Callan Institute

Fourth Quarter 2020

Capital Markets Review

Uneven Recovery Ahead for Years

ECONOMY

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The path to recovery in the U.S. and most developed economies from the pandemic will likely see the level of GDP regain its pre-pandemic peak in mid-2021, but the job markets in those countries are not likely to regain their pre-pandemic totals until well into 2022.

Robust Quarter Powers Strong 2020

INSTITUTIONAL INVESTORS

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Institutional investors saw strong gains in 4Q20 and positive results for 2020, despite the pandemic-induced headwinds. While results for 2020 lagged a 60% stocks/40% bonds benchmark, over longer periods investors' returns were on par with the benchmark.

Vaccine Hopes Fuel Double-Digit Gains

EQUITY

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The S&P 500 hit a record high in 4Q20, and was up 12.1% for the quarter and 18.4% for the year. Value outperformed growth in 4Q, but trailed for the year by a wide margin. Vaccine hopes fueled double-digit returns broadly across developed and emerging markets.

Investors Continue Their Hunt for Yield

FIXED INCOME

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The 10-year U.S. Treasury yield closed 4Q20 at 0.93%, up 24 bps from 3Q20 but off from the year-end level of 1.92%. Corporate credit outperformed treasuries as investors hunted for yield. Low rates and asset purchase programs continued to prop up the global bond market.

Hotels, Retail Face Pandemic Headwinds

REAL ESTATE/REAL ASSETS

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Hotels and Retail are the most challenged sectors while Office faces uncertainty; Industrial remains the best performer. Global REITs gained 13.5% compared to 14.0% for global equities. U.S. REITs rose 11.6%, but they lagged the S&P 500 Index (+12.1%).

Roller-Coaster Ride Ends on a High Note

PRIVATE EQUITY

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Private equity fared quite well in 2020, all things considered. Diminished activity in 2Q and 3Q mixed with strong gains in 1Q and 4Q. Private equity activity showed tolerable declines for most private M&A measures, but the IPO market had a gangbuster year.

Healthy Returns amid Volatile Markets

HEDGE FUNDS/MACs

13 PAGE

The vigorous but volatile market conditions enabled healthy hedge fund profits from both alpha and beta. The median managers of Callan Multi-Asset Class style groups generated positive returns, gross of fees, consistent with their underlying risk exposures.

Second Straight Quarterly Gain

DEFINED CONTRIBUTION

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The Callan DC Index's gain of 6.0% in 3Q20 comes two quarters after the 15.0% plunge it experienced in 1Q20. The Index is now positive for the year. The Age 45 TDF posted a larger gain, due to its higher equity allocation. Balances also rose, solely from investment returns.

Broad Market Quarterly Returns

U.S. Equity Russell 3000	Global ex-U.S. Equity MSCI ACWI ex USA	U.S. Fixed Income Bloomberg Barclays Agg	Global ex-U.S. Fixed Income Bloomberg Barclays Gbl ex US
14.7%	17.0%	0.7%	5.1%

Sources: Bloomberg Barclays, FTSE Russell, MSCI

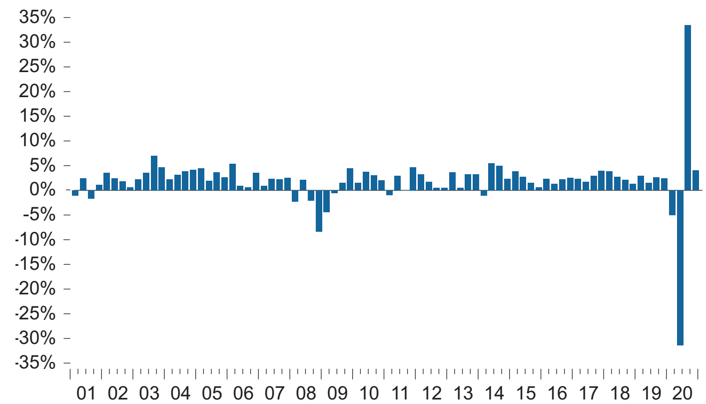
An Uneven Recovery and an Unreliable Narrator

ECONOMY | Jay Kloepfer

The U.S. economy grew at a 4% rate in the fourth quarter of 2020 but finished the year with a 3.5% decline in GDP compared to 2019, the steepest recession in 75(!) years. The plunge in economic activity in 2Q and the sharp rebound in 3Q put into question the reliability of economic data, and GDP in particular, in telling the tale of the true economic impact of the pandemic. The way countries measure GDP varies, especially when it comes to the output of the government sector. Reported GDP plunged in the U.K. far more than in continental Europe or the U.S., but the difference had to do with the valuation of the change in government output. In the U.S., we value government output in large part by looking at how much is spent on government services. Teachers, civil servants, and public health care workers were still paid, even though their activities were severely altered, so government output changed little. In the U.K. and France, data such as the number of hospital procedures, doctor's visits, and pupils in school are used, and this activity fell sharply. Did economic activity really fall farther in the U.K., or are the data not telling the full story?

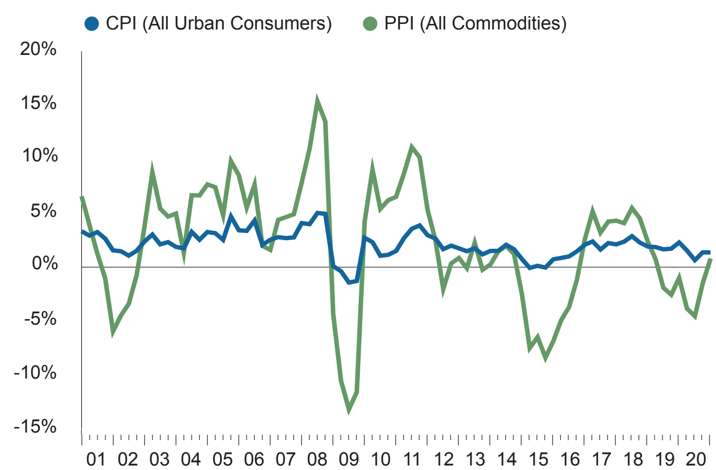
The labor market data also seem to reveal a tale of two cities—or do they? The difference in the benefits offered by different countries to those dislocated by the pandemic are substantial, and seriously bias economic measures such as the number of people employed and unemployment rates. In many euro zone countries, pandemic relief came in the form of subsidies to companies to keep their employees on the payroll. In the U.S., companies furloughed or let go of employees, and the states and federal government used the unemployment benefits system along with direct grants to households via stimulus payments to support these dislocated workers. As a result, unemployment in the U.S. spiked to almost 15% in April, while the unemployment rate in many euro zone countries barely moved. Another complication is that the unemployment rate in the U.S. suggests more slack than there may be in practice. A clue to this mismatch in the data between unemployment and potential capacity is in the data tracking those seeking work. In the U.S., the number seeking jobs usually tracks the unemployment rate very

Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

closely. During the pandemic, the number of job seekers barely increased while the unemployment rate quadrupled, suggesting workers are expecting to be rehired into their former jobs or in their former industry.

This focus on the labor market is important for clues as to how the economy will recover and who has been the most affected by the pandemic-induced recession. Since consumption is 70% of GDP in the U.S., the direct tie between employment and income and then spending is vital; that tie has been blurred by the massive stimulus provided both here and in our trading partners. Stimulus payments directly to industries and individuals, as well as expanded unemployment benefits, have buoyed spending both by consumers within countries and on our traded goods between countries, and prevented an even steeper economic decline than this worst-in-seven-decades experience. Total employment in the U.S. fell by 22 million between January and April, and we have generated 12 million jobs since April to replace them. The problem for the continued recovery is that we are still short millions of jobs, and the rate of job recovery plateaued in October 2020 and remained flat through December.

