Callan

CALLAN INSTITUTE

Capital Market Review

Second Quarter 2018

Is This It for the Economic Recovery?

ECONOMY

2 PAGE

GDP growth hit 4.1% in the second quarter, the strongest rate since 2014. Many other economic indicators corroborate a story of a thriving U.S. economy. But are imbalances arising that mean we are reaching the peak in the current cycle?

Tough Quarter but Brighter in Long Term

FUND SPONSOR

4 PAGE

The median fund sponsor in Callan's database rose 0.9% in the quarter, while a 60% equity/40% fixed income benchmark increased 2%. Over a 15-year time period all plans, by type and size, grew roughly in line with the benchmark.

Another Gap Between U.S. and Overseas

EQUITY

6 PAGE

U.S. stocks rose on strong earnings and robust economic growth. Small cap stocks outperformed large caps, which were held down by trade worries. Trade woes also hit non-U.S. stocks, with most major indices in the red. Emerging market stocks were hit particularly hard.

Trade Turbulence Troubles Bonds

FIXED INCOME

8 PAGE

U.S. rates rose in the quarter, and the yield curve continued to flatten. The Bloomberg Barclays US Aggregate Bond Index fell 0.2%, while high yield rebounded. Most non-U.S. indices fell in the quarter; emerging market bonds were the biggest losers.

Show Me the Money: Income Helps Returns

REAL ESTATE

10 PAGE

U.S. core real estate returns are shifting toward income, rather than appreciation. Spreads between core and value-add strategies remain tight. Industrial was the best-performing sector in the quarter. Overseas markets are attracting interest.

Languid Summer for Private Markets

PRIVATE EQUITY

12 PAGE

With the public market zig-zagging sideways, private equity activity slowed modestly. Fundraising picked up in the quarter but is slightly behind last year's first half. Company investments and exits trended down, with the venture-backed IPO market a bright spot.

Trade Spat Rains on Risk Parade

HEDGE FUNDS/MACs

13 PAGE

Event-driven hedge funds were the quarter's steadier contributors. Emerging market-focused hedge funds fell but avoided the big losses of underlying indices. Rising rates should be a tailwind for managers. Callan's MAC Style Groups struggled and trailed a 60/40 benchmark.

DC Plans Struggle in Turbulent Market

DEFINED CONTRIBUTION

15 PAGE

The Callan DC Index™ fell 0.2% in the first quarter, although it performed better than the Age 45 Target Date Fund, which dropped 0.5%. DC plan balances grew slightly (+0.1%) in the quarter. The DC Index's equity allocation fell for the first time in seven quarters.

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
+3.9%	-2.6%	-0.2%	-4.8%

Sources: Bloomberg Barclays, MSCI, FTSE Russell

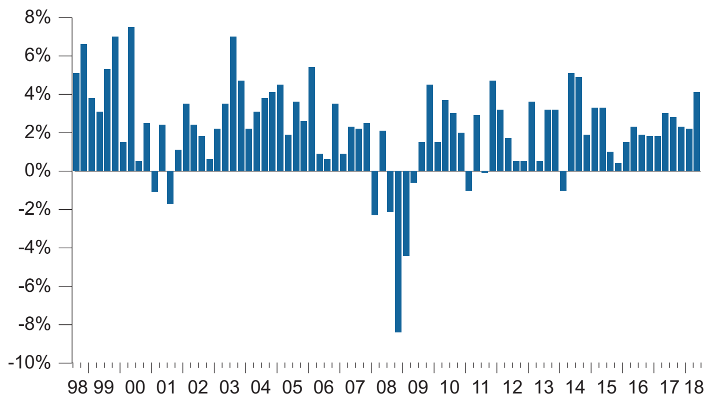
Is This It?

ECONOMY | Jay Kloepfer

Real GDP growth in the U.S. hit 4.1% in the second quarter of 2018, the strongest quarterly gain since 2014. Many indicators corroborate the story of a thriving American economy: low unemployment, robust consumer spending, elevated business and consumer confidence, and growth in non-residential investment. However, a big contributor to growth was a surge in exports, likely due to stockpiling ahead of tariffs imposed at the end of the quarter, which may not be sustained for long. Global growth is de-synchronizing, with signs of deceleration emerging in Europe, Japan, and China. Oil prices have rebounded from the lows of 2014, and inflationary pressures such as wages are gradually building. The Fed raised interest rates for the second time this year in June, and it is telegraphing two more hikes before the end of 2018 and perhaps three in 2019. While the tax cuts at the end of 2017 (a form of stimulative spending by the federal government) are buoying consumer spending, we may be reaching a peak in the current cycle.

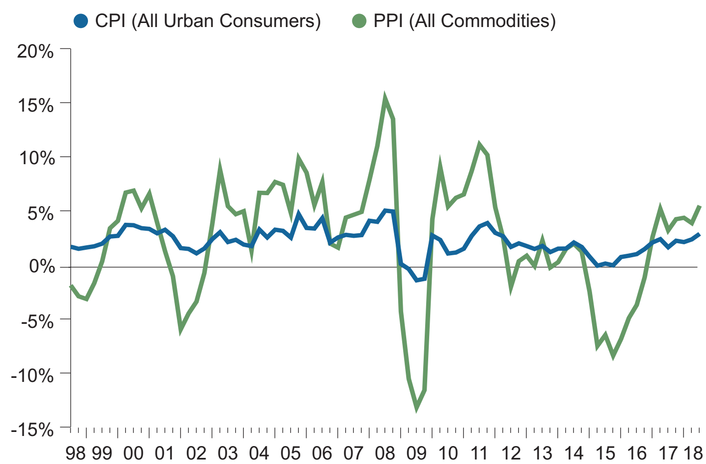
Expansions do not die of "old age"; elapsed time is not an economic variable. In addition, the current expansion has seen one of the slowest rates of GDP growth, an average of just 2.2%, compared to a typical expansion average of 3% or greater. That said, the current expansion is one of the longest on record, and it is the imbalances that can develop during long expansions that ultimately lead to a correction. Diverging global growth, and the resetting of monetary policy in the U.S. to return to "normal" ahead of plans by other countries' central banks, means higher interest rates in the economy with the strongest growth and upward pressure on the U.S. dollar. A more expensive dollar will make U.S. exports more costly, at a time of increased trade uncertainty following the imposition of tariffs. Higher interest rates mean higher borrowing costs, after a decade of cheap debt for those who could get it. The tight labor market poses another source of imbalance, with unemployment dipping to a generational low of 3.8% in May, employers facing challenges hiring talent, and wage pressures gradually building.

Quarterly Real GDP Growth (20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

The second quarter was clearly another high point for the U.S. economy in the long rebound since 2009. U.S. exports surged 9.3% in the quarter, accounting for a fourth of total GDP growth. With growth weakening in American trading partners, the increase in exports to them does not likely represent a surge in demand but a shift in timing, which will show up in subsequent quarters. The tax cut represents a potentially large fiscal stimulus, and consumers have certainly responded, driving consumption spending 4% during the quarter and accounting for two-thirds of GDP growth. Business investment of the tax cut is mixed; equipment spending grew more slowly in the first half of the year compared to 2017, while investment in structures surged at an annual rate of more than 13% in each of the first two quarters. One surprise in the quarter was a drop in inventory investment, which actually subtracted 1 percentage point from GDP. The upshot is that GDP growth could have been as high as 5%, and the economy now has greater capacity to rebuild inventory, suggesting a boost to future growth.

