Callan

Third Quarter 2017

Why So Sad?

ECONOMY

2 PAGE

The disconnect sharpened in the quarter between the state of the economy, which is pretty good, and sentiment, which is not so good. Global geopolitical upheaval dominates the news cycle. But the world economy is in much better shape than this sentiment might suggest.

Managing Risk While Hunting for Returns

FUND SPONSOR

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Endowments and foundations performed best over the one-year period ending with the third quarter, while Taft-Hartley plans surpassed other groups over the past three- and five-year periods. Corporate plans did best over a 10-year period.

Up, Up, Up, and Away for Global Stocks

EQUITY

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The **S&P 500, Russell 2000,** and **Nasdaq Composite** all hit record highs on the final trading day of the quarter. Non-U.S. developed equity outperformed the U.S. for the third consecutive quarter; emerging markets outperformed developed ones, also for the third straight quarter.

Healthy Risk Appetite Drove Yields

FIXED INCOME

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Global fixed income markets generally performed well in the third quarter. Moderate growth and inflation kept long-term rates low and range-bound in the U.S. Rates were also low outside the U.S., but dollar weakness boosted returns, especially for emerging market debt.

Best Location? Europe These Days

REAL ESTATE

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The **NCREIF Property Index** notched 35 straight quarters of gains, while the **NCREIF Open End Diversified Core Equity Index** rebounded from last quarter's seven-year low. Europe was the strongest-performing region, with the **FTSE EPRA/NAREIT Europe Index** up 4.8%.

PE Market Sees 'Golden Era'

PRIVATE EQUITY

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Low volatility and gently rising markets fostered ongoing "Golden Era" conditions in the private equity market. Fundraising is on pace to best last year's post-GFC high; buyout and venture investments slowed slightly but dollar volume remained healthy.

Kickin' It with Risk

HEDGE FUNDS

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The **Credit Suisse Hedge Fund Index** rose 1.8% in the quarter, while the median manager in the *Callan Hedge Fund-of-Funds Database* advanced 2.0%. The median *Callan Long/Short Equity FoF* (+3.1%) handily beat the *Callan Absolute Return FOF* (+1.8%).

Strongest First Half in DC Index History

DEFINED CONTRIBUTION

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The Callan DC Index™ rose 3.1% during the second quarter and is now up 7.9% year-to-date—its strongest first-half performance since its 2006 inception. Still, the Index trailed the typical Age 45 Target Date Fund, up 3.7% in the second quarter and 9.4% in the first half.

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
+4.6%	+6.2%	+0.8%	+2.5%

Sources: Bloomberg Barclays, MSCI, Russell Investment Group

Knowledge. Experience. Integrity.

Why So Sad?

ECONOMY | Jay Kloepfer

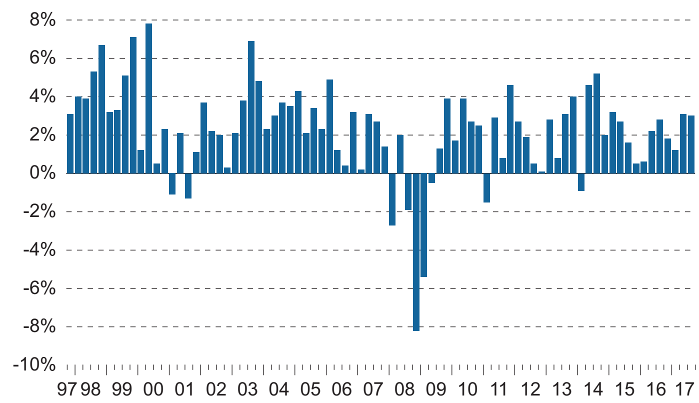
The disconnect sharpened in the third quarter of 2017 between the state of the underlying economy, which is pretty good, and sentiment, which is not so good, teetering on downright gloomy.

Geopolitical upheaval across the globe dominated the news cycle, feeding anxieties about the future of monetary and fiscal policy, taxes, trade, and conflict. Tension remained high with North Korea and continued to escalate with Russia. Richly priced capital markets spurred concerns about an "inevitable" correction. Comparisons to the pre-Global Financial Crisis (GFC) period in 2007, to before the Dot-Com Bubble in 2000, and particularly to 1987 before the 20% one-day drop in the U.S. stock market abound. Then two hurricanes of historic proportions slammed the Caribbean, the Gulf of Mexico, and the U.S. mainland within a couple weeks of each other in September.

Stepping back from the conjecture and hand-wringing, the state of the global economy as we head into the fourth quarter of 2017 is much better than this general sentiment might suggest. Investors are certainly less concerned about the economy than the news would lead us to believe. The U.S. economy has actually gathered momentum as 2017 progressed. After a relatively weak first quarter (1.4% growth), GDP was revised up to 3.1% in the second quarter and grew an astounding 3.0% in the third quarter *after* accounting for the impact of Harvey and Irma. Without the hurricanes, real GDP would likely have seen a robust gain in excess of 4%, perhaps as strong as 4.5%. Initial estimates for fourth quarter growth are equally lofty.

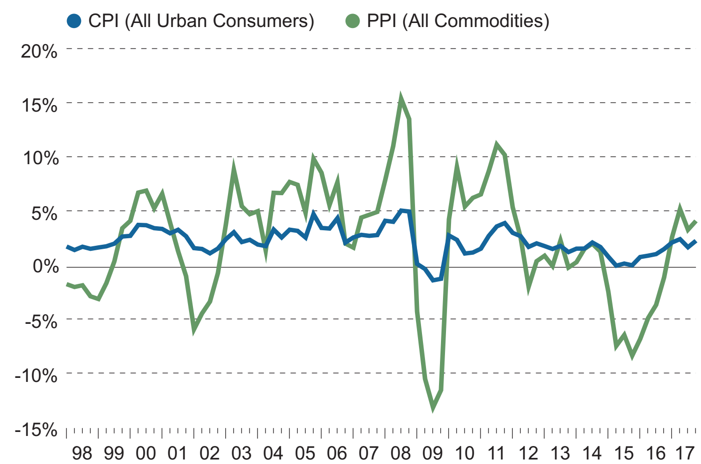
What gives? Is this growth spurt the last, exuberant gasp before the economy collapses from exhaustion? First and foremost, we should recall that expansions do not die of old age; they typically expire under the weight of imbalances in spending versus income, a run-up in debt, a build-up in inventory for demand that wanes, or over-building for economic activity that doesn't materialize. These imbalances are obvious in hindsight but difficult to spot in the moment. The current cycle is particularly hard to pin down; the expansion may be getting long in the tooth

Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

after more than seven years, but the GDP gains since the GFC (2.2% per year) are substantially lower than those enjoyed in previous recoveries (above 3%). Consumers spent the first several years following the GFC deleveraging, whether voluntarily or involuntarily. Businesses have been persistently reluctant to invest in capital, except perhaps for equipment replacement and technology.

