  
15 years experience



**Ben Kirby** is co-head of investments for Thornburg Investment Management. He is responsible for driving the investment process at the firm level. Ben is also a portfolio manager on multiple strategies. He joined Thornburg in 2008 as equity research analyst, was promoted to associate portfolio manager in 2011, and was named portfolio manager and managing director in 2013. Ben holds a BA in computer science from Fort Lewis College and an MBA from Duke University's Fuqua School of Business. Prior to graduate school, Ben was a software engineer at Pinnacle Business Systems in Oklahoma City, Oklahoma. He is a CFA charterholder.

# Emerging Markets Team: Holdings Coverage

Collaboration within and across the equity team ensures comprehensive research coverage



# Equity Team Resources

Jason Brady, CFA  
President & CEO

Brian McMahon  
Chief Investment Strategist

## HEAD OF INVESTMENTS

Ben Kirby, CFA  
Co-Head of Investments

Jeff Klingelhofer, CFA  
Co-Head of Investments

## EQUITY

### Portfolio Management

Brian McMahon  
Portfolio Manager

Matt Burdett  
Portfolio Manager

Miguel Oleaga  
Portfolio Manager

Steven Klopukh, CFA  
Portfolio Manager

Tim McCarthy, CFA  
Portfolio Manager

Lei Wang, CFA  
Portfolio Manager

Charlie Wilson, PhD  
Portfolio Manager

Josh Rubin  
Portfolio Manager

Greg Dunn  
Portfolio Manager

Sean Sun, CFA  
Portfolio Manager

Ben Kirby, CFA  
Portfolio Manager

Brian Burrell, CFA  
Associate Portfolio Manager

Nicholas Anderson, CFA  
Associate Portfolio Manager

Joe Salmond  
Associate Portfolio Manager

## SUSTAINABLE INVESTING/ESG

Jakub Walko  
Director of ESG Investing and Global Investment Stewardship

## PORTFOLIO ANALYTICS

Igor Kuznetsov, PhD  
Portfolio Analytics Manager

Dan Martinez, CFA  
Sr. Analyst, Portfolio Analytics

Andrew Hockey, CFA  
Analyst, Portfolio Analytics

## Research

Glen Hilton  
Sr. Equity Research Analyst

Paul Ariano, CFA  
Sr. Equity Research Analyst

Emily Leveille, CFA  
Sr. Equity Research Analyst

Jason Lind, CFA  
Equity Research Analyst

Garima Malpani  
Equity Research Analyst

Mustafa Arikan  
Equity Research Analyst

Ben Song, CFA, FRM  
Equity Research Analyst

Joseph Santos  
Equity Research Analyst

Neal BasuMullick, CFA  
Equity Research Analyst

Suhada Thanikkatt, CFA  
Equity Research Analyst

Baadal Chaudhary, CFA  
Equity Research Analyst

## Trading

Thomas Garcia  
Head of Equity Trading

Erin McCaffery  
Lead Private Accounts Trader

Nelson Chadwick  
Sr. Equity Trader

Mike Capitani  
Sr. Equity Trader

Jeffrey Karolewicz  
Sr. Equity Trader

William Griffith  
Sr. Equity Trader

Elijah King  
Head of Trading Operations

Kayla Moore  
Equity/Currency Trader

Josh Archuleta  
Intermediate Equity Trader

# Investment Philosophy and Process

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# Emerging Markets Investment Philosophy

Emerging markets offer an attractive opportunity to access high economic growth

- **Capital markets are less efficient**, and securities become mispriced more frequently
- **Capital markets are more volatile** because they are less mature

We build a concentrated portfolio...

...of **strong businesses** whose stocks are mispriced

We use three baskets to balance the portfolio...

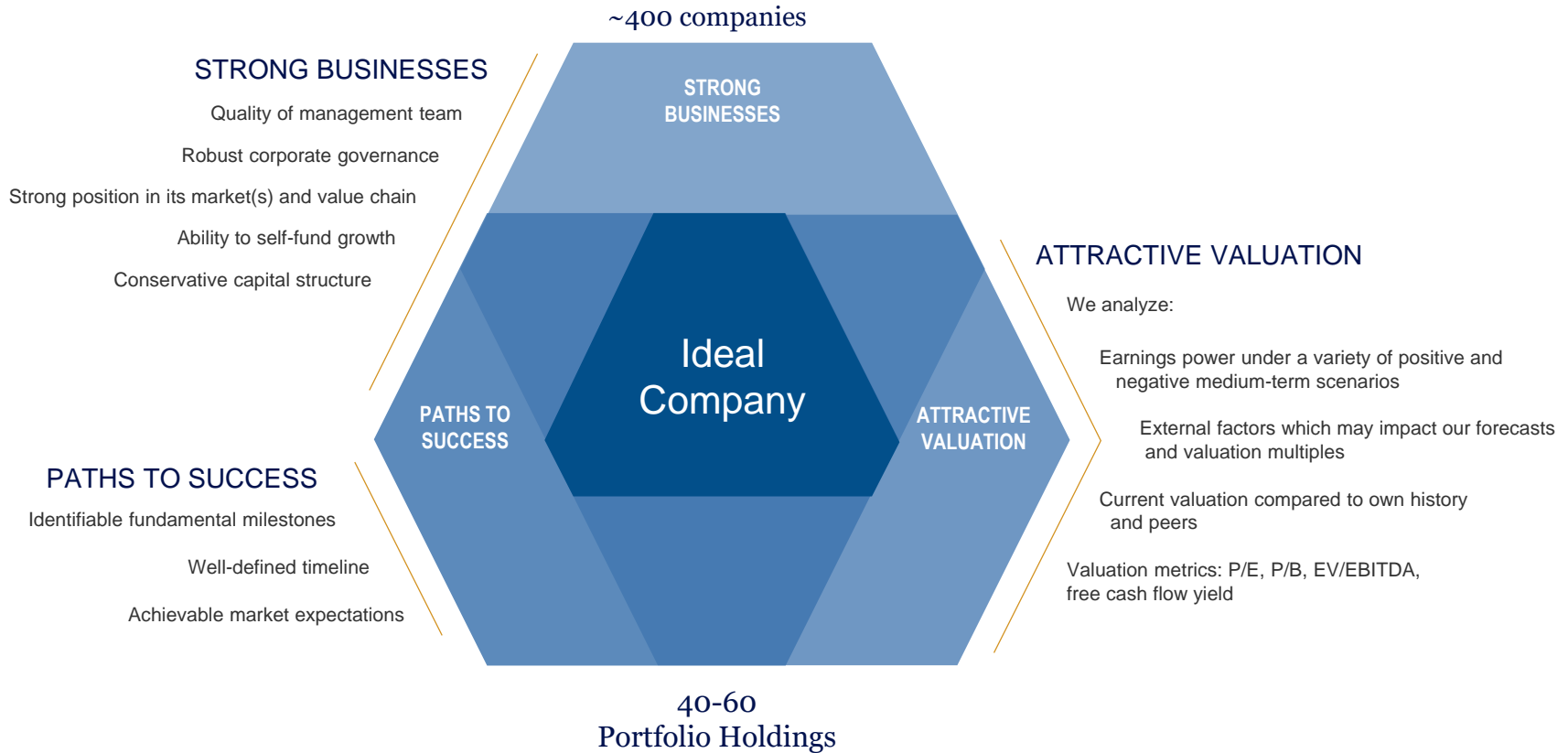
...to **mitigate the volatility** typically associated with a concentrated portfolio

**Goal:** Outperform the MSCI EM Index over a market cycle...

...with performance driven by **stock selection**  
...while managing **benchmark-relative risk**

# Focus on Strong Business

An active approach to finding great opportunities





# Investment Process with ESG Integrated



## MATERIALITY

Focus on the factors that influence return and risk

Establish **material ESG factors** for each proposed investment

Analyze company results and prospective strategy



## DATA

Review 3<sup>rd</sup> party data for ESG factors from multiple sources

Example ESG data sources:

- Bloomberg
- Sustainalytics
- MSCI
- S&P



## ASSESSMENT

Integrate analysis of material **ESG factors** and **3<sup>rd</sup> party ESG rating** with comprehensive investment research

Assess business, financial and ESG sustainability to uncover opportunity and manage risks



## DECISION

Establish an appropriate compensation for the determined risk

Decide to invest or defer, scaling position size and holding period as required



## STEWARDSHIP

Monitor ESG risks and reporting

Vote company proxy with purpose

Establish opportunities for company engagement

We evaluate material ESG risks and opportunities for each company within the essential, relevant sector and industry context.

# Thornburg Emerging Markets Investment Process

## Portfolio Construction: Three-basket approach

Redefine investment universe into three baskets for portfolio diversification without regard to sector, style, or cyclicity



### Consistent Earner

35–45% of the portfolio

Companies with predictable growth, profitability, cash flow and/or dividends

- A stable industry with limited sensitivity to external macroeconomic forces
- Predictable cost inputs paired with disciplined capital allocation
- Underpenetrated markets, differentiated value proposition, strong brand equity and/or essential products and services



### Basic Value

35–45% of the portfolio

Companies in mature industries exhibiting higher earnings volatility

- Higher economic sensitivity and capital intensity
- Timing mismatch between business investment and ability to generate attractive return
- Internal restructuring or product cycle



### Emerging Franchise

Max 20% of the portfolio

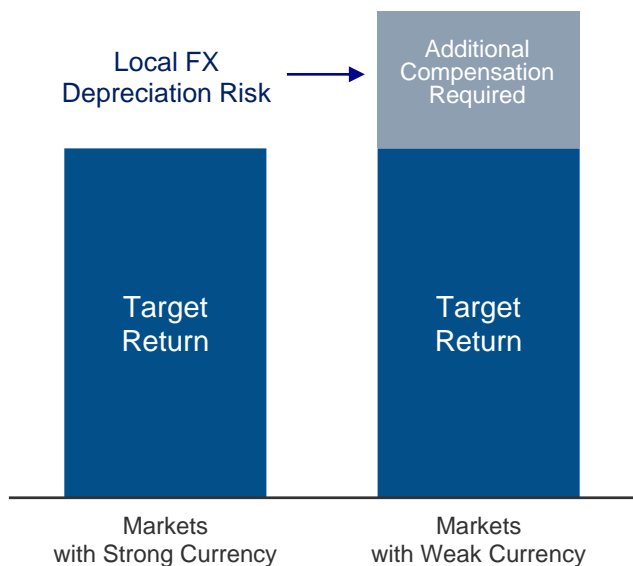
Companies with strong growth potential from creating or entering new markets and taking market share

- Potential leadership position in a market, but still-evolving competitive dynamics
- Strong business model, but untested across business cycle
- Growth may require substantial investment relative to certainty about the durability of revenue and cash flow

For illustration purposes only. Not representative of an actual investment.

# Managing Currency Risk

Requiring additional compensation when investing in markets with vulnerable FX



Relative Weight to Fragile Currencies  
Emerging Markets Equity Strategy  
Representative Account  
Since Inception through June 30, 2021



Source: FactSet

Weights are percentages of the total portfolio. Holdings are subject to change daily.

FX refers to the foreign exchange market. It is the over-the-counter market in which the foreign currencies of the world are traded.

Fragile currencies include Argentina, Brazil, Chile, Colombia, Egypt, Hungary, India, Indonesia, Malaysia, Mexico, Pakistan, Russia, South Africa, Thailand, Turkey.

Please see disclosure page for other important disclosures and definitions.



# Thornburg EM Risk Process

Our investment process is structured to navigate the risks in emerging markets and of managing a concentrated portfolio.

The primary source of risk is failing to consistently execute our process.

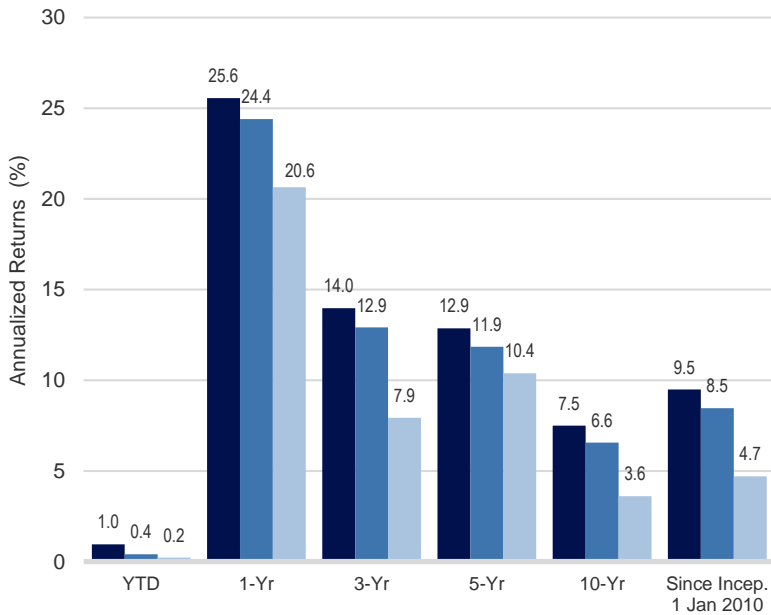
**Risk Oversight** is managed by **Thornburg's independent Portfolio Analytics Team** and is focused on key metrics tied to our investment process.

# Portfolio Outcomes

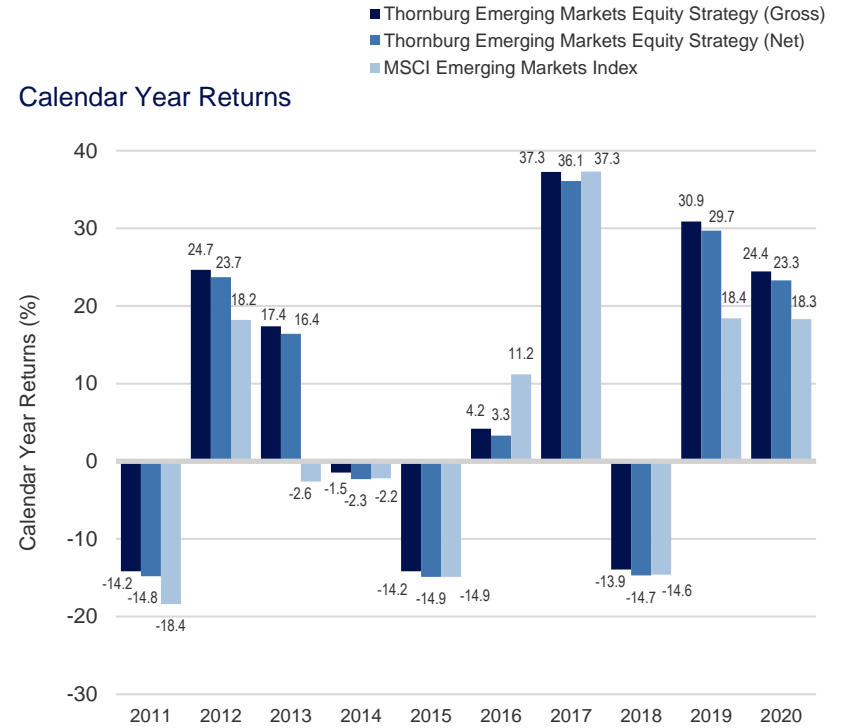
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# Investment Performance

Annualized Returns



Calendar Year Returns



Past performance does not guarantee future results. Please see the GIPS® Composite Report included herein.

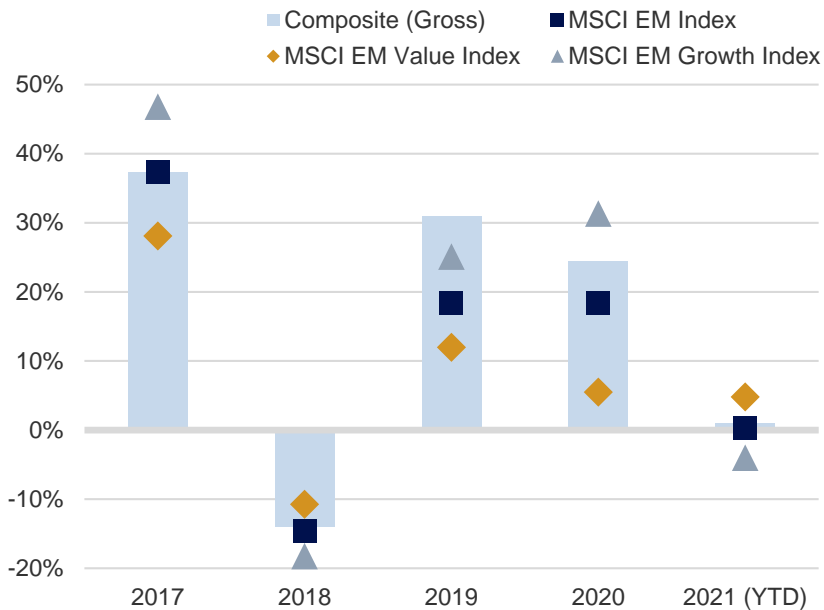
As of July 31, 2021  
Returns for less than one year are not annualized.



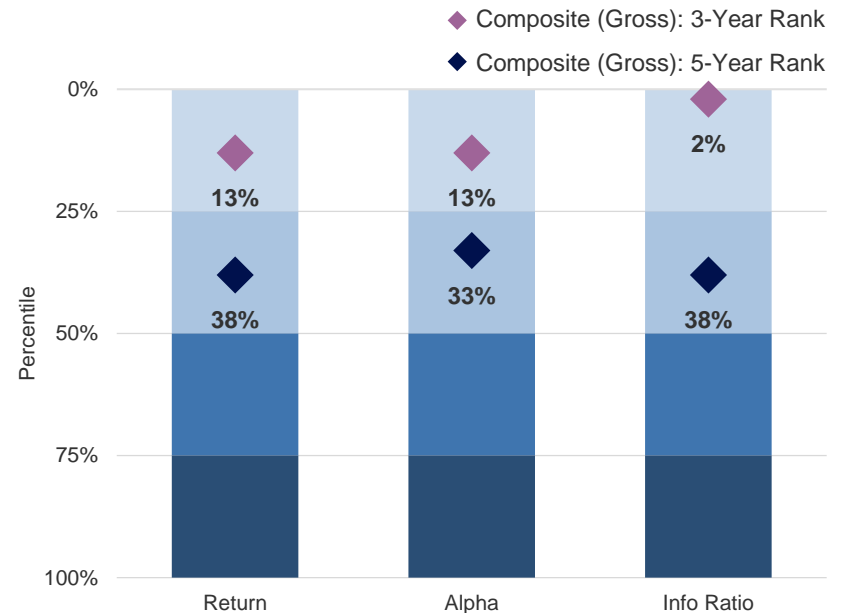
# Consistent Performance over the Market Cycle

## Thornburg Emerging Markets Equity Composite

**Solid Performance When Growth or Value Drive EM Returns**



**Attractive Risk Adjusted Performance across the Cycle**



*Past performance does not guarantee future results. Please see the GIPS® Composite Report included herein.*

Source: eVestment Alliance and Thornburg (as of July 31, 2021)

Based on annualized returns (gross of fees) vs. eVestment Emerging Markets All Cap Core Equity Universe with 104 products reporting in the three-year period and 97 products reporting in the five-year period. A high ranking does not mean that the strategy had high performance, only that the advisor outperformed its peers. The ranking assessed herein may not have been achieved in all reporting periods. Please see disclosure page for other important disclosures and definitions.

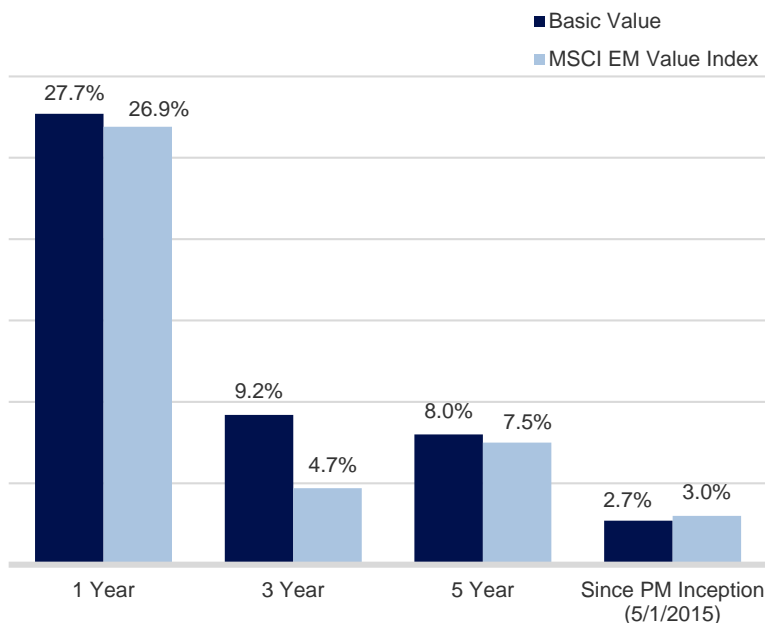




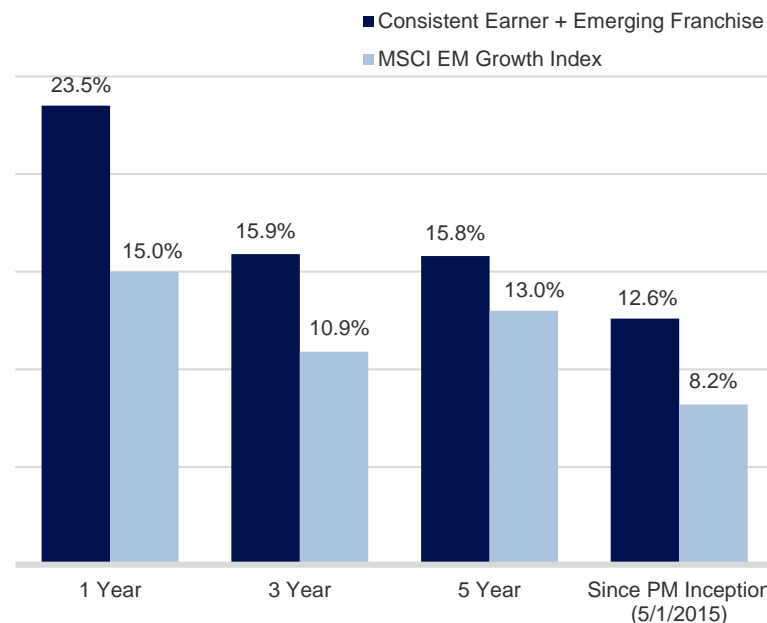
# Strong Stock Selection across the Style Spectrum

## Representative Account

### Historical Value Basket Performance



### Historical Growth Basket Performance



*Past performance does not guarantee future results.*

This performance data is based on a representative account currently invested within the Thornburg Emerging Markets Equity Composite.

Source: FactSet (as of July 31, 2021)

PM Inception refers to the date that current portfolio managers began managing the Strategy. Returns are annualized. The potential long-term impacts of the pandemic remain uncertain and difficult to assess, and there is no assurance that a particular business strategy or product will limit potential investment losses.

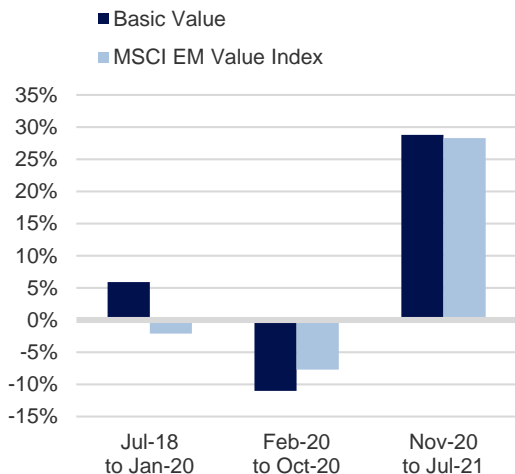
Please see disclosure page for other important disclosures and definitions.



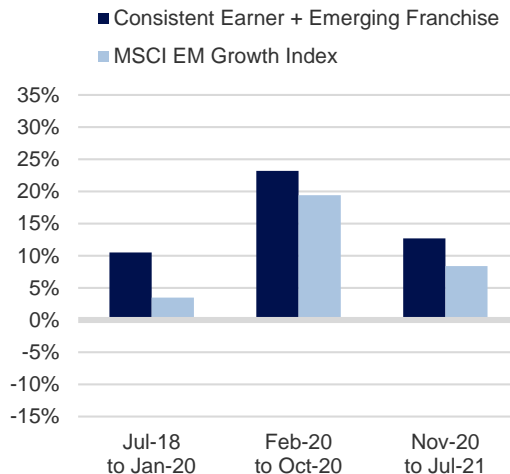
# Basket Balance Supports Performance during a Market Cycle

## Representative Account

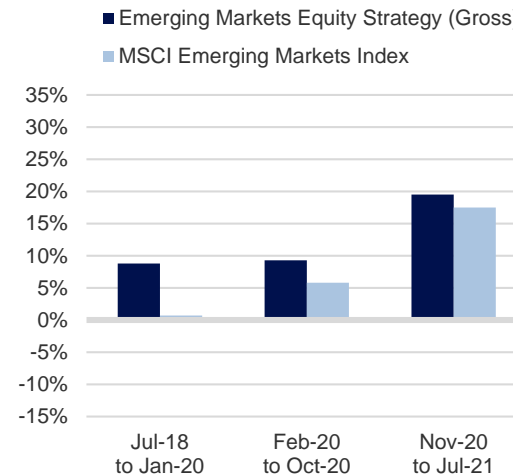
**Basic Value Basket**  
vs. MSCI EM Value Index



**Consistent Earner and Emerging Franchise Baskets**  
vs. MSCI EM Growth Index



**Thornburg Emerging Markets Equity Strategy**  
vs. MSCI EM Index



*Past performance does not guarantee future results.*

This performance data is based on a representative account currently invested within the Thornburg Emerging Markets Equity Composite.

Source: FactSet and Bloomberg

Returns are annualized for periods greater than one year. Please see disclosure page for other important disclosures and definitions.



# A Complementary Case

Combining Axiom EM Strategic Portfolio with Thornburg Emerging Markets Strategy dampens overall volatility without notably lowering the return profile.



*Past performance does not guarantee future results. Please see the GIPS® Composite Report included herein.*

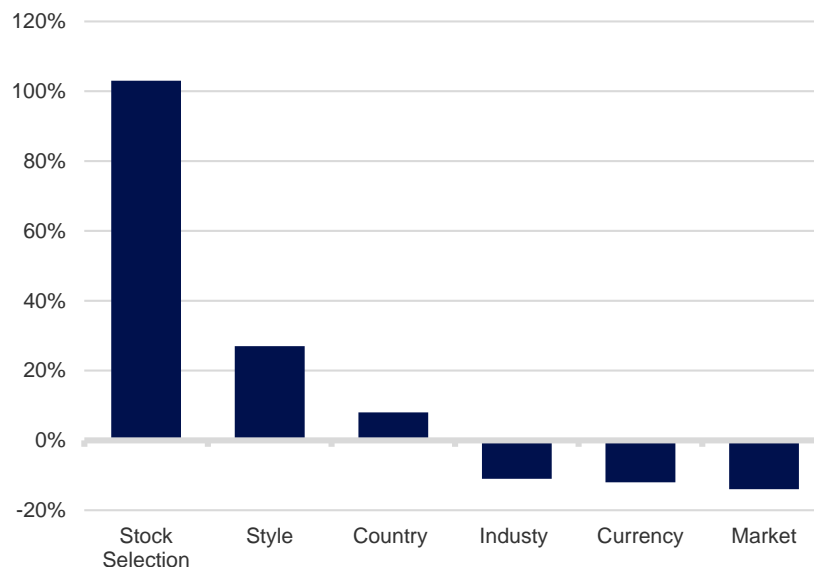
Source: eVestment Alliance and Thornburg  
 \*TIM/Axiom 50/50 allocation rebalanced semi-annually



# Conclusion

- ✓ **Predictable and repeatable process** to identify strong businesses and construct a balanced portfolio
- ✓ **Stock selection is the primary driver of portfolio returns**
- ✓ Three-basket approach to style diversification enables a **core return profile**
- ✓ **Robust complement to growth-oriented Axiom across the market cycle**

Trailing 3-Year Risk Factor Attribution:  
Sources of Excess Return  
Emerging Markets Equity Strategy (Representative Account)



*Past performance does not guarantee future results.*

Source: Thornburg, Axioma and FactSet  
Please see disclosure page for other important disclosures and definitions.



# Proposed Fees & Thornburg Client Service Team

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# MWRA Proposed Fee Schedule

Effective for the life of the relationship

Thornburg is pleased to offer Massachusetts Water Resource's Authority founders fee pricing for the following vehicle:

**LLC Commingled Vehicle**

70 bps All-In fee

Monthly Liquidity

# The MWRA Client Service Team



**Charlie Wilson, PhD**  
Managing Director  
Portfolio Manager  
[Charlie.Wilson@thornburg.com](mailto:Charlie.Wilson@thornburg.com)



**Josh Rubin**  
Managing Director  
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**Ben Kirby, CFA**  
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**Frances D'Alessio**  
Managing Director  
Regional Director  
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**Chris Kuhl**  
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**Rene Alarid**  
Managing Director  
Director, Investment Operations  
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# Appendix

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Portfolio  
Positioning &  
Characteristics

Investment  
Performance

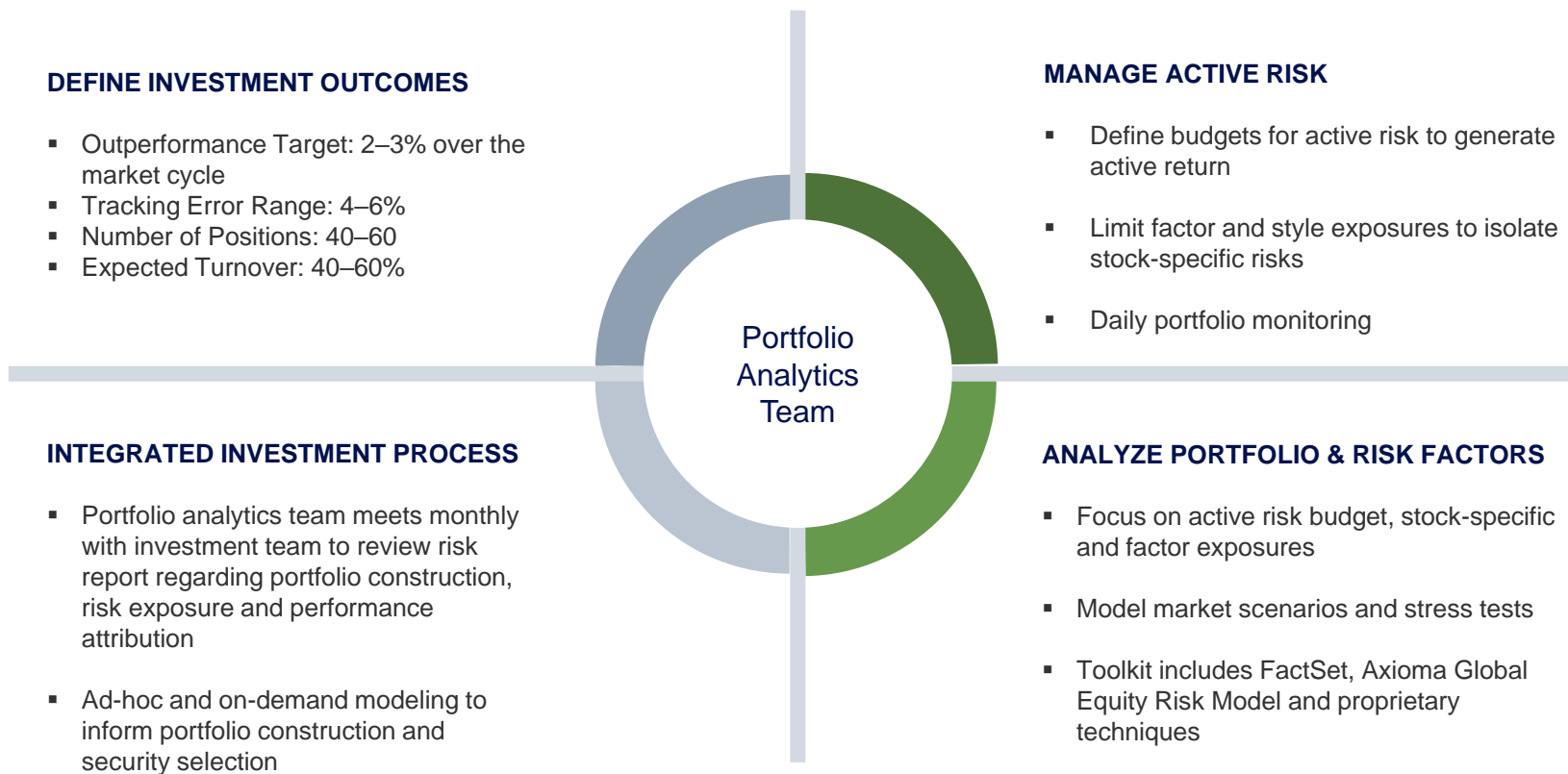
Equity Team  
Resources &  
Risk Oversight

Case Studies

GIPS® Composite  
Report & Disclosures

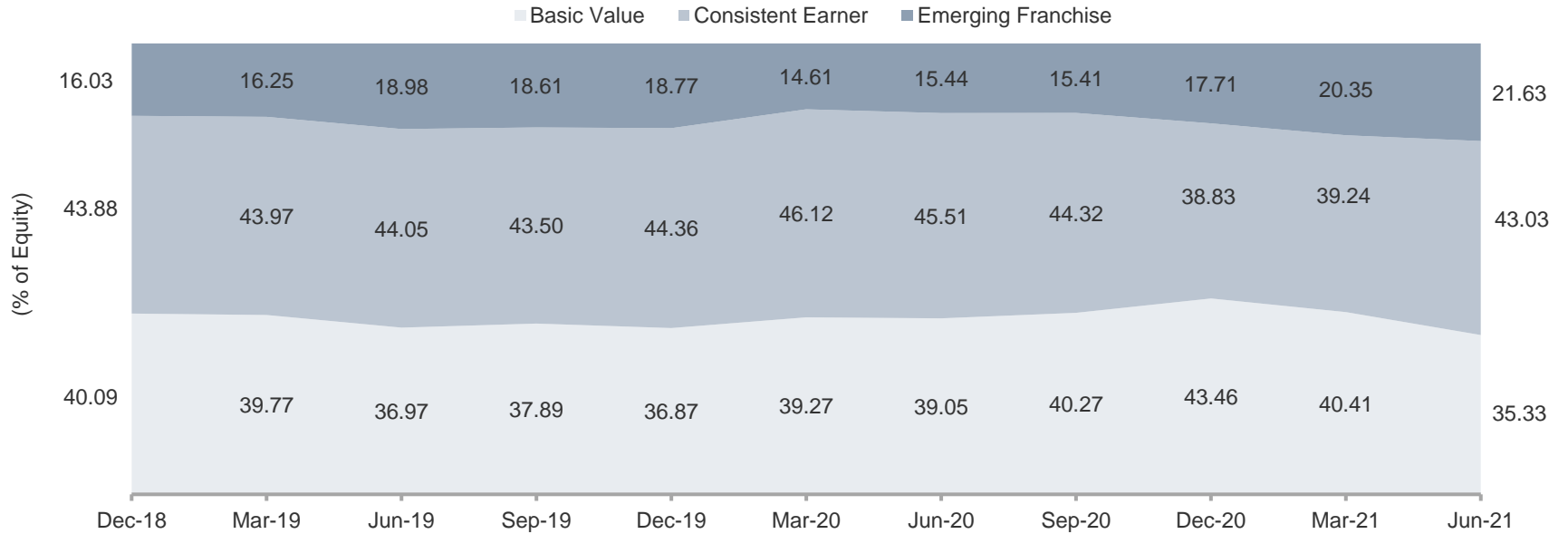
# Dedicated Risk Management

Independent portfolio analytics team focused on quantitative aspects of portfolio construction and risk management



# Basket Allocation over Time

## Representative Account



Source: Thornburg Investment Management  
 Holdings may change daily. Weights are percentages of equity. Please see disclosure page for other important disclosures and definitions.



# Portfolio Characteristics

## Representative Account

PORTFOLIO STATISTICS	PORTFOLIO	MSCI EMERGING MARKETS INDEX
Number of Holdings	53	1,412
Weighted Avg Market Cap	\$187.1B	\$165.7B
Median Market Cap	\$31.0B	\$7.8B
ROA	9.1%	7.6%
5-Yr. ROE	21.1%	11.8%
Net Debt/EBITDA	17.6%	14.6%
Active Share	70.5%	--
1-Yr Turnover	85.5%	--
<b>MARKET CAP (EX-CASH) (%)</b>		
Large > \$12 Billion	84.6	77.6
Mid \$2.5 Billion - 12 Billion	14.1	21.8
Small < \$2.5 Billion	1.3	0.6

MPT STATISTICS: COMPOSITE VS. MSCI EMERGING MARKETS INDEX	3-YR	5-YR	INCEPTION (1 JAN 10)
Annualized Alpha	4.91%	1.85%	5.05%
Beta	1.04	1.01	0.90
R-Squared	97.0%	94.6%	89.2%
Sharpe Ratio	0.80	0.84	0.57
Information Ratio	1.67	0.53	0.81
Standard Deviation	19.6%	16.7%	16.9%
Up Capture	117.2%	106.0%	98.9%
Down Capture	100.3%	99.0%	78.0%

*Past performance does not guarantee future results.*

Source: FactSet and Advent/APX  
 Portfolio attributes can and do vary. Weights are percentages of total portfolio. Holdings may change daily.  
 Please see disclosure page for other important disclosures and definitions.

# Portfolio Characteristics

## Representative Account

TEN LARGEST HOLDINGS* (%)	PORTFOLIO	MSCI EMERGING MARKETS INDEX
Taiwan Semiconductor	7.9	6.2
Alibaba Group Holding Ltd.	6.2	4.8
Tencent Holdings Ltd.	5.8	5.3
Samsung Electronics Co., Ltd.	4.2	4.6
AIA Group Limited	3.4	--
HDFC Bank Limited	2.9	--
China Gas Holdings Limited	2.9	0.1
Micron Technology, Inc.	2.8	--
Mediatek Inc	2.4	0.6
Walmart De Mexico Sab De Cv	2.4	0.2

### SECTOR ALLOCATION (%)

Info. Technology	28.4	20.4
Financials	18.2	17.8
Consumer Disc.	16.6	17.6
Comm. Services	12.8	11.3
Consumer Staples	7.5	5.6
Energy	4.9	5.0
Materials	4.5	8.4
Industrials	3.9	4.9
Utilities	2.2	1.9
Health Care	--	5.0
Real Estate	--	2.0
Cash	1.2	--

TEN LARGEST COUNTRIES (%)	PORTFOLIO	MSCI EMERGING MARKETS INDEX
China	29.2	37.5
Taiwan	11.6	13.9
India	10.4	9.9
Brazil	8.3	5.2
Russia	7.4	3.3
South Korea	6.9	13.2
Mexico	6.6	1.7
United States	4.0	--
Hong Kong	3.1	--
Indonesia	2.4	1.1

### REGIONAL EXPOSURE (%)

Pacific ex-Japan	3.1	--
North America	4.0	--
Emerging Asia	62.4	79.1
Emerging Latin America	20.0	7.8
Emerging EMEA	7.4	13.0
Cash	1.8	--

\*As of May 31, 2021

Source: FactSet and Advent/APX

Cash may also include cash equivalents and currency forwards. Portfolio attributes can and do vary. Weights are percentages of total portfolio. Holdings may change daily. Holdings are classified by country of risk as determined by MSCI and Bloomberg.

Please see disclosure page for other important disclosures and definitions.



# Portfolio Holdings by Basket

## Representative Account

<b>BASIC VALUE (%)</b>	<b>38.1%</b>	<b>CONSISTENT EARNER (%)</b>	<b>42.9%</b>	<b>EMERGING FRANCHISE (%)</b>	<b>15.7%</b>
Samsung Electronics Co. Ltd.	4.2%	Taiwan Semiconductor Manufacturing Co. Ltd.	7.9%	SBI Cards & Payment Services Ltd.	1.9%
China Gas Holdings Ltd.	2.9%	Alibaba Group Holding Ltd.	6.2%	Meituan	1.8%
Micron Technology, Inc.	2.8%	Tencent Holdings Ltd.	5.8%	Converge ICT Solutions, Inc.	1.7%
MediaTek, Inc.	2.4%	AIA Group Ltd.	3.4%	East Money Information Co. Ltd.	1.5%
Ping An Insurance Group Co. of China Ltd.	2.3%	HDFC Bank Ltd.	2.9%	Reliance Industries Ltd.	1.3%
LUKOIL PJSC	2.0%	Wal-Mart de Mexico S.A.B. de C.V.	2.4%	Pageseguro Digital Ltd.	1.3%
Adani Ports & Special Economic Zone Ltd.	1.7%	Infosys Ltd.	2.1%	21Vianet Group, Inc.	1.3%
Grupo Financiero Banorte S.A.B. de C.V.	1.6%	NAVER Corp.	2.0%	Lojas Quero Quero S/A	1.2%
Magnit PJSC	1.6%	Prosus N.V.	1.9%	InPost S.A.	1.1%
Bank Rakyat Indonesia Persero Tbk PT	1.6%	Shenzhen International Group Holdings Ltd.	1.9%	XP, Inc.	1.1%
Hon Hai Precision Industry Co. Ltd.	1.4%	NetEase, Inc.	1.6%	Sunny Optical Technology Group Co. Ltd.	1.1%
Severstal PAO	1.4%	Wuliangye Yibin Co Ltd	1.5%	EPAM Systems, Inc.	1.0%
Lojas Americanas S.A.	1.4%	Natura & Co. Holding S.A.	1.5%	Novatek PJSC	1.0%
Beijing Oriental Yuhong Waterproof Technology Co. Ltd.	1.4%	China Feihe Ltd.	0.9%	Globant S.A.	0.9%
Sociedad Quimica y Minera de Chile S.A.	1.4%			Fix Price Group Ltd.	0.6%
Credicorp Ltd.	1.3%				
Grupo Aeroportuario del Pacifico S.A.B. de C.V.	1.2%			Cash & Cash Equiv.	3.4%
Telefonica Brasil S.A.	1.1%				
ICICI Bank Ltd.	1.1%				
Galaxy Entertainment Group Ltd.	0.7%				
Geely Automobile Holdings Ltd.	0.6%				

Source: Advent/APX, as of May 31, 2021  
 Holdings may change daily. Weights are percentages of the total portfolio.  
 Please see disclosure page for other important disclosures and definitions.

# Portfolio Holdings by Sector

## Representative Account

	PORTFOLIO (%)	MSCI EMERGING MARKETS INDEX (%)
<b>Information Technology</b>	<b>26.4</b>	<b>20.4</b>
Taiwan Semiconductor Manufacturing Co., Ltd.	7.9	6.2
Samsung Electronics Co., Ltd.	4.2	4.6
Micron Technology, Inc.	2.7	--
MediaTek Inc.	2.5	0.6
Infosys Limited	2.1	0.8
Hon Hai Precision Industry Co., Ltd.	1.4	0.6
PagSeguro Digital Ltd.	1.3	--
21Vianet Group, Inc.	1.3	0.0
Sunny Optical Technology (Group) Co., Ltd.	1.1	0.2
EPAM Systems, Inc.	1.0	--
Globant SA	0.9	0.1
<b>Financials</b>	<b>18.4</b>	<b>18.3</b>
AIA Group Limited	3.2	--
HDFC Bank Limited	2.8	--
Ping An Insurance (Group) Company of China, Ltd.	2.2	0.9
SBI Cards & Payment Services Limited	1.9	0.0
Grupo Financiero Banorte, S.A.B. de C.V.	1.6	0.2
PT Bank Rakyat Indonesia (Persero) Tbk	1.6	0.2
East Money Information Co., Ltd.	1.5	0.0
Credicorp Ltd.	1.3	0.1
ICICI Bank Limited	1.1	0.5
XP, Inc.	1.1	--
<b>Consumer Discretionary</b>	<b>16.4</b>	<b>16.8</b>
Alibaba Group Holding Ltd.	6.2	4.8
Meituan	2.0	1.6
Prosus N.V.	1.9	--
Shenzhen International Group Holdings Ltd.	1.8	0.2
Lojas Americanas S.A.	1.3	0.0
Lojas Quero-Quero SA	1.2	--
Galaxy Entertainment Group Limited	0.7	--
Fix Price Group Ltd.	0.6	--
Geely Automobile Holdings Limited	0.6	0.2

	PORTFOLIO (%)	MSCI EMERGING MARKETS INDEX (%)
<b>Communication Services</b>	<b>12.3</b>	<b>11.4</b>
Tencent Holdings Ltd.	5.9	5.3
NAVER Corp.	2.0	0.5
Converge Information and Communications Technology Solutions, Inc.	1.7	--
NetEase, Inc.	1.6	0.6
Telefonica Brasil S.A.	1.1	--
<b>Consumer Staples</b>	<b>7.9</b>	<b>5.7</b>
Wal-Mart de Mexico SAB de CV	2.5	0.2
Magnit PJSC	1.6	0.1
Natura &Co Holding S.A.	1.5	0.1
Wuliangye Yibin Co., Ltd.	1.5	0.1
China Feihe Limited	0.9	0.1
<b>Energy</b>	<b>4.3</b>	<b>4.9</b>
Oil Co. LUKOIL PJSC	2.0	0.4
Reliance Industries Limited	1.2	1.0
Novatek JSC	1.0	0.2
<b>Materials</b>	<b>4.2</b>	<b>8.7</b>
Beijing Oriental Yuhong Waterproof Technology Co., Ltd.	1.5	0.0
Severstal PAO	1.4	0.1
Sociedad Quimica y Minera de Chile S.A.	1.3	0.1
<b>Industrials</b>	<b>4.0</b>	<b>4.7</b>
Adani Ports & Special Economic Zone Ltd.	1.6	0.1
Grupo Aeroportuario del Pacifico SAB de CV	1.2	0.1
InPost S.A.	1.1	--
<b>Utilities</b>	<b>2.8</b>	<b>2.0</b>
China Gas Holdings Limited	2.8	0.1
<b>Cash &amp; Cash Equiv.</b>	<b>3.4</b>	<b>--</b>

Source: FactSet, as of May 31, 2021

Holdings may change daily. Weights are percentages of the total portfolio. Please see disclosure page for other important disclosures and definitions.

# Investment Performance

<b>ANNUALIZED RETURNS (%)</b>	<b>QTD</b>	<b>YTD</b>	<b>1-YR</b>	<b>3-YR</b>	<b>5-YR</b>	<b>10-YR</b>	<b>INCEPTION (1 JAN 10)</b>
Thornburg Emerging Markets Equity Strategy (Gross)	4.64	6.55	43.88	17.01	15.09	8.04	10.08
Thornburg Emerging Markets Equity Strategy (Net)	4.40	6.06	42.57	15.93	14.06	7.10	9.05
MSCI Emerging Markets Index	5.05	7.45	40.90	11.27	13.03	4.28	5.37
Excess Return (Net)	-0.65	-1.39	1.67	4.66	1.03	2.82	3.68

<b>CALENDAR YEAR RETURNS (%)</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Thornburg Emerging Markets Equity Strategy (Gross)	-14.18	24.66	17.37	-1.45	-14.17	4.20	37.26	-13.94	30.88	24.44
Thornburg Emerging Markets Equity Strategy (Net)	-14.84	23.69	16.36	-2.30	-14.91	3.28	36.12	-14.72	29.67	23.29
MSCI Emerging Markets Index	-18.42	18.22	-2.60	-2.19	-14.92	11.19	37.28	-14.58	18.42	18.31
Excess Return (Net)	3.58	5.47	18.96	-0.12	0.00	-7.90	-1.16	-0.14	11.25	4.98

*Past performance does not guarantee future results. Please see the GIPS® Composite Report included herein.*

As of quarter end June 30, 2021  
Returns for less than one year are not annualized.





# Portfolio Construction and Risk Oversight

## STRATEGY EXPECTATIONS

Excess return 200–300 bps annualized over a market cycle with similar or less volatility than MSCI Emerging Markets Index.

Tracking error range 4–6%

## POSITION SIZE

Typically 40–60 holdings

Active weight usually 1–5%

## HOLDING PERIOD

Expected turnover range 40–60%

Target: 3+ years (growth baskets)

Target: 18–24 months (value basket)

## MARKET CAPITALIZATION

Typically greater than \$1 billion USD

## CASH LIMIT

<10% under normal conditions

## INDUSTRY LIMIT

Maximum of 25%

## COUNTRY LIMIT

Maximum of 50%

## DEVELOPED MARKETS LIMIT

Less than 10% of portfolio

## CURRENCY HEDGING

Permitted as risk management tool

## SECURITY LEVEL

Fundamental research with detailed financial and company models

Monitor essential attributes of free cash flow, return-on-equity, leverage and liquidity

Ongoing research coverage from a dedicated analyst

Scenario modeling to test and challenge investment thesis

Analyze material sustainability/ESG metrics

## RISK ANALYTICS

Independent risk analytics team

Peer portfolio manager risk oversight

Robust factor analysis and scenario testing

## PORTFOLIO LEVEL

Three-basket approach achieves diversity across style spectrum

- Basic Value 35–45%
- Consistent Earner 35–35%
- Emerging Franchise 20%

Monitoring country, sector, and industry diversification

Maintaining currency awareness

## COMPLIANCE

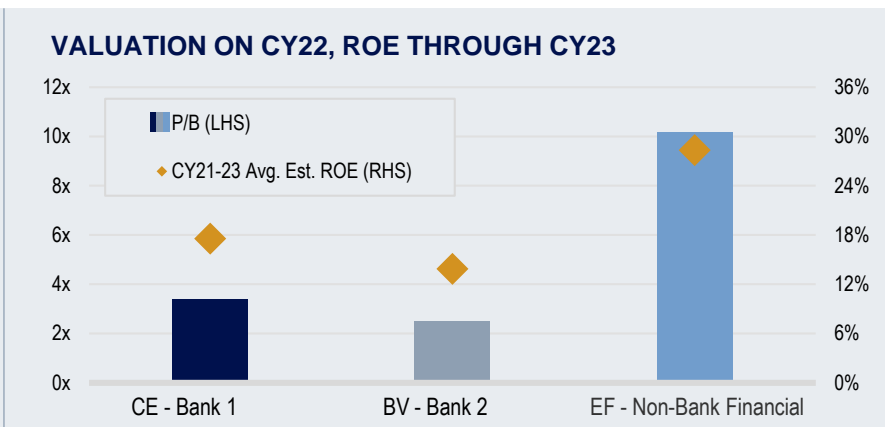
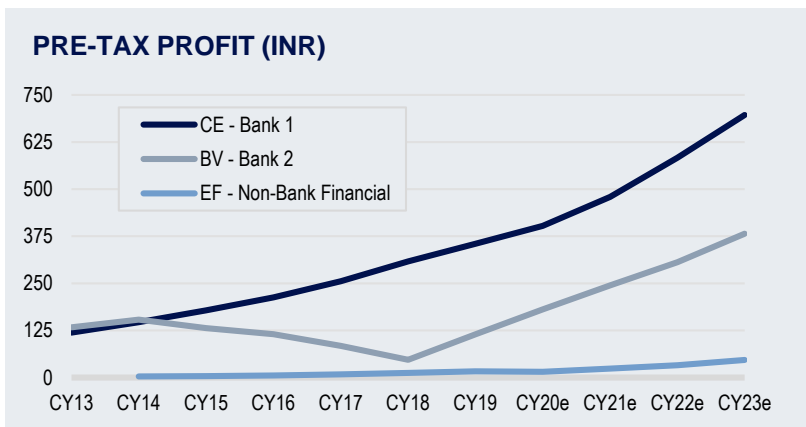
Monitors portfolio compliance with client investment guidelines

Operational risk committee

# Investment Case Study

## Financials: Indian Banks

	DESCRIPTION	STYLE BASKET FIT	PATHS TO SUCCESS
<b>Bank 1</b>	India's largest private bank and a leading player across a variety of retail loan categories	<b>Consistent Earner (CE):</b> history of consistent YoY revenue growth through economic cycles	Accelerating financial inclusion of India's growing middle class provides a long runway for continued success
<b>Bank 2</b>	One of India's largest private banks, ICICI maintains a strong presence in the corporate lending segment	<b>Basic Value (BV):</b> commercial focus leads to a more cyclically sensitive cash flow profile	Following an extended period of high NPLs, management changes and increased credit scrutiny can drive a strong earnings recovery
<b>Non-Bank Financial</b>	Credit card arm of the largest bank in India and the country's second largest credit card provider	<b>Emerging Franchise (EF):</b> higher volatility as the company works to carve out a leading position in an underpenetrated market segment	A rapidly expanding middle class can drive the proliferation of new credit card users as well as larger spending balances of existing users

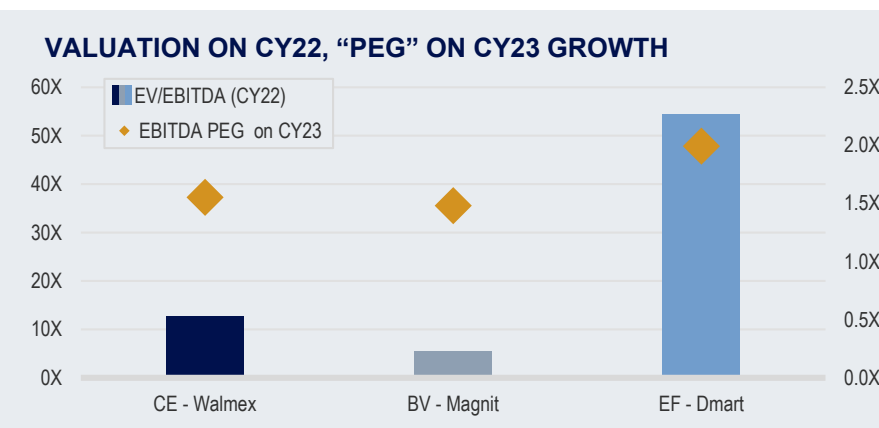
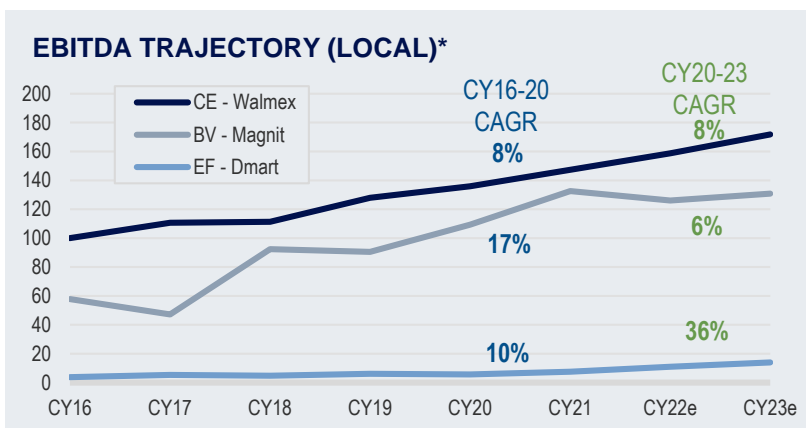


Source: Bloomberg  
 Any securities, sectors, or countries mentioned are for illustration purposes only. Holdings are subject to change.  
 Under no circumstances does the information contained within represent a recommendation to buy or sell any security.

# Investment Case Study

## Consumer Staples: Retail Foods

	DESCRIPTION	STYLE BASKET FIT	PATHS TO SUCCESS
<b>Walmex (Mexico)</b>	#1 grocery and general merchandise retailer in Mexico and Central America	<b>Consistent Earner (CE):</b> strong core business provides steady earnings compounding with e-commerce driving growth potential.	Best-in-class execution coupled with omnichannel platform and digital initiatives support “stronger for longer” growth trajectory.
<b>Magnit (Russia)</b>	Russia’s #2 grocery retailer, with an expanding drugstore/cosmetics operation	<b>Basic Value (BV):</b> prior management missteps weakened competitive positioning and squeezed margins. Now a turnaround story.	Addressing customer preferences with better selection and improving supply chain to reduce working capital and raise margins.
<b>DMart (India)</b>	Low-cost grocery and general merchandise retailer operating 200+ stores across India	<b>Emerging Franchise (EF):</b> expanding out of home region, but new store openings squeeze margins and limit free cash flow.	New store openings, strong same store sales growth from maturing stores, and increasing store density in new regions.