Employment loss by industry has been wildly variable, and points up just how different the economic impact has been from the stock market's incredible recovery. The sectors that drove the stock market rebound since March—information technology, communications, the sectors of consumer goods and wholesale/retail trade driven by Amazon—suffered little if any employment decline, and in fact employ far fewer people than the sectors that are underrepresented in the stock market and suffered the biggest job losses. Employment in leisure and hospitality fell by 8.2 million during March and April, increased by 4.9 million from May to November, and then declined by over half a million in December as stricter shelter-in-place rules were reinstated prior to the holiday season in many states. Since February 2020, employment in leisure and hospitality is down by 3.9 million, or 22.9 percent. The other big losses were in state and local government, services, manufacturing, and education. These sectors employ many lower-paid, lower-skilled, and part-time workers and often feature a high concentration of female employees. Income inequality during the pandemic has been exacerbated as a result.

The Long-Term View

		Periods Ended 12/31/20			
Index	**4Q20**	**Year**	**5 Yrs**	**10 Yrs**	**25 Yrs**
U.S. Equity					
Russell 3000	14.7	20.9	15.4	13.8	9.7
S&P 500	12.2	18.4	15.2	13.9	9.6
Russell 2000	31.4	20.0	13.3	11.2	9.1
Global ex-U.S. Equity					
MSCI EAFE	16.1	7.8	7.5	5.5	5.0
MSCI ACWI ex USA	17.0	10.7	8.9	4.9	--
MSCI Emerging Markets	19.7	18.3	12.8	3.6	--
MSCI ACWI ex USA Small Cap	18.6	14.2	9.4	6.0	6.5
Fixed Income					
Bloomberg Barclays Agg	0.7	7.5	4.4	3.8	5.2
90-Day T-Bill	0.0	0.7	1.2	0.6	2.3
Bloomberg Barclays Long G/C	1.7	16.1	9.4	8.2	7.4
Bloomberg Barclays Gl Agg ex US	5.1	10.1	4.9	2.0	4.0
Real Estate					
NCREIF Property	1.2	1.6	5.9	9.0	9.1
FTSE Nareit Equity	11.6	-8.0	4.8	8.3	9.6
Alternatives					
CS Hedge Fund	6.4	6.4	4.1	3.8	7.3
Cambridge PE*	10.4	17.9	13.9	13.8	15.1
Bloomberg Commodity	10.2	-3.1	1.0	-6.5	1.0
Gold Spot Price	0.0	24.4	12.3	2.9	6.6
Inflation – CPI-U	0.1	1.4	2.0	1.7	2.1

*Data for most recent period lags by a quarter. Data as of 9/30/20.
Sources: Bloomberg, Bloomberg Barclays, Bureau of Economic Analysis, Credit Suisse, FTSE Russell, MSCI, NCREIF, Refinitiv/Cambridge, S&P Dow Jones Indices

The path to recovery in the U.S. and most developed economies will likely see the level of GDP regain its pre-pandemic peak in mid-2021, but the job markets are not likely to regain their pre-pandemic job counts until well into 2022, restraining consumer spending and the overall global recovery.

Recent Quarterly Economic Indicators

	4Q20	3Q20	2Q20	1Q20	4Q19	3Q19	2Q19	1Q19
Employment Cost–Total Compensation Growth	2.5%	2.4%	2.7%	2.8%	2.7%	2.8%	2.7%	2.8%
Nonfarm Business–Productivity Growth	-4.8%	5.1%	10.6%	-0.3%	1.6%	0.3%	2.0%	3.7%
GDP Growth	4.0%	33.4%	-32.9%	-5.0%	2.4%	2.6%	1.5%	2.9%
Manufacturing Capacity Utilization	72.7%	70.8%	63.2%	73.9%	75.0%	75.4%	75.5%	76.4%
Consumer Sentiment Index (1966=100)	79.8	75.6	74.0	96.4	97.2	93.8	98.4	94.5

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

Robust Quarterly Gains Power Strong 2020 Returns

INSTITUTIONAL INVESTORS

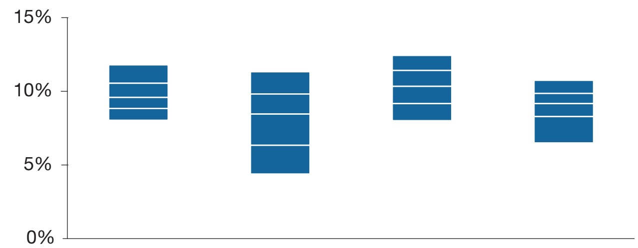
Performance

- All investor types saw robust gains in 4Q20, easily outpacing a 60% stocks/40% bonds benchmark, which rose 7.5%.
- The robust quarterly results pushed their gains for the year into double digits, outpacing global ex-U.S. equities and fixed income, although falling below the 60%/40% benchmark.
- Long-term results continue to be on par with the 60%/40% benchmark and better than bonds or global ex-U.S. equities.
- Nonprofits set the pace for the quarter, while corporate defined benefit (DB) plans top the leader board for most longer-term periods.
- Public DB plans were the best performers over 20 years, but results for all plan types fell in a narrow range.

Broad Issues

- Many institutional investors are re-examining portfolios to adjust for the new environment.
- They are also re-evaluating all asset classes, not just the diversifiers, including fixed income; public equity; hedge funds and liquid alternatives; private equity, private credit, and the notion of private capital; and real assets.
- But the key issue is what to do about fixed income in the lower yield environment.
- Liquidity needs ease but remain top of mind for investors.

Quarterly Returns, Callan Database Groups



	Public Database	Corporate Database	Nonprofit Database	Taft-Hartley Database
10th Percentile	11.8	11.3	12.4	10.8
25th Percentile	10.6	9.8	11.4	9.9
Median	9.6	8.5	10.3	9.2
75th Percentile	8.8	6.3	9.2	8.3
90th Percentile	8.0	4.4	8.0	6.5

Source: Callan

- Investors are also wrestling with whether to rebalance out of growth managers, and U.S. equity, as both growth and large cap U.S. equity crushed value and global ex-U.S. equity. The key question: Rebalance, or ride the risks of style tilt and manager concentration?
- As noted, real assets are under serious review, within DC as well as DB plans. The source of the discomfort is the underperformance of segments like energy, MLPs, and commodities.
- Investors are also trying to determine what can serve as an equity diversifier equal to bonds with the return of zero interest rates.

Callan Database Median and Index Returns* for Periods Ended 12/31/20

Database Group	Quarter	Year-to-date	Year	3 Years	5 Years	10 Years
Public Database	**9.6**	**11.7**	**11.7**	**8.2**	**9.4**	**8.1**
Corporate Database	**8.5**	**13.7**	**13.7**	**9.2**	**10.1**	**8.5**
Nonprofit Database	**10.3**	**12.3**	**12.3**	**8.3**	**9.6**	**8.1**
Taft-Hartley Database	**9.2**	**11.1**	**11.1**	**8.3**	**9.5**	**8.5**
All Institutional Investors	**9.5**	**12.3**	**12.3**	**8.5**	**9.6**	**8.3**
Large (>$1 billion)	**9.3**	**12.4**	**12.4**	**8.6**	**9.7**	**8.4**
Medium ($100mm - $1bn)	**9.4**	**12.3**	**12.3**	**8.6**	**9.7**	**8.3**
Small (<$100 million)	**9.7**	**12.1**	**12.1**	**8.2**	**9.5**	**8.0**

*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit (DB) plans, corporate DB plans, nonprofits, 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, affiliation, or endorsement of such product, service, or entity by Callan.

