





PERIOD ENDING: MARCH 31, 2022

Investment Performance Review for

Imperial County Employees' Retirement System

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Investment Landscape	TAB I
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Recent Verus research

Visit: https://www.verusinvestments.com/insights/

Sound thinking

2022: BACK TOWARDS NORMAL?

As we do every year, during January we sit down to think about what might matter for the coming year — and that process always begins with us assessing how we did the previous year. The goal of this is to help boards prioritize their work, whether it is actually allocating money or simply setting the agenda of topics they should be thinking about. In the latest Sound Thinking, our CIO, Ian Toner, CFA will review topics from the previous year and outline the following topics that an investor might want to add to their agenda for the coming year.

Annual research

2022 ACTIVE MANAGEMENT ENVIRONMENT

Active manager dispersion has been very wide recently, as the pandemic-induced global recession and subsequent fast-paced recovery resulted in considerable economic divergence. These dynamics have created interesting opportunities for active managers to show differentiated performance and deliver alpha to clients. We hope that the insights from this unique mathematical approach provide a deeper understanding of active manager behavior and assists investors in their selection process.

Verus business update

Since our last Investment Landscape webinar:

- Verus has hired three employees. Tim McEnery, Managing Director |
 Senior Consultant; Samantha Grant, Senior Consultant; and Kyle Jangard,
 Public Markets Research Analyst.
 - Tim and Samantha will establish a Verus office in Chicago. Expanding our Midwest presence has been a long-term strategic goal to grow our nationwide services.
- We've had success over the last three months in retaining several new clients. Our national client footprint expanded to 25 states, with our recent additions of clients in Hawaii and North Dakota.
- The IIDC grew to 25 consulting firms with over \$42 trillion in assets under advisement. Verus founded the Institutional Investing Diversity Cooperative in December 2020, leading a call to action in the consulting industry for disclosure of asset manager diversity data at the investment team level.



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1st quarter summary

THE ECONOMIC CLIMATE

- Real GDP grew at a 5.5% rate year-over-year in Q4 (+6.9% quarterly annualized rate). Strong expenditures into new inventory boosted growth, as many businesses have struggled to replenish inventory levels in the face of global supply chain issues. Business investment and rising exports also contributed to the strong pace of growth. p. 8
- The rate of unemployment in the U.S. has continued to fall, improving from 3.9% to 3.6% during the quarter. The labor force participation rate has gradually increased, rising from 61.6% to 62.4%. A historic shortage of workers may remain a sticky issue, as 11.3 million job openings are posted, but only 6.0 million Americans are seeking work. *p.* 11

PORTFOLIO IMPACTS

- High yield credit spreads expanded from 2.8% to 3.3%, although default activity is expected to remain historically low. It appears spread movement has been more of an effect of broader risk-off market moves, rather than a specific reflection of changing credit conditions. p. 24
- U.S. core CPI, excluding food & energy, rose by 6.5% year-over-year in March. Headline inflation, which is being closely watched at the moment as this includes energy & food prices, reached 8.5%. Prices in some other areas have stabilized. Many investors believe inflation peaked in March, though there remains much uncertainty around the path from here. p. 9

THE INVESTMENT CLIMATE

- In late February, Russian forces invaded Ukraine—a move which was anticipated by major Western intelligence communities. Ukraine has put together a remarkable defense thus far, as many citizens have taken up arms to defend their country. p. 18
- Multi-year underinvestment in energy, and now the Russia/Ukraine war, has created a shock to energy markets and crisis-level prices in many European countries. Government officials have been hesitant to vocally support increased local energy production, primarily due to climate concerns. In the U.S., many shale firms have opted to increase production on existing land, but have been slow to pursue new projects—partly due to supply chain issues (shortages in labor, truck drivers, and frack sand) and also due to prioritization of profits over growth. p. 38

ASSET ALLOCATION ISSUES

- Nearly every asset class delivered negative performance in Q1. Equity markets pulled back, credit spreads widened, and interest rates headed higher. Certain real assets including commodities were the exception. p. 49
- Value stocks outperformed Growth stocks by a substantial margin during Q1, as the Energy sector outpaced the index by 43.6% (Energy 39.0%, S&P 500 -4.6%). Large capitalization stocks outperformed small capitalization stocks (Russell 1000 +9.8%, Russell 2000 +2.1%). p. 30

Nearly every asset class delivered losses during Q1, as risk assets sold off, credit spreads widened, and interest rates moved higher



What drove the market in Q1?

"U.S. Inflation Accelerated to 8.5% in March, Hitting Four-Decade High"

HEADLINE CONSUMER PRICE INFLATION (YEAR-OVER-YEAR)

Oct	Nov	Dec	Jan	Feb	Mar
6.2%	6.8%	7.0%	7.5%	7.9%	8.5%

Article Source: Wall Street Journal, April 12th, 2022

"Russian Stocks' 33% Crash Is Fifth-Worst in Market History"

MOEX RUSSIA EQUITY INDEX PRICE LEVEL

Oct	Nov	Dec	Jan	Feb	Mar
4150	3891	3787	3530	2470	2704

Article Source: Bloomberg, February 24th, 2022

"Commodity prices surge after Russia's Ukraine invasion

BLOOMBERG COMMODITY SPOT INDEX

Oct	Nov	Dec	Jan	Feb	Mar
525.1	487.3	502.2	546.8	577.7	625.3

Article Source: Axios, March 1st, 2022

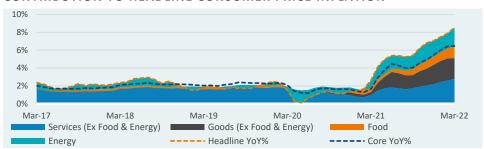
"Global Bond Rout Deepens on Fear Rate Hikes Will Stoke Recession"

BLOOMBERG GLOBAL AGGREGATE TREASURIES TOTAL RETURN

Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022
3.2%	(5.5%)	0.9%	(1.1%)	(1.0%)	(6.2%)

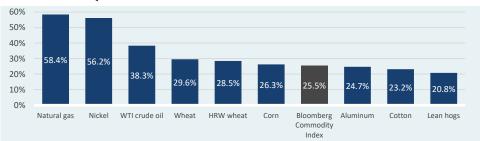
Article Source: Bloomberg, March 27th, 2022

CONTRIBUTION TO HEADLINE CONSUMER PRICE INFLATION



Source: Bureau of Labor Statistics, as of 3/31/22

COMMODITY Q1 PERFORMANCE



Source: Bloomberg, as of 3/31/22

EXPECTED NUMBER OF RATE HIKES BY DECEMBER 2022



Source: Bloomberg, as of 3/31/22



Economic environment



U.S. economics summary

- Real GDP grew at a 5.5% rate year-over-year in the fourth quarter (+6.9% quarterly annualized rate).
 Strong expenditures into new inventory boosted the economy during the quarter, as many businesses had struggled to replenish inventory levels in the face of global supply chain issues.
 Business investment and rising exports also contributed to the strong Q4 pace of growth.
- In economic terms, the effects of COVID-19 seem to be in the rearview mirror. Travel volumes have risen closer to prior levels, credit card transactions are extremely strong, and Americans are once again dining out and spending on entertainment.
- U.S. core CPI, which excludes food & energy prices, rose by 6.5% yearover-year in March. Headline inflation, which is being closely watched at the moment as this includes many of the goods that exhibited the largest prices gains

- (energy & food), reached 8.5%. Price rises have become more broad-based in recent months, with many goods and services experiencing increases.
- U.S. unemployment continued to fall, improving from 3.9% to 3.6%.
 The labor force participation rate has gradually increased, rising from 61.6% to 62.4%. The historic shortage of workers may remain a sticky issue, as 11.3 million job openings are currently posted, but only 6.0 million Americans are seeking work.
- The fast rise of 30-year fixed mortgage rates to near 5.0%, along with skyrocketing home prices, has made homeownership a nearly impossible goal for some Americans, and is squeezing the budgets of many (though at the same time generating much wealth for homeowners). This effect is captured in the Housing Affordability Index, which further deteriorated during Q1.

Most Recent	12 Months Prior
5.5%	(2.3%)
12/31/21	12/31/21
6.5%	1.6%
3/31/22	3/31/21
2.4%	2.3%
3/31/22	3/31/21
0.25% – 0.50%	0.00% – 0.25%
3/31/22	3/31/21
2.34%	1.74%
3/31/22	3/31/21
3.6%	6.0%
3/31/22	3/31/21
6.9%	10.7%
3/31/22	3/31/21
	5.5% 12/31/21 6.5% 3/31/22 2.4% 3/31/22 0.25% - 0.50% 3/31/22 2.34% 3/31/22 3.6% 3/31/22 6.9%



GDP growth

Real GDP grew at a 5.5% rate year-over-year in the fourth quarter (+6.9% quarterly annualized rate). Strong expenditures into new inventory boosted growth, as many businesses had struggled to replenish inventory levels in the face of global supply chain issues. Business investment and rising exports also contributed to strong fourth quarter GDP.

During Q1 2022, concerns rose around the possibility of slowing economic growth or even a recession in the near-term, though the chances of recession appear low. The Atlanta Fed GDPNow real-time forecast for first quarter growth was 1.1%, as of April 11th (seasonally adjusted QoQ annualized rate).

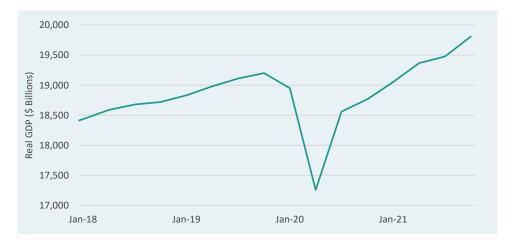
However, it is broadly expected that economic growth picks back up to around 3% throughout the remainder of 2022.

As we mentioned last quarter, U.S. GDP growth is quoted in *inflation-adjusted* terms. This will mean that inflation trends could have large impacts on upcoming U.S. GDP growth numbers. Higher inflation would depress the rate of GDP growth, and falling inflation would likely boost GDP figures, all else equal. Multiple past U.S. recessions were caused at least partially by rising inflation rather than solely by slowing growth (see 1970s, 1980s).

Q4 GDP growth was very strong

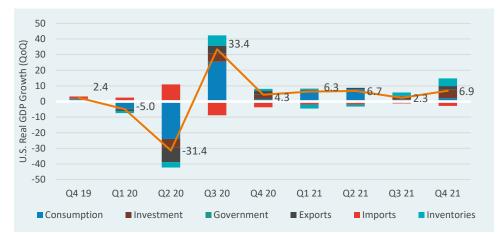
Economists expect weak growth in Q1, followed by a mild economic reacceleration

U.S. REAL GROSS DOMESTIC PRODUCT



Source: FRED, as of 12/31/21

U.S. REAL GDP COMPONENTS (QOQ)



Source: FRED, as of 12/31/21



Inflation

U.S. core CPI, which excludes food & energy prices, rose by 6.5% year-over-year in March. Headline inflation, which is being closely watched at the moment as this includes many goods that have exhibited the most notable prices gains (energy & food), reached 8.5%. While price rises in energy and food have been large in recent months, prices in some other areas have stabilized. Many investors believe inflation peaked in March, though much uncertainty exists regarding the path from here.

There are both inflationary and deflationary forces at play in the current environment. On the inflationary side, Russia's invasion of Ukraine has led to substantial disruptions to energy and agricultural markets, which flowed through to price spikes in many commodity markets. These moves can be seen in the March

inflation report. Geopolitical crises tend to result in *upward* commodity price movement, which suggests continued war or wider conflict could have inflationary effects. On the *deflationary* side, large single-month inflation numbers are beginning to *fall out* of the 12-month CPI calculation window. This will naturally have a depressing effect on future CPI figures. Furthermore, many pandemic-specific issues are beginning to be resolved, such as clogged supply chains, unusually high demand for physical goods, and abnormally strong spending patterns. On the next slide we visualize some of these *inflationary* and *deflationary* effects.

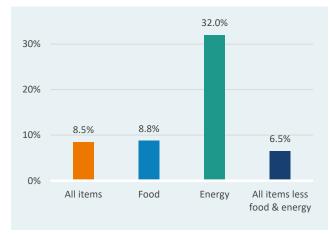
Inflation has proven more sticky (less transitory) than previously expected

Overall, we believe that inflation will most likely begin falling later in 2022, though this could be a slower process than originally believed.

U.S. CPI (YOY)



U.S. CPI (YOY)



MONTHLY PRICE MOVEMENT



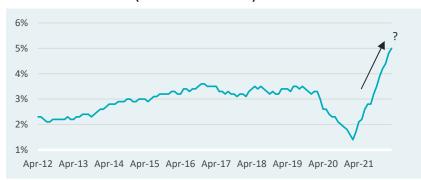
Source: BLS, as of 3/31/22 Source: BLS, as of 3/31/22



Source: BLS, as of 3/31/22

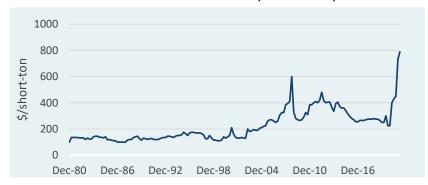
Inflationary & deflationary forces

CPI SHELTER COSTS (YEAR-OVER-YEAR)



Shelter costs, which account for \sim 40% of the core CPI gauge, have continued to track rent prices higher. The continuation of this trend could mute the impact of a potential rollover in prices for consumer durables like used cars, and result in a higher floor for inflation near-term.

U.S. CORNBELT AMMONIUM NITRATE (FERTILIZER) PRICES



Russia, the world's largest fertilizer exporter, imposed a two-month ban on ammonium nitrate exports, which will threaten the reduction of fertilizer supplies. The export ban is likely to result in higher prices for U.S. farmers.

Source: FRED, as of 3/31/22 (upper), Bloomberg, as of 3/31/22 (lower)

USED CAR & TRUCK PRICES



If certain pandemic-related price rises were to reverse as conditions ease, this could bring inflation down materially

Inflation dynamics are complex. On this slide we take a look at a few potentially inflationary forces (left side) and deflationary forces (right side)

SHIPS AT ANCHOR - PORT OF L.A.



Pandemic-related supply and demand complexities contributed to many supply shortages and price spikes. As these issues are resolved, we would expect prices of some goods to stabilize and perhaps even move closer to prior levels.

Source: FRED, as of 3/31/22 (upper), Port of Los Angeles, as of 4/15/22 (lower)



Labor market

The rate of unemployment in the U.S. has continued to fall, improving from 3.9% to 3.6% during the quarter. The labor force participation rate has gradually increased, rising from 61.6% to 62.4%. The historic shortage of workers may remain a sticky issue, as 11.3 million job openings are posted, but only 6.0 million Americans seeking work.

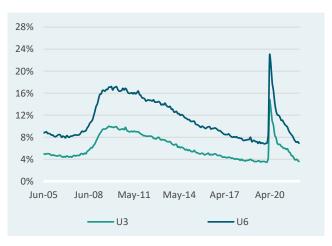
Throughout the latter part of the pandemic, our belief has been that abnormally early retirements have shrunk the overall labor force, and that the U.S. labor participation rate will not likely fully rebound to prior levels. This forecast has proven accurate, as much of the 55+ U.S. worker age cohort remains out of the workforce and not seeking employment. This compares to

younger age cohorts which have made greater progress toward rejoining the labor pool.

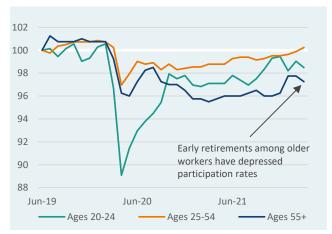
The shortage of workers is likely having a dampening effect on the U.S. economy, as fewer workers means less productive activity, which translates to fewer paychecks and total household income. At the onset of the labor supply shortage, some held the view that fewer workers might mean greater overall wage income if this gave workers more negotiating power with employers. Unfortunately, the results have not met those expectations, as wages have failed to keep up with inflation.

U.S. labor participation continues to see gradual improvement

U.S. UNEMPLOYMENT



LABOR PARTICIPATION RATE



Source: FRED, as of 3/31/22

UNEMPLOYED VS # JOBS AVAILABLE

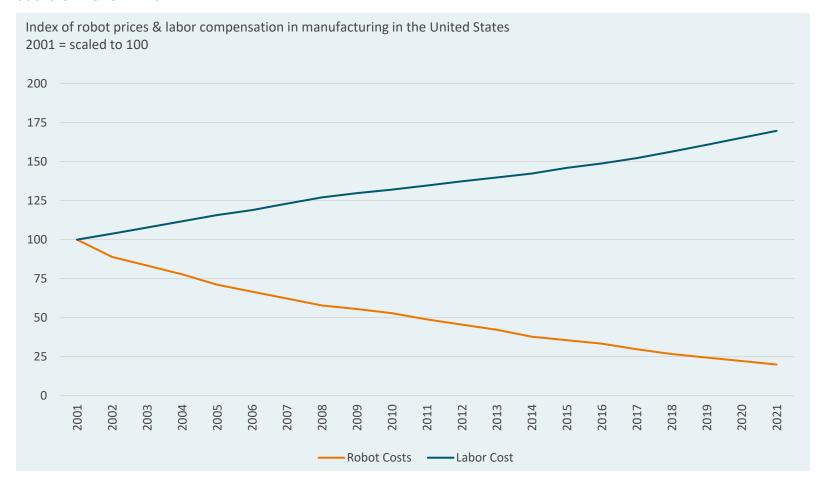


Source: FRED, as of 2/28/22 or most recent data

Source: FRED, as of 3/31/22

Labor costs alternatives

COSTS OF AUTOMATION



With widespread labor shortages, companies are increasingly adopting robotics and automation to stay competitive

Spending on robotics was approximately \$2 billion in 2021 (a 14% increase over the previous high in 2017)

Source: U.S. Bureau of Labor Statistics; ARK Investment Management Ark-investment.com; United Nations Economic Commission; BCG



The consumer

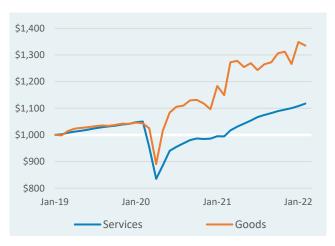
U.S. personal consumption expenditures (PCE) represents consumer spending across a broad basket of goods. Spending boomed during the COVID-19 recovery, with a surprisingly large shift towards purchases of goods and away from services. This substantial shift was believed to be a major contributor to demand/supply imbalances and price inflation of goods during the pandemic. After adjusting for inflation, consumption has risen 1.6% per year since February of 2020.

Auto sales remain depressed relative to pre-pandemic volumes and are at the lowest level since 2011. Sales have likely been hindered by supply chain and therefore inventory issues surrounding new vehicles as well as affordability issues for used vehicles due to the unprecedented rise in prices.

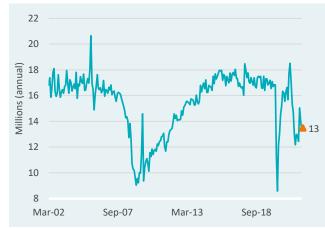
While economic growth and spending appears to be slowing, it is worth noting how significant the increase in U.S. household wealth has been. Asset prices broadly headed higher during the COVID-19 recovery, which included skyrocketing home prices. While these moves certainly create difficulties for new investors (dollars invested today are expected to generate relatively lower long-term returns) and also for future homebuyers (home affordability has been very negatively affected), rising markets have created great profits for many Americans, as indicated by surging total household wealth.

Despite vastly increased American wealth and strong job prospects, sentiment is very depressed as living costs rocket higher

PERSONAL CONSUMPTION EXPENDITURES



AUTO SALES



Source: Federal Reserve, as of 2/28/22

U.S. HOUSEHOLD WEALTH



Source: FRED, as of 12/31/21



Source: FRED, as of 2/28/22

Sentiment

Consumer sentiment has collapsed to levels not seen since the depths of the 2008-2009 Global Financial Crisis. The University of Michigan survey fell from 70.6 to 59.4 during the quarter, as survey respondents indicated deteriorating living conditions due to high inflation and expectations that household financial conditions will worsen throughout the year. On a more positive note, Americans are reportedly optimistic about job prospects and the strong labor market.

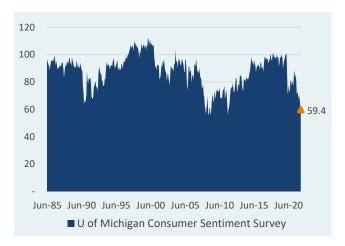
There remain 11.3 million open jobs but only 6.0 million unemployed people in the labor force, indicating significant

labor market tightness. Per the Conference Board, the percentage of Americans who believe it is difficult to land a job right now is at the lowest level since year 2000. A competitive market has led to strong nominal wage gains, but real (adjusted for inflation) average hourly earnings failed to keep up with inflation, and have actually contracted -2.7% over the last year.

The NFIB Small Business Optimism index weakened further. As detailed in the survey, 31% of small businesses see inflation as the largest problem they face. Labor shortages and supply chain issues continue to weigh on business activity.

Sentiment, by some measures, has reached lows not seen since the 2008-2009 Global Financial Crisis

CONSUMER SENTIMENT



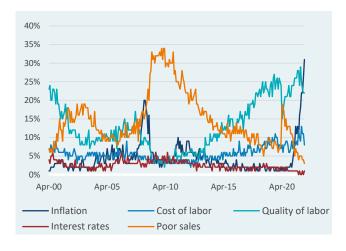
Source: University of Michigan, as of 3/31/22

CONSUMER VIEWS ON THE LABOR MARKET



Source: Conference Board, as of 3/31/22

BIGGEST ISSUES FOR SMALL BUSINESSES



Source: NFIB, as of 3/31/22



Housing

U.S. home prices continued higher, up +19% over the past year ending January, and up a whopping 32% since pre-pandemic. Price appreciation may be set to cool off as the 30-year fixed mortgage rate has risen to 5%, inventories have risen, and sales activity has slowed considerably.

The fast rise of 30-year fixed mortgage rates to near 5%, along with skyrocketing home prices, has made homeownership a nearly impossible goal for some Americans, and is squeezing the budgets of many (though at the same time generating much wealth for homeowners). This effect is captured in the

Housing Affordability Index, which deteriorated during Q1.

The cost of housing has outpaced wage gains for decades, although only mildly so (not as dramatically as some might assume). Lower and lower interest rates had largely counteracted higher home prices in terms of total ownership costs. This rough equilibrium seems to have swung in the other direction over the past year. Lack of affordability may mean a continued slowdown in home sales activity, and perhaps a plateauing or even decline in property values in some areas.

