

## PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS

PERIOD ENDING: JUNE 30, 2021

Investment Performance Review for

**Imperial County Employees' Retirement System** 

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Investment Landscape	ταβ ι
Investment Performance Review	TAB II



## PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS

3<sup>RD</sup> QUARTER 2021 Investment Landscape

# Recent Verus research

## Visit: <u>https://www.verusinvestments.com/insights/</u>

## **Topics of interest**

## **MEASURING & BUDGETING ACTIVE RISK**

Active risk budgeting is valuable in the construction, monitoring, and overall governance of the investment portfolio. An active risk budget identifies how much risk an investor wants to take in the portfolio and where the investor plans to allocate that risk. In this paper we provide an introduction to active risk and demonstrate how to measure and budget that risk. We also discuss the individual sources that drive active risk and why they're important to identify. Last, we review a practical example of how active risk can inform portfolio construction and demonstrate how the Verus active management environment research can be used to inform active/passive allocations throughout the portfolio.

## Sound thinking

## THINKING SKEPTICALLY

Risk markets are currently trading at all-time highs, cryptocurrencies are soaring, and investment markets are looking forward to a broadly positive post-COVID future. At times like these it can be valuable to consider the role that skepticism plays in the investment process. This short paper is designed to help clarify the role that skepticism can play, and also to clarify how investors can use it as a tool without being captured by it, because excessive skepticism may lead to missed opportunities.

## **Annual research**

## **2021 REAL ASSETS OUTLOOK**

In last year's outlook, COVID-19 was front and center in our views and outlooks across all asset classes. A year later, we are beginning to return to a more normalized pre-COVID lifestyle and with that, a recovery in many of the sectors impacted in 2020. One of the topics being debated among investors is the potential for inflationary pressure, a portfolio risk that hasn't emerged in several decades. That discussion has reignited interest in real assets and capital flows into the asset class.

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# 2<sup>nd</sup> quarter summary

## THE ECONOMIC CLIMATE

- Real GDP grew at a 0.4% rate year-over-year in the first quarter (+6.4% quarterly annualized rate) as the U.S. recovery continued at a quicker-than-expected pace. It appears that GDP will fully recover in Q2. *p. 12*
- The U.S. unemployment rate has been slow to rebound, despite a full recovery in economic activity. This might suggest that government spending has had an outsized impact, and raises risks around a stimulus "hangover" when spending programs end. *p.* 14
- Economies around the world continued to recover as life began moving back to normal. This description does not apply to all economies, as Brazil, Japan, and much of Africa and Southeast Asia still grapple with effects of COVID and new variants of the virus. *p. 20*

## **PORTFOLIO IMPACTS**

- Credit spreads grew even tighter during Q2, driven by investor demand and improvements in economic fundamentals. High yield spreads tightened to 2.68%—a new cycle low. Investment grade tightened 11 basis points to end the quarter at 0.80%. *p. 25*
- Inflation surprised on the upside in Q2, adding to investor fears. U.S. core CPI rose 4.5% year-over-year, while headline came in at 5.4%. The jump in prices has been concentrated in a few areas, including energy (+24.5% YoY) and used car & truck prices (+45.2% YoY). *p. 13*

## THE INVESTMENT CLIMATE

- The Biden Administration's Infrastructure Plan continues to be up in the air in terms of size and composition. As of mid-July, Democrat legislators had reached an agreement for \$4.1 trillion in spending, comprised of \$3.5 trillion in "human infrastructure" and \$600 billion towards "traditional infrastructure" It is unclear whether this proposal will gain sufficient support from Democrats. *p.* 12
- It seems that investors have put the 2020 pandemicinduced recession behind them. Implied volatility, realized market volatility, and the risks reflected in asset prices are very low. This data suggests that investors perceive a strong economy, a healthy business environment, and very few threats on the horizon. *p. 35*

## ASSET ALLOCATION ISSUES

- U.S. equities were a top performer again in Q2 (S&P 500 +8.5%). International equities (+5.2% MSCI EAFE Index) were on par with emerging markets (+5.1% MSCI Emerging Markets Index) on an unhedged currency basis. *p. 28*
- Factor performance suffered during Q2, reversing much of the gains from the prior quarter. Large capitalization stocks beat small (Russell 1000 +8.5%, Russell 2000 +4.3%) and growth stocks beat value (Russell 1000 Growth +11.9%, Russell 1000 Value +5.2%). *p. 30*

Economic progress continues to exceed expectations, though strong optimism may already be reflected in asset prices

We believe a neutral risk stance is warranted in the current environment



# What drove the market in Q2?

## "Delta Covid variant first found in India spreads to 62 countries, hot spots form in Asia and Africa, WHO says"

## **GLOBAL COVID-19 CASES (MILLIONS)**

Jan	Feb	Mar	Apr	May	Jun
26.3	28.7	30.5	32.3	33.3	33.7
	<u> </u>	and acad			

Article Source: CNBC, as of June 2<sup>nd</sup>, 2021

## "Inflation: Is it transitory or not?"

## CORE CPI GROWTH (YEAR-OVER-YEAR)

Jan	Feb	Mar	Apr	May	Jun
1.4%	1.3%	1.6%	3.0%	3.8%	4.5%

Article Source: Yahoo Finance, June 15th, 2021

## "TREASURIES-U.S. Treasury yield curve flattens as Fed seen more proactive on inflation"

## IMPLIED EFFECTIVE FED FUNDS RATE IN DECEMBER 2023

Jan	Feb	Mar	Apr	May	Jun
0.15%	0.30%	0.40%	0.47%	0.49%	0.80%

Article Source: Reuters, June 18th, 2021

## "Is the reflation trade over? What stock-market investors need to watch"

## **TEN-YEAR U.S. TREASURY YIELD**

Jan	Feb	Mar	Apr	May	Jun
1.07%	1.40%	1.74%	1.63%	1.59%	1.47%
Article Courses	MarkatMatak	luna 21st 2021			

Article Source: MarketWatch, June 21st, 2021

## SHARE OF U.S. COVID-19 CASE GROWTH BY VIRUS VARIANT



Source: U.S. Center for Disease Control, as of 6/19/21

## **U.S. INFLATION RATES (YEAR-OVER-YEAR)**



Source: Bloomberg, as of 6/30/21

## IMPLIED EFFECTIVE FED FUNDS RATE





# **Economic environment**



# U.S. economics summary

- Real GDP grew at a 0.4% rate yearover-year in the first quarter (+6.4% quarterly annualized rate) as the U.S. recovery continued at a quicker-than-expected pace. It appears that gross domestic product (GDP) will fully recover in Q2.
- The U.S. unemployment rate has been slow to improve, falling very slightly from 6.0% in March to 5.9% in June. The labor market remains materially weaker relative to prepandemic conditions. This might suggest that a significant portion of the economic recovery has been fueled by government spending, and raises concerns about whether recent strength may prove fleeting when government intervention slows.
- The Biden Administration's Infrastructure Plan continues to be up in the air in terms of size and composition. As of mid-July, Democrat legislators had reached

an agreement for \$4.1 trillion in spending, comprised of \$3.5 trillion in "human infrastructure" and \$600 billion towards "traditional infrastructure" It is unclear whether this proposal will garner sufficient support from Democrats.

- Inflation surprised on the upside in Q2, adding to investor concerns around a potential sustained rise.
   U.S. core inflation, which excludes food & energy prices, rose 4.5% year-over-year in June. U.S. headline inflation came in at 5.4%. The rise in prices has so far been concentrated in a few specific areas, including energy (+24.5% YoY) and used car and truck prices (+45.2% YoY).
- Consumer sentiment further improved over the quarter, but has only regained roughly half of the deterioration post-pandemic.

	Most Recent	12 Months Prior
GDP (YoY)	0.4% 3/31/21	0.3% 3/31/20
Inflation (CPI YoY, Core)	<b>4.5%</b> 6/30/21	1.2% 6/30/20
Expected Inflation (5yr-5yr forward)	<b>2.20%</b> 6/30/21	1.5% 6/30/20
Fed Funds Target Range	0% – 0.25% <sub>6/30/21</sub>	0% – 0.25% <sub>6/30/20</sub>
10-Year Rate	1.47% 6/30/21	<b>0.66%</b> 6/30/20
U-3 Unemployment	5.9% 6/30/21	11.1% 6/30/20
U-6 Unemployment	9.8% 6/30/21	18.0% 6/30/20



# COVID-19 case growth

## SEVEN-DAY AVERAGE DAILY CASE GROWTH



## SEVEN-DAY AVERAGE DAILY CASE GROWTH - PER 100,000 RESIDENTS



Source: Bloomberg, as of 7/18/21



# Delta variant

Spread of the more virulent delta variant (which originated in India) of the coronavirus within the U.K. led officials to push back the date for reopening from mid-June to mid-July, and has sparked concerns in recent months that material spread outside of the U.K. could lead to a reintroduction of social distancing controls.

U.S. -VACCINE DOSES ADMINISTERED BY TYPE



## U.K. – SEVEN-DAY AVERAGE CASE GROWTH

Source: Bloomberg, BBC, U.K. government, as of 6/21/21 \*Joint project with Sanofi Pasteur.

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**U.K. VACCINE DOSE ORDERS (MILLIONS)** 

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# Public Health England (PHE) findings

While case growth has picked up from very low levels within the U.K., there are several factors in play which probably reduce the likelihood that delta case growth picks up materially in the U.S.

- 1. The U.K. has a much higher exposure to the Astra vaccine, which is significantly less effective at preventing symptomatic infection.
- 2. Early prioritization of the one-dose vaccine regimen in the U.K. resulted in lower levels of protection.



## TWO-DOSE REGIMEN EFFECTIVENESS FOR PFIZER AND ASTRAZENECA



## ONE-DOSE REGIMEN EFFECTIVENESS FOR PFIZER AND ASTRAZENECA

Source: https://www.medrxiv.org/content/10.1101/2021.05.22.21257658v1



# Global vaccination campaign

## DOSES ADMINISTERED RELATIVE TO PERCENTAGE OF POPULATION FULLY VACCINATED



The EU has closed the vaccine gap relative to the U.S. and the U.K., led by a pickup in administration in Germany

Source: Bloomberg, as of 7/16/21



# GDP growth

Real GDP grew at a 0.4% rate year-over-year in Q1 (+6.4% quarterly annualized rate) as the U.S. recovery continued at a quicker-than-expected pace. It appears that real gross domestic product (GDP) will once again reach its pre-pandemic level in Q2. The Atlanta Fed GDPNow estimate suggests a 7.9% Q2 growth rate as of July 9<sup>th</sup> (seasonally-adjusted guarterly annualized rate).

The Biden Administration's Infrastructure Plan continues to be up in the air in terms of size and composition. As of mid-July, Democrat legislators had reached an agreement for \$4.1 trillion in spending, comprised of \$3.5 trillion in "human infrastructure" (Medicare funding, childcare, government-funded college, and energy transition), and \$600 billion towards "traditional

infrastructure" (roads, bridges, power infrastructure, rail, broadband internet, and water infrastructure). It is unclear whether this proposal will garner adequate buy-in, and it is also unclear whether Republicans will withdraw support, now that Democrats appear ready to proceed with many of the more controversial spending items that the RNC negotiated against.

The U.S. economy likely fully recovered during Q2 2021

The Biden Administration has held strong in its push for further government spending, despite an arguably speedy economic recovery. These efforts have been met with opposition, as some view these proposals as excessive, given the stronger state of the economy. Additional government spending may increase the risk of economic overheating and inflation.





## **U.S. REAL GROSS DOMESTIC PRODUCT**



Source: Bloomberg, as of 3/31/21

Source: FRED, as of 3/31/21

# Inflation

Inflation surprised on the upside in Q2, adding to investor concerns around a sustained rise. U.S. core CPI, which excludes food & energy prices, rose 4.5% YoY in June. U.S. headline inflation came in at 5.4%. The rise in prices has so far been concentrated in a few areas. Energy prices (+24.5% YoY) have had the most significant impact, with extreme gasoline price rises (+45.1% YoY) being very noticeable at the pump. Used automobile prices (+45.2% YoY) have also seen large gains.

We maintain our belief that recent price rises will generally prove transitory as most increases can be explained either by base effects or one-time effects from pandemic supply and spending dynamics. Energy price growth is an example of 'base effects', where prices fell dramatically in spring 2020 and then recovered by spring 2021, creating the mirage of high inflation (inflation is a 12-month price change measurement). Higher used car prices is likely an example of 'one-time effects' from supply issues (chip shortages led to decreased supply of new cars) and also consumer spending habit changes during COVID (fear of public transportation led to auto purchases, and stimulus checks provided funds for purchases). As auto sales slow, we believe this will mitigate high prices. However, there are also some signs of more structural price rises, such as owner's equivalent rent (OER) which is much slower moving due to the impact of lease arrangements and the longer time it takes for home price increases to impact household budgets more broadly. It is important to distinguish between *onetime* and *transitory* price rises in the current environment

## U.S. CPI (YOY)



## U.S. CPI (YOY)

Source: BLS, as of 6/30/21



## **BREAKEVEN INFLATION RATES**



Source: Bloomberg, as of 6/30/21

Source: Bloomberg, as of 6/30/21

# Labor market

The U.S. labor market rate has been slow to recover, as unemployment fell only slightly from 6.0% in March to 5.9% in June. Labor participation also paints a lukewarm picture, rising from 61.5% to 61.6% during the quarter. The labor market remains materially weaker relative to pre-pandemic conditions. This might suggest that a significant portion of the economic recovery has been fueled by government spending and raises concerns about whether recent strength may prove fleeting once government spending slows.