Another surprise in the GDP report was a drop in residential investment. The housing market has been a bit of a riddle as this long recovery has unfolded. The inventory of existing single-family homes reached its lowest reading on record for the month of May (1.65 million). Inventory levels keep dropping, reaching a supply of 4.1 months in June while a 6-month supply is considered normal. Yet home prices are high and rising everywhere. The FHA reported that home price indices rose year-over-year in the first quarter in all 50 states and in each of the 100 largest metro areas. The number of homes worth less than their mortgage has dropped by 80% since 2011, which should lead to an increase in potential inventory. Three factors have weighed on the inventory of homes for sale. A substantial number of single-family homes were converted to rental units starting in 2006. Second, Americans don't move as much; mobility in 2017 dropped to a post-World War II low. Third, starts have been hindered for 10 years on the supply side, with high timber and construction costs, a shortage of building sites, and restricted access to credit. Demand may be there, but builders have been unable to put up enough homes.

The Long-Term View

Index	2018 2nd Qtr	Periods ended Dec. 31, 2017 Year	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	3.89	21.13	15.58	8.60	9.72
S&P 500	3.43	21.83	15.79	8.50	9.69
Russell 2000	7.75	14.65	14.12	8.71	9.54
Non-U.S. Equity					
MSCI ACWI ex USA	-2.61	27.19	6.80	1.84	–
MSCI Emerging Markets	-7.96	37.28	4.35	1.68	–
MSCI ACWI ex USA Small Cap	-2.60	31.65	10.03	4.69	–
Fixed Income					
Bloomberg Barclays Agg	-0.16	3.54	2.10	4.01	5.48
90-Day T-Bill	0.45	0.86	0.27	0.39	2.60
Bloomberg Barclays Long G/C	-1.45	10.71	4.43	7.26	7.67
Bloomberg Barclays Gl Agg ex US	-4.76	10.51	-0.20	2.40	5.02
Real Estate					
NCREIF Property	1.76	6.96	10.19	6.08	9.12
FTSE NAREIT Equity	10.04	5.23	9.46	7.44	10.76
Alternatives					
CS Hedge Fund	0.10	7.12	4.23	3.24	–
Cambridge PE*	3.03	19.33	13.86	9.09	15.62
Bloomberg Commodity	0.40	1.70	-8.45	-6.83	2.47
Gold Spot Price	-5.48	13.68	-4.82	4.56	5.63
Inflation – CPI-U	0.98	2.11	1.43	1.61	2.23

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

Recent Quarterly Economic Indicators

	2Q18	1Q18	4Q17	3Q17	2Q17	1Q17	4Q16	3Q16
Employment Cost–Total Compensation Growth	2.8%	2.7%	2.6%	2.5%	2.4%	2.4%	2.2%	2.3%
Nonfarm Business–Productivity Growth	3.6%	0.4%	0.3%	2.6%	1.7%	0.2%	1.1%	2.4%
GDP Growth	4.1%	2.2%	2.3%	2.8%	3.0%	1.8%	1.8%	1.9%
Manufacturing Capacity Utilization	75.4%	75.3%	75.2%	74.4%	74.9%	74.6%	74.4%	74.3%
Consumer Sentiment Index (1966=100)	98.3	98.9	98.4	95.1	96.4	97.2	93.2	90.3

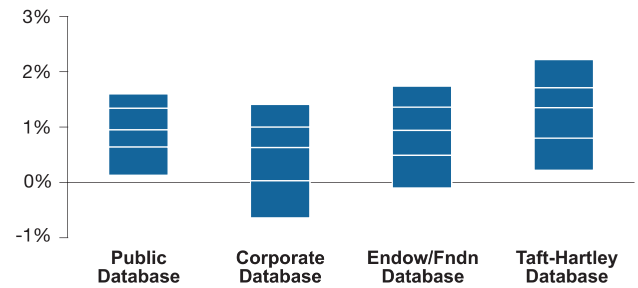
Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

Tough Quarter, but Long-Term Results Are Brighter

FUND SPONSOR

- The median fund sponsor in Callan's database gained 0.9% in the second quarter.
- By fund type, Taft-Hartley plans (+1.4%) were the top performers; corporate plans (+0.6%) came in last.
- The dispersion of returns for funds by size was quite narrow; small plans (under $100 million) rose 0.94% while large plans (more than $1 billion) were up 0.89% and medium plans grew by 0.87%.
- All fund types and sizes lagged a benchmark consisting of **60% S&P 500/40% Bloomberg Barclays US Aggregate Bond Index,** which rose 2%.
- Over the last year plans also trailed the benchmark, which was up 8.3%. Endowments/foundations came close, while corporate plans (+6.7%) underperformed.
- Over longer time periods, plans advanced at rates closer to that benchmark. The 60/40 benchmark rose 7.3% annually over the last 15 years. Endowments/foundations did best over that time period, up 7.6%, while Taft-Hartley plans were the laggards at 7.1%. Large plans (+7.7%) topped the benchmark, while medium and small plans reported returns slightly below it.

Callan Fund Sponsor Returns for the Quarter

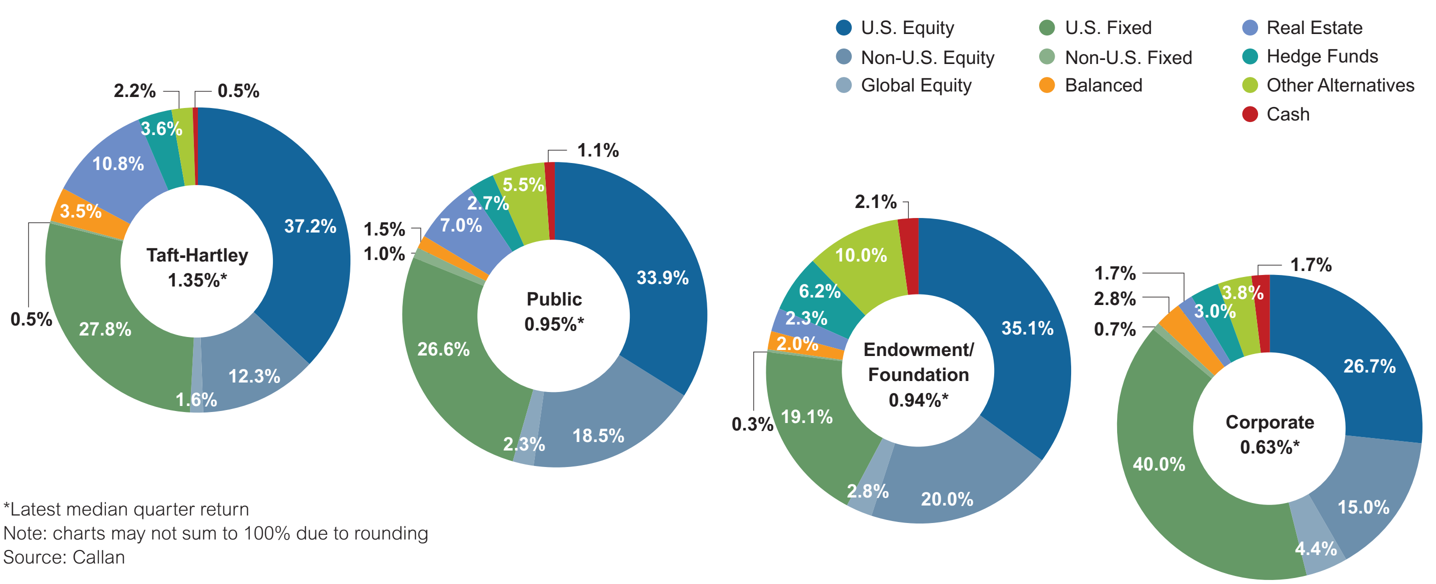


	Public Database	Corporate Database	Endow/Fndn Database	Taft-Hartley Database
10th Percentile	1.60	1.41	1.74	2.22
25th Percentile	1.34	1.00	1.36	1.71
Median	0.95	0.63	0.94	1.35
75th Percentile	0.64	0.03	0.49	0.80
90th Percentile	0.13	-0.64	-0.10	0.22

Source: Callan

- Plans continue to focus on managing an environment of rising interest rates, continued low return expectations, and the desire for strong risk controls in anticipation of a late cycle market downturn.
- Some fund sponsors are looking for downside protection while others are seeking higher yield in less-efficient markets in order to reach return targets.

