Callan Institute

Third Quarter 2019

Capital Market Review

The Four Most Dangerous Words

ECONOMY

2 PAGE

"This time, it's different" has been trotted out near the peak of most cycles as justification for why the expansion can continue, at a time when imbalances typically push measures of economic soundness to their limits. This time, however, it may really be different.

Steady Returns Amid Equities Rebound

INSTITUTIONAL INVESTORS

4 PAGE

Corporate plans gained the most among plan types over the one-year period ending in the third quarter. Nonprofits trailed all fund types. Over the last 20 years, returns for investor types ranged from 6.2%-6.3%, outpacing the 6.1% return of a stocks-bonds benchmark.

U.S. Stocks Mixed; Global Markets Fall

EQUITY

6 PAGE

U.S. equity markets posted mixed results amid historic lows for 30-year Treasury yields and a historic factor rotation. Global equity markets turned negative after modest but positive results in the second quarter, buffeted by geopolitical turmoil.

After Two Rate Cuts, Yields Fall Globally

FIXED INCOME

8 PAGE

The Federal Open Market Committee cut short-term interest rates by 25 basis points twice in the third quarter. Yields fell in the U.S. and abroad given global growth headwinds. U.S. fixed income saw mostly positive returns; non-U.S. returns were mixed.

Real Estate Solid; Real Assets Down

REAL ESTATE/REAL ASSETS

10 PAGE

U.S. core real estate returns continue to be driven by income, with limited appreciation this late in the cycle. Global REITs gained 4.6% in the third quarter; U.S. REITs advanced 7.8%. Most real assets, with the notable exception of gold, finished the quarter lower.

A Bountiful but Smaller Harvest

PRIVATE EQUITY

12 PAGE

Most private equity activity measures were down in the third quarter. So far this year, all private equity liquidity measures that Callan tracks moderated. High prices, perceived slowing of global economic growth, and spooky geopolitical events dampened activity so far this year.

Hedge Funds Flat; MACs Struggle

HEDGE FUNDS/MACs

13 PAGE

Equity market churn, while Treasury yields fell further, had a mixed effect across hedge funds, leaving the broad hedge fund universe flat. Multi-asset class (MAC) performance varied depending on net market exposures, but was mostly flat or down.

Returns Moderate for Callan DC Index

DEFINED CONTRIBUTION

15 PAGE

The Callan DC Index™ rose 3.3% in the second quarter compared to 9.6% in the first quarter. The Age 45 Target Date Fund gained 3.5%, largely due to its higher equity allocation. The Index's growth in balances returned to a normal level after a big gain in the first quarter.

Broad Market Quarterly Returns

U.S. Equity Russell 3000	Non-U.S. Equity MSCI ACWI ex USA	U.S. Fixed Income Bloomberg Barclays Agg	Non-U.S. Fixed Income Bloomberg Barclays Gbl ex US
1.2%	-1.8%	2.3%	-0.6%

Sources: Bloomberg Barclays, FTSE Russell, MSCI

The Four Most Dangerous Words (This Time, It's Different…)

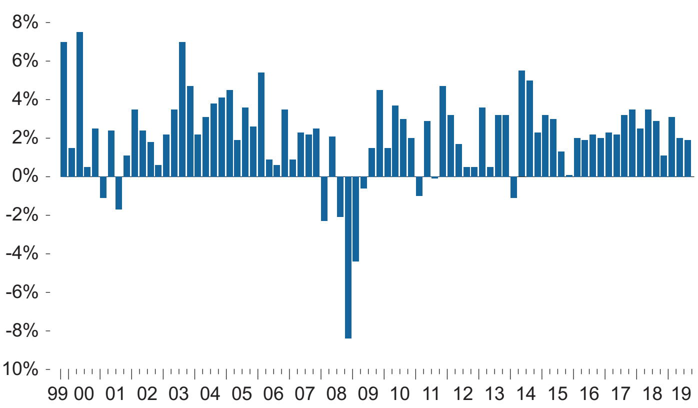
ECONOMY | Jay Kloepfer

Third quarter U.S. GDP growth surprised on the upside, coming in at 1.9% and extending what is now the longest economic expansion on record to 124 months. While 1.9% sounds modest compared to past cycles, it is positively robust compared to developed economies around the globe. The U.S. economy, and to an extent the entire global economy, has defied fears of an imminent collapse all year. While the current expansion may appear long in the tooth, elapsed time is not an economic variable. This expansion has been far weaker than each of the past 10, whether measured by cumulative GDP growth (at just under 25%, it's about half that of the 1990s), by job creation, or by investment. The overhang of the housing market collapse has weighed heavily on growth since 2009, and the measured pace of growth has in fact enabled the U.S. economy to maintain a slow burn.

Several long-held tenets of fundamental macroeconomics appear to be under serious re-consideration after the extraordinary 10-year period following the Global Financial Crisis: the cause (and the absence) of inflation; the execution of monetary policy; the role of central banks and in particular the pivot by the Federal Reserve at the start of 2019; and the business cycle. The new macroeconomic narrative says that first, the business cycle as we know it has been disrupted; second, the source and volatility of inflation has been altered going forward; third, central banks have added sustaining economic expansion to their official remit, therefore the quantitative easing (QE) genie is out of the bottle and we will not be stuffing it back in anytime soon. All of these changes to the macro world are interrelated, one sustaining the other, and are potentially pointing to a different path for the U.S. and global economy than would be expected, given past accepted relationships between inflation, monetary policy, and the business cycle.

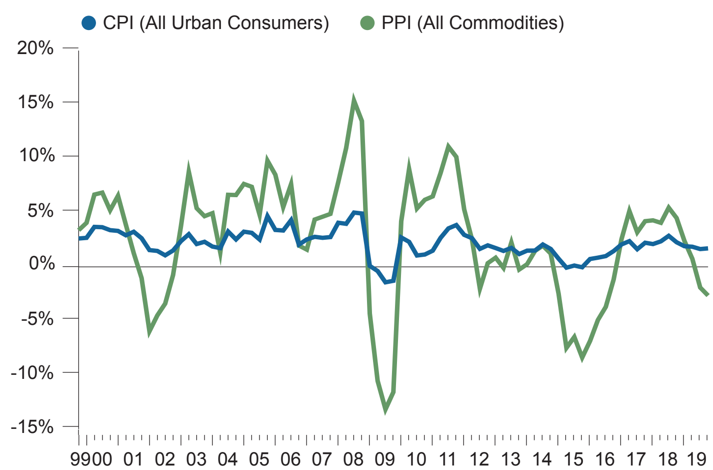
"This time, it's different" has been trotted out near the peak of most cycles to justify why the expansion can continue, at a time when imbalances typically push measures of economic soundness to their limits. This time, however, it may really be different.

Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

In the words of many analysts, the Fed rate hike in December 2018 may have been the end of an era. The Fed's standard operating procedure until now has been to tighten preemptively before inflation takes off, and following the extraordinary period of zero interest rate policy, the Fed's goal had been to normalize rates while inflation was low. The Fed pivot in January to pause on rate hikes, and then to implement two cuts in the third quarter while the expansion continues, indicates that preemptive tightening and rate normalization are over, and we may not see them again. The macro world as we know it may have changed.

The headlines of impending doom that have dominated 2019 make the coming recession, if it ever materializes, the most anticipated slowdown ever. The economic result so far in 2019 is that the U.S. economy has shrugged off slowing global growth, a prolonged trade war with China, and geopolitical uncertainty in the euro zone due to Brexit—and continued to steam along. The job market remains strong, and the unemployment rate is at a generational low of 3.6%. U.S. economic growth is clearly moderating, but the expected plunge has yet to materialize, in part because of the lack of obvious imbalances, and in part because of the relatively insular nature of the U.S. economy. The trade war with China is top of the news, yet the cumulative impact on GDP growth since 2018 is less than 1%, as estimated by Capital Economics. The rest of the world has clearly slowed, and global GDP growth looks ready to fall to its weakest pace (near 2% next year) since 2012.