Beginning mid-June, a few U.S. states decided to stop accepting Federal emergency unemployment benefits. Among the benefits were a \$300 weekly unemployment add-on, expanded eligibility, and an extension of the duration of benefits overall. Research regarding the impacts of these programs on joblessness are mixed. Based on one study from the Federal Reserve Bank of St. Louis, states that have stopped these programs have seen unemployment fall by 5% more than states that have continued offering expanded benefits (12% unemployment vs. 7%). This study suggests that many unemployed workers may come back into the workforce as government subsidies roll off. It is worth mentioning that other factors are in play regarding the timid labor market recovery, including parents declining work to care for children, fears of workplace safety, and early retirements. These labor dynamics are complex and it may be overly simplistic to attribute problems to a single cause. A large portion of the U.S. labor force remains neither employed nor seeking work

## **U.S. UNEMPLOYMENT**



## LABOR PARTICIPATION RATE



## UNEMPLOYMENT DURATION



Source: FRED, as of 6/30/21

Source: FRED, as of 6/30/21

Source: FRED, as of 6/30/21

# **Employment conditions**

Nonfarm payrolls expanded by 567,000 per month on average in the second quarter, reaching a total of 145.8 million by quarter-end. This number was 6.8 million below the pre-pandemic peak of February 2020. Labor market conditions have been improving overall, but the road has been bumpy, given the ebb and flow of virus cases and the impact on individual state and city policy decisions.

Job openings rose to a fresh record of 9.2 million in May, underscoring the fact that the recent bounce back in consumer demand has outpaced the ability of business owners to hire to meet that demand. In order to address that shortfall, many business owners have begun to raise wages,

offer signing bonuses, offer more flexible work hours, and offer the ability to work from home. Said another way, the sellers have the upper hand in the labor market at present. The number of people who quit their jobs in May (3.6 million) remained near record levels, reflecting workers' confidence in their ability to find other employment.

While employers are struggling to find qualified employees in the current environment, the expiration of a litany of additional unemployment insurance programs through the end of the year could push up labor market supply. Whether the skills of the currently not-working contingent matches up with current labor demand remains to be seen.

## **U.S. EMPLOYEES ON NONFARM PAYROLLS**



U.S. JOB OPENINGS (MILLIONS)



## SMALL BUSINESS OWNERS' HIRING CONDITIONS



*Source: BLS, as of 6/30/21* 

Verus"

Source: BLS, as of 5/31/21

Source: NFIB, as of 6/30/21

# The consumer

U.S. retail sales would appear red hot if defined on a year-overyear growth basis (+12%). But, as we have mentioned during past quarters, year-over-year numbers are skewed due to the events of early-2020. In reality, retail sales fell -2.5% from Q1 to Q2.

As vast government stimulus translated to hot consumer spending, it might be reasonable to ask what will happen to recent trends as government spending slows and once stimulus money has been spent. This effect might in part explain the recent drop in U.S. auto sales, which have fallen to the lowest level since 2014. We remain cautious about assuming a clean economic turnaround, as much of the recent rebound has been due to government spending rather than a natural rebound in jobs, spending, and household economic/financial security. This effect may tie closely with the more muted improvement in consumer sentiment and comfort indicators, as illustrated on slide 18.

According to anonymized cellular phone data collected by Google for COVID-19 public health research, Americans appear to have returned to normal life in most respects. Travel to the workplace and transit usage, however, remain notably depressed relative to pre-COVID activity. If work-from-home policies are extended or even made permanent at many businesses, it is likely that this type of travel remains lower.

#### REAL RETAIL SALES



## AUTO SALES



Source: Federal Reserve, as of 6/30/21

## **GOOGLE U.S. ACTIVITY TRACKER**



Source: Google anonymized U.S. citizen mobility, as of 6/30/21

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Source: FRED, as of 6/30/21

# An unbalanced recovery



Source: Fred, Verus, as of 3/31/21 – Nonfarm business sector total hours worked, nominal U.S. gross domestic product (GDP)



# Sentiment

Consumer sentiment further improved over the quarter but has only recovered roughly half of the deterioration post-COVID, according to the indices below.

The Bloomberg Consumer Comfort Index attempts to gauge Americans' views on the economy, their personal financial situations, and buying conditions. The index rose from 50.0 to 53.3. The University of Michigan Consumer Sentiment Survey attempts to gauge attitudes about the business climate, personal finances, and spending conditions. The index jumped from 84.9 to 85.5. As reported by the university, "...consumers' complaints about rising prices on homes, vehicles, and household durables reached an all-time record." The survey surmised that Americans have accumulated significant savings, and a critical issue going forward will be whether these savings are held for safety or are spent.

Small business optimism improved over the quarter but remained below pre-pandemic levels. Business owners are optimistic on the outlook, supported by expectations for gradual economic reopening, but continue to struggle to fill open positions due to a shortage of qualified employees in the labor pool.



## **CONSUMER SENTIMENT**



Source: University of Michigan, as of 6/30/21

## SMALL BUSINESS OPTIMISM



Source: NFIB, as of 6/30/21

## Source: Bloomberg, as of 6/30/21



# Housing

Home sales activity surged considerably in late 2020, but has slowed year-to-date, closer to pre-COVID levels in May. The median home sales price in May was 23.6% higher than one year prior, pushed upward by very low inventory and very high demand. Recent price rises have been some of the strongest on record, generating wealth for many Americans, but also hurting affordability and diminishing the chance of homeownership for prospective future homeowners.

The strength of the recent housing boom has been surprising. It is not yet clear whether the current upward

trend will persist. Housing inventory has improved, now standing at 5.1 months of supply, which is closer to prepandemic levels. This likely eases some price pressure. Earlier in the year it appeared that mortgage interest rates were rebounding towards prior levels, beginning the year at 2.67% and reaching 3.18% by the end of March. However, this trend reversed course during the second quarter, as rates fell back to 2.98%. An increasing volume of new home construction is likely easing tight inventories, as demonstrated below.

## **U.S. MONTHLY HOME SALES**



## **U.S. MEDIAN HOME SALES PRICE**



## HOUSING SUPPLY VS NEW CONSTRUCTION



Source: U.S. Census Bureau, as of 5/31/21

Source: FRED, as of 6/30/21

Source: FRED, as of 5/31/21



# International economics summary

- Economies around the world continued to recover as COVID-19 fears eased, government shutdown orders were removed, and life began moving back to normal. This description of course does not apply to all economies, as Brazil, Japan, and much of Africa and Southeast Asia still grapple with effects of COVID and new variants of the virus.
- While expanding access to quality vaccines enabled mainland Europe to close the gap relative to the U.K. and the U.S. regarding vaccination rates, many countries in Asia, Africa, and Central Europe continued to face procurement issues, which has led public policymakers to respond more forcefully to pickups in case growth.
- Inflation has risen around the world, with the U.S. experiencing one of the largest rises. This will likely be a key theme for markets in the coming months.

- The U.S. trade balance of goods and services remained at a near alltime-low level of \$75B per month, perhaps indicating that the relative strength of the U.S. consumer has pushed up domestic imports to levels above exports. The U.S. trade deficit might be primed to recede if the global recovery were to broaden.
- The pace of global manufacturing sector activity growth remained high, while services sector activity in many countries began to expand.
- Chinese GDP growth reportedly moderated from a year-over-year pace of 18.3% in Q1 to 7.9% in Q2—slightly missing expectations (+8.0%), but keeping the 6% annual target in range. Retail sales (+12.1%) and industrial production (+8.3%) both grew by more than forecast, but policymakers continue to worry that the economic recovery has been uneven in composition, which could weigh on future growth.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	0.4%	5.4%	5.9%
	3/31/21	6/30/21	6/30/21
Eurozone	<b>(1.3%)</b>	1.9%	<b>7.9%</b>
	3/31/21	6/30/21	5/31/21
Japan	(1.6%)	<b>0.0%</b>	3.1%
	3/31/21	6/30/21	5/31/21
BRICS	13.3%	<b>2.5%</b>	<b>5.7%</b> <i>12/31/20</i>
Nations	3/31/21	6/30/21	
Brazil	1.0%	<b>8.4%</b>	<b>14.7%</b>
	3/31/21	6/30/21	4/30/21
Russia	(0.7%) 3/31/21	6.5% 6/30/21	<b>4.9%</b> 5/31/21
India	1.6% 3/31/21	6.3% 6/30/21	<b>9.2%</b> 6/30/21
China	<b>7.9%</b>	1.1%	5.0%
	6/30/21	6/30/21	5/31/21

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

Economies around the world continued to recover, as COVID-19 fears eased, government shutdown orders were removed, and life began moving back to normal. This description of course does not apply to all economies, as Brazil, Japan, and much of Africa and Southeast Asia still grapple with effects of COVID and new variants of the virus.

A third wave of COVID has hit the Asia-Pacific region, as the Delta variant triggered economic restrictions in the area. Slower vaccination rollouts in many countries has resulted in greater vulnerability to new variants. Inflation has jumped nearly everywhere across the globe, though the U.S. has seen one of the largest rises. This will likely be a key theme for markets and central banks in the coming months.

The rate of unemployment was mixed during the second quarter. The U.S. and Eurozone labor markets improved moderately over the quarter, while Japan saw a rise in joblessness. As we have described in prior quarters, governments have taken very different approaches to supporting workers, which has made global labor market trends difficult to compare.

## REAL GDP GROWTH (YOY)



## **INFLATION (CPI YOY)**



Source: Bloomberg, as of 6/30/21 - or most recent release

## UNEMPLOYMENT



Source: Bloomberg, as of 6/30/21 - or most recent release

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Source: Bloomberg, as of 3/31/21

# Fixed income rates & credit



# Fixed income environment

- The 10-year U.S. Treasury yield moved lower during Q2, from 1.75% to 1.44%. Many have attributed this trend to the Federal Reserve's recent indications that monetary policy will be kept very easy for the medium term. "Lower-for-longer" interest rates may act as a support to risk asset prices.
- Despite very dovish communication from central banks, derivative markets suggest investors are pricing between a 0-0.4% rise in interest rates over the next year in most developed countries.
- Headline Inflation in Brazil has risen to 8.4%, double the pre-pandemic level. Brazil has hiked their central bank rate from 2.00% to 4.25% to battle rising prices. Inflation in Russia has also jumped, now at 6.5%. Russia has hiked their key rate from 4.25 to 5.5%. This might suggest that central banks around the world have different views regarding how "transitory" the recent inflation rise will be.

- Risky credit outperformed over the quarter as spread levels compressed to decade-lows in the United States, and emerging markets debt bounced back. Hard-currency denominated emerging market debt returned 4.1% and high yield credit in the U.S. returned 2.7%.
- Policy shifts from the People's Bank of China resulted in a drawdown of liquidity across Asian markets over most of the quarter, which weighed on valuations for larger tech companies across the region. More recent concerns over the pace of the economic recovery in China may lead the government to withdraw liquidity more gradually.
- While some developed market central banks (Bank of Canada, Bank of Korea, Norges Bank) have started to marginally tighten (or signal tighter) policy, the Federal Reserve and the European Central Bank are expected to keep policies accommodative for at least the next year to 18 months.

	QTD Total Return	1 Year Total Return
Core Fixed Income (BBgBarc U.S. Aggregate)	1.8%	(0.3%)
Core Plus Fixed Income (BBgBarc U.S. Universal)	2.0%	1.1%
U.S. Treasuries (BBgBarc U.S. Treasury)	1.7%	(3.2%)
U.S. High Yield (BBgBarc U.S. Corporate HY)	2.7%	15.4%
Bank Loans (S&P/LSTA Leveraged Loan)	1.4%	11.7%
Emerging Market Debt Local (JPM GBI-EM Global Diversified)	3.5%	6.6%
Emerging Market Debt Hard (JPM EMBI Global Diversified)	4.1%	7.5%
Mortgage-Backed Securities (BBgBarc MBS)	0.3%	(0.4%)

Source: Bloomberg, as of 6/30/21



# Yield environment





## **YIELD CURVE CHANGES OVER LAST FIVE YEARS**



## Source: Bloomberg, as of 6/30/21

**GLOBAL GOVERNMENT YIELD CURVES** 



## IMPLIED CHANGES OVER NEXT YEAR



Investment Landscape 3rd Quarter 2021

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# Credit environment

Credit markets performed positively in the second quarter, supported by strong corporate earnings, strong inflows and the expectation that supply will moderate in the second half of the year. Interest rates, specifically on the long-end of the curve, fell over the quarter, providing further duration tailwinds for fixed income securities. Corporate investment grade credit returned +3.6% over the quarter while high yield and leverage loans returned +2.7% and +1.4%, respectively.

Credit spreads grew tighter during the quarter, driven by strong investor demand and continued improvements in

economic fundamentals. High yield spreads tightened 42 basis points to 268 basis points, a new cycle low. Investment grade tightened a more modest 11 basis points to end the quarter at 80 basis points.

Lower quality bonds continue to outperform within both high yield and leverage loans. CCC bonds have now outperformed the broad high yield bond index in 10 of the past 11 months while split B/CCC loans have outperformed in 11 consecutive months.

## **SPREADS**



Source: Barclays, Bloomberg, as of 6/30/21

## HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 6/30/21

	Credit Spread (OAS)		
Market	6/30/21	6/30/20	
Long U.S. Corp	1.2%	2.0%	
U.S. Inv Grade Corp	0.8%	1.5%	
U.S. High Yield	2.7%	6.3%	
U.S. Bank Loans*	4.3%	6.2%	

Source: Barclays, Credit Suisse, Bloomberg, as of 6/30/21 \*Discount margin (4-year life)

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# Default & issuance

Default activity remained modest over the quarter, with defaults totaling \$3.5 billion on bonds and loans. Notably, fewer defaults occurred during the past two quarters than at any time in the past two years—an impressive development, given that the U.S. economy is still recovering from the pandemic. In addition, rolling twelve-month defaults have fallen as larger default volumes experienced last June exited the rolling window. This brought the par-weighted U.S. high yield default rate down 3.4% to end the quarter at 2.5%. Similarly, the loan par-weighted default rate ended the quarter at 1.9%, down 1.9% since March and down 2.5% year-to-date.