Corporate DB Plans

- The plunge in Treasury rates in March 2020 obscured the impact of spread widening. The funded status for corporate DB plans moving down their LDI glidepaths did not take the hit many suffered in the GFC.
- The plunge has not yet derailed the commitment to de-risking, but moves to STRIPS for extra duration are now in question.
- There is likely to be an uptick in termination and risk transfer, and consideration of a pause to further de-risking if rates start to rise.

DC Plans

- Fees continued to be the top issue for DC plan sponsors, as has been true for many quarters.
- DC glidepaths saw an increase in private markets exposures, and higher equity allocations in the mid-career and path landing point (age 80). Greater diversification helps manage the risk with greater return-seeking strategies, while more passive exposure is used to manage fees.
- There was a flurry of rulemaking from the Trump administration in its final months, and many DC plan sponsors and recordkeepers have been moving rapidly to track all the changes, and the potential for them to be undone by the incoming administration.
- DC plan sponsors and recordkeepers are both working rapidly to address lessons learned from the pandemic to alter participant-facing services like enrollment and financial counseling, making them more digital-first.
- Recordkeeper consolidation activity picked up in 4Q20. This will likely point to an increase in recordkeeper searches in the near term.

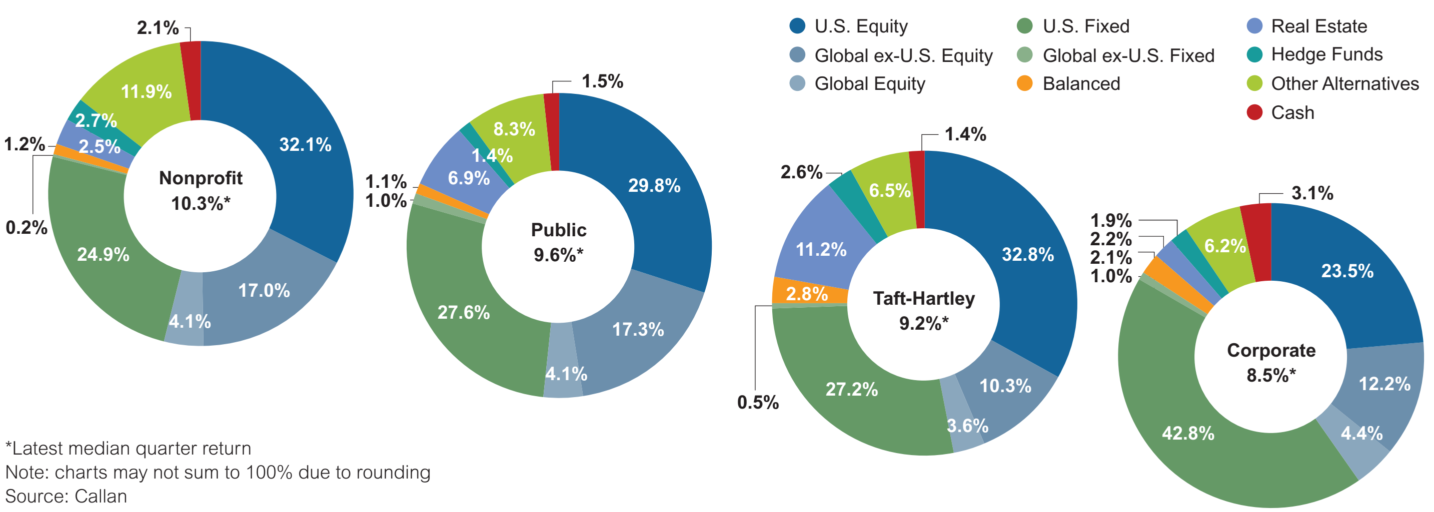
Public DB Plans

- There was a surge in public plan asset allocation reviews and capital markets discussions.
- The "V-shaped" recovery in equities helped calm fears.
- But there are great concerns about lower capital markets assumptions over the next 10 years, which are seriously challenging expectations for funding and solvency; this is a decades-long problem, made worse by the pandemic.
- ROA assumptions have been reduced but face further downward pressure. Weaker return assumptions may derail the expressed desire to bring in risk; there is growing interest in 30-year assumptions to justify more balanced portfolios.
- Liquidity needs and drawdown risks are top of mind. Stress testing is at the forefront of asset/liability studies, focusing on funding, contributions, liquidity, and solvency.

Nonprofits

- Subdued expectations for capital markets returns are challenging both the risk tolerance of endowments/foundations and the sustainability of established spending rates.
- There is growing dissatisfaction with private real assets, hedge funds, and the presence of any fixed income; significant portfolio reconstruction is on the table.

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

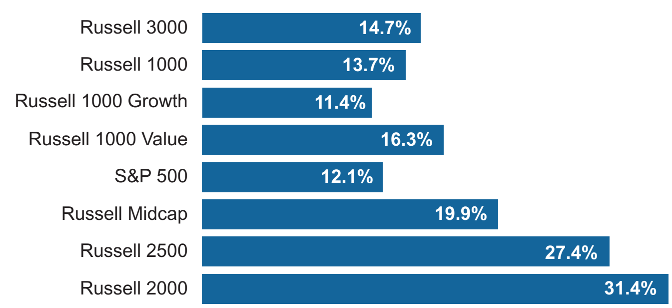
Record highs in 2020

- The S&P 500 Index hit a record high in 4Q20. The Index was up 12.1% for the quarter, bringing the 2020 gain to 18.4%.
- Since its March low, the S&P is up over 70%, with all sectors posting increases greater than 40%.
- 4Q winner: Energy (+28%), but down 34% for the year
- Top 2020 sector: Technology with 44% gain (+12% in 4Q)
- Pandemic has cast a pall over certain sectors while rewarding others: online retail soared 69% in 2020, while hotels/cruise lines, airlines, and retail REITs dropped ~30%.
- Apple, Microsoft, Amazon, Facebook, and Alphabet made up 22% of S&P 500 market cap at year-end, and for 2020, accounted for 12.1% of 18.4% Index return.

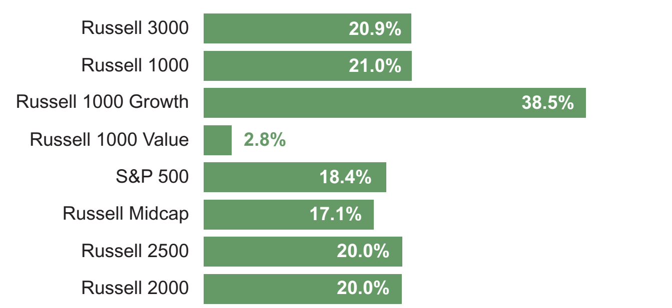
4Q saw shift in market trends

- In 4Q, value outperformed growth across the cap spectrum driven by vaccine progress, political clarity, and further stimulus. For the year, however, value trails growth by a significant margin due to Tech's outperformance.
- Fueled by the prospect of an economic recovery, small cap outperformed large in 4Q but was even on the year. Small value was the best performer for the quarter, but 2020 gain is a mere 4.6%.
- 4Q experienced a shift in YTD 2020 trends, attributed to expectations of broader economic recovery from the vaccine roll-out and the presidential election outcome.
- Cyclical sectors such as Energy, Financials, Industrials, and Materials outperformed during the quarter.

