

Callan



**Mendocino County Employees
Retirement Association
Performance Review**

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Quarter ended March 31, 2020

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Senior Vice President

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Senior Vice President

Agenda

-
- Economic and Capital Markets Review
 - MCERA CY 1Q 2020 Performance
 - Investment Policy Statement Review

Global Economic Update

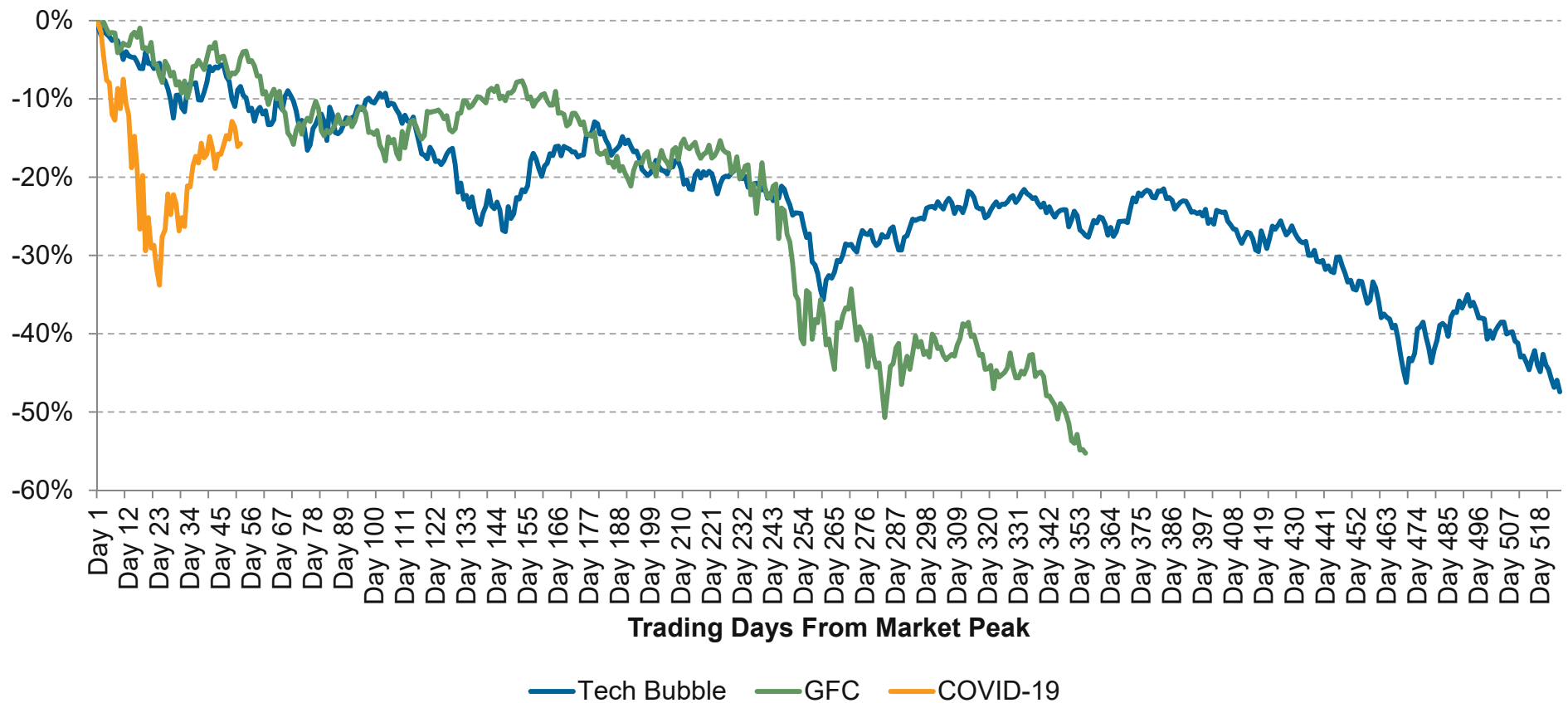
What Just Happened?

A 'Global Hurricane' in the form of a pandemic

The sharpest and fastest equity market decline ever: 16 trading days to reach bear market; -33% after just 23 days

S&P 500 Index Cumulative Returns

Market Peak-to-Trough for Last Two Corrections vs. Current Path of COVID-19 Correction Through 5/4/20



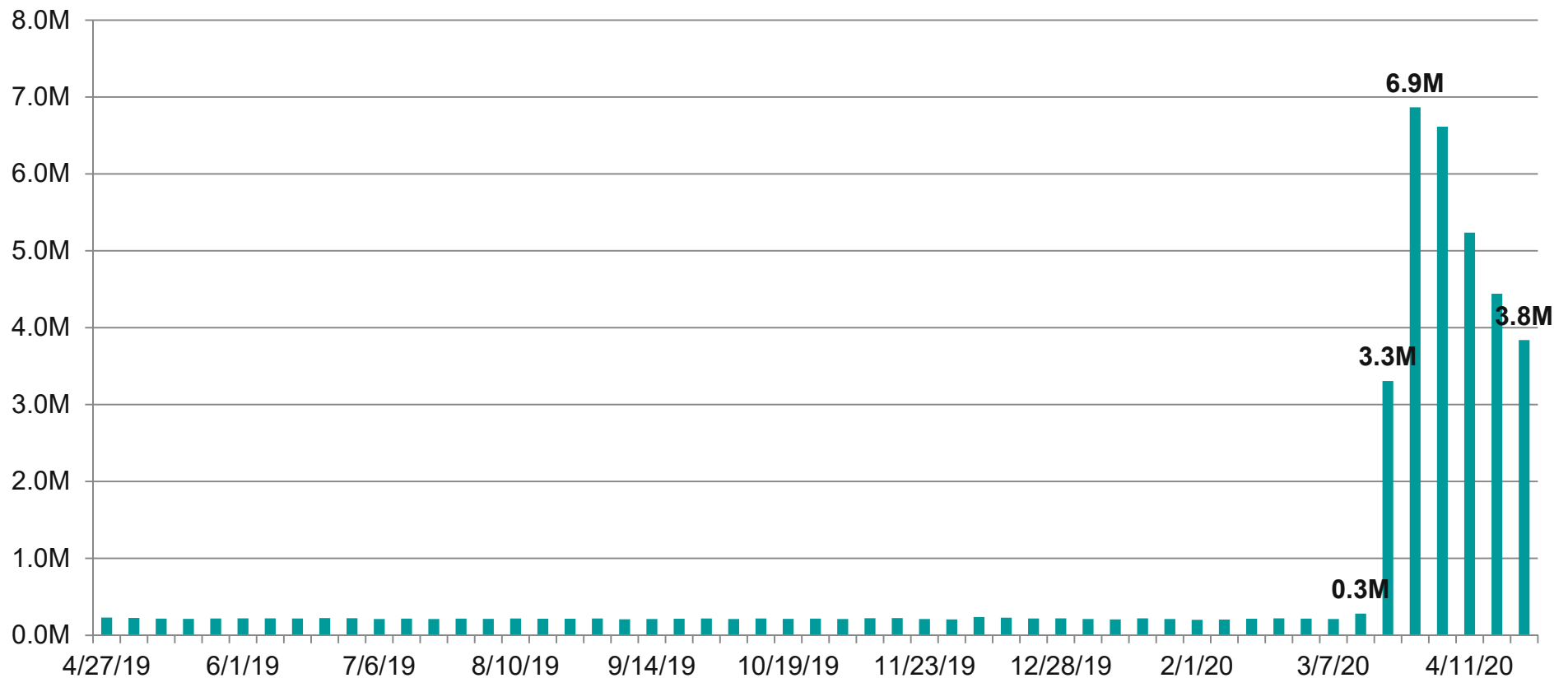
U.S. and Global Economic Conditions

Initial unemployment claims

Initial unemployment claims have spiked.

- 6,867,000 for week ended March 28 (peak); 3,839,000 for week ended April 25 (current)
- Over 15 million jobs lost since March 1, 9% of the U.S. labor force weeks.

Insured unemployment rate now at 5.1%, likely headed into double-digits



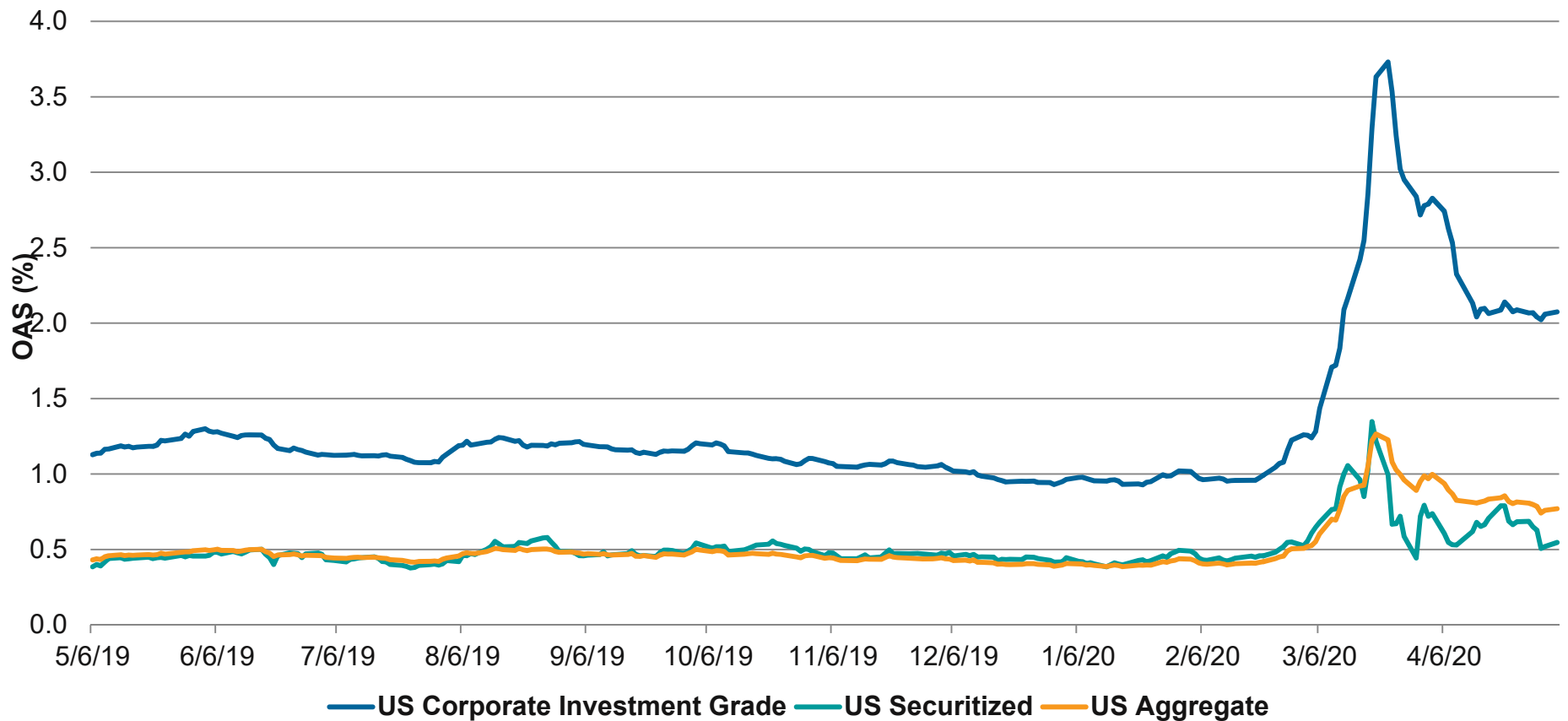
Sources: US Employment and Training Administration

Current Financial Conditions

Bloomberg Indices' spreads YTD through May 4

Corporate yield spreads expanded to almost four times their starting levels.

- Current corporate spreads are lower than their peak but still about two times their beginning of the year values.
- Securitized spread widening was much more limited and has recovered more quickly.



Source: Bloomberg

Sharp Drop in Global Equity Markets in 1Q 2020

No place to hide

- Equity markets around the globe collapsed starting in late February.
 - S&P was down 33% from peak (02/19/20) at worst point on 3/23/20; -19.6% loss for the quarter. All countries and sectors suffered.
 - Fed cut interest rates to zero, commenced QE, instituted multiple facilities to backstop money markets, credit markets, and the economy.
 - Congress passed fiscal stimulus (CARES) to carry the economy through the crisis.
 - Fed’s role is a backstop/facilitator/lender of last resort, but not a grantor; it expects to get paid back. Programs are designed to keep the Fed from losing money.
 - Granting is the province of Congress, and fiscal policy.

Returns for Periods ended March 31, 2020

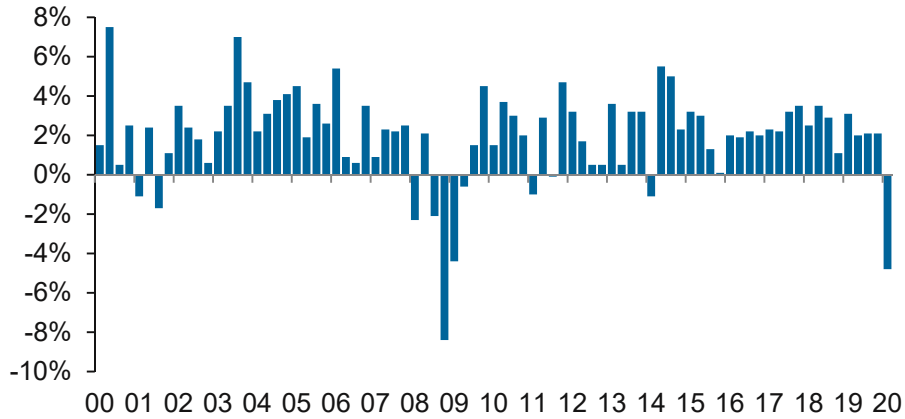
	1 Quarter	1 Year	5 Years	10 Years	25 Years
U.S. Equity					
Russell 3000	-20.90	-9.13	5.77	10.15	8.81
S&P 500	-19.60	-6.98	6.73	10.53	8.85
Russell 2000	-30.61	-23.99	-0.25	6.90	7.57
Global ex-U.S. Equity					
MSCI World ex USA	-23.26	-14.89	-0.76	2.43	4.12
MSCI Emerging Markets	-23.60	-17.69	-0.36	0.69	--
MSCI ACWI ex USA Small Cap	-29.01	-21.18	-0.81	2.79	4.57
Fixed Income					
Bloomberg Barclays Aggregate	3.15	8.93	3.36	3.88	5.49
90-day T-Bill	0.57	2.25	1.19	0.64	2.43
Bloomberg Barclays Long Gov/Credit	6.21	19.32	5.99	8.07	7.89
Bloomberg Barclays Global Agg ex-US	-2.68	0.74	2.04	1.39	3.77
Real Estate					
NCREIF Property	0.71	5.28	7.65	10.17	9.28
FTSE Nareit Equity	-27.30	-21.26	-0.35	7.40	9.24
Alternatives					
CS Hedge Fund	-8.98	-4.32	0.24	2.96	7.35
Cambridge Private Equity*	0.90	9.50	12.37	13.75	15.30
Bloomberg Commodity	-23.29	-22.31	-7.76	-6.74	0.56
Gold Spot Price	4.83	22.96	6.18	3.66	5.75
Inflation - CPI-U	0.44	1.54	1.80	1.72	2.15

