



CITY OF OAKLAND

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MEMORANDUM

TO: HONORABLE MAYOR &
CITY COUNCIL

FROM: Erin Roseman,
Director of Finance

SUBJECT: Oakland PFRS's Investment
Portfolio and Actuary Valuation
Report

DATE: June 21, 2022

INFORMATION

As a continued best practice and in accordance with the City of Oakland Charter, the Finance Department will publish a quarterly informational report on the performance of Oakland Police and Fire Retirement System's ("PFRS") investment portfolio to the City Council.

The Oakland Police and Fire Retirement System is a closed defined benefit plan established by the City of Oakland's (the "City") Charter. PFRS is governed by a board of seven trustees (the "PFRS Board"). PFRS covers the City's sworn police and fire employees hired prior to July 1, 1976. PFRS was closed to new members on June 30, 1976. As of March 31, 2022, PFRS had 691 retired members and no active members.

As of March 31, 2022, the PFRS Investment Portfolio had a balance of \$449.4 million and generated a quarterly return of -5.4 percent, gross of fees, underperforming its policy benchmark by -0.3 percent. The portfolio outperformed its benchmark by 0.9 percent over the one-year period, 0.0 percent over the three-year period, and 0.5 percent over the five-year period. This is discussed in more detail in the attached Investment Quarterly report.

As of the most recent PFRS actuarial valuation dated July 1, 2021, the PFRS Funded Ratio (market value of assets divided by present value of future benefits) is 80.2 percent. The City is currently making annual required contributions to PFRS. The required contribution for fiscal year 2022/2023 is \$32.7 million. The City funds these contributions from a voter approved ad valorem tax on all property within the City of Oakland. This tax is specifically dedicated to fund PFRS pension obligations.

The attached Quarterly Investment Performance report (*Attachment A*) provided by the PFRS Investment Consultant, Meketa Investment Group (MIG) summarizes the performance of the PFRS investment portfolio for the quarter ended March 31, 2022.

For questions regarding this report, please contact Teir Jenkins, Investment Officer, at (510) 238-6481.

Respectfully submitted,



ERIN ROSEMAN
Director of Finance

Attachment A: Oakland Police and Fire System Quarterly Investment Performance Report as of March 31, 2022

Oakland Police and Fire Retirement System

Q1 2022

Quarterly Report

Agenda

1. Total Portfolio Summary
2. Economic and Market Update
3. Asset Class and Manager Commentary
4. 1Q 2022 Performance as of March 31, 2022
5. Disclaimer, Glossary, and Notes

Total Portfolio Summary

Total Portfolio Summary

As of March 31, 2022, the City of Oakland Police and Fire Retirement System (OPFRS) portfolio had an aggregate value of \$449.4M. This represents a \$26.1M depreciation in investment value after (\$7.7M) in benefit payments over the quarter. Over the one-year period, the OPFRS Total Portfolio value is higher by \$23.5M, after withdrawals totaling (\$17.4M) for benefit payments.

Asset Allocation Trends

- The asset allocation targets throughout this report reflect those as of March 31, 2022. Target weightings reflect the interim phase (where Crisis Risk Offset component is set to 10%) of the Plan's previously approved asset allocation (effective 5/31/2017).
- Relative to policy targets, the portfolio ended the latest quarter overweight Equities, Covered Calls and Cash, while underweight Fixed Income and Crisis Risk Offset (CRO). The Fixed Income asset class was slightly below its acceptable ranges from the policy target.
 - In February 2022, Kepos was funded as a new Alternative Risk Premia manager to the CRO segment.

Recent Investment Performance

- During the most recent quarter, the OPFRS portfolio generated an absolute return of (5.4%), gross of fees, trailing its policy benchmark by (0.3%). Over the trailing 1- and 5-year periods, however, the portfolio outperformed its benchmark by 0.9% and 0.5% respectively while keeping pace in the 3-year period.
- In comparison to its peers, the OPFRS portfolio lagged the Median fund's return over the quarter by (0.6%) while outperforming the Median fund by 0.5% over the 1-year period. Over the 3- and 5-year trailing periods, the OPFRS portfolio trailed the Median fund by (1.3%) and (0.2%) respectively.

	Quarter	CYTD	FYTD	1 Year	3 Year	5 Year
Total Portfolio ¹	-5.4%	-5.4%	-0.1%	5.0%	9.4%	9.0%
Policy Benchmark ²	-5.1%	-5.1%	-1.1%	4.1%	9.4%	8.5%
Excess Return	-0.3%	-0.3%	1.0%	0.9%	0.0%	0.5%
Reference: Median Fund ³	-4.8%	-4.8%	-0.7%	4.5%	10.7%	9.2%
Reference: Total Net of Fees ⁴	-5.4%	-5.4%	-0.4%	4.7%	9.1%	8.7%

- Over the quarter, the portfolio reflected the broad market trends with all asset classes generating negative absolute returns. On relative basis, the Credit component was the primary contributor with an excess return of 3.7% in Q1.

¹ Gross of Fees. Performance since 2005 includes securities lending.

² Evolving Policy Benchmark consists of 40% Russell 3000, 12% MSCI ACWI ex U.S., 33% Bloomberg Universal, 5% CBOE BXM, 6.7% SG Multi Asset Risk Premia, 3.3% Bloomberg Long Treasury.

³ Investment Metrics Public Define Benefit Plan with \$250 million to \$1 billion value Universe.

⁴ Longer-term (>1 year) Net of fee returns include estimates based on OPFRS manager fee schedule (approximately 34 bps).

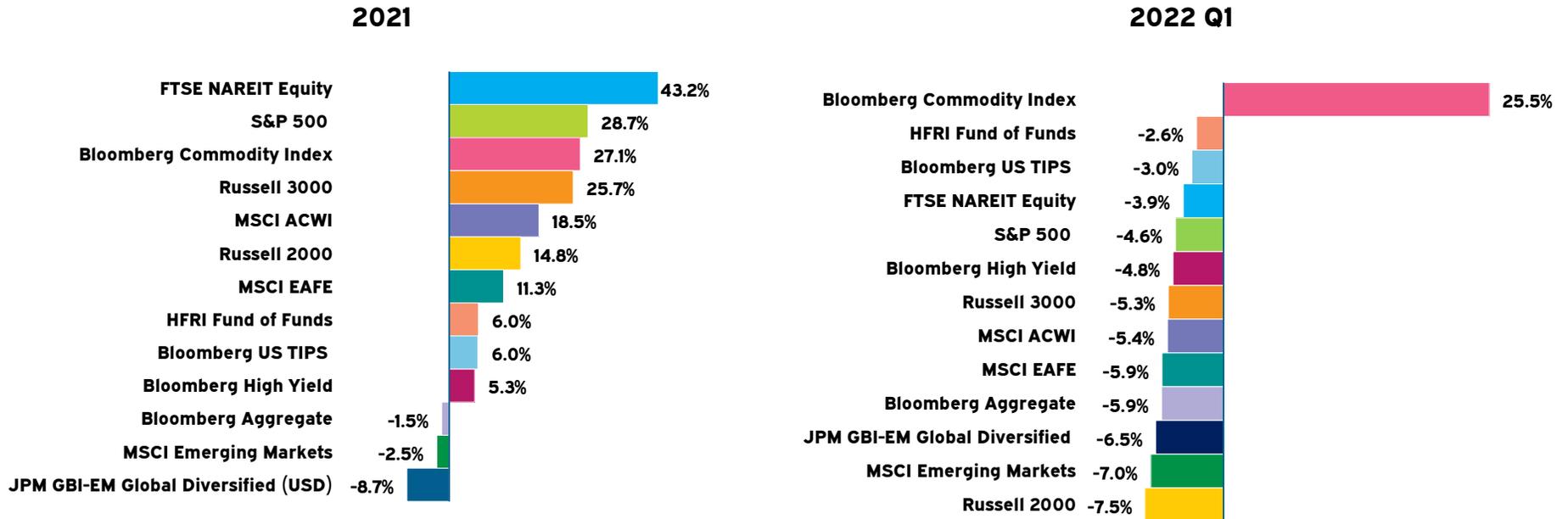
Economic and Market Update

Data as of March 31, 2022

Q1 Commentary

- The first quarter saw market volatility, driven by persistently high inflation, expectations for policy to tighten faster than previously expected, and Russia's invasion of Ukraine.
- Except for commodities, all asset classes declined during the quarter.
 - Equities declined across the board with double-digit losses in China particularly weighing on emerging markets.
 - Value oriented equities outpaced growth in the US influenced by higher interest rates.
 - Bonds in the US had one of their worst quarters on record, declining more than equities.
 - Rates rose across the US yield curve, with the curve inverting by some measures by month-end.
 - Inflation remains high globally given lingering supply issues from the pandemic and the conflict in Ukraine.
 - The pace of policy tightening will likely increase due to persistent inflation.
- The conflict in eastern Europe will have considerable economic and financial consequences for the global economy including the pacing of policy rate tightening, the risk of policy mistakes, and supply shocks pushing inflation even higher around the world.

Index Returns¹



→ Outside of emerging markets and the broad US investment grade bond market (Bloomberg Aggregate), most asset classes appreciated in 2021.

→ Most major asset classes suffered negative returns in the first quarter of 2022 with the notable exception of commodities. TIPS declined less than most other asset classes in the inflationary environment.

¹ Data Source: Bloomberg and FactSet. Data is as of March 31, 2022.

Domestic Equity Returns¹

Domestic Equity	March (%)	Q1 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	3.7	-4.6	15.6	18.9	16.0	14.6
Russell 3000	3.2	-5.3	11.9	18.2	15.4	14.3
Russell 1000	3.4	-5.1	13.3	18.7	15.8	14.5
Russell 1000 Growth	3.9	-9.0	15.0	23.5	20.9	17.0
Russell 1000 Value	2.8	-0.7	11.7	13.0	10.3	11.7
Russell MidCap	2.6	-5.7	6.9	14.9	12.6	12.8
Russell MidCap Growth	1.6	-12.6	-0.9	14.8	15.1	13.5
Russell MidCap Value	3.0	-1.8	11.5	13.6	10.0	12.0
Russell 2000	1.2	-7.5	-5.8	11.7	9.7	11.0
Russell 2000 Growth	0.5	-12.6	-14.3	9.9	10.3	11.2
Russell 2000 Value	2.0	-2.4	3.3	12.7	8.6	10.5

US Equities: Russell 3000 Index returned -5.3%, and value indices outperformed growth in Q1.

- Despite positive returns in March, US equities posted negative returns for the first quarter of 2022 across all market capitalizations and styles given persistently high inflation and geopolitical uncertainty.
- Value stocks declined far less than growth stocks in the rising rate environment. Strong returns in the energy sector and weakness in the technology sector contributed to the results.
- Large company stocks (Russell 1000) outperformed small company stocks (Russell 2000).

¹ Source: Bloomberg. Data is as of March 31, 2022.

Foreign Equity Returns¹

Foreign Equity	March (%)	Q1 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	0.2	-5.4	-1.5	7.5	6.8	5.5
MSCI EAFE	0.6	-5.9	1.2	7.8	6.7	6.3
MSCI EAFE (Local Currency)	2.1	-3.7	6.2	8.2	6.5	8.6
MSCI EAFE Small Cap	0.0	-8.5	-3.6	8.5	7.4	8.3
MSCI Emerging Markets	-2.3	-7.0	-11.4	4.9	6.0	3.4
MSCI Emerging Markets (Local Currency)	-2.1	-6.1	-9.9	6.2	7.5	6.3
MSCI China	-8.0	-14.2	-32.5	-3.0	3.5	4.5

International Developed Market Equities: MSCI EAFE -5.9% in Q1.

- Returns in international developed markets were also negative for the first quarter of 2022.
- Declines were driven by a sharp fall in stocks in Europe hurt by a high reliance on Russian oil and gas.
- Continued strength in the US dollar also weighed on results.

Emerging Markets: MSCI EM -7.0% in Q1.

- Emerging market stocks declined more than developed market stocks for the quarter.
- China was a key driver of results as its zero COVID-19 policy led to renewed lockdowns in Shanghai. Concerns related to regulations on US-listed China stocks and overall slower growth also weighed on returns.
- Russian stocks and the ruble plunged with sanctions and trading halts.

¹ Source: Bloomberg. Data is as of March 31, 2022.

Fixed Income Returns¹

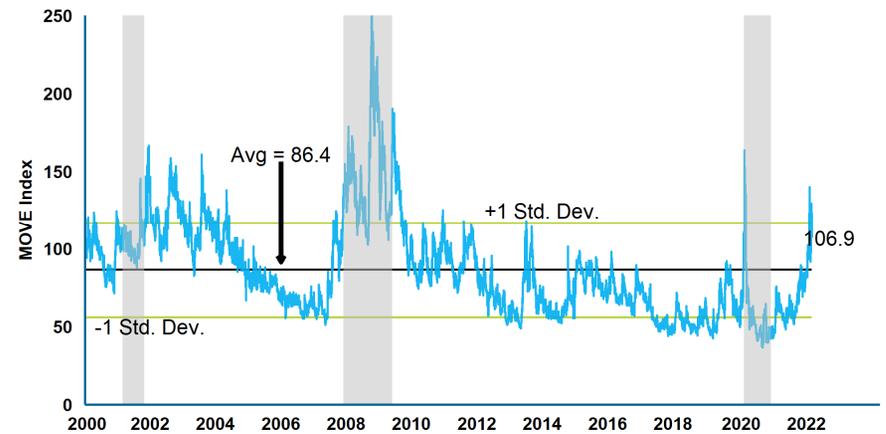
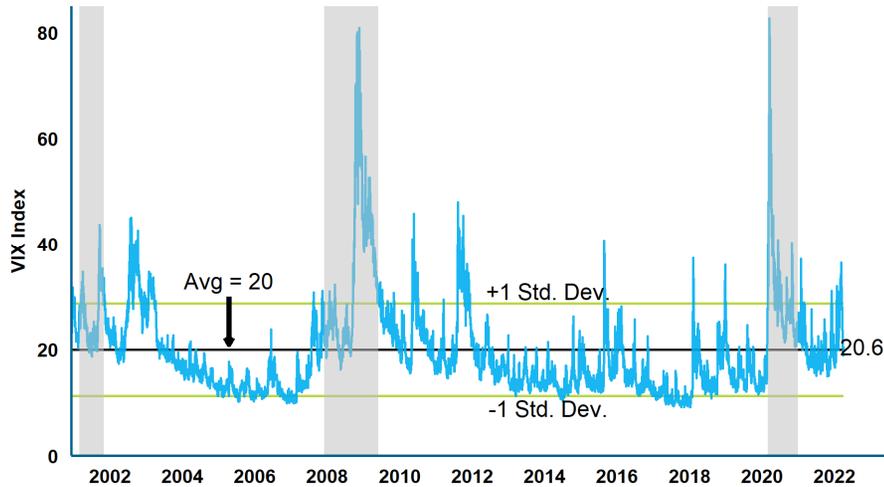
Fixed Income	March (%)	Q1 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	-2.7	-6.1	-4.2	1.8	2.3	2.6	3.3	6.6
Bloomberg Aggregate	-2.8	-5.9	-4.2	1.7	2.1	2.2	2.9	6.8
Bloomberg US TIPS	-1.9	-3.0	4.3	6.2	4.4	2.7	2.6	7.6
Bloomberg High Yield	-1.1	-4.8	-0.7	4.6	4.7	5.7	6.0	4.6
JPM GBI-EM Global Diversified (USD)	-1.5	-6.5	-8.5	-1.1	0.2	-0.7	6.4	5.1

Fixed Income: Bloomberg Universal -6.1% in Q1.

- The broad US investment grade bond market (Bloomberg Aggregate) experienced one of its worst quarters on record given continued concerns about policy tightening and inflation. The nominal 10-year Treasury yield finished the quarter at 2.3%, a level 0.8% above the end of 2021.
- TIPS also declined in the rising rate environment, but less than other bond sectors, helped by their inflation component.
- US credit spreads widened in the first quarter, particularly in high yield, as risk assets fell. Spreads remain at relatively low levels, though, given strong corporate health and high investor demand in the low-rate environment.
- Emerging market debt prices also declined in the quarter driven by the Russian invasion of Ukraine.

¹ Source: Bloomberg. JPM GBI-EM is from InvestorForce. Data is as of March 31, 2022.

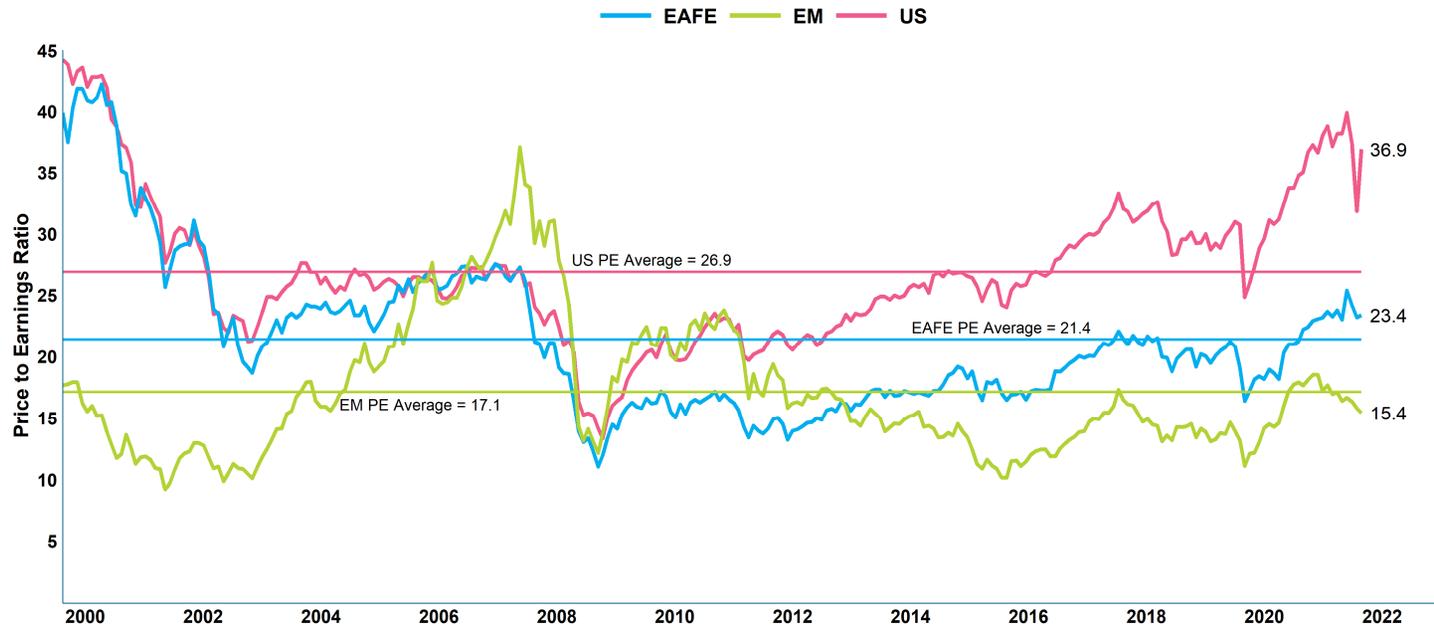
Equity and Fixed Income Volatility¹



- Volatility in equities (VIX) increased for the first quarter but finished well below the March peak of 36.5.
- Fixed income volatility (MOVE) also increased and remains elevated driven largely by expectations that the Federal Reserve would tighten monetary policy faster than previously expected.

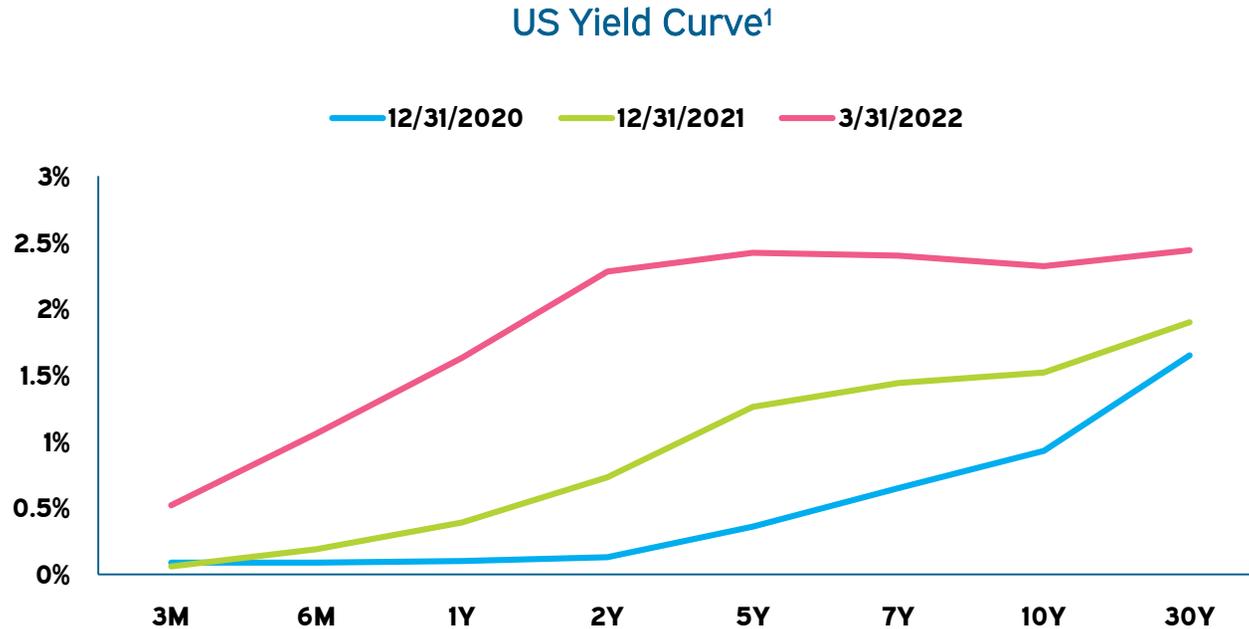
¹ Equity and Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of March 2022. The average line indicated is the average of the VIX and MOVE values between January 2000 and the present month-end respectively.