Consumer spending is finally leading GDP growth, fueled by tight labor markets, a long-awaited nudge upward in wages and salaries, and in a perhaps less sanguine development, a renewed interest in and ability to borrow. While mortgage debt is still more difficult to obtain than pre-GFC, consumer credit as a percentage of disposable income has regained its pre-GFC peak of 24% and then some, reaching past 26% in the third quarter of 2017. Business spending is also finally accelerating after years of fits and starts. The ISM Report on Business for September shows strength across almost all measures of manufacturing and non-manufacturing activity. The Purchasing Managers' Index came in at 58.8 in August and 60.8 in September, well above 50, the dividing line between expansion and contraction. The new orders, production, and employment indices are even stronger, and coupled with a sharp decline in inventories following the hurricanes, activity is poised to be even stronger in the fourth quarter.

The sustainability of the 2017 burst in growth will certainly fall under scrutiny. Hopes for near-term fiscal stimulus in the U.S. are diminished, and tight labor markets suggest limited potential for further growth from the existing set of labor and capital inputs available in the U.S. economy.

Outside the U.S., euro zone GDP for the second quarter was revised upwards to 2.3% from 1.7%, and preliminary data support continued improvement in the third quarter. The long-awaited response to the stimulus appears to have arrived. In China, annual growth increased by 6.9% in the second quarter, identical to the first quarter and slightly ahead of expectations. Initial data on industrial production and investment in fixed assets released in July and August are consistent with a third quarter slowdown. Robust gains in developed non-U.S. and emerging equity markets are fueled by renewed optimism, or at least reduced skepticism, about growth prospects in many markets around the globe.

The Long-Term View

Index	2017 3rd Qtr	Periods ended Dec. 31, 2016 Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	4.57	12.74	14.67	7.07	9.29
S&P 500	4.48	11.96	14.66	6.95	9.15
Russell 2000	5.67	21.31	14.46	7.07	9.69
Non-U.S. Equity					
MSCI ACWI ex USA	6.16	4.50	5.00	0.96	–
MSCI Emerging Markets	7.89	11.19	1.28	1.84	–
MSCI ACWI ex USA Small Cap	6.90	3.91	7.74	2.89	–
Fixed Income					
Bloomberg Barclays Agg	0.85	2.65	2.23	4.34	5.63
90-Day T-Bill	0.26	0.33	0.12	0.80	2.71
Bloomberg Barclays Long G/C	1.53	6.67	4.07	6.85	7.58
Bloomberg Barclays Gl Agg ex US	2.48	1.49	-1.39	2.44	4.73
Real Estate					
NCREIF Property	1.70	7.97	10.91	6.93	8.63
FTSE NAREIT Equity	0.94	8.52	12.01	5.08	11.13
Alternatives					
CS Hedge Fund	1.81	1.25	4.34	3.75	–
Cambridge PE*	--	9.26	12.77	9.40	15.39
Bloomberg Commodity	2.52	11.77	-8.95	-5.57	2.55
Gold Spot Price	3.42	8.63	-5.97	6.08	4.82
Inflation – CPI-U	0.76	2.07	1.36	1.81	2.26

*Most recent quarterly data not available.
Sources: Bloomberg Barclays, Bloomberg, Credit Suisse, FTSE, MSCI, NCREIF, Russell Investment Group, Standard & Poor's, Thomson Reuters/Cambridge, Bureau of Economic Analysis.

Recent Quarterly Economic Indicators

	3Q17	2Q17	1Q17	4Q16	3Q16	2Q16	1Q16	4Q15
Employment Cost–Total Compensation Growth	2.5%	2.4%	2.4%	2.2%	2.3%	2.3%	1.9%	2.0%
Nonfarm Business–Productivity Growth	1.6%*	1.5%	0.1%	1.3%	2.5%	0.8%	-1.2%	-2.6%
GDP Growth	3.0%	3.1%	1.2%	1.8%	2.8%	2.2%	0.6%	0.5%
Manufacturing Capacity Utilization	75.2%	75.7%	75.4%	75.1%	74.9%	75.1%	75.4%	75.4%
Consumer Sentiment Index (1966=100)	95.1	96.4	97.2	93.2	90.3	92.4	91.5	91.3

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

Managing Risk While Hunting for Returns

FUND SPONSOR

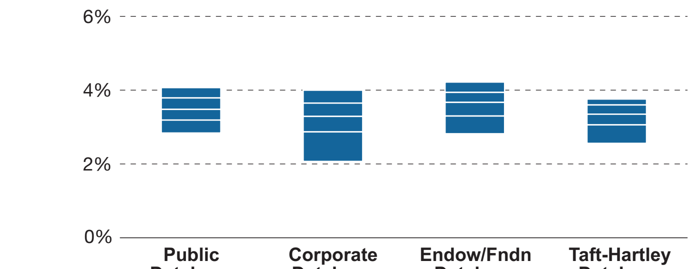
Low interest rates and low return expectations continued to drive strategic allocation discussions for fund sponsors. Many felt compelled to take on market risk to reach return targets. Sponsors are now examining if there is anything they can do to tamp down the risk within their large growth allocation short of actually reducing it.

For instance, to offset risk in a crisis situation, plans have examined strategies including Treasury bond allocations, momentum, multi-asset class (MACs), and even gold.

These discussions, as we have noted before, turn diversification on its head: Investors are looking for investments with similar underlying return factors (in this case equity) while seeking at least some diversification to smooth the ride within that large growth allocation. A broader growth allocation can then consider investments like high yield, convertibles, low volatility equity, hedge funds, MACs, and option-based strategies. This approach also allows for new strategies to be brought into the fold, based on prospective diversification or return enhancement. The broadening of growth assets often leads to a sharper focus on refining fixed income exposure to gain a "purer" exposure to interest rates.

In addition, the active/passive discussion continues to loom large. The argument to retain active to protect in a down market and be nimble in a volatile, low-return environment is compelling, but plan sponsors are weary of historical