High yield bond issuance remains elevated, but has slowed from the record-setting levels experienced last quarter. Gross issuance for the quarter was \$160.8 billion, bringing the year-to date total to \$338.4 billion. This was notably greater than the \$238.0 billion issued in the first half of 2020. Leveraged loan issuance also slowed to \$119.3, down from \$163.9 billion issued in the first quarter.

Investment grade issuance for the quarter totaled \$350 billion, below the four-year average second quarter issuance of \$401, and less than the \$423 billion issued in Q1.

## HY DEFAULT RATE (ROLLING 1-YEAR)



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



## U.S. ISSUANCE (\$ BILLIONS)



Source: BofA Merrill Lynch, as of 6/30/21

Source: BofA Merrill Lynch, as of 6/30/21 – par weighted

Source: BofA Merrill Lynch, as of 6/30/21







# Equity environment

- U.S. equities were a top performer again in Q2, returning +8.5%. International equities (+5.2% MSCI EAFE Index) were on par with emerging markets (+5.0% MSCI Emerging Markets Index) on an unhedged currency basis.
- Following the notable turnaround in value stock performance during Q1, growth stocks once again took the lead in Q2. Growth stocks beat value by 6.7% during the quarter, dampening excitement for a value comeback.
- U.S. small-cap stocks (+4.3%) lagged large-cap stocks (+8.5%) as the reflation trade lost steam, but have still outperformed by 21.2% over the last year.
- It seems that investors have put the 2020 pandemic-induced recession behind them. Implied volatility, actual market volatility, and the risk reflected in asset

prices is very low. This data suggests that investors perceive a strong economy, a healthy business environment, and very few risks on the horizon.

- Per FactSet, the estimated yearover-year earnings growth for the S&P 500 Index as of Q2 2021 is 64.0%. If that rate were to materialize, it would mark the highest year-over-year growth rate reported by the index since Q4 2009 (109.1%).
- Global equities have marched higher without many hiccups over the last six months. The MSCI ACWI Index has not closed more than 5% below its prior peak level since November 2<sup>nd</sup>, 2020. In the second quarter, the furthest the ACWI ever closed below its prior high-water-mark was 3.3%.

	QTD TOTAL RETURN		1 YEAR TOT	AL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)	
US Large Cap (S&P 500)	8.5%				8%
US Small Cap (Russell 2000)	4.3% 67.0%		0%		
US Large Value (Russell 1000 Value)	5.2	5.2%		7%	
US Large Growth (Russell 1000 Growth)	11.9%		42.5%		
International Large (MSCI EAFE)	5.2%	4.9%	32.4%	28.0%	
Eurozone (Euro Stoxx 50)	5.8%	5.1%	35.4%	29.7%	
U.K. (FTSE 100)	5.8%	5.7%	31.9%	18.5%	
Japan (NIKKEI 225)	(1.6%)	(1.0%)	27.0%	31.7%	
Emerging Markets (MSCI Emerging Markets)	5.0%	3.5%	40.9%	35.1%	

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 6/30/21



# Domestic equity

U.S. equities were a top performer again in Q2, returning +8.5%. Per FactSet, the estimated year-over-year earnings growth for the S&P 500 Index as of June 30<sup>th</sup> was 64.0%. If that rate were to materialize, it would mark the highest year-over-year rate reported by the index since Q4 2009 (109.1%).

Concerns over the potential of the coronavirus delta variant to crimp the growth outlook helped to drive a rotation away from the more cyclical sectors that had driven the advance in U.S. equities since last August. Interest rates fell substantially, supporting outperformance of the Real Estate (+13.1%), IT

(+11.6%), and Telecom (+10.7%) sectors. The shift in sentiment towards more cautious risk positioning led the quality factor (+10.6%) to outperform relative to MSCI's suite of long-only factor indices.

While it appears possible that equities could continue rallying into next year, the road could well become bumpier from here, given high valuations and the level of optimism baked into prices. We retain a cautiously optimistic view, given the uncertainty which shrouds the outlook.

#### S&P 500 INDEX



FORWARD 12-MONTH EARNINGS PER SHARE



#### Q2 SECTOR PERFORMANCE



Source: Standard & Poor's, as of 6/30/21

Source: MSCI, as of 6/30/21

Source: Standard & Poor's, as of 6/30/21

# Domestic equity size & style

Large capitalization stocks beat small (Russell 1000 +8.5%, Russell 2000 +4.3%) and growth stocks beat value (Russell 1000 Growth +11.9%, Russell 1000 Value +5.2%), as investors rotated portfolios away from riskier exposures to larger, more quality names amid a more cautious risk outlook.

Following the notable turnaround in value stock performance during Q1, growth stocks once again took the lead in Q2, dampening excitement for a value comeback. As we have noted recently, sector trends can have large impacts on

factor behavior. This may have been the case with value in the first quarter. Small capitalization stocks have exhibited a spectacular run over the past year, outperforming large cap stocks by 21.2% (Russell 2000 +62.0, Russell 1000 +43.1%).

In general, factor performance tends to be noisy and difficult to predict, which suggests that style investing should in most cases involve a longer-term focus. Small cap and value stocks delivered strong relative performance during Q1

## SMALL CAP VS LARGE CAP (YOY)



VALUE VS GROWTH (YOY)

Source: FTSE, as of 6/30/21



#### **Q2 SECTOR PERFORMANCE**



Source: Standard & Poor's, as of 6/30/21

## Verus<sup>77</sup>

Source: FTSE, as of 6/30/21

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# International developed equity

International equities delivered +5.2% (MSCI EAFE Index) during the quarter on an unhedged currency basis, lagging U.S. equities but in line with emerging market equities (MSCI Emerging Markets +5.0%). Broad dollar weakness over most of the quarter boosted returns for unhedged investors in international developed equities by 0.3%, European equities by 0.7%, and emerging markets by 1.5%. The Japanese yen depreciated slightly relative to the U.S. dollar, which presented headwinds for unhedged investors in Japanese equities. Fading of risk-on sentiment in June helped to spur a turnaround in the U.S. dollar late in the quarter, though short

covering dynamics also played a factor.

Fresh concerns over the growth outlook following the emergence of the new, more virulent delta strain of the coronavirus pushed ECB policymakers to accelerate the pace of weekly asset purchases within the Pandemic Emergency Purchase Programme slightly, with the goal being to preserve financial conditions supporting a strong recovery. The commitment to easier policy over the short-to-intermediate term helped to keep interest rates at relatively low levels, which buoyed the valuation of European equities.

## INTERNATIONAL DEVELOPED EQUITIES



## EFFECT OF CURRENCY (1-YEAR ROLLING)



## ECB WEEKLY PEPP PURCHASES (BILLIONS)



Source: MSCI, as of 6/30/21

Verus<sup>77</sup>

Source: MSCI, as of 6/30/21

Source: Bloomberg, ECB, as of 7/9/21

# Emerging market equity

Emerging market equities (MSCI EM +5.0%) underperformed U.S. (S&P 500 +8.6%) and were in line with international developed equities (MSCI EAFE +5.2%) during the second quarter.

Latin American equities once again took the lead during the second quarter, outperforming the broader index by 10% (MSCI Latin America 15.0%, MSCI Emerging Markets +5.0%). Much of this performance was due to the notable underperformance of Chinese equities, which lagged the overall index by -2.8% during Q2 and -14.4% over the past year. Single countries in the emerging markets complex often

display high volatility. In other words, large idiosyncratic moves such as the one witnessed recently by Chinese equities are not unusual.

Headline Inflation in Brazil has risen to 8.4%, which is double the pre-pandemic level. Brazil has hiked their central bank rate from 2.00% to 4.25% to battle rising prices. Inflation in Russia has also jumped, now at 6.5%. Russia has hiked their key rate from 4.25% to 5.50%. This might suggest that central banks around the world have different views regarding how "transitory" the recent inflation rise will be, although volatile rates of inflation are common in the emerging markets.

## EMERGING MARKET EQUITY



## **INFLATION (YOY)**









Source: Bloomberg, MSCI, as of 6/30/21, performance in USD terms



Source: MSCI, as of 6/30/21

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# Chinese markets

- The Chinese equity market has now lagged the broader emerging markets by -1.1% on a 3-year annualized basis, -13.8% on a 1-year basis, and -5.7% year-to-date (MSCI China, MSCI Emerging Markets).
- Chinese equities began to sell off in late February, with the initial catalyst appearing to be a decision by the People's Bank of China to shift its focus away from an accommodative financial stance towards tightening, with the aim of limiting the risks that excessive leverage within certain segments of the economy poses to the economy.
- This shift in focus from ensuring economic recovery to managing the risks of financial excesses came in the form of a marginal tightening of liquidity across the country, which sparked a sell-off in some of the high-flying tech companies that had driven outperformance in the early days of the pandemic. Losses in China accelerated in the second quarter of 2021 when regulators cracked down on some national champions in the IT industry, reportedly over concerns around the risks of the data gathered by those companies falling into the wrong hands, which could undermine the position of the Communist Party of China. While it appears that both general liquidity conditions have begun to improve and the tech crackdown has showed signs of easing, these issues remain front and center for the broader emerging market universe.
- Recent larger idiosyncratic moves in the Chinese market highlight the benefits of gaining diversified exposure to the asset class.



Chinese tech companies listed in the U.S. but whose business is primarily conducted in China have sold off significantly since late February 2021

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# Equity valuations

Industry analysts forecast a 11.2% gain over the next 12 months for the S&P 500, according to FactSet, despite record-high valuations.

Valuations remain at very high levels relative to history, supported by extremely low interest rates, central bank accommodation, and unprecedented government spending. As is often the case when valuations rise, opinions differ regarding whether: a) valuations are supported by the environment and will stay elevated for the long-term, resulting in lower expected returns, or b) valuations are excessive and will come back down due to a market correction. Some investors might question the possibility of a third scenario – that future earnings growth will be strong enough to naturally bring down valuations. However, this third scenario is not currently supported by earnings forecasts. Our view on these conditions continues to be somewhat aligned with scenario "a"—that valuations are indeed high, but that unusual conditions and a potentially synchronized global economic comeback may support these high prices for the medium term. Nonetheless, with such optimism baked into risk asset prices, it will be important to watch closely for any disruptions to the market's optimistic outlook.

## FORWARD P/E RATIOS



## S&P 500 EARNINGS GROWTH VS. FORECASTS



## VALUATION METRICS (3-MONTH AVERAGE)



Source: MSCI, 12m forward P/E, as of 6/30/21

Source: Bloomberg, as of 6/30/21

Source: Bloomberg, MSCI as of 6/30/21 - trailing P/E
# Equity volatility

The Cboe VIX Index has fallen further year-to-date, reaching 15 in June. This compares to the longer-term average of 19. One-year trailing realized volatility has now returned to pre-COVID levels.

It seems that investors have put the 2020 pandemic-induced recession behind them. Implied volatility, actual market volatility, and the risk reflected in asset prices is very low. This data suggests that investors perceive a strong economy, a healthy business environment, and very few risks on the horizon. However, it is reasonable to question the degree to which unprecedented government stimulus and easy money has influenced markets as of late.

The Cboe Skew Index, which measures the perceived tail risk of the distribution of S&P 500 Index returns over a 30-day horizon, rose to 161.9, 35% above its average level since inception in 1990. The high level of the skew index indicates a steep implied volatility curve, which could be interpreted as more bearish bears, more bullish bulls, or both. In any case, disagreement among investors appears to be wide at present, which could allow for larger short-term price swings.

#### U.S. IMPLIED VOLATILITY (VIX)



#### **REALIZED VOLATILITY**



#### Source: Standard & Poor's, MSCI, as of 6/30/21

#### CBOE SKEW INDEX



Source: Cboe, Bloomberg, as of 6/30/21



Source: Cboe, as of 6/30/21

# Long-term equity performance



Source: Morningstar, as of 6/30/21







# Currency

The stabilization in the U.S. dollar that took place in the first quarter as Treasury yields rose began to fade as longer-term interest rates declined from pandemic-era high levels. The dollar sold off relative to major currencies in April and May, before finding a bid in June on the back of slightly more cautious sentiment. Investors remain quite polarized over the medium-to-long term path of the dollar, which might increase the probability of more volatility in the future.

Despite U.S. dollar weakness relative to the euro and British pound over the quarter, those two European currencies remain relatively cheap on a purchasing power parity basis. The Japanese yen became even cheaper relative to the dollar over the period, while the Swiss franc and Norwegian Krone remained at relatively expensive valuations.

The embedded currency portfolio of the MSCI EAFE Index returned 0.3% over the quarter, but returned 4.4% over the trailing year on the back of a weakening U.S. dollar. Within Verus' preferred currency beta benchmark, the momentum factor (-6.8%) contributed significant headwinds to one-year trailing returns, as frequent shifts in market risk sentiment limited the capacity of risk-on and risk-off currencies from sustaining trends in one direction or the other.

#### **BLOOMBERG DOLLAR SPOT INDEX**



PURCHASING POWER PARITY VALUATIONS VS. U.S. DOLLAR (OECD)



#### **CURRENCY BETA RELATIVE PERFORMANCE**



Source: Bloomberg, as of 6/30/21

Source: Bloomberg, as of 6/30/21

Source: Bloomberg, MSCI, as of 6/30/21

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# Periodic table of returns

Small Cap Value

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	YTD	5-Year	10-Year
Small Cap Value	66.4	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	26.7	23.7	17.9
Commodities	43.1	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	21.1	18.8	14.9
Small Cap Equity	33.2	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	17.5	18.0	13.5
Large Cap Value	27.3	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	17.0	16.5	12.3
Large Cap Equity	26.5	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	15.0	13.6	11.6
Large Cap Growth	21.3	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	13.0	13.0	10.8
Small Cap Growth	24.3	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	9.0	11.9	8.8
International Equity	20.9	-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	8.8	10.3	6.9
Emerging Markets Equity	13.2	-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	7.4	9.8	5.9
60/40 Global Portfolio	11.4	-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	6.0	6.1	4.3
Hedge Funds of Funds	7.3	-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	4.7	5.8	3.8
Real Estate	4.8	-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	1.7	3.0	3.4
Cash	-0.8	-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	0.0	2.4	0.6
US Bonds	-1.5	-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	-1.6	1.1	-4.4
			Large	Cap Eq	uity		Small Cap G				owth				Comm	odities									
			Large	Cap Va	lue				Intern	ationa	l Equity				Real Es	state									
			Large	Cap Gr	owth				Emerg	ging Ma	rkets Ec	quity			Hedge	Funds o	ofFunds	5							
			Small	Cap Eq	uity		US Bonds							60% MSCI ACWI/40% BBgBarc Global Bond											

Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BBgBarc US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, BBgBarc Global Bond. NCREIF Property Index performance data as of 3/31/21.