Equity Cyclically Adjusted P/E Ratios¹



- US equity valuations retreated in the first two months of 2022, and rebounded in March with the market recovery. They remain well above long-term averages (near +2 standard deviations).
- International developed market valuations remain below the US, with those for emerging markets under its long-term average.

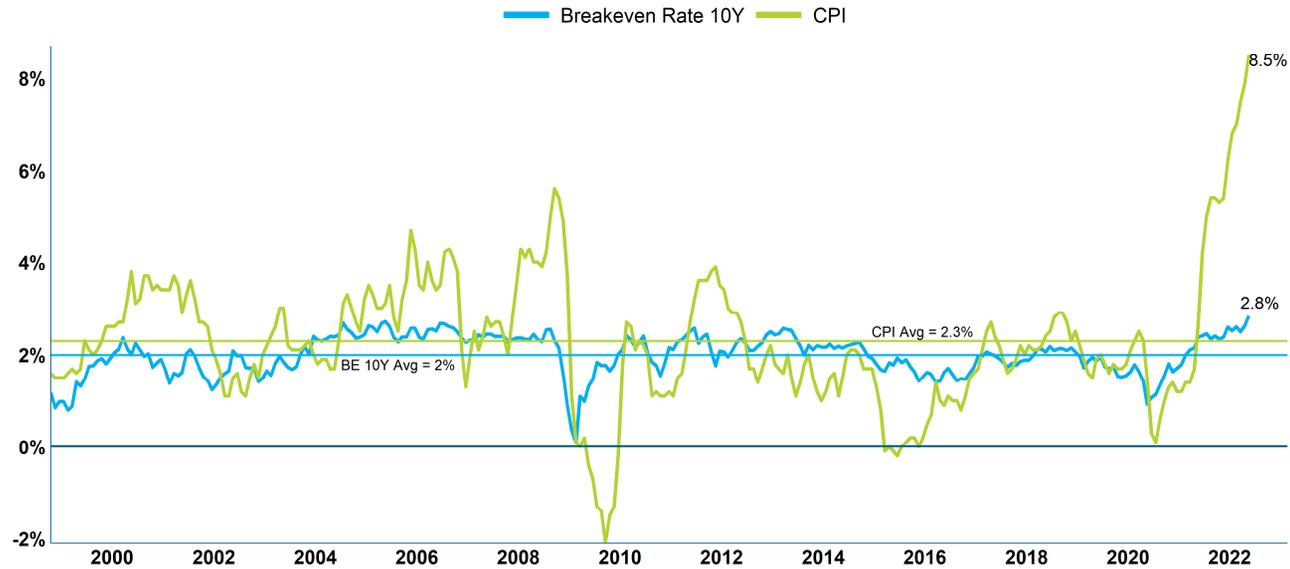
¹ US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Developed and Emerging Market Equity (MSCI EAFE and EM Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years. Data is as of March 31, 2022. The average line is the long-term average of the US, EM, and EAFE PE values from December 1999 to month-end respectively.



- The trends of higher rates across maturities and curve flattening continued during the first quarter of 2022 as markets repriced inflation, rate expectations, and an accelerated pace of the Federal Reserve reducing its balance sheet.
- The spread between two-year and ten-year Treasuries declined significantly over the quarter and became negative after quarter-end which historically has often signaled a recession.

¹ Source: Bloomberg. Data is as of March 31, 2022.

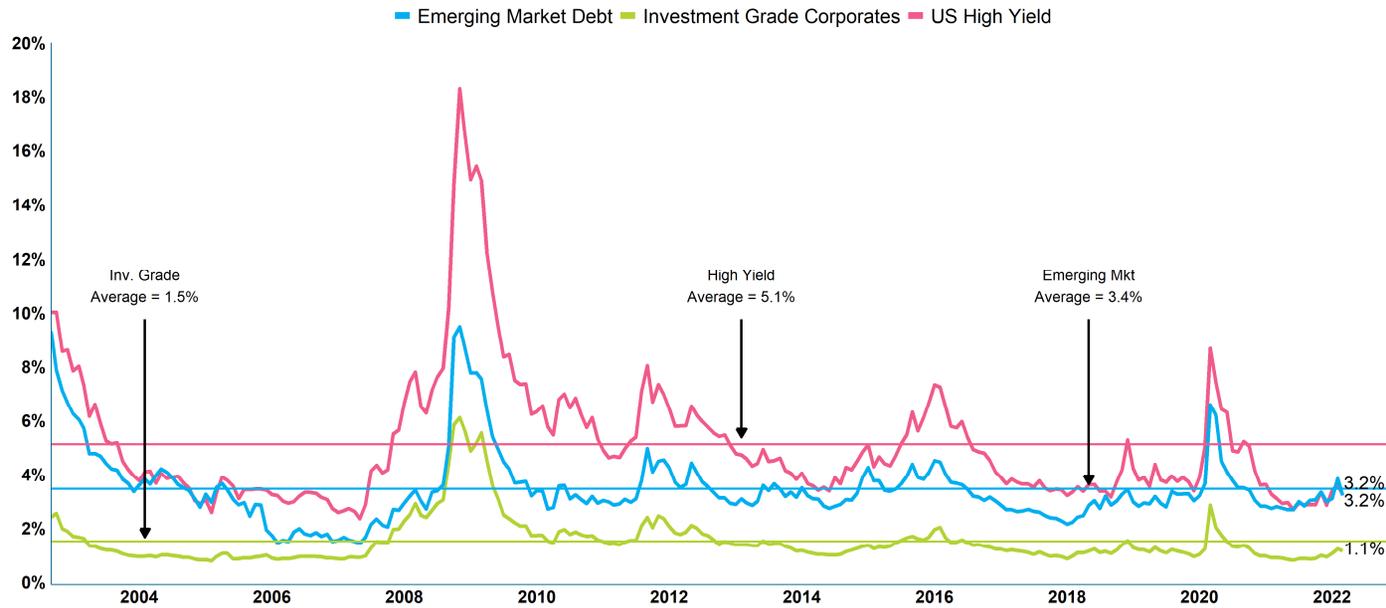
Ten-Year Breakeven Inflation and CPI¹



- Inflation expectations (breakevens) increased during the quarter but are off their peak of close to 3.0%. They remain well above the long-term average.
- Trailing twelve-month CPI continued to rise in March, reaching 8.5%, a level not seen since the early 1980s and far above the long-term average of 2.3%.
- Rising prices for energy and food, and for new and used cars, remained key drivers of higher inflation.

¹ Source: Bloomberg. Data is as of March 31, 2022. The CPI and 10 Year Breakeven average lines denote the average values from August 1998 to the present month-end respectively. Breakeven values represent month-end values for comparative purposes.

Credit Spreads vs. US Treasury Bonds¹



- Credit spreads (the spread above a comparable maturity Treasury) increased over the quarter leading to negative returns.
- In the US, high yield spreads increased more than investment grade spreads, but declined less due to the higher relative income. Emerging market spreads finished the quarter at the same level as US high yield.
- The search for yield in a low-rate environment and continued strong corporate fundamentals with low default risk have been key drivers in the decline in credit spreads to below long-term averages in the US. High yield spreads remain well below the long-term average.

¹ Sources: Bloomberg. Data is as of March 31, 2022. Average lines denote the average of the investment grade, high yield, and emerging market spread values from August 2000 to the present month-end respectively.

Global Economic Outlook

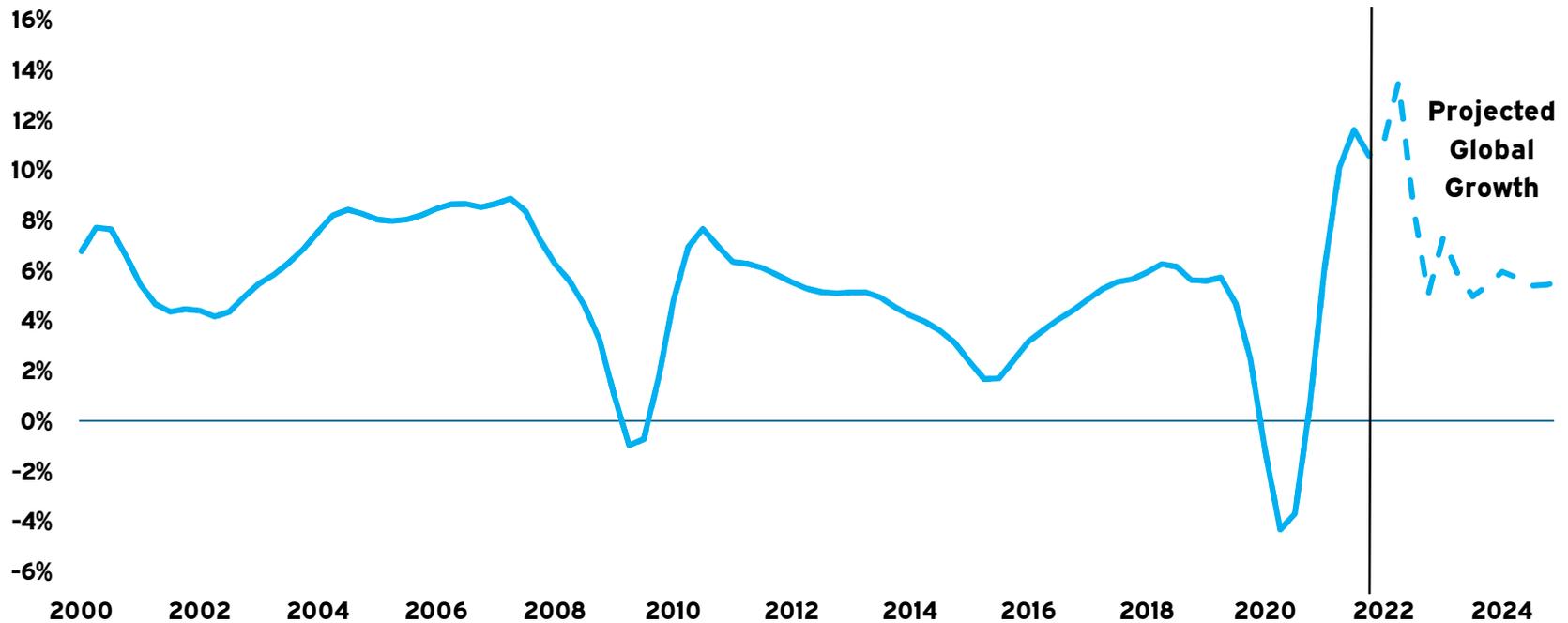
The IMF significantly lowered global growth forecasts in their latest projections, driven by the economic impacts of the war in Ukraine.

- The IMF forecasts final global GDP to come in at 6.1% in 2021 and 3.6% in 2022 (0.8% below the prior 2022 estimate), both still above the past ten-year average of 3.0%.
- In advanced economies, GDP is projected to increase 3.3% in 2022 and 2.4% in 2023. The US has limited economic ties with Russia but saw another downgrade in the 2022 growth forecast (3.7% versus 4.0%) largely due to policy reduction happening faster than previously expected. The euro area economy saw a significant downgrade in expected growth (2.8% versus 3.9%) in 2022 as rising energy prices particularly weigh on the region that is a net importer of energy. The Japanese economy is expected to grow 2.4% this year.
- Growth projections for emerging markets are higher than developed markets, at 3.8% in 2022 and 4.4% in 2023. China’s growth was downgraded (4.4% versus 4.8%) for 2022 given tight COVID-19 restrictions and continued property sector problems.
- The global inflation forecast was significantly increased for 2022 (7.4% versus 3.8%) due to the war in Ukraine.

	Real GDP (%) ¹			Inflation (%) ¹		
	IMF 2022 Forecast	IMF 2023 Forecast	Actual 10 Year Average	IMF 2022 Forecast	IMF 2023 Forecast	Actual 10 Year Average
World	3.6	3.6	3.0	7.4	4.8	3.5
Advanced Economies	3.3	2.4	1.6	5.7	2.5	1.5
US	3.7	2.3	2.1	7.7	2.9	1.9
Euro Area	2.8	2.3	0.9	5.3	2.3	1.2
Japan	2.4	2.3	0.5	1.0	0.8	0.5
Emerging Economies	3.8	4.4	4.2	8.7	6.5	5.1
China	4.4	5.1	6.7	2.1	1.8	2.1

¹ Source: IMF World Economic Outlook. Real GDP forecasts from April WEO Update. Inflation forecasts are as of the April 2022 Update. "Actual 10 Year Average" represents data from 2012 to 2021.

Global Nominal Gross Domestic Product (GDP) Growth¹

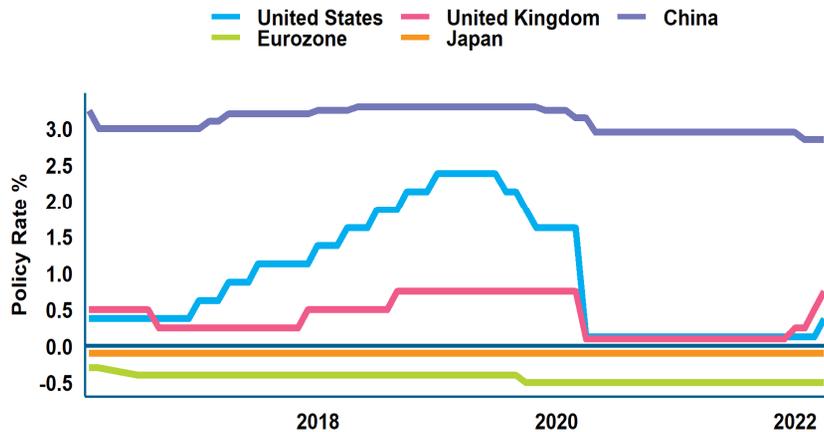


- Global economies are expected to slow in 2022 compared to 2021 but are forecasted to have another year of largely above-trend growth as economies continue to emerge from the pandemic.
- Looking forward, the track of the conflict between Russia and Ukraine, continued supply chain issues, ongoing inflationary pressures, tighter monetary policy, and lingering pandemic problems all remain key.

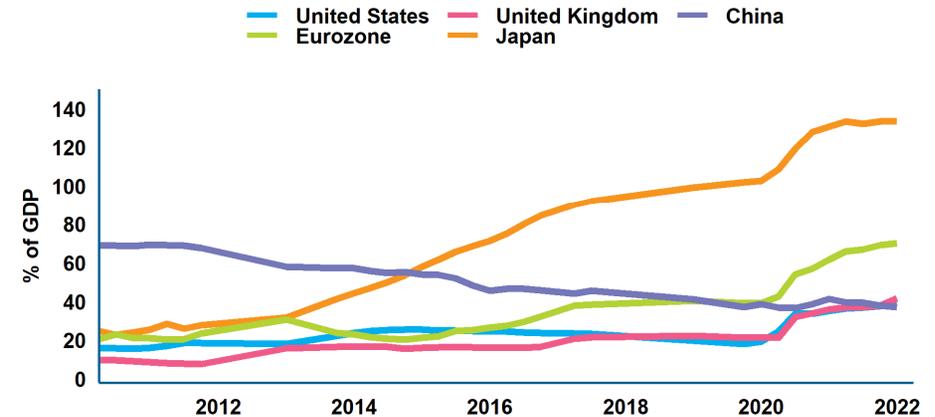
¹ Source: Oxford Economics (World GDP, US\$ prices & PPP exchange rate, nominal, % change YoY). Updated March 2022.

Central Bank Response¹

Policy Rates



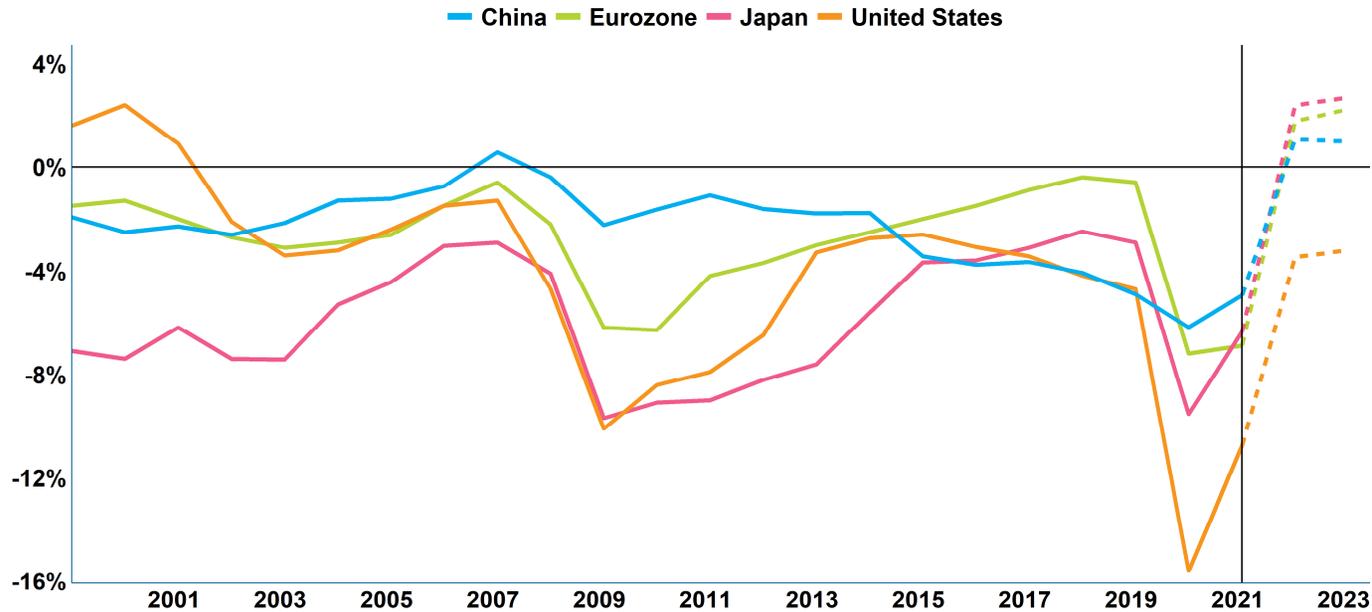
Balance Sheet as % of GDP



- After global central banks took extraordinary action to support the economy during the pandemic including policy rate cuts and emergency stimulus through quantitative easing (QE), many are considering reducing support in the face of high inflation.
- The pace of withdrawing support will likely vary across central banks with the US expected to take a more aggressive approach. The risk remains for a policy error, particularly overtightening, as the war in Ukraine could suppress global growth.
- The one notable outlier is China, where the central bank recently lowered rates and reserve requirements in response to slowing growth.

¹ Source: Bloomberg. Policy rate data is as of March 31, 2022. China policy rate is defined as the medium-term lending facility 1 year interest rate. Balance sheet as % of GDP is based on quarterly data and is as of December 31, 2021.

Budget Surplus / Deficit as a Percentage of GDP¹

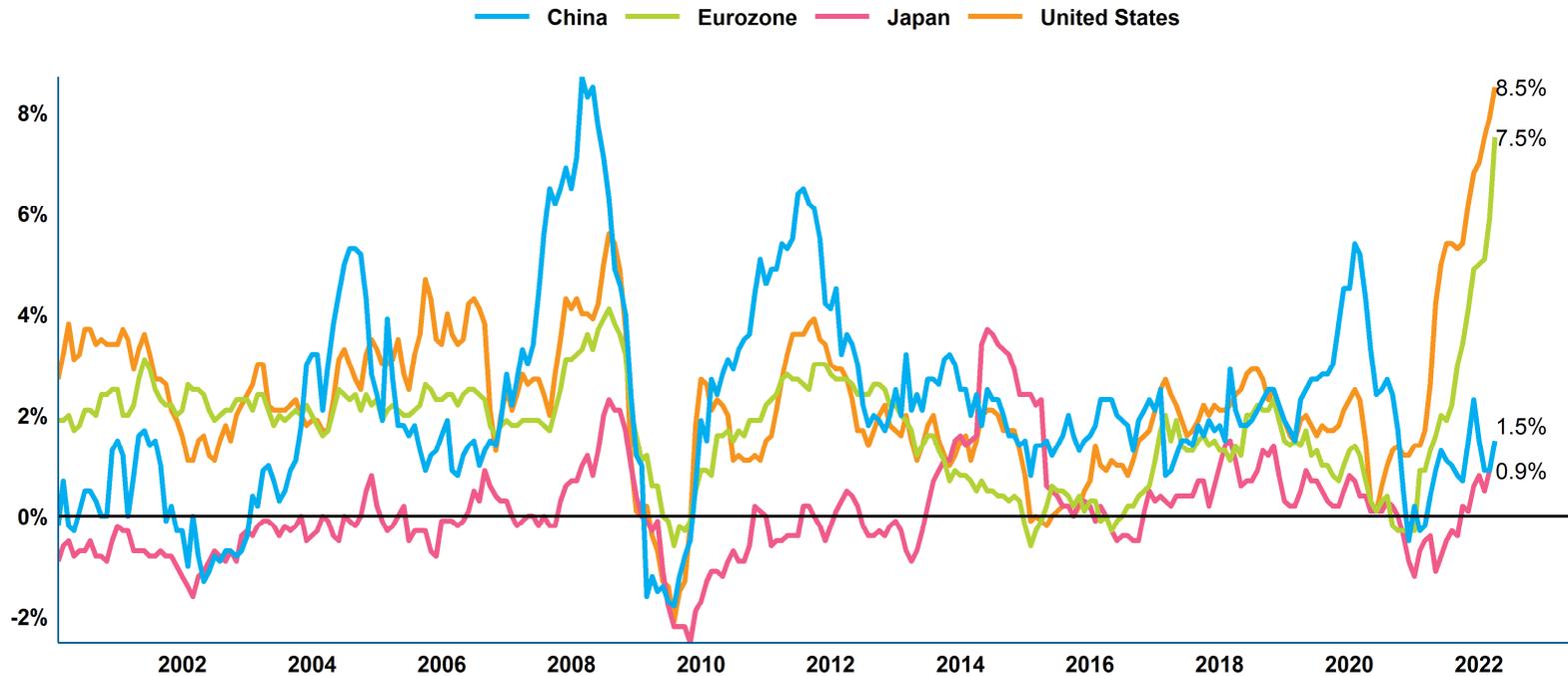


→ Budget deficits as a percentage of GDP drastically increased for major world economies, particularly the US, due to massive fiscal support and the severe economic contraction's effect on tax revenue in 2020 and 2021.