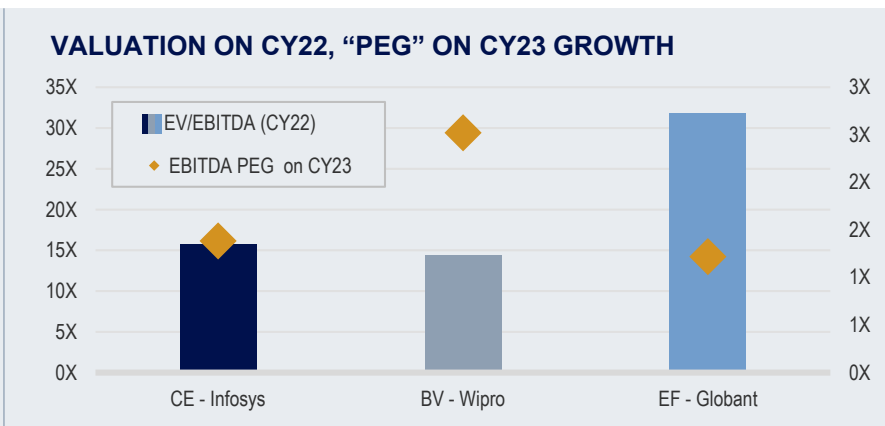
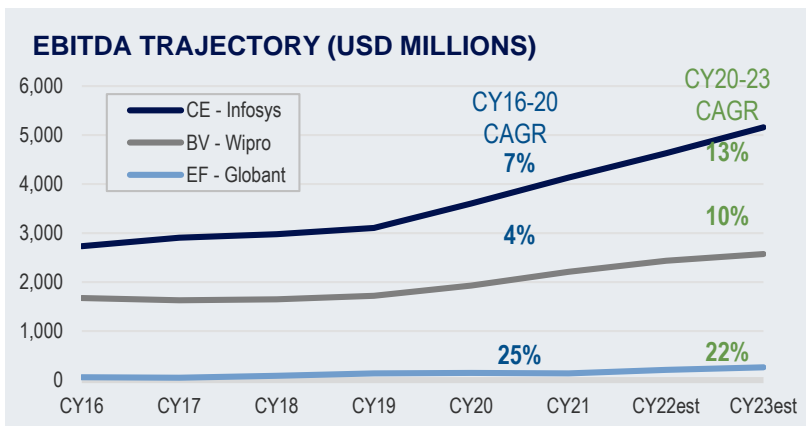


Source: Bloomberg  
 \*Walmex CY16 EBITDA indexed to 100. Magnit and Dmart CY16 EBITDA scaled relative to Walmex starting value.  
 Any securities, sectors, or countries mentioned are for illustration purposes only. Holdings are subject to change.  
 Under no circumstances does the information contained within represent a recommendation to buy or sell any security.

# Investment Case Study

## Information Technology: Services Companies

	DESCRIPTION	STYLE BASKET FIT	PATHS TO SUCCESS
<b>Infosys (India)</b>	Provides end-to-end IT services and consulting solutions to a global customer base	<b>Consistent Earner (CE):</b> higher-end value-add service offerings increase business strength and growth consistency through the cycle	Shifting away from legacy infrastructure services to provide higher value add digital solutions in high demand areas
<b>Wipro (India)</b>	Global IT services provider with higher exposure to legacy back-end support, and a high mix of exposure to stressed industries	<b>Basic Value (BV):</b> greater dependence on lower-end commoditized services limits pricing power and heightens economic cyclicality	Economic reopening, digital services investments, and accelerating global GDP growth could support earnings rebound
<b>Globant (Argentina)</b>	Focused on “digital transformation” IT services and consulting, improving companies’ customer-facing capabilities	<b>Emerging Franchise (EF):</b> exposed to newest and highest growth areas in IT Services and investing all FCF into growth initiatives	Building new leading-edge capabilities, deepening monetization of global 1000 corporates, and expanding geographic reach



Source: Bloomberg

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# 2019 GIPS® Composite Report

## Thornburg Emerging Markets Equity Composite

1 JANUARY 2010 (INCEPTION)  
THROUGH 31 DECEMBER 2019

PERIOD	COMPOSITE RETURNS		INDEX RETURNS	3-YR ANNUALIZED STANDARD DEVIATION*		DISPERSION	AS OF 31 DEC		
	GROSS	NET	MSCI EMERGING MARKETS INDEX	COMPOSITE	MSCI EMERGING MARKETS INDEX	INTERNAL EQUAL WTD.	NUMBER OF ACCOUNTS	COMPOSITE ASSETS (MM)	TOTAL FIRM ASSETS (MM)
2019	30.88%	29.67%	18.42%	13.83%	14.17%	N/M	2	937	42,660
2018	-13.94%	-14.72%	-14.57%	12.74%	14.60%	N/M	2	770	40,510
2017	37.26%	36.12%	37.28%	11.90%	15.35%	N/M	2	1,101	48,784
2016	4.20%	3.28%	11.19%	12.74%	16.07%	N/M	2	1,058	48,937
2015	-14.17%	-14.91%	-14.92%	12.91%	14.06%	N/M	2	1,168	54,809
2014	-1.45%	-2.30%	-2.19%	14.00%	15.00%	N/M	4	3,950	64,492
2013	17.37%	16.36%	-2.60%	19.00%	19.04%	N/M	4	2,244	94,303
2012	24.66%	23.69%	18.22%	20.30%	21.50%	N/M	1	142	83,646
2011	-14.18%	-14.84%	-18.42%	N/A	N/A	N/M	1	62	73,213
2010	33.00%	30.72%	18.88%			N/M	1	58	73,389

\* 3-Yr annualized standard deviation is not required for annual periods prior to 2011.

N/A - Not available. Thirty-six monthly composite returns are not available due to the composite's inception date.

N/M - Not meaningful. A statistical measure of internal dispersion for composites with five or fewer accounts (included for the entire year) is not considered meaningful.

1. Thornburg Investment Management, Inc. claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Thornburg Investment Management, Inc. has been independently verified for the period July 1, 1998 through December 31, 2018. The verification reports are available upon request. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. Verification does not ensure the accuracy of any specific composite presentation.
2. Thornburg Investment Management, Inc. (the "Firm") is an independent investment adviser registered under the Investment Advisers Act of 1940. Registration does not imply a certain level of skill or training. The Firm's clientele consists of mutual funds, commingled funds and taxable and non-taxable separately managed accounts in U.S., non-U.S. and global equity strategies and in U.S. fixed income strategies. Policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request.
3. Valuations are computed and performance is reported in United States dollars.
4. The three-year annualized ex-post standard deviation measures the variability of the composite and the benchmark returns over the preceding 36-month period. Internal dispersion is calculated using the equal-weighted standard deviation of annual gross returns of those accounts included in the composite for the entire year.



# 2019 GIPS® Composite Report

## Thornburg Emerging Markets Equity Composite

1 JANUARY 2010 (INCEPTION)  
THROUGH 31 DECEMBER 2019

5. The performance data quoted represents past performance; it does not guarantee future results. Returns will fluctuate and current performance may be either lower or higher than data shown.
6. The Developing World Composite includes all discretionary non-wrap accounts invested in the Developing World Strategy. The strategy seeks long-term capital appreciation by investing primarily in equity securities of developing country issuers and issuers which are, in Thornburg's opinion, tied economically to one or more developing countries. The strategy may invest in companies of any size.
7. The MSCI Emerging Markets Net Total Return Index is a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging markets. The MSCI Emerging Markets Index consists of the following 24 emerging market country indexes: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Qatar, Russia, South Africa, Taiwan, Thailand, Turkey and United Arab Emirates. The performance of any index is not indicative of the performance of any particular investment. Unless otherwise noted, index returns reflect the reinvestment of income dividends and capital gains, if any, but do not reflect fees, brokerage commissions or other expenses of investing. Benchmark returns are not covered by the report of independent verifiers.
8. Portfolio construction will have significant differences from that of a benchmark index in terms of security holdings, industry weightings, asset allocations and number of positions held, all of which may contribute to performance, characteristics and volatility differences. Investors may not make direct investments into any index.
9. Returns reflect the reinvestment of income and capital gains. Net returns shown are net of actual investment advisory fees. Prior to January 1, 2011 the net returns reflect the deduction of management fees and other administrative expenses. The standard fee schedule currently in effect is: 0.75% on the first \$50 million, 0.65% on the next \$50 million, 0.60% on the next \$150 million, negotiable thereafter. Fees may be negotiated in lieu of the standard fee schedule.
10. The Developing World Composite has been examined for the period from January 1, 2010 through December 31, 2019. The examination reports are available upon request.
11. This composite was created in January 2010. A list of composite descriptions is available upon request.

# Disclosures

*The performance data quoted represents past performance; it does not guarantee future results. Returns will fluctuate and current performance may be either lower or higher than data shown.*

Investments in the strategy carry risks, including possible loss of principal. Special risks may be associated with investments outside the United States, especially in emerging markets, including currency fluctuations, illiquidity, volatility, and political and economic risks. Investments in small capitalization companies may increase the risk of greater price fluctuations. Carefully consider the strategy's investment objectives, risks, fees and expenses before investing. There is no guarantee that the strategy will meet its investment objectives.

Unless otherwise noted, source of all data, charts, tables and graphs is Thornburg Investment Management, Inc.

Portfolio holdings and characteristics shown herein are from a representative account managed within the investment composite. The representative account is selected based on account characteristics that Thornburg believes accurately represent the investment strategy as a whole. Should these characteristics change materially, Thornburg may select a different representative account. Holdings may change daily and may vary among accounts, which may contribute to different investment results.

The information provided in this report should not be considered a recommendation to purchase or sell any particular security. There is no assurance that any securities discussed herein will remain in an account's portfolio at the time you receive this report or that securities sold have not been repurchased. The securities discussed do not represent an account's entire portfolio and, in the aggregate, may represent only a small percentage of an account's portfolio holdings. It should not be assumed that any of the securities transactions or holdings discussed were or will prove to be profitable, or that the investment recommendations or decisions we make in the future will be profitable or will equal the investment performance of the securities discussed herein.

The MSCI Emerging Markets Net Total Return USD Index is a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging markets. The MSCI Emerging Markets Index consists of the following 24 emerging market country indexes: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Qatar, Russia, South Africa, Taiwan, Thailand, Turkey and United Arab Emirates.

The MSCI Emerging Markets Value Index captures large- and mid-cap securities exhibiting overall value style characteristics across 26 Emerging Markets (EM) countries. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield.

The MSCI Emerging Markets Growth Index captures large- and mid-cap securities exhibiting overall growth style characteristics across 26 Emerging Markets (EM) countries. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward EPS growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend.

Portfolio construction will have significant differences from that of a benchmark index in terms of security holdings, industry weightings, asset allocations and number of positions held, all of which may contribute to performance, characteristics and volatility differences. Investors may not make direct investments into any index.

Active Share - A measure of the percentage of stock holdings in a manager's portfolio that differ from the benchmark index.

EBITDA - Earnings before interest, taxes, depreciation, and amortization (EBITDA) is a metric that measures a company's overall financial performance.

eVestment Ranking is determined by taking a value for a given product and comparing that value to that of the product's specified peer group. Ranking is done in a percentile fashion, from 1 to 100, and products are assigned a percentile ranking based upon where their representative value lines up with the peer group as a whole. The higher a percentile number for a product, the worse performing it is compared to its peers for that specific valuation. Conversely, the lower a percentile number for a product, the better performing that product is when compared to its peers for the specific valuation. For example, a product with a rank of 1 is in the top percentile of its peer group, while a product with a rank of 100 is in the bottom percentile of its peer group.

eVestment Global Emerging Markets Equity Universe - Global Emerging Markets Equity inclusive of all style, capitalization, and strategy approaches.

Investing in an ESG-focused strategy does not assure or guarantee better performance and cannot eliminate the risk of investment losses.

Portfolios invested in a limited number of holdings may expose an investor to greater volatility.

Diversification does not assure or guarantee better performance and cannot eliminate the risk of investment losses.





# ABS EMERGING MARKETS STRATEGIES

PRESENTED TO:

Massachusetts Water Resources  
Authority Employees'  
Retirement System

August 2021



# A Differentiated Approach

## FOCUS ON LOCAL SPECIALISTS

**Emerging markets are inefficient** and ripe for alpha generation through **stock selection**.

Our approach is to **select local specialists** to pick stocks in their own markets.

The resulting alpha generation is **not dependent on style biases or country selection**.

The ABS team has **three decades of experience** building **cost-effective solutions** for US institutions.

While less traditional, the strategy has generated **net excess returns** since inception.

### ABS Emerging Markets Strategic Fund

<b>Specialists</b>	18 Specialists
<b>Style</b>	Core / All cap (large, mid and small cap)
<b>Performance</b>	5.3% outperformance in 2020 2.6% outperformance 2021 through June 30
<b>AUM</b>	\$1.6 B

\*Relative performance measured against the MSCI Emerging Markets IMI Index.

AUM figure is estimated as of June 1, 2021 and is subject to change. The MSCI Emerging Markets IMI Index includes the reinvestment of dividends the impact of currency and is net of foreign taxes, symbol MIMUEMRN. Performance data updated through June 30, 2021. Performance numbers are estimates, include reinvestment of earnings, are net of a flat 0.75% p.a. management fee and are subject to change. Return information is calculated by ABS using performance information believed to be reliable and provided by the underlying managers. Such information is provided "as is" and may not be independently verified. ABS assumes no responsibility for the accuracy of this information and undertakes no independent verification of it. The ABS EM Strategic Portfolio commenced operations in December 2017. Past returns are not a guarantee of future results. Please see end of this presentation for important disclosure information.



# **FIRM OVERVIEW**

## ABS GLOBAL INVESTMENTS

# Firm Overview

## ABS SUMMARY

**\$7.3B** assets under management

**33** employees

**21** equity partners

**19** investment professionals

**13** nationalities and **15** languages spoken

**12+** years average investment team ABS tenure

### Diverse Team with Presence Around the Globe



Firm AUM are approximate as of June 1, 2021 and is subject to change. The above reflect the opinions of ABS and is subject to change at any time, without notice to investors.

# People

## EMPLOYEE DETAIL

	Name	Role	Industry Experience	ABS Experience	Equity Ownership	Operating Committee	Management Committee
Qualitative Analysis	Alain De Coster	Portfolio Manager	38 Years	18 Years	✓	✓	✓
	Laurence Russian, CFA	Portfolio Manager	27 Years	18 Years	✓	✓	✓
	Guilherme Valle, CFA	Portfolio Manager	28 Years	18 Years	✓	✓	✓
	Michael Halper, CFA	Head of Research	19 Years	18 Years	✓	✓	
	Donald Leung, CFA (Hong Kong)	Investment Analyst	19 Years	17 Years	✓		
	Omar Yacoub, CFA, CAIA	Investment Analyst	19 Years	13 Years	✓		
	Jeff Alleva, CFA	Investment Analyst	17 Years	12 Years	✓		
	Natascha Willans (São Paulo)	Investment Analyst	14 Years	7 Years	✓		
	Colin Caneff	Investment Analyst	6 Years	2 Years			
	Yousif Al-Shamali	Investment Analyst	1 Year	1 Year			
Quant	Sharon Liu	Investment Analyst	8 Years	<1 Year			
	Sean White, CFA	Head of Quant/Risk	20 Years	15 Years	✓	✓	
	Ioanna Chatzistamatiou	Quant/Risk Analyst	22 Years	14 Years			
	Brendon Qu, CFA, FRM	Quant/Risk Analyst	9 Years	9 Years	✓		
Ops DD	Jun Seong Jang	Quant/Risk Analyst	3 Years	3 Years			
	Frank Docimo, CPA	Ops Due Diligence Analyst	21 Years	14 Years	✓		
	Greg Moroney, CAIA	Ops Due Diligence Analyst	17 Years	15 Years	✓		
	Christian von Ballmoos (Zurich)	Ops Due Diligence Analyst	23 Years	12 Years	✓		
	Ishpreet Chadha, Esq.	Ops Due Diligence Analyst	8 Years	8 Years	✓		
	Jill D'Elisa	Ops Due Diligence Analyst	19 Years	<1 Year			
Ops	<b>Investment Team</b>	<b>20 Investment Professionals</b>	<b>Avg: 18 Years</b>	<b>Avg: 11 Years</b>	<b>14 Partners</b>	<b>5 Members</b>	<b>3 Members</b>
	David Finn, CPA	CFO/CCO	24 Years	18 Years	✓	✓	✓
	John Mulfinger, CPA	Accounting Manager	18 Years	11 Years	✓		
	Dayana Kemraj	Operations Manager	16 Years	16 Years	✓		
	Brittney McNeal	Fund Accountant	6 Years	6 Years			
	Samantha Funigiello	Tax Manager	10 Years	2 Years			
	Faiza Munir	Senior Accountant	8 Years	<1 Year			
	Alison Hill	IT / Office Manager	12 Years	12 Years	✓		
	Jon Feinberg	Marketing	19 Years	11 Years	✓	✓	
	Celina Rodriguez, CAIA	Marketing	6 Years	6 Years	✓		
Bus. Dev.	Chris Carmody	Marketing	17 Years	3 Years			
	Nick Dutter	Marketing	12 Years	2 Years			
	Thomas Kelley	Marketing	1 Year	1 Year			
	Jestine Roberts	Investor Relations	23 Years	10 Years	✓		
	<b>33 Employees</b>	<b>13 Nationalities</b>	<b>Avg: 16 Years</b>	<b>Avg: 10 Years</b>	<b>21 Partners</b>	<b>7 Members</b>	<b>4 Members</b>

Experience and equity ownership as of July 2021. Experience is rounded to the nearest whole year.

# Partnerships

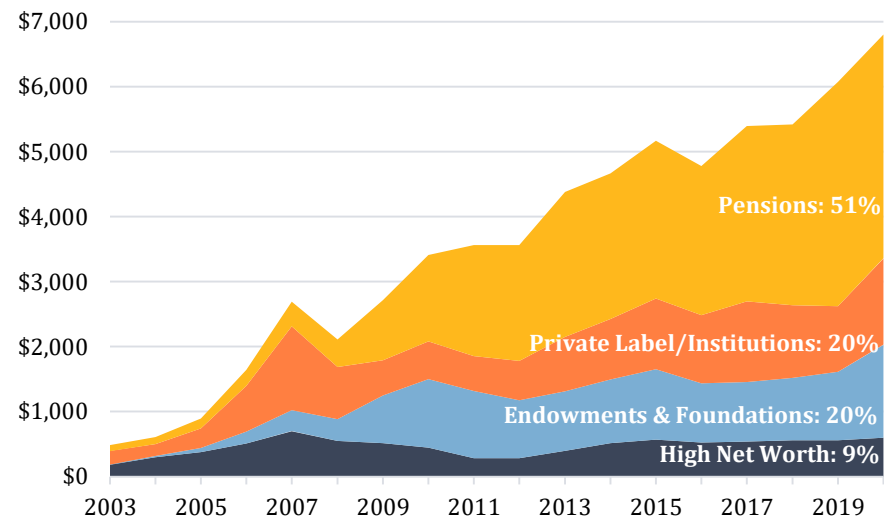
DIVERSE INVESTOR BASE



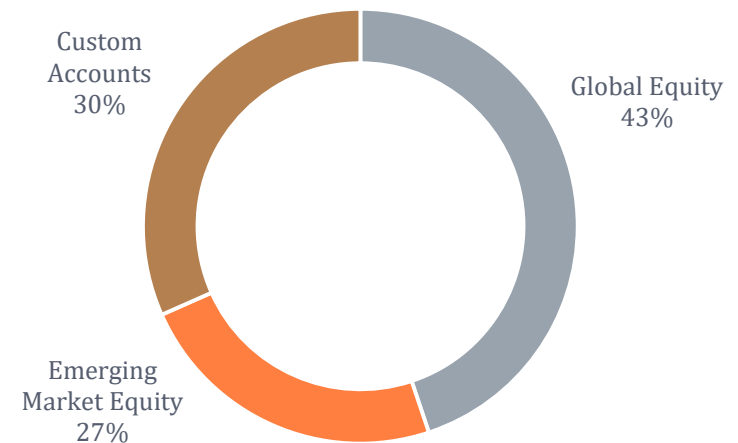
**\$7.3 Billion**  
Assets Under Management



ABS AUM by Client Type (\$MM)



ABS AUM by Strategy Type



Firm AUM is estimated as of July 1, 2021 and is subject to change. ABS AUM by client and strategy type as of January 1, 2021. The above reflect the opinions of ABS and is subject to change at any time, without notice to investors.

# Firm Overview

## PRODUCT PROFILE

Strategy Type	Structure	Inception	AUM	Net Range	Return Objective	Risk Objective
<b>Global Equity</b>		<b>1/1/2003</b>	<b>\$3,051M</b>	<b>30-75%</b>	<b>Market-like returns over full cycle</b>	<b>Less volatility than the MSCI ACWI</b>
ABS Global Portfolio	3(c)7 Offshore	1/1/2003	\$1,154M	30-60%	MSCI ACWI	~50% MSCI ACWI
ABS Global ERISA Portfolio	3(c)1 ERISA	1/1/2006	\$938M	30-60%	MSCI ACWI	~50% MSCI ACWI
ABS Limited Partnership	3(c)7 LP	7/1/2003	\$466M	30-60%	MSCI ACWI	~50% MSCI ACWI
ABS L/S Strategies Fund	1099 RIC	3/1/2011*	\$218M	30-60%	MSCI ACWI	~50% MSCI ACWI
ABS Directional Global Portfolio	3(c)7 ERISA	3/1/2013	\$237M	50-75%	MSCI ACWI	< MSCI ACWI
ABS Crossover Growth Fund	3(c)1 LLC	1/1/2021	\$38M	50-100%	MSCI World Growth	> MSCI World Growth
<b>Emerging Market Equity</b>		<b>7/1/2012</b>	<b>\$2,086M</b>	<b>Over 50%</b>	<b>Market-plus returns over full cycle</b>	
ABS EM Strategic Portfolio	3(c)1 LP	12/1/2017	\$1,555M	Long-Only	> MSCI EM IMI Index	= MSCI EM IMI Index
ABS Emerging Markets Portfolio	3(c)7 ERISA	7/1/2012	\$368M	50-75%	MSCI EM Index	< MSCI EM Index
ABS EM Direct Portfolio	3(c)1 LLC	4/1/2018	\$111M	Long-Only	> MSCI EM Index	= MSCI EM IMI Index
ABS Emerging Markets LP	3(c)7 LP	1/1/2013	\$49M	50-75%	MSCI EM Index	< MSCI EM Index
ABS China Direct Portfolio	3(c)1 LP	2/1/2020	\$3M	Long-Only	> MSCI Golden Dragon	= MSCI Golden Dragon
<b>Custom Accounts (10 portfolios)</b>		<b>3/1/2003</b>	<b>\$2,103M</b>			
Custom Global Long/Short (6)	Various	3/1/2003	\$1,726M	Varies	Global / Custom	< Target Market
Custom Low Exposure (2)	Various	1/1/2009	\$254M	0-40%	LIBOR+ / Flexible	< 5% / Variable
Custom Emerging Markets (2)	Various	4/1/2005	\$123M	Varies	EM/Custom	Variable
<b>Total Assets</b>			<b>\$7,240M</b>			

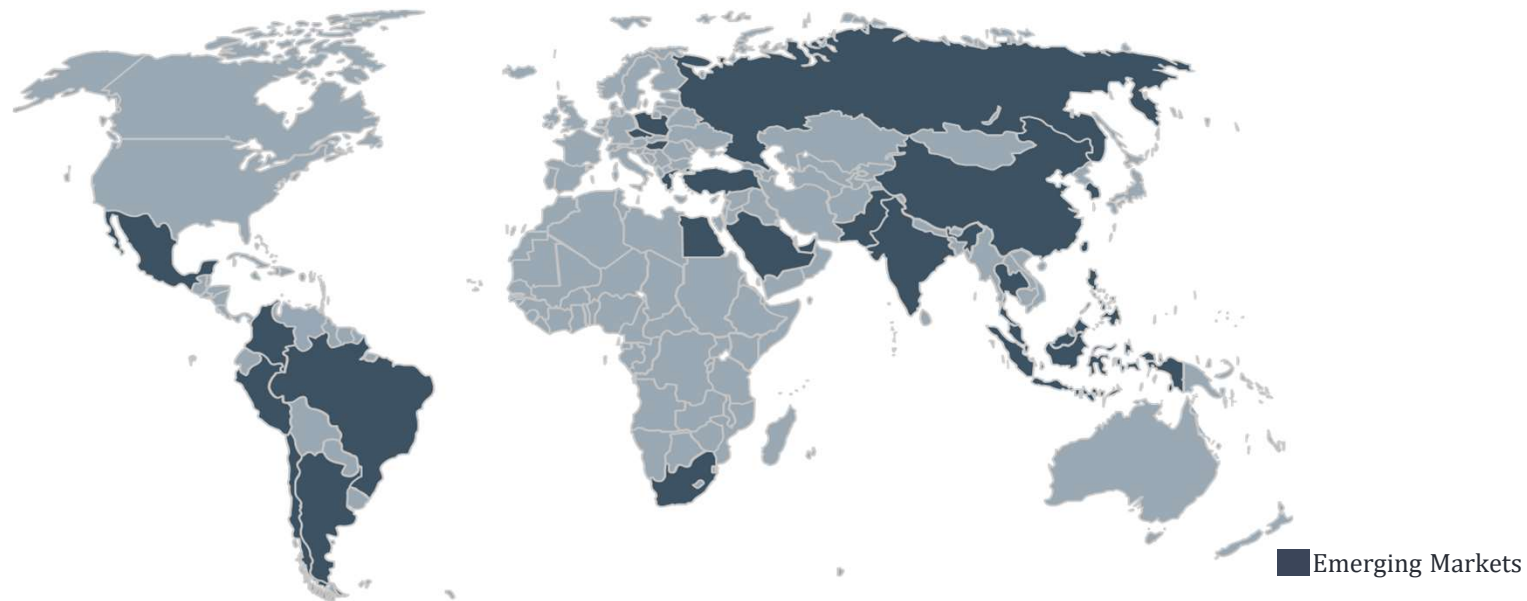
AUM figure is estimated as of June 1, 2021 and is subject to change. Net Range represents the normal net exposure range for each portfolio, but is not a hard limit. \*ABS L/S Strategies Fund was converted into a Registered Investment Company (RIC) on 1/1/2016, prior to that, the portfolio was a 3(c)1 Delaware domiciled fund. Please see the end of this presentation for important disclosure information.



# **ABS APPROACH TO ACCESSING ALPHA IN EMERGING MARKETS**

# ABS Approach to Accessing Alpha in Emerging Markets

FOCUS ON LOCAL SPECIALISTS



Opportunity

Execution

Outcome

**Dynamic and Inefficient  
Markets**

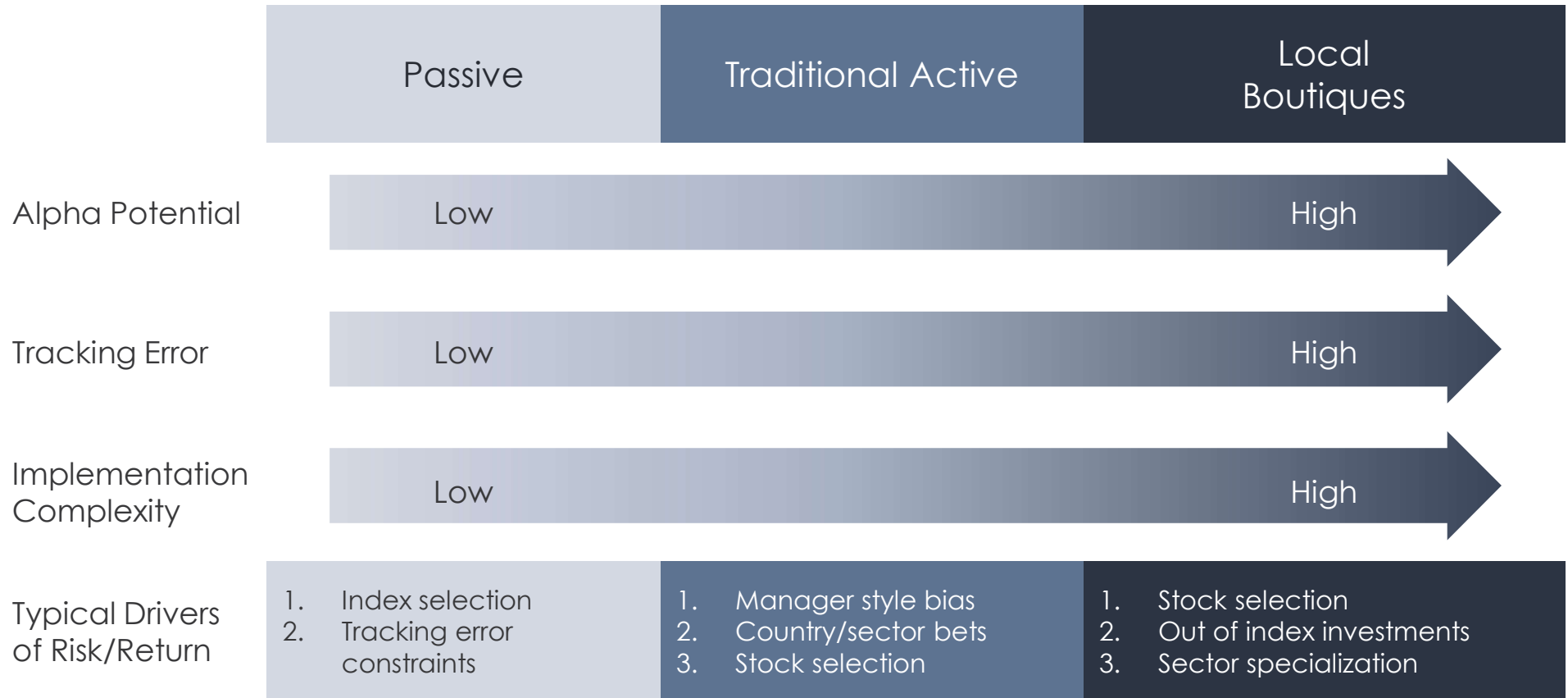
**Local Specialists**

**Alpha**



# Investing in Emerging Market Equity

## DIFFERENT APPROACH TO INVESTING



# Team

## EMERGING MARKETS INVESTMENT TEAM

### Dedicated Qualitative EM Team



**Guilherme Valle, CFA**  
Co-Founder and Managing Member



**Omar Yacoub, CFA, CAIA**  
Investment Analyst  
*Coverage: Global EM, Frontier, EMEA*



**Donald Leung, CFA**  
Investment Analyst  
*Coverage: Asia*



**Natascha Willans**  
Investment Analyst  
*Coverage: Latin America*



**Yousif Al-Shamali**  
Investment Analyst  
*Coverage: Middle East*

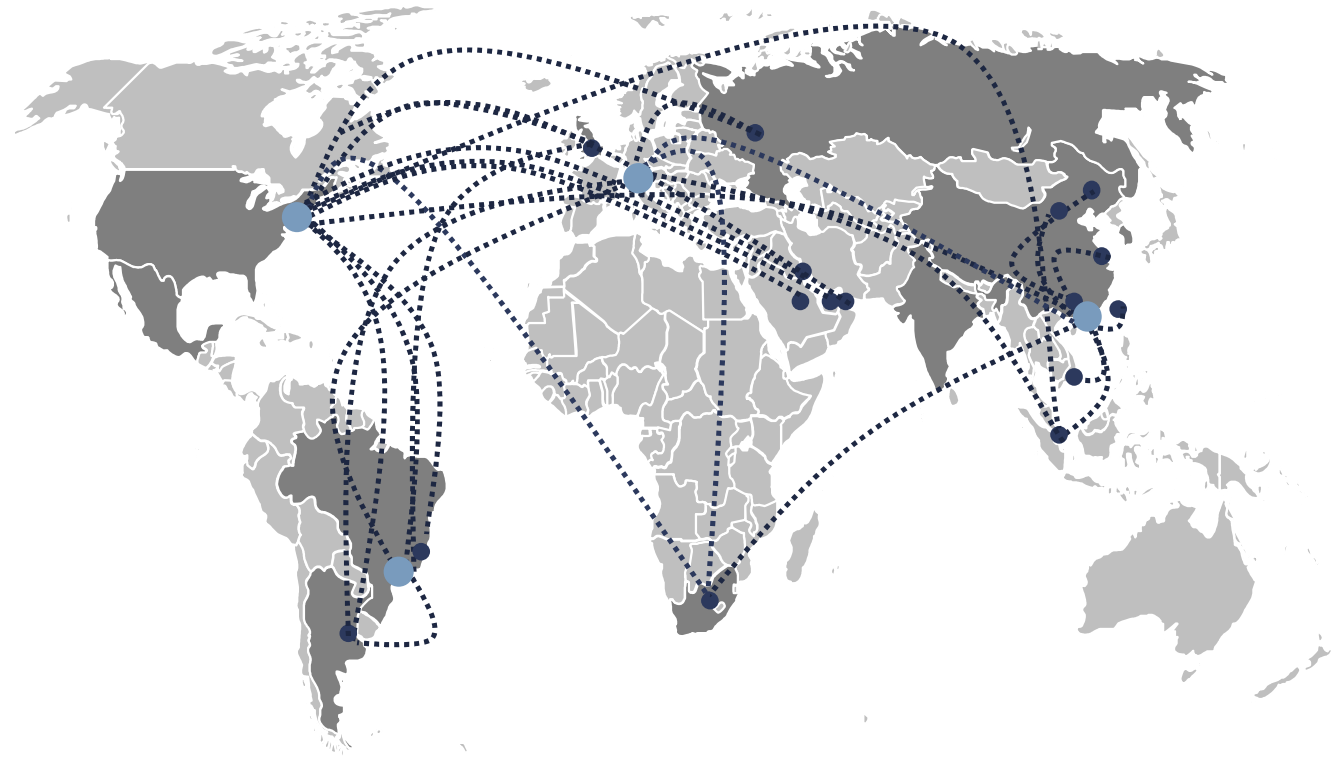
# Intensive Research Process

BREADTH AND DEPTH OF RELATIONSHIPS

## Research Travel Efforts in 2019

- Hong Kong
- Shanghai
- Singapore
- Ho Chi Minh City
- Taipei
- Buenos Aires
- São Paulo
- London
- Moscow
- Johannesburg
- Rio de Janeiro
- Shenyang
- Beijing
- Shenzhen
- Riyadh
- Dubai
- Abu Dhabi
- Kuwait city

18  
cities



- ABS Office Location
- Manager Location
- Trip Location

Data as of 2019



# **ABS EMERGING MARKETS STRATEGIC PORTFOLIO (EMS)**

# Product Description

## ABS EMERGING MARKETS STRATEGIC PORTFOLIO (EMS)

<b>Investment Objective</b>	Targets superior returns relative to MSCI Emerging Markets IMI Index over a full market cycle
<b>Fund Launch</b>	December 2017
<b>AUM</b>	US\$ 1,595 million*
<b>Number of Local Specialists</b>	Typically 15 - 20
<b>Style</b>	Core / All cap (large, mid and small cap)
<b>Country Allocation</b>	+/- 15% relative to the index
<b>Sector Allocation</b>	+/- 15% relative to the index
<b>Number of Local Specialists</b>	Typically 15 - 20

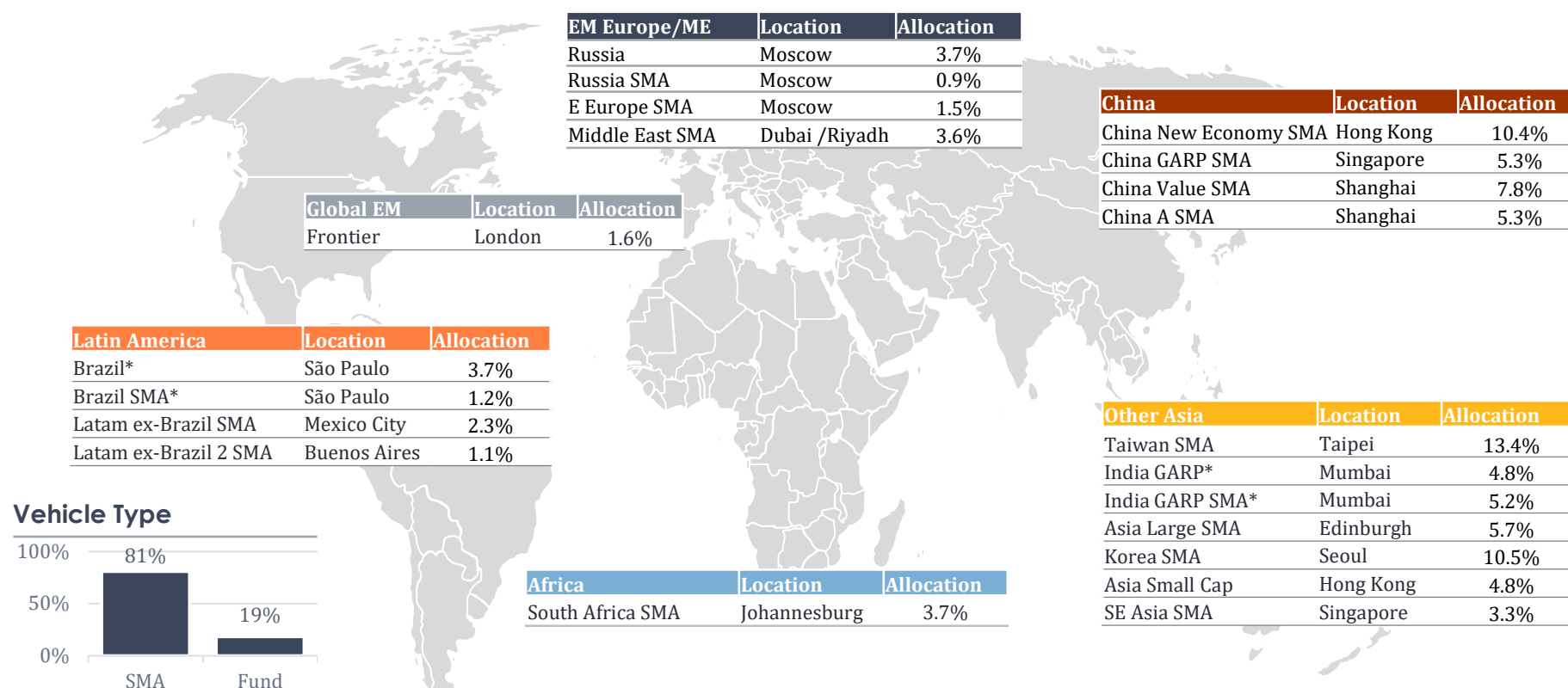
\* Estimated AUM figure is estimated as of July 1, 2021 and is subject to change. Please see the end of this presentation for important disclosure information

# Focus on Local Specialists

## ABS EMERGING MARKETS STRATEGIC PORTFOLIO (EMS)

### ABS EMS Portfolio Breakdown by Region/Manager

as of July 1, 2021



\*These specialists manage both fund and SMA vehicles for ABS. Data updated through July 1, 2021. Graphs are provided for illustrative purposes only and should not be relied upon to make an investment decision. Please see the end of this presentation for important disclosure information.

# Return & Risk

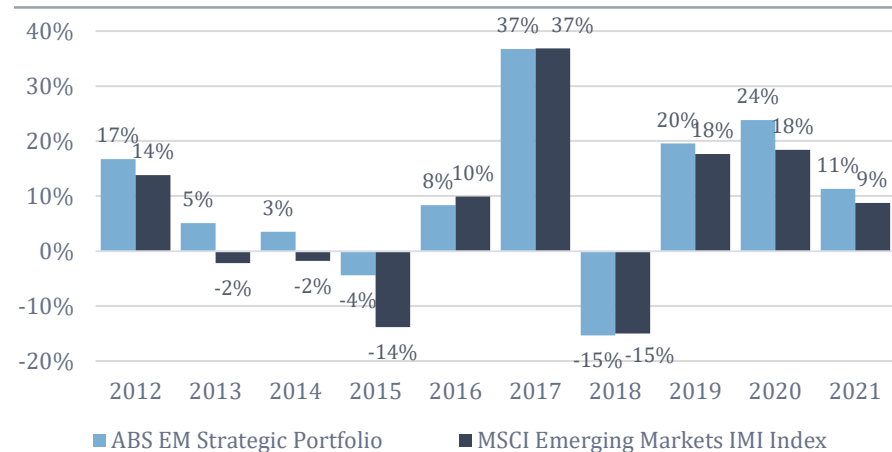
## ABS EMERGING MARKETS STRATEGIC PORTFOLIO (EMS)

### Annualized Risk/Return Statistics (includes Carve Out performance)

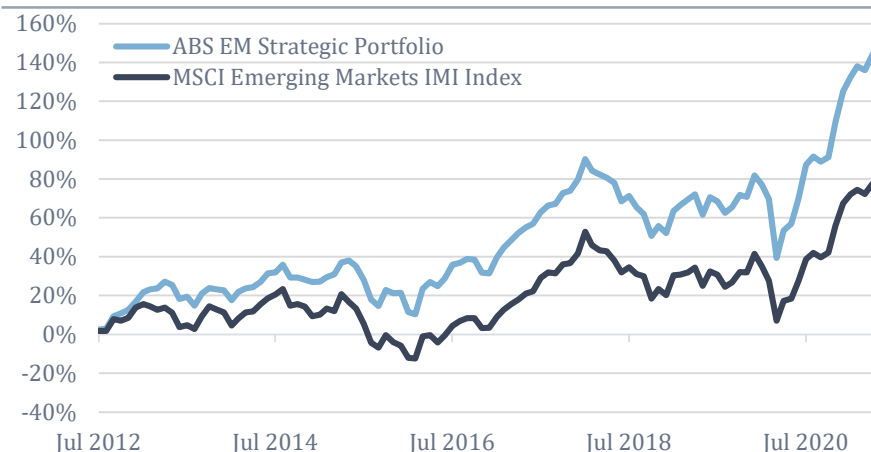
July 2012 – June 2021

	QTD	YTD	1-Year	3-Year	5-Year	Annualized Return	Annualized Standard Deviation
<b>ABS EM Strategic Portfolio</b>	6.2%	11.3%	47.8%	14.1%	14.3%	10.7%	14.7%
<b>MSCI Emerging Markets IMI Index</b>	5.7%	8.8%	43.2%	11.4%	12.9%	6.9%	15.8%

### Annual Returns (includes Carve Out)



### Cumulative Returns (includes Carve Out)

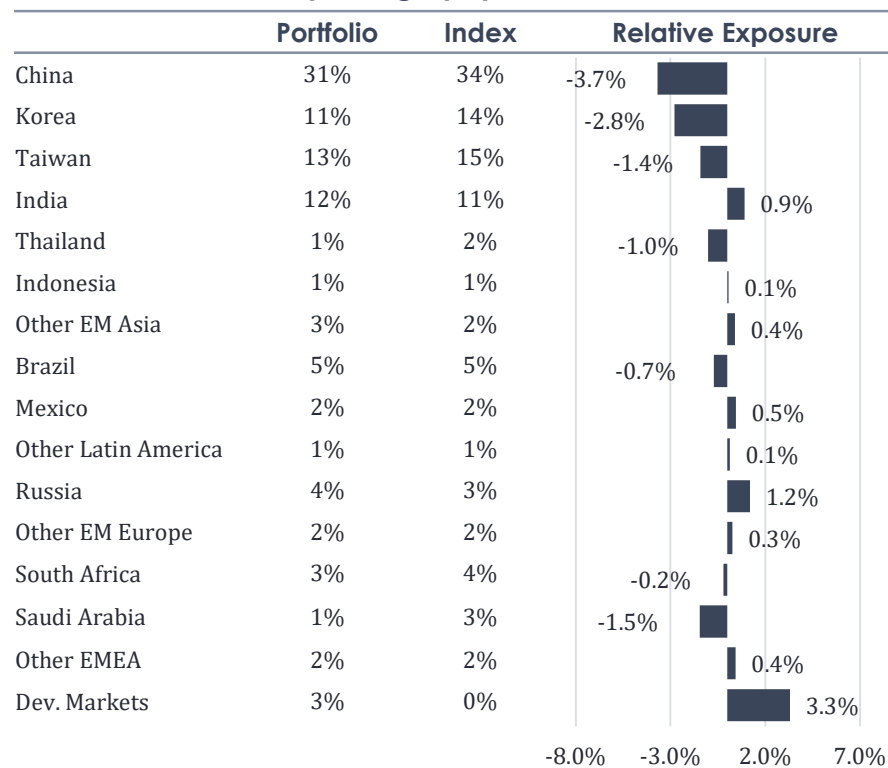


Data updated through June 30, 2021. The MSCI Emerging Markets IMI Index includes the reinvestment of dividends the impact of currency and is net of foreign taxes, symbol MIMUEMRN; Performance numbers are estimates, include reinvestment of earnings, are net of a flat 0.75% p.a. management fee and are subject to change. Prior to December 2017, the back-tested returns for the ABS EM Strategic Portfolio presented herein are calculated by applying the above stated management fee rate to the net returns of the long only managers from ABS Emerging Markets Portfolio. Return information is calculated by ABS using performance information believed to be reliable and provided by the underlying managers. Such information is provided "as is" and may not be independently verified. ABS assumes no responsibility for the accuracy of this information and undertakes no independent verification of it. From December 2017 onwards, the returns for the ABS EM Strategic Portfolio presented herein are actual fund returns. Past returns are not a guarantee of future results. Graphs are provided for illustrative purposes only and should not be relied upon to make an investment decision. Please see end of this presentation for important disclosure information.

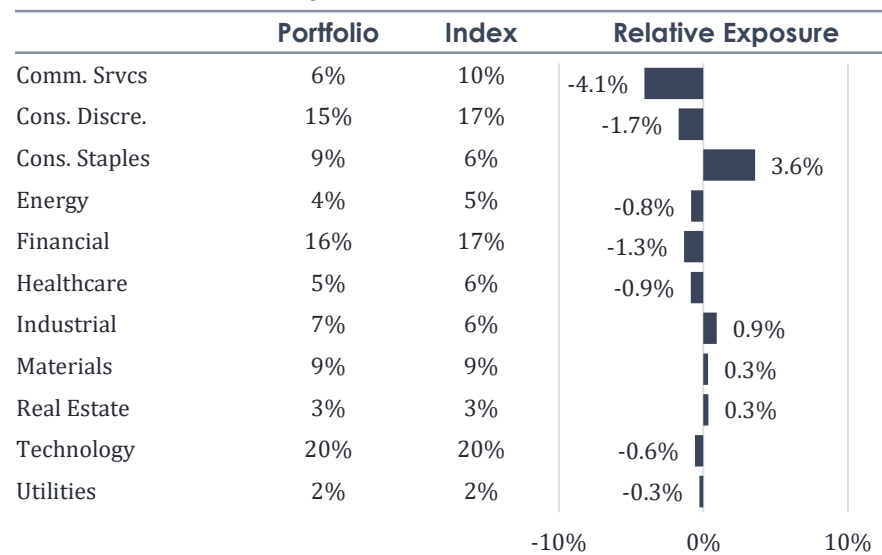
# Current Exposure by Geography, Sector & Market Cap

## ABS EMERGING MARKETS STRATEGIC PORTFOLIO (EMS)

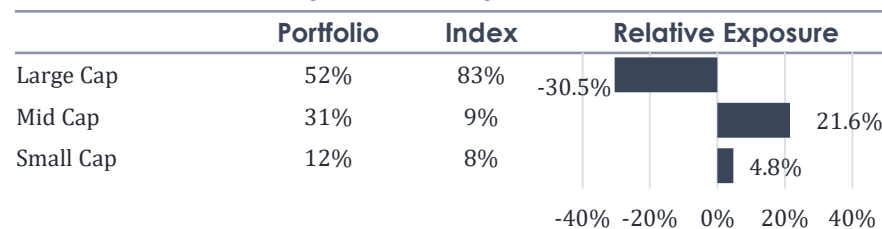
### Portfolio Allocation by Geography



### Portfolio Allocation by Sector



### Portfolio Allocation by Market Cap



Data estimated as of July 1, 2021. Exposure data is based on information provided by the underlying managers, is subject to change and is not independently verified. Please see the end of this presentation for important disclosure information.



# Portfolio Holdings

## ABS EMERGING MARKETS STRATEGIC PORTFOLIO (EMS)

### Top and Bottom 10 Relative Allocations by Stock

Stock	Portfolio	Index	Relative Exposure
Kweichow Moutai A	1.7%	0.2%	1.5%
Sea Ltd	1.3%	-	1.3%
China Merchants Bank A	1.3%	0.1%	1.1%
Greentown China	1.0%	0.0%	1.0%
Futu Holdings ADR	0.9%	-	0.9%
Nan Ya Plastics Corp	1.0%	0.2%	0.9%
China Tourism Group A	0.9%	0.1%	0.8%
China State Constr. - A	0.7%	0.0%	0.7%
Bank of Chengdu A	0.6%	0.0%	0.6%
Ventustech Group A	0.6%	-	0.6%
Reliance Industries	0.2%	0.8%	-0.6%
Wuxi Biologics Cayman	-	0.6%	-0.6%
Ping An Insurance H	-	0.6%	-0.6%
Meituan B	0.9%	1.5%	-0.7%
Nio Inc ADR	-	0.7%	-0.7%
JD.com ADR	-	0.7%	-0.7%
Vale SA	0.2%	0.9%	-0.8%
Taiwan Semiconductor	4.3%	5.4%	-1.1%
Tencent Holdings	1.7%	4.4%	-2.7%
Alibaba Group	0.6%	4.4%	-3.8%

### Portfolio Summary

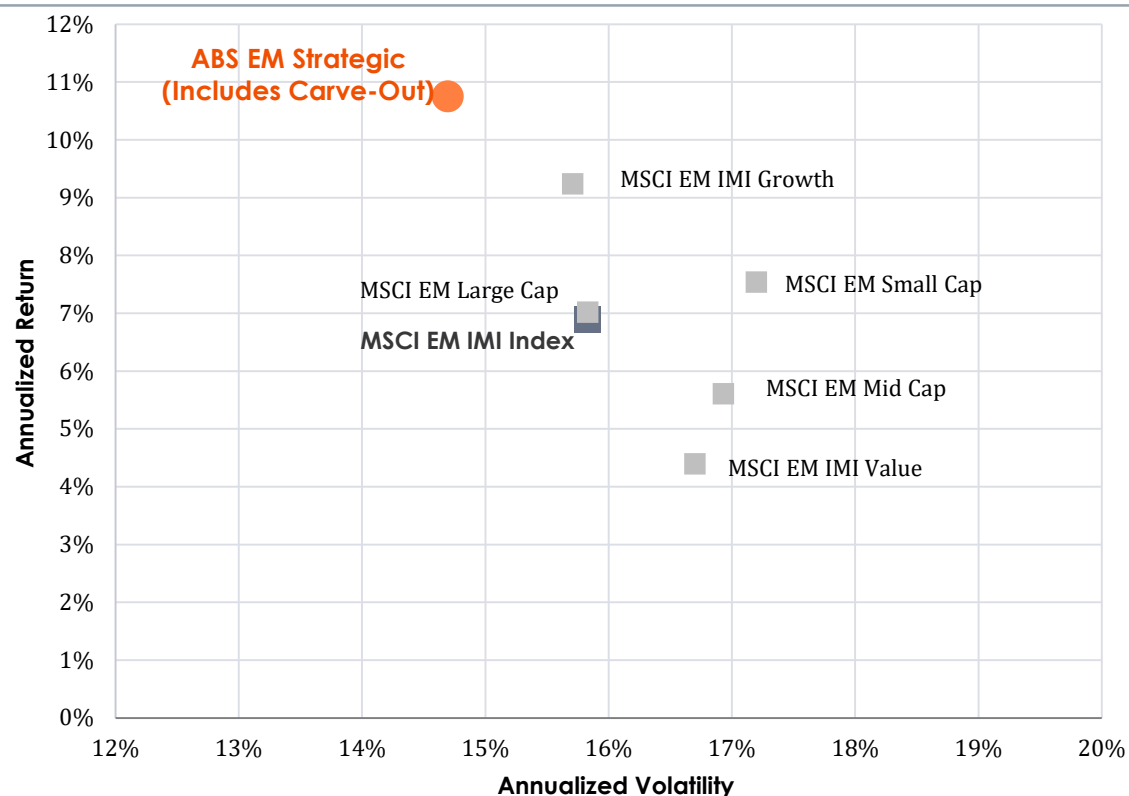
	ABS EMS	MSCI EM IMI Index
<b>Total Holdings</b>	552	3,234
<b>Unique Stocks (not in index)</b>	181	-
<b>Active Share</b>	65%	-
<b>Largest Country Overweight</b>		Russia: +1.2%
<b>Largest Country Underweight</b>		China: -3.7%
<b>Largest Sector Overweight</b>		Cons Staples: +3.6%
<b>Largest Sector Underweight</b>		Comm Srvcs: -4.1%

Data as of June 30, 2021. Please see the end of this presentation for important disclosure information. Top 10 holdings inclusion criteria are not performance based. Relative Exposure is vs. the MSCI EM IMI Index

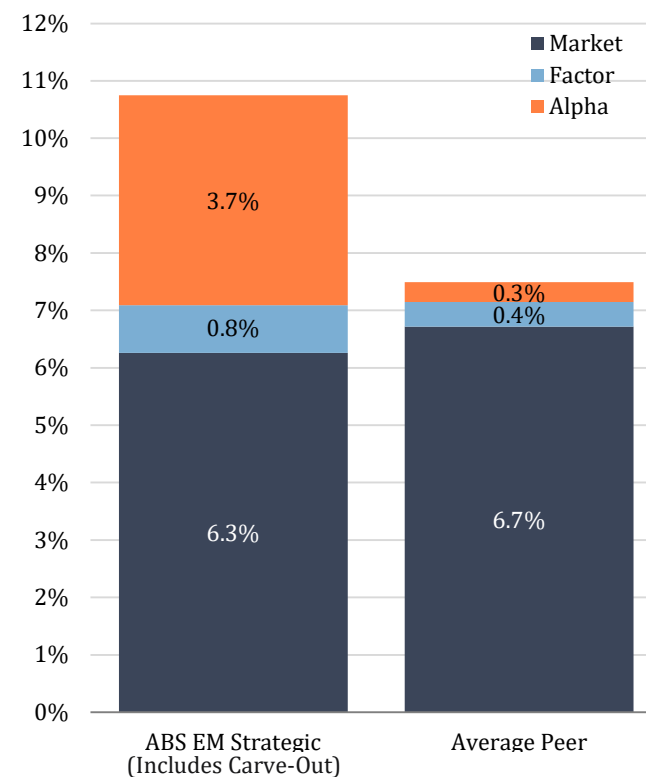
# Risk/Return Analysis

## ABS EMERGING MARKETS STRATEGIC PORTFOLIO (EMS)

Risk/Return Relative to MSCI EM Indexes



Components of Returns

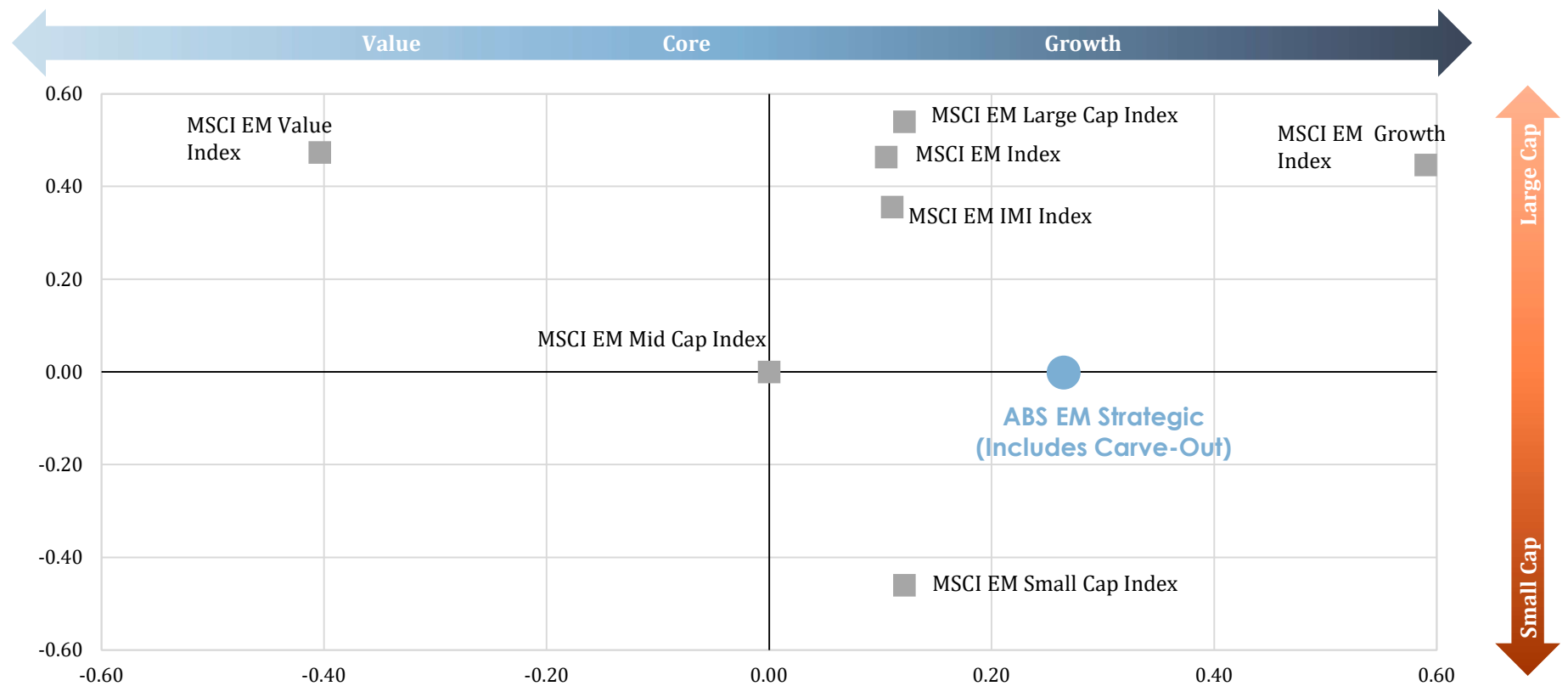


Data updated through June 30, 2021, Please refer to prior page for performance disclosure concerning carveout data. Performance numbers are estimates, include reinvestment of earnings, are net of a flat 0.75% p.a. management fee and are subject to change. Components of return analysis based on historical regression of monthly returns relative to the MSCI EM IMI Index for Market, MSCI EM IMI Growth, MSCI EM IMI Value, and MSCI EM Small Cap Indexes for Factor, and excess returns for Stock/Alpha. Average Peer data is based on a Bloomberg screen of all US-listed mutual funds that are classified as active global emerging markets with AUM above \$250M as of July 1, 2020 with track records from July 2012 to May 2021 (68 funds). Graphs are provided for illustrative purposes only and should not be relied upon to make an investment decision. Please see the end of this presentation for important disclosure information.