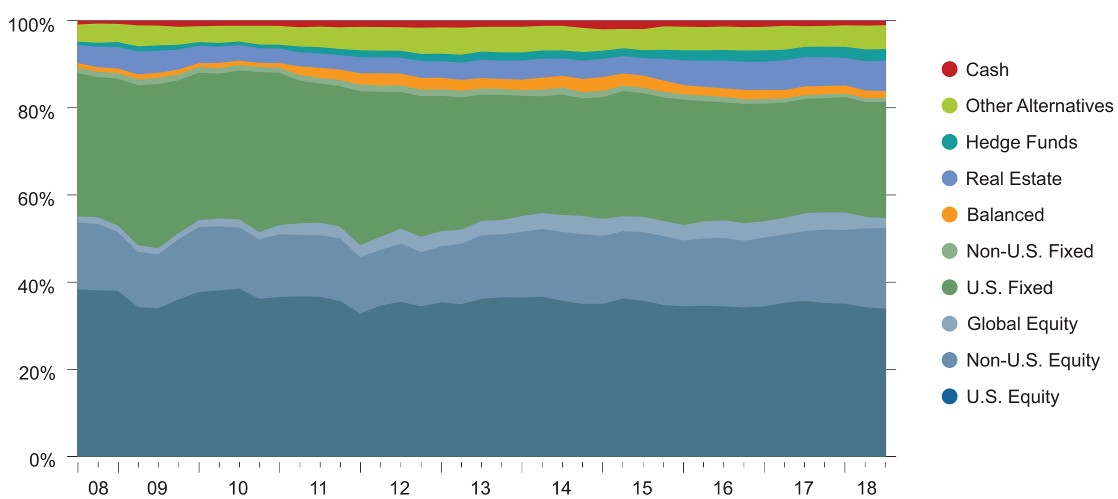
Callan Fund Sponsor Average Asset Allocation



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

- Still others want strong, transparent risk controls and lower performance volatility while examining lower fee structures.
- The debate continues about whether active or passive management provides investors with the right balance between higher performance and lower costs.
- Passive investing is primarily visible in equity asset classes, including both large cap U.S. equity and non-U.S. equity.
- Some fund sponsors are considering new or additional investments in private assets including real estate, private equity, and private credit.
- Topics that concern plan sponsors are rising interest rates and the uncertain outcomes of tariffs with global trade partners. Despite these concerns, some plans will seek enhanced returns at the expense of increased risk.
- Corporate defined benefit (DB) plans are embracing de-risking (increasing fixed income and extending duration). They are moving along their de-risking glidepath and working at different stages of the process. Implementation of de-risking plans depends largely on interest rate movements this year.
- Return enhancement continues to be the focus of public plans and endowment and foundation funds. As endowments and foundations seek higher returns, asset classes such as global equity, non-U.S. equity, and real estate benefit. Risk and funded status for public plans are ongoing concerns.
- Defined contribution (DC) plans are evaluating different levels of service offered by recordkeepers and shifting away from off-the-shelf target date funds (TDFs). Examination of managed account offerings on a standalone basis in order to improve participant outcomes and experiences is ongoing and will continue into the future.
- TDFs' share of DC assets grew to 31.3% in the first quarter, marking another high for the category, according to the Callan DC Index™.

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. Equities

U.S. equities (**S&P 500 Index:** +3.4%) rose on a strong earnings season and positive economic data. Energy was the best-performing sector (+13.5%) as oil prices trended higher after the U.S. withdrew from the Iran nuclear accord.

Small cap (+7.8%) outperformed large cap (+3.6%) on trade war fears. Large cap companies derive a big portion of revenues from foreign markets and are more negatively impacted by trade wars than domestically focused small cap firms.

Growth (+5.8%) continued to outperform value (+1.2%) due to the Consumer Discretionary (+8.2%) and Tech (+7.1%) sectors.

The concentration of returns within broad indices remains a concern. Excluding the performance of the FAANG stocks (Facebook, Amazon, Apple, Netflix, Google), S&P 500 performance was negative.

Large Cap Trails Small Cap Amid Trade War Concerns

– Retaliatory tariffs hit the U.S. agriculture, auto, and industrial metals sectors, among others. The ongoing decline of U.S. export market share is exacerbating the impact on large caps, which may continue to face macro headwinds in the coming quarters.
– Small cap (+7.7% YTD) is outperforming large cap (+2.9% YTD) as investors view small companies as more insulated against potential trade wars/looming tariffs. S&P 500 companies generate 38% of revenue overseas versus 20% for the S&P SmallCap 600.
– The rising dollar and concerns over the divergence between the strong U.S. economy and slower global growth are also driving investors to the relative safety of smaller companies.

Large Growth Continues to Dominate

– Large value trailed large growth by nearly 900 bps in the first half of 2018 (-1.7% vs. +7.3%), driven by ongoing outperformance of the Tech sector and tech-exposed Consumer Discretionary companies.

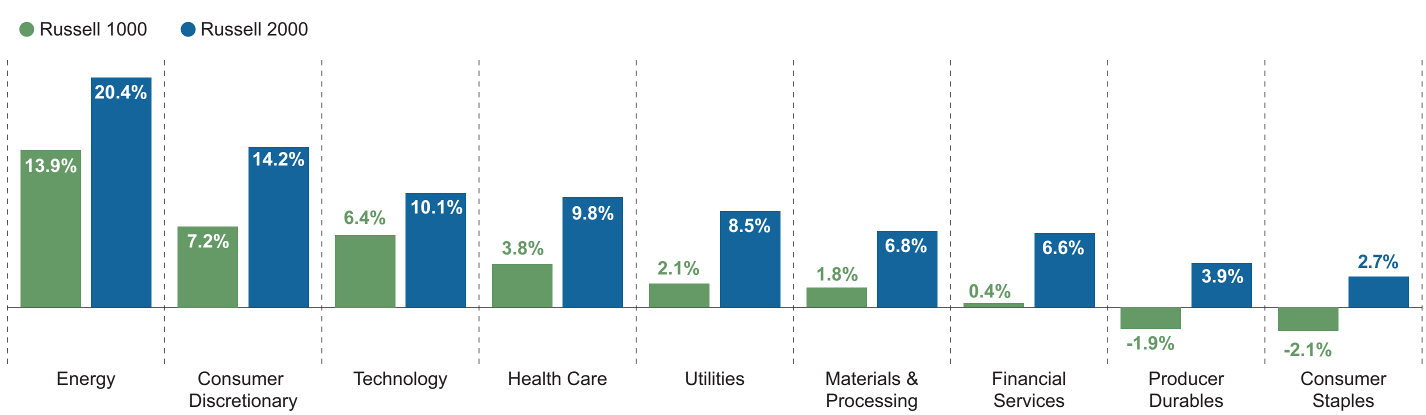
Concentration Risk

– FAANG stocks continue to drive an outsized proportion of returns within equity indices.
– Biotech represents half of the Health Care sector's weight of the **Russell 2000 Growth Index** (12% vs. 25%), and many small growth managers have struggled in selecting biotech names given the binary outcomes of research and depth of resources needed to do it well.

