Verus

PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS

2ND QUARTER 2023

Investment Landscape

Verus business update

Since our last Investment Landscape webinar:

- Verus hired three employees:
  - **Philip Schmitt**, Director | Public Markets
  - **Christian Reed**, Private Markets Performance Analyst
  - **Jonathan Powell**, Performance Analyst
- Three employees recently passed various levels of the CFA exam. Verus currently has a total of 34 CFA charterholders
- Jonathan Henderson, Director | Operations received the 2022 Verus North Star Award for championing client success
- Verus launched a newly designed website in February, making it easier to find our thought leadership and markets updates
- At the end of March, Verus met with 40 emerging or diverse managers at its Emerging & Diverse Manager Diligence Days event
- Recent research, found at *verusinvestments.com/research*
  - ***U.S. Equity Index Concentration*** *(short video)*
  - ***2023 Active Management Environment***
  - ***Verus Viewpoints on SVB & Broad Market Stress***
  - ***2023: The Return of Simplicity***
  - ***The Importance of Emerging & Diverse Managers***

Recent Verus research

Visit: verusinvestments.com/research

Sound thinking

2023: THE RETURN OF SIMPLICITY

Each January, we assess the suggestions that we made the previous year to see what we called correctly and where we got things wrong. We also suggest topics that we believe should be on the agenda for the balance of the coming year:

1. Inflation: Down, bumpily
2. A landing: But what kind?
3. Rates: Lower but slower
4. Zero makes heroes: Funded foolishness failing
5. More office pain: The slow recognition of reality
6. International markets of mystery: Or opportunity?
7. Active opportunities: Decision-making matters
8. Private pain: A drag for a while
9. ESG: Louder not quieter
10. Simple beats complex: With a twist

Thought leadership

SVB & BROAD MARKET STRESS

Given recent events around Silicon Valley Bank's failure, heightened market volatility, and broad uncertainty in the banking sector, Verus shared our perspectives, focusing on asset-owner impacts.

U.S. EQUITY INDEX CONCENTRATION

Does the rising concentration of the U.S. equity market have implications for investors? In a short video, we examined the causes of index concentration, the levels of concentration relative to global markets, and how this environment affects the success of active managers. We answered the following questions:

- What causes index concentration?
- How concentrated has the U.S. equity market become? How does this index concentration compare to other equity markets?
- What are the implications of concentration for active managers?

Annual research

2023 ACTIVE MANAGEMENT ENVIRONMENT

Changing market conditions in recent years continue to suggest a more attractive environment for active managers to demonstrate skill and add value for investors.

- Greater economic uncertainty around the world, aggressive central bank actions, and rising bond yields have created an environment of greater dispersion in active manager performance.
- Higher dispersion is apparent in the most recent 3-year dataset within the document, which also reflects a larger proportion of active managers outperforming the benchmark relative to prior periods.
- Our analysis continues to illustrate stark differences regarding the relationship between risk and return across asset class universes. In many asset classes, there has been a negative relationship between risk-taking relative to the benchmark and total return. These characteristics may provide helpful context to investors when discussing active management.

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1st quarter summary

THE ECONOMIC CLIMATE

— Real GDP increased at a 2.7% rate in the fourth quarter (0.9% growth year-over-year). The U.S. economy was supported by mild but positive growth across most aspects of activity. ***p. 9***

— Unemployment continued to suggest a strong labor market, unchanged at 3.5% in March. Widespread layoffs in the technology sector have captured headlines, though the sector makes up a rather small segment of overall jobs. The labor participation rate is showing positive signs as workers who had left the job market during the pandemic are once again seeking employment. ***p. 12***

PORTFOLIO IMPACTS

— The U.S. inflation picture continued to improve. March headline CPI came in at 5.0% year-over-year—the lowest since Q2 2021. Core inflation remained stubbornly high at 5.6% year-over-year. Many of the goods and services that initially contributed to high inflation, such as used cars, food, and energy, have moderated in price. ***p. 10***

— U.S. real (inflation-adjusted) personal consumption expenditures were modest in February at 2.5% growth year-over-year. Household purchases of services continued to climb, while goods purchases remained flat. During the pandemic, an unprecedented surge in spending on goods occurred to the detriment of services. It appears that trend has now normalized. ***p. 13***

THE INVESTMENT CLIMATE

— U.S. yield curve inversion reached even more extreme levels during Q1. The 10-year 2-year yield spread (short-term interest rates being higher than long-term interest rates) reached ~107 bps on March 8th. Inversion has historically preceded recession. ***p. 19***

— Silicon Valley Bank (SVB) failed and was transitioned to government ownership on March 10th. SVB is among the top 20 largest banks in the United States with approximately 1% of all U.S. domestic bank deposits. In the near-term, sentiment seems to have been shored up by backstops from the Federal Reserve, Treasury, and FDIC, though we are watching conditions closely. ***p. 20 & 21***

ASSET ALLOCATION ISSUES

— Global equities delivered another strong quarter in Q1 (MSCI ACWI +7.3%). A variety of risks are stacking up that could weigh on additional gains, including potential recession in many markets, persistent inflation problems, and tightening credit conditions. ***p. 26***

— U.S. growth stocks delivered strong outperformance in the first quarter (Russell 1000 Growth +14.4% vs. Russell 1000 Value +1.0%), effectively reversing value's rally in Q4 2022. This divergence in style behavior appears to be, once again, mostly a result of relative sector returns. Information technology led the index +21.8% over the quarter, while energy (-4.7%) and financials (-5.6%) were laggards. ***p. 28***

Markets performed well in Q1, further recovering from the losses of 2022

Recession risk, banking stress, and stubborn inflation may create difficulties going forward

What drove the market in Q1?

"U.S. Inflation Eases but Stays High, Putting Fed in a Tough Spot"

HEADLINE CONSUMER PRICE INFLATION (YEAR-OVER-YEAR)

Oct	Nov	Dec	Jan	Feb	Mar
7.7%	7.1%	6.5%	6.4%	6.0%	5.0%

Article Source: AP, March 14th, 2023

"U.S. Bank Failures Pose Risk to Global Growth"

FDIC UNREALIZED GAINS (LOSSES) ON BANK'S INVESTMENT SECURITIES

Q3 21	Q4 21	Q1 22	Q2 22	Q3 22	Q4 22
$29.4B	($7.9B)	($293.7B)	($469.7B)	($689.9B)	($620.4B)

Article Source: Wall Street Journal, March 26th, 2023

"Federal Reserve's Path is Murkier After Bank Blowup"

FED FUNDS FUTURES PEAK IMPLIED RATE (MONTH END)

Oct	Nov	Dec	Jan	Feb	Mar
4.98%	4.92%	4.97%	4.92%	5.42%	4.95%

Article Source: The New York Times, March 13th, 2023

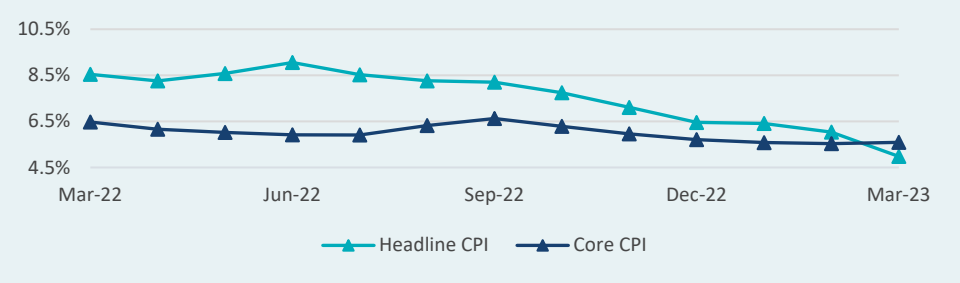
"Fed Hikes Interest Rates 25 Basis Points in March 2023"

FED FUNDS TARGET RATE – UPPER BOUND

Q4 21	Q1 22	Q2 22	Q3 22	Q4 22	Q1 23
0.25%	0.50%	1.75%	3.25%	4.50%	5.00%

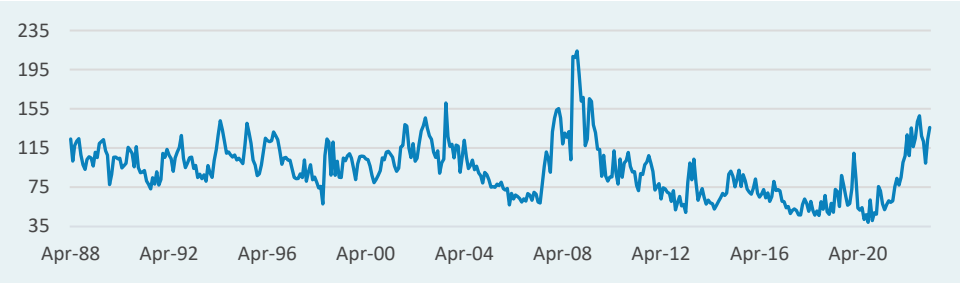
Article Source: Bloomberg, March 22nd, 2023

U.S. HEADLINE VS. CORE INFLATION (YEAR-OVER-YEAR)



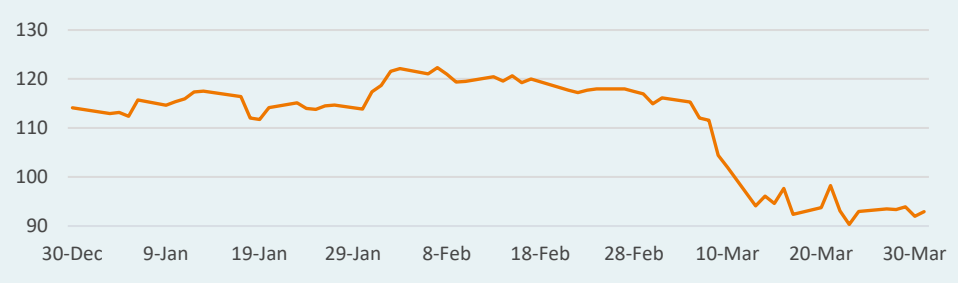
Source: BLS, as of 3/31/23

U.S. TREASURIES IMPLIED VOLATILITY (ICE BOFA MOVE INDEX)



Source: Bloomberg, as of 3/31/23

KBW REGIONAL BANKING INDEX



Source: Bloomberg, as of 3/31/23

Economic environment

U.S. economics summary

— Real GDP increased at a 2.7% rate in the fourth quarter (0.9% year-over-year). The U.S. economy in Q4 was supported by mild but positive growth across most aspects of activity. First quarter GDP is expected to come in at 2.2%, according to the Atlanta Fed GDPNow forecast, as of April 10th.

— The inflation picture improved further. March headline inflation came in at 5.0% year-over-year—the lowest since Q2 2021. Core inflation has remained stubbornly high at 5.6% year-over-year. Many of the goods and services prices that initially contributed to high inflation have moderated or fallen.

— U.S. real personal consumption expenditures were modest in February at 2.5% year-over-year. Household purchases of services continued to climb, while goods purchases were flat. Purchasing trends around goods and services appear to have normalized for the first time since the pandemic.

— Although hiring activity may be slowing and layoffs are occurring in places, the labor participation rate is rebounding as workers who had left the job market during the pandemic are once again seeking employment.

— Consumer sentiment remained weak in Q1. According to the University of Michigan, households increasingly expect a recession in the near-term, especially lower income and younger Americans. Inflation fears have reportedly subsided, with expectations for 3.6% inflation over the next year.

— The U.S. housing market has faced a harsh winter season, as high prices and a significant jump in mortgage interest rates severely crimped demand. Existing home sales are as weak as during the lows of 2009-2011 following the U.S. housing bubble.

	Most Recent	12 Months Prior
Real GDP *(YoY)*	0.9% *12/31/22*	5.7% *12/31/21*
Inflation *(CPI YoY, Core)*	5.6% *3/31/23*	8.5% *3/31/22*
Expected Inflation *(5yr-5yr forward)*	2.2% *3/31/23*	2.4% *3/31/22*
Fed Funds Target Range	4.75% – 5.00% *3/31/23*	0.25% – 0.50% *3/31/22*
10-Year Rate	3.47% *3/31/23*	2.34% *3/31/22*
U-3 Unemployment	3.5% *3/31/23*	3.6% *3/31/22*
U-6 Unemployment	6.7% *3/31/23*	6.9% *3/31/22*

GDP growth

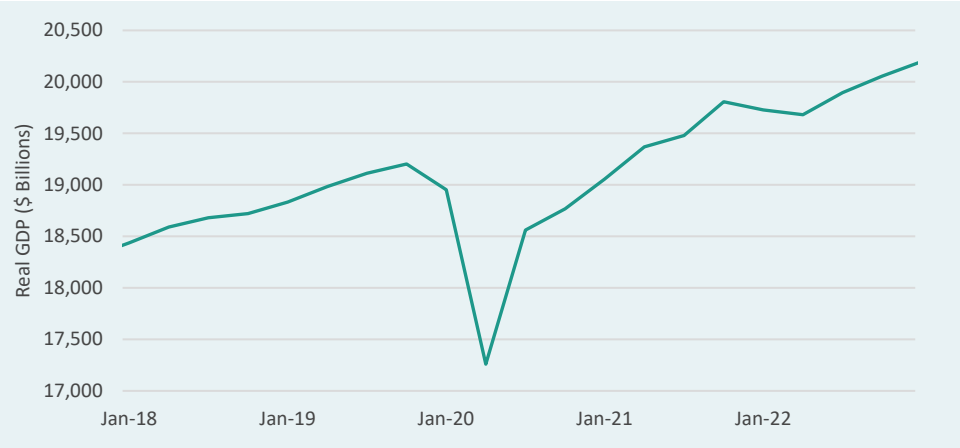
Real GDP increased at a 2.7% rate in the fourth quarter (0.9% growth year-over-year). The U.S. economy was supported by mild but positive growth across most aspects of activity. First quarter GDP is expected to come in at 2.2%, according to the Atlanta Fed GDPNow forecast, as of April 10th.

Consumer spending increased at a 2.1% annualized rate, boosted by spending on services but dragged lower by fewer goods purchases. Within services, healthcare and housing saw the largest gains. Private investment spending was fueled by manufacturing—primarily in traditional energy products, mining, utilities, and construction. With regard to government spending, increases were reportedly due to higher compensation of government employees rather than on new projects or initiatives.

Investors remain undecided regarding whether the U.S. economy will enter recession in 2023. Economist forecasts suggest near-zero growth for most quarters this year, but with no recession. Either way, it is reasonable to assume very weak economic growth for the near-term. Furthermore, the failure of Silicon Valley Bank and ensuing stress on the financial sector has created new risks, as this stress will likely lead to a slowdown in traditional bank lending activity. If many banks reduce lending activity and increase lending standards, this may result in a material tightening of economic activity that compounds the existing effects of higher interest rates.

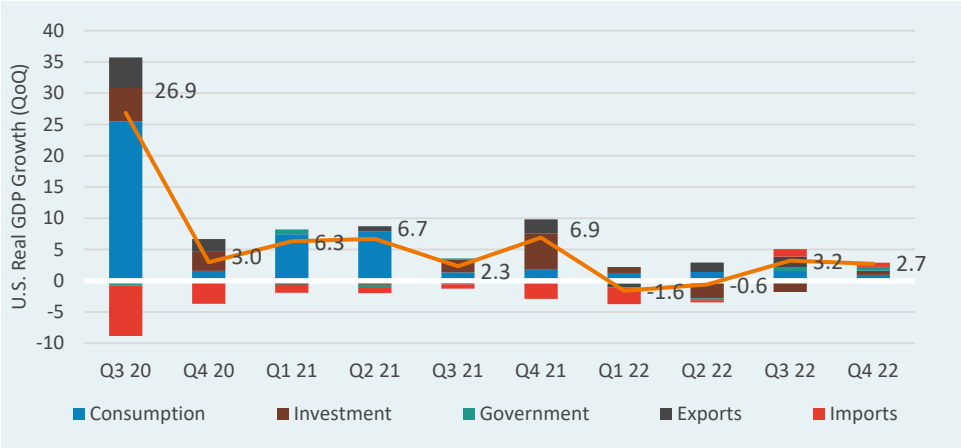
A tightening of bank lending raises the risks of an economic slowdown

U.S. REAL GROSS DOMESTIC PRODUCT



Source: FRED, as of 12/31/22

U.S. REAL GDP COMPONENTS (QOQ)



Source: FRED, as of 12/31/22

Inflation

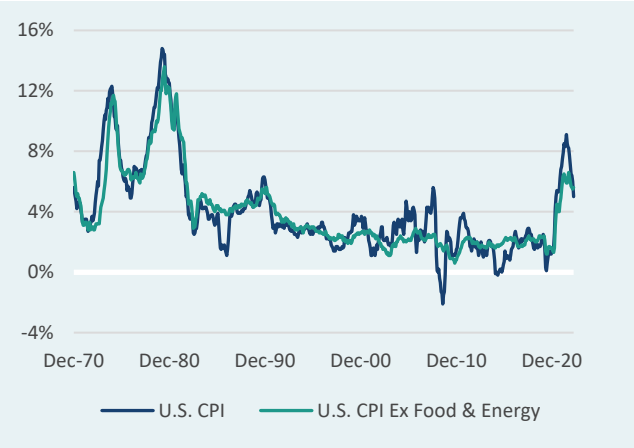
The inflation picture further improved in the United States, as both headline and core inflation figures declined further. March headline inflation came in at 5.0% year-over-year—the lowest since Q2 of 2021. Core inflation has remained stubbornly high at 5.6% year-over-year in March. Many of the goods and services that initially contributed to high inflation, such as used cars, food, and energy, have moderated or are falling in price. Shelter costs remain the largest single driver of inflation. Recent output cuts in oil production by OPEC+ members could reignite some inflation in energy and transportation costs—these effects will be important to watch in the coming months.

U.S. hourly wage gains continued to decelerate during the quarter—now at only a 4.2% year-over-year growth rate. The possibility of persistently high wage increases has been a risk to the inflation story, as accelerating wages can sustain higher spending and therefore higher ongoing inflation. Now that wage growth has slowed, this risk is subsiding.

Overall, inflation (CPI) is very likely to fall to around 4% in Q2, for the technical reasons illustrated below. However, certain persistent monthly price pressures suggest that inflation may stabilize at this level rather than at the 1-2% inflation experienced throughout much of the 2010s.

Persistent monthly Core CPI figures suggest inflation may stabilize at a level higher than the Fed's target

U.S. CPI (YOY)

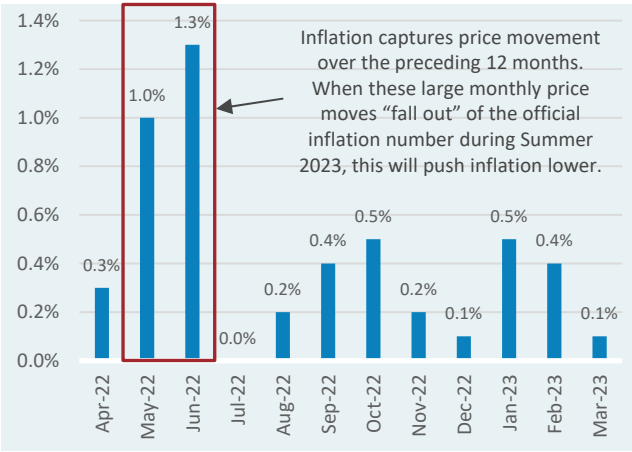


Source: BLS, as of 3/31/23

AVERAGE HOURLY EARNINGS

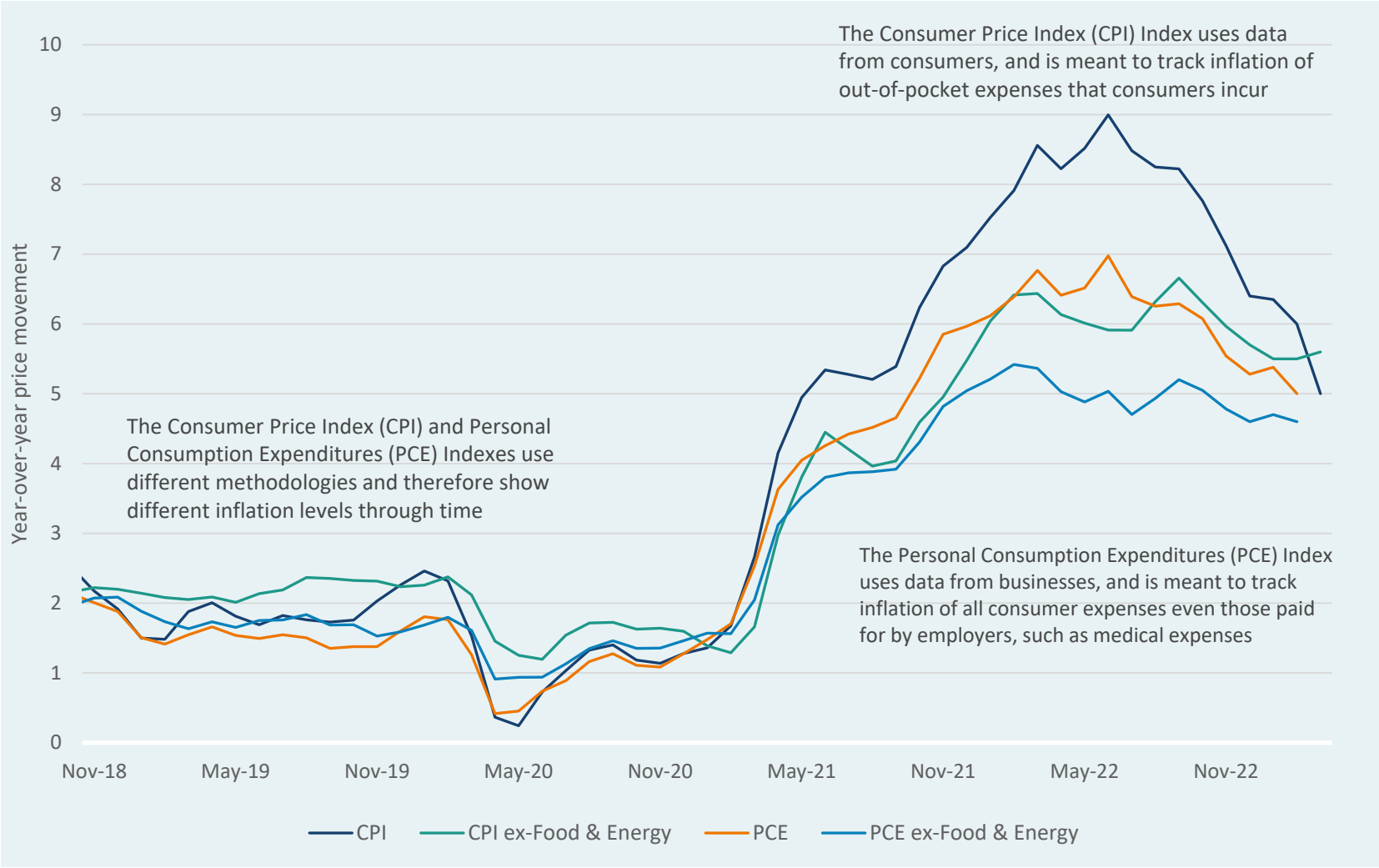
Source: BLS, as of 3/31/23

MONTHLY PRICE MOVEMENT



Source: BLS, as of 3/31/23

How are inflation conditions evolving?



Official inflation figures continue to fall, though persistent monthly Core CPI figures suggest inflation may stabilize at a level higher than the Fed's target

Source: FRED, Verus, PCE data as of 2/28/23, CPI data as of 3/31/23

Labor market

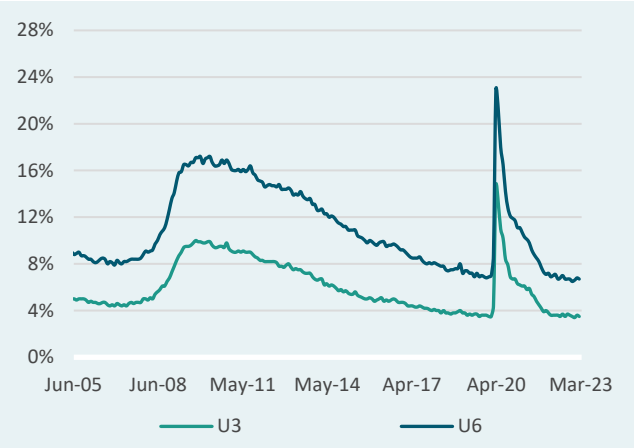
Unemployment continues to suggest a strong labor market, unchanged at 3.5% in March. Widespread layoffs in the technology sector have captured headlines in recent months, though it is important to remember that this sector makes up a rather small segment of overall jobs in the country, and the job market remains broadly strong by most measures.

Although hiring activity may be slowing and layoffs are occurring in some places, the labor participation rate is now showing positive signs as workers who had left the job market during the pandemic are once again seeking employment. Labor data suggests that this recovery has occurred mostly in the age 25 to 55-year cohort, and that older workers are not yet returning to the labor market.

A recovery in total workforce size is a good sign for future economic growth and may take some pressure off wages. This trend also helps relieve the historically large mismatch regarding the number of jobs available and the number of workers available to fill those jobs. An increase in total workforce size while the number of job postings are declining helps to rebalance the labor market.

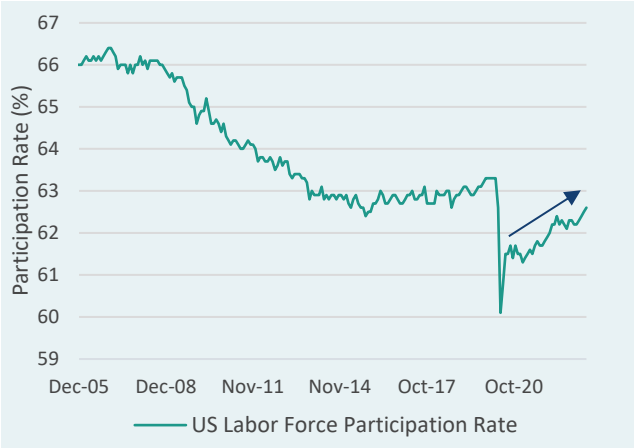
Workers that left the labor force during the pandemic are slowly returning to the job market

U.S. UNEMPLOYMENT



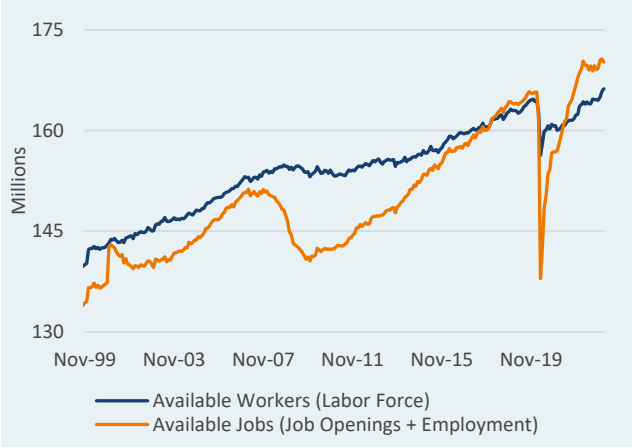
Source: FRED, as of 3/31/23

LABOR FORCE PARTICIPATION RATE



Source: FRED, as of 3/31/23

WORKERS AVAILABLE VS. AVAILABLE JOBS



Source: BLS, as of 2/28/23

The consumer

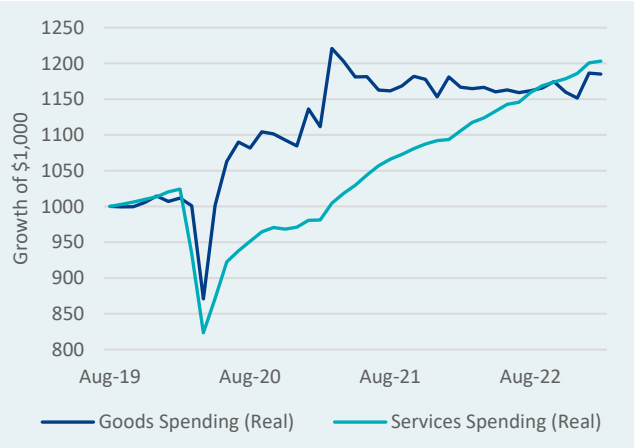
U.S. real (inflation-adjusted) personal consumption expenditure growth has been modest, at 2.5% year-over-year in February. Household purchases of services continued to climb, while goods purchases remained flat. During the pandemic, an unprecedented surge in spending on goods occurred, to the detriment of services. It appears that trend has now normalized.

Personal savings rates have improved from extremely low levels. More household savings may be partly a reflection of consumer expectations for recession, as well as weaker job prospects (these sentiments are discussed on the next slide).

Big ticket items such as automobiles and homes have seen slowing sales activity as higher interest rates make purchases less affordable and budgets come under strain. The average size of a car payment in America over time illustrates the significance of this effect, as monthly payments have outstripped the overall rate of inflation—by a significant margin in the case of used vehicles.

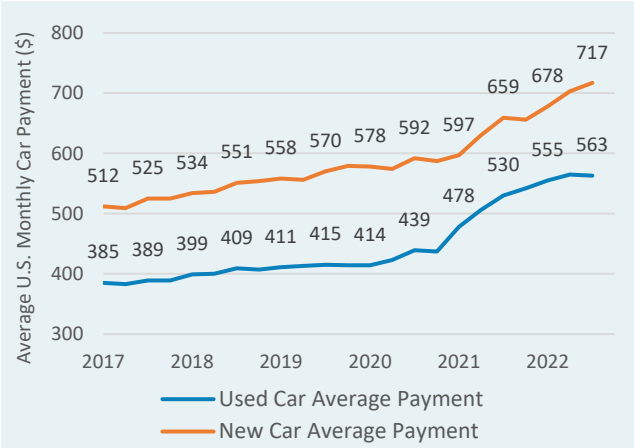
Much of the increase in consumer spending has been due to rising prices rather than more goods purchased

SPENDING TRENDS: GOODS VS. SERVICES



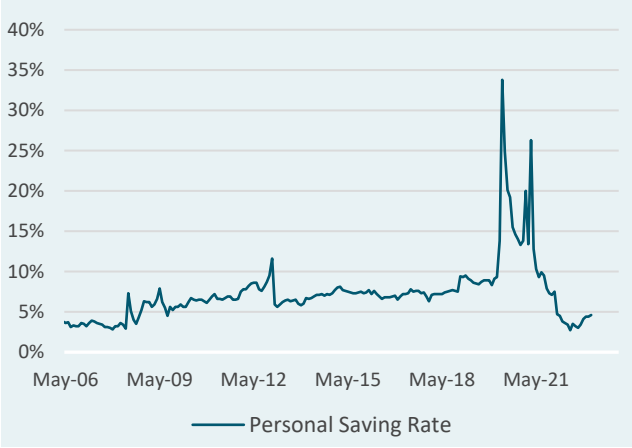
Source: FRED, as of 2/28/23

AVERAGE SIZE OF CAR PAYMENT



Source: Irina Ivanova, Edmunds, as of 9/30/22

PERSONAL SAVINGS RATE



Source: FRED, as of 2/28/23

Sentiment

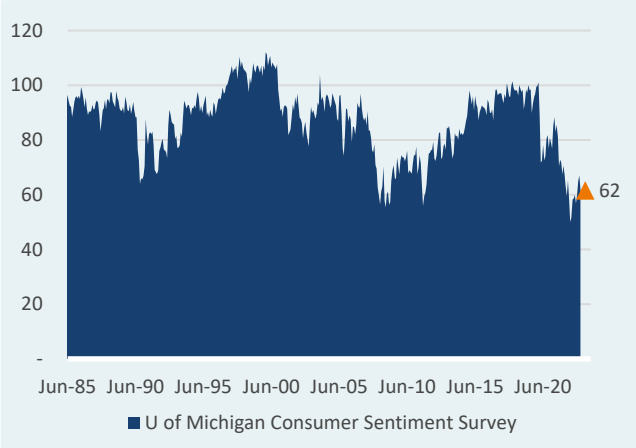
Consumer sentiment was unchanged in the first quarter by most measures but remains depressed. According to the University of Michigan, households increasingly fear a recession in the near-term, especially among lower income and younger Americans. Inflation concerns have subsided, with households expecting 3.6% inflation over the next full year—only moderately higher than the 2.3-3.0% assumed rate of pre-pandemic times.

Consumer confidence measured by the Conference Board was also stable. According to the Conference Board survey, available jobs are 'not so plentiful', discretionary spending plans have been cut back, but spending plans for items such as health care and home repairs increased.

The NFIB Small Business Optimism index remains very depressed, reflecting a poor business outlook. Fewer business owners reported inflation as their top concern for business operations, at twenty-four percent in March. During the quarter, a greater number of business owners expected inflation-adjusted sales to fall in the future.

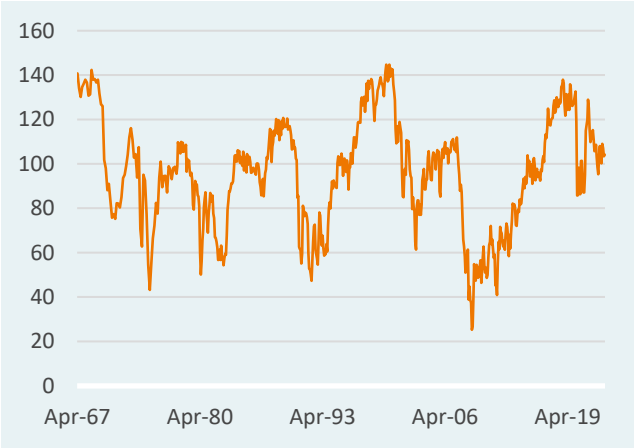
Sentiment, by most measures, remains very poor

CONSUMER SENTIMENT



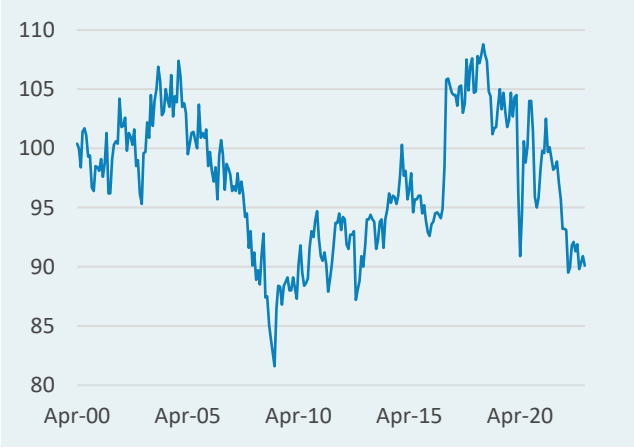
Source: University of Michigan, as of 3/31/23

CONFERENCE BOARD CONSUMER CONFIDENCE



Source: Conference Board, as of 3/31/23

NFIB SMALL BUSINESS SENTIMENT



Source: NFIB, as of 3/31/23

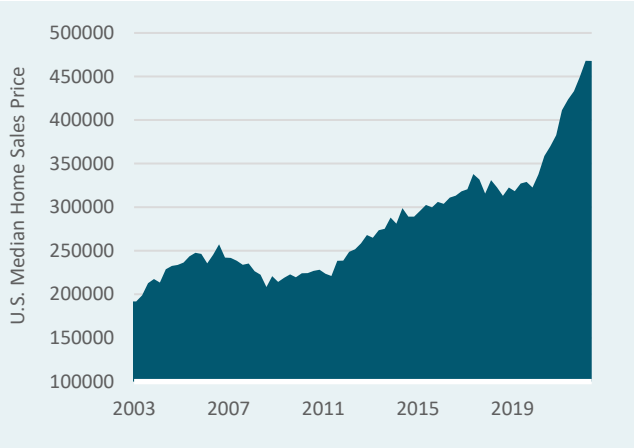
Housing

The U.S. housing market has faced a harsh winter season, as high prices and a significant jump in mortgage interest rates severely crimped demand. Existing home sales are as weak as during the lows of 2009-2011 following the housing bubble. However, monthly sales activity surged 14.5% in February, according to the National Association of Realtors, as potential buyers took advantage of a dip in mortgage rates.

By most measures available, average home prices appear to have plateaued over the latter half of 2022. Price movement has varied significantly by marketplace, with larger markets such as San Francisco experiencing double digit losses in home values, while certain smaller markets—mostly in the southern U.S.—such as Sarasota, Florida seeing some of the largest gains in the nation.

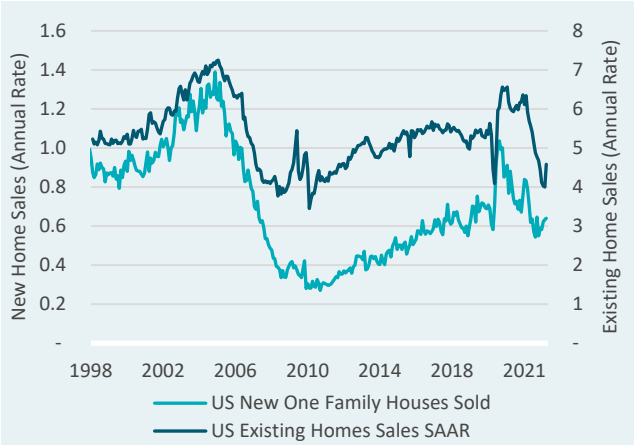
The monthly supply of homes remains high, due to a combination of depressed sales activity and modest increases in inventory levels over the past year. Inventories could stay soft as potential sellers wish to avoid listing their homes and giving up their existing low interest rate mortgage. Additionally, potential sellers who have recently seen the value of their home decline may not wish to sell at lower prices—especially those sellers who may be underwater on a loan.

U.S. MEDIAN HOME SALES PRICE



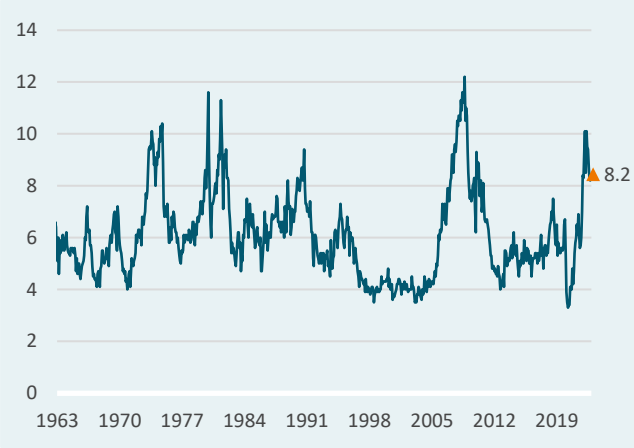
Source: FRED, as of 12/31/22

HOME SALES: NEW & EXISTING (MILLIONS)



Source: FRED, as of 2/28/23

MONTHLY SUPPLY OF HOMES



Source: FRED, as of 2/28/23

International economics summary

— Developed economies have experienced a sharp slowdown in growth. The IMF forecasts developed economy GDP to fall from 2.7% in 2022 to 1.3% in 2023. The deteriorating outlook was attributed to monetary tightening by central banks, as well as Russia's invasion of Ukraine. Meanwhile, emerging market economic growth is expected to accelerate in 2023, rising from 3.9% to 4.0%.

— Inflation trends varied by country during the quarter but seem to suggest broad moderation. European nations continue to cope with very high inflation rates—much of which have been driven by surging energy costs. In many countries, higher energy prices are contributing to half of official inflation figures.

— Developed central banks, in response to inflation, have carried on with their tightening cycles. Both the European Central Bank and Bank of England raised rates in March, with the ECB increasing their Deposit Facility Rate by 50 bps to 3.00%, while the BOE implemented a 25 bps hike, bringing their policy rate to 4.25%.

— February 24th marked the one-year anniversary of Russia's invasion of Ukraine. The war has created much uncertainty around Europe's economic outlook, and led Finland to apply, and to be accepted as, a NATO member.

— China made progress on its reopening in Q1, as the country aims to ramp up economic activity following nearly three-years of lockdowns. Mobility data has picked up, while gauges of manufacturing and non-manufacturing activity have moved into expansionary territory. March non-manufacturing PMIs came in at 58.2—the highest level since 2011.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	0.9% *12/31/22*	5.0% *3/31/23*	3.5% *3/31/23*
Eurozone	1.8% *12/31/22*	6.9% *3/31/23*	6.6% *2/28/23*
Japan	0.4% *12/31/22*	3.3% *3/31/23*	2.5% *2/28/23*
BRICS Nations	2.5% *12/31/22*	2.9% *3/31/23*	5.2% *12/31/21*
Brazil	1.9% *12/31/22*	4.7% *3/31/23*	8.5% *3/31/23*
Russia	(2.7%) *12/31/22*	3.5% *3/31/23*	3.5% *2/28/23*
India	4.4% *12/31/22*	5.7% *3/31/23*	7.8% *3/31/23*
China	2.9% *12/31/22*	0.7% *3/31/23*	5.6% *2/28/23*

NOTE: India lacks reliable government unemployment data. Unemployment rate shown above is estimated from the Centre for Monitoring Indian Economy. The Chinese unemployment rate represents the monthly surveyed urban unemployment rate in China.

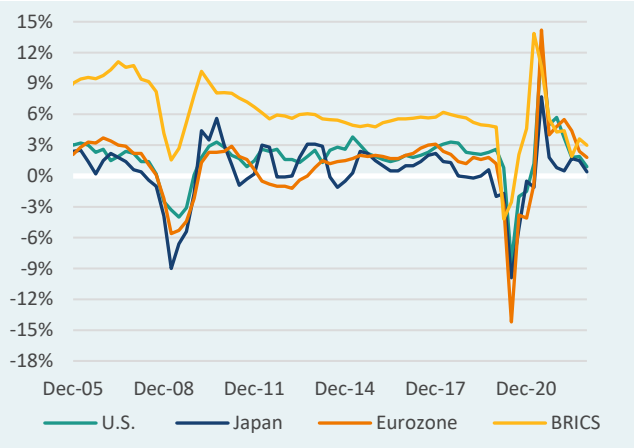
International economics

Many developed economies have experienced a sharp slowdown in growth, which is expected to continue in 2023. Near-zero growth or recession is likely in the near-term for the U.S. and many other developed markets. The IMF forecasts developed economy growth to fall from 2.7% in 2022 to 1.3% in 2023. The deteriorating outlook was partly attributed to monetary tightening of central banks, as well as Russia's invasion of Ukraine.

A rosier outlook exists for emerging markets. The IMF forecasts economic growth of 4.0% in 2022 and 3.9% in 2023. Growth expectations continue to suggest a widening divide between emerging and developed economies, with emerging markets exhibiting a 1.3% *growth premium* over developed markets in 2022, a 2.6% premium in 2023, and a 2.8% premium in 2024.

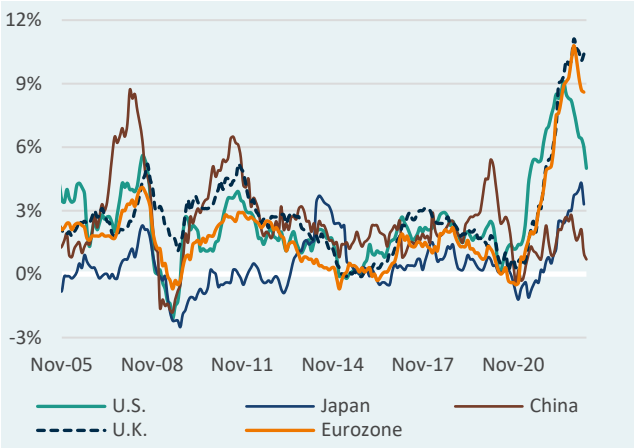
Inflation trends varied by country during the quarter but seem to suggest broad moderation. European countries continue to cope with higher inflation rates—much of which have been driven by surging energy costs. In many areas, higher energy prices are contributing as much as one half of official inflation figures.

REAL GDP GROWTH (YOY)



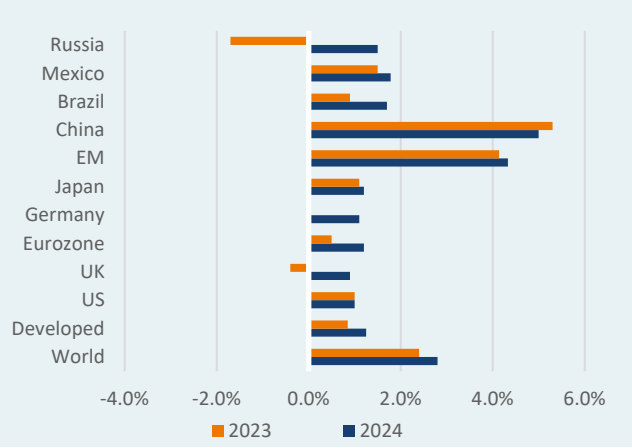
Source: Bloomberg, as of 12/31/22

INFLATION (CPI YOY)



Source: Bloomberg, as of 3/31/23 – or most recent release

ECONOMIC GROWTH FORECASTS



Source: Bloomberg, as of 3/31/23 – or most recent release

Fixed income rates & credit

Fixed income environment

— The 10-year U.S. Treasury yield fell during the quarter from 3.88% to 3.47%. It appears increasingly likely that the U.S. has already reached, and is beyond, *peak interest rates*. The looming possibility of recession, effects of banking stress, and implications from the Federal Reserve that only one interest rate hike may remain, suggests that bond yields may have more room to fall than to rise.

— Silicon Valley Bank (SVB) failed and was transitioned to government ownership on March 10th. SVB is among the top 20 largest banks in the United States, with approximately 1% of all U.S. domestic bank deposits. New York regulators closed Signature Bank shortly thereafter, and more failures may follow. Banking stress has implications for the future actions of the Federal Reserve and for the economy.

— During the first quarter, fixed income markets delivered strong positive returns despite concerns related to the banking sector and the potential for additional Fed rate hikes. High yield credit performance led the way at 3.6%, followed by 3.5% from investment grade credit and 3.3% from bank loans.

— U.S. yield curve inversion reached even more extreme levels during Q1. The 10-year 2-year yield spread (short-term interest rates being higher than long-term interest rates) reached ~107 bps on March 8th, suggesting an incoming recession.

— Uncertainty around the path of Federal Reserve rate hikes and whether inflation is under control has contributed to considerable volatility in bond markets. As indicated by the ICE BofA "MOVE" Index, which measures the volatility priced into U.S. Treasury bonds, domestic and international banking stress further added to fixed income market choppiness in the first quarter.

	QTD Total Return	1 Year Total Return
Core Fixed Income (Bloomberg U.S. Aggregate)	3.0%	(4.8%)
Core Plus Fixed Income (Bloomberg U.S. Universal)	2.9%	(4.6%)
U.S. Treasuries (Bloomberg U.S. Treasury)	3.0%	(4.5%)
U.S. High Yield (Bloomberg U.S. Corporate HY)	3.6%	(3.3%)
Bank Loans (S&P/LSTA Leveraged Loan)	3.3%	2.5%
Emerging Market Debt Local (JPM GBI-EM Global Diversified)	5.2%	(0.7%)
Emerging Market Debt Hard (JPM EMBI Global Diversified)	1.9%	(6.9%)
Mortgage-Backed Securities (Bloomberg MBS)	2.5%	(4.9%)

Source: Bloomberg, as of 3/31/23

Banking stress

Markets saw significant volatility in March, largely driven by failures within the banking system. We believe these bank failures were widely due to two factors:

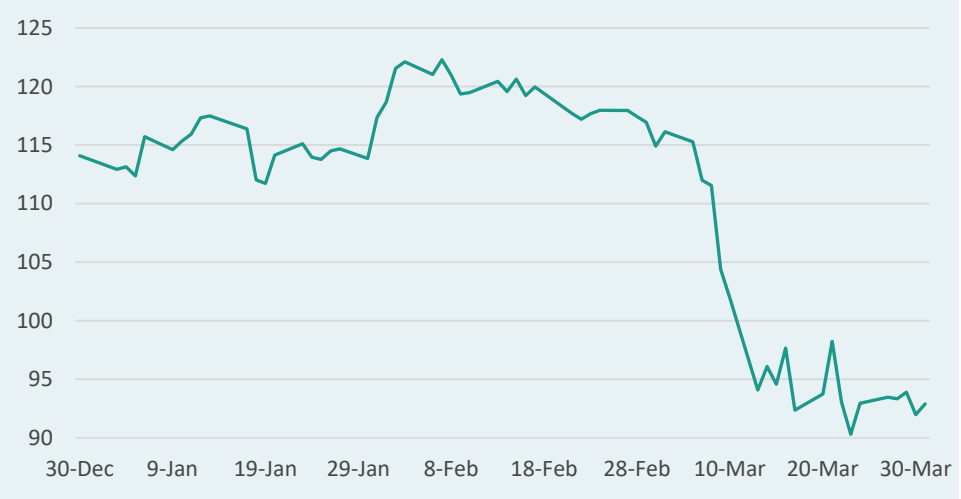
First, the bank depositor base was very concentrated in certain lines of business. Silvergate and Signature Bank were both involved in the crypto-currency space (although neither of these banks held crypto-currency directly on their balance sheet). This space came under significant pressure after the crypto-currency exchange FTX and some other smaller firms declared bankruptcy. Silicon Valley Bank had a large exposure to the technology and U.S. venture space, where clients had a greater need to withdraw their cash deposits due to slowing venture capital deployment and tighter economic conditions.

Second, bank assets were sharply devalued as interest rates rose quickly. The rapid rise in interest rates impacted assets such as Treasuries and mortgage-backed securities. In many cases, interest rate duration mismatch between bank assets and liabilities could arguably be attributed to a lack of risk management oversight. It is important to note that although these assets lost value very quickly, most assets are high quality with low default risk. This is a key differentiator from banking stress that occurred during the 2008-2009 Global Financial Crisis when banks held complex securitized assets—many of which turned out to be very low quality with high default risk.

TIMELINE

Date	Event
March 8th	Silvergate Bank announces it will be winding down operations
March 10th	Silicon Valley Bank falls into FDIC receivership after a failed attempt to raise equity following large losses associated with a substantial sale of its Available-For-Sale securities portfolio
March 12th	Signature Bank fails. The bank had a similar deposit base to Silvergate Bank, who rapidly pulled cash after previous failures
March 16th	Eleven large banks deposit $30B at First Republic Bank to shore up liquidity and improve confidence. First Republic's shares had tanked as investors feared contagion risks spreading to First Republic
March 19th	The Swiss government announced the acquisition of Credit Suisse by rival UBS. The acquisition was in order to prevent CS from collapsing

KBW REGIONAL BANKING INDEX



Source: Verus, Bloomberg, as of 3/31/23

Impacts outside the financial sector

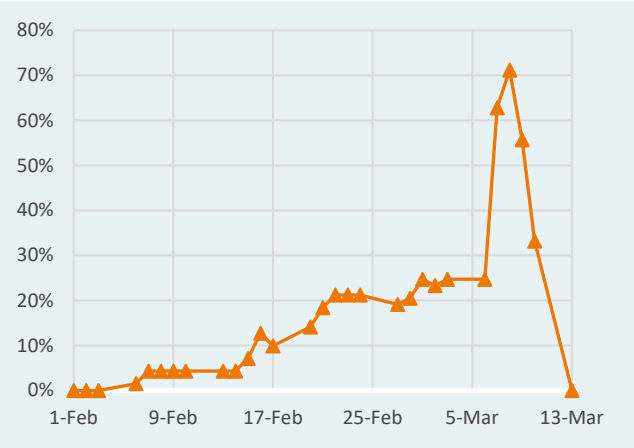
Expectations for the Fed's hiking cycle has weakened dramatically alongside bond yields, as markets began to doubt the Federal Reserve's willingness to hike rates in the face of financial stress. Banking issues will likely translate to a lower risk tolerance for many banks, as well as the offloading of many existing loans, and reduced overall lending activity. These effects would create an additional tightening of financial conditions regardless of future Federal Reserve actions.

Money market funds have seen very large inflows, as cash is transferred from traditional bank deposits to much higher yielding, and in many instances safer (if bank deposits were not FDIC insured), vehicles.

It will take time for all implications and effects to be clear. In the near term, sentiment seems to have been largely shored up by backstops from the Federal Reserve, Treasury, and the FDIC. In addition to the Federal Reserve's discount lending window, the Bank Term Funding Program (BTFP) was created to increase liquidity for banks which hold high quality assets. This has increased the Fed's balance sheet, counteracting recent efforts to reduce the size of the balance sheet.

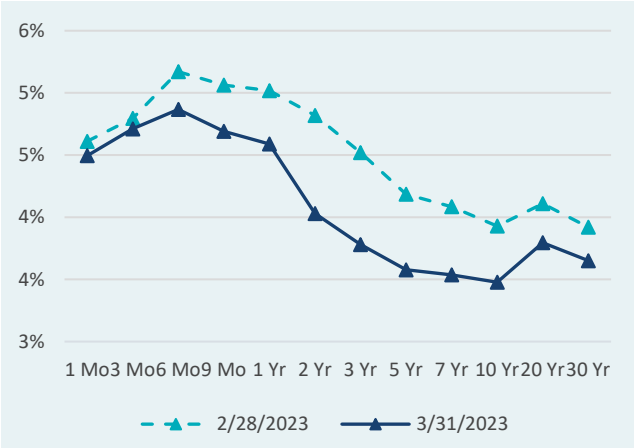
Repricing for a softer FOMC tightening cycle has arguably had the largest impact from a macroeconomic perspective

IMPLIED PROBABILITY: 50 BP RATE HIKE BY FED



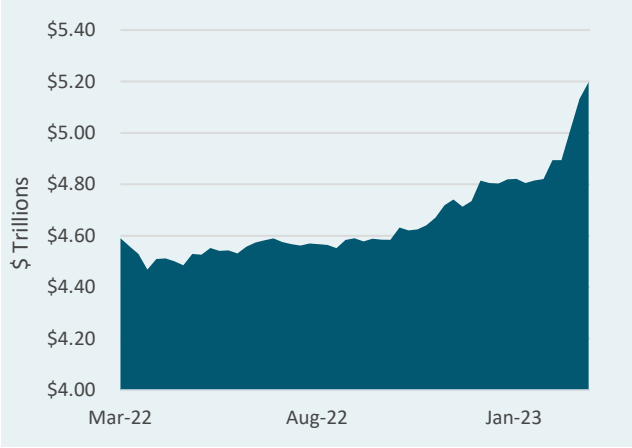
Source: Bloomberg, as of 3/13/23

U.S. YIELD CURVE



Source: Bloomberg, as of 3/31/23

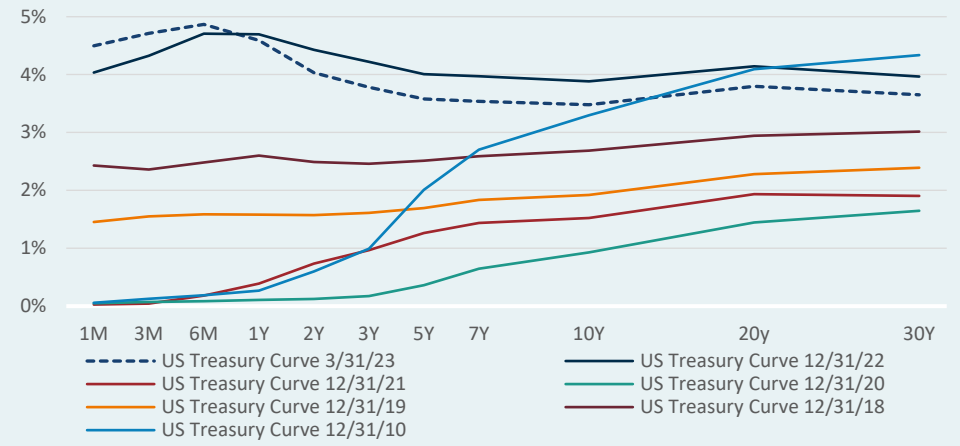
ICI MONEY MARKET FUNDS ASSETS



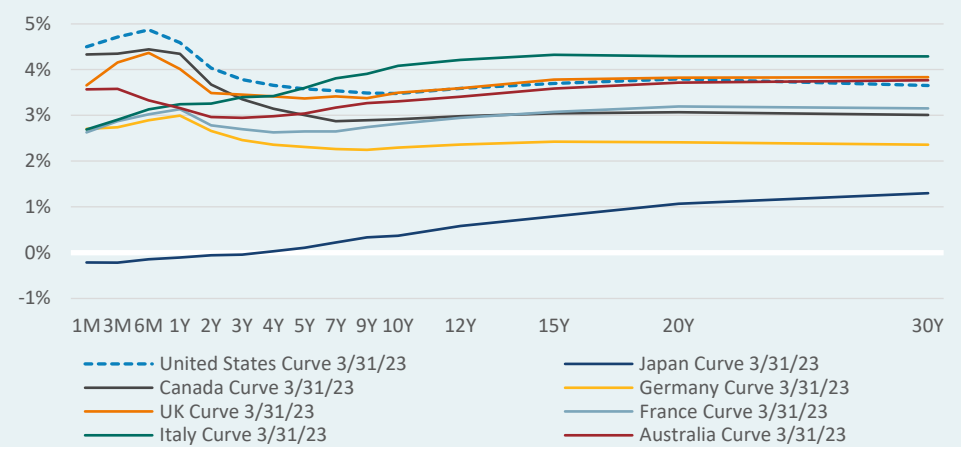
Source: ICI, Bloomberg, as of 3/29/23

Yield environment

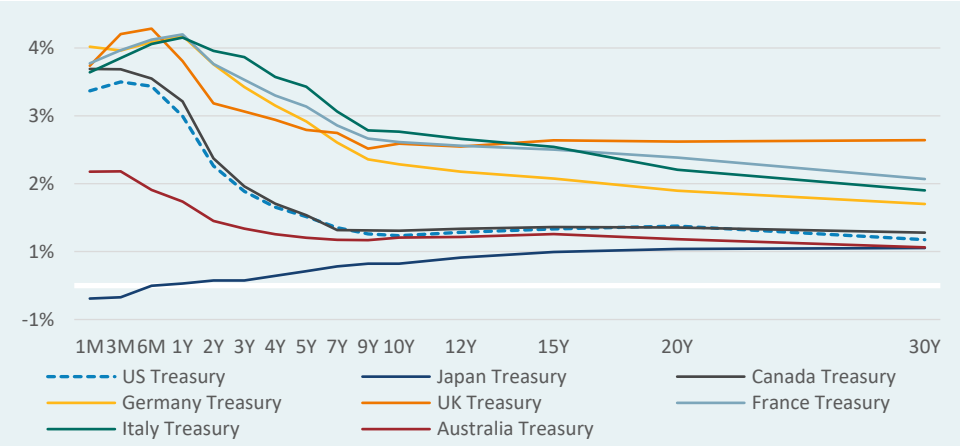
U.S. YIELD CURVE



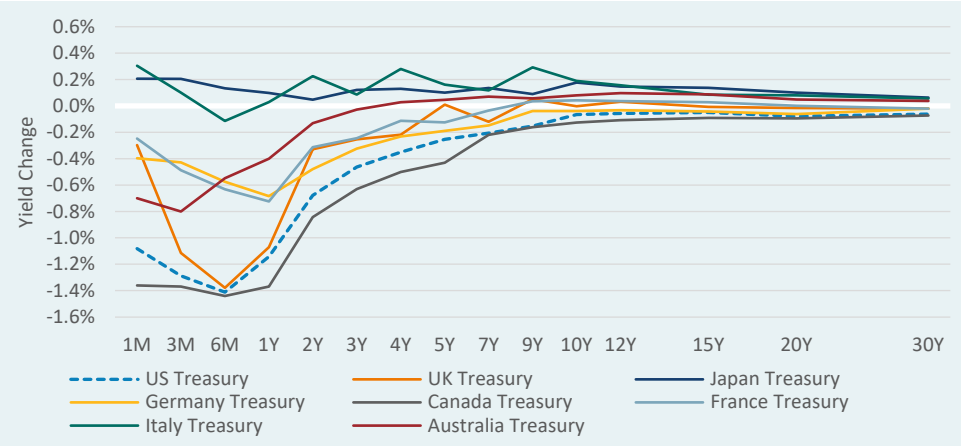
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 3/31/23

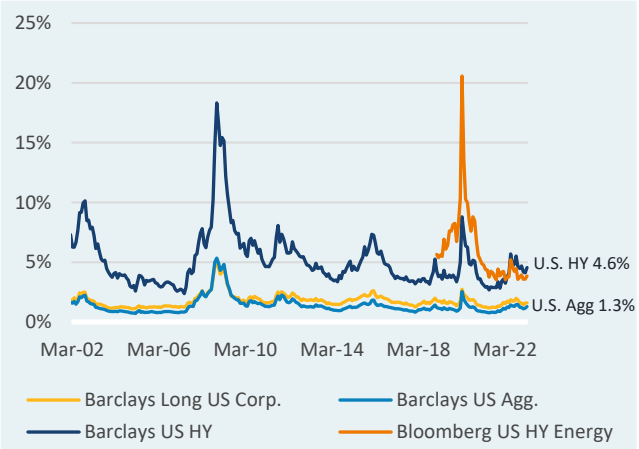
Credit environment

During the first quarter, fixed income markets delivered strong, positive returns despite concerns related to the banking sector and the potential for additional Fed rate hikes. High yield credit returns led the way with 3.6%, followed by 3.5% from investment grade credit and 3.3% from bank loans.

Within high yield bonds, unlike the performance witnessed during the fourth quarter where higher quality credit outperformed, performance was driven primarily by lower quality CCC-rated bonds. These bonds returned 5.1% during the quarter compared to 3.4% and 3.8% for B-rated and BB-rated bonds, respectively. Bank loan performance was driven primarily by continued strong demand from CLOs.

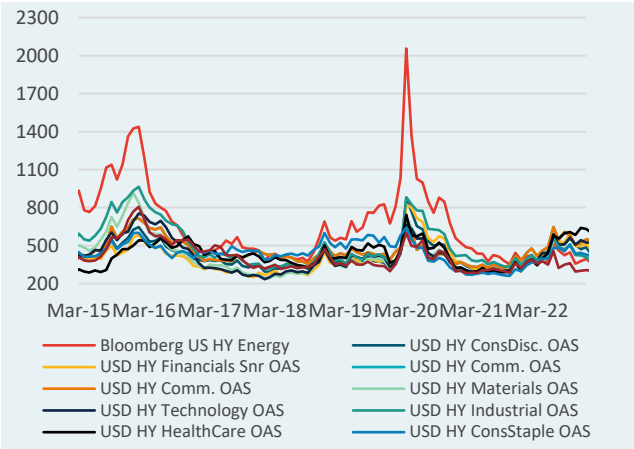
Credit spreads widened with investment grade spreads rising 0.10% to 1.4% while high yield spreads rose by 0.30% to 4.6%. Despite the jump, credit spreads remain below their long-term averages, which suggests that investors remain positive on the health of the market. However, should the economy begin to slow, credit spreads could move wider from here.

SPREADS



Source: Barclays, Bloomberg, as of 3/31/23

HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 3/31/23

	Credit Spread (OAS)	
Market	**3/31/23**	**3/31/22**
Long U.S. Corp	1.6%	1.6%
U.S. Inv Grade Corp	1.4%	1.2%
U.S. High Yield	4.6%	3.3%
U.S. Bank Loans*	5.6%	4.3%

Source: Barclays, Credit Suisse, Bloomberg, as of 3/31/23
**Discount margin (4-year life)*

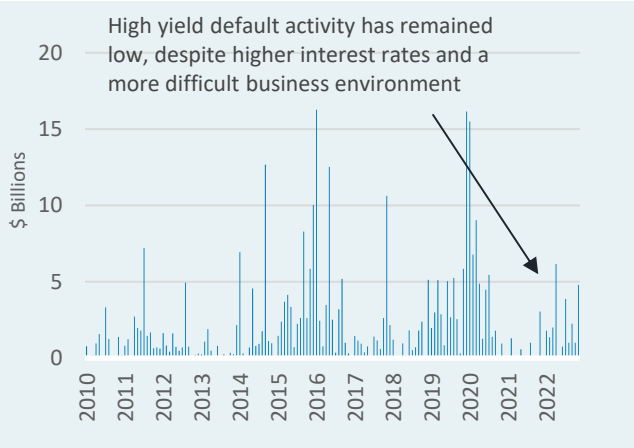
Default & issuance

Default activity remained below the long-term trend in Q1. During the quarter, 17 companies defaulted totaling $20.6 billion, with large defaults concentrated in the Media, Technology, and Consumer-related sectors. Combined defaults during the quarter were the highest since the beginning of the pandemic in 2Q 2020.

Past twelve-month default rates for both high yield bonds and bank loans decreased to 1.9% and 2.2%, respectively. This compares favorably to the long-term average of roughly 3.2% for bonds and 3.1% for loans. High yield recovery rates ended the quarter at 47.4%, down roughly 7.9% from the end of last year. Similarly, the recovery rate of bank loans ended the quarter at roughly 45.7%, down from 51.8% in 2022.

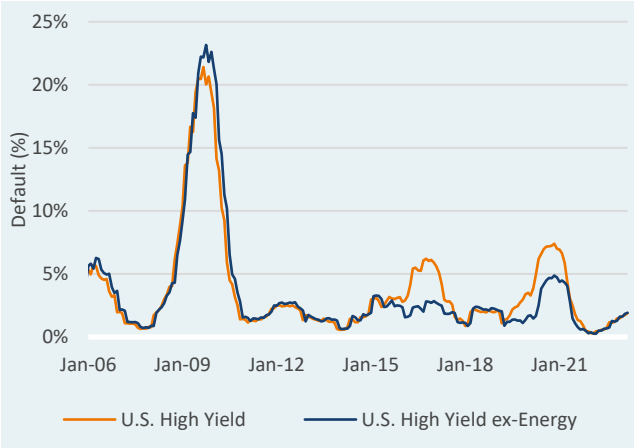
The pace of investment grade credit issuance accelerated in the first quarter with $404.2 billion of issuance compared with $200.2 billion in Q4 2022. The story was very different in levered credit which saw high yield bond and bank loan issuance decline to roughly $40.2 and $48.3 billion, respectively, during the period. For context, the level of high yield issuance ranked as the second lowest since the Global Financial Crisis in 2008-2009.

U.S. HY MONTHLY DEFAULTS (PAR WEIGHTED)



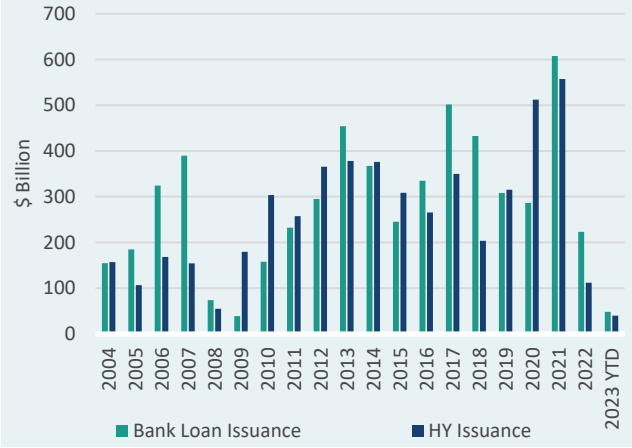
Source: BofA Merrill Lynch, as of 3/31/23

U.S. HY SECTOR DEFAULTS (LAST 12 MONTHS)



Source: BofA Merrill Lynch, as of 3/31/23 – par weighted

DEVELOPED MARKET ISSUANCE ($ BILLIONS)



Source: BofA Merrill Lynch, all developed markets, as of 3/31/23

Equity

Equity environment

— Global equities delivered another strong quarter in Q1 (MSCI ACWI +7.3%). A variety of risks are stacking up that could weigh on additional gains, including potential recession in many markets, persistent inflation problems, and tightening credit conditions.

— The outlook for domestic stocks remains challenged, especially against the backdrop of high inflation and expectations for slowing economic growth. Earnings growth has started to decline, with year-over-year S&P 500 earnings falling -4.9% in Q4 2022, the first decline seen since Q2 2020.

— The effects of currency volatility on portfolio performance was mixed during the first quarter. Over the past full year, currency movement led to a -8.5% loss for investors with unhedged exposure to international developed equity (MSCI EAFE unhedged -1.4%, MSCI EAFE hedged +7.1%), led by a -12.6% loss in Japanese equities (TOPIX unhedged -3.1%, TOPIX hedged +9.5%). We continue to believe that a thoughtful currency program may allow investors to reduce their total portfolio risk while also increasing long-term expected returns.

— Growth stocks delivered strong outperformance in the first quarter (Russell 1000 Growth +14.4% vs. Russell 1000 Value +1.0%), effectively reversing value's rally in Q4 2022. This divergence in style behavior appears to be, once again, mostly a result of relative sector returns.

— The Cboe VIX implied volatility index surged in March on the news of Silicon Valley Bank's failure, and the possibility of contagion across the financial sector, but ended the quarter at 18.7%—near the longer-term average.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
U.S. Large Cap (S&P 500)	7.5%		(7.7%)	
U.S. Small Cap (Russell 2000)	2.7%		(11.6%)	
U.S. Equity (Russell 3000)	7.2%		(8.6%)	
U.S. Large Value (Russell 1000 Value)	1.0%		(5.9%)	
US Large Growth (Russell 1000 Growth)	14.4%		(10.9%)	
Global Equity (MSCI ACWI)	7.3%	7.3%	(7.4%)	(4.8%)
International Large (MSCI EAFE)	8.5%	8.3%	(1.4%)	7.1%
Eurozone (EURO STOXX 50)	16.2%	15.0%	10.8%	17.1%
U.K. (FTSE 100)	6.4%	3.8%	(1.1%)	6.9%
Japan (TOPIX)	5.8%	8.5%	(3.1%)	9.5%
Emerging Markets (MSCI Emerging Markets)	4.0%	3.8%	(10.7%)	(6.6%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 3/31/23

Domestic equity

U.S. equities finished the first quarter up 7.5%, marking another positive quarter as the S&P 500 recovers from the losses of 2022. Much volatility persisted through recent months, with shares moving higher in January, before falling sharply in line with expectations for a more hawkish Federal Reserve. The fallout in the banking system challenged the financial sector, but ultimately proved to be a significant tailwind to the broader index, as investor expectations for the Federal Reserve's rate path were significantly cut down. This boosts equity market valuations because lower interest rates increase the present value of equities through the discounting of cash flows. Growth stocks tend to benefit the most from this effect, as businesses with larger earnings expected further into the future are more sensitive to interest rate changes.

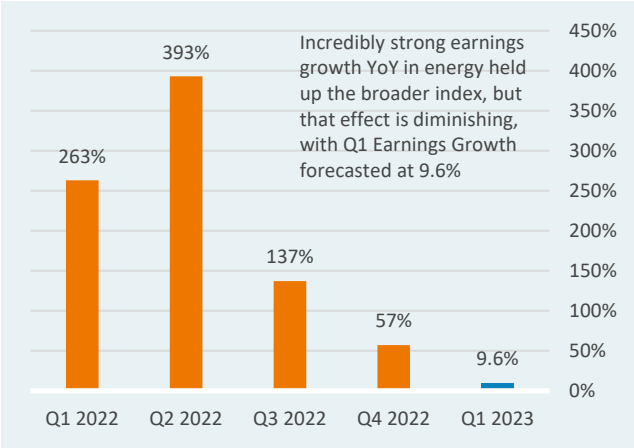
Despite recent gains, the outlook for domestic stocks remains challenged, given the backdrop of high inflation and expectations for slowing economic growth. Corporate earnings have been weakening, with year-over-year S&P 500 earnings falling -4.9% in Q4 2022—the first decline seen since Q2 2020. Analysts believe this trend will continue—FactSet expects Q1 2023 earnings to slide -6.6%.

Domestic companies continue to face margin compression due to higher input prices and wages, although many companies are now implementing cost cutting measures—most visibly within the technology and financial sectors—to help retain earnings. The normalization of earnings growth within the energy sector, which had previously provided a large tailwind to broad earnings, has also been a drag.

