Callan

March 31, 2020

City of Milwaukee Employes' Retirement System

Investment Measurement Service Quarterly Review

Table of Contents
March 31, 2020

Table of Contents
March 31, 2020

Absolute Return

Real Assets

Callan Institute

First Quarter 2020

Capital Market Review

Pandemic Impact: What Happened?

ECONOMY

2 PAGE

The speed at which the response to the pandemic shut down the economy and affected the capital markets was unprecedented. We hit bear market territory for the U.S. stock market in 16 days. The sudden drop in economic activity matched the depth and speed of the market drop.

Results Rel ect Initial Impact of COVID-19

INSTITUTIONAL INVESTORS

4 PAGE

All four primary types of institutional investors experienced sharp declines in the i rst quarter and smaller drops for the 12 months ending March 31. Over the last 20 years, all plan types have produced returns in a narrow range of 5.1%-5.3%.

Record Plunge Amid Extreme Volatility

EQUITY

6 PAGE

U.S. equities experienced extreme volatility and near-record declines, in terms of speed. Large caps did relatively better; the Russell 2000 experienced its worst quarter ever. Growth continued to perform better vs. value across all market capitalizations.

Market Driven by Search for Safety

FIXED INCOME

8 PAGE

Treasuries rallied as investors sought safety. The yield curve steepened as the Fed cut rates. Investment grade and high yield bonds saw record outl ows. Global i xed income fell across the board, with the pain especially intense for emerging market debt.

Private RE Positive; Real Assets Hammered

REAL ESTATE/REAL ASSETS

10 PAGE

Private real estate rose, due to income gains. Returns are expected to fall in 2Q20 and beyond. Global REITs underperformed equities and bonds. Infrastructure saw record fundraising. Almost all real assets saw GFC-level drops, especially energy-related sectors.

Activity Declines as Public Equity Drops

PRIVATE EQUITY

12 PAGE

The public equity market decline slowed every aspect of private equity transaction activity. Valuations are likely to decline when i rst quarter numbers become available in early July. But historically, private equity has proven resilient in weathering downturns.

Notable Losses Amid Wider Market Plunge

HEDGE FUNDS/MACs

13 PAGE

The Credit Suisse Hedge Fund Index lost 9.0% in the i rst quarter. The Callan Hedge Fund-of-Funds Peer Group slumped 8.1%, net of all fees and expenses. And representing 50 of the largest, broadly diversiied hedge funds, the Callan Institutional Hedge Fund Peer Group fell 6.3%.

Index Posts Highest Return Since 2009

DEFINED CONTRIBUTION

15 PAGE

The Callan DC Index gained 21.9% in 2019, while the Age 45 Target Date Fund rose 24.0%. TDFs saw the biggest inlows for the quarter, while U.S. large cap equity saw the largest outlows. The allocation to equity hit 70.2%, the highest since the third quarter of 2018.

Broad Market Quarterly Returns

U.S. Equity	Global ex-U.S. Equity	U.S. Fixed Income	Global ex-U.S. Fixed Income
Russell 3000	MSCI ACWI ex USA	Bloomberg Barclays Agg	Bloomberg Barclays Gbl ex US
-20.9%	-23.4%	3.1%	-2.7%

Sources: Bloomberg Barclays, FTSE Russell, MSCI

What Just Happened?

ECONOMY | Jay Kloepfer

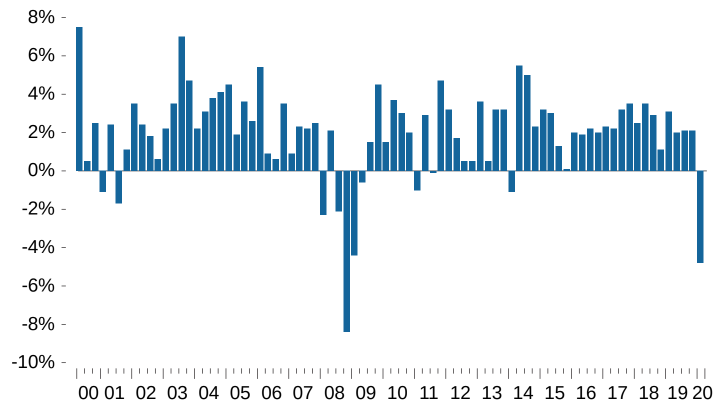
The unprecedented response to the COVID-19 pandemic touched every actor in the global economy: consumers, workers, businesses, shareholders and business owners, renters, property owners, nonproi ts, and governments at every level. The worldwide lockdown hit travel, transportation, and retail i rst, and spending collapsed in March as shelter-in-place orders and steep job losses restricted expenditures. Tax revenues plunged across all levels of government while demand for (and supply of) certain services ballooned. The Federal Reserve and central banks around the globe stepped in at record speed to revive and expand many of the policies developed during the Global Financial Crisis, to provide liquidity and support for i nancial markets that were seizing up in uncertainty. Governments rushed to offer massive i scal stimulus to backstop the economy.

All these actions were taken to address the economic impact of the shutdown. However, these policies can only address the symptoms of the economic dislocation. At its core, this event is a global health crisis, and its resolution depends on the containment of the spread of the virus and a vaccine. The full return of the economy depends on the coni dence that we are safe to resume jobs, travel, consumption, and daily interaction. Until then, the global economy will be hampered in ways we can only partly anticipate; the unmeasurable risk of the global health crisis will dominate for some time.

The speed with which the response to the pandemic shut down the economy and devastated coni dence in the capital markets was remarkable. We hit bear market territory for the U.S. stock market—dei ned as a decline of 20%—in 16 days, the second-fastest drop in history (dating back to the Great Depression), only missing the record by a day. We hit a bottom on March 23, when the U.S. market was down almost 34%. Equity markets around the globe were down by at least the same amount.

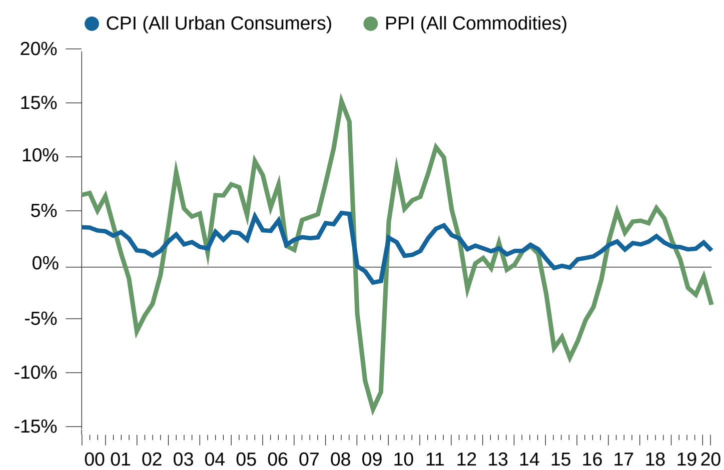
The U.S. economy inished February in pretty good shape, trending to a GDP growth rate for the i rst quarter of just above 2% annualized, with unemployment at a generational low of

Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Inl ation Year-Over-Year



Source: Bureau of Labor Statistics

3.5%. In a matter of weeks, as efforts to address the spread of the virus were enacted quickly, the sudden drop in economic activity matched the depth and speed of the stock market drop. The national emergency was declared March 13, most shelter-in-place orders came over the next couple of weeks, and the economic impact was sudden and severe.