# Factor Exposure

## ABS EMERGING MARKETS STRATEGIC PORTFOLIO (EMS)

### Factor Exposure: ABS EM Strategic Portfolio



Data updated through June 30, 2021. Performance numbers are estimates, include reinvestment of earnings, are net of a flat 0.75% p.a. management fee and are subject to change. Source for MSCI EM indices from MSCI. Graphs are provided for illustrative purposes only and should not be relied upon to make an investment decision. Please see the end of this presentation for important disclosure information, including disclosures concerning carveout data.

# PERAC Regulations

## ABS EMERGING MARKETS STRATEGIC PORTFOLIO (EMS)

- PERAC regulations

1. SEC Registration Requirement

ABS will not invest Massachusetts Water Resources Authority Employees' Retirement System ("MWRA") assets in any underlying funds unless they are managed by SEC registered investment advisors.

2. PERAC Tobacco Stock Restricted List

ABS has implemented an automated screening tool that will eliminate Boston Retirement System's exposure to any companies on the restricted list

- ABS, through a dedicated PERAC-compliant vehicle, will adhere to these PERAC regulations and provide the transparency necessary for MWRA

# Conclusion

## ABS EMERGING MARKETS STRATEGIC PORTFOLIO (EMS)

- Emerging Markets countries are rich environments for alpha generation
- Local specialists are better positioned to capture alpha
- ABS has a global team with over 25 years of experience working with local specialists to structure portfolios for institutional investors
- ABS has outperformed the index since inception, without an inherent country or style biases



# NOTES & DISCLOSURES

# Terms

## ABS EMERGING MARKETS STRATEGIC PORTFOLIO, LP

### Structure and terms

Structure	3c1, Limited Partnership
Redemption	Monthly, 60 days prior notice
Subscriptions	Monthly
Founders Fee	N/A
Standard Fee	<b>Option I:</b> 0.45% & 10% over hurdle* <b>Option II:</b> 0.75%

\*Hurdle is MSCI EM IMI Index.

# Important Disclosures

## ABS EMERGING MARKETS STRATEGIC PORTFOLIO, LP

**ABS Emerging Markets Strategic Portfolio:** This presentation was prepared to provide some general background, current statistics and performance returns for the ABS Emerging Markets Strategic Fund LP (for purposes of this paragraph, the "Fund" or "Portfolio") and its preceding carve out since July 1, 2012 as described above using the fee terms of 0.75% management fee per annum. Fees are not necessarily representative of any client's actual returns. Based on the timing of capital contributions or higher performance and /or management fees, the returns achieved by an existing investor over a shorter or identical period may be materially lower. Furthermore, in considering the prior performance information contained herein, prospective investors should bear in mind that past performance is no guarantee of future results and there can be no assurance that the Fund will achieve comparable results. There can also be no assurance that any targeted returns contained in this presentation can be realized or that actual results will not be materially lower than those targeted.

**ABS EM Strategic Carve Out Methodology:** Each month, the percentage allocation of each long-only manager in the ABS Emerging Markets Portfolio was multiplied by the fund's monthly performance to determine each fund's attribution to the portfolio. Then we removed the funds that are not long-only and re-scaled the allocations as if the long-only funds represented 100% of portfolio. The process was repeated each month to determine a monthly return on invested capital for the 20 different funds that we have invested with in the ABS Emerging Markets Portfolio. The minimum number of long-only funds in the portfolio was 3, and the maximum was 14. Date range: July 2012 - November 2017 (net of underlying manager fees and a 0.75% management fee applied at the ABS level).

Carve-out performance results are based upon a segment of the emerging markets strategies managed by ABS and were not managed separately but as part of a larger strategy. Results should not be considered indicative of the skill of the adviser. During the period 2012-November 2017 ABS was not managing assets according to the strategy depicted. Carve-out performance does not include other fees or charges for administration, custody or any other expenses included with the management of a fund. No cash balance or cash flow is included in the calculation. Clients may experience a loss. No representation is being made that any fund will or is likely to achieve profits or losses similar to those shown herein.

Hypothetical, back-tested performances have many inherent limitations only some of which are described as follows: (i) Hypothetical, back-tested results are achieved by means of retroactive application of a model designed using historical information, which may constitute the benefit of hindsight. (ii) Such performance is designed based on historical data, which may include revisions and/or the benefit of hindsight. (iii) Such performance does not reflect the adviser's decision making process if the adviser were actually managing a client's portfolio, which may include sentiment and/or emotional influences by market and/or economic events. (iv) Such performance does not reflect actual client asset trading and cannot accurately account for trading costs and the ability to withstand losses. (v) The information is based, in part, on hypothetical assumptions made for modeling purposes that may not be realized in the actual management of accounts. No representation or warranty is made as to the reasonableness of the assumptions made or that all assumptions used in achieving the returns have been stated or fully considered. Assumption changes may have a material impact on the model returns presented. Results may not reflect the impact of material market or economic factors that might have influenced the back-tested methodology if it had actually been in use during the period shown

This presentation shall not constitute an offer to sell or the solicitation of any offer to buy which may only be made at the time a qualified investor receives a final confidential private offering memorandum (the "Fund Documents") describing the Fund. In the event of any inconsistency between this presentation and the Fund Documents, the Fund Documents will govern. This presentation being provided to a prospective investor does not guarantee an investor's qualification for an investment in the Fund or the Fund's capacity for its investment. Such criteria may only be determined upon completion of the Subscription Material for the Fund. This presentation is strictly confidential and is not to be provided to any person without the approval of ABS Investment Management LLC. An investment in the Fund will involve significant risks, including the risk of loss of the amount invested. Although indices used in this presentation have been gathered using public and private sources and data we believe to be reliable, we make no representations as to their accuracy or completeness. The MSCI Emerging Markets TR Index includes the reinvestment of dividends, the impact of currency and is net of foreign taxes, symbol NDUEEGF; Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index. The Fund's financial statements are audited within 180 days after each year end and thus the prior year's annual return may be unaudited for up to six months into the current year. The most recent month's performance return is an internal estimate and has not been calculated by the Fund's third party administrator. References made to "ABS" herein refer to ABS Investment Management LLC, the investment manager to the Fund, which manages multiple portfolios other than the Fund. The size and nature of the other portfolios has varied since the Fund's inception and the size of the Fund relative to other ABS portfolios may materially differ at certain points in time. The underlying managers provided data used herein by ABS to calculate annualized returns, but have not reviewed this presentation for accuracy or completeness. The data utilized in the calculation of annualized returns since inception is purported to be net of all underlying manager fees and expenses, but has not necessarily been verified by ABS or an independent party.



# Important Notes and Disclosures

## ABS EMERGING MARKETS STRATEGIC PORTFOLIO, LP

Year	Fund Gross Return (%)	Fund Net Return (%)	Benchmark Return (%)	3 Year Annualized Return		3 Year Annualized Standard Deviation		Fund Assets (\$M)	Firm Assets (\$M)
				Fund Gross (%)	Benchmark (%)	Fund Gross (%)	Benchmark (%)		
2017*	3.35	3.27	3.60	N/A	N/A	N/A	N/A	104	5,372
2018	-14.69	-15.51	-15.04	N/A	N/A	N/A	N/A	268	5,215
2019	20.41	19.29	17.64	N/A	N/A	N/A	N/A	699	6,070

\* Performance for 2017 is for the period December 1, 2017-December 31, 2017

- ABS Investment Management LLC claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. ABS Investment Management LLC has been independently verified for the periods January 1, 2015 through December 31, 2019. The verification report is available upon request. A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. Verification does not provide assurance on the accuracy of any specific performance report.
- ABS Investment Management LLC is a privately owned investment manager registered with the SEC. The firm is an investment management firm specializing in global equity solutions, with extensive experience in both emerging markets and early stage investing. The firm primarily provides services to a broad array of sophisticated investors from around the world including Pension Plans (Public, Corporate and Taft Hartley), Endowments, Foundations, Insurance Companies and High Net Worth Individuals. ABS manages a family of global equity long/short multi-manager funds along with long-only and long-biased emerging market strategies.
- The ABS Emerging Markets Strategic Portfolio invests in long-only emerging market equity managers. The Fund focuses on country and regional specialists in emerging markets countries as defined by the MSCI global classification standards. In addition, the portfolio has the ability to allocate up to 15% in opportunistic strategies in frontier and/or developed markets. The portfolio aims to be fully invested at all times and seeks to outperform the MSCI Emerging Markets IMI Index over a full market cycle with a similar level of risk. The Fund is valued monthly.
- The benchmark provided is the MSCI Emerging Markets IMI Index includes the reinvestment of dividends, the impact of currency and is net of foreign taxes.
- Gross fund returns are presented before the deduction of management fees but reflect the deduction of all trading and administrative expenses and underlying fund fees. Net returns are calculated by deducting 1/12th of 0.95% management fee monthly. Fund returns are net of withholding taxes. The management fee for Option SII is 0.95%. The expected total expense ratio for Option SII is 1.05%. All returns and assets are presented in US dollars.
- The Fund inception date is December 1, 2017, which is the date of the first investment. List and description of limited and broad distribution pooled funds is available upon request. Policies for valuing investments, calculating performance, and preparing GIPS reports are available upon request. The three-year annualized standard deviation measures the variability of the fund and the benchmark returns over the preceding 36-month period. The fund track record does not span three years; therefore, this number is not available. GIPS® is a registered trademark of CFA Institute. CFA Institute does not endorse or promote this organization, nor does it warrant the accuracy or quality of the content contained herein. The Fund allocates a material amount of its assets to sub-advisors, directly and indirectly. In accordance with U.S. GAAP the Fund uses the net asset value provided by each of the underlying investment funds as its fair value methodology for all non-cash investments.



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# MONTHLY PERFORMANCE REPORT

**MWRA EMPLOYEES' RETIREMENT  
SYSTEM**

AUGUST 26, 2021



# GOALS & OBJECTIVES

## Investment Return Objective

**“Its primary goal is to provide promised benefits to participants and beneficiaries of the MWRA Employees’ Retirement system. Plan assets should be equal to or greater than the present value of the projected benefit obligations (“fully funded”). When Plan assets are less than the present value of projected benefit obligations, a schedule will be established and a plan will be in place to meet a fully funded status. When achieving return objectives required to fully fund the system, the Board is intent on controlling risk. Consistency of returns and risk of loss are primary considerations. The Board has also determined that the annual performance of plan assets should not vary substantially from returns achieved by other public pension funds with similar goals and objectives.”**

## Return Expectations

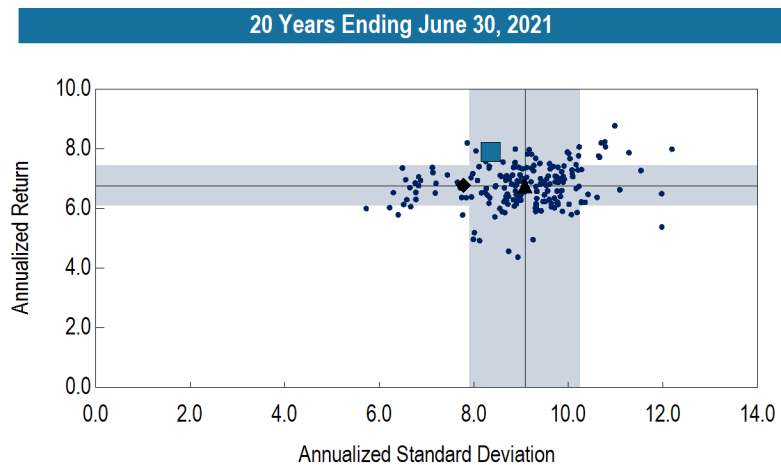
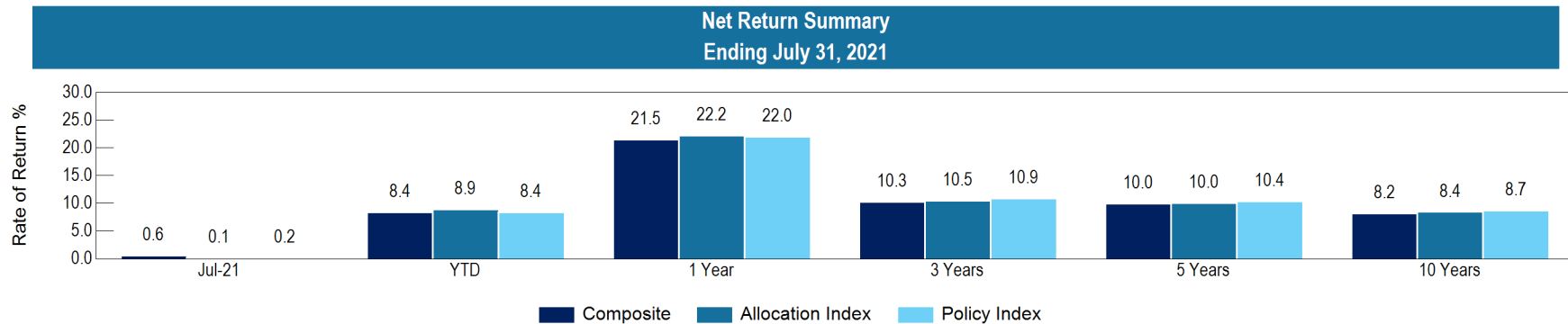
**The investment growth should be maintained in such a manner that the minimum nominal rate of return does not cause a negative real rate of return over a full market cycle:**

- **Time Horizon:** Return assumptions will be based on a ten year time horizon with a detailed review and analysis to be made at least annually to monitor allocations and assumptions. Should a manager deviate from proscribed mandate or expected risk and return profile by a consequential degree, that manager may be reevaluated at any time.
- **Liquidity Needs:** Presently contributions exceed plan withdrawals to provide benefits, payouts, and/or plan expenses. Portfolio liquidity will be managed based on the cash flow needs of the System.
- **Regulatory Considerations:** Assets of this Fund shall be invested in a manner consistent with the fiduciary standards established under Code of Massachusetts Regulations 840 (“840 CMR”). The Board shall also use as precedent the Employee Retirement Income Security Act (ERISA).



# MWRA Employees' Retirement System

## EXECUTIVE SUMMARY



Statistics Summary			
	Anlzd Ret	Anlzd Std Dev	Rank
Composite	11.2%	10.3%	58
Allocation Index	11.1%	9.7%	61
Policy Index	11.4%	10.4%	49
InvMetrics Public DB Gross Median	11.4%	11.9%	--

### Performance

- The Composite returned 0.6% (net) for the month, outperforming the Allocation Index (0.1%) and Policy Index (0.2%).
- In equities, U.S. large-cap stocks outperformed with the S&P 500 Index gaining 2.4%. Growth stocks reestablished their dominance over value equities, outperforming for the second consecutive month. The MSCI Emerging Market Index underperformed, declining 6.7% last month. The portfolio's Domestic Equity composite returned 2.2% (net) while Non-US Developed Equity fell -0.8%, and Emerging Markets Equity declined -6.0%.
- In fixed income, global yields moved lower. In the U.S., the Treasury yield curve continued to flatten with the 10- and 30-year yields falling 22 and 17 basis points, respectively. The Fixed Income composite returned 1.0% (net) for the month while the BC Agg and BC US HY returned 1.1% and 0.4%, respectively.
- This brings the total plan return for the trailing one-year period to 21.5% (net), while the Allocation and Policy Index returned 22.2% (net) and 22.0% (net), respectively.

20 years Risk/Return is as of 06/30/2021. Chart reflects universe data on quarter end months only. Returns for 20 years Risk/Return and Statistics Summary are gross of fees. Since inception return is 8.8% gross of fees. Prior to 1999, performance history does not capture separate net and gross returns.



# MWRA Employees' Retirement System

## TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	1 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Composite</b>	<b>706,254,687</b>	<b>100.0</b>	<b>100.0</b>	<b>0.6</b>	<b>8.4</b>	<b>21.5</b>	<b>10.3</b>	<b>10.0</b>	<b>8.2</b>	<b>7.2</b>	<b>Jan-86</b>
Allocation Index				0.1	8.9	22.2	10.5	10.0	8.4	--	Jan-86
Policy Index				0.2	8.4	22.0	10.9	10.4	8.7	--	Jan-86
<b>Total Balanced</b>	<b>5,128,483</b>	<b>0.7</b>	<b>0.0</b>	<b>0.8</b>	<b>12.1</b>	<b>26.1</b>	<b>9.0</b>	<b>8.2</b>	<b>5.3</b>	<b>5.6</b>	<b>Dec-10</b>
PRIT Core Fund	5,128,483	0.7		0.8	12.1	26.5	11.6	11.1	9.2	7.4	Apr-99
60% S&P 500 / 40% BBgBarc Aggregate				1.9	10.3	20.5	13.5	11.8	10.7	6.8	Apr-99
<b>Total Domestic Equity</b>	<b>219,587,445</b>	<b>31.1</b>	<b>31.0</b>	<b>2.2</b>	<b>16.9</b>	<b>38.1</b>	<b>17.8</b>	<b>17.4</b>	<b>14.5</b>	<b>8.4</b>	<b>May-99</b>
Russell 3000				1.7	17.1	38.7	18.1	17.4	15.2	7.9	May-99
<b>Large Cap</b>	<b>170,673,136</b>	<b>24.2</b>	<b>24.0</b>	<b>2.9</b>	<b>17.0</b>	<b>34.5</b>	<b>19.4</b>	<b>18.0</b>	<b>15.1</b>	<b>15.1</b>	<b>Dec-10</b>
Rhumblin Advisors S&P 500 Index Fund	69,835,255	9.9	10.0	2.4	18.0	36.4	18.1	17.3	15.2	9.6	Apr-97
S&P 500				2.4	18.0	36.4	18.2	17.3	15.3	9.5	Apr-97
Coho Relative Value Equity	47,102,746	6.7	7.0	1.4	11.2	25.5	12.8	12.2	--	13.1	Mar-16
Russell 1000 Value				0.8	18.0	39.3	11.3	11.4	12.1	13.4	Mar-16
Polen Focused Growth	53,735,134	7.6	7.0	4.9	20.4	39.5	27.8	24.8	--	23.6	Feb-16
Russell 1000 Growth				3.3	16.7	36.7	25.3	23.3	18.4	23.6	Feb-16
<b>Small Cap</b>	<b>48,914,310</b>	<b>6.9</b>	<b>7.0</b>	<b>-0.1</b>	<b>16.4</b>	<b>51.2</b>	<b>13.9</b>	<b>16.0</b>	<b>13.3</b>	<b>13.9</b>	<b>Dec-10</b>
Boston Partners Small Cap Value	23,192,004	3.3	3.5	-1.7	23.2	63.3	9.7	11.3	11.1	11.0	Feb-97
Russell 2000 Value				-3.6	22.2	63.7	8.3	11.6	10.8	9.5	Feb-97
Loomis Sayles Small Cap Growth	25,722,306	3.6	3.5	1.5	9.0	38.8	17.4	20.0	15.2	7.9	Jan-97
Russell 2000 Growth				-3.6	5.0	41.0	13.9	16.4	13.6	8.1	Jan-97
<b>Total Non-US Equity</b>	<b>135,543,502</b>	<b>19.2</b>	<b>19.0</b>	<b>-1.5</b>	<b>4.5</b>	<b>25.7</b>	<b>8.4</b>	<b>10.1</b>	<b>5.4</b>	<b>5.1</b>	<b>Mar-99</b>
<b>International Equity</b>	<b>117,172,641</b>	<b>16.6</b>	<b>12.0</b>	<b>-0.8</b>	<b>5.8</b>	<b>28.5</b>	<b>10.2</b>	<b>11.2</b>	<b>6.3</b>	<b>5.0</b>	<b>Sep-05</b>
SEG Baxter Street	43,635,183	6.2	5.0	0.2	6.5	23.7	13.1	12.8	--	12.8	May-16
MSCI ACWI ex USA				-1.6	7.4	27.8	7.9	9.6	5.4	9.5	May-16
Schroder International Alpha Trust Class 1	52,594,234	7.4	4.0	-0.3	8.6	31.8	12.8	13.1	--	8.8	Mar-12
MSCI ACWI ex USA				-1.6	7.4	27.8	7.9	9.6	5.4	6.3	Mar-12
Baillie Gifford International Growth Fund Class K	20,943,225	3.0	3.0	-4.0	-0.8	--	--	--	--	19.9	Oct-20
MSCI ACWI ex USA				-1.6	7.4	27.8	7.9	9.6	5.4	25.6	Oct-20

Since inception return is 8.8% gross of fees. Prior to 1999, performance history does not capture separate net and gross returns.

In November 2019, Loomis Sayles and Schroders transitioned from a mutual fund to a CIT structure. Performance prior to transitioning to the CIT investment vehicle is linked to mutual fund performance history.



# MWRA Employees' Retirement System

## TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	1 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Emerging Markets Equity</b>	<b>18,370,861</b>	<b>2.6</b>	<b>7.0</b>	<b>-6.0</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>-3.1</b>	<b>Mar-21</b>
<i>MSCI Emerging Markets</i>				-6.7	0.2	20.6	7.9	10.4	3.6	-3.5	Mar-21
Axiom Emerging Markets Trust Class 2	18,370,861	2.6	7.0	-6.0	--	--	--	--	--	-3.1	Mar-21
<i>MSCI Emerging Markets</i>				-6.7	0.2	20.6	7.9	10.4	3.6	-3.5	Mar-21
<b>Total Fixed Income</b>	<b>168,222,759</b>	<b>23.8</b>	<b>24.0</b>	<b>1.0</b>	<b>0.8</b>	<b>2.6</b>	<b>6.4</b>	<b>4.6</b>	<b>4.8</b>	<b>6.6</b>	<b>Mar-99</b>
Garcia Hamilton Fixed Income Aggregate	46,286,504	6.6	6.0	0.9	-1.3	-1.2	4.8	--	--	4.4	Apr-18
<i>BBgBarc US Aggregate TR</i>				1.1	-0.5	-0.7	5.7	3.1	3.3	5.1	Apr-18
Lord Abbett Core Fixed Income	26,656,042	3.8	4.0	1.0	0.2	0.7	6.0	--	--	5.4	Apr-18
<i>BBgBarc US Aggregate TR</i>				1.1	-0.5	-0.7	5.7	3.1	3.3	5.1	Apr-18
Rhumbline TIPS	30,170,145	4.3	4.0	2.7	4.4	6.9	7.6	4.6	--	4.9	Jun-16
<i>BBgBarc US TIPS TR</i>				2.7	4.4	6.9	7.6	4.5	3.3	5.0	Jun-16
Loomis Sayles Multisector Full Discretion Trust	53,051,364	7.5	8.0	0.5	0.6	3.9	7.5	6.3	5.7	7.9	Mar-99
<i>BBgBarc US Aggregate TR</i>				1.1	-0.5	-0.7	5.7	3.1	3.3	4.8	Mar-99
<i>BBgBarc US High Yield TR</i>				0.4	4.0	10.6	7.2	7.0	6.6	6.9	Mar-99
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1	12,004,163	1.7	2.0	-0.1	2.5	7.5	--	--	--	4.2	Aug-19
<i>Credit Suisse Leveraged Loan</i>				0.0	3.5	9.6	4.1	4.7	4.5	4.1	Aug-19
Invesco Mortgage Recovery Loans Feeder Fund	54,542	0.0		0.0	-0.5	-1.6	1.2	0.2	6.2	11.2	Apr-10
<i>BBgBarc US Aggregate TR</i>				1.1	-0.5	-0.7	5.7	3.1	3.3	3.8	Apr-10
<b>Total Hedge Fund</b>	<b>40,265,829</b>	<b>5.7</b>	<b>6.0</b>	<b>0.0</b>	<b>5.2</b>	<b>14.5</b>	<b>5.6</b>	<b>5.3</b>	<b>4.1</b>	<b>3.7</b>	<b>Oct-06</b>
PRIM Portfolio Completion Strategies	15,092,761	2.1		-0.1	7.7	15.9	4.3	5.4	4.7	4.1	Oct-06
Corbin Pinehurst Partners	12,769,669	1.8		-0.2	6.6	19.9	--	--	--	10.0	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				-0.3	4.7	15.4	6.1	5.8	3.8	7.9	Nov-18
UBS Neutral Alpha Strategies	11,660,181	1.7		0.2	1.3	8.6	--	--	--	6.1	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				-0.3	4.7	15.4	6.1	5.8	3.8	7.9	Nov-18
Entrust Peru Wind Down	743,218	0.1		-0.1	-1.5	0.4	-3.8	--	--	-3.8	Dec-17
<i>HFRI Fund of Funds Composite Index</i>				-0.3	4.7	15.4	6.1	5.8	3.8	5.5	Dec-17
<b>Other</b>	<b>16,887,166</b>	<b>2.4</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>1.4</b>	<b>1.3</b>	<b>0.7</b>	<b>0.7</b>	<b>Dec-10</b>
Cash Account	16,887,166	2.4		0.0	0.0	0.0	1.4	1.3	0.7	1.8	Feb-00
<i>91 Day T-Bills</i>				0.0	0.0	0.0	1.2	1.1	0.6	1.5	Feb-00

Importantly, all returns in this report, including those of the private real estate managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences. Corbin Pinehurst Partners, UBS Neutral Alpha Strategies, and Entrust Peru Wind Down are preliminary as of 07/31/2021 and are subject to change when finalized.





# MWRA Employees' Retirement System

## TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	1 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Total Real Estate</b>	<b>51,589,903</b>	<b>7.3</b>	<b>10.0</b>	<b>0.0</b>	<b>5.7</b>	<b>8.5</b>	<b>6.4</b>	<b>7.4</b>	<b>10.2</b>	<b>7.7</b>	<b>Apr-99</b>
<i>NCREIF Property Index</i>				0.0	5.4	7.4	5.5	6.1	8.8	8.5	Apr-99
Morgan Stanley Prime Property (\$2.8m commitment in '95)	21,104,244	3.0		0.0	4.7	7.4	5.3	6.7	10.3	8.4	Sep-95
TA Realty Core Property Fund, LP (\$15m commitment in '19)	21,724,355	3.1		0.0	7.7	12.4	--	--	--	8.2	Jun-19
Invesco Mortgage Recovery II (\$3M commitment in '15)	728,128	0.1		0.0	3.1	-49.6	-14.8	-3.7	--	-2.5	Oct-15
Landmark VI (\$2m commitment in '11)	79,556	0.0		0.0	-2.9	-12.1	-13.4	-8.1	2.7	2.7	Jul-11
Landmark VIII (\$4m commitment in '17)	1,363,102	0.2		0.0	3.0	14.4	6.1	--	--	14.2	Nov-17
Courtland/Mesirow MFire (\$2m commitment in '11)	619,337	0.1		0.0	0.8	0.7	-3.8	1.2	--	2.2	May-12
Cerberus Institutional Real Estate Partners III (\$1.5m commitment in '12)	570,376	0.1		0.0	4.1	14.6	10.3	8.1	--	12.2	May-13
TA Realty Fund X LP (\$3.5m commitment in '12)	329,270	0.0		0.0	1.7	-0.2	5.9	6.6	--	8.5	May-13
TerraCap Partners III, LP (\$2.6m commitment in '15)	1,592,259	0.2		0.0	0.2	3.2	6.5	11.0	--	9.8	Jul-15
TerraCap Partners IV, LP (\$4m commitment in '17)	3,441,447	0.5		0.0	5.3	10.8	10.8	--	--	9.9	Nov-17
Cerberus Institutional Real Estate Partners III AIV, S.C.A. SICAV-RAIF	37,830	0.0		0.0	--	--	--	--	--	-2.1	Mar-21
<b>Total Private Equity</b>	<b>69,029,598</b>	<b>9.8</b>	<b>10.0</b>	<b>0.0</b>	<b>18.4</b>	<b>42.2</b>	<b>14.7</b>	<b>14.1</b>	<b>12.6</b>	<b>10.1</b>	<b>Apr-99</b>
<i>CJA US All PE</i>				0.0	9.4	34.7	15.5	16.3	13.8	12.9	Apr-99
<i>NASDAQ W/O Income</i>				1.2	13.8	36.6	24.1	23.2	18.2	8.3	Apr-99
PRIM Vintage Year 2008 (\$3m commitment in '08)	999,475	0.1		0.0	14.7	48.8	13.9	18.7	18.6	9.4	Jun-08
PRIM Vintage Year 2009 (\$1m commitment in '09)	170,175	0.0		-0.1	36.5	139.3	44.8	33.6	25.2	14.7	Nov-09
PRIM Vintage Year 2010 (\$1m commitment in '10)	701,034	0.1		-0.1	51.1	108.4	31.6	27.1	19.9	13.6	Jun-10
PRIM Vintage Year 2011 (\$1.5m commitment in '11)	938,725	0.1		-0.1	52.5	79.3	28.5	25.6	9.4	8.6	May-11
PRIM Vintage Year 2012 (\$1m commitment in '12)	858,871	0.1		-0.1	30.9	75.1	29.0	25.4	--	-8.7	Jun-12
PRIM Vintage Year 2014 (\$2m commitment in '14)	2,171,033	0.3		0.0	23.5	57.4	27.0	25.0	--	6.8	Jun-14
PRIM Vintage Year 2017 (\$2m commitment in '17)	1,901,323	0.3		-0.3	26.9	61.8	20.8	--	--	15.0	May-17
PRIM Vintage Year 2020 (\$5m commitment in '20)	1,037,512	0.1		-0.4	19.9	40.1	--	--	--	20.9	Mar-20
PRIM Vintage Year 2021 (\$5m commitment in '21)	467,850	0.1		-0.1	-2.4	--	--	--	--	-2.4	Dec-20
Alcentra European DLF (\$5m commitment in '14)	684,378	0.1		0.0	1.4	4.1	-2.0	2.4	--	4.1	Jan-15
Ascent Fund IV (\$2m commitment in '04)	6,783	0.0		0.0	-8.5	-10.9	-42.2	-33.8	-32.7	-21.2	Jul-04
Ascent Fund IV-B (\$1m commitment in '16)	117,538	0.0		0.0	-14.0	-22.2	-26.3	-16.2	--	-16.0	Jul-16
Ascent Fund V (\$2m commitment in '08)	1,995,137	0.3		0.0	19.0	25.3	1.5	1.8	7.0	5.6	Oct-08
Ascent VI (\$3m commitment in '15)	3,061,939	0.4		0.0	2.8	5.0	-1.0	4.8	--	0.8	Dec-15
CVI Credit Value Fund IV A LP (\$6m commitment in '17)	5,810,815	0.8		0.0	9.0	20.4	6.3	--	--	5.9	Dec-17

Importantly, all returns in this report, including those of the private markets managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences.





# MWRA Employees' Retirement System

## TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	1 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Invesco Fund IV (\$3m commitment in '03)	174	0.0		0.0	0.0	-13.1	-21.7	-11.2	-0.7	--	Feb-04
Invesco Fund VI (\$5m commitment in '13)	9,198,242	1.3		0.0	33.1	90.1	31.1	25.4	--	20.7	Jul-13
Kayne Energy Fund VII (\$5m commitment in '15)	1,839,625	0.3		0.0	48.2	30.4	-36.6	-13.2	--	-12.3	Jan-16
Foundry 2007 (\$3m commitment in '07)	500,263	0.1		0.0	55.9	151.0	2.1	2.1	8.8	21.8	Dec-07
Foundry 2010 (\$3m commitment in '10)	4,371,695	0.6		0.0	17.3	53.0	16.8	13.7	13.1	11.2	Jan-11
Foundry 2010 Annex (\$0.4m commitment in '15)	456,453	0.1		0.0	-0.1	129.5	44.1	35.4	--	28.4	Sep-15
Pinebridge PEP V (\$6m commitment in '07)	865,936	0.1		0.0	1.4	21.9	7.4	5.4	9.1	--	Mar-08
Landmark XV (\$3m commitment in '13)	1,447,588	0.2		0.0	4.9	48.5	11.8	14.0	--	14.2	Nov-13
JFL Equity Investors IV, L.P. (\$6m commitment in '16)	8,588,018	1.2		0.0	38.0	74.0	53.0	--	--	43.2	Jan-17
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)	5,167,328	0.7		0.0	10.5	31.9	28.3	--	--	21.0	Feb-17
Park Square Credit Opportunities III (\$3m commitment in '17)	2,654,569	0.4		0.0	4.0	8.6	9.3	--	--	6.9	Feb-18
Ironsides Constitution Opportunities (\$3m commitment in '18)	2,336,483	0.3		0.0	3.7	15.5	--	--	--	12.0	Oct-18
HarbourVest Dover Street X (\$9m commitment in '20)	3,138,384	0.4		0.0	6.8	26.2	--	--	--	92.4	Jun-20
Hamilton Lane Secondary Fund V LP (\$9m commitment in '20)	3,601,385	0.5		0.0	9.4	41.1	--	--	--	37.4	Jul-20
JFL Equity Investors V, L.P. (\$8m commitment in '20)	3,940,865	0.6		0.0	-3.9	--	--	--	--	-13.7	Sep-20
<i>Private Equity Benchmark (1 Qtr. Lag)</i>				0.0	22.0	47.4	17.6	17.2	14.0	47.4	Sep-20

Importantly, all returns in this report, including those of the private markets managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences.



# MWRA Employees' Retirement System

## ESTIMATED FEE SCHEDULE

Account	Fee Schedule	Market Value As of 7/31/2021	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
PRIT Core Fund	0.49% of Assets	\$5,128,483	0.7%	\$25,130	0.49%
Rhumblin Advisors S&P 500 Index Fund	0.05% of Assets	\$69,835,255	9.9%	\$34,918	0.05%
Coho Relative Value Equity	0.50% of First 75.0 Mil, 0.40% of Next 75.0 Mil, 0.35% Thereafter	\$47,102,746	6.7%	\$235,514	0.50%
Polen Focused Growth	0.65% of Assets	\$53,735,134	7.6%	\$349,278	0.65%
Boston Partners Small Cap Value	1.00% of Assets	\$23,192,004	3.3%	\$231,920	1.00%
Loomis Sayles Small Cap Growth	0.45% of Assets	\$25,722,306	3.6%	\$115,750	0.45%
SEG Baxter Street	1.00% of Assets	\$43,635,183	6.2%	\$436,352	1.00%
Schroder International Alpha Trust Class 1	0.55% of Assets	\$52,594,234	7.4%	\$289,268	0.55%
Baillie Gifford International Growth Fund Class K	0.60% of Assets	\$20,943,225	3.0%	\$125,659	0.60%
Axiom Emerging Markets Trust Class 2	0.73% of Assets	\$18,370,861	2.6%	\$134,107	0.73%
Garcia Hamilton Fixed Income Aggregate	0.25% of First 25.0 Mil, 0.20% Thereafter	\$46,286,504	6.6%	\$105,073	0.23%
Lord Abbett Core Fixed Income	0.19% of Assets	\$26,656,042	3.8%	\$50,646	0.19%
Rhumblin TIPS Pooled Index Fund	0.04% of Assets	\$30,170,145	4.3%	\$12,068	0.04%
Loomis Sayles Multisector Full Discretion Trust	0.50% of First 20.0 Mil, 0.40% of Next 20.0 Mil, 0.30% Thereafter	\$53,051,364	7.5%	\$219,154	0.41%
Octagon Senior Secured Credit Cayman Fund Ltd.- Cl. L Acc, Series 1	0.40% of Assets	\$12,004,163	1.7%	\$48,017	0.40%
Invesco Mortgage Recovery Loans Feeder Fund	No Fee	\$54,542	0.0%	--	--
PRIM Portfolio Completion Strategies	No Fee	\$15,092,761	2.1%	--	--
Corbin Pinehurst Partners	0.85% of Assets	\$12,769,669	1.8%	\$108,542	0.85%
UBS Neutral Alpha Strategies	0.90% of Assets	\$11,660,181	1.7%	\$104,942	0.90%
Entrust Peru Wind Down	0.50% of Assets	\$743,218	0.1%	\$3,716	0.50%
Cash Account	No Fee	\$16,887,166	2.4%	--	--
Morgan Stanley Prime Property (\$2.8m commitment in '95)	No Fee	\$21,104,244	3.0%	--	--
TA Realty Core Property Fund, LP (\$15m commitment in '19)	No Fee	\$21,724,355	3.1%	--	--
Invesco Mortgage Recovery II (\$3M commitment in '15)	No Fee	\$728,128	0.1%	--	--
Landmark VI (\$2m commitment in '11)	No Fee	\$79,556	0.0%	--	--



# MWRA Employees' Retirement System

## ESTIMATED FEE SCHEDULE

Account	Fee Schedule	Market Value As of 7/31/2021	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Landmark VIII (\$4m commitment in '17)	No Fee	\$1,363,102	0.2%	--	--
Courtland/Mesirow MFire (\$2m commitment in '11)	No Fee	\$619,337	0.1%	--	--
Cerberus Real Estate Partners III (\$1.5m commitment in '12)	No Fee	\$570,376	0.1%	--	--
TA Realty Fund X LP (\$3.5m commitment in '12)	No Fee	\$329,270	0.0%	--	--
TerraCap Partners III, LP (\$2.6m commitment in '15)	No Fee	\$1,592,259	0.2%	--	--
TerraCap Partners IV, LP (\$4m commitment in '17)	No Fee	\$3,441,447	0.5%	--	--
Cerberus Real Estate Partners III AIV, S.C.A. SICAV-RAIF	No Fee	\$37,830	0.0%	--	--
PRIM Vintage Year 2008 (\$3m commitment in '08)	No Fee	\$999,475	0.1%	--	--
PRIM Vintage Year 2009 (\$1m commitment in '09)	No Fee	\$170,175	0.0%	--	--
PRIM Vintage Year 2010 (\$1m commitment in '10)	No Fee	\$701,034	0.1%	--	--
PRIM Vintage Year 2011 (\$1.5m commitment in '11)	No Fee	\$938,725	0.1%	--	--
PRIM Vintage Year 2012 (\$1m commitment in '12)	No Fee	\$858,871	0.1%	--	--
PRIM Vintage Year 2014 (\$2m commitment in '14)	No Fee	\$2,171,033	0.3%	--	--
PRIM Vintage Year 2017 (\$2m commitment in '17)	No Fee	\$1,901,323	0.3%	--	--
PRIM Vintage Year 2020 (\$5m commitment in '20)	No Fee	\$1,037,512	0.1%	--	--
PRIM Vintage Year 2021 (\$5m commitment in '21)	No Fee	\$467,850	0.1%	--	--
Alcentra European DLF (\$5m commitment in '14)	No Fee	\$684,378	0.1%	--	--
Ascent Fund IV (\$2m commitment in '04)	No Fee	\$6,783	0.0%	--	--
Ascent Fund IV-B (\$1m commitment in '16)	No Fee	\$117,538	0.0%	--	--
Ascent Fund V (\$2m commitment in '08)	No Fee	\$1,995,137	0.3%	--	--
Ascent VI (\$3m commitment in '15)	No Fee	\$3,061,939	0.4%	--	--
CVI Credit Value Fund IV A LP (\$6m commitment in '17)	No Fee	\$5,810,815	0.8%	--	--
Invesco Partnership Fund IV (\$3m commitment in '03)	No Fee	\$174	0.0%	--	--
Invesco Fund VI (\$5m commitment in '13)	No Fee	\$9,198,242	1.3%	--	--
Kayne Energy Fund VII (\$5m commitment in '15)	No Fee	\$1,839,625	0.3%	--	--
Foundry 2007 (\$3m commitment in '07)	No Fee	\$500,263	0.1%	--	--
Foundry 2010 (\$3m commitment in '10)	No Fee	\$4,371,695	0.6%	--	--
Foundry 2010 Annex (\$0.4m commitment in '15)	No Fee	\$456,453	0.1%	--	--
Pinebridge (AIG) PEP V Asia (\$6m commitment in '07)	No Fee	\$55,816	0.0%	--	--



# MWRA Employees' Retirement System

## ESTIMATED FEE SCHEDULE

Account	Fee Schedule	Market Value As of 7/31/2021	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Pinebridge (AIG) PEP V Co-Investment (\$6m commitment in '07)	No Fee	\$69,013	0.0%	--	--
Pinebridge (AIG) PEP V Europe (\$6m commitment in '07)	No Fee	\$23,520	0.0%	--	--
Pinebridge (AIG) PEP V Large Market US Buyout (\$6m commitment in '07)	No Fee	\$156,195	0.0%	--	--
Pinebridge (AIG) PEP V Preferred Participation Fund (\$6m commitment in '07)	No Fee	\$316,971	0.0%	--	--
Pinebridge (AIG) PEP V Secondary (\$6m commitment in '07)	No Fee	\$34,446	0.0%	--	--
Pinebridge (AIG) PEP V Small-Mid Market US Buyout (\$6m commitment in '07)	No Fee	\$106,197	0.0%	--	--
Pinebridge (AIG) PEP V US Venture (\$6m commitment in '07)	No Fee	\$103,778	0.0%	--	--
Landmark XV (\$3m commitment in '13)	No Fee	\$1,447,588	0.2%	--	--
JFL Equity Investors IV, L.P. (\$6m commitment in '16)	No Fee	\$8,588,018	1.2%	--	--
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)	No Fee	\$5,167,328	0.7%	--	--
Park Square Credit Opportunities III (\$3m commitment in '17)	No Fee	\$2,654,569	0.4%	--	--
Ironsides Constitution Opportunities (\$3m commitment in '18)	No Fee	\$2,336,483	0.3%	--	--
HarbourVest Dover Street X (\$9m commitment in '20)	No Fee	\$3,138,384	0.4%	--	--
Hamilton Lane Secondary Fund V LP (\$9m commitment in '20)	No Fee	\$3,601,385	0.5%	--	--
JFL Equity Investors V, L.P. (\$8m commitment in '20)	No Fee	\$3,940,865	0.6%	--	--
<b>Investment Management Fee</b>		<b>\$706,254,687</b>	<b>100.0%</b>	<b>\$2,630,055</b>	<b>0.37%</b>

Note:  
 Estimate fee for privates are ~\$1,556,212 annually, which brings the total expense ratio for privates to ~18 bps. This brings the total estimated expense ratio for MWRA to ~55 bps.



# MWRA Employees' Retirement System

## NOTES

- 1 - Results for periods longer than one year are annualized.
- 2 - Total Balances, Large Cap, Small Cap, and Other Composite performance starts 12/1/2010.
- 3 - Preliminary Total Composite net of fee since inception return is 7.2% for the current month.
- 4 - Preliminary Total Composite gross of fee since inception return is 8.8% for the current month.
- 5 - Targets, Allocation Index, and Policy Index have been updated to reflect new allocation of 06/01/2020.
- 6 - Policy Index changed from Nasdaq to Cambridge All PE to reflect as of 5/1/2012.
- 7 - Policy Index Consists of: 24% S&P 500, 7% Russell 2000, 12% MSCI ACWI IMI , 7% MSCI Emerging Markets, 10% BBgBarc US Aggregate TR, 4% BBgBarc US TIPS TR, 10% BBgBarc US Universal TR, 10% NCREIF Property Index, 10% CJA US All PE , 6% HFRI Fund of Funds Composite Index.
- 8 - Allocation index consists of: Weighted index of underlying managers to their respective benchmark.



# DISCLAIMERS & DISCLOSURES

Past performance is no guarantee of future results.

Returns for pooled funds, e.g. mutual funds and collective investment trusts, are collected from third parties; they are not generally calculated by NEPC. Returns for separate accounts, with some exceptions, are calculated by NEPC. Returns are reported net of manager fees unless otherwise noted.

A “since inception” return, if reported, begins with the first full month after funding, although actual inception dates (e.g. the middle of a month) and the timing of cash flows are taken into account in Composite return calculations.

NEPC’s preferred data source is the plan’s custodian bank or record-keeper. If data cannot be obtained from one of the preferred data sources, data provided by investment managers may be used. Information on market indices and security characteristics is received from additional providers. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within. In addition, some index returns displayed in this report or used in calculation of a policy index, allocation index or other custom benchmark may be preliminary and subject to change.

All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.

The opinions presented herein represent the good faith views of NEPC as of the date of this presentation and are subject to change at any time. Neither fund performance nor universe rankings contained in this report should be considered a recommendation by NEPC.

This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.

Source of private fund performance benchmark data: Cambridge Associates, via Refinitiv



MWRA Employees' Retirement System

Asset Allocation Rebalance Summary

August 26, 2021

	Market Value	Weight in Fund	Target Weight	Recommendation	New Market Value	New Weight
<b>Composite</b>	<b>\$710,410,707</b>	<b>100.0%</b>	<b>100.0%</b>	<b>\$0</b>	<b>\$710,410,707</b>	<b>100.0%</b>
<b>Total Balanced</b>	<b>\$5,128,483</b>	<b>0.7%</b>	<b>0.0%</b>	<b>\$0</b>	<b>\$5,128,483</b>	<b>0.7%</b>
PRIT Core Fund	\$5,128,483	0.7%	0.0%	\$0	\$5,128,483	0.7%
<b>Total Domestic Equity</b>	<b>\$224,919,277</b>	<b>31.7%</b>	<b>31.0%</b>	<b>\$0</b>	<b>\$224,919,277</b>	<b>31.7%</b>
Rhumblin Advisors S&P 500 Index Fund	\$70,065,711	9.9%	10.0%	\$0	\$70,065,711	9.9%
Coho Relative Value	\$52,087,071	7.3%	7.0%	\$0	\$52,087,071	7.3%
Polen Focused Growth	\$54,173,175	7.6%	7.0%	\$0	\$54,173,175	7.6%
Robeco Boston Partners Small Cap Value	\$24,433,195	3.4%	3.5%	\$0	\$24,433,195	3.4%
Loomis Sayles Small Cap Growth	\$24,160,125	3.4%	3.5%	\$0	\$24,160,125	3.4%
<b>Total International Equity</b>	<b>\$135,650,928</b>	<b>19.1%</b>	<b>19.0%</b>	<b>\$1,000,000</b>	<b>\$136,650,928</b>	<b>19.2%</b>
SEG - Baxter Street Fund	\$43,635,183	6.1%	5.0%	-\$6,000,000	\$37,635,183	5.3%
Schroders International Alpha	\$52,273,409	7.4%	4.0%	-\$15,000,000	\$37,273,409	5.2%
Baillie Gifford	\$20,371,475	2.9%	3.0%	\$0	\$20,371,475	2.9%
Axiom Emerging Markets	\$19,370,861	2.7%	3.5%	\$0	\$19,370,861	2.7%
Emerging Equity Manger TBD	\$0	0.0%	3.5%	\$22,000,000	\$22,000,000	3.1%
<b>Total Equity</b>	<b>\$360,570,205</b>	<b>50.8%</b>	<b>50.0%</b>	<b>\$1,000,000</b>	<b>\$361,570,205</b>	<b>50.9%</b>
<b>Total Fixed Income</b>	<b>\$167,847,117</b>	<b>23.6%</b>	<b>24.0%</b>	<b>-\$1,000,000</b>	<b>\$166,847,117</b>	<b>23.5%</b>
Garcia Hamilton	\$46,239,757	6.5%	6.0%	-\$7,000,000	\$39,239,757	5.5%
Lord Abbett	\$26,610,727	3.7%	4.0%	\$7,000,000	\$33,610,727	4.7%
Loomis Sayles Multi Sector Bonds	\$52,897,515	7.4%	8.0%	\$4,000,000	\$56,897,515	8.0%
Rhumblin TIPS	\$30,040,413	4.2%	4.0%	-\$7,000,000	\$23,040,413	3.2%
Octagon Senior Secured Loans	\$12,004,163	1.7%	2.0%	\$2,000,000	\$14,004,163	2.0%
Invesco Mortgage Recovery	\$54,542	0.0%	0.0%	\$0	\$54,542	0.0%
<b>Total Hedge Fund</b>	<b>\$40,265,829</b>	<b>5.7%</b>	<b>6.0%</b>	<b>\$0</b>	<b>\$40,265,829</b>	<b>5.7%</b>
PRIM Absolute Return Fund	\$15,092,761	2.1%		\$0	\$15,092,761	2.1%
Corbin Pinehurst Partners	\$12,769,669	1.8%		\$0	\$12,769,669	1.8%
UBS Neutral Alpha Strategies	\$11,660,181	1.6%		\$0	\$11,660,181	1.6%
Entrust Peru Winddown	\$743,218	0.1%		\$0	\$743,218	0.1%
<b>Total Real Estate</b>	<b>\$51,589,903</b>	<b>7.3%</b>	<b>10.0%</b>	<b>\$0</b>	<b>\$51,589,903</b>	<b>7.3%</b>
TA Realty Core	\$21,104,244	3.0%		\$0	\$21,104,244	3.0%
Morgan Stanley PPF	\$21,724,355	3.1%		\$0	\$21,724,355	3.1%
<b>Total Private Equity</b>	<b>\$69,029,598</b>	<b>9.7%</b>	<b>10.0%</b>	<b>\$0</b>	<b>\$69,029,598</b>	<b>9.7%</b>
<b>Cash</b>	<b>\$15,979,572</b>	<b>2.2%</b>	<b>0.0%</b>	<b>\$0</b>	<b>\$15,979,572</b>	<b>2.2%</b>
Peoples United Cash	\$15,979,572	2.2%	0.0%	\$0	\$15,979,572	2.2%





# EMERGING MARKET EQUITY SEARCH

## MASS. WATER RESOURCE'S AUTHORITY RETIREMENT SYSTEM

August 2021

Sebastian Grzejka, CAIA, Principal  
Kiley Fischer, Analyst



PROPRIETARY & CONFIDENTIAL



# SUMMARY OF EMERGING MARKET EQUITY SEARCH

## Target Fund Strategy

- Core Emerging Market Equity

## Advertised requirements for the search:

1. Candidates must have familiarity with and agree to comply (in writing) with Massachusetts G.L. Chapter 32 and Chapter 176 of the Acts of 2011. Additionally, candidates must have familiarity and agree to comply with the reporting and investment guidelines administered by PERAC.
2. Candidates must read and agree to the attached side letter pertaining to mandatory contractual language, based on the guidelines above.
3. Candidates must be registered with the SEC or Massachusetts Secretary of State.
4. Preference will be given to candidates who have at least \$500 million in assets in the fund that is being suggested, however, this is subject to the Board's discretion
5. Preference will be given to Funds that have a live track record of at least three years, however, this is subject to the Board's discretion
6. Fund strategy must be in a pooled vehicle (commingled or mutual fund)
7. Fund liquidity must be daily or monthly

## Responses were due on June 25, 2021 at 2:00 PM EST

- A total of 25 managers responded
- At the July meeting four managers were selected for further review



# EM EQUITY SEARCH FINALISTS

Firm	Vehicle	Fees	Fund AUM (MM)	Approach & Comments	Strategy Inception
ABS Investment Management	CF	EI: 75 bps on assets EI: 45 bps (10% incentive fee)	\$1,341.0	<ul style="list-style-type: none"> <li>- Fundamental All Cap Core Strategy</li> <li>- Fund of Funds approach/dual layer of fees</li> <li>- Live track record started in 2017</li> <li>- Sound historical performance</li> <li>- Highly Advantageous</li> </ul>	12/1/2017
Manulife	CIT	John Hancock Emerging Markets Equity Trust: For investments between \$10M-\$50M the I1 share class at 85bps. John Hancock Emerging Markets Equity Mutual Fund: R6 share class is available at 88bps.	\$2,699.2	<ul style="list-style-type: none"> <li>- Fundamental All Cap Core Strategy</li> <li>- Manager has proposed a lower fee share class</li> <li>- Sound historical performance</li> <li>- Manulife announced lead PM of strategy will go on 90 day leave</li> <li>- Advantageous</li> </ul>	12/1/2010
Thornburg	LLC CF	70 bps	\$1,208.4	<ul style="list-style-type: none"> <li>- Fundamental All Cap</li> <li>- Sound historical performance</li> <li>- Proposed vehicle and fee structure are for founders share class of commingled fund</li> <li>- Majority of assets are in retail mutual fund</li> <li>- Advantageous</li> </ul>	1/1/2010
Wellington Trust	CF	First \$50M: 80 bps Next \$50M: 75 bps Thereafter: 70 bps (Op. Expenses capped at 15 bps)	\$774.0	<ul style="list-style-type: none"> <li>- Fundamental All Cap Core Strategy</li> <li>- Sound historical performance</li> <li>- Wellington is a previous MWRA Manager</li> <li>- Advantageous</li> </ul>	10/31/2015





# FIRM AND PRODUCT SUMMARY



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# FIRM COMPARISON SUMMARY

Firm Name	Location	Year Firm Founded	Total Assets Under Mgmt (\$MM)	% Employee Owned	% Parent Owned	Parent Company Name	% Publicly Held	% Other Ownership
<b>Emerging Markets Equity</b>								
ABS Investment Management LLC	Greenwich, Connecticut	2002	6,761	59	0	NA	0	41
Manulife Investment Management	Toronto, Ontario	1887	591,362	0	100	Manulife Financial Corporation	0	0
Thornburg Investment Management Inc	Santa Fe, New Mexico	1982	45,367	17	0	NA	0	83
Wellington Management Company LLP	Boston, Massachusetts	1928	1,315,723	100	0	NA	0	0

Firm Name	Registered Investment Advisor	GIPS Compliant	Past or Pending Litigation	Firm uses Placement Agent
<b>Emerging Markets Equity</b>				
ABS Investment Management LLC	Yes	Yes	No	No
Manulife Investment Management	Yes	Yes	Yes	No
Thornburg Investment Management Inc	Yes	Yes	Yes	No
Wellington Management Company LLP	Yes	Yes	Yes	No



# PRODUCT COMPARISON

Firm/Product	Inception Date	AUM (\$MM)	# of Portfolio Managers	# of Research Analysts	# of Traders
<b>Emerging Markets Equity</b>					
ABS - ABS EMS Portfolio	2017	1,341	1	4	0
Manulife - EME	2010	2,699	2	3	0
Thornburg - EME	2010	1,208	3	31	10
Wellington - EME	2015	774	2	0	0

Firm/Product	Vehicle Proposed	Liquidity In	Liquidity Out	Client Fee for \$20.00 mm	NEPC Negotiated/Reduced Fee (bps)	Reported Fee (bps)
<b>Emerging Markets Equity</b>						
ABS - ABS EMS Portfolio	Commingled Fund	Monthly	Monthly	150,000.00**	---	75
Manulife - EME	Commingled Fund	Daily	Daily	190,000.00*	---	95
Thornburg - EME	Commingled Fund (3c11)	Monthly	Monthly	158,000.00*	---	79
	Commingled Fund (3c7)	Monthly	Monthly	150,000.00*	---	75
Wellington - EME	Commingled Fund	Daily	Daily	160,000.00*	---	80

\* Represents the standard stated management fees offered by the manager. The managers may have other fee options or offered a different fee/vehicle for this search, which has been summarized on slide 2.