S&P 500 PRICE INDEX

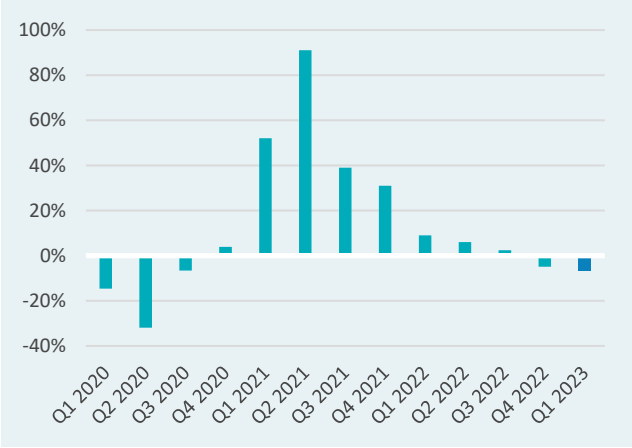
Source: Standard & Poor's, as of 3/31/23

ENERGY EARNINGS GROWTH (YEAR-OVER-YEAR)



Source: FactSet, as of 3/31/23

S&P 500 EARNINGS GROWTH (YEAR-OVER-YEAR)



Source: FactSet, as of 3/31/23

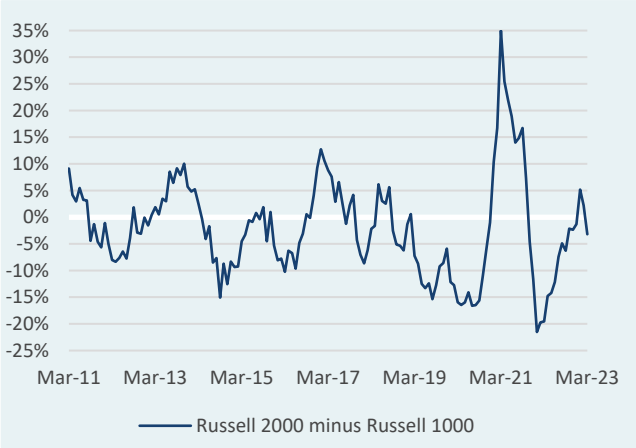
Domestic equity size & style

Growth stocks delivered strong outperformance in the first quarter (Russell 1000 Growth +14.4% vs. Russell 1000 Value +1.0%), effectively reversing the value rally of Q4 2022. This divergence in style behavior appears to be, once again, mostly a result of relative sector returns. Information technology led the index at +21.8% over the quarter, while energy (-4.7%) and financials (-5.6%) were laggards.

Small capitalization stocks underperformed large capitalization stocks during Q1 (Russell 2000 +2.7%, Russell 1000 +7.5%) and have also lagged over the past year (Russell 2000 -11.6%, Russell 1000 -8.4%).

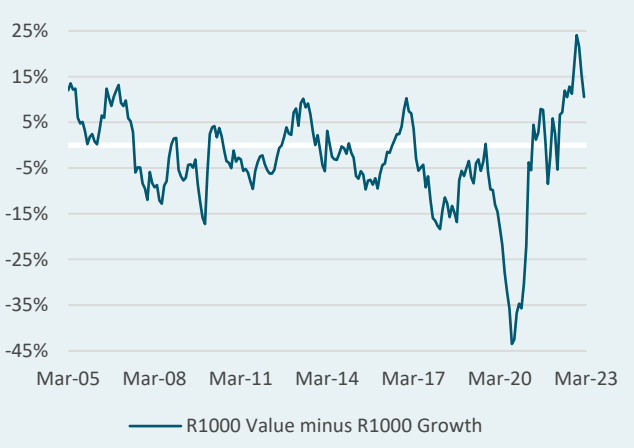
Large disparities in sector performance and the significant impact of this ongoing volatility on style factors supports our view that factor timing should rarely be pursued for most investors. There are occasions when market mispricing offers a compelling case to tilt into a style factor, though these occasions come along perhaps every few decades rather than every few years. We believe that style investing is most appropriately pursued in a strategic manner based on each individual investor's market beliefs and long-term goals.

SMALL CAP VS LARGE CAP (YOY)



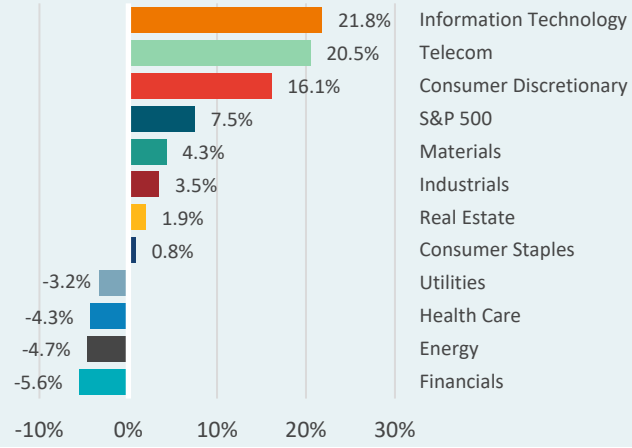
Source: FTSE, as of 3/31/23

VALUE VS GROWTH (YOY)



Source: FTSE, as of 3/31/23

Q1 2023 SECTOR PERFORMANCE



Source: Morningstar, as of 3/31/23

International developed equity

International developed equities outperformed global peers for a consecutive quarter, with the MSCI EAFE Index finishing up 8.3% in unhedged currency terms. Currency market movement was more muted, leading to a smaller 0.2% difference between currency hedged and unhedged index returns. This was likely a welcome change, given large and painful currency movements of the past year as the U.S. dollar appreciated.

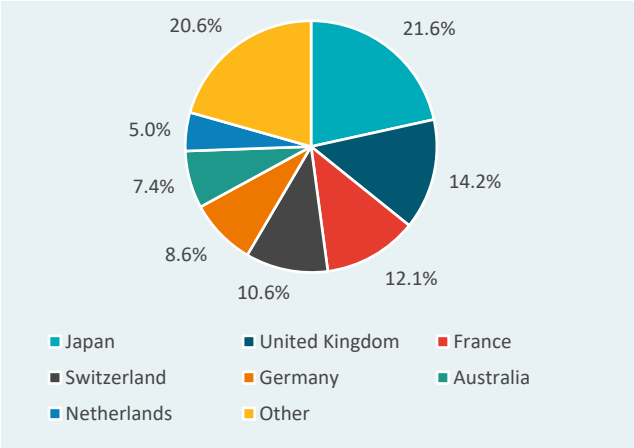
European shares outperformed, due to larger European companies delivering positive earnings despite much economic uncertainty. The larger capitalization STOXX 50 Index returned 16.2%, compared to the broader STOXX 600 Index which finished the quarter up 10.3%. Japanese equities lagged most other markets in Q1.

Inflation uncertainty has likely been a key contributor to the cheaper valuations of international developed equities, although inflation pressures have started to show some relief in the Eurozone, driven primarily by moderating energy prices. Despite these positive signs, both the European Central Bank and Bank of England have signaled that additional rate hikes are ahead. The drag presented by central bank hawkishness may be an ongoing theme of 2023.

INTERNATIONAL DEVELOPED EQUITY

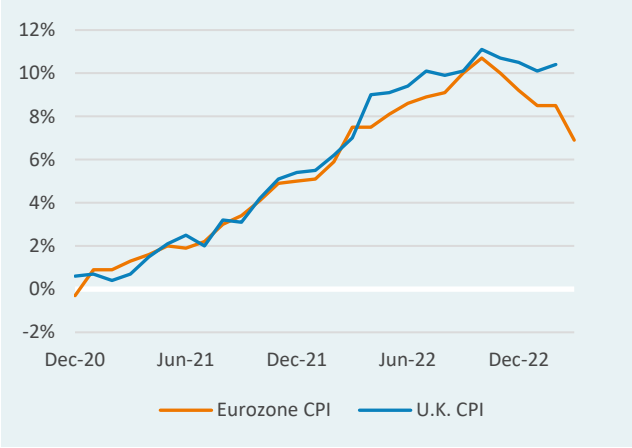
Source: MSCI, as of 3/31/23

MSCI EAFE INDEX COUNTRY DECOMPOSITION



Source: MSCI, as of 3/31/23

EUROPEAN INFLATION



Source: Bloomberg, as of 3/31/23. U.K. CPI as of 2/28/23

Emerging market equity

Emerging market equities lagged the global opportunity set during the quarter. The MSCI EM Index finished up 4.0%, relative to 8.5% from the MSCI EAFE Index and 7.5% from the S&P 500.

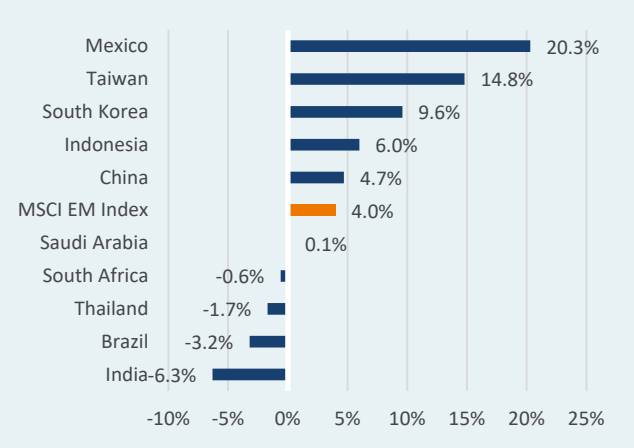
Chinese equities—the largest country weight in the index at thirty percent—saw a slowdown in economic momentum from the COVID-19 reopening, yet still finished the quarter +4.7%. China generated a drag on the overall emerging market index despite large gains from markets in Mexico, Taiwan, and South Korea.

While slowing economic growth amongst developed economies provides a headwind to emerging markets, a lack of inflationary pressures amongst most emerging countries helps paint a more optimistic picture. Fewer inflation problems allows for looser central bank policies, which combined with a continuation of pandemic reopening in China, could allow for higher economic growth in the near-term. The IMF's World Economic Outlook sees emerging & developing economy growth at 3.9% in 2023—much higher than the expected 1.3% for advanced economies.

EMERGING MARKET EQUITY

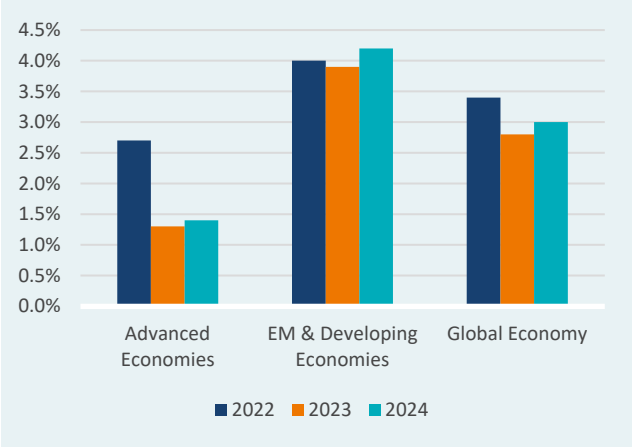
Source: MSCI, as of 3/31/23

Q1 2023 MSCI COUNTRY RETURNS (USD)



Source: Bloomberg, MSCI, as of 3/31/23

IMF'S APRIL REAL GDP GROWTH FORECASTS



Source: IMF April World Economic Outlook

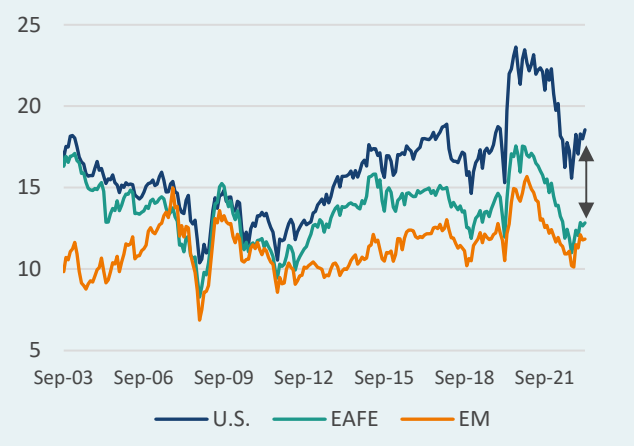
Equity valuations

Equity valuations continued to move higher in the first quarter, as global equities advanced and corporate earnings remained relatively flat. Forward price-to-earnings in the U.S. ended March at 18.6x, sliding below the 5-year average, but still higher than the 10-year average of 17.8x. In contrast, international developed (12.8x) and emerging market (11.8x) valuations sit below or at their respective five- and ten-year averages.

U.S. equities led global markets over the past decade largely due to a boom in corporate earnings and the success of technology-focused mega cap stocks. However, part of that outperformance was due to U.S. equity multiples rising to elevated levels. This is reflected in current U.S. valuations and the near-record divide between U.S. and non-U.S. markets. Lofty multiples may limit further upside of domestic equities without a rebound in earnings, especially given the possibility of U.S. recession, persistent inflation, and recent banking stress. However, an incoming global economic slowdown could support domestic equities as investors tend to prefer high quality markets during times of stress.

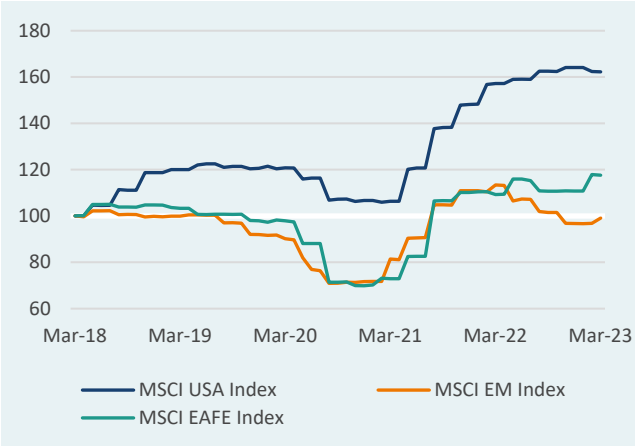
U.S. markets remain relatively expensive, despite potential recession, inflation, banking, and other risks

FORWARD P/E RATIOS



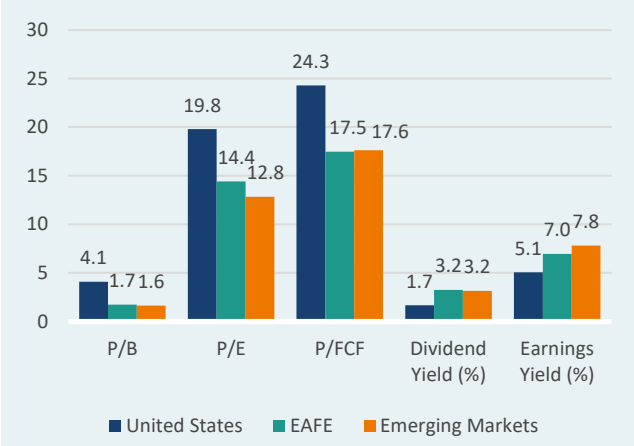
Source: MSCI, 12m forward P/E, as of 3/31/23

TRAILING 12M EPS (INDEX 100)



Source: Bloomberg, MSCI, as of 3/31/23

VALUATION METRICS (3-MONTH AVERAGE)



Source: Bloomberg, MSCI, as of 3/31/23 - trailing P/E

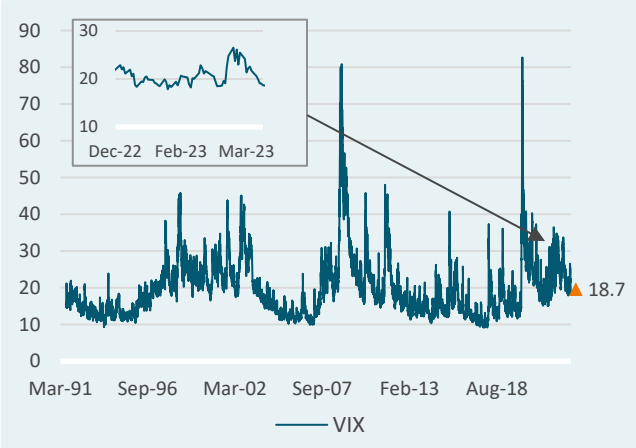
Equity volatility

The Cboe VIX implied volatility index surged in March on the news of Silicon Valley Bank's failure, and the possibility of contagion across the financial sector, but ended the quarter at 18.7%—near the longer-term average. Markets have faced an ongoing drumbeat of risks in recent years, from the global pandemic, to ensuing inflation shock and aggressive response from central banks, now to banking/credit stress and possible recession.

Realized volatility of global equity markets remains above average, while emerging market volatility continues to be in line with developed markets—a trend that has been uncommon historically.

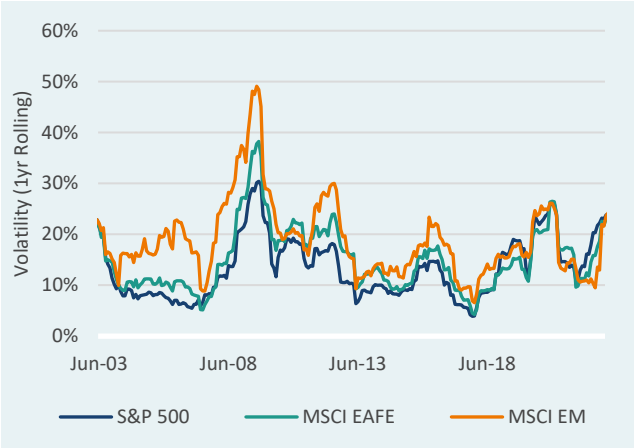
Many market stories of the past year have related to Federal Reserve tightening and the path of interest rates. These stories have contributed to considerable volatility in bond markets. As indicated by the ICE BofA "MOVE" Index, which measures the volatility priced into U.S. Treasury bonds, domestic and international banking stress in the first quarter further added to market choppiness.

U.S. IMPLIED VOLATILITY (VIX)



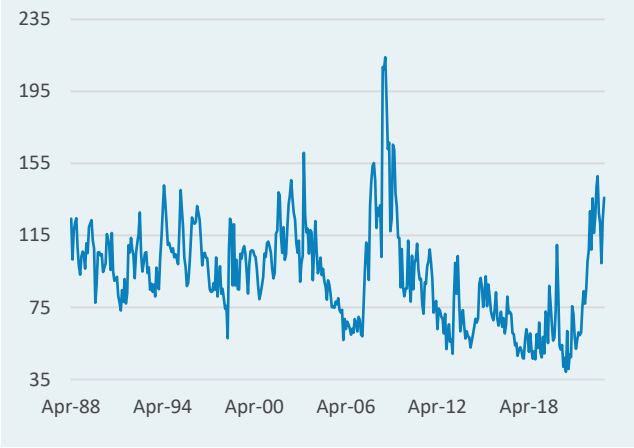
Source: Cboe, as of 3/31/23

REALIZED VOLATILITY



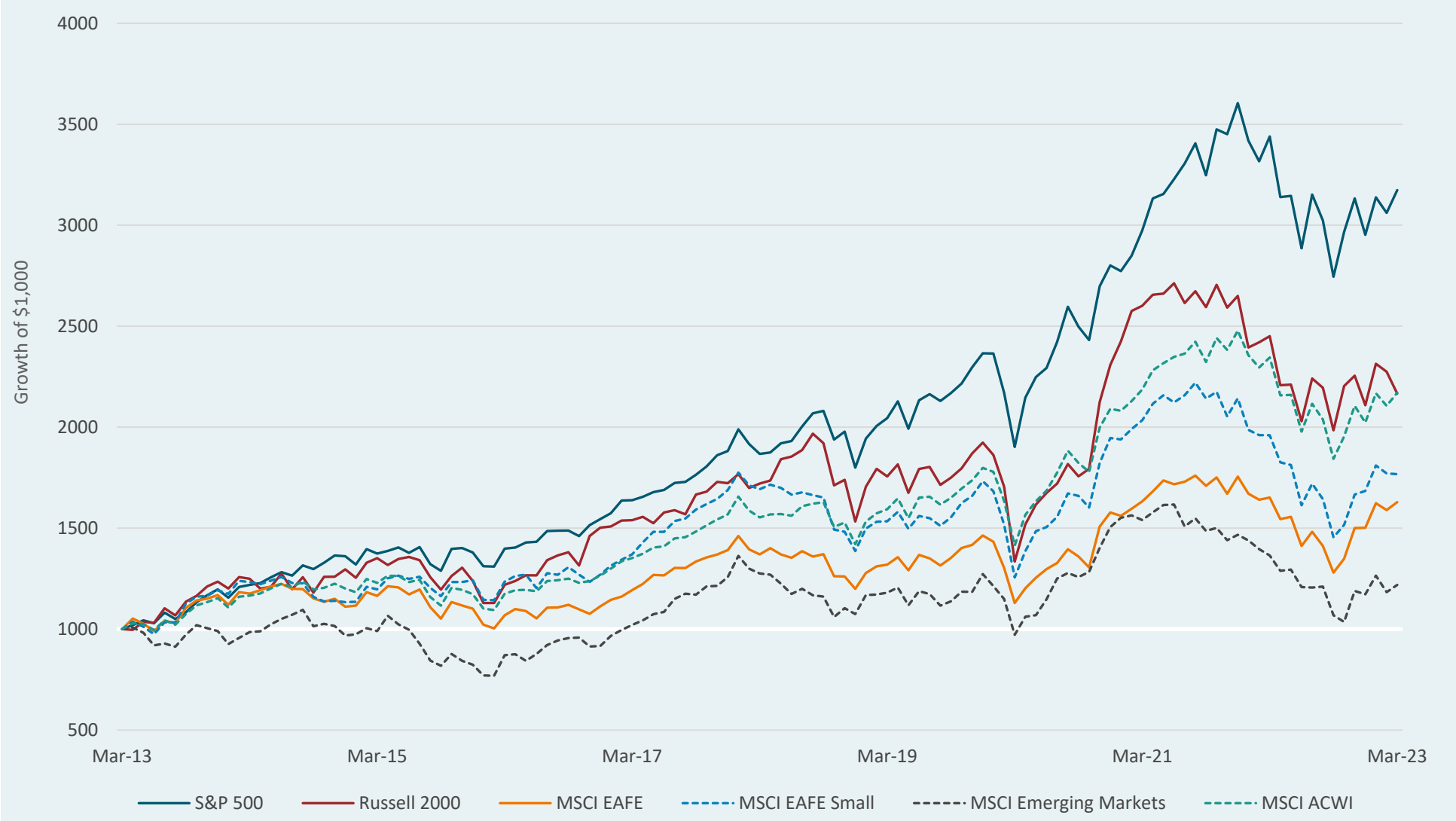
Source: S&P, MSCI, as of 3/31/23

U.S. TREASURY IMPLIED VOL ("MOVE" INDEX)



Source: Bloomberg, as of 3/31/23

Long-term equity performance



Source: MPI, as of 3/31/23

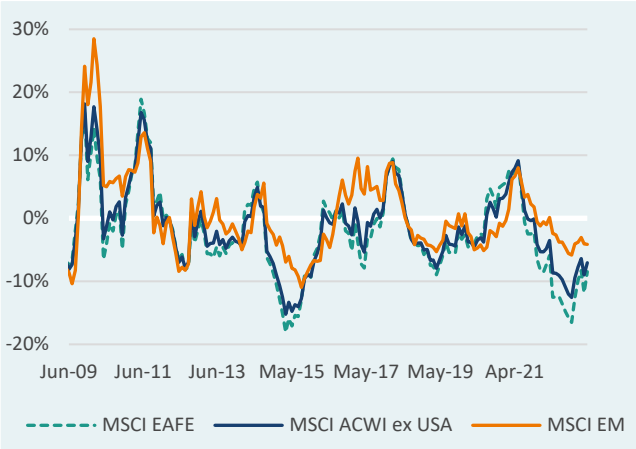
Other assets

Currency

The effects of currency volatility on portfolio performance was mixed during the first quarter. Over the past full year, currency movement led to a -8.5% loss for investors with unhedged exposure to international developed equity (MSCI EAFE unhedged -1.4%, MSCI EAFE hedged +7.1%), fueled by a -12.6% currency loss from Japanese equities (TOPIX unhedged -3.1%, TOPIX hedged +9.5%). The U.S. dollar depreciated -1.6% during the quarter, according to the U.S. Trade Weighted Dollar Index, providing a tailwind to most unhedged international investments.

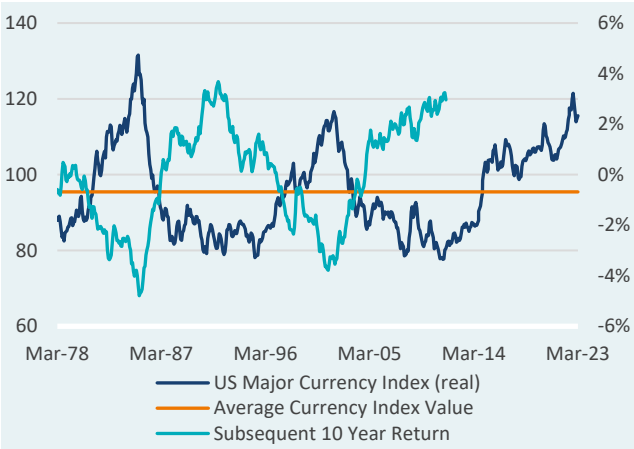
A thoughtful currency program may allow investors to reduce their total portfolio risk while also increasing long-term expected returns. The MSCI Currency Factor Mix Index—a representation of a passive investment in the currency market—has shown a positive one-year rolling return over most periods with very low volatility. This contrasts to the unhedged currency exposure (what we refer to as "embedded currency") that most investors own, which has demonstrated high volatility and frequent losses. This currency program would have delivered cumulative outperformance of +22.5% over the past five years for an international developed equity portfolio, and +52.0% cumulative outperformance over the past ten years, while also reducing total risk in the portfolio.

EFFECT OF CURRENCY (1-YEAR ROLLING)



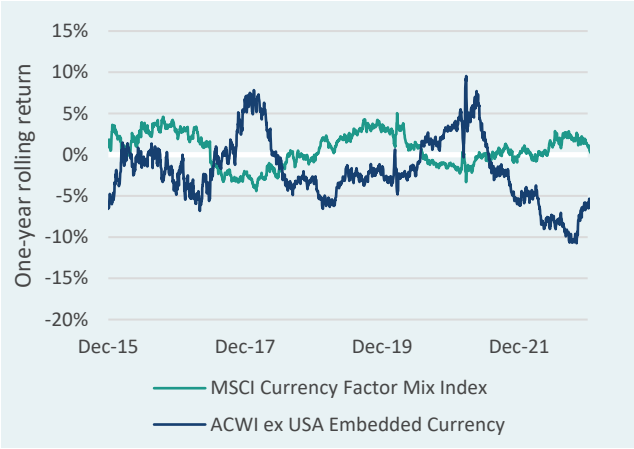
Source: MSCI, as of 3/31/23

BLOOMBERG DOLLAR SPOT INDEX



Source: Federal Reserve, as of 3/31/23

EMBEDDED CURRENCY VS CURRENCY FACTORS



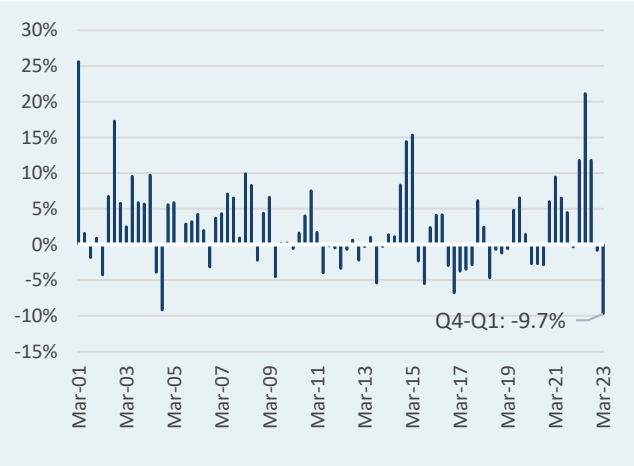
Source: Bloomberg, MSCI, as of 3/31/23

A reversal in CTA strategy performance

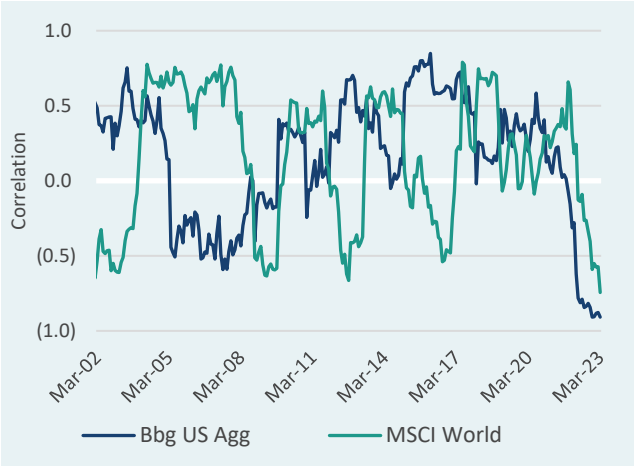
In 2021 and for most of 2022, systematic CTA strategies were the top performing hedge fund strategy. Trend following was paying off after several years of mediocre returns from 2016-2020. This periodicity is typical of trend following/CTA type strategies, and the end of 2022 and first quarter of 2023 served as examples of weak runs for these strategies. CTA strategies, as proxied by the SocGen CTA Index, had their worst ever consecutive quarters from Q4 '22 through Q1 '23, looking back to the year 2000.

A key driver of underperformance is apparent when examining one-year correlations of these strategies to stocks and bonds, which were recently at their all time most-negative levels. Rolling 3-year performance of CTAs relative to other strategy types has reversed after COVID-19 drawdowns begin to roll off and as CTAs have suffered from the recent reversals in both stocks and bonds. As intermediate (6-12 month) trends in markets begin to flatten out and the first half of 2022 rolls off, we believe CTA positioning may level out and potentially support a rebound in performance.

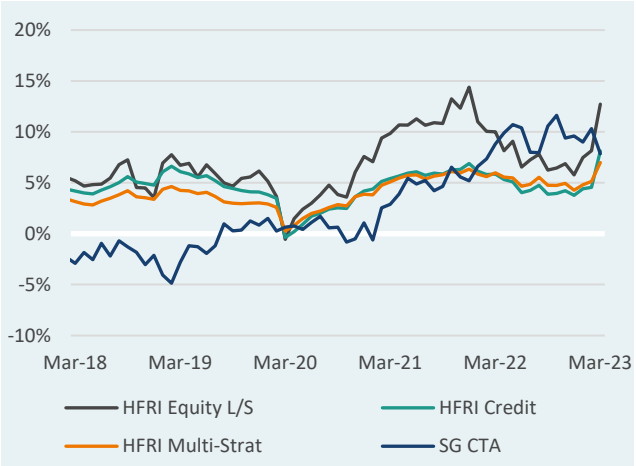
ROLLING 6-MONTH RETURNS FOR CTA INDEX



12-MONTH CORRELATION VS CTA INDEX



CUMULATIVE RETURN LAST 12 MONTHS



Source: HFR, MPI, Morningstar. SocGen, Data as of 3/31/23

Appendix

Periodic table of returns

BEST ↑ ↓ WORST

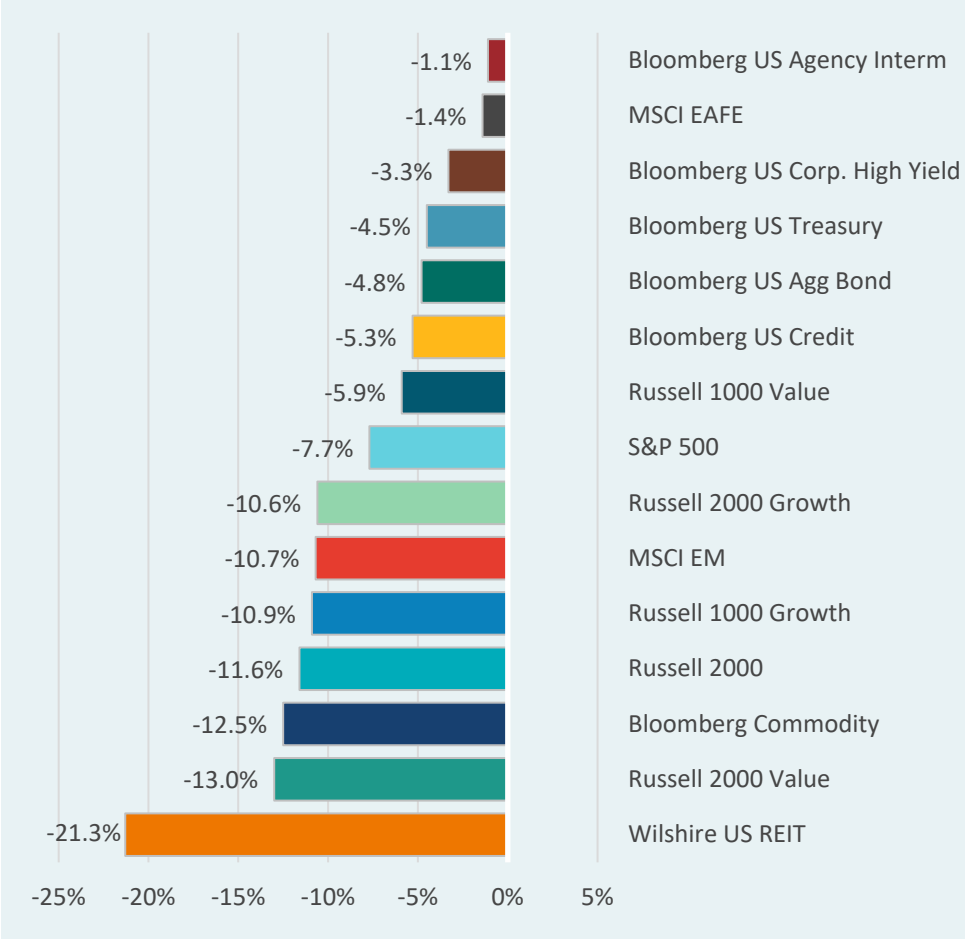
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	YTD	5-Year	10-Year
Large Cap Growth	56.3	26.0	34.5	32.6	39.8	5.2	79.0	29.1	14.3	18.6	43.3	13.5	13.3	31.7	37.3	6.7	36.4	38.5	28.3	16.1	14.4	13.7	14.6
International Equity	48.5	22.2	21.4	26.9	16.2	1.4	37.2	26.9	7.8	18.1	38.8	13.2	5.7	21.3	30.2	1.9	31.4	34.6	27.6	9.4	8.5	10.9	12.0
Large Cap Equity	47.3	20.7	20.1	23.5	15.8	-6.5	34.5	24.5	2.6	17.9	34.5	13.0	0.9	17.3	25.0	0.0	28.5	21.0	27.1	1.5	7.5	7.5	9.1
Small Cap Growth	46.0	18.3	14.0	22.2	11.8	-21.4	32.5	19.2	1.5	17.5	33.5	11.8	0.6	12.1	22.2	-1.5	26.5	20.0	26.5	-4.7	6.1	7.5	8.8
60/40 Global Portfolio	39.2	16.5	7.5	18.4	11.6	-25.9	28.4	16.8	0.4	16.4	33.1	6.0	0.0	11.8	21.7	-3.5	25.5	18.3	25.2	-7.5	5.6	5.4	8.5
Emerging Markets Equity	30.0	14.5	7.1	16.6	10.9	-28.9	27.2	16.7	0.1	16.3	32.5	5.6	-0.4	11.3	17.1	-4.8	22.4	14.0	17.7	-13.0	4.0	4.7	8.0
US Bonds	29.9	14.3	6.3	15.5	10.3	-33.8	23.3	16.1	-2.1	15.3	23.3	4.9	-0.8	11.2	14.6	-6.0	22.0	10.3	14.8	-14.5	3.0	4.5	7.2
Small Cap Equity	29.7	12.9	5.3	15.1	7.0	-35.6	20.6	15.5	-2.9	14.6	12.1	4.2	-1.4	8.0	13.7	-8.3	18.6	7.8	11.3	-14.5	2.7	4.3	5.0
Hedge Funds of Funds	25.2	11.4	4.7	13.3	7.0	-36.8	19.7	13.1	-4.2	11.5	11.0	3.4	-2.5	7.1	7.8	-9.3	18.4	7.5	8.9	-17.3	1.6	3.9	5.0
Cash	23.9	9.1	4.6	10.4	5.8	-37.6	18.9	10.2	-5.5	10.5	9.0	2.8	-3.8	5.7	7.7	-11.0	8.7	4.6	6.5	-19.1	1.1	3.5	3.3
Large Cap Value	11.6	6.9	4.6	9.1	4.4	-38.4	11.5	8.2	-5.7	4.8	0.1	0.0	-4.4	2.6	7.0	-11.2	7.8	2.8	2.8	-20.1	1.0	3.3	2.0
Real Estate	9.0	6.3	4.2	4.8	-0.2	-38.5	5.9	6.5	-11.7	4.2	-2.0	-1.8	-7.5	1.0	3.5	-12.9	7.7	0.5	0.0	-20.4	0.0	1.3	1.4
Small Cap Value	4.1	4.3	3.2	4.3	-1.6	-43.1	0.2	5.7	-13.3	0.1	-2.3	-4.5	-14.9	0.5	1.7	-13.8	6.4	0.5	-1.5	-26.4	-0.7	0.9	0.8
Commodities	1.0	1.4	2.4	2.1	-9.8	-53.2	-16.9	0.1	-18.2	-1.1	-9.5	-17.0	-24.7	0.3	0.9	-14.6	2.1	-3.1	-2.5	-29.1	-5.4	-0.9	-1.7

- Large Cap Equity
- Large Cap Value
- Large Cap Growth
- Small Cap Equity
- Small Cap Value
- Small Cap Growth
- International Equity
- Emerging Markets Equity
- US Bonds
- Cash
- Commodities
- Real Estate
- Hedge Funds of Funds
- 60% MSCI ACWI/40% Bloomberg Global Bond

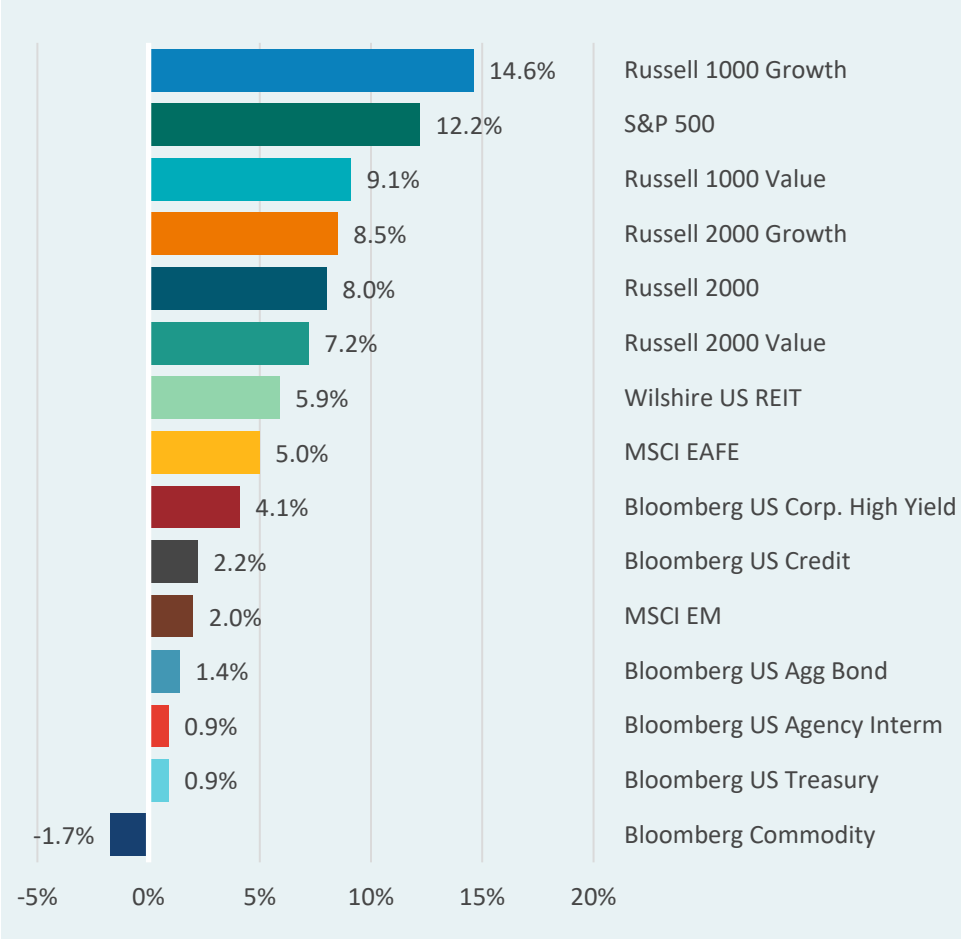
Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, Bloomberg US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, Bloomberg Global Bond. NCREIF Property Index performance data as of 12/31/22.

Major asset class returns

ONE YEAR ENDING MARCH



TEN YEARS ENDING MARCH



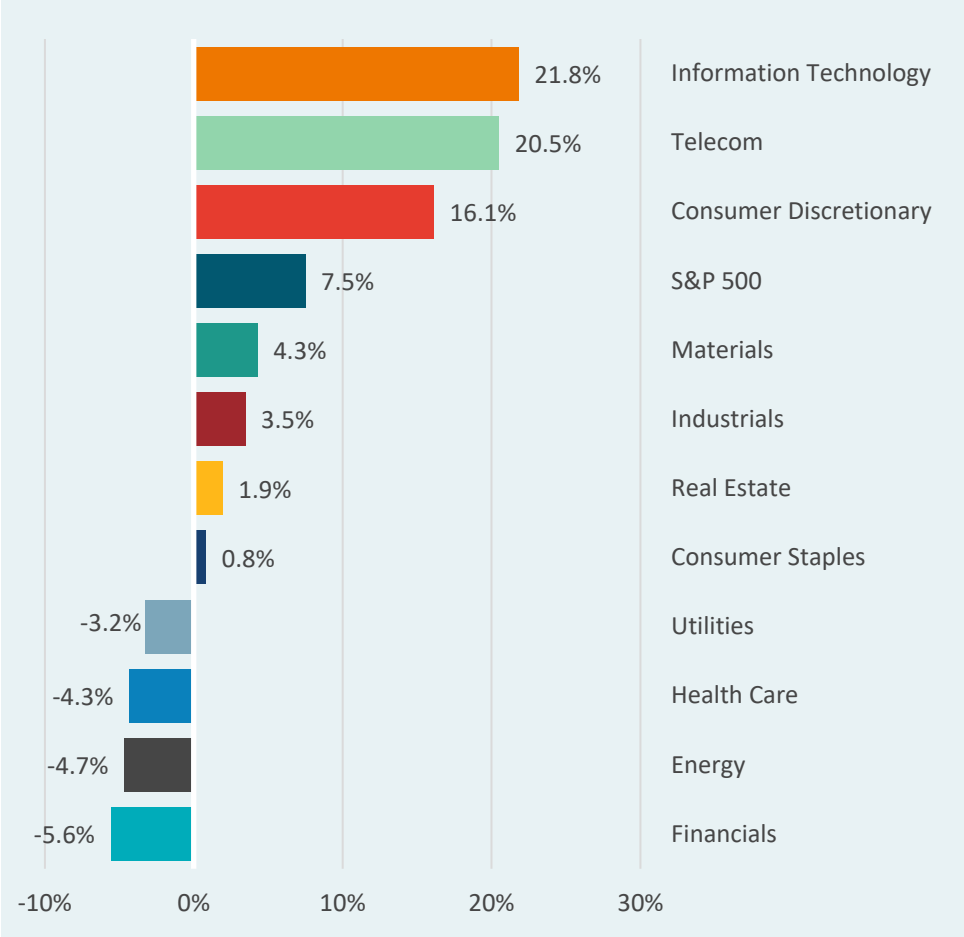
**Only publicly traded asset performance is shown here. Performance of private assets is typically released with a 3- to 6-month delay.*

Source: Morningstar, as of 3/31/23

Source: Morningstar, as of 3/31/23

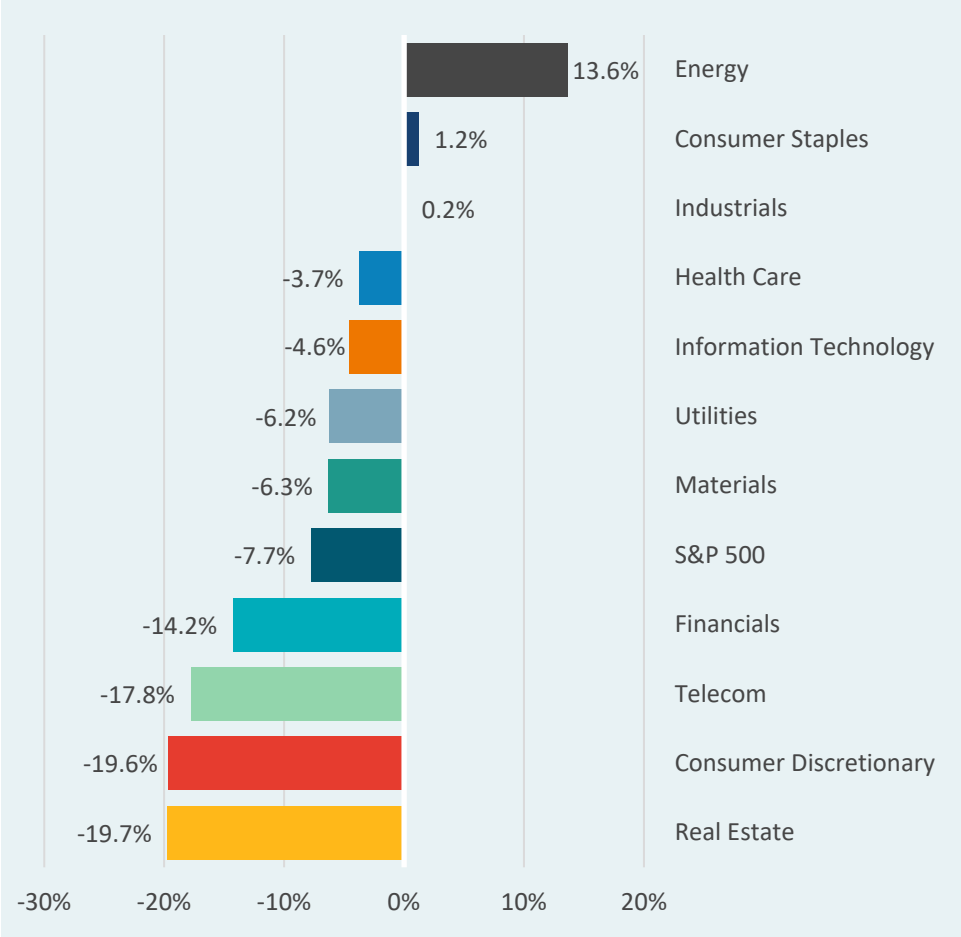
S&P 500 sector returns

QTD



Source: Morningstar, as of 3/31/23

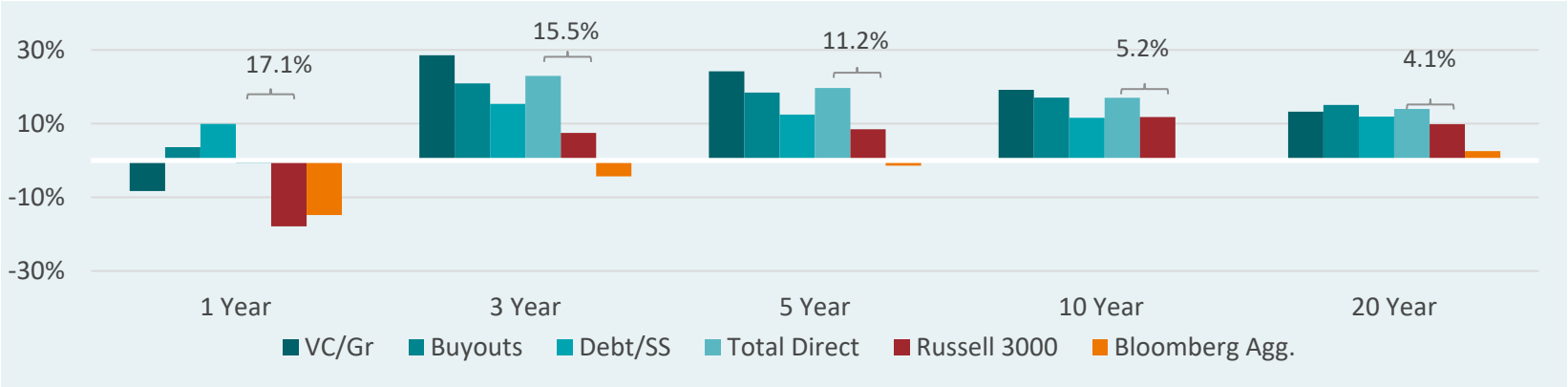
ONE YEAR ENDING MARCH



Source: Morningstar, as of 3/31/23

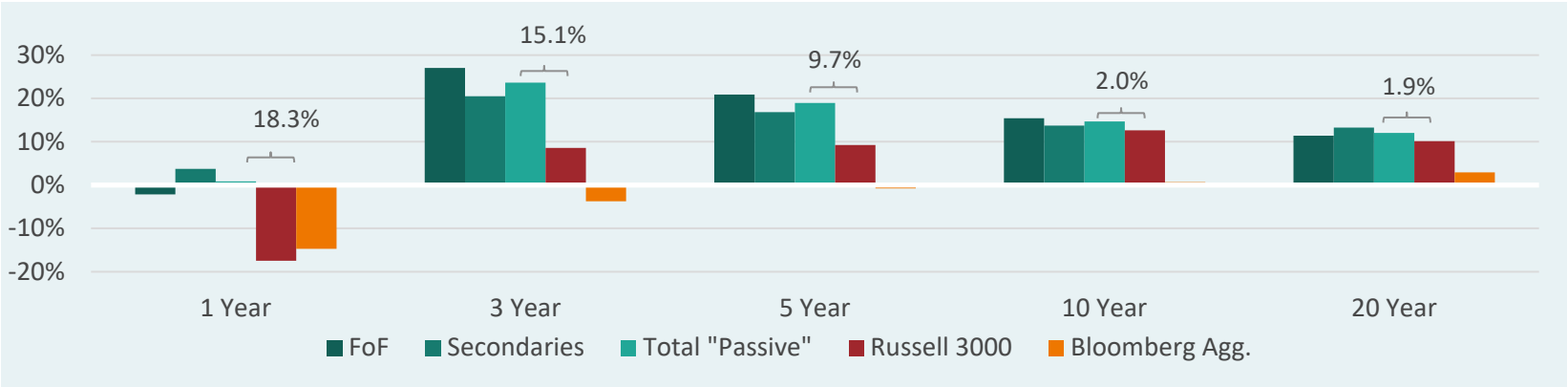
Private equity vs. traditional assets performance

DIRECT PRIVATE EQUITY FUND INVESTMENTS



Direct P.E Fund Investments outperformed comparable public equites across all time periods

"PASSIVE" STRATEGIES

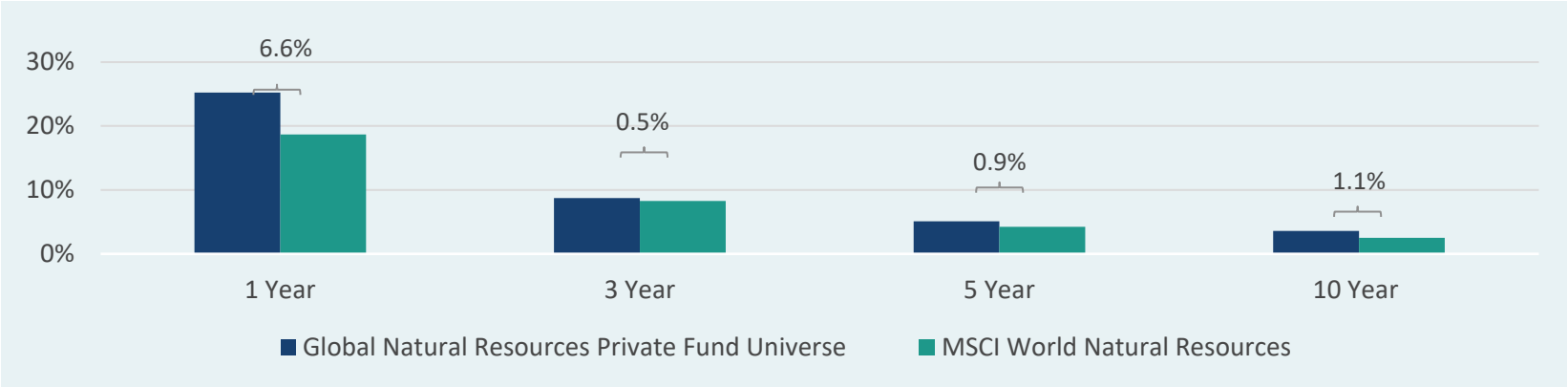


"Passive" strategies outperformed comparable public equities across all time periods

Sources: Refinitiv PME: U.S. Private Equity Funds sub asset classes as of September 30, 2022. Public Market Equivalent returns resulted from "Total Passive" and Total Direct's identical cash flows invested into and distributed from respective traditional asset comparable.

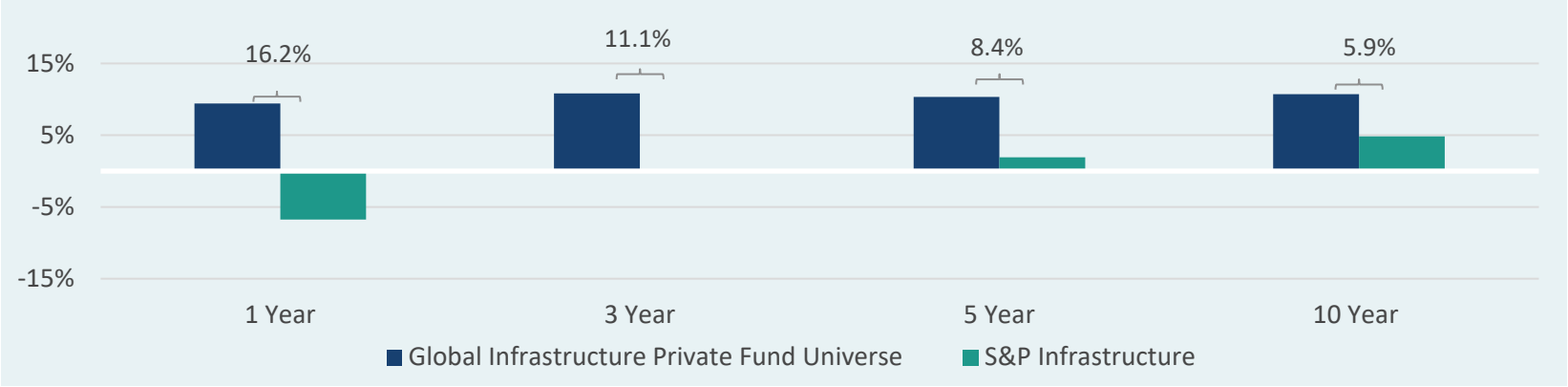
Private vs. liquid real assets performance

GLOBAL NATURAL RESOURCES FUNDS



N.R. funds outperformed the MSCI World Natural Resources benchmark across all periods

GLOBAL INFRASTRUCTURE FUNDS

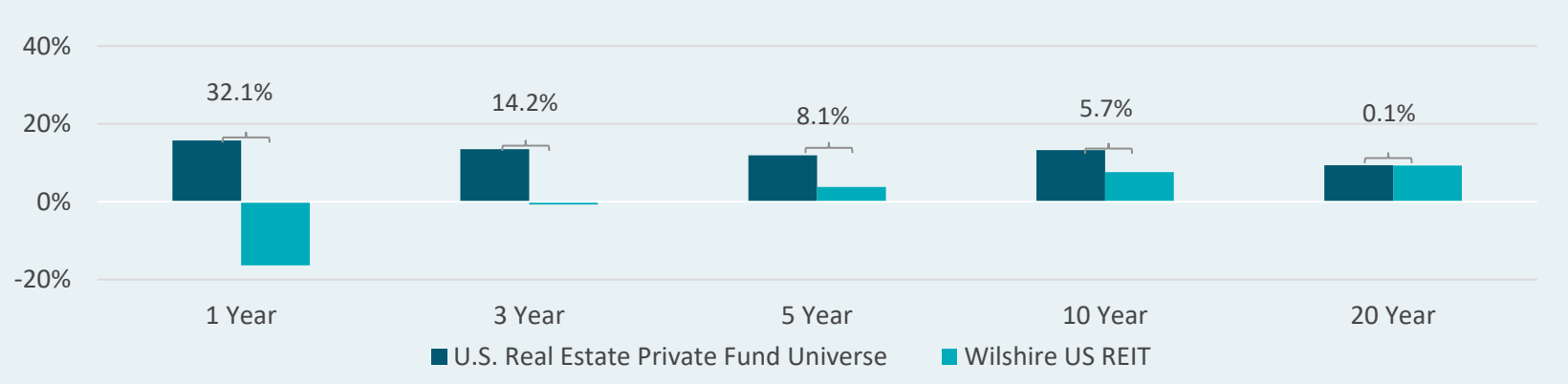


Infra. funds outperformed the S&P Infra. across all periods

Sources: Refinitiv PME: Global Natural Resources (vintage 1999 and later, inception of MSCI World Natural Resources benchmark) and Global Infrastructure (vintage 2002 and later, inception of S&P Infrastructure benchmark) universes as of September 30, 2022. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real assets universes.

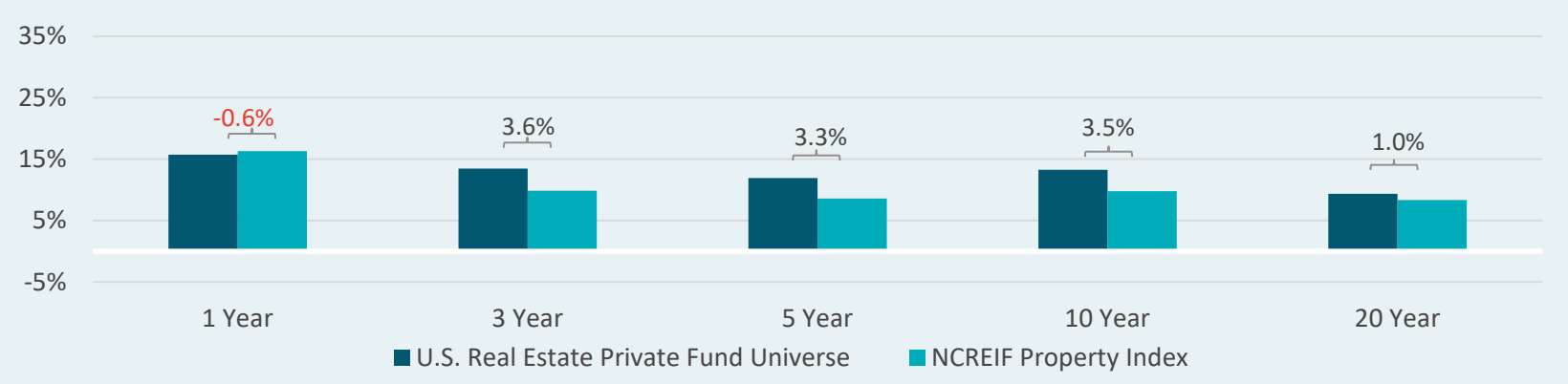
Private vs. liquid and core real estate performance

U.S. PRIVATE REAL ESTATE FUNDS VS. LIQUID UNIVERSE



U.S. Private R.E. funds outperformed the Wilshire U.S. REIT Index across all time periods

U.S. PRIVATE REAL ESTATE FUNDS VS. CORE FUNDS



U.S. Private R.E. Funds outperformed the NCREIF Property Index across all time periods, aside from the 1-year

Sources: Refinitiv PME: U.S. Real Estate universes as of September 30, 2022. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real estate universes.

Detailed index returns

DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index							
S&P 500	3.7	7.5	7.5	(7.7)	18.6	11.2	12.2
S&P 500 Equal Weighted	(0.9)	2.9	2.9	(6.3)	22.1	10.0	11.4
DJ Industrial Average	2.1	0.9	0.9	(2.0)	17.3	9.0	11.1
Russell Top 200	4.9	8.7	8.7	(8.3)	18.4	11.9	12.8
Russell 1000	3.2	7.5	7.5	(8.4)	18.6	10.9	12.0
Russell 2000	(4.8)	2.7	2.7	(11.6)	17.5	4.7	8.0
Russell 3000	2.7	7.2	7.2	(8.6)	18.5	10.5	11.7
Russell Mid Cap	(1.5)	4.1	4.1	(8.8)	19.2	8.1	10.1
Style Index							
Russell 1000 Growth	6.8	14.4	14.4	(10.9)	18.6	13.7	14.6
Russell 1000 Value	(0.5)	1.0	1.0	(5.9)	17.9	7.5	9.1
Russell 2000 Growth	(2.5)	6.1	6.1	(10.6)	13.4	4.3	8.5
Russell 2000 Value	(7.2)	(0.7)	(0.7)	(13.0)	21.0	4.5	7.2

INTERNATIONAL EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
MSCI ACWI	3.1	7.3	7.3	(7.4)	15.4	6.9	8.1
MSCI ACWI ex US	2.4	6.9	6.9	(5.1)	11.8	2.5	4.2
MSCI EAFE	2.5	8.5	8.5	(1.4)	13.0	3.5	5.0
MSCI EM	3.0	4.0	4.0	(10.7)	7.8	(0.9)	2.0
MSCI EAFE Small Cap	(0.2)	4.9	4.9	(9.8)	12.1	0.9	5.9
Style Index							
MSCI EAFE Growth	5.3	11.1	11.1	(2.8)	10.9	4.9	6.0
MSCI EAFE Value	(0.3)	5.9	5.9	(0.3)	14.6	1.7	3.7
Regional Index							
MSCI UK	(0.6)	6.1	6.1	(0.8)	14.6	3.0	3.4
MSCI Japan	4.0	6.2	6.2	(5.2)	7.4	1.3	5.0
MSCI Euro	4.1	15.6	15.6	7.7	17.1	3.9	6.0
MSCI EM Asia	3.6	4.8	4.8	(9.4)	7.1	0.1	4.2
MSCI EM Latin American	0.8	3.9	3.9	(11.1)	18.1	(1.8)	(1.9)

FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
Bloomberg US TIPS	2.9	3.3	3.3	(6.1)	1.8	2.9	1.5
Bloomberg US Treasury Bills	0.4	1.1	1.1	2.5	0.8	1.4	0.9
Bloomberg US Agg Bond	2.5	3.0	3.0	(4.8)	(2.8)	0.9	1.4
Bloomberg US Universal	2.3	2.9	2.9	(4.6)	(2.0)	1.0	1.6
Duration							
Bloomberg US Treasury 1-3 Yr	1.6	1.6	1.6	0.2	(0.8)	1.1	0.8
Bloomberg US Treasury Long	4.7	6.2	6.2	(16.0)	(11.3)	(0.4)	1.5
Bloomberg US Treasury	2.9	3.0	3.0	(4.5)	(4.2)	0.7	0.9
Issuer							
Bloomberg US MBS	1.9	2.5	2.5	(4.9)	(3.3)	0.2	1.0
Bloomberg US Corp. High Yield	1.1	3.6	3.6	(3.3)	5.9	3.2	4.1
Bloomberg US Agency Interm	1.8	1.9	1.9	(1.1)	(1.6)	0.9	0.9
Bloomberg US Credit	2.7	3.5	3.5	(5.3)	(0.7)	1.5	2.2

OTHER

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Index							
Bloomberg Commodity	(0.2)	(5.4)	(5.4)	(12.5)	20.8	5.4	(1.7)
Wilshire US REIT	(2.6)	3.2	3.2	(21.3)	11.0	5.7	5.9
CS Leveraged Loans	(0.1)	3.1	3.1	2.1	8.4	3.5	3.9
S&P Global Infrastructure	2.4	3.9	3.9	(3.5)	15.6	5.9	6.4
Alerian MLP	(0.7)	3.4	3.4	13.9	46.3	6.9	0.6
Regional Index							
JPM EMBI Global Div	1.0	1.9	1.9	(6.9)	(0.0)	(0.6)	2.0
JPM GBI-EM Global Div	4.1	5.2	5.2	(0.7)	0.9	(2.4)	(1.5)
Hedge Funds							
HFRI Composite	(0.8)	1.2	1.2	(2.1)	10.5	4.7	4.4
HFRI FOF Composite	0.1	1.6	1.6	(1.1)	7.5	3.3	3.3
Currency (Spot)							
Euro	2.5	1.8	1.8	(2.4)	(0.3)	(2.5)	(1.7)
Pound Sterling	2.1	2.8	2.8	(6.1)	(0.1)	(2.5)	(2.0)
Yen	2.4	(0.9)	(0.9)	(8.8)	(6.7)	(4.4)	(3.4)

Source: Morningstar, HFRI, as of 3/31/23.

Definitions

Bloomberg US Weekly Consumer Comfort Index *- tracks the public's economic attitudes each week, providing a high-frequency read on consumer sentiment. The index, based on cell and landline telephone interviews with a random, representative national sample of U.S. adults, tracks Americans' ratings of the national economy, their personal finances and the buying climate on a weekly basis, with views of the economy's direction measured separately each month. (www.langerresearch.com)*

University of Michigan Consumer Sentiment Index *- A survey of consumer attitudes concerning both the present situation as well as expectations regarding economic conditions conducted by the University of Michigan. For the preliminary release approximately three hundred consumers are surveyed while five hundred are interviewed for the final figure. The level of consumer sentiment is related to the strength of consumer spending. (www.Bloomberg.com)*

NFIB Small Business Outlook *- Small Business Economic Trends (SBET) is a monthly assessment of the U.S. small-business economy and its near-term prospects. Its data are collected through mail surveys to random samples of the National Federal of Independent Business (NFIB) membership. The survey contains three broad question types: recent performance, near-term forecasts, and demographics. The topics addressed include: outlook, sales, earnings, employment, employee compensation, investment, inventories, credit conditions, and single most important problem. (http://www.nfib-sbet.org/about/)*

NAHB Housing Market Index – *the housing market index is a weighted average of separate diffusion induces for three key single-family indices: market conditions for the sale of new homes at the present time, market conditions for the sale of new homes in the next six months, and the traffic of prospective buyers of new homes. The first two series are rated on a scale of Good, Fair, and Poor and the last is rated on a scale of High/Very High, Average, and Low/Very Low. A diffusion index is calculated for each series by applying the formula "(Good-Poor + 100)/2" to the present and future sales series and "(High/Very High-Low/Very Low + 100)/2" to the traffic series. Each resulting index is then seasonally adjusted and weighted to produce the HMI. Based on this calculation, the HMI can range between 0 and 100.*

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Tulare County Employees' Retirement Association

Investment Performance Review

Period Ending: March 31, 2023

Verus®

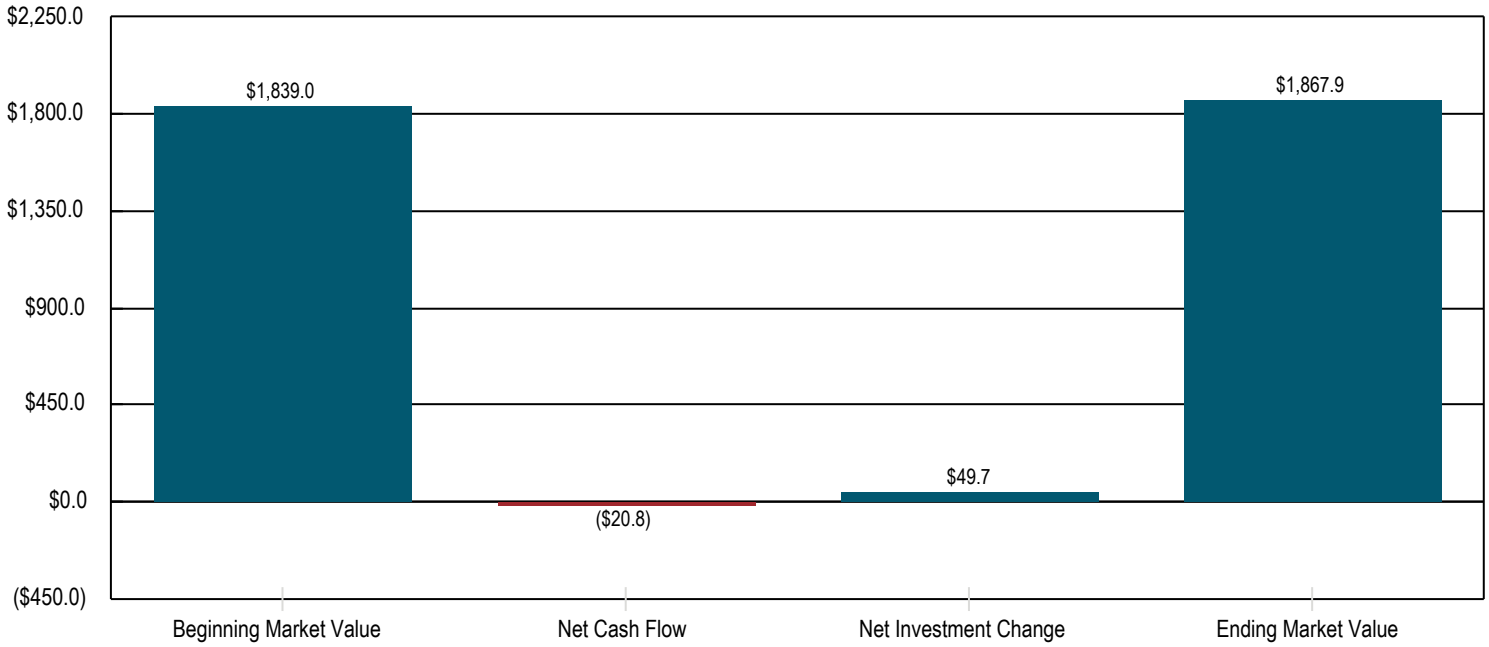
VERUSINVESTMENTS.COM

SEATTLE 206.622.3700
CHICAGO 312.815.5228
PITTSBURGH 412.784.6678
LOS ANGELES 310.297.1777
SAN FRANCISCO 415.362.3484

Portfolio Reconciliation

	3 Mo	Fiscal YTD
Beginning Market Value	1,838,960,594	1,811,341,702
Net Cash Flow	-20,763,350	-16,811,966
Net Investment Change	49,734,713	73,411,197
Ending Market Value	1,867,927,322	1,867,927,322

Change in Market Value
Last Three Months



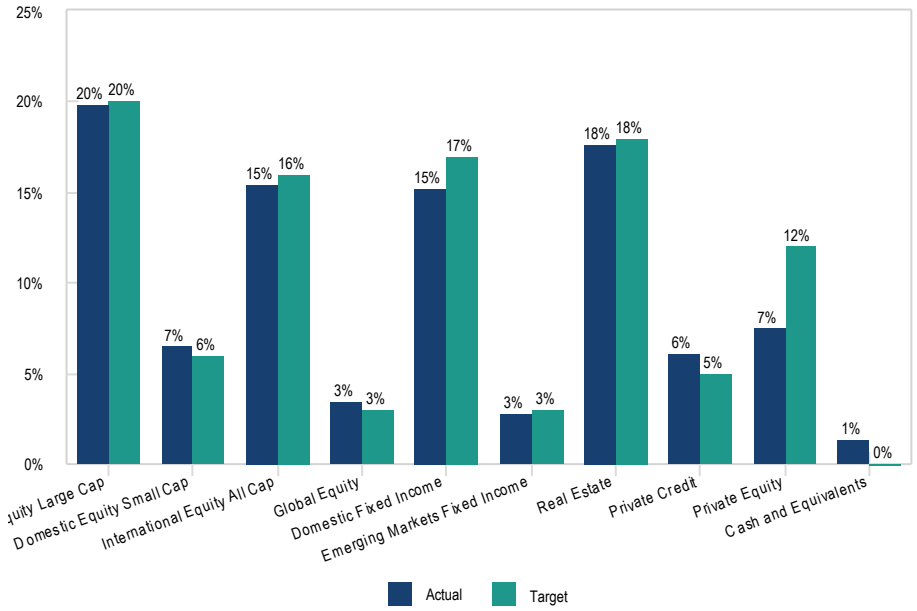
FY ends 6/30.