U.S. Equity: Quarterly Returns



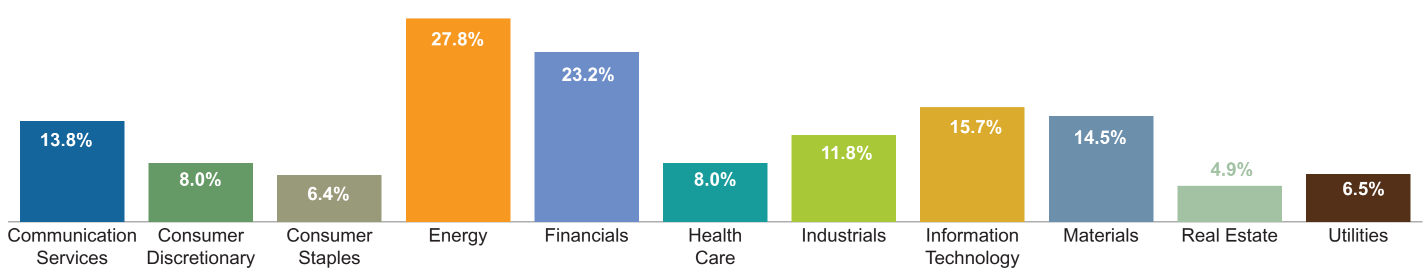
U.S. Equity: One-Year Returns



Sources: FTSE Russell and S&P Dow Jones Indices

- Although stocks with the highest P/E's significantly outperformed for the year, the trend shifted after the vaccine announcement and stocks with zero earnings estimates or P/E's less than 10 shot up.

Quarterly Performance of Industry Sectors



Source: S&P Dow Jones Indices

Global/Global ex-U.S. Equity

Vaccine rollouts extend and expand risk-on rally

- Prospects of global economic recovery propelled by COVID-19 vaccination fueled double-digit returns broadly across developed and emerging markets.
- Expectations of reverting back to normal economic activity by late 2021 enabled risk assets to thrive.
- Emerging markets outperformed developed markets, led by Latam—specifically Brazil.
- Small cap outperformed large as business confidence improved with news of vaccination.

Market rotates to cyclicals

- Positive outlook on reflation trade stoked Energy, Materials, and Financials to drive the market.
- Beta and volatility led factor performance due to market rotation.

U.S. dollar vs. other currencies

- U.S. dollar continued to lose ground as appetite for risk increased with the expectation that a path to global economic recovery is on the horizon.

Growth vs. value

- Value topped growth as sentiment shifted to cyclical sectors.

4Q20 belonged to value; does it have staying power?

- COVID-19 benefited value as the quarter brought news of successful vaccines.
- Financials, Travel, and Energy rebounded.
- MSCI World Growth (+12.4%) trailed MSCI World Value (+15.2%) over the three-month period.
- Even with this divergence of style in 4Q20, growth still outpaced value globally by over 35% for the full year.

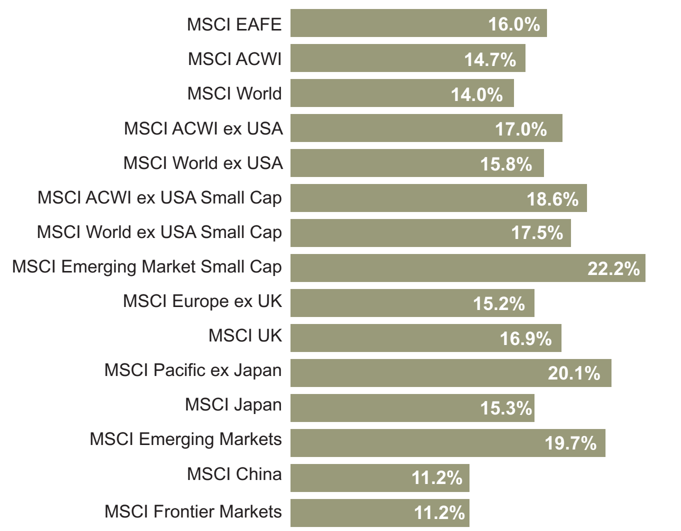
Potential tailwinds for value

- Higher interest rates on the heels of potentially higher inflation with government stimulus and businesses reopening
- Continued rebound of discretionary spending in areas neglected in 2020 as markets reopen: lodging, travel

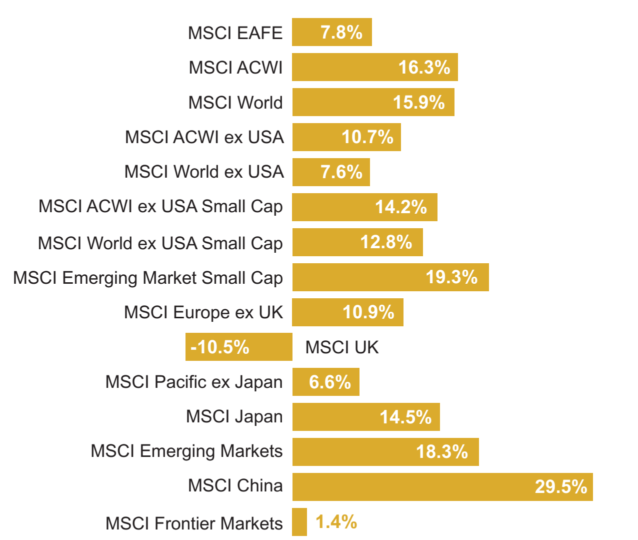
The good news

- Recent dollar weakness supports emerging markets.
- Could continue in 2021, driven by wider U.S. fiscal deficit plus stronger emerging market currencies

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

Treasury yields rose

– The 10-year U.S. Treasury yield closed 4Q20 at 0.93%, up 24 bps from 3Q20 but off from the year-end level of 1.92%.
– TIPS outperformed nominal U.S. Treasuries as 10-year breakeven spreads widened from 163 bps to 199 bps.
– No rate hikes are expected until at least 2023.

Bloomberg Barclays Aggregate gained slightly

– Corporate credit outperformed treasuries as investors continued to hunt for yield.
– Corporate credit ended the year up 9.9% despite record issuance in 2020.

High yield bonds gained on the quarter as rally extended

– High yield bonds outperformed investment grade (IG) securities in 4Q, returning 6.5%, but trailed IG for the year.
– Leveraged loans gained 3.6% as demand remained strong to finish the year.

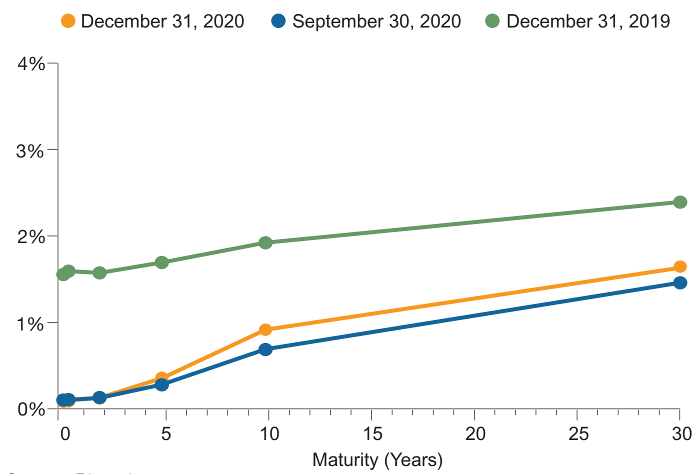
Munis boosted by favorable supply/demand dynamics

– Municipals outperformed Treasuries for the quarter, but remained down for the year.
– Tax-exempt issuance was muted amid strong demand.
– Lower quality outperformed for the quarter; however, higher quality outperformed for the year.