\*\* ABSs' Fund of Funds approach results in a double layer of fees, however, all performance stated throughout the book is net of all fees.



# EQUITY PRODUCT COMPARISON

Firm/Product	Primary Equity Capitalization	Current # of Holdings	Typical Holdings	Wgt'd. Avg. Mkt. Cap (\$MM)	Median Mkt. Cap (\$MM)	Annual Turnover (%)	Max Cash Position (%)	Typical Cash (%)
<b>Emerging Markets Equity</b>								
ABS - ABS EMS Portfolio	All Cap	530	500	94,313	4,646	30	15	4
Manulife - EME	All Cap	62	NA*	168,621	49,869	58	NA*	NA*
Thornburg - EME	All Cap	59	54	186,179	24,976	77	10	6
Wellington - EME	All Cap	179	70	55,229	9,354	88	5	2

\*Not Available

Firm/Product	% Portfolio in Market Cap Range:						
	> \$50 Billion (%)	\$15-50 Billion (%)	\$7.5-15 Billion (%)	\$1.5-7.5 Billion (%)	\$750-1.5 Billion (%)	\$400-750 Million (%)	< \$400 Million (%)
<b>Emerging Markets Equity</b>							
ABS - ABS EMS Portfolio	31	20	11	28	6	2	1
Manulife - EME	60	22	9	7	2	0	0
Thornburg - EME	54	24	9	12	0	1	0
Wellington - EME	24	25	18	26	6	0	1



# EQUITY STYLE CHARACTERISTICS

Firm/Product	Earnings Yield	Dividend Yield	EPS Growth	Fundamental Beta	Book/Price	Return on Equity
<b>Emerging Markets Equity</b>						
ABS - ABS EMS Portfolio	4.91	1.99	15.52	1.06	0.43	13.82
Manulife - EME	NA*	NA*	NA*	NA*	NA*	NA*
Thornburg - EME	3.83	1.39	17.91	1.11	0.26	18.05
Wellington - EME	4.40	1.46	22.77	1.13	.36	13.79

\*Not Available

Firm/Product	Consumer Discretionary (%)	Consumer Staples (%)	Energy (%)	Financials (%)	Health Care (%)	Industrials (%)	Info. Tech. (%)	Materials (%)	Real Estate (%)	Comm. Serv. (%)	Utilities (%)	Other (%)
<b>Emerging Markets Equity</b>												
ABS - ABS EMS Portfolio	16.9	11.2	3.3	16.3	3.9	7.0	21.1	9.4	2.5	6.5	1.9	0.0
Manulife - EME	18.1	5.7	4.0	18.4	4.9	5.5	25.9	6.1	0.0	11.5	0.0	0.0
Thornburg - EME	15.4	9.8	3.1	20.9	0.0	5.4	24.8	3.8	0.0	12.6	4.2	0.0
Wellington - EME	13.0	3.0	2.0	17.0	13.0	14.0	12.0	3.0	3.0	9.0	11.0	0.0





# PERFORMANCE



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# TRAILING PERIOD RETURNS - (NET OF FEES)

	Benchmark	Qtr	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
<b>Emerging Markets Equity</b>								
ABS - ABS EMS Portfolio *	1	6.2%	11.3%	47.8%	14.1%	14.6%	9.8%	NA
Manulife - EME	1	5.4%	6.5%	44.2%	16.9%	16.4%	9.6%	6.9%
Thornburg - EME	1	4.4%	6.2%	42.8%	16.1%	14.2%	7.1%	7.2%
Wellington - EME	1	6.0%	6.5%	46.6%	17.3%	17.9%	NA	NA

\*Strategy inception is 12/1/2017. Performance prior to this date is representative track record.

<b>Actual Return</b>								
1	MSCI EM-ND	5.0%	7.4%	40.9%	11.3%	13.0%	6.4%	4.3%



# CALENDAR YEAR RETURNS - (NET OF FEES)

	Bench mark	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
<b>Emerging Markets Equity</b>											
ABS - ABS EMS Portfolio*	1	23.8%	19.6%	-15.3%	38.7%	8.3%	-4.8%	3.5%	5.0%	NA	NA
Manulife - EME	1	33.7%	27.3%	-16.9%	42.3%	3.8%	-10.3%	-0.9%	4.4%	18.2%	-19.0%
Thornburg - EME	1	23.5%	29.9%	-14.6%	36.3%	3.4%	-14.8%	-2.2%	16.5%	23.7%	-14.8%
Wellington - EME	1	38.8%	22.2%	-14.2%	45.3%	5.9%	NA	NA	NA	NA	NA

\*Strategy inception is 12/1/2017. Performance prior to this date is representative track record.

<b>Actual Index Return</b>											
1	MSCI EM-ND	18.3%	18.4%	-14.6%	37.3%	11.2%	-14.9%	-2.2%	-2.6%	18.2%	-18.4%



# EXCESS RETURNS PERFORMANCE SUMMARY - (NET OF FEES)

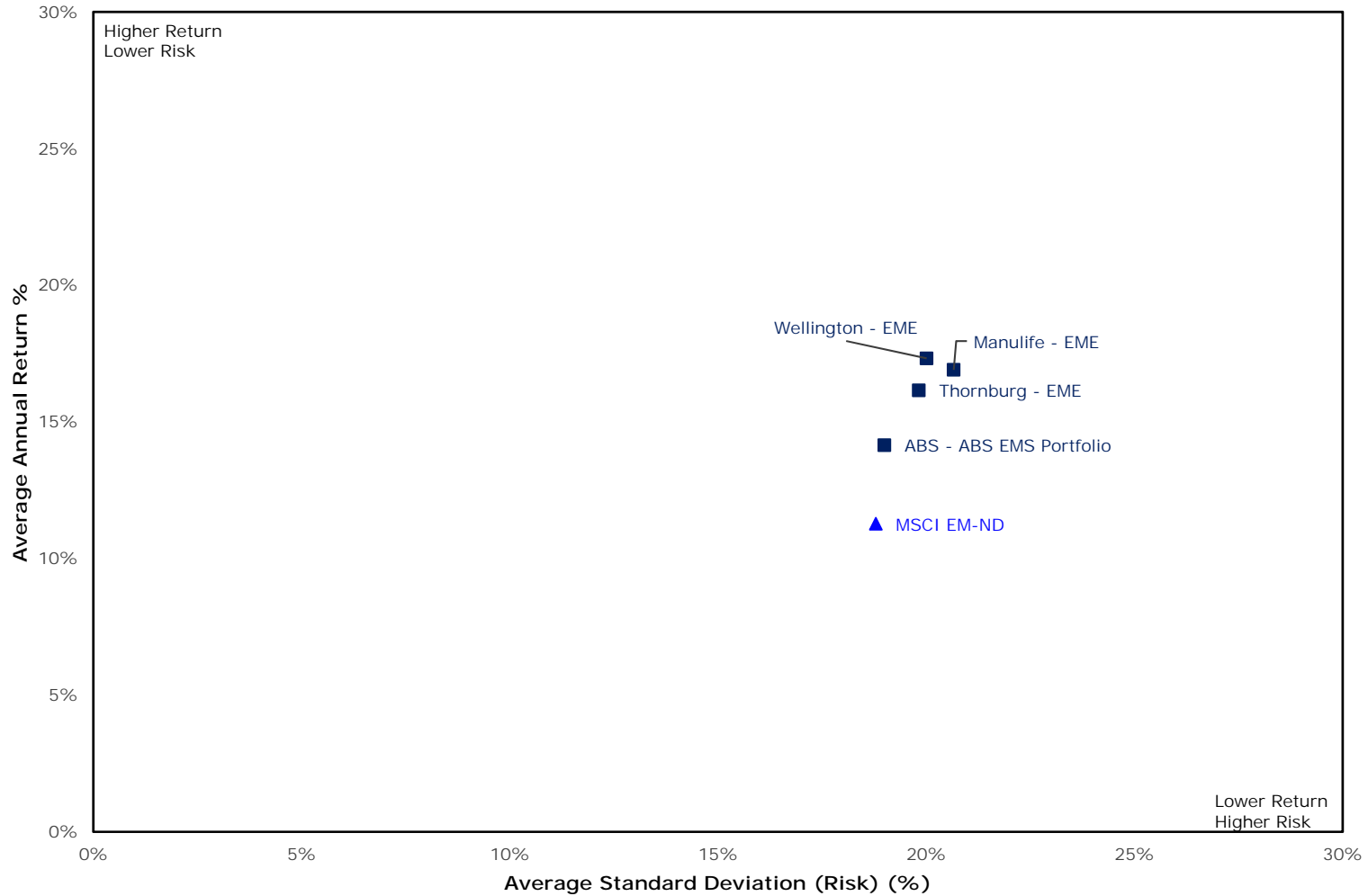
	Primary Benchmark	# of Months (Track Record)	% Positive (Mo.)	High (Mo.)	Low (Mo.)	Average (Mo.)	% > 0.5%	Rolling 1 Yr. Rtr.		Rolling 3 Yr. Rtr.	
								> 0%	> 3%	> 0%	> 3%
<b>Emerging Markets Equity</b>											
ABS - ABS EMS Portfolio*	MSCI EM-ND	108	60%	4.7%	(3.0%)	0.3%	43%	76%	47%	90%	48%
Manulife - EME	MSCI EM-ND	127	54%	4.3%	(2.8%)	0.2%	43%	73%	47%	89%	39%
Thornburg - EME	MSCI EM-ND	138	56%	5.1%	(3.8%)	0.3%	47%	71%	57%	68%	56%
Wellington - EME	MSCI EM-ND	68	57%	4.6%	(3.7%)	0.3%	40%	81%	60%	100%	70%

	# of Months (Track Record)	Excess Return					Tracking Error				Information Ratio				Beta vs. Primary Benchmark
		1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	
<b>Emerging Markets Equity</b>															
ABS - ABS EMS Portfolio*	108	6.9%	2.9%	1.6%	3.5%	NA	3.6%	3.6%	4.7%	NA	0.80	0.44	0.74	NA	0.89
Manulife - EME	127	3.3%	5.6%	3.4%	3.2%	2.6%	4.0%	3.6%	3.8%	4.1%	1.40	0.94	0.85	0.63	1.01
Thornburg - EME	138	1.9%	4.9%	1.2%	0.7%	3.0%	3.5%	3.9%	5.1%	5.9%	1.40	0.31	0.14	0.51	0.90
Wellington - EME	68	5.7%	6.0%	4.9%	NA	NA	6.3%	5.6%	NA	NA	0.96	0.86	NA	NA	0.94

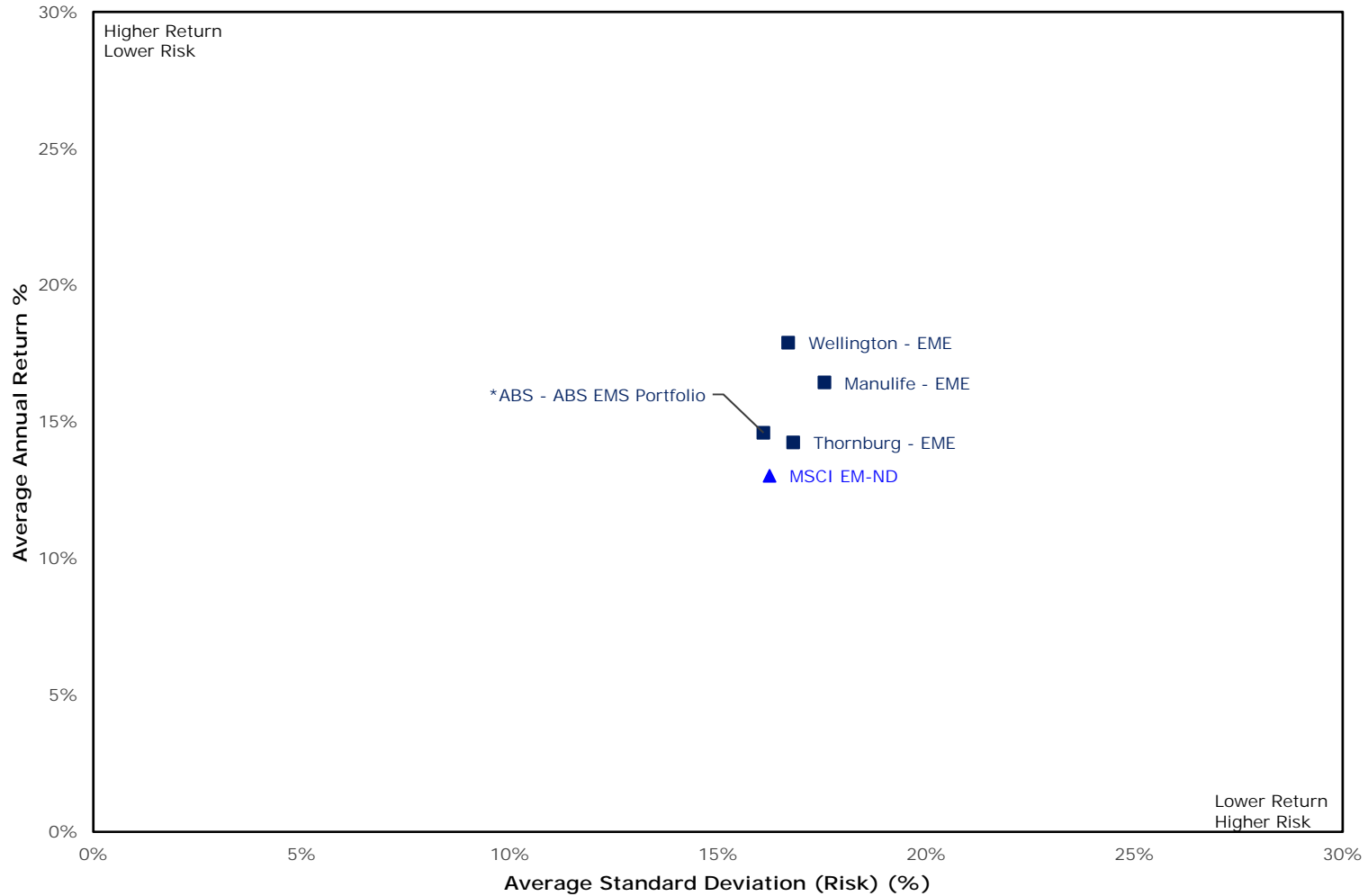
\*Strategy inception is 12/1/2017. Performance prior to this date is representative track record.



# 3 YEAR TOTAL RISK/RETURNS COMPARISON - (NET OF FEES)



# 5 YEAR TOTAL RISK/RETURNS COMPARISON - (NET OF FEES)

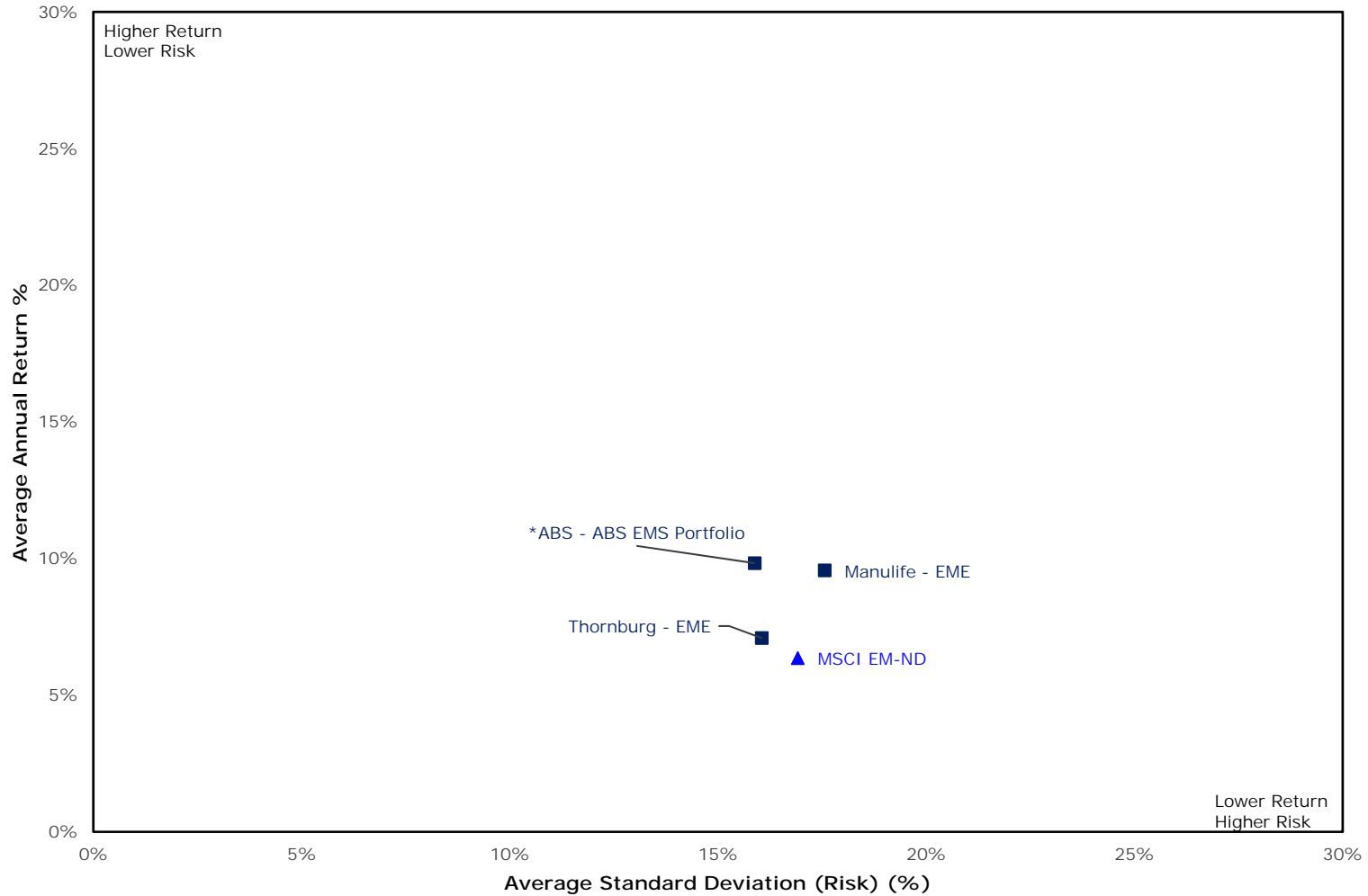


\*Strategy inception is 12/1/2017. Performance prior to this date is representative track record.

Past performance is no guarantee of future results

Performance as of June 30, 2021

# 7 YEAR TOTAL RISK/RETURNS COMPARISON - (NET OF FEES)

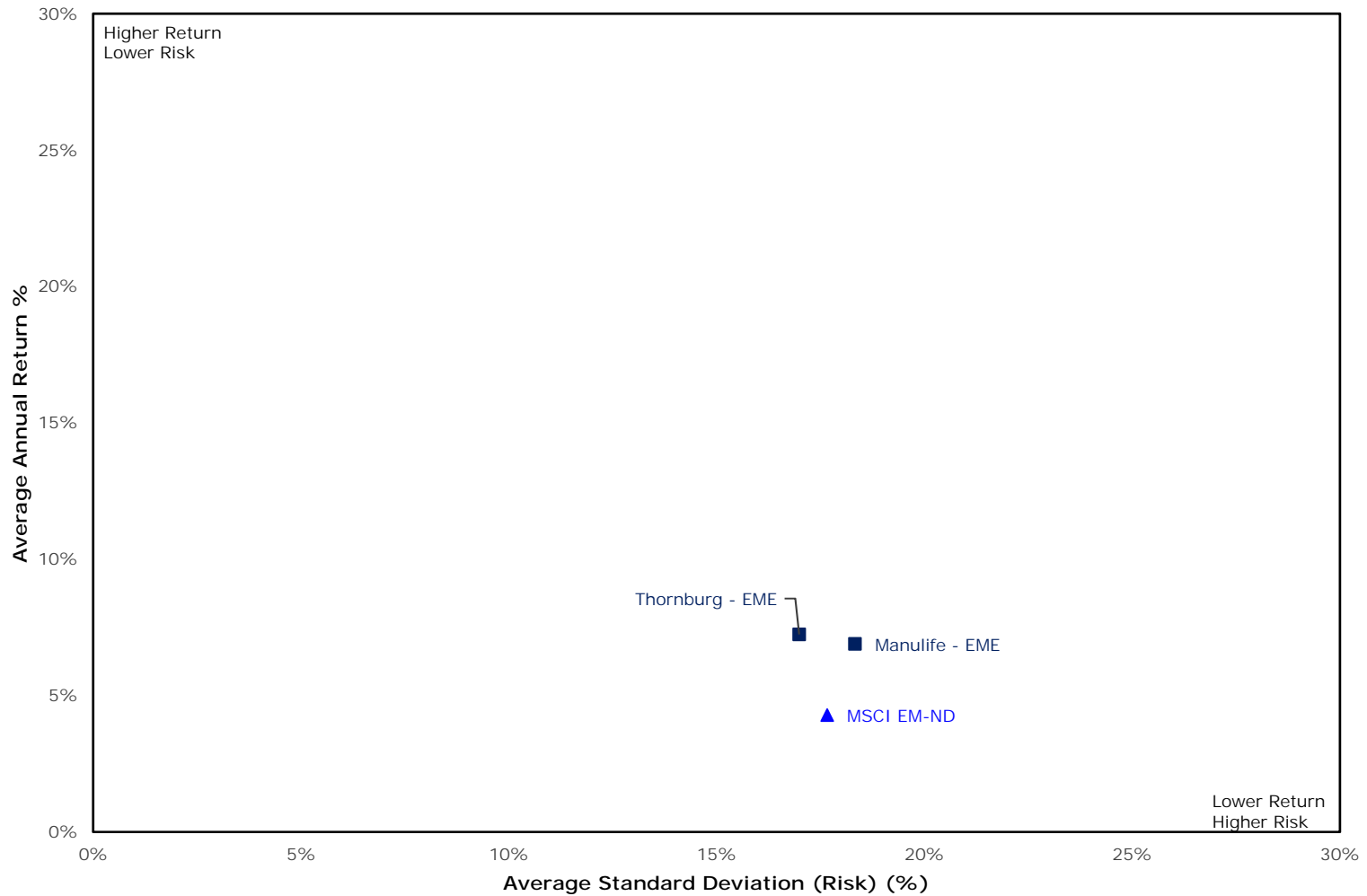


\*Strategy inception is 12/1/2017. Performance prior to this date is representative track record.

Past performance is no guarantee of future results

Performance as of June 30, 2021

# 10 YEAR TOTAL RISK/RETURNS COMPARISON - (NET OF FEES)





# APPENDIX

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# MANAGERS EXCLUDED AFTER FIRST ROUND

Fund	Vehicle	Fees	Fund AUM (MM)	Approach & Comments	Side Letter
Aberdeen	CF	First \$50M: 90 bps Next \$50M: 85 bps Over \$100M: 80 bps	\$22,712.4	- Aberdeen merged with Standard Life in 2017; AUM losses since 2018; Not Advantageous	Yes
Amundi	CIT	First \$100M: 50 bps Next \$100M: 45 bps Thereafter: 40 bps	\$3,076.3	- Fundamental All Cap; Not Advantageous	Yes
Ashmore	MF	\$20M at 100 bps	\$1,870.0	- Fundamental All Cap - Most assets in SMA; Relatively high fee; Not Advantageous	Yes*
Aubrey	CF	75 bps	\$711.0	- Fundamental All Cap - Total firm assets are ~\$1.5 billion; Strategy takes a growth approach; Not Advantageous	Yes
Candriam	CF	45 bps *	\$2,393.7	- Fundamental Mid/Large Cap - Wholly owned by NY Life; * Fee is early investor discount for the first \$150M invested in CF; Strategy takes a growth approach; Not Advantageous	Yes
Carrhae				- Incomplete submission (missing 4 required documents) - Unacceptable	
Connor, Clark & Lunn	CF (DLP)	First \$50M: 80 bps Next \$50M: 70 bps Thereafter: 60 bps	\$609.4	- Quantitative All Cap - Strategy has over 700 holdings; Not Advantageous	Yes
Coronation	CF	Opt I: First \$200M: 85 bps, Next \$200M: 82.5 bps, Next \$200M: 80 bps, Next \$200M: 77.5 bps, Thereafter: 75 bps Opt. II: First \$100M: 35 bps, Next \$50M: 30 bps, Next \$50M: 25 bps, Over \$200M: 20 bps flat (20% incentive fee)	\$2,230.0	- Fundamental All Cap - May hold investments which derives more than 15 per cent of its revenues from tobacco sales; Not Advantageous	TBD (Tobacco)
Driehaus Capital Management	CIT	Under \$20M: 80 bps If over \$20M: First \$50M: 75 bps, Next \$50M: 65 bps, Thereafter: 60bps (Other Expenses Cap: 10 bps)	\$4,398.6	- Combined All Cap - Strategy takes a growth approach; Recent departure of CEO; Not Advantageous	Yes
Eastspring Investments	CIT	Management Fee: 50 bps (Op Expense Cap: 15 bps)	\$1,676.0	- Fundamental All Cap - Strategy takes a value approach; Not Advantageous	Yes



\*Manager has tentatively agreed to the terms of the side letter but retain the right to negotiate in good faith later.

# MANAGERS EXCLUDED AFTER FIRST ROUND

Fund	Vehicle	Fees	Fund AUM (MM)	Approach & Comments	Side Letter
FountainCap	SMA	100 bps	\$1,266.0	- Fundamental All Cap - Strategy is China only; Strategy takes a growth approach; Unacceptable	Yes
GAM Investments	CF	40 bps	\$1,031.0	- Combined All Cap - Firm AUM losses since 2018; Not Advantageous	Yes*
Glovista Investments	SMA CF	60 bps	\$171.0	- Fundamental Large Cap - Diverse owned manager; Strategy is deep value; Strategy AUM under \$500; Not Advantageous	Yes
Grantham, Mayo, Van Otterloo	MF	Total Fees: 94 bps (87 bps mgmt. fee)	\$4,329.0	- Quantitative All Cap - Strategy takes a value approach; Firm AUM losses since 2018; Not Advantageous	Yes*
Newton Investment Management	CF MF	75 bps	\$2,400.0	- Fundamental All Cap - Wholly owned by BNY Mellon; Strategy takes a growth approach; Not Advantageous	Yes
Nipun Capital	CF	40 bps	\$387.0	- Quantitative All Cap - Firm and strategy both have under \$500 million in AUM; Not Advantageous	Yes
NS Partners	CF	First \$25M: 85 bps, Next \$25M: 80 bps Next \$50M: 70 bps, Thereafter: 60 bps	\$1,140.5	- Fundamental All Cap - Strategy takes a growth approach; Not Advantageous	Yes
Oaktree Capital	CF	80 bps	\$7,592.0	- Fundamental All Cap - Recently acquired by Brookfield Asset Management; Not Advantageous	Yes*
Polar Capital	MF	Option I: 50 bps Option II: 20 bps (20% performance fee)	\$486.6	- Fundamental All Cap - Strategy AUM under \$500M; takes a growth approach; Not Advantageous	Tentative
Victory Capital	CF	60 bps	\$3,176.9	Not Advantageous	Yes
William Blair	CIT / MF	First \$20M - 1.00%, Next \$30M - 0.80% Next \$50M - 0.70%, Next \$50M - 0.65% Next \$50M - 0.60%, Next \$200M - 0.40%, Thereafter - 0.35% MF: (R6) - 1.19% (I) - 1.26%	\$5,997.9	- Fundamental All Cap - Relatively high fees; Strategy takes a growth approach; Not Advantageous	Tentative



\*Manager has tentatively agreed to the terms of the side letter but retain the right to negotiate in good faith later.

# TOTAL FIRM ASSETS

Firm	YTD		2020		2019		2018	
	\$MM	# of accounts	\$MM	# of accounts	\$MM	# of accounts	\$MM	# of accounts
<b>Emerging Markets Equity</b>								
ABS Investment Management LLC	6,761	531	6,579	523	6,068	NA*	5,250	NA*
Manulife Investment Management	591,362	2,724	580,604	2,517	531,484	2,260	496,850	2,405
Thornburg Investment Management Inc	45,367	766	43,516	701	42,660	766	40,520	1,165
Wellington Management Company LLP	1,315,723	2,439	1,291,419	2,383	1,154,735	2,369	1,003,389	2,327

\*Not Available

# TOTAL PRODUCT ASSETS

Firm/Product	YTD		2020		2019		2018	
	\$MM	# of accounts	\$MM	# of accounts	\$MM	# of accounts	\$MM	# of accounts
<b>Emerging Markets Equity</b>								
ABS - ABS EMS Portfolio	1,341	35	1,183	34	699	16	268	9
Manulife - EME No Data	2,699	4	2,677	4	2,342	4	1,652	4
Thornburg - EME No Data	1,208	4	1,108	4	937	4	770	4
Wellington - EME No Data	774	3	692	3	243	3	164	3



As of March 31, 2021

# PRODUCT ASSETS BY VEHICLE TYPE

Firm/Product	Separate Account		Commingled Fund		Inst. Mutual Fund	Retail Mutual Fund
	\$MM	# of accounts	\$MM	# of accounts	\$MM	\$MM
Emerging Markets Equity						
ABS - ABS EMS Portfolio	0	0	1,341	35	0	0
Manulife - EME	2,654	3	45	1	0	0
Thornburg - EME	0	0	0	2	0	1,208
Wellington - EME	234	1	540	2	0	0



# LITIGATION

Firm	Manager's explanation of Prior or Pending Litigation
Emerging Markets Equity	
ABS Investment Management LLC	There is no prior or pending litigation.
Manulife Investment Management	<p>Litigation: During the past 12 months*            Manulife Investment Management has not been the subject of any litigation, formal investigation or administrative proceedings related to its investment management activities that were either materially adverse to the Firm's business operations or had a materially unfavorable outcome to the Firm.</p> <p>As an affiliate of a global organization, our affiliates are at times involved in litigation both as a defendant and as a plaintiff. Litigation naming a Manulife Financial Corporation entity as a defendant ordinarily involves its activities as a provider of insurance protection and wealth management products, or as an investment adviser, employer or taxpayer. None of our affiliates' litigation or investigation matters are believed to be material to Manulife Investment Management's ability to provide investment management services.</p> <p>*As of June 30 2021. Updated semiannually.</p> <p>Insurance: Insurance coverage varies by the entities within Manulife Investment Management. Additional details are available upon request.</p>
Thornburg Investment Management Inc	<p>Neither the firm, nor its principals, nor its investment professionals have been involved in litigation relating to its investment management services.</p> <p>In November 2019, Thornburg was named as a defendant in a civil complaint filed by a former employee related to employment matters. This matter is currently ongoing and the firm does not consider it material.</p>
Wellington Management Company LLP	From time to time, Wellington Management is involved in litigation that arises in the ordinary course of its business, none of which is material with respect to the firm's investment management business or its clients.



# DISCLOSURE

## Data Disclosure:

- Investment fees can have a significant effect on total returns. The results profiled herein reflect the deduction of management fees and other expenses, except where specifically noted.

## Footnotes:

### Firm Ownership

- Thornburg Investment Management, Inc: Thornburg is 32% owned by Family, and 50% owned by other entities.
- ABS Investment Management, LLC: In 2011 Evercore LP completed an investment in ABS. In accordance with the purchase agreement, Evercore purchased a 45% non-controlling interest in the Advisor.

### Fees & Expenses

- Wellington Management Company, LLP: Operating Expenses are capped at 0.15% per annum of the net assets of the Portfolio. Operating Expenses above the capped amount will be borne by the Trustee.
- ABS Investment Management, LLC: ABS is additionally proposing a 0.45% management fee with an incentive fee of 10% over the MSCI Emerging Markets IMI Index



# DISCLAIMER

- **This report contains summary information regarding the investment management approaches described herein but is not a complete description of the investment objectives, policies or portfolio management and research that supports these approaches. This analysis does not constitute a recommendation to implement any of the aforementioned approaches.**
- **Past performance is no guarantee of future results.**
- **Information on market indices was provided by sources external to NEPC, and other data used to prepare this report was obtained directly from the investment manager(s). While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.**
- **This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.**





# Q2 2021 INVESTMENT REPORT

MWRA EMPLOYEES' RETIREMENT SYSTEM

AUGUST 2021

Sebastian Grzejka, CAIA, Principal  
Kiley Fischer, Consulting Analyst





# GOALS & OBJECTIVES

## Investment Return Objective

**“Its primary goal is to provide promised benefits to participants and beneficiaries of the MWRA Employees’ Retirement system. Plan assets should be equal to or greater than the present value of the projected benefit obligations (“fully funded”). When Plan assets are less than the present value of projected benefit obligations, a schedule will be established and a plan will be in place to meet a fully funded status. When achieving return objectives required to fully fund the system, the Board is intent on controlling risk. Consistency of returns and risk of loss are primary considerations. The Board has also determined that the annual performance of plan assets should not vary substantially from returns achieved by other public pension funds with similar goals and objectives.”**

## Return Expectations

**The investment growth should be maintained in such a manner that the minimum nominal rate of return does not cause a negative real rate of return over a full market cycle:**

**Time Horizon:** Return assumptions will be based on a ten year time horizon with a detailed review and analysis to be made at least annually to monitor allocations and assumptions. Should a manager deviate from proscribed mandate or expected risk and return profile by a consequential degree, that manager may be reevaluated at any time

**Liquidity Needs:** Presently contributions exceed plan withdrawals to provide benefits, payouts, and/or plan expenses. Portfolio liquidity will be managed based on the cash flow needs of the System.

**Regulatory Considerations:** Assets of this Fund shall be invested in a manner consistent with the fiduciary standards established under Code of Massachusetts Regulations 840 (“840 CMR”). The Board shall also use as precedent the Employee Retirement Income Security Act (ERISA).



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<b>Second Quarter Plan Performance</b>	<b>2</b>





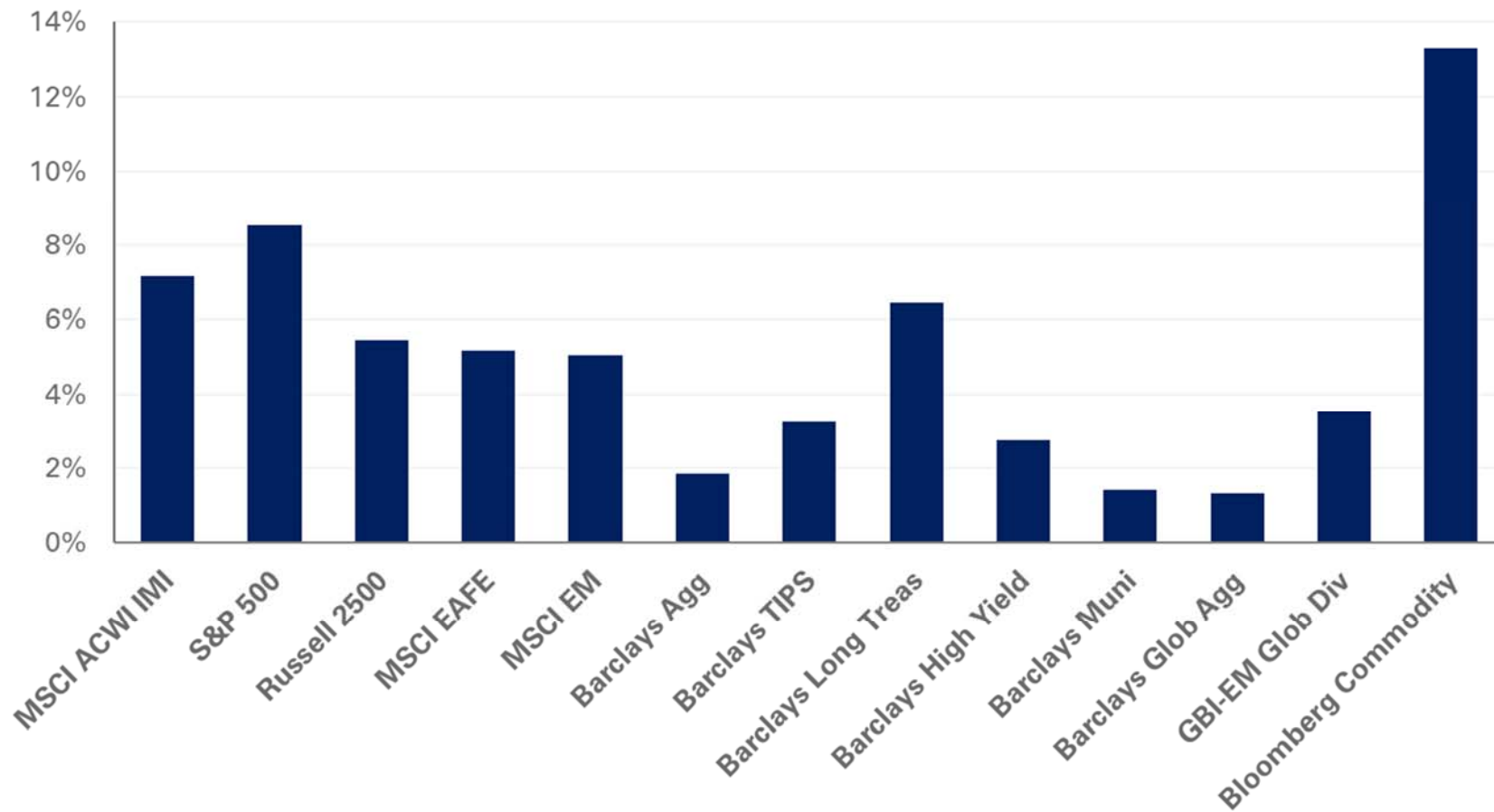
# MARKET REVIEW



PROPRIETARY & CONFIDENTIAL

# S&P 500 OUTPERFORMED

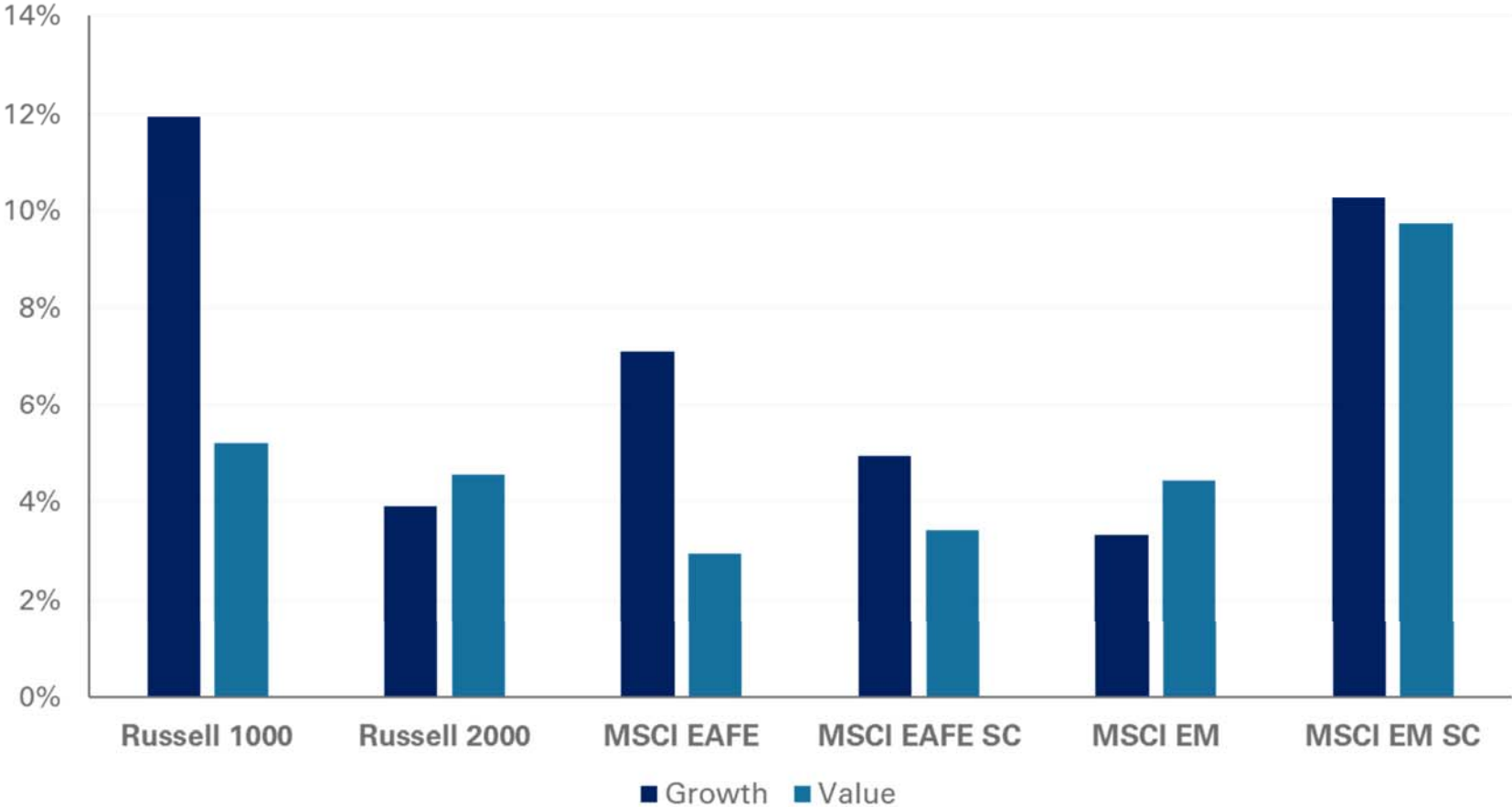
## QUARTERLY RETURN



Source: MSCI, S&P, Russell, MSCI, Bloomberg, JPM, FactSet

# U.S. LARGE CAP GROWTH OUTPERFORMED

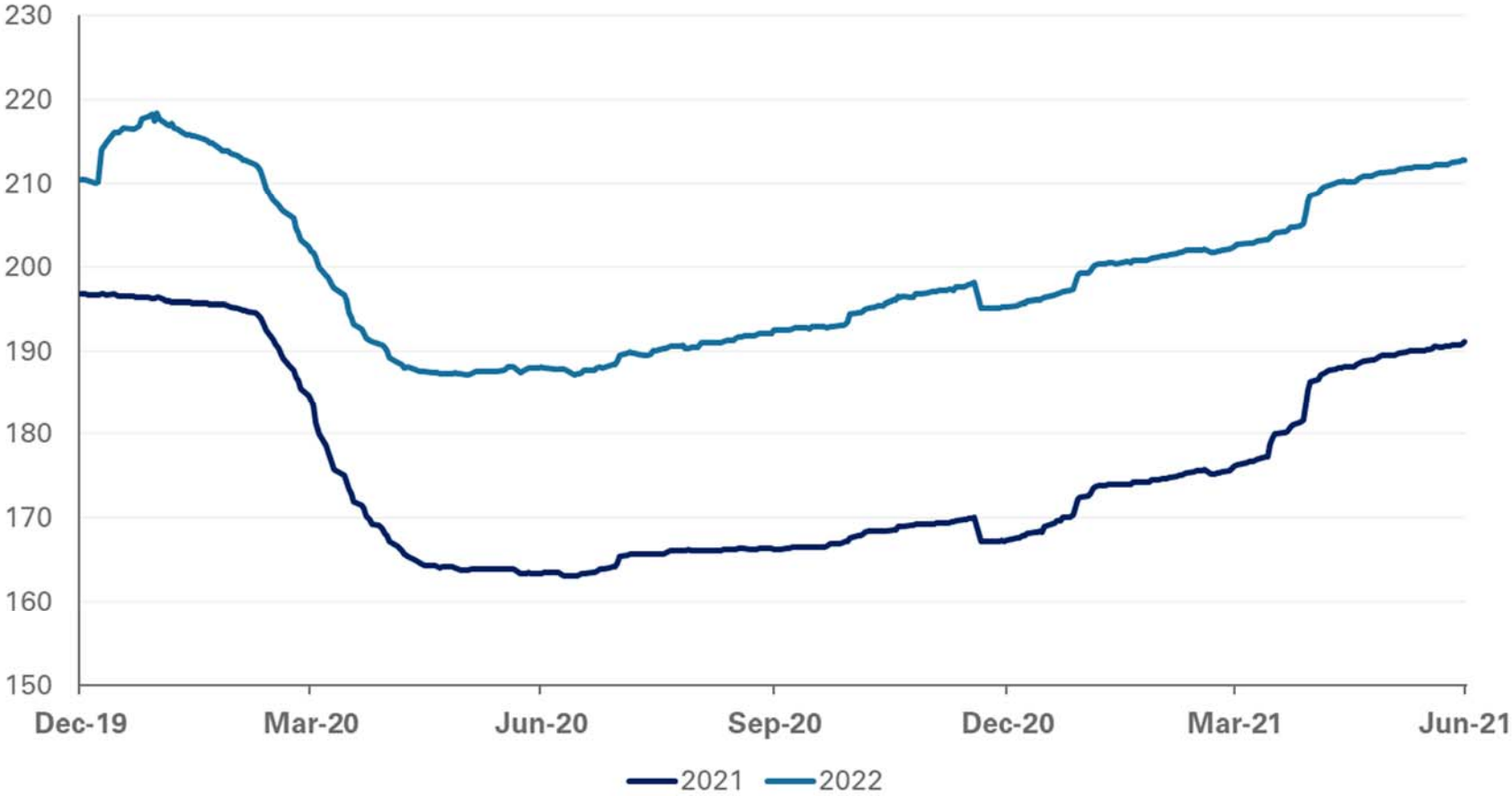
## QUARTERLY RETURN



Source: Russell, MSCI, FactSet

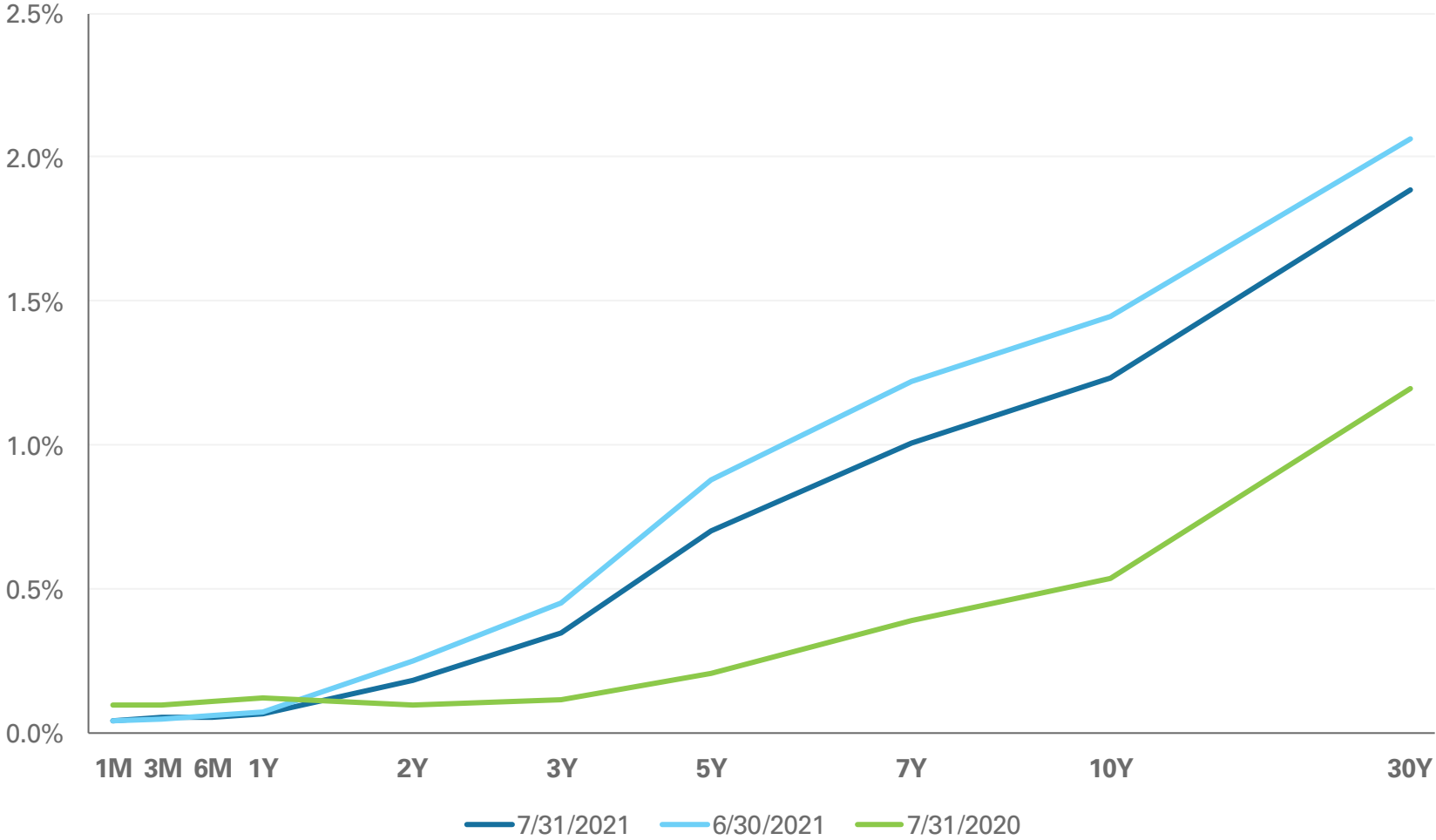
# EPS FORECASTS RECOVERED TO PRE-COVID LEVELS

## S&P 500 EARNINGS PER SHARE FORECASTS



Source: S&P, FactSet

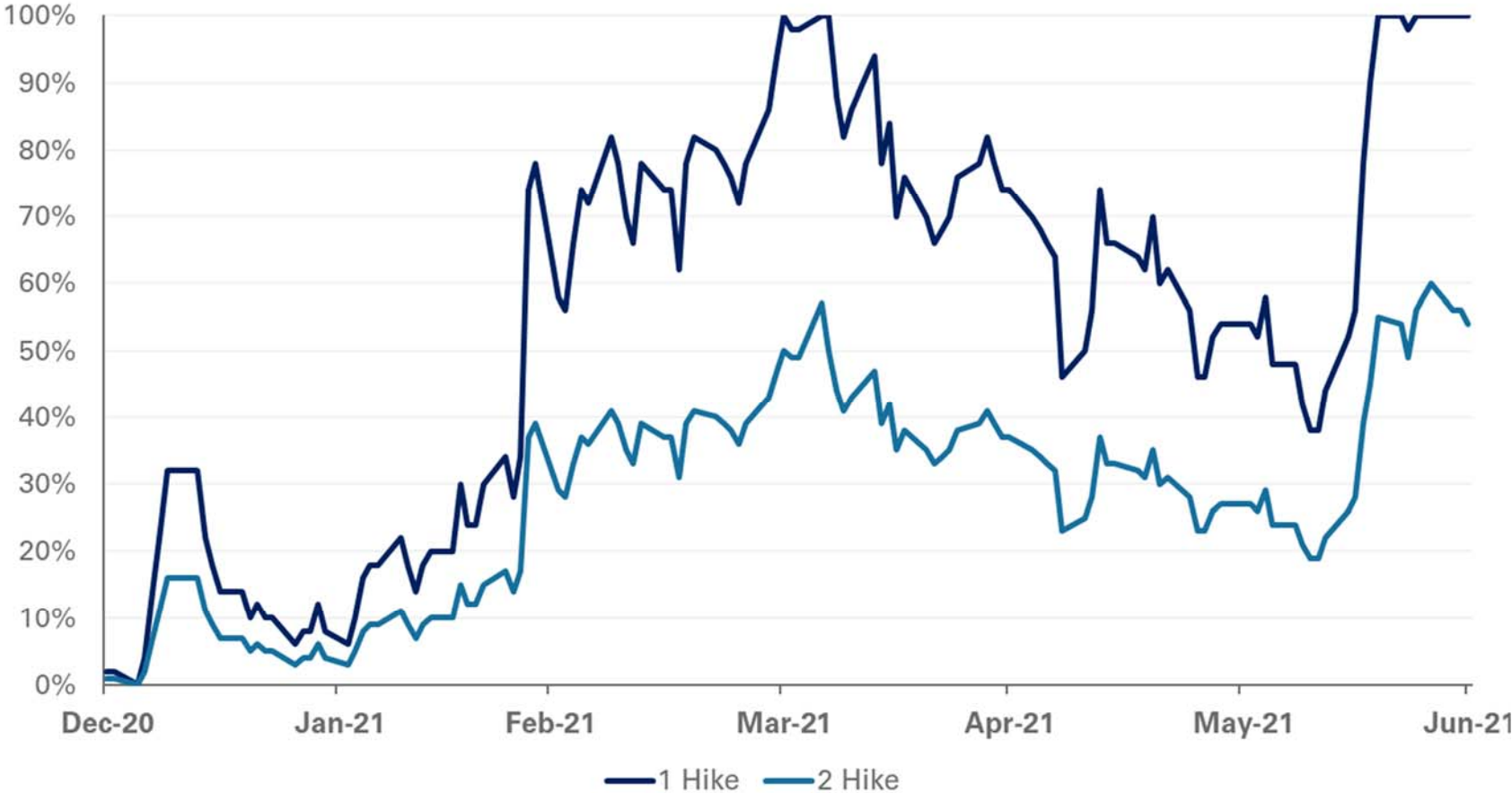
# US TREASURY YIELD CURVE



Source: FactSet

# MARKET PRICED RATE HIKE IN 2022

PROBABILITY OF FED FUNDS HIKE BY THE END OF 2022

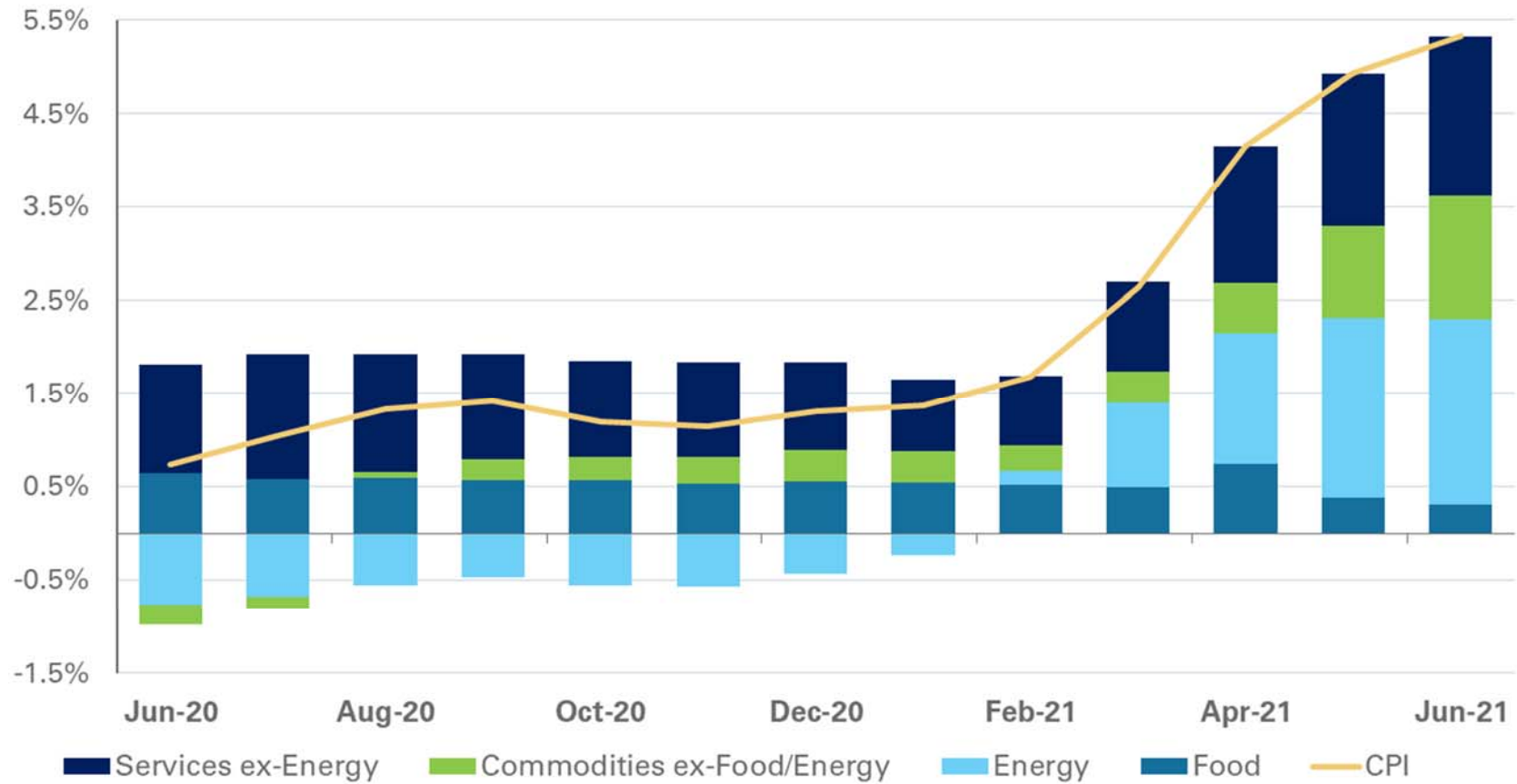


Source: FactSet



# REALIZED INFLATION ACCELERATED

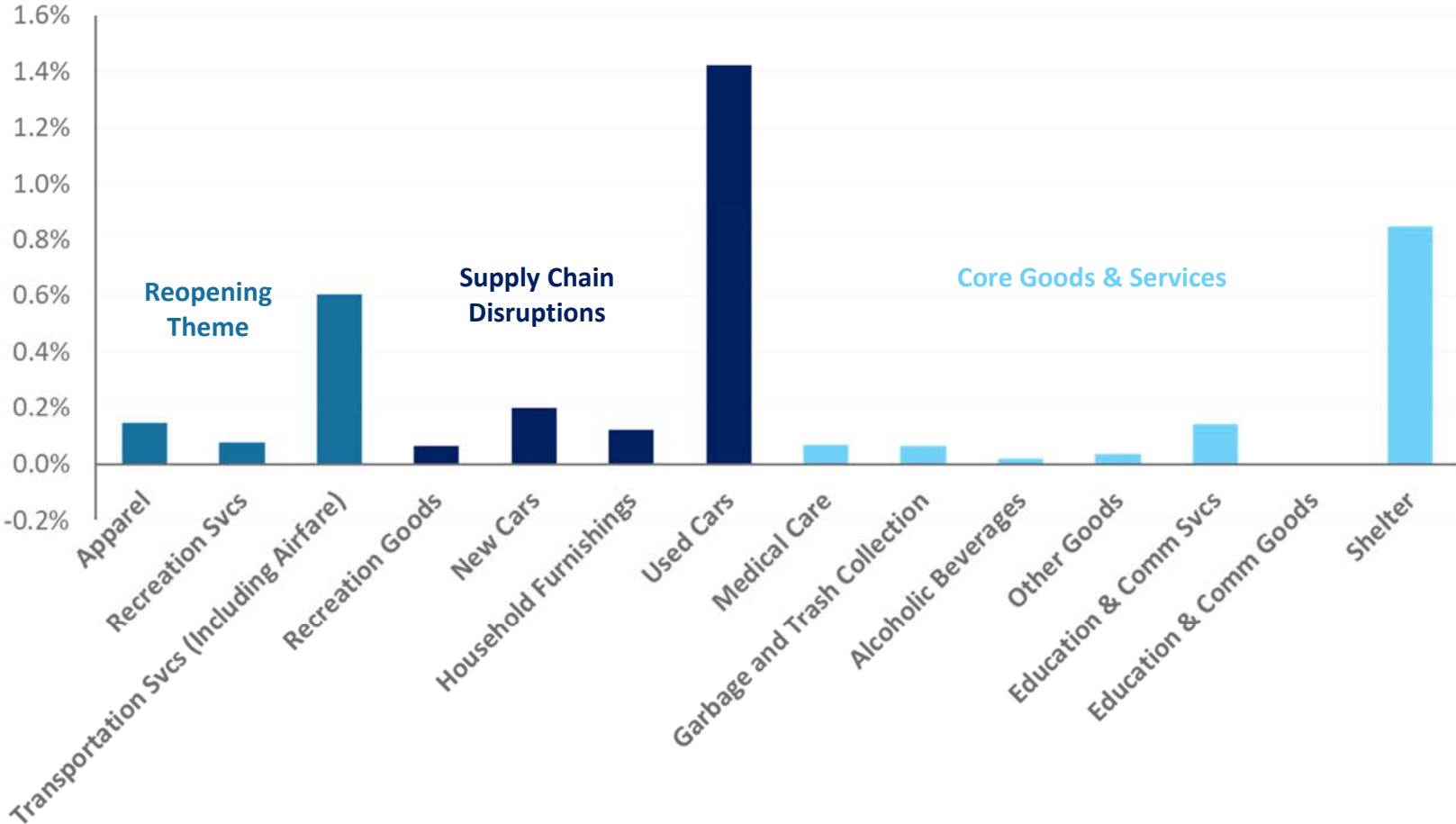
## MAJOR COMPONENTS OF YEAR-OVER-YEAR U.S. CPI