Total Fund
Executive Summary (Net of Fees)

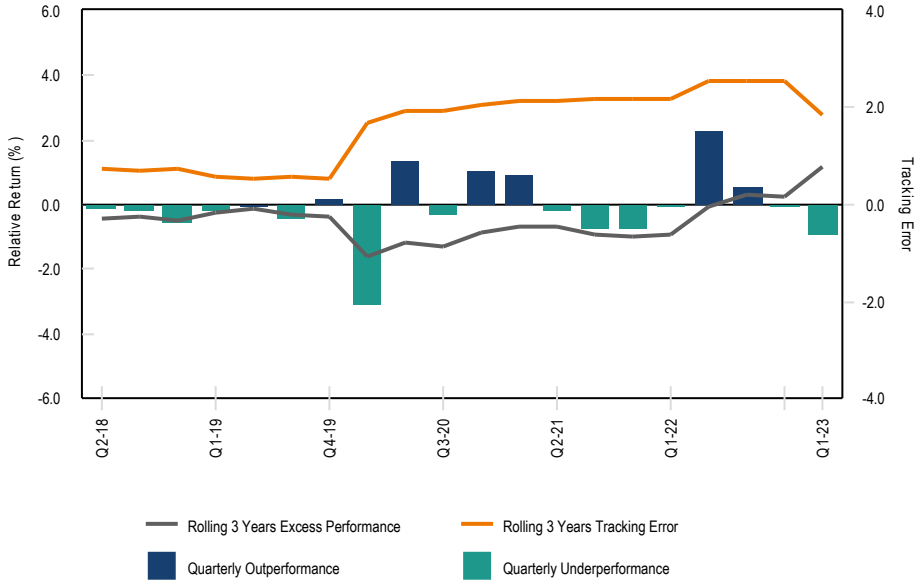
Tulare County Employees' Retirement Association
Period Ending: March 31, 2023

	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs
Total Fund	**2.6**	**3.8**	**-3.1**	**10.1**	**5.5**	**6.1**	**5.2**
Policy Index	*3.5*	*3.5*	*-5.7*	*8.7*	*5.7*	*6.1*	*5.5*
All DB Public Plans >1B Rank	*96*	*77*	*14*	*83*	*70*	*84*	*96*
Total Domestic Equity	**6.0**	**9.2**	**-8.6**	**18.4**	**9.6**	**11.5**	**9.9**
Russell 3000 Index	*7.2*	*9.7*	*-8.6*	*18.5*	*10.5*	*11.7*	*9.9*
Total International Equity	**7.0**	**11.7**	**-2.7**	**13.8**	**3.8**	**5.2**	**2.3**
MSCI AC World ex USA Index	*7.0*	*10.4*	*-4.6*	*12.3*	*3.0*	*4.7*	*3.1*
Total Global Equity	**7.4**	**15.4**	**2.4**	**21.6**	**8.0**	**-**	**-**
MSCI AC World Index	*7.4*	*10.1*	*-7.0*	*15.9*	*7.5*	*8.6*	*6.6*
Total Fixed Income	**3.2**	**1.4**	**-4.8**	**-1.3**	**-0.1**	**0.9**	**3.0**
Blmbg. U.S. Aggregate Index	*3.0*	*-0.1*	*-4.8*	*-2.8*	*0.9*	*1.4*	*2.7*
Total Domestic Fixed Income	**3.2**	**0.3**	**-5.3**	**-1.4**	**1.0**	**1.4**	**-**
Blmbg. U.S. Aggregate Index	*3.0*	*-0.1*	*-4.8*	*-2.8*	*0.9*	*1.4*	*2.7*

Actual vs. Target Allocation (%)



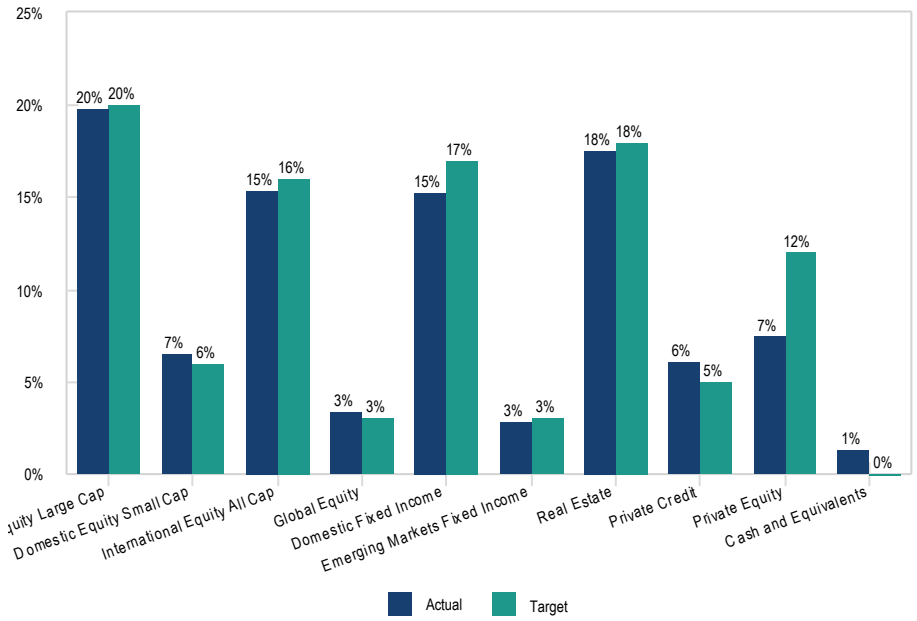
Rolling Annualized Excess Performance and Tracking Error
Total Fund vs. Policy Index



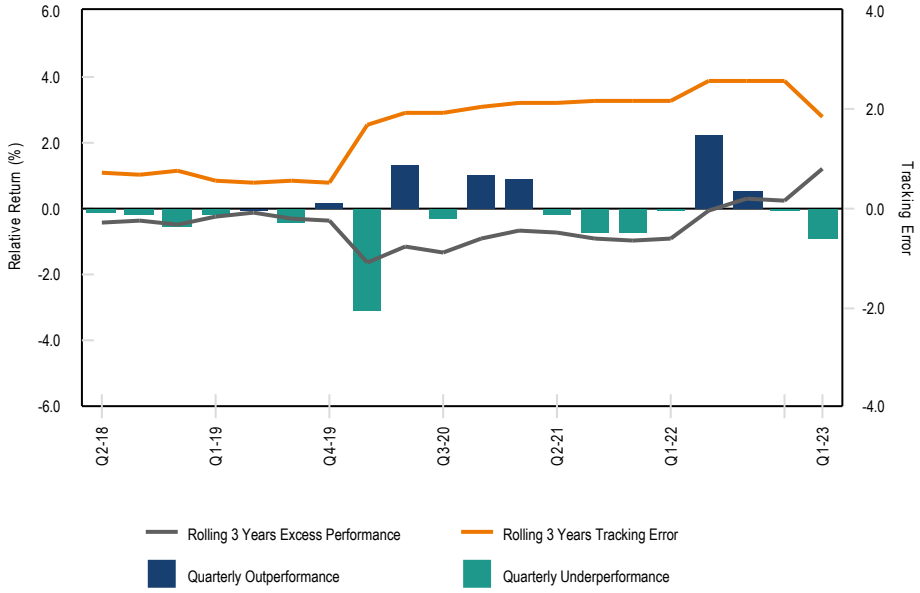
Policy Index as of 10/1/2021: 26% Russell 3000, 16% MSCI ACWI ex US, 3% MSCI ACWI, 17% Bloomberg US Aggregate, 3% JPM EMBI Global/ JPM GBI EM Index, 13.4% NCREIF-ODCE, 5% Russell 2000, 4.6% MSCI REIT Index, 7% Private Equity Returns, 5% Private Credit Returns. All return periods greater than 1-year are rolling annualized returns.

	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs
Total Emerging Markets Fixed Income	**3.2**	**8.6**	**-1.4**	**3.6**	**-**	**-**	**-**
50% JPM EMBI Global Div/ 50% JPM GBI EM Global Div	*3.5*	*6.9*	*-3.8*	*0.5*	*-1.4*	*0.3*	*3.1*
Total Real Estate	**-4.5**	**-6.7**	**0.4**	**6.3**	**6.4**	**8.3**	**4.4**
NCREIF-ODCE	*-3.2*	*-7.5*	*-3.1*	*8.4*	*7.5*	*9.5*	*5.9*
Total Infrastructure	**2.6**	**-**	**-**	**-**	**-**	**-**	**-**
NCREIF-ODCE	*-3.2*	*-7.5*	*-3.1*	*8.4*	*7.5*	*9.5*	*5.9*
Total Private Equity	**-4.0**	**0.8**	**4.3**	**21.5**	**19.8**	**15.3**	**11.9**
Private Equity Benchmark	*-4.0*	*0.8*	*4.3*	*21.5*	*19.8*	*15.7*	*12.3*
Total Private Credit	**1.1**	**-1.1**	**-0.1**	**6.3**	**7.9**	**-**	**-**
Private Credit Benchmark	*1.1*	*-1.0*	*0.0*	*6.4*	*7.9*	*-*	*-*

Actual vs. Target Allocation (%)



Rolling Annualized Excess Performance and Tracking Error
Total Fund vs. Policy Index



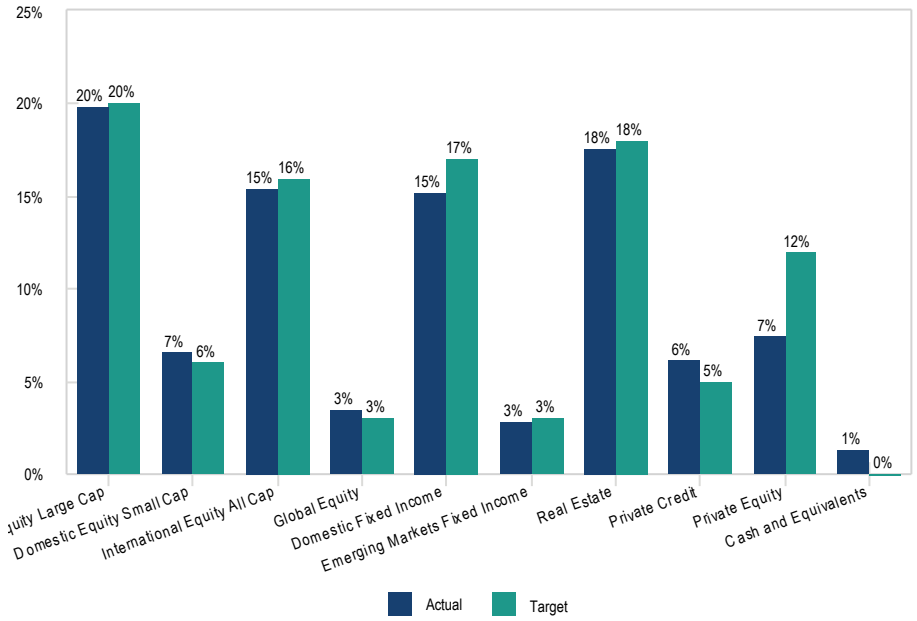
Policy Index as of 10/1/2021: 26% Russell 3000, 16% MSCI ACWI ex US, 3% MSCI ACWI, 17% Bloomberg US Aggregate, 3% JPM EMBI Global/ JPM GBI EM Index, 13.4% NCREIF-ODCE, 5% Russell 2000, 4.6% MSCI REIT Index, 7% Private Equity Returns, 5% Private Credit Returns. All return periods greater than 1-year are rolling annualized returns.

Total Fund
Executive Summary (Gross of Fees)

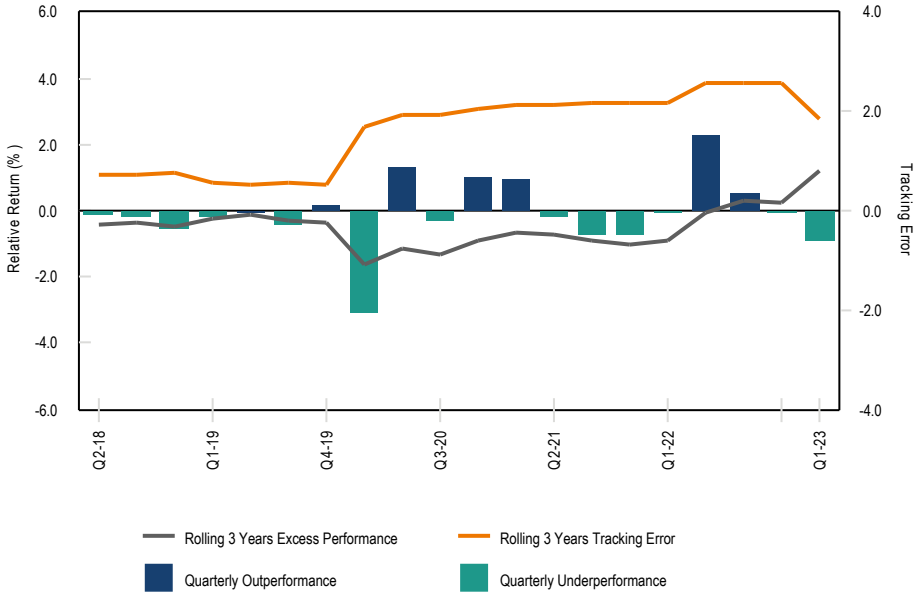
Tulare County Employees' Retirement Association
Period Ending: March 31, 2023

	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs
Total Fund	**2.6**	**4.0**	**-2.8**	**10.4**	**5.8**	**6.4**	**5.5**
Policy Index	*3.5*	*3.5*	*-5.7*	*8.7*	*5.7*	*6.1*	*5.5*
Total Domestic Equity	**6.0**	**9.4**	**-8.4**	**18.7**	**10.0**	**11.9**	**10.4**
Russell 3000 Index	*7.2*	*9.7*	*-8.6*	*18.5*	*10.5*	*11.7*	*9.9*
Total International Equity	**7.1**	**12.0**	**-2.3**	**14.2**	**4.1**	**5.5**	**2.7**
MSCI AC World ex USA Index	*7.0*	*10.4*	*-4.6*	*12.3*	*3.0*	*4.7*	*3.1*
Total Global Equity	**7.6**	**16.0**	**3.2**	**22.5**	**8.9**	**-**	**-**
MSCI AC World Index	*7.4*	*10.1*	*-7.0*	*15.9*	*7.5*	*8.6*	*6.6*
Total Fixed Income	**3.3**	**1.6**	**-4.5**	**-1.0**	**0.3**	**1.2**	**3.3**
Blmbg. U.S. Aggregate Index	*3.0*	*-0.1*	*-4.8*	*-2.8*	*0.9*	*1.4*	*2.7*
Total Domestic Fixed Income	**3.3**	**0.5**	**-5.1**	**-1.2**	**1.3**	**1.7**	**-**
Blmbg. U.S. Aggregate Index	*3.0*	*-0.1*	*-4.8*	*-2.8*	*0.9*	*1.4*	*2.7*

Actual vs. Target Allocation (%)



Rolling Annualized Excess Performance and Tracking Error
Total Fund vs. Policy Index

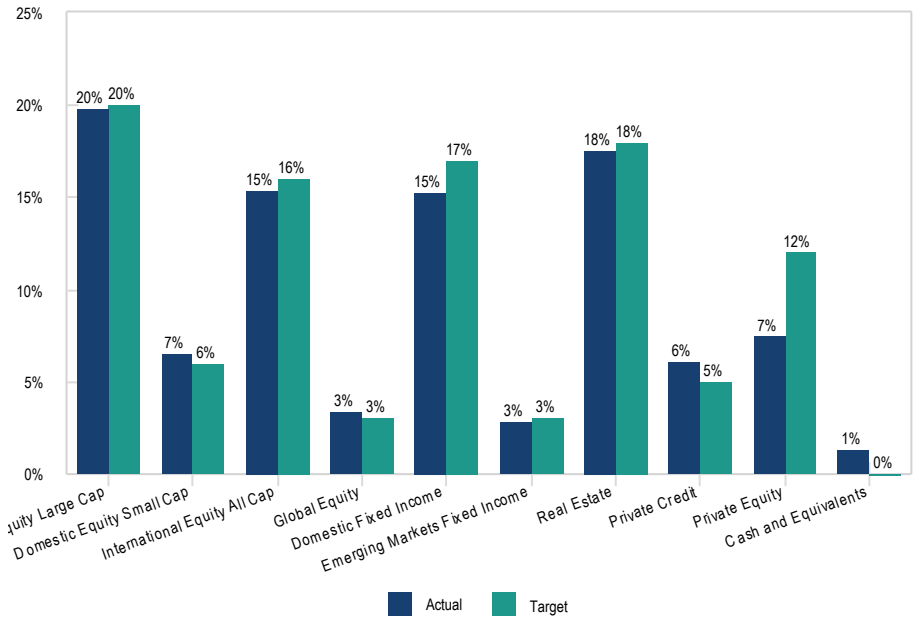


Policy Index as of 10/1/2021: 26% Russell 3000, 16% MSCI ACWI ex US, 3% MSCI ACWI, 17% Bloomberg US Aggregate, 3% JPM EMBI Global/ JPM GBI EM Index, 13.4% NCREIF-ODCE, 5% Russell 2000, 4.6% MSCI REIT Index, 7% Private Equity Returns, 5% Private Credit Returns. All return periods greater than 1-year are rolling annualized returns.

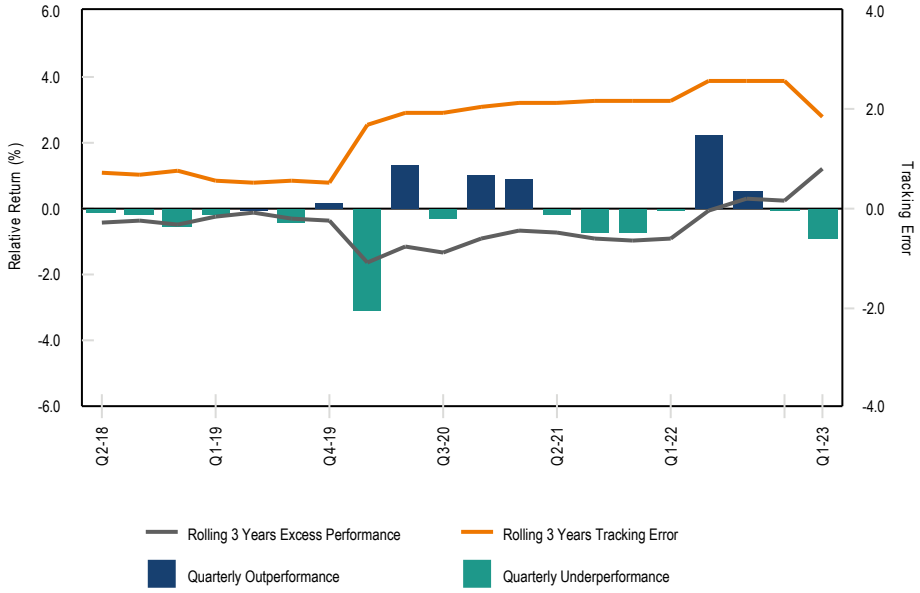
Verus

	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs
Total Emerging Markets Fixed Income	**3.4**	**9.0**	**-1.1**	**4.0**	**-**	**-**	**-**
50% JPM EMBI Global Div/ 50% JPM GBI EM Global Div	*3.5*	*6.9*	*-3.8*	*0.5*	*-1.4*	*0.3*	*3.1*
Total Real Estate	**-4.5**	**-6.6**	**0.7**	**6.4**	**6.5**	**8.6**	**4.6**
NCREIF-ODCE	*-3.2*	*-7.5*	*-3.1*	*8.4*	*7.5*	*9.5*	*5.9*
Total Infrastructure	**2.6**	**-**	**-**	**-**	**-**	**-**	**-**
NCREIF-ODCE	*-3.2*	*-7.5*	*-3.1*	*8.4*	*7.5*	*9.5*	*5.9*
Total Private Equity	**-4.0**	**0.8**	**4.3**	**21.5**	**19.8**	**15.7**	**12.3**
Private Equity Benchmark	*-4.0*	*0.8*	*4.3*	*21.5*	*19.8*	*15.7*	*12.3*
Total Private Credit	**1.1**	**-1.0**	**0.0**	**6.4**	**7.9**	**-**	**-**
Private Credit Benchmark	*1.1*	*-1.0*	*0.0*	*6.4*	*7.9*	*-*	*-*

Actual vs. Target Allocation (%)



Rolling Annualized Excess Performance and Tracking Error
Total Fund vs. Policy Index



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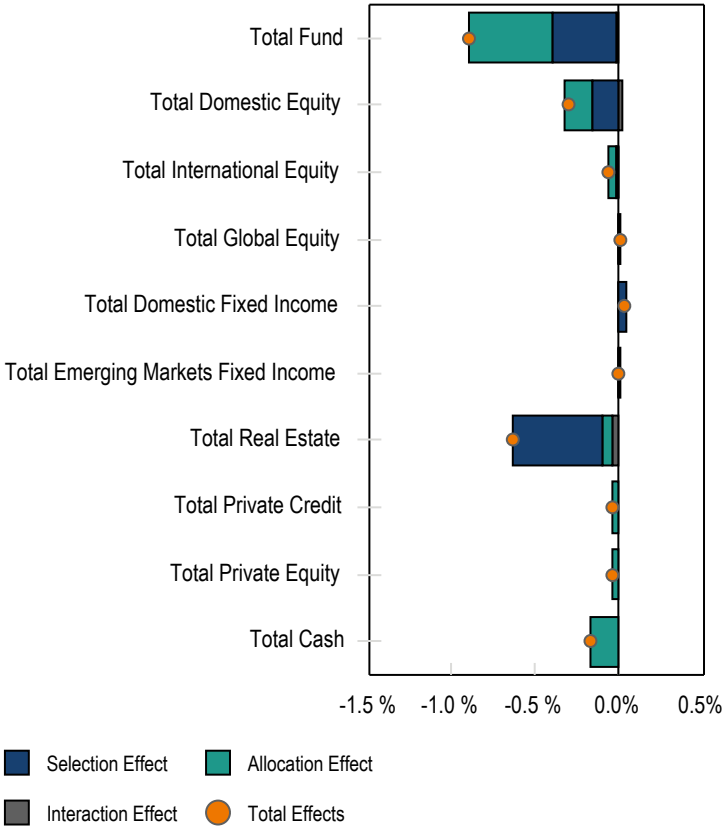
Attribution Effects
3 Months Ending March 31, 2023



Performance Attribution

	3 Mo
Wtd. Actual Return	2.6
Wtd. Index Return	3.5
Excess Return	**-0.9**
Selection Effect	-0.4
Allocation Effect	-0.5
Interaction Effect	0.0

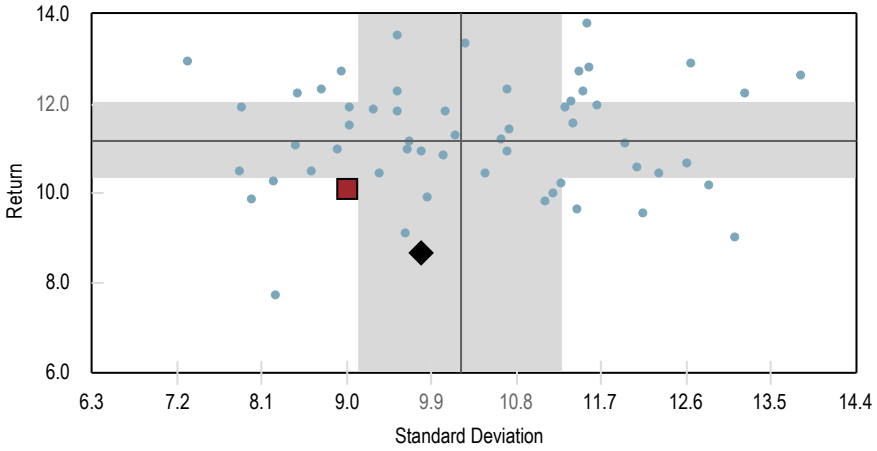
Attribution Summary
3 Months Ending March 31, 2023

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Domestic Equity	6.0	6.5	-0.5	-0.1	-0.2	0.0	-0.3
Total International Equity	7.0	7.0	0.0	0.0	0.0	0.0	-0.1
Total Global Equity	7.4	7.4	0.0	0.0	0.0	0.0	0.0
Total Domestic Fixed Income	3.2	3.0	0.3	0.1	0.0	0.0	0.0
Total Emerging Markets Fixed Income	3.2	3.1	0.2	0.0	0.0	0.0	0.0
Total Real Estate	-4.5	-1.6	-2.9	-0.5	-0.1	0.0	-0.6
Total Private Credit	1.1	1.1	0.0	0.0	0.0	0.0	0.0
Total Private Equity	-4.0	-4.0	0.0	0.0	0.0	0.0	0.0
Total Cash	0.8	1.1	-0.3	0.0	-0.2	0.0	-0.2
Total Fund	**2.6**	**3.5**	**-0.9**	**-0.4**	**-0.5**	**0.0**	**-0.9**

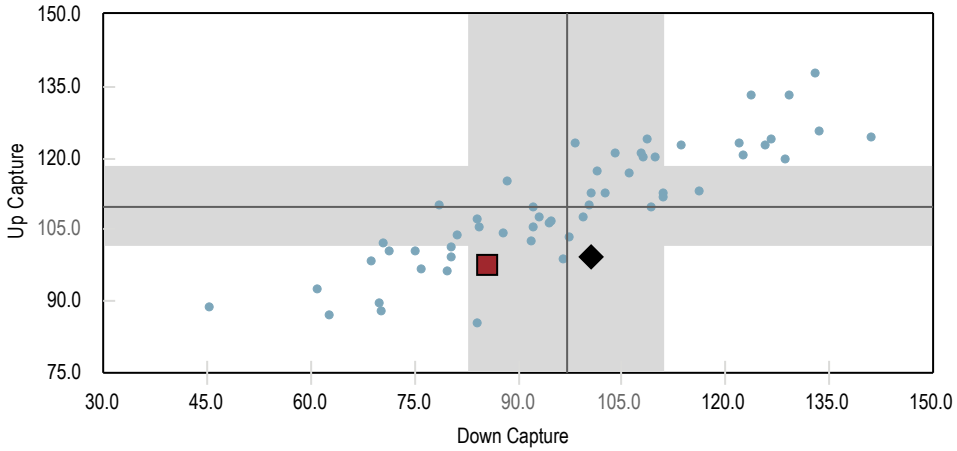
Weighted returns shown in attribution analysis may differ from actual returns. Wtd. Actual Return is the sum of the products of each group's return and its respective weight at the beginning of the period.

	Anlzd Return	Anlzd Standard Deviation	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Capture	Down Capture
Total Fund	10.10	9.01	2.20	0.89	2.47	0.94	1.01	0.50	98.43	85.16

Annualized Return vs. Annualized Standard Deviation



Up Markets vs. Down Markets



InvMetrics Public DB > $1B

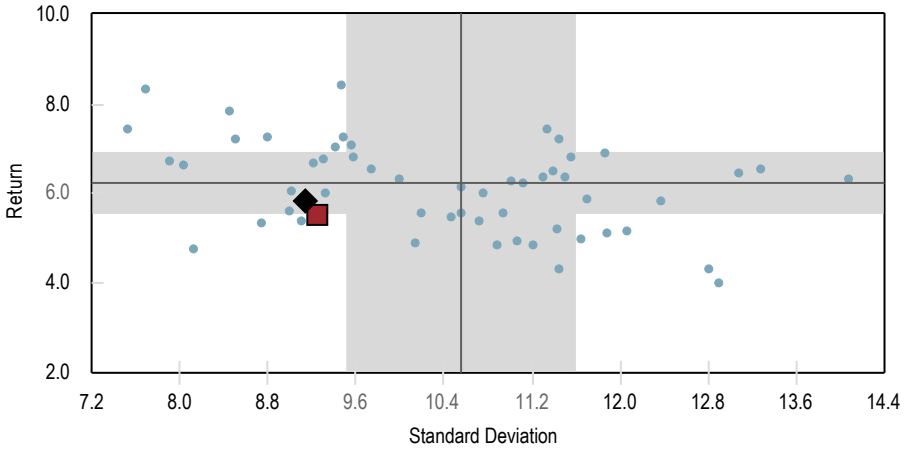
	Return	Standard Deviation
Total Fund	10.10	9.01
Policy Index	8.69	9.79
Median	11.19	10.20
Population	56	56

InvMetrics Public DB > $1B

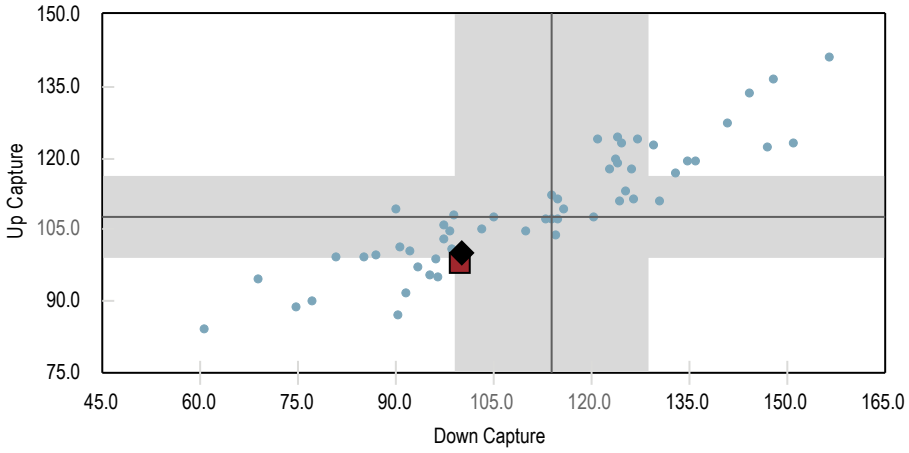
	Up Capture	Down Capture
Total Fund	97.59	85.57
Policy Index	99.15	100.48
Median	109.95	96.95
Population	56	56

	Anlzd Return	Anlzd Standard Deviation	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Capture	Down Capture
Total Fund	5.54	9.26	-0.16	0.98	2.33	0.94	0.48	-0.12	98.11	99.86

Annualized Return vs. Annualized Standard Deviation



Up Markets vs. Down Markets

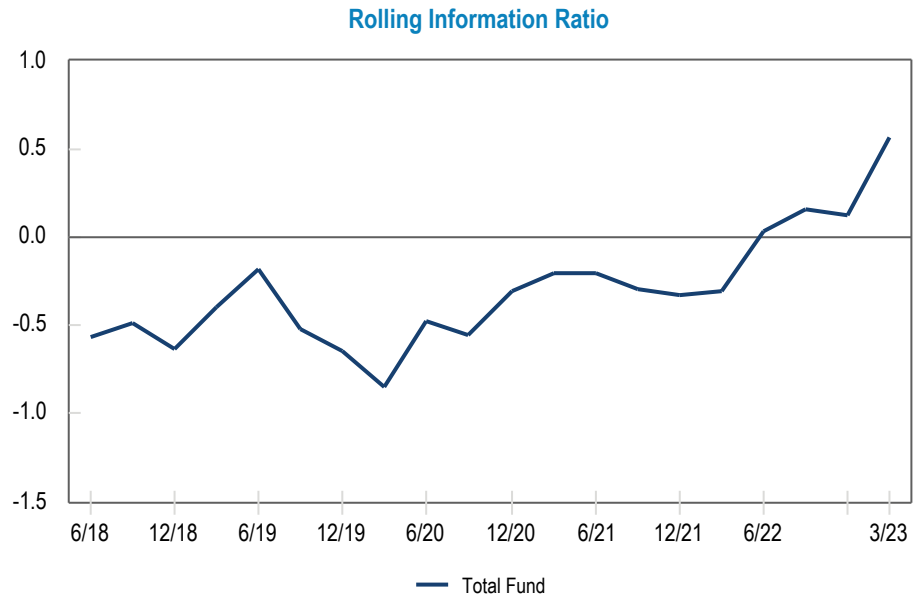


InvMetrics Public DB > $1B

	Return	Standard Deviation
Total Fund	5.54	9.26
Policy Index	5.86	9.15
Median	6.24	10.56
Population	55	55

InvMetrics Public DB > $1B

	Up Capture	Down Capture
Total Fund	98.11	99.86
Policy Index	100.00	100.00
Median	107.71	113.81
Population	55	55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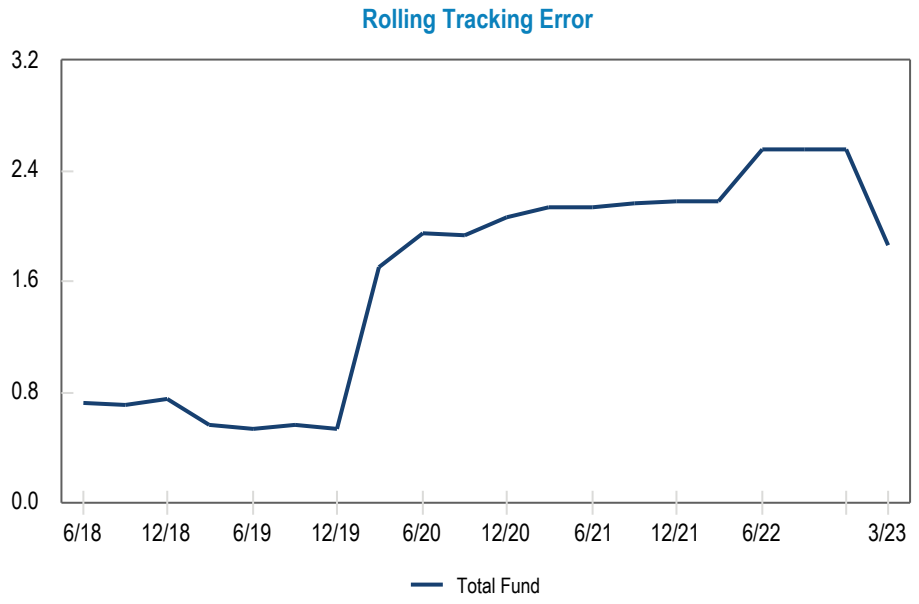
0.0
-0.5
-1.0
-1.5
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
Total Fund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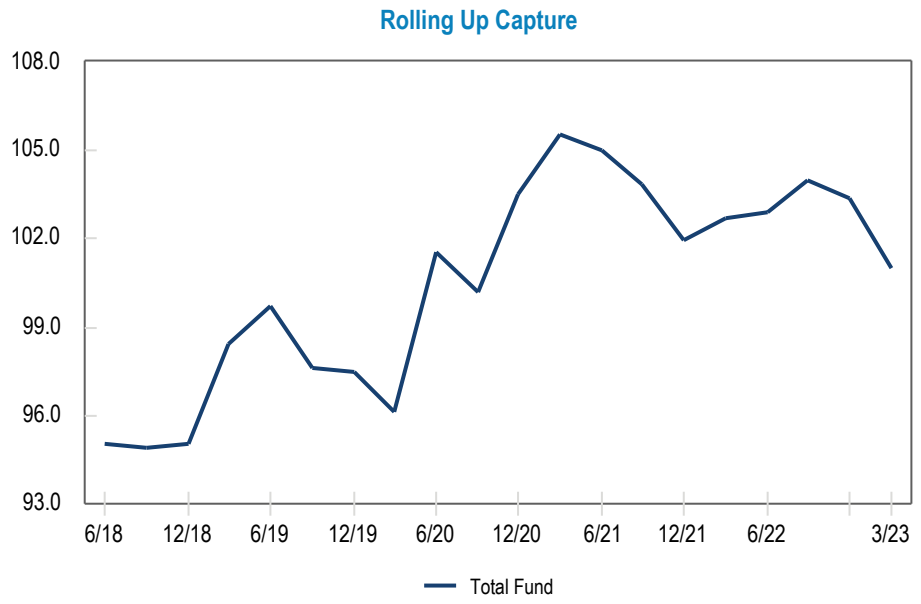
2.4
1.6
0.8
0.0
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
Total Fund


Rolling Up Capture
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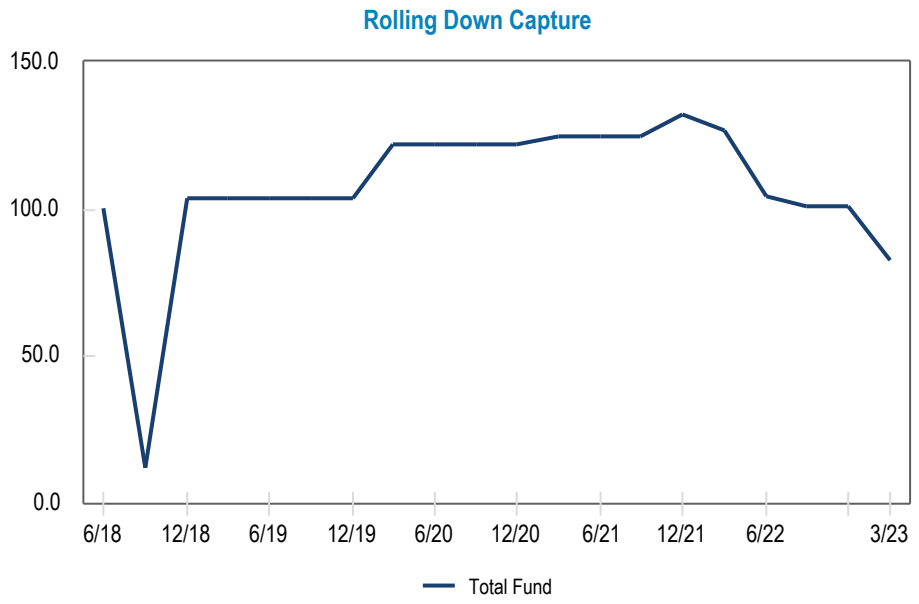
105.0
102.0
99.0
96.0
93.0
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
Total Fund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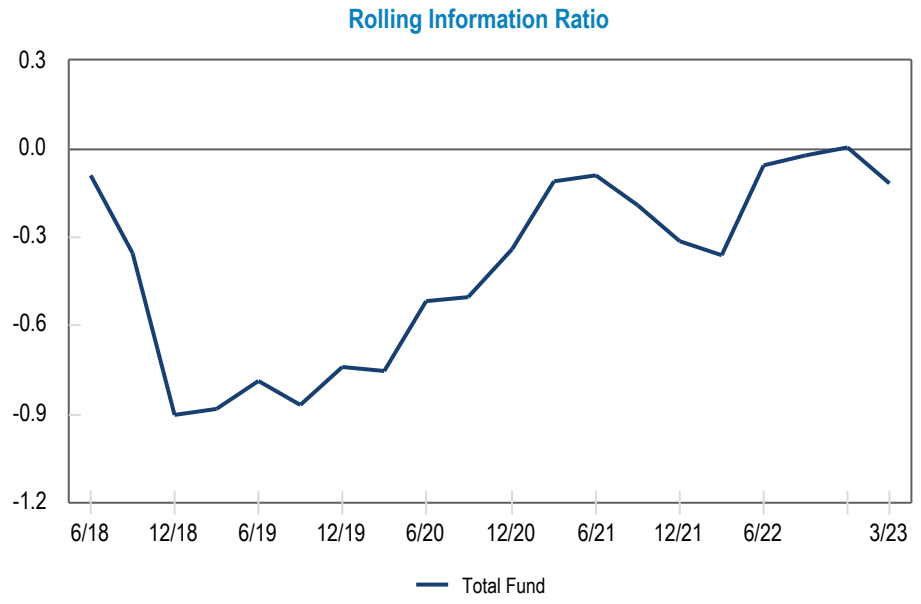
100.0
50.0
0.0
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
Total Fund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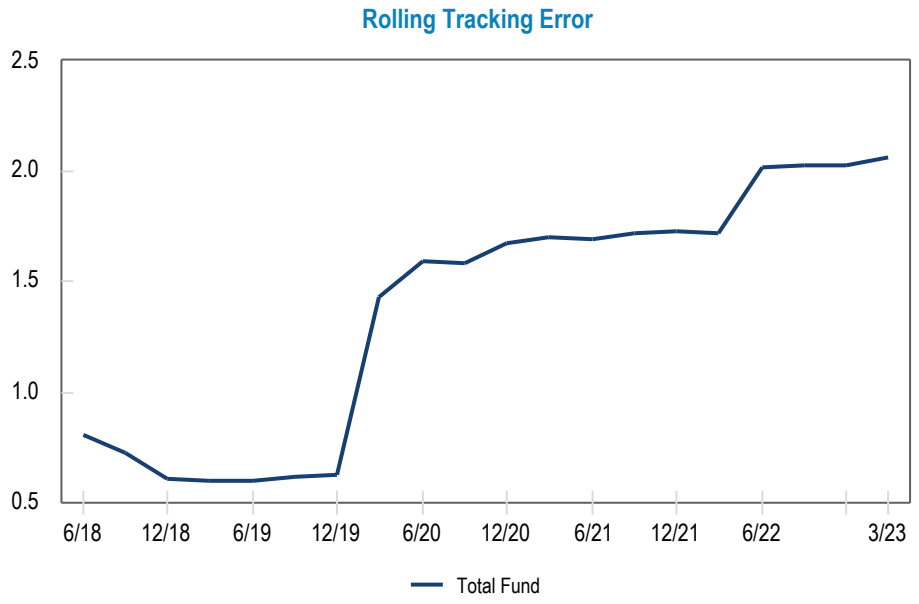
-0.3
-0.6
-0.9
-1.2
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
Total Fund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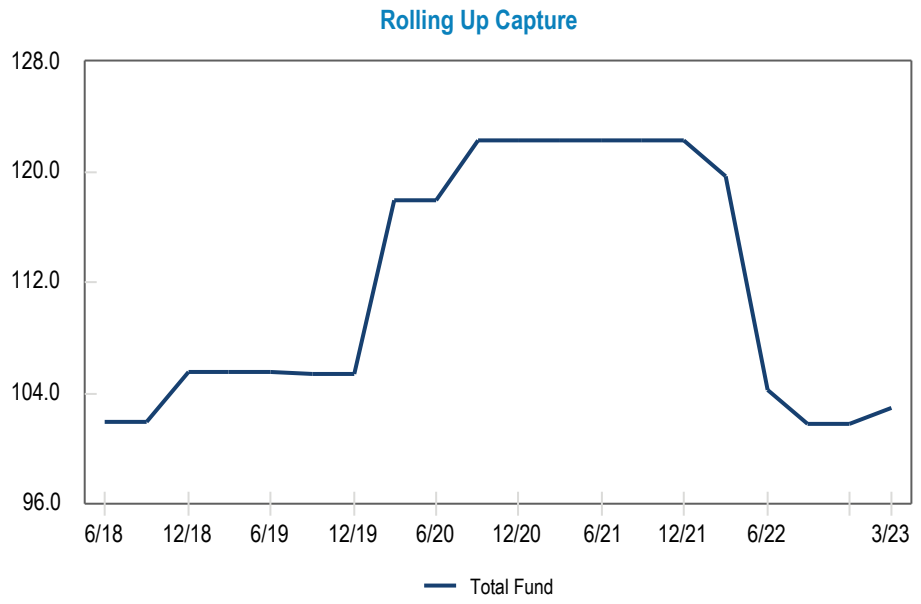
2.0
1.5
1.0
0.5
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
Total Fund


Rolling Up Capture
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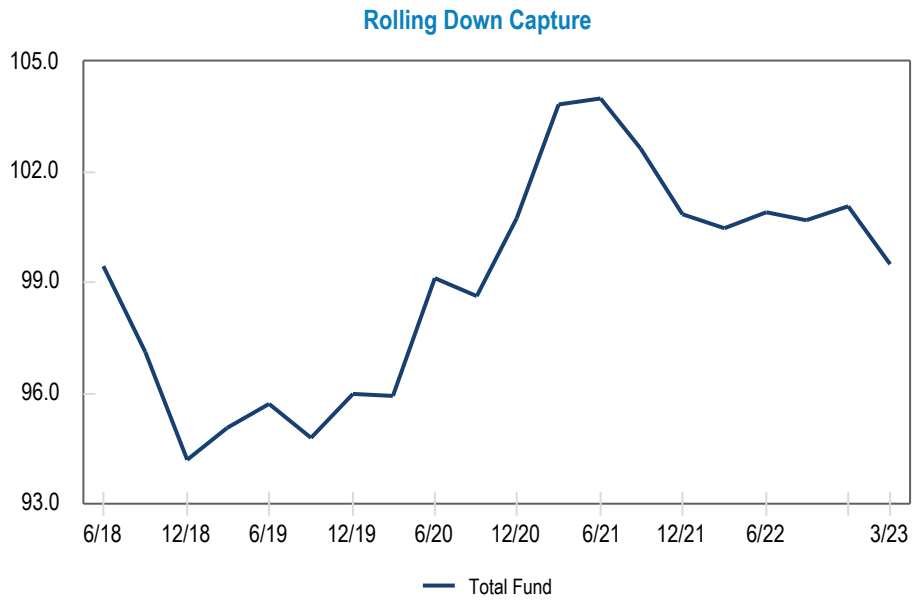
112.0
104.0
96.0
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
Total Fund


Rolling Down Capture
105.0
102.0
99.0
96.0
93.0
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
Total Fund

Total Fund
Performance Summary (Net of Fees)

Tulare County Employees' Retirement Association
Period Ending: March 31, 2023

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2022	2021	2020	2019	2018
Total Fund	**1,867,927,322**	**100.0**	**2.6**	**-3.1**	**10.1**	**5.5**	**6.1**	**-7.8**	**13.4**	**8.9**	**15.4**	**-2.9**
Policy Index			*3.5*	*-5.7*	*8.7*	*5.7*	*6.1*	*-11.0*	*14.2*	*10.6*	*15.9*	*-2.3*
All DB Public Plans >1B Rank			*96*	*14*	*83*	*70*	*84*	*17*	*73*	*82*	*79*	*37*
Total Domestic Equity	**492,594,012**	**26.4**	**6.0**	**-8.6**	**18.4**	**9.6**	**11.5**	**-18.2**	**26.1**	**18.2**	**29.8**	**-5.4**
Russell 3000 Index			*7.2*	*-8.6*	*18.5*	*10.5*	*11.7*	*-19.2*	*25.7*	*20.9*	*31.0*	*-5.2*
SSGA S&P 500 Flagship Fund	163,112,768	8.7	7.5	-7.8	18.6	11.1	12.2	-18.1	28.6	18.3	31.5	-4.4
S&P 500 Index			*7.5*	*-7.7*	*18.6*	*11.2*	*12.2*	*-18.1*	*28.7*	*18.4*	*31.5*	*-4.4*
eV US Large Cap Core Equity Rank			*21*	*65*	*35*	*26*	*16*	*65*	*31*	*37*	*30*	*39*
PGIM QS US Core Equity	68,115,366	3.6	7.1	-7.9	18.9	9.6	11.7	-16.3	29.8	12.0	28.6	-6.8
S&P 500 Index			*7.5*	*-7.7*	*18.6*	*11.2*	*12.2*	*-18.1*	*28.7*	*18.4*	*31.5*	*-4.4*
eV US Large Cap Core Equity Rank			*27*	*66*	*28*	*55*	*32*	*49*	*20*	*71*	*58*	*71*
William Blair Large Cap Growth	67,843,221	3.6	12.0	-	-	-	-	-	-	-	-	-
Russell 1000 Growth Index			*14.4*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*
eV US Large Cap Growth Equity Rank			*53*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*
Boston Partners Large Cap Value	71,579,626	3.8	-0.4	-5.2	21.4	7.8	9.9	-4.3	30.4	2.4	23.8	-9.0
Russell 1000 Value Index			*1.0*	*-5.9*	*17.9*	*7.5*	*9.1*	*-7.5*	*25.2*	*2.8*	*26.5*	*-8.3*
eV US Large Cap Value Equity Rank			*68*	*57*	*27*	*58*	*41*	*35*	*17*	*60*	*76*	*55*
SSGA US Extended Market Index	63,166,927	3.4	5.8	-14.1	-	-	-	-26.4	-	-	-	-
Dow Jones U.S. Completion Total Stock Market Indx			*5.8*	*-14.3*	*-*	*-*	*-*	*-26.5*	*-*	*-*	*-*	*-*
eV US Small-Mid Cap Growth Equity Rank			*75*	*70*	*-*	*-*	*-*	*41*	*-*	*-*	*-*	*-*
William Blair SMID Cap Growth	26,990,150	1.4	5.4	-10.1	13.8	7.5	11.5	-22.7	8.7	32.6	31.1	-1.7
Russell 2500 Growth Index			*6.5*	*-10.4*	*14.7*	*6.8*	*10.0*	*-26.2*	*5.0*	*40.5*	*32.7*	*-7.5*
eV US Small-Mid Cap Growth Equity Rank			*78*	*35*	*78*	*61*	*30*	*19*	*75*	*63*	*48*	*36*
Leeward Small Cap Value	31,785,955	1.7	0.4	-3.4	24.3	7.2	8.5	-7.1	31.6	3.8	26.3	-15.5
Russell 2000 Value Index			*-0.7*	*-13.0*	*21.0*	*4.5*	*7.2*	*-14.5*	*28.3*	*4.6*	*22.4*	*-12.9*
eV US Small Cap Value Equity Rank			*75*	*25*	*35*	*27*	*42*	*18*	*38*	*57*	*24*	*58*

Policy Index: 26% Russell 3000, 16% MSCI ACWI ex US, 3% MSCI ACWI, 17% Bloomberg US Aggregate, 3% JPM EMBI Global/ JPM GBI EM Index, 13.4% NCREIF-ODCE, 7% Private Equity Returns, 5% Private Credit Returns, 5% Russell 2000, 4.6% MSCI US REIT Index. SSGA Russell Small Cap replaced with SSGA US Extended Market Index on 6/10/21. Invesco Commercial Mortgage funded 9/1/21. Franklin Templeton Global liquidated 12/28/2021. SSGA US REIT Index Funded 12/10/2021. Macquarie Large Cap Growth liquidated 4/25/2022, proceeds funded William Blair Large Cap Growth.

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2022	2021	2020	2019	2018
Total International Equity	**287,486,888**	**15.4**	**7.0**	**-2.7**	**13.8**	**3.8**	**5.2**	**-14.2**	**9.6**	**13.4**	**22.7**	**-14.5**
MSCI AC World ex USA Index			*7.0*	*-4.6*	*12.3*	*3.0*	*4.7*	*-15.6*	*8.3*	*11.1*	*22.1*	*-13.8*
SSGA MSCI ACWI Ex US Index Fund	98,381,631	5.3	7.0	-4.9	12.0	2.7	4.4	-15.8	7.9	10.9	21.8	-14.0
MSCI AC World ex USA (Net)			*6.9*	*-5.1*	*11.8*	*2.5*	*4.2*	*-16.0*	*7.8*	*10.7*	*21.5*	*-14.2*
eV ACWI ex-US All Cap Equity Rank			*74*	*54*	*65*	*56*	*80*	*37*	*64*	*66*	*71*	*39*
PIMCO RAE Fundamental Global Ex US Fund	99,833,008	5.3	6.1	-0.7	16.3	1.8	4.7	-8.9	12.3	1.7	16.1	-15.1
MSCI AC World ex USA Value (Net)			*5.2*	*-4.0*	*13.8*	*1.3*	*3.1*	*-8.6*	*10.5*	*-0.8*	*15.7*	*-14.0*
eV ACWI ex-US All Cap Value Eq Rank			*72*	*55*	*33*	*39*	*35*	*38*	*28*	*44*	*68*	*48*
SGA International Growth	89,272,249	4.8	7.9	-2.3	13.0	-	-	-17.8	9.1	26.0	30.5	-
MSCI AC World ex USA Growth (Net)			*8.6*	*-6.4*	*9.5*	*-*	*-*	*-23.1*	*5.1*	*22.2*	*27.3*	*-*
eV ACWI ex-US Growth Equity Rank			*65*	*16*	*39*	*-*	*-*	*13*	*45*	*50*	*41*	*-*
Total Global Equity	**63,622,436**	**3.4**	**7.4**	**2.4**	**21.6**	**8.0**	**-**	**-14.6**	**28.5**	**14.3**	**24.2**	**-15.9**
MSCI AC World Index			*7.4*	*-7.0*	*15.9*	*7.5*	*-*	*-18.0*	*19.0*	*16.8*	*27.3*	*-8.9*
Skellig Water Fund (aka KBI)	63,622,436	3.4	7.4	2.4	21.6	8.0	-	-14.6	28.5	14.3	24.2	-15.9
MSCI AC World Index (Net)			*7.3*	*-7.4*	*15.4*	*6.9*	*-*	*-18.4*	*18.5*	*16.3*	*26.6*	*-9.4*
eV Global All Cap Equity Rank			*43*	*5*	*10*	*31*	*-*	*35*	*2*	*58*	*65*	*89*
Total Fixed Income	**336,282,036**	**18.0**	**3.2**	**-4.8**	**-1.3**	**-0.1**	**0.9**	**-13.5**	**-2.2**	**4.7**	**8.1**	**0.1**
Blmbg. U.S. Aggregate Index			*3.0*	*-4.8*	*-2.8*	*0.9*	*1.4*	*-13.0*	*-1.5*	*7.5*	*8.7*	*0.0*
Total Domestic Fixed Income	**284,508,946**	**15.2**	**3.2**	**-5.3**	**-1.4**	**1.0**	**1.4**	**-13.7**	**-0.7**	**7.9**	**9.0**	**-0.2**
Blmbg. U.S. Aggregate Index			*3.0*	*-4.8*	*-2.8*	*0.9*	*1.4*	*-13.0*	*-1.5*	*7.5*	*8.7*	*0.0*
BlackRock Core Plus Fixed Income	78,694,371	4.2	3.1	-5.3	-2.3	1.0	1.5	-13.8	-1.4	8.4	8.7	0.1
Blmbg. U.S. Aggregate Index			*3.0*	*-4.8*	*-2.8*	*0.9*	*1.4*	*-13.0*	*-1.5*	*7.5*	*8.7*	*0.0*
eV US Core Plus Fixed Inc Rank			*61*	*63*	*93*	*83*	*88*	*63*	*88*	*57*	*81*	*22*
Doubleline Core Plus	103,709,038	5.6	3.4	-5.0	-0.8	0.7	-	-12.7	-0.2	5.2	8.3	-0.3
Blmbg. U.S. Aggregate Index			*3.0*	*-4.8*	*-2.8*	*0.9*	*-*	*-13.0*	*-1.5*	*7.5*	*8.7*	*0.0*
eV US Core Plus Fixed Inc Rank			*36*	*47*	*53*	*96*	*-*	*25*	*38*	*97*	*88*	*34*
MacKay Shields Core Plus	102,105,537	5.5	3.2	-5.7	-1.1	1.2	-	-14.6	-0.4	9.9	9.6	-1.0
Blmbg. U.S. Aggregate Index			*3.0*	*-4.8*	*-2.8*	*0.9*	*-*	*-13.0*	*-1.5*	*7.5*	*8.7*	*0.0*
eV US Core Plus Fixed Inc Rank			*51*	*81*	*63*	*61*	*-*	*87*	*48*	*22*	*55*	*75*

Policy Index: 26% Russell 3000, 16% MSCI ACWI ex US, 3% MSCI ACWI, 17% Bloomberg US Aggregate, 3% JPM EMBI Global/ JPM GBI EM Index, 13.4% NCREIF-ODCE, 7% Private Equity Returns, 5% Private Credit Returns, 5% Russell 2000, 4.6% MSCI US REIT Index. SSGA Russell Small Cap replaced with SSGA US Extended Market Index on 6/10/21. Invesco Commercial Mortgage funded 9/1/21. Franklin Templeton Global liquidated 12/28/2021. SSGA US REIT Index Funded 12/10/2021. Macquarie Large Cap Growth liquidated 4/25/2022, proceeds funded William Blair Large Cap Growth.

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2022	2021	2020	2019	2018
Total Emerging Markets Fixed Income	**51,773,090**	**2.8**	**3.2**	**-1.4**	**3.6**	**-**	**-**	**-12.4**	**-5.3**	**4.6**	**-**	**-**
50% JPM EMBI Global Div/50% JPM GBI EM Global Div			*3.5*	*-3.8*	*0.5*	-	-	*-14.8*	*-5.3*	*4.0*	-	-
PGIM Emerging Markets Debt	51,773,090	2.8	3.2	-1.4	3.6	-	-	-12.4	-5.3	4.6	-	-
50% JPM EMBI Global Div/50% JPM GBI EM Global Div			*3.5*	*-3.8*	*0.5*	-	-	*-14.8*	*-5.3*	*4.0*	-	-
eV Emg Mkts Fixed Inc - Blended Currency Rank			*27*	*15*	*19*	-	-	*39*	*70*	*70*	-	-
Total Real Estate	**328,169,896**	**17.6**	**-4.5**	**0.4**	**6.3**	**6.4**	**8.3**	**11.0**	**12.8**	**1.8**	**5.2**	**8.8**
NCREIF-ODCE			*-3.2*	*-3.1*	*8.4*	*7.5*	*9.5*	*7.5*	*22.2*	*1.2*	*5.3*	*8.3*
RREEF America II	165,792,899	8.9	-5.6	1.0	8.2	7.5	9.4	18.4	12.8	1.8	5.3	8.6
NCREIF-ODCE			*-3.2*	*-3.1*	*8.4*	*7.5*	*9.5*	*7.5*	*22.2*	*1.2*	*5.3*	*8.3*
American Realty Strategic Value Fund	87,673,881	4.7	-3.5	7.4	8.0	-	-	16.2	11.3	1.1	-	-
NCREIF-ODCE			*-3.2*	*-3.1*	*8.4*	-	-	*7.5*	*22.2*	*1.2*	-	-
Invesco Commercial Mortgage Income Fund	73,994,772	4.0	-3.1	-1.8	-	-	-	2.7	-	-	-	-
NCREIF-ODCE			*-3.2*	*-3.1*	-	-	-	*7.5*	-	-	-	-
SSGA US REIT Index Non-Lending Fund	708,344	0.0	2.8	-21.0	-	-	-	-26.0	-	-	-	-
Dow Jones U.S. REIT Index			*1.9*	*-18.7*	-	-	-	*-24.8*	-	-	-	-
eV US REIT Rank			*53*	*75*	-	-	-	*58*	-	-	-	-
Infrastructure	**82,056,176**	**4.4**	**2.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
NCREIF-ODCE			*-3.2*	-	-	-	-	-	-	-	-	-
IFM Global Infrastructure	82,056,176	4.4	2.6	-	-	-	-	-	-	-	-	-
NCREIF-ODCE			*-3.2*	-	-	-	-	-	-	-	-	-

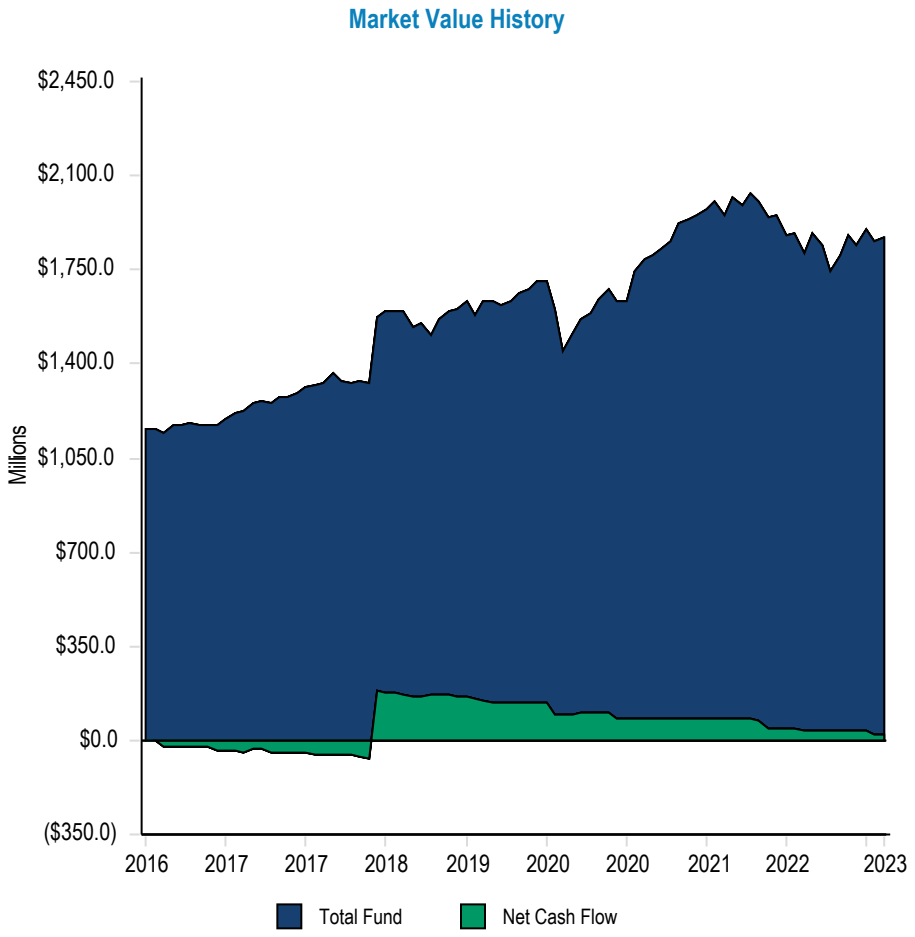
Policy Index: 26% Russell 3000, 16% MSCI ACWI ex US, 3% MSCI ACWI, 17% Bloomberg US Aggregate, 3% JPM EMBI Global/ JPM GBI EM Index, 13.4% NCREIF-ODCE, 7% Private Equity Returns, 5% Private Credit Returns, 5% Russell 2000, 4.6% MSCI US REIT Index. SSGA Russell Small Cap replaced with SSGA US Extended Market Index on 6/10/21. Invesco Commercial Mortgage funded 9/1/21. Franklin Templeton Global liquidated 12/28/2021. SSGA US REIT Index Funded 12/10/2021. Macquarie Large Cap Growth liquidated 4/25/2022, proceeds funded William Blair Large Cap Growth.

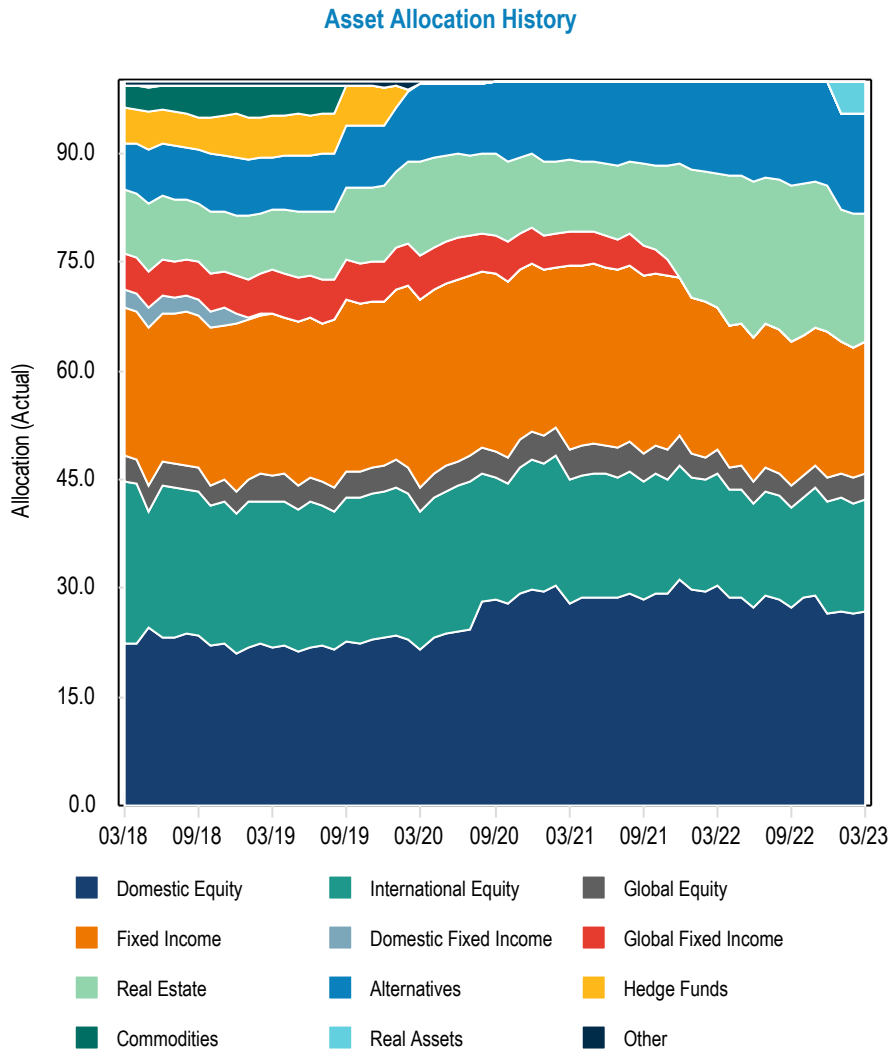
	Anlzd Ret	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
SSGA S&P 500 Flagship Fund	11.15	20.11	-0.04	1.00	0.02	1.00	0.56	-1.65	99.88	100.07
PGIM QS US Core Equity	9.62	20.80	-1.61	1.03	2.59	0.99	0.49	-0.49	96.56	103.72
Boston Partners Large Cap Value	7.84	21.99	-0.01	1.08	3.46	0.98	0.40	0.21	105.48	103.59
William Blair SMID Cap Growth	7.50	24.38	1.31	0.86	6.11	0.96	0.37	-0.03	90.78	85.96
Leeward Small Cap Value	7.25	26.48	2.75	0.92	4.14	0.98	0.35	0.48	98.33	85.20
SSGA MSCI ACWI Ex US Index Fund	2.68	20.29	0.20	1.00	0.12	1.00	0.17	1.58	100.55	99.40
PIMCO RAE Fundamental Global Ex US Fund	1.79	22.83	0.62	1.07	2.66	0.99	0.14	0.33	107.10	102.79
Skellig Water Fund (aka KBI)	8.05	22.06	0.90	1.07	5.31	0.95	0.40	0.28	108.82	103.18
BlackRock Core Plus Fixed Income	0.99	5.84	0.05	1.05	1.01	0.97	-0.04	0.10	106.95	106.24
Doubleline Core Plus	0.66	5.54	-0.08	0.85	3.14	0.70	-0.11	-0.08	86.18	88.81
MacKay Shields Core Plus	1.25	6.33	0.31	1.08	2.30	0.87	0.01	0.17	115.84	109.89
RREEF America II	7.53	7.81	-0.01	1.02	4.59	0.66	0.76	0.03	97.16	80.00

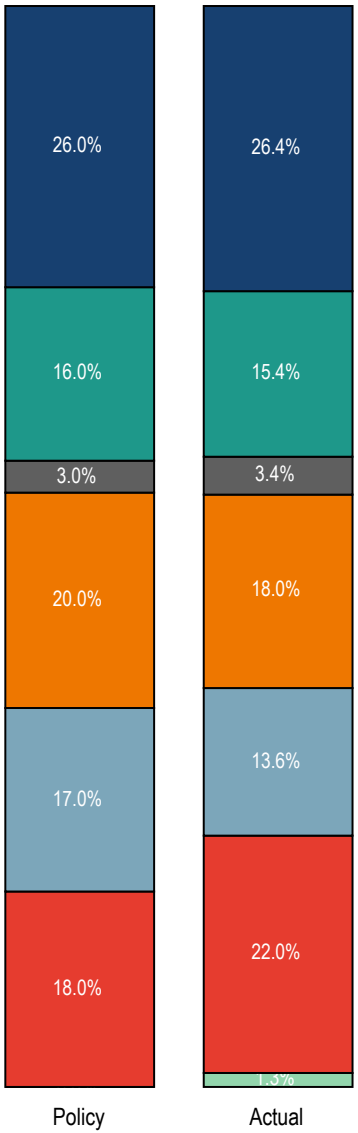
Risk analysis excludes managers with less than 5 years history.