U.S. credit attractive to non-U.S. investors

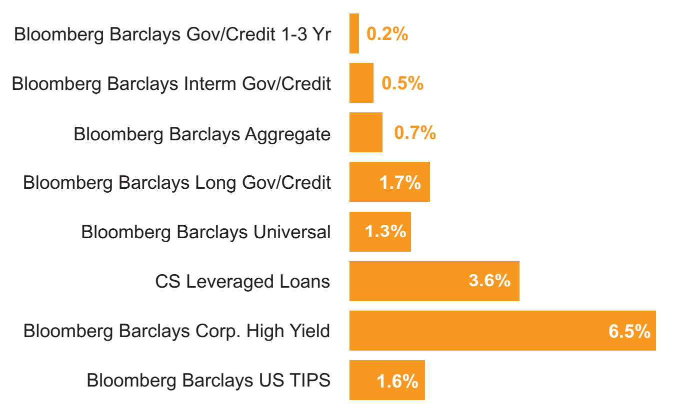
– Central banks globally are adopting a "lower for longer" mindset toward rates.
– 89% of positive yields globally are in the U.S., spurring demand for U.S. corporate credit.
– Lower LIBOR rates have decreased currency hedging costs; combined with a steep Treasury curve, that makes U.S. credit attractive to non-U.S. investors.

U.S. Treasury Yield Curves



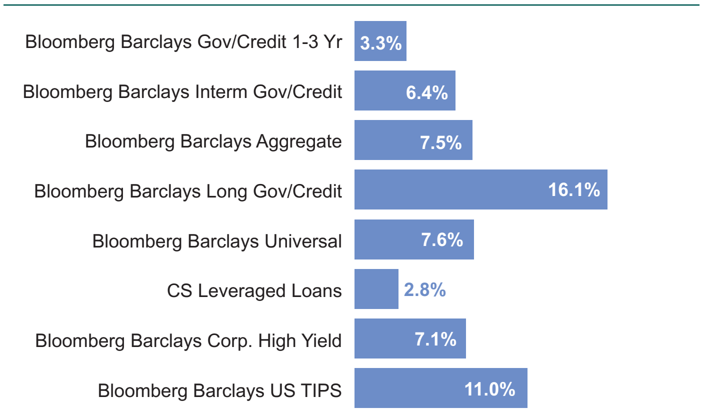
Source: Bloomberg

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

Implications of U.S. rates rising in 4Q

- U.S. Treasury rates rose in 4Q, most notably in the intermediate and long portions of the yield curve.
- As Democrats won both seats in the Georgia run-off, greater fiscal stimulus is likely. This may lead to further steepening of the yield curve and increased inflation expectations.
- A rising rate environment opens opportunities for floating-rate securities like leveraged loans, and makes securities with shorter durations such as securitized credit more attractive.

Global Fixed Income

Global fixed income rose amid monetary backdrop

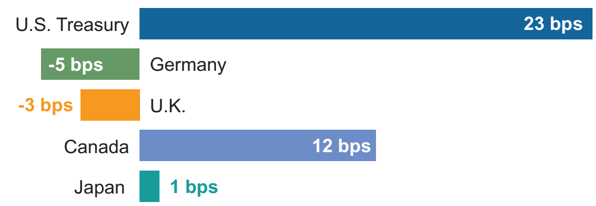
- Low rates and asset purchase programs continued to prop up the global bond market.
- Broad-based U.S. dollar weakness resulting from continued confidence in risk assets dampened hedged returns as the USD lost 4.27% versus the euro, 5.43% versus the British pound, and 2.02% versus the yen.

Emerging market debt ended the year positive

- Emerging market debt indices gained in 4Q20, finishing the year in positive territory amid a global search for yield and renewed growth expectations.
- U.S. dollar-denominated index (EMBI Global Diversified) underperformed local currency emerging market debt as U.S. rates rose; returns were mixed across the 70+ constituents.
- Local currency index (GBI-EM Global Diversified) was up significantly, with broad-based gains across constituents.

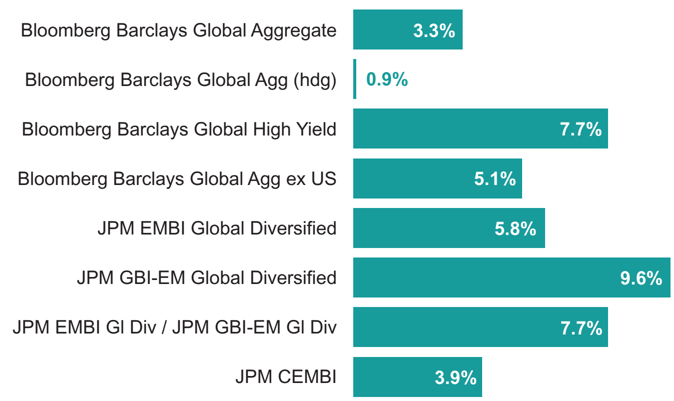
Change in 10-Year Global Government Bond Yields

3Q20 to 4Q20



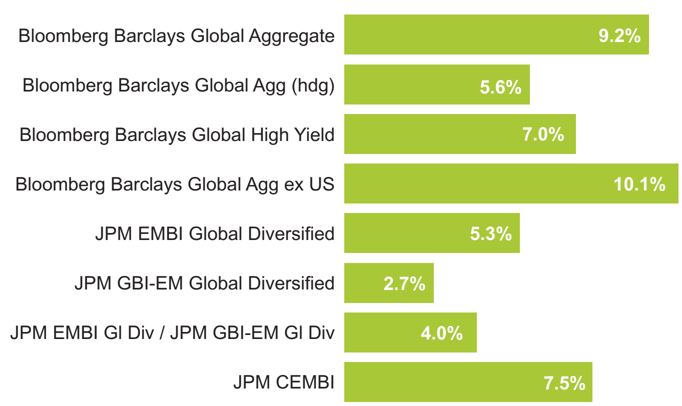
Source: Bloomberg Barclays

Global Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and JPMorgan Chase

Global Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and JPMorgan Chase

Hotels, Retail Face Pandemic Headwinds; REITs Gain but Lag Equities

REAL ESTATE/REAL ASSETS | Munir Iman

Pandemic continues to challenge Hotels and Retail

- Hotels and Retail are the most challenged sectors while Office faces uncertainty; Industrial remains the best performer.
- Income remains positive except in the Hotel sector.
- Appraisers have more certainty on the pandemic's impact on valuations.
- Return dispersion by manager within the ODCE Index is due to the composition of underlying portfolios.