Initial unemployment claims came in at 211,000 the i rst week of March, at trend for the year, and moved up to 282,000 in the second week, normally an alarming increase of 34%. However, claims then shot up to 3.3 million the next week and doubled again to 6.9 million the following week. While my commentary is focused on the i rst quarter, it is important to note that through the fourth week of April, claims have reached almost 30 million in just six weeks. Economic activity hit a serious bump after March 13, with 2½ weeks left in the quarter. The loss in this short period to GDP pulled growth from 2% as March began to a fall of 4.8% for the i rst quarter, a swing of almost 7% in less than three weeks. This was the largest quarterly decline since the fourth quarter of 2008.

As large and surprising as the i rst quarter drop may be, a much steeper plunge is in store for the U.S. and the rest of the global economy in the second quarter. Consensus projections are for second quarter GDP to fall by up to 35% (annual rate), and for consumption to fall by more than 40%. These numbers would be cartoonish, if they weren't so dire.

The pullback in business activity, employment, labor income, and subsequently in consumption is without modern parallel, and the usual measures of gauging economic activity must be viewed through a new lens to gain meaning. Percent changes in GDP around a cataclysmic event like this are difi cult to grasp and not very helpful; a more useful approach will be to compare levels now and in the future versus pre-COVID. Percent change is more useful in describing an economy moving smoothly through normal cycles of expansion and recession.

The Long-Term View

Index	2020 1st Qtr	Periods Ended 3/31/20 Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	-20.9	-9.1	5.8	10.1	8.8
S&P 500	-19.6	-7.0	6.7	10.5	8.9
Russell 2000	-30.6	-24.0	-0.2	6.9	7.6
Global ex-U.S. Equity					
MSCI EAFE	-22.8	-14.4	-0.6	2.7	4.0
MSCI ACWI ex USA	-23.4	-15.6	-0.6	2.1	--
MSCI Emerging Markets	-23.6	-17.7	-0.4	0.7	--
MSCI ACWI ex USA Small Cap	-29.0	-21.2	-0.8	2.8	4.6
Fixed Income					
Bloomberg Barclays Agg	3.1	8.9	3.4	3.9	5.5
90-Day T-Bill	0.6	2.3	1.2	0.6	2.4
Bloomberg Barclays Long G/C	6.2	19.3	6.0	8.1	7.9
Bloomberg Barclays Gl Agg ex US	-2.7	0.7	2.0	1.4	3.8
Real Estate					
NCREIF Property	0.7	5.3	7.6	10.2	9.3
FTSE Nareit Equity	-27.3	-21.3	-0.3	7.4	9.2
Alternatives					
CS Hedge Fund	-9.0	-4.3	0.2	3.0	7.4
Cambridge PE*	5.7	16.6	12.8	13.7	15.3
Bloomberg Commodity	-23.3	-22.3	-7.8	-6.7	0.6
Gold Spot Price	4.8	23.0	6.2	3.7	5.8
Inl ation – CPI-U	0.4	1.5	1.8	1.7	2.2

*Data for most recent period lags by a quarter. Data as of Dec. 31, 2019.
Sources: Bloomberg, Bloomberg Barclays, Bureau of Economic Analysis, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices, Rei nitiv/Cambridge

On a hopeful note, in the words of Dr. Anthony Fauci, "this pandemic will be over, I promise." The monetary and i scal response is massive and is keeping markets liquid. The S&P 500 was down 20% through March, but has retreated to a loss of 12% year-to-date through April, and the index is now at a level comparable to both September 2019 and one year ago. Finally, we will adapt and learn to live and work safely, just as we learned to l y safely after 9/11.

Recent Quarterly Economic Indicators

	1Q20	4Q19	3Q19	2Q19	1Q19	4Q18	3Q18	2Q18
Employment Cost–Total Compensation Growth	2.8%	2.7%	2.8%	2.7%	2.8%	2.9%	2.8%	2.8%
Nonfarm Business–Productivity Growth	-2.5%	1.2%	-0.3%	2.6%	3.8%	0.5%	1.6%	2.0%
GDP Growth	-4.8%	2.1%	2.1%	2.0%	3.1%	1.1%	2.9%	3.5%
Manufacturing Capacity Utilization	73.5%	75.0%	75.4%	75.5%	76.4%	77.0%	76.9%	76.4%
Consumer Sentiment Index (1966=100)	96.4	97.2	93.8	98.4	94.5	98.2	98.1	98.3

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

Results Rel ect the Initial Impact of the Pandemic

INSTITUTIONAL INVESTORS

– All four primary types of institutional investors experienced sharp declines in the i rst quarter and smaller drops for the 12 months ending March 31. A quarterly rebalanced 60% S&P 500/40% Bloomberg Barclays Aggregate portfolio declined 10.9% during the quarter and 0.4% over the year. Equities, represented by the S&P 500 Index, experienced a much-sharper decline of 19.6%.

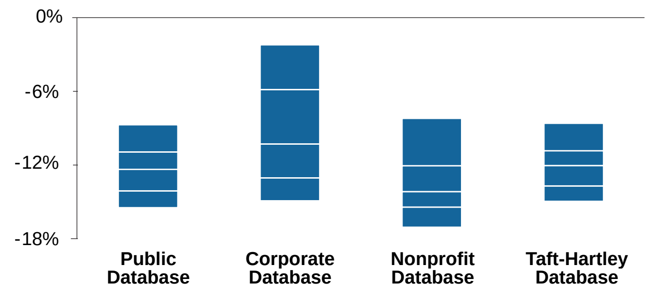
– Over the one-year period, corporate dei ned benei t (DB) plans showed the smallest decline, nonproi ts the sharpest.

– Over longer time periods, corporate DB plans have been the best performers. But over the last 20 years, all plan types have produced returns in a narrow range of 5.1%-5.3%, in line with the performance of the blended equities/i xed income benchmark.

– Entering the year, the primary fear for institutional investors was an equity market downturn. Those fears were of course realized.

– In the wake of the pandemic-induced bear market, investors are turning their attention to rebalancing their portfolios and managing liquidity needs.

Quarterly Returns, Callan Database Groups



	Public Database	Corporate Database	Nonprofit Database	Taft-Hartley Database
10th Percentile	-8.7	-2.2	-8.2	-8.6
25th Percentile	-10.9	-5.9	-12.1	-10.8
Median	-12.4	-10.3	-14.2	-12.1
75th Percentile	-14.1	-13.1	-15.4	-13.7
90th Percentile	-15.5	-14.9	-17.1	-15.0

Source: Callan

– Investors are also reevaluating the purpose and implementation of all diversii ers, including real assets, hedge funds and liquid alternatives, i xed income, and private assets.

– At this point, the depth and magnitude of the downturn and the recession remain unknown.