HOUSING AFFORDABILITY INDEX



WAGES VS RENTING COSTS



Source: FRED, as of 2/28/22

CASE-SHILLER HOME PRICE INDEX



Source: FRED, as of 1/31/22

Source: NFIB, as of 2/28/22

International economics summary

- The pace of economic growth has moved further back toward average levels in most economies. In January, the International Monetary Fund cut their 2021 advanced economy growth projections from 5.2% to 4.3%. Growth in 2022 is expected to slow to 3.1%.
- Unemployment continued to fall to, or below, pre-pandemic levels.
 However, in countries such as the United States these data do not tell the whole story, since the total size of the labor pool has shrunk substantially.
- Inflation trends have been surprisingly bifurcated by region.
 While the United States and Europe are generally contending with a spike in prices and inflation not seen in decades, Japan and China are experiencing very low inflation and muted price pressures.
- In late February, Russian forces

- invaded Ukraine—a move which was anticipated by major Western intelligence communities. Ukraine has put together a remarkable defense thus far, as many citizens have taken up arms to defend their country.
- Russia's invasion of Ukraine led to substantial spikes in energy and agricultural prices as concerns grew of a potential supply shock.
 Eurozone producer prices grew 31.4% over the 12 months ending February, reflecting the impact of surging natural gas prices (+58.4%).
- COVID-19 case growth rose to record levels in China, which led CCP officials to reinstate lockdowns in some of the largest provinces in the country. Continued commitment to the "zero-Covid" policy in China could weigh on the outlook for global growth, as well as elongate the process of supply chain normalization, particularly within the freight shipping industry.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	5.5%	8.5%	3.6%
	12/31/21	3/31/22	3/31/22
Eurozone	4.6%	7.5%	6.8%
	12/31/21	3/31/22	2/28/22
Japan	0.4%	1.3%	2.6%
	12/31/21	3/31/22	2/28/22
BRICS	4.0%	3.2%	5.2 % 12/31/21
Nations	12/31/21	3/31/22	
Brazil	1.6%	10.5%	11.2%
	12/31/21	2/28/22	2/28/22
Russia	5.0%	9.2%	4.1%
	12/31/21	2/28/22	2/28/22
India	5.4%	6.1%	7.6%
	12/31/21	2/28/28	3/31/22
China	4.8%	0.9%	5.8%
	3/31/22	2/28/22	3/31/22

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

The pace of economic growth has moved further back towards average levels in most economies. This is reflected in quarter-over-quarter GDP growth figures, as these provide a better gauge of *short-term* growth trends. The International Monetary Fund estimates a 4.3% growth rate for calendar year 2021, and then a slowing to 3.1% in 2022. The IMF reports that recovery strength will likely vary considerably by location, due to access to medical care, types of government policy support, and regional cross-country spillovers.

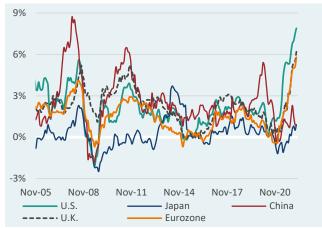
Inflation trends continue to be disparate from country-tocountry, as spiking inflation is a problem for a certain subset of economies. While the United States and Europe are generally contending with a jump in prices and inflation not seen in decades, Japan and China are experiencing very low inflation and muted price pressure.

Unemployment has further improved to, or below, prepandemic levels. Investors should also note the change in labor market *size*. For example, disenfranchised workers falling out of the workforce or early retirements may not be captured in popular unemployment metrics but can have just as deleterious effects on economic activity as traditional job loss.

REAL GDP GROWTH (YOY)



INFLATION (CPI YOY)



Source: Bloomberg, as of 3/31/22 – or most recent release

UNEMPLOYMENT



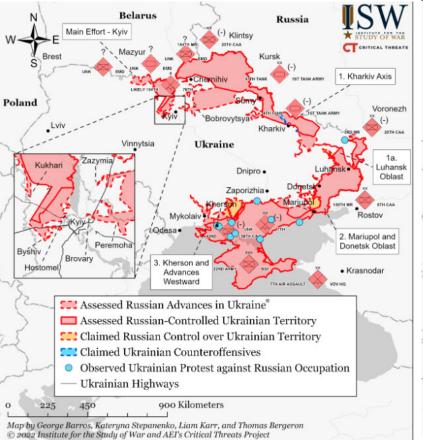
Source: Bloomberg, as of 3/31/22 – or most recent release



Source: Bloomberg, as of 12/31/21

Assessed control of terrain in Ukraine

3/15/2022 - 12:00PM PST



4/13/2022 - 12:00PM PST



Russian forces have been repelled from Kyiv, and have shifted their focus to consolidating control over area around the separatistcontrolled Donetsk and Luhansk Oblasts in Eastern Ukraine

Source: Institute for the Study of War, as of 4/13/22, 12:00 PM PST



Conflict summary and key themes

Russian forces were unsuccessful in their attempt to take Kyiv, and have since withdrawn to refocus efforts on taking the territory around the Donetsk and Luhansk Oblasts in Eastern Ukraine. What have been the drivers of Ukrainian success thus far?

Ukrainian Tactics

- Effective withdrawal into major population centers which have proven easier to defend
- Efficient utilization of anti-aircraft (Stinger) and anti-armor (Javelin) technology
- Judicious use of airpower to disrupt Russian supply lines

Russian Military Incompetence

- Issues transporting adequate oil and fuel supplies to the front lines to support the advance
- Lack of experienced troops (many conscripts have 1-2 years experience and were not expecting to actually be sent into combat)
- Low morale (many troops have surrendered to Ukrainian forces, or have sabotaged their vehicles to slow the advance
- Poor battlefield intelligence (many Russian troops are wandering into Ukrainian cities with little awareness of those cities,
 which has left them in an incredibly vulnerable positions and made it easier for Ukrainians to use their anti-armor weaponry)
- NATO estimated that between 7-15K Russian troops have been killed, and another 15-30K have been injured

Western Sanctions

- The Federal Reserve and the European Central Bank officially sanctioned the Central Bank of Russia, an unprecedented strategy for containing a G20 economy
- Key Russian banks have been excluded from SWIFT, disconnecting them from sources of foreign capital and preventing them from sending or receiving money from other financial institutions around the world. This is often considered the "nuclear option" relative to the menu of economic sanctions
- Entire industries have instituted export controls, banning the shipment of key technology input goods such as semiconductors, aircraft, aircraft parts, and oil equipment to Russia

Source: Verus, as of 4/13/22



Fixed income rates & credit



Fixed income environment

- The 10-year U.S. Treasury yield jumped during Q1, from 1.51% to 2.34%, as the Federal Reserve signaled that more aggressive tightening is ahead.
- Fixed income broadly delivered losses during the first quarter, as interest rates headed higher and credit spreads expanded. Higher duration exposures (Bloomberg U.S. Aggregate -5.9%) underperformed lower duration exposures (Bloomberg U.S. Corporate High Yield -4.8%). This theme was also visible over the past year.
- The U.S. yield curve has flattened, or even inverted, depending on the measure. The 10-year minus 2-year yield spread ended the quarter at exactly +0.00%. Yield curve inversion is generally believed to be a sign of nearing recession, as in most cases recession occurs within 1 to 2 years following the initial inversion.
- History suggests that interest rate

- rises have been more of an effect of Federal Reserve action rather than solely due to spiking inflation. This likely means that the Fed's plans for moderate tightening will translate to only moderate rate rises. This statement is of course not intended to minimalize the pain of interest rate rises on bond portfolios, which has been notable.
- Credit spreads expanded during the quarter, with U.S. high yield spreads moving from 2.8% to 3.3% and U.S. investment grade spreads heading from 0.9% to 1.2%. Spread movement often occurs alongside broader market risk-off environments, which implies that investors should not necessarily assume that these moves were specific to the credit outlook.
- Write-downs of Russian (-100%) and Ukrainian (-51.4%) bonds weighed heavily on hard-currency emerging market debt (JPM EMBI Global Diversified -10.0%).

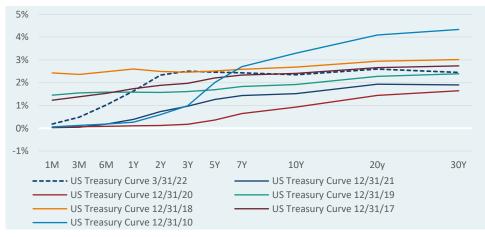
	QTD Total Return	1 Year Total Return
Core Fixed Income (Bloomberg U.S. Aggregate)	(5.9%)	(4.2%)
Core Plus Fixed Income (Bloomberg U.S. Universal)	(6.1%)	(4.2%)
U.S. Treasuries (Bloomberg U.S. Treasury)	(5.6%)	(3.7%)
U.S. High Yield (Bloomberg U.S. Corporate HY)	(4.8%)	(0.7%)
Bank Loans (S&P/LSTA Leveraged Loan)	(0.1%)	3.3%
Emerging Market Debt Local (JPM GBI-EM Global Diversified)	(6.5%)	(8.5%)
Emerging Market Debt Hard (JPM EMBI Global Diversified)	(10.0%)	(7.4%)
Mortgage-Backed Securities (Bloomberg MBS)	(5.0%)	(4.9%)

Source: Bloomberg, as of 3/31/22



Yield environment

U.S. YIELD CURVE

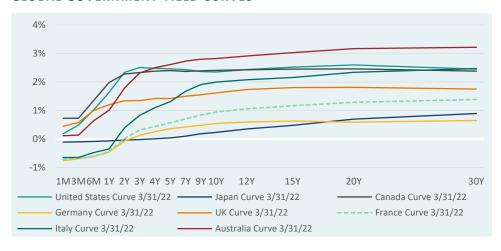


YIELD CURVE CHANGES OVER LAST FIVE YEARS

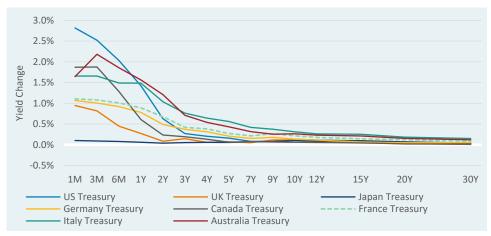


Source: Bloomberg, as of 3/31/22

GLOBAL GOVERNMENT YIELD CURVES



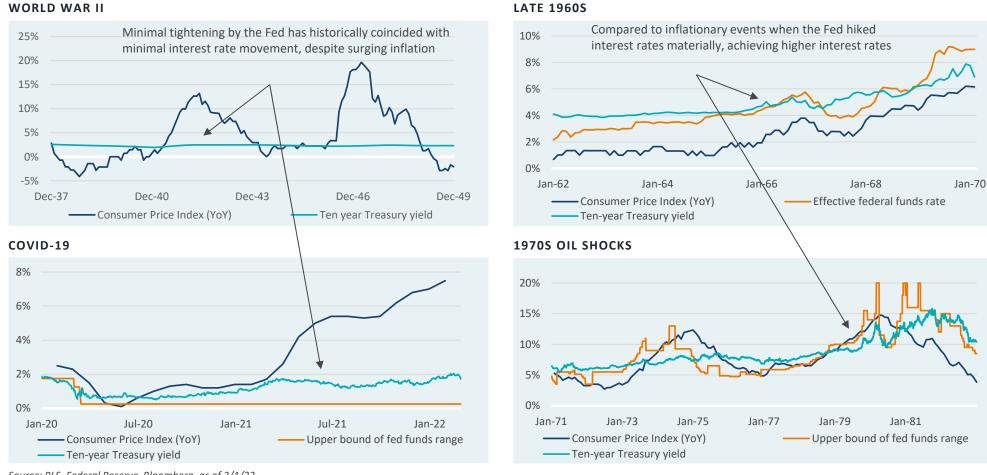
IMPLIED CHANGES OVER NEXT YEAR





What history tells us about rising rates

During historical periods where inflation was rising but the Fed was <u>not</u> hiking rates, interest rate moves were minimal. This may mean that the Federal Reserve's currently moderate interest rate policy suggests only moderate interest rate rises from here.



Source: BLS, Federal Reserve, Bloomberg, as of 3/1/22

NOTE: These conclusions were reached via a broader historical inflation and interest rate analysis. For further information about these findings, please reach out to your Verus consultant.



Credit environment

Fixed income broadly delivered losses during the first quarter, as interest rates headed higher and credit spreads expanded. Higher duration exposures such as core fixed income (Bloomberg U.S. Aggregate -5.9%) underperformed lower duration exposures such as U.S. high yield (Bloomberg U.S. Corporate High Yield -4.8%). This effect was also visible over the past year.

Credit spreads expanded moderately during the quarter, with U.S. high yield spreads moving from 2.8% to 3.3% and U.S. investment grade spreads heading upward from 0.9% to 1.2%. Spread movement of this nature often occurs alongside broader market risk-off environments,

which implies investors should not necessarily assume that these moves are specific to a worsening credit outlook.

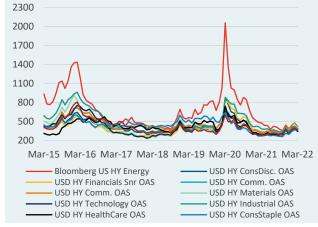
The low yield environment has pushed many investors to search for greater yield, such as through the pursuit of increased private markets exposure and/or taking on riskier holdings. The mild move higher in the yield curve likely helps ease this market environment issue, although high inflation has created new problems for investors. Looking further into the future, following the Fed's planned hiking cycle, markets are expecting interest rates to fall back down, presumably as economic conditions worsen and the Fed begins easing.

SPREADS



Source: Barclays, Bloomberg, as of 3/31/22

HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 3/31/22

	Credit Spread (OAS)		
Market	3/31/22	3/31/21	
Long U.S. Corp	1.6%	1.3%	
U.S. Inv Grade Corp	1.2%	0.9%	
U.S. High Yield	3.3%	3.1%	
U.S. Bank Loans*	4.3%	4.3%	

Source: Barclays, Credit Suisse, Bloomberg, as of 3/31/22

*Discount margin (4-year life)



Default & issuance

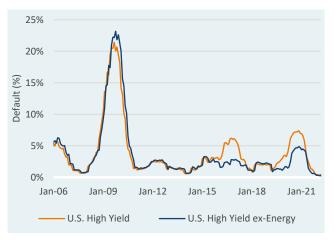
Despite a general increase in volatility and a sell-off across high-yield and leveraged loan markets, default activity remained negligible. Over the first quarter only \$1.6 billion in defaults occurred, marking the third-lowest quarterly total since Q4 2013. Realized recovery rates for high yield bonds over the past 12 months have lingered around 48%, significantly elevated above the 25-year average (39.9%). Loan recovery rates have come in slightly lower than the historical average (58.6% vs. 64.4%).

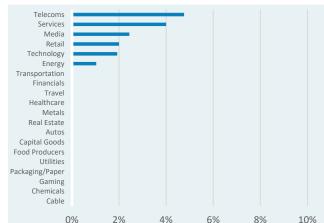
High-yield and loan default rates ended the quarter at 0.50% and 0.86%, respectively, and are expected to rise slightly through the rest of the year. J.P. Morgan forecasts default rates of 0.75% for high yield bonds and loans in 2022, with those rates picking up to 1.25% in 2023. For context, the long-

term average historical default rates for bonds and loans have been around 3.6% and 3.1%, respectively.

High yield issuance hit its lowest level since March 2020 in February, and then fell further in March, as issuers contended with a sharp increase in global bond yields. High-yield issuance totaled just \$46.5 billion so far this year, down from \$158.8 billion (-71%) over the same period a year ago. Year-to-date loan issuance is also down approximately 60% relative to Q1 2021. Extensive capital raises that occurred in 2021, as well as broadly higher interest rates, have likely contributed to very low financing activity so far this year.

HY DEFAULT RATE (ROLLING 1-YEAR)

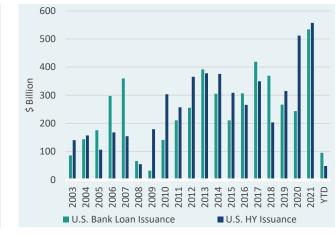




U.S. HY SECTOR DEFAULTS (LAST 12 MONTHS)

Source: BofA Merrill Lynch, as of 3/31/22 – par weighted

U.S. ISSUANCE (\$ BILLIONS)



Source: BofA Merrill Lynch, as of 3/31/22



Source: BofA Merrill Lynch, as of 3/31/22

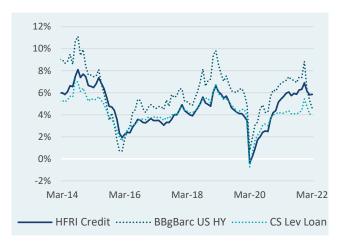
Alternative credit

Credit hedge fund strategies were a bright spot in Q1 relative to fixed income markets. The HFRI Credit Index, which typically tracks between high yield and leveraged loan indices, gained 0.2% during the quarter despite widening credit spreads and rising rates which detracted from the performance of traditional credit.

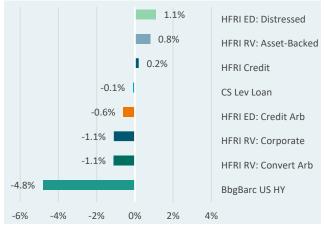
Looking more closely at hedge fund credit, distressed/restructuring strategies, as well as assetbacked, were strong performers during the quarter and have outperformed credit markets over the past year.

Distressed investors have benefitted from out-offavor, deep value assets rebounding over the prior 18 months. Asset-backed strategies have been able to limit duration exposure while finding new ways to maintain access to higher yielding securitized instruments, such as by expanding into origination/ securitization or moving further out on the liquidity spectrum.

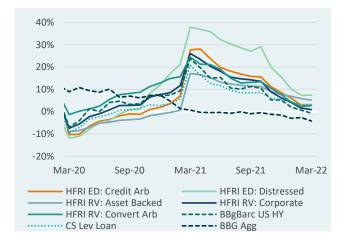
3 YEAR ROLLING RETURN



1Q 2022 QUARTERLY RETURN



1 YEAR ROLLING RETURN



Source: HFRI, as of 3/31/22 Source: HFRI, as of 3/31/22



Source: HFRI, as of 3/31/22

Equity



Equity environment

- U.S. equities held up marginally better during the first quarter (S&P 500 -4.6%), followed by international developed equities (MSCI EAFE -5.9%) and emerging market equities (MSCI Emerging Markets -7.0%), on an unhedged currency basis.
- Currency movement during the quarter detracted from the performance of investors who do not hedge foreign currency exposure. Currency movements in international developed markets generated losses of -2.4% (MSCI EAFE).
- Value stocks outperformed Growth stocks by a substantial margin during Q1 (Russell 1000 Value -0.7% vs Russell 1000 Growth -9.0%) as Growth stocks fell sharply, reversing the gains delivered in the second half of 2021. Large capitalization stocks beat small capitalization stocks by a narrower margin (Russell 1000

- -5.1%, Russell 2000 -7.5%).
- The Cboe VIX Index spiked midquarter during Russia's invasion of Ukraine, as fears of potential broader global conflict, food shortages, and higher inflation roiled markets. The index fell to 20 to end the quarter, moderately above the longer-term average. Realized volatility over the past year was more muted as the pandemic has moved into the rearview mirror.
- Emerging market equities appear attractively priced, as EM equities are in the 8th percentile of cheapness relative to U.S. equities, looking back to 2003. Much of this valuation difference is due to Chinese markets, which have sold off massively over concerns around possible sanctions due to relations with Russia, regulatory crackdowns on the real estate and internet sectors, and major city lockdowns due to COVID-19.

	QTD TOTAL RETURN		1 YEAR TOT	AL RETURN
	(unhedged)	(hedged)	(unhedged)	(hedged)
U.S. Large Cap (S&P 500)	15 6%		6%	
U.S. Small Cap (Russell 2000)	(7.5	5%)	(5.8	3%)
U.S. Equity (Russell 3000)	(5.3	3%)	11.	9%
U.S. Large Value (Russell 1000 Value)	(0.7%)		11.	7%
US Large Growth (Russell 1000 Growth)	(9.0%)		15.0%	
Global Equity (MSCI ACWI)	(5.4%)	(4.8%)	7.3%	8.8%
International Large (MSCI EAFE)	(5.9%)	(3.5%)	1.2%	7.1%
Eurozone (Euro Stoxx 50)	(10.9%)	(8.7%)	(3.9%)	2.7%
U.K. (FTSE 100)	0.0%	2.8%	10.7%	16.4%
Japan (NIKKEI 225)	(7.8%)	(2.6%)	(11.9%)	(2.9%)
Emerging Markets (MSCI Emerging Markets)	(7.0%)	(7.0%)	(11.4%)	(11.5%)

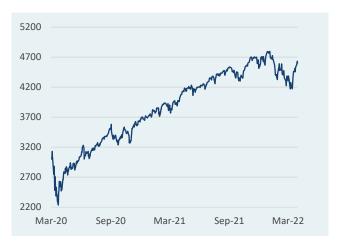
Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 3/31/22

Domestic equity

U.S. equities fell during the first quarter (S&P 500 -4.6%), though less so than other global markets (MSCI ACWI ex-USA -5.4%). Within the U.S. market, sector dispersion was very wide, with large-cap energy companies advancing 39.0% on spiking energy prices, and large-cap technology stocks (-8.4%) and consumer discretionary (-9.0%) selling off on concerns that higher inflation (influenced by spiking energy prices) might result in a much more hawkish outlook for Fed policy and interest rates. Energy sector earnings are expected to bolster overall index level earnings on a year-on-year basis in Q1, primarily due to the average price of oil rising from \$58.14 to \$95.01. If the energy sector were excluded, Q1 year-over-year earnings growth would be expected at -0.6%, instead of +5.1%.

Companies continue to contend with headwinds from supply chain disruptions, surging commodity prices which were given a leg higher by the conflict in Ukraine, ongoing labor shortages and higher prices in general. In Q4 of 2021, 365 S&P 500 companies mentioned "inflation" on earnings calls, which was the highest number in at least 10 years, per FactSet. Under this backdrop, companies are raising their prices to help offset higher costs, and the S&P 500 Index is expected to report a fifth consecutive quarter of revenue growth north of 10% in Q1. Interestingly, analysts expect net profit margins will be higher through the rest of the year than they are expected to be in Q1 (+12.1%).

S&P 500 PRICE INDEX

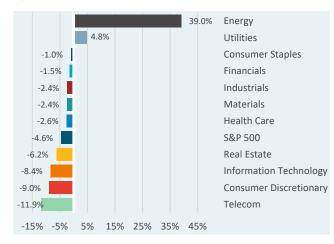


NET PROFIT MARGIN – S&P 500 INDEX



Source: FactSet, as of 4/14/22

Q1 SECTOR PERFORMANCE



Source: Standard & Poor's, as of 3/31/22



Source: Standard & Poor's, as of 3/31/22

Domestic equity size & style

Value stocks outperformed Growth stocks by a substantial margin during the first quarter (Russell 1000 Value -0.7% vs Russell 1000 Growth -9.0%) as Growth stocks fell sharply, reversing the gains delivered in the second half of 2021. Large capitalization stocks outperformed small capitalization stocks by a narrower margin (Russell 1000 -5.1%, Russell 2000 -7.5%).