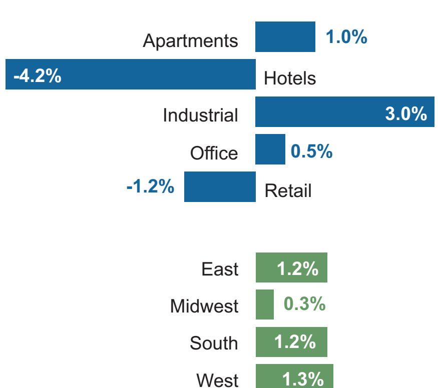
More than $200b of dry power

- U.S. core open end funds have investment queues of roughly $5 billion and exit queues of $20 billion.
- >$200 billion of capital waiting to be deployed in North America
- Majority of dry powder capital in opportunistic, value-add, and debt funds

Fundamentals will continue to be affected

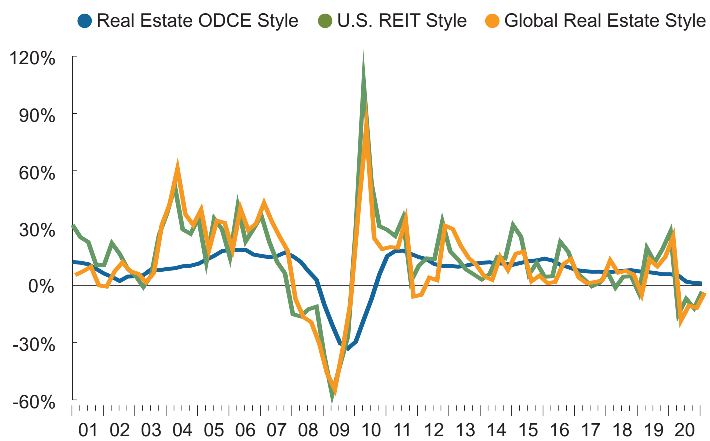
- Vacancy rates for all property types have been or will be affected.
- Net operating income has declined as Retail continues to suffer.
- 4Q20 rent collections showed relatively stable income throughout the quarter in the Industrial, Apartment, and Office sectors. The Retail sector remains challenged, with regional malls affected most heavily.
- Class A/B urban apartments relatively strong, followed by certain types of Industrial and Office
- Supply was in check before the pandemic.

Sector Quarterly Returns by Property Type and Region



Source: NCREIF

Rolling One-Year Returns



Source: Callan

- Construction is limited to finishing up existing projects but has been hampered by shelter-in-place orders and material shortages.
- New construction of preleased industrial and multifamily is occurring.
- Transaction volume dropped off during the quarter, except for multifamily and industrial assets with strong-credit tenants, which are trading at pre-COVID-19 levels.
- 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 flows will experience less of a change in cap rates; however, those with less reliable cash flows will see greater adjustments.

Global REITs increased but slightly lagged equities

- Global REITs underperformed slightly in 4Q20, gaining 13.3% compared to 14.0% for global equities (MSCI World).
- U.S. REITs rose 11.6% in 4Q20, lagging the S&P 500 Index, which jumped 12.1%.
- Globally, REITs are trading at a discount to NAV with the exception of those in the U.S., Singapore, and Australia.

- Sectors are mixed, between trading at a discount or premium.
- Ongoing volatility in REIT share prices offers opportunities to purchase mispriced securities, individual assets from REIT owners, and discounted debt, as well as lend to companies and/or execute take-privates of public companies.

Investment opportunities: real estate

- Primary opportunity: purchase of mispriced publicly traded real estate, both equity and debt
- Emerging opportunity: purchase of mezzanine loans from forced sellers
- The pandemic continues to impact real estate assets across Europe, with the Retail and Office sectors the first to undergo write-downs. Transaction activity has not yet meaningfully bounced back, as price discovery is still underway.

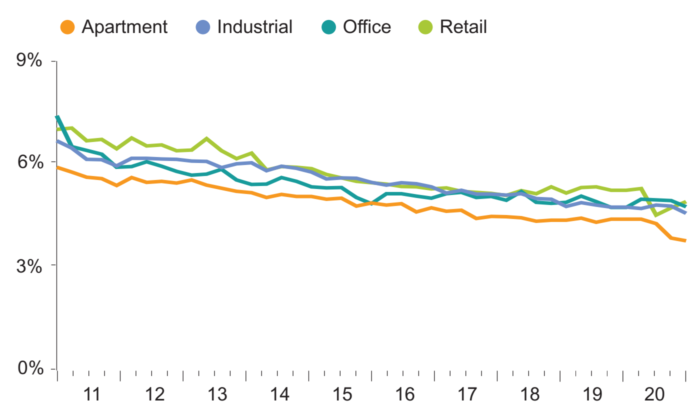
Investment opportunities: infrastructure

- Strong performance from communications assets has drawn increased interest from infrastructure investors, and in some cases real estate investors for data centers.
- Most infrastructure investment continues to be focused in OECD countries in North America and Europe. Some managers are sponsoring Asia-focused funds.

Investment opportunities: timberland and farmland

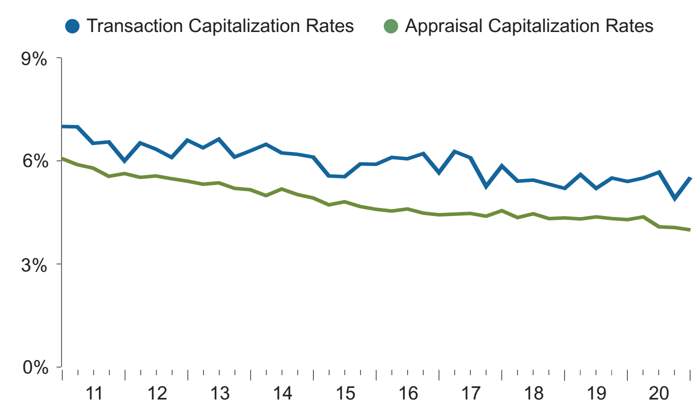
- Investment in farmland may increase if it proves to be a true diversifier in the pandemic.
- Institutional investment in timber has been waning for several years. The pandemic is unlikely to turn that tide.

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 12/31/20

Private Real Assets	Quarter	Year to Date	Year	3 Years	5 Years	10 Years	15 Years
Real Estate ODCE Style	**1.3**	**1.0**	**1.0**	**4.6**	**5.9**	**9.1**	**5.5**
NFI-ODCE (value wt net)	1.1	0.3	0.3	4.0	5.3	8.9	5.5
NCREIF Property	1.2	1.6	1.6	4.9	5.9	9.0	7.1
NCREIF Farmland	0.6	1.7	1.7	3.9	5.0	10.1	11.2
NCREIF Timberland	0.6	0.8	0.8	1.8	2.3	4.6	5.4
Public Real Estate							
Global Real Estate Style	**11.4**	**-3.9**	**-3.9**	**4.6**	**5.8**	**7.5**	**5.7**
FTSE EPRA Nareit Developed	13.3	-9.0	-9.0	1.5	3.7	5.4	--
Global ex-U.S. Real Estate Style	**12.7**	**-0.9**	**-0.9**	**5.4**	**6.3**	**7.2**	**5.9**
FTSE EPRA Nareit Dev ex US	13.9	-7.1	-7.1	1.7	5.0	4.5	--
U.S. REIT Style	**9.8**	**-3.2**	**-3.2**	**5.8**	**6.4**	**9.5**	**7.4**
EPRA Nareit Equity REITs	11.6	-8.0	-8.0	3.4	4.8	8.3	6.5

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

Roller-Coaster Ride Ends on a High Note

PRIVATE EQUITY | Gary Robertson

Given travel restrictions and the move to video due diligence "on-sites," global private equity fundraising held up amazingly well in 2020. The same can be said for the volumes of underlying portfolio company investments and exits. Private equity market liquidity showed a quickening pace in the final quarter, which is expected to carry to 2021.

In 2020, private equity partnerships holding final closes raised $645 billion globally across 1,163 partnerships (unless otherwise noted, PitchBook provided all data cited). The dollar amount declined only 12% from 2019's near record total, and the number of funds raised fell 34%. 4Q20 finished strong with final closes totaling $197 billion, up 74% from 3Q. The number of funds totaled 295, up 22%.