Source: Bureau of Labor Statistics, FactSet, NEPC; as of 06/30/2021

# UNUSUALLY HIGH INFLATION ACTIVITY

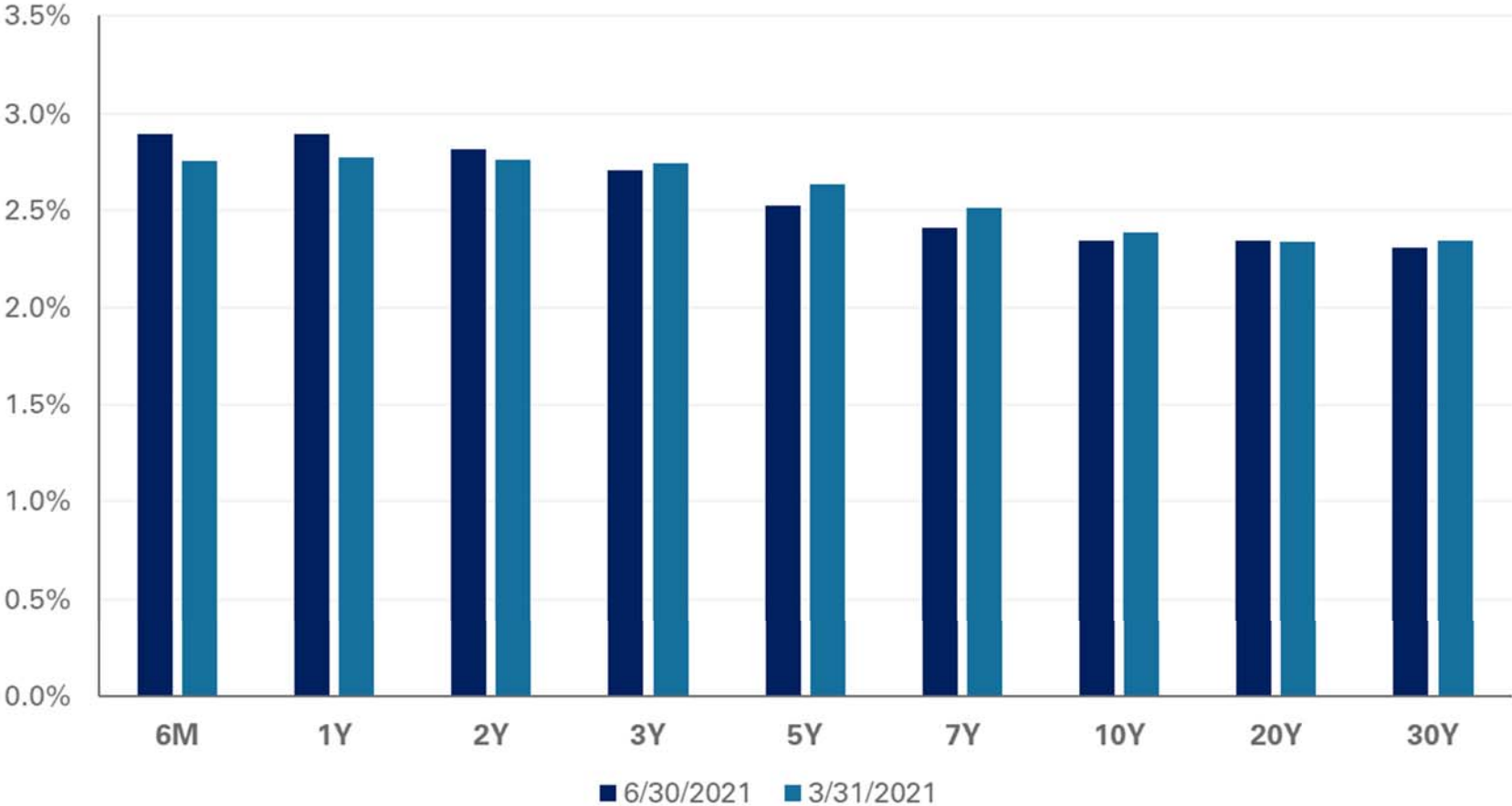
## CONTRIBUTION TO YEAR-OVER-YEAR U.S. CPI-U



Source: Bureau of Labor Statistics, FactSet, NEPC; as of 06/30/2021

# SHORT-TERM INFLATION EXPECTATION ROSE

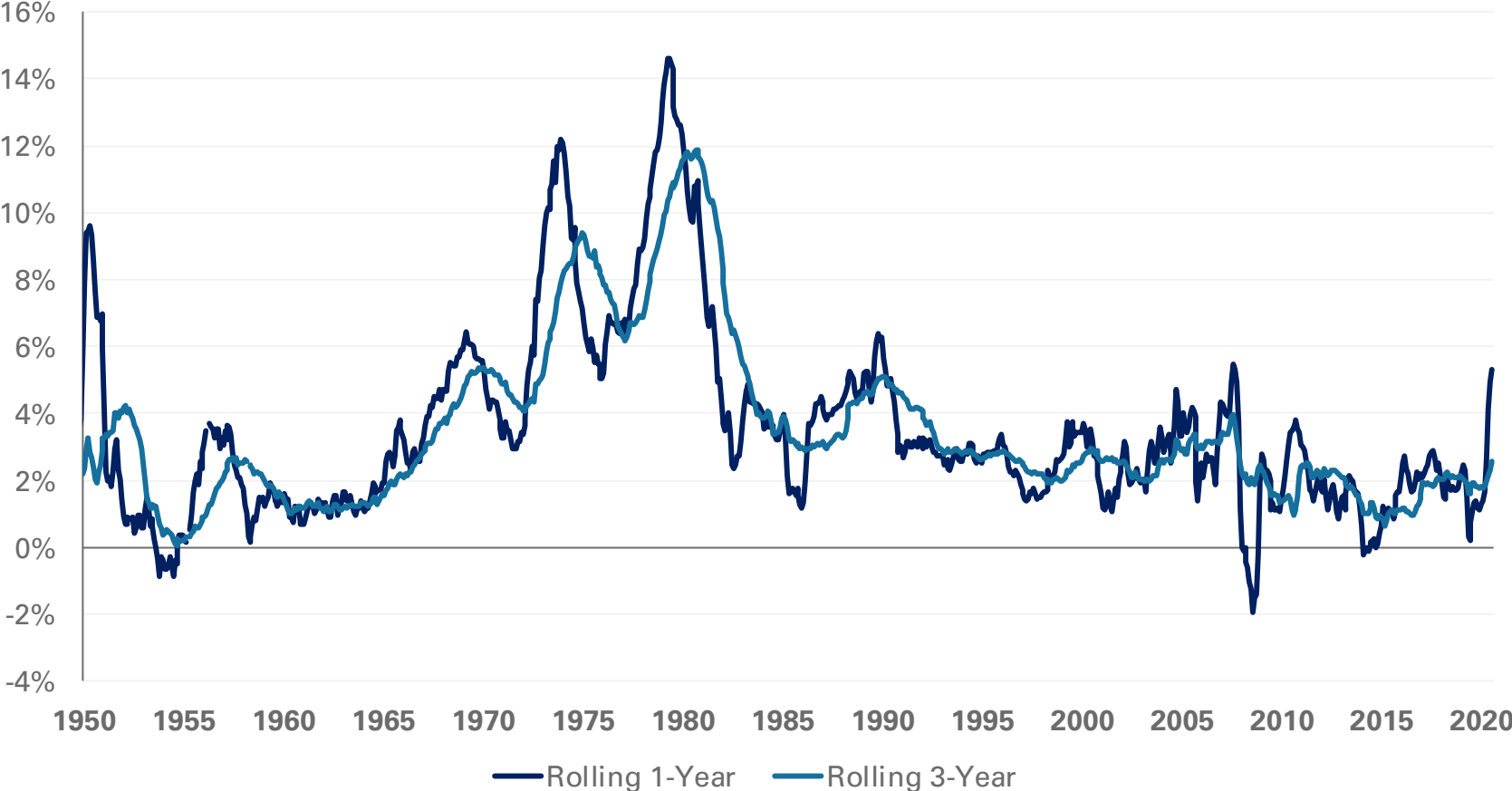
## U.S. BREAKEVEN INFLATION



Source: FactSet

# INFLATION

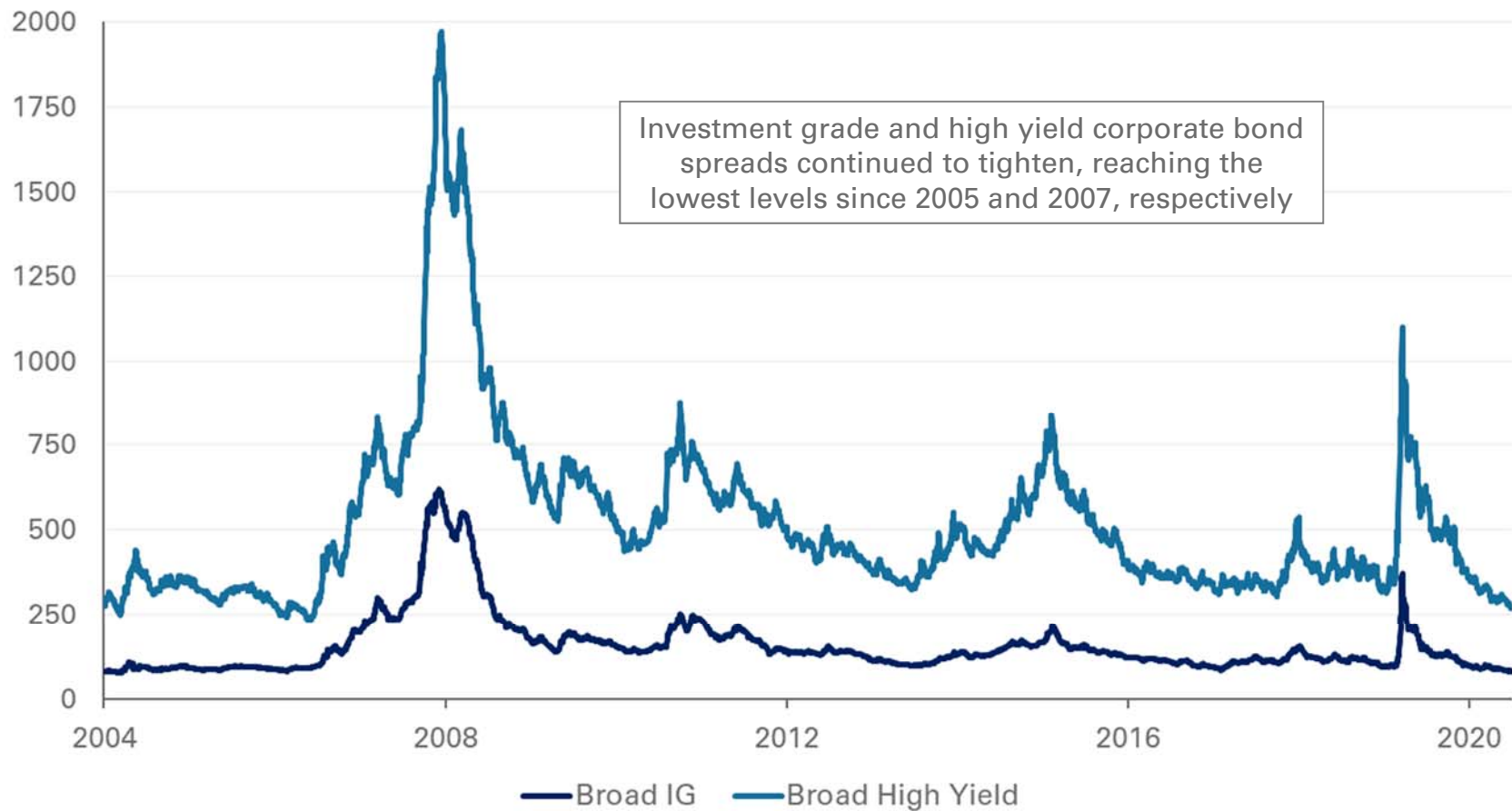
## U.S. CONSUMER PRICE INDEX



Source: Bureau of Labor Statistics, FactSet

# CORPORATE SPREADS NEAR LOWS

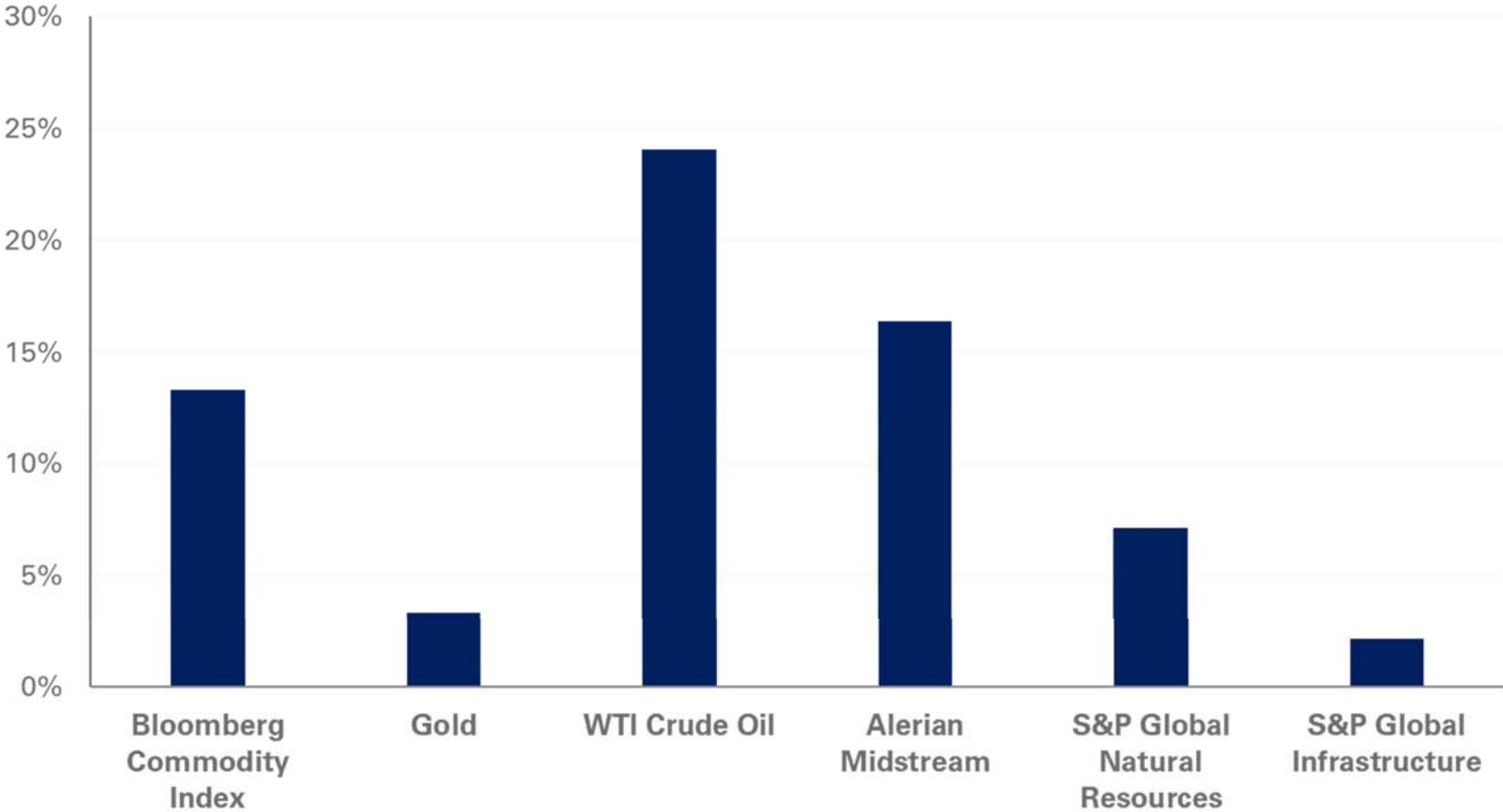
## OPTION ADJUSTED CREDIT SPREADS



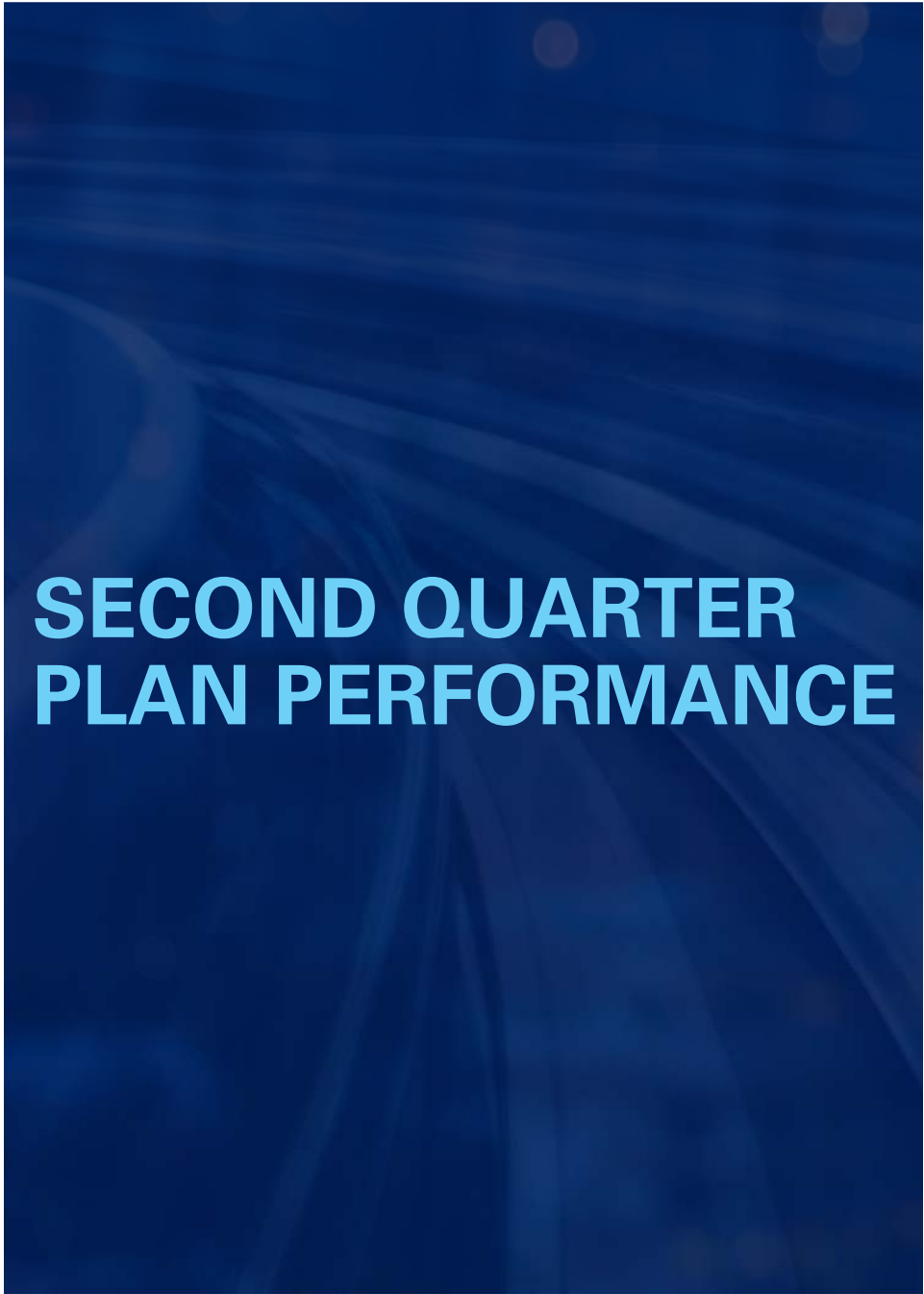
Source: Bloomberg, FactSet

# REBOUND IN OIL PRICES BOOSTED REAL ASSETS

## QUARTERLY RETURN



Source: Bloomberg, Alerian, S&P, FactSet



# SECOND QUARTER PLAN PERFORMANCE

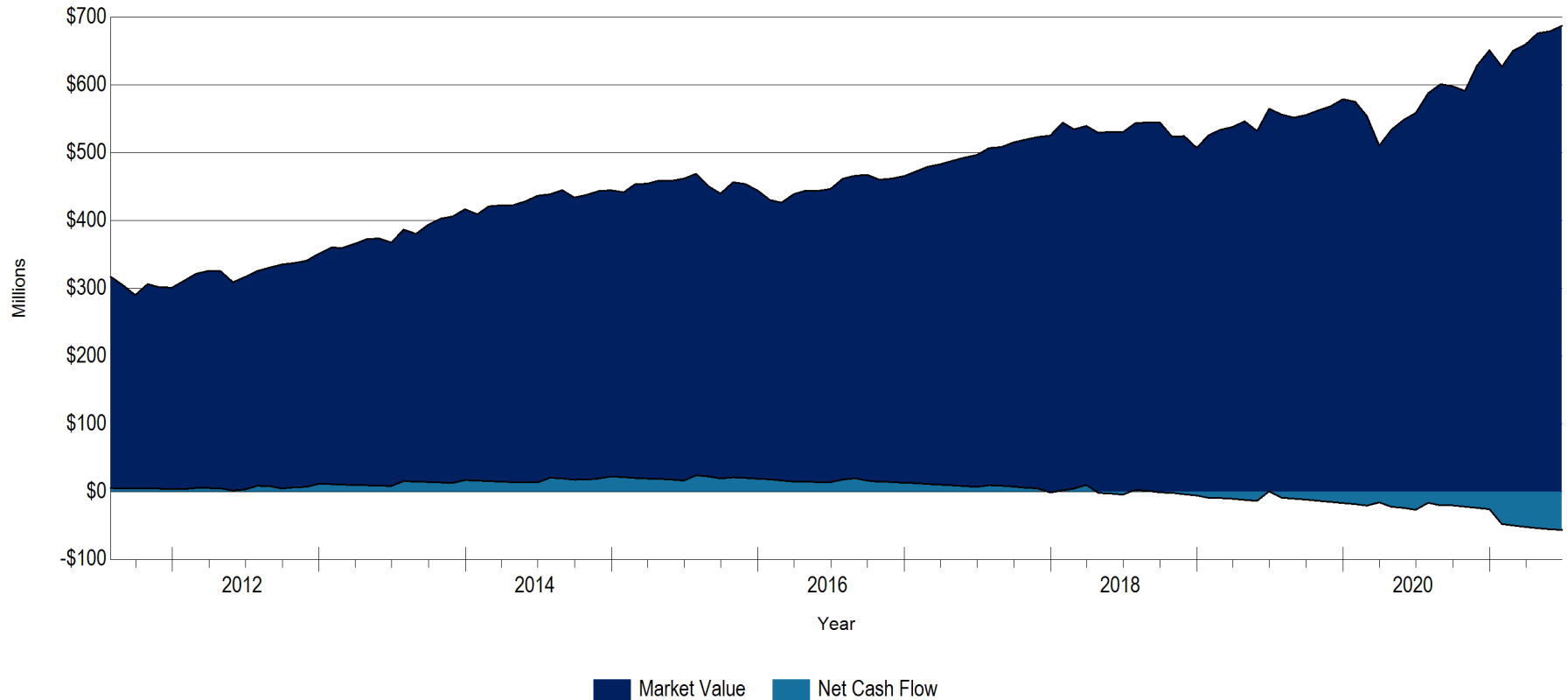


PROPRIETARY & CONFIDENTIAL

# MWRA Employees' Retirement System

## TOTAL FUND ASSET GROWTH SUMMARY

10 Years Ending June 30, 2021



	Last Three Months	Year-To-Date	One Year	Three Years	Five Years	Seven Years	Ten Years
Beginning Market Value	\$659,993,272	\$651,404,918	\$558,856,818	\$530,589,542	\$446,679,027	\$436,645,592	\$313,967,508
Net Cash Flow	-\$4,387,284	-\$30,577,411	-\$29,687,854	-\$51,979,567	-\$70,378,344	-\$69,933,910	-\$56,544,958
Net Investment Change	\$31,979,684	\$66,758,165	\$158,416,707	\$208,975,696	\$311,284,989	\$320,873,990	\$430,163,122
Ending Market Value	\$687,585,672	\$687,585,672	\$687,585,672	\$687,585,672	\$687,585,672	\$687,585,672	\$687,585,672

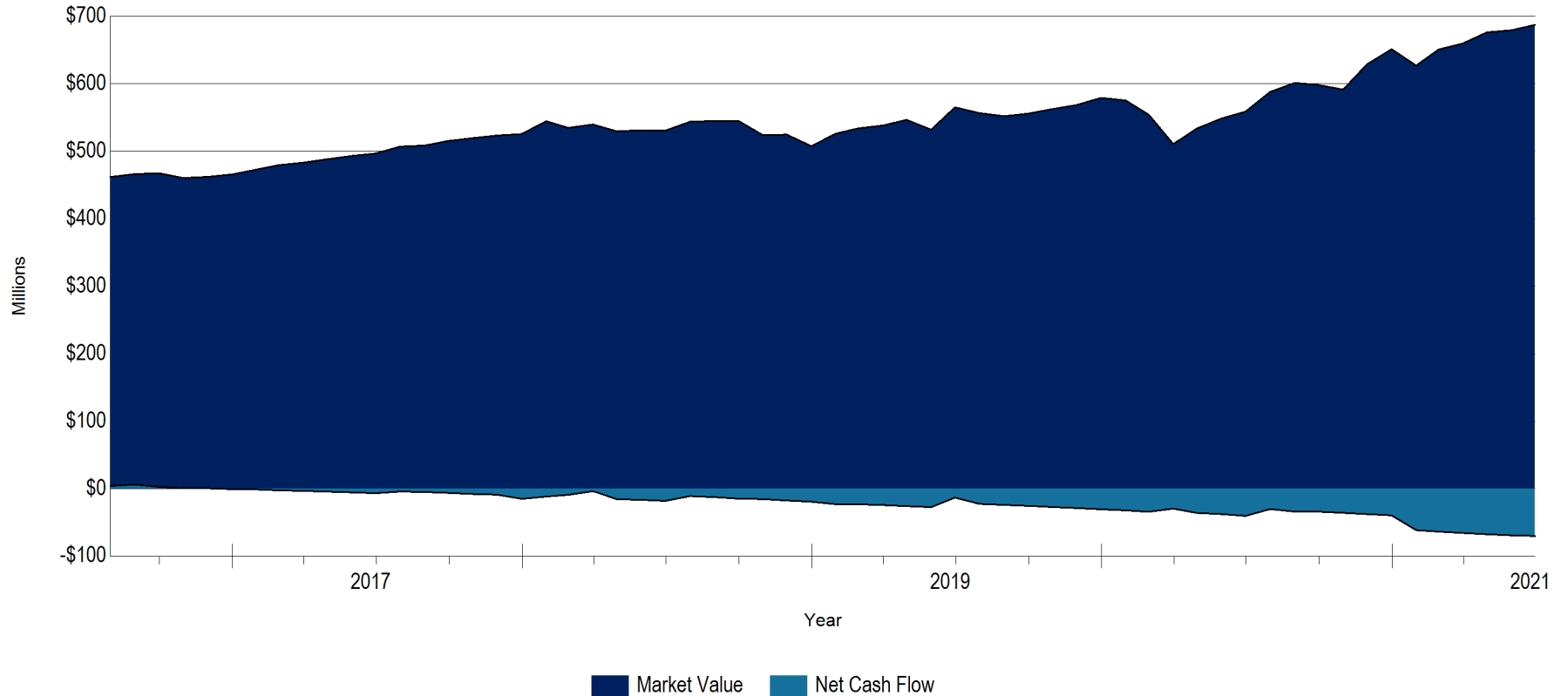




# MWRA Employees' Retirement System

## TOTAL ASSET GROWTH SUMMARY-CALENDAR YEAR

5 Years Ending June 30, 2021

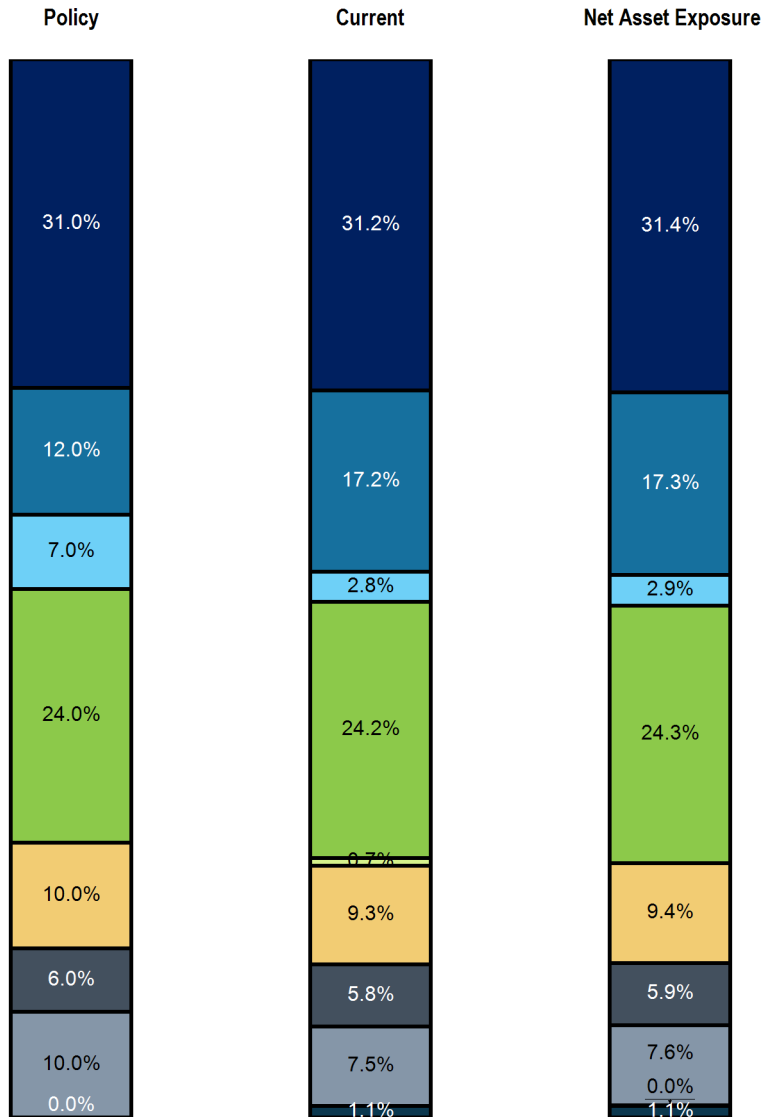


	2016	2017	2018	2019	2020
Beginning Market Value	\$444,744,803	\$465,451,611	\$525,597,128	\$507,653,878	\$579,228,207
Net Cash Flow	-\$6,027,819	-\$14,389,228	-\$4,272,726	-\$11,215,192	-\$8,986,694
Net Investment Change	\$26,946,982	\$74,534,744	-\$13,670,523	\$82,789,521	\$81,163,404
Ending Market Value	\$465,663,966	\$525,597,128	\$507,653,878	\$579,228,207	\$651,404,918



# MWRA Employees' Retirement System

## TOTAL FUND ASSET ALLOCATION vs. POLICY



Asset Allocation vs. Target			
	Policy	Current	Net Asset Exposure
Equity - Domestic	31.0%	31.2%	31.4%
Equity - International	12.0%	17.2%	17.3%
Emerging Equity	7.0%	2.8%	2.9%
Fixed Income	24.0%	24.2%	24.3%
Balanced	--	0.7%	--
Private Equity	10.0%	9.3%	9.4%
Hedge Funds	6.0%	5.8%	5.9%
Real Estate	10.0%	7.5%	7.6%
Real Assets	--	--	0.0%
Cash	0.0%	1.1%	1.1%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Asset class weights may not add up to 100% due to rounding.

Real Assets include Commodities, Real Estate, and TIPS.

Cash includes Other.

PIMCO All Asset reported on 1 Qtr. lag.

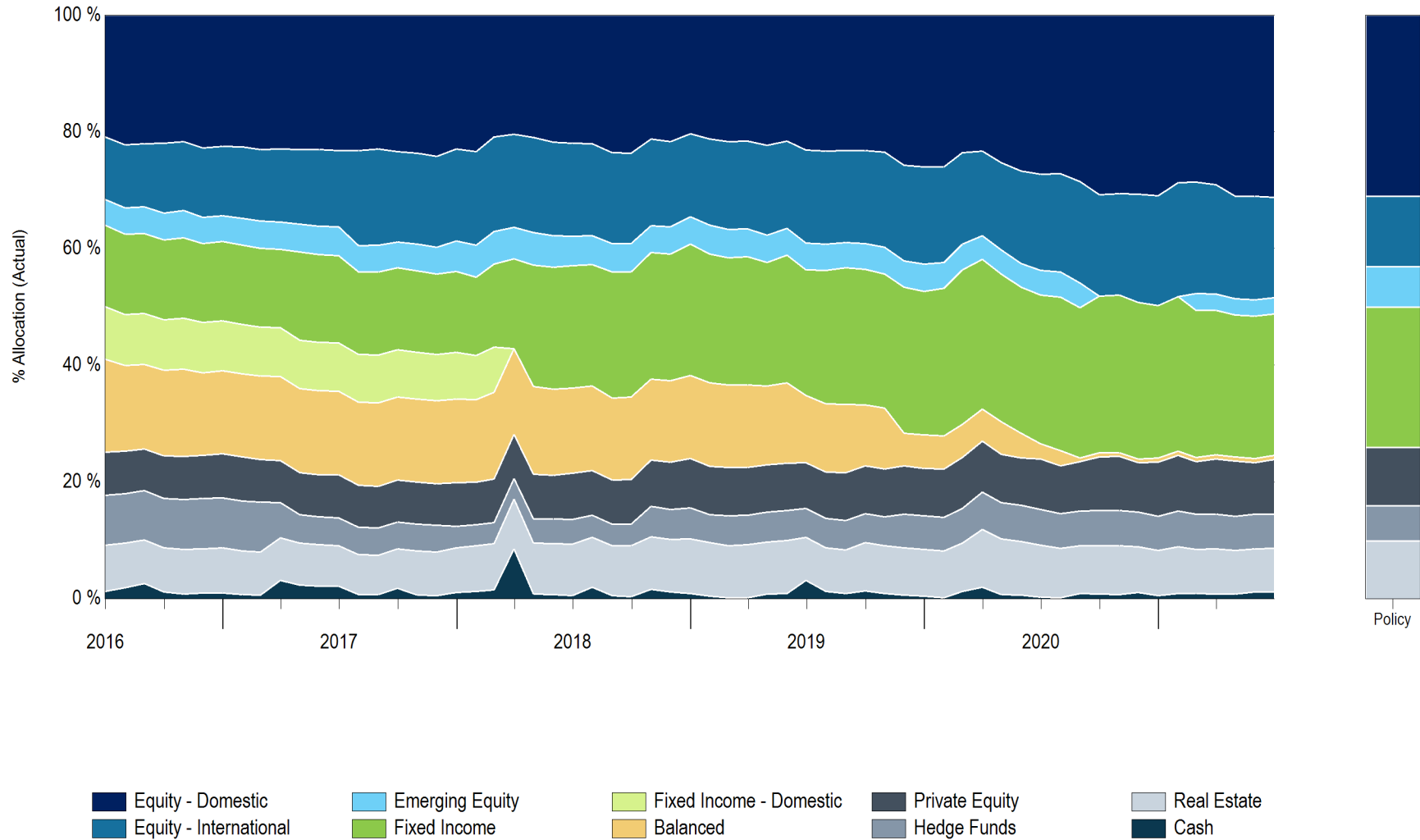
Policy Index Consists of: 24% S&P 500, 7% Russell 2000, 12% MSCI ACWI IMI, 7% MSCI Emerging Markets, 10% BBgBarc US Aggregate TR, 4% BBgBarc US TIPS TR, 10% BBgBarc US Universal TR, 10% NCREIF Property Index, 10% CJA US All PE, 6% HFRI Fund of Funds Composite Index.



# MWRA Employees' Retirement System

## TOTAL FUND ASSET ALLOCATION HISTORY

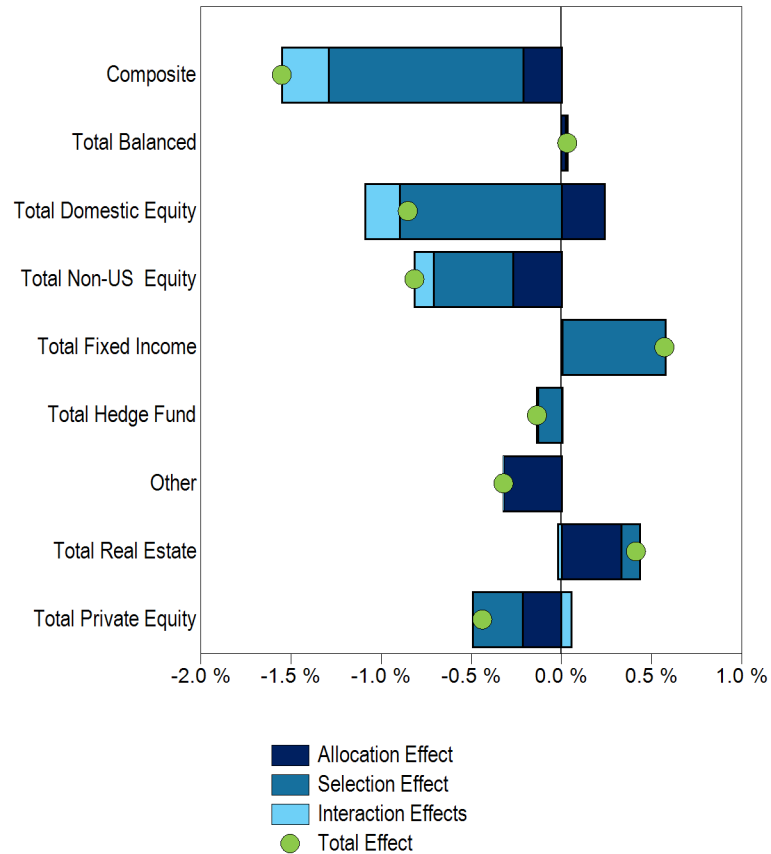
Asset Allocation History



# MWRA Employees' Retirement System

## TOTAL FUND ATTRIBUTION

Attribution Effects  
1 Year Ending June 30, 2021



Attribution Summary  
1 Year Ending June 30, 2021

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Balanced	29.1%	22.7%	6.4%	0.0%	0.0%	0.0%	0.0%
Total Domestic Equity	41.7%	45.7%	-4.0%	-0.9%	0.2%	-0.2%	-0.9%
Total Non-US Equity	35.1%	37.7%	-2.6%	-0.4%	-0.3%	-0.1%	-0.8%
Total Fixed Income	3.9%	2.1%	1.8%	0.6%	0.0%	0.0%	0.6%
Total Hedge Fund	16.3%	18.3%	-2.0%	-0.1%	0.0%	0.0%	-0.1%
Other	0.0%	0.1%	0.0%	0.0%	-0.3%	0.0%	-0.3%
Total Real Estate	8.2%	7.4%	0.9%	0.1%	0.3%	0.0%	0.4%
Total Private Equity	32.3%	34.7%	-2.4%	-0.3%	-0.2%	0.1%	-0.4%
<b>Total</b>	<b>23.8%</b>	<b>25.3%</b>	<b>-1.6%</b>	<b>-1.1%</b>	<b>-0.2%</b>	<b>-0.3%</b>	<b>-1.6%</b>

Note: Policy weights reflect the beginning of the period target weights.

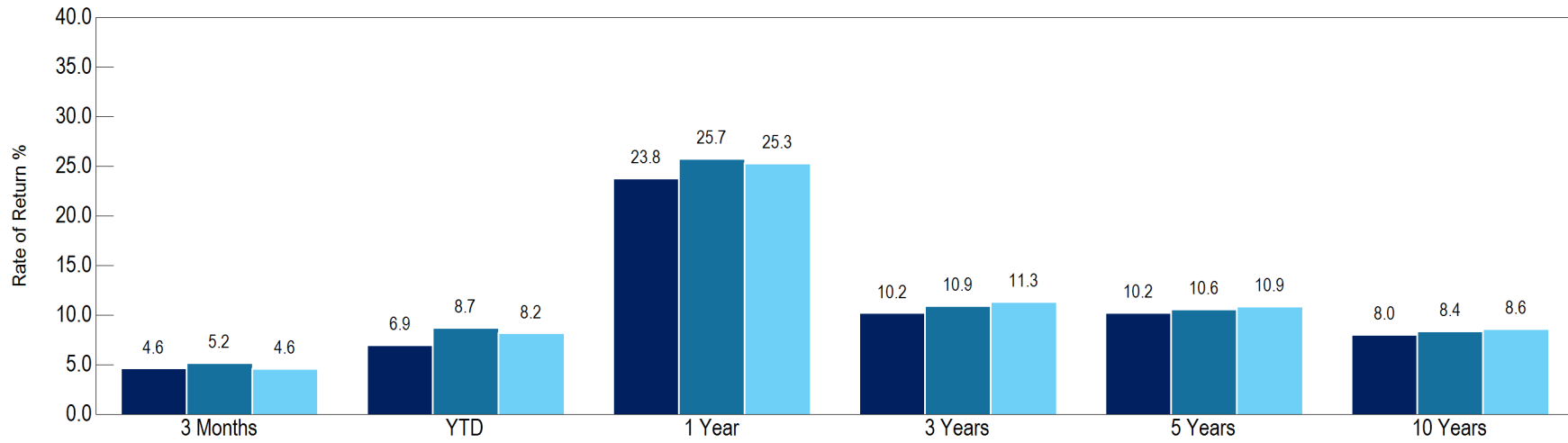
Note: Plan attribution is a static, return based calculation and the results reflect the composites shown. As a result, the total returns shown may vary from the calculated returns shown on the performance summary.



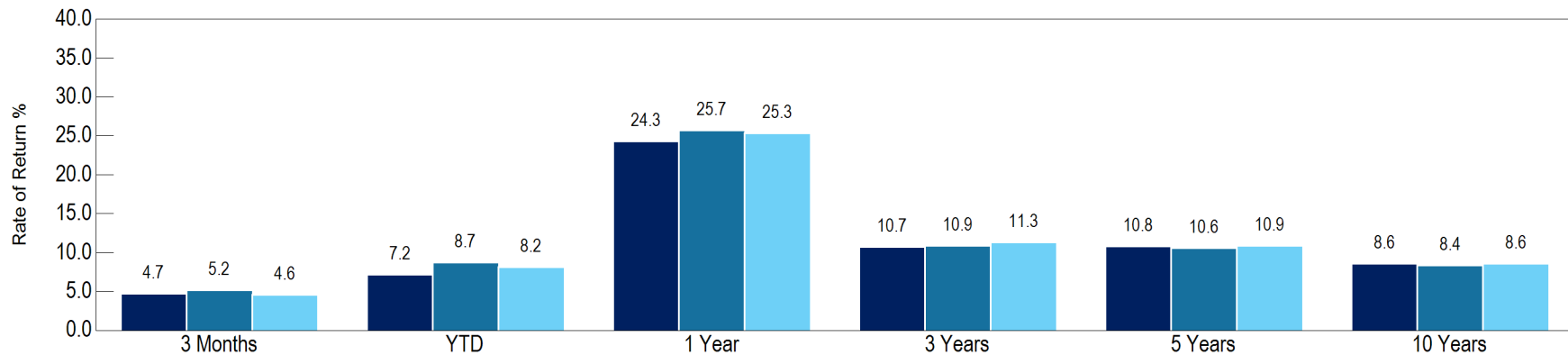
# MWRA Employees' Retirement System

## TOTAL FUND RETURN SUMMARY

Return Summary Net



Return Summary Gross



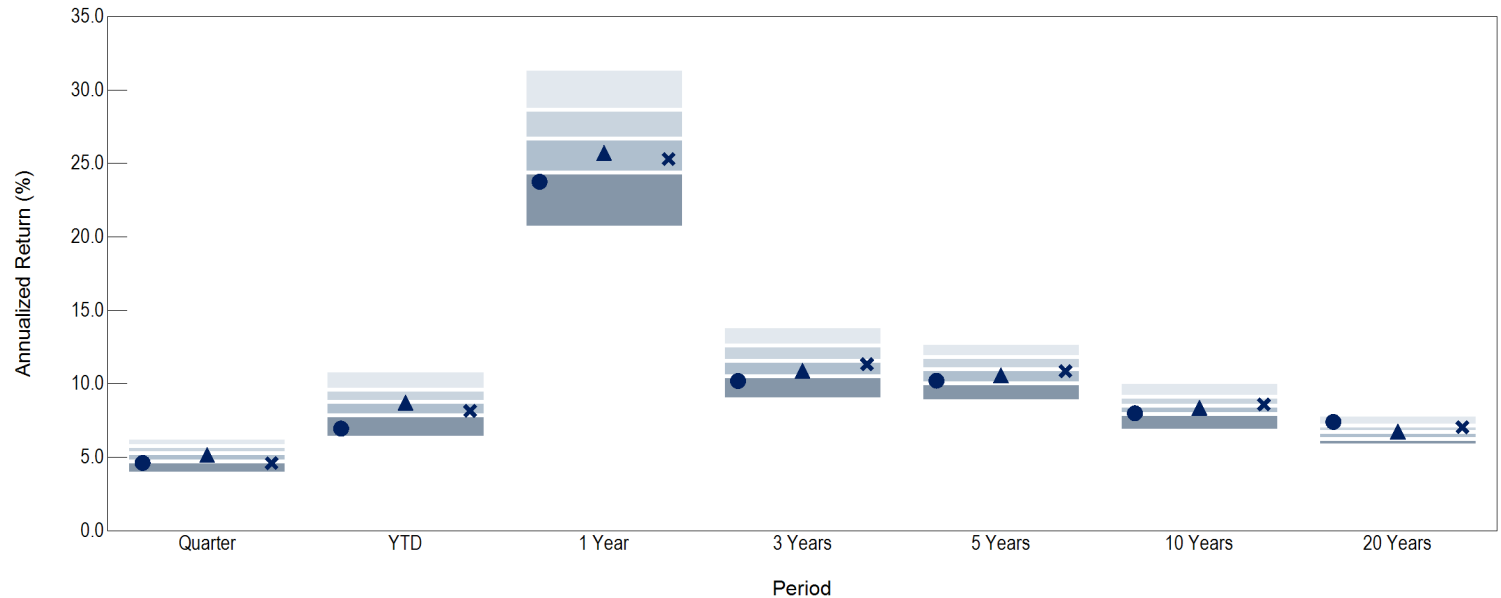
■ Composite   
 ■ Allocation Index   
 ■ Policy Index



# MWRA Employees' Retirement System

## TOTAL FUND RETURN SUMMARY vs. PEER UNIVERSE

Composite vs. InvMetrics Public DB Net



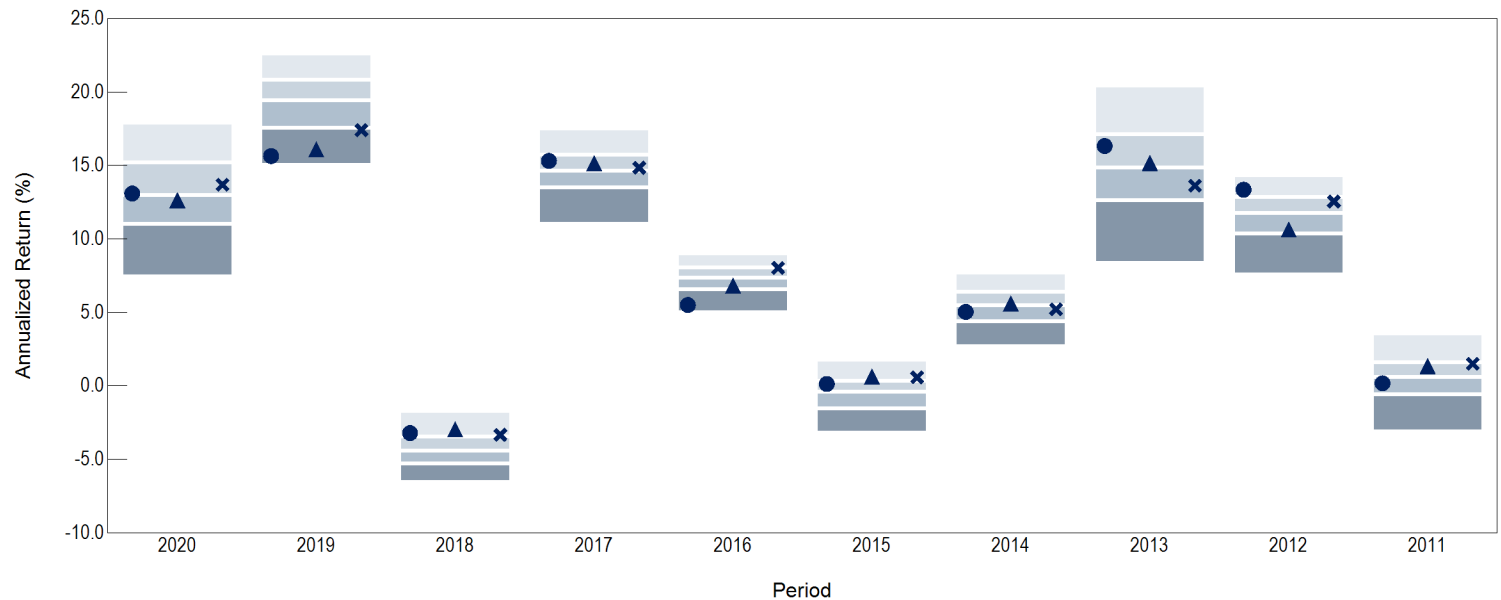
	Return (Rank)													
5th Percentile	6.3		10.9		31.4		13.9		12.8		10.1		7.9	
25th Percentile	5.8		9.6		28.7		12.6		11.8		9.1		7.2	
Median	5.3		8.8		26.7		11.6		11.0		8.5		6.8	
75th Percentile	4.7		7.9		24.4		10.5		10.1		8.0		6.3	
95th Percentile	3.9		6.4		20.7		9.0		8.8		6.8		5.8	
# of Portfolios	473		471		468		455		437		350		159	
● Composite	4.6	(80)	6.9	(92)	23.8	(81)	10.2	(82)	10.2	(73)	8.0	(75)	7.4	(14)
▲ Allocation Index	5.2	(56)	8.7	(52)	25.7	(62)	10.9	(66)	10.6	(64)	8.4	(57)	6.8	(49)
× Policy Index	4.6	(81)	8.2	(67)	25.3	(66)	11.3	(57)	10.9	(56)	8.6	(47)	7.0	(33)