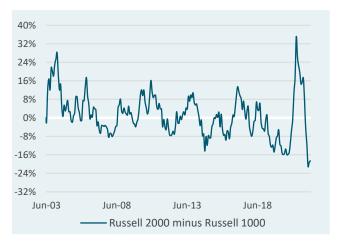
Energy stocks dramatically outperformed during Q1, as global demand has outpaced energy production for quite some time, pushing prices higher. Additionally, Russia's invasion of Ukraine led to widespread fears of an energy supply crunch, which temporarily sent oil to \$123/bbl—the highest level since 2008. Attractive conditions for energy producers coincided with outperformance of

Utilities, Financials, Industrials, and Materials sectors, which tend to have a Value tilt. During Q1, the Information Technology sector, which is tilted towards Growth, underperformed the index.

Further tightening of Fed policy and interest rate hikes will likely impact Value and Growth stock behavior, though these relationships are complex. For example, rate rises that result in a flattening of the yield curve may not be as boosting to financial sector performance, since banks profit from interest curve steepening (banks lend at the long end of the curve and borrow at the short end). The nature of the environment in which interest rates rise will contribute to future style factor behavior.

Value strongly outperformed during Q1

SMALL CAP VS LARGE CAP (YOY)

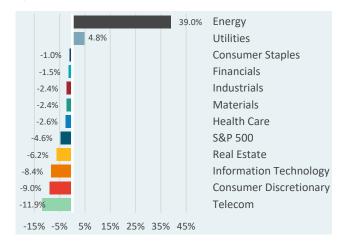


VALUE VS GROWTH (YOY)



Source: FTSE, as of 3/31/22

Q1 SECTOR PERFORMANCE



Source: Standard & Poor's, as of 3/31/22



Source: FTSE, as of 3/31/22

International developed equity

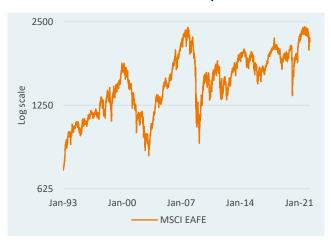
International developed equities fell -5.9% during the quarter, while U.S. equities performed slightly better (S&P 500 -4.6%) and emerging market equities trailed (MSCI Emerging Markets -7.0%), on an unhedged currency basis. Currency movement during the quarter detracted from the performance of investors who do not hedge foreign currency exposure. Currency movements in international developed markets generated losses of -2.4% (MSCI EAFE).

Eurozone and Japanese equities were among the worst performers during the quarter (Euro Stoxx 50 -10.9%, Nikkei 225 -7.8%), though much of these losses were driven by currency market movement. U.K. equities were among the top

performers at 1.8% (MSCI UK). Investors with a currency hedging program would have outperformed unhedged investors by roughly +2.2% in Eurozone equities, +5.2% in Japanese equities, and +2.8% in U.K. equities.

German equities (MSCI Germany -13.1%) detracted significantly from international developed equity returns, as investors expressed concern over the country's large exposure to Russian energy imports. Producer prices in Germany rose 25.9% yearover-year in February, partly due to surging gas prices. It is not yet known the degree to which businesses will be able to pass through higher prices to customers. Inflation in Germany rose to 7.3%—the highest level in decades.

INTERNATIONAL DEVELOPED EQUITY



EFFECT OF CURRENCY (1-YEAR ROLLING)



EUROPEAN EQUITY PERFORMANCE - Q1 2022



Source: MSCI, as of 3/31/22

Source: MSCI, Bloomberg, as of 3/31/22. Returns in USD terms.



Source: MSCI, as of 3/31/22

Emerging market equity

Emerging market equities delivered losses (MSCI EM -7.0%) on an unhedged currency basis, lagging developed markets during the quarter. Latin American markets substantially outperformed Asian markets (MSCI EM Latin America +27.3%, MSCI EM Asia -8.7%).

Chinese equities have seen large losses over the last year. The Nasdaq Golden Dragon China Index recently drew down further than its maximum loss during the Global Financial Crisis. Concerns over imposed sanctions due to relations with Russia, regulatory crackdowns on the real estate and internet sectors, and rising COVID-19 cases resulting in major city lockdowns

have provided the backdrop to the massive sell-off in Chinese equities. More supportive government policies appear to be coming down the pike, which may contribute to a turnaround.

Emerging market equities are attractively priced relative to developed markets. The valuation divide is now extremely large. On a price-to-earnings basis, emerging market equities are in the 8th percentile cheap relative to U.S. equities going back to 2003, meaning they have been cheaper just 7% of the time since 2003. Emerging market equities have also recently fallen back to more average valuations relative to international developed markets.

EMERGING MARKET EQUITY

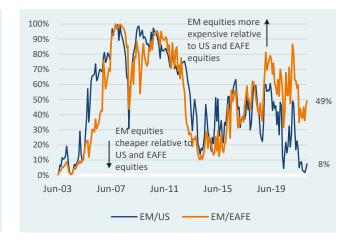


CHINESE EQUITY DRAWDOWNS



Source: MSCI, Nasdaq, as of 3/22/22

VALUATION PERCENTILES



Source: MSCI, forward 12m price multiples, as of 2/28/22



Source: MSCI, as of 12/31/21

Equity valuations

Valuations drifted lower over the first quarter as earnings expectations remained relatively steady and prices moderated. The forward 12-month P/E ratio for the S&P 500 closed the quarter at 19.0—slightly above the five-year average. Forward multiples have fallen back to pre-pandemic levels for most international developed and emerging equity markets.

In the domestic market, analysts appear optimistic about the outlook. If earnings over the next 12 months meet expectations and valuations hold at current levels, the S&P 500 Price Index is forecast to rise 18.5% to around an index level of 5250.

U.S. equity forward P/E valuations remain at historically stretched levels relative to international developed and emerging market equities. U.S. forward price multiples closed the quarter in the 99th percentile relative to EAFE, and in the 92nd percentile relative to EM, using monthly data going back to 2003. The strength of U.S. institutions, the resilience of the U.S. consumer, the United States' energy independence, as well its distance from ongoing conflict in Ukraine may help to tilt international investor flows toward U.S. equities, likely supporting a healthy U.S. equity valuation premium.

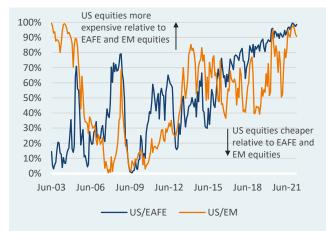
Most equity valuations have moved back towards normal levels, though U.S. prices remain rich

FORWARD P/E RATIOS



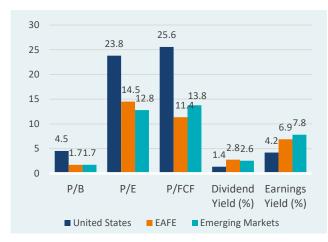
Source: MSCI, 12m forward P/E, as of 3/31/22

RELATIVE FORWARD PRICE MULTIPLES – VALUATION PERCENTILE ANALYSIS



Source: Bloomberg, MSCI, as of 3/31/22

VALUATION METRICS (3-MONTH AVERAGE)



Source: Bloomberg, MSCI as of 3/31/22 - trailing P/E

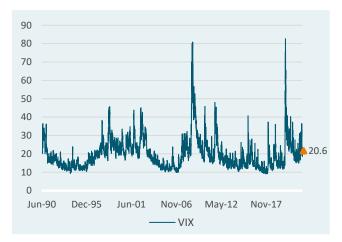


Equity volatility

The Cboe VIX Index spiked mid-quarter during Russia's invasion of Ukraine, as fears of potential global conflict, food shortages, and higher inflation roiled markets. The index fell to 20 to end the quarter—moderately above the longer-term average. Realized volatility over the past year was muted as the pandemic and its associated pain has moved into the rearview mirror. U.S. markets were the most volatile among developed and emerging markets, which has been rare historically. Implied volatility for close-to-the-money put and call options on U.S. large-cap stocks appears to be reflecting fairly-neutral risk positioning. In short, the price of downside protection relative to upside participation is around average.

While realized volatility in emerging market equities was fairly low relative to history in Q1, weakness in tech shares and concerns over potential sanctions resulted in material selloffs in highly-tech-weighted regional markets. In U.S. dollar terms, the MSCI China Index closed the quarter -44% below previous records, and Russian stocks were marked down -100%. Moving forward, the exclusion of Russian equities from MSCI's Emerging Market benchmark will result in an even higher weighting for the Asian segment of the EM complex, which tends to be more growth-tilted and more volatile.

U.S. IMPLIED VOLATILITY (VIX)

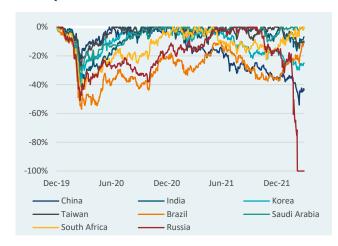


REALIZED VOLATILITY



Source: Standard & Poor's, MSCI, as of 3/31/22

EM EQUITY - MAX DRAWDOWNS FROM PEAKS

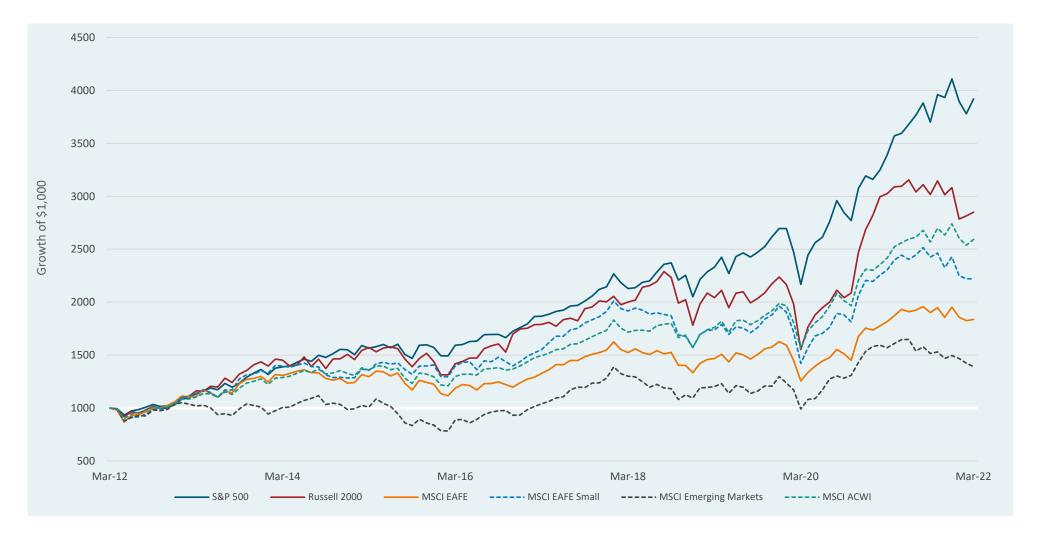


Source: MSCI, Bloomberg, as of 3/31/22, returns in USD



Source: Choe, as of 3/31/22

Long-term equity performance







Other assets



Commodities

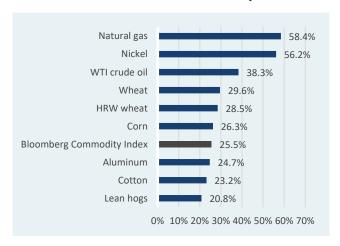
Commodities were by far the best-performing major asset class in Q1 2022 (Bloomberg Commodity Index +25.5%), with every major sector contributing positively to overall index returns. The Energy (+47.9%) and Grains (+24.9%) sectors drove the advance, as investors speculated on what war in the Ukraine and the economic ostracization of Russia might mean for energy access and wheat and corn production.

Industrial metals (+22.7%) also rallied substantially, influenced by clean energy transition efforts that have ramped up in recent months. A short squeeze in nickel (+56.2%) was

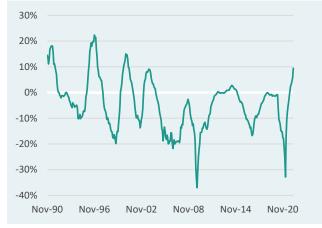
additive to performance.

Improving roll yield has been a huge component of the outsized total return offered by commodities, adding +9.4% to performance over the last twelve months. Massive increases in spot prices relative to further-dated contracts pushed many commodity futures curves into relatively steep backwardation over the near-term, allowing investors to roll their contracts for a profit. In order for this roll yield to be sustainable, spot prices will need to stay elevated relative to futures pricing.

BLOOMBERG COMMODITY INDEX - Q1 2022

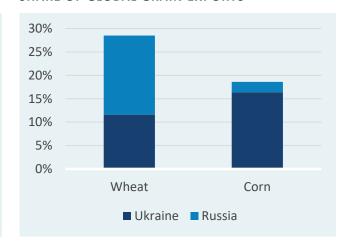


S&P GSCI INDEX ROLL YIELD (LAST 12 MONTHS)



Source: Standard & Poor's, Bloomberg, as of 3/31/22

SHARE OF GLOBAL GRAIN EXPORTS



Source: Food and Agriculture Organization of the United Nations



Source: Bloomberg, as of 3/31/22

How can the Russian oil gap be filled?

Russia produced approximately 11 million barrels of oil per day prior the onset of Covid-19 and the recent economic sanctions. Since then, many countries have imposed embargoes on Russian oil, and higher prices have incentivized policymakers to reopen discussions with other producers, including Venezuela and Iran.

Prior to the imposition of sanctions on Venezuelan and Iranian oil in January 2019 and June 2019, respectively, the two countries were producing around 5.8 million barrels per day. Today, they are producing around 3.2 million barrels per day. Even if the two countries were able to ramp up production back to pre-sanction levels, which would be an impressive feat both diplomatically and physically, that would only replace roughly a quarter of Russian output.

Increased energy production is needed to alleviate high prices, but this conflicts with the West's climate priorities. U.S. government officials have given mixed signals to oil producers. For example, the administration announced in April that it will resume its sale of leases for drilling on federal land, though 80% less land will be leased relative to the footprint that had been originally evaluated. Furthermore, required royalties for energy extraction were raised from 12.5% to 18.75%. In the U.S., many shale firms have opted to increase production on existing land, but have been slow to pursue new projects—partly due to supply chain issues (shortages in labor, truck drivers, and frack sand) and also due to prioritization of profits over growth. This newfound conservatism is reflected by recent comments from Scott Sheffield, CEO of Pioneer Natural Resources Co., who said his company, the largest oil producer in the Permian Basin, is not currently considering raising its long-term goal of increasing oil production by 0-5% per year. As shown on the bottom right, Pioneer's goal this year is to return 80% of cash flow to investors.

WHAT ABOUT VENEZUELA AND IRAN?



TOTAL U.S. SHALE PRODUCTION



Source: Rystad Energy, as of 4/30/22

SHALE PRODUCERS' FOCUS ON DIVIDENDS



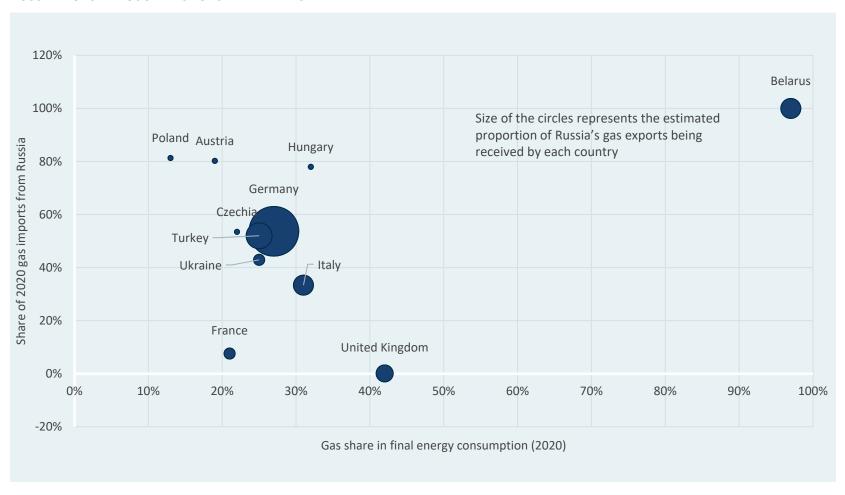
Source: Pioneer Natural Resources, Q4 2021 Earnings Presentation



Source: Bloomberg News, as of 2/28/22

Russian energy embargoes

RUSSIAN GAS EXPOSURE VS. GAS DEPENDENCE



Most
countries
which have
banned
Russian oil
and gas do
not rely
heavily on
Russia for
their energy
resources

Source: Bruegel, as of 2/28/22



Grain supply outlook

Russia, the world's largest fertilizer exporter, imposed a twomonth ban on ammonium nitrate exports, which threatens the availability of fertilizer supplies, especially to South America, as the region enters a critical point in the growing season. Although the United States is not a direct buyer of Russian ammonium nitrate, the export ban is likely to result in higher prices for U.S. farmers.

The outlook for South America's soybean crops has deteriorated as a second year of drought, brought on by La Nina, drags down yield and production forecasts. *Gro*

Intelligence's yield forecast model indicates a production decline which would take soybean stocks to the tightest levels since 2015/2016. The outlook for corn is less dire, as planted acreage is up approximately 5% in Brazil this year, though falling crop yields could offset greater acreage.

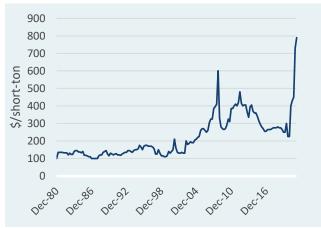
China, the world's largest grain consumer is also facing significant food shortages. Recently, the country's agriculture minister stated that the condition of the winter wheat crop was the "worst in history", and that yields are expected to fall around 20%.

MAJOR DESTINATIONS FOR RUSSIAN AMMONIUM NITRATE EXPORTS (VOLUME)



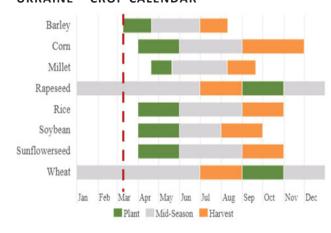
Source: COMTRADE, Gro Intelligence, as of 12/31/20

U.S. CORNBELT AMMONIUM NITRATE PRICES



Source: Bloomberg, as of 3/23/22

UKRAINE - CROP CALENDAR

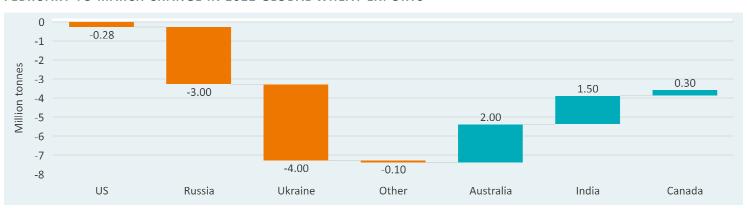


Source: USDA, Ukraine Ministry of Agriculture



Where will incremental supply come from?

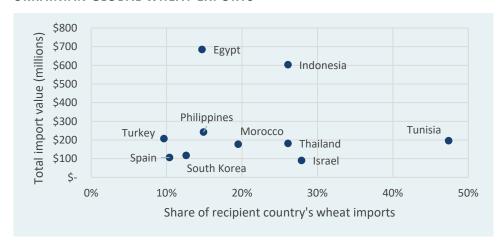
FEBRUARY TO MARCH CHANGE IN 2022 GLOBAL WHEAT EXPORTS



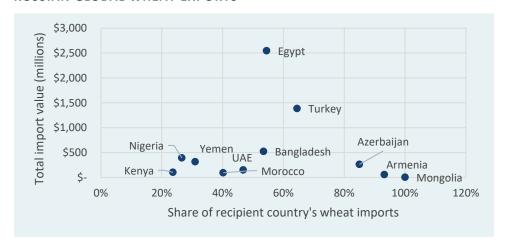
Global production is expected to drop 3.5 million metric tons in 2022, as substitution from farmers in Australia, India, and Canada is not expected to be able to fully offset production declines in the Black Sea region

Source: USDA March 2022 World Agricultural Supply and Demand Estimates. Export change based on revised projections from the USDA World Agricultural Supply and Demand Estimates

UKRAINIAN GLOBAL WHEAT EXPORTS



RUSSIAN GLOBAL WHEAT EXPORTS



Source: OEC, BACI



Appendix



Periodic table of returns

Small Cap Value

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	YTD	5-Year	10-Year
Commodities	31.8	14.0	25.9	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	15.6	20.2	17.0
Real Estate	22.8	8.4	10.3	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	0.0	15.1	14.5
Cash	12.2	7.3	6.7	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	0.0	10.5	11.7
US Bonds	11.6	3.3	1.6	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	-3.2	9.5	11.4
Large Cap Value	7.0	2.8	1.0	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	-3.5	9.5	11.2
Hedge Funds of Funds	4.1	-2.4	-6.0	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	22.4	14.0	17.7	-3.5	8.0	10.7
Small Cap Value	6.0	2.5	-5.9	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	22.0	10.3	14.8	-4.3	8.0	9.3
Emerging Markets Equity	-3.0	-5.6	-11.4	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	-4.8	7.8	6.5
60/40 Global Portfolio	-7.3	-9.1	-15.5	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	-5.7	7.2	6.2
International Equity	-7.8	-9.2	-15.7	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	-6.5	7.0	3.8
Large Cap Equity	-14.0	-12.4	-20.5	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	-8.2	6.6	3.2
Small Cap Equity	-22.4	-19.5	-21.7	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	-8.7	4.5	2.5
Large Cap Growth	-22.4	-20.4	-27.9	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	-12.5	2.7	0.6
Small Cap Growth	-30.6	-21.2	-30.3	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	-13.0	1.1	-1.9
	L	arge C	ap Equ	iity				Sm	nall Ca	p Grov	wth				Cor	mmod	ities								
	Large Cap Value						Int	ternat	ional E	quity				Rea	al Esta	te									
	Large Cap Growth						En	nergin	g Mark	ets Eq	uity			He	dge Fu	nds of	Funds	5							
	Small Cap Equity						US	Bond	s					609	% MSCI	ACWI	/40%	Bloom	berg 6	Global E	Bond				

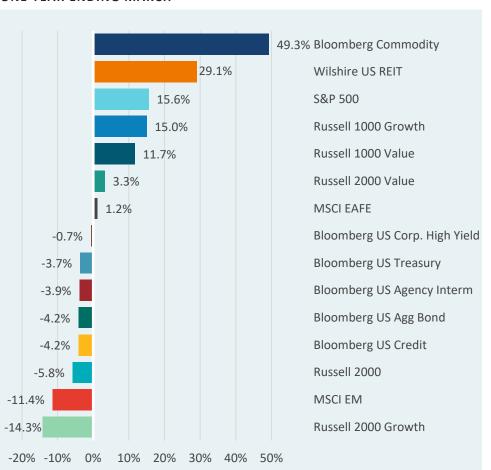
Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, Bloomberg US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, Bloomberg Global Bond. NCREIF Property Index performance data as of 12/31/21.