*Cambridge PE data through September 30, 2019.
Source: Callan

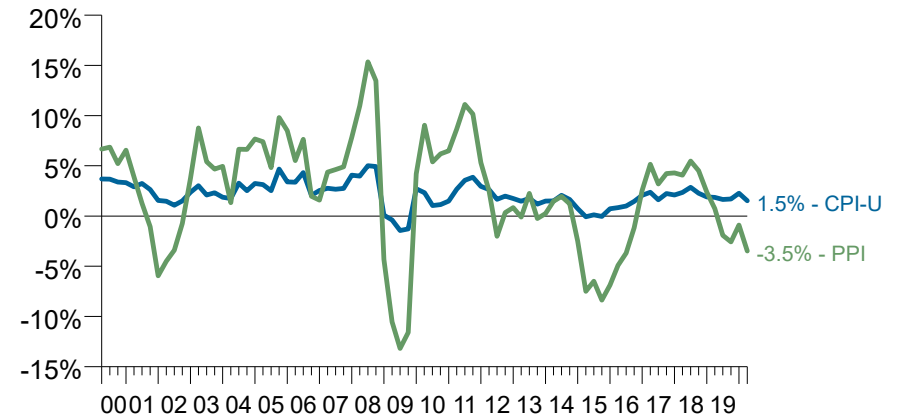
U.S. Economy—Summary

For periods ended March 31, 2020

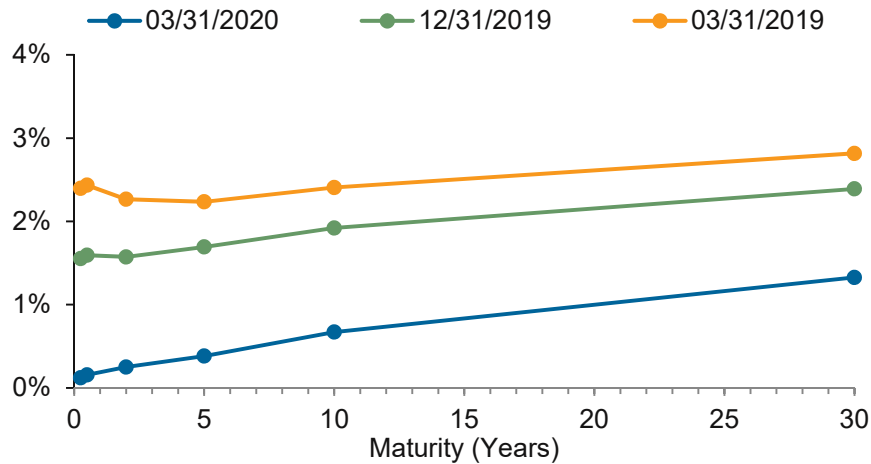
Quarterly Real GDP Growth



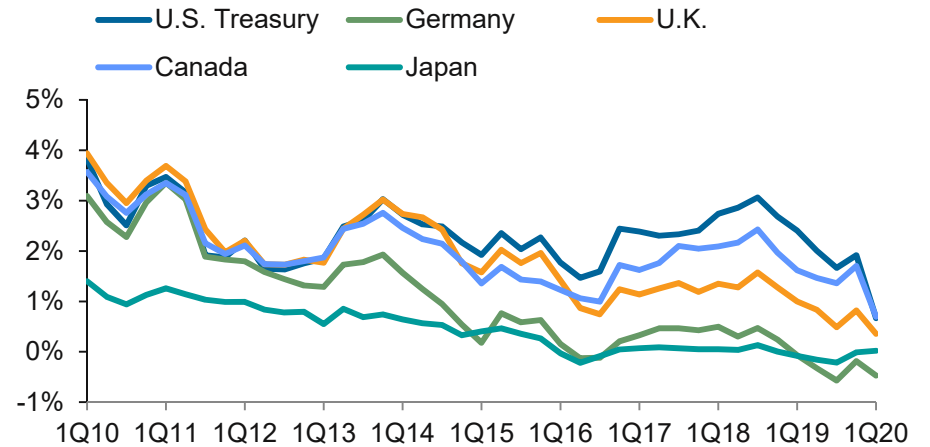
Inflation Year-Over-Year



U.S. Treasury Yield Curves



10-Year Global Government Bond Yields



Sources: Bloomberg, Bureau of Labor Statistics, Callan

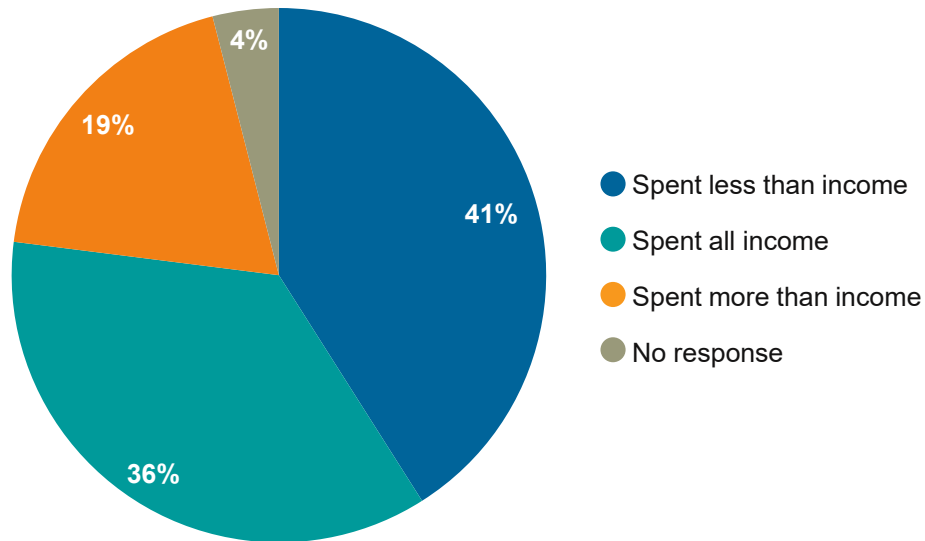
Compendium of Coronavirus Impact

- Public Health Policy and Conditions of Paramount Concern
 - *Markets and the economy will only fully rebound with containment and vaccine; monetary and fiscal policy can only support the economy but not solve the crisis.*
 - *Ordering the opening of the economy will not work without worker and business confidence in the public health situation.*
- U.S. and Global Economic Conditions
 - *Economic growth*
 - *Employment*
- Economic Resilience
 - *Individuals*
 - *Businesses*
- Government Intervention
 - *Fiscal policy*
 - *Monetary policy*
- Impact on the Financial Markets
 - *S&P 500 returns YTD*
 - *Broad U.S. bond market results YTD*
- Economic and Financial Prospects
 - *Global GDP growth*
 - *U.S. economy*
 - *Inflation*
 - *U.S. corporate profitability*

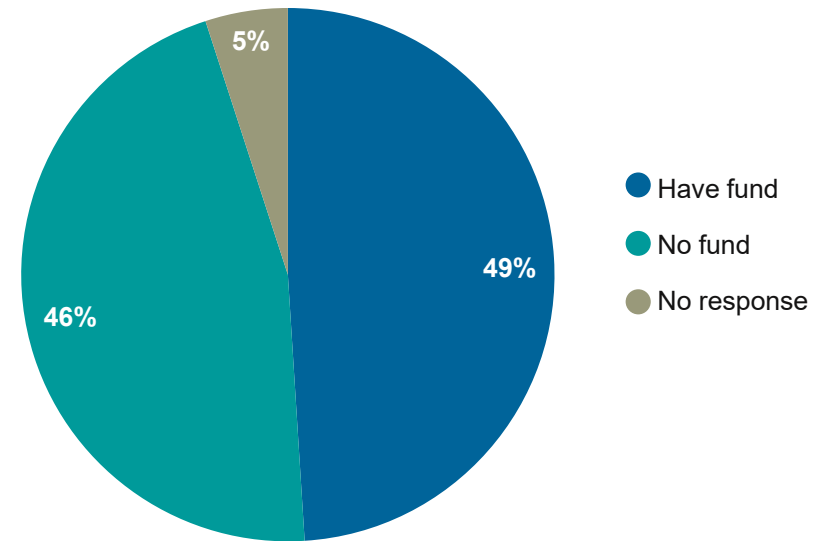
Individual Economic Resilience

Spending and savings

Household Spending



Rainy Day Fund



- Many had insufficient income prior to crisis
 - *55% spend all or more than their income*
- Fewer than half can draw on savings
 - *46% have no emergency reserves*

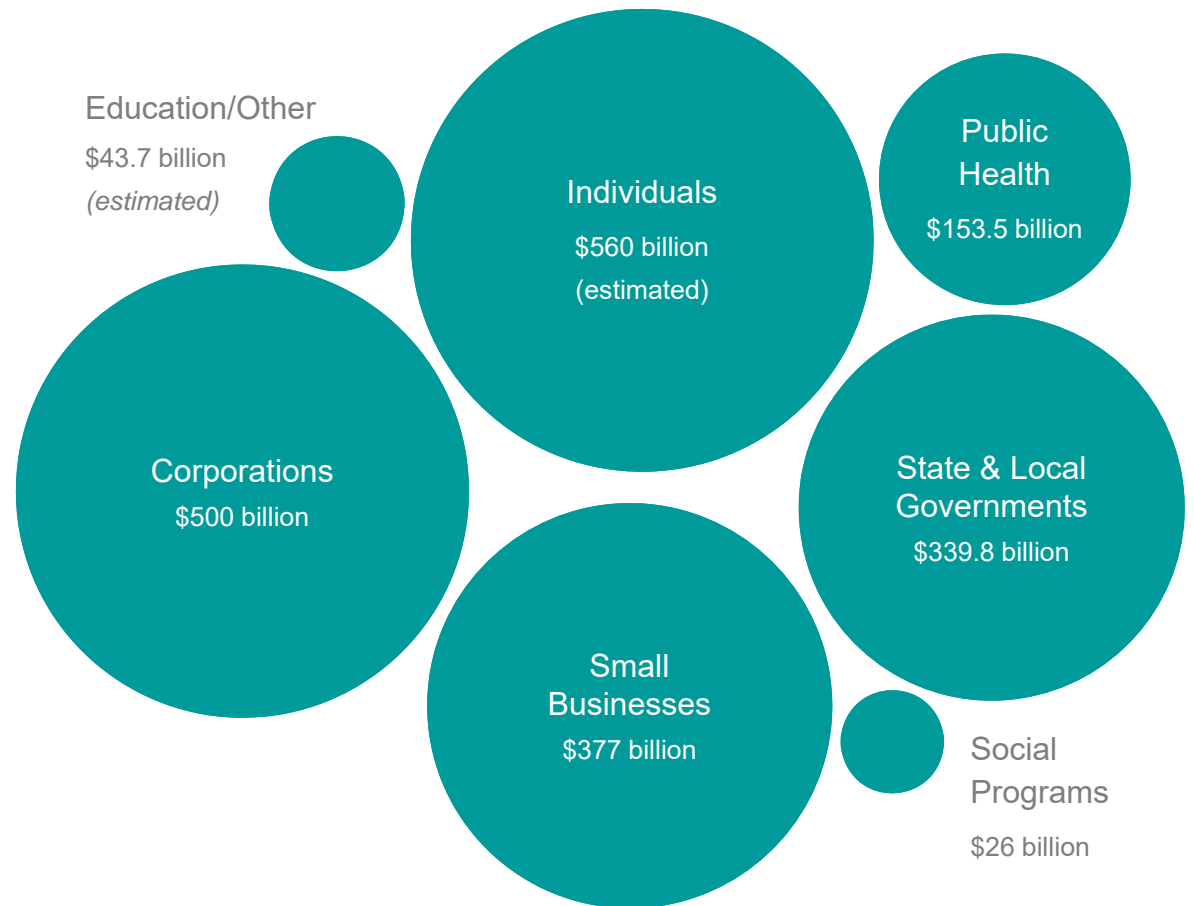
FINRA Investor Education Foundation, National Financial Capability Study, <https://www.usfinancialcapability.org/results.php?region=US>

2020 CARES Act Injects \$2 Trillion in Fiscal Stimulus

Equates to roughly 10% of GDP

- Expanded unemployment benefits
 - New benefits for those who exhausted eligibility
 - Additional \$600/week for up to four months
 - Potential for 13 weeks of federal benefits after state benefits exhausted
- Cash distributions
 - Up to \$1,200 for individuals, scaled by income level
 - Advance refundable tax credit against 2020 income taxes
- Student loan relief
 - Suspended payments and interest for some federal student loans
 - More flexibility for federal education grants
 - Tax-free employer loan payments
- Defined contribution plan liquidity
 - Relaxation of distribution taxes
 - Expansion of loan amounts
- \$58 billion in airline industry relief
- \$377 billion for small businesses
 - Relaxed credit reporting
 - Federally backed home loan forbearance

Distribution of the \$2 Trillion from the CARES Act



Source: NPR.org

Government Intervention

Selected Fed programs to assist financial markets

- Commercial Paper Funding Facility (CPFF)
 - *Liquidity for commercial paper markets*
- Money Market Mutual Fund Liquidity Facility (MMLF)
 - *The Federal Reserve Bank of Boston will make loans available to eligible financial institutions secured by high-quality assets purchased by the financial institution from money market mutual funds to assist money market funds in meeting demands for redemptions.*
- The Primary Market Corporate Credit Facility (PMCCF)
 - *The PMCCF will allow companies access to credit so that they are better able to maintain business operations and capacity during the period of dislocations related to the pandemic. The PDCF will offer overnight and term funding with maturities up to 90 days.*
- Foreign and International Monetary Authorities (FIMA Repo Facility)
 - *FIMA account holders temporarily exchange their U.S. Treasury securities held with the Federal Reserve for U.S. dollars, which can then be made available to institutions in their jurisdictions to help support the smooth functioning of the U.S. Treasury market by providing an alternative temporary source of U.S. dollars other than sales of securities in the open market.*
- Term Asset-Backed Securities Loan Facility (TALF)
 - *The TALF will enable the issuance of asset-backed securities (ABS) backed by student loans, auto loans, credit card loans, loans guaranteed by the Small Business Administration, and certain other assets.*

Source: The Federal Reserve Board

Government Intervention

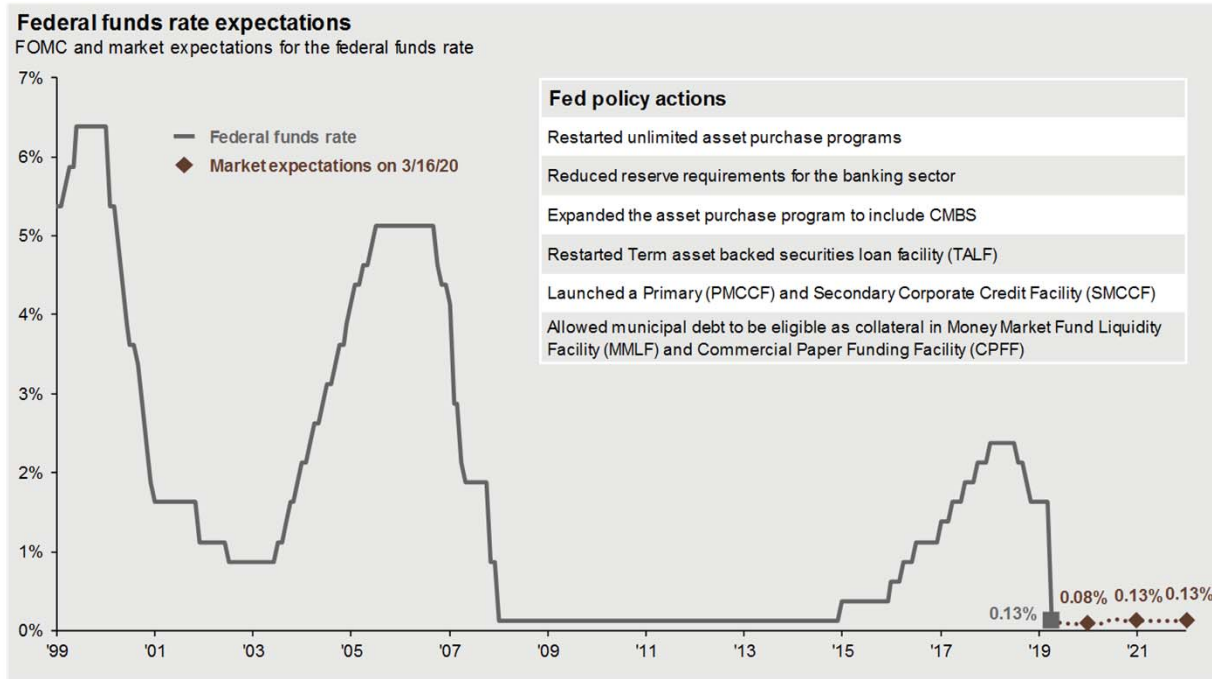
Selected Fed programs to assist consumer lending

- Small-Dollar Loans
 - *Encourage banks, savings associations, and credit unions to offer responsible small-dollar loans to consumers and small businesses in response to COVID-19*
 - *Promoted by the Board of Governors of the Federal Reserve System, Consumer Financial Protection Bureau, Federal Deposit Insurance Corporation, National Credit Union Administration, and Office of the Comptroller of the Currency*
 - *Loans can be offered through a variety of structures, including open-end lines of credit, closed-end installment loans, or appropriately structured single payment loans.*
 - *For borrowers who experience unexpected circumstances and cannot repay a loan as structured, banks, savings associations, and credit unions are further encouraged to consider workout strategies designed to help borrowers repay the principal of the loan while mitigating the need to re-borrow.*
- Total Loss Absorbing Capacity (TLAC)
 - *TLAC is an additional cushion of capital and long-term debt that could be used to recapitalize a bank if it is in distress. The change will facilitate the use of firms' buffers to promote lending activity to households and businesses.*

Source: The Federal Reserve Board

Government Intervention

Fed funds rate



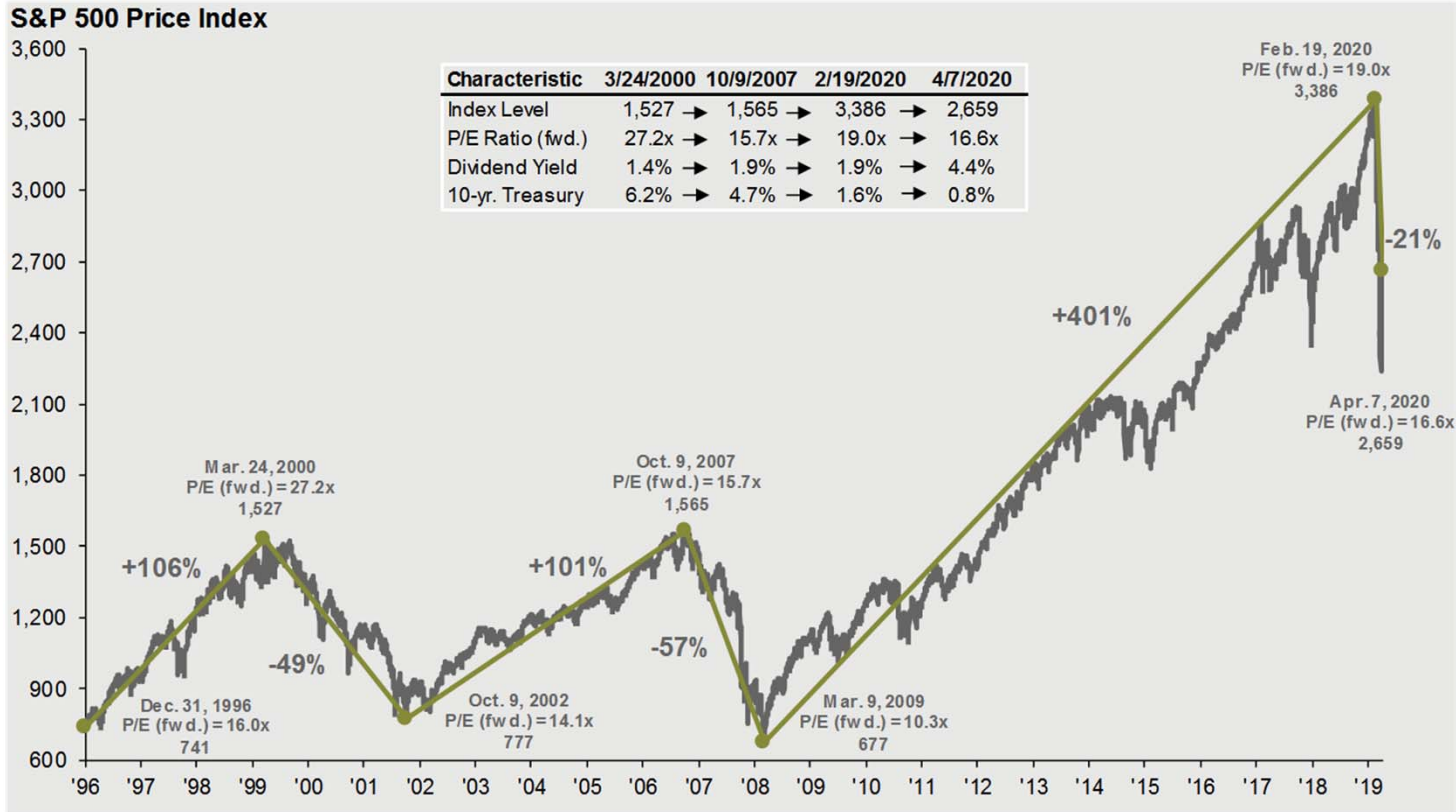
Source: Bloomberg, FactSet, Federal Reserve, J.P. Morgan Asset Management.
Market expectations are the federal funds rates priced into the fed futures market as of the following date of the March 15, 2020 emergency cut and are through December 2022.
Guide to the Markets – U.S. Data are as of April 7, 2020.

