

# Warrington Township Pension Committee

## Minutes for March 11, 2022 Meeting

The regular meeting of the Warrington Township Pension Committee was held at 1:05 pm. March 11, 2022 in the Neshaminy Room at the Warrington Township Building and Zoom. The members present were as follows:

Fred Gaines (BOS)	Vanessa Maurer (BOS)
Kenneth Hawthorn	Alexander Moldavskiy (Police Alt)
Peter Kim (Finance Dir)	Amy Organek (NUPP)
Joseph Kirby (Resident)	Michael Simone (Resident)
Barry P. Luber (Twp Mgr)	

Also present: Lee Martin – Marquette Assoc.  
William Torre - Marquette Assoc.

### 1. Call to Order

The meeting was called to order at 1:05pm.

### 2. Approval of Minutes

a. February 16, 2022

Mr. Kirby said these minutes are not ready yet. They will be forwarded to the committee when finished

### 3. 4th Quarter Pension Plan Performance Review

Mr. Martin reviewed the economy and our plans and performance.

The Police plan return was around 11.0%, just below the policy index of 11.9%.  
The NUPP return was 10.9%, just under the 11.6% policy index.

Negative factors were exposure to Global Equity and Emerging Markets. Positive exposure factors were Domestic Equity, Defensive Equity, Real Estate, and Fixed income.

It was suggested we consider reassessing the asset allocation study and consider some other option such as Private Credit & Core Plus Fixed Income for the Police Plan and Defensive Equity and Core Plus Fixed Income for the NUPP.

### 4. Review Asset Allocation

Mr. Torre & Mr. Martin Reviewed the options presented last meeting for Opportunistic Credit and Private Debt.

There was extended discussion on the different options and combinations of Opportunistic Credit and Private Debt as shown in the Strategic Asset Allocation Review Handout. There was concern with the concept of the Private Debt and options using that vehicle, so they were not considered.

In a motion by Mr. Kirby, seconded by Sgt. Hawthorn, the pension committee voted to recommend to the Board of Supervisors the adoption of option 1 – reducing the Total equity by

5% while adding 5% to the current Fixed income Structure. Additionally, the NUPP will remain the same. Motion passed unanimously.

### **5. Review Lowering the Assumed Rate of Return**

The Assumed Rate of Return for the Police Plan is 7.1%. With the reduced risk and returns anticipated from the impending adoption of the Opportunistic Credit, it was suggested that the ARR be lowered. Several levels were discussed, and it was agreed that 6.75% would be the best for this change making it match the NUPP. They will have a similar ARR and risk level.

In a motion by Mr. Kirby and seconded by Mr. Luber, the Pension committee voted to reduce the Assumed Rate of Return for the Police Pension Plan to 6.75%. The NUPP is to remain the same. Motion passed unanimously

### **6. COLA Discussion**

Sgt. Hawthorn reviewed his concerns regarding the lack of COLAs and delay in having the discussions to grant them. The COLA for 2022 had not been voted on for recommendation due to delays in scheduling meetings and the gathering of information. Sgt. Hawthorn distributed his analysis of the COLAs granted and retirees with details involving the total increases, the 30% allowable window for increases, and the increases granted. Also included was a chart of the history in state aid for the pension.

In a motion by Sgt Hawthorn, seconded by Ms. Maurer, the Pension Committee voted to recommend to the Board of Supervisors the granting of a 1% COLA for 2022 to both the Police and Non-Uniformed Pension Plans. The Motion Passed, 4-3

Fred Gaines - no  
Ken Hawthorn – yes  
Peter Kim - abstain

Joseph Kirby - no  
Barry Luber - no  
Vanessa Maurer - yes

Amy Organek - yes  
Michael Simone - yes

This will be added to the agenda for the March 22, 2022 Board of Supervisors meeting.

### **7. COLA impact for 2023**

We will be requesting information from John Vargo (actuary) for the effects of our motions from this meeting and for potential COLAs for 2023 of .5%, 1%, 1.5% and 2%.

### **8. Current Plan Investments Discussion (Michael Simone)**

Mr. Simone reviewed his findings with the committee. Some of the items covered were overlapping investments, reviewing potential performance of other investment profiles, benchmarking and how we are measuring our managers. It was agreed that he would compile a list of questions for Marquette on his findings and they would be forwarded to Ms. Organek for disbursement to the committee for comment. They could then be forwarded on to Marquette.

### **8. Other Business - none**

**9. Action Items**

- a. John Vargo will be contacted for updated numbers for the COLA proposal for the presentation for the BOS meeting. It was requested that he provide scenarios for .5%, 1%, 1.5%, and 2%
- b. Memos will be done for the COLA for 2022 (retroactive), The change in the Assumed Rate of Return, and the Asset Mr. Marcarelli will request analysis from the actuary for changing the rate of return for both plans.

**Next Meeting** – The next meeting is scheduled for May 11, 2022 at the township building. Tentatively, scheduled for the meeting is discussion on the 2023 COLA and Discussion on the questions from Mr. Simone.

**Adjournment** – 3:07 pm

Recorder: Amy Organek

DRAFT

## Peter Kim

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**From:** Joseph Kirby <Joseph.Kirby@BrandywineGlobal.com>  
**Sent:** Wednesday, February 16, 2022 4:23 PM  
**To:** Amy Organek; Barry P. Luber; Fred Gaines; Kenneth Hawthorn; Imartin@marquetteassociates.com; Michael Simone; Alexander Moldavskiy; Vanessa Maurer; Peter Kim; William Torre Jr.  
**Cc:** Joseph Kirby (joseph\_kirby@comcast.net)  
**Subject:** RE: Pension committee

Amy:

We would like to schedule a follow up meeting in person in the township office in March.

The agenda will be:

1. Review and approve the minutes from this meeting (provided we clean them up in time) (max 5 min)
2. Review the asset allocation discussion and options and plan to make a motion for proposing a change or staying the current course of AA. (Hopefully we can have Lee or Billy join in person or via zoom) (max 20 min)
3. Review and discuss the impact of lowering the Assumed Rates of Return for each plan. (max 15 min)
4. Review and discuss the impact of COLA's for 2022 and 2023 (max 15 min)
5. Review Michael Simone's work on the current plan investments and questions pertaining to the other expenses in the plan. (max 15-20 min)

I'm trying to be realistic to keep the meeting under 90 minutes. I think we can accomplish all of it in 1hour 15min and possibly even 1 hour. If you are only able to find a 60 min window that will work for everyone I propose we can reduce 3 and 4 by five minutes each and not worry about the first item if we don't have time. Michael has been patient as he has worked to refine his message so I want to give him the full 20 min and I think the asset allocation also requires a full 20 minute window. Any agenda items that are unresolved will need to be carried forward to the 1<sup>st</sup> quarter review discussion.

John Vargo will be emailing you and Peter answers to follow up items. It would be ideal to receive and distribute his response to the committee before this meeting if possible.

For scheduling I am unavailable the week of 3/21 – 3-25 between work and family commitments.

Lee / Billy: Can you update the asset allocation page with another scenario to include the other option I mentioned during the call? I asked what the risk model will show for splitting 10% shown in Option 2 from Opportunistic credit to 5% Opp credit & 5% private credit option.

Sincerely,  
Joe

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**Joseph J Kirby | Brandywine Global Investment Management, LLC**  
Portfolio Manager  
1735 Market Street, Suite 1800 | Philadelphia, PA 19103  
Phone: 215 609 3500 | Email: joseph.kirby@brandywineglobal.com



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**From:** Amy Organek <Aorganek@warringtontownship.org>

**Sent:** Wednesday, February 9, 2022 12:51 PM

**To:** Barry P. Luber <bluber@warringtontownship.org>; Fred Gaines <fgainespe@gmail.com>; Kenneth Hawthorn <khawthorn@warringtonpd.org>; Joseph Kirby <Joseph.Kirby@BrandywineGlobal.com>; Imartin@marquetteassociates.com; Michael Simone <michaelsimone01@gmail.com>; Alexander Moldavskiy <amoldavskiy@warringtonpd.org>; Vanessa Maurer <vmaurer@warringtontownship.org>; Peter Kim <pkim@warringtontownship.org>

**Subject:** [EXTERNAL] Pension committee

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These are the minutes from the last meetings we had and a tentative agenda. Remember I will not be present this meeting.

Thank you,

Amy Organek  
Assistant Finance Director  
Warrington Township  
215-343-9350 x108  
F 215-343-5944  
[aorganek@warringtontownship.org](mailto:aorganek@warringtontownship.org)

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**ADDENDUM**

**THE WARRINGTON TOWNSHIP POLICE PENSION PLAN BOARD  
OF SUPERVISORS  
INVESTMENT POLICY STATEMENT  
DATED MARCH 24, 2015  
AMENDED AUGUST 1, 2016  
AMENDED JUNE 13, 2017  
AMENDED DECEMBER, 2018**

**DOCUMENT CHANGES:**

**1. ASSET ALLOCATION GUIDELINES.....ATTACHMENT I**

**DECREASED EQUITY TARGET FROM 68% TO 63%**

DECREASED DOMESTIC EQUITY TARGET FROM 43% TO 42%.  
DECREASED INTERNATIONAL EQUITY TARGET FROM 25% TO 21%  
MINIMUM AND MAXIMUM RANGES ADJUSTED TO +/- 10% OF TARGETS.

**INCREASED FIXED INCOME TARGET FROM 20% TO 25%**

INCREASED BONDS TARGET FROM 18% TO 23%  
MINIMUM AND MAXIMUM RANGES SET TO 0% AND 10%, RESPECTIVELY

**ADOPTED \_\_\_\_\_, 2022**

**EFFECTIVE \_\_\_\_\_, 2022**

\_\_\_\_\_  
**CHAIRPERSON**

\_\_\_\_\_  
**MEMBER**

\_\_\_\_\_  
**MEMBER**

\_\_\_\_\_  
**MEMBER**

\_\_\_\_\_  
**MEMBER**

## Attachment I

<u>Asset Class</u>	<u>Minimum, %</u>	<u>Target, %</u>	<u>Maximum, %</u>	<u>Benchmark</u>
<b>Equities</b>	<b>53</b>	<b>63</b>	<b>73</b>	
Domestic	32	42	52	Russell 3000
International	11	21	31	MSCI ACWI ex U.S. IMI (net)
<b>Fixed Income</b>	<b>15</b>	<b>25</b>	<b>35</b>	
Bonds	13	23	33	Barclay's Capital U.S. Intermediate Government/Credit
Cash	0	2	5	ML 90 Day T-Bill
<b>Real Estate</b>	<b>2</b>	<b>7</b>	<b>12</b>	NCREIF ODCE Index
<b>Defensive Equity</b>	<b>0</b>	<b>5</b>	<b>10</b>	50S&P/50ML 90 Day T-Bill



# Warrington Township

Quarterly Performance Report as  
of December 31, 2021





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# Marquette Update



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# Marquette Update

1Q 2022

\$332B

assets under advisement

99%

client retention rate

11 years

avg. client tenure

36<sup>th</sup>

year in business

19<sup>th</sup>

largest investment consulting firm according to P&I<sup>1</sup>

5

office locations in Chicago, Baltimore, Milwaukee, Philadelphia, and St. Louis

100%

employee-owned

120+

employees

24

full-time partners



Market Preview Video & Letter from the Director of Research: 1/25

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## Marquette Adds Two New Partners

We are excited to announce the election of two new managing partners. As an employee-owned firm, we are thrilled to not only reward and celebrate the contributions of our employees, but ensure our independence for years to come. Marquette now has 24 full-time owners. Reference our 2022 client letter for more information.

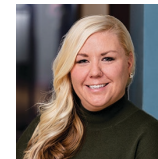


**Lauren Cellucci, CIMA®**

Managing Partner

19 years experience

Joined firm in 2016



**Aimee O'Connor, CFP®**

Managing Partner

18 years experience

Joined firm in 2019



### RECENT HIRES

**Junnor Shin**  
Client Analyst

**Alberto Rivera**  
Sr. Client Analyst, AVP

**Simone Newsome**  
DEI Coordinator

**Matt Mierzwa**  
IT Services Lead

**Annie Das**  
Sr. Private Client Analyst

**Judy Convey**  
Sr. Client Analyst

Firm and client statistics as of September 30, 2021. Client retention rate calculated 2011–2020. <sup>1</sup>As of June 30, 2021 per P&I Daily 2021 Investment Management Consultants Survey ranked by worldwide institutional assets under advisement. Marquette is an independent investment adviser registered under the Investment Advisers Act of 1940, as amended. Registration does not imply a certain level of skill or training. More information about Marquette including our investment strategies, fees and objectives can be found in our ADV Part 2, which is available upon request.

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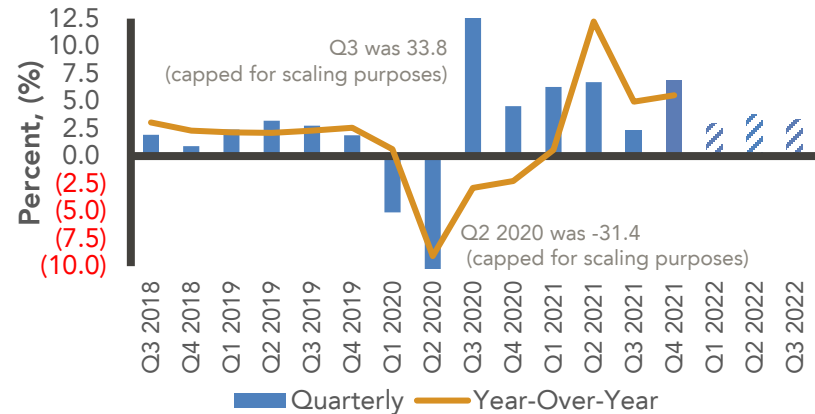
# Market Environment



# U.S. Economy

- Economic activity accelerated in Q4, with real GDP increasing by a better-than-expected annual rate of 6.9%. Growth was primary driven by private inventory accumulation and consumer spending. The former accounted for approximately 70% of real GDP growth.
- For 2022, a continued increase in inventory investment is expected to be a key driver of economic growth as inventories remain near historic lows relative to sales for many industries.
- However, the economy is still grappling with persistent supply chain disruptions. Outside the U.S., several countries are re-imposing lockdown measures, most notably in China. This approach may exacerbate supply chain issues, leaving businesses unable to build their respective inventories as economists currently anticipate.
- Most economists expect inflation to peak in Q1. However, supply chain issues may cause inflation to decelerate less quickly than anticipated through the remainder of 2022.

U.S. Real GDP Growth



U.S. Retail Inventory-to-Sales Ratio



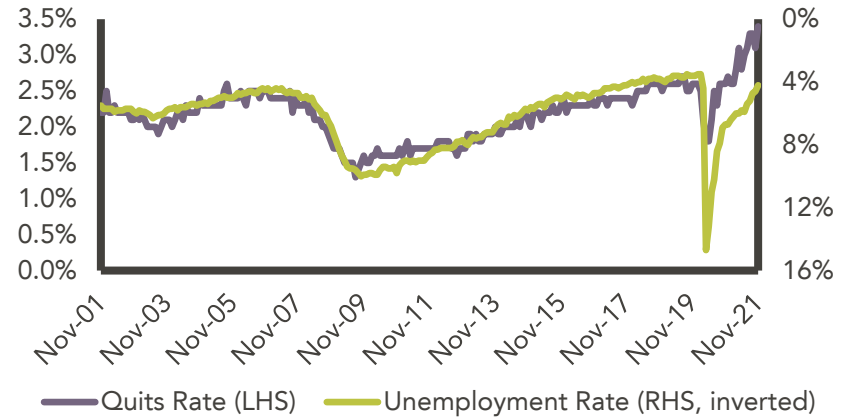
Sources: Refinitiv and The Wall Street Journal. Striped bars reflect estimates.



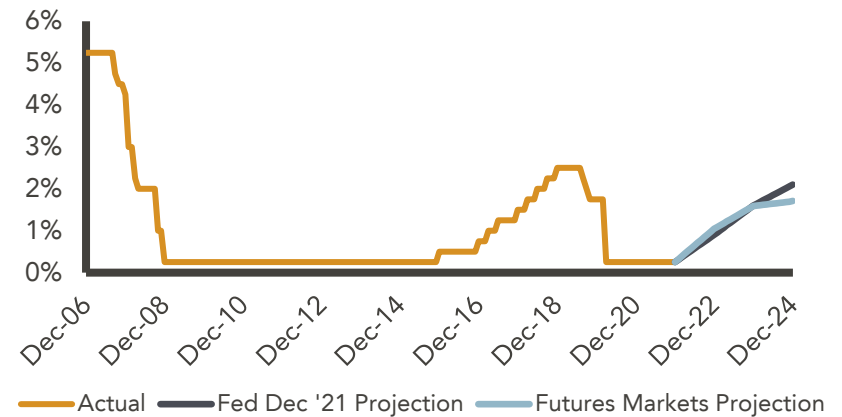
# U.S. Economy

- The labor market continues to tighten amid supply constraints. While the December employment report came in below expectations, the unemployment rate dropped to just 3.9% — its lowest level since before the pandemic.
- Notably, the quits rate, or resignations as a percentage of the workforce, within private industries continued to increase. A record number of workers quit their jobs in November, seeking better opportunities, higher wages, or leaving the workforce entirely. At 3.4%, the quits rate is consistent with an unemployment rate of below 1%.
- A tight labor market, coupled with accelerating inflation across most industries, has led the Federal Reserve to shift its outlook for monetary policy. Specifically, the Fed now anticipates it will halt its current quantitative easing program in March, while raising short-term rates three times this year and another three times in 2023.

U.S. Private Industry Quits Rate



Short-Term Interest Rates

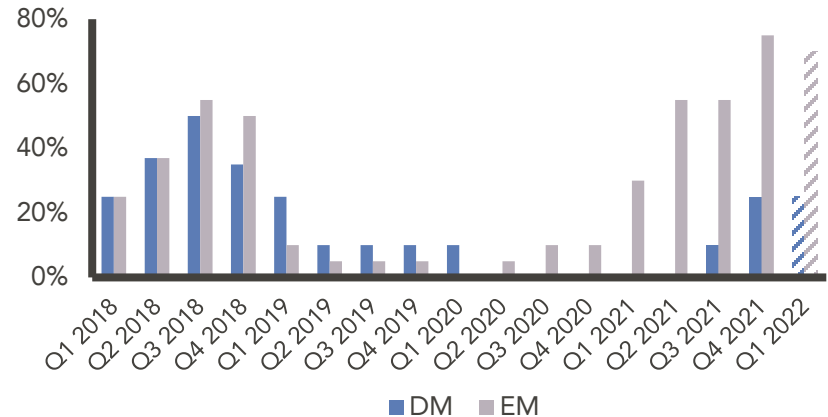


Sources: Refinitiv. The concept for the U.S. Private Industries Quits Rate vs. Unemployment chart was sourced from KKR's *A Different Kind of Recovery* December 2021 publication.

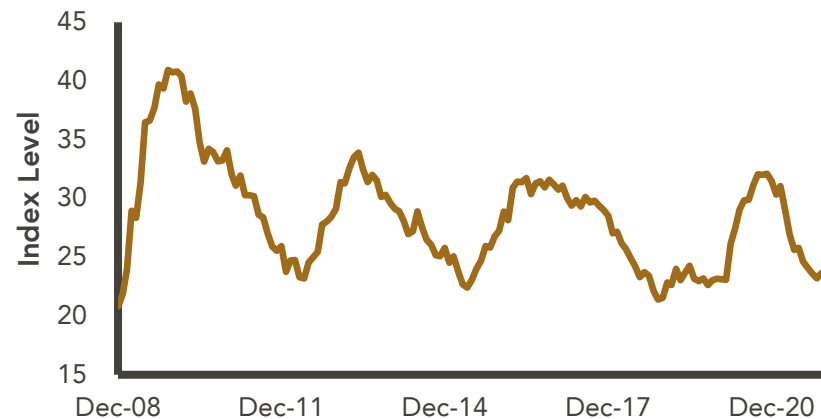
# Global Economy

- Outside the U.S., similar dynamics are playing out across the global economy. Global economic growth appears to have reaccelerated meaningfully from the Q3 slowdown.
- Like the Federal Reserve, global central banks are poised to tighten policy in 2022. Morgan Stanley estimates that nearly 80% and approximately 25% of emerging market and developed market central banks, respectively, will raise rates this year.
- One key exception is China, where economic growth slowed meaningfully in the second half of 2021 amid the country's "zero COVID policy", a challenging property market and subdued credit growth. In fact, the PBOC has eased policy recently, lowering banks' reserve requirement ratios and cutting the one-year loan prime rate. Most economists expect policymakers to continue easing policy throughout 2022.

% of Central Banks Raising Interest Rates



China Credit Impulse

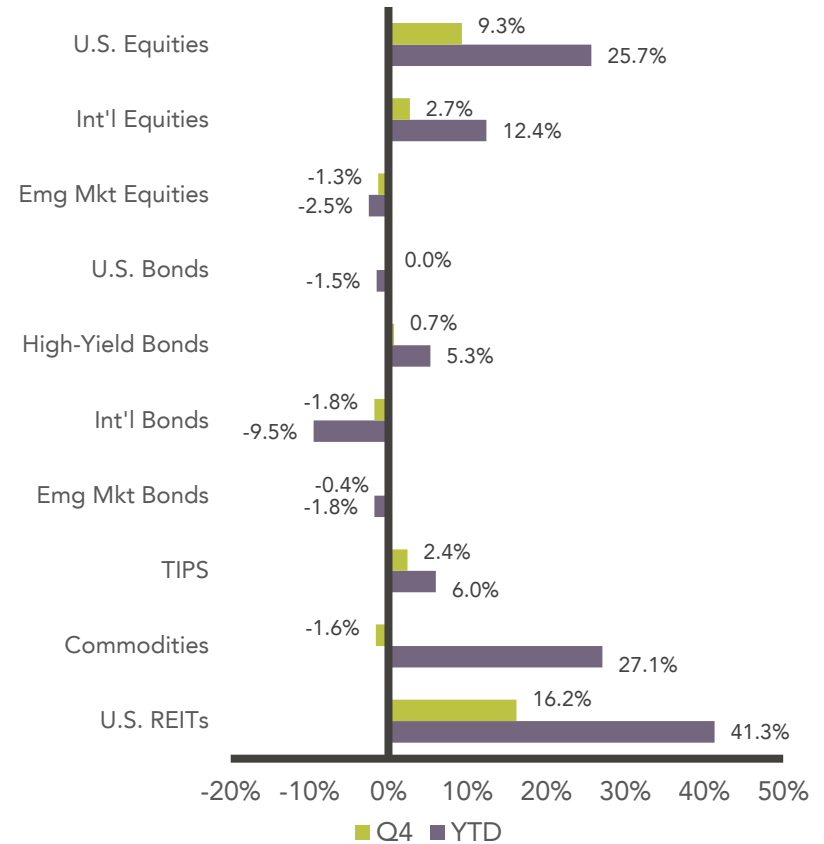


Sources: Morgan Stanley and Bloomberg. Striped bars reflect estimates. The credit impulse is defined as the monthly change of the flow in new credit as a share of GDP.

# Global Asset Class Performance

- Global equities** ended Q4 firmly in the black as investors focused on strong corporate earnings, though there was a wide dispersion across regions. U.S. equities handily outperformed their international developed and emerging market counterparts. The latter finished in the red once again, with U.S. dollar strength hurting returns, and lagged non-U.S. developed markets by nearly 15 percentage points in 2021.
- Fixed income** returns were muted during Q4, with investment-grade bonds flat for the quarter. Sub-investment grade debt outperformed, with high-yield bonds and bank loans both returning 0.7% for the quarter.
- Inflation-sensitive assets** performance was mixed in Q4. TIPS outperformed nominal bonds amid rising inflation expectations, while commodities declined amid demand concerns generated by the emergence of the omicron COVID-19 variant. Finally, REITs topped broad equity markets, with the asset class posting its second-strongest calendar year on record.

Asset Class Returns: Select Asset Class Performance

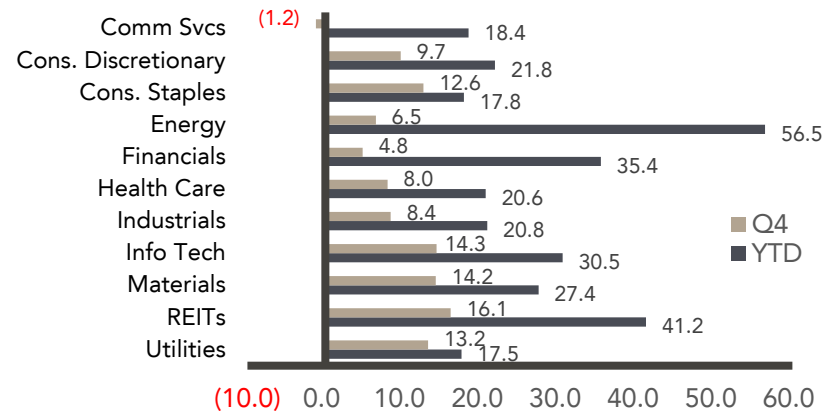


Source: Markov Processes International

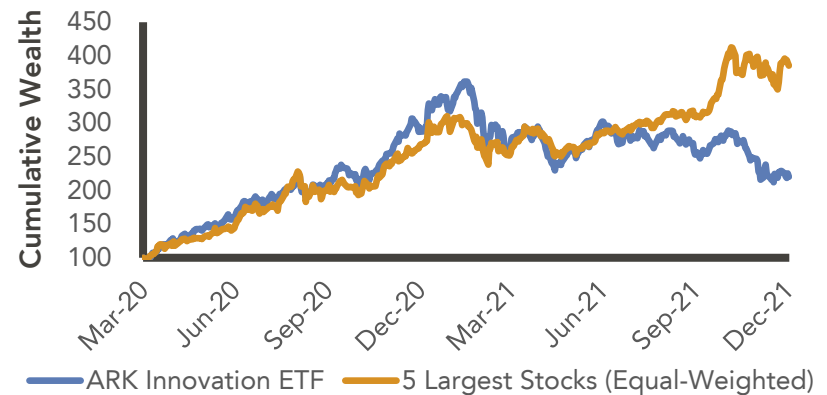
# U.S. Equity Markets

- U.S. equity rallied in Q4, overcoming a late-November sell-off in reaction to the global spread of the omicron variant. All sectors were in the black, except Communication Services, with REITs (+16.1%), Information Technology (+14.3%) and Materials (+14.2%) leading the way.
- Similar to Q3, growth stocks and large caps were best from a style and capitalization perspective, benefitting from the outperformance of Information Technology.
- Further down the capitalization spectrum, however, value outperformed within mid- and small-cap stocks. After a meteoric rise amid the pandemic, many unprofitable small- and mid-cap technology stocks fell dramatically in Q4 amid the prospect of rising interest rates.

## Sector Returns



## Profitless Tech vs. Mega-Cap Tech

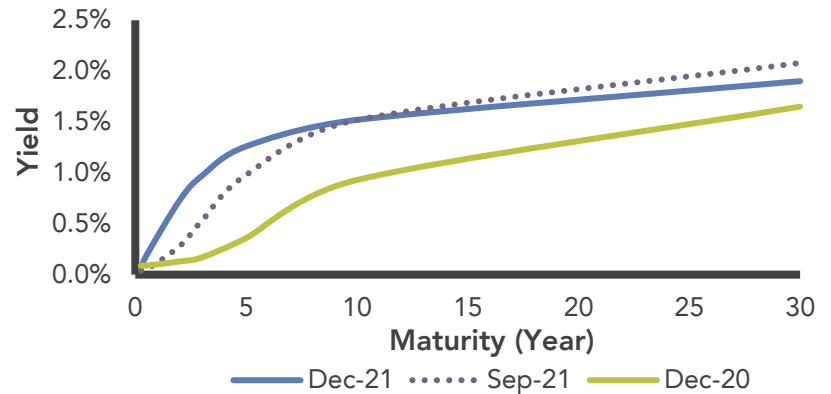


Sources: Refinitiv. The five largest stocks are Microsoft, Apple, Amazon, Tesla and Alphabet. The ARK Innovation ETF is predominantly comprised of smaller, unprofitable technology companies and is widely cited by market participants as a proxy for unprofitable small- and mid-cap technology stocks.

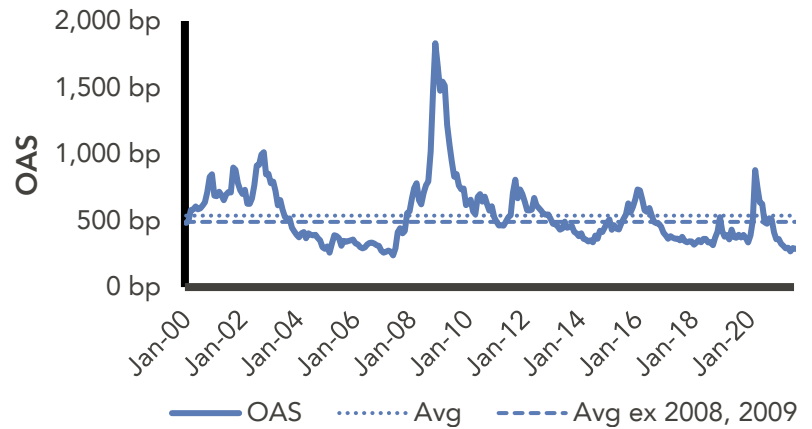
# U.S. Fixed Income

- Interest rates on the short and intermediate part of the Treasury yield curve rose sharply amid the prospects of tighter monetary policy, while yields on long-term bonds fell modestly.
- After very strong returns in both 2019 and 2020, the bond market succumbed to the upward pressure on rates and delivered negative returns in 2021. At **-1.5%**, the Bloomberg Aggregate Bond Index posted just its fourth negative calendar year return since the index began in 1976.
- Sub-investment grade debt continued to outperform their investment-grade counterparts. High yield (+0.7%) and bank loans (+0.7%) posted gains as spreads were little changed. High yield spreads, for example, ended the quarter at 283 basis points—down slightly from 289 at the end of Q2, but well below the long-term average of about 537 basis points.

Yield Curve



High Yield Spread



Sources: Bloomberg Barclays and Refinitiv

# Global Index Returns

DOMESTIC EQUITY	QTR	YTD	1 Year	3 Year	5 Year	10 Year
S&P 500 Index	11.0	28.7	28.7	26.1	18.5	16.6
Russell 3000 Index	9.3	25.7	25.7	25.8	18.0	16.3
Russell 3000 Growth Index	10.9	25.9	25.9	33.2	24.6	19.4
Russell 3000 Value Index	7.5	25.4	25.4	17.6	11.0	12.9
Russell TOP 200 Index	11.0	27.9	27.9	27.3	19.7	17.2
Russell TOP 200 Growth Index	13.7	31.2	31.2	35.6	26.8	20.7
Russell TOP 200 Value Index	7.4	23.5	23.5	16.6	11.1	12.7
Russell 1000 Index	9.8	26.5	26.5	26.2	18.4	16.5
Russell 1000 Growth Index	11.6	27.6	27.6	34.1	25.3	19.8
Russell 1000 Value Index	7.8	25.2	25.2	17.6	11.2	13.0
Russell Mid-Cap Index	6.4	22.6	22.6	23.3	15.1	14.9
Russell Mid-Cap Growth Index	2.8	12.7	12.7	27.5	19.8	16.6
Russell Mid-Cap Value Index	8.5	28.3	28.3	19.6	11.2	13.4
Russell 2000 Index	2.1	14.8	14.8	20.0	12.0	13.2
Russell 2000 Growth Index	0.0	2.8	2.8	21.2	14.5	14.1
Russell 2000 Value Index	4.4	28.3	28.3	18.0	9.1	12.0
<b>DOMESTIC EQUITY BY SECTOR (MSCI)</b>						
Communication Services	(1.2)	18.4	18.4	25.4	12.9	12.6
Consumer Discretionary	9.7	21.8	21.8	32.1	23.0	20.2
Consumer Staples	12.6	17.8	17.8	18.4	11.4	12.2
Energy	6.5	56.5	56.5	4.6	(2.2)	0.3
Financials	4.8	35.4	35.4	20.5	12.7	15.8
Health Care	8.0	20.6	20.6	20.3	17.8	17.5
Industrials	8.4	20.8	20.8	21.0	13.1	14.6
Information Technology	14.3	30.5	30.5	41.6	31.2	23.5
Materials	14.2	27.4	27.4	23.5	14.0	12.6
Real Estate	16.1	41.2	41.2	20.0	12.5	12.1
Utilities	13.2	17.5	17.5	13.4	11.4	11.1

Source: Markov Processes International

# Global Index Returns

INTERNATIONAL/GLOBAL EQUITY	QTR	YTD	1 Year	3 Year	5 Year	10 Year
MSCI EAFE (Net)	2.7	11.3	11.3	13.5	9.6	8.0
MSCI EAFE Growth (Net)	4.1	11.3	11.3	19.0	13.6	10.1
MSCI EAFE Value (Net)	1.2	10.9	10.9	7.8	5.3	5.8
MSCI EAFE Small Cap (Net)	0.1	10.1	10.1	15.6	11.0	10.8
MSCI AC World Index (Net)	6.7	18.5	18.5	20.4	14.4	11.9
MSCI AC World Index Growth (Net)	6.9	17.1	17.1	27.6	19.9	14.7
MSCI AC World Index Value (Net)	6.3	19.6	19.6	12.9	8.7	8.8
MSCI Europe ex UK (Net)	5.7	15.7	15.7	17.0	11.5	9.4
MSCI United Kingdom (Net)	5.6	18.5	18.5	8.7	6.2	5.1
MSCI Pacific ex Japan (Net)	(0.1)	4.7	4.7	9.7	8.3	6.8
MSCI Japan (Net)	(4.0)	1.7	1.7	11.7	8.5	8.3
MSCI Emerging Markets (Net)	(1.3)	(2.5)	(2.5)	10.9	9.9	5.5

Source: Markov Processes International

# Global Index Returns

FIXED INCOME	QTR	YTD	1 Year	3 Year	5 Year	10 Year
Merrill Lynch 3-month T-Bill	0.0	0.0	0.0	1.0	1.1	0.6
Barclays Intermediate Gov't./Credit	(0.6)	(1.4)	(1.4)	3.9	2.9	2.4
Barclays Aggregate Bond	0.0	(1.5)	(1.5)	4.8	3.6	2.9
Barclays Short Government	(0.2)	(0.2)	(0.2)	1.6	1.5	0.9
Barclays Intermediate Government	(0.6)	(1.7)	(1.7)	3.0	2.3	1.7
Barclays Long Government	3.0	(4.6)	(4.6)	8.8	6.5	4.5
Barclays Investment Grade Corp.	0.2	(1.0)	(1.0)	7.6	5.3	4.7
Barclays High Yield Corp. Bond	0.7	5.3	5.3	8.8	6.3	6.8
JPMorgan Global ex US Bond	(1.8)	(9.5)	(9.5)	1.7	2.6	0.3
JPMorgan Emerging Market Bond	(0.4)	(1.8)	(1.8)	5.9	4.7	5.3
INFLATION SENSITIVE						
Consumer Price Index	1.6	7.0	7.0	3.5	2.9	2.1
BC TIPS	2.4	6.0	6.0	8.4	5.3	3.1
Commodities	(1.6)	27.1	27.1	9.9	3.7	(2.9)
Gold	4.0	(4.3)	(4.3)	11.0	8.4	0.7
REITs	16.2	41.3	41.3	19.9	12.5	12.2
FTSE EPRA/NAREIT Global REITs	12.2	31.3	31.3	12.7	7.5	8.6
NCREIF ODCE*	7.7	21.1	21.1	8.2	7.8	9.4
NCREIF Farmland**	1.5	5.5	5.5	4.9	5.5	10.2
NCREIF Timberland**	1.9	5.0	5.0	2.4	2.9	4.9

\*Data are preliminary.

\*\*Data are as of September 30, 2021.

Source: Markov Processes International



# Warrington Township

## Executive Summary



## Observations

- Market Value as of 12/31/2021
  - Police Pension Plan: \$24.8 million
  - Non-Uniform Pension Plan: \$8.0 million
- Q4-21 Investment Gain and Return:
  - Police Gain: \$1.2M, Return: 5.3% (net), Policy Index: 5.1%, Peer Group Ranking: Top Quartile
  - Non-Uniform Gain: \$367K, Return: 4.8% (net), Policy Index: 4.5%, Peer Group Ranking: Top Quartile
- Positive attribution for the quarter from:
  - Domestic Equity (Active SMID Cap)
  - Defensive Equity
  - Real Estate
  - Fixed Income (Active Investment Grade and Below Investment Grade Credit)
- Negative attribution for the quarter from:
  - Global Equity (Active Value and Growth)
  - Emerging Markets (Passive Management)
- 2021 Investment Gain and Return:
  - Police Gain: \$3.2M, Return: 15.0% (net), Policy Index: 14.7%, Peer Group Ranking: Top Quartile
  - Non-Uniform Gain: \$954K, Return: 13.5% (net), Policy Index: 13.1%, Peer Group Ranking: 2nd Quartile
- 5-Year Investment Gain, Return and Statistics:
  - Police Gain: \$9.5M, Return: 11.0% (net), Policy Index: 11.9%, Assumed Rate of Return: 7.1%
    - Beta: 0.98 with lower volatility
    - Peer Group Ranking: 2nd Quartile

- Non-Uniform Gain: \$3.3M, Return: 10.9% (net), Policy Index: 11.6%, Assumed Rate of Return: 6.75%
  - Beta: 0.96 with lower downside capture and volatility
  - Peer Group Ranking: 2nd Quartile

## **Recent Actions/Looking Ahead**

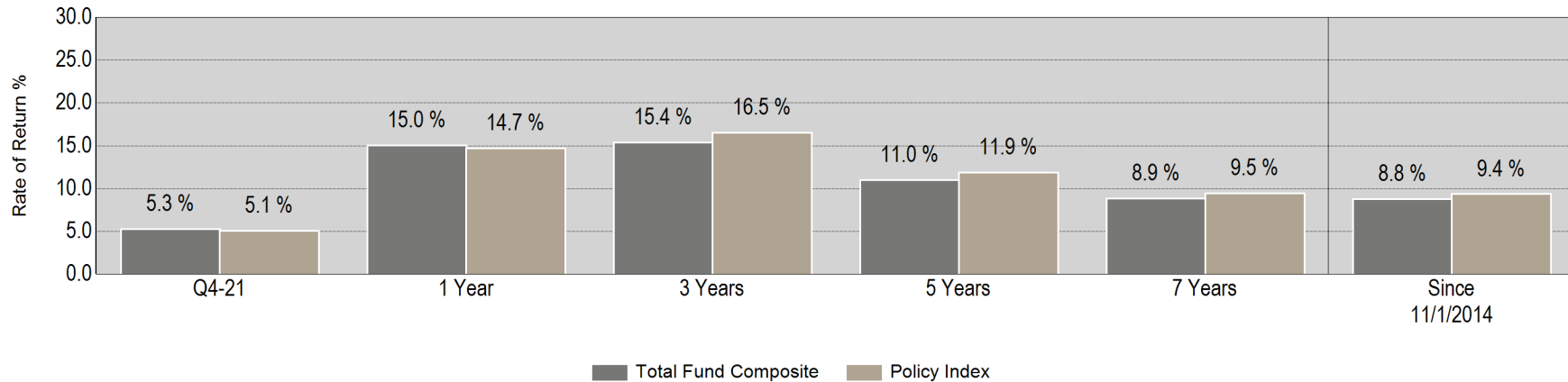
- Defensive Equity allocation in the Police Pension Plan was split in October for diversification benefits
  - Added NB U.S. Equity Putwrite
- Changes to International Equity Structure in January '22
  - Terminated Emerging Markets Index (passive management)
  - Added Harding Loevner International Small Cap and Wellington Emerging Markets (both active management)
- Revisit Asset Allocation Study Review
  - Police Pension: Includes additional options profiling Private Credit & Core Plus Fixed Income
  - Non-Uniform Pension: Includes additional options profiling Defensive Equity & Core Plus Fixed Income
- Asset Class Education
  - Core Plus Fixed Income
  - Private Credit

As of December 31, 2021

**Summary of Cash Flows**

	Fourth Quarter	One Year	Three Years	Five Years	Seven Years	Since 11/1/14
<b>Beginning Market Value</b>	<b>\$22,564,931</b>	<b>\$21,108,704</b>	<b>\$14,261,669</b>	<b>\$13,293,111</b>	<b>\$12,053,042</b>	<b>\$12,033,064</b>
Contributions	\$1,202,795	\$1,372,554	\$5,208,041	\$6,349,904	\$8,122,905	\$8,149,617
Withdrawals	-\$234,102	-\$886,445	-\$2,920,952	-\$4,383,936	-\$5,853,694	-\$5,952,060
Net Cash Flow	\$968,692	\$486,109	\$2,287,089	\$1,965,968	\$2,269,211	\$2,197,557
Net Investment Change	\$1,218,466	\$3,157,276	\$8,203,331	\$9,493,010	\$10,429,836	\$10,521,468
<b>Ending Market Value</b>	<b>\$24,752,089</b>	<b>\$24,752,089</b>	<b>\$24,752,089</b>	<b>\$24,752,089</b>	<b>\$24,752,089</b>	<b>\$24,752,089</b>

**Return Summary (Net)**



**Asset Allocation vs. Target**

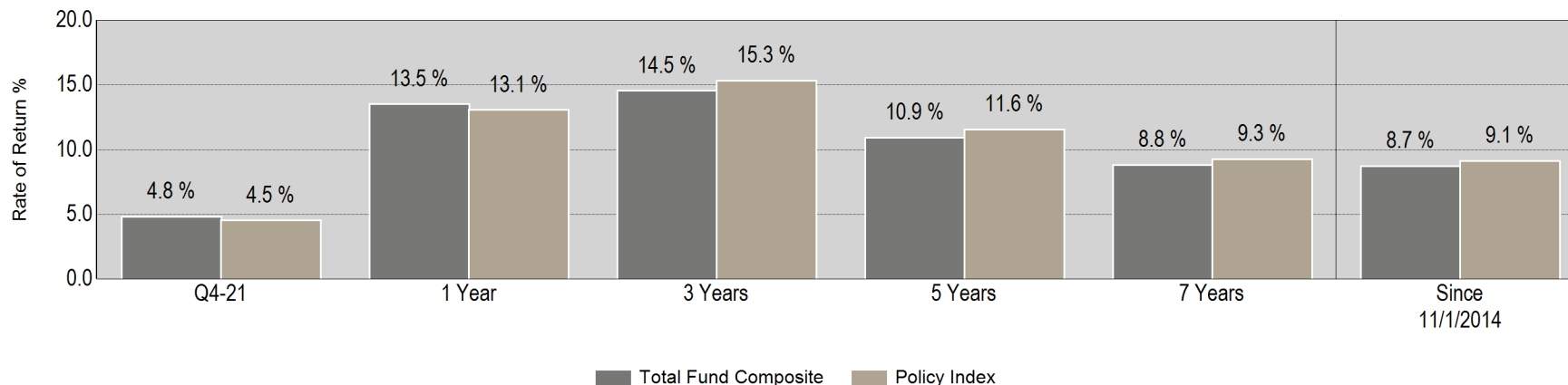
	Current	Policy	Policy Range	Within Range
U.S. Equity	30.6%	30.0%	25.0% - 35.0%	Yes
Global Equity	23.9%	24.0%	19.0% - 29.0%	Yes
Non-U.S. Equity	13.8%	14.0%	9.0% - 19.0%	Yes
Real Estate	7.1%	7.0%	2.0% - 12.0%	Yes
Defensive Equity	5.1%	5.0%	0.0% - 10.0%	Yes
U.S. Fixed Income	18.2%	18.0%	13.0% - 23.0%	Yes
Cash Equivalent	1.5%	2.0%	0.0% - 5.0%	Yes
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>		