Cash



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.

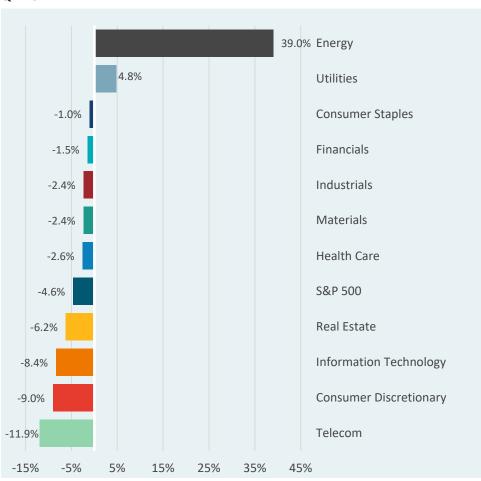
Source: Morningstar, as of 3/31/22

Source: Morningstar, as of 3/31/22

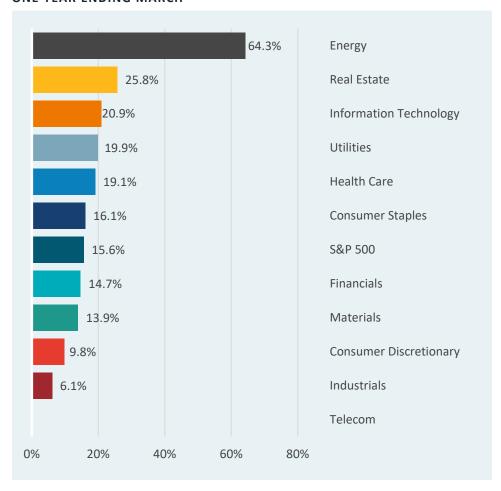


S&P 500 sector returns

Q1 2022



ONE YEAR ENDING MARCH



Source: Morningstar, as of 3/31/22 Source: Morningstar, as of 3/31/22



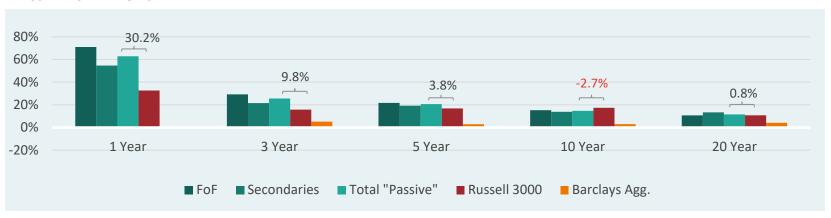
Private equity vs. traditional assets performance

DIRECT PRIVATE EQUITY FUND INVESTMENTS



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

"PASSIVE" STRATEGIES



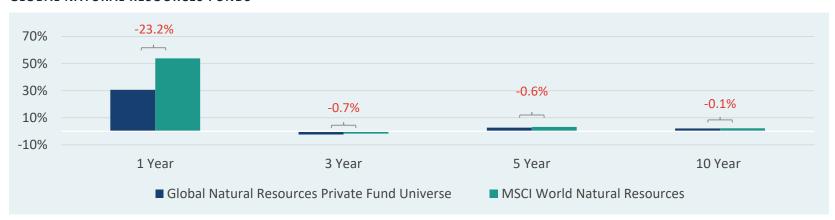
"Passive" strategies outperformed comparable public equities across all time periods, aside from the 10-year basis.

Sources: C|A PME: U.S. Private Equity Funds sub asset classes as of September 30, 2021. Public Market Equivalent returns resulted from "Total Passive" and Total Direct's identical cash flows invested into and distributed from respective traditional asset comparable.



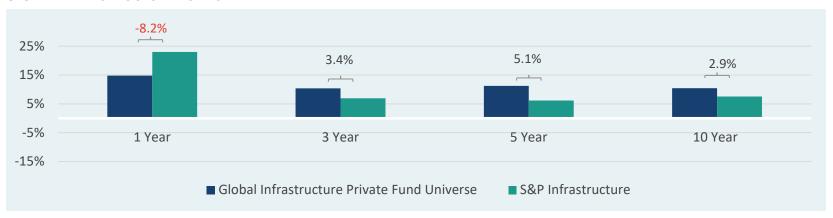
Private vs. liquid real assets performance

GLOBAL NATURAL RESOURCES FUNDS



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

GLOBAL INFRASTRUCTURE FUNDS



Infra. funds outperformed the S&P Infra. across all periods, aside from the 1-year basis.

Sources: C/A 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, 2021. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real assets universes.



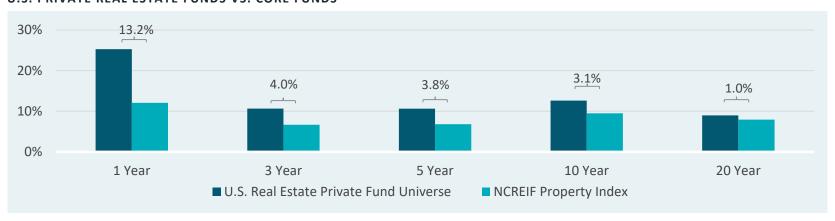
Private vs. liquid and core real estate performance

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



U.S. Private
R.E. funds
underperformed
the Wilshire
U.S. REIT Index
across all time
periods, aside on
a 5-year basis.

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



U.S. Private R.E. Funds outperformed the NCREIF Property Index across all time periods.

Sources: C/A PME: U.S. Real Estate universes as of September 30, 2021. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real estate universes.



Detailed index returns

DOMESTIC EQUITY								FIXED INCOME							
	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year		Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index								Broad Index							
S&P 500	3.7	(4.6)	(4.6)	15.6	18.9	16.0	14.6	Bloomberg US TIPS	(1.9)	(3.0)	(3.0)	4.3	6.2	4.4	2.7
S&P 500 Equal Weighted	2.6	(2.7)	(2.7)	13.1	17.0	13.9	14.0	Bloomberg US Treasury Bills	(0.0)	(0.0)	(0.0)	(0.0)	0.8	1.1	0.6
DJ Industrial Average	2.5	(4.1)	(4.1)	7.1	12.6	13.4	12.8	Bloomberg US Agg Bond	(2.8)	(5.9)	(5.9)	(4.2)	1.7	2.1	2.2
Russell Top 200	3.7	(4.9)	(4.9)	15.7	20.1	17.0	15.2	Bloomberg US Universal	(2.7)	(6.1)	(6.1)	(4.2)	1.9	2.3	2.6
Russell 1000	3.4	(5.1)	(5.1)	13.3	18.7	15.8	14.5	Duration							
Russell 2000	1.2	(7.5)	(7.5)	(5.8)	11.7	9.7	11.0	Bloomberg US Treasury 1-3 Yr	(1.4)	(2.5)	(2.5)	(3.0)	0.8	1.0	0.8
Russell 3000	3.2	(5.3)	(5.3)	11.9	18.2	15.4	14.3	Bloomberg US Treasury Long	(5.3)	(10.6)	(10.6)	(1.4)	3.3	3.9	4.0
Russell Mid Cap	2.6	(5.7)	(5.7)	6.9	14.9	12.6	12.9	Bloomberg US Treasury	(3.1)	(5.6)	(5.6)	(3.7)	1.4	1.8	1.7
Style Index								Issuer							
Russell 1000 Growth	3.9	(9.0)	(9.0)	15.0	23.6	20.9	17.0	Bloomberg US MBS	(2.6)	(5.0)	(5.0)	(4.9)	0.6	1.4	1.7
Russell 1000 Value	2.8	(0.7)	(0.7)	11.7	13.0	10.3	11.7	Bloomberg US Corp. High Yield	(1.1)	(4.8)	(4.8)	(0.7)	4.6	4.7	5.7
Russell 2000 Growth	0.5	(12.6)	(12.6)	(14.3)	9.9	10.3	11.2	Bloomberg US Agency Interm	(2.1)	(3.7)	(3.7)	(3.9)	0.7	1.1	1.2
Russell 2000 Value	2.0	(2.4)	(2.4)	3.3	12.7	8.6	10.5	Bloomberg US Credit	(2.5)	(7.4)	(7.4)	(4.2)	2.8	3.2	3.4
INTERNATIONAL EQUITY								OTHER							
Broad Index								Index							
MSCI ACWI	2.2	(5.4)	(5.4)	7.3	13.8	11.6	10.0	Bloomberg Commodity	8.6	25.5	25.5	49.3	16.1	9.0	(0.7)
MSCI ACWI ex US	0.2	(5.4)	(5.4)	(1.5)	7.5	6.8	5.6	Wilshire US REIT	6.9	(3.9)	(3.9)	29.1	11.9	10.0	9.9
MSCI EAFE	0.6	(5.9)	(5.9)	1.2	7.8	6.7	6.3	CS Leveraged Loans	0.0	(0.1)	(0.1)	3.2	4.1	4.1	4.5
MSCI EM	(2.3)	(7.0)	(7.0)	(11.4)	4.9	6.0	3.4	S&P Global Infrastructure	5.9	7.5	7.5	16.7	8.0	7.7	7.8
MSCI EAFE Small Cap	(0.0)	(8.5)	(8.5)	(3.6)	8.5	7.4	8.3	Alerian MLP	2.0	18.9	18.9	37.5	1.4	(1.1)	1.2
Style Index								Regional Index							
MSCI EAFE Growth	0.6	(11.9)	(11.9)	(1.5)	9.8	8.9	7.5	JPM EMBI Global Div	(0.9)	(10.0)	(10.0)	(7.4)	0.0	1.7	3.7
MSCI EAFE Value	0.7	0.3	0.3	3.6	5.2	4.2	4.9	JPM GBI-EM Global Div	(1.5)	(6.5)	(6.5)	(8.5)	(1.1)	0.2	(0.7)
Regional Index								Hedge Funds							
MSCIUK	0.1	1.8	1.8	13.6	5.3	5.5	4.5	HFRI Composite	(0.1)	(1.6)	(1.6)	2.6	8.3	6.2	5.1
MSCI Japan	(0.5)	(6.6)	(6.6)	(6.5)	6.8	6.1	6.5	HFRI FOF Composite	0.6	(2.7)	(2.7)	1.3	5.9	4.6	3.9
MSCI Euro	(1.7)	(11.1)	(11.1)	(3.4)	6.8	5.5	5.9	Currency (Spot)							
MSCI EM Asia	(3.1)	(8.7)	(8.7)	(15.2)	6.1	7.2	5.8	Euro	(0.9)	(2.2)	(2.2)	(5.3)	(0.3)	0.8	(1.8)
MSCI EM Latin American	13.1	27.3	27.3	23.5	3.2	4.1	(1.1)	Pound Sterling	(1.9)	(2.8)	(2.8)	(4.6)	0.3	1.0	(1.9)
								Yen	(5.1)	(5.1)	(5.1)	(9.0)	(3.0)	(1.7)	(3.8)

EIVED INCOME

Source: Morningstar, HFRI, as of 3/31/22.



DOMESTIC FOLLITY

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 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. (https://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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Imperial County Employees' Retirement System

Investment Performance Review Period Ending: March 31, 2022



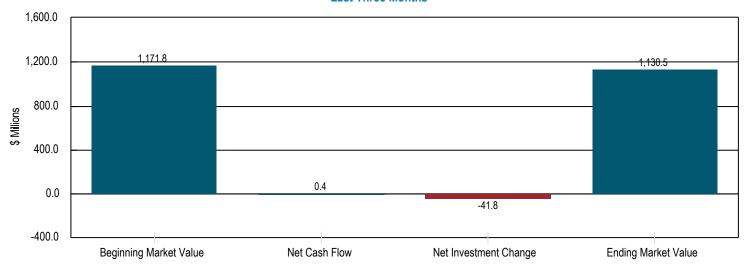
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SAN FRANCISCO 415-362-3484

Portfolio Reconciliation

	Last Three Months	Fiscal Year-To-Date	One Year
Beginning Market Value	\$1,171,807,869	\$1,108,038,199	\$1,053,796,411
Net Cash Flows	\$409,100	-\$6,930,096	-\$12,427,801
Net Investment Change	-\$41,762,675	\$29,346,191	\$89,085,684
Ending Market Value	\$1,130,454,294	\$1,130,454,294	\$1,130,454,294

Change in Market Value Last Three Months



Contributions and withdrawals may include intra-account transfers between managers/funds. Fee transactions are excluded from Portfolio Reconciliation.



Total Fund Executive Summary (Net of Fees)

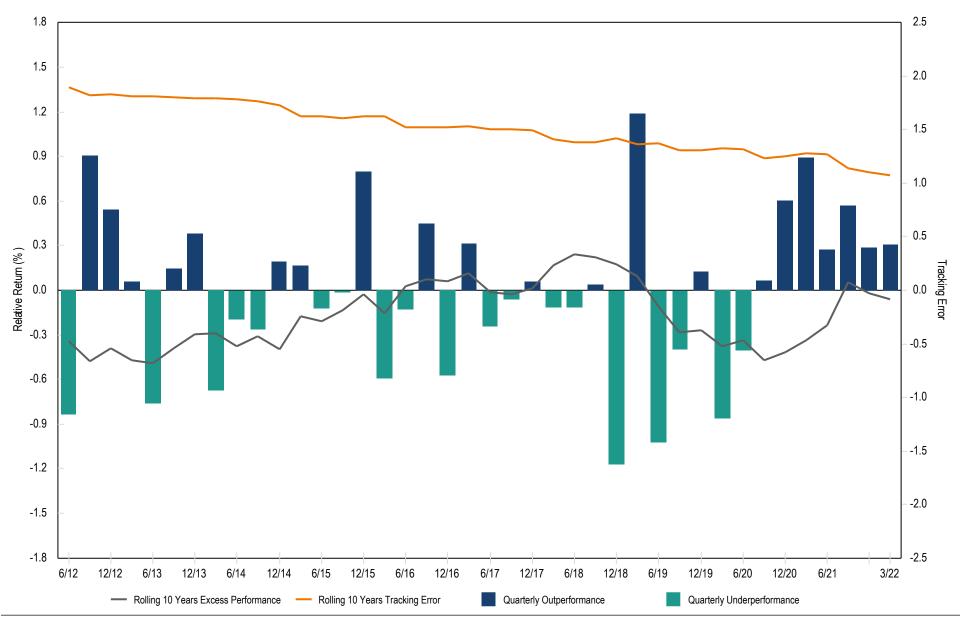
	Market Value	% of Portfolio	QTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
Total Fund	1,130,454,294	100.0	-3.6	2.6	8.4	11.4	9.6	8.4
Policy Index			-3.9	1.4	6.8	11.3	9.7	8.4
InvMetrics Public DB Rank			15	8	7	26	32	46
Total Domestic Equity	397,630,485	35.2	-5.3	3.4	11.9	18.3	15.4	14.1
Russell 3000 Index			-5.3	3.4	11.9	18.2	15.4	14.3
Total International Equity	201,927,209	17.9	-6.4	-6.4	-1.4	6.8	6.2	5.4
MSCI AC World ex USA Index			-5.3	-6.3	-1.0	8.0	7.3	6.0
Total Fixed Income	262,982,811	23.3	-5.7	-4.8	-2.3	3.3	3.1	3.1
Blmbg. U.S. Aggregate Index			-5.9	-5.9	-4.2	1.7	2.1	2.2
Total Real Estate	116,978,103	10.3	4.7	16.6	21.4	9.5	8.4	9.6
NCREIF Property Index			5.3	17.6	21.9	9.6	8.5	9.6
Total Private Equity	77,494,277	6.9	0.0	23.6	36.3	30.4	25.5	18.6
Private Equity Benchmark			0.0	23.6	36.3	30.4	25.5	20.9
Total Private Credit	40,832,821	3.6	3.4	14.0	18.5	10.4	N/A	N/A
Private Credit Benchmark			3.4	14.0	18.5	11.5	N/A	N/A
Total Opportunistic	21,897,290	1.9	17.5	24.8	22.7	10.7	11.3	13.4
Assumption Rate + 1%			2.1	6.3	8.5	8.5	8.5	N/A





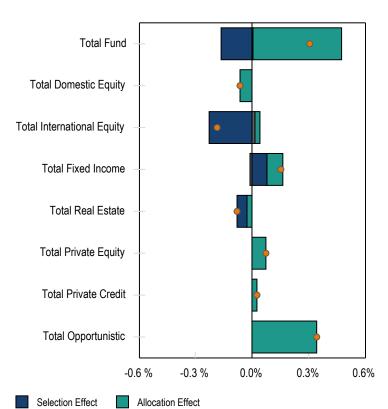


Rolling Annualized Excess Performance and Tracking Error





Attribution Effects Last Three Months



Total Effects

Performance Attribution

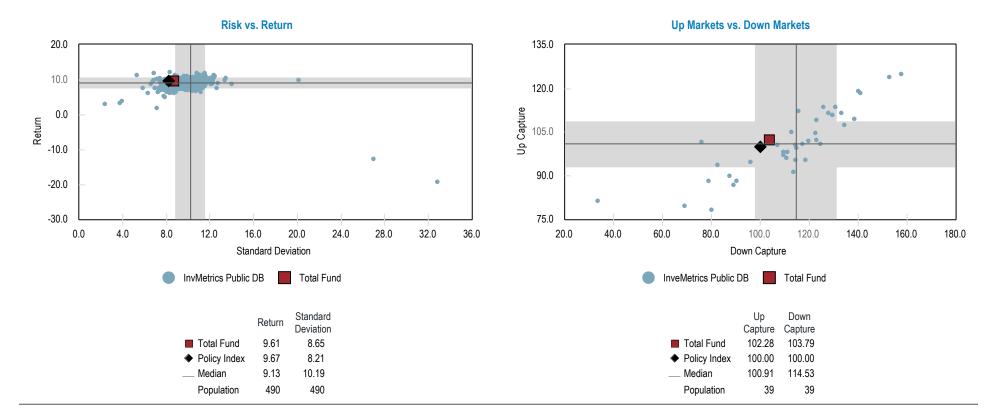
	Quarter
Wtd. Actual Return	-3.58
Wtd. Index Return	-3.89
Excess Return	0.31
Selection Effect	-0.17
Allocation Effect	0.47
Interaction Effect	0.01

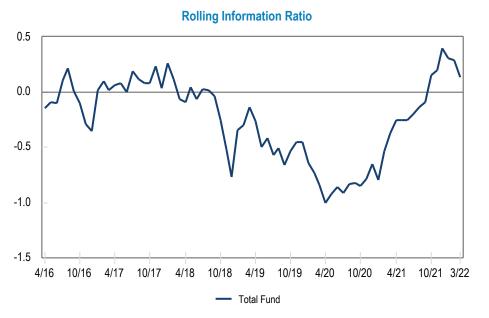
Attribution Summary Last Three Months

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Domestic Equity	-5.3	-5.3	0.0	0.0	-0.1	0.0	-0.1
Total International Equity	-6.4	-5.3	-1.1	-0.2	0.0	0.0	-0.2
Total Fixed Income	-5.7	-5.9	0.3	0.1	0.1	0.0	0.2
Total Real Estate	4.7	5.3	-0.6	-0.1	0.0	0.0	-0.1
Total Private Equity	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Total Private Credit	3.4	3.4	0.0	0.0	0.0	0.0	0.0
Total Opportunistic	17.5	2.1	15.4	0.0	0.3	0.0	0.3
Total Fund	-3.6	-3.9	0.3	-0.2	0.5	0.0	0.3

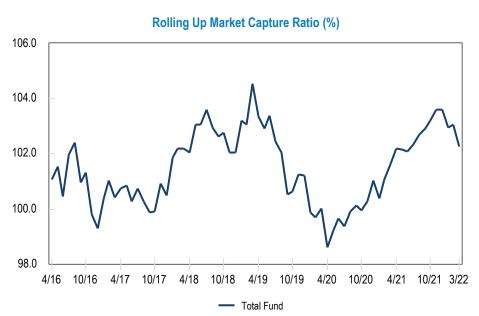
Interaction Effect

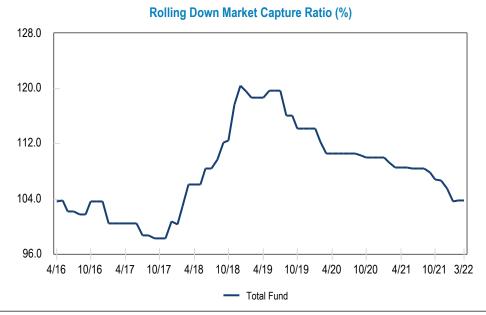
	Annualized Return	Annualized Excess Return	Annualized Standard Deviation	Annualized Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Capture	Down Capture
Total Fund	9.61	8.47	8.65	-0.47	1.05	0.97	0.99	0.97	-0.01	103.07	107.50











