

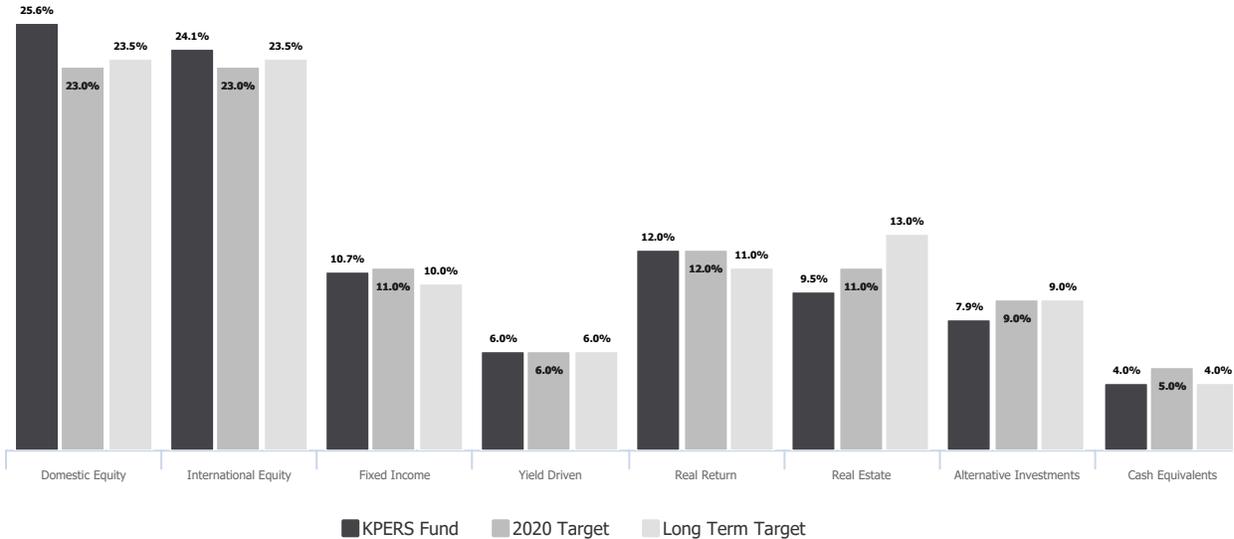
INVESTMENT  
SECTION



# CHIEF INVESTMENT OFFICER’S REVIEW

The Kansas Public Employees Retirement System investment portfolio represents all contributions to the plan, from both members and their employers, as well as net earnings on these assets. Total assets at the end of Fiscal Year 2020 were \$20.2 billion. The System’s investment portfolio is managed for the long term, in order to generate adequate returns to pay the

benefits promised to members. In order to achieve that goal, the assets receive the benefit of a broadly diversified investment portfolio which includes domestic and non-U.S. stocks, bonds, real estate, timber, infrastructure, alternative investments, and cash equivalents.



## BASIS OF PRESENTATION

The investment performance data is calculated by the Retirement System’s custodial bank and prepared by the Retirement System’s Investment Division staff. In Fiscal Year 2020, the System’s custodial bank was State Street Bank and Trust. Performance calculations were prepared using time-weighted rates of return, gross of fees, unless otherwise indicated.

## ASSET ALLOCATION

Portfolio investments are diversified among eight different asset classes for asset allocation and investment performance purposes, including: domestic equity; international (non-U.S.) equity; fixed income; “yield driven” assets; “real return” assets; real estate; alternative investments; and cash equivalents. (NOTE: For financial reporting purposes, as reported in the Financial Section and the Investment Summary in the Investment Section, investments are categorized by the underlying security.)

The Board of Trustees, working with the System’s general investment consultant, Meketa Investment Group (MIG) and investment staff, completed an asset/liability study in January 2020. The Board reviewed several investment policy options during the asset/liability study, all of which contained an emphasis on improving funding progress over time. At the

conclusion of the asset/liability study, the Board adopted a new set of long-term asset allocation targets. (The long-term asset allocation targets are reflected in the chart above.) The risk philosophy implied by the asset allocation policy targets places significant emphasis on managing and improving the funded status of the Retirement System over time. The new long-term asset allocation targets include a significant reduction in the yield driven asset class, and increases in the target allocations for private equity and real estate.

The allocation to equity investments (primarily publicly-traded stocks) continues to comprise the largest portion of the Retirement System’s investment portfolio. This allocation reflects the System’s long-term investment orientation and the expectation that equities will provide attractive real returns over time. Equity investments allow the investment portfolio to participate in the investment returns produced by companies seeking to grow and profit from their business activities. Equity investments are made globally, sourcing investment return from both domestic and foreign companies, and diversifying the accompanying investment risk across a broad spectrum of economies, currencies, economic sectors, and industries. Fixed income investments are also an important component of the System’s asset mix. Due to its relatively low correlation with

equities, the fixed income portfolio serves to diversify the equity risk in the System’s investment portfolio.

The yield driven asset class is designed to house those assets which derive a significant part of their expected return from income and have moderate exposure to growth risk, but that also provide a degree of diversification. The yield driven asset class consists of the System’s strategic fixed income portfolios and investments in domestic Real Estate Investment Trusts (REITs).

The majority of the real return asset category is made up of Treasury Inflation Protected Securities (TIPS) and global inflation linked bonds (GILBs). These two portfolios are both managed passively. The real return asset class also houses the System’s investments in infrastructure and timber assets.

Real estate investments generate returns in a different manner than equities or fixed income investments, since real estate follows a different, and typically longer, market cycle. Because it moves in a different market cycle than publicly-traded stocks and bonds, real estate provides diversification advantages, as well as some inflation protection, to the investment portfolio. The System’s real estate portfolio is heavily weighted to “core” real estate, which means that it also produces an attractive current income.

The System’s alternative investments, which consist primarily of investments in private partnerships that make venture capital investments, pursue leveraged buyout strategies or own private debt, represent the higher end of the investment risk/return spectrum. Private equity managers pursue higher growth opportunities in pursuit of higher returns, with commensurate investment risk.

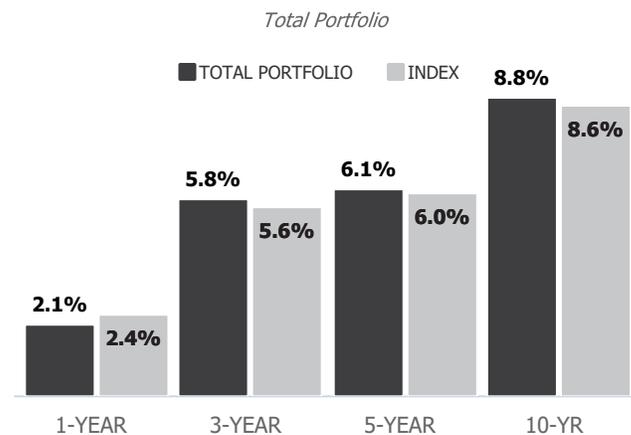
The System also holds cash equivalents investments, primarily to facilitate investment transactions and the cash flows needed to pay benefits. The cash equivalents portfolio is bifurcated, with a portion of the portfolio invested in a slightly longer duration strategy with daily liquidity, while the majority of the portfolio is invested as a short term investment fund (STIF).