As of December 31, 2021

**Summary of Cash Flows**

	Fourth Quarter	One Year	Three Years	Five Years	Seven Years	Since 11/1/14
<b>Beginning Market Value</b>	<b>\$7,532,446</b>	<b>\$7,183,808</b>	<b>\$5,350,731</b>	<b>\$5,182,348</b>	<b>\$5,029,696</b>	<b>\$5,013,056</b>
Contributions	\$197,643	\$218,763	\$1,005,732	\$1,159,427	\$1,475,261	\$1,488,841
Withdrawals	-\$102,605	-\$362,785	-\$1,054,716	-\$1,661,234	-\$2,194,193	-\$2,229,100
Net Cash Flow	\$95,038	-\$144,022	-\$48,984	-\$501,808	-\$718,931	-\$740,259
Net Investment Change	\$366,698	\$954,396	\$2,692,435	\$3,313,641	\$3,683,418	\$3,721,385
<b>Ending Market Value</b>	<b>\$7,994,182</b>	<b>\$7,994,182</b>	<b>\$7,994,182</b>	<b>\$7,994,182</b>	<b>\$7,994,182</b>	<b>\$7,994,182</b>

**Return Summary (Net)**



**Asset Allocation vs. Target**

	Current	Policy	Policy Range	Within Range
U.S. Equity	28.2%	28.0%	23.0% - 33.0%	Yes
Global Equity	24.1%	24.0%	19.0% - 29.0%	Yes
Non-U.S. Equity	10.7%	11.0%	6.0% - 16.0%	Yes
Real Estate	7.8%	7.0%	2.0% - 12.0%	Yes
U.S. Fixed Income	28.0%	28.0%	23.0% - 33.0%	Yes
Cash Equivalent	1.1%	2.0%	0.0% - 5.0%	Yes
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>		

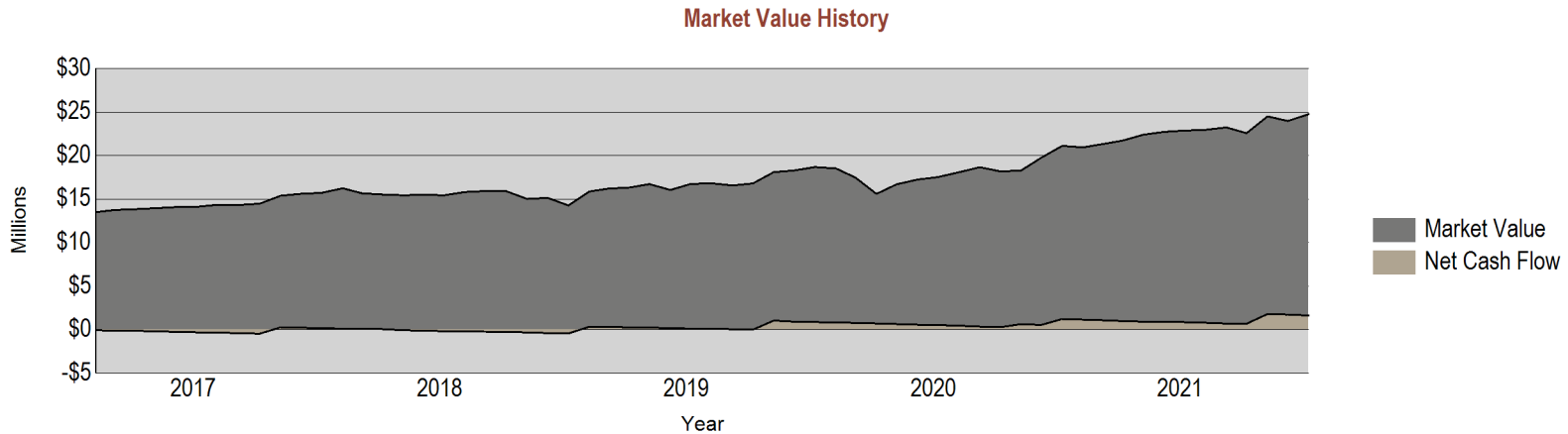
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# Warrington Township

Police Pension Plan



As of December 31, 2021



**Cash Flow Summary by Manager From October 01, 2021 to December 31, 2021**

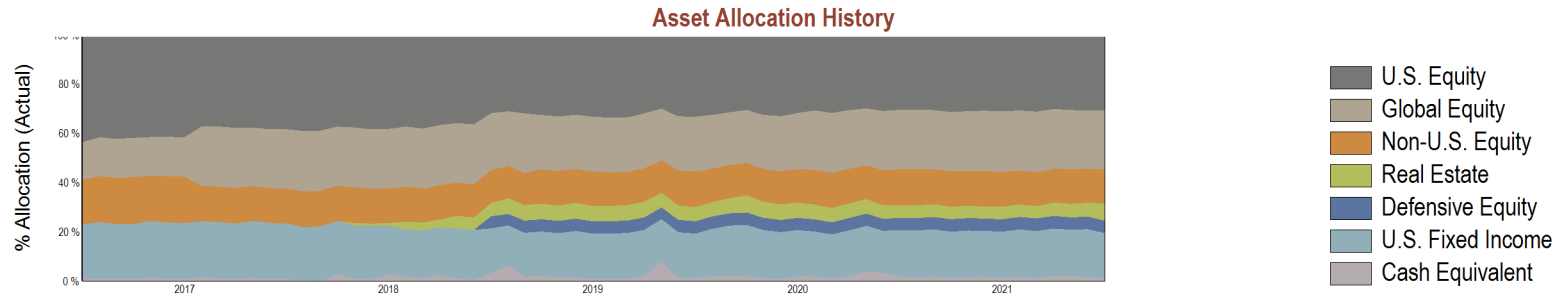
	Beginning Market Value	Net Cash Flow	Net Investment Change	Ending Market Value
Fidelity 500 Index Fund	\$5,232,519	\$90,000	\$587,023	\$5,909,542
Eaton Vance Atlanta SMID	\$733,976	\$0	\$71,545	\$805,520
Vanguard Small-Cap Value	\$779,033	\$30,000	\$49,843	\$858,877
Dodge & Cox Global	\$1,358,083	\$50,000	\$43,493	\$1,451,577
AB Global Core Equity Portfolio	\$1,362,824	\$50,000	\$78,416	\$1,491,240
MFS Low Volatility Global Equity	\$1,397,061	\$0	\$91,611	\$1,488,672
Artisan Global Opportunities	\$1,360,855	\$50,000	\$64,180	\$1,475,035
Hartford Schroder Int'l Multi-Cap Value	\$939,574	\$75,000	\$27,876	\$1,042,450
Fidelity Total Int'l Index	\$1,296,125	\$125,000	\$24,312	\$1,445,437
Fidelity Emerging Markets Index Fund	\$859,131	\$75,000	-\$14,135	\$919,996
Deutsche RREEF America REIT II	\$1,228,702	\$375,000	\$143,979	\$1,747,681
Parametric Volatility Risk Premium- Defensive	\$1,160,073	-\$585,000	\$52,485	\$627,558
NB U.S. Equity Index PutWrite Strategy Fund	\$0	\$610,000	\$12,787	\$622,787
Fidelity Intern. Treasury Bond Index	\$1,873,281	\$20,000	-\$2,880	\$1,890,402
Lord Abbett Short Duration Income	\$1,135,023	\$60,000	-\$3,913	\$1,191,111
Vanguard Short-Term Corporate Bond	\$1,249,065	\$70,000	-\$8,476	\$1,310,589
Chartwell Short Duration High Yield	\$110,210	\$0	\$293	\$110,503
First American Gov't Obligations	\$489,396	-\$126,308	\$24	\$363,112
<b>Total</b>	<b>\$22,564,931</b>	<b>\$968,692</b>	<b>\$1,218,466</b>	<b>\$24,752,089</b>



# Warrington Township Police Pension Plan

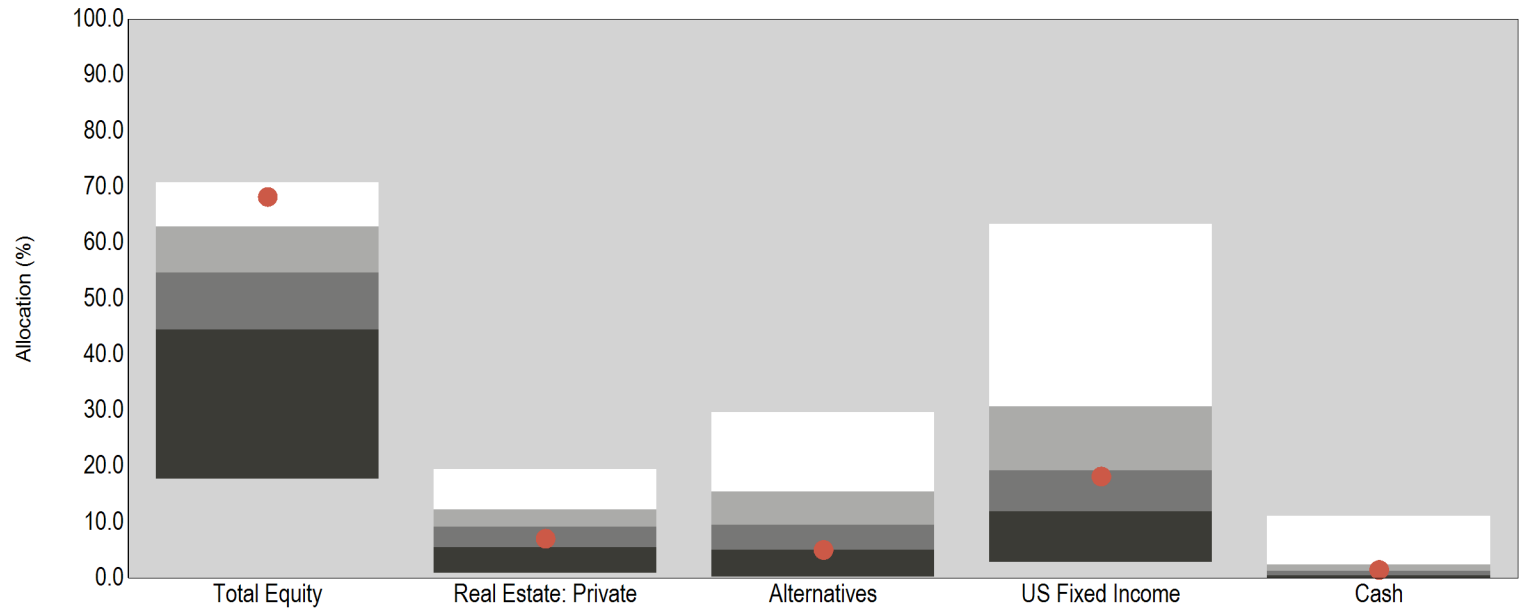
# Asset Allocation Summary

As of December 31, 2021



	Market Value	% of Portfolio	Policy %	Policy Difference
<b>Total Equity Composite</b>	<b>16,888,347</b>	<b>68.2</b>	<b>68.0</b>	<b>56,926</b>
<b>U.S. Equity Composite</b>	<b>7,573,939</b>	<b>30.6</b>	<b>30.0</b>	<b>148,312</b>
Fidelity 500 Index Fund	5,909,542	23.9	23.5	92,801
Eaton Vance Atlanta SMID	805,520	3.3	3.0	62,958
Vanguard Small-Cap Value	858,877	3.5	3.5	-7,447
<b>Global Equity Composite</b>	<b>5,906,525</b>	<b>23.9</b>	<b>24.0</b>	<b>-33,977</b>
Dodge & Cox Global	1,451,577	5.9	6.0	-33,549
AB Global Core Equity Portfolio	1,491,240	6.0	6.0	6,115
MFS Low Volatility Global Equity	1,488,672	6.0	6.0	3,547
Artisan Global Opportunities	1,475,035	6.0	6.0	-10,090
<b>Non-U.S. Equity Composite</b>	<b>3,407,883</b>	<b>13.8</b>	<b>14.0</b>	<b>-57,409</b>
Hartford Schroder Int'l Multi-Cap Value	1,042,450	4.2	4.0	52,367
Fidelity Total Int'l Index	1,445,437	5.8	5.5	84,072
Fidelity Emerging Markets Index Fund	919,996	3.7	4.5	-193,848
<b>Real Estate Composite</b>	<b>1,747,681</b>	<b>7.1</b>	<b>7.0</b>	<b>15,034</b>
Deutsche RREEF America REIT II	1,747,681	7.1	7.0	15,034
<b>Defensive Equity Composite</b>	<b>1,250,345</b>	<b>5.1</b>	<b>5.0</b>	<b>12,740</b>
Parametric Volatility Risk Premium- Defensive	627,558	2.5	2.5	8,755
NB U.S. Equity Index PutWrite Strategy Fund	622,787	2.5	2.5	3,985
<b>U.S. Fixed Income Composite</b>	<b>4,502,605</b>	<b>18.2</b>	<b>18.0</b>	<b>47,229</b>
Fidelity Intern. Treasury Bond Index	1,890,402	7.6	8.0	-89,765
Lord Abbett Short Duration Income	1,191,111	4.8	4.5	77,267
Vanguard Short-Term Corporate Bond	1,310,589	5.3	5.0	72,984
Chartwell Short Duration High Yield	110,503	0.4	0.5	-13,257
<b>Cash Equivalents Composite</b>	<b>363,112</b>	<b>1.5</b>	<b>2.0</b>	<b>-131,930</b>
First American Gov't Obligations	363,112	1.5	2.0	-131,930

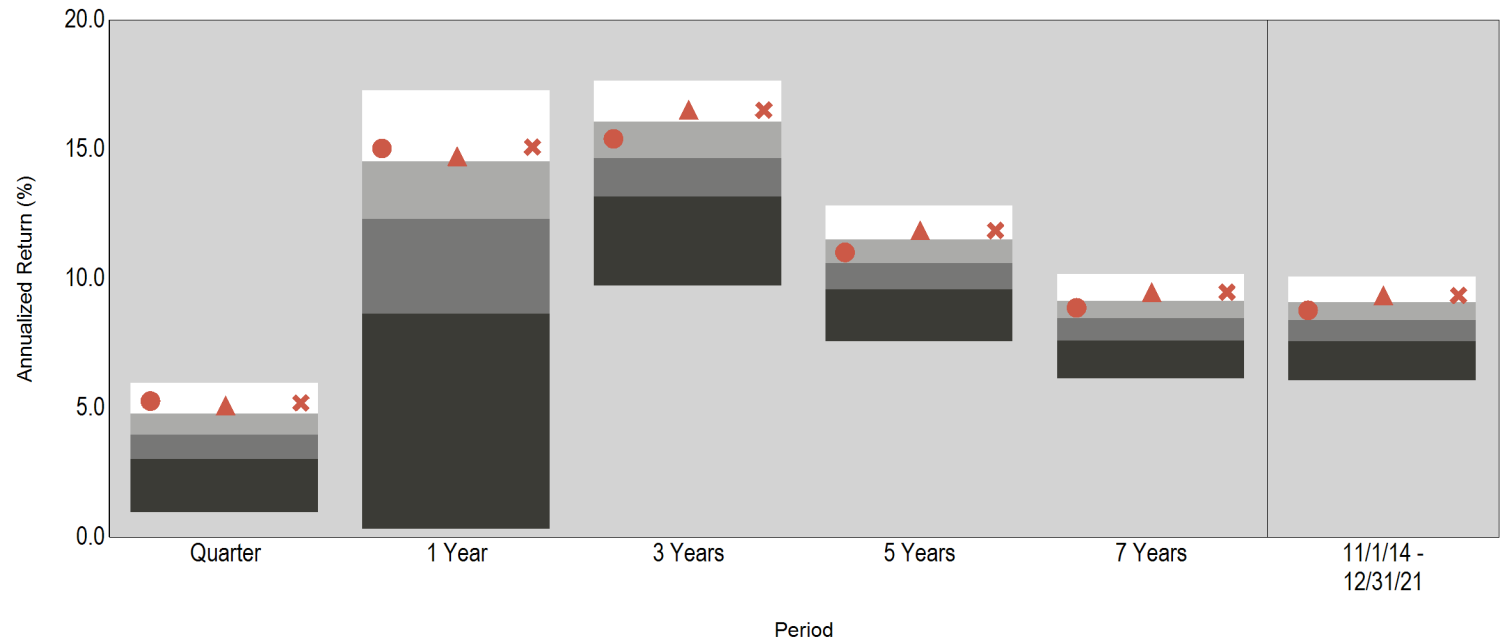
Total Plan Allocation vs. InvMetrics All DB Net



Allocation (Rank)

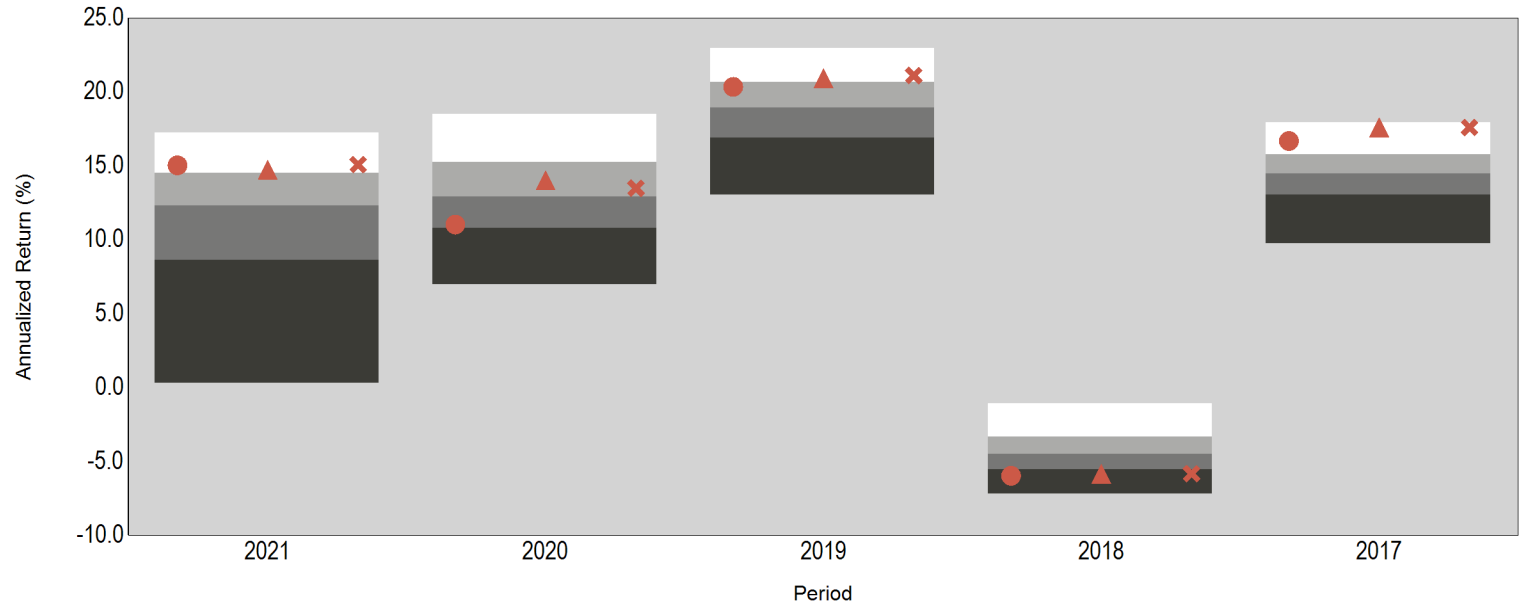
5th Percentile	70.8	19.4	29.7	63.3	11.1					
25th Percentile	62.9	12.3	15.5	30.8	2.5					
Median	54.7	9.2	9.6	19.2	1.3					
75th Percentile	44.5	5.5	5.1	12.0	0.5					
95th Percentile	17.8	0.9	0.3	2.9	0.0					
# of Portfolios	509	295	311	308	475					
● Total Fund Composite	68.2	(9)	7.1	(69)	5.1	(76)	18.2	(53)	1.5	(46)

InvMetrics All DB Net Return Comparison



	Quarter		1 Year		3 Years		5 Years		7 Years		11/1/14 - 12/31/21	
<b>Return (Rank)</b>												
5th Percentile	6.0		17.3		17.6		12.8		10.2		10.1	
25th Percentile	4.8		14.5		16.1		11.5		9.1		9.1	
Median	4.0		12.3		14.6		10.6		8.5		8.4	
75th Percentile	3.0		8.6		13.2		9.6		7.6		7.6	
95th Percentile	1.0		0.3		9.7		7.6		6.1		6.1	
# of Portfolios	1,332		1,316		1,277		1,205		1,120		1,099	
● Total Fund Composite	5.3	(14)	15.0	(20)	15.4	(36)	11.0	(39)	8.9	(36)	8.8	(36)
▲ Policy Index	5.1	(17)	14.7	(23)	16.5	(17)	11.9	(17)	9.5	(15)	9.4	(18)
✕ Policy Index (CBOE)	5.2	(15)	15.1	(19)	16.5	(17)	11.9	(18)	9.5	(15)	9.4	(18)

InvMetrics All DB Net Return Comparison



	2021		2020		2019		2018		2017	
<b>Return (Rank)</b>										
5th Percentile	17.3		18.5		23.0		-1.1		17.9	
25th Percentile	14.5		15.3		20.7		-3.3		15.8	
Median	12.3		12.9		18.9		-4.5		14.5	
75th Percentile	8.6		10.8		16.9		-5.5		13.0	
95th Percentile	0.3		7.0		13.0		-7.2		9.7	
# of Portfolios	1,316		1,745		1,580		1,647		1,009	
● Total Fund Composite	15.0	(20)	11.0	(73)	20.3	(30)	-6.0	(81)	16.7	(14)
▲ Policy Index	14.7	(23)	14.0	(39)	20.9	(22)	-5.8	(80)	17.6	(7)
✕ Policy Index (CBOE)	15.1	(19)	13.5	(44)	21.1	(20)	-5.8	(80)	17.6	(7)

As of December 31, 2021

**RISK RETURN STATISTICS**  
January 01, 2017 Through December 31, 2021

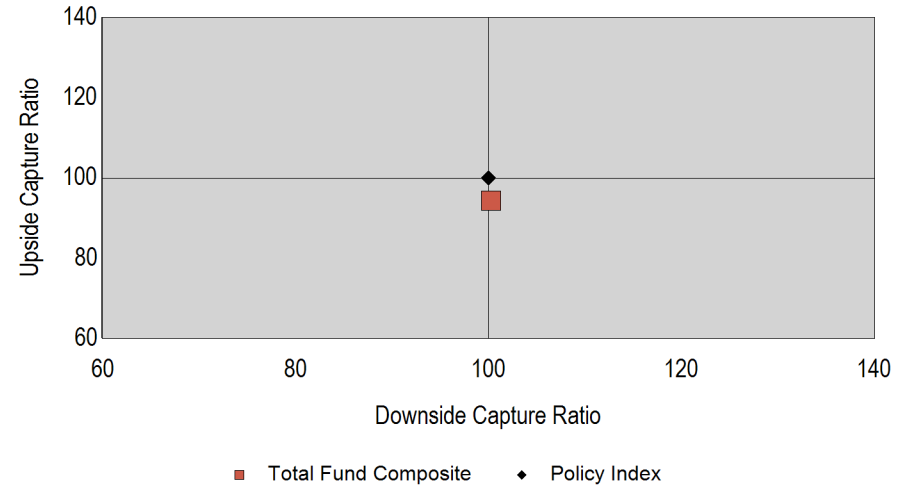
	Total Fund Composite	Policy Index
<b>RETURN SUMMARY STATISTICS</b>		
Number of Periods	60	60
Maximum Return	8.58	9.00
Minimum Return	-10.42	-10.05
Annualized Return	11.02	11.87
Total Return	68.66	75.24
Annualized Excess Return Over Risk Free	9.94	10.79
Annualized Excess Return	-0.85	0.00

	Total Fund Composite	Policy Index
<b>RISK SUMMARY STATISTICS</b>		
Beta	0.98	1.00
Upside Deviation	6.24	6.49
Downside Deviation	9.45	9.37

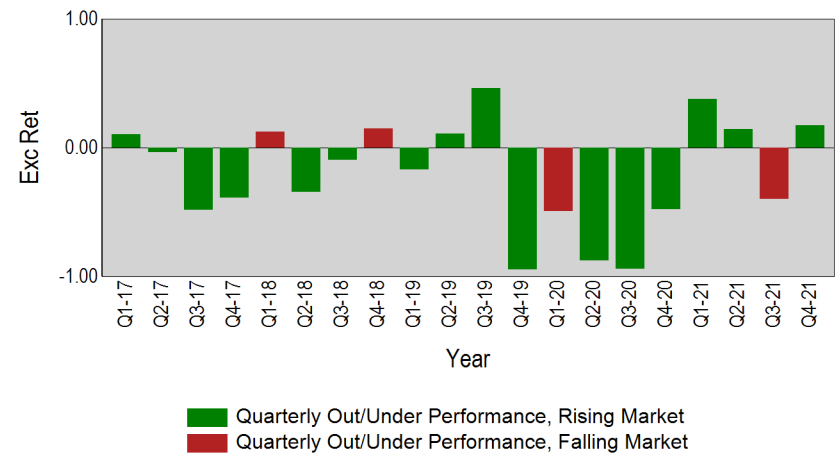
	Total Fund Composite	Policy Index
<b>RISK/RETURN SUMMARY STATISTICS</b>		
Annualized Standard Deviation	10.69	10.86
Alpha	-0.05	0.00
Sharpe Ratio	0.93	0.99
Excess Return Over Market / Risk	-0.08	0.00
Tracking Error	0.91	0.00
Information Ratio	-0.94	--

	Total Fund Composite	Policy Index
<b>CORRELATION STATISTICS</b>		
R-Squared	0.99	1.00
Correlation	1.00	1.00

**Upside Capture Ratio vs. Downside Capture Ratio**  
5 Years Ending December 31, 2021



**Quarterly Excess Performance**  
Total Fund Composite vs. Policy Index



# Warrington Township Police Pension Plan

## Performance Summary (Net)

As of December 31, 2021

	3 Mo	1 Yr	3 Yrs	5 Yrs	7 Yrs	Market Value % of Portfolio	Policy %	Inception	Inception Date	
<b>Total Fund Composite</b>	<b>5.3</b>	<b>15.0</b>	<b>15.4</b>	<b>11.0</b>	<b>8.9</b>	<b>24,752,089</b>	<b>100.0</b>	<b>100.0</b>	<b>9.0</b>	<b>Oct-14</b>
<i>Policy Index</i>	5.1	14.7	16.5	11.9	9.5				9.5	Oct-14
<i>InvMetrics All DB Net Rank</i>	14	20	36	39	36				34	Oct-14
<b>Total Equity Composite</b>	<b>6.8</b>	<b>19.6</b>	<b>19.6</b>	<b>13.8</b>	<b>11.0</b>	<b>16,888,347</b>	<b>68.2</b>	<b>68.0</b>	<b>10.9</b>	<b>Nov-14</b>
<i>Total Equity Policy Index</i>	6.4	19.1	21.2	15.0	11.8				11.6	Nov-14
<b>U.S. Equity Composite</b>	<b>10.7</b>	<b>27.7</b>	<b>24.1</b>	<b>16.4</b>	<b>13.7</b>	<b>7,573,939</b>	<b>30.6</b>	<b>30.0</b>	<b>13.8</b>	<b>Nov-14</b>
<i>Russell 3000</i>	9.3	25.7	25.8	18.0	14.5				14.6	Nov-14
Fidelity 500 Index Fund	11.0	28.7	--	--	--	5,909,542	23.9	23.5	35.2	Jun-20
<i>S&amp;P 500</i>	11.0	28.7	--	--	--				35.2	Jun-20
<i>Large Blend MStar MF Rank</i>	25	23	--	--	--				33	Jun-20
Eaton Vance Atlanta SMID	9.7	22.3	22.3	16.7	14.9	805,520	3.3	3.0	14.6	Nov-14
<i>Russell 2500</i>	3.8	18.2	21.9	13.8	11.7				11.8	Nov-14
<i>SMID Blend MStar MF Rank</i>	7	62	21	1	1				1	Nov-14
Vanguard Small-Cap Value	6.4	28.1	18.5	10.3	--	858,877	3.5	3.5	10.1	Apr-15
<i>CRSP US Small Cap Value TR USD</i>	6.4	28.1	18.5	10.3	--				10.1	Apr-15
<i>Small Value MStar MF Rank</i>	51	72	55	30	--				34	Apr-15
<b>Global Equity Composite</b>	<b>5.1</b>	<b>17.4</b>	<b>19.4</b>	<b>14.2</b>	<b>10.7</b>	<b>5,906,525</b>	<b>23.9</b>	<b>24.0</b>	<b>10.6</b>	<b>Nov-14</b>
<i>Global Equity Policy</i>	6.1	18.2	20.2	14.2	10.7				10.4	Nov-14
Dodge & Cox Global	3.3	20.8	16.6	11.0	8.9	1,451,577	5.9	6.0	8.3	Nov-14
<i>MSCI ACWI Value NR USD</i>	6.3	19.6	12.9	8.7	7.0				6.6	Nov-14
<i>World Large Stock Value Mstar MF Rank</i>	93	34	21	30	21				29	Nov-14
AB Global Core Equity Portfolio	5.7	18.1	--	--	--	1,491,240	6.0	6.0	23.9	Jul-20
<i>MSCI ACWI</i>	6.7	18.5	--	--	--				26.6	Jul-20
<i>World Large Stock Mstar MF Rank</i>	60	47	--	--	--				66	Jul-20
MFS Low Volatility Global Equity	6.6	16.9	14.2	11.5	9.2	1,488,672	6.0	6.0	8.9	Nov-14
<i>MSCI ACWI Minimum Volatility Index</i>	6.3	13.9	12.3	10.5	8.9				8.7	Nov-14
<i>World Large Stock Mstar MF Rank</i>	46	60	87	73	68				66	Nov-14
Artisan Global Opportunities	4.8	13.9	29.5	21.0	--	1,475,035	6.0	6.0	16.3	Jun-15
<i>MSCI ACWI Growth</i>	6.9	17.1	27.6	19.9	--				15.0	Jun-15
<i>World Large Stock Growth Mstar MF Rank</i>	52	61	14	24	--				24	Jun-15

# Warrington Township Police Pension Plan

## Performance Summary (Net)

As of December 31, 2021

	3 Mo	1 Yr	3 Yrs	5 Yrs	7 Yrs	Market Value % of Portfolio	Policy %	Inception	Inception Date	
<b>Non-U.S. Equity Composite</b>	<b>1.4</b>	<b>6.4</b>	<b>10.8</b>	<b>7.8</b>	<b>4.8</b>	<b>3,407,883</b>	<b>13.8</b>	<b>14.0</b>	<b>4.2</b>	<b>Nov-14</b>
<i>Non-U.S. Equity Policy Index</i>	1.6	8.5	13.6	9.8	6.7				6.1	Nov-14
Hartford Schroder Int'l Multi-Cap Value	3.0	13.9	10.9	7.3	--	1,042,450	4.2	4.0	6.8	Jul-16
<i>MSCI ACWI ex USA Value</i>	1.2	10.5	8.2	6.0	--				6.7	Jul-16
<i>Foreign Large Value MStar MF Rank</i>	34	29	49	38	--				58	Jul-16
Fidelity Total Int'l Index	2.0	8.5	--	--	--	1,445,437	5.8	5.5	8.5	Dec-20
<i>MSCI ACWI ex USA IMI</i>	1.6	8.5	--	--	--				8.5	Dec-20
<i>Foreign Large Blend MStar MF Rank</i>	75	64	--	--	--				64	Dec-20
Fidelity Emerging Markets Index Fund	-1.3	--	--	--	--	919,996	3.7	4.5	-6.7	Feb-21
<i>MSCI Emerging Markets</i>	-1.3	--	--	--	--				-6.2	Feb-21
<i>Diversified Emerging Mkts MStar MF Rank</i>	52	--	--	--	--				57	Feb-21
<b>Real Estate Composite</b>						<b>1,747,681</b>	<b>7.1</b>	<b>7.0</b>		
Deutsche RREEF America REIT II	10.6	23.9	10.0	--	--	1,747,681	7.1	7.0	9.6	Apr-18
<i>NFI-ODCE</i>	7.7	21.1	8.2	--	--				8.0	Apr-18
<i>InvMetrics Trust Funds Real Estate Priv Net Rank</i>	9	14	14	--	--				16	Apr-18
<b>Defensive Equity Composite</b>	<b>5.6</b>	<b>17.4</b>	<b>12.5</b>	<b>--</b>	<b>--</b>	<b>1,250,345</b>	<b>5.1</b>	<b>5.0</b>	<b>12.5</b>	<b>Jan-19</b>
<i>50% S&amp;P 500/50% 91 Day T-Bill</i>	5.5	13.7	13.2	--	--				13.2	Jan-19
Parametric Volatility Risk Premium- Defensive	6.1	18.0	12.7	--	--	627,558	2.5	2.5	12.7	Dec-18
<i>50% S&amp;P 500/50% 91 Day T-Bill</i>	5.5	13.7	13.2	--	--				13.2	Dec-18
<i>CBOE S&amp;P 500 Covered Combo Index</i>	7.5	20.8	13.0	--	--				13.0	Dec-18
NB U.S. Equity Index PutWrite Strategy Fund	--	--	--	--	--	622,787	2.5	2.5	1.7	Oct-21
<i>CBOE Put Write Index</i>	--	--	--	--	--				2.3	Oct-21

# Warrington Township Police Pension Plan

## Performance Summary (Net)

As of December 31, 2021

	3 Mo	1 Yr	3 Yrs	5 Yrs	7 Yrs	Market Value % of Portfolio	Policy %	Inception	Inception Date
<b>U.S. Fixed Income Composite</b>	<b>-0.4</b>	<b>-1.2</b>	<b>4.3</b>	<b>3.2</b>	<b>2.7</b>	<b>4,502,605</b>	<b>18.2</b>	<b>18.0</b>	<b>2.7</b> <b>Nov-14</b>
<i>Bloomberg US Govt/Credit Int TR</i>	-0.6	-1.4	3.9	2.9	2.5				2.5 <i>Nov-14</i>
Fidelity Intern. Treasury Bond Index	-0.2	-3.0	4.3	3.3	--	1,890,402	7.6	8.0	2.5 <i>Apr-15</i>
<i>Bloomberg US Treasury 5-10 Yr TR</i>	-0.2	-3.0	4.4	3.3	--				2.6 <i>Apr-15</i>
<i>Intermediate Government MStar MF Rank</i>	20	94	2	2	--				4 <i>Apr-15</i>
Lord Abbett Short Duration Income	-0.3	1.2	3.4	2.9	--	1,191,111	4.8	4.5	2.6 <i>Apr-15</i>
<i>ICE BofA 1-3 Yrs US Corporate TR</i>	-0.5	0.0	3.2	2.6	--				2.3 <i>Apr-15</i>
<i>Short-Term Bond MStar MF Rank</i>	24	20	34	26	--				23 <i>Apr-15</i>
Vanguard Short-Term Corporate Bond	-0.7	-0.4	--	--	--	1,310,589	5.3	5.0	1.0 <i>Jun-20</i>
<i>BBgBarc U.S. 1-5 Year Corp. Bond Index</i>	-0.7	-0.5	--	--	--				1.1 <i>Jun-20</i>
<i>Short-Term Bond MStar MF Rank</i>	77	70	--	--	--				61 <i>Jun-20</i>
Chartwell Short Duration High Yield	0.3	2.4	--	--	--	110,503	0.4	0.5	5.1 <i>Jun-20</i>
<i>BofA Merrill Lynch 1-3 Yrs High Yield BB</i>	0.5	3.2	--	--	--				6.6 <i>Jun-20</i>
<i>eV US High Yield Fixed Inc - Short Duration Net Rank</i>	95	98	--	--	--				94 <i>Jun-20</i>
<b>Cash Equivalents Composite</b>						<b>363,112</b>	<b>1.5</b>	<b>2.0</b>	
First American Gov't Obligations						363,112	1.5		



**Policy Index History**

Total Fund Composite		
1/1/2019	Present	43% Russell 3000 / 25% MSCI ACWI ex USA IMI / 18% Bloomberg US Govt/Credit Int TR / 2% ICE BofA 91 Days T-Bills TR / 7% NFI-ODCE / 5% 50% S&P 500/50% 91 Day T-Bill
10/1/2018	12/31/2018	48% Russell 3000 / 26% MSCI ACWI ex USA IMI / 19% Bloomberg US Govt/Credit Int TR / 2% ICE BofA 91 Days T-Bills TR / 5% NFI-ODCE
7/1/2018	9/30/2018	49% Russell 3000 / 26% MSCI ACWI ex USA / 20% Bloomberg US Govt/Credit Int TR / 2% ICE BofA 91 Days T-Bills TR / 3% NFI-ODCE
8/1/2016	6/30/2018	49% Russell 3000 / 26% MSCI ACWI ex USA / 23% Bloomberg US Govt/Credit Int TR / 2% ICE BofA 91 Days T-Bills TR
11/1/2014	7/31/2016	50% Russell 3000 / 20% MSCI ACWI ex USA / 28% Bloomberg US Govt/Credit Int TR / 2% ICE BofA 91 Days T-Bills TR
Total Equity Composite		
1/1/2019	Present	63% Russell 3000 / 37% MSCI ACWI ex USA IMI
10/1/2018	12/31/2018	65% Russell 3000 / 35% MSCI ACWI ex USA IMI
8/1/2016	9/30/2018	65% Russell 3000 / 35% MSCI ACWI ex USA
11/1/2014	7/31/2016	71% Russell 3000 / 29% MSCI ACWI ex USA
U.S. Equity Composite		
11/1/2014	Present	Russell 3000
Global Equity Composite		
10/1/2018	Present	MSCI ACWI IMI Net USD
11/1/2014	9/30/2018	MSCI ACWI
Non-U.S. Equity Composite		
10/1/2018	Present	MSCI ACWI ex USA IMI
11/1/2014	9/30/2018	MSCI ACWI ex USA
Real Estate Composite		
4/1/2018	Present	NFI-ODCE
Defensive Equity Composite		
1/1/2019	Present	50% 91 Day T-Bills / 50% S&P 500
U.S. Fixed Income Composite		
11/1/2014	Present	Bloomberg US Govt/Credit Int TR
Cash Equivalents Composite		
11/1/2014	Present	ICE BofA 91 Days T-Bills TR

# Warrington Township Police Pension Plan

## Fee Summary

As of December 31, 2021

Account	Fee Schedule	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Fidelity 500 Index Fund	0.02% of Assets	23.9%	\$886	0.02%
Eaton Vance Atlanta SMID	0.82% of Assets	3.3%	\$6,605	0.82%
Vanguard Small-Cap Value	0.07% of Assets	3.5%	\$601	0.07%
Dodge & Cox Global	0.62% of Assets	5.9%	\$9,000	0.62%
AB Global Core Equity Portfolio	0.90% of Assets	6.0%	\$13,421	0.90%
MFS Low Volatility Global Equity	0.68% of Assets	6.0%	\$10,123	0.68%
Artisan Global Opportunities	0.91% of Assets	6.0%	\$13,423	0.91%
Hartford Schroder Int'l Multi-Cap Value	0.77% of Assets	4.2%	\$8,027	0.77%
Fidelity Total Int'l Index	0.06% of Assets	5.8%	\$867	0.06%
Fidelity Emerging Markets Index Fund	0.08% of Assets	3.7%	\$690	0.08%
Deutsche RREEF America REIT II	0.95% of Assets	7.1%	\$16,603	0.95%
Parametric Volatility Risk Premium- Defensive	0.47% of Assets	2.5%	\$2,950	0.47%
NB U.S. Equity Index PutWrite Strategy Fund	0.56% of Assets	2.5%	\$3,488	0.56%
Fidelity Interm. Treasury Bond Index	0.03% of Assets	7.6%	\$567	0.03%
Lord Abbett Short Duration Income	0.34% of Assets	4.8%	\$4,050	0.34%
Vanguard Short-Term Corporate Bond	0.07% of Assets	5.3%	\$917	0.07%
Chartwell Short Duration High Yield	0.49% of Assets	0.4%	\$541	0.49%
First American Gov't Obligations	0.18% of Assets	1.5%	\$654	0.18%
<b>Investment Management Fee</b>		<b>100.0%</b>	<b>\$93,413</b>	<b>0.38%</b>

As of December 31, 2021

**RISK RETURN STATISTICS**

January 01, 2017 Through December 31, 2021

Total Equity Composite Total Equity Policy Index

**RETURN SUMMARY STATISTICS**

Number of Periods	60	60
Maximum Return	12.25	12.66
Minimum Return	-14.81	-14.25
Annualized Return	13.78	14.96
Total Return	90.66	100.77
Annualized Excess Return Over Risk Free	12.70	13.88
Annualized Excess Return	-1.18	0.00

**RISK SUMMARY STATISTICS**

Beta	0.98	1.00
Upside Deviation	8.83	9.14
Downside Deviation	13.40	13.14

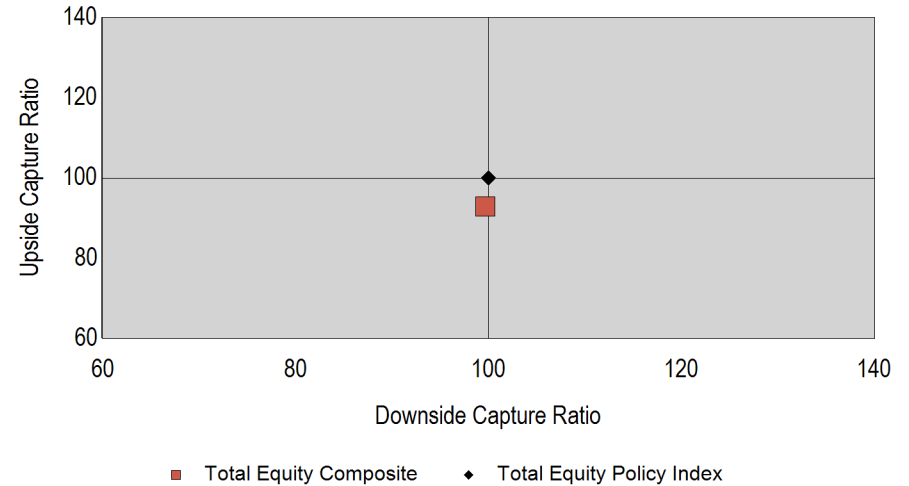
**RISK/RETURN SUMMARY STATISTICS**

Annualized Standard Deviation	15.01	15.26
Alpha	-0.07	0.00
Sharpe Ratio	0.85	0.91
Excess Return Over Market / Risk	-0.08	0.00
Tracking Error	1.18	0.00
Information Ratio	-1.00	--