The source of inflation has shifted from the goods and commodities sectors to the service sector. Goods and commodities have shown substantial variability, with the attendant impact on the business cycle and on prices. The service sector shows much more subdued cyclicality, and as a result both the business cycle and inflation may become irrevocably less volatile, with the boom and bust of past cycles no longer the expectation. Headline inflation came in at a 1.7% annual rate in the third quarter, still well below the Fed's target of 2%, and producer price inflation in particular went negative during 2019, dragged down by commodity and goods prices. The persistence of low inflation in the face of continued expansion and a decade of accommodative monetary policy is one factor giving the Fed cover to cut rates while growth continues.

The Long-Term View

Index	2019 3rd Qtr	Periods ended Dec. 31, 2018 Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	1.2	-5.2	7.9	13.2	9.0
S&P 500	1.7	-4.4	8.5	13.1	9.1
Russell 2000	-2.4	-11.0	4.4	12.0	8.3
Non-U.S. Equity					
MSCI EAFE	-1.1	-13.8	0.5	6.3	4.6
MSCI ACWI ex USA	-1.8	-14.2	0.7	6.6	--
MSCI Emerging Markets	-4.2	-14.6	1.6	8.0	--
MSCI ACWI ex USA Small Cap	-1.2	-18.2	2.0	10.0	--
Fixed Income					
Bloomberg Barclays Agg	2.3	0.0	2.5	3.5	5.1
90-Day T-Bill	0.6	1.9	0.6	0.4	2.5
Bloomberg Barclays Long G/C	6.6	-4.7	5.4	5.9	6.8
Bloomberg Barclays Gl Agg ex US	-0.6	-2.1	0.0	1.7	4.4
Real Estate					
NCREIF Property	1.4	6.7	9.3	7.5	9.3
FTSE Nareit Equity	7.8	-4.6	7.9	12.1	9.8
Alternatives					
CS Hedge Fund	0.3	-3.2	1.7	5.1	7.3
Cambridge PE*	4.3	10.6	11.9	13.8	15.2
Bloomberg Commodity	-1.8	-11.2	-8.8	-3.8	2.0
Gold Spot Price	4.2	-2.1	1.3	3.8	4.9
Inflation – CPI-U	0.2	1.9	1.5	1.8	2.2

*Data for most recent period lags by a quarter. Data as of June 30, 2019.
Sources: Bloomberg, Bloomberg Barclays, Bureau of Economic Analysis, Credit Suisse, FTSE Russell, MSCI, NCREIF, Standard & Poor's, Refinitiv/Cambridge

Recent Quarterly Economic Indicators

	3Q19	2Q19	1Q19	4Q18	3Q18	2Q18	1Q18	4Q17
Employment Cost–Total Compensation Growth	2.8%	2.7%	2.8%	2.9%	2.8%	2.8%	2.7%	2.6%
Nonfarm Business–Productivity Growth	-0.1%*	2.3%	3.5%	0.1%	1.2%	1.8%	0.9%	0.9%
GDP Growth	1.9%	2.0%	3.1%	1.1%	2.9%	3.5%	2.5%	3.5%
Manufacturing Capacity Utilization	75.5%	75.5%	76.4%	77.0%	76.9%	76.4%	76.1%	75.8%
Consumer Sentiment Index (1966=100)	93.8	98.4	94.5	98.2	98.1	98.3	98.9	98.4

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

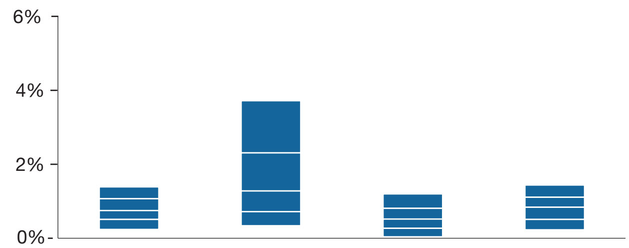
* Estimated figure provided by IHS Markit

Steady Returns Continue Amid Equities Rebound

INSTITUTIONAL INVESTORS

- A quarterly rebalanced 60% S&P 500/40% Bloomberg Barclays Aggregate portfolio returned 7.1% over the one year ended September 30, 2019. All broad institutional investor groups underperformed this benchmark.
- Both U.S. and non-U.S. equity markets continued their rebound in the third quarter after dropping during 2018. Non-U.S. equity underperformed relative to U.S. equity during 2018 and so far this year.
- Corporate plans gained the most among plan types over the one-year period, followed by public defined benefit (DB) plans. Nonprofits trailed all fund types. Over longer periods, Taft-Hartley plans have tended to perform best, but the range of returns for all institutional investor types tended to be in a narrow range; for instance, over the last 10 years, returns for all investor types ranged from 7.9%-8.4%.
- As the expansion continues, investors are discussing how long it can go on, and the fear of missing out is fading the longer the bull market runs. Investors are also addressing how the reversal in Fed policy changes the landscape, as it and other central banks take on the added role of sustaining the expansion. In addition, investors are examining what current yields portend for capital market assumptions.

Quarterly Returns, Callan Database Groups



	Public Database	Corporate Database	Nonprofit Database	Taft-Hartley Database
10th Percentile	1.39	3.72	1.20	1.44
25th Percentile	1.07	2.31	0.81	1.11
Median	0.75	1.28	0.52	0.84
75th Percentile	0.51	0.72	0.27	0.51
90th Percentile	0.24	0.34	0.04	0.23

Source: Callan

- Public DB plans are focused on returns from private markets, but face mounting pressure to control costs. One approach they have adopted is a barbelled pursuit of active management in private markets and alternatives, and all passive in equity, more passive in fixed, and cheaper liquid alternatives with "passive" exposures to betas and factors.