**INVESTMENT POLICY**

The Board of Trustees has adopted a Statement of Investment Policy, Objectives and Guidelines (the Statement), which serves as a guide to the implementation of the System’s broad investment objectives. The Statement complements State statutes and documents the principles and standards that guide the management of the System’s assets. It is binding upon all persons with authority over the assets, including investment managers, custodians, consultants, staff and the members of the Board of Trustees. The Statement is the product of the Board’s careful and prudent study and is reviewed annually and updated as needed. It sets forth the investment policies, objectives and

guidelines that the Board of Trustees judges to be appropriate and prudent, in consideration of the needs of the System, and to comply with K.S.A. 74-4901 et seq., to direct the System’s assets. Although the System is not subject to the provisions of the Employee Retirement Income Security Act of 1974, as amended (ERISA), the Board intends to abide by the provisions of ERISA to the greatest extent practicable. As such, this Statement is written to be consistent with ERISA. Among other things, the Statement establishes the criteria against which the System’s investment managers are to be measured. In addition, it serves as a review document to guide ongoing oversight of the investment of the Fund as a yardstick of compliance with K.S.A 74-4901 et seq.

**TIME WEIGHTED TOTAL RETURN**



**FISCAL YEAR 2020 INVESTMENT PERFORMANCE**

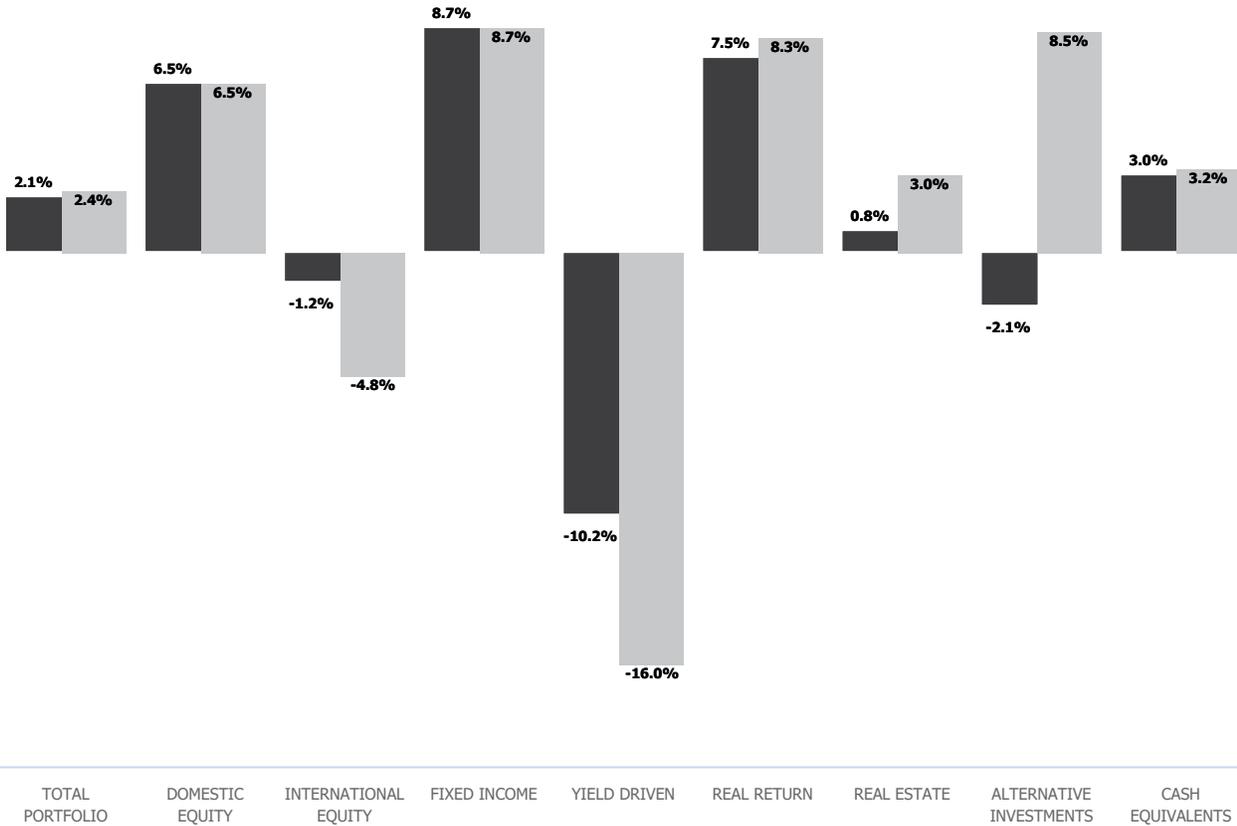
The Retirement System’s total investment portfolio experienced a 2.1 percent total return for the one year ending June 30, 2020. The 2.1 percent return underperformed the KPERS Policy Index by 0.3 percent for the fiscal year. For the three years ending June 30, 2020, the System’s total investment portfolio has produced an average annualized return of 5.8 percent, which outperformed the Policy Index by 0.2 percent. The System’s investment portfolio generated a 6.1 percent total return during the five years ending June 30, 2020, exceeding the Policy Index benchmark by 0.1 percent. For the ten-year period, total return has been 8.8 percent, and has exceeded the Policy Index by 0.2 percent.

For the 25-year period ending June 30, 2020, the System’s assets have produced an average annualized total return of 7.8 percent, only slightly exceeding the current 7.75 percent percent actuarial return assumption. (The System’s Board of Trustees took action to reduce the actuarially assumed rate of return from 8 percent to 7.75 percent in November 2016, and the 7.75 percent assumption was reaffirmed by the Board in 2020.)