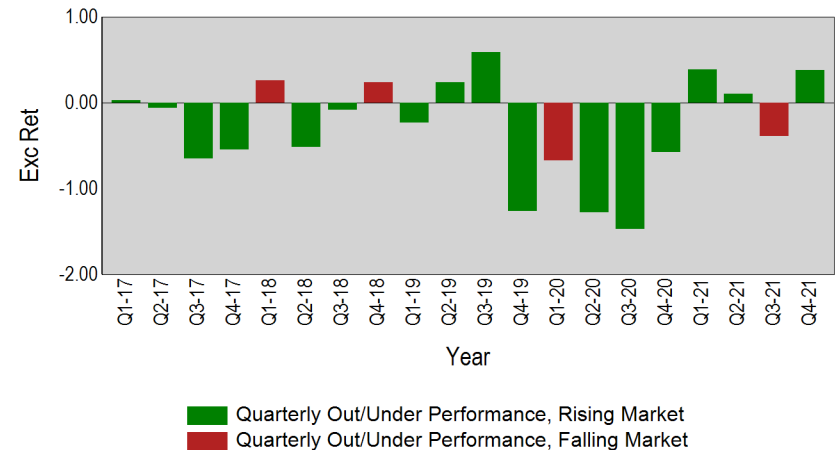
**CORRELATION STATISTICS**

R-Squared	0.99	1.00
Correlation	1.00	1.00

Upside Capture Ratio vs. Downside Capture Ratio  
5 Years Ending December 31, 2021



Quarterly Excess Performance  
Total Equity Composite vs. Total Equity Policy Index



**Characteristics**

	Portfolio	MSCI ACWI IMI Net USD
Number of Holdings	6,193	9,292
Weighted Avg. Market Cap. (\$B)	345.7	380.3
Median Market Cap. (\$B)	5.0	2.3
Price To Earnings	19.5	20.2
Price To Book	3.6	3.6
Price To Sales	2.2	2.3
Return on Equity (%)	19.8	18.9
Yield (%)	1.7	1.8

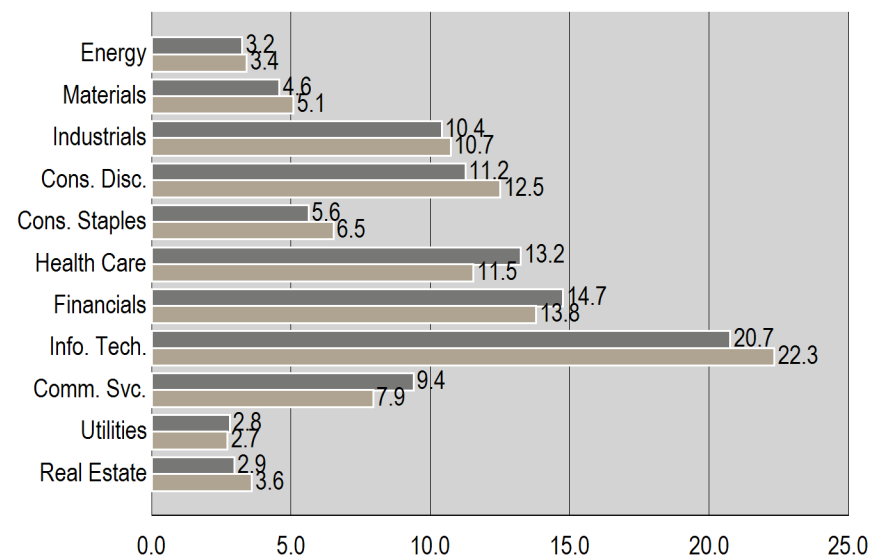
**Top Holdings**

MICROSOFT CORP	3.3%
APPLE INC	2.5%
ALPHABET INC	1.4%
AMAZON.COM INC	1.3%
ALPHABET INC	1.2%
META PLATFORMS INC	1.2%
TESLA INC	0.8%
NVIDIA CORPORATION	0.7%
JOHNSON & JOHNSON	0.6%
COMCAST CORP	0.6%
<b>Total</b>	<b>13.6%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Total Equity Composite	12.4%	17.2%	68.0%	2.4%
MSCI ACWI IMI Net USD	16.3%	15.2%	68.5%	0.0%
<i>Weight Over/Under</i>	-3.9%	1.9%	-0.5%	2.4%

**Sector Allocation (%) vs MSCI ACWI IMI Net USD**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	2.5%	2.9%	-0.4%
United States	61.5%	60.3%	1.3%
Europe Ex U.K.	12.7%	12.6%	0.1%
United Kingdom	4.1%	3.9%	0.2%
Pacific Basin Ex Japan	3.1%	3.0%	0.2%
Japan	4.4%	5.9%	-1.6%
Emerging Markets	10.9%	11.1%	-0.3%
Other	0.8%	0.3%	0.5%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Characteristics**

	Portfolio	Russell 3000
Number of Holdings	1,471	3,065
Weighted Avg. Market Cap. (\$B)	527.2	568.6
Median Market Cap. (\$B)	7.2	2.8
Price To Earnings	23.9	24.9
Price To Book	4.2	4.5
Price To Sales	3.0	3.4
Return on Equity (%)	25.8	22.9
Yield (%)	1.3	1.3

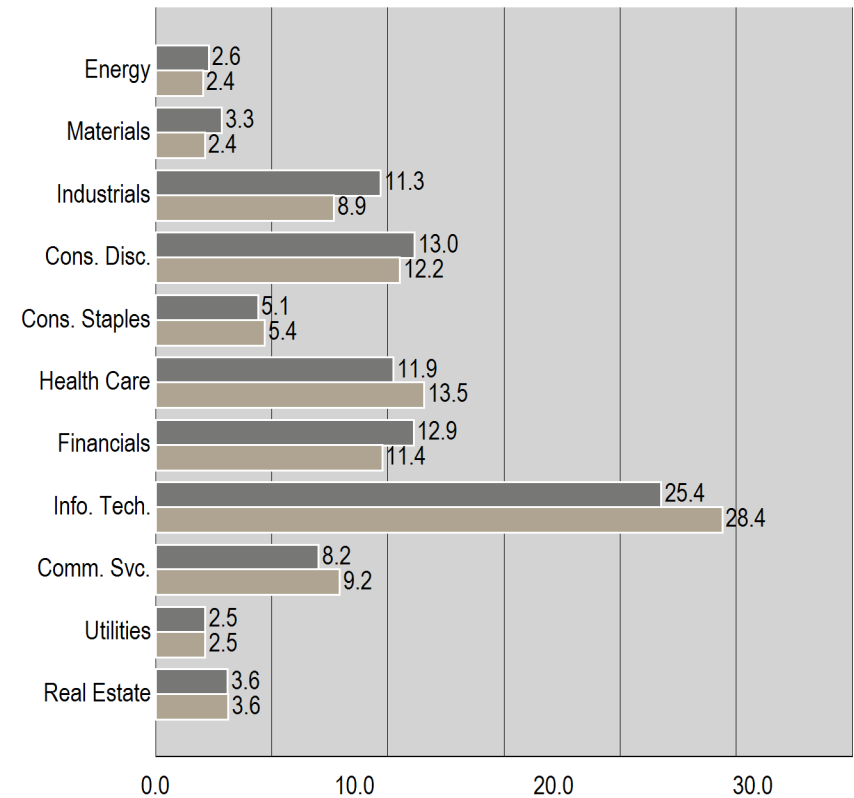
**Top Holdings**

APPLE INC	5.4%
MICROSOFT CORP	4.9%
AMAZON.COM INC	2.8%
ALPHABET INC	1.7%
TESLA INC	1.7%
ALPHABET INC	1.6%
META PLATFORMS INC	1.5%
NVIDIA CORPORATION	1.4%
BERKSHIRE HATHAWAY INC	1.1%
UNITEDHEALTH GROUP INC	0.9%
<b>Total</b>	<b>23.0%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
U.S. Equity Composite	4.2%	29.8%	65.3%	0.7%
Russell 3000	5.6%	23.1%	71.2%	0.0%
<i>Weight Over/Under</i>	<i>-1.4%</i>	<i>6.6%</i>	<i>-5.9%</i>	<i>0.7%</i>

**Sector Allocation (%) vs Russell 3000**



Common Holdings Matrix

	<i>Fidelity 500 Index Fund</i>		<i>Eaton Vance Atlanta SMID</i>		<i>Vanguard Small-Cap Value</i>	
	#	%	#	%	#	%
Fidelity 500 Index Fund	--	--	16	30	49	14
Eaton Vance Atlanta SMID	16	1	--	--	21	6
Vanguard Small-Cap Value	49	1	21	43	--	--

**Characteristics**

	Portfolio	MSCI ACWI IMI Net USD
Number of Holdings	270	9,292
Weighted Avg. Market Cap. (\$B)	249.9	380.3
Median Market Cap. (\$B)	48.3	2.3
Price To Earnings	20.9	20.2
Price To Book	3.6	3.6
Price To Sales	2.2	2.3
Return on Equity (%)	19.3	18.9
Yield (%)	1.5	1.8

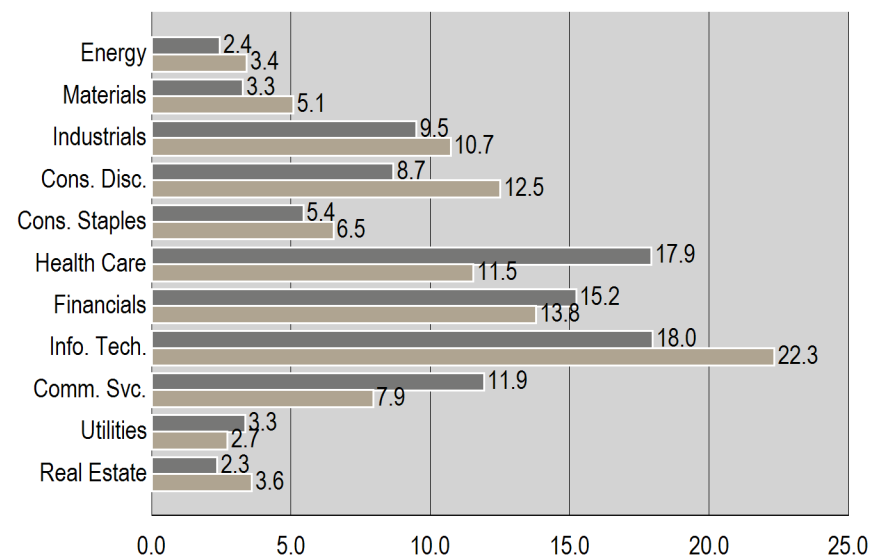
**Top Holdings**

MICROSOFT CORP	3.1%
ALPHABET INC	2.1%
TECHTRONIC INDUSTRIES CO LTD	1.5%
ROCHE HOLDING AG	1.4%
ALPHABET INC	1.3%
META PLATFORMS INC	1.3%
COMCAST CORP	1.3%
UBS GROUP AG	1.2%
ADVANCED MICRO DEVICES INC	1.1%
VEEVA SYSTEMS INC	1.0%
<b>Total</b>	<b>15.3%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Global Equity Composite	4.3%	15.3%	76.5%	3.8%
MSCI ACWI IMI Net USD	16.3%	15.2%	68.5%	0.0%
<i>Weight Over/Under</i>	<i>-12.0%</i>	<i>0.1%</i>	<i>8.0%</i>	<i>3.8%</i>

**Sector Allocation (%) vs MSCI ACWI IMI Net USD**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	4.0%	2.9%	1.0%
United States	50.1%	60.3%	-10.2%
Europe Ex U.K.	21.5%	12.6%	8.9%
United Kingdom	6.2%	3.9%	2.3%
Pacific Basin Ex Japan	4.9%	3.0%	1.9%
Japan	6.0%	5.9%	0.0%
Emerging Markets	6.4%	11.1%	-4.7%
Other	1.0%	0.3%	0.7%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

Common Holdings Matrix

	<i>Dodge &amp; Cox Global</i>		<i>AB Global Core Equity Portfolio</i>		<i>MFS Low Volatility Global Equity</i>		<i>Artisan Global Opportunities</i>	
	#	%	#	%	#	%	#	%
Dodge & Cox Global	--	--	8	27	8	8	3	7
AB Global Core Equity Portfolio	8	14	--	--	6	6	1	2
MFS Low Volatility Global Equity	8	18	6	21	--	--	3	6
Artisan Global Opportunities	3	4	1	7	3	7	--	--



**Characteristics**

	Portfolio	MSCI ACWI ex USA IMI
Number of Holdings	4,657	6,706
Weighted Avg. Market Cap. (\$B)	88.5	85.0
Median Market Cap. (\$B)	4.4	2.0
Price To Earnings	12.8	15.3
Price To Book	2.6	2.7
Price To Sales	1.3	1.5
Return on Equity (%)	14.5	14.0
Yield (%)	2.8	2.6

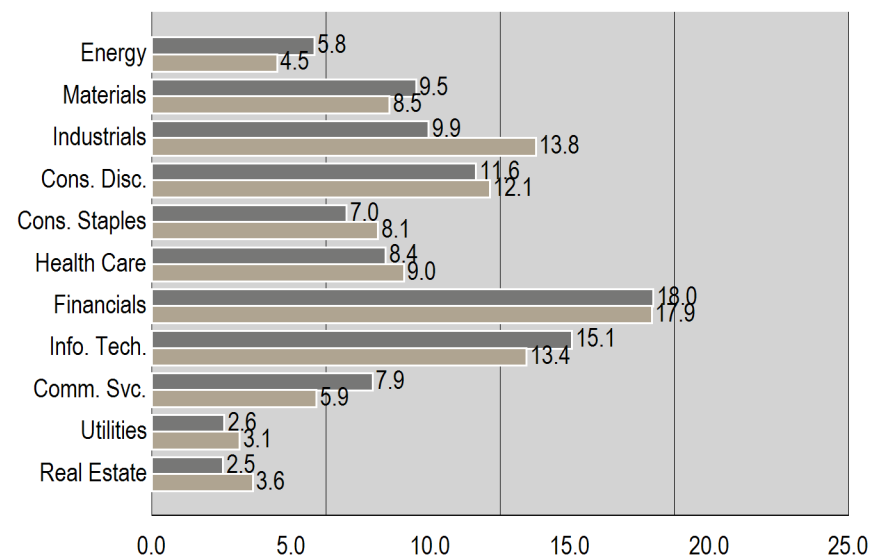
**Top Holdings**

TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	3.0%
SAMSUNG ELECTRONICS CO LTD	1.7%
TENCENT HOLDINGS LTD	1.6%
ALIBABA GROUP HOLDING LTD	1.1%
ROCHE HOLDING AG	0.8%
ASTRAZENECA PLC	0.7%
NOVARTIS AG	0.6%
UNILEVER PLC	0.6%
MEITUAN DIANPING USD0.00001 A B CLASS ISIN KYG596691041	0.6%
SANOFI	0.6%
<b>Total</b>	<b>11.2%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Non-U.S. Equity Composite	25.1%	23.8%	47.2%	3.8%
MSCI ACWI ex USA IMI	25.8%	21.2%	53.0%	0.0%
<i>Weight Over/Under</i>	-0.7%	2.6%	-5.8%	3.8%

**Sector Allocation (%) vs MSCI ACWI ex USA IMI**



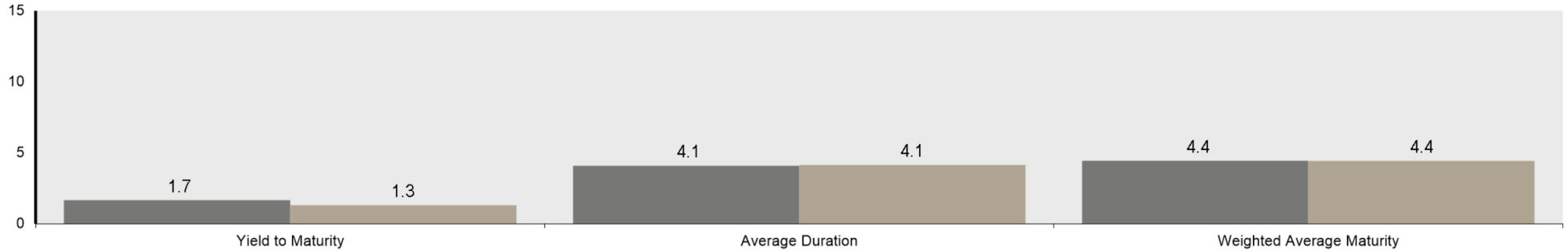
**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	5.6%	7.4%	-1.7%
United States	0.4%	0.0%	0.4%
Europe Ex U.K.	22.8%	31.6%	-8.8%
United Kingdom	8.0%	9.7%	-1.8%
Pacific Basin Ex Japan	7.3%	7.5%	-0.2%
Japan	11.6%	14.9%	-3.3%
Emerging Markets	42.5%	28.0%	14.4%
Other	1.9%	0.9%	1.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

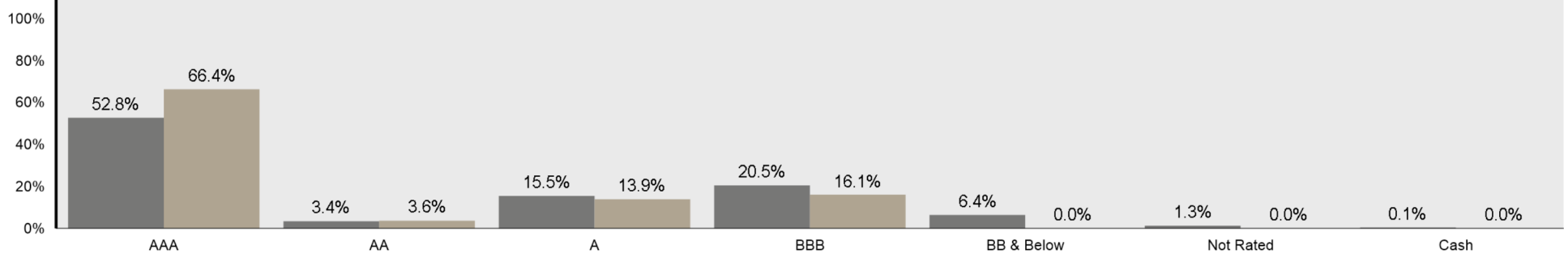
Common Holdings Matrix

	<i>Hartford Schroder Int'l Multi-Cap Value</i>		<i>Fidelity Total Int'l Index</i>		<i>Fidelity Emerging Markets Index Fund</i>	
	#	%	#	%	#	%
Hartford Schroder Int'l Multi-Cap Value	--	--	612	23	130	24
Fidelity Total Int'l Index	612	86	--	--	1,011	97
Fidelity Emerging Markets Index Fund	130	17	1,011	25	--	--

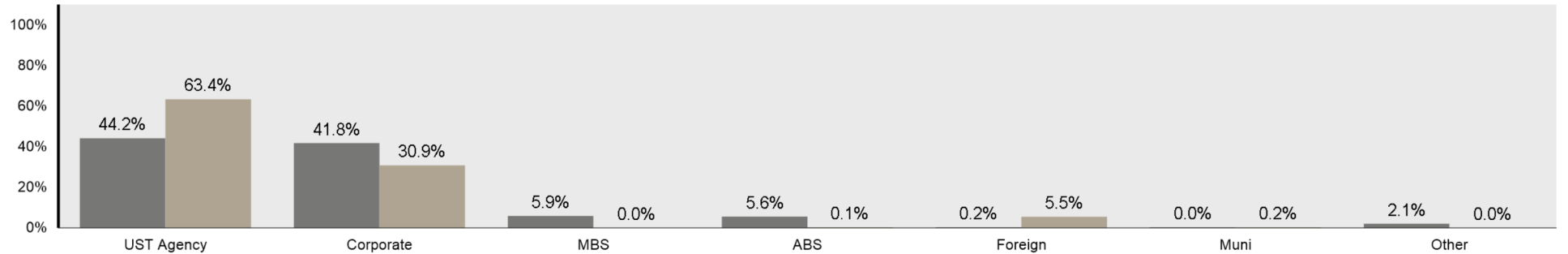
Yield to Maturity



Credit Quality



US Sector



Police Pension Plan - U.S. Fixed Income Composite

Bloomberg US Govt/Credit Int TR

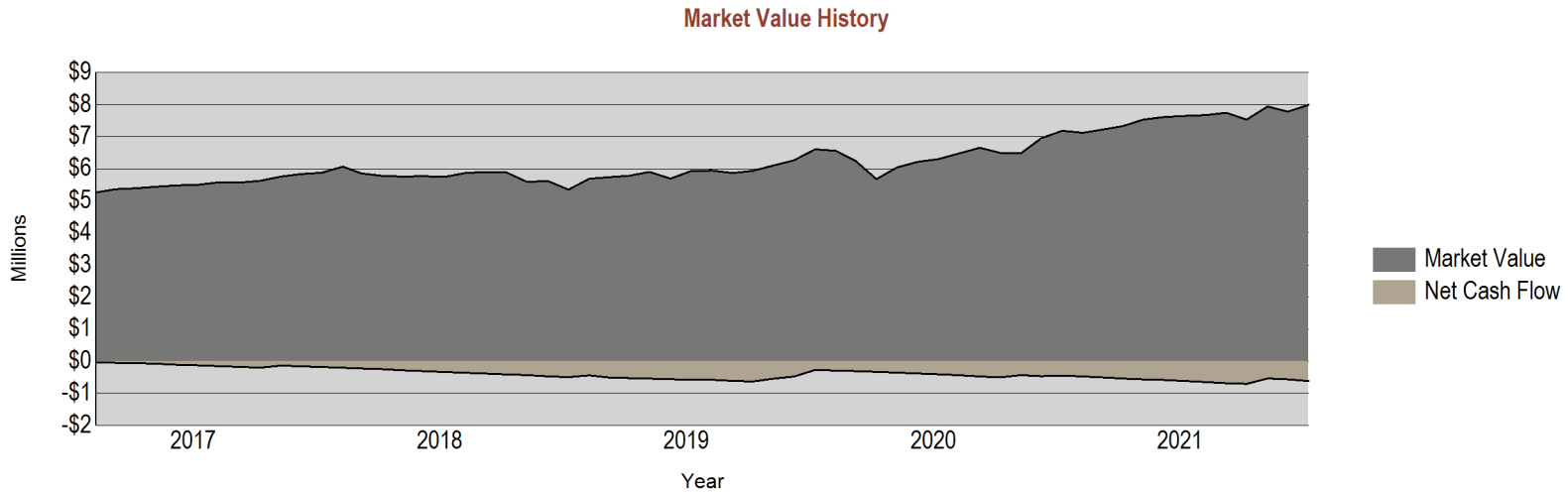
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# Warrington Township

## Non-Uniform Pension Plan



As of December 31, 2021



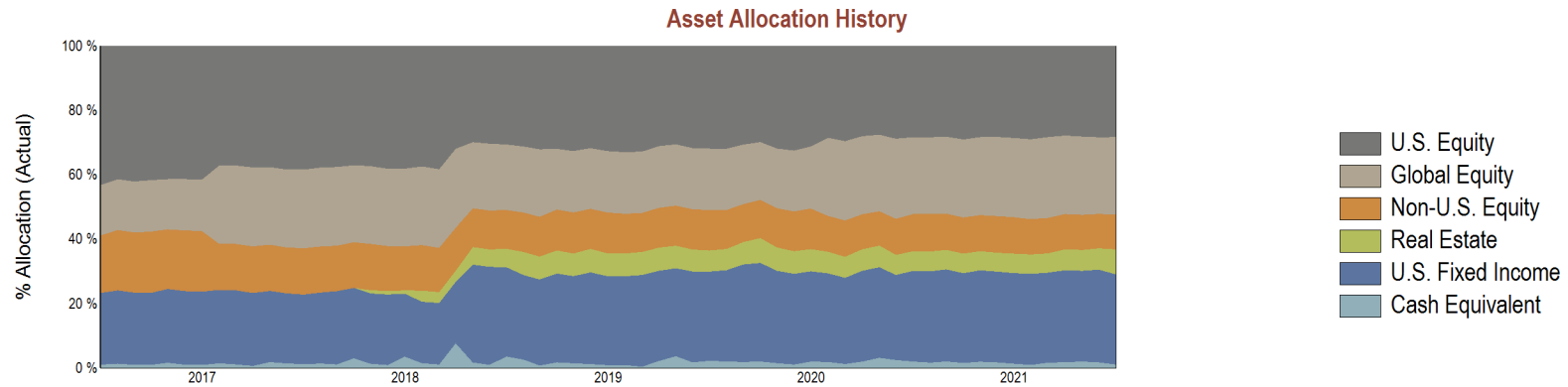
**Cash Flow Summary by Manager From October 01, 2021 to December 31, 2021**

	Beginning Market Value	Net Cash Flow	Net Investment Change	Ending Market Value
Fidelity 500 Index Fund	\$1,621,416	-\$50,000	\$178,965	\$1,750,380
Eaton Vance Atlanta SMID	\$185,221	\$0	\$18,055	\$203,276
Vanguard Small-Cap Value	\$283,310	\$0	\$18,065	\$301,375
Dodge & Cox Global	\$466,743	\$0	\$15,314	\$482,057
AB Global Core Equity Portfolio	\$458,788	\$0	\$26,356	\$485,145
MFS Low Volatility Global Equity	\$451,403	\$0	\$29,600	\$481,003
Artisan Global Opportunities	\$459,106	\$0	\$21,829	\$480,935
Hartford Schroder Int'l Multi-Cap Value	\$222,733	\$25,000	\$6,614	\$254,347
Fidelity Total Int'l Index	\$372,029	\$0	\$7,461	\$379,490
Fidelity Emerging Markets Index Fund	\$227,933	\$0	-\$2,862	\$225,071
Deutsche RREEF America REIT II	\$491,481	\$75,000	\$54,933	\$621,413
Fidelity Interm. Treasury Bond Index	\$978,536	\$60,000	-\$1,784	\$1,036,752
Lord Abbett Short Duration Income	\$514,057	\$15,000	-\$1,770	\$527,288
Vanguard Short-Term Corporate Bond	\$619,891	\$20,000	-\$4,186	\$635,705
Chartwell Short Duration High Yield	\$38,432	\$0	\$102	\$38,534
First American Gov't Obligations	\$141,367	-\$49,962	\$7	\$91,412
<b>Total</b>	<b>\$7,532,446</b>	<b>\$95,038</b>	<b>\$366,698</b>	<b>\$7,994,182</b>

# Warrington Township Non-Uniform Pension Plan

# Asset Allocation Summary

As of December 31, 2021



	Market Value	% of Portfolio	Policy %	Policy Difference
<b>Total Equity Composite</b>	<b>5,043,078</b>	<b>63.1</b>	<b>63.0</b>	<b>6,743</b>
<b>U.S. Equity Composite</b>	<b>2,255,031</b>	<b>28.2</b>	<b>28.0</b>	<b>16,660</b>
Fidelity 500 Index Fund	1,750,380	21.9	22.0	-8,340
Eaton Vance Atlanta SMID	203,276	2.5	2.5	3,421
Vanguard Small-Cap Value	301,375	3.8	3.5	21,579
<b>Global Equity Composite</b>	<b>1,929,140</b>	<b>24.1</b>	<b>24.0</b>	<b>10,536</b>
Dodge & Cox Global	482,057	6.0	6.0	2,406
AB Global Core Equity Portfolio	485,145	6.1	6.0	5,494
MFS Low Volatility Global Equity	481,003	6.0	6.0	1,352
Artisan Global Opportunities	480,935	6.0	6.0	1,284
<b>Non-U.S. Equity Composite</b>	<b>858,907</b>	<b>10.7</b>	<b>11.0</b>	<b>-20,453</b>
Hartford Schroder Int'l Multi-Cap Value	254,347	3.2	3.0	14,521
Fidelity Total Int'l Index	379,490	4.7	4.5	19,752
Fidelity Emerging Markets Index Fund	225,071	2.8	3.5	-54,726
<b>Real Estate Composite</b>	<b>621,413</b>	<b>7.8</b>	<b>7.0</b>	<b>61,821</b>
Deutsche RREEF America REIT II	621,413	7.8	7.0	61,821
<b>U.S. Fixed Income Composite</b>	<b>2,238,279</b>	<b>28.0</b>	<b>28.0</b>	<b>-92</b>
Fidelity Interm. Treasury Bond Index	1,036,752	13.0	13.0	-2,492
Lord Abbett Short Duration Income	527,288	6.6	6.5	7,666
Vanguard Short-Term Corporate Bond	635,705	8.0	8.0	-3,829
Chartwell Short Duration High Yield	38,534	0.5	0.5	-1,437
<b>Cash Equivalents Composite</b>	<b>91,412</b>	<b>1.1</b>	<b>2.0</b>	<b>-68,472</b>
First American Gov't Obligations	91,412	1.1	2.0	-68,472

Total Plan Allocation vs. InvMetrics All DB Net

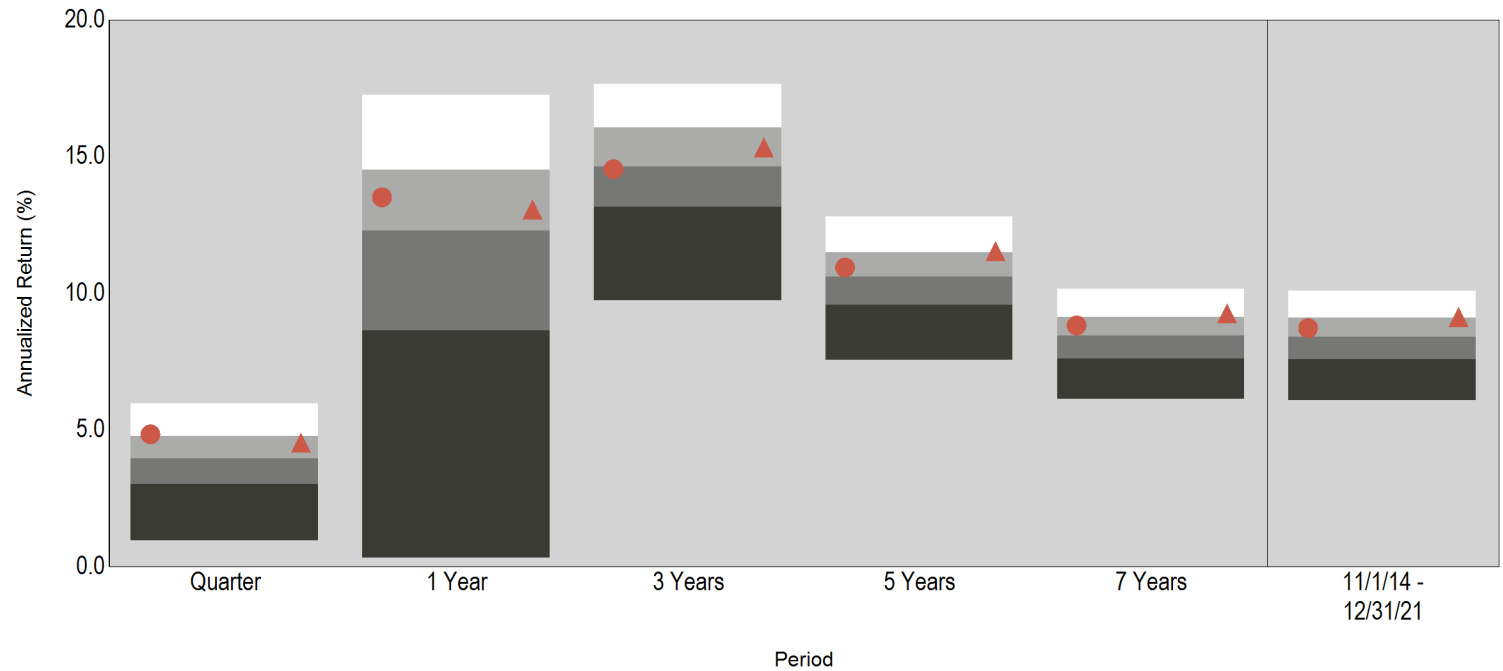


Allocation (Rank)

5th Percentile	70.8		19.4		63.3		11.1	
25th Percentile	62.9		12.3		30.8		2.5	
Median	54.7		9.2		19.2		1.3	
75th Percentile	44.5		5.5		12.0		0.5	
95th Percentile	17.8		0.9		2.9		0.0	
# of Portfolios	509		295		308		475	
● Total Fund Composite	63.1	(25)	7.8	(65)	28.0	(31)	1.1	(54)



InvMetrics All DB Net Return Comparison

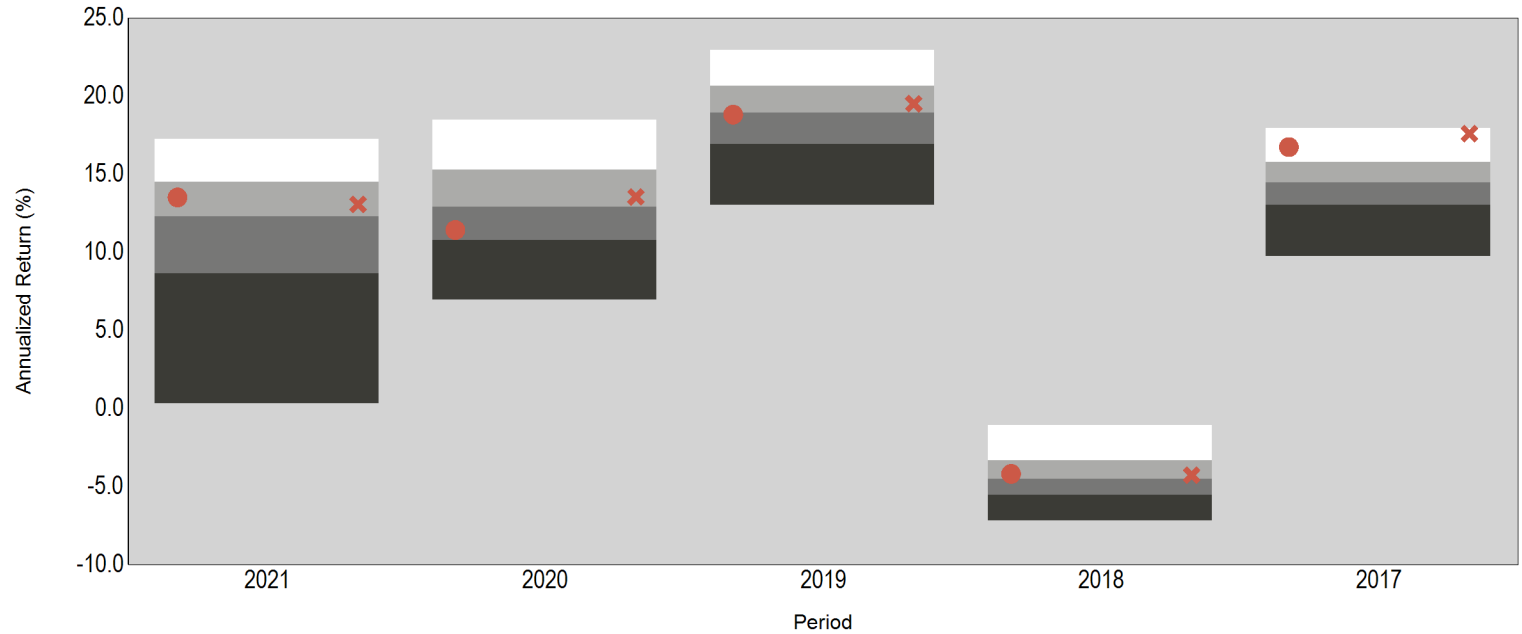


Return (Rank)

5th Percentile	6.0	17.3	17.6	12.8	10.2	10.1
25th Percentile	4.8	14.5	16.1	11.5	9.1	9.1
Median	4.0	12.3	14.6	10.6	8.5	8.4
75th Percentile	3.0	8.6	13.2	9.6	7.6	7.6
95th Percentile	1.0	0.3	9.7	7.6	6.1	6.1
# of Portfolios	1,332	1,316	1,277	1,205	1,120	1,099
● Total Fund Composite	4.8 (24)	13.5 (37)	14.5 (53)	10.9 (41)	8.8 (37)	8.7 (38)
▲ Policy Index	4.5 (32)	13.1 (42)	15.3 (38)	11.6 (25)	9.3 (22)	9.1 (24)

As of December 31, 2021

InvMetrics All DB Net Return Comparison



	2021		2020		2019		2018		2017	
<b>Return (Rank)</b>										
5th Percentile	17.3		18.5		23.0		-1.1		17.9	
25th Percentile	14.5		15.3		20.7		-3.3		15.8	
Median	12.3		12.9		18.9		-4.5		14.5	
75th Percentile	8.6		10.8		16.9		-5.5		13.0	
95th Percentile	0.3		7.0		13.0		-7.2		9.7	
# of Portfolios	1,316		1,745		1,580		1,647		1,009	
● Total Fund Composite	13.5	(37)	11.4	(69)	18.8	(52)	-4.2	(43)	16.7	(14)
▲ Policy Index	13.1	(42)	13.5	(43)	19.5	(41)	-4.3	(45)	17.6	(7)

As of December 31, 2021

**RISK RETURN STATISTICS**  
January 01, 2017 Through December 31, 2021

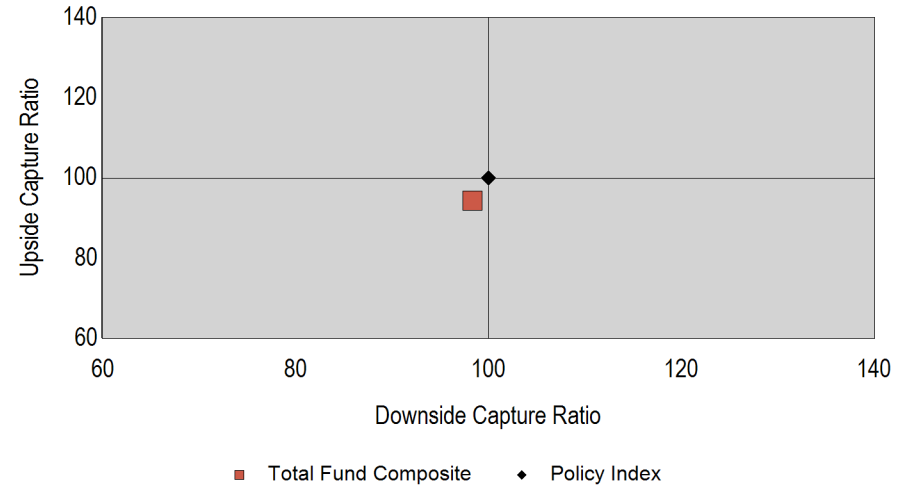
	Total Fund Composite	Policy Index
<b>RETURN SUMMARY STATISTICS</b>		
Number of Periods	60	60
Maximum Return	7.79	8.12
Minimum Return	-8.84	-9.06
Annualized Return	10.95	11.55
Total Return	68.11	72.75
Annualized Excess Return Over Risk Free	9.87	10.47
Annualized Excess Return	-0.61	0.00

	Total Fund Composite	Policy Index
<b>RISK SUMMARY STATISTICS</b>		
Beta	0.96	1.00
Upside Deviation	5.62	5.87
Downside Deviation	7.98	8.32

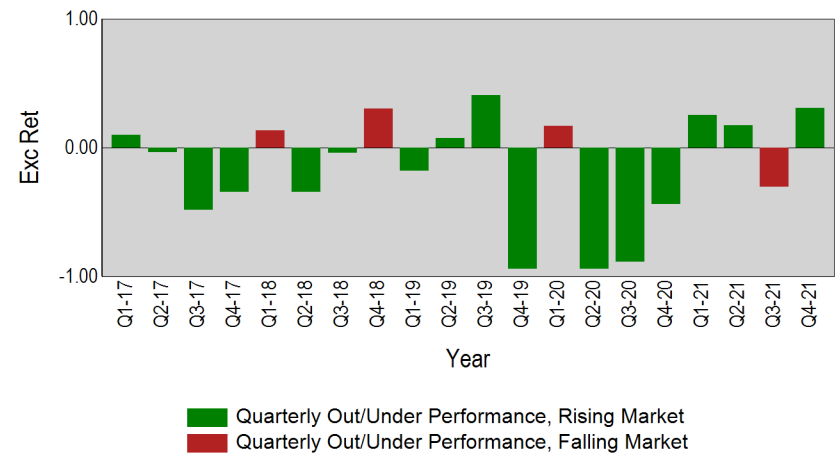
	Total Fund Composite	Policy Index
<b>RISK/RETURN SUMMARY STATISTICS</b>		
Annualized Standard Deviation	9.45	9.78
Alpha	-0.01	0.00
Sharpe Ratio	1.04	1.07
Excess Return Over Market / Risk	-0.06	0.00
Tracking Error	0.88	0.00
Information Ratio	-0.69	--

	Total Fund Composite	Policy Index
<b>CORRELATION STATISTICS</b>		
R-Squared	0.99	1.00
Correlation	1.00	1.00

Upside Capture Ratio vs. Downside Capture Ratio  
5 Years Ending December 31, 2021