			IRR Analysis as of IRR date									
Vintage Year	Manager Name/Fund Name	Estimated Market Value as of 3/31/2023[3]	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value as of IRR date	Distrib./ Paid-In (DPI)[1]	Tot. Value/ Paid-In (TVPI)[2]	Net IRR Since Inception[6]	IRR Date
Private Equity												
2005	BlackRock Private Capital II[7]	$428,705	$15,000,000	$15,719,139	105%	-$719,139	$24,063,592	$431,570	*153.08%*	*155.81%*	*6.7%*	12/31/22
2016	Ocean Avenue Fund III	$20,761,113	$20,000,000	$18,600,000	93%	$1,400,000	$21,691,950	$22,902,136	*116.62%*	*228.24%*	*28.2%*	09/30/22
	Ocean Avenue Fund IV	$31,268,037	$26,000,000	$23,400,000	90%	$2,600,000	$11,830,000	$25,989,893	*50.56%*	*184.18%*	*39.9%*	09/30/22
2023	Ocean Avenue Fund V	$2,000,000	$20,000,000	$2,000,000	10%	$18,000,000	$0	*NM*		*100.00%*	*N/M*	*N/M*
2004	Pantheon USA Fund VI	$153,054	$15,000,000	$14,175,000	95%	$825,000	$21,695,924	$152,104	*153.06%*	*154.14%*	*6.7%*	12/31/22
2016	Pathway Private Equity Fund Investors 8	$31,322,169	$20,000,000	$17,808,713	89%	$2,191,287	$9,043,436	$33,059,860	*50.78%*	*226.66%*	*25.4%*	06/30/22
2017	Pathway Private Equity Fund Investors 9	$25,073,843	$20,000,000	$13,582,257	68%	$6,417,743	$1,904,454	$27,252,527	*14.02%*	*198.63%*	*29.5%*	03/31/22
2020	Pathway Private Equity Fund Investors 10	$22,023,212	$30,000,000	$17,622,558	59%	$12,377,442	$684,834	N/A	*3.89%*	*128.86%*	*N/A*	*NM*
2012	Stepstone Secondary Opportunities Fund II[8]	$4,338,098	$27,500,000	$32,388,011	118%	$3,894,163	$39,891,528	$4,652,915	*123.17%*	*136.56%*	*10.6%*	09/30/22
2022	Audax Private Equity Fund VII-B	$0	$22,000,000	$0	0%	$22,000,000	$0	*NM*	*#DIV/0!*	*#DIV/0!*	*NM*	*N/M*
2022	Altas Partners Holdings III	$108,898	$22,000,000	$108,898	0.5%	$21,891,102	$0	*NM*	*0.00%*	*100.00%*	*NM*	*N/M*
Private Credit												
2016	Sixth Street Diversified Credit Program	$85,372,549	$160,000,000	$102,619,137	64%	$57,380,863	$47,534,217	$84,712,776	*46.3%*	*129.5%*	*8.8%*	12/31/22
Opportunistic												
2020	Sixth Street TAO	$28,652,110	$50,000,000	$27,471,757	55%	$22,528,243	$3,038,363	$30,697,441	*11.1%*	*115.4%*	*9.5%*	12/31/22
2010	KKR Mezzanine Partners	$2,059,003	$15,000,000	$22,181,173	148%	-$7,181,173	$21,142,303	$2,012,677	*95.3%*	*104.6%*	*8.7%*	09/30/22
2011	PIMCO Bravo	$0	$15,000,000	$15,000,000	100%	$0	$27,216,524	$446,175	*181.4%*	*181.4%*	*22.2%*	12/31/18
	Total Private Markets	**$253,560,792**	$477,500,000	$322,676,643	68%	$163,605,531	$229,737,126	$232,310,074	*71.2%*	*149.8%*		
	% of Portfolio (Market Value)	***13.6%***										

[1](DPI) is equal to (capital returned / capital called)
[2](TVPI) is equal to (market value + capital returned) / capital called
[3]Last known market value + capital calls - distributions
[4]IRR currently unavailable for these funds.
[5]Investment period ended, no further capital to be called.
[6]Net IRR is calculated on the cash flows of all the limited partners of the fund and is net of all fees. Each IRR figure is provided by its respective manager.
[7]BlackRock: Total capital called is $15,719,139 which includes recycled distributions.
[8]StepStone: $8,782,174 in recallable distributions

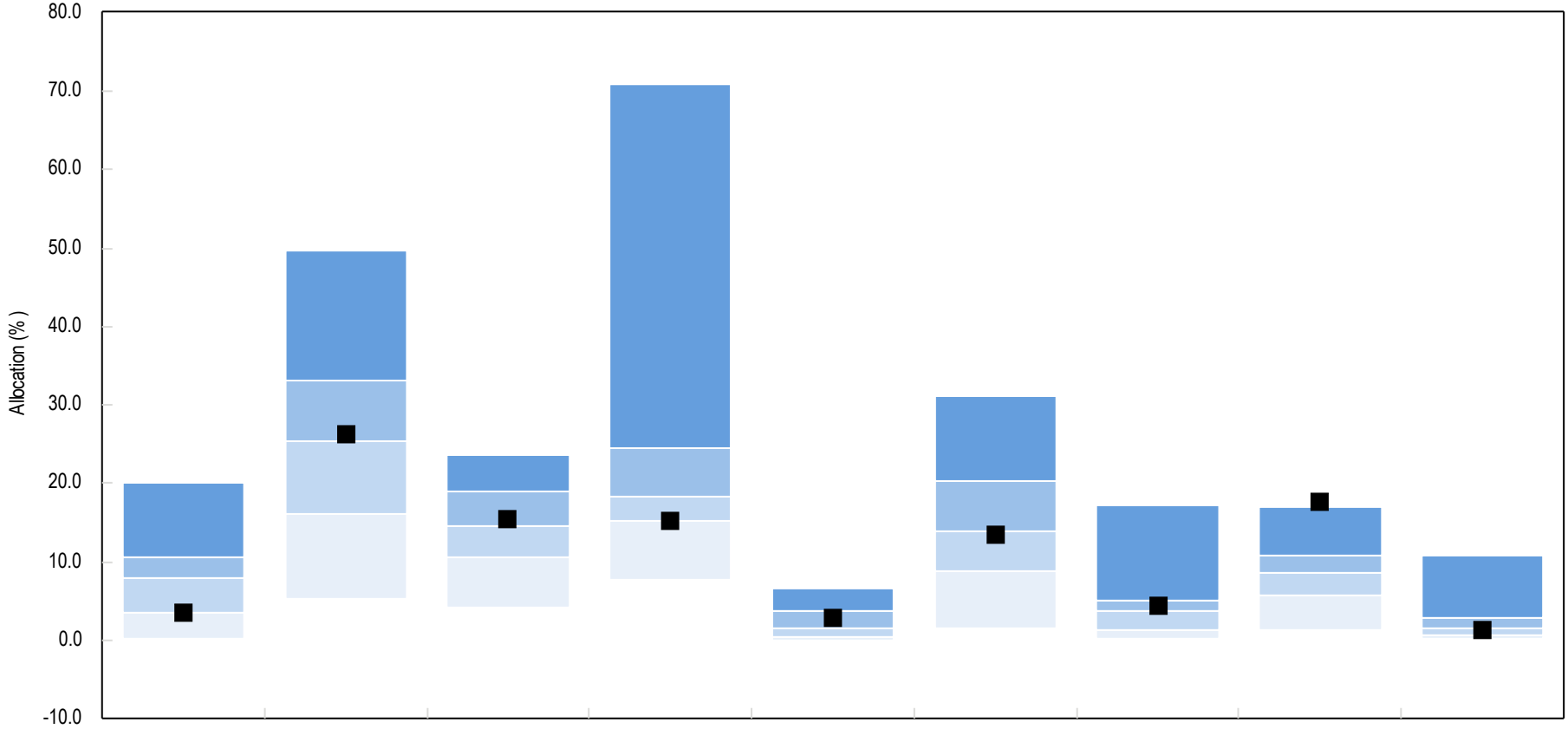

Market Value History
$2,450.0
$2,100.0
$1,750.0
$1,400.0
$1,050.0
$700.0
$350.0
$0.0
($350.0)
Millions
2016
2017
2017
2018
2019
2020
2020
2021
2022
2023
Total Fund
Net Cash Flow


Asset Allocation History
90.0
75.0
60.0
45.0
30.0
15.0
0.0
Allocation (Actual)
03/18
09/18
03/19
09/19
03/20
09/20
03/21
09/21
03/22
09/22
03/23
Domestic Equity
International Equity
Global Equity
Fixed Income
Domestic Fixed Income
Global Fixed Income
Real Estate
Alternatives
Hedge Funds
Commodities
Real Assets
Other



	Current Balance ($)	Current Allocation (%)	Policy Allocation (%)	Excess Allocation ($)	Policy Range (%)	Within IPS Range?
Domestic Equity	492,594,012	26.4	26.0	6,932,908	15.0 - 35.0	Yes
International Equity	287,486,888	15.4	16.0	-11,381,483	5.0 - 25.0	Yes
Global Equity	63,622,436	3.4	3.0	7,584,616	0.0 - 5.0	Yes
Fixed Income	336,282,036	18.0	20.0	-37,303,429	10.0 - 35.0	Yes
Alternatives	253,560,792	13.6	17.0	-63,986,852	10.0 - 30.0	Yes
Real Assets	410,226,072	22.0	18.0	73,999,154	10.0 - 30.0	Yes
Cash and Equivalents	24,155,086	1.3	0.0	24,155,086	0.0 - 10.0	Yes
Total	**1,867,927,322**	**100.0**	**100.0**			

Total Plan Allocation vs. All DB Public Plans >1B
As of March 31, 2023



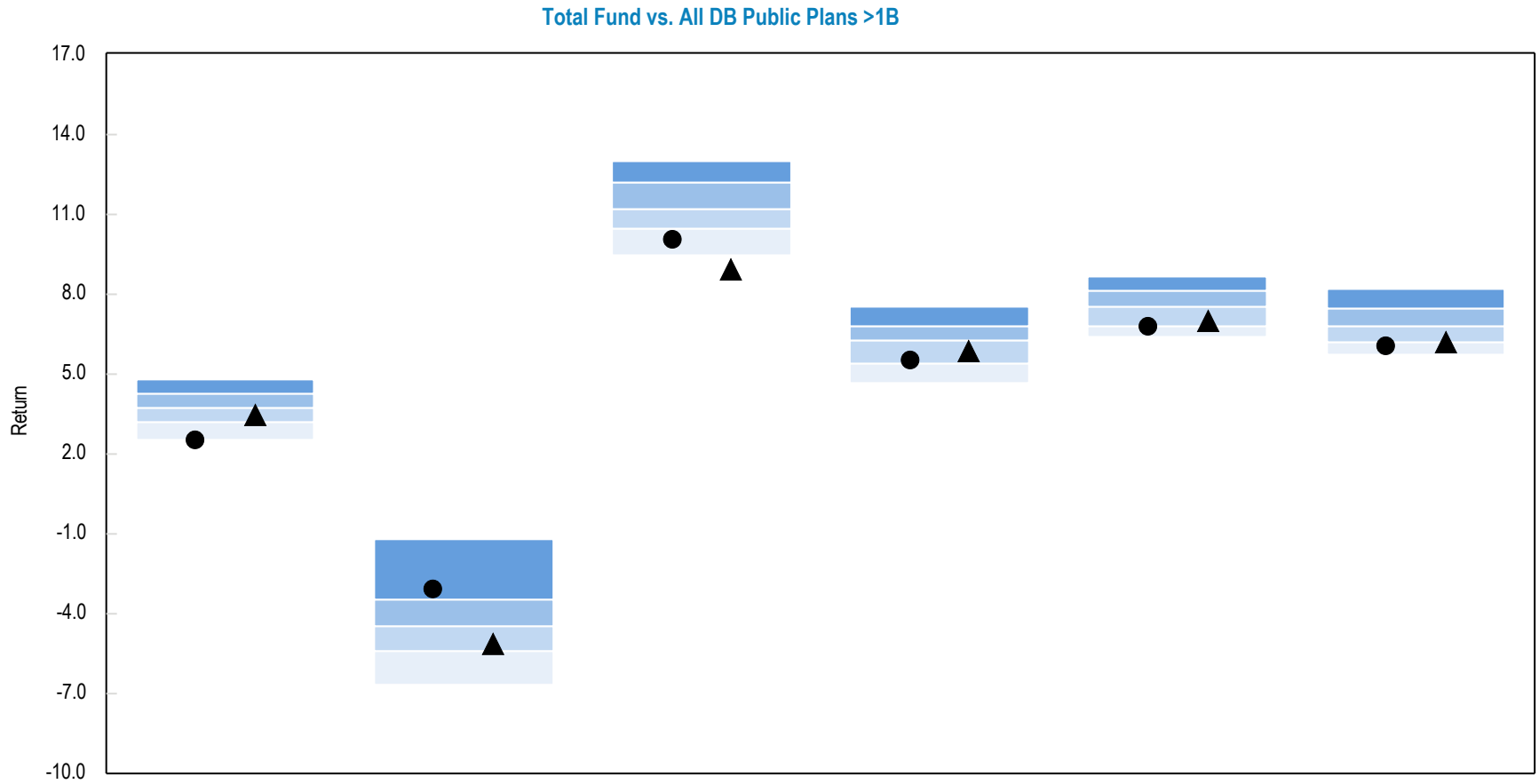
	Global Equity	US Equity	Global ex-US Equity	US Fixed	Global ex-US Fixed	Private Equity	Real Assets/Commod	Total Real Estate	Cash & Equivalents
■ Total Fund	3.4 (79)	26.4 (44)	15.4 (46)	15.2 (75)	2.8 (32)	13.4 (52)	4.4 (39)	17.7 (3)	1.3 (59)
5th Percentile	20.2	49.7	23.7	70.9	6.6	31.2	17.1	16.9	10.7
1st Quartile	10.5	33.1	18.9	24.6	3.8	20.3	4.9	10.9	2.8
Median	7.9	25.4	14.6	18.2	1.5	13.9	3.6	8.7	1.6
3rd Quartile	3.6	16.0	10.6	15.2	0.3	8.8	1.3	5.8	0.6
95th Percentile	0.1	5.4	4.1	7.8	0.1	1.4	0.1	1.4	0.2
Population	20	107	106	107	52	46	32	87	83

Account	Fee Schedule	Market Value As of March 31, 2023	% of Portfolio	Estimated Annual Fee ($)	Estimated Annual Fee (%)
American Realty Strategic Value Fund	0.90 % of Assets	87,673,881	4.69	789,065	0.90
BlackRock Alternative Advisors	Minimum Fee: $120,000	428,705	0.02	120,000	27.99
BlackRock Core Plus Fixed Income	0.25 % of First $100 M 0.25 % of Next $100 M 0.00 % Thereafter	78,694,371	4.21	196,736	0.25
Boston Partners Large Cap Value	0.45 % of First $50 M 0.35 % of Next $50 M 0.30 % Thereafter	71,579,626	3.83	300,529	0.42
Doubleline Core Plus	0.28 % of First $100 M 0.25 % Thereafter	103,709,038	5.55	289,273	0.28
Invesco Commercial Mortgage Income Fund	1.00 % of First $50 M 0.90 % Thereafter	73,994,772	3.96	715,953	0.97
KKR Mezzanine Partners I	0.38 % of Assets	2,059,003	0.11	7,721	0.38
Leeward Small Cap Value	0.65 % of Assets	31,785,955	1.70	206,609	0.65
MacKay Shields Core Plus	0.30 % of Assets	102,105,537	5.47	306,317	0.30
Mellon Capital Cash Account		24,155,086	1.29	-	-
Ocean Avenue Fund III	0.85 % of Assets	20,761,113	1.11	176,469	0.85
Ocean Avenue Fund IV	1.25 % of Assets	31,268,037	1.67	390,850	1.25
Pantheon Ventures	0.47 % of Assets	153,054	0.01	725	0.47
Pathway Private Equity Fund Investors 10	0.58 % of Assets	22,023,212	1.18	127,735	0.58
Pathway Private Equity Fund Investors 8	0.61 % of Assets	31,322,169	1.68	191,065	0.61
Pathway Private Equity Fund Investors 9	0.58 % of Assets	25,073,843	1.34	145,428	0.58
PGIM Emerging Markets Debt	0.44 % of Assets	51,773,090	2.77	227,802	0.44
PGIM QS US Core Equity	0.41 % of Assets	68,115,366	3.65	279,273	0.41
PIMCO RAE Fundamental Global Ex US Fund	0.78 % of First $25 M 0.43 % of Next $75 M 0.38 % Thereafter	99,833,008	5.34	516,782	0.52
RREEF America II	0.95 % of Assets	165,792,899	8.88	1,575,033	0.95
SGA International Growth	0.45 % of Assets	89,272,249	4.78	401,725	0.45
Sixth Street DCP (frmrly TSSP DCP)	1.11 % of Assets	85,372,549	4.57	947,635	1.11
Sixth Street TAO Contingent (frmrly TSSP TAO Contingent)	1.35 % of Assets	28,652,110	1.53	386,803	1.35
Skellig Water Fund (aka KBI)	0.48 % of Assets	63,622,436	3.41	305,388	0.48
SSGA MSCI ACWI Ex US Index Fund	0.08 % of First $25 M 0.07 % of Next $25 M 0.06 % Thereafter	98,381,631	5.27	66,529	0.07
SSGA S&P 500 Flagship Fund	0.03 % of Assets	163,112,768	8.73	48,934	0.03

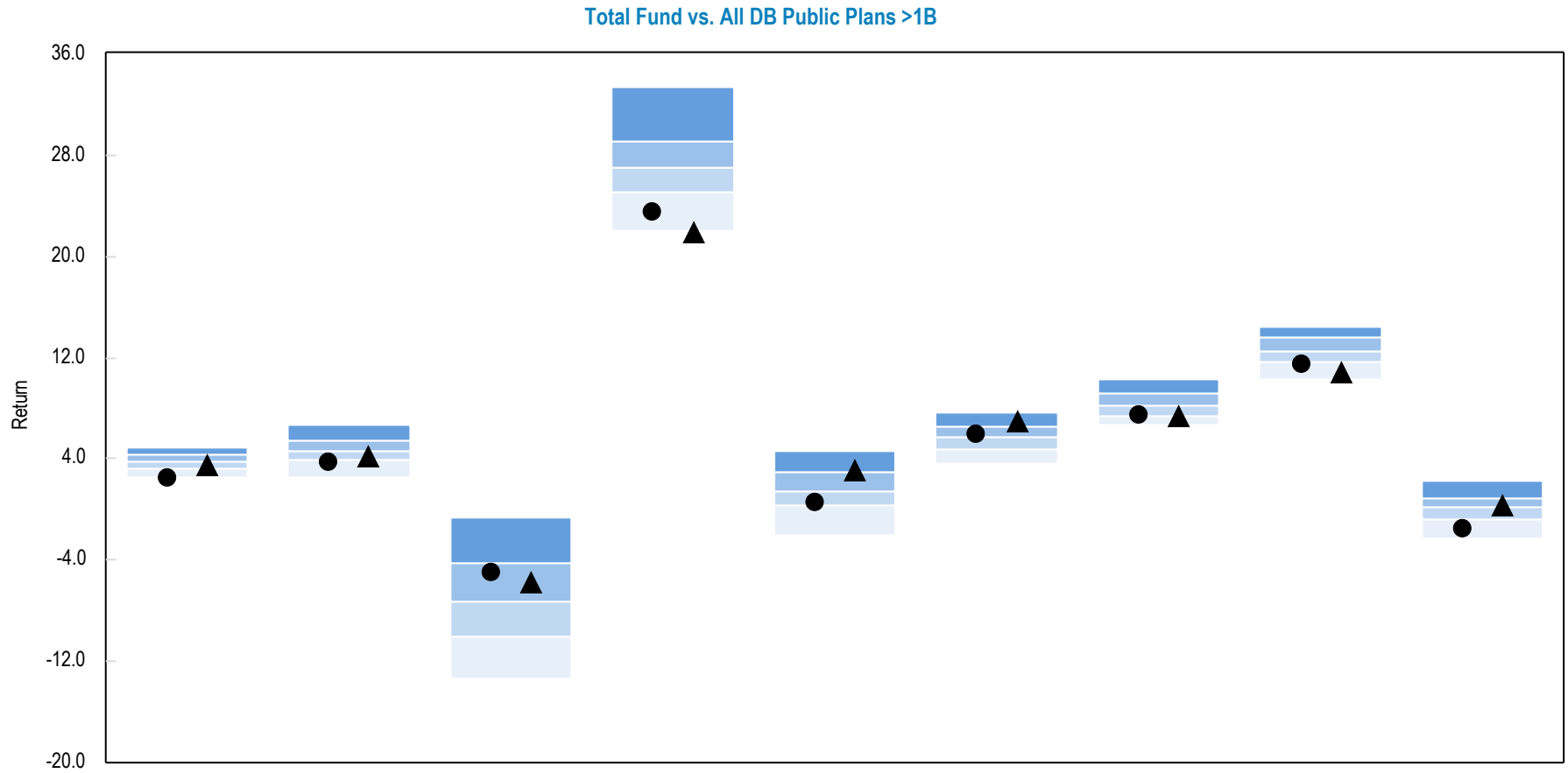
**The negotiated fee schedule for TCERA's investment in the ARA Strategic Value fund is 90 bps so long as assets remain above $80,000,000. Sixth Street Partners fee schedule is as follows: No management fee at SMA level. Subject to the annual fees of each of the underlying TSSP funds. (1) TAO 65bps on unfunded commitments and 1.35% on remaining capital contributions (long-term investor designation) (2) TSLE 1.5% on commitments, 1.25% on remaining capital contributions post commitment period (3) TICP 30bps on remaining capital contributions. TAO Contingent fee schedule is 65bps on unfunded commitments and 1.35% on remaining capital contributions. Fees shown for Pathway are estimated effective average fees over 15-year fund lifespan.*

Account	Fee Schedule	Market Value As of March 31, 2023	% of Portfolio	Estimated Annual Fee ($)	Estimated Annual Fee (%)
SSGA US Extended Market Index	0.03 % of First $50 M 0.03 % of Next $50 M 0.02 % Thereafter	63,166,927	3.38	18,423	0.03
SSGA US REIT Index Non-Lending Fund	1.04 % of Assets	708,344	0.04	7,367	1.04
Stepstone Secondary Opportunities Fund II	Minimum Fee: $343,750	4,338,098	0.23	343,750	7.92
William Blair Large Cap Growth	0.45 % of First $50 M 0.32 % of Next $50 M 0.27 % of Next $150 M 0.27 % Thereafter	67,843,221	3.63	281,206	0.41
William Blair SMID Cap Growth	0.95 % of First $10 M 0.80 % of Next $20 M 0.75 % of Next $20 M 0.70 % of Next $50 M 0.65 % of Next $100 M 0.60 % Thereafter	26,990,150	1.44	230,921	0.86
Investment Management Fee		**1,867,927,322**	**100.00**	**9,602,046**	**0.51**

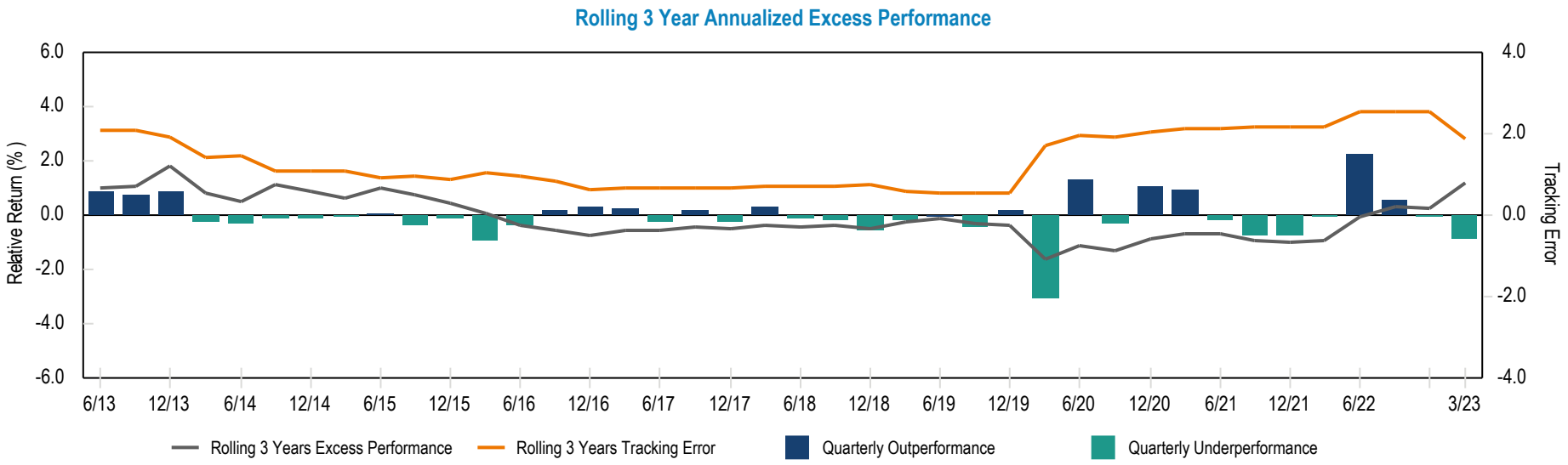
**The negotiated fee schedule for TCERA's investment in the ARA Strategic Value fund is 90 bps so long as assets remain above $80,000,000. Sixth Street Partners fee schedule is as follows: No management fee at SMA level. Subject to the annual fees of each of the underlying TSSP funds. (1) TAO 65bps on unfunded commitments and 1.35% on remaining capital contributions (long-term investor designation) (2) TSLE 1.5% on commitments, 1.25% on remaining capital contributions post commitment period (3) TICP 30bps on remaining capital contributions. TAO Contingent fee schedule is 65bps on unfunded commitments and 1.35% on remaining capital contributions. Fees shown for Pathway are estimated effective average fees over 15-year fund lifespan.*

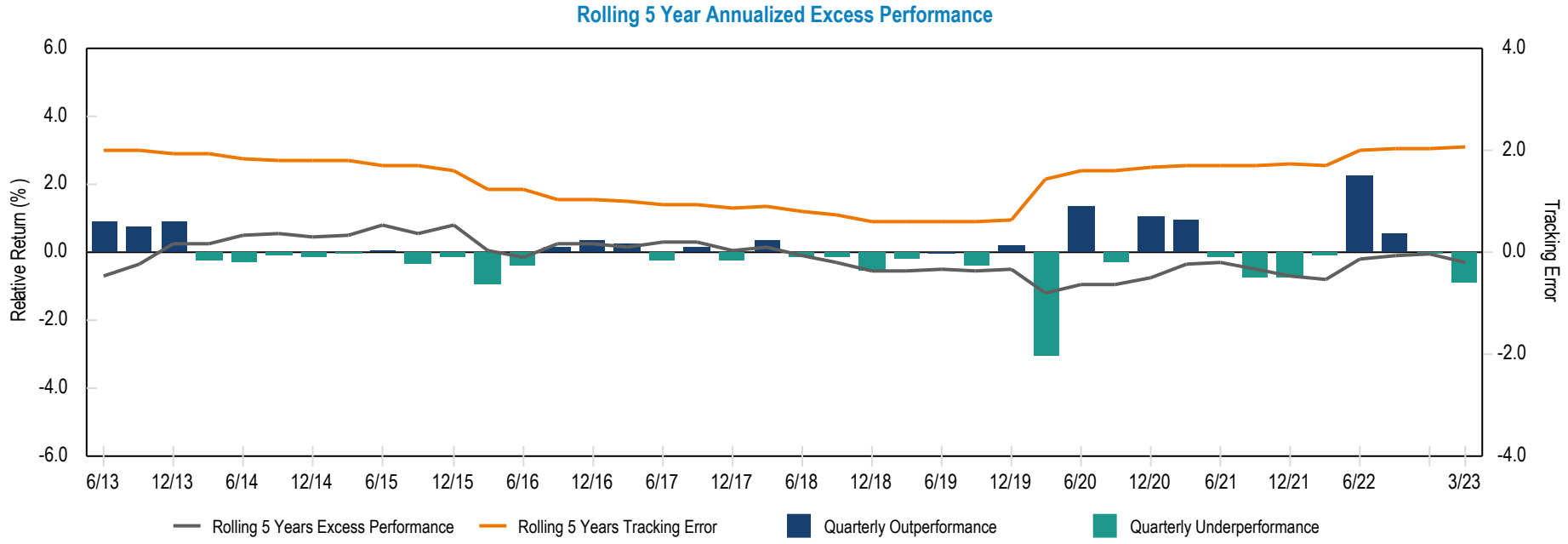


	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● Total Fund	2.56 (96)	-3.09 (14)	10.10 (83)	5.54 (70)	6.83 (74)	6.09 (84)
▲ Policy Index	3.47 (60)	-5.12 (69)	8.91 (99)	5.86 (60)	7.00 (68)	6.19 (75)
5th Percentile	4.82	-1.21	13.02	7.54	8.67	8.18
1st Quartile	4.27	-3.45	12.20	6.77	8.12	7.45
Median	3.73	-4.49	11.19	6.24	7.56	6.79
3rd Quartile	3.22	-5.40	10.47	5.40	6.80	6.19
95th Percentile	2.56	-6.64	9.44	4.69	6.38	5.74
Population	66	59	58	57	57	54



	3 Mo	Fiscal YTD	Fiscal 2022	Fiscal 2021	Fiscal 2020	Fiscal 2019	Fiscal 2018	Fiscal 2017	Fiscal 2016
● Total Fund	2.56 (96)	3.85 (77)	-4.88 (34)	23.62 (87)	0.56 (68)	5.95 (45)	7.52 (73)	11.46 (79)	-1.46 (84)
▲ Policy Index	3.47 (60)	4.21 (66)	-5.75 (40)	21.86 (96)	3.06 (22)	6.92 (14)	7.42 (76)	10.90 (88)	0.36 (47)
5th Percentile	4.82	6.66	-0.62	33.33	4.63	7.70	10.28	14.37	2.29
1st Quartile	4.27	5.40	-4.23	29.14	2.89	6.51	9.15	13.55	0.92
Median	3.73	4.68	-7.30	26.97	1.41	5.77	8.24	12.55	0.25
3rd Quartile	3.22	3.87	-10.01	25.08	0.28	4.81	7.42	11.63	-0.75
95th Percentile	2.56	2.53	-13.40	22.00	-2.08	3.68	6.74	10.35	-2.30
Population	66	64	105	151	137	103	78	77	74


Rolling 3 Year Annualized Excess Performance
Relative Return (%)
Tracking Error
6.0
4.0
2.0
0.0
-2.0
-4.0
-6.0
4.0
2.0
0.0
-2.0
-4.0
6/13
12/13
6/14
12/14
6/15
12/15
6/16
12/16
6/17
12/17
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
Rolling 3 Years Excess Performance
Rolling 3 Years Tracking Error
Quarterly Outperformance
Quarterly Underperformance

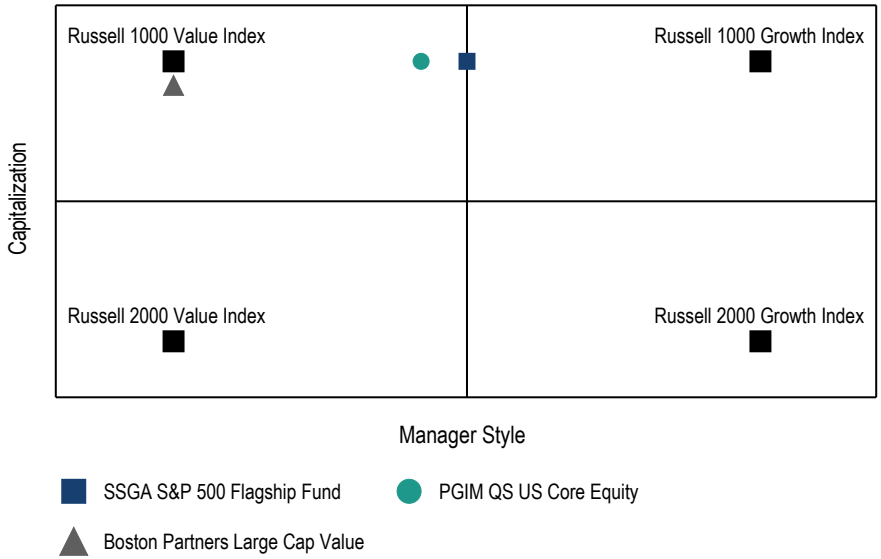

Rolling 5 Year Annualized Excess Performance
Relative Return (%)
Tracking Error
6.0
4.0
2.0
0.0
-2.0
-4.0
-6.0
4.0
2.0
0.0
-2.0
-4.0
6/13
12/13
6/14
12/14
6/15
12/15
6/16
12/16
6/17
12/17
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
Rolling 5 Years Excess Performance
Rolling 5 Years Tracking Error
Quarterly Outperformance
Quarterly Underperformance

Total Domestic Equity
Asset Class Overview (Net of Fees)

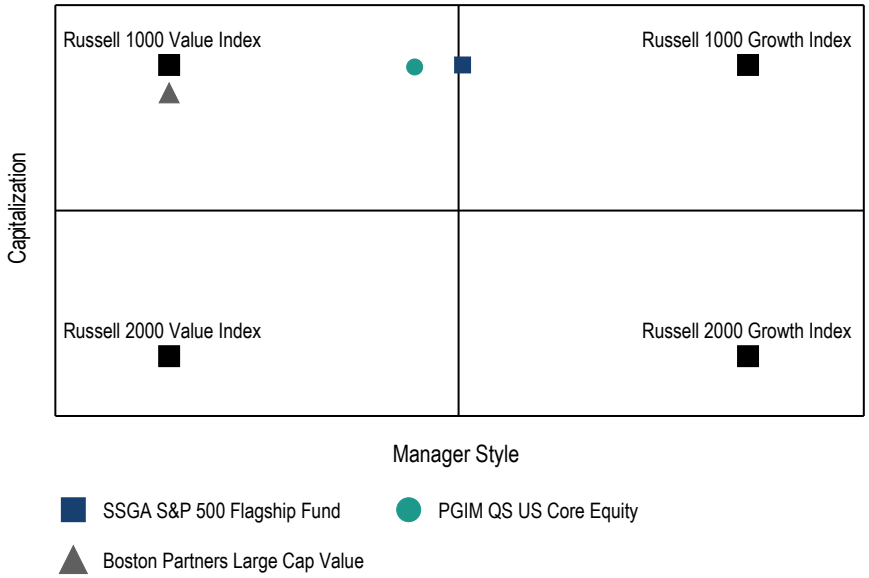
Tulare County Employees' Retirement Association
Period Ending: March 31, 2023

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2022	2021	2020	2019	2018
Total Domestic Equity	**492,594,012**	**100.0**	**6.0**	**-8.6**	**18.4**	**9.6**	**11.5**	**-18.2**	**26.1**	**18.2**	**29.8**	**-5.4**
Russell 3000 Index			*7.2*	*-8.6*	*18.5*	*10.5*	*11.7*	*-19.2*	*25.7*	*20.9*	*31.0*	*-5.2*
SSGA S&P 500 Flagship Fund	163,112,768	33.1	7.5	-7.8	18.6	11.1	12.2	-18.1	28.6	18.3	31.5	-4.4
S&P 500 Index			*7.5*	*-7.7*	*18.6*	*11.2*	*12.2*	*-18.1*	*28.7*	*18.4*	*31.5*	*-4.4*
eV US Large Cap Core Equity Rank			*21*	*65*	*35*	*26*	*16*	*65*	*31*	*37*	*30*	*39*
PGIM QS US Core Equity	68,115,366	13.8	7.1	-7.9	18.9	9.6	11.7	-16.3	29.8	12.0	28.6	-6.8
S&P 500 Index			*7.5*	*-7.7*	*18.6*	*11.2*	*12.2*	*-18.1*	*28.7*	*18.4*	*31.5*	*-4.4*
eV US Large Cap Core Equity Rank			*27*	*66*	*28*	*55*	*32*	*49*	*20*	*71*	*58*	*71*
William Blair Large Cap Growth	67,843,221	13.8	12.0	-	-	-	-	-	-	-	-	-
Russell 1000 Growth Index			*14.4*	-	-	-	-	-	-	-	-	-
eV US Large Cap Growth Equity Rank			*53*	-	-	-	-	-	-	-	-	-
Boston Partners Large Cap Value	71,579,626	14.5	-0.4	-5.2	21.4	7.8	9.9	-4.3	30.4	2.4	23.8	-9.0
Russell 1000 Value Index			*1.0*	*-5.9*	*17.9*	*7.5*	*9.1*	*-7.5*	*25.2*	*2.8*	*26.5*	*-8.3*
eV US Large Cap Value Equity Rank			*68*	*57*	*27*	*58*	*41*	*35*	*17*	*60*	*76*	*55*

U.S. Effective Style Map
3 Years



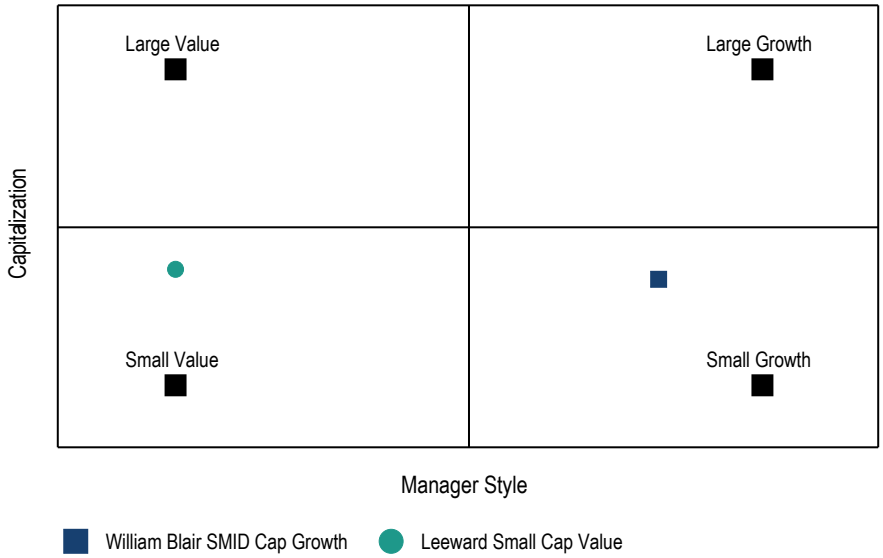
U.S. Effective Style Map
5 Years



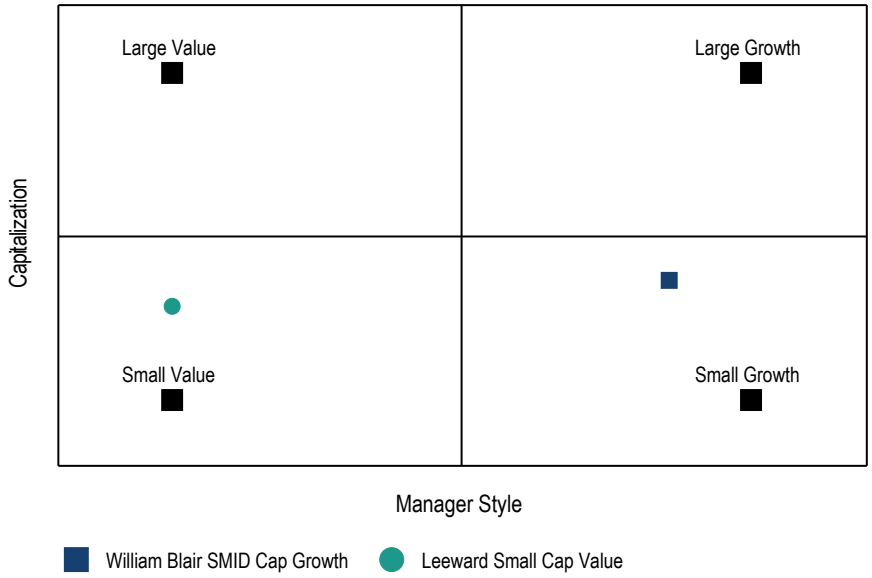
Managers need 3 years of history to be included in the style map. Macquarie Large Cap Growth liquidated 4/25/2022, proceeds funded William Blair Large Cap Growth.

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2022	2021	2020	2019	2018
SSGA US Extended Market Index	63,166,927	12.8	5.8	-14.1	-	-	-	-26.4	-	-	-	-
Dow Jones U.S. Completion Total Stock Market Indx			*5.8*	*-14.3*	-	-	-	*-26.5*	-	-	-	-
eV US Small-Mid Cap Equity Rank			*38*	*88*	-	-	-	*81*	-	-	-	-
William Blair SMID Cap Growth	26,990,150	5.5	5.4	-10.1	13.8	7.5	11.5	-22.7	8.7	32.6	31.1	-1.7
Russell 2500 Growth Index			*6.5*	*-10.4*	*14.7*	*6.8*	*10.0*	*-26.2*	*5.0*	*40.5*	*32.7*	*-7.5*
eV US Small-Mid Cap Growth Equity Rank			*78*	*35*	*78*	*61*	*30*	*19*	*75*	*63*	*48*	*36*
Leeward Small Cap Value	31,785,955	6.5	0.4	-3.4	24.3	7.2	8.5	-7.1	31.6	3.8	26.3	-15.5
Russell 2000 Value Index			*-0.7*	*-13.0*	*21.0*	*4.5*	*7.2*	*-14.5*	*28.3*	*4.6*	*22.4*	*-12.9*
eV US Small Cap Value Equity Rank			*75*	*25*	*35*	*27*	*42*	*18*	*38*	*57*	*24*	*58*

U.S. Effective Style Map
3 Years



U.S. Effective Style Map
5 Years



Managers need 3 years of history to be included in the style map.

Total Domestic Equity
Common Holdings Matrix

Tulare County Employees' Retirement Association
Period Ending: March 31, 2023

	SSGA S&P 500 Flagship Fund		PGIM QS US Core Equity		Boston Partners Large Cap Value		SSGA US Extended Market Index		William Blair SMID Cap Growth		Lee Munder Small Value	
	#	%	#	%	#	%	#	%	#	%	#	%
SSGA S&P 500 Flagship Fund	0	0	157	94	66	84	0	0	7	9	0	0
PGIM QS US Core Equity	157	69	0	0	34	52	47	3	1	1	1	2
Boston Partners Large Cap Value	66	18	34	20	0	0	7	1	1	1	1	1
SSGA US Extended Market Index	0	0	47	6	7	5	0	0	61	83	83	98
William Blair SMID Cap Growth	7	0	1	0	1	0	61	6	0	0	6	8
Lee Munder Small Value	0	0	1	0	1	1	83	5	6	12	0	0

William Blair Large Cap Growth not included in Correlation matrix until it reaches 1 year history.

Correlation Matrix
1 Year Ending March 31, 2023

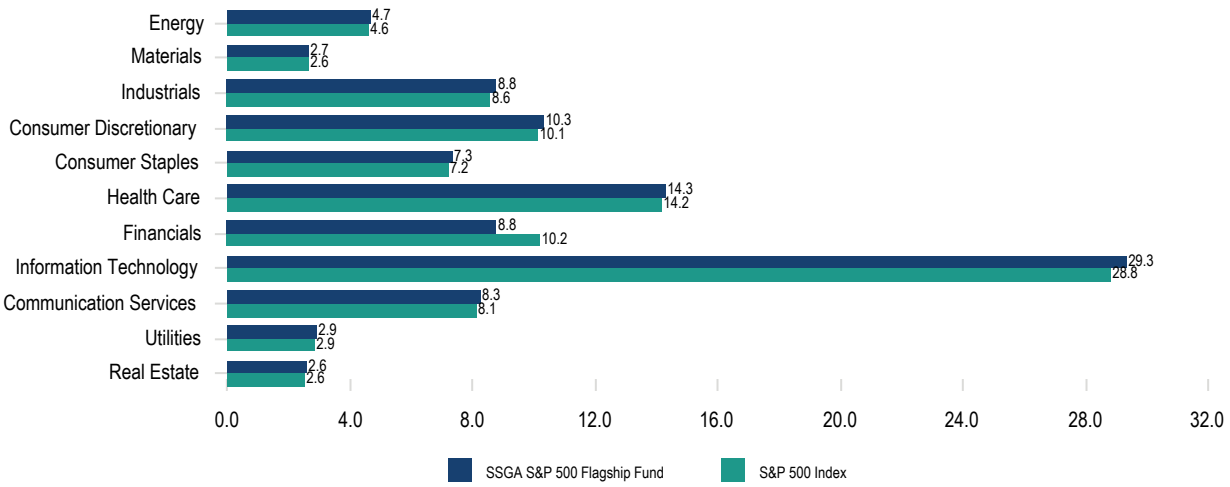
	SSGA S&P 500 Flagship Fund	PGIM QS US Core Equity	Boston Partners Large Cap Value	SSGA US Extended Market Index	William Blair SMID Cap Growth	Lee Munder Small Value	S&P 500 Index
SSGA S&P 500 Flagship Fund	1.00						
PGIM QS US Core Equity	1.00	1.00					
Boston Partners Large Cap Value	0.92	0.93	1.00				
SSGA US Extended Market Index	0.94	0.94	0.90	1.00			
William Blair SMID Cap Growth	0.94	0.93	0.87	0.98	1.00		
Lee Munder Small Value	0.88	0.90	0.96	0.93	0.89	1.00	
S&P 500 Index	1.00	1.00	0.92	0.94	0.94	0.88	1.00

William Blair Large Cap Growth not included in Correlation matrix until it reaches 1 year history.

Characteristics

	Portfolio	Benchmark
Number of Stocks	503	503
Wtd. Avg. Mkt. Cap $B	534.3	536.7
Median Mkt. Cap $B	29.9	30.3
Price/Earnings ratio	20.87	20.89
Price/Book ratio	4.36	4.21
Return on Equity (%)	11.56	11.40
Current Yield (%)	1.71	1.68
Beta (5 Years, Monthly)	1.00	1.00
R-Squared (5 Years, Monthly)	1.00	1.00

Sector Allocation (%)



Largest Equity Holdings

	Wgt (%)	Return (%)
Apple Inc	7.26	27.11
Microsoft Corp	6.35	20.52
Amazon.com Inc	2.72	22.96
NVIDIA Corporation	2.02	90.10
Alphabet Inc	1.83	17.57
Tesla Inc	1.65	68.42
Alphabet Inc	1.60	17.21
Meta Platforms Inc	1.40	76.12
Exxon Mobil Corp	1.33	0.19
Unitedhealth Group Inc	1.31	-10.54

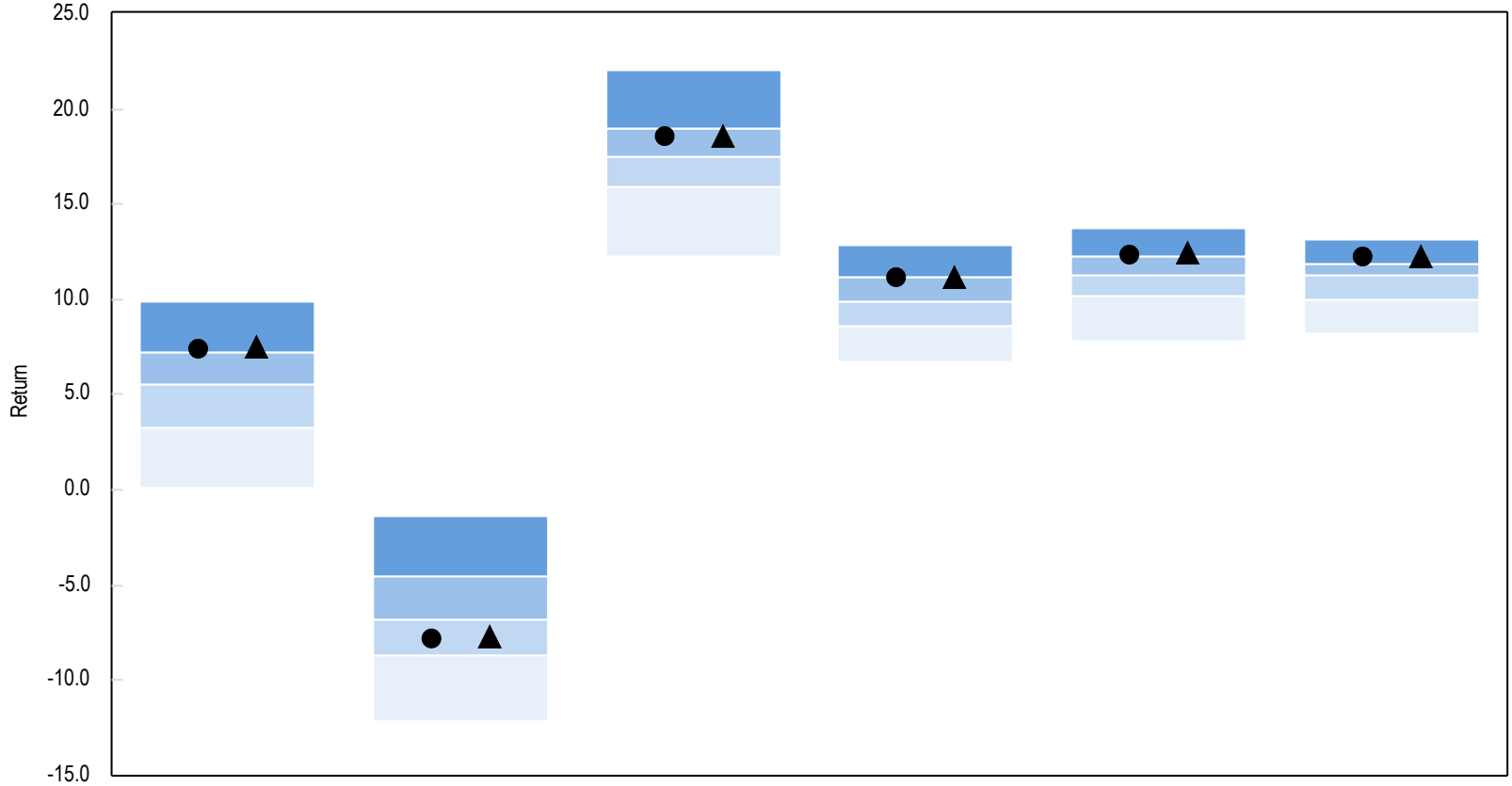
Top Contributors

	Wgt (%)	Return (%)	Contr (%)
Apple Inc	6.16	27.11	1.67
Microsoft Corp	5.67	20.52	1.16
NVIDIA Corporation	1.15	90.10	1.04
Tesla Inc	1.05	68.42	0.72
Meta Platforms Inc	0.86	76.12	0.65
Amazon.com Inc	2.36	22.96	0.54
Alphabet Inc	1.67	17.57	0.29
Alphabet Inc	1.49	17.21	0.26
SALESFORCE INC	0.42	50.67	0.21
Advanced Micro Devices Inc	0.33	51.32	0.17

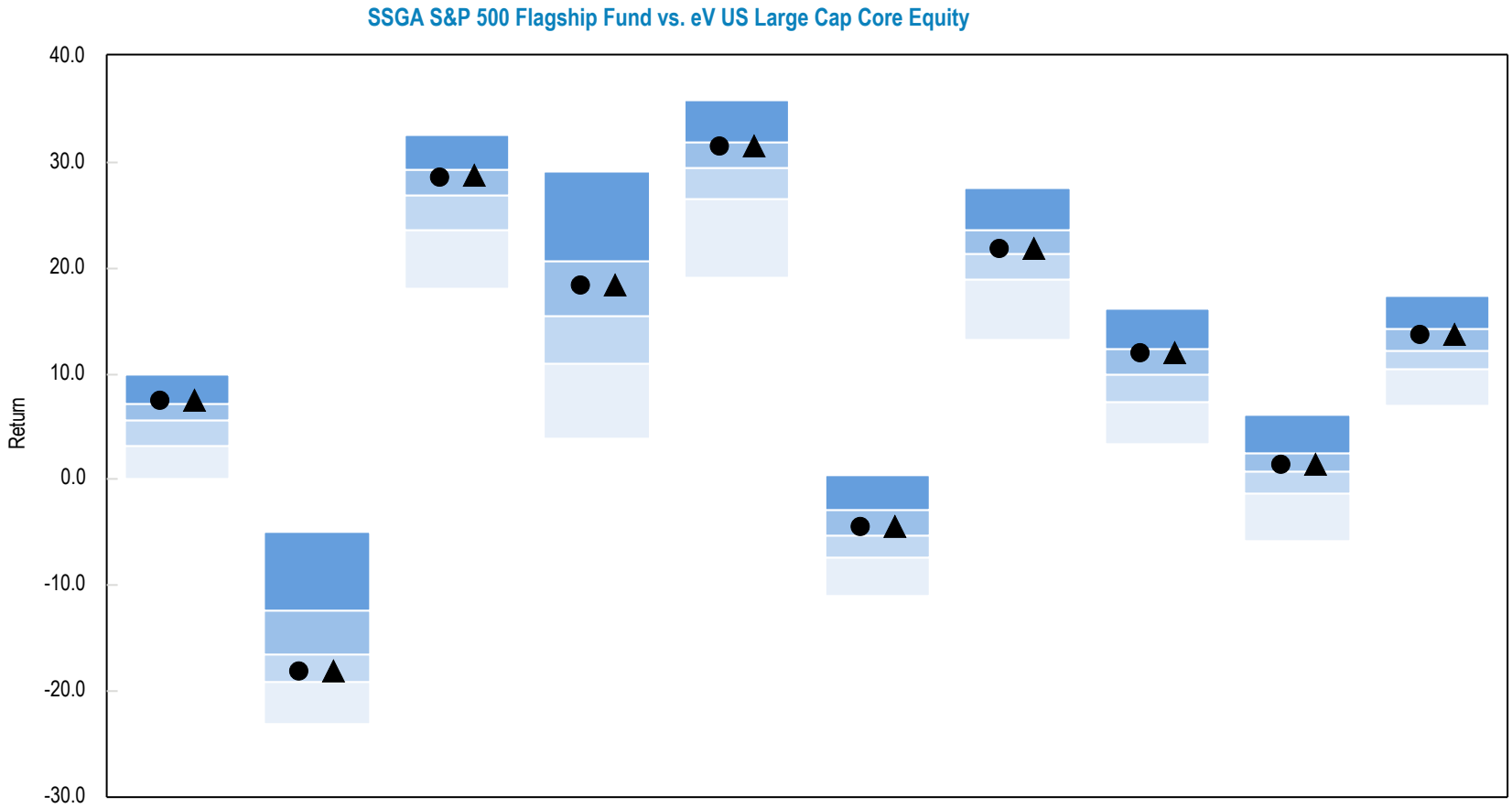
Bottom Contributors

	Wgt (%)	Return (%)	Contr (%)
Pfizer Inc	0.91	-19.64	-0.18
Johnson & Johnson	1.46	-11.64	-0.17
Unitedhealth Group Inc	1.57	-10.54	-0.17
Schwab (Charles) Corp	0.40	-36.89	-0.15
Bank of America Corp	0.73	-13.08	-0.10
Chevron Corp	1.01	-8.29	-0.08
CVS Health Corp	0.39	-19.71	-0.08
The Cigna Group	0.32	-22.54	-0.07
Conocophillips	0.47	-15.02	-0.07
First Republic Bank	0.07	-88.50	-0.06

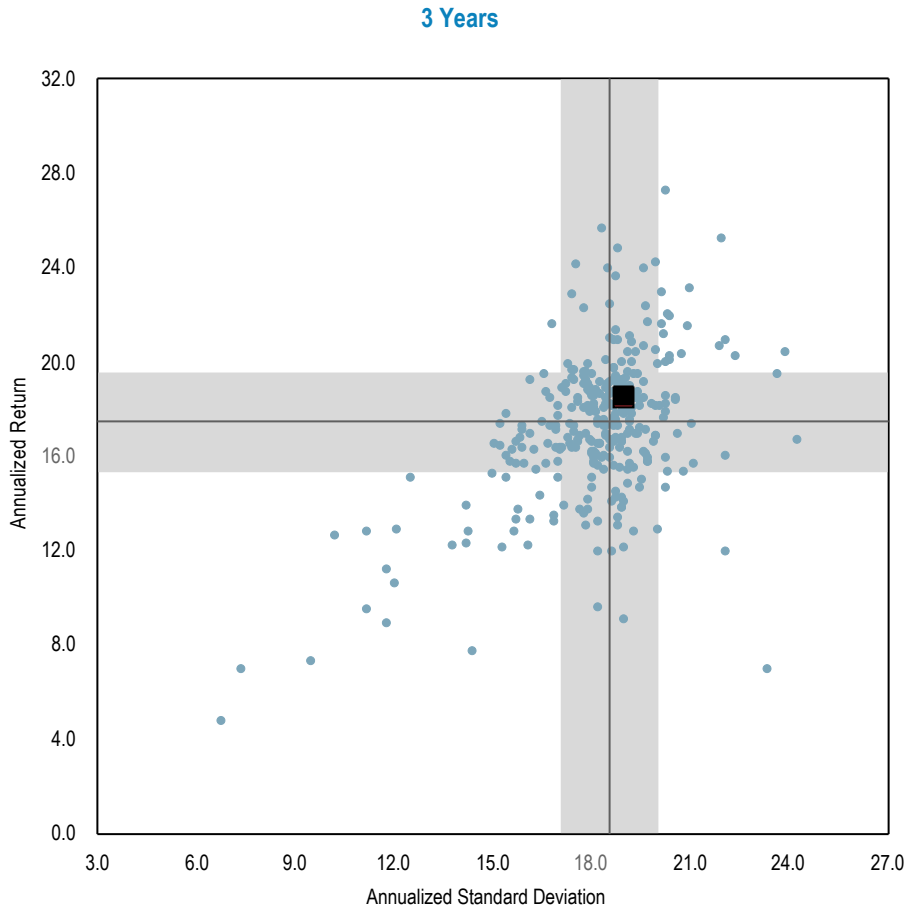
SSGA S&P 500 Flagship Fund vs. eV US Large Cap Core Equity

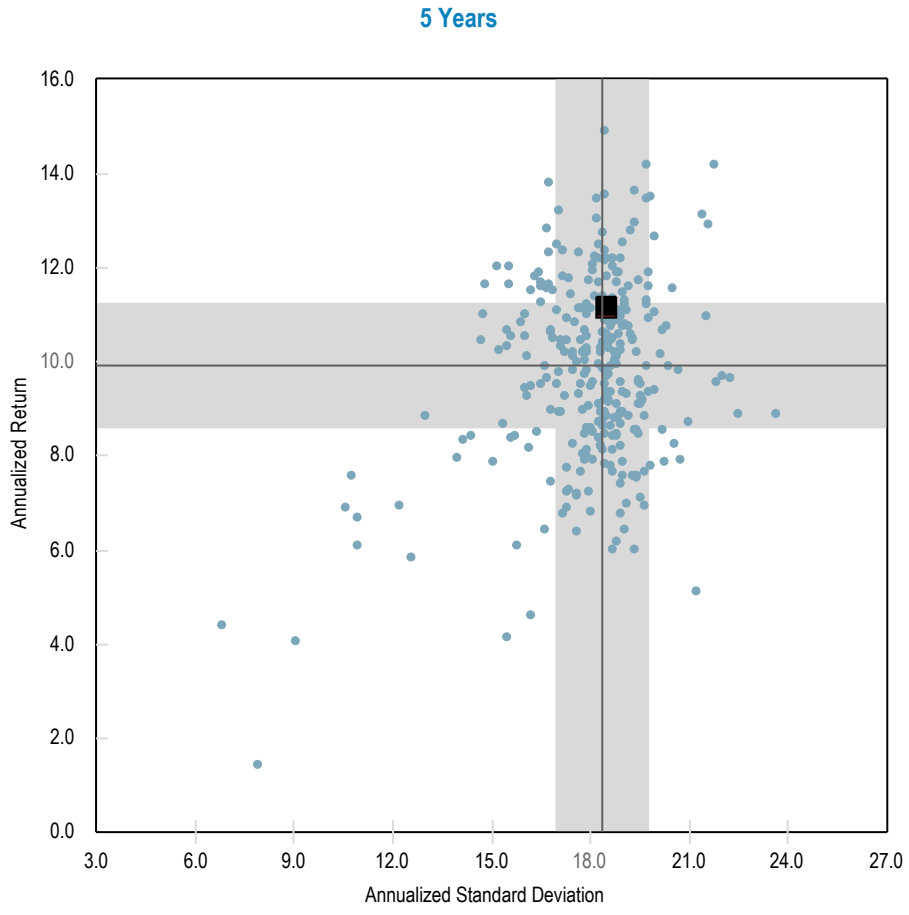


	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● SSGA S&P 500 Flagship Fund	7.46 (21)	-7.77 (65)	18.55 (35)	11.15 (26)	12.40 (22)	12.23 (16)
▲ S&P 500 Index	7.50 (21)	-7.73 (65)	18.60 (33)	11.19 (24)	12.42 (22)	12.24 (16)
5th Percentile	9.88	-1.35	22.03	12.84	13.77	13.11
1st Quartile	7.19	-4.54	19.00	11.15	12.23	11.89
Median	5.57	-6.83	17.48	9.94	11.28	11.26
3rd Quartile	3.27	-8.67	15.96	8.56	10.17	10.03
95th Percentile	0.08	-12.14	12.27	6.71	7.83	8.18
Population	329	326	317	300	272	231



	3 Mo	2022	2021	2020	2019	2018	2017	2016	2015	2014
● SSGA S&P 500 Flagship Fund	7.46 (21)	-18.13 (65)	28.63 (31)	18.34 (37)	31.46 (30)	-4.39 (39)	21.84 (44)	12.00 (29)	1.43 (40)	13.69 (31)
▲ S&P 500 Index	7.50 (21)	-18.11 (64)	28.71 (30)	18.40 (37)	31.49 (30)	-4.38 (39)	21.83 (44)	11.96 (29)	1.38 (41)	13.69 (31)
5th Percentile	9.88	-4.91	32.57	29.15	35.81	0.43	27.59	16.19	6.16	17.30
1st Quartile	7.19	-12.37	29.20	20.66	31.89	-2.90	23.58	12.33	2.57	14.22
Median	5.57	-16.53	26.92	15.41	29.40	-5.20	21.40	9.89	0.70	12.18
3rd Quartile	3.27	-19.17	23.59	10.95	26.57	-7.37	18.94	7.41	-1.39	10.49
95th Percentile	0.08	-23.17	18.03	3.80	19.06	-10.90	13.21	3.32	-5.76	7.06
Population	329	341	356	373	382	386	389	388	391	391





3 Years

	Return	Standard Deviation	Sharpe Ratio
SSGA S&P 500 Flagship Fund	18.55	18.96	0.95
S&P 500 Index	18.60	18.96	0.95

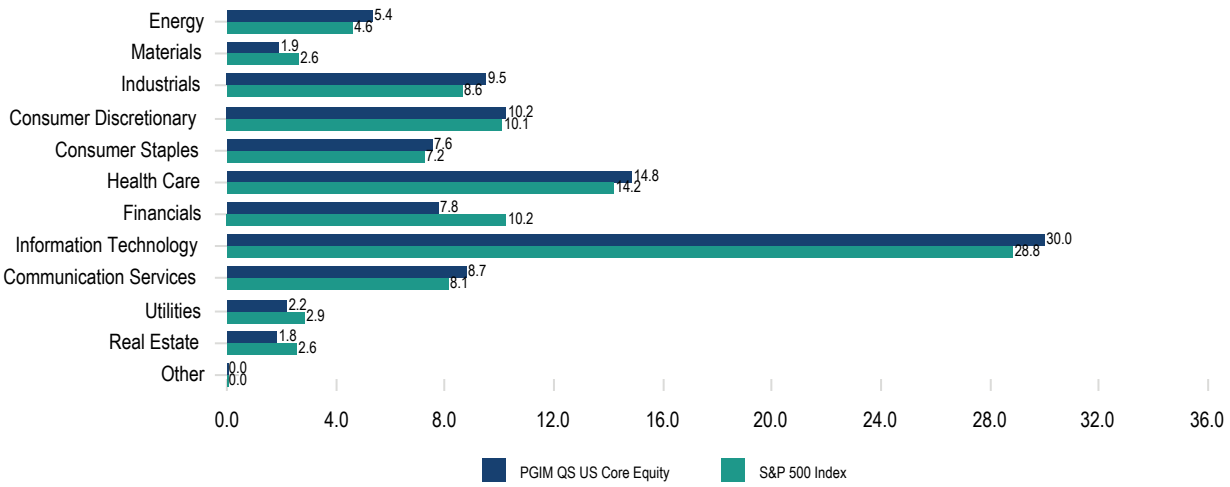
5 Years

	Return	Standard Deviation	Sharpe Ratio
SSGA S&P 500 Flagship Fund	11.15	18.48	0.59
S&P 500 Index	11.19	18.48	0.59

Characteristics

	Portfolio	Benchmark
Number of Stocks	207	503
Wtd. Avg. Mkt. Cap $B	521.6	536.7
Median Mkt. Cap $B	46.9	30.3
Price/Earnings ratio	17.86	20.89
Price/Book ratio	4.19	4.21
Return on Equity (%)	10.60	11.40
Current Yield (%)	1.76	1.68
Beta (5 Years, Monthly)	1.01	1.00
R-Squared (5 Years, Monthly)	0.99	1.00

Sector Allocation (%)



Largest Equity Holdings

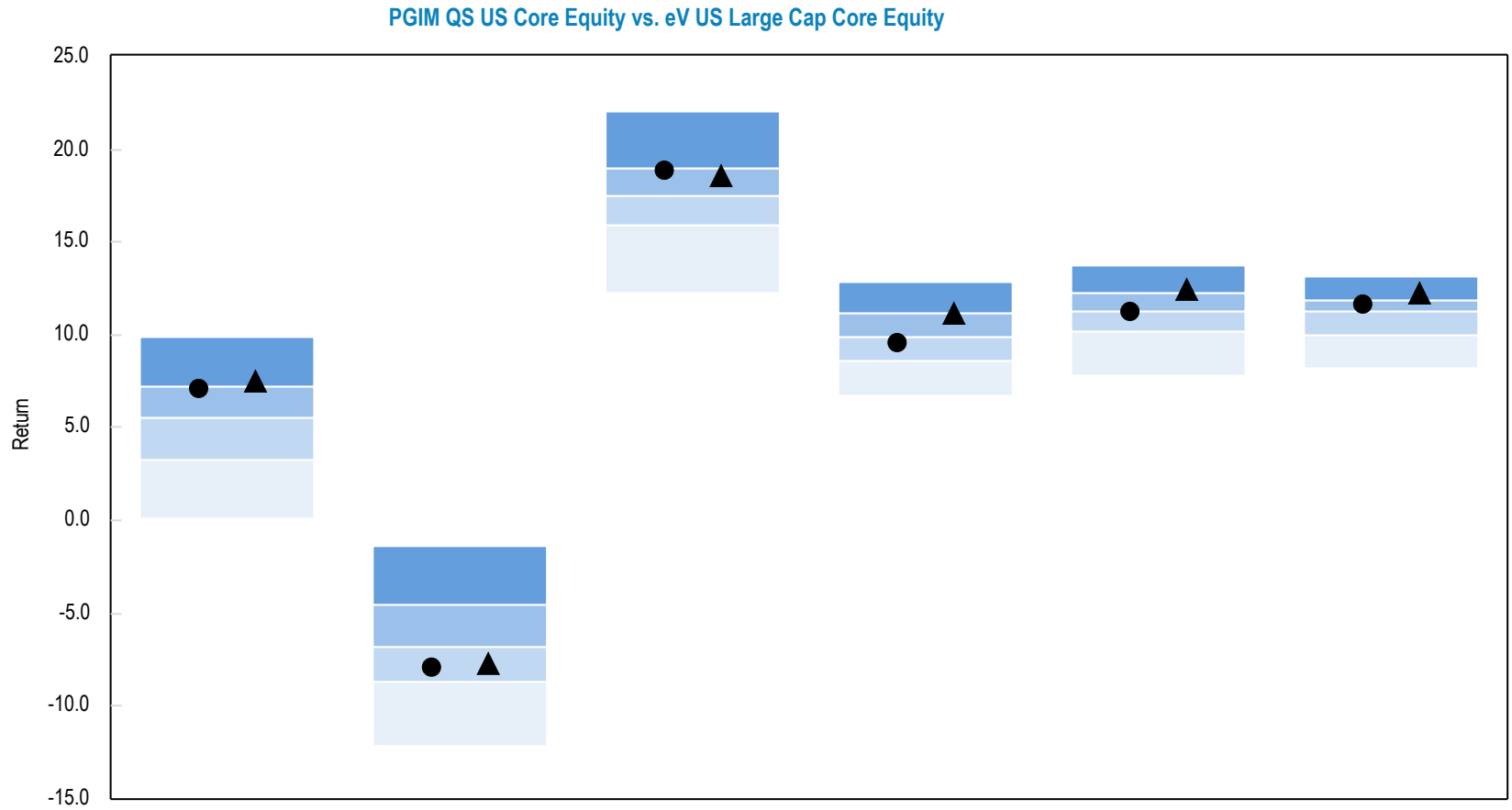
	Wgt (%)	Return (%)
Apple Inc	6.77	27.11
Microsoft Corp	6.27	20.52
NVIDIA Corporation	2.63	90.10
Amazon.com Inc	2.12	22.96
Meta Platforms Inc	2.00	76.12
Tesla Inc	1.91	68.42
Alphabet Inc	1.82	17.57
Alphabet Inc	1.76	17.21
Unitedhealth Group Inc	1.58	-10.54
Exxon Mobil Corp	1.47	0.19

Top Contributors

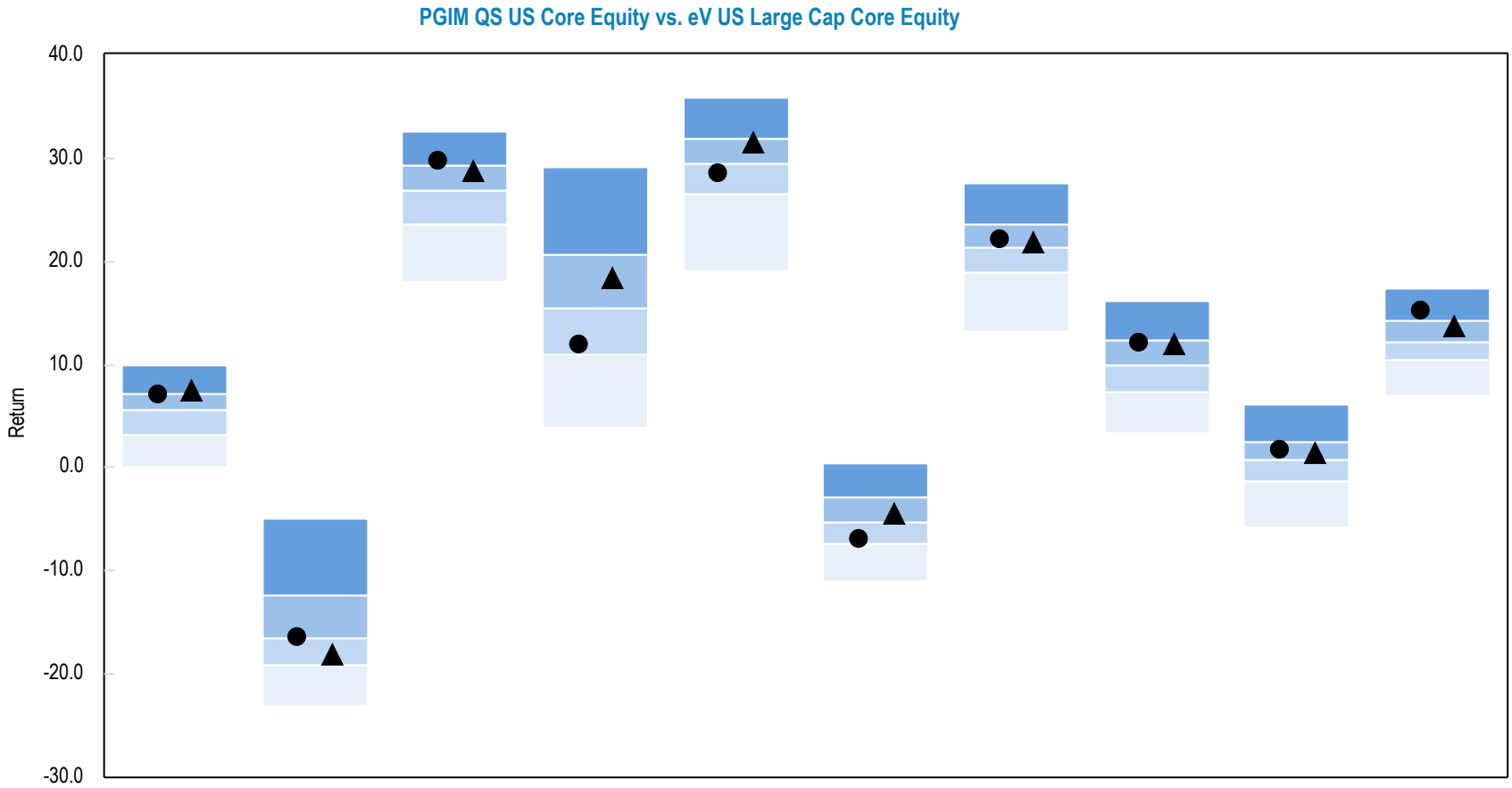
	Wgt (%)	Return (%)	Contr (%)
Apple Inc	5.73	27.11	1.55
Microsoft Corp	5.94	20.52	1.22
Meta Platforms Inc	1.10	76.12	0.84
Tesla Inc	1.16	68.42	0.79
NVIDIA Corporation	0.55	90.10	0.50
Amazon.com Inc	1.91	22.96	0.44
Alphabet Inc	1.81	17.57	0.32
Alphabet Inc	1.80	17.21	0.31
FedEx Corp.	0.69	32.68	0.23
Intel Corp	0.81	25.18	0.20