### TIME WEIGHTED TOTAL RETURN BY ASSET CLASS

Fiscal Year 2020

■ KPERS ■ INDEX



#### FINANCIAL MARKET AND PERFORMANCE OVERVIEW

Fiscal Year 2020 was a year made up of very disparate quarters from an investment performance perspective. The first quarter produced a 0.9 percent total return, as the Federal Reserve lowered short term rates and the US Treasury yield curve inverted. During the second quarter of the fiscal year, stocks and bonds both rallied, and the System’s investment portfolio produced a 4.5 percent total return. The third quarter brought unprecedented downside volatility in risk assets, as the coronavirus pandemic became widespread, and the US economy shrank by a 32.9 percent annualized rate. The System’s investment portfolio experienced a -11.7 percent total return during the third fiscal quarter. However, the fourth fiscal quarter brought a rapid recovery in risk assets, as economic reopenings drove hopes of a “V-shaped” global economic recovery. The recovery in risk assets drove a 9.7 percent total return for the System’s investment portfolio in the fourth fiscal quarter. The result of these four disparate quarters was a 2.1 percent total return for the System in Fiscal Year 2020.

experienced in the second quarter was also unprecedented. Crisis measures implemented by global central banks and fiscal stimulus undertaken by global governmental authorities, as well as the “reopening” of economies late in the second quarter underpinned a dramatic recovery in asset values for global risk based assets. Investor uncertainty abounds, however, as possible scenarios range from a meaningful resurgence in COVID-19 cases that cause reopenings to pause or reverse to a “return to normal” economy more quickly than anticipated, and the further lifting of coronavirus restrictions. Regardless of the outcome, the second quarter of 2020 was the worst quarter for US economic growth since the 1930s, and unemployment rose from 3.5 percent in early 2020 to 10.3 percent at fiscal year end. During times of historic financial market volatility and economic stress, it is more important than ever for the Retirement System to retain the perspective of a long term institutional investor. Significant exposure to risk assets over time is necessary in order for the System’s investment portfolio to achieve the 7.75 percent actuarial return assumption set by the Board of Trustees.

While the downside volatility experienced in the first quarter of calendar year 2020 was unprecedented, the upside volatility

### INVESTMENT STAFF

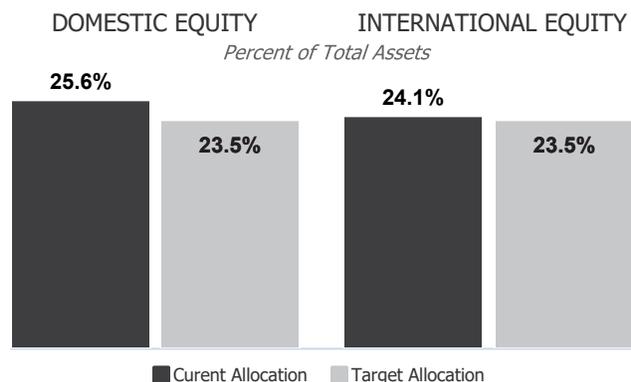
The System employs a staff of nine investment professionals to provide oversight and management of the assets and external investment managers. Under the oversight of the Chief Investment Officer (CIO), responsibility for the portfolio is assigned to the respective investment teams. The Deputy CIO for Public Markets has oversight responsibility for the publicly-traded asset classes, and oversees the System’s active international equity investment portfolios. An Investment Officer for Public Markets oversees the yield driven investment portfolios, and the passive domestic and international equity portfolios. An Assistant Investment Officer for Public Markets has oversight responsibility for the core fixed income, the TIPS/GILB portfolios in the real return asset class, and the cash equivalents portfolios. The Deputy CIO for Private Markets manages the System’s real estate and private equity investments, as well as the allocations to infrastructure and timber. The Chief Investment Officer and the four Investment Officers are supported by a team of four Investment Analysts who provide research support and assistance in managing the portfolios. Investment staff are focused on bringing a consistent, disciplined management process to all aspects of oversight of investment managers, compliance monitoring, and risk management.

## PUBLIC EQUITY INVESTMENTS

Public equity investments represent the largest strategy allocation within the System’s portfolio. As of June 30, 2020, the market value of the System’s global equity portfolio was \$10.0 billion. The strategy is executed through external managers investing domestically and internationally. Active strategies are utilized for approximately 40.4 percent of the public equity portfolio, focusing entirely on international equities. The balance of the global equity portfolio is passively managed to replicate the return of broad market indices.

### PORTFOLIO STRUCTURE

The following graphs describe the current and target allocations at June 30, 2020:



### DOMESTIC EQUITY

Domestic equities represent 51.5 percent of the total public equity portfolio and 25.6 percent of total assets. Domestic equity investments are benchmarked against the Russell 3000 index. It is the System’s view that consistent outperformance over time through active management is extremely difficult when investing in U.S. equities. Therefore, 100 percent of the domestic equity portfolio is passively managed in an index strategy. This passive exposure is designed to replicate the return on the Russell 3000 index and is implemented through two investment managers.

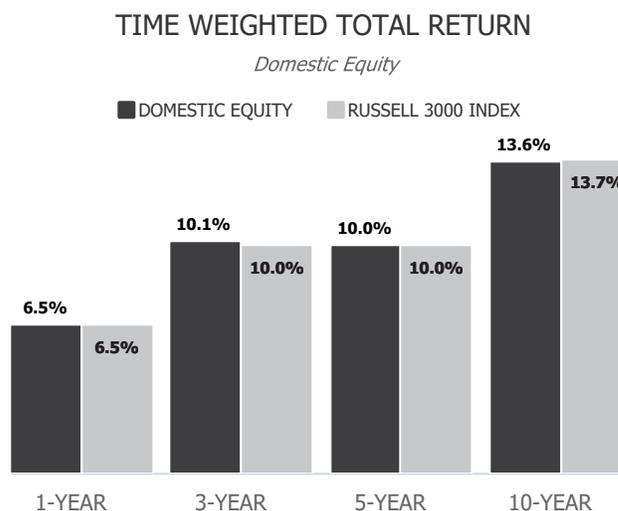
### INTERNATIONAL EQUITY

International equities represent 48.5 percent of the total public equity portfolio and 24.1 percent of total assets. International equity investments are benchmarked against the MSCI All Country World – Ex U.S. Net Index. Equity investments in companies domiciled outside of the United States offer the potential to add value through prudent active management. Therefore, 90 percent of this portfolio is actively managed. The System has retained four active managers to invest across the non-U.S. developed markets and emerging markets. The balance of the international equity portfolio is invested to replicate the return on the MSCI All Country World – Ex U.S. Net Index.