Amazon Effect Continues

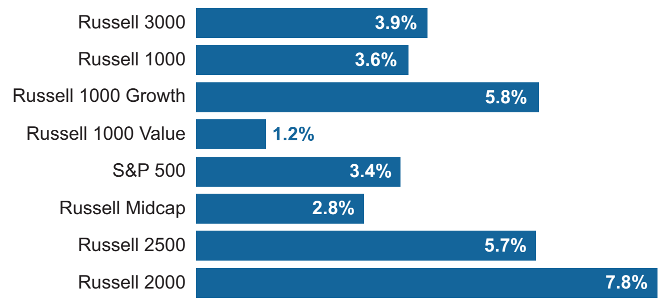
Amazon (+17%) increased in size by over 69% since last year's Russell reconstitution, with continued market share expansion

Quarterly Performance of Select Sectors



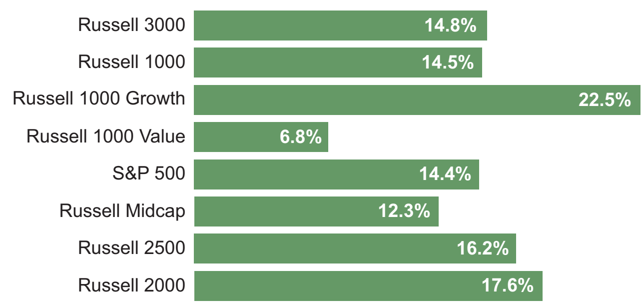
Source: FTSE Russell

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

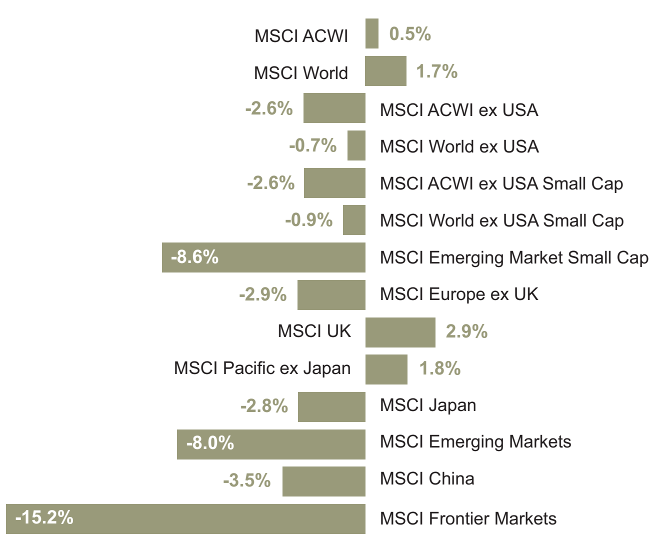
in the retailing space (including food) and now into Health Care. Active large cap managers with underweight positions to Amazon will likely continue to lag their benchmarks given Amazon's looming presence in large cap indices.

Non-U.S. / Global Equity

Non-U.S. markets ended in the red as trade war talk moved into action. Although initial tariffs levied by the U.S. were targeted, retaliatory actions and supply chain disruptions broadened their effects.

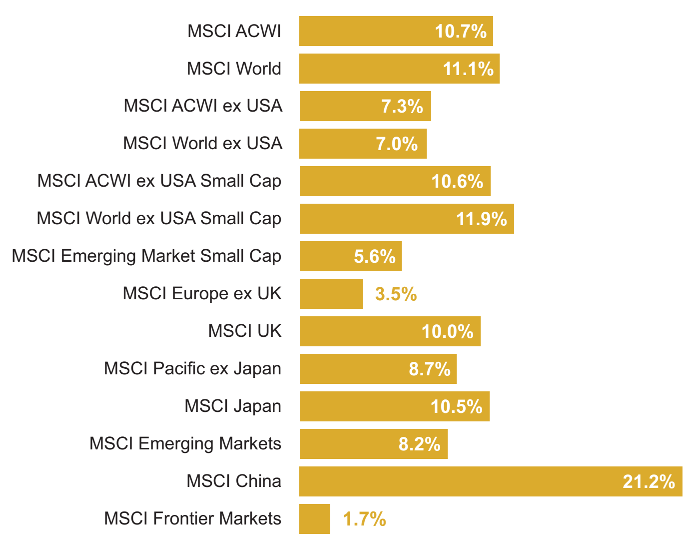
- Growth outpaced value—although no factor category showed significant strength.
- Cyclical sectors were hurt later in the quarter as the prospect of slower growth led to reduced expectations.
- The U.S. dollar was up, hurting non-U.S. returns. The euro and British pound were hit especially hard with the rise of populism and Brexit turmoil.
- Frontier markets were singed by Argentina (-42%) on continuing political unrest, severe drought, and a devaluing currency.
- Emerging markets were among the hardest hit, with Latin America taking the brunt of the sell-off. In May, Brazil's central bank unexpectedly left rates unchanged, while a trucking strike and growing concern about October elections weighed on markets. The Brazilian real fell 14% in the quarter versus the U.S. dollar.
- China reversed a five-quarter rally on concerns surrounding growing debt burdens, slower growth, and trade uncertainty.

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



Source: MSCI

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



Source: MSCI

Global Fixed Income

U.S. Fixed Income

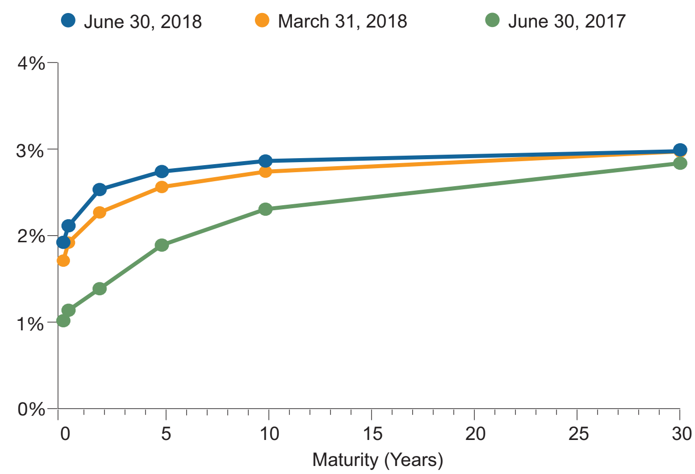
Fixed income markets grappled with multiple issues, resulting in continued volatility. Trade conflicts due to the imposition of tariffs, emerging market elections, and the rising U.S. dollar contributed to the unstable environment.

U.S. rates rose in the second quarter and the yield curve continued its flattening trend.

Treasury Spreads Tightened

- The spread between the 2-year and 10-year ended at its lowest level (33 bps) in more than 10 years.
- The **Bloomberg Barclays US Aggregate Bond Index** fell 0.2%.
- Investment-grade (IG) corporates faced increased headwinds during the quarter, dragging returns lower. Concerns over potential trade wars and rising rates increasingly weighed on IG credit despite rising earnings and revenues.
- High yield corporates (**Bloomberg Barclays High Yield Index:** +1.0%) rebounded in the second quarter, pushing year-to-date returns into positive territory.
- CCC-rated credits continued to outperform higher-rated credits within high yield.