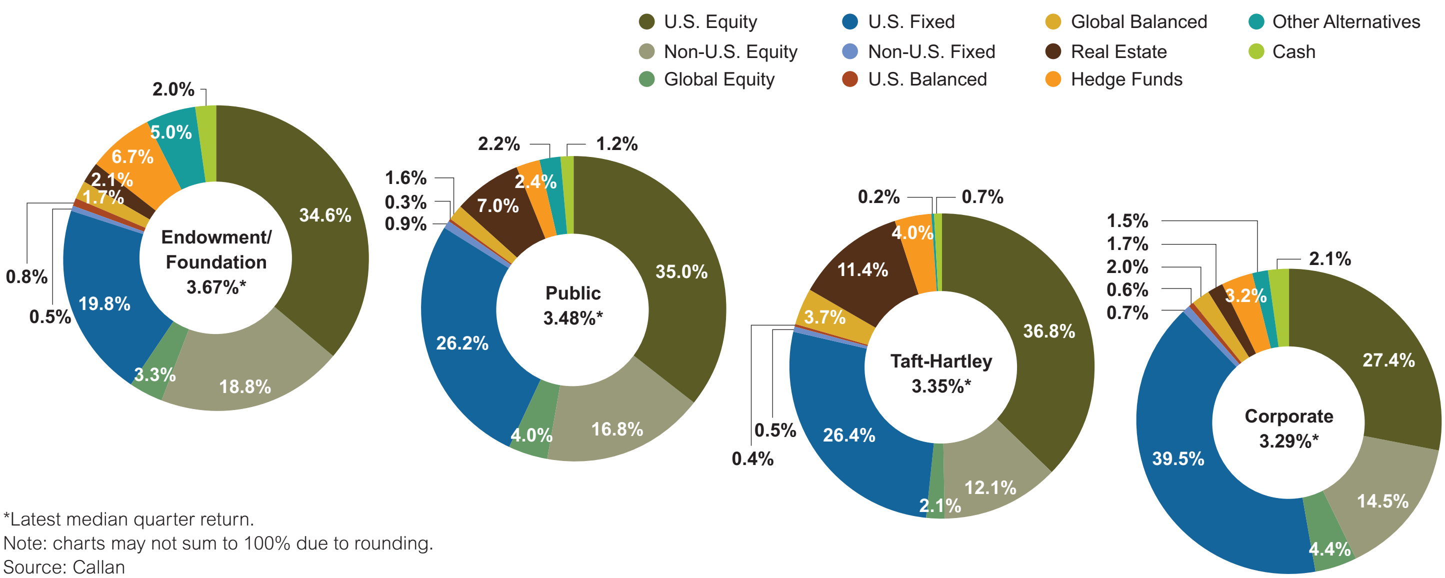
Callan Fund Sponsor Returns for the Quarter



	Public Database	Corporate Database	Endow/Fndn Database	Taft-Hartley Database
10th Percentile	4.07	4.00	4.22	3.76
25th Percentile	3.79	3.65	3.94	3.60
Median	3.48	3.29	3.67	3.35
75th Percentile	3.19	2.87	3.30	3.06
90th Percentile	2.84	2.07	2.82	2.56

Source: Callan

Callan Fund Sponsor Average Asset Allocation



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

underperformance in actively managed equity. And tied to that discussion is the use of passive management to control costs.

For defined contribution (DC) plans, regulations, lawsuits, and implementation are driving factors for the decision-making process. Some of this conversation has led to negotiating a reduction of fees for the plans, in some cases to a significant extent. Heightened fee sensitivity and litigation have resulted in little traction for non-traditional asset classes such as liquid alternatives.

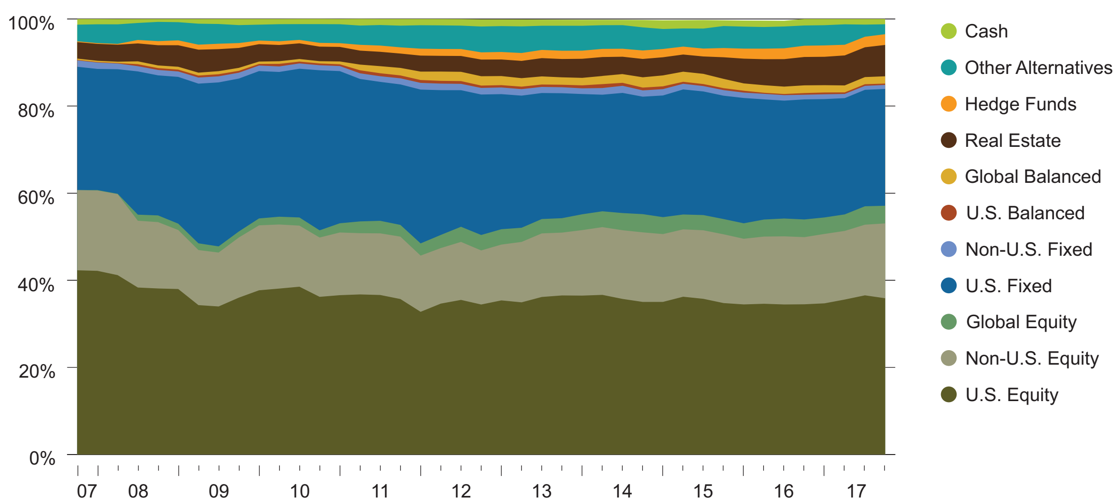
Target date funds (TDFs) dominate asset flows in DC plans; they now account for almost 30% of DC assets, according to the Callan DC Index™. TDFs have received an average of 71% of flows into DC plans over the last three years.

Over the last five years, Callan has seen several trends in asset allocation by different types of fund sponsors:

- Corporate funds: The range of U.S. fixed income allocations has widened, as these sponsors are in different stages of efforts to de-risk.
- Public funds: Many have increased their allocation to non-U.S. equity and real estate at the expense of fixed income. Capital market return expectations have created a difficult environment for total return investors.
- Endowments and foundations: They continue to move assets from fixed income to asset classes with expectations for higher returns. Global equity, non-U.S. equity, and real estate have all benefited from this shift.

The performance by fund sponsors continued to be robust. Over the one-year ending with the third quarter, only corporate sponsors did not exceed the 10.9% return of a quarterly rebalanced 60% S&P 500/40% Bloomberg Barclays Aggregate portfolio. Endowments and foundations performed best over that one-year period, while corporate plans did best over a 10-year period. Taft-Hartley plans were the best-performing group over the past three and five years, partially due to a larger home-country bias.

Callan Public Fund Database Average Asset Allocation (10 Years)



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

Global Equity

U.S. Stocks: The 'Everything Rally' Marched On

+4.6%

RUSSELL 3000

The Goldilocks environment ("Not too hot, not too cold, but just right") and investor complacency continued to keep volatility at multi-decade lows and propel stock markets to new highs, in spite of escalating tensions with North Korea, several severe natural disasters, and uncertainty around the prospects for tax reform and other U.S. domestic agenda items. The **S&P 500 Index, Russell 2000 Index,** and **Nasdaq Composite Index** all hit record highs on the final trading day of the quarter. It was the Nasdaq's 50th record close this year.

