MWRA EMPLOYEES' RETIREMENT BOARD MEETING

AGENDA

Thursday, February 25, 2021 10:00 a.m.
MWRA, 2 Griffin Way
Via Remote Participation

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
- 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 Minutes – VOTE

- a) January 28, 2021 Minutes
- b) January 28, 2021 Executive Session Minutes

Item 4 Approval of Warrants – VOTE

- a) Warrant 2-2021
- b) Warrant 2-2021A – Payroll

Item 5 Approval of Monthly Transfers 2-2021 – VOTE

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

- a) Kathleen Scruton DOR 12/26/2020
- b) Ernest Langelier DOR 1/9/2021
- c) Bonnie Gillespie-Perry DOR 1/20/2021
- d) Richard Famolare DOR 1/20/2021
- e) Tina Saunders DOR 1/22/2021
- f) Ravindra Joshi DOR 1/23/2021
- g) Kathleen Kolar DOR 1/30/2021
- h) Brian Rozowsky DOR 2/6/2021
- i) Michael Rivard DOR 2/13/2021
- j) Joseph Giangregorio DOR 2/14/2021

Item 7 Approval of Frederick Brandon's buyback of City of Framingham employment – VOTE

Item 8 Draft Job Description for Executive Secretary for Review or Referral to Subcommittee

Item 9 10:15 a.m. Legal
Hass v. Stanton

Item 10 Manager Presentations

10:30 a.m. a) Invesco
- i. Mortgage Recovery Funds I and II
- ii. Partnership Funds IV and VI

10:45 a.m.	b)	Ascent
11:00 a.m.	c)	Loomis

Item 11 NEPC

a) Flash Report as of 12/31/2020
b) Rebalance Recommendation
c) 2021 Asset Allocation Review
d) Garcia Hamilton Fee Proposal

..FOR YOUR INFORMATION and REVIEW ....

Item 99-1 PERAC Memo #8-2021 – Required Minimum Distribution: Now Age 72 For This Year's Notifications

Item 99-2 PERAC Memo #9-2021 – Actuarial Data

Item 99-3 PERAC Memo #10-2021 – Forfeiture of Retirement Allowance for Dereliction of Duty by Members

Item 99-4 PERAC Pension Newsflash

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, March 25, 2021, 10:00 a.m., Chelsea

MASSACHUSETTS WATER RESOURCES AUTHORITY EMPLOYEES' RETIREMENT BOARD MEETING JANUARY 28, 2021

A meeting of the MWRA Employees' Retirement Board was held via conference call on Thursday, January 28, 2021, due to safety concerns regarding the Coronavirus. 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 meeting by conference call were Thomas J. Durkin, Kevin McKenna, Andrew Pappastergion, Frank Zecha, Carolyn Russo, Julie McManus, and Sebastian Grzejka. Mr. Fleming was absent due to health issues. Members of the public including David Jackson, Kevin Fowlkes, and Gar Chung from Financial Investment News attended. Vice Chairman Durkin called the meeting to order at 10:02 a.m.

1) Call the meeting to order

2) Standing Committee Reports
   - i. By-Laws Committee: No report
   - ii. Human Resources Committee: No report
   - iii. Special Committee, Stipend: No report
   - iv. Job Review Committee: No report

Mr. Zecha asked the Executive Director for an update on the Board Members' laptops. Mr. Pappastergion stated that he had spoken to Mr. Laskey in regard to the amount of time it has taken and the difficulty in getting the laptops set up, the fact that Retirement Staff had been directed by IT to separately purchase all of the required encryption, Office, and anti-virus programs, and the fact that the IT Director had determined that non-employee Board members would not be permitted to log into the MWRA's system in order to access board meeting materials. Mr. Pappastergion questioned why the Retirement Board Members could be trusted with the oversight of $650 million in Retirement System Assets, but not with access to the computer system, and stressed to Mr. Laskey that he hopes the process will be made as simple as possible. He stated that he would be following up, and that there will be more updates to come.

3) Approval of December 17, 2020 Minutes – VOTE

On a motion made by Mr. Pappastergion and seconded by Mr. McKenna:
VOTED
to approve the minutes of the December 17, 2020 meeting as presented. 4-0, roll call with McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes and Mr. Durkin voting yes

4) Request for Refund of Accumulated Deductions Kevin Fowlkes, 28 years 5 months of creditable service - due to technical difficulties Mr. Fowlkes was unable to unmute his microphone. Staff was asked to contact him to assist while the Board continued. Mr. Durkin asked the Executive Director what steps were taken to be sure that Mr. Fowlkes has been properly advised prior to his severing his rights to a retirement benefit and medical coverage. The Executive Director delineated a series of phone discussions and emails with Mr. Fowlkes informing him of all the possible repercussions: losing the retirement benefit, losing the medical coverage for himself and for his daughter, including present value computations for the value of each, his being subject to rules providing higher contributions and lower retirement benefits should he become employed by a MA governmental entity in the future, along with a series of emails to Mr. Fowlkes and from Human Resources and Affirmative Action in regard to his other benefit rights. The Executive Director also noted that all of the warnings and implications are detailed in writing on the refund forms executed by Mr. Fowlkes. Mr. Zecha asked the Executive Director about Mr. Fowlkes' marital status and the possible existence of a DRO. The Executive Director responded that Mr. Fowlkes is not currently married, and is the custodial parent of a minor daughter. She could not state with certainty that he has never been married, but stated that there is no indication of a prior marriage in his file. Mr. McKenna made a motion to table the matter until such time as Mr. Fowlkes' connectivity issues could be resolved.

On a motion made by Mr. McKenna and seconded by Mr. Pappastergion:
<u>VOTED</u>
to table the matter of Kevin Fowlkes' request for a refund until connectivity issues are resolved. 4-0, roll call with McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes and Mr. Durkin voting yes

5) Approval of Warrants – VOTE
   a) Warrant 1-2021
   b) Warrant 1-2021A – Payroll

On a motion made by Mr. Pappastergion and seconded by Mr. McKenna:
<u>VOTED</u>
to approve Warrant 1-2021 as presented with the caveat that the Executive Director shall not release the payment to Mr. Fowlkes until the Board is able to speak with him. 4-0, roll call with 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. McKenna:
<u>VOTED</u>
to approve Warrant 1-2021A Retiree Payroll as presented. 4-0, roll call

with McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes and Mr. Durkin voting yes

6) Approval of Monthly Transfers 1-2021 – VOTE

Mr. Grzejka noted that the monthly transfers were a reiteration of the ones approved by the Board in December, with the exception of the increase to the redemptions to fund allocations to ABS and Axiom made by the Board from $38m to $40m ($20m each). The increase was intended to rebalance additional investment gains earned prior to funding the two new managers.

On a motion made by Mr. Zecha and seconded by Mr. McKenna:
VOTED
to approve the rebalance transfers as presented and as recommended by NEPC. 4-0, roll call with McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes and Mr. Durkin voting yes

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

a) Janet DiGregorio DOR 12/10/2020
b) Kathleen Chaloux DOR 1/2/2021
c) Elizabeth Toby DOR 1/9/2021

On a motion made by Mr. Pappastergion and seconded by Mr. McKenna:
VOTED
to acknowledge above superannuation retirements. Mr. Pappastergion asked that the best wishes and gratitude of the Board be extended to Ms. DiGregorio for her long-term service to the Board. 4-0, roll call with McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes and Mr. Durkin voting yes

At 10:26 Mr. Fowlkes was able to resolve his connection issues and joined the meeting.

On a motion made by Mr. McKenna and seconded by Mr. Pappastergion:
VOTED
to remove from the table the matter of Kevin Fowlkes' request for a refund. 4-0, roll call with McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes and Mr. Durkin voting yes

Mr. Durkin requested that Mr. Zecha present the Board's concerns to Mr. Fowlkes regarding his request for withdrawal of his retirement funds. Mr. Zecha stated to Mr. Fowlkes that by withdrawing his funds that he is leaving between $600,000 and $800,000 in benefits on the table. He inquired about Mr. Fowlkes' marital status and Mr. Fowlkes stated that he has never been married. Mr.

Zecha noted that due to the refund of retirement deductions, Mr. Fowlkes' potential Social Security benefits will still be offset up to $400-$500 per month. Mr. Zecha stated that withdrawing the funds severs Mr. Fowlkes' rights, and if he were to be re-employed that repayment would be required to establish prior service, and he would have to work at least two years before he would be able to retire. Mr. Zecha asked the Executive Director to confirm on that point, and she confirmed the re-employment period required is two years. Mr. Zecha noted that the Authority will save a lot of money if he withdraws, because the Employer contributes significantly to retirement benefits. He reiterated the Mr. Fowlkes is currently vested, could begin collecting a retirement benefit immediately, and that in withdrawing he is surrendering the right to both the Retirement benefit and medical insurance for himself and his daughter. Mr. Fowlkes stated that he is aware of the implications. Mr. Durkin stated that this is not a frequent occurrence and that the Board is trying to make sure he is fully informed. Mr. Fowlkes stated that Staff had previously informed him thoroughly, but that his decision to withdraw his funds is firm. Mr. Durkin thanked Mr. Zecha for providing his expertise in the matter.

On a motion made by Mr. McKenna and seconded by Mr. Papastergion:
VOTED
to approve the request for refund of accumulated deductions made by Mr. Kevin Fowlkes. 4-0, roll call with McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes and Mr. Durkin voting yes

8) 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.

PA Capital
SEG
PineBridge
Terra Cap
Garcia Hamilton

Each manager was cautioned that the Board cannot fully guarantee security of the meeting platform and cautioned the participants against sharing information considered proprietary. 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.

Ms. Julia Seelye and Mr. Richard Wiltshire presented on behalf of PE Manager PA Capital (Formerly Private Advisors). Ms. Seeyle described PA Capital as a collaborative culture with a long-term stable team. Mr. Wiltshire stated that the pool of private equity investments to which the MWRA Employees' Retirement System has committed $4m is a $97m pool of capital with a 2016 vintage year. The fund has 30 investments across industries and sectors. So far, 91% of committed capital has been called, with two realizations. MWRAERS is invested in the businesses alongside the General Partners. The fund has a low-mid market focus, including some family businesses. PA typically gains a majority stake, then “upstreams” the business by bringing in professional management teams to grow and solidify the business, allowing PA to obtain a premium since the restructure work is already completed. Q4 of 2020 saw one material exit and two capitalizations, with two exits expected in 2021. Mr. Wiltshire offered Constellation as a case study. Mr. McKenna inquired as to why the underlying companies have been presented as numbers rather than names. Mr. Wiltshire responded that there are confidentiality agreements regarding many of the companies involved. Mr. Grzejka asked about recent exits, whether they were sales or whether the companies were taken public. Mr. Wiltshire reported having been approached by SPAC (Special Purpose Acquisition Company) but stated that PA has decided against moving forward in that respect. He expects that “Company 3” will be a large IPO in 2020. Mr. Durkin asked about projected 2020 returns. Mr. Wiltshire responded that it is too early to say, but that his expectation is that the fund will be up for the year and in Q4. Mr. Zecha inquired about fees. Mr. Wiltshire responded that the fees are 1% of committed capital. Mr. Wiltshire noted that PA recently closed on a new fund with two MA Clients, and that they had partnered with NEPC. Ms. Seeyle stated they had negotiated a fee discount and would send the information to the Board. PA Capital signed off at 10:52 a.m.

Ms. Kerry Dempsey joined the call on behalf of International Equity Manager SEG in regard to the System's investment in the Baxter Street International Fund. Ms. Dempsey stated that the fund has neither a value nor growth tilt, with about 300 companies in the portfolio, SEG deploys cash into weakness, while stocks are trading at a discount, and raises cash into strength. SEG had a high cash position of about 21% in February-March, and took advantage of the downturn to buy quality. By March 23, 2020 the cash position was back down to 2%. Ms. Dempsey described the fund as consisting of three buckets of securities: “Organic Revenue”, which thrive in any market; “Cyclical Thrivers”, and “Covid-impacted” (or “Recovery Plays”). They have shifted funds recently to more Recovery Plays. The currently over-valued US dollar is expected to come down, which should favor the non-us markets. Mr. Zecha asked if there has been any indication that the US market craziness (i.e. GameStop-type trading activity) has spread into non-US securities, and Ms. Dempsey responded there has not been any, although SEG will watch for opportunities presented by volatility. Mr. Grzejka asked if the portfolio was impacted by the Executive Order in regard to China. Ms. Dempsey stated that the fund has a 10% position in EM, with two large positions in China, Alibaba and Tencent. However, the positions had already been reduced, on the basis of perceived over-valuation. Alibaba is currently less than 1% of the portfolio. Ms. Dempsey still sees some value to positions in China, since the recovery there has been more quick due to tighter restrictions implemented early on in the crisis. An example would be Prudential PLC, which is a UK listed company which largely sells life insurance policies to Chinese consumers. Ms. Dempsey signed off the call at 11:10 a.m.

Cyber Liability Policy Presentation - Mr. Durkin asked the Executive Director to provide a brief explanation in regard to the upcoming presentation. The Executive Director stated that at the December meeting the Board had requested that she invite Mr. Paul Shanley and Traveler's to make a presentation as to the importance of Cyberliability coverage, particularly given the size of the MWRA's fund, and a summary of typical benefits, exclusions, etc. Mr. Shanley joined the call but did not appear able to unmute his microphone. Ms. Nelda Cronin and Mr. Matt Kieras presented on behalf of Travelers. Mr. Kieras noted that there have been large retail breaches, ID theft is evolving rapidly, and that one incident can result in millions of dollars in losses. He described the coverage as protecting against third party incursion by an outside entity, as well as coverage for first party expenses, i.e. expenses related to the cyber event, such as breach response, notification requirements, betterment, restore to better (necessary security upgrades), etc. He noted trends in Cyber-extortion and ransomware, as well as in social engineering fraud which may mimic a current member or vendor, and in reverse social engineering. Ms. Cronin stated that the claim trends are 1/3 social engineering, 1/3 Ransomware, and 1/3 "other." She said that the hackers are becoming far more sophisticated, and often no longer bear the hallmarks of fake emails, grammatical errors, etc. She said once the hackers gain access to emails, they now wait and watch, to see who is in charge of money transactions, and then insert themselves into the process, and change account information. Any change to any vendor's account information should be independently verified through speaking to a known person. Dual authentication may also help prevent incidents. Three years ago the average ransomware demand was $35,000. Two years ago it was $250,000. Now the average is $1,000,000. Traveler's has a $30m decryption demand claim before it right now. To prevent victimization, backups should not be linked to the operation of the System. If the bad actor is able to upload an encryption virus, running a system backup may infect the backed up files as well. Mr. Kieras noted that as a side effect of remote work, more and more people rely solely on email contact rather than face-to-face or phone contact, and opportunistic hackers know this. Mr. McKenna asked if we are covered at all under our current policy and Mr. Kieras responded in the negative. Cyber Liability coverage requires a separate policy. Mr. McKenna asked if the outside auditor offers a Cyber review, and the Board has them perform the review, would that reduce the cost of a policy? Mr. Kieras responded that he can't say without seeing what the review entails. Mr. McKenna asked what the normal range of coverage would be for a fund that is about $650m in assets. Mr. Kieras stated that it does not necessarily correlate to assets, but rather to transactional exposure, size of wires, number of vendors, potential size of claim (number of members potentially affected by a breach), etc. He stated that for first time policy purchases most buy $1m-$5m in coverage, but larger entities such as major retailers may have multiple layers of $10m policies. Mr. Zecha asked if Travelers has other Massachusetts clients, and Mr. Kieras responded that they do. Mr. Zecha asked the Executive Director to follow up with Mr. Shanley and Travelers for references. Mr. Zecha thanked the group, and Mr. Shanley, Mr. Kieras, and Ms. Cronin signed off at 11:34 a.m.

Mr. Zecha acknowledged that Gar Chung from FIN had joined the meeting as an observer, and Mr. Durkin welcomed him.

Olivier Keller and Jared Shull joined the call on behalf of PE Manager Pinebridge at 11:37 a.m. Mr. Grzejka gave a warning to the speakers in regard to proprietary information since members of the public are on the call. Mr. Keller noted that MWRA ERS has approximately $700,000 remaining across the 8 underlying sleeves. The investments had vintage years from 2005 through 2009, so since-inception performance incorporates the economic crisis of 2008. Mr. Keller expects additional distributions in the coming weeks, with 15% of committed capital remaining. Mr. Keller noted that PEP V Asia was the largest detractor but that market conditions have improved, and that the Co-investment sleeve was hit hard by the 2008 crisis. The Secondary sleeve has been the most consistent performer of the eight. Mr. Grzejka asked whether Pinebridge would consider selling the remaining assets on the secondary market in order to wrap up the fund. Mr. Keller responded that the recovery has seen values increase so they are investigating the possibility. Mr. Keller signed off at 11:45 a.m.

Mr. McKenna asked Mr. Grzejka if Pinebridge had exposure to Fitbit in the US sleeve. Mr. Grzejka responded that they did, but that it was much smaller than Foundry's, and that he could request the specific attribution from Pinebridge.

Steve Hagenbuckle, Susanna Davis and Joe Connelly joined the call on behalf of Real Estate Manager Terracap in regard to the System's investment in Fund III and Fund IV. Mr. Grzejka repeated the warning about disclosure of proprietary information given that there are members of the public on the call. Mr. Connelly was having difficulty with is audio, and was instructed to hit *6. Mr. Connelly thanked the MWRA Retirement Board for the opportunity to attend, and for its business, and stated that Terracap had performed as they said they would. Mr. Durkin noted that Mr. Connolly is always welcome. Mr. Hagenbuckle reported that the company continues to grow, and that there have been no negative firm events. He stated that Terracap invests in the high-demand growth markets such as Tampa, Atlanta, Dallas, Orlando, Charlotte, etc. rather that the "gateway markets", which have experienced corporate migration out due to cost of business, Covid-19, and civil unrest. He commented that the funds had no exposure to retail, senior living or student housing. He reported Fund III has $1.7m remaining value on an initial investment of $2.8m, and has made $2.4m in distributions to date. The System invested $4m in Fund IV in 2017 has received distributions totaling $1.9 m and has $4.2 in remaining value. Mr. Hagenbuckle anticipates two sales on February 11, 2021 with distributions expected February 18, 2021. He expects year-end performance likely in the low teens, and that Q4 numbers should be release between February 15th and February 20th. Mr. Hagenbuckle detailed Terracap's focus on high-demand corporate relocation markets, with in-migration and projected employment growth, where both people and businesses are moving, seeking affordability. The approach is strictly data-driven and they are sticking to their thesis. Terracap is in the midst of a capital raise for Fund V, with a close expected in the summer of 2021. Mr. Zecha asked is California is still experiencing a business exodus, and Mr. Hagenbuckle responded in the affirmative, with 75 corporate relocations while the Phoenix and Scottsdale areas experienced a net influx of 300,000 people, predominantly from California and Seattle. Mr. Zecha asked if there are opportunities in the falling markets, and Mr. Hagenbuckle stated that the falling markets are risky, and one would need to be a sharpshooter to identify the opportunities. Mr. Hagenbuckle stated that they have a significant weighting in workforce housing in growing markets. Mr. Zecha asked whether they are primarily premium units, and Mr. Hagenbukle answer that most are standard but that they do renovations and offer some units as higher-end options at a premium. Mr. McKenna thanked Mr. Hagenbuckle and asked about Cary Hospitality on page 19 of the presentation. Mr. McKenna noted the relatively high position in the sole hotel property and asked what the plan is regarding the future of the property, since Terracap had previously reported anticipating a sale in December of 2019. Mr. Hagenbuckle stated that given that there are four years left on the fund that Cary will probably be among the last sales, that hopefully travel will recover, and that there is an entertainment and office complex scheduled to be built nearby. Terracap secured a roughly $200,000 PPP loan and expects to be approved for additional funds to support the property. Mr. Hagenbuckle expects the sale of the Barrett Commerce Center in April. Mr. Hagenbuckle, Ms. Davis, and Mr. Connolly left the call at 12:15 p.m.

Mr. Gilbert Garcia joined the call in regard to the Retirement System's Fixed Income investment in Garcia Hamilton. Mr. Garcia immediately acknowledged that the fund has underperformed relative to their benchmark in this extraordinary time period since the initial investment in 2019, and that he would make no excuses. The fund has added high-quality, fixed-rate credit and has improved relative performance. Mr. Durkin asked how Garcia Hamilton has handled duration, and Mr. Garcia noted that duration was largely responsible for the underperformance. Since the fund added credit, the spreads have swung back, and the fund expects to reduce credit exposure again. Mr. Garcia expects rates to climb somewhat once we are on the other side of the virus. He noted other countries have already resumed growth, and he expects the stimulus and a jobs initiative will help the US recovery. He noted the monetary supply is seeing its fastest growth outside of wartime, and that consumer enthusiasm and savings are reaching highs as well. Mr. Zecha asked about a possible reduction in fees. Mr. Garcia stated that in light of the underperformance that Garcia Hamilton would be willing to lower the base fee and add a performance fee component in order to show Garcia Hamilton's commitment to improved performance. Mr. Zecha asked that Mr. Garcia put together a proposal and submit it to NEPC for review by the Board at the next meeting, and thanked Mr. Garcia for his honesty and for the offer. Mr. Garcia signed off the call at 12:36p.m.

11) NEPC

a) Flash Report as of 12/31/2020
b) Rebalance Recommendation

Mr. Grzejka asked if the Board would like to take a brief recess before he begins his performance review. Mr. Durkin called a brief recess at 12:37 p.m.

Mr. Durkin called a return to order at 12:45 p.m. Mr. Grzejka reported that the fund had finished December at $647m with 12.2% YTD based on the reporting currently available, but noted that several managers have not yet reported Q4 numbers. NEPC expects to present the annual Asset Allocation Review at the February meeting. The active US Equity managers added value. He noted in regard to the Small Cap portfolio that Growth outperformed Value in the largest spread ever, but expects a return to normalcy. He stressed the importance of rebalancing, and stated that the Board's consistent and disciplined approach to "taking money off the table" contributed to the System's gains in 2020. Baillie Gifford was up roughly 21% for the year, with double-digit returns for both the Equity and Fixed income portfolios. TIPS returned very well in the volatile 2020 markets, coming in at just under 11% YTD. The Loomis Fixed Income Trust also performed well, and Octagon is poised to do well in 2021. Both Corbin and UBS outperformed the PRIT Hedge Fund portfolio by a wide margin. Overall the System's portfolio outperformed in both 2019 and 2020 and Mr. Grzejka noted there may be a negative correlation for 2021, in that the prior years' gains may eat into 2021's expected returns. He expects that there will be both PE and RE RFP's issued in 2021. Mr. Durkin asked where the System falls relative to PRIT's 12.56 for the year. Mr. Grzejka noted that PRIT's net return is 12.1%, and that the MWRA Retirement System is at 12.2% with the expectation that the outstanding reporting will increase this number somewhat. He noted that PRIT's is more of a total return orientation, with MWRAERS' more moderate allocation faring well relative to PRIT, and that the MWRA Board's timely and disciplined rebalancing has helped performance.

In regard to the rebalance recommendations. Mr. Grzejka reiterated that this was merely an update of the approved December rebalance recommendations for the purpose of funding the new EM mangers, and that due to portfolio growth NEPC is recommending increasing the overall EM allocation from $38 to $40. He noted that Axiom is in the process of being funded, and that although the additional information regarding underlying managers requested has been submitted, ABS has yet to be approved by PERAC.

12) Legal Update

a) James Barry Section 7 Hearing
b) Vernava Superior Court Decision

At 1:02 p.m. Attorney Gibson made a recommendation that the Board convene the hearing in regard to the application for accidental disability retirement filed by Mr. James Barry. The Retirement Coordinator stated that she would email Attorney Hislop as arranged to let him know the Board is ready for him.

> On a motion made by Mr. Pappastergion and seconded by Mr. McKenna:
> **<u>VOTED</u>**
> to convene in Executive Session under Purpose 7 in regard to the application of Mr. James Barry for accidental disability. 4-0, roll call with McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes and Mr. Durkin voting yes

The Board convened in Executive Session at 1:06 p.m.

The Board returned to open session at 1:24 p.m.

Mr. Durkin asked the Executive Director why Mr. Jackson was on the call, and the Executive Director responded that she really wasn't sure. She stated that a 91A termination hearing had been scheduled for his failure to file 2019 earnings information with PERAC as required. However, subsequent to the Board's issuance of the Hearing Notice, PERAC notified the Board that Mr. Jackson had complied with the reporting requirements, and the Hearing Notice had notified Mr. Jackson that if he had complied, he would not need to attend the Board meeting.

Mr. Durkin asked that the Board ratify in open session the action taken in Executive session in regard to the Application of James Barry for accidental Disability retirement.

On a motion made by Mr. McKenna and seconded by Pappastergion
VOTED
to approve, in consideration of the affirmative certification of the medical panel, the application of Mr. James Barry for Accidental Disability Retirement, and to forward the related documents to PERAC for final review and approval. 4-0, roll call with McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes and Mr. Durkin voting yes

Attorney Gibson discussed the SJC's decision that *Vernava* must be applied regardless of whether the employee retires for superannuation or disability. PERAC is seeking review by the attorney General, and has submitted corrective legislation which would essentially reverse *Vernava*, allowing sick and vacation pay received to supplement worker's compensation to be once again considered regular compensation. Mr. Zecha asked Attorney Gibson to clarify the difference between s. 34 and s. 35 benefits. Counsel responded that an employee receiving total incapacity worker's compensation under s. 34 would receive creditable service, while an employee receiving s. 35 partial incapacity benefits receives none. Essentially this creates two classes of employees, because public safety employees receive fill creditable service while they receive 111F benefit, and they are considered regular compensation. Attorney Gibson cautioned whether the next step would be not to give creditable service at all for sick and vacation time, and stated that he is hoping the corrective legislation filed by PERAC will pass. Mr. McKenna asked whether Vernava has any impact on PFML, and Counsel responded that PFML benefits are not sick or vacation benefits by the employer but are paid by a third party due to an inability of the employee to perform service for the employer, and are therefore not considered regular compensation. Attorney Gibson described the *Vernava* case as a Pyrrhic victory which resulted in and administrative nightmare for Board staff, lower benefits for some employees, as well as benefits which are effective no earlier than six months prior to the filing of the application. Mr. Zecha asked who the Attorney was that had argued for the *Vernava* outcome, and Attorney Gibson responded Attorney Michael Sacco, who Mr. Zecha noted is now the Director of the Worcester Regional Retirement System.

Attorney Gibson informed the Board of the appointment of Mr. Richard McKinnon, PFFM President, to the PERAC Commission to replace former Commissioner Robert McCarthy, who recently retired.

Counsel recommended that the Board members attend the PERAC Legislative Update webinar when it becomes available on PERAC's site.

He noted that legislation has also been filed to reform forfeiture provisions, and to limit excess earnings recovery by Boards to the Retirement Allowance paid. Counsel also noted that MWRA Board was given credit in PERAC's PowerPoint presentation for bringing to their attention the adverse effect of the Anti-Spiking provisions on MEPA pay adjustments.

Attorney Gibson stated that he had tested PERAC's on-line SFI form in PROSPER, and that it had taken him approximately 30 minutes to complete. He stated that the benefit is that the form will-pre-populate in future years, requiring less input.

He stated that the earnings limit moratorium for retirees who become re-employed by governmental entities has been extended through 2021.

PERAC has released the 1.3% COLA Memo, and Counsel recommended that the Board send notification to the Authority now in anticipation of a March vote by the Retirement Board.

Mr. Zecha asked whether Attorney Gibson sees any issues with the Board's acceptance of Garcia Hamilton's offer to change their fee structure in light of their underperformance, and he stated that he sees none, and that it is the Board's responsibility to negotiate lower fees where possible. He noted that no matter what non-PRIT systems get criticized for fees even under the best of circumstances, and that the System benefits from the Board's established record of working to reduce fees. Mr. Grzejka suggested that any new fee proposal must include a cap to insure that the new fee structure may not exceed the prior one. Board Counsel concurred.

Mr. McKenna asked Mr. Grzejka to provide an update in regard to the remaining Peru investment with Entrust. Mr. Grzejka noted that the process is moving forward but involves the convening of an international tribunal in November 2021, and that some new communication is expected to come after that.

Mr. Zecha asked if the Board is required to hold Due Diligence meetings annually for Entrust, and Attorney Gibson stated that since there is no active management, he does not believe the annual meetings are required on "holdback" assets. Mr. Zecha noted that he always enjoys hearing from Mr. Hymowitz and that perhaps the Board should call him in.

Mr. Durkin stated that on behalf of the Board he wished Chairman Fleming well.

> On a motion made by Mr. Zecha and seconded by Mr. Pappastergion:
> **VOTED**
> to adjourn the January 28, 2021 meeting of the MWRA Retirement Board.
> 4-0, roll call with McKenna voting yes, Mr. Pappastergion voting yes, Mr. Zecha voting yes and Mr. Durkin voting yes

The meeting was adjourned at 1:58 p.m.

The following were provided to the Board Members for their review:

> PERAC Memo # 35-2020 – Post Retirement Work Waiver During the State of Emergency Extended to 2021
> PERAC Memo # 36-2020 – 2020 Disability Data

PERAC Memo # 37-2020 – Mandatory Retirement Board Member Training – 1st Quarter 2021
PERAC Memo # 38-2020 – Questions Arising in Wake of the *Gomes* Decision
PERAC Memo # 39-2020 – Tobacco Company List
PERAC Memo # 1-2021 – 840 CMR 10:10(3) & 10:15(1)(c) – Annual Review of Medical Testing Fee
PERAC Memo # 2-2021 – 2021 Limits Under Chapter 46 of the Acts of 2002
PERAC Memo # 3-2021 – 2021 Limits Under Section 23 of Chapter 131 of the Acts of 2010
PERAC Memo # 4-2021 – COLA Notice
PERAC Memo # 5-2021 – PROSPER SFI Online Submission
PERAC Memo # 6-2021 – 2021 Interest Rate Set at 0.1%
Item 99-12 PERAC Memo # 7-2021 – Buyback and Make-up Repayment Worksheets
Draft Job Description for Executive Secretary for Review by Board and/or Subcommittee at Subsequent Board Meeting
EnTrust Global Peru Land Bonds Update Letter
aillie Gifford 2021 Partnership Announcement
Alcentra CEO Update

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.

The next regularly scheduled meeting of the MWRA Employees' Retirement Board will be held Thursday, February 25, 2021 at Massachusetts Water Resources Authority, 2 Griffin Way, Chelsea, at 10:00 a.m., if permissible, otherwise, will be held by publicly advertised conference call.

James M. Fleming, Elected Member

Kevin McKenna, Elected Member

Andrew Pappastergion, Ex Officio

Thomas J. Durkin, Appointed Member

Frank Zecha, Fifth Member

Massachusetts Water Resources Authority Retirement System
Invesco Mortgage Recovery Fund I and II

February 2020

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Table of Contents

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01 Instructions

Firm: Invesco Advisor, Inc.
Strategy/Product: Invesco Mortgage Recovery Fund I and II
Client: Massachusetts Water Resources Authority Retirement System

NEPC Manager Due Diligence Questionnaire - Update

In support of our upcoming meeting we ask that you please complete this due diligence questionnaire. Please provide your responses in the form of brief descriptions, lists or tables added directly to this Word document. Thank you for taking the time to complete this questionnaire. Please note that your response will be part of the NEPC Research Database.

02 Firm/Organization

02.01 Have there been any changes in ownership or management in the past year?

There have been no changes in ownership or management relating to Invesco Mortgage Recovery Fund I and II.

There have been no changes to ownership (public firm) over the past year. Some of the key events such as mergers/acquisitions and other changes for the parent organization, Invesco Ltd., include:

On December 11, 2019, Invesco announced the expansion of its digital wealth business supporting advisors, end-investors, and financial institutions with industry-leading tools, resources and investment capabilities. RedBlack, a market-leader in portfolio rebalancing and trading technology, joins Invesco, bringing more than 150 clients and $350 billion of platform assets.

On May 24, 2019, Invesco Ltd. and Massachusetts Mutual Life Insurance Company announced the successful completion of Invesco's acquisition of MassMutual's asset management affiliate OppenheimerFunds. Per the terms of the transaction, MassMutual became a significant shareholder of Invesco, with an approximate 15.7% stake in the common stock of the combined firm. The strategic transaction brings Invesco's total assets under management to $1.2 trillion, making it the 6th-largest US retail investment manager and the 13th-largest global investment manager, further enhancing the firm's ability to help meet client needs through its comprehensive range of high-conviction active, passive and alternative capabilities.

02.02 List firm AUM, net flows and accounts gained/lost for the past 5 years.

Collectively, Invesco Ltd.'s specialized investment teams manage $1,349.9 billion (as of December 31, 2020) in assets under management globally across a diversified set of distinct investment strategies spanning major equity and fixed income asset classes, asset allocation, and alternatives, including real estate, private equity and commodities.

These capabilities are delivered through multiple distinct investment centers and teams designed around specific asset classes, styles, or regional expertise. Each investment team adheres to clearly defined investment philosophies and processes aligned with client expectations. Each of the firm's investment teams employs local investment risk oversight, which is augmented by regional and global risk management policies, practices, and procedures.

Of the approximate $1,349.9 billion managed by Invesco Ltd., Invesco Real Estate manages approximately $82.8 billion in direct real estate and public securities strategies globally as of December 31, 2020. The following tables break down IRE's total assets under management by investment strategy as of December 31, 2020:

Investment Strategy	Gross AUM (in US$ millions)
Direct Real Estate	**63,505**
Core	48,643
Core Plus	3,255
Core/Value-Add	1,593
Value-Add	6,211
Opportunistic	773
Debt	3,031
Real Asset Securities	**19,257**
Global Infrastructure	131
Master Limited Partnerships	4,668
US Real Estate Securities – Total Return	2,863
Global Real Estate Securities – Total Return	4,294

Income Real Estate Securities (US & Global)	4,866
Global - Gold and Special Minerals	2,434
Total	**82,762**

Source: Invesco Real Estate. As of December 31, 2020.

02.03 Have there been any new or discontinued products in the past year?

Invesco Ltd. continues to execute the firm's long-term strategy, which further improves the firm's ability to serve clients. The firm conducts an annual strategic planning process in which senior leaders assesses the macro environment and opportunities within the markets in which the firm operates, together with the growth, needs and budgets of the firm's business operations around the world. The firm takes a disciplined approach to managing the company, and allocates resources to the opportunities that will best benefit clients and its global business over the long term. Long-term strategic priorities are outlined below, along with key steps Invesco is taking to achieve them.

Invesco Ltd. regularly reviews its existing product line and works to bring quality investments to clients in different regions or channels. The firm offers a comprehensive product line by investment asset class, geography, and investment vehicle. From time-to-time, there exist opportunities to expand the product offering. To facilitate this process, product introductions are vetted carefully through an overall development process which is a combination of a global committee, coupled with regional product development forums. These committees and forums are in place to ensure investment and operational merit of a new product, and include a collection of leaders within Product Development, Investments, Operations, Legal and Compliance. This approach enables the firm to introduce investment strategies that are aligned with client expectations, represent the best of the firm, and will have longevity in their ability to achieve their stated investment processes and philosophy.

Please refer to the attached InFocus on changes to Invesco's U.S. product line-up.

Within the parent organization there is a strong focus on alternative assets including real estate, and real estate is viewed as one of the premier products in terms of performance and client satisfaction.

Annually, Invesco Real Estate (IRE) prepares a rolling three-year business plan, which is discussed and approved by the firm.

Within Invesco, IRE is also committed to achieving strong investment performance over the long-term, continually reinforcing its investment culture and improving its ability to deliver investment excellence for its clients. IRE believes this is the foundation upon which its assets under management will grow. As part of IRE's on-going management, IRE continually monitors the business, ensuring that adequate resources are in place to effectively execute its investment strategies. IRE will add professionals as necessary to enhance the team and ensure appropriate support in all areas of the organization.

Two new global securities strategies were launched in 2014: Invesco MLP Securities and Invesco Global Infrastructure Securities. These strategies use the same investment process which has been in place for over 20 years to analyze long-lived heterogeneous assets with stable underlying cash flows: Global Infrastructure, investing in the global backbone of today and the growth of the future, and MLP, investing in the fundamental requirements for processing, transportation and storage of energy.

In the US IRE anticipates launching a non-traded REIT that will pursue real estate investments throughout the United States. In Europe IRE anticipates launching its second European value-add fund in IRE's series of European closed-end comingled value-add funds. In Asia, IRE anticipates launching its fourth Asian value-add fund in IRE's series of Asian closed-end comingled value-add funds.

Globally, IRE anticipates launching a collective investment trust fund to provide exposure to private and public real estate for DC plans such as target date funds. IRE also anticipates launching a Luxembourg domiciled FOF designed to provide investors with access to an institutional quality global real estate portfolio.

IRE’s long-term planning ensures a smooth process and stability that is a cornerstone of IRE’s platform. It should be noted that since IRE's inception, the team management of client assets has always been a priority. Team management is part of IRE’s philosophy, and it is embedded in how IRE transmits culture, training and experience.

02.04 Are any products capacity constrained?

No.

02.05 Describe any current or pending regulatory, compliance or litigation issues and the expected business impact.

From time to time, Invesco Advisers, Inc., which has and maintains robust compliance programs and practices that comply with Rule 206(4)-7 under the Investment Advisers Act of 1940 and Rule 38a-1 of the Investment Company Act of 1940, may receive formal or informal requests from governmental or regulatory bodies about their activities. No requests currently pending are expected to result in any matter that could have a material adverse impact on the business or operations.

From time to time, Invesco’s US registered investment advisers may be involved in legal proceedings. No legal proceedings currently pending are expected to have a material impact on the business or operations of any such advisers.

03 Portfolio Management Team

03.01 Have there been any changes in the portfolio management team in the past year?

There have been no changes to the investment team as of December 31, 2020.

03.02 Are there any expected changes to the team in the future (planned additions or departures)?

No.

04 Process

04.01 Have there been significant changes in any of the areas below in the past year?

- **Identification of investment ideas**
- **Process for exploring and vetting ideas**
- **Portfolio trading practices including buy/sell rules**
- **Approach to portfolio monitoring and risk management**

No

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05 Philosophy

05.01 Describe recent changes in investment philosophy, if any.

While enhancements have been made as transparency in the industry has improved, IRE's basic philosophy has not changed since the Fund's inception.

06 Portfolio

06.01 If not included in your meeting presentation, provide portfolio holdings, sector exposure, geographic exposure and common characteristics (yield, duration, market cap, P/E, etc.).

This information will be included in the meeting presentation.

06.02 List strategy AUM, net flows and accounts gained/lost for the past 5 years.

This is a closed end fund. There have been no changes.

06.03 Describe investor concentration for the strategy and note the percent of AUM attributable to the top five investors.

This is a closed end fund. There have been no changes.

07 Performance / Market Outlook

07.01 If not included in your meeting presentation, provide trailing returns as of the most recent quarter-end and calendar year returns for the past 10 years, both relative to benchmark.

It is very difficult for benchmarks and/or peer universes to be established within an opportunistic investment strategy due to timing of fund raises/deployment of capital (economic environment of purchases/sales) and variation of strategies among different managers.

The most recently reported quarter-end, since inception and projected internal rates of return and equity multiples are included in the meeting presentation materials.

07.02 Briefly discuss recent performance trends and identify environments in which the strategy is likely to be in or out of favor.

This commentary is included in the quarterly report for IMRF I, please see Attachment 1.

07.03 Describe your market outlook and how strategy positioning is impacted by your views.

This commentary is included in the quarterly report for IMRF I, please see Attachment 1.

07.04 Could you please include a slide in your presentation that sows the MWRA's account history, initial contribution, cumulative subsequent contributions, cumulative subsequent distributions, gain/loss and current value.

Yes.

Contact information

Contact Name:	**Jake Passero**
Title:	Director, Relationship Manager
Telephone:	+1 (212) 278-9530
Email:	Jake.Passero@invesco.com

Massachusetts Water Resources Authority Retirement System

Invesco Partnership Fund IV and Invesco Partnership Fund VI.

February 2021

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Table of Contents

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01 Instructions

Firm: Invesco Private Capital
Strategy/Product: Invesco Partnership Fund IV; Invesco Partnership Fund VI
Client: MWRA Employees' Retirement System

NEPC Manager Due Diligence Questionnaire - Update

In support of our upcoming meeting we ask that you please complete this due diligence questionnaire. Please provide your responses in the form of brief descriptions, lists or tables added directly to this Word document. Thank you for taking the time to complete this questionnaire. Please note that your response will be part of the NEPC Research Database.

02 Firm/Organization

02.01 Have there been any changes in ownership or management in the past year?

There have been no changes in ownership or management relating to Invesco Partnership Fund IV and Invesco Partnership Fund VI.

There have been no changes to ownership (public firm) over the past year. Some of the key events such as mergers/acquisitions and other changes for the parent organization, Invesco Ltd., include:

On December 11, 2019, Invesco announced the expansion of its digital wealth business supporting advisors, end-investors, and financial institutions with industry-leading tools, resources and investment capabilities. RedBlack, a market-leader in portfolio rebalancing and trading technology, joins Invesco, bringing more than 150 clients and $350 billion of platform assets.

On May 24, 2019, Invesco Ltd. and Massachusetts Mutual Life Insurance Company announced the successful completion of Invesco's acquisition of MassMutual's asset management affiliate OppenheimerFunds. Per the terms of the transaction, MassMutual became a significant shareholder of Invesco, with an approximate 15.7% stake in the common stock of the combined firm. The strategic transaction brings Invesco's total assets under management to $1.2 trillion, making it the 6th-largest US retail investment manager and the 13th-largest global investment manager, further enhancing the firm's ability to help meet client needs through its comprehensive range of high-conviction active, passive and alternative capabilities.

02.02 List firm AUM, net flows and accounts gained/lost for the past 5 years.

Invesco Private Capital managed approximately $1.3 billion as of December 31, 2020. Strategy flow information is not available for external distribution.

02.03 Have there been any new or discontinued products in the past year?

Invesco Ltd. continues to execute the firm's long-term strategy, which further improves the firm's ability to serve clients. The firm conducts an annual strategic planning process in which senior leaders assesses the macro environment and opportunities within the markets in which the firm operates, together with the growth, needs and budgets of the firm's business operations around the world. The firm takes a disciplined approach to managing the company, and allocates resources to the opportunities that will best benefit clients and its global business over the long term. Long-term strategic priorities are outlined below, along with key steps Invesco is taking to achieve them.

Invesco Ltd. regularly reviews its existing product line and works to bring quality investments to clients in different regions or channels. The firm offers a comprehensive product line by investment asset class, geography, and investment vehicle. From time-to-time, there exist opportunities to expand the product offering. To facilitate this process, product introductions are vetted carefully through an overall development process which is a combination of a global committee, coupled with regional product development forums. These committees and forums are in place to ensure investment and operational merit of a new product, and include a collection of leaders within Product Development, Investments, Operations, Legal and Compliance. This approach enables the firm to introduce investment strategies that are aligned with client expectations, represent the best of the firm, and will have longevity in their ability to achieve their stated investment processes and philosophy.

Please refer to the attached InFocus on changes to Invesco's U.S. product line-up.

02.04 4. Are any products capacity constrained?

No.

02.05 Describe any current or pending regulatory, compliance or litigation issues and the expected business impact.

From time to time the firm, its team members (defined as those individuals named in the Fund's PPM) and its affiliated funds may be involved in legal proceedings or insurance claims. Currently there are no legal proceedings which IPC currently believes will have material impact on IPC or its managed funds business or operations.

03 Portfolio Management Team

03.01 Have there been any changes in the portfolio management team in the past year?

In January of 2020, Alan Weinfeld joined IPC as a Partner and Investment Committee member. Jess Mulvihill, Vice President, left IPC in August 2020 to pursue her MBA.

03.02 Are there any expected changes to the team in the future (planned additions or departures)?

No.

04 Process

04.01 Have there been significant changes in any of the areas below in the past year?

- **Identification of investment ideas**
  No.

- **Process for exploring and vetting ideas**
  No.

- **Portfolio trading practices including buy/sell rules**
  No,

- **Approach to portfolio monitoring and risk management**

  No.

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05 Philosophy

05.01 Describe recent changes in investment philosophy, if any.

Not applicable.

06 Portfolio

06.01 If not included in your meeting presentation, provide portfolio holdings, sector exposure, geographic exposure and common characteristics (yield, duration, market cap, P/E, etc.).

This information will be included in the meeting presentation.

06.02 List strategy AUM, net flows and accounts gained/lost for the past 5 years.

Strategy flows are not available for external distribution.

06.03 Describe investor concentration for the strategy and note the percent of AUM attributable to the top five investors.

The strategy has a diverse mix of client types, as shown in the chart below.

Corporate	17.3%
Foundation/Endowment	2.0%
HNW/Family	35.3%
Insurance/Financial	9.1%
Taft-Hartley	11.5%

Source: Invesco. As of September 30, 2020.

07 Performance / Market Outlook

07.01 If not included in your meeting presentation, provide trailing returns as of the most recent quarter-end and calendar year returns for the past 10 years, both relative to benchmark.

This is included in the meeting presentation.

07.02 Briefly discuss recent performance trends and identify environments in which the strategy is likely to be in or out of favor.

The team sees clear and growing opportunity within early-stage venture. Predictably, inflation in mega VC fund sizes as well as non-traditional investor participation has led to higher and fast-growing valuations at the later stage, while early-stage valuations have shifted only modestly above historical averages. As a result, early stage is more clearly delineated from late stage than ever before. IPC believes that the strongest returns will still come from seed and early venture funds where entry valuation matters most, and that access to the best VCs and deal flow are paramount. It is worth noting that the inflation in late-stage valuations and funding rounds has been a positive for early-stage venture investors, creating more liquidity downstream for early-stage investments and another potential exit path for investors. We have increasingly seen early-stage investors selling into larger late-stage rounds at premium valuations rather than waiting for a M&A event or an IPO for an exit.

07.03 Describe your market outlook and how strategy positioning is impacted by your views.

IPC believes that over the past 30 years, venture capital has been one of the most important forces in the global economy, and that demand for venture capital investment remains strong as the country's entrepreneurial culture fosters a growing number of start-ups. Additionally, while the global economy continues to cope with regional growth cycles, political conflicts and a global pandemic, IPC believes the fundamental factors driving demand for venture capital investment have not diminished.

With each new wave of technology breakthroughs, IPC believes the velocity of change and disruption driving venture capital has accelerated. Over the years, IPC has observed many incumbent products, companies, and industries get entirely displaced at an increasingly rapid pace. Historically, this phenomenon had been commonplace in technology-centric industries – whereby newer technology was constantly displacing older technology. Today, technology is transforming almost every facet of our lives, with innovation displacing industries from agriculture to construction, transportation, and nearly every segment of the services sector.

As this disruption takes place, IPC believes compelling opportunities continue to emerge for investors. IPC believes that venture capital backed companies remain at the forefront of capitalizing on those opportunities.

07.04 Could you please include a slide in your presentation that shows the MWRA's account history, initial contribution, cumulative subsequent contributions, cumulative subsequent distributions, gain/loss and current value.

This is included in our presentation.

Contact information

Contact Name: Jake Passero
Title: Director, Relationship Manager
Telephone: +1 (212) 278-9530
Email: Jake.Passero@invesco.com

MWRA Retirement System

Jake Passero
Director – US Institutional Sales

February 2021

NOT FDIC INSURED | MAY LOSE VALUE | NO BANK GUARANTEE

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For existing investors only. All material presented is compiled from sources believed to be reliable and current, but accuracy cannot be guaranteed. This is not to be construed as an offer to buy or sell any financial instruments and should not be relied upon as the sole factor in an investment making decision. As with all investments there are associated inherent risks. Please obtain and review all financial material carefully before investing. Past performance is not indicative of future results. This portfolio is actively managed. Portfolio holdings and characteristics are subject to change. This does not constitute a recommendation of the suitability of any investment strategy for a particular investor. The opinions expressed herein are based on current market conditions and are subject to change without notice.

Portfolio Overview

Portfolio Overview: Invesco Partnership Fund IV & VI
MWRA Retirement System

As of September 30, 2020

Partnership Name	Commitment	Total Contributions[1]	Cumulative Distributions	+ Estimated NAV	= Total Value
INVESCO Partnership Fund IV	$3,000,000	$2,282,765	$4,780,409	$11,963	$4,792,372

- Total value to cost currently stands at 2.10x
- Net IRR for the fund is 9.2%

Partnership Name	Commitment	Total Contributions[1]	Cumulative Distributions	+ Estimated NAV	= Total Value
INVESCO Partnership Fund VI	$5,000,000	$3,958,354	$1,106,919	$7,579,774	$8,686,693

- Total value to cost currently stands at 2.19x
- Net IRR for the fund is 15.20%

1 Management fees are paid inside of capital commitments, therefore, total contributed capital includes the management fees paid through 9/30/2020.

Invesco Partnership Fund VI

Invesco Partnership Fund VI

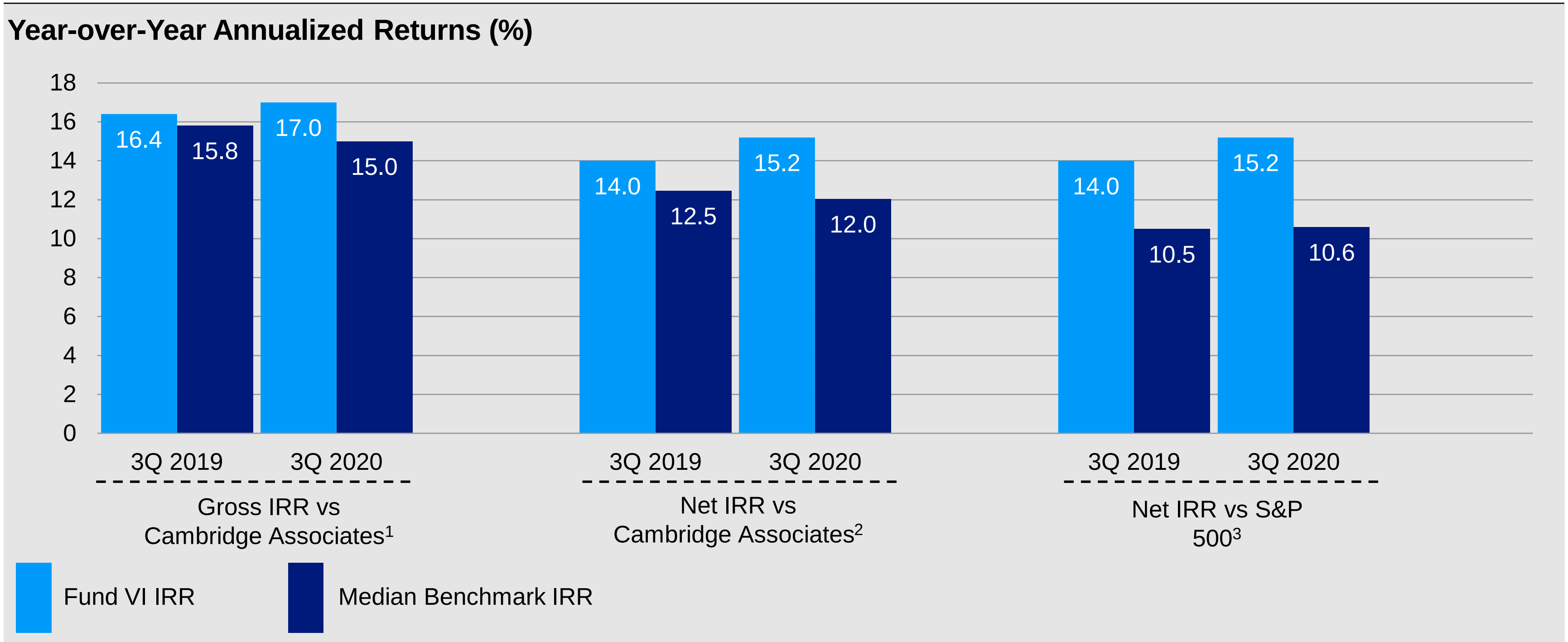
Progress Report (as of December 31, 2020)

- 95% of aggregate fund commitments have been drawn by underlying partnerships
- Portfolio average cost-weighted life as of 3Q'20 = 4.8 years
- A total of $53.4 million[1], representing 76.2% of contributions, has been distributed to Fund VI in cash and stock
- Strong "diversified" gross IRR of 17.0% as of 3Q'20
- Performance continues to be strong in 3Q'20, across all portfolios:
  - U.S. Venture Gross IRR: 22.6%
  - U.S. Buyout Gross IRR: 13.8%
  - International Gross IRR: 13.8%

Aggregate investment level. This summary and the information contained herein is prepared solely for the use of our limited partners and should not be distributed without our consent. Unless otherwise noted, IRRs are calculated by Invesco based on information provided by the investments. The aggregate sleeve figures may differ slightly from the absolute sum of all the individual sleeves due to rounding. Co-Investments are inclusive of all the data above.
1 Includes distributions and any interest true-ups for subsequent entry after first closing.

Invesco Partnership Fund VI

Gross & Net “diversified” Performance vs. Benchmarks



Returns as of 9/30/19 and 9/30/20. Past performance is not a guarantee of future results. Any reference to a ranking, a rating or an award does not provide a guide to future results and is not constant over time. Gross “diversified” IRR represents investment level performance and is net of underlying funds’ fees and expenses, gross of IPC’s fees and expenses. Net “diversified” IRR represents fund level performance and is net of both underlying funds’ and IPC’s fees and expenses. “Diversified” IRRs calculated at the diversified fund level: 30% International Partnership Fund VI, 25% U.S. Venture Partnership Fund VI and 45% U.S. Buyout Partnership Fund VI.

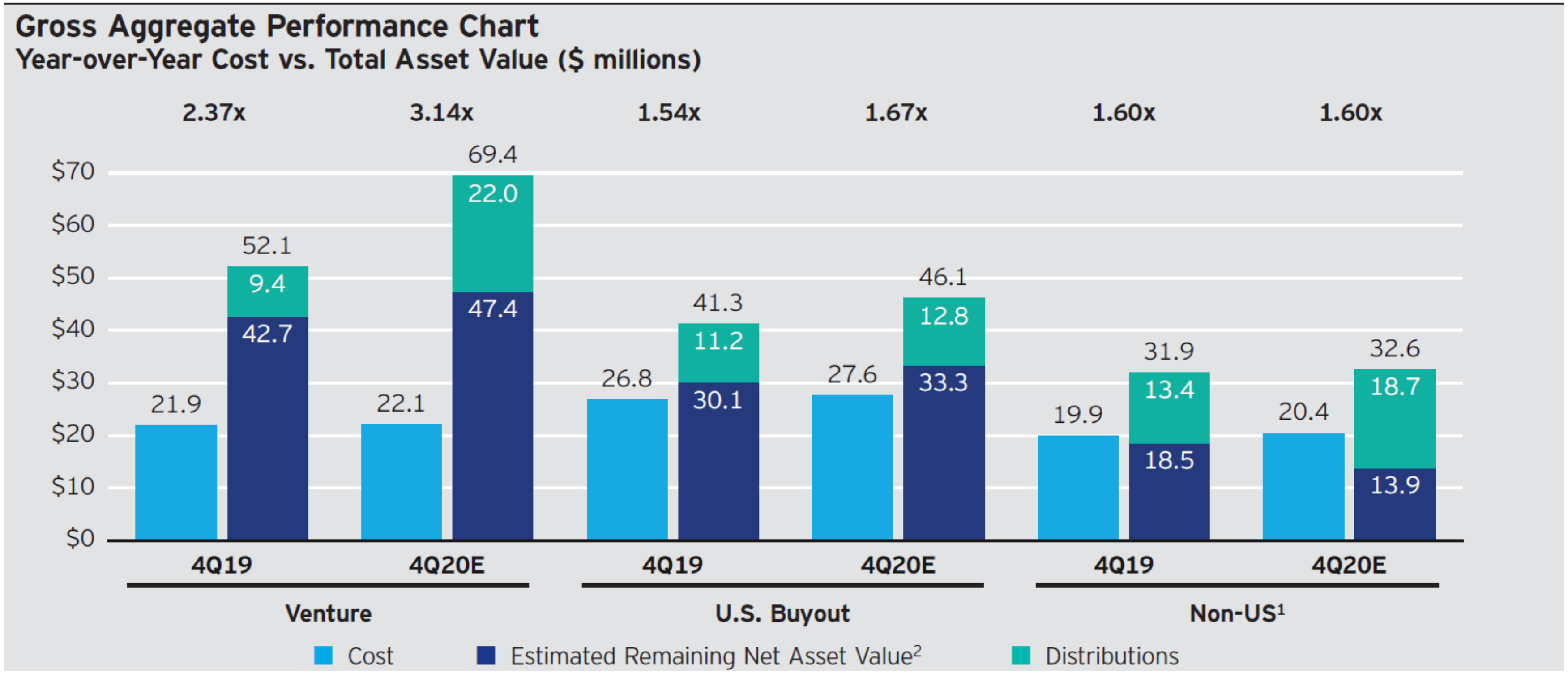
1 Cambridge Associates Venture Capital, Buyout, and Growth Equity (2011 vintage, U.S., Europe) as of 9/30/19 and 9/30/20.

2 Cambridge Associates Private Equity Fund of Funds Index (2011 vintage) as of 9/30/19 and 9/30/20. Invesco Partnership Fund VI is a 2011 vintage year fund-of-funds, therefore a 2011 fund-of-funds benchmark is most appropriate.

3 Bloomberg – Represents annualized simple price appreciation of S&P 500, dividends not reinvested. These returns are calculated from 7/19/11, the date of Invesco Partnership Fund VI’s first draw down, through 9/30/19 and 9/30/20. Please note that these returns do not reflect the cash flows used to calculate the Invesco Partnership Fund VI IRRs and, consequently, a direct comparison may not be meaningful. Index is unmanaged and unavailable for investment.

Invesco Partnership Fund VI
Gross Aggregate Fund Performance

As of December 31, 2020



Aggregate investment level. This summary and the information contained herein is prepared solely for the use of our limited partners and should not be distributed without our consent. Unless otherwise noted, IRRs are calculated by Invesco based on information provided by the investments. Past performance is not a guarantee of future results.

1 Commitment amounts to underlying investments (that are currency based) will fluctuate on a quarterly basis to adjust for currency fluctuations.

2 Estimated Net Asset Value - uses prior quarter values from General Partners then adds contributions and subtracts distributions if current quarter values are not available.