- In addition to supporting financial market liquidity, the Fed cut the Fed funds rate
 - *The Fed cut rates repeatedly and quickly; Fed funds now near zero*
 - *QE engaged to manage along the length of the yield curve*
 - *QE to be expanded to include intervention in the below-investment grade market*
- Markets do not expect the Fed to raise rates in the near future

Source: Federal Reserve, J.P. Morgan

Impact on Financial Markets

S&P 500 returns longer term



- The decline in the S&P has been abrupt, and swift: entered bear market (-20%) in 16 trading days, hit -33% on day 23 (March 23, 2020). Return for Q1 is -19.6%.
- The drop is large but not unprecedented.
 - *Fall from the Tech Bubble was -19%.*
 - *Downdraft during the Global Financial Crisis was -57%.*

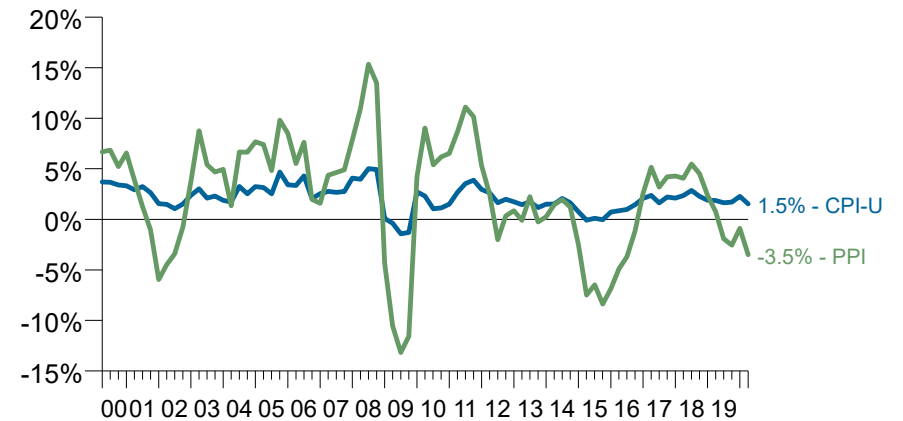
Source: Source: Compustat, FactSet, Federal Reserve, Standard & Poor's, J.P. Morgan Asset Management

Economic and Financial Prospects

Inflation

- Fixed income market expected substantial decrease in inflation.
- *Five-year breakeven inflation rate is the difference between five-year nominal and five-year Treasury Inflation Protected Securities (TIPS) yields.*
- *The difference in yields is an estimate of inflation five years into the future.*
- Producer prices plunged in Q1; expected to fall further in Q2.
- Consumer prices will be driven down by the collapse in oil prices and a sharp drop in consumption spending.
- Monetary and fiscal policy measures may stir inflation down the road if the economy recovers sharply.

Inflation Year-Over-Year



Source: Board of Governors of the Federal Reserve System, fred.stlouisfed.org;; US DOL

U.S. Equity: COVID-19 Decimates U.S. Equity Returns

Cyclicals punished; Tech, Staples, and Health Care more resilient

- Energy fell as demand declined and OPEC and Russia refused to cut production, driving down oil prices globally.
- Financials and Industrials plunged as interest rates were cut by the Fed compounded by expectations of a GDP decline due to COVID-19.
- Tech fared the best— “FAAMG” stocks averaged -7.9% led by Amazon (+5.5%) and Microsoft (+0.3%).

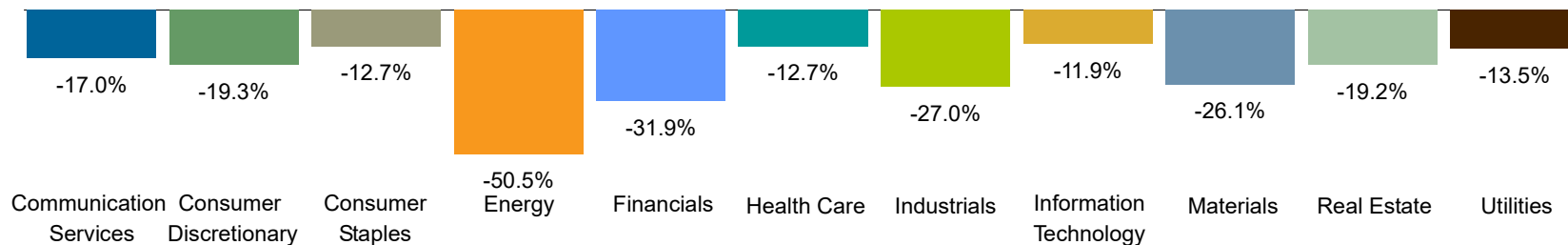
Large cap outpaces small cap for quarter

- Russell 2000 (-30.6%) experienced worst quarter on record.
- Perceived safety of larger companies combined with more acute exposure to COVID-19 impact (restaurants, hotels, airlines) drove sell-off .
- Russell 2000 Value exposure to Energy (especially E&P companies) and Financials (banks) drove results.

Growth outpaces value across market capitalizations

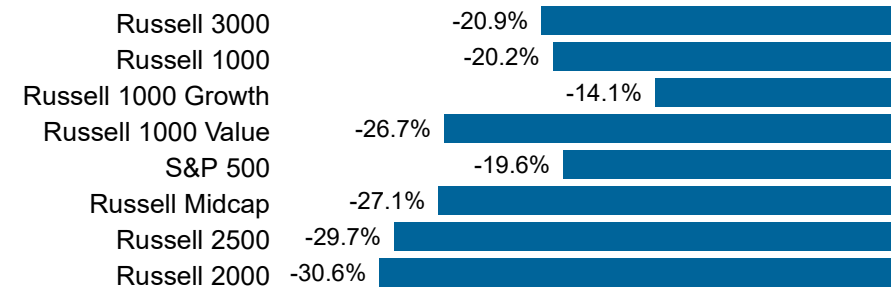
- Spread between Russell 1000 Growth (-14.1%) and Russell 2000 Value (-35.7%) one of widest on record

Economic Sector Quarterly Performance (S&P 500)

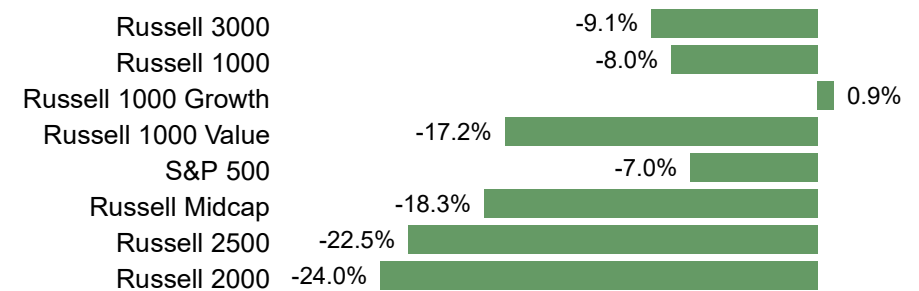


Sources: FTSE Russell, S&P Dow Jones Indices

U.S. Equity: Quarterly Returns



U.S. Equity: One-Year Returns



Global ex-U.S. Equity Performance

Worst sell-off since 2008

- Global economic activity halted with shelter-in-place response to COVID-19.
- Oil price war between Saudi Arabia and Russia further exacerbated market meltdown.
- Decisive actions to contain the outbreak and stimulate the economy allowed China to outperform every developed and developing country.

Cyclical sectors imploded

- Energy, Financial, and travel-related industries derailed by pandemic, looming global recession, and oil price war.
- Factor performance favored risk aversion, including beta, size and volatility, reflecting “risk-off” market environment.

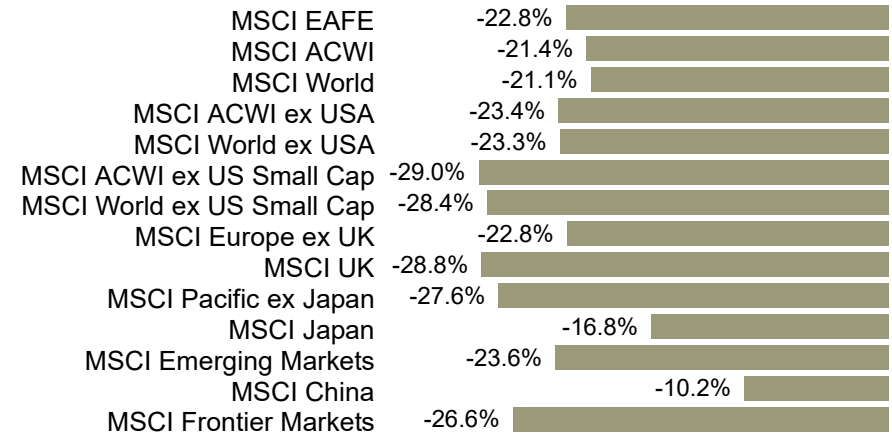
U.S. dollar vs. other currencies

- Safe-haven currencies (U.S. dollar, Swiss franc, and yen) were bid up as market volatility peaked and outperformed other major currencies.

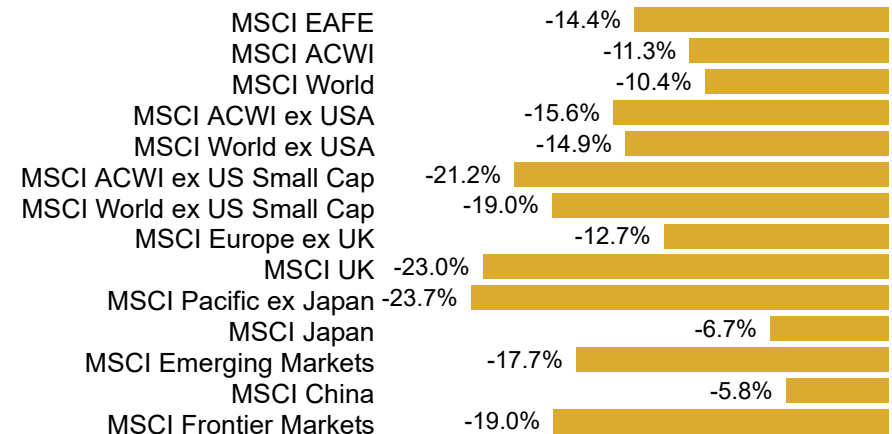
Growth vs. value

- Growth continued to outperform value within markets and capitalizations, supported by Health Care, Consumer Staples, and Tech.

Global Equity: Quarterly Returns



Global Equity: Annual Returns



Source: MSCI

U.S. Fixed Income Performance

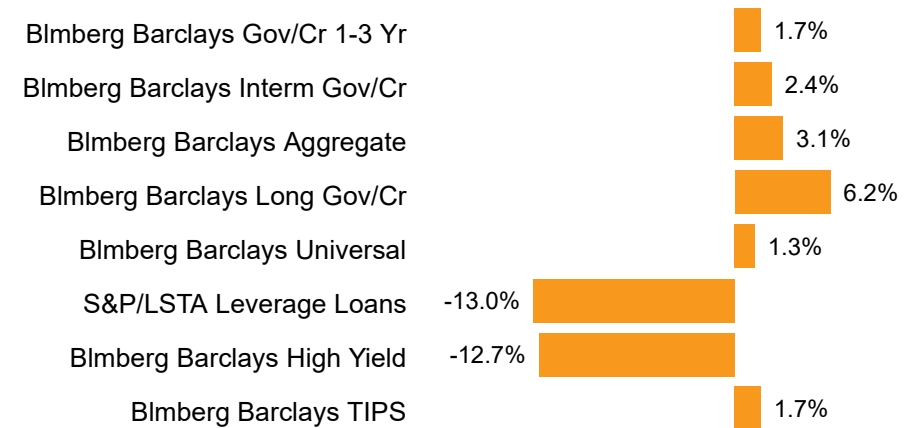
Treasuries rallied as investors sought safety

- The 10-year U.S. Treasury yield reached a low in March of 0.31% before closing the quarter at 0.70%, down sharply from the 2019 year-end level of 1.92%.
- The Treasury yield curve steepened as the Fed cut rates to 0% - 0.25%.
- TIPS underperformed nominal Treasuries as expectations for inflation sank. The 10-year breakeven spread ended the quarter at 87 bps, down sharply from 177 bps at year-end.

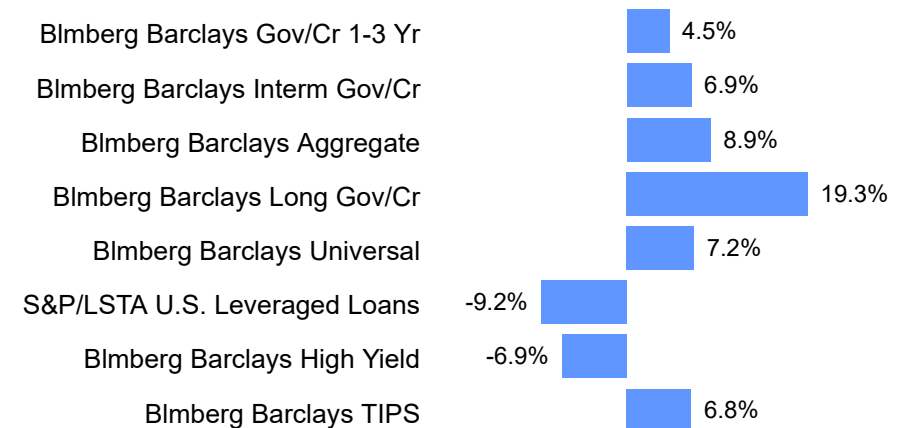
Investors spurned credit risk

- IG and HY funds saw record outflows as investors flocked to cash.
- IG corporate spreads widened by 149 bps to 272 bps, representing hardest-hit sector in BB Aggregate Index; several well-known Industrials issuers downgraded to below-investment grade, including Occidental Petroleum and Ford.
- Quality bias was evident as BBB-rated credit (-7.4%) underperformed single A or higher (+0.5%).
- CCC-rated high yield corporates (-20.6%) lagged BB-rated corporates (-10.2%).
- Energy (-38.9%) was the lowest-performing high yield bond sub-sector as oil prices collapsed.

U.S. Fixed Income: Quarterly Returns



U.S. Fixed Income: Annual Returns



Sources: Bloomberg Barclays, S&P Dow Jones Indices

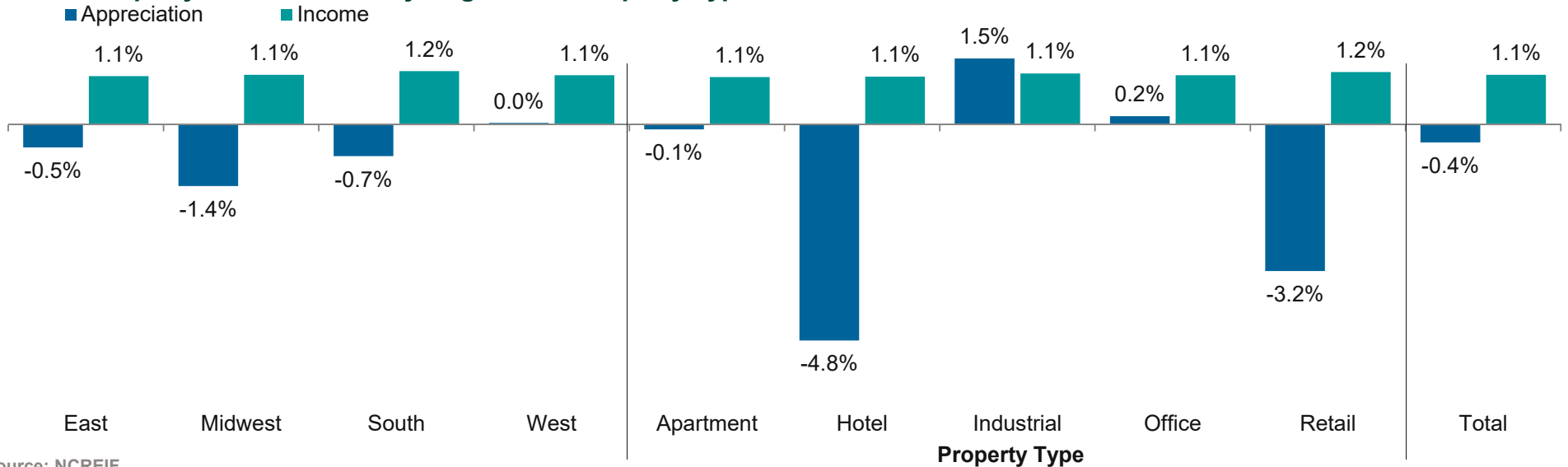
U.S. Private Real Estate Market Trends

Results

- Initial impact of pandemic reflected in Q1 results
- Positive return due to income
- Industrial real estate performed well.
- Retail depreciation accelerated this quarter.
- Dispersion of returns by manager within the ODCE Index due to composition of underlying portfolios but also valuation methodologies/approach
- Negative returns expected for the second quarter and beyond.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
NCREIF ODCE	1.0%	4.9%	6.8%	8.5%	11.5%
Appreciation	0.0%	0.7%	2.5%	3.9%	6.3%
Income	1.0%	4.2%	4.2%	4.4%	4.9%
NCREIF Property Index	0.7%	5.3%	6.4%	7.7%	10.2%
Appreciation	-0.4%	0.7%	1.8%	2.9%	5.7%
Income	1.1%	4.5%	4.6%	4.7%	4.6%