Quarterly Excess Performance  
Total Fund Composite vs. Policy Index



# Warrington Township Non-Uniform Pension Plan

## Performance Summary (Net)

As of December 31, 2021

	3 Mo	1 Yr	3 Yrs	5 Yrs	7 Yrs	Market Value	% of Portfolio	Policy %	Inception	Inception Date
<b>Total Fund Composite</b>	<b>4.8</b>	<b>13.5</b>	<b>14.5</b>	<b>10.9</b>	<b>8.8</b>	<b>7,994,182</b>	<b>100.0</b>	<b>100.0</b>	<b>8.9</b>	<b>Oct-14</b>
Policy Index	4.5	13.1	15.3	11.6	9.3				9.3	Oct-14
InvMetrics All DB Net Rank	24	37	53	41	37				35	Oct-14
<b>Total Equity Composite</b>	<b>6.7</b>	<b>20.0</b>	<b>19.9</b>	<b>14.0</b>	<b>11.2</b>	<b>5,043,078</b>	<b>63.1</b>	<b>63.0</b>	<b>11.1</b>	<b>Nov-14</b>
Total Equity Policy Index	6.6	19.5	21.5	15.1	11.9				11.7	Nov-14
<b>U.S. Equity Composite</b>	<b>10.3</b>	<b>28.2</b>	<b>24.3</b>	<b>16.5</b>	<b>13.9</b>	<b>2,255,031</b>	<b>28.2</b>	<b>28.0</b>	<b>13.9</b>	<b>Nov-14</b>
Russell 3000	9.3	25.7	25.8	18.0	14.5				14.6	Nov-14
Fidelity 500 Index Fund	11.0	28.7	--	--	--	1,750,380	21.9	22.0	35.2	Jun-20
S&P 500	11.0	28.7	--	--	--				35.2	Jun-20
Large Blend MStar MF Rank	25	23	--	--	--				33	Jun-20
Eaton Vance Atlanta SMID	9.7	22.3	22.3	16.7	14.9	203,276	2.5	2.5	14.6	Nov-14
Russell 2500	3.8	18.2	21.9	13.8	11.7				11.8	Nov-14
SMID Blend MStar MF Rank	7	62	21	1	1				1	Nov-14
Vanguard Small-Cap Value	6.4	28.1	18.5	10.3	--	301,375	3.8	3.5	10.1	Apr-15
CRSP US Small Cap Value TR USD	6.4	28.1	18.5	10.3	--				10.1	Apr-15
Small Value MStar MF Rank	51	72	55	30	--				34	Apr-15
<b>Global Equity Composite</b>	<b>5.1</b>	<b>17.5</b>	<b>19.4</b>	<b>14.3</b>	<b>10.7</b>	<b>1,929,140</b>	<b>24.1</b>	<b>24.0</b>	<b>10.6</b>	<b>Nov-14</b>
Global Equity Policy	6.1	18.2	20.2	14.2	10.7				10.4	Nov-14
Dodge & Cox Global	3.3	20.8	16.6	11.0	8.9	482,057	6.0	6.0	8.3	Nov-14
MSCI ACWI Value NR USD	6.3	19.6	12.9	8.7	7.0				6.6	Nov-14
World Large Stock Value Mstar MF Rank	93	34	21	30	21				29	Nov-14
AB Global Core Equity Portfolio	5.7	18.1	--	--	--	485,145	6.1	6.0	23.9	Jul-20
MSCI ACWI	6.7	18.5	--	--	--				26.6	Jul-20
World Large Stock Mstar MF Rank	60	47	--	--	--				65	Jul-20
MFS Low Volatility Global Equity	6.6	16.9	14.2	11.5	9.2	481,003	6.0	6.0	8.9	Nov-14
MSCI ACWI Minimum Volatility Index	6.3	13.9	12.3	10.5	8.9				8.7	Nov-14
World Large Stock Mstar MF Rank	46	60	87	73	68				66	Nov-14
Artisan Global Opportunities	4.8	13.9	29.5	21.0	--	480,935	6.0	6.0	16.4	Jul-15
MSCI ACWI Growth	6.9	17.1	27.6	19.9	--				14.9	Jul-15
World Large Stock Growth Mstar MF Rank	52	61	14	24	--				22	Jul-15

# Warrington Township Non-Uniform Pension Plan

## Performance Summary (Net)

As of December 31, 2021

	3 Mo	1 Yr	3 Yrs	5 Yrs	7 Yrs	Market Value	% of Portfolio	Policy %	Inception	Inception Date
<b>Non-U.S. Equity Composite</b>	<b>1.4</b>	<b>7.0</b>	<b>11.4</b>	<b>8.2</b>	<b>5.1</b>	<b>858,907</b>	<b>10.7</b>	<b>11.0</b>	<b>4.5</b>	<b>Nov-14</b>
<i>Non-U.S. Equity Policy Index</i>	1.6	8.5	13.6	9.8	6.7				6.1	Nov-14
Hartford Schroder Int'l Multi-Cap Value	3.0	13.9	10.9	7.3	--	254,347	3.2	3.0	6.8	Jul-16
<i>MSCI ACWI ex USA Value</i>	1.2	10.5	8.2	6.0	--				6.7	Jul-16
<i>Foreign Large Value MStar MF Rank</i>	34	29	49	38	--				58	Jul-16
Fidelity Total Int'l Index	2.0	8.5	--	--	--	379,490	4.7	4.5	8.5	Dec-20
<i>MSCI ACWI ex USA IMI</i>	1.6	8.5	--	--	--				8.5	Dec-20
<i>Foreign Large Blend MStar MF Rank</i>	75	64	--	--	--				64	Dec-20
Fidelity Emerging Markets Index Fund	-1.3	--	--	--	--	225,071	2.8	3.5	-6.7	Feb-21
<i>MSCI Emerging Markets</i>	-1.3	--	--	--	--				-6.2	Feb-21
<i>Diversified Emerging Mkts MStar MF Rank</i>	52	--	--	--	--				57	Feb-21
<b>Real Estate Composite</b>						<b>621,413</b>	<b>7.8</b>	<b>7.0</b>		
Deutsche RREEF America REIT II	10.6	23.9	10.0	--	--	621,413	7.8	7.0	9.6	Apr-18
<i>NFI-ODCE</i>	7.7	21.1	8.2	--	--				8.0	Apr-18
<i>InvMetrics Trust Funds Real Estate Priv Net Rank</i>	5	11	13	--	--				14	Apr-18
<b>U.S. Fixed Income Composite</b>	<b>-0.4</b>	<b>-1.2</b>	<b>4.2</b>	<b>3.1</b>	<b>2.7</b>	<b>2,238,279</b>	<b>28.0</b>	<b>28.0</b>	<b>2.6</b>	<b>Nov-14</b>
<i>Bloomberg US Govt/Credit Int TR</i>	-0.6	-1.4	3.9	2.9	2.5				2.5	Nov-14
Fidelity Interm. Treasury Bond Index	-0.2	-3.0	4.3	3.3	--	1,036,752	13.0	13.0	2.5	Apr-15
<i>Bloomberg US Treasury 5-10 Yr TR</i>	-0.2	-3.0	4.4	3.3	--				2.6	Apr-15
<i>Intermediate Government MStar MF Rank</i>	20	95	2	2	--				4	Apr-15
Lord Abbett Short Duration Income	-0.3	1.2	3.4	2.9	--	527,288	6.6	6.5	2.6	Apr-15
<i>ICE BofA 1-3 Yrs US Corporate TR</i>	-0.5	0.0	3.2	2.6	--				2.3	Apr-15
<i>Short-Term Bond MStar MF Rank</i>	26	20	34	25	--				23	Apr-15
Vanguard Short-Term Corporate Bond	-0.6	-0.3	--	--	--	635,705	8.0	8.0	1.1	Jun-20
<i>BBgBarc U.S. 1-5 Year Corp. Bond Index</i>	-0.7	-0.5	--	--	--				1.1	Jun-20
<i>Short-Term Bond MStar MF Rank</i>	65	64	--	--	--				57	Jun-20
Chartwell Short Duration High Yield	0.3	2.4	--	--	--	38,534	0.5	0.5	5.1	Jun-20
<i>BofA Merrill Lynch 1-3 Yrs High Yield BB</i>	0.5	3.2	--	--	--				6.6	Jun-20
<i>eV US High Yield Fixed Inc - Short Duration Net Rank</i>	95	98	--	--	--				94	Jun-20
<b>Cash Equivalents Composite</b>						<b>91,412</b>	<b>1.1</b>	<b>2.0</b>		
First American Gov't Obligations						91,412	1.1			

**Policy Index History**

Total Fund Composite		
1/1/2019	Present	41% Russell 3000 / 22% MSCI ACWI ex USA IMI / 28% Bloomberg US Govt/Credit Int TR / 2% ICE BofA 91 Days T-Bills TR / 7% NFI-ODCE
10/1/2018	12/31/2018	41% Russell 3000 / 23% MSCI ACWI ex USA IMI / 29% Bloomberg US Govt/Credit Int TR / 2% ICE BofA 91 Days T-Bills TR / 5% NFI-ODCE
7/1/2018	9/30/2018	49% Russell 3000 / 26% MSCI ACWI ex USA / 20% Bloomberg US Govt/Credit Int TR / 2% ICE BofA 91 Days T-Bills TR / 3% NFI-ODCE
8/1/2016	6/30/2018	49% Russell 3000 / 26% MSCI ACWI ex USA / 23% Bloomberg US Govt/Credit Int TR / 2% ICE BofA 91 Days T-Bills TR
11/1/2014	7/31/2016	50% Russell 3000 / 20% MSCI ACWI ex USA / 28% Bloomberg US Govt/Credit Int TR / 2% ICE BofA 91 Days T-Bills TR
Total Equity Composite		
10/1/2018	Present	65% Russell 3000 / 35% MSCI ACWI ex USA IMI
8/1/2016	9/30/2018	65% Russell 3000 / 35% MSCI ACWI ex USA
11/1/2014	7/31/2016	71% Russell 3000 / 29% MSCI ACWI ex USA
U.S. Equity Composite		
11/1/2014	Present	Russell 3000
Global Equity Composite		
10/1/2018	Present	MSCI ACWI IMI Net USD
11/1/2014	9/30/2018	MSCI ACWI
Non-U.S. Equity Composite		
10/1/2018	Present	MSCI ACWI ex USA IMI
11/1/2014	9/30/2018	MSCI ACWI ex USA
Real Estate Composite		
4/1/2018	Present	NFI-ODCE
U.S. Fixed Income Composite		
11/1/2014	Present	Bloomberg US Govt/Credit Int TR
Cash Equivalents Composite		
11/1/2014	Present	ICE BofA 91 Days T-Bills TR

# Warrington Township Non-Uniform Pension Plan

## Fee Summary

As of December 31, 2021

Account	Fee Schedule	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Fidelity 500 Index Fund	0.02% of Assets	21.9%	\$263	0.02%
Eaton Vance Atlanta SMID	0.82% of Assets	2.5%	\$1,667	0.82%
Vanguard Small-Cap Value	0.07% of Assets	3.8%	\$211	0.07%
Dodge & Cox Global	0.62% of Assets	6.0%	\$2,989	0.62%
AB Global Core Equity Portfolio	0.90% of Assets	6.1%	\$4,366	0.90%
MFS Low Volatility Global Equity	0.68% of Assets	6.0%	\$3,271	0.68%
Artisan Global Opportunities	0.91% of Assets	6.0%	\$4,377	0.91%
Hartford Schroder Int'l Multi-Cap Value	0.77% of Assets	3.2%	\$1,958	0.77%
Fidelity Total Int'l Index	0.06% of Assets	4.7%	\$228	0.06%
Fidelity Emerging Markets Index Fund	0.08% of Assets	2.8%	\$169	0.08%
Deutsche RREEF America REIT II	0.95% of Assets	7.8%	\$5,903	0.95%
Fidelity Interm. Treasury Bond Index	0.03% of Assets	13.0%	\$311	0.03%
Lord Abbett Short Duration Income	0.34% of Assets	6.6%	\$1,793	0.34%
Vanguard Short-Term Corporate Bond	0.07% of Assets	8.0%	\$445	0.07%
Chartwell Short Duration High Yield	0.49% of Assets	0.5%	\$189	0.49%
First American Gov't Obligations	0.18% of Assets	1.1%	\$165	0.18%
<b>Investment Management Fee</b>		<b>100.0%</b>	<b>\$28,303</b>	<b>0.35%</b>

As of December 31, 2021

**RISK RETURN STATISTICS**  
January 01, 2017 Through December 31, 2021

Total Equity Composite Total Equity Policy Index

**RETURN SUMMARY STATISTICS**

Number of Periods	60	60
Maximum Return	12.25	12.63
Minimum Return	-14.64	-14.23
Annualized Return	14.00	15.10
Total Return	92.54	101.99
Annualized Excess Return Over Risk Free	12.92	14.02
Annualized Excess Return	-1.10	0.00

**RISK SUMMARY STATISTICS**

Beta	0.98	1.00
Upside Deviation	8.82	9.16
Downside Deviation	13.27	13.14

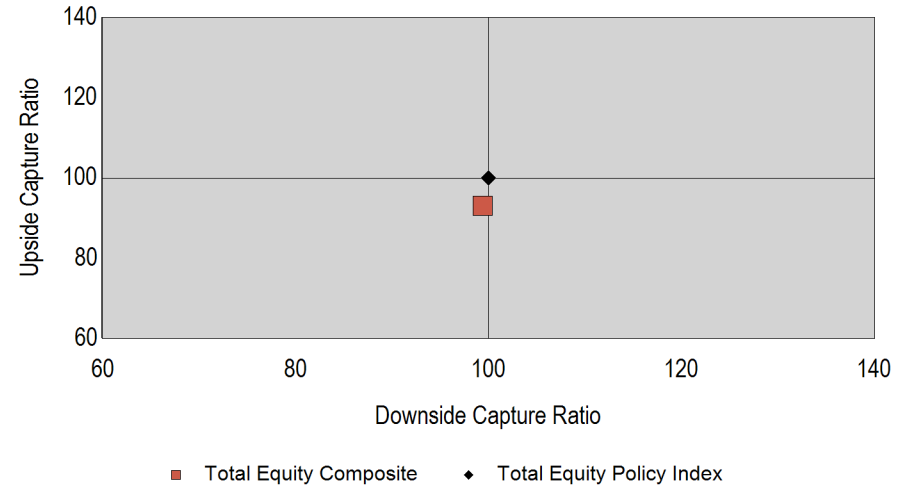
**RISK/RETURN SUMMARY STATISTICS**

Annualized Standard Deviation	14.97	15.28
Alpha	-0.05	0.00
Sharpe Ratio	0.86	0.92
Excess Return Over Market / Risk	-0.07	0.00
Tracking Error	1.18	0.00
Information Ratio	-0.93	--

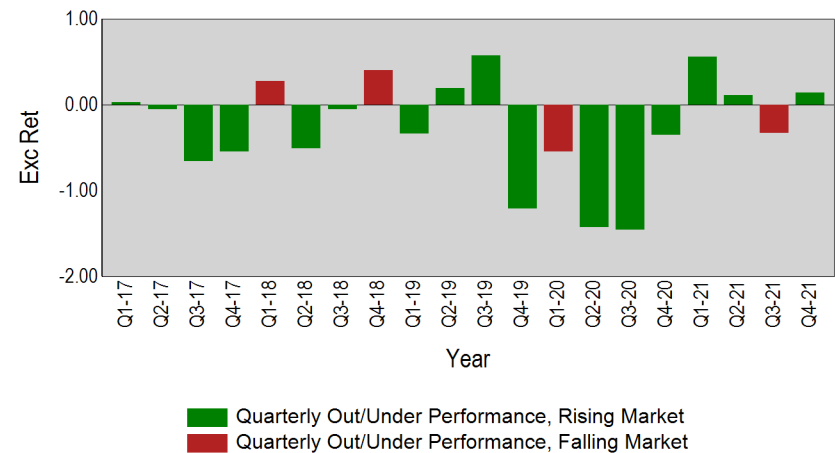
**CORRELATION STATISTICS**

R-Squared	0.99	1.00
Correlation	1.00	1.00

**Upside Capture Ratio vs. Downside Capture Ratio**  
5 Years Ending December 31, 2021



**Quarterly Excess Performance**  
Total Equity Composite vs. Total Equity Policy Index





**Characteristics**

	Portfolio	MSCI ACWI
Number of Holdings	6,193	2,957
Weighted Avg. Market Cap. (\$B)	349.2	431.0
Median Market Cap. (\$B)	5.0	14.3
Price To Earnings	19.8	20.6
Price To Book	3.6	3.8
Price To Sales	2.2	2.5
Return on Equity (%)	19.8	21.4
Yield (%)	1.6	1.8

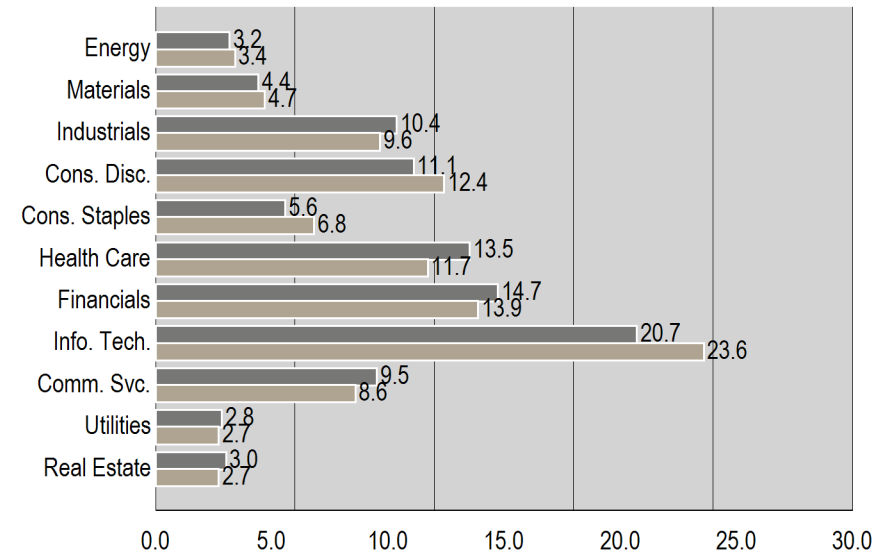
**Top Holdings**

MICROSOFT CORP	3.4%
APPLE INC	2.5%
ALPHABET INC	1.5%
AMAZON.COM INC	1.3%
ALPHABET INC	1.3%
META PLATFORMS INC	1.2%
TESLA INC	0.8%
COMCAST CORP	0.7%
JOHNSON & JOHNSON	0.7%
NVIDIA CORPORATION	0.7%
<b>Total</b>	<b>13.8%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Total Equity Composite	12.1%	16.7%	68.8%	2.4%
MSCI ACWI	5.8%	16.2%	78.0%	0.0%
<i>Weight Over/Under</i>	<i>6.3%</i>	<i>0.5%</i>	<i>-9.2%</i>	<i>2.4%</i>

**Sector Allocation (%) vs MSCI ACWI**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	2.4%	2.9%	-0.5%
United States	63.0%	61.3%	1.7%
Europe Ex U.K.	12.7%	12.6%	0.1%
United Kingdom	4.1%	3.6%	0.5%
Pacific Basin Ex Japan	3.0%	2.7%	0.3%
Japan	4.2%	5.5%	-1.3%
Emerging Markets	9.6%	11.1%	-1.4%
Other	0.8%	0.2%	0.6%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Characteristics**

	Portfolio	Russell 3000
Number of Holdings	1,471	3,065
Weighted Avg. Market Cap. (\$B)	524.5	568.6
Median Market Cap. (\$B)	7.2	2.8
Price To Earnings	23.7	24.9
Price To Book	4.2	4.5
Price To Sales	3.0	3.4
Return on Equity (%)	25.7	22.9
Yield (%)	1.3	1.3

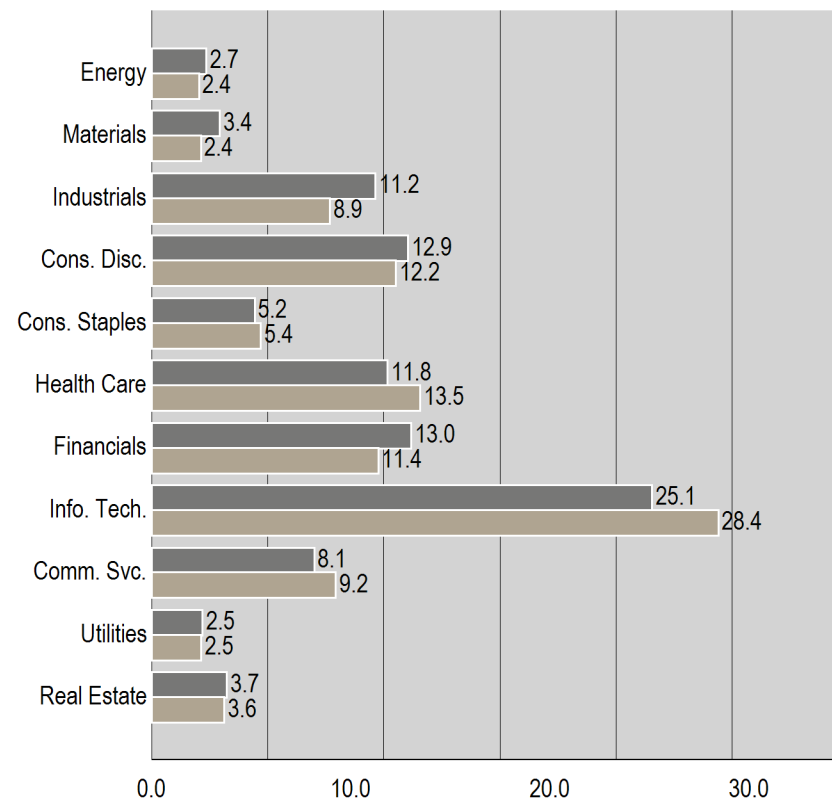
**Top Holdings**

APPLE INC	5.3%
MICROSOFT CORP	4.9%
AMAZON.COM INC	2.8%
ALPHABET INC	1.7%
TESLA INC	1.7%
ALPHABET INC	1.6%
META PLATFORMS INC	1.5%
NVIDIA CORPORATION	1.4%
BERKSHIRE HATHAWAY INC	1.1%
UNITEDHEALTH GROUP INC	0.9%
<b>Total</b>	<b>22.9%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
U.S. Equity Composite	4.7%	29.6%	64.9%	0.8%
Russell 3000	5.6%	23.1%	71.2%	0.0%
<i>Weight Over/Under</i>	<i>-0.9%</i>	<i>6.4%</i>	<i>-6.3%</i>	<i>0.8%</i>

**Sector Allocation (%) vs Russell 3000**



Common Holdings Matrix

	<i>Fidelity 500 Index Fund</i>		<i>Eaton Vance Atlanta SMID</i>		<i>Vanguard Small-Cap Value</i>	
	#	%	#	%	#	%
Fidelity 500 Index Fund	--	--	16	30	49	14
Eaton Vance Atlanta SMID	16	1	--	--	21	6
Vanguard Small-Cap Value	49	1	21	43	--	--

**Characteristics**

	Portfolio	MSCI ACWI IMI Net USD
Number of Holdings	270	9,292
Weighted Avg. Market Cap. (\$B)	249.5	380.3
Median Market Cap. (\$B)	48.3	2.3
Price To Earnings	20.9	20.2
Price To Book	3.6	3.6
Price To Sales	2.2	2.3
Return on Equity (%)	19.2	18.9
Yield (%)	1.5	1.8

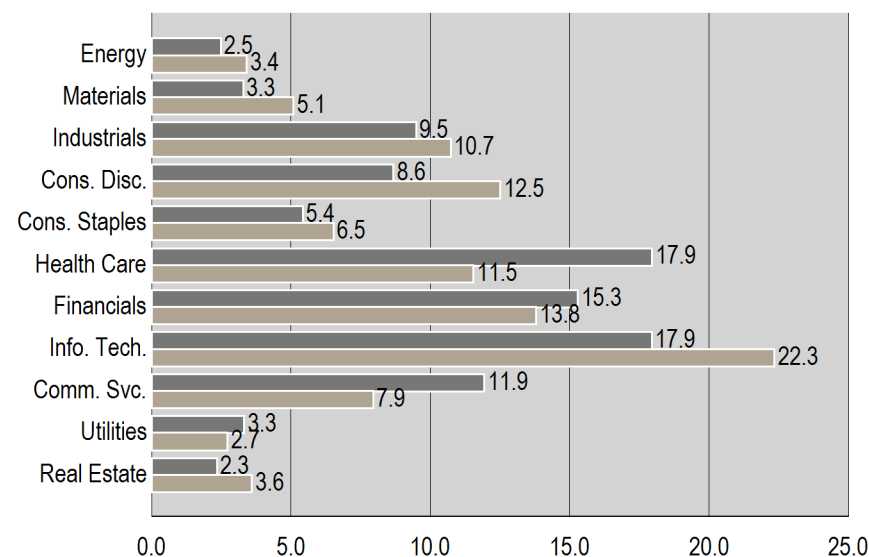
**Top Holdings**

MICROSOFT CORP	3.1%
ALPHABET INC	2.1%
TECHTRONIC INDUSTRIES CO LTD	1.5%
ROCHE HOLDING AG	1.4%
ALPHABET INC	1.3%
META PLATFORMS INC	1.3%
COMCAST CORP	1.3%
UBS GROUP AG	1.2%
ADVANCED MICRO DEVICES INC	1.1%
GLAXOSMITHKLINE PLC	1.1%
<b>Total</b>	<b>15.3%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Global Equity Composite	4.3%	15.3%	76.5%	3.8%
MSCI ACWI IMI Net USD	16.3%	15.2%	68.5%	0.0%
<i>Weight Over/Under</i>	-12.0%	0.1%	8.0%	3.8%

**Sector Allocation (%) vs MSCI ACWI IMI Net USD**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	4.0%	2.9%	1.0%
United States	50.1%	60.3%	-10.2%
Europe Ex U.K.	21.5%	12.6%	8.9%
United Kingdom	6.2%	3.9%	2.3%
Pacific Basin Ex Japan	4.8%	3.0%	1.9%
Japan	5.9%	5.9%	0.0%
Emerging Markets	6.5%	11.1%	-4.7%
Other	1.0%	0.3%	0.7%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

Common Holdings Matrix

	<i>Dodge &amp; Cox Global</i>		<i>AB Global Core Equity Portfolio</i>		<i>MFS Low Volatility Global Equity</i>		<i>Artisan Global Opportunities</i>	
	#	%	#	%	#	%	#	%
Dodge & Cox Global	--	--	8	27	8	8	3	7
AB Global Core Equity Portfolio	8	14	--	--	6	6	1	2
MFS Low Volatility Global Equity	8	18	6	21	--	--	3	6
Artisan Global Opportunities	3	4	1	7	3	7	--	--

**Characteristics**

	Portfolio	MSCI ACWI ex USA
Number of Holdings	4,657	2,330
Weighted Avg. Market Cap. (\$B)	88.4	98.9
Median Market Cap. (\$B)	4.4	10.3
Price To Earnings	12.9	15.3
Price To Book	2.6	2.7
Price To Sales	1.3	1.6
Return on Equity (%)	14.5	14.8
Yield (%)	2.8	2.6

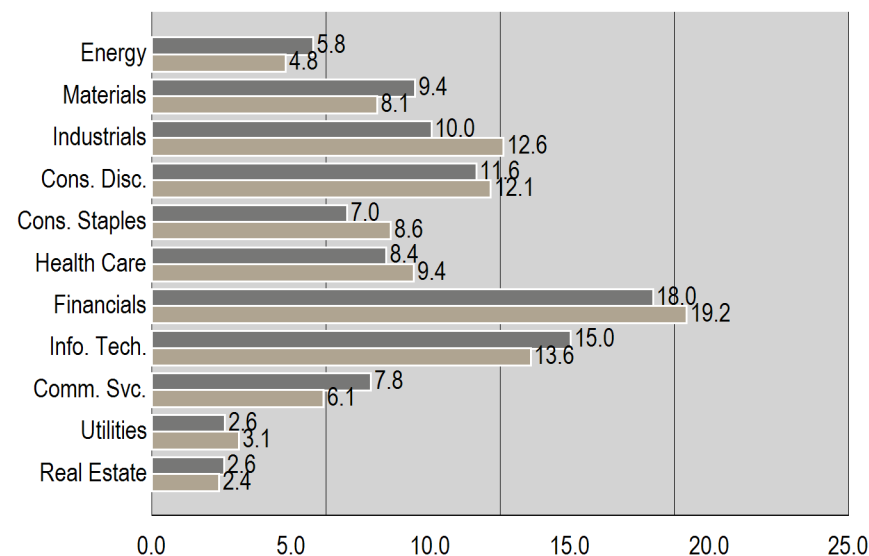
**Top Holdings**

TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	3.0%
SAMSUNG ELECTRONICS CO LTD	1.7%
TENCENT HOLDINGS LTD	1.6%
ALIBABA GROUP HOLDING LTD	1.1%
ROCHE HOLDING AG	0.8%
ASTRAZENECA PLC	0.7%
NOVARTIS AG	0.6%
UNILEVER PLC	0.6%
MEITUAN DIANPING USD0.00001 A B CLASS ISIN KYG596691041	0.6%
SANOFI	0.6%
<b>Total</b>	<b>11.1%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Non-U.S. Equity Composite	25.1%	23.7%	47.4%	3.8%
MSCI ACWI ex USA	13.4%	24.6%	62.0%	0.0%
<i>Weight Over/Under</i>	<i>11.6%</i>	<i>-0.9%</i>	<i>-14.6%</i>	<i>3.8%</i>

**Sector Allocation (%) vs MSCI ACWI ex USA**

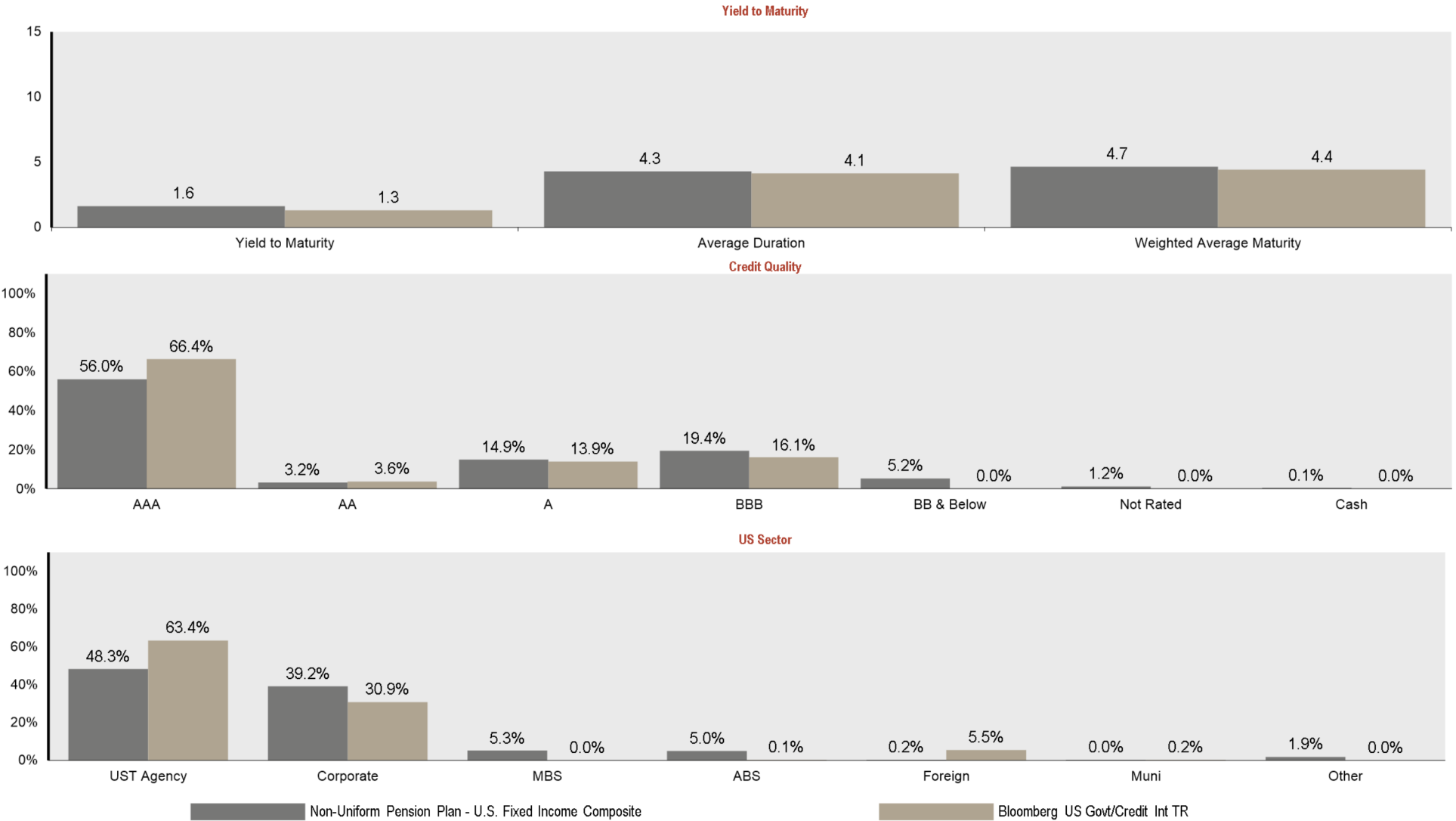


**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	5.7%	7.5%	-1.8%
United States	0.4%	0.0%	0.4%
Europe Ex U.K.	23.1%	32.5%	-9.5%
United Kingdom	8.0%	9.3%	-1.3%
Pacific Basin Ex Japan	7.3%	7.1%	0.3%
Japan	11.7%	14.3%	-2.7%
Emerging Markets	42.0%	28.7%	13.3%
Other	1.9%	0.6%	1.2%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

Common Holdings Matrix

	<i>Hartford Schroder Int'l Multi-Cap Value</i>		<i>Fidelity Total Int'l Index</i>		<i>Fidelity Emerging Markets Index Fund</i>	
	#	%	#	%	#	%
Hartford Schroder Int'l Multi-Cap Value	--	--	612	23	130	24
Fidelity Total Int'l Index	612	86	--	--	1,011	97
Fidelity Emerging Markets Index Fund	130	17	1,011	25	--	--





# Investment Managers



**Manager Summary:** Passively-managed. Seeks to track the performance of the S&P 500 Index. Invests in large-cap U.S. equities diversified among growth and value styles. Fund remains fully invested.

**Characteristics**

	Portfolio	S&P 500
Number of Holdings	506	504
Weighted Avg. Market Cap. (\$B)	666.0	670.5
Median Market Cap. (\$B)	34.6	34.6
Price To Earnings	26.2	26.2
Price To Book	4.9	4.9
Price To Sales	3.8	3.7
Return on Equity (%)	30.6	30.4
Yield (%)	1.3	1.3

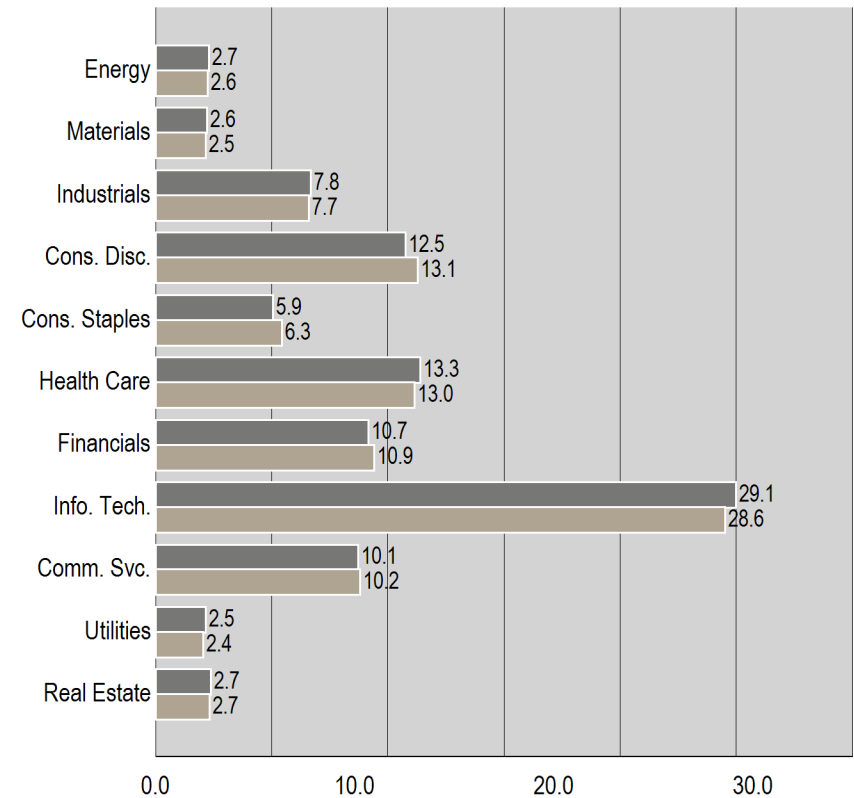
**Top Holdings**

APPLE INC	6.9%
MICROSOFT CORP	6.3%
AMAZON.COM INC	3.6%
ALPHABET INC	2.2%
TESLA INC	2.1%
ALPHABET INC	2.0%
META PLATFORMS INC	2.0%
NVIDIA CORPORATION	1.8%
BERKSHIRE HATHAWAY INC	1.4%
UNITEDHEALTH GROUP INC	1.2%
<b>Total</b>	<b>29.3%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap
Fidelity 500 Index Fund	0.0%	16.6%	83.4%
S&P 500	0.0%	16.4%	83.6%
<i>Weight Over/Under</i>	<i>0.0%</i>	<i>0.2%</i>	<i>-0.2%</i>

**Sector Allocation (%) vs S&P 500**



**Manager Summary:** Focus on investing in high-quality companies with a history of stable and consistent earnings. Emphasize innovative business models, shareholder-friendly managements and companies with limited Wall Street coverage. Seek high levels of free cash flow with low volatility over time. Portfolio comprised of companies with high credit ratings - tends to outperform when quality is in favor.

**Characteristics**

	Portfolio	Russell 2500
Number of Holdings	55	2,542
Weighted Avg. Market Cap. (\$B)	12.2	8.1
Median Market Cap. (\$B)	11.4	1.8
Price To Earnings	25.4	18.8
Price To Book	3.9	3.0
Price To Sales	2.7	2.2
Return on Equity (%)	24.3	8.7
Yield (%)	0.7	1.2

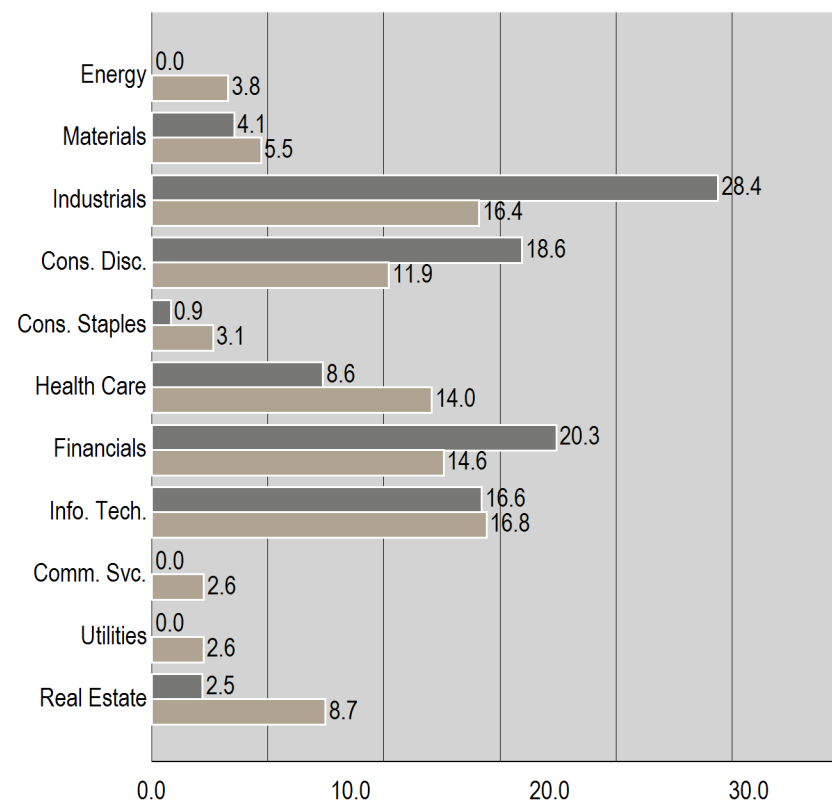
**Top Holdings**

BERKLEY (W.R.) CORP	4.8%
CARLISLE COS INC	4.4%
J.B. HUNT TRANSPORT SERVICES INC.	3.6%
ENVISTA HOLDINGS CORP	3.3%
ARAMARK	3.2%
WEX INC	3.0%
TERMINIX GLOBAL HOLDINGS INC	2.8%
GARTNER INC	2.8%
SEI INVESTMENTS CO	2.7%
JONES LANG LASALLE INC	2.5%
<b>Total</b>	<b>33.1%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap
Eaton Vance Atlanta SMID	7.0%	93.0%	0.0%
Russell 2500	35.7%	64.3%	0.0%
<i>Weight Over/Under</i>	<i>-28.7%</i>	<i>28.7%</i>	<i>0.0%</i>

**Sector Allocation (%) vs Russell 2500**



**Manager Summary:** Passively managed to track the performance of the CRSP US Small Cap Value Index. Follows a full-replication approach whereby the fund attempts to hold the same securities at the same weights as the benchmark. Low expense ratio means the returns will also track the benchmark closely on a net-of-fees basis.

**Characteristics**

	Portfolio	CRSP US Small Cap Value TR USD
Number of Holdings	993	938
Weighted Avg. Market Cap. (\$B)	7.2	7.3
Median Market Cap. (\$B)	3.3	3.3
Price To Earnings	14.7	14.7
Price To Book	2.3	2.3
Price To Sales	1.5	1.5
Return on Equity (%)	13.6	13.7
Yield (%)	1.9	1.7

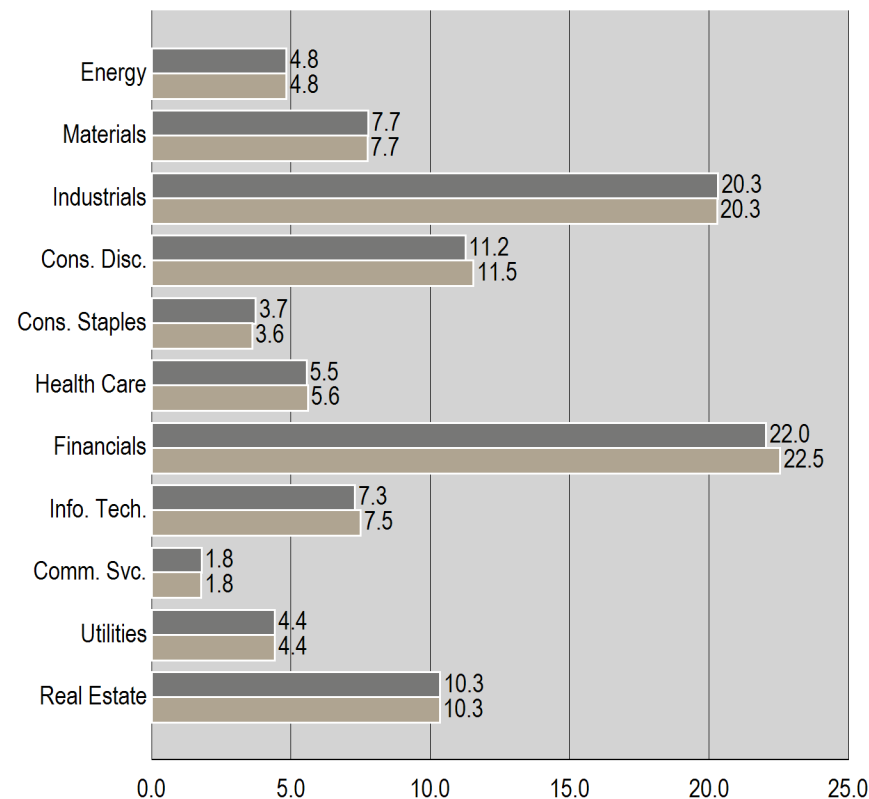
**Top Holdings**

SIGNATURE BANK	0.6%
DIAMONDBACK ENERGY INC	0.6%
VICI PROPERTIES INC	0.6%
MOLINA HEALTHCARE INC.	0.6%
IDEX CORP	0.6%
NUANCE COMMUNICATIONS INC	0.6%
BROWN & BROWN INC	0.5%
BUILDERS FIRSTSOURCE INC	0.5%
QUANTA SERVICES INC.	0.5%
KIMCO REALTY CORP	0.5%
<b>Total</b>	<b>5.6%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap
Vanguard Small-Cap Value	67.5%	32.5%	0.0%
CRSP US Small Cap Value TR USD	68.2%	31.8%	0.0%
<i>Weight Over/Under</i>	<i>-0.7%</i>	<i>0.7%</i>	<i>0.0%</i>

**Sector Allocation (%) vs CRSP US Small Cap Value TR USD**



**Manager Summary:** Focuses on identifying large, well-established companies across the globe that trade at a discount to their long-term profit opportunities. Emphasize fundamental research, attempting to understand risks facing businesses over a 3-5-year time horizon. Seeks companies with solid management teams and strong, competitive franchises. Strategy tends to hold deep value stocks that may be out-of-favor in the short-term but offer good value for the long-term investor.