Funds Closed 1/1/20 to 12/31/20

Strategy	No. of Funds	Amt ($mm)	Share
Venture Capital	592	110,362	17%
Growth Equity	99	49,493	8%
Buyouts	273	285,346	44%
Mezzanine Debt	18	21,362	3%
Distressed	34	40,149	6%
Energy	4	6,216	1%
Secondary and Other	79	103,814	16%
Fund-of-Funds	64	27,814	4%
Totals	**1,163**	**644,556**	**100%**

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

New buyout investments for 2020 totaled 7,575, down 20% from 2019. Dollar volume fell 36% to $441 billion. The fourth quarter saw 2,223 new investments, a 23% increase, and dollar volume jumped 20% to $116 billion.

The year produced 32,198 rounds of new investment in venture capital (VC) companies, down 19% from 2019. Announced volume of $326 billion was up 18%. 4Q saw 7,227 new rounds, a 4% decline, and dollar volume rose 9% to $96 billion.

Last year also saw 1,791 buyout-backed private M&A exits, down 31% from 2019, with proceeds of $373 billion, down 42%. 4Q had 497 private exits, up 29%, with proceeds of $117 billion, up 144%. IPOs were strong for both venture capital and buyouts. The year's 144 buyout-backed IPOs increased 16% from 2019, with proceeds of $58 billion, up 71%. 4Q buyout-backed IPOs numbered 62, a jump of 32% from 3Q, with $24 billion of proceeds, up 60%.

Venture-backed M&A exits for the year totaled 1,788, down 18% from 2019. Announced dollar volume of $108 billion was down 19%. The final quarter had 473 exits, up 9%, and announced value of $46 billion vaulted 171%. The year's 391 venture-backed IPOs jumped 46% from 2019, with proceeds of $76 billion, up 65%. There were 115 VC-backed offerings in 4Q, a 17% drop, and the $26 billion of proceeds dropped 21% from 3Q.

Private Equity Performance (%) (Pooled Horizon IRRs through 9/30/20*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years	25 Years
All Venture	11.1	27.9	20.8	14.6	16.6	12.3	6.0	26.6
Growth Equity	12.4	25.8	19.2	16.4	14.7	13.5	11.3	15.1
All Buyouts	10.8	15.6	13.4	14.3	14.0	12.4	11.9	13.2
Mezzanine	5.5	7.5	9.0	10.0	11.5	10.5	8.4	9.8
Credit Opportunities	3.5	-1.8	2.7	5.6	8.2	8.5	9.4	9.5
Control Distressed	7.8	5.9	5.8	8.5	10.3	9.6	10.3	10.7
All Private Equity	**10.5**	**18.1**	**14.7**	**13.9**	**13.9**	**12.1**	**10.0**	**14.1**
S&P 500	8.9	15.2	12.3	14.2	13.7	9.2	6.4	9.3
Russell 3000	14.7	20.9	14.5	15.4	13.8	10.0	7.8	9.7

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 the *Capital Markets Review* and other Callan publications.

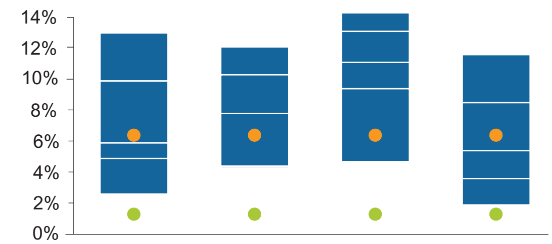
Hedge Funds Vaccinated Against Risk

HEDGE FUNDS/MACs | Jim McKee

The vigorous but volatile market conditions fed by continuing central bank liquidity enabled healthy hedge fund profits from both alpha and beta. As a proxy of asset-weighted hedge fund performance, the Credit Suisse Hedge Fund Index (CS HFI) surged 6.4% in 4Q20, its strongest quarterly gain since 2009. Representing actual hedge fund portfolios net of all fees and expenses, the median manager in the Callan Hedge Fund-of-Funds (FOF) Peer Group advanced 8.5%.

All strategies within the CS HFI were positive. Frenzied corporate issuance, whether equity, credit, or blank checks in the form of SPACs, particularly enriched Risk Arbitrage (+11.3%) and Event-Driven Multi-Strategy (+10.7%). Revived hopes for downtrodden credits benefited Distressed (+9.2%), marking the strategy's best quarterly gain since its 1994 inception. Riding the equity wave higher with an average 0.5 beta exposure, Long-Short Equity added 7.6%.

Hedge Fund Style Group Returns



	Absolute Return FOF	Core Div. FOF	Long/Short Equity FOF	Institutional Hedge Funds
10th Percentile	13.0	12.1	14.3	11.6
25th Percentile	9.9	10.3	13.1	8.5
Median	5.9	7.8	11.1	5.4
75th Percentile	4.9	4.4	9.4	3.6
90th Percentile	2.6	4.3	4.7	1.9
CS Hedge Fund ●	6.4	6.4	6.4	6.4
90-Day T-Bill +5% ●	1.3	1.3	1.3	1.3

Sources: Callan, Credit Suisse, Federal Reserve

Callan Peer Group Median and Index Returns* for Periods Ended 12/31/20

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15Years
Callan Institutional Hedge Fund Peer Group	**5.4**	**6.8**	**5.1**	**5.9**	**5.7**	**6.9**
Callan Fund-of-Funds Peer Group	**8.5**	**13.1**	**6.5**	**5.7**	**5.0**	**4.8**
Callan Absolute Return FOF Style	**5.9**	**4.4**	**3.8**	**4.1**	**4.3**	**4.2**
Callan Core Diversified FOF Style	**7.8**	**12.4**	**5.7**	**5.2**	**4.7**	**4.6**
Callan Long/Short Equity FOF Style	**11.1**	**17.9**	**8.1**	**7.3**	**6.2**	**5.5**
BB GS Cross Asset Risk Premia 6% Vol Idx	1.2	-4.3	2.3	3.2	5.1	5.9
Credit Suisse Hedge Fund	6.4	6.4	4.0	4.1	3.8	4.7
CS Convertible Arbitrage	4.2	10.3	5.2	5.5	4.1	4.8
CS Distressed	9.2	3.8	1.2	3.4	3.6	4.4
CS Emerging Markets	5.6	12.2	4.6	6.9	4.7	5.7
CS Equity Market Neutral	0.7	1.7	-0.6	0.3	1.6	-0.9
CS Event-Driven Multi	10.7	6.9	4.1	3.9	2.5	4.7
CS Fixed Income Arb	3.3	3.6	3.6	4.3	4.6	4.0
CS Global Macro	6.0	6.5	5.5	4.4	4.1	6.0
CS Long/Short Equity	7.6	7.9	4.9	4.8	5.0	5.5
CS Managed Futures	5.9	1.9	1.2	-0.1	0.6	2.8
CS Multi-Strategy	5.1	5.6	3.9	4.6	5.7	5.6
CS Risk Arbitrage	11.3	16.0	6.8	6.4	3.9	4.5
HFRI Asset Wtd Composite	7.6	2.8	3.2	3.8	3.7	--
90-Day T-Bill + 5%	1.3	5.7	6.6	6.2	5.6	6.2

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

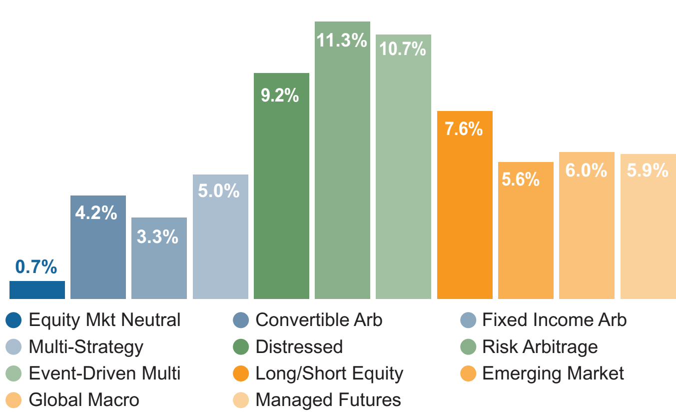
Within Callan's Hedge FOF Peer Group, market exposures differentiated performance in the quarter. Fed by the equity rally as well as stock dispersion within it, the median Callan Long/Short Equity FOF (+11.1%) easily beat the Callan Absolute Return FOF (+5.9%), which benefited from tightening spreads in equity, credit, and event arbitrage. With diversifying exposures to both non-directional and directional styles, the Core Diversified FOF gained 7.8%.