Callan Database Median and Index Returns* for Periods Ended 3/31/20

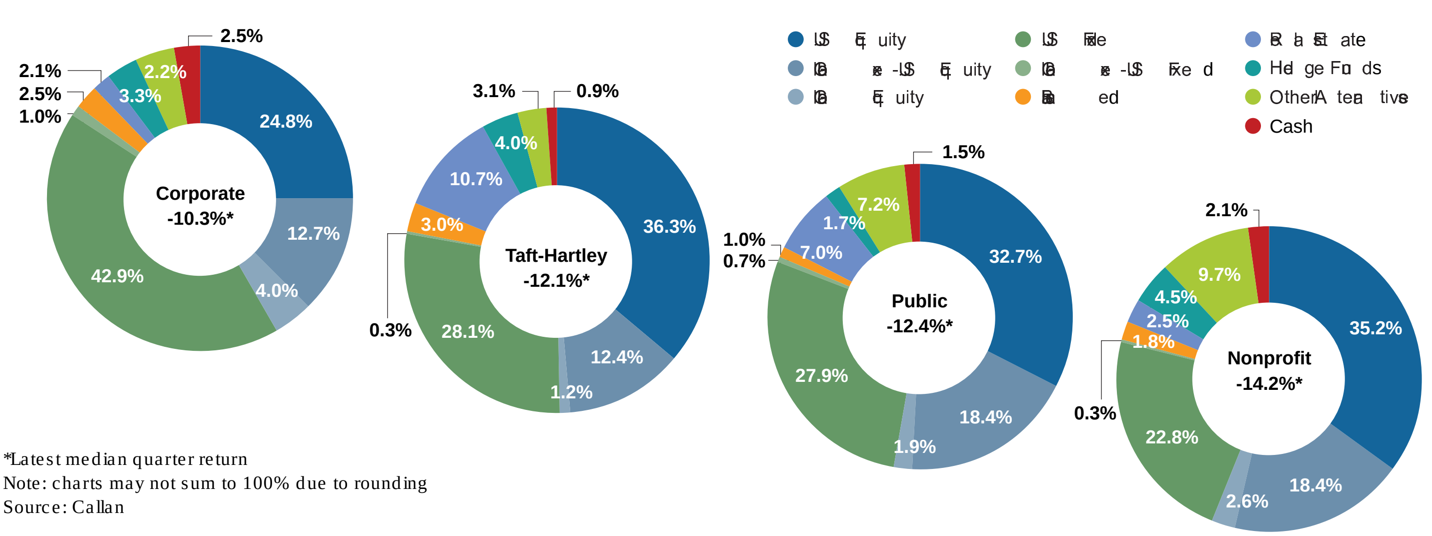
Database Group	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Public Database	**-12.35**	**-4.10**	**3.19**	**3.88**	**6.41**	**5.77**
Corporate Database	**-10.29**	**-0.77**	**4.24**	**4.29**	**6.88**	**6.08**
Nonproi t Database	**-14.17**	**-5.81**	**2.50**	**3.21**	**6.08**	**5.67**
Taft-Hartley Database	**-12.05**	**-4.07**	**3.36**	**4.23**	**6.83**	**5.68**
All Institutional Investors	**-12.53**	**-4.24**	**3.20**	**3.81**	**6.55**	**5.80**
Large (>$1 billion)	**-10.98**	**-2.61**	**3.88**	**4.25**	**6.89**	**6.06**
Medium ($100mm - $1bn)	**-12.48**	**-4.31**	**3.31**	**3.94**	**6.52**	**5.77**
Small (<$100 million)	**-13.48**	**-5.01**	**2.78**	**3.36**	**6.21**	**5.66**

*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public dei ned benei t (DB) plans, corporate DB plans, nonproi ts, and Taft-Hartley plans. Approximately 10% to 15% of the database constituents are Callan's clients. All database group returns presented gross of fees. Past performance is no guarantee of future results. Reference to or inclusion in this report of any product, service, or entity should not be construed as a recommendation, approval, ai liation, or endorsement of such product, service, or entity by Callan.

– Our counsel to investors: stay the course, rebalance, manage liquidity, evaluate portfolio segments and strategies for impairment or unexpected performance, and watch for opportunities, both inside your portfolio and across the markets.
– Not surprisingly, the coronavirus pandemic and related market upheaval dominated the attention of investors:
  - Risk management and volatility were common concerns for all institutional investors.
  - **Public DB plans**: Rebalancing was a recurring theme, as was the related issue of liquidity. Across nearly all asset classes, plans showed limited interest in making changes to their strategic allocations.
  - **Corporate DB plans**: Many were trying to address the challenges caused by changes in their funded status. A large share of plans continued to implement the process of de-risking. The decline in rates since October 2018 demonstrated the benei t to de-risking with respect to matching interest rate risk. The plunge in rates through March 2020 obscures the impact of spread widening; the effect on funded status and LDI match is uncertain and variable.
  - **DC plans**: Sponsors focused on communication to help participants affected by the economic shutdown. They were also trying to determine the effects of the SECURE and CARES Acts. Both make major changes to the regulatory environment for DC plans. While fees continued to be the top issue, concerns about plans' investment structures climbed. The active/passive debate continues, but it is more muted and likely to stay that way as plans focus on the impact of the coronavirus pandemic.
  - **Nonproi ts**: A key concern for some of these organizations was the impact of an economic slowdown on the organization: less tuition for colleges and fewer donations for churches. Nonproi ts also had little interest in changing their strategic allocations, although there was interest in alternative beta/enhanced index products and unconstrained i xed income.
– Investors are already discussing opportunities in i xed income coming from the market dislocation and the policy response around the globe. The biggest question to answer: If opportunistic i xed income is to be pursued, from where do you fund it? Do you expect it to outperform equity? Do you risk up your i xed income in response to a zero interest rate policy that is back in place?

Average Asset Allocation, Callan Database Groups



*Latest median quarter return
Note: charts may not sum to 100% due to rounding
Source: Callan

Equity

U.S. Equities

During the 1st quarter of 2020, the COVID-19 pandemic coupled with an oil price war between Saudi Arabia and Russia spurred extreme global market volatility, which was further exacerbated by the realization that a shelter-in-place mandate was required to overcome the spread of the disease, subsequently inducing an all-but-certain global recession.

Large cap ► *Russell 2000: -30.6%* | *Russell 1000: -20.2%*

- Cyclicals were punished while Technology, Staples, and Health Care were more resilient.
- Energy (-50.5%) plunged as demand declined and OPEC and Russia refused to cut production, driving down oil prices globally.
- Financials (-31.9%) and Industrials (-27.0%) fell sharply as interest rates were cut by the Fed in an emergency session, combined with expectations of a steep GDP decline because of COVID-19.
- Technology fared the best (-11.9%). The FAAMG stocks had an average return of -7.9% in 1Q, led by Amazon (+5.5%) and Microsoft (+0.3%); Health Care (-12.7%) and Consumer Staples (-12.7%) also held up better than the index average.

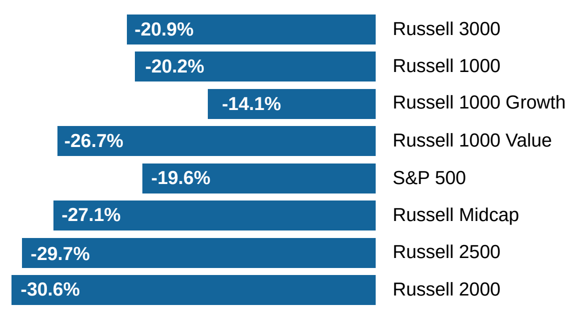
Large cap outpaced small cap for the quarter

- The Russell 2000 (-30.6%) experienced its worst quarter on record.
- The perceived safety of larger companies combined with more acute exposure to COVID-19 impact (e.g., restaurants, hotels, airlines, REITs) drove the sell-off.
- The performance of the Russell 2000 Value (-35.7%) was driven by its exposure to Energy (especially exploration and production companies) and Financials (banks).