**Characteristics**

	Portfolio	MSCI ACWI
Number of Holdings	86	2,957
Weighted Avg. Market Cap. (\$B)	187.1	431.0
Median Market Cap. (\$B)	47.4	14.3
Price To Earnings	14.8	20.6
Price To Book	2.5	3.8
Price To Sales	1.4	2.5
Return on Equity (%)	14.7	21.4
Yield (%)	1.9	1.8

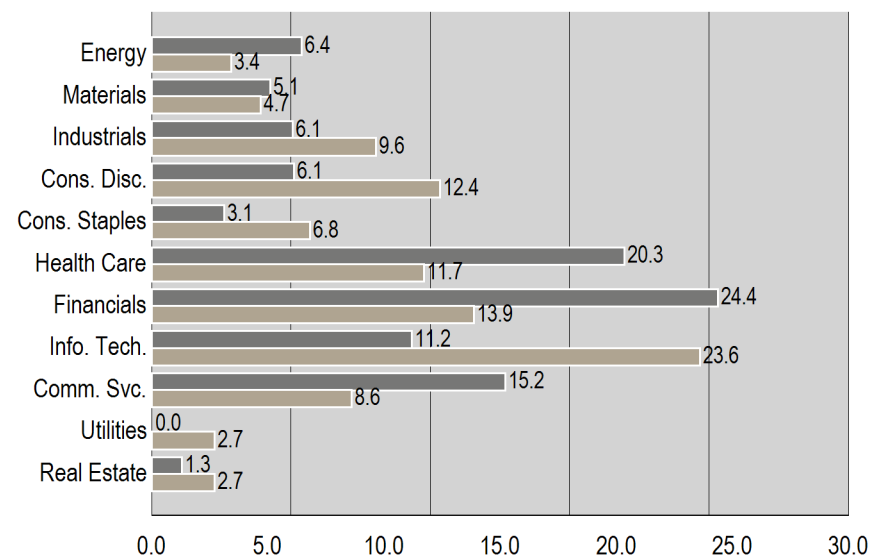
**Top Holdings**

GLAXOSMITHKLINE PLC	3.9%
SANOFI	3.7%
ALPHABET INC	3.2%
COMCAST CORP	3.0%
NOVARTIS AG	2.9%
CHARTER COMMUNICATIONS INC	2.7%
SUNCOR ENERGY INC.	2.4%
ROCHE HOLDING AG	2.2%
FEDEX CORP.	2.2%
WELLS FARGO & CO	2.1%
<b>Total</b>	<b>28.3%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Dodge & Cox Global	5.6%	19.8%	73.1%	1.5%
MSCI ACWI	5.8%	16.2%	78.0%	0.0%
<i>Weight Over/Under</i>	-0.2%	3.6%	-4.9%	1.5%

**Sector Allocation (%) vs MSCI ACWI**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	4.4%	2.9%	1.5%
United States	46.0%	61.3%	-15.3%
Europe Ex U.K.	23.3%	12.6%	10.7%
United Kingdom	8.5%	3.6%	4.9%
Pacific Basin Ex Japan	0.8%	2.7%	-2.0%
Japan	3.5%	5.5%	-2.0%
Emerging Markets	12.5%	11.1%	1.4%
Other	1.1%	0.2%	0.8%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Manager Summary:** Applies a bottom-up fundamental process to identify attractively valued U.S. and non-U.S. companies which have the ability to generate high and sustainable growth on invested capital. With no inherent style-bias, the strategy holds a relatively concentrated global portfolio with 50-80 stocks.

**Characteristics**

	Portfolio	MSCI ACWI
Number of Holdings	63	2,957
Weighted Avg. Market Cap. (\$B)	413.2	431.0
Median Market Cap. (\$B)	60.6	14.3
Price To Earnings	23.9	20.6
Price To Book	5.2	3.8
Price To Sales	2.8	2.5
Return on Equity (%)	23.8	21.4
Yield (%)	0.9	1.8

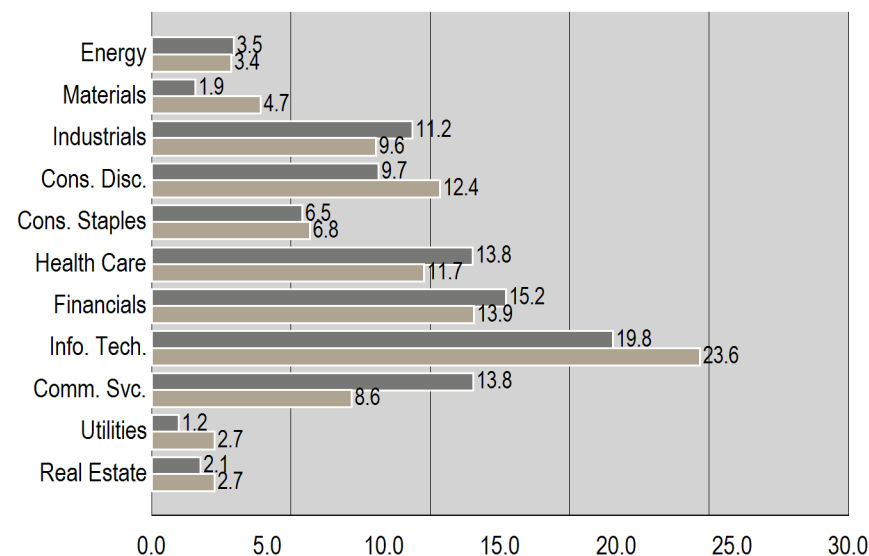
**Top Holdings**

MICROSOFT CORP	6.9%
ALPHABET INC	5.0%
META PLATFORMS INC	4.6%
COCA-COLA CO (THE)	4.1%
OTIS WORLDWIDE CORP	3.6%
COGNIZANT TECHNOLOGY SOLUTIONS CORP	3.4%
SAP SE	3.2%
MOODY'S CORP.	3.0%
ROCHE HOLDING AG	2.9%
JULIUS BAER GRUPPE AG	2.6%
<b>Total</b>	<b>39.4%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
AB Global Core Equity Portfolio	2.4%	11.8%	80.1%	5.6%
MSCI ACWI	5.8%	16.2%	78.0%	0.0%
<i>Weight Over/Under</i>	-3.4%	-4.3%	2.1%	5.6%

**Sector Allocation (%) vs MSCI ACWI**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	0.0%	2.9%	-2.9%
United States	58.6%	61.3%	-2.7%
Europe Ex U.K.	25.7%	12.6%	13.1%
United Kingdom	6.3%	3.6%	2.7%
Pacific Basin Ex Japan	1.5%	2.7%	-1.3%
Japan	4.7%	5.5%	-0.8%
Emerging Markets	3.2%	11.1%	-7.9%
Other	0.0%	0.2%	-0.2%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Manager Summary:** Strategy seeks to produce long-term excess market returns with less volatility than the market. Investment process combines quantitative inputs and fundamental analysis. Only stocks that exhibit low volatility are considered for further analysis. Fundamental inputs include analyst expectations for earnings and valuation. Stocks are then rated buy, hold, or sell. Strategy typically holds 80-120 names with a maximum position limit of 4%.

**Characteristics**

	Portfolio	MSCI ACWI
Number of Holdings	102	2,957
Weighted Avg. Market Cap. (\$B)	231.5	431.0
Median Market Cap. (\$B)	39.4	14.3
Price To Earnings	21.7	20.6
Price To Book	3.6	3.8
Price To Sales	2.3	2.5
Return on Equity (%)	23.4	21.4
Yield (%)	2.2	1.8

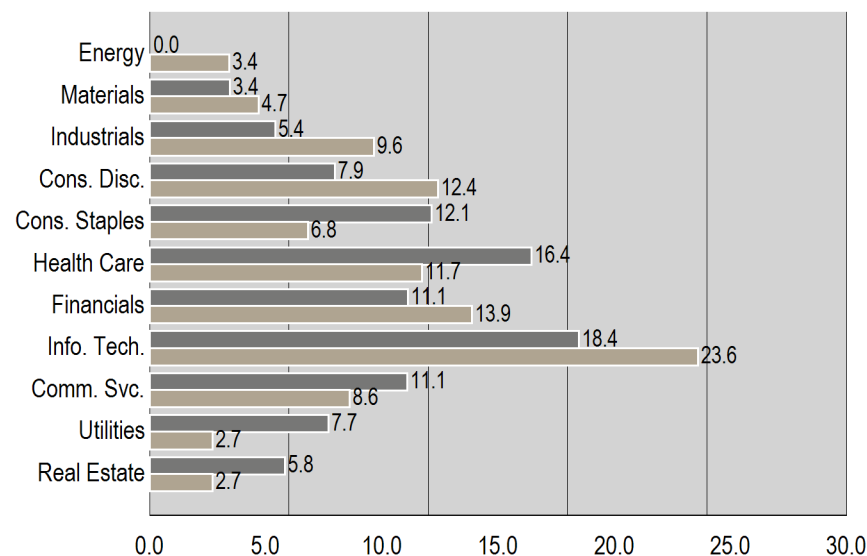
**Top Holdings**

TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	2.9%
ROCHE HOLDING AG	2.8%
NOVO NORDISK 'B'	2.8%
JOHNSON & JOHNSON	2.7%
CLP HOLDINGS LTD	2.6%
ADOBE INC	2.6%
MICROSOFT CORP	2.5%
KDDI CORP	2.2%
ALPHABET INC	2.1%
CONSTELLATION SOFTWARE INC	2.0%
<b>Total</b>	<b>25.4%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
MFS Low Volatility Global Equity	7.9%	20.6%	69.3%	2.2%
MSCI ACWI	5.8%	16.2%	78.0%	0.0%
<i>Weight Over/Under</i>	2.1%	4.4%	-8.7%	2.2%

**Sector Allocation (%) vs MSCI ACWI**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	6.9%	2.9%	4.0%
United States	47.3%	61.3%	-14.0%
Europe Ex U.K.	15.8%	12.6%	3.2%
United Kingdom	1.7%	3.6%	-1.9%
Pacific Basin Ex Japan	6.2%	2.7%	3.5%
Japan	11.1%	5.5%	5.5%
Emerging Markets	8.3%	11.1%	-2.8%
Other	2.8%	0.2%	2.6%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Manager Summary:** Focuses on stocks exhibiting the following three characteristics. **1) Franchise Company:** possess a proprietary asset, dominates its market, or has a defensible brand. **2) Attractive Valuation:** discount to the team's estimate of private market value. **3) Accelerating Profit Cycle:** solid cash flow and well positioned to take advantage of market opportunities. Companies are typically identified through two sources: quantitative screens and qualitative analysis. Concentrated strategy of approximately 30-50 stocks.

**Characteristics**

	Portfolio	MSCI ACWI
Number of Holdings	45	2,957
Weighted Avg. Market Cap. (\$B)	197.6	431.0
Median Market Cap. (\$B)	53.5	14.3
Price To Earnings	30.9	20.6
Price To Book	5.0	3.8
Price To Sales	5.3	2.5
Return on Equity (%)	17.4	21.4
Yield (%)	0.7	1.8

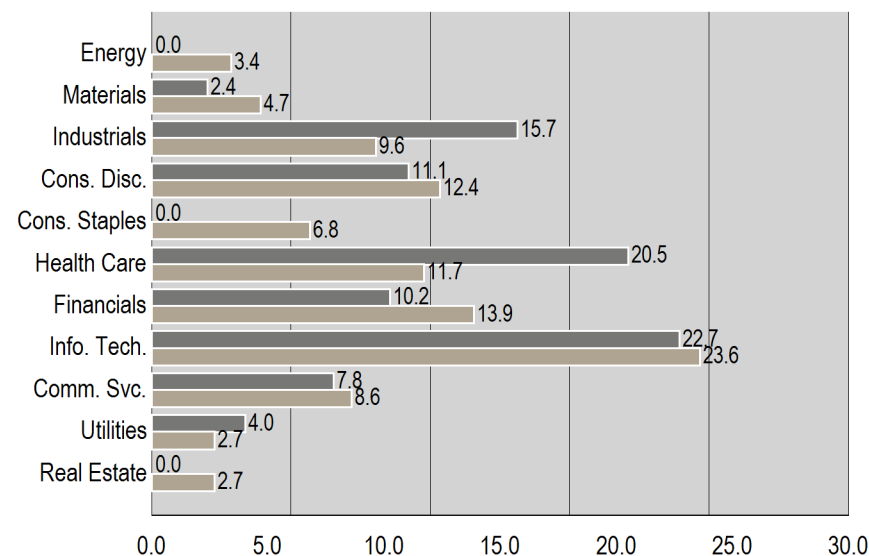
**Top Holdings**

TECHTRONIC INDUSTRIES CO LTD	5.9%
ADVANCED MICRO DEVICES INC	4.6%
VEEVA SYSTEMS INC	4.2%
LONZA GROUP AG, ZUERICH	4.0%
DANAHER CORP	3.8%
BOSTON SCIENTIFIC CORP	3.5%
NEXTERA ENERGY INC	3.3%
ATLASSIAN CORP PLC	3.2%
ALPHABET INC	3.1%
APTIV PLC	2.9%
<b>Total</b>	<b>38.5%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Artisan Global Opportunities	0.8%	8.4%	84.4%	6.3%
MSCI ACWI	5.8%	16.2%	78.0%	0.0%
<i>Weight Over/Under</i>	<i>-5.0%</i>	<i>-7.8%</i>	<i>6.4%</i>	<i>6.3%</i>

**Sector Allocation (%) vs MSCI ACWI**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	3.8%	2.9%	0.9%
United States	49.8%	61.3%	-11.5%
Europe Ex U.K.	22.0%	12.6%	9.4%
United Kingdom	8.5%	3.6%	4.9%
Pacific Basin Ex Japan	10.8%	2.7%	8.1%
Japan	4.1%	5.5%	-1.4%
Emerging Markets	0.9%	11.1%	-10.2%
Other	0.0%	0.2%	-0.2%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>



**Manager Summary:** Quantitative process leads to a diversified, all-cap portfolio with developed and emerging market exposure. The team seeks stocks trading at attractive valuations with higher quality fundamentals than industry peers. Weighting scheme favors higher-quality and more liquid securities. Portfolio tends to hold more than 500 stocks.

**Characteristics**

	Portfolio	MSCI ACWI ex USA Value
Number of Holdings	788	1,454
Weighted Avg. Market Cap. (\$B)	51.6	67.2
Median Market Cap. (\$B)	3.2	9.5
Price To Earnings	10.5	11.2
Price To Book	2.1	1.9
Price To Sales	1.0	1.0
Return on Equity (%)	15.4	11.4
Yield (%)	3.5	4.0

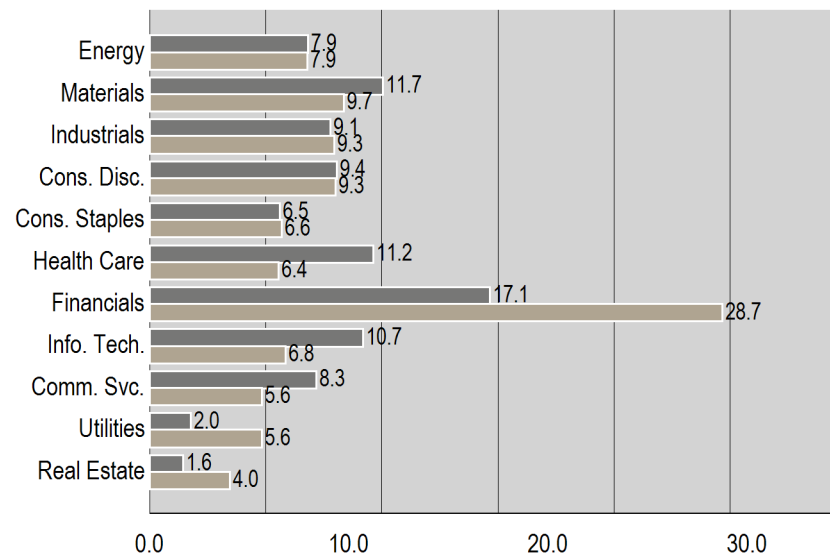
**Top Holdings**

ASTELLAS PHARMA INC	1.4%
HENKEL AG & CO KGAA	1.4%
SANOFI	1.4%
ASTRAZENECA PLC	1.4%
GLAXOSMITHKLINE PLC	1.3%
NIPPON TELEGRAPH & TELEPHONE CORP NTT	1.3%
UNILEVER PLC	1.3%
NOVARTIS AG	1.3%
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	1.3%
KDDI CORP	1.3%
<b>Total</b>	<b>13.5%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Hartford Schroder Int'l Multi-Cap Value	31.7%	26.2%	36.4%	5.7%
MSCI ACWI ex USA Value	15.3%	27.7%	56.9%	0.0%
<i>Weight Over/Under</i>	16.3%	-1.5%	-20.5%	5.7%

**Sector Allocation (%) vs MSCI ACWI ex USA Value**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	8.3%	7.7%	0.6%
United States	0.1%	0.0%	0.1%
Europe Ex U.K.	28.8%	30.1%	-1.4%
United Kingdom	14.4%	12.0%	2.4%
Pacific Basin Ex Japan	5.8%	7.1%	-1.3%
Japan	17.4%	14.2%	3.2%
Emerging Markets	23.4%	28.2%	-4.8%
Other	1.8%	0.7%	1.2%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

As of December 31, 2021

**Manager Summary:** The investment seeks to provide investment results that correspond to the total return of foreign developed and emerging stock markets. The fund normally invests at least 80% of assets in securities included in the MSCI ACWI (All Country World Index) ex USA Investable Market Index and in depository receipts representing securities included in the index. The MSCI ACWI (All Country World Index) ex USA Investable Market Index is a market capitalization-weighted index designed to measure the investable equity market performance for global investors of large, mid, and small-cap stocks in developed and emerging markets, excluding the U.S.

**Characteristics**

	Portfolio	MSCI ACWI ex USA IMI
Number of Holdings	4,273	6,706
Weighted Avg. Market Cap. (\$B)	84.6	85.0
Median Market Cap. (\$B)	3.6	2.0
Price To Earnings	15.3	15.3
Price To Book	2.7	2.7
Price To Sales	1.6	1.5
Return on Equity (%)	14.2	14.0
Yield (%)	2.5	2.6

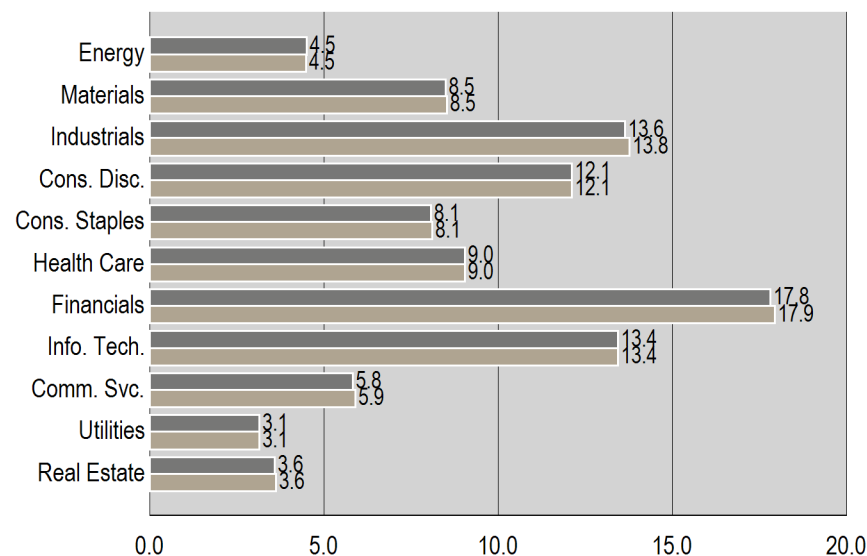
**Top Holdings**

TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	1.7%
NESTLE SA, CHAM UND VEVEY	1.2%
TENCENT HOLDINGS LTD	1.1%
ASML HOLDING NV	1.0%
SAMSUNG ELECTRONICS CO LTD	1.0%
ROCHE HOLDING AG	0.9%
ALIBABA GROUP HOLDING LTD	0.7%
LVMH MOET HENNESSY LOUIS VUITTON SE	0.7%
TOYOTA MOTOR CORP	0.6%
NOVO NORDISK 'B'	0.6%
<b>Total</b>	<b>9.6%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Fidelity Total Int'l Index	23.3%	21.3%	52.1%	3.3%
MSCI ACWI ex USA IMI	25.8%	21.2%	53.0%	0.0%
<i>Weight Over/Under</i>	<i>-2.5%</i>	<i>0.1%</i>	<i>-0.9%</i>	<i>3.3%</i>

**Sector Allocation (%) vs MSCI ACWI ex USA IMI**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	7.4%	7.4%	0.0%
United States	0.4%	0.0%	0.4%
Europe Ex U.K.	32.8%	31.6%	1.2%
United Kingdom	8.4%	9.7%	-1.3%
Pacific Basin Ex Japan	9.0%	7.5%	1.5%
Japan	14.9%	14.9%	0.0%
Emerging Markets	25.6%	28.0%	-2.5%
Other	1.6%	0.9%	0.7%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

As of December 31, 2021

**Manager Summary:** The fund seeks to provide investment results that correspond to the total return of emerging stock markets. Invests at least 80% of assets in securities included in the MSCI Emerging Markets Index and in depository receipts representing securities included in the index. Utilizes statistical sampling techniques based on factors such as capitalization, industry exposures, dividend yield, earnings growth and the effect of foreign taxes to attempt to replicate the the returns of MSCI Emerging Markets Index.

**Characteristics**

	Portfolio	MSCI Emerging Markets
Number of Holdings	1,236	1,413
Weighted Avg. Market Cap. (\$B)	134.9	139.7
Median Market Cap. (\$B)	8.0	7.2
Price To Earnings	12.5	12.3
Price To Book	2.8	2.8
Price To Sales	1.5	1.4
Return on Equity (%)	14.7	14.6
Yield (%)	2.4	2.4

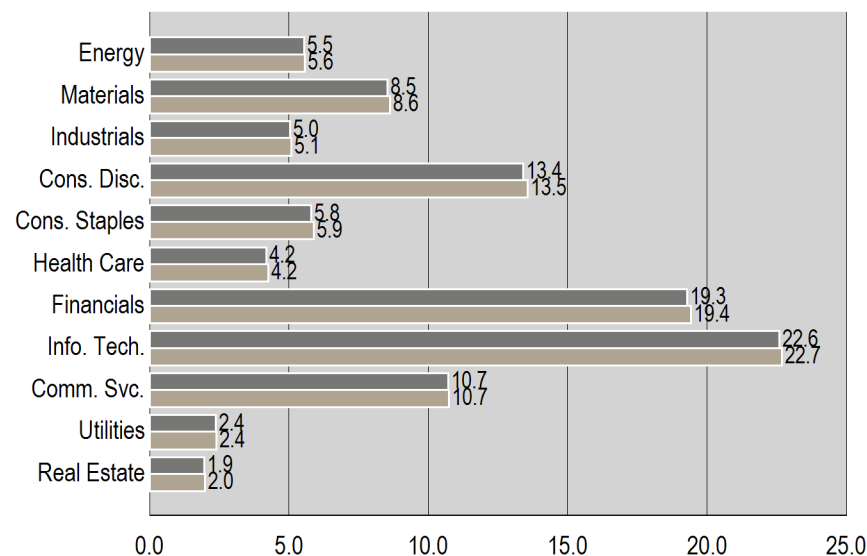
**Top Holdings**

TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	7.0%
TENCENT HOLDINGS LTD	4.3%
SAMSUNG ELECTRONICS CO LTD	4.0%
ALIBABA GROUP HOLDING LTD	2.9%
MEITUAN DIANPING USD0.00001 A B CLASS ISIN KYG596691041	1.5%
RELIANCE INDUSTRIES LTD	1.2%
INFOSYS LTD	1.1%
CHINA CONSTRUCTION BANK CORP	0.8%
MEDIATEK INCORPORATION	0.8%
JD.COM INC	0.8%
<b>Total</b>	<b>24.4%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Fidelity Emerging Markets Index Fund	7.1%	23.1%	67.1%	2.6%
MSCI Emerging Markets	14.3%	21.8%	63.9%	0.0%
<i>Weight Over/Under</i>	<i>-7.2%</i>	<i>1.3%</i>	<i>3.3%</i>	<i>2.6%</i>

**Sector Allocation (%) vs MSCI Emerging Markets**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	0.0%	0.0%	0.0%
United States	0.9%	0.0%	0.9%
Europe Ex U.K.	0.5%	0.2%	0.3%
United Kingdom	0.2%	0.0%	0.2%
Pacific Basin Ex Japan	6.1%	0.0%	6.1%
Japan	0.0%	0.0%	0.0%
Emerging Markets	89.8%	99.2%	-9.4%
Other	2.5%	0.6%	1.9%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Characteristics**

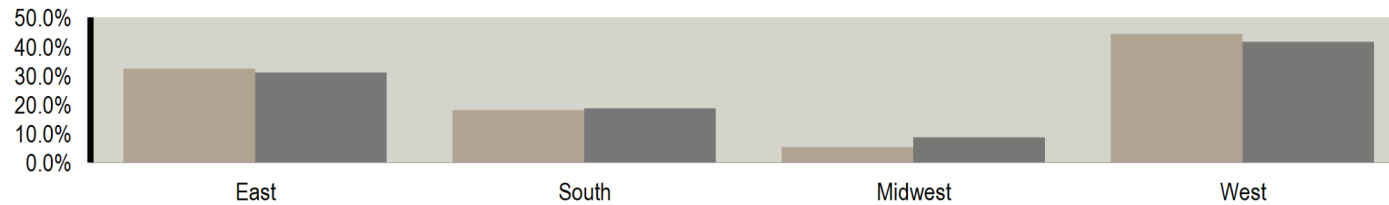
Fund GAV (\$MM)	\$18,135.5
Fund NAV (\$MM)	\$15,027.5
Cash (% of NAV)	1.7%
# of Investments	126
% in Top 10 by NAV	24.2%
Leverage %	20.4%
Occupancy	95.1%
# of MSAs	34
1-Year Dividend Yield	3.4%
As of Date	31-Dec-21

**Strategy Breakdown**

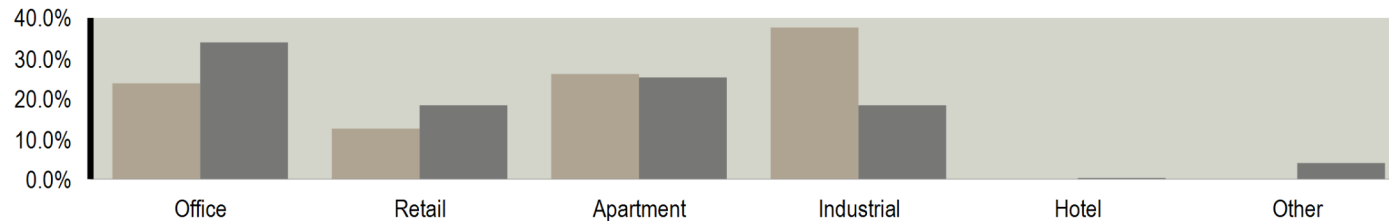
	% of Portfolio
Pre-Development	
Development	2.9%
Initial Leasing	
Operating	97.1%
Re-Development	
Other	
<u>Queue In:</u>	
Contribution Queue (\$MM)	\$163.79
Anticipated Drawdown (Months)	6

Top Five Metro Areas	% of NAV
San Francisco, CA	10.4%
Los Angeles, CA	10.0%
New York, NY	8.5%
Boston, MA	8.3%
Seattle, WA	7.4%
<u>Queue Out:</u>	
Redemption Queue (\$MM)	\$0.00
Anticipated Payout (Months)	6

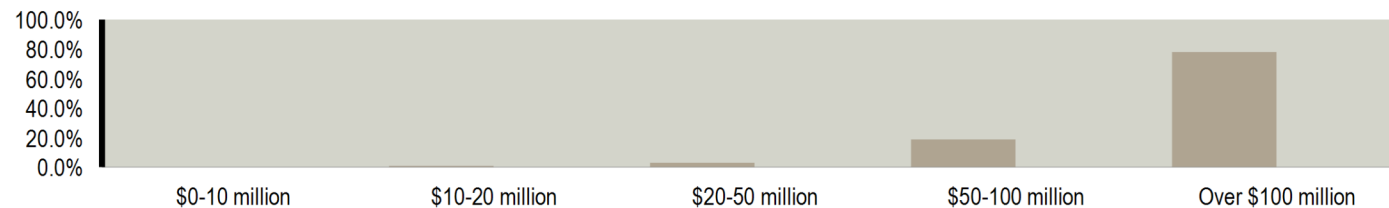
**Regional Breakdown by NAV (Excluding Cash & Debt)**



**Property Type Breakdown by NAV (Excluding Cash & Debt)**

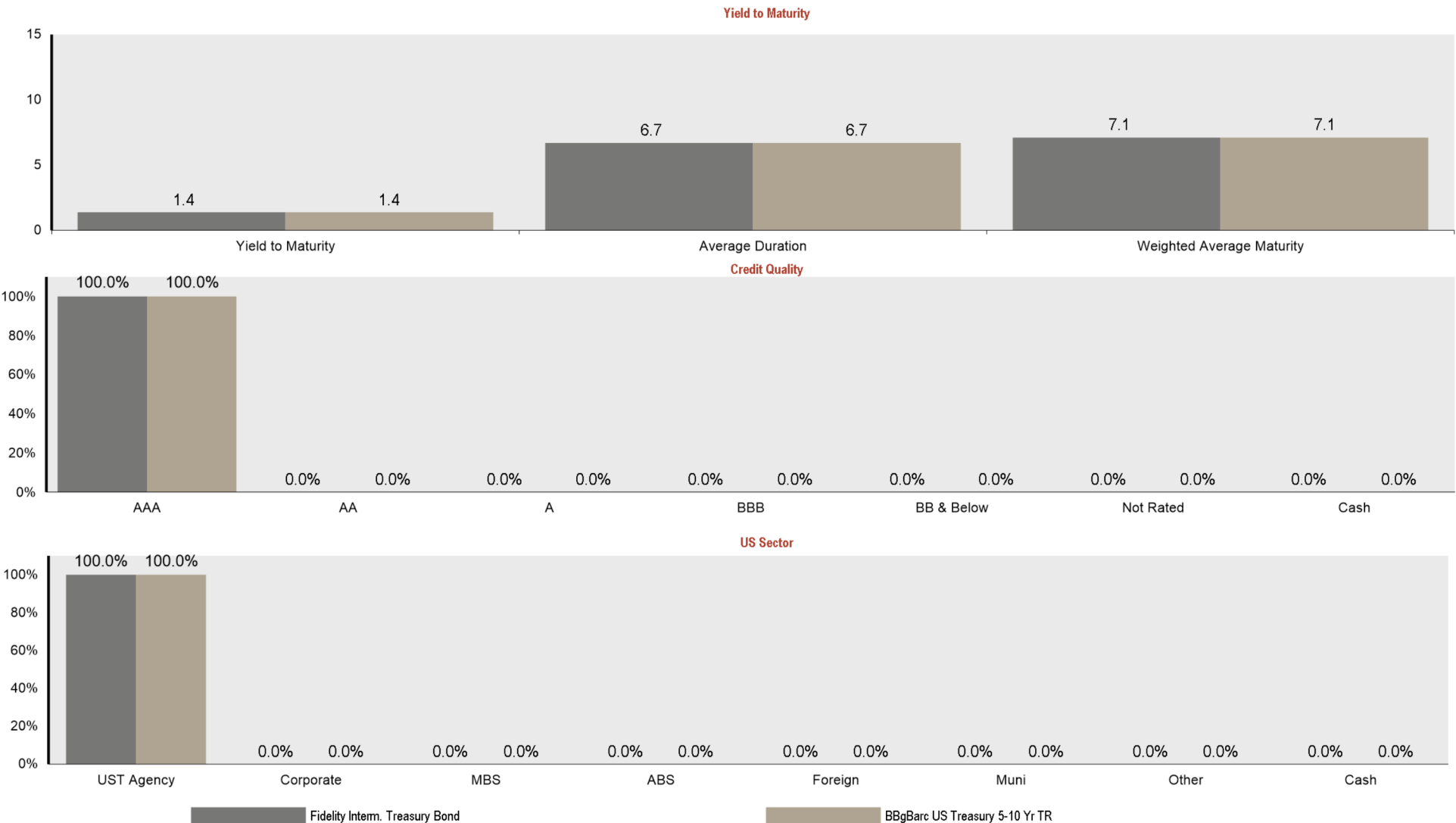


**Property Size Breakdown by NAV (Excluding Cash & Debt)**



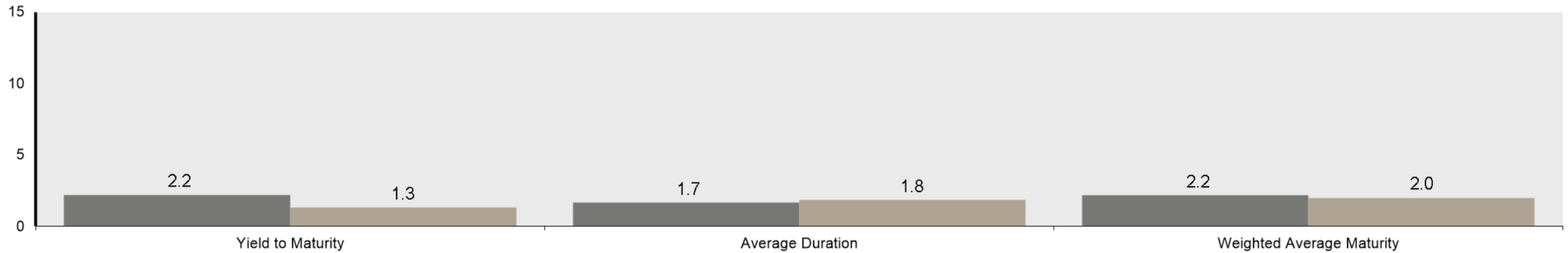
■ Rreef America II ■ NCREIF-ODCE

**Manager Summary:** Passively-managed using an index sampling approach. Seeks to track the performance of Barclays Capital U.S. 5-10 year Treasury Index. Invests only in U.S. Treasury securities. Intermediate duration portfolio. a smaller number of securities.

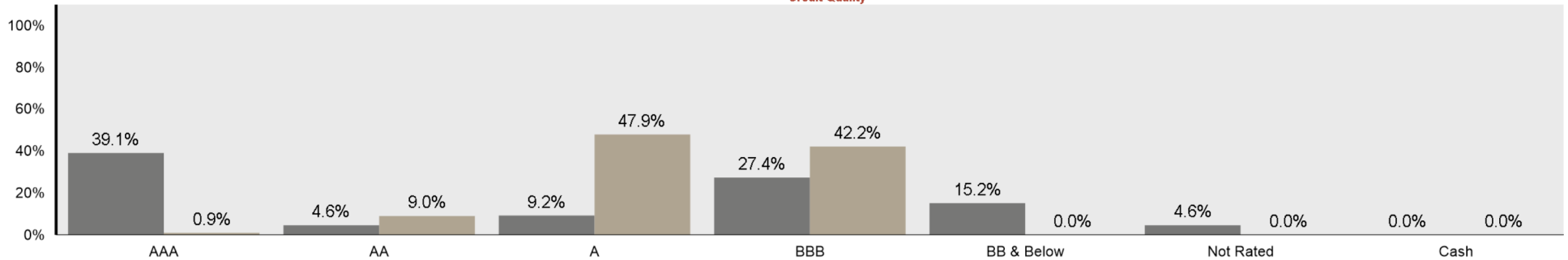


**Manager Summary:** Seeks to add value through sector rotation and security selection among short-duration securities. Approach combines top-down decisions making with bottom-up security selection. A separate quantitative team helps monitor risk allocation as well as the relative attractiveness of securities and sectors. The strategy employs a duration-neutral position versus the benchmark.

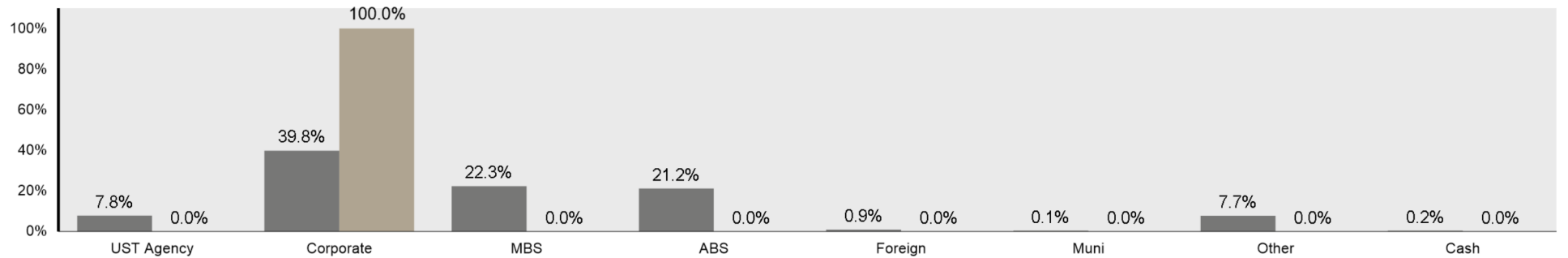
Yield to Maturity



Credit Quality



US Sector

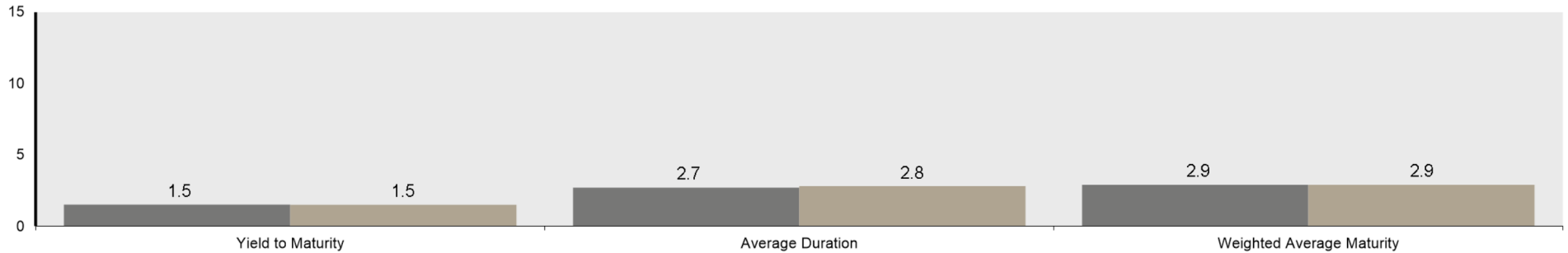


Lord Abbett Short Duration Income Fund

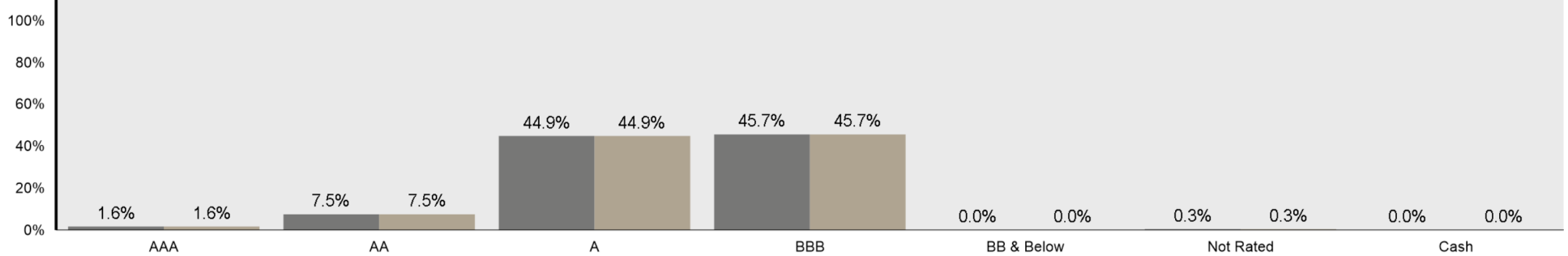
ICE BofAML 1-3 Year U.S. Corp. Index

**Manager Summary:** Seeks to track the performance of the Bloomberg Barclays U.S. 1-5 Year Corporate Bond Index. Diversified exposure to the short-term investment-grade U.S. corporate bond market. Follows a passively managed, index-sampling approach. Provides current income with high credit quality.