Invesco Partnership Fund VI
Financial Summary

As of December 31, 2020

Financial Summary				As of December 31, 2020
	Venture	U.S. Buyout	Non-US	Total
Commitments to Invesco Partnership Fund VI	**$19,191,919**	**$25,252,525**	**$25,252,525**	**$69,696,969**
Commitments to Portfolio Investments	**$22,917,297**	**$28,399,308**	**$22,353,380**[1]	**$73,669,985**
Number of Funds	6	5	6	17
Number of Co-Investments	1	1	0	2
Actual Drawdowns to Fund Investments	**$22,099,071**	**$27,623,526**	**$20,424,089**	**$70,146,686**
% Contributed	96.4%	97.3%	91.4%	95.2%
Distributions from Portfolio Investments[2]	**$21,971,934**	**$12,779,833**	**$18,680,000**	**$53,431,767**
% Distributed	99.4%	46.3%	91.5%	76.2%
Estimating Remaining Net Asset Value[3]	**$47,388,784**	**$33,297,721**	**$13,937,060**	**$94,623,565**
Total Portfolio Value	**$69,360,718**	**$46,077,554**	**$32,617,059**	**$148,055,331**
Gross IRR[4]	22.6%	13.8%	13.8%	17.0%[5]

Portfolio Overview	
Vintage Years of Underlying Investments	2011-2016
Total Number of Funds	17
Total Number of Co-Investments	2
Number of Remaining Underlying Companies[6]	268
Average Cost-Weighted Life[7]	4.8 years
% Contributed	95.2%
% Distributed	76.2%

Aggregate investment level. This summary and the information contained herein is prepared solely for the use of our limited partners and should not be distributed without our consent. Unless otherwise noted, IRRs are calculated by Invesco based on information provided by the investments. The aggregate sleeve figures may differ slightly from the absolute sum of all the individual sleeves due to rounding. Co-Investments are inclusive of all the data above.

1 Commitment amounts to underlying investments (that are currency based) will fluctuate on a quarterly basis to adjust for currency fluctuations.

2 Includes distributions and any interest true-ups for subsequent entry after first closing.

3 Estimated Net Asset Value - uses prior quarter values from General Partners then adds contributions and subtracts distributions if current quarter values are not available.

4 Gross Investment IRR reflects returns of the underlying portfolio net of underlying funds' fees and expenses, gross of IPC's fees and expenses as of 09/30/20.

5 This IRR is calculated at the diversified fund level. 30% International Partnership Fund VI, 25% Venture Partnership Fund VI and 45% U.S. Buyout Partnership Fund VI.

6 Aggregate number of remaining underlying companies may contain some duplication from the sleeves.

7 Data is as of 09/30/20

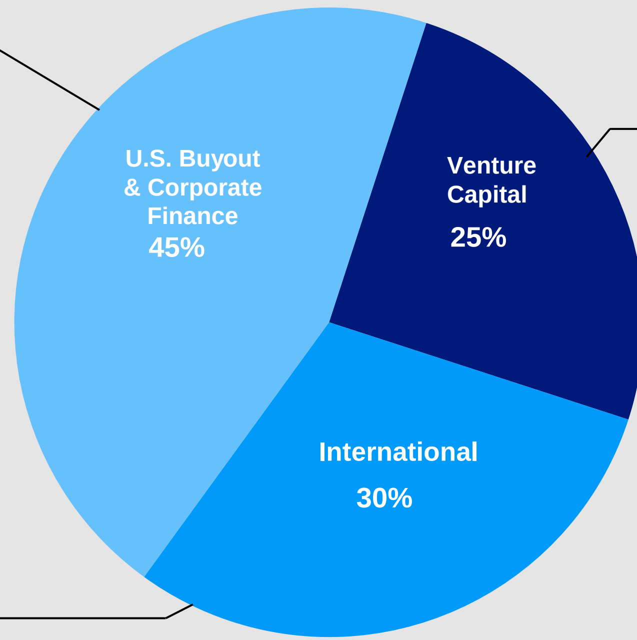
Invesco Partnership Fund VI
Portfolio Diversification

Commitments through December 31, 2020

Investment Focus

U.S. Private Equity ($28.4 million)

Berkshire VIII
H.I.G. Growth Buyouts & Equity II
Parallel Resources Energy Recapitalization & Restructuring Fund
Oak HC/FT, LP
RoundTable Healthcare IV
Space Exploration Technologies Corp. (SpaceX)



Venture Capital ($22.9 million)

Edison VI (secondary)
Jibo Inc.
Foundry 2013
Foundry 2016
General Catalyst VI
Sigma 9 West
Union Square 2012

International ($22.4 million)

Blue Water Energy
Corsair IV
Hg Capital Mercury
Orchid Asia Fund V
Primary Fund IV
GGV Discovery I

Percentages based on recommended allocation, not actual commitments.

MWRA
Investment To Date

IMRF I	
Contributions:	3,885,205
Distributions:	(5,064,016)
Gross Income/(loss):	181,131
Asset Management Fees:	(83,485)
Realized and UR Gain/(loss):	1,274,802
Ending NAV:	193,637
Commitment:	4,000,000
Contributions	3,885,205
Distributions- recallable:	0
Remaining Unfunded:	114,795

As of September 30, 2020

MWRA
Investment To Date

IMRF II	
Contributions:	2,705,130.99
Distributions:	(2,710,350.00)
Gross Income/(loss):	139,720.50
Asset Management Fees:	(72,121.07)
Realized and UR Gain/(loss):	774,528.70
Ending NAV:	836,909.12
Commitment:	3,000,000
Contributions	2,705,130.99
Distributions- recallable:	1,075,121.00
Remaining Unfunded:	1,369,990.01

As of September 30, 2020

Invesco Mortgage Recovery Loans AIV, L.P.

Quarterly Report

Third Quarter 2020

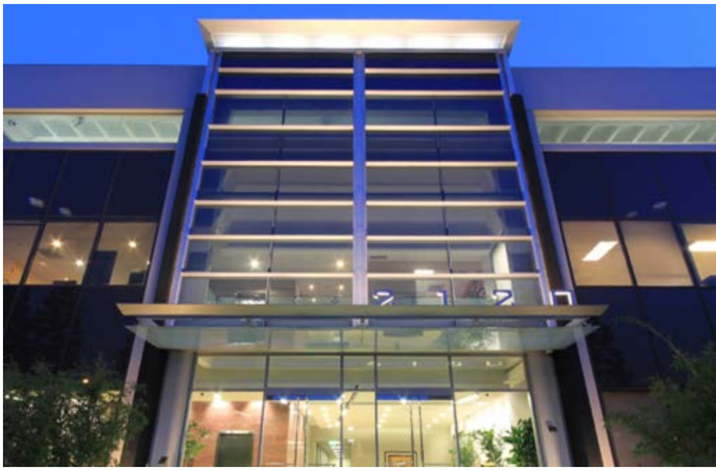


Table of Contents

Cover Photos:			
	Top	***Circle Star Plaza*** *San Carolos, CA (Left)*	***Ritz-Carlton Ft. Lauderdale*** *Ft. Lauderdale, FL (Right)*
	Middle	***Dumbo Heights*** *New York, NY (Left)*	***Apollo at Rosecrans*** *El Segundo, CA (Right)*
	Bottom	***1 Hotel*** *Miami, FL (Right)*	***Fifth Street Towers*** *Minneapolis, MN (Right)*

Invesco Mortgage Recovery Loans AIV, L.P.

Quarterly Report
September 30, 2020

General Partner

WLR / IVZ Mortgage Recovery Associates LLC

Investment Committee

Scott Dennis
James B. Lockhart III
Stephen J. Toy
Bert Crouch

Independent Certified Public Accountants

PricewaterhouseCoopers LLP
300 Madison Avenue
New York, NY 10017

Custodian

Citizens Bank/RBS
53 State Street
Boston, MA 02109

Dear Fellow Partners,

We are pleased to present the Quarterly Report of Invesco Mortgage Recovery Loans AIV, L.P. (the "Fund") for the quarter ended September 30, 2020.

Portfolio Performance

The Net Fund IRR since inception is 13.82%. Effective April 1, 2019, the GP is no longer charging management fees for this Fund.

Disposition Activity

There was no disposition activity in Q3 2020.

Investment Remaining

The Fund has one (1) residential condominium remaining that is associated with the One Hotel investment. There is a residential brokerage group actively marketing this last residential condominium. COVID-19 has delayed the sale of the final residential condominium but the Portfolio Management team is working to push on the disposition of this asset.

Fund Status & Next Steps

The Fund matured on September 30, 2017, and as previously communicated, the Fund is no longer in active business and has entered into the "wind-up" period. Following the disposition of the last remaining investment above; the Fund currently has escrows / outstanding liabilities associated with certain investments that mean the Fund entities must remain open through 2026. The Fund team has been working with investment partners/legal/senior management to identify any potential solutions to accelerate the dissolution of these entities.

With the Fund's investments predominantly realized, the Fund team seeks to complete the liquidation and wind up of the Fund entities in a prompt and prudent manner, with a final distribution upon liquidation.

Should you have any questions on the reports, please contact WLR Investor Relations at WLRInvestorRelations@invesco.com or 212-826-1100. Finally, please be reminded that this quarterly report is subject to confidentiality.

Best regards,

Invesco Mortgage Recovery Fund

1 WLR Whole Loan Fund, L.P.

Invesco Mortgage Recovery Loans AIV, L.P.

UNAUDITED Financial Statements
As of September 30, 2020

Invesco Mortgage Recovery Loans AIV, L.P.
Statement of Assets, Liabilities, and Partners' Capital (UNAUDITED)

As of September 30, 2020

Assets	
Investment in Invesco Mortgage Recovery Master Loans AIV, L.P., at fair value	$7,982,293
Due from broker	31,587,515
Due from affiliate	3,377,517
Total Assets	**$42,947,325**

Liabilities and Partners' Capital	
Liabilities:	
Accrued expenses	$13
Total Liabilities	**$13**
Partners' Capital:	
General Partner	$2,320,078
Limited Partners	40,627,234
Total Partners' Capital	**$42,947,312**
Total Liabilities and Partners' Capital	**$42,947,325**

For the Three and Nine months Ended September 30, 2020

Investment Statement		
Net Investment Income and Expenses:	Current Quarter	Year to Date
Interest income	$296	$41,895
Other fees	(829)	(1,817)
Professional expenses	(20,893)	(21,213)
Total net investment income/(loss)	**$(21,426)**	**$18,865**
Partnership Net Investment Income and Expenses:		
Interest Income	$487	$69,498
Professional fees	-	(1,007)
Other expenses	-	(266)
Total partnership investment income	**$487**	**$68,225**
Net investment income/(loss)	$(20,939)	$87,090
Net change in unrealized appreciation/(depreciation) on investments allocated from Invesco Mortgage Recovery Master Loans AIV, L.P.	103,668	(243,656)
Net increase/ (decrease) in partners' capital resulting from operations	**$82,729**	**$(156,566)**

Invesco Mortgage Recovery Loans AIV, L.P.
Statement of Changes in Partners' Capital (UNAUDITED)

For the Nine Months Ended September 30, 2020

	Limited Partners	General Partner	Total
Balance – Beginning December 31, 2019	$40,825,578	$5,777,650	$46,603,228
Net investment income/ (loss)	69,628	17,462	87,090
Net change in unrealized appreciation/ (depreciation) on investments	(194,807)	(48,849)	(243,656)
Capital Distributions	(73,166)	(3,426,184)	(3,499,350)
Balance – Ending September 30, 2020	**$40,627,234**	**$2,320,078**	**$42,947,312**

This report is intended for current investors in the Fund and their designated representatives only. Pursuant to the relevant provisions in the Limited Partnership Agreement you agree to keep this report confidential and not redistribute it without the prior written consent of WL Ross. Any offer or solicitation of an investment may be made only by delivery of the Fund's confidential offering documents to qualified investors. If you are not a current investor in this Fund, you received this report only because you are a qualified investor or investment professional, and have requested it and understand that this report is current as of the date noted for informational purposes only and should not be relied upon when deciding whether to invest in the Fund. While some information used in this report has been obtained from various published and unpublished sources considered to be reliable, WL Ross does not guarantee its accuracy or completeness and accepts no liability for any direct or consequential loss arising from its use.

Past performance is not a guarantee of future results. Actual results may vary. An investment in the Fund may result in a loss. The statements contained in this report that are not historical facts are forward-looking statements. These forward-looking statements are based on current expectations, estimates and projections about the industry and markets in which the Fund operates, and WL Ross's beliefs and assumptions. Words such as "expects," "targeted," "anticipates," "should," "intends," "plans," "believes," "seeks," "estimates," "forecasts," "projects" and variations of such words and similar expressions are intended to identify such forward-looking statements. An example would be the targeted and projected returns to investors. These statements do not guarantee future performance and involve certain risks, uncertainties and assumptions which are difficult to predict. As such, actual outcomes and returns may differ materially from what is expected or forecasted in such forward-looking statements.

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Gross Asset Level IRR – Reflects cash flows to and from portfolio positions and is gross of all Fund level expenses, management fees, and any applicable Fund carried interest.

Gross Fund IRR – Reflects cash flows to and from limited partners and is gross of management fees and any applicable carried interest, and net of all Fund level expenses as well as any operating and organizational expenses and commissions.

Net Fund IRR – Reflects cash flows to and from limited partners that is net of all Fund level expenses, management fees, and any applicable carried interest as well as any expenses and commissions.

All returns shown are for the Fund as a whole. An individual investor's returns may be greater or less than the returns shown, based on its negotiated terms.

The above Gross Asset Level IRR, Gross Fund IRR, and Net Fund IRR, are based on current performance.

*****

Invesco Mortgage Recovery Master Fund, L.P. & Invesco Mortgage Recovery Master Loans AIV, L.P.

Quarterly Report
September 30, 2020

General Partner

WLR / IVZ Mortgage Recovery Associates LLC

Investment Committee

Bert Crouch
James B. Lockhart III
Scott Dennis
Stephen J. Toy

Advisory Board Representation

Navyug Patel, *State of New York Common Retirement Fund*
Danita Johnson, *State of Connecticut Retirement Plans and Trust Funds*
Matthew Worley, *State Teachers Retirement System of Ohio*
Craig Demko, *State of North Carolina*
Ronald Funderburk, *State of North Carolina*
Lifen Li, *China Investment Corporation*
Hongxing Chang, *China Investment Corporation*
John Grubenman, *Texas Permanent School Fund*
Kathryn Gernert, *Texas Permanent School Fund*
David Klauka, *State of Michigan*

Independent Certified Public Accountants

PricewaterhouseCoopers LLP
300 Madison Avenue
New York, NY 10017

Custodian

Citizens Bank/RBS
53 State Street
Boston, MA 02109

Dear Fellow Partners,

We are pleased to present the Quarterly Report of Invesco Mortgage Recovery Master Fund and Invesco Mortgage Recovery Loans AIV, L.P. (the "Fund") for the quarter ended September 30, 2020.

Portfolio Performance

The Gross Asset Level IRR (Gross IRR) and Net Fund IRR since inception is 17.8% and 17.2%, respectively. This is the aggregate master fund and therefore excludes fees and expenses at the respective feeder funds. The table below provides a summary of the portfolio activities and performance as of September 30, 2020. (See Portfolio Summary for individual investments.)

$MM	# of Investments	Invested Capital	Proceeds Received	Fair Value	Total Value	Gross IRR	MOIC
Realized Investments	17	$1,505.2	$2,000.9	$0.3	$2,001.2	18.2%	1.33x
Partially Realized Investments	1	$118.2	$175.3	$7.6	$182.9	13.9%	1.55x
Total	18	$1,623.4	$2,176.2	$7.9	$2,184.1	17.8%	1.35x

Should you have any questions on the reports, please contact WLR Investor Relations at WLRInvestorRelations@invesco.com or 212-826-1100. Finally, please be reminded that this quarterly report is subject to confidentiality.

Best regards,

Invesco Mortgage Recovery Fund

Portfolio Summary

Summary of Investment Activity
From Inception through September 30, 2020.

Investments	Investment Date	Invested Capital	Proceeds[1]	Fair Value	Total Value	MOIC[2]	Gross IRR[3]
Realized							
PPIP Securities	Oct-2009	$499.5	$615.7	$0.0	$615.7	1.23x	18.0%
WLR Lefrak (Northwest), LLC	Oct-2009	$31.7	$63.9	$0.3	$64.2	2.03x	18.6%
Circle Star Member, LLC	Jun-2010	$26.0	$32.8	$0.0	$32.8	1.26x	39.9%
Residential Whole Loans	Jun-2010	$120.9	$118.5	$0.0	$118.5	0.98x	-1.0%
Market Square Member, LLC	Sep-2010	$27.7	$39.7	$0.0	$39.7	1.43x	12.5%
Credit Default Swap	Dec-2010	$52.5	$79.9	$0.0	$79.9	1.52x	22.2%
Indiana Retail Member, LLC	Apr-2011	$52.6	$71.9	$0.0	$71.9	1.37x	18.3%
Brickell Bayview Investor, LLC	May-2011	$38.9	$43.9	$0.0	$43.9	1.13x	16.3%
IMRF Loan Portfolio Member, LLC	Sep-2011	$308.6	$369.6	$0.0	$369.6	1.20x	18.1%
Broomfield Hotel Investor, LLC	Nov-2011	$8.9	$12.3	$0.0	$12.3	1.38x	15.1%
Colfin Milestone North Funding, LLC	Nov-2011	$8.7	$14.2	$0.0	$14.2	1.63x	17.3%
IMRF Fifth Street Member, LLC	Apr-2012	$106.0	$130.7	$0.0	$130.7	1.23x	17.5%
IMRF Watchtower Member, LLC	Jul-2013	$70.9	$123.7	$0.0	$123.7	1.74x	22.1%
IMRF Resort Member, LLC	Jul-2013	$18.4	$33.2	$0.0	$33.2	1.80x	36.7%
Park Place Apollo Investor, LLC	Mar-2013	$56.6	$144.7	$0.0	$144.7	2.56x	47.2%
IMRF Industrial Member, LLC	Oct-2013	$43.7	$78.2	$0.0	$78.2	1.79x	32.5%
Shackleford Crossings Member, LLC	May-2011	$33.6	$28.0	$0.0	$28.0	0.83x	-16.7%
Total Realized Investments		$1,505.2	$2,000.9	$0.3	$2,001.2	1.33x	18.2%
Partially Realized							
IMRF Hotel Member, LLC	Feb-2012	$118.2	$175.3	$7.6	$182.9	1.55x	13.9%
Total Partially Realized Investments		$118.2	$175.3	$7.6	$182.9	1.55x	13.9%
GRAND TOTAL		$1,623.4	$2,176.2	$7.9	$2,184.1	1.35x	17.8%

1 Includes all proceeds from Investment including operating income and sale proceeds.
2 MOIC = Total Value/Invested Capital.
3 Represents cash flows to and from portfolio positions and is gross of management fees, operating expenses and carried interest.

IMRF Hotel Member, LLC
Miami, Florida

Transaction Highlights	
Investment Date	February 2012
Investment Type	Hotel
Property Size	337 keys, 265 condo units, 90,000 SF retail
Invested Capital	$118.2M
Proceeds	$175.3M
Exit Date	February 2019
Gross Sales Price	$610M
IRR / MOIC	13.9% / 1.55x
JV Partner/(% Equity Co-Invest)	The Lefrak Organization / (25%) & Starwood Capital / (50.0%)

Investment Thesis at Acquisition

- Acquire the foreclosed mezzanine position of Credit Suisse secured by a beachfront mixed-use project, including a 337 room hotel (Gansevoort Hotel South Beach), 92 condo-hotel rental units, 173 for-sale condominium units (Paradiso Condominiums) and 90,000 square feet of retail space in partnership with Starwood Capital (50.0%) and The LeFrak Organization (25.0%)
- Restructure existing first mortgage with Banco Inbursa to provide for an A- and B-Note
- Complete capital works in connection with the 40-year recertification of the structure required by the City of Miami
- Upgrade and reposition the entire property and re-launch under Starwood's eco-concept 1 Hotel brand
- Re-tenant the retail space to create an amenity package better suited to the residents and guests of the upgraded project

Execution Results

- Hotel was sold to Host Hotels & Resorts (NYSE:HST) in February 2019 for $610 million, which equates to more than $1.2 million per key
- Transaction price represents one of the largest hotel sales worldwide over the past 12 months on both an absolute and price per key basis. The investment team is very pleased with this outcome, particularly when compared to expectations in 2016/2017
- The team is actively negotiating a liquidation sale for the one (1) remaining unit at 1 Hotel
- All condo units are held unlevered

Invesco Mortgage Recovery Master Fund, L.P &
Invesco Mortgage Recovery Master Loans AIV, L.P.

Combined Financial Statements
(UNAUDITED)
As of September 30, 2020

Invesco Mortgage Recovery Master Fund, L.P &
Invesco Mortgage Recovery Master Loans AIV, L.P.
Combined Statement of Assets, Liabilities and Partners' Capital (UNAUDITED)

As of September 30, 2020

Assets	
Investments, at fair value (cost $0)	$9,079,243
Due from broker	3,317,915
Due from affiliates	952,501
Total Assets	**$13,349,659**

Liabilities and Partners' Capital	
Liabilities:	
Due to affiliates	$100,010
Accrued expenses	105,429
Total Liabilities	**$205,439**
Partners' Capital:	
General Partners	$-
Limited Partners	11,984,114
Non-Controlling Interests in the Fund	1,160,106
Total Partners' Capital	**$13,144,220**
Total Liabilities and Partners' Capital	**$13,349,659**

Invesco Mortgage Recovery Master Fund, L.P &
Invesco Mortgage Recovery Master Loans AIV, L.P.
Combined Statement of Operations (UNAUDITED)

For the Three and Nine Months Ended September 30, 2020

Investment Statement		
Investment Income:	Current Quarter	Year to Date
Interest income	$500	$71,553
Total investment income	**$500**	**$71,553**
Expenses:		
Professional fees and other expenses	$32,715	$ 34,943
Total Expenses	**$32,715**	**$ 34,943**
Net investment income/(loss)	$(32,215)	$36,610
Net change in unrealized appreciation/(depreciation)	178,408	(395,922)
Net increase/ (decrease) attributable to non controlling interests	(22,724)	21,603
Net increase/ (decrease) in partners' capital resulting from operations	**$123,469**	**$(337,709)**

Invesco Mortgage Recovery Master Fund, L.P &
Invesco Mortgage Recovery Master Loans AIV, L.P.
Combined Statement of Changes in Partners' Capital (UNAUDITED)

For the Nine Months Ended September 30, 2020

	Limited Partners	General Partner	Non-Controlling Interests in the Fund	Total
Balance – Beginning December 31,2019	$27,107,519	$ -	$3,472,750	$30,580,269
Capital Contributions	12,787	-	2,615	15,402
Net increase/ (decrease) in partners' capital resulting from operations	(337,709)	-	(21,603)	(359,312)
Capital Distributions	(14,798,483)	-	(2,293,656)	(17,092,139)
Balance – Ending September 30,2020	**$11,984,114**	**$-**	**$1,160,106**	**$13,144,220**

Invesco Mortgage Recovery Master Fund, L.P &
Invesco Mortgage Recovery Master Loans AIV, L.P.
Combined Schedule of Investments(UNAUDITED)

As of September 30, 2020

Security	Cost Basis	Fair Value	Unrealized Gain/(Loss)
WLR LeFrak Northwest LLC	$-	$337,776	$337,776
IMRF Hotel Member, LLC	-	8,635,829	8,635,829
Park Place Apollo Investor LLC	-	105,638	105,638
Total:	**$-**	**$9,079,243**	**$9,079,243**

Invesco Mortgage Recovery Master Fund, L.P & Invesco Mortgage Recovery Master Loans AIV, L.P.

Combining Financial Statements
(UNAUDITED)
As of September 30, 2020

Invesco Mortgage Recovery Master Fund, L.P &
Invesco Mortgage Recovery Master Loans AIV, L.P.
Combining Statement of Financial Condition (UNAUDITED)

As of September 30, 2020

Assets			
	Invesco Mortgage Recovery Master Fund, L.P.	Invesco Mortgage Recovery Master Loans AIV, L.P.	Total
Investments at fair value (cost $0, and $00)	$-	$9,079,243	$9,079,243
Due from brokers	25,271	3,292,644	3,317,915
Due from affiliates	-	952,501	952,501
Total Assets	**$ 25,271**	**$13,324,388**	**$ 13,349,659**

Liabilities and Partners' Capital			
	Invesco Mortgage Recovery Master Fund, L.P.	Invesco Mortgage Recovery Master Loans AIV, L.P.	Total
Liabilities:			
Due to partners	$25,271	$74,739	$100,010
Accrued expenses	-	105,429	105,429
Total Liabilities	**$25,271**	**$180,168**	**$205,439**
Partners' capital:			
Limited Partners	$-	$11,984,114	$11,984,114
General Partners	-	-	-
Non-Controlling Interests in the Group	-	1,160,106	1,160,106
Total Partners' Capital	**$-**	**$13,144,220**	**$13,144,220**
Total Liabilities and Partners' Capital	**$25,271**	**$13,324,388**	**$13,349,659**

Invesco Mortgage Recovery Master Fund, L.P &
Invesco Mortgage Recovery Master Loans AIV, L.P.
Combining Statement of Operations (UNAUDITED)

For the Nine Months Ended September 30, 2020

Investment Statement			
	Invesco Mortgage Recovery Master Fund, L.P.	**Invesco Mortgage Recovery Master Loans AIV, L.P.**	**Total**
Investment income			
Interest income	$9	$71,544	$71,553
Total investment income	**$9**	**$71,544**	**$71,553**
Expenses			
Professional fees and other expenses	$233	$34,710	$34,943
Total Expenses	**$233**	**$34,710**	**$34,943**
Net investment income/(loss):	$(224)	$36,834	$36,610
Net change in unrealized appreciation/(depreciation) on investments:	-	(395,922)	(395,922)
Net increase attributable to Non-Controlling Interests:	-	21,603	21,603
Net increase/ (decrease) in partners' capital resulting from operations:	**$(224)**	**$(337,485)**	**$(337,709)**

Invesco Mortgage Recovery Master Fund, L.P &
Invesco Mortgage Recovery Master Loans AIV, L.P.
Combining Statement of Changes in Partners' Capital (UNAUDITED)

For the Nine Months Ended September 30, 2020

Invesco Mortgage Recovery Master Fund, L.P.		
	Limited Partners	General Partner
Balance – Beginning December 31,2019	$-	$-
Capital Contributions	224	-
Net increase/ (decrease) in partners' capital resulting from operations	(224)	-
Distributions	-	-
Balance – Ending September 30,2020	**$-**	**$-**

Invesco Mortgage Recovery Master Loans AIV, L.P.			
	Limited Partners	General Partner	Non-Controlling Interests in the Fund
Balance – Beginning December 31,2019	$27,107,519	$-	$3,472,750
Capital Contributions	12,563	-	2,615
Net increase/ (decrease) in partners' capital resulting from operations	(337,485)	-	(21,603)
Distributions	(14,798,483)	-	(2,293,656)
Balance – Ending September 30,2020	**$11,984,114**	**$-**	**$1,160,106**

Total				
	Limited Partners	General Partner	Non-Controlling Interests in the Fund	Total
Balance – Beginning December 31,2019	$27,107,519	$-	$3,472,750	$30,580,269
Capital Contributions	12,787	-	2,615	15,402
Net increase/ (decrease) in partners' capital resulting from operations	(337,709)	-	(21,603)	(359,312)
Distributions	(14,798,483)	-	(2,293,656)	(17,092,139)
Balance – Ending September 30,2020	**$11,984,114**	**$-**	**$1,160,106**	**$13,144,220**

Combining Schedule of Investments(UNAUDITED)

As of September 30, 2020

Security	Cost Basis	Fair Market Value	Unrealized Gain/(Loss)
WLR LeFrak Northwest LLC	$-	$337,776	$337,776
IMRF Hotel Member, LLC	-	8,635,829	8,635,829
Park Place Apollo Investor LLC	-	105,638	105,638
Total:	**$-**	**$9,079,243**	**$9,079,243**

Disclosures

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******

Gross Asset Level IRR – Reflects cash flows to and from portfolio positions and is gross of all Fund level expenses, management fees, and any applicable Fund carried interest.

Gross Fund IRR – Reflects cash flows to and from limited partners and is gross of management fees and any applicable carried interest, and net of all Fund level expenses as well as any operating and organizational expenses and commissions.

Net Fund IRR – Reflects cash flows to and from limited partners that is net of all Fund level expenses, management fees, and any applicable carried interest as well as any expenses and commissions.

All returns shown are for the Fund as a whole. An individual investor's returns may be greater or less than the returns shown, based on its negotiated terms.

The above Gross Asset Level IRR, Gross Fund IRR, and Net Fund IRR, are based on current performance.

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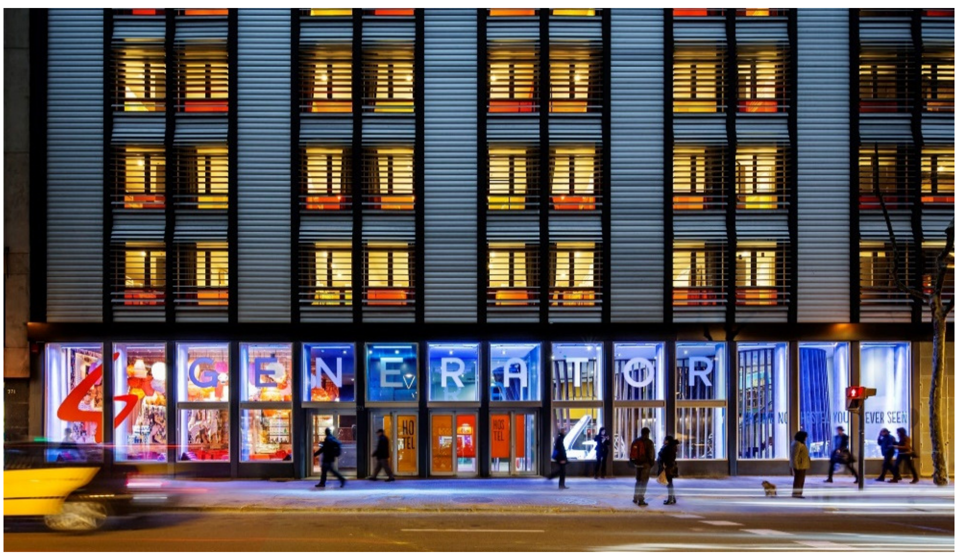
Invesco Mortgage Recovery Fund II
Quarterly Report

Invesco

Third Quarter 2020



Rendering

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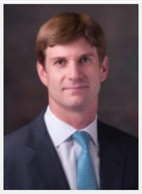
Europe: London ▪ Paris ▪ Munich ▪ Prague ▪ Madrid ▪ Luxembourg ▪ Warsaw ▪ Milan
Asia: Hong Kong ▪ Shanghai ▪ Tokyo ▪ Seoul ▪ Singapore ▪ Sydney ▪ Beijing ▪ Hyderabad

Contact Information

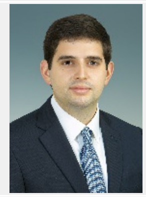
Fund Management



Bert Crouch
Managing Director,
Portfolio Manager
Invesco Real Estate
2001 Ross Avenue,
Suite 3400
Dallas, TX 75201
972-715-7419
bert.crouch@invesco.com

Rivka Altman
Director,
Associate Portfolio Manager
Invesco Real Estate
2001 Ross Avenue,
Suite 3400
Dallas, TX 75201
972-715-7484
rivka.altman@invesco.com

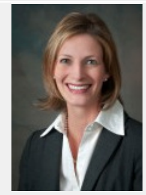
Tom Emson
Senior Director,
Fund Management
Invesco Real Estate
1166 Avenue of the Americas,
26th Floor
New York, NY 10036
212-278-9553
tom.emson@invesco.com



Jonathan Feldman
Director,
Fund Management
Invesco Real Estate
43-45 Portman Square
London, W1H 6LY
United Kingdom
+44 20 7543 3557
jonathan.feldman@invesco.com

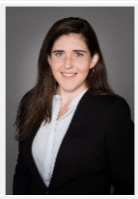
Eleanor Sinclair
Associate Director,
Structured Finance
Invesco Real Estate
London, W1H 6LY
United Kingdom
+44 20 7543 3562
eleanor.sinclair@ldn.invesco.com

Fund Operations



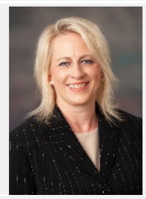
Courtney Popelka, CPA
Senior Director,
Fund Operations Manager
Invesco Real Estate
2001 Ross Avenue,
Suite 3400
Dallas, TX 75201
972-715-5887
courtney.popelka@invesco.com

Kate Bassett
Senior Associate,
Fund Operations
Invesco Real Estate
2001 Ross Avenue,
Suite 3400
Dallas, TX 75201
972-715-5842
kate.bassett@invesco.com



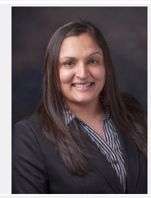
Paulina Sotomayor
Senior Associate,
Fund Operations
Invesco Real Estate
2001 Ross Avenue
Suite 3400
Dallas, TX 75201
972-715-5840
paulina.sotomayor@invesco.com

Investor Relations



Jennifer Semler
Associate,
Investor Relations Specialist
Invesco Real Estate
2001 Ross Avenue,
Suite 3400
Dallas, TX 75201
972-715-5820
jennifer.semler@invesco.com

Financial Reporting



Nima Parikh, CPA
Director,
Controller
Invesco Real Estate
2001 Ross Avenue,
Suite 3400
Dallas, TX 75201
972-707-5560
nima.parikh@invesco.com

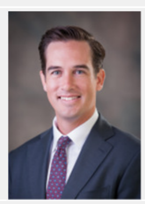
Funds' Management

William C. Grubbs Jr.
Managing Director,
Chief Investment Officer
Invesco Real Estate
101 California Street,
Suite 1800
San Francisco, CA 94111
415-445-7523
bill.grubbs@invesco.com

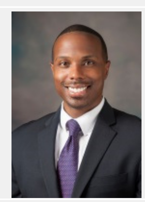
Product Management

Max Swango
Managing Director,
Client Portfolio Manager
Invesco Real Estate
2001 Ross Avenue,
Suite 3400
Dallas, TX 75201
972-715-7431
max.swango@invesco.com

Laler DeCosta
Managing Director,
Client Portfolio Manager
Invesco Real Estate
1360 Peachtree Street NE
Atlanta, GA 30309
404-439-3124
laler.decosta@invesco.com



Brooks Monroe
Managing Director,
Client Portfolio Manager
Invesco Real Estate
2001 Ross Avenue,
Suite 3400
Dallas, TX 75201
972-715-7489
brooks.monroe@invesco.com



De'Juan Collins
Director,
Client Portfolio Manager
Invesco Real Estate
2001 Ross Avenue,
Suite 3400
Dallas, TX 75201
972-715-7456
dejuan.collins@invesco.com

Cover Photos:

Top	***Ames Hotel*** *Boston, MA (Left)*	***Emblem*** *Paris, France (Right)*
Middle	***Generator*** *Pan-European (Left)*	
Bottom	***Frascati*** *Dublin, Ireland (Left)*	***Exposition Boulevard*** *Los Angeles, CA (Right)*

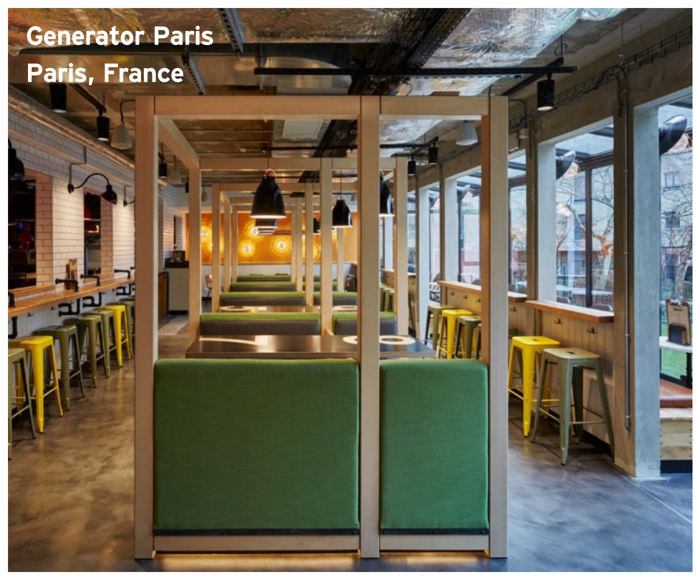
Table of Contents

Executive Summary

Invesco

Vintage Year	**2014**
Fund Size [1]	**$334**
Investments (Total / % Fund)	**12 / 107%**
Realizations (Total / % Fund) [2]	**8 / 68%**
Fund Leverage (LTC)	**48%**
Gross Capital Called [3]	**$302 / 90%**
Distributions	**$299 / 89%**
Net Capital Invested	**$3 / 1%**
Fund Maturity	**Oct-2021**

Frascati
Dublin, Ireland


Generator Paris
Paris, France

	Projected (Gross) [4][5]		Since Inception (Gross) [4][6]		Since Inception (Net) [6][7]	
Fund Performance	**IRR**	**EM**	**IRR**	**EM**	**IRR**	**EM**
Fund Level	12.2%	1.5x	15.2%	1.4x	11.1%	1.3x
Realized Investments [8]	17.4%	1.4x	17.4%	1.4x	--	--
Unrealized Investments	4.4%	1.3x	7.0%	1.3x	--	--

As of quarter end, the Fund is in compliance with the Investment Restrictions of the Limited Partnership Agreement.

*Amounts in millions. [1] Includes the GP's $50 million commitment. [2] Barba Portfolio Investments (Sareb and Gregorio Benitez) are reflected as one investment and are partially realized. The Fund has a total of 12 investments comprising 26 assets. [3] Subsequent to quarter-end, the Fund called an additional $12 million (4%). [4] Fund-level gross returns are before fund expenses, management, and incentive fees. Projected and since inception IRR after fund expenses, but before management and incentive fees are 10.6% and 13.6%, respectively. [5] Projected equity multiple is calculated as whole dollar profit over peak equity. [6] Since inception equity multiples calculated consistent with TVPI methodology. [7] Management fees and carried interest are recorded at the Fund-level only. [8] Includes remaining projected cash flows from Barba Portfolio.

Fund Overview. Invesco Mortgage Recovery Fund II ("IMRF II" or the "Fund") is a $334 million (before accounting for pre-approved co-investments) continuation of the opportunistic real estate fund series with a stated objective and related track record of achieving outsized risk-adjusted returns via real estate-themed, strategic investments throughout the capital structure in both private and, to a lesser extent, public markets. The Fund committed 107% of its aggregate capital commitments (including redeployed capital) to twelve (12) investments, comprised of twenty-six (26) assets.

To-date, seven (7) investments have been fully realized and one (1) investment (Barba) is substantially realized, representing 68% of committed capital and resulting in a 17.4% IRR.

The ongoing impacts of COVID-19 on the remaining portfolio are continuously monitored and assessments are underway for those investments as it relates to hold/sell strategies. As a result, asset sales are likely to be substantially delayed in order to maximize sales proceeds as the revised business plans become clearer and the capital markets re-stabilize.

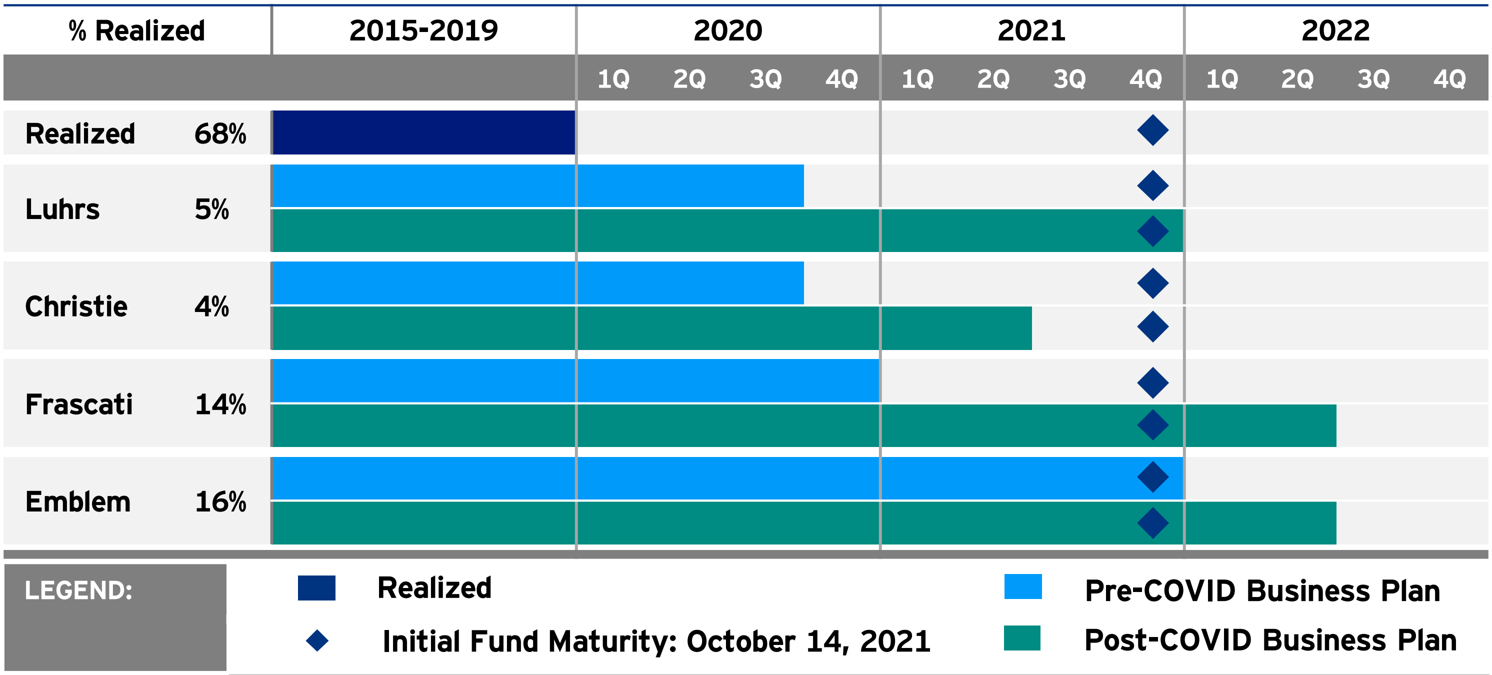
Below is an updated summary of investment performance that incorporates the Fund team's COVID-19 recalibration views and is reflected in more detail in the Portfolio Summary.

Reforecast Summary (Realized/Unrealized Investments)				Fund Equity Commitment		Investment Targets (1)		
Investment	Property Type	US/EU	Strategy	$	% of Fund (2)	Hold Period (Mo.)	IRR	EM
Realized				**$228**	**68%**	**34**	**17.4%**	**1.4x**
Unrealized								
5801 CHRISTIE AVENUE (Emeryville, CA)	Office	US	Opportunistic	$14	4%	75	4.4%	1.3x
LUHRS CITY CENTER (Phoenix, AZ)	Mixed-Use	US	Opportunistic	$16	5%	72	-6.9%	0.7x
FRASCATI (Dublin, Ireland)	Retail	EU	Rescue Capital	$47	14%	82	1.5%	1.1x
EMBLEM (Paris, France)	Office	EU	Opportunistic	$53	16%	54	12.9%	1.5x
Unrealized Subtotal / Wtd. Avg.				**$130**	**39%**	**69**	**4.4%**	**1.3x**
Total / Wtd. Avg.				**$358**	**107%**	**46**	**11.2%**	**1.5x**

*Amounts in millions. Totals may not foot due to rounding. [1] Unrealized metrics based on investment reforecasts as of quarter-end. [2] Based on Fund size of $334.0 million.

Fund Execution. Overall, IMRF II investments took a concentrated approach around high-conviction investment themes and invested within both debt and equity structures. Each business plan provided optionality, specifically when faced with adverse regulations or sector headwinds. 68% of the Fund's portfolio was monetized prior to COVID-19, including four (4) investments in the most impacted sectors – hospitality (Generator & Ames Hotel) and retail (102 Champs- Élysées & Spiga).

As of 3Q 2020, 39% of total equity commitments remain, with the majority remaining in the two (2) European investments. Each respective partnership is acutely focused on business plan reviews and strategic disposition timelines. It is expected that each business plan will be delayed 18-24 months due to COVID-19. The below chart is subject to change based on potential shutdowns and modified re-opening plans which could further delay business plan executions.



Remaining Investments:

- Frascati: The local team remains focused on implementing safety measures to protect tenants and customers from COVID-19, identifying strategies to minimize loss of rent, while providing support to the retailers to facilitate continuity of trade. As of quarter-end, 25 out of the 47 units (representing 87,342 SF out of 170,150 SF) were open and trading. 67% of 3Q 2020 rents were paid upfront in advance. Total footfall YTD 2020 (end 3Q) was down 28% compared to 3Q 2019. Parking revenue for the same period was down 12% compared to 3Q 2019. Both footfall and parking revenue stabilized through the third quarter following the reopening of the center at the end of the second quarter, trending back to 2019 values. Progress continues on the revised objective to reposition the asset from pure retail to a prime mixed-use "town center" scheme, where the majority of the underlying value (60%+) will reside in the residential for-rent component and the two long-leased grocery anchors - M&S and Aldi (weighted average lease term of 12.75 years). To this end, revised plans and designs have been prepared to assess the potential to convert the former Debenhams store to 115 additional residential units, taking the total residential component above 200 units over three (3) phases. Phase 1 of the residential (45 units) is scheduled for delivery in 2Q 2021, and planning consent is expected for Phase 2 (57 units) in 4Q 2020. Given the stronger headwinds facing the retail sector post COVID-19, the focus remains on capital preservation and monetization of the Fund's investment expeditiously once capital markets have stabilized, which is expected over the next two (2) years.

- Emblem: The refurbishment project began in 1Q 2020 and was scheduled to continue for a period of up to 18 months. As a result of COVID-19, the construction was interrupted for six (6) weeks due to local quarantine conditions. A total construction delay of six (6) months has been incorporated. Delivery of the final project is now expected in 4Q 2021. The additional delay will provide more time for leasing and general economic recovery. The team has implemented design changes to meet new market sentiment in the post COVID-19 environment, seeking to further accentuate the best-in-class facilities. However, given the uncertainty facing the wider office sector and the potential for occupier demand for high-rise office space to be weaker post COVID-19, recent underwriting reduced the expected stabilized rental value by 10% and increased the tenant incentive package by 33%.
- Luhrs City Center: Transient parking income continues to underperform historical collections as the Maricopa County Courthouse remains closed. The partnership is seeking additional opportunities to boost income in the short term through contract and month to month parking. With an impending loan maturity in June 2021, the Fund will commence conversations with Bank of America to extend the loan, providing ample term to allow for parking recovery. The Fund will closely monitor recovery of revenue and overall liquidity in the market in anticipation of a sale in late 2021/early 2022.
- 5801 Christie: The buyer terminated the purchase contract in June 2020 due to COVID-19 and the Fund retained the $3.5M deposit released in June 2018 as part of sale terms. Over the past few months, the partnership has been re-strategizing the path to disposition and assessing whether to complete the development plan prior to sale or take it to the market with revised renderings that are salable in today's environment. It is currently planned that the asset will go to the market in December, targeting a combination of multifamily and life science developers; the partnership will be looking for certainty of execution within a reasonable closing timeframe and limiting any contingencies tied to city plan approvals.

While it is always our objective that this quarterly communication is industry-leading in its thoroughness of information and level of transparency, we acknowledge this is a unique time in the market, and we are always available to answer any questions you may have or provide additional information. We hope and trust that you and your families are safe and healthy, and please let us know what we can do to assist both personally and professionally.

Best regards,

Courtney Popelka

Bert Crouch	Rivka Altman	Courtney Popelka
Portfolio Manager	Associate Portfolio Manager	Director of Fund Operations

Portfolio Summary

Investment	Property Type (Strategy)	SF / Units	Investment / Exit Date	Hold Period (Mths)	LTC [1]	Equity Commitments $USD	Equity Commitments % of Fund [2]	Equity Flows [3] Contrib.	Equity Flows [3] Distrib.
Realized / Partially Realized									
U.S.									
CROWN HEIGHTS [4] (Brooklyn, NY)	LAND (As-of-Right) (High Yield Credit)	168,000	Apr-15 Dec-16	20	37%	$8.2	2%	$8.2	$10.2
BAYSIDE SQUARE (Newport Beach, CA)	OFFICE (Opportunistic)	34,943	Nov-15 Oct-18	35	52%	$11.1	3%	$11.1	$10.1
AMES HOTEL (Boston, MA)	HOSPITALITY (Opportunistic)	114	Dec-15 Sep-19	45	62%	$24.0	7%	$24.0	$26.9
EXPOSITION BOULEVARD (Los Angeles, CA)	OFFICE (High Yield Credit)	70,785	Jun-17 Nov-19	29	20%	$13.9	4%	$13.9	$19.4
Subtotal				***36***		***$57.1***	***17%***	***$57.1***	***$66.7***
Europe									
102 CHAMPS-ÉLYSÉES (Paris, France)	RETAIL (Opportunistic)	7,373	Sep-15 Mar-17	18	73%	$24.0	7%	€21.5	€41.8
GENERATOR [5] (Pan-European Portfolio)	HOSPITALITY (Rescue Capital)	8,700	Nov-14 May-17	30	39%	$75.2	23%	€64.0	€97.1
SPIGA [6] (Milan, Italy)	RETAIL (Rescue Capital)	84,220	Mar-16 Jun-19	39	62%	$60.9	18%	€54.8	€72.5
BARBA PORTFOLIO [7] (Madrid, Spain)	RESIDENTIAL (Distressed/NPL)	117,983	Jul/Oct-15 Various	54	33%	$11.2	3%	€10.0	€13.5
Subtotal				***33***		***$171.3***	***51%***	***€150.3***	***€224.8***
Realized / Part. Realized Total (in USD)				**34**		**$228.4**	**68%**	**$228.4**	**$314.8**
Unrealized									
U.S.									
5801 CHRISTIE AVENUE (Emeryville, CA)	OFFICE (Opportunistic)	120,689	Mar-15 --	66	--	$13.7	4%	$13.7	$3.6
LUHRS CITY CENTER [8] (Phoenix, AZ)	MIXED-USE (Opportunistic)	158,500	Dec-15 --	57	62%	$15.6	5%	$15.6	--
Subtotal				***61***		***$29.4***	***9%***	***$29.4***	***$3.6***
Europe									
FRASCATI (Dublin, Ireland)	RETAIL (Rescue Capital)	175,000	Aug-15 --	61	63%	$47.1	14%	€37.6	--
EMBLEM [6][9] (Paris, France)	OFFICE (Opportunistic)	316,000	Dec-17 --	33	65%	$53.2	16%	€34.8	--
Subtotal				***46***		***$100.3***	***30%***	***€72.4***	***--***
Unrealized Total (in USD)				**50**		**$129.6**	**39%**	**$112.2**	**$3.6**
Grand Total (in USD)				**39**		**$358.0**	**107%**	**$340.6**	**$318.4**

*Amounts in millions and EUR amounts are translated to USD at the transaction date. Total Equity Commitments of $358.0 million is inclusive of redeployed capital of $73.4 million. Totals may not foot due to rounding. Additional footnotes can be found on pages 18-19.

Portfolio Summary

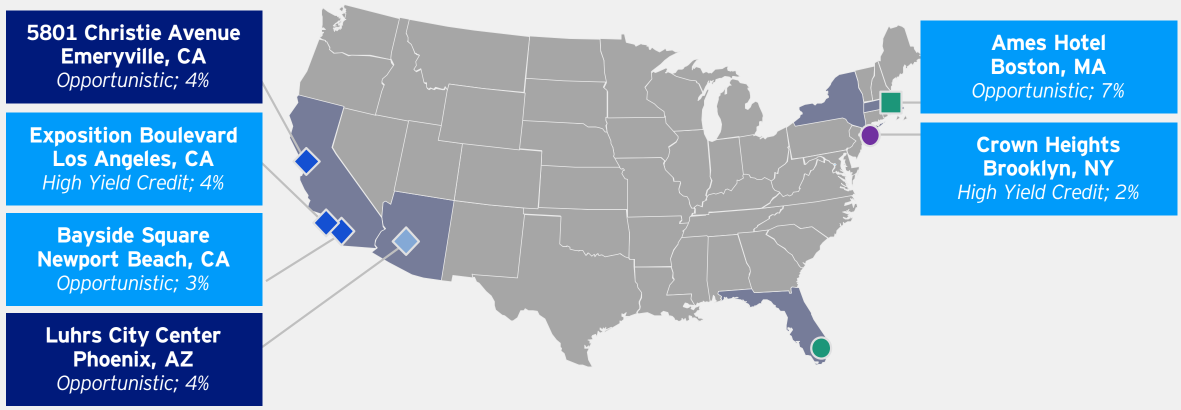
Investment	Total Capitalization	Valuation: Cost Basis (10)	Valuation: GAV (10)	Valuation: NAV (11)	Fund Ownership (12): Cost Basis / Cap Stack	Fund Ownership (12): Market Value	Performance (13): Since Inception IRR	Performance (13): Since Inception EM	Performance (13): Projected IRR	Performance (13): Projected EM
Realized / Partially Realized										
U.S.										
CROWN HEIGHTS (4) (Brooklyn, NY)	$20.3	$20.3	$44.6	--	95% / 35%	94%	17.5%	1.3x	17.5%	1.3x
BAYSIDE SQUARE (Newport Beach, CA)	$23.2	$23.2	$23.3	--	90%	90%	-3.0%	0.9x	-3.0%	0.9x
AMES HOTEL (Boston, MA)	$59.4	$59.4	$63.5	--	80%	100%	3.6%	1.1x	3.6%	1.1x
EXPOSITION BOULEVARD (Los Angeles, CA)	$47.2	$47.2	$90.5	--	100% / 12%	100%	15.5%	1.4x	15.5%	1.4x
Subtotal	***$150.2***	***$150.2***	***$221.9***				***5.9%***	***1.2x***	***5.9%***	***1.2x***
Europe										
102 CHAMPS-ÉLYSÉES (Paris, France)	€63.9	€63.9	€115.0	--	89%	89%	60.3%	1.8x	60.3%	1.8x
GENERATOR (5) (Pan-European Portfolio)	€338.9	€338.9	€450.0	--	24%	25%	20.4%	1.5x	20.4%	1.5x
SPIGA (6) (Milan, Italy)	€134.2	€134.2	€211.9	--	69%	71%	12.2%	1.4x	12.2%	1.4x
BARBA PORTFOLIO (7) (Madrid, Spain)	€24.8	€24.8	€36.9	€2.6	90%	90%	19.1%	1.6x	19.1%	1.6x
Subtotal	***€561.7***	***€561.7***	***€813.8***	***€2.6***			***21.2%***	***1.5x***	***21.2%***	***1.5x***
Realized / Part. Realized Total (in USD)	**$758.6**	**$758.6**	**$1,105.0**	**$3.1**			**17.4%**	**1.4x**	**17.4%**	**1.4x**
Unrealized										
U.S.										
5801 CHRISTIE AVENUE (Emeryville, CA)	$13.6	$13.6	$32.5	$28.0	95%	86%	18.0%	2.3x	4.4%	1.3x
LUHRS CITY CENTER (8) (Phoenix, AZ)	$50.3	$50.3	$33.4	$4.2	95%	95%	-24.9%	0.3x	-6.9%	0.7x
Subtotal	***$63.9***	***$63.9***	***$65.9***	***$32.2***			***4.3%***	***1.2x***	***-1.2%***	***0.9x***
Europe										
FRASCATI (Dublin, Ireland)	€140.9	€122.4	€125.0	€45.3	100%	100%	6.9%	1.3x	1.5%	1.1x
EMBLEM (6)(9) (Paris, France)	€222.4	€188.0	€199.5	€40.8	48%	50%	11.3%	1.3x	12.9%	1.5x
Subtotal	***€363.3***	***€310.4***	***€324.5***	***€86.2***			***8.4%***	***1.3x***	***6.3%***	***1.3x***
Unrealized Total (in USD)	**$489.8**	**$427.8**	**$446.4**	**$134.0**			**7.0%**	**1.3x**	**4.4%**	**1.3x**
Grand Total (in USD)	**$1,248.4**	**$1,186.3**	**$1,551.4**	**$137.1**			**13.2%**	**1.4x**	**11.2%**	**1.5x**

*Amounts in millions and EUR amounts are translated to USD at the transaction date with the exception NAV, which are translated using the exchange rate at the balance sheet date. Totals may not foot due to rounding. Additional footnotes can be found on pages 18-19.