Callan Database Median and Index Returns* for Periods ended September 30, 2019

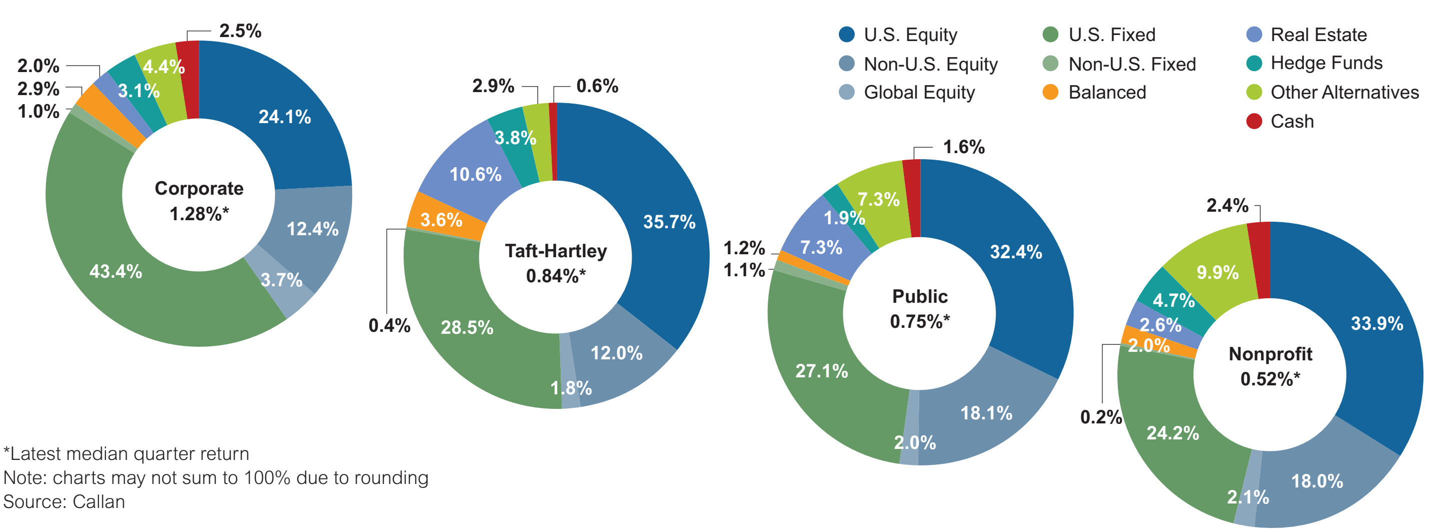
Database Group	Quarter	Year-to-date	Year	3 Years	5 Years	10 Years
Public Database	**0.75**	**12.03**	**4.17**	**7.80**	**6.39**	**8.10**
Corporate Database	**1.28**	**14.11**	**6.39**	**7.78**	**6.51**	**8.17**
Nonprofit Database	**0.52**	**12.59**	**3.63**	**7.88**	**5.98**	**7.94**
Taft-Hartley Database	**0.84**	**11.92**	**3.88**	**8.03**	**6.91**	**8.40**
All Institutional Investors	**0.77**	**12.62**	**4.19**	**7.88**	**6.39**	**8.18**
Large (>$1 billion)	**0.88**	**11.86**	**4.57**	**8.11**	**6.63**	**8.43**
Medium ($100mm - $1bn)	**0.83**	**12.54**	**4.25**	**7.91**	**6.46**	**8.17**
Small (<$100 million)	**0.70**	**12.87**	**4.00**	**7.72**	**6.19**	**7.95**

*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit, corporate defined benefit, 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.

– All investor types are considering lower equity exposures. They are also reevaluating the purpose and implementation of:
  - Real assets
  - Hedge funds and liquid alternatives
  - Fixed income
  - Equity
– For public DB plans, return enhancement is the most important issue. Alternative assets such as private equity and private real estate continue to draw interest from investors. Some plans appear to be rethinking their approach to passive investments and holding off increasing their allocation to them. Plans continue to express interest in reducing their allocations to U.S. equity.
– Corporate DB plans are most focused on risk control. Many are looking to decrease their equity allocation, with nearly the same number considering increases to fixed income. The percentage of corporate DB plans continuing to implement the process of de-risking has increased significantly over the last four years.
– For DC plans, fees remain top of mind. Retirement income options are also getting attention.
– Enhancing returns is the biggest concern for nonprofits, as they seek to meet spending needs and grow the corpus over time. Among all investor types, nonprofits historically have implemented or considered an outsourced chief investment officer (OCIO) at a higher rate than other types of institutional investors, and that trend continued this quarter.
– As part of their efforts to increase returns to meet plan targets, investors are evaluating how to implement private market allocations, and whether it is feasible to create a customized program implementation.
– For instance, public DB plans are expressing interest in multi-asset class (MAC) strategies. However, that interest is not widely shared. Corporate DB plans and nonprofits do not seem to be interested in increasing their exposure to MACs, and in fact corporate DB plans are increasingly expressing a desire to reduce their MAC allocations. Nonprofits showed a similar shift in sentiment.
– Private real estate and private equity have been staples of many investors' portfolios, and they continue to express interest in increasing their allocations to these asset classes. Investors, most notably nonprofits, are also beginning to indicate growing interest in increasing allocations to private credit.
– Fund liquidity may be a concern that prevents some investors from adding to illiquid investments.
– Despite the interest in alternatives, some plans are terminating their hedge fund exposures.

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

U.S. equities posted mixed results amid a market that saw 30-year Treasury yields hit historic lows and the most meaningful, albeit short-lived, factor rotation among stocks since the Global Financial Crisis (GFC). Large cap (+1.4%) and mid cap stocks (+0.5%) posted modest gains for the quarter while small caps declined (Russell 2000: -2.4%). Ongoing U.S.-China trade tension, earnings and interest rate uncertainty, and the global political landscape continued to drive investor uncertainty.

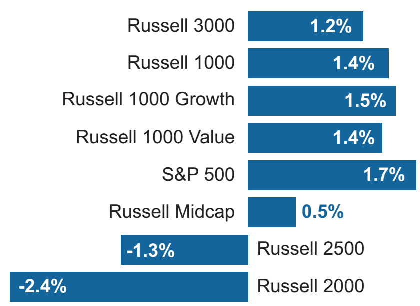
Large Cap ► *S&P 500: +1.7% | Russell 1000: +1.4%*

- Top sectors were in defensive areas including Utilities (+9.3%), Real Estate (+7.7%), and Consumer Staples (+6.1%) in response to investors' continued flight to quality.
- Energy, hurt by falling oil prices, fell 6.3%; Health Care lagged (-2.2%) amid discussions around price transparency and pricing reform by U.S. presidential candidates.
- Cyclical sector exposure has been volatile given uncertainty around the trade deal (and continued sideways movement of markets) along with slowed global growth.
- Up to September, momentum stocks (which have shifted to include many of the market's least volatile stocks) outperformed as investors shunned the cheapest quintile of value (and more volatile) stocks. This trend sharply reversed in early September as the 10-year Treasury yield rose from 1.46% to 1.73% and momentum stocks fell precipitously while value stocks traded up over the course of two days. The magnitude of the reversal gave a boost to value stocks across market capitalizations for the quarter.

Growth vs. Value ► *Russell 1000 Value: +1.4%, Russell 1000 Growth: +1.5% | Russell 2000 Value: -0.6%, Russell 2000 Growth: -4.2%)*

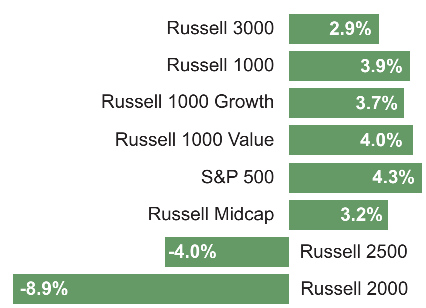
- While value continues to trail growth year-to-date, it gained ground during September's factor reversal, finishing the quarter essentially in line with growth within large caps.

U.S. Equity: Quarterly Returns



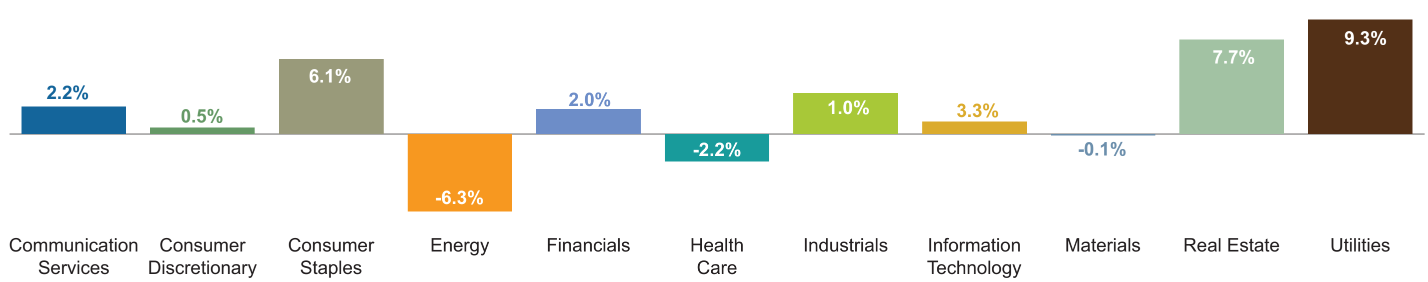
Sources: FTSE Russell and Standard & Poor's

U.S. Equity: One-Year Returns



Sources: FTSE Russell and Standard & Poor's

Quarterly Performance of Industry Sectors



Source: Standard & Poor's

- Within small cap, value benefited as investors favored the cheapest 20% of small caps while the most expensive quintile within the Russell 2000 declined double digits.