NCREIF Property Index Returns by Region and Property Type



Source: NCREIF

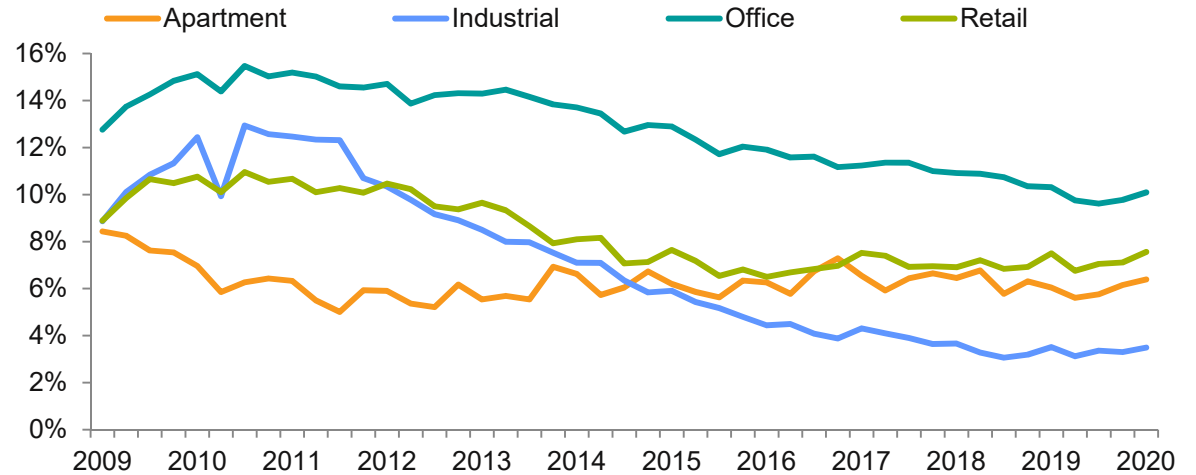
U.S. Private Real Estate Market Trends

Source: NCREIF

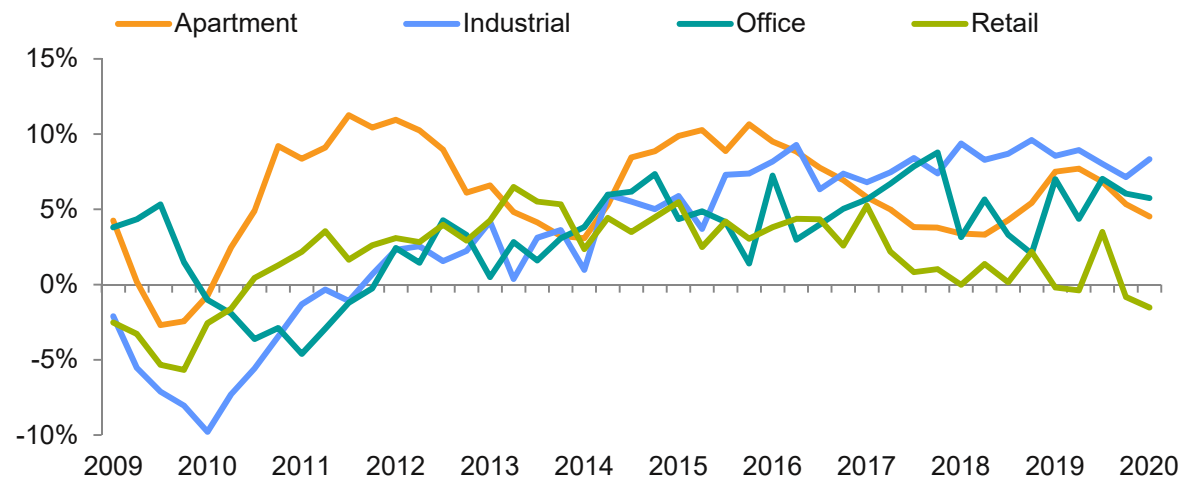
U.S. real estate fundamentals

- Vacancy rates for all property types are or will be impacted.
- Limited change in net operating income but the second quarter will show declines.
- April rent collections show malls severely impacted followed by other types of retail. Class A/B urban apartments are relatively strong, followed by certain types of Industrial and Office.
- Supply was in check prior to the pandemic.
- Construction is limited to finishing up existing projects but has been hampered by shelter in place and material shortages.
- New construction will be basically halted in future quarters except for pre-leased properties.

Vacancy by Property Type

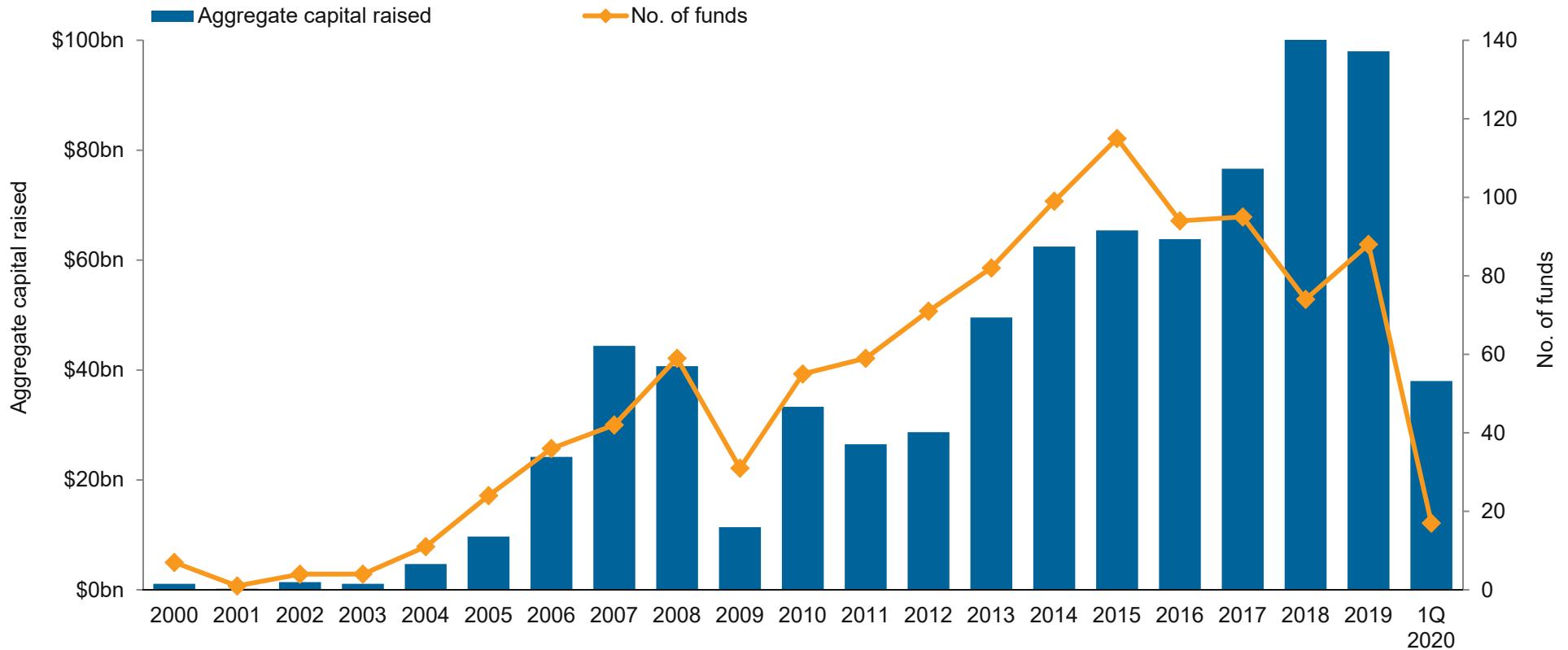


4-Quarter Rolling NOI Growth by Property Type



Infrastructure Fundraising Momentum Continued Through 1Q20

Mega-funds continue to dominate fundraising



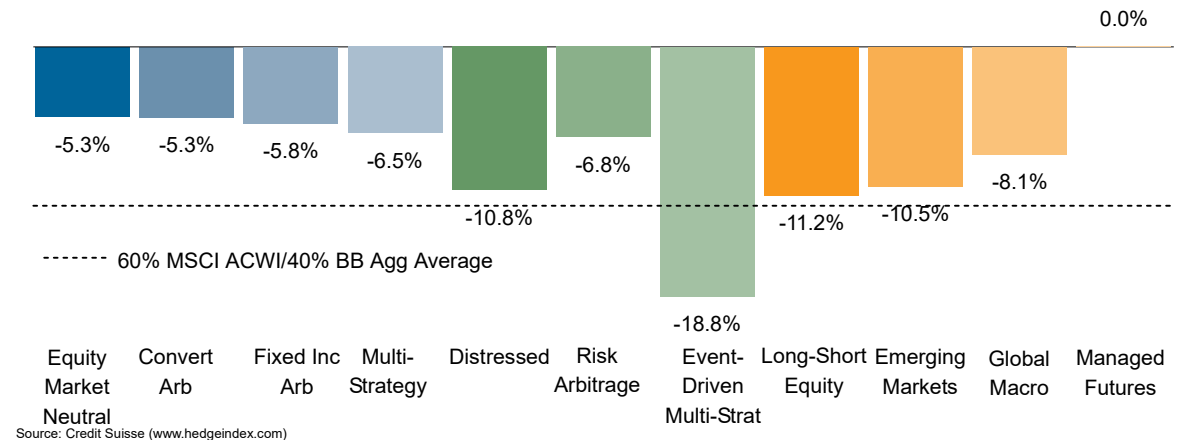
- 1Q20 was the third-largest quarter for closed-end infrastructure fundraising, following 4Q19 (\$43 billion) and 3Q18 (\$38 billion). The closed-end fund market continues to expand, with infrastructure debt, emerging markets, and sector-specific strategies (e.g., communications and renewables). Investor interest in mezzanine or debt-focused funds has increased.
- Open-end funds raised significant capital in 2019, and the universe of investable funds continues to increase as the sector matures.
- In 2020 assets with guaranteed/contracted revenue or more inelastic demand patterns (e.g., renewables, telecoms, and utilities) fared better than assets with GDP/demand-based revenue (e.g. airports, seaports, midstream-related).

Source: Preqin and Callan research

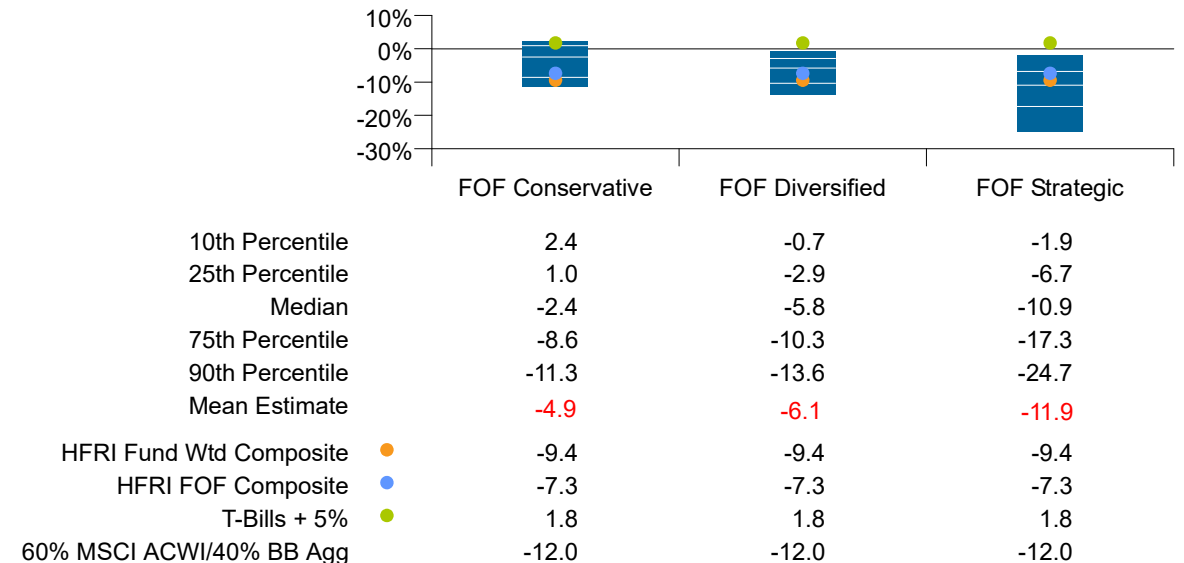
Hedge Fund Performance

- Breaking bad: Be careful what you wish for
 - As capital markets collapsed, hedge funds saw volatility they longed for...
 - Long-biased exposure to equity and credit bore brunt of quarter’s meltdown; results exponentially worse with leverage.
 - Long-Short Equity suffered losses in line with its equity market beta, suggesting modest “alpha” in the market turbulence.
 - Event-Driven suffered from market decline, illiquidity, and deal risk, especially within Multi-Strategy (-18.8%) trading “soft” events.
 - Distressed likely not reflecting full impact of valuation declines.
 - Relative Value styles as well as Risk Arb slumped with spreads widening during March’s derisking but trimmed losses by quarter end.
 - Managed Futures (+0.0%) was flat, as equity trend reversal offset gains from continuing trends in rates and commodities, esp. energy.
 - Global Macro (-8.1%) reflects negative impact of very large funds like Bridgewater.

Credit Suisse Hedge Fund Strategy Returns (quarter ended 3/31/20)



Preliminary HFRI FOF Style Group Returns (quarter ended 3/31/20)



Hedge Fund and MAC Industry Trends

Volatility less suppressed with recession ahead

- Equity volatility reverted to above-average levels, creating trading opportunities for hedge funds.
- Pricing of risk assets least likely to be supported by monetary and fiscal stimulus; equities and lower grade credits to rely more on underlying fundamentals. Rising tide of credit to bail them out again?

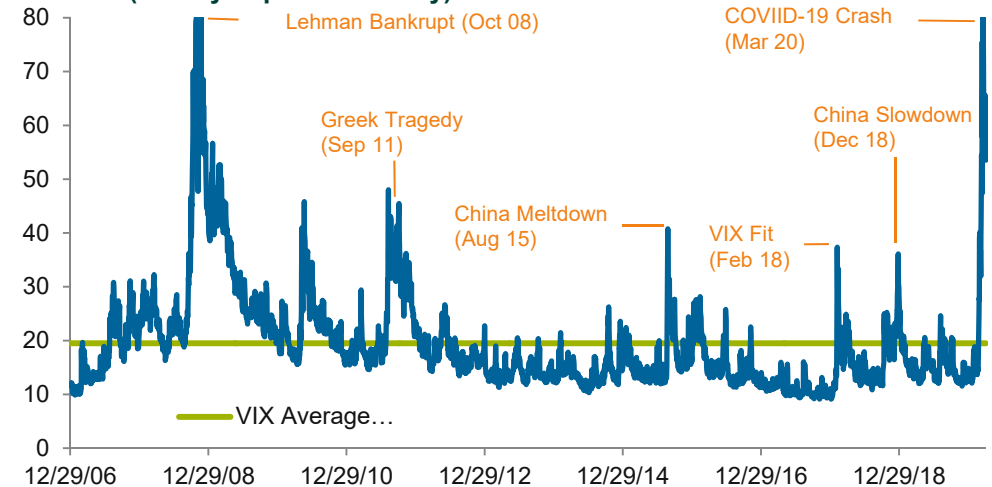
Extremely low yields on long-duration bonds likely to create renewed appetite for hedge funds

- Improved alpha outlook for strongest survivors due to enduring market vol and intra-market dispersion

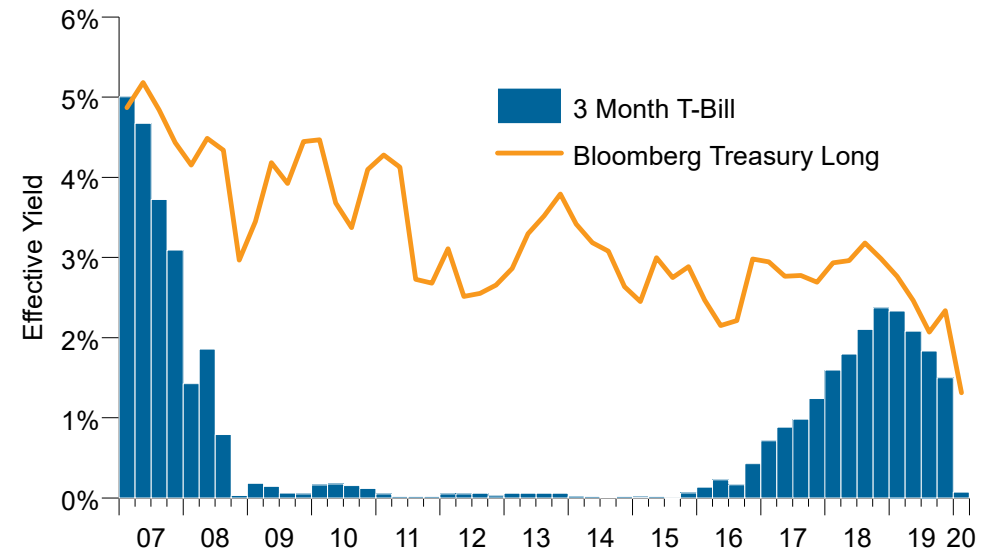
Callan Institutional Hedge Funds (CIHF) to consider

- Callan's peer group provides representative benchmark for clients directly investing in hedge funds as well as candidates to consider.
- Previously closed managers selectively open to clients willing to allocate more. Stated NAVs, though, need vetting for further fundamental weakness.