→ As fiscal stimulus programs end, and economic recoveries continue, deficits should improve in the coming years.

¹ Source: Bloomberg. Data is as of March 31, 2022. Projections via IMF Forecasts from April 2022 Report. Dotted lines represent 2022 and 2023 forecasts.

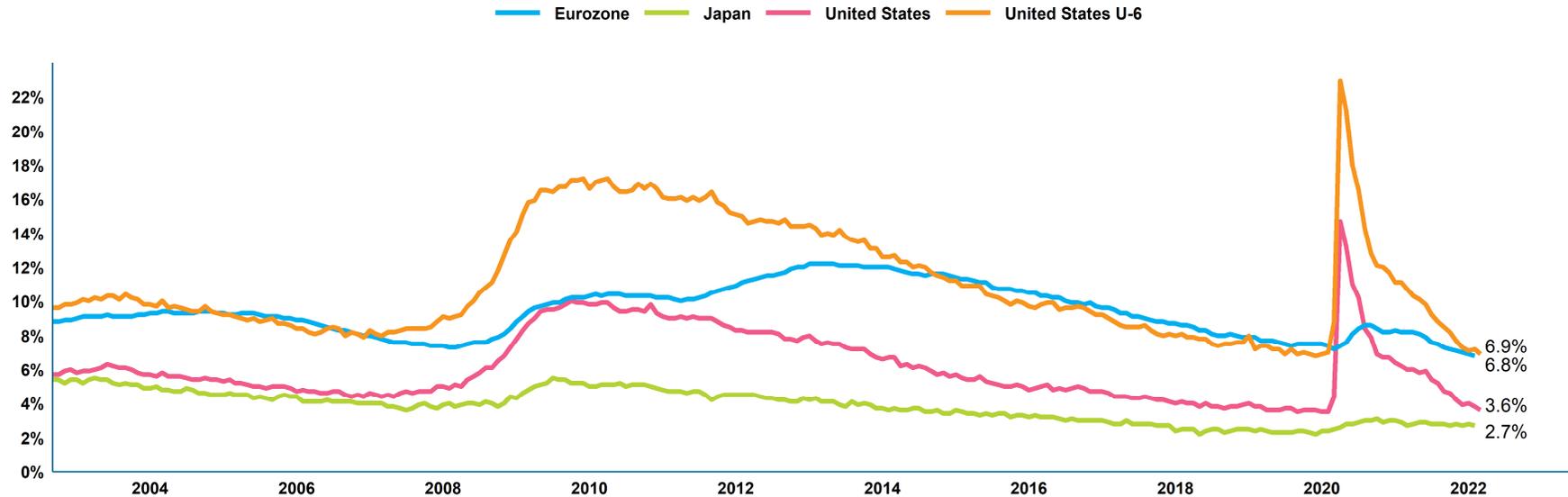
Inflation (CPI Trailing Twelve Months)¹



- Inflation increased dramatically from the lows of the pandemic, particularly in the US and Eurozone where it continues to reach levels not seen in decades.
- Supply issues related to the pandemic and higher prices in many key commodities driven by the Russia and Ukraine conflict have been key drivers of inflation globally.

¹ Source: Bloomberg. Data is as of March 2022, except for Japan, where the most recent data available is as of February 28, 2022.

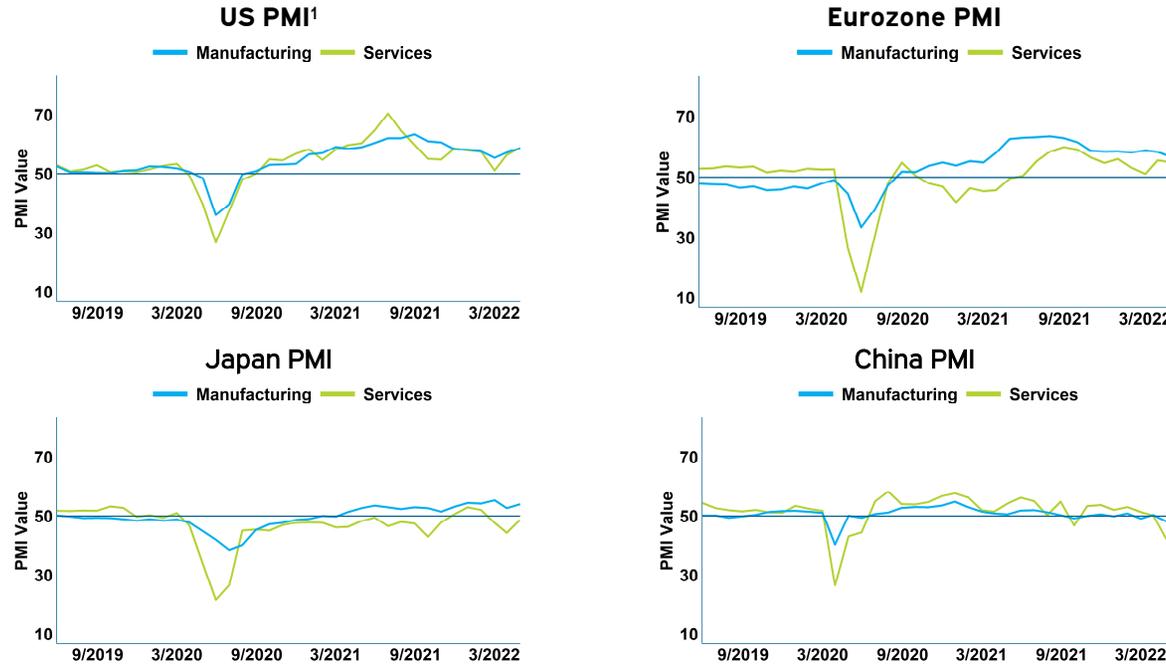
Unemployment¹



- As economies have largely reopened due to vaccines for the virus, improvements have been seen in the labor market.
- US unemployment, which experienced the steepest rise from the pandemic, has declined back to pre-pandemic levels. The broader measure (U-6) that includes discouraged and underemployed workers has declined but is much higher at 6.9%.

¹ Source: Bloomberg. Data is as of March 31, 2022, for the US. The most recent data for Eurozone and Japanese unemployment is as of February 28, 2022.

Global PMIs



- After improvements from the lows of the pandemic, Purchasing Managers Indices (PMI), based on surveys of private sector companies, have experienced pressures recently.
- Service sector PMIs have seen some improvements in the US and Europe lately as the effects of the Omicron variant wane, while Japan and China remain in contraction due to a rise in COVID-19 cases.
- In most countries, manufacturing PMIs are in expansion territory as pandemic-related production issues ease and orders increase. China is the one exception, though, with the manufacturing PMI falling below 50 in March due to increased COVID-19 restrictions.

¹ Source: Bloomberg. US Market Services and Manufacturing PMI, Caixin Services and Manufacturing PMI, Eurozone Market Services and Manufacturing PMI, Jibun Bank Services and Manufacturing PMI. Data is as of March 2022. Readings below 50 represent economic contractions.

US Dollar versus Broad Currencies¹



- The US dollar continued its 2021 trend of strengthening against a broad basket of peers in the first quarter of 2022 with further increases after month-end.
- Safe-haven flows and higher rates have been key drivers of the dollar’s continued strength.
- A few commodity-sensitive currencies like the Brazilian real, South African rand, and Mexican peso have recently outpaced the dollar, given persistently high commodity prices.

¹ Source: Bloomberg. Data as of March 28, 2022.

Summary

Key Trends in 2022:

- The war in eastern Europe has created significant uncertainty going forward with a wide range of potential outcomes. Volatility will likely remain high.
- Expect growth to slow globally in 2022 but remain above trend. The track of the pandemic and war will be key.
- Inflationary pressures could linger, particularly if the Russian invasion of Ukraine intensifies or expands.
- The end of many fiscal programs will put the burden of continued growth on consumers. Higher energy and food prices will depress their ability to spend in other areas.
- Monetary policy will likely tighten globally but will remain relatively low. The risk of policy error remains.
- Valuations remain high in the US, but low rates and strong margins should be supportive.
- Outside the US, valuations remain lower in both emerging and developed markets, but risks remain.

Asset Class and Manager Commentary

Domestic Equity

→ Over the quarter ending March 31, 2022, domestic equity returned (5.6%), trailing the Russell 3000 benchmark by (0.3%). Reflecting the volatile market over the quarter, all of the managers generated negative absolute returns with mixed performance on relative basis.

- The passive strategies, namely **Northern Trust Russell 1000** and **iShares Edge MSCI Minimum Volatility**, performed in line with their respective benchmarks with acceptable tracking error. While it is not included in the current report, **iShares Edge MSCI Minimum Volatility** was replaced with **Wellington Defensive Equity** (hired in 2021) after the current reporting period.
- **Earnest Partners**, the Plan's active mid cap core manager, returned (5.7%), keeping pace with the Russell Midcap benchmark, placing its slight above the average in its peer group for the quarter. It has also outperformed its benchmark over all other time periods measured and maintained an above-average ranking since its inception in 2006.
- **Rice Hall James**, the Plan's active small cap growth manager, returned (11.5%) outperforming the Russell 2000 Growth benchmark by 1.1%, and placing in the 31st percentile for the quarter. The manager also outperformed its benchmark over the 1- and 3-year trailing periods by 9.2% and 1.5% respectively. While it has outperformed the benchmark over all time periods measured, due to its underperformance in 2018, Rice Hall James ranks below the Median fund over the 3-year trailing and since inception periods.
- **Brown Fundamental**, the Plan's active small cap value manager, returned (5.1%) over the quarter lagging its Russell 2000 Value benchmark by (2.7%) while outperforming the benchmark over the trailing 1-year period by 1.9%. Among its peers, Brown ranks below the Median fund as of March 2022.

International Equity

- For the quarter, the international equity segment returned (4.6%), outperforming the MSCI ACWI ex US benchmark by 0.7%; it has similarly outperformed over the 1-, 3-, and 5-year trailing periods by 3.1%, 1.2%, and 1.0% respectively.
- The Vanguard passive international developed markets portfolio posted (5.8%). Due to Vanguard's fair-value pricing methodology, the strategy has slightly deviated from its tracked index's return of (5.3%); however, the deviation along with its excess return are expected to equalize over the longer term.
 - **SGA MSCI ACWI ex US**, the Plan's active core international equity manager, returned (3.9%) outperforming its benchmark by 1.4% over the quarter placing it in the top quartile amongst its peers. It has also outperformed its benchmark over the 1-year trailing period by 3.4% even though it has trailed the benchmark by (1.4%) since inception in December 2019.

Fixed Income

- Over the quarter, the Fixed Income aggregate returned (6.0%), slightly outperforming the Bloomberg Universal benchmark by 0.1%. Reflecting the broad market trends, core fixed income managers in this portfolio posted similar absolute returns with mixed relative performance over the quarter.
- Over the other time periods, except **Wellington Core Bond**, which was funded one year ago, the managers have consistently outperformed their benchmark and have generally maintained an above average peer ranking across time.
- **Ramirez** returned (6.1%) over the quarter, trailing the benchmark by (0.2%) placing it below the Median rank in the peer group. However, Ramirez has outperformed its benchmark over the 1-, 3-, and 5-year trailing periods by 0.7%, 0.4%, and 0.7% respectively, and maintained an above average ranking over the 1- and 5-year trailing periods.
 - **Reams** posted (5.5%) over the quarter outperforming its benchmark by 0.6% and placing it above average in its peer group. It has also outperformed the benchmark over 1-, 3-, and 5-year trailing periods by 1.0%, 3.8%, and 2.5% respectively and maintained an above average rank over all these periods. It is noteworthy that over the 3- and 5-year periods, **Reams** ranks in the 3rd percentile amongst its peers.
 - **Wellington Core Bond**, the core fixed income manager funded a year ago in April 2021, returned (6.3%) over the quarter trailing the benchmark by (0.4%). It has also trailed the benchmark over the past year by the same magnitude.

Credit

→ With **Polen Capital** as the Plan's sole Credit manager, the **Credit** portfolio returned (1.1%) over the quarter, outperforming the asset class's benchmark, Bloomberg US High Yield, by 3.7%. It has also outperformed the same over the 1-, 3-, and 5-year periods by 5.3%, 1.1%, and 1.3% respectively. Among its peers, **Polen** ranks in the top quartile across all these periods; in the shorter term (2022 Q1 and 1-year period), it ranks within top-ten among its peers.

- This manager was formerly known as DDJ. As DDJ was recently acquired by **Polen Capital**, the manager remains on the Watchlist to monitor its progress and organization changes.

Covered Calls

→ Over the quarter, the **Covered Calls** portfolio returned (2.6%) trailing its benchmark by (3.4%). The segment also trailed the benchmark over the trailing 1-year period; however, over the longer 3- and 5-year periods, it has outperformed the benchmark by 5.9% and 4.5% respectively.

- **Parametric DeltaShift**, the Plan's active covered calls allocation returned (3.3%), trailing its benchmark, the CBOE BXM, index by (4.1%) over the quarter. However, it has outperformed the benchmark over all other time periods measured. In comparison with the managers in the US Large Cap Core Equity – which is an imperfect peer group for the strategy – it has ranked above average during the quarter and over 1- and 3-year trailing periods while moderately below average over the long-term 5-year trailing period.
- **Parametric BXM**, the Plan's passive covered calls allocation returned (1.6%), trailing its benchmark, the CBOE BXM index, by (2.4%). It has also trailed the benchmark over the 1-year trailing period by (3.7%) while outperforming it over the 3- and 5-year periods. While this passive strategy ranks in the top quartile during the quarter, it ranks in the bottom quartile over all other, longer trailing periods. As noted above, we ought to keep in mind that the peer group available for the **Covered Calls** asset class is an imperfect comparison.

Crisis Risk Offset

→ Over the quarter, the **Crisis Risk Offset** (CRO) portfolio posted (8.6%), trailing its benchmark SG Multi Alternative Risk Premia Index by (8.2%). While the CRO component is benchmarked against the SG Multi Alternative Risk Premia Index, **Vanguard Long-Term Treasury ETF** was the sole funded investment in the portfolio for most part of the quarter; it therefore requires caution in evaluating the segment's performance.

- **Vanguard Long-Term Treasury ETF** performed within expectations as a passive manager during the quarter as well as over the trailing 1-year period.
- As part of the long-term development of this asset class, **Kepos** was added as the Alternative Risk Premia manager in February.
- Another manager, **Versor**, was added to the portfolio after this reporting period in April 2022 as the Systematic Trend Following manager.

**1Q 2021 Performance
as of March 31, 2022**

OPFRS Total Plan | As of March 31, 2022

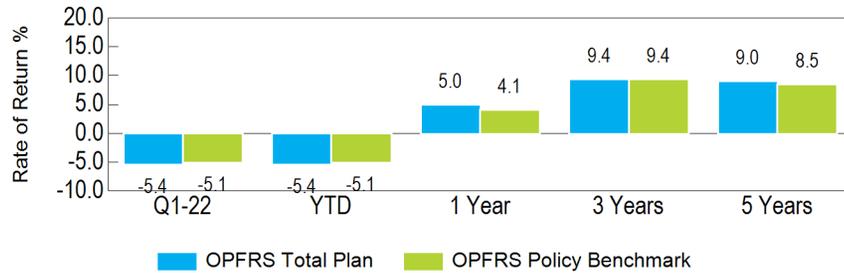
3 Months Ending March 31, 2022		
	Anlzd Return	Standard Deviation

OPFRS Total Plan	-2.39%	3.08%
OPFRS Policy Benchmark	-2.78%	2.67%
InvMetrics Public DB \$250mm-\$1B Gross Median	-1.96%	2.61%

1 Year Ending March 31, 2022		
	Anlzd Return	Standard Deviation

OPFRS Total Plan	4.96%	2.44%
OPFRS Policy Benchmark	4.10%	2.22%

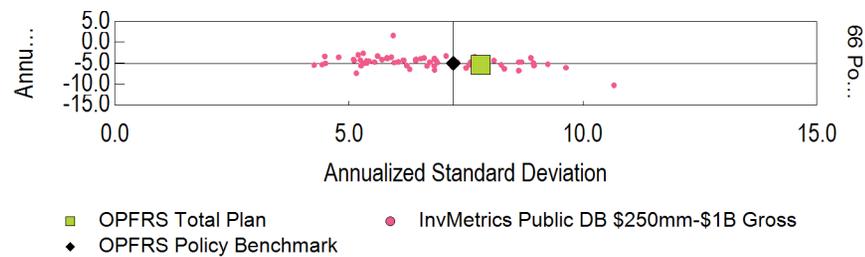
Return Summary Ending March 31, 2022



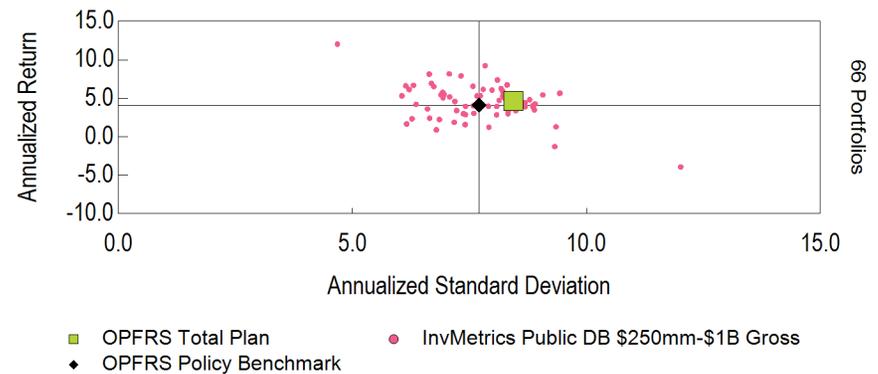
Summary of Cash Flows

	Quarter-To-Date	One Year
Beginning Market Value	\$483,220,978	\$443,301,342
Net Cash Flow	-\$7,726,635	-\$17,426,181
Capital Appreciation	-\$26,120,897	\$23,498,003
Ending Market Value	\$449,373,445	\$449,373,445

Annualized Return vs. Annualized Standard Deviation 3 Months Ending March 31, 2022