Cash



BEST

WORST

# Major asset class returns

#### ONE YEAR ENDING JUNE



\*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 6/30/21

Source: Morningstar, as of 6/30/21

**TEN YEARS ENDING JUNE** 



**Investment Landscape** 3rd Quarter 2021

# S&P 500 sector returns

Q2 2021



#### ONE YEAR ENDING JUNE



Source: Morningstar, as of 6/30/21

Source: Morningstar, as of 6/30/21

# 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 underperformed comparable public equities across all time periods, aside from the 1 and 3-year basis.

Sources: Thomson Reuters Cambridge Universe's PME Module: U.S. Private Equity Funds sub asset classes as of December 31, 2020. 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**

**GLOBAL INFRASTRUCTURE FUNDS** 



N.R. funds outperformed the MSCI World Natural Resources benchmark across all time periods, aside on a 5-year basis.

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

Sources: Thomson Reuters 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 December 31, 2020. 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 REAL ESTATE FUNDS VS. CORE FUNDS



U.S. Private R.E. funds outperformed the Wilshire U.S. REIT Index over the past 10 years, but have lagged on a 20year basis.

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

Sources: Thomson Reuters C/A PME: Global and U.S. Real Estate universes as of December 31, 2020. 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		м
Core Index								Broad Index	
S&P 500	2.3	8.5	15.3	40.8	18.7	17.6	14.8	BBgBarc US TIPS	(
S&P 500 Equal Weighted	0.1	6.9	19.2	50.7	16.4	15.7	13.8	BBgBarc US Treasury Bills	(
DJ Industrial Average	0.0	5.1	13.8	36.3	15.0	16.7	13.5	BBgBarc US Agg Bond	(
Russell Top 200	2.9	8.9	14.5	40.8	20.2	18.9	15.6	BBgBarc US Universal	
Russell 1000	2.5	8.5	15.0	43.1	19.2	18.0	14.9	Duration	
Russell 2000	1.9	4.3	17.5	62.0	13.5	16.5	12.3	BBgBarc US Treasury 1-3 Yr	(
Russell 3000	2.5	8.2	15.1	44.2	18.7	17.9	14.7	BBgBarc US Treasury Long	3
Russell Mid Cap	1.5	7.5	16.2	49.8	16.4	15.6	13.2	BBgBarc US Treasury	(
Style Index								Issuer	
Russell 1000 Growth	6.3	11.9	13.0	42.5	25.1	23.7	17.9	BBgBarc US MBS	(
Russell 1000 Value	(1.1)	5.2	17.0	43.7	12.4	11.9	11.6	BBgBarc US Corp. High Yield	
Russell 2000 Growth	4.7	3.9	9.0	51.4	15.9	18.8	13.5	BBgBarc US Agency Interm	()
Russell 2000 Value	(0.6)	4.6	26.7	73.3	10.3	13.6	10.8	BBgBarc US Credit	
INTERNATIONAL EQUITY								OTHER	
Broad Index								Index	
MSCI ACWI	1.3	7.4	12.3	39.3	14.6	14.6	9.9	Bloomberg Commodity	
MSCI ACWI ex US	(0.6)	5.5	9.2	35.7	9.4	11.1	5.4	Wilshire US REIT	1
MSCI EAFE	(1.1)	5.2	8.8	32.4	8.3	10.3	5.9	CS Leveraged Loans	(
MSCI EM	0.2	5.0	7.4	40.9	11.3	13.0	4.3	Alerian MLP	
MSCI EAFE Small Cap	(1.7)	4.3	9.0	41.0	8.4	12.0	8.4	Regional Index	
Style Index								JPM EMBI Global Div	
MSCI EAFE Growth	0.0	7.4	6.8	31.0	12.5	12.5	7.8	JPM GBI-EM Global Div	(
MSCI EAFE Value	(2.3)	3.0	10.7	33.5	3.8	7.8	3.9	Hedge Funds	
Regional Index								HFRI Composite	
MSCI UK	(2.4)	6.0	12.5	31.3	1.9	5.7	3.7	HFRI FOF Composite	(
MSCI Japan	(0.3)	(0.3)	1.3	24.8	7.2	10.2	7.2	Currency (Spot)	
MSCI Europe	0.7	6.7	(1.1)	1.1	5.6	3.5	3.7	Euro	(
MSCI EM Asia	0.1	3.8	6.0	41.0	13.1	15.3	7.0	Pound Sterling	(:
MSCI EM Latin American	2.7	15.0	8.9	44.9	5.1	5.9	(2.5)	Yen	(

FIXED INCOME							
	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
BBgBarc US TIPS	0.6	3.2	1.7	6.5	6.5	4.2	3.4
BBgBarc US Treasury Bills	(0.0)	0.0	0.0	0.1	1.4	1.2	0.7
BBgBarc US Agg Bond	0.7	1.8	(1.6)	(0.3)	5.3	3.0	3.4
BBgBarc US Universal	0.7	2.0	(1.1)	1.1	5.6	3.5	3.7
Duration							
BBgBarc US Treasury 1-3 Yr	(0.2)	(0.0)	(0.1)	0.1	2.7	1.6	1.2
BBgBarc US Treasury Long	3.6	6.5	(7.9)	(10.6)	8.0	3.1	6.7
BBgBarc US Treasury	0.6	1.7	(2.6)	(3.2)	4.7	2.2	2.8
lssuer							
BBgBarc US MBS	(0.0)	0.3	(0.8)	(0.4)	3.8	2.3	2.6
BBgBarc US Corp. High Yield	1.3	2.7	3.6	15.4	7.4	7.5	6.7
BBgBarc US Agency Interm	(0.1)	0.5	(0.6)	(0.1)	3.3	1.9	1.8
BBgBarc US Credit	1.5	3.3	(1.3)	3.0	7.4	4.6	4.9
OTHER							
Index							
Bloomberg Commodity	1.9	13.3	21.1	45.6	3.9	2.4	(4.4)
Wilshire US REIT	3.1	12.8	22.8	37.5	10.1	6.4	9.4
CS Leveraged Loans	0.4	1.4	3.5	11.7	4.4	5.0	4.5
Alerian MLP	5.2	21.2	47.8	64.0	(1.1)	(2.0)	1.3
Regional Index							
JPM EMBI Global Div	0.7	4.1	(0.7)	7.5	6.7	4.9	5.7
JPM GBI-EM Global Div	(1.2)	3.5	(3.4)	6.6	4.1	3.2	0.5
Hedge Funds							
HFRI Composite	0.4	4.0	10.0	27.4	8.7	7.9	5.1
HFRI FOF Composite	0.3	2.7	4.7	18.1	6.2	6.1	3.8
Currency (Spot)							
Euro	(3.0)	0.9	(3.1)	5.6	0.5	1.3	(2.0)
Pound Sterling	(2.8)	0.1	1.1	11.8	1.5	0.7	(1.5)
Yen	(1.4)	(0.4)	(7.0)	(2.8)	(0.1)	(1.6)	(3.1)

Source: Morningstar, HFRI, as of 6/30/21



# Definitions

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

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

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

**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: June 30, 2021



VERUSINVESTMENTS.COM

SEATTLE 206-622-3700 LOS ANGELES 310-297-1777 SAN FRANCISCO 415-362-3484 PITTSBURGH 412-784-6678

Portfolio Reconciliation											
	Last Three Months	Fiscal Year-To-Date	One Year								
Beginning Market Value	\$1,052,813,738	\$881,387,962	\$881,387,962								
Net Cash Flow	-\$5,682,198	-\$10,495,356	-\$10,495,356								
Net Investment Change	\$58,128,283	\$234,367,217	\$234,367,217								
Ending Market Value	\$1,105,259,823	\$1,105,259,823	\$1,105,259,823								



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)

OTD

	QTD	YTD	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
Total Fund	5.5	9.4	26.7	26.7	11.4	10.9	8.3
Policy Index	5.3	8.2	24.6	24.6	11.8	11.2	8.3
InvMetrics Public DB Net Rank	39	30	50	50	53	55	61
Total Domestic Equity	8.2	15.1	44.2	44.2	18.8	17.9	14.5
Russell 3000	8.2	15.1	44.2	44.2	18.7	17.9	14.7
eV US All Cap Core Equity Net Rank	38	58	44	44	33	27	25
Total International Equity	5.4	10.1	36.8	36.8	8.5	10.7	5.1
MSCI ACWI ex USA Gross	5.6	9.4	36.3	36.3	9.9	11.6	5.9
InvMetrics Public DB ex-US Eq Net Rank	63	21	58	58	84	81	96
Total Fixed Income	2.6	-0.3	3.5	3.5	6.4	4.2	4.1
BBgBarc US Aggregate TR	1.8	-1.6	-0.3	-0.3	5.3	3.0	3.4
InvMetrics Public DB Total Fix Inc Net Rank	10	40	51	51	11	43	41
Total Real Estate	3.4	5.6	7.3	7.3	5.6	5.9	8.7
NCREIF ODCE Net	3.7	5.7	7.2	7.2	4.6	5.6	8.6
Total Private Equity	10.3	27.2	65.4	65.4	25.2	22.1	12.8
Private Equity Benchmark	10.3	27.2	65.4	65.4	25.2	22.1	
Total Private Credit	1.5	2.8	9.1	9.1	7.3		
Private Credit Benchmark	1.5	2.8	9.1	9.1	7.3		
Total Opportunistic	-1.7	11.7	14.9	14.9	2.2	7.4	11.2
Assumption Rate + 1%	2.0	4.0	8.3	8.3	8.3	8.3	8.6

VTD Fiscal

1 Vr 2 Vra E Vra 10 Vra

#### 40.0 35.0 33.0 30.0 27.0 25.0 19.5 20.0 20.0 9.1 10.0 10.0 6.4 5.0 5.0 3.2 1.6 0.3 0.0 0.0 0.0 Domestic Domestic Real Estate Private Private Cash and Other International Fixed Income Equity Equity Equity Credit Equivalents

Actual vs Target Allocation (%)

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

Policy

Actual





New Policy Index (as of 8/1/2020): 33% Russell 3000, 20% MSCI ACWI ex USA Gross, 27% BBgBarc Aggregate, 10% NCREIF Property, 2%BBgBarc 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% BBgBarc Aggregate, 10% NCREIF Property, 1% Russell 3000, 2%BBgBarc Aggregate, 4% Private Equity Benchmark, 3% Private Credit Benchmark. Prior Policy Index (10/1/2016 to 9/30/2018): 29% Russell 3000, 24% MSCI ACWI ex USA Gross, 27% BBgBarc Aggregate, 5% NCREIF Property Index, 5% NCREIF Property Index +2%, 5% Russell 3000, +3% (Lagged), 5% BBgBarc High Yield +2% (Lagged). Prior quarter Private Equity returns, and index data are used. All returns are Net of fees. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. As of 10/1/20 the SAA Target for equity changed to 33% Russell 3000 + 2% ACWI ex-US (see Exhibit B attached).





Interaction Effects Total Effect

#### Attribution Effects

#### **Performance Attribution**

	Quarter	YTD
Wtd. Actual Return	5.54%	9.44%
Wtd. Index Return *	5.27%	8.22%
Excess Return	0.26%	1.23%
Selection Effect	0.17%	0.56%
Allocation Effect	0.08%	0.43%
Interaction Effect	-0.09%	0.07%

\*Calculated from benchmark returns and weightings of each component.

#### Attribution Summary Last Three Months

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Domestic Equity	8.2%	8.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Total International Equity	5.4%	5.6%	-0.2%	0.0%	0.0%	0.0%	0.0%
Total Fixed Income	2.6%	1.8%	0.7%	0.2%	0.1%	0.0%	0.3%
Total Real Estate	3.4%	3.6%	-0.2%	0.0%	-0.1%	0.0%	-0.1%
Total Private Equity	10.3%	10.3%	0.0%	0.0%	0.1%	0.0%	0.1%
Total Private Credit	1.5%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Opportunistic	-1.7%	2.0%	-3.7%	0.0%	0.0%	-0.1%	-0.1%
Total	5.5%	5.3%	0.3%	0.2%	0.1%	-0.1%	0.2%

Weighted returns shown in attribution analysis may differ from actual returns.