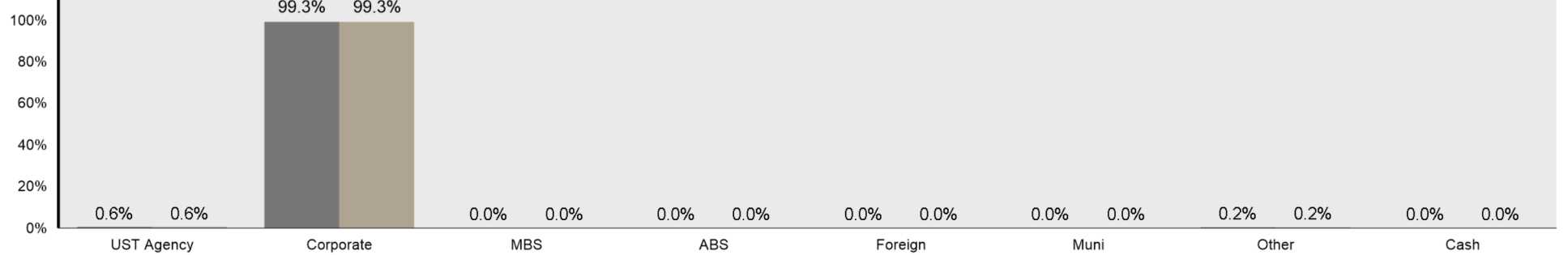
Yield to Maturity



Credit Quality



US Sector

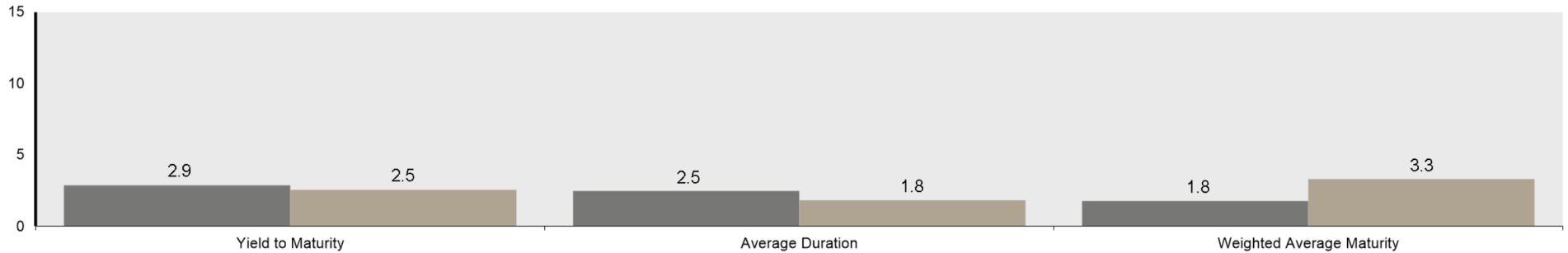


Vanguard Short-Term Corp. Bond Index

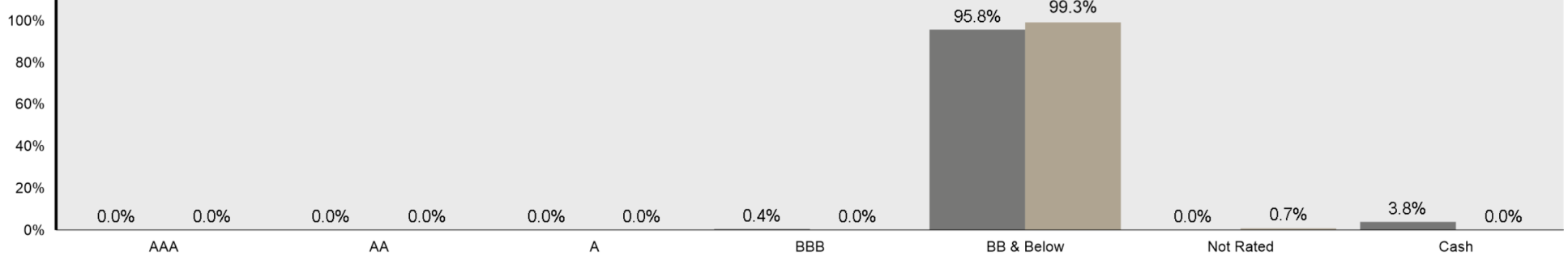
BBgBarc US 1-5 Year Corp. Bond Index

**Manager Summary:** Seeks income and long-term capital appreciation. Focuses on higher quality high yield corporate debt securities seeking attractive short-term yields and lower volatility than the broad high yield and leverage bank loan markets. Typically invests at least 80% of its net assets in high yield debt securities.

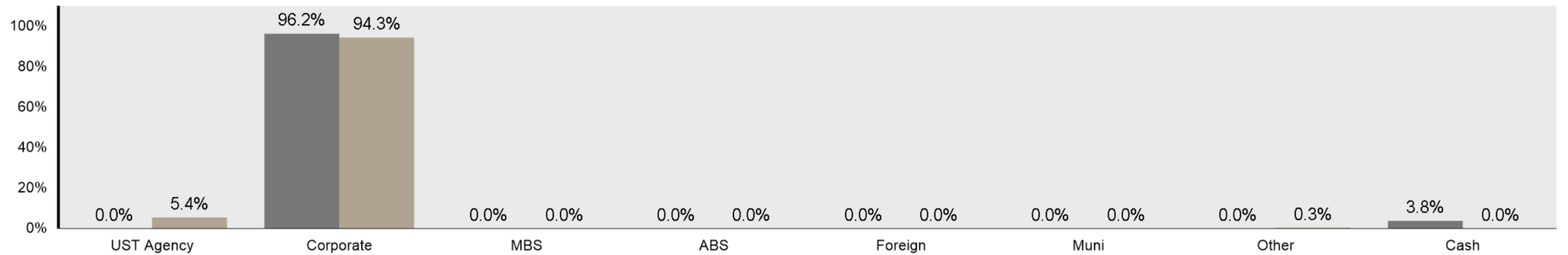
Yield to Maturity



Credit Quality



US Sector



Chartwell Short Duration High Yield

BofA Merrill Lynch 1-3 Yrs High Yield BB



# Strategic Asset Allocation Review

## Warrington Township



**Presented By:**

Lee Martin, Ph.D.  
Managing Director

William Torre, CFA, CAIA  
Vice President

# Contents

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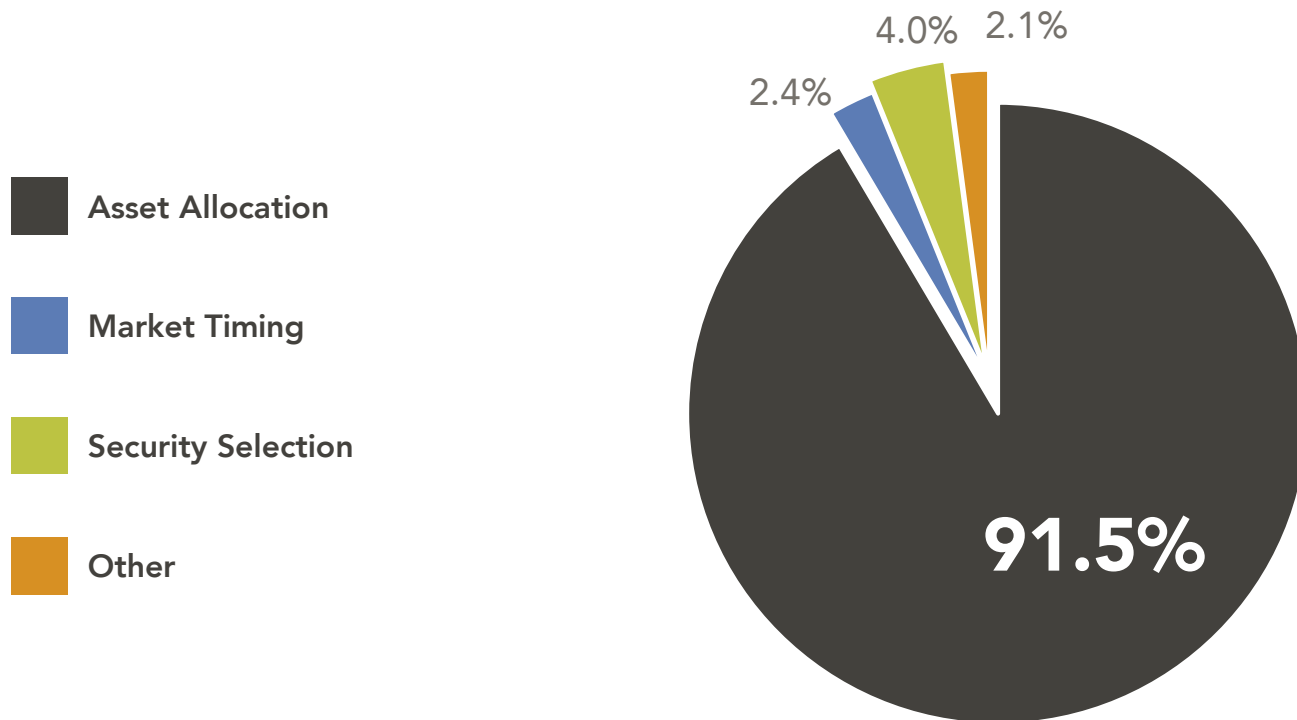
- Asset Allocation Background
- Police Pension Plan: Asset Allocation
- Non-Uniform Pension Plan: Asset Allocation
- Opportunistic Credit Background
- Private Debt Background



# Asset Allocation Background

# Asset allocation controls portfolio risk

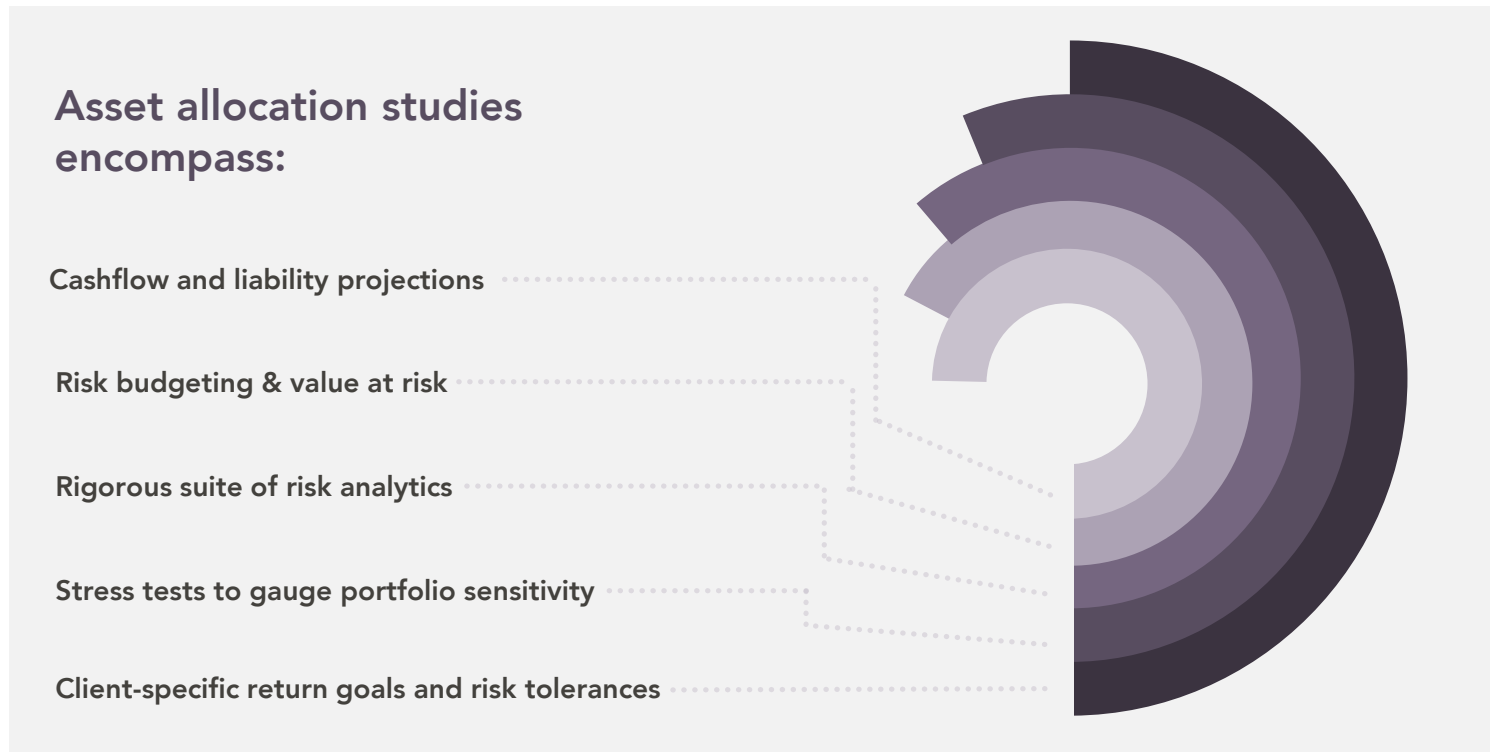
## Portfolio return variability (%)



Source: Gary P. Brinson, L. Randolph Hood, and Gilbert L. Beebower, "Determinants of Portfolio Performance," Financial Analysts Journal, July/August 1986. Gary P. Brinson, Brian D. Singer, and Gilbert L. Beebower, "Determinants of Portfolio Performance II: An Update," Financial Analysts Journal, May/June 1991.

# A comprehensive approach to asset allocation

**Holistic approach contributes to optimal portfolios for each client's unique circumstances**



# Client-specific return goals and risk tolerances

Studies reflect client-specific inputs which are reflected in robust analytics package

## CLIENT SPECIFIC VARIABLES

- Target rate of return
- Risk tolerance
- Cash flows
- Liabilities
- Liquidity constraints
- Suitable asset classes
- Spending policy
- Debt covenants

## SOFTWARE MODELING

- Monte-Carlo model utilizes over 25 variables:
  - Interest Rates
  - Default Rates
  - Corporate Spreads
  - Dividend Yields
  - Property Yields
- Dynamic correlations
- Reflects current market environment
- Objective inputs and outputs – no building block

## STUDY

- Monte Carlo analysis: 1,000 scenarios produce a range of outcomes
- Downside risk and downside deviation
- Value-at-risk
- Includes analysis of funding ratio or spending policy
- Stress testing
- Portfolio optimization
- Customized reports to best-suit client needs

# Warrington Township: Plan Background

---

- Goal of creating a diversified portfolio that generates the highest probability of meeting the target return with measured amounts of risk and mitigating each plan's downside risk (permanent losses).
- Target Return Objective: Police: 7.10% | Non-Uniform: 6.75%
- Additional factors:
  - Plan dynamics: current plan structure, future projected liability streams and investment liquidity profile
  - Ensure investment management fee dollars are used efficiently
  - Broad market environment
    - Lower interest rates have resulted in lower fixed income return expectations
    - Higher longer term inflation expectations impacting real returns
  - Plans have ability to access sub investment grade credit, as well as private market investments for Police Pension, to help achieve plan goals

# Police Pension Plan



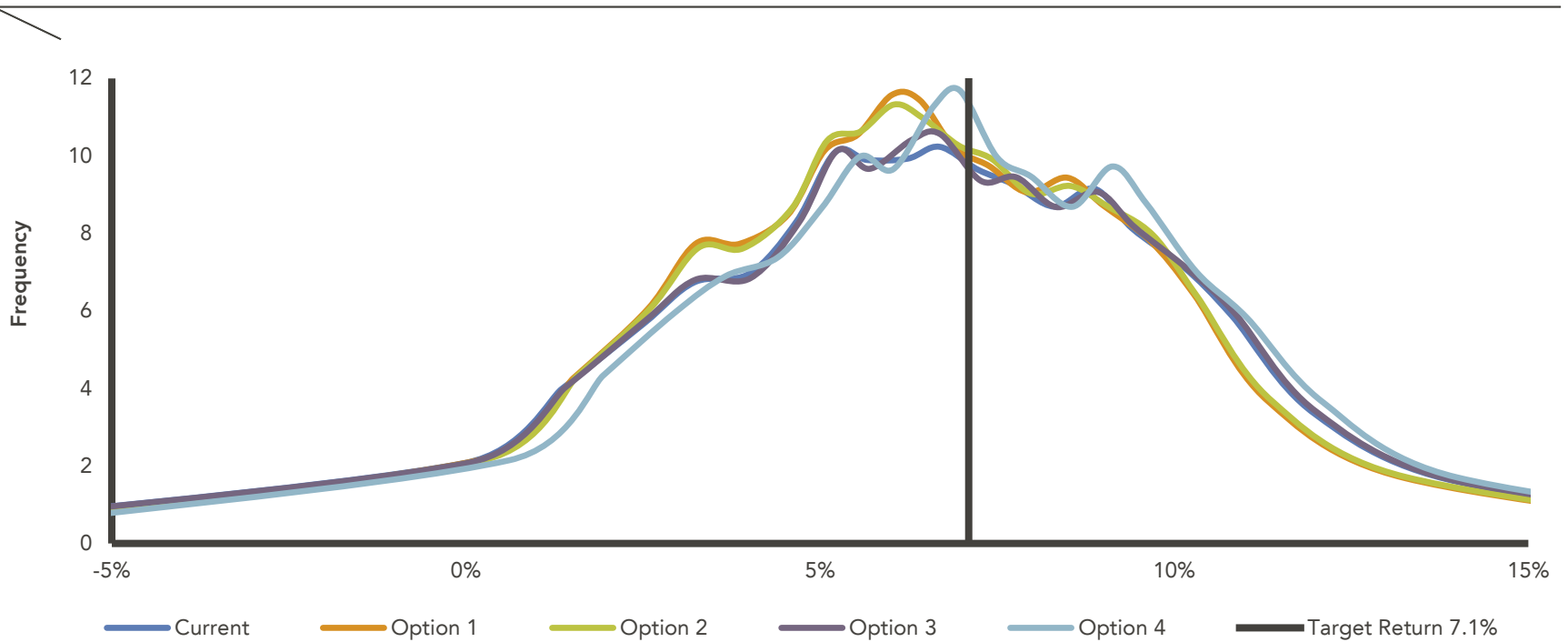
# Police Pension: Asset Allocation

- **Current:** Reflects the current target asset allocation
- **Option 1:** Reduce Total Equity by 5% while adding a 5% target allocation to Opportunistic Credit
  - Reduces risk significantly
- **Option 2:** Reduce Total Equity by 5% & reduce current Fixed Income structure by 5%, adding a 10% target allocation to Opportunistic Credit
  - Higher estimated return and lower risk
- **Option 3:** Reduce current Fixed Income structure by 5% while adding a 5% target allocation to Opportunistic Credit
  - Higher estimated return
- **Option 4:** Reduce Total Equity by 2% & reduce current Fixed Income structure by 3% while adding a 5% target allocation to Private Credit
  - Reduces risk significantly
  - Highest Return/Risk Ratio

	Current	Option 1	Option 2	Option 3	Option 4
Total Plan	100.0%	100.0%	100.0%	100.0%	100.0%
Total Equity	68.0%	63.0%	63.0%	68.0%	66.0%
Total U.S. Equity	32.0%	29.0%	29.0%	32.0%	31.0%
Large Cap Core	25.5%	23.0%	23.0%	25.5%	24.5%
Mid Cap Core	3.0%	2.75%	2.75%	3.0%	3.0%
Small Cap Value	3.5%	3.25%	3.25%	3.5%	3.5%
Total Non-US Equity	16.0%	14.0%	14.0%	16.0%	15.0%
Non-U.S. All Cap Core	6.0%	5.25%	5.25%	6.0%	5.0%
International Large Cap Value	3.5%	3.0%	3.0%	3.5%	3.5%
International Small Cap	2.0%	1.75%	1.75%	2.0%	2.0%
Emerging Markets	4.5%	4.0%	4.0%	4.5%	4.5%
Total Global Equity	20.0%	20.0%	20.0%	20.0%	20.0%
Global Equity	15.0%	15.0%	15.0%	15.0%	15.0%
Global Low Volatility	5.0%	5.0%	5.0%	5.0%	5.0%
Total Defensive Equity	5.0%	5.0%	5.0%	5.0%	5.0%
Defensive Equity	5.0%	5.0%	5.0%	5.0%	5.0%
Total Real Estate	7.0%	7.0%	7.0%	7.0%	7.0%
Core Real Estate	7.0%	7.0%	7.0%	7.0%	7.0%
Total Fixed Income	20.0%	25.0%	30.0%	20.0%	22.0%
Cash	2.0%	2.0%	2.0%	2.0%	2.0%
Intermediate Govt/Credit	18.0%	18.0%	13.0%	13.0%	15.0%
Opportunistic Credit	0.0%	5.0%	10.0%	5.0%	0.0%
Private Credit	0.0%	0.0%	0.0%	0.0%	5.0%
Estimated Return	6.63%	6.53%	6.72%	6.82%	6.94%
Assumed Risk	12.33%	11.57%	11.74%	12.49%	11.84%
Return/Risk	0.54	0.56	0.57	0.55	0.59

Source: Marquette Associates Asset Allocation Study: 12-31-2021

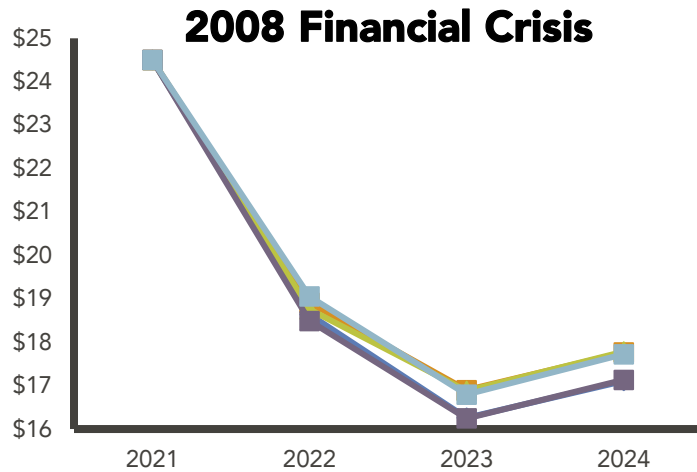
# Annual Return Distribution



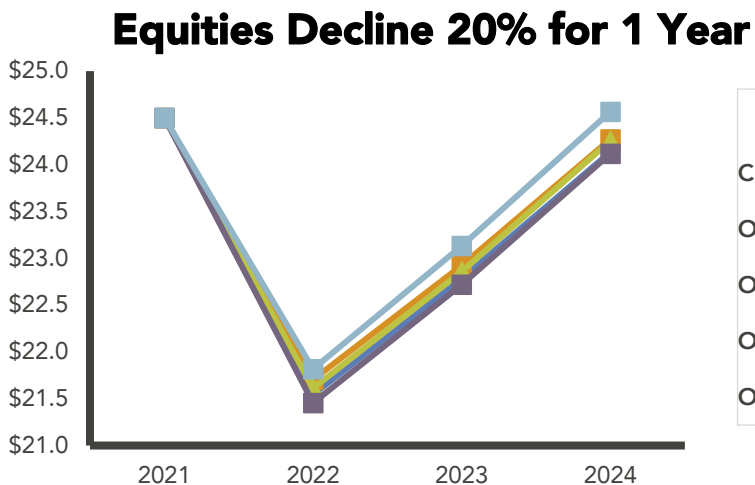
Percentile	Current	Option 1	Option 2	Option 3	Option 4
5%	0.0%	0.2%	0.2%	0.0%	0.6%
25%	4.0%	3.9%	3.9%	4.0%	4.4%
50%	6.6%	6.5%	6.7%	6.8%	6.9%
75%	9.4%	9.0%	9.1%	9.4%	9.6%
95%	14.0%	13.3%	13.3%	14.0%	14.0%

Source: Marquette Associates – 12-31-2021 Asset Allocation Study

# Scenario Analysis



	2022	2023	2024	Annualized Return
Current	-23.9%	-33.6%	-30.2%	-11.3%
Option 1	-22.8%	-31.0%	-27.5%	-10.2%
Option 2	-23.4%	-31.1%	-27.4%	-10.1%
Option 3	-24.5%	-33.7%	-30.1%	-11.2%
Option 4	-22.2%	-31.4%	-27.6%	-10.2%



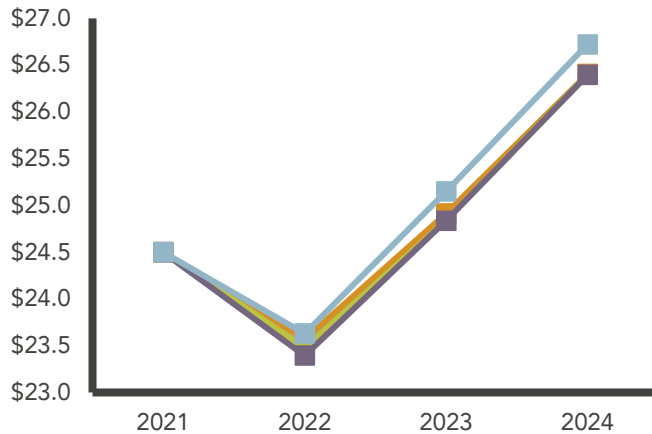
	2022	2023	2024	Annualized Return
Current	-12.1%	-7.0%	-1.5%	-0.5%
Option 1	-11.4%	-6.4%	-0.9%	-0.3%
Option 2	-11.8%	-6.7%	-1.0%	-0.3%
Option 3	-12.4%	-7.3%	-1.6%	-0.5%
Option 4	-11.0%	-5.6%	0.3%	0.1%

— Current    
 — Option 1    
 — Option 2    
 — Option 3    
 — Option 4

Source: Asset Allocation Study 12-31-2021

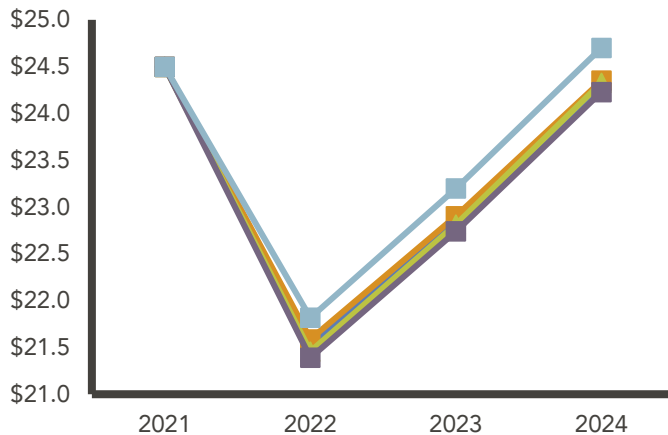
# Scenario Analysis

## 2011 U.S. Debt Crisis



	2022	2023	2024	Annualized Return
Current	-4.1%	1.7%	7.8%	2.5%
Option 1	-3.8%	1.7%	7.8%	2.5%
Option 2	-4.2%	1.4%	7.8%	2.5%
Option 3	-4.5%	1.4%	7.7%	2.5%
Option 4	-3.5%	2.7%	9.1%	2.9%

## Perfect Storm for 1 Year



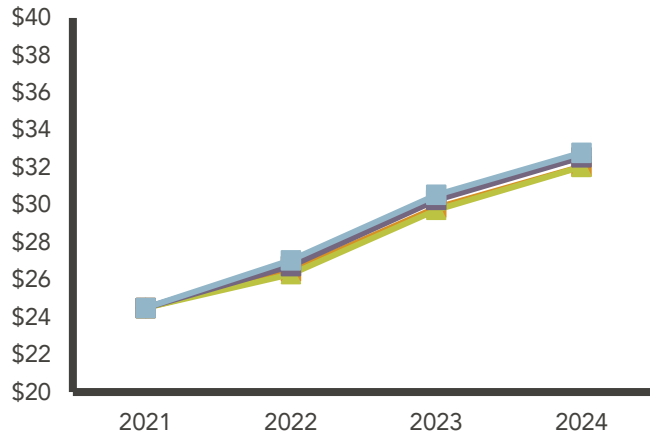
	2022	2023	2024	Annualized Return
Current	-12.2%	-6.8%	-1.0%	-0.3%
Option 1	-11.9%	-6.5%	-0.6%	-0.2%
Option 2	-12.4%	-6.9%	-0.7%	-0.2%
Option 3	-12.7%	-7.2%	-1.1%	-0.4%
Option 4	-10.9%	-5.3%	0.8%	0.3%

— Current    
 — Option 1    
 — Option 2    
 — Option 3    
 — Option 4

Source: Asset Allocation Study 12-31-2021

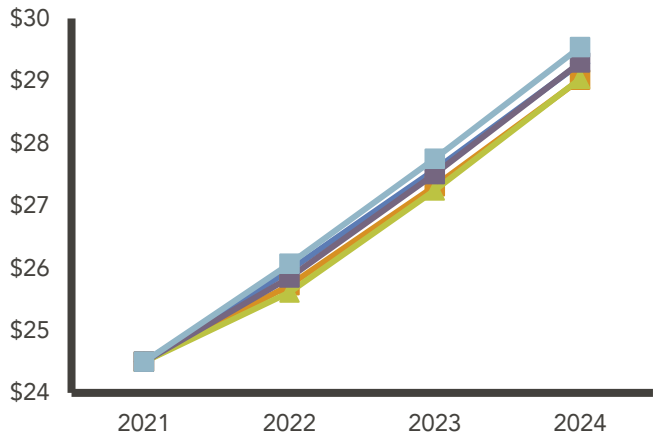
# Scenario Analysis

## 1981 Interest Rate Spike



	2022	2023	2024	Annualized Return
Current	9.7%	24.0%	32.9%	10.0%
Option 1	7.9%	21.8%	30.9%	9.4%
Option 2	7.4%	21.4%	30.8%	9.4%
Option 3	9.1%	23.6%	32.9%	9.9%
Option 4	10.4%	24.7%	33.9%	10.2%

## Interest Rates Rise 1% for 1 Year



	2022	2023	2024	Annualized Return
Current	6.0%	12.6%	19.5%	6.1%
Option 1	5.0%	11.5%	18.5%	5.8%
Option 2	4.5%	11.2%	18.5%	5.8%
Option 3	5.5%	12.3%	19.6%	6.1%
Option 4	6.4%	13.3%	20.6%	6.4%

—●— Current    
 —■— Option 1    
 —▲— Option 2    
 —◆— Option 3    
 —□— Option 4

Source: Asset Allocation Study 12-31-2021

# **Non-Uniform Pension Plan**

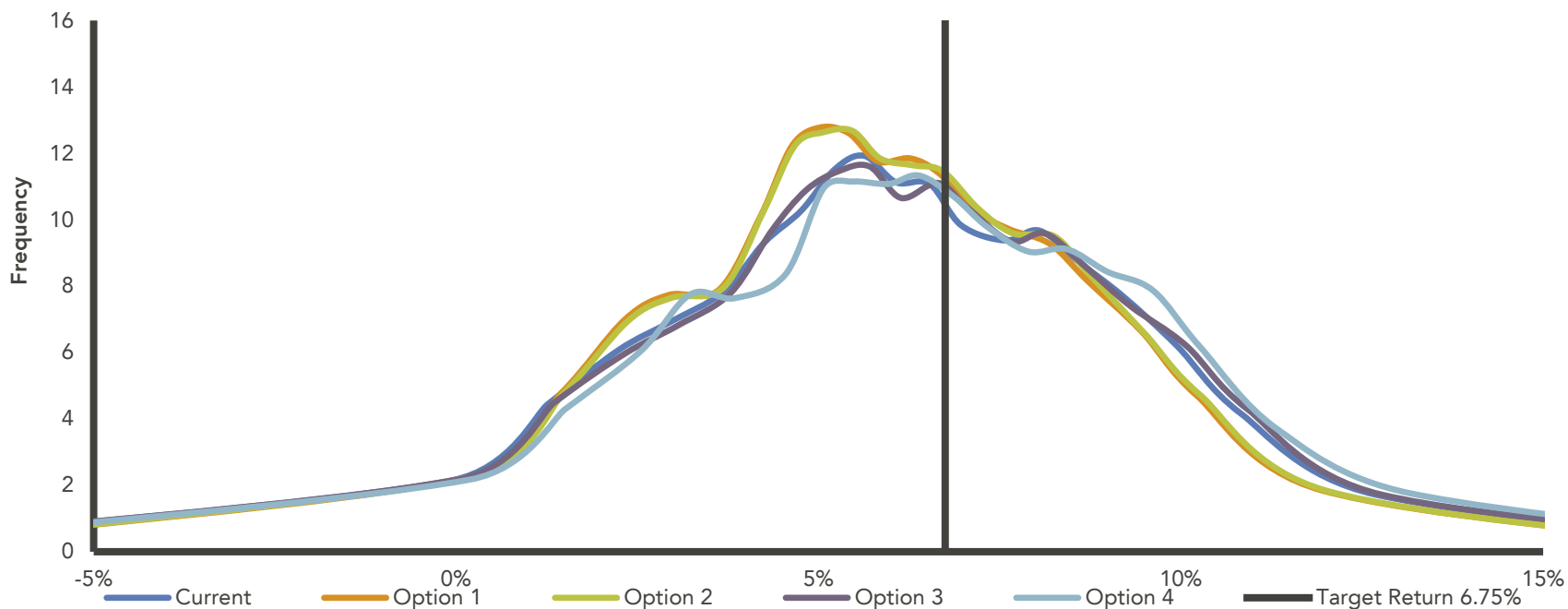
# Non-Uniform Pension: Asset Allocation

- **Current:** Reflects the current target allocation
- **Option 1:** Reduce Total Equity by 5% while adding a 5% target allocation to Opportunistic Credit
  - Reduces estimated return but also risk
- **Option 2:** Reduce Total Equity by 5% & reduce current Fixed Income structure by 5%, adding a 10% target allocation to Opportunistic Credit
  - Higher estimated return with lower risk
- **Option 3:** Reduce current Fixed Income structure by 10% while adding a 10% target allocation to Opportunistic Credit
  - Higher estimated return with higher risk
- **Option 4:** Reduce current Fixed Income structure by 10% while adding a 5% target allocation to Opportunistic Credit and a 5% target allocation to Defensive Equity
  - Highest estimated return with higher risk

	Current	Option 1	Option 2	Option 3	Option 4
Total Plan	100.0%	100.0%	100.0%	100.0%	100.0%
Total Equity	63.0%	58.0%	58.0%	63.0%	63.0%
Total U.S. Equity	30.0%	25.0%	25.0%	30.0%	30.0%
Large Cap Core	24.0%	20.0%	20.0%	24.0%	24.0%
Mid Cap Core	2.5%	2.5%	2.5%	2.5%	2.5%
Small Cap Value	3.5%	2.5%	2.5%	3.5%	3.5%
Total Non-US Equity	13.0%	13.0%	13.0%	13.0%	13.0%
Non-U.S. All Cap Core	3.0%	3.0%	3.0%	3.0%	3.0%
International Large Cap Value	4.5%	4.5%	4.5%	4.5%	4.5%
International Small Cap	2.0%	2.0%	2.0%	2.0%	2.0%
Emerging Markets	3.5%	3.5%	3.5%	3.5%	3.5%
Total Global Equity	20.0%	20.0%	20.0%	20.0%	20.0%
Global Equity	15.0%	15.0%	15.0%	15.0%	15.0%
Global Low Volatility	5.0%	5.0%	5.0%	5.0%	5.0%
Total Defensive Equity	0.0%	0.0%	0.0%	0.0%	5.0%
Defensive Equity	0.0%	0.0%	0.0%	0.0%	5.0%
Total Real Estate	7.0%	7.0%	7.0%	7.0%	7.0%
Core Real Estate	7.0%	7.0%	7.0%	7.0%	7.0%
Total Fixed Income	30.0%	35.0%	35.0%	30.0%	25.0%
Cash	2.0%	2.0%	2.0%	2.0%	2.0%
Intermediate Govt/Credit	28.0%	28.0%	23.0%	18.0%	18.0%
Opportunistic Credit	0.0%	5.0%	10.0%	10.0%	5.0%
Estimated Return	6.08%	6.00%	6.19%	6.47%	6.51%
Assumed Risk	11.30%	10.58%	10.75%	11.62%	11.57%
Return/Risk	0.54	0.57	0.58	0.56	0.56

Source: Marquette Associates Asset Allocation Study: 12-31-2021

# Annual Return Distribution

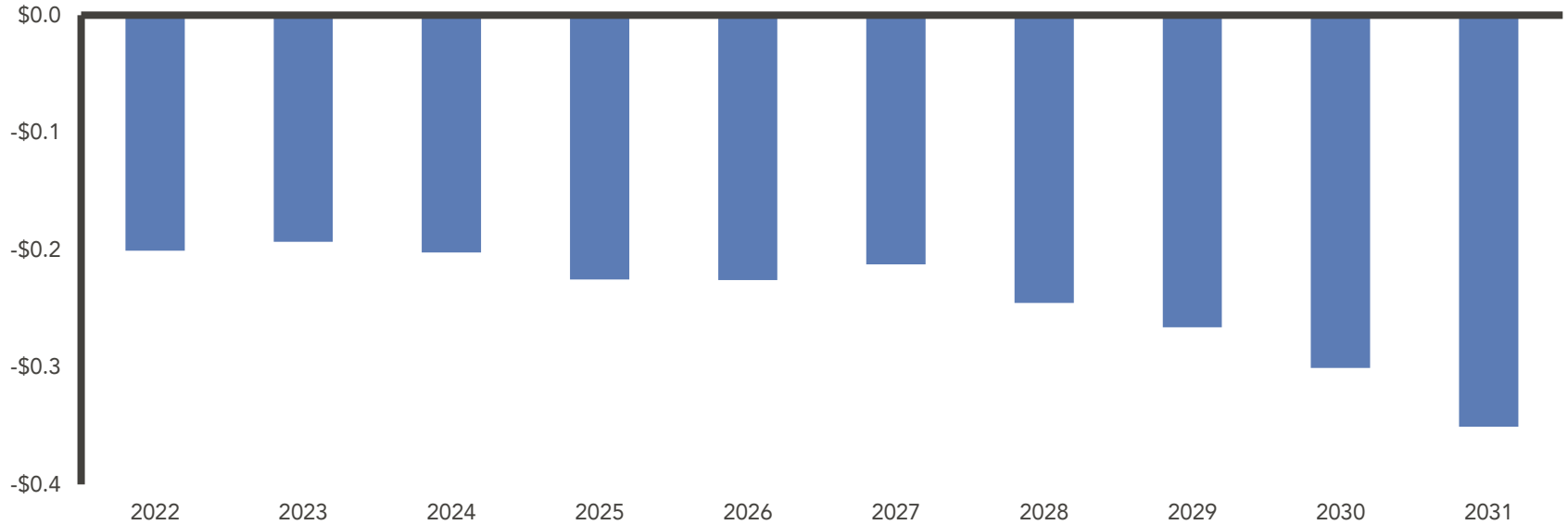


Percentile	Current	Option 1	Option 2	Option 3	Option 4
5%	-0.1%	0.2%	0.2%	0.0%	0.2%
25%	3.7%	3.6%	3.7%	3.8%	3.8%
50%	6.1%	6.0%	6.2%	6.5%	6.5%
75%	8.6%	8.2%	8.3%	8.7%	9.0%
95%	12.7%	12.0%	12.0%	12.8%	13.2%

Source: Marquette Associates – 12-31-2021 Asset Allocation Study



# Projected Cash Flows by Year (\$M)

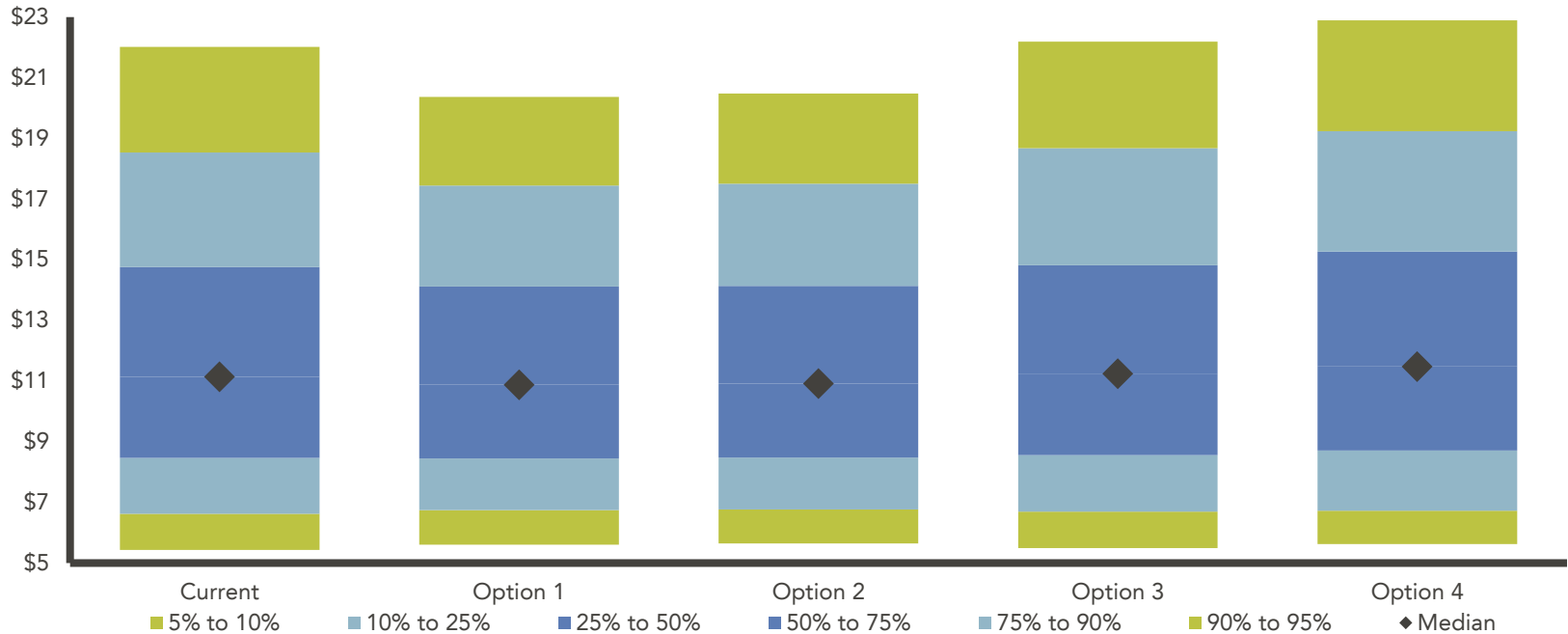


## Forecasted Cash Flow as Percentage of Market Value

Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Current	-2.4%	-2.2%	-2.3%	-2.4%	-2.3%	-2.1%	-2.4%	-2.5%	-2.8%	-3.1%
Option 1	-2.4%	-2.2%	-2.3%	-2.5%	-2.4%	-2.2%	-2.4%	-2.6%	-2.8%	-3.2%
Option 2	-2.4%	-2.2%	-2.3%	-2.5%	-2.4%	-2.2%	-2.4%	-2.6%	-2.8%	-3.2%
Option 3	-2.4%	-2.2%	-2.3%	-2.4%	-2.3%	-2.1%	-2.4%	-2.5%	-2.8%	-3.1%
Option 4	-2.4%	-2.2%	-2.3%	-2.4%	-2.3%	-2.1%	-2.3%	-2.4%	-2.7%	-3.1%

Note: Liability and benefit projections based on data from Conrad Siegel. Information based on Asset Liability Study: 12-31-2021