Bottom Contributors

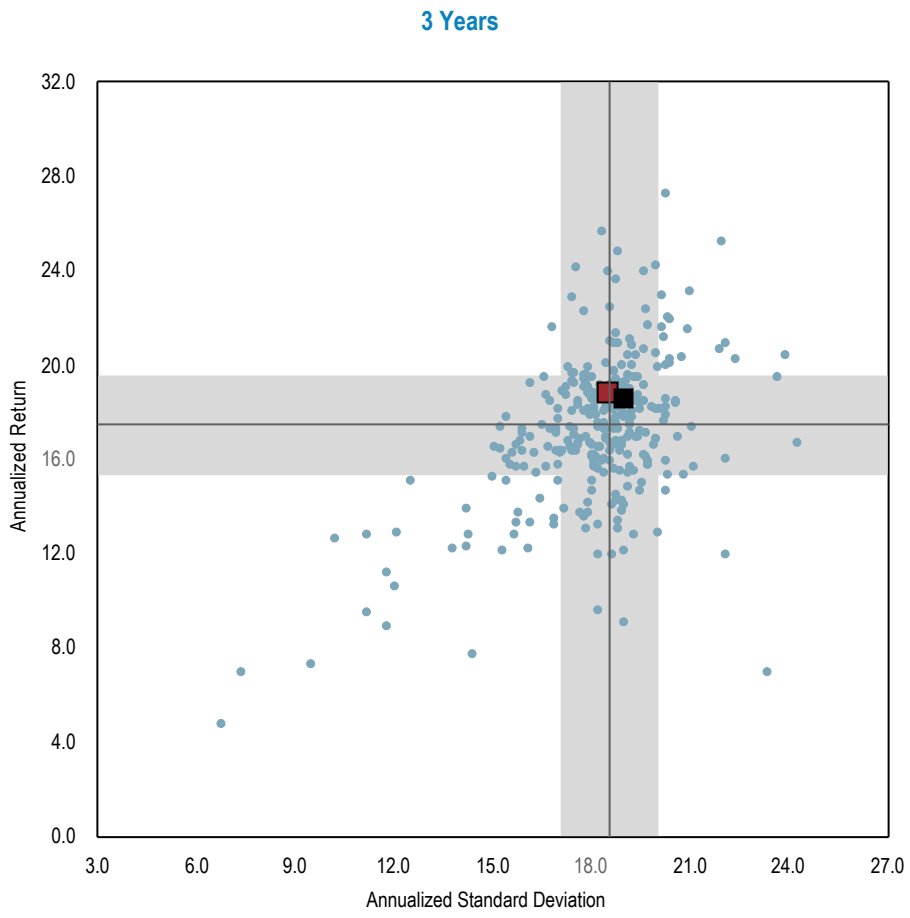
	Wgt (%)	Return (%)	Contr (%)
Pfizer Inc	1.48	-19.64	-0.29
The Cigna Group	0.95	-22.54	-0.21
Unitedhealth Group Inc	1.84	-10.54	-0.19
Schwab (Charles) Corp	0.48	-36.89	-0.18
CVS Health Corp	0.88	-19.71	-0.17
American International Group Inc	0.77	-19.86	-0.15
Johnson & Johnson	1.13	-11.64	-0.13
Enphase Energy Inc	0.55	-20.64	-0.11
Truist Financial Corp	0.57	-19.89	-0.11
Citizens Financial Group Inc	0.50	-22.09	-0.11

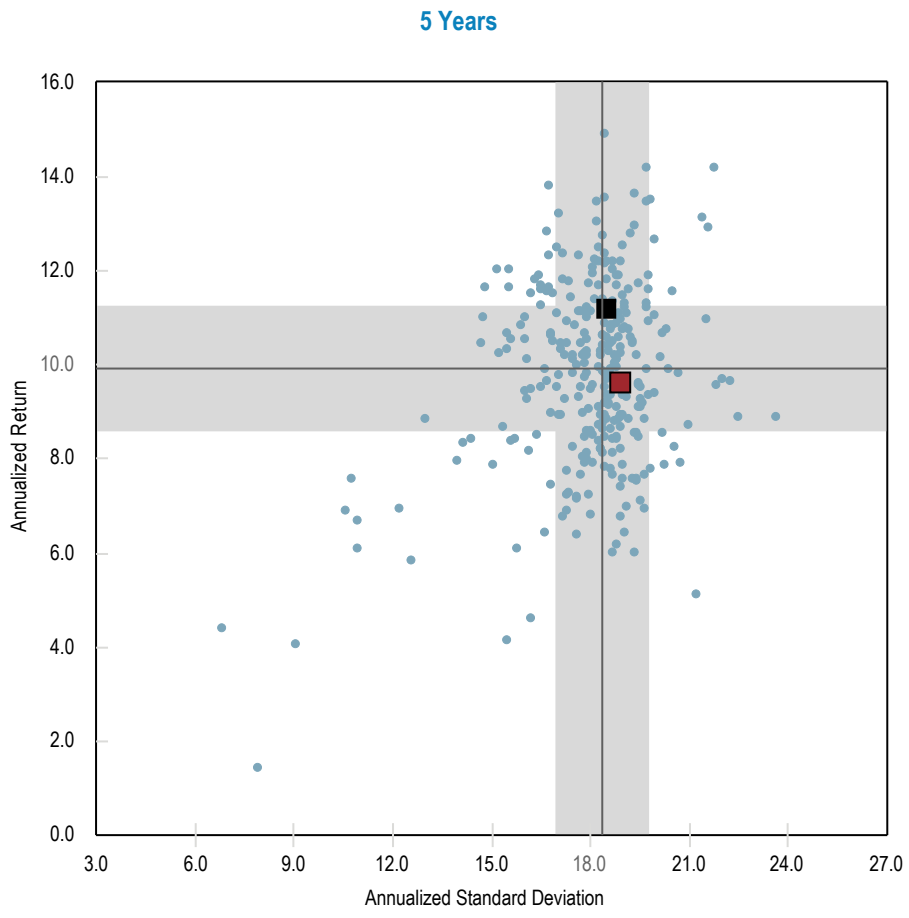


	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● PGIM QS US Core Equity	7.09 (27)	-7.89 (66)	18.86 (28)	9.62 (55)	11.23 (52)	11.69 (32)
▲ S&P 500 Index	7.50 (21)	-7.73 (65)	18.60 (33)	11.19 (24)	12.42 (22)	12.24 (16)
5th Percentile	9.88	-1.35	22.03	12.84	13.77	13.11
1st Quartile	7.19	-4.54	19.00	11.15	12.23	11.89
Median	5.57	-6.83	17.48	9.94	11.28	11.26
3rd Quartile	3.27	-8.67	15.96	8.56	10.17	10.03
95th Percentile	0.08	-12.14	12.27	6.71	7.83	8.18
Population	329	326	317	300	272	231



	3 Mo	2022	2021	2020	2019	2018	2017	2016	2015	2014
● PGIM QS US Core Equity	7.09 (27)	-16.30 (49)	29.78 (20)	11.96 (71)	28.55 (58)	-6.79 (71)	22.12 (40)	12.12 (27)	1.78 (34)	15.25 (15)
▲ S&P 500 Index	7.50 (21)	-18.11 (64)	28.71 (30)	18.40 (37)	31.49 (30)	-4.38 (39)	21.83 (44)	11.96 (29)	1.38 (41)	13.69 (31)
5th Percentile	9.88	-4.91	32.57	29.15	35.81	0.43	27.59	16.19	6.16	17.30
1st Quartile	7.19	-12.37	29.20	20.66	31.89	-2.90	23.58	12.33	2.57	14.22
Median	5.57	-16.53	26.92	15.41	29.40	-5.20	21.40	9.89	0.70	12.18
3rd Quartile	3.27	-19.17	23.59	10.95	26.57	-7.37	18.94	7.41	-1.39	10.49
95th Percentile	0.08	-23.17	18.03	3.80	19.06	-10.90	13.21	3.32	-5.76	7.06
Population	329	341	356	373	382	386	389	388	391	391





3 Years

	Return	Standard Deviation	Sharpe Ratio
PGIM QS US Core Equity	18.86	18.49	0.98
S&P 500 Index	18.60	18.96	0.95

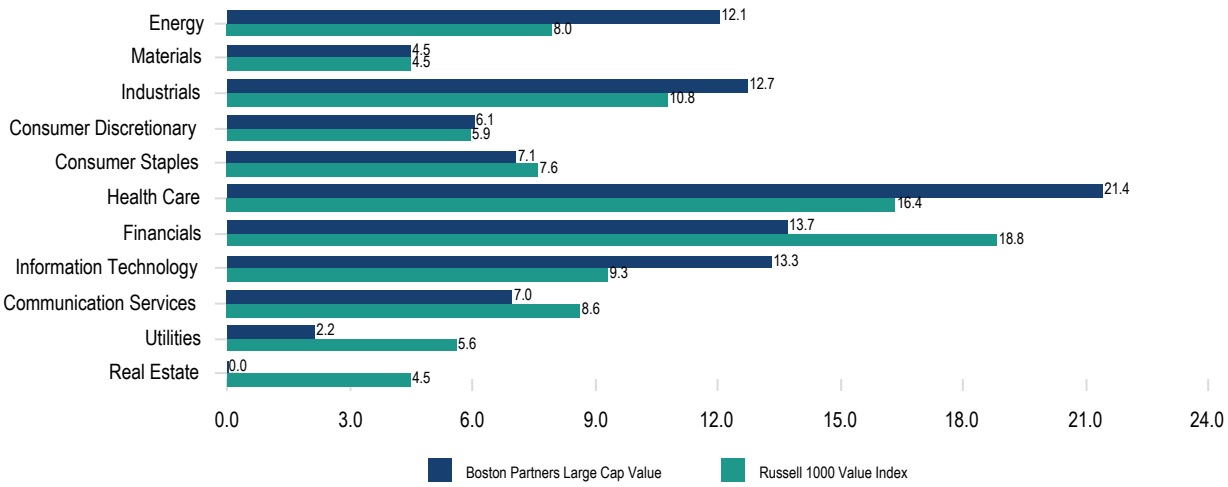
5 Years

	Return	Standard Deviation	Sharpe Ratio
PGIM QS US Core Equity	9.62	18.89	0.51
S&P 500 Index	11.19	18.48	0.59

Characteristics

	Portfolio	Benchmark
Number of Stocks	84	849
Wtd. Avg. Mkt. Cap $B	153.5	152.9
Median Mkt. Cap $B	48.0	11.5
Price/Earnings ratio	16.13	15.93
Price/Book ratio	2.70	2.49
Return on Equity (%)	0.31	3.48
Current Yield (%)	2.05	2.32
Beta (5 Years, Monthly)	1.03	1.00
R-Squared (5 Years, Monthly)	0.98	1.00

Sector Allocation (%)



Largest Equity Holdings

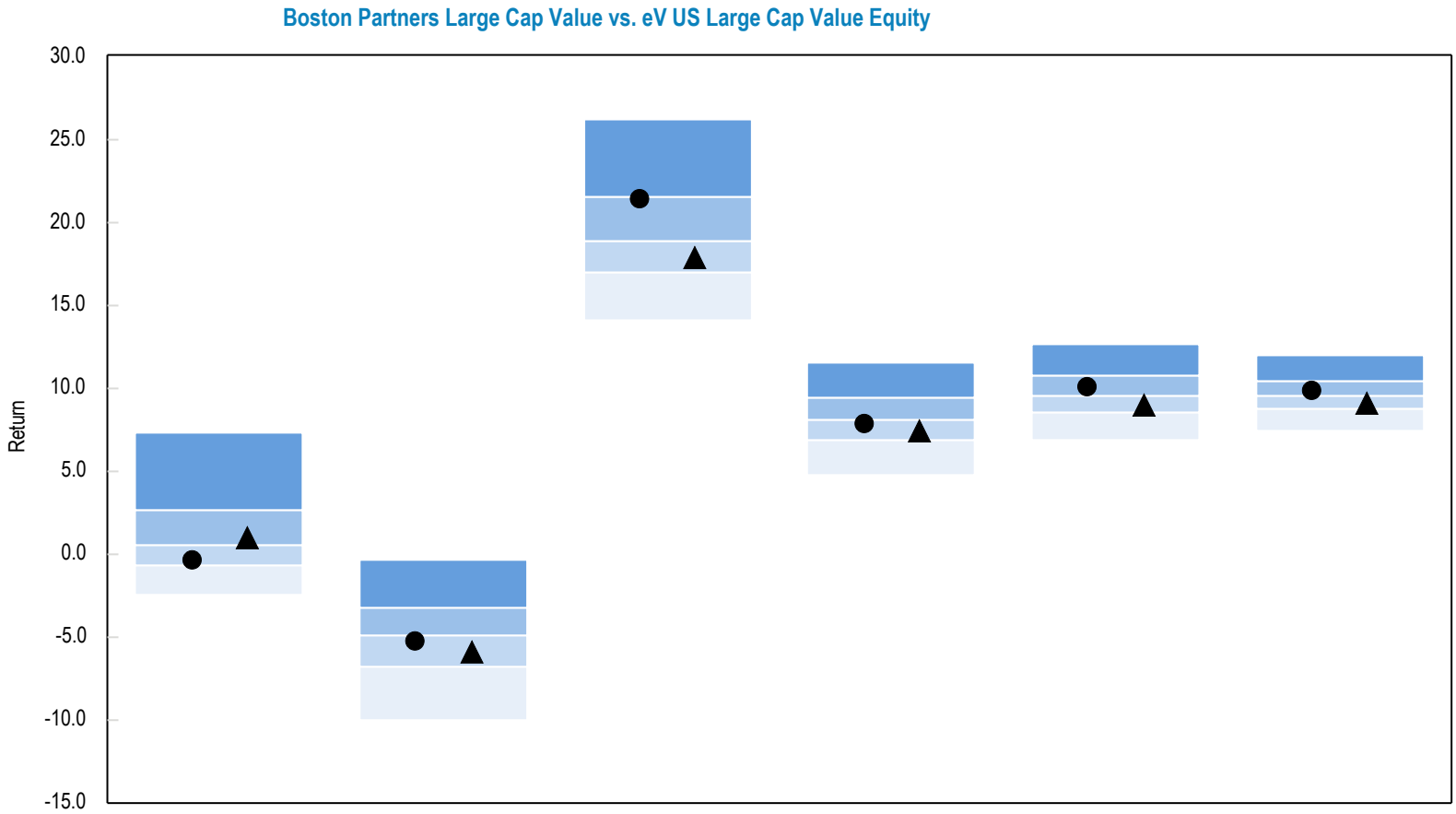
	Wgt (%)	Return (%)
JPMorgan Chase & Co	3.77	-2.11
Alphabet Inc	3.47	17.57
Bristol-Myers Squibb Co	3.36	-2.91
Johnson & Johnson	3.23	-11.64
Sanofi	3.14	12.37
Cisco Systems Inc	2.82	10.61
AutoZone Inc	2.56	-0.33
Activision Blizzard Inc	2.29	11.81
Marathon Petroleum Corp	2.28	16.53
Keurig Dr Pepper Inc	2.18	0.06

Top Contributors

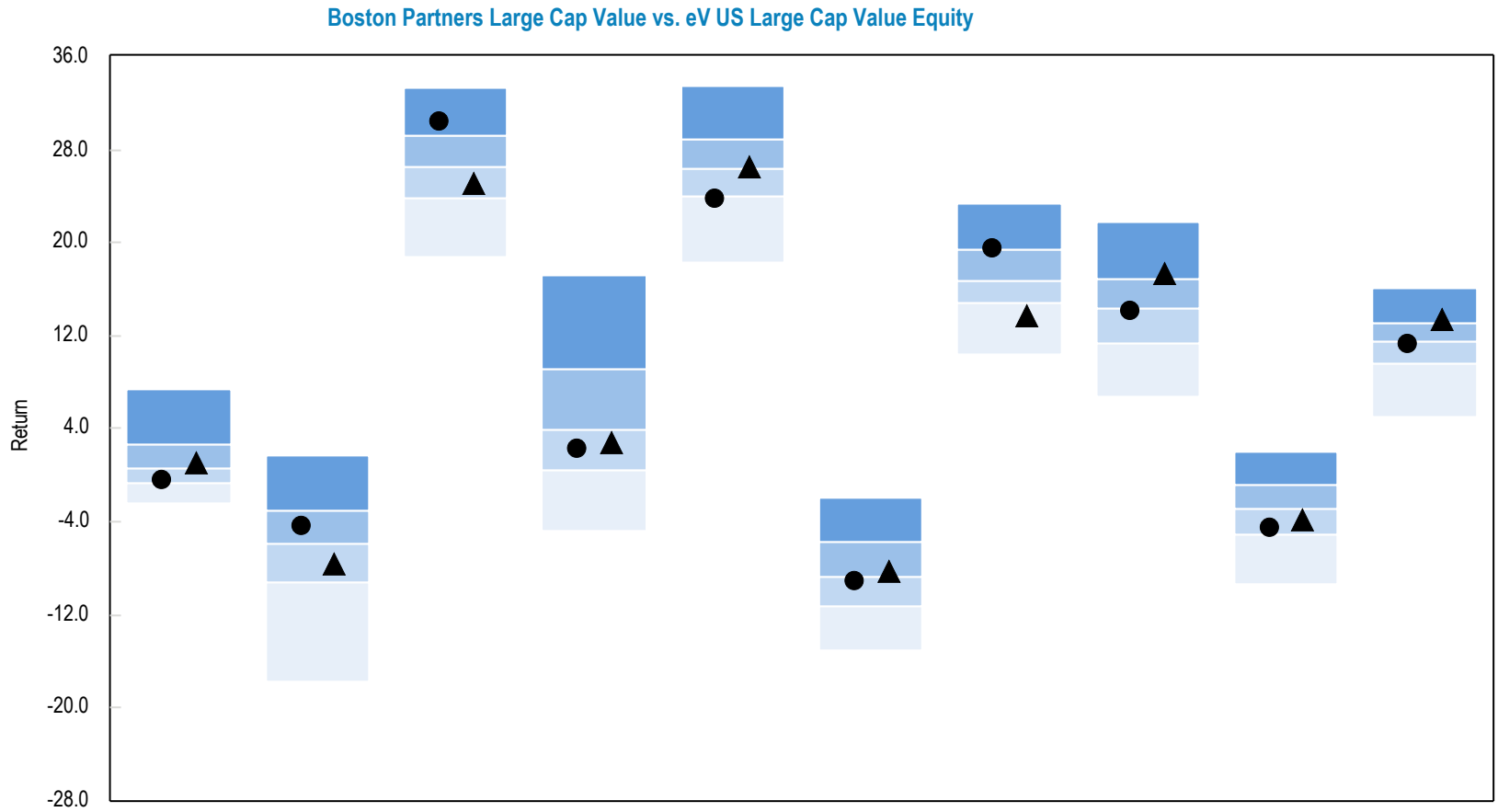
	Wgt (%)	Return (%)	Contr (%)
Alphabet Inc	2.33	17.57	0.41
Sanofi	2.76	12.37	0.34
Advanced Micro Devices Inc	0.66	51.32	0.34
CRH PLC	1.05	30.54	0.32
Marathon Petroleum Corp	1.94	16.53	0.32
Applied Materials Inc	1.08	26.43	0.28
QUALCOMM Inc.	1.64	16.75	0.28
Cisco Systems Inc	2.17	10.61	0.23
Booking Holdings Inc	0.65	31.61	0.21
Microchip Technology Inc	0.95	19.77	0.19

Bottom Contributors

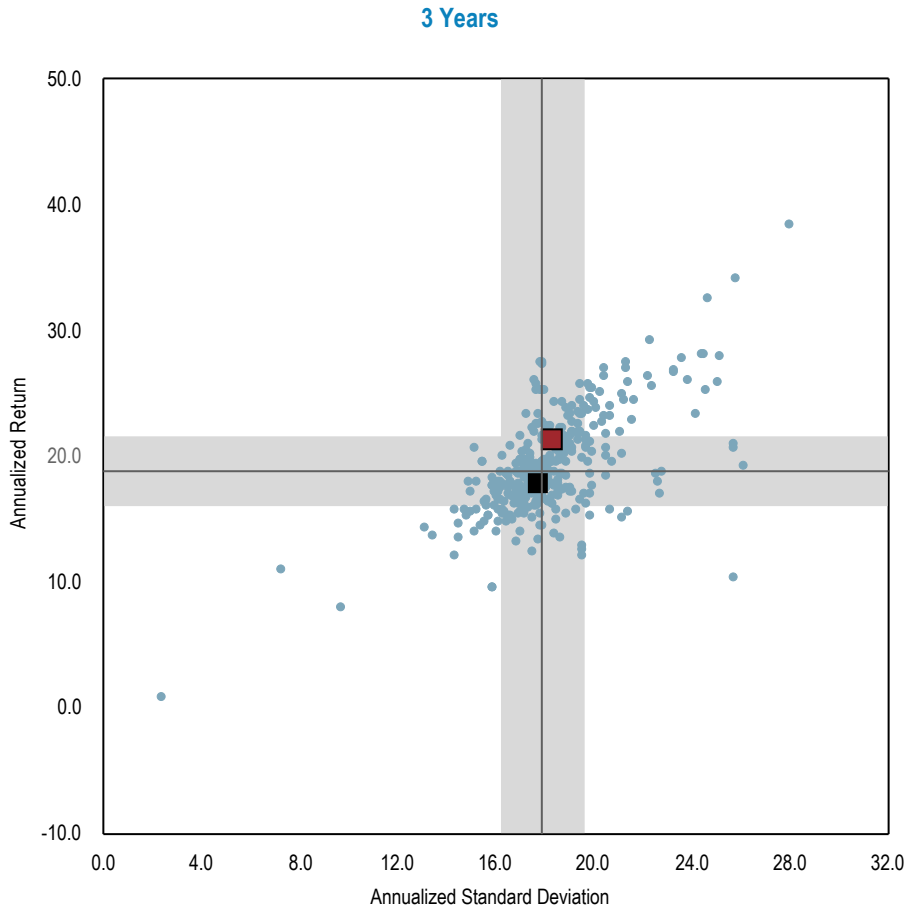
	Wgt (%)	Return (%)	Contr (%)
Schwab (Charles) Corp	2.57	-36.89	-0.95
The Cigna Group	2.50	-22.54	-0.56
CVS Health Corp	2.48	-19.71	-0.49
Johnson & Johnson	4.10	-11.64	-0.48
Centene Corp	1.95	-22.92	-0.45
Conocophillips	2.64	-15.02	-0.40
Bank of America Corp	1.82	-13.08	-0.24
Unitedhealth Group Inc	2.13	-10.54	-0.22
Wells Fargo & Co	2.24	-8.90	-0.20
Devon Energy Corp	1.15	-16.23	-0.19

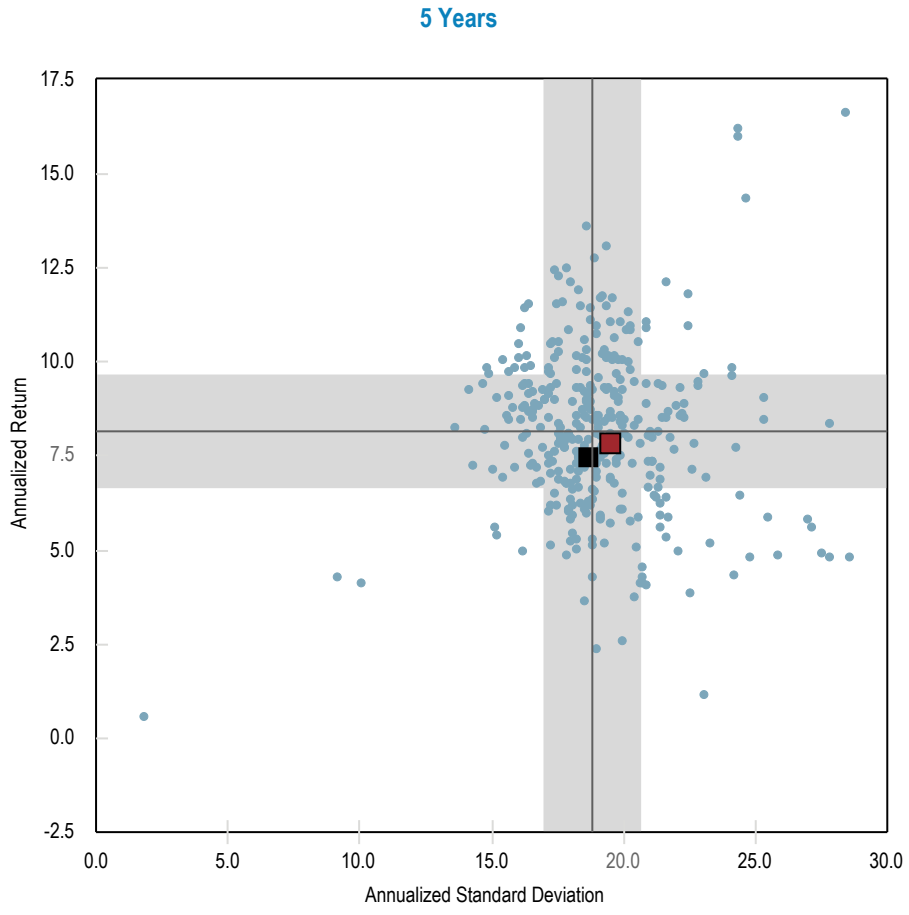


	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● Boston Partners Large Cap Value	-0.38 (68)	-5.19 (57)	21.43 (27)	7.84 (58)	10.15 (37)	9.86 (41)
▲ Russell 1000 Value Index	1.01 (43)	-5.91 (66)	17.93 (63)	7.50 (65)	9.02 (66)	9.13 (65)
5th Percentile	7.36	-0.32	26.26	11.60	12.63	11.98
1st Quartile	2.68	-3.23	21.55	9.41	10.79	10.43
Median	0.55	-4.89	18.88	8.16	9.59	9.58
3rd Quartile	-0.71	-6.73	16.96	6.87	8.52	8.74
95th Percentile	-2.46	-10.03	14.13	4.82	6.90	7.43
Population	378	376	364	355	336	317



	3 Mo	2022	2021	2020	2019	2018	2017	2016	2015	2014
● Boston Partners Large Cap Value	-0.38 (68)	-4.26 (35)	30.43 (17)	2.38 (60)	23.81 (76)	-9.00 (55)	19.58 (25)	14.19 (51)	-4.38 (70)	11.33 (52)
▲ Russell 1000 Value Index	1.01 (43)	-7.54 (65)	25.16 (66)	2.80 (58)	26.54 (48)	-8.27 (45)	13.66 (85)	17.34 (21)	-3.83 (65)	13.45 (23)
5th Percentile	7.36	1.74	33.38	17.23	33.40	-2.00	23.39	21.75	1.96	16.14
1st Quartile	2.68	-3.07	29.19	9.12	28.88	-5.69	19.46	16.93	-0.79	13.16
Median	0.55	-5.86	26.54	3.91	26.31	-8.72	16.78	14.28	-2.92	11.49
3rd Quartile	-0.71	-9.24	23.77	0.48	23.92	-11.29	14.75	11.27	-5.04	9.64
95th Percentile	-2.46	-17.74	18.78	-4.72	18.38	-15.05	10.47	6.84	-9.34	5.06
Population	378	384	400	406	432	443	446	452	464	461



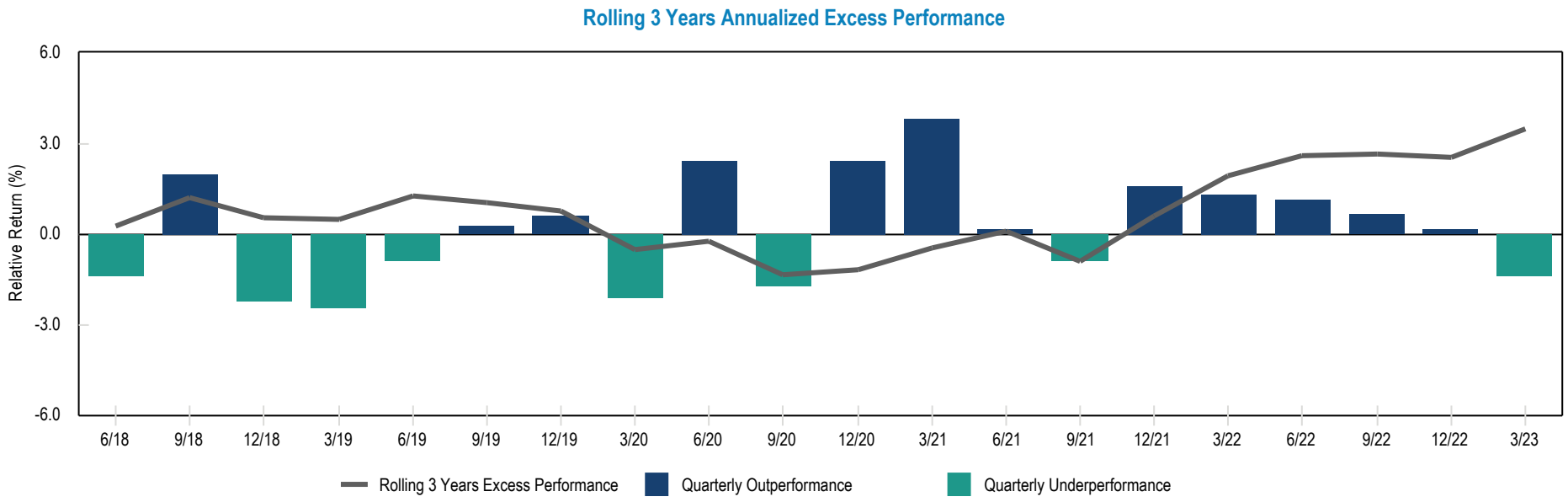


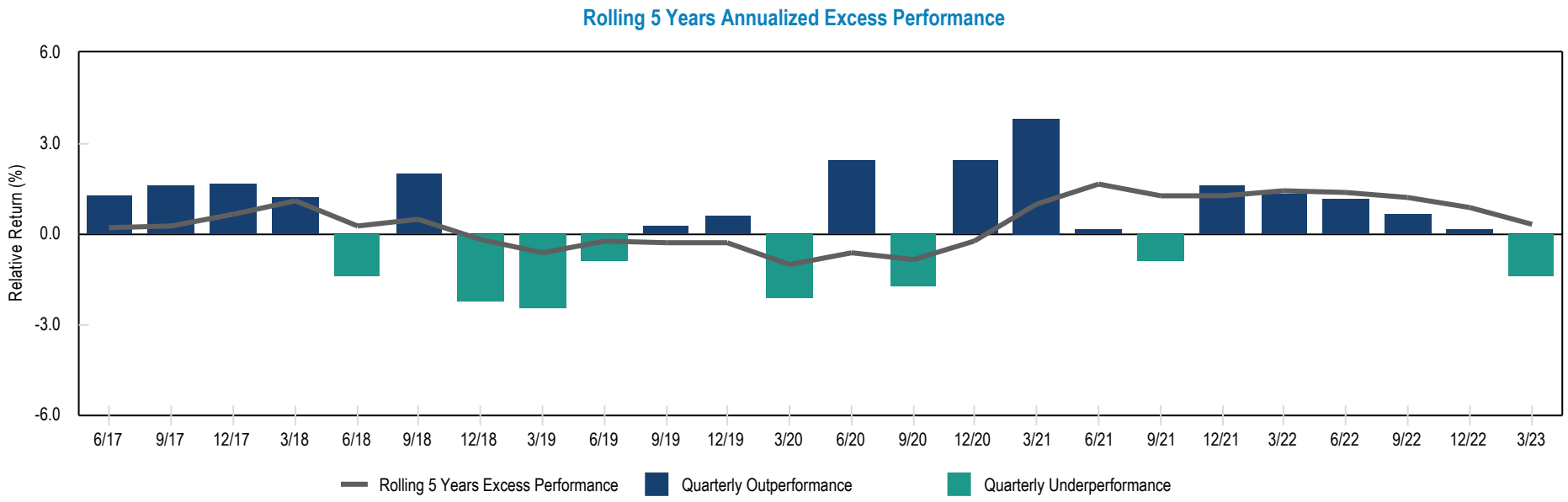
3 Years

	Return	Standard Deviation	Sharpe Ratio
Boston Partners Large Cap Value	21.43	18.31	1.10
Russell 1000 Value Index	17.93	17.68	0.97

5 Years

	Return	Standard Deviation	Sharpe Ratio
Boston Partners Large Cap Value	7.84	19.52	0.41
Russell 1000 Value Index	7.50	18.66	0.41



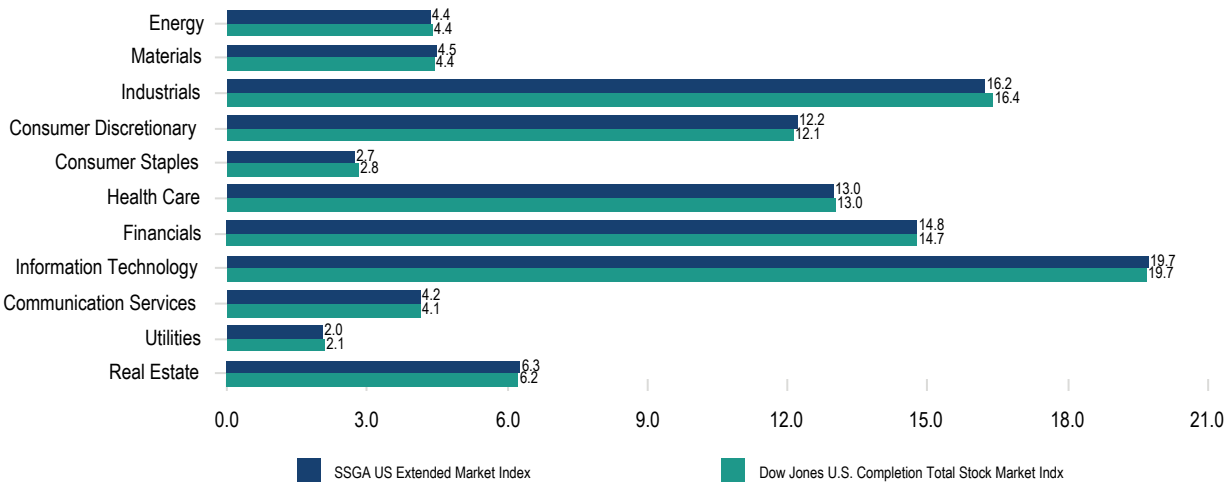


Holdings as of 9/30/22.

Characteristics

	Portfolio	Benchmark
Number of Stocks	3,615	3,719
Wtd. Avg. Mkt. Cap $B	11.2	11.1
Median Mkt. Cap $B	0.5	0.5
Price/Earnings ratio	14.25	14.30
Price/Book ratio	2.90	2.89
Return on Equity (%)	-1.94	-2.01
Current Yield (%)	1.40	1.40
Beta	-	1.00
R-Squared	-	-

Sector Allocation (%)



Largest Equity Holdings

	Wgt (%)	Return (%)
Uber Technologies Inc	1.06	28.18
Blackstone Inc	1.04	19.51
Palo Alto Networks Inc	1.01	43.14
Airbnb Inc	0.83	45.50
Snowflake Inc	0.74	7.49
Lululemon Athletica Inc	0.70	13.67
Workday Inc	0.70	23.43
Cheniere Energy Inc.	0.65	5.37
Marvell Technology Inc	0.62	17.10
Block Inc	0.62	9.25

Top Contributors

	Wgt (%)	Return (%)	Contr (%)
Palo Alto Networks Inc	0.72	43.14	0.31
Airbnb Inc	0.59	45.50	0.27
Uber Technologies Inc	0.85	28.18	0.24
Seagen Inc	0.31	57.55	0.18
Blackstone Inc	0.90	19.51	0.18
Workday Inc	0.58	23.43	0.14
Trade Desk Inc (The)	0.34	35.87	0.12
CrowdStrike Holdings Inc	0.39	30.36	0.12
HubSpot Inc	0.24	48.29	0.12
Atlassian Corp	0.33	33.02	0.11

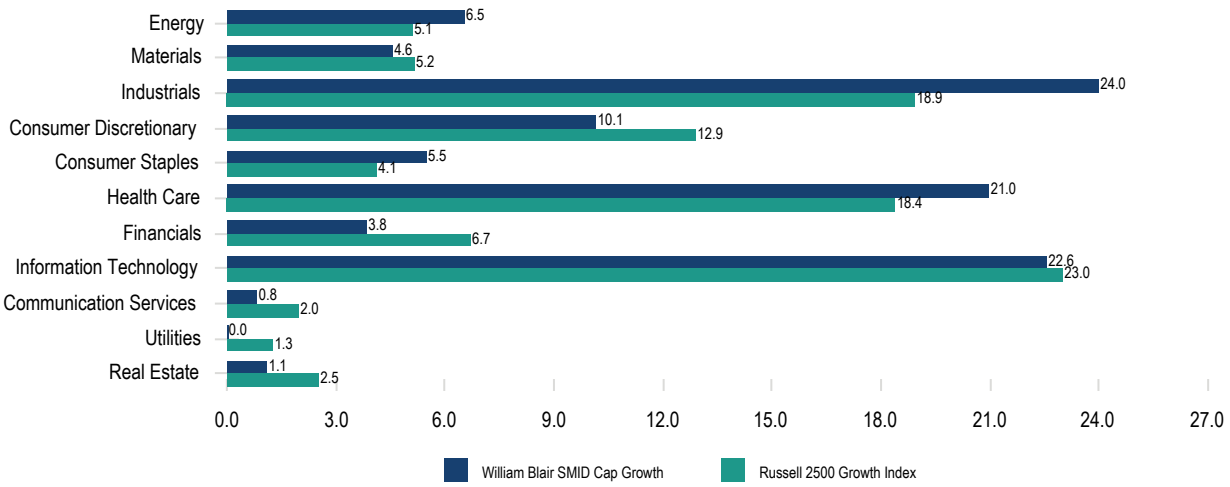
Bottom Contributors

	Wgt (%)	Return (%)	Contr (%)
Alnylam Pharmaceuticals Inc	0.51	-15.71	-0.08
Texas Pacific Land Corp	0.25	-27.31	-0.07
First Horizon Corp	0.23	-26.73	-0.06
Ovintiv Inc	0.22	-28.37	-0.06
BILL Holdings Inc	0.18	-25.53	-0.05
Halozyme Therapeutics Inc	0.14	-32.88	-0.05
Western Alliance Bancorporation	0.11	-40.04	-0.04
United Therapeutics Corp	0.22	-19.46	-0.04
Antero Resources Corporation	0.15	-25.49	-0.04
Chesapeake Energy Corp	0.18	-18.11	-0.03

Characteristics

	Portfolio	Benchmark
Number of Stocks	73	1,323
Wtd. Avg. Mkt. Cap $B	8.3	6.1
Median Mkt. Cap $B	6.3	1.6
Price/Earnings ratio	21.96	17.24
Price/Book ratio	4.28	4.17
Return on Equity (%)	2.61	0.62
Current Yield (%)	0.65	0.86
Beta (5 Years, Monthly)	0.92	1.00
R-Squared (5 Years, Monthly)	0.96	1.00

Sector Allocation (%)



Largest Equity Holdings

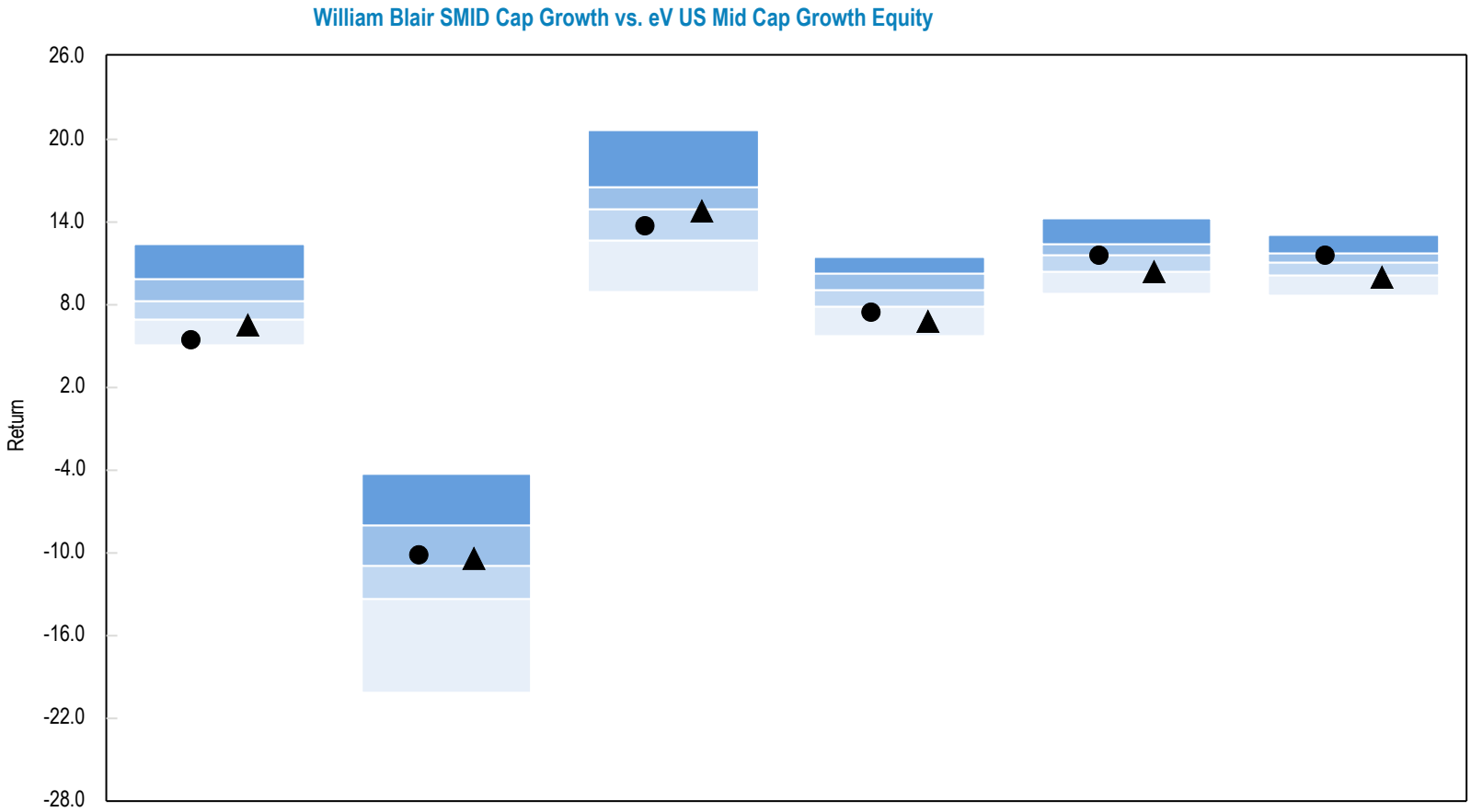
	Wgt (%)	Return (%)
BWX Technologies Inc	3.19	8.94
Builders FirstSource Inc	3.05	36.84
Axon Enterprise Inc	2.74	35.51
Chemed Corp	2.74	5.43
Euronet Worldwide Inc	2.34	18.56
Encompass Health Corp	2.22	-9.30
Penumbra Inc	2.19	25.28
Mercury Systems Inc	2.16	14.26
Lancaster Colony Corp	2.14	3.29
Brink's Co (The)	2.10	24.75

Top Contributors

	Wgt (%)	Return (%)	Contr (%)
Axon Enterprise Inc	3.01	35.51	1.07
Builders FirstSource Inc	2.83	36.84	1.04
National Instruments Corporation	1.52	42.78	0.65
Penumbra Inc	1.85	25.28	0.47
Brink's Co (The)	1.84	24.75	0.46
Fox Factory Holding Corp	1.27	33.04	0.42
Euronet Worldwide Inc	2.06	18.56	0.38
Ares Management Corp	1.64	23.15	0.38
PagerDuty Inc	1.02	31.70	0.32
Guidewire Software Inc	0.97	31.15	0.30

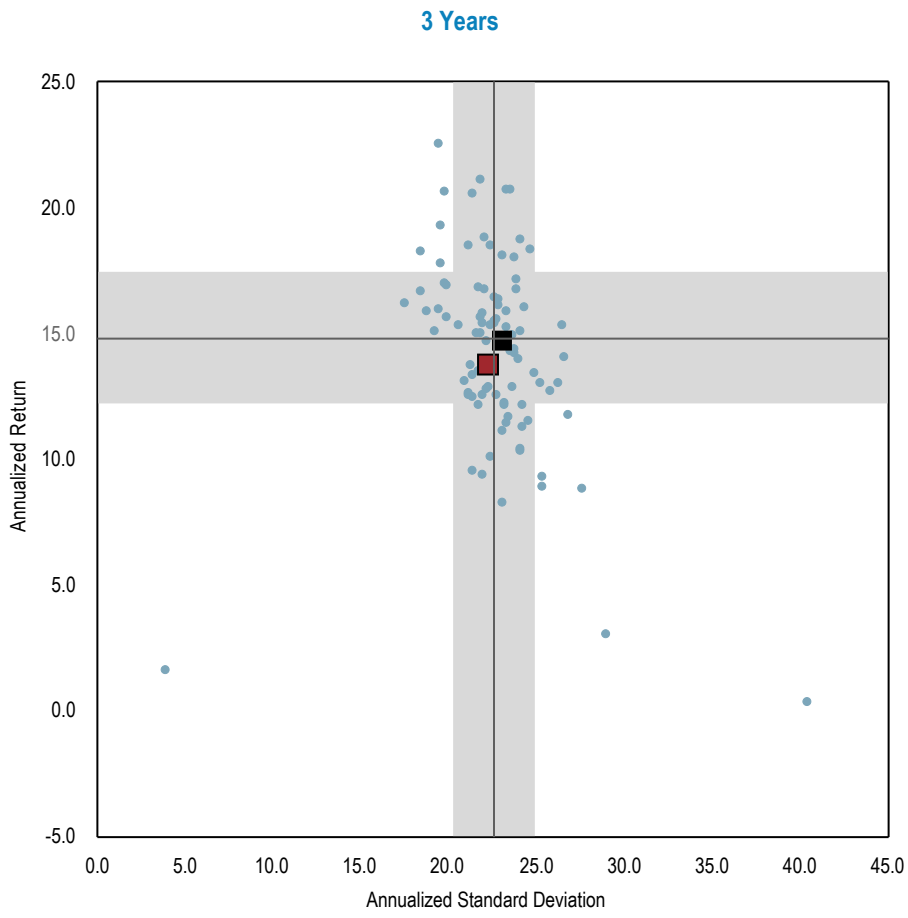
Bottom Contributors

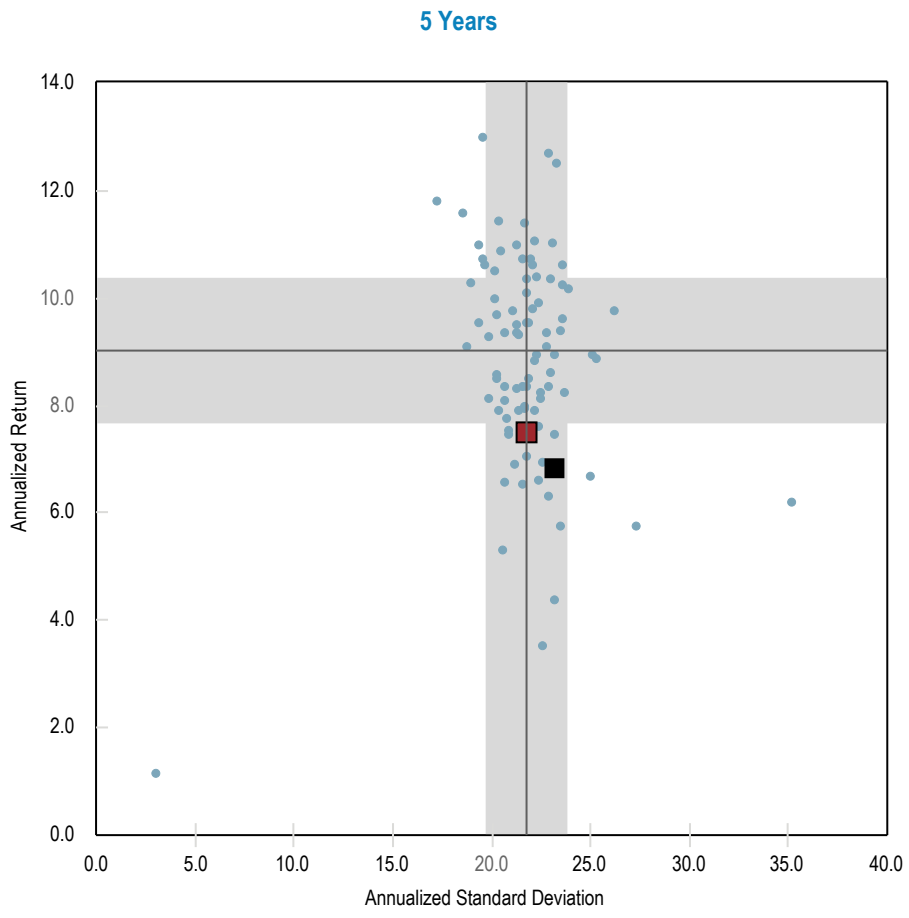
	Wgt (%)	Return (%)	Contr (%)
National Vision Holdings Inc	2.63	-51.39	-1.35
Halozyme Therapeutics Inc	2.04	-32.88	-0.67
Western Alliance Bancorporation	1.35	-40.04	-0.54
Acadia Healthcare Co Inc	2.55	-12.23	-0.31
New Fortress Energy Inc	1.08	-24.60	-0.27
Azenta Inc	0.95	-23.36	-0.22
Globus Medical Inc	0.84	-23.74	-0.20
Encompass Health Corp	2.09	-9.30	-0.19
CF Industries Holdings Inc	1.21	-14.52	-0.18
Twist Bioscience Corp	0.42	-36.66	-0.15



	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● William Blair SMID Cap Growth	5.43 (92)	-10.07 (43)	13.77 (60)	7.50 (82)	11.59 (51)	11.54 (35)
▲ Russell 2500 Growth Index	6.54 (85)	-10.35 (47)	14.75 (51)	6.82 (87)	10.39 (77)	10.05 (78)
5th Percentile	12.43	-4.33	20.69	11.51	14.32	13.12
1st Quartile	9.84	-8.03	16.52	10.28	12.37	11.77
Median	8.30	-10.93	14.87	9.03	11.63	11.05
3rd Quartile	6.98	-13.37	12.60	7.91	10.42	10.14
95th Percentile	5.04	-20.07	8.95	5.75	8.79	8.60
Population	100	99	94	90	85	81

	3 Mo	2022	2021	2020	2019	2018	2017	2016	2015	2014
● William Blair SMID Cap Growth	5.43 (92)	-22.67 (18)	8.67 (79)	32.60 (64)	31.10 (74)	-1.74 (32)	29.31 (18)	7.24 (26)	5.19 (9)	8.78 (40)
▲ Russell 2500 Growth Index	6.54 (85)	-26.21 (32)	5.04 (91)	40.47 (37)	32.65 (63)	-7.47 (78)	24.46 (59)	9.73 (14)	-0.19 (56)	7.05 (63)
5th Percentile	12.43	-16.40	24.17	65.98	42.99	3.36	33.92	13.28	6.46	14.12
1st Quartile	9.84	-24.88	19.20	44.20	38.14	-0.84	28.34	7.29	2.37	10.34
Median	8.30	-28.09	14.60	35.32	35.04	-4.22	25.08	4.86	0.33	7.91
3rd Quartile	6.98	-32.50	10.12	30.46	30.57	-7.12	22.27	2.25	-2.28	5.35
95th Percentile	5.04	-37.75	2.43	17.33	23.53	-10.73	16.90	-4.67	-7.49	1.16
Population	100	101	103	108	108	113	116	122	129	129



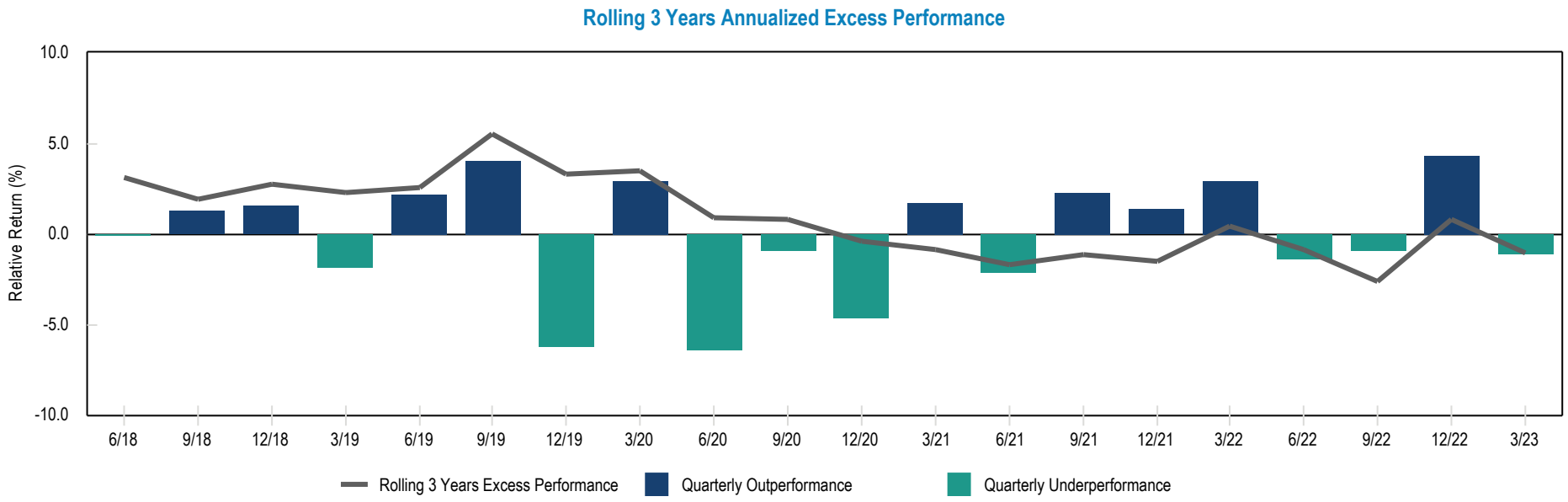


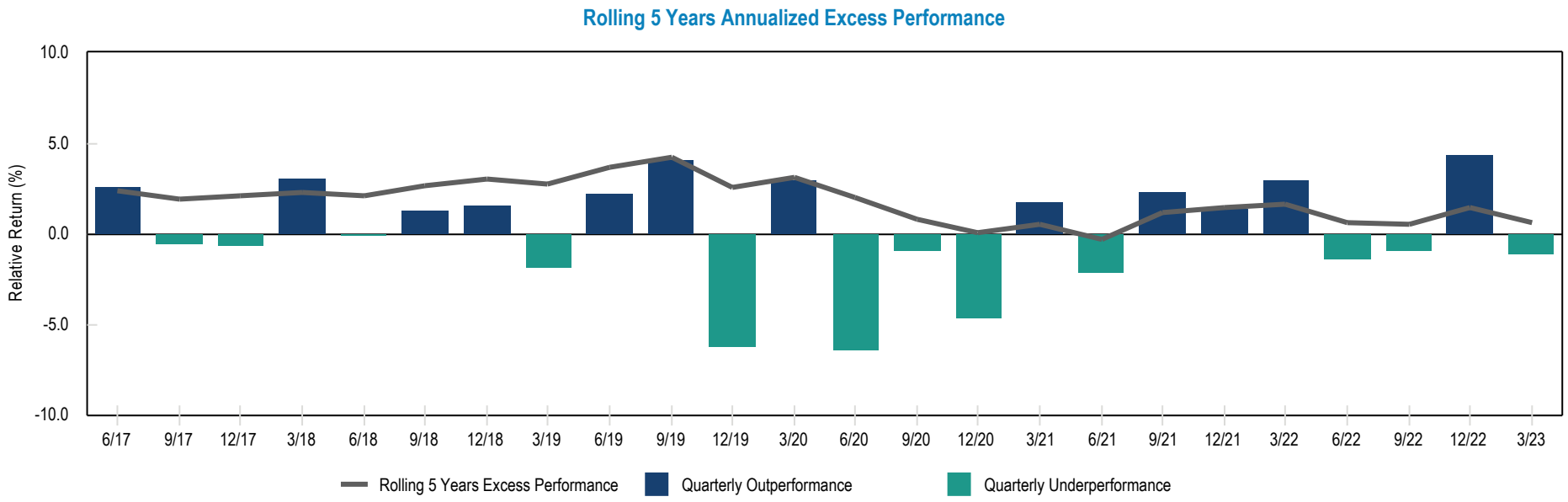
3 Years

	Return	Standard Deviation	Sharpe Ratio
William Blair SMID Cap Growth	13.77	22.26	0.65
Russell 2500 Growth Index	14.75	23.01	0.67

5 Years

	Return	Standard Deviation	Sharpe Ratio
William Blair SMID Cap Growth	7.50	21.80	0.38
Russell 2500 Growth Index	6.82	23.22	0.34

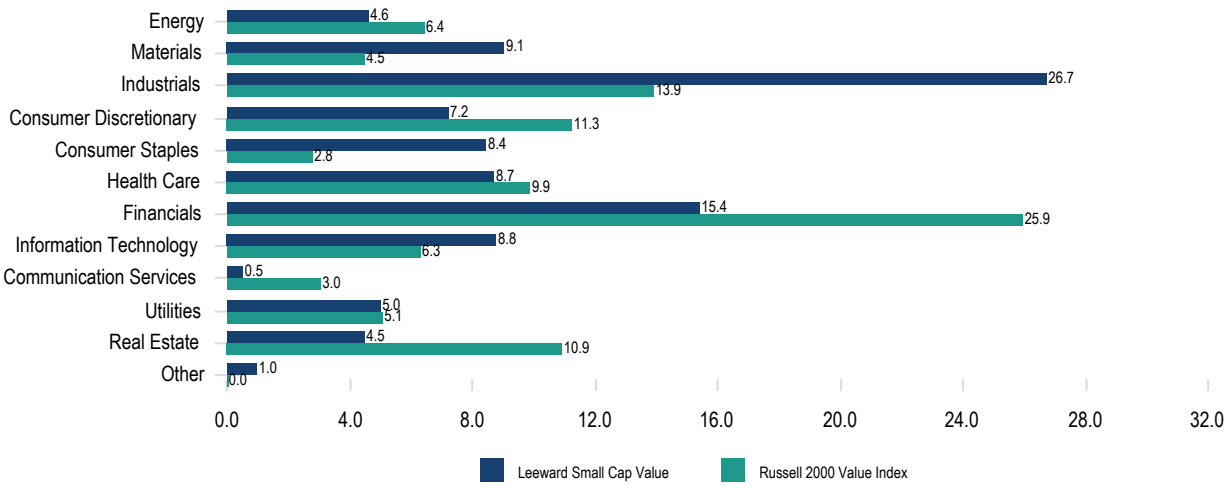

Rolling 3 Years Annualized Excess Performance
10.0
5.0
0.0
-5.0
-10.0
Relative Return (%)
6/18
9/18
12/18
3/19
6/19
9/19
12/19
3/20
6/20
9/20
12/20
3/21
6/21
9/21
12/21
3/22
6/22
9/22
12/22
3/23
Rolling 3 Years Excess Performance
Quarterly Outperformance
Quarterly Underperformance


Rolling 5 Years Annualized Excess Performance
10.0
5.0
0.0
-5.0
-10.0
Relative Return (%)
6/17
9/17
12/17
3/18
6/18
9/18
12/18
3/19
6/19
9/19
12/19
3/20
6/20
9/20
12/20
3/21
6/21
9/21
12/21
3/22
6/22
9/22
12/22
3/23
Rolling 5 Years Excess Performance
Quarterly Outperformance
Quarterly Underperformance

Characteristics

	Portfolio	Benchmark
Number of Stocks	87	1,363
Wtd. Avg. Mkt. Cap $B	4.3	2.4
Median Mkt. Cap $B	3.7	0.8
Price/Earnings ratio	14.78	10.02
Price/Book ratio	2.30	1.63
Return on Equity (%)	3.33	1.34
Current Yield (%)	1.55	2.38
Beta (5 Years, Monthly)	0.92	1.00
R-Squared (5 Years, Monthly)	0.96	1.00

Sector Allocation (%)



Largest Equity Holdings

	Wgt (%)	Return (%)
Huron Consulting Group Inc	2.92	10.70
Prestige Consumer Healthcare Inc	2.64	0.05
Regal Rexnord Corp	2.50	17.59
Clean Harbors Inc	2.47	24.92
O I Glass Inc	2.41	37.06
Portland General Electric Co	2.06	0.73
TreeHouse Foods Inc	1.95	2.13
Ingredion Inc	1.88	4.61
Wintrust Financial Corp.	1.81	-13.32
First Interstate BancSystem Inc	1.76	-21.76

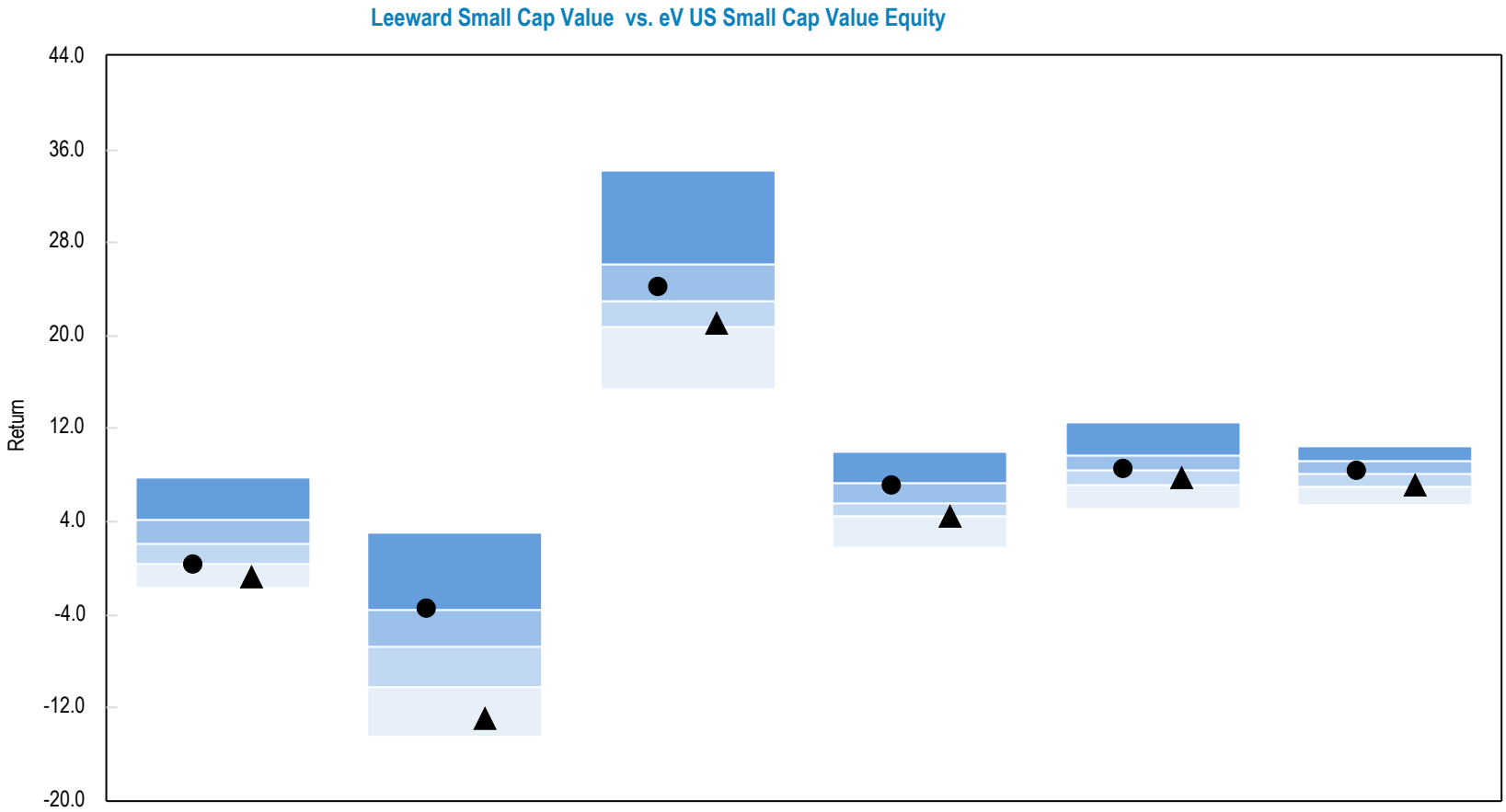
Top Contributors

	Wgt (%)	Return (%)	Contr (%)
O I Glass Inc	1.72	37.06	0.64
National Instruments Corporation	1.16	42.78	0.50
Clean Harbors Inc	1.93	24.92	0.48
Regal Rexnord Corp	2.08	17.59	0.37
Huron Consulting Group Inc	2.57	10.70	0.28
Primerica Inc	1.09	21.91	0.24
Belden Inc	1.13	20.76	0.23
Standex International Corp	1.18	19.84	0.23
Envista Holdings Corp	1.08	21.41	0.23
CIRCOR International Inc	0.70	29.88	0.21

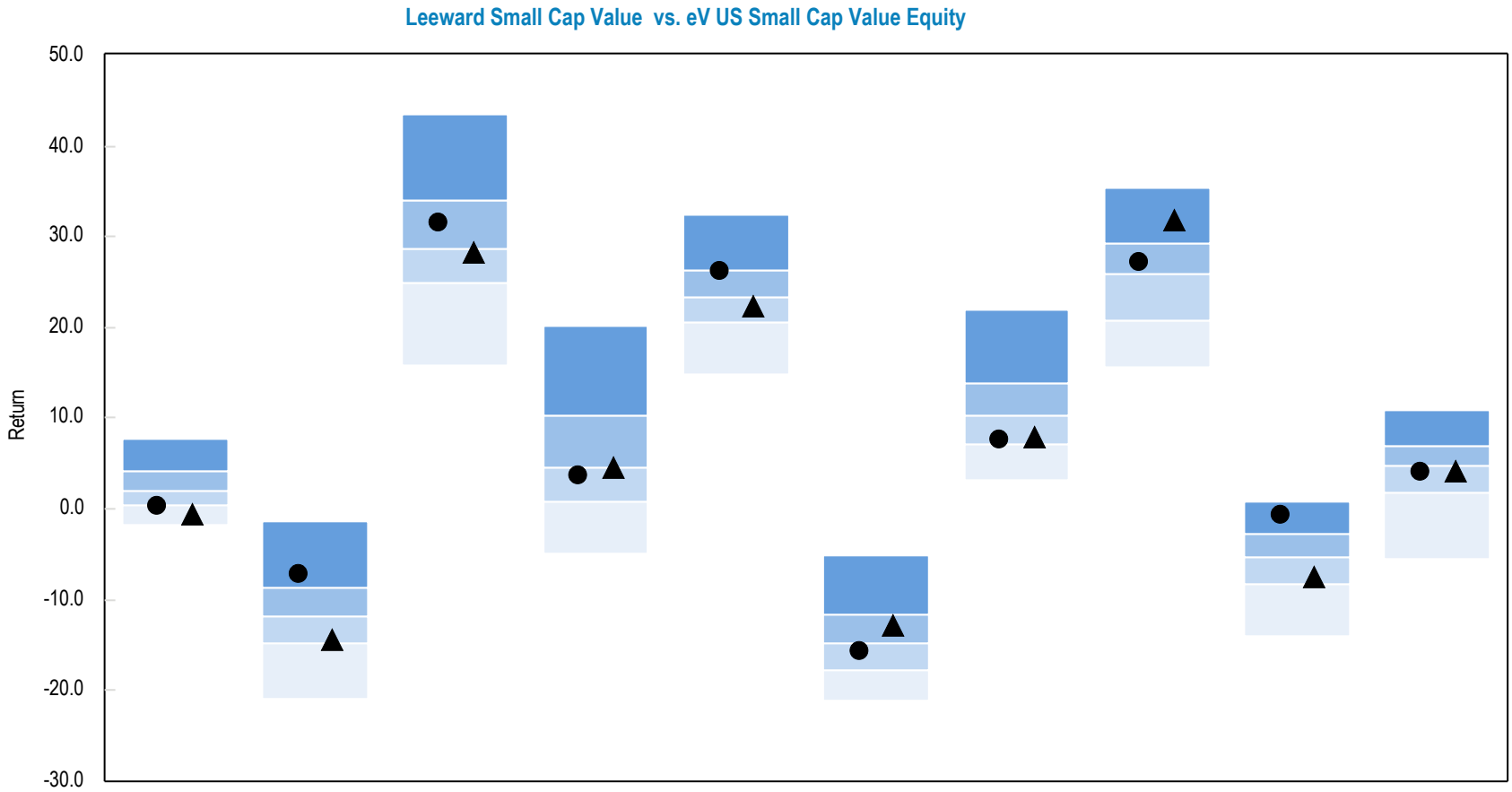
Bottom Contributors

	Wgt (%)	Return (%)	Contr (%)
Western Alliance Bancorporation	1.64	-40.04	-0.66
BankUnited Inc	1.77	-33.06	-0.58
Columbia Banking System Inc	1.82	-27.61	-0.50
First Interstate BancSystem Inc	2.23	-21.76	-0.48
PacWest Bancorp	0.80	-57.22	-0.46
Pinnacle Financial Partners Inc	1.54	-24.65	-0.38
Wintrust Financial Corp.	2.04	-13.32	-0.27
Helmerich & Payne Inc.	0.87	-27.12	-0.23
Cactus Inc	1.26	-17.78	-0.22
Encompass Health Corp	1.89	-9.30	-0.18

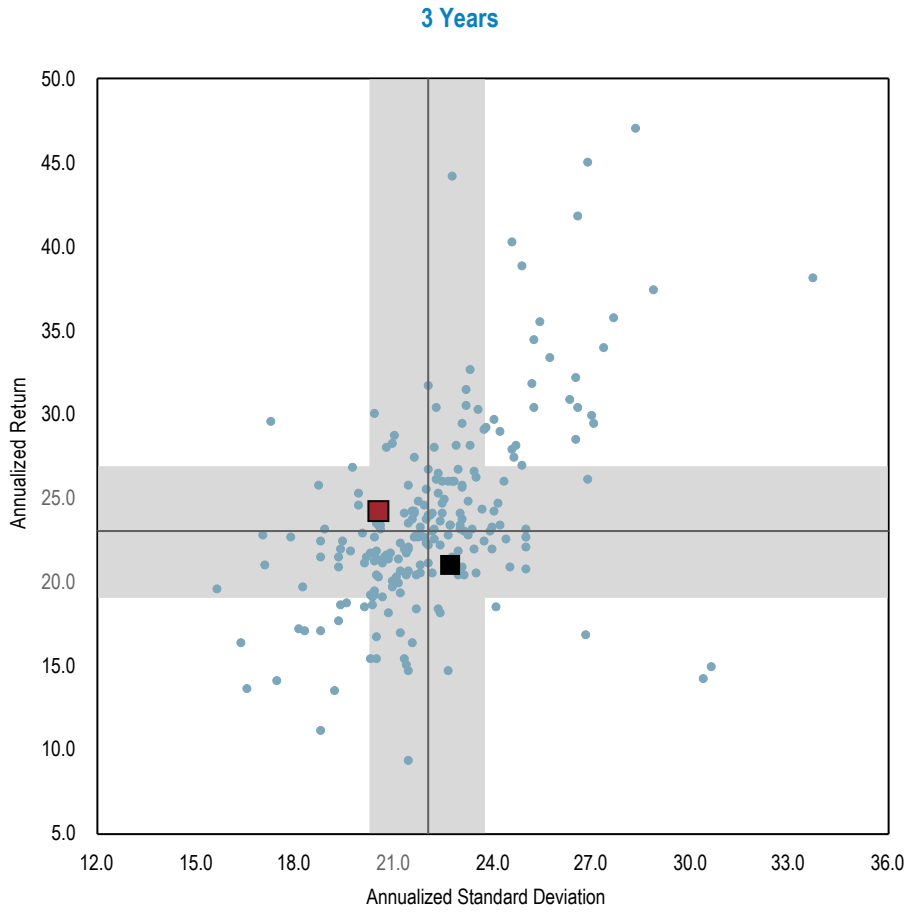
Holdings as of 9/30/2022.