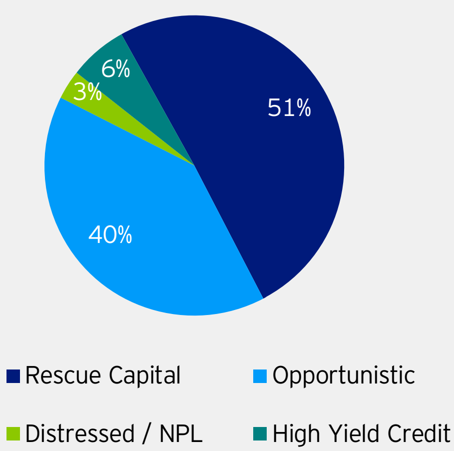
Portfolio Construction

Legend

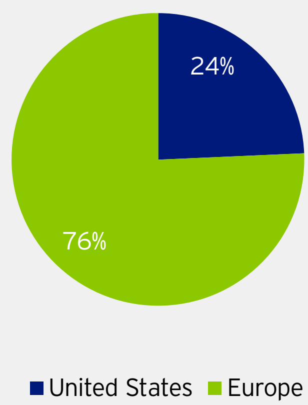
Realized / Unrealized:
Realized / Part. Realized
Unrealized
Property Type:
Office
Mixed-Use
Residential
Hospitality
Generator Asset



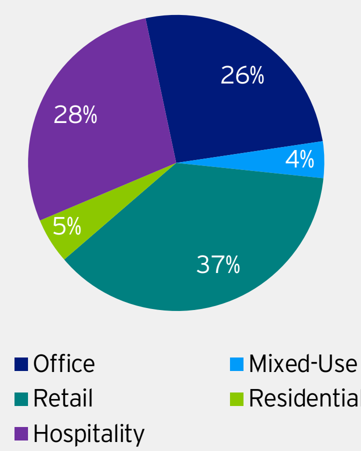
Strategy Allocation



Geographic Allocation

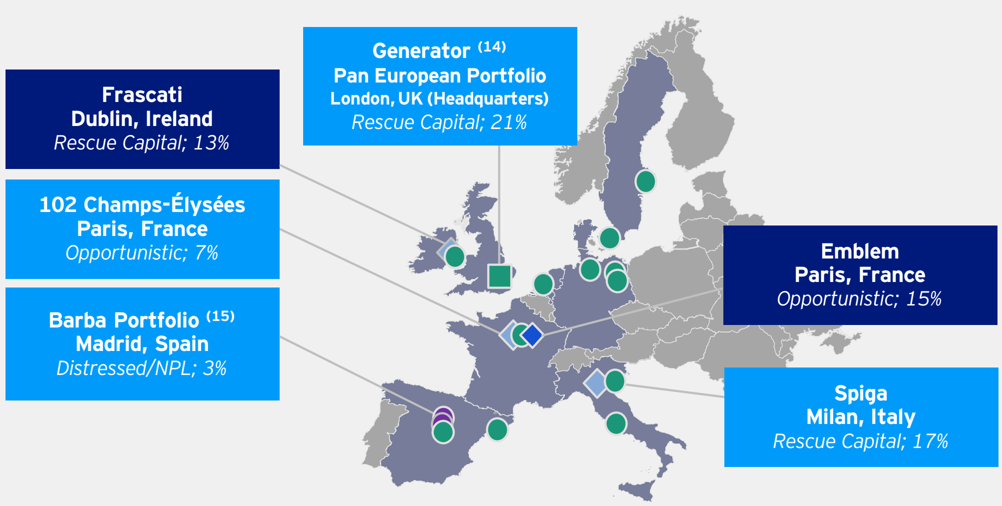


Sector Allocation



Legend

Realized / Unrealized:
Realized / Part. Realized
Unrealized
Property Type:
Office
Retail
Residential
Hospitality
Generator Asset



Note: Maps and charts based on the Fund's committed equity of $358 million (inclusive of redeployed capital). Utilizing total Fund commitments of $334 million, European exposure on the remaining asset base is 30% (25% invested) as of quarter-end. At no one time has European exposure exceeded the 65% Fund limitation. Additional footnotes can be found on pages 18-19.

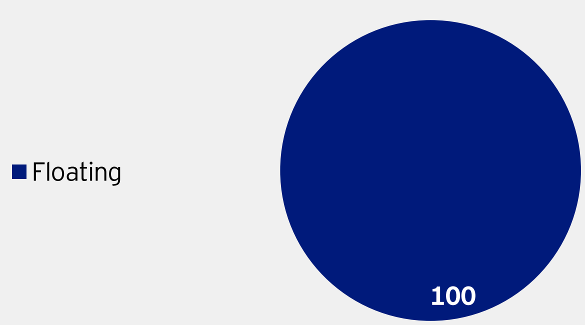
Debt Summary

Investment	Lender	Loan Commitment [16]	Loan Balance at Exit [16]	Average LTC	Weighted Average Interest Rate
Realized					
U.S.					
CROWN HEIGHTS	Bank of the Ozarks	$9.9	$9.9	37%	4.08%
BAYSIDE SQUARE	Realty Finance	$10.8	$10.8	52%	5.64%
AMES HOTEL	MetLife	$41.3	$36.0	62%	5.84%
EXPOSITION BOULEVARD	Bank of the Ozarks	$19.7	$11.7	20%	4.82%
Europe [18]					
GENERATOR	Various	€32.6	€32.6	39%	2.83%
102 CHAMPS-ÉLYSÉES	ING	€44.3	€41.3	73%	1.78%
SPIGA	Natixis	€81.7	€65.3	62%	2.13%
BARBA - GREGORIO	Banco Popular	€3.3	€3.0	48%	2.38%
Realized Total / Wtd. Avg. [19]		**$259.9**	**$224.6**	**57%**	**3.16%**

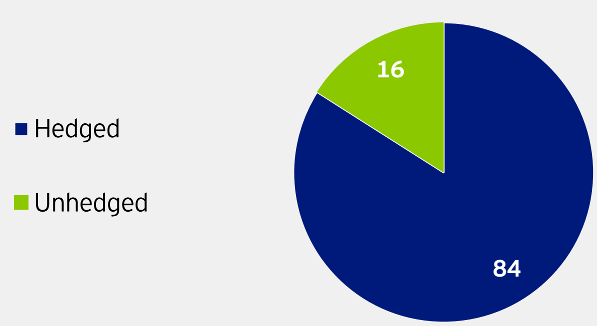
Annual Avg. Interest Rates [17]	LIBOR	EURIBOR
2014	0.16%	0.13%
2015	0.20%	-0.07%
2016	0.50%	-0.34%
2017	1.11%	-0.37%
2018	2.02%	-0.37%
2019	2.22%	-0.40%
3Q'20	0.64%	-0.48%

Investment	Lender	Loan Commitment [16]	Current Loan Balance [16]	LTC	Fixed / Floating	Interest Rate	Maturity Date	Extension Option
Unrealized								
U.S.								
LUHRS CITY CENTER	Bank of America	$14.2	$14.2	62%	Floating	2.30%	Jun-21	--
Europe [18]								
FRASCATI	Bank of Ireland	€86.7	€76.8	63%	Floating	2.60%	Jan-21	1 (1) Yr
BARBA - SAREB [20]	Ibercaja Bank	€20.5	€1.3	33%	Floating	3.00%	Jul-47	--
EMBLEM	Societe Générale	€82.0	€60.5	65%	Floating	2.20%	Dec-22	1 (2) Yr
Investment Level Total / Wtd. Avg. [19][21]		**$235.9**	**$176.7**	**60%**		**2.42%**		
CREDIT FACILITY [22]	Wells Fargo	$35.0	$34.0	--	Floating	1.71%	May-21	--
Fund Level Total / Wtd. Avg. [23]		**$270.9**	**$210.7**	**48%**		**2.31%**		

Interest Rate Composition (%) [24][25]



Interest Rate Hedge (%) [24][25]



*Amounts in millions and EUR amounts are translated to USD at the transaction date except for unrealized investments, which are translated using the exchange rate at the balance sheet date. Totals may not foot due to rounding. Additional footnotes can be found on pages 18-19.

Foreign Currency Hedging Summary

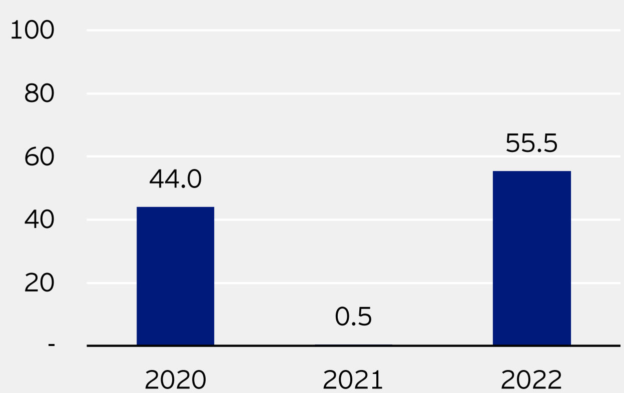
The Fund hedges all non-U.S. investments so as not to speculate on foreign currency movements. Forwards are the Fund's preferred method of hedging currency exposure as they offer lower costs and better liquidity than options. Notional is typically sized to the Fund's equity investment plus a portion of the anticipated profits, which is managed dynamically throughout the life of the investment.

The Fund expects to hedge an additional ~€21 million over the next few months related to the ongoing business plan executions for the remaining European investments. The Fund is actively engaged with the counterparties to ensure sufficient threshold and liquidity capacity as the Fund winds down. Additionally, the Fund works in collaboration with the broader Invesco platform (Invesco Fixed Income "IFI") to execute the hedging strategy. IFI's current view is that over the longer term, the dollar is expected to weaken as the Fed remains accommodative, keeping yields low relative to other countries. Even as growth recovers next year, IFI believes the Fed's inflation regime will support lower yields for quite some time. Further, certain US asset classes have rich valuations due to increased demand in 2020. Lower yields and rich valuations in the US will encourage investors to look elsewhere for better investment opportunities, ultimately causing the dollar to depreciate due to lower demand.

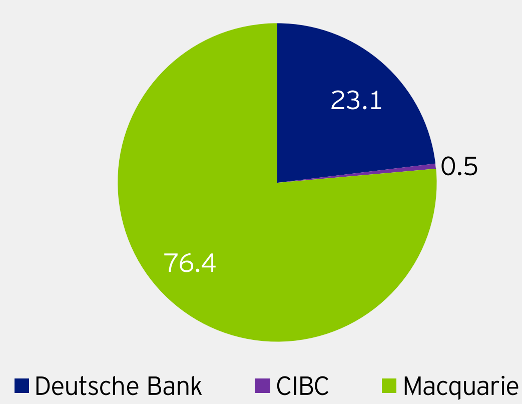
To-date, the Fund has recognized net realized hedging gains of $15.4 million, the majority of which have been distributed to the LPs. The current hedges are in a net gain position as of quarter-end. Near-term hedge maturities will be rolled and extended as necessary.

Investment	Forward Position [25]			Counterparty [26]	Maturity Date [27]
FRASCATI	Short EURUSD	€	20.9	Deutsche Bank	12/31/20
FRASCATI	Short EURUSD	€	18.8	Macquarie	12/31/20
SAREB [28]	Short EURUSD	€	0.4	Canadian Imperial Bank of Commerce	06/30/21
EMBLEM [29]	Short EURUSD	€	50.0	Macquarie	11/30/22
Total Notional Outstanding		€	90.1		

Maturity Schedule (%) [30]

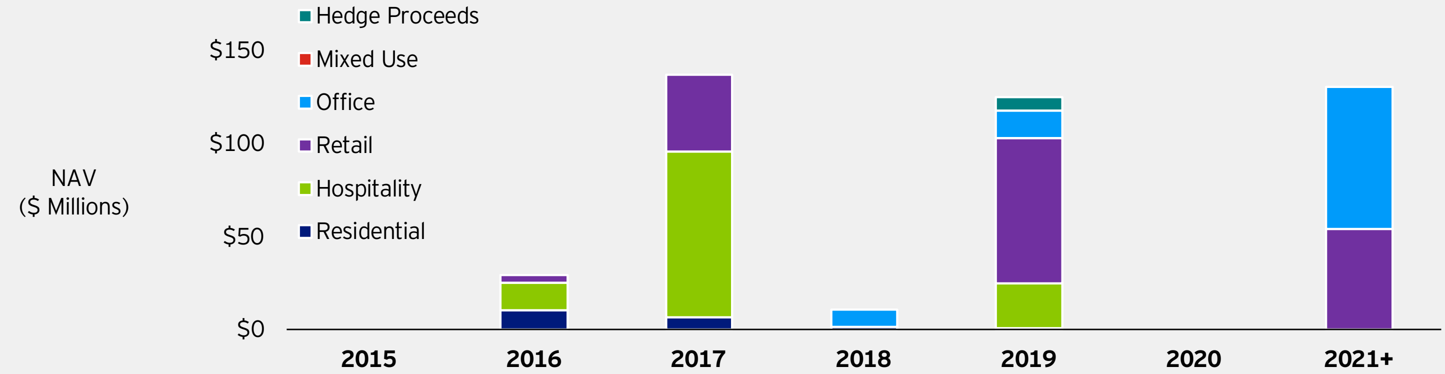


Counterparty Concentration (%) [30]



*Amounts in millions. Totals may not foot due to rounding. Additional footnotes can be found on pages 18-19.

Return of Capital / Profit Distribution

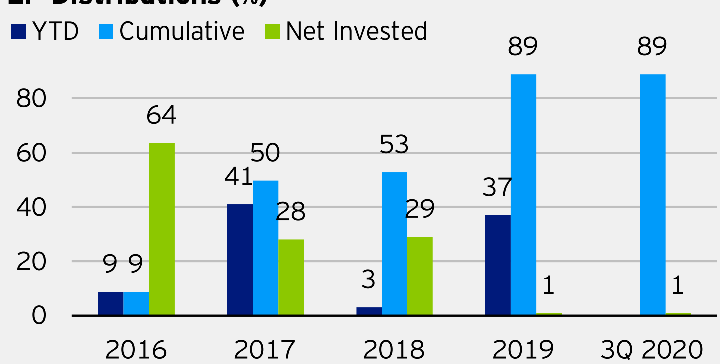


Fund Year	1	2	3	4	5	6	7
BY Net Invested Capital	14%	60%	64%	28%	29%	1%	5%
Plus: Capital Contributions	46%	13%	5%	4%	9%	4%	7%
Less: Capital Distributions (31)	0%	9%	41%	3%	37%	0%	39%
YE Net Invested Capital	**60%**	**64%**	**28%**	**29%**	**1%**	**5%**	**0%**
Profit Distribution	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**27%**
% Realized (32)	0%	2%	32%	35%	68%	68%	107%

Capital Summary

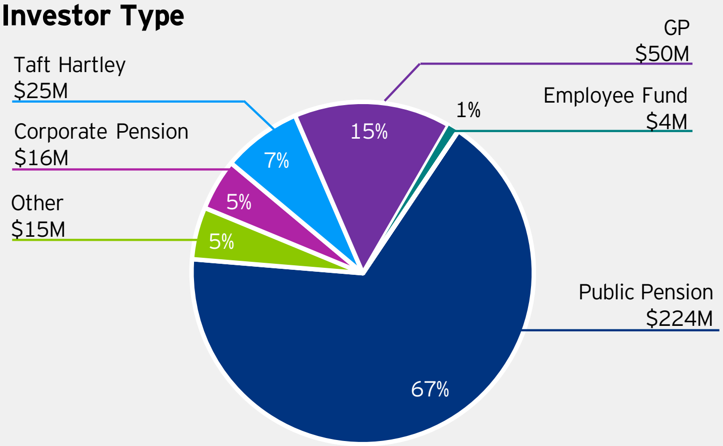
Capital Called	$301.5	90%
Redeployed Capital Uncalled	$56.5	17%
Total Committed Equity	**$358.0**	**107%**
Fund Reserves	$49.4	15%
Total Redeployed Capital	($73.4)	(22%)
Total Fund Commitments	**$334.0**	**100%**

LP Distributions (%)



Total distributed: $298.5M ($179.7M non-recallable; $118.8M recallable).

Investor Type



Current Quarter Activity

- The Fund called $12 million (4%) in capital from LPs in October. The funds were used to pay down the subscription facility that has been utilized to bridge fundings to Emblem and Frascati.
- The Fund utilizes a subscription facility (collateralized by LP unfunded capital commitments) for cash management purposes. Subsequent to quarter-end, the subscription facility was extended in order to align capital needs with business plan executions and disposition timing.

*Amounts in millions. Totals may not foot due to rounding. Additional footnotes can be found on pages 18-19.

5801 Christie Avenue
Emeryville, California
Office / Opportunistic

Investment Thesis at Acquisition

- Acquisition of a well-located, two-building commercial property
- Prime location between Oakland and Berkeley in the "gateway" of Emeryville, a creative epicenter in the Bay Area ideally suited for redevelopment given its visibility, accessibility, and proximity to amenities
- Business plan involves finalizing all planning/permitting requirements (no entitlement risk involved) for redevelopment as a residential/mixed-use project, then exiting the "shovel-ready" site to a developer

Transaction Highlights			
Acquisition Date	March 2015	Fund Equity Commitment / %	$13.7M / (4%)
Sub-market	Emeryville	Leverage (LTC)	--
Property Size	120,689 SF	Stabilized Basis / Yield	$13.6M / --
Leased (%)	35%	JV Partner / % Equity Co-Invest	Harvest Properties / (5%)

Luhrs City Center
Phoenix, Arizona
Mixed-Use / Opportunistic

Investment Thesis at Acquisition

- The asset is comprised of two 1920's vintage office towers connected by ground floor retail, and an adjacent six-story parking garage
- The buildings were previously undermanaged by an out-of-state hotel developer who lacked the expertise needed to maximize value
- The property benefits from the six-story parking garage as a significant revenue generator along with the property's prime location adjacent to the Phoenix Light Rail and Cityscape development
- Business plan entails minor leasing over 24 months to demonstrate proof of concept, particularly in the street-level retail; targeted capital improvements will include upgrading the common areas and additional renovation to the building exterior

Transaction Highlights			
Acquisition Date	December 2015	Fund Equity Commitment / %	$15.6M / (5%)
Sub-market	CBD	Leverage (LTC)	62%
Property Size – Arc./Tower	21,516 / 44,248 SF	Stabilized Basis / Yield	$50.3M / 7.5%
Leased (%) – Arc./Tower	74% / 48%	JV Partner / % Equity Co-Invest	Lincoln Property Company / (5%)

Frascati
Dublin, Ireland
Retail / Rescue Capital

Investment Thesis at Acquisition

- Off-market acquisition of a fully-leased shopping centre located in one of the wealthiest suburbs of Dublin working with established local operating partner
- Opportunity to add value with planning consent recently granted for a 68,000 SF retail expansion and ability to improve upon consented scheme to include mixed use including residential
- Projected stabilized yield on cost of 6.5% for the enlarged scheme after completion of the expansion, compared to an estimated exit cap in the low-5% range
- The Dublin residential market is strong and there may be an opportunity to add a residential component during the hold period via one or more phases

Transaction Highlights			
Acquisition Date	August 2015	Fund Equity Commitment / %	$47.1M / (14%)
Sub-market	Blackrock	Leverage (LTC)	63%
Property Size	175,000 SF	Stabilized Basis / Yield	€140.9 / 5.1%
Leased (%)	53%	JV Partner / % Equity Co-Invest	Burlington Real Estate Ltd / (0%)

Emblem
Paris, France
Office / Opportunistic

Investment Thesis at Acquisition

- €164.5 million purchase price corresponds to an 8.0% cap rate on in-place income, a 7% discount to CBRE's purchase valuation and below replacement cost
- 100% leased to EDF; the rolling tenant break option from Y2 presents two potential business plan options, both with similar return profiles (16%-17% IRR, 1.7x-2.0x EM)
- If EDF remains in occupation, the Fund would enjoy a strong cash yield and have the opportunity to negotiate the extension of the EDF tenancy on a longer-term lease
- In the event EDF vacates, a full refurbishment would be undertaken to create a Grade A office tower, delivering an expected stabilized cap rate of 6.5%, or an expected unlevered profit margin of ~28%

Transaction Highlights			
Acquisition Date	December 2017*	Fund Equity Commitment / %	$53.2M / (16%)
Sub-market	La Défense	Leverage (LTC)	65%
Property Size	316,000 SF	Stabilized Basis / Yield	€222.4 / 6.2%
Leased (%)	0%	JV Partner / % Equity Co-Invest	EVAF (Invesco) / (47.5%); Red Tree Capital / (5%)

**Investment was under contract prior to the expiration of the investment Period in October 2017.*

Barba Portfolio
Madrid, Spain
Residential / Distressed/NPL

Investment Thesis at Acquisition

- Programmatic partnership with Barba, an experienced local operator with unique access to non-performing loans held in Spain's "bad bank" SAREB
- Barba is an experienced local residential operator, having developed 2,350+ flats in Madrid, Castile and León
- Capitalize on severe shortage of high-quality residential product in established neighborhoods of Madrid where values were near historic lows
- First transaction consists of nine units in a wealthy suburb of northern Madrid; project was 100% pre-sold cost. Second transaction consists of three non-performing loans sold by SAREB

Transaction Highlights

Acquisition Date	July / October 2015	**Fund Equity Commitment / %**	$11.2M / (3%)
Sub-market	Various in Northern Madrid	**Leverage (LTC)**	33%
Property Size	117,983 SF	**Stabilized Basis / Yield**	-- / --
Leased (%)	N/A - Built-To-Sell	**JV Partner / % Equity Co-Invest**	Barba Group / (10%)

Sold Investments

Crown Heights
Brooklyn, New York
Land / High Yield Credit

Investment Thesis at Acquisition

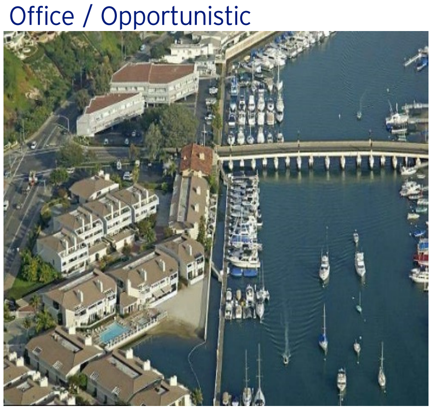
- $18.9 million senior loan origination for the refinancing of a matured/defaulted loan secured by two lots in the Crown Heights neighborhood of Brooklyn, NY
- Underutilized collateral consists of three vacant industrial buildings, and as-of-right zoning allows for the development of four residential buildings (3x FAR = 168,000 SF and ~209 units)

Execution Results

- Loan was funded in April 2015 and $10.5 million of debt-on-debt financing was secured in May 2015 from a relationship balance sheet lender
- Investment repaid at par (via refinance) in December 2016

Transaction Highlights			
Acquisition Date	April 2015	Exit Date	December 2016
Fund Equity Commitment / %	$8.2M / (2%)	Repayment (Par)	$18.9
Property Size / Leased	168,000 SF / 0%	Profit	$2.0
Leverage (Avg LTC)	37%	IRR / TVPI	17.5% / 1.3x
JV Partner / % Equity Co-Invest	Hudson Realty Capital / (5%)	Buyer / Type	Refinanced by Institutional Private Equity Group

Bayside Square
Newport Beach, California
Office / Opportunistic



Investment Thesis at Acquisition

- Acquisition of two boutique office buildings located on a prime waterfront site in Newport Beach, adjacent to Balboa Island and the Newport Beach Yacht Club
- Attractive risk-return profile with downside protection and optionality from as-of-right commercial use with outperformance achieved from securing entitlements

Execution Results

- The Partnership opted to stop the re-entitlement effort given a surprise ruling by the California Coastal Commission on a nearby project; to continue the process would require substantial equity for consultants and architectural drawings
- Sale to a private buyer closed in October 2018 with substantially all capital returned

Transaction Highlights			
Acquisition Date	November 2015	Exit Date	October 2018
Fund Equity Commitment / %	$11.1M / (3%)	Gross Sales Price / Cap Rate	$23.3 / 3.6%
Property Size / Leased	34,943 SF / 89%	Net Profit / Loss	($1.0)
Leverage (Avg LTC)	52%	IRR / TVPI	-3.0% / 0.9x
JV Partner / % Equity Co-Invest	Shopoff Realty Investments / (10%)	Buyer / Type	Private Individual / (1031 Buyer)

Sold Investments

Ames Hotel
Boston, Massachusetts
Hospitality / Opportunistic

Investment Thesis at Acquisition

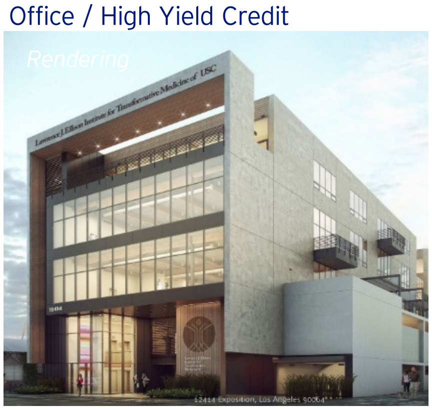
- Preferred equity investment to reposition a boutique hotel located in Boston's financial district
- Business plan called for replacing management, light renovations focused on meeting space, and adding guest technology, new F&B offerings, and lobby renovation

Execution Results

- Through last full month of ownership (August 2019), RevPAR increased $8.93 (3.5%) over same period in 2018 vs. the competitive set increase of $15.92 (6.3%)
- While the investment underperformed original underwriting expectations, the preferred equity structure preserved equity and returned capital to investors

Transaction Highlights			
Acquisition Date	December 2015	Exit Date	September 2019
Fund Equity Commitment / %	$24.0M / (7%)	Gross Sales Price / Cap Rate	$63.5 / 3.4%
Property Size / Leased	114 Keys / 88%	Net Profit / Loss	$3.0
Leverage (Avg LTC)	62%	IRR / TVPI	3.6% / 1.1x
JV Partner / % Equity Co-Invest	Gencom & Gemstone Hotels / (20%)	Buyer / Type	Suffolk University / (Private)

Exposition Boulevard
Los Angeles, California
Office / High Yield Credit



Investment Thesis at Acquisition

- Preferred equity investment for the ground-up development of a five-story office building
- Project is fully-entitled and "shovel-ready", with drawings 100% complete and permitting nearly finalized

Execution Results

- Sponsor successfully executed a lease with University of Southern California on behalf of Lawrence Ellison Institute of Transformative Medicine for the entire building
- At payoff, stabilized valuation of the investment by a third party was $91.7 million ($1,295 PSF; 4.30% cap rate) implying sub-60% LTV to the Fund's investment

Transaction Highlights			
Acquisition Date	June 2017	Exit Date	November 2019
Fund Equity Commitment / %	$13.9M / (4%)	Repayment (Pref)	$13.8
Property Size / Leased	70,785 SF / 100%	Profit	$5.5
Leverage (Avg LTC)	20%	IRR / TVPI	15.5% / 1.4x
JV Partner / % Equity Co-Invest	--	Buyer / Type	Refinanced by California Bank & Trust

Sold Investments

102 Champs-Élysées
Paris, France
Retail / Opportunistic

Investment Thesis at Acquisition

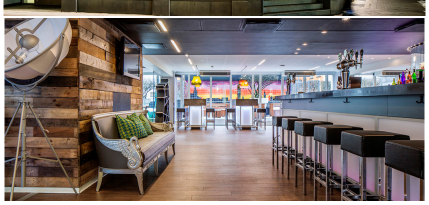
- Off-market acquisition of a 7,373 SF retail jewel box in Paris, France with prime street frontage along the prestigious Avenue des Champs-Élysées
- Business plan involved converting the space into a flagship retail asset within the "Golden Triangle" of Paris, with a leasing strategy focused on a single tenant

Execution Results

- Single tenant lease agreement executed in 4Q 2016 with Kiko, a well-known European cosmetics retailer. Lease terms slightly exceeded underwriting
- Property was marketed for sale in early 2017 and investor demand was both strong and diverse. Closing occurred in March 2017 well above an independent valuation

Transaction Highlights			
Acquisition Date	September 2015	Exit Date	March 2017
Fund Equity Commitment / %	$24.0M / (7%)	Gross Sales Price / Cap Rate	€115.0 / 2.8%
Property Size / Leased	7,373 SF / 100%	Net Profit / Loss	€20.2
Leverage (Avg LTC)	73%	IRR / TVPI	60.3% / 1.8x
JV Partner / % Equity Co-Invest	Thor Equities / (11%)	Buyer / Type	AEW / (European Fund)

Generator
Pan-European Portfolio
Hospitality / Rescue Capital



Investment Thesis at Acquisition

- Rescue capital injection of €60.0 million in a pan-European hospitality company in partnership with Patron Capital, a leading institutional PERE fund sponsor
- Portfolio consisted of 14 assets: Amsterdam, Barcelona, Berlin (2), Copenhagen, Dublin, Hamburg, London, Madrid, Paris, Rome, Venice, Miami and Stockholm

Execution Results

- During the hold period, Generator consistently outperformed budgeted revenue and EBITDA
- Patron engaged Lazard to sell the company in 2H 2016. The company was sold to an institutional investor at a valuation well in excess of the Fund's projections

Transaction Highlights			
Acquisition Date	November 2014	Exit Date	May 2017
Fund Equity Commitment / %	$75.2M / (23%)	Gross Sales Price / Cap Rate	€450.0 / 6.0%
Property Size / Leased	8,700 Units / --	Net Profit / Loss	€33.1
Leverage (Avg LTC)	39%	IRR / TVPI	20.4% / 1.5x
JV Partner / % Equity Co-Invest	Patron Capital / (76%)	Buyer / Type	Queensgate / (Private Institution)

Sold Investments

Spiga
Milan, Italy
Retail / Rescue Capital

Investment Thesis at Acquisition

- Acquisition of a mixed-use property with high-street retail frontage in the heart of Milan's world-renowned fashion district on via della Spiga
- Business plan calls for increasing the retail space vertically to create a flagship location for at least two luxury retailers and refurbishing the residential floors

Execution Results

- Corporate restructuring completed in 2017, allowing for greater optionality and liquidity at resale, and capital gains tax of €26 million was crystallized
- After delivering vacant possession and a building permit for a full refurbishment of the asset, the sales transaction was completed at 15% above valuation in June 2019

Transaction Highlights			
Acquisition Date	March 2016	Exit Date	June 2019
Fund Equity Commitment / %	$60.9M / (18%)	Gross Sales Price / Cap Rate	€211.9 / 3.6%
Property Size / Leased	84,220 SF / 0%	Net Profit / Loss	€17.6
Leverage (Avg LTC)	62%	IRR / TVPI	12.2% / 1.4x
JV Partner / % Equity Co-Invest	Thor Equities (13%) / Fund LP (18%)	Buyer / Type	PGGM & Hines / (Insitutional)

Footnotes

Portfolio Summary

1. Total realized loan to cost ("LTC") is a weighted average based on loan balance at exit. Total unrealized LTC reflects the total debt balance divided by the total cost basis as of quarter-end. Refer to Footnote 8 in the Additional Information / Fund Disclosures section for more information.

2. Based on total Fund size of $334.0 million (includes the GP's $50 million commitment).

3. Represents contributions and distributions (in functional currency) to/from underlying investments.

4. "As of right" refers to developable square footage, uses, etc. that are permitted by the property's existing zoning and entitlement.

5. Generator investment was made prior to the Fund's Final Closing date and was in compliance with the Fund's single portfolio investment limitation.

6. These investments have co-investors (see individual investment pages herein for details).

7. Barba Portfolio investments (Sareb & Gregorio Benitez) combined due to JV structure. As of June 30, 2019, all invested capital had been returned to the Fund. The Fund projects the investment to continue to distribute proceeds through 2021 as the remainder of the business plan is completed. LTC reflects the unrealized portion only. Gross Asset Value ("GAV"), Cost Basis and return metrics are shown aggregate for the entire investment.

8. The Luhrs Building was sold in December 2019. The Luhrs Arcade (retail) and Tower remain. GAV, Cost Basis and return metrics are shown aggregate for the entire investment.

9. Investment was under contract prior to the expiration of the Investment Period in October 2017.

10. For equity investments, GAV and Cost Basis for realized investments reflect the sales price and cost basis at disposition, respectively. GAV and Cost Basis for unrealized equity investments reflect the underlying property's fair market value and cost basis, respectively, as of quarter-end. For realized debt investments, GAV and Cost Basis reflect the appraised value of the collateral and total debt, including the Fund's debt position and third-party financing, plus accrued interest, respectively, at loan payoff. GAV and Cost Basis for unrealized debt investments reflect the estimated total capitalization and estimated total (fully funded) debt, including the Fund's debt position and third-party financing, plus accrued interest. Amounts are shown in functional currency and at 100% ownership.

11. Net asset value ("NAV") shown in functional currency and is the Fund's share of the investment as of quarter-end.

12. Percentage of Fund ownership: Cost basis represents contractual ownership at acquisition/closing. Capital Stack ("Cap Stack") is included for debt investments and represents the Fund's position in the overall cap stack. For realized investments, this is calculated as average third-party debt over average GAV for the hold period. For unrealized investments, this is calculated as the estimated third-party fully funded debt over estimated total capitalization. Market value represents the Fund's effective ownership at exit or quarter-end.

13. Internal rates of return ("IRR") shown are calculated using gross investment level returns denominated in USD and include realized or unrealized gains/losses from foreign currency hedging. Since inception equity multiples are calculated consisted with the TVPI methodology; projected equity multiples (for unrealized/partially realized investments) are calculated as whole dollar profit over peak equity.

Portfolio Construction

14. Generator investment was made prior to the Fund's Final Closing date and was in compliance with the Fund's single portfolio investment limitation.

15. As of June 30, 2019, all invested capital had been returned to the Fund. The Fund projects the investment to continue to distribute proceeds through 2021 as the remainder of the business plan is completed.

Debt Summary

16. Represents the Fund's effective ownership percentage of loan commitment and loan balance at exit or quarter-end.

17. Average one-month LIBOR (USD) and EURIBOR rates.

18. Amounts presented in functional currency.

19. Amounts translated to USD using the exchange rate at exit or the balance sheet date.

20. Effective June 30, 2020, upon commencement of principal payments, the loan was automatically extended for 27 years through June 2047.

21. Leverage is limited to 65% of the aggregate cost of investments (and 75% of any single investment).

22. The Fund extended the subscription facility post quarter-end.

23. Calculated as total debt (including the credit facility) over aggregate cost of investments plus the unfunded capital commitments of LP investors and Fund level working capital.

24. Excludes the Fund's subscription line of credit. Based on the Fund's effective ownership percentage of the total loan commitments.

25. Floating (unhedged) debt is limited to Luhrs City Center and Barba - Sareb.

Foreign Currency Hedging Summary

25. Hedge positions are marked-to-market monthly by Chatham. As of quarter-end, net realized currency hedging gains totaled approximately $15.4 million and net unrealized currency gains totaled $777,109.

26. Derivative trading agreements have been established with multiple counterparties, and the Fund aims to enter long-dated tenor contracts for optimal liquidity.

27. Maturity dates are aligned with anticipated realization dates of underlying Fund investments and near-term maturities will be rolled and extended as necessary.

28. Barba Portfolio investment.

29. Subsequent to quarter-end, the hedged notional was reduced by €4.4 million.

30. Based on quarter-end total notional of €90.1 million.

Capital Management

31. Distribution percentages are shown net of realized and projected fees.

32. Based on total Fund commitments of $334.0 million.

Additional Information / Fund Disclosures

1. Invesco Mortgage Recovery Fund II is an opportunistic, cross-border, closed-end fund with an initial seven (7) year life (following the Initial Closing Date of October 14, 2014). The Fund may be extended for a one-year period at the sole discretion of the General Partner and an additional one-year period with Advisory Board consent. The initial maturity date is October 14, 2021.
2. The Fund's vintage year is 2014 as defined by Global Investment Performance Standards ("GIPS").
3. Fund-level gross and net IRRs are pre-tax internal rates of return based on actual quarterly cash flows (contributions and distributions) and the estimated terminal value as of the most recent quarter end. Gross IRRs exclude, and net IRRs include, management fees and carried interest. Fund-level since inception net returns are exclusive of the General Partner's $50 million capital commitment.
4. Investment-level IRRs are presented gross as management fees and fund-level carried interest are calculated and recorded at the Fund-level. The IRR for a realized investment is as of the quarter of disposition. Post-disposition cash flows (if any) are also reflected in the quarter of disposition.
5. Since inception equity multiples are presented based on TVPI methodology: distributions / contributions. Projected equity multiples are calculated as whole dollar profit over peak equity.
6. An individual investor's return may differ from the returns shown based on the timing of their specific cash flows and management fees and/or carried interest allocation.
7. Operating results of the Fund are presented on a fair value basis of accounting in conformity with U.S. GAAP. Further, in accordance with GAAP, the Fund qualifies as an investment company. Please refer to the condensed notes to the financial statements for further information.
8. The Fund's investments in real estate (per the financial statements) consist of equity and debt interests in the underlying real estate assets. As such, for purposes of calculating the Fund's Loan-to-Cost ("LTC") ratio, the investment level loan balances and acquisition cost (at the Fund's effective ownership) are utilized. Leverage (excluding the credit facility) is limited to 65% of the aggregate acquisition cost of investments, with a 75% limitation on individual investments. Fund-level leverage is calculated as total debt (including the credit facility) over aggregate cost of investments plus the unfunded capital commitments of LP investors and Fund level working capital.
9. Real estate investments are carried at cost (subject to adjustment for material events) for the twelve months following acquisition. Thereafter, each investment is valued on an annual basis. Refer to the Valuation Policy included herein.
10. Certain information contained in this report constitutes forward-looking statements, which can be identified by use of forward-looking terminology such as "may", "seek", "should", "expect", "anticipate", "project", "estimate", "intend", "continue", or "believe" or the negatives thereof or other variations thereon or comparable terminology. While we believe that such statements and information are based upon reasonable estimates and assumptions, due to various risks and uncertainties, actual events or results or the actual performance may differ materially from those reflected or contemplated in such forward-looking statements.
11. This report is intended primarily for Fund investors. This report contains confidential and proprietary information of the Fund, Invesco Ltd. and/or their affiliates. You agree to keep this report confidential and not distribute or disclose all or any part of this report without the prior written consent of Invesco. All material presented is compiled from sources believed to be reliable and current, but accuracy and completeness cannot be guaranteed, and we accept no liability for any loss arising from this report's use. It is not our intention to state, indicate or imply in any manner that current or past results are indicative of future profitability or expectations. This report is not to be construed as an offer to buy or sell any financial instrument. Any such offer may be made only pursuant to the Fund's confidential offering documents delivered to qualified investors. If you are not a current investor in this Fund, you may have received this report only because you are a qualified investor or investment professional, and have requested it and understand that this report is current as of the date noted for informational purposes only and should not be relied upon when deciding whether to invest in the Fund. As with all investments there are associated inherent risks.
12. Other Fund Disclosures: Effective 2Q 2020, and based on NCREIF/PREA recommendations, the Fund will present three (3) levels of Fund returns: (1) before all fund-level expenses, management fees and carried interest; (2) after fund-level expenses, but before management fees and carried interest, and (3) after of all fund-level expenses, management fees and carried interest (i.e. the net return).

Fund Governance Log

Date	Description / Action
February 18, 2014	Fund Inception – Limited Partnership Agreement
October 14, 2014	First Close Amended and Restated Limited Partnership Agreement -Reflect withdrawal of Limited Partner and admission of certain Limited Partners
December 19, 2014	Second Close
March 19, 2015	Third Close
June 8, 2015	Fourth Close
August 6, 2015	First Amendment to the Amended and Restated Limited Partnership Agreement -No more than 5% of capital commitments reserved for Fund Expenses for purposes of determining the Successor Fund threshold of 80%; RMBS restricted; 10% limitation on CMBS; 65% EU allocation; 75% leverage limitation on single Portfolio Investment; 20% single Portfolio Investment limitation; investment restrictions from Initial to Final Close based on greater of actual Subscriptions and $600M; 20% limitation on follow-on investments post-investment period; deficiency drawdown limited to 25%; change of address for notices; change from Blaine Smith to Bert Crouch as contact; Wilbur Ross & Kevin Grundy replaced Blaine Smith & Josh Seegopaul as IMRF Principals.
September 8, 2015	Fifth Close
April 14, 2016	Final Close
July 15, 2016	Second Amendment to the Amended and Restated Limited Partnership Agreement -Clarification of operating and organizational expenses
March 7, 2017	Advisory Committee approval received to (1) replace Rich King with Mario Clemente as an Investment Committee Member; and (2) replace Wilbur Ross with Stephen Toy as an IMRF Principal and Investment Committee Member
June 28, 2018	Third Amendment to the Amended and Restated Limited Partnership Agreement -Added language regarding Advisory Board meeting locations (in the US or Europe); corrected the "catch up" provision in the distribution waterfall
December 13, 2019	Advisory Committee approval received to waive the related party conflict related to the assignment of the Tax Indemnity Obligation from Ital Investment Fondo to IMRF II HoldCo S.à.r.l. and IMRF II HoldCo S.à.r.l.'s assumption thereof in order to accelerate the wind down and liquidation of the Spiga investment.

**Notes on the Limited Partnership Agreement ("LPA") amendments are intended to provide an overview of primary changes, and do not reflect all edits. Please refer to the most current LPA for details.*

Combined Statement of Assets, Liabilities, and Partners' Capital
September 30, 2020

Assets		
Investments in real estate, at fair value (cost basis of $112,181,061)	$	138,050,804
Cash and cash equivalents		8,172,251
Accounts receivable, net		23,750
Deferred financing costs, net		8,624
Total assets	$	146,255,429
Liabilities		
Notes payable, at fair value	$	34,000,000
Investment management fees payable		177,173
Accrued expenses and other liabilities		745,054
Total liabilities		34,922,227
Partners' capital		
General partners		32,407,772
Limited partners		78,925,430
Total partners' capital		111,333,202
Total liabilities and partners' capital	$	146,255,429

The accompanying notes are an integral part of these financial statements.

Combined Statement of Operations
For the Three and Nine Months Ended September 30, 2020

	Three Months	Nine Months
Investment income		
Earnings from investments in real estate	$ 3,325,000	$ 3,325,000
Interest income	161	191
Total investment income	3,325,161	3,325,191
Expenses		
Interest and financing fees, including amortization of deferred financing costs	165,120	583,110
Investment management fees	177,173	519,939
General and administrative	34,929	200,078
Total expenses	377,222	1,303,127
Net investment income	**2,947,939**	**2,022,064**
Net realized and unrealized gain (loss) on real estate investments		
Realized gain (loss) on disposed investment	(20,612)	5,603,350
Reversal of previously recorded unrealized (gain) loss on disposed investment	(6,097)	(5,731,786)
Unrealized gain (loss) on Investments	(18,937,082)	(20,162,397)
Net realized gain (loss) on foreign currency transactions	2,629	(905,136)
Net unrealized foreign currency gain (loss)	436,788	4,515,177
Net income (loss)	**$ (15,576,435)**	**$ (14,658,728)**

The accompanying notes are an integral part of these financial statements.

Combined Statement of Changes in Partners' Capital
For the Nine Months Ended September 30, 2020

	General Partners	Limited Partners	Total
Partners' capital, beginning of period	$ 41,286,666	$ 84,705,264	$ 125,991,930
Net income (loss)	(2,156,372)	(12,502,356)	(14,658,728)
GP incentive reallocation	(6,722,522)	6,722,522	-
Partners' capital, end of period	$ 32,407,772	$ 78,925,430	$ 111,333,202

The accompanying notes are an integral part of these financial statements.

Combined Statement of Cash Flows
For the Three and Nine Months Ended September 30, 2020

Cash flows from operating activities:	Three Months	Nine Months
Net income (loss)	$ (15,576,435)	$ (14,658,728)
Adjustments to reconcile net income (loss) to net cash flows provided by (used in) operating activities:		
Investment fundings	(1,652,025)	(5,685,913)
Investment redemptions	57,619	4,859,609
Investment income	(3,325,000)	(3,325,000)
Realized (gain) loss on investments	20,612	(5,603,350)
Reversal of previously recorded unrealized gain (loss) on investments	6,097	5,731,786
Unrealized (gain) loss on investments	18,937,082	20,162,397
Net realized (gain) loss on foreign currency transactions	(2,629)	905,136
Net unrealized foreign currency (gain) loss	(436,788)	(4,515,177)
Amortization of deferred financing costs	20,842	67,361
Change in operating assets and liabilities:		
Accounts receivable	(10,000)	(23,309)
Investment management fees payable	5,537	(254,512)
Accrued expenses and other liabilities	599,814	147,413
Net cash flows provided by (used in) operating activities	**(1,355,274)**	**(2,192,287)**
Cash flows from financing activities:		
Proceeds from line of credit	2,500,000	6,200,000
Payment of deferred financing costs	-	(62,526)
Net cash flows provided by financing activities	**2,500,000**	**6,137,474**
Effect of currency exchange rate changes on cash and cash equivalents	5,688	24,001
NET CHANGE IN CASH AND CASH EQUIVALENTS	1,150,414	3,969,188
CASH AND CASH EQUIVALENTS–Beginning of period	$7,021,837	4,203,063
CASH AND CASH EQUIVALENTS– End of period	**$ 8,172,251**	**$ 8,172,251**
Supplemental disclosure of cash flow information		
Cash paid for interest and fees	$ 144,278	$ 556,401

The accompanying notes are an integral part of these financial statements.

Fund Level Expenses As of September 30, 2020		
Dead Deal Costs	$ -	$ 163,577
Audit & Tax	68,960	2,403,933
Other General & Administrative Costs	145,143	1,993,431
Investment Management Fees	519,939	7,103,925
Interest & Financing Costs	583,110	7,043,773
Organizational Costs	(14,025)	1,362,782
Total Fund Level Expenses	$ 1,303,127	$ 20,071,421

[1] *Other General & Administrative Costs primarily consist of accounting payroll, travel and entertainment.*

Organization and Business

Invesco Mortgage Recovery Fund II, L.P. (IMRF II), and Invesco Mortgage Recovery Fund II ESC L.P. (ESC), both Delaware limited partnerships, and Invesco Mortgage Recovery Fund II AIV, L.P. (AIV), a Cayman limited partnership, were formed with the objective of making investments in opportunistic and distressed real estate opportunities in the U.S. and Europe. Invesco Mortgage Recovery Master Associates II, LLC, a Delaware limited partnership serves as the general partner of the IMRF II and ESC. Invesco Mortgage Recovery Master Associates II AIV, L.P., a Cayman limited partnership, serves as the general partner of AIV. Limited partners hold the remaining interests.

IMRF II, ESC and AIV are collectively referred to herein as the Fund. The accompanying financial statements are presented on a combined basis because of common ownership. The Fund will terminate on October 14, 2021, unless it is otherwise extended or dissolved earlier in accordance with the terms of the partnership agreement.

Principles of Reporting

In the opinion of management, the unaudited combined financial statements reflect all adjustments necessary for a fair presentation of the Fund's financial position and unaudited results of operations in accordance with U.S. generally accepted accounting principles (GAAP). Further, in accordance with GAAP, the Fund qualifies as an investment company. Certain information and footnote disclosures normally included in the annual audited combined financial statements have been condensed or omitted. All significant intercompany balances and transactions have been eliminated.

Investments

The Fund's investments consist of equity and debt interests in underlying real estate assets. Earnings from investments are recognized to the extent cash has been received or dividends have been declared to the extent they result from operations of underlying investments. Income from loans is recognized as earned on an accrual basis and is reflected in investments on the statement of assets, liabilities and partners' capital. The "investments" balance in the accompanying financial statements reflects the Fund's allocable share of the fair value of the underlying assets.

Underlying real estate investments owned by the Fund contain certain expense payments made by Invesco Advisers, Inc. to third-party vendors that directly relate to the ongoing management/operations of the properties. These expenses include costs for third-party legal, software, tenant relations, property management assessment, regulatory compliance and IT support. They are typically billed back to the properties by Invesco twice per year but at least on an annual basis. Invesco has an established process for how these expenses are tracked and allocated to properties under management for each real estate product.

Investments are carried at cost (subject to adjustment for material events) for the twelve months following acquisition. Thereafter, each investment is valued on an annual basis. An intra-year valuation may be done for an investment if warranted due to material changes at the property or market level. Development investments are carried at cost if there have been no material changes to the initial investment premise as it is assumed that costs incurred to date are the best estimate of fair value. If it is determined that there has been a material change to the initial investment premise, a valuation will be performed.

The Fund generally bases the fair value of investments on discounted cash flow techniques for which the significant inputs are the amount and timing of expected future cash flows (generated by certain key assumptions including forecasted income, expenses, capital expenditures, and terminal value) and market yields required by investors for the risk profile.

Since the resulting valuations are based on estimates, the values reflected in the financial statements may materially differ from the values that would be determined by negotiations held between parties in a sales transaction.

Foreign Currency Translation

The Fund uses the currency of the primary economic environment in which it operates (its functional currency) for investments held outside of the U.S. Assets and liabilities are translated to U.S. dollars using exchange rates at the balance sheet date. Revenues and expenses are translated to U.S. dollars using average exchange rates during the year. The Fund does not isolate that portion of the result of operations resulting from changes in foreign exchange rates on investments from the fluctuation arising from changes in the value of its investments held.

Foreign Currency Forward Contracts

The Fund enters into foreign currency forward contracts with various counterparties to hedge against foreign currency exchange risk on its non-U.S. denominated investments or to facilitate settlement of a foreign currency denominated transaction. Foreign currency forward contracts are over-the-counter contracts for delayed delivery of currency in which the buyer and seller agree to buy/sell and deliver a specified currency at a specified price on a specified date. The foreign currency forward contracts are valued by an independent third-party who estimates the future values of the two currency tranches using forward exchange rates that are based on traded forward points and calculates a present value of the net amount using a discount factor based on observable traded interest rates. When a foreign currency forward contract is closed, through either delivery or offset by entering into another foreign currency forward contract, the Fund records a realized gain or loss equal to the difference between the value of the contract at the time it was entered into and the value of the contact at the time it was closed.

Foreign currency forward contracts involve elements of the market risk in excess of the amounts reflected in the statement of assets, liabilities and partners' capital. The Fund bears the risk of the unfavorable change in the foreign exchange rate underlying the foreign currency forward contract. Risks may also arise upon entering into these contracts from the potential inability of the counterparties to meet the terms of their contracts. The Fund does not enter derivative contracts for speculative purposes.

Partner Capital

Contributions: The Fund's final closing occurred on April 14, 2016. The investors have committed up to $334,018,854 of capital to the Fund. The partnership agreement calls for capital to be contributed by the investors in proportion to their respective committed capital amounts.

Distributions: The partnership agreement provides for distributions disproportionate to the investor's capital balance in the event that the preferred return, as defined, has been paid and all invested capital has been returned. Thereafter, incentive distributions will be made to the general partner in accordance with the terms of the partnership agreement. As of September 30, 2020, an incentive distribution in the amount of $14,333,659 would be due to the general partner if the Fund was liquidated.

Income Taxes

Since the Fund is structured as a partnership, no provision for income taxes is reflected in the accompanying combined financial statements of the Fund as the Fund's investors are responsible for reporting their allocable shares of the Fund's income or loss on their individual tax returns.

Valuation Policy

I. Overview – Internal Valuations

Invesco Real Estate employs a "mark-to-market" philosophy concerning the valuation of all investments. Inherent to this philosophy is the timely valuation of each asset such that significant fluctuations in market value are captured.

I. Timing & Frequency

- Initial Valuation - Investments are carried at cost (subject to adjustment for material events) in the first year following acquisition.
- Annual Valuations - Beginning with calendar year-end following the first anniversary of an investment's acquisition, each investment is valued in the fourth quarter of each calendar year during its holding period. Annual valuations are typically commissioned from third party appraisers, but alternative valuation methodologies may be employed in special circumstances.
- Intra-year Valuation – An investment will be valued, as warranted, due to material changes at the property or market level. Intra-year valuations may be performed by third party appraisers, internally by Invesco investment professionals, or by alternative methods deemed appropriate for the investment.

II. Methodology

- Third Party Valuations - Appraisers engaged by Invesco shall be unbiased and free from any conflicts of interest. An appraiser must be qualified to appraise the type of investment held in the portfolio, shall hold the appropriate licenses and/or designations to do so, and shall have been actively engaged in the appraisal of such real estate in the market in which the properties are located for an acceptable period of time. Invesco awards appraisal assignments based upon several factors, including: the amount of experience in the geographic area, experience with the property type, resource capacity at the time of the assignment, and competitive pricing. Upon completion of a draft, Invesco reviews the draft for adherence to professional guidelines, errors and omissions. Each appraisal report is required to conform to applicable valuation standards for the jurisdiction in which they are located.
- Internal Valuations - Internal valuations utilize the approaches and methodologies that are most applicable to value the type of investment. Upon completion of the internal valuations, the valuation is reviewed with the Invesco investment professionals and any adjustments that are deemed appropriate are made. Once the internal valuation is finalized with the portfolio/fund team, it is formally booked with accounting.
- Special Circumstances – For situations where the investment's complexity or uniqueness makes a third party valuation unfeasible, alternative methodologies may be employed, including utilizing an internal model that captures the complexity, or using the valuation performed by a partner in the investment which is then reviewed by Invesco. These valuation methodologies used in these special circumstances will be reviewed and approved by the IMRF II auditor.

NEPC, LLC

Firm:	**Ascent Venture Partners**
Strategy / Product:	**Venture Capital**
Client:	**MWRA Employees' Retirement Board**

NEPC Manager Due Diligence Questionnaire - Update

Instructions

In support of our upcoming meeting we ask that you please complete this due diligence questionnaire. Please provide your responses in the form of brief descriptions, lists or tables added directly to this Word document.

Thank you for taking the time to complete this questionnaire. Please note that your response will be part of the NEPC Research Database.

Firm / Organization

1. Have there been any changes in ownership or management in the past year?

   The firm was unable to raise the next fund, (in part from the onset of COVID-19). Since the new fund was not raised, the firm will not be making any new investments, and as a result Geoff Oblak has joined another Boston-based VC firm. He will continue to work closely on a contractual basis with the Ascent team, including his lead investment role in managing three portfolio companies in AVP V and AVP VI. The other team members (Burns, Dick, Girvan, Fates, and Scanlon) continue to manage the portfolio companies to outcomes for all of the remaining funds.

   As part of Geoff Oblak's transition, his ownership in the Management Company has been retired.

2. List firm AUM, net flows and accounts gained/lost for the past 5 years.

   Ascent Venture Partners ("Ascent"/the "Firm") has $430M of committed capital for the remaining 4 of 6 funds. The most recent fund, Ascent Venture Partners VI, L.P. is a 2015 vintage fund with $71.05M of committed capital.

3. Have there been any new or discontinued products in the past year?

   AVP I and AVP II have been terminated and dissolved in the normal course of the life of a fund in December 2019 and January 2020, respectively.

4. Are any products capacity constrained? **No**

5. Describe any current or pending regulatory, compliance or litigation issues and the expected business impact. **There are no current or pending regulatory, compliance or litigation issues.**

Portfolio Management Team

1. Have there been any changes in the portfolio management team in the past year?

   In addition to Geoff Oblak's transition, as noted above, Baiyin Murphy, Principal, left in the Fall of 2020 for a new opportunity as would be expected since the firm will not be making any new investments.

   Are there any expected changes to the team in the future (planned additions or departures)? **No**

Process

1. Have there been significant changes in any of the areas below in the past year?
   - Identification of investment ideas **No**
   - Process for exploring and vetting ideas **No**
   - Portfolio trading practices including buy/sell rules **No**
   - Approach to portfolio monitoring and risk management **No**

Philosophy

1. Describe recent changes in investment philosophy, if any. **None**

Portfolio

1. If not included in your meeting presentation, provide portfolio holdings, sector exposure, geographic exposure and common characteristics (yield, duration, market cap, P/E, etc.). **The meeting presentation includes the current portfolio holdings and appropriate performance information for venture capital.**

2. List strategy AUM, net flows and accounts gained/lost for the past 5 years. **The Firm has $430M of committed capital across the remaining 4 of its 6 funds all of which invest/have invested in a similar venture capital strategy. The funds have made capital calls and distributions in the normal course of operation over the last year.**

3. Describe investor concentration for the strategy and note the percent of AUM attributable to the top five investors. **As is typical of venture capital funds, Ascent has 38% of its committed capital concentrated in the top five investors (aggregated by common control). The risk commonly associated with investor concentration is mitigated by the long-term nature of the asset class and withdrawal restrictions common amongst venture capital funds.**

Performance / Market Outlook

1. If not included in your meeting presentation, provide trailing returns as of the most recent quarter-end and calendar year returns for the past 10 years, both relative to benchmark.

   The presentation contains venture capital appropriate performance returns.

2. Briefly discuss recent performance trends and identify environments in which the strategy is likely to be in or out of favor.

   All of the portfolio companies were impacted by COVID-19, and the performance expectations have been adjusted accordingly. The portfolio companies took steps to control costs and lengthen cash runway, including reductions in team size, salary reductions, furloughs and other expenses. The portfolio valuations have been adjusted to reflect lower expectations for 2020. The public markets have since rebounded; private markets may follow including many in our portfolio that already have. Many of the technology and digital trends have been accelerated by COVID-19, creating both risks and opportunities.

3. Describe your market outlook and how strategy positioning is impacted by your views.

   The long-term nature of a venture capital strategy mitigates some of the risk from short-term volatility of the public markets.

4. Could you please include a slide in your presentation that sows the MWRA's account history, initial contribution, cumulative subsequent contributions, cumulative subsequent distributions, gain/loss and current value.

5. **This data information is included on an account page in the presentation.**

ASCENT VENTURE PARTNERS

TRUSTED PARTNERS TO EXCEPTIONAL ENTREPRENEURS

Ascent Venture Partners

Update Presentation – MWRA Employees' Retirement System

February 2021

All performance data as of September 30, 2020

Investor Status – MWRA Employees' Retirement Board

As of September 30, 2020	AVP II	AVP IV	AVP IV-B	AVP V	AVP VI	Total
Commitment	$800,000	$2,000,000	$1,000,000	$2,000,000	$3,000,000	$8,800,000
Invested Capital	$774,806	$2,000,000	$967,836	$1,940,000	$2,580,000	$8,262,642
Distributions	$2,582,627	$311,176	$785,229	$1,298,211	$-0-	$4,977,243
Distributions as % of invested capital	333%	16%	81%	67%	0%	60%
Remaining Value	$-0-	$31,080	$155,950	$1,624,903	$2,726,317	$4,538,250
Remaining Value as % of invested capital	0%	2%	16%	84%	106%	55%
Value of Invested Capital	$2,582,627	$342,256	$941,179	$2,923,114	$2,726,317	$9,515,493
Value as % of invested capital	333%	17%	97%	151%	106%	115%

THE ASCENT TEAM:
TRUSTED PARTNERS TO ENTREPRENEURS

Luke Burns	Walter Dick	Matt Fates	Brian Girvan	Geoff Oblak	Tom Scanlon
GP	GP	GP	GP	GP	CFO

Continuity
Over 100 years of venture experience, most of it together at Ascent

Teamwork
Collaborative, team-oriented model

Consistent Focus
Early stage Enterprise IT

Leadership
Lead 100% of investments with active engagement with company mgmt.