### PERFORMANCE

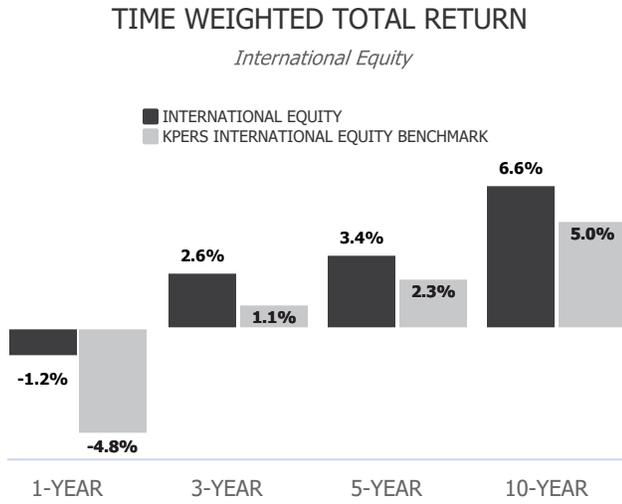
The return of the System’s domestic equity portfolio was in line with the portfolio’s benchmark during Fiscal Year 2020. The domestic equity portfolio produced a 6.5 percent total return during the fiscal year. Over longer periods, the return on the domestic equity portfolio was also in line with its benchmark, as expected, given its purely passive approach.

The following chart reports the performance of the domestic equity portfolio:



The return of the international equity portfolio was negative, though above the benchmark return, during Fiscal Year 2020. The international equity portfolio produced a total return of -1.2 percent for the fiscal year, relative to the -4.8 percent return for the benchmark. The international equity portfolio has produced strong relative returns over all time periods reported, as active management has added value relative to the benchmark.

The following chart reports the performance of the international equity portfolio:

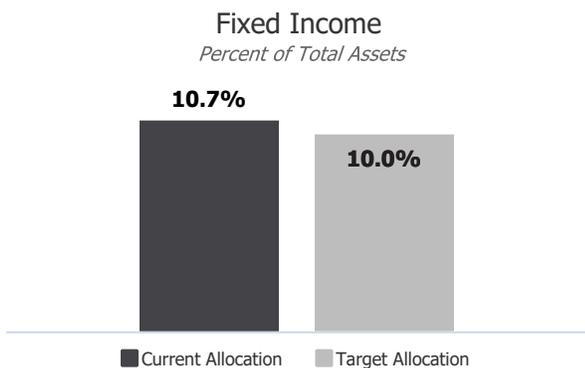


## FIXED INCOME INVESTMENTS

As of June 30, 2020, the Retirement System’s fixed income portfolio had a market value of \$2.2 billion, representing 10.7 percent of the total assets of the System. The portfolio is structured with external managers investing through an active core fixed income U.S. mandate. Two investment managers manage the strategy.

### PORTFOLIO STRUCTURE

The following graph describes the current and target allocations at June 30, 2020:



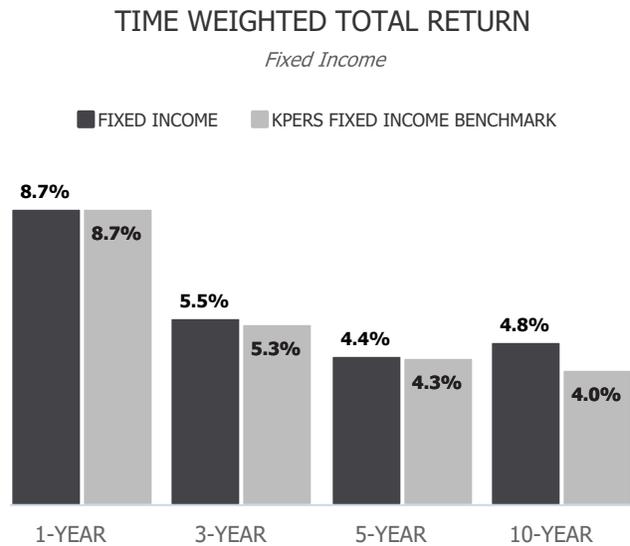
### CORE U.S. FIXED INCOME

The fixed income portfolio is invested in core U.S. strategies through two active investment managers. The portfolio’s objective is to provide diversification to other assets in the System’s portfolio and to preserve capital while providing current income. The core fixed income U.S. strategies are primarily invested in traditional investment grade securities. The fixed income portfolio utilizes the Barclays Capital U.S. Aggregate Index as the benchmark.

### PERFORMANCE

The core U.S. fixed income portfolio produced a total return of 8.7 percent during Fiscal Year 2020, matching the benchmark return of 8.7 percent. Over longer periods, the portfolio has provided positive absolute returns that have exceeded the benchmark return.

The following chart reports the performance of the fixed income portfolio:

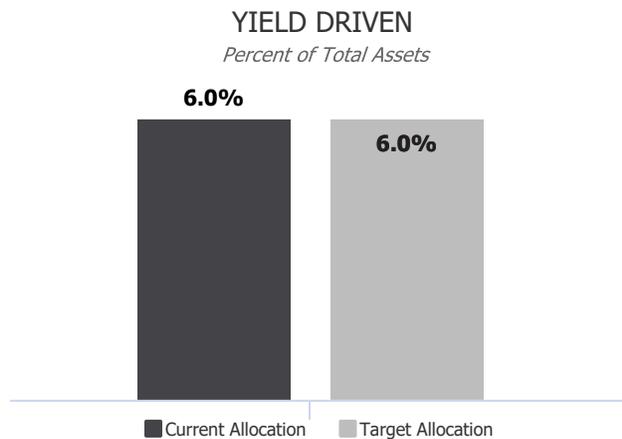


## YIELD DRIVEN INVESTMENTS

As of June 30, 2020, the System’s yield driven portfolio had a market value of \$1.2 billion representing 6.0 percent of total assets. The strategy is actively managed by two strategic fixed income managers and two REIT managers. The yield driven asset class is designed to produce current income and an element of diversification away from equity risk, while also maintaining some degree of correlation with equities.

**PORTFOLIO STRUCTURE**

The following graph describes the current and target allocations at June 30, 2020:



**STRATEGIC FIXED INCOME**

The strategic fixed income strategy represents approximately 60.9 percent of the total yield driven portfolio and 3.7 percent of total assets. The strategy is currently measured against the Barclays U.S. High Yield 2% Issuer Cap Index. The strategic fixed income portfolio maintains a minimum investment of 70 percent in high yield corporate debt securities. The System’s two strategic fixed income managers produced modest positive returns, outperforming the benchmark for Fiscal Year 2020.

**REAL ESTATE INVESTMENT TRUSTS (REITS)**

REITs represent 23.1 percent of the yield driven asset class and 1.4 percent of the System’s total assets. This strategy is benchmarked against the MSCI U.S. REIT Index. The publicly-traded real estate securities portfolio is implemented by managers that actively invest in domestic REITs, real estate operating companies (REOCs) and related investment vehicles. The domestic REIT strategy is actively managed by two investment managers. The REIT managers produced a negative total return while, in aggregate, outperforming the benchmark for Fiscal Year 2020.