U.S. Treasury Yield Curves



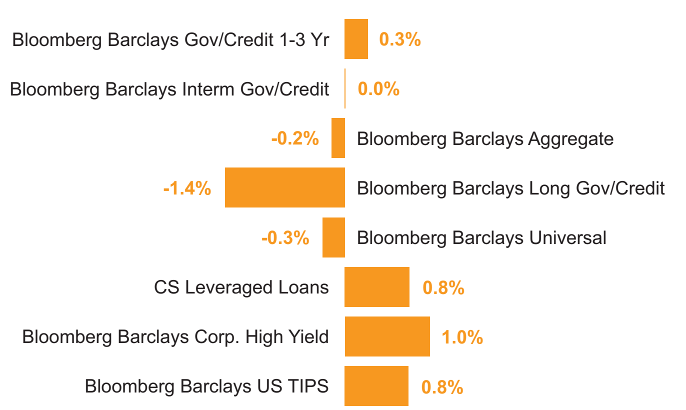
Source: Bloomberg

- Earnings growth remains strong and defaults remain benign amid the positive economic outlook.

Yield Curve Nears Inversion

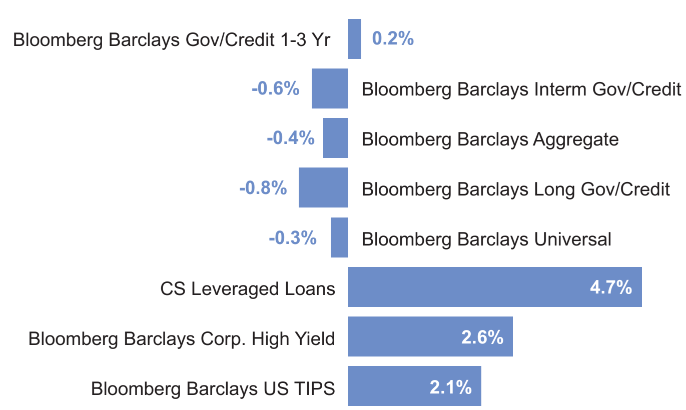
- The Fed's preferred measure of inflation, personal consumption expenditures (PCE), is on the precipice of its 2% target.

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 impact of increased tariffs and fiscal policy may lead to even higher levels.
- Only the recent strength of the U.S. dollar and a drop in energy prices have curtailed the dramatic rise over the past year.
- With two more hikes forecasted for this year and three more next year, the curve is inching closer to inversion.
- While not an immediate cause of recession, an inverted curve has been a reliable signal of recession in the past.

Non-U.S. Fixed Income

Most Indices Fell in Second Quarter

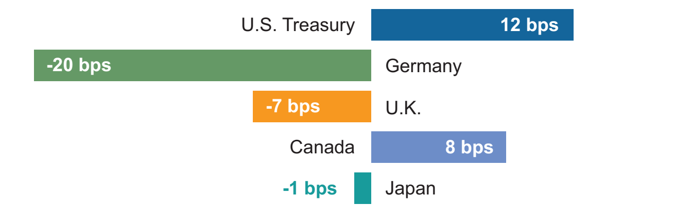
- The **Bloomberg Barclays Global Aggregate Bond Index** dropped 2.8%.
- The ex-U.S. version of the Index fell even more, declining 4.8%.
- Emerging market (EM) indices were especially hard hit (**JPM GBI-EM Global Diversified Index:** -10.4%).
- For the last year, broad indices were narrowly positive but EM indices were lower.

Uncertainty of Trade War May Have Biggest Impact

- Announced tariffs are not expected to have a meaningful impact on growth; however, the extent of the costs ultimately depends on the degree to which other countries counter.
- An OECD study that looks at the far larger shock of a 10% across-the-board increase in tariffs by the U.S., euro zone, and China finds that global GDP would fall by 1.4%.
- The more impactful result may be an increase in uncertainty, which tends to precede weaker economic activity.
- These effects will take time to ultimately play out and are even more difficult to quantify.

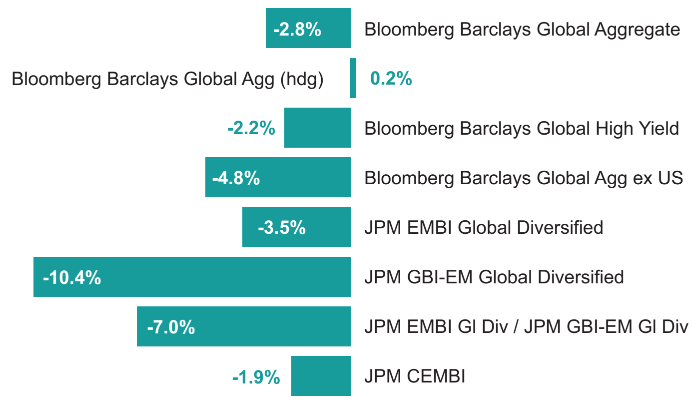
Change in 10-year Global Government Bond Yields

1Q18 to 2Q18



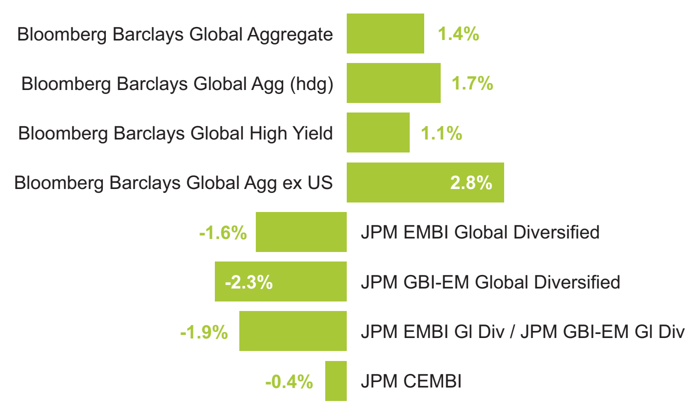
Source: Bloomberg Barclays

Non-U.S. Fixed Income: Quarterly Returns



Sources: Bloomberg Barclays and JPMorgan Chase

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



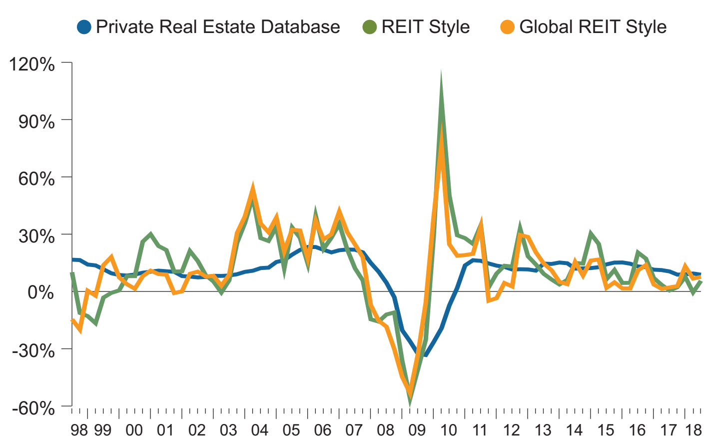
Sources: Bloomberg Barclays and JPMorgan Chase