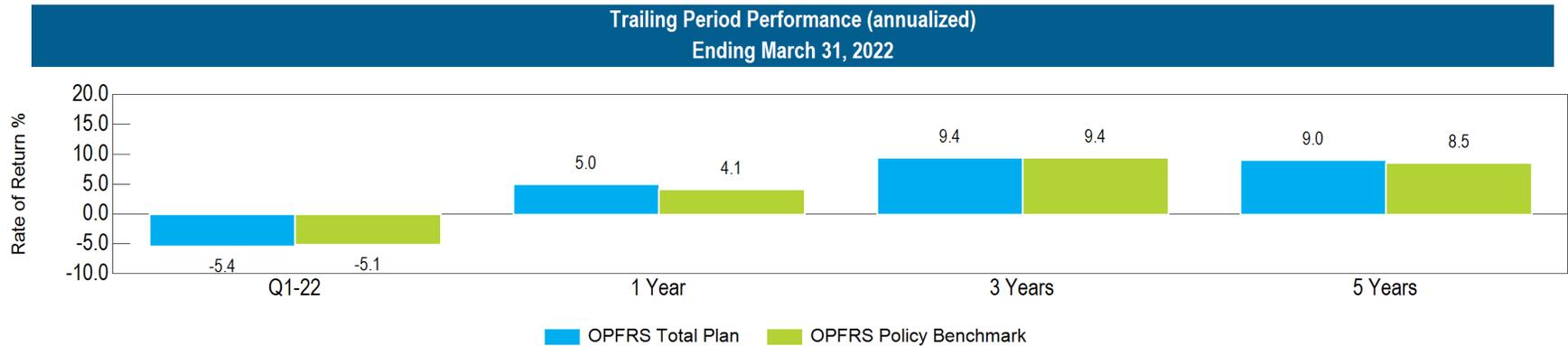


Annualized Return vs. Annualized Standard Deviation 1 Year Ending March 31, 2022

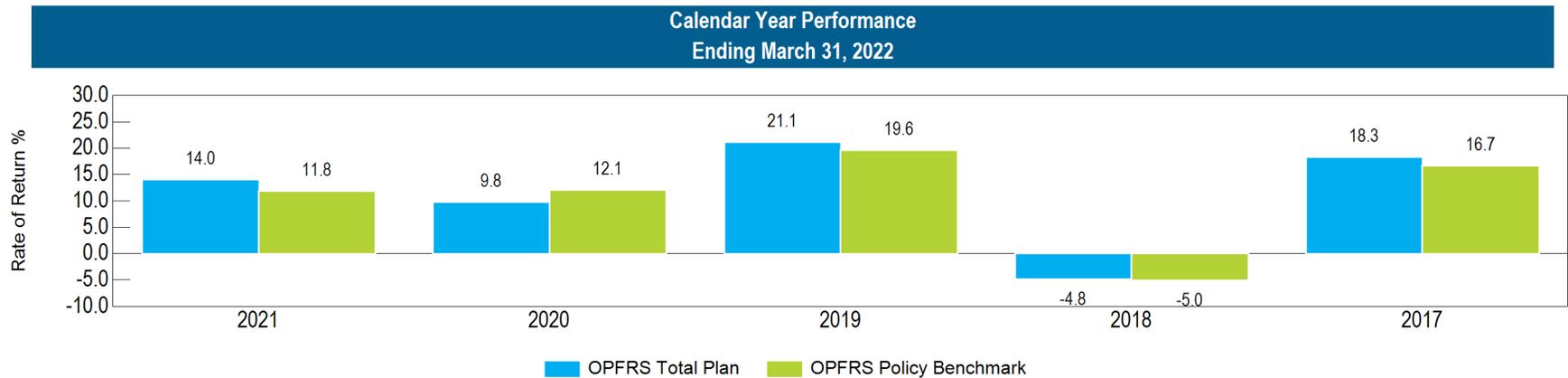


	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)
OPFRS Total Plan	-5.4	-0.1	5.0	9.4	9.0	8.0	8.2
<i>OPFRS Policy Benchmark</i>	<i>-5.1</i>	<i>-1.1</i>	<i>4.1</i>	<i>9.4</i>	<i>8.5</i>	<i>7.9</i>	<i>7.8</i>
Excess Return	-0.3	1.0	0.9	0.0	0.5	0.1	0.4
Domestic Equity	-5.6	3.2	10.0	16.7	14.5	12.7	13.8
<i>Russell 3000 (Blend)</i>	<i>-5.3</i>	<i>3.4</i>	<i>11.9</i>	<i>18.2</i>	<i>15.4</i>	<i>13.4</i>	<i>14.3</i>
Excess Return	-0.3	-0.2	-1.9	-1.5	-0.9	-0.7	-0.5
International Equity	-4.6	-2.8	2.1	9.2	8.3	6.5	6.9
<i>MSCI ACWI ex US (Blend)</i>	<i>-5.3</i>	<i>-6.3</i>	<i>-1.0</i>	<i>8.0</i>	<i>7.3</i>	<i>5.7</i>	<i>6.0</i>
Excess Return	0.7	3.5	3.1	1.2	1.0	0.8	0.9
Fixed Income	-6.0	-5.8	-3.5	2.2	2.9	2.6	2.9
<i>Bloomberg Universal (Blend)</i>	<i>-6.1</i>	<i>-6.1</i>	<i>-4.2</i>	<i>1.9</i>	<i>2.3</i>	<i>2.2</i>	<i>2.6</i>
Excess Return	0.1	0.3	0.7	0.3	0.6	0.4	0.3
Credit	-1.1	1.3	4.6	5.7	6.0	6.0	--
<i>Bloomberg US High Yield TR</i>	<i>-4.8</i>	<i>-3.3</i>	<i>-0.7</i>	<i>4.6</i>	<i>4.7</i>	<i>5.0</i>	<i>--</i>
Excess Return	3.7	4.6	5.3	1.1	1.3	1.0	
Covered Calls	-2.6	7.2	14.3	14.8	11.8	11.0	--
<i>CBOE S&P 500 BuyWrite USD</i>	<i>0.8</i>	<i>9.3</i>	<i>14.9</i>	<i>8.9</i>	<i>7.3</i>	<i>7.3</i>	<i>--</i>
Excess Return	-3.4	-2.1	-0.6	5.9	4.5	3.7	
Crisis Risk Offset	-8.6	-6.8	-1.2	-11.3	--	--	--
<i>SG Multi Alternative Risk Premia Index</i>	<i>-0.4</i>	<i>1.2</i>	<i>3.3</i>	<i>-2.8</i>	<i>--</i>	<i>--</i>	<i>--</i>
Excess Return	-8.2	-8.0	-4.5	-8.5			

Fiscal year begins on July 1.



	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	2017 (%)	2018 (%)	2019 (%)	2020 (%)	2021 (%)
OPFRS Total Plan	-5.4	-0.1	5.0	9.4	9.0	18.3	-4.8	21.1	9.8	14.0
<i>OPFRS Policy Benchmark</i>	-5.1	-1.1	4.1	9.4	8.5	16.7	-5.0	19.6	12.1	11.8
<i>InvMetrics Public DB \$250mm-\$1B Gross Median</i>	-4.8	-0.7	4.5	10.7	9.2	15.8	-4.1	18.6	13.1	13.6

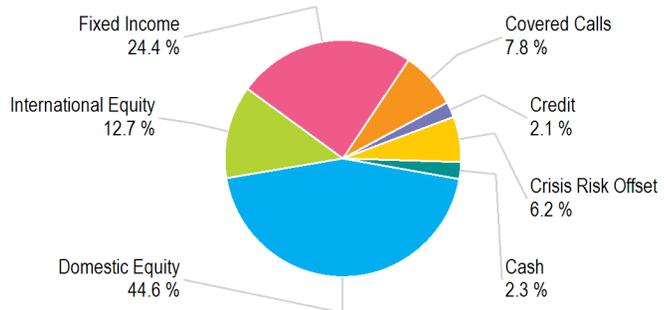


Fiscal year begins on July 1.

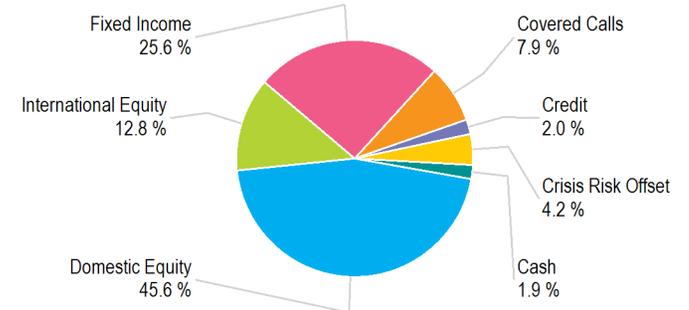
Asset Allocation vs. Target As Of March 31, 2022

	Current	%	Policy	Difference*
Domestic Equity	\$200,637,476	44.6%	40.0%	4.6%
International Equity	\$56,850,045	12.7%	12.0%	0.7%
Fixed Income	\$109,591,367	24.4%	31.0%	-6.6%
Covered Calls	\$35,018,022	7.8%	5.0%	2.8%
Credit	\$9,250,051	2.1%	2.0%	0.1%
Crisis Risk Offset	\$27,661,952	6.2%	10.0%	-3.8%
Cash	\$10,364,533	2.3%	0.0%	2.3%

March 31, 2022: \$449,834,415



March 31, 2021: \$483,220,978



Cash account market value includes cash balances held in ETF accounts at the custodian and residuals from terminated managers.

Target weightings reflect the Plan's evolving asset allocation (effective 5/31/2017.)

	Market Value	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs	S.I.	S.I. Date
Domestic Equity	200,637,476	100.0	-5.6	10.0	16.7	14.5	9.4	Jun-97
<i>Russell 3000 (Blend)</i>			<i>-5.3</i>	<i>11.9</i>	<i>18.2</i>	<i>15.4</i>	<i>9.6</i>	<i>Jun-97</i>
Excess Return			-0.3	-1.9	-1.5	-0.9	-0.2	
Northern Trust Russell 1000	103,327,856	51.5	-5.1	13.3	18.7	15.8	15.0	Jun-10
<i>Russell 1000</i>			<i>-5.1</i>	<i>13.3</i>	<i>18.7</i>	<i>15.8</i>	<i>15.0</i>	<i>Jun-10</i>
Excess Return			0.0	0.0	0.0	0.0	0.0	
<i>eV US Large Cap Core Equity Gross Rank</i>			<i>55</i>	<i>58</i>	<i>35</i>	<i>40</i>	<i>43</i>	<i>Jun-10</i>
EARNEST Partners	48,590,675	24.2	-5.7	8.2	18.3	16.1	11.2	Apr-06
<i>Russell MidCap</i>			<i>-5.7</i>	<i>6.9</i>	<i>14.9</i>	<i>12.6</i>	<i>9.6</i>	<i>Apr-06</i>
Excess Return			0.0	1.3	3.4	3.5	1.6	
<i>eV US Mid Cap Core Equity Gross Rank</i>			<i>45</i>	<i>41</i>	<i>13</i>	<i>8</i>	<i>28</i>	<i>Apr-06</i>
iShares Edge MSCI Min Vol ETF	22,076,344	11.0	-3.8	13.6	--	--	21.8	Apr-20
<i>MSCI USA Minimum Volatility GR USD</i>			<i>-3.8</i>	<i>13.8</i>	<i>--</i>	<i>--</i>	<i>21.9</i>	<i>Apr-20</i>
Excess Return			0.0	-0.2			-0.1	
<i>eV US Low Volatility Equity Gross Rank</i>			<i>53</i>	<i>51</i>	<i>--</i>	<i>--</i>	<i>80</i>	<i>Apr-20</i>
Rice Hall James	15,430,352	7.7	-11.5	-5.1	11.4	--	10.5	Jul-17
<i>Russell 2000 Growth</i>			<i>-12.6</i>	<i>-14.3</i>	<i>9.9</i>	<i>--</i>	<i>9.9</i>	<i>Jul-17</i>
Excess Return			1.1	9.2	1.5		0.6	
<i>eV US Small Cap Growth Equity Gross Rank</i>			<i>31</i>	<i>37</i>	<i>85</i>	<i>--</i>	<i>91</i>	<i>Jul-17</i>
Brown Fundamental Small Cap Value	11,212,249	5.6	-5.1	5.2	--	--	5.2	Apr-21
<i>Russell 2000 Value</i>			<i>-2.4</i>	<i>3.3</i>	<i>--</i>	<i>--</i>	<i>3.3</i>	<i>Apr-21</i>
Excess Return			-2.7	1.9			1.9	
<i>eV US Small Cap Value Equity Gross Rank</i>			<i>72</i>	<i>55</i>	<i>--</i>	<i>--</i>	<i>55</i>	<i>Apr-21</i>

	Market Value	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs	S.I.	S.I. Date
International Equity	57,310,971	100.0	-4.6	2.1	9.2	8.3	5.7	Jan-98
<i>MSCI ACWI ex US (Blend)</i>			<i>-5.3</i>	<i>-1.0</i>	<i>8.0</i>	<i>7.3</i>	<i>5.7</i>	<i>Jan-98</i>
Excess Return			0.7	3.1	1.2	1.0	0.0	
SGA ACWI ex-U.S. Equity	40,766,479	71.1	-3.9	2.4	--	--	6.3	Dec-19
<i>MSCI ACWI ex USA Gross</i>			<i>-5.3</i>	<i>-1.0</i>	--	--	<i>7.7</i>	<i>Dec-19</i>
Excess Return			1.4	3.4			-1.4	
<i>eV ACWI ex-US All Cap Core Eq Gross Rank</i>			<i>19</i>	<i>26</i>	--	--	<i>89</i>	<i>Dec-19</i>
Vanguard Developed Markets ETF	16,083,566	28.1	-5.8	0.7	--	--	10.4	Sep-19
<i>FTSE Developed All Cap Ex US TR USD</i>			<i>-5.2</i>	<i>1.9</i>	--	--	<i>11.0</i>	<i>Sep-19</i>
Excess Return			-0.6	-1.2			-0.6	
<i>eV ACWI ex-US All Cap Core Eq Gross Rank</i>			<i>41</i>	<i>39</i>	--	--	<i>73</i>	<i>Sep-19</i>

Oakland Police and Fire Retirement System Total Plan

Manager Performance - Gross of Fees | As of March 31, 2022

	Market Value	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs	S.I.	S.I. Date
Fixed Income	109,591,411	100.0	-6.0	-3.5	2.2	2.9	5.1	Dec-93
<i>Bloomberg Universal (Blend)</i>			<i>-6.1</i>	<i>-4.2</i>	<i>1.9</i>	<i>2.3</i>	<i>4.9</i>	<i>Dec-93</i>
Excess Return			0.1	0.7	0.3	0.6	0.2	
Ramirez	74,513,589	68.0	-6.1	-3.5	2.1	2.8	2.8	Jan-17
<i>Bloomberg US Aggregate TR</i>			<i>-5.9</i>	<i>-4.2</i>	<i>1.7</i>	<i>2.1</i>	<i>2.2</i>	<i>Jan-17</i>
Excess Return			-0.2	0.7	0.4	0.7	0.6	
<i>eV US Core Fixed Inc Gross Rank</i>			83	28	72	33	33	<i>Jan-17</i>
Reams	27,928,505	25.5	-5.5	-3.2	5.7	4.8	5.6	Feb-98
<i>Bloomberg Universal (Blend)</i>			<i>-6.1</i>	<i>-4.2</i>	<i>1.9</i>	<i>2.3</i>	<i>4.5</i>	<i>Feb-98</i>
Excess Return			0.6	1.0	3.8	2.5	1.1	
<i>eV US Core Plus Fixed Inc Gross Rank</i>			36	42	3	3	44	<i>Feb-98</i>
Wellington Core Bond	7,149,273	6.5	-6.3	-4.6	--	--	-4.6	Apr-21
<i>Bloomberg US Aggregate TR</i>			<i>-5.9</i>	<i>-4.2</i>	--	--	<i>-4.2</i>	<i>Apr-21</i>
Excess Return			-0.4	-0.4			-0.4	
<i>eV US Core Fixed Inc Gross Rank</i>			95	96	--	--	96	<i>Apr-21</i>

Oakland Police and Fire Retirement System Total Plan

Manager Performance - Gross of Fees | As of March 31, 2022

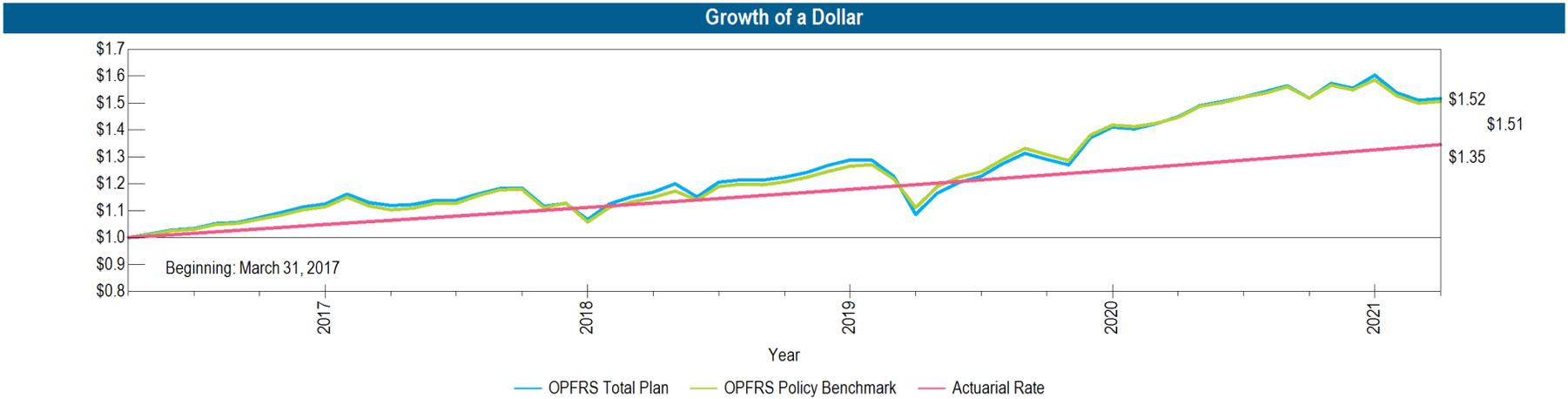
	Market Value	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs	S.I.	S.I. Date
Credit	9,250,051	100.0	-1.1	4.6	5.7	6.0	6.2	Feb-15
<i>Bloomberg US High Yield TR</i>			<i>-4.8</i>	<i>-0.7</i>	<i>4.6</i>	<i>4.7</i>	<i>5.2</i>	<i>Feb-15</i>
Excess Return			3.7	5.3	1.1	1.3	1.0	
Polen Capital	9,250,051	100.0	-1.1	4.6	5.7	6.0	6.2	Feb-15
<i>ICE BofA High Yield Master TR</i>			<i>-4.5</i>	<i>-0.3</i>	<i>4.4</i>	<i>4.6</i>	<i>5.1</i>	<i>Feb-15</i>
Excess Return			3.4	4.9	1.3	1.4	1.1	
<i>eV US High Yield Fixed Inc Gross Rank</i>			<i>8</i>	<i>5</i>	<i>23</i>	<i>12</i>	<i>16</i>	<i>Feb-15</i>

	Market Value	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs	S.I.	S.I. Date
Covered Calls	35,018,022	100.0	-2.6	14.3	14.8	11.8	10.4	Apr-14
<i>CBOE S&P 500 BuyWrite USD</i>			<i>0.8</i>	<i>14.9</i>	<i>8.9</i>	<i>7.3</i>	<i>7.0</i>	<i>Apr-14</i>
Excess Return			-3.4	-0.6	5.9	4.5	3.4	
Parametric DeltaShift	17,664,992	50.4	-3.3	16.8	18.6	14.6	12.8	Apr-14
<i>CBOE S&P 500 BuyWrite USD</i>			<i>0.8</i>	<i>14.9</i>	<i>8.9</i>	<i>7.3</i>	<i>7.0</i>	<i>Apr-14</i>
Excess Return			-4.1	1.9	9.7	7.3	5.8	
<i>eV US Large Cap Core Equity Gross Rank</i>			<i>25</i>	<i>17</i>	<i>37</i>	<i>64</i>	<i>64</i>	<i>Apr-14</i>
Parametric BXM	17,353,030	49.6	-1.6	11.2	10.5	8.8	8.2	Apr-14
<i>CBOE S&P 500 BuyWrite USD</i>			<i>0.8</i>	<i>14.9</i>	<i>8.9</i>	<i>7.3</i>	<i>7.0</i>	<i>Apr-14</i>
Excess Return			-2.4	-3.7	1.6	1.5	1.2	
<i>eV US Large Cap Core Equity Gross Rank</i>			<i>12</i>	<i>75</i>	<i>98</i>	<i>98</i>	<i>98</i>	<i>Apr-14</i>

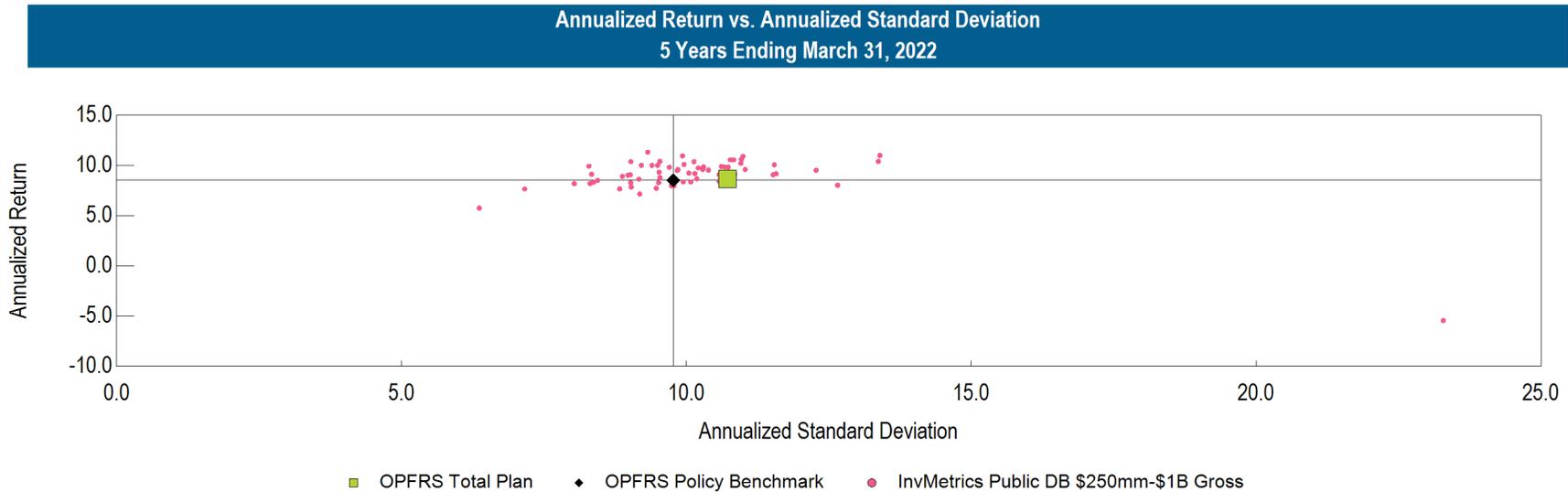
Oakland Police and Fire Retirement System Total Plan