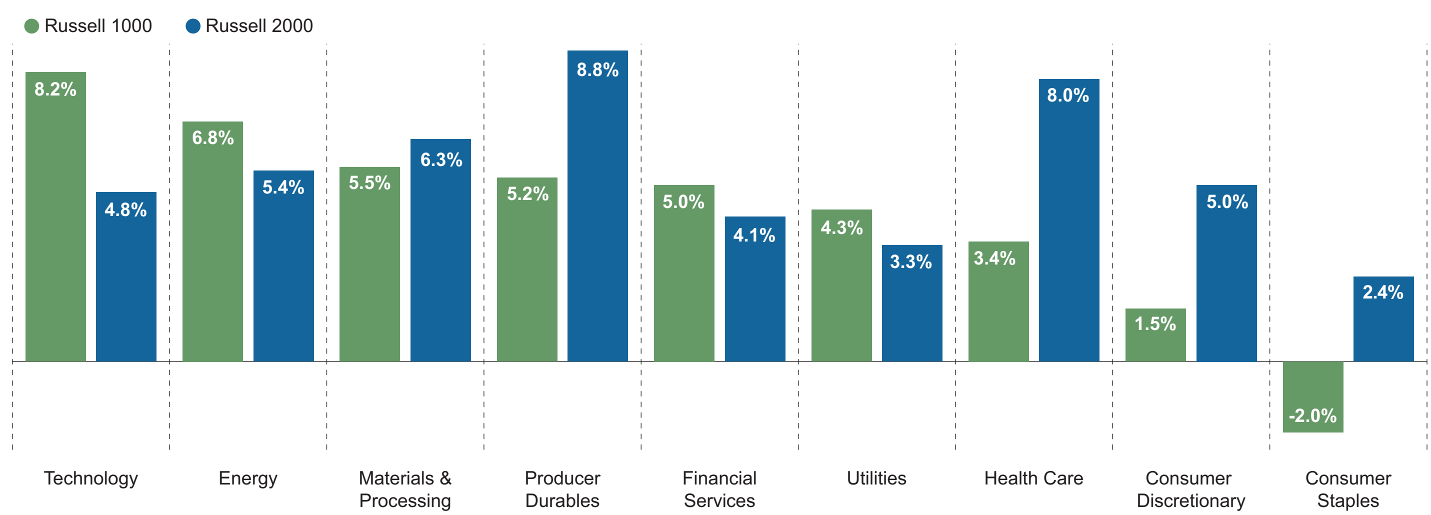
Stocks, bonds, and commodities alike rewarded investors in what's been coined the "everything rally," marked by its surprisingly low volatility. Even cash is up from its dismal 0% days and posted a +0.3% quarterly result. Investors' attention remained focused on the hopeful promise of tax reform along with the generally upbeat picture of the U.S. economy. But contrarians question where longer-term alpha can be found amid stretched equity valuations.

The Tech (+8.6%) and Energy (+6.8%) sectors led the S&P 500 (+4.5%). The globally dominant Tech names (the so-called "FAAMG" stocks, or Facebook, Amazon, Apple, Microsoft, and Google) continued to drive results in the sector, which now accounts for 23% of the S&P 500 and 38% of the **Russell 1000 Growth Index.** Tech alone has accounted for approximately 40% of the S&P 500's return year-to-date, with key drivers being strong earnings reports, increasing market share, and product innovation. Record-high valuations for several companies raised concern over their influence on the overall performance of the Index should a correction occur.

The Energy sector continued to see signs of incremental improvement during the quarter due to a backdrop of improving supply and demand. Consumer Staples (-1.3%) was the sole sector to deliver a negative result as momentum-oriented stocks and sectors garnered favor.

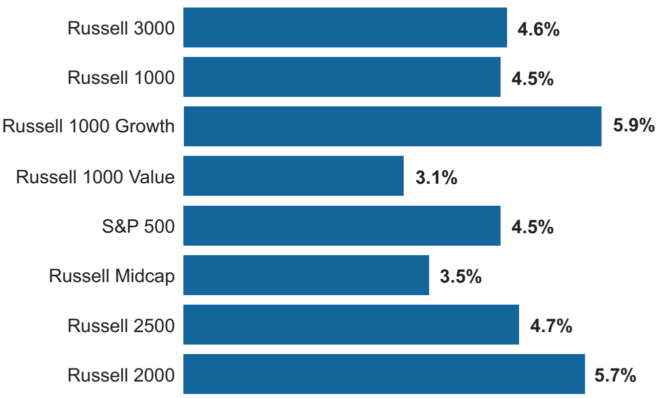
Small cap stocks outperformed large cap. In addition, growth outperformed value (Russell 1000 Growth: +5.9% vs. **Russell 1000 Value:** +3.1%; **Russell 2000 Growth:** +6.2% vs. **Russell 2000 Value:** +5.1%). Biotech (+14.5%) and a surge in small

Quarterly Performance of Select Sectors



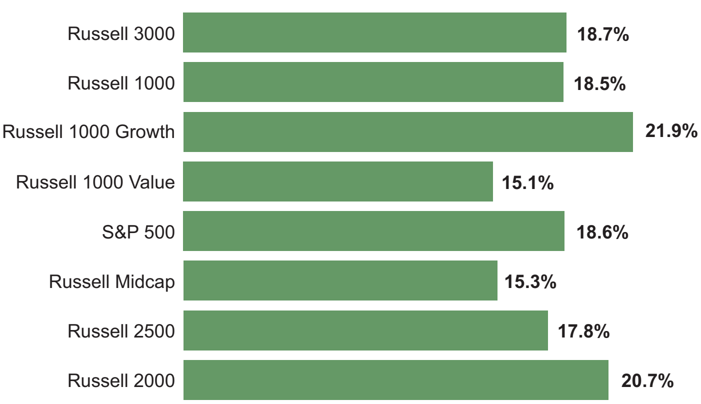
Source: Russell Investment Group

U.S. Equity: Quarterly Returns



Sources: Russell Investment Group and Standard & Poor's

U.S. Equity: One-Year Returns



Sources: Russell Investment Group and Standard & Poor's

cap value on tax reform news in September bolstered small cap stocks during the quarter. Biotech benefited from the easing of pricing risks as well as the FDA's approval of genetics-based therapeutics.

From a factor perspective, momentum (+27.5% YTD) remained the top performer while defensive (+8.5% YTD) was the laggard. Investor behavior has had a meaningful influence on results as investors tend to project their optimism across the broad market and chase momentum during periods of strength.

Global Stocks: Stronger Outside the U.S.

+6.2%

MSCI ACWI ex USA

Non-U.S. developed economies continued to gain traction. Second quarter GDP growth in the euro zone was 2.3% (year-over-year) with consumer confidence and demand both showing strength. The euro gained ground versus the U.S. dollar and the pound continued to strengthen on hawkish comments from the Bank of England. Outside of Europe, Japan's economy continued to slowly recover; second quarter GDP growth was 2.5% (annualized). While this was lower than expected, the economy has now expanded for six consecutive quarters.

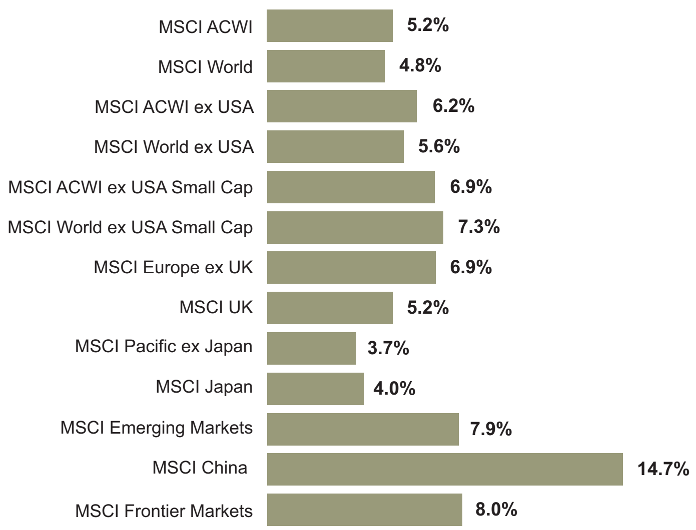
Non-U.S. developed equity (**MSCI World ex USA:** +5.6%) outperformed the U.S. for the third consecutive quarter as the European market (**MSCI Europe:** +6.5%) continued to post positive economic data and corporate earnings growth with some signs of political stability.