U.S. Returns Moderate; Interest in Overseas Markets Is High

REAL ESTATE

– U.S. core real estate returns continue to moderate and shift toward income. The limited appreciation that did occur in the second quarter came from net operating income growth rather than further cap rate compression.
– The **NCREIF Open End Diversified Core Equity Index** rose 1.8% in the second quarter, while the **Callan Real Estate ODCE Style Group** gained 1.6%.
– Spreads remain relatively tight between core and value-add due to large amounts of capital in both strategies chasing fewer available deals, combined with many investors seeking to create core assets by using their non-core buckets to buy and stabilize non-core properties.
– As private real estate valuations continue to test historical highs, investors are looking at other sectors such as real estate debt and REITs to access the best risk-adjusted returns from real estate. Both U.S. and non-U.S. REITs are trading at discounts to net asset value, indicating relative value for public market securities compared to private real estate valuations.
– The **EPRA/NAREIT Developed Index** jumped 5.1% in the second quarter, versus the +4.5% return for the **Callan Global Real Estate Style Group.** The **EPRA/NAREIT Develeped ex US Index** increased only 0.6%, compared to the 0.4% gain for the **Callan Global ex-U.S. Real Estate Style Group.** The **NAREIT Equity REITs Index** spiked 10.0%; the **Callan U.S. REIT Style Group** nearly matched that with a 8.6% return.
– Supply and demand fundamentals are balanced but peaking. Supply is in check and aided by strict commercial real estate lending standards. Demand continues on the back of synchronized U.S. growth. Transaction volumes have begun to take a step back in recent quarters from current cycle peak levels but have yet to substantially affect pricing, as property remains expensive.
– The industrial sector performed the strongest (+3.6%), benefiting as structural shifts in the economy, property markets, and consumer habits continue to dampen demand for traditional retail space. Office is performing as expected late in the cycle (+1.5%), and tenant improvements and other capital expenditures are increasingly eroding cash flow. Multifamily remains strong due to positive demographic trends, except for the Class A luxury segment in prime markets such as New York.
– European real estate markets (ex-U.K.) are gaining momentum due to strong fundamentals in major European cities and despite continued political concerns across the region.
– Value-add and opportunistic real estate owners and operators continue to see significant prospects for creating and selling core product to a robust market of buyers. Paris, Berlin, Frankfurt, Amsterdam, Stockholm, and Madrid continue to see increased levels of investment activity.
– Asian real estate products are seeing strong fundraising momentum, with existing managers reaching target fund sizes and an increase in Asia-focused open-end funds.
– The Chinese government is implementing policies to increase domestic growth and consumption, including support for the development of multi-family rental property, a relatively new concept in China. Over the summer, the Chinese renminbi weakened against the dollar, due to monetary easing in China and global trade tensions, and more stringent

Rolling One-Year Returns



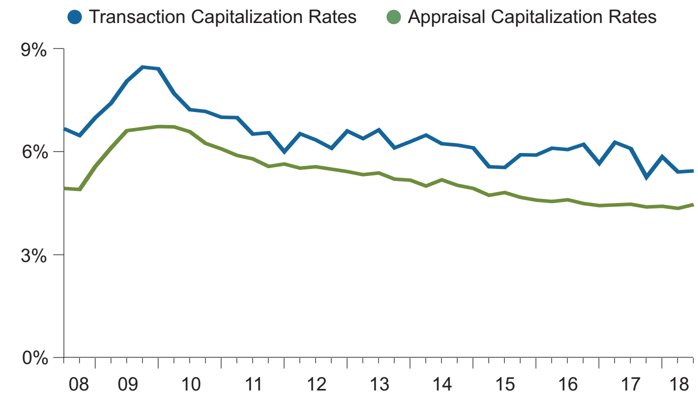
Source: Callan

capital controls have increased the amount of capital looking to invest within the country; investment activity remains steady in China.

– Other major markets such as Japan, Australia, South Korea, and India continue to see investment activity across multiple sectors.

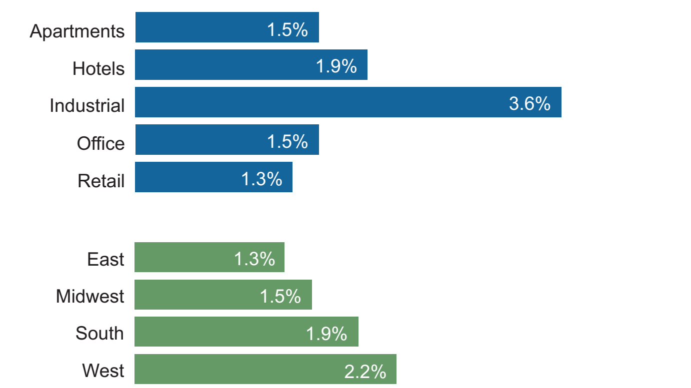
– Infrastructure strategies are raising significant capital. Open-end infrastructure managers have secured substantial new commitments this year. Infrastructure managers have reported mixed impact to their portfolios following the implementation of the latest tax law changes. The variety of closed-end infrastructure products continues to increase with new offerings in debt and emerging markets-focused strategies.

NCREIF Transaction and Appraisal Capitalization Rates



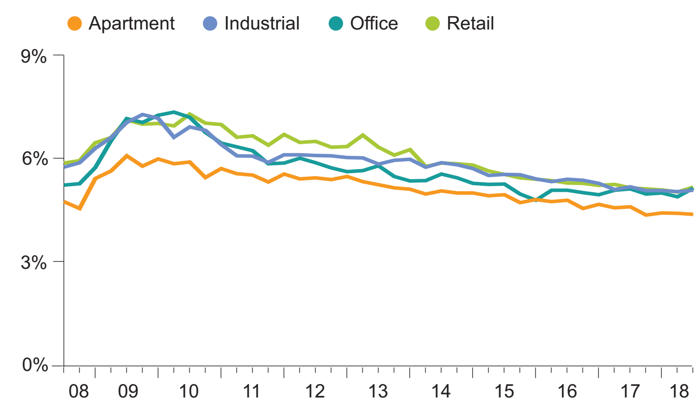
Source: NCREIF
Note: Transaction capitalization rate is equal weighted.

Sector Quarterly Returns by Property Type and Region



Source: NCREIF

NCREIF Capitalization Rates by Property Type



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

Callan Database Median and Index Returns* for Periods ended June 30, 2018

Private Real Assets	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
Real Estate ODCE Style	1.60	3.67	7.55	8.85	10.19	4.53	7.18
NFI-ODCE (value wt net)	1.81	3.82	7.47	8.38	10.03	4.33	7.29
NCREIF Property	1.76	3.49	7.13	8.23	9.76	6.22	8.98
NCREIF Farmland	1.13	2.46	6.55	7.58	10.25	11.73	14.61
NCREIF Timberland	0.48	1.41	3.57	3.43	6.00	4.00	7.45
Public Real Estate							
Global Real Estate Style	4.50	0.75	7.53	6.73	7.58	6.61	10.38
EPRA/NAREIT Developed	5.12	0.36	5.64	5.71	5.97	4.88	–
Global ex-U.S. Real Estate Style	0.44	0.72	11.45	5.36	6.24	5.08	10.31
EPRA/NAREIT Developed ex US	0.55	0.03	9.77	5.67	5.69	4.27	9.59
U.S. REIT Style	8.57	1.30	4.48	8.47	8.91	8.66	10.94
NAREIT Equity REITs	10.04	1.02	3.50	8.06	8.31	7.94	10.02

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

Languid Summer Days

PRIVATE EQUITY | Gary Robertson

- Second quarter private equity partnership commitments totaled $90.3 billion, with 329 new partnerships formed. The dollar volumes and number of funds both rose 36% from $66.5 billion and 242 in the prior quarter. (Source: *Private Equity Analyst*)
- For the first half, 2018 is running $9 billion or 5% behind a year ago. This year's fundraising should end up in the high $300 billion range, similar to the past two years. Some large fundraising events are slated to start in the fourth quarter.
- New buyout transactions fell although activity remained brisk overall. Funds closed 443 investments with $36.0 billion in disclosed deal value, a 26% dip in count and a 47% decline in value from the first quarter's very robust 597 investments and $67.9 billion of announced value. (Source: *Buyouts*)
- The $17.9 billion add-on of Toshiba Memory by Bain's portfolio company KK Pangea was the quarter's largest buyout. Nine acquisitions with announced values of $1 billion or more closed in the quarter, the same as last quarter. (Source: *Buyouts*)
- New investments in venture capital companies totaled 1,895 rounds of financing with $27.3 billion of announced value. Investments were down 10% from the prior quarter, and value fell 13%. The median pre-money valuations continued to increase across the board. The smallest and largest increases were seed (+17%) and Series C (+44%). (Source: National Venture Capital Association)