Manager Performance - Gross of Fees | As of March 31, 2022

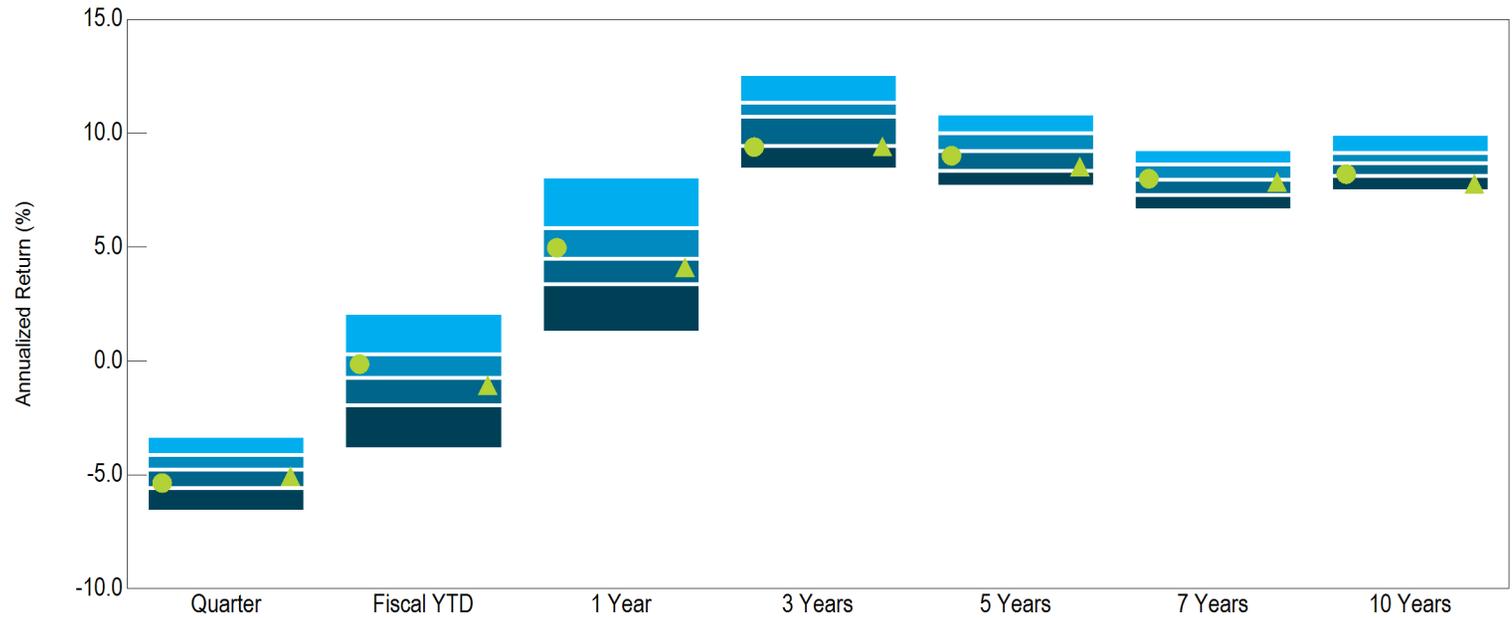
	Market Value	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs	S.I.	S.I. Date
Crisis Risk Offset	27,661,952	100.0	-8.6	-1.2	-11.3	--	-9.7	Aug-18
<i>SG Multi Alternative Risk Premia Index</i>			<i>-0.4</i>	<i>3.3</i>	<i>-2.8</i>	<i>--</i>	<i>-2.0</i>	<i>Aug-18</i>
Excess Return			-8.2	-4.5	-8.5		-7.7	
Vanguard Long-Term Treasury ETF	17,883,935	64.7	-10.1	-2.8	--	--	0.8	Jul-19
<i>Bloomberg US Govt Long TR</i>			<i>-10.6</i>	<i>-1.5</i>	<i>--</i>	<i>--</i>	<i>1.4</i>	<i>Jul-19</i>
Excess Return			0.5	-1.3			-0.6	
<i>eV US Long Duration - Gov/Cred Fixed Inc Net Rank</i>			<i>24</i>	<i>36</i>	<i>--</i>	<i>--</i>	<i>99</i>	<i>Jul-19</i>
Kepos Alternative Risk Premia	9,778,017	35.3	--	--	--	--	-2.1	Feb-22
<i>SG Multi Alternative Risk Premia Index</i>			<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>-1.2</i>	<i>Feb-22</i>
Excess Return							-0.9	



The actuarial expected rate of return was 8% through 6/30/2009, 7.5% through 6/30/2010, 7% through 6/30/2011, 6.75% through 6/30/2014, 6.5% through 2/31/2017 and 6.0% currently



InvMetrics Public DB \$250mm-\$1B Gross Return Comparison



	Quarter		Fiscal YTD		1 Year		3 Years		5 Years		7 Years		10 Years	
Return (Rank)														
5th Percentile	-3.3		2.1		8.1		12.6		10.9		9.3		10.0	
25th Percentile	-4.1		0.3		5.8		11.4		10.0		8.6		9.1	
Median	-4.8		-0.7		4.5		10.7		9.2		8.0		8.7	
75th Percentile	-5.6		-1.9		3.4		9.4		8.4		7.3		8.1	
95th Percentile	-6.6		-3.9		1.2		8.4		7.7		6.6		7.4	
# of Portfolios	66		66		66		66		64		62		60	
● OPFRS Total Plan	-5.4	(70)	-0.1	(37)	5.0	(46)	9.4	(78)	9.0	(63)	8.0	(50)	8.2	(73)
▲ OPFRS Policy Benchmark	-5.1	(66)	-1.1	(55)	4.1	(55)	9.4	(78)	8.5	(72)	7.9	(58)	7.8	(85)

Fiscal year begins on July 1.

Manager Monitoring/Probation Status Return vs. Benchmark since Corrective Action (As of March 31, 2022)

Portfolio	Status	Concern	Months Since Corrective Action	Performance ¹ Since Corrective Action (Gross, %)	Peer Group Percentile Ranking ²	Date of Corrective Action ³
Polen Capital ⁴	On Watch	Performance/ Org changes	33	6.0	18	5/29/2019
ICE BofAML US High Yield				4.6		
Rice Hall James	On Watch	Performance	33	13.5	84	5/29/2019
Russell 2000 Growth				12.3		
Parametric	On Watch	Org changes	15	21.5	NA	10/28/2020
CBOE S&P 500 BuyWrite USD				19.5		

Investment Performance Criteria for Manager Monitoring/Probation Status

Asset Class	Short-term (Rolling 12 months)	Medium-term (Rolling 36 months)	Long-term (60 + months)
Active Domestic Equity	Fund return < benchmark return by 3.5%	Annualized Fund return < benchmark return by 1.75% for 6 consecutive months	VRR ⁵ < 0.97 for 6 consecutive months
Active International Equity	Fund return < benchmark return by 4.5%	Annualized Fund return < benchmark return by 2.0% for 6 consecutive months	VRR < 0.97 for 6 consecutive months
Passive International Equity	Tracking Error > 0.50%	Tracking Error > 0.45% for 6 consecutive months	Annualized Fund return < benchmark return by 0.40% for 6 consecutive months
Fixed Income	Fund return < benchmark return by 1.5%	Annualized Fund return < benchmark return by 1.0% for 6 consecutive months	VRR < 0.98 for 6 consecutive months

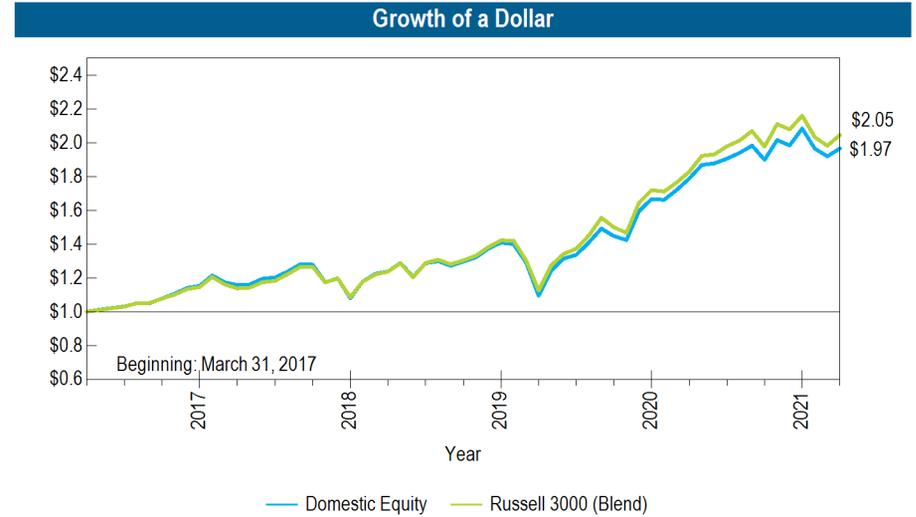
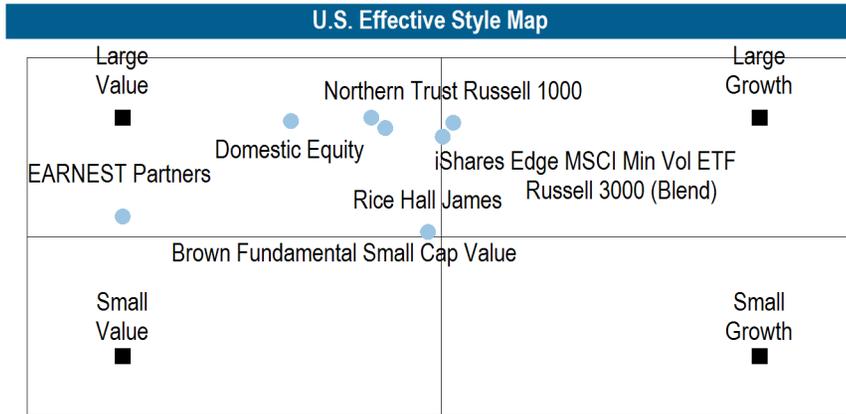
¹ Annualized performance if over one year

² Ranking over most recent quarter if on watch for less than 1 year, or over 1 year if on watch for more than a year.

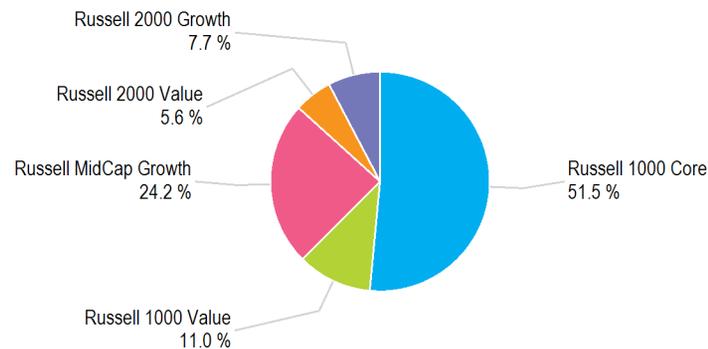
³ Approximate date based on when the Board voted to either monitor a manager at a heightened level or place it on probation.

⁴ Polen Capital High Yield strategy was formerly known as DDJ High Yield prior to 2022.

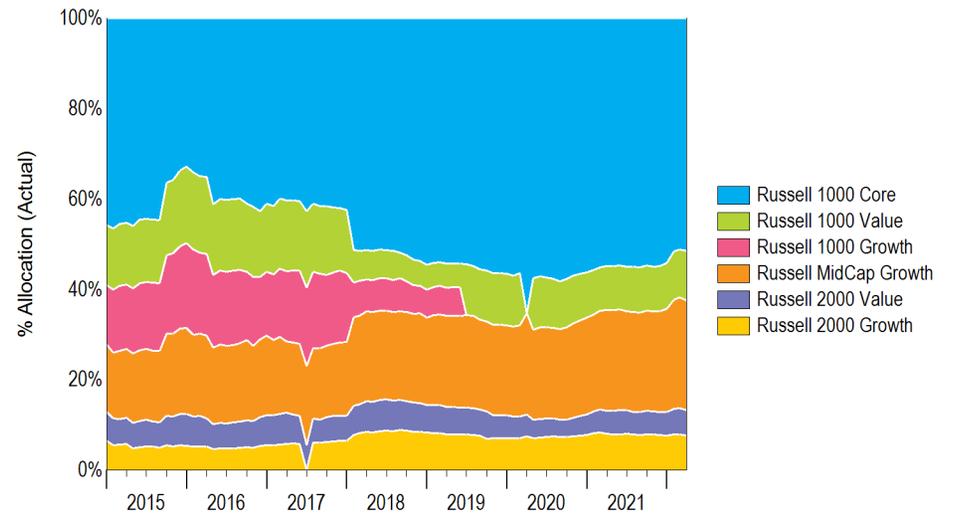
⁵ VRR (Value Relative Ratio) is calculated as manager cumulative return/ benchmark return.



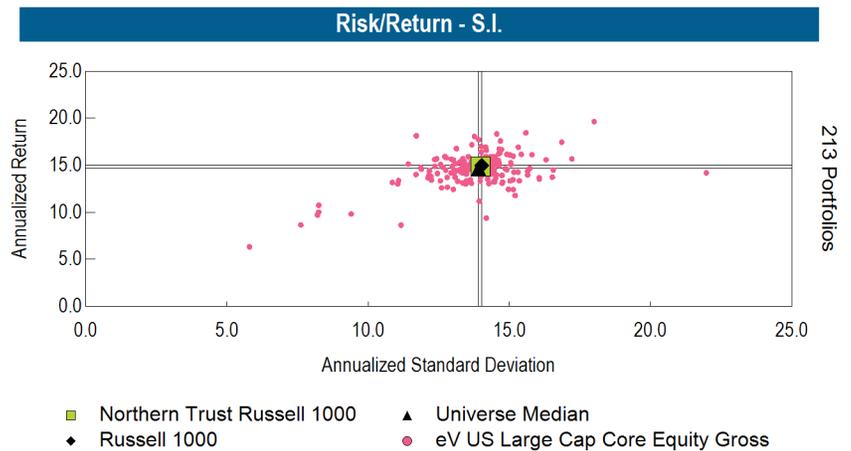
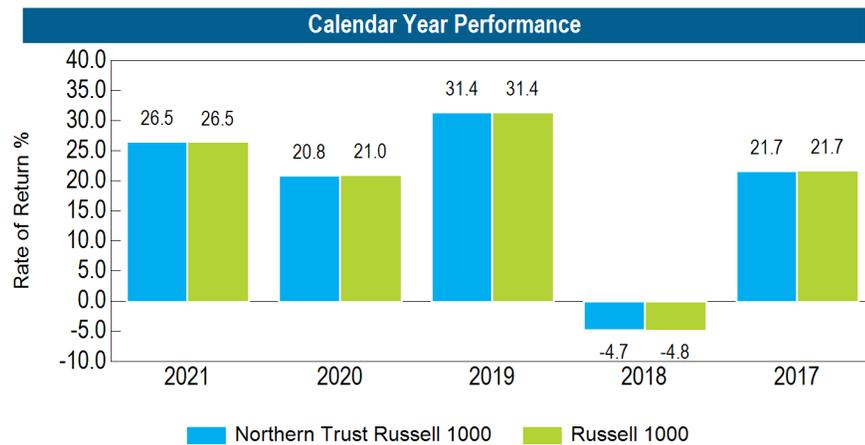
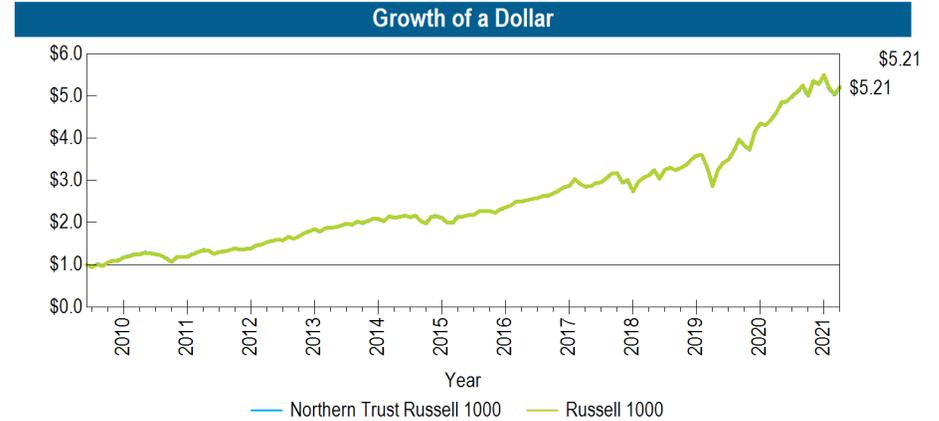
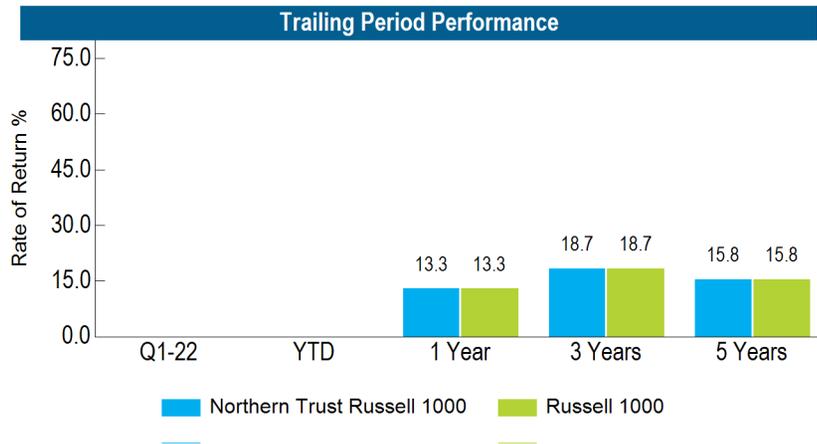
Style Exposure



Style History (5-Year)

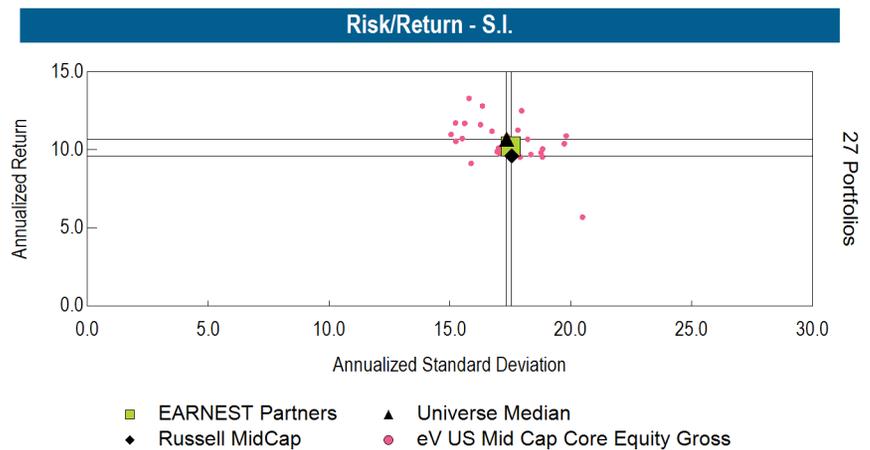
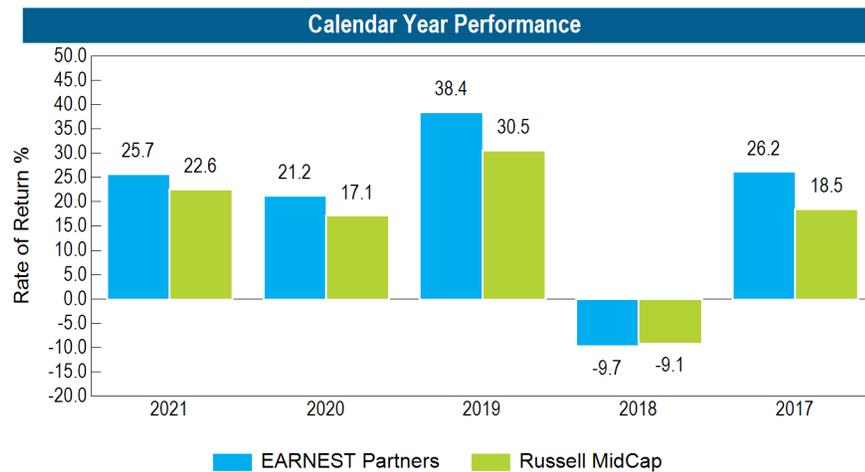
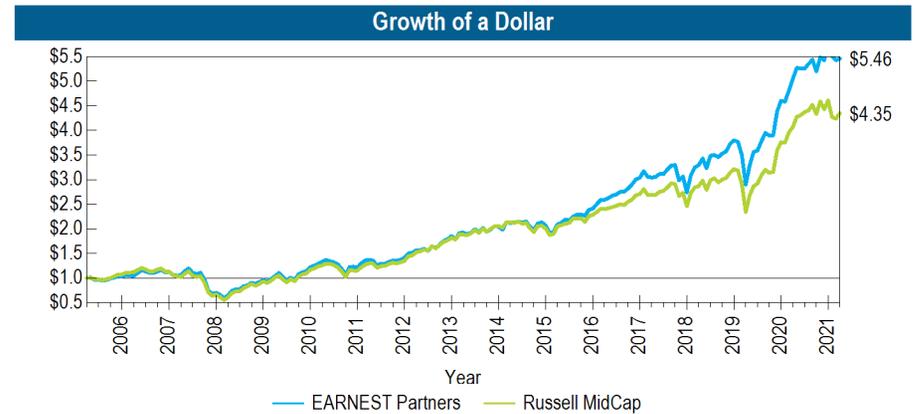
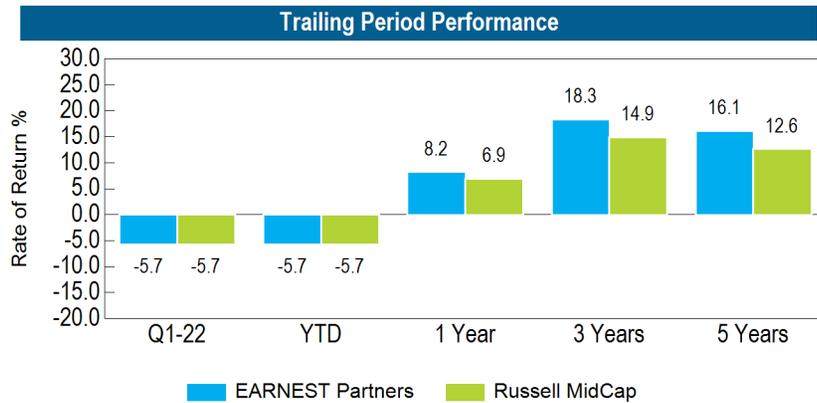


	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Northern Trust Russell 1000	14.89%	13.98%	0.00%	1.00	-0.58	0.15%	98.53%	99.84%
Russell 1000	14.97%	14.02%	0.00%	1.00	--	0.00%	100.00%	100.00%



Performance shown is net-of-fees and since inception.