# MWRA Employees' Retirement System

## TOTAL FUND SUMMARY vs. PEER UNIVERSE - CALENDAR YEAR

Composite vs. InvMetrics Public DB Net

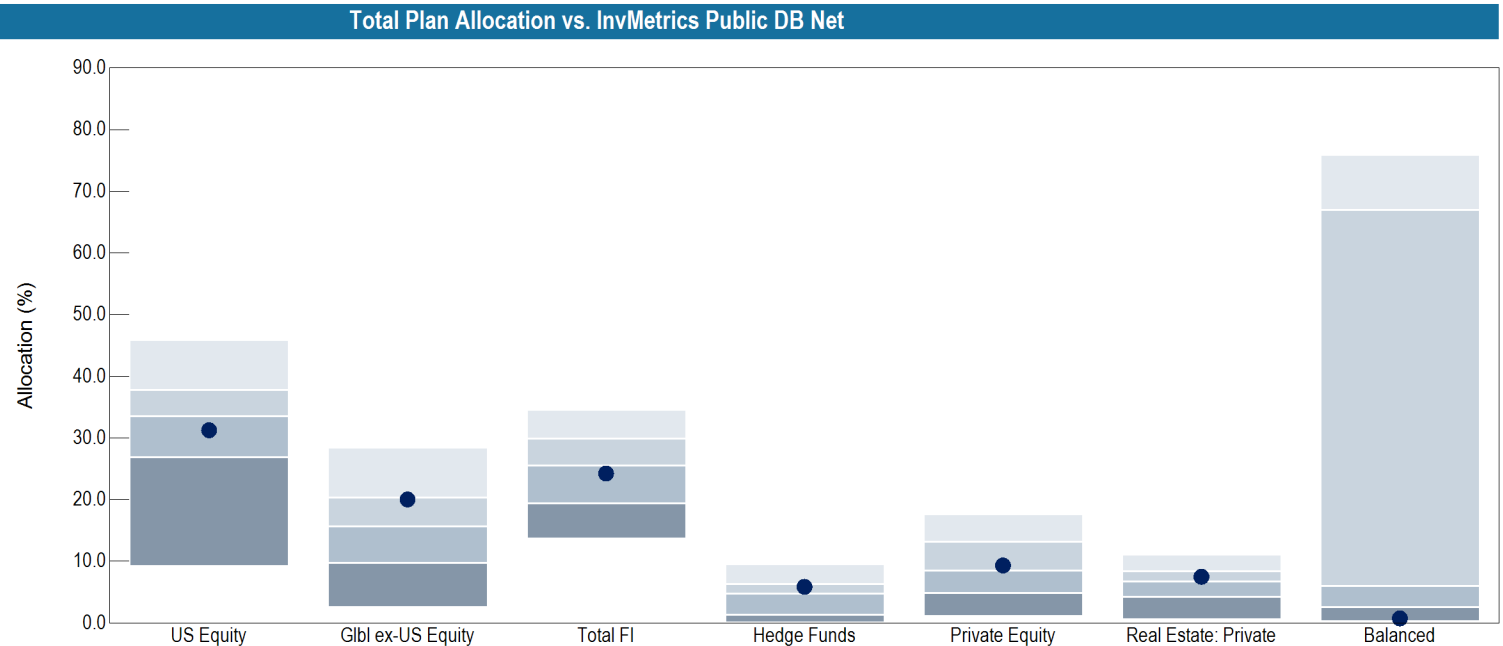


	Return (Rank)															
	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011						
5th Percentile	17.9	22.6	-1.7	17.5	9.0	1.7	7.7	20.4	14.3	3.6						
25th Percentile	15.3	20.8	-3.4	15.8	8.1	0.4	6.4	17.2	12.9	1.6						
Median	13.0	19.5	-4.4	14.7	7.4	-0.4	5.5	14.9	11.8	0.6						
75th Percentile	11.0	17.6	-5.2	13.6	6.6	-1.5	4.4	12.7	10.4	-0.5						
95th Percentile	7.5	15.1	-6.5	11.1	5.0	-3.2	2.7	8.4	7.6	-3.1						
# of Portfolios	596	550	496	269	269	262	210	191	159	137						
● Composite	13.1 (50)	15.6 (93)	-3.2 (21)	15.3 (36)	5.5 (92)	0.1 (31)	5.0 (62)	16.3 (36)	13.4 (16)	0.2 (63)						
▲ Allocation Index	12.6 (55)	16.1 (91)	-3.0 (16)	15.1 (40)	6.8 (68)	0.6 (19)	5.6 (47)	15.2 (46)	10.6 (72)	1.3 (31)						
× Policy Index	13.7 (43)	17.4 (77)	-3.3 (24)	14.8 (46)	8.0 (28)	0.6 (20)	5.2 (59)	13.6 (66)	12.6 (36)	1.5 (28)						



# MWRA Employees' Retirement System

## TOTAL FUND ALLOCATIONS vs. PEER UNIVERSE



	Allocation (Rank)													
5th Percentile	45.9		28.4		34.6		9.5		17.6		11.0		75.9	
25th Percentile	37.9		20.4		29.9		6.4		13.2		8.5		67.1	
Median	33.6		15.8		25.6		4.9		8.6		6.9		6.1	
75th Percentile	26.9		9.9		19.5		1.5		4.9		4.4		2.7	
95th Percentile	9.3		2.7		13.8		0.1		1.3		0.7		0.4	
# of Portfolios	108		149		190		50		78		101		12	
● Composite	31.2	(57)	20.0	(28)	24.2	(56)	5.8	(33)	9.3	(47)	7.5	(40)	0.7	(91)

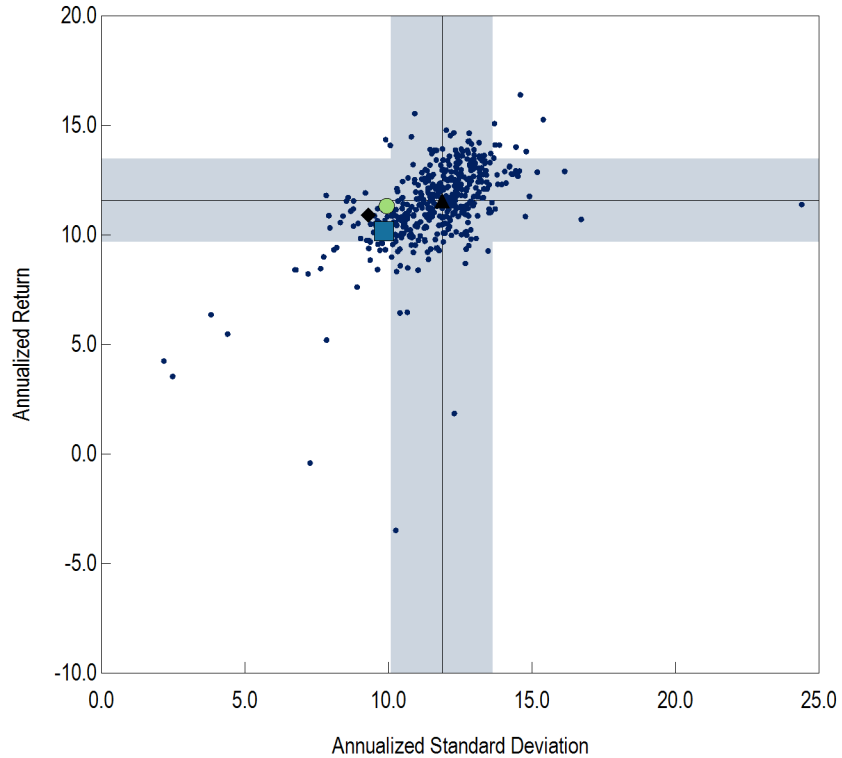




# MWRA Employees' Retirement System

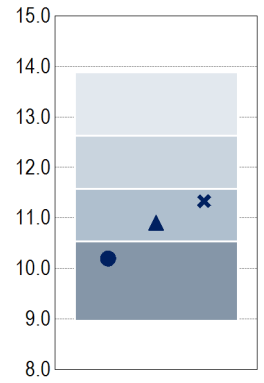
## TOTAL FUND RISK/RETURN - 3 YEARS

3 Years Ending June 30, 2021



- Composite
- ◆ Allocation Index
- Policy Index
- ▲ Universe Median
- ▭ 68% Confidence Interval
- InvMetrics Public DB Net

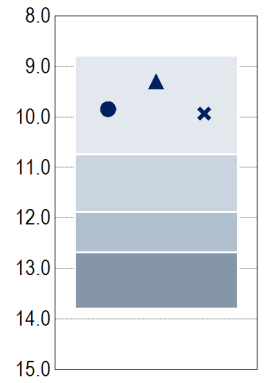
Anlzd Return



● Composite	Value	10.19
	Rank	82
▲ Allocation Index	Value	10.90
	Rank	66
× Policy Index	Value	11.33
	Rank	57

Universe	5th %tile	13.88
	25th %tile	12.64
	Median	11.58
	75th %tile	10.54
	95th %tile	8.97

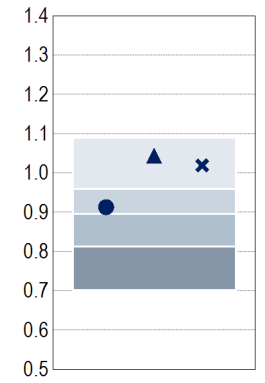
Anlzd Standard Deviation



● Composite	Value	9.85
	Rank	11
▲ Allocation Index	Value	9.30
	Rank	7
× Policy Index	Value	9.94
	Rank	13

Universe	5th %tile	8.78
	25th %tile	10.73
	Median	11.87
	75th %tile	12.67
	95th %tile	13.79

Sharpe Ratio



● Composite	Value	0.91
	Rank	44
▲ Allocation Index	Value	1.04
	Rank	10
× Policy Index	Value	1.02
	Rank	12

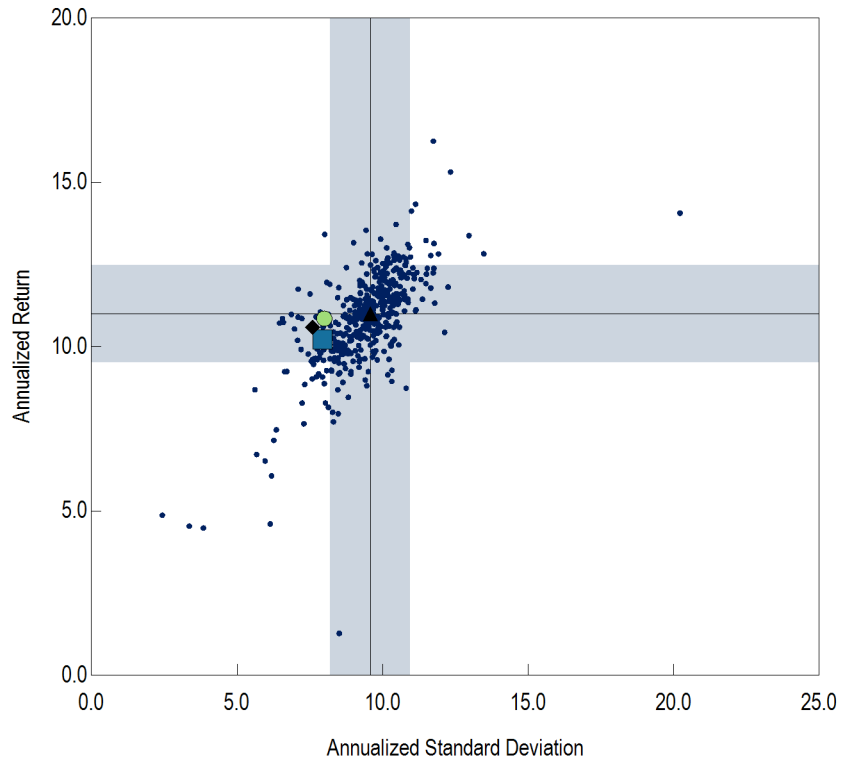
Universe	5th %tile	1.09
	25th %tile	0.96
	Median	0.90
	75th %tile	0.81
	95th %tile	0.70



# MWRA Employees' Retirement System

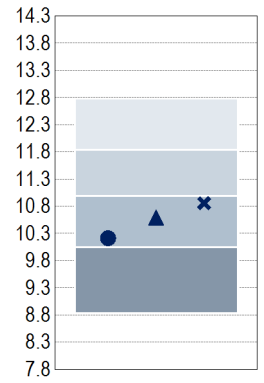
## TOTAL FUND RISK/RETURN - 5 YEARS

5 Years Ending June 30, 2021



- Composite
- ◆ Allocation Index
- Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Public DB Net

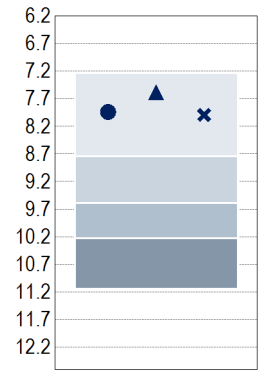
Analzd Return



● Composite	Value	10.21
	Rank	73
▲ Allocation Index	Value	10.59
	Rank	64
× Policy Index	Value	10.86
	Rank	56

Universe	5th %tile	12.78
	25th %tile	11.84
	Median	11.00
	75th %tile	10.06
	95th %tile	8.84

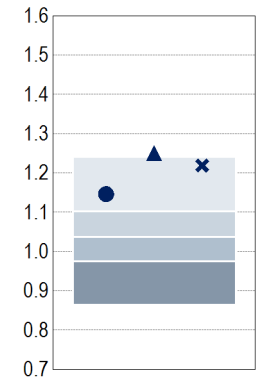
Analzd Standard Deviation



● Composite	Value	7.94
	Rank	11
▲ Allocation Index	Value	7.58
	Rank	7
× Policy Index	Value	8.00
	Rank	12

Universe	5th %tile	7.23
	25th %tile	8.73
	Median	9.58
	75th %tile	10.21
	95th %tile	11.13

Sharpe Ratio



● Composite	Value	1.15
	Rank	14
▲ Allocation Index	Value	1.25
	Rank	5
× Policy Index	Value	1.22
	Rank	7

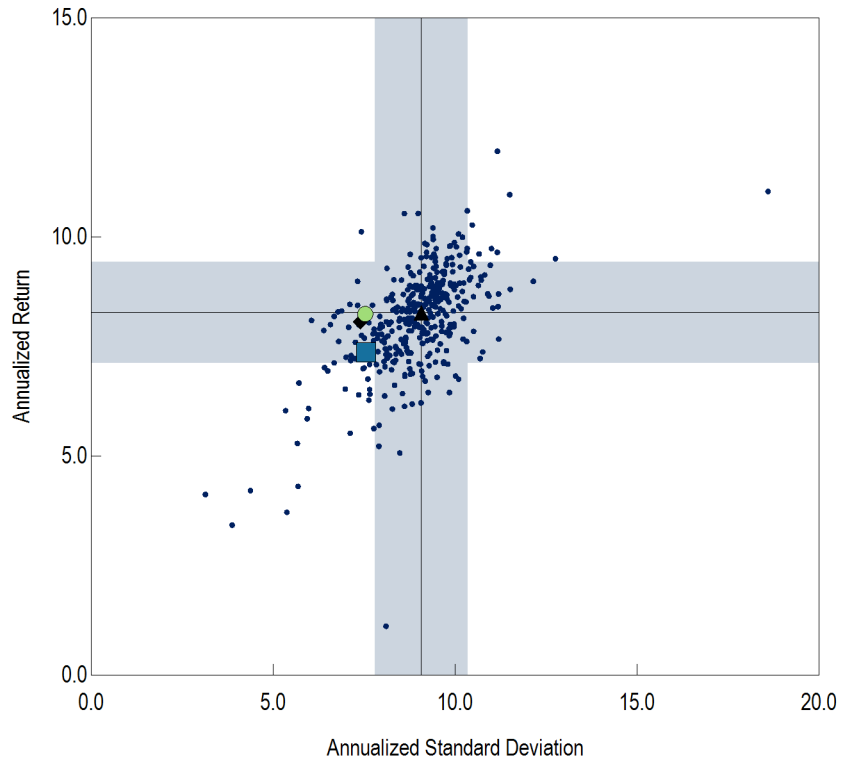
Universe	5th %tile	1.24
	25th %tile	1.10
	Median	1.04
	75th %tile	0.98
	95th %tile	0.87



# MWRA Employees' Retirement System

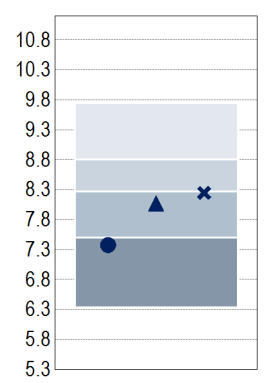
## TOTAL FUND RISK/RETURN - 7 YEARS

7 Years Ending June 30, 2021



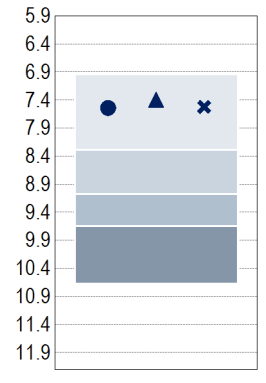
- Composite
- ◆ Allocation Index
- Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Public DB Net

Annualized Return



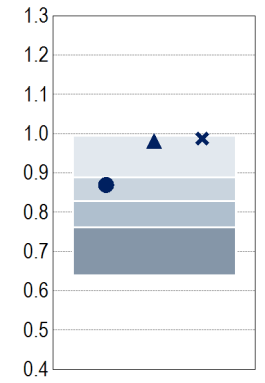
● Composite	Value	7.37
	Rank	79
▲ Allocation Index	Value	8.07
	Rank	55
× Policy Index	Value	8.25
	Rank	51
Universe		
	5th %tile	9.74
	25th %tile	8.82
	Median	8.28
	75th %tile	7.51
	95th %tile	6.35

Annualized Standard Deviation



● Composite	Value	7.54
	Rank	11
▲ Allocation Index	Value	7.39
	Rank	9
× Policy Index	Value	7.52
	Rank	11
Universe		
	5th %tile	6.94
	25th %tile	8.28
	Median	9.06
	75th %tile	9.64
	95th %tile	10.66

Sharpe Ratio



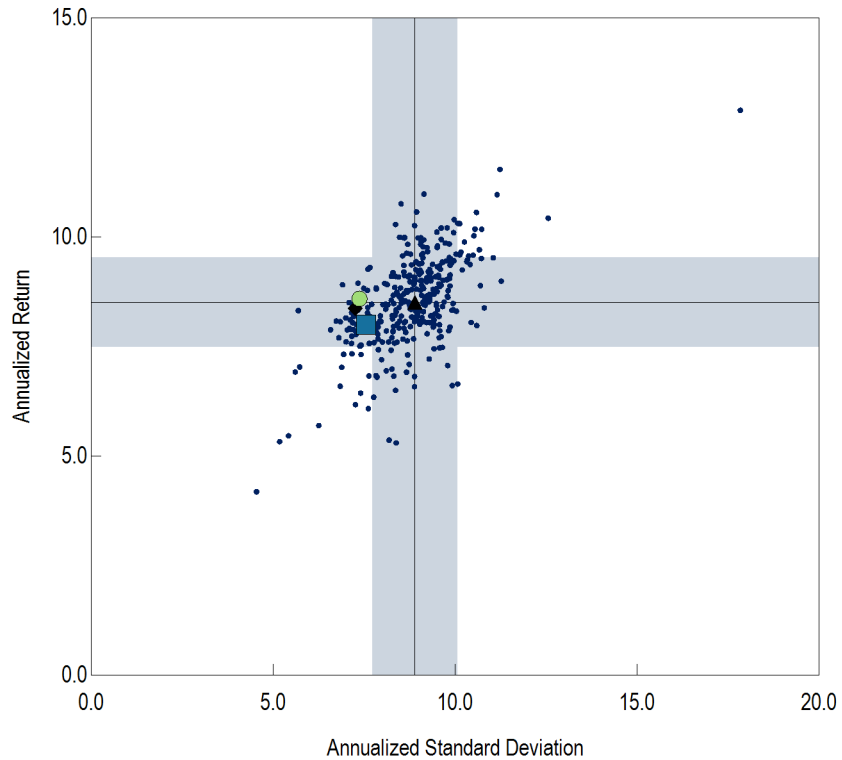
● Composite	Value	0.87
	Rank	33
▲ Allocation Index	Value	0.98
	Rank	7
× Policy Index	Value	0.99
	Rank	6
Universe		
	5th %tile	0.99
	25th %tile	0.89
	Median	0.83
	75th %tile	0.76
	95th %tile	0.64



# MWRA Employees' Retirement System

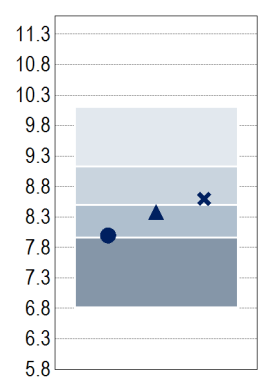
## TOTAL FUND RISK/RETURN - 10 YEARS

10 Years Ending June 30, 2021



- Composite
- ◆ Allocation Index
- Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Public DB Net

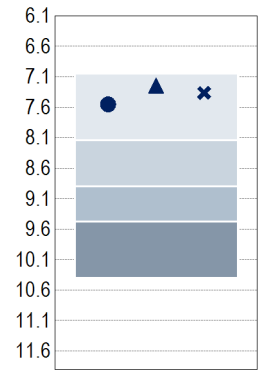
Annual Return



● Composite	Value	8.00
	Rank	75
▲ Allocation Index	Value	8.38
	Rank	57
× Policy Index	Value	8.59
	Rank	47

Universe	5th %tile	10.11
	25th %tile	9.14
	Median	8.51
	75th %tile	7.97
	95th %tile	6.83

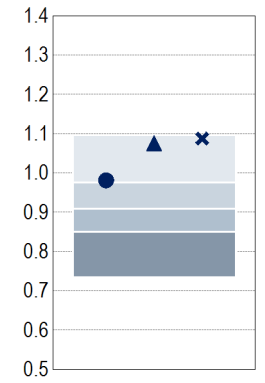
Annual Standard Deviation



● Composite	Value	7.55
	Rank	14
▲ Allocation Index	Value	7.24
	Rank	10
× Policy Index	Value	7.36
	Rank	11

Universe	5th %tile	7.05
	25th %tile	8.13
	Median	8.89
	75th %tile	9.47
	95th %tile	10.39

Sharpe Ratio



● Composite	Value	0.98
	Rank	24
▲ Allocation Index	Value	1.08
	Rank	7
× Policy Index	Value	1.09
	Rank	7

Universe	5th %tile	1.10
	25th %tile	0.98
	Median	0.91
	75th %tile	0.85
	95th %tile	0.74



# MWRA Employees' Retirement System

## TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	20 Yrs (%)	Rank	Inception (%)	Inception Date
<b>Composite</b>	<b>687,360,033</b>	<b>100.0</b>	<b>100.0</b>	<b>4.6</b>	<b>80</b>	<b>23.8</b>	<b>81</b>	<b>10.2</b>	<b>82</b>	<b>10.2</b>	<b>73</b>	<b>8.0</b>	<b>75</b>	<b>7.4</b>	<b>14</b>	<b>7.1</b>	<b>Jan-86</b>
Allocation Index				5.2	56	25.7	62	10.9	66	10.6	64	8.4	57	6.8	49	--	Jan-86
Policy Index				4.6	81	25.3	66	11.3	57	10.9	56	8.6	47	7.0	33	--	Jan-86
InvMetrics Public DB Net Median				5.3		26.7		11.6		11.0		8.5		6.8		8.4	Jan-86
<b>Composite</b>	<b>687,360,033</b>	<b>100.0</b>	<b>100.0</b>	<b>4.6</b>	<b>79</b>	<b>23.8</b>	<b>77</b>	<b>10.2</b>	<b>83</b>	<b>10.2</b>	<b>71</b>	<b>8.0</b>	<b>80</b>	<b>7.4</b>	<b>28</b>	<b>7.1</b>	<b>Jan-86</b>
Allocation Index				5.2	49	25.7	60	10.9	64	10.6	63	8.4	62	6.8	74	--	Jan-86
Policy Index				4.6	79	25.3	64	11.3	54	10.9	53	8.6	52	7.0	54	--	Jan-86
InvMetrics Public DB Gross Median				5.1		26.6		11.4		10.9		8.6		7.1		8.7	Jan-86
<b>Total Balanced</b>	<b>5,089,949</b>	<b>0.7</b>	<b>0.0</b>	<b>6.7</b>	<b>--</b>	<b>29.1</b>	<b>--</b>	<b>9.2</b>	<b>--</b>	<b>8.5</b>	<b>--</b>	<b>5.3</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>5.5</b>	<b>Dec-10</b>
PRIT Core Fund	5,089,949	0.7		6.7	28	29.4	51	11.7	26	11.5	17	9.0	1	7.6	54	7.4	Apr-99
60% S&P 500 / 40% BBgBarc Aggregate				5.8	38	23.0	86	13.6	1	11.9	12	10.4	1	7.3	62	6.8	Apr-99
<b>Total Domestic Equity</b>	<b>214,761,124</b>	<b>31.2</b>	<b>31.0</b>	<b>7.5</b>	<b>39</b>	<b>41.7</b>	<b>65</b>	<b>18.1</b>	<b>37</b>	<b>17.8</b>	<b>35</b>	<b>13.9</b>	<b>36</b>	<b>9.2</b>	<b>63</b>	<b>8.3</b>	<b>May-99</b>
Russell 3000				8.2	30	44.2	55	18.7	32	17.9	34	14.7	27	8.9	69	7.9	May-99
eV All US Equity Net Median				6.6		45.6		15.6		15.9		12.9		9.7		9.9	May-99
<b>Large Cap</b>	<b>165,849,422</b>	<b>24.1</b>	<b>24.0</b>	<b>8.3</b>	<b>29</b>	<b>36.8</b>	<b>85</b>	<b>19.5</b>	<b>28</b>	<b>18.2</b>	<b>33</b>	<b>14.5</b>	<b>30</b>	<b>--</b>	<b>--</b>	<b>15.0</b>	<b>Dec-10</b>
eV All US Equity Net Median				6.6		45.6		15.6		15.9		12.9		9.7		13.6	Dec-10
Rhumblin Advisors S&P 500 Index Fund	68,221,283	9.9	10.0	8.5	27	40.7	40	18.6	27	17.6	21	14.7	16	8.6	61	9.5	Apr-97
S&P 500				8.5	26	40.8	39	18.7	26	17.6	20	14.8	13	8.6	61	9.5	Apr-97
eV US Large Cap Core Equity Net Median				7.7		39.5		16.9		16.1		13.6		8.9		10.0	Apr-97
Coho Relative Value Equity	46,444,903	6.8	7.0	3.3	99	28.0	97	13.4	41	12.4	56	--	--	--	--	13.0	Mar-16
Russell 1000 Value				5.2	63	43.7	50	12.4	52	11.9	67	11.6	50	7.7	71	13.5	Mar-16
eV US Large Cap Value Equity Net Median				5.6		43.6		12.5		12.6		11.6		8.3		13.7	Mar-16
Polen Focused Growth	51,183,236	7.4	7.0	12.9	16	38.8	60	26.9	16	24.8	22	--	--	--	--	22.9	Feb-16
Russell 1000 Growth				11.9	33	42.5	32	25.1	30	23.7	37	17.9	18	9.8	47	23.3	Feb-16
eV US Large Cap Growth Equity Net Median				11.1		40.0		23.5		22.0		16.4		9.6		21.5	Feb-16

Note:

1. Since inception return is 8.8% gross of fees. Prior to 1999, performance history does not capture separate net and gross returns
2. In November 2019, Loomis Sayles and Schroders transitioned from a mutual fund to a CIT structure. Performance prior to the transition to the CIT investment vehicle is linked to mutual fund performance history.



# MWRA Employees' Retirement System

## TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	20 Yrs (%)	Rank	Inception (%)	Inception Date
<b>Small Cap</b>	<b>48,911,702</b>	<b>7.1</b>	<b>7.0</b>	<b>5.2</b>	<b>68</b>	<b>59.8</b>	<b>20</b>	<b>14.7</b>	<b>55</b>	<b>17.3</b>	<b>39</b>	<b>12.9</b>	<b>51</b>	<b>--</b>	<b>--</b>	<b>14.0</b>	<b>Dec-10</b>
<i>eV All US Equity Net Median</i>				6.6		45.6		15.6		15.9		12.9		9.7		13.6	Dec-10
Boston Partners Small Cap Value	23,581,202	3.4	3.5	6.0	21	73.5	25	11.2	38	13.2	44	10.8	48	10.2	49	11.1	Feb-97
<i>Russell 2000 Value</i>				4.6	39	73.3	26	10.3	47	13.6	38	10.8	48	9.2	76	9.7	Feb-97
<i>eV US Small Cap Value Equity Net Median</i>				3.9		65.5		10.2		12.9		10.7		10.2		10.8	Feb-97
Loomis Sayles Small Cap Growth	25,330,500	3.7	3.5	4.2	75	45.9	74	17.4	69	20.7	57	14.6	60	9.1	86	7.9	Jan-97
<i>Russell 2000 Growth</i>				3.9	78	51.4	62	15.9	81	18.8	73	13.5	77	9.0	86	8.3	Jan-97
<i>eV US Small Cap Growth Equity Net Median</i>				5.8		53.7		21.2		22.3		15.0		11.3		11.4	Jan-97
<b>Total Non-US Equity</b>	<b>137,602,635</b>	<b>20.0</b>	<b>19.0</b>	<b>5.6</b>	<b>56</b>	<b>35.1</b>	<b>73</b>	<b>9.4</b>	<b>65</b>	<b>11.5</b>	<b>65</b>	<b>5.3</b>	<b>86</b>	<b>5.3</b>	<b>95</b>	<b>5.2</b>	<b>Mar-99</b>
<i>eV All ACWI ex-US Equity Net Median</i>				6.1		39.6		11.1		12.6		7.4		7.4		7.6	Mar-99
<b>International Equity</b>	<b>118,079,456</b>	<b>17.2</b>	<b>12.0</b>	<b>5.5</b>	<b>47</b>	<b>36.3</b>	<b>46</b>	<b>10.9</b>	<b>24</b>	<b>12.3</b>	<b>30</b>	<b>6.2</b>	<b>69</b>	<b>--</b>	<b>--</b>	<b>5.1</b>	<b>Sep-05</b>
<i>eV All EAFE Equity Net Median</i>				5.3		35.5		8.5		10.7		6.9		6.9		6.4	Sep-05
SEG Baxter Street	43,544,622	6.3	5.0	5.7	56	31.1	86	13.2	33	13.7	37	--	--	--	--	13.0	May-16
<i>MSCI ACWI ex USA</i>				5.5	60	35.7	70	9.4	66	11.1	68	5.4	83	6.5	84	10.0	May-16
<i>eV All ACWI ex-US Equity Net Median</i>				6.1		39.6		11.1		12.6		7.4		7.4		11.6	May-16
Schroder International Alpha Trust Class 1	52,719,384	7.7	4.0	5.0	71	41.0	43	14.1	27	14.1	33	--	--	--	--	8.9	Mar-12
<i>MSCI ACWI ex USA</i>				5.5	60	35.7	70	9.4	66	11.1	68	5.4	83	6.5	84	6.6	Mar-12
<i>eV All ACWI ex-US Equity Net Median</i>				6.1		39.6		11.1		12.6		7.4		7.4		8.8	Mar-12
Baillie Gifford International Growth Fund Class K	21,815,451	3.2	3.0	6.2	50	--	--	--	--	--	--	--	--	--	--	24.9	Oct-20
<i>MSCI ACWI ex USA</i>				5.5	60	35.7	70	9.4	66	11.1	68	5.4	83	6.5	84	27.7	Oct-20
<i>eV All ACWI ex-US Equity Net Median</i>				6.1		39.6		11.1		12.6		7.4		7.4		27.5	Oct-20
<b>Emerging Markets Equity</b>	<b>19,523,179</b>	<b>2.8</b>	<b>7.0</b>	<b>6.5</b>	<b>36</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.0</b>	<b>Mar-21</b>
<i>MSCI Emerging Markets</i>				5.0	52	40.9	65	11.3	50	13.0	53	4.3	70	10.1	66	3.5	Mar-21
<i>eV Emg Mkts Equity Net Median</i>				5.2		43.8		11.2		13.1		5.0		10.3		4.1	Mar-21
Axiom Emerging Markets Trust Class 2	19,523,179	2.8	7.0	6.5	36	--	--	--	--	--	--	--	--	--	--	3.0	Mar-21
<i>MSCI Emerging Markets</i>				5.0	52	40.9	65	11.3	50	13.0	53	4.3	70	10.1	66	3.5	Mar-21
<i>eV Emg Mkts Equity Net Median</i>				5.2		43.8		11.2		13.1		5.0		10.3		4.1	Mar-21



# MWRA Employees' Retirement System

## TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	20 Yrs (%)	Rank	Inception (%)	Inception Date
<b>Total Fixed Income</b>	<b>166,523,364</b>	<b>24.2</b>	<b>24.0</b>	<b>2.1</b>	<b>38</b>	<b>3.9</b>	<b>37</b>	<b>6.1</b>	<b>34</b>	<b>4.7</b>	<b>30</b>	<b>4.8</b>	<b>31</b>	<b>6.7</b>	<b>18</b>	<b>6.5</b>	<b>Mar-99</b>
<i>eV All US Fixed Inc Net Median</i>				1.7		2.3		5.1		3.4		3.7		4.6		4.7	Mar-99
Garcia Hamilton Fixed Income Aggregate	45,885,162	6.7	6.0	1.2	96	-0.8	94	4.5	97	--	--	--	--	--	--	4.3	Apr-18
<i>BBgBarc US Aggregate TR</i>				1.8	78	-0.3	82	5.3	78	3.0	77	3.4	79	4.6	73	4.9	Apr-18
<i>eV US Core Fixed Inc Net Median</i>				2.0		0.7		5.7		3.4		3.7		4.8		5.2	Apr-18
Lord Abbett Core Fixed Income	26,384,733	3.8	4.0	1.8	77	1.7	27	5.7	51	--	--	--	--	--	--	5.2	Apr-18
<i>BBgBarc US Aggregate TR</i>				1.8	78	-0.3	82	5.3	78	3.0	77	3.4	79	4.6	73	4.9	Apr-18
<i>eV US Core Fixed Inc Net Median</i>				2.0		0.7		5.7		3.4		3.7		4.8		5.2	Apr-18
Rhumblin TIPS	29,385,517	4.3	4.0	3.2	48	6.5	71	6.5	46	4.2	65	--	--	--	--	4.4	Jun-16
<i>BBgBarc US TIPS TR</i>				3.2	42	6.5	72	6.5	47	4.2	63	3.4	41	5.2	76	4.5	Jun-16
<i>eV US TIPS / Inflation Fixed Inc Net Median</i>				3.2		7.2		6.5		4.4		3.3		5.2		4.7	Jun-16
Loomis Sayles Multisector Full Discretion Trust	52,797,044	7.7	8.0	2.5	8	6.7	2	7.7	3	6.6	1	5.8	1	8.3	1	7.9	Mar-99
<i>BBgBarc US Aggregate TR</i>				1.8	78	-0.3	82	5.3	78	3.0	77	3.4	79	4.6	73	4.8	Mar-99
<i>BBgBarc US High Yield TR</i>				2.7	5	15.4	1	7.4	3	7.5	1	6.7	1	7.8	1	6.9	Mar-99
<i>eV US Core Fixed Inc Net Median</i>				2.0		0.7		5.7		3.4		3.7		4.8		5.0	Mar-99
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1	12,016,366	1.7	2.0	1.2	96	9.8	2	--	--	--	--	--	--	--	--	4.5	Aug-19
<i>Credit Suisse Leveraged Loan</i>				1.4	94	11.7	1	4.4	97	5.0	3	4.5	5	4.7	59	4.2	Aug-19
<i>eV US Core Fixed Inc Net Median</i>				2.0		0.7		5.7		3.4		3.7		4.8		4.7	Aug-19
Invesco Mortgage Recovery Loans Feeder Fund	54,542	0.0		0.0	99	-1.6	99	1.2	99	0.2	99	6.2	1	--	--	11.3	Apr-10
<i>BBgBarc US Aggregate TR</i>				1.8	85	-0.3	99	5.3	89	3.0	99	3.4	97	4.6	98	3.7	Apr-10
<i>eV US Core Plus Fixed Inc Net Median</i>				2.2		3.0		6.2		4.0		4.3		5.3		4.7	Apr-10
<b>Total Hedge Fund</b>	<b>40,204,539</b>	<b>5.8</b>	<b>6.0</b>	<b>2.5</b>	<b>--</b>	<b>16.3</b>	<b>--</b>	<b>5.6</b>	<b>--</b>	<b>5.6</b>	<b>--</b>	<b>4.1</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.7</b>	<b>Oct-06</b>
PRIM Portfolio Completion Strategies	15,104,992	2.2		2.5	--	17.3	--	4.4	--	5.7	--	4.7	--	--	--	4.1	Oct-06
Corbin Pinehurst Partners	12,717,986	1.9		4.0	--	22.3	--	--	--	--	--	--	--	--	--	10.2	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				2.9	--	18.3	--	6.3	--	6.1	--	3.9	--	3.9	--	8.2	Nov-18
UBS Neutral Alpha Strategies	11,636,908	1.7		1.2	--	10.3	--	--	--	--	--	--	--	--	--	6.3	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				2.9	--	18.3	--	6.3	--	6.1	--	3.9	--	3.9	--	8.2	Nov-18
Entrust Peru Wind Down	744,653	0.1		-0.6	--	0.4	--	-3.9	--	--	--	--	--	--	--	-3.9	Dec-17
<i>HFRI Fund of Funds Composite Index</i>				2.9	--	18.3	--	6.3	--	6.1	--	3.9	--	3.9	--	5.8	Dec-17

Note:

1. Importantly, all returns in this report, including those of the private real estate managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences.
2. Corbin Pinehurst Partners and Entrust Peru Wind Down are preliminary as of 06/30/2021 and are subject to change when finalized.



# MWRA Employees' Retirement System

## TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	20 Yrs (%)	Rank	Inception (%)	Inception Date
<b>Other</b>	<b>7,624,496</b>	<b>1.1</b>	<b>0.0</b>	<b>0.0</b>	--	<b>0.0</b>	--	<b>1.4</b>	--	<b>1.3</b>	--	<b>0.7</b>	--	--	--	<b>0.7</b>	<b>Dec-10</b>
Cash Account	7,624,496	1.1		0.0	56	0.0	67	1.4	36	1.3	54	0.7	54	1.5	22	1.8	Feb-00
91 Day T-Bills				0.0	65	0.1	58	1.2	76	1.1	74	0.6	68	1.3	72	1.5	Feb-00
eV US Cash Management Net Median				0.0		0.1		1.4		1.3		0.7		1.4		1.7	Feb-00
<b>Total Real Estate</b>	<b>51,490,260</b>	<b>7.5</b>	<b>10.0</b>	<b>3.3</b>	--	<b>8.2</b>	--	<b>6.5</b>	--	<b>7.5</b>	--	<b>10.2</b>	--	<b>7.6</b>	--	<b>7.8</b>	<b>Apr-99</b>
NCREIF Property Index				3.6	--	7.4	--	5.5	--	6.1	--	8.8	--	8.2	--	8.5	Apr-99
Morgan Stanley Prime Property (\$2.8m commitment in '95)	21,104,244	3.1		2.8	--	7.4	--	5.3	--	6.7	--	10.3	--	7.9	--	8.4	Sep-95
TA Realty Core Property Fund, LP (\$15m commitment in '19)	21,721,743	3.2		5.3	--	12.4	--	--	--	--	--	--	--	--	--	8.5	Jun-19
Invesco Mortgage Recovery II (\$3M commitment in '15)	728,128	0.1		0.0	--	-49.6	--	-14.8	--	-3.7	--	--	--	--	--	-2.5	Oct-15
Landmark VI (\$2m commitment in '11)	88,245	0.0		7.3	--	-3.2	--	-10.5	--	-6.3	--	3.7	--	--	--	3.7	Jul-11
Landmark VIII (\$4m commitment in '17)	1,384,619	0.2		5.4	--	16.1	--	6.7	--	--	--	--	--	--	--	15.0	Nov-17
Courtland/Mesirow MFire (\$2m commitment in '11)	619,337	0.1		0.0	--	0.7	--	-3.8	--	1.2	--	--	--	--	--	2.3	May-12
Cerberus Institutional Real Estate Partners III (\$1.5m commitment in '12)	519,641	0.1		0.0	--	4.4	--	7.0	--	6.1	--	--	--	--	--	11.0	May-13
TA Realty Fund X LP (\$3.5m commitment in '12)	334,001	0.0		0.0	--	1.2	--	6.4	--	6.9	--	--	--	--	--	8.7	May-13
TerraCap Partners III, LP (\$2.6m commitment in '15)	1,592,259	0.2		0.0	--	3.2	--	6.5	--	11.0	--	--	--	--	--	9.9	Jul-15
TerraCap Partners IV, LP (\$4m commitment in '17)	3,441,447	0.5		0.0	--	10.8	--	10.8	--	--	--	--	--	--	--	10.2	Nov-17
Cerberus Institutional Real Estate Partners III AIV, S.C.A. SICAV-RAIF	37,830	0.0		0.0	--	--	--	--	--	--	--	--	--	--	--	-2.1	Mar-21

Note:

1. Importantly, all returns in this report, including those of the private markets managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences.





# MWRA Employees' Retirement System

## TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	20 Yrs (%)	Rank	Inception (%)	Inception Date
<b>Total Private Equity</b>	<b>64,063,666</b>	<b>9.3</b>	<b>10.0</b>	<b>2.9</b>	--	<b>32.3</b>	--	<b>12.0</b>	--	<b>12.4</b>	--	<b>11.7</b>	--	<b>8.3</b>	--	<b>9.8</b>	<b>Apr-99</b>
CJA US All PE				0.0	--	34.7	--	15.5	--	16.3	--	13.8	--	12.7	--	13.0	Apr-99
NASDAQ W/O Income				9.5	--	44.2	--	24.5	--	24.5	--	18.0	--	10.0	--	8.3	Apr-99
PRIM Vintage Year 2008 (\$3m commitment in '08)	1,049,996	0.2		9.3	--	49.3	--	13.9	--	18.7	--	18.5	--	--	--	9.5	Jun-08
PRIM Vintage Year 2009 (\$1m commitment in '09)	185,285	0.0		12.9	--	139.6	--	44.8	--	33.6	--	25.0	--	--	--	14.8	Nov-09
PRIM Vintage Year 2010 (\$1m commitment in '10)	705,126	0.1		30.4	--	108.8	--	31.6	--	27.1	--	19.6	--	--	--	13.7	Jun-10
PRIM Vintage Year 2011 (\$1.5m commitment in '11)	958,109	0.1		34.1	--	79.6	--	28.4	--	25.5	--	9.5	--	--	--	8.7	May-11
PRIM Vintage Year 2012 (\$1m commitment in '12)	869,212	0.1		13.9	--	79.1	--	29.1	--	25.5	--	--	--	--	--	-8.7	Jun-12
PRIM Vintage Year 2014 (\$2m commitment in '14)	2,226,688	0.3		9.6	--	57.5	--	26.9	--	24.9	--	--	--	--	--	6.8	Jun-14
PRIM Vintage Year 2017 (\$2m commitment in '17)	1,905,713	0.3		7.7	--	64.2	--	20.0	--	--	--	--	--	--	--	15.4	May-17
PRIM Vintage Year 2020 (\$5m commitment in '20)	833,451	0.1		11.9	--	40.0	--	--	--	--	--	--	--	--	--	22.7	Mar-20
PRIM Vintage Year 2021 (\$5m commitment in '21)	362,294	0.1		-2.3	--	--	--	--	--	--	--	--	--	--	--	-2.3	Dec-20
Alcentra European DLF (\$5m commitment in '14)	684,378	0.1		0.0	--	4.1	--	-2.0	--	2.4	--	--	--	--	--	4.1	Jan-15
Ascent Fund IV (\$2m commitment in '04)	7,098	0.0		0.0	--	-6.8	--	-41.3	--	-33.2	--	-32.4	--	--	--	-21.1	Jul-04
Ascent Fund IV-B (\$1m commitment in '16)	135,944	0.0		0.0	--	-10.0	--	-22.6	--	-13.8	--	--	--	--	--	-13.8	Jul-16
Ascent Fund V (\$2m commitment in '08)	1,680,079	0.2		0.0	--	5.6	--	-4.2	--	-1.7	--	5.2	--	--	--	4.2	Oct-08
Ascent VI (\$3m commitment in '15)	3,009,613	0.4		0.0	--	3.2	--	-1.5	--	4.4	--	--	--	--	--	0.5	Dec-15
CVI Credit Value Fund IV A LP (\$6m commitment in '17)	5,810,815	0.8		2.5	--	20.4	--	6.3	--	--	--	--	--	--	--	6.0	Dec-17
Invesco Fund IV (\$3m commitment in '03)	174	0.0		0.0	--	-13.1	--	-21.7	--	-11.2	--	-0.7	--	--	--	--	Feb-04
Invesco Fund VI (\$5m commitment in '13)	6,341,157	0.9		0.0	--	42.8	--	19.2	--	18.4	--	--	--	--	--	16.7	Jul-13
Kayne Energy Fund VII (\$5m commitment in '15)	1,648,825	0.2		0.0	--	16.9	--	-38.8	--	-15.1	--	--	--	--	--	-14.2	Jan-16
Foundry 2007 (\$3m commitment in '07)	500,263	0.1		7.0	--	151.0	--	2.1	--	2.1	--	8.8	--	--	--	22.0	Dec-07
Foundry 2010 (\$3m commitment in '10)	4,371,695	0.6		17.3	--	53.0	--	16.8	--	13.7	--	13.1	--	--	--	11.3	Jan-11
Foundry 2010 Annex (\$0.4m commitment in '15)	456,453	0.1		0.0	--	129.5	--	44.1	--	35.4	--	--	--	--	--	28.9	Sep-15
Pinebridge PEP V (\$6m commitment in '07)	865,936	0.1		0.0	--	21.9	--	7.4	--	5.4	--	9.1	--	--	--	--	Mar-08
Landmark XV (\$3m commitment in '13)	1,415,572	0.2		0.0	--	40.6	--	9.8	--	12.7	--	--	--	--	--	13.5	Nov-13
JFL Equity Investors IV, L.P. (\$6m commitment in '16)	7,345,201	1.1		0.0	--	48.6	--	45.2	--	--	--	--	--	--	--	39.2	Jan-17
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)	5,167,328	0.8		0.0	--	31.9	--	28.3	--	--	--	--	--	--	--	21.4	Feb-17
Park Square Credit Opportunities III (\$3m commitment in '17)	2,607,786	0.4		0.0	--	6.7	--	8.6	--	--	--	--	--	--	--	6.5	Feb-18

Note:

1. Importantly, all returns in this report, including those of the private markets managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences.



# MWRA Employees' Retirement System

## TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	20 Yrs (%)	Rank	Inception (%)	Inception Date
Ironsides Constitution Opportunities (\$3m commitment in '18)	2,336,483	0.3		0.0	--	15.5	--	--	--	--	--	--	--	--	--	12.4	Oct-18
HarbourVest Dover Street X (\$9m commitment in '20)	3,138,384	0.5		0.0	--	26.2	--	--	--	--	--	--	--	--	--	102.4	Jun-20
Hamilton Lane Secondary Fund V LP (\$9m commitment in '20)	3,601,385	0.5		0.0	--	41.1	--	--	--	--	--	--	--	--	--	41.1	Jul-20
JFL Equity Investors V, L.P. (\$8m commitment in '20)	3,987,627	0.6		0.0	--	--	--	--	--	--	--	--	--	--	--	-12.7	Sep-20
<i>Private Equity Benchmark (1 Qtr. Lag)</i>				9.4	--	47.4	--	17.6	--	17.2	--	14.0	--	11.3	--	47.4	Sep-20

Note:

1. Importantly, all returns in this report, including those of the private markets managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences.



# MWRA Employees' Retirement System

## NOTES

- 1 - Results for periods longer than one year are annualized.
- 2 - Total Balances, Large Cap, Small Cap, and Other Composite performance starts 12/1/2010.
- 3 - Preliminary Total Composite net of fee since inception return is 7.1% for the current month.
- 4 - Preliminary Total Composite gross of fee since inception return is 8.8% for the current month.
- 5 - Targets, Allocation Index, and Policy Index have been updated to reflect new allocation of 06/01/2020.
- 6 - Policy Index changed from Nasdaq to Cambridge All PE to reflect as of 5/1/2012.
- 7 - Policy Index Consists of: 24% S&P 500, 7% Russell 2000, 12% MSCI ACWI IMI , 7% MSCI Emerging Markets, 10% BBgBarc US Aggregate TR, 4% BBgBarc US TIPS TR, 10% BBgBarc US Universal TR, 10% NCREIF Property Index, 10% C|A US All PE , 6% HFRI Fund of Funds Composite Index.
- 8 - Allocation index consists of: Weighted index of underlying managers to their respective benchmark.



# DISCLAIMER

## Information Disclaimer

- Past performance is no guarantee of future results.
- All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.
- NEPC's source for portfolio pricing, calculation of accruals, and transaction information is the plan's custodian bank. Information on market indices and security characteristics is received from other sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.
- Some index returns displayed in this report or used in calculation of a policy, allocation or custom benchmark may be preliminary and subject to change.
- This report is provided as a management aid for the client's internal use only. Information contained in this report does not constitute a recommendation by NEPC.
- This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.

## Reporting Methodology

- The client's custodian bank is NEPC's preferred data source unless otherwise directed. NEPC generally reconciles custodian data to manager data. If the custodian cannot provide accurate data, manager data may be used.
- Trailing time period returns are determined by geometrically linking the holding period returns, from the first full month after inception to the report date. Rates of return are annualized when the time period is longer than a year. Performance is presented gross and/or net of manager fees as indicated on each page.
- For managers funded in the middle of a month, the "since inception" return will start with the first full month, although actual inception dates and cash flows are taken into account in all Composite calculations.
- This report may contain forward-looking statements that are based on NEPC's estimates, opinions and beliefs, but NEPC cannot guarantee that any plan will achieve its targeted return or meet other goals.