**MASTER LIMITED PARTNERSHIPS (MLPS)**

MLPs represent 3.1 percent of the yield driven asset class and 0.2 percent of the System’s total assets. The strategy is benchmarked against the Alerian MLP Index. The System terminated its one MLP manager in Fiscal Year 2020 and has largely liquidated the portfolio as of fiscal year end.

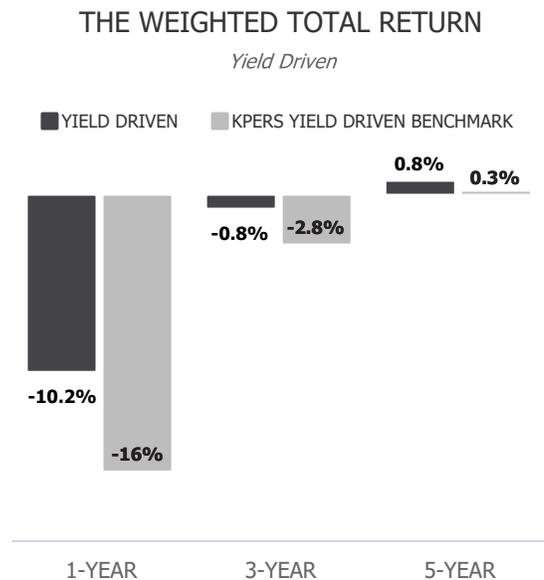
**BANK LOANS**

The bank loan allocation represents 12.8 percent of the yield driven asset class and 0.8 percent of the System’s total assets. The

strategy is benchmarked against the Credit Suisse Leveraged Loan Index. The System terminated its one bank loan manager in Fiscal Year 2020 and is in the process of liquidating this portfolio.

**PERFORMANCE**

The yield driven portfolio produced a total return of -10.2 percent in Fiscal Year 2020, outperforming the asset class benchmark return of -16.0 percent. Outperformance during Fiscal Year 2020 was due to the performance of the REIT and the strategic fixed income strategies, as well as, the impact the liquidation of the MLP portfolio had on relative return. The yield driven portfolio has outperformed the asset class benchmark, though at negative to modestly positive total returns.

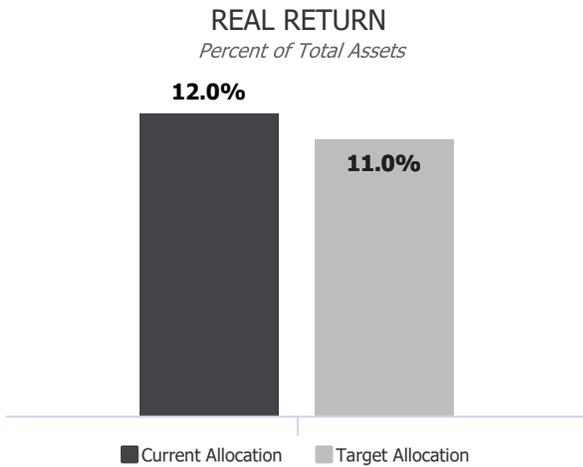


**REAL RETURN INVESTMENTS**

The real return portfolio is designed to provide the System with a hedge against future inflationary episodes. This strategy utilizes both public and private market investments. Public market exposure is global and achieved primarily through inflation linked fixed income securities issued by governments and their agencies in the U.S. as well as in developed countries around the world. Exposure in the private markets is currently achieved through investments in timber and infrastructure. The real return portfolio represents 12.0 percent of the System’s total assets, and had a market value of \$2.4 billion as of June 30, 2020.

**PORTFOLIO STRUCTURE**

The following graph describes the current and target allocations at June 30, 2020:



**U.S. TREASURY INFLATION LINKED BONDS (TIPS)**

The TIPS portfolio represents 41.1 percent of the real return portfolio and is benchmarked against the Barclays U.S. TIPS Index. This passively managed exposure is designed to replicate the return on domestic inflation linked bonds. It is the System’s view that the minimal excess return available through active management of TIPS is not sufficient to compensate for the incremental costs of active management fees. The TIPS portfolio performed in line with its benchmark during Fiscal Year 2020, as expected.

**GLOBAL INFLATION LINKED BONDS (GILBS)**

The GILB portfolio represents 35.6 percent of the real return portfolio and is benchmarked against the Barclays World ILB Index (USD Hedged). The GILB portfolio provides global diversification by broadening the opportunity set to capture unexpected inflation within investment grade sovereign bonds. This portfolio was transitioned from active management to passive management during Fiscal Year 2019. Since the transition, performance of the GILB portfolio has been in line with the benchmark, as expected.

**TIMBER**

Timber investments are a component of the System’s real return asset allocation due to their historically high correlation to inflation. The System is diversified within timber markets located in Idaho and throughout eight states in the southern U.S. Over time, timber investments are expected to provide the System with current cash yields and modest capital appreciation. For Fiscal Year 2020, the System’s timber investments produced a 1.5 percent total return, underperforming the strategy benchmark and the real return asset class benchmark. Underperformance can be attributed to softness in the housing market during the

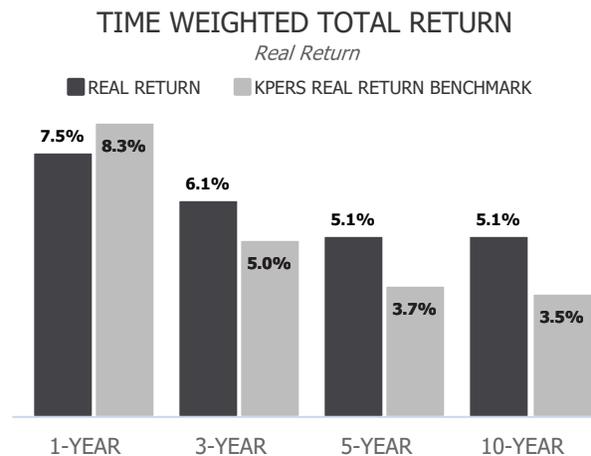
first half of the fiscal year, and to economic weakness created by the global coronavirus pandemic during the second half of the fiscal year.

**INFRASTRUCTURE**

The System’s three infrastructure managers have been successful in operating their infrastructure investments, despite some assets such as toll roads, airports and seaports being negatively impacted by the coronavirus pandemic. The System’s infrastructure portfolio is well-diversified, with investments in Australia, the United Kingdom, and throughout North and South America. It is invested across multiple sectors, including renewable power, toll roads, electric utilities, seaports and energy. The objectives of this portfolio are to produce moderate current income and capital appreciation, while preserving capital, providing diversification benefits, and providing an inflation hedge. The infrastructure portfolio produced a total return of 6.6 percent for the fiscal year, outperforming the strategy benchmark return of 6.2 percent.