Non-U.S./Global Equities

Global equity markets turned negative in the third quarter. After more modest positive results in the second quarter, fears over continued trade war impacts, a no-deal Brexit, and a potential global slowdown impacted investor behavior. Given this backdrop, more defensive areas of the market outperformed.

Developed ► *MSCI EAFE: -1.1% | MSCI World ex USA: -0.9% | MSCI ACWI ex USA: -1.8% | MSCI Hong Kong: -11.9% | MSCI Japan: +3.1%*

- Boris Johnson's attempted suspension of Parliament and no-deal Brexit proclamations weighed on U.K. stocks (-2.5%).
- Germany (-4.0%) experienced recession fears; industrial production dropped 1.5% in June from the prior month, while the estimate was -0.5%.
- Hong Kong protests proved to be a headwind as its market fell 11.9% over the three-month period.
- Japan (+3.1%) was one of the few bright spots within developed markets as low short-term interest rates remain unchanged and a resolution to the Japan/South Korea trade war looked more promising.
- Cyclical sectors trailed as investors were positioned defensively; Energy (-6.5%) had the worst performance.
- For the quarter, factor performance reflected cautious investor behavior as quality and low volatility did well. However, the month of September saw a brief recovery in value across all markets as trade talks improved and central banks eased.

Emerging Markets ► *MSCI Emerging Markets Index: -4.2%*

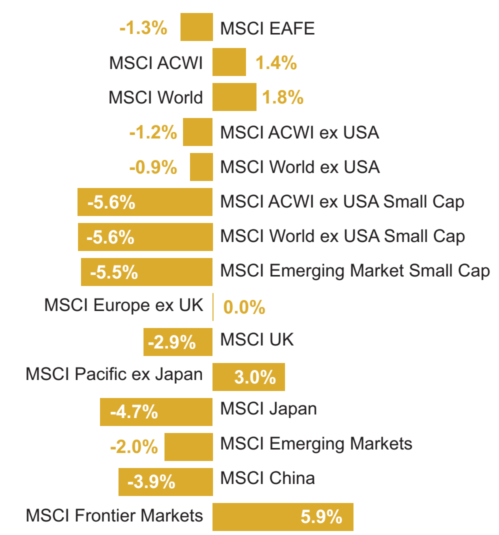
- Emerging markets fared worst among global markets; uncertainty weighed heavily on these volatile countries.
- Though most emerging market countries fell during the quarter, Turkey (+11.7%) had strong results as its central bank cut rates two times in less than two months.
- Factor performance in emerging markets favored quality and price momentum as investors moved toward safe assets.

Non-U.S. Small Cap ► *MSCI World ex USA Small Cap: -0.3% | MSCI EM Small Cap: -4.6%*

- Small cap marginally outperformed large cap, both in developed and all country ex-U.S. markets; despite overall defensive posturing, idiosyncratic businesses pushed past global market issues.
- Japan (+4.0%) helped drive developed returns as small cap companies also benefited from low rates and resolved trade tensions; Hong Kong (-7.6%) detracted as local businesses were hurt by the protests.

Non-U.S. Equity: Quarterly Returns (U.S. Dollar)

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



Source: MSCI

Fixed Income

The Federal Open Market Committee (FOMC) cut short-term interest rates by 25 basis points twice in the third quarter amid an economic backdrop that has been supported by strong consumer spending and a solid labor market, but challenged by weakening manufacturing data and business investment. The Fed chair stated that the FOMC would act as "appropriate to sustain the expansion," and the European Central Bank and other central banks around the world also moved in the direction of easing monetary policy. Yields fell in the U.S. and abroad given global growth headwinds fueled by mounting trade tensions as well as geopolitical uncertainty.

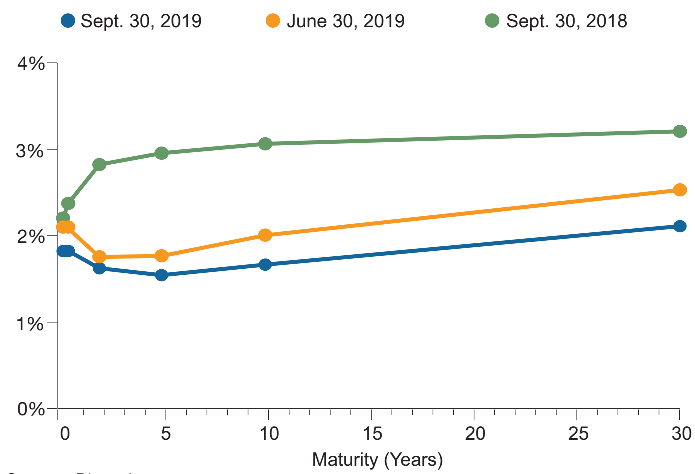
Core Fixed Income ▶ *Bloomberg Barclays US Agg: +2.3%*

- Treasuries returned 2.4% as rates fell across the yield curve.
- While the widely monitored 2- and 10-year key rates remained positive, the spread between the 3-month and 10-year key rates remained inverted.
- Long Treasuries soared (+7.9%) as 30-year yields fell roughly 40 bps.
- Nominal Treasuries outperformed TIPS as inflation expectations continued to fall; 10-year breakeven spreads were 1.53% as of quarter-end, down from 1.69% as of June 30. The 10-year real yield dipped briefly into negative territory in early September.

Investment-Grade Corporates ▶ *Bloomberg Barclays Corporate (Inv. Grade): +3.1%*

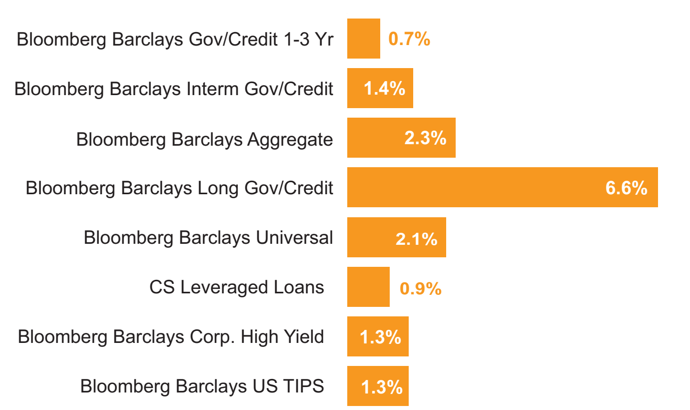
- Investment grade corporate credit spreads were range-bound, but their yield advantage was enough to generate positive excess returns versus like-duration Treasuries.
- Issuance in the corporate bond market was $320 billion in the quarter, $50 billion higher than a year ago; demand remained solid. BBB-rated corporates (+3.1%) modestly outperformed A-rated or higher corporates (+3.0%).

U.S. Treasury Yield Curves



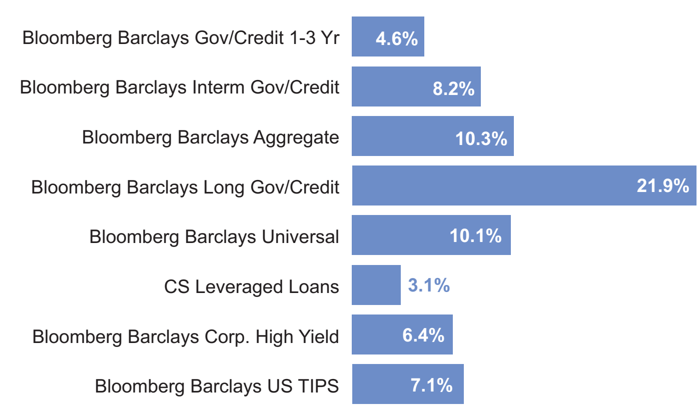
Source: Bloomberg

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

High Yield ► *Bloomberg Barclays Corporate HY: +1.3%*

- BB-rated corporates (+2.0%) outperformed CCC-rated corporates (-1.8%). BB- and B-rated spreads narrowed slightly, but the rally in rates helped drive outperformance as a result of higher quality bonds' greater sensitivity to interest rate movements.
- CCC-rated bond spreads widened significantly, representing some concern about deteriorating quality at the lower-end of the spectrum.