# QUARTERLY PERFORMANCE REPORT PRIVATE DEBT

## MWRA Employees' Retirement System

March 31, 2021



BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

# MWRA Employees' Retirement System

## RETURN SUMMARY

Investments			Trailing Period Returns (IRR) %							Public Market Equivalent (PME)		
Investment Name	Vintage Year	Commitment	(Qtr)	(YTD)	(1 Yr)	(3 Yrs)	(5 Yrs)	(10 Yrs)	SI IRR	IRR PME	KS PME	Benchmark
Invesco Mortgage Recovery Fund, L.P.	2010	\$4,000,000	-0.54%	-0.54%	-0.57%	6.41%	-1.43%	8.60%	13.37%	8.53%	1.07	MSCI ACWI
<b>Total</b>		<b>\$4,000,000</b>	<b>-0.54%</b>	<b>-0.54%</b>	<b>-0.57%</b>	<b>6.41%</b>	<b>-1.43%</b>	<b>8.60%</b>	<b>13.37%</b>	<b>8.53%</b>	<b>1.07</b>	



# MWRA Employees' Retirement System

## ANALYSIS BY FUND

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Invesco Mortgage Recovery Fund, L.P.	2010	\$4,000,000	\$114,794	\$3,885,206	\$4,506	\$5,202,154	\$54,542	\$5,256,696	\$1,366,984	1.34	1.35	13.37%
<b>Total</b>		<b>\$4,000,000</b>	<b>\$114,794</b>	<b>\$3,885,206</b>	<b>\$4,506</b>	<b>\$5,202,154</b>	<b>\$54,542</b>	<b>\$5,256,696</b>	<b>\$1,366,984</b>	<b>1.34</b>	<b>1.35</b>	<b>13.37%</b>



# MWRA Employees' Retirement System

## ANALYSIS BY LIFECYCLE

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>Harvesting</b>												
Invesco Mortgage Recovery Fund, L.P.	2010	\$4,000,000	\$114,794	\$3,885,206	\$4,506	\$5,202,154	\$54,542	\$5,256,696	\$1,366,984	1.34	1.35	13.37%
<b>Total Harvesting</b>		<b>\$4,000,000</b>	<b>\$114,794</b>	<b>\$3,885,206</b>	<b>\$4,506</b>	<b>\$5,202,154</b>	<b>\$54,542</b>	<b>\$5,256,696</b>	<b>\$1,366,984</b>	<b>1.34</b>	<b>1.35</b>	<b>13.37%</b>
<b>Total</b>		<b>\$4,000,000</b>	<b>\$114,794</b>	<b>\$3,885,206</b>	<b>\$4,506</b>	<b>\$5,202,154</b>	<b>\$54,542</b>	<b>\$5,256,696</b>	<b>\$1,366,984</b>	<b>1.34</b>	<b>1.35</b>	<b>13.37%</b>





# MWRA Employees' Retirement System

## ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>2010</b>												
Invesco Mortgage Recovery Fund, L.P.	2010	\$4,000,000	\$114,794	\$3,885,206	\$4,506	\$5,202,154	\$54,542	\$5,256,696	\$1,366,984	1.34	1.35	13.37%
<b>Total 2010</b>		<b>\$4,000,000</b>	<b>\$114,794</b>	<b>\$3,885,206</b>	<b>\$4,506</b>	<b>\$5,202,154</b>	<b>\$54,542</b>	<b>\$5,256,696</b>	<b>\$1,366,984</b>	<b>1.34</b>	<b>1.35</b>	<b>13.37%</b>
<b>Total</b>		<b>\$4,000,000</b>	<b>\$114,794</b>	<b>\$3,885,206</b>	<b>\$4,506</b>	<b>\$5,202,154</b>	<b>\$54,542</b>	<b>\$5,256,696</b>	<b>\$1,366,984</b>	<b>1.34</b>	<b>1.35</b>	<b>13.37%</b>



# MWRA Employees' Retirement System

## ANALYSIS BY INVESTMENT STRATEGY

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>Distressed</b>												
Invesco Mortgage Recovery Fund, L.P.	2010	\$4,000,000	\$114,794	\$3,885,206	\$4,506	\$5,202,154	\$54,542	\$5,256,696	\$1,366,984	1.34	1.35	13.37%
<b>Total Distressed</b>		<b>\$4,000,000</b>	<b>\$114,794</b>	<b>\$3,885,206</b>	<b>\$4,506</b>	<b>\$5,202,154</b>	<b>\$54,542</b>	<b>\$5,256,696</b>	<b>\$1,366,984</b>	<b>1.34</b>	<b>1.35</b>	<b>13.37%</b>
<b>Total</b>		<b>\$4,000,000</b>	<b>\$114,794</b>	<b>\$3,885,206</b>	<b>\$4,506</b>	<b>\$5,202,154</b>	<b>\$54,542</b>	<b>\$5,256,696</b>	<b>\$1,366,984</b>	<b>1.34</b>	<b>1.35</b>	<b>13.37%</b>



# MWRA Employees' Retirement System

## QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Temp Return of Capital	Distribution	Net Cash Flow
<b>Grand Total</b>						<b>0</b>



# GLOSSARY OF TERMS

- **Commitment Amount** – The amount an investor has committed to invest with the General Partner
- **Paid In Capital** – The amount an investor has contributed for investments and management fees
- **Capital to be Funded** – The remaining amount an investor contractually has left to fund its commitments
- **Additional Fees** – Fees that are outside the capital commitment, also includes interest paid/received due from subsequent closings of the fund
- **Cumulative Distributions** – The amount an investor has received from realized and partially realized investments
- **Valuation** – Sum of the fair market value of all investments plus cash
- **Call Ratio** – Calculated by dividing Amount Funded by Capital Committed
- **DPI Ratio** - Calculated by dividing Amount Distributed by Amount Funded
- **Market Exposure** – Calculated by adding Reported Value plus Unfunded Commitments
- **Total Value** – Calculated by adding Amount Distributed and Reported Value. Represents the total amount an investor should expect to receive from their investments
- **Net Benefit** – Calculated by subtracting Total Value by Capital to be Funded plus Additional Fees
- **Total Value to Paid In Capital Ratio** – Calculated by dividing Total Value by Amount Funded. Represents the multiple of the overall cash invested that an investor is expected to receive
- **IRR** - The calculation of the IRR (Internal Rate of Return) takes into consideration the timing of cash contributions and distributions to and from the partnerships, the length of time the investments have been held and the sum of the Reported Value
- **Index Comparison Method (ICM)** – represents the hypothetical IRR of a private investment program that is computed by assuming the fund flows were invested in and out of a publicly traded index. The resulting hypothetical market value of the program is then used with the program’s actual cash flows to compute a hypothetical IRR. This hypothetical IRR can be compared with the actual IRR to determine whether the private investment program outperformed the publicly traded index
- **Valuation ICM** – The valuation equivalent that ICM calculates for the public market is called valuation ICM
- **KS PME** – The Kaplan Schoar Public Markets Equivalent is a ratio of the future value of all distributions divided by the future value of all contributions using the index return as the discount rate. The ending valuation is treated as a distribution in this method
- **IRR ICM** – The IRR equivalent that ICM calculates for the public market is called IRR ICM



# QUARTERLY PERFORMANCE REPORT PRIVATE EQUITY

## MWRA Employees' Retirement System

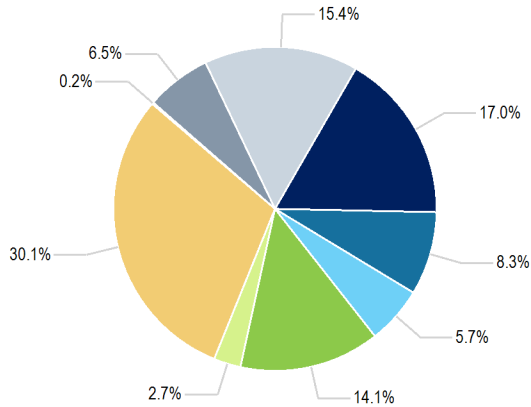
March 31, 2021



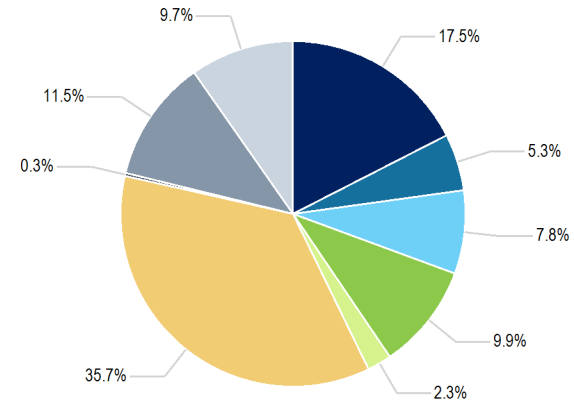
BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

# MWRA Employees' Retirement System ANALYSIS BY STRATEGY

Private Markets Valuation by Strategy



Private Markets Fund Exposure by Strategy



Buyout, Direct Lending, Energy, Growth Equity, Venture Capital, Co-Investments, Distressed, Fund of Funds, Secondary

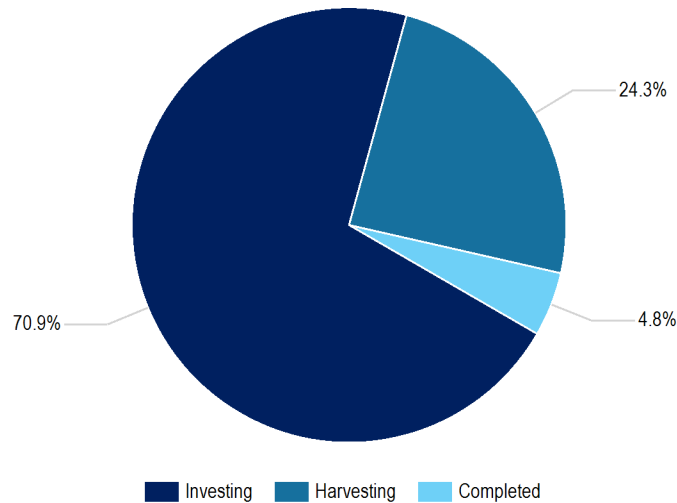
Buyout, Direct Lending, Energy, Growth Equity, Venture Capital, Co-Investments, Distressed, Fund of Funds, Secondary

Investment Strategy	Investments			Commitments			Contributions & Distributions			Valuations				Performance		
	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Fund Exposure	DPI	TVPI	IRR			
Total Buyout	\$18,428,390	\$7,758,705	0.58	\$10,669,685	\$114,412	\$8,428,716	\$10,687,136	\$19,115,853	\$8,331,756	\$18,445,842	0.78	1.77	13.99%			
Total Co-Investments	\$4,900,000	\$380,720	0.92	\$4,519,280	\$46,833	\$2,203,826	\$5,236,341	\$7,440,167	\$2,874,055	\$5,617,061	0.48	1.63	11.65%			
Total Direct Lending	\$8,000,000	\$4,609,864	0.42	\$3,390,136	\$26,581	\$1,397,674	\$3,611,288	\$5,008,962	\$1,592,245	\$8,221,152	0.41	1.47	7.30%			
Total Distressed	\$9,000,000	\$1,601,989	0.82	\$7,398,011	\$10,063	\$21,961	\$8,837,437	\$8,859,398	\$1,451,324	\$10,439,426	0.00	1.20	9.40%			
Total Energy	\$5,000,000	\$708,226	0.86	\$4,291,774	-\$40,917	\$984,075	\$1,697,871	\$2,681,946	-\$1,568,911	\$2,406,097	0.23	0.63	-16.41%			
Total Fund of Funds	\$33,500,000	\$18,763,513	0.44	\$14,736,487	\$247,675	\$14,164,260	\$18,931,929	\$33,096,189	\$18,112,027	\$37,695,442	0.95	2.21	15.39%			
Total Growth Equity	\$900,000	\$194,403	0.78	\$705,597	-\$9,254	\$1,235,115	\$106,197	\$1,341,312	\$644,969	\$300,600	1.77	1.93	9.72%			
Total Secondaries	\$12,600,000	\$7,986,215	0.37	\$4,613,785	\$14,362	\$2,488,721	\$4,099,134	\$6,587,855	\$1,959,708	\$12,085,349	0.54	1.42	14.55%			
Total Venture Capital	\$20,123,012	\$576,528	0.97	\$19,546,484	\$64,437	\$25,109,153	\$9,691,715	\$34,800,868	\$15,189,948	\$10,268,244	1.28	1.77	11.78%			
<b>Total</b>	<b>\$112,451,402</b>	<b>\$42,580,164</b>	<b>0.62</b>	<b>\$69,871,238</b>	<b>\$474,192</b>	<b>\$56,033,502</b>	<b>\$62,899,048</b>	<b>\$118,932,549</b>	<b>\$48,587,119</b>	<b>\$105,479,212</b>	<b>0.80</b>	<b>1.69</b>	<b>12.35%</b>			

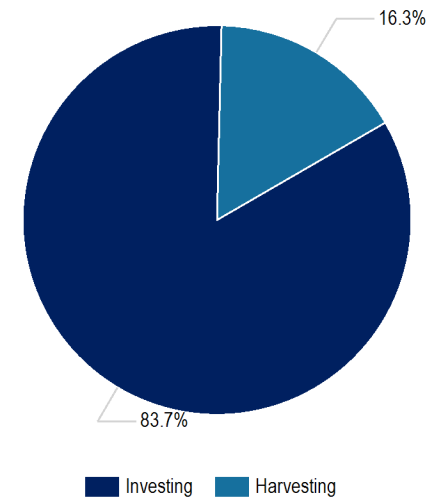


# MWRA Employees' Retirement System ANALYSIS BY LIFECYCLE

Commitment by Lifecycle



Unfunded Commitment by Lifecycle



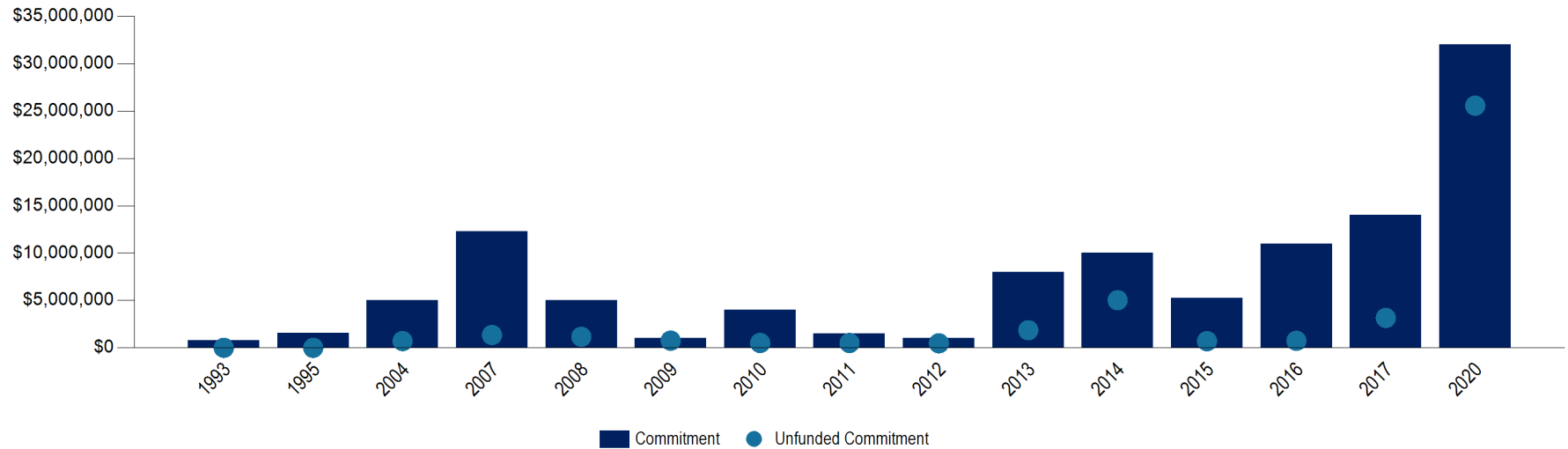
Lifecycle	Commitments			Contributions & Distributions			Valuations			Performance		
	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total Investing	\$79,768,205	\$35,641,771	0.55	\$44,126,434	\$65,946	\$18,127,928	\$53,495,915	\$71,623,843	\$27,431,463	0.41	1.62	17.00%
Total Harvesting	\$27,308,390	\$6,938,393	0.75	\$20,369,997	\$356,750	\$32,736,782	\$9,403,133	\$42,139,915	\$21,413,168	1.58	2.03	12.33%
Total Completed	\$5,374,807	\$0	1.00	\$5,374,807	\$51,496	\$5,168,791	\$0	\$5,168,791	-\$257,512	0.95	0.95	-11.00%
<b>Total</b>	<b>\$112,451,402</b>	<b>\$42,580,164</b>	<b>0.62</b>	<b>\$69,871,238</b>	<b>\$474,192</b>	<b>\$56,033,502</b>	<b>\$62,899,048</b>	<b>\$118,932,549</b>	<b>\$48,587,119</b>	<b>0.80</b>	<b>1.69</b>	<b>12.35%</b>



# MWRA Employees' Retirement System

## ANALYSIS BY VINTAGE YEAR

Commitments By Vintage Year



Vintage Year	Commitments			Contributions & Distributions			Valuations			Performance		
	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total 1993	\$800,000	\$0	1.00	\$800,000	\$0	\$1,199,402	\$0	\$1,199,402	\$399,402	1.50	1.50	8.87%
Total 1995	\$1,574,807	\$0	1.00	\$1,574,807	\$0	\$3,116,593	\$0	\$3,116,593	\$1,541,786	1.98	1.98	13.46%
Total 2004	\$5,000,000	\$717,234	0.86	\$4,282,766	\$232,198	\$5,177,877	\$8,307	\$5,186,184	\$671,220	1.15	1.15	2.14%
Total 2007	\$12,308,390	\$1,354,156	0.89	\$10,954,234	\$158,583	\$22,186,612	\$1,333,638	\$23,520,250	\$12,407,432	2.00	2.12	14.46%
Total 2008	\$5,000,000	\$1,166,681	0.77	\$3,833,319	\$2,212	\$4,698,828	\$2,716,992	\$7,415,820	\$3,580,288	1.23	1.93	11.88%
Total 2009	\$1,000,000	\$756,264	0.24	\$243,736	\$109	\$533,482	\$179,421	\$712,902	\$469,058	2.19	2.92	20.68%
Total 2010	\$4,000,000	\$513,456	0.87	\$3,486,544	\$180	\$2,819,803	\$4,589,889	\$7,409,691	\$3,922,967	0.81	2.13	11.82%
Total 2011	\$1,500,000	\$517,547	0.65	\$982,453	\$159	\$1,371,720	\$1,058,280	\$2,429,999	\$1,447,387	1.40	2.47	18.66%
Total 2012	\$1,000,000	\$480,808	0.52	\$519,192	\$44	\$532,781	\$792,473	\$1,325,254	\$806,018	1.03	2.55	20.11%
Total 2013	\$8,000,000	\$1,861,151	0.77	\$6,138,849	-\$9,117	\$3,451,818	\$10,120,130	\$13,571,948	\$7,442,216	0.56	2.21	16.62%
Total 2014	\$10,000,000	\$5,028,825	0.50	\$4,971,175	\$26,581	\$2,095,205	\$5,967,680	\$8,062,884	\$3,065,128	0.42	1.61	9.06%
Total 2015	\$5,268,205	\$708,226	0.87	\$4,559,979	-\$40,917	\$1,255,900	\$2,154,458	\$3,410,358	-\$1,108,704	0.28	0.75	-9.81%

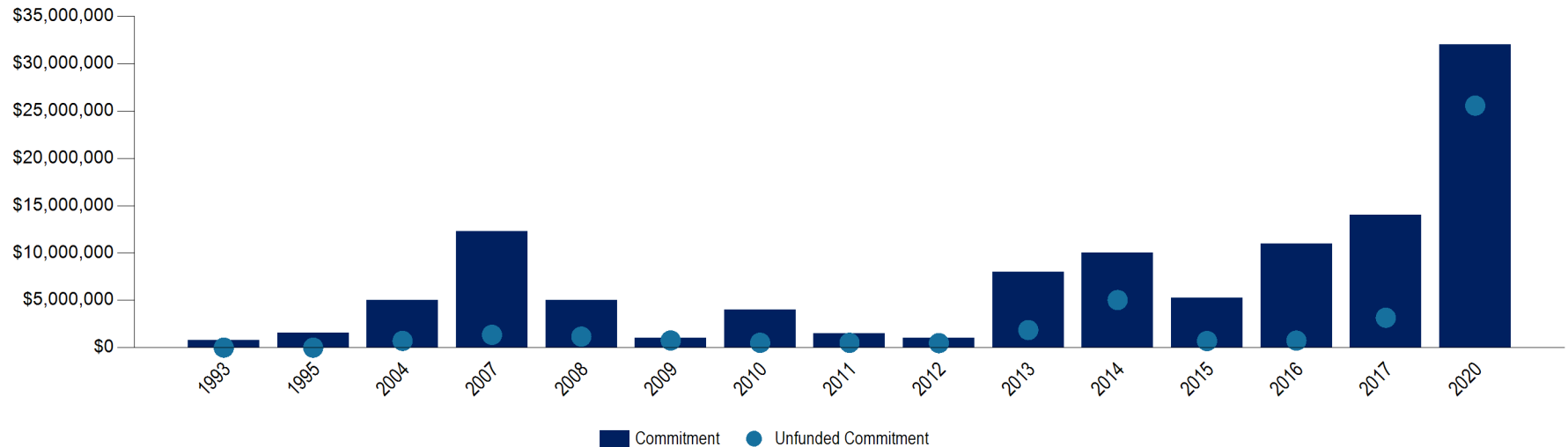




# MWRA Employees' Retirement System

## ANALYSIS BY VINTAGE YEAR

Commitments By Vintage Year



Investments	Commitments			Contributions & Distributions			Valuations			Performance		
Vintage Year	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total 2016	\$11,000,000	\$745,640	0.93	\$10,254,360	\$75,121	\$7,181,830	\$13,257,645	\$20,439,474	\$10,109,994	0.70	1.98	29.33%
Total 2017	\$14,000,000	\$3,158,460	0.77	\$10,841,540	\$10,089	\$101,377	\$13,216,502	\$13,317,879	\$2,466,250	0.01	1.23	11.05%
Total 2020	\$32,000,000	\$25,571,717	0.20	\$6,428,283	\$18,949	\$310,275	\$7,503,634	\$7,813,909	\$1,366,677	0.05	1.21	39.83%
<b>Total</b>	<b>\$112,451,402</b>	<b>\$42,580,164</b>	<b>0.62</b>	<b>\$69,871,238</b>	<b>\$474,192</b>	<b>\$56,033,502</b>	<b>\$62,899,048</b>	<b>\$118,932,549</b>	<b>\$48,587,119</b>	<b>0.80</b>	<b>1.69</b>	<b>12.35%</b>



# APPENDIX

## MWRA Employees' Retirement System

March 31, 2021



# MWRA Employees' Retirement System

## RETURN SUMMARY

Investments			Trailing Period Returns (IRR) %							Public Market Equivalent (PME)		
Investment Name	Vintage Year	Commitment	(Qtr)	(YTD)	(1 Yr)	(3 Yrs)	(5 Yrs)	(10 Yrs)	SI IRR	IRR PME	KS PME	Benchmark
AIG PEP V Asia, L.P.	2007	\$549,557	-7.19%	-7.19%	5.64%	-17.19%	-9.32%	3.06%	1.53%	7.05%	0.78	MSCI ACWI
AIG PEP V Co-Investment, L.P.	2007	\$900,000	3.61%	3.61%	24.55%	-5.84%	-2.06%	5.86%	0.68%	8.76%	0.64	MSCI ACWI
AIG PEP V Europe, L.P.	2007	\$1,655,272	-9.05%	-9.05%		7.43%	15.67%	7.31%	2.38%	6.55%	0.80	MSCI ACWI
AIG PEP V Large Market U.S. Buyout, L.P.	2007	\$720,000	10.32%	10.32%	126.06%	20.22%	16.85%	15.16%	7.80%	-0.76%	1.27	MSCI ACWI
AIG PEP V Preferred Participation Fund, L.P.	2007	\$503,561	-0.62%	-0.62%	60.21%	1.67%	-2.90%	15.19%	11.59%	8.20%	1.18	MSCI ACWI
AIG PEP V Secondary, L.P.	2007	\$600,000	-1.61%	-1.61%	-3.71%	-13.36%	-7.85%	4.24%	6.75%	9.67%	0.90	MSCI ACWI
AIG PEP V Small-Mid Market U.S. Buyout, L.P.	2007	\$900,000	2.98%	2.98%	82.35%	19.52%	14.35%	13.37%	9.72%		1.40	MSCI ACWI
AIG PEP V US Venture, L.P.	2007	\$480,000	0.72%	0.72%	22.01%	1.83%	3.48%	11.74%	13.17%		1.59	MSCI ACWI
Alcentra European Direct Lending Fund I, L.P.	2014	\$5,000,000	1.38%	1.38%	5.69%	0.23%	5.21%		7.00%	6.97%	1.00	MSCI ACWI
Ascent Venture Partners II, L.P.	1995	\$774,807							26.71%			
Ascent Venture Partners IV(B), L.P.	2016	\$1,000,000	-0.52%	-0.52%	-11.04%	-24.46%			-1.11%	7.91%	0.79	MSCI ACWI
Ascent Venture Partners IV, L.P.	2004	\$2,000,000	-1.82%	-1.82%	-4.03%	-42.05%	-44.61%	-34.10%	-27.15%	7.79%	0.13	MSCI ACWI
Ascent Venture Partners V, L.P.	2008	\$2,000,000	0.19%	0.19%	4.07%	-4.20%	0.05%	7.54%	6.68%	10.13%	0.83	MSCI ACWI
Ascent Venture Partners VI, L.P.	2014	\$3,000,000	1.08%	1.08%	1.56%	0.11%	2.47%		2.00%	12.78%	0.70	MSCI ACWI
Boston Capital Venture Fund III, L.P.	1993	\$800,000							8.87%			
Castile Ventures III, L.P.	2007	\$3,000,000							-36.97%	6.52%	0.27	MSCI ACWI
CVI Credit Value Fund A IV, L.P.	2017	\$6,000,000	6.12%	6.12%	27.43%	7.72%			7.64%	18.63%	0.83	MSCI ACWI
Dover Street X, L.P.	2020	\$9,000,000	6.81%	6.81%	32.20%				76.64%	37.86%	1.17	Russell 3000
Foundry Venture Capital 2007, L.P.	2007	\$3,000,000	45.71%	45.71%	106.90%	14.56%	2.68%	15.81%	42.81%	14.47%	3.66	MSCI ACWI
Foundry Venture Capital 2010 Annex, L.P.	2015	\$268,205	-0.05%	-0.05%	128.70%	61.94%	32.24%		27.10%	10.81%	1.72	MSCI ACWI
Foundry Venture Capital 2010, L.P.	2010	\$3,000,000	0.03%	0.03%	30.45%	12.60%	9.70%	11.00%	10.63%	10.23%	1.02	MSCI ACWI
Hamilton Lane Secondary Fund V, L.P.	2020	\$9,000,000	-1.15%	-1.15%					49.24%			
Invesco Fund IV, L.P.	2004	\$3,000,000	0.00%	0.00%	-17.93%	-21.63%	4.49%	11.19%	10.33%			
Invesco Partnership Fund VI, L.P.	2013	\$5,000,000	0.00%	0.00%	60.62%	23.66%	18.04%		17.23%	10.28%	1.40	MSCI ACWI
Ironsides Opportunities Fund, L.P.	2017	\$3,000,000	3.72%	3.72%	21.13%				14.38%	16.87%	0.97	MSCI ACWI
JFL Equity Investors IV, L.P.	2016	\$6,000,000	17.24%	17.24%	53.81%	51.24%			38.57%	11.67%	1.67	MSCI ACWI
JFL Equity Investors V, L.P.	2020	\$9,000,000	-2.53%	-2.53%					-11.84%			
Kayne Anderson Energy Fund VII, L.P.	2015	\$5,000,000	32.83%	32.83%	8.73%	-34.94%	-16.52%		-16.41%	14.17%	0.55	MSCI ACWI
Landmark Equity Partners XV, L.P.	2013	\$3,000,000	-0.61%	-0.61%	20.57%	12.03%	13.98%		13.42%	9.56%	1.08	MSCI ACWI
Mass PRIM AIVY 2008	2008	\$3,000,000	1.79%	1.79%	6.16%	9.30%	14.73%	18.91%	17.21%	8.10%	1.42	MSCI ACWI



# MWRA Employees' Retirement System

## RETURN SUMMARY

Investments			Trailing Period Returns (IRR) %							Public Market Equivalent (PME)		
Investment Name	Vintage Year	Commitment	(Qtr)	(YTD)	(1 Yr)	(3 Yrs)	(5 Yrs)	(10 Yrs)	SI IRR	IRR PME	KS PME	Benchmark
Mass PRIM AIVY 2009	2009	\$1,000,000	19.32%	19.32%	82.12%	47.83%	22.92%	21.73%	20.68%	6.71%	1.72	MSCI ACWI
Mass PRIM AIVY 2010	2010	\$1,000,000	15.97%	15.97%	51.49%	18.51%	16.25%	18.17%	17.97%	8.68%	1.54	MSCI ACWI
Mass PRIM AIVY 2011	2011	\$1,500,000	13.80%	13.80%	20.65%	16.91%	17.76%	18.66%	18.66%	8.33%	1.52	MSCI ACWI
Mass PRIM AIVY 2012	2012	\$1,000,000	14.41%	14.41%	42.41%	19.99%	20.07%		20.11%	8.56%	1.60	MSCI ACWI
Mass PRIM AIVY 2014	2014	\$2,000,000	12.43%	12.43%	26.82%	24.26%	24.19%		24.34%	10.80%	1.57	MSCI ACWI
Mass PRIM AIVY 2017	2017	\$2,000,000	18.09%	18.09%	37.36%	24.53%			27.75%	17.77%	1.16	MSCI ACWI
Mass PRIM AIVY 2020	2020	\$5,000,000	8.80%	8.80%	27.45%				27.25%			
Park Square Capital Credit Opportunities III (USD), L.P.	2017	\$3,000,000	2.12%	2.12%	8.42%	9.32%			8.65%	18.68%	0.85	MSCI ACWI
Private Advisors Small Co Coinvestment Fund, L.P.	2016	\$4,000,000	10.51%	10.51%	45.38%	30.42%			26.17%	13.27%	1.29	MSCI ACWI
Ticonderoga Concord Partners III, L.P.	1995	\$800,000							-8.06%			
<b>Total</b>		<b>\$112,451,402</b>	<b>6.39%</b>	<b>6.39%</b>	<b>32.59%</b>	<b>13.47%</b>	<b>12.31%</b>	<b>12.00%</b>	<b>12.35%</b>			



# MWRA Employees' Retirement System

## ANALYSIS BY FUND

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
AIG PEP V Asia, L.P.	2007	\$549,557	\$122,805	\$426,752	\$11,622	\$425,655	\$55,816	\$481,471	\$43,097	0.97	1.10	1.53%
AIG PEP V Co-Investment, L.P.	2007	\$900,000	\$22,644	\$877,356	\$32,765	\$885,186	\$69,013	\$954,199	\$44,078	0.97	1.05	0.68%
AIG PEP V Europe, L.P.	2007	\$1,655,272	\$569,938	\$1,085,334	\$25,194	\$1,292,083	\$23,520	\$1,315,603	\$205,075	1.16	1.18	2.38%
AIG PEP V Large Market U.S. Buyout, L.P.	2007	\$720,000	\$131,894	\$588,106	-\$11,616	\$862,272	\$156,195	\$1,018,467	\$441,977	1.50	1.77	7.80%
AIG PEP V Preferred Participation Fund, L.P.	2007	\$503,561	\$3,899	\$499,662	\$28,158	\$778,653	\$316,971	\$1,095,624	\$567,804	1.48	2.08	11.59%
AIG PEP V Secondary, L.P.	2007	\$600,000	\$191,709	\$408,291	\$17,277	\$559,856	\$34,446	\$594,302	\$168,734	1.32	1.40	6.75%
AIG PEP V Small-Mid Market U.S. Buyout, L.P.	2007	\$900,000	\$194,403	\$705,597	-\$9,254	\$1,235,115	\$106,197	\$1,341,312	\$644,969	1.77	1.93	9.72%
AIG PEP V US Venture, L.P.	2007	\$480,000	\$71,864	\$408,136	\$12,941	\$788,687	\$103,778	\$892,465	\$471,388	1.87	2.12	13.17%
Alcentra European Direct Lending Fund I, L.P.	2014	\$5,000,000	\$3,919,997	\$1,080,003	\$26,581	\$1,360,205	\$934,162	\$2,294,367	\$1,187,782	1.23	2.07	7.00%
Ascent Venture Partners II, L.P.	1995	\$774,807	\$0	\$774,807	\$0	\$2,571,916	\$0	\$2,571,916	\$1,797,109	3.32	3.32	26.71%
Ascent Venture Partners IV(B), L.P.	2016	\$1,000,000	\$32,164	\$967,836	\$0	\$793,136	\$135,944	\$929,080	-\$38,756	0.82	0.96	-1.11%
Ascent Venture Partners IV, L.P.	2004	\$2,000,000	\$0	\$2,000,000	\$0	\$334,111	\$7,098	\$341,209	-\$1,658,791	0.17	0.17	-27.15%
Ascent Venture Partners V, L.P.	2008	\$2,000,000	\$60,000	\$1,940,000	\$0	\$1,298,211	\$1,680,079	\$2,978,290	\$1,038,290	0.67	1.54	6.68%
Ascent Venture Partners VI, L.P.	2014	\$3,000,000	\$300,000	\$2,700,000	\$0	\$0	\$2,889,613	\$2,889,613	\$189,613	0.00	1.07	2.00%
Boston Capital Venture Fund III, L.P.	1993	\$800,000	\$0	\$800,000	\$0	\$1,199,402	\$0	\$1,199,402	\$399,402	1.50	1.50	8.87%
Castile Ventures III, L.P.	2007	\$3,000,000	\$0	\$3,000,000	\$51,496	\$852,796	\$0	\$852,796	-\$2,198,700	0.28	0.28	-36.97%
CVI Credit Value Fund A IV, L.P.	2017	\$6,000,000	\$600,000	\$5,400,000	-\$1,229	\$0	\$6,266,410	\$6,266,410	\$867,639	0.00	1.16	7.64%
Dover Street X, L.P.	2020	\$9,000,000	\$6,975,000	\$2,025,000	\$6,202	\$310,275	\$2,568,656	\$2,878,931	\$847,729	0.15	1.42	76.64%
Foundry Venture Capital 2007, L.P.	2007	\$3,000,000	\$45,000	\$2,955,000	\$0	\$14,506,308	\$467,702	\$14,974,010	\$12,019,010	4.91	5.07	42.81%
Foundry Venture Capital 2010 Annex, L.P.	2015	\$268,205	\$0	\$268,205	\$0	\$271,825	\$456,587	\$728,412	\$460,207	1.01	2.72	27.10%
Foundry Venture Capital 2010, L.P.	2010	\$3,000,000	\$67,500	\$2,932,500	\$0	\$1,948,084	\$3,950,914	\$5,898,998	\$2,966,498	0.66	2.01	10.63%
Hamilton Lane Secondary Fund V, L.P.	2020	\$9,000,000	\$7,425,000	\$1,575,000	\$12,686	\$0	\$2,295,165	\$2,295,165	\$707,479	0.00	1.45	49.24%
Invesco Fund IV, L.P.	2004	\$3,000,000	\$717,234	\$2,282,766	\$232,198	\$4,843,767	\$1,209	\$4,844,976	\$2,330,012	1.93	1.93	10.33%
Invesco Partnership Fund VI, L.P.	2013	\$5,000,000	\$1,041,645	\$3,958,355	\$0	\$1,833,228	\$8,624,098	\$10,457,326	\$6,498,971	0.46	2.64	17.23%
Ironsides Opportunities Fund, L.P.	2017	\$3,000,000	\$1,001,989	\$1,998,011	\$11,292	\$21,961	\$2,571,027	\$2,592,988	\$583,684	0.01	1.29	14.38%
JFL Equity Investors IV, L.P.	2016	\$6,000,000	\$355,400	\$5,644,600	\$61,053	\$5,070,053	\$7,954,373	\$13,024,426	\$7,318,773	0.89	2.28	38.57%
JFL Equity Investors V, L.P.	2020	\$9,000,000	\$6,574,769	\$2,425,231	\$0	\$0	\$2,180,261	\$2,180,261	-\$244,970	0.00	0.90	-11.84%
Kayne Anderson Energy Fund VII, L.P.	2015	\$5,000,000	\$708,226	\$4,291,774	-\$40,917	\$984,075	\$1,697,871	\$2,681,946	-\$1,568,911	0.23	0.63	-16.41%
Landmark Equity Partners XV, L.P.	2013	\$3,000,000	\$819,506	\$2,180,494	-\$9,117	\$1,618,590	\$1,496,032	\$3,114,622	\$943,245	0.75	1.43	13.42%
Mass PRIM AIVY 2008	2008	\$3,000,000	\$1,106,681	\$1,893,319	\$2,212	\$3,400,617	\$1,036,912	\$4,437,529	\$2,541,998	1.79	2.34	17.21%



# MWRA Employees' Retirement System

## ANALYSIS BY FUND

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Mass PRIM AIVY 2009	2009	\$1,000,000	\$756,264	\$243,736	\$109	\$533,482	\$179,421	\$712,902	\$469,058	2.19	2.92	20.68%
Mass PRIM AIVY 2010	2010	\$1,000,000	\$445,956	\$554,044	\$180	\$871,719	\$638,975	\$1,510,694	\$956,469	1.57	2.73	17.97%
Mass PRIM AIVY 2011	2011	\$1,500,000	\$517,547	\$982,453	\$159	\$1,371,720	\$1,058,280	\$2,429,999	\$1,447,387	1.40	2.47	18.66%
Mass PRIM AIVY 2012	2012	\$1,000,000	\$480,808	\$519,192	\$44	\$532,781	\$792,473	\$1,325,254	\$806,018	1.03	2.55	20.11%
Mass PRIM AIVY 2014	2014	\$2,000,000	\$808,828	\$1,191,172	\$0	\$735,000	\$2,143,905	\$2,878,905	\$1,687,732	0.62	2.42	24.34%
Mass PRIM AIVY 2017	2017	\$2,000,000	\$866,604	\$1,133,396	\$26	\$41,946	\$1,701,940	\$1,743,886	\$610,464	0.04	1.54	27.75%
Mass PRIM AIVY 2020	2020	\$5,000,000	\$4,596,948	\$403,052	\$61	\$0	\$459,552	\$459,552	\$56,438	0.00	1.14	27.25%
Park Square Capital Credit Opportunities III (USD), L.P.	2017	\$3,000,000	\$689,867	\$2,310,133	\$0	\$37,469	\$2,677,126	\$2,714,595	\$404,462	0.02	1.18	8.65%
Private Advisors Small Co Coinvestment Fund, L.P.	2016	\$4,000,000	\$358,076	\$3,641,924	\$14,068	\$1,318,640	\$5,167,328	\$6,485,968	\$2,829,977	0.36	1.77	26.17%
Ticonderoga Concord Partners III, L.P.	1995	\$800,000	\$0	\$800,000	\$0	\$544,677	\$0	\$544,677	-\$255,323	0.68	0.68	-8.06%
<b>Total</b>		<b>\$112,451,402</b>	<b>\$42,580,164</b>	<b>\$69,871,238</b>	<b>\$474,192</b>	<b>\$56,033,502</b>	<b>\$62,899,048</b>	<b>\$118,932,549</b>	<b>\$48,587,119</b>	<b>0.80</b>	<b>1.69</b>	<b>12.35%</b>



# MWRA Employees' Retirement System

## ANALYSIS BY LIFECYCLE

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>Investing</b>												
Ascent Venture Partners IV(B), L.P.	2016	\$1,000,000	\$32,164	\$967,836	\$0	\$793,136	\$135,944	\$929,080	-\$38,756	0.82	0.96	-1.11%
Ascent Venture Partners VI, L.P.	2014	\$3,000,000	\$300,000	\$2,700,000	\$0	\$0	\$2,889,613	\$2,889,613	\$189,613	0.00	1.07	2.00%
CVI Credit Value Fund A IV, L.P.	2017	\$6,000,000	\$600,000	\$5,400,000	-\$1,229	\$0	\$6,266,410	\$6,266,410	\$867,639	0.00	1.16	7.64%
Dover Street X, L.P.	2020	\$9,000,000	\$6,975,000	\$2,025,000	\$6,202	\$310,275	\$2,568,656	\$2,878,931	\$847,729	0.15	1.42	76.64%
Foundry Venture Capital 2010 Annex, L.P.	2015	\$268,205	\$0	\$268,205	\$0	\$271,825	\$456,587	\$728,412	\$460,207	1.01	2.72	27.10%
Hamilton Lane Secondary Fund V, L.P.	2020	\$9,000,000	\$7,425,000	\$1,575,000	\$12,686	\$0	\$2,295,165	\$2,295,165	\$707,479	0.00	1.45	49.24%
Invesco Partnership Fund VI, L.P.	2013	\$5,000,000	\$1,041,645	\$3,958,355	\$0	\$1,833,228	\$8,624,098	\$10,457,326	\$6,498,971	0.46	2.64	17.23%
Ironsides Opportunities Fund, L.P.	2017	\$3,000,000	\$1,001,989	\$1,998,011	\$11,292	\$21,961	\$2,571,027	\$2,592,988	\$583,684	0.01	1.29	14.38%
JFL Equity Investors IV, L.P.	2016	\$6,000,000	\$355,400	\$5,644,600	\$61,053	\$5,070,053	\$7,954,373	\$13,024,426	\$7,318,773	0.89	2.28	38.57%
JFL Equity Investors V, L.P.	2020	\$9,000,000	\$6,574,769	\$2,425,231	\$0	\$0	\$2,180,261	\$2,180,261	-\$244,970	0.00	0.90	-11.84%
Kayne Anderson Energy Fund VII, L.P.	2015	\$5,000,000	\$708,226	\$4,291,774	-\$40,917	\$984,075	\$1,697,871	\$2,681,946	-\$1,568,911	0.23	0.63	-16.41%
Mass PRIM AIVY 2008	2008	\$3,000,000	\$1,106,681	\$1,893,319	\$2,212	\$3,400,617	\$1,036,912	\$4,437,529	\$2,541,998	1.79	2.34	17.21%
Mass PRIM AIVY 2009	2009	\$1,000,000	\$756,264	\$243,736	\$109	\$533,482	\$179,421	\$712,902	\$469,058	2.19	2.92	20.68%
Mass PRIM AIVY 2010	2010	\$1,000,000	\$445,956	\$554,044	\$180	\$871,719	\$638,975	\$1,510,694	\$956,469	1.57	2.73	17.97%
Mass PRIM AIVY 2011	2011	\$1,500,000	\$517,547	\$982,453	\$159	\$1,371,720	\$1,058,280	\$2,429,999	\$1,447,387	1.40	2.47	18.66%
Mass PRIM AIVY 2012	2012	\$1,000,000	\$480,808	\$519,192	\$44	\$532,781	\$792,473	\$1,325,254	\$806,018	1.03	2.55	20.11%
Mass PRIM AIVY 2014	2014	\$2,000,000	\$808,828	\$1,191,172	\$0	\$735,000	\$2,143,905	\$2,878,905	\$1,687,732	0.62	2.42	24.34%
Mass PRIM AIVY 2017	2017	\$2,000,000	\$866,604	\$1,133,396	\$26	\$41,946	\$1,701,940	\$1,743,886	\$610,464	0.04	1.54	27.75%
Mass PRIM AIVY 2020	2020	\$5,000,000	\$4,596,948	\$403,052	\$61	\$0	\$459,552	\$459,552	\$56,438	0.00	1.14	27.25%
Park Square Capital Credit Opportunities III (USD), L.P.	2017	\$3,000,000	\$689,867	\$2,310,133	\$0	\$37,469	\$2,677,126	\$2,714,595	\$404,462	0.02	1.18	8.65%
Private Advisors Small Co Coinvestment Fund, L.P.	2016	\$4,000,000	\$358,076	\$3,641,924	\$14,068	\$1,318,640	\$5,167,328	\$6,485,968	\$2,829,977	0.36	1.77	26.17%
<b>Total Investing</b>		<b>\$79,768,205</b>	<b>\$35,641,771</b>	<b>\$44,126,434</b>	<b>\$65,946</b>	<b>\$18,127,928</b>	<b>\$53,495,915</b>	<b>\$71,623,843</b>	<b>\$27,431,463</b>	<b>0.41</b>	<b>1.62</b>	<b>17.00%</b>
<b>Harvesting</b>												
AIG PEP V Asia, L.P.	2007	\$549,557	\$122,805	\$426,752	\$11,622	\$425,655	\$55,816	\$481,471	\$43,097	0.97	1.10	1.53%
AIG PEP V Co-Investment, L.P.	2007	\$900,000	\$22,644	\$877,356	\$32,765	\$885,186	\$69,013	\$954,199	\$44,078	0.97	1.05	0.68%
AIG PEP V Europe, L.P.	2007	\$1,655,272	\$569,938	\$1,085,334	\$25,194	\$1,292,083	\$23,520	\$1,315,603	\$205,075	1.16	1.18	2.38%
AIG PEP V Large Market U.S. Buyout, L.P.	2007	\$720,000	\$131,894	\$588,106	-\$11,616	\$862,272	\$156,195	\$1,018,467	\$441,977	1.50	1.77	7.80%
AIG PEP V Preferred Participation Fund, L.P.	2007	\$503,561	\$3,899	\$499,662	\$28,158	\$778,653	\$316,971	\$1,095,624	\$567,804	1.48	2.08	11.59%
AIG PEP V Secondary, L.P.	2007	\$600,000	\$191,709	\$408,291	\$17,277	\$559,856	\$34,446	\$594,302	\$168,734	1.32	1.40	6.75%
AIG PEP V Small-Mid Market U.S. Buyout, L.P.	2007	\$900,000	\$194,403	\$705,597	-\$9,254	\$1,235,115	\$106,197	\$1,341,312	\$644,969	1.77	1.93	9.72%



# MWRA Employees' Retirement System

## ANALYSIS BY LIFECYCLE

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
AIG PEP V US Venture, L.P.	2007	\$480,000	\$71,864	\$408,136	\$12,941	\$788,687	\$103,778	\$892,465	\$471,388	1.87	2.12	13.17%
Alcentra European Direct Lending Fund I, L.P.	2014	\$5,000,000	\$3,919,997	\$1,080,003	\$26,581	\$1,360,205	\$934,162	\$2,294,367	\$1,187,782	1.23	2.07	7.00%
Ascent Venture Partners IV, L.P.	2004	\$2,000,000	\$0	\$2,000,000	\$0	\$334,111	\$7,098	\$341,209	-\$1,658,791	0.17	0.17	-27.15%
Ascent Venture Partners V, L.P.	2008	\$2,000,000	\$60,000	\$1,940,000	\$0	\$1,298,211	\$1,680,079	\$2,978,290	\$1,038,290	0.67	1.54	6.68%
Foundry Venture Capital 2007, L.P.	2007	\$3,000,000	\$45,000	\$2,955,000	\$0	\$14,506,308	\$467,702	\$14,974,010	\$12,019,010	4.91	5.07	42.81%
Foundry Venture Capital 2010, L.P.	2010	\$3,000,000	\$67,500	\$2,932,500	\$0	\$1,948,084	\$3,950,914	\$5,898,998	\$2,966,498	0.66	2.01	10.63%
Invesco Fund IV, L.P.	2004	\$3,000,000	\$717,234	\$2,282,766	\$232,198	\$4,843,767	\$1,209	\$4,844,976	\$2,330,012	1.93	1.93	10.33%
Landmark Equity Partners XV, L.P.	2013	\$3,000,000	\$819,506	\$2,180,494	-\$9,117	\$1,618,590	\$1,496,032	\$3,114,622	\$943,245	0.75	1.43	13.42%
<b>Total Harvesting</b>		<b>\$27,308,390</b>	<b>\$6,938,393</b>	<b>\$20,369,997</b>	<b>\$356,750</b>	<b>\$32,736,782</b>	<b>\$9,403,133</b>	<b>\$42,139,915</b>	<b>\$21,413,168</b>	<b>1.58</b>	<b>2.03</b>	<b>12.33%</b>
<b>Completed</b>												
Ascent Venture Partners II, L.P.	1995	\$774,807	\$0	\$774,807	\$0	\$2,571,916	\$0	\$2,571,916	\$1,797,109	3.32	3.32	26.71%
Boston Capital Venture Fund III, L.P.	1993	\$800,000	\$0	\$800,000	\$0	\$1,199,402	\$0	\$1,199,402	\$399,402	1.50	1.50	8.87%
Castile Ventures III, L.P.	2007	\$3,000,000	\$0	\$3,000,000	\$51,496	\$852,796	\$0	\$852,796	-\$2,198,700	0.28	0.28	-36.97%
Ticonderoga Concord Partners III, L.P.	1995	\$800,000	\$0	\$800,000	\$0	\$544,677	\$0	\$544,677	-\$255,323	0.68	0.68	-8.06%
<b>Total Completed</b>		<b>\$5,374,807</b>	<b>\$0</b>	<b>\$5,374,807</b>	<b>\$51,496</b>	<b>\$5,168,791</b>	<b>\$0</b>	<b>\$5,168,791</b>	<b>-\$257,512</b>	<b>0.95</b>	<b>0.95</b>	<b>-11.00%</b>
<b>Total</b>		<b>\$112,451,402</b>	<b>\$42,580,164</b>	<b>\$69,871,238</b>	<b>\$474,192</b>	<b>\$56,033,502</b>	<b>\$62,899,048</b>	<b>\$118,932,549</b>	<b>\$48,587,119</b>	<b>0.80</b>	<b>1.69</b>	<b>12.35%</b>





# MWRA Employees' Retirement System

## ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>1993</b>												
Boston Capital Venture Fund III, L.P.	1993	\$800,000	\$0	\$800,000	\$0	\$1,199,402	\$0	\$1,199,402	\$399,402	1.50	1.50	8.87%
<b>Total 1993</b>		<b>\$800,000</b>	<b>\$0</b>	<b>\$800,000</b>	<b>\$0</b>	<b>\$1,199,402</b>	<b>\$0</b>	<b>\$1,199,402</b>	<b>\$399,402</b>	<b>1.50</b>	<b>1.50</b>	<b>8.87%</b>
<b>1995</b>												
Ascent Venture Partners II, L.P.	1995	\$774,807	\$0	\$774,807	\$0	\$2,571,916	\$0	\$2,571,916	\$1,797,109	3.32	3.32	26.71%
Ticonderoga Concord Partners III, L.P.	1995	\$800,000	\$0	\$800,000	\$0	\$544,677	\$0	\$544,677	-\$255,323	0.68	0.68	-8.06%
<b>Total 1995</b>		<b>\$1,574,807</b>	<b>\$0</b>	<b>\$1,574,807</b>	<b>\$0</b>	<b>\$3,116,593</b>	<b>\$0</b>	<b>\$3,116,593</b>	<b>\$1,541,786</b>	<b>1.98</b>	<b>1.98</b>	<b>13.46%</b>
<b>2004</b>												
Ascent Venture Partners IV, L.P.	2004	\$2,000,000	\$0	\$2,000,000	\$0	\$334,111	\$7,098	\$341,209	-\$1,658,791	0.17	0.17	-27.15%
Invesco Fund IV, L.P.	2004	\$3,000,000	\$717,234	\$2,282,766	\$232,198	\$4,843,767	\$1,209	\$4,844,976	\$2,330,012	1.93	1.93	10.33%
<b>Total 2004</b>		<b>\$5,000,000</b>	<b>\$717,234</b>	<b>\$4,282,766</b>	<b>\$232,198</b>	<b>\$5,177,877</b>	<b>\$8,307</b>	<b>\$5,186,184</b>	<b>\$671,220</b>	<b>1.15</b>	<b>1.15</b>	<b>2.14%</b>
<b>2007</b>												
AIG PEP V Asia, L.P.	2007	\$549,557	\$122,805	\$426,752	\$11,622	\$425,655	\$55,816	\$481,471	\$43,097	0.97	1.10	1.53%
AIG PEP V Co-Investment, L.P.	2007	\$900,000	\$22,644	\$877,356	\$32,765	\$885,186	\$69,013	\$954,199	\$44,078	0.97	1.05	0.68%
AIG PEP V Europe, L.P.	2007	\$1,655,272	\$569,938	\$1,085,334	\$25,194	\$1,292,083	\$23,520	\$1,315,603	\$205,075	1.16	1.18	2.38%
AIG PEP V Large Market U.S. Buyout, L.P.	2007	\$720,000	\$131,894	\$588,106	-\$11,616	\$862,272	\$156,195	\$1,018,467	\$441,977	1.50	1.77	7.80%
AIG PEP V Preferred Participation Fund, L.P.	2007	\$503,561	\$3,899	\$499,662	\$28,158	\$778,653	\$316,971	\$1,095,624	\$567,804	1.48	2.08	11.59%
AIG PEP V Secondary, L.P.	2007	\$600,000	\$191,709	\$408,291	\$17,277	\$559,856	\$34,446	\$594,302	\$168,734	1.32	1.40	6.75%
AIG PEP V Small-Mid Market U.S. Buyout, L.P.	2007	\$900,000	\$194,403	\$705,597	-\$9,254	\$1,235,115	\$106,197	\$1,341,312	\$644,969	1.77	1.93	9.72%
AIG PEP V US Venture, L.P.	2007	\$480,000	\$71,864	\$408,136	\$12,941	\$788,687	\$103,778	\$892,465	\$471,388	1.87	2.12	13.17%
Castile Ventures III, L.P.	2007	\$3,000,000	\$0	\$3,000,000	\$51,496	\$852,796	\$0	\$852,796	-\$2,198,700	0.28	0.28	-36.97%
Foundry Venture Capital 2007, L.P.	2007	\$3,000,000	\$45,000	\$2,955,000	\$0	\$14,506,308	\$467,702	\$14,974,010	\$12,019,010	4.91	5.07	42.81%
<b>Total 2007</b>		<b>\$12,308,390</b>	<b>\$1,354,156</b>	<b>\$10,954,234</b>	<b>\$158,583</b>	<b>\$22,186,612</b>	<b>\$1,333,638</b>	<b>\$23,520,250</b>	<b>\$12,407,432</b>	<b>2.00</b>	<b>2.12</b>	<b>14.46%</b>
<b>2008</b>												
Ascent Venture Partners V, L.P.	2008	\$2,000,000	\$60,000	\$1,940,000	\$0	\$1,298,211	\$1,680,079	\$2,978,290	\$1,038,290	0.67	1.54	6.68%
Mass PRIM AIVY 2008	2008	\$3,000,000	\$1,106,681	\$1,893,319	\$2,212	\$3,400,617	\$1,036,912	\$4,437,529	\$2,541,998	1.79	2.34	17.21%
<b>Total 2008</b>		<b>\$5,000,000</b>	<b>\$1,166,681</b>	<b>\$3,833,319</b>	<b>\$2,212</b>	<b>\$4,698,828</b>	<b>\$2,716,992</b>	<b>\$7,415,820</b>	<b>\$3,580,288</b>	<b>1.23</b>	<b>1.93</b>	<b>11.88%</b>
<b>2009</b>												
Mass PRIM AIVY 2009	2009	\$1,000,000	\$756,264	\$243,736	\$109	\$533,482	\$179,421	\$712,902	\$469,058	2.19	2.92	20.68%
<b>Total 2009</b>		<b>\$1,000,000</b>	<b>\$756,264</b>	<b>\$243,736</b>	<b>\$109</b>	<b>\$533,482</b>	<b>\$179,421</b>	<b>\$712,902</b>	<b>\$469,058</b>	<b>2.19</b>	<b>2.92</b>	<b>20.68%</b>



# MWRA Employees' Retirement System

## ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>2010</b>												
Foundry Venture Capital 2010, L.P.	2010	\$3,000,000	\$67,500	\$2,932,500	\$0	\$1,948,084	\$3,950,914	\$5,898,998	\$2,966,498	0.66	2.01	10.63%
Mass PRIM AIVY 2010	2010	\$1,000,000	\$445,956	\$554,044	\$180	\$871,719	\$638,975	\$1,510,694	\$956,469	1.57	2.73	17.97%
<b>Total 2010</b>		<b>\$4,000,000</b>	<b>\$513,456</b>	<b>\$3,486,544</b>	<b>\$180</b>	<b>\$2,819,803</b>	<b>\$4,589,889</b>	<b>\$7,409,691</b>	<b>\$3,922,967</b>	<b>0.81</b>	<b>2.13</b>	<b>11.82%</b>
<b>2011</b>												
Mass PRIM AIVY 2011	2011	\$1,500,000	\$517,547	\$982,453	\$159	\$1,371,720	\$1,058,280	\$2,429,999	\$1,447,387	1.40	2.47	18.66%
<b>Total 2011</b>		<b>\$1,500,000</b>	<b>\$517,547</b>	<b>\$982,453</b>	<b>\$159</b>	<b>\$1,371,720</b>	<b>\$1,058,280</b>	<b>\$2,429,999</b>	<b>\$1,447,387</b>	<b>1.40</b>	<b>2.47</b>	<b>18.66%</b>
<b>2012</b>												
Mass PRIM AIVY 2012	2012	\$1,000,000	\$480,808	\$519,192	\$44	\$532,781	\$792,473	\$1,325,254	\$806,018	1.03	2.55	20.11%
<b>Total 2012</b>		<b>\$1,000,000</b>	<b>\$480,808</b>	<b>\$519,192</b>	<b>\$44</b>	<b>\$532,781</b>	<b>\$792,473</b>	<b>\$1,325,254</b>	<b>\$806,018</b>	<b>1.03</b>	<b>2.55</b>	<b>20.11%</b>
<b>2013</b>												
Invesco Partnership Fund VI, L.P.	2013	\$5,000,000	\$1,041,645	\$3,958,355	\$0	\$1,833,228	\$8,624,098	\$10,457,326	\$6,498,971	0.46	2.64	17.23%
Landmark Equity Partners XV, L.P.	2013	\$3,000,000	\$819,506	\$2,180,494	-\$9,117	\$1,618,590	\$1,496,032	\$3,114,622	\$943,245	0.75	1.43	13.42%
<b>Total 2013</b>		<b>\$8,000,000</b>	<b>\$1,861,151</b>	<b>\$6,138,849</b>	<b>-\$9,117</b>	<b>\$3,451,818</b>	<b>\$10,120,130</b>	<b>\$13,571,948</b>	<b>\$7,442,216</b>	<b>0.56</b>	<b>2.21</b>	<b>16.62%</b>
<b>2014</b>												
Alcentra European Direct Lending Fund I, L.P.	2014	\$5,000,000	\$3,919,997	\$1,080,003	\$26,581	\$1,360,205	\$934,162	\$2,294,367	\$1,187,782	1.23	2.07	7.00%
Ascent Venture Partners VI, L.P.	2014	\$3,000,000	\$300,000	\$2,700,000	\$0	\$0	\$2,889,613	\$2,889,613	\$189,613	0.00	1.07	2.00%
Mass PRIM AIVY 2014	2014	\$2,000,000	\$808,828	\$1,191,172	\$0	\$735,000	\$2,143,905	\$2,878,905	\$1,687,732	0.62	2.42	24.34%
<b>Total 2014</b>		<b>\$10,000,000</b>	<b>\$5,028,825</b>	<b>\$4,971,175</b>	<b>\$26,581</b>	<b>\$2,095,205</b>	<b>\$5,967,680</b>	<b>\$8,062,884</b>	<b>\$3,065,128</b>	<b>0.42</b>	<b>1.61</b>	<b>9.06%</b>
<b>2015</b>												
Foundry Venture Capital 2010 Annex, L.P.	2015	\$268,205	\$0	\$268,205	\$0	\$271,825	\$456,587	\$728,412	\$460,207	1.01	2.72	27.10%
Kayne Anderson Energy Fund VII, L.P.	2015	\$5,000,000	\$708,226	\$4,291,774	-\$40,917	\$984,075	\$1,697,871	\$2,681,946	-\$1,568,911	0.23	0.63	-16.41%
<b>Total 2015</b>		<b>\$5,268,205</b>	<b>\$708,226</b>	<b>\$4,559,979</b>	<b>-\$40,917</b>	<b>\$1,255,900</b>	<b>\$2,154,458</b>	<b>\$3,410,358</b>	<b>-\$1,108,704</b>	<b>0.28</b>	<b>0.75</b>	<b>-9.81%</b>
<b>2016</b>												
Ascent Venture Partners IV(B), L.P.	2016	\$1,000,000	\$32,164	\$967,836	\$0	\$793,136	\$135,944	\$929,080	-\$38,756	0.82	0.96	-1.11%
JFL Equity Investors IV, L.P.	2016	\$6,000,000	\$355,400	\$5,644,600	\$61,053	\$5,070,053	\$7,954,373	\$13,024,426	\$7,318,773	0.89	2.28	38.57%
Private Advisors Small Co Coinvestment Fund, L.P.	2016	\$4,000,000	\$358,076	\$3,641,924	\$14,068	\$1,318,640	\$5,167,328	\$6,485,968	\$2,829,977	0.36	1.77	26.17%
<b>Total 2016</b>		<b>\$11,000,000</b>	<b>\$745,640</b>	<b>\$10,254,360</b>	<b>\$75,121</b>	<b>\$7,181,830</b>	<b>\$13,257,645</b>	<b>\$20,439,474</b>	<b>\$10,109,994</b>	<b>0.70</b>	<b>1.98</b>	<b>29.33%</b>