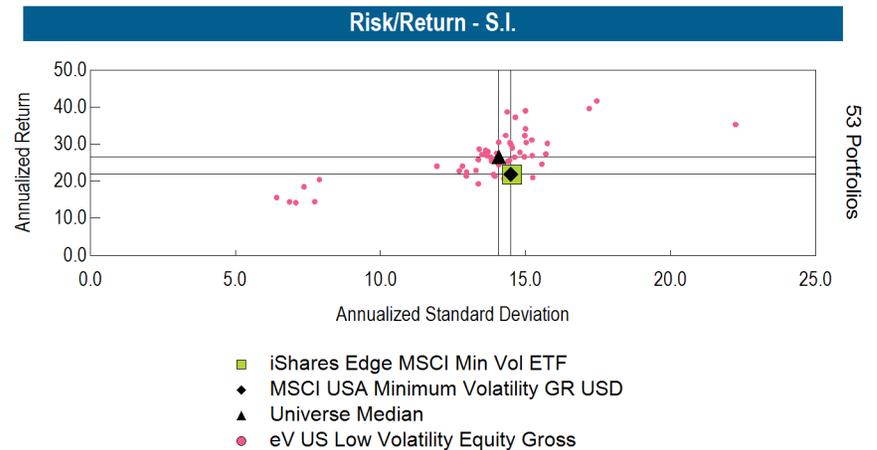
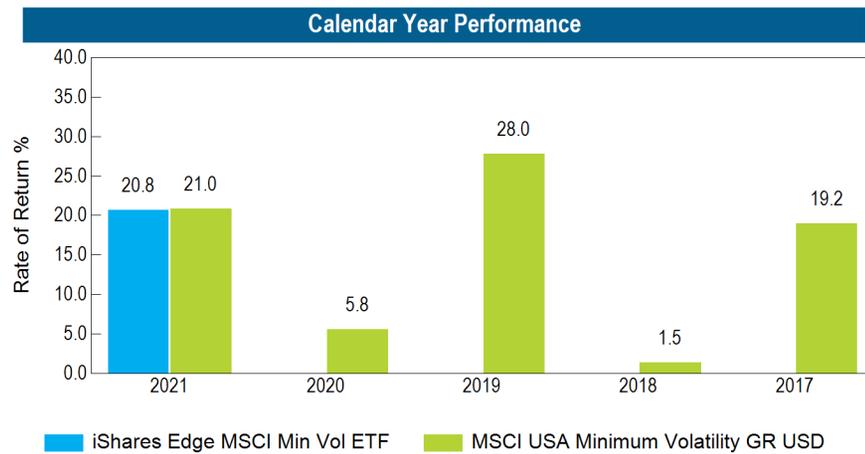
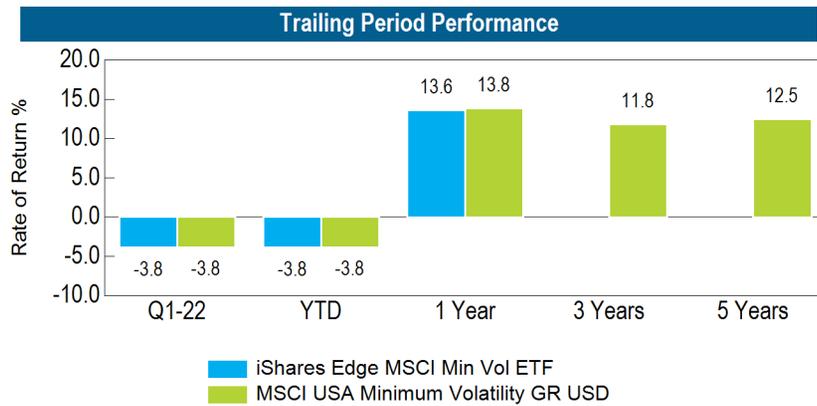
	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
EARNEST Partners	10.21%	17.51%	0.06%	0.98	0.17	3.52%	92.96%	98.99%
Russell MidCap	9.62%	17.55%	0.00%	1.00	--	0.00%	100.00%	100.00%



Performance shown is net-of-fees and since inception.

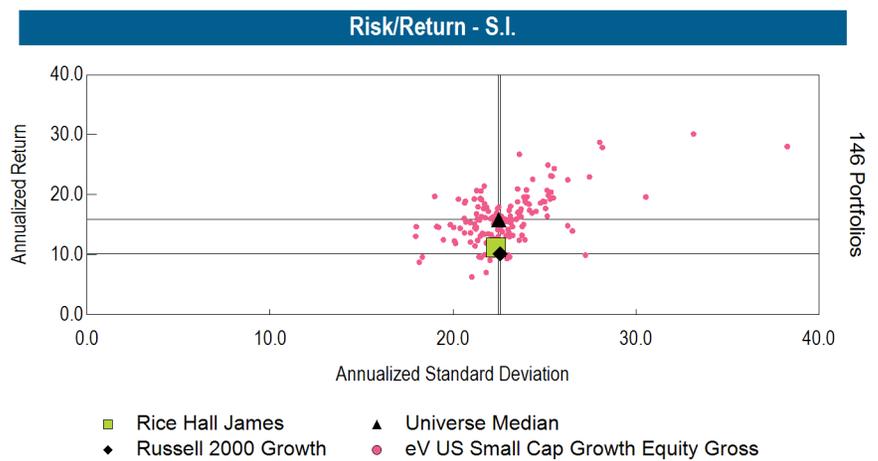
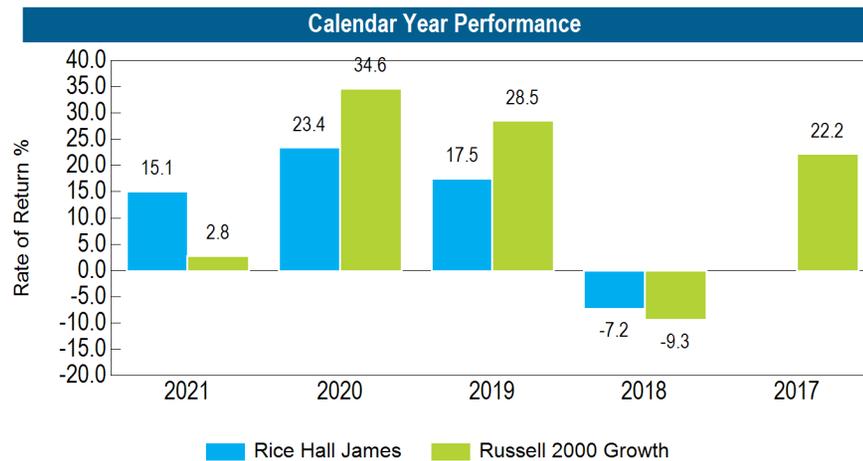
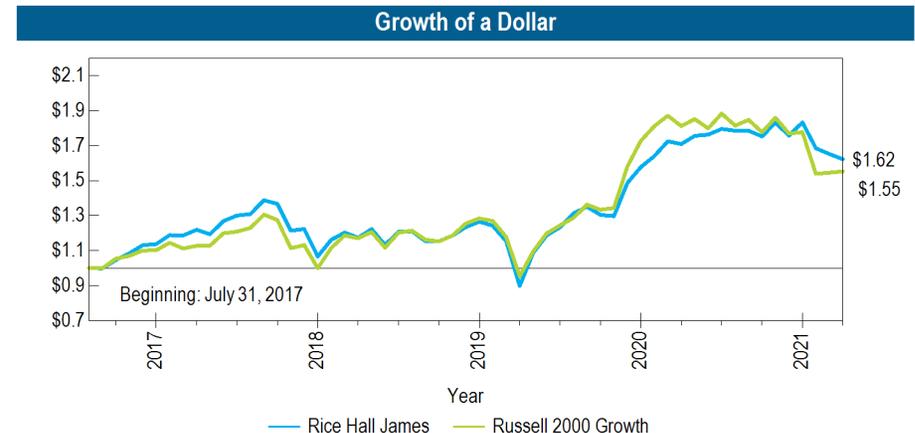
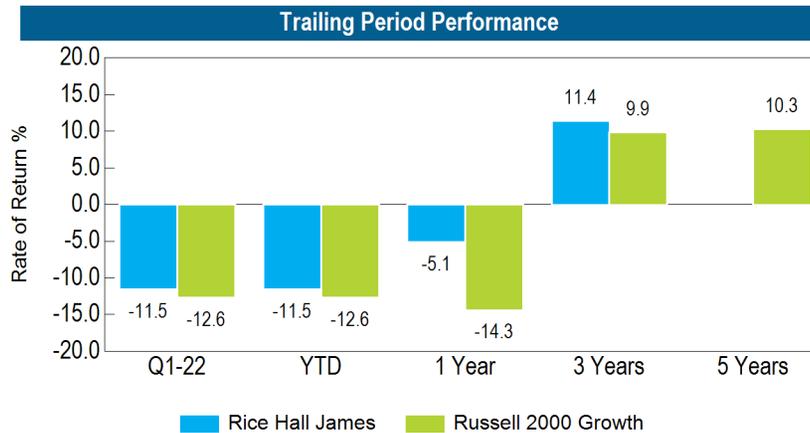
iShares Edge MSCI Min Vol ETF | As of March 31, 2022

	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
iShares Edge MSCI Min Vol ETF	21.77%	14.53%	-0.02%	1.00	-0.55	0.28%	99.80%	100.52%
MSCI USA Minimum Volatility GR USD	21.92%	14.49%	0.00%	1.00	--	0.00%	100.00%	100.00%



Performance shown is net-of-fees and since inception.

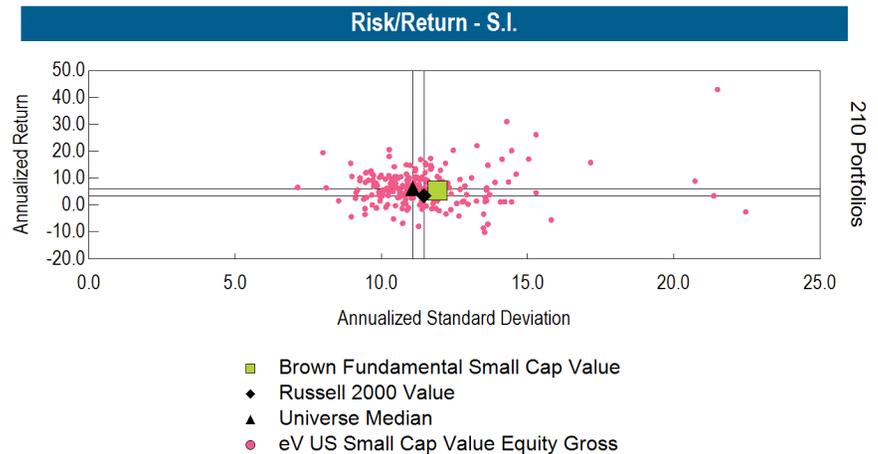
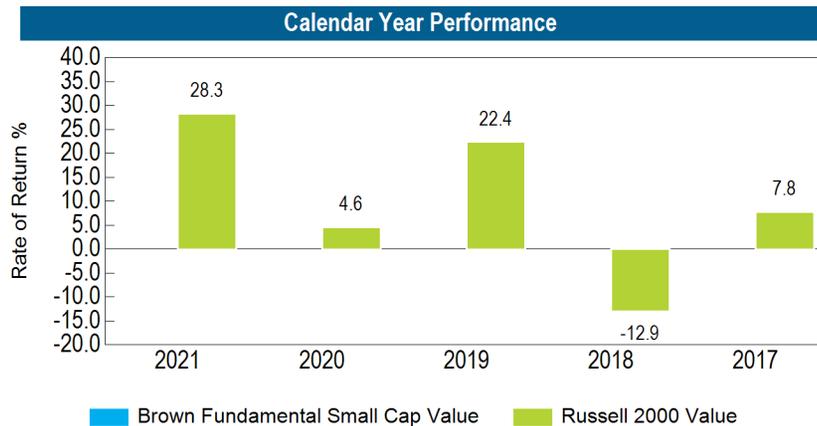
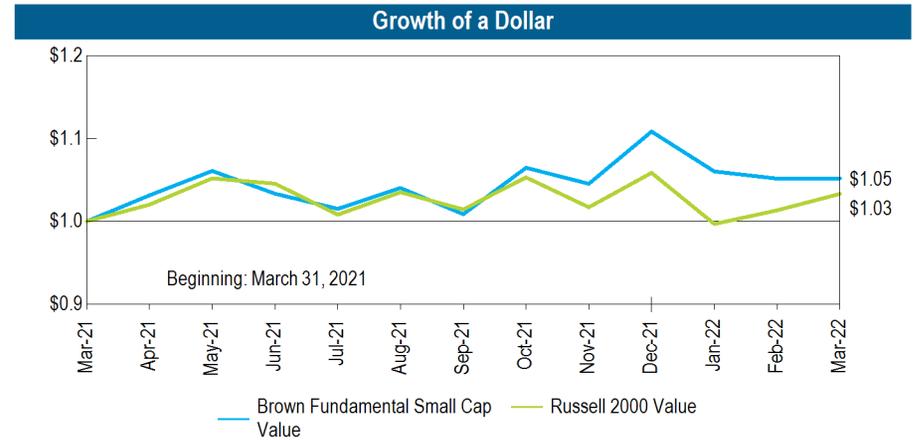
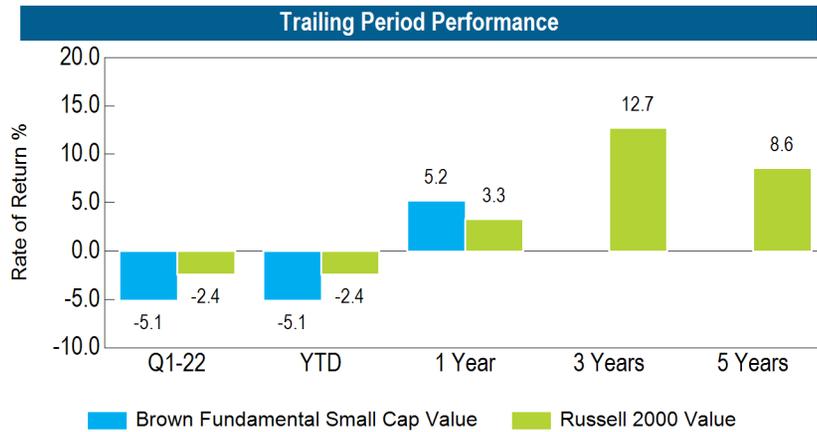
	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Rice Hall James	9.82%	22.16%	0.05%	0.94	-0.01	7.25%	84.03%	93.07%
Russell 2000 Growth	9.89%	22.38%	0.00%	1.00	--	0.00%	100.00%	100.00%



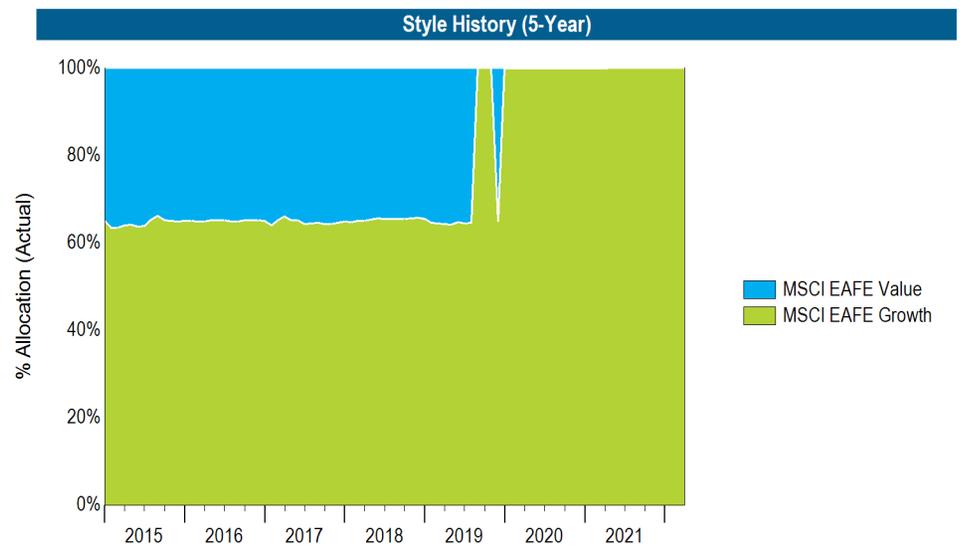
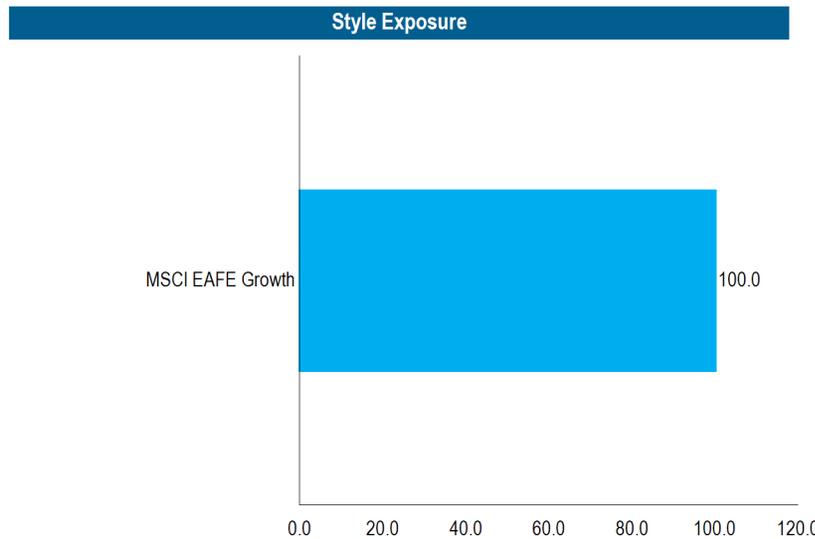
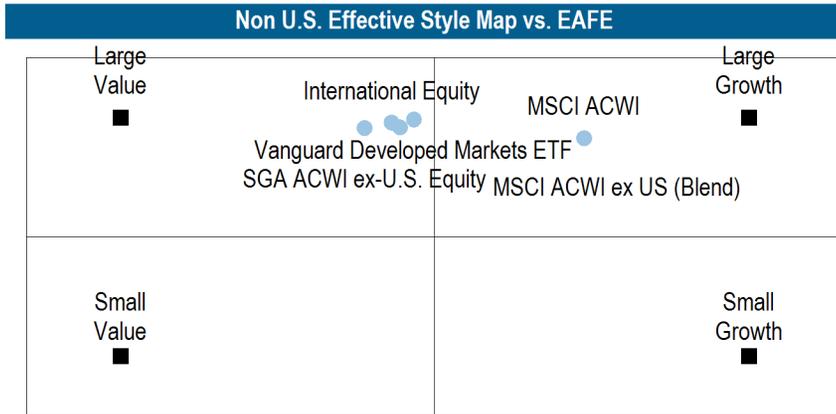
Performance shown is net-of-fees and since inception.

Brown Fundamental Small Cap Value | As of March 31, 2022

	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Brown Fundamental Small Cap Value	4.31%	11.92%	0.11%	0.91	0.17	5.79%	96.02%	90.27%
Russell 2000 Value	3.32%	11.45%	0.00%	1.00	--	0.00%	100.00%	100.00%

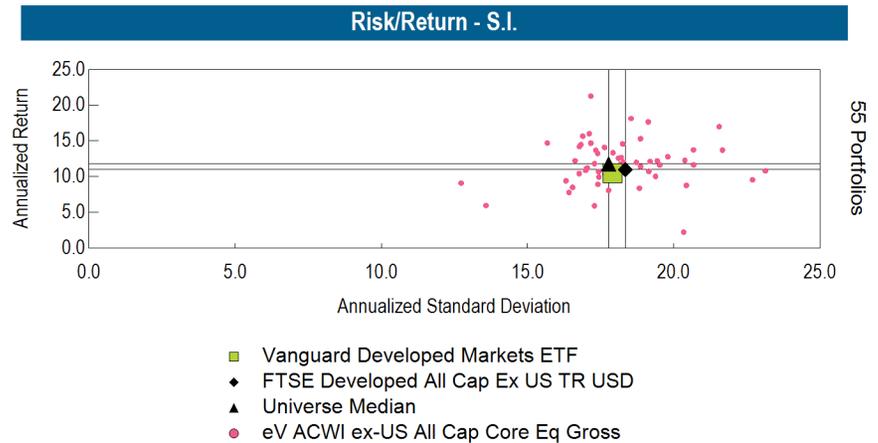
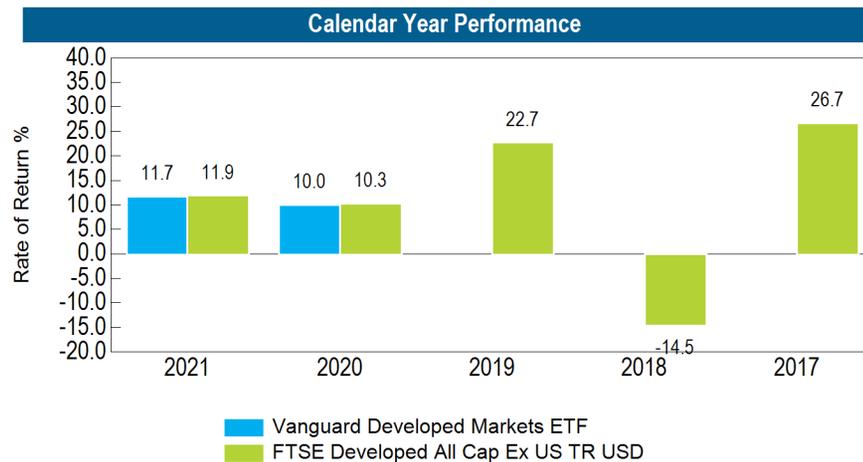
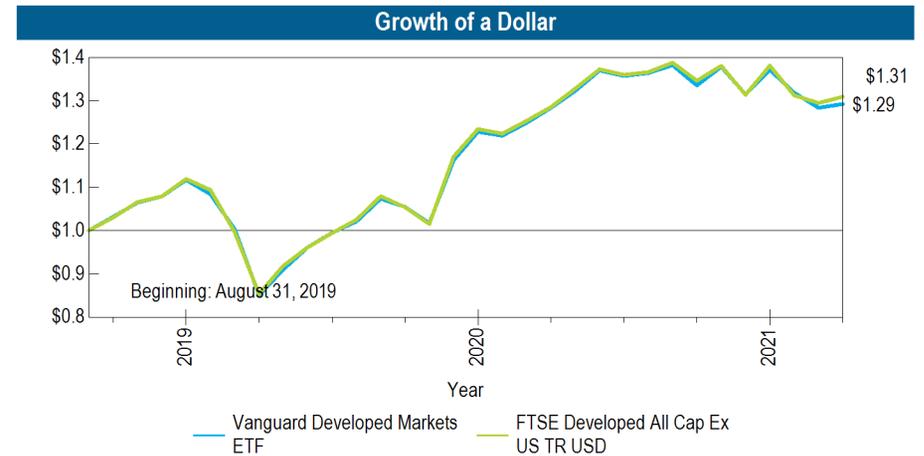
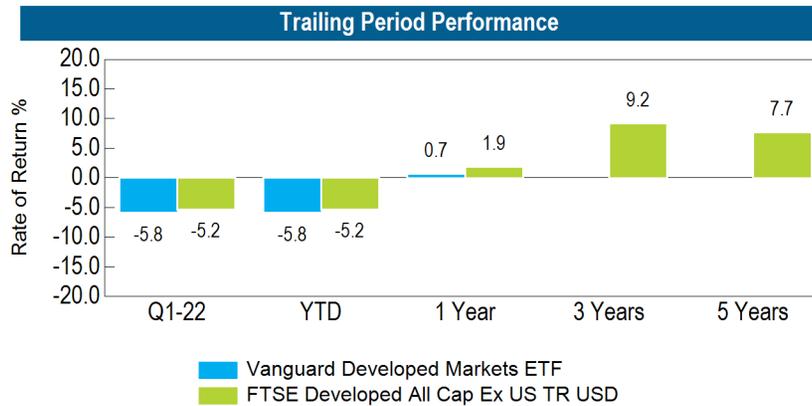


Performance shown is net-of-fees and since inception.