The dollar's losses against the euro stemmed from an upside surprise with European growth and market-friendly outcomes in European elections. Economically sensitive sectors outperformed defensive securities.

All sectors generated positive returns. Energy and Materials were the top two performers as a result of higher oil and commodity prices. WTI and Brent prices surged by 12% and 20%, respectively, driven by favorable supply and demand dynamics. Copper rallied 9% due to tightening supply and positive economic data from China.

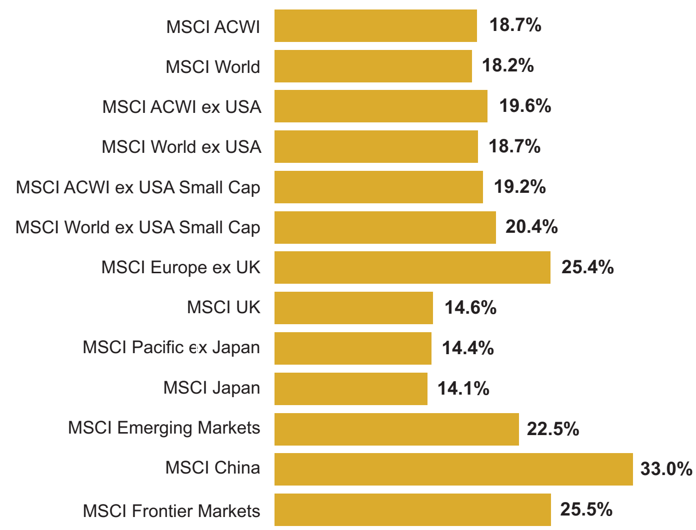
Value outpaced growth as economically sensitive sectors posted strong quarterly results.

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



Source: MSCI

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



Source: MSCI

Emerging Markets: Upbeat Signs Across the Board

+7.9%
MSCI EM

Emerging markets topped developed markets for the third consecutive quarter, fueled by a soft dollar, synchronized global growth, and strong oil and commodity prices. Brazil was the best-performing country within emerging markets given the hope of achieving fiscal reforms to spur economic growth. China continued to fare well with GDP growth of 6.9% exceeding expectations; the Chinese Tech and Real Estate sectors were top performers.

All sectors within emerging markets posted positive returns, led by economically sensitive sectors such as Real Estate, Energy, Materials, and Financials.

Brazilian and Russian banks surged during the quarter, spurred by rising oil and commodity prices and improving lending conditions.

Despite a strong showing by value factors, growth and momentum dominated the market given the returns of large cap Asian tech companies, helped in part by the demand for mobility and connectivity.

Non-U.S. Small Cap: Mixed Messages

+6.9%
MSCI ACWI ex USA SC

Developed non-U.S. small cap (**MSCI World ex USA Small Cap:** +7.3%) outperformed large cap in the risk-on market environment marked by improving economic activity in Europe. The top three performing countries were Germany (+17.0%), Norway (+16.4%), and Italy (+13.5%). All sectors posted positive returns, led by Energy and Technology.

Small cap (**MSCI Emerging Markets Small Cap:** +5.6%) lagged large cap in emerging markets due to the strong performance of large cap Asian technology companies. The top three performing countries were Peru (+42.8%), Brazil (+31.8%), and Chile (+19.8%), all benefiting from higher oil and commodity prices.

Growth outperformed value in developed small cap, propelled by optimism surrounding European growth. Conversely, value outpaced growth in emerging market small cap, supported by positive oil and commodity prices.

Global Fixed Income

U.S. Bonds: Low Volatility Drove Returns

+0.8%

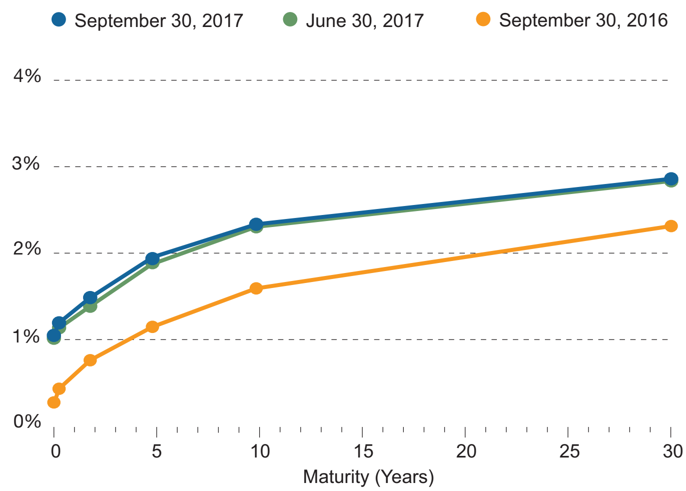
BB AGGREGATE

Yields rose modestly, particularly on the short end of the U.S. Treasury yield curve. The 10-year Treasury yield touched 2.00% during the quarter on geopolitical risks related to North Korea, but ended the quarter at 2.33%. Moderate growth and inflation kept long-term rates low and range-bound. Volatility in fixed income markets (as well as equities) sat at near historic lows; the overall risk appetite remained strong. And in general, lower-rated credits again outperformed investment grade.

The **Bloomberg Barclays U.S. Aggregate Bond Index** was up 0.8% in the quarter. The **Bloomberg Barclays U.S. Corporate Bond Index** rose 1.3%. High yield corporates fared even better, with the **Bloomberg Barclays U.S. Corporate High Yield Bond Index** up 2.0%. TIPS rebounded from their underperformance in the previous quarter.

The **Bloomberg Barclays U.S. TIPS Index** rose 0.9% and the 10-year breakeven spread (the difference between nominal and real yields) rose to 1.84% as of quarter-end from 1.73% at the end of the second quarter.

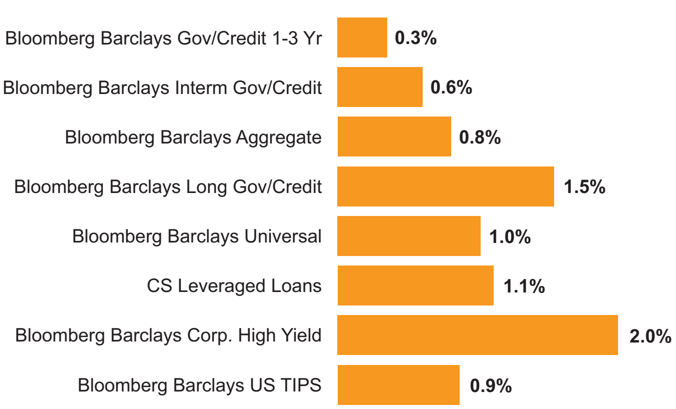
U.S. Treasury Yield Curves



Source: Bloomberg

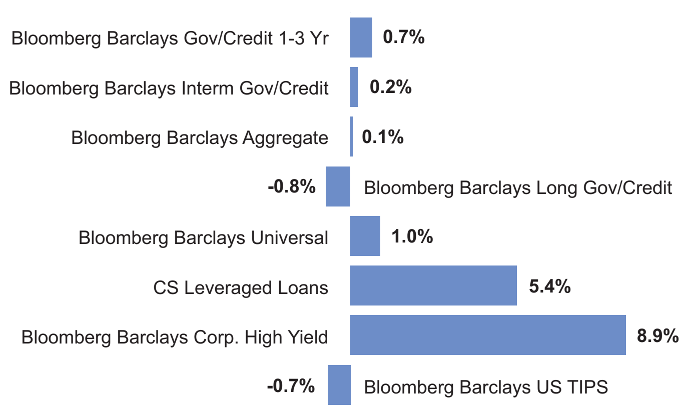
Corporate credit spreads tightened on strong demand and robust corporate earnings. Financials and Utilities were the leading sectors during the quarter. High yield credit continued to perform well, aided by the hunt for yield. The upward trend in earnings along with corporate discipline has led to the highest rating agency upgrade-downgrade ratio since 2013.