### Total Fund Risk Analysis - 5 Years (Net of Fees)





## Total Fund Rolling Risk Statistics (Net of Fees)



— Total Fund Rolling 3 Year — Total Fund Rolling 5 Year

#### Rolling Up Market Capture Ratio (%)



Rolling Information Ratio



#### Rolling Tracking Error



#### Rolling Down Market Capture Ratio (%)





# Total Fund Performance Summary (Net of Fees)

Period Ending: June 30, 2021

	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2020	2019	2018	2017	2016	Inception I	Inception Date
Total Fund	1,105,259,823	100.0	5.5	9.4	26.7	26.7	11.4	10.9	8.3	12.3	17.9	-4.1	16.0	7.4	9.1	Mar-89
Policy Index			5.3	8.2	24.6	24.6	11.8	11.2	8.3	13.2	18.0	-2.8	15.9	8.3		Mar-89
InvMetrics Public DB Net Rank			39	30	50	50	53	55	61	59	73	43	22	49	12	Mar-89
Total Domestic Equity	386,341,584	35.0	8.2	15.1	44.2	44.2	18.8	17.9	14.5	21.0	31.1	-5.2	21.2	12.8		
Russell 3000			8.2	15.1	44.2	44.2	18.7	17.9	14.7	20.9	31.0	-5.2	21.1	12.7		
eV US All Cap Core Equity Net Rank			38	58	44	44	33	27	25	43	42	40	42	20		
BlackRock Russell 3000	386,341,584	35.0	8.2	15.1	44.2	44.2	18.8	17.9		21.0	31.1	-5.2	21.2	12.8	16.4	Dec-15
Russell 3000			8.2	15.1	44.2	44.2	18.7	17.9		20.9	31.0	-5.2	21.1	12.7	16.2	Dec-15
eV US All Cap Core Equity Net Rank			38	58	44	44	33	27		43	42	40	42	20	33	Dec-15
Total International Equity	215,513,703	19.5	5.4	10.1	36.8	36.8	8.5	10.7	5.1	8.1	20.7	-14.3	27.9	4.4		
MSCI ACWI ex USA Gross			5.6	9.4	36.3	36.3	9.9	11.6	5.9	11.1	22.1	-13.8	27.8	5.0		
InvMetrics Public DB ex-US Eq Net Rank			63	21	58	58	84	81	96	93	84	29	55	48		
BlackRock International Equity	159,463,386	14.4	5.3	9.1	32.7	32.7	8.6	10.6	6.1	8.1	22.4	-13.5	25.4	1.3	7.7	Jul-03
MSCI EAFE			5.2	8.8	32.4	32.4	8.3	10.3	5.9	7.8	22.0	-13.8	25.0	1.0	7.4	Jul-03
eV All EAFE Equity Net Rank			51	60	66	66	49	51	70	49	47	33	60	37	59	Jul-03
DFA Emerging Markets Value	27,633,674	2.5	6.9	15.8	46.8	46.8	7.4	10.8	2.2	2.8	9.6	-11.9	33.8	19.8	4.7	Jan-07
MSCI Emerging Markets Value NR			5.7	10.0	41.6	41.6	7.8	9.7	1.8	5.5	12.0	-10.7	28.1	14.9	4.5	Jan-07
eV Emg Mkts All Cap Value Equity Net Rank			16	9	30	30	84	69	99	81	98	20	49	22	72	Jan-07
Harding Loevner Emerging Markets	28,416,643	2.6	4.9	6.4	41.8	41.8	8.0			12.4	24.0	-19.5	33.6		9.6	Jul-16
MSCI Emerging Markets Growth GR			4.5	5.1	40.3	40.3	14.7			31.6	25.4	-18.0	47.1		15.6	Jul-16
eV Emg Mkts All Cap Growth Equity Net Rank			47	44	58	58	99			99	61	73	89		92	Jul-16
Total Fixed Income	275,920,908	25.0	2.6	-0.3	3.5	3.5	6.4	4.2	4.1	9.8	9.5	-0.8	4.3	4.8		
BBgBarc US Aggregate TR			1.8	-1.6	-0.3	-0.3	5.3	3.0	3.4	7.5	8.7	0.0	3.5	2.6		
InvMetrics Public DB Total Fix Inc Net Rank			10	40	51	51	11	43	41	8	32	59	62	43		
Ducenta Squared	112,328,104	10.2	2.3	-1.0	2.1	2.1	6.3	4.1	4.4	9.1	9.9	-0.1	4.3	4.8	6.1	Dec-92
BBgBarc US Aggregate TR			1.8	-1.6	-0.3	-0.3	5.3	3.0	3.4	7.5	8.7	0.0	3.5	2.6	5.3	Dec-92
eV US Core Plus Fixed Inc Net Rank			35	68	72	72	47	49	40	34	45	23	74	41	36	Dec-92
MacKay Shields Core Plus Opportunities	111,753,694	10.1	2.6	-0.6	3.6	3.6	6.5	4.2		9.9	9.7	-1.0	4.5	4.7	3.6	Mar-15
BBgBarc US Aggregate TR			1.8	-1.6	-0.3	-0.3	5.3	3.0		7.5	8.7	0.0	3.5	2.6	3.1	Mar-15
eV US Core Plus Fixed Inc Net Rank			12	49	40	40	36	44		23	54	75	62	47	67	Mar-15
BlackRock US TIPS	51,839,109	4.7	3.2	1.7	6.5	6.5	6.6	4.3	3.5	11.2	8.5	-1.2	3.2	4.8	4.6	Apr-07
BBgBarc US TIPS TR			3.2	1.7	6.5	6.5	6.5	4.2	3.4	11.0	8.4	-1.3	3.0	4.7	4.5	Apr-07
eV US TIPS / Inflation Fixed Inc Net Rank			45	71	72	72	44	54	27	31	53	36	47	43	53	Apr-07

Tortoise is now Ducenta Squared.

## Total Fund Performance Summary (Net of Fees)

Period Ending: June 30, 2021

	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2020	2019	2018	2017	2016	Inception I	nception Date
Total Real Estate	100,219,255	9.1	3.4	5.6	7.3	7.3	5.6	5.9	8.7	2.1	5.7	7.5	5.8	6.5		
NCREIF Property Index			3.6	5.4	7.4	7.4	5.5	6.1	8.8	1.6	6.4	6.7	7.0	8.0		
NCREIF ODCE Net			3.7	5.7	7.2	7.2	4.6	5.6	8.6	0.3	4.4	7.4	6.7	7.8		
ASB Real Estate	27,579,712	2.5	0.0	2.2	3.0	3.0	3.2	3.9		1.5	3.0	6.6	4.0	4.6	7.3	Dec-12
NCREIF Property Index			3.6	5.4	7.4	7.4	5.5	6.1		1.6	6.4	6.7	7.0	8.0	8.3	Dec-12
NCREIF ODCE Net			3.7	5.7	7.2	7.2	4.6	5.6		0.3	4.4	7.4	6.7	7.8	8.2	Dec-12
Clarion Lion	28,928,431	2.6	5.6	8.0	10.9	10.9	6.9	7.3	9.6	2.3	6.8	8.6	7.9	8.0	4.9	Dec-06
NCREIF Property Index			3.6	5.4	7.4	7.4	5.5	6.1	8.8	1.6	6.4	6.7	7.0	8.0	6.6	Dec-06
NCREIF ODCE Net			3.7	5.7	7.2	7.2	4.6	5.6	8.6	0.3	4.4	7.4	6.7	7.8	5.0	Dec-06
ARA American Strategic Value Realty	41,765,920	3.8	4.3	6.6	8.2	8.2	6.8			2.4	7.8				7.3	Jan-18
NCREIF Property Index +2%			4.1	6.4	9.5	9.5	7.6			3.6	8.5				7.8	Jan-18
NCREIF ODCE +2%			4.4	7.2	10.2	10.2	7.4			3.2	7.4				7.6	Jan-18
1221 State St. Corp	1,945,192	0.2	0.0	0.0	0.0	0.0	2.6	4.9	1.1	0.0	7.9	0.0	0.0	17.5	1.6	Sep-08
Total Private Equity	70,731,140	6.4	10.3	27.2	65.4	65.4	25.2	22.1	12.8	23.0	13.3	21.3	18.8	10.6		
Harbourvest Buyout IX	8,356,112	0.8	9.5	25.5	57.6	57.6	26.0	24.2	8.1	21.3	17.6	23.6	23.2	13.7		Sep-11
Harbourvest Credit Ops IX	1,091,628	0.1	8.2	14.7	30.9	30.9	9.6	12.2	7.7	0.3	8.0	14.4	17.5	8.5		Sep-11
Harbourvest International PE VI	3,257,806	0.3	14.5	35.6	67.0	67.0	20.9	19.4	12.2	17.2	6.0	14.8	19.4	12.2		Jun-10
Harbourvest Venture IX	6,764,602	0.6	14.1	46.0	114.4	114.4	46.4	31.6	20.9	52.4	24.6	25.9	9.4	5.3		Sep-11
Harbourvest 2017 Global Fund	25,987,040	2.4	10.2	31.9	68.6	68.6	23.6			18.8	8.8	20.9			23.6	Sep-17
Harbourvest 2018 Global Fund	14,419,573	1.3	9.3	19.2	47.6	47.6				16.0	14.3				19.4	Dec-18
Harbourvest 2019 Global Fund	10,854,379	1.0	9.0	16.3	95.6	95.6				34.6					32.7	Dec-19
Russell 3000 + 3%			9.0	16.8	48.4	48.4				24.5					29.1	Dec-19
Total Private Credit	35,473,378	3.2	1.5	2.8	9.1	9.1	7.3			4.8	9.4	6.7				
Portfolio Advisors Credit Strategies Fund	12,341,077	1.1	0.0	0.0	8.3	8.3	5.6			3.9	8.2	6.6			5.1	Oct-17
BBgBarc High Yield +2% (Lagged)			1.3	8.4	26.1	26.1	9.0			5.3	8.5	5.1			7.8	Oct-17
Ascribe Opportunities Fund IV	-10,655	0.0	0.0	-23.2	-32.8	-32.8									-32.8	Jul-20
BBgBarc High Yield +2% (Lagged)			1.3	8.4	26.1	26.1									26.1	Jul-20
Total Opportunistic	18,031,296	1.6	-1.7	11.7	14.9	14.9	2.2	7.4	11.2	0.9	-10.7	32.0	5.3	5.0		
KKR Mezzanine Partners	2,388,164	0.2	0.8	1.4	-13.7	-13.7	-3.4	2.6	6.4	-15.2	-4.2	25.3	8.7	4.0	7.2	Apr-11
PIMCO BRAVO	13,942	0.0	-24.6	-20.3	-12.3	-12.3	-42.1	-19.1	-1.8	-48.2	-49.1	77.8	-12.4	11.2	-1.4	May-11
TSSP Adjacent Opportunities Partners	15,629,190	1.4	-2.2	14.1	25.4	25.4									19.8	Apr-20
Total Cash																
Cash Account	3,028,559	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0		
91 Day T-Bills			0.0	0.0	0.1	0.1	1.2	1.1	0.6	0.5	2.1	1.9	0.9	0.3		

TSSP Adjacent funded 4/16/2020. ASB Real Estate market value as of 3/31/2021



# Investment Manager Performance Analysis - 3 & 5 Years (Net of Fees)

# Period Ending: June 30, 2021

				3	Years						
	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
BlackRock Russell 3000	18.77%	0.04%	19.42%	0.05%	1.00	0.03%	1.00	0.90	1.25	100.12%	99.96%
BlackRock International Equity	8.55%	0.28%	17.81%	0.25%	1.00	0.33%	1.00	0.41	0.87	101.91%	100.36%
DFA Emerging Markets Value	7.39%	-0.42%	21.45%	-1.02%	1.08	4.68%	0.96	0.28	-0.09	107.39%	105.87%
Harding Loevner Emerging Markets	8.00%	-6.70%	21.51%	-7.24%	1.04	7.21%	0.89	0.32	-0.93	85.73%	109.90%
Ducenta Squared	6.29%	0.94%	3.84%	0.82%	1.02	1.43%	0.86	1.30	0.66	115.58%	106.33%
MacKay Shields Core Plus Opportunities	6.50%	1.16%	4.37%	0.66%	1.09	2.17%	0.76	1.21	0.53	124.92%	122.10%
BlackRock US TIPS	6.58%	0.05%	3.99%	-0.03%	1.01	0.10%	1.00	1.32	0.52	100.99%	101.07%
ASB Real Estate	3.23%	-2.27%	2.35%	0.76%	0.45	2.54%	0.33	0.82	-0.89	58.45%	77.87%
Clarion Lion	6.90%	1.40%	4.24%	-0.65%	1.37	1.48%	0.95	1.32	0.95	131.43%	185.14%
ARA American Strategic Value Realty	6.76%	-0.85%	3.51%	-1.88%	1.14	0.86%	0.95	1.58	-0.98	86.15%	39.64%
Portfolio Advisors Credit Strategies Fund	5.60%	-3.37%	6.52%	2.32%	0.37	8.11%	0.27	0.67	-0.42	33.00%	4.89%

				5	Years						
	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
BlackRock International Equity	10.60%	0.32%	14.72%	0.28%	1.00	0.29%	1.00	0.64	1.11	102.39%	100.20%
DFA Emerging Markets Value	10.81%	1.11%	18.34%	0.45%	1.07	3.86%	0.96	0.53	0.29	112.66%	102.75%
Ducenta Squared	4.10%	1.08%	3.44%	1.10%	0.99	1.19%	0.88	0.86	0.91	116.28%	92.71%
MacKay Shields Core Plus Opportunities	4.23%	1.21%	3.83%	1.05%	1.05	1.74%	0.80	0.82	0.70	124.63%	101.68%
BlackRock US TIPS	4.27%	0.09%	3.57%	0.06%	1.01	0.08%	1.00	0.88	1.17	101.37%	99.85%
ASB Real Estate	3.88%	-2.26%	2.35%	0.46%	0.56	2.13%	0.49	1.16	-1.06	61.82%	77.87%
Clarion Lion	7.31%	1.18%	3.90%	-0.56%	1.28	1.26%	0.94	1.58	0.93	126.33%	185.14%