**PERFORMANCE**

The System’s real return portfolio underperformed its asset class benchmark in Fiscal Year 2020, producing a 7.5 percent total return against a benchmark return of 8.3 percent. Infrastructure was the strongest performing investment strategy on a relative basis, while inflation linked bonds had the best absolute performance in the asset class. The real return portfolio has outperformed its benchmark over the three-, five-, and ten-year periods ending June 30, 2020.

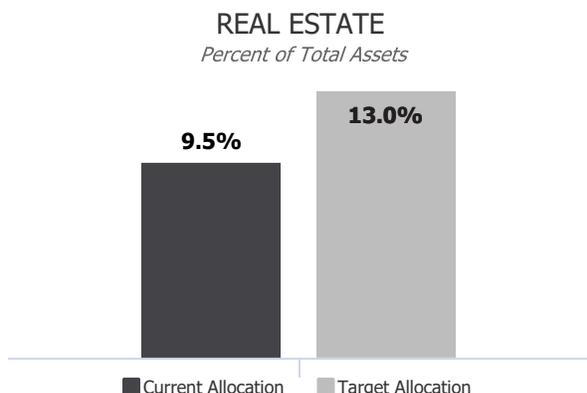


**REAL ESTATE INVESTMENTS**

As of June 30, 2020, the real estate portfolio had a market value of \$1.9 billion, representing 9.5 percent of the total fund. The real estate portfolio is primarily designed to provide diversification to the broader portfolio, while also providing a meaningful current income. Capital appreciation is a tertiary objective of current real estate investment activities.

### PORTFOLIO STRUCTURE

The System’s real estate portfolio is classified into two categories: “core” and “noncore.” The “core” portion of the portfolio is targeted at a 75 percent allocation, while the “noncore” segment is targeted at a 25 percent allocation.



### CORE REAL ESTATE

The largest segment of the real estate portfolio is “core” real estate. This portion of the portfolio is expected to produce steady current income in the form of investment yield while also providing portfolio diversification, and serving as an inflation hedge. The Retirement System’s core portfolio primarily consists of partial and full commitments to eight commingled funds.

The System continued to invest into pooled real estate investment funds during Fiscal Year 2020. This strategy is expected to result in improved liquidity, enhanced portfolio diversification, lower management fees and a reduction in the single event risk associated with owning individual real estate assets.

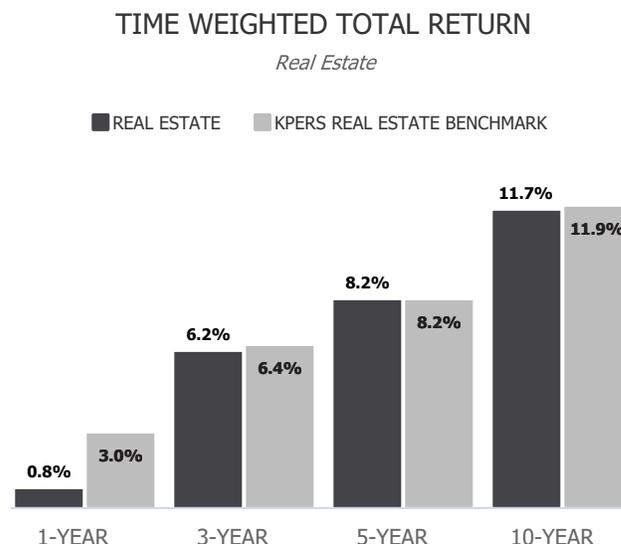
### NON-CORE REAL ESTATE

The “non-core” segment consists of investments that generally involve some element of property lifecycle risk (such as positioning, leasing and development) while also utilizing greater leverage (debt) than core strategies. While providing elements of inflation protection and a diversification benefit to the broader portfolio, the System expects non-core real estate investments to produce meaningful capital appreciation and higher overall long-term returns than core investments. The non-core portfolio consists of investment funds employing a diversity of strategies and property types, both domestically and internationally.

### REAL ESTATE PERFORMANCE

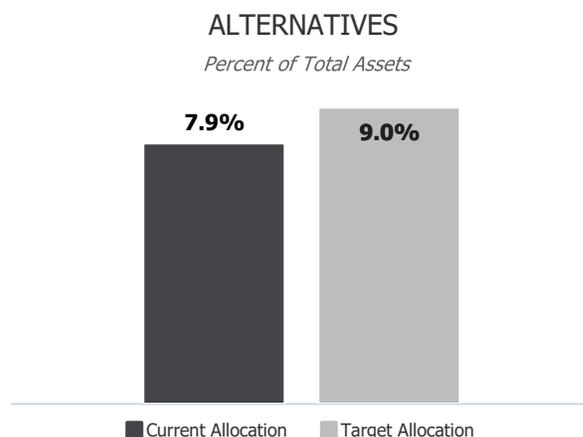
The System’s real estate portfolio underperformed its benchmark in Fiscal Year 2020. The core real estate portfolio produced a total return of 0.8 percent, underperforming the strategy benchmark by 1.4 percent, while the non-core real estate portfolio underperformed its benchmark by 4.5 percent, with a total

return of 0.7 percent. In total, the System’s real estate portfolio produced a total return of 0.8 percent, which underperformed the benchmark return by 2.2 percent. Overall, most of the System’s real estate fund investments are diversified and should continue to benefit from a continued migration out of retail properties and into higher performing sectors such as multifamily and industrial properties. Longer-term results from the real estate asset class have been more robust, with an 11.7 percent total return for the trailing ten-year period ending June 30, 2020.



## ALTERNATIVE INVESTMENTS

At June 30, 2020, the System’s alternative investment portfolio had a fair market value of \$1.6 billion, representing 7.9 percent of the total portfolio. Since the inception of the alternative investment program in 1997 through June 30, 2020, the System has committed \$4.3 billion to 122 funds with 63 general partners.



**PORTFOLIO STRUCTURE**

The alternative investment portfolio consists primarily of interests in private partnerships that provide equity and debt to companies. The portfolio contains two primary sub-portfolios based on investment period. Each portfolio has its own set of directives, guidelines, external fund managers and consultants who provide advice on investment strategy and investment selection during its investment period. The largest portfolio is the Private Equity Program (PEP), representing 99.6 percent of the market value of the asset class. The PEP portfolio actively seeks new commitments to private equity funds in three styles: buyout, venture capital/growth equity and special situations. Since the inception of PEP in 2007, the System has committed \$3.3 billion to 68 funds with 28 general partners.