	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017	Inception	Inception Date
Total Fund	1,130,454,294	100.0	-3.6	2.6	8.4	11.4	9.6	8.4	16.7	12.3	17.9	-4.1	16.0	9.0	Apr-89
Policy Index			-3.9	1.4	6.8	11.3	9.7	8.4	14.4	13.2	18.0	-2.7	15.9	-	
InvMetrics Public DB Rank			15	8	7	26	32	46	13	64	75	40	27	38	
Total Domestic Equity	397,630,485	35.2	-5.3	3.4	11.9	18.3	15.4	14.1	25.7	21.0	31.1	-5.2	21.2		
Russell 3000 Index			-5.3	3.4	11.9	18.2	15.4	14.3	25.7	20.9	31.0	-5.2	21.1		
BlackRock Russell 3000	397,630,485	35.2	-5.3	3.4	11.9	18.3	15.4	-	25.7	21.0	31.1	-5.2	21.2	14.9	Dec-15
Russell 3000 Index			-5.3	3.4	11.9	18.2	15.4	-	25.7	20.9	31.0	-5.2	21.1	14.7	
eV US All Cap Core Equity Rank			41	36	31	34	26	-	53	42	36	44	40	16	
Total International Equity	201,927,209	17.9	-6.4	-6.4	-1.4	6.8	6.2	5.4	10.1	8.1	20.7	-14.3	27.9		
MSCI AC World ex USA Index			-5.3	-6.3	-1.0	8.0	7.3	6.0	8.3	11.1	22.1	-13.8	27.8		
BlackRock International Equity	153,769,802	13.6	-5.8	-3.6	1.5	8.1	7.0	6.5	11.6	8.1	22.4	-13.5	25.4	7.1	Jul-03
MSCI EAFE (Net)			-5.9	-3.8	1.2	7.8	6.7	6.3	11.3	7.8	22.0	-13.8	25.0	6.8	
eV All EAFE Equity Rank			39	33	31	46	45	56	48	52	48	30	63	58	
DFA Emerging Markets Value	26,964,137	2.4	0.5	-2.4	4.3	5.9	5.6	3.3	12.4	2.8	9.6	-11.9	33.8	4.3	Jan-07
MSCI Emerging Markets Value (Net)			-3.4	-8.7	-3.5	3.2	4.2	1.6	4.0	5.5	12.0	-10.7	28.1	3.7	
eV Emg Mkts All Cap Value Equity Rank			18	18	18	55	66	78	17	84	91	32	38	82	
Harding Loevner Emerging Markets	21,193,270	1.9	-17.8	-26.0	-22.4	-1.1	1.2	-	-4.3	12.4	24.0	-19.5	33.6	2.7	Aug-16
MSCI Emerging Markets Growth Index			-10.2	-21.6	-18.1	6.7	7.8	-	-8.2	31.6	25.4	-18.0	47.1	8.6	
eV Emg Mkts All Cap Growth Equity Rank			91	86	89	99	100	-	48	97	53	70	83	99	
Total Fixed Income	262,982,811	23.3	-5.7	-4.8	-2.3	3.3	3.1	3.1	0.6	9.8	9.5	-0.8	4.3		
Blmbg. U.S. Aggregate Index			-5.9	-5.9	-4.2	1.7	2.1	2.2	-1.5	7.5	8.7	0.0	3.5		
Ducenta Squared	105,910,613	9.4	-6.2	-5.9	-3.7	2.6	2.8	3.2	-0.6	9.1	9.9	-0.1	4.3	5.7	Mar-93
Blmbg. U.S. Aggregate Index			-5.9	-5.9	-4.2	1.7	2.1	2.2	-1.5	7.5	8.7	0.0	3.5	4.8	
eV US Core Plus Fixed Inc Rank			77	60	62	49	45	39	52	35	42	27	66	29	
MacKay Shields Core Plus Opportunities	104,697,423	9.3	-6.4	-6.3	-3.9	2.8	2.8	-	-0.5	9.9	9.7	-1.0	4.5	2.3	Mar-15
Blmbg. U.S. Aggregate Index			-5.9	-5.9	-4.2	1.7	2.1	-	-1.5	7.5	8.7	0.0	3.5	1.9	
eV US Core Plus Fixed Inc Rank			88	89	64	39	46	-	49	21	51	76	52	70	
BlackRock US TIPS	52,374,776	4.6	-3.0	1.0	4.3	6.2	4.5	2.7	5.9	11.2	8.5	-1.2	3.2	4.3	Apr-07
Blmbg. U.S. TIPS			-3.0	1.0	4.3	6.2	4.4	2.7	6.0	11.0	8.4	-1.3	3.0	4.3	
eV US TIPS / Inflation Fixed Inc Rank			68	49	24	44	35	29	26	30	34	33	39	30	

Imperial County Employees' Retirement System Period Ending: March 31, 2022

	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017	Inception	Inception Date
Total Real Estate	116,978,103	10.3	4.7	16.6	21.4	9.5	8.4	9.6	18.4	2.1	5.7	7.5	5.8		
NCREIF Property Index			5.3	17.6	21.9	9.6	8.5	9.6	17.7	1.6	6.4	6.7	7.0		
NCREIF ODCE Net			7.2	22.8	27.3	10.3	8.9	9.9	21.0	0.3	4.4	7.4	6.7		
ASB Real Estate	28,146,862	2.5	0.0	9.0	11.8	5.5	5.5	-	14.2	1.5	3.0	6.6	4.0	8.0	Jan-13
NCREIF Property Index			5.3	17.6	21.9	9.6	8.5	-	17.7	1.6	6.4	6.7	7.0	9.5	
NCREIF ODCE Net			7.2	22.8	27.3	10.3	8.9	-	21.0	0.3	4.4	7.4	6.7	9.9	
Clarion Lion	33,750,374	3.0	7.0	22.5	29.4	12.4	10.6	11.1	23.6	2.3	6.8	8.6	7.9	6.2	Jan-07
NCREIF Property Index			5.3	17.6	21.9	9.6	8.5	9.6	17.7	1.6	6.4	6.7	7.0	7.4	
NCREIF ODCE Net			7.2	22.8	27.3	10.3	8.9	9.9	21.0	0.3	4.4	7.4	6.7	6.2	
ARA American Strategic Value Realty	53,080,142	4.7	6.2	18.1	23.2	10.8	-	-	18.6	2.4	7.8	-	-	10.2	Jan-18
NCREIF Property Index +2%			5.8	19.4	24.3	11.8	-	-	20.0	3.6	8.5	8.9	-	11.0	
NCREIF ODCE Net			7.2	22.8	27.3	10.3	-	-	21.0	0.3	4.4	7.4	-	9.3	
1221 State St. Corp	2,000,725	0.2	0.0	0.0	0.0	2.6	1.5	2.4	0.0	0.0	7.9	0.0	0.0	1.4	Jun-08
Total Private Equity	77,494,277	6.9	0.0	23.6	36.3	30.4	25.5	18.6	57.3	23.0	13.3	21.3	18.8		
Harbourvest Buyout IX	7,825,630	0.7	0.0	19.3	30.5	28.5	26.0	18.1	49.6	21.3	17.6	23.6	23.2	-	Jun-11
Harbourvest Credit Ops IX	1,004,928	0.1	0.0	15.1	24.6	13.0	12.3	14.0	32.1	0.3	8.0	14.4	17.5	-	Jun-11
Harbourvest International PE VI	2,575,033	0.2	0.0	4.2	19.3	21.2	19.6	14.2	41.2	17.2	6.0	14.8	19.4	-	Mar-10
Harbourvest Venture IX	7,159,572	0.6	0.0	30.9	49.4	51.3	37.7	25.7	91.1	52.4	24.6	25.9	9.4	-	Jun-11
Harbourvest 2017 Global Fund	27,027,961	2.4	0.0	22.5	35.0	29.3	-	-	61.6	18.8	8.8	20.9	-	24.9	Oct-17
Harbourvest 2018 Global Fund	17,229,751	1.5	0.0	25.6	25.6	24.6	-	-	37.0	16.0	14.3	-	-	20.2	Jan-19
Harbourvest 2019 Global Fund	14,671,402	1.3	0.0	28.7	40.2	-	-	-	49.6	34.6	-	-	-	35.0	Dec-19
Russell 3000 + 3%			-4.6	5.7	15.3	-	-	-	29.4	24.5	-	-	-	21.9	
Total Private Credit	40,832,821	3.6	3.4	14.0	18.5	10.4	-	-	16.1	4.8	9.4	6.7	-		
Portfolio Advisors Credit Strategies Fund	12,143,792	1.1	0.0	13.3	17.6	11.8	-	-	26.8	3.9	8.2	6.6	-	9.9	Oct-17
Bloomberg High Yield +2% (Lagged)			1.2	5.9	7.4	11.0	-	-	13.5	5.3	8.5	5.1	-	7.8	
Crescent Direct Lending Levered Fund II	3,222,784	0.3	0.0	4.8	8.4	9.1	-	-	11.5	6.0	12.4	-	-	8.8	Mar-18
Bloomberg High Yield +2% (Lagged)			1.2	5.9	7.4	11.0	-	-	13.5	5.3	8.5	-	-	8.1	
Audax Direct Lending Fund A	4,688,247	0.4	6.0	20.1	27.0	17.0	-	-	23.1	10.1	16.3	-	-	19.9	Oct-18
Bloomberg High Yield +2% (Lagged)			1.2	5.9	7.4	11.0	-	-	13.5	5.3	8.5	-	-	9.0	
Ares Capital Europe IV	6,997,401	0.6	1.5	7.5	10.2	10.5	-	-	11.8	8.2	13.1	-	-	10.4	Aug-18
Bloomberg High Yield +2% (Lagged)			1.2	5.9	7.4	11.0	-	-	13.5	5.3	8.5	-	-	8.7	•
Lone Star XI	2,661,904	0.2	0.0	128.6	409.8	-	-	-	538.0	-62.8	-	-	-	20.4	Jun-19
Bloomberg High Yield +2% (Lagged)			1.2	5.9	7.4	-	-	-	13.5	5.3	-	-	-	9.2	



Total Fund Executive Summary - Preliminary (Net of Fees)

	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017	Inception	Inception Date
Sixth Street Diversified Credit	9,710,270	0.9	11.4	8.0	10.4	-	-	-	-1.4	-	-	-	-	4.3	May-20
Bloomberg High Yield +2% (Lagged)			1.2	5.9	7.4	-	-	-	13.5	-	-	-	-	8.6	
Ascribe Opportunities Fund IV	1,408,423	0.1	0.0	41.8	7.7	-	-	-	-17.3	-	-	-	-	-190.8	Jul-20
Bloomberg High Yield +2% (Lagged)			1.2	5.9	7.4	-	-	-	13.5	-	-	-	-	15.8	
Total Opportunistic	21,897,290	1.9	17.5	24.8	22.7	10.7	11.3	13.4	18.6	0.9	-10.7	32.0	5.3	11.9	Dec-07
KKR Mezzanine Partners	2,603,008	0.2	0.0	9.0	9.9	-2.2	3.6	7.0	10.5	-15.2	-4.2	25.3	8.7	7.6	Jun-11
PIMCO BRAVO	13,673	0.0	-0.2	-1.9	-26.1	-35.1	-20.3	-3.3	-21.7	-48.2	-49.1	77.8	-12.4	-1.6	May-11
TSSP Adjacent Opportunities Partners	19,280,609	1.7	20.3	27.3	24.5	-	-	-	20.6	-	-	-	-	26.3	Apr-20
Total Cash															
Cash Account	10,711,298	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
90 Day U.S. Treasury Bill			0.0	0.1	0.1	0.8	1.1	0.6	0.0	0.7	2.3	1.9	0.9	0.7	

	Annualized Return	Annualized Excess Return	Annualized Standard Deviation	Annualized Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Capture	Down Capture
BlackRock Russell 3000	18.27	18.50	20.54	0.03	1.00	0.02	1.00	0.89	1.02	100.04	99.88
BlackRock International Equity	8.11	9.06	19.34	0.30	1.00	0.13	1.00	0.46	2.36	101.30	99.39
DFA Emerging Markets Value	5.94	8.79	26.13	2.93	1.07	5.11	0.97	0.33	0.65	112.74	95.11
Harding Loevner Emerging Markets	-1.12	1.97	27.16	-7.15	1.08	8.11	0.92	0.07	-0.81	93.79	134.22
Ducenta Squared	2.57	1.89	5.52	0.86	1.01	1.64	0.91	0.35	0.54	118.29	100.59
MacKay Shields Core Plus Opportunities	2.78	2.12	5.96	1.08	1.02	2.70	0.80	0.36	0.41	123.78	101.75
BlackRock US TIPS	6.25	5.38	3.93	-0.02	1.01	0.13	1.00	1.37	0.25	100.36	99.64
ASB Real Estate	5.47	4.61	3.39	0.30	0.55	3.14	0.46	1.29	-1.26	58.54	77.56
Clarion Lion	12.39	11.20	5.64	-0.29	1.31	1.64	0.97	1.91	1.61	130.21	184.41
ARA American Strategic Value Realty	10.78	9.65	4.18	-0.34	0.95	1.15	0.93	2.20	-0.82	91.41	65.05
Portfolio Advisors Credit Strategies Fund	11.79	10.80	7.78	5.86	0.53	7.39	0.52	1.38	0.06	93.05	63.12
Crescent Direct Lending Levered Fund II	9.13	8.11	4.09	8.78	0.04	11.09	0.01	1.90	-0.20	52.79	-21.40
Audax Direct Lending Fund A	17.01	15.40	6.26	14.02	0.26	9.74	0.19	2.43	0.52	112.35	22.29
Ares Capital Europe IV	10.47	9.39	4.73	10.97	-0.03	12.01	0.01	2.01	-0.08	62.10	-17.88



	Annualized Return	Annualized Excess Return	Annualized Standard Deviation	Annualized Alpha	Annualized Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Capture	Down Capture
BlackRock International Equity	8.11	8.48	17.05	0.28	1.00	0.33	1.00	0.49	0.97	101.36	100.32
DFA Emerging Markets Value	5.94	7.16	20.42	2.70	1.07	4.68	0.95	0.35	0.64	107.72	95.39
Ducenta Squared	2.57	1.83	4.41	0.78	1.06	1.34	0.91	0.42	0.65	117.70	104.92
MacKay Shields Core Plus Opportunities	2.78	2.06	4.90	0.91	1.12	2.13	0.82	0.42	0.52	128.00	114.07
BlackRock US TIPS	6.25	5.37	4.31	-0.01	1.01	0.10	1.00	1.24	0.32	100.54	100.55
ASB Real Estate	5.47	4.61	4.05	0.17	0.56	3.53	0.62	1.13	-1.12	58.54	77.56
Clarion Lion	12.39	11.21	7.47	-0.16	1.30	1.97	0.98	1.49	1.35	130.21	184.41



\$43,656

\$41,634

\$197,398

\$0

\$0

\$0

\$0

\$139

\$21,156

\$20,131

\$83,209

\$64,812

\$61,765

\$280,746

Vintage	Manager & Fund Name	Estimated 3/31/2022 Market Value ³	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value for IRR	Distrib./ Paid-In (DPI) ¹	Tot. Value/ Paid-In (TVPI) ²	Net IRR Since Inception ⁴	IRR Date
2011	HarbourVest IX-Buyout	\$7,825,630	\$10,000,000	\$8,525,000	85%	\$1,475,000	\$11,261,546	\$9,281,484	132.1%	223.9%	20.5%	9/30/21
2011	HarbourVest IX-Credit	\$1,004,928	\$2,000,000	\$1,600,000	80%	\$400,000	\$1,589,612	\$1,256,989	99.4%	162.2%	13.6%	9/30/21
2008	HarbourVest Int'l VI ⁵	\$2,575,033	\$3,712,930	\$2,630,078	71%	\$1,082,852	\$3,599,247	\$3,004,251	136.8%	234.8%	16.0%	9/30/21
2011	HarbourVest IX-Venture	\$7,159,572	\$4,000,000	\$3,800,000	95%	\$200,000	\$6,776,438	\$8,023,812	178.3%	366.7%	26.1%	9/30/21
2017	HarbourVest 2017 Global	\$27,027,961	\$30,000,000	\$17,700,000	59%	\$12,300,000	\$8,528,895	\$29,894,527	48.2%	200.9%	30.3%	9/30/21
2018	HarbourVest 2018 Global	\$17,229,751	\$20,000,000	\$10,538,043	53%	\$9,461,957	\$376,435	\$18,629,751	3.6%	167.1%	38.2%	9/30/21
2019	HarbourVest 2019 Global	\$14,671,402	\$20,000,000	\$9,575,273	48%	\$10,424,727	\$0	\$14,077,480	0.0%	153.2%	63.0%	9/30/21
	Total Illiquid Private Equity	\$77,494,277	\$89,712,930	\$54,368,394	61%	\$35,344,536	\$32,132,173	\$84,168,294	154.8%	213.9%		
	% of Portfolio (Market Value)	6.8%						Management	Admin	Interest	Other	Total
					_			Fee	Fee	Expense	Expense	Expense ⁶
					_	HarbourVest IX-Buyout	:	\$24,910	\$0	\$0	\$3,066	\$27,976
						HarbourVest IX-Credit		\$4,976	\$0	\$10	\$2,266	\$7,252
						HarbourVest Int'l VI		\$6,241	\$0	\$128	\$34	\$6,403
						HarbourVest IX-Venture	Э	\$9,981	\$0	\$0	\$678	\$10,659
						HarbourVest 2017 Glob	pal	\$66,000	\$0	\$1	\$35,878	\$101,879

HarbourVest 2018 Global

HarbourVest 2019 Global

¹(DPI) is equal to (capital returned / capital called)

²(TVPI) is equal to (market value + capital returned) / capital called

³Last known market value + capital calls - distributions (preliminary MV's as of 3/31/2022)

⁴Net 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.

⁵HarbourVest International Private Equity Partners VI-Partnership Fund L.P. values are originally presented in euros and are calculated to dollars using XE™.

⁶All fees and expenses are for 3Q 2021

		Estimated 3/31	Total	Capital	%	Remaining	Capital	Market Value	Distrib./ Paid-In	Tot. Value/ Paid-In	Net IRR Since	IRR
Vintage	Manager & Fund Name	Market Value ³	Commitment	Called	Called	Commitment	Returned	for IRR	(DPI) ¹	(TVPI) ²	Inception⁴	Date
2013	Portfolio Advisors Credit Strategies Fund	\$12,143,792	\$11,250,000	\$11,250,000	100%	\$0	\$1,602,718	\$13,580,395	14.2%	122.2%	7.8%	9/30/21
2017	Crescent Direct Lending Levered Fund II	\$3,222,784	\$7,000,000	\$5,707,507	82%	\$1,292,493	\$3,656,090	\$3,485,707	64.1%	120.5%	8.8%	12/31/21
2017	Audax Direct Lending Fund A	\$4,688,247	\$7,000,000	\$4,620,676	66%	\$2,379,324	\$1,398,205	NA	30.3%	131.7%	NM ⁶	NM ⁶
2018	Ares Capital Europe IV	\$6,997,401	\$8,000,000	\$6,762,884	85%	\$1,237,116	\$1,367,594	NA	20.2%	123.7%	NM^7	NM^7
2019	Lone Star Fund XI	\$2,661,904	\$5,750,000	\$1,544,010	27%	\$4,205,990	\$103,177	NA	6.7%	179.1%	NA	NA
2019	Ascribe Opportunities IV	\$1,408,423	\$6,000,000	\$1,362,497	23%	\$4,637,503	\$26,909	NA	NA	NA	NA	NA
2020	Sixth Street Diversified Credit	\$9,710,270	\$20,000,000	\$10,525,786	53%	\$9,474,214	\$1,672,978	NA	15.9%	108.1%	NA	NA
	Total Illiquid Private Credit	\$40,832,821	\$65,000,000	\$41,773,360	64%	\$23,226,640	\$9,827,671	\$17,066,102	40.9%	64.4%		
	% of Portfolio (Market Value)	3.6%					Management	Accrued	Admin	Interest	Other	Total
	,						Fee	Carried Interest	Fee	Expense	Expense	Expense ⁵
											·	
					Portfolio Adv	visors CSF	\$0	\$0	\$0	\$0	\$0	\$0
					Crescent Dir	rect Lending II	\$39,930	\$7,466	\$14,042	\$0	\$0	\$61,438
					Audax Direc	t Lending A	\$30,128	\$0	\$0	\$0	\$55,547	\$85,675
					Ares Capital	Europe IV	\$25,337	\$18,964	\$0	\$27,201	\$9,030	\$80,532
					Ascribe Opp	ortunities IV	\$98	\$0	\$0	\$0	\$0	\$98

Lone Star Fund XI

Sixth Street Diversified Credit

\$0

\$0

\$95,493

\$0

\$26,430

\$0

\$0

\$14,042

\$0

\$27,201



\$0

\$0

\$227,743

\$0

\$64,577

¹(DPI) is equal to (capital returned / capital called)

²(TVPI) is equal to (market value + capital returned) / capital called

³Last known market value + capital calls - distributions (preliminary MV's as of 3/31/2022)

⁴Net 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.

⁵All fees and expenses except Audax Direct Lending are for 4Q 2021

⁶The Fund issued its first capital call on October 26, 2018. As such it does not consider the IRR to be meaningful.

⁷Given the nature of the ACE IV strategy, Ares will begin reporting fund-level IRR metrics beginning in Q3 2019, one year after the fund's first investment.

		Estimated 3/31	Total	Capital	%	Remaining	Capital	Market Value	Distrib./ Paid-In	Tot. Value/ Paid-In	Net IRR Since	IRR
Vintage	Manager & Fund Name	Market Value ³	Commitment	Called	Called	Commitment	Returned	for IRR	(DPI) ¹	(TVPI) ²	Inception ⁵	Date
0040	. 6	00.000.007	040.000.000	0.4.0.000.000	1000/		040 400 540	00.407.050	101001	404.004	7.00/	0.400.40
2010	KKR Mezzanine ⁶	\$2,603,007	\$10,000,000	\$10,000,000	100%	\$0	\$13,493,513	\$2,467,356	134.9%	161.0%	7.3%	9/30/21
2011	PIMCO BRAVO 4	\$13,673	\$10,000,000	\$10,000,000	100%	\$0	\$18,133,166	\$13,736	181.3%	181.5%	-1.6%	12/31/21
2020	TSSP Adjacent Opportunities Partners	\$19,280,609	\$40,000,000	\$15,103,184	38%	\$24,896,816	\$3,919,665	NA	26.0%	153.6%	NA	NA
	Total Illiquid Opportunistic	\$21,897,290	\$60,000,000	\$35,103,184	59%	\$24,896,816	\$35,546,344	\$2,481,092	7.1%	108.3%		
	% of Portfolio (Market Value)	1.9%					Management Fee	Accrued Carried Interest	Admin Fee	Interest Expense	Other Expense	Total Expense ⁷
	% of Portfolio (Market Value)	1.9%					•					
	% of Portfolio (Market Value)	1.9%		I	KKR Mezzai	nine	•					
	% of Portfolio (Market Value)	1.9%		1	KKR Mezzai PIMCO BRA		Fee	Carried Interest	Fee	Expense	Expense	Expense ⁷
	% of Portfolio (Market Value)	1.9%			PIMCO BRA		Fee \$3,960	Carried Interest	Fee \$0	Expense \$0	Expense \$2,278	Expense ⁷ \$6,238



¹(DPI) is equal to (capital returned / capital called)

²(TVPI) is equal to (market value + capital returned) / capital called

³Last known market value + capital calls - distributions (preliminary MV's as of 3/31/2022)

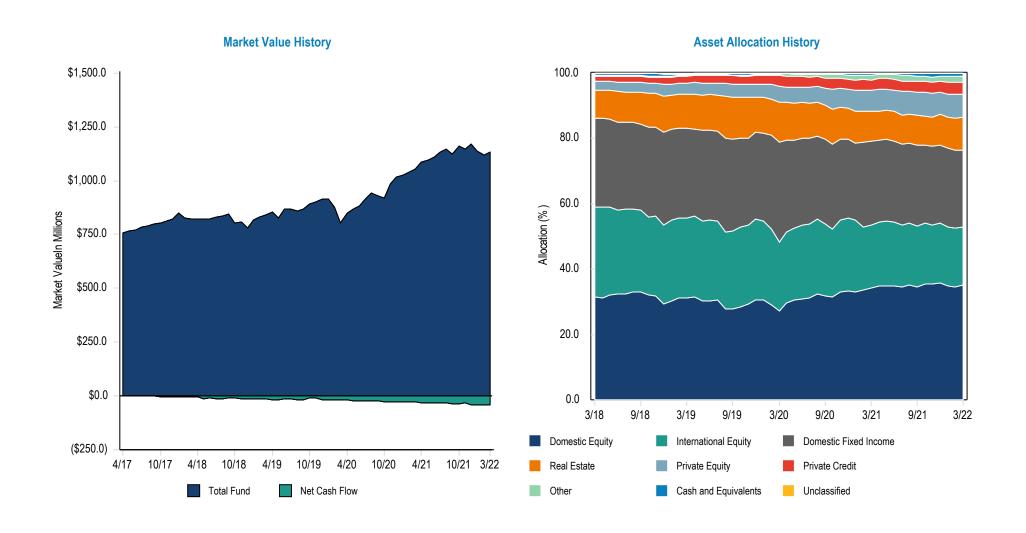
⁴Investment period ended, no further capital to be called.