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Vintage	Manager & Fund Name	Estimated 6/30 Market Value <sup>3</sup>	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value for IRR	Distrib./ Paid-In (DPI) <sup>1</sup>	Tot. Value/ Paid-In (TVPI) <sup>2</sup>	Net IRR Since Inception <sup>4</sup>	IRR Date
2011	HarbourVest IX-Buyout	\$8,356,112	\$10,000,000	\$8,525,000	85%	\$1,475,000	\$9,164,033	\$8,890,828	107.5%	205.5%	19.7%	3/31/21
2011	HarbourVest IX-Credit	\$1,091,628	\$2,000,000	\$1,600,000	80%	\$400,000	<b>\$1</b> ,337,551	\$1,197,331	83.6%	151.8%	12.8%	3/31/21
2008	HarbourVest Int'l VI <sup>5</sup>	\$3,257,806	\$3,712,930	\$2,630,078	71%	\$1,082,852	\$2,765,306	\$3,419,711	105.1%	229.0%	16.2%	3/31/21
2011	HarbourVest IX-Venture	\$6,764,602	\$4,000,000	\$3,800,000	95%	\$200,000	\$5,184,746	\$7,526,512	136.4%	314.5%	24.6%	3/31/21
2017	HarbourVest 2017 Global	\$25,987,040	\$30,000,000	\$17,700,000	59%	\$12,300,000	\$3,829,801	\$25,987,040	21.6%	168.5%	27.0%	3/31/21
2018	HarbourVest 2018 Global	\$14,419,573	\$20,000,000	\$10,538,043	53%	\$9,461,957	\$376,435	\$14,627,734	3.6%	140.4%	31.1%	3/31/21
2019	HarbourVest 2019 Global	\$10,854,379	\$20,000,000	\$7,975,273	40%	\$12,024,727	\$0	\$10,336,844	0.0%	136.1%	69.0%	3/31/21
	Total Illiquid Private Equity	\$70,731,140	\$89,712,930	\$52,768,394	59%	\$36,944,536	\$22,657,872	\$71,986,000	136.4%	179.4%		

6.4%		Management Fee	Admin Fee	Interest Expense	Other Expense	Total Expense <sup>6</sup>
	HarbourVest IX-Buyout	\$24,911	\$0	\$14	\$3,193	\$28,118
	HarbourVest IX-Credit	\$4,976	\$0	\$1	\$1,323	\$6,300
	HarbourVest Int'l VI	\$6,438	\$0	\$38	\$40	\$6,516
	HarbourVest IX-Venture	\$9,983	\$0	\$17	\$225	\$10,225
	HarbourVest 2017 Global	\$66,000	\$0	\$0	\$44,308	\$110,308
	HarbourVest 2018 Global	\$33,535	\$0	\$18	\$16,832	\$50,385
	HarbourVest 2019 Global	\$27,940	\$0	\$2,085	\$13,998	\$44,023

<sup>1</sup>(DPI) is equal to (capital returned / capital called)

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

<sup>3</sup>Last known market value + capital calls - distributions (preliminary MV's as of 3/31/2021)

<sup>4</sup>Net IRR is calculated on the cash flows of all the limited partners of the fund and is net of all fees. Each IRR figure is provided by its respective manager.

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

<sup>6</sup>All fees and expenses are for 1Q 2021

HarbourVest 2017 Global Fund first capital call issued 9/21/2017. Portfolio Advisors first capital call issued 10/5/2017. HarbourVest 2018 Global Fund first capital call issued 12/13/2018.



\$0

\$2,173

\$173,783

\$255,875

\$79,919

Vintage	Manager & Fund Name	Estimated 6/30 Market Value <sup>3</sup>	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value for IRR	Distrib./ Paid-In (DPI) <sup>1</sup>	Tot. Value/ Paid-In (TVPI) <sup>2</sup>	Net IRR Since Inception <sup>4</sup>	IRR Date
2013	Portfolio Advisors Credit Strategies Fund	\$12,341,077	\$11,250,000	\$11,250,000	100%	\$0	\$897,720	\$12,341,077	8.0%	117.7%	7.4%	12/31/20
2017	Crescent Direct Lending Levered Fund II	\$4,808,535	\$7,000,000	\$5,707,507	82%	\$1,292,493	\$2,365,467	\$5,756,697	41.4%	125.7%	8.7%	12/31/20
2017	Audax Direct Lending Fund A	\$4,122,588	\$7,000,000	\$4,247,494	61%	\$2,752,506	\$775,975	¢0,700,007 NA	18.3%	115.3%	NM <sup>6</sup>	NM <sup>6</sup>
2018	Ares Capital Europe IV	\$6,861,476	\$8,000,000	\$6,407,973	80%	\$1,592,027	\$638,111	NA	10.0%	117.0%	NM <sup>7</sup>	NM <sup>7</sup>
2010	Lone Star Fund XI	\$219,753	\$5,750,000	\$548,644	10%	\$5,201,356	\$103,177	NA	18.8%	58.9%	NA	NA
2019	Ascribe Opportunities IV	-\$10,655	\$6,000,000	\$0,044	0%	\$6,000,000	\$0	NA	NA	NA	NA	NA
2010	Sixth Street Diversified Credit	\$7,130,604	\$20,000,000	\$8,120,293	41%	\$11,879,707	\$1,172,709	NA	14.4%	102.3%	NA	NA
	Total Illiquid Private Credit	\$35,473,378	\$65,000,000	\$36,281,910	56%	\$28,718,090	\$5,953,159	\$18,097,774	49.9%	66.3%		
	% of Portfolio (Market Value)	3.2%					Management	Accrued	Admin	Interest	Other	Total
							Fee	<b>Carried Interest</b>	Fee	Expense	Expense	Expense⁵
					Portfolio Adv	visors CSF	\$0	\$0	\$0	\$0	\$0	\$0
					Crescent Dir	rect Lending II	\$47,308	\$20,874	\$3,840	\$0	\$0	\$72,022
					Audax Direc	t Lending A	\$24,011	\$0	\$0	\$0	\$44,297	\$68,308
					Ares Capital	Europe IV	\$21,779	\$26,922	\$7,527	\$28,378	\$0	\$84,606

<sup>1</sup>(DPI) is equal to (capital returned / capital called) \$93.098 \$47,796 \$11.367 \$28.378 \$44,297 \$224,936 <sup>2</sup>(TVPI) is equal to (market value + capital returned) / capital called

Ascribe Opportunities IV

Sixth Street Diversified Credit

Lone Star Fund XI

\$0

\$0

\$0

\$0

\$0

\$0

\$0

\$0

\$0

\$0

\$0

\$0

\$0

\$0

\$0

\$0

\$0

\$0

<sup>3</sup>Last known market value + capital calls - distributions (preliminary MV's as of 3/31/2021)

<sup>4</sup>Net IRR is calculated on the cash flows of all the limited partners of the fund and is net of all fees. Each IRR figure is provided by its respective manager.

<sup>5</sup>All fees and expenses are for 1Q 2021

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

<sup>7</sup>Given 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.

Portfolio Advisors first capital call issued 10/5/2017. Crescent Direct Lending first called 3/13/2018. Ares IV first called 8/13/2018. Audax Direct Lending first called 10/26/2018.



Vintage	Manager & Fund Name	Estimated 6/30 Market Value <sup>3</sup>	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value for IRR	Distrib./ Paid-In (DPI) <sup>1</sup>	Tot. Value/ Paid-In (TVPI) <sup>2</sup>	Net IRR Since Inception <sup>5</sup>	IRR Date
2010	KKR Mezzanine <sup>6</sup>	\$2,388,164	\$10,000,000	\$10,000,000	100%	\$0	\$13,493,513	\$2,387,789	134.9%	158.8%	6.6%	3/31/21
2011	PIMCO BRAVO <sup>4</sup>	\$13,942	\$10,000,000	\$10,000,000	100%	\$0	\$18,133,166	\$69,502	181.3%	181.5%	22.2%	3/31/21
2020	TSSP Adjacent Opportunities Partners	\$15,629,191	\$40,000,000	\$13,598,283	34%	\$26,401,717	\$1,898,648	NA	14.0%	128.9%	NA	NA
	Total Illiquid Opportunistic	\$18,031,297	\$60,000,000	\$33,598,283	56%	\$26,401,717	\$33,525,327	\$2,457,291	7.3%	107.1%		
	% of Portfolio (Market Value)	1.6%					Management	Accrued	Admin	Interest	Other	Total
	% of Portfolio (Market Value)	1.6%					Management Fee	Accrued Carried Interest	Admin Fee	Interest Expense	Other Expense	Total Expense <sup>7</sup>
	% of Portfolio (Market Value)	1.6%		l	KKR Mezzanine PIMCO BRAVO							-
	% of Portfolio (Market Value)	1.6%			PIMCO BRAVO	pportunities Partners	<b>Fee</b> \$3,391	Carried Interest	<b>Fee</b> \$0	Expense \$0	Expense \$4,921	Expense <sup>7</sup> \$8,312

<sup>1</sup>(DPI) is equal to (capital returned / capital called)

 $^{2}(\ensuremath{\mathsf{TVPI}})$  is equal to (market value + capital returned) / capital called

<sup>3</sup>Last known market value + capital calls - distributions (preliminary MV's as of 3/31/2021)

<sup>4</sup>Investment period ended, no further capital to be called.

<sup>5</sup>Net IRR is calculated on the cash flows of all the limited partners of the fund and is net of all fees. Each IRR figure is provided by its respective manager.

<sup>6</sup>KKR: Total capital called is \$12,653,625, which includes recycled distributions. Unused capital commitment is \$839,888 after including distribution proceeds available for reinvestment

<sup>7</sup>All fees and expenses are for 1Q 2021



## Total Fund Cash Flow by Manager (Last Three Months)

	Beginning Market Value	Contributions	Withdrawals	Net Cash Flow	Capital Appreciation	Income	Ending Market Value
BlackRock Russell 3000	\$361,126,776	\$0	-\$4,452,535	-\$4,452,535	\$29,667,343	\$0	\$386,341,584
BlackRock International Equity	\$151,430,882	\$0	\$0	\$0	\$8,032,504	\$0	\$159,463,386
DFA Emerging Markets Value	\$25,853,639	\$0	\$0	\$0	\$1,780,036	\$0	\$27,633,674
Harding Loevner Emerging Markets	\$27,021,419	\$0	\$0	\$0	\$1,395,224	\$0	\$28,416,643
Ducenta Squared	\$109,768,947	\$0	\$0	\$0	\$2,559,158	\$0	\$112,328,104
MacKay Shields Core Plus Opportunities	\$108,931,186	\$0	\$0	\$0	\$2,822,508	\$0	\$111,753,694
BlackRock US TIPS	\$50,201,970	\$0	\$0	\$0	\$1,637,139	\$0	\$51,839,109
ASB Real Estate	\$28,675,365	\$0	-\$1,095,653	-\$1,095,653	\$0	\$0	\$27,579,712
Clarion Lion	\$28,672,097	\$194,551	-\$1,539,264	-\$1,344,713	\$1,601,047	\$0	\$28,928,431
ARA American Strategic Value Realty	\$39,156,575	\$935,000	\$0	\$935,000	\$1,674,345	\$0	\$41,765,920
1221 State St. Corp	\$1,965,351	\$44,746	-\$64,917	-\$20,171	\$0	\$11	\$1,945,192
Harbourvest Buyout IX	\$8,123,095	\$0	-\$534,716	-\$534,716	\$767,733	\$0	\$8,356,112
Harbourvest Credit Ops IX	\$1,106,760	\$0	-\$105,703	-\$105,703	\$90,571	\$0	\$1,091,628
Harbourvest International PE VI	\$2,964,623	\$0	-\$136,455	-\$136,455	\$429,638	\$0	\$3,257,806
Harbourvest Venture IX	\$6,596,022	\$0	-\$761,910	-\$761,910	\$930,490	\$0	\$6,764,602
Harbourvest 2017 Global Fund	\$23,591,454	\$0	\$0	\$0	\$2,395,586	\$0	\$25,987,040
Harbourvest 2018 Global Fund	\$13,388,387	\$0	-\$208,161	-\$208,161	\$1,239,347	\$0	\$14,419,573
Harbourvest 2019 Global Fund	\$9,487,244	\$517,535	\$0	\$517,535	\$849,600	\$0	\$10,854,379
Portfolio Advisors Credit Strategies Fund	\$12,561,483	\$0	-\$220,406	-\$220,406	\$0	\$0	\$12,341,077
Crescent Direct Lending Levered Fund II	\$4,651,897	\$626,006	-\$469,368	\$156,638	\$0	\$0	\$4,808,535
Audax Direct Lending Fund A	\$3,233,816	\$997,197	-\$293,196	\$704,001	\$184,771	\$0	\$4,122,588
Ares Capital Europe IV	\$6,812,119	\$0	-\$127,087	-\$127,087	\$176,444	\$0	\$6,861,476
Lone Star XI	\$191,647	\$28,107	\$0	\$28,107	\$0	\$0	\$219,753
Sixth Street Diversified Credit	\$6,079,235	\$910,644	\$0	\$910,644	\$140,725	\$0	\$7,130,604
Ascribe Opportunities Fund IV	-\$10,655	\$0	\$0	\$0	\$0	\$0	-\$10,655
KKR Mezzanine Partners	\$2,389,220	\$0	-\$20,657	-\$20,657	\$19,601	\$0	\$2,388,164
PIMCO BRAVO	\$18,500	\$0	\$0	\$0	-\$4,558	\$0	\$13,942
TSSP Adjacent Opportunities Partners	\$11,828,068	\$4,062,101	\$0	\$4,062,101	-\$260,979	\$0	\$15,629,190
Cash Account	\$6,996,616	\$24,480	-\$3,992,537	-\$3,968,056	\$0	\$0	\$3,028,559
Total	\$1,052,813,738	\$8,340,367	-\$14,022,565	-\$5,682,198	\$58,128,272	\$11	\$1,105,259,823

ASB, Harbourvest, Portfolio Advisors, Ares, Audax, PIMCO Bravo, KKR Mezzanine, Sixth Street, and TSSP Adjacent Opportunities market values as of 3/31/2021 +/- 2Q21 calls/distributions.