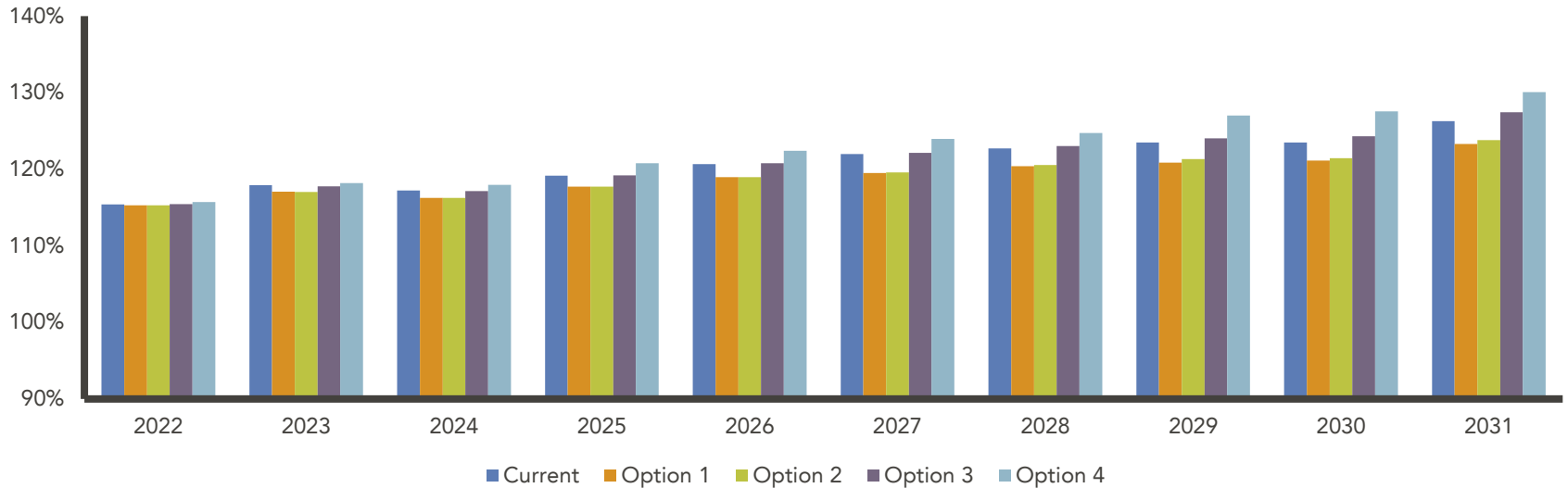
# Distributions of Year 10 Market Values (\$M)



Percentile	Current	Option 1	Option 2	Option 3	Option 4
5%	\$5.4	\$5.6	\$5.7	\$5.5	\$5.6
10%	\$6.6	\$6.7	\$6.8	\$6.7	\$6.7
25%	\$8.5	\$8.4	\$8.5	\$8.6	\$8.7
50%	\$11.1	\$10.9	\$10.9	\$11.2	\$11.5
75%	\$14.8	\$14.1	\$14.1	\$14.8	\$15.3
90%	\$18.5	\$17.4	\$17.5	\$18.7	\$19.2
95%	\$22.0	\$20.4	\$20.5	\$22.2	\$22.9

Note: Liability and benefit projections based on data from Conrad Siegel. Information based on Asset Liability Study: 12-31-2021

# Estimated Funding Ratio by Year (%)

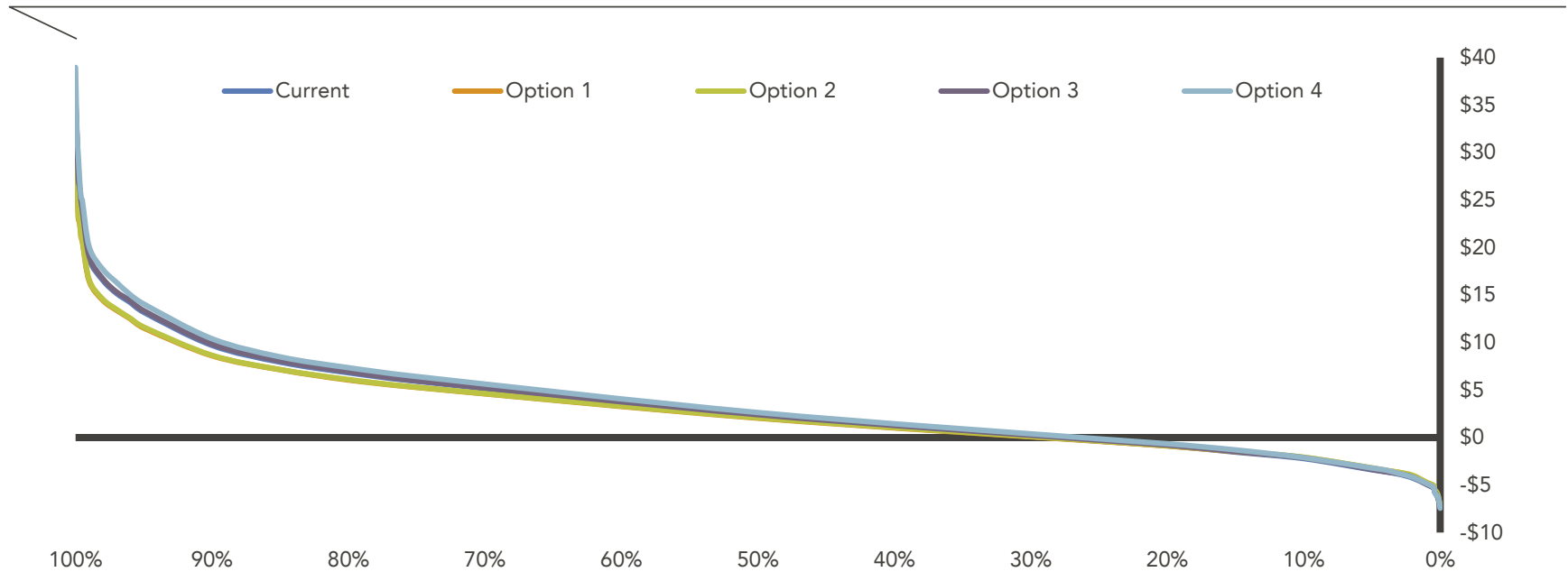


## Estimated Year 10 Funding Ratio Ranges

Percentile	Current	Option 1	Option 2	Option 3	Option 4
5%	61.6%	63.6%	64.0%	62.3%	63.8%
10%	75.0%	76.4%	76.7%	75.9%	76.3%
25%	95.9%	95.7%	96.1%	97.1%	98.7%
50%	126.3%	123.3%	123.8%	127.5%	130.1%
75%	167.2%	159.9%	160.3%	168.0%	173.0%
90%	210.1%	197.7%	198.4%	211.7%	218.1%
95%	249.5%	230.8%	232.1%	251.5%	259.5%

Note: Liability and benefit projections based on data from Conrad Siegel. Information based on Asset Liability Study: 12-31-2021

# Estimated Year 10 Net Surplus Position

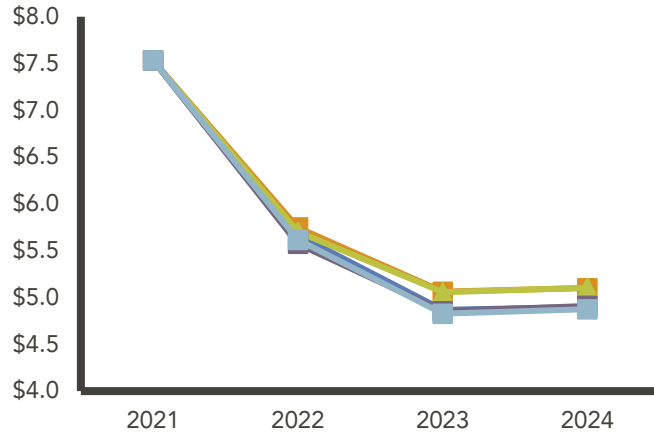


Percentile	Current	Option 1	Option 2	Option 3	Option 4
5%	-\$3.4	-\$3.2	-\$3.2	-\$3.3	-\$3.2
10%	-\$2.2	-\$2.1	-\$2.1	-\$2.1	-\$2.1
25%	-\$0.4	-\$0.4	-\$0.3	-\$0.3	-\$0.1
50%	\$2.3	\$2.1	\$2.1	\$2.4	\$2.7
75%	\$5.9	\$5.3	\$5.3	\$6.0	\$6.4
90%	\$9.7	\$8.6	\$8.7	\$9.9	\$10.4
95%	\$13.2	\$11.5	\$11.7	\$13.4	\$14.1

Note: Liability and benefit projections based on data from Conrad Siegel. Information based on Asset Liability Study: 12-31-2021

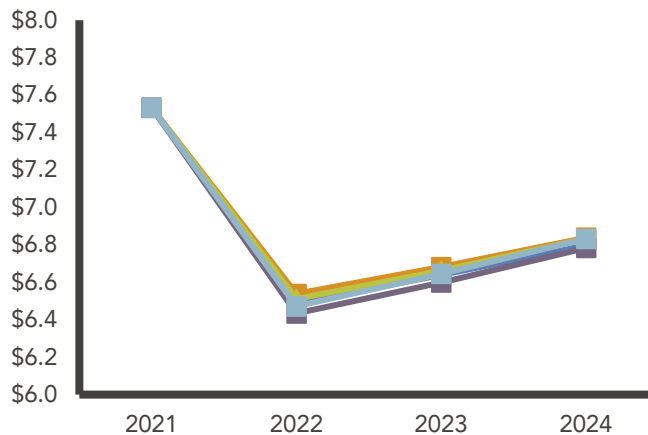
# Scenario Analysis

## 2008 Financial Crisis



	2022	2023	2024	Annualized Return
Current	-22.1%	-30.5%	-27.1%	-10.0%
Option 1	-21.0%	-27.8%	-24.4%	-8.9%
Option 2	-21.7%	-27.9%	-24.3%	-8.9%
Option 3	-23.4%	-30.6%	-26.9%	-9.9%
Option 4	-22.8%	-31.0%	-27.4%	-10.1%

## Equities Decline 20% for 1 Year



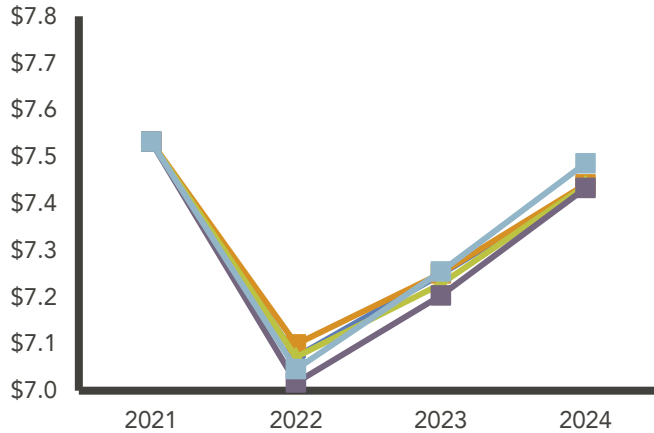
	2022	2023	2024	Annualized Return
Current	-11.2%	-6.5%	-1.4%	-0.5%
Option 1	-10.5%	-5.9%	-0.9%	-0.3%
Option 2	-10.9%	-6.2%	-1.0%	-0.3%
Option 3	-11.9%	-7.0%	-1.6%	-0.5%
Option 4	-11.4%	-6.4%	-0.9%	-0.3%

— Current    
 — Option 1    
 — Option 2    
 — Option 3    
 — Option 4

Source: Asset Allocation Study 12-31-2021

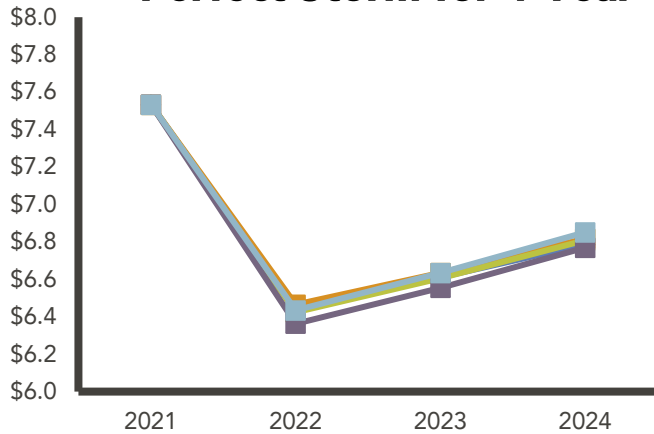
# Scenario Analysis

## 2011 U.S. Debt Crisis



	2022	2023	2024	Annualized Return
Current	-3.4%	1.6%	7.1%	2.3%
Option 1	-3.1%	1.6%	7.1%	2.3%
Option 2	-3.5%	1.3%	7.1%	2.3%
Option 3	-4.2%	1.0%	7.1%	2.3%
Option 4	-3.8%	1.7%	7.8%	2.5%

## Perfect Storm for 1 Year



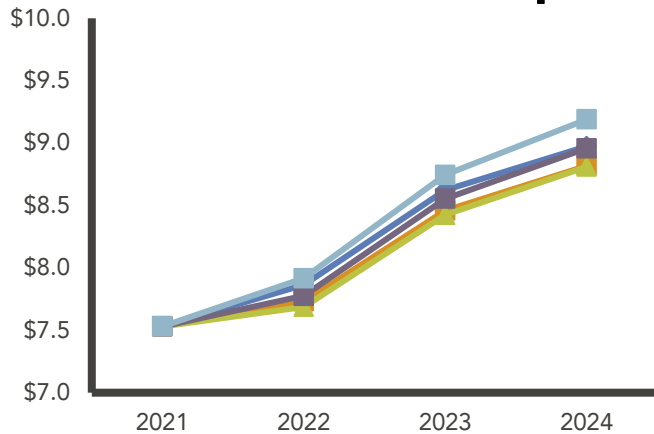
	2022	2023	2024	Annualized Return
Current	-11.8%	-6.9%	-1.6%	-0.5%
Option 1	-11.5%	-6.6%	-1.1%	-0.4%
Option 2	-12.1%	-6.9%	-1.2%	-0.4%
Option 3	-12.9%	-7.6%	-1.7%	-0.6%
Option 4	-11.9%	-6.5%	-0.6%	-0.2%

— Current    
 — Option 1    
 — Option 2    
 — Option 3    
 — Option 4

Source: Asset Allocation Study 12-31-2021

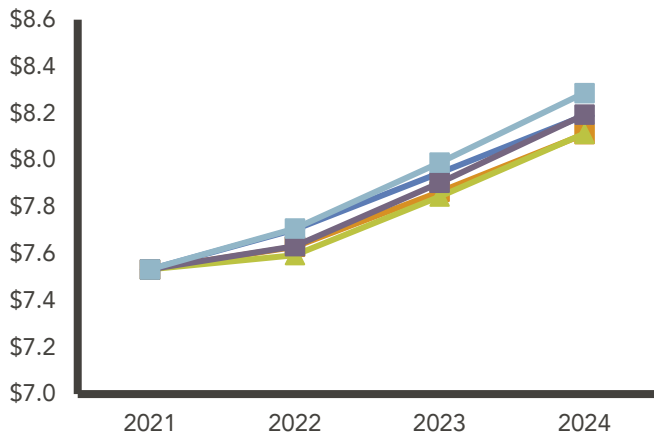
# Scenario Analysis

## 1981 Interest Rate Spike



	2022	2023	2024	Annualized Return
Current	7.1%	20.0%	27.7%	8.5%
Option 1	5.3%	17.9%	25.7%	7.9%
Option 2	4.7%	17.4%	25.6%	7.9%
Option 3	5.9%	19.1%	27.6%	8.5%
Option 4	7.8%	21.7%	30.7%	9.3%

## Interest Rates Rise 1% for 1 Year



	2022	2023	2024	Annualized Return
Current	4.9%	10.8%	17.1%	5.4%
Option 1	3.9%	9.8%	16.0%	5.1%
Option 2	3.5%	9.5%	16.1%	5.1%
Option 3	4.0%	10.3%	17.2%	5.4%
Option 4	5.0%	11.5%	18.4%	5.8%

— Current    
 — Option 1    
 — Option 2    
 — Option 3    
 — Option 4

Source: Asset Allocation Study 12-31-2021

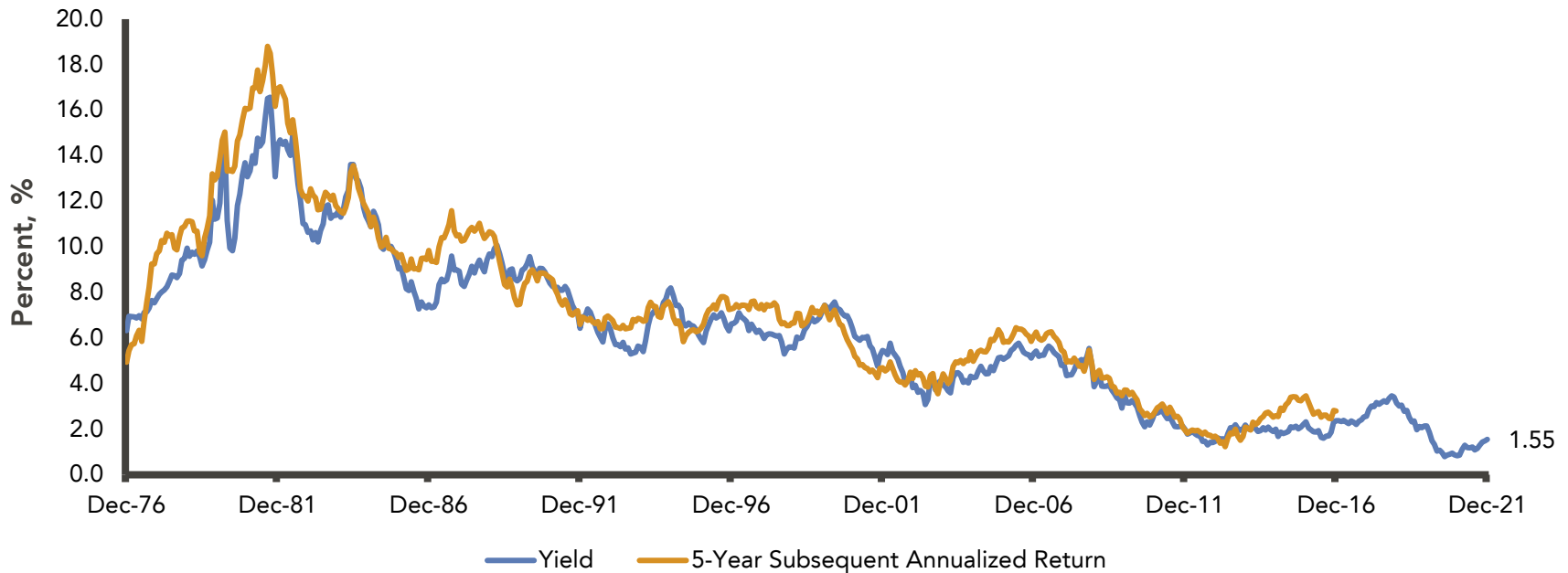
# Opportunistic Credit



# Core fixed income yields and returns

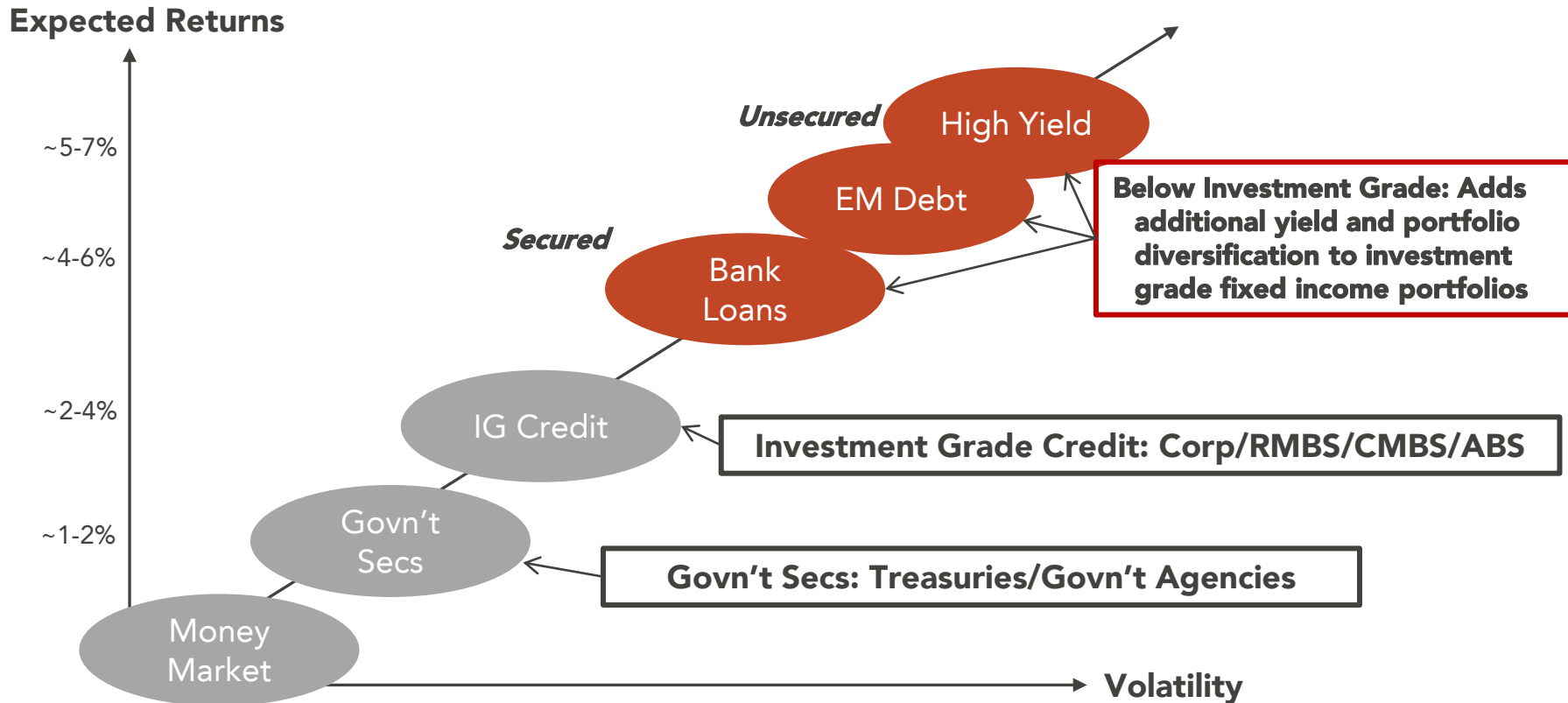
## Low fixed income yields signal low returns

### ▣ Yields and Subsequent Returns for Bloomberg Intermediate Aggregate Index



Source: Refinitiv.

# Fixed Income Return/Risk Spectrum



Source: December 31, 2021 Marquette Associates Asset Allocation Assumptions

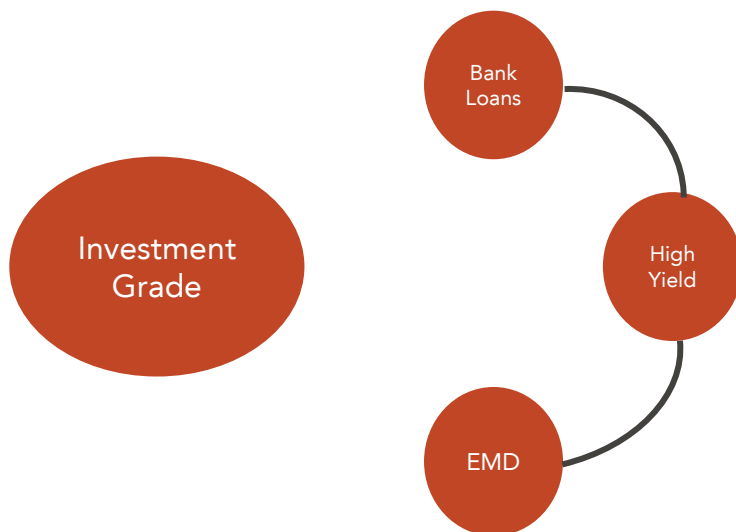
# Marquette's fixed income framework

What we expect from fixed income:

- Income
- Diversification
- Stability & principal protection

Capital Structure	Credit Rating	Typical Yield	Duration	Typical Default Rate	Hist. Recovery Rate Bankruptcy
Invest Grade	AAA – BBB	2-4%	6.50	N/A	N/A
Bank Loans	BB – CCC	5-8%	0.25	2-4%	65%
High Yield	BB - CCC	6-9%	4.50	3-5%	45%

How we build a fixed income portfolio:



- **Investment Grade fixed income** used for principal protection
- Satellites used to provide additional income, diversification and return enhancement
- **Utilize Opportunistic Credit Manager** who can tactically allocate to satellite positions based on market environment and opportunity set

Source: Moody's, Credit Suisse

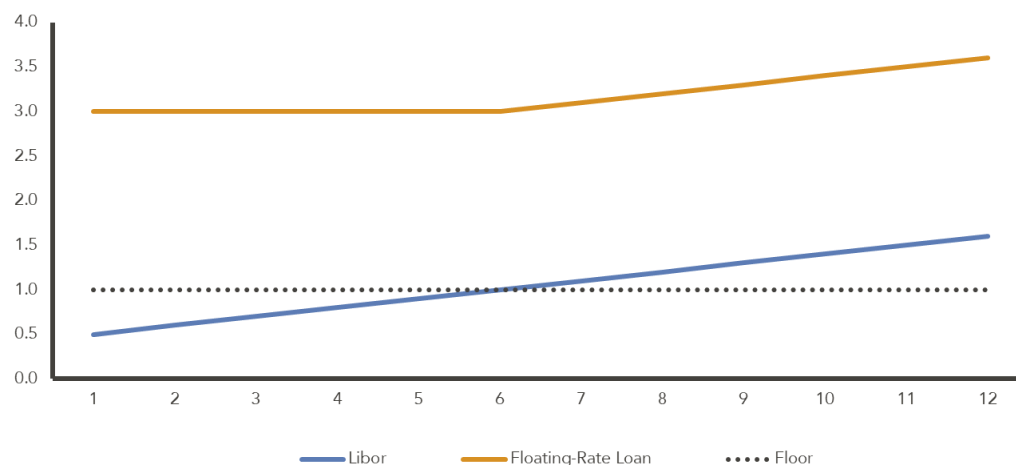
# Definition of high yield

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- The high yield asset class is situated between core bonds and equities in the risk/return spectrum
- A high yield bond is defined as a debt security issued by a corporation with a below BBB credit rating.
- These below investment grade credit ratings indicate a greater chance of default but also comes with higher interest rates, enticing lenders with higher yields given the inherent higher risk.
- Initially created for corporate “Fallen Angels”, this market grew in the 1980’s as corporations partnered with investment banks for M&A deals or leveraged buyouts. As of the end of 2021, this remains an established market with roughly \$1 trillion in bonds outstanding.
- Though considered a liquid market, in periods of market stress, investors can see market volatility as interest rate spreads widen, given the underlying credit and default risks that appear more relevant.

# Definition of bank loans

- The bank loan (also known as “leveraged loan” and “senior secured loan”) asset class is situated between core bonds and high yield bonds in the risk/return spectrum
- These loans are secured by a company’s assets and have the unique characteristic of providing investors a floating interest rate, which benefits investors during rising interest rate environments
- Bank loans typically outperform core bonds in rising rate environments, and typically outperform high yield bonds in negative returning markets
- An interest rate floor protects investors if rates were to fall



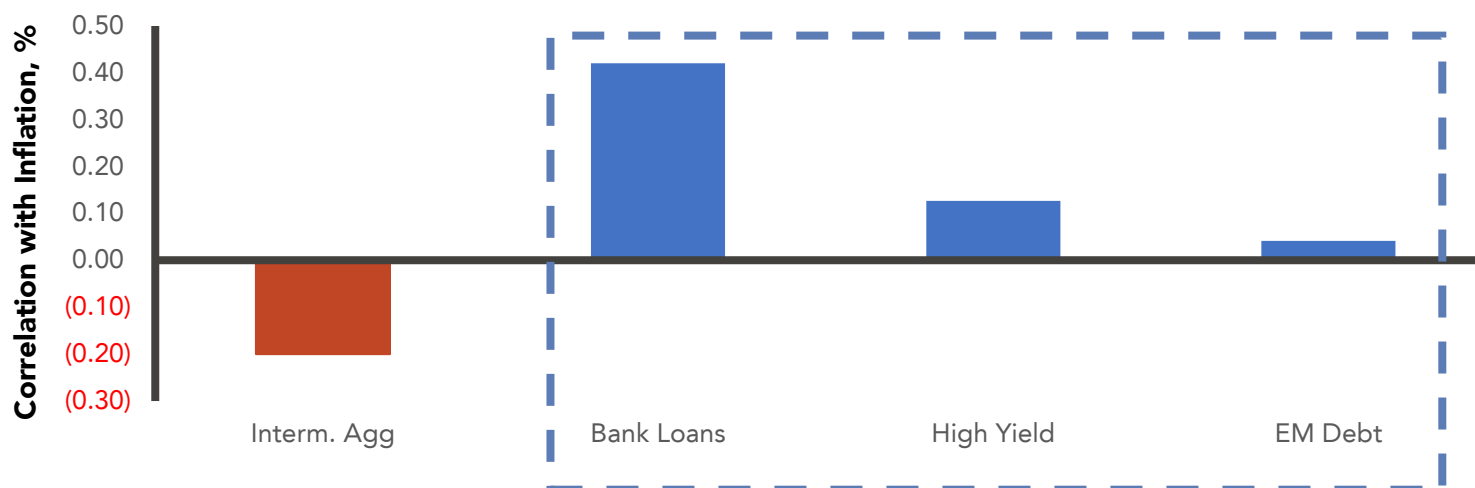
# Definition of emerging markets debt

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- Emerging Markets Debt are bonds issued by developing countries or companies domiciled in developing countries (ie. China, Brazil, India)
- Emerging Markets Debt historically have provided higher relative yields to their developed country counterparts, given higher risks
  - Smaller Nations with more concentrated economies
  - Less liquid and transparent markets
  - Political and regulatory challenges
- Emerging Markets Debt may provide inflation hedging capabilities
  - Many countries have commodity focused economies
  - Higher economic growth in emerging economies vs. developed markets
- There is a large number of countries and regions within emerging markets universe, provides diversification benefits
- Bonds are usually purchased in hard currency (USD, Euro) as well as Local Currency in the more developed countries

# Fixed income correlations with inflation

Within fixed income, plus sector allocations have more closely aligned with increasing costs/liability growth compared to investment grade fixed income.



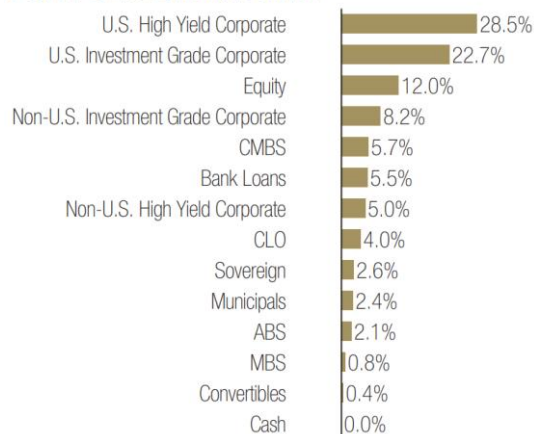
Analysis uses quarterly data and covers the longest common time period (July 2000 – September 2021).

# Lord Abbett Bond Debenture Fund

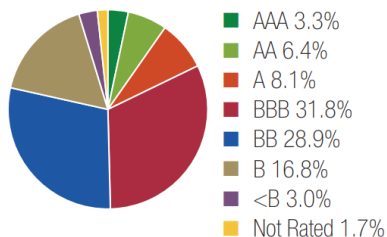
**Investment Description:** This strategy seeks attractive risk adjusted returns by optimally positioning the portfolio along the credit curve, maximizing exposure to the most favored industries, security selection within those industries and selecting the best value within those company's capital structures. This portfolio will invest in high yield, loans, EM Debt, investment grade bonds and public equity securities.

Ticker	LBNVX
Expense Ratio	0.51%
Coupon	4.36%
Avg. Credit Quality	BB
Effective Duration	5.5 yrs.

## PORTFOLIO BREAKDOWN



## CREDIT QUALITY DISTRIBUTION



	1 Yr.	3 Yrs.	5 Yrs.	10 Yrs.
LBNVX	3.5%	8.3%	6.1%	6.6%
BBG Barclays Int. G/C	-1.4%	3.9%	2.9%	2.4%

	2021	2020	2019	2018	2017
LBNVX	3.5%	7.9%	13.7%	-3.6%	9.5%
BBG Barclays Int. G/C	-1.4%	6.4%	6.8%	0.9%	2.1%

## TEN LARGEST HOLDINGS

Crowdstrike Holdings Inc	0.7%	Snowflake Inc	0.4%
Sprint Capital Corp	0.5%	HCA Inc	0.4%
Occidental Petroleum Corp	0.4%	Intuit Inc	0.4%
BX Trust 2021-ARIA	0.4%	Trex Co Inc	0.4%
Kraft Heinz Foods Co	0.4%	MEG Energy Corp	0.4%

\*Data based on Lord Abbett's 12-31-21 Fact Sheet



# Nuveen High Yield Income Fund

**Investment Description:** A total fixed income market approach to investing, focused on USD high yield and bank loans to provide attractive risk adjusted returns over a full market cycle. The strategy seeks to outperform the broader high yield bond market through providing more downside protection than the high yield market during market sell-offs and attractive income, through active bond management. Typically invests in more liquid issuers.

Ticker	NCSRX
Expense Ratio	0.63%
Coupon	5.49%
Avg. Credit Quality	B
Effective Duration	3.4 yrs.

## Sector allocation (%)<sup>2</sup>

	Fund net assets
U.S. High Yield Corporates	62.5
Senior Loans	17.5
Non-US DM High Yield Corporates	8.9
Emerging Market Debt	1.0
Preferred	0.9
Investment Grade Corporates	0.0
Other Sectors	1.1
Cash and Equivalents	8.2

## Credit quality (%)<sup>3</sup>

	Fund net assets
BBB	0.0
BB	29.5
B	48.5
CCC	11.9
CC	0.9
NR	1.2
Cash and Equivalents	8.2

	1 Yr.	3 Yrs.	5 Yrs.	10 Yrs.
NCSRX	6.7%	7.3%	5.5%	6.3%
BBG Barclays Int. G/C	-1.4%	3.9%	2.9%	2.4%

	2021	2020	2019	2018	2017
NCSRX	6.7%	2.1%	13.4%	-0.5%	6.2%
BBG Barclays Int. G/C	-1.4%	6.4%	6.8%	0.9%	2.1%

## Top 10 Holdings

Imola Merger Corp	1.4%	Revlon Consumer Products	1.0%
Occidental Petro	1.3%	Tenet Healthcare Corp	0.9%
Finastra USA Inc.	1.0%	Clear Channel Outdoor Holdings	0.9%
Ahead DB Holdings	1.0%	Primo Water Holdings	0.8%
CCO Holdings	1.0%	Surgery Center	0.8%

\*Data based on Nuveen's 12-31-21 Fact Sheet

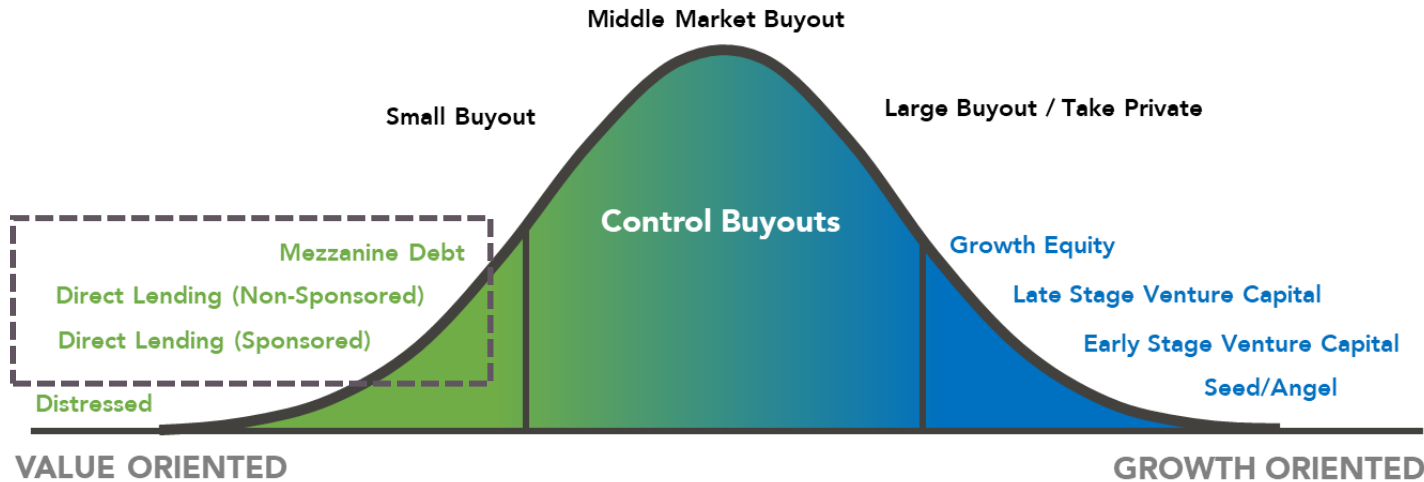
# Private Debt

# Private Markets Introduction

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- Private markets includes privately held debt and equity investments
- The global private equity and debt industry currently manages approximately \$3.0 trillion in assets, as the industry has doubled in size over the past decade
- Private markets are broken down into five investment categories:
  - Venture Capital
  - Growth Equity
  - Buyout
  - **Private Debt**
  - Distressed

# Private markets segmentation



Sub Category	Expected Return	Financing	Duration of Investment	Relative Risk	Stage	Success Rate	Ownership Stake
Venture Capital	20%+	100% Equity	5 years +	High	Early	Low	Less than 50%
Growth Equity	15% - 20%	100% Equity	3-5 years +	Medium-High	Early Growth	Medium	Less than 50%
Buyout	13% - 20%	100% Equity	3-5 years +	Medium	Mature	Medium	More than 50%
Private Debt	7% - 15%	100% Debt	1-5 years +	Low	Mature	High	None
Distressed	Varies	Varies	1-5 years +	Low - Medium	Mature - Declining	Medium	0 - 100%

Source: Marquette Associates. This table represents Marquette's best estimate of typical returns, risk, duration, and investment style of each investment category.

# Private Debt: Introduction

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- Private debt are loans originated by non-bank lenders for private and public companies
- Private debt is an established asset class which has existed for decades. Historically these loans were issued by national and regional banks but due to regulatory constraints, these banks have significantly reduced their exposure and investment managers have filled this void
- For investors, these loans can be accessed across the capital structure from senior secured loans to junior capital tranches
- Over the past decade, private debt has provided attractive income (+8%), yielding more than public fixed income
- The majority of private debt offers an interest rate hedge (inflation hedge) while having a duration of three to five years

# Private Debt characteristics

Provides an allocation to an area of the market less accessed in public credit

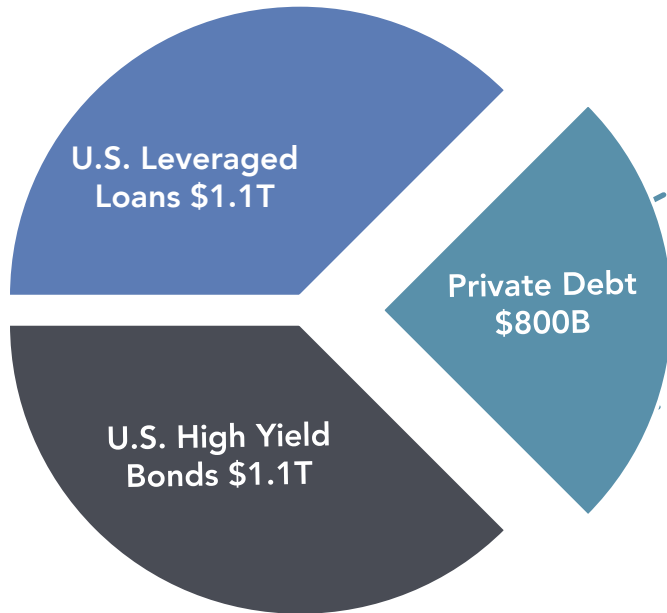
	High Yield Bonds	Private Debt <small>(Direct Lending, Mezzanine, Distressed, Special Situations, Venture Debt)</small>	Bank Loans
<b>Maturity</b>	7–10+ Years	3–5 Years	3–6 Years
<b>Seniority</b>	Subordinate	Both (Senior & Subordinate)	Senior
<b>Securitization</b>	Unsecured	Both (Secured & Unsecured)	Secured
<b>Rate Structure</b>	Fixed Rate	Floating Rate	Floating Rate
<b>Target Company Size</b>	\$300M–\$2B EBITDA <sup>1</sup>	<b>\$5M–\$100M EBITDA<sup>1</sup></b>	<b>\$300M–\$2B EBITDA<sup>1</sup></b>
<b>Average Deal Size</b>	~\$500M	<b>~\$5M–\$100M</b>	~\$400M
<b>Origination</b>	Bank Origination	<b>Non-Bank / Asset Mgr Origination</b>	Bank Origination

Source: Preqin; <sup>1</sup> The Annual Manual; U.S. Leveraged Finance Primer

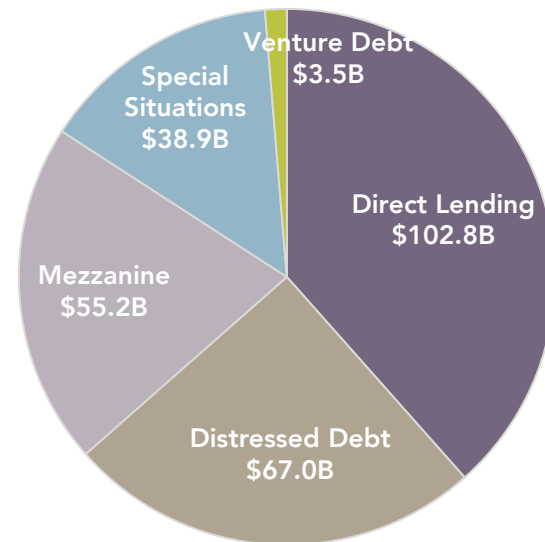
# The private debt market

Private Credit is a well established and diversified asset class

U.S. non-investment grade credit market is ~\$3 Trillion



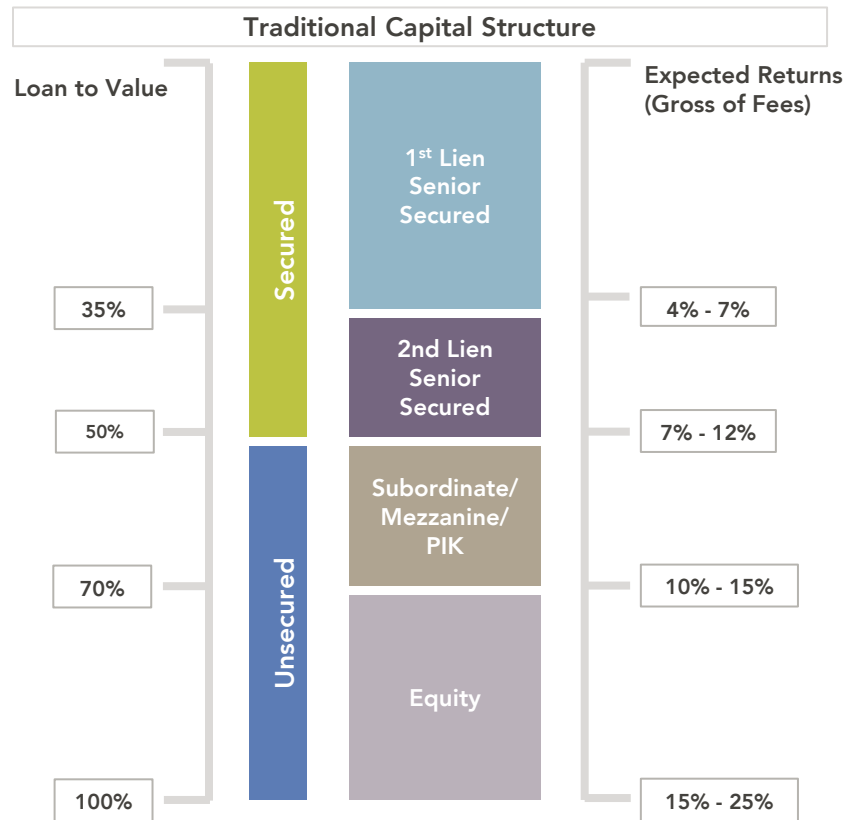
Private Debt provides capital to many different investment areas



Source: Fortress

# Traditional private business capital structure

Senior capitalized 1<sup>st</sup> lien loans have attractive relative yields (4-7%). When adding fund leverage, they have historically generated double-digit net returns. In contrast, lower capital tranches have double digit return projections (7-12%) but also increased financial risks (ie. credit, liquidity and market) relative to 1<sup>st</sup> lien loans.