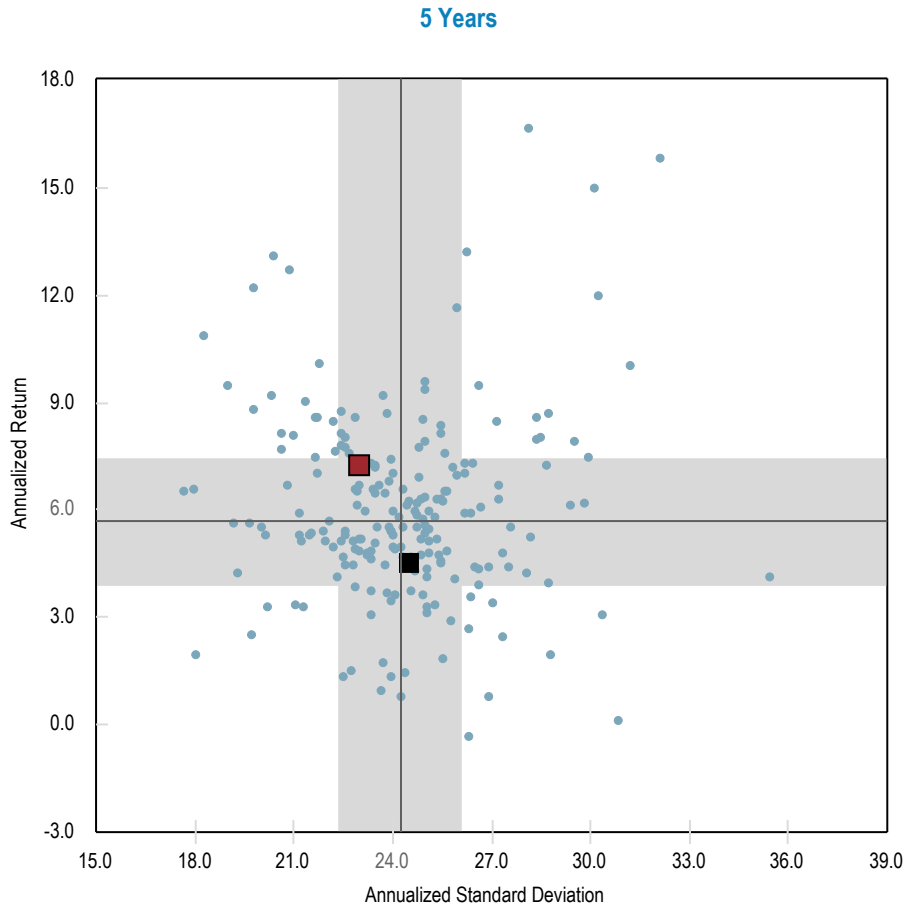


	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● Leeward Small Cap Value	0.44 (75)	-3.40 (25)	24.31 (35)	7.25 (27)	8.64 (46)	8.50 (42)
▲ Russell 2000 Value Index	-0.66 (87)	-12.96 (91)	21.01 (74)	4.55 (76)	7.86 (66)	7.22 (72)
5th Percentile	7.76	3.03	34.18	10.07	12.50	10.56
1st Quartile	4.14	-3.52	26.12	7.32	9.69	9.16
Median	2.09	-6.76	23.05	5.67	8.50	8.06
3rd Quartile	0.38	-10.14	20.76	4.55	7.21	7.07
95th Percentile	-1.74	-14.43	15.45	1.88	5.11	5.44
Population	219	218	214	207	199	181



	3 Mo	2022	2021	2020	2019	2018	2017	2016	2015	2014
● Leeward Small Cap Value	0.44 (75)	-7.09 (18)	31.60 (38)	3.78 (57)	26.32 (24)	-15.49 (58)	7.67 (71)	27.28 (38)	-0.52 (9)	4.12 (58)
▲ Russell 2000 Value Index	-0.66 (87)	-14.48 (73)	28.27 (52)	4.63 (50)	22.39 (60)	-12.86 (34)	7.84 (70)	31.74 (14)	-7.47 (72)	4.22 (56)
5th Percentile	7.76	-1.38	43.56	20.19	32.43	-5.17	21.95	35.37	0.86	10.83
1st Quartile	4.14	-8.69	33.95	10.24	26.25	-11.70	13.83	29.34	-2.80	6.85
Median	2.09	-11.78	28.68	4.62	23.37	-14.85	10.24	25.97	-5.26	4.74
3rd Quartile	0.38	-14.87	24.94	0.73	20.53	-17.67	7.15	20.79	-8.20	1.77
95th Percentile	-1.74	-20.93	15.88	-4.85	14.75	-21.14	3.13	15.60	-13.98	-5.46
Population	219	224	235	246	252	259	269	268	270	276



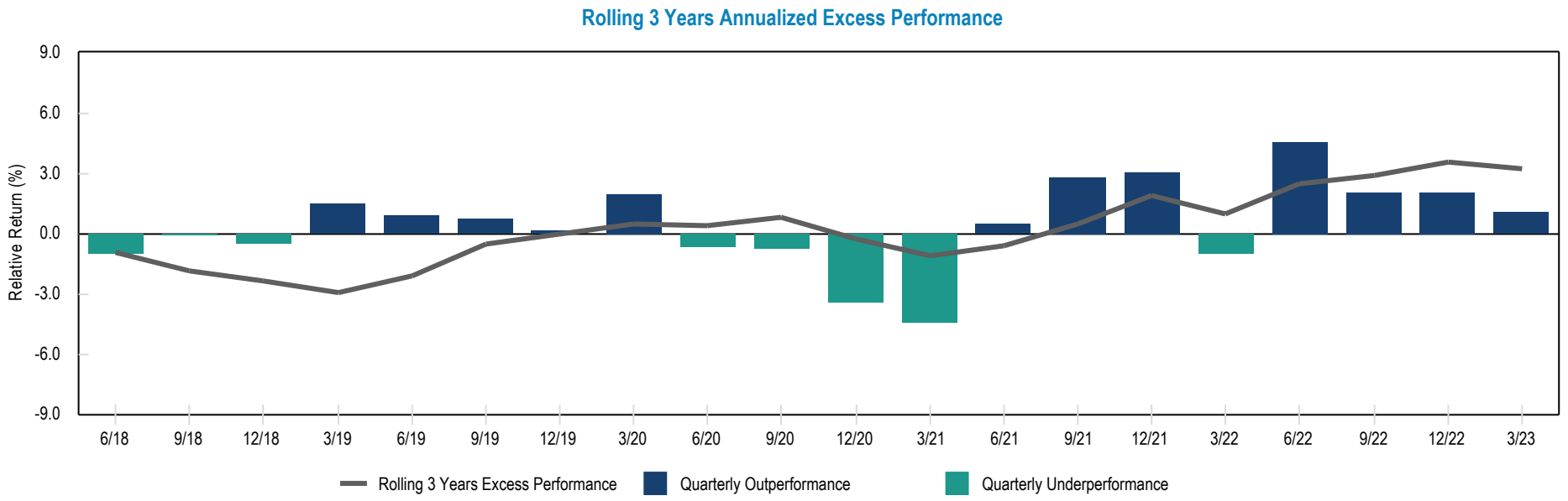


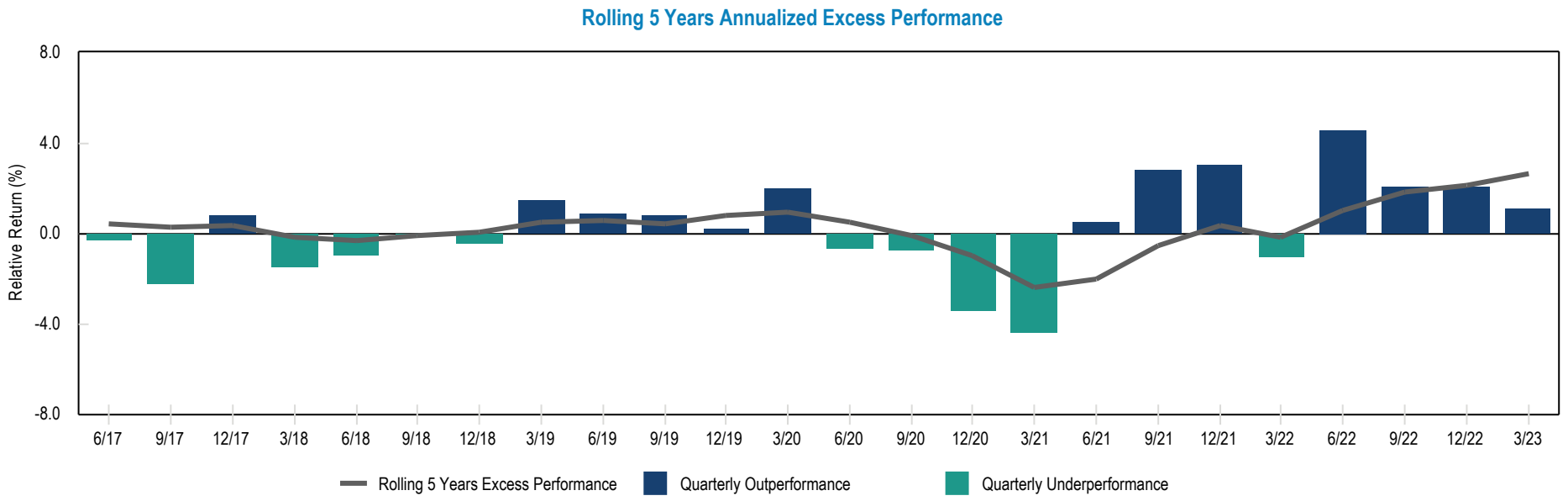
3 Years

	Return	Standard Deviation	Sharpe Ratio
Leeward Small Cap Value	24.31	20.52	1.12
Russell 2500 Value Index	21.01	22.70	0.91

5 Years

	Return	Standard Deviation	Sharpe Ratio
Leeward Small Cap Value	7.25	22.98	0.36
Russell 2500 Value Index	4.55	24.49	0.25


Rolling 3 Years Annualized Excess Performance
9.0
6.0
3.0
0.0
-3.0
-6.0
-9.0
Relative Return (%)
6/18
9/18
12/18
3/19
6/19
9/19
12/19
3/20
6/20
9/20
12/20
3/21
6/21
9/21
12/21
3/22
6/22
9/22
12/22
3/23
Rolling 3 Years Excess Performance
Quarterly Outperformance
Quarterly Underperformance

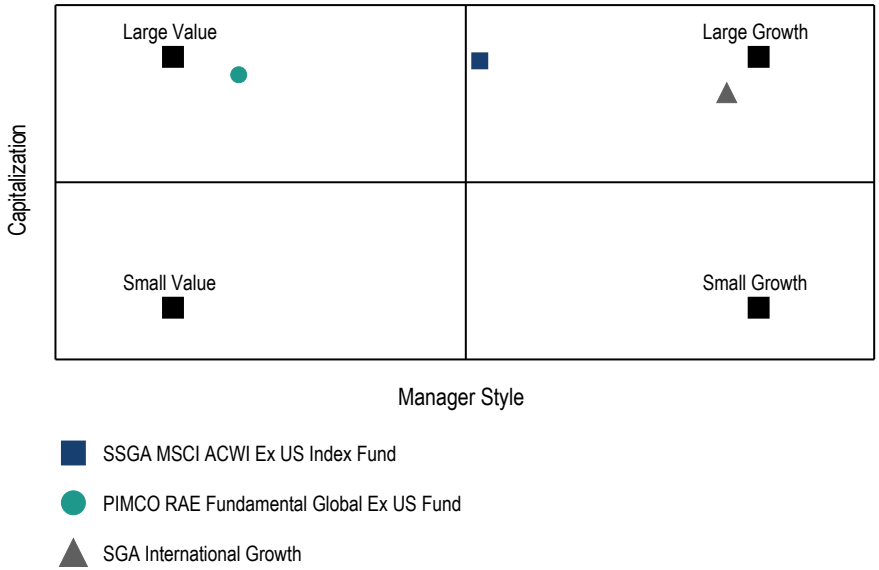

Rolling 5 Years Annualized Excess Performance
8.0
4.0
0.0
-4.0
-8.0
Relative Return (%)
6/17
9/17
12/17
3/18
6/18
9/18
12/18
3/19
6/19
9/19
12/19
3/20
6/20
9/20
12/20
3/21
6/21
9/21
12/21
3/22
6/22
9/22
12/22
3/23
Rolling 5 Years Excess Performance
Quarterly Outperformance
Quarterly Underperformance

Total International Equity
Asset Class Overview (Net of Fees)

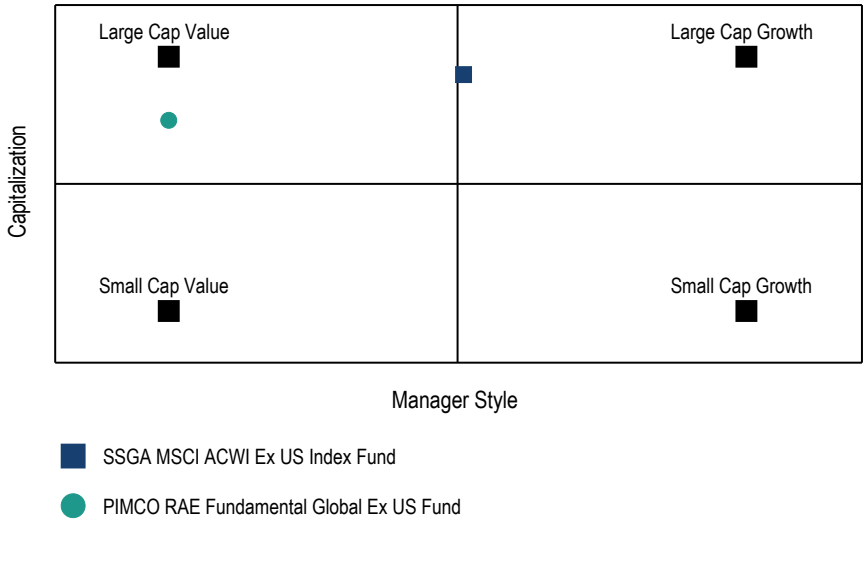
Tulare County Employees' Retirement Association
Period Ending: March 31, 2023

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2022	2021	2020	2019
Total International Equity	**287,486,888**	**100.0**	**7.0**	**-2.7**	**13.8**	**3.8**	**5.2**	**-14.2**	**9.6**	**13.4**	**22.7**
MSCI AC World ex USA Index			*7.0*	*-4.6*	*12.3*	*3.0*	*4.7*	*-15.6*	*8.3*	*11.1*	*22.1*
SSGA MSCI ACWI Ex US Index Fund	98,381,631	34.2	7.0	-4.9	12.0	2.7	4.4	-15.8	7.9	10.9	21.8
MSCI AC World ex USA (Net)			*6.9*	*-5.1*	*11.8*	*2.5*	*4.2*	*-16.0*	*7.8*	*10.7*	*21.5*
eV ACWI ex-US All Cap Equity Rank			*74*	*54*	*65*	*56*	*80*	*37*	*64*	*66*	*71*
PIMCO RAE Fundamental Global Ex US Fund	99,833,008	34.7	6.1	-0.7	16.3	1.8	4.7	-8.9	12.3	1.7	16.1
MSCI AC World ex USA Value (Net)			*5.2*	*-4.0*	*13.8*	*1.3*	*3.1*	*-8.6*	*10.5*	*-0.8*	*15.7*
eV ACWI ex-US Value Equity Rank			*65*	*50*	*47*	*58*	*43*	*37*	*44*	*54*	*71*
SGA International Growth	89,272,249	31.1	7.9	-2.3	13.0	-	-	-17.8	9.1	26.0	30.5
MSCI AC World ex USA Growth (Net)			*8.6*	*-6.4*	*9.5*	*-*	*-*	*-23.1*	*5.1*	*22.2*	*27.3*
eV ACWI ex-US Growth Equity Rank			*65*	*16*	*39*	*-*	*-*	*13*	*45*	*50*	*41*

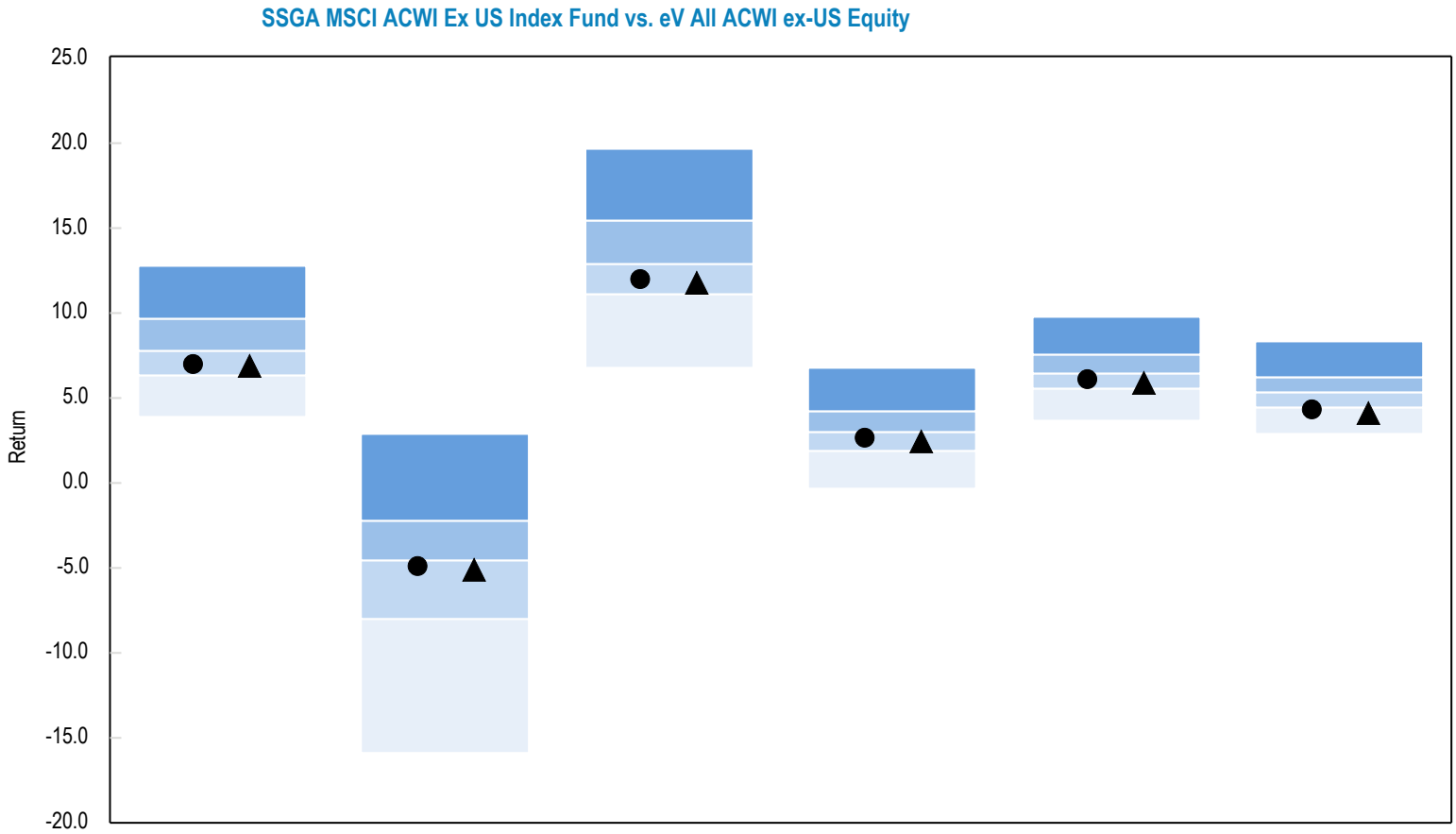
International Equity Effective Style Map
3 Years



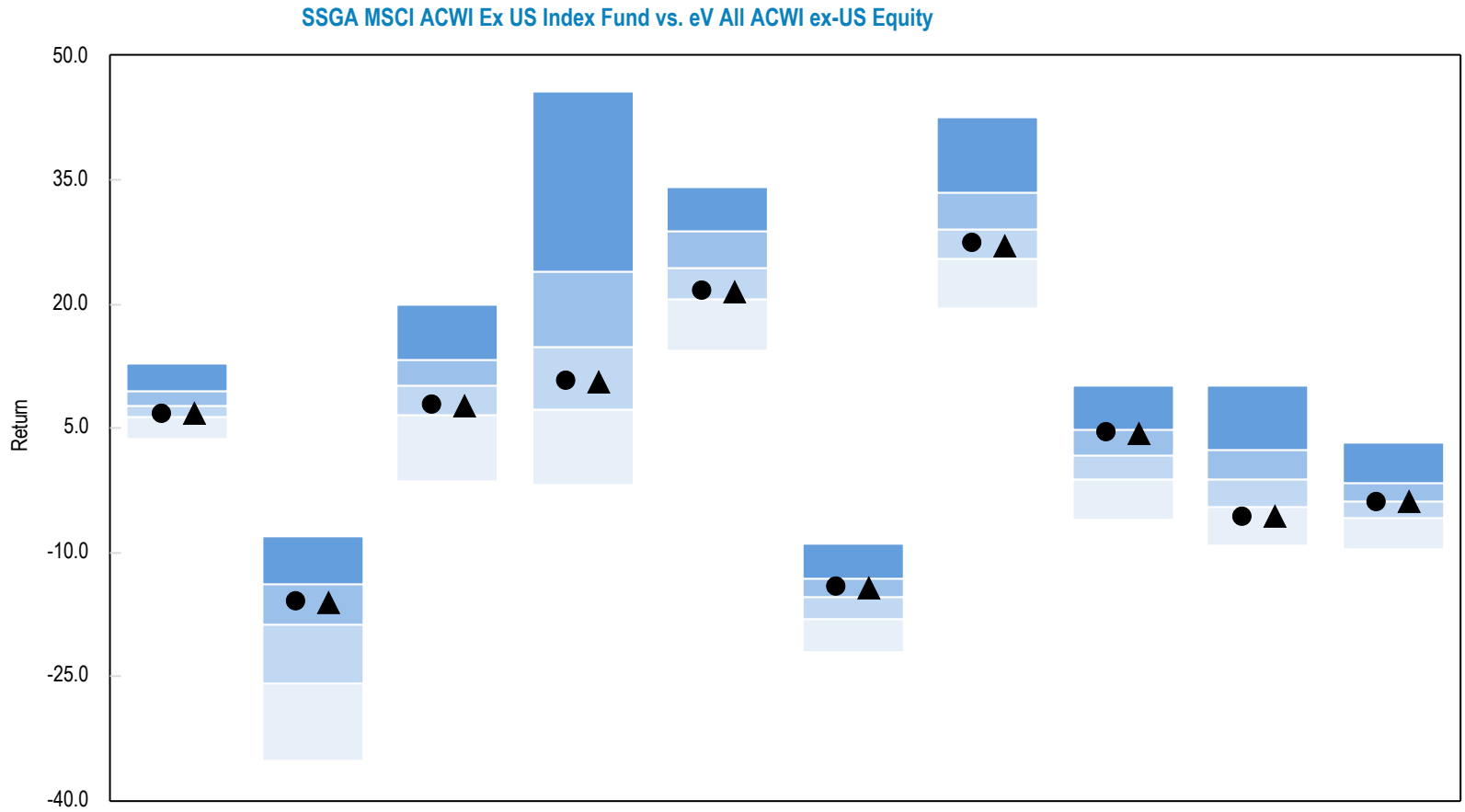
International Equity Effective Style Map
5 Years



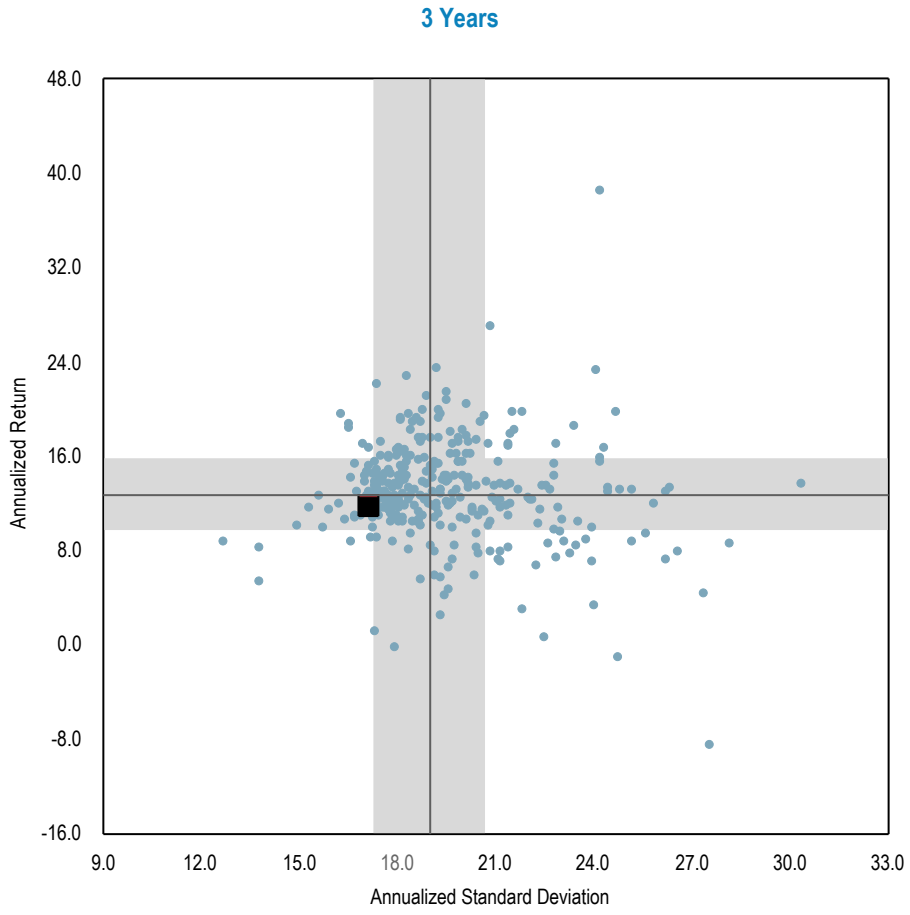
Research Affiliates converted to PIMCO RAE Fundamental Global Ex US Fund on 6/5/15 (performance prior to this date represents previously held Enhanced RAFI Global ex US).

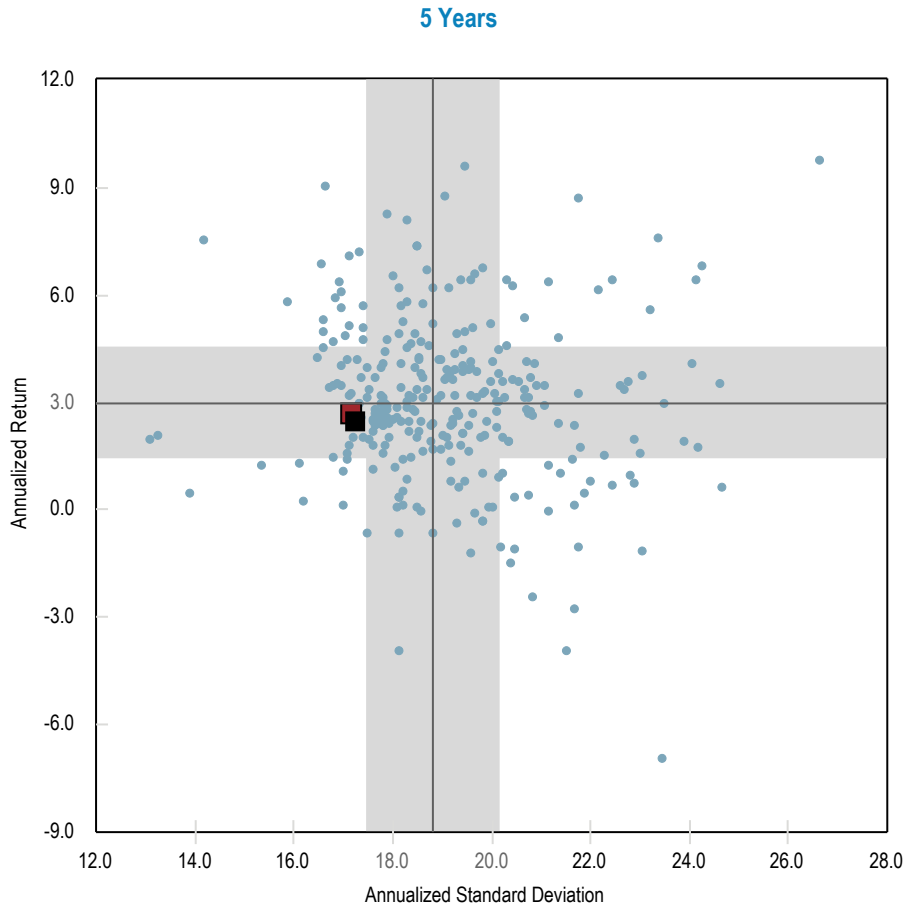


	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● SSGA MSCI ACWI Ex US Index Fund	6.95 (64)	-4.85 (53)	11.98 (64)	2.68 (57)	6.07 (58)	4.37 (78)
▲ MSCI AC World ex USA (Net)	6.87 (67)	-5.07 (55)	11.80 (67)	2.47 (62)	5.86 (67)	4.17 (85)
5th Percentile	12.80	2.93	19.66	6.75	9.75	8.30
1st Quartile	9.62	-2.22	15.39	4.18	7.61	6.27
Median	7.82	-4.60	12.85	2.98	6.43	5.31
3rd Quartile	6.35	-8.02	11.07	1.84	5.52	4.41
95th Percentile	3.86	-15.88	6.82	-0.34	3.62	2.93
Population	348	348	328	298	270	220



	3 Mo	2022	2021	2020	2019	2018	2017	2016	2015	2014
● SSGA MSCI ACWI Ex US Index Fund	6.95 (64)	-15.84 (35)	7.95 (66)	10.93 (62)	21.78 (66)	-14.04 (37)	27.46 (63)	4.69 (28)	-5.54 (82)	-3.68 (49)
▲ MSCI AC World ex USA (Net)	6.87 (67)	-16.00 (36)	7.82 (67)	10.65 (64)	21.51 (68)	-14.20 (38)	27.19 (65)	4.50 (30)	-5.66 (84)	-3.87 (52)
5th Percentile	12.80	-7.98	19.90	45.68	34.31	-8.85	42.65	10.32	10.12	3.25
1st Quartile	9.62	-13.77	13.29	23.93	28.83	-13.17	33.61	4.87	2.47	-1.62
Median	7.82	-18.74	10.13	14.83	24.37	-15.25	29.15	1.73	-1.05	-3.78
3rd Quartile	6.35	-25.82	6.74	7.44	20.64	-17.97	25.60	-1.18	-4.47	-5.87
95th Percentile	3.86	-35.20	-1.38	-1.72	14.48	-21.91	19.56	-6.11	-9.06	-9.64
Population	348	357	372	374	366	357	351	344	326	312





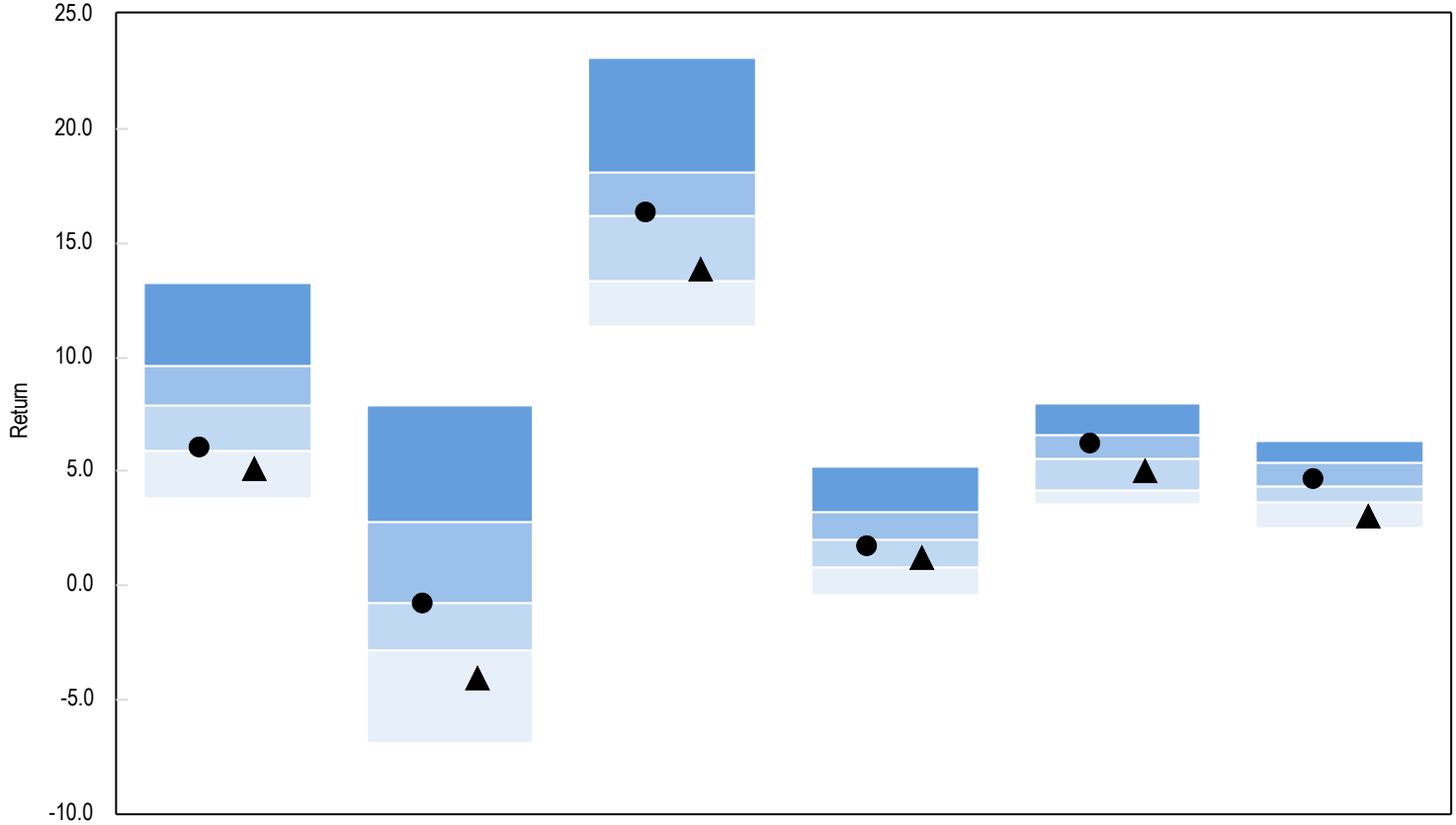
3 Years

	Return	Standard Deviation	Sharpe Ratio
SSGA MSCI ACWI Ex US Index Fund	11.98	17.08	0.70
MSCI AC World ex US Index	11.80	17.11	0.69

5 Years

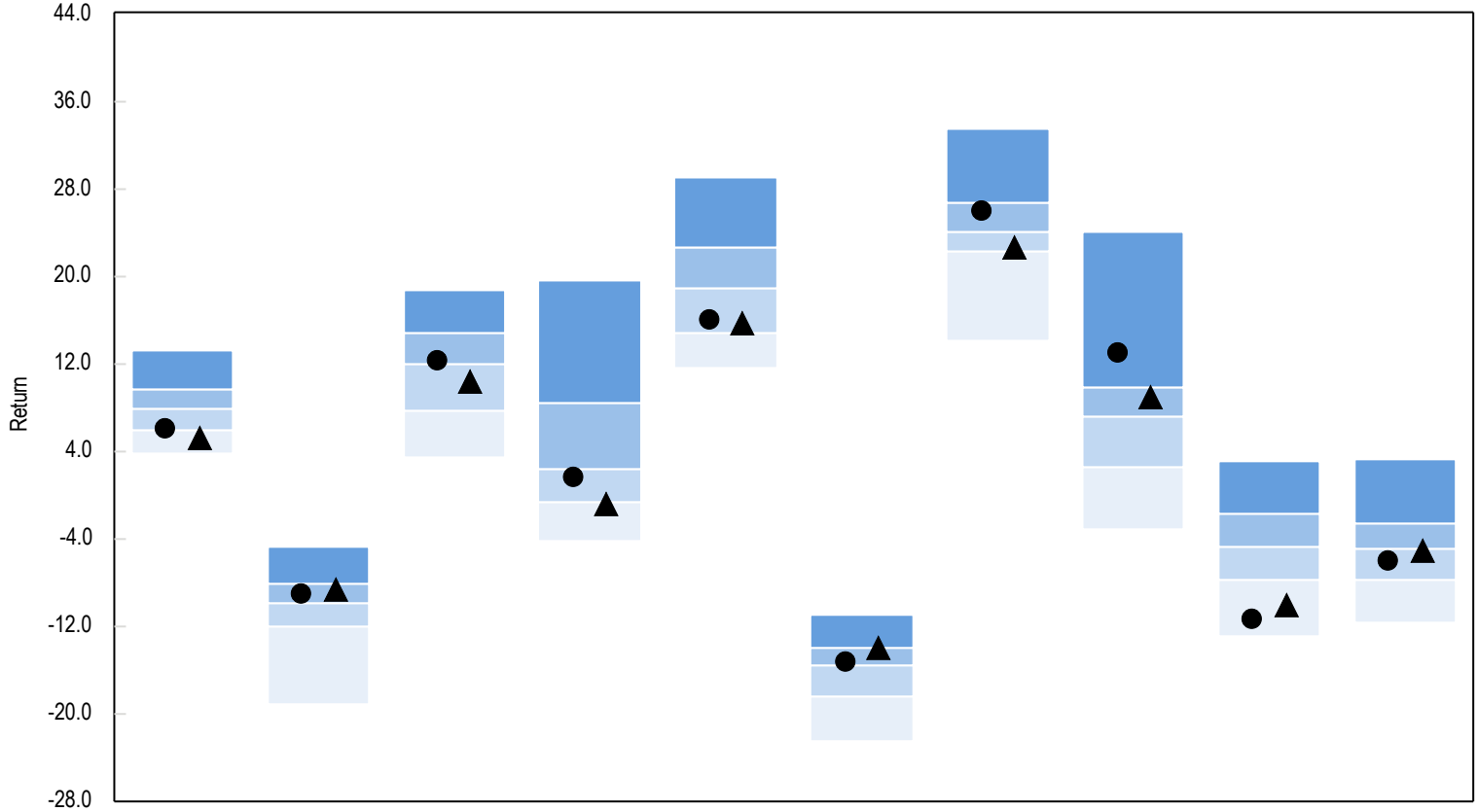
	Return	Standard Deviation	Sharpe Ratio
SSGA MSCI ACWI Ex US Index Fund	2.68	17.18	0.16
MSCI AC World ex US Index	2.47	17.22	0.15

PIMCO RAE Fundamental Global Ex US Fund vs. eV ACWI ex-US Value Equity

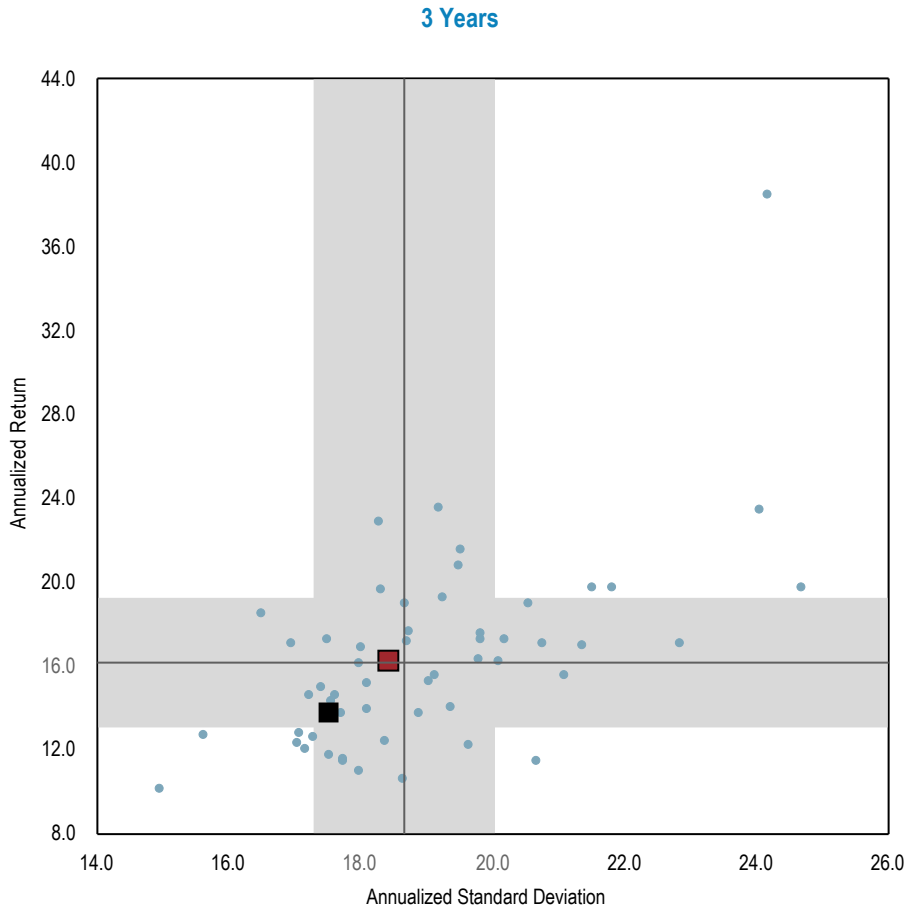


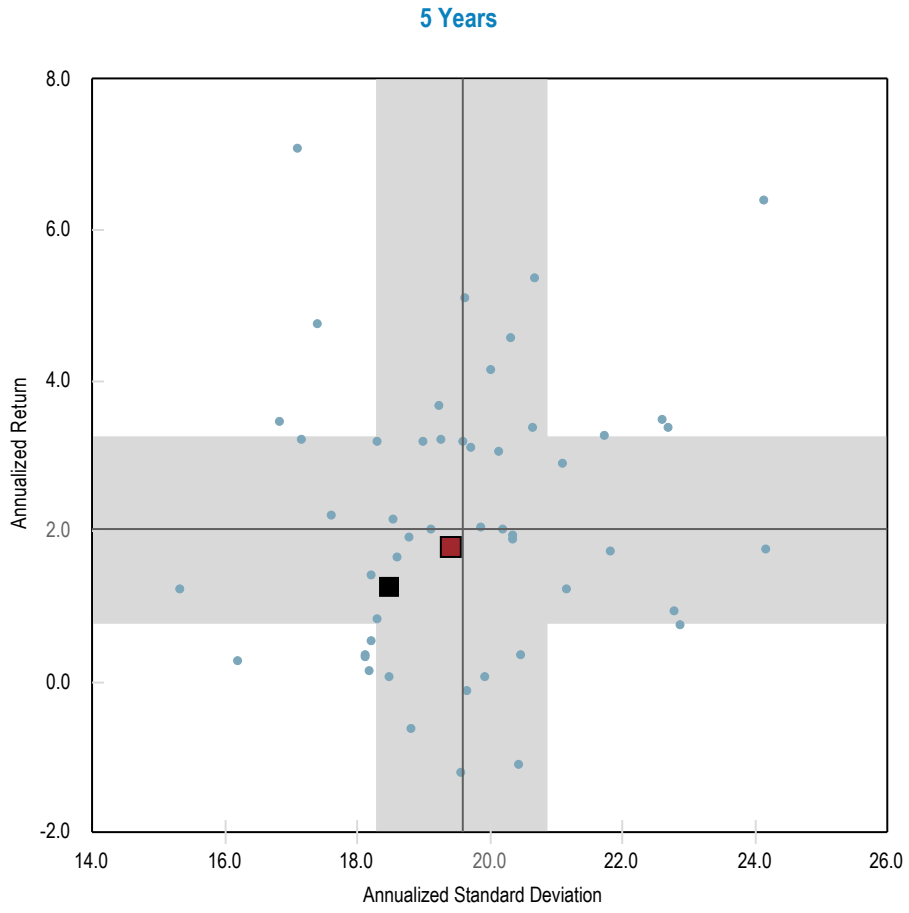
	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● PIMCO RAE Fundamental Global Ex US Fund	6.11 (65)	-0.74 (50)	16.32 (47)	1.79 (58)	6.22 (36)	4.66 (43)
▲ MSCI AC World ex USA Value (Net)	5.16 (85)	-4.00 (80)	13.82 (73)	1.26 (68)	5.00 (63)	3.06 (85)
5th Percentile	13.29	7.90	23.09	5.24	8.00	6.33
1st Quartile	9.62	2.81	18.12	3.26	6.63	5.38
Median	7.87	-0.79	16.22	2.02	5.60	4.38
3rd Quartile	5.90	-2.80	13.32	0.79	4.16	3.67
95th Percentile	3.79	-6.89	11.36	-0.37	3.61	2.57
Population	59	59	55	51	44	36

PIMCO RAE Fundamental Global Ex US Fund vs. eV ACWI ex-US Value Equity



	3 Mo	2022	2021	2020	2019	2018	2017	2016	2015	2014
● PIMCO RAE Fundamental Global Ex US Fund	6.11 (65)	-8.91 (37)	12.30 (44)	1.69 (54)	16.05 (71)	-15.12 (42)	25.99 (37)	12.99 (11)	-11.36 (88)	-5.90 (56)
▲ MSCI AC World ex USA Value (Net)	5.16 (85)	-8.59 (30)	10.46 (62)	-0.77 (76)	15.72 (73)	-13.97 (25)	22.66 (68)	8.92 (32)	-10.06 (84)	-5.10 (52)
5th Percentile	13.29	-4.62	18.76	19.58	29.08	-10.88	33.59	24.08	3.10	3.29
1st Quartile	9.62	-8.14	14.88	8.45	22.58	-13.98	26.75	9.94	-1.68	-2.50
Median	7.87	-9.94	12.06	2.35	18.97	-15.63	24.07	7.26	-4.75	-4.91
3rd Quartile	5.90	-12.07	7.69	-0.70	14.79	-18.46	22.31	2.52	-7.78	-7.80
95th Percentile	3.79	-19.18	3.44	-4.22	11.56	-22.53	14.20	-3.16	-12.93	-11.58
Population	59	60	64	65	63	61	58	57	57	55



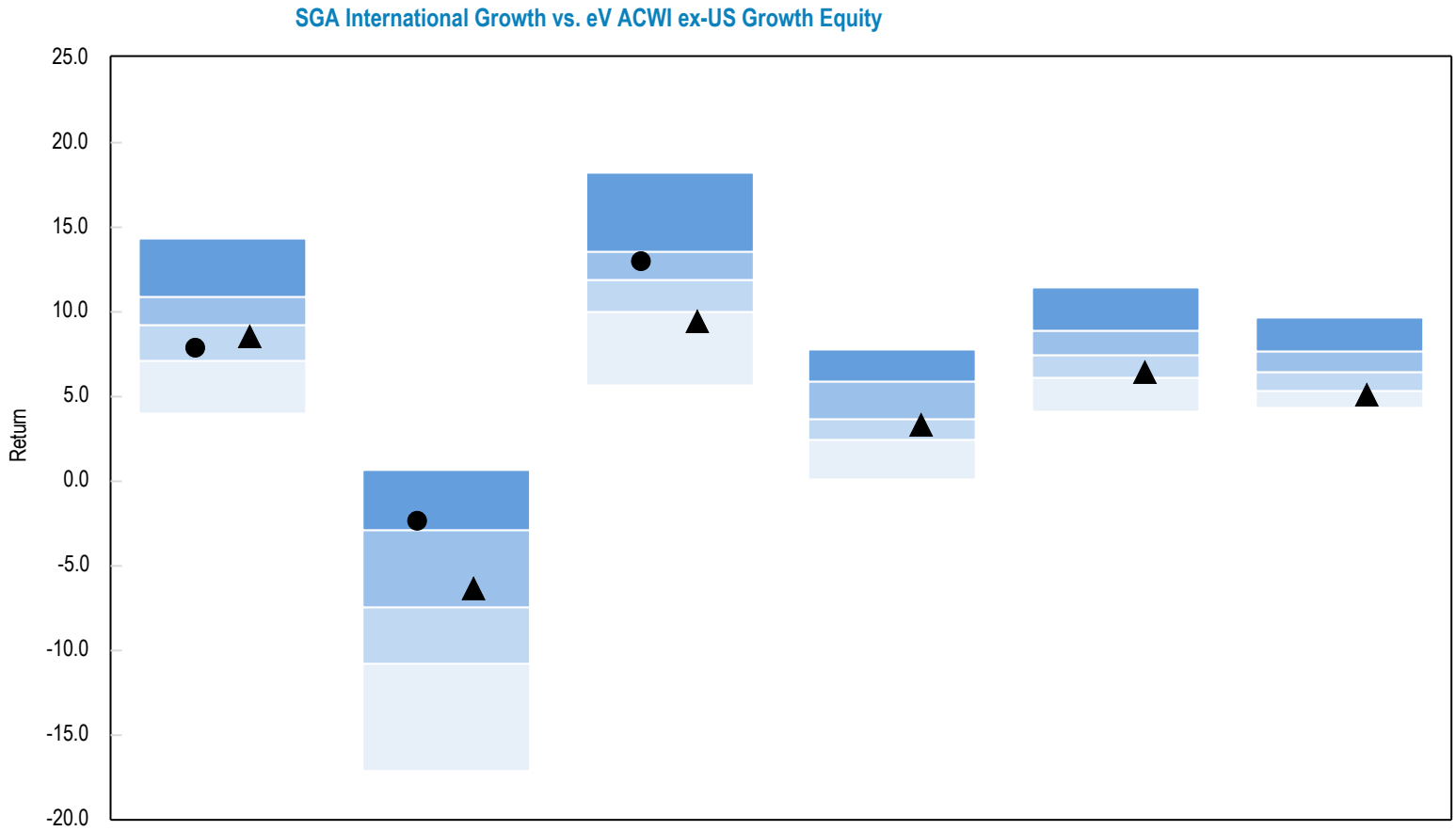


3 Years

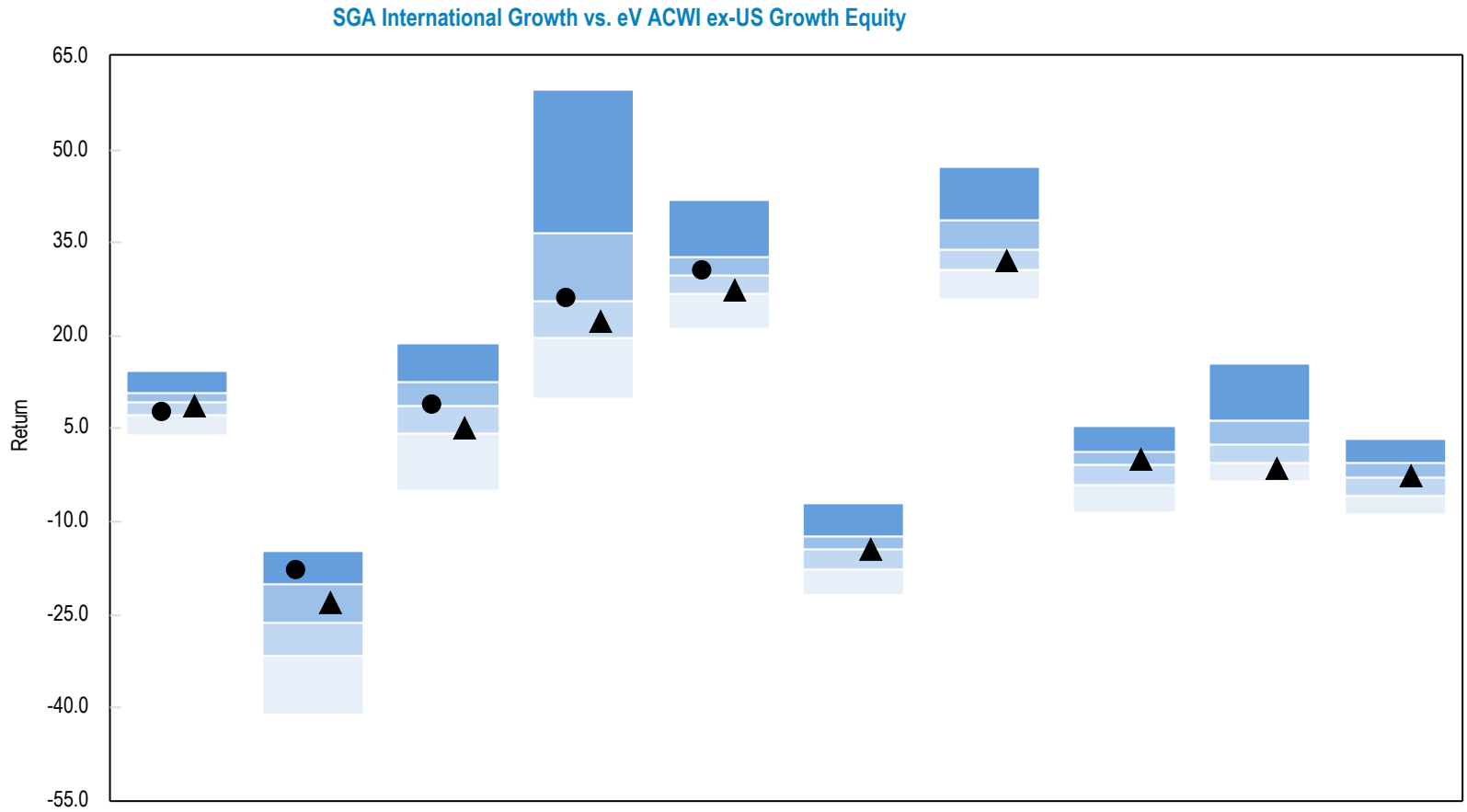
	Return	Standard Deviation	Sharpe Ratio
PIMCO RAE Fundamental Global Ex US Fund	16.32	18.42	0.87
MSCI AC World Ex US Value Index	13.82	17.51	0.78

5 Years

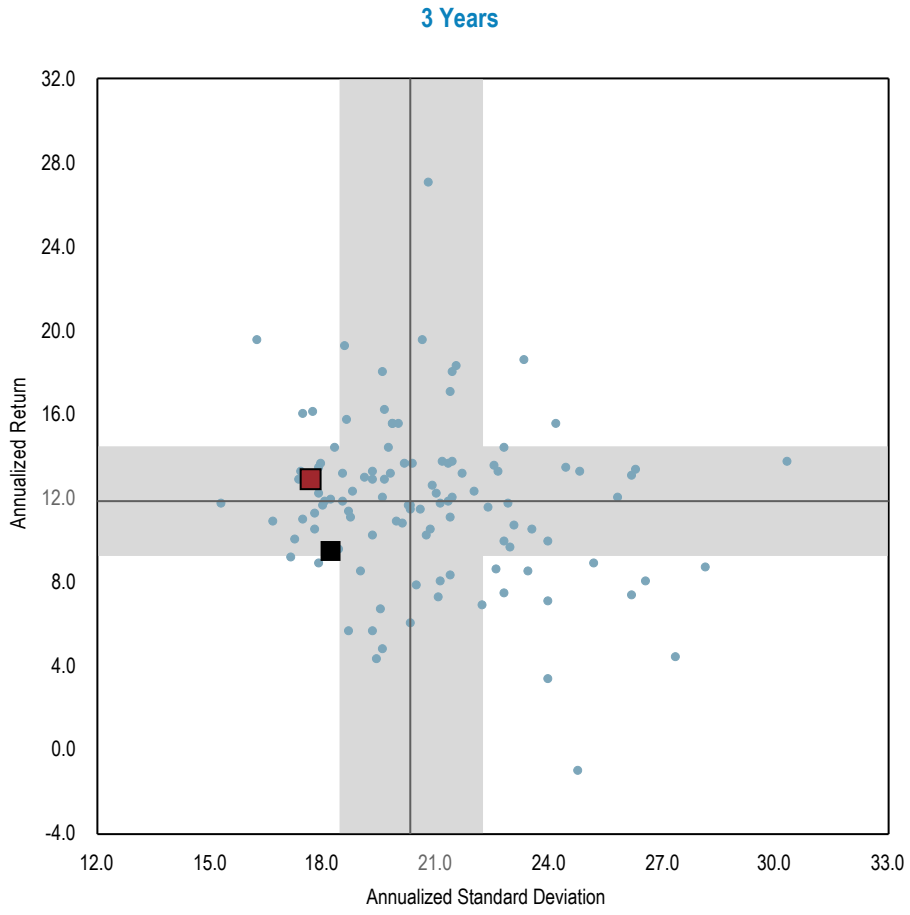
	Return	Standard Deviation	Sharpe Ratio
PIMCO RAE Fundamental Global Ex US Fund	1.79	19.42	0.12
MSCI AC World Ex US Value Index	1.26	18.48	0.09

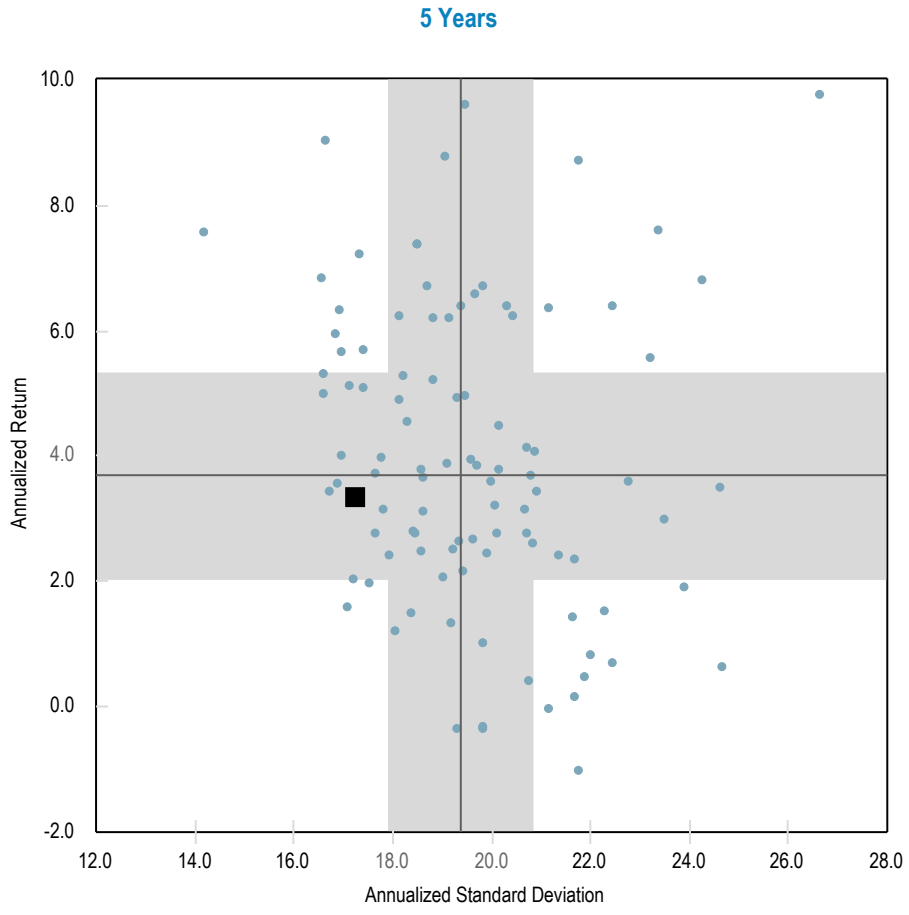


	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● SGA International Growth	7.93 (65)	-2.35 (16)	12.97 (39)	-	-	-
▲ MSCI AC World ex USA Growth (Net)	8.59 (58)	-6.35 (46)	9.49 (78)	3.36 (58)	6.47 (69)	5.08 (87)
5th Percentile	14.34	0.67	18.28	7.73	11.40	9.68
1st Quartile	10.91	-2.86	13.59	5.84	8.88	7.65
Median	9.25	-7.42	11.91	3.69	7.45	6.39
3rd Quartile	7.11	-10.80	9.96	2.42	6.16	5.31
95th Percentile	3.96	-17.10	5.71	0.14	4.15	4.32
Population	115	115	109	99	89	69



	3 Mo	2022	2021	2020	2019	2018	2017	2016	2015	2014
● SGA International Growth	7.93 (65)	-17.76 (13)	9.11 (45)	26.04 (50)	30.52 (41)	-	-	-	-	-
▲ MSCI AC World ex USA Growth (Net)	8.59 (58)	-23.05 (35)	5.09 (73)	22.20 (69)	27.34 (73)	-14.43 (52)	32.01 (69)	0.12 (41)	-1.25 (85)	-2.65 (50)
5th Percentile	14.34	-14.60	18.89	59.78	41.93	-7.07	47.26	5.48	15.53	3.26
1st Quartile	10.91	-20.15	12.69	36.66	32.64	-12.36	38.73	1.44	6.19	-0.45
Median	9.25	-26.30	8.67	25.71	29.78	-14.26	34.00	-0.71	2.61	-2.84
3rd Quartile	7.11	-31.61	4.20	19.77	26.72	-17.71	30.70	-4.01	-0.39	-5.75
95th Percentile	3.96	-41.15	-4.81	10.01	21.19	-21.68	25.81	-8.59	-3.46	-8.65
Population	115	117	118	114	112	106	106	103	95	88





3 Years

	Return	Standard Deviation	Sharpe Ratio
SGA International Growth	12.97	17.66	0.73
MSCI AC World ex USA Growth Index	9.49	18.17	0.54

5 Years

	Return	Standard Deviation	Sharpe Ratio
SGA International Growth	-	-	-
MSCI AC World ex USA Growth Index	3.36	17.26	0.20

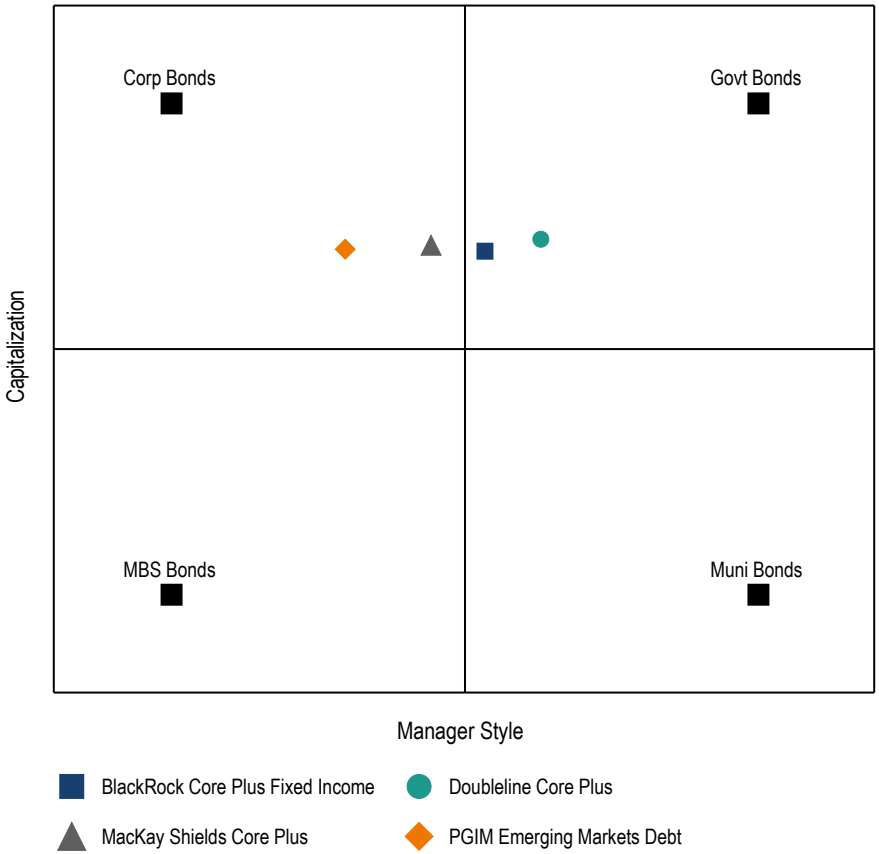
Total Fixed Income
Asset Class Overview (Net of Fees)

Tulare County Employees' Retirement Association
Period Ending: March 31, 2023

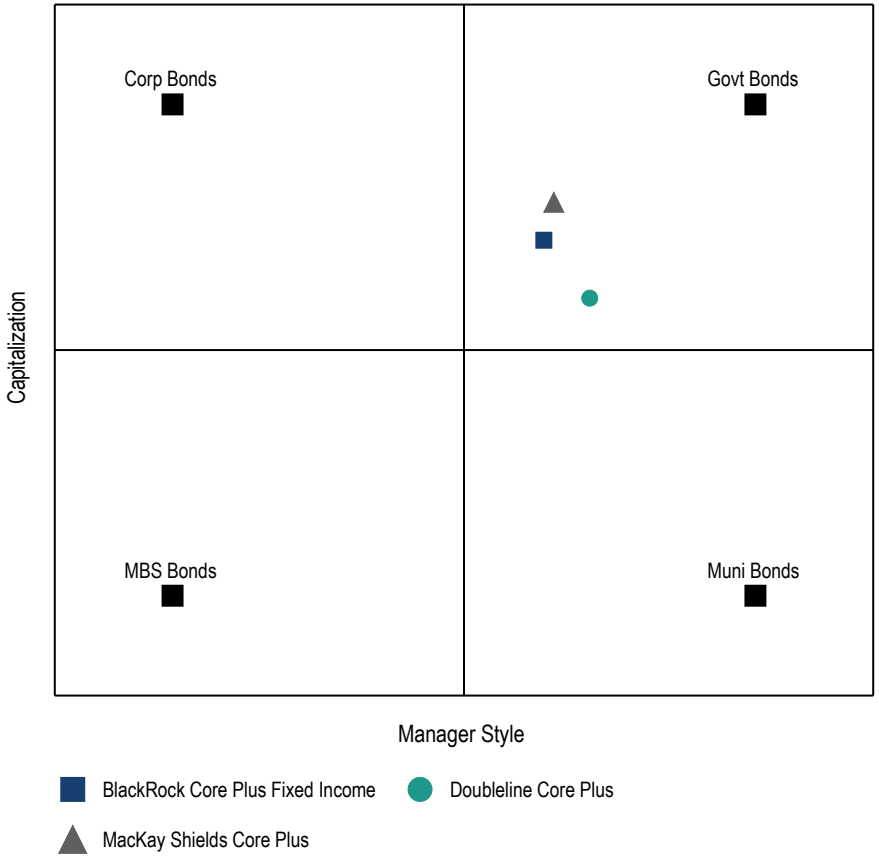
	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2022	2021	2020	201
Total Fixed Income	**336,282,036**	**100.0**	**3.2**	**-4.8**	**-1.3**	**-0.1**	**0.9**	**-13.5**	**-2.2**	**4.7**	**8.**
Blmbg. U.S. Aggregate Index			*3.0*	*-4.8*	*-2.8*	*0.9*	*1.4*	*-13.0*	*-1.5*	*7.5*	*8.*
Total Domestic Fixed Income	**284,508,946**	**84.6**	**3.2**	**-5.3**	**-1.4**	**1.0**	**1.4**	**-13.7**	**-0.7**	**7.9**	**9.**
Blmbg. U.S. Aggregate Index			*3.0*	*-4.8*	*-2.8*	*0.9*	*1.4*	*-13.0*	*-1.5*	*7.5*	*8.*
BlackRock Core Plus Fixed Income	78,694,371	23.4	3.1	-5.3	-2.3	1.0	1.5	-13.8	-1.4	8.4	8.
Blmbg. U.S. Aggregate Index			*3.0*	*-4.8*	*-2.8*	*0.9*	*1.4*	*-13.0*	*-1.5*	*7.5*	*8.*
eV US Core Plus Fixed Inc Rank			*61*	*63*	*93*	*83*	*88*	*63*	*88*	*57*	*8*
Doubleline Core Plus	103,709,038	30.8	3.4	-5.0	-0.8	0.7	-	-12.7	-0.2	5.2	8.
Blmbg. U.S. Aggregate Index			*3.0*	*-4.8*	*-2.8*	*0.9*	-	*-13.0*	*-1.5*	*7.5*	*8.*
eV US Core Plus Fixed Inc Rank			*36*	*47*	*53*	*96*	-	*25*	*38*	*97*	*8*
MacKay Shields Core Plus	102,105,537	30.4	3.2	-5.7	-1.1	1.2	-	-14.6	-0.4	9.9	9.
Blmbg. U.S. Aggregate Index			*3.0*	*-4.8*	*-2.8*	*0.9*	-	*-13.0*	*-1.5*	*7.5*	*8.*
eV US Core Plus Fixed Inc Rank			*51*	*81*	*63*	*61*	-	*87*	*48*	*22*	*5*
Total Emerging Markets Fixed Income	**51,773,090**	**15.4**	**3.2**	**-1.4**	**3.6**	**-**	**-**	**-12.4**	**-5.3**	**4.6**	
50% JPM EMBI Global Div/50% JPM GBI EM Global Div			*3.5*	*-3.8*	*0.5*	-	-	*-14.8*	*-5.3*	*4.0*	
PGIM Emerging Markets Debt	51,773,090	15.4	3.2	-1.4	3.6	-	-	-12.4	-5.3	4.6	
50% JPM EMBI Global Div/50% JPM GBI EM Global Div			*3.5*	*-3.8*	*0.5*	-	-	*-14.8*	*-5.3*	*4.0*	
eV Emg Mkts Fixed Inc - Blended Currency Rank			*27*	*15*	*19*	-	-	*39*	*70*	*70*	

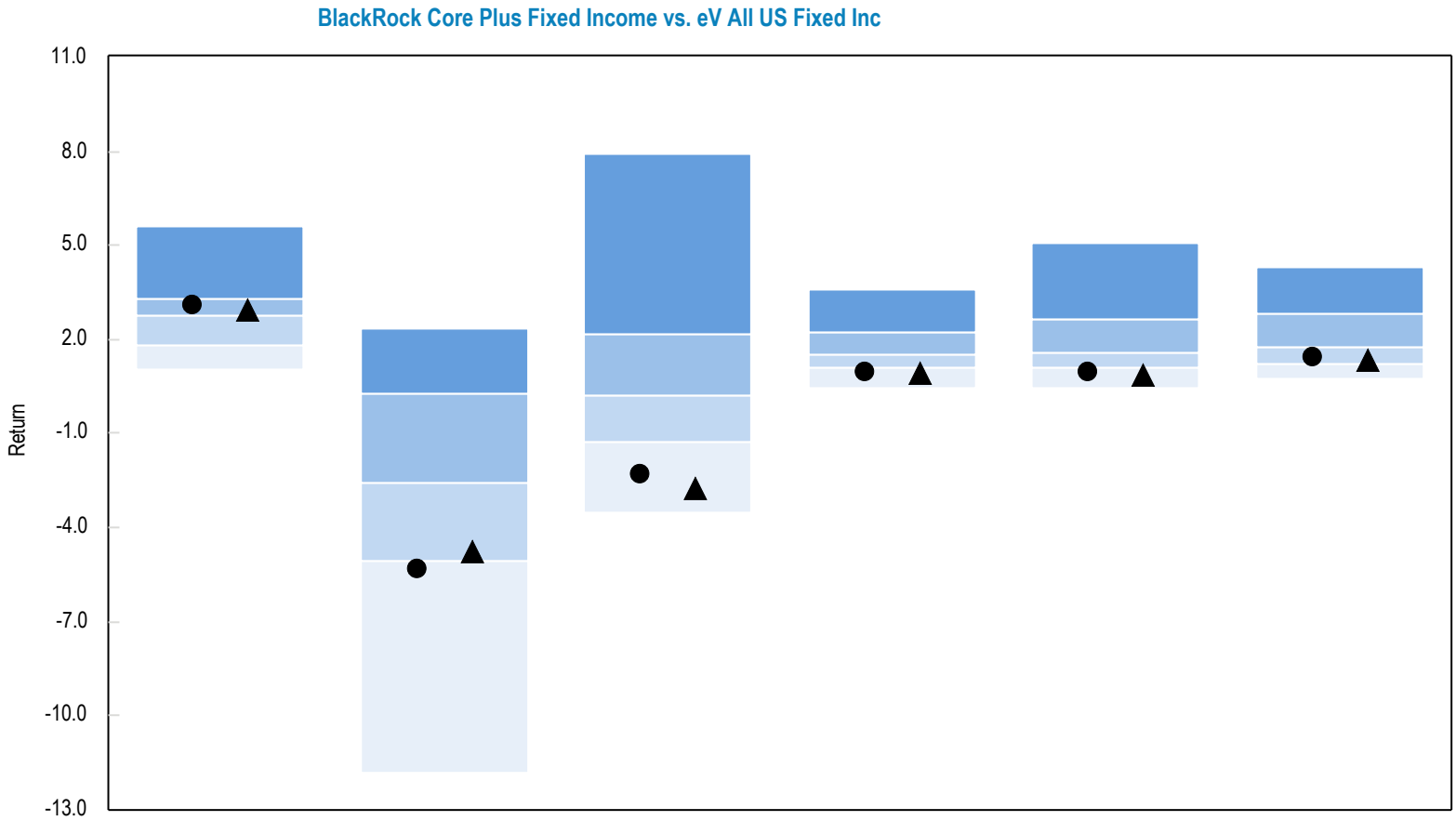
Franklin Templeton Global Bond Plus liquidated 12/28/2021.