Vanguard Developed Markets ETF | As of March 31, 2022

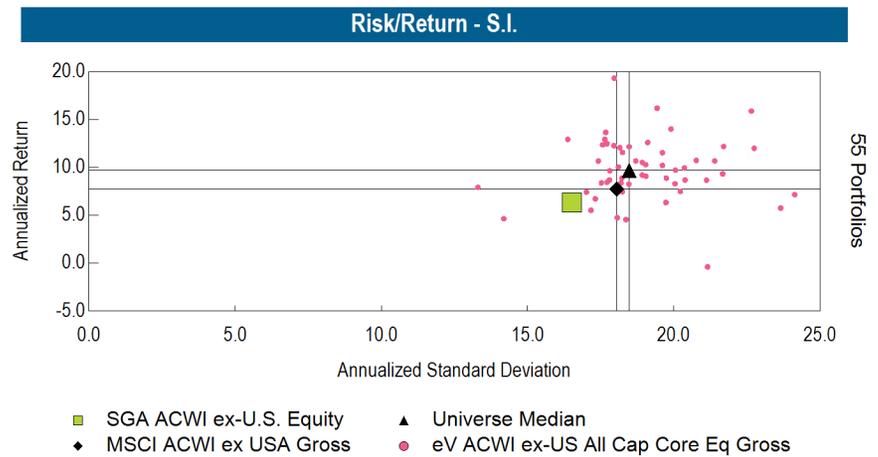
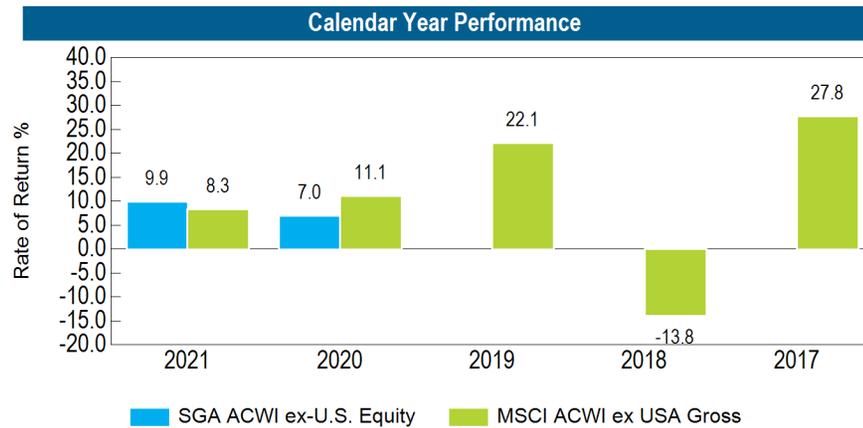
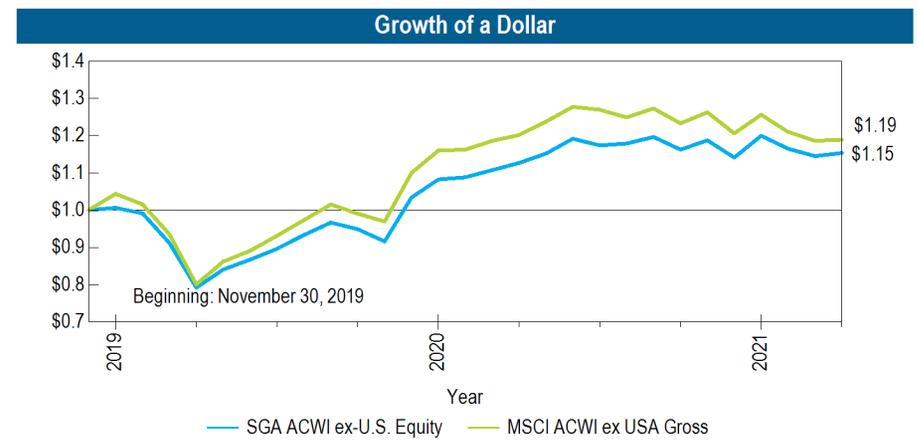
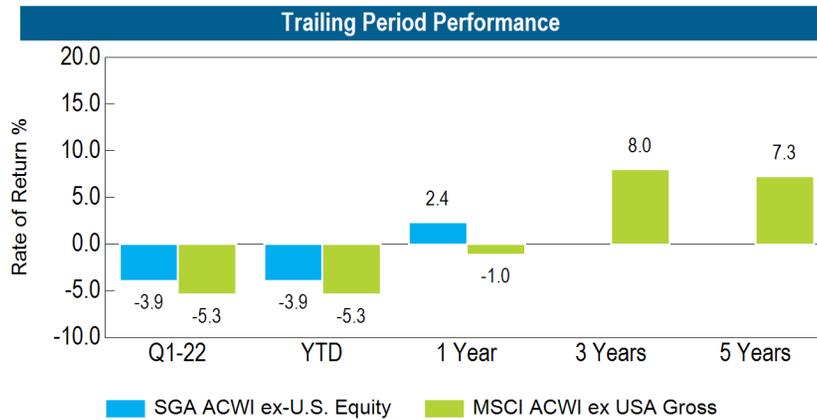
	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Vanguard Developed Markets ETF	10.43%	17.91%	-0.02%	0.97	-0.27	2.09%	96.79%	99.33%
FTSE Developed All Cap Ex US TR USD	10.99%	18.34%	0.00%	1.00	--	0.00%	100.00%	100.00%



Performance shown is net-of-fees and since inception.

SGA ACWI ex-U.S. Equity | As of March 31, 2022

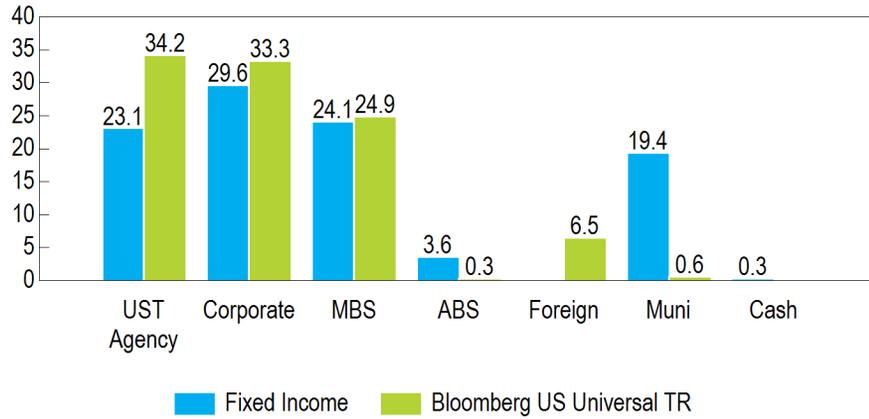
	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
SGA ACWI ex-U.S. Equity	5.59%	16.47%	-0.11%	0.89	-0.55	3.80%	81.79%	92.45%
MSCI ACWI ex USA Gross	7.70%	18.04%	0.00%	1.00	--	0.00%	100.00%	100.00%



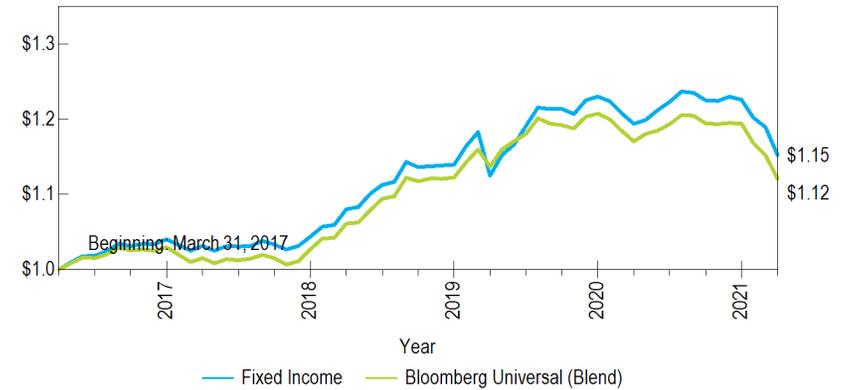
Performance shown is net-of-fees and since inception.

Fixed Income | As of March 31, 2022

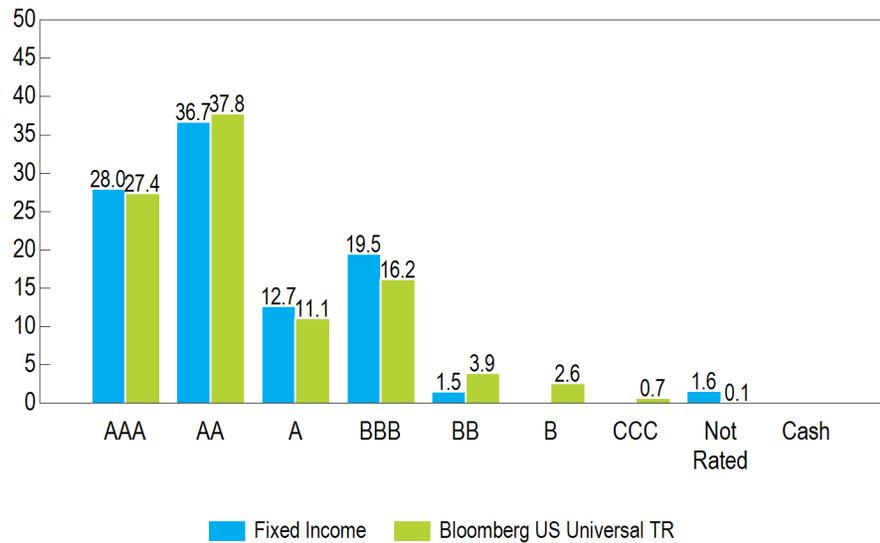
US Sector Allocation



Growth of a Dollar 5 Years Ending March 31, 2022



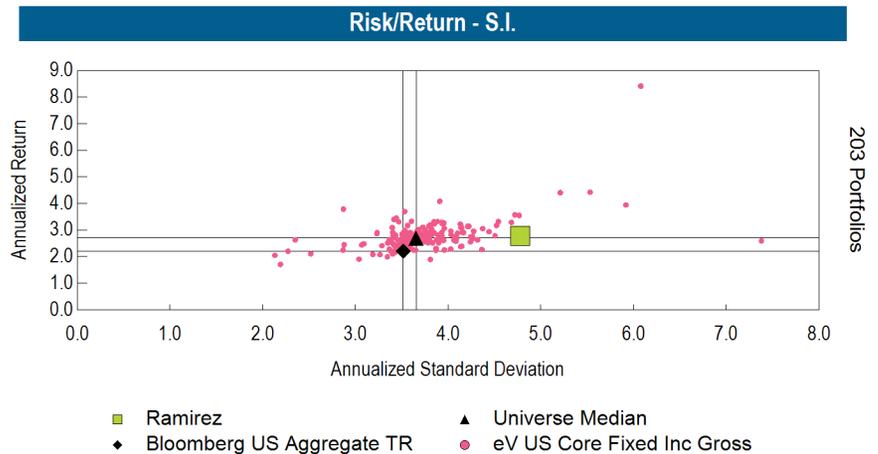
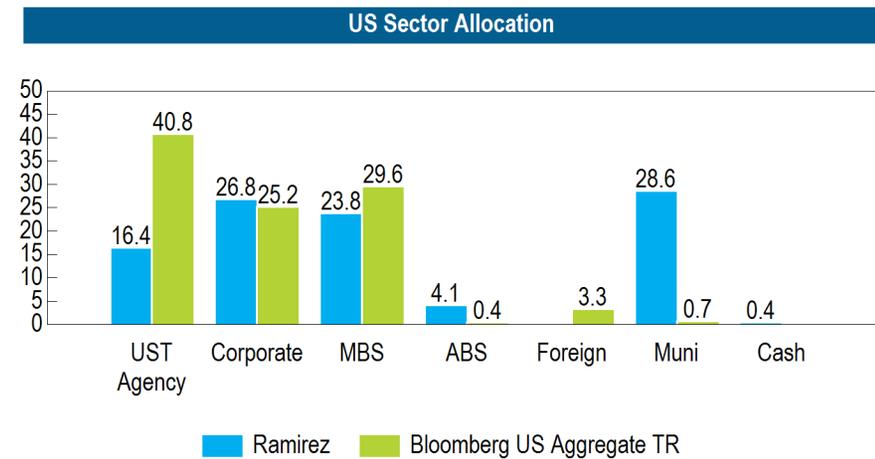
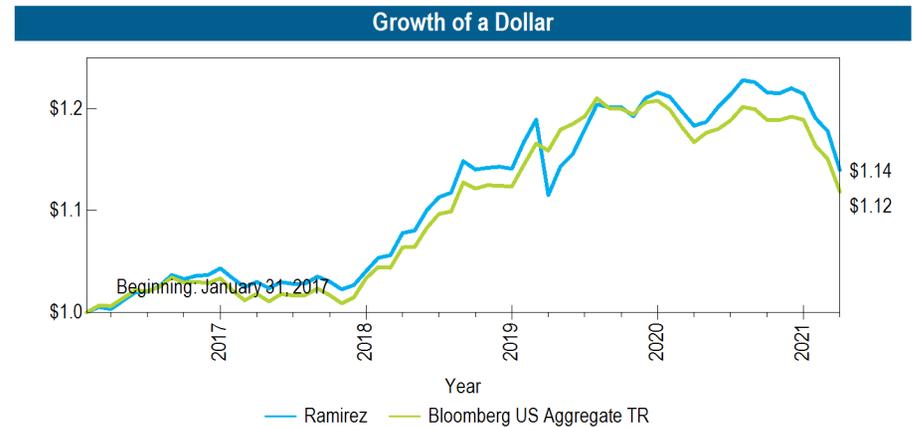
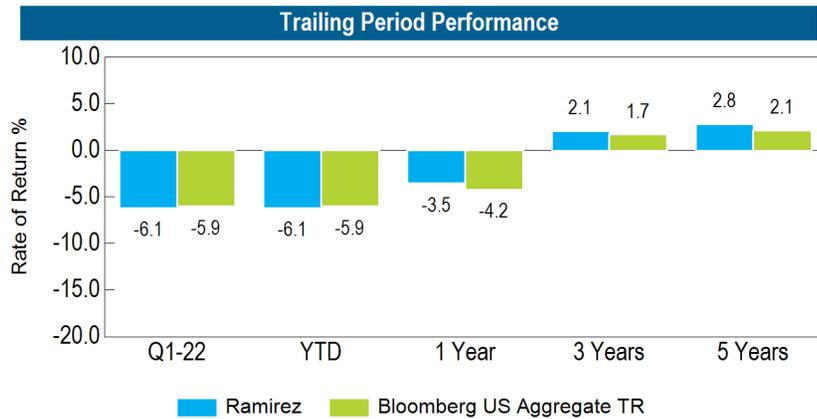
Credit Quality Allocation



Fixed Income Fixed Income Characteristics vs. Bloomberg US Universal TR

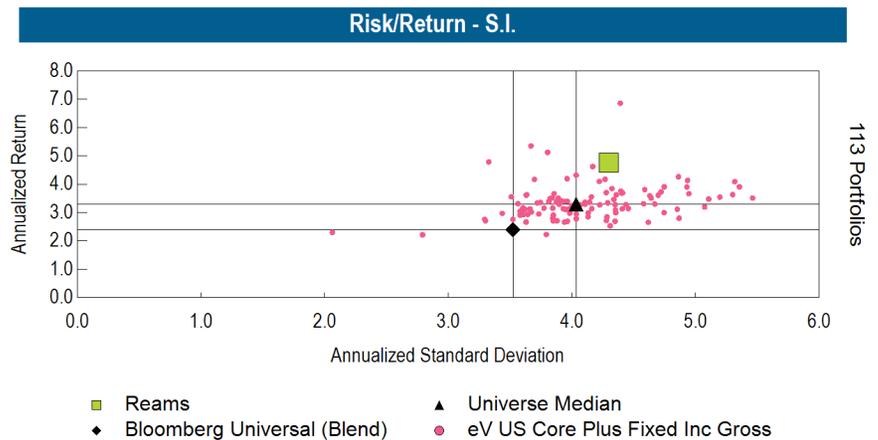
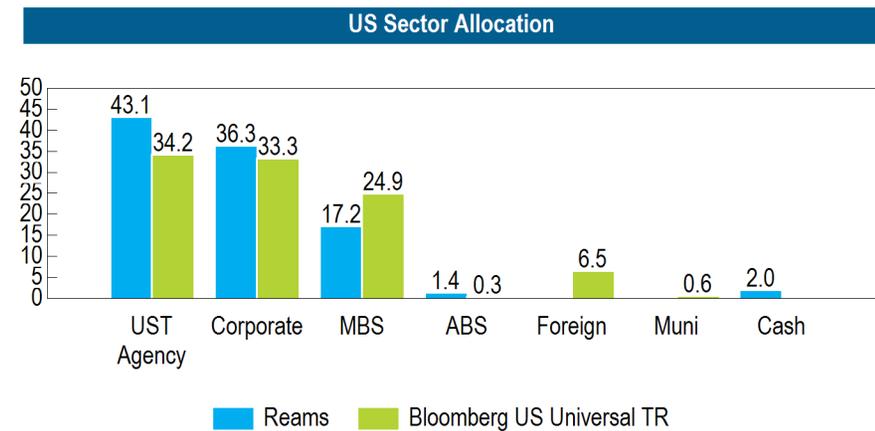
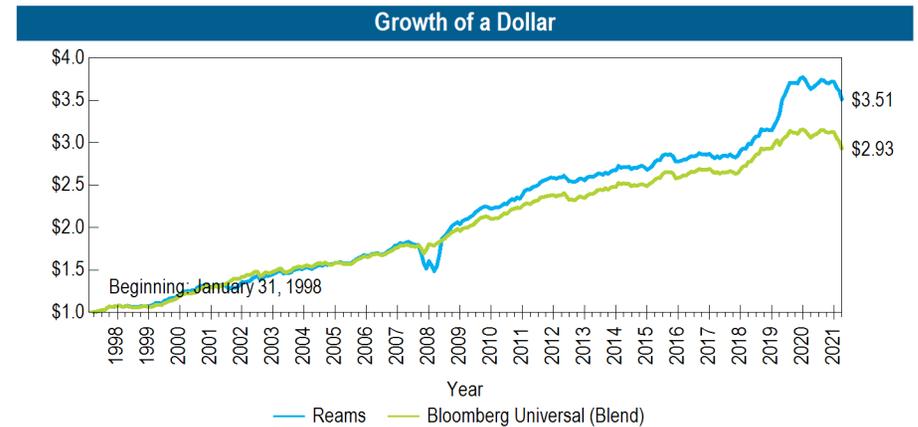
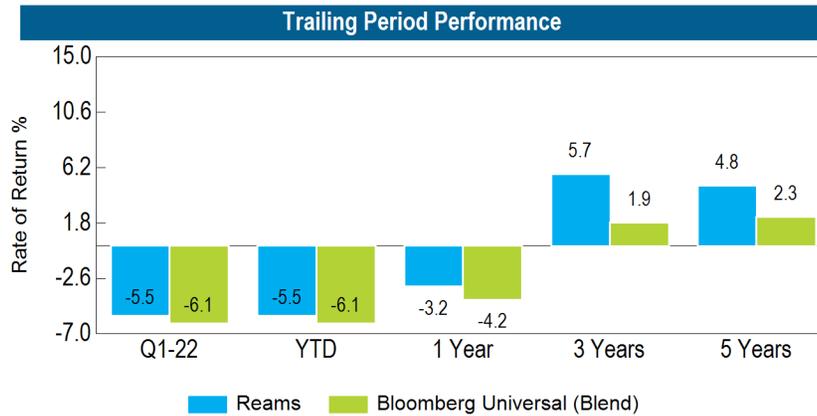
	Portfolio Q1-22	Index Q1-22
Fixed Income Characteristics		
Yield to Maturity	3.39	3.26
Average Duration	6.28	6.64
Average Quality	AA	AA
Weighted Average Maturity	8.95	12.70