Tracking 50 of the largest, broadly diversified hedge funds with low-beta exposure to equity markets, the median manager in the Callan Institutional Hedge Fund (CIHF) Peer Group gained 5.4% in 4Q. For the year, the median manager was up 6.8%. Those funds focused on hedged credit led, on average, others focused more on equities, rates, and cross-asset strategies in the quarter, but lagged those others for the full year.

Measuring the performance of these alternative risk premia in the quarter, the Bloomberg GSAM Risk Premia Index gained 1.2% based upon a 6% volatility target. Within the underlying styles of the Index's alternative risk premia, Currency Carry (+3.7%), U.S. Equity Value (+3.6%), and Currency Trend (+3.6%) were the big beneficiaries of the quarter's cyclical risk-on rotation.

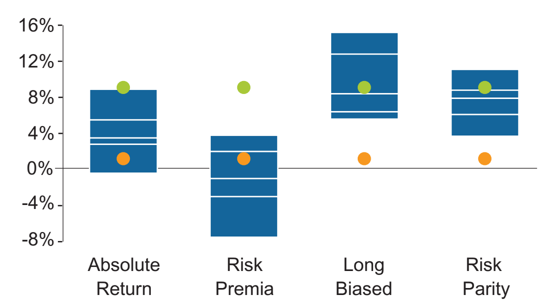
Within Callan's database of liquid alternative solutions, the median managers of Callan Multi-Asset Class (MAC) style groups generated positive returns, gross of fees, consistent with their underlying risk exposures. For example, the Callan Risk Parity MAC, which typically targets equal risk-weighted allocations across asset classes with leverage, gained 7.9%, slightly trailing the more equity risk-oriented benchmark of 60% MSCI ACWI and 40% Bloomberg Barclays US Aggregate Bond Index (+9.1%). Given its usually long equity bias within a dynamic asset allocation framework, the Callan Long-Biased MAC (+8.4%) also marginally underperformed the 60%/40% index. The median Callan Risk Premia MAC fell 1.0%, reflecting its levered exposures to uncorrelated alternative risk premia (such as those in the Bloomberg GSAM Risk Premia Index). As the most conservative MAC style focused on non-directional strategies of long and short asset class exposures, the Callan Absolute Return MAC earned 3.5%.

Credit Suisse Hedge Fund Strategy Returns



Source: Credit Suisse

MAC Style Group Returns



	Absolute Return	Risk Premia	Long Biased	Risk Parity
10th Percentile	8.9	3.8	15.2	11.1
25th Percentile	5.5	2.0	12.8	8.8
Median	3.5	-1.0	8.4	7.9
75th Percentile	2.8	-3.0	6.4	6.1
90th Percentile	-0.4	-7.5	5.6	3.7
BB GS Cross Asset Risk Premia (6%v)	1.2	1.2	1.2	1.2
60% MSCI ACWI/ 40% BB Barclays Agg	9.1	9.1	9.1	9.1

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

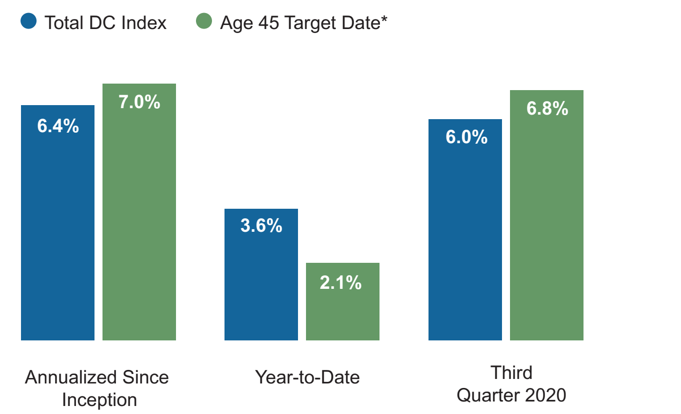
Index Posts Second Straight Quarterly Gain

DEFINED CONTRIBUTION | Patrick Wisdom

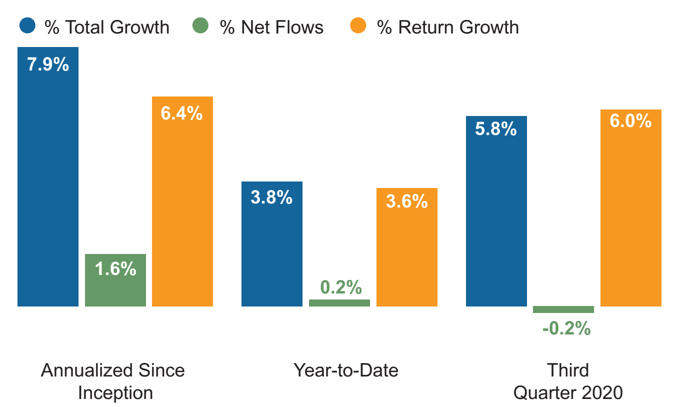
- The Callan DC Index™ rose 6.0% in 3Q20, the second straight quarter of gains after a 15.0% 1Q20 plunge. The increase propelled the Index to a gain year to date (3.6%). The Age 45 Target Date Fund (analogous to the 2040 vintage) posted a larger quarterly gain (6.8%), attributable to its higher allocation to equity.
- Balances within the DC Index rose by 5.8%. Investment returns (6.0%) were the sole driver of the growth, while net flows (-0.2%) had a small, negative effect.
- Target date funds typically get the largest net inflows, but they received only 12.5% of quarterly inflows as investors gravitated to relatively safer asset classes such as U.S. fixed income (36.9%) and stable value (30.7%).
- U.S. large cap (-45.1%) and U.S. small/mid cap (-38.9%) had the largest net outflows.
- Turnover (i.e., net transfer activity levels within DC plans) increased in 3Q, rising to 0.75% from the previous quarter's 0.37%.
- The Index's overall allocation to equity increased slightly to 68.8% from the previous quarter's 68.4%. U.S. large cap saw the largest percentage increase in allocation, rising by 60 basis points to 26.0%. U.S. small/mid cap had the largest percentage decrease, to 7.4% from 7.7% in 2Q.
- The prevalence of a money market offering (49.1%) increased by 1.4 percentage points from 2Q20. The percentage of plans offering a balanced fund (47.4%) dipped by more than 3 percentage points.
- For plans with more than $1 billion in assets, the average asset-weighted fee decreased by 2 basis points to 0.27%. Plans with less than $500 million in assets saw a slightly larger fee decrease of 4 bps to 0.33%, 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 flows 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 (3Q20)
(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
U.S. Fixed Income	36.91%
Stable Value	30.67%
U.S. Smid Cap	-38.89%
U.S. Large Cap	-45.14%
Total Turnover**	**0.75%**

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.

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The *Capital Market Review* is a quarterly macroeconomic indicator newsletter that provides thoughtful insights on the economy and recent performance in the equity, fixed income, alternatives, real estate, and other capital markets.

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