⁵Net 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.

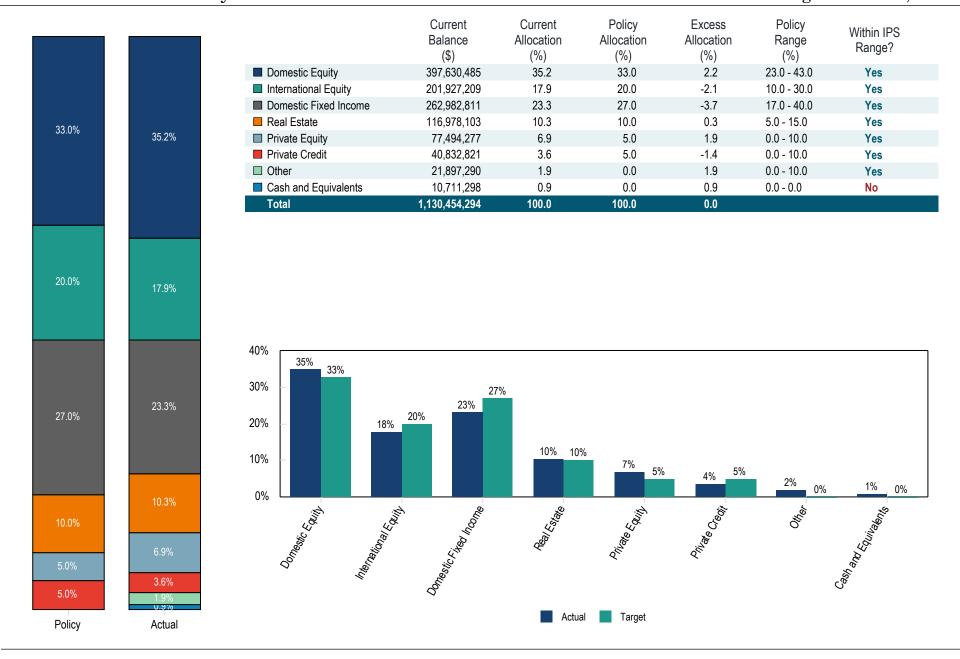
⁶KKR: Total capital called is \$12,686,373, which includes recycled distributions. Unused capital commitment is \$839,888 after including distribution proceeds available for reinvestment

⁷All fees and expenses are for 4Q 2021

	Beginning Market Value	Contributions	Withdrawals	Net Cash Flows	Capital Appreciation	Income	Ending Market Value
BlackRock Russell 3000	\$419,748,039	\$0	\$0	\$0	-\$22,117,554	\$0	\$397,630,485
BlackRock International Equity	\$163,226,259	\$0	\$0	\$0	-\$9,456,457	\$0	\$153,769,802
DFA Emerging Markets Value	\$26,822,274	\$0	\$0	\$0	\$141,864	\$0	\$26,964,137
Harding Loevner Emerging Markets	\$25,696,840	\$0	\$0	\$0	-\$4,503,570	\$0	\$21,193,270
Ducenta Squared	\$112,860,678	\$0	\$0	\$0	-\$6,950,065	\$0	\$105,910,613
MacKay Shields Core Plus Opportunities	\$111,841,897	\$0	\$0	\$0	-\$7,144,475	\$0	\$104,697,423
BlackRock US TIPS	\$53,973,080	\$0	\$0	\$0	-\$1,598,304	\$0	\$52,374,776
ASB Real Estate	\$28,146,862	\$0	\$0	\$0	\$0	\$0	\$28,146,862
Clarion Lion	\$31,599,124	\$189,681	-\$275,418	-\$85,737	\$2,236,987	\$0	\$33,750,374
ARA American Strategic Value Realty	\$48,140,284	\$1,900,000	\$0	\$1,900,000	\$3,039,858	\$0	\$53,080,142
1221 State St. Corp	\$1,984,255	\$23,004	-\$6,546	\$16,458	\$12	\$0	\$2,000,725
Harbourvest Buyout IX	\$8,425,938	\$0	-\$600,308	-\$600,308	\$0	\$0	\$7,825,630
Harbourvest Credit Ops IX	\$1,135,024	\$0	-\$130,096	-\$130,096	\$0	\$0	\$1,004,928
Harbourvest International PE VI	\$2,701,171	\$0	-\$126,138	-\$126,138	\$0	\$0	\$2,575,033
Harbourvest Venture IX	\$7,330,471	\$0	-\$170,899	-\$170,899	\$0	\$0	\$7,159,572
Harbourvest 2017 Global Fund	\$28,894,588	\$0	-\$1,866,627	-\$1,866,627	\$0	\$0	\$27,027,961
Harbourvest 2018 Global Fund	\$17,229,751	\$0	\$0	\$0	\$0	\$0	\$17,229,751
Harbourvest 2019 Global Fund	\$13,671,402	\$1,000,000	\$0	\$1,000,000	\$0	\$0	\$14,671,402
Portfolio Advisors Credit Strategies Fund	\$12,143,792	\$0	\$0	\$0	\$0	\$0	\$12,143,792
Crescent Direct Lending Levered Fund II	\$3,485,707	\$0	-\$262,923	-\$262,923	\$0	\$0	\$3,222,784
Audax Direct Lending Fund A	\$4,454,815	\$373,182	-\$406,114	-\$32,932	\$266,364	\$0	\$4,688,247
Ares Capital Europe IV	\$7,188,435	\$0	-\$298,484	-\$298,484	\$107,450	\$0	\$6,997,401
Lone Star XI	\$2,656,542	\$5,362	\$0	\$5,362	\$0	\$0	\$2,661,904
Sixth Street Diversified Credit	\$8,328,969	\$728,073	-\$301,128	\$426,945	\$954,356	\$0	\$9,710,270
Ascribe Opportunities Fund IV	\$876,117	\$532,306	\$0	\$532,306	\$0	\$0	\$1,408,423
KKR Mezzanine Partners	\$2,603,008	\$0	\$0	\$0	\$0	\$0	\$2,603,008
PIMCO BRAVO	\$13,699	\$0	\$0	\$0	-\$26	\$0	\$13,673
TSSP Adjacent Opportunities Partners	\$16,037,972	\$810,901	-\$829,150	-\$18,249	\$3,260,886	\$0	\$19,280,609
Cash Account	\$10,590,876	\$1,233,427	-\$1,113,005	\$120,422	\$0	\$0	\$10,711,298
Total Fund	\$1,171,807,869	\$6,795,937	-\$6,386,837	\$409,100	-\$41,762,675	\$0	\$1,130,454,294



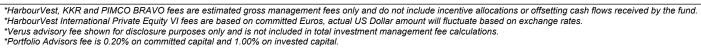






Imperial County Employees' Retirement System Period Ending: March 31, 2022

Account	Fee Schedule	Market Value	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
1221 State St. Corp		2,000,725	0.18	-	-
ARA American Strategic Value Realty	1.25 % of First \$10 M 1.20 % of Next \$15 M 1.10 % of Next \$25 M 1.00 % Thereafter	53,080,142	4.70	610,801	1.15
Ares Capital Europe IV		6,997,401	0.62	-	-
ASB Real Estate	1.25 % of First \$5 M 1.00 % of Next \$10 M 0.75 % Thereafter	28,146,862	2.49	261,101	0.93
Ascribe Opportunities Fund IV		1,408,423	0.12	-	-
Audax Direct Lending Fund A		4,688,247	0.41	-	-
BlackRock International Equity	0.15 % of First \$50 M 0.10 % of Next \$50 M 0.00 % Thereafter	153,769,802	13.60	125,000	0.08
BlackRock Russell 3000	0.03 % of Assets	397,630,485	35.17	119,289	0.03
BlackRock US TIPS	0.07 % of Assets	52,374,776	4.63	36,662	0.07
Cash Account		10,711,298	0.95	-	-
Clarion Lion	1.25 % of First \$10 M 1.00 % of Next \$15 M 0.85 % Thereafter	33,750,374	2.99	349,378	1.04
Crescent Direct Lending Levered Fund II		3,222,784	0.29	-	-
DFA Emerging Markets Value	0.41 % of Assets	26,964,137	2.39	110,553	0.41
Ducenta Squared	0.29 % of First \$100 M 0.25 % of Next \$100 M 0.00 % Thereafter	105,910,613	9.37	299,777	0.28
Harbourvest 2017 Global Fund	Minimum Fee: \$262,500	27,027,961	2.39	262,500	0.97
Harbourvest 2018 Global Fund	Minimum Fee: \$138,000	17,229,751	1.52	138,000	0.80
Harbourvest 2019 Global Fund	0.45 % of Assets	14,671,402	1.30	66,021	0.45
Harbourvest Buyout IX	Minimum Fee: \$100,000	7,825,630	0.69	100,000	1.28
Harbourvest Credit Ops IX	Minimum Fee: \$20,000	1,004,928	0.09	20,000	1.99
Harbourvest International PE VI	Minimum Fee: \$35,000	2,575,033	0.23	35,000	1.36
Harbourvest Venture IX	Minimum Fee: \$40,000	7,159,572	0.63	40,000	0.56
Harding Loevner Emerging Markets	1.05 % of Assets	21,193,270	1.87	222,529	1.05
KKR Mezzanine Partners	Minimum Fee: \$150,000	2,603,008	0.23	150,000	5.76
Lone Star XI		2,661,904	0.24	-	-
MacKay Shields Core Plus Opportunities	0.35 % of Assets	104,697,423	9.26	366,441	0.35
PIMCO BRAVO	1.90 % of Assets	13,673	0.00	260	1.90





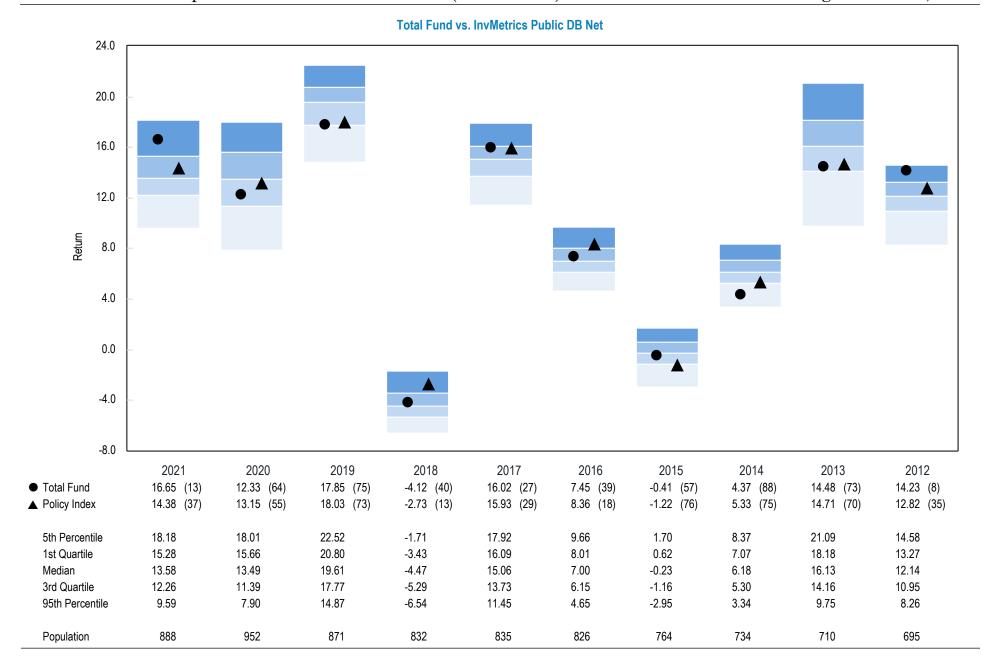
Total Fund Investment Fund Fee Analysis

Imperial County Employees' Retirement System Period Ending: March 31, 2022

Account	Fee Schedule	Market Value	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Portfolio Advisors Credit Strategies Fund	Minimum Fee: \$180,000	12,143,792	1.07	180,000	1.48
Sixth Street Diversified Credit		9,710,270	0.86	-	-
TSSP Adjacent Opportunities Partners		19,280,609	1.71	-	-
Investment Management Fee		1,130,454,294	100.00	3,493,313	0.31

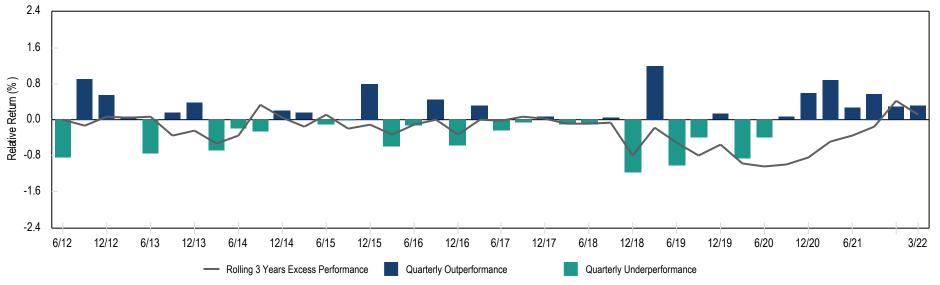
Total Fund vs. InvMetrics Public DB Net 14.0 11.0 8.0 5.0 Return 2.0 -1.0 -4.0 -7.0 -10.0 Quarter YTD Fiscal YTD 1 Yr 3 Yrs 5 Yrs 7 Yrs 10 Yrs 2.58 (8) -3.58 (15) -3.58 (15) 8.38 (7) 11.39 (26) 9.61 (32) 8.16 (28) 8.37 (46) Total Fund -3.89 (21) -3.89 (21) 1.39 (17) 6.85 (18) 11.27 (28) 9.67 (30) 8.18 (26) 8.43 (42) ▲ Policy Index 5th Percentile -2.38 -2.38 3.11 9.36 12.43 10.80 9.08 9.63 1st Quartile -4.09 -4.09 0.66 6.10 11.40 9.81 8.19 8.80 Median -4.88 -4.88 -0.70 4.73 10.56 9.13 7.68 8.31 3rd Quartile -5.74 -5.74 -2.03 3.21 9.72 8.45 7.16 7.74 95th Percentile -6.87 -6.87 -4.12 1.04 8.10 7.24 6.14 6.85 401 525 522 Population 525 521 515 490 453



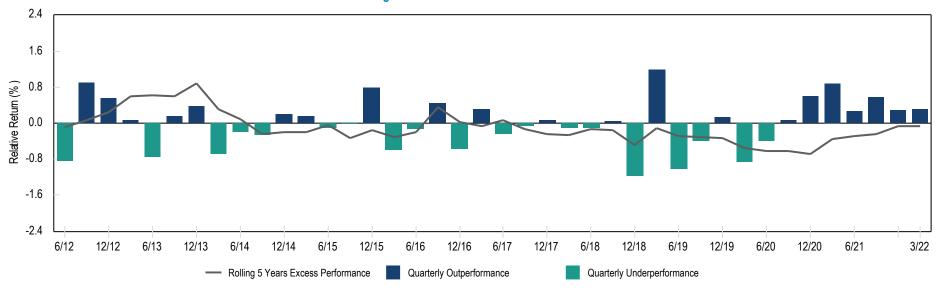








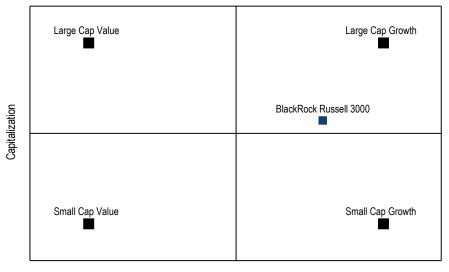
Rolling 5 Year Annualized Excess Performance



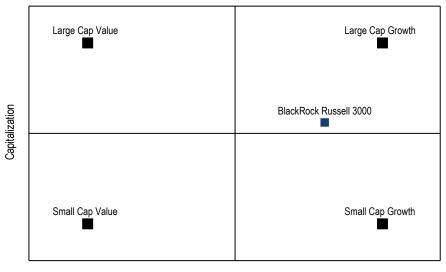


	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017
Total Domestic Equity	397,630,485	100.0	-5.3	3.4	11.9	18.3	15.4	14.1	25.7	21.0	31.1	-5.2	21.2
Russell 3000 Index			-5.3	3.4	11.9	18.2	15.4	14.3	25.7	20.9	31.0	-5.2	21.1
BlackRock Russell 3000	397,630,485	100.0	-5.3	3.4	11.9	18.3	15.4	-	25.7	21.0	31.1	-5.2	21.2
Russell 3000 Index			-5.3	3.4	11.9	18.2	15.4	-	25.7	20.9	31.0	-5.2	21.1
eV US All Cap Core Equity Rank			41	36	31	34	26	-	53	42	36	44	40

U.S. Effective Style Map 3 Years Ending: March 31, 2022



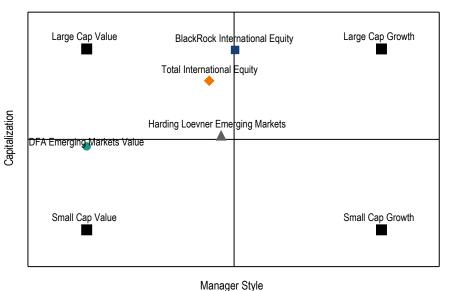
U.S Effective Style Map 5 Years Ending: March 31, 2022



Manager Style Manager Style

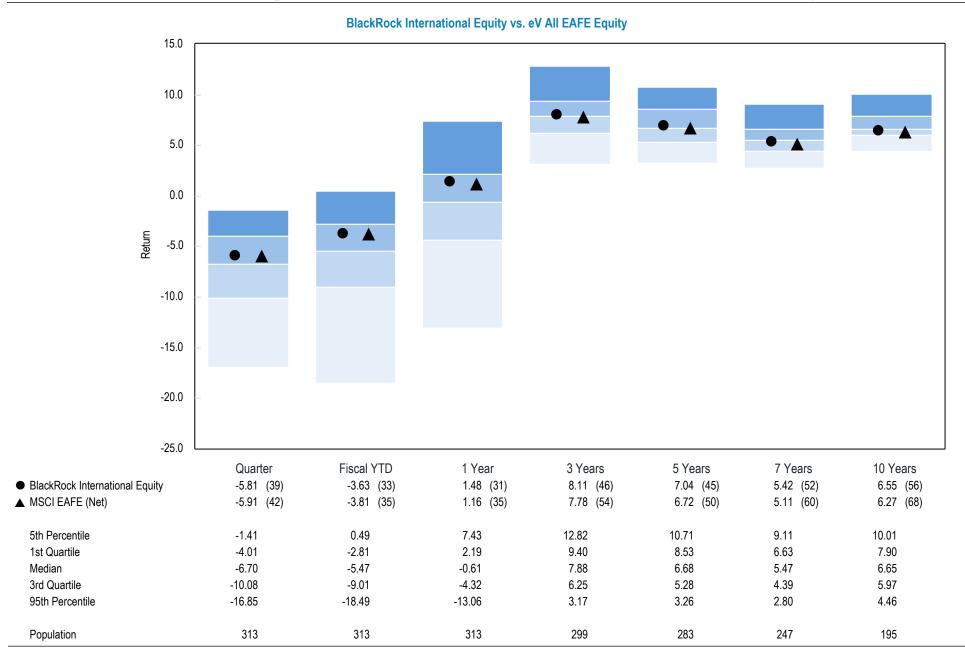
	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017
Total International Equity	201,927,209	100.0	-6.4	-6.4	-1.4	6.8	6.2	5.4	10.1	8.1	20.7	-14.3	27.9
MSCI AC World ex USA Index			-5.3	-6.3	-1.0	8.0	7.3	6.0	8.3	11.1	22.1	-13.8	27.8
BlackRock International Equity	153,769,802	76.2	-5.8	-3.6	1.5	8.1	7.0	6.5	11.6	8.1	22.4	-13.5	25.4
MSCI EAFE (Net)			-5.9	-3.8	1.2	7.8	6.7	6.3	11.3	7.8	22.0	-13.8	25.0
eV All EAFE Equity Rank			39	33	31	46	45	56	48	52	48	30	63
DFA Emerging Markets Value	26,964,137	13.4	0.5	-2.4	4.3	5.9	5.6	3.3	12.4	2.8	9.6	-11.9	33.8
MSCI Emerging Markets Value (Net)			-3.4	-8.7	-3.5	3.2	4.2	1.6	4.0	5.5	12.0	-10.7	28.1
eV Emg Mkts All Cap Value Equity Rank			18	18	18	55	66	78	17	84	91	32	38
Harding Loevner Emerging Markets	21,193,270	10.5	-17.8	-26.0	-22.4	-1.1	1.2	-	-4.3	12.4	24.0	-19.5	33.6
MSCI Emerging Markets Growth Index			-10.2	-21.6	-18.1	6.7	7.8	-	-8.2	31.6	25.4	-18.0	47.1
eV Emg Mkts All Cap Growth Equity Rank			91	86	89	99	100	-	48	97	53	70	83