Fixed Income Style Map 3 Years

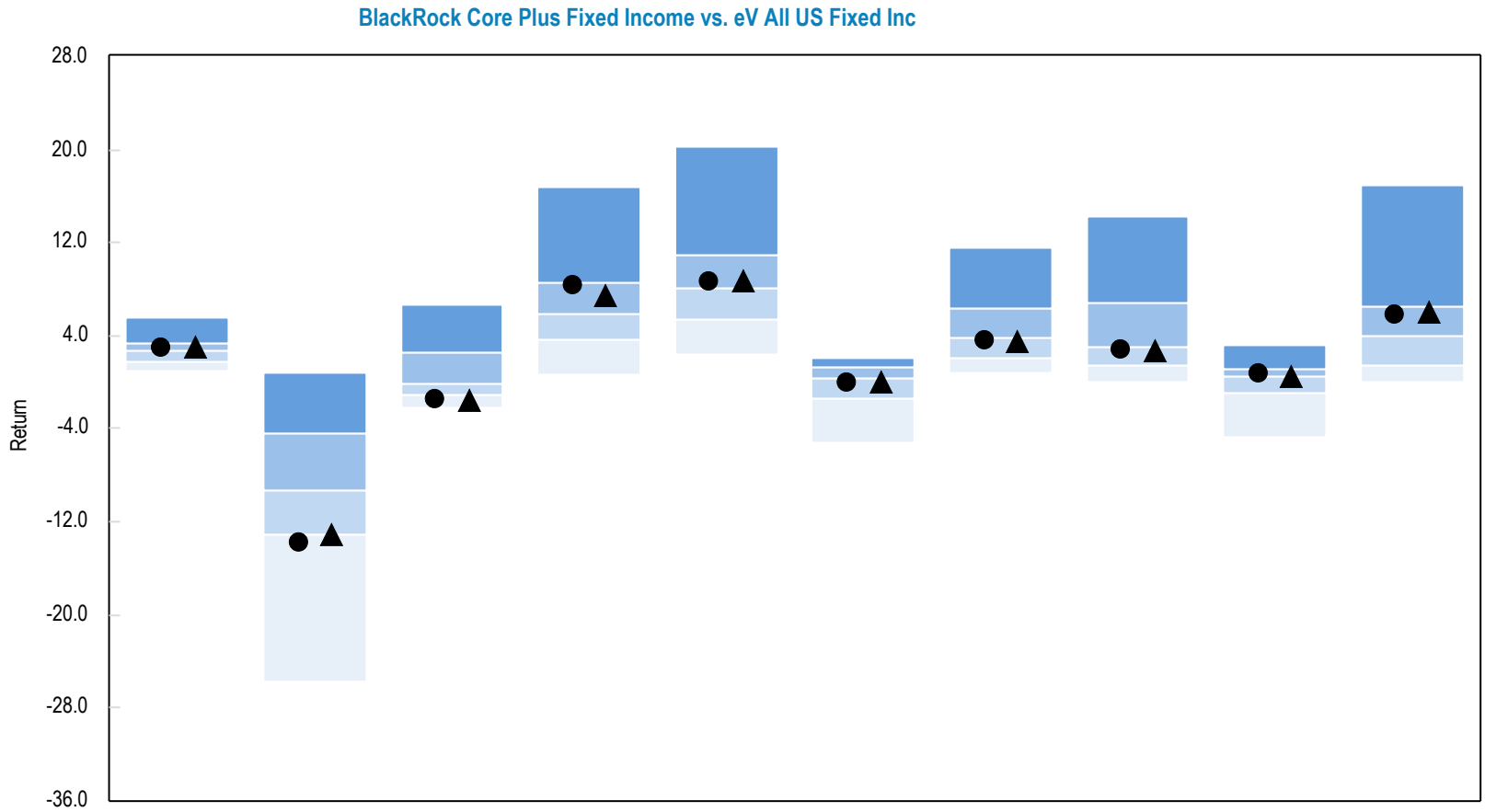


Fixed Income Style Map 5 Years

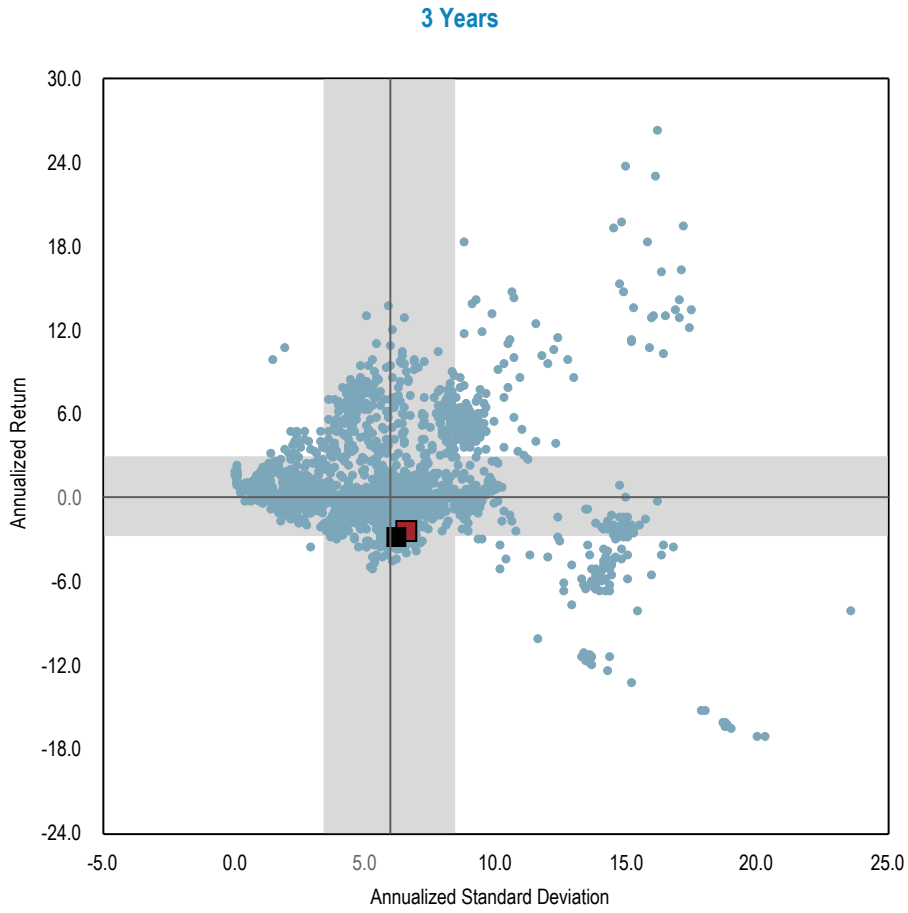


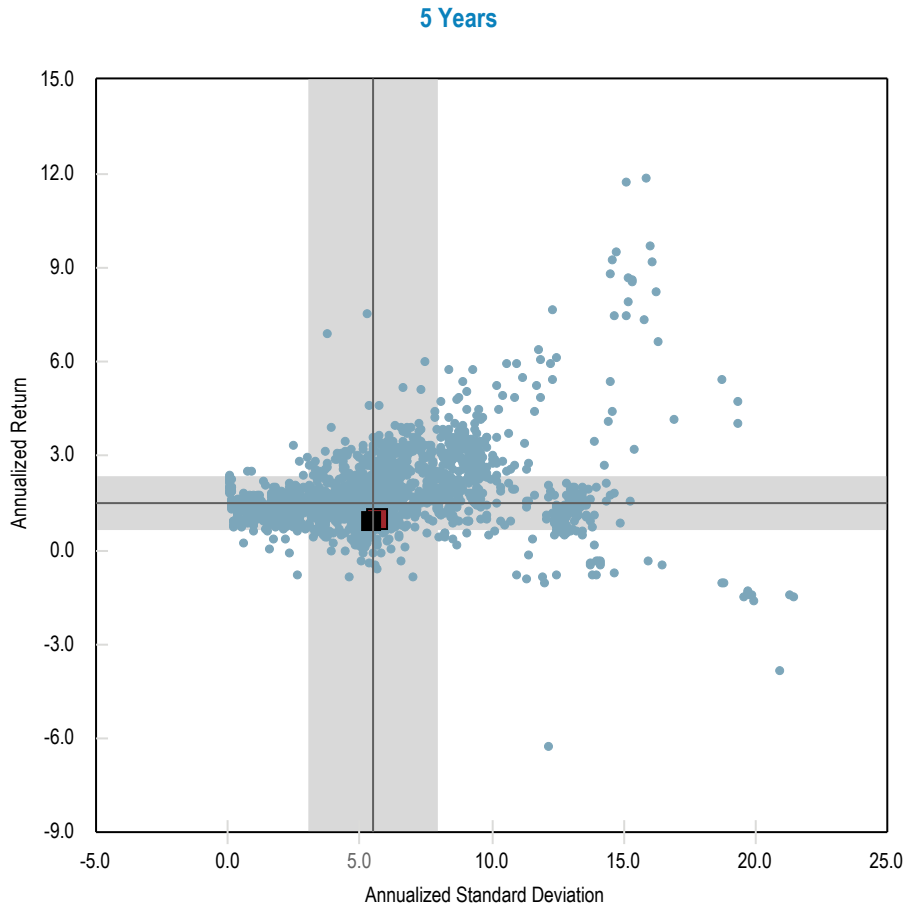


	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● BlackRock Core Plus Fixed Income	3.10 (35)	-5.30 (78)	-2.28 (87)	0.99 (82)	0.98 (82)	1.48 (62)
▲ Blmbg. U.S. Aggregate Index	2.96 (41)	-4.78 (70)	-2.77 (91)	0.90 (86)	0.88 (86)	1.36 (69)
5th Percentile	5.63	2.36	7.92	3.60	5.05	4.28
1st Quartile	3.32	0.26	2.18	2.21	2.66	2.83
Median	2.74	-2.58	0.20	1.51	1.59	1.75
3rd Quartile	1.83	-5.08	-1.29	1.13	1.11	1.24
95th Percentile	1.02	-11.79	-3.55	0.43	0.47	0.76
Population	2,098	2,070	2,008	1,912	1,783	1,586



	3 Mo	2022	2021	2020	2019	2018	2017	2016	2015	2014
● BlackRock Core Plus Fixed Income	3.10 (35)	-13.78 (81)	-1.41 (82)	8.40 (27)	8.75 (43)	0.10 (54)	3.61 (54)	2.87 (53)	0.81 (37)	5.95 (32)
▲ Blmbg. U.S. Aggregate Index	2.96 (41)	-13.01 (74)	-1.55 (85)	7.51 (36)	8.72 (44)	0.01 (56)	3.54 (55)	2.65 (56)	0.55 (47)	5.97 (31)
5th Percentile	5.63	0.75	6.65	16.71	20.21	2.09	11.61	14.25	3.26	16.94
1st Quartile	3.32	-4.41	2.61	8.62	10.95	1.30	6.38	6.78	1.17	6.45
Median	2.74	-9.35	-0.11	5.93	8.14	0.32	3.83	3.10	0.47	3.92
3rd Quartile	1.83	-13.11	-1.14	3.60	5.39	-1.37	2.13	1.42	-0.88	1.45
95th Percentile	1.02	-25.72	-2.26	0.74	2.42	-5.14	0.83	0.01	-4.71	0.09
Population	2,098	2,191	2,276	2,320	2,340	2,361	2,335	2,316	2,305	2,266



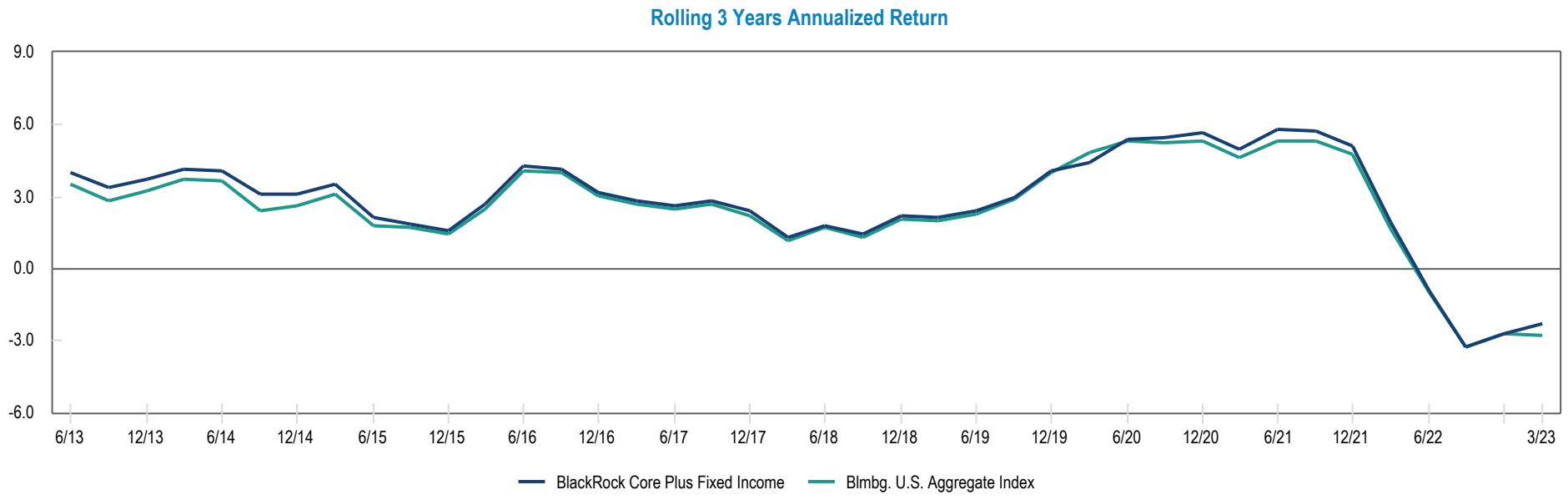


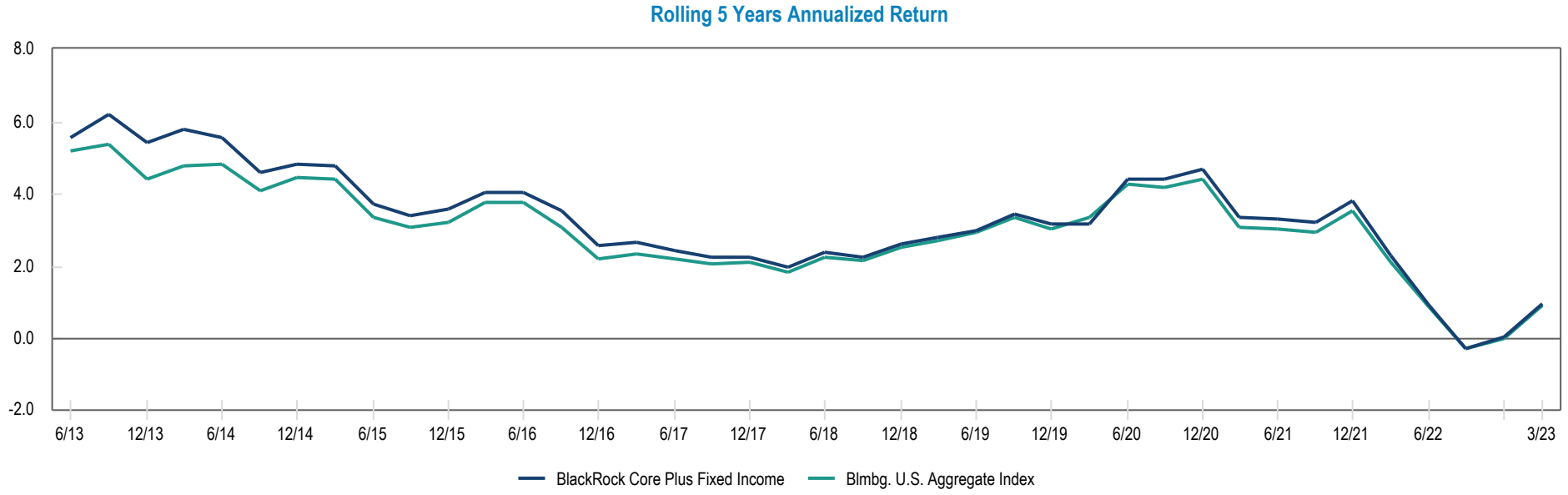
3 Years

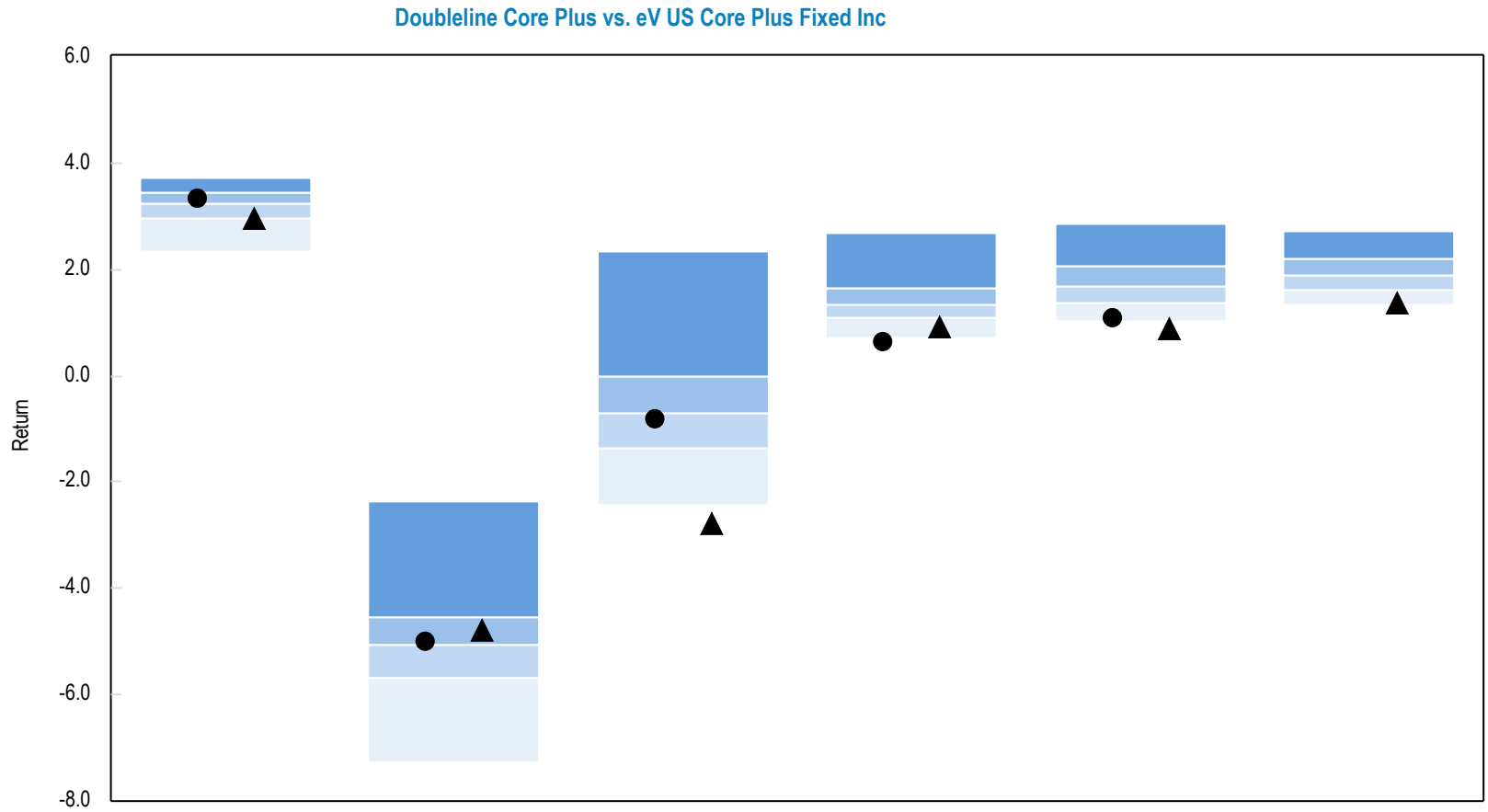
	Return	Standard Deviation	Sharpe Ratio
BlackRock Core Plus Fixed Income	-2.28	6.60	-0.45
Bloomberg US Aggregate Index	-2.77	6.20	-0.57

5 Years

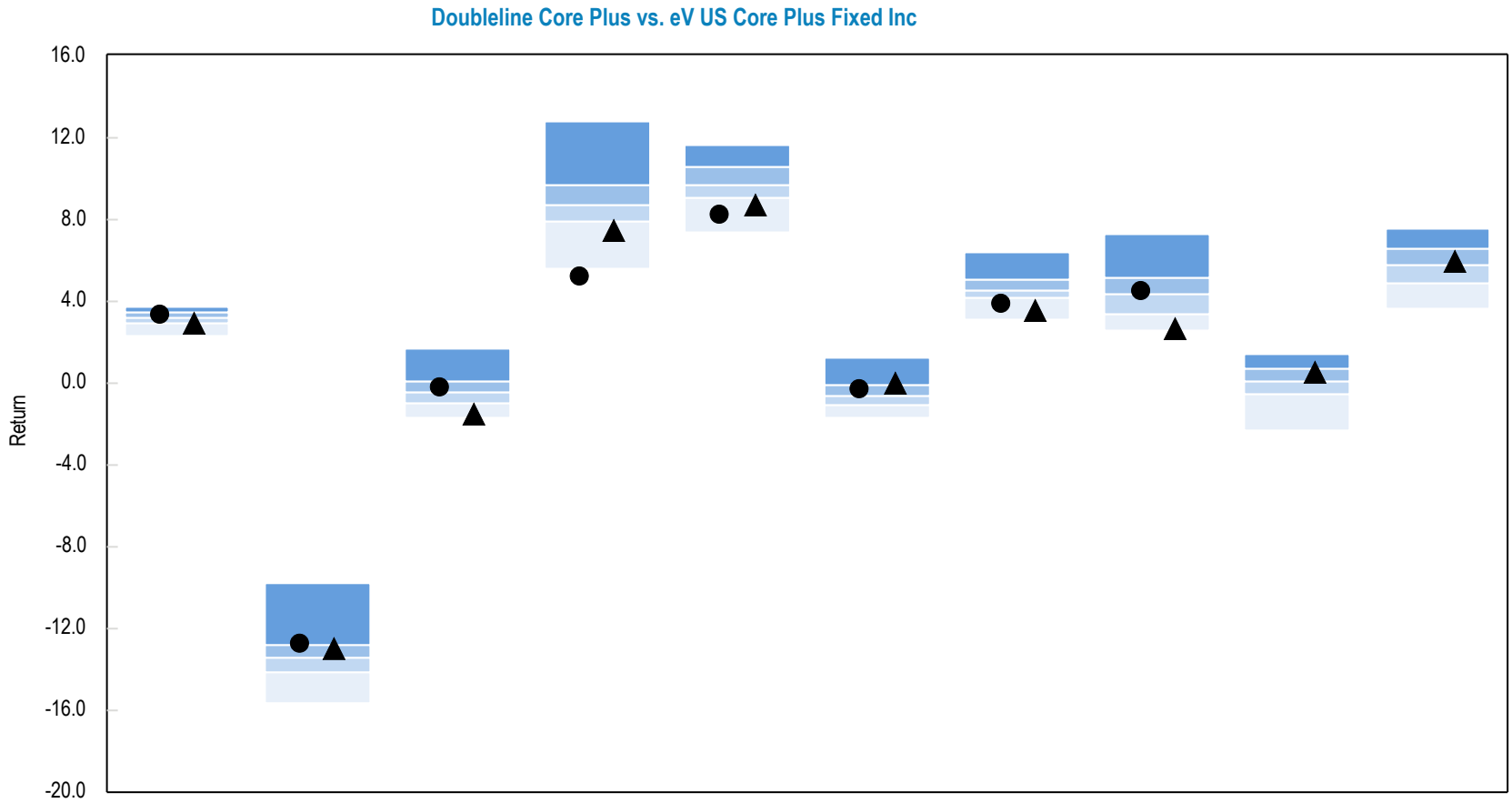
	Return	Standard Deviation	Sharpe Ratio
BlackRock Core Plus Fixed Income	0.99	5.67	-0.05
Bloomberg US Aggregate Index	0.90	5.42	-0.07


Rolling 3 Years Annualized Return
9.0
6.0
3.0
0.0
-3.0
-6.0
6/13
12/13
6/14
12/14
6/15
12/15
6/16
12/16
6/17
12/17
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
BlackRock Core Plus Fixed Income
Blmbg. U.S. Aggregate Index

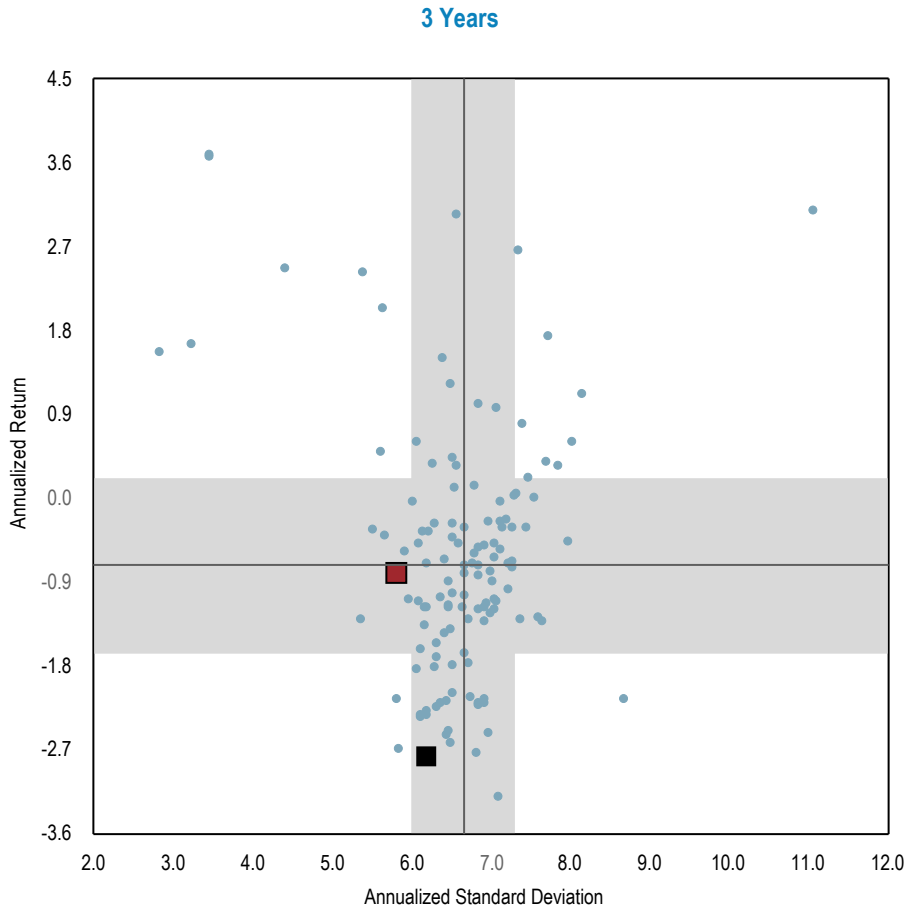

Rolling 5 Years Annualized Return
8.0
6.0
4.0
2.0
0.0
-2.0
6/13
12/13
6/14
12/14
6/15
12/15
6/16
12/16
6/17
12/17
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
BlackRock Core Plus Fixed Income
Blmbg. U.S. Aggregate Index

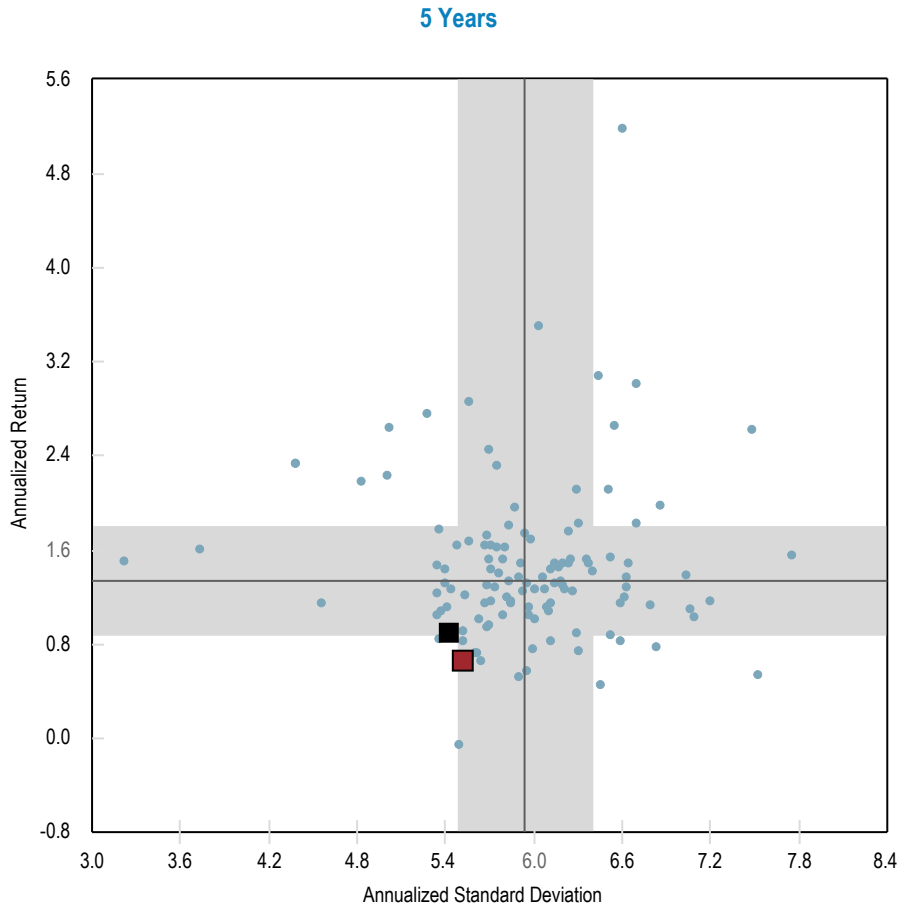


	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● Doubleline Core Plus	3.35 (36)	-5.00 (47)	-0.80 (53)	0.66 (96)	1.09 (92)	-
▲ Blmbg. U.S. Aggregate Index	2.96 (74)	-4.78 (36)	-2.77 (100)	0.90 (86)	0.88 (100)	1.36 (93)
5th Percentile	3.72	-2.37	2.33	2.67	2.86	2.70
1st Quartile	3.45	-4.55	-0.01	1.64	2.07	2.20
Median	3.23	-5.07	-0.72	1.34	1.67	1.89
3rd Quartile	2.95	-5.67	-1.38	1.11	1.35	1.61
95th Percentile	2.35	-7.29	-2.44	0.72	1.02	1.34
Population	135	134	127	119	113	103



	3 Mo	2022	2021	2020	2019	2018	2017	2016	2015	2014
● Doubleline Core Plus	3.35 (36)	-12.74 (25)	-0.18 (38)	5.23 (97)	8.28 (88)	-0.28 (34)	3.93 (84)	4.55 (41)	-	-
▲ Blmbg. U.S. Aggregate Index	2.96 (74)	-13.01 (36)	-1.55 (92)	7.51 (82)	8.72 (81)	0.01 (25)	3.54 (91)	2.65 (93)	0.55 (30)	5.97 (42)
5th Percentile	3.72	-9.76	1.71	12.82	11.63	1.24	6.44	7.28	1.44	7.54
1st Quartile	3.45	-12.76	0.09	9.65	10.61	-0.10	5.11	5.16	0.67	6.56
Median	3.23	-13.46	-0.43	8.71	9.73	-0.60	4.57	4.35	0.12	5.80
3rd Quartile	2.95	-14.13	-1.02	7.89	9.03	-1.03	4.14	3.39	-0.51	4.87
95th Percentile	2.35	-15.65	-1.70	5.64	7.39	-1.66	3.14	2.58	-2.27	3.68
Population	135	139	141	144	145	143	145	142	141	139



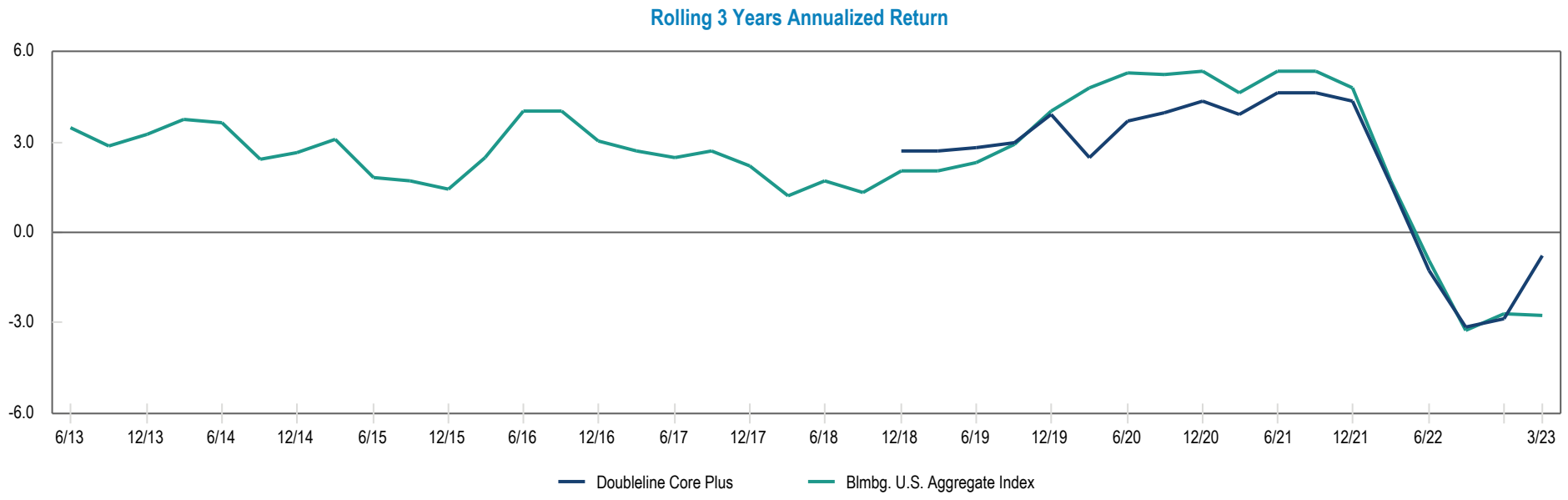


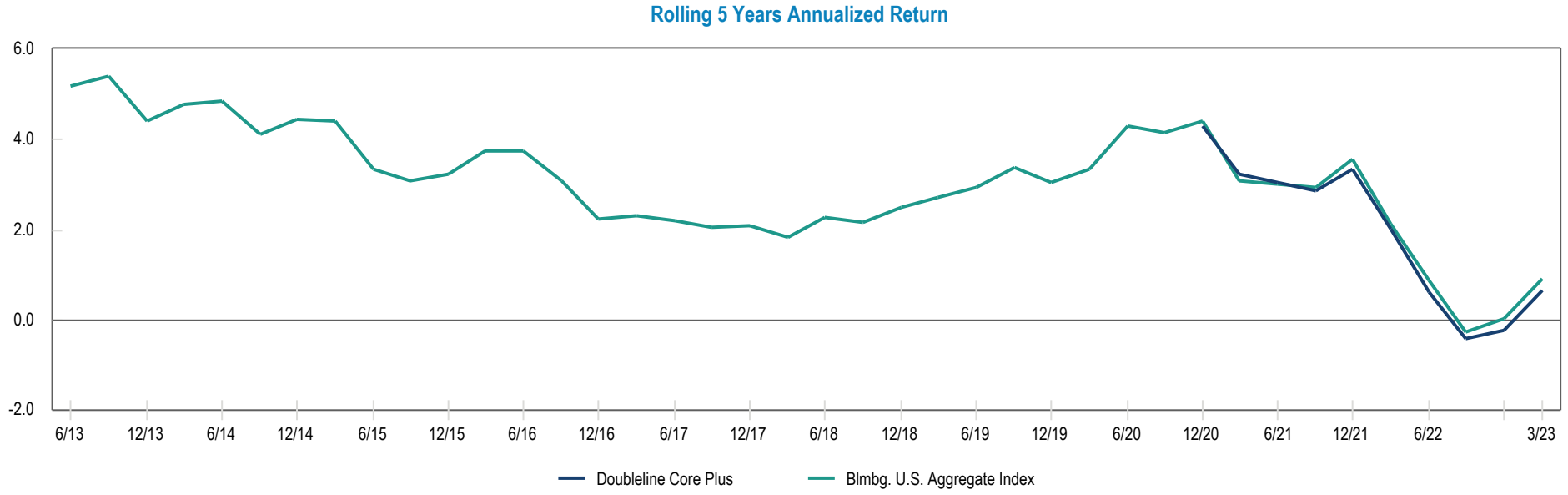
3 Years

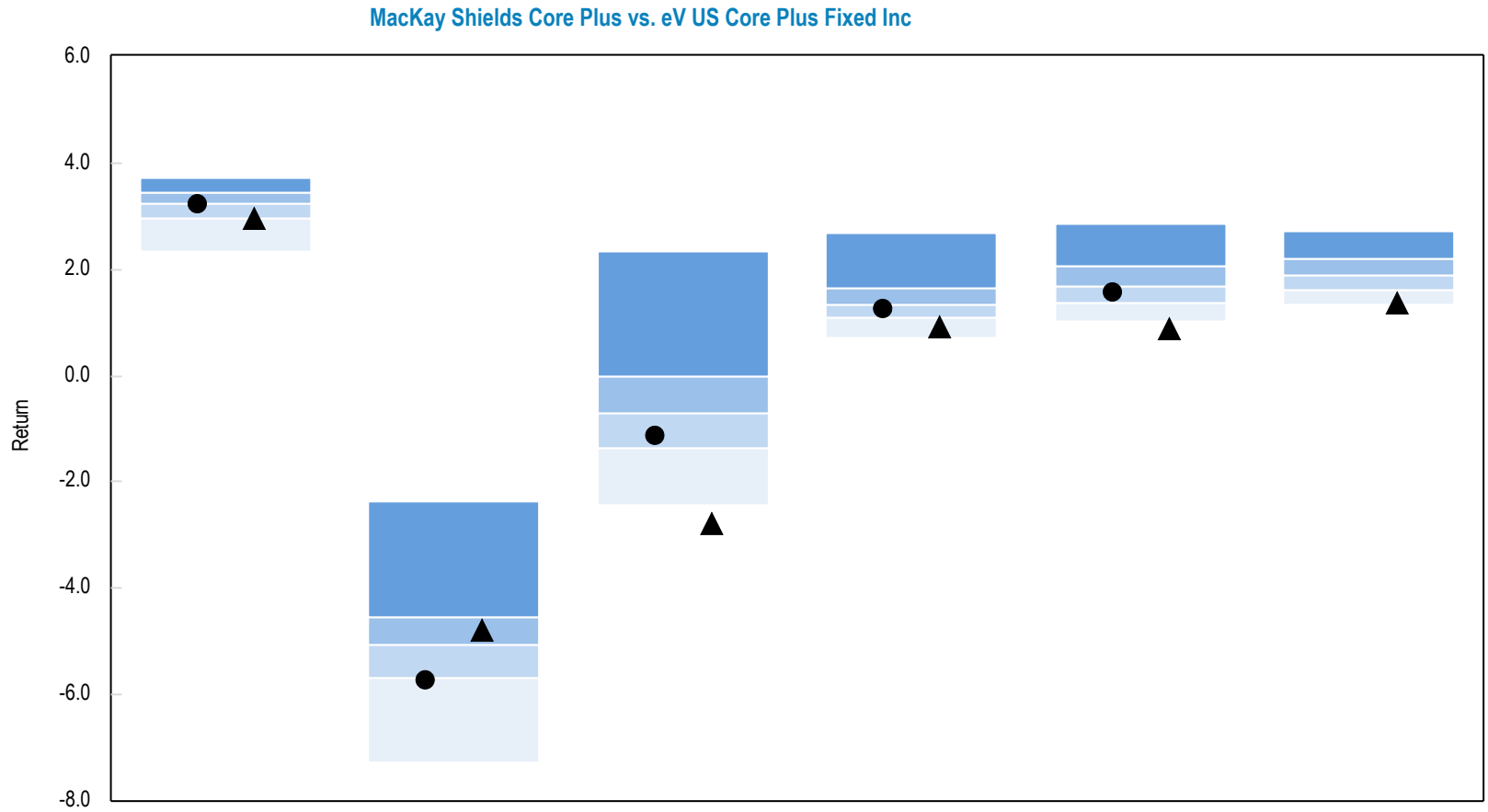
	Return	Standard Deviation	Sharpe Ratio
Doubleline Core Plus	-0.80	5.81	-0.26
Bloomberg US Aggregate Index	-2.77	6.20	-0.57

5 Years

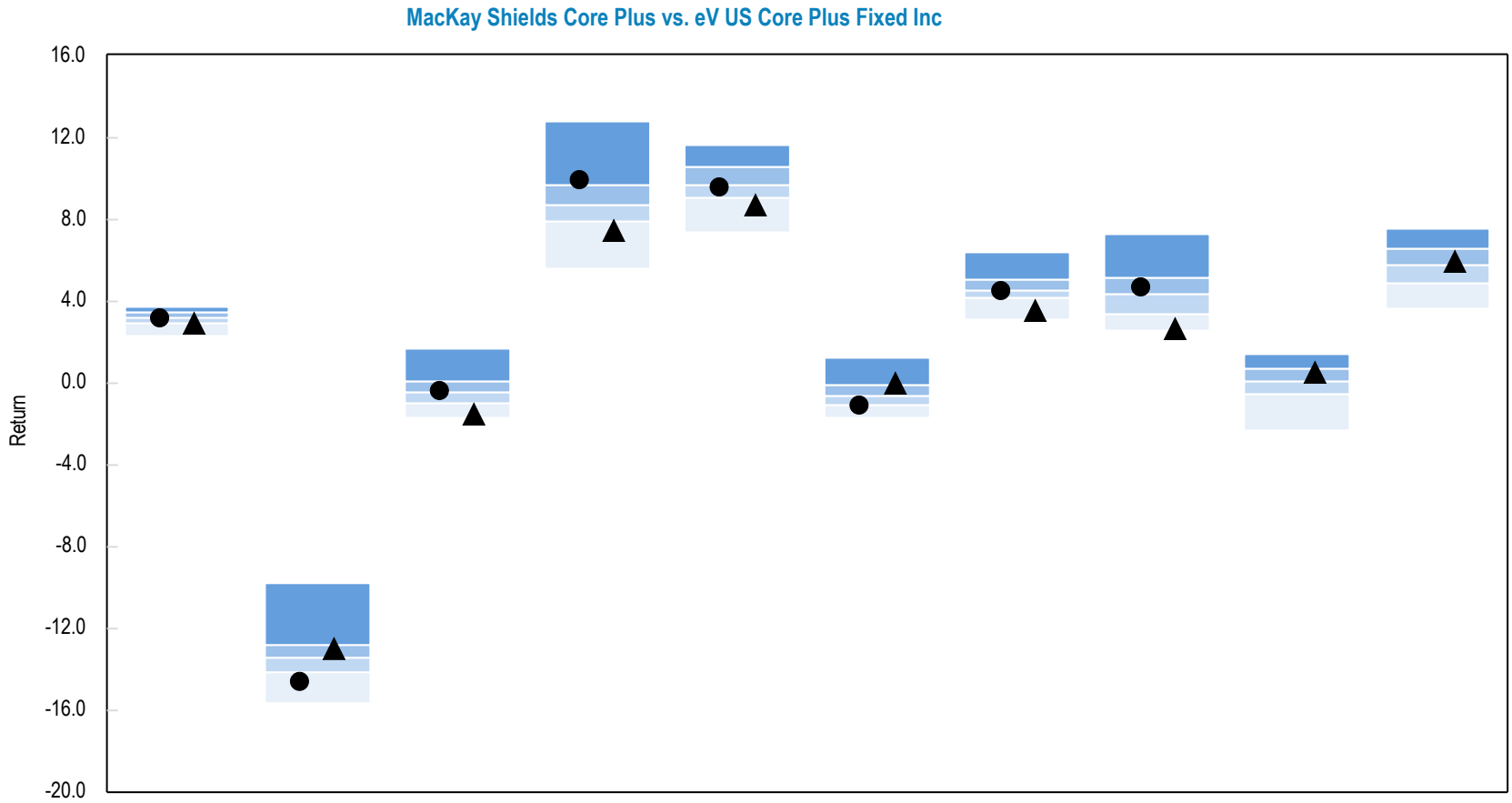
	Return	Standard Deviation	Sharpe Ratio
Doubleline Core Plus	0.66	5.52	-0.11
Bloomberg US Aggregate Index	0.90	5.42	-0.07


Rolling 3 Years Annualized Return
6.0
3.0
0.0
-3.0
-6.0
6/13
12/13
6/14
12/14
6/15
12/15
6/16
12/16
6/17
12/17
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
Doubleline Core Plus
Blmbg. U.S. Aggregate Index

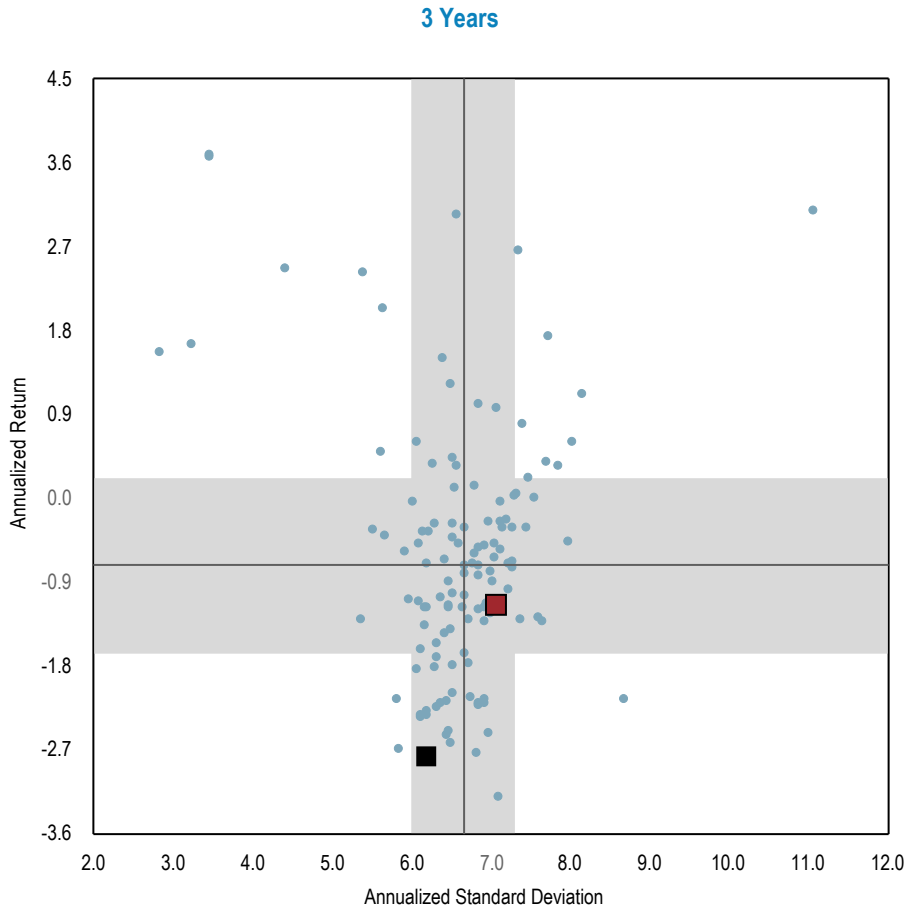

Rolling 5 Years Annualized Return
6.0
4.0
2.0
0.0
-2.0
6/13
12/13
6/14
12/14
6/15
12/15
6/16
12/16
6/17
12/17
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
Doubleline Core Plus
Blmbg. U.S. Aggregate Index

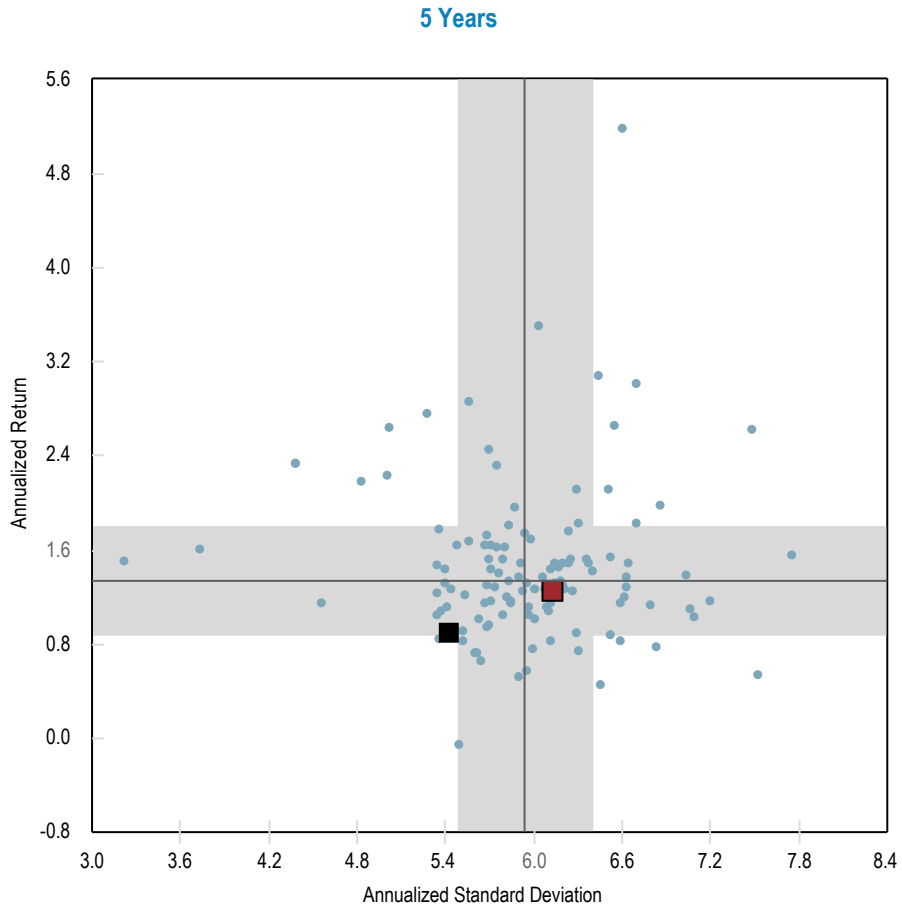


	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● MacKay Shields Core Plus	3.23 (51)	-5.73 (81)	-1.13 (63)	1.25 (61)	1.57 (58)	-
▲ Blmbg. U.S. Aggregate Index	2.96 (74)	-4.78 (36)	-2.77 (100)	0.90 (86)	0.88 (100)	1.36 (93)
5th Percentile	3.72	-2.37	2.33	2.67	2.86	2.70
1st Quartile	3.45	-4.55	-0.01	1.64	2.07	2.20
Median	3.23	-5.07	-0.72	1.34	1.67	1.89
3rd Quartile	2.95	-5.67	-1.38	1.11	1.35	1.61
95th Percentile	2.35	-7.29	-2.44	0.72	1.02	1.34
Population	135	134	127	119	113	103



	3 Mo	2022	2021	2020	2019	2018	2017	2016	2015	2014
● MacKay Shields Core Plus	3.23 (51)	-14.59 (87)	-0.36 (48)	9.92 (22)	9.60 (55)	-1.02 (75)	4.53 (52)	4.70 (37)	-	-
▲ Blmbg. U.S. Aggregate Index	2.96 (74)	-13.01 (36)	-1.55 (92)	7.51 (82)	8.72 (81)	0.01 (25)	3.54 (91)	2.65 (93)	0.55 (30)	5.97 (42)
5th Percentile	3.72	-9.76	1.71	12.82	11.63	1.24	6.44	7.28	1.44	7.54
1st Quartile	3.45	-12.76	0.09	9.65	10.61	-0.10	5.11	5.16	0.67	6.56
Median	3.23	-13.46	-0.43	8.71	9.73	-0.60	4.57	4.35	0.12	5.80
3rd Quartile	2.95	-14.13	-1.02	7.89	9.03	-1.03	4.14	3.39	-0.51	4.87
95th Percentile	2.35	-15.65	-1.70	5.64	7.39	-1.66	3.14	2.58	-2.27	3.68
Population	135	139	141	144	145	143	145	142	141	139





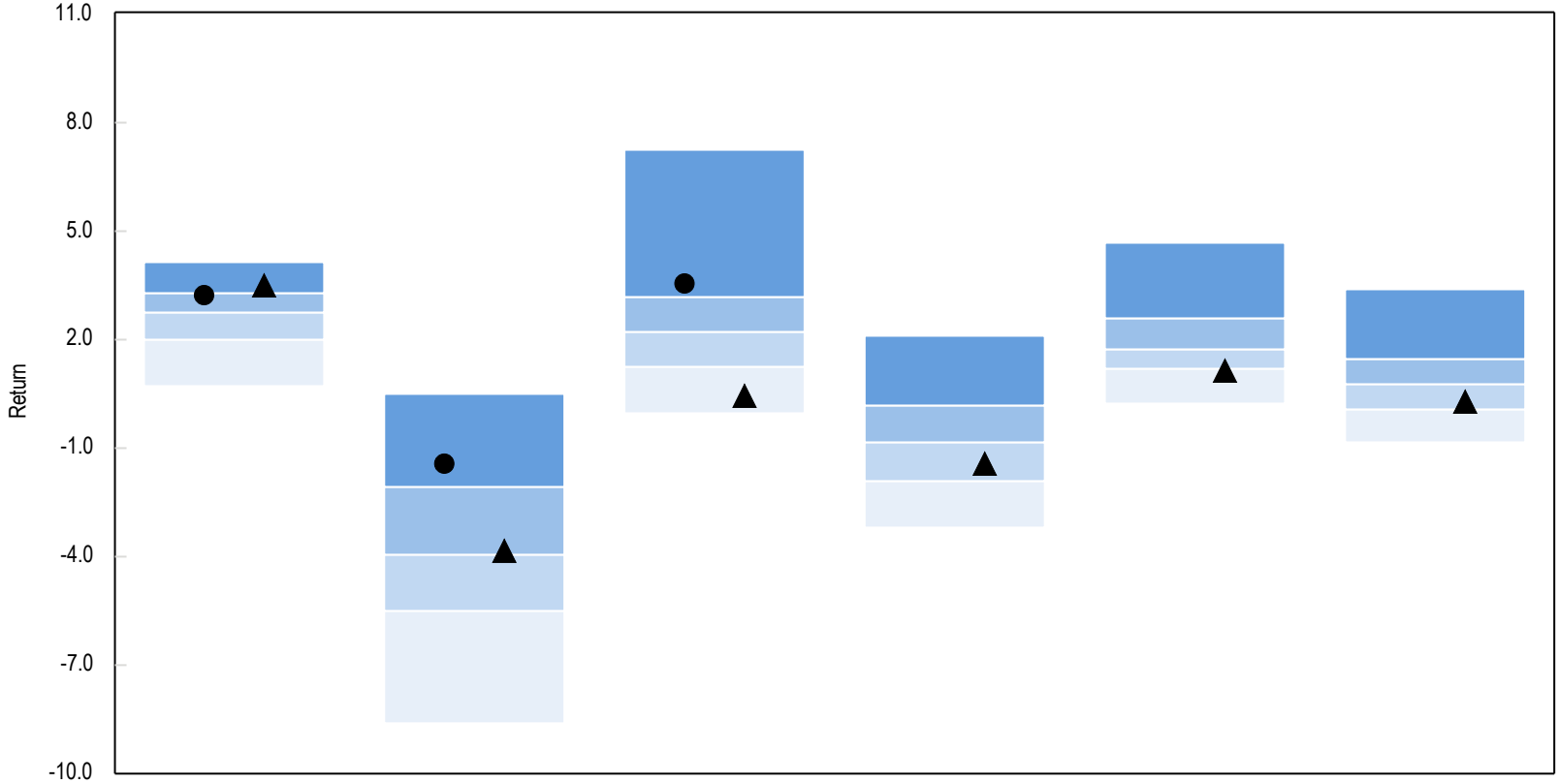
3 Years

	Return	Standard Deviation	Sharpe Ratio
MacKay Shields Core Plus	-1.13	7.06	-0.25
Bloomberg US Aggregate Index	-2.77	6.20	-0.57

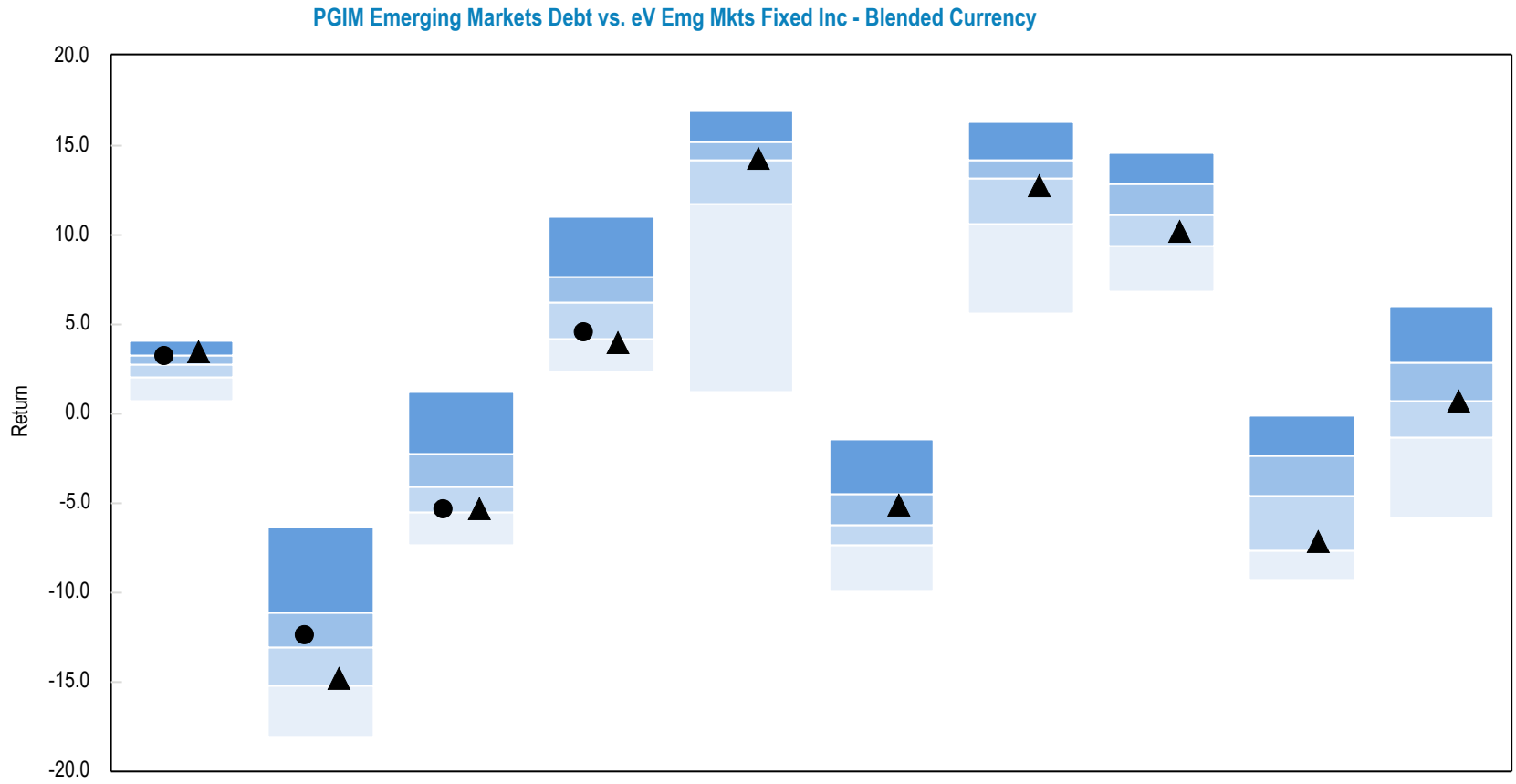
5 Years

	Return	Standard Deviation	Sharpe Ratio
MacKay Shields Core Plus	1.25	6.13	0.01
Bloomberg US Aggregate Index	0.90	5.42	-0.07

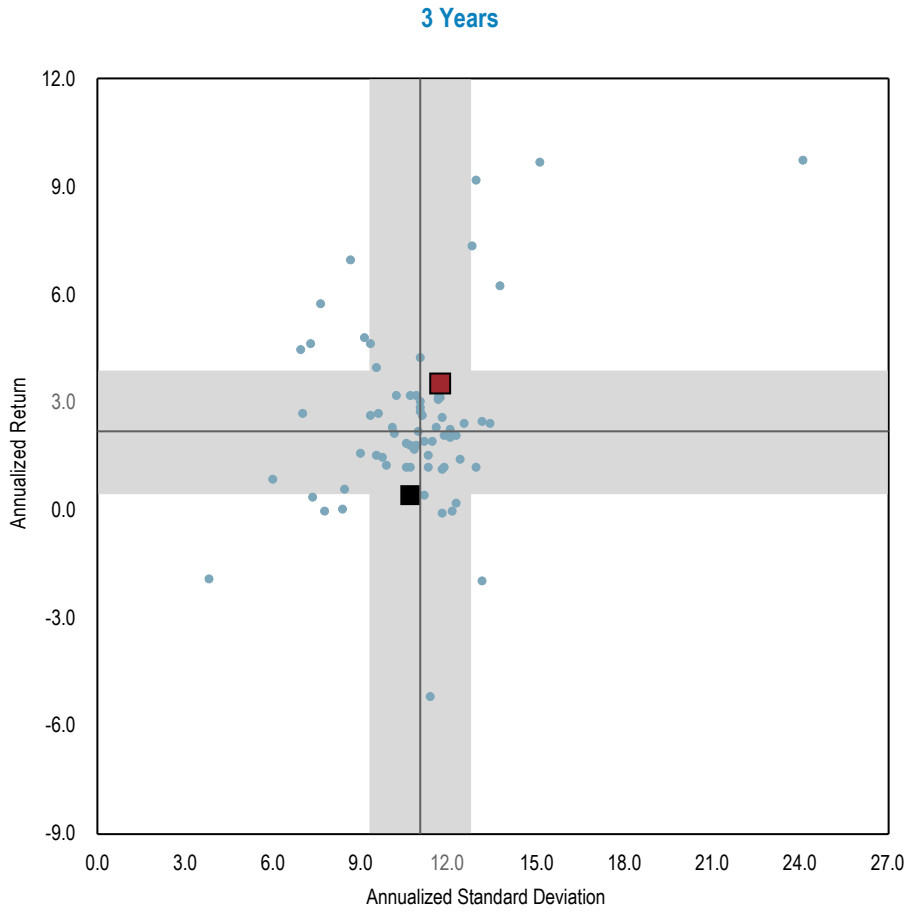
PGIM Emerging Markets Debt vs. eV Emg Mkts Fixed Inc - Blended Currency

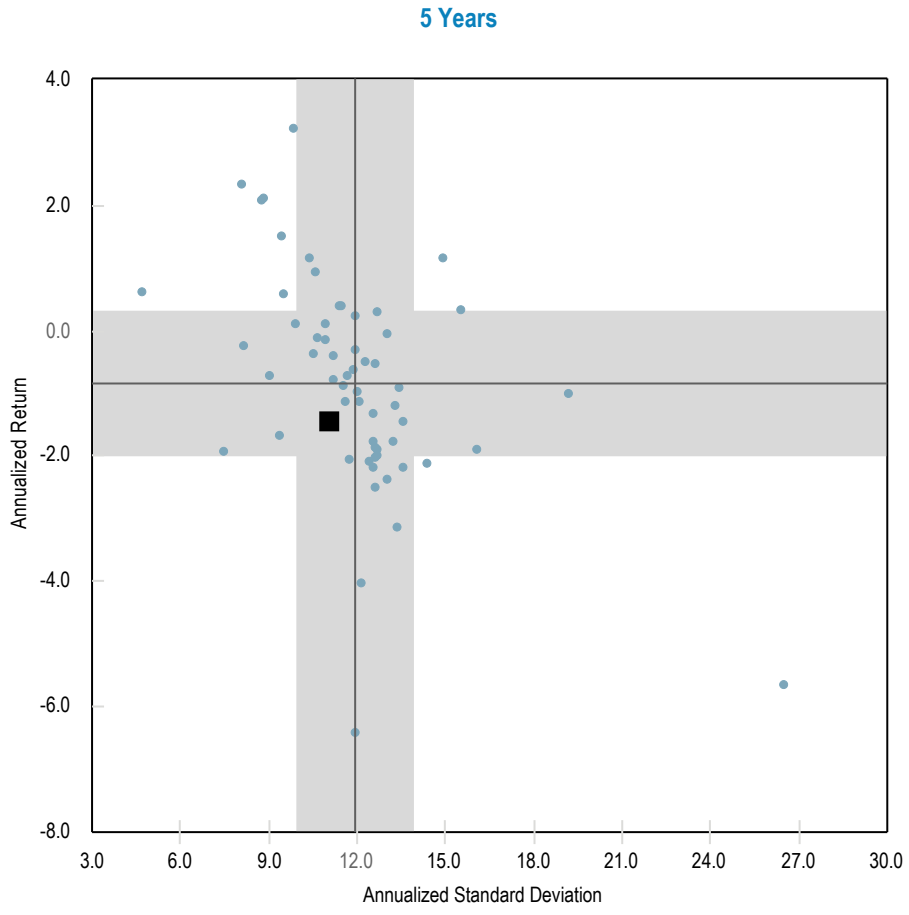


	Quarter	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
● PGIM Emerging Markets Debt	3.25 (27)	-1.42 (15)	3.56 (19)	-	-	-
▲ 50% JPM EMBI Global Div /50% JPM GBI EM Global Div	3.51 (21)	-3.83 (49)	0.46 (87)	-1.44 (67)	1.15 (79)	0.29 (69)
5th Percentile	4.12	0.52	7.26	2.08	4.68	3.37
1st Quartile	3.29	-2.06	3.16	0.15	2.61	1.44
Median	2.74	-3.95	2.20	-0.83	1.74	0.77
3rd Quartile	2.01	-5.51	1.23	-1.88	1.22	0.05
95th Percentile	0.73	-8.61	-0.03	-3.17	0.24	-0.84
Population	70	70	68	60	49	32



	3 Mo	2022	2021	2020	2019	2018	2017	2016	2015	2014
● PGIM Emerging Markets Debt	3.25 (27)	-12.37 (39)	-5.30 (70)	4.56 (70)	-	-	-	-	-	-
▲ 50% JPM EMBI Global Div /50% JPM GBI EM Global Div	3.51 (21)	-14.75 (73)	-5.32 (71)	4.02 (78)	14.31 (45)	-5.15 (33)	12.74 (55)	10.16 (68)	-7.14 (68)	0.71 (50)
5th Percentile	4.12	-6.29	1.18	10.98	16.99	-1.41	16.29	14.58	-0.09	6.07
1st Quartile	3.29	-11.11	-2.22	7.68	15.18	-4.51	14.18	12.84	-2.36	2.86
Median	2.74	-13.02	-4.09	6.26	14.13	-6.20	13.18	11.17	-4.57	0.68
3rd Quartile	2.01	-15.17	-5.53	4.18	11.69	-7.39	10.64	9.41	-7.66	-1.28
95th Percentile	0.73	-18.06	-7.38	2.32	1.20	-9.94	5.61	6.89	-9.31	-5.79
Population	70	73	82	82	76	76	71	65	60	54



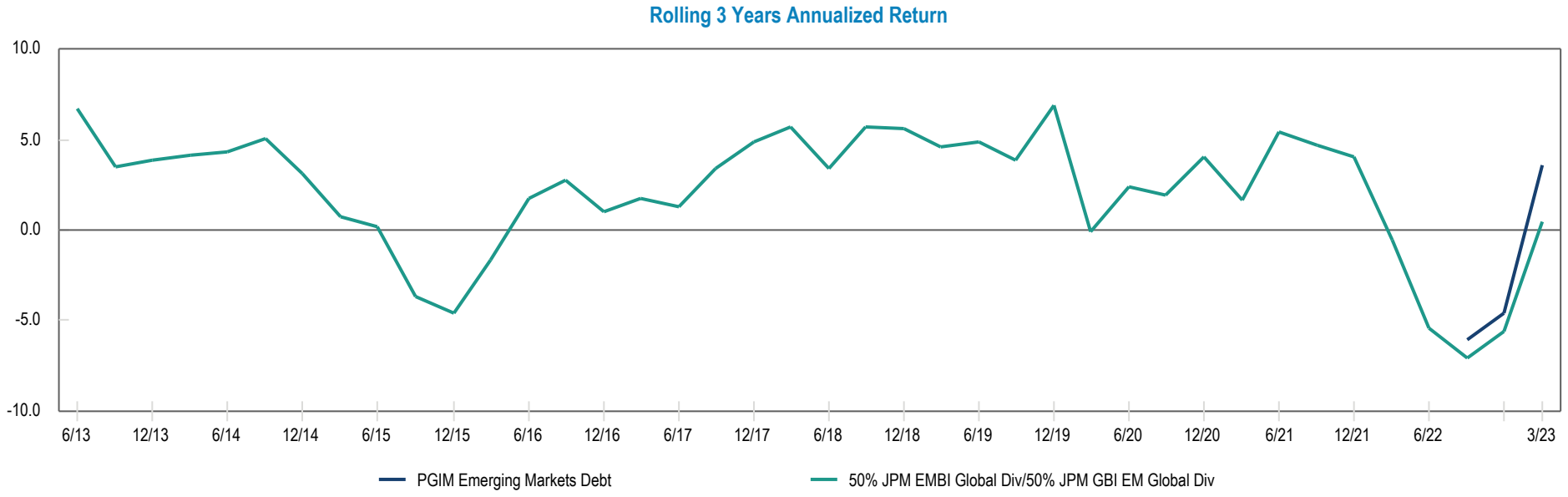


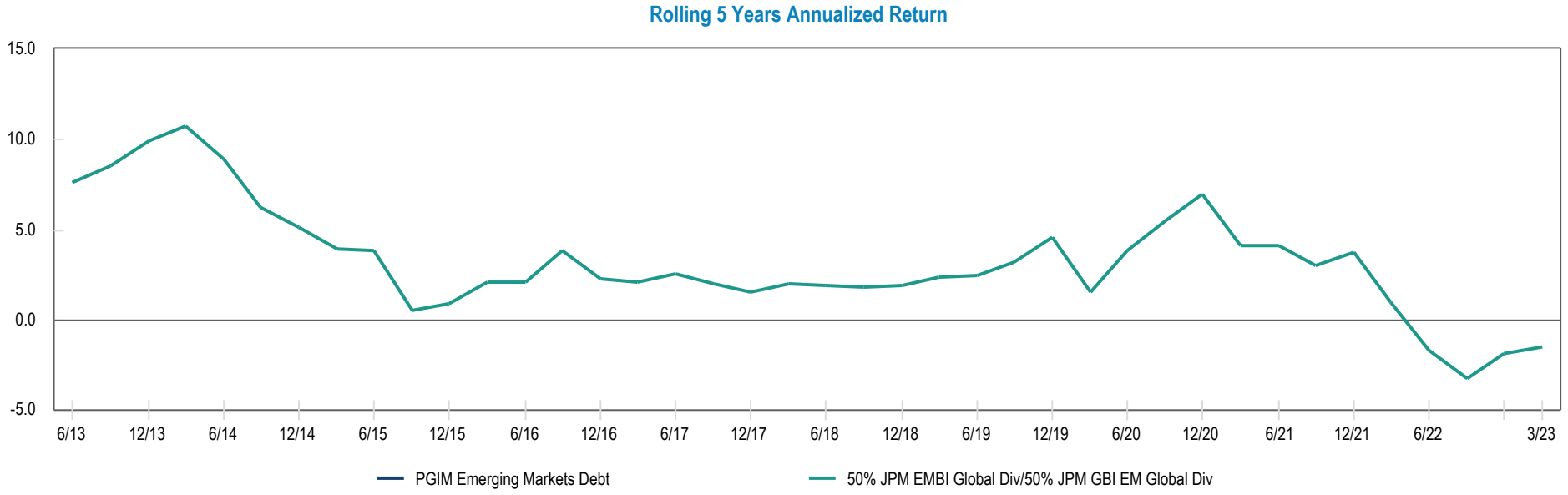
3 Years

	Return	Standard Deviation	Sharpe Ratio
PGIM Emerging Markets Debt	3.56	11.72	0.28
50% JPM EMBI Global Div/50% JPM GBI EM Global Div	0.46	10.69	0.01