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

The municipal bond market also performed well; the **Bloomberg Barclays Municipal Bond Index** returned 1.1% for the quarter and the shorter duration 1-10 Year Blend Index was up 0.7%.

Global Bonds: Many Reasons to Cheer

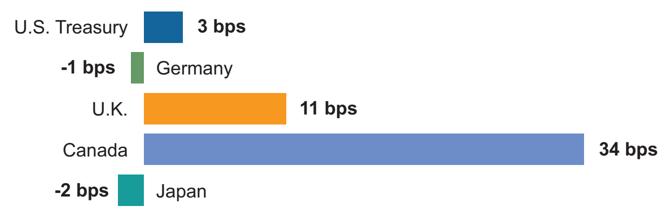
+2.5%

BB GBL AGG ex US

Rates were also steady overseas, though dollar weakness boosted returns. The **Bloomberg Barclays Global Aggregate Index** returned +1.8% (unhedged) versus +0.8% for the hedged version. Emerging market debt posted solid returns. The **JPM EMBI Global Diversified Index** ($ denominated) was up 2.6%. Gains were broad-based with only beleaguered Venezuela (-11%) down. The local currency **JPM GBI-EM Global Diversified Index** increased 3.6%. Returns were mixed for this index, with Brazil (+11%) being the best performer and Argentina's first-ever local bonds (-4%) being the worst on worries over the success of reforms.

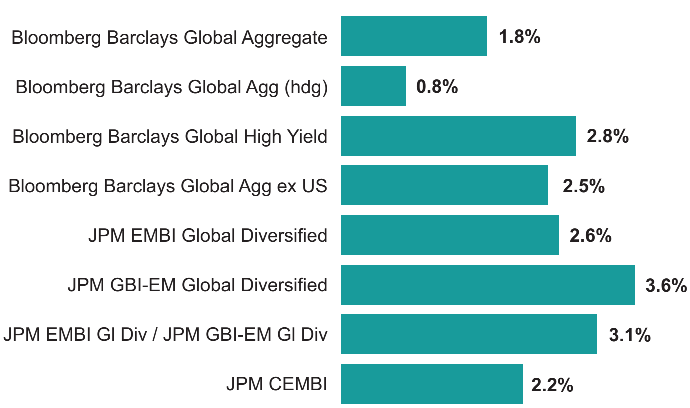
Change in 10-year Global Government Bond Yields

2Q17 to 3Q17



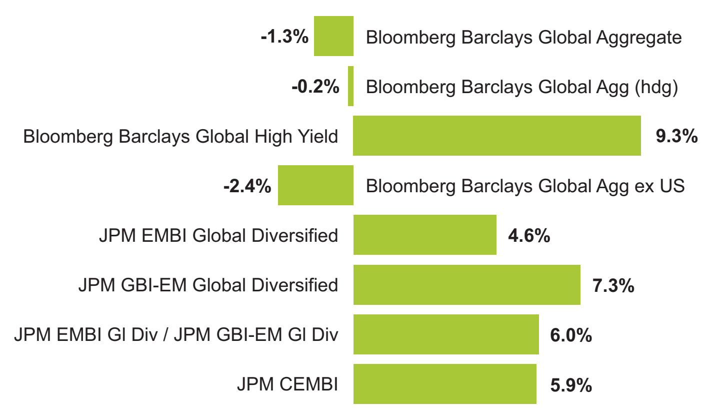
Source: Bloomberg Barclays

Non-U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and JP Morgan

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



Sources: Bloomberg Barclays and JP Morgan

Europe Continues as Best-Performing Region

REAL ESTATE | Kevin Nagy

The **NCREIF Property Index** advanced 1.7% during the third quarter (1.1% from income and 0.6% from appreciation). This marked the 35th consecutive quarter of positive returns for the Index. Appreciation return resumed its decreasing trend after an increase during the second quarter.

Industrial (+3.3%) was the best-performing sector for the sixth consecutive quarter followed by Hotel (+2.3%), Multi-Family (+1.7%), and Office (+1.4%); Retail (+1.2%) was the worst performer.

The West was the strongest region for the fourth quarter in a row, increasing 2.2%, and the East brought up the rear with a +1.3% return.

Transaction volume increased to $11.8 billion, up 53% from the second quarter and 22% from the third quarter of 2016. Appraisal capitalization rates fell 8 basis points to 4.39%. Transaction capitalization suffered a steeper decline, falling 83 bps to 5.26%. The spread between appraisal and transaction rates decreased to 87 bps.

Occupancy rates fell to 93.3%. Industrial and Retail occupancy rates increased slightly while Apartment and Office rates decreased.

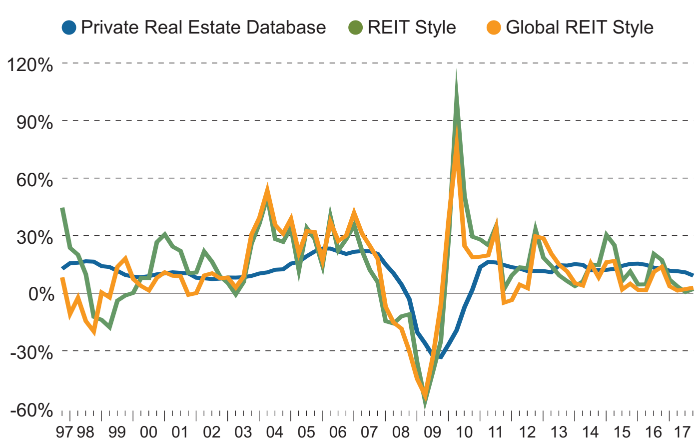
The **NCREIF Open End Diversified Core Equity Index** rose 1.9% (1.1% from income and 0.8% from appreciation), a 17 bps increase from the second quarter. Appreciation return increased by 18 bps from the second quarter's seven-year low.

Global real estate investment trusts (REITs), tracked by the **FTSE EPRA/NAREIT Developed REIT Index** (USD), outperformed U.S. REITs and posted a 1.8% return. U.S. REITs, as measured by the **FTSE NAREIT Equity REITs Index,** advanced 0.9% for the quarter.