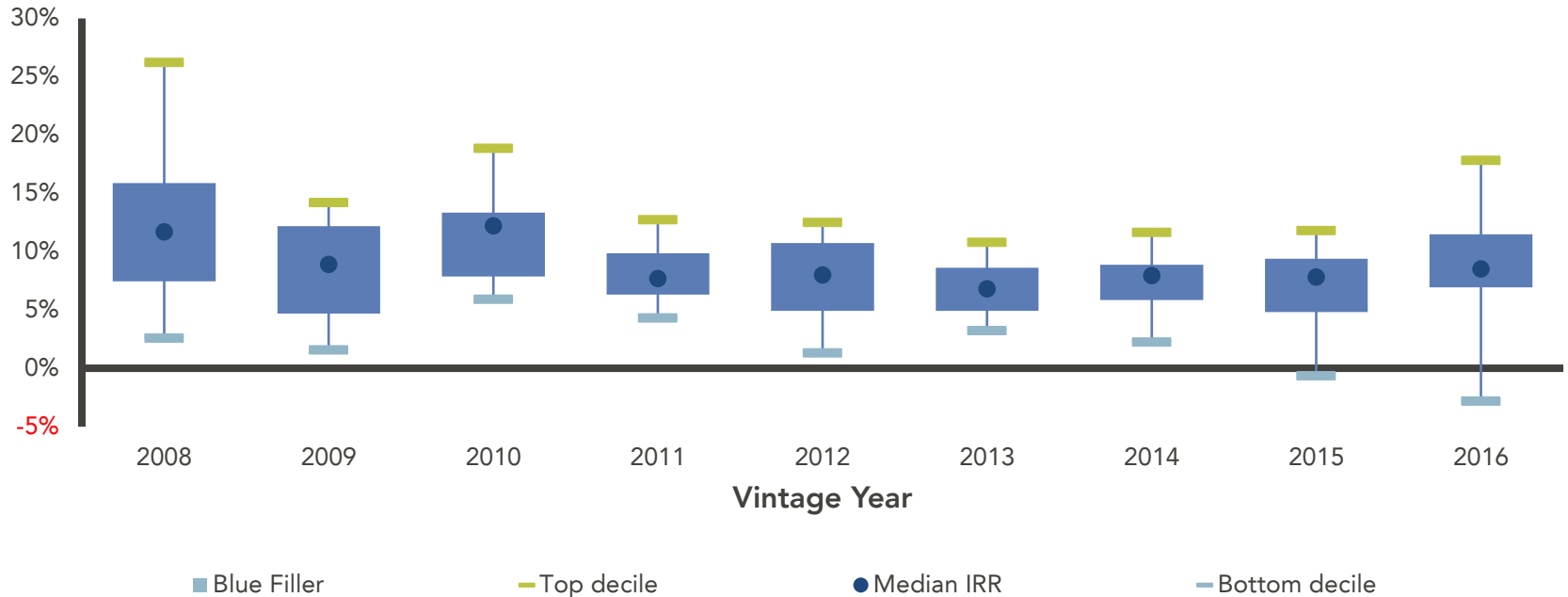




# Stable vintage year performance

For nearly 10 years, private credit has provided investors with a stable return, producing average returns over 8% on an annual basis. This consistent performance, provides a strong complement to traditional fixed income.

Private credit returns by vintage year

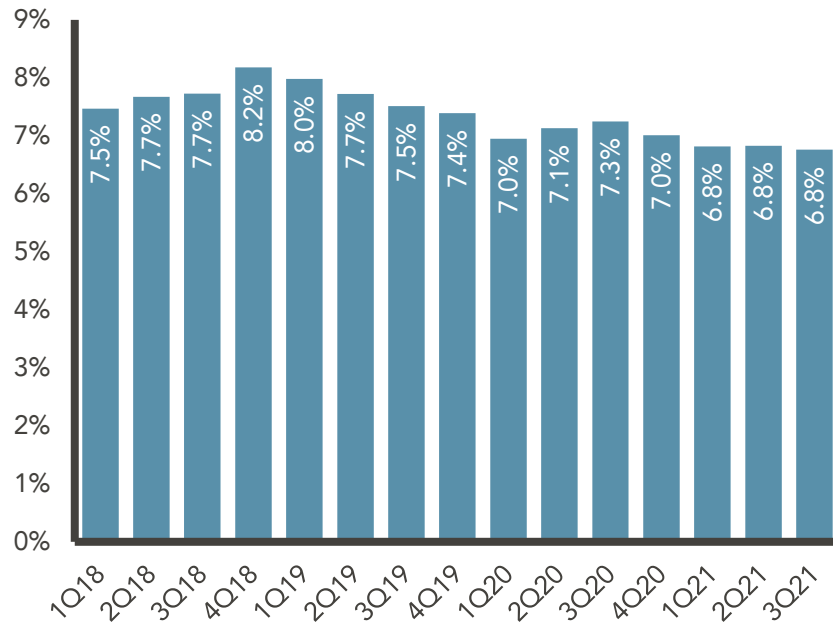


Source: Pitchbook

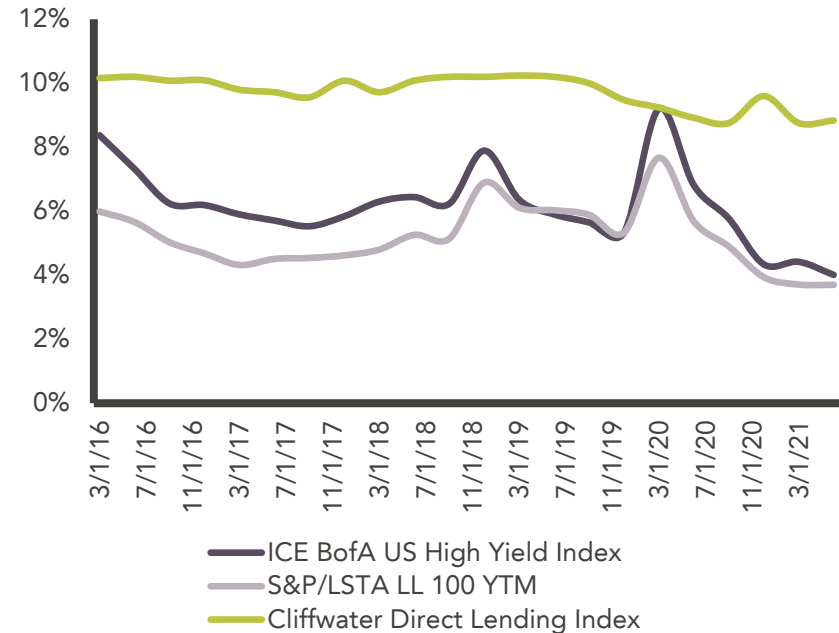
# Private credit premiums hold steady

Relative to high yield bonds, private credit is higher in the capital structure and provides ~200bps of yield premium. Compared to 10-year Treasury yields, private credit offers more than 550 bps of yield premium.

↘ Avg. first lien middle market yield



↘ Private credit yields vs. traditional fixed income yield



Sources: ICE BofA, Cliffwater, S&P LSTA, Refinitiv LPC

# Open-ended Private Market Investments

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## Access to private market investments with more frequent liquidity

- Fund of funds:
  - Private Credit: senior direct and senior syndicated loans, may hold opportunistic public credit for liquidity and on-going market opportunities
- Globally diversified
- Evergreen fund structure
- Liquidity terms
  - Private debt: Quarterly redemption and monthly inflows
- Fees charged on committed capital only

\*Redemptions will first be met with subscriptions on a quarterly basis. Annually, redemptions not met with subscriptions will be placed in an annual runoff sleeve in an amount up to 25% of the NAV of the master fund.

# Advantages of Open-ended Private Market Vehicles

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## Challenges of Closed-end

- Investment lag between fund commitment and capital being called
- Distributions create cash drag and challenges to hit target return
- Closed end funds are illiquid with 8-10+ year fund life
- Concentration in underlying funds lack diversification
- Fees charged on committed capital, not just capital invested

## Open-end Solution

- ✓ Immediate exposure to a diversified portfolio, reduces j-curve
- ✓ Flexibility to reinvest fund distributions or receive them
- ✓ More liquid vehicle, quarterly redemption
- ✓ Day 1 invested: Diversified by sector, region and vintage year
- ✓ Fees only charged on invested capital

# Appendix

# Asset Class Assumptions

Police Pension Return Target: 7.10% | Non-Uniform Pension Return Target: 6.75%

	12/31/2021	
	10 Year Return Assumptions	10 Year Risk Assumptions
<b>U.S. Equity</b>		
U.S. Large Cap Core	7.0%	18.4%
U.S. Mid Cap Core	7.2%	19.2%
U.S. Small Cap Value	8.1%	20.6%
<b>Non-US Equity</b>		
Broad Non-U.S. Equity	7.4%	24.0%
Broad Non-U.S. Equity Value	7.1%	26.0%
Developed Small Cap	7.5%	29.2%
Emerging Markets	7.4%	34.2%
<b>Global Equity</b>		
Global Equity	7.4%	21.2%
Global Low Volatility	6.7%	13.0%
<b>Defensive Equity</b>		
Defensive Equity	6.1%	10.3%
<b>Real Estate</b>		
Core Real Estate	6.5%	5.2%
<b>Fixed Income</b>		
Int Govn't/Credit	1.6%	1.4%
Opportunistic Credit	5.6%	6.4%
Private Credit	9.6%	8.2%

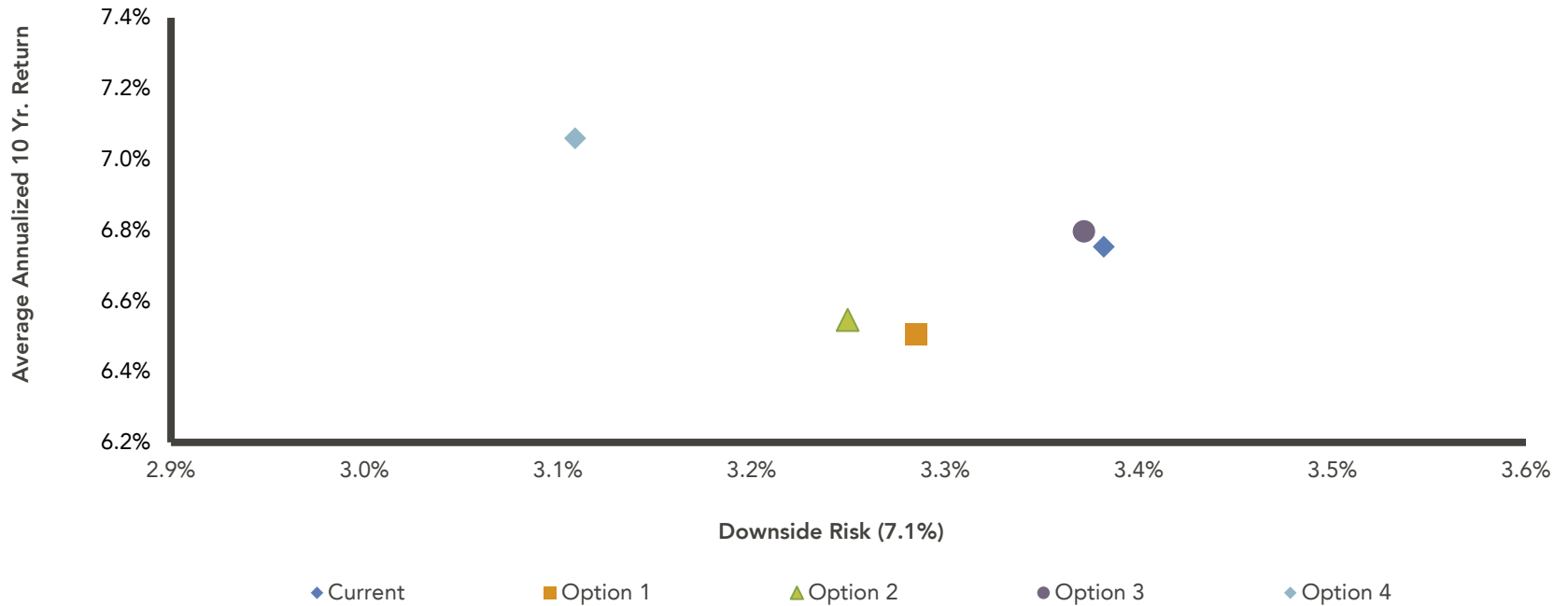
Data from Marquette Asset Allocation Studies

# Asset class outlook for the next 6 to 12 months

		CHANGE	HEADWINDS	NEUTRAL	TAILWINDS	TAKEAWAYS
U.S. Equities	Large-cap		□ □	■	□ □	<ul style="list-style-type: none"> <li>U.S.: Increasingly restrictive monetary policy and the potential for prolonged inflation could drive volatility higher for U.S. equity markets in 2022. Specifically, a rise in interest rates could be particularly detrimental to growth-oriented equities, which have already undergone repricing in recent weeks. Small-cap value continues to present possible opportunities, as the space currently exhibits relatively attractive multiples and may benefit from an uptick in rates given the extent to which it is comprised of companies in the financials sector. Finally, it is important to remember that future U.S. equity market returns will likely not keep pace with those of recent years, which have been historic in magnitude.</li> </ul>
	Mid-cap		□ □	■	□ □	
	Small-cap		□ □	□	■ □	
	Value		□ □	■	□ □	
	Growth		□ ■	□	□ □	
Non-U.S. Equities	Developed large-cap		□ □	□	■ □	<ul style="list-style-type: none"> <li>Non-U.S.: Central banks in developed countries are expected to start raising rates, joining several emerging market countries that started the hike cycle in 2021. With higher inflation and higher interest rates, we expect a stronger U.S. dollar in the short term. Historically EM equities have a negative correlation with dollar movement, so we expect this to be a headwind for shorter-term performance. Additionally, there are several geopolitical events where bad news is likely to have an outsized negative impact on EM compared to DM. For these reasons we are downgrading EM. On the flip side, we think a rising rate environment may favor developed non-U.S. stocks. These markets feature more exposure to financials and other cyclicals that can benefit from higher interest rates.</li> </ul>
	Developed small-cap		□ □	□	■ □	
	Emerging markets	▼	■ □	□	□ □	
Fixed Income	Core bonds		□ □	■	□ □	<ul style="list-style-type: none"> <li>Fixed Income: Rates are low, spreads are tight, and the Fed is expected to hike rates during 2022. However, credit fundamentals are healthy, and defaults are low. Bank loans' floating rate mechanism should help to preserve value as rates rise and inflation remains high. EMD has further runway for spread tightening and presents the most attractive valuation among fixed income sectors. Core bonds are still reliable for liquidity and downside protection in the event of a market correction.</li> </ul>
	Bank loans	▲	□ □	■	□ □	
	High yield		□ ■	□	□ □	
	EMD		□ □	□	■ □	
Real Assets	Core real estate	▲	□ □	■	□ □	<ul style="list-style-type: none"> <li>Real Assets: Relative outperformance opportunities are expected to exist in a post-pandemic environment within industrial, multifamily, and select specialty sectors. However, increasing inflationary concerns and a rising interest rate environment may exert downward pressure on valuations across most sectors. Investors should continue to allocate to infrastructure as an effective vehicle to manage long-term liabilities and inflation.</li> </ul>
	Value-add real estate		□ □	□	■ □	
	Infrastructure		□ □	□	■ □	
Hedge Funds	Equity long/short		□ □	□	■ □	<ul style="list-style-type: none"> <li>Private Equity: Private equity remains an attractive asset class with superior upside potential. Particularly attractive are the small buy-out and early-stage venture sectors while we are cautious on late-stage venture. Risks to monitor; increasing competition for assets and the impact of macro risks on the asset class, including but not limited to rising rates, wage pressures, and inflation.</li> </ul>
	Credit		□ ■	□	□ □	
	VRP		□ □	■	□ □	
Private Equity	Buyout		□ □	□	■ □	<ul style="list-style-type: none"> <li>Private Credit: Direct lending is an attractive asset class against the backdrop of increased inflation and a potential rising rate environment, given a majority of loans contain floating interest rates linked to LIBOR. Investors continue to benefit from a strong structure and yield premium relative to traditional fixed income in a yield-starved environment. Distressed and opportunistic investment opportunities are few and far between in the current market and do not exhibit strong risk and reward dynamics compared to direct lending.</li> </ul>
	Venture Capital		□ □	□	■ □	
Private Credit	Direct lending		□ □	□	□ ■	
	Distressed/opportunistic	▼	□ ■	□	□ □	

For illustration only. These views apply to a 6- to 12-month horizon; arrows in Change column represent change in view since last quarter. This summary of individual asset class views shows relative direction and strength of conviction but is independent of portfolio construction considerations. These views should not be construed as a recommended portfolio or investment advice. Past performance does not imply future returns.

# Police: Avg Ann. 10 Yr. Return/Downside Risk

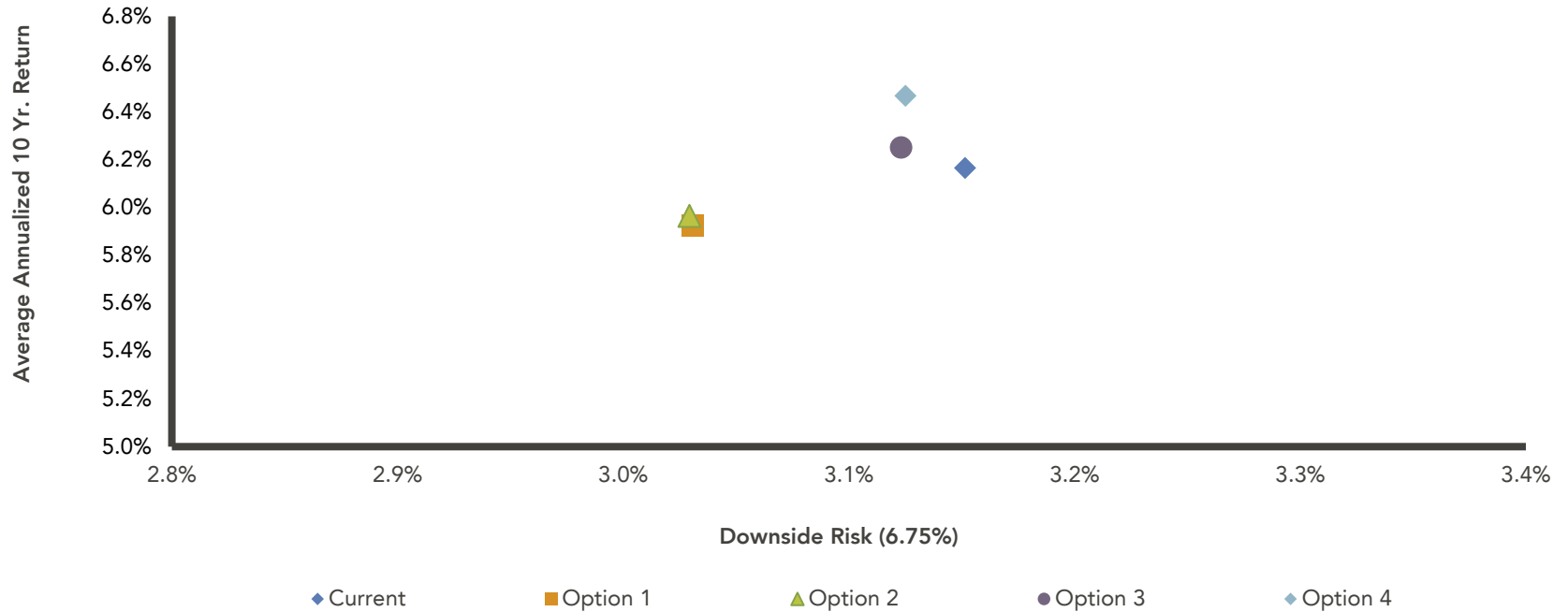


Percentile	Current	Option 1	Option 2	Option 3	Option 4
Downside Probability (7.1%)	54.3%	56.5%	56.4%	53.8%	51.7%
Downside Risk (7.1%)	3.4%	3.3%	3.2%	3.4%	3.1%
Downside Probability (0%)	5.1%	4.5%	4.4%	4.9%	3.7%
Downside Risk (0%)	1.9%	1.7%	1.7%	1.9%	1.7%

Source: Marquette Associates – 12-31-21 Asset Allocation Study



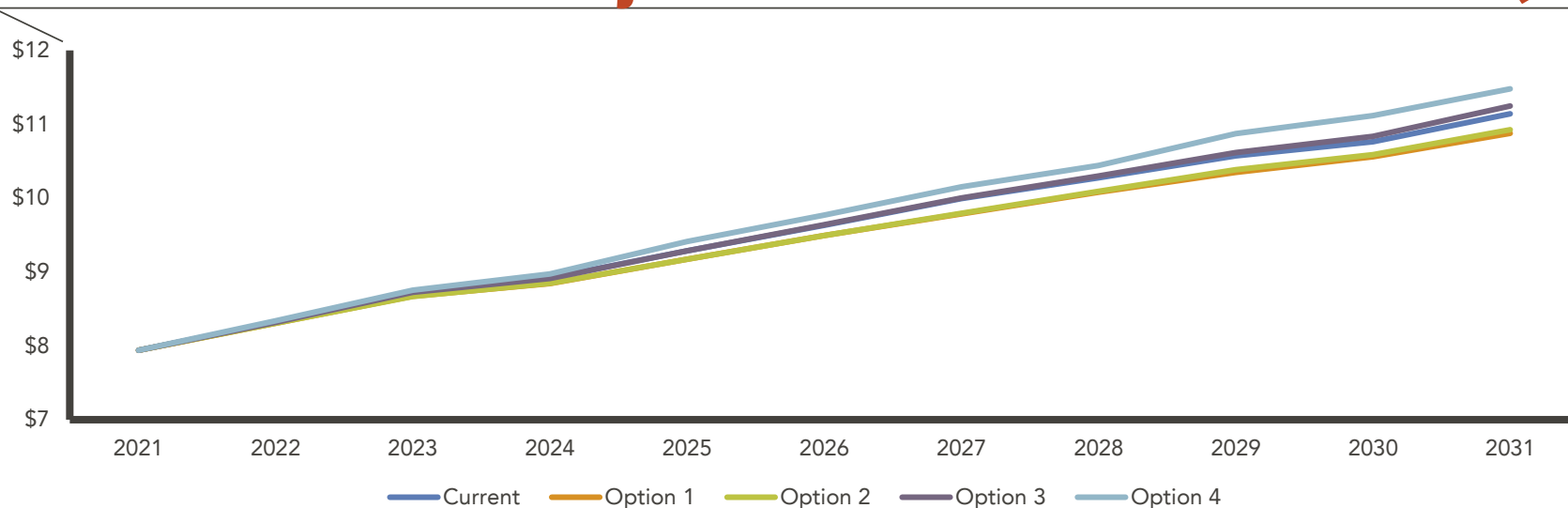
# Non-Uniform: Avg Ann 10 Yr Ret/Downside Risk



Percentile	Current	Option 1	Option 2	Option 3	Option 4
Downside Probability (6.75%)	57.6%	60.9%	60.1%	56.6%	53.6%
Downside Risk (6.75%)	3.2%	3.0%	3.0%	3.1%	3.1%
Downside Probability (0%)	5.1%	4.4%	4.3%	4.9%	4.5%
Downside Risk (0%)	1.7%	1.5%	1.5%	1.7%	1.7%

Source: Marquette Associates – 12-31-21 Asset Allocation Study

# Non-Uniform: Med Projected Mrkt Value of Portfolios (\$M)



Year	Current	Option 1	Option 2	Option 3	Option 4
2022	\$8.3	\$8.3	\$8.3	\$8.3	\$8.3
2023	\$8.7	\$8.7	\$8.7	\$8.7	\$8.8
2024	\$8.9	\$8.8	\$8.8	\$8.9	\$9.0
2025	\$9.3	\$9.2	\$9.2	\$9.3	\$9.4
2026	\$9.6	\$9.5	\$9.5	\$9.6	\$9.8
2027	\$10.0	\$9.8	\$9.8	\$10.0	\$10.2
2028	\$10.3	\$10.1	\$10.1	\$10.3	\$10.4
2029	\$10.6	\$10.3	\$10.4	\$10.6	\$10.9
2030	\$10.8	\$10.6	\$10.6	\$10.8	\$11.1
2031	\$11.1	\$10.9	\$10.9	\$11.2	\$11.5

Note: Liability and benefit projections based on data from Conrad Siegel. Information based on Asset Liability Study: 12-31-2021

# Fixed Income: Defining the Asset Class

## Investment Grade (Int Gov/Credit)

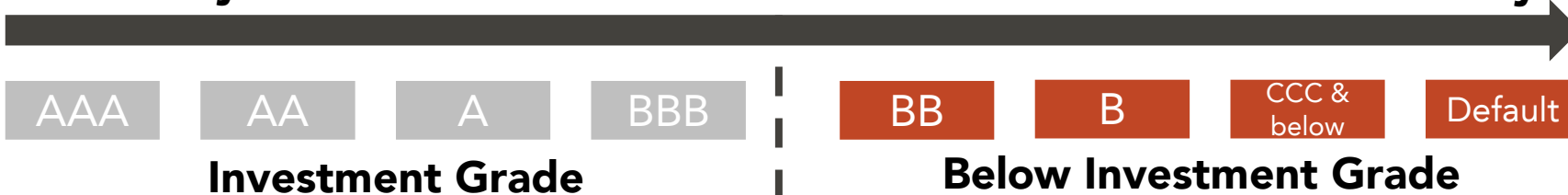
- Instrument that allows governments, companies and other types of issuers to borrow money from investors. Perceived to be less risky than below investment grade, given the inherent underlying fundamentals for the issuer (higher principal security and better liquidity)
- Investment Grade Bonds provide:**
  - Regular and dependable cash flows**
  - Principal protection especially in market downturns**
  - Diversification benefits to equity portfolios (low correlation)**

## Below Investment Grade

- Below investment grade bonds offer a higher yield than investment grade bonds because of their higher risk of default
- These bonds fall between investment grade bonds (core bonds) and public equities in their risk/return spectrum
- Below Investment Grade bonds have historically outperformed core bonds and underperformed equities in periods of economic advancement and underperformed core bonds and outperformed public equities during market corrections
- Diversifying by bond type (high yield corporates, bank loans and EM Debt), by issuer, industries and regions can alleviate downside risks and enhance risk adjusted returns**

Least Risky

Most Risky



# Historical statistics – since 1992

**Bank Loans and High yield bonds feature higher volatility than core bonds, but higher risk-adjusted returns than equities**

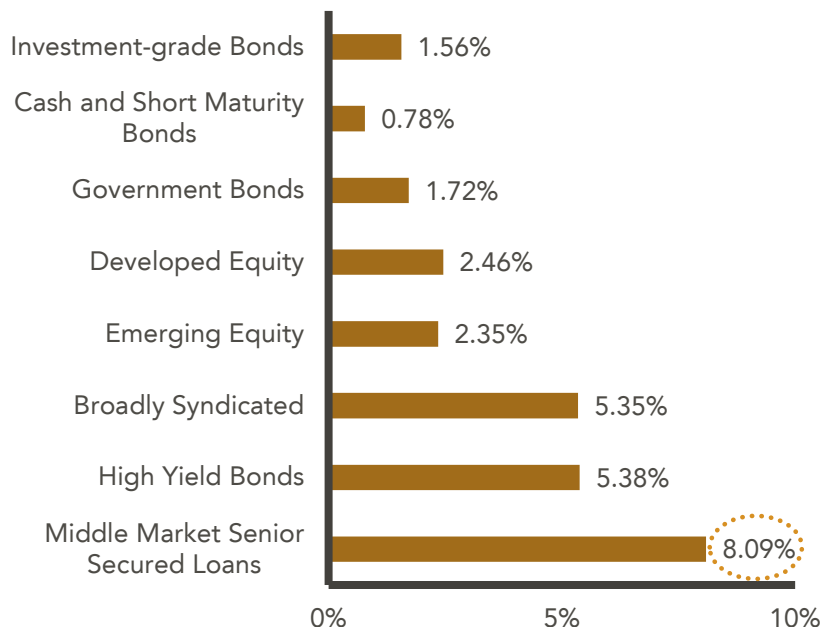
	Since Inception Annualized		
	Avg. Return	St Dev	Sharpe Ratio
Core Bond	5.4%	3.5%	0.84
Bank Loans	5.5%	5.4%	0.55
High Yield	7.7%	8.2%	0.62
U.S. Equities	10.8%	14.8%	0.56

Source: Markov Processes International. Data are through December 31, 2021.

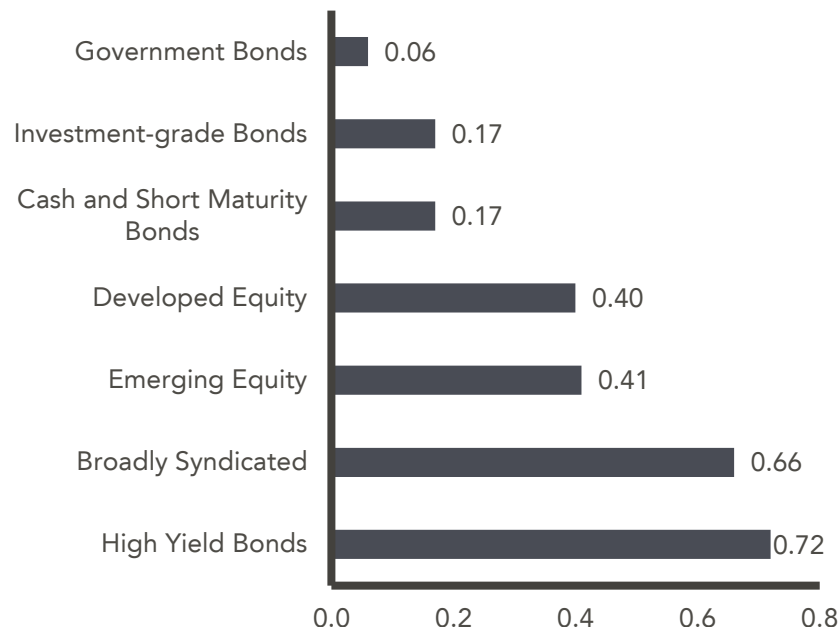
# Private debt historical yield & correlations

**Middle market loans have offered high yields and exhibited limited correlation to public market asset classes**

▾ 10-year Middle Market Asset Class Yields (%)



▾ 10-year Correlations to Middle Market Private Credit

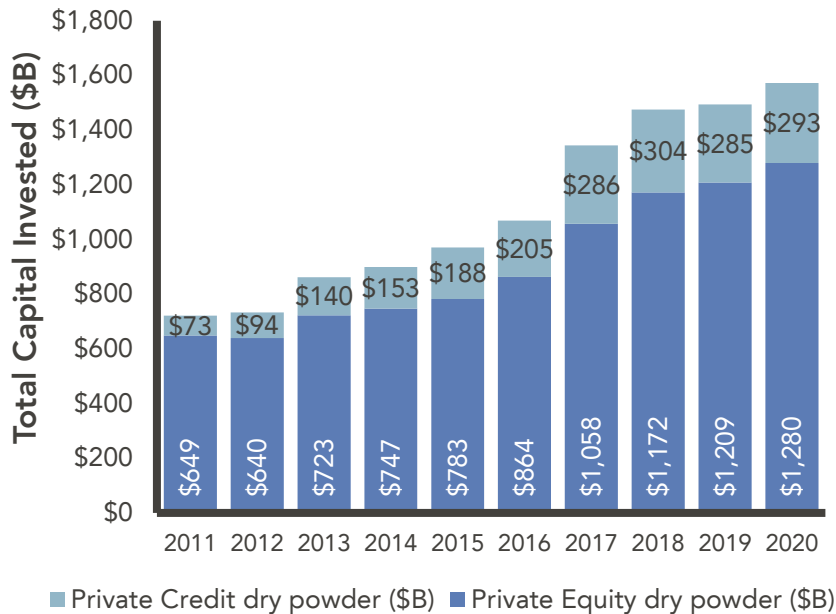


Source: Churchill Asset Management; Middle market loans: S&P LSTA Middle Market Index; HY bonds: S&P LSTA BB-B Index; Broadly syndicated: S&P LSTA Loan 100 Index; Emerging equity: MSCI EM; Developed equity: MSCI World; Cash: Barclays Global Treasury 1-3 Year; Government bonds: Bloomberg Barclays Global Treasury 7-10 Year; for the 10-year period ending 31 Mar 2019.

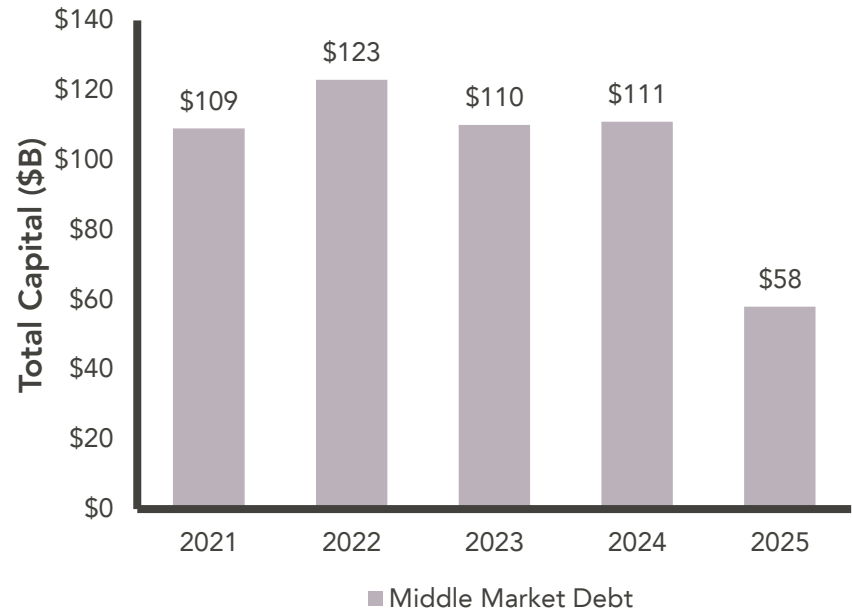
# Visible and increasing demand for private debt

- Private equity dry powder is increasing as fundraising totals continue to grow. Sponsors have a greater need to put capital to work; this pent-up capital will require the financing needs of private debt
- Significant debt refinancing with visible maturity cliff in the years ahead as over \$550 billion in debt will terminate by 2025, creating additional opportunity for private debt managers

Private debt has room for further growth (\$B)



Middle market debt maturity wall (\$B)

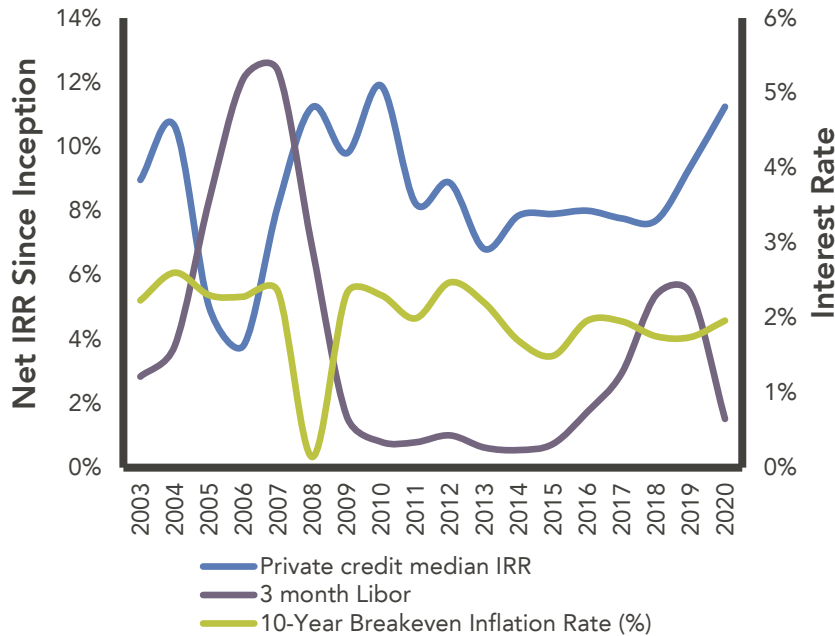


Sources: Pitchbook and Annaly

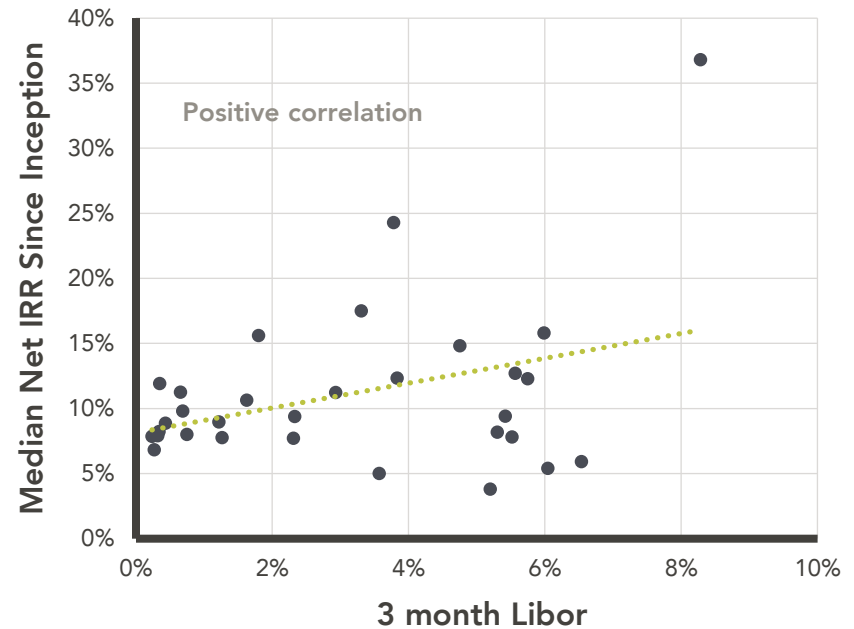
# Inflation & Libor: How it impacts private credit

Floating interest rates and Libor floors are synonymous with private credit investments. Historically, there is a positive correlation between private credit IRRs and increasing Libor rates. Furthermore, there is a positive correlation amongst inflation and Libor rates.

↳ Median annual IRRs relative to Libor & inflation



↳ Correlation of annual median IRRs & Libor rates



Sources: Churchill, S&P LCD, Pitchbook

# Stress Scenarios

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**Baseline:** Normal market conditions. Note the results of this scenario may differ from the asset allocation study: the asset allocation study is a stochastic Monte Carlo simulation whereas the stress scenarios are deterministic.

**2008 Financial Crisis (October 2007 – Feb 2009):** The financial crisis of 2007–09 is considered by many economists to have been the worst financial crisis since the Great Depression of the 1930s. It threatened the collapse of large financial institutions, which was prevented by the bailout of banks by national governments, but stock markets still dropped worldwide. Equities around the world dropped 40% - 50% and the 10-year U.S. Treasury fell from 4.5% to 3.1%.

**Black Monday (October 1987):** On Monday, October 19, 1987, stock markets around the world crashed. The crash began in Hong Kong and spread west to Europe, hitting the United States after other markets had already declined by a significant margin. The Dow Jones Industrial Average (DJIA) fell exactly 508 points to 1,738.74 (-22.6%) and the 10-year U.S. Treasury dropped from 9.6% to 8.9%.

**2011 U.S. Debt Ceiling Crisis and Downgrade (June through September 2011):** The United States debt-ceiling crisis of 2011 was a stage in the ongoing political debate in the United States Congress about the appropriate level of government spending and its effect on the national debt and deficit. Ultimately, this led to the credit-rating agency Standard & Poor's downgrading the credit rating of the United States government for the first time in the country's history. The S&P 500 declined by almost 15%.

**1994 Interest Rate Spike (December 1993 - December 1994):** Yields on 30-year Treasuries jumped some 200 basis points in the first nine months of the year, hammering investors and financial firms. The accepted story is that an over-eager Federal Reserve raised interest rates too soon. Equities fell slightly with the S&P 500 down 1.5%.

**1981 Interest Rate Spike (July 1980 – July 1981):** The 1970's and early 80's featured stagnant growth coupled with high inflation (i.e. stagflation). In an effort to help contain the rampant inflation, the newly elected Fed Chairman, Paul Volcker, undertook a rapid series of rate hikes. While this process was ultimately successful - inflation dropped from 14.8% in March of 1980 all the way down to 3% by 1983 - the rapid rates decimated many fixed income investors, as the 10-year U.S. Treasury yield rose from 10.3% to 14.3%. However, equities were strong during this time, with the S&P 500 up over 7.5%.

**Interest Rates Rise 1% for 1 Year:** Treasuries up 1% in year 1 and flat in years 2 and 3.

**Interest Rates Rise 1% Annually for 3 Years:** Treasuries up 1% for each of the 3 years.

**Equities Decline 20% for 1 Year:** This is the definition of a bear market. Assumes that corporate spreads widen out by 1% as well, which is roughly the average spread change during equity downturns. Equities are as expected for years 2 and 3, while spreads remain unchanged.

**Equities Decline 15% Annually for 3 Years:** Equities fall 15% in each of the 3 years with corporate spreads widening 1% each year. This is designed to model out a prolonged downturn in the market.

**Perfect Storm for 1 Year:** Treasuries and spreads increase 1% in year 1, flat in years 2 and 3. Equities fall 20% in year 1 and as are expected for year 2 and 3.

**Perfect Storm for 3 Years:** Treasury and spreads increase 1% in each of the 3 years. Equities fall 15% each year.



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