VIX Index (30-Day Implied Volatility) since 2006



90-day T-bill vs. Bloomberg Long Treasury Yields

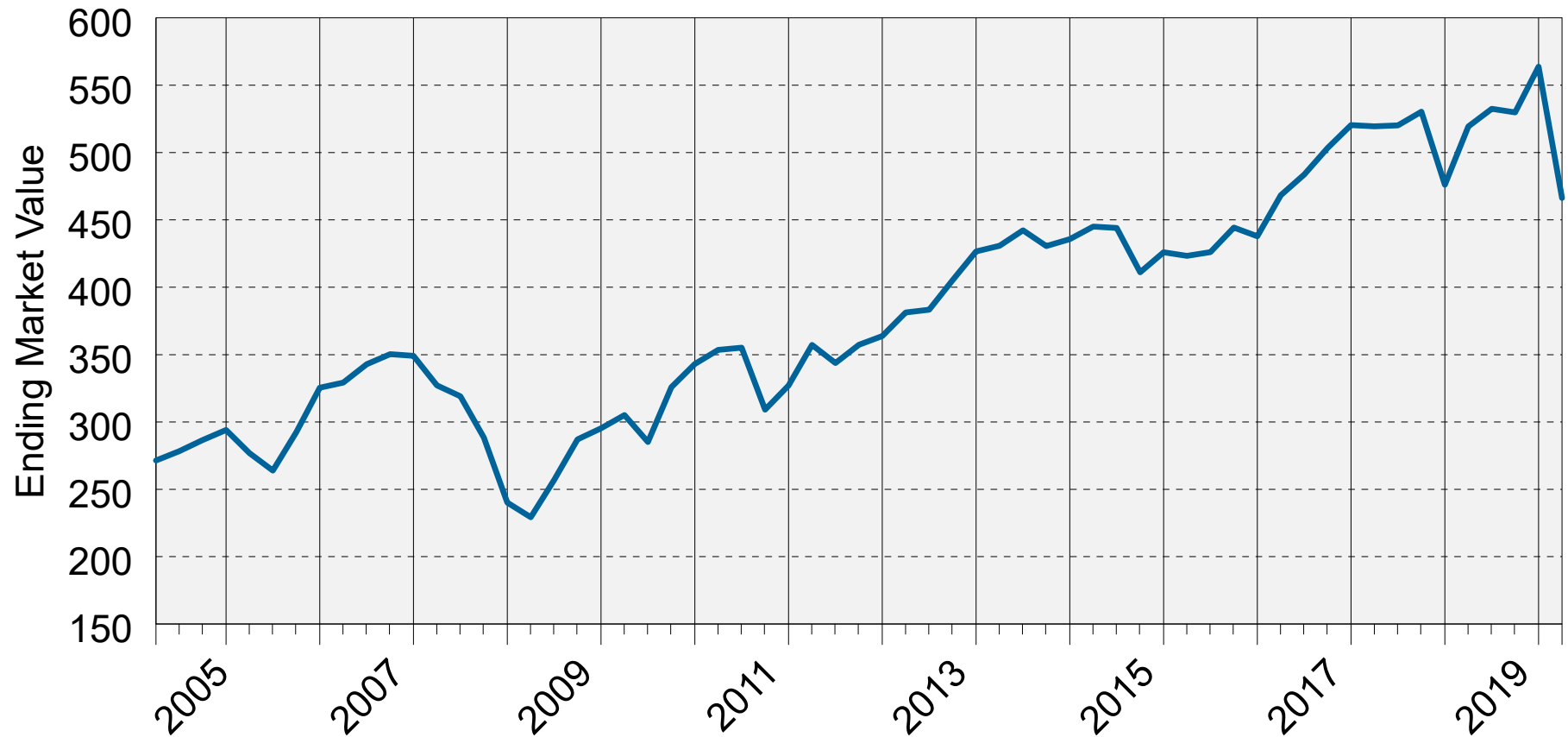


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MCERA Plan Performance

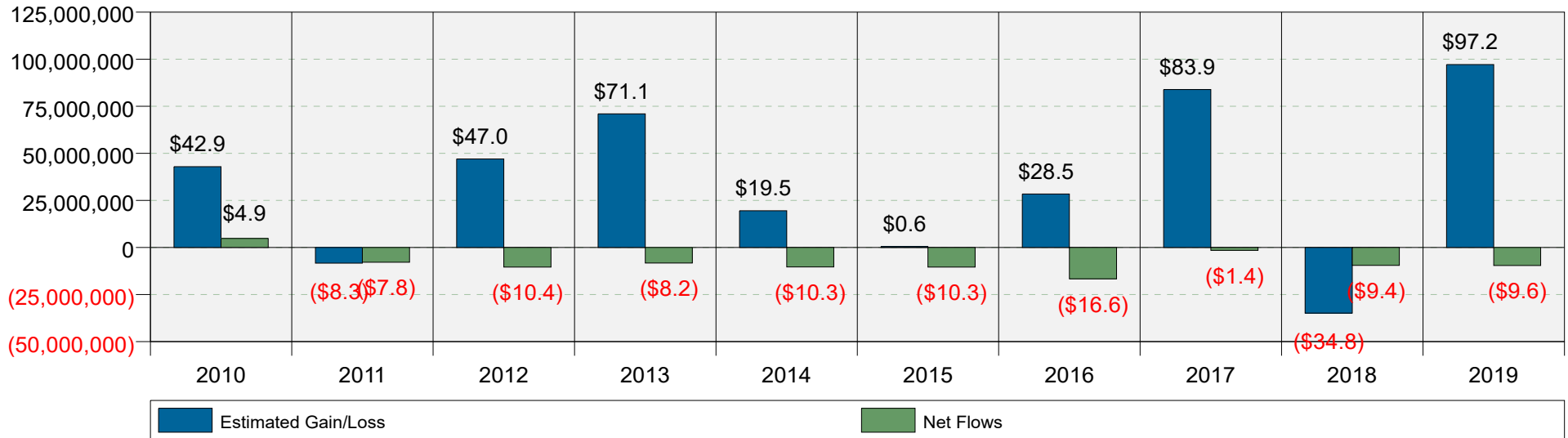
Total MCERA Plan Growth

MCERA Ending Market Value
for 15 Years Ended March 31, 2020



Total MCERA Plan Growth

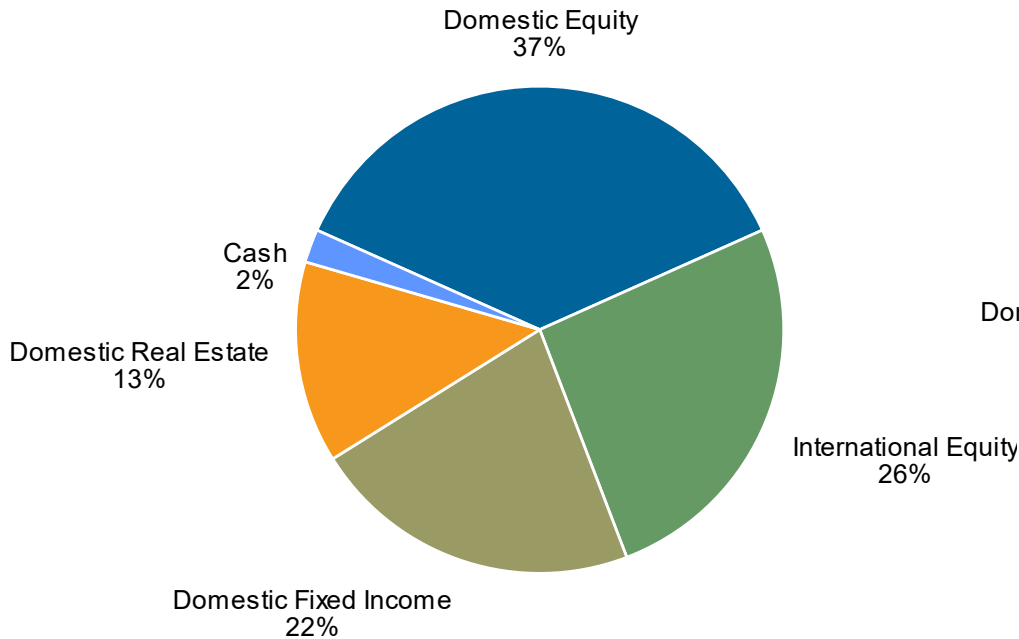
Investment Gain/Loss and Net Contribution/Distribution MCERA for 10 Years Ended December 31, 2019



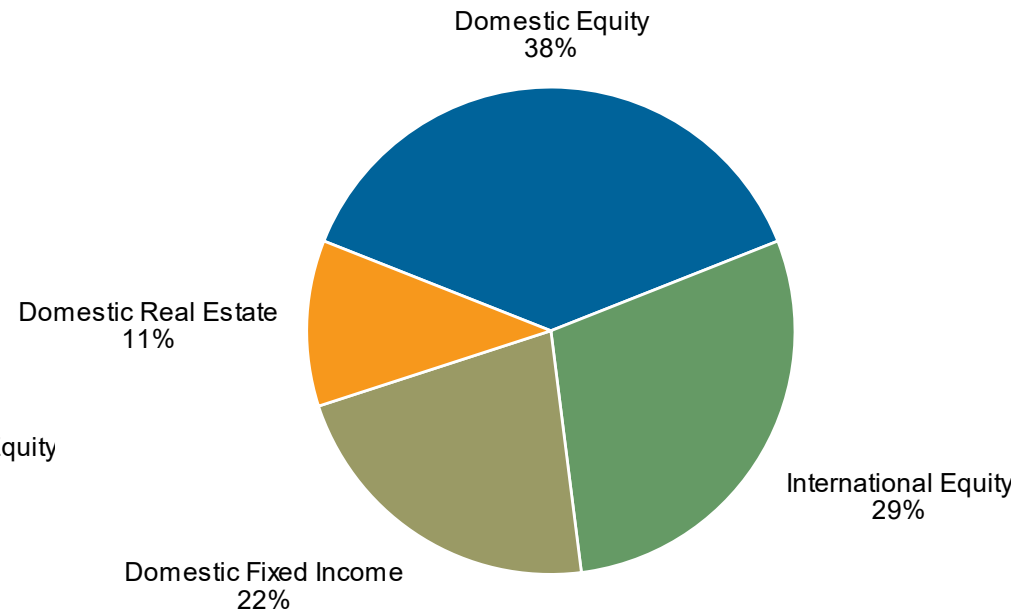
	March 31, 2020			December 31, 2019		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Domestic Equities	\$170,639,865	36.59%	\$(3,600,000)	\$(54,366,548)	\$228,606,413	40.54%
International Equities	\$120,691,448	25.88%	\$4,000,000	\$(42,115,661)	\$158,807,109	28.16%
Domestic Fixed Income	\$102,286,771	21.94%	\$(13,000,000)	\$820,891	\$114,465,881	20.30%
Real Estate	\$62,394,980	13.38%	\$(8,593)	\$649,301	\$61,754,272	10.95%
Cash	\$10,281,560	2.20%	\$10,064,388	\$0	\$217,172	0.04%
Total Fund	\$466,294,625	100.0%	\$(2,544,205)	\$(95,012,017)	\$563,850,847	100.0%

MCERA Actual vs Target Asset Allocation as of March 31, 2020

Actual Asset Allocation



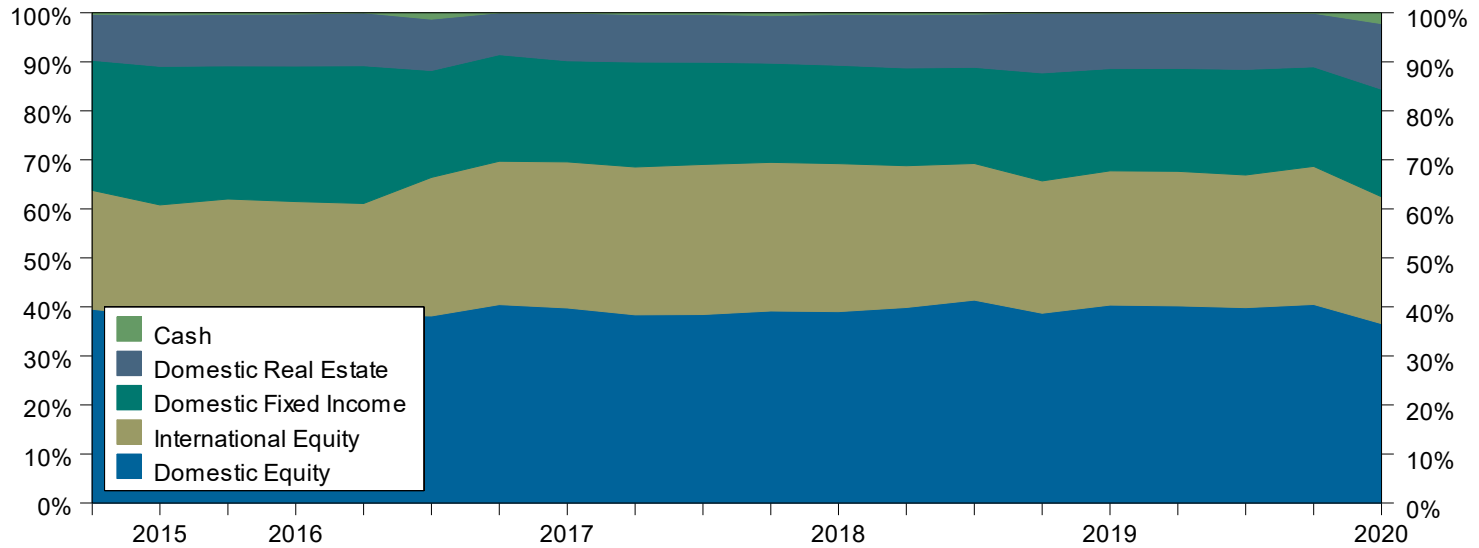
Target Asset Allocation



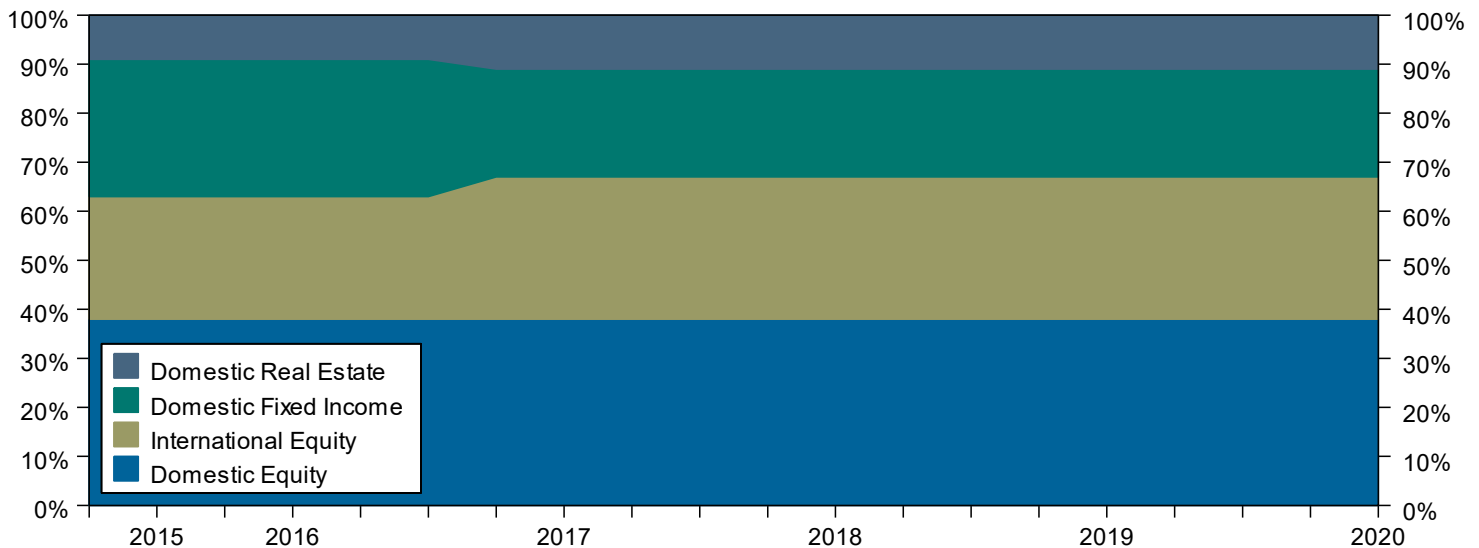
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equity	170,640	36.6%	38.0%	(1.4%)	(6,552)
International Equity	120,691	25.9%	29.0%	(3.1%)	(14,534)
Domestic Fixed Income	102,287	21.9%	22.0%	(0.1%)	(298)
Domestic Real Estate	62,395	13.4%	11.0%	2.4%	11,103
Cash	10,282	2.2%	0.0%	2.2%	10,282
Total	466,295	100.0%	100.0%		