Funds Closed January 1 to June 30, 2018

Strategy	No. of Funds	Amt ($mm)	Percent
Venture Capital	273	24,612	16%
Buyouts	193	108,047	69%
Private Debt	39	8,457	5%
Secondary and Other	23	8,537	5%
Fund-of-funds	43	7,140	5%
Totals	**571**	**156,793**	**100%**

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

- There were 132 private M&A exits of buyout-backed companies with disclosed values totaling $24.5 billion. Both the count and dollar volume were down from the prior quarter's 164 sales and $28.8 billion. (Source: *Buyouts*)
- Six buyout-backed IPOs raised an aggregate $2.5 billion, down from 11 totaling $3.9 billion previously. (Source: *Buyouts*)
- Venture-backed M&A exits totaled 173 transactions with disclosed value of $8.8 billion, compared to 203 sales with values of $13.6 billion in the first quarter. (Source: *Buyouts*)
- There were 28 VC-backed IPOs in the second quarter with a combined float of $1.9 billion. The first quarter had 15 IPOs and total issuance of $2.2 billion. (Source: *Buyouts*)

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

Private Equity Performance Database (%) (Pooled Horizon IRRs through December 31, 2017*)

Strategy	3 Months	Year	3 Years	5 Years	10 Years	15 Years	20 Years
All Venture	3.68	12.97	9.23	16.18	9.51	9.70	17.90
Growth Equity	5.83	20.09	12.21	13.63	9.95	13.04	13.47
All Buyouts	5.38	22.64	13.65	14.41	8.83	14.59	12.43
Mezzanine	3.18	14.72	9.70	10.18	8.80	9.67	8.67
Distressed	2.45	10.99	6.72	9.52	9.49	10.77	10.34
All Private Equity	**3.63**	**15.26**	**10.10**	**10.82**	**9.25**	**11.47**	**11.24**
S&P 500	4.82	19.11	11.94	13.97	9.12	12.97	12.81

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.

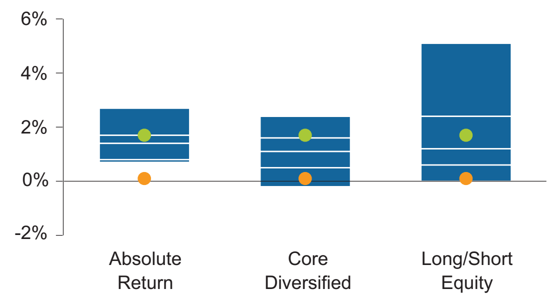
Trade Spat Rains on Risk Parade

HEDGE FUNDS/MACs | Jim McKee

Hedge Funds

- During the quarter, Trump's tough talk on trade upset markets, particularly abroad, while positive momentum from tax cuts and corporate earnings growth lifted U.S. markets.
- Benefiting from a strong corporate environment, particularly in the U.S., event-driven strategies (Event-Driven Multi, Distressed, Risk Arb) were the quarter's steadier contributors.
- As fiscal and monetary policies diverged globally, Global Macro gained 1.3% with its discretionary bets; however, Managed Futures (-0.3%) lacked any meaningful systematic trends.
- Actively managing risks in foreign markets hurt by a stronger dollar, Emerging Markets (-4.3%) suffered fewer losses than the underlying market indices.
- Long/Short Equity (-0.3%) went nowhere, on average, amid turbulent markets across geographies and styles.

Hedge Fund-of-Funds Style Group Returns



	Absolute Return	Core Diversified	Long/Short Equity
10th Percentile	2.7	2.4	5.1
25th Percentile	1.7	1.6	2.4
Median	1.4	1.1	1.2
75th Percentile	0.8	0.5	0.6
90th Percentile	0.7	-0.2	0.0
CS Hedge Fund ●	0.1	0.1	0.1
3-Mo T-Bill +5% ●	1.7	1.7	1.7

Sources: Callan, Credit Suisse, Federal Reserve

Callan Database Median and Index Returns* for Periods ended June 30, 2018

Hedge Fund Universe	Quarter	Year	3 Years	5 Years	10 Years	15 Years
Callan Fund-of-Funds Database	**1.29**	**5.61**	**2.76**	**4.23**	**3.32**	**4.82**
Callan Absolute Return FOF Style	**1.36**	**4.99**	**2.71**	**4.07**	**3.09**	**4.49**
Callan Core Diversified FOF Style	**1.06**	**5.05**	**2.22**	**4.18**	**3.25**	**5.03**
Callan Long/Short Equity FOF Style	**1.21**	**7.34**	**3.90**	**5.56**	**3.85**	**5.98**
Credit Suisse Hedge Fund	0.10	4.74	2.02	3.60	3.24	5.51
CS Equity Market Neutral	-0.64	5.89	1.88	2.05	-3.36	0.33
CS Fixed Income Arb	-0.27	3.96	4.02	3.92	4.27	4.02
CS Distressed	0.51	4.15	2.95	3.73	4.08	6.61
CS Event-Driven Multi	2.02	3.69	-0.42	2.13	2.92	5.84
CS Emerging Markets	-4.34	5.69	4.68	4.77	3.43	7.46
CS Managed Futures	-0.29	4.00	-1.47	1.88	0.62	2.87
CS Convertible Arbitrage	-0.77	2.56	3.12	2.55	4.28	3.96
CS Multi-Strategy	0.14	3.46	4.53	6.03	5.28	6.48
CS Risk Arbitrage	0.80	1.98	3.26	2.74	2.72	4.08
CS Long/Short Equity	-0.35	7.06	3.31	5.80	4.12	6.56
CS Global Macro	1.27	5.65	1.71	2.76	3.63	6.67
HFRI Asset Wtd Composite	0.87	5.31	2.68	4.17	3.52	–
90-Day T-Bill + 5%	1.66	6.36	5.68	5.42	5.35	6.29

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

Rates a Tailwind for Managers

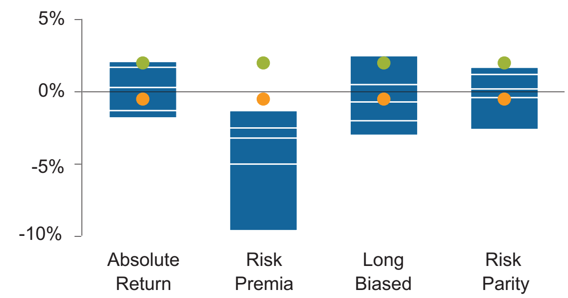
– Rising short-term rates are now providing a tailwind to hedge fund performance with growing returns on cash and short-interest rebates.
– Higher rates, with accompanying inflation risks, are also likely to create more market volatility, leading to more trading opportunities for active managers like hedge funds.

Multi-Asset Class (MAC) Strategies

Liquid alternatives to hedge funds have become popular among investors for their attractive risk-adjusted returns that are similarly uncorrelated with traditional stock and bond investments but constructed at a lower cost.