In the U.S., REITs started the quarter with a strong July but then surrendered most of the gains with poor showings in August and September. Sectors experiencing strong secular demand, such as Industrial (+6.5%) and Data Centers (+5.2%), were the best performers as the continued rise of e-commerce and cloud storage provided ample tailwind. Hotels (+2.8%) and Self-Storage (+4.7%) also did well, buoyed by expectations of inflation and rising interest rates. Health Care (-5.4%) was the worst-performing sector.

Europe, as represented by the **FTSE EPRA/NAREIT Europe Index,** was again the strongest-performing region, rising 4.8% in U.S. dollar terms. Strong, diversified growth across the majority of the region's economies was the main driver of positive returns. The region largely shrugged off destabilizing political events such as the Catalonian independence referendum.

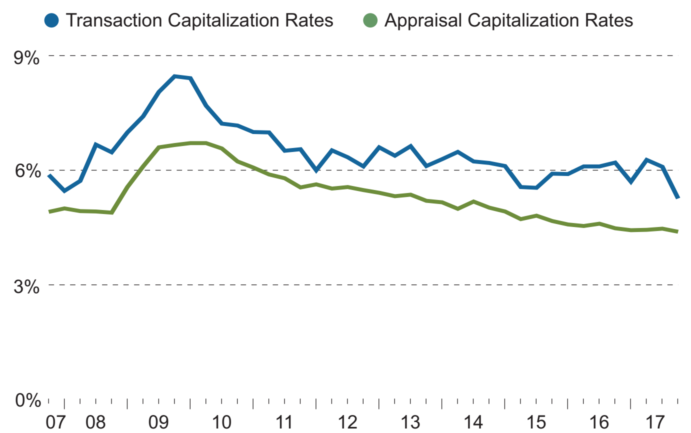
Rolling One-Year Returns



Source: Callan

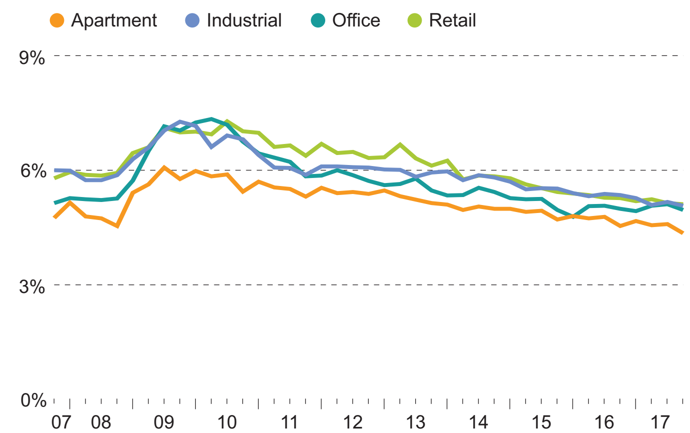
For the second quarter in a row, the Asia-Pacific region outperformed the U.S. but underperformed Europe. Hong Kong provided the best regional performance while Japan lagged behind, hurt by a strengthening yen.

NCREIF Transaction and Appraisal Capitalization Rates



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

NCREIF Capitalization Rates by Property Type



Source: NCREIF
Note: Capitalization rates are appraisal-based.

Low Volatility + Rising Markets = Strong Liquidity

PRIVATE EQUITY | Gary Robertson

Third quarter private equity partnership commitments totaled $84.0 billion, with 210 new partnerships formed, according to *Private Equity Analyst*. The number of funds raised decreased 34% from 319 in the second quarter, but the dollar volume dipped only 2% from $85.0 billion. Apollo IX is the largest fund raised so far in 2017, holding a $24.6 billion final close in the third quarter—and it is the largest buyout fund ever raised.

Investments by buyout funds into companies totaled 446 deals, down 12% from 504 in the prior quarter, according to *Buyouts* newsletter. The announced total volume was $51 billion, up 6% from $48 billion in the second quarter. The quarter's largest deal was the $7.5 billion take-private of Panera Bread by JAB, a family-owned holding company. Sixteen deals with announced values of $1 billion or more closed in the quarter.

New investments in venture capital companies totaled 1,706 rounds of financing with $21.5 billion of announced value, according to the National Venture Capital Association (NVCA). The number of rounds declined 21% from the 2,164 in the second quarter, and announced dollar value decreased 6% from $22.9 billion.

Buyouts reported that there were 446 private M&A exits of buyout-backed companies, with 43 deals disclosing values totaling $50.8 billion. The M&A exits were down 12% from the prior quarter's 504, but the announced value increased 6% from $48.1 billion. Buyout-backed IPOs in the third quarter fell to only one raising $43 million, a sharp decrease compared to last quarter's seven IPOs (a two-year high), raising an aggregate $2.0 billion.

Venture-backed exits (both private sales and IPOs) totaled 182 transactions, and disclosed value totaled $11.2 billion. The number of exits rose 2% from the second quarter's 179, and the announced dollar volume increased 9% from $10.3 billion.

Please see our upcoming issue of *Private Markets Trends* for more in-depth coverage.

Funds Closed January 1 to September 30, 2017

Strategy	No. of Funds	Amt ($mm)	Percent
Venture Capital	382	29,109	12%
Buyouts	272	167,111	67%
Subordinated Debt	52	22,627	9%
Distressed Debt	17	9,601	4%
Secondary and Other	31	9,869	4%
Fund-of-funds	85	11,122	4%
Totals	**839**	**249,439**	**100%**

Source: Private Equity Analyst
Figures may not total due to rounding.

Private Equity Performance Database (%) (Pooled Horizon IRRs through June 30, 2017*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	2.01	8.79	11.89	14.74	9.37	8.32	19.63
Growth Equity	3.69	14.51	9.51	12.74	9.94	11.84	13.20
All Buyouts	6.51	18.69	10.43	14.36	8.71	13.86	12.55
Mezzanine	4.00	11.72	8.63	9.91	8.73	9.47	8.79
Distressed	4.30	17.77	8.19	11.95	9.15	11.29	11.36
All Private Equity	**4.96**	**15.79**	**10.35**	**13.94**	**8.98**	**12.19**	**13.15**
S&P 500	3.09	17.90	9.61	14.63	7.18	8.35	7.15
Russell 3000	3.02	18.51	9.10	14.58	7.26	8.66	7.44

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

Kickin' It with Risk

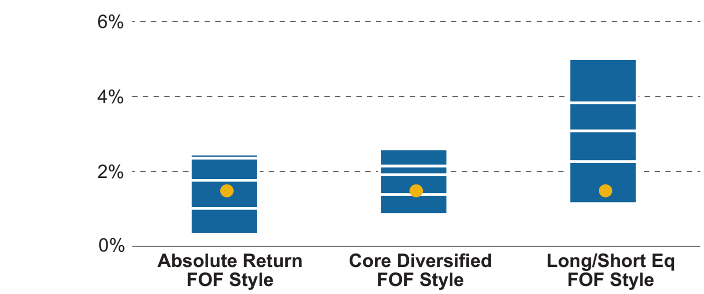
HEDGE FUNDS | Jim McKee

Discarding worries of stubbornly slow global economic growth and other distractions, markets focused on positive economic news and hopes of U.S. tax reform this quarter, suggesting rising stock prices ahead. Volatility as a measure of perceived market risk reached cyclical lows across the major markets. Amid this risk-on environment, hedge funds got some traction. Illustrating raw hedge fund performance without implementation costs, the asset-weighted **Credit Suisse Hedge Fund Index** (CS HFI) rose 1.8%. As a proxy for live hedge fund portfolios, the median manager in the **Callan Hedge Fund-of-Funds Database** advanced 2.0%, net of all fees and expenses.