ASCENT VENTURE PARTNERS

COVID-19: **PORTFOLIO IMPACT**

- All companies impacted by COVID-19 – performance expectations for 2020 have been adjusted accordingly

- Multiple steps taken to control expenses and lengthen cash runway on case by case basis:
  - Reductions in team size, salary reductions, furloughs and other expenses
  - Use of Government PPP Loans - $14M across 10 companies

- Q1 write downs in Ascent portfolio reflect lowered expectations for 2020
  - -10.2% across AVP V & AVP VI portfolios, in aggregate

- Public markets have rebounded, private markets are following
  - Many tech/digital trends have been accelerated by COVID-19

COVID-19: **FIRM IMPACT**

- Onset of the COVID-19 crisis in March caused a pullback in LP interest for our next fund
  - We made the tough decision to cease fundraising efforts
- Focus squarely remains on managing Ascent funds for optimal outcomes
  - We have the team and resources necessary to manage out the portfolio
- Ascent will not be making new investments, so our team resources will evolve over time
  - Geoff has joined another Boston-based VC
    - Geoff will continue to work closely with the Ascent team and manage three of his AVP V and AVP VI companies

AVP IV (2004): **PORTFOLIO SUMMARY**

AVP IV	Number of Investments	Cost ($M)	Value ($M)	Gross Multiple	Gross IRR	Net IRR	Net Multiple
Realized	16	143	146	1.0x	0.4%		
Unrealized	1	15	2	0.2x	-42.4%		
Total	**17**	**158**	**149**	**0.9x**	**-1.1%**	**-27.8%**	**0.2x**

- Net returns presented above are for original AVP IV LPs, AVP IV-B net IRR is -.8%
- AVP IV (original investors) is 100% drawn; AVP IV-B (secondary investors) is 97% drawn
- $29.3M was distributed to AVP IV-B in 2020 from the sale of two companies, Revulytics and TimeTrade. One company, BryterCX, remains
- All probable outcomes have no increase in capital account value for AVP IV original investors. Small distribution made in February 2021 from reduction in cash reserves

AVP IV (2004): **SUMMARY**

- Exited two companies this past year
- Distributed $27.8M in March of 2020 and $1.5M in June of 2020 to AVP IV-B investors
- Meaningful value remains for AVP IV-B investors
- All probable outcomes have no increase in capital account value for AVP IV original investors
- Distributed $688K in February of 2021 to AVP IV investors

AVP V (2008): **PORTFOLIO SUMMARY**

AVP V	Number of Investments	Cost ($M)	Value ($M)	Gross Multiple	Gross IRR	Net IRR	Net Multiple
Realized	4	21	60	2.8x	30.4%		
Unrealized	6	43	75	1.7x	7.5%		
Total	10	64	134	2.1x	13.5%	6.8%	1.5x

Active Portfolio: invaluable, Knoa Software, NOVA SCIENTIFIC, rapidminer, START/APP, vee|24

- Portfolio construction completed in 2015 - 97% of capital called to date
- Four of ten investments have exited thus far
    - Distributed $50M to LPs on contributed capital of $76M
- 4 of remaining 6 active companies have demonstrated fund driver potential

AVP V: **FUND PERFORMANCE**

		2020 REVENUE	COST	VALUE	CURRENT MULTIPLE	
REALIZED	CloudLock	Realized	$5.8M	$38.6M	6.7	DRIVER
	cargometrics	Realized	$6.1M	$12.8M	2.1	CONTRIBUTOR
	PerspecSys	Realized	$4.9M	$8.1M	1.6	CONTRIBUTOR
	ScaleBase	Realized	$4.3M	$0.0M	0.0	ASSET SALE
		SUBTOTAL:	**$21.0M**	**$59.5M**	**2.8**	
ACTIVE	invaluable	$27M	$5.6M	$15.0M	2.7	DRIVER
	START/APP	$18M	$5.8M	$14.8M	2.5	DRIVER
	NOVA SCIENTIFIC	$113M	$9.9M	$20.8M	2.1	DRIVER
	vee24	$4M	$6.1M	$9.9M	1.6	DRIVER
	rapidminer	$13M	$7.2M	$9.5M	1.3	CONTRIBUTOR
	Knoa Software	$5M	$8.0M	$4.6M	0.6	DEFENSIVE
		SUBTOTAL:	**$42.7M**	**$74.6M**	**1.7**	

AVP V: **SUMMARY**

Primarily responding to COVID-19 in 2020

- All companies have been proactive
- Reassessments have been made and actions taken including:
  - Reforecasts across the portfolio
  - Cost cutting and realignments (RIF's, furloughs, pay cuts)
  - Liquidity stopgaps, including selective use of the PPP loan program, where appropriate
  - Adapted business models, where needed

Focused on positioning companies to perform when New Normal occurs

- Companies are leaner
- Companies have adequate liquidity for now
- Some Companies are positioned to benefit from New Normal business trends

Will assess exit options when New Normal emerges and picture becomes clearer

- Distributed $50M to date
- 65% DPI for AVP V
- Positioning two companies to exit by the end of 2021

AVP VI (2015): **PORTFOLIO SUMMARY**

AVP V	Number of Investments	Cost ($M)	Value ($M)	Gross Multiple	Gross IRR	Net IRR	Net Multiple
Realized	0	0	0	0.0x	N/A		
Unrealized	9	53	67	1.3x	8.0%		
Total	9	53	67	1.3x	8.0%	1.8%	1.1x

Active Portfolio:

- 90% of capital has been called to date
- Portfolio construction complete
- 3 of 9 investments have already demonstrated fund driver potential
- Working with companies to best position for growth post COVID-19

AVP VI: **FUND PERFORMANCE**

	2020 REVENUE ($M)	COST	VALUE	CURRENT MULTIPLE	
SIDECAR	$17	$7.8M	$17.7M	2.3	DRIVER
splash	$22	$8.9M	$16.0M	1.8	DRIVER
Connected2Fiber	$5	$5.5M	$8.9M	1.6	DRIVER
promoboxx	$6	$4.9M	$7.3M	1.5	CONTRIBUTOR
cloudbees	$100	$4.6M	$4.7M	1.0	CONTRIBUTOR
NOVA SCIENCES	$39	$5.0M	$3.9M	0.8	NEW
GR8 PEOPLE	$4	$4.4M	$4.4M	1.0	DEFENSIVE
CPX SECURITY	$0.5	$6.4M	$3.3M	0.5	DEFENSIVE
empow You have it in you.	$1	$5.0M	$0.1M	0.0	DEFENSIVE
	TOTAL:	**$52.5M**	**$66.5M**	**1.3**	

AVP VI: **SUMMARY**

AVP VI in growth mode

- Portfolio construction complete, nine investments diversified across target sectors
- Called 90% of capital thus far
  - Expect to call 2% to 6% over next year for new and follow-on investments
- Intensive engagement with portfolio throughout the year to respond to COVID-19 impact, position companies for longer term success
- Portfolio still relatively immature with average age of 3.1 years, but beginning to segregate portfolio into Driver, Contributor and Defensive categories
- Working to maximize value of 3 Drivers, improve performance of 2 Contributors, limit additional capital into 3 Defensive companies unless prospects improve

NEPC, LLC

Firm: Loomis, Sayles & Company
Strategy / Product: Small Cap Growth & Multisector Full Discretion
Client: Massachusetts Water Resources Authority Retirement System

NEPC Manager Due Diligence Questionnaire - Update

Instructions

In support of our upcoming meeting we ask that you please complete this due diligence questionnaire. Please provide your responses in the form of brief descriptions, lists or tables added directly to this Word document.

Thank you for taking the time to complete this questionnaire. Please note that your response will be part of the NEPC Research Database.

Firm / Organization

1. Have there been any changes in ownership or management in the past year?

   No changes in the past year

2. List firm AUM, net flows and accounts gained/lost for the past 5 years.

   a. 12/31/2020 AUM: $347,751,715,702; 2,204 accounts

   b. Trailing 5 year net gain/loss: $16,776,467,769; +59 accounts

3. Have there been any new or discontinued products in the past year?

   No

4. Are any products capacity constrained?

   No

5. Describe any current or pending regulatory, compliance or litigation issues and the expected business impact.

Item 1. Ongoing Litigation – Firm Level:
In July 2011, the Loomis Sayles Credit Alpha Fund (the "Fund") was named as a defendant along with all former shareholders of the Tribune Corporation (the "Company") that received cash in exchange for shares of the Company in a public-to-private leveraged buyout in 2007 (the "LBO"). The Fund received $1,190,000 for the shares it owned at the time of the LBO. Within one year of the LBO, the company filed for Chapter 11 bankruptcy. Pre-bankruptcy bondholders and unsecured creditors seek to recover all amounts paid to the shareholder defendants ("Defendants") in connection with the LBO, with pre-bankruptcy interest, alleging that the LBO constituted a fraudulent conveyance by the Company. The entirety of this litigation has been consolidated in federal district court in New York. A settlement offer, which would have involved Defendants agreeing to repay 57.2% of the proceeds received, was rejected on the advice of counsel as premature, at the high end of the range of reasonableness, and not in the best interests of the Fund. In May 2014, Ropes & Gray, on behalf of shareholder defendants (including

Loomis) filed a Global Motion to Dismiss in the federal district court. In March 2016, the United States Court of Appeals for the Second Circuit upheld the federal district court's dismissal of the plaintiffs' claim of constructive fraudulent conveyance. The plaintiffs appealed this decision to the Supreme Court of the United States, which declined to hear the case. In January 2017, the federal district court dismissed the plaintiffs' second claim, for intentional fraudulent conveyance. This decision is subject to appeal. In February 2018 the U.S. Supreme Court issued a decision on the constructive fraudulent conveyance issue in a case from another circuit, which led to remand of the Second Circuit decision in the Tribune case. In June 2018, the federal district court judge required all parties in the various litigations that are part of Tribune to consider ways to pursue a global mediation process. Mediation occurred in the spring of 2019 and was unsuccessful. In December 2019, the Second Circuit upheld its previous dismissal of the plaintiffs' claim of constructive fraudulent conveyance, and in February 2020 denied plaintiffs' petition for rehearing. In July 2020 Plaintiffs petitioned the U.S. Supreme Court to review the Second Circuit's dismissal. In January 2020 the plaintiffs appealed the January 2017 dismissal of the intentional fraudulent conveyance claim, and oral arguments were heard in August 2020.

Last Material Update: 09/23/2020
Last Reviewed: 01/05/2021
Item 2. Ongoing Litigation – Firm Level:
Loomis, Sayles & Company, L.P. is defendant in a civil complaint initially filed in April 2014. The complaint alleges that Loomis Sayles misclassified a software engineer as an independent contractor, when he should have been an employee of Loomis Sayles under applicable Massachusetts statute. The complaint purports to represent a class of unnamed technology contractors the plaintiff claims were misclassified as contractors. In its answer, Loomis denied all the allegations. Loomis believes the plaintiff's case has no merit, and intends to vigorously defend its position in this matter. The plaintiff represented and certified that he was an employee in fact of a sub vendor, and his employer represented and certified to Loomis Sayles that it complied with all state and federal tax and employment laws applicable to the employment of this individual. Depositions began in January 2015. Discovery ended in late May 2015 and dispositive motions, including a motion for class certification by the plaintiff and a motion for summary judgment by Loomis Sayles, were filed at the end of June 2015. A hearing on various motions was held in September 2016. The judge denied plaintiff's motion for class certification and Loomis Sayles' motion for summary judgment. In April 2018, the trial judge issued a directed verdict in Loomis Sayles' favor, and the plaintiff appealed the verdict in May 2018. The Massachusetts Court of Appeals heard oral arguments in the case in September 2019 and in January 2020 reversed the directed verdict, remanding the case for retrial. In February 2020 Loomis Sayles appealed this decision to the Massachusetts Supreme Judicial Court. The appeal was denied, and preparations are underway for a retrial.
Last Material Update: 07/31/2020
Last Reviewed: 01/05/2021
Item 5. Resolved Regulatory Contact – Firm Level:
In July 2020, the Compliance and Registrant Regulation staff of the Ontario Securities Commission (OSC) notified Loomis, Sayles & Company, L.P. ("Loomis Sayles") that OSC would be conducting a review of Loomis Sayles. The purpose of the review is to gain a better understanding of Loomis Sayles' operations and business activities and compliance with Ontario securities law. In September 2020 the OSC notified Loomis Sayles that it should have filed a notice with the OSC regarding the transfer of client accounts from McDonnell Investment Management, LLC to Loomis Sayles, and Loomis Sayles filed such notice in October 2020.
Last Material Update: 10/30/2020

Last Reviewed: 01/05/2021

Portfolio Management Team

1. Have there been any changes in the portfolio management team in the past year?

   There have been no changes to the portfolio management team for the Small Cap Growth or Multisector Full Discretion products.

2. Are there any expected changes to the team in the future (planned additions or departures)?

   There are no expected changes to these teams in the future

Process

1. Have there been significant changes in any of the areas below in the past year?
   - Identification of investment ideas
   - Process for exploring and vetting ideas
   - Portfolio trading practices including buy/sell rules
   - Approach to portfolio monitoring and risk management

There has been no change to our core investment philosophy or process. We believe that research is a critical foundation for investment management excellence; however, no successful strategy remains static in a world of continuous change. We continue to seek to enhance our investment capabilities and refine our investment processes. We are constantly developing new analytical tools to assist our portfolio management teams in their quest for improved performance. Our goal is to deliver performance that meets or exceeds our clients' expectations.

While our philosophy has remained the same over the years, we continually enhance our process in order to provide our best possible service and performance for our clients.

We have made enhancements over the past several years to address the market dislocations and the rapid flow of information and the fixed income group has transformed itself into a team-driven organization. The reality is, this change has been organic and evolutionary. As the economic environment and markets change in nature, we believe it is essential to continually adapt our processes to meet the challenges we face. Mastering the art of teamwork never ends. In the quest for superior performance, we will continue to adjust and update our investment process, teams and oversight to help ensure the best outcome for our clients. Since 2002, we have implemented product teams, sector teams, risk analysis tools, and a state-of-the-art attribution system which encompasses a global process.

Philosophy

1. Describe recent changes in investment philosophy, if any.

   There has been no change to our core investment philosophy or process

Portfolio

1. If not included in your meeting presentation, provide portfolio holdings, sector exposure, geographic exposure and common characteristics (yield, duration, market cap, P/E, etc.).
   Included in the presentation

2. List strategy AUM, net flows and accounts gained/lost for the past 5 years.

   a. Multisector Full Discretion 12/31/2020 AUM: $31,590,476,217; 129 accounts

   b. Multisector Full Discretion trailing 5 year net gain/loss: $66,885,319; +24 accounts

   c. Small Cap Growth 12/31/2020 AUM: $4,899,972,754; 25 accounts

   d. Small Cap Growth trailing 5 year net gain/loss: $555,967,401.58; +9 accounts

3. Describe investor concentration for the strategy and note the percent of AUM attributable to the top five investors.

   a. % By AUM of Multisector Full Discretion: 8.85% Commingled, 4.26% Institutional Mutual Fund, 55.63% Retail Mutual Fund, 31.25% Separate Account,

   b. % By AUM of Small Cap Growth: 57.85% Retail Mutual Fund, 16.47% Separate Account, 11.93% Commingled, 13.74% Institutional Mutual Fund

Performance / Market Outlook

1. If not included in your meeting presentation, provide trailing returns as of the most recent quarter-end and calendar year returns for the past 10 years, both relative to benchmark.

   Included in presentation

2. Briefly discuss recent performance trends and identify environments in which the strategy is likely to be in or out of favor.

   a. For Multisector Full Discretion, please see the attached account 4Q20 mailer

   b. For Small Cap Growth, please see the attached 4Q20 Small Cap Growth mailer

3. Describe your market outlook and how strategy positioning is impacted by your views.

   a. For Multisector Full Discretion, please see the attached account 4Q20 mailer

   b. For Small Cap Growth, please see the attached 4Q20 Small Cap Growth mailer

4. Could you please include a slide in your presentation that sows the MWRA's account history, initial contribution, cumulative subsequent contributions, cumulative subsequent distributions, gain/loss and current value.

   Included in presentation

MWRA RETIREMENT SYSTEM

PRESENTED BY:
Fred Sweeney, CFA
Vice President, Fixed Income Product Manager

Noreen Drohan
Vice President, Product Manager

Michael Finocchi, CAIA
Vice President, Relationship Manager

LOOMIS | SAYLES

February 25, 2021

www.loomissayles.com | One Financial Center Boston, MA 02111
617 482-2450 | BOSTON CHICAGO DETROIT SAN FRANCISCO LONDON SINGAPORE UTRECHT

presented by:

FRED SWEENEY, CFA
Vice President, Fixed Income Product Manager

NOREEN DROHAN
Vice President, Product Manager

MICHAEL FINOCCHI, CAIA
Vice President, Relationship Manager

contents

loomis sayles at a glance

Serving clients **with integrity** and a **global perspective** since **1926**

BOSTON • CHICAGO • DETROIT • SAN FRANCISCO

LONDON • SINGAPORE • UTRECHT

AUM by client base

- US institutional
- Non-US institutional
- US retail
- Non-US retail

Investment expertise across asset classes

Fixed income: **$251.5 B** Equity: **$96.3 B**

- Investment Grade Corporates
- Equities
- Developed Country Treasurys
- Mortgage & Structured Finance
- High Yield Corporates
- Emerging Market Debt
- Municipals
- Other
- Bank Loans
- Government Related
- Convertible Bonds

As of 12/31/2020. The Utrecht office opened on November 1, 2020.
Due to rounding, pie chart total may not equal 100%.
Other includes cash & equivalents and derivatives.
Total AUM includes the assets of both Loomis, Sayles & Co., LP, and Loomis Sayles Trust Company, LLC. ($33.3 billion for the Loomis Sayles Trust Company).
Loomis Sayles Trust Company is a wholly owned subsidiary of Loomis, Sayles & Company, L.P.

foundation for alpha

CREDIT RESEARCH	EQUITY	MACRO STRATEGIES	MORTGAGE & STRUCTURED FINANCE	QUANTITATIVE RESEARCH & RISK ANALYSIS
Alpha generation through differentiated insights	*Driving alpha through independent thinking*	*Focused insights for investment team impact*	*Opportunities outside traditional asset classes*	*Bringing together the art and science of investing*
Providing insight and differentiated perspectives across the credit classes, risk spectrum, and capital structure	Active long-term strategies built on differentiated non-consensus insight	Tailor-made research and data driven assessments of global macro investment conditions, opportunities and risks	Uncovering hidden alpha in complex structured markets	Generating signals that can identify risk patterns and opportunities

TRADING	ESG	INVESTMENT RISK OVERSIGHT	TECHNOLOGY	BUSINESS INFRASTRUCTURE
Beyond trade execution	*Integrate and engage*	*Ensuring investment teams are meeting client needs & expectations*	*Translating data into insight*	*Allowing investors to remain focused on alpha generation*
+50 trading professionals integrated within all investment processes every step of the way	Training and tools for investment teams to assess material ESG factors	A common foundation underlying all strategies: • Sound philosophy • Rigorous, repeatable process • Proprietary research • Disciplined portfolio construction • Integrated risk management	Tapping the power of our proprietary In2! technology platform, integrating more than 5 billion data points each day	Legal, compliance, distribution, marketing, relationship management, & client services

alpha engines

FIXED INCOME

ALPHA STRATEGIES	BANK LOANS	DISCIPLINED ALPHA	EMERGING MARKET DEBT	EURO CREDIT†	FULL DISCRETION	GLOBAL	MORTGAGE & STRUCTURED FINANCE	MUNICIPAL	RELATIVE RETURN
Credit Asset Emerging Market Debt Blended World Credit Asset Multi-Asset Income Inflation Protected (TIPS) Systematic Investment Strategies	Senior Loans Senior Floating Rate and Fixed Income CLOs	Core Intermediate Corporate Long Corporate Long Gov't Corp Long Credit Global Disciplined Alpha**	Corporate Local Currency Short Duration Asia Credit	Euro Credit Sustainable Euro Credit Euro High Yield	Multisector Core Plus Full Discretion High Yield Full Discretion Global High Yield US High Yield High Yield Conservative Strategic Alpha	Global Bond Global Credit Global Debt Unconstrained Global Disciplined Alpha**	Agency MBS Core Securitized IG Securitized Credit (ERISA) High Yield Securitized Credit Private Debt and Equity	Short Intermediate Medium Crossover**	Short Duration Inter. Duration Core Core Plus IG Corporate IG Inter. Corp Long Corporate Long Credit Long Gov't/Credit Custom LDI
$9.5 B*	$4.1 B	$16.4 B	$3.2 B	-	$66.8 B	$37.4 B	$13.3 B*	$7.8 B	$106.6 B

EQUITY

GROWTH EQUITY STRATEGIES	GLOBAL EMERGING MARKETS EQUITY	GLOBAL EQUITY OPPORTUNITIES	SPECIALTY GROWTH STRATEGIES	SMALL CAP VALUE
All Cap Growth Global Growth International Growth Large Cap Growth Long/Short Equity	Global Emerging Markets Equity Global Emerging Markets Equity Long/Short	Global Allocation Global Equity Opportunities	Small Cap Growth Small/Mid Cap Growth Mid Cap Growth	Small Cap Value Small/Mid Cap Core
$77.2 B	$57.8 M***	$8.3 B	$7.2 B	$2.8 B

As of 12/31/2020.

**Includes accounts that may also be counted as part of other strategies **Co-managed investment strategy ***Assets include seed money from our parent company.*

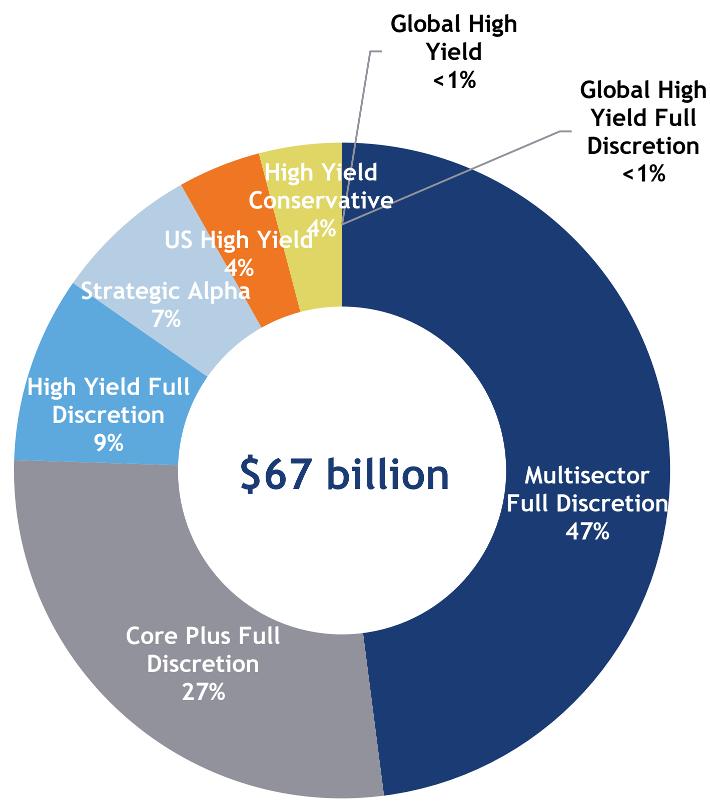
†The Euro Credit team joined Loomis Sayles on November 1, 2020. Funding provided by Natixis.

full discretion product

LOOMIS SAYLES FULL DISCRETION TEAM ASSETS UNDER MANAGEMENT

$67 billion as of December 31, 2020

	ASSETS ($ millions)
Multisector Full Discretion	31,590
Core Plus Full Discretion	17,865
High Yield Full Discretion	5,980
Strategic Alpha	4,419
US High Yield	2,946
High Yield Conservative	2,832
Global High Yield	671
Global High Yield Full Discretion	408



As of 12/31/2020. Due to rounding, pie chart total may not equal 100%.

LOOMIS | SAYLES®

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investment team

HIGHLY EXPERIENCED TEAM SUPPORTED BY DEEP FIRM RESOURCES

PRODUCT TEAM	MATT EAGAN, CFA Portfolio Manager	DAN FUSS, CFA* Portfolio Manager	BRIAN KENNEDY Portfolio Manager	ELAINE STOKES Portfolio Manager
Yrs of Industry Experience	30	62	30	33
Yrs with Firm	23	44	26	32

KEY SUPPORT

PORTFOLIO MANAGER	STRATEGISTS		PRODUCT MANAGEMENT	INVESTMENT ANALYSTS	PORTFOLIO SPECIALISTS
Todd Vandam, CFA	Scott Darci, CFA Bryan Hazelton, CFA Brian Hess	Vishal Patel, CFA Chris Romanelli, CFA Peter Sheehan	Ken Johnson Fred Sweeney, CFA Kristen Doyle	Shong Xiao, CFA Elizabeth Ditomasso**	Rigas Gartiganis Boeurn Kan-Crawford Matt Tierney Amy Steede

SPECIALTY RESEARCH†

CONVERTIBLES		DISTRESSED/RESTRUCTURING	CUSTOMIZED
Rich Crable Mark Ravanesi Olga Tatar, CFA	Greg Jones, CFA Matt Sabourin	Colin Wilson Murphy	Nicole Ranzinger Zachary South Ryan Yackel

SECTOR TEAMS

US Yield Curve		Global Asset Allocation		Developed Non-US Markets	
Inv Grade / Global Credit	Mortgage & Structured Finance	US Government	High Yield / Bank Loans	Emerging Markets	Convertibles

FIRM RESOURCES

Macro Strategies
2 Directors
Associate Director
Economist
Senior Quantitative Analyst
Senior Commodities Analyst
1 Senior Analyst
2 Senior Research Associates

Quant. Research & Risk Analysis
Director
2 Associate Directors
Director, LDI Solutions
Senior Quantitative Analyst
7 Quantitative Analysts

Credit Research
Director
2 Associate Directors
Head of Municipal Research
Head of Convertibles Research
37 Senior Analysts
11 Analysts
7 Research Senior Associates
8 Research Associates

Equity Research
12 Senior Analysts
9 Analysts
3 Research Associates

Mortgage & Structured Finance
Head
Portfolio Manager
4 Strategists
4 Senior Analysts
1 Research Analyst
2 Research Associates
Director, MSF Trading
4 MSF Traders/TAs

Sovereign Research
3 Senior Analysts
3 Analysts
1 Senior Associate

Fixed Income Trading
25 Traders/TAs
Director,
Portfolio Implementation
15 Portfolio Specialists
Director, Operational Trading Risk Mgt.
Risk Analyst

As of 12/31/2020. ^Full Discretion Strategies managed by this team include: Multisector Full Discretion, Strategic Income, Core Plus Full Discretion, and Investment Grade Fixed Income.
**Effective 3/1/21, Dan will move to Senior Advisor on the Full Discretion team and will no longer be a named Portfolio Manager on these strategies.*
***Investment Associate †Specialty Research resides within the Credit Research group.*

guideline summary

BENCHMARK

- Bloomberg Barclays Capital US Government/Credit Index

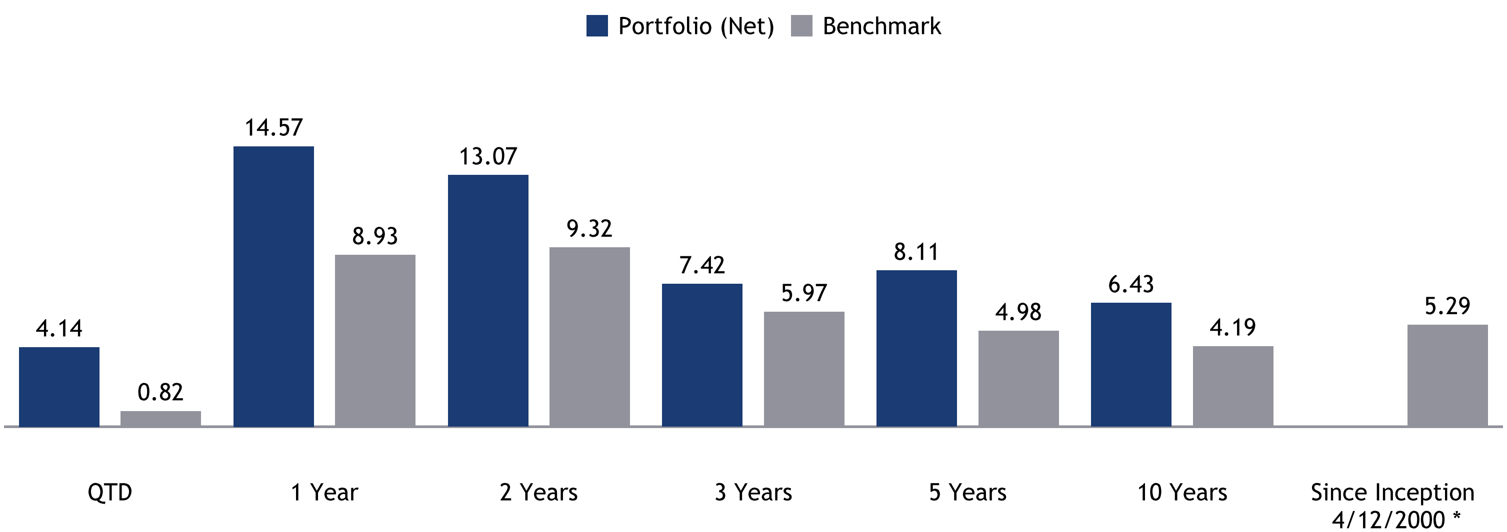
GUIDELINES & LIMITATIONS

- Minimum Credit Quality: Account must hold at least 65% MV rated equal to or above Moody's, S&P or Fitch, Baa3/BBB-/BBB-, at the time of purchase. Loomis rating applies if security is not rated by S&P, Moody's, or Fitch.
- Split Rated Securities: Higher rating will govern split-rated securities.
- Issue: May not hold more than 5% MV in any one issue, excluding US Treasuries & Government Agencies, the LS Senior Loan Fund and the LS Full Discretion Securitized Asset Fund at the time of purchase.
- Investment Classes: The portfolio may invest up to 15% in the LS Full Discretion Institutional Securitized Fund at the time of purchase.
- Investment Classes: Account may not purchase or hold mutual funds excluding the Senior Floating Rate Fund LLC and the Loomis Sayles Full Discretion Institutional Securitized Fund
- Convertibles & Residual Equity: 10% in Common stock, at the time of purchase.
- Industry Concentration: No industry, as defined by Bloomberg Barclays Capital, except securities issued or guaranteed by the U.S. Government, its agencies, instrumentalities, or government sponsored entities will comprise more than 25% of the market value of the Fund, at the time of purchase.
- Currency: 60% minimum in US dollar denominated securities, including cash and cash equivalents, at the time of purchase.

Guideline summary is not a complete restatement of guidelines. The slide is intended to be a summary to aid in the review process.

performance

TRAILING RETURNS AS OF 12/31/2020 (%)



	QTD	1 Year	2 Years	3 Years	5 Years	10 Years	Since Inception 4/12/2000 *
Excess Return (Net)	+3.32	+5.65	+3.75	+1.45	+3.13	+2.24	

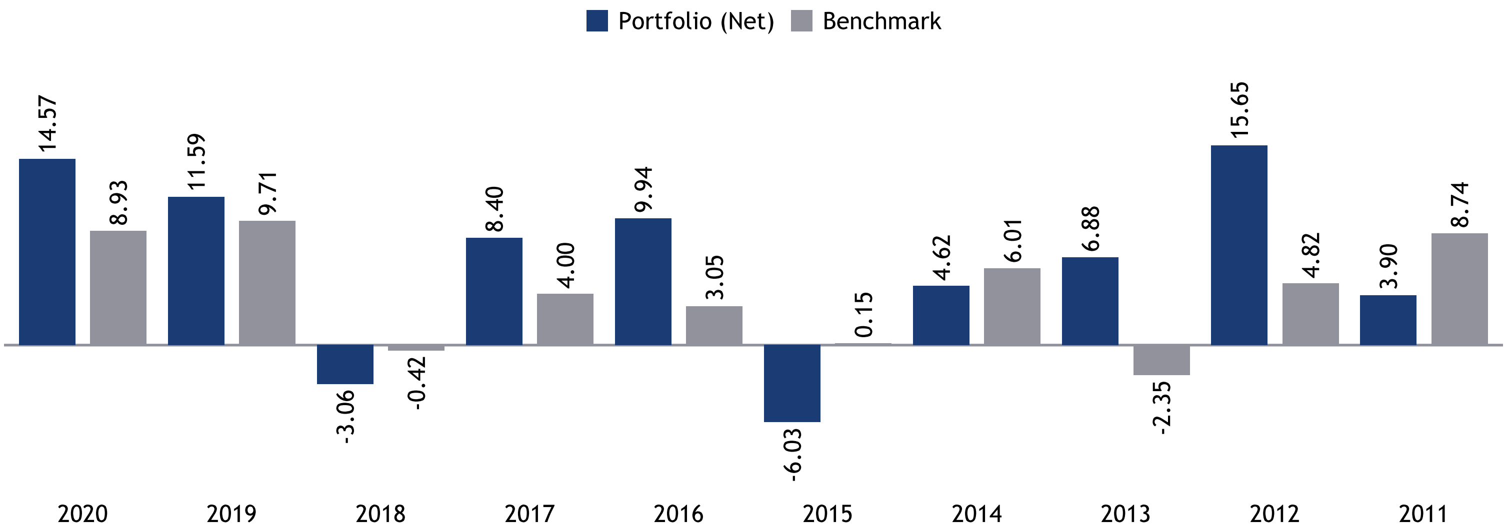
PORTFOLIO VALUATION (USD)

	Portfolio 12/31/2019	Portfolio 12/31/2020
Total	38,695,790	49,758,220

Benchmarks: BBG BARC Govt Credit (4/12/2000 - 12/31/2020).
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index.
** Net returns only available from 12/31/2000.*

performance

CALENDAR YEAR RETURNS AS OF 12/31/2020 (%)



	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Excess Return (Net)	+5.65	+1.88	-2.64	+4.40	+6.89	-6.18	-1.39	+9.23	+10.83	-4.84

Benchmarks: BBG BARC Govt Credit (4/12/2000 - 12/31/2020).
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index.

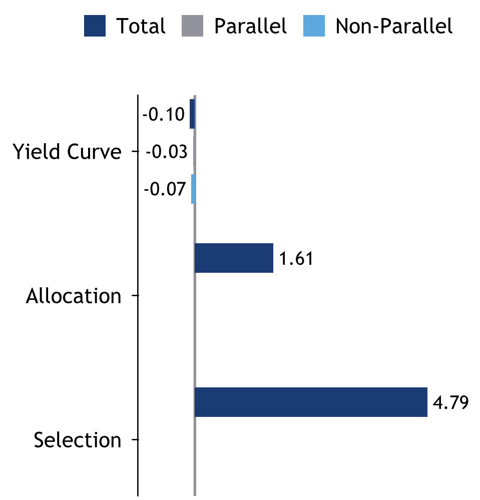
attribution analysis

12/31/2019 TO 12/31/2020

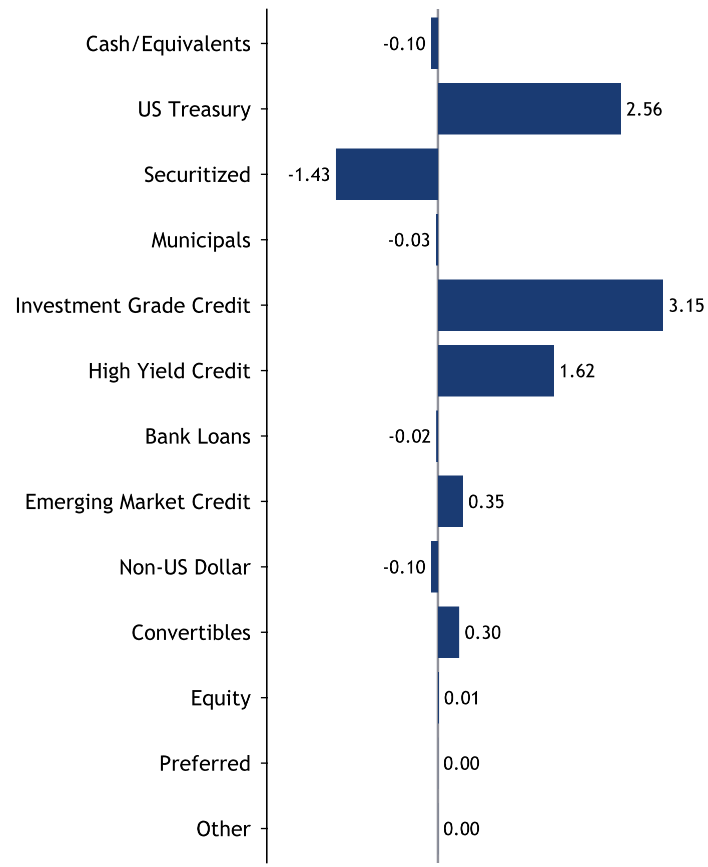
TOTAL RETURNS

	Total Return
Portfolio Return	15.09
Benchmark Return	8.92
Excess Return	6.17

EXCESS RETURN ATTRIBUTION



EXCESS RETURN ATTRIBUTION BY SECTOR



Figures on the bar chart may not add up to total excess return as they exclude impact of trading and pricing differences.
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index.

attribution analysis

12/31/2019 TO 12/31/2020

SECTOR DISTRIBUTION

	Portfolio Final Weight	Benchmark Final Weight	Portfolio Average Weight	Benchmark Average Weight	Portfolio Return	Benchmark Return	Total Effect
Investment Grade Credit	44.93	44.67	43.44	42.67	14.49	9.35	3.15
US Treasury	9.73	51.93	13.50	54.01	13.93	8.00	2.56
High Yield Credit	14.37	0.02	12.44	0.00	1.58	5.97	1.62
Emerging Market Credit	5.96	2.32	4.87	2.31	9.37	5.94	0.35
Convertibles	4.66	0.00	2.66	0.00	12.04	8.93	0.30
Equity	1.33	0.00	0.28	0.00	-57.15	8.93	0.01
Other	0.00	0.00	0.00	0.00	0.00	0.11	0.00
Preferred	0.00	0.00	0.00	0.00	0.08	8.93	0.00
Bank Loans	0.45	0.00	0.52	0.00	5.67	8.93	-0.02
Municipals	0.00	1.05	0.00	1.00	0.00	12.11	-0.03
Non-US Dollar	0.08	0.00	0.43	0.00	8.16	8.93	-0.10
Cash/Equivalents	2.28	0.00	2.92	0.00	-0.56	8.93	-0.10
Securitized	16.20	0.00	18.95	0.00	4.91	8.93	-1.43

Total Effects are impacted by sector returns, allocation shifts and market timing. Total Effect includes yield curve impact.
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index.

attribution analysis

12/31/2019 TO 12/31/2020

TOP 10 INDUSTRIES BY TOTAL EFFECT

	Portfolio Weight	Benchmark Weight	Total Effect
Treasuries	14.31	54.01	2.42
Communications	10.65	3.45	1.23
Consumer Cyclical	6.16	2.67	0.97
Consumer Non Cyclical	9.23	6.23	0.81
Capital Goods	4.28	2.08	0.81
Banking	7.01	8.08	0.59
Technology	5.01	3.31	0.35
Finance Companies	2.86	0.34	0.33
Basic Industry	4.62	1.10	0.27
Owned No Guarantee	0.41	1.75	0.09

BOTTOM 10 INDUSTRIES BY TOTAL EFFECT

	Portfolio Weight	Benchmark Weight	Total Effect
Non Agency CMBS	1.42	0.00	-0.46
ABS Other	2.94	0.00	-0.46
Car Loan	4.78	0.00	-0.24
Energy	5.07	3.02	-0.24
Whole Business	1.83	0.00	-0.15
Reits	2.40	1.00	-0.13
Student Loan	1.47	0.00	-0.06
Credit Card	0.42	0.00	-0.05
Insurance	2.15	1.67	-0.04
Home Equity	5.57	0.00	-0.04

Out-of-benchmark allocations defaulted to security selection.
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index.

attribution analysis

12/31/2019 TO 12/31/2020

TOP 10 ISSUERS BY TOTAL EFFECT

	Portfolio Weight	Benchmark Weight	Total Effect
U S TREASURY	14.06	52.35	2.52
Boeing Co/The	1.17	0.19	0.43
Charter Communications Inc	2.44	0.25	0.32
Morgan Stanley	0.83	0.50	0.25
Kraft Heinz Co/The	0.84	0.02	0.24
General Motors Co	1.38	0.24	0.22
Anheuser-Busch InBev SA/NV	0.56	0.39	0.22
ViacomCBS Inc	0.55	0.11	0.22
T-Mobile US Inc	0.75	0.10	0.21
Expedia Group Inc	0.77	0.02	0.21

BOTTOM 10 ISSUERS BY TOTAL EFFECT

	Portfolio Weight	Benchmark Weight	Total Effect
Whiting Petroleum Corp	0.11	0.00	-0.27
Continental Resources Inc/OK	0.44	0.01	-0.16
ELEMENT COMM AVIATION	0.06	0.00	-0.14
Service Properties Trust	0.35	0.01	-0.13
WFRBS	0.15	0.00	-0.11
Sarepta Therapeutics Inc	0.08	0.00	-0.11
Chesapeake Energy Corp	0.02	0.00	-0.10
Rede DOR Finance Sarl	0.18	0.00	-0.09
Seven Generations Energy Ltd	0.11	0.00	-0.07
CREDIT SUISSE MTG CAP CERTIFICATES	0.31	0.00	-0.07

The current benchmark is Bloomberg Barclays U.S. Government/Credit Index.

attribution analysis

12/31/2019 TO 12/31/2020

CURRENCY DISTRIBUTION

	Portfolio Weight Pre-Hedge	Portfolio Weight Post-Hedge	Currency Contribution	Bond Contribution	Hedging Effect	Total Effect
Argentine Peso	0.16	0.16	-0.05	0.12	0.00	0.07
Brazilian Real	0.04	0.04	-0.03	0.00	0.00	-0.03
Canadian Dollar	0.42	0.10	0.00	-0.02	-0.01	-0.03
Malaysian Ringgit	0.08	0.08	-0.01	-0.02	0.00	-0.03
Norwegian Krone	0.08	0.08	-0.05	-0.02	0.00	-0.06
US Dollar	99.13	99.13	0.00	6.44	0.00	6.44
Unrealized FX Gain/Loss	0.00	0.00	0.00	0.00	0.00	0.00
Australian Dollar	0.03	0.03	-0.02	-0.01	0.00	-0.03
Euro	0.02	0.02	-0.01	0.00	0.00	-0.01
Mexican Peso	0.02	0.02	0.00	0.00	0.00	0.00
New Zealand Dollar	0.02	0.02	-0.01	0.00	0.00	-0.01
Swedish Krona	0.02	0.02	-0.01	0.00	0.00	-0.01

Weights reflect end of period holdings. Effects are as of the entire period. Bond Contribution is the sum of Country Allocation and Local Market effects.
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index.

portfolio summary

AS OF 12/31/2020

	Portfolio 12/31/2020	Benchmark 12/31/2020	Portfolio 12/31/2019	Benchmark 12/31/2019
Yield to Worst (%)	2.66	1.07	3.59	2.22
Effective Duration (years)	7.54	7.68	6.13	6.88
Effective Maturity (years)	10.08	9.80	8.20	9.12
OAS * (bps)	184	42	148	38
Coupon (%)	3.79	2.65	4.17	3.02
Current Yield (%)	3.48	2.38	3.95	2.84
Average Quality	BAA2	AA3	A3	AA3
Number of Securities	682	8,183	410	7,396
Number of Issuers	329	998	225	947

Quality	Portfolio 12/31/2020	Benchmark 12/31/2020	Portfolio 12/31/2019	Benchmark 12/31/2019
AAA	14.07	57.80	30.00	61.14
AA	3.03	6.57	2.12	6.43
A	11.28	18.98	16.56	17.99
BAA	47.38	16.63	38.77	14.44
BA	14.92	0.02	8.73	0.00
B	6.30	0.00	2.39	0.00
CAA	1.58	0.00	0.86	0.00
CA	0.06	0.00	0.11	0.00
C	0.03	0.00	0.08	0.00
NR	1.35	0.00	0.36	0.00

** OAS is option adjusted spread.*
Client Guideline Quality Methodology presented.
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index.

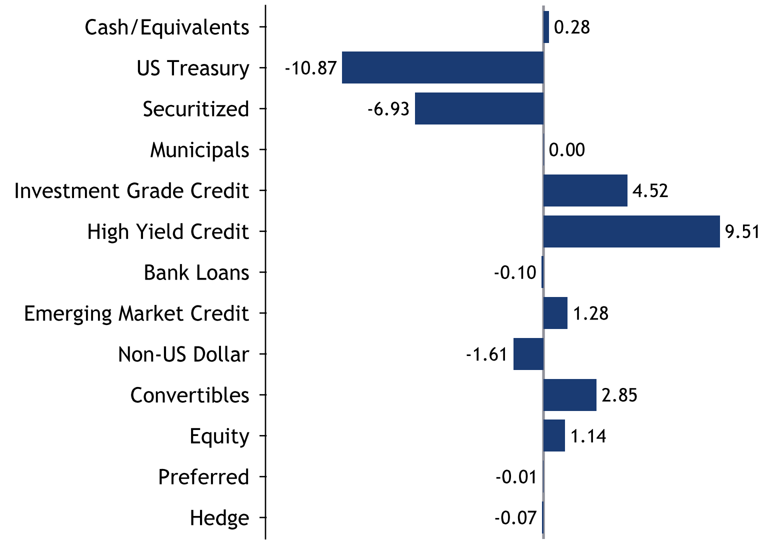
sector allocation

12/31/2019 TO 12/31/2020 (%)

SECTOR DISTRIBUTION

	Portfolio 12/31/2020	Over/Under Weight
Cash/Equivalents	2.28	2.28
US Treasury	9.73	-42.20
Securitized	16.20	16.20
Municipals	0.00	-1.05
Investment Grade Credit	44.93	0.26
High Yield Credit	14.37	14.35
Bank Loans	0.45	0.45
Emerging Market Credit	5.96	3.63
Non-US Dollar	-0.23	-0.23
Convertibles	4.66	4.66
Equity	1.33	1.33
Preferred	0.00	0.00
Hedge	0.31	0.31

SECTOR ALLOCATION CHANGE



The current benchmark is Bloomberg Barclays U.S. Government/Credit Index.

country of risk allocation

AS OF 12/31/2020

Total Developed Countries Exposure	Portfolio Weight %	Benchmark Weight %
Developed	93.93	97.69
Americas	85.35	89.95
United States	83.78	88.36
Canada	0.73	1.57
Cayman Islands	0.47	0.00
Bermuda	0.38	0.02
Asia	0.00	0.93
Other	0.00	0.93
Europe	7.42	4.47
United Kingdom	2.69	1.77
France	1.00	0.20
Germany	0.84	0.70
Spain	0.59	0.19
Belgium	0.44	0.45
Ireland	0.44	0.08
Netherlands	0.44	0.46
Norway	0.35	0.11
Denmark	0.26	0.00
Luxembourg	0.20	0.00
Finland	0.16	0.00
Other	0.00	0.51
Oceania	1.08	0.26
Australia	1.08	0.26
Supranational **	0.08	2.09
Supranational	0.08	2.09

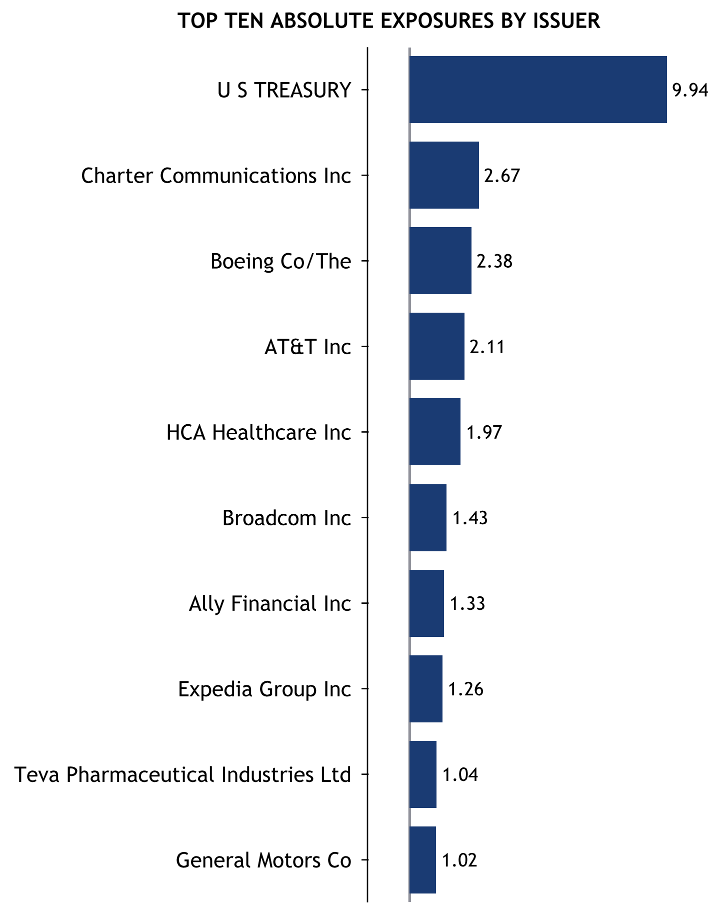
Total EM Countries Exposure (USD & Non USD)	Portfolio Weight %	Benchmark Weight %
Emerging Markets *	6.07	2.31
Africa	1.25	0.00
South Africa	0.77	0.00
Zambia	0.48	0.00
Americas	3.18	1.38
Mexico	1.91	0.53
Brazil	0.81	0.09
Argentina	0.25	0.00
Colombia	0.17	0.26
Chile	0.05	0.08
Other	0.00	0.41
Asia	0.18	0.73
India	0.16	0.00
China	0.03	0.23
Other	0.00	0.49
Europe	0.00	0.10
Other	0.00	0.10
Middle East	1.45	0.10
Israel	1.11	0.10
Saudi Arabia	0.34	0.00
Total	100.00	100.00

Non Dollar Exposure	Portfolio Weight %	Benchmark Weight %
Total Non USD †	0.17	0.00
Developed	0.08	0.00
Canadian Dollar	0.08	0.00
Emerging Markets	0.09	0.00
Argentine Peso	0.09	0.00

** Emerging markets includes countries with middle or low income economies, as designed by the World Bank, also taking into consideration capital market liquidity and accessibility.*
*** Supranational includes debt from an entity sponsored by a combination of multiple governments to promote economic development.*
† Values shown include impact of hedging, if utilized.
Due to active management, country and currency allocation will evolve over time. Due to rounding, totals may not equal 100%.
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index.

absolute exposures by issuer

AS OF 12/31/2020 (%)



The current benchmark is Bloomberg Barclays U.S. Government/Credit Index.

SMALL CAP GROWTH

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specialty growth strategies

INVESTMENT TEAM

PORTFOLIO MANAGEMENT	MARK BURNS, CFA Portfolio Manager	JOHN SLAVIK, CFA Portfolio Manager
Yrs in industry	24	29
Yrs with Firm	21	15

DEDICATED ANALYSTS	James Lamb, CFA	Chris O'Brien, CFA	Nathaniel Roberts	Anand Vankawala
Yrs in industry	16	27	19	11
Yrs with Firm	12	7	13	3

DEDICATED INVESTMENT ASSOCIATES	Samuel Eneh	Colin Hickey
Yrs in industry	1	1
Yrs with Firm	1	1

PRODUCT MANAGEMENT	Noreen Drohan
Yrs in industry	15
Yrs with Firm	15

As of 12/31/2020.

strategy overview

TEAM HIGHLIGHTS

Team assets under management

- $4.9 billion – Small Cap Growth
- $2.3 billion – Small/Mid Cap Growth
- $7.1 million – Mid Cap Growth

Product Capacity

- Small Cap Growth – institutional separate account and collective trust currently closed to new investors; other vehicles remain open
- Small/Mid Cap Growth - approximately $3 billion
- Mid Cap Growth – approximately $10 billion

Clients include

- Endowment/Foundation, Corporate, Taft-Hartley, Public Funds, Sub-advisory, Mutual Fund

As of 12/31/2020.
Team assets under management are aggregated from all vehicles managed by the team. Not all vehicles are available for all investors.

account overview

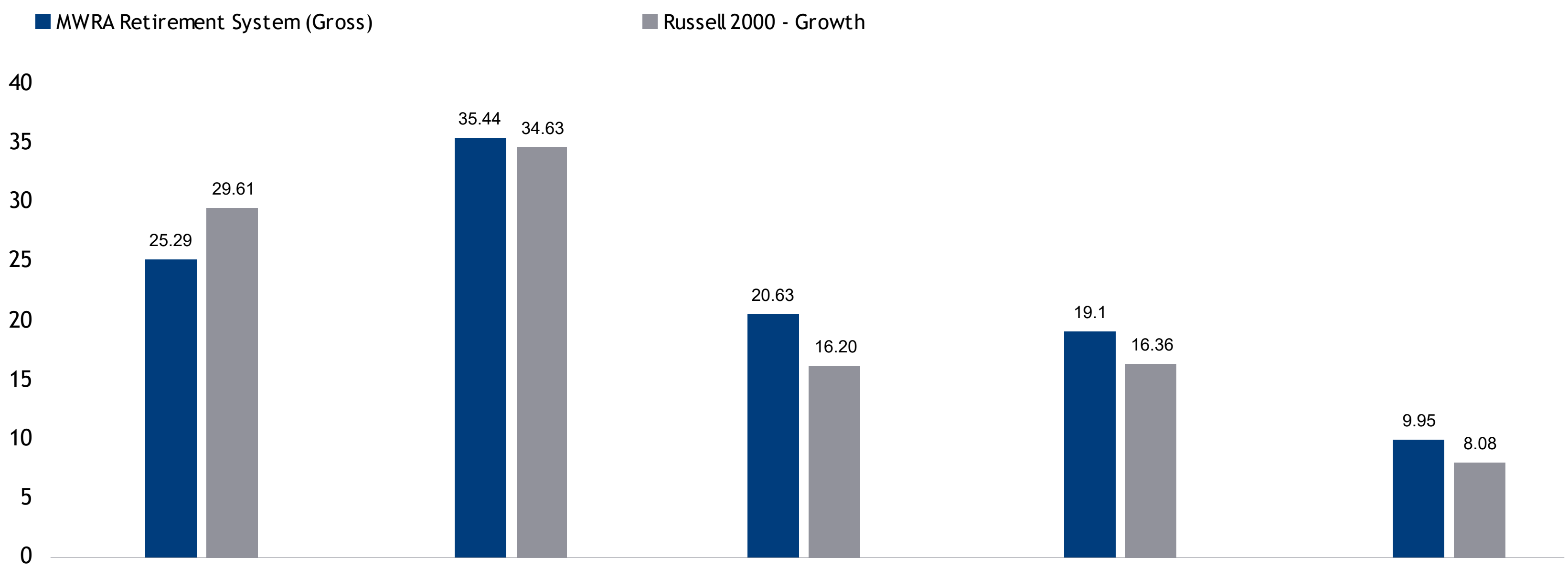
SINCE INCEPTION 1/8/1997

MWRA Retirement System	
Initial Investment (1/8/1997)	$2,500,000
Client Cash Additions	$4,045,737
Client Security Additions	$6,948,954
Client Cash Withdrawals	$-20,000,000
Income Earned	$758,890
Fees/Expenses/Adjustments	$14,219
Realized Gains/Losses	$22,160,851
Unrealized Gains/Losses	$9,185,113
Total Market Value at 12/31/2020	**$23,113,764**

This report is a service provided to customers of Loomis Sayles. It is for informational purposes only. It is not a recommendation to buy or sell securities. Past performance is not a guarantee of future results. Loomis Sayles believes the information contained herein is reliable but we do not guarantee its accuracy.

investment results

TRAILING RETURNS AS OF 12/31/2020 (%)



	4Q20	1 year	3 years	5 years	Since Inception 1/8/97
Portfolio (Gross)	25.29	35.44	20.63	19.11	9.95
Benchmark	29.61	34.63	16.20	16.36	8.08
Excess Return	-4.32	0.81	4.43	2.75	1.87

For periods longer than one year, all returns are annualized. Data Source: Bloomberg, Russell/Mellon Analytical Serv

market overview

REVIEW & OUTLOOK

- The fourth quarter ended with robust positive returns for many markets as small cap stocks significantly outperformed large cap stocks. The US election and positive COVID-19 vaccine news helped to push returns higher. The Russell 2000 index posted its best quarter on record.
- Despite a global pandemic, equity markets staged an incredible comeback off the market bottom in March; the rally was even more powerful than what we saw coming out of the Global Financial Crisis in 2009.
- The stocks that led the charge off the bottom were the usual leaders in a market like this: highest beta, lower quality, smaller market cap.
- 2020 ended an incredibly powerful two years for the strategy on an absolute return basis.
- In the near-term as we work through vaccine distribution in the face of surging COVID-19 cases, there may be some increased volatility and weaker economic data, but beyond that towards the latter part of 2021 there could be significant economic improvement as Main Street catches up.