Leveraged Loans ► *CS Leveraged Loans: +0.9%*

- Bank loans, which have floating rate coupons, underperformed high yield bonds as rates rallied and investors worried about deteriorating credit quality.
- CLO issuance continued to exceed expectations, providing positive technical support to the leveraged loan market.

Non-U.S. Fixed Income

Global Fixed Income ► *Bloomberg Barclays Global Aggregate (unhedged): +0.7% | (hedged): +2.6%*

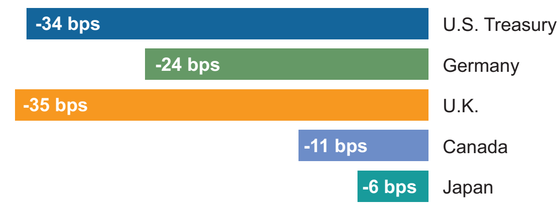
- Developed market sovereign bond yields rallied, pushing European sovereigns further into negative territory as the ECB reduced its deposit rate and announced a new bond purchasing stimulus program.
- Negative yielding debt totals nearly $17 trillion, a record high.
- The U.S. dollar was up 3.4% versus a basket of trade partner currencies and up 4.3% versus the beleaguered euro.

Emerging Market Debt ($US) ► *JPM EMBI Global Diversified: +1.5%* | **(Local currency)** ► *JPM GBI-EM Global Diversified: -0.8%*

- Broadly, emerging market currencies depreciated versus the U.S. dollar, hampering local currency returns.
- Within the dollar-denominated benchmark, Argentina (-42%) and Venezuela (-51%) were among the few to post negative returns. Conversely, returns in the local debt benchmark were more mixed with Turkey (+19%) and Argentina (-60%) being outliers.

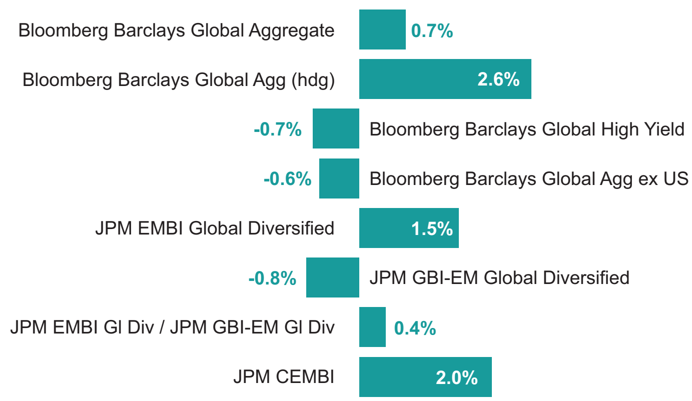
Change in 10-Year Global Government Bond Yields

2Q19 to 3Q19



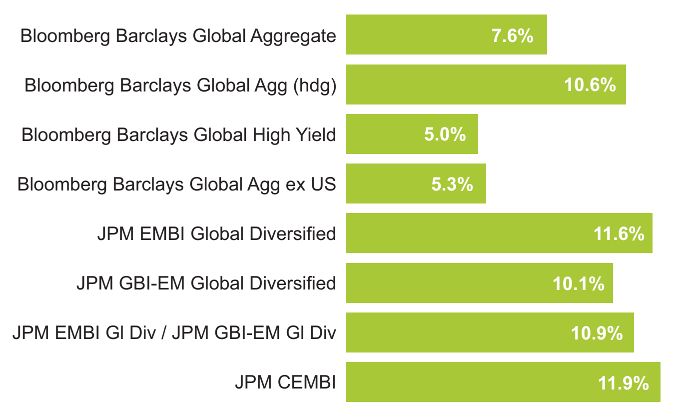
Source: Bloomberg Barclays

Non-U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and JPMorgan Chase

Non-U.S. Fixed Income: One-Year Returns



Sources: Bloomberg Barclays and JPMorgan Chase

Real Estate Stays Solid; Real Assets Mostly Down

REAL ESTATE/REAL ASSETS | Munir Iman and Kristin Bradbury

U.S. Real Estate

Real Estate Returns Continue to Moderate

- U.S. core real estate returns continue to be driven by income, with limited appreciation this late in the cycle.
- Returns are coming from net operating income (NOI) growth rather than further cap rate compression.
- Industrial continues to outperform other property types.
- Retail showing signs of depreciation

U.S. Real Estate Fundamentals Remain Healthy

- Steady returns continued, driven by above inflation-level rent growth in many metros.
- Within the NCREIF Property Index, the vacancy rate for U.S. Office was 9.6% in the quarter, the lowest in over 12 years.
- Net operating income (NOI) has been growing annually and is expected to be the primary return driver. Apartment and Industrial NOI growth fell slightly from the second quarter.

Pricing Remains Expensive in the U.S.

- Transaction volumes increased and remain robust.
- Cap rates rose slightly; market at near full valuations.

REITs Outperformed Global Equities

- U.S. REITs advanced 7.8% in the quarter, outpacing the S&P 500 Index, which rose 1.7%.
- Global REITs gained 4.6% compared to -0.2% for the MSCI ACWI IMI.
- Both U.S. and non-U.S. REITs are trading at net asset value.

Non-U.S. Real Estate

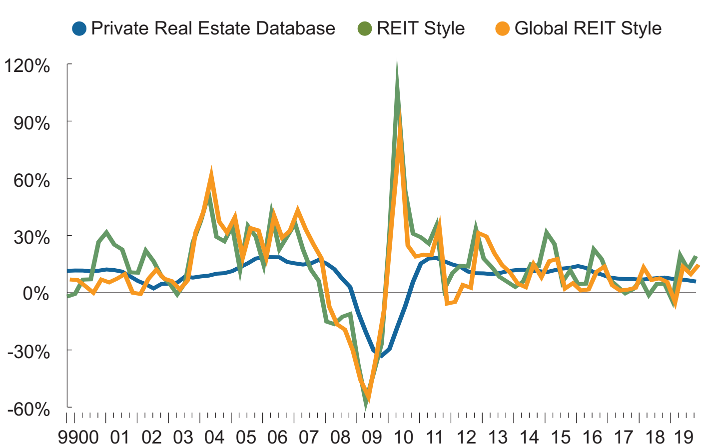
Asia Is Increasingly Important

- U.S.-China trade talks, unrest in Hong Kong, and other areas of political uncertainty have impacted real estate markets in the region. Managers continue to find attractive opportunities in some sectors of the market such as restructuring opportunities, necessity-based retail, and logistics.
- The number of open-end core funds focused on the Asia-Pacific market has increased in recent years and includes both sector-diversified and sector-specific (e.g., logistics) funds, supporting the development of the institutional real estate market in the region.
- During 2019, India had its first successful IPO for a REIT.