# MWRA Employees' Retirement System

## ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>2017</b>												
CVI Credit Value Fund A IV, L.P.	2017	\$6,000,000	\$600,000	\$5,400,000	-\$1,229	\$0	\$6,266,410	\$6,266,410	\$867,639	0.00	1.16	7.64%
Ironsides Opportunities Fund, L.P.	2017	\$3,000,000	\$1,001,989	\$1,998,011	\$11,292	\$21,961	\$2,571,027	\$2,592,988	\$583,684	0.01	1.29	14.38%
Mass PRIM AIVY 2017	2017	\$2,000,000	\$866,604	\$1,133,396	\$26	\$41,946	\$1,701,940	\$1,743,886	\$610,464	0.04	1.54	27.75%
Park Square Capital Credit Opportunities III (USD), L.P.	2017	\$3,000,000	\$689,867	\$2,310,133	\$0	\$37,469	\$2,677,126	\$2,714,595	\$404,462	0.02	1.18	8.65%
<b>Total 2017</b>		<b>\$14,000,000</b>	<b>\$3,158,460</b>	<b>\$10,841,540</b>	<b>\$10,089</b>	<b>\$101,377</b>	<b>\$13,216,502</b>	<b>\$13,317,879</b>	<b>\$2,466,250</b>	<b>0.01</b>	<b>1.23</b>	<b>11.05%</b>
<b>2020</b>												
Dover Street X, L.P.	2020	\$9,000,000	\$6,975,000	\$2,025,000	\$6,202	\$310,275	\$2,568,656	\$2,878,931	\$847,729	0.15	1.42	76.64%
Hamilton Lane Secondary Fund V, L.P.	2020	\$9,000,000	\$7,425,000	\$1,575,000	\$12,686	\$0	\$2,295,165	\$2,295,165	\$707,479	0.00	1.45	49.24%
JFL Equity Investors V, L.P.	2020	\$9,000,000	\$6,574,769	\$2,425,231	\$0	\$0	\$2,180,261	\$2,180,261	-\$244,970	0.00	0.90	-11.84%
Mass PRIM AIVY 2020	2020	\$5,000,000	\$4,596,948	\$403,052	\$61	\$0	\$459,552	\$459,552	\$56,438	0.00	1.14	27.25%
<b>Total 2020</b>		<b>\$32,000,000</b>	<b>\$25,571,717</b>	<b>\$6,428,283</b>	<b>\$18,949</b>	<b>\$310,275</b>	<b>\$7,503,634</b>	<b>\$7,813,909</b>	<b>\$1,366,677</b>	<b>0.05</b>	<b>1.21</b>	<b>39.83%</b>
<b>Total</b>		<b>\$112,451,402</b>	<b>\$42,580,164</b>	<b>\$69,871,238</b>	<b>\$474,192</b>	<b>\$56,033,502</b>	<b>\$62,899,048</b>	<b>\$118,932,549</b>	<b>\$48,587,119</b>	<b>0.80</b>	<b>1.69</b>	<b>12.35%</b>



# MWRA Employees' Retirement System

## ANALYSIS BY INVESTMENT STRATEGY

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>Buyout</b>												
AIG PEP V Asia, L.P.	2007	\$549,557	\$122,805	\$426,752	\$11,622	\$425,655	\$55,816	\$481,471	\$43,097	0.97	1.10	1.53%
AIG PEP V Europe, L.P.	2007	\$1,655,272	\$569,938	\$1,085,334	\$25,194	\$1,292,083	\$23,520	\$1,315,603	\$205,075	1.16	1.18	2.38%
AIG PEP V Large Market U.S. Buyout, L.P.	2007	\$720,000	\$131,894	\$588,106	-\$11,616	\$862,272	\$156,195	\$1,018,467	\$441,977	1.50	1.77	7.80%
AIG PEP V Preferred Participation Fund, L.P.	2007	\$503,561	\$3,899	\$499,662	\$28,158	\$778,653	\$316,971	\$1,095,624	\$567,804	1.48	2.08	11.59%
JFL Equity Investors IV, L.P.	2016	\$6,000,000	\$355,400	\$5,644,600	\$61,053	\$5,070,053	\$7,954,373	\$13,024,426	\$7,318,773	0.89	2.28	38.57%
JFL Equity Investors V, L.P.	2020	\$9,000,000	\$6,574,769	\$2,425,231	\$0	\$0	\$2,180,261	\$2,180,261	-\$244,970	0.00	0.90	-11.84%
<b>Total Buyout</b>		<b>\$18,428,390</b>	<b>\$7,758,705</b>	<b>\$10,669,685</b>	<b>\$114,412</b>	<b>\$8,428,716</b>	<b>\$10,687,136</b>	<b>\$19,115,853</b>	<b>\$8,331,756</b>	<b>0.78</b>	<b>1.77</b>	<b>13.99%</b>
<b>Co-Investments</b>												
AIG PEP V Co-Investment, L.P.	2007	\$900,000	\$22,644	\$877,356	\$32,765	\$885,186	\$69,013	\$954,199	\$44,078	0.97	1.05	0.68%
Private Advisors Small Co Coinvestment Fund, L.P.	2016	\$4,000,000	\$358,076	\$3,641,924	\$14,068	\$1,318,640	\$5,167,328	\$6,485,968	\$2,829,977	0.36	1.77	26.17%
<b>Total Co-Investments</b>		<b>\$4,900,000</b>	<b>\$380,720</b>	<b>\$4,519,280</b>	<b>\$46,833</b>	<b>\$2,203,826</b>	<b>\$5,236,341</b>	<b>\$7,440,167</b>	<b>\$2,874,055</b>	<b>0.48</b>	<b>1.63</b>	<b>11.65%</b>
<b>Direct Lending</b>												
Aicentra European Direct Lending Fund I, L.P.	2014	\$5,000,000	\$3,919,997	\$1,080,003	\$26,581	\$1,360,205	\$934,162	\$2,294,367	\$1,187,782	1.23	2.07	7.00%
Park Square Capital Credit Opportunities III (USD), L.P.	2017	\$3,000,000	\$689,867	\$2,310,133	\$0	\$37,469	\$2,677,126	\$2,714,595	\$404,462	0.02	1.18	8.65%
<b>Total Direct Lending</b>		<b>\$8,000,000</b>	<b>\$4,609,864</b>	<b>\$3,390,136</b>	<b>\$26,581</b>	<b>\$1,397,674</b>	<b>\$3,611,288</b>	<b>\$5,008,962</b>	<b>\$1,592,245</b>	<b>0.41</b>	<b>1.47</b>	<b>7.30%</b>
<b>Distressed</b>												
CVI Credit Value Fund A IV, L.P.	2017	\$6,000,000	\$600,000	\$5,400,000	-\$1,229	\$0	\$6,266,410	\$6,266,410	\$867,639	0.00	1.16	7.64%
Ironsides Opportunities Fund, L.P.	2017	\$3,000,000	\$1,001,989	\$1,998,011	\$11,292	\$21,961	\$2,571,027	\$2,592,988	\$583,684	0.01	1.29	14.38%
<b>Total Distressed</b>		<b>\$9,000,000</b>	<b>\$1,601,989</b>	<b>\$7,398,011</b>	<b>\$10,063</b>	<b>\$21,961</b>	<b>\$8,837,437</b>	<b>\$8,859,398</b>	<b>\$1,451,324</b>	<b>0.00</b>	<b>1.20</b>	<b>9.40%</b>
<b>Energy</b>												
Kayne Anderson Energy Fund VII, L.P.	2015	\$5,000,000	\$708,226	\$4,291,774	-\$40,917	\$984,075	\$1,697,871	\$2,681,946	-\$1,568,911	0.23	0.63	-16.41%
<b>Total Energy</b>		<b>\$5,000,000</b>	<b>\$708,226</b>	<b>\$4,291,774</b>	<b>-\$40,917</b>	<b>\$984,075</b>	<b>\$1,697,871</b>	<b>\$2,681,946</b>	<b>-\$1,568,911</b>	<b>0.23</b>	<b>0.63</b>	<b>-16.41%</b>
<b>Fund of Funds</b>												
Hamilton Lane Secondary Fund V, L.P.	2020	\$9,000,000	\$7,425,000	\$1,575,000	\$12,686	\$0	\$2,295,165	\$2,295,165	\$707,479	0.00	1.45	49.24%
Invesco Fund IV, L.P.	2004	\$3,000,000	\$717,234	\$2,282,766	\$232,198	\$4,843,767	\$1,209	\$4,844,976	\$2,330,012	1.93	1.93	10.33%
Invesco Partnership Fund VI, L.P.	2013	\$5,000,000	\$1,041,645	\$3,958,355	\$0	\$1,833,228	\$8,624,098	\$10,457,326	\$6,498,971	0.46	2.64	17.23%
Mass PRIM AIVY 2008	2008	\$3,000,000	\$1,106,681	\$1,893,319	\$2,212	\$3,400,617	\$1,036,912	\$4,437,529	\$2,541,998	1.79	2.34	17.21%
Mass PRIM AIVY 2009	2009	\$1,000,000	\$756,264	\$243,736	\$109	\$533,482	\$179,421	\$712,902	\$469,058	2.19	2.92	20.68%
Mass PRIM AIVY 2010	2010	\$1,000,000	\$445,956	\$554,044	\$180	\$871,719	\$638,975	\$1,510,694	\$956,469	1.57	2.73	17.97%
Mass PRIM AIVY 2011	2011	\$1,500,000	\$517,547	\$982,453	\$159	\$1,371,720	\$1,058,280	\$2,429,999	\$1,447,387	1.40	2.47	18.66%



# MWRA Employees' Retirement System

## ANALYSIS BY INVESTMENT STRATEGY

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Mass PRIM AIVY 2012	2012	\$1,000,000	\$480,808	\$519,192	\$44	\$532,781	\$792,473	\$1,325,254	\$806,018	1.03	2.55	20.11%
Mass PRIM AIVY 2014	2014	\$2,000,000	\$808,828	\$1,191,172	\$0	\$735,000	\$2,143,905	\$2,878,905	\$1,687,732	0.62	2.42	24.34%
Mass PRIM AIVY 2017	2017	\$2,000,000	\$866,604	\$1,133,396	\$26	\$41,946	\$1,701,940	\$1,743,886	\$610,464	0.04	1.54	27.75%
Mass PRIM AIVY 2020	2020	\$5,000,000	\$4,596,948	\$403,052	\$61	\$0	\$459,552	\$459,552	\$56,438	0.00	1.14	27.25%
<b>Total Fund of Funds</b>		<b>\$33,500,000</b>	<b>\$18,763,513</b>	<b>\$14,736,487</b>	<b>\$247,675</b>	<b>\$14,164,260</b>	<b>\$18,931,929</b>	<b>\$33,096,189</b>	<b>\$18,112,027</b>	<b>0.95</b>	<b>2.21</b>	<b>15.39%</b>
<b>Growth Equity</b>												
AIG PEP V Small-Mid Market U.S. Buyout, L.P.	2007	\$900,000	\$194,403	\$705,597	-\$9,254	\$1,235,115	\$106,197	\$1,341,312	\$644,969	1.77	1.93	9.72%
<b>Total Growth Equity</b>		<b>\$900,000</b>	<b>\$194,403</b>	<b>\$705,597</b>	<b>-\$9,254</b>	<b>\$1,235,115</b>	<b>\$106,197</b>	<b>\$1,341,312</b>	<b>\$644,969</b>	<b>1.77</b>	<b>1.93</b>	<b>9.72%</b>
<b>Secondaries</b>												
AIG PEP V Secondary, L.P.	2007	\$600,000	\$191,709	\$408,291	\$17,277	\$559,856	\$34,446	\$594,302	\$168,734	1.32	1.40	6.75%
Dover Street X, L.P.	2020	\$9,000,000	\$6,975,000	\$2,025,000	\$6,202	\$310,275	\$2,568,656	\$2,878,931	\$847,729	0.15	1.42	76.64%
Landmark Equity Partners XV, L.P.	2013	\$3,000,000	\$819,506	\$2,180,494	-\$9,117	\$1,618,590	\$1,496,032	\$3,114,622	\$943,245	0.75	1.43	13.42%
<b>Total Secondaries</b>		<b>\$12,600,000</b>	<b>\$7,986,215</b>	<b>\$4,613,785</b>	<b>\$14,362</b>	<b>\$2,488,721</b>	<b>\$4,099,134</b>	<b>\$6,587,855</b>	<b>\$1,959,708</b>	<b>0.54</b>	<b>1.42</b>	<b>14.55%</b>
<b>Venture Capital</b>												
AIG PEP V US Venture, L.P.	2007	\$480,000	\$71,864	\$408,136	\$12,941	\$788,687	\$103,778	\$892,465	\$471,388	1.87	2.12	13.17%
Ascent Venture Partners II, L.P.	1995	\$774,807	\$0	\$774,807	\$0	\$2,571,916	\$0	\$2,571,916	\$1,797,109	3.32	3.32	26.71%
Ascent Venture Partners IV(B), L.P.	2016	\$1,000,000	\$32,164	\$967,836	\$0	\$793,136	\$135,944	\$929,080	-\$38,756	0.82	0.96	-1.11%
Ascent Venture Partners IV, L.P.	2004	\$2,000,000	\$0	\$2,000,000	\$0	\$334,111	\$7,098	\$341,209	-\$1,658,791	0.17	0.17	-27.15%
Ascent Venture Partners V, L.P.	2008	\$2,000,000	\$60,000	\$1,940,000	\$0	\$1,298,211	\$1,680,079	\$2,978,290	\$1,038,290	0.67	1.54	6.68%
Ascent Venture Partners VI, L.P.	2014	\$3,000,000	\$300,000	\$2,700,000	\$0	\$0	\$2,889,613	\$2,889,613	\$189,613	0.00	1.07	2.00%
Boston Capital Venture Fund III, L.P.	1993	\$800,000	\$0	\$800,000	\$0	\$1,199,402	\$0	\$1,199,402	\$399,402	1.50	1.50	8.87%
Castile Ventures III, L.P.	2007	\$3,000,000	\$0	\$3,000,000	\$51,496	\$852,796	\$0	\$852,796	-\$2,198,700	0.28	0.28	-36.97%
Foundry Venture Capital 2007, L.P.	2007	\$3,000,000	\$45,000	\$2,955,000	\$0	\$14,506,308	\$467,702	\$14,974,010	\$12,019,010	4.91	5.07	42.81%
Foundry Venture Capital 2010 Annex, L.P.	2015	\$268,205	\$0	\$268,205	\$0	\$271,825	\$456,587	\$728,412	\$460,207	1.01	2.72	27.10%
Foundry Venture Capital 2010, L.P.	2010	\$3,000,000	\$67,500	\$2,932,500	\$0	\$1,948,084	\$3,950,914	\$5,898,998	\$2,966,498	0.66	2.01	10.63%
Ticonderoga Concord Partners III, L.P.	1995	\$800,000	\$0	\$800,000	\$0	\$544,677	\$0	\$544,677	-\$255,323	0.68	0.68	-8.06%
<b>Total Venture Capital</b>		<b>\$20,123,012</b>	<b>\$576,528</b>	<b>\$19,546,484</b>	<b>\$64,437</b>	<b>\$25,109,153</b>	<b>\$9,691,715</b>	<b>\$34,800,868</b>	<b>\$15,189,948</b>	<b>1.28</b>	<b>1.77</b>	<b>11.78%</b>
<b>Total</b>		<b>\$112,451,402</b>	<b>\$42,580,164</b>	<b>\$69,871,238</b>	<b>\$474,192</b>	<b>\$56,033,502</b>	<b>\$62,899,048</b>	<b>\$118,932,549</b>	<b>\$48,587,119</b>	<b>0.80</b>	<b>1.69</b>	<b>12.35%</b>



# MWRA Employees' Retirement System

## QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Temp Return of Capital	Distribution	Net Cash Flow
Alcentra European Direct Lending Fund I, L.P.	2/28/2021				-22,013	-22,013
<b>Total: Alcentra European Direct Lending Fund I, L.P.</b>					<b>-22,013</b>	<b>-22,013</b>
Ascent Venture Partners IV(B), L.P.	3/31/2021				-1,753	-1,753
<b>Total: Ascent Venture Partners IV(B), L.P.</b>					<b>-1,753</b>	<b>-1,753</b>
Ascent Venture Partners IV, L.P.	2/28/2021				-22,934	-22,934
<b>Total: Ascent Venture Partners IV, L.P.</b>					<b>-22,934</b>	<b>-22,934</b>
CVI Credit Value Fund A IV, L.P.	1/31/2021			-420,000		-420,000
<b>Total: CVI Credit Value Fund A IV, L.P.</b>				<b>-420,000</b>		<b>-420,000</b>
Dover Street X, L.P.	3/31/2021				-99,731	-99,731
<b>Total: Dover Street X, L.P.</b>					<b>-99,731</b>	<b>-99,731</b>
Foundry Venture Capital 2010, L.P.	1/31/2021				-200,467	-200,467
<b>Total: Foundry Venture Capital 2010, L.P.</b>					<b>-200,467</b>	<b>-200,467</b>
Invesco Partnership Fund VI, L.P.	1/31/2021				-124,532	-124,532
<b>Total: Invesco Partnership Fund VI, L.P.</b>					<b>-124,532</b>	<b>-124,532</b>
Ironsides Opportunities Fund, L.P.	1/31/2021	152,584		-148,466	-4,118	0
<b>Total: Ironsides Opportunities Fund, L.P.</b>		<b>152,584</b>		<b>-148,466</b>	<b>-4,118</b>	<b>0</b>
JFL Equity Investors IV, L.P.	2/28/2021				-679,561	-679,561
	3/31/2021	295,199				295,199
<b>Total: JFL Equity Investors IV, L.P.</b>		<b>295,199</b>			<b>-679,561</b>	<b>-384,362</b>
JFL Equity Investors V, L.P.	2/28/2021			-430,813		-430,813
	3/31/2021	207,742				207,742
<b>Total: JFL Equity Investors V, L.P.</b>		<b>207,742</b>		<b>-430,813</b>		<b>-223,071</b>



# MWRA Employees' Retirement System

## QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Temp Return of Capital	Distribution	Net Cash Flow
Landmark Equity Partners XV, L.P.	3/31/2021				-52,590	-52,590
<b>Total: Landmark Equity Partners XV, L.P.</b>					<b>-52,590</b>	<b>-52,590</b>
Mass PRIM AIVY 2008	1/31/2021				-7,688	-7,688
	2/28/2021				-1,338	-1,338
<b>Total: Mass PRIM AIVY 2008</b>					<b>-9,026</b>	<b>-9,026</b>
Mass PRIM AIVY 2009	1/31/2021				-4,025	-4,025
	2/28/2021				-19,548	-19,548
	3/31/2021				-6,530	-6,530
<b>Total: Mass PRIM AIVY 2009</b>					<b>-30,103</b>	<b>-30,103</b>
Mass PRIM AIVY 2010	1/31/2021				-1,982	-1,982
	2/28/2021				-8,355	-8,355
	3/31/2021	2,901				2,901
<b>Total: Mass PRIM AIVY 2010</b>		<b>2,901</b>			<b>-10,336</b>	<b>-7,435</b>
Mass PRIM AIVY 2011	1/31/2021				-37,361	-37,361
	2/28/2021				-19,728	-19,728
	3/31/2021	7,849				7,849
<b>Total: Mass PRIM AIVY 2011</b>		<b>7,849</b>			<b>-57,088</b>	<b>-49,240</b>
Mass PRIM AIVY 2012	1/31/2021				-21,325	-21,325
	2/28/2021				-51,535	-51,535
	3/31/2021				-9,127	-9,127
<b>Total: Mass PRIM AIVY 2012</b>					<b>-81,987</b>	<b>-81,987</b>
Mass PRIM AIVY 2014	1/31/2021				-34,616	-34,616
	2/28/2021				-58,541	-58,541
	3/31/2021				-30,377	-30,377
<b>Total: Mass PRIM AIVY 2014</b>					<b>-123,534</b>	<b>-123,534</b>



# MWRA Employees' Retirement System

## QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Temp Return of Capital	Distribution	Net Cash Flow
Mass PRIM AIVY 2017	1/31/2021	21,950				21,950
	2/28/2021				-36,319	-36,319
	3/31/2021	7,955				7,955
<b>Total: Mass PRIM AIVY 2017</b>		<b>29,906</b>			<b>-36,319</b>	<b>-6,414</b>
Mass PRIM AIVY 2020	1/31/2021	84,961				84,961
	2/28/2021	74,872				74,872
	3/31/2021	20,963				20,963
<b>Total: Mass PRIM AIVY 2020</b>		<b>180,796</b>				<b>180,796</b>
Park Square Capital Credit Opportunities III (USD), L.P.	2/28/2021			-19,541	-19,541	-39,083
<b>Total: Park Square Capital Credit Opportunities III (USD), L.P.</b>				<b>-19,541</b>	<b>-19,541</b>	<b>-39,083</b>
Private Advisors Small Co Coinvestment Fund, L.P.	1/31/2021				-68,350	-68,350
<b>Total: Private Advisors Small Co Coinvestment Fund, L.P.</b>					<b>-68,350</b>	<b>-68,350</b>
<b>Grand Total</b>		<b>876,976</b>		<b>-1,018,820</b>	<b>-1,643,985</b>	<b>-1,785,828</b>





# GLOSSARY OF TERMS

- **Commitment Amount** – The amount an investor has committed to invest with the General Partner
- **Paid In Capital** – The amount an investor has contributed for investments and management fees
- **Capital to be Funded** – The remaining amount an investor contractually has left to fund its commitments
- **Additional Fees** – Fees that are outside the capital commitment, also includes interest paid/received due from subsequent closings of the fund
- **Cumulative Distributions** – The amount an investor has received from realized and partially realized investments
- **Valuation** – Sum of the fair market value of all investments plus cash
- **Call Ratio** – Calculated by dividing Amount Funded by Capital Committed
- **DPI Ratio** - Calculated by dividing Amount Distributed by Amount Funded
- **Market Exposure** – Calculated by adding Reported Value plus Unfunded Commitments
- **Total Value** – Calculated by adding Amount Distributed and Reported Value. Represents the total amount an investor should expect to receive from their investments
- **Net Benefit** – Calculated by subtracting Total Value by Capital to be Funded plus Additional Fees
- **Total Value to Paid In Capital Ratio** – Calculated by dividing Total Value by Amount Funded. Represents the multiple of the overall cash invested that an investor is expected to receive
- **IRR** - The calculation of the IRR (Internal Rate of Return) takes into consideration the timing of cash contributions and distributions to and from the partnerships, the length of time the investments have been held and the sum of the Reported Value
- **Index Comparison Method (ICM)** – represents the hypothetical IRR of a private investment program that is computed by assuming the fund flows were invested in and out of a publicly traded index. The resulting hypothetical market value of the program is then used with the program’s actual cash flows to compute a hypothetical IRR. This hypothetical IRR can be compared with the actual IRR to determine whether the private investment program outperformed the publicly traded index
- **Valuation ICM** – The valuation equivalent that ICM calculates for the public market is called valuation ICM
- **KS PME** – The Kaplan Schoar Public Markets Equivalent is a ratio of the future value of all distributions divided by the future value of all contributions using the index return as the discount rate. The ending valuation is treated as a distribution in this method
- **IRR ICM** – The IRR equivalent that ICM calculates for the public market is called IRR ICM



# QUARTERLY PERFORMANCE REPORT REAL ESTATE

## MWRA Employees' Retirement System

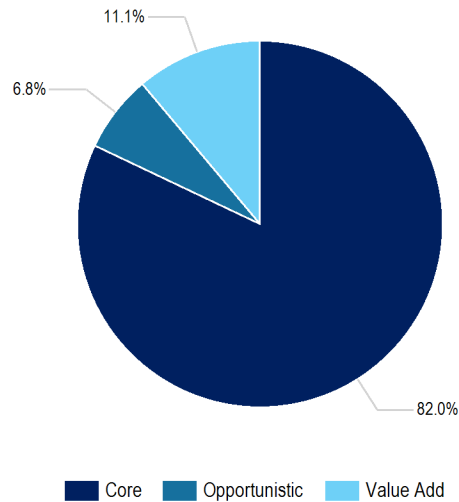
March 31, 2021



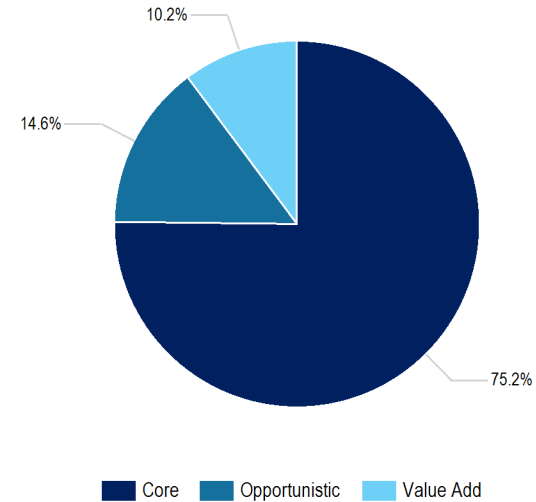
BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

# MWRA Employees' Retirement System ANALYSIS BY STRATEGY

Private Markets Valuation by Strategy



Private Markets Fund Exposure by Strategy

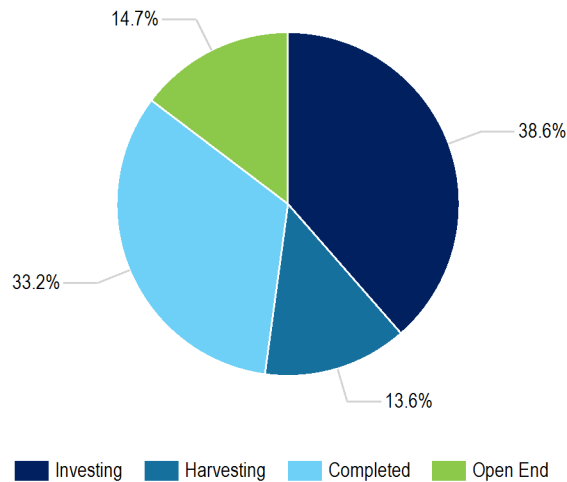


Investments	Commitments			Contributions & Distributions			Valuations				Performance		
	Investment Strategy	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Fund Exposure	DPI	TVPI
Total Core	\$52,587,180	\$0	1.00	\$52,587,180	\$0	\$35,577,611	\$41,375,653	\$76,953,265	\$24,366,084	\$41,375,653	0.68	1.46	9.95%
Total Opportunistic	\$14,500,000	\$4,598,797	0.68	\$9,901,203	\$4,898	\$8,688,298	\$3,438,425	\$12,126,723	\$2,220,622	\$8,037,222	0.88	1.22	4.40%
Total Value Add	\$14,610,264	\$0	1.00	\$14,610,264	\$3,600	\$15,159,439	\$5,619,581	\$20,779,020	\$6,165,156	\$5,619,581	1.04	1.42	9.77%
<b>Total</b>	<b>\$81,697,444</b>	<b>\$4,598,797</b>	<b>0.94</b>	<b>\$77,098,647</b>	<b>\$8,498</b>	<b>\$59,425,348</b>	<b>\$50,433,659</b>	<b>\$109,859,008</b>	<b>\$32,751,862</b>	<b>\$55,032,456</b>	<b>0.77</b>	<b>1.42</b>	<b>9.13%</b>

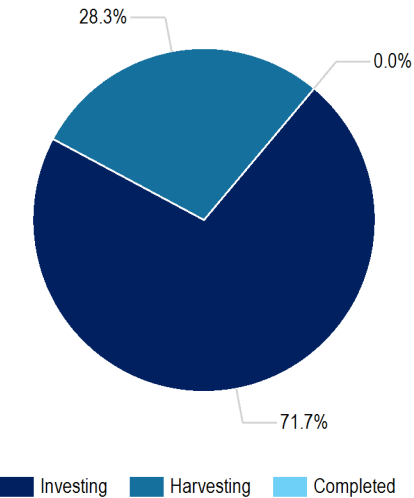


# MWRA Employees' Retirement System ANALYSIS BY LIFECYCLE

Commitment by Lifecycle



Unfunded Commitment by Lifecycle



Investments	Commitments			Contributions & Distributions			Valuations			Performance			
	Lifecycle	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total Investing		\$31,500,000	\$3,297,690	0.90	\$28,202,310	\$20,487	\$5,997,668	\$26,978,446	\$32,976,114	\$4,753,317	0.21	1.17	7.63%
Total Harvesting		\$11,110,264	\$1,301,107	0.88	\$9,809,157	-\$11,989	\$11,742,350	\$2,922,302	\$14,664,652	\$4,867,484	1.20	1.50	12.13%
Total Completed		\$27,087,180	\$0	1.00	\$27,087,180	\$0	\$41,685,330	\$0	\$41,685,330	\$14,598,150	1.54	1.54	8.20%
Total Open End		\$12,000,000	\$0	1.00	\$12,000,000	\$0	\$0	\$20,532,911	\$20,532,911	\$8,532,911	0.00	1.71	11.79%
<b>Total</b>		<b>\$81,697,444</b>	<b>\$4,598,797</b>	<b>0.94</b>	<b>\$77,098,647</b>	<b>\$8,498</b>	<b>\$59,425,348</b>	<b>\$50,433,659</b>	<b>\$109,859,008</b>	<b>\$32,751,862</b>	<b>0.77</b>	<b>1.42</b>	<b>9.13%</b>



# MWRA Employees' Retirement System

## ANALYSIS BY VINTAGE YEAR

Commitments By Vintage Year



Vintage Year	Commitments			Contributions & Distributions			Valuations			Performance		
	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total 2000	\$2,500,000	\$0	1.00	\$2,500,000	\$0	\$4,814,756	\$0	\$4,814,756	\$2,314,756	1.93	1.93	16.26%
Total 2003	\$3,687,180	\$0	1.00	\$3,687,180	\$0	\$7,058,204	\$0	\$7,058,204	\$3,371,024	1.91	1.91	9.08%
Total 2005	\$16,000,000	\$0	1.00	\$16,000,000	\$0	\$2,442,038	\$20,532,911	\$22,974,950	\$6,974,950	0.15	1.44	5.97%
Total 2010	\$20,900,000	\$935,470	0.96	\$19,964,530	-\$1,167	\$31,151,625	\$717,582	\$31,869,207	\$11,905,844	1.56	1.60	10.23%
Total 2012	\$5,000,000	\$365,369	0.93	\$4,634,631	\$10,932	\$6,695,407	\$900,135	\$7,595,542	\$2,949,979	1.44	1.64	12.30%
Total 2015	\$5,610,264	\$1,055,637	0.81	\$4,554,627	-\$27,350	\$3,882,912	\$2,453,563	\$6,336,475	\$1,809,198	0.86	1.40	9.01%
Total 2017	\$8,000,000	\$2,242,321	0.72	\$5,757,679	\$26,083	\$2,231,331	\$4,986,726	\$7,218,057	\$1,434,295	0.39	1.25	8.50%
Total 2019	\$20,000,000	\$0	1.00	\$20,000,000	\$0	\$1,149,075	\$20,842,742	\$21,991,817	\$1,991,817	0.06	1.10	6.43%
<b>Total</b>	<b>\$81,697,444</b>	<b>\$4,598,797</b>	<b>0.94</b>	<b>\$77,098,647</b>	<b>\$8,498</b>	<b>\$59,425,348</b>	<b>\$50,433,659</b>	<b>\$109,859,008</b>	<b>\$32,751,862</b>	<b>0.77</b>	<b>1.42</b>	<b>9.13%</b>



# APPENDIX

## MWRA Employees' Retirement System

March 31, 2021



# MWRA Employees' Retirement System

## RETURN SUMMARY

Investments			Trailing Period Returns (IRR) %						
Investment Name	Vintage Year	Commitment	(Qtr)	(YTD)	(1 Yr)	(3 Yrs)	(5 Yrs)	(10 Yrs)	SI IRR
BlackRock Apartment Value Fund II, L.P.	2000	\$2,500,000							16.26%
BlackRock Apartment Value Fund III, Inc.	2005	\$2,000,000							-9.85%
Cerberus Institutional Real Estate Partners III, L.P.	2012	\$1,500,000	-4.98%	-4.98%	4.80%	7.90%	6.46%		11.58%
Corporate Property Associates 15 Incorporated	2003	\$3,687,180							9.08%
Intercontinental Real Estate Investment Fund IV, L.P.	2005	\$2,000,000							-6.40%
Invesco Mortgage Recovery Fund II, L.P.	2015	\$3,000,000	3.47%	3.47%	-48.82%	1.03%	9.15%		6.35%
Landmark Real Estate Fund VI, L.P.	2010	\$2,000,000	-0.33%	-0.33%	-14.15%	-10.66%	-3.91%	13.77%	19.68%
Landmark Real Estate Partners VIII, L.P.	2017	\$4,000,000	-0.86%	-0.86%	3.08%	5.42%			11.24%
Mass PRIM Real Estate 2010	2010	\$16,900,000							10.01%
Prime Property Fund, LLC	2005	\$12,000,000	1.91%	1.91%	2.57%	4.42%	5.75%	9.04%	11.79%
Real Estate Global Partnership Fund II, L.P.	2010	\$2,000,000	0.81%	0.81%	-1.48%	-3.28%	2.98%		6.08%
TA Associates Realty Fund X, L.P.	2012	\$3,500,000	3.18%	3.18%	0.43%	13.82%	11.99%		12.60%
TA Realty Core Property Fund, L.P.	2019	\$20,000,000	2.29%	2.29%	6.26%				6.43%
TerraCap Partners III, L.P.	2015	\$2,610,264	0.00%	0.00%	3.14%	4.25%	18.18%		10.35%
TerraCap Partners IV (Institutional), L.P.	2017	\$4,000,000	0.00%	0.00%	5.96%	8.44%			7.98%
<b>Total</b>		<b>\$81,697,444</b>	<b>1.70%</b>	<b>1.70%</b>	<b>3.23%</b>	<b>5.88%</b>	<b>7.39%</b>	<b>9.75%</b>	<b>9.13%</b>



# MWRA Employees' Retirement System

## ANALYSIS BY FUND

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
BlackRock Apartment Value Fund II, L.P.	2000	\$2,500,000	\$0	\$2,500,000	\$0	\$4,814,756	\$0	\$4,814,756	\$2,314,756	1.93	1.93	16.26%
BlackRock Apartment Value Fund III, Inc.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,236,567	\$0	\$1,236,567	-\$763,433	0.62	0.62	-9.85%
Cerberus Institutional Real Estate Partners III, L.P.	2012	\$1,500,000	\$365,369	\$1,134,631	\$0	\$1,465,587	\$519,641	\$1,985,228	\$850,597	1.29	1.75	11.58%
Corporate Property Associates 15 Incorporated	2003	\$3,687,180	\$0	\$3,687,180	\$0	\$7,058,204	\$0	\$7,058,204	\$3,371,024	1.91	1.91	9.08%
Intercontinental Real Estate Investment Fund IV, L.P.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,205,471	\$0	\$1,205,471	-\$794,529	0.60	0.60	-6.40%
Invesco Mortgage Recovery Fund II, L.P.	2015	\$3,000,000	\$1,055,637	\$1,944,363	\$0	\$1,635,229	\$728,128	\$2,363,357	\$418,994	0.84	1.22	6.35%
Landmark Real Estate Fund VI, L.P.	2010	\$2,000,000	\$245,470	\$1,754,530	\$4,429	\$2,629,618	\$88,245	\$2,717,863	\$958,904	1.49	1.55	19.68%
Landmark Real Estate Partners VIII, L.P.	2017	\$4,000,000	\$2,242,321	\$1,757,679	\$6,065	\$600,718	\$1,473,074	\$2,073,792	\$310,048	0.34	1.18	11.24%
Mass PRIM Real Estate 2010	2010	\$16,900,000	\$0	\$16,900,000	\$0	\$27,370,332	\$0	\$27,370,332	\$10,470,332	1.62	1.62	10.01%
Prime Property Fund, LLC	2005	\$12,000,000	\$0	\$12,000,000	\$0	\$0	\$20,532,911	\$20,532,911	\$8,532,911	0.00	1.71	11.79%
Real Estate Global Partnership Fund II, L.P.	2010	\$2,000,000	\$690,000	\$1,310,000	-\$5,596	\$1,151,675	\$629,337	\$1,781,012	\$476,608	0.88	1.37	6.08%
TA Associates Realty Fund X, L.P.	2012	\$3,500,000	\$0	\$3,500,000	\$10,932	\$5,229,820	\$380,494	\$5,610,314	\$2,099,382	1.49	1.60	12.60%
TA Realty Core Property Fund, L.P.	2019	\$20,000,000	\$0	\$20,000,000	\$0	\$1,149,075	\$20,842,742	\$21,991,817	\$1,991,817	0.06	1.10	6.43%
TerraCap Partners III, L.P.	2015	\$2,610,264	\$0	\$2,610,264	-\$27,350	\$2,247,683	\$1,725,435	\$3,973,118	\$1,390,204	0.87	1.54	10.35%
TerraCap Partners IV (Institutional), L.P.	2017	\$4,000,000	\$0	\$4,000,000	\$20,018	\$1,630,613	\$3,513,652	\$5,144,265	\$1,124,247	0.41	1.28	7.98%
<b>Total</b>		<b>\$81,697,444</b>	<b>\$4,598,797</b>	<b>\$77,098,647</b>	<b>\$8,498</b>	<b>\$59,425,348</b>	<b>\$50,433,659</b>	<b>\$109,859,008</b>	<b>\$32,751,862</b>	<b>0.77</b>	<b>1.42</b>	<b>9.13%</b>





# MWRA Employees' Retirement System

## ANALYSIS BY LIFECYCLE

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>Investing</b>												
Cerberus Institutional Real Estate Partners III, L.P.	2012	\$1,500,000	\$365,369	\$1,134,631	\$0	\$1,465,587	\$519,641	\$1,985,228	\$850,597	1.29	1.75	11.58%
Landmark Real Estate Partners VIII, L.P.	2017	\$4,000,000	\$2,242,321	\$1,757,679	\$6,065	\$600,718	\$1,473,074	\$2,073,792	\$310,048	0.34	1.18	11.24%
Real Estate Global Partnership Fund II, L.P.	2010	\$2,000,000	\$690,000	\$1,310,000	-\$5,596	\$1,151,675	\$629,337	\$1,781,012	\$476,608	0.88	1.37	6.08%
TA Realty Core Property Fund, L.P.	2019	\$20,000,000	\$0	\$20,000,000	\$0	\$1,149,075	\$20,842,742	\$21,991,817	\$1,991,817	0.06	1.10	6.43%
TerraCap Partners IV (Institutional), L.P.	2017	\$4,000,000	\$0	\$4,000,000	\$20,018	\$1,630,613	\$3,513,652	\$5,144,265	\$1,124,247	0.41	1.28	7.98%
<b>Total Investing</b>		<b>\$31,500,000</b>	<b>\$3,297,690</b>	<b>\$28,202,310</b>	<b>\$20,487</b>	<b>\$5,997,668</b>	<b>\$26,978,446</b>	<b>\$32,976,114</b>	<b>\$4,753,317</b>	<b>0.21</b>	<b>1.17</b>	<b>7.63%</b>
<b>Harvesting</b>												
Invesco Mortgage Recovery Fund II, L.P.	2015	\$3,000,000	\$1,055,637	\$1,944,363	\$0	\$1,635,229	\$728,128	\$2,363,357	\$418,994	0.84	1.22	6.35%
Landmark Real Estate Fund VI, L.P.	2010	\$2,000,000	\$245,470	\$1,754,530	\$4,429	\$2,629,618	\$88,245	\$2,717,863	\$958,904	1.49	1.55	19.68%
TA Associates Realty Fund X, L.P.	2012	\$3,500,000	\$0	\$3,500,000	\$10,932	\$5,229,820	\$380,494	\$5,610,314	\$2,099,382	1.49	1.60	12.60%
TerraCap Partners III, L.P.	2015	\$2,610,264	\$0	\$2,610,264	-\$27,350	\$2,247,683	\$1,725,435	\$3,973,118	\$1,390,204	0.87	1.54	10.35%
<b>Total Harvesting</b>		<b>\$11,110,264</b>	<b>\$1,301,107</b>	<b>\$9,809,157</b>	<b>-\$11,989</b>	<b>\$11,742,350</b>	<b>\$2,922,302</b>	<b>\$14,664,652</b>	<b>\$4,867,484</b>	<b>1.20</b>	<b>1.50</b>	<b>12.13%</b>
<b>Completed</b>												
BlackRock Apartment Value Fund II, L.P.	2000	\$2,500,000	\$0	\$2,500,000	\$0	\$4,814,756	\$0	\$4,814,756	\$2,314,756	1.93	1.93	16.26%
BlackRock Apartment Value Fund III, Inc.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,236,567	\$0	\$1,236,567	-\$763,433	0.62	0.62	-9.85%
Corporate Property Associates 15 Incorporated	2003	\$3,687,180	\$0	\$3,687,180	\$0	\$7,058,204	\$0	\$7,058,204	\$3,371,024	1.91	1.91	9.08%
Intercontinental Real Estate Investment Fund IV, L.P.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,205,471	\$0	\$1,205,471	-\$794,529	0.60	0.60	-6.40%
Mass PRIM Real Estate 2010	2010	\$16,900,000	\$0	\$16,900,000	\$0	\$27,370,332	\$0	\$27,370,332	\$10,470,332	1.62	1.62	10.01%
<b>Total Completed</b>		<b>\$27,087,180</b>	<b>\$0</b>	<b>\$27,087,180</b>	<b>\$0</b>	<b>\$41,685,330</b>	<b>\$0</b>	<b>\$41,685,330</b>	<b>\$14,598,150</b>	<b>1.54</b>	<b>1.54</b>	<b>8.20%</b>
<b>Open End</b>												
Prime Property Fund, LLC	2005	\$12,000,000	\$0	\$12,000,000	\$0	\$0	\$20,532,911	\$20,532,911	\$8,532,911	0.00	1.71	11.79%
<b>Total Open End</b>		<b>\$12,000,000</b>	<b>\$0</b>	<b>\$12,000,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$20,532,911</b>	<b>\$20,532,911</b>	<b>\$8,532,911</b>	<b>0.00</b>	<b>1.71</b>	<b>11.79%</b>
<b>Total</b>		<b>\$81,697,444</b>	<b>\$4,598,797</b>	<b>\$77,098,647</b>	<b>\$8,498</b>	<b>\$59,425,348</b>	<b>\$50,433,659</b>	<b>\$109,859,008</b>	<b>\$32,751,862</b>	<b>0.77</b>	<b>1.42</b>	<b>9.13%</b>



# MWRA Employees' Retirement System

## ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>2000</b>												
BlackRock Apartment Value Fund II, L.P.	2000	\$2,500,000	\$0	\$2,500,000	\$0	\$4,814,756	\$0	\$4,814,756	\$2,314,756	1.93	1.93	16.26%
<b>Total 2000</b>		<b>\$2,500,000</b>	<b>\$0</b>	<b>\$2,500,000</b>	<b>\$0</b>	<b>\$4,814,756</b>	<b>\$0</b>	<b>\$4,814,756</b>	<b>\$2,314,756</b>	<b>1.93</b>	<b>1.93</b>	<b>16.26%</b>
<b>2003</b>												
Corporate Property Associates 15 Incorporated	2003	\$3,687,180	\$0	\$3,687,180	\$0	\$7,058,204	\$0	\$7,058,204	\$3,371,024	1.91	1.91	9.08%
<b>Total 2003</b>		<b>\$3,687,180</b>	<b>\$0</b>	<b>\$3,687,180</b>	<b>\$0</b>	<b>\$7,058,204</b>	<b>\$0</b>	<b>\$7,058,204</b>	<b>\$3,371,024</b>	<b>1.91</b>	<b>1.91</b>	<b>9.08%</b>
<b>2005</b>												
BlackRock Apartment Value Fund III, Inc.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,236,567	\$0	\$1,236,567	-\$763,433	0.62	0.62	-9.85%
Intercontinental Real Estate Investment Fund IV, L.P.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,205,471	\$0	\$1,205,471	-\$794,529	0.60	0.60	-6.40%
Prime Property Fund, LLC	2005	\$12,000,000	\$0	\$12,000,000	\$0	\$0	\$20,532,911	\$20,532,911	\$8,532,911	0.00	1.71	11.79%
<b>Total 2005</b>		<b>\$16,000,000</b>	<b>\$0</b>	<b>\$16,000,000</b>	<b>\$0</b>	<b>\$2,442,038</b>	<b>\$20,532,911</b>	<b>\$22,974,950</b>	<b>\$6,974,950</b>	<b>0.15</b>	<b>1.44</b>	<b>5.97%</b>
<b>2010</b>												
Landmark Real Estate Fund VI, L.P.	2010	\$2,000,000	\$245,470	\$1,754,530	\$4,429	\$2,629,618	\$88,245	\$2,717,863	\$958,904	1.49	1.55	19.68%
Mass PRIM Real Estate 2010	2010	\$16,900,000	\$0	\$16,900,000	\$0	\$27,370,332	\$0	\$27,370,332	\$10,470,332	1.62	1.62	10.01%
Real Estate Global Partnership Fund II, L.P.	2010	\$2,000,000	\$690,000	\$1,310,000	-\$5,596	\$1,151,675	\$629,337	\$1,781,012	\$476,608	0.88	1.37	6.08%
<b>Total 2010</b>		<b>\$20,900,000</b>	<b>\$935,470</b>	<b>\$19,964,530</b>	<b>-\$1,167</b>	<b>\$31,151,625</b>	<b>\$717,582</b>	<b>\$31,869,207</b>	<b>\$11,905,844</b>	<b>1.56</b>	<b>1.60</b>	<b>10.23%</b>
<b>2012</b>												
Cerberus Institutional Real Estate Partners III, L.P.	2012	\$1,500,000	\$365,369	\$1,134,631	\$0	\$1,465,587	\$519,641	\$1,985,228	\$850,597	1.29	1.75	11.58%
TA Associates Realty Fund X, L.P.	2012	\$3,500,000	\$0	\$3,500,000	\$10,932	\$5,229,820	\$380,494	\$5,610,314	\$2,099,382	1.49	1.60	12.60%
<b>Total 2012</b>		<b>\$5,000,000</b>	<b>\$365,369</b>	<b>\$4,634,631</b>	<b>\$10,932</b>	<b>\$6,695,407</b>	<b>\$900,135</b>	<b>\$7,595,542</b>	<b>\$2,949,979</b>	<b>1.44</b>	<b>1.64</b>	<b>12.30%</b>
<b>2015</b>												
Invesco Mortgage Recovery Fund II, L.P.	2015	\$3,000,000	\$1,055,637	\$1,944,363	\$0	\$1,635,229	\$728,128	\$2,363,357	\$418,994	0.84	1.22	6.35%
TerraCap Partners III, L.P.	2015	\$2,610,264	\$0	\$2,610,264	-\$27,350	\$2,247,683	\$1,725,435	\$3,973,118	\$1,390,204	0.87	1.54	10.35%
<b>Total 2015</b>		<b>\$5,610,264</b>	<b>\$1,055,637</b>	<b>\$4,554,627</b>	<b>-\$27,350</b>	<b>\$3,882,912</b>	<b>\$2,453,563</b>	<b>\$6,336,475</b>	<b>\$1,809,198</b>	<b>0.86</b>	<b>1.40</b>	<b>9.01%</b>
<b>2017</b>												
Landmark Real Estate Partners VIII, L.P.	2017	\$4,000,000	\$2,242,321	\$1,757,679	\$6,065	\$600,718	\$1,473,074	\$2,073,792	\$310,048	0.34	1.18	11.24%
TerraCap Partners IV (Institutional), L.P.	2017	\$4,000,000	\$0	\$4,000,000	\$20,018	\$1,630,613	\$3,513,652	\$5,144,265	\$1,124,247	0.41	1.28	7.98%
<b>Total 2017</b>		<b>\$8,000,000</b>	<b>\$2,242,321</b>	<b>\$5,757,679</b>	<b>\$26,083</b>	<b>\$2,231,331</b>	<b>\$4,986,726</b>	<b>\$7,218,057</b>	<b>\$1,434,295</b>	<b>0.39</b>	<b>1.25</b>	<b>8.50%</b>
<b>2019</b>												
TA Realty Core Property Fund, L.P.	2019	\$20,000,000	\$0	\$20,000,000	\$0	\$1,149,075	\$20,842,742	\$21,991,817	\$1,991,817	0.06	1.10	6.43%
<b>Total 2019</b>		<b>\$20,000,000</b>	<b>\$0</b>	<b>\$20,000,000</b>	<b>\$0</b>	<b>\$1,149,075</b>	<b>\$20,842,742</b>	<b>\$21,991,817</b>	<b>\$1,991,817</b>	<b>0.06</b>	<b>1.10</b>	<b>6.43%</b>
<b>Total</b>		<b>\$81,697,444</b>	<b>\$4,598,797</b>	<b>\$77,098,647</b>	<b>\$8,498</b>	<b>\$59,425,348</b>	<b>\$50,433,659</b>	<b>\$109,859,008</b>	<b>\$32,751,862</b>	<b>0.77</b>	<b>1.42</b>	<b>9.13%</b>



# MWRA Employees' Retirement System

## ANALYSIS BY INVESTMENT STRATEGY

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>Core</b>												
Corporate Property Associates 15 Incorporated	2003	\$3,687,180	\$0	\$3,687,180	\$0	\$7,058,204	\$0	\$7,058,204	\$3,371,024	1.91	1.91	9.08%
Mass PRIM Real Estate 2010	2010	\$16,900,000	\$0	\$16,900,000	\$0	\$27,370,332	\$0	\$27,370,332	\$10,470,332	1.62	1.62	10.01%
Prime Property Fund, LLC	2005	\$12,000,000	\$0	\$12,000,000	\$0	\$0	\$20,532,911	\$20,532,911	\$8,532,911	0.00	1.71	11.79%
TA Realty Core Property Fund, L.P.	2019	\$20,000,000	\$0	\$20,000,000	\$0	\$1,149,075	\$20,842,742	\$21,991,817	\$1,991,817	0.06	1.10	6.43%
<b>Total Core</b>		<b>\$52,587,180</b>	<b>\$0</b>	<b>\$52,587,180</b>	<b>\$0</b>	<b>\$35,577,611</b>	<b>\$41,375,653</b>	<b>\$76,953,265</b>	<b>\$24,366,084</b>	<b>0.68</b>	<b>1.46</b>	<b>9.95%</b>
<b>Opportunistic</b>												
Cerberus Institutional Real Estate Partners III, L.P.	2012	\$1,500,000	\$365,369	\$1,134,631	\$0	\$1,465,587	\$519,641	\$1,985,228	\$850,597	1.29	1.75	11.58%
Intercontinental Real Estate Investment Fund IV, L.P.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,205,471	\$0	\$1,205,471	-\$794,529	0.60	0.60	-6.40%
Invesco Mortgage Recovery Fund II, L.P.	2015	\$3,000,000	\$1,055,637	\$1,944,363	\$0	\$1,635,229	\$728,128	\$2,363,357	\$418,994	0.84	1.22	6.35%
Landmark Real Estate Fund VI, L.P.	2010	\$2,000,000	\$245,470	\$1,754,530	\$4,429	\$2,629,618	\$88,245	\$2,717,863	\$958,904	1.49	1.55	19.68%
Landmark Real Estate Partners VIII, L.P.	2017	\$4,000,000	\$2,242,321	\$1,757,679	\$6,065	\$600,718	\$1,473,074	\$2,073,792	\$310,048	0.34	1.18	11.24%
Real Estate Global Partnership Fund II, L.P.	2010	\$2,000,000	\$690,000	\$1,310,000	-\$5,596	\$1,151,675	\$629,337	\$1,781,012	\$476,608	0.88	1.37	6.08%
<b>Total Opportunistic</b>		<b>\$14,500,000</b>	<b>\$4,598,797</b>	<b>\$9,901,203</b>	<b>\$4,898</b>	<b>\$8,688,298</b>	<b>\$3,438,425</b>	<b>\$12,126,723</b>	<b>\$2,220,622</b>	<b>0.88</b>	<b>1.22</b>	<b>4.40%</b>
<b>Value Add</b>												
BlackRock Apartment Value Fund II, L.P.	2000	\$2,500,000	\$0	\$2,500,000	\$0	\$4,814,756	\$0	\$4,814,756	\$2,314,756	1.93	1.93	16.26%
BlackRock Apartment Value Fund III, Inc.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,236,567	\$0	\$1,236,567	-\$763,433	0.62	0.62	-9.85%
TA Associates Realty Fund X, L.P.	2012	\$3,500,000	\$0	\$3,500,000	\$10,932	\$5,229,820	\$380,494	\$5,610,314	\$2,099,382	1.49	1.60	12.60%
TerraCap Partners III, L.P.	2015	\$2,610,264	\$0	\$2,610,264	-\$27,350	\$2,247,683	\$1,725,435	\$3,973,118	\$1,390,204	0.87	1.54	10.35%
TerraCap Partners IV (Institutional), L.P.	2017	\$4,000,000	\$0	\$4,000,000	\$20,018	\$1,630,613	\$3,513,652	\$5,144,265	\$1,124,247	0.41	1.28	7.98%
<b>Total Value Add</b>		<b>\$14,610,264</b>	<b>\$0</b>	<b>\$14,610,264</b>	<b>\$3,600</b>	<b>\$15,159,439</b>	<b>\$5,619,581</b>	<b>\$20,779,020</b>	<b>\$6,165,156</b>	<b>1.04</b>	<b>1.42</b>	<b>9.77%</b>
<b>Total</b>		<b>\$81,697,444</b>	<b>\$4,598,797</b>	<b>\$77,098,647</b>	<b>\$8,498</b>	<b>\$59,425,348</b>	<b>\$50,433,659</b>	<b>\$109,859,008</b>	<b>\$32,751,862</b>	<b>0.77</b>	<b>1.42</b>	<b>9.13%</b>



# MWRA Employees' Retirement System

## QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Temp Return of Capital	Distribution	Net Cash Flow
Cerberus Institutional Real Estate Partners III, L.P.	2/28/2021				-31,882	-31,882
<b>Total: Cerberus Institutional Real Estate Partners III, L.P.</b>					<b>-31,882</b>	<b>-31,882</b>
Invesco Mortgage Recovery Fund II, L.P.	1/31/2021	206,575				206,575
<b>Total: Invesco Mortgage Recovery Fund II, L.P.</b>		<b>206,575</b>				<b>206,575</b>
Landmark Real Estate Partners VIII, L.P.	3/31/2021				-44,801	-44,801
<b>Total: Landmark Real Estate Partners VIII, L.P.</b>					<b>-44,801</b>	<b>-44,801</b>
TA Realty Core Property Fund, L.P.	2/28/2021				-205,792	-205,792
<b>Total: TA Realty Core Property Fund, L.P.</b>					<b>-205,792</b>	<b>-205,792</b>
TerraCap Partners IV (Institutional), L.P.	2/28/2021				-605,258	-605,258
<b>Total: TerraCap Partners IV (Institutional), L.P.</b>					<b>-605,258</b>	<b>-605,258</b>
<b>Grand Total</b>		<b>206,575</b>			<b>-887,733</b>	<b>-681,158</b>



# GLOSSARY OF TERMS

- **Commitment Amount** – The amount an investor has committed to invest with the General Partner
- **Paid In Capital** – The amount an investor has contributed for investments and management fees
- **Capital to be Funded** – The remaining amount an investor contractually has left to fund its commitments
- **Additional Fees** – Fees that are outside the capital commitment, also includes interest paid/received due from subsequent closings of the fund
- **Cumulative Distributions** – The amount an investor has received from realized and partially realized investments
- **Valuation** – Sum of the fair market value of all investments plus cash
- **Call Ratio** – Calculated by dividing Amount Funded by Capital Committed
- **DPI Ratio** - Calculated by dividing Amount Distributed by Amount Funded
- **Market Exposure** – Calculated by adding Reported Value plus Unfunded Commitments
- **Total Value** – Calculated by adding Amount Distributed and Reported Value. Represents the total amount an investor should expect to receive from their investments
- **Net Benefit** – Calculated by subtracting Total Value by Capital to be Funded plus Additional Fees
- **Total Value to Paid In Capital Ratio** – Calculated by dividing Total Value by Amount Funded. Represents the multiple of the overall cash invested that an investor is expected to receive
- **IRR** - The calculation of the IRR (Internal Rate of Return) takes into consideration the timing of cash contributions and distributions to and from the partnerships, the length of time the investments have been held and the sum of the Reported Value
- **Index Comparison Method (ICM)** – represents the hypothetical IRR of a private investment program that is computed by assuming the fund flows were invested in and out of a publicly traded index. The resulting hypothetical market value of the program is then used with the program’s actual cash flows to compute a hypothetical IRR. This hypothetical IRR can be compared with the actual IRR to determine whether the private investment program outperformed the publicly traded index
- **Valuation ICM** – The valuation equivalent that ICM calculates for the public market is called valuation ICM
- **KS PME** – The Kaplan Schoar Public Markets Equivalent is a ratio of the future value of all distributions divided by the future value of all contributions using the index return as the discount rate. The ending valuation is treated as a distribution in this method
- **IRR ICM** – The IRR equivalent that ICM calculates for the public market is called IRR ICM