The second portfolio is the Alternative Investment Portfolio (AIP) and represents 0.4 percent of the market value of the asset class. From 1997 to 2001, AIP made commitments to 54 funds with 35 general partners across five styles: buyout, venture capital, mezzanine, distressed debt and natural resources. As this is a mature portfolio, the remaining funds in the AIP portfolio are currently pursuing exit strategies for their existing holdings.

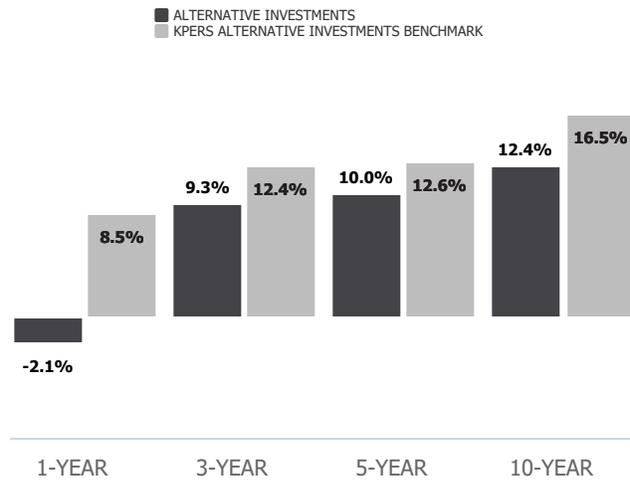
**ALTERNATIVE INVESTMENTS PERFORMANCE**

The System’s alternative investments portfolio underperformed its benchmark in Fiscal Year 2020, producing a rare negative 2.1 percent total return against a public benchmark return of 8.5 percent.

Private equity investments typically span ten years or longer. Therefore, the longer term returns from this asset class are more relevant in assessing its success in adding value to the overall portfolio. The System’s current long-term performance objective for alternative investments is to exceed the return of the Russell 3000 plus 2 percent. As the chart below shows, the alternative investments portfolio is underperforming this objective over the ten-year period, with a total return of 12.4 percent, due to in large part to the exceptionally strong performance from the publicly-traded domestic equity benchmark in recent years.

**TIME WEIGHTED TOTAL RETURN**

*Alternative Investments*



As required by K.S.A 74-4904, a schedule of alternative investments initiated on or after July 1, 1991, is listed on the following two pages.

ALTERNATIVE INVESTMENTS INITIATED ON OR AFTER JULY 1, 1991 <sup>(1)</sup>*As of June 30, 2020*

Description	Cost	Market Value
Advanced Technology Ventures VI, L.P.	\$ 8,252,815	\$ -
Apax Europe IX, L.P.	62,272,181	83,627,055
Apollo Investment Fund VII, L.P.	6,407,772	2,031,200
Apollo Investment Fund VIII, L.P.	39,877,275	40,383,916
Apollo Investment Fund IX, L.P.	13,478,243	13,688,207
Ares Corporate Opportunities Fund III, L.P.	3,427,552	1,172,422
Ares Corporate Opportunities Fund IV, L.P.	13,821,933	15,594,707
Ares Corporate Opportunities Fund V, L.P.	55,148,673	57,931,144
Ares Special Situations Fund IV, L.P.	47,686,469	41,591,566
Audax Mezzanine Fund III, L.P.	4,390,574	3,224,490
Beacon Group Energy Fund II, L.P.	1,841,499	465,984
Capital Resource Partners IV, L.P.	4,520,636	27,006
CCMP Capital Investors III, L.P.	36,524,979	41,354,421
Centerbridge Capital Partners II, L.P.	16,065,005	4,699,994
Centerbridge Capital Partners III, L.P.	18,154,524	28,299,998
Clayton Dublier & Rice VI, L.P.	2,998,283	9,906
Crestview Partners III, L.P.	27,687,230	27,140,048
Cypress Merchant Banking II, L.P.	6,889,672	9,673
Encap Energy Capital VIII, L.P.	16,073,890	3,902,869
Encap Energy Capital IX, L.P.	31,495,304	10,917,028
Encap Energy Capital X, L.P.	39,433,360	31,591,957
First Reserve Fund XII, L.P.	17,633,531	2,720,730
FS Equity Partners VII, L.P.	40,278,308	45,518,153
FS Equity Partners VIII, L.P.	19,802,375	18,983,725
Green Equity Investors VII, L.P.	62,708,920	71,361,998
GSO Capital Solutions Fund, L.P.	6,654,891	420,975
GSO Capital Solutions Fund II, L.P.	14,404,543	4,650,651
GSO Capital Solutions Fund III, L.P.	15,343,664	10,215,397
Halpern Denny Fund III, L.P.	1	-
HD Access, Inc.	186,674	123,912
Hellman & Friedman VII, L.P.	3,287,546	16,988,759
Hellman & Friedman VIII, L.P.	38,598,847	42,609,692
Hellman & Friedman IX, L.P.	14,947,472	12,590,091
JMI Equity Fund VII, L.P.	5,348,734	11,036,268
Montagu IV, L.P.	3,185,964	2,909,374
Montagu V, L.P.	41,606,836	45,993,978
New Enterprise Associates 13, L.P.	5,187,196	5,844,523
New Enterprise Associates 16, L.P.	35,886,119	37,117,695
New Enterprise Associates 17, L.P.	9,500,000	9,136,093
New Mountain Partners V, L.P.	36,850,816	50,480,017

ALTERNATIVE INVESTMENTS INITIATED ON OR AFTER JULY 1, 1991 <sup>(1)</sup> (CONTINUED)