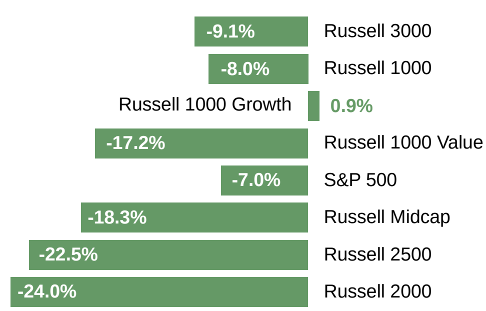
Growth outpaces value across market capitalizations

- The spread between Russell 1000 Growth (-14.1%) and Russell 2000 Value (-35.7%) was one of the widest ever.
- Russell MidCap Value (-0.8%) and Russell 2000 Value (-2.4%) now have negative annualized returns over a trailing i ve-year time period.

U.S. Equity: Quarterly Returns

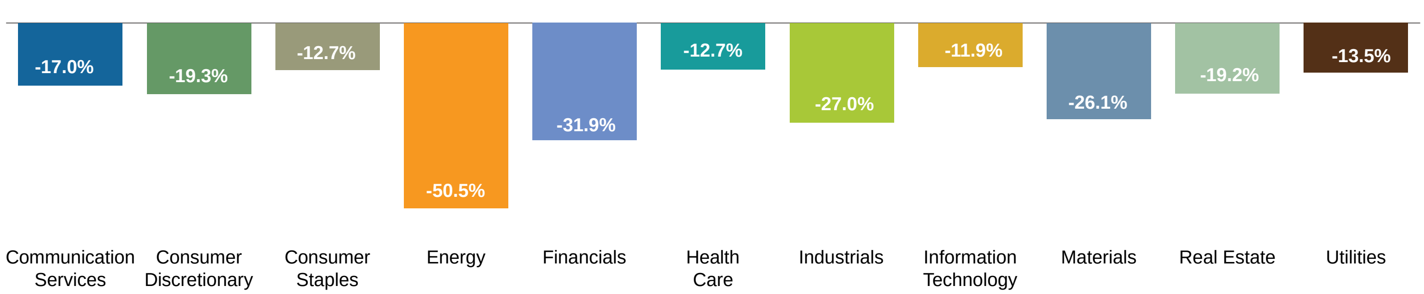


U.S. Equity: One-Year Returns



Sources: FTSE Russell and S&P Dow Jones Indices

Quarterly Performance of Industry Sectors



Source: S&P Dow Jones Indices

Global/Global ex-U.S. Equity

The COVID-19 pandemic coupled with the oil price war between Saudi Arabia and Russia injected signii cant volatility into the global equity markets, with most major indices entering bear market territory.

Global/Developed ex-U.S. ► ***MSCI EAFE: -22.8% | MSCI World ex USA: -23.3% | MSCI ACWI ex USA: -23.4% | MSCI Japan: -16.8% | MSCI Pacii c ex Japan: -27.6%***

- Fears of the pandemic and a global recession stoked the worst quarterly sell off since 2008 as economic activity halted worldwide.
- The oil price war further exacerbated the market meltdown, bidding up safe-haven assets and currencies.
- The U.S. dollar outperformed the euro, the British pound, and other major currencies, while underperforming the Swiss franc and Japanese yen.
- Every sector posted negative returns, led by cyclicals like travel-related industries, Energy, and Financials given the state of the economy and oil prices.
- Defensive sectors generally were under less pressure as demand for basic necessities to function (i.e., e-commerce and mobility) and combat the pandemic (i.e., diagnostics and treatment) helped stabilize Health Care, Consumer Staples, and Information Technology.
- Factor performance in developed ex-U.S. markets rel ected risk aversion, including beta, size, and volatility.

Emerging Markets ► ***MSCI Emerging Markets Index: -23.6%***

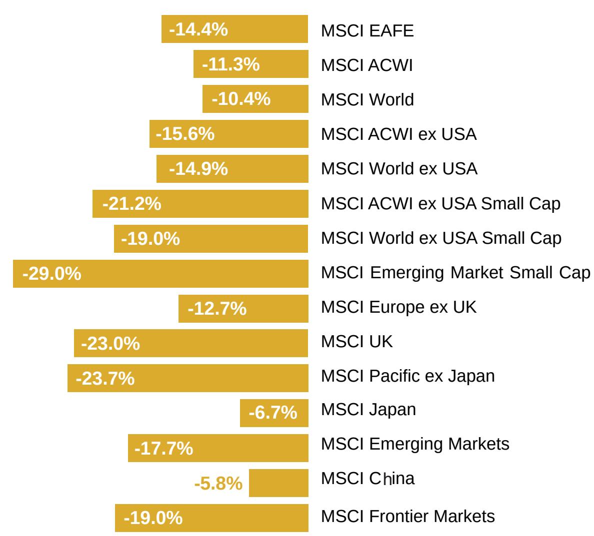
- Decisive actions to contain the pandemic and stimulate the economy allowed China to outperform every developed and developing country.
- A looming global recession and the collapse in oil prices decimated commodities-levered economies like Brazil, South Africa, and Russia.
- Every sector posted negative returns, led by cyclicals such as travel-related industries, Energy, and Financials.
- Defensive sectors generally were under less pressure as demand for basic necessities and for diagnostics and treatment helped stabilize Health Care, Consumer Staples, and Information Technology.

Global ex-U.S. Small Cap ► ***MSCI World ex USA Small Cap: -28.4% | MSCI EM Small Cap: -31.4%***

- "Risk-off" market environment challenged small cap relative to large cap in both developed and emerging markets.
- Growth signii cantly outperformed value both within developed and emerging markets, supported by strong performance in Health Care, Consumer Staples, and Information Technology.

Global ex-U.S. Equity: Quarterly Returns (U.S. Dollar)

Global ex-U.S. Equity: One-Year Returns (U.S. Dollar)



Source: MSCI

Fixed Income

U.S. Fixed Income

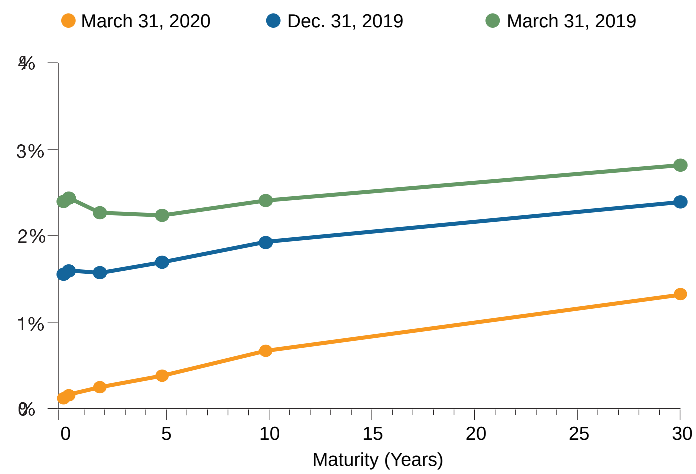
Treasuries rallied as investors sought safety

- 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 basis points, down sharply from 177 bps at year-end.