### Total Fund Asset Allocation History



#### Market Value History



## Total Fund Asset Allocation vs. Policy

### Period Ending: June 30, 2021





### Total Fund Investment Fee Analysis

Account	Fee Schedule	Market Value As of 6/30/2021	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
1221 State St. Corp	No Fee	\$1,945,192	0.2%		
ARA American Strategic Value Realty	1.25% of First 10.0 Mil, 1.20% of Next 15.0 Mil, 1.10% of Next 25.0 Mil, 1.00% Thereafter	\$41,765,920	3.8%	\$489,425	1.17%
ASB Real Estate	1.25% of First 5.0 Mil, 1.00% of Next 10.0 Mil, 0.75% Thereafter	\$27,579,712	2.5%	\$256,848	0.93%
Ascribe Opportunities Fund IV	No Fee	-\$10,655	0.0%		
BlackRock International Equity	0.15% of First 50.0 Mil, 0.10% of Next 50.0 Mil	\$159,463,386	14.6%	\$125,000	0.08%
BlackRock Russell 3000	0.03% of Assets	\$386,341,584	35.5%	\$115,902	0.03%
BlackRock US TIPS	0.07% of Assets	\$51,839,109	4.8%	\$36,287	0.07%
Cash Account	No Fee	\$3,028,559	0.3%		
Clarion Lion	No Fee	\$28,928,431	2.7%		
DFA Emerging Markets Value	0.41% of Assets	\$27,633,674	2.5%	\$113,298	0.41%
Ducenta Squared	0.29% of First 100.0 Mil, 0.25% of Next 100.0 Mil	\$112,328,104	10.3%	\$315,820	0.28%
Harbourvest 2017 Global Fund	262,500 Annually	\$25,987,040	2.4%	\$262,500	1.01%
Harbourvest 2018 Global Fund	138,000 Annually	\$14,419,573	1.3%	\$138,000	0.96%
Harbourvest 2019 Global Fund	0.45% of Assets	\$10,854,379	1.0%	\$48,845	0.45%
Harbourvest Buyout IX	100,000 Annually	\$8,356,112	0.8%	\$100,000	1.20%
Harbourvest Credit Ops IX	20,000 Annually	\$1,091,628	0.1%	\$20,000	1.83%
Harbourvest International PE VI	35,000 Annually	\$3,257,806	0.3%	\$35,000	1.07%
Harbourvest Venture IX	40,000 Annually	\$6,764,602	0.6%	\$40,000	0.59%
Harding Loevner Emerging Markets	1.05% of Assets	\$28,416,643	2.6%	\$298,375	1.05%
KKR Mezzanine Partners	150,000 Annually	\$2,388,164	0.2%	\$150,000	6.28%
MacKay Shields Core Plus Opportunities	0.35% of Assets	\$111,753,694	10.3%	\$391,138	0.35%
PIMCO BRAVO	1.90% of Assets	\$13,942	0.0%	\$265	1.90%
Portfolio Advisors Credit Strategies Fund	180,000 Annually	\$12,341,077	1.1%	\$180,000	1.46%
Sixth Street Diversified Credit	No Fee	\$7,130,604	0.7%		
TSSP Adjacent Opportunities Partners	No Fee	\$15,629,190	1.4%		
Investment Management Fee		\$1,089,247,471	100.0%	\$3,116,703	0.29%

\*HarbourVest, KKR and PIMCO BRAVO fees are estimated gross management fees only and do not include incentive allocations or offsetting cash flows received by the fund.

\*HarbourVest International Private Equity VI fees are based on committed Euros, actual US Dollar amount will fluctuate based on exchange rates.

\*Verus advisory fee shown for disclosure purposes only and is not included in total investment management fee calculations.

\*Portfolio Advisors fee is 0.20% on committed capital and 1.00% on invested capital.

\*Total fund market value excludes other investments managed by Portfolio Advisors.

\*HarbourVest funds annual fee amounts calculated by applying the average annual fee charged to each fund over its expected lifecycle by its respective capital commitment.

Verus<sup>77</sup>



Total Fund Cumulative Performance vs. InvMetrics Public DB Net

	Return (Ra	ank)														
5th Percentile	6.3		10.9		31.4		31.4		13.9		12.8		9.7		10.1	
25th Percentile	5.8		9.6		28.7		28.7		12.6		11.8		8.8		9.1	
Median	5.3		8.8		26.7		26.7		11.6		11.0		8.3		8.5	
75th Percentile	4.7		7.9		24.4		24.4		10.5		10.1		7.5		8.0	
95th Percentile	3.9		6.4		20.7		20.7		9.0		8.8		6.3		6.8	
# of Portfolios	473		471		468		468		455		437		395		350	
Total Fund	5.5	(39)	9.4	(30)	26.7	(50)	26.7	(50)	11.4	(53)	10.9	(55)	8.0	(60)	8.3	(61)
Policy Index	5.3	(49)	8.2	(64)	24.6	(74)	24.6	(74)	11.8	(44)	11.2	(46)	<mark>8</mark> .1	(54)	8.3	(61)





Total Fund Consecutive Periods vs. InvMetrics Public DB Net

	Return (Rank	)								
5th Percentile	17.9	22.6	-1.7	17.5	9.0	1.7	7.7	20.4	14.3	3.6
25th Percentile	15.3	20.8	-3.4	15.8	8.1	0.4	6.4	17.2	12.9	1.6
Median	13.0	19.5	-4.4	14.7	7.4	-0.4	5.5	14.9	11.8	0.6
75th Percentile	11.0	17.6	-5.2	13.6	6.6	-1.5	4.4	12.7	10.4	-0.5
95th Percentile	7.5	15.1	-6.5	11.1	5.0	-3.2	2.7	8.4	7.6	-3.1
# of Portfolios	596	550	496	269	269	262	210	191	159	137
Total Fund	12.3 (59)	17.9 (73)	-4.1 (43)	16.0 (22)	7.4 (49)	-0.4 (51)	4.4 (77)	14.5 (55)	14.2 (6)	-1.5 (86)
Policy Index	13.2 (49)	18.0 (70)	-2.8 (14)	15.9 (24)	8.3 (22)	-1.2 (72)	4.9 (64)	13.5 (69)	11.2 (63)	0.4 (57)



#### Rolling 3 Year Annualized Excess Performance





### Total Domestic Equity Asset Class Overview (Net of Fees)

Period Ending: June 30, 2021

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2020	2019	2018	2017	2016
Total Domestic Equity	386,341,584	8.2	15.1	44.2	44.2	18.8	17.9	14.5	21.0	31.1	-5.2	21.2	12.8
Russell 3000		8.2	15.1	44.2	44.2	18.7	17.9	14.7	20.9	31.0	-5.2	21.1	12.7
eV US All Cap Core Equity Net Rank		38	58	44	44	33	27	25	43	42	40	42	20
BlackRock Russell 3000	386,341,584	8.2	15.1	44.2	44.2	18.8	17.9		21.0	31.1	-5.2	21.2	12.8
Russell 3000		8.2	15.1	44.2	44.2	18.7	17.9		20.9	31.0	-5.2	21.1	12.7
eV US All Cap Core Equity Net Rank		38	58	44	44	33	27		43	42	40	42	20

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#### U.S. Effective Style Map 3 Years Ending June 30, 2021

#### U.S. Effective Style Map 5 Years Ending June 30, 2021





### Total International Equity Asset Class Overview (Net of Fees)

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2020	2019	2018	2017	2016
Total International Equity	215,513,703	5.4	10.1	36.8	36.8	8.5	10.7	5.1	8.1	20.7	-14.3	27.9	4.4
MSCI ACWI ex USA Gross		5.6	9.4	36.3	36.3	9.9	11.6	5.9	11.1	22.1	-13.8	27.8	5.0
InvMetrics Public DB ex-US Eq Net Rank		63	21	58	58	84	81	96	93	84	29	55	48
BlackRock International Equity	159,463,386	5.3	9.1	32.7	32.7	8.6	10.6	6.1	8.1	22.4	-13.5	25.4	1.3
MSCI EAFE		5.2	8.8	32.4	32.4	8.3	10.3	5.9	7.8	22.0	-13.8	25.0	1.0
eV All EAFE Equity Net Rank		51	60	66	66	49	51	70	49	47	33	60	37
DFA Emerging Markets Value	27,633,674	6.9	15.8	46.8	46.8	7.4	10.8	2.2	2.8	9.6	-11.9	33.8	19.8
MSCI Emerging Markets Value NR		5.7	10.0	41.6	41.6	7.8	9.7	1.8	5.5	12.0	-10.7	28.1	14.9
eV Emg Mkts All Cap Value Equity Net Rank		16	9	30	30	84	69	99	81	98	20	49	22
Harding Loevner Emerging Markets	28,416,643	4.9	6.4	41.8	41.8	8.0			12.4	24.0	-19.5	33.6	
MSCI Emerging Markets Growth GR		4.5	5.1	40.3	40.3	14.7			31.6	25.4	-18.0	47.1	
eV Emg Mkts All Cap Growth Equity Net Rank		47	44	58	58	99			99	61	73	89	

#### MSCI Effective Style Map 3 Years Ending Jun 30, 2021



#### MSCI Effective Style Map 5 Years Ending Jun 30, 2021





BlackRock International Equity vs. eV All EAFE Equity Net Universe

	Return (R	ank)														
5th Percentile	8.7		16.7		55.2		55.2		15.2		16.7		10.3		10.6	
25th Percentile	6.5		12.2		40.8		40.8		10.6		12.8		7.6		8.5	
Median	5.4		9.8		35.6		35.6		8.4		10.7		6.0		6.9	
75th Percentile	4.2		7.4		31.1		31.1		6.2		9.2		4.6		6.0	
95th Percentile	2.3		4.1		25.0		25.0		3.1		6.6		2.6		3.6	
# of Portfolios	233		233		233		233		223		208		177		143	
BlackRock International Equity	5.3	(51)	9.1	(60)	32.7	(66)	32.7	(66)	8.6	(49)	10.6	(51)	5.2	(60)	6.1	(70)
MSCI EAFE	5.2	(56)	8.8	(66)	32.4	(70)	32.4	(70)	8.3	(55)	10.3	(57)	5.0	(68)	5.9	(79)



### BlackRock International Equity Consecutive Performance Comparison (Net of Fees)



BlackRock International Equity vs. eV All EAFE Equity Net Universe

	Return (Ran	ik)								
5th Percentile	29.8	31.9	-9.0	39.6	7.1	11.2	2.6	33.6	29.3	-6.9
25th Percentile	14.0	25.7	-12.7	31.3	2.6	4.7	-2.4	28.2	22.1	-9.7
Median	8.0	22.1	-15.8	26.6	0.6	1.2	-4.3	24.5	18.9	-12.6
75th Percentile	4.0	19.1	-18.6	23.4	-1.5	-1.6	-6.0	20.8	16.9	-15.4
95th Percentile	-2.6	14.7	-23.1	18.6	-5.0	-5.5	-9.1	14.3	12.5	-19.4
# of Portfolios	255	255	243	232	215	188	164	151	144	129
<ul> <li>BlackRock International Equity</li> </ul>	8.1 (49)	22.4 (47	') -13.5 (33)	25.4 (60)	1.3 (37)	-0.6 (65)	-4.8 (58)	22.9 (63)	17.6 (69)	-11.9 (43)
▲ MSCI EAFE	7.8 (53)	22.0 (52	2) -13.8 (37)	25.0 (64)	1.0 (44)	-0.8 (67)	-4.9 (60)	22.8 (64)	17.3 (72)	-12.1 (45)


## BlackRock International Equity Risk vs Return Three & Five Year (Net of Fees)



# 3 Years Ending June 30, 2021

Annualized Return vs. Annualized Standard Deviation

Annualized Return vs. Annualized Standard Deviation 5 Years Ending June 30, 2021



- BlackRock International Equity
- MSCI EAFE
- Universe Median
- 68% Confidence Interval
- eV All EAFE Equity Net  $^{\circ}$





DFA Emerging Markets Value vs. eV Emg Mkts All Cap Value Equity Net Universe

	Return (R	ank)														
5th Percentile	8.2		20.1		59.2		59.2		13.7		15.6		8.1		5.2	
25th Percentile	6.0		12.4		48.4		48.4		12.4		13.8		7.1		5.0	
Median	4.2		9.4		44.3		44.3		10.7		12.6		5.8		4.7	
75th Percentile	2.5		7.6		39.5		39.5		9.2		10.4		4.7		3.1	
95th Percentile	0.3		2.4		29.7		29.7		5.4		7.5		2.0		2.4	
# of Portfolios	22		22		22		22		18		16		12		9	
DFA Emerging Markets Value	6.9	(16)	15.8	(9)	46.8	(30)	46.8	(30)	7.4	(84)	10.8	(69)	4.3	(79)	2.2	(99)
MSCI Emerging Markets Value NR	5.7	(36)	10.0	(43)	41.6	(65)	41.6	(65)	7.8	(82)	9.7	(81)	3.3	(85)	1.8	(99)





#### DFA Emerging Markets Value vs. eV Emg Mkts All Cap Value Equity Net Universe

	Return (Ra	ank)								
5th Percentile	22.6	22.2	-9.4	42.6	25.1	-9.1	5.5	7.7	25.5	-8.5
25th Percentile	18.1	21.0	-12.3	37.2	18.2	-13.8	1.6	4.3	20.7	-17.0
Median	13.4	17.7	-14.0	33.1	15.1	-16.4	-1.6	0.6	15.6	-18.6
75th Percentile	5.4	14.4	-15.3	29.1	11.4	-19.0	-5.3	-3.6	14.8	-19.7
95th Percentile	-4.0	12.9	-19.2	26.9	7.2	-23.1	-12.1	-5.3	10.8	-22.7
# of Portfolios	24	22	25	22	22	20	18	16	11	11
DFA Emerging Markets Value	2.8 (8	1) 9.6 (9	8) -11.9 (20	0) 33.8 (49)	19.8 (22)	-18.8 (74)	-4.4 (73)	-3.8 (78)	19.4 (31)	-25.6 (99)
MSCI Emerging Markets Value NR	5.5 (7	4) 12.0 (9	7) -10.7 (15	5) 28.1 (87)	14.9 (52)	-18.6 (72)	-4.1 (72)	-5.1 (93)	15.9 (40)	-17.9 (38)