As of June 30, 2020

Description	Cost	Market Value
OCM Opportunities Fund VIIb, L.P.	-	55,519
OneLiberty Fund IV, L.P.	1,155,056	740,032
OneLiberty Ventures 2000, L.P.	11,708,757	2,653,427
Pine Brook Capital Partners, L.P.	7,735,518	845,508
Pine Brook Capital Partners II, L.P.	45,114,501	40,164,312
Platinum Equity Capital Partners III, L.P.	15,112,204	16,098,396
Platinum Equity Capital Partners IV, L.P.	55,784,438	50,979,278
Platinum Equity Capital Partners V, L.P.	5,682,517	4,591,190
Quad-C Partners IX, L.P.	21,991,063	23,898,678
Snow Phipps II, L.P.	12,616,430	13,358,567
Snow Phipps III, L.P.	24,933,925	32,122,550
TA XII, L.P.	50,635,880	76,560,792
TA XIII, L.P.	7,076,252	6,104,704
TowerBrook Investors III, L.P.	3,982,077	-
TowerBrook Investors IV, L.P.	17,564,935	26,985,958
TowerBrook Investors V, L.P.	6,016,771	5,249,145
TPG Growth II, L.P.	3,784,837	1,270,808
TPG Growth III, L.P.	34,634,569	38,758,438
TPG Growth IV, L.P.	27,634,071	26,612,163
TPG Partners VI, L.P.	9,045,940	4,663,390
TPG Partners VII, L.P.	56,542,822	69,236,912
TPG Partners VIII, L.P.	5,945,987	4,265,140
VantagePoint Venture Partners IV, L.P.	9,810,025	1,844,265
Vestar Capital Partners IV, L.P.	1,373,358	154,251
Vista Equity Partners Fund IV, L.P.	9,300,598	17,358,245
Vista Equity Partners Fund V, L.P.	49,057,783	74,275,544
Vista Equity Partners Fund VI, L.P.	70,568,122	89,899,059
Vista Equity Partners Fund VII L.P.	17,320,500	17,467,776
Warburg Pincus Equity Partners, L.P.	-	78,729
Warburg Pincus Global Growth, L.P.	15,763,356	15,881,692
Warburg Pincus Private Equity X, L.P.	6,098,421	9,408,265
Warburg Pincus Private Equity XI, L.P.	17,224,544	27,180,502
Warburg Pincus Private Equity XII, L.P.	53,671,723	70,135,363
Wellspring Capital Partners V, L.P.	8,654,334	9,974,094
Wellspring Capital Partners VI, L.P.	25,148,180	21,616,395
Windjammer Mezzanine & Equity Fund II, L.P.	-	24,575
	<u>\$ 1,536,549,800</u>	<u>\$ 1,596,879,284</u>

(1) Investment values quoted without spin-offs or distributions.

LIST OF LARGEST HOLDINGS <sup>(1)</sup>

As of June 30, 2020

EQUITIES			FIXED INCOME				
Shares	Security	Fair Value (\$)	Par Value	Security	Description	Fair Value (\$)	
1,264,794	Microsoft Corp	\$ 257,398,227	115,145,000	US Treasury N/B	0.125%	30 Apr 2022	\$ 115,055,187
690,827	Apple Inc	252,013,690	83,262,000	US Treasury N/B	0.125%	31 May 2022	83,200,386
71,528	Amazon.Com Inc	197,332,877	50,000,000	US Treasury N/B	2.375%	15 Apr 2021	50,863,500
1,501,980	Tencent Holdings Ltd	96,625,000	50,000,000	US Treasury N/B	2.375%	15 Mar 2021	50,771,500
405,490	Facebook Inc CL A	92,074,614	50,000,000	US Treasury N/B	2.000%	15 Jan 2021	50,488,500
50,586	Alphabet Inc CL A	71,733,477	50,000,000	US Treasury N/B	1.875%	15 Dec 2020	50,386,500
50,220	Alphabet Inc CL C	70,991,494	41,065,000	US Treasury N/B	2.125%	15 May 2022	42,561,819
6,913,239	AIA Group Ltd	64,490,085	36,172,856	State Street TR		STIF Fund	36,172,856
458,097	SAP SE	63,964,090	31,065,000	US Treasury N/B	2.000%	15 Feb 2050	35,576,570
1,132,644	Rio Tinto Plc	63,663,056	22,335,000	US Treasury N/B	0.375%	30 Apr 2025	22,436,178

(1) A complete listing of the System's holdings is available at the Retirement System office.

CHANGES IN FAIR VALUE OF INVESTMENTS <sup>(1)</sup>

(In Thousands)

For the Fiscal Year Ended June 30, 2020

	June 30, 2019 Fair Value	Purchases and Other Increases	Sales and Other Decreases	June 30, 2020 Fair Value	Asset Mix Fair Value
<b>Marketable Securities</b>					
Domestic Equities	\$ 6,129,376	\$ 1,330,407	\$ (1,558,697)	\$ 5,901,086	29.15%
International Equities	4,311,378	4,977,252	(4,943,251)	4,345,379	21.47
Total Fixed	5,468,782	7,143,911	(7,045,966)	5,566,727	27.50
Temporary <sup>(2)</sup> Investments	351,748	29,290,309	(29,298,950)	343,107	1.69
Total Marketable Securities	16,261,284	42,741,879	(42,846,864)	16,156,299	79.81
<b>Real Estate and Alternative Investments</b>					
Real Estate	2,396,467	280,289	(186,636)	2,490,120	12.30
Alternatives	1,600,568	325,135	(328,824)	1,596,879	7.89
Total Real Estate and Alternative Investments	3,997,035	605,424	(515,460)	4,086,999	20.19
<b>Total</b>	<b>\$ 20,258,319</b>	<b>\$ 43,347,303</b>	<b>\$ (43,362,324)</b>	<b>\$ 20,243,298</b>	<b>100.00%</b>

(1) Amounts include changes in unrealized appreciation and exclude interest and dividend accruals.

(2) Temporary Investments include currencies, short term pools, and securities maturing within one year of purchase.

## U.S. EQUITY COMMISSIONS

For the Fiscal Year Ended June 30, 2020

Broker Name	Comissions Paid		Shares	Comissions per Share	Percent of Total Comissions	
Liquidnet, Inc	\$	113,387	\$	6,099,680	0.02	13.5%
Raymond James & Associates		56,940		1,702,084	0.03	6.8
JP Morgan Securities, LLC		52,672		1,750,584	0.03	6.3
Jefferies & Co., Inc		47,548		3,832,675	0.01	5.7
Citigroup Global Markets, Inc		46,657		1,539,885	0.03	5.6
Barclays Capital		45,421		1,416,156	0.03	5.4
B. Riley & Co., LLC		45,273		2,260,764	0.02	5.4
Wells Fargo Securities, LLC		39,449		1,594,781	0.02	4.7
Bank of America Securities, Inc		39,317		3,028,986	0.01	4.7
Morgan Stanley Co., Inc		37,188		3,446,737	0.01	4.4
RBC Capital Markets, LLC		35,642		2,832,856	0.01	4.2
Stifel Nicolaus & Co., Inc		30,577		1,016,948	0.03	3.6
Cowen & Co., LLC		30,491		2,159,442	0.01	3.6
Piper Jaffray & Co.		29,861		2,957,708	0.01	3.6
Virtu Americas, LLC		25,475		3,114,355	0.01	3.0
Evercore ISI		20,954		731,379	0.03	2.5
MKM Partners, LLC		18,375		872,391	0.02	2.2
UBS Securities, LLC		16,966		1,237,125	0.01	2.0
BTIG, LLC		11,984		676,922	0.02	1.4
Instinet, LLC		11,905		1,005,420	0.01	1.4
Other		84,107		5,262,461	0.02	10.0
<b>Total Broker Comissions</b>	<b>\$</b>	<b>840,189</b>	<b>\$</b>	<b>48,539,339</b>		<b>100.0%</b>