5 Years

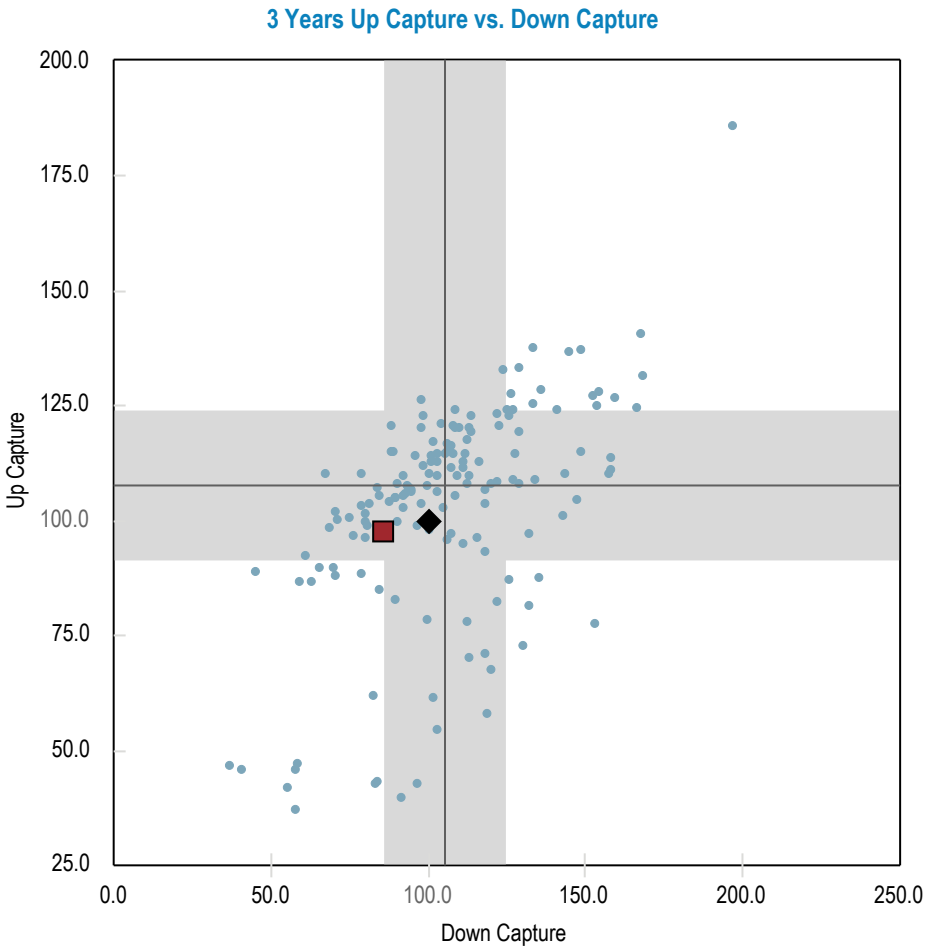
	Return	Standard Deviation	Sharpe Ratio
PGIM Emerging Markets Debt	-	-	-
50% JPM EMBI Global Div/50% JPM GBI EM Global Div	-1.44	11.07	-0.20


Rolling 3 Years Annualized Return
10.0
5.0
0.0
-5.0
-10.0
6/13
12/13
6/14
12/14
6/15
12/15
6/16
12/16
6/17
12/17
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
PGIM Emerging Markets Debt
50% JPM EMBI Global Div/50% JPM GBI EM Global Div

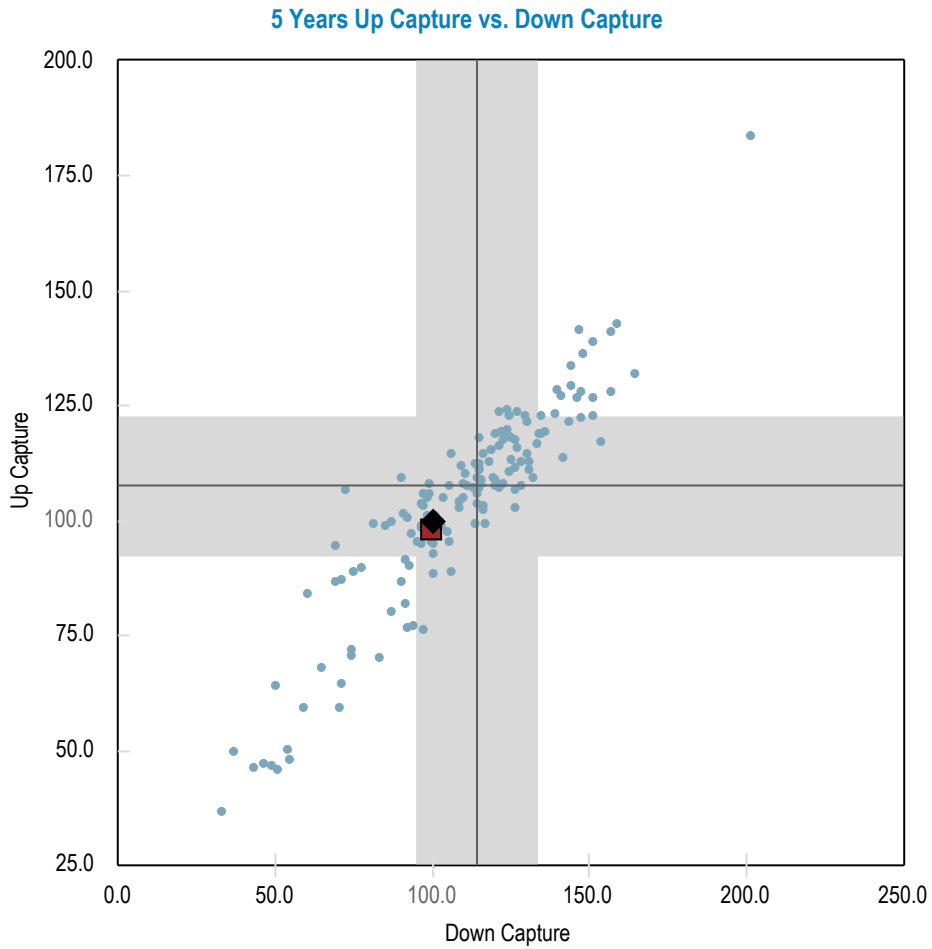

Rolling 5 Years Annualized Return
15.0
10.0
5.0
0.0
-5.0
6/13
12/13
6/14
12/14
6/15
12/15
6/16
12/16
6/17
12/17
6/18
12/18
6/19
12/19
6/20
12/20
6/21
12/21
6/22
3/23
PGIM Emerging Markets Debt
50% JPM EMBI Global Div/50% JPM GBI EM Global Div

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2022	2021	2020	2019	2018
Total Real Estate	**328,169,896**	**100.0**	**-4.5**	**0.4**	**6.3**	**6.4**	**8.3**	**11.0**	**12.8**	**1.8**	**5.2**	**8.8**
NCREIF-ODCE			*-3.2*	*-3.1*	*8.4*	*7.5*	*9.5*	*7.5*	*22.2*	*1.2*	*5.3*	*8.3*
RREEF America II	165,792,899	50.5	-5.6	1.0	8.2	7.5	9.4	18.4	12.8	1.8	5.3	8.6
NCREIF-ODCE			*-3.2*	*-3.1*	*8.4*	*7.5*	*9.5*	*7.5*	*22.2*	*1.2*	*5.3*	*8.3*
American Realty Strategic Value Fund	87,673,881	26.7	-3.5	7.4	8.0	-	-	16.2	11.3	1.1	-	-
NCREIF-ODCE			*-3.2*	*-3.1*	*8.4*	-	-	*7.5*	*22.2*	*1.2*	-	-
Invesco Commercial Mortgage Income Fund	73,994,772	22.5	-3.1	-1.8	-	-	-	2.7	-	-	-	-
NCREIF-ODCE			*-3.2*	*-3.1*	-	-	-	*7.5*	-	-	-	-
SSGA US REIT Index Non-Lending Fund	708,344	0.2	2.8	-21.0	-	-	-	-26.0	-	-	-	-
Dow Jones U.S. REIT Index			*1.9*	*-18.7*	-	-	-	*-24.8*	-	-	-	-

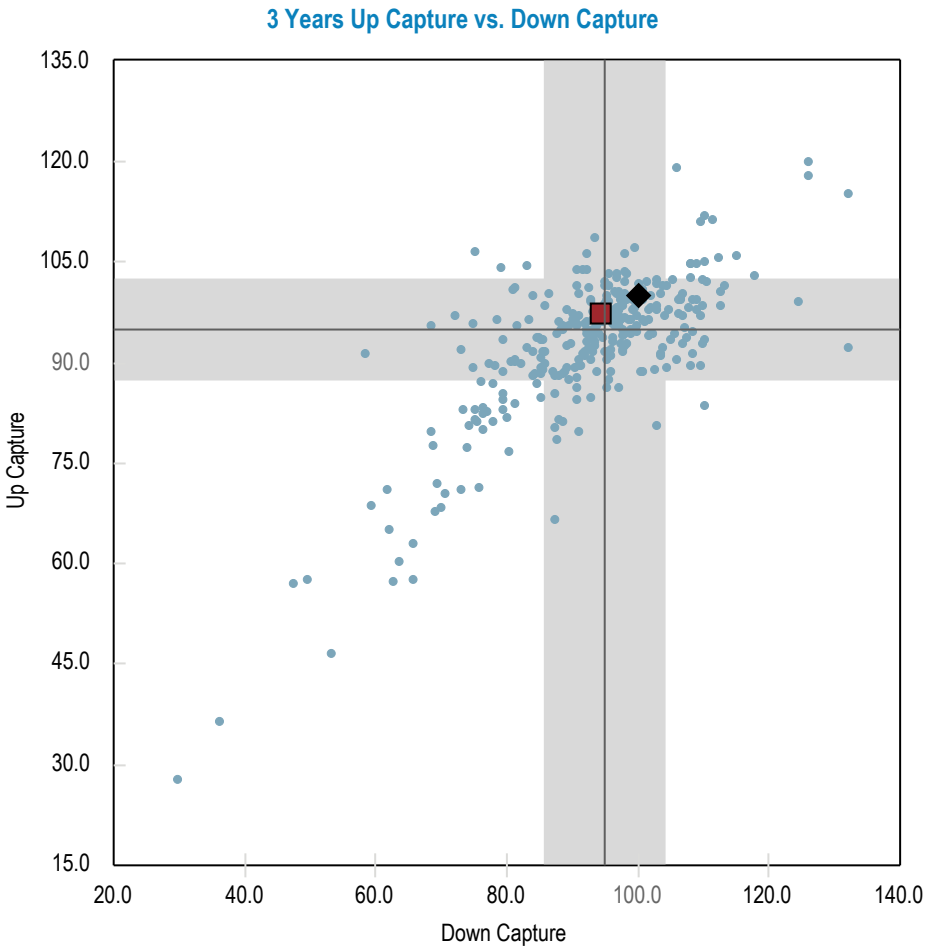
American Realty funded 4Q 2019. Invesco Commerical Mortgage Income Fund was funded 9/1/2021. SSGA US REIT Index was funded 12/10/2021.



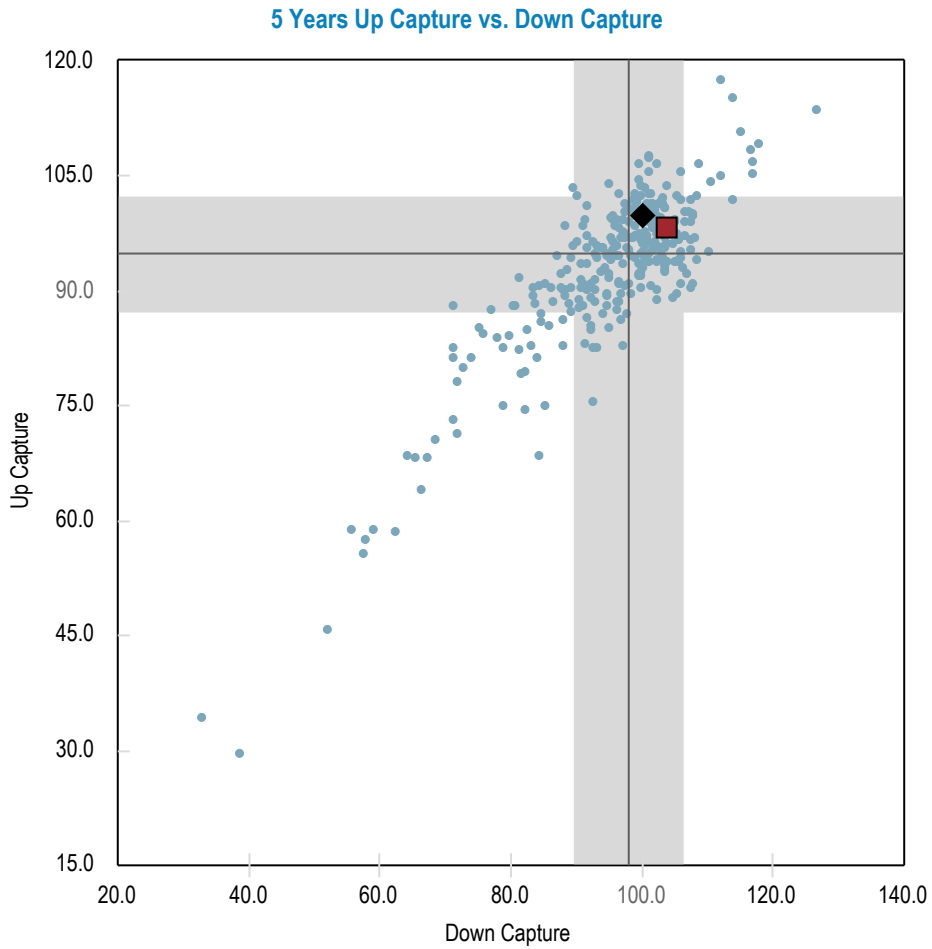
	Up Capture	Down Capture
Total Fund	97.59	85.57
Policy Index	100.00	100.00
Median	107.71	105.48
Population	152	152



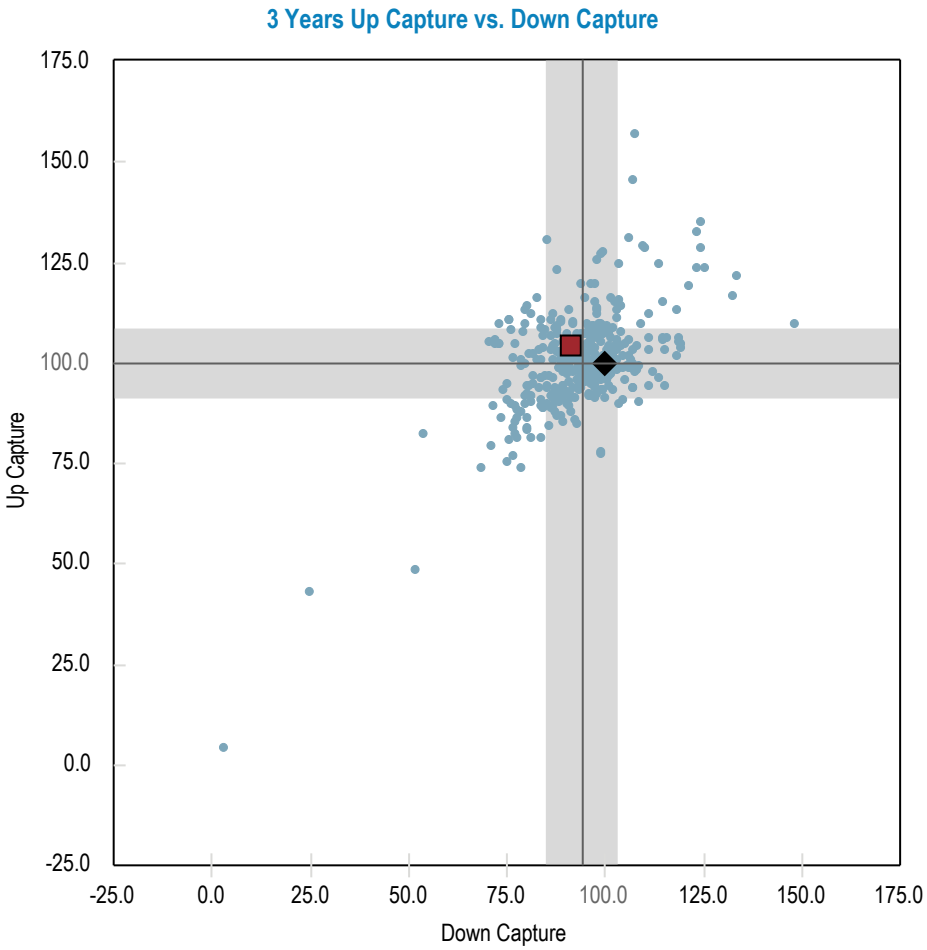
	Up Capture	Down Capture
Total Fund	98.11	99.86
Policy Index	100.00	100.00
Median	107.59	114.16
Population	148	148



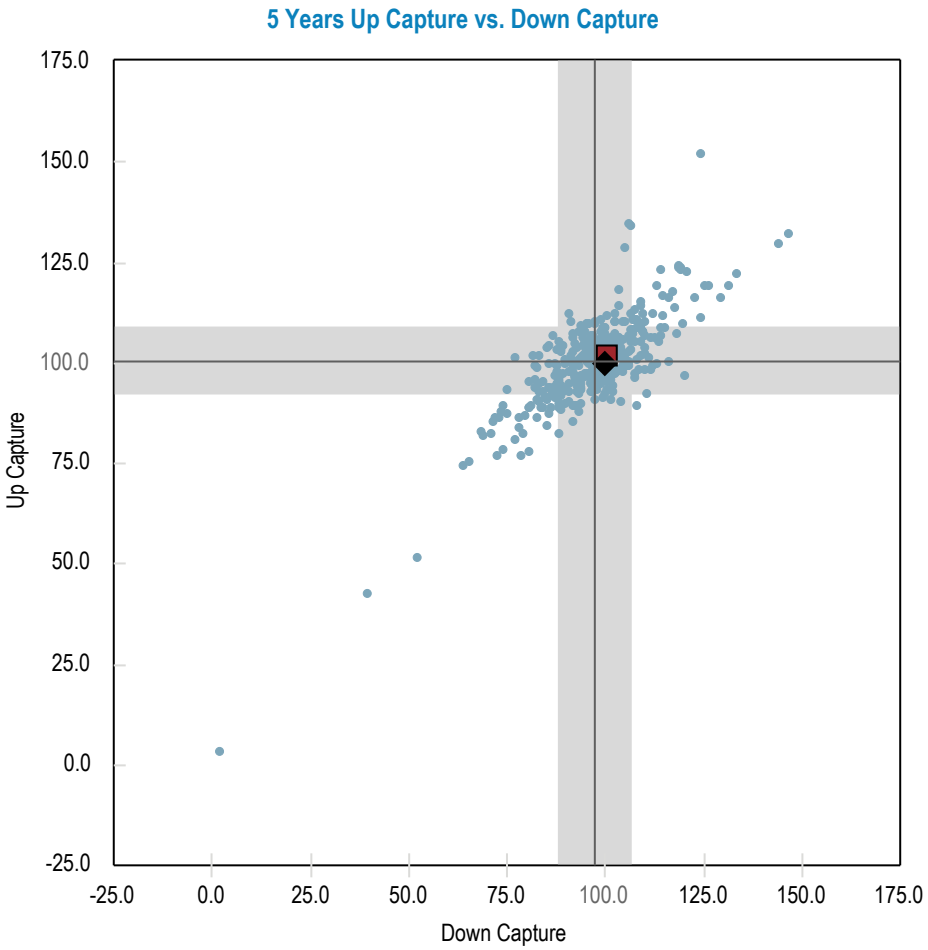
	Up Capture	Down Capture
PGIM QS US Core Equity	97.49	94.42
S&P 500 Index	100.00	100.00
Median	95.11	94.96
Population	317	317



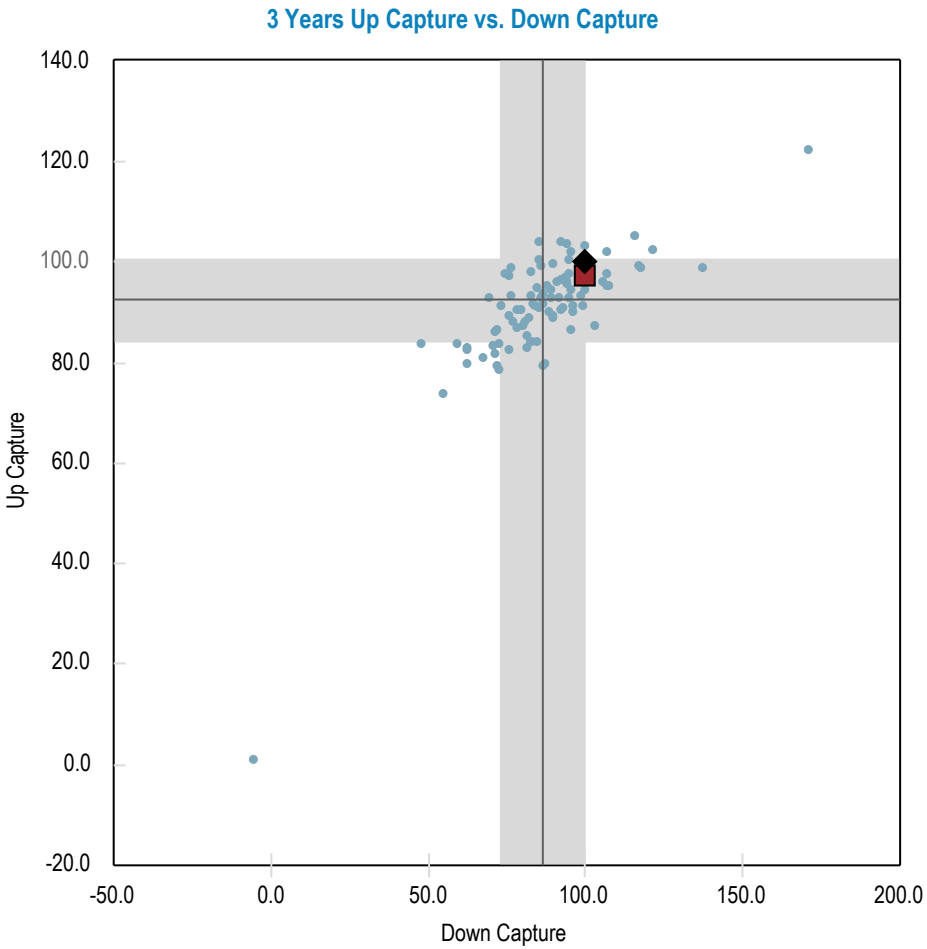
	Up Capture	Down Capture
PGIM QS US Core Equity	98.36	103.85
S&P 500 Index	100.00	100.00
Median	94.80	98.10
Population	300	300



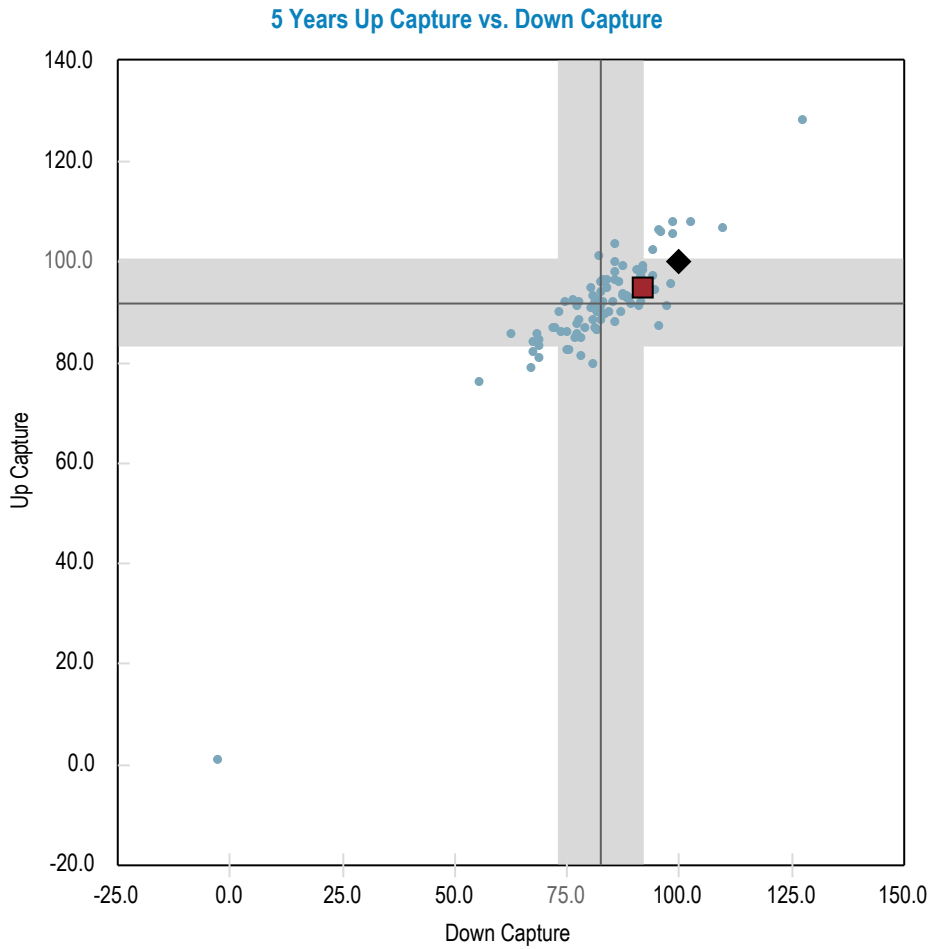
	Up Capture	Down Capture
Boston Partners Large Cap Value	104.47	91.22
Russell 1000 Value Index	100.00	100.00
Median	99.98	94.07
Population	364	364



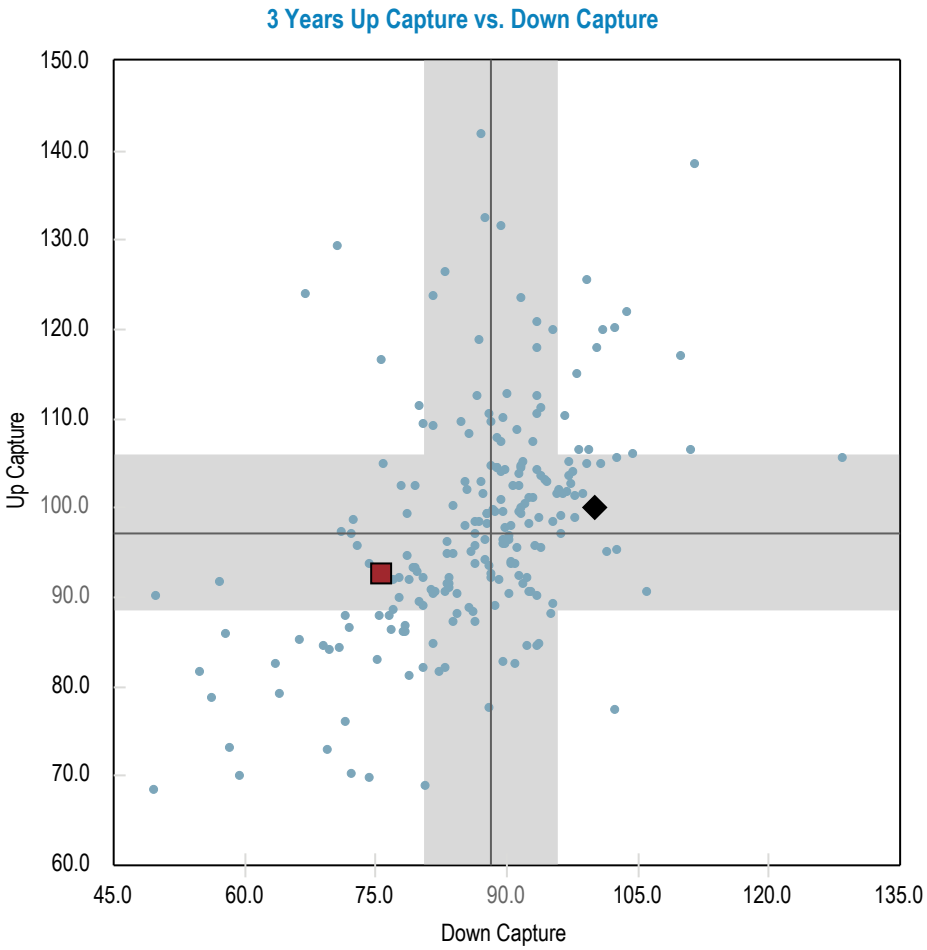
	Up Capture	Down Capture
Boston Partners Large Cap Value	101.78	100.20
Russell 1000 Value Index	100.00	100.00
Median	100.56	97.52
Population	355	355



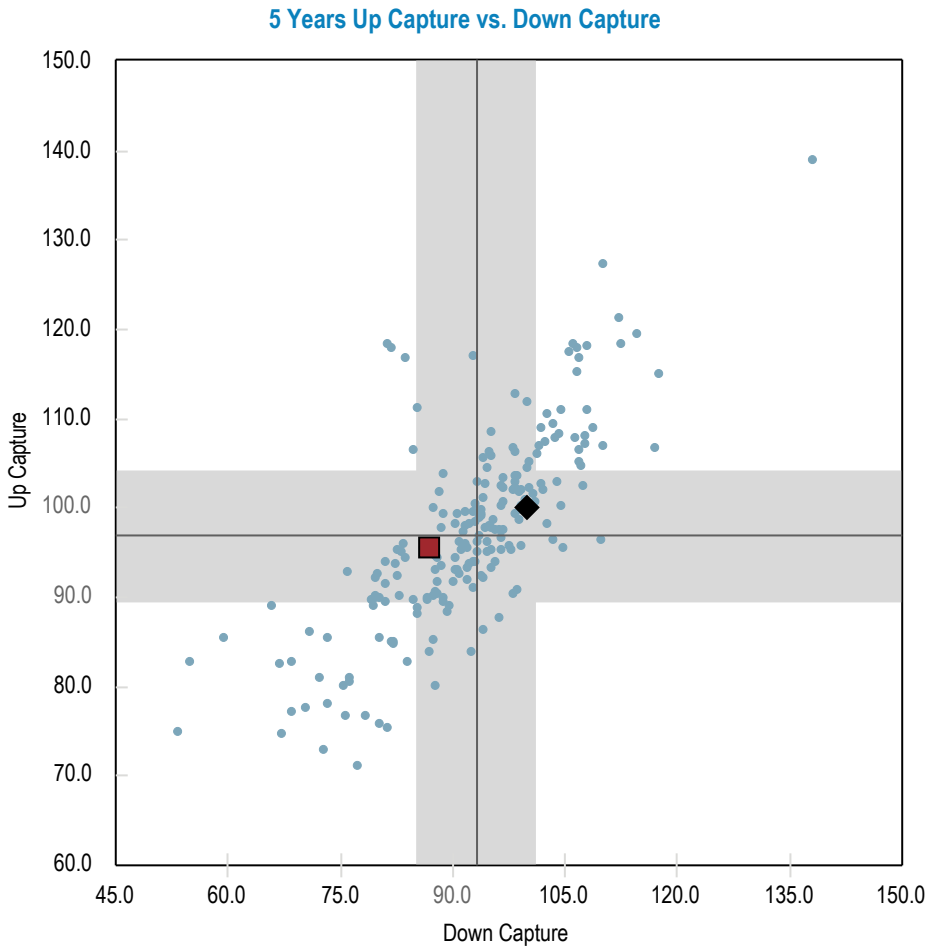
	Up Capture	Down Capture
William Blair SMID Cap Growth	97.25	99.63
Russell 2500 Growth Index	100.00	100.00
Median	92.45	86.37
Population	94	94



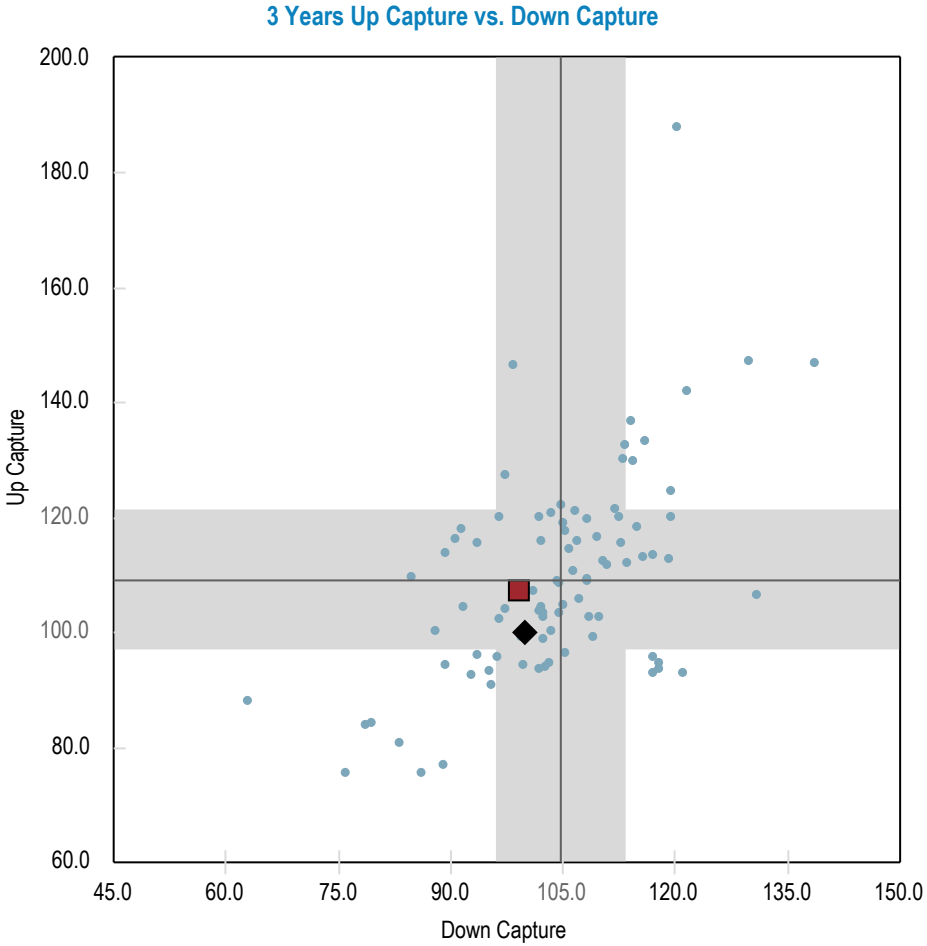
	Up Capture	Down Capture
William Blair SMID Cap Growth	94.83	91.82
Russell 2500 Growth Index	100.00	100.00
Median	92.02	82.41
Population	90	90



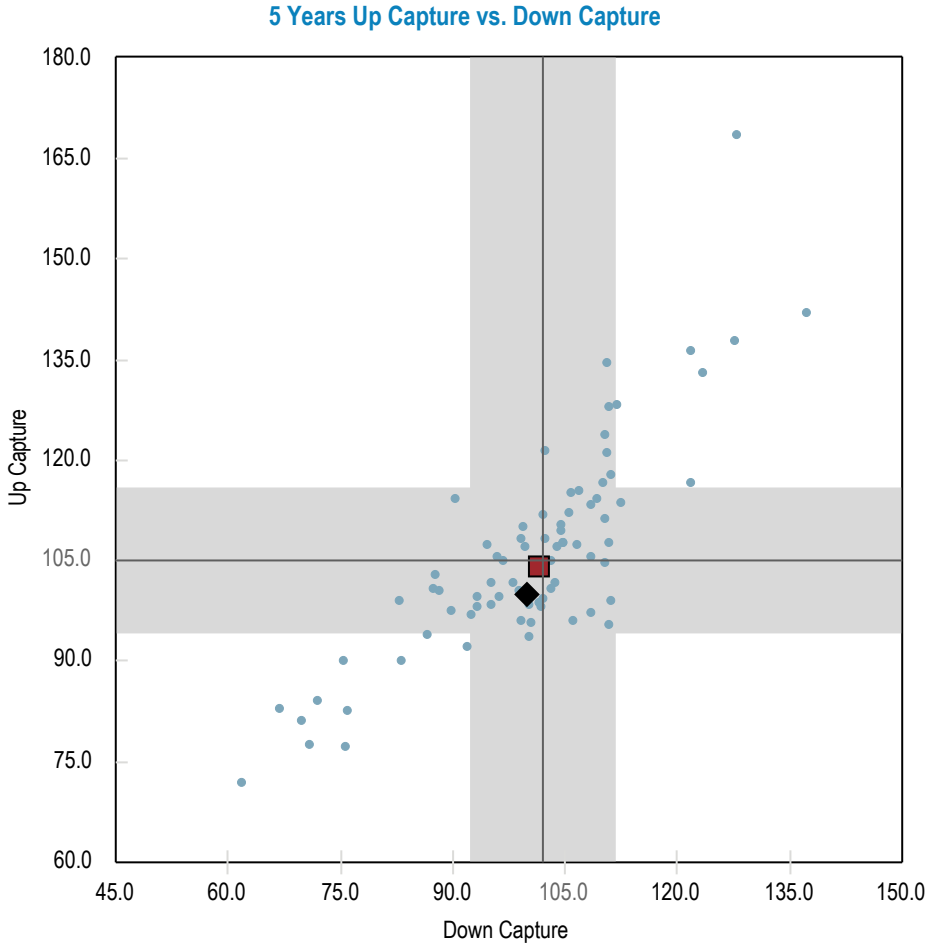
	Up Capture	Down Capture
Leeward Small Cap Value	92.77	75.69
Russell 2000 Value Index	100.00	100.00
Median	97.25	88.20
Population	214	214



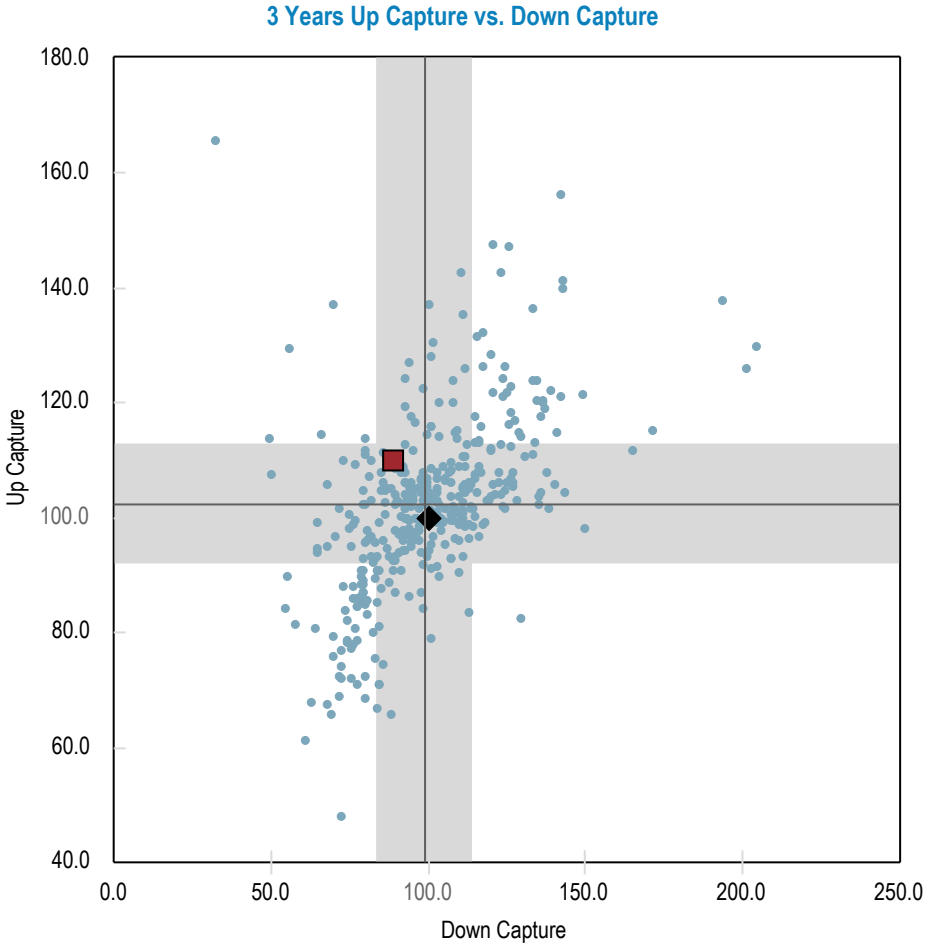
	Up Capture	Down Capture
Leeward Small Cap Value	95.50	86.93
Russell 2000 Value Index	100.00	100.00
Median	96.88	93.16
Population	207	207



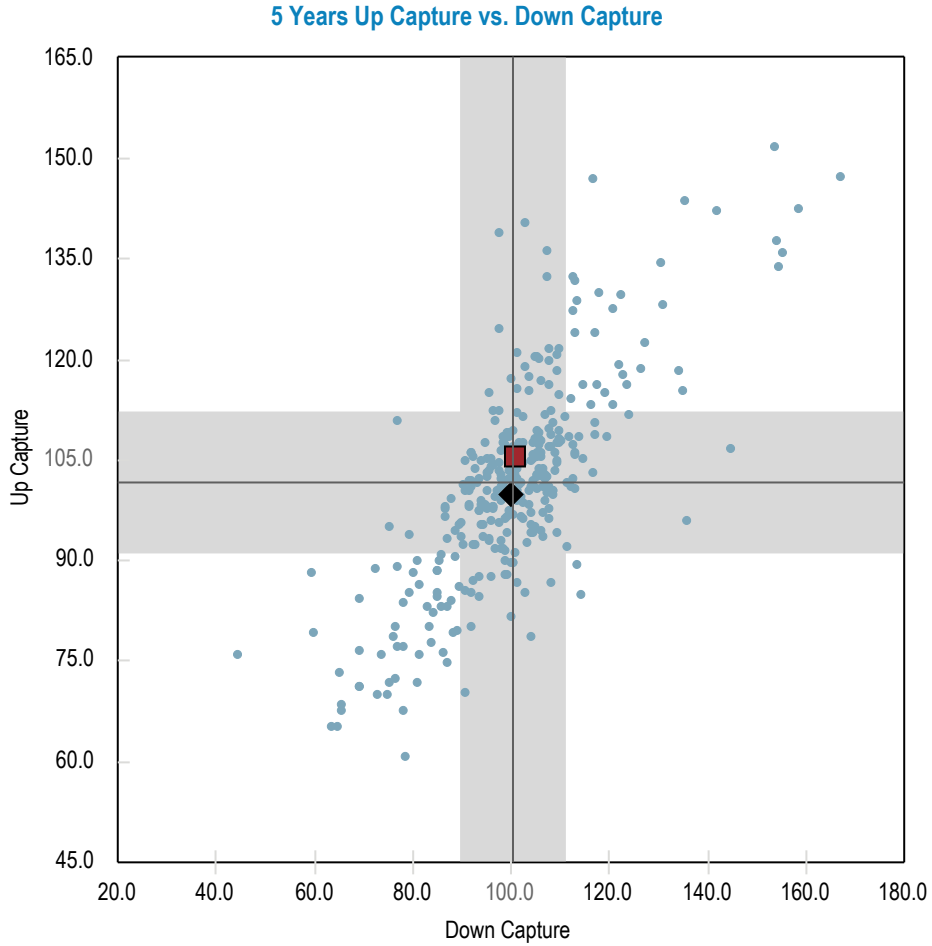
	Up Capture	Down Capture
PIMCO RAE Fundamental Global Ex US Fund	107.25	99.04
MSCI AC World ex USA Value (Net)	100.00	100.00
Median	109.13	104.74
Population	87	87



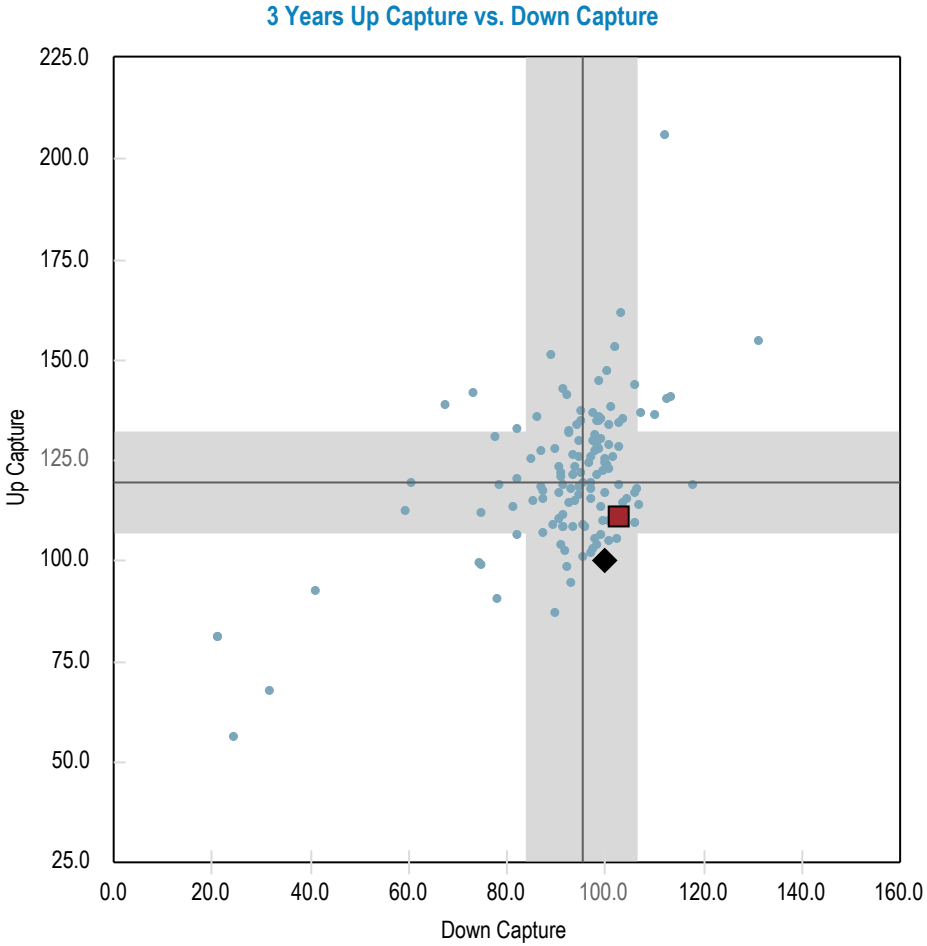
	Up Capture	Down Capture
PIMCO RAE Fundamental Global Ex US Fund	104.08	101.45
MSCI AC World ex USA Value (Net)	100.00	100.00
Median	105.06	102.12
Population	77	77



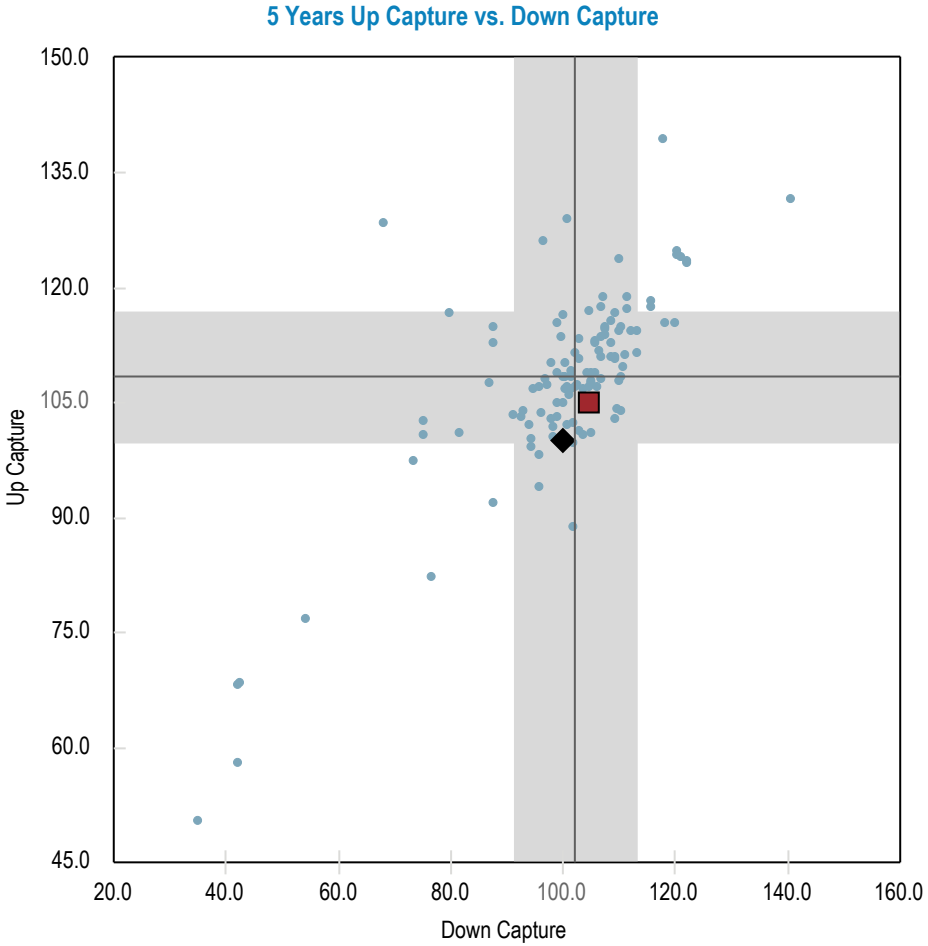
	Up Capture	Down Capture
Skellig Water Fund (aka KBI)	109.83	89.05
MSCI AC World Index (Net)	100.00	100.00
Median	102.46	98.75
Population	383	383



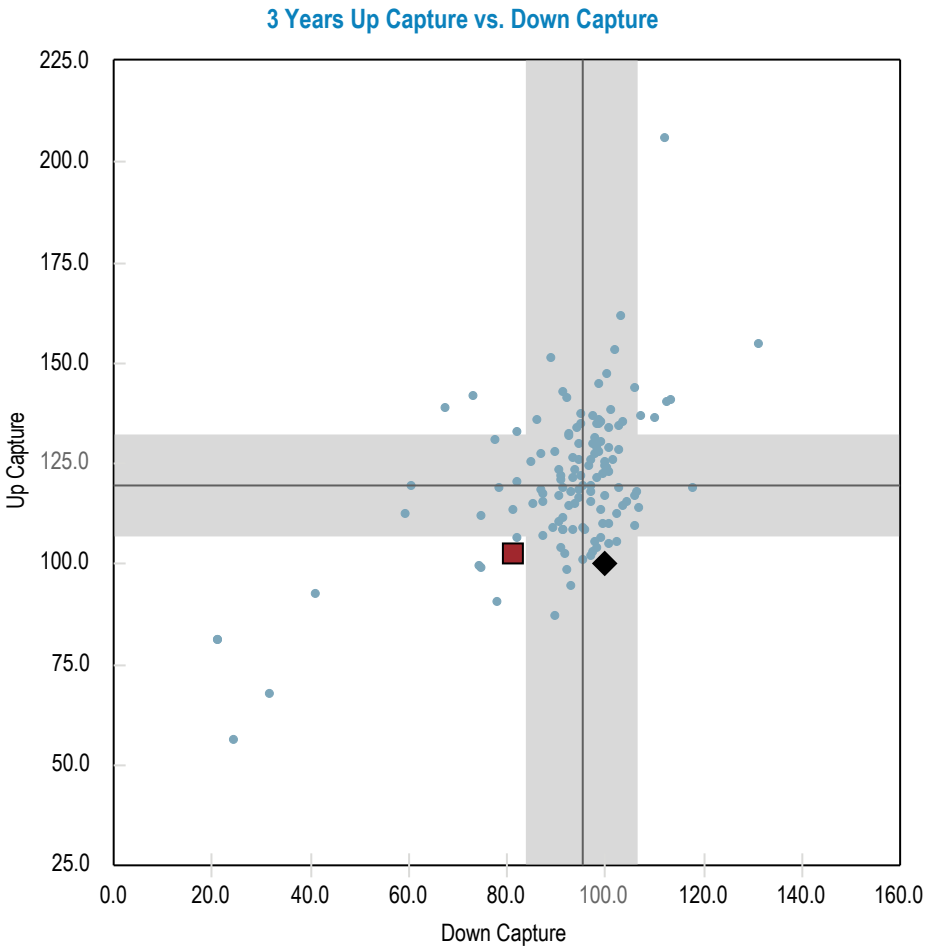
	Up Capture	Down Capture
Skellig Water Fund (aka KBI)	105.64	100.82
MSCI AC World Index (Net)	100.00	100.00
Median	101.68	100.53
Population	337	337



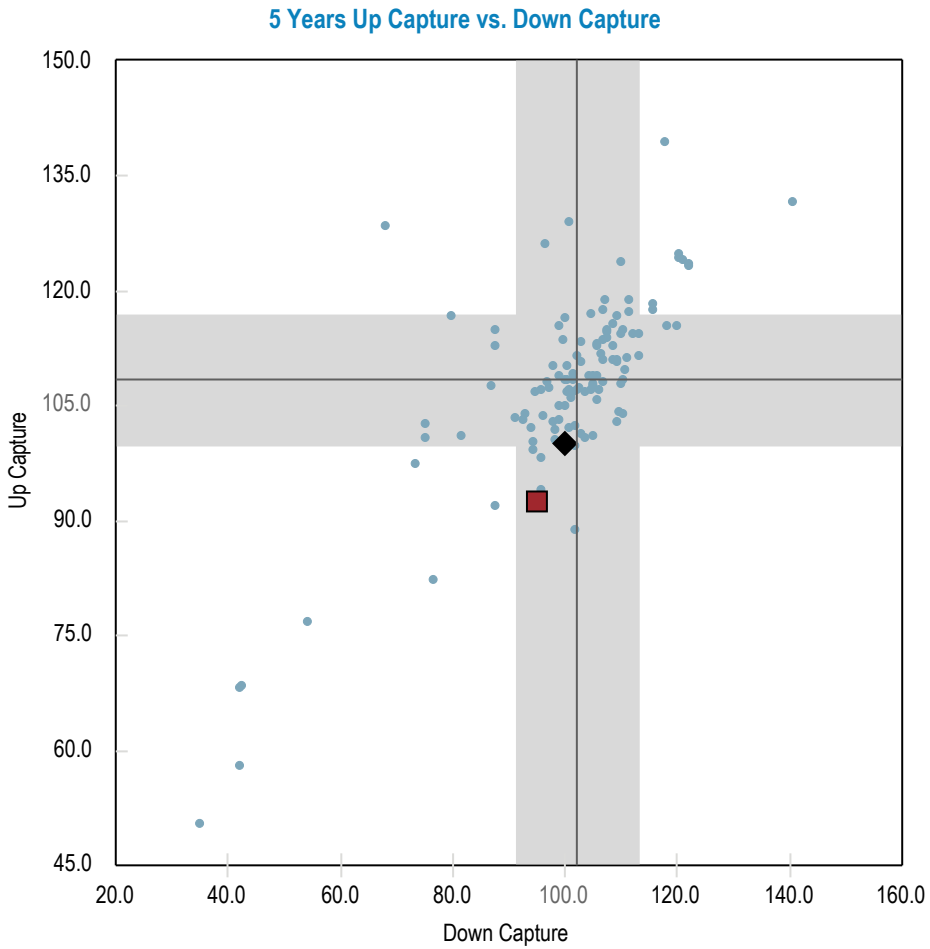
	Up Capture	Down Capture
BlackRock Core Plus Fixed Income	111.27	102.70
Blmbg. U.S. Aggregate Index	100.00	100.00
Median	119.51	95.28
Population	127	127



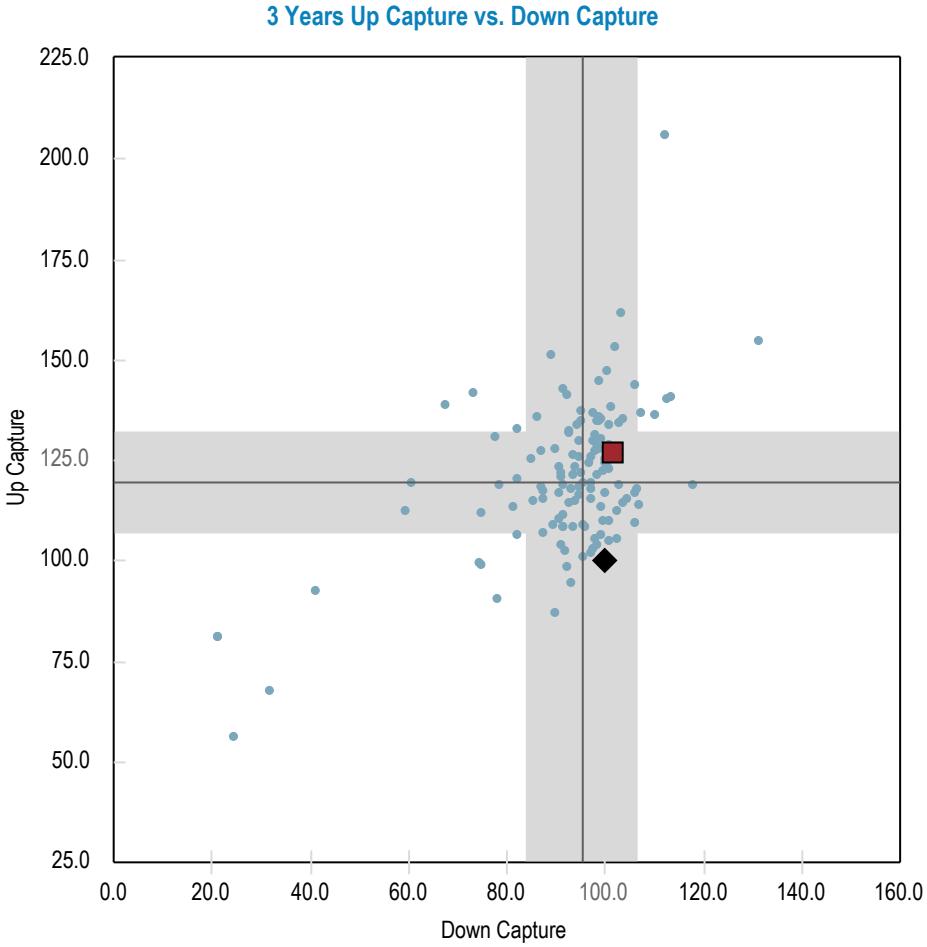
	Up Capture	Down Capture
BlackRock Core Plus Fixed Income	105.18	104.57
Blmbg. U.S. Aggregate Index	100.00	100.00
Median	108.41	102.18
Population	119	119



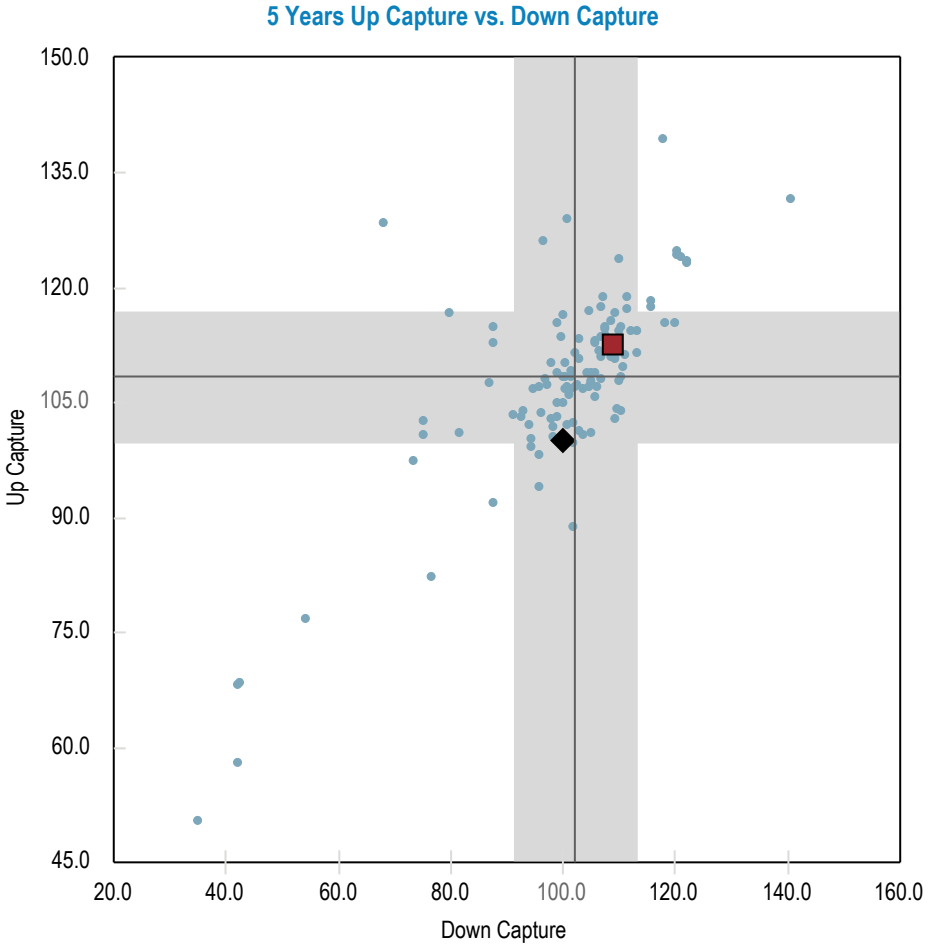
	Up Capture	Down Capture
Doubleline Core Plus	102.59	81.31
Blmbg. U.S. Aggregate Index	100.00	100.00
Median	119.51	95.28
Population	127	127



	Up Capture	Down Capture
Doubleline Core Plus	92.47	94.95
Blmbg. U.S. Aggregate Index	100.00	100.00
Median	108.41	102.18
Population	119	119



	Up Capture	Down Capture
MacKay Shields Core Plus	126.94	101.69
Blmbg. U.S. Aggregate Index	100.00	100.00
Median	119.51	95.28
Population	127	127



	Up Capture	Down Capture
MacKay Shields Core Plus	112.54	108.67
Blmbg. U.S. Aggregate Index	100.00	100.00
Median	108.41	102.18
Population	119	119

Performance Return Calculations

Performance is calculated using Time Weighted Rates of Return (TWRR) methodologies. Monthly returns are linked geometrically and annualized for periods longer than one year.

Data Source

Verus is an independent third party consulting firm and calculates returns from best source book of record data. Returns calculated by Verus may deviate from those shown by the manager in part, but not limited to, differences in prices and market values reported by the custodian and manager, as well as significant cash flows into or out of an account. It is the responsibility of the manager and custodian to provide insight into the pricing methodologies and any difference in valuation.

Illiquid Alternatives

Due to the inability to receive final valuation prior to report production, closed end funds (including but are not limited to Real Estate, Hedge Funds, Private Equity, and Private Credit) performance is typically reported at a one-quarter lag. Valuation is reported at a one-quarter lag, adjusted for current quarter flow (cash flows are captured real time). Closed end fund performance is calculated using a time-weighted return methodology consistent with all portfolio and total fund performance calculations. For Private Markets, performance reports also include Verus-calculated multiples based on flows and valuations (e.g. DPI and TVPI) and manager-provided IRRs.

Manager Line Up

Manager	Fund Incepted	Data Source	Manager	Fund Incepted	Data Source
SSGA S&P 500 Flagship Fund	7/27/2011	SSGA	SSGA US REIT Index Non-Lending Fund	12/10/2021	BNY
PGIM QS US Core Equity	12/1/2008	BNY	RREEF America II	3/1/2003	Deutsche
Boston Partners Large Cap Value	2/1/1999	BNY	Pantheon USA Fund VI	7/26/2005	Pantheon
William Blair Large Cap Growth	4/25/2022	BNY	PIMCO BRAVO	1/14/2011	PIMCO
SSGA US Extended Market Index	6/10/2021	SSGA	KKR Mezzanine Partners	7/8/2011	KKR
William Blair SMID Cap Growth	6/30/2006	BNY	Stepstone Secondary Opps II	5/10/2013	Stepstone
Leeward Small Cap Value	8/26/2009	BNY	Ocean Avenue Fund III	5/27/2016	Ocean Ave
SSGA MSCI ACWI ex US	1/1/2010	SSGA	Ocean Avenue Fund IV	9/16/2019	Ocean Ave
PIMCO RAE	8/14/2012	PIMCO	Pathway Fund 8	4/12/2016	Pathway
SGA Global Growth	6/4/2018	SGA	Pathway Fund 9	5/31/2018	Pathway
Skellig DST Water Fund	10/28/2014	KBI	Pathway Fund 10	3/31/2020	Pathway
BlackRock Fixed Income	12/1/1995	BNY	Sixth Street Partners Diversified Credit	11/21/2016	Sixth Street
Doubleline Core Plus	12/1/2015	BNY	Sixth Stree TAO Contingent	4/16/2020	Sixth Street
MacKay Shields Core Plus	12/1/2015	MacKay	American Realty	12/20/2019	American Realty
PGIM Emerging Markets Debt	8/26/2019	BNY	Invesco Commercial Mortgage	9/1/2021	Invesco
IFM Global Infrastructure	1/1/2023	IFM			

Policy & Custom Index Composition

Policy Index: (10/1/2021 -)	26% Russell 3000, 5% Russell 2000, 16% MSCI ACWI ex US, 3% MSCI ACWI, 17% Bloomberg US Aggregate, 3% JPM EMBI Global/ JPM GBI EM Index, 13.4% NCREIF-ODCE, 7% Private Equity Returns, 5% Private Credit Returns, and 4.6% MSCI US REIT Index.
Policy Index (9/30/2020 - 9/23/2021)	25% Russell 3000, 15% MSCI ACWI ex US, 3% MSCI ACWI, 17% BBgBarc US Aggregate, 5% JPM GBI Global, 5% (50% JPM EMBI Global Div/50% JPM GBI EM Global Div), 20% NCREIF-ODCE, 5% Private Equity Returns, 5% Private Credit Returns.
Policy Index (10/23/2019 - 7/22/2020)	20% Russell 3000, 20% MSCI ACWI ex US, 3% MSCI ACWI, 17% BBgBarc US Aggregate, 5% JPM GBI Global, 5% (50% JPM EMBI Global Div/50% JPM GBI EM Global Div), 20% NCREIF-ODCE, 5% Private Equity Returns, 5% Private Credit Returns

Other Disclosures

Glossary

Allocation Effect: An attribution effect that describes the amount attributable to the managers' asset allocation decisions, relative to the benchmark.

Alpha: The excess return of a portfolio after adjusting for market risk. This excess return is attributable to the selection skill of the portfolio manager. Alpha is calculated as: Portfolio Return - [Risk-free Rate + Portfolio Beta x (Market Return - Risk-free Rate)].

Benchmark R-squared: Measures how well the Benchmark return series fits the manager's return series. The higher the Benchmark R-squared, the more appropriate the benchmark is for the manager.

Beta: A measure of systematic, or market risk; the part of risk in a portfolio or security that is attributable to general market movements. Beta is calculated by dividing the covariance of a security by the variance of the market.

Book-to-Market: The ratio of book value per share to market price per share. Growth managers typically have low book-to-market ratios while value managers typically have high book-to-market ratios.

Capture Ratio: A statistical measure of an investment manager's overall performance in up or down markets. The capture ratio is used to evaluate how well an investment manager performed relative to an index during periods when that index has risen (up market) or fallen (down market). The capture ratio is calculated by dividing the manager's returns by the returns of the index during the up/down market, and multiplying that factor by 100.

Correlation: A measure of the relative movement of returns of one security or asset class relative to another over time. A correlation of 1 means the returns of two securities move in lock step, a correlation of -1 means the returns of two securities move in the exact opposite direction over time. Correlation is used as a measure to help maximize the benefits of diversification when constructing an investment portfolio.

Excess Return: A measure of the difference in appreciation or depreciation in the price of an investment compared to its benchmark, over a given time period. This is usually expressed as a percentage and may be annualized over a number of years or represent a single period.

Information Ratio: A measure of a manager's ability to earn excess return without incurring additional risk. Information ratio is calculated as: excess return divided by tracking error.

Interaction Effect: An attribution effect that describes the portion of active management that is contributable to the cross interaction between the allocation and selection effect. This can also be explained as an effect that cannot be easily traced to a source.

Portfolio Turnover: The percentage of a portfolio that is sold and replaced (turned over) during a given time period. Low portfolio turnover is indicative of a buy and hold strategy while high portfolio turnover implies a more active form of management.

Price-to-Earnings Ratio (P/E): Also called the earnings multiplier, it is calculated by dividing the price of a company's stock into earnings per share. Growth managers typically hold stocks with high price-to-earnings ratios whereas value managers hold stocks with low price-to-earnings ratios.

R-Squared: Also called the coefficient of determination, it measures the amount of variation in one variable explained by variations in another, i.e., the goodness of fit to a benchmark. In the case of investments, the term is used to explain the amount of variation in a security or portfolio explained by movements in the market or the portfolio's benchmark.

Selection Effect: An attribution effect that describes the amount attributable to the managers' stock selection decisions, relative to the benchmark.

Sharpe Ratio: A measure of portfolio efficiency. The Sharpe Ratio indicates excess portfolio return for each unit of risk associated with achieving the excess return. The higher the Sharpe Ratio, the more efficient the portfolio. Sharpe ratio is calculated as: Portfolio Excess Return / Portfolio Standard Deviation.

Sortino Ratio: Measures the risk-adjusted return of an investment, portfolio, or strategy. It is a modification of the Sharpe Ratio, but penalizes only those returns falling below a specified benchmark. The Sortino Ratio uses downside deviation in the denominator rather than standard deviation, like the Sharpe Ratio.

Standard Deviation: A measure of volatility, or risk, inherent in a security or portfolio. The standard deviation of a series is a measure of the extent to which observations in the series differ from the arithmetic mean of the series. For example, if a security has an average annual rate of return of 10% and a standard deviation of 5%, then two-thirds of the time, one would expect to receive an annual rate of return between 5% and 15%.

Style Analysis: A return based analysis designed to identify combinations of passive investments to closely replicate the performance of funds

Style Map: A specialized form or scatter plot chart typically used to show where a Manager lies in relation to a set of style indices on a two-dimensional plane. This is simply a way of viewing the asset loadings in a different context. The coordinates are calculated by rescaling the asset loadings to range from -1 to 1 on each axis and are dependent on the Style Indices comprising the Map.

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