Investors spurned credit risk

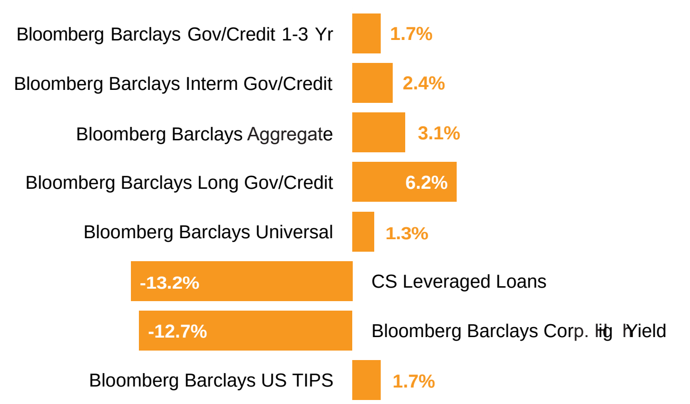
- Investment grade and high yield bond funds experienced record outflows as investors flocked to cash.
- Investment grade corporate spreads widened by 149 bps to 272 bps, representing the hardest hit sector in the Bloomberg Barclays US Aggregate Bond Index, particularly within Industrials, where several well-known issuers were downgraded to below investment grade, including Occidental Petroleum and Ford.
- The 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.
- Most securitized sectors underperformed U.S. Treasuries.
- Bloomberg Barclays CMBS (+1.2%) and Bloomberg Barclays MBS (+2.8%) gained, while Bloomberg Barclays ABS declined (-0.2%).

U.S. Treasury Yield Curves



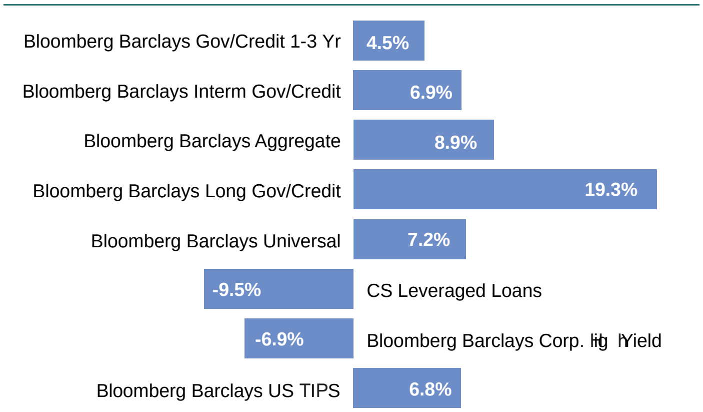
Source: Bloomberg

U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and Credit Suisse

U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and Credit Suisse

Global Fixed Income

Most indices fell by double digits

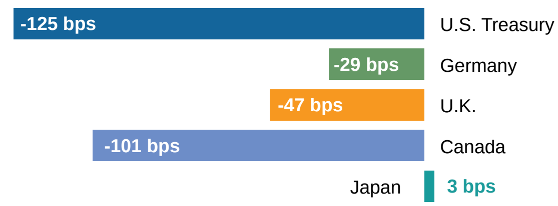
- Developed market sovereign bond yields ended the quarter slightly higher even as central banks stepped in to provide support to their economies; the European Central Bank launched a €750 billion stimulus program and the Bank of England cut interest rates.
- The U.S. dollar rose against the Australian dollar, British pound, and euro as investors sought safety within the greenback.

EM debt plummeted in the risk-off environment

- Within the dollar-denominated benchmark, returns were mixed amongst its 60+ constituents.
- Within the local currency-denominated benchmark, several local market returns in Latin America dropped about 20% (Brazil, Mexico, and Colombia), and South Africa plunged 29% as oil-sensitive economies suffered from the fall in oil prices.

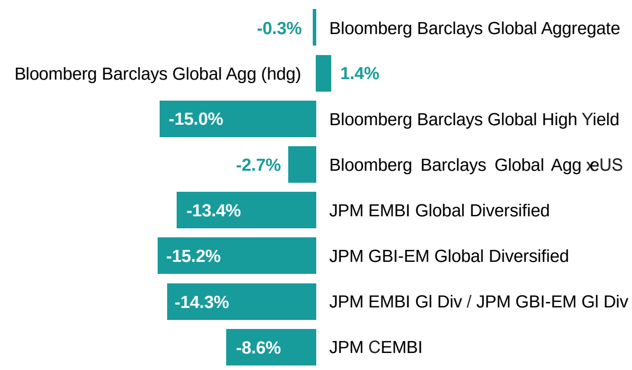
Change in 10-Year Global Government Bond Yields

4Q19 to 1Q20



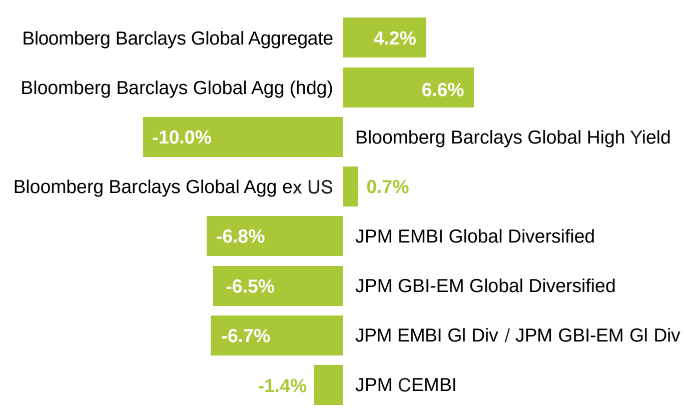
Source: Bloomberg Barclays

Global ex-U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and JPMorgan Chase

Global ex-U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and JPMorgan Chase

Private RE Returns Positive, but Likely to Change; Real Assets Hammered

REAL ESTATE/REAL ASSETS | Sally Haskins and David Welsch

Private real estate results positive due to income

- Initial impact of pandemic rel ected in 1Q20 results
- Positive return due to income
- Industrial real estate performed well.
- Retail depreciation accelerated this quarter.
- The dispersion of returns by manager within the NCREIF ODCE Index was due to the composition of underlying portfolios but also valuation methodologies and approaches.
- Negative returns expected for the second quarter and beyond.

How the pandemic is affecting fundamentals

- Vacancy rates for all property types in the U.S. are or will be impacted.
- There has been 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 ofi ce.
- Supply was in check prior to the pandemic.
- Construction is limited to i nishing up existing projects but has been hampered by shelter-in-place orders and material shortages.
- New construction will be basically halted in future quarters except for pre-leased properties.
- Transaction volumes were healthy in the i rst part of the quarter, but dropped off at quarter end and ground to a halt thereafter, with deals being canceled even when there were material non-refundable deposits.
- Cap rates remained steady during the quarter. The spread between cap rates and 10-year Treasuries is relatively high, leading some market participants to speculate that cap rates will not adjust much. Price discovery is happening and there are limited transactions.
- Callan believes the pandemic may cause a permanent re-pricing of risk across property types. Property types with more reliable cash l ows will experience less of a change in cap rates; however, those with less reliable cash l ows will see greater adjustments.

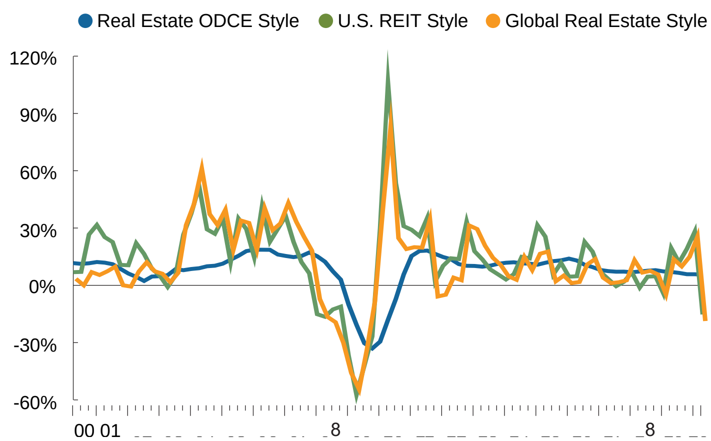
Global REITs underperformed vs. equities and bonds

- Global REITs plunged 28.5% in 1Q20 compared to a 21% drop for global equities (MSCI World).
- U.S. REITs fell 27.3% in 1Q20, lagging the S&P 500 Index, which was off 19.6%.
- Globally REITs are trading at a signii cant discount to NAV; in most regions the discount is at a i ve-year low.
- All property types except for data centers, cell towers, and life science are trading at the bottom of their range.