Europe Buffeted by Political Uncertainty

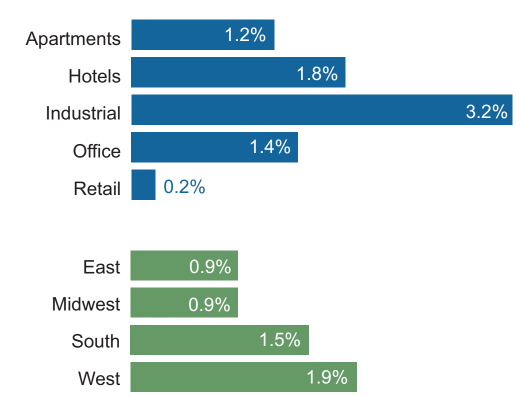
- Political uncertainty continues to weigh on overall economic growth throughout Europe, but real estate fundamentals remain strong in key gateway markets given strong demand and the continued lack of new supply. Cap rates for prime real estate remain low, as real estate continues to be an attractive asset class as a result of low interest rates throughout the region.
- Yields between prime and secondary real estate remain wide, providing opportunities for investors targeting transitional assets, as markets across Europe have less modern stock compared to 10 years ago.

Rolling One-Year Returns



Source: Callan

Sector Quarterly Returns by Property Type and Region



Source: NCREIF

Infrastructure Fundraising Momentum Continues

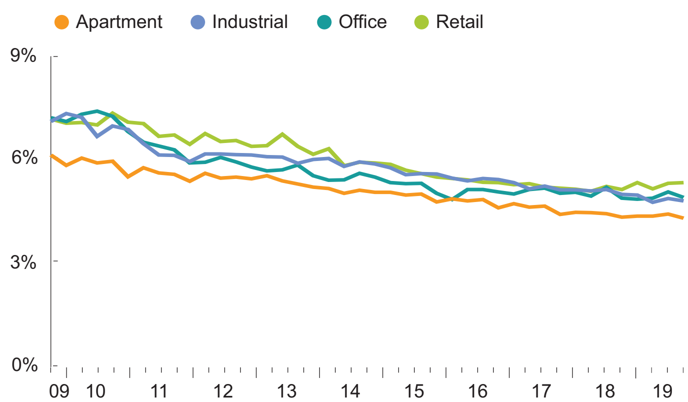
- Open end funds are raising significant capital, and the universe of investible funds keeps increasing.
- The closed end fund market continues to expand, with additional offerings in infrastructure debt, emerging markets, and sector-specific areas (e.g., communications and renewables).

Real Assets

Challenging Quarter as Oil Prices Slide

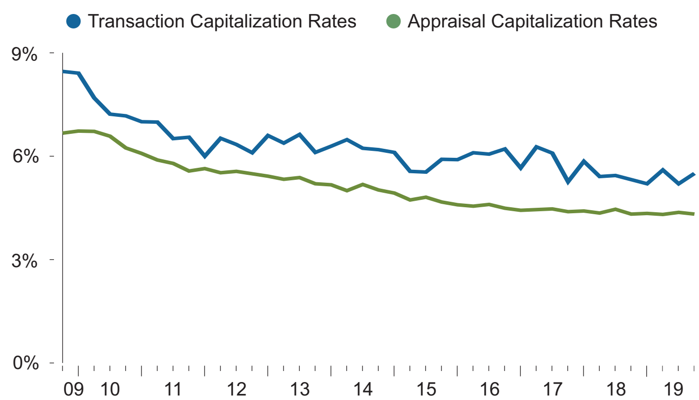
- While the MLP category generally benefits from declining rate environments, volatile and falling oil prices weighed more heavily on the space in the quarter (Alerian MLP Index: -5.0%; +11.0% YTD).
- Oil prices slid from $58.47 to $54.07 (WTI) during the quarter, and the energy-heavy Goldman Sachs Commodity Index was off 4.2%, while Gold (S&P Gold spot price: +4.3%; +15.0% YTD) benefited from its safe haven status.
- Looking across the rest of the commodity complex, Agriculture Commodities finished in negative territory (Bloomberg Commodity Agriculture Subindex: -6.2%), weighed down by coffee, corn, and cotton in particular, while nickel (+35.5%) almost single-handedly lifted the Industrial Metals Subindex (+2.4%) into positive territory for the quarter.

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 September 30, 2019

Private Real Assets	Quarter	Year to Date	Year	3 Years	5 Years	10 Years	15 Years
Real Estate ODCE Style	**1.5**	**4.5**	**5.9**	**7.1**	**9.0**	**9.9**	**6.8**
NFI-ODCE (value wt net)	1.1	3.1	4.6	6.3	8.4	9.8	6.9
NCREIF Property	1.4	4.8	6.2	6.8	8.6	9.8	8.6
NCREIF Farmland	1.0	2.4	5.3	6.1	7.9	11.0	14.2
NCREIF Timberland	0.2	1.3	2.1	3.1	4.4	4.0	7.0
Public Real Estate							
Global Real Estate Style	**4.6**	**22.3**	**14.7**	**7.4**	**8.3**	**10.2**	**8.3**
FTSE EPRA Nareit Developed	4.6	19.8	13.0	5.6	6.8	8.6	--
Global ex-U.S. Real Estate Style	**2.8**	**17.9**	**11.7**	**7.9**	**7.8**	**8.1**	**7.8**
FTSE EPRA Nareit Dev ex US	1.5	14.6	8.9	5.9	5.0	6.5	--
U.S. REIT Style	**7.7**	**28.5**	**19.2**	**8.4**	**10.7**	**13.6**	**9.7**
EPRA Nareit Equity REITs	7.8	27.0	18.4	7.4	10.3	13.0	9.0

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

A Bountiful but Smaller Harvest

PRIVATE EQUITY | Gary Robertson

Private equity activity measures were down in the third quarter, except for upticks in dollar volume for fundraising and buyout exits. So far this year, all private equity liquidity measures that Callan tracks moderated. High prices, perceived slowing of global economic growth, and challenging geopolitical events dampened activity so far this year.

Private equity partnerships holding final closes totaled $188 billion, with 201 new partnerships formed, according to PitchBook. The dollar volume rose 27% from the prior quarter, but the number of funds holding final closes fell 7%. So far this year, 2019 is running 7% behind 2018. No strategy is dominating the market compared to historical commitment ranges, as investors focus on diversification.

New buyout transactions declined, according to PitchBook. Funds closed 1,491 company investments with $110 billion in disclosed deal value, representing a 14% decline in count and a 16% dip in dollar value from the second quarter.

According to PitchBook, new investments in venture capital companies totaled 4,664 rounds of financing with $57 billion of announced value. The number of investments was down 13% from the prior quarter, and announced value fell 15%. The median pre-money valuations of Series A through D rounds continued to increase, with only Seed Stage remaining flat.

Funds Closed January 1 to September 30, 2019

Strategy	No. of Funds	Amt ($mm)	Share
Venture Capital	263	46,702	10%
Growth Equity	50	61,789	13%
Buyouts	158	241,920	51%
Mezzanine Debt	39	60,308	13%
Distressed	8	12,203	3%
Energy	10	14,767	3%
Secondary and Other	39	27,970	6%
Fund-of-funds	20	7,358	2%
Totals	**587**	**473,017**	**100%**

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

There were 404 private M&A exits of private equity-backed companies (excluding venture capital), PitchBook reports, with disclosed values totaling $122 billion. Private sale count was down 6% from the prior quarter but announced dollar volume rose 12%. The year-to-date exit count declined 35%. There were 16 private-equity backed IPOs in the third quarter raising $6 billion, a steep decline from 42 totaling $16 billion previously.

Venture-backed M&A exits totaled 320 transactions with disclosed value of $12 billion. The number of sales fell 12% and announced dollar volume plunged 52%. The year-to-date exit count declined 13%. There were 47 VC-backed IPOs in the third quarter with a combined float of $9 billion. For comparison, the second quarter had 59 IPOs and total issuance of $22 billion. Peloton was the largest third quarter IPO, raising $1.2 billion.