As of 12/31/2020

performance attribution

QUARTERLY PERFORMANCE THROUGH 12/31/2020

Contribution from stock selection:	-3.66%
Contribution from sector allocation:	-0.64%
Net Outperformance	-4.30%

Top 5 Contributing Issuers	Total Return (%)	Contribution to Total Return (BPS)
Rocket Pharmaceuticals, Inc.	139.90	86
MyoKardia, Inc.	64.85	82
Goosehead Insurance, Inc. Class A	44.08	75
FormFactor, Inc.	72.56	72
Five9, Inc.	34.48	66

Bottom 5 Contributing Issuers	Total Return (%)	Contribution to Total Return (BPS)
Palomar Holdings, Inc.	-29.89	(60)
Inovalon Holdings, Inc. Class A	-30.93	(51)
iRhythm Technologies, Inc.	-22.49	(30)
Emergent BioSolutions Inc.	-17.15	(14)
Insmed Incorporated	-16.58	(9)

Top 3 Contributing Sectors to Relative Return	Total Return (%)	Contribution to Relative Return (BPS)
Real Estate	0.00	28
Consumer Staples	27.93	26
Materials	0.00	12

Bottom 3 Contributing Sectors to Relative Return	Total Return (%)	Contribution to Relative Return (BPS)
Health Care	26.04	(155)
Industrials	24.38	(112)
Financials	11.75	(98)

The current benchmark is Russell 2000 - Growth. Benchmark sectors reflect S&P sectors. Where a security is bought and/or sold within the period, in-portfolio return may not equal stock's return during calendar period. Contribution to relative return reflects the sum of allocation and selection effects. Data Source: Factset

performance attribution

QUARTERLY PERFORMANCE - THROUGH 12/31/2020 (%)

	Account			Russell 2000 - Growth			Attribution Analysis		
Sector	Average Weight	Total Return	Contrib to Return	Average Weight	Total Return	Contrib to Return	Allocation Effect	Selection Effect	Total Effect
Real Estate	0.00	0.00	0.00	3.60	20.48	0.76	0.28	0.00	0.28
Consumer Staples	3.39	27.93	0.92	3.09	16.76	0.56	-0.05	0.31	0.26
Materials	0.00	0.00	0.00	2.56	23.06	0.63	0.12	0.00	0.12
Utilities	0.00	0.00	0.00	1.67	22.74	0.40	0.08	0.00	0.08
Communication Services	0.71	34.46	0.23	2.28	26.52	0.61	0.03	0.03	0.06
Information Technology	24.90	35.16	8.31	20.58	35.98	7.13	0.22	-0.25	-0.03
Energy	0.00	0.00	0.00	0.15	37.73	0.06	-0.03	0.00	-0.03
Consumer Discretionary	11.18	20.23	2.32	13.77	23.80	3.38	0.09	-0.36	-0.27
Financials	7.93	11.75	1.15	4.21	22.29	1.00	-0.24	-0.73	-0.98
Industrials	17.86	24.38	4.33	13.71	31.14	4.21	0.03	-1.15	-1.12
Health Care	30.30	26.04	8.04	34.40	31.82	10.86	-0.04	-1.51	-1.55
Cash	3.72	0.02	0.00	0.00	0.00	0.00	-1.13	0.00	-1.13
Total	**100.00**	**25.29**	**25.29**	**100.00**	**29.59**	**29.59**	**-0.64**	**-3.66**	**-4.30**

For periods longer than one year, all returns are annualized. Benchmark sectors reflect S&P sectors. Attribution analysis is shown for account as supplemental information. Where a security is bought and/or sold within the period, in-portfolio return may not equal stock's return during calendar period. Data Source: Factset

performance attribution

ONE YEAR PERFORMANCE THROUGH 12/31/2020

Contribution from stock selection:	-0.14%
Contribution from sector allocation:	1.43%
Net Outperformance	1.28%

Top 5 Contributing Issuers	Total Return (%)	Contribution to Total Return (BPS)
Five9, Inc.	165.93	300
Quidel Corporation	112.43	288
Freshpet Inc	140.29	253
Goosehead Insurance, Inc. Class A	197.45	208
Kinsale Capital Group, Inc.	97.28	170

Bottom 5 Contributing Issuers	Total Return (%)	Contribution to Total Return (BPS)
Chefs' Warehouse, Inc.	-87.27	(159)
Essent Group Ltd.	-62.83	(138)
Laureate Education, Inc. Class A	-47.70	(138)
NMI Holdings, Inc. Class A	-65.97	(134)
Hexcel Corporation	-57.63	(130)

Top 3 Contributing Sectors to Relative Return	Total Return (%)	Contribution to Relative Return (BPS)
Real Estate	0.00	156
Financials	35.87	140
Information Technology	48.17	114

Bottom 3 Contributing Sectors to Relative Return	Total Return (%)	Contribution to Relative Return (BPS)
Consumer Discretionary	-2.47	(446)
Energy	-72.91	(99)
Industrials	31.57	6

The current benchmark is Russell 2000 - Growth. Benchmark sectors reflect S&P sectors. Where a security is bought and/or sold within the period, in-portfolio return may not equal stock's return during calendar period. Contribution to relative return reflects the sum of allocation and selection effects. Data Source: Factset

performance attribution

ONE YEAR PERFORMANCE - THROUGH 12/31/2020 (%)

	Account			Russell 2000 - Growth			Attribution Analysis		
Sector	Average Weight	Total Return	Contrib to Return	Average Weight	Total Return	Contrib to Return	Allocation Effect	Selection Effect	Total Effect
Real Estate	0.00	0.00	0.00	4.00	7.59	-0.90	1.56	0.00	1.56
Financials	8.15	35.87	1.19	4.94	17.30	-0.04	-0.13	1.53	1.40
Information Technology	23.65	48.17	13.51	19.45	44.43	9.70	0.68	0.46	1.14
Health Care	29.55	55.66	21.48	33.25	48.25	19.77	-0.58	1.63	1.05
Materials	0.00	0.00	0.00	2.70	6.79	0.00	0.93	0.00	0.93
Consumer Staples	3.08	38.62	0.89	3.21	18.05	0.67	0.09	0.63	0.72
Utilities	0.00	0.00	0.00	1.68	8.42	0.12	0.64	0.00	0.64
Communication Services	1.23	10.90	-0.33	2.39	13.96	0.26	0.37	0.06	0.43
Industrials	20.10	31.57	3.25	15.73	35.57	1.48	0.28	-0.22	0.06
Energy	0.29	-72.91	-2.07	0.27	-33.78	-0.39	-0.74	-0.25	-0.99
Consumer Discretionary	9.81	-2.47	-2.03	12.39	32.17	3.93	-0.48	-3.98	-4.46
Cash	4.13	0.36	0.02	0.00	0.00	0.00	-1.19	0.00	-1.19
Total	**100.00**	**35.90**	**35.90**	**100.00**	**34.62**	**34.62**	**1.43**	**-0.14**	**1.28**

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For periods longer than one year, all returns are annualized. Benchmark sectors reflect S&P sectors. Attribution analysis is shown for account as supplemental information. Where a security is bought and/or sold within the period, in-portfolio return may not equal stock's return during calendar period. Data Source: Factset

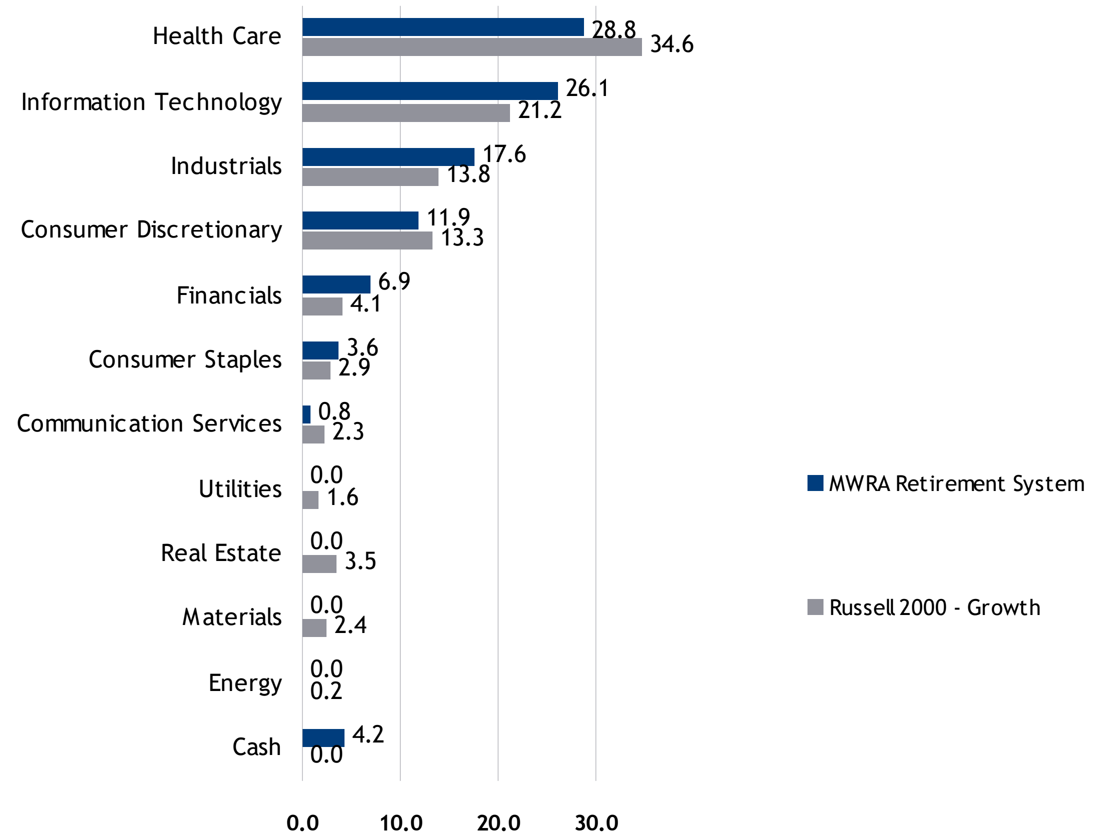
4Q20 investment highlights

BUYS	SELLS
Axonics Modulation Technologies • Medical device company with neuromodulation technology for overactive bladder, which we believe is a $1 billion market • Second generation product approved with an additional device anticipated to enhance its product offering • Expectation to take market share from established competitor while also further penetrating total addressable market	**Generac** • Manufacturer of standby generators • Company has seen robust demand due to a number of drivers • Sold after the company reached our maximum market cap
MaxLinear • MaxLinear Inc is a semiconductor company that provides analog and mixed-signal products for broadband communication applications. • The company is undergoing a positive evolution toward stronger growth, due to a recent acquisition that materially improves their core position in connected home products and higher faith in management based on the new CFO	**iRhythm Technologies** • iRhythm Technologies, Inc. engages in the development of monitoring and diagnostic solutions for detection of cardiac arrhythmias. • The Center for Medicare and Medicaid Services unexpectedly did not finalize a proposed rate increase for IRTC's main product • The change in reimbursement changed our revenue expectations to a point where we thought risk/reward was no longer favorable
Gentherm • Gentherm designs, develops, and manufactures heating, cooling, and ventilating devices for the auto and medical markets • Operating in favorable market given return to growth in SAAR • Continued penetration of its products due to consumers' demands of increased comfort in cars/trucks • Longer-term growth opportunity with electric vehicles	**Penumbra** • Medical device company with leading technology in clot removals for stroke and PE • Company issued a product recall during the quarter • Stock sold off and triggered our stop loss

As of 12/31/2020

comparative sector diversification

AS OF 12/31/2020 (%)



Benchmark sectors reflect S&P sectors. Data Source: Bloomberg, Russell/Mellon Analytical Serv, FactSet

portfolio holdings

ACCOUNT HOLDINGS & SECTOR WEIGHTS AS OF 12/31/2020

Health Care 28.8%
Inspire Medical Systems Inc
LHC Group Inc
Amedisys Inc
Natera Inc
NeoGenomics Inc
PRA Health Sciences Inc
Halozyme Therapeutics Inc
Repligen Corp
BioTelemetry Inc
Pacira BioSciences Inc
Veracyte Inc
AtriCure Inc
Rocket Pharmaceuticals Inc
STAAR Surgical Co
Axonics Modulation Technologies Inc
Phreesia Inc
NuVasive Inc
SpringWorks Therapeutics Inc
Blueprint Medicines Corp
Y-mAbs Therapeutics Inc
HealthEquity Inc
PTC Therapeutics Inc
ChemoCentryx Inc
CryoPort Inc
Xencor Inc
Dicerna Pharmaceuticals Inc
Insmed Inc
Aerie Pharmaceuticals Inc
CONMED Corp
GW Pharmaceuticals PLC
Addus HomeCare Corp

Information Technology 26.1%
Rapid7 Inc
Q2 Holdings Inc
Globant SA
MACOM Technology Solutions Holdings Inc
Varonis Systems Inc
Tenable Holdings Inc
FormFactor Inc
RealPage Inc
Envestnet Inc
Novanta Inc
WNS Holdings Ltd
Silicon Laboratories Inc
Blackline Inc
Itron Inc
Mimecast Ltd
Advanced Energy Industries Inc
KBR Inc
NIC Inc
Rambus Inc
nLight Inc
EVERTEC Inc
MaxLinear Inc
Silicon Motion Technology Corp
ManTech International Corp/VA
SVMK Inc

Industrials 17.6%
SiteOne Landscape Supply Inc
Advanced Drainage Systems Inc
Kornit Digital Ltd
Kratos Defense & Security Solutions Inc
Trex Co Inc
Mercury Systems Inc
Casella Waste Systems Inc
AAON Inc
WillScot Mobile Mini Holdings Corp
Air Transport Services Group Inc
RBC Bearings Inc
McGrath RentCorp
Proto Labs Inc
Huron Consulting Group Inc
UFP Industries Inc
AeroVironment Inc

Consumer Discretionary 11.9%
National Vision Holdings Inc
Fox Factory Holding Corp
frontdoor Inc
Wingstop Inc
Patrick Industries Inc
Texas Roadhouse Inc
Malibu Boats Inc
Columbia Sportswear Co
Shutterstock Inc
Dorman Products Inc
Stoneridge Inc
Papa John's International Inc
Gentherm Inc
Arco Platform Ltd
Steven Madden Ltd

Financials 6.9%
Goosehead Insurance Inc
Kinsale Capital Group Inc
PJT Partners Inc
Hamilton Lane Inc
Focus Financial Partners Inc
Assetmark Financial Holdings Inc
Ameris Bancorp

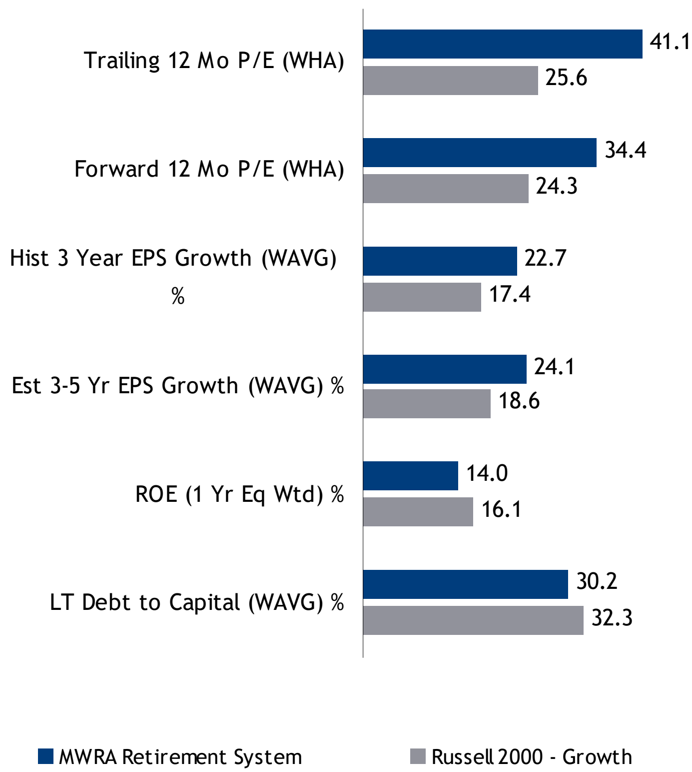
Consumer Staples 3.6%
Freshpet Inc
Simply Good Foods Co/The
Primo Water Corp

Communication Services 0.8%
TechTarget Inc

Benchmark sectors reflect S&P sectors. Boldface items represent top ten holdings. Sector categorization source: FactSet. Holdings may combine more than one security from the same issuer and related depositary receipts. Data Source: Bloomberg

characteristics summary

AS OF 12/31/2020



MARKET CAPITALIZATION STATISTICS

	PORTFOLIO	Russell 2000 - Growth
> $2 Billion	81.77%	75.57%
$1 to 2 Billion	12.80%	15.42%
$0.5 to 1 Billion	1.19%	5.70%
< $0.5 Billion	0.00%	3.32%
Cash/Equivalents	4.24%	0.00%
Weighted Average ($mm)	$4,360	$4,072
Median	$3,594	$1,213
Minimum	$632	$42
Maximum	$10,370	$17,398

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Characteristics are shown for account as supplemental information. Due to active management, characteristics will evolve over time. Data Source: Factset

contacts

RELATIONSHIP MANAGEMENT

Michael Finocchi, CAIA
Vice President, Relationship Manager
617-535-5342
mfinocchi@loomissayles.com

Jason Dempsey
Client Portfolio Analyst
617-603-7323
jdempsey@loomissayles.com

Carrie Cameron
Administrative Assistant
617-535-5403
ccameron@loomissayles.com

John Meyer, CFA, CAIA, FRM
Vice President
617-346-9753
john.meyer@loomissayles.com

MWRA EMPLOYEES' RETIREMENT SYSTEM

December 31, 2020

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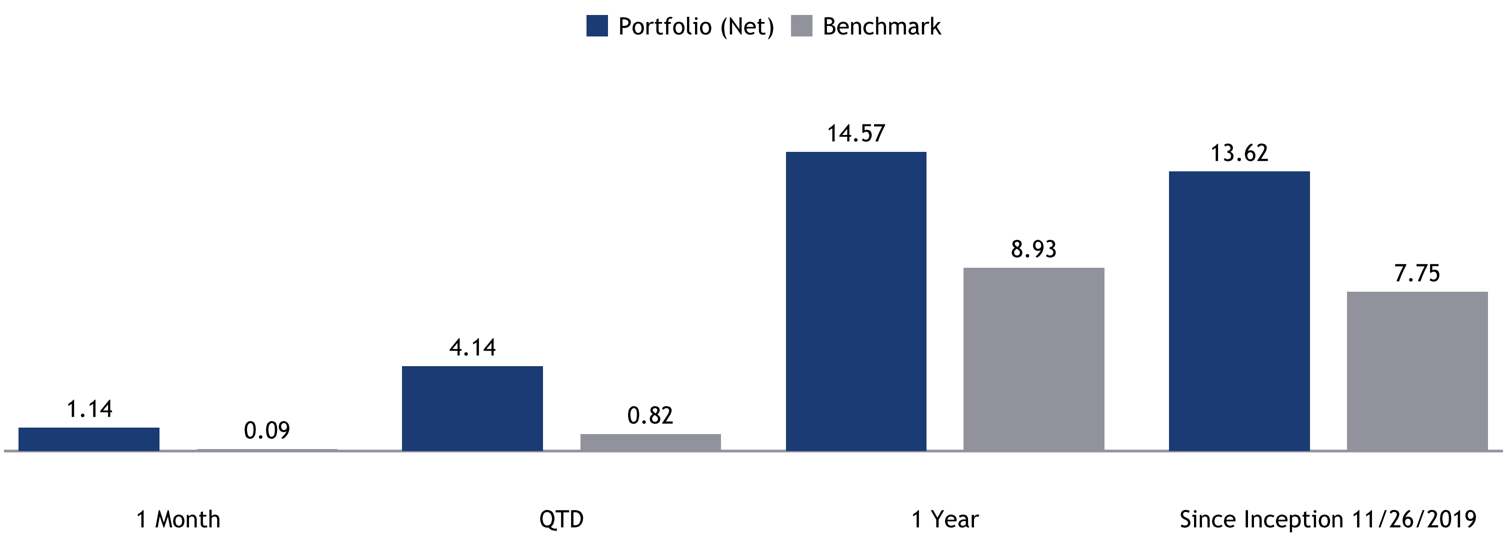
performance

TRAILING RETURNS AS OF 12/31/2020 (%)



	1 Month	QTD	1 Year	Since Inception 11/26/2019
Excess Return (Net)	+1.05	+3.32	+5.65	+5.87

PORTFOLIO VALUATION (USD)

	Portfolio 9/30/2020	Portfolio 12/31/2020	Increase/Decrease
Total	47,781,190	49,758,220	1,977,030

Data Source: Barclays Capital
Benchmarks: BBG BARC Govt Credit (11/26/2019 - 12/31/2020).
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index. Returns over one year are annualized. Information is reported on a trade date basis.
Performance and market value reflects your investment in the fund.

performance

CALENDAR YEAR RETURNS AS OF 12/31/2020 (%)

	2020
Excess Return (Net)	+5.65

Data Source: Barclays Capital
Benchmarks: BBG BARC Govt Credit (11/26/2019 - 12/31/2020).
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index. Returns over one year are annualized. Information is reported on a trade date basis.
Performance and market value reflects your investment in the fund.

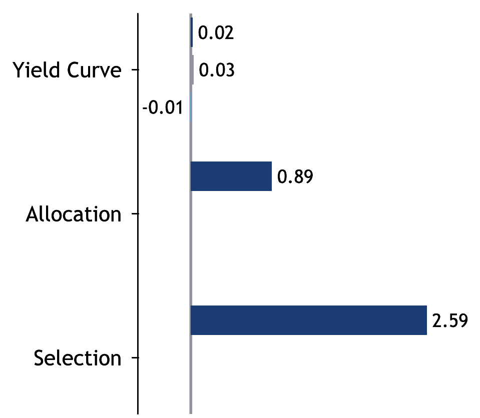
attribution analysis

9/30/2020 TO 12/31/2020

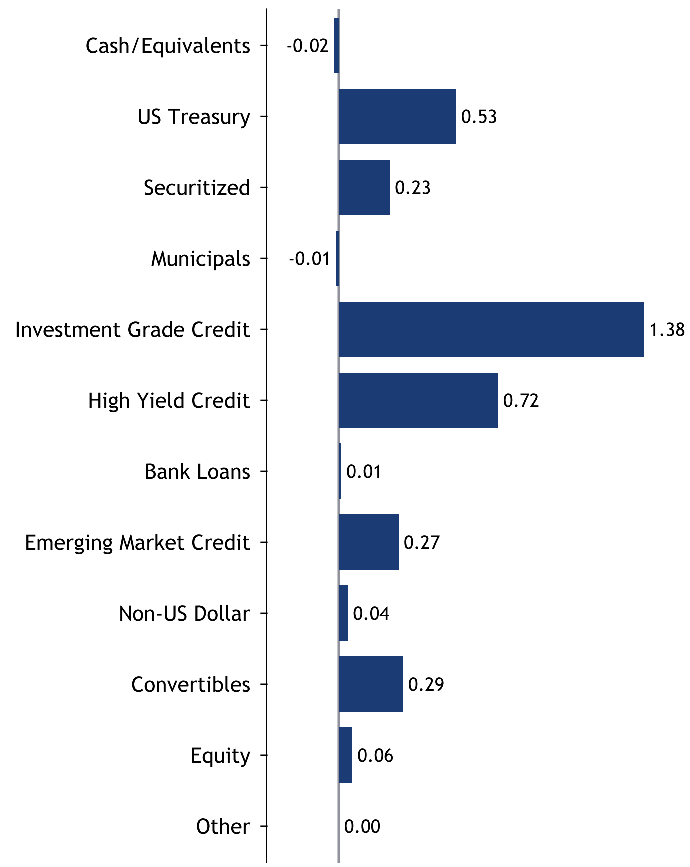
TOTAL RETURNS

	Total Return
Portfolio Return	4.27
Benchmark Return	0.82
Excess Return	3.45

EXCESS RETURN ATTRIBUTION



EXCESS RETURN ATTRIBUTION BY SECTOR



Data Source: Barclays Capital
Figures on the bar chart may not add up to total excess return as they exclude impact of trading and pricing differences. Excess Return by sector includes yield curve impact.
Attribution account returns are gross of fees. Attribution information reflects fund data. Attribution account returns reflect Loomis vendor provided prices. This may lead to differences in returns on this page and actual fund returns.
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index. Performance and commentary information reflects fund data.

portfolio summary

AS OF 12/31/2020

	Portfolio 12/31/2020	Benchmark 12/31/2020	Portfolio 9/30/2020	Benchmark 9/30/2020
Yield to Worst (%)	2.66	1.07	3.36	1.13
Effective Duration (years)	7.54	7.68	7.61	7.61
Effective Maturity (years)	10.08	9.80	10.40	9.76
OAS * (bps)	184	42	264	58
Coupon (%)	3.79	2.65	4.01	2.79
Current Yield (%)	3.48	2.38	3.80	2.50
Average Quality	BAA2	AA3	BAA2	AA3
Number of Securities	682	8,183	619	8,101
Number of Issuers	329	997	289	978

Quality	Portfolio 12/31/2020	Benchmark 12/31/2020	Portfolio 9/30/2020	Benchmark 9/30/2020
AAA	14.07	57.80	13.69	57.95
AA	3.03	6.57	2.63	6.86
A	11.28	18.98	10.70	18.80
BAA	47.38	16.63	50.43	16.39
BA	14.92	0.02	15.25	0.00
B	6.30	0.00	5.75	0.00
CAA	1.58	0.00	1.12	0.00
CA	0.06	0.00	0.09	0.00
C	0.03	0.00	0.03	0.00
NR	1.35	0.00	0.30	0.00

Data Source: Barclays Capital
** OAS is option adjusted spread.*
Client Guideline Quality Methodology presented. Both duration and maturity for equity securities are deemed to be zero.
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index. Performance and commentary information reflects fund data.

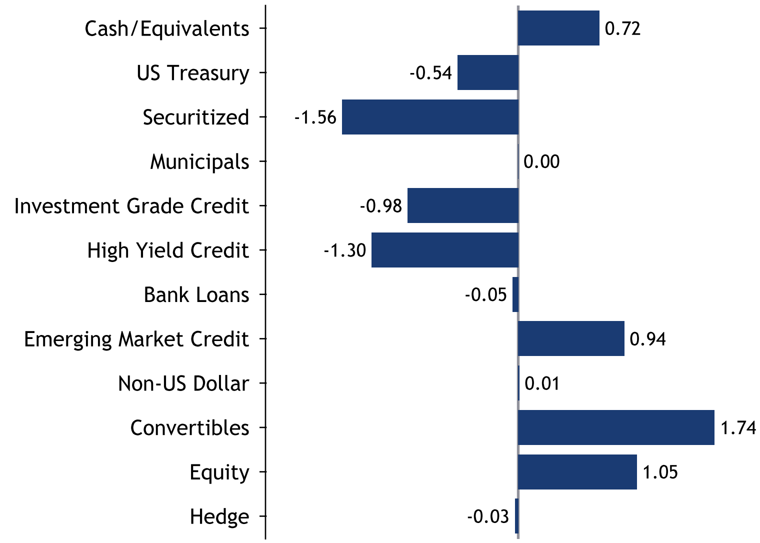
sector allocation

9/30/2020 TO 12/31/2020 (%)

SECTOR DISTRIBUTION

	Portfolio 12/31/2020	Over/Under Weight
Cash/Equivalents	2.28	2.28
US Treasury	9.73	-42.20
Securitized	16.20	16.20
Municipals	0.00	-1.05
Investment Grade Credit	44.93	0.26
High Yield Credit	14.37	14.35
Bank Loans	0.45	0.45
Emerging Market Credit	5.96	3.63
Non-US Dollar	-0.23	-0.23
Convertibles	4.66	4.66
Equity	1.33	1.33
Hedge	0.31	0.31

SECTOR ALLOCATION CHANGE



Data Source: Barclays Capital
The current benchmark is Bloomberg Barclays U.S. Government/Credit Index. Performance and commentary information reflects fund data.

performance commentary

9/30/2020 TO 12/31/2020

- For the quarter, the MWRA Employees' Retirement System portfolio outperformed the Bloomberg Barclays U.S. Government/Credit Index. Outperformance was driven primarily by security selection while sector allocation contributed significantly throughout the quarter. Investment grade credit, high yield credit, and US Treasurys sectors were the top contributors.

- On an absolute and excess basis, investment grade credit positively contributed to performance as the sector generated the greatest returns within the strategy. Security selection was the major driver in this sector. Exposure across the capital goods, consumer cyclical, and consumer non cyclical names moderately aided excess return with the securities issued by General Motors, Boeing Capital, and HCA Inc. having the best performance in this sector.

- Our overweight allocation to high yield credit positively impacted performance during the quarter. Select exposure to consumer non cyclical, energy, and REITS names modestly helped excess return with the securities issued by Enlink Midstream Partners, Ladder Capital Finance, and Kraft Heinz Foods having the best performance in this sector.

- The underweight exposure to US Treasurys generated positive return during the quarter.

full discretion strategy

OCTOBER – DECEMBER 2020

Sector	Investment Themes	Investment Strategies
US Duration	US Treasury securities are expensive based on our models. However, for now the combination of a large output gap, elevated household savings rate, and aggressive Fed QE should prevent a disorderly sell-off in the US Treasury market. The risk to this view would be accelerating inflation with Core PCE moving closer to 2.0%. We believe inflation will remain well contained for now, particularly on a core basis, due to the huge output gaps facing many economies. However, we do not rule out rising inflationary pressures on a medium-term basis as a result of the massive debt-financed stimulus and money printing that has taken place this year, plus the damage the COVID-19 shock has wrought on the supply side of the economy.	Capturing the timing of a Fed policy shift towards less aggressive QE will be a key call for our duration view this year. For now we are slightly underweight duration thanks to an improving economy and overvaluation. We could become more underweight duration though if we feel the inflation backdrop is pointing towards higher inflation or if we sense Fed policy will have to become less accommodative.
Yield Curve Positioning	The yield curve typically steepens in the early stages of an economic recovery, which is where the US economy finds itself at the moment. However, we have already seen a fair bit of steepening and we expect the Fed will be reluctant to allow the yield curve to steepen too much, even as the economy continues to recover from the COVID shock. We are watching inflation and US Treasury supply as potential catalysts for a more rapid steepening. At the same time we know the Fed has the option of extending the maturity of its QE program in order to better control the yield curve. This last factor prevents us from positioning too aggressively for a steeper curve despite the early cycle condition of the economy.	Our yield curve positioning is neutral across key rate duration buckets.
Short-Term Liquid Investments	Built up liquidity in portfolio has provided opportunity to take advantage of more attractive valuations in the marketplace.	Continue deploying short term investments as opportunities present themselves.
US Treasury/Agency	Treasury securities are expensive compared with our fair value models and ongoing Fed buying has richened agency bonds too. As such, forward returns for these sectors are expected to be quite low and we currently favor other segments of the fixed income universe over them.	We are utilizing short-term US Treasury securities as liquid investments and for duration management purposes. Otherwise, we are underweight US Treasury and Agency securities in favor of other sectors.
Structured Finance	Further stimulus likely ahead in 2021 will provide additional consumer support. Companies maintaining stringent lending standards, despite low interest rates. Delinquency and default data rising but at an acceptable pace given credit enhancement in most deals.	Spreads in many areas have rebounded significantly. Focus remains on the few areas in CLOs, CMBS, ABS & RMBS that continue to offer value.
Credit Cycle	Given the Federal Reserve's response/support of credit markets, we view US economy being in credit repair and transitioning into the Recovery Phase. As profitability improves, we expect corporate leverage to decrease as the economy continues to heal from the effects of COVID-19.	Adding to credit with focus on maximizing convexity.
Investment Grade Credit	While valuations have rallied since late March, we continue to expect credit spreads to trend tighter throughout Credit Repair and into Recovery stage of the cycle. Bouts of volatility will be suppressed due to the Fed's intervention while lower supply in 4Q20 and 1Q21 will create positive technicals for Investment Grade valuations. Foreign demand for US IG Corporate has slowed but we expect foreign demand to remain strong as hedged yields are well above the 2019 average.	Maintaining elevated risk levels given our view of the cycle and valuations. We continue to source short-term and high quality corporates in favor of credits that offer attractive valuations and convexity. We will use bouts of volatility to add to Investment Grade Credit while we continue to selectively participate in the new issue market and purchase fallen angels prior to the downgrade.
High Yield	Vaccination hopes have pushed valuations to tights since the selloff in March 2020 but remain attractive on a relative basis. Volatility is expected during the Credit Repair phase but should decline as we transition to recovery. The yield pickup versus IG credit is a positive technical.	Manage high yield exposure through careful issue selection. Take advantage of volatility and attractive new issuer market to add to existing positions and provide diversification.
Currency	Synchronized global economic acceleration later this year combined with aggressive Fed easing and still reasonable longer-term valuations for many currencies could allow for a period of prolonged foreign currency strength and US dollar weakness in 2021.	The US dollar has weakened considerably since its highs early last year and we expect a retracement of some nature, which we will use to position for strong currency performance during 2021.

full discretion strategy

OCTOBER - DECEMBER 2020 (cont.)

Sector	Investment Themes	Investment Strategies
Emerging Local and USD	Emerging market valuations are attractive and appealing. However, we remain cautious on growth from COVID-19 shut downs, and protracted trade disputes. As the vaccine roll out occurs in EM countries, we will monitor and access opportunities.	Highly selective within emerging market debt, focusing on higher quality securities with attractive real yields for local currency bonds, and US-dollar revenue companies with strong balance sheets for hard currency corporate bonds. Our investment strategy is consistent with EM credit being in early cycle, and increased uncertainty of protracted trade disputes and prospects for EM growth.
Convertible	The convertible bond market has been a significant outperformer within risk assets YTD. New issuance has been robust as some of the more COVID-19 exposed industries tap this market as a source of liquidity.	During Q4 we began increasing our convert exposure. Convertible bonds offer attractive convexity during the Recovery and Late Cycle phases as HY credit markets start to become call constrained.
Equities	US equities posted a strong fourth quarter and continued the strong performance since bottoming in March. Our belief that we are most likely heading into the Recovery Phase should offer a supportive, though potentially volatile, backdrop equities. We are monitoring the economic recovery closely.	The Recovery Phase of the cycle tends to be supportive for equity returns, both in absolute terms and relative to most fixed-income asset categories. Our preference is to own names that have strong franchises, are up in quality, and have a strong history & forward potential to pay and grow dividends.
Bank Loans	Strong demand for loans as CLO creation ramps up. Higher interest rates will bring further demand for floating rate structures.	Monitoring the situation within bank loans for the time being.

INVESTMENT OUTLOOK

JANUARY 2021

By Craig Burelle, VP, Senior Macro Strategies Analyst

WE BELIEVE KEY INGREDIENTS ARE CURRENTLY IN PLACE FOR GLOBAL FINANCIAL MARKETS TO CONTINUE DISCOUNTING THE RECOVERY PHASE OF THE CREDIT CYCLE.

COVID-19 vaccine distribution is underway, the US will deliver additional fiscal support, and monetary policy is likely to remain highly accommodative for several years to foster economic growth and broad labor market improvement. Credit risk premiums compressed materially across markets in the fourth quarter, but we still see opportunity for marginal spread tightening and positive excess return potential. We believe relatively higher-yielding asset classes are among the most likely to benefit from ongoing progress through the credit cycle.

MACRO DRIVERS

Key monetary and fiscal policies are likely to remain in place while COVID-19 vaccines are distributed globally. Social distancing measures may begin to lift by mid-2021.

CREDIT

We see limited potential for spread tightening in US and European markets, but believe investors can still earn carry.

GOVERNMENT DEBT & POLICY

Global developed market yield curves should remain anchored at the front end but longer-term yields could drift higher as the recovery takes hold.

CURRENCIES

Foreign currencies can potentially outperform the US dollar as the global economy recovers. CEEMEA,[i] Latin America and emerging Asia are currently attractive regions to add foreign exchange (FX) exposure.

EQUITIES

Equity performance is likely to be more balanced in 2021 as we expect a rising tide to lift equity indices across global regions and sectors.

POTENTIAL RISKS

We believe asset valuations reflect a robust 2021 outlook. If setbacks in COVID-19 vaccine distribution cause the recovery to falter, investors may reassess valuation levels.

[i] *Central and Eastern Europe, the Middle East and Africa*

MACRO DRIVERS

CRITICAL MACRO DRIVERS ARE IN PLACE TO SUPPORT THE GLOBAL ECONOMIC REBOUND.

- COVID-19 vaccine distribution, monetary accommodation and supportive fiscal policy represent a trifecta of macro drivers that comprise our positive 2021 outlook.
- We believe it will take several quarters for COVID-19 vaccines to reach a majority of the global population. During that period, monetary policy is likely to remain accommodative in the US, euro zone and Japan.
- Another round of fiscal stimulus payments for US consumers should help boost consumption in the first quarter of 2021, when we expect growth to moderate.
- We believe China's economy could reach pre-COVID levels of output in early-to-mid 2021 followed by the US in the third quarter. The euro zone and Japan may not eclipse prior peak output levels before the first quarter of 2022.
- We expect a surge in corporate earnings to coincide with an anticipated bounce in economic activity over the next 12 to 18 months. Better earnings should lead to organic improvement in corporate leverage metrics, which spiked during the downturn as corporate bond issuance jumped.

CREDIT

GLOBAL CREDIT SPREADS MAY NOT TIGHTEN MUCH FROM CURRENT LEVELS.

- Near-record low interest rates, sizable liquidity and strong demand for yield should help keep credit market volatility at bay.
- US, Europe and Sterling investment grade spreads are likely to remain in a fairly tight range near pre-COVID lows given the stimulative policy mix and anticipated fundamental improvement.
- Lower-credit-quality fixed income performance tends to be highly correlated with economic activity. We believe US high yield spreads have room to tighten a bit more as the credit cycle likely progresses through the recovery phase in 2021.
- US-dollar-denominated emerging market (EM) corporate credit looks relatively attractive because spreads have only retraced 75% of the COVID-induced spike. The sector should see positive momentum as long as the global economy, and Asian economies in particular, continue to improve.
- The US dollar appears likely to weaken during the recovery phase, which could relieve a certain degree of funding pressure in strained areas of the EM dollar-pay sector.
- US housing market strength should continue to support RMBS fundamentals. In consumer ABS, fiscal stimulus could help contain any weakness. In CMBS, the future of commercial real estate and current fundamentals represent challenging hurdles, but signs of a bottom may be emerging.
- We believe realized default rates within the US levered loan sector may be notably lower than what the market was pricing last spring. We expect loan prices to move higher going forward.

GOVERNMENT DEBT & POLICY

DEVELOPED MARKET BOND YIELDS MAY NOT HAVE MUCH UPSIDE POTENTIAL, EVEN IN RECOVERY.

- Federal Reserve Chair Jerome Powell and other members of the Fed board have signaled that they expect policy rates to remain at the zero lower bound for a period of years, with some conditions attached.
- Government borrowing rates have been so low that monetary policymakers in the US and Europe are openly calling for fiscal policy support. In our view, funding stimulus initiatives at low rates is logical, especially when the Fed and the European Central Bank (ECB) are buying bonds through quantitative easing.
- Similar to the US Treasury market, other developed market yields seem likely to stay in tight ranges with a modest upward drift over the next year.
- A strong year-over-year rebound in global growth is widely expected for calendar year 2021. However, growth rates are likely to slip in 2022 once easy comparisons roll off.
- As economies normalize, we anticipate an environment similar to pre-pandemic conditions (i.e., moderate growth and limited inflation pressure). Under those circumstances, bond yield upside potential seems limited.
- We see potential opportunities with relatively higher yields in emerging markets, but security selection is critical. In the unhedged rate sector, we think Brazil, Indonesia and Mexico currently look attractive.

CURRENCIES

WE EXPECT MODEST DOLLAR WEAKNESS AHEAD.

- Strong risk appetite and a weakening dollar are historically consistent with cyclical improvement in the global economy. We expect the risk-on trade to continue as the recovery firms, which tends to favor non-dollar exposure.
- The broad dollar is likely to continue slowly trending weaker and we believe some of the most attractive FX opportunities are currently in emerging markets.
- An economic recovery, especially in China, is generally a favorable condition for Asian currencies. Within the region, we favor cyclical and high-yielding currencies that would likely benefit from yield-seeking foreign inflows.
- We have a constructive view on higher-beta Latin American currencies. We believe cheap relative valuation and high exposure to the global cyclical recovery will be key catalysts for these currencies.
- Further strength in the euro/dollar exchange rate could be limited. A strong euro can lower demand for the region's exports, which is not a condition favored by euro zone policy makers.
- We do not anticipate a multi-year dollar bear market. The dollar is likely to remain a relatively "safe haven" if riskier assets sell off or correct.

EQUITIES

POSITIVE MACRO DRIVERS AND EARNINGS GROWTH SHOULD PROPEL EQUITY MARKETS HIGHER IN 2021.

- Global equity valuations are likely to remain above historic averages given the tilt of monetary policymakers and ultra-low interest rates across developed economies.

- Optimism surrounding COVID-19 vaccine effectiveness and distribution are additional factors supporting equity markets and we see fundamental improvement ahead in 2021.

- The global recovery should boost cyclically-tied equities that have a high correlation to economic growth. We expect a broad, more balanced rally across global equities. Europe, Japan and emerging market equities should participate along with the US.

- The growth-versus-value trade, which has favored growth in recent years, may even out in the early half of 2021.

- The developed market financial sector, which has a large weighting in Europe and Japan indices, still faces long-term challenges in this environment of low interest rates and flattish yield curves.

- Within the global equity space, we currently prefer EM versus Europe and Japan given the strong economic rebound in Asia and potential for dollar weakness.

POTENTIAL RISKS

POSITIVE DEVELOPMENTS NEED TO STAY ON TRACK.

- If the spread of COVID-19 begins to pressure medical facility capacity, some regions could return to lockdown conditions, which would likely limit economic progress and risk appetite.

- We believe continued optimism regarding vaccine efficacy and distribution is necessary for risk appetite to remain robust. Bottlenecks along the distribution and delivery chain would not be well received.

- The fiscal response, particularly in the US, has been largely effective in bridging cash flow gaps for the unemployed and small businesses. If support is removed too soon, domestic consumption would likely take a hit, which could prolong or even interrupt the recovery.

- We will be monitoring rhetoric about corporate taxes as the new US administration takes office. In our view, raising corporate taxes during a recovery would be detrimental to the recovery's progress.

- A hawkish shift in G-3 central bank strategy could rattle markets, but we believe that risk is unlikely to develop in 2021.

MARKET REVIEW

FOURTH QUARTER REVIEW OCTOBER – DECEMBER 2020

By Matthew Novak, CFA, Senior Research Associate

INDEX RETURNS BY SECTOR AS OF DECEMBER 31, 2020

INDEX	1 MONTH	3 MONTH	6 MONTH	1 YEAR
US Broad Market				
BBG BARC US Aggregate Bond	0.14	0.67	1.29	7.51
BBG BARC US Government/Credit	0.09	0.82	1.60	8.93

The broad fixed income market posted positive returns for the final quarter of 2020. However, quarterly returns under 1% represent a slowdown in the pace of recovery compared to prior quarters. This was largely expected as the steep losses experienced in March were largely recovered by the beginning of the third quarter. The fixed income market has generally been resilient despite swings in risk appetite this year.

INDEX	1 MONTH	3 MONTH	6 MONTH	1 YEAR
US Governments				
BBG BARC US Treasurys	-0.23	-0.83	-0.66	8.00
3-Month T-Bills	0.01	0.03	0.07	0.67
2-Year Treasury	0.07	0.04	0.11	3.07
5-Year Treasury	0.10	-0.22	-0.04	7.26
10-Year Treasury	-0.56	-1.91	-1.85	10.61
30-Year Treasury	-1.45	-4.18	-4.96	18.72
BBG BARC US TIPS	1.15	1.62	4.70	10.99
BBG BARC US Agency	0.11	0.04	0.40	5.48

US Treasurys were the only major fixed income class to experience negative returns for the quarter. It was the first quarterly loss for the asset class since the pandemic began. The lifting of a few major uncertainties and announcements of effective COVID-19 vaccine candidates boosted market sentiment and investors shifted away from relative "safe haven" assets like US Treasurys.

INDEX	1 MONTH	3 MONTH	6 MONTH	1 YEAR
BBG BARC US Municipals	0.61	1.82	3.07	5.21

Municipal bonds posted a positive quarterly return. The municipal bond market continued to function properly. While the Federal Reserve's Municipal Liquidity Facility was only used marginally, it was taken out of commission at the end of the fourth quarter. The market will no longer be able to rely on the facility as a stabilizing force.

INDEX	1 MONTH	3 MONTH	6 MONTH	1 YEAR
US Securitized				
BBG BARC MBS	0.22	0.24	0.36	3.87
BBG BARC ABS	0.20	0.36	1.16	4.52
BBG BARC CMBS	0.73	1.05	2.78	8.11

Securitized assets produced marginally positive returns for the quarter, though they trailed corporates. The CMBS index led the asset class, benefiting from its much longer average duration profile as investor risk appetite improved. The Fed's quantitative easing (QE) purchases continued to support MBS assets. The Fed communicated its willingness to increase liquidity through QE purchases markets deteriorate, which has likely helped keep markets calm.

Data Sources: Bloomberg Barclays indices from Barclays Live; currency returns, JPMorgan and Citigroup indices from Bloomberg; bank loans from S&P Global Market Intelligence. All returns in US dollars, unless noted. ***Past performance is no guarantee of future results.***

MARKET REVIEW

FOURTH QUARTER REVIEW OCTOBER – DECEMBER 2020

By Matthew Novak, CFA, Senior Research Associate

INDEX RETURNS BY SECTOR AS OF DECEMBER 31, 2020

INDEX	1 MONTH	3 MONTH	6 MONTH	1 YEAR
Corporates				
BBG BARC US Investment Grade	0.44	3.05	4.63	9.89
AAA	-0.14	1.47	2.58	12.30
AA	0.13	1.74	2.57	9.00
A	0.19	2.22	3.38	10.06
BBB	0.70	3.99	6.07	9.88
BBG BARC European Investment Grade *-local currency returns*	0.17	1.98	4.01	2.77
AAA	-0.13	0.70	2.21	3.53
AA	-0.04	0.76	1.68	1.98
A	0.11	1.51	3.31	2.58
BBB	0.24	2.52	4.94	3.04
BBG BARC Sterling Investment Grade *-local currency returns*	1.84	4.05	5.64	9.09
AAA	2.97	2.73	1.44	15.18
AA	1.76	2.45	2.89	7.99
A	1.94	3.43	4.82	9.06
BBB	1.75	4.81	6.82	9.05

Global investment grade debt also posted positive returns for the quarter. Lower-quality assets outperformed as risk appetite improved and investors moved further out on the risk spectrum in search for yield. UK investment grade corporates led performance for the quarter followed by US corporates, while Euro corporates continued their year-long trend of lagging behind.

High Yield Corporates				
BBG BARC US High Yield	1.88	6.45	11.34	7.11
BB	1.55	5.69	9.94	10.17
B	1.72	5.83	10.63	4.59
CCC	3.19	9.91	17.99	2.27

Data Sources: Bloomberg Barclays indices from Barclays Live; currency returns, JPMorgan and Citigroup indices from Bloomberg; bank loans from S&P Global Market Intelligence. All returns in US dollars, unless noted. ***Past performance is no guarantee of future results.***

MARKET REVIEW

FOURTH QUARTER REVIEW OCTOBER – DECEMBER 2020

By Matthew Novak, CFA, Senior Research Associate

INDEX RETURNS BY SECTOR AS OF DECEMBER 31, 2020

INDEX	1 MONTH	3 MONTH	6 MONTH	1 YEAR
High Yield Corporates Cont.				
BBG BARC Pan-European High Yield *-local currency returns*	0.79	5.34	8.05	1.76
BB	0.72	4.53	7.13	1.78
B	0.70	5.94	8.80	-0.58
CCC	1.46	9.14	12.41	7.02

High yield corporate issues performed well and finished the quarter among the best-performing major segments of the bond market. Yield spreads in this market have now retraced back to 2019 levels, suggesting that high yield debt has made a full recovery from the large selloff in March. Similar to investment grade debt, lower-quality high yield debt outperformed and US debt outperformed European debt.

INDEX	1 MONTH	3 MONTH	6 MONTH	1 YEAR
Bank Loans				
S&P/LSTA Leveraged Loan	1.35	3.81	8.11	3.12
BB	1.10	2.75	5.50	0.75
B	1.41	3.78	8.27	3.80
CCC	2.33	9.21	18.50	4.35

The performance of the bank loan market is often correlated with that of the US high yield bond market, and this quarter was no exception. While bank loans did not keep up with high yield bonds, the asset class still benefited from the continued risk-on rally. Lower-quality bank loans outperformed as investors continued to increase their overall risk exposure.

INDEX	1 MONTH	3 MONTH	6 MONTH	1 YEAR
Developed Countries				
CITIGROUP WGBI *-local currency returns*	0.08	0.15	0.79	5.52
CITIGROUP Non-USD WGBI	0.26	0.71	1.60	3.71
United States	-0.24	-0.82	-0.65	7.98
Canada	0.03	-0.44	-0.57	7.34
Japan	0.05	-0.02	0.14	-1.09
Australia	-0.35	-0.56	0.31	4.43
United Kingdom	1.73	0.62	-0.76	9.71
European GBI	0.14	1.20	2.89	5.03
France	0.02	0.60	1.82	4.52
Germany	-0.04	0.32	0.72	2.99

Data Sources: Bloomberg Barclays indices from Barclays Live; currency returns, JPMorgan and Citigroup indices from Bloomberg; bank loans from S&P Global Market Intelligence. All returns in US dollars, unless noted. ***Past performance is no guarantee of future results.***

MARKET REVIEW

FOURTH QUARTER REVIEW OCTOBER – DECEMBER 2020

By Matthew Novak, CFA, Senior Research Associate

INDEX RETURNS BY SECTOR AS OF DECEMBER 31, 2020

INDEX	1 MONTH	3 MONTH	6 MONTH	1 YEAR
Developed Countries Cont.				
Ireland	0.29	1.16	2.50	4.98
Italy	0.53	2.78	6.37	8.15
Spain	0.15	1.55	3.33	4.33

Global government bonds delivered mildly positive returns for the quarter and outperformed US Treasurys. Only a handful of other developed countries joined the US in posting a negative quarterly return. Peripheral European countries such as Ireland, Italy and Spain performed particularly well.

INDEX	1 MONTH	3 MONTH	6 MONTH	1 YEAR
Emerging Markets				
JP Morgan EMBIG *-Sovereign / Quasi-Sovereign, USD*	1.79	5.49	7.89	5.88
JP Morgan CEMBI Broad Diversified *-Corporates, USD*	1.47	4.44	7.30	7.13
JP Morgan GBI-EM Global Diversified *-Governments, local currency*	1.25	2.76	3.65	8.37

Consistent with positive investor risk appetite, emerging markets (EM) assets continued to outperform during the quarter. EM dollar-pay bonds continued their rally, assisted by a weakening US dollar. Corporate hard-currency bonds also performed well. Local-currency government debt did not keep up with dollar-denominated government debt, though it did outperform developed market sovereigns.

INDEX	1 MONTH	3 MONTH	6 MONTH	1 YEAR
Currency Markets				
Dollar Bloc				
Canadian Dollar	2.17	4.67	6.69	2.08
Australian Dollar	4.77	7.43	11.46	9.59
New Zealand Dollar	2.38	8.57	11.31	6.59
Western Europe				
Euro	2.42	4.22	8.74	8.94
Norwegian Krone	3.49	8.78	12.19	2.41

Data Sources: Bloomberg Barclays indices from Barclays Live; currency returns, JPMorgan and Citigroup indices from Bloomberg; bank loans from S&P Global Market Intelligence. All returns in US dollars, unless noted. ***Past performance is no guarantee of future results.***

MARKET REVIEW

FOURTH QUARTER REVIEW OCTOBER – DECEMBER 2020

By Matthew Novak, CFA, Senior Research Associate

INDEX RETURNS BY SECTOR AS OF DECEMBER 31, 2020

INDEX	1 MONTH	3 MONTH	6 MONTH	1 YEAR
Currency Markets Cont.				
Swedish Krona	4.21	8.87	13.29	13.83
Swiss Franc	2.68	4.03	7.02	9.20
British Pound	2.60	5.80	10.23	3.12
Emerging Europe & Africa				
Czech Koruna	2.48	7.56	10.54	5.68
Hungarian Forint	1.21	4.46	6.25	-0.58
Polish Zloty	0.59	3.54	5.99	1.63
Russian Ruble	2.66	4.33	-4.34	-16.70
South African Rand	5.26	13.98	18.08	-4.73
Turkish New Lira	5.15	3.70	-7.90	-20.02
Asia				
Japanese Yen	1.03	2.16	4.53	5.19
Chinese Renminbi	0.79	4.04	8.22	6.68
Indonesian Rupiah	0.50	5.91	1.53	-1.31
Malaysian Ringgit	1.33	3.39	6.62	1.76
Philippine Peso	0.11	0.96	3.74	5.46
Singapore Dollar	1.47	3.28	5.41	1.80
South Korean Won	1.85	7.66	10.73	6.43
Latin America				
Argentine Peso	-3.38	-9.47	-16.27	-28.85
Brazilian Real	3.10	7.91	5.18	-22.47
Chilean Peso	7.81	10.19	15.38	5.62
Colombian Peso	4.99	11.65	9.56	-4.45
Mexican Peso	1.34	11.05	15.46	-4.96
Peruvian New Sol	-0.30	-0.43	-2.11	-8.43

The US dollar sold off significantly in the final months of the year, continuing its downward trend. The beneficiaries of a weak US dollar were broad-based—only Argentina, which has a well managed currency market, posted meaningful negative returns. Stronger risk appetite also aided the rally in many FX markets.

Data Sources: Bloomberg Barclays indices from Barclays Live; currency returns, JPMorgan and Citigroup indices from Bloomberg; bank loans from S&P Global Market Intelligence. All returns in US dollars, unless noted. ***Past performance is no guarantee of future results.***

MARKET REVIEW

FOURTH QUARTER REVIEW OCTOBER – DECEMBER 2020

By Matthew Novak, CFA, Senior Research Associate

EQUITY MARKET TOTAL RETURNS AS OF DECEMBER 31, 2020

INDEX	3 MONTH	1 YEAR	3 YEAR	5 YEAR
Global Equity Markets				
S&P 500®	12.15	18.25	14.10	15.15
MSCI ALL COUNTRY WORLD	14.79	16.69	10.58	12.81
MSCI EUROPE	15.66	5.88	4.16	7.39
MSCI JAPAN	15.29	14.91	6.45	9.04
MSCI EMERGING MARKETS	19.77	18.53	6.53	13.17

Global equity markets completed their recovery from the lows of March. The dispersion among quarterly returns was relatively limited for the quarter, though emerging markets noticeably outperformed. Europe's 12-month return significantly lags behind other regions. Overall, equity performance indicated that investors are likely looking through current earnings reports and focusing on the potential for an economic recovery in 2021.

INDEX	3 MONTH	1 YEAR	3 YEAR	5 YEAR
US Equity Markets				
RUSSELL 1000®	13.69	20.79	14.74	15.53
GROWTH	11.39	38.15	22.86	20.91
VALUE	16.25	2.77	6.03	9.70
RUSSELL MIDCAP®	19.91	16.96	11.54	13.34
GROWTH	19.02	35.27	20.38	18.58
VALUE	20.43	4.93	5.34	9.69
RUSSELL 2000®	31.37	19.79	10.19	13.20
GROWTH	29.61	34.33	16.11	16.30
VALUE	33.36	4.60	3.70	9.62

While the growth style of investing outperformed value by a wide margin during the 12-month period, this trend showed signs of reversing as value outperformed growth in the fourth quarter. Small-cap stocks outperformed large-cap stocks in the final three months of the year.

Data Source: FactSet. All returns in US dollars, unless noted. Performance for one and multi-year periods is annualized. ***Past performance is no guarantee of future results.***

MARKET REVIEW

FOURTH QUARTER REVIEW OCTOBER – DECEMBER 2020

By Matthew Novak, CFA, Senior Research Associate

S&P 500 SECTORS AS OF DECEMBER 31, 2020

INDEX	3 MONTH	1 YEAR	3 YEAR	5 YEAR
Sector Performance Attribution (%)				
Energy	27.75	-33.68	-15.29	-5.20
Financials	23.22	-1.69	4.14	11.16
Industrials	15.71	11.06	7.59	12.28
Materials	14.47	20.75	8.66	13.19
Communication Services	13.82	23.61	11.81	11.24
Information Technology	11.80	43.89	29.25	27.85
Consumer Discretionary	8.04	33.30	19.81	17.60
Healthcare	8.02	13.45	13.41	11.65
Utilities	6.54	0.48	9.73	11.50
Consumer Staples	6.35	10.75	8.98	9.14
Real Estate	4.83	-2.17	7.25	5.23

While dispersion among S&P sectors was relatively high, all sectors posted positive returns for the quarter. Higher-beta industries, such as communication services and financials, continued to rebound. Among the most notable was the energy sector, which returned 27.75% for the fourth quarter. Industrials and materials also performed well as manufacturing PMIs firmly remained in expansionary territory.

Data Source: FactSet. Performance for one and multi-year periods is annualized. Sorted by index quarterly returns. Due to rounding, sector totals may not equal 100%.
Past performance is no guarantee of future results.

MARKET REVIEW

FOURTH QUARTER REVIEW OCTOBER – DECEMBER 2020

By Matthew Novak, CFA, Senior Research Associate

All data as of December 31, 2020 unless otherwise noted.

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Past performance is no guarantee of future results.

Indices are unmanaged and do not incur fees. It is not possible to invest directly in an index.

Investing involves risk including possible loss of principal.

Commodity, interest and derivative trading involves substantial risk of loss.

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contacts

RELATIONSHIP MANAGEMENT

Michael Finocchi, CAIA
Vice President, Relationship Manager
617-535-5342
mfinocchi@loomissayles.com

Jason Dempsey
Client Portfolio Analyst
617-603-7323
jdempsey@loomissayles.com

Carrie Cameron
Administrative Assistant
617-535-5403
ccameron@loomissayles.com

Summary of Investment Position

MWRA Employees' Retirement System
CT01286-CXMFIM

Date Run: 01/06/2021
As Of: 12/31/2020
Base Currency: USD

Classification	Total Market Value	Total Accrued	% of Total Fund	Estimated Annual Income	Current Yield
Fixed Income Holdings					
Commingled Vehicles	49,758,220		100.0		
Total Fixed Income	49,758,220		100.0		
Total	49,758,220		100.0		
Accrued Income	0				
Total Fund	49,758,220				

Portfolio Diversification

MWRA Employees' Retirement System
CT01286-CXMFIM

Date Run: 01/06/2021
As Of: 12/31/2020
Base Currency: USD

Classification	Total Cost	Total Market Value	Total Accrued	% of Sector	% of Total Fund	Estimated Annual Income	Current Yield
Fixed Income Holdings							
Commingled Vehicles	43,388,010	49,758,220		100.00	100.00		
Total Fixed Income	43,388,010	49,758,220		100.00	100.00		
Total	43,388,010	49,758,220			100.00		
Accrued Income		0					
Total Fund		49,758,220					

MWRA Employees' Retirement System
CT01286-CXMFIM

Date Run: 01/06/2021
As Of: 12/31/2020
Base Currency: USD

Rating	Shares	Security Description	Total Cost Unit Cost	Price	Market Value Accrued	Yield	% Of Total	Unrealized Gain/Loss	Effective Duration
		Fixed Income Holdings							
		-----Bond Mutual Funds-----	43,388,009.67 23.962	27.480	49,758,219.73	2.66	100.00	6,370,210.06	7.54
Baa2	1,810,706.686 *1,810,706.686E*	LS MSFD CIT CLASS B 3.7828	43,388,009.67 23.962	27.480	49,758,219.73	2.66	100.00	6,370,210.06	7.54
		Total Fixed Income	43,388,009.67		49,758,219.73	2.66	100.00	6,370,210.06	7.54
		Total Equity	0.00		0.00	0.00		0.00	0.00
		Total Commodities	0.00		0.00	0.00		0.00	0.00
		Total Principal	43,388,009.67		49,758,219.73	2.66	100.00	6,370,210.06	7.54
		Accrued Income			0.00				
		Total Fund			49,758,219.73				7.54

Notes:
- Duration values represent modified duration to effective maturity.