Within CS HFI, the best-performing strategy was *Emerging Markets* (+5.6%), where embedded market beta explained some but not all of the gains. Other strategies performing particularly well were *Equity Market Neutral* (+4.4%) and *Long/Short Equity* (+3.0%); both benefited from an improved stock-picking environment. *Managed Futures* (+1.3%) and *Global Macro* (+1.8%) benefited modestly from top-down trends and discretionary calls, particularly in the equity markets.

Within Callan's Hedge Fund-of-Funds Database, market exposures meaningfully affected performance in the quarter. Supported by the equity rally, the median *Callan Long/Short Equity FOF* (+3.1%) handily beat the *Callan Absolute Return FOF* (+1.8%). With exposures to both non-directional and directional styles, the *Core Diversified FOF* advanced 1.9%.

Callan Style Group Quarterly Returns



	Absolute Return FOF Style	Core Diversified FOF Style	Long/Short Eq FOF Style
10th Percentile	2.46	2.60	5.01
25th Percentile	2.35	2.14	3.83
Median	1.76	1.91	3.08
75th Percentile	1.01	1.38	2.26
90th Percentile	0.32	0.85	1.14
T-Bills + 5% ●	1.48	1.48	1.48

Sources: Callan and Merrill Lynch

Callan Database Median and Index Returns* for Periods ended September 30, 2017

	Quarter	YTD	Year	3 Years	5 Years	10 Years	15 Years
Hedge Fund-of-Funds Database	**2.02**	**5.47**	**7.26**	**2.87**	**4.97**	**3.11**	**5.16**
CS Hedge Fund Index	1.81	4.70	5.91	1.96	4.16	3.24	6.00
CS Equity Market Neutral	4.38	7.00	4.16	1.37	2.48	-2.89	0.55
CS Convertible Arbitrage	1.61	4.10	4.54	2.76	3.51	3.61	4.76
CS Fixed Income Arbitrage	0.22	4.20	6.12	3.02	3.86	3.57	4.04
CS Multi-Strategy	1.38	6.56	7.80	5.33	6.97	5.01	7.06
CS Distressed	1.56	5.52	9.29	1.27	5.47	3.70	7.68
CS Risk Arbitrage	1.66	5.70	6.52	3.37	3.44	3.10	4.38
CS Event-Driven Multi-Strategy	0.58	4.27	6.12	-1.19	3.47	2.73	6.49
CS Long/Short Equity	2.99	9.81	9.59	3.94	6.86	3.91	6.88
CS Global Macro	1.83	0.26	4.86	1.48	2.53	4.58	7.31
CS Managed Futures	1.32	-3.12	-8.59	-0.17	0.00	2.09	3.25
CS Emerging Markets	5.58	13.02	12.72	5.88	6.21	3.53	8.63

*Returns less than one year are not annualized. Sources: Callan and Credit Suisse.

DC Index Clocks Strongest First Half in Its History

DEFINED CONTRIBUTION | Tom Szkwarla

The Callan DC Index™ rose a healthy 3.1% during the second quarter, reflecting strong equity market performance, and is now up 7.9% year-to-date—its best first-half performance since its 2006 inception. Still, the Index trailed the typical Age 45 Target Date Fund (TDF), which gained 3.7% in the second quarter and 9.4% in the first half. TDFs have benefited from higher exposures to non-U.S. equity and emerging markets, which are both up sharply year to date, than the typical DC participant.

Since the Index's inception in 2006, the average TDF has outperformed DC plans by 76 basis points annually. Due to their heavier equity exposure, TDFs have tended to outperform in strong markets and underperform in weak markets.

For the quarter, plan balances rose 3.19%, almost entirely due to return growth (3.06%) rather than inflows (plan sponsor and participant contributions), which contributed just 0.13%.

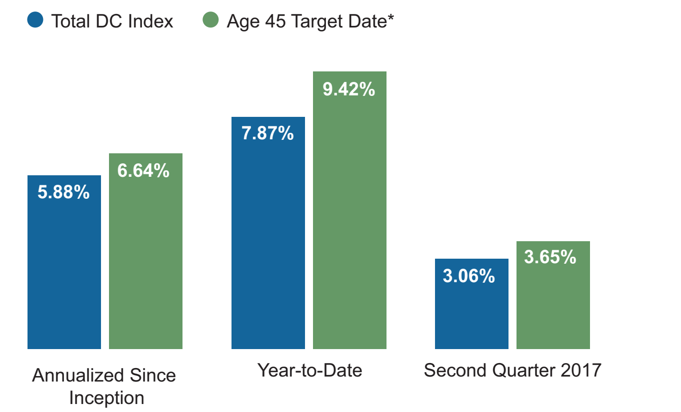
The proportion of net flows into non-U.S. equities during the quarter was the highest since late 2007. Money primarily flowed out of stable value, U.S. small/mid cap equity, and company stock. As usual, TDFs attracted the lion's share of net flows, with 69 cents of every dollar of flows moving into these funds.

Index turnover (i.e., net transfer activity levels within DC plans) came in at 0.43% in the quarter compared to average historical quarterly turnover levels of 0.63%.

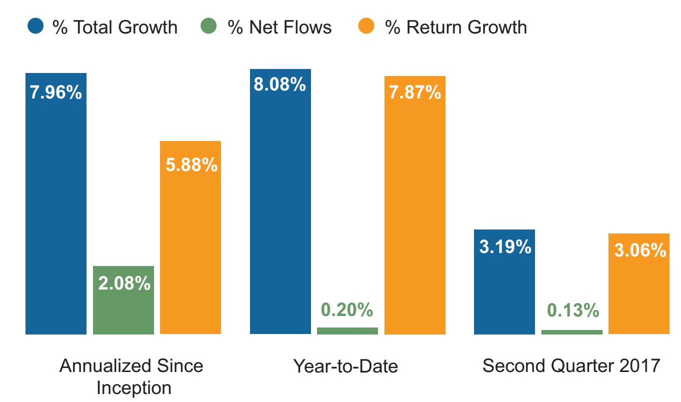
The Callan DC Index's overall equity allocation edged up from last quarter to nearly 70%, slightly above the Index's historical average of 67%. Still, the Index has yet to achieve its pre-Global Financial Crisis equity allocation peak of 73% (fourth quarter of 2007).

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 $135 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 2017)
(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	69.47%
Emerging Market Equity	1.94%
U.S. Small/Mid Cap	-28.57%
Stable Value	-31.80%
Total Turnover**	**0.43%**

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 2030 TDF to the 2035 TDF in June 2013.

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