MCERA Actual vs Target Historical Asset Allocation

Actual Historical Asset Allocation

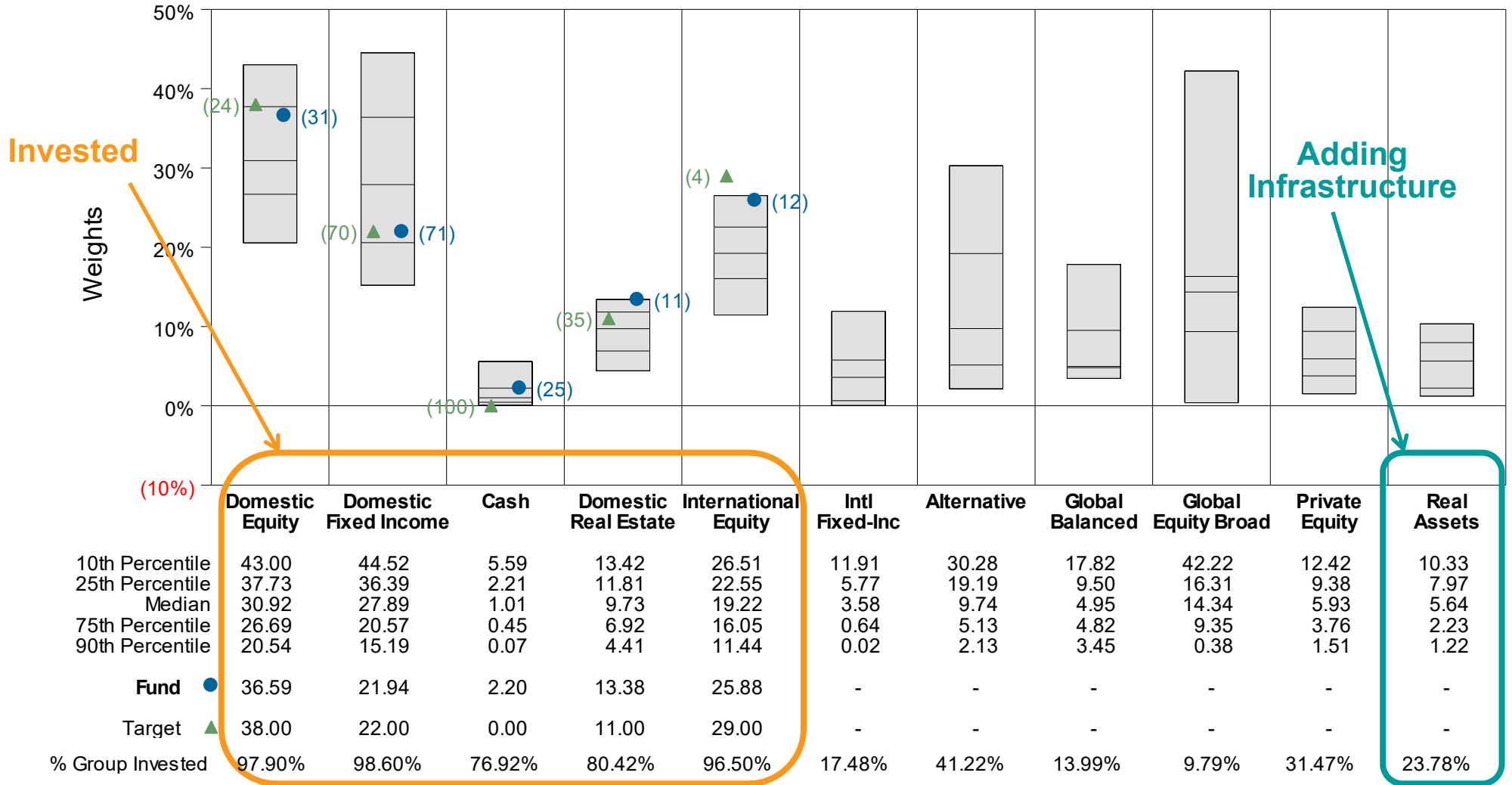


Target Historical Asset Allocation



MCERA Asset Class Weights vs Callan Public Fund Sponsor Database

Asset Class Weights vs Callan Public Fund Sponsor Database

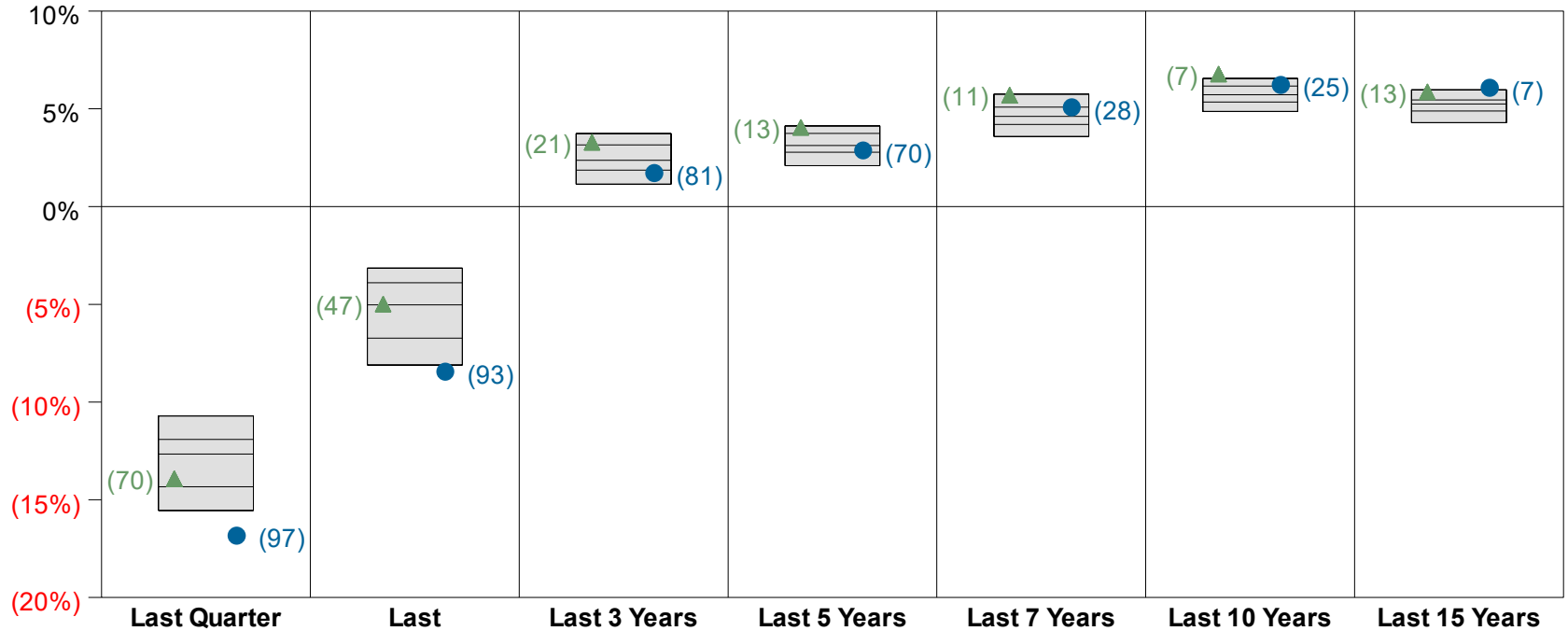


Asset Allocation as of March 31, 2020

	March 31, 2020				December 31, 2019	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Domestic Equities	\$170,639,865	36.59%	\$(3,600,000)	\$(54,366,548)	\$228,606,413	40.54%
Large Cap Equities	\$122,088,254	26.18%	\$(3,600,000)	\$(35,149,803)	\$160,838,057	28.52%
Vanguard S&P 500 Index	31,922,804	6.85%	0	(7,780,733)	39,703,537	7.04%
SSGA S&P Equal Weighted NL CTF	29,460,933	6.32%	0	(11,035,398)	40,496,331	7.18%
Boston Partners	28,549,358	6.12%	0	(11,684,528)	40,233,886	7.14%
Harbor Cap Appreciation	32,155,159	6.90%	(3,600,000)	(4,649,144)	40,404,303	7.17%
Mid Cap Equities	\$26,394,351	5.66%	\$0	\$(9,256,782)	\$35,651,133	6.32%
Fidelity Low Priced Stock	12,380,516	2.66%	0	(4,823,623)	17,204,140	3.05%
Janus Enterprise	14,013,835	3.01%	0	(4,433,158)	18,446,993	3.27%
Small Cap Equities	\$22,157,259	4.75%	\$0	\$(9,959,963)	\$32,117,222	5.70%
Prudential Small Cap Value	7,090,530	1.52%	0	(6,395,221)	13,485,752	2.39%
AB US Small Growth	15,066,729	3.23%	0	(3,564,742)	18,631,471	3.30%
International Equities	\$120,691,448	25.88%	\$4,000,000	\$(42,115,661)	\$158,807,109	28.16%
EuroPacific	22,696,322	4.87%	0	(6,562,919)	29,259,241	5.19%
Harbor International	27,471,664	5.89%	4,000,000	(7,761,297)	31,232,961	5.54%
Oakmark International	18,924,856	4.06%	0	(10,854,256)	29,779,112	5.28%
Mondrian International	20,664,993	4.43%	0	(7,902,917)	28,567,910	5.07%
T. Rowe Price Intl Small Cap	18,725,000	4.02%	0	(4,998,982)	23,723,982	4.21%
Investec	12,208,613	2.62%	0	(4,035,291)	16,243,904	2.88%
Domestic Fixed Income	\$102,286,771	21.94%	\$(13,000,000)	\$820,891	\$114,465,881	20.30%
Dodge & Cox Income	52,296,496	11.22%	(5,000,000)	(402,594)	57,699,090	10.23%
PIMCO	49,990,275	10.72%	(8,000,000)	1,223,485	56,766,790	10.07%
Real Estate	\$62,394,980	13.38%	\$(8,593)	\$649,301	\$61,754,272	10.95%
RREEF Private	32,006,454	6.86%	0	300,655	31,705,799	5.62%
Barings Core Property Fund	29,100,526	6.24%	0	340,053	28,760,473	5.10%
625 Kings Court	1,288,000	0.28%	(8,593)	8,593	1,288,000	0.23%
Cash	\$10,281,560	2.20%	\$10,064,388	\$0	\$217,172	0.04%
Total Fund	\$466,294,625	100.0%	\$(2,544,205)	\$(95,012,017)	\$563,850,847	100.0%

MCERA Total Fund Performance as of March 31, 2020

Performance vs Callan Public Fund Sponsor Database (Net)

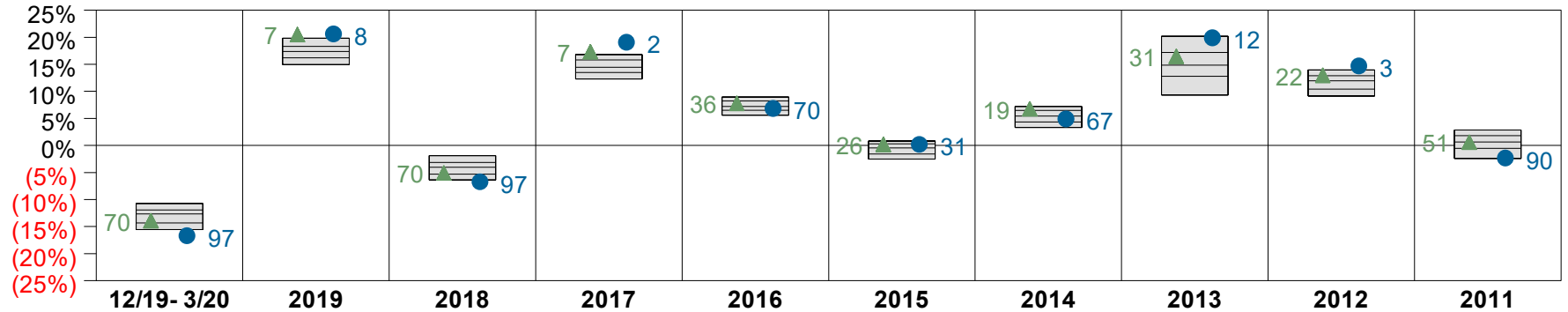


10th Percentile	(10.71)	(3.16)	3.74	4.13	5.75	6.55	5.98
25th Percentile	(11.92)	(3.90)	3.16	3.74	5.08	6.16	5.45
Median	(12.67)	(5.03)	2.37	3.12	4.61	5.73	5.24
75th Percentile	(14.33)	(6.73)	1.86	2.78	4.20	5.35	4.90
90th Percentile	(15.55)	(8.10)	1.15	2.09	3.59	4.87	4.29
Total Fund	● (16.88)	(8.50)	1.66	2.81	5.03	6.17	6.03
Total Fund Benchmark	▲ (13.92)	(4.98)	3.29	4.05	5.70	6.78	5.87

- The Callan Public Fund Sponsor Database consists of public employee pension total funds including both Callan LLC client and surveyed non-client funds.
- Returns greater than one year are annualized

MCERA Total Fund Performance as of March 31, 2020

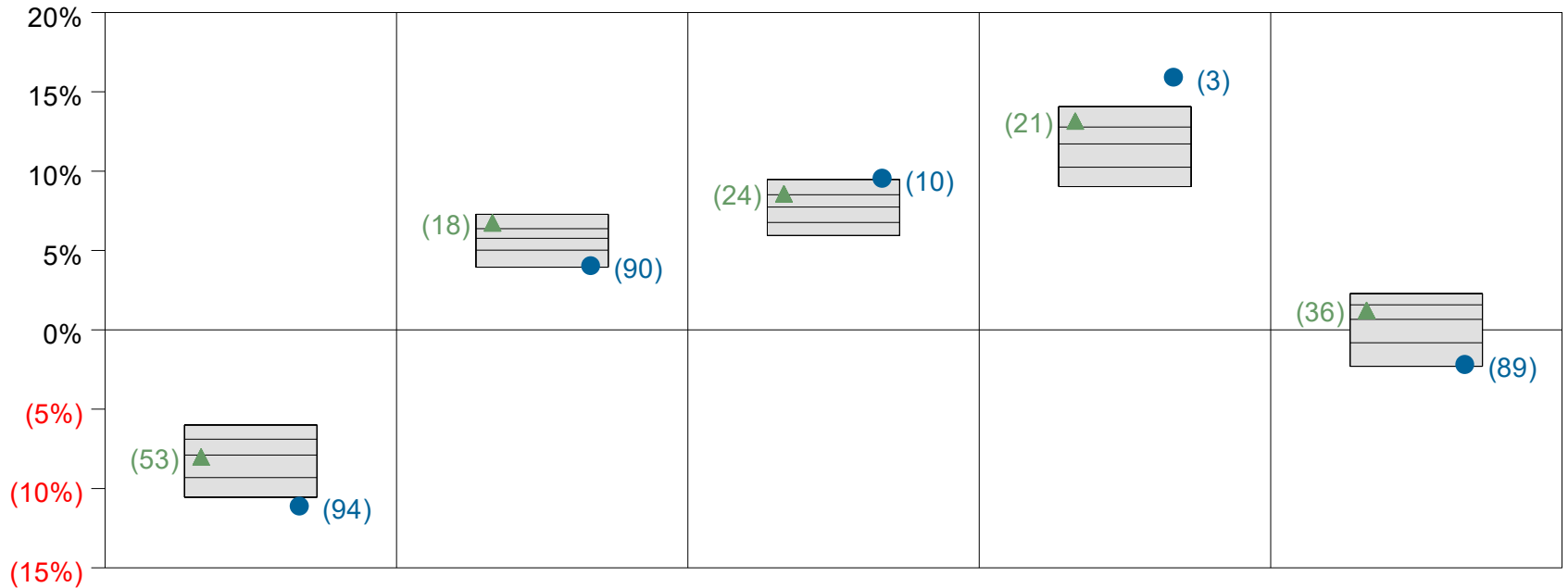
Performance vs Callan Public Fund Sponsor Database (Net)



	12/19- 3/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(10.71)	19.82	(1.89)	16.81	8.94	0.81	7.19	20.18	13.96	2.86
25th Percentile	(11.92)	18.31	(3.14)	15.83	8.20	0.29	6.48	17.17	12.89	1.79
Median	(12.67)	17.36	(4.02)	14.46	7.21	(0.46)	5.43	14.85	11.95	0.63
75th Percentile	(14.33)	16.21	(5.29)	13.48	6.51	(1.58)	4.34	12.78	10.41	(0.54)
90th Percentile	(15.55)	14.92	(6.37)	12.30	5.60	(2.51)	3.33	9.31	9.13	(2.44)
Total Fund ●	(16.88)	20.43	(6.92)	18.89	6.67	0.01	4.72	19.72	14.53	(2.53)
Total Fund Benchmark ▲	(13.92)	20.50	(5.07)	17.34	7.78	0.21	6.80	16.47	12.99	0.60

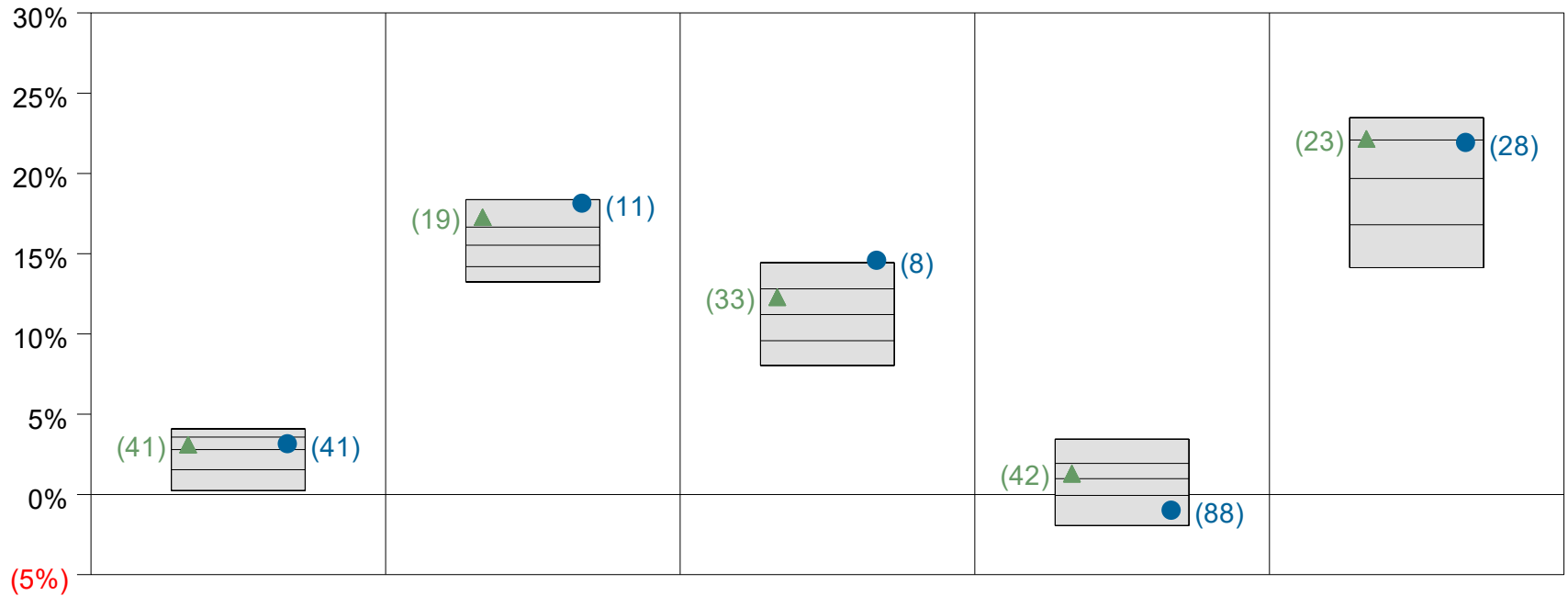
MCERA Total Fund Fiscal Year Performance

March 31, 2020



	Fiscal YTD	FY 2019	FY 2018	FY 2017	FY 2016
10th Percentile	(5.99)	7.28	9.48	14.07	2.29
25th Percentile	(6.89)	6.37	8.52	12.79	1.58
Median	(7.90)	5.77	7.74	11.72	0.67
75th Percentile	(9.31)	5.03	6.77	10.26	(0.81)
90th Percentile	(10.55)	3.95	5.95	9.04	(2.30)
Total Fund ●	(11.18)	3.97	9.48	15.86	(2.26)
Total Fund Benchmark ▲	(8.01)	6.75	8.57	13.16	1.23

MCERA Total Fund Fiscal Year Performance (continued)

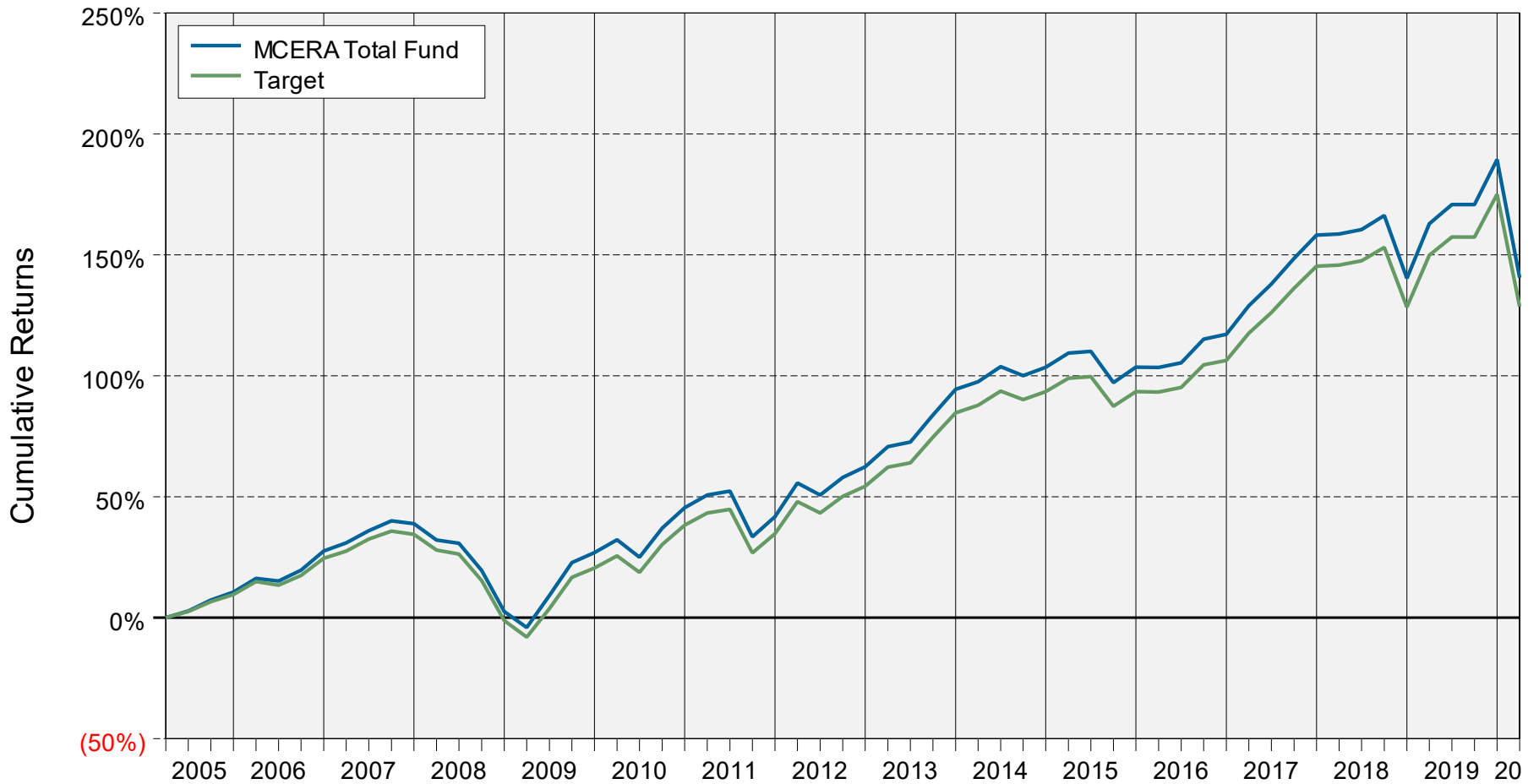


	FY 2015	FY 2014	FY 2013	FY 2012	FY 2011
10th Percentile	4.09	18.37	14.44	3.44	23.47
25th Percentile	3.57	16.66	12.81	1.93	22.08
Median	2.80	15.53	11.21	0.99	19.68
75th Percentile	1.54	14.19	9.58	(0.06)	16.80
90th Percentile	0.24	13.23	8.03	(1.94)	14.14
Total Fund ●	3.09	18.08	14.52	(1.04)	21.87
Total Fund Benchmark ▲	3.10	17.27	12.29	1.30	22.15

MCERA Cumulative Total Fund Performance

For 15 Years Ended March 31, 2020

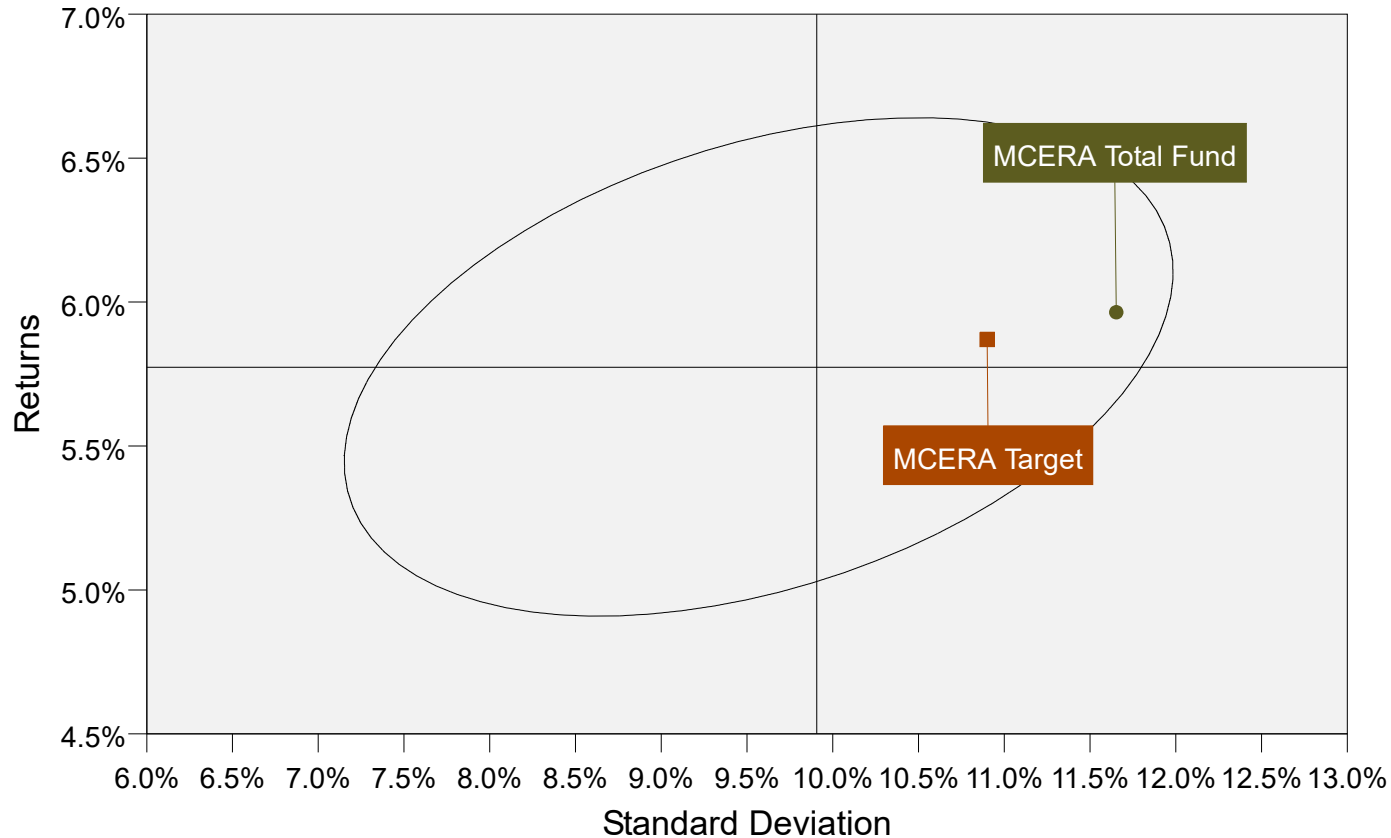
Fifteen Year Cumulative Returns



MCERA Annualized Return vs Risk

15 Years Ended March 31, 2020

Group: Callan Public Fund Sponsor Database



- The chart above plots 15 year annualized return vs standard deviation of the MCERA Total Fund and the Total Fund Target. Over the trailing 15 year period the MCERA Total Fund has achieved an annualized return slightly higher than the Total Fund Target with higher volatility.

Cumulative Total Fund Relative Attribution

March 31, 2020

Relative Attribution Effects for Quarter ended March 31, 2020

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	40%	38%	(23.86%)	(20.90%)	(1.19%)	(0.14%)	(1.33%)
Domestic Fixed Income	19%	22%	0.80%	3.15%	(0.45%)	(0.43%)	(0.89%)
Domestic Real Estate	11%	11%	1.05%	0.71%	0.04%	(0.00%)	0.03%
International Equity	29%	29%	(26.59%)	(23.26%)	(0.96%)	0.03%	(0.93%)
Cash	1%	0%	0.00%	0.00%	0.00%	0.14%	0.14%
Total			(16.88%)	(13.92%)	(2.56%)	(0.41%)	(2.97%)

Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	39%	38%	4.36%	5.77%	(0.52%)	(0.04%)	(0.56%)
Domestic Fixed Income	23%	24%	3.27%	3.36%	(0.04%)	(0.14%)	(0.18%)
Domestic Real Estate	10%	10%	7.31%	7.39%	(0.00%)	(0.00%)	(0.01%)
International Equity	27%	28%	(2.13%)	(0.17%)	(0.52%)	0.02%	(0.51%)
Cash	0%	0%	0.00%	0.00%	0.00%	0.02%	0.02%
Total			2.81%	4.05%	(1.09%)	(0.14%)	(1.24%)

Investment Manager Returns for Periods Ended March 31, 2020

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 15 Years
Domestic Equities	(23.86%)	(13.72%)	2.66%	4.36%	8.26%	9.54%	7.38%
Russell 3000 Index	(20.90%)	(9.13%)	4.00%	5.77%	8.96%	10.15%	7.50%
Large Cap Equities							
Vanguard S&P 500 Index	(19.60%)	(7.00%)	5.08%	6.70%	-	-	-
S&P 500 Index	(19.60%)	(6.98%)	5.10%	6.73%	9.62%	10.53%	7.58%
SSGA S&P Eq Weighted NL CTF	(27.27%)	(17.77%)	-	-	-	-	-
S&P 500 Eq Weighted	(26.70%)	(17.56%)	(0.44%)	2.79%	7.12%	9.21%	7.57%
Boston Partners	(29.04%)	(19.79%)	(2.83%)	0.62%	4.93%	-	-
S&P 500 Index	(19.60%)	(6.98%)	5.10%	6.73%	9.62%	10.53%	7.58%
Russell 1000 Value Index	(26.73%)	(17.17%)	(2.18%)	1.90%	5.56%	7.67%	5.41%
Harbor Cap Appreciation (1)	(11.80%)	0.06%	12.90%	10.63%	13.83%	12.84%	10.13%
S&P 500 Index	(19.60%)	(6.98%)	5.10%	6.73%	9.62%	10.53%	7.58%
Russell 1000 Growth Index	(14.10%)	0.91%	11.32%	10.36%	12.93%	12.97%	9.69%
Mid Cap Equities							
Fidelity Low Priced Stock	(28.04%)	(18.10%)	(2.26%)	0.69%	4.71%	7.23%	6.51%
Russell MidCap Value Idx	(31.71%)	(24.13%)	(5.97%)	(0.76%)	4.06%	7.22%	6.03%
Janus Enterprise (2)	(24.03%)	(12.74%)	6.43%	6.97%	10.47%	11.71%	-
Russell MidCap Growth Idx	(20.04%)	(9.45%)	6.53%	5.61%	9.49%	10.89%	8.64%
Small Cap Equities							
Prudential Small Cap Value (3)	(47.42%)	(44.02%)	(18.29%)	(8.08%)	(2.08%)	-	-
MSCI US Small Cap Value Idx	(36.65%)	(31.38%)	(10.11%)	(2.78%)	1.77%	13.33%	10.62%
Russell 2000 Value Index	(35.66%)	(29.64%)	(9.51%)	(2.42%)	1.80%	8.89%	7.17%
AB US Small Growth (4)	(19.13%)	(9.59%)	10.46%	8.21%	10.79%	13.33%	10.62%
Russell 2000 Growth Index	(25.76%)	(18.58%)	0.10%	1.70%	6.47%	8.89%	7.17%

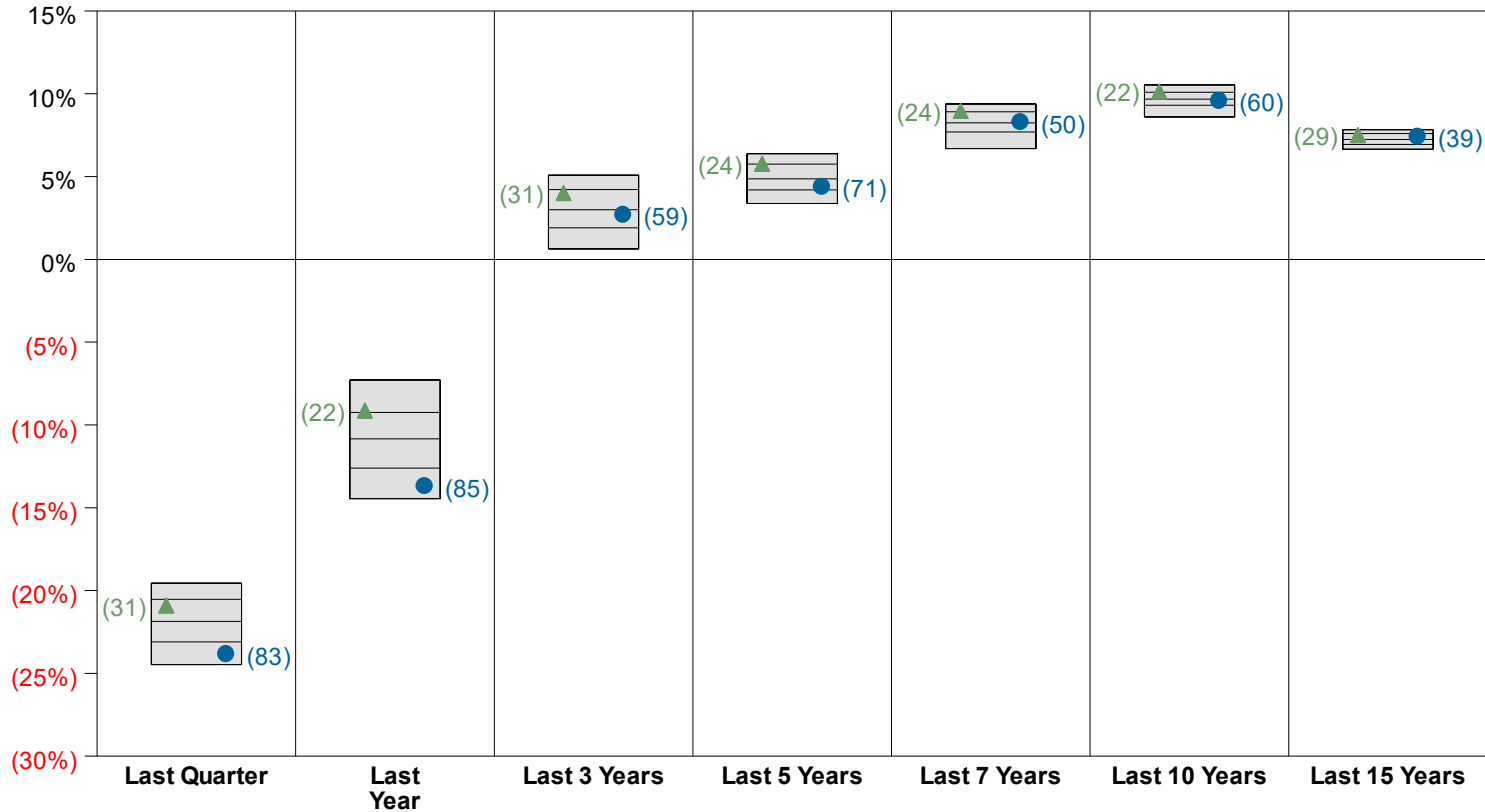
Investment Manager Returns for Periods Ended March 31, 2020 (continued)

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 15 Years
International Equities	(26.59%)	(18.29%)	(4.33%)	(2.13%)	0.31%	1.64%	4.00%
MSCI ACWI ex-US Index	(23.26%)	(15.14%)	(1.48%)	(0.17%)	1.53%	2.24%	2.74%
EuroPacific	(22.43%)	(12.70%)	0.29%	0.91%	3.46%	3.97%	5.36%
Harbor International (1)	(24.85%)	(16.06%)	(5.05%)	(3.24%)	(0.63%)	1.56%	-
Oakmark International (2)	(36.45%)	(27.59%)	(10.37%)	(5.13%)	(0.72%)	2.03%	-
Mondrian International	(27.82%)	(21.65%)	(5.44%)	(2.91%)	(0.26%)	-	-
MSCI EAFE Index	(22.83%)	(14.38%)	(1.82%)	(0.62%)	1.75%	2.72%	3.06%
MSCI ACWI ex-US Index	(23.26%)	(15.14%)	(1.48%)	(0.17%)	1.53%	2.52%	3.86%
T. Rowe Price Intl Small Cap	(21.28%)	(12.37%)	-	-	-	-	-
MSCI ACWI ex US Small Cap	(29.01%)	(21.18%)	(4.89%)	(0.81%)	1.05%	-	-
Investec	(25.00%)	(18.52%)	-	-	-	-	-
MSCI Emerging Markets Index	(23.60%)	(17.69%)	(1.62%)	(0.36%)	(0.40%)	-	-
Domestic Fixed Income	0.80%	6.42%	4.21%	3.27%	3.13%	4.06%	4.81%
Blmbg Aggregate Index	3.15%	8.93%	4.82%	3.36%	3.19%	3.88%	4.40%
Dodge & Cox Income	(0.70%)	5.08%	3.86%	3.28%	3.32%	4.14%	5.02%
PIMCO	2.19%	7.64%	4.51%	3.24%	2.92%	4.11%	-
Blmbg Aggregate Index	3.15%	8.93%	4.82%	3.36%	3.19%	3.88%	4.40%
Real Estate	1.05%	5.72%	6.66%	7.31%	8.82%	10.40%	7.06%
Real Estate Custom Benchmark (3)	0.71%	4.38%	6.14%	7.39%	8.76%	10.44%	7.46%
RREEF Private	0.95%	5.57%	6.60%	8.05%	9.73%	11.22%	6.73%
Barings Core Property Fund	1.18%	5.34%	6.29%	7.79%	8.31%	-	-
NFI-ODCE Equal Weight Net	0.71%	4.38%	6.14%	7.82%	9.09%	10.55%	6.41%
625 Kings Court	0.67%	18.53%	16.88%	14.04%	16.11%	10.81%	7.16%
Total Fund	(16.88%)	(8.50%)	1.66%	2.81%	5.03%	6.17%	6.03%
Total Fund Benchmark	(13.92%)	(4.98%)	3.29%	4.05%	5.70%	6.78%	5.87%

MCERA Domestic Equity Composite Performance

For Periods Ended March 31, 2020

Performance vs Public Fund - Domestic Equity (Net)

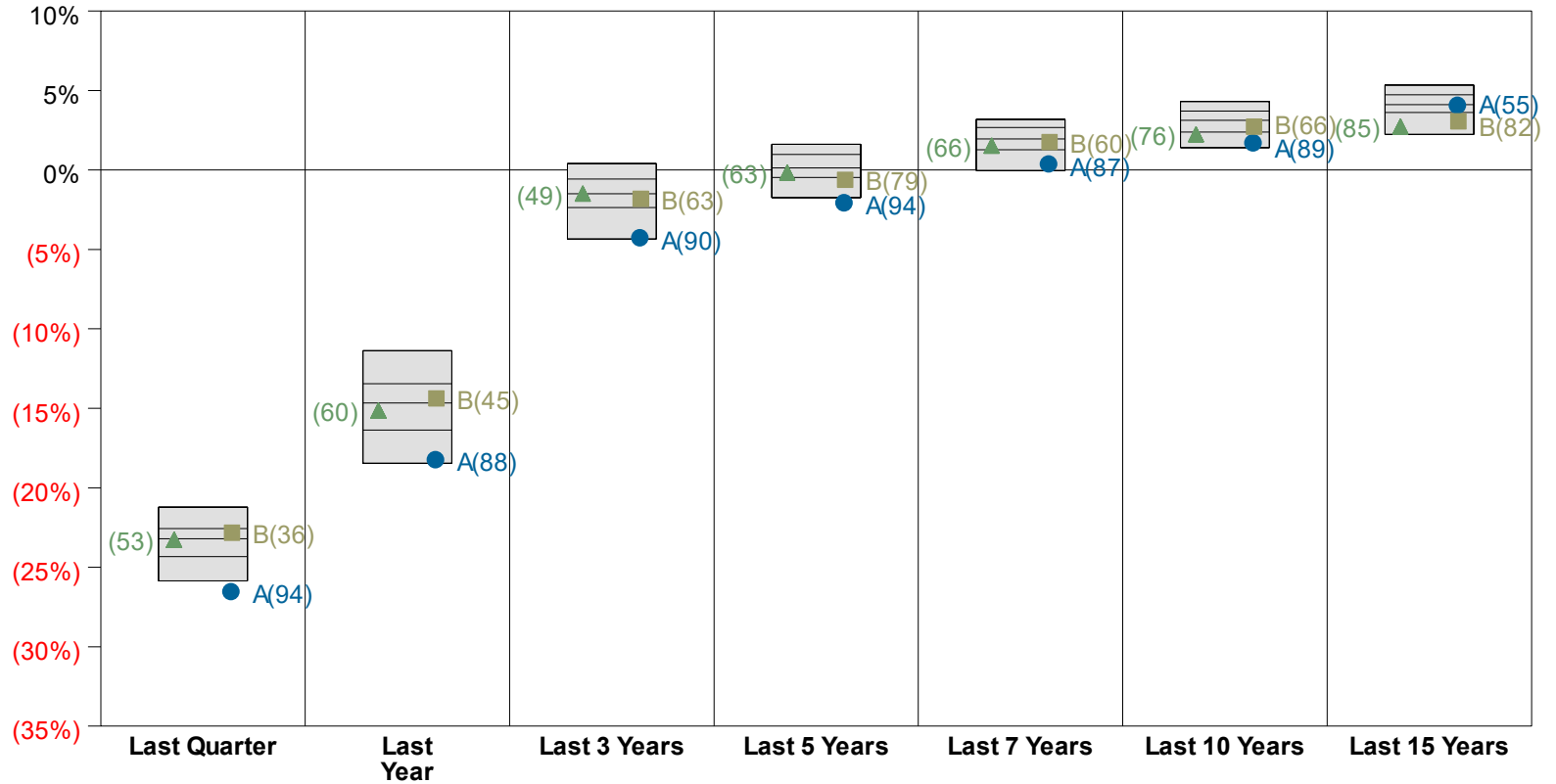


10th Percentile	(19.55)	(7.28)	5.08	6.39	9.38	10.53	7.83
25th Percentile	(20.53)	(9.24)	4.21	5.75	8.90	10.10	7.59
Median	(21.86)	(10.83)	2.99	4.86	8.25	9.68	7.25
75th Percentile	(23.10)	(12.61)	1.91	4.20	7.70	9.31	6.94
90th Percentile	(24.46)	(14.45)	0.63	3.37	6.68	8.61	6.65
Domestic Equity Composite	● (23.86)	(13.72)	2.66	4.36	8.26	9.54	7.38
Russell 3000 Index	▲ (20.90)	(9.13)	4.00	5.77	8.96	10.15	7.50

MCERA International Equity Composite Performance

For Periods Ended March 31, 2020

Performance vs Public Fund - International Equity (Net)



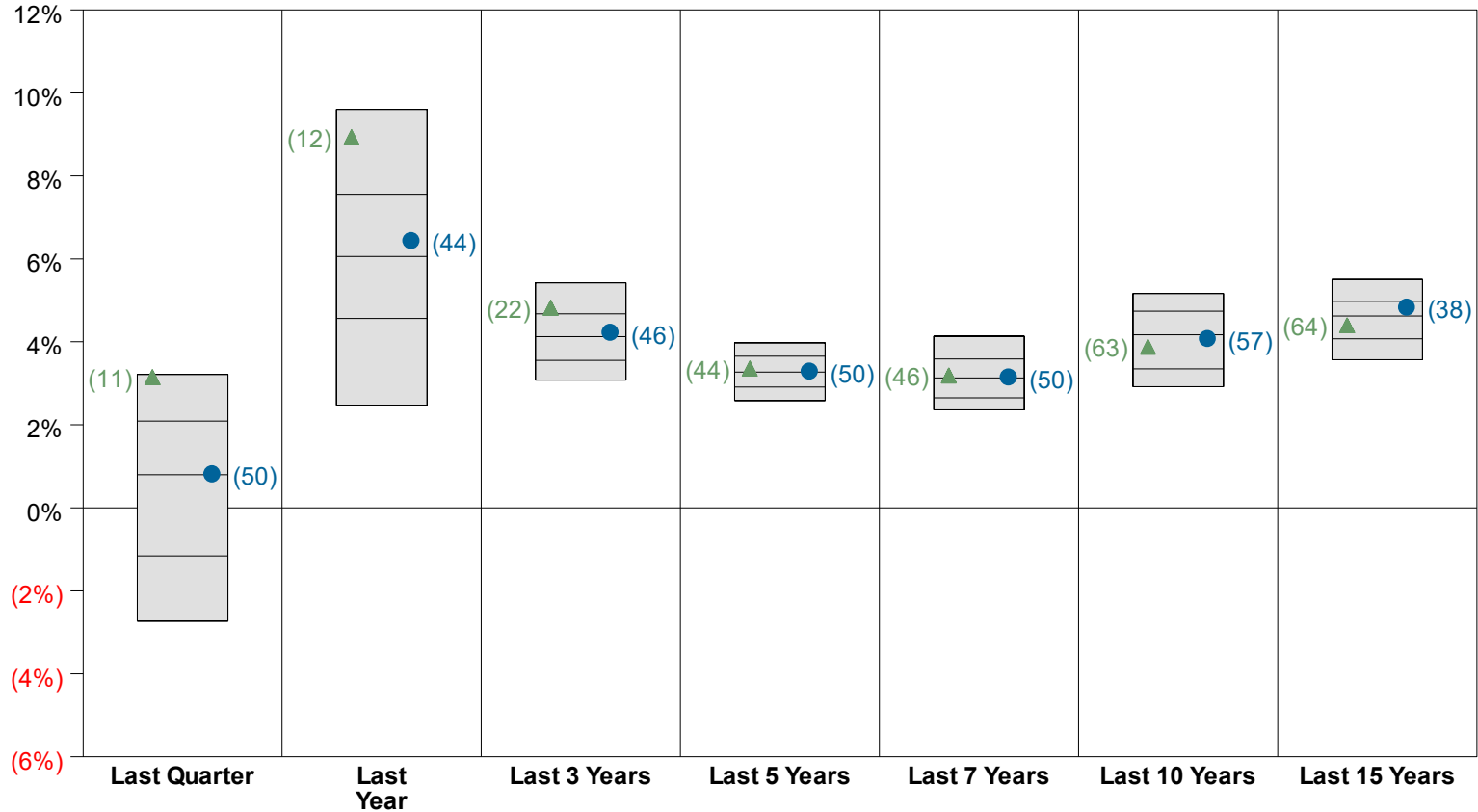
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 15 Years
10th Percentile	(21.22)	(11.36)	0.40	1.62	3.18	4.30	5.34
25th Percentile	(22.56)	(13.45)	(0.58)	0.98	2.68	3.70	4.73
Median	(23.20)	(14.66)	(1.50)	0.13	1.96	3.12	4.12
75th Percentile	(24.33)	(16.37)	(2.36)	(0.47)	1.27	2.38	3.62
90th Percentile	(25.85)	(18.46)	(4.34)	(1.74)	(0.04)	1.40	2.23

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 15 Years
International Equity Composite	● A (26.59)	(18.29)	(4.33)	(2.13)	0.31	1.64	4.00
MSCI EAFE Index	■ B (22.83)	(14.38)	(1.82)	(0.62)	1.75	2.72	3.06
MSCI ACWI ex-US Index	▲ (23.26)	(15.14)	(1.48)	(0.17)	1.53	2.24	2.74

MCERA Fixed Income Composite Performance

For Periods Ended March 31, 2020

Performance vs Public Fund - Domestic Fixed (Net)



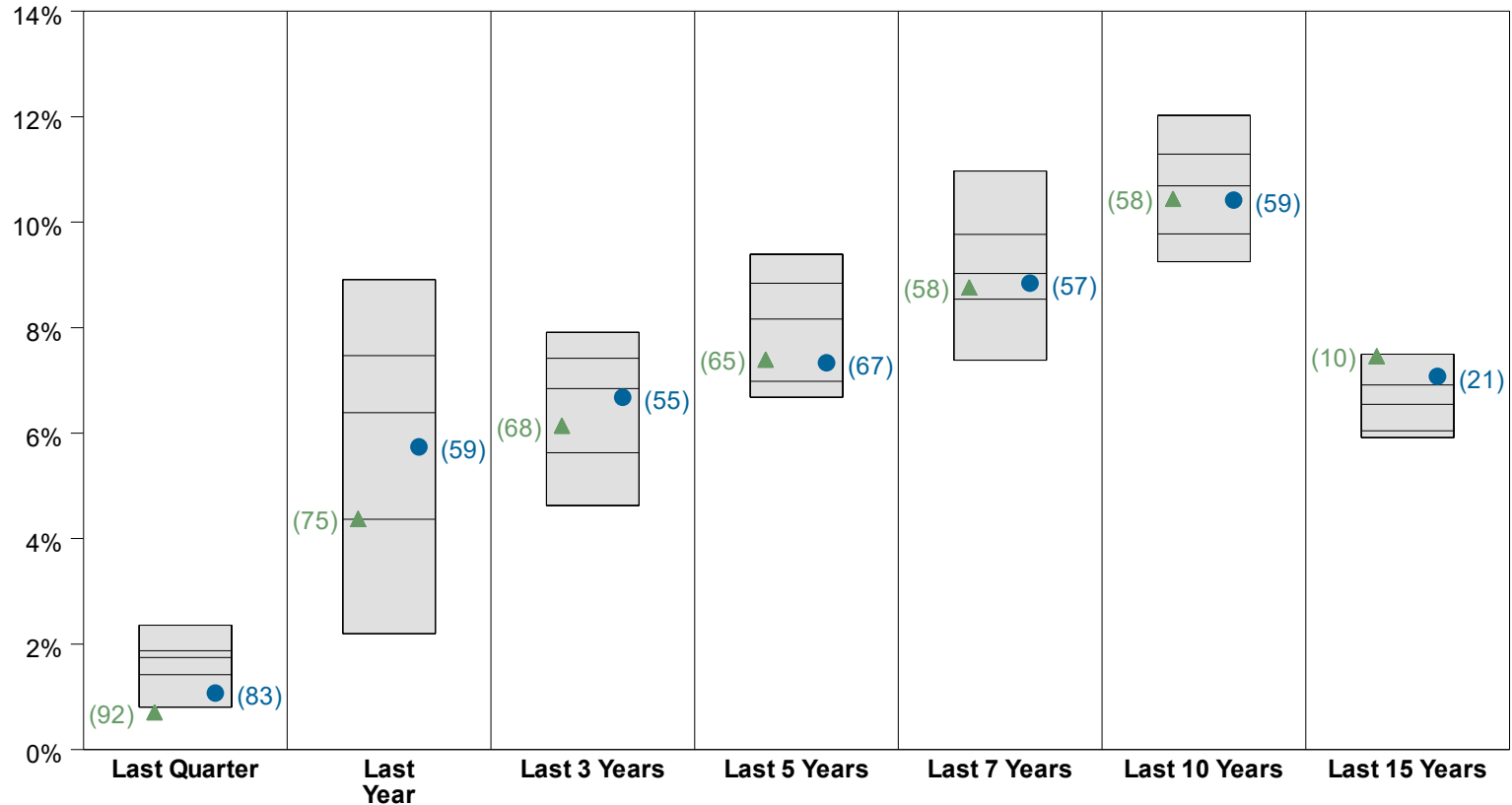
10th Percentile	3.22	9.60	5.42	3.98	4.14	5.17	5.50
25th Percentile	2.09	7.56	4.68	3.65	3.59	4.74	4.97
Median	0.80	6.06	4.13	3.27	3.13	4.17	4.62
75th Percentile	(1.16)	4.56	3.55	2.91	2.65	3.35	4.07
90th Percentile	(2.73)	2.47	3.08	2.58	2.36	2.92	3.57

	Domestic Fixed Income Composite (Blue Dot)	Blmbg Aggregate (Green Triangle)
Domestic Fixed Income Composite	0.80	6.42
Blmbg Aggregate	3.15	8.93
	4.21	4.82
	3.27	3.36
	3.13	3.19
	4.06	3.88
	4.81	4.40

MCERA Real Estate Composite Performance

For Periods Ended March 31, 2020

Performance vs Callan Open End Core Cmmingled Real Est (Net)



10th Percentile	2.36	8.91	7.91	9.39	10.97	12.03	7.50
25th Percentile	1.88	7.47	7.42	8.84	9.77	11.29	6.92
Median	1.75	6.39	6.84	8.16	9.03	10.69	6.55
75th Percentile	1.42	4.37	5.63	6.98	8.54	9.78	6.04
90th Percentile	0.81	2.20	4.63	6.68	7.38	9.25	5.92

Real Estate Composite	●	1.05	5.72	6.66	7.31	8.82	10.40	7.06
Real Estate Custom Benchmark	▲	0.71	4.38	6.14	7.39	8.76	10.44	7.46

Callan

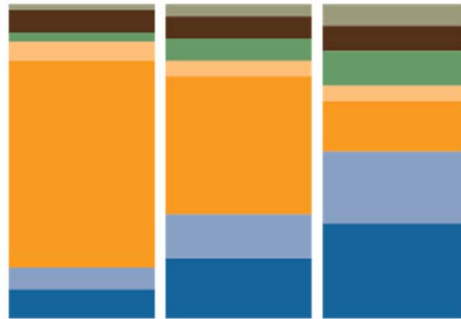
Callan Update

Published Research Highlights from 1Q20

2020 DC Trends Survey



Callan's 2020-2029 Capital Market Assumptions



How DC Plans Can Harness DC Plan Data for Better Outcomes



An Introduction to Our New Hedge Fund Peer Group



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Catherine Beard

Plus our [blog](#) contains a wide array of posts related to the pandemic

Additional Reading

Private Equity Trends quarterly newsletter

Active vs. Passive quarterly charts

Capital Market Review quarterly newsletter

Monthly Updates to the Periodic Table

Market Pulse Flipbook quarterly markets update

Real Assets Reporter quarterly newsletter

Callan Institute Events

Upcoming Conferences, Workshops, and Webinars

Upcoming Webinars

Hedge Fund Overview

May 21, 2020

China Update

July 8, 2020

Register at [callan.com/callan-institute-events](https://www.callan.com/callan-institute-events)

“Research, education, and dialogue are more important than ever in these extraordinary times, which is why I’m pleased to announce that we are adding more webinars, and we plan to expand our events to include roundtables and other interactive digital offerings.”

Barb Gerraty
Director, Callan Institute



On-Demand Webinars

Visit our website for On-Demand webinar options at <https://www.callan.com/on-demand-webinars/>

Our most recent webinar covered strategies in alternatives.

“Callan College”

Introduction to Investments for Institutional Investors

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. It lasts one-and-a-half days and is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities.

Alternative Investments for Institutional Investors

Alternative investments like private equity, hedge funds, and real estate can play a key role in any portfolio. In this one-day session, Callan experts will provide instruction about the importance of allocations to alternatives, and how to integrate, evaluate, and monitor them.

Program dates and registration can be found at [callan.com/callan-institute-events](https://www.callan.com/callan-institute-events)

Callan Updates

Firm updates by the numbers, as of March 31, 2020

Total Associates: 193

Ownership

- 100% employees
- Broadly distributed across more than 95 shareholders

Leadership Changes

- No executive additions or departures
- No leadership changes this quarter

Total General and Fund Sponsor Consultants: more than 45

Total Specialty and Research Consultants: more than 60

Total CFA/CAIA/FRMs: more than 55

Total Fund Sponsor Clients: more than 400

AUA: more than \$2.5 trillion

“We’ve been taking precautions to combat the spread of the virus and to safeguard the health of our employees, our clients, and the community at large. Our hearts go out to those directly affected by the virus, and to those whose lives are being disrupted by the downstream social and economic effects.”

- CEO & Chief Research Officer Greg Allen on Callan's COVID-19 Response



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