Private Equity Performance Database (%) (Pooled Horizon IRRs through June 30, 2019*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	6.25	18.96	15.93	14.95	15.01	11.80	13.06
Growth Equity	4.70	15.37	17.71	13.26	14.77	13.59	13.53
All Buyouts	4.12	10.72	16.06	11.85	15.27	13.72	12.07
Mezzanine	2.37	8.05	11.64	10.28	11.05	10.63	8.73
Credit Opportunities	1.09	3.20	9.37	5.68	13.39	9.61	10.13
Control Distressed	1.95	4.27	10.47	7.62	12.16	10.63	10.58
All Private Equity	**4.34**	**12.31**	**15.52**	**11.98**	**14.79**	**12.88**	**12.13**
S&P 500	4.30	10.42	14.19	10.71	14.70	8.75	5.90

Note: Private equity returns are net of fees. Sources: Refinitiv/Cambridge and Standard & Poor's
*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.

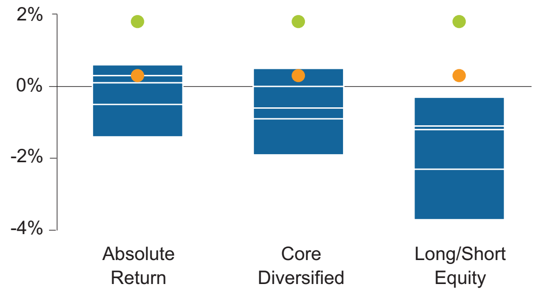
Hedge Funds Flat; MACs Struggle

HEDGE FUNDS/MACs | Jim McKee

Alpha trades flat as markets soften during the quarter

- Equity market churn, while Treasury yields fell further, had a mixed effect across hedge funds, leaving the broad hedge fund universe flat.
- *Managed Futures* (+3.5%) and *Global Macro* (+2.1%) were lead performers for the second quarter in a row, benefiting from continuing rate and currency trends.
- *Equity Market Neutral* (-1.7%) slipped hard, particularly given September's sudden factor rotation to value while momentum reversed.
- *Long/Short Equity* (+0.1%) was unchanged without much equity beta support; the equity factor reversal in September also hurt.
- *Distressed* (-3.5%) sank as spreads among weaker credits widened amid a flight-to-quality.
- Hedge fund portfolios with exposure to macro trading fared better while those with emerging market exposure, particularly Argentina, suffered more.

Hedge Fund-of-Funds Style Group Returns



	Absolute Return	Core Diversified	Long/Short Equity
10th Percentile	0.6	0.5	-0.3
25th Percentile	0.3	0.0	-1.1
Median	0.1	-0.6	-1.2
75th Percentile	-0.5	-0.9	-2.3
90th Percentile	-1.4	-1.9	-3.7
CS Hedge Fund ●	0.3	0.3	0.3
90-Day T-Bill +5% ●	1.8	1.8	1.8

Sources: Callan, Credit Suisse, and Federal Reserve

Callan Database Median and Index Returns* for Periods ended September 30, 2019

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Database	**-0.63**	**0.46**	**3.76**	**2.35**	**4.22**	**4.24**
Callan Absolute Return FOF Style	**0.07**	**0.80**	**3.60**	**2.32**	**4.16**	**3.95**
Callan Core Diversified FOF Style	**-0.62**	**0.23**	**3.37**	**2.02**	**3.99**	**4.12**
Callan Long/Short Equity FOF Style	**-1.19**	**0.02**	**4.57**	**3.40**	**4.67**	**5.37**
Credit Suisse Hedge Fund	0.26	2.13	3.83	2.30	4.32	4.97
CS Convertible Arbitrage	-0.41	1.29	2.55	2.28	4.36	3.78
CS Distressed	-3.46	-3.09	3.06	0.79	4.65	5.22
CS Emerging Markets	-4.11	1.81	3.29	3.02	4.28	5.99
CS Equity Market Neutral	-1.74	-4.37	0.27	0.16	1.14	-0.57
CS Event-Driven Multi	-0.80	0.18	3.49	0.16	3.37	5.05
CS Fixed Income Arb	0.28	2.38	4.39	3.23	5.66	3.84
CS Global Macro	2.12	7.66	5.35	3.11	4.89	6.43
CS Long/Short Equity	0.10	-0.36	4.85	3.38	4.88	5.74
CS Managed Futures	3.53	7.81	0.59	2.07	1.57	3.58
CS Multi-Strategy	0.68	1.94	4.23	4.18	6.23	5.95
CS Risk Arbitrage	0.23	1.98	3.18	2.64	2.68	3.81
HFRI Asset Wtd Composite	0.30	2.65	4.39	2.93	4.49	--
90-Day T-Bill + 5%	1.77	7.39	6.54	5.98	5.54	6.39

*Gross of fees. Sources: Bloomberg Barclays, Callan, Credit Suisse, Hedge Fund Research, Societe Generale, and Standard & Poor's

Amid choppy markets, MACs struggle for gains

- Multi-asset class (MAC) performance varied depending on net market exposures, but was mostly flat or down.
- The **HFR Risk Parity Index** targeting 10% volatility was positive (+1.9%), reflecting the modest lift of stocks and bonds.
- **Eurekahedge Multi-Factor Risk Premia Index** fell 5.1%, indicating broad headwinds for those seeking diversifying returns outside long-only markets.
- Within risk premia, *equity momentum* was a key detractor in light of September's factor reversal; *rates momentum* was an offsetting contributor given the trend of falling yields.
- *Long-Biased* trailed due to exposure to risk-on assets.
- *Absolute Return* benefited from exposure to higher-quality assets.

Volatility simmers slightly below average

- Markets are further discounting growth with lower expected rates, long and short.
- If global manufacturing data softens further, thereby overwhelming expectations of central banks easing, hedge funds are positioned reasonably well for an equity downturn.
- However, any economic rebound with tepid inflation will cause most hedge funds to lag.

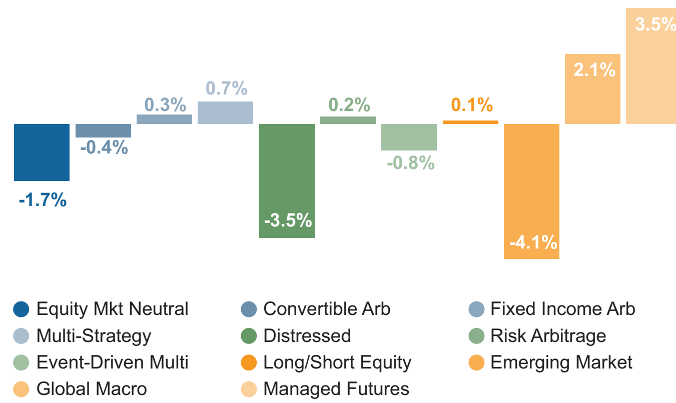
Falling yield curve shrinks the playing field, however level it may be

- Lower long rates factored into stocks and bonds leave less room for traditional assets to run, giving hedged strategies more opportunity to shine.
- However, as short rates also settle to lower levels, dwindling cash returns and short interest rebates take some wind out of hedge fund sails.

Industry outflows shade constructive mood

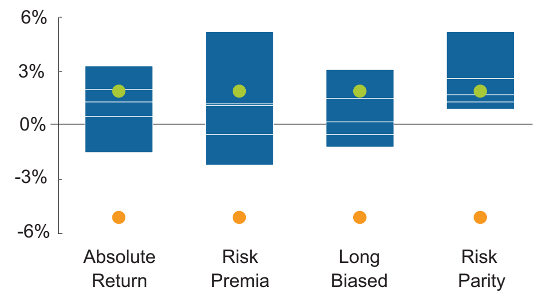
- The third quarter was the sixth consecutive quarter of industry asset outflows, which runs counter to the industry's positive view of an improving opportunity set ahead with increasing volatility tied to growing economic uncertainty.