	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Ramirez	2.57%	4.78%	0.01%	1.11	0.13	2.77%	123.67%	119.37%
Bloomberg US Aggregate TR	2.20%	3.52%	0.00%	1.00	--	0.00%	100.00%	100.00%



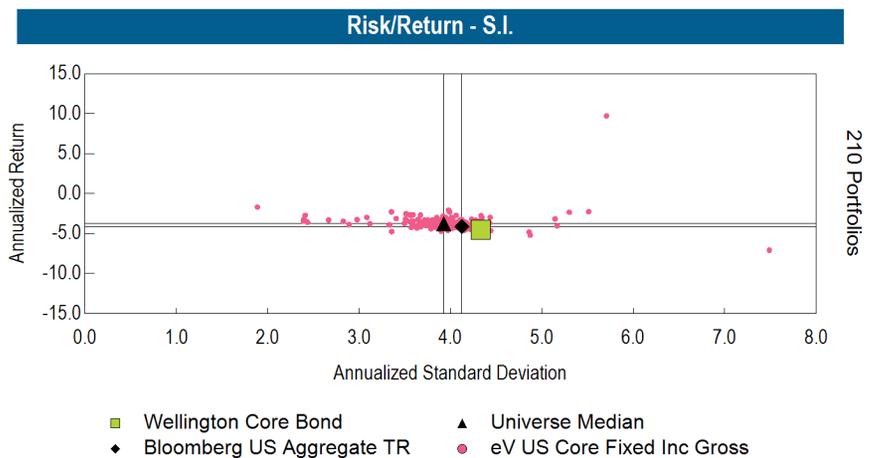
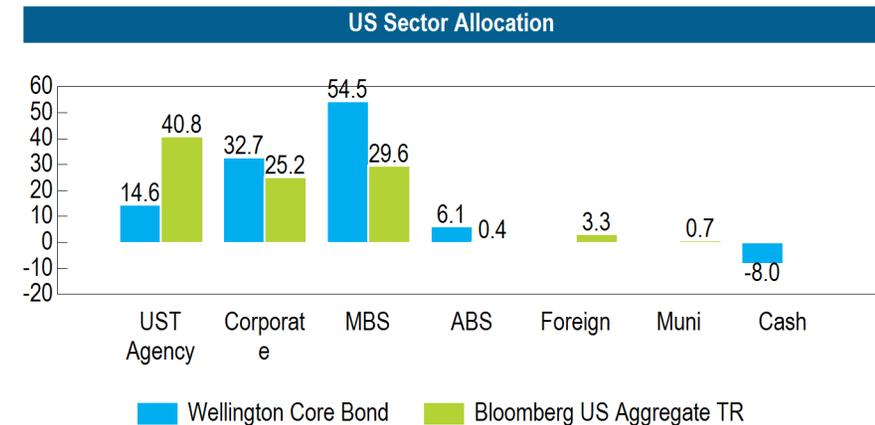
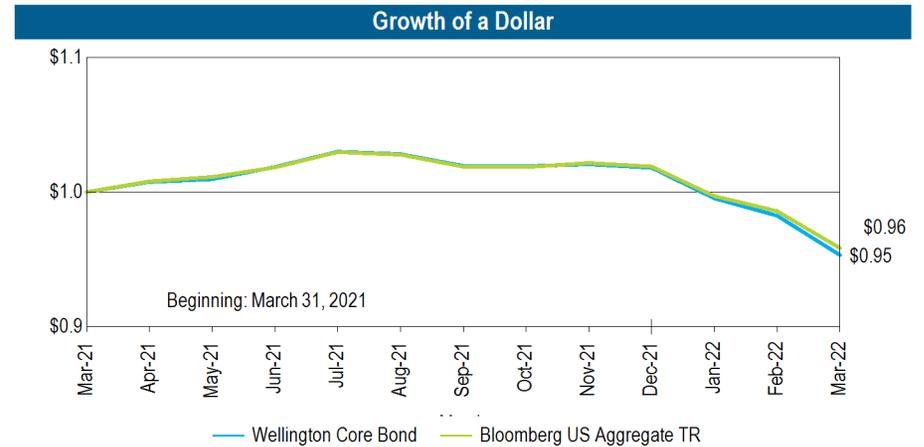
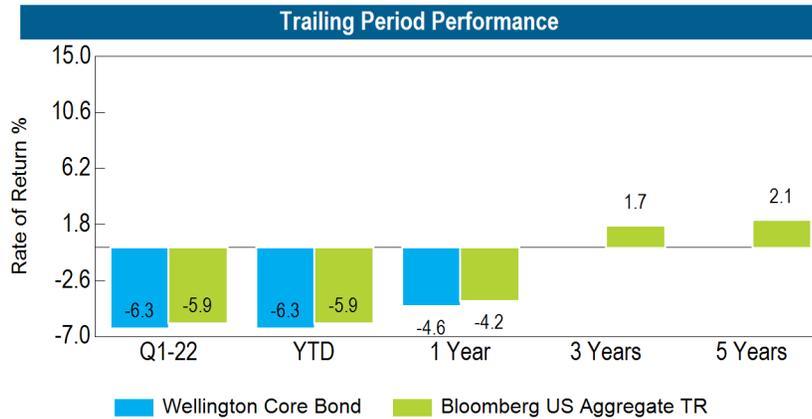
Performance shown is net-of-fees and since inception.

	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Reams	5.33%	5.31%	0.05%	1.04	0.20	3.90%	122.26%	98.83%
Bloomberg Universal (Blend)	4.55%	3.47%	0.00%	1.00	--	0.00%	100.00%	100.00%



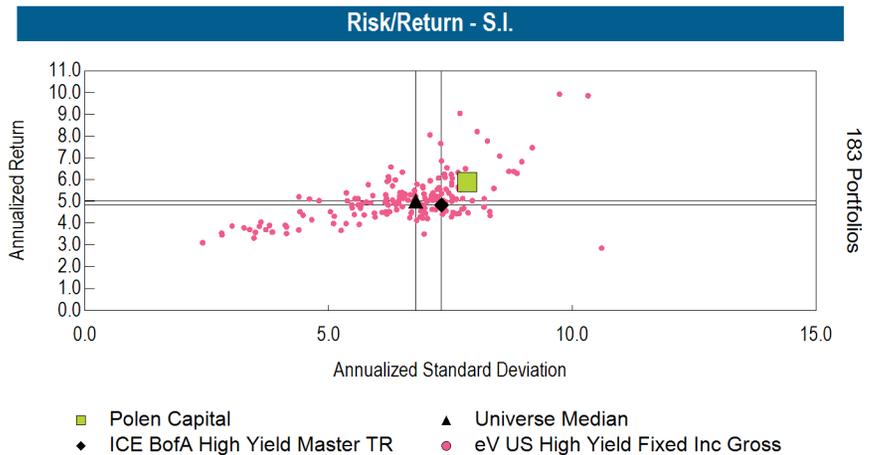
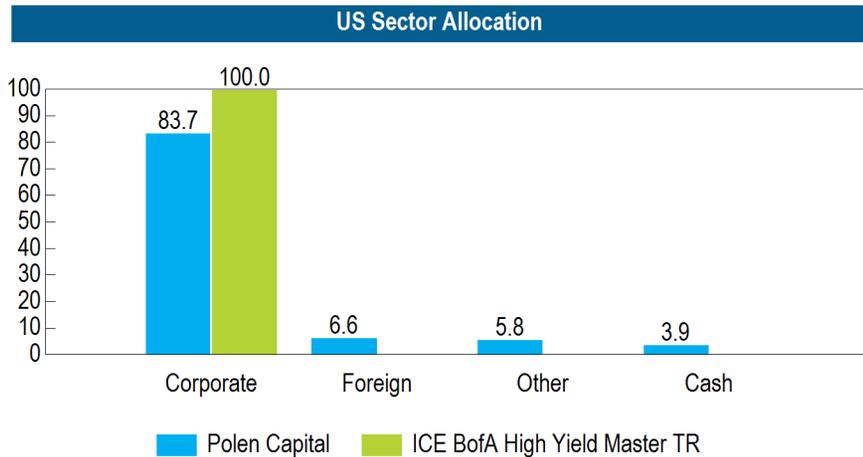
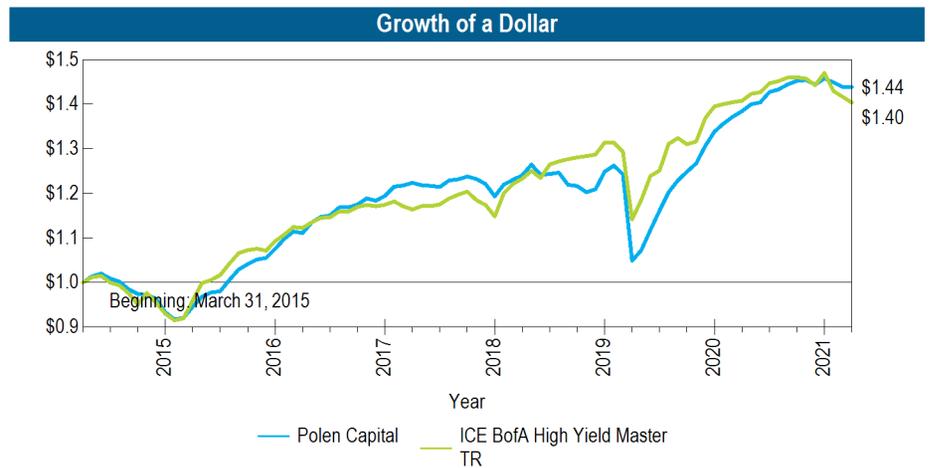
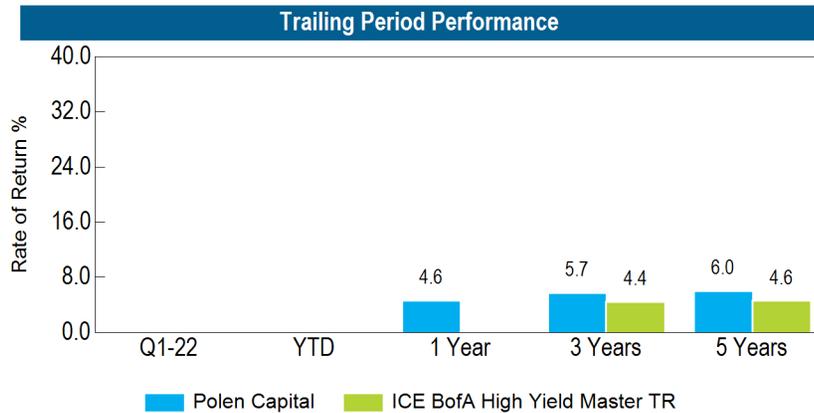
Performance shown is net-of-fees and since inception.

	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Wellington Core Bond	-4.68%	4.33%	-0.03%	1.05	-1.40	0.37%	96.21%	105.51%
Bloomberg US Aggregate TR	-4.15%	4.12%	0.00%	1.00	--	0.00%	100.00%	100.00%



Performance shown is net-of-fees and since inception.

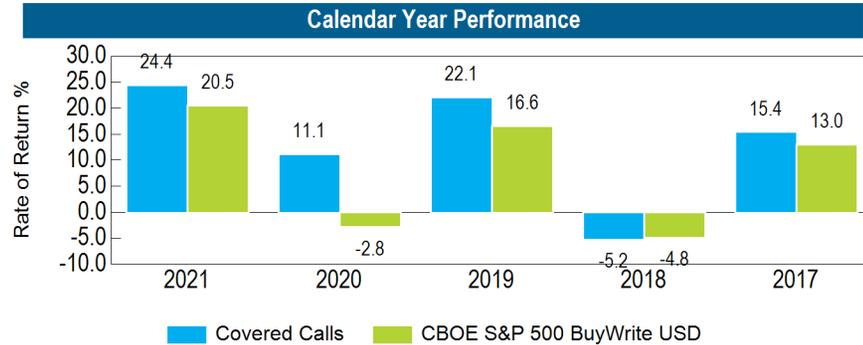
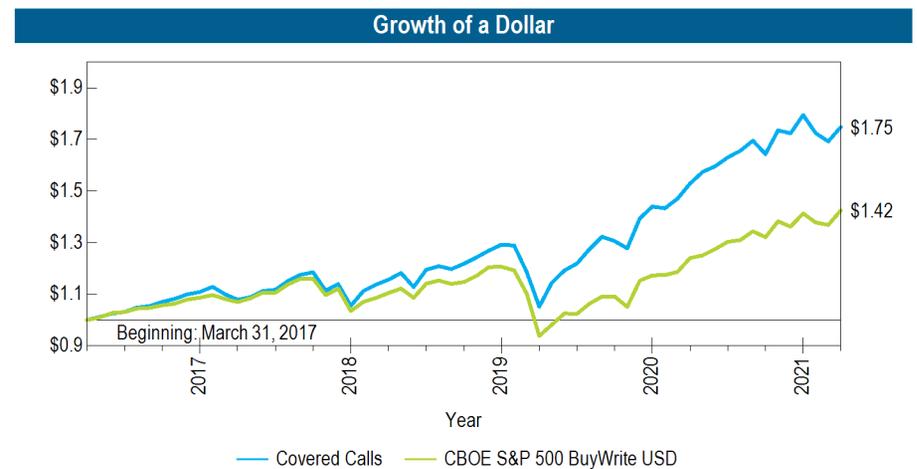
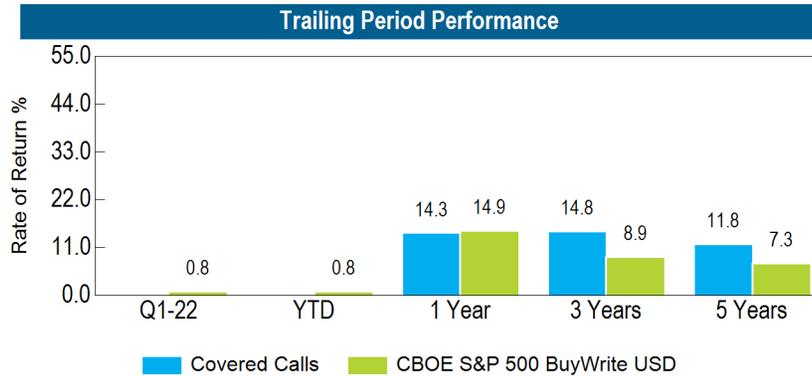
	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Polen Capital	5.46%	7.82%	0.06%	0.94	0.09	3.79%	90.03%	84.58%
ICE BofA High Yield Master TR	5.11%	7.31%	0.00%	1.00	--	0.00%	100.00%	100.00%



Performance shown is net-of-fees and since inception.

Covered Calls | As of March 31, 2022

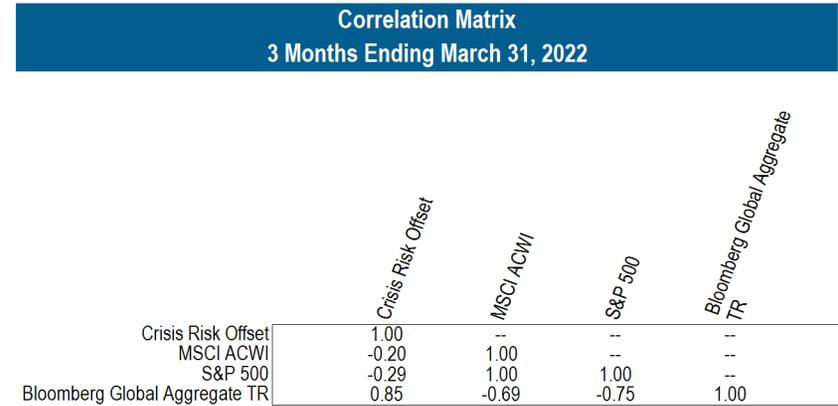
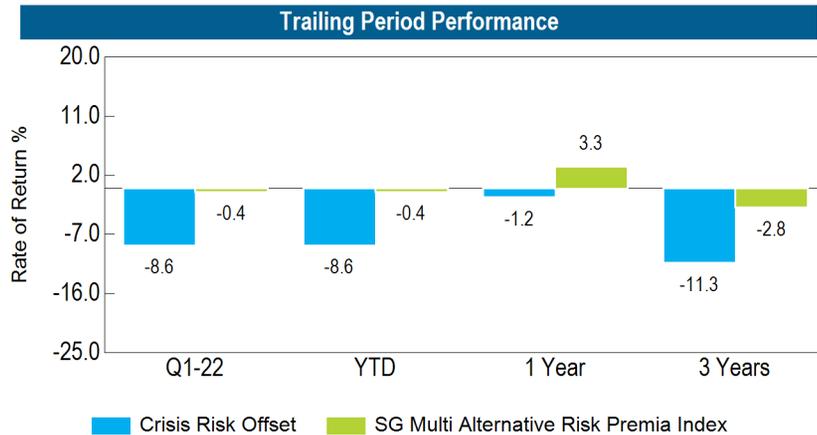
	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Covered Calls	10.12%	10.70%	0.25%	0.98	0.91	3.38%	135.87%	100.14%
CBOE S&P 500 BuyWrite USD	7.03%	10.31%	0.00%	1.00	--	0.00%	100.00%	100.00%
Parametric BXM	7.91%	8.88%	0.16%	0.83	0.30	2.93%	93.75%	88.81%
CBOE S&P 500 BuyWrite USD	7.03%	10.31%	0.00%	1.00	--	0.00%	100.00%	100.00%
Parametric DeltaShift	12.46%	12.75%	0.36%	1.13	1.01	5.40%	187.07%	108.08%
CBOE S&P 500 BuyWrite USD	7.03%	10.31%	0.00%	1.00	--	0.00%	100.00%	100.00%



Performance shown is net-of-fees and since inception.

Crisis Risk Offset | As of March 31, 2022

	Anlzd Return	Anlzd Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Crisis Risk Offset	-11.93%	12.93%	-0.81%	0.74	-0.74	12.22%	-45.04%	101.22%
SG Multi Alternative Risk Premia Index	-2.91%	6.09%	0.00%	1.00	--	0.00%	100.00%	100.00%
Kepos Alternative Risk Premia	--	--	--	--	--	--	--	--
SG Multi Alternative Risk Premia Index	-2.91%	6.09%	0.00%	1.00	--	0.00%	100.00%	100.00%
Vanguard Long-Term Treasury ETF	0.77%	13.64%	-0.05%	1.02	-0.35	1.66%	102.47%	104.24%
Bloomberg US Govt Long TR	1.36%	13.26%	0.00%	1.00	--	0.00%	100.00%	100.00%



Performance shown is net-of-fees and since Vanguard Long-Term Treasury ETF's inception (July 2019).

Benchmark History

As of March 31, 2022

OPFRS Total Plan

1/1/2019	Present	40% Russell 3000 / 12% MSCI ACWI ex USA Gross / 33% Bloomberg US Universal TR / 5% CBOE BXM / 6.7% SG Multi Alternative Risk Premia Index / 3.3% Bloomberg US Treasury Long TR
5/1/2016	12/31/2018	48% Russell 3000 / 12% MSCI ACWI ex USA Gross / 20% Bloomberg US Universal TR / 20% CBOE BXM
10/1/2015	4/30/2016	43% Russell 3000 / 12% MSCI ACWI ex USA Gross / 20% Bloomberg US Universal TR / 15% CBOE BXM / 10% CPI - All Urban Consumers (unadjusted) +3%
1/1/2014	9/30/2015	48% Russell 3000 / 12% MSCI ACWI ex USA Gross / 20% Bloomberg US Universal TR / 10% CBOE BXM / 10% CPI - All Urban Consumers (unadjusted) +3%
3/1/2013	12/31/2013	40% Russell 3000 / 10% MSCI ACWI ex USA Gross / 17% Bloomberg US Universal TR / 33% ICE BofA 3M US Treasury TR USD
8/1/2012	2/28/2013	20% Russell 3000 / 7% MSCI ACWI ex USA Gross / 18% Bloomberg US Universal TR / 55% ICE BofA 3M US Treasury TR USD
10/1/2007	7/31/2012	53% Russell 3000 / 17% MSCI ACWI ex USA Gross / 30% Bloomberg US Universal TR
4/1/2006	9/30/2007	35% Russell 3000 / 15% MSCI ACWI ex USA Gross / 50% Bloomberg US Universal TR
1/1/2005	3/31/2006	35% Russell 3000 / 15% MSCI ACWI ex USA Gross / 50% Bloomberg US Aggregate TR
4/1/1998	12/31/2004	50% Bloomberg US Aggregate TR / 10% Russell 1000 / 20% Russell 1000 Value / 5% Russell MidCap / 15% MSCI EAFE
12/1/1988	3/31/1998	40% S&P 500 / 55% Bloomberg US Aggregate TR / 5% FTSE T-Bill 3 Months TR

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PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

Credit Risk: Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security.)

Duration: Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

Information Ratio: This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

Jensen's Alpha: A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk. $\text{Portfolio Return} - [\text{Risk Free Rate} + \text{Beta} * (\text{market return} - \text{Risk Free Rate})]$.

Market Capitalization: For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

Market Weighted: Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

Maturity: The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

Prepayment Risk: The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

Price-Book Value (P/B) Ratio: The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

Price-Earnings (P/E) Ratio: A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about its future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

Quality Rating: The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

Sharpe Ratio: A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

STIF Account: Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

Standard Deviation: A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

Style: The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

Tracking Error: A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

Yield to Maturity: The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a “basis book.” For example, a 5% bond pays \$5 a year interest on each \$100 par value. To figure its current yield, divide \$5 by \$95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay \$100 for the bond that can be bought now for \$95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{5\% \text{ (discount)}}{5 \text{ (yrs. to maturity)}} = 1\% \text{ pro rata, plus } 5.26\% \text{ (current yield)} = 6.26\% \text{ (yield to maturity)}$$

Yield to Worst: The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

NCREIF Property Index (NPI): Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE): Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: *Investment Terminology*, International Foundation of Employee Benefit Plans, 1999.
The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991

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Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.