MSCI Effective Style Map 3 Years Ending: March 31, 2022

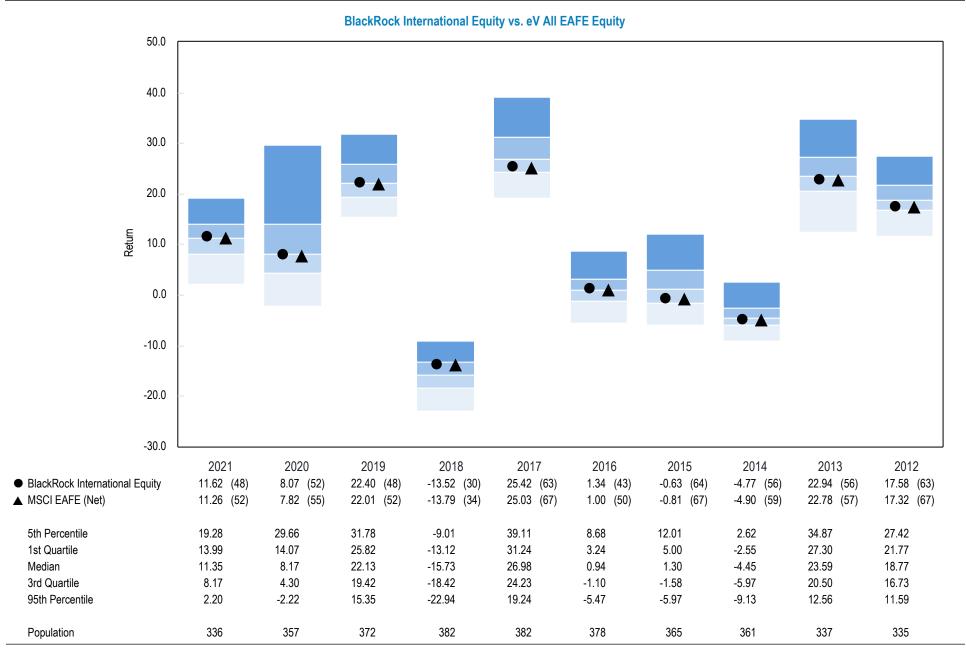


MSCI Effective Style Map 5 Years Ending: March 31, 2022

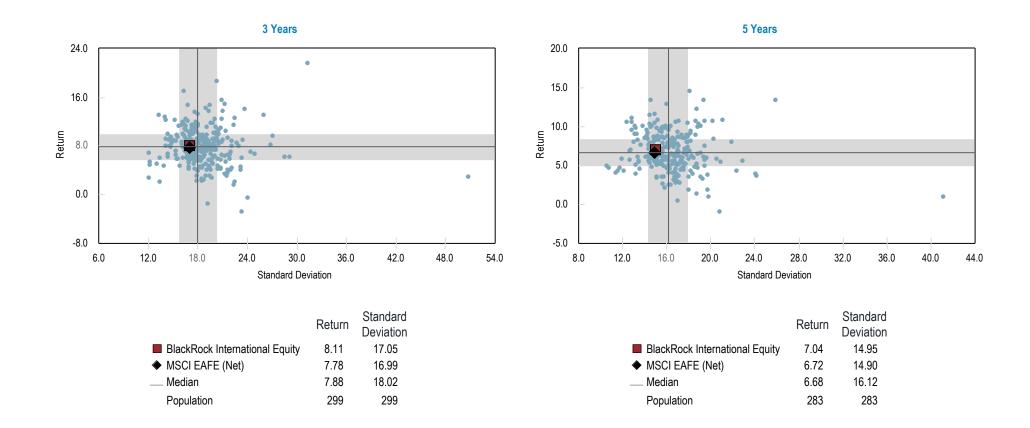












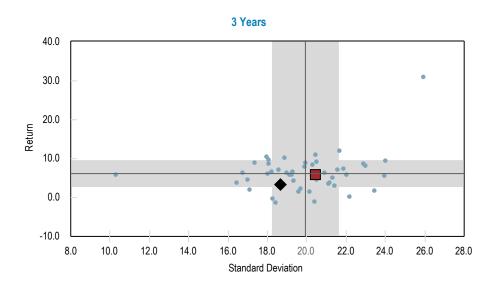


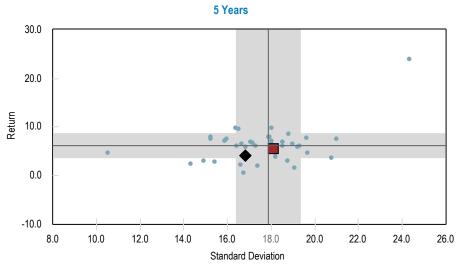
DFA Emerging Markets Value vs. eV Emg Mkts All Cap Value Equity 15.0 10.0 5.0 0.0 Return -5.0 -10.0 -15.0 -20.0 -25.0 Quarter Fiscal YTD 1 Year 5 Years 10 Years 3 Years 7 Years DFA Emerging Markets Value 0.53 (18) -2.42 (18) 4.30 (18) 5.94 (55) 5.62 (66) 5.59 (64) 3.33 (78) -3.42 (43) -3.53 (44) 3.22 (81) 4.24 (77) 3.40 (85) 1.58 (100) ▲ MSCI Emerging Markets Value (Net) -8.70 (48) 5th Percentile 4.03 0.50 7.53 10.80 9.80 9.09 8.09 1st Quartile -0.11 -4.91 1.04 8.57 7.64 6.75 5.81 Median -4.83 -9.05 -4.39 6.17 6.21 5.98 4.32 3rd Quartile -6.91 -14.95 -10.77 3.80 4.63 3.73 3.65 95th Percentile -13.18 -21.94 -19.48 -0.11 2.12 3.21 2.01 52 52 52 Population 49 41 34 26



DFA Emerging Markets Value vs. eV Emg Mkts All Cap Value Equity 50.0 40.0 30.0 20.0 Return 10.0 0.0 -10.0 -20.0 -30.0 2021 2020 2019 2018 2017 2015 2013 2012 2016 2014 DFA Emerging Markets Value 12.41 (17) 2.81 (84) 9.64 (91) -11.93 (32) 33.76 (38) 19.83 (24) -18.77 (88) -4.40 (74) -3.80 (81) 19.38 (50) 28.07 (82) 14.90 (53) ▲ MSCI Emerging Markets Value (Net) 4.00 (58) 5.48 (72) 11.96 (89) -10.74 (20) -18.57 (88) -4.08 (72) -5.11 (89) 15.87 (87) 5th Percentile 18.44 23.96 27.28 -6.64 43.36 33.15 -7.00 7.10 10.04 29.61 1st Quartile 8.80 19.16 22.09 -11.43 36.09 19.69 -11.79 2.45 4.51 22.81 Median 4.63 9.81 18.05 -13.01 32.24 15.39 -15.09 -0.17 0.19 19.36 3rd Quartile 1.64 4.71 14.69 -15.36 28.81 10.84 -17.26 -4.70 -2.97 16.74 95th Percentile -7.51 -3.43 7.18 -18.81 24.62 -21.28 -9.30 -6.38 6.56 11.51 42 59 51 Population 51 58 57 55 48 52 52



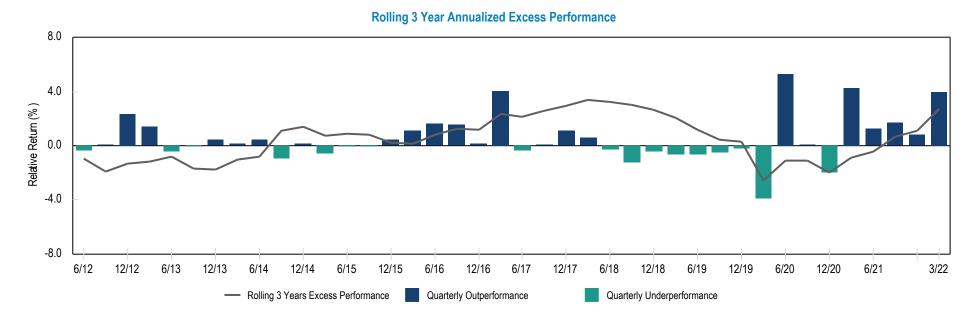




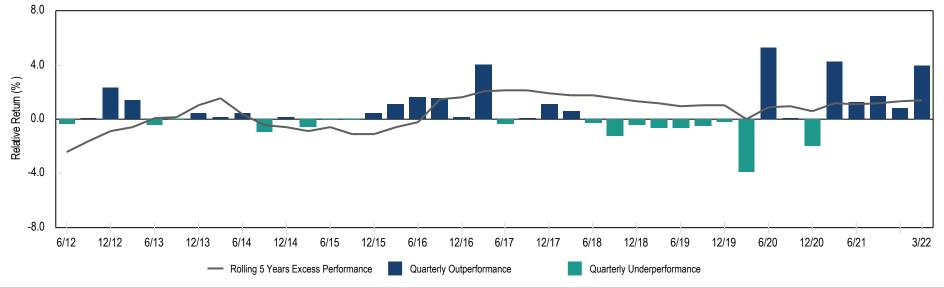
	Return	Standard Deviation
■ DFA Emerging Markets Value	5.94	20.42
◆ MSCI Emerging Markets Value (Net)	3.22	18.64
Median	6.17	19.92
Population	49	49

	Return	Standard Deviation
DFA Emerging Markets Value	5.62	18.08
 MSCI Emerging Markets Value (Net) 	4.24	16.82
Median	6.21	17.86
Population	41	41

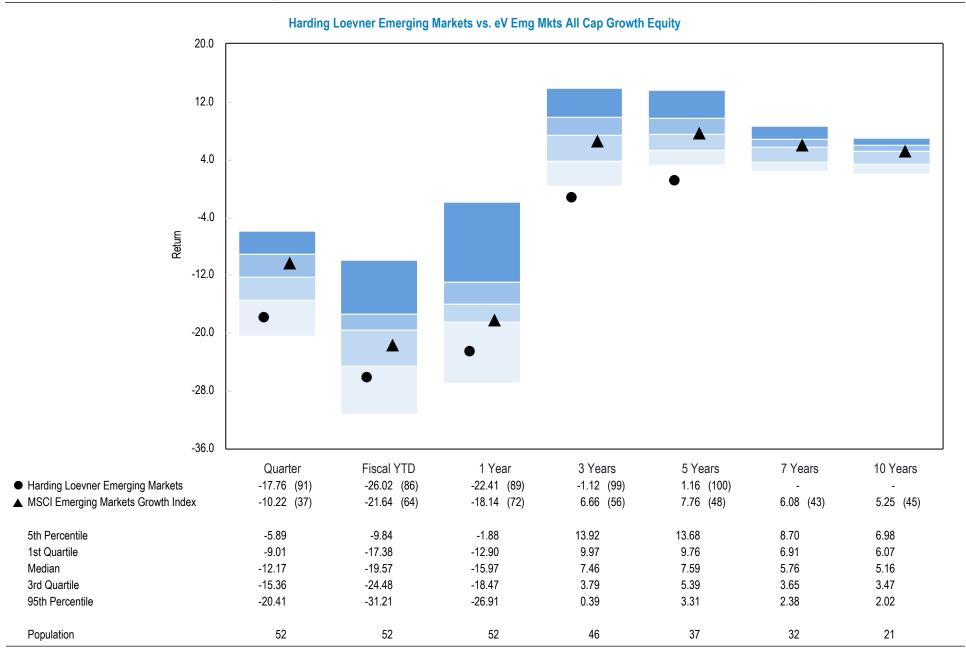




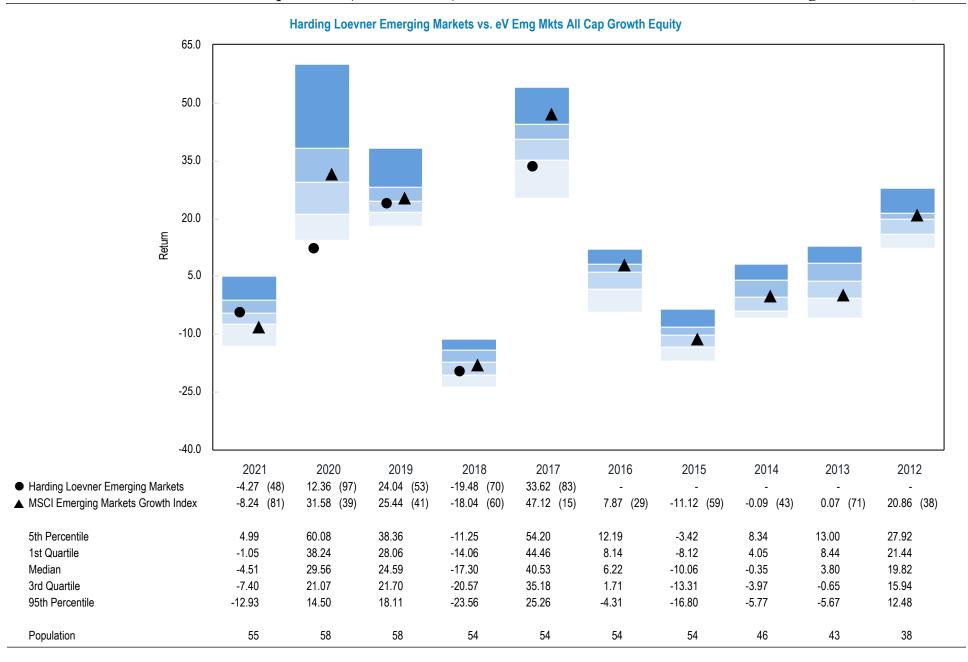




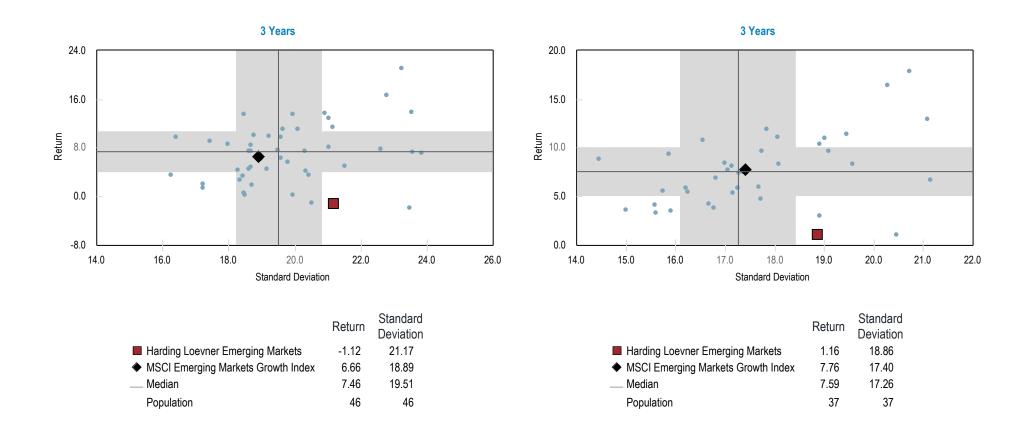




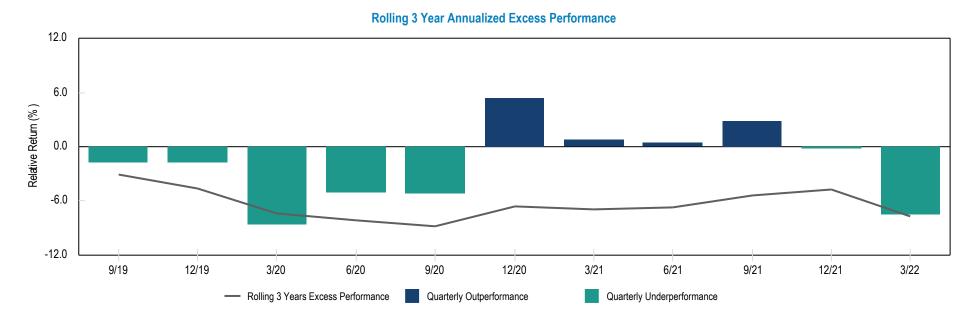


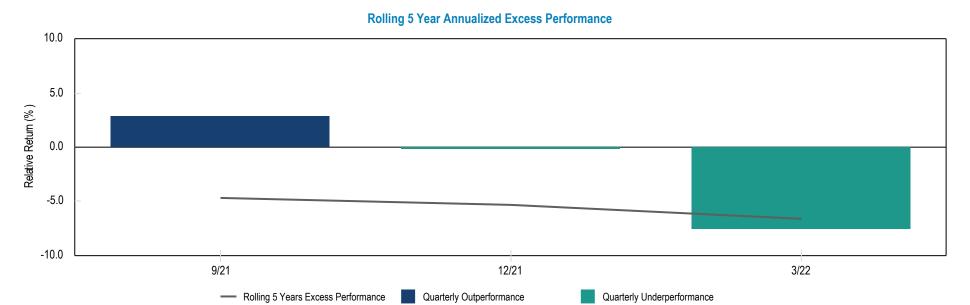














	Market Value	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017
Total Fixed Income	262,982,811	-5.7	-4.8	-2.3	3.3	3.1	3.1	0.6	9.8	9.5	-0.8	4.3
Blmbg. U.S. Aggregate Index		-5.9	-5.9	-4.2	1.7	2.1	2.2	-1.5	7.5	8.7	0.0	3.5
Ducenta Squared	105,910,613	-6.2	-5.9	-3.7	2.6	2.8	3.2	-0.6	9.1	9.9	-0.1	4.3
Blmbg. U.S. Aggregate Index		-5.9	-5.9	-4.2	1.7	2.1	2.2	-1.5	7.5	8.7	0.0	3.5
eV US Core Plus Fixed Inc Rank		77	60	62	49	45	39	52	35	42	27	66
MacKay Shields Core Plus Opportunities	104,697,423	-6.4	-6.3	-3.9	2.8	2.8	-	-0.5	9.9	9.7	-1.0	4.5
Blmbg. U.S. Aggregate Index		-5.9	-5.9	-4.2	1.7	2.1	-	-1.5	7.5	8.7	0.0	3.5
eV US Core Plus Fixed Inc Rank		88	89	64	39	46	-	49	21	51	76	52
BlackRock US TIPS	52,374,776	-3.0	1.0	4.3	6.2	4.5	2.7	5.9	11.2	8.5	-1.2	3.2
Blmbg. U.S. TIPS		-3.0	1.0	4.3	6.2	4.4	2.7	6.0	11.0	8.4	-1.3	3.0
eV US TIPS / Inflation Fixed Inc Rank		68	49	24	44	35	29	26	30	34	33	39

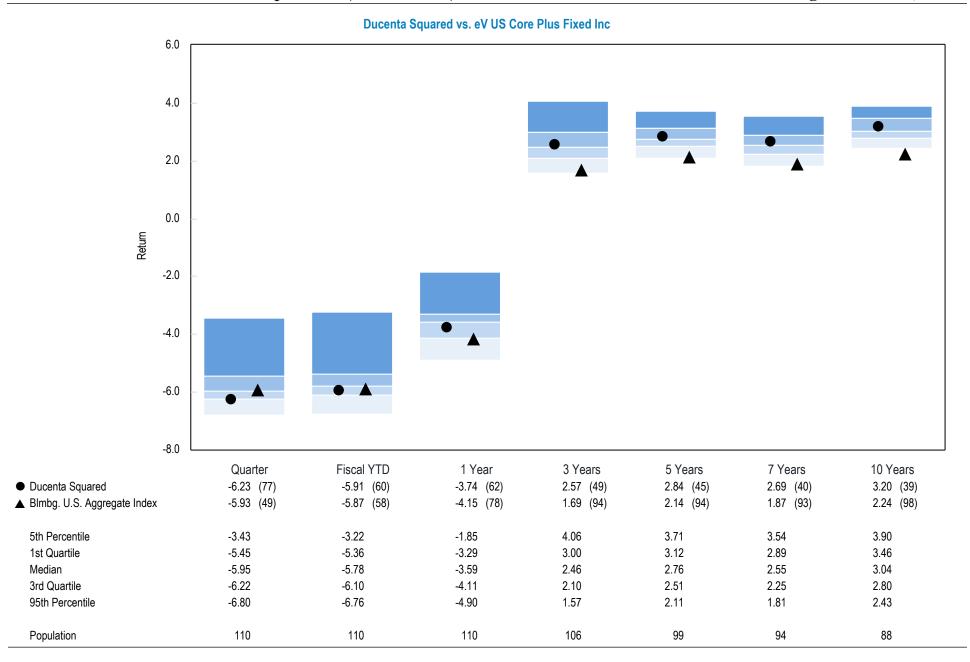
Fixed Income Style Map Fixed Income Style Map 3 Years Ending March 31, 2022 5 Years Ending March 31, 2022 Corp Bonds Govt Bonds Corp Bonds Govt Bonds Capitalization Capitalization MBS Bonds Muni Bonds MBS Bonds Muni Bonds Manager Style Manager Style Total Fixed Income Ducenta Squared MacKay Shields Core Plus Opportunities BlackRock US TIPS BlackRock US TIPS Total Fixed Income Ducenta Squared

Imperial County Employees' Retirement System Period Ending: March 31, 2022

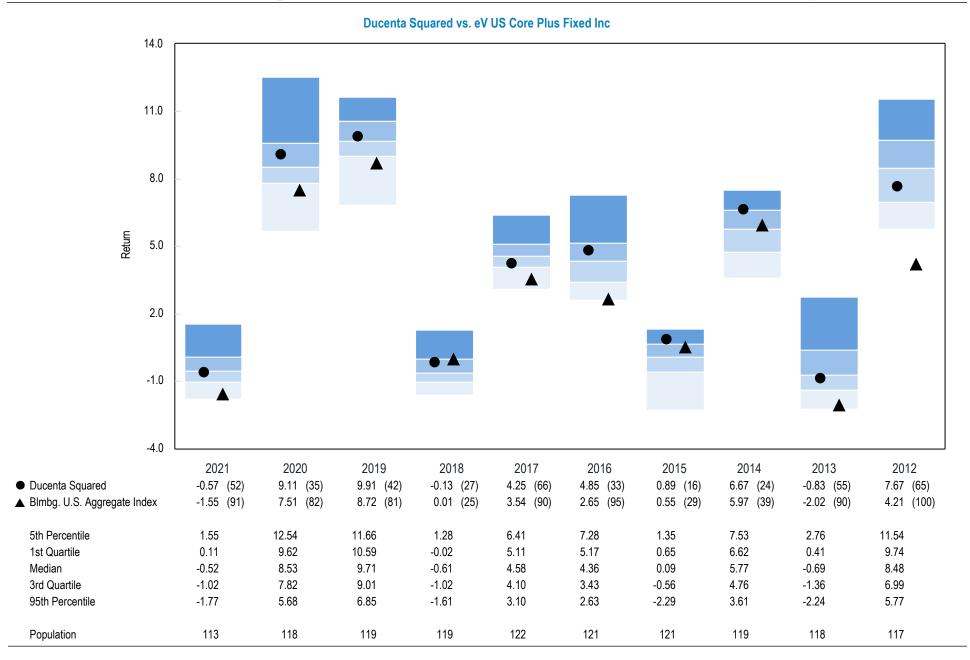
	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017
Total Fixed Income	262,982,811	100.0	-5.7	-4.8	-2.3	3.3	3.1	3.1	0.6	9.8	9.5	-0.8	4.3
Blmbg. U.S. Aggregate Index			-5.9	-5.9	-4.2	1.7	2.1	2.2	-1.5	7.5	8.7	0.0	3.5
Ducenta Squared	105,910,613	40.3	-6.2	-5.9	-3.7	2.6	2.8	3.2	-0.6	9.1	9.9	-0.1	4.3
Blmbg. U.S. Aggregate Index			-5.9	-5.9	-4.2	1.7	2.1	2.2	-1.5	7.5	8.7	0.0	3.5
MacKay Shields Core Plus Opportunities	104,697,423	39.8	-6.4	-6.3	-3.9	2.8	2.8	-	-0.5	9.9	9.7	-1.0	4.5
Blmbg. U.S. Aggregate Index			-5.9	-5.9	-4.2	1.7	2.1	-	-1.5	7.5	8.7	0.0	3.5
BlackRock US TIPS	52,374,776	19.9	-3.0	1.0	4.3	6.2	4.5	2.7	5.9	11.2	8.5	-1.2	3.2
Blmbg. U.S. TIPS			-3.0	1.0	4.3	6.2	4.4	2.7	6.0	11.0	8.4	-1.3	3.0