** Equity securities are deemed to have a duration value of zero.

- Shares in Italics ending in 'E' are excluded from fee.

"Yield" represents yield to effective maturity.

MWRA RETIREMENT SYSTEM

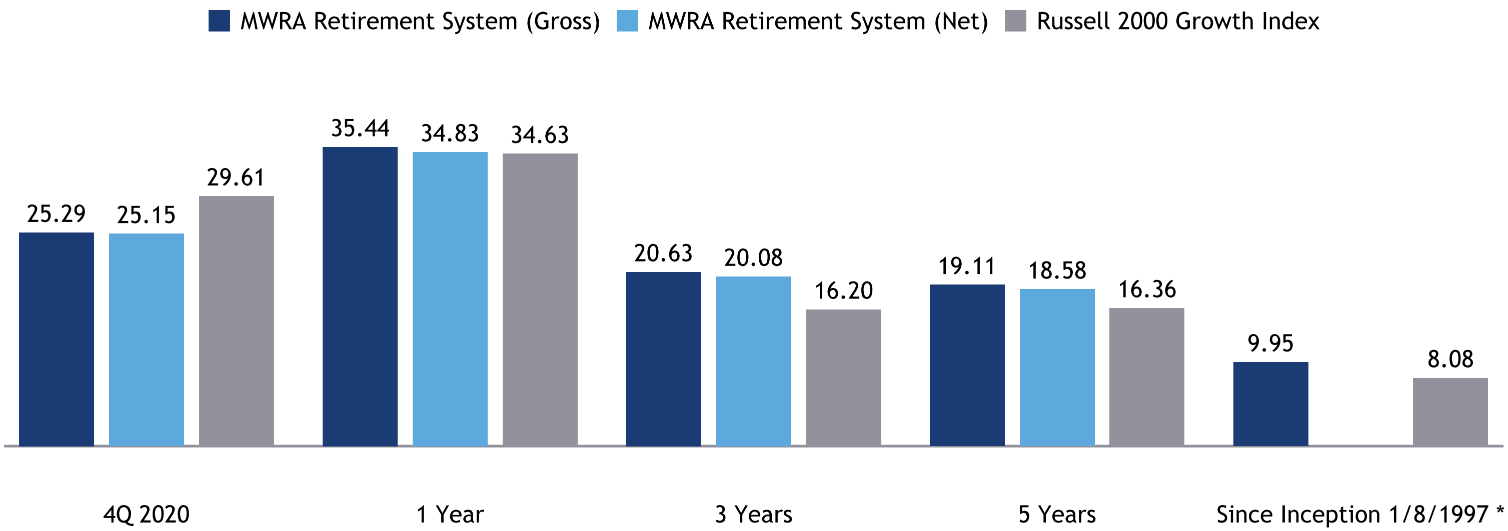
December 31, 2020

LOOMIS | SAYLES

www.loomissayles.com | One Financial Center Boston, MA 02111
617 482-2450 | BOSTON CHICAGO DETROIT SAN FRANCISCO LONDON SINGAPORE UTRECHT

performance

TRAILING RETURNS AS OF 12/31/2020 (%)



	4Q 2020	1 Year	3 Years	5 Years	Since Inception 1/8/1997 *
Excess return vs. Russell 2000 Growth (gross)	-4.32	+0.80	+4.43	+2.75	+1.87

PORTFOLIO VALUATION (USD)

	Beginning balance	Purchases / reinvestments	Withdrawals	Change in market value	Ending balance
9/30/2020 - 12/31/2020	20,199,520	0	-2,000,000	4,914,240	23,113,760

Data Source: Loomis Sayles and the Frank Russell Company.
** Net returns only available from 12/31/2000.*
Gross returns are net of trading costs. Net returns are gross returns less the effective management fees. Returns for multiyear periods are annualized. Returns may increase or decrease as a result of currency fluctuations.
Past performance is no guarantee of future results.

performance attribution

9/30/2020 TO 12/31/2020 (%)

Contribution from Stock Selection:	-3.66%
Contribution from Sector Allocation:	-0.64%
Net Outperformance:	-4.30%

Top 5 Contributing Issuers	Total Return (%)	Contribution to Total Return (BPS)
Rocket Pharmaceuticals, Inc.	139.89	86
MyoKardia, Inc.	64.85	82
Goosehead Insurance, Inc.	44.08	75
FormFactor, Inc.	72.56	72
Five9, Inc.	34.48	66

Bottom 5 Contributing Issuers	Total Return (%)	Contribution to Total Return (BPS)
Palomar Holdings, Inc.	-29.89	(60)
Inovalon Holdings, Inc.	-30.93	(51)
iRhythm Technologies, Inc.	-22.49	(30)
Emergent BioSolutions Inc.	-17.15	(14)
Insmed Incorporated	-16.58	(9)

Top 3 Contributing Sectors to Relative Return	Total Return (%)	Contribution to Relative Return (BPS)
Real Estate	0.00	28
Consumer Staples	27.93	26
Materials	0.00	12

Bottom 3 Contributing Sectors to Relative Return	Total Return (%)	Contribution to Relative Return (BPS)
Health Care	26.04	(155)
Industrials	24.38	(112)
Financials	11.75	(98)

The current benchmark is Russell 2000 Growth Index. Benchmark sectors reflect S&P GICS sectors. Information on this page reflects fund data. Where a security is bought and/or sold within the period, in-portfolio return may not equal stock's return during calendar period. Contribution to relative return reflects the sum of allocation and selection effects. Data Source: Factset.

performance attribution

9/30/2020 TO 12/31/2020 (%)

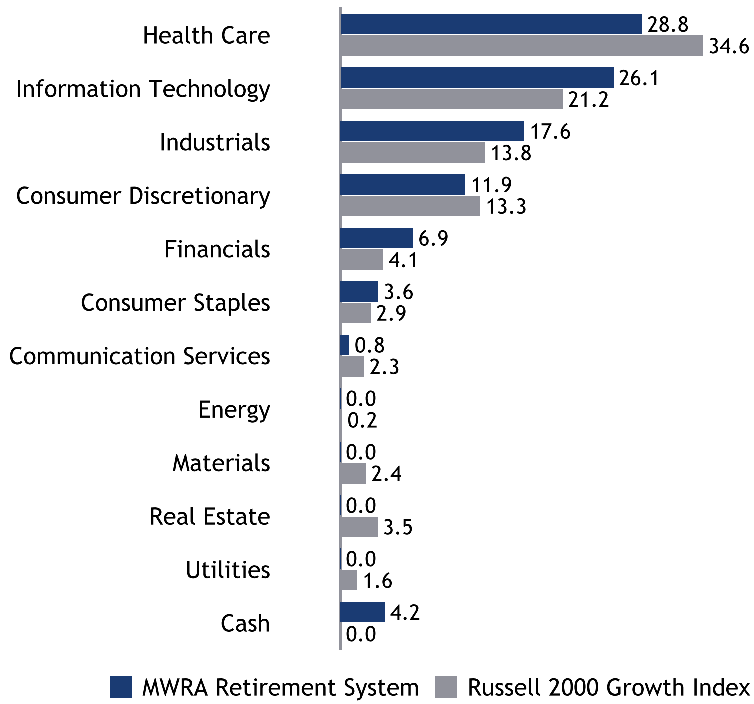
	Portfolio			Russell 2000 Growth Index			Attribution Analysis		
Sector	Average Weight	Total Return	Contribution to Return	Average Weight	Total Return	Contribution to Return	Allocation Effect	Selection Effect	Total Effect
Real Estate	0.00	0.00	0.00	3.60	20.48	0.76	0.28	0.00	0.28
Consumer Staples	3.39	27.93	0.92	3.09	16.76	0.56	-0.05	0.31	0.26
Materials	0.00	0.00	0.00	2.56	23.06	0.63	0.12	0.00	0.12
Utilities	0.00	0.00	0.00	1.67	22.74	0.40	0.08	0.00	0.08
Communication Services	0.71	34.46	0.23	2.28	26.52	0.61	0.03	0.03	0.06
Information Technology	24.90	35.16	8.31	20.58	35.98	7.13	0.22	-0.25	-0.03
Energy	0.00	0.00	0.00	0.15	37.73	0.06	-0.03	0.00	-0.03
Consumer Discretionary	11.18	20.23	2.32	13.77	23.80	3.38	0.09	-0.36	-0.27
Financials	7.93	11.75	1.15	4.21	22.29	1.00	-0.24	-0.73	-0.98
Industrials	17.86	24.38	4.33	13.71	31.14	4.21	0.03	-1.15	-1.12
Health Care	30.30	26.04	8.04	34.40	31.82	10.86	-0.04	-1.51	-1.55
Cash	3.72	0.02	0.00	0.00	0.00	0.00	-1.13	0.00	-1.13
Total	100.00	25.29	25.29	100.00	29.59	29.59	-0.64	-3.66	-4.30

Attribution information reflects fund data. For periods longer than one year, all returns are annualized. Benchmark sectors reflect S&P GICS sectors. Attribution analysis is shown for account as supplemental information. Where a security is bought and/or sold within the period, in-portfolio return may not equal stock's return during calendar period. Data Source: Factset.

characteristics

AS OF 12/31/2020 (%)

SECTOR DISTRIBUTION



TOP 10 HOLDINGS

	Portfolio Weight (%)
Freshpet Inc	2.1
SiteOne Landscape Supply Inc	1.9
Goosehead Insurance Inc	1.8
Rapid7 Inc	1.6
Q2 Holdings Inc	1.5
Inspire Medical Systems Inc	1.5
LHC Group Inc	1.5
Globant SA	1.5
Advanced Drainage Systems Inc	1.5
Amedisys Inc	1.5
Total	**16.4**

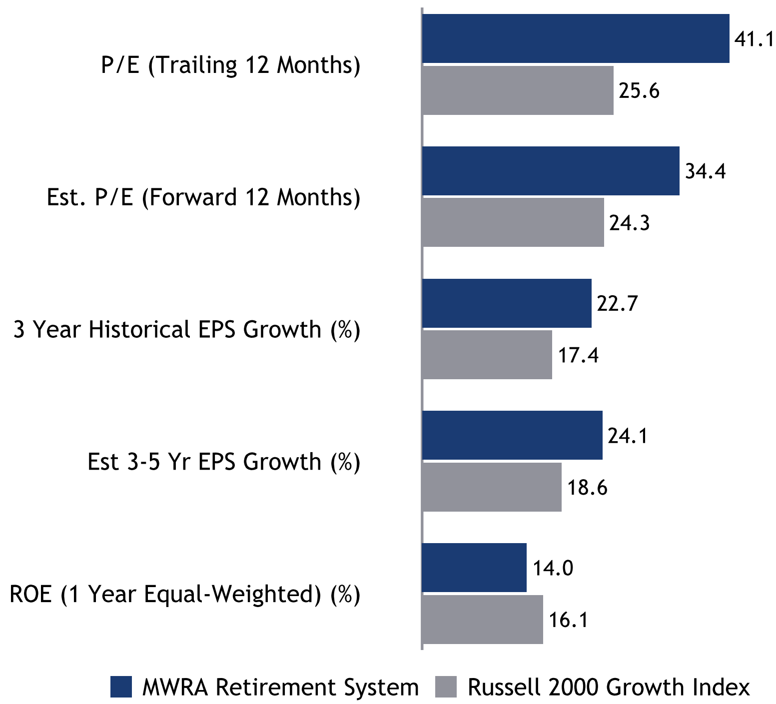
Benchmark sectors reflect S&P GICS sectors. Data Source: Bloomberg, Russell/Mellon Analytical Serv, FactSet.

LOOMIS SAYLES®

characteristics

AS OF 12/31/2020

CHARACTERISTICS



MARKET CAPITALIZATION STATISTICS

	Portfolio	Russell 2000 Growth Index
> $6 Billion	16.22%	17.78%
$4 to 6 Billion	30.30%	25.65%
$2 to 4 Billion	35.65%	32.14%
< $2 Billion	13.59%	24.43%
Cash	4.24%	0.00%
Weighted Average ($mm)	$4,360	$4,074
Median ($mm)	$3,594	$1,211
Minimum ($mm)	$632	$43
Maximum ($mm)	$10,371	$17,399

Characteristics are shown for account as supplemental information. Due to active management, characteristics will evolve over time. Data Source: Factset

outlook & strategy

OCTOBER - DECEMBER 2020

SMALL CAP GROWTH OUTLOOK & STRATEGY AS OF DECEMBER 31, 2020

QUARTERLY PERFORMANCE

As we reflect on the calendar year that was 2020, there are many different words that come to mind. Extraordinary. Astounding. Historic. What all of these descriptors have in common is their portrayal of just how unprecedented this year was, for a variety of reasons. Despite a global pandemic, equity markets staged a prodigious comeback off the market bottom. These incredible returns were generated not only during a pandemic, but during a pandemic that presented other potential market obstacles including a Presidential election and economic shutdowns. Against that backdrop, the Loomis Sayles Small Cap Growth strategy generated robust positive absolute returns for the fourth quarter and the year. While your portfolio saw a relative performance shortfall in the fourth quarter, for the year portfolio slightly outperformed the robust returns of the benchmark.

MARKET REVIEW

2020 ended an incredibly powerful two years for our strategy on an absolute return basis. As demonstrated below, gross returns were close to 30% in 2019 and over 35% 2020. The total return for that two year period was close to 70% (not annualized). To have two consecutive calendar years with returns that robust is particularly rare. 2020 in and of itself was quite rare as well, but it is important to note the consecutive robust returns your portfolio has generated.

The unparalleled nature of 2020 is evident in a number of data points and market trends. The Russell 2000 index (proxy for small cap stocks) posted its worst and best quarters since its inception during this one calendar year. The rally we have seen off the bottom in March has been even more powerful than what we saw coming out of the Global Financial Crisis in 2009. The environment within which this has occurred has made these moves that much more remarkable.

	2019	12.31.2019 - 3.18.2020	3.18.2020 - 12.31.2020	2020
Small Cap Growth Representative Account*	27.68%	-34.62%	107.15%	35.44%
Russell 2000 Growth Index	28.48%	-37.38%	114.98%	34.63%

**gross of fee returns of representative account*

Historically, our strategy has been able to provide downside protection, which we were able to do so during the crash earlier this year. However, when markets are moving at a parabolic rate, particularly off a market bottom when returns are driven by the highest beta and lowest quality stocks, we tend to lag, and that was the case for the year as a whole.

Beta, at its simplest, is how much the portfolio moves in line with the market (benchmark). The Russell 2000 Growth index was up close to 115% off the market bottom in March. When the beta of a portfolio is less than 1 during a market like this, it will struggle to keep pace. The beta of this strategy has typically been in the .90 to .95 range, making it difficult to keep pace in a market like the one we have seen in 2020.

SMALL CAP GROWTH OUTLOOK & STRATEGY AS OF DECEMBER 31, 2020

Liquidity, in the form of ETF flows, was another market trend that we saw during the year. This was especially true as we ended the year. There was a significant increase in net flows to small cap ETFs, in particular the iShares Russell 2000 ETF (IWM). During the months of October, November and December the IWM saw net inflows of approximately $7 billion; during the prior 9 months there was approximately net outflows of approximately $900 million. Flows into small cap ETFs can have disproportionate impact on the smallest stocks; our strategy tends to be bigger than the benchmark on a weighted average market cap basis.

While the relative performance shortfall during the fourth quarter is disappointing, the results that your portfolio was able to generate for the year were not. Historically, the strategy has been able to protect on the downside, which is what your portfolio did during the selloff in the first quarter. When the market rallies off the bottom, the strategy may lag, which is what transpired as is demonstrated by the returns relative to the benchmark since the March 18th low. The strategy has behaved in a way that would be expected given our investment approach and that gives us, and hopefully you, our clients, confidence during turbulent and historic times.

FOURTH QUARTER CONTRIBUTORS TO PERFORMANCE

During the fourth quarter our underweight positions in the Real Estate sector and stock selection in the Consumer Staples sector had the most positive impact on relative performance. On a company basis, Rocket Pharmaceuticals, MyoKardia and Goosehead Insurance were the top contributors to performance. Rocket Pharmaceuticals, is a clinical-stage biotechnology company, which engages in the development of gene therapy treatment options for rare and devastating pediatric disease. During the quarter the company provided positive initial data on their gene therapy for an orphan cardiac disease. Should the therapy eventually get approved it would be the first treatment for a deadly disease effecting thousands of people worldwide. MyoKardia, is a clinical-stage biopharmaceutical company that engages in discovering, developing, and commercializing targeted therapies for the treatment of rare cardiovascular diseases. During the quarter, the company received an acquisition offer by Bristol Myers for $225 per share. Goosehead Insurance, is a personal lines insurance agency that is rapidly expanding across the USA. The stock performed well in Q420 due to its continued strong performance in premiums written, as well as, the management's decision to raise financial guidance demonstrating the resiliency of the company's business model.

FOURTH QUARTER DETRACTORS FROM PERFORMANCE

Stock selection in the Health Care, Industrials and Financial sectors detracted the most from relative performance. On a company basis, the three largest detractors to performance during the fourth quarter were Palomar Holdings, Inovalon Holdings and iRhythm Technologies. Palomar Holdings, focuses on the residential and commercial earthquake markets in earthquake-exposed states such as California, Oregon, Washington, and states with exposure to the New Madrid Seismic Zone. After a strong run leading into the quarter, the company reported results below expectations. As a result, the stock sold off in the quarter triggering our stop loss. Inovalon Holdings, engages in the development of cloud-based platforms for the healthcare industry. Due to continued weakness driven by COVID and worries about growth visibility the stock sold off after a weaker than expected quarter. The stock triggered out stop loss. iRhythm Technologies, engages in the development of monitoring and diagnostic solutions for detection of cardiac arrhythmias. This quarter, the Center for Medicare and Medicaid Services unexpectedly did not finalize a proposed rate increase for IRTC's main product. As a result, the stock sold off in the quarter triggering our stop loss.

OUTLOOK

After a year like 2020, it can be difficult to wrap your head around where we go from here. Two events at the end of 2020 helped to remove some uncertainty – the U.S. election and the success of COVID-19 vaccines. The positive vaccine news has increased hopes for broader based economic reopening in 2021. However, some of the market moves of 2020 appeared to have already priced in an alleviation of uncertainty and what a more normal 2021 would look like. 2020 was a better year for stocks than the economy; as we move into 2021 that trend may reverse with contracting multiples.

contacts

RELATIONSHIP MANAGEMENT

Michael Finocchi, CAIA
Vice President, Relationship Manager
617-535-5342
mfinocchi@loomissayles.com

Jason Dempsey
Client Portfolio Analyst
617-603-7323
jdempsey@loomissayles.com

Carrie Cameron
Administrative Assistant
617-535-5403
ccameron@loomissayles.com

John Meyer, CFA, CAIA, FRM
Vice President
617-346-9753
john.meyer@loomissayles.com

MWRA Retirement System
L45116-SCGBOS

Date Run: 01/06/2021
As Of: 12/31/2020
Base Currency: USD

Classification	Total Market Value	Total Accrued	% of Total Fund	Estimated Annual Income	Current Yield
Fixed Income Holdings					
Cash and Equivalents	979,827		4.2	3,666	0.4
Net Cash	979,827		4.2	3,666	0.4
Cash and Equivalents	1,044,267		4.5	3,908	0.4
Pending Trades	-64,440		-0.3	-241	0.4
Total Fixed Income	979,827		4.2	3,666	0.4
Equity Holdings					
Communication Services	194,235		0.8		
Consumer Discretionary	2,758,544		11.9	15,142	0.5
Consumer Staples	829,932		3.6	2,155	0.3
Financials	1,601,762	820	6.9	5,196	0.3
Health Care	6,660,076	38	28.8	863	0.0
Industrials	4,056,876		17.6	9,298	0.2
Information Technology	6,031,263	392	26.1	12,209	0.2
Total Equity	22,132,686	1,251	95.8	44,863	0.2
Total	23,112,514		100.0	48,529	0.2
Accrued Income	1,251				
Total Fund	23,113,764				

MWRA Retirement System
L45116-SCGBOS

Date Run: 01/06/2021
As Of: 12/31/2020
Base Currency: USD

Classification	Total Cost	Total Market Value	Total Accrued	% of Sector	% of Total Fund	Estimated Annual Income	Current Yield
Fixed Income Holdings							
Net Cash	979,827	979,827		100.00	4.24	3,666	0.4
Cash and Equivalents	1,044,267	1,044,267		106.58	4.52	3,908	0.4
Pending Trades	-64,440	-64,440		-6.58	-0.28	-241	0.4
Total Fixed Income	979,827	979,827		100.00	4.24	3,666	0.4
Equity Holdings							
-----Communication Services-----							
Media	119,534	194,235		0.88	0.84		
Total Communication Services	119,534	194,235		0.88	0.84		
-----Consumer Discretionary-----							
Auto Components	794,358	916,685		4.14	3.97	3,565	0.4
Diversified Consumer Services	328,277	347,928		1.57	1.51		
Hotels Restaurants & Leisure	351,453	597,898		2.70	2.59	6,367	1.1
Internet & Direct Marketing Retail	124,586	174,446		0.79	0.75	1,654	0.9
Leisure Products	175,456	189,880		0.86	0.82		
Specialty Retail	167,215	268,389		1.21	1.16		
Textiles Apparel & Luxury Goods	181,888	263,319		1.19	1.14	3,556	1.4
Total Consumer Discretionary	2,123,233	2,758,544		12.46	11.93	15,142	0.5
-----Consumer Staples-----							
Beverages	131,279	140,822		0.64	0.61	2,155	1.5
Food Products	283,406	689,110		3.11	2.98		
Total Consumer Staples	414,685	829,932		3.75	3.59	2,155	0.3
-----Financials-----							
Banks	42,357	42,753	102	0.19	0.19	674	1.6
Capital Markets	679,424	826,454	719	3.74	3.58	3,936	0.5
Insurance	177,934	732,555		3.31	3.17	587	0.1
Total Financials	899,715	1,601,762	820	7.24	6.93	5,196	0.3
-----Health Care-----							
Biotechnology	1,490,588	2,431,612		10.99	10.52		
Health Care Equipment & Supplies	847,247	1,173,411	38	5.30	5.08	863	0.1
Health Care Providers & Services	578,461	1,149,115		5.19	4.97		
Health Care Technology	239,617	555,399		2.51	2.40		
Life Sciences Tools & Services	312,780	868,423		3.92	3.76		
Pharmaceuticals	401,440	482,115		2.18	2.09		
Total Health Care	3,870,133	6,660,076	38	30.09	28.81	863	0.0

Portfolio Diversification

MWRA Retirement System
L45116-SCGBOS

Date Run: 01/06/2021
As Of: 12/31/2020
Base Currency: USD

Classification	Total Cost	Total Market Value	Total Accrued	% of Sector	% of Total Fund	Estimated Annual Income	Current Yield
-----Industrials-----							
Aerospace & Defense	528,850	739,176		3.34	3.20		
Air Freight & Logistics	175,889	230,161		1.04	1.00		
Building Products	480,802	1,055,436		4.77	4.57	4,377	0.4
Commercial Services & Supplies	388,205	465,151		2.10	2.01	4,921	1.1
Construction & Engineering	115,840	231,770		1.05	1.00		
Machinery	247,044	719,737		3.25	3.11		
Professional Services	151,037	170,012		0.77	0.74		
Trading Companies & Distributors	120,276	445,433		2.01	1.93		
Total Industrials	2,207,941	4,056,876		18.33	17.55	9,298	0.2
-----Information Technology-----							
Electronic Equipment & Instruments &	476,372	684,533		3.09	2.96		
IT Services	811,182	1,309,755	392	5.92	5.67	7,998	0.6
Semiconductors & Semiconductor Equipment	979,239	1,579,709		7.14	6.83	4,210	0.3
Software	1,120,558	2,457,266		11.10	10.63		
Total Information Technology	3,387,351	6,031,263	392	27.25	26.10	12,209	0.2
Total Equity	13,022,593	22,132,686	1,251	100.00	95.76	44,863	0.2
Total	14,002,420	23,112,514			100.00	48,529	0.2
Accrued Income		1,251					
Total Fund		23,113,764					

Base Currency: USD

Rating	Shares	Security Description	Total Cost / Unit Cost	Price	Market Value / Accrued	Income Rate / Yield	Estimated Annual Income	Curr Yield
		Fixed Income Holdings						
		-----Cash and Equivalents-----						
Aaa	1,044,266.900	STIF MONEY MARKET	1,044,266.90	1.000	1,044,266.90	0.374	3,907.51	0.4
AA+		0.3742 01/01/2021	1.000					
		Equity Holdings						
		-----Communication Services-----						
		-----Media-----						
	3,286.000	TECHTARGET	119,534.14	59.110	194,235.46	0.000	0.00	0.0
			36.377					
		-----Consumer Discretionary-----						
		-----Auto Components-----						
	1,927.000	DORMAN PRODUCTS INC	177,140.40	86.820	167,302.14	0.000	0.00	0.0
			91.925					
	2,450.000	FOX FACTORY HOLDING CORP	181,386.77	105.710	258,989.50	0.000	0.00	0.0
			74.035					
	1,850.000	GENTHERM INC	113,375.29	65.220	120,657.00	0.000	0.00	0.0
			61.284					
	3,183.000	PATRICK INDUSTRIES INC	188,816.64	68.350	217,558.05	1.639	3,564.96	1.6
			59.320					
	5,034.000	STONERIDGE INC	133,639.39	30.230	152,177.82	0.000	0.00	0.0
			26.547					
		-----Diversified Consumer Services-----						
	2,584.000	ARCO PLATFORM LTD - CLASS A	123,481.70	35.490	91,706.16	0.000	0.00	0.0
			47.787					
	5,103.000	FRONTDOOR INC	204,795.00	50.210	256,221.63	0.000	0.00	0.0
			40.132					
		-----Hotels Restaurants & Leisure-----						
	1,649.000	PAPA JOHN'S INTL INC	137,162.64	84.850	139,917.65	1.061	1,484.10	1.1
			83.179					
	2,656.000	TEXAS ROADHOUSE INC CLASS A	147,511.35	78.160	207,592.96	1.842	3,824.64	1.8
			55.539					
	1,889.000	WINGSTOP INC	66,778.94	132.550	250,386.95	0.423	1,057.84	0.4
			35.351					
		-----Internet & Direct Marketing Retail-----						
	2,433.000	SHUTTERSTOCK INC	124,585.51	71.700	174,446.10	0.948	1,654.44	0.9
			51.207					

Base Currency: USD

Rating	Shares	Security Description	Total Cost Unit Cost	Price	Market Value Accrued	Income Rate / Yield	Estimated Annual Income	Curr Yield
		Equity Holdings (cont.)						
		-----Consumer Discretionary (cont.)-----						
		-----Leisure Products-----						
	3,041.000	MALIBU BOATS INC - A	175,456.32 57.697	62.440	189,880.04	0.000	0.00	0.0
		-----Specialty Retail-----						
	5,926.000	NATIONAL VISION HOLDINGS INC	167,214.59 28.217	45.290	268,388.54	0.000	0.00	0.0
		-----Textiles Apparel & Luxury Goods-----						
	2,064.000	COLUMBIA SPORTSWEAR CO	118,067.28 57.203	87.380	180,352.32	1.190	2,146.56	1.2
	2,349.000	STEVEN MADDEN LTD	63,820.87 27.169	35.320	82,966.68	1.699	1,409.40	1.7
		-----Consumer Staples-----						
		-----Beverages-----						
	8,981.000	PRIMO WATER CORP	131,279.39 14.617	15.680	140,822.08	1.531	2,155.44	1.5
		-----Food Products-----						
	3,430.000	FRESHPET INC	110,313.63 32.161	141.990	487,025.70	0.000	0.00	0.0
	6,444.000	SIMPLY GOOD FOODS CO/THE	173,092.06 26.861	31.360	202,083.84	0.000	0.00	0.0
		-----Financials-----						
		-----Banks-----						
	1,123.000	AMERIS BANCORP	42,356.96 37.718	38.070	42,752.61 101.55	1.576	673.80	1.6
		-----Capital Markets-----						
	6,910.000	ASSETMARK FINANCIAL HOLDINGS	177,705.58 25.717	24.200	167,222.00	0.000	0.00	0.0
	4,515.000	FOCUS FINANCIAL PARTNERS-A	169,132.29 37.460	43.500	196,402.50	0.000	0.00	0.0
	2,595.000	HAMILTON LANE INC-CLASS A	160,200.71 61.734	78.050	202,539.75 718.75	1.602	3,243.75	1.6
	3,459.000	PJT PARTNERS INC - A	172,385.47 49.837	75.250	260,289.75	0.266	691.80	0.3
		-----Insurance-----						
	3,257.000	GOOSEHEAD INSURANCE INC -A	96,821.41 29.727	124.760	406,343.32	0.000	0.00	0.0

Base Currency: USD

Rating	Shares	Security Description	Total Cost / Unit Cost	Price	Market Value / Accrued	Income Rate / Yield	Estimated Annual Income	Curr Yield
		Equity Holdings (cont.)						
		-----Financials (cont.)-----						
		-----Insurance (cont.)-----						
	1,630.000	KINSALE CAPITAL GROUP INC	81,113.03 49.763	200.130	326,211.90	0.180	586.80	0.2
		-----Health Care-----						
		-----Biotechnology-----						
	1,673.000	BLUEPRINT MEDICINES CORP	109,893.44 65.686	112.150	187,626.95	0.000	0.00	0.0
	2,640.000	CHEMOCENTRYX INC	145,828.33 55.238	61.920	163,468.80	0.000	0.00	0.0
	6,458.000	DICERNA PHARMACEUTICALS INC	160,718.41 24.887	22.030	142,269.74	0.000	0.00	0.0
	6,772.000	HALOZYME THERAPEUTICS INC	116,480.36 17.200	42.710	289,232.12	0.000	0.00	0.0
	3,734.000	INSMED INC	143,905.01 38.539	33.290	124,304.86	0.000	0.00	0.0
	3,404.000	NATERA INC	124,311.32 36.519	99.520	338,766.08	0.000	0.00	0.0
	2,718.000	PTC THERAPEUTICS INC	116,706.99 42.939	61.030	165,879.54	0.000	0.00	0.0
	4,334.000	ROCKET PHARMACEUTICALS INC	91,381.24 21.085	54.840	237,676.56	0.000	0.00	0.0
	2,726.000	SPRINGWORKS THERAPEUTICS INC	120,356.17 44.151	72.520	197,689.52	0.000	0.00	0.0
	5,018.000	VERACYTE INC	117,950.42 23.505	48.940	245,580.92	0.000	0.00	0.0
	3,583.000	XENCOR INC	132,593.27 37.006	43.630	156,326.29	0.000	0.00	0.0
	3,692.000	Y-MABS THERAPEUTICS INC	110,462.96 29.920	49.510	182,790.92	0.000	0.00	0.0
		-----Health Care Equipment & Supplies-----						
	4,342.000	ATRICURE INC	125,810.83 28.975	55.670	241,719.14	0.000	0.00	0.0
	4,408.000	AXONICS MODULATION TECHNOLOG	211,597.91 48.003	49.920	220,047.36	0.000	0.00	0.0
	1,079.000	CONMED CORP	116,717.67 108.172	112.000	120,848.00 38.40	0.714	863.20	0.7
	3,615.000	CRYOPORT INC	107,866.28 29.839	43.880	158,626.20	0.000	0.00	0.0
	3,529.000	NUVASIVE INC	174,523.47 49.454	56.330	198,788.57	0.000	0.00	0.0

Base Currency: USD

Rating	Shares	Security Description	Total Cost / Unit Cost	Price	Market Value / Accrued	Income Rate / Yield	Estimated Annual Income	Curr Yield
		Equity Holdings (cont.)						
		-----Health Care (cont.)-----						
		-----Health Care Equipment & Supplies (cont.)-----						
	2,946.000	STAAR SURGICAL CO	110,731.31 37.587	79.220	233,382.12	0.000	0.00	0.0
		-----Health Care Providers & Services-----						
	270.000	ADDUS HOMECARE CORP	31,091.29 115.153	117.090	31,614.30	0.000	0.00	0.0
	1,165.000	AMEDISYS INC	82,424.84 70.751	293.330	341,729.45	0.000	0.00	0.0
	3,493.000	BIOTELEMETRY INC	176,939.09 50.655	72.080	251,775.44	0.000	0.00	0.0
	2,538.000	HEALTHEQUITY INC	120,811.57 47.601	69.710	176,923.98	0.000	0.00	0.0
	1,627.000	LHC GROUP INC	167,194.03 102.762	213.320	347,071.64	0.000	0.00	0.0
		-----Health Care Technology-----						
	1,852.000	INSPIRE MEDICAL SYSTEMS INC	137,133.63 74.046	188.090	348,342.68	0.000	0.00	0.0
	3,816.000	PHREESIA INC	102,483.53 26.856	54.260	207,056.16	0.000	0.00	0.0
		-----Life Sciences Tools & Services-----						
	5,865.000	NEOGENOMICS INC	87,147.35 14.859	53.840	315,771.60	0.000	0.00	0.0
	2,351.000	PRA HEALTH SCIENCES INC	128,068.41 54.474	125.440	294,909.44	0.000	0.00	0.0
	1,345.000	REPLIGEN CORP	97,563.82 72.538	191.630	257,742.35	0.000	0.00	0.0
		-----Pharmaceuticals-----						
	994.000	GW PHARMACEUTICALS -ADR	95,105.13 95.679	115.410	114,717.54	0.000	0.00	0.0
	9,021.000	AERIE PHARMACEUTICALS INC	131,883.11 14.620	13.510	121,873.71	0.000	0.00	0.0
	4,103.000	PACIRA PHARMACEUTICALS INC	174,451.40 42.518	59.840	245,523.52	0.000	0.00	0.0
		-----Industrials-----						
		-----Aerospace & Defense-----						
	1,761.000	AEROVIRONMENT INC	135,393.15 76.884	86.900	153,030.90	0.000	0.00	0.0
	10,903.000	KRATOS DEFENSE & SECURITY SOLUTIONS INC	207,445.07 19.026	27.430	299,069.29	0.000	0.00	0.0

Base Currency: USD

Rating	Shares	Security Description	Total Cost / Unit Cost	Price	Market Value / Accrued	Income Rate / Yield	Estimated Annual Income	Curr Yield
		Equity Holdings (cont.)						
		-----Industrials (cont.)-----						
		-----Aerospace & Defense (cont.)-----						
	3,260.000	MERCURY COMPUTER SYSTEMS INC	186,011.77 57.059	88.060	287,075.60	0.000	0.00	0.0
		-----Air Freight & Logistics-----						
	7,344.000	AIR TRANSPORT SERVICES GROUP I	175,888.66 23.950	31.340	230,160.96	0.000	0.00	0.0
		-----Building Products-----						
	3,887.000	AAON INC	159,095.42 40.930	66.630	258,990.81	0.570	1,477.06	0.6
	4,126.000	ADVANCED DRAINAGE SYSTEMS IN	146,193.32 35.432	83.580	344,851.08	0.431	1,485.36	0.4
	3,517.000	TREX COMPANY INC	48,485.94 13.786	83.720	294,443.24	0.000	0.00	0.0
	2,829.000	UFP INDUSTRIES INC	127,027.12 44.902	55.550	157,150.95	0.900	1,414.50	0.9
		-----Commercial Services & Supplies-----						
	4,336.000	CASELLA WASTE SYSTEMS INC CL A	187,906.78 43.336	61.950	268,615.20	0.000	0.00	0.0
	2,929.000	MCGRATH RENTCORP	200,297.79 68.384	67.100	196,535.90	2.504	4,920.72	2.5
		-----Construction & Engineering-----						
	10,003.000	WILLSCOT MOBILE MINI HOLDINGS	115,839.91 11.581	23.170	231,769.51	0.000	0.00	0.0
		-----Machinery-----						
	3,647.000	KORNIT DIGITAL LTD	76,759.39 21.047	89.130	325,057.11	0.000	0.00	0.0
	1,233.000	PROTO LABS INC	96,280.44 78.086	153.400	189,142.20	0.000	0.00	0.0
	1,148.000	RBC BEARINGS INC	74,003.97 64.463	179.040	205,537.92	0.000	0.00	0.0
		-----Professional Services-----						
	2,884.000	HURON CONSULTING GROUP INC	151,036.91 52.371	58.950	170,011.80	0.000	0.00	0.0
		-----Trading Companies & Distributors-----						
	2,808.000	SITEONE LANDSCAPE SUPPLY INC	120,275.71 42.833	158.630	445,433.04	0.000	0.00	0.0

Base Currency: USD

Rating	Shares	Security Description	Total Cost / Unit Cost	Price	Market Value / Accrued	Income Rate / Yield	Estimated Annual Income	Curr Yield
		Equity Holdings (cont.)						
		-----Information Technology-----						
		-----Electronic Equipment & Instruments & Components-----						
	2,482.000	ITRON INC	179,427.14 72.291	95.900	238,023.80	0.000	0.00	0.0
	5,431.000	NLIGHT INC	131,432.12 24.200	32.650	177,322.15	0.000	0.00	0.0
	2,277.000	NOVANTA INC	165,512.58 72.689	118.220	269,186.94	0.000	0.00	0.0
		-----IT Services-----						
	4,497.000	EVERTEC INC	129,046.01 28.696	39.320	176,822.04	0.509	899.40	0.5
	1,589.000	GLOBANT SA	100,401.29 63.185	217.610	345,782.29	0.000	0.00	0.0
	6,200.000	KBR INC	166,643.31 26.878	30.930	191,766.00 392.00	1.293	2,480.00	1.3
	1,568.000	MANTECH INTL CORP-A	106,838.73 68.137	88.940	139,457.92	1.439	2,007.04	1.4
	7,255.000	NIC INC	159,953.94 22.047	25.830	187,396.65	1.394	2,611.80	1.4
	3,727.000	WNS HOLDINGS LTD-ADR	148,298.65 39.790	72.050	268,530.35	0.000	0.00	0.0
		-----Semiconductors & Semiconductor Equipment-----						
	2,273.000	ADVANCED ENERGY INDS	143,915.41 63.315	96.970	220,412.81	0.000	0.00	0.0
	6,913.000	FORMFACTOR INC	154,315.37 22.322	43.020	297,397.26	0.000	0.00	0.0
	5,669.000	MA-COM TECHNOLOGY SOLUTIONS	165,932.23 29.270	55.040	312,021.76	0.000	0.00	0.0
	4,603.000	MAXLINEAR INC-CLASS A	141,311.17 30.700	38.190	175,788.57	0.000	0.00	0.0
	10,225.000	RAMBUS INC	141,395.97 13.828	17.460	178,528.50	0.000	0.00	0.0
	1,961.000	SILICON LABS INC	100,174.71 51.083	127.340	249,713.74	0.000	0.00	0.0
	3,029.000	SILICON MOTION TECHNOL-ADR	132,194.36 43.643	48.150	145,846.35	2.887	4,210.31	2.9
		-----Software-----						
	1,842.000	BLACKLINE INC	120,347.01 65.335	133.380	245,685.96	0.000	0.00	0.0
	3,364.000	ENVESTNET INC	156,009.03 46.376	82.290	276,823.56	0.000	0.00	0.0

MWRA Retirement System
L45116-SCGBOS

Date Run: 01/06/2021
As Of: 12/31/2020
Base Currency: USD

Rating	Shares	Security Description	Total Cost Unit Cost	Price	Market Value Accrued	Income Rate / Yield	Estimated Annual Income	Curr Yield
Equity Holdings (cont.)								
-----Information Technology (cont.)-----								
-----Software (cont.)-----								
	4,067.000	MIMECAST LTD	110,185.42 27.093	56.840	231,168.28	0.000	0.00	0.0
	2,829.000	Q2 HOLDINGS INC	79,044.19 27.941	126.530	357,953.37	0.000	0.00	0.0
	3,997.000	RAPID7 INC	115,330.11 28.854	90.160	360,369.52	0.000	0.00	0.0
	3,346.000	REALPAGE INC	142,644.98 42.631	87.240	291,905.04	0.000	0.00	0.0
	3,193.000	SVMK INC	81,529.09 25.534	25.550	81,581.15	0.000	0.00	0.0
	5,755.000	TENABLE HOLDINGS INC	174,329.75 30.292	52.260	300,756.30	0.000	0.00	0.0
	1,901.000	VARONIS SYSTEMS INC	141,138.69 74.244	163.610	311,022.61	0.000	0.00	0.0
Pending Trades			-64,439.58		-64,439.58	0.374	-241.12	0.4
Total Fixed Income			979,827.32		979,827.32	0.374	3,666.39	0.4
Total Equity			13,022,592.56		22,132,686.38	0.203	44,862.92	0.2
Total Commodities			0.00		0.00		0.00	
Total Principal			14,002,419.88		23,112,513.70	0.210	48,529.31	0.2
Accrued Income					1,250.70			
Total Fund					23,113,764.40			

"Yield" represents yield to effective maturity.

PERFORMANCE REPORT

MWRA EMPLOYEES' RETIREMENT SYSTEM

February 2021

Sebastian Grzejka, CAIA, Senior ConsultantKiley

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

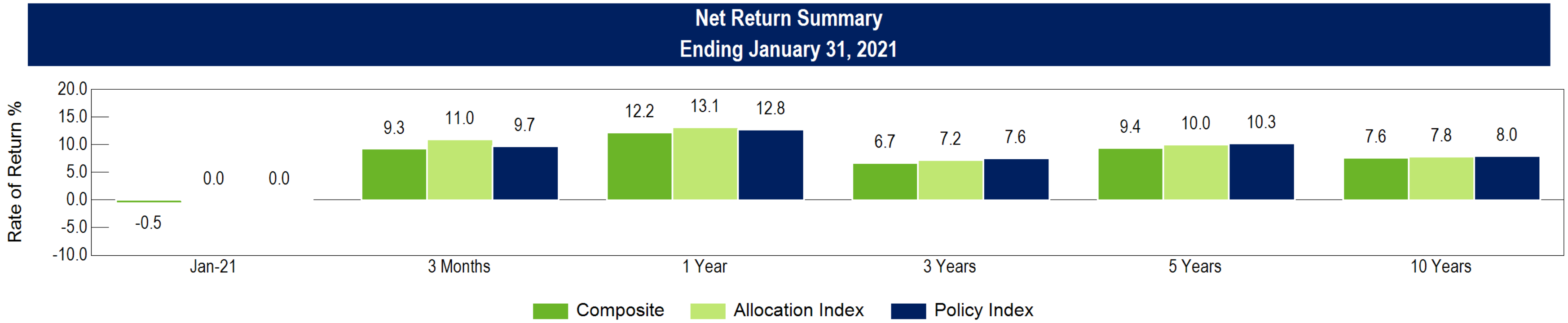
The investment growth should be maintained in such a manner that the minimum nominal rate of return does not cause a negative real rate of return over a full market cycle:

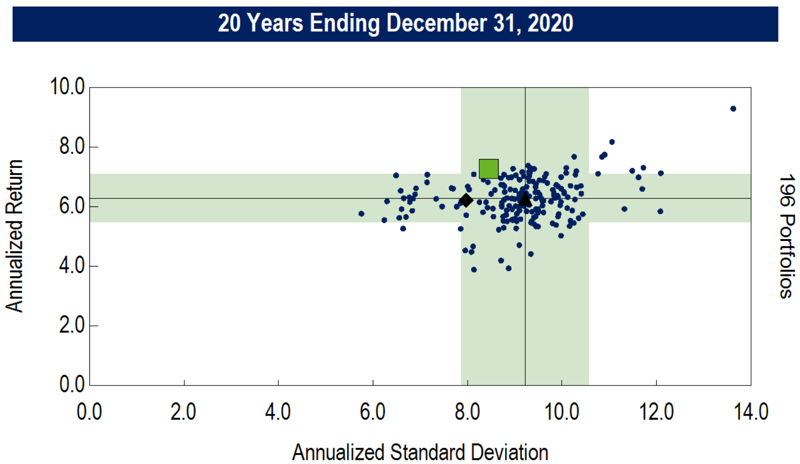
- **Time Horizon:** Return assumptions will be based on a ten year time horizon with a detailed review and analysis to be made at least annually to monitor allocations and assumptions. Should a manager deviate from proscribed mandate or expected risk and return profile by a consequential degree, that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

EXECUTIVE SUMMARY





Statistics Summary

	Anlzd Ret	Anlzd Std Dev	Rank
Composite	7.3%	8.4%	17
Allocation Index	6.3%	8.0%	76
Policy Index	6.6%	8.6%	57
InvMetrics Public DB Gross Median	6.7%	9.3%	--

Performance

- The Composite returned -0.5% (net) for the month underperforming the Allocation Index (0.0%) and Policy Index (0.0%).
- After a strong start to the year, developed market equities subsequently reversed course, ending January in the red. The market volatility was fueled by a short squeeze in a number of heavily-shorted names. The S&P 500 Index was down 1.0% for the month while the MSCI ACWI ex USA was up 0.2% for the month. The portfolio's domestic equity composite returned -1.1% (net) while International Equity returned 0.1% (net) for the month. Emerging markets exposure has been added to the portfolio through the recent funding of Axiom.
- Within fixed income, the yield curve modestly steepened with the 10- and 30-year Treasury yields rising 17 and 20 basis points, respectively. The Fixed Income Composite returned -0.4% (net) for the month while the BC Agg and BC US HY returned -0.7 and 0.3% respectively.
- This brings the total plan return for the trailing one year period to 12.2% (net), while the Allocation and Policy Index returned 13.1% (net) and 12.8%(net) respectively.

20 years Risk/Return is as of 12/31/2020. 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 8.6% 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 (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Composite	**643,652,965**	**100.0**	**100.0**	**-0.5**	**12.2**	**6.7**	**9.4**	**7.6**	**7.0**	**Jan-86**
Allocation Index				*0.0*	*13.1*	*7.2*	*10.0*	*7.8*	*--*	*Jan-86*
Policy Index				*0.0*	*12.8*	*7.6*	*10.3*	*8.0*	*--*	*Jan-86*
Total Balanced	**4,574,038**	**0.7**	**0.0**	**-0.1**	**12.1**	**3.9**	**7.5**	**4.3**	**4.7**	**Dec-10**
PRIT Core Fund	4,574,038	0.7		-0.1	12.2	7.4	10.5	8.4	7.0	Apr-99
60% S&P 500 / 40% BBgBarc Aggregate				*-0.9*	*12.9*	*9.6*	*11.5*	*9.8*	*6.5*	*Apr-99*
Total Domestic Equity	**180,051,177**	**28.0**	**26.0**	**-1.1**	**19.0**	**12.6**	**15.9**	**13.0**	**7.8**	**May-99**
Russell 3000				*-0.4*	*20.5*	*12.4*	*16.7*	*13.5*	*7.3*	*May-99*
Large Cap	**134,887,261**	**21.0**	**20.0**	**-2.0**	**18.4**	**13.3**	**16.0**	**13.3**	**13.9**	**Dec-10**
Rhumbline Advisors S&P 500 Index Fund	59,613,328	9.3	8.0	-1.0	17.2	11.6	16.0	13.4	9.0	Apr-97
S&P 500				*-1.0*	*17.2*	*11.7*	*16.2*	*13.5*	*8.9*	*Apr-97*
Coho Relative Value Equity	37,352,131	5.8	6.0	-3.2	11.1	7.2	--	--	11.4	Mar-16
Russell 1000 Value				*-0.9*	*4.1*	*4.4*	*10.7*	*10.2*	*10.9*	*Mar-16*
Polen Focused Growth	37,921,802	5.9	6.0	-2.6	27.1	21.8	21.0	--	21.0	Feb-16
Russell 1000 Growth				*-0.7*	*34.5*	*19.9*	*22.2*	*16.8*	*22.2*	*Feb-16*
Small Cap	**45,163,916**	**7.0**	**6.0**	**1.6**	**21.3**	**11.2**	**16.1**	**12.4**	**13.1**	**Dec-10**
Boston Partners Small Cap Value	22,655,761	3.5	3.0	1.6	7.6	3.5	10.8	9.1	10.4	Feb-97
Russell 2000 Value				*5.3*	*16.4*	*5.1*	*12.3*	*9.2*	*9.0*	*Feb-97*
Loomis Sayles Small Cap Growth	22,508,155	3.5	3.0	1.6	35.6	18.7	21.2	15.4	7.8	Jan-97
Russell 2000 Growth				*4.8*	*42.7*	*16.5*	*20.2*	*14.1*	*8.3*	*Jan-97*
Total Non-US Equity	**142,674,280**	**22.2**	**21.0**	**0.1**	**18.6**	**4.2**	**11.4**	**4.8**	**5.0**	**Mar-99**
International Equity	**122,674,280**	**19.1**	**15.0**	**0.1**	**19.7**	**6.2**	**11.8**	**5.6**	**4.8**	**Sep-05**
SEG Baxter Street	39,999,752	6.2	5.0	-2.3	15.6	8.5	--	--	12.2	May-16
MSCI ACWI ex USA				*0.2*	*14.0*	*3.1*	*10.5*	*4.8*	*9.0*	*May-16*
Schroder International Alpha Trust Class 1	50,720,990	7.9	5.0	0.3	28.1	8.1	12.7	--	8.4	Mar-12
MSCI ACWI ex USA				*0.2*	*14.0*	*3.1*	*10.5*	*4.8*	*5.9*	*Mar-12*
Baillie Gifford International Growth Fund Class K	31,953,539	5.0		3.0	--	--	--	--	24.4	Oct-20
MSCI ACWI ex USA				*0.2*	*14.0*	*3.1*	*10.5*	*4.8*	*17.3*	*Oct-20*

Since inception return is 8.6% 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.

TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value ($)	% of Portfolio	Policy %	1 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Emerging Markets Equity	**20,000,000**	**3.1**	**6.0**	**--**	**--**	**--**	**--**	**--**	**--**	**Feb-21**
MSCI Emerging Markets				*3.1*	*27.9*	*4.4*	*15.0*	*4.2*	*--*	*Feb-21*
Axiom Emerging Markets Trust Class 2	20,000,000	3.1		--	--	--	--	--	--	Feb-21
MSCI Emerging Markets				*3.1*	*27.9*	*4.4*	*15.0*	*4.2*	*--*	*Feb-21*
Total Fixed Income	**166,023,773**	**25.8**	**27.0**	**-0.4**	**7.9**	**5.8**	**6.1**	**5.2**	**6.7**	**Mar-99**
Garcia Hamilton Fixed Income Aggregate	46,449,858	7.2	8.0	-0.9	5.1	--	--	--	5.4	Apr-18
BBgBarc US Aggregate TR				*-0.7*	*4.7*	*5.5*	*4.0*	*3.8*	*5.9*	*Apr-18*
Lord Abbett Core Fixed Income	26,520,388	4.1	4.0	-0.3	5.7	--	--	--	6.2	Apr-18
BBgBarc US Aggregate TR				*-0.7*	*4.7*	*5.5*	*4.0*	*3.8*	*5.9*	*Apr-18*
Rhumbline TIPS	31,897,475	5.0	5.0	0.3	8.8	6.3	--	--	4.5	Jun-16
BBgBarc US TIPS TR				*0.3*	*9.1*	*6.3*	*4.8*	*3.8*	*4.6*	*Jun-16*
Loomis Sayles Multisector Full Discretion Trust	49,307,959	7.7	8.0	-0.8	11.2	6.8	8.3	6.2	8.0	Mar-99
BBgBarc US Aggregate TR				*-0.7*	*4.7*	*5.5*	*4.0*	*3.8*	*4.9*	*Mar-99*
BBgBarc US High Yield TR				*0.3*	*7.4*	*6.1*	*9.0*	*6.6*	*6.9*	*Mar-99*
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1	11,792,594	1.8	2.0	0.9	4.4	--	--	--	4.6	Aug-19
Credit Suisse Leveraged Loan				*1.3*	*3.5*	*4.1*	*5.6*	*4.4*	*3.9*	*Aug-19*
Invesco Mortgage Recovery Loans Feeder Fund	55,499	0.0		0.0	-0.3	4.9	0.7	6.7	11.9	Apr-10
BBgBarc US Aggregate TR				*-0.7*	*4.7*	*5.5*	*4.0*	*3.8*	*3.9*	*Apr-10*
Total Hedge Fund	**37,930,043**	**5.9**	**6.0**	**-0.4**	**6.6**	**3.5**	**4.5**	**3.6**	**3.4**	**Oct-06**
PRIM Portfolio Completion Strategies	14,249,776	2.2		1.7	3.0	2.4	4.6	4.1	3.8	Oct-06
Corbin Pinehurst Partners	11,544,831	1.8		-2.3	9.6	--	--	--	7.4	Nov-18
HFRI Fund of Funds Composite Index				*-0.9*	*9.6*	*3.8*	*4.9*	*3.2*	*7.1*	*Nov-18*
UBS Neutral Alpha Strategies	11,383,524	1.8		-1.1	9.0	--	--	--	6.4	Nov-18
HFRI Fund of Funds Composite Index				*-0.9*	*9.6*	*3.8*	*4.9*	*3.2*	*7.1*	*Nov-18*
Entrust Peru Wind Down	751,912	0.1		-0.1	-0.4	-4.0	--	--	-4.1	Dec-17
HFRI Fund of Funds Composite Index				*-0.9*	*9.6*	*3.8*	*4.9*	*3.2*	*4.6*	*Dec-17*
Other	**5,214,609**	**0.8**	**0.0**	**0.0**	**0.4**	**1.7**	**1.3**	**0.7**	**0.7**	**Dec-10**
Cash Account	5,214,609	0.8		0.0	0.4	1.7	1.3	0.7	1.8	Feb-00
91 Day T-Bills				*0.0*	*0.3*	*1.4*	*1.1*	*0.6*	*1.6*	*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.
Axiom Emerging Markets Trust Class 2 funded as of 02/2021.