Verus<sup>77</sup>

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#### Annualized Return vs. Annualized Standard Deviation 3 Years Ending June 30, 2021

Annualized Return vs. Annualized Standard Deviation 5 Years Ending June 30, 2021

Imperial County Employees' Retirement System

#### Rolling 3 Year Annualized Excess Performance





## Total Fixed Income Asset Class Overview (Net of Fees)

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2020	2019	2018	2017	2016
Total Fixed Income	275,920,908	2.6	-0.3	3.5	3.5	6.4	4.2	4.1	9.8	9.5	-0.8	4.3	4.8
BBgBarc US Aggregate TR		1.8	-1.6	-0.3	-0.3	5.3	3.0	3.4	7.5	8.7	0.0	3.5	2.6
InvMetrics Public DB Total Fix Inc Net Rank		10	40	51	51	11	43	41	8	32	59	62	43
Ducenta Squared	112,328,104	2.3	-1.0	2.1	2.1	6.3	4.1	4.4	9.1	9.9	-0.1	4.3	4.8
BBgBarc US Aggregate TR		1.8	-1.6	-0.3	-0.3	5.3	3.0	3.4	7.5	8.7	0.0	3.5	2.6
eV US Core Plus Fixed Inc Net Rank		35	68	72	72	47	49	40	34	45	23	74	41
MacKay Shields Core Plus Opportunities	111,753,694	2.6	-0.6	3.6	3.6	6.5	4.2		9.9	9.7	-1.0	4.5	4.7
BBgBarc US Aggregate TR		1.8	-1.6	-0.3	-0.3	5.3	3.0		7.5	8.7	0.0	3.5	2.6
eV US Core Plus Fixed Inc Net Rank		12	49	40	40	36	44		23	54	75	62	47
BlackRock US TIPS	51,839,109	3.2	1.7	6.5	6.5	6.6	4.3	3.5	11.2	8.5	-1.2	3.2	4.8
BBgBarc US TIPS TR		3.2	1.7	6.5	6.5	6.5	4.2	3.4	11.0	8.4	-1.3	3.0	4.7
eV US TIPS / Inflation Fixed Inc Net Rank		45	71	72	72	44	54	27	31	53	36	47	43

#### Fixed Income Style Map 3 Years Ending June 30, 2021

Corp.		Govt.
Bonds	Ducenta Squared	Bonds
MacKay Shields Core Plus Opport		
BlackRock	JS TIPS Total Fixed Incom	e
Mort	ages	

#### Fixed Income Style Map 5 Years Ending June 30, 2021





## Total Fixed Income Asset Class Overview (Net of Fees)

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2020	2019	2018	2017	2016
Total Fixed Income	275,920,908	2.6	-0.3	3.5	3.5	6.4	4.2	4.1	9.8	9.5	-0.8	4.3	4.8
BBgBarc US Aggregate TR		1.8	-1.6	-0.3	-0.3	5.3	3.0	3.4	7.5	8.7	0.0	3.5	2.6
Ducenta Squared	112,328,104	2.3	-1.0	2.1	2.1	6.3	4.1	4.4	9.1	9.9	-0.1	4.3	4.8
BBgBarc US Aggregate TR		1.8	-1.6	-0.3	-0.3	5.3	3.0	3.4	7.5	8.7	0.0	3.5	2.6
MacKay Shields Core Plus Opportunities	111,753,694	2.6	-0.6	3.6	3.6	6.5	4.2		9.9	9.7	-1.0	4.5	4.7
BBgBarc US Aggregate TR		1.8	-1.6	-0.3	-0.3	5.3	3.0		7.5	8.7	0.0	3.5	2.6
BlackRock US TIPS	51,839,109	3.2	1.7	6.5	6.5	6.6	4.3	3.5	11.2	8.5	-1.2	3.2	4.8
BBgBarc US TIPS TR		3.2	1.7	6.5	6.5	6.5	4.2	3.4	11.0	8.4	-1.3	3.0	4.7

#### Correlation Matrix Last 5 Years

	Total Fixed Income	Ducenta Squared	MacKay Shields Core Plus Opportunities	BlackRock US TIPS	BBgBarc US Aggregate TR	
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	0.90	0.87	0.86	1.00		
BBgBarc US Aggregate TR	0.88	0.92	0.83	0.77	1.00	



## Ducenta Squared Cumulative Performance Comparison (Net of Fees)



Ducenta Squared vs. eV US Core Plus Fixed Inc Net Universe

	Return (R	ank)														
5th Percentile	2.9		0.9		7.0		7.0		7.4		5.1		4.6		5.0	
25th Percentile	2.4		-0.1		4.0		4.0		6.7		4.5		4.2		4.7	
Median	2.2		-0.6		3.1		3.1		6.2		4.0		3.9		4.3	
75th Percentile	2.0		-1.1		2.0		2.0		5.8		3.8		3.5		3.9	
95th Percentile	1.5		-1.5		1.0		1.0		4.9		3.3		3.0		3.6	
# of Portfolios	87		87		87		87		82		79		75		70	
<ul> <li>Ducenta Squared</li> </ul>	2.3	(35)	-1.0	(68)	2.1	(72)	2.1	(72)	6.3	(47)	4.1	(49)	4.1	(30)	4.4	(40)
BBgBarc US Aggregate TR	1.8	(86)	-1.6	(96)	-0.3	(99)	-0.3	(99)	5.3	(89)	3.0	(99)	3.3	(85)	3.4	(97)



## Ducenta Squared Consecutive Performance Comparison (Net of Fees)



#### Ducenta Squared vs. eV US Core Plus Fixed Inc Net Universe

	Return (Rar	nk)								
5th Percentile	12.7	11.9	1.3	6.5	9.7	1.4	7.4	3.9	13.0	8.2
25th Percentile	9.6	10.6	-0.2	5.2	5.8	0.5	6.2	0.4	10.1	7.7
Median	8.4	9.8	-0.6	4.7	4.6	-0.1	5.5	-0.8	8.6	6.7
75th Percentile	7.9	9.1	-1.0	4.2	3.7	-0.8	4.7	-1.2	6.9	5.6
95th Percentile	6.6	7.6	-1.7	3.5	2.5	-2.4	3.6	-2.0	4.9	3.0
# of Portfolios	89	86	77	80	84	71	71	65	64	54
<ul> <li>Ducenta Squared</li> </ul>	9.1 (34	) 9.9 (45)	-0.1 (23)	4.3 (74)	4.8 (41)	0.9 (12)	6.7 (17)	-0.8 (53)	8.5 (54)	7.1 (40)
BBgBarc US Aggregate TR	7.5 (84	) 8.7 (85	0.0 (21)	3.5 (95)	2.6 (93)	0.6 (22)	6.0 (35)	-2.0 (96)	4.2 (96)	7.8 (17)



## Ducenta Squared Risk vs Return Three & Five Year (Net of Fees)





Annualized Return vs. Annualized Standard Deviation 5 Years Ending June 30, 2021



## Ducenta Squared Rolling Return Analysis (Net of Fees)

#### Rolling 3 Year Annualized Excess Performance





## BlackRock US TIPS Cumulative Performance Comparison (Net of Fees)



BlackRock US TIPS vs. eV US TIPS / Inflation Fixed Inc Net Universe

	Return (R	ank)														
5th Percentile	4.8		4.0		12.7		12.7		9.1		5.8		4.6		4.9	
25th Percentile	3.4		2.4		7.8		7.8		6.8		4.8		3.6		3.5	
Median	3.1		1.9		7.2		7.2		6.5		4.4		3.3		3.3	
75th Percentile	2.2		1.6		6.3		6.3		6.3		4.0		3.0		2.9	
95th Percentile	1.7		0.8		6.0		6.0		5.0		3.3		2.1		1.9	
# of Portfolios	16		16		16		16		15		15		14		12	
BlackRock US TIPS	3.2	(45)	1.7	(71)	6.5	(72)	6.5	(72)	6.6	(44)	4.3	(54)	3.4	(30)	3.5	(27)
BBgBarc US TIPS TR	3.2	(45)	1./	(69)	6.5	(72)	6.5	(72)	6.5	(47)	4.2	(63)	3.3	(37)	3.4	(41)





#### BlackRock US TIPS vs. eV US TIPS / Inflation Fixed Inc Net Universe

	Return (Ran	k)								
5th Percentile	16.6	10.7	-0.1	4.4	7.8	-0.6	4.7	-5.6	13.5	16.8
25th Percentile	11.6	8.7	-0.9	3.5	5.1	-1.2	3.8	-8.4	8.4	14.1
Median	10.6	8.5	-1.4	3.1	4.6	-1.6	3.3	-8.8	7.2	13.4
75th Percentile	9.7	6.6	-2.0	2.8	3.9	-2.2	1.2	-9.1	6.6	12.4
95th Percentile	6.3	5.4	-4.3	1.7	2.5	-5.7	0.0	-13.3	4.8	8.9
# of Portfolios	17	19	21	20	22	22	24	19	17	16
<ul> <li>BlackRock US TIPS</li> </ul>	11.2 (31)	8.5 (53)	-1.2 (36)	3.2 (47)	4.8 (43)	-1.3 (30)	3.6 (39)	-8.6 (44)	7.0 (61)	13.6 (38)
BBgBarc US TIPS TR	11.0 (37)	8.4 (54)	-1.3 (39)	3.0 (57)	4.7 (49)	-1.4 (33)	3.6 (37)	-8.6 (44)	7.0 (62)	13.6 (40)



## BlackRock US TIPS Risk vs Return Three & Five Year (Net of Fees)





## BlackRock US TIPS Rolling Return Analysis (Net of Fees)

#### Rolling 3 Year Annualized Excess Performance





## Total Real Estate Asset Class Overview (Net of Fees)

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2020	2019	2018	2017	2016
Total Real Estate	100,219,255	3.4	5.6	7.3	7.3	5.6	5.9	8.7	2.1	5.7	7.5	5.8	6.5
NCREIF Property Index		3.6	5.4	7.4	7.4	5.5	6.1	8.8	1.6	6.4	6.7	7.0	8.0
NCREIF ODCE Net		3.7	5.7	7.2	7.2	4.6	5.6	8.6	0.3	4.4	7.4	6.7	7.8
ASB Real Estate	27,579,712	0.0	2.2	3.0	3.0	3.2	3.9		1.5	3.0	6.6	4.0	4.6
NCREIF Property Index		3.6	5.4	7.4	7.4	5.5	6.1		1.6	6.4	6.7	7.0	8.0
NCREIF ODCE Net		3.7	5.7	7.2	7.2	4.6	5.6		0.3	4.4	7.4	6.7	7.8
Clarion Lion	28,928,431	5.6	8.0	10.9	10.9	6.9	7.3	9.6	2.3	6.8	8.6	7.9	8.0
NCREIF Property Index		3.6	5.4	7.4	7.4	5.5	6.1	8.8	1.6	6.4	6.7	7.0	8.0
NCREIF ODCE Net		3.7	5.7	7.2	7.2	4.6	5.6	8.6	0.3	4.4	7.4	6.7	7.8
ARA American Strategic Value Realty	41,765,920	4.3	6.6	8.2	8.2	6.8			2.4	7.8			
NCREIF Property Index +2%		4.1	6.4	9.5	9.5	7.6			3.6	8.5			
NCREIF ODCE +2%		4.4	7.2	10.2	10.2	7.4			3.2	7.4			
1221 State St. Corp	1,945,192	0.0	0.0	0.0	0.0	2.6	4.9	1.1	0.0	7.9	0.0	0.0	17.5

Property Type Allocation Allocation as of June 30, 2021







ARA American Strategic Value Realty funded 1/4/2018.

#### **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 <sup>1</sup>	HarbourVest
Harding Loevner	7/5/2016	Harding Loevner	HarbourVest IX-Credit	2011 <sup>1</sup>	HarbourVest
Bradford & Marzec Fixed (Tortoise Capital)	12/1/1992	J.P. Morgan	HarbourVest International VI	2008 <sup>1</sup>	HarbourVest
MacKay Shields Core Plus Ops	3/2/2015	CITCO	Harbourvest IX-Venture	2011 <sup>1</sup>	HarbourVest
BlackRock US TIPS	4/11/2007	J.P. Morgan	Harbourvest 2017 Global	2017 <sup>1</sup>	HarbourVest
ASB Real Estate	12/31/2012	ASB Real Estate	Harbourvest 2018 Global	2018 <sup>1</sup>	HarbourVest
Clarion Lion	12/31/2006	Clarion Lion	Harbourvest 2019 Global	2019 <sup>1</sup>	HarbourVest
Portfolio Advisors	10/31/2017	Portfolio Advisors	KKR Mezzanine	2010 <sup>1</sup>	KKR
TSSP Adjacent Opportunities Partners	4/16/2020	Sixth Street	PIMCO BRAVO	2011 <sup>1</sup>	PIMCO
Sixth Street Diversified Credit	5/29/2020	Sixth Street	ARA American Strategic Value Realty	01/04/2018	ARA

<sup>1</sup>Represents fund vintage year.

#### Policy & Custom Index Composition

Policy Index (8/1/2020- Current)	33% Russell 3000, 20% MSCI ACWI ex USA Gross, 27% BBgBarc Aggregate, 10% NCREIF Property, 2%BBgBarc 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% BBgBarc Aggregate, 10% NCREIF Property,1% Russell 3000, 2%BBgBarc 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% BBgBarc Aggregate, 10% NCREIF Property, 5% Russell 3000 +3% (Lagged), 5% BBgBarc High Yield +2% (Lagged).
Policy Index (10/1/2016-9/30/2018)	29% Russell 3000, 24% MSCI ACWI ex USA Gross, 27% BBgBarc Aggregate, 5% NCREIF Property, 5% NCREIF Property +2%, 5% Russell 3000 +3% (Lagged), 5% BBgBarc 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 the exact opposite direction over time. Correlation is used as a measure to help maximize the benefits of diversification when constructing an investment portfolio.

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

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

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

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

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

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

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

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

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

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

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

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

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