Credit Suisse Hedge Fund Strategy Returns



Source: Credit Suisse

MAC Style Group Returns



	Absolute Return	Risk Premia	Long Biased	Risk Parity
10th Percentile	3.3	5.2	3.1	5.2
25th Percentile	2.0	1.2	1.5	2.6
Median	1.3	1.1	0.2	1.7
75th Percentile	0.5	-0.5	-0.5	1.3
90th Percentile	-1.5	-2.2	-1.2	0.9
Eurekahedge MFRP (5%v) ●	-5.1	-5.1	-5.1	-5.1
60% S&P 500/ 40% BB Barclays Agg ●	1.9	1.9	1.9	1.9

Sources: Bloomberg Barclays, Callan, Eurekahedge, Standard & Poor's

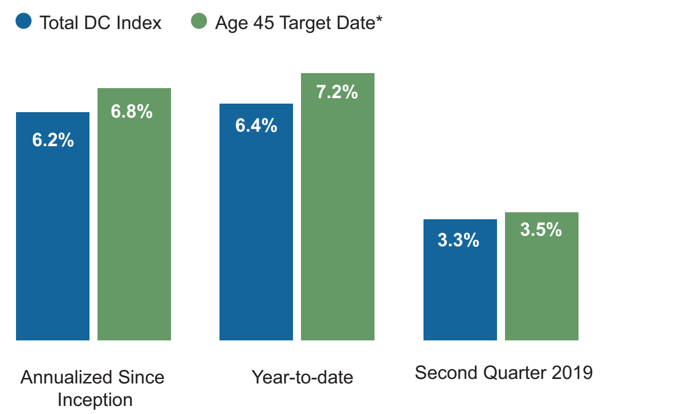
Performance Slows but Remains Solid

DEFINED CONTRIBUTION | Patrick Wisdom

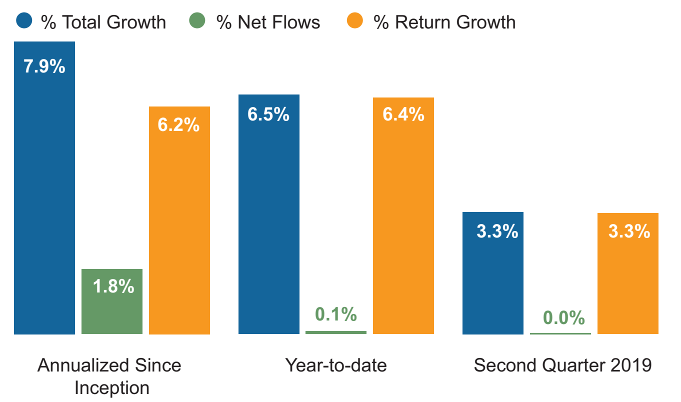
- The Callan DC Index™ gained 3.3% in the second quarter, compared to the first quarter's jump of 9.6%. The Age 45 Target Date Fund gained 3.5%, largely due to its higher equity allocation.
- The Index's growth in balances in the second quarter (3.3%) returned to a normal level after a robust gain in the first quarter (9.8%). Net flows were also positive but very small (0.03%).
- Target date funds (TDFs) yet again saw the largest inflows for the quarter. Both large-cap and small/mid-cap U.S. equity experienced large outflows. U.S. fixed income had relatively large inflows, while stable value options had relatively large outflows.
- Second quarter turnover (i.e., net transfer activity levels within DC plans) increased to 0.54% from the previous quarter's measure of 0.48%. Turnover has risen for three consecutive quarters but still sits below the historical average (0.60%).
- The overall allocation to equity increased to 70.0% from 69.5% in the previous quarter. The current allocation exceeds the Index's historical average by 2.2 percentage points.
- The percentage of assets allocated to U.S. large-cap equity rose. Gains as a result of strong performance outweighed outflows from the asset class. The current allocation to U.S. large-cap equity (25.2%) is now at its second highest level over the past decade.
- On the other hand, the percentage allocated to stable value decreased, while the allocation to TDFs remained steady.
- Stable value's prevalence within DC plans rose for the seventh consecutive quarter and is now at 77%. Additionally, more plans are now offering emerging market equity, global equity, and high yield fixed income as investment options.

The Callan DC Index is an equally weighted index tracking the cash flows and performance of nearly 90 plans, representing more than one million DC participants and over $150 billion in assets. The Index is updated quarterly and is available on Callan's website, as is the quarterly DC Observer newsletter.

Investment Performance



Growth Sources



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

Asset Class	Flows as % of Total Net Flows
Target Date Funds	62.56%
U.S. Fixed Income	26.82%
U.S. Smid Cap	-20.40%
U.S. Large Cap	-45.95%
Total Turnover**	**0.54%**

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

Source: Callan DC Index

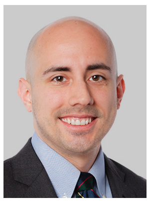
Note: DC Index inception date is January 2006.

* 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.

Contributors

Kristin Bradbury, CFA, of Callan's Independent Adviser Group, conducts investment manager research and due diligence with a focus on fixed income managers.



Kyle Fekete, CFA is an investment consultant in Callan's Global Manager Research group, responsible for research and analysis of fixed income investment managers.

Munir Iman works in Callan's Real Assets Consulting group, collecting information on real asset products and tracking new real estate fund offerings.

Amy Jones is co-manager of Callan's Global Manager Research group, which provides fundamental and statistical research on investment managers.

Jay Kloepfer is director of Capital Markets Research, helping Callan's fund sponsor clients with strategic planning and providing custom research.

Lauren Mathias, CFA is an investment consultant in Callan's Global Manager Research group, responsible for research and analysis of non-U.S. equity investment managers.

Jim McKee specializes in hedge fund research addressing asset allocation, manager structure, manager search, and performance evaluation.

Gary Robertson in the Private Equity Consulting group is responsible for alternative investments consulting services at Callan.

Irina Sushch, CFA is an investment consultant in Callan's Global Manager Research group, responsible for research and analysis of U.S. equity investment managers.

Patrick Wisdom is an associate defined contribution consultant in Callan's Fund Sponsor Consulting group, responsible for providing analytical support to Callan's DC clients and consultants.

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.

If you have any questions or comments, please email institute@callan.com.

Editor – Stephen R. Trousdale
Performance Data – Alpay Soyoguz, CFA; Matt Loster; Fionnuala Wright
Designer – Nicole Silva

About Callan

Callan was founded as an employee-owned investment consulting firm in 1973. Ever since, we have empowered institutional clients with creative, customized investment solutions that are backed by proprietary research, exclusive data, and ongoing education. Today, Callan advises on more than $2 trillion in total fund sponsor assets, which makes it among the largest independently owned investment consulting firms in the U.S. Callan uses a client-focused consulting model to serve pension and defined contribution plan sponsors, endowments, foundations, independent investment advisers, investment managers, and other asset owners. Callan has six offices throughout the U.S. For more information, please visit www.callan.com.

About the Callan Institute

The Callan Institute, established in 1980, is a source of continuing education for those in the institutional investment community. The Institute conducts conferences and workshops and provides published research, surveys, and newsletters. The Institute strives to present the most timely and relevant research and education available so our clients and our associates stay abreast of important trends in the investments industry.

Callan

Corporate Headquarters

600 Montgomery Street
Suite 800
San Francisco, CA 94111
800.227.3288
415.974.5060

www.callan.com

Regional Offices

Atlanta
800.522.9782

Chicago
800.999.3536

Denver
855.864.3377

New Jersey
800.274.5878

Portland
800.227.5060

@CallanLLC

Callan