– Callan's Multi-Asset Class (MAC) style groups struggled with a tough top-down market environment, leading to flat or negative returns in the second quarter.
– **CS Neuberger MARP** (-0.5%) is an equal risk-weighted index of alternative risk factors (value, carry, momentum, and liquidity) across four capital markets (equity, fixed income, currency, and commodities) targeting 5% volatility.
– Equity Value (-4.6%) sank again after a similar loss in the first quarter, reflecting a continuing Tech-led growth story. Although Commodity Momentum (+9.5%) got traction, conflicting economic signals around the world undermined other momentum factors.

MAC Style Group Returns

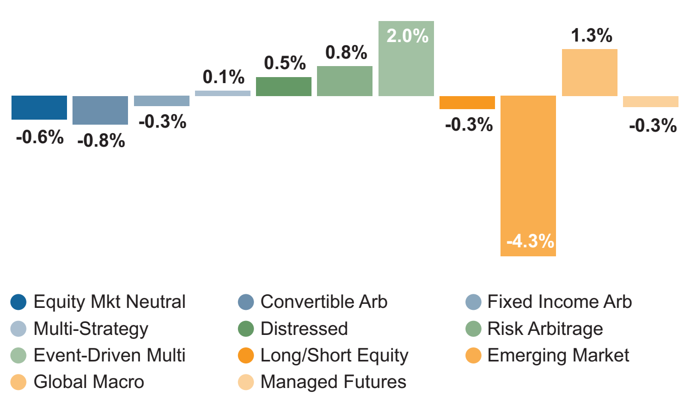


	Absolute Return	Risk Premia	Long Biased	Risk Parity
10th Percentile	2.1	-1.3	2.5	1.7
25th Percentile	1.7	-2.5	0.5	1.2
Median	0.3	-3.2	-0.7	0.2
75th Percentile	-1.3	-5.0	-2.0	-0.4
90th Percentile	-1.8	-9.6	-3.0	-2.6
CS NB MARP (5%v)	-0.5	-0.5	-0.5	-0.5
60% S&P 500/ 40% BB Barclays Agg	2.0	2.0	2.0	2.0

Sources: Bloomberg Barclays, Callan, Credit Suisse, Neuberger Berman, Standard & Poor's

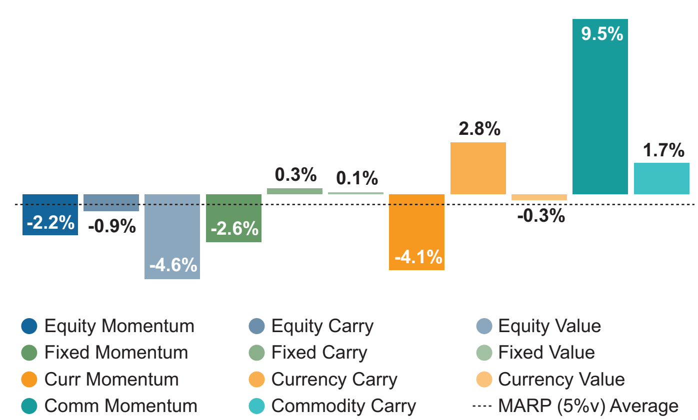
– The **Risk Premia MAC Style Group** (-3.2%) experienced systematic weakness, as noted above with the CS NB MARP. Normally diversifying exposures of value and momentum risk factors were key detractors again this quarter. Reflecting different vol targets and factor exposures, returns of underlying Risk Premia managers showed significant dispersion over the quarter.
– Other MAC group returns hovered around zero, trailing the traditional 60/40 benchmark (+2.0%).

Credit Suisse Hedge Fund Strategy Returns



Source: Credit Suisse

Alternative Risk Factor Breakdown



Sources: Credit Suisse, Neuberger Berman

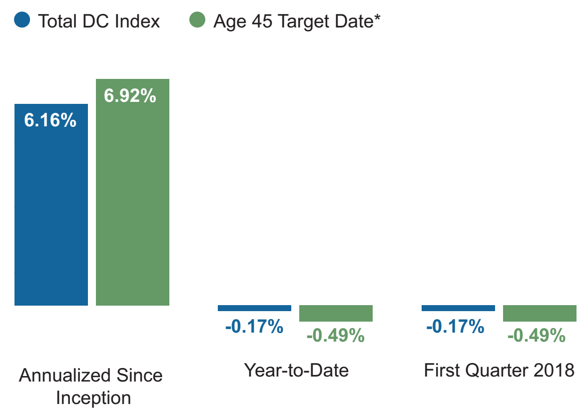
DC Plans Struggle in Turbulent Market

DEFINED CONTRIBUTION | Tom Szkwarla

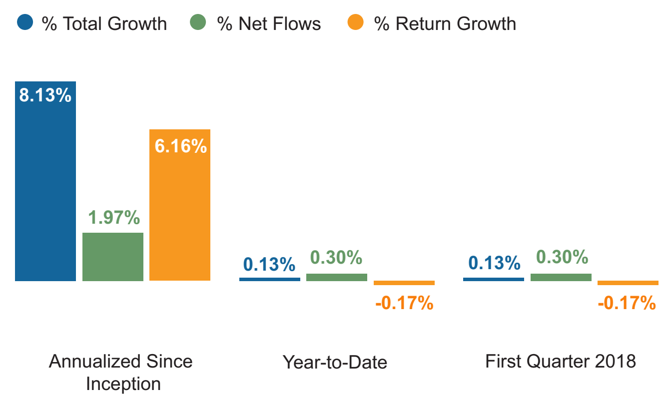
- The Callan DC Index™ fell 0.2% in the first quarter, reflecting widespread declines in global markets.
- But the DC Index outpaced the Age 45 Target Date Fund, which lost 0.5%.
- Since inception, the DC Index's annual return of 6.2% has trailed the Age 45 TDF by 76 basis points.
- Driven primarily by participant inflows, DC plan balances slightly increased by 0.1% during the quarter. Inflows (participant and plan sponsor contributions) added 0.3% to total growth, overcoming the 0.2% drop in returns.
- Over the long term, participant balances have increased an average of 8.1% annually, with market appreciation contributing 6.2% and net cash flows adding the remainder.
- U.S. fixed income experienced net inflows of 13.1% during the period. Riskier assets like U.S. equity and company stock experienced significant outflows.
- For the quarter, nearly 70 cents of every dollar that moved within DC plans flowed to TDFs.
- Turnover (i.e., net transfer activity levels within DC plans) in the DC Index of 0.3% came in well below the historical average at 0.6% and was at its lowest level since the first quarter of 2011.
- The Callan DC Index's overall equity allocation fell for the first time in seven quarters, ending at 70%, still slightly above the Index's historical average (68%).
- TDFs' share of DC assets grew to 31.3% during the quarter, another all-time high. The allocation to U.S. large cap equity declined slightly from last quarter, but U.S. large cap continues to be the second-highest allocation, at 23.3%.
- When TDFs are available in a DC plan, they hold a much greater portion of assets (34%) than any other option.

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 (First Quarter 2018)
(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	69.83%
U.S. Fixed Income	13.13%
U.S. Smid Cap	-32.65%
U.S. Large Cap	-21.99%
Total Turnover**	**0.31%**

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.

Contributors

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

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

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.

Jim McKee is director of Callan's Hedge Fund Research group, specializing in asset allocation, manager structure, manager search, and performance evaluation.

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

Gary Robertson is manager of Callan's Private Equity Research group. Gary is responsible for the firm's Alternative Investments consulting services.

Tom Szkwarla is a defined contribution consultant in Callan's Fund Sponsor Consulting group, responsible for providing support to Callan's DC clients and consultants.

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

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

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.

I*f 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