MWRA Employees' Retirement System

TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value ($)	% of Portfolio	Policy %	1 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Real Estate	**50,649,550**	**7.9**	**10.0**	**0.0**	**2.4**	**5.9**	**7.2**	**10.3**	**7.7**	**Apr-99**
NCREIF Property Index				*0.0*	*1.6*	*4.9*	*5.9*	*9.0*	*8.5*	*Apr-99*
Morgan Stanley Prime Property ($2.8m commitment in '95)	20,148,886	3.1		0.0	1.3	5.0	6.6	10.6	8.4	Sep-95
TA Realty Core Property Fund, LP ($15m commitment in '19)	20,577,472	3.2		0.0	5.5	--	--	--	6.0	Jun-19
Invesco Mortgage Recovery II ($3M commitment in '15)	1,151,262	0.2		0.0	-6.8	7.7	9.4	--	9.0	Oct-15
Landmark VI ($2m commitment in '11)	91,255	0.0		0.0	-11.4	-11.9	-7.2	--	3.5	Jul-11
Landmark VIII ($4m commitment in '17)	1,436,482	0.2		0.0	-4.0	1.3	--	--	13.0	Nov-17
Courtland/Mesirow MFire ($2m commitment in '11)	628,063	0.1		0.0	-6.9	-2.9	2.2	--	2.4	May-12
Cerberus ($1.5m commitment in '12)	579,620	0.1		0.0	11.0	10.6	7.9	--	12.4	May-13
TA Realty Fund X LP ($3.5m commitment in '12)	367,725	0.1		0.0	-8.6	6.9	7.2	--	8.7	May-13
TerraCap Partners III, LP ($2.6m commitment in '15)	1,686,358	0.3		0.0	1.8	3.6	7.7	--	10.2	Jul-15
TerraCap Partners IV, LP ($4m commitment in '17)	3,982,427	0.6		0.0	0.9	8.6	--	--	8.6	Nov-17
Total Private Equity	**56,535,495**	**8.8**	**10.0**	**0.0**	**5.8**	**7.8**	**6.6**	**12.0**	**9.1**	**Apr-99**
C|A US All PE				*0.0*	*9.3*	*11.2*	*12.8*	*12.7*	*12.2*	*Apr-99*
NASDAQ W/O Income				*1.4*	*42.8*	*20.8*	*23.2*	*17.1*	*8.0*	*Apr-99*
PRIM Vintage Year 2008 ($3m commitment in '08)	1,019,267	0.2		-0.1	8.2	11.3	16.3	18.5	8.6	Jun-08
PRIM Vintage Year 2009 ($1m commitment in '09)	174,474	0.0		0.0	57.6	36.2	26.7	21.6	12.2	Nov-09
PRIM Vintage Year 2010 ($1m commitment in '10)	556,393	0.1		0.0	39.7	17.8	18.4	13.5	10.0	Jun-10
PRIM Vintage Year 2011 ($1.5m commitment in '11)	940,012	0.1		-0.1	14.4	15.3	17.9	--	4.4	May-11
PRIM Vintage Year 2012 ($1m commitment in '12)	748,486	0.1		-0.2	40.7	19.2	20.3	--	-12.0	Jun-12
PRIM Vintage Year 2014 ($2m commitment in '14)	1,988,755	0.3		-0.1	22.8	24.3	20.7	--	3.9	Jun-14
PRIM Vintage Year 2017 ($2m commitment in '17)	1,476,491	0.2		0.5	19.2	11.1	--	--	10.1	May-17
PRIM Vintage Year 2020 ($5m commitment in '20)	327,525	0.1		-0.8	--	--	--	--	8.3	Mar-20
PRIM Vintage Year 2021 ($5m commitment in '21)	27,505	0.0		0.0	--	--	--	--	0.0	Dec-20
Alcentra European DLF ($5m commitment in '14)	924,753	0.1		0.0	-4.8	-0.9	2.1	--	3.9	Jan-15
Ascent Fund IV ($2m commitment in '04)	31,080	0.0		0.0	-1.1	-52.5	-44.8	-32.9	-21.2	Jul-04
Ascent Fund IV-B ($1m commitment in '16)	149,795	0.0		0.0	-28.9	-21.6	--	--	-13.3	Jul-16
Ascent Fund V ($2m commitment in '08)	1,624,903	0.3		0.0	-10.5	-5.4	0.4	5.5	4.1	Oct-08
Ascent VI ($3m commitment in '15)	2,846,317	0.4		0.0	-7.3	0.1	2.0	--	0.3	Dec-15
CVI Credit Value Fund IV A LP ($6m commitment in '17)	5,983,869	0.9		0.0	-5.4	2.3	--	--	2.2	Dec-17
Invesco Fund IV ($3m commitment in '03)	1,381	0.0		0.0	-14.9	-19.9	-10.1	1.1	--	Feb-04

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 (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Invesco Fund VI ($5m commitment in '13)	6,853,465	1.1		0.0	22.2	13.8	13.2	--	14.3	Jul-13
Kayne Energy Fund VII ($5m commitment in '15)	1,500,446	0.2		0.0	-66.8	-38.8	-17.2	--	-16.9	Jan-16
Foundry 2007 ($3m commitment in '07)	206,805	0.0		0.0	-11.4	-21.0	-23.4	5.0	14.8	Dec-07
Foundry 2010 ($3m commitment in '10)	3,888,104	0.6		0.0	25.9	12.2	8.5	9.9	9.9	Jan-11
Foundry 2010 Annex ($0.4m commitment in '15)	390,580	0.1		0.0	100.9	49.4	32.0	--	27.7	Sep-15
Pinebridge PEP V ($6m commitment in '07)	743,228	0.1		0.0	12.7	0.4	1.8	8.7	--	Mar-08
Landmark XV ($3m commitment in '13)	1,298,784	0.2		0.0	-0.9	7.3	9.4	--	11.6	Nov-13
JFL Equity Investors IV, L.P. ($6m commitment in '16)	6,939,534	1.1		0.0	9.7	37.5	--	--	31.5	Jan-17
Private Advisors Small Co. Coinvestment Fund, LP ($4m commitment in '17)	4,260,351	0.7		0.0	27.7	22.2	--	--	18.2	Feb-17
Park Square Credit Opportunities III ($3m commitment in '17)	2,634,590	0.4		0.0	5.7	5.9	--	--	5.9	Feb-18
Ironsides Constitution Opportunities ($3m commitment in '18)	2,356,903	0.4		0.0	5.0	--	--	--	7.5	Sep-18
HarbourVest Dover Street X ($9m commitment in '20)	2,316,154	0.4		0.0	--	--	--	--	83.4	Jun-20
Hamilton Lane Secondary Fund V LP ($9m commitment in '20)	1,815,777	0.3		0.0	--	--	--	--	10.8	Jul-20
JFL Equity Investors V, L.P. ($8m commitment in '20)	2,509,768	0.4		0.0	--	--	--	--	-7.9	Sep-20
Private Equity Benchmark (1 Qtr. Lag)				*0.0*	*13.4*	*13.1*	*13.0*	*13.1*	*21.5*	*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 1/31/2021	% of Portfolio	Estimated Annual Fee ($)	Estimated Annual Fee (%)
PRIT Core Fund	0.49% of Assets	$4,574,038	0.7%	$22,413	0.49%
Rhumbline Advisors S&P 500 Index Fund	0.05% of Assets	$59,613,328	9.3%	$29,807	0.05%
Coho Relative Value Equity	0.50% of First 75.0 Mil, 0.40% of Next 75.0 Mil, 0.35% Thereafter	$37,352,131	5.8%	$186,761	0.50%
Polen Focused Growth	0.65% of Assets	$37,921,802	5.9%	$246,492	0.65%
Boston Partners Small Cap Value	1.00% of Assets	$22,655,761	3.5%	$226,558	1.00%
Loomis Sayles Small Cap Growth	0.45% of Assets	$22,508,155	3.5%	$101,287	0.45%
SEG Baxter Street	1.00% of Assets	$39,999,752	6.2%	$399,998	1.00%
Schroder International Alpha Trust Class 1	0.55% of Assets	$50,720,990	7.9%	$278,965	0.55%
Baillie Gifford International Growth Fund Class K	0.60% of Assets	$31,953,539	5.0%	$191,721	0.60%
Axiom Emerging Markets Trust Class 2	No Fee	$20,000,000	3.1%	--	--
Garcia Hamilton Fixed Income Aggregate	0.25% of First 25.0 Mil, 0.20% Thereafter	$46,449,858	7.2%	$105,400	0.23%
Lord Abbett Core Fixed Income	0.19% of Assets	$26,520,388	4.1%	$50,389	0.19%
Rhumbline TIPS	0.05% of First 50.0 Mil, 0.04% Thereafter	$31,897,475	5.0%	$15,949	0.05%
Loomis Sayles Multisector Full Discretion Trust	0.50% of First 20.0 Mil, 0.40% of Next 20.0 Mil, 0.30% Thereafter	$49,307,959	7.7%	$207,924	0.42%
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1	0.40% of Assets	$11,792,594	1.8%	$47,170	0.40%
Invesco Mortgage Recovery Loans Feeder Fund	No Fee	$55,499	0.0%	--	--
PRIM Portfolio Completion Strategies	No Fee	$14,249,776	2.2%	--	--
Corbin Pinehurst Partners	0.85% of Assets	$11,544,831	1.8%	$98,131	0.85%
UBS Neutral Alpha Strategies	0.90% of Assets	$11,383,524	1.8%	$102,452	0.90%
Entrust Peru Wind Down	0.50% of Assets	$751,912	0.1%	$3,760	0.50%
Cash Account	No Fee	$5,214,609	0.8%	--	--
Morgan Stanley Prime Property ($2.8m commitment in '95)	No Fee	$20,148,886	3.1%	--	--
TA Realty Core Property Fund, LP ($15m commitment in '19)	No Fee	$20,577,472	3.2%	--	--
Invesco Mortgage Recovery II ($3M commitment in '15)	No Fee	$1,151,262	0.2%	--	--
Landmark VI ($2m commitment in '11)	No Fee	$91,255	0.0%	--	--

MWRA Employees' Retirement System

ESTIMATED FEE SCHEDULE

Account	Fee Schedule	Market Value As of 1/31/2021	% of Portfolio	Estimated Annual Fee ($)	Estimated Annual Fee (%)
Landmark VIII ($4m commitment in '17)	No Fee	$1,436,482	0.2%	--	--
Courtland/Mesirow MFire ($2m commitment in '11)	No Fee	$628,063	0.1%	--	--
Cerberus ($1.5m commitment in '12)	No Fee	$579,620	0.1%	--	--
TA Realty Fund X LP ($3.5m commitment in '12)	No Fee	$367,725	0.1%	--	--
TerraCap Partners III, LP ($2.6m commitment in '15)	No Fee	$1,686,358	0.3%	--	--
TerraCap Partners IV, LP ($4m commitment in '17)	No Fee	$3,982,427	0.6%	--	--
PRIM Vintage Year 2008 ($3m commitment in '08)	No Fee	$1,019,267	0.2%	--	--
PRIM Vintage Year 2009 ($1m commitment in '09)	No Fee	$174,474	0.0%	--	--
PRIM Vintage Year 2010 ($1m commitment in '10)	No Fee	$556,393	0.1%	--	--
PRIM Vintage Year 2011 ($1.5m commitment in '11)	No Fee	$940,012	0.1%	--	--
PRIM Vintage Year 2012 ($1m commitment in '12)	No Fee	$748,486	0.1%	--	--
PRIM Vintage Year 2014 ($2m commitment in '14)	No Fee	$1,988,755	0.3%	--	--
PRIM Vintage Year 2017 ($2m commitment in '17)	No Fee	$1,476,491	0.2%	--	--
PRIM Vintage Year 2020 ($5m commitment in '20)	No Fee	$327,525	0.1%	--	--
PRIM Vintage Year 2021 ($5m commitment in '21)	No Fee	$27,505	0.0%	--	--
Alcentra European DLF ($5m commitment in '14)	No Fee	$924,753	0.1%	--	--
Ascent Fund IV ($2m commitment in '04)	No Fee	$31,080	0.0%	--	--
Ascent Fund IV-B ($1m commitment in '16)	No Fee	$149,795	0.0%	--	--
Ascent Fund V ($2m commitment in '08)	No Fee	$1,624,903	0.3%	--	--
Ascent VI ($3m commitment in '15)	No Fee	$2,846,317	0.4%	--	--
CVI Credit Value Fund IV A LP ($6m commitment in '17)	No Fee	$5,983,869	0.9%	--	--
Invesco Partnership Fund IV ($3m commitment in '03)	No Fee	$1,381	0.0%	--	--
Invesco Fund VI ($5m commitment in '13)	No Fee	$6,853,465	1.1%	--	--
Kayne Energy Fund VII ($5m commitment in '15)	No Fee	$1,500,446	0.2%	--	--
Foundry 2007 ($3m commitment in '07)	No Fee	$206,805	0.0%	--	--
Foundry 2010 ($3m commitment in '10)	No Fee	$3,888,104	0.6%	--	--
Foundry 2010 Annex ($0.4m commitment in '15)	No Fee	$390,580	0.1%	--	--
Pinebridge (AIG) PEP V Asia ($6m commitment in '07)	No Fee	$59,005	0.0%	--	--
Pinebridge (AIG) PEP V Co-Investment ($6m commitment in '07)	No Fee	$61,898	0.0%	--	--
Pinebridge (AIG) PEP V Europe ($6m commitment in '07)	No Fee	$27,626	0.0%	--	--

MWRA Employees' Retirement System

ESTIMATED FEE SCHEDULE

Account	Fee Schedule	Market Value As of 1/31/2021	% of Portfolio	Estimated Annual Fee ($)	Estimated Annual Fee (%)
Pinebridge (AIG) PEP V Large Market US Buyout ($6m commitment in '07)	No Fee	$127,137	0.0%	--	--
Pinebridge (AIG) PEP V Preferred Participation Fund ($6m commitment in '07)	No Fee	$239,501	0.0%	--	--
Pinebridge (AIG) PEP V Secondary ($6m commitment in '07)	No Fee	$34,233	0.0%	--	--
Pinebridge (AIG) PEP V Small-Mid Market US Buyout ($6m commitment in '07)	No Fee	$96,198	0.0%	--	--
Pinebridge (AIG) PEP V US Venture ($6m commitment in '07)	No Fee	$97,630	0.0%	--	--
Landmark XV ($3m commitment in '13)	No Fee	$1,298,784	0.2%	--	--
JFL Equity Investors IV, L.P. ($6m commitment in '16)	No Fee	$6,939,534	1.1%	--	--
Private Advisors Small Co. Coinvestment Fund, LP ($4m commitment in '17)	No Fee	$4,260,351	0.7%	--	--
Park Square Credit Opportunities III ($3m commitment in ’17)	No Fee	$2,634,590	0.4%	--	--
Ironsides Constitution Opportunities ($3m commitment in '18)	No Fee	$2,356,903	0.4%	--	--
HarbourVest Dover Street X ($9m commitment in '20)	No Fee	$2,316,154	0.4%	--	--
Hamilton Lane Secondary Fund V LP ($9m commitment in '20)	No Fee	$1,815,777	0.3%	--	--
JFL Equity Investors V, L.P. ($8m commitment in '20)	No Fee	$2,509,768	0.4%	--	--
Investment Management Fee		**$643,652,965**	**100.0%**	**$2,315,174**	**0.36%**

Note:
Estimate fee for privates are ~$1,301,900 annually, which brings the total expense ratio for privates to ~20 bps. This brings the total estimated expense ratio for MWRA to ~56 bps.

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 7.0% for the current month.

4 - Preliminary Total Composite gross of fee since inception return is 8.6% 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: 20% S&P 500, 6% Russell 2000, 10% MSCI EAFE, 5% MSCI ACWI IMI , 6% MSCI Emerging Markets, 12% BBgBarc US Aggregate TR, 5% BBgBarc US TIPS TR, 8% BBgBarc US Universal TR, 10% NCREIF Property Index, 10% C|A US All PE , 6% HFRI Fund of Funds Composite Index, 2% Credit Suisse Leveraged Loan.

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.

MWRA Employees' Retirement System

Asset Allocation Rebalance Summary

February 19, 2021

	Market Value	Weight in Fund	Target Weight	Recommendation	New Market Value	New Weight
Composite	**$661,030,661**	**100.0%**	**100.0%**	**$0**	**$661,030,661**	**100.0%**
Total Balanced	**$4,574,038**	**0.7%**	**0.0%**	**$0**	**$4,574,038**	**0.7%**
PRIT Core Fund	$4,574,038	0.7%	0.0%	$0	$4,574,038	0.7%
Total Domestic Equity	**$191,336,390**	**28.9%**	**26.0%**	**-$2,000,000**	**$189,336,390**	**28.6%**
Rhumbline Advisors S&P 500 Index Fund	$62,772,834	9.5%	8.0%	-$2,000,000	$60,772,834	9.2%
Coho Relative Value	$38,624,810	5.8%	6.0%	$0	$38,624,810	5.8%
Polen Focused Growth	$40,418,524	6.1%	6.0%	$0	$40,418,524	6.1%
Robeco Boston Partners Small Cap Value	$24,670,754	3.7%	3.0%	$0	$24,670,754	3.7%
Loomis Sayles Small Cap Growth	$24,849,468	3.8%	3.0%	$0	$24,849,468	3.8%
Total International Equity	**$147,684,867**	**22.3%**	**21.0%**	**-$2,000,000**	**$145,684,867**	**22.0%**
SEG - Baxter Street Fund	$39,999,752	6.1%	5.0%	$0	$39,999,752	6.1%
Schroders International Alpha	$53,891,052	8.2%	5.0%	-$12,000,000	$41,891,052	6.3%
Baillie Gifford	$33,794,063	5.1%	5.0%	-$10,000,000	$23,794,063	3.6%
Axiom Emerging Markets	$20,000,000	3.0%	3.0%	$0	$20,000,000	3.0%
ABS Emerging Markets	$0	0.0%	3.0%	$20,000,000	$20,000,000	3.0%
Total Equity	**$339,021,257**	**51.3%**	**47.0%**	**-$4,000,000**	**$335,021,257**	**50.7%**
Total Fixed Income	**$165,062,402**	**25.0%**	**27.0%**	**$0**	**$165,062,402**	**25.0%**
Garcia Hamilton	$46,163,184	7.0%	8.0%	$0	$46,163,184	7.0%
Lord Abbett	$26,310,877	4.0%	4.0%	$0	$26,310,877	4.0%
Loomis Sayles Multi Sector Bonds	$49,307,959	7.5%	8.0%	$0	$49,307,959	7.5%
Rhumbline TIPS	$31,432,289	4.8%	5.0%	$0	$31,432,289	4.8%
Octagon Senior Secured Loans	$11,792,594	1.8%	2.0%	$0	$11,792,594	1.8%
Invesco Mortgage Recovery	$55,499	0.0%	0.0%	$0	$55,499	0.0%
Total Hedge Fund	**$37,930,043**	**5.7%**	**6.0%**	**$0**	**$37,930,043**	**5.7%**
PRIM Absolute Return Fund	$14,249,776	2.2%		$0	$14,249,776	2.2%
Corbin Pinehurst Partners	$11,544,831	1.7%		$0	$11,544,831	1.7%
UBS Neutral Alpha Strategies	$11,383,524	1.7%		$0	$11,383,524	1.7%
Entrust Peru Winddown	$751,912	0.1%		$0	$751,912	0.1%
Total Real Estate	**$50,649,550**	**7.7%**	**10.0%**	**$0**	**$50,649,550**	**7.7%**
TA Realty Core	$20,577,472	3.1%		$0	$20,577,472	3.1%
Morgan Stanley PPF	$20,148,886	3.0%		$0	$20,148,886	3.0%
Total Private Equity	**$56,535,495**	**8.6%**	**10.0%**	**$0**	**$56,535,495**	**8.6%**
Cash	**$7,257,876**	**1.1%**	**0.0%**	**$4,000,000**	**$11,257,876**	**1.7%**
Peoples United Cash	$7,257,876	1.1%	0.0%	$4,000,000	$11,257,876	1.7%

2021 ASSET ALLOCATION REVIEW

MWRA EMPLOYEES' RETIREMENT SYSTEM

February 25, 2021

Sebastian Grzejka, CAIA, Principal, Senior Consultant
Kiley Fischer, Consulting Analyst

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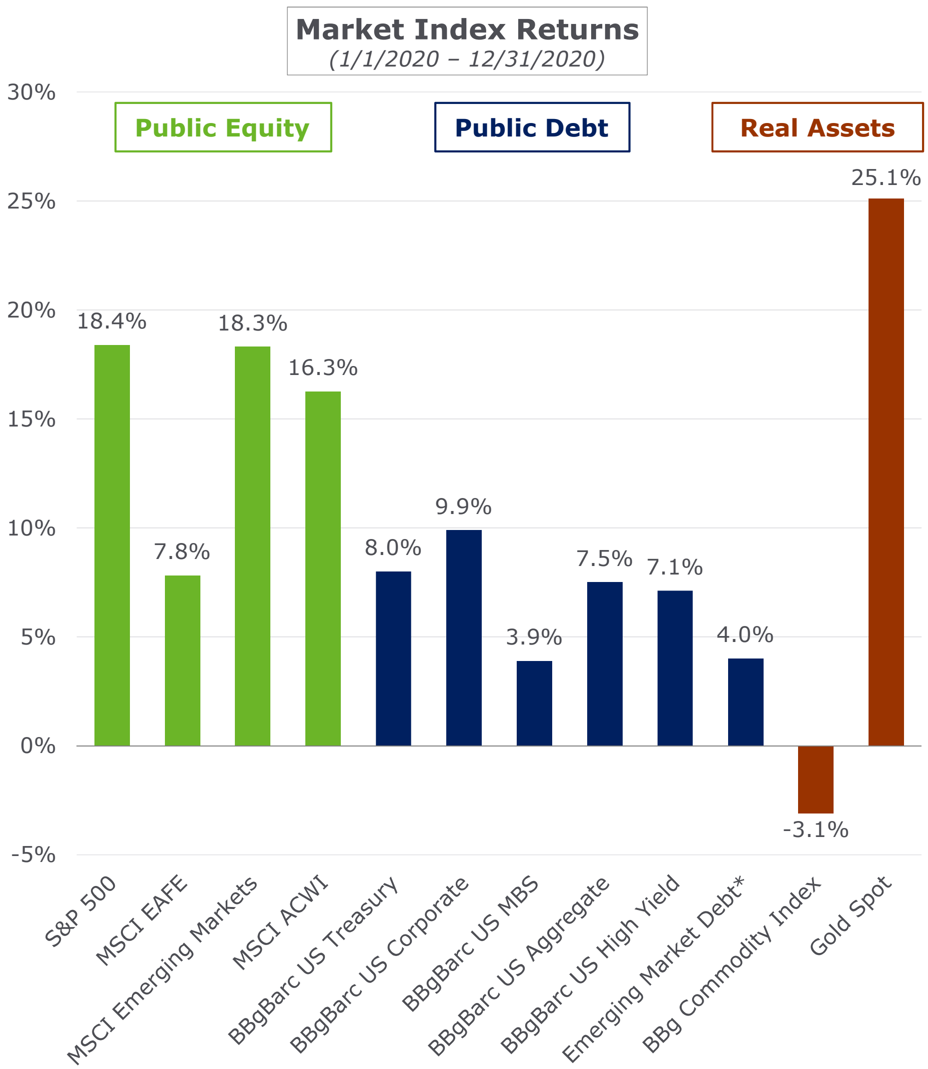
MARKET RECAP AND 2021 OUTLOOK

NEPC, LLC

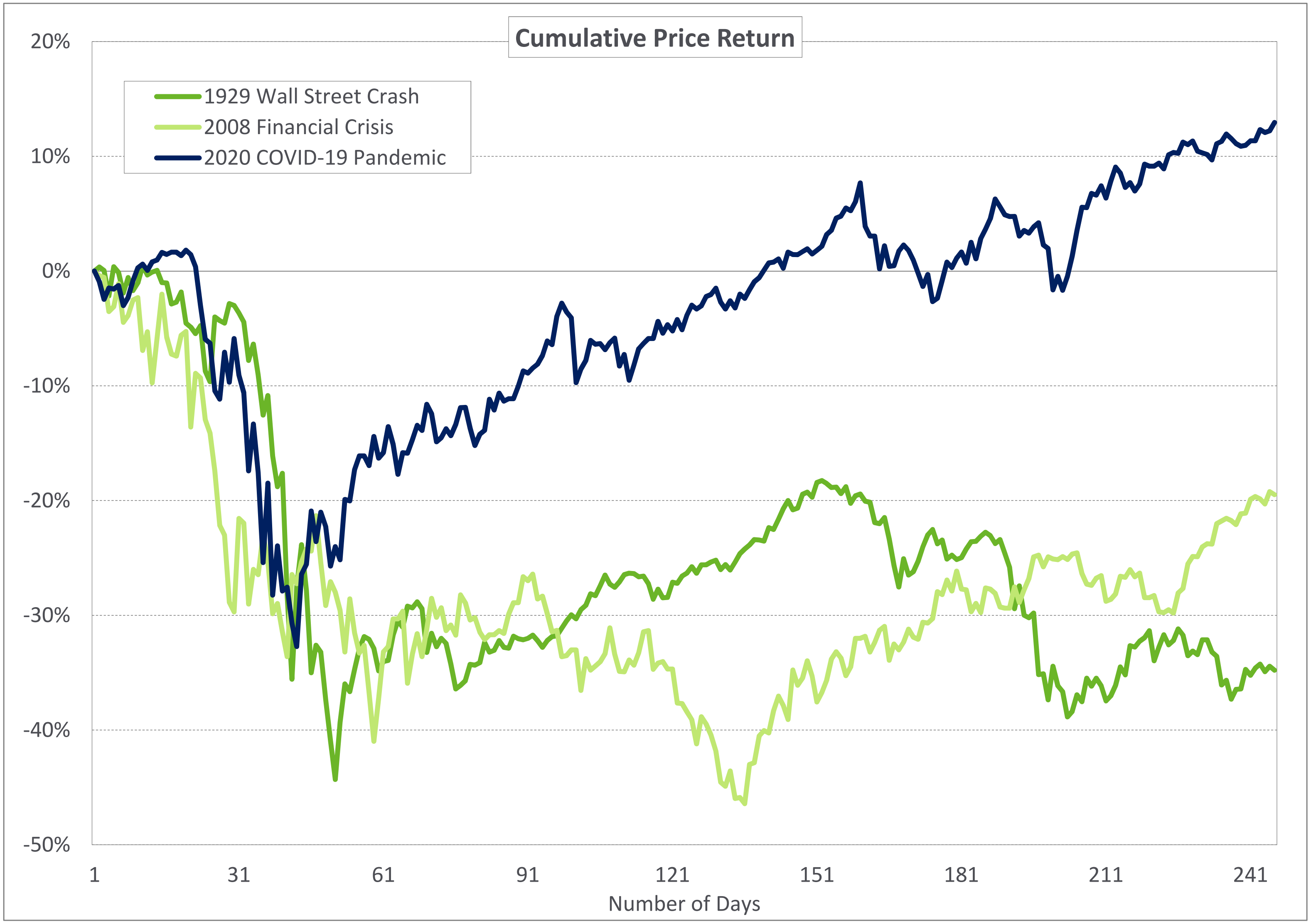
YEAR IN REVIEW – CALENDAR YEAR 2020



- **Following the equity and credit market sell-off in March, driven by COVID-19, asset valuations and market sentiment rebounded at an unprecedented pace**
  - The COVID-19 market was the shortest bear market in history
- **U.S. equities, emerging market equities and gold led the way for asset classes in 2020**
  - The S&P 500 gained 18.4% for the calendar year; MSCI EAFE and ACWI gained 7.8% and 16.0% respectively
  - Fixed Income saw a positive year as well; the BBgBarc US Treasury Index returned 8.0% while the BBgBarc U.S. Corporate Bond Index returned 9.9%
- **Inflation expectations recovered and credit spreads ended the year near pre-COVID levels**

**EMD benchmark is 50% JPM EMBI Global Diversified/50% JPM GBI-EM Global Diversified.*

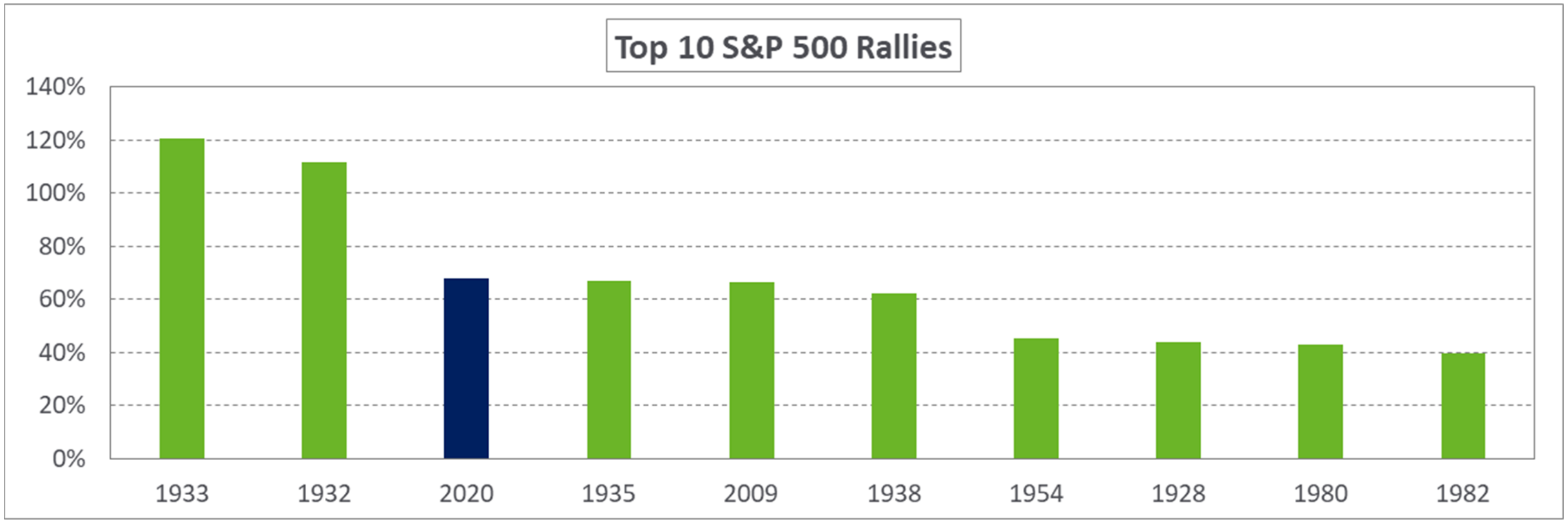
SHORTEST BEAR MARKET IN HISTORY

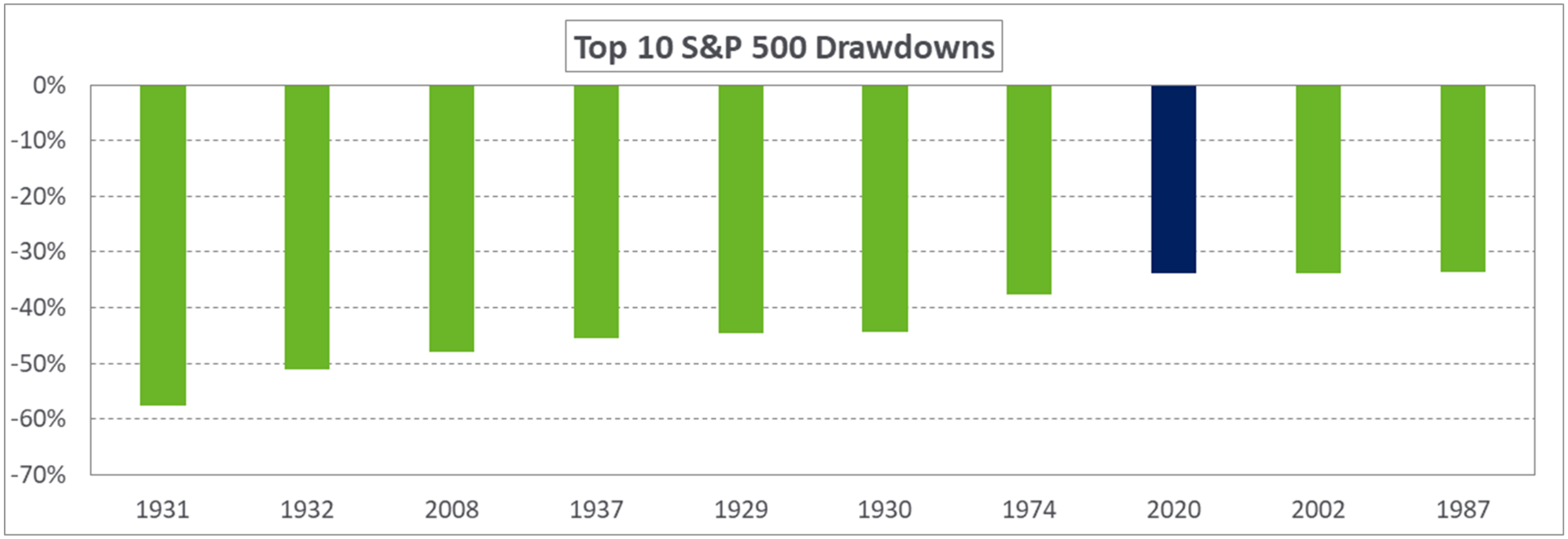


Source: S&P, FactSet

Financial Crisis represents S&P returns from 9/1/2008 – 8/10/2009; Wall Street Crash represents Dow Jones returns from 8/30/1929 – 8/25/1930; COVID-19 represents S&P returns from 1/23/2020 (representing the start of the Wuhan, China lockdown) – 12/31/2020

2020 WAS A MOMENTOUS YEAR

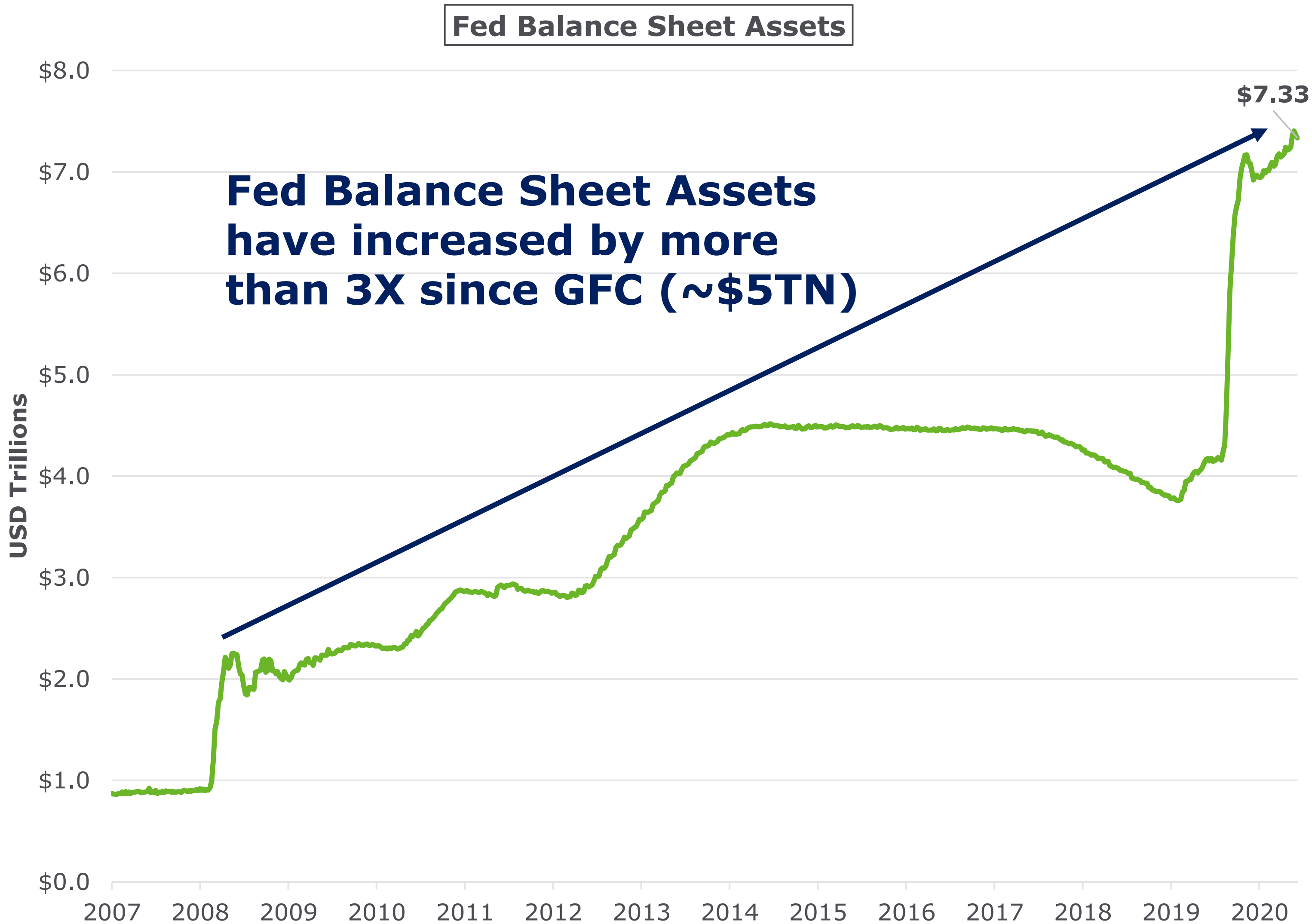




Source: S&P, FactSet

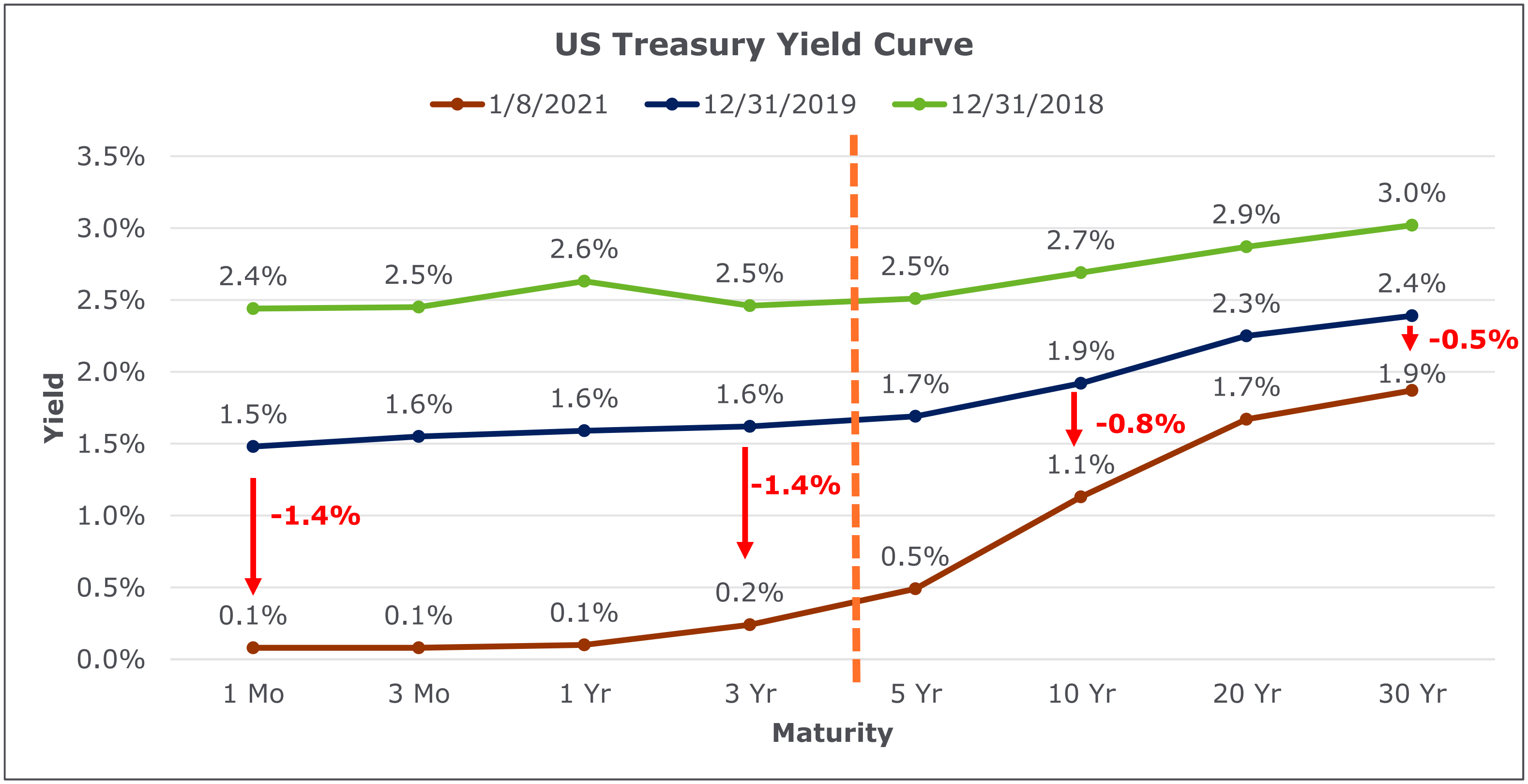
Rallies and drawdowns represent the largest trough-to-peak and peak-to-trough, respectively, within a calendar year

FEDERAL RESERVE BALANCE SHEET ASSETS

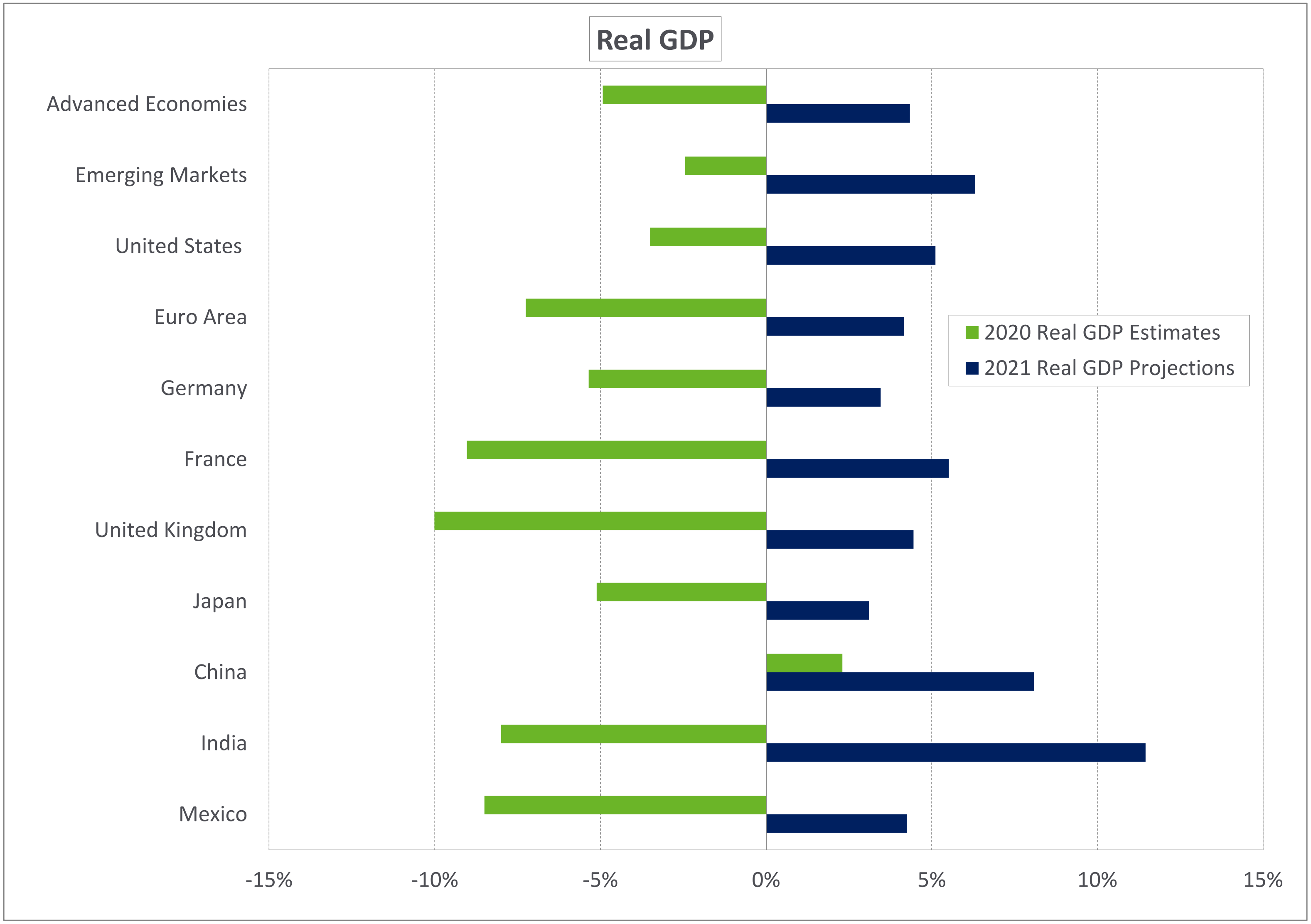


US TREASURY YIELD CURVE

- **Treasury yields have declined significantly over past few years; the market sell-off that occurred in March 2020 led to unprecedented quantitative easing from the Federal Reserve and drove short term interest rates near zero**
  - The Federal Reserve target range for the Fed Funds Rate is between 0.00% to 0.25%
  - NEPC anticipates that these market dynamics (i.e. 0% Interest Rates) will remain in place for an extended period

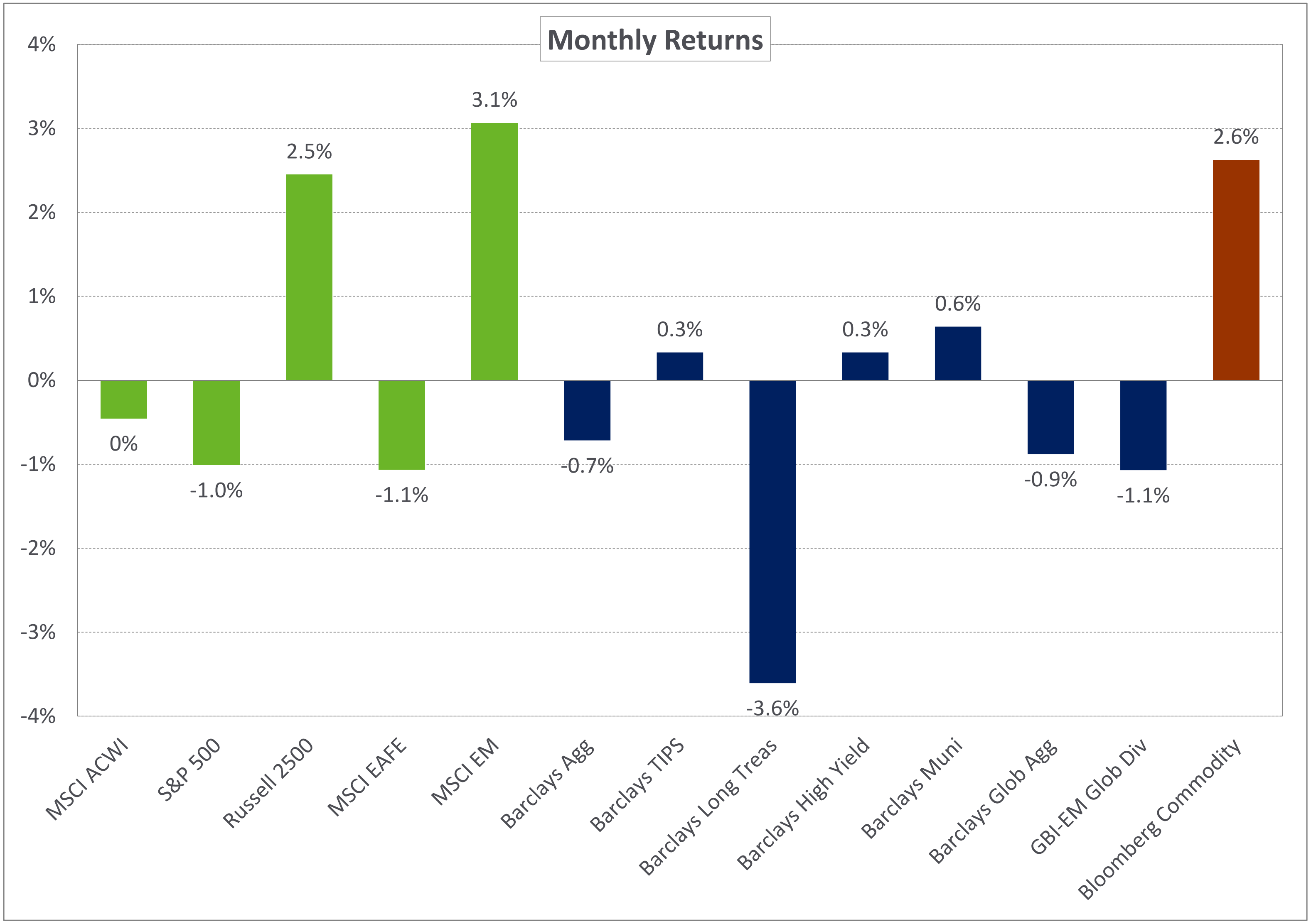


ECONOMIES EXPECTED TO RECOVER IN 2021



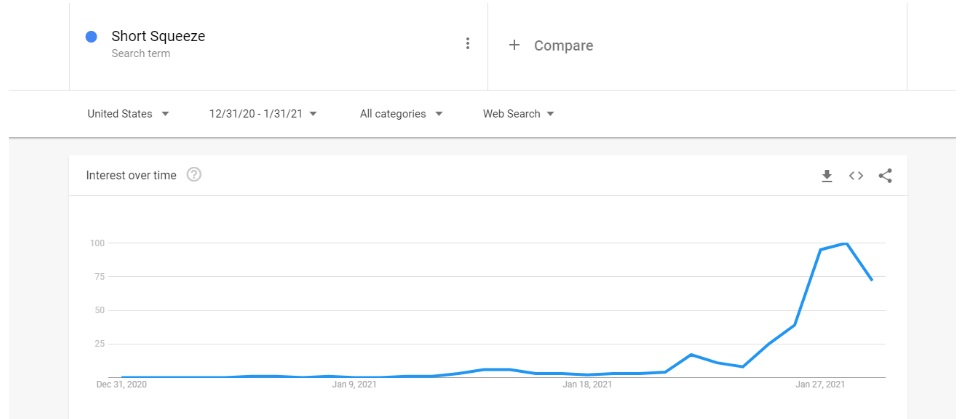
Source: IMF

2021 STARTED OFF ON AN UNEVEN NOTE



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

WILD START FOR 2021



THE WALL STREET JOURNAL.

Keith Gill in his Boston suburb basement, where he streams his YouTube videos.

Keith Gill Drove the GameStop Reddit Mania. He Talked to the Journal.

Source: Twitter, Google, Wall Street Journal

ASSET ALLOCATION REVIEW

NEPC, LLC

NEPC'S KEY MARKET THEMES (DECEMBER 2020)

Key Market Themes are factors that define global markets and can be expected to both evolve and remain relevant without a clear timeline of conclusion. At times, themes may be challenged or disrupted and generate market volatility.

Virus Trajectory

No Change in Status

Dormant	Faded	Neutral	Prevalent	**Dominant**

- Virus Trajectory continues to be the dominant force driving global economic outcomes
- Market sentiment improved with successful vaccine candidates, though concerns remain around distribution, logistics, and supply of the vaccine
- Uncertainty remains as worsening COVID-19 trends and a potential new strain of the virus may impact the timing of an economic recovery

Permanent Interventions

No Change in Status

Dormant	Faded	Neutral	Prevalent	**Dominant**

- Permanent Interventions continues to be the dominant force driving global markets upward
- In the US, a fifth coronavirus relief package worth about $900 billion was passed. In Europe, the Central Bank expanded its emergency bond-buying program by €500B and extended the program

Globalization Backlash

No Change in Status

Dormant	Faded	Neutral	**Prevalent**	Dominant

- The importance of the theme may increase in coming years as the lasting impact from the pandemic is seen
- The world will likely be faced with an amplified wealth divide given economic and labor market disruptions, which historically has driven more volatile political outcomes

China Transitions

No Change in Status

Dormant	Faded	**Neutral**	Prevalent	Dominant

- US-China tensions escalated as President Trump signed two executive orders that prohibited US investors from owning a select number of corporate securities from China and banned transactions with some Chinese software applications
- President-elect Biden has promised a policy review in 2021 regarding the US policy posture with China

NEPC'S STRATEGIC OUTLOOK BY BETA GROUP

Equity

- **Equity return assumptions have declined year-over-year as stock prices have rebounded sharply following the sell-off in March**
  - Discounting future earnings with lower interest rates supports higher equity valuation multiples over time

Credit

- **Credit return assumptions have declined year-over-year as credit spreads have tightened**
  - Safe-haven fixed income return assumptions are materially lower due to lower interest rates and muted inflation expectations

Real Assets

- **Real asset assumptions reflect a high level of uncertainty due to the dislocation in energy prices and a decline in demand for core real estate**
  - The strategic outlook for real assets reflects a high level of uncertainty due to subdued inflation expectations

Date Published	12/31/2020	12/31/2019	---
Asset Class	**10-Year Return**	**10-Year Return**	**Change YoY**
Cash	0.8%	1.8%	-1.0%
US Inflation	2.0%	2.3%	-0.3%
Equity			
US Large-Cap Equity	5.4%	6.0%	-0.6%
Int'l Developed Equity	5.9%	6.8%	-0.9%
Int'l Emerging Equity	7.5%	9.3%	-1.8%
*Global Equity**	*6.2%*	*7.0%*	*-0.8%*
*Private Equity**	*9.3%*	*10.0%*	*-0.7%*
Debt			
US Treasury Bond	0.9%	2.5%	-1.6%
*US Aggregate Bond**	*1.4%*	*3.0%*	*-1.6%*
US TIPS	1.0%	3.0%	-2.0%
US High Yield Corporate Bond	2.9%	5.3%	-2.4%
*Private Debt**	*6.1%*	*7.6%*	*-1.5%*
Real Assets			
Commodity Futures	0.9%	4.3%	-3.4%
US REIT	5.5%	6.8%	-1.3%
Gold	2.9%	NA	NA
Core Real Estate	4.4%	6.0%	-1.6%
Multi Asset			
*US 60/40**	*4.1%*	*5.1%*	*-1.0%*
*Global 60/40**	*4.6%*	*5.1%*	*-0.5%*
*Hedge Fund**	*4.0%*	*5.7%*	*-1.7%*

**Calculated as a blend of other asset classes*

MWRAERS ASSET ALLOCATION OVERVIEW

- **Each year, NEPC develops capital market assumptions which are forward looking, fundamental based forecasts**
  - Assumptions are developed with proprietary valuation models to generate both an intermediate (10-year) and long-term (30-year) outlook
  - Expected returns, volatility and correlations are produced based on a combination of forward looking analysis and historical data
    - Assumptions are developed for over 70 asset classes

- **We prepared an annual review of the Pension's asset allocation**
  - Our analysis focuses on developing a long term target allocation that matches with your goals and objectives, including liquidity and operating needs
  - Aside from reviewing the asset allocation, we will continue to focus on implementation throughout 2021 with a focus on private markets

- **We recommend fine tuning the Plans asset allocation with the following adjustments**
  - NEPC's permanent interventions theme, which views continued central bank support for markets and low rates, boosts sentiment and potential outlook for risk assets
    - We want to focus on increasing equity exposure, with an overweight to US and Emerging
  - Within fixed income, we recommend maintaining a balance of safe haven and return seeking exposure
    - We recommend a slight decrease to core bonds and TIPS exposure, while maintaining the current allocation to global multi-sector fixed income
  - Finally, we will continue to assess market opportunities for the Plan

MEAN VARIANCE - ASSET ALLOCATION SUMMARY

	Policy Target	Proposed Target
US Large Cap	20%	24%
US Small/Mid Cap	6%	7%
Non-US Developed	10%	12%
Non-US Developed Small Cap	5%	0%
Emerging Markets	6%	7%
Private Equity	10%	10%
Total Equity	**57%**	**60%**
Core Bonds	12%	10%
TIPS	5%	4%
Global Multi-Sector	10%	10%
Total Fixed Income	**27%**	**24%**
Real Estate	10%	10%
Total Real Assets	**10%**	**10%**
Hedge Funds	6%	6%
Total Multi-Asset	**6%**	**6%**

Expected Return 10 yrs	**5.6%**	**5.7%**
Expected Return 30 yrs	**6.6%**	**6.7%**
Standard Dev	**13.2%**	**13.6%**
Sharpe Ratio (10 yrs)	**0.36**	**0.36**

The asset allocation of the Plan is reviewed on an annual basis and adjustments are made based on portfolio goals and market opportunities. Today, we are profiling a potential mix which looks to make adjustments to the Plan's Equity and Fixed Income exposure.

Within equities, we recommend increasing the overall target allocation and balancing the regional exposure with an overweight to the US and Emerging Markets relative to the MSCI ACWI. The MSCI ACWI represents the global equity opportunity set. Further, given the recent changes to the allocation, we also recommend eliminating a direct target to Non US Small Cap and consolidating around a broad Non US target.

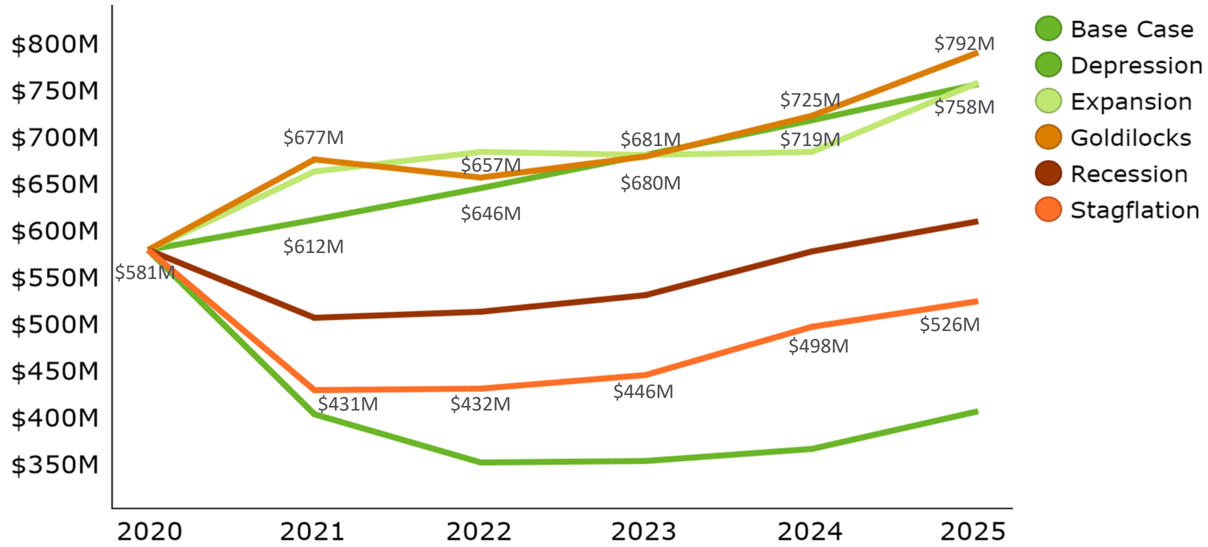
Within fixed income, we recommend decreasing the overall allocation and balancing the safe haven and return seeking credit exposure. To achieve this balance, we recommend trimming the Plan's exposure to core bonds and TIPS. Safe haven fixed income return assumptions are materially lower due to lower interest rates resulting in a higher equity risk premia.

The resulting asset allocation maintains a similar risk and return profile to the current policy. The recommended adjustments refine the allocation to better reflect current opportunities, as well as closer align the portfolio to current weightings.