	Total Fixed Income	Ducenta Squared	MacKay Shields Core Plus Opportunities	BlackRock US TIPS	Blmbg. U.S. Aggregate Index
Total Fixed Income	1.00				
Ducenta Squared	0.99	1.00			
MacKay Shields Core Plus Opportunities	0.99	0.98	1.00		
BlackRock US TIPS	0.89	0.84	0.83	1.00	
Blmbg. U.S. Aggregate Index	0.93	0.95	0.91	0.81	1.00

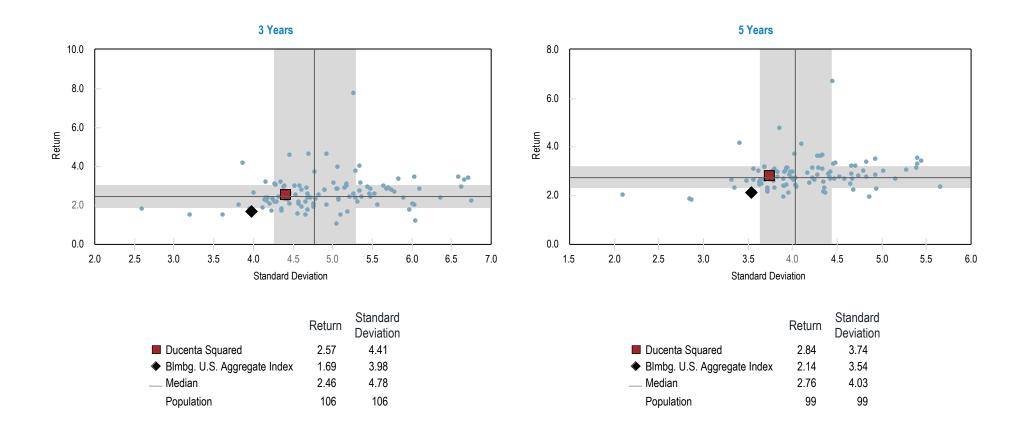




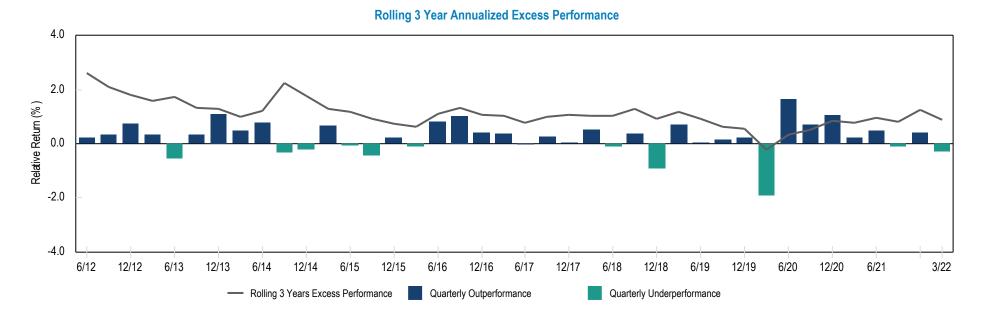




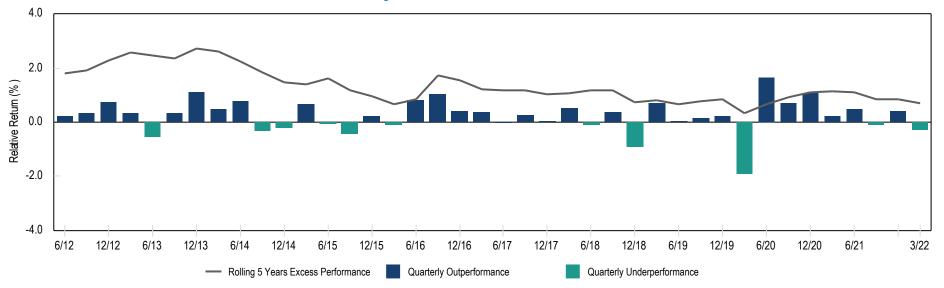




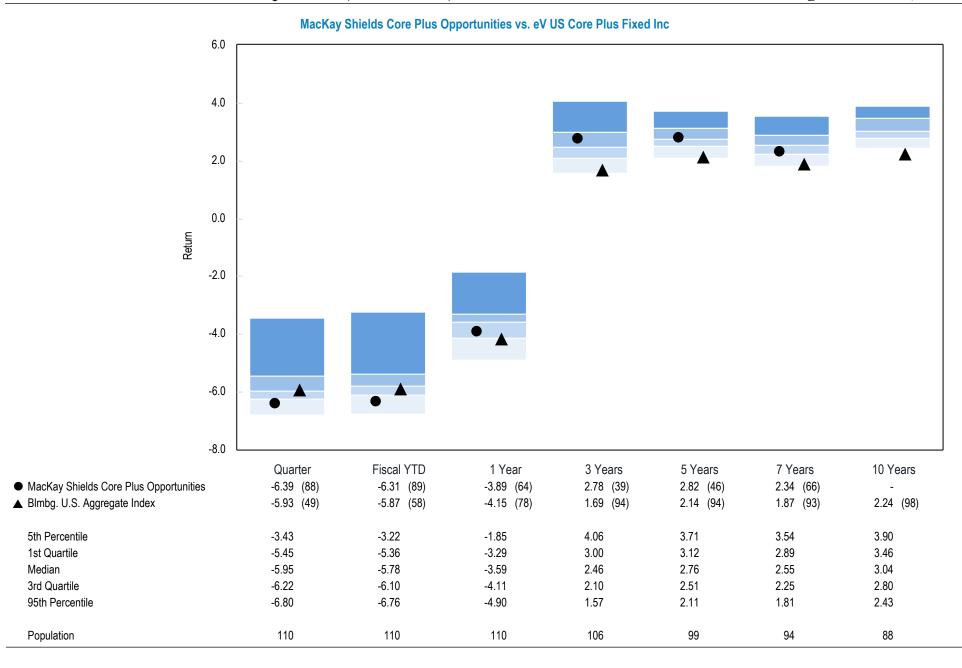




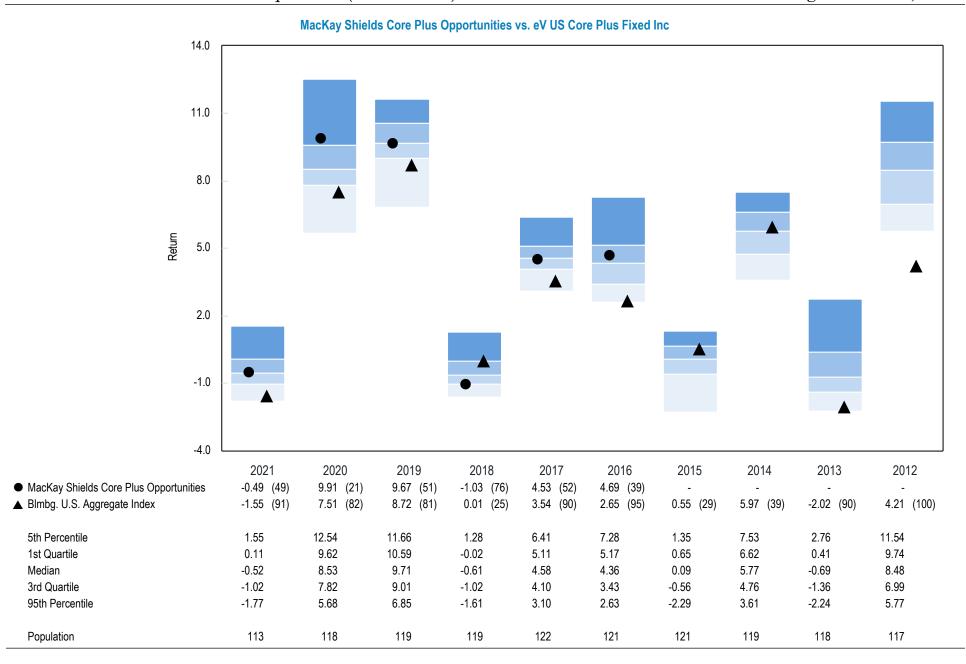




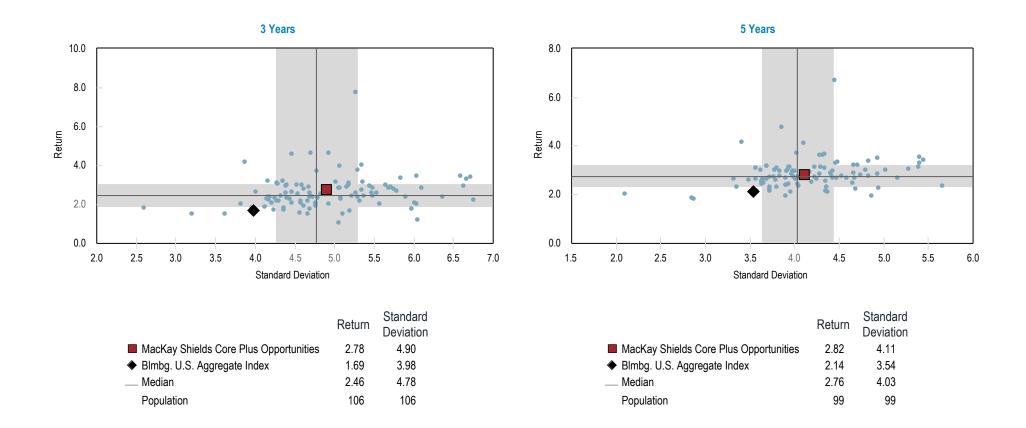




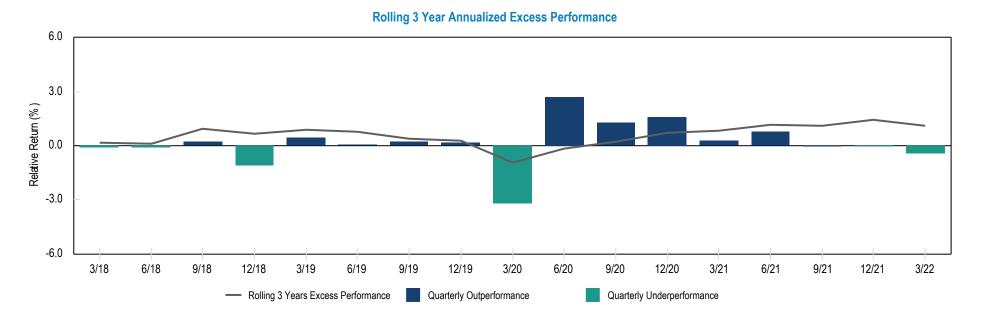




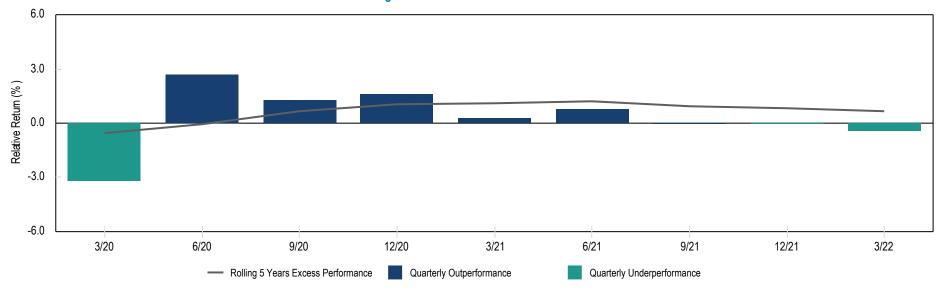


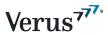










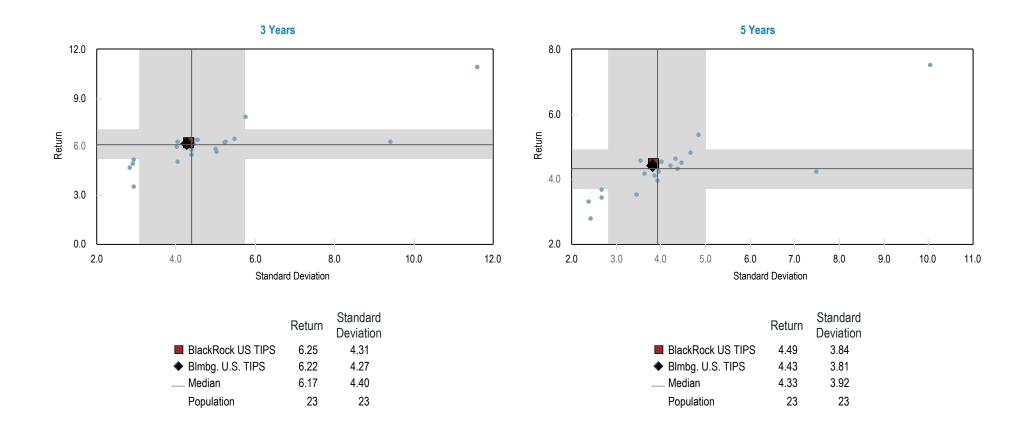


BlackRock US TIPS vs. eV US TIPS / Inflation Fixed Inc 10.0 8.0 6.0 4.0 Return 2.0 0.0 -2.0 -4.0 -6.0 Quarter Fiscal YTD 1 Year 3 Years 5 Years 7 Years 10 Years -2.98 (68) 0.98 (49) 3.65 (27) 2.74 (29) 4.27 (24) 6.25 (44) 4.49 (35) BlackRock US TIPS ▲ Blmbg. U.S. TIPS -3.02 (70) 1.01 (47) 4.29 (23) 6.22 (46) 4.43 (42) 3.58 (32) 2.69 (33) 5th Percentile -0.53 2.05 5.64 7.72 5.33 4.24 3.34 1st Quartile -1.95 1.41 4.23 6.38 4.54 3.68 2.77 Median -2.82 0.94 3.99 6.17 4.33 3.49 2.51 3rd Quartile 0.42 2.18 -3.14 3.65 5.63 4.04 3.09 95th Percentile -4.16 -1.17 2.72 4.76 3.34 2.66 1.92 23 23 Population 24 24 24 23 19

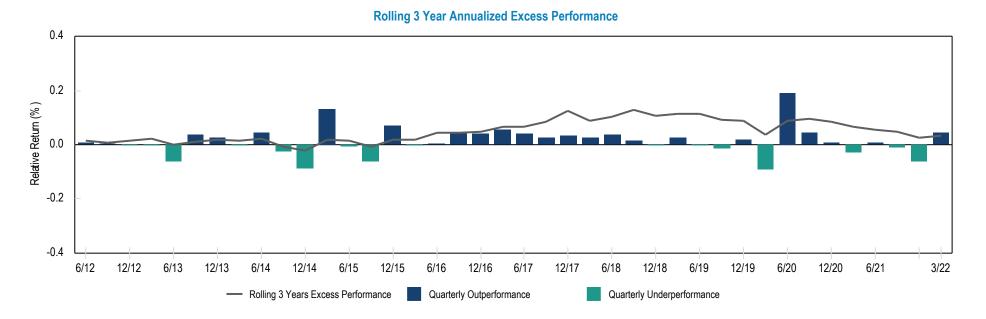


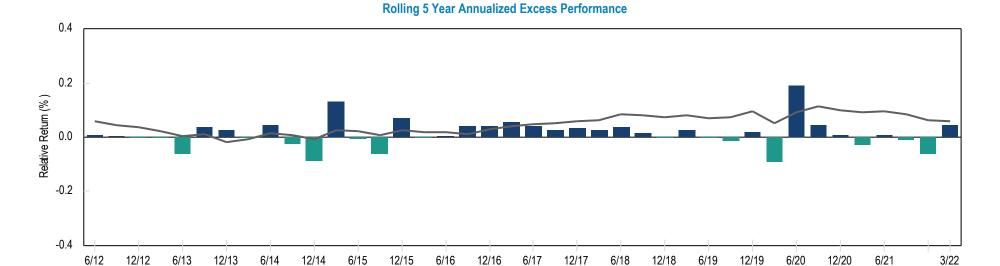
BlackRock US TIPS vs. eV US TIPS / Inflation Fixed Inc 16.0 12.0 8.0 4.0 Return 0.0 -4.0 -8.0 -12.0 -16.0 2021 2020 2019 2018 2017 2016 2015 2013 2012 2014 5.86 (26) 11.15 (30) 8.46 (34) -1.19 (33) 3.17 (39) 4.77 (33) -1.31 (27) 3.56 (33) -8.61 (50) BlackRock US TIPS 6.99 (47) ▲ Blmbg. U.S. TIPS 5.96 (23) 10.99 (37) 8.43 (34) -1.26 (37) -1.44 (31) 3.64 (31) -8.61 (49) 3.01 (48) 4.68 (38) 6.98 (47) 5th Percentile 7.13 14.44 9.49 -0.06 4.29 7.37 -0.14 4.98 -4.71 10.32 1st Quartile 5.86 11.54 8.60 -1.00 3.40 5.00 -1.25 3.80 -7.39 7.57 Median 5.60 10.60 8.30 -1.47 2.96 4.43 -1.65 3.23 -8.64 6.88 3.93 3rd Quartile 5.25 9.64 6.74 -1.88 2.40 -2.19 1.63 -9.08 6.37 95th Percentile 4.80 6.19 5.52 -4.40 1.60 2.56 -4.19 -0.95 -11.16 4.72 30 35 46 Population 27 28 37 41 43 45 47











Quarterly Outperformance

— Rolling 5 Years Excess Performance

Quarterly Underperformance



	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017
Total Real Estate	116,978,103	100.0	4.7	16.6	21.4	9.5	8.4	9.6	18.4	2.1	5.7	7.5	5.8
NCREIF Property Index			5.3	17.6	21.9	9.6	8.5	9.6	17.7	1.6	6.4	6.7	7.0
NCREIF ODCE			7.4	23.6	28.5	11.3	9.5	10.1	22.2	1.2	5.3	7.1	7.0
ASB Real Estate	28,146,862	24.1	0.0	9.0	11.8	5.5	5.5	-	14.2	1.5	3.0	6.6	4.0
NCREIF Property Index			5.3	17.6	21.9	9.6	8.5	-	17.7	1.6	6.4	6.7	7.0
NCREIF ODCE			7.4	23.6	28.5	11.3	9.5	-	22.2	1.2	5.3	7.1	7.0
Clarion Lion	33,750,374	28.9	7.0	22.5	29.4	12.4	10.6	11.1	23.6	2.3	6.8	8.6	7.9
NCREIF Property Index			5.3	17.6	21.9	9.6	8.5	9.6	17.7	1.6	6.4	6.7	7.0
NCREIF ODCE			7.4	23.6	28.5	11.3	9.5	10.1	22.2	1.2	5.3	7.1	7.0
ARA American Strategic Value Realty	53,080,142	45.4	6.2	18.1	23.2	10.8	-	-	18.6	2.4	7.8	-	-
NCREIF Property Index +2%			5.8	19.4	24.3	11.8	-	-	20.0	3.6	8.5	8.9	-
NCREIF ODCE +2%			7.9	25.4	31.0	13.5	-	-	24.6	3.2	7.4	8.9	-
1221 State St. Corp	2,000,725	1.7	0.0	0.0	0.0	2.6	1.5	2.4	0.0	0.0	7.9	0.0	0.0

Performance Return Calculations

Performance is calculated using Modified Dietz and for time periods with large cash flow (generally greater than 10% of portfolio value), Time Weighted Rates of Return (TWRR) methodologies. Monthly returns are geometrically linked 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	Inception Date	Data Source	Manager	Inception Date	Data Source
BlackRock Russell 3000	12/10/2015	J.P. Morgan	1221 State Street Corp	9/30/2008	ICERS/Union Bank
BlackRock International Equity	7/3/2003	J.P. Morgan	Cash	-	J.P. Morgan
DFA Emerging Markets Value	1/11/2007	J.P. Morgan	HarbourVest IX-Buyout	2011 ¹	HarbourVest
Harding Loevner	7/5/2016	Harding Loevner	HarbourVest IX-Credit	2011 ¹	HarbourVest
Bradford & Marzec Fixed (Tortoise Capital)	12/1/1992	J.P. Morgan	HarbourVest International VI	2008 ¹	HarbourVest
MacKay Shields Core Plus Ops	3/2/2015	CITCO	Harbourvest IX-Venture	2011 ¹	HarbourVest
BlackRock US TIPS	4/11/2007	J.P. Morgan	Harbourvest 2017 Global	2017 ¹	HarbourVest
ASB Real Estate	12/31/2012	ASB Real Estate	Harbourvest 2018 Global	2018 ¹	HarbourVest
Clarion Lion	12/31/2006	Clarion Lion	Harbourvest 2019 Global	2019 ¹	HarbourVest
Portfolio Advisors	10/31/2017	Portfolio Advisors	KKR Mezzanine	2010 ¹	KKR
TSSP Adjacent Opportunities Partners	4/16/2020	Sixth Street	PIMCO BRAVO	2011 ¹	PIMCO
Sixth Street Diversified Credit	5/29/2020	Sixth Street	ARA American Strategic Value Realty	01/04/2018	ARA

¹Represents fund vintage year.

Policy & Custom Index Composition

Policy Index (8/1/2020- Current)	33% Russell 3000, 20% MSCI ACWI ex USA Gross, 27% Bloomberg Aggregate, 10% NCREIF Property, 2% Bloomberg Aggregate, 5% Private Equity Benchmark, 3% Private Credit Benchmark.
Policy Index (1/1/2020-7/31/2020)	29% Russell 3000, 24% MSCI ACWI ex USA Gross, 27% Bloomberg Aggregate, 10% NCREIF Property,1% Russell 3000, 2% Bloomberg Aggregate, 4% Private Equity Benchmark, 3% Private Credit Benchmark.
Policy Index (10/1/2018-12/31/2019)	29% Russell 3000, 24% MSCI ACWI ex USA Gross, 27% Bloomberg Aggregate, 10% NCREIF Property, 5% Russell 3000 +3% (Lagged), 5% Bloomberg High Yield +2% (Lagged).
Policy Index (10/1/2016-9/30/2018)	29% Russell 3000, 24% MSCI ACWI ex USA Gross, 27% Bloomberg Aggregate, 5% NCREIF Property, 5% NCREIF Property +2%, 5% Russell 3000 +3% (Lagged), 5% Bloomberg High Yield +2% (Lagged).
Policy Index (7/1/2014-9/30/2016)	29% Russell 3000, 25% MSCI ACWI ex-US (Gross), 30% Barclays U.S. Aggregate, 6% NCREIF Property Index, 5% Bloomberg Commodity Index, 5% Russell 3000 +3% (Lagged).



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 lock step, 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 lock step, 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 lock step, 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 lock step, 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 lock step, 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 lock step, 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 lock step, 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 lock step, 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 lock step, 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 lock step, 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 lock step, a correlation of 1 means the returns of 1 me

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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