Infrastructure sees near-record fundraising

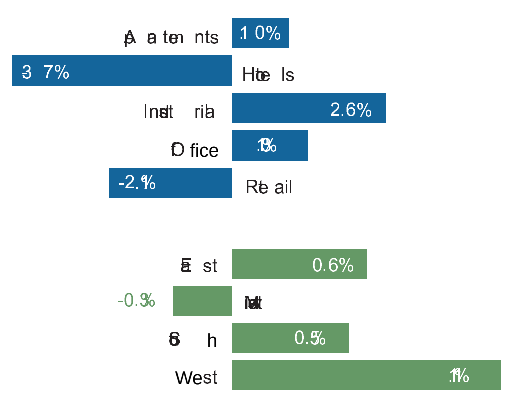
- 1Q20 was the third-largest quarter for closed-end infrastructure fundraising. The closed-end fund market continues to expand, with infrastructure debt, emerging markets, and

Rolling One-Year Returns



Source: Callan

Sector Quarterly Returns by Property Type and Region



Source: NCREIF

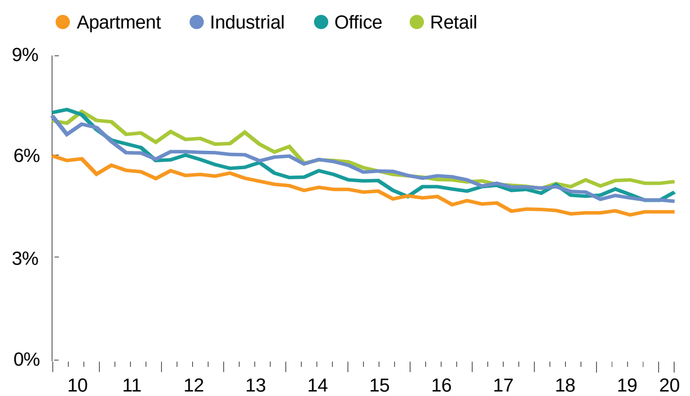
sector-specii c strategies (e.g., communications and renewables). Investor interest in mezzanine or debt-focused funds has increased.

– Open-end funds raised signii cant 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, utilities) fared better than assets with GDP/demand-based revenue (e.g., airports, seaports, midstream-related).

Real assets buffeted by COVID-19

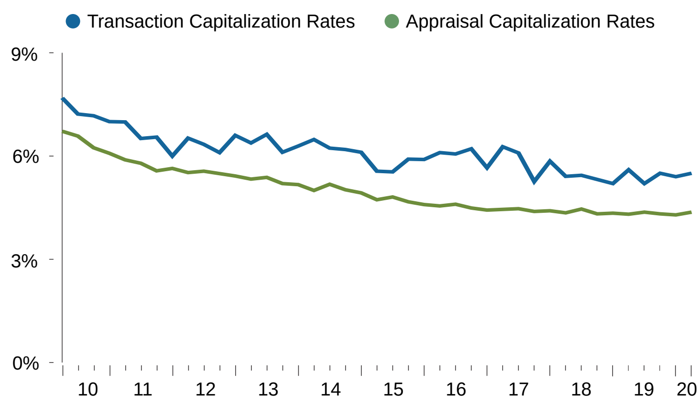
– Real asset returns were signii cantly challenged during the i rst quarter of 2020 as almost the entire space (except gold and TIPS) experienced performance not seen since the Global Financial Crisis.
– The MLP space (Alerian MLP Index: -57%) and energy-related stocks (S&P 1200 Energy Index: -44%) were among the worst hit as Russia and Saudi Arabia engaged in an oil price war smack in the middle of a global pandemic that was already poised to cripple near-term energy demand.
– One silver lining, pun intended, was gold, which served its usual safe-haven role during the depths of March and throughout the i rst quarter; the Bloomberg Gold sub-Index rose 4.5% in the i rst quarter while equities of most companies tasked with mining the shiny metal were not so fortunate (GDX-Van Eck Gold Miners ETF: -14.5%).

NCREIF Capitalization Rates by Property Type



Source: NCREIF. Capitalization rates (net operating income / current market value (or sale price)) are appraisal-based.

NCREIF Transaction and Appraisal Capitalization Rates



Source: NCREIF
Note: Transaction capitalization rate is equal weighted.

Callan Database Median and Index Returns* for Periods Ended 3/31/20

Private Real Assets	Quarter	Year to Date	Year	3 Years	5 Years	10 Years	15 Years
Real Estate ODCE Style	**1.5**	**1.5**	**5.6**	**6.7**	**8.2**	**10.6**	**6.5**
NFI-ODCE (value wt net)	0.8	0.8	3.9	5.9	7.5	10.4	6.5
NCREIF Property	0.7	0.7	5.3	6.4	7.6	10.2	8.1
NCREIF Farmland	-0.1	-0.1	2.6	5.2	6.3	10.7	13.1
NCREIF Timberland	0.1	0.1	1.3	2.5	2.8	4.5	6.4
Public Real Estate							
Global Real Estate Style	**-25.2**	**-25.2**	**-18.7**	**-0.4**	**0.5**	**6.4**	**5.7**
FTSE EPRA Nareit Developed	-28.5	-28.5	-24.0	-3.8	-2.1	4.4	--
Global ex-U.S. Real Estate Style	**-24.8**	**-24.8**	**-18.0**	**0.6**	**0.1**	**5.4**	**5.3**
FTSE EPRA Nareit Dev ex US	-27.7	-27.7	-23.0	-2.1	-1.5	3.4	--
U.S. REIT Style	**-23.1**	**-23.1**	**-15.2**	**-0.4**	**1.4**	**8.6**	**7.2**
EPRA Nareit Equity REITs	-27.3	-27.3	-21.3	-3.1	-0.3	7.4	6.2

*Returns less than one year are not annualized.
Sources: Callan, FTSE Russell, NCREIF

Over the Cliff

PRIVATE EQUITY | Gary Robertson

The impact of the COVID-19 virus on the capital markets in late February has introduced a period of price uncertainty and a pull-back in lending. Transaction activity is expected to slow for the remainder of 2020. New fundraising is also being delayed. General partners are focused more on existing portfolio company health and less on starting new company platforms.

Fundraising ► Based on preliminary data, first quarter private equity partnerships holding final closes totaled $119 billion, down 37% from the fourth quarter. New partnerships formed totaled 223, off 28%. Callan expects fundraising to continue to slow as 2020 progresses. (Unless otherwise noted, all data come from PitchBook.)

Buyouts ► New buyout transactions declined notably, albeit from strong levels. Funds closed 1,677 investments with $103 billion in disclosed deal value, a 27% decline in count and a 41% dip in dollar value from the fourth quarter. The largest investment was the $14.3 billion take-private of Zayo Group, a digital communications infrastructure and services provider, by Digital Colony and EQT, along with a consortium of co-investors.

VC Investments ► New investments in venture capital companies totaled 5,868 rounds of financing, down 16%, with $64 billion of announced value, off just 2%. The largest investment was a $3 billion round in Gojek, a ride-hailing and personal courier company serving Southeast Asia.

Funds Closed 1/1/2020 to 3/31/2020

Strategy	No. of Funds	Amt ($mm)	Share
Venture Capital	119	30,155	25%
Growth Equity	20	14,289	12%
Buyouts	56	52,736	44%
Mezzanine Debt	1	434	0%
Distressed	0	0	0%
Energy	2	4,475	4%
Secondary and Other	14	8,053	7%
Fund-of-Funds	11	8,836	7%
Totals	**223**	**118,978**	**100%**

Source: PitchBook (Figures may not total due to rounding.)

Exits ► There were 422 private M&A exits of private equity-backed companies, a drop of 23%. Disclosed values plunged 69% to $55 billion. There were 11 private equity-backed IPOs in the first quarter, down 67%, which raised an aggregate $6 billion, lower by 14%.

Venture-backed M&A exits totaled 354 with disclosed value of $23 billion. The number of sales declined 12% from the fourth quarter, and announced value was unchanged. There were 50 VC-backed IPOs, lower by 34%, and the combined float totaled $6 billion, a drop of 14%.

Private Equity Performance (%) (Pooled Horizon IRRs through 9/30/2019*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	-0.37	13.01	14.56	14.39	14.83	11.41	11.02
Growth Equity	1.32	12.76	16.02	12.77	14.03	13.41	13.13
All Buyouts	1.43	8.85	15.32	12.83	14.59	13.65	12.04
Mezzanine	0.87	6.02	10.86	10.00	10.85	10.58	8.60
Credit Opportunities	-0.36	0.61	7.73	5.49	10.47	9.28	9.90
Control Distressed	1.05	4.38	8.86	7.83	11.17	10.52	10.58
All Private Equity	**0.92**	**9.59**	**14.41**	**12.33**	**14.03**	**12.72**	**11.72**
S&P 500	1.70	4.25	13.39	10.84	13.24	9.01	6.33
Russell 3000	1.16	2.92	12.83	10.44	13.08	9.10	6.72

Note: Private equity returns are net of fees. Sources: Refinitiv/Cambridge and S&P Dow Jones Indices
*Most recent data available at time of publication

Note: Transaction count and dollar volume figures across all private equity measures are preliminary figures and are subject to update in subsequent versions of *Capital Market Review* and other Callan publications.

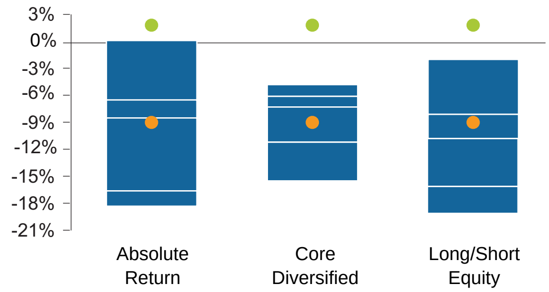
Breaking Bad

HEDGE FUNDS/MACs | Jim McKee

Crushing fragile hopes of continuing economic strength coming into 2020, the COVID-19 pandemic coupled with a sudden oil market collapse forced investors to recalibrate their measures of risk across all capital markets. As investors ran for safe havens, Treasuries soared while equities cratered.

Representing a paper portfolio of hedge fund interests without implementation costs, the **Credit Suisse Hedge Fund Index (CS HFI)** lost 9.0% in the i rst quarter. As a proxy for live hedge fund portfolios, the median manager in the **Callan Hedge Fund-of-Funds Peer Group** slumped 8.1%, net of all fees and expenses. Representing 50 of the largest, broadly diversii ed hedge funds with low-beta exposure to equity markets, the median manager in the **Callan Institutional Hedge Fund Peer Group** fell 6.3%.

Hedge Fund-of-Funds Style Group Returns



	Absolute Return	Core Diversified	Long/Short Equity
10th Percentile	0.1	-4.8	-2.0
25th Percentile	-6.5	-6.1	-8.1
Median	-8.5	-7.3	-10.8
75th Percentile	-16.6	-11.2	1 .1 - 6
90th Percentile	-18.3	-15.5	-19.1
CS Hedge Fund ●	-9.0	-9.0	-9.0
90-Day T-Bill +5% ●	1.8	1.8	1. 8

Sources: Callan, Credit Suisse, and Federal Reserve

Callan Peer Group Median and Index Returns* for Periods Ended 3/31/2020

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Peer Group	**-8.1**	**-4.9**	**0.5**	**0.7**	**3.1**	**3.8**
Callan Absolute Return FOF Style	**-8.5**	**-6.7**	**0.1**	**0.8**	**3.1**	**3.3**
Callan Core Diversii ed FOF Style	**-7.3**	**-4.3**	**0.4**	**0.4**	**3.0**	**3.5**
Callan Long/Short Equity FOF Style	**-10.8**	**-6.5**	**0.4**	**0.8**	**3.6**	**4.6**
Credit Suisse Hedge Fund	-9.0	-4.3	0.4	0.2	3.0	4.0
CS Convertible Arbitrage	-5.3	-1.3	0.9	2.4	3.2	3.7
CS Distressed	-10.8	-11.5	-2.2	-0.8	2.5	3.9
CS Emerging Markets	-10.5	-6.2	0.7	1.8	3.2	5.1
CS Equity Market Neutral	-5.3	-6.2	-1.0	-0.3	0.9	-1.1
CS Event-Driven Multi	-18.8	-14.9	-4.1	-3.4	0.6	3.1
CS Fixed Income Arb	-5.8	-2.2	1.7	2.5	4.4	3.3
CS Global Macro	-8.1	-1.1	1.1	0.6	3.6	5.4
CS Long/Short Equity	-11.2	-5.4	1.4	1.1	3.6	4.8
CS Managed Futures	0.0	5.7	2.0	-2.0	1.4	3.0
CS Multi-Strategy	-6.5	-2.6	1.0	2.2	5.0	5.2
CS Risk Arbitrage	-6.8	-4.1	0.8	1.8	1.9	3.2
HFRI Asset Wtd Composite	-10.0	-6.1	0.2	0.4	3.1	--
90-Day T-Bill + 5%	1.8	7.3	6.8	6.2	5.6	6.4

*Net of fees. Sources: Callan, Credit Suisse, Hedge Fund Research

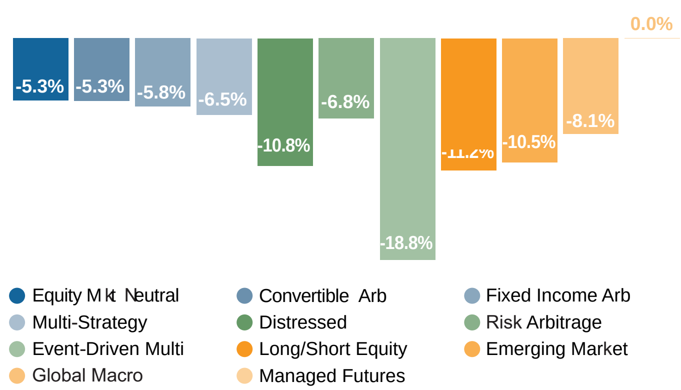
Within CS HFI, the worst-performing index was ***Event-Driven Multi-Strategy*** (-18.8%), rel ecting its material exposure to soft deals particularly vulnerable to shifting market sentiments and crowded trades. The next group of poorly performing strategies included ***Long/Short Equity*** (-11.2%), ***Distressed*** (-10.8%), and ***Emerging Markets*** (-10.5%). Despite low net exposures, risk-on arbitrage strategies like ***Equity Market Neutral*** (-5.3%), ***Convertible Arbitrage*** (-5.3%), and ***Fixed-Income Arbitrage*** (-5.8%) suffered the next level of losses due to widened spreads from derisking or being net long with illiquidity. The best-performing strategy last quarter was ***Managed Futures*** (+0.0%).

Within the Callan Hedge FOF Group, net exposures to illiquidity and equity-related risks primarily determined performance in the i rst quarter. The median ***Callan Long/Short Equity FOF*** dropped 10.8%, with its net equity exposure driving the loss. Similarly, the median ***Callan Absolute Return FOF*** sank 8.5%.

The ***Core Diversii ed FOF*** (-7.3%) suffered the least of the FOF style groups.

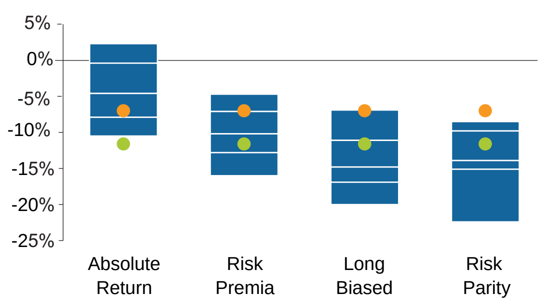
Within Callan's database of liquid alternative solutions, the median managers of Callan Multi-Asset Class (MAC) style groups were all negative, gross of fees. The median ***Callan Risk Premia MAC*** dropped 10.2% as managers reduced gross exposures to their factors to keep within volatility targets. Targeting equal risk-weighted allocations to major asset classes with leverage, the ***Callan Risk Parity MAC*** fell 13.9%, trailing its 60% MSCI ACWI/40% Bloomberg Barclays US Aggregate Bond Index (-12.0%). Given a usually long equity bias within its dynamic asset allocation mandate, the ***Callan Long-Biased MAC*** (-14.8%) also trailed the 60%/40% benchmark. As the most conservative MAC style focused on nondirectional strategies of long and short asset class exposures, ***Callan Absolute Return MAC*** slipped 4.6%.

Credit Suisse Hedge Fund Strategy Returns



Source: Credit Suisse

MAC Style Group Returns



	Absolute Return	Risk Premia	Long Biased	Risk Parity
10th Percentile	2.3	-4.7	- . 6 9- .	8 5
25th Percentile	-0.4	-7.1	-11.1	-9.8
Median	-4.6	-10.2	-14. 8-13.	9
75th Percentile	-7.9	-12. 8-1 .	-16 9 1	5
90th Percentile	-10.5	-1 .0 6	-20.0	-22.4
Eurekahedge MFRP (5%v)	-7.0	-7.0	-7.0	- 7.0
60% MSCI ACWI/ 40% BB Barclays Agg	-11.6	-11. 6-11.	-11.6	6

Sources: Bloomberg Barclays, Callan, Eurekahedge, S&P Dow Jones Indices

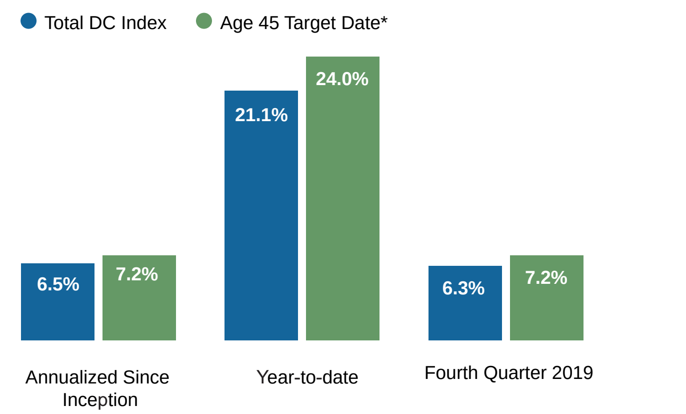
Index Posts Highest Return Since 2009

DEFINED CONTRIBUTION | Patrick Wisdom

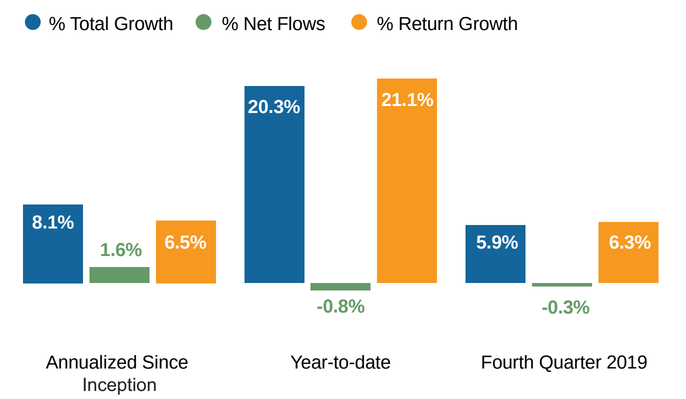
- The **Callan DC Index™** rose 6.3% in the i nal quarter of 2019, the fourth consecutive quarter of gains, and jumped 21.1% for the year, the highest since 2009. The Age 45 Target Date Fund had a larger fourth-quarter (7.2%) and full-year gain (24.0%).
- The Index's growth in balances in the fourth quarter (5.9%) marked the fourth straight quarter of growth. Investment returns (6.3%) drove the growth, while net l ows (-0.3%) detracted.
- Target date funds (TDFs) experienced the largest inl ows (53.8%). After garnering the most l ows in the previous quarter, U.S. i xed income again saw signii cant inl ows (36.5%). U.S. large cap equity (-38.5%) had the largest outl ows.
- Fourth-quarter turnover (i.e., net transfer activity) increased to 0.38% from the previous quarter's 0.35%, well below the historical average (0.60%).
- The allocation to equity within the Index increased to 70.2%, the highest since the third quarter of 2018.
- The share of assets allocated to stable value decreased to 9.8%. The allocation to U.S. i xed income (6.1%) also fell despite positive l ows; the asset class's relative underperformance was the primary driver of the decrease.
- TDFs experienced the largest increase in asset allocation (30.4%), due to large inl ows and solid performance.
- The prevalence of real return/TIPS within DC plans increased by 3.4 percentage points from the previous quarter to 38.5%.
- The presence of company stock (21.5%) remains near historic lows. Brokerage window prevalence (41.4%) remains near all-time highs.
- For plans with more than $1 billion in assets, the average asset-weighted fee decreased by 4 basis points to 0.29%. Plans with less than $500 million in assets saw a fee decrease of 2 bps, while the fee for plans with assets between $500 million and $1 billion remained steady at 0.36%.

The Callan DC Index is an equally weighted index tracking the cash l ows and performance of over 100 plans, representing nearly $300 billion in assets. The Index is updated quarterly and is available on Callan's website.

Investment Performance



Growth Sources



Net Cash Flow Analysis (Fourth Quarter 2019)
(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	53.80%
U.S. Fixed Income	36.52%
U.S. Smid Cap	-18.02%
U.S. Large Cap	-38.48%
Total Turnover**	**0.38%**

Data provided here is the most recent available at time of publication.

Source: Callan DC Index

Note: DC Index inception date is January 2006.

* The Age 45 Fund transitioned from the average 2035 TDF to the 2040 TDF in June 2018.

** Total Index "turnover" measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.