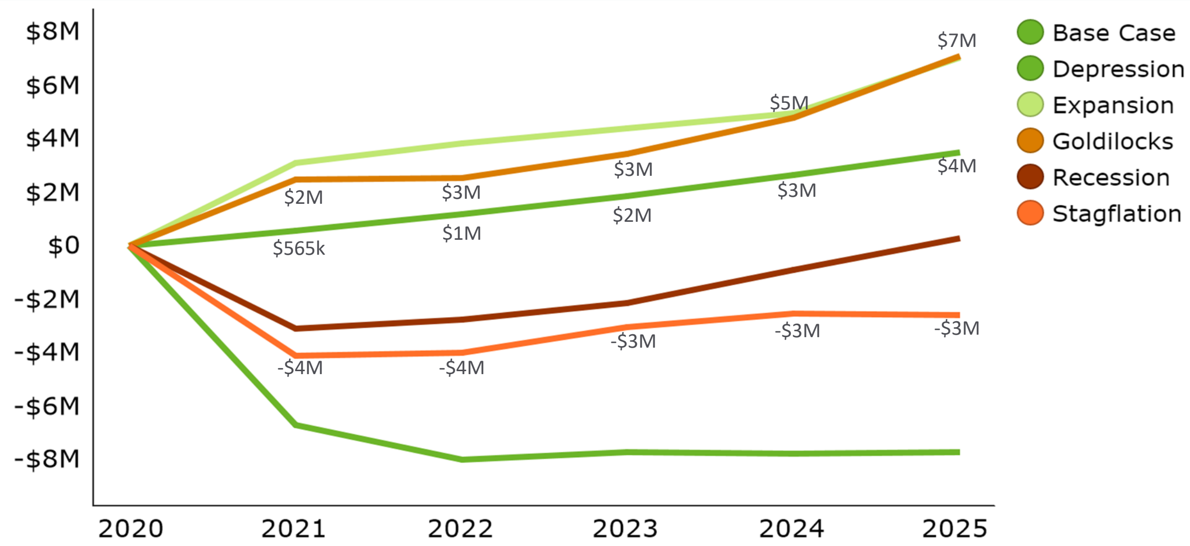
NEPC's 2021 10 year return assumptions do not include manager alpha
Values may not add up to 100% due to rounding

MARGINAL ASSET GROWTH VS POLICY

Policy



Proposed Mix Change vs Policy



THOUGHTS ON EQUITY ALLOCATION

NEPC utilizes the MSCI ACWI to help guide views on regional tilts in client portfolios

The ACWI represents the global equity opportunity set, which is utilized as the neutral weight for all of our client equity allocations

We recommend MWRA rebalance towards these target weights

US equities have outperformed due to large growth-oriented Big Tech companies driving relative returns vs all of public equity

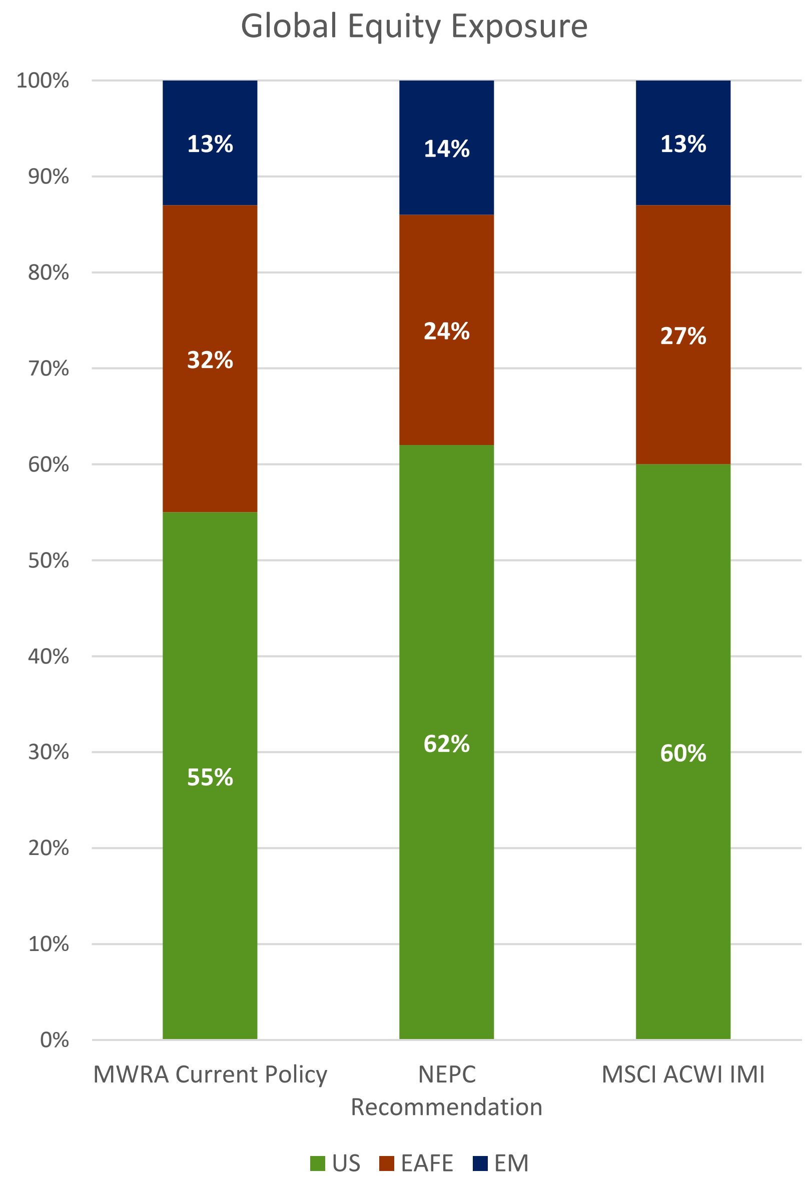
Despite P/E levels, we favor a modest strategic ***overweight*** to US markets as the elevated valuation trend is likely to continue

Further, NEPC encourages a strategic bias to emerging markets equities relative to the MSCI ACWI weight

Strategic overweight to emerging equity is designed to capture higher return expectations

Subdued growth outlook in EAFE informs our underweight recommendation

Pockets of opportunities may exist in small cap, which the MWRA ERS currently has exposure to via existing investments



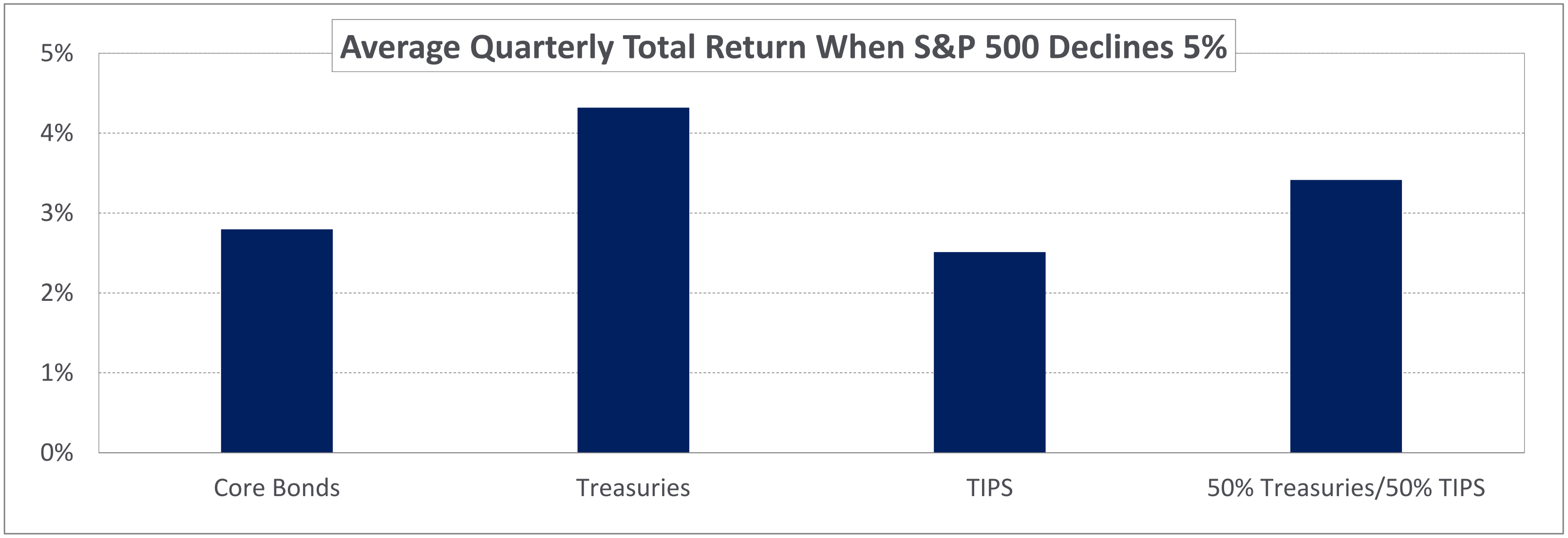
Source: MSCI, eVestment
As of 12/31/2020

SAFE-HAVEN FIXED INCOME
STRATEGIC VIEWS

Safe-haven fixed income exposure is a liquidity source and offers downside protection for the total portfolio

The safe-haven liquidity profile is vital as market stress can impair the portfolio's ability to meet cash flow needs

- The inability to service capital calls, support spending needs, or rebalance in times of market stress limit the portfolio's future return
- Sizing of the safe-haven exposure to support downside protection needs should reflect return objectives and investor risk tolerance



Source: Barclays, FactSet, NEPC

SAFE-HAVEN FIXED INCOME
STRATEGIC VIEWS

We recommend a strategic blend of 50% US TIPS and 50% US Treasuries for total return focused investors

Treasuries and TIPS offer exposure to nominal and real rates and are diversifying assets that exhibit a low correlation to risk assets

Safe-haven instruments may differ by investor type

The duration and liquidity profile should reflect risk objectives, liability/commitment structure, and desire for capital efficiency

Strategic safe-haven exposure should be structured to address the unique risk tolerances of each investor

We encourage evaluating core bond exposure as it may not align with an investor's desired safe-haven objective

Investor Type	Safe-Haven Strategic Blend
Total Return Focus	50% US Treasury and 50% US TIPS
Liability-Driven and Insurance	IG Corporate Bonds and Treasury Bonds
Tax Aware	High-Quality Municipal Bonds

RETURN-SEEKING CREDIT
STRATEGIC VIEWS

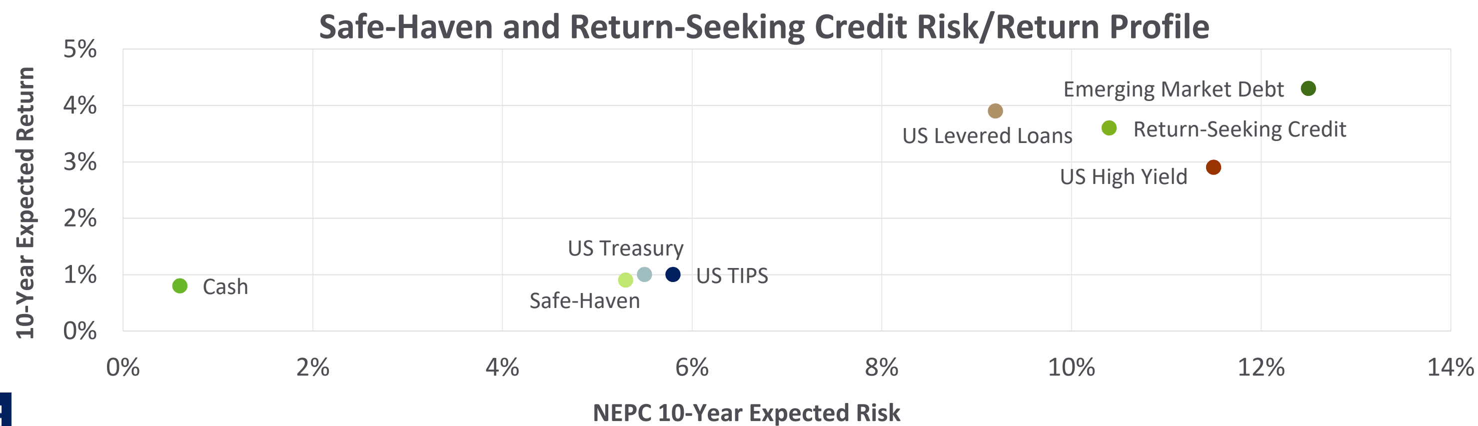
For many investors, fixed income target allocations are applied with a broad brush with conflicting objectives

The goal of safety vs return are in conflict and the need for liquidity and downside protection can be overlooked when reaching for yield

We recommend investors create distinct strategic targets for safe-haven fixed income and return-seeking credit

Separate strategic targets align the objective and benchmark for each mandate and highlight the role each play in a portfolio

We encourage investors to acknowledge the conflicting objectives of safe-haven vs return-seeking assets



APPENDIX

DEFINING THE THEME

KEY MARKET THEME: *VIRUS TRAJECTORY*

The Virus Trajectory theme reflects the uncertain path of how the pandemic and global economic activity interact

The scope and duration of virus containment efforts severely disrupted the global economy

Successful distribution of COVID-19 vaccines shortens the timeline of the theme

A significant increase in the pace of vaccinations will be needed to aid a rapid recovery for the global economy

The lasting influence of the pandemic is uncertain as the extent of the economic scars have yet to be fully realized

Despite relative improvement in economic data, recent data points highlight lingering disruptions in businesses and the labor market

Plausible economic paths range from a rapid economic recovery, to a K-shaped recovery, to a depression

The Virus Trajectory theme began in 2020 and could conclude in 2021, but broad socio-economic effects will be felt for years

INVESTMENT CONSIDERATIONS

KEY MARKET THEME: *VIRUS TRAJECTORY*

The wide range of scenarios pulls investor focus from the extremes of vaccine optimism to a renewed outbreak

The pandemic has amplified our PI theme, fueling fiscal and monetary expansion to the benefit of equity markets

For risky investments, it raises the question "do valuations matter?"

A rapid vaccine rollout can unleash economic exuberance and benefit highly cyclical assets and value stocks

However, the risk of an extended economic downturn and prolonged deflationary environment remain

In such an environment, nominal government bonds offer relief

Continuum of Virus and Economic Paths

Health Risk	Calibration Between Health Risks and Economic Costs	Economic Cost

POTENTIAL OUTCOMES AND IMPLICATIONS

KEY MARKET THEME: *VIRUS TRAJECTORY*

	Description	Market Implications
Base Case	Virus containment efforts aimed at slowing the spread of COVID-19 will shape the trajectory of a recovery. Increased monetary and fiscal stimulus offset some of the economic disruption, but economic growth and labor markets are likely to take longer to normalize than historical recessions suggest.	Market volatility remains at elevated levels. Low interest rates are here to stay but there is increased volatility around the path of inflation. Large deflationary pressures remain and are paired with a stimulative fiscal response. Opportunities may be available for investors willing to take on greater strategic equity exposure. Impact of Virus Trajectory looks to recede within 12 months.
Economic Depression	Period of extreme economic disruption characterized by unemployment levels greater than 10% and falling consumer spending levels. Waves of changing containment rules damage consumer confidence, limiting economic activity even during less restrictive times. Massive government fiscal relief measures look to plug holes in GDP but the lack of economic dynamism reduces productivity.	Combined fiscal and monetary policies are MMT-like with outsized volatility in global currency regimes. Relative benefits to the yuan and dollar. Extreme deflationary pressures offer value in nominal local government debt (e.g. US Treasuries). An unprecedented economic disruption across industries and countries. Patience is required as equity markets reprice and the credit default cycle is elevated. Maintaining liquidity is a first order priority, but look to allocate surplus liquidity to distressed investments.
Rapid Vaccine Roll-Out	Combination of dynamic containment and expansive distribution of vaccines lead to a rapid path of economic recovery in 2021. Fiscal policy relief and stimulus fill the economic gap to restore economic normalization.	Strongly positive for all cyclical assets and a potential catalyst for value-oriented equities. Provides path for moderately higher inflation as fiscal policy expansion drives economic growth. Begins a period of post-pandemic economic exuberance with consumer spending growth across all corners of the economy.

DEFINING THE THEME

KEY MARKET THEME: *PERMANENT INTERVENTIONS*

Global markets are defined by central bank market interventions and permanent fiscal support

The pandemic has supercharged the Permanent Interventions theme with outsized support and fiscal relief

Market sentiment is now a key central bank policy pillar of equal standing to inflation and employment mandates

Low interest rates and a fragile economic environment force central banks to grow balance sheets and liquify the global financial system

Without meaningful inflation pressures, the path of monetary policy does not normalize and an environment of low interest rates persists

We believe permanent fiscal intervention is the baseline

Weak economic growth trends in the developed world underpin political tensions and motivate a significant fiscal debt expansion

Permanent Interventions boosts investor sentiment and enhances our long-term return outlook for risk assets

We believe central banks across the globe will continue to expand balance sheet assets to sustain an environment of excess liquidity

DEFINING THE THEME CONTINUED

KEY MARKET THEME: *PERMANENT INTERVENTIONS*

The removal of central bank measures and fiscal stimulus would reveal the global economy's structural weakness

The dynamics of muted inflation pressures and low economic growth drive a combined monetary and political response

As debt-to-GDP levels rise, the necessity of central bank intervention is reinforced to maintain low interest rates

Nominal economic growth rates must exceed sovereign bond yields to forestall a sovereign debt crisis, as seen in the Eurozone in 2010

We see the Permanent Interventions theme muting the normal fluctuations of the business cycle

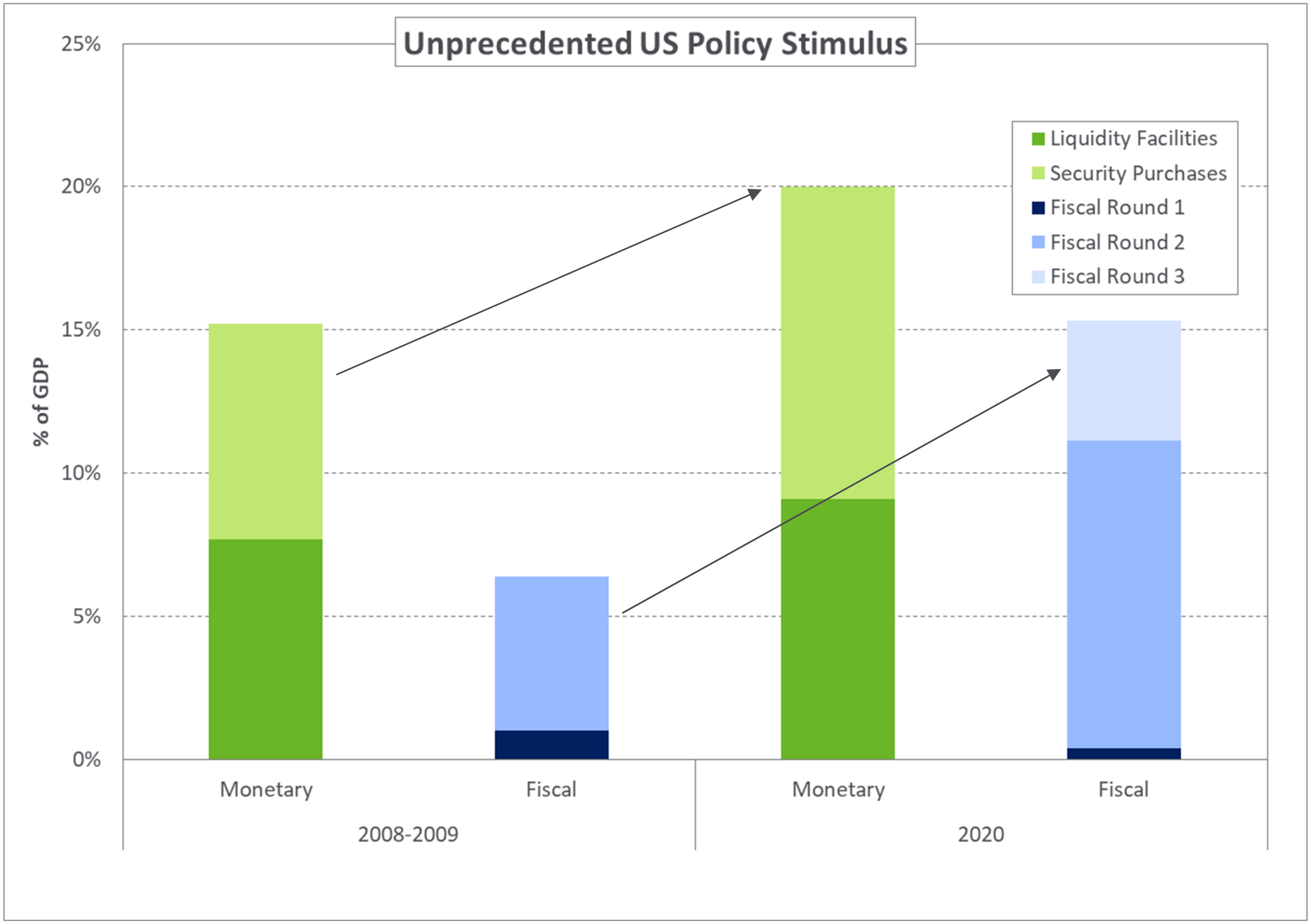
This potentially leaves no safety net in an economic downturn should central bank and fiscal interventions be limited or exhausted

The new regime reflects permanent easy monetary policy, surplus liquidity, and fiscal debt growth

Investors have yet to fully discount the combined favorable equity market conditions and heightened long-term macro tail-risks

ELEVATED PERMANENT INTERVENTIONS

KEY MARKET THEME: *PERMANENT INTERVENTIONS*



Source: NEPC, Federal Reserve
Fiscal Rd 1: 2008 – Economic Stimulus Act ($152B); 2020 – CPRSA/Families First ($91B); Fiscal Rd 2: 2008 – Am. Recovery & Reinv. Act ($787B); 2020 – CARES Act ($2.3T); Fiscal Rd 3: 2020 – Consolidated Appropriations Act ($900B)

INVESTMENT CONSIDERATIONS

KEY MARKET THEME: *PERMANENT INTERVENTIONS*

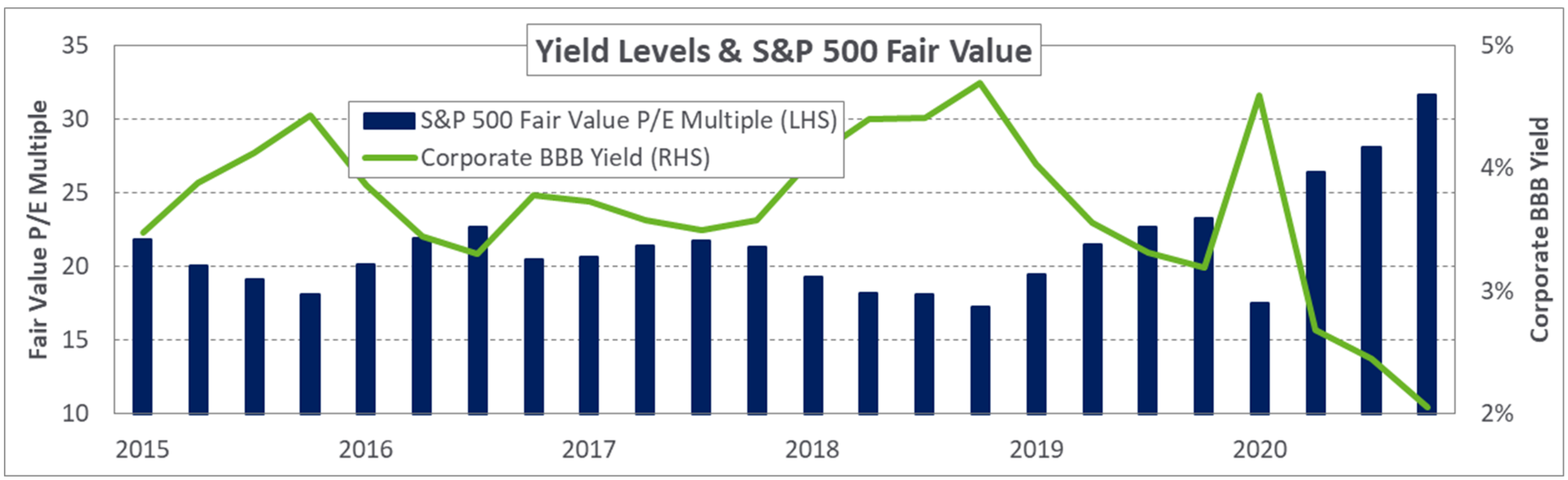
Permanent Interventions sustains high P/E multiples and equity valuations become a less potent market signal

Low interest rates generate higher values when discounting future cash flows and increase valuation levels for equity markets

The supportive policy environment is favorable to equity

Investors enjoy high profit margins relative to history as the surplus of central bank liquidity benefits holders of capital relative to labor

However, proactive tightening of monetary policy damages market sentiment and exposes the fragile nature of market dynamics



Source: FactSet, S&P, Bloomberg

POTENTIAL OUTCOMES

KEY MARKET THEME: *PERMANENT INTERVENTIONS*

	Description	Long-Term Market Implications
The New Normal	NEPC base case expectation of a permanent regime of easy monetary policy, surplus market liquidity, and fiscal debt growth paired with muted inflation levels	Favorable to equities relative to safe-haven fixed income, with risk assets benefiting from above average corporate profit margins and low interest rates. The normal fluctuations of a business cycle are subdued but macro tail-risks continue to build
Political Dysfunction	Interconnected with NEPC's Globalization Backlash theme, political conflict disrupts the full intervention of fiscal stimulus	Economic growth rates are lower as fiscal stimulus lacks permanence. Developed economies are at a greater risk of a downturn and central bank intervention has limits to improve economic growth. Favorable to long duration fixed income and tactically favorable to risks assets following frequent bouts of market volatility
Back to Normal	Economic trend growth rates and inflation levels normalize along with market and business cycles	Expected period of low investment returns for all assets classes as real interest rates normalize. Requires a repricing of risk premia to incorporate a neutral fiscal policy and the withdrawal of central bank intervention
Inflation	A material increase in inflation would be a severe tail-risk outcome for investors as the market discounts almost no probability of above average inflation levels	Significant repricing of market expectations and risk premia likely generate permanent losses of capital among some segments of equity and fixed income markets. Potential cause and/or effect is a devaluation of developed market currencies and a breakdown of the US dollar's reserve currency status
Japanification	This outcome is largely driven by a demographic crisis, with Europe being the most severely exposed. China is at risk, but racing to increase per-capita GDP levels before the population ages. The US demographic profile is relatively positive compared to other nations	Favorable to long duration fixed income with severe deflationary pressures and low growth rates. Fiscal and monetary intervention is not a cure, but mitigates the full economic damage. Central banks control bond prices across the yield curve, severely distorting the cost of capital and corporate capital structures. The impacted regions experience a "lost decade" of investment returns

DEFINING THE THEME

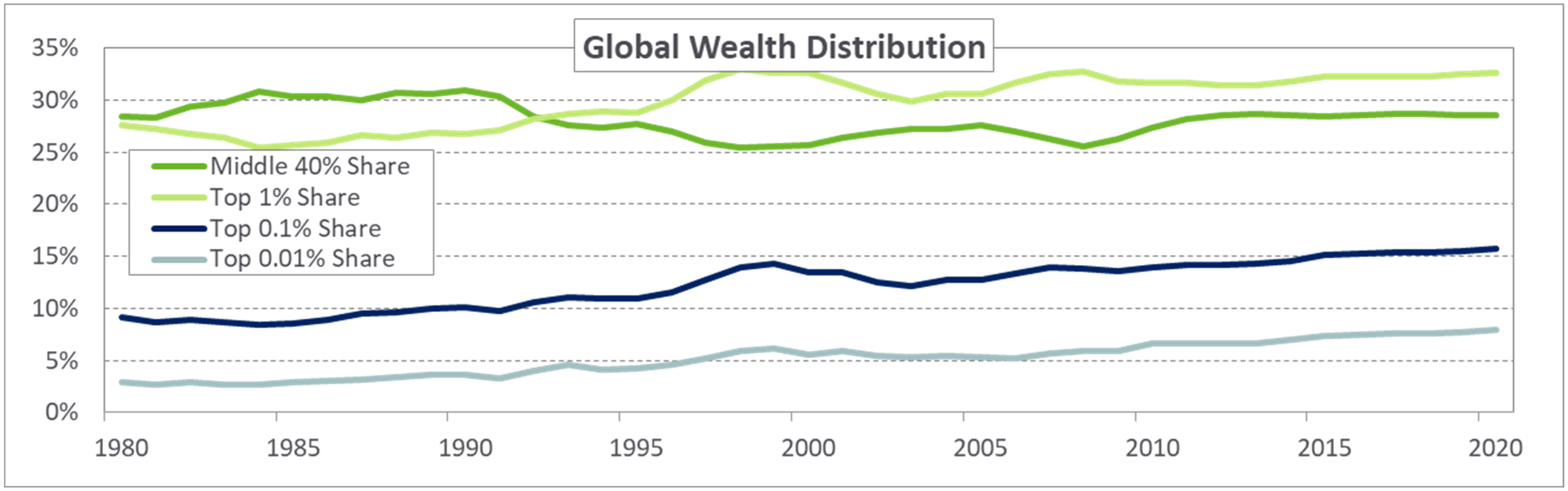
KEY MARKET THEME: *GLOBALIZATION BACKLASH*

Stagnant wage growth and growing wealth inequality are fueling political discontent across the world

Populist movements across the world are shifting away from the political and economic orthodoxy of the last 50 years

The growth of populist movements destabilizes the established political order and materializes as Backlash

Anti-establishment political bias heightens tail-risks in global markets as voting patterns become more volatile with a wider range of outcomes associated with foreign policy, trade policy, and tax rates



Source: World Inequality Lab

EXPECTED EVOLUTION

KEY MARKET THEME: *GLOBALIZATION BACKLASH*

We do not expect wealth inequality to decrease, which reinforces the long-term nature of the Backlash theme

The origin of voters' economic unease remains and the pull of anti-establishment political parties poses a risk to the economic order

The K-shaped recovery associated with the pandemic has exaggerated social and economic disparities

The COVID-19 pandemic has magnified the wealth gap as the labor market disruption acutely impacts part-time jobs and sectors that have experienced decades of stagnant wage growth

An acceleration of climate change risks can place even greater limits on economic mobility across the globe

The extremes of the political spectrum are likely to have a greater role in government as moderation is stretched

The role of government may be muted as parliamentary coalitions have narrow paths of consensus, heightening tail-risks and political instability as reforms are unable to be enacted

INVESTMENT CONSIDERATIONS AND RISKS

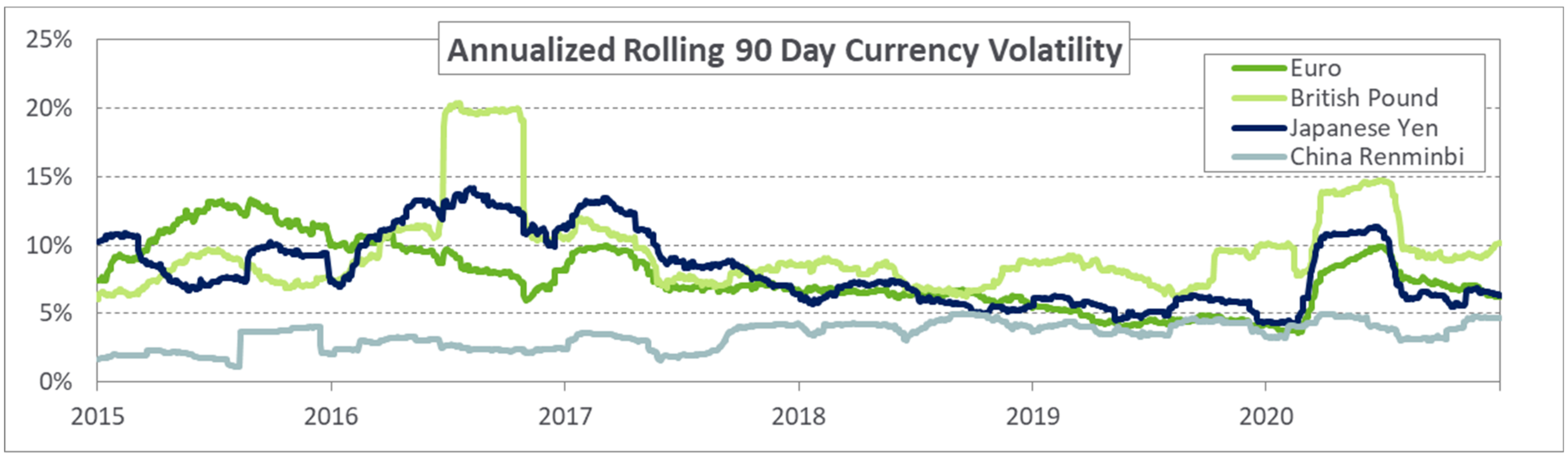
KEY MARKET THEME: *GLOBALIZATION BACKLASH*

The battering of the established world order carries investment risks and opportunities for global markets

Market sentiment is sensitive to disruptions due to Globalization Backlash but lack of political consensus limits regulatory action and can be a positive for equity markets

The drift from political orthodoxy heightens tail-risks and leaves currency markets prone to bouts of volatility

Europe is but one example of a potential flashpoint associated with globalization backlash, which likely incites more frequent volatility shocks across government bond yields, equities, and currencies



Source: FactSet

POTENTIAL OUTCOMES AND IMPLICATIONS
KEY MARKET THEME: *GLOBALIZATION BACKLASH*

	Description	Long-Term Market Implications
Pushback on Established World Order	NEPC base case expectation of rising nationalism and growing populist trends, which strains multilateral relationships and increases geopolitical risks	Does not favor a specific investment action or asset class but includes more volatility for governments as coalitions shift with narrow paths of consensus. Likely leads to greater volatility for capital markets, particularly in currencies across the developed world
A More Balanced Global Wealth Distribution	Economic adjustments lead to long-term improvements in real income for lower income workers in the developed world and emerging market economies	Positive for equities and credit with some aspect of normalization in inflation and real interest rates. With economic productivity gains, role of monetary policy could decrease in importance
Expanding Protectionism	A severe reversal in globalization with a regression in trade and global economic integration	Greater protectionism negatively harms investor sentiment, business investment, geopolitical relations, and global supply chains. Developed nations, such as the US, with domestically available resources and consumers may have a relative structural advantage. This scenario generates lower global growth and higher volatility
Democracy Crumbles	Breakdowns in the social fabric of society and government. Populist movements become the "revolution" as economic structures and policies are refashioned	Holders of capital suffer under this path as investment markets across equity and fixed income experience severe negative outcomes with gold and alternative currencies being one of the few exposures to offer a positive benefit for a portfolio

DEFINING THE THEME

KEY MARKET THEME: *CHINA TRANSITIONS*

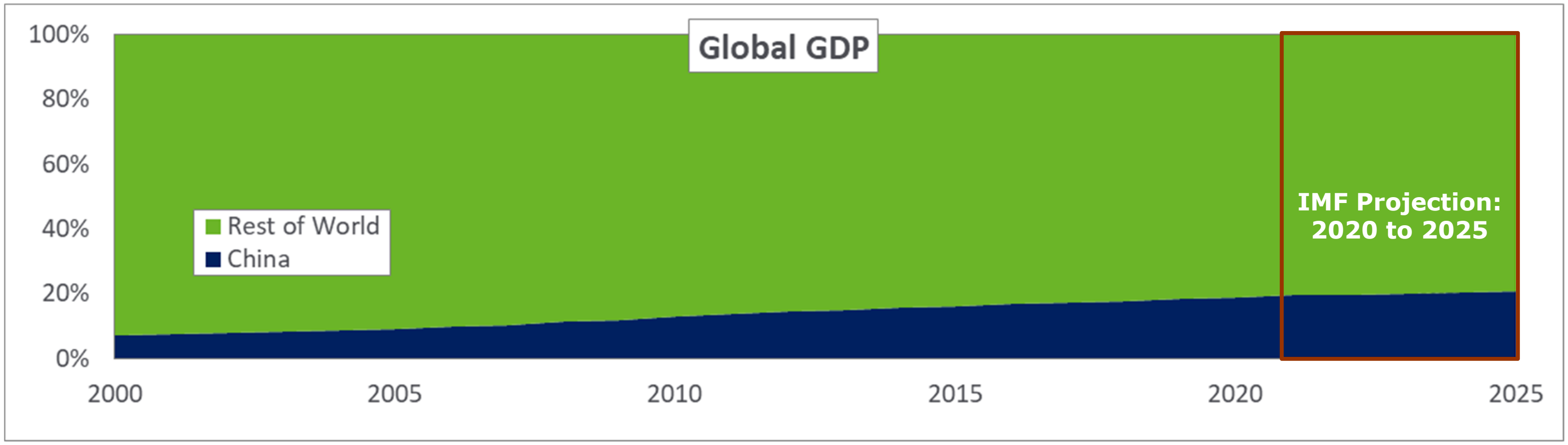
China is undergoing a multi-faceted advancement as the economy transitions to a consumption-oriented model

- China's socioeconomic profile is changing with rising income levels, increased urbanization, but also a challenging demographic profile

All the while China's influence on the global stage shifts to reflect its status as an ascending geopolitical power

Disruption of these transitions will be transmitted widely due to China's ever-expanding role in the world economy

- China is the global growth engine and is expected to provide 25% of world GDP growth, which is equal to creating a new Canada annually



Source: IMF

EXPECTED EVOLUTION

KEY MARKET THEME: *CHINA TRANSITIONS*

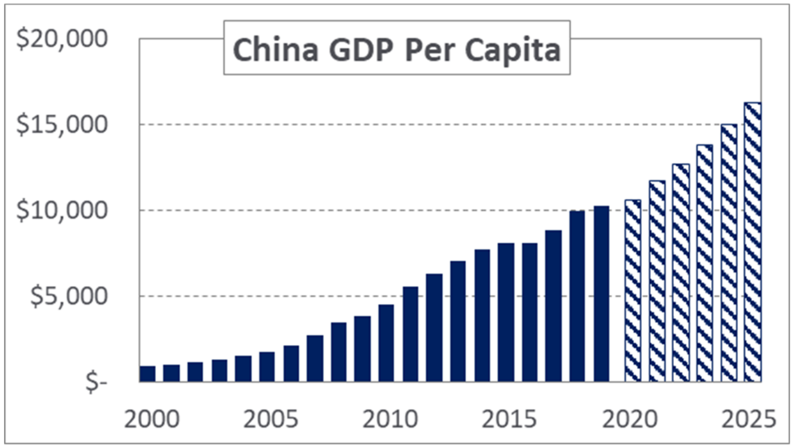
China's growth will slow but its economy is expected to equal the size of the US economy within 15 years

Policymakers must continue to balance the goal of sustaining healthy economic growth rates and moderating credit growth

Recent data points highlight China's restraint but an acceleration of credit growth and real estate development is a systemic risk

Rising income levels and the rural to urban shift expand the demand for a range of consumer-oriented services

Despite the increases in GDP per capita, innovation and productivity advances are required for China to escape the middle income trap



Source: IMF

Source: IMF

INVESTMENT CONSIDERATIONS AND RISKS

KEY MARKET THEME: *CHINA TRANSITIONS*

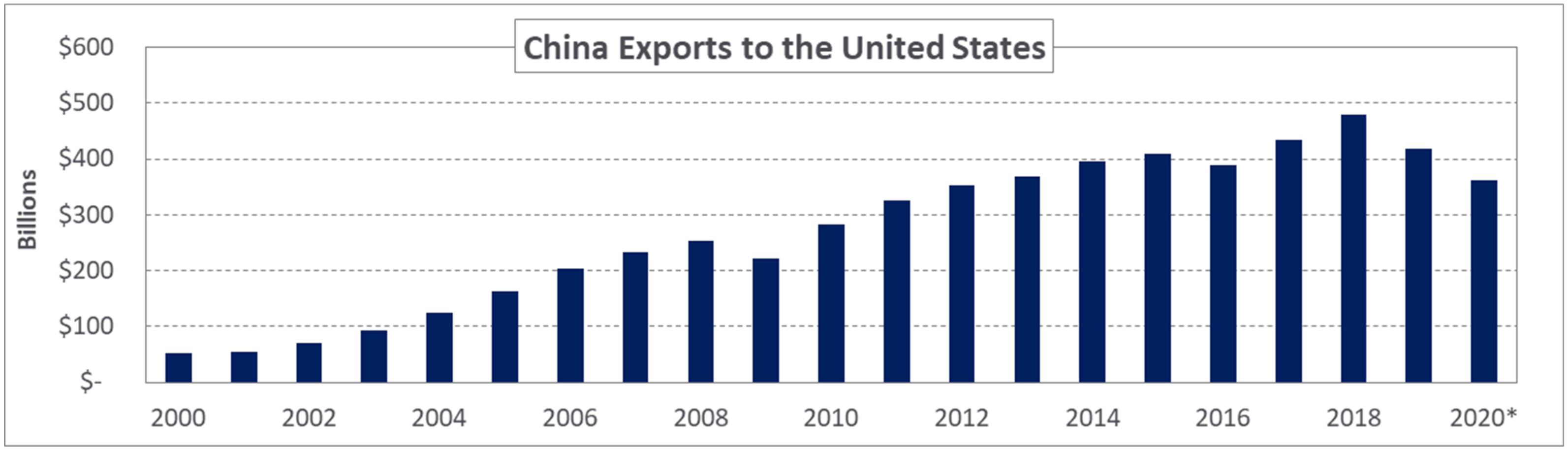
US-China trade tension is an example of our Transitions theme and reflects the competitive economic relationship

Trade policy is a deterrent to China's rising economic status but a dynamic of competition can degrade to economic confrontation

Tariffs and security restrictions are a dangerous game and leave open the risk of a zero-sum economic conflict

US-China tariffs and trade tension are the "new normal" and reflect China's position as a strategic competitor across a range of sectors

Competitive tensions are likely to continue but we do not anticipate US-China disputes escalating to limit the flow of goods and services



Source: China Customs, FactSet; *2020 represents total through 11/30/2020

INVESTMENT CONSIDERATIONS AND RISKS

KEY MARKET THEME: *CHINA TRANSITIONS*

China's transitions will likely evolve for the next decade

Successful management of these trends can benefit global investors especially those with relative overweight exposure to Chinese assets

Access to financial markets is likely to expand with ongoing inclusion efforts by global index providers across both equity and fixed income

China is on a long path to reach developed market status

We anticipate large strategic asset allocation targets to China will be required over time to maintain a neutral market beta exposure

China is leveraging its economic growth to affirm its role on the world stage as an equal to US, specifically in Asia

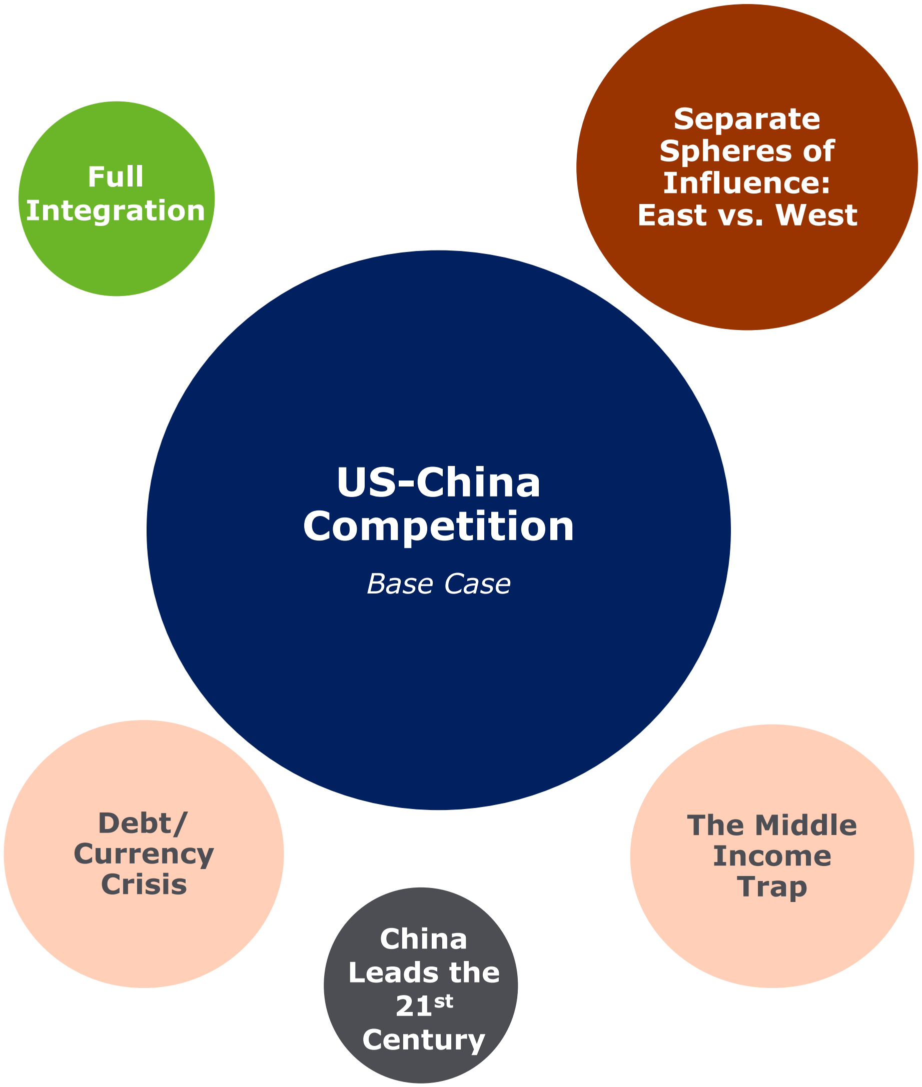
US-China competitive tensions are likely to persist and at times may incite volatility in global markets and impact investor sentiment

We believe the risk of a US-China economic conflict is low

Should an economic conflict arise, the disruption will have a sever impact on the global economy as the breaking of US-China economic links imposes outsized social and economic costs on both nations

POTENTIAL OUTCOMES AND IMPLICATIONS

KEY MARKET THEME: *CHINA TRANSITIONS*



Size of bubble denotes expected likelihood of outcome

US-China Competition: Competition not confrontation characterizes the economic and geopolitical relationship for the US and China. China successfully transitions to a consumer-oriented economy with per-capita GDP in line with the developed world. Capital markets continue to liberalize but cycles of volatility reflects the ebb and flow of the competitive US-China relationship

US-China and Separate Spheres of Influence: Two separate economic, geopolitical, and financial systems exist with an ongoing confrontational relationship. This dynamic may impact foreign access to Chinese capital markets, with the potential to directly impact regional blocs aligned with China

The Middle Income Trap: Per-capita income growth stalls as innovation and productivity levels do not improve from current levels. China fails to achieve developed market status, implying an internal shift away from market-friendly reforms or an external force such as US policy pressure curtailing China's growth

Debt and Currency Crisis: Uncontrolled expansion of credit growth to drive short-term economic gain fuels capital misallocation and represents a systematic risk to the financial system and China's currency controls

The 21st Century is Dominated by China: China becomes the dominant global power for this century. China assumes economic leadership and the yuan ascends to become a global reserve currency

Full Integration: Political and economic liberalization within China and complete integration in the established world order and the current geopolitical hierarchy

10-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
Inflation	2.0%	1.6%	+0.4%
Cash	0.8%	0.6%	+0.2%
US Leverage Cost	1.2%	0.9%	+0.3%
Non-US Cash	0.0%	0.0%	-
US Large-Cap Equity	5.4%	5.8%	-0.4%
US Small/Mid-Cap Equity	5.7%	6.4%	-0.7%
Non-US Developed Equity	5.9%	6.2%	-0.3%
Non-US Developed Equity (USD Hedge)	6.1%	6.6%	-0.5%
Non-US Developed Small-Cap Equity	6.1%	6.4%	-0.3%
Emerging Market Equity	7.5%	8.0%	-0.5%
Emerging Market Small-Cap Equity	8.1%	8.5%	-0.4%
Hedge Fund - Equity	4.0%	4.3%	-0.3%
Private Equity - Buyout	7.6%	8.3%	-0.7%
Private Equity - Growth	8.9%	9.6%	-0.7%
Private Equity - Venture	10.4%	11.0%	-0.6%
Private Equity - Secondary	7.1%	7.8%	-0.7%
Non-US Private Equity	10.7%	11.0%	-0.3%
China Equity	7.0%	7.0%	-
US Microcap Equity	6.6%	7.2%	-0.6%

10-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
US TIPS	1.0%	0.8%	+0.2%
US Treasury Bond	0.9%	0.6%	+0.3%
US Corporate Bond	2.2%	2.4%	-0.2%
US Mortgage-Backed Securities	1.2%	0.8%	+0.4%
US High Yield Corporate Bond	2.9%	3.6%	-0.7%
US Leveraged Loan	3.9%	3.8%	+0.1%
Emerging Market External Debt	3.0%	4.0%	-1.0%
Emerging Market Local Currency Debt	5.0%	5.4%	-0.4%
Non-US Government Bond	0.6%	0.6%	-
Non-US Government Bond (USD Hedge)	0.8%	0.9%	-0.1%
US Municipal Bond	2.0%	2.0%	-
US Municipal Bond (1-10 Year)	1.1%	1.0%	+0.1%
US High Yield Municipal Bond	2.8%	3.3%	-0.5%
Hedge Fund - Credit	3.9%	4.1%	-0.2%
Private Debt - Credit Opportunities	6.2%	6.6%	-0.4%
Private Debt - Distressed	7.2%	7.7%	-0.5%
Private Debt - Direct Lending	5.4%	5.3%	+0.1%
US Securitized Bond	1.8%	1.6%	+0.2%
US Collateralized Loan Obligation	2.3%	2.1%	+0.2%
US High Yield Securitized Bond	2.3%	1.8%	+0.5%
US High Yield Collateralized Loan Obligation	4.6%	4.6%	-

10-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
US Short-Term TIPS (1-3 Year)	1.1%	0.8%	+0.3%
US Short-Term Treasury Bond (1-3 Year)	1.0%	0.7%	+0.3%
US Short-Term Corporate Bond (1-3 Year)	1.8%	1.6%	+0.2%
US Short-Term High Yield Corporate Bond	2.5%	2.6%	-0.1%
US Intermediate-Term TIPS (3-10 Year)	0.9%	-	-
US Intermediate-Term Treasury Bond	1.0%	-	-
US Intermediate-Term Corporate Bond	2.3%	-	-
US Long-Term Treasury Bond (10-30 Year)	0.7%	0.4%	+0.3%
US Long-Term TIPS (10-30 Year)	1.0%	0.8%	+0.2%
US Long-Term Corporate Bond	2.3%	2.8%	-0.5%
20+ Year US Treasury STRIPS	0.4%	0.0%	+0.4%
US Corporate Bond - AAA	1.5%	1.5%	-
US Corporate Bond - AA	1.6%	1.7%	-0.1%
US Corporate Bond - A	1.9%	2.0%	-0.1%
US Corporate Bond - BBB	2.5%	2.9%	-0.4%
US Corporate Bond - BB	3.9%	4.4%	-0.5%
US Corporate Bond - B	3.0%	3.8%	-0.8%
US Corporate Bond - CCC/Below	-3.4%	-2.4%	-1.0%
US Taxable Municipal Bond	2.5%	2.5%	-
10 Year US Treasury Bond	0.9%	0.5%	+0.4%
10 Year Non-US Govt. Bond (USD Hedge)	-0.1%	-0.1%	-

10-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
Commodity Futures	0.9%	0.6%	+0.3%
Midstream Energy	7.4%	8.0%	-0.6%
US REIT	5.5%	5.7%	-0.2%
Global Infrastructure Equity	5.9%	6.2%	-0.3%
Global Natural Resources Equity	6.7%	7.1%	-0.4%
Gold	2.9%	-	-
Core Real Estate	4.4%	4.2%	+0.2%
Non-Core Real Estate	5.5%	5.1%	+0.4%
Private Debt - Real Estate	4.1%	3.9%	+0.2%
Private Real Assets - Natural Resources	8.0%	8.2%	-0.2%
Private Real Assets - Infrastructure	5.4%	5.5%	-0.1%
Hedge Fund - Macro	3.6%	4.1%	-0.5%
*Global Equity**	6.2%	6.6%	-0.4%
*Private Equity**	9.3%	10.0%	-0.7%
*US Aggregate Bond**	1.4%	1.2%	+0.2%
*Private Debt**	6.1%	6.3%	-0.2%
*US Long-Term Government/Credit**	1.7%	1.8%	-0.1%
*Hedge Fund**	4.0%	4.3%	-0.3%

*Calculated as a blend of other asset classes

30-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
Inflation	2.2%	2.1%	+0.1%
Cash	1.9%	1.8%	+0.1%
US Leverage Cost	2.2%	2.1%	+0.1%
Non-US Cash	1.1%	1.2%	-0.1%
US Large-Cap Equity	6.3%	6.4%	-0.1%
US Small/Mid-Cap Equity	6.6%	6.8%	-0.2%
Non-US Developed Equity	6.5%	6.6%	-0.1%
Non-US Developed Equity (USD Hedge)	6.7%	7.0%	-0.3%
Non-US Developed Small-Cap Equity	6.8%	6.9%	-0.1%
Emerging Market Equity	8.4%	8.7%	-0.3%
Emerging Market Small-Cap Equity	8.6%	8.9%	-0.3%
Hedge Fund - Equity	5.0%	5.2%	-0.2%
Private Equity - Buyout	8.5%	8.7%	-0.2%
Private Equity - Growth	9.8%	10.0%	-0.2%
Private Equity - Venture	10.7%	10.9%	-0.2%
Private Equity - Secondary	8.0%	8.2%	-0.2%
Non-US Private Equity	10.7%	10.9%	-0.2%
China Equity	7.8%	8.1%	-0.3%
US Microcap Equity	7.4%	7.6%	-0.2%

30-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
US TIPS	2.1%	2.1%	-
US Treasury Bond	2.0%	1.9%	+0.1%
US Corporate Bond	3.7%	3.7%	-
US Mortgage-Backed Securities	2.3%	2.2%	+0.1%
US High Yield Corporate Bond	5.0%	5.2%	-0.2%
US Leveraged Loan	4.8%	4.7%	+0.1%
Emerging Market External Debt	4.5%	4.8%	-0.3%
Emerging Market Local Currency Debt	5.1%	5.3%	-0.2%
Non-US Government Bond	1.7%	1.5%	+0.2%
Non-US Government Bond (USD Hedge)	1.9%	1.8%	+0.1%
US Municipal Bond	2.3%	2.3%	-
US Municipal Bond (1-10 Year)	1.9%	1.9%	-
US High Yield Municipal Bond	3.9%	4.1%	-0.2%
Hedge Fund - Credit	5.3%	5.4%	-0.1%
Private Debt - Credit Opportunities	7.0%	7.1%	-0.1%
Private Debt - Distressed	7.8%	7.9%	-0.1%
Private Debt - Direct Lending	7.4%	7.0%	+0.4%
US Securitized Bond	3.1%	3.0%	+0.1%
US Collateralized Loan Obligation	3.3%	3.1%	+0.2%
US High Yield Securitized Bond	4.5%	4.3%	+0.2%
US High Yield Collateralized Loan Obligation	5.7%	5.6%	+0.1%

30-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
US Short-Term TIPS (1-3 Year)	2.0%	2.0%	-
US Short-Term Treasury Bond (1-3 Year)	2.0%	1.9%	+0.1%
US Short-Term Corporate Bond (1-3 Year)	3.7%	2.8%	+0.9%
US Short-Term High Yield Corporate Bond	3.5%	3.3%	+0.2%
US Intermediate-Term TIPS (3-10 Year)	2.1%	-	-
US Intermediate-Term Treasury Bond	2.1%	-	-
US Intermediate-Term Corporate Bond	3.8%	-	-
US Long-Term Treasury Bond (10-30 Year)	1.9%	1.8%	+0.1%
US Long-Term TIPS (10-30 Year)	2.0%	2.0%	-
US Long-Term Corporate Bond	3.8%	4.0%	-0.2%
20+ Year US Treasury STRIPS	1.7%	1.5%	+0.2%
US Corporate Bond - AAA	2.8%	2.8%	-
US Corporate Bond - AA	2.9%	2.9%	-
US Corporate Bond - A	3.3%	3.3%	-
US Corporate Bond - BBB	3.9%	4.0%	-0.1%
US Corporate Bond - BB	5.6%	5.8%	-0.2%
US Corporate Bond - B	4.9%	5.1%	-0.2%
US Corporate Bond - CCC/Below	-0.8%	-0.5%	-0.3%
US Taxable Municipal Bond	3.9%	3.9%	-
10 Year US Treasury Bond	2.3%	2.1%	+0.2%
10 Year Non-US Govt. Bond (USD Hedge)	1.1%	1.1%	-

30-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
Commodity Futures	3.3%	3.6%	-0.3%
Midstream Energy	7.3%	7.9%	-0.6%
US REIT	6.7%	6.8%	-0.1%
Global Infrastructure Equity	6.6%	6.7%	-0.1%
Global Natural Resources Equity	7.0%	7.2%	-0.2%
Gold	3.7%	-	-
Core Real Estate	5.6%	5.5%	+0.1%
Non-Core Real Estate	7.0%	6.9%	+0.1%
Private Debt - Real Estate	5.2%	5.1%	+0.1%
Private Real Assets - Natural Resources	8.5%	8.9%	-0.4%
Private Real Assets - Infrastructure	6.6%	6.8%	-0.2%
Hedge Fund - Macro	4.7%	4.7%	-
*Global Equity**	7.0%	7.2%	-0.2%
*Private Equity**	10.1%	10.3%	-0.2%
*US Aggregate Bond**	2.7%	2.6%	+0.1%
*Private Debt**	7.5%	7.3%	+0.2%
*US Long-Term Government/Credit**	3.1%	3.1%	-
*Hedge Fund**	5.2%	5.4%	-0.2%

*Calculated as a blend of other asset classes

SCENARIO ANALYSIS: REGIME CHANGES

NEPC scenario analysis highlights the impact of shifting economic and market regimes on the portfolio and potential asset allocation mixes

- Risk asset returns are informed by credit returns which are based on changes in real rate, inflation, and credit spreads experienced across market regimes

Expansion

Informed by rising interest rates, moderately rising inflation, elevated positive real rates, and consistent spread tightening

Stagflation

Informed by rising interest rates, rising inflation, depressed negative real rates, and consistent spread widening

Goldilocks

Informed by level interest rates, level inflation, positive real rates, and consistent spread tightening

Recession

Informed by depressed interest rate levels, falling inflation, depressed positive real rates, and consistent spread widening followed by tightening back to current levels

Depression

Informed by negative interest rates, deflation, and severe credit defaults and downgrades

SCENARIO ANALYSIS: REGIME RETURNS

Expansion Scenario Return*

Cash: 1.75%
Treasuries: -0.8%
Long Treasuries: -3.9%
US TIPS: 1.3%
US IG Credit: 0.7%
High Yield Bonds: 2.3%
US Large-Cap Equity: 6.9%
Emerging Market Equity: 9.9%
Commodities: 1.6%

Depression Scenario Return*

Cash: -0.3%
Treasuries: 1.0%
Long Treasuries: 3.7%
US TIPS: -0.7%
US IG Credit: 2.5%
High Yield Bonds: -6.5%
US Large-Cap Equity: -11.7%
Emerging Market Equity: -29.0%
Commodities: -17.2%

Goldilocks Scenario Return*

Cash: 0.5%
Treasuries: 0.3%
Long Treasuries: 0.0%
US TIPS: 0.6%
US IG Credit: 2.4%
High Yield Bonds: 2.8%
US Large-Cap Equity: 7.6%
Emerging Market Equity: 11.1%
Commodities: -0.6%

Recession Scenario Return*

Cash: 0.0%
Treasuries: 0.1%
Long Treasuries: 0.5%
US TIPS: -0.9%
US IG Credit: 2.0%
High Yield Bonds: -0.2%
US Large-Cap Equity: 0.2%
Emerging Market Equity: -2.4%
Commodities: -7.5%

Stagflation Scenario Return*

Cash: 1.4%
Treasuries: -0.6%
Long Treasuries: -4.4%
US TIPS: 2.3%
US IG Credit: -0.4%
High Yield Bonds: 0.7%
US Large-Cap Equity: -3.6%
Emerging Market Equity: -11.3%
Commodities: 4.5%

Scenario returns are a 5 year annualized returns

INFORMATION DISCLAIMER

Past performance is no guarantee of future results.

The goal of this report is to provide a basis for substantiating asset allocation recommendations. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.

Information on market indices was provided by 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.

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

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Fixed Income Management – Aggregate Strategy Performance Based Fee

Base Fee of 12.5 basis points

Performance Fee of 15% of an excess Performance over the Bloomberg Barclays US Aggregate Bond Index over a rolling 3-year period
Minimum Threshold of 12.5 basis points
Total Fee Cap of 25 basis points

The Base Fee (12.5 basis points) is payable quarterly in arrears and will be based on the total market value of the Account on the last business day of the quarter, as determined by the Manager. Fees will be prorated for any partial quarters.

The portfolio is eligible for an additional performance-based fee. The portfolio must first achieve a minimum outperformance of 12.5 basis points. Then, the portfolio's performance-based fee is derived as follows: 15% of the Gross Excess Performance over the Bloomberg Barclays US Aggregate Bond Index, after the threshold of 12.5 basis points is met. The performance fee is calculated for year 1 based on the trailing 12-month period. Then performance fee for year 2 will be based on the trailing 24-month period. Finally, the performance fee for years 3 and beyond will be based on the trailing 36-month period. When calculated, the performance fee will be added to the quarterly fee to arrive at a total fee. The portfolio's total fee, base fee and performance based- fee